

D ½ ROAD RECONSTRUCTION 29 ¼ to 30 ROAD

SPECIAL PROVISIONS

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GENERAL

The descriptions of the pay items listed in the Bid Schedule for this Project may not agree with those listed in the Standard Specifications. Payment for all Work performed, as required in the Contract Documents, will be in accordance with the items and units listed in the Bid Schedule.

STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION

The City of Grand Junction Standard Specifications for Road and Bridge Construction are hereby modified or supplemented for this Project by the following modifications to The Standard Specifications for Road and Bridge Construction, State Department of Highways, Division of Highways, State of Colorado.

SP-1 SECTION 203 – POTHOLING

Section 203 of the Standard Specifications is hereby revised for this project as follows:

Subsection 203.05(g) shall include the following: All potholing shall be accomplished using noninvasive, vacuum equipment. All potholing methods and locations shall be preapproved by the Project Engineer. Any potholing that has not been preapproved by the Project Engineer shall be at the Contractor's expense.

SP-2 SECTION 203 – PROOF ROLLING

Section 203 of the Standard Specifications is hereby revised for this project as follows:

Delete Subsection 203.11(f).

In Subsection 203.12, delete the pay item "Proof Rolling" and add the following:
Proof Rolling will not be measured and paid for separately but shall be included in the work.

SP-3 SECTION 206 – EXCAVATION AND BACKFILL FOR STRUCTURES

Section 206 of the Standard Specifications is hereby revised for this project as follows:

Structure excavation and structure backfill required for all manholes, valve boxes, inlets, walls, pipes, culverts, utility conduits, extensions, removed pipes, and removed conduits will not be measured and paid for separately but shall be included in the work.

SP-4 SECTION 206 (UU-103.8) – STABILIZATION FABRIC

Section 206 of the Standard Specifications is hereby revised for this project as follows:

Stabilization Fabric shall be utilized for trench base stabilization in areas where groundwater is encountered during trenching activities. Fabric placement shall be in accordance with the City of Grand Junction's Standard Detail GU-03. Fabric material shall be Mirafi RS580i or Engineer-approved equal.

SP-5 SECTION 210 – RESET STRUCTURES

Section 210 of the Standard Specifications is hereby revised for this project as follows:

The Contractor shall adjust all manholes, valve boxes, and survey range boxes 0 to 1/4 inch below final grade and adjusted to match the slope of the roadway. Valve boxes and manholes are to be always maintained fully accessible for emergency and maintenance operations. The cost of adjusting valve boxes, manholes, and survey range boxes shall be included in the work, unless otherwise specified. The Contractor shall be responsible for any cost incurred by the Owner to provide access to the covered manholes or valve boxes. Final adjustment of all utility access points shall be completed within seven days from the time the HMA was placed.

SP-6 SECTION 210 – FURNISH AND INSTALL MAILBOX CLUSTER

Section 210 of the Standard Specifications is hereby revised for this project as follows:

The work includes furnishing and installing new mailbox clusters in locations shown on the plans. All materials and construction shall comply with CDOT Section 210. Installation includes concrete pad and anchoring of cluster box unit (CBU) in accordance with USPS standards. Work shall include coordination with USPS for final placement and access.

SP-7 SECTION 210 – RESET SPRINKLER SYSTEMS

Section 210 of the Standard Specifications is hereby revised for this project as follows:

During construction activities it is anticipated that private irrigation systems will be present and potentially disturbed needing to be reset. All work shall adhere to the requirements of Specification Section 210.11.2 *Sprinkler Systems*.

For estimate purposes the project limits include at least 17 properties with the potential for irrigation system impacts. Work could include resetting of sprinklers and pumps and other irrigation equipment.

SP-8 SECTION 401 – PLANT MIX PAVEMENTS

Section 401 of the Standard Specifications is hereby revised for this project as follows:

401.01 Description.

Add the following:

This work shall consist of providing a Hot Mix Asphalt (HMA) to be placed as shown on the plans, or as directed by the Owner. The Contractor shall be responsible for Process Control (PC) of the HMA; including the design, and control of the quality of the material incorporated into the project.

401.02 Composition of Mixtures.

Delete subparagraph (a) *Mix Design* and replace with the following:

A Job Mix Formula (JMF) design shall be submitted for each mixture required, at least 10 calendar days prior to placing any mix on the project, for acceptance by the Owner. JMF's previously approved by CDOT within the past six months may be utilized. The JMF design shall be determined using AASHTO T-312 or CP-L 5115 for the Method of Mixture Design. Grading ST, SX, and S shall be designed using 100mm molds. The job mix gradation shall be wholly within the Master Range Table in subsection 703.04 before the tolerances shown in Section 401 are applied.

Designs shall be developed and performed in a materials laboratory that meets the requirements set forth by AASHTO Materials Reference Laboratory (AMRL) for all testing procedures. The design shall be stamped and signed by a Professional Engineer licensed in the State of Colorado. In addition, the Contractor shall submit, as part of the mixture design, laboratory data documents to verify the following:

- Gradation, specific gravity, source and description of individual aggregate and properties, and the final blend.
- Aggregate physical properties.
- Source and Grade of the Performance Graded Binder.
- Proposed Design Job Mix: aggregate and additive blending, final gradation, optimum binder content.
- Mixing and compaction temperatures used.
- Mixture properties shall be determined with a minimum of four binder contents.

The JMF for each mixture shall establish a single percentage of aggregate passing each required sieve size, a single percentage of asphalt cement to be added to the aggregate, and a single temperature for the mixture at the discharge point of the plant.

The Owner reserves the right to verify the asphalt supplier's mix design for each JMF design utilizing materials produced and stockpiled. The asphalt supplier shall provide, at no cost, a sufficient quantity of each aggregate, mineral filler, Recycled Asphalt Pavement (RAP), and additive for the required laboratory tests, as well as all Certificates of Conformance/ Compliance at any time on any material used. The Asphalt Supplier shall provide copies of quality control testing results during the production of HMA used within one business day from the sampling date.

Mixture design of HMA shall meet the requirements of Table 403-1 and Table 403-2 in the Revision to Section 403. For mixes requiring a design gyration of 100 (ESALs greater than 3 million) the Project Special Conditions should be used. This gyration is not recommended for the majority of roads within Mesa County.

Delete subparagraph *(b) Mixtures Furnished to the Project* and replace with the following:

Production verification shall occur prior to, or during, the start of the project. Volumetric properties of the mix shall be verified by LabCAT Level C Certified Technicians. If the mix was produced for another project within the last 90 days, data from that project can be submitted for verification. All mixtures furnished for the project shall conform within the ranges of tolerance listed in Table 401.02A. The mix verification test reports shall be submitted to the Owner prior to mix placement.

TABLE
401.02A
Production Mix
Tolerances

| <u>Property</u> | <u>Tolerance</u> |
|-------------------------------|------------------|
| <u>Asphalt Cement Content</u> | <u>± 0.3%</u> |
| <u>VMA</u> | <u>± 1.2%</u> |
| <u>Air Voids</u> | <u>± 1.2%</u> |

Verification testing for binder content, gradation and physical properties shall be performed at the frequencies listed in Table 401.23-1.

There shall be no substitutions of materials allowed during production, unless approved in advance by the Owner. All substitutions will require checkpoint verification. If the checkpoint differs from the Job Mix Formula (JMF), a new mix design will be required. Upon request of the Owner, the binder grade may be changed by one available binder grade level without requiring a new mix design.

Should a change in the source of any material used in the production of HMA (aggregate, mineral filler, lime, or performance graded asphalt binder) occur, a one point verification test (at optimum binder content) of the mix must be performed to verify that the applicable criteria shown on Table 403-1 (HMA) and Table 403-2 (VMA) of Revision to Section 403 are still met. If this testing shows noncompliance, the Contractor shall establish a new job mix design and obtain approval by the Owner before the new HMA is used.

Add the following new subparagraphs:

(c) *Reclaimed Asphalt Pavement (RAP)*. RAP shall be allowed in HMA up to a maximum binder replacement of 23 percent, unless otherwise specified in the contract, and provided that all the specifications for the HMA are met. Fine Aggregate Angularity requirements shall apply only to the virgin fraction of the fine aggregate. RAP shall be of uniform quality and gradation with a maximum size no greater than the nominal aggregate size of the mix. RAP shall not contain clay balls, vegetable matter, or other deleterious substances.

The Contractor shall have an approved mix design for the amount of RAP to be used. The AC content of the RAP utilized in the Contractor RAP mix design shall be the average AC content determined in accordance with 1B or 1C, below, or alternatively, a minimum of five samples of the Contractors RAP stockpile may be sampled and the average AC content of the RAP be determined using AASHTO T-164, Method A or B, or in accordance with 1C below. The Contractor shall determine the total binder replaced by the binder in the RAP pursuant to the following equation:

Total Binder Replaced = $(A \times B) \times 100/E$

Where:

A = RAP % Binder Content *

B = RAP % in Mix *

E = Total Effective Binder Content *

* in decimal format (i.e. 2% is 0.02)

The Total Binder Replaced by the binder in the RAP shall not exceed 23 percent of the effective binder content of either the mix design or the produced mix.

The Contractor shall have an approved Quality Control (QC) Plan that details how the RAP will be processed and controlled. The QC plan shall address the following:

1. RAP Processing Techniques. This requires a schematic diagram and narrative that explains the processing (crushing, screening, and rejecting) and stockpile operation for this specific project.
2. Control of RAP Asphalt Binder Content (AASHTO T-164, Method A or B). RAP Asphalt Binder Content may also be determined in accordance with CP-L 5120, provided an RAP AC

content correction factor is determined through correlation testing with AASHTO T-164, Method A or B. The correction factor shall be determined by performing correlation testing on the first five samples of the RAP AC content, then at a frequency of one for every five AC content tests thereafter. The correction factor shall be determined by calculating the average difference in AC content between CP-L 5120 and AASHTO T-164, Method A or B, and applying the correction to the AC content determined in accordance with CP-L 5120 :

Frequency: 1 per 1000 tons of processed RAP material (minimum five tests)

3. (Alternate) The Contractor may propose a RAP asphalt content correction factor to be used in conjunction with CP-L 5120. The proposed CP-L 5120 RAP asphalt content correction factor shall be used with all RAP asphalt contents tested for the mixture design and quality control sampling and testing. The methodology of the proposed CP-L 5120 RAP asphalt content correction factor shall be outlined in detail in the approved RAP QC Plan. At a minimum, the proposed CP-L 5120 correction factor shall identify the principal source locations of the RAP aggregate, gradation of the material tested, and specific ignition oven serial number used in all the RAP asphalt content testing. The RAP source locations, material gradation, and specific equipment used shall substantiate the CP-L 5120 asphalt content correction factor used for the testing. The substantiation must be from data gathered from historical information or specific asphalt content correction data obtained from tests performed on similar virgin aggregate sources, virgin material gradations, and the specific equipment used.

4. Control of RAP Gradation (CP31 or AASHTO T-30):

Frequency: 1 per 1000 tons of processed RAP material (minimum three tests, sampling from belt feed and not stockpile)

5. Process Control Charts shall be maintained for binder content and each screen listed in Table 401.2C, during addition of any RAP material to the stockpile. The Contractor shall maintain separate control charts for each RAP stockpile. The control charts shall be displayed and shall be made available, along with RAP AC extraction testing laboratory reports to the Engineer upon request

The processed RAP must be 100 percent passing the 31.5 mm (1¼ inch) sieve. The aggregate obtained from the processed RAP shall be 100 percent passing the 25.0 mm (1 inch) sieve. The aggregate and binder obtained from the processed RAP shall be uniform in all the measured parameters in accordance with the following:

**Table 401.2C
RAP Binder & Aggregate Uniformity Tolerances**

| Element | Standard Deviation |
|----------------|--------------------|
| Binder Content | 0.5 |
| % Passing ¾" | 4.0 |
| % Passing ½" | 4.0 |
| % Passing 3/8" | 4.0 |
| % Passing #4 | 4.0 |
| % Passing #8 | 4.0 |
| % Passing #30 | 3.0 |
| % Passing #200 | 1.5 |

(d) *Warm Mix Asphalt (WMA) Technology*. The Contractor may choose to use a WMA Technology that is included on the CDOT approved products list (<https://www.codot.gov/business/apl/asphalt-warm-mix.html>).

WMA technologies (additive or foaming) used shall be identified on the mix design, indicating usage as a workability additive and/or anti-strip additive. WMA shall be submitted and approved by the Owner for use on a project.

The addition of WMA additives during production, including foaming, shall be controlled by a calibrated metering system interlocked with the plant's controls per the manufacturers' recommendation. Additives may be added at the asphalt terminal at the dosage rate recommended by the WMA technology provider. The foaming process mixes water and binder to create microscopic steam bubbles. Typical water injection rate is $\leq 2\%$ of binder flow rate or per manufacturers' recommendation.

(e) *Anti-Strip Additives*. Anti-Strip shall be added into the HMA. Anti-Strip agents may be liquids (added to the binder), lime (added to the aggregates) or other products, and shall be submitted for approval by the Owner.

The minimum value for Tensile Strength Ratio (TSR) tested in accordance with Table 401.21-1 shall be 80% for the mix design and 70% during production.

There are various types of liquid Anti-Strips. Amine and Organo-silane type liquid Anti-Strip additives are physically mixed with the asphalt binder. Liquid Anti-Strip agents shall be added per the manufacturer's recommendations. Typical product dosages are provided in Table 401.2E-1.

TABLE 401.2E-1
Liquid Anti-Strip Dosage Rates

| Type | Typical Dosage Rate |
|---------------|---------------------|
| Amine | 0.4% to 0.8% |
| Organo-silane | 0.05% to 0.15% |

WMA chemical products which display Anti-Stripping characteristics will be classified, and identified on the mix design, as a liquid Anti-Strip additive.

When a liquid Anti-Strip additive is used, the Contractor shall include the following information with the mix design submission:

- Information on the type of liquid Anti-Strip additive to be supplied, including product name, product manufacturer/supplier
- Additive rate
- TSR values for the treated mixes
- The proposed method for incorporating the additive into the plant produced mix

401.03 Aggregates.

Add the following:

The percentage of fractured faces shall be as shown in Table 403.1 of the Revision to Section 403.

Grading ST (3/8" nominal) mixes may be used for leveling, maintenance, bike paths, sidewalks and thin lift overlays. Grading SX (1/2" nominal) mixes shall be used on top and bottom lifts and for patching. Grading S (3/4" nominal) mixes may be used for bottom lifts.

401.05 Hydrated Lime.

Add the following:

When used in the HMA, hydrated lime shall be added at the rate of 1% by dry weight of the aggregate and shall be included in the amount of material passing the No. 200 sieve.

401.06 Asphalt Cement.

Revise the second paragraph to read as follows:

The asphalt cement shall meet the applicable requirements of subsection 702.01.

Add the following:

The Contractor shall provide to the Owner acceptable 'Certifications of Compliance' of each applicable asphalt binder grade from the supplier. Should testing or certificate show nonconformance with the specifications, the asphalt binder may be rejected. When production begins, the Contractor shall, upon request, provide to the Owner a one quart can of each specified asphalt binder for analysis. Additionally, the Contractor shall provide the refinery test results that pertain to the asphalt binders used during production.

Based on climatic conditions and reliability, binder grades approved for use in Mesa County are as follows in Table 401.06A-1:

**TABLE
401.06A-1
Recommended Performance Graded Binders**

| Condition | Non-modified Binder | Modified Binder |
|---|----------------------------|------------------------|
| Free flowing traffic loads and 300,000 to 1 million 18K ESAL | PG 64-22 | |
| Free flowing traffic loads and 300,000 to 1 million 18K ESAL, plus above 6000 elevation | PG 58-28 | |

| | | |
|---|--|-----------------------------|
| Slow moving or standing trucks, major street intersections and/or 10,000,000 18K ESAL | | PG 76-28 (top lift only) |
|---|--|-----------------------------|

Binder grades other than those shown above shall not be used unless the proposed binder and the mix design are approved in writing by the OWNER. The asphalt cement shall meet the requirements of subsection 702.01

401.07 Weather Limitations and Placement Temperatures.

Revise as follows:

Surface temperatures shall be used to determine placement of APM. APM produced with documented WMA will be allowed a reduction in minimum surface temperatures for placement as provided in Table 401.07A-1. Ambient temperatures and other weather conditions shall be considered prior to placement.

**TABLE 401.07A-1
Minimum Surface Temperatures for placement of APM**

| Compacted Layer Thickness (in.) | Minimum Surface Temperature (°F) | | | |
|------------------------------------|----------------------------------|----------|-------------------------------|----------|
| | Top Layer | | Layers Below the Top Layer | |
| Product | APM | with WMA | APM | with WMA |
| <1½ | 60 | 50 | 50 | 40 |
| 1½ - <3 | 50 | 45 | 40 | 35 |
| 3 or more | 45 | 40 | 35 | 35 |

401.08 Asphalt Mixing Plant.

Delete the last paragraph of the subsection.

401.09 Hauling Equipment.

Add the following:

The Owner may reject any HMA which demonstrates it has been contaminated from a petroleum distillate release agent. The Owner may reject any uncovered HMA which demonstrates it has been impacted by contamination and/or weather.

401.10 Asphalt Pavers.

Delete the twelve paragraph and replace with the following:

Contractor shall submit for and receive approval of the screed control devices to be utilized on the paver prior to use for placing HMA on the project.

Add the following:

A Material Transfer Vehicle (MTV) or Material Transfer Device (MTD) may be required for placement of the HMA if the Contractor is not able to demonstrate the ability for continuous straight-line paver operations and ability to eliminate the need to stop the paver in between each haul truck. The MTV shall be a self-propelled unit with on board storage of material. An MTD is a non-self-propelled unit. Both MTV and MTD are capable of receiving material from trucks or from the ground, transferring the material from the unit to a paver hopper insert via a conveyor system.

401.11 Tack Coat.

Delete and replace with the following:

A tack coat shall be applied between pavement course and to all existing concrete and asphalt surfaces per Section 407. Tack coat is considered incidental to the cost of the HMA.

401.15 Mixing.

Add the following:

If a WMA technology (additive or foaming) is used, the discharge temperatures may be lowered during production at the discretion of the Contractor provided all specifications are achieved. Mix design is to indicate revised allowable discharge temperatures with WMA usage.

401.16 Spreading and Finishing.

Revise as follows:

Joints in the top layer of new pavement shall be located on lane lines unless otherwise shown on the plans. Longitudinal joints shall be minimized with wide paving pulls. Transverse joints shall be formed by cutting back on the previous run to expose the full depth of the course. Tack coat material shall be applied to contact surfaces of all joints before additional mixture is placed against the previously compacted material.

401.17 Compaction.

Revise as follows:

Equipment used for compaction of the HMA will be at the discretion of the Contractor. The number, weight, and type of rollers furnished shall be sufficient to obtain the required density and surface texture.

All joints shall be compacted to 92% of maximum theoretical specific gravity (Rice), taken six inches offset from the joint. The allowable variance shall be $\pm 2\%$. Joint density will be determined using nuclear density equipment.

Delete paragraphs six through eight, and paragraphs eleven to the end of the subsection and replace with the following:

Cores may be used to verify compaction results. The Contractor shall core the pavement, as required by the Owner; in accordance with AASHTO T 230, Method B, or for field calibration of nuclear density equipment in accordance with the ASTM D 2950. At a minimum, cores for nuclear density equipment correlation shall be taken at the beginning of placement of each project or change of mixture materials or gradation, unless otherwise approved by the Engineer. If the correlation cores were produced for another project within the last 90 days, data from that project can be submitted for verification, if no change in materials or gradation has occurred. When cores are used, the Contractor shall provide all labor and equipment for the coring and repair of the holes.

Along forms, curbs, headers, walls, and all other places not accessible to the rollers, the mixture shall meet all project compaction specifications. Any mixture that is defective, shall be corrected to meet the project specifications at the expense of the Contractor.

401.20 Surface Smoothness.

Delete and replace with the following:

The finish transverse and longitudinal surface elevation of the pavement shall be measured using a 10-foot straightedge. Surface smoothness shall be verified following the finish roller pass. Surface variation shall not exceed 3/16 inch in 10 feet for full lane width paving. For patching, the variation shall not exceed 3/8 inch in 10 feet. The final pavement surface shall not vary from the specified cross section by more than one inch at any point. Transverse measurements for variations shall exclude breaks in the crown sections. If the surface tolerance exceeds 3/16" across transverse joints, measured in at least three locations, the Contractor shall make corrections to the joint before proceeding. All corrections shall be made at the Contractor's expense.

The final surface pavement adjacent to curb and gutter shall be finished from 1/8-inch to 3/8- inches above the lip for catch curb and shall not extend above the lip for spill curb.

The Contractor shall adjust all manholes, valve boxes, and survey range boxes 0 to 1/4- inch below final grade and adjusted to match the slope of the roadway. Valve boxes and manholes are to be maintained fully accessible at all times for emergency and maintenance operations. The cost of adjusting valve boxes, manholes, and survey range boxes shall be included in the work, unless otherwise specified. The Contractor shall be responsible for any cost incurred by the Owner to provide access to the covered manholes or valve boxes. Final adjustment of all utility access points shall be completed within seven days of from the time the HMA was placed.

Add the following new subsections:

401.23 Testing and Inspection

The Contractor shall assume full responsibility for controlling all operations and processes to meet the Specifications. The Contractor shall perform all tests necessary for process control purposes on all elements at the frequency listed in Table 401.23-1. The Contractor shall maintain a log of all process control testing. Test results that have sampling or testing errors shall not be used. Process control testing shall be performed at the expense of the Contractor.

Laboratories shall be accredited by AASHTO Materials Reference Laboratory (AMRL) for the tests being performed. Technicians obtaining samples and conducting compaction tests must have a LabCAT Level A certification. Technicians conducting tests of asphalt content and gradation must have a LabCAT Level B certification. Technicians performing volumetric testing must have a LabCAT Level C certification. Equivalent NICET certification for all technicians is acceptable.

When requested by the Owner, the Contractor shall submit a quality control plan that addresses production, sampling, testing, and qualifications of testing personnel, timing, and methods for making adjustments to meet the specifications. The Contractor will provide a process or schedule for making corrections for material that was placed but does not meet specifications as well as obtain a follow up sample immediately after corrective actions are taken to assess the adequacy of the corrections. In the event the follow-up process control sample also fails to meet Specification requirements; the Contractor shall cease production of the asphalt mixture until the problem is adequately resolved to the satisfaction of the Owner.

**TABLE
401.23-1
Minimum Materials Sampling and Testing
for Process Control and Owners Acceptance**

| Test | Standard | Minimum Frequency |
|---|---|---|
| Sampling | AASHTO T168, ASTM D 979 and ASTM D3665, CP 41 | 1/1000 tons or fraction thereof (not less than one test per day) |
| In-Place Density | AASHTO T 166, T 238, T 230, CP 81 (nuclear), CP 44 (coring) | One test for each 250 lineal feet per lane and one test per 1,000 lineal feet of joint per lift |
| Thickness (Core) (when called for in Project specs.) | ASTM D3549 | One test for each 1000 lineal feet per lane |
| Air Voids & VMA | CP-L 5115 A.I. SP-2 | 1/1000 tons or fraction thereof (not less than one test per day) |
| Gradation | AASHTO T 27/T 11, CP 31 | 1/1000 tons or fraction thereof (not less than one test per day) |
| Hveem/Marshall Stability As Applicable | CP-L 5016 | One per project per mix used |
| Binder Content | CP-L 5120, AASHTO T 164 or other methods agreed upon between Owner and Contractor | 1/1000 tons or fraction thereof (not less than one test per day) |
| Maximum Theoretical Specific Gravity (Rice) | AASHTO T 209 (Rice), CP-L 51 | 1/1000 tons or fraction thereof (not less than one test per day) |
| Lottman Stripping, TSR & Dry Density | CP-L 5109 | One per project per mix used. |

Field control testing of dense graded asphalt mixes for the above tests shall meet the requirements of Table 403-1 and Table 403-2 in the Revision to Section 403.

401.24 Acceptance

If any materials furnished, or work performed, fails to meet the specification requirements, such deficiencies shall be documented and reported to the Owner. Copies of all process control tests shall be delivered to the Owner within one business day. Test results that cannot be completed within one day shall be provided to the Owner no later than three days after the sample was obtained.

Owners Acceptance (OA) test results, if any, and/or Process Control (PC) test results will be evaluated to determine acceptability. If the Contractor does not meet the project specifications, but acceptable work has been produced, the Owner shall determine the extent of the work to be accepted. If the

Owner determines the work is not acceptable, the Contractor shall correct the work, as approved by the Owner, at the expense of the Contractor.

SP-9 SECTION 403 – HOT MIX ASPHALT

Section 403 of the Standard Specifications is hereby revised for this project as follows:

403.02 Materials

Delete and replace with the following:

The materials shall conform to the requirements of subsections 401.2 of the Revised Section 401 above.

The design mix for hot mix asphalt (HMA) shall conform to the following Table 403-1 and Table 403-2:

**Table 403-1
Mixture Properties for Hot Mix Asphalt**

| Property | Test Method | Value |
|--|---|-----------------|
| | | |
| Air Voids, percent at: N (design) | AASHTO T-132, CPL 5115 | 3.0 – 4.0 |
| Lab Compaction (Revolutions): N (design) | CPL 5115 | 75 |
| Hveem Stability, (Grading ST, SX & S only) | CPL 5106 | 28 min. |
| Aggregate Retained on the 4.75 mm (No. 4) Sieve for S, SX and SG, and on the 2.36mm (No. 8) Sieve for ST and SF with at least 2 Mechanically Induced fractured faces | CP 45 | 60% min. |
| Accelerated Moisture Susceptibility Tensile Strength Ratio (Lottman)(for S & SX mixes) | AASHTO T-283 Method B, CPL 5109 Method B | 80 min. |
| Minimum Dry Split Tensile Strength, kPa (psi) | CPL 5109 Method B | 205 (30) min. |
| Voids in the Mineral Aggregate (VMA) % minimum | CP 48, AI-SP2 | See Table 403-2 |
| Voids Filled with Asphalt (VFA) | AI MS-2 | 65-80% |
| Dust to Asphalt Ratio: Fine Gradation | CP 50 | 0.6 – 1.2 |
| Coarse Gradation | | 0.8 – 1.6 |

| Property | Test Method | Value |
|----------|--|-------|
| | | |
| Note: | AI MS-2 = Asphalt Institute Manual Series 2 | |
| Note: | Mixes with gradations having less than 40% passing the 4.75 mm (No. 4) sieve shall be approached with caution because of constructability problems. | |
| Note: | Gradations for mixes with a nominal maximum aggregate size of one-inch or larger are considered a coarse gradation if they pass below the maximum density line at the #4 screen. | |
| | Gradations for mixes with a nominal maximum aggregate size of 3/4" to 3/8" are considered a coarse gradation if they pass below the maximum density line at the #8 screen. | |
| | Gradations for mixes with a nominal maximum aggregate size of #4 or smaller are considered a coarse gradation if they pass below the maximum density line at the #16 screen. | |

Table 403-2
Minimum Voids in Mineral Aggregate (VMA)

| Nominal Maximum Size*, mm (inches) | ***Design Air Voids ** | | |
|---|------------------------|------|------|
| | 3.5% | 4.0% | 4.5% |
| 37.5 (1½) | 11.6 | 11.7 | 11.8 |
| 25.0 (1) | 12.6 | 12.7 | 12.8 |
| 19.0 (¾) | 13.6 | 13.7 | 13.8 |
| 12.5 (½) | 14.6 | 14.7 | 14.8 |
| 9.5 (⅜) | 15.6 | 15.7 | 15.8 |
| 4.75 (No. 4) | 16.6 | 16.7 | 16.8 |
| * The Nominal Maximum Size is defined as one sieve larger than the first sieve to retain more than 10%. ** Interpolate specified VMA values for design air voids between those listed. *** Extrapolate specified VMA values for production air voids beyond those listed. | | | |

403.03 Construction Requirements

Delete the first paragraph and replace with the following:

The construction requirements shall be as prescribed in subsections 401.3 through 401.14 of the Revised Section 401 above.

403.04 Method of Measurement

Delete and replace with the following:

Hot Mix Asphalt will be measured by the ton or the square yard. Batch weights will not be permitted as a method of measurement when measured by the ton. The tonnage shall be the weight used in the accepted pavement.

403.05 Basis of Payment

Delete and replace with the following:

The accepted quantities of hot mix asphalt will be paid for in accordance with subsection 401.22, at the contract unit price per ton or square yard for the asphalt mixture.

Payment will be made under:

| Pay Item | Pay Unit |
|-------------------------------------|-----------------|
| Hot Mix Asphalt (Grading __)(PG __) | Ton |
| Hot Mix Asphalt (Grading __)(PG __) | Square Yard |
| Hot Mix Asphalt (Patching) | Square Yard |

Aggregate, asphalt cement, asphalt recycling agent, additives, hydrated lime, tack coat, and all other work necessary to complete each hot mix asphalt items will not be paid for separately but shall be included in the unit price bid.

SP-10 SECTION 407 – PRIME COAT, TACK COAT, AND REJUVENATING AGENT

Section 407 of the Standard Specifications is hereby revised for this project as follows:

407.01 Description.

Add the following:

Prior to placement of APM, a tack coat shall be applied to all existing concrete and asphalt surfaces.

407.02 Asphalt Material.

Add the following:

The tack coat shall meet the specification for emulsified asphalt, consisting of CSS-1h or SS-1h, and conform to AASHTO M208 or M140.

407.07 Application of Asphalt Material.

Add the following:

The tack coat shall be applied at the rates specified in Table 407-1. The surface receiving the tack coat shall be dry and clean. Tack coat shall be applied uniformly. Allow to cure (dehydrate) before paving. If contaminated, clean and reapply.

TABLE 407-1 – Tack Coat Application Rates

(Values in gallons per square yard)

| Surface Condition | Residual | Undiluted | Diluted (1:1) |
|--------------------------|-----------|-----------|---------------|
| New asphalt | 0.03–0.04 | 0.05–0.07 | 0.10–0.13 |
| Oxidized asphalt | 0.04–0.06 | 0.07–0.10 | 0.13–0.20 |
| Milled Surface (asphalt) | 0.06–0.08 | 0.10–0.13 | 0.20–0.30 |
| Milled Surface (PCC) | 0.06–0.08 | 0.10–0.13 | 0.20–0.30 |
| Portland Cement Concrete | 0.04–0.06 | 0.07–0.10 | 0.13–0.20 |

407.09 Method of Measurement and Basis of Payment.

Delete and replace with:

Tack Coat will not be measured and paid separately but shall be considered subsidiary to related items of work.

SP-11 SECTION 509 – PEDESTRIAN RAILING

Section 509 of the Standard Specifications is hereby revised for this project as follows:

509.01. Description. Work includes furnishing, fabricating, erecting, and powder coating structural steel per these specifications and plans.

509.02 Reference Standards.

ASTM A53/A500/A501 (Steel pipe and tubing)

ASTM E935 (Performance for metal railing systems)

SSPC-Paint 20 (Zinc-rich primers)

509.03 Submittals. Shop drawings indicating profiles, connections, fasteners, and anchorage.

509.04 Materials.

All materials shall comply with CDOT Section 509 unless otherwise noted. Railings shall be designed to resist 50 lb/ft uniform and 200 lb concentrated loads. Infill shall resist 50 lb on 1 sq. ft.

Accommodate 120°F ambient / 180°F surface temperature movement.

Use ASTM A53 Grade B pipe, factory-welded fittings, and black powder coat (AAMA 2605).

509.05. Execution

Install plumb and level, with tight joints and field tolerances of ¼".

All joints shall be ground flush. Drain holes required.

Welded components sealed; bent pipe free of kinks.

509.06. Method of Measurement and Basis of Payment.

Pedestrian railing will be paid by the linear foot.

SP-12 SECTION 603 (UU-108.2) – CORRUGATED POLYETHYLENE PIPE

Section 603 of the Standard Specifications is hereby revised for this project as follows:

Polypropylene pipe may be substituted for reinforced concrete pipe (RCP) if approved by the Engineer. Substitute pipe must meet CDOT Standard Detail M-603-4. Installation and bedding requirements remain per RCP. No change in basis of payment.

SP-13 SECTION 604 (UU-108.5) – STORM SEWER WATER QUALITY MANHOLES

Section 604 of the Standard Specifications is hereby revised for this project as follows:

This work consists of furnishing and installing ADS Storm Sewer Water Quality Manholes (WQMH) or an engineer-approved equal that meets these specifications. Reference plans for the location. The water quality structure is to meet the 30 mg/L effluent Pollutant Reduction Standard when following TAPE or NJDEP (2021) laboratory testing protocols as of 2022. All shall be concrete structures and designed by the manufacturer to withstand the buoyancy forces due to a fluctuating groundwater table.

The following proposed storm flows should be used to size the treatment structures:

Storm Sewer WQMH 01 shall be ADS BaySeparator 10K or approved equal.

2-year event (WQCV Design Event): 12.01 cfs

100-year event: 64.61 cfs

Storm Sewer WQMH 02 shall be ADS Arcadia AR4PC or approved equal.

2-year event (WQCV Design Event): 1.50 cfs

100-year event: 4.43 cfs

Storm Sewer WQMH 03 shall be ADS Arcadia AR4PC or approved equal.

2-year event (WQCV Design Event): 1.09 cfs

100-year event: 3.21 cfs

SP-14 SECTION 607 – GATE ELECTRONIC SERVICE CONNECTION

Section 607 of the Standard Specifications is hereby revised for this project as follows:

This work includes furnishing and installing electric service connections for gates, including trenching, conduit, wiring, and utility coordination. All work shall conform to NEC. Includes permits and connections.

SP-15 SECTION 607 – 4-FOOT WOOD SPLIT RAIL FENCE (SPECIAL)

Section 607 of the Standard Specifications is hereby revised for this project as follows:

Contractor shall furnish and install 4-foot, 2-rail, pressure-treated wood fence per plans. Posts set in concrete. All materials shall be new and defect-free. No separate payment for gates or terminations.

SP-16 SECTION 610 – BOULEVARD TREATMENT

Section 610 of the Standard Specifications is hereby revised for this project as follows:

The boulevard area is defined as the space between the back of curb and the front of the detached sidewalk, as indicated on the typical sections. Contractor shall place weed barrier landscape fabric before rock placement. Weed-proof fabric shall be heavy-duty polypropylene with a thickness of at least 0.15 mm and overlapped by a minimum of 3 inches where required.

Landscape rock shall be 1 1/2-inch tan granite, placed at a uniform thickness of 4 inches.

SP-17 SECTION 614 – SIGN PANEL (CLASS 1)

Section 614 of the Standard Specifications is hereby revised for this project as follows:

Work includes furnishing and installing permanent Class 1 sign panels and mounting hardware. Panels shall meet MUTCD and CDOT requirements for size, reflectivity, and installation. Material: High-intensity prismatic or better.

SP-18 SECTION 630 – TRAFFIC CONTROL PLAN

Section 630 of the Standard Specifications is hereby revised for this project as follows:

Description: This work consists of preparing, submitting, and revising a complete Traffic Control Plan (TCP) in accordance with CDOT Section 630 and the Manual on Uniform Traffic Control Devices (MUTCD). The TCP shall address phasing, detours, pedestrian access, emergency vehicle access, and coordination with other work zones or agencies.

Construction Requirements: The Contractor shall prepare and submit a detailed Traffic Control Plan (TCP) to the Engineer for review at least seven (7) calendar days prior to the commencement of any work. The TCP shall conform to CDOT Section 630 and the MUTCD and shall include:

- Project phasing
- Lane shifts or closures
- Pedestrian access provisions
- Detour routes
- Access for emergency services

The TCP may include full road closures within the defined project limits, provided the Contractor maintains continuous access to all local traffic including residents, emergency responders, deliveries, and other authorized users as approved by the Engineer. The Contractor shall coordinate closures with affected property owners and provide at least 48 hours' notice. Detour routes shall be clearly signed and accessible. Revisions required by the Engineer shall be made at no additional cost. No work shall begin until the TCP is approved.

Measurement: Traffic Control Plan will be measured by the lump sum, complete and accepted. This payment shall be full compensation for furnishing all labor, materials, and incidentals required for the preparation, submittal, and revision of the Traffic Control Plan. This item shall not include implementation or maintenance of traffic control devices in the field. Contractor is allowed full closure of road except for local access.

Basis of Payment: Payment will be made at the contract lump sum price for:

Pay Item: Traffic Control Plan

Pay Unit: Lump Sum

SP-19 SECTION 630 – TRAFFIC CONTROL (COMPLETE IN PLACE)

Section 630 of the Standard Specifications is hereby revised for this project as follows:

Description: This work consists of furnishing, installing, maintaining, relocating, and removing all temporary traffic control devices required to complete the project in accordance with the approved Traffic Control Plan, CDOT Section 630, and MUTCD.

Construction Requirements: The Contractor shall install, maintain, and remove all traffic control devices as described in the approved TCP and per CDOT Section 630 and MUTCD requirements.

Devices include:

- Signs
- Barricades
- Cones
- Flaggers
- Arrow boards
- Other necessary devices

The Contractor may fully close the roadway within the project limits to through traffic, but must provide safe and adequate access to all local traffic at all times, including residents, businesses, emergency vehicles, mail delivery, and sanitation services. Local access routes must be maintained and clearly signed throughout construction.

The Contractor shall employ a certified Traffic Control Supervisor (TCS) to oversee setup and adjustments. Devices shall be inspected daily and immediately repaired or replaced if damaged or displaced.

Measurement: Traffic Control (Complete in Place) will be measured by the calendar day that traffic control is in place and actively maintained, as verified by the Engineer. This price includes all traffic control devices, flaggers, TCS services, setup, maintenance, relocation, and removal. No additional payment will be made for night work, partial-day control, or adjustments.

Basis of Payment: Payment will be made at the contract unit price per day for:

Pay Item: Traffic Control (Complete in Place)

Pay Unit: Day

SP-20 WATERLINE SPECIFICATIONS

For waterline construction, this project shall reference Ute Water Conservancy District's waterline specifications and standard waterline details. Ute Water's waterline specifications are provided within Appendix C – Project Manual. Any questions regarding waterline construction shall be directed to the City Project Engineer who will then contact Ute Water for advice and answers.