

**Harmony and Ziegler Improvements – Front Range Village Development (2007)**

The Colorado Division of Highways "Standard Specifications for Road and Bridge Construction" (2005), except as revised herein, is hereby adopted as a minimum standard of compliance for this project. The City of Fort Collins Storm Drainage Construction Standards, City of Fort Collins Water Utilities Standard Construction Specifications, Larimer County Urban Area Street Standards, the Fort Collins – Loveland Water District and South Fort Collins Sanitation District Standards, and City of Fort Collins Work Area Traffic Control Handbook, shall also serve as minimum standards of compliance for this project. They are not included in the contract documents, but may be obtained at the appropriate City Departments. **It shall be the Contractor's responsibility to purchase and familiarize themselves with all of the City Department Specifications.** These project specifications, City Department specifications, and CDOT standard specifications are considered minimum standards for compliance on this project. In those instances where the CDOT Standard Specifications conflict with the City specifications listed above, the City specifications shall govern. In those instances where the CDOT Standard Specifications conflict with any of the provisions of the preceding Sections 00001 through 01750, General Requirements, the preceding sections shall govern.

**PROJECT CONSTRUCTION SPECIFICATIONS  
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**REVISION OF SECTION 201**  
**CLEARING AND GRUBBING**

Section 201 of the Standard Specifications is hereby revised for this project as follows:

**Subsection 201.01 is revised to include the following:**

This work shall consist of clearing, grubbing, removing, and disposing of vegetation and debris within the limits of the right of way, easement areas, borrow pits, and other areas shown in the Contract or required by the work. Vegetation and objects designated to remain shall be preserved free from injury or defacement. The Owner will designate all trees, shrubs, plants, and other objects to remain. Every object that is designated to remain and is damaged shall be repaired or replaced as directed, at the Contractors expense. Clearing and grubbing shall extend to the toe of the fill or the top of cut slopes, unless otherwise designated. All surface objects, trees, stumps, roots, fencing, and other protruding obstructions not designated to remain shall be cleared and grubbed, including mowing, as required. Undisturbed stumps, roots, and nonperishable solid objects located 2 feet or more below subgrade or embankment slope may remain in place. In areas to be rounded at the tops of back slopes, stumps shall be removed to at least 2 feet below the surface of the final slope.

All cleared material or debris shall be disposed of outside of the project limits.

**Payment will be made under:**

Pay Item and Pay Unit

The pay unit is denoted by ( )

201-01 Clearing and Grubbing – (LS)

The above prices and payments shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in the clearing and grubbing as specified in these specifications, and as directed by the Engineer.

**END OF SECTION**

**REVISION OF SECTION 202**  
**REMOVALS**

Section 202 of the Standard Specifications is hereby revised for this project as follows:

**Subsection 202.01 is revised to include the following:**

The Contractor shall remove and dispose of all concrete sidewalk, curb and gutter, crosspans, driveways, inlets, irrigation structures, pipe, structures, asphalt, fence, trees, retaining walls and any other obstructions that are designated for removal by the Engineer. All such removals will be measured in the field, and quantities agreed to by the Contractor and the Engineer.

**Subsection 202.02 is revised to include the following:**

**Remove Pipe (RCP, CMP, PVC)** - The Contractor shall remove all (clay tile, concrete, PVC, ductile, corrugated metal, steel) pipes according to the construction drawings or as directed by the Engineer. All trenches will be backfilled to City of Fort Collins specifications to 95% compaction. All areas must be graded according to Engineers direction and all pipe removed is to be the property of the Contractor.

**Remove Existing FES** - The Contractor shall remove the flared end sections and have the City representative determine if they can be re-used. If the flared end sections are determined to be in good conditions, then the Contractor will be responsible for storing and placing this item. If the flared end sections have been determined to be unacceptable, then it becomes the property of the Contractor. All labor, equipment, and materials necessary to perform this work, will be paid for under this item.

**Remove Concrete Irrigation Structure** – The contractor will remove the existing irrigation structure as shown on the plans. All labor, materials, equipment, disposal cost and cost to plug the existing pipe must be included in this unit price.

**Remove Concrete Channel** – Contractor will be required to remove and dispose of all materials. The unit price must include all equipment, labor and materials necessary to complete this work.

**Profile Mill Asphalt Pavement (Ziegler Road)** – The Contractor must provide: pick-up broom, labor, small front end loader (skip tractor), superintendent, and TCS. Prior to the rotomill operations, the Contractor will be required to spot check elevations with a string line or transit. The material will be the property of the Contractor and will be hauled offsite. This item will be paid for by the square yard (SY).

**Remove Leech Field and Sceptic Tank** – The Contractor will be responsible for removing the leech field and sceptic tank at the Young Property. This work will consist of removing the tank and leechfield and disposing them. system The unit price must include all equipment, labor and materials necessary to complete this work.

**Remove Gate** – The Contractor will be responsible for removing the Gates along Harmony Road and disposing the material offsite. The unit price must include all equipment, labor and materials necessary to complete this work.

The Contractor Shall remove and dispose of all concrete sidewalk, curb and gutter, cross pans, driveways, inlets, irrigation structures, pipe, structures, asphalt, fence, trees, retaining walls and any other obstructions that are designated for removal by the Engineer. All such removals will be measured in the field and quantities agreed to by the Contractor and the Engineer. Prior to removal, concrete and/or asphalt shall be saw cut full depth to a clean and straight vertical line. Pieces of concrete which, due to the Contractor's operations, crack or break beyond the limits of construction shall be saw-cut, or removed to the nearest joint, and removed and replaced at the Contractor's expense. The limit of the repair will be determined by the Engineer. The initial saw cutting to remove existing concrete and/or asphalt shall be considered incidental to the work and shall not be paid for separately under this item. Removal of concrete, asphalt and/or obstructions as described in section 202.01 beyond the limits designated by the Engineer will be the responsibility of the Contractor and will not be paid for under this section.

Disposal Site - Materials designated for removal shall become property of the Contractor, unless noted in the specifications or specified by the Engineer to be salvaged or stockpiled. It shall be the Contractor's responsibility to

obtain disposal sites for all unusable material, which is removed.

**Subsection 202.12 is revised to include the following:**

The Contractor and the Engineer shall field measure and agree upon the quantity to be removed before the work commences. Should the Contractor fail to request the Engineer to measure any work, the Contractor shall not be compensated for materials that were not measured by the Engineer.

**Payment will be made under:**

Pay Item and Pay Unit

The pay unit is denoted by ( ).

- 202-01 Remove Curb and Gutter – (LF)
- 202-02 Remove Concrete Sidewalk – (SF)
- 202-03 Remove Asphalt – Full Depth (4” – 8”) – (EA)
- 202-04 Profile Mill Asphalt Pavement – (SY)
- 202-05 Remove Tree 48”+ Diameter – (EA)
- 202-06 Remove Tree 24” – Diameter – (EA)
- 202-07 Remove Pipe (RCP, CMP, PVC) – (LF)
- 202-08 Remove Inlet – (EA)
- 202-09 Remove Existing FES – (EA)
- 202-10 Remove Concrete Channel – (LF)
- 202-11 Remove Leech Field and Sceptic Tank – (LS)
- 202-12 Remove Area Inlet – (EA)
- 202-13 Remove Irrigationo Structure – (EA)
- 202-14 Remove Existing Hydrant – (EA)
- 202-15 Remove Headwall – (EA)
- 202-16 Remove Gate – (EA)
- 202-17 Remove Retaining Wall – (EA)

The above prices and payments shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in removals and rotomilling, including excavation, backfill, haul and disposal, as specified in these specifications, and as directed by the Engineer. All saw cutting involved in removing the necessary items in order to complete the Work shall be considered incidental to the Work and will not be paid for separately.

**END OF SECTION**

**REVISION OF SECTION 203**  
**EXCAVATION AND EMBANKMENT**

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

**Subsection 203.01 is revised to include the following:**

**Unclassified Excavation** - This shall consist of excavation of all materials on the site to final grades, excluding the bid items listed in Section 202. Excavation of unsuitable material will only be paid for if it is found to be unsuitable in its original state. This item shall be measured from the plans and cross sections, and will be paid for by the cubic yard. This item shall be paid according to plan quantity.

**Embankment (Complete in Place)** - All excavated material, except the material being hauled and disposed, shall be placed as embankment and compacted, to final grades, as specified in Section 203.07. The use of scrapers will not be permitted to compact the material. A disk with 4 wheel drive tractor 815 CAT or equal will be required to do this work. The embankment quantity was not adjusted to allow for shrinkage during compaction. This item will be measured from the plans and cross sections and will be paid for by the cubic yard. This item will be paid according to plan quantity.

**Borrow - ABC (Class 5 or 6) - (Complete in Place)** - This shall include supplying, placing, and compacting aggregate base course as directed by the Engineer. This item will be measured in the field and paid for by the ton. This item will not be paid for as Embankment. Borrow material will only be used for fill if there is a shortage of suitable material onsite and/or as directed by the Engineer and may be used under sidewalks.

**Muck Excavation (Complete in Place)** - This shall include excavation of unsuitable material, supplying and placing Class 1 or 2 Structural Backfill, Pit Run or an approved fill, re-compacting material to finish grade, and haul and disposal of unsuitable material. ***NOTE: Muck-excavation of material from rain or weather damage or dewatering pump failure will not be paid for and is entirely the Contractor's responsibility.*** This item shall be measured in the field, and will be paid for by the cubic yard.

**Topsoil - (Stripping, Stockpiling, Placing) 6" Depth** – All areas that have suitable topsoil material shall be stripped to a depth of 6 inches. This material shall be stockpiled and placed after the final grades have been established. This item shall include stripping existing vegetation, temporarily stockpiling, loading, hauling, and placing topsoil material for back of walk and curb areas, and other designated areas. This item shall be paid according to plan quantity.

**Median Splashblock/Hardscape Shaping (Complete in Place)** – The areas in the medians beneath the exposed aggregate concrete shall be backfilled with suitable onsite material approved by the Engineer. These areas shall be backfilled in lifts not to exceed six inches (6") and compacted with a plate compactor or as directed by the Engineer. This item will not be paid for as Embankment. This item will be measured in the field and will be paid for by the square foot.

**Potholing** – The Contractor shall be responsible for locating electrical, gas, fiber optic, cable, telephone, traffic signal conduit and other existing utility lines and shall be performed every 100 lineal feet or as deemed necessary by the Contractor. All related work, including excavation, backfilling, shoring, labor and number of hours will not be measured and paid for separately, but shall be included in the work. Repair of damaged existing utility lines caused by the Contractor will be at the Contractor's expense. Potholing will be paid as a lump sum item.

**Flowfill Section Over Shallow Utilities** – This work shall consist of the removal of soil above an existing utility, after subgrade elevation has been achieved, one foot (1') deep and three feet (3') wide. This excavated area that can not be treated with flyash, will be filled with flowable fill to the top of subgrade to protect the existing utility. All related work, material and equipment will not be measured and paid for separately, but shall be included in the work. This work shall be measured and paid for by the linear foot.

**Flowable Fill** – shall be a Portland Cement Concrete Mix. The cement shall conform to the Standard Specifications for Portland Cement, ASTM C 150-85, Type I/II. The minimum 24-hour strength shall be 10-psi and the maximum 28 day strength, 60 psi. The maximum aggregate size shall be one inch (1"). The minimum slump shall be six inches (6") and

the maximum, eight inches (8”). The non-shrink backfill shall be consolidated with a mechanical vibrator. Payment of using flow fill will be paid for by the cubic yard and only when used as required by the Engineer.

**Import Screened Topsoil (6”) – Parkway Areas** – This shall include supplying, hauling, placing, and grading screened topsoil between the new curb and gutter and sidewalk, and/or as directed by the Engineer of this project. This material shall be placed and graded on the surface for the future seeding and landscaping (by others). This item will be measured in the field and paid for by the cubic yard. This item will not be paid for as Embankment.

These items will not be paid separately under items in section 202, 210, 603, or 604.

Embankment and sub-grade material shall be compacted to 95% of maximum density at +/- 2% optimum moisture. Maximum density shall be determined by ASTM D 698. This will apply under the roadway, curb and gutter, sidewalk, and driveways. Topsoil shall be compacted to 85% of maximum density at/or near optimum moisture.

Excavation and Embankment will only be paid when a significant change in grade is required, as determined by the Engineer. **Minor cuts and fills shall be considered incidental to the work, and shall not be paid separately under this section.**

**Muck Excavation (Complete in Place)** - This shall include excavation of unsuitable material, supplying and placing Class 1 or 2 Structural Backfill, Pit Run or an approved fill, recompacting material to finish grade, and haul and disposal of unsuitable material. Muck-excavation of material from rain or weather damage will not be paid for and is entirely the Contractor's responsibility. This item shall be measured in the field, and will be paid for by the cubic yard. The proposed material shall meet the following minimum requirements:

LL Maximum:	30
PI Maximum:	6
"R" Value Minimum:	78

The minimum strength coefficient of the Aggregate Base Coarse shall be 0.11.

**After specified compaction has been obtained, the sub-grade under the curb, gutter, sidewalk, and pavement shall be proof-rolled with a heavily loaded rubber tired roller, fully loaded water truck, or approved equal.**

Those areas which produce a rut depth of over one-half (1/2) inch or which crack the sub-grade after pumping and rebounding shall be ripped, scarified, wetted or dried if necessary, and re-compacted to the requirements for density and moisture at the Contractor’s expense. Where unsuitable material is encountered, the Engineer may require the Contractor to remove the unsuitable materials and backfill to the finished grade with approved material. The completed sub-grade shall be proof-rolled again after placement of approved material. **This will be paid for at the contract unit price for Muck Excavation.**

The Contractor shall refer to the plans for re-grading information. This work shall include all excavation, embankment, and grading required to prepare these sites for landscaping.

**Subsection 203.04 is revised to include the following:**

The excavations and embankments shall be finished to smooth and uniform surfaces conforming to the typical sections specified. Variation from the sub-grade plan elevations specified shall not be more than 0.08 feet.

**Subsection 203.13 is revised to include the following:**

**Payment will be made under:**

Pay Item and Pay Unit

The pay unit is denoted by ( ).

- 203-01 Unclassified Excavation – (CY)
- 203-02 Embankment – (CIP) – (CY)
- 203-03 Borrow Suitable Fill – (CY)

- 203-04 Topsoil–(Stripping, Stockpiling and Placing) – 6” Depth – (CY)
- 203-05 Import Screened Topoil (6”) in Parkway Areas – (CY)
- 203-06 Median Fill 60/40 Mix
- 203-07 Median Splashblock/Hardscape Shaping - CIP – (SF)
- 203-08 Potholing – (LS)
- 203-09 Flowfill Section Over Shallow Utilities – (LF)
- 203-10 Muck Excavation (CIP) – (CY)

The above prices and payments shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all work involved in Unclassified Excavation, Embankment, Haul & Dispose, Topsoil (stripping, stockpiling, placing), Muck Excavation, Borrow ABC and Median Hardscape Shaping, including without limitation, haul, stockpiling, placing of material, watering or drying soil, compaction, proof rolling, finish grading, and disposal of unusable materials, as shown on the plans and as specified in these specifications, and as directed by the Engineer.

**END OF SECTION**



**REVISION OF SECTION 206**  
**EXCAVATION AND BACKFILL FOR STRUCTURES**

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

**Subsection 206.03 is revised to include the following:**

**Structure Excavation** – It is anticipated that unsuitable soils will be encountered for the foundation of the box culvert. The excavation of the unsuitable material has already been accounted for and will be paid for under the Muck Excavation item.

The Contractor is cautioned that construction equipment may cause the natural soils to pump or deform while performing excavation work inside and on footings, structural floor slabs, or other structure foundation areas.

Foundation materials which are: a) saturated by either surface or dewatering work by the Contractor; b) frozen for any reason; or, c) that are disturbed by the Contractor's work or caused to become unacceptable for foundation material purposes by means of the Contractor's equipment, manpower, or methods of work shall be removed and replaced by the Contractor at his expense.

Care should be taken when excavating the foundations to avoid disturbing the supporting materials. Excavation by either hand or careful backhoe soil removal, may be required in excavating the last few inches of material to obtain the subgrade of any item of the concrete work.

Any over-excavated subgrades that are due to the Contractor's actions, shall be brought back to subgrade elevations by the Contractor and at his expense in the following manner:

1. For over-excavations of 2 inches or less, either: Backfill and compact with an approved granular materials; backfill with ½ inch washed crushed rock; or fill within concrete at the time of the appurtenant structure concrete pour.
2. For over-excavations greater than 2 inches, backfill and compact with 1½ inch washed crushed rock.

**Structural Backfill (On-site Fill)** - Backfill, and fill within 2 feet of and adjacent to all structures and for full height of the walls, shall be selected non-swelling material. It shall be granular, well graded, and free from stones larger than 3 inches. Material may be job excavated, but selectivity will be required as determined by the Engineer. Refer to the Plans for job specific requirements. Stockpiled material, other than topsoil from the excavation shall be used for backfilling unless an impervious structural backfill is specified. The backfill material shall consist of either clean on-site granular materials free of stones larger than 3 inches in diameter with no more than 20% passing the No. 200 sieve, or equivalent imported materials. All backfill around the structures shall be consolidated by mechanical tamping. The material shall be placed in 8-inch loose lifts within range of 2% above to 2% below the optimum moisture content and compacted to 95% of Maximum Standard Proctor Density (ASTM D698) for cohesive soils, or to 70% relative density for pervious material as determined by the relative density of cohesionless soils test, ASTM D4253.

**Subsection 206.07is revised to include the following:**

**Payment will be made under:**

Pay Item and Pay Unit

The pay unit is denoted by ( ).

206-01 Structure Excavation – (CY)

206-02 Structure Backfill (On-Site Fill) – (CY)

206-03 Filter Material (1 ½" Washed Rock) – (TON)

The above prices and payments shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all work involved in Structural Excavation, Backfill, Haul & Leveling, Filter Material installation, and Dewatering, including without limitation, haul, stockpiling, placing of material, watering or drying soil, compaction, proof rolling, finish grading, and disposal of unusable materials, as shown on the plans and as specified in these specifications, and as directed by the Engineer.

**END OF SECTION**

**REVISION OF SECTION 208**  
**EROSION CONTROL**

Section 208 of the Standard Specifications is hereby revised as follows:

**Subsection 208.05 is revised to include the following:**

All Erosion Control Devices, Materials, and Techniques required to prevent damage to the storm water facilities as outlined in the City of Fort Collins Standards will be considered incidental to the work, and shall be included in the price. No measurement for payment shall be made for maintenance of Erosion Control devices. This item will be paid for as a lump sum price to the Contractor.

**Subsection 208.07 is revised to include the following:**

The accepted quantities will be paid for at the contract unit price.

**Payment will be made under:**

Pay Item and Pay Unit

The pay unit is denoted by ( ).

208-01 Erosion Control – (LS)

The above prices and payments shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all work involved in installing and maintaining erosion control, complete-in-place, as specified in these specifications, and as directed by the Engineer.

**END OF SECTION**

**REVISION OF SECTION 210**  
**RESET STRUCTURES**

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

**Subsection 210.10 is revised to include the following:**

Work contained in this Subsection shall meet the requirements of the current **City of Fort Collins** and **Fort Collins-Loveland Water District** Utilities Standard Construction Specifications or other applicable water utility agency standard construction specifications. Copies of the specifications can be obtained at The Fort Collins Loveland Water District at 5150 Snead Dr, Fort Collins Colorado.

The Contractor shall cooperate and coordinate with the **City Water Utilities Department, Fort Collins-Loveland Water District** and **South Fort Collins Sanitation District** or other applicable water utility when shutting off water to minimize downtime to customers. The Contractor shall also coordinate work involving the relocation of fire hydrants, water meters, curb stops, and water valves, and lowering water and sewer service lines, and water lines. The Contractor shall supply all materials required to complete the work that is not supplied by the City or other applicable water utility, and these materials shall be included in the costs of each item. This shall include, but not be limited to; new copper line and fittings, new stop boxes, meter pits, excavation, backfill and compaction. New copper fittings, stop boxes, and meter pits will be required at each location.

All structures located in bituminous pavements to be surfaced shall be adjusted prior to, or during paving operations.

All structures located within a concrete pavement shall be adjusted prior to pouring the concrete pavement section.

The Contractor shall perform all work needed to ensure that said structures can be readily adjusted and shall have all necessary materials on hand prior to commencing the work. The adjustments shall be made as noted below.

All structures shall be adjusted to be  $\frac{1}{4}$ " (+/-)  $\frac{1}{8}$ " below the pavement surface.

**The Contractor shall be responsible for immediately cleaning out all construction materials that may fall into manholes, valve boxes, or other structures during the construction process.** In the event that a structure was not properly adjusted (i.e. too high or too low) or the structure was covered and not adjusted after the paving operation, written notice will be given by the Engineer to the Contractor requiring the Contractor to make the necessary adjustments within 5 working days. In the event that the structure is not adjusted within said time frame; the Engineer shall have the right to engage a third party to complete the work, and to withhold the cost of such work from payments due the Contractor.

If a structure is adjusted prior to an overlay operation, the Contractor shall place bituminous base material around the structure as directed by the Engineer to insure that it will not be a hazard to vehicular traffic. This will be paid for under the bid item for Asphalt Patching.

**Adjust Manhole Ring/Cover** – Manholes located within existing asphalt pavement shall be adjusted by removing an area of pavement with a minimum diameter one foot (1') larger than the structure (centered on the structure). This shall be done by cutting vertical edges, adjusting the manhole by grouting concrete rings and/or utilizing metal shims to raise the structure to the proper grade, then spreading and mechanically compacting bituminous material of the same grade and quality as the adjacent pavement. **NOTE: All manholes shall be raised through the top lift.**

When the manhole adjustment is complete, the slope of the top surface of the manhole cover shall match the slope of the pavement in both the longitudinal and traverse directions. Any manhole cover which is unstable or noisy under traffic shall be replaced. This item will be paid under Adjust Manhole Ring/Cover – (EA).

**Modify Manhole** - Manholes located within existing asphalt pavement or sub-grade shall be adjusted by removing an area of pavement or sub-grade with a minimum diameter two foot (2') larger than the structure (centered on the structure). All OSHA shoring is the responsibility of the Contractor. This shall be done by cutting vertical edges in the

pavement, if required, and excavating below the ground surface to the required barrel seam needed to start the adjustment. The cone section shall be removed and additional sections added or removed to obtain the plan finished elevation. All manhole sections shall be cleaned and an approved gasket material applied prior to reassembly. This work shall be done in accordance with the City of Fort Collins Standard Construction Specification and/or the South Fort Collins Sanitation District Specifications for Sewer Mains. The excavation shall be backfilled with on-site material and shall be mechanically compacted or **Flowable Fill** used if directed by the Engineer. This item will be paid under Modify Manhole – (EA). Flowable Fill will be paid under Section 608.

**Adjust Valve Box** – Valve boxes located within asphalt pavement shall be adjusted by removing the existing pavement around the valve box, adjusting the valve by turning it to the proper grade, trimming the existing asphalt by cutting vertical edges, then spreading and mechanically compacting bituminous material of the same grade and quality as the adjacent pavement.

If a valve box cannot be turned up, or can be turned up, but not sufficiently to achieve the proper grade or if the top section of the valve box is in poor condition, the Contractor shall excavate around the top section of the valve box and remove and replace the top section with a longer section supplied by the Contractor. The excavation shall then be back filled with **Non-Shrink flowfill** to the top of sub-grade, and then, material of the same grade and quality as the adjacent pavement shall be placed.

The Contractor shall exercise reasonable care while attempting to adjust the valve boxes. If, in the opinion of the Engineer, the Contractor is negligent and breaks the valve box, the valve box shall be replaced at the Contractor's expense. This item will be paid under Adjust Valve Box – (EA).

**Subsection 210.13 is revised to include the following:**

**Payment will be made under:**

Pay Item and Pay Unit

The pay unit is denoted by ( ).

- 210-01 Adjust Manhole Ring/Cover – (EA)
- 210-02 Adjust Valve Box – (EA)
- 210-03 Modify Manhole – (EA)
- 210-04 Relocate PRV Vault per FCLWD Specs – (EA)
- 210-05 Relocate Meter Pit – (EA)
- 210-06 Relocate Fire Hydrant – (EA)
- 210-07 Relocate CP Test Station – (EA)
- 210-08 Remove and Relocate Fence – (LF)
- 210-09 Remove PVC Fence Intact and Deliver to Owner – (LF)
- 210-10 Remove and Reset Mailbox – (EA)

The above prices and payments shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the Work involved in adjusting structures, complete-in-place, including non-shrink backfill, concrete, metal shims, bituminous materials, haul and disposal, excavation, bedding material, backfill, and compaction as shown on the plans, as specified in these specifications, and as directed by the Engineer.

**END OF SECTION**

**REVISION OF SECTION 304**  
**AGGREGATE BASE COURSE**

Section 304 of the Standard Specifications is revised as follows:

**Subsection 304.01 is revised to include the following:**

This work shall consist of placing 6” of Aggregate Base Course (Class 5 or 6) over previously prepared pavement sub-grade approved by the Engineer. Aggregate Base Course will be used under the asphalt pavement section and shall meet the requirements of Subsection 703.03.

**The proposed material shall meet the following minimum requirements:**

LL Maximum:	30
PI Maximum:	6
“R” Value Minimum:	78

The minimum strength coefficient of the Class 5 or 6 Aggregate Base Course shall be 0.11

**Subsection 304.06 is revised to include the following:**

Aggregate Base Course shall be compacted to at least 95% of maximum density at or near optimum moisture as determined by ASTM D698.

**Subsection 304.07 is revised to include the following:**

Aggregate Base Course will be measured by the ton at proper moisture. Quantity will be adjusted accordingly if the moisture content is too high. Haul and water necessary to bring mixture to optimum moisture will not be measured or paid for separately, but shall be included in the price for Aggregate Base Course. ***Load tickets shall be consecutively numbered for each day.***

**Soil sterilization shall be applied under all new asphalt paving and shall be considered incidental to the work. Sterilization shall not be paid for separately under this item.**

**Subsection 304.08 is revised to include the following:**

The accepted quantities of Aggregate Base Course will be paid for at the contract unit price per ton.

**Payment will be made under:**

Pay Item and Pay Unit

The pay unit is denoted by ( ).

- 304-01 Aggregate Base Course – (Class 5 or 6) - 4” Depth – (CIP) – (TON)
- 304-02 Aggregate Base Course – (Class 5 or 6) – 10” Depth – (CIP) – (TON)
- 304-03 Gravel Shoulder – Class 5 or 6 Aggregate Base (6” Depth) – (TON)

The above prices and payments shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in Aggregate Base Course including haul, sterilization, and water. The work will be complete-in-place, as shown on the plans, as specified in these specifications, and as directed by the Engineer.

**END OF SECTION**

**REVISION OF SECTION 306**  
**RECONDITIONING**

Section 306 of the Standard Specifications is hereby revised for this project as follows:

**Subsection 306.02 is revised to include the following:**

The top 8" of the sub-grade including fill areas (curb, gutter and sidewalk areas) shall be reconditioned by scarifying and re-compacting. The sub-grade shall be thoroughly mixed and dried or moistened to full depth and compacted as specified in Section 203.07. The reconditioned surface shall not vary above or below the lines and grades as staked by more than 0.04 foot under asphalt or concrete pavement or 0.08 foot under aggregate base course. The surface shall be tested prior to application of any base course or pavement. All defective work shall be corrected as directed by the Engineer. The surface shall be protected and maintained until base course or pavement has been placed. **If the Contractor chooses to use road base as a fine grading material or a material to mitigate over excavated or rain damaged areas this shall be entirely the Contractor's cost and shall be considered incidental to the Work.** The Contractor shall be paid for reconditioning, if reconditioning has been attempted, and muck excavation in the event that unsuitable material is encountered and removed at the direction of the Engineer. It shall be at the Engineer's discretion to determine if the Contractor has made a sufficient effort to control the moisture in the sub-grade material and made a reasonable effort to recondition the sub-grade.

Soil sterilization shall be applied under all new asphalt paving and shall be considered incidental to the work. Sterilization shall not be paid for separately under this item.

***This item (Reconditioning) will not be necessary or paid for in flyash stabilized areas.***

**Subsection 306.04 is revised to include the following:**

The accepted quantities of Reconditioning will be paid for at the contract unit price per square yard.

**Payment will be made under:**

Pay Item and Pay Unit

The pay unit is denoted by ( ).

- 306-01 Reconditioning (8") - (SY)
- 306-02 Sidewalk Preparation – (SY)

The above prices and payments shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all work involved in Reconditioning, complete-in-place, including compaction, wetting or drying, and finish grading, as shown on the plans, as specified in these specifications, and as directed by the Engineer.

**END OF SECTION**

## **REVISION OF SECTION 307 FLYASH SUBGRADE STABILIZATION**

### **Section 307 of the Standard Specifications is revised as follows:**

This item shall consist of treating the subgrade, adding Class "C" fly ash, mixing and compacting of the mixed material to the required depth and density. This item applies to natural ground or embankment and shall be constructed as specified herein and in conformity with the typical sections, lines and grades as shown on the plans or as established by the Engineer.

### **MATERIALS**

- A. Fly Ash - The fly ash shall meet ASTM Specification 618, Section 3.2, when sampled and tested in accordance with Sections 4, 6, and 8 unless otherwise shown on the plans. Fly ash shall be Class C designation containing a minimum of 25 percent CaO.
- B. Water - The water used in the stabilized mixture shall be clean, clear, and free of sewage, vegetable matter, oil, acid, and alkali. Water known to be potable may be used without testing. All other sources shall be tested in accordance with AASHTO T-26 and approved by the Materials Engineer.

### **EQUIPMENT**

- A. The machinery, tools and equipment necessary for proper prosecution of the Work shall be on the project site and approved by the Engineer prior to the beginning of construction operations. All machinery, tools and equipment used shall be maintained in a satisfactory and workmanlike manner.
- B. Fly ash shall be stored and handled in closed weatherproof containers until immediately before distribution on the road. If storage bins are used, they shall be completely enclosed.
- C. If fly ash is furnished in trucks, each truck shall have the weight of fly ash certified on public scales or the Contractor shall place a set of standard platform truck scales or hopper scales at a location approved by the Engineer.

### **CONSTRUCTION METHODS**

#### **A. General**

It is the primary purpose of this specification to secure a completed course of treated material that contains the following:

1. Uniform fly ash/soil mixture with no loose or segregated areas;
2. Uniform density and moisture content
3. Is well bound for its full depth
4. A smooth surface suitable for placing subsequent courses.

It shall be the responsibility of the Contractor to regulate the sequence of his work; to process a sufficient quantity of material to achieve full depth as shown on plans; to use the proper amounts of fly ash; to maintain the work; and to rework the courses as necessary to meet the above requirements at no additional cost.

Before other construction operations are initiated, the subgrade shall be graded and shaped to enable the fly ash treatment of materials in place, in conformance with the lines, grades, and thickness shown on the plans. Unsuitable soil or materials shall be removed and replaced with acceptable material.

The subgrade shall be firm and able to support, without displacement, the construction equipment and the compaction hereinafter specified. Soft or yielding subgrade shall be corrected and made stable by scarifying,



adding fly ash, and compacting until it is of uniform stability.

If the Contractor elects to use a trimming machine that will remove the subgrade material accurately to the secondary grade, he will not be required to expose the secondary grade or windrow the material. However, the Contractor shall be required to roll the subgrade, as directed by the Engineer, before using the trimming machine and correcting any soft areas that this rolling may reveal. This method will be permitted only where a machine is provided which will ensure that the material is cut uniformly to the proper depth and which has cutters that will plane the secondary grade to a smooth surface over the entire width of the cut. The machine shall be of such design that visible indication is given at all times that the machine is cutting to the proper depth.

## **B. Application**

The fly ash shall be spread by an approved spreader at the rate of 12% dry weight of soil as shown on the plans and as directed by the Engineer. A motor grader shall not be used to spread the fly ash.

The fly ash shall be distributed at a uniform rate and in such manner as to reduce the scattering of fly ash by wind to a minimum. Fly ash shall not be applied when wind conditions, in the opinion of the Engineer, are such that blowing fly ash becomes objectionable to traffic or adjacent property owners.

During final mixing, water shall be added to the materials as directed by the Engineer, until the proper moisture content has been secured. Water shall be added through the pulverizing machine or method acceptable to the Engineer to develop a uniform, controlled rate addition of the needed moisture. Initial mixing after the addition of fly ash will be accomplished dry or with a minimum of water to prevent fly ash balls. Final moisture content of the mix, prior to compaction, shall not exceed the optimum moisture content of the mix by more than two percent nor by less than the optimum by more than four percent. Should the natural moisture content of the soil be above the specified range, aeration of the soil may be required prior to addition of the fly ash.

## **C. Mixing**

The soil and fly ash shall be thoroughly mixed by approved rotary mixers or other approved equipment, and the mixing continued until, in the opinion of the Engineer, a homogeneous, friable mixture of soil and fly ash is obtained, free from all clods or lumps. Water required to achieve the specified moisture content for the mixture should be added after initial mixing.

If the soil fly ash mixture contains clods, they shall be reduced in size by raking, blading, disking, harrowing, scarifying or the use of other approved pulverization methods so that when all non-slaking aggregates retained on the No. 4 sieve are removed, the remainder of the material shall meet the following requirements when tested at the field moisture condition or dry by laboratory sieves:

Minimum Passing 1: inch sieve 100 percent

Minimum Passing No. 4 sieve 60 percent

## **D. Compaction**

Compaction of the mixture shall begin immediately after mixing of the fly ash and be completed within one hour following addition of fly ash and water. The material shall be sprinkled as necessary to maintain the optimum moisture. Compaction of the mixture shall begin at the bottom and shall continue until the entire depth of mixture is uniformly compacted to a specified density.

All non-uniform (too wet, too dry or insufficiently treated) areas which appear shall be corrected immediately by scarifying the areas affected, adding or removing material as required and reshaping the recompacting by sprinkling and rolling. The surface of the course shall be maintained in a smooth condition, free from undulations and ruts, until other work is placed thereon or the work is accepted.

The stabilized section shall be compacted to the extent necessary to provide the density specified below:

Description:

For fly ash treated subgrade, existing subbase or existing base that will receive subsequent sub-base or base courses - Not less than 95 percent maximum dry density (ASTM D-698)

For fly ash treated sub-base or base that will receive surface course - Not less than 95 percent maximum dry density (ASTM D-698)

In addition to the requirements specified for density, the full depth of the material shown on the plans shall be compacted to the extent necessary to remain firm and stable under construction equipment. After each section is completed, the Engineer will make tests as necessary. If the material fails to meet the density requirements, the Engineer may require it to be reworked as necessary to meet those requirements or require the Contractor to change his construction methods to obtain required density on the next section. Throughout this entire operation, the shape of the course shall be maintained with a blade, and the surface, upon completion, shall be smooth and in conformity with the typical section shown on the plans and to the established lines and grades. Grading should be terminated within two hours after blending of the fly ash. Should the material, due to any reason or cause, lose the required stability, density and finish before the next course is placed or the work is accepted, it shall be reprocessed, re-compacted and refinished at the sole expense of the Contractor. Reprocessing shall follow the same pattern as the initial stabilization, including the addition of fly ash.

**E. Finishing, Curing and Preparation for Surfacing**

After the final course of the treated sub-grade, sub-base or base has been compacted, it shall be brought the required lines and grades in accordance with the typical sections.

1. The resulting base surface shall be thoroughly rolled with a pneumatic tire roller and “clipped”, “skinned” or “tight bladed” by a power grader to a depth of approximately 3 inch, removing all loosened stabilized material from the section. Re-compaction of the loose material should not be attempted. The surface shall then be thoroughly compacted with the pneumatic roller, adding small increments of moisture as needed during rolling. If plus No. 4 aggregate is present in the mixture; one complete coverage of the section with the fat wheel roller shall be made immediately after the “clipping” operation. When directed by the Engineer, surface finishing methods may be varied from this procedure provided a dense, uniform surface, free of surface compaction plans, is produced. The moisture content of the surface material must be maintained within the specified range during all finishing operations. Surface compaction and finishing shall proceed in such a manner as to produce, in not more than two hours, a smooth, closely knit surface, free of cracks, ridges or loose material conforming to the crown, grade and line shown on the plans.
2. After the fly ash treated course has been finished as specified herein, the surface shall be protected against rapid drying by either of the following curing methods for a period of not less than three days or until the surface or subsequent courses are placed:
  - (a) Maintain a thorough and continuously moist condition by sprinkling.
  - (b) Apply a two-inch layer of earth on the completed course and maintain in a moist condition.
  - (c) Apply an asphalt membrane to the treated course, immediately after same is completed. The quantity and type of asphalt approved for use by the Engineer shall be sufficient to completely cover and seal the total surface of the base between crown lines and all voids. If the Contractor elects to use this method, it shall be the responsibility of the Contractor to protect the asphalt membrane from being picked up by traffic by either sanding or dusting the surface of same. The asphalt membrane may remain in place when the proposed surface or other base courses are placed. Asphaltic emulsions are not acceptable for the asphaltic membrane.

**METHOD OF MEASUREMENT**

Fly Ash Subgrade Stabilization will be measured by the square yard to the limits as constructed in the field and be paid

for at the contract unit price per square yard.

**NOTE:** The square yards of Fly Ash Subgrade Stabilization is an *estimate only* based on the soils report and general knowledge of the soil conditions in this area. The subgrade areas to be stabilized with fly ash will be determined by the Engineer based upon results after proof rolling and effects resulting from inclement weather conditions. Subgrade areas *not* requiring fly ash stabilization will be Reconditioned (Revision of Section 306), measured by the square yard as constructed in the field and paid for at the Reconditioning contract unit price per square yard.

**BASIS OF PAYMENT**

**Payment will be made under:**

Pay Item and Pay Unit

The pay unit is denoted by ( ).

307-01 Fly-Ash - 12" Depth - 12% - (SY)

The above prices and payments shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all work involved in Fly ash stabilization, complete-in-place, including compaction, and wetting or drying as shown on the plans, as specified in these specifications, and as directed by the Engineer.

**END OF SECTION**

**REVISION OF SECTION 401 & 703  
PLANT MIX PAVEMENTS – GENERAL & AGGREGATES**

Section 401 and 703 of the Standard Specifications is hereby revised as follows:

**Subsection 401.02 is hereby revised to include the following:**

Requests made in writing by the Contractor for changes in the job mix formula will be considered by the Engineer. A job mix formula shall be determined by the Contractor and submitted to the Engineer for approval a minimum of one week prior to the beginning of construction for each proposed change. **The Contractor shall provide the Engineer with an asphalt mix design report from an independent testing laboratory acceptable to the Engineer.** The report shall state the Mix properties, optimum oil content, job mix formula and recommended mixing and placing temperatures. The costs for all job mix formulas shall be the responsibility of the Contractor.

If the Contractor uses more than three (3) job mix formulas for a type of plant mix pavement used, the City may charge the Contractor for testing and evaluation of the mix designs, including the costs for calibration of a Nuclear Asphalt Oven.

**For Superpave Mixes, delete Table 401-2 and replace with the following:**

**TABLE 401-2**

Grading	Test Procedure	Minimum Test Result	Sampling Frequency
All Gradings	CP L-5109 Method B	80	One per 10, 000 metric tons (10,000 tons) or fraction thereof (minimum)

**In subsection 401.02, delete the second, third, and fourth paragraphs and replace with the following:**

1. A proposed plant mix pavement mix design prepared in accordance with Colorado Procedure 52(CP52-99), including a proposed job-mix gradation for each mixture required by the Contract which shall be fully within the Master Range Table, Tables 703-3A, B, and C, before the tolerances shown in Table 401-1 are applied. The weight of lime shall be included in the total weight of the material passing the 75 mm (No. 200) sieve. The restricted zone boundaries shown for all gradings in Tables 703-3A, 703-3B, and 703-3C are to be used as guidelines in mix design development. However, the job-mix gradation is not required to pass above or below the restricted zone boundaries.
2. The name of the refinery supplying the asphalt cement and the source of the anti-stripping additive.
3. A sufficient quantity of each aggregate for the Department to perform the tests specified in section 2.2.1 of CP52.

**In subsection 401.02 delete Table 401-1, including the footnotes, and replace with the following:**

<b>TABLE 401-1</b> Bitumen Content	±0.3%
Asphalt Recycling Agent	±0.2%
Temperature of Mixture When Discharged from Mixer	±10°C
<sup>1</sup> Hot Bituminous Pavement - Item 403	
Passing the 9.5 mm ( <sup>3</sup> / <sub>8</sub> " <sup>2</sup> ) and larger sieves	±6%
Passing the the 4.75 mm (No. 4) and 2.36 mm (No. 8) sieves	±5%
Passing the 600 mm (#30) sieve	±4%
Passing the 75 mm (#200) sieve	±2%

<sup>1</sup>When 100% passing is designated, there shall be no tolerance. When 90-100% passing is designated, 90% shall be the minimum; no tolerance shall be used.

**Delete Subsection 401.07 and replace with the following:**

Plant mix pavement shall be placed only on properly prepared unfrozen surfaces which are free of water, snow, and ice. The plant mix pavement shall be placed only when both the air and surface temperatures equal or exceed the temperatures specified in Table 401-3 and the Engineer determines that the weather conditions permit the pavement to be properly placed and compacted.

**Table 401-3  
Placement Temperature Limitations in °C**

Compacted Layer Thickness in mm (inches)	Minimum Surface and Air Temperature °C (°F)	
	Top Layer	Layers Below Top Layer
<38 (1½)	15 (60)	10 (50)
38 (1½) - <75 (3)	10 (50)	5 (40)
75 (3) or more	7 (45)	2 (35)

**Note:** Air temperature is taken in the shade. Surface is defined as the existing base on which the new pavement is to be placed.

If the temperature falls below the minimum air or surface temperatures, paving shall stop.

The Contractor shall schedule the work so that no planed or recycled surface is left without resurfacing for more than 10 calendar days during the period specified in Table 401-3A, below. The Contractor shall immediately place a temporary hot bituminous pavement layer on any surface that has been planed or recycled and can not be resurfaced in accordance with the above temperature requirements within 10 calendar days after being planed or recycled. The minimum thickness of the temporary hot bituminous pavement layer shall be 50 mm (2 inches). The Contractor shall perform the quality control required to assure adequate quality of the hot bituminous pavement used in the temporary layer. All applicable pavement markings shall be applied to the temporary layer surface. The Contractor shall maintain the temporary layer for the entire period that it is open to traffic. Distress which affects the ride, safety, or serviceability of the temporary layer shall be immediately corrected to the satisfaction of the Engineer. The temporary hot bituminous pavement layer shall be removed when work resumes.

**Table No. 401-3A  
Periods Requiring Overlay of Treated Surfaces**

Location by Elevation	Period During Which Planed or Recycled Surfaces Must be Overlaid within Ten Days
All areas below and including 2100 m (7000 feet)	October 1 to March 1
All areas above 2100 m (7000 feet) up to and including 2600 m (8500 feet)	September 5 to April 1
All areas above 2600 m (8500 feet)	August 20 to May 15

**In Subsection 401.15, delete the third and fourth paragraphs (including table) and replace with the following:**

The minimum temperature of the mixture when discharged from the mixer and when delivered for use shall be as shown in the following table:

Asphalt Grade	Minimum Mix Discharge Temperature, °C (°F)*	Minimum Delivered Mix Temperature, °C (°F)**
PG 58-28	135 (275)	113 (235)
PG 58-22	138 (280)	113 (235)
PG 64-22	143 (290)	113 (235)
AC-20 Rubberized	160 (320)	138 (280)
PG 76-28	160 (320)	138 (280)
PG 70-28	149 (300)	138 (280)
PG 64-28	149 (300)	138 (280)
PG 58-34	149 (300)	138 (280)

\* The maximum mix discharge temperature shall not exceed the minimum discharge temperature by more than 17°C (30°F) .

\*\* Delivered mix temperature shall be measured behind the paver screed.

Hot-mix asphalt mixture shall be produced at the lowest temperature within the specified temperature range that produces a workable mix and provides for uniform coating of aggregates (95% minimum in accordance with AASHTO T 195), and that allows the required compaction to be achieved.

**Subsection 401.16 is hereby revised to include the following:**

The mixture shall be laid upon an approved surface, spread and struck off to provide for drainage to the side(s) of the roadway with a minimum cross slope of two percent (2%) or as directed by the Engineer.

**In subsection 401.17, first paragraph, delete the last two (2) sentence and replace with the following:**

When the mixture contains unmodified asphalt cement (PG 58-28, PG 58-22, or PG 64-22) or modified (PG 58-34), and the surface temperature falls below 85°C (185 °F), no further compaction effort will be permitted unless approved. If the mixture contains modified asphalt cement (AC-20R, PG 76-28, PG 70-28, or PG 64-28) and the surface temperature falls below 110°C (230 °F), no further compaction effort will be permitted unless approved.

**Subsection 401.17 is hereby revised to include the following:**

All pneumatic tire rubbers shall be equipped with rubber skirts.

In subsection 703.04 delete Table 703-3 and replace with Tables 703-3A, B, and C as follows:

**TABLE 703-3A  
Master Range Table for Hot Bituminous Pavement (Grading S)**

Sieve Size	Percent by Weight Passing Square Mesh Sieves	Restricted Zone Boundary (Guideline)	
		Minimum	Maximum
37.5 mm (1½")			
25.0 mm (1")	100		
19.0 mm (¾")	90 - 100		
12.5 mm (½")	*		
9.5 mm (¾")	*		
4.75 mm (#4)	*		
2.36 mm (#8)	23 - 49	34.6	34.6
1.18 mm (#16)		22.3	28.3
600 mm (#30)	*	16.7	20.7
300 mm (#50)		13.7	13.7
150 mm (#100)			
75 mm (#200)	2 - 8		

\* These additional Form 43 Specification Screens will initially be established using values from the As Used Gradation shown on the Design Mix.

**TABLE 703-3B  
Master Range Table for Hot Bituminous Pavement (Grading SX)**

Sieve Size	Percent by Weight Passing Square Mesh Sieves	Restricted Zone Boundary (Guideline)	
		Minimum	Maximum
37.5 mm (1½")			
25.0 mm (1")			
19.0 mm (¾")	100		
12.5 mm (½")	90 - 100		
9.5 mm (¾")	*		
4.75 mm (#4)	*		
2.36 mm (#8)	28 - 58	39.1	39.1
1.18 mm (#16)		25.6	31.6
600 mm (#30)	*	19.1	23.1
300 mm (#50)		15.5	15.5
150 mm (#100)			
75 mm (#200)	2 - 10		

\* These additional Form 43 Specification Screens will initially be established using values from the As Used Gradation shown on the Design Mix.



**TABLE 703-3C**  
**Master Range Table for Hot Bituminous Pavement (Grading SG)**

Sieve Size	Percent by Weight Passing Square Mesh Sieves	Restricted Zone Boundary (Guideline)	
		Minimum	Maximum
37.5 mm (1½")	100		
25.0 mm (1")	90 - 100		
19.0 mm (¾")			
12.5 mm (½")	*		
9.5 mm (⅜")	*		
4.75 mm (#4)	*	39.5	39.5
2.36 mm (#8)	19 - 45	26.8	30.8
1.18 mm (#16)		18.1	24.1
600 mm (#30)	*	13.6	17.6
300 mm (#50)		11.4	11.4
150 mm (#100)			
75 mm (#200)	1 - 7		

\* These additional Form 43 Specification Screens will initially be established using values from the As Used Gradation shown on the Design Mix.

**END OF SECTION**

**REVISION OF SECTION 403**  
**HOT BITUMINOUS PAVEMENT**

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

**Subsection 403.01 is revised to include the following:**

**Hot Bituminous Pavement** – This shall consist of constructing one or more courses of HBP Grading S & SG over existing pavement or subgrade surfaces previously prepared by the contractor or City of Fort Collins Crews.

**Asphalt Hand Patching** – HBP Grading S & SG shall be used in locations as directed by the Engineer. These quantities will be restricted to small areas which require hand placement methods and conventional paving equipment cannot be utilized.

Asphalt Leveling Course  $\frac{3}{4}$  Grading S – (PG 64-22) – (TON)

**WestBound Harmony Detour Paveing - 200'x60'x4" (2" PG 64-22 on 3" PG 58-28)** – This work will consist of installing 3" of PG 58-28 SG with a 2" PG 64-22 top lift at the "shoe-flies" to detour traffic around the concrete intersection work and the fill work on the Westbound lanes of Harmony Road. The City of Fort Collins' anticipates using a shoe-fly at approximate locations: STA 132+50 to 134+50 AND STA 163+00 to 165+00. The fill required to build up the shoe-flies will be included in the earth as fill is necessary in these locations per the final design. Pavement cutting, excavation, subgrade preparation, haul and disposal, bituminous materials, aggregate, asphalt cement, asphalt recycling agent, additives, hydrated lime, and all other work necessary to complete each hot bituminous pavement item will not be paid for separately but shall be included in the unit price bid. The item will be paid as per Ton.

**Subsection 403.02 is revised to include the following:**

**Laboratory Mix Design – Grading S & SG** - The mix designs shall be prepared by an independent laboratory acceptable to the Engineer and shall be submitted by the Contractor to the Engineer for approval a minimum on one (1) month prior to the beginning of paving for this project. The criteria for the mix design is as follows:

**HBP Grading S & SG**

**SEE TABLE 403-1 NEXT PAGE FOR DESIGN CRITERIA**

A request made in writing by the Contractor for changes in the job mix formula will be considered by the Engineer.

The Contractor shall prepare a quality control plan outlining the steps taken to minimize segregation of HBP. This plan shall be submitted to the Engineer and approved prior to beginning the paving operations. **When the Engineer determines that segregation is unacceptable, the paving shall stop and the cause of segregation shall be corrected before paving operations will be allowed to resume. The Contractor will not be allowed to clean the paver hopper during paving operations.**

Reclaimed materials will not be allowed in Hot Bituminous Pavement. A maximum of 20% reclaimed material will be allowed for HBP Grading SG. The Contractor shall construct the work such that all roadway pavement placed prior to the time paving operations end for the year, shall be completed to the full thickness required by the plans. The Contractor's Progress Schedule shall show the methods to be used to comply with this requirement.

***Vertical drop offs will not be allowed at the end of any days paving. Paper joints will be required to a taper equaling 3 times the amount of drop. Paving joints shall be at the lane lines or in the center of the lane. In no case shall the paving joints be in the wheel path. The contractor shall submit a longitudinal joint and pavement marking plan 3 days prior to paving.***

<p><b><u>PAVEMENT SECTION:</u></b>                  Grading S-100 (PG 64-28)                  Grading SG-100 (PG58-28)                  Aggregate Base Coarse                  Flyash Treated Subgrade</p>	<p><b>NOTE:</b> All Contract Quantites are Based on a Preliminary Pavement Design by Terracon. The City is currently performing a final pavement design for Harmony and Ziegler. The Quantites are Representative of the Design we Anticipate on each Roadway.</p>
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The design mix for Grading S, SX, and SG shall conform to the following:

**TABLE 403-1**

<b>Property</b>	<b>Test Method</b>	<b>Grading S</b>	<b>Grading SG</b>	<b>Grading SX N/A this Project</b>
Air Voids, percent at:				
N (initial)	CPL 5115	> 11.0	> 11.0	> 11.0
N (design)		3.0 - 5.0	3.0 - 5.0	3.0 - 5.0
N (maximum)		> 2.0	> 2.0	> 2.0
Lab Compaction (Revolutions):				
N (initial) (a)	CPL 5115	8	8	(a)
N (design) (b)		100	100	(b)
N (maximum) (a)		174	174	(a)
Stability, minimum (a) (for information)	CPL 5106	42	42	(a)
Aggregate Retained on the 4.75 mm (No. 4) Sieve with at least two Mechanically Induced Fractured Faces, % minimum	CP 45	60	60	60
Accelerated Moisture Susceptibility Tensile Strength Ratio (Lottman), minimum	CPL 5109 Method B	80	80	80
Minimum Dry Split Tensile Strength, kPa (psi)	CPL 5109 Method B	205 (30)	205 (30)	205 (30)
Grade of Asphalt Cement Top Layer		PG 64-28	PG 58-28	PG 64-28
Grade of Asphalt Cement Layers Below Top		PG 64-28	PG 58-28	PG 64-22
Voids in the Mineral Aggregate (VMA) % minimum (a)	CP 48	14.0	12.0	(a)
Voids Filled with Asphalt (VFA) % (a)	AI MS-2	65 - 75	65 - 75	(a)

- (a) Current CDOT Design Criteria
- (b) Residential 50, Collector 75, Arterial 100

Note: AIMS-2 = Asphalt Institute Manual Series 2

Note: The current version of CPL 5115 is available from the Region Materials Engineer.

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.

**Subsection 403.03 is revised to include the following:**

Regardless of the delivery temperature, the mixture shall not be placed for use on the roadway at a temperature lower than 225° F.

Emulsified Asphalt for tack coat shall be Grade CSS-1h. The tack coat shall consist of a 1:1 dilution (one (1) part emulsified asphalt to one (1) part water). The application rate for tack coat shall be approximately 0.1 gallons per square yard.

The existing pavement shall be broomed and cleaned to be free of dirt, water, vegetation and other deleterious matter immediately prior to commencing the paving operation. Edges of the area to be patched shall be sawcut vertically, and perpendicular or parallel to the roadway, as directed by the Engineer. Tack coat shall be placed against clean, vertical edges on all sides of the area to be patched.

Hot Bituminous Pavement Grading S and SX shall be placed in equal lifts not exceeding three (3) inches. The minimum lift thickness for Grading SX shall be one (1) inch and Grading S shall be (1 ½) inch. HBP Grading SG shall be placed in equal lifts not exceeding four (4) inches and the minimum lift thickness shall be three (3) inches. Overlaying layers of Hot Bituminous Pavement shall not be placed until the lower layer has cooled sufficiently to provide a stable material which will support the equipment without rutting, shoving or moving in any manner. Tack coat shall be placed between all lifts.

**NOTE: Any leveling courses placed shall be paid for at the contract unit price for Hot Bituminous Pavement.**

**Subsection 403.04 shall include the following:**

Hot Bituminous Pavement Grading SX, S and SG, will be measured by the ton and paid for at the Contract Unit Price for Asphalt Patching and Hot Bituminous Pavement. Pavement cutting, excavation, subgrade preparation, haul and disposal, bituminous materials, aggregate, asphalt cement, asphalt recycling agent, additives, hydrated lime, and all other work necessary to complete each hot bituminous pavement item will not be paid for separately but shall be included in the unit price bid.

Load slips shall be consecutively numbered for each day and shall include batch time.

**Subsection 403.05 is revised to include the following:**

**Payment will be made under:**

Pay Item and Pay Unit

The pay unit is denoted by ( ).

403-01 Hot Bituminous Pavement – Grading S – 100 – (2” Depth) – (PG 64-28) – (TON)

403-02 Hot Bituminous Pavement – Grading S – 100 – (2.5” Depth) – (PG 64-22) – (TON)

403-03 Hot Bituminous Pavement – Grading SG – 100 – (4” Depth) – (PG 58-28) – (TON)

403-04 Asphalt Leveling Course ¾ Grading S - 100 – (PG 64-28) – (TON)

403-05 Asphalt Hand Patching – Grading S – 100 – (3”) – (PG 64-28) – (TON)

403-06 Asphalt Hand Patching – Grading SG -100 (7” Depth) – (PG 58-28) – (TON)

403-07 WestBound Harmony Detour Paving - 200'x60'x5" (2” PG 64-28 on 3” PG 58-28) – (TON)

The above prices and payments shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in Hot Bituminous Pavement and Asphalt Patching, including pavement cutting, excavation, subgrade preparation, haul and disposal, compaction, rolling, surface preparation, and bituminous materials, complete in-place, as shown on these plans, as specified in these specifications, and as directed by the Engineer.

**END OF SECTION**

**REVISION OF SECTION 412**  
**PORTLAND CEMENT CONCRETE PAVEMENT**

Section 412 of the Standard Specifications is hereby revised as follows:

**Subsection 412.03 is revised to include the following:**

Concrete pavement shall conform to Class “P” concrete as specified in Subsections 601.02 and 601.03. Class “P” concrete shall have a minimum 28-day field compressive strength of 4200 psi.

The Contractor shall submit a concrete mix design for Class “P” showing and establishing the proportions of all the ingredients. The Contractor shall be responsible for all subsequent adjustments necessary to produce the specified concrete mix. The Contractor shall submit a new mix design based on the Class “P” requirements when a change occurs in the type of cement, or sources of fly ash, or aggregate. **The contractor may delete Class F fly ash and also substitute Size 67 aggregate in lieu of the larger aggregate blend for the Class “P” concrete only upon the approval of the mix design submitted to the Engineer.**

The Contractor shall also submit a mix design for High Early Concrete. This mix shall have a minimum 24-hour field compressive strength of 3000 psi and a minimum 28-day field compressive strength of 4200 psi. This item shall be paid for by the cubic yard of concrete used. It shall include supplying, placing, curing and texturing the high early concrete. Payment for the cost of using high early concrete will be paid for by the cubic yard for the incremental increase in cost and will be paid only when the Engineer requires use of high early concrete.

No concrete shall be placed until the applicable mix design and maturity relationship has been submitted, reviewed and approved by the Engineer. **Review and approval of the mix designs by the Engineer will not constitute acceptance of the concrete. Acceptance shall be based solely on the work conforming to the specifications and on satisfactory test results of the concrete placed on this project.**

**Subsection 412.12 is revised to include the following:**

Immediately following the burlap drag finish, the surface shall be given an “astroturf” drag finish. Materials used for final finish shall be of such texture and weight to produce a uniform texture similar to a broom type finish. Drags shall be full width of the new pavement and maintained in acceptable condition as specified for “astroturf” drag finish.

**Subsection 412.13 is revised to include the following:**

The Contractor shall saw joints early enough to control or limit random cracking but not too early as to create chipping along the sawed joint. **Saw cutting will not be allowed between the hours of 9:00 p.m. and 6:00 a.m. unless approved by the Engineer.** Saw cutting joints shall be included in this work and will not be paid for separately.

If the Contractor proposes variations from CDOT M Standards, it is requested that the Contractor shall prepare a pavement joint and doweling layout for approval by the Engineer.

**Subsection 412.17 is revised to include the following:**

The concrete pavement smoothness shall meet the requirements of Category 4, Class I, as shown in Table 412-1 for the Profilograph test.

**Subsection 412.18 is revised to include the following:**

**Silicone joint sealant material:** Concrete joints shall be sealed with an approved silicone joint sealant material. A copy of the manufacturer's recommendations pertaining to the application of the sealant shall be submitted to the Engineer for approval prior to the beginning of work, and these recommendations shall be adhered to by the Contractor, with such exceptions as this specification may require. The sealant material shall be applied into the joint using equipment and techniques recommended by the joint sealant manufacturer. The Engineer may elect to check for bonding or adherence to the sides of the joint. If the sealant does not bond to the joint, the Contractor shall remove the joint sealant material and clean and reseal these joints in accordance with the criteria outlined.

**Backer rod:** Shall be a round, heat resistant material meeting the requirements set forth by the joint sealant manufacturer. The Contractor shall submit the proposed material to the Engineer for review and approval prior to use. The backer rod shall be placed in such a manner that the grade for the proper depth of the sealant material is maintained. The depth of the sealant shall be a maximum of ¼ inch.

The Contractor shall thoroughly clean the joint and adjacent pavement surface for a width of not less than one inch (1") on each side of the joint of all scale, dirt, dust, residue, or any foreign material that will prevent bonding of the joint sealant. This operation is to be accomplished by immediately flushing the joints with water after sawing. The joints shall be sandblasted after they have dried, just prior to sealing. After sandblasting, the joint shall be cleaned using compressed air with a minimum pressure of 100 psi. The sandblasting and air cleaning shall be performed on the same day as the backer rod placement and joint sealant application. Sealant shall not commence for a minimum of 24 hours after sawing or a weather event without approval of the Engineer.

**Enhanced Concrete Crosswalk – 10" – Davis Tile Red w/Stamped Border** – Concrete crosswalks shall be Class "P" concrete as specified in Section 412 of these specifications. The concrete shall be integrally colored with the required lbs. of Davis Color per sack of cement. The Contractor shall submit a new mix design based on the Class "P" requirements when a change occurs in the type of cement, flyash or aggregate size. The Color of the crosswalks will be Davis Color "Tile Red". The texture will be Brickform Texture Mats FM-3500 Cal Weave, 24"x24". The surface of the concrete crosswalk shall be sealed and protected from drying by applying Davis W-1000 Clear Cure and Seal, or approved equal. The unit price bid per square foot of concrete crosswalk shall include the entire Contractor's costs. The price bid shall include: saw cutting, furnishing and installing dowel bars and keyways as required; supplying, forming, placing, finishing, and edging the concrete surface; curing/sealing materials; joint materials/sealers; texturing equipment as determined, and all other related and necessary materials, work, and equipment required to construct the concrete crosswalks in accordance with the Specifications.

**Subsection 412.24 is revised to include the following:**

**Payment will be made under:**

Pay Item and Pay Unit

The pay unit is denoted by ( ).

412-01 Concrete Pavement (10") – (SY)

412-02 Enhanced Concrete Crosswalk – 10" – Tile Red w/Stamped Border – (SY)

The above prices and payment shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in placing concrete pavement, complete-in-place, including haul, concrete materials, finishing the surface, saw cutting the joints, curing, placing dowels, and sealing joints as shown on the plans, as specified in these specifications, and as directed by the Engineer.

**END OF SECTION**

**REVISION OF SECTION 506**  
**RIPRAP**

Section 506 of the Standard Specifications is hereby revised as follows:

**Subsection 506.01 is revised to include the following:**

This work consists of the construction of riprap sections with riprap, Type II bedding and covered with topsoil in accordance with these specifications and in conformity with the lines and grades shown on the plans or established grades.

**Subsection 506.02 is revised to include the following:**

Color of buried riprap shall be approved by the Engineer. Exposed riprap shall be gray to blue gray in color or as approved by the Engineer.

Rock used for riprap shall be hard, durable, angular in shape and free from cracks, over-burden, shale and organic matter. Thin, slab type stones, rounded stones and flaking rock shall not be used. **Removed concrete shall not be used for riprap without specific written approval by the Engineer.** Service records of the proposed material will be considered by the Engineer in determining the acceptability of the rock. Neither breadth nor thickness of a single stone shall be less than one-third (1/3) its length.

Bedding material shall conform to the specification for Type II Filter material as per the City of Fort Collins Storm Drainage Design Criteria and Construction Standards (Table 12-3) or CDOT Class A filter material (Section 703.09).

**Subsection 506.03 is revised to include the following:**

**Wherever possible, the excavation for the riprap sections shall be undisturbed material, or where this is not possible, the underlying materials shall be compacted to 95% of maximum density as determined by ASTM D 698. The bottom of the excavation shall have a uniform slope, be reasonably smooth, free from mounds and windrows and free of debris prior to placing the filter material.**

Bedding material shall be placed on top of the sub-grade material prior to riprap installation at all locations of riprap sections shown on the plans. The layer shall be shaped to provide the minimum thickness of bedding material as shown on the details of the plans.

Riprap material shall be placed immediately after the bedding material is placed and in a manner to provide a well-graded mass of stone with minimum voids. Riprap may be machine-placed with sufficient handwork to minimize disturbance of the bedding material layer. This material shall be placed to the required thickness and grade shown on the details of the plans.

Topsoil material shall be used to backfill and bury the entire riprap bed area and compacted to insure thorough settling of the topsoil within the rock voids. The top three inches (3") of the topsoil shall be loosely placed. This material shall be placed to the required thickness as shown on the details of the plans. **The contractor shall utilize, when appropriate, existing topsoil on site.**

**Subsection 506.04 is revised to include the following:**

Riprap sections specified in the plans will be paid for at the contract unit price per **EA**. The unit price bid shall include all costs associated with installation of the bedding material, riprap and topsoil including excavating for the placement of these materials, all materials, delivery, stockpiling and handling of the riprap.

**Subsection 506.05 is revised to include the following:**



**Payment will be made under:**

**Pay Item and Pay Unit**

The pay unit is denoted by ( ).

506-01 D-50 Buried Rip-Rap, 6" Topsoil (CIP Per Detail) – (EA)

The above prices and payment shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in excavating, placing riprap, bedding and topsoil, complete-in-place, including haul and stockpile of materials, handling of the riprap and finish grading of the surface as shown on the plans, as specified in these specifications, and as directed by the Engineer.

**END OF SECTION**

**REVISION OF SECTION 601**  
**STRUCTURAL CONCRETE**

Section 601 of the Standard Specifications is hereby revised as follows:

**Subsection 601.01 is revised to include the following:**

This work shall consist of the construction of a double barrel cast-in-place box culvert, wing walls, parapet walls, railings and necessary conduits in accordance with the plans, specifications, and the Larimer County Urban Area Street Standards (Refer to detail drawing 11-01F). It shall be the Contractor's responsibility to purchase and familiarize themselves with these specifications. The Contractor is responsible for providing all materials and equipment necessary to meet the requirements of the Colorado Department of Transportation Standards and Larimer County Urban Area Street Standards.

**Mix Design :**

1. Compressive Strength: 4000 psi at 28 days
  - a. Minimum number of cylinders passing above requirement shall be 90%.
  - b. Minimum strength of cylinder acceptable, 3800 psi.
2. Cement Content: 6 bags per cubic yard minimum
3. Maximum Permissible Water – Cement Ratio
  - a. For 4000 psi strength, non air-entrained, absolute ratio by weight 0.49.
  - b. For 4000 psi strength, air-entrained, absolute ratio by weight 0.45.
4. Slump: Four inch maximum.
5. Air Content: 6% +/- 1 ½% for concrete with exposed surfaces or subject to freezing and thawing; not required for other concrete.

**All Shop Drawings must be approved by the Design Engineer (Gary Weeks with Weeks and Associates).**

The accepted quantities will be paid for at the contract unit price.

**Payment will be made under:**

Pay Item and Pay Unit

The pay unit is denoted by ( ).

601-01 Concrete Retaining Wall with Footer and 6' Attached Block Wall – (EA)

601-02 Concrete Wall Extension with Guardrail – (LS)

The above prices and payments shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all Work involved in a cast in place box culvert, as shown on the plans, as specified in these specifications, and as directed by the Engineer.

**END OF SECTION**

**REVISION OF SECTION 603**  
**CULVERTS AND SEWERS**

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

**Subsection 603.01 is revised to include the following:**

This work shall consist of the construction and reconstruction of reinforced concrete pipe, pipe encasement, pipe connections, and joint encasement in accordance with the plans, specifications, the City of Fort Collins Storm Drainage Design Criteria and Construction Standards. It shall be the Contractor's responsibility to purchase and familiarize themselves with these specifications. The Contractor shall include in the Work all the necessary items to complete the Work including but not limited to excavation, bedding, backfill, and compaction.

The accepted quantities will be paid for at the contract unit price.

**Payment will be made under:**

Pay Item and Pay Unit

The pay unit is denoted by ( ).

- 603-01 18" RCP Class III – (LF)
- 603-02 24" RCP Class III – (LF)
- 603-03 19"x30" HERCP Class III – (LF)
- 603-04 34"x53" HERCP Class III – (LF)
- 603-05 8" HDPE Pipe – (LF)
- 603-06 18" RCP Class III FES – (EA)
- 603-07 19"x30" HERCP Class III FES – (EA)
- 603-08 Concrete Encasement – (LF)
- 603-09 18" RCP Thru Retaining Wall – (EA)
- 603-10 Tie 34"x53" HERCP to Existing Concrete irrigation Ditch – CIP – (EA)
- 603-11 Tie to Existing Manhole – (EA)
- 603-12 4" Median Underdrain Pipe – (Perforated) - (LF)
- 603-13 4" Median Underdrain Pipe – (Solid) - (LF)
- 603-14 4" Median Underdrain clean-out – (EA)
- 603-15 4" Median Underdrain/Storm Sewer Tie-in (Core Drill and Connect with Non-shrink Grout) – (EA)

The above prices and payments shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all Work involved in installing pipe and encasing joints, complete in-place, as shown on the plans, as specified in these specifications, and as directed by the Engineer. Concrete and/or Asphalt patching will be paid for separately under the appropriate item.

**END OF SECTION**

**REVISION OF SECTION 604**  
**MANHOLES, INLETS, AND METER VAULTS**

Section 604 of the Standard Specifications is hereby revised as follows: Fort Collins Loveland Water District Specifications can be obtained at 5150 Snead Drive Fort Collins, Colorado. A mandatory pre-construction will be required before the contractor starts any work on the district system.

**Subsection 604.01 is revised to include the following:**

This work shall consist of the construction of manholes, CDOT Type ‘R’ inlets, type 16 combination inlets, and providing and maintaining erosion control, in accordance with the plans, specifications, and the City of Fort Collins Storm Drainage Design Criteria and Construction Standards. It shall be the Contractor's responsibility to purchase and familiarize themselves with these specifications. The Contractor shall include the cost of excavation, backfill, compaction, and installation and maintenance of erosion control into each item listed in this section.

The Contractor shall clean all sediment caught in the storm sewer system due to this project. The frequency of the cleaning shall be at the direction of the Engineer. The Contractor will not be allowed to flush the pipes with water. All Erosion Control Devices, Materials, and Techniques required to prevent damage to the storm water facilities as outlined in the City of Fort Collins Standards will be considered incidental to the work, and shall be included in the price. No measurement for payment shall be made for maintenance of Erosion Control devices.

**Subsection 604.02 is revised to include the following:**

Proportioning shall conform to the requirements for Class B concrete as described in Section 601.

**Subsection 604.08 is revised to include the following:**

The accepted quantities will be paid for at the contract unit price.

**Payment will be made under:**

Pay Item and Pay Unit

The pay unit is denoted by ( ).

- 604-01 5’ Type R-Inlet – (EA)
- 604-02 10’ Type R Inlet – (EA)
- 604-03 15’ Type R Inlet – (EA)
- 604-04 18” Area Inlet – (EA)
- 604-05 Inlet Type “C” – (EA)
- 604-06 8” HDPE Area inlet and Tie in (Core Drill and Connect with Non-shrink Grout) – (EA)
- 604-07 Double Type 13 Inlet – (EA)
- 604-08 24” Headwall – CIP – (EA)
- 604-09 Tie 18” RCP to Existing Storm Sewer with Concrete Collar – (EA)
- 604-10 4’ Diameter Sewer Manhole – (EA)
- 604-11 4” PVC Conduit Sleeving for Median Irrigation– (LF)

The above prices and payments shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all work involved in constructing inlets, constructing manholes, and installing and maintaining erosion control, complete-in-place, as specified in these specifications, and as directed by the Engineer.

**END OF SECTION**

**REVISION OF SECTION 608**  
**SIDEWALKS AND DECORATIVE CROSSWALKS**

Section 608 of the Standard Specifications is hereby revised for this project as follows:

**Subsection 608.01 is revised to include the following:**

This work shall consist of the construction of concrete sidewalks (6”), pedestrian access ramps, exposed aggregate median splashblock, driveways, crossspans, and drive approaches, in accordance with the plans and specifications. Required saw cutting will be incidental to the work and will not be measured or paid for separately. The use of aggregate base material for fine grading or over excavated areas will not be paid for separately.

**Subsection 608.02 is revised to include the following:**

Proportioning shall conform to the requirements for Class "B" concrete as described in Section 601 with the exception the minimum 28 day compressive strength shall be **4000 psi**.

The Contractor shall also submit a mix design for **High Early Concrete**. This mix shall have a minimum 24-hour compressive strength of 3000 psi and a minimum 28-day compressive strength of 3500 psi. It shall include supplying, placing, curing and texturing the high early concrete. The price shall apply to all Sections including Section 412, 608 and 610. **Payment for extra cost of using high early concrete will be paid for by the cubic yard for the incremental increase in costs and will be paid only when the Engineer requires use of high early.**

**Subsection 608.04 is revised to include the following:**

**Exposed Aggregate Concrete:** The Exposed Aggregate Concrete shall be Class “EA” concrete integrally colored with 1½ lbs. of Davis Color No. 5237 “San Diego Buff” per sack of cement. The surface of the Exposed Aggregate Concrete shall be sealed and protected from drying by applying Davis W-1000 Clear Cure and Seal, or approved equal. “San Diego Buff” shall be used for all exposed aggregate concrete in the median.

**Truncated Dome Panels:** Pedestrian Access Warning Cast Iron Plates – East Jordan Iron Works Model 7005-71. Detectable warnings on new curb ramps shall be truncated domes of the dimensions shown in the plans. Domes shall be prefabricated by the manufacturer as a pattern on concrete or masonry pavers. Pavers shall meet all Americans with Disabilities Act (ADA) requirements for truncated domes, and when installed, shall be capable of producing the pattern of domes as shown in the plans. Pavers shall meet the requirements of ASTM C 902 or ASTM C 936.

It is the Contractor's responsibility to adequately protect their work from damage by weather (including cold, heat, rain, wind), vandalism, or other causes until such time as it is accepted by the City. If traffic control devices are used to protect the work, they will **not** be paid for separately, but shall be included in the work.

**Subsection 608.05 is revised to include the following:**

The Concrete Driveway (6”), Sidewalk (6”), Access Ramps w/Landings (8”), Drive Approach (6”) and Concrete Crossspan/Apron (9 1/2”) items will be measured by the square foot of finished flatwork. **The price for the Access Ramps (8”) shall include the truncated dome panel landing area.** Ramp area shall be measured from the back of the curb to the back of the walk from point of curb return to point of curb return.

**Subsection 608.06 is revised to include the following:**

The accepted quantities will be paid for at the contract unit price.

**Payment will be made under:**

Pay Item and Pay Unit

The pay unit is denoted by ( ).

- 608-01 Concrete Sidewalk (6") – (SF)
- 608-02 Concrete Pedestrian Access Ramps with Truncated Domes (8") – (SF)
- 608-03 Pedestrian Refuge Island Ramp with Truncated Domes (8") – (SF)
- 608-04 Sidewalk Chase – per Detail – (EA)
- 608-05 Concrete Drive Approach w/ Aprons (8") – (SF)
- 608-06 Concrete Driveway Approach (6") – (SF)
- 608-07 Exposed Aggregate Median Cover – San Diego Buff (4") – (SF)

The above prices and payments shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work involved in constructing concrete sidewalks, miscellaneous flatwork, access ramps, drive approaches, and driveways, complete-in-place, including haul, concrete materials, finishing the surface, saw cutting joints, curing, placing dowels, and sealing joints as shown on the plans, protection from staining existing concrete from washing the exposed aggregate, cutting the plastic used to separate the different colors as specified in these specifications, and as directed by the Engineer.

**END OF SECTION**

**REVISION OF SECTION 609**  
**CURB AND GUTTER**

Section 609 of the Standard Specifications is hereby revised as follows:

**Subsection 609.01 is revised to include the following:**

This work shall consist of the construction of cast in place vertical 6" curb and gutter, 6" outfall curb and gutter (1-ft pan), and concrete lined irrigation ditch accordance with the details and these specifications. The unit price bid per linear foot of curb and gutter, no sidewalk, includes construction of new curb and gutter sections, complete and in place, measured along the flow line. Removal of curb and gutter is not included in this section, but will be measured and paid separately as described in Section 202. **It is the Contractor's responsibility to adequately protect their Work from damage by weather, vandalism, or other causes until such time as it is accepted by the City.** If traffic control devices are used to protect the work, they shall not be paid for separately, but shall be included in the work.

**Subsection 609.02 is revised to include the following:**

Proportioning shall conform to the requirements for Class "B" concrete as described in Section 601 with the exception the minimum 28 day compressive strength shall be **4000 psi.**

**Subsection 609.07 is revised to include the following:**

The accepted quantity of curb and gutter will be paid for at the contract unit price per linear foot.

**Payment will be made under:**

**Pay Item and Pay Unit**

The pay unit is denoted by ( ).

- 609-01 Vertical Curb & Gutter (30") - (LF)
- 609-02 Outfall Curb & Gutter (18") - (LF)
- 609-03 Combination Vertical Curb with attached 6' Wide Bike Lane/Gutter – (LF)

The above prices and payments shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work involved in constructing vertical curb and gutter, variable height curb and gutter, concrete median curb, complete-in-place, including haul, concrete materials, finishing the surface, saw cutting joints, curing, placing dowels, and sealing joints as shown on the plans, as specified in these specifications, and as directed by the Engineer.

**END OF SECTION**

**REVISION OF SECTION 619**  
**WATER LINES**

Section 619 of the Standard Specifications is hereby revised as follows:

**Subsection 619.01 is revised to include the following:**

**FCLWD WATER LINES ITEMS**

This work shall include installing ductile iron pipe (DIP), gate valves, tees, bends, tapping saddles, plugs, reaction blocks and joining to existing lines and other items as shown on the plans and as designated by the Engineer. This work shall meet the requirements of the current **Fort Collins-Loveland Water District Standards**. It shall be the Contractors responsibility to purchase and familiarize themselves with these specifications; they can be obtained at 5150 Snead Drive Fort Collins, Colorado.

All work associated with installing the water lines that is **NOT** itemized in the bid tab shall be considered incidental to the work and will not be paid for separately. This includes, but is not limited to excavating and backfilling, valve boxes, plugs, thrust blocks, bedding materials, poly-wrap, chlorinating, pressure testing and all materials incidental to completing the installation and connections to existing water lines.

**Subsection 619.06 is revised to include the following:** The contractor will be required to install the irrigation tap and meter pit to Fort Collins Loveland Water District the installation of the backflow preventer and access steel cage to City of Fort Collins Irrigation Specifications. Parks and recreation will have to final inspection will have to be coordinated by the contractor.

**Subsection 619.05 is revised as follows:**

**Payment will be made under:**

Pay Item and Pay Unit

The pay unit is denoted by ( ).

- 619-01    ¾” Irrigation Service & Meter Pit/Copper-Corp-Curb Stop per COFC Spec including Backflow Preventer/Pressure Reducer Assembly/Metal Screen Cover – (EA)
- 619-02    Fire Hydrant Assembly (6”, tap valve, pipe, hydrant) per COFC Spec – (EA)

The above prices and payment shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing ductile iron water pipe and valves, connecting to existing water lines according to the Fort Collins-Loveland Water District Standards, complete-in-place, as shown on the plans, as specified in these specifications, and as directed by the Engineer.

**END OF SECTION**



**REVISION OF SECTION 630**  
**TRAFFIC CONTROL DEVICES**

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

**Subsection 630.01 shall be revised as follows:**

This work shall consist of furnishing, installing, moving, maintaining and removing temporary traffic signs, advance warning arrows panels, barricades, channeling devices, and delineators as required by the latest revision of the "Manual on Uniform Traffic Control Devices for Streets and Highways" (MUTCD), the City of Fort Collins' "Work Area Traffic Control Handbook", June 1989 with Revisions dated May 29, 1991, and the City of Fort Collins' "Design Criteria and Standards for Streets, Subsection 1.4, "Barricades, Warning Signs, Signal Lights", July, 1986. This work includes use of the above devices to channelize or direct traffic away from the work zone, but does not include work zone protection. It is the Contractor's responsibility to protect his work zone and to protect Pedestrians and Bicyclists from potential hazards arising from his work until such time as the work has been completed and can be opened to traffic.

Traffic Control Devices shall be measured and paid for under this section based upon a **lump sum pay item**.

In the event of a conflict between the MUTCD criteria and the City's criteria, the City's criteria shall govern.

Traffic control devices shall be placed and/or stored in the City right-of-way in such a manner that minimizes the hazards to pedestrians, bicyclists and vehicles. Proper placement and storage of traffic control devices will be subject to the Engineer's discretion.

Traffic control devices shall be removed from the site immediately upon completion of the Work, but not before the concrete has cured sufficiently to allow vehicular traffic to use it.

**Message Boards** – Will be placed to the plan designed by the City of Fort Collins. This item will be paid for per day (Day).

**Traffic Control** – The scope for the traffic control has been described under Section 01580 Traffic Regulation. This item will be paid for as a lump sum (LS).

**Subsection 630.02 shall include the following:**

All traffic control devices placed for this project must meet or exceed the minimum standards set forth in the MUTCD. All traffic control devices shall be clean and in good operating condition when delivered and shall be maintained in that manner on a daily basis. All traffic control devices shall be clearly marked and free of crossed out information or any other form of defacement that detracts from the purpose for which they are intended (i.e. crossed out information, information written in long-hand style, etc.)

Additionally, any sign blank with sign faces on both sides must have the back sign face covered when in use to avoid confusion to motorists traveling in the opposite direction and other potentially affected parties, such as residents affected by any information the sign may present.

**Subsection 630.05, the second paragraph shall include the following:**

The reflective material shall be AP1000 Polyester (Reflexite Corporation), 3M Type III or Transparent (Reflexite Corporation). Vinyl material is not acceptable unless its brightness is equivalent to or greater than the types named as approved by the Engineer.

**Subsection 630.08 shall be revised as follows:**

**Traffic control on this project is the responsibility of the Contractor.**

For this project, a Traffic Control Plan shall be prepared. **The Traffic Control Plan shall be submitted for approval to the Traffic Division by 12:00 noon, two working days prior to the commencement of work. (Note: Traffic Control Plans for work done on Monday and Tuesday shall be submitted the previous Friday by 9:00 a.m.).** Facsimiles of plans shall not be allowed. No phase of the construction shall start until the Traffic Control Plan has been approved. Failure to have an approved Traffic Control Plan shall constitute cause for the City to stop work, as well as the Contractor's forfeiture of payment for all work and materials at that location, with no adjustment in the contract time.

The Traffic Control Plan shall include, as a minimum, the following:

- (1) A detailed diagram which shows the location of all sign placements, including advance construction signs (if not previously approved), **finer doubled for speeding signs** and speed limit signs; method, length and time duration for lane closures, and location of flag persons.
- (2) A tabulation of all traffic control devices shown on the detailed diagram including, but not limited to: construction signs; vertical panel; vertical panel with light; Type I, Type II, and Type III barricades; cones; drum channeling devices; advance warning flashing or sequencing arrow panel. Certain traffic control devices may be used for more than one operation or phase. However, all devices required for any particular phase must be detailed and tabulated for each phase.
- (3) Number of flaggers to be used.
- (4) Parking Restrictions to be in affect.

Approval of the proposed method of handling traffic is intended to indicate minimum devices needed to control traffic. Such approval does not relieve the Contractor of liability specifically assigned to him under this contract.

Parking Restrictions shall be clearly shown on the Traffic Control Plan, including the location and quantity of "NO PARKING" signs, the date to be placed, and the date to be removed. Failure to have an approved Traffic Control Plan, including the Parking Restriction information listed above shall constitute cause for the City to stop work, as well as the Contractor's forfeiture of payment for all work and materials at that location, with no adjustment in the contract time.

**Subsection 630.09 shall be revised as follows:**

Traffic Control Management shall be performed by a Traffic Control Supervisor (TCS). The TCS(s) shall possess a valid Driver's License, a current American Traffic Safety Services Association (ATSSA) certification as a Worksite Traffic Control Supervisor or Colorado Contractor's Association (CCA) certification as a Traffic Control Supervisor. (Proof of certification shall be presented to the City Traffic Control Manager, and when requested by a City representative, for each TCS utilized on this project.)

**This Project will require a full-time Traffic Control Supervisor (TCS).**

**The TCS shall have a minimum of one-year experience as a certified TCS. The TCS shall be on site at all times during the construction. Qualifications shall be submitted to the Engineer for approval a minimum of one week prior to commencement of the work.**

**The TCS shall be equipped with a cellular phone. The cost of this phone shall be incidental to the work. The TCS cellular phone number will be made available to the Engineer, Inspector, and the General Contractor**

**It is the intent of the specifications that the TCS be the same person throughout the project. If the TCS is to be replaced during the project, the Engineer shall be given a minimum of one (1) weeks notice and qualifications shall be submitted for approval of the TCS replacement.**

Payment for the TCS shall be **included** in the lump sum pay item.

The TCS's duties shall include, but not be limited to:

- (1) Preparing, revising and submitting Traffic Control Plans as required.
- (2) Direct supervision of project flaggers.
- (3) Coordinating all traffic control related operations, including those of the Subcontractors, City Streets Department, and suppliers.
- (4) Coordinating project activities with appropriate police and fire control agencies, Transfort, school districts and other affected agencies and parties prior to construction.
- (5) Maintaining a project traffic control diary which shall become part of the City's project records.
- (6) Inspecting traffic control devices on every calendar day for the duration of the project.
- (7) Insuring that traffic control devices are functioning as required.
- (8) Overseeing all requirements covered by the plans and specifications, which contribute to the convenience, safety and orderly movement of traffic.
- (9) Flagging.
- (10) Setting up and maintaining traffic control devices.
- (11) Attending weekly progress meetings as requested by the Engineer and/or Contractor.
- (12) Shall perform a minimum of Five (5) complete site checks per day, during day light hours, including weekends and/or as requested by the City of Fort Collins representatives.

**Traffic control management shall be maintained on a 24-hour per day basis. The Contractor shall make arrangements so that the Traffic Control Supervisor or their approved representative will be available on every working day, "on call" at all times and available upon the Engineer's request at other than normal working hours.**

All traffic control devices shall be placed under the supervision of a Traffic Control Supervisor.

The Traffic Control Supervisor shall have up to date copies of the City of Fort Collins' "Work Area Traffic Control Handbook", and Part VI of the MUTCD, pertaining to traffic controls for street and highway construction, available at all times.

**Subsection 630.13 shall be revised as follows:**

The Contractor shall supply and pay **all** costs associated with the traffic control for this project. Traffic Control devices as per the provided traffic control plans are minimum requirements, additional devices, signage may be

required after initial set-up is completed This applies to all phases of this project.

The accepted quantities will be paid for at the contract unit price for each of the pay items listed below:

**Payment will be made under:**

Pay Item and Pay Unit

The pay unit is denoted by ( ).

- 630-01 Specialty Signs 3” Letters on 48” x 48” – (EA)
- 630-02 Message Boards (4 Boards for a total of 6 Days) – (Day)
- 630-03 Type III Barricades – (Section)
- 630-04 Traffic Control – (LS)

Flaggers and all incidental equipment will **not** be measured and paid for separately, but shall be included in the Work. The flaggers shall be provided with electronic communication devices when required. These devices will **not** be measured and paid for separately, but shall be included in the Work.

The cost of batteries, electricity and/or fuel for all lighting or warning devices shall not be paid for separately but shall be considered subsidiary to the item and shall be included in the Work. Sandbags will not be measured and paid for separately, but shall be included in the Work. The Contractor may provide larger construction traffic signs than those typically used in accordance with the MUTCD, if approved; however, no additional payment will be made for the larger signs. The City shall not be responsible for any losses or damage due to theft or vandalism.

**SPECIAL CONDITIONS FOR WORK ON ARTERIALS AND COLLECTORS**

NOTE: Cross street traffic shall be maintained at all times unless authorized by the Engineer in writing.

NOTE: Full closures on arterials and collectors, including those listed above, will be allowed under extreme circumstances and only upon approval by the Engineer and City Traffic Division. Plans shall be approved a minimum of one week prior to the commencement of work and/or the time required to adequately notify the public through the media.

NOTE: The General Specifications provides additional details on allowed closures along Harmony Road and Ziegler Road.

**SPECIAL CONDITIONS FOR WORK ON RESIDENTIAL STREETS**

NOTE: Full closures on all residential streets shall be allowed as shown on the traffic control plans **only if approved by the City Traffic Division.**

**END OF SECTION**