SECTION 02721

AGGREGATE BASE COURSE

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Aggregate base course.

B. Related Sections:

1. Section 02060 – Aggregate Materials.

2. Section 02315 – Excavation.

3. Section 02740 – Flexible Pavement.

4. Section 02750 – Rigid Pavement.

5. Section 03300 – Cast-in-Place Concrete.

1.2 REFERENCES

A. Colorado Department of Transportation:

1. 2017 CDOT Standard Specifications for Road and Bridge Construction.

B. American Society for Testing and Materials:

1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).

1.3 SUBMITTALS

A. Materials Source: Submit name of imported materials suppliers.

B. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

A. Furnish each aggregate material from single source throughout the Work.

B. Perform work in accordance with 2017CDOT Standard Specifications for Road and Bridge Construction and City of Cañon City standard.

C. Maintain one copy of each document on site.

PART 2 PRODUCTS

2.1 MATERIALS

A. Aggregate Base Course: Type Class 6 as specified in Section 02060 or as specified by design engineer and approved by the City.

B. Geotextile Fabric:

1. Shall be a non-woven, spun-bonded, continuous filament, polypropylene geotextile fabric meeting the following minimum standards:

TEST METHOD	*PROPERTY*	*MINIMUM VALUE*
ASTM D-4751	Apparent Opening Size	140 US Sieve
ASTM D-4491	Permittivity	0.10 Sec^{-1}
ASTM D-4491	Water Flow Rate	15 g/min/sf
ASTM D-4632	Grab Tensile Strength	240 lbs
ASTM D-4533	Trapezoidal Tear	79 lbs
ASTM D-4632	Elongation @ Break	50%

2. Geotextile fabric shall be approved by the Engineer. Additionally, other physical properties may be used by the Engineer to evaluate the geotextile including, but not limited to, CBR puncture testing, Mullen Burst testing, permeability, and puncture strength.

3. Approved Fabrics
   a. Typar 3601G.
   b. US Fabric SF65

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify substrate has been inspected, gradients and elevations are correct, and is dry.

3.2 PREPARATION

A. Scarify sub grade 6-inches minimum and compact to 97 percent Standard Proctor.

B. Compact disturbed load-bearing soil to 97 percent Standard Proctor prior to placement of fabric or base course material.

C. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.

D. Do not place fill on soft, muddy, or frozen surfaces.

3.3 GEOTEXTILE FABRIC PLACEMENT

A. Install fabric on native sub grade below aggregate base course.

B. The fabric shall be unrolled parallel to the alignment of the roadway.

C. Folds and wrinkles not associated with roadway curves shall be removed prior to covering fabric.

D. The fabric shall be pinned, stapled, or secured in place by small piles of fill prior to covering to prevent movement.

E. Mechanical equipment shall not be allowed to operate on the surface to the fabric.

F. Minimum overlap along fabric seams shall be as specified by the design engineer but not less than 1 foot longitudinally and 3 feet transversally.

3.4 AGGREGATE PLACEMENT

A. Place aggregate in maximum 8 inch layers and compact to 97 percent, maximum dry density, ASTM D698, Standard Proctor. Lift size may be increased when it is demonstrated that compaction requirements can be met using other methods. The Engineer will make final determination on the thickness of each lift in the field.

B. Level and contour surfaces to elevations and gradients indicated.

C. Maintain optimum moisture content, plus or minus ($\pm$) 2 percent, of fill materials to attain required compaction density.

D. Use adequate hand operated mechanical tamping equipment in areas inaccessible to larger compaction equipment.

3.5 TOLERANCES

A. Maximum Variation From Thickness: 1/2 inch.

B. Maximum Variation From Elevation: 1/4 inch.

3.6 FIELD QUALITY CONTROL

A. Compaction Testing: In accordance with ASTM D698.

B. When tests indicate Work does not meet specified requirements, remove Work, replace, compact, and retest

C. Compaction Testing for Bedding and Backfill:

1. Contractor is required to hire an independent, licensed engineer experienced in soil analysis and evaluation to perform required compaction tests in accordance with ASTM D698. Copies of all Proctor curves and test results showing exact location of sample collection and test sites must be furnished to Engineer. Engineer shall be informed prior to testing and he may designate areas of testing.

2. Performed by City personnel or Contractor at option of Engineer in accordance with ASTM D698.

3. Testing is to be done at various elevations in trench, which may require excavation by Contractor after backfill is installed.

4. Frequency of Compaction Tests will be specified by Engineer in field but shall be no less than every 200 feet at every 1 foot of depth of the backfill or anytime the means and methods of compaction change.

5. Testing shall use the Standard Proctor method. Alternatives such as Modified Proctor or Relative Density based on necessity due to material type may be used with the permission of the Engineer so long as the necessary conversion data, testing, and information has been completed and submitted prior commencement of the work.

3.7 SCHEDULES

A. Under Curb and Gutter, Cross Pans, Driveway Aprons, and Asphalt Patch:

1. Compact placed aggregate materials uniformly, 6 inches thick, over sub grade.

2. Exclude Class 6 base course material installed for all curb & gutter tied to concrete pavement. Subgrade treatment for the attached curb & gutter shall be the same as for the concrete pavement.

3. Design engineer shall verify minimum requirements are adequate based on site conditions and propose changes to Engineer accordingly for approval.

B. Under Sidewalk:

1. Compact placed aggregate materials uniformly, 4 inches thick, over sub grade.

2. Compact placed aggregate materials uniformly, 6 inches thick in driveways and under sidewalk adjacent to mountable curb and gutter, over sub grade.

3. Design engineer shall verify minimum requirements are adequate based on site conditions and propose necessary changes to Engineer accordingly for approval.

C. Under Asphalt Pavement:

1. Compact placed aggregate materials uniformly, 8 inches thick minimum, over geotextile fabric.

2. Design engineer shall verify minimum requirements are adequate based on site conditions and propose necessary changes to Engineer accordingly for approval.

D. Under Concrete Pavement:

1. Compact placed aggregate materials uniformly, to thickness indicated by Engineer if required, over subgrade.

2. Design engineer shall verify minimum requirements are adequate based on site conditions and propose necessary changes to Engineer accordingly for approval.

END OF SECTION