PROJECT SPECIAL PROVISIONS

HIGHWAY 105A ROAD WIDENING PROJECT

APRIL 2023

PROJECT NUMBER: STA 105A-014
PROJECT CODE: 19734

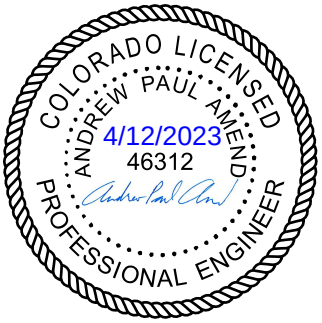
FOR ROADWAY/REMOVAL & GENERAL SHEETS ONLY

FOR ELECTRICAL ONLY

FOR UTILITY SPECIFICATION ONLY

FOR WALL WORK ONLY

FOR DRAINAGE ONLY



FOR TRAFFIC ONLY

EL PASO COUNTY
DEPARTMENT OF PUBLIC WORKS
HWY105 Project A

The Standard Specifications for Construction for this Project shall consist of the applicable sections and subsections of the 2022 "Colorado Department of Transportation Standard Specifications for Road and Bridge Construction."

The following Project Special Provisions take precedence over Specifications or Plans and supplement or amend the referenced “Standard Specifications for Road and Bridge Construction” adopted in 2022 by the Colorado Department of Transportation, which is to be used to control construction of this Project.

The Pikes Peak Region Asphalt Specifications, Version 6 shall control construction of HMA.
https://assets-publicworks.elpasoco.com/wp-content/uploads/Documents/Pikes-Peak-Region-Asphalt-Paving-Specs-Version-6-March-2022.pdf

PROJECT SPECIAL PROVISIONS

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CDOT STANDARD SPECIAL PROVISIONS

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NOTICE TO BIDDERS

This Project has conditional right-of-way (ROW) clearance. As of the date of the advertisement for bids, there are "no work zones" in effect. These will remain in effect until otherwise communicated to the Contractor in writing. See ROW Plan No Work Exhibit for locations. Possession of the property and removal of the no work zones is anticipated prior to award and/or mobilization.

El Paso County Project Engineer - Alissa Werre
Phone: (719) 238-8080

The above referenced individuals or her assign(s) are the only representatives of the Department with authority to provide any information, clarification, or interpretation regarding the plans, specifications, and any other contract documents or requirements.

COMMENCEMENT AND COMPLETION OF WORK
(WORKING DAY)

The services called for shall commence on the date of contract execution by all Parties and shall be completed within **390 Working Days**. The time count shall begin upon receipt of the Notice to Proceed. A Limited Notice to Proceed may be provided to the Contractor prior to the Notice to Proceed for the purpose of ordering certain materials for the project that may require substantial lead time prior to delivery to the site, permitting and other non-construction tasks. Construction Work shall commence upon Notice to Proceed.

If materials stockpiling begins before the beginning date, contract time will not be charged for the stockpiling effort. Stockpiling of materials before the beginning date is subject to the Engineer's approval. If such approval is given, stockpiled material will be paid for in accordance with Sections 109 and 626.

Hot Mix Asphalt paving shall **not** be performed between **October 15** and **April 15** unless otherwise approved by the Engineer. As temperatures allow, paving outside this window can be accomplished if requested by the Contractor in writing and approved by the Engineer in writing.

PUBLIC INVOLVEMENT BY CONTRACTOR

The Contractor shall provide information to the following public information services on an ongoing basis and for the duration of the Project:

1. The Contractor shall plan to attend a public meeting prior to mobilization. The meeting will be organized by the County at a location near the project site.

2. The Contractor, at the pre-construction meeting, shall designate a contact person for the Project. This individual shall be primarily responsible for maintaining communications with and providing detailed information regarding construction phasing to the Engineer. Communication with residents, businesses; and/or the affected agencies may be requested by the Engineer.

   During the pre-construction meeting the contractor and county shall determine the protocol and personnel for contact with the public or emergency services.

   It is the Contractor's responsibility to be in contact daily, weekly or as needed with the organizations that provide emergency services that would be impacted during construction. At a minimum, the following agencies shall be coordinated within an ongoing basis (providing updated information related to traffic delays, road closures, and detours throughout the Project duration).

   El Paso County Department of Public Works
   Alissa Werre, Project Engineer
   Cell phone Number: 719.238.8080

   El Paso County Sheriff Dispatch
   El Paso County Sheriff, Attn: Dispatch
   Telephone Number: 719.390.5555

   Fire District
   Tri-Lakes Monument District, Attn: Dispatch
   Telephone Number: 719.484.0911

   Police Protection
   El Paso County Sheriff Department, Attn: Dispatch
   Telephone Number: 719.520.7100

3. A letter of introduction shall be delivered to all landowners and businesses impacted by the Project prior to mobilization and before any revisions to public access due to phasing changes for the project duration. These letters shall include the following, at a minimum:

   1. Contractor's name, address, phone number.
   2. Field Superintendent's name and mobile phone number.
   3. Public information office phone number.
   4. Schedule of work, including phasing, detour plans, road and sidewalk closures.

PUBLIC INVOLVEMENT BY CONTRACTOR
-Continued-

4. At the pre-construction meeting it will be determined if the Contractor or the County shall deliver periodic updates, developed by the Contractor, to each landowner and business at each phase of the Project throughout the construction period. These updates should contain information concerning temporary road closures, driveway and/or cross street work, paving schedule and other pertinent information that the landowner and businesses may need to know.

5. At the pre-construction meeting it will be determined if the Contractor or the County shall meet individually with each of the landowners and businesses impacted by construction due to the roadway improvements affecting access to their facilities prior to grading, culvert installations and paving operations. The Contractor shall not cut off reasonable access to any landowner or business for more then fifteen minutes without advance coordination and agreement in writing from the business or. The Contractor shall submit such access plans to the Project Engineer for approval, and the Contractor shall obtain written agreements with the individual businesses and property owners regarding access not shown in the plans and provide such agreements to the Engineer for approval prior to proceeding with the work.

All costs incidental to the foregoing requirements will not be paid for separately but shall be included in the work.

REVISION OF SECTION 101
DEFINITIONS AND TERMS

Certain terms utilized in the Specifications referred to above shall be interpreted to have different meanings (where applicable) within the scope of this Contract. When used in reference to compliance with laws and regulations, or the source of specifications or drawings, the terms shall retain their original meaning. A summary of redefinitions follows:

The following sections are amended for purposes of identification of the Owner and responsible parties for control of the construction of this project.

CONTRACT MODIFICATION ORDER: In addition to the definition given in the “CDOT Standard Specifications”, the term “Contract Modification Order” shall also include and be synonymous with the term “Change Order”.

PROJECT ENGINEER OR ENGINEER: This term shall mean the El Paso County Engineer, El Paso County Department of Public Works or designated representative.

OWNER: The term “OWNER” shall refer to the El Paso County Department of Public Works, acting through and on behalf of the El Paso County Board of County Commissioners.

Other additional terms that may be utilized in the Standard Specifications shall be interpreted to have different
meanings within the scope of this Contract. A summary of redefinitions follows:

a. “CDOT Resident Engineer”: shall mean the County Engineer, El Paso County, Colorado or designated representative.
b. “County” or “EPC” shall mean El Paso County, Colorado.
c. "Department" shall mean El Paso County, Colorado, Department of Public Works, Engineering Division.
d. “Department of Transportation” shall mean El Paso County, Department of Public Works, Engineering Division.
e. "CDOT Resident Engineer" shall mean the County Engineer, El Paso County, Colorado or designated representative.
f. "Engineer" shall mean the County Engineer, El Paso County, Colorado, or designated representative.
g. “Regional Transportation Director” shall mean the El Paso County Department of Public Works, Engineering Division.
h. “State, State of Colorado, or State Department of Transportation or CDOT” shall mean El Paso County, Colorado (where applicable).

REVISION OF SECTION 102
BIDDING REQUIREMENTS AND CONDITIONS

Section 102 of the Standard Specifications is hereby revised for this project as follows:

Subsection 102.01 - Pre-Qualification of Bidders, is deleted in its entirety.

Subsection 102.05 shall include the following:

The following construction documents are available to all bidders:

HWY 105 Project A

- Standard Special Provisions
- Project Special Provisions
- Construction Plans (Includes Subsurface Utility Investigation Plans)
- Geotechnical and Pavement Design Report, Highway 105, Full Corridor Design
- Highway 105 Project A, Pavement Addendum Revision 1, El Paso County, Colorado
- Final Drainage Report, Highway 105, Project A

3D modeling data is available in DTM and DGN formats. Available 3D modeling data consists of survey files and design model files.

The County does not warrant the 3D modeling data and this information is not considered to be a part of the Contract. If bidders use the 3D modeling data in preparing a proposal or planning and prosecuting the Work, it is used at their own risk, and bidders are responsible for all conclusions, deductions, and inferences drawn from the 3D modeling data.

REVISION OF SECTION 103
AWARD AND EXECUTION OF CONTRACT

Section 103 of the Standard Specifications is hereby revised for this project as follows:

Add **Subsection 103.05** Contract Duration

The contract will remain open until all Work has been completed and accepted by the County, all permit requirements have been met and all permits have been closed, including but not limited to, the El Paso County Work in the ROW Permit, Erosion & Stormwater Quality Control Permit (ESQCP) and Colorado Discharge Permit System Construction Stormwater Discharge Permit (CDPS-SDP). If agreed upon by the Contractor and the Engineer, the project may be deemed substantially complete, and retainage or partial retainage may be released prior to closing permits, but the Contractor will remain responsible for meeting all permit requirements, including but not limited to, inspections, maintenance, and additional Work as approved by the Engineer, until the permits have been closed. All permits shall remain open until closure is agreed upon by the Contractor and the Engineer.

REVISION OF SECTIONS 104 AND 105
PAVEMENT SURFACE COURSE MAINTENANCE

Sections 104 and 105 of the Standard Specifications are hereby revised for this project as follows:

In **subsection 104.04**, third paragraph, delete the first two sentences and replace with the following:

Portions of the roadway that are not included in the contract Work and are outside of 50 feet of the project limits and in El Paso County ROW will be maintained by El Paso County. The Contractor is responsible for snow removal within the project limits and within the current phase work zone that is restricted to the public by traffic control. The Contractor and Engineer will coordinate with El Paso County Public Works regarding snow removal outside of the current phase work zone but within the project limits. El Paso County will provide snow removal outside of the project limits. If the county is unable to maintain main snow removal on mainline traffic on HWY105 then the contractor will be reimbursed for snow removal effort.

In **subsection 104.04(a)**, the second paragraph shall be deleted and replaced with the following:

Maintenance requirements will not be paid for separately but shall be included in the Work.

Subsection 105.19 shall include the following:

The Contractor shall be responsible for timely response to complete all surface course maintenance for portions of the roadway that are included in the contract Work within the project limits, including 50 feet of the approach to project and any onsite and offsite detour routes, as required to complete the Work. The Contractor will provide and work with El Paso County to coordinate needed snow removal for portions of the roadway that are included in the contract Work within the project limits as required to complete the Work. These services shall be available upon notice, and provided for at all times, including holidays and seasonal no work periods. The Contractor shall provide these services beginning when time count starts for the project through final acceptance. The Contractor shall submit a Pavement Surface Course Maintenance Plan (PSCMP) to the Engineer for acceptance prior to opening any offsite detours to traffic. The PSCMP shall include, but will not be limited to, the following:

(1) Source of materials to be used for pavement surface course repairs (PSCR).
(2) Type of materials to be used for PSCR.
(3) Equipment available to use for PSCR.
(4) Labor, including names and phone numbers, to perform PSCR.
(5) Response Time. The Contractor and the traffic control supervisor (TCS) shall respond to the project site within two hours of notification.
(6) Traffic Control. The Contractor shall perform traffic control as required until completion of the PSCR.

REVISION OF SECTIONS 104 AND 105
PAVEMENT SURFACE COURSE MAINTENANCE
-continued-

(7) Pavement Marking. Full compliance pavement markings shall be in place on all PSCRs prior to opening to traffic.

The Contractor shall complete pavement surface course maintenance in accordance with the PSCMP. To implement the PSCMP, the Contractor shall develop and submit a method for handling repairs (MHR) for each different PSCR that shows the Contractor's proposed construction methods consistent with the PSCMP. Each proposed MHR will be approved in writing by the Engineer before the PSCR will be allowed to begin.

PSCRs shall be completed in a timely manner in accordance with the approved PSCMP. Unless otherwise approved, PSCRs shall be completed within 24 hours of notification.

Pavement surface course maintenance and snow removal as described above will not be paid for separately but will be included in the Work.

REVISION OF SECTION 104
CONSTRUCTION STAGING AND PHASING

Section 104 of the Standard Specifications is hereby revised for this project as follows:

Subsection 104.04 shall include the following:
(e) Traffic Signal Maintenance: The Contractor shall be responsible for maintaining the existing and new traffic signal for the duration of the Project. Maintenance shall include, but not be limited to: adjusting signal heads and detection equipment for construction phasing, signal bulb replacement, signal head repair and/or replacement, detection camera repair and/or replacement, electric system repair and/or replacement, controller adjustments and/or repair, structural repair and/or replacement, and all labor, equipment and materials for accomplishing the maintenance activities. Contractor shall coordinate with El Paso County regarding the materials and labor required for repairs.

Maintenance of the Traffic Signal as described above will not be paid for separately but shall be included in the Work. Replacement materials that are not required for adjustments associated with construction phasing will be paid for with the Force Account as agreed upon by the Contractor and the Engineer.

Damage to the traffic signal due to the Contractor’s operations and/or negligence shall be repaired at the Contractor’s expense.

REVISION OF SECTION 105
CONTROL OF WORK

Section 105 of the Standard Specifications is hereby revised for this project as follows:

Subsection 105.02 (b) shall include the following:

The Contractor shall provide for review by the Engineer a complete traffic signal material submittal package that contains all of the proposed traffic signal equipment, including material specifications and descriptions, that will be necessary to complete the traffic signal work. The Contractor shall allow for a minimum two-week submittal review period and shall not order any traffic signal equipment until after a review of all submittals has been completed by the Engineer and verified by the Contractor. Submittals for the traffic signal equipment shall be submitted for review and approval immediately upon the "Notice to Proceed".

Subsection 105.19 shall include the following:

The Contractor shall provide emergency response and periodic on-site traffic control signal operational expertise, materials, equipment, and staff, as necessary and as directed by the Engineer, to maintain continuous and satisfactory traffic signal operation for existing and new traffic signals located within the project limits for the duration of the Project. The Contractor shall consider this work incidental to the overall work being performed and shall be included as part of the Project.

Functional responsibility for new traffic equipment installed will become the responsibility of the Contractor until final acceptance of the Project. The Contractor shall consider this work incidental to the overall work being performed and shall be included as part of the Project.

The Contractor shall provide traffic control signal operational expertise, materials, equipment, and staff, as necessary, to implement signal operational changes for existing and new traffic signals located within the project limits in accordance with construction zone traffic control phasing, project plans, and as directed by the Engineer, for the duration of the Project. The Contractor shall consider this work incidental to the overall work being performed and shall be included as part of the Project.

REVISION OF SECTION 105
AS-CONSTRUCTED DRAWINGS

Subsection 105.02(b) shall include the following:

The Contractor shall coordinate with the Project Inspector to supply the Engineer upon completion, an as-constructed set of drawings showing the locations of items that were changed during construction and any other pertinent information that altered from the construction bid set plans. The changes will be “red-lined” and agreed upon by the Contractor and the Engineer. Costs associated with the as-constructed plans shall be included in the Work.

REVISION OF SECTION 105
COOPERATION BETWEEN CONTRACTORS

Section 105 of the Standard Specifications is hereby revised for this project as follows:

Subsection 105.10 shall include the following:

Other construction agencies will be working in the vicinity of the Project or in the project limits. The Contractor shall conduct the work so as not to interfere with or hinder the progress or completion of the work being performed by other agencies or contractors. All Traffic control conflicts that arise between the needs of the various construction contractors and other agencies shall be brought to the attention of the Engineer. The Engineer, in coordination with all contractors, will decide the method of resolution.

REVISION OF SECTION 105
COOPERATION WITH UTILITIES

Section 105 of the Standard Specifications is hereby revised for this project as follows:

Subsection 105.11 shall be revised to add the following to the last sentence of the 3rd paragraph of this section:

Due to the complex and significant amount of utility impacts related to this project, utility specific coordination meetings between the Contractor and the utility owners, utility contractors, and Engineer will be compensated in accordance with Section 642 Utility Coordination Meeting.

REVISION OF SECTIONS 105 AND 203
CONFORMITY TO THE CONTRACT OF EMBANKMENT

Sections 105, 106 and 203 of the Standard Specifications are hereby revised for this project as follows:

Subsection 105.03 shall include the following:

(c) Conformity to the contract of embankment construction shall be determined in accordance with the following:
1. The Contractor shall be responsible for Process Control (PC) for all embankment material on this project. PC shall include but not be limited to the following:
   (1) Maximum lift thickness of six inches in accordance with subsection 203.06 or as directed.
   (2) Compaction equipment capable of obtaining the specified compaction.
   (3) Water trucks with an adequate distribution system that will apply water evenly.
   (4) List of all inspection and materials testing forms and procedures utilized by the Contractor.

2. *Documentation.* The Contractor shall maintain current records of process control operation activities, and tests performed. These records shall include as a minimum, the Contractor or subcontractor, the number of personnel working, weather conditions, type of equipment being used, delays and their cause, and deficiencies along with corrective action taken. Such records shall cover both conforming and defective or deficient features. Additional documentation to the Engineer shall include all daily test results, daily inspection reports, daily non-compliance reports, and monthly certification reports. Copies of these records and a statement that Work incorporated in the project complies with the Contract shall be submitted to the Engineer prior to payment for the Work or upon request. EPC Quality Assurance documentation shall not be used as supporting documentation for the Contractors certification.

   EPC or EPC's certified representative will be responsible for Quality Assurance (QA) and Independent Assurance Testing (IAT).

Subsection 203.02 (a) shall include the following:

Unclassified Excavation shall include removal of unstable material within the roadway as determined and directed by the Engineer.

Rock Excavation may be encountered on the project per the findings of the Geotechnical Report prepared by Shannon & Wilson, Inc. 1321 Bannock St., Denver, CO titled "Geotechnical & Pavement Design Report, Highway 105, Full Corridor Design, El Paso County, Colorado, dated July 6, 2017. and will be paid for separately at the direction of the Engineer.

REVISION OF SECTIONS 105 AND 203
CONFORMITY TO THE CONTRACT OF EMBANKMENT
-continued-

Subsection 203.11 (b) shall include the following:

The Contractor's Process Control efforts will not be measured and paid for separately but shall be included in the Work.

April 26, 2023

Colorado Project No. STA 105A-014
Construction Subaccount No. 19734

REVISION OF SECTION 107
RIGHT-OF-WAY RESTRICTIONS

Section 107 of the Standard Specifications is hereby revised so that Section 107.19 includes the following:

The Contractor is hereby made aware that at the time of bidding on this project, El Paso County does not have possession of all necessary Right of Way required to complete portions of this project and has identified the following locations as **"No Work Areas"** until the Restriction Dates shown below. Please reference the authorized Right of Way Plans.

PROJECT EXCEPTIONS

Ownership	Owner Name	FMV Date	Offer Date	Anticipated Possession Date	Restriction Date
RW-1, RW-1A, TE-1 REV	Village Center Metropolitan District	12/9/2022	12/14/2022	5/31/2023	6/1/2023
RW-5, PE-5, TE-5 REV, TE-5A	Monument Academy Building Corp	11/29/2022	12/2/2022	5/31/2023	6/1/2023
RW-6 REV, TE-6	Corporation of the Presiding Bishop of the Church of Jesus Christ of Latter Day Saints	12/2/2022	12/12/2022	6/30/2023	7/1/2023
RW10 REV, TE-10 REV	Village Center Metropolitan District	12/9/2022	12/14/2022	5/19/2023	7/1/2023

When bidding, the Contractor is advised that the Contractor shall not enter the Parcels identified above prior to receiving a final clearance.

The County anticipates no delay toward completion of the project due to the restrictions imposed herein. No additional time or mobilization costs shall be granted to the Contractor for delays associated with not having possession of the above mentioned locations prior to the dates specified above. All ROW is anticipated to be completed by July 1st, 2023

REVISION OF SECTION 107
LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

Section 107 of the Standard Specifications is hereby revised for this project as follows:

Subsection 107.02 shall include the following:

Unless otherwise specified, the Contractor shall procure all permits and licenses; pay all charges, fees, and taxes; and give all notices necessary and incidental to the due and lawful prosecution of the Work. The following permits are required for the Project and shall be obtained by the Contractor:

- Construction Dewatering Permit (CDPHE) (as applicable)
- Construction Activity Permit (El Paso County Health Department)
- Erosion & Stormwater Quality Control Permit (ESQCP) (El Paso County)
  Prior to issuing the ESQCP, the Contractor will need to submit the following:
  - Drainage Report (provided by Engineer of Record)
  - ESQCP Application – fees will be waived
  - Signed PBMP Applicability Form (provided by Engineer of Record)
  - Signed SWMP and GEC Plans (provided by Engineer of Record)
  - Revisions to the SWMP and/or GEC plans, as applicable (created by the Contractor)
  - Signed GEC Checklist (provided by Engineer of Record)
  - Signed SWMP Checklist (provided by Engineer of Record)
  - Spill Prevention and Response Plan (part of the SWMP)
- COR400000 Stormwater Discharge Permit (CDPS-SDP) (CDPHE)
- Work in the ROW Permit (El Paso County) – fees will be waived

The County has obtained the following permits and project guidance:

- Floodplain Development Permit (Regional Building Department)
- Nationwide Permit 14 (USACE)
- Biological Opinion and Incidental take Statement (USFWS) (guidance documents)

The Contractor shall comply with all permit provisions and requirements and guidance documents. The costs of these permits will not be paid for separately but shall be included in the Work.

Subsection 107.06 (d) Competent Persons shall include the following:

(20) Traffic Control
(21) Erosion Control

Subsection 107.12 shall include the following:

The Contractor shall protect all existing vegetation (including trees, shrubs, ground covers, grasses, wetlands & riparian) in the project area, except for that vegetation, which must be removed to accommodate construction of the project and perform environmental mitigation, as shown on the plans.

REVISION OF SECTION 107
LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC
-continued-

The Contractor shall perform all the Work in such a manner that the least environmental damage will result. All questionable areas or items shall be brought to the attention of the Engineer for approval prior to removal or any damaging activity.

The County has acquired the property located on the northwest corner of Hwy 105 and Lake Woodmoor Drive. This property is referred to as "the Mitigation Property" and was acquired for Preble's Meadow Jumping Mouse (PMJM) mitigation. *Under no circumstances* shall the Contractor or its subcontractors enter the property beyond the limits of disturbance designated in the construction plans. The only exceptions shall be Plantings and Weed Mitigation as described in Revision of Sections 214 and 240 below; however, the Contractor shall provide a method statement to the Engineer for work within the Mitigation Property at least two (2) weeks in advance of entering and shall receive written approval from the Engineer prior to entering. The method statement shall include, but is not limited to schedule, type of equipment and vehicles, entrance location and path of movement, an overall plan for avoiding or minimizing impacts to the existing vegetation and a plan for mitigating impacts if they occur. Entering the Mitigation Property will not be allowed to without the Engineer or project inspector onsite.

Subsection 107.17 shall be revised to include the following:

The Contractor shall assess and understand the risk of working near Dirty Woman Creek. Such risks include, but are not limited to, flooding, high groundwater, and fluctuation in flows. The Contractor shall be responsible for constructing and maintaining all temporary facilities near the waterway. In no case will the cost of constructing and maintenance of these facilities be paid for separately, and such Work shall be incidental to the cost of other items.

Delete **subsection 107.25 (b) 13** and replace with the following:

Pollutant byproducts of construction, such as concrete, asphalt, solids, sludges, pollutants removed in the course of treatment of wastewater, excavation or excess fill material, and material from sediment traps shall be handled, stockpiled, and disposed of in a manner that prevents entry into State waters, including wetlands. Removal of concrete waste and washout water from mixer trucks, concrete finishing tools, concrete saw, and all concrete material removed during construction operations or cleaning shall be performed in a manner that prevents waste material from entering State waters and shall not leave the site as surface runoff. A minimum of ten days prior to the start of the construction activity, the Contractor shall submit in writing a Method Statement for Containing Pollutant Byproducts to the Engineer for approval.

REVISION OF SECTION 107
LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC
-continued-

Delete **subsection 107.25 (c)** and replace with the following:

(c) *Stormwater Construction Permits.* A Colorado Discharge Permit System Construction Stormwater Discharge Permit (CDPS-SDP) will be obtained from CDPHE by the General Contractor. The Contractor shall coordinate with El Paso County (EPC) to become the Operator permittee of the permit upon award of the Contract.

An Erosion & Stormwater Quality Control Permit (ESQCP) will be obtained from El Paso County by the General Contractor. A Stormwater Management Plan (SWMP) and, SWMP Checklist (provided by the Contractor) and Grading and Erosion Control (GEC) Plan, GEC Checklist, PBMP Applicability Form, and Drainage Report (provided by the Engineer of Record and included in the IFB package) are required to be submitted to EPC for review at least ten (10) calendar days prior to requested issuing of the ESQCP. EPC will not certify the project as Owner for the CDPS-SDP until the ESQCP is issued by the County.
No Work shall begin until the CDPS-SDP permit with Owner and Operator has been approved by CDPHE. A copy of the permit shall be placed in the project SWMP.

The Contractor is legally required to obtain all other permits associated with specific activities within or outside of the right of way, such as borrow pits, concrete or asphalt plant sites, waste disposal sites, or other facilities, as applicable. Staging areas within a quarter mile, but not within EPC right of way shall be considered a common plan of development and permits for these facilities require permitting in the Contractor's name as Owner and Operator. These permits include local agency, federal, or other stormwater permits. The Contractor shall consult with the Engineer and contact the CDPHE or other appropriate federal, state, or local agency to determine the need for any permit.

To initiate final acceptance of the stormwater construction Work (including seeding and planting required for erosion control), the Contractor shall request in writing, a Stormwater Completion Walkthrough. The Engineer will set up the walkthrough. It will include the Engineer or designated representative, EPC Stormwater Inspector, Superintendent or designated representative, Stormwater Management Plan (SWMP) Administrator, and an EPC Maintenance representative. Unsatisfactory and incomplete stormwater and sediment/erosion control Work will be identified in this walkthrough and will be summarized by the Engineer in a punch list.

The completed action items associated with the corrective Work will be shown as completed on the punch list. Upon completion of all items shown, the Contractor shall notify the Engineer. Upon written agreement that the punch list is completed from the Engineer, the Contractor shall request to terminate the CDPHE CDPS-SDP. Upon termination of the CDPS-SDP, the Contractor shall submit a written request to EPC to terminate the ESQCP.

REVISION OF SECTION 107
LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC
-continued-

Until termination of the ESQCP has been approved by EPC and termination of the CDPS-SDP has been approved by the CDPHE, the Contractor shall continue to adhere to all permit requirements. Requirements shall include erosion control inspections, control measure installation, control measure maintenance, control measure repair including seeded areas, and temporary control measure removal. All documentation shall be submitted to the Engineer and placed in the SWMP.

All costs associated with the Contractor applying for, holding, and terminating the ESQCP and CDPS-SDP will not be measured and paid for separately but shall be included in the Work in accordance with subsection 107.02.

Section 107 shall include the following:

107.26 Noxious Weed Mediation. Noxious weeds may persist on or adjacent to the project location. All weed species on the State Weed Law List A and B shall be addressed according to State Statute. CDOT Standard Specifications and BMPs shall be followed to reduce the spread of noxious weeds, including the following:

(1) Soil disturbance shall be minimized to the extent possible.
(2) Herbicide may be used immediately adjacent to wetlands and/or water bodies only if the label indicates that its use is appropriate for such areas.
(3) All disturbed area will be re-seeded with a certified weed-free low water seed mix within seven days of completion of work during the growing season unless otherwise designated for hard surface treatment.
(4) “A” Horizon soil material currently supporting noxious weed cover of more than 10% shall not be used as topsoil during re-vegetation.
(5) Imported topsoil shall be certified as weed free.
(6) All areas treated for noxious weeds during construction will be monitored and re-treated, if necessary, to prevent establishment of noxious weeds.
(7) Any compost or mulch used shall be weed-free.
(8) All equipment moved onto the Project shall be free of soil, seeds, vegetative matter, or other debris that could contain or hold noxious weed seed. The Engineer may inspect all equipment prior to it being placed into service and may reject equipment that does not meet this specification.

REVISION OF SECTION 107
PERFORMANCE OF SAFETY CRITICAL WORK

Section 107 of the Standard Specifications is hereby revised for this project as follows:

Subsection 107.061 is hereby added to this project as follows:

107.061 Performance of Safety Critical Work. The following Work elements are considered safety critical Work for this project:

(1) Temporary Work: falsework, shoring that exceeds 5 feet in height, cofferdams, and temporary pipe installation.
(2) Work requiring the use of cranes or other heavy lifting equipment.
(3) Work under or near overhead electric lines.
(4) Work over or adjacent to river, stream, or other protected water way.
(5) Traffic signal mast arm removal and construction

The Contractor shall submit to the Engineer, for review, an initial, detailed construction plan that addresses safe construction methods for each of the safety critical elements applicable to this project. The Engineer's review will be for general conformance with the plans, specifications, best management practices regarding safety of the operation and industry standards. The detailed construction plan shall be submitted two weeks prior to the safety critical element conference described below. The construction plan shall be stamped "Approved for Construction" and signed by the Contractor.

The Construction Plan shall include the following:

(1) Safety Critical Element for which the plan is being prepared and submitted.
(2) Contractor or subcontractor responsible for the plan preparation and the Work.
(3) Schedule, procedures, equipment, and sequence of operations, that comply with the Working hour limitations.
(4) Temporary Work required: falsework, bracing, shoring, etc.
(5) Underground, above grade, and overhead utilities identification and protective steps taken.
(6) Communication plan as necessary with stakeholders, media, and the public.
(7) Additional actions that will be taken to ensure that the Work will be performed safely.
(8) Names and qualifications of Workers who will be in responsible charge of the Work:
    A. Years of experience performing similar Work
    B. Training taken in performing similar Work
    C. Certifications earned in performing similar Work
(9) Names and qualifications of Workers operating cranes or other lifting equipment
    A. Years of experience performing similar Work
    B. Training taken in performing similar Work
    C. Certifications earned in performing similar Work

REVISION OF SECTION 107
PERFORMANCE OF SAFETY CRITICAL WORK
-continued-

(10) The construction plan shall address how the Contractor will handle contingencies such as:
   A. Unplanned events (storms, traffic accidents, Work accidents, etc.)
   B. Structural elements that don't fit or line up
   C. Work that cannot be completed in time for the roadway to be reopened to traffic
   D. Replacement of Workers who don't perform the Work safely
   E. Unexpected absence of critical management team
   F. Equipment failure
   G. Other potential difficulties inherent in the type of Work being performed

(11) Name and qualifications of Contractor's person designated to determine and notify the Engineer in writing when it is safe to open a route to traffic after it has been closed for safety critical Work.

Plan requirements that overlap with above requirements may be submitted only once.

A safety critical element conference shall be held two weeks prior to beginning construction on each safety critical element. The Engineer, the Contractor, the safety critical element subcontractors, and the Contractor's Engineer shall attend the conference. Communications staff (Contractor or El Paso County) shall also attend to address any public/media needs.

After the safety critical element conference, and prior to beginning Work on the safety critical element, the Contractor shall submit a final construction plan to the Engineer for record purposes only. The Contractor's Engineer shall sign and seal temporary Works, such as falsework, shoring etc., related to construction plans for the safety critical elements, and Heavy lifting. The final construction plan shall be stamped "Approved for Construction" and signed by the Contractor.

The Contractor shall perform safety critical Work only when the Engineer, or an authorized representative, is on the project site. The Contractor's Engineer shall be onsite to inspect and provide written approval of safety critical Work for which they provided signed and sealed construction details. Unless otherwise directed or approved, the Contractor's Engineer need not be onsite during the actual performance of safety critical Work but shall be present to conduct inspection for written approval of the safety critical Work.

REVISION OF SECTION 107
PERFORMANCE OF SAFETY CRITICAL WORK
-continued-

When ordered by the Engineer, the Contractor shall immediately stop safety critical Work that is being performed in an unsafe manner or which will result in an unsafe situation for the traveling public. Prior to stopping Work, the Contractor shall make the situation safe for Work stoppage. The Contractor shall submit an acceptable plan to correct the unsafe process before the Engineer will authorize resumption of the Work. When ordered by the Engineer, the Contractor shall remove Workers from the project that are performing the safety critical Work in a manner that creates an unsafe situation for the public in accordance with subsection 108.06.

Should an unplanned event occur, or the safety critical operation deviate from the submitted plan, the Contractor shall immediately cease operations on the safety critical element, except for performing any Work necessary to ensure Worksite safety and provide proper protection of the Work and the traveling public. If the Contractor intends to modify the submitted plan, they shall submit a revised plan to the Engineer prior to resuming operations.

All costs associated with the preparation and implementation of each safety critical element construction plan will not be measured and paid for separately but shall be included in the Work.

The Contractor shall not be relieved from ultimate liability for unsafe or negligent acts or receive a waiver of the Colorado Governmental Immunity Act on behalf of the Department.

REVISION OF SECTION 107
ARCHAEOLOGICAL AND PALEONTOLOGICAL DISCOVERIES

Section 107 of the Standard Specifications is hereby revised for this project as follows:

Subsection 107.23 shall include the following:

Archaeological and Paleontological Discoveries. When the Contractor's operations, including materials pits and quarries, encounter plant or animal fossils, remains of prehistoric or historic structures, prehistoric or historic artifacts (bottle dumps, charcoal from subsurface hearths, old pottery, potsherds, stone tools, arrowheads, etc.), the Contractor's affected operations shall immediately cease. The Contractor shall immediately notify the Engineer, or other appropriate agency for contractor source pits or quarries, of the discovery of these materials. When ordered to proceed, the Contractor shall conduct affected operations as directed. Additional work, except that in contractor source materials pits or quarries under subsection 106.02(b), will be paid for by the Department as provided in subsection 104.02 when contract unit prices exist, or as extra work as provided in subsection 104.03 when no unit prices exist. Delays to the Contractor, not associated with work in contractor sources, because of the materials encountered may be cause for extension of contract time in accordance with subsection 108.08. If fossils, prehistoric or historic structures, or prehistoric or historic artifacts are encountered in a contractor source materials pit or quarry, all costs and time delays shall be the responsibility of the Contractor.

REVISION OF SECTION 108
PROSECUTION AND PROGRESS

Section 108 of the Standard Specifications is hereby revised for this project as follows:

Subsection 108.02 shall be replaced with the following:

The Contractor shall not commence Work prior to the issuance of a “Limited Notice to Proceed”. Construction of the project is anticipated to begin in the Spring of 2023. A Limited Notice to Proceed will be issued to allow the awarded Contractor to order materials and obtain permits in advance of construction as required. The “Notice to Proceed” will specify the date on which contract time commences.

Subsection 108.03(b) shall include the following:

A Project Schedule will be submitted to the Engineer for approval. All work performed by the Contractor or any of the Contractor’s agents during a working day shall be accomplished within pre-established working hours. Neither the Contractor nor any of the Contractor’s agents shall work at times outside of the daily working hours without prior written approval by the Engineer. Requests for changes in working hours shall be submitted to the Engineer in writing at least 48 hours before the proposed change in working hours would take effect.

A CPM schedule will be required. Schedules submitted for this bid shall use an assumed start date.

Salient features to be shown on the Contractor's progress schedule are:

- Construction Surveying
- Mobilization
- Temporary Erosion Control
- Traffic Control
- Utility Relocations
- Clearing and Grubbing
- Retaining Walls
- Roadway Embankment
- Inlets, Manholes and Storm Pipe
- Base Coarse
- Asphalt (HMA) Pavement
- Sidewalk and Pedestrian Ramps
- Roundabout Construction
- Traffic Signal
- Water Quality and Detention Pond
- Topsoil, Seeding and Mulching / Soil Retention blankets.
- Other items or milestones

REVISION OF SECTION 108
PROSECUTION AND PROGRESS
-continued-

The Contractor shall submit an electronic copy and .pdf copy of the critical path schedule and method statement to the Engineer each month, 10 working days prior to the estimate cutoff date. Payment of the estimate will be released after review and acceptance of the updated schedule and method statement. Minimum review time will be 10 working days. The electronic copy shall be submitted on Microsoft Project, 2018 version or newer. A large-scale schedule shall be posted in the construction trailer at the beginning of the project and updated periodically, as directed by the Engineer.

Subsection 108.05 shall include the following:

All construction activities shall be completed Monday through Friday during daylight hours or between 7:00 am and 7:00 pm, whichever is stricter. Weekend or nighttime construction Work will be considered provided that the Contractor submits a request a minimum of four (4) working days prior to the weekend activities and two (2) weeks prior to nighttime activities. The submittal shall include a noise mitigation plan identifying the measures to be implemented by the Contractor to mitigate construction noise. Noise mitigation measures will not be measured and paid for separately but shall be included in the Work.

REVISION OF SECTION 202
REMOVAL OF TREES

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

Subsection 202.02 shall include the following:

Trees designated for removal shall include removing all branches, stems, trunks, stumps and roots to at least two (2) feet below the surface of the final slope line. Debris shall become the property of the Contractor.

This work includes the removal trees as shown on the construction plans and as directed by the Engineer. This work includes the preservation from injury or defacement of all vegetation and objects designated to remain.

The Engineer will establish environmental limits. All trees, shrubs, plants, grasses, and other vegetative materials shall remain, except as designated by the limits of construction shown on the Roadway Removal sheets and SWMP or as directed by the Engineer.

Access for the removal of trees will be limited. Trees shall be felled at the risk of the Contractor. Limits of disturbance will be delineated with plastic fence and shall be adhered to.

All removed vegetation shall become the property of the contractor and shall be hauled away and disposed of by the Contractor. When trees being cut off are outside the excavation limits, the stumps shall be ground to two (2) feet below the finished grade.

Subsection 202.12 shall include the following:

Pay Item	**Pay Unit**
Removal of Tree	Each

Chipping, stockpiling mulch, and hauling and stockpiling trunks and limbs will not be paid for separately but shall be included in the work.

Trees to be removed with a diameter of 6 inches or lager measured at 4 feet above the ground will be paid as Removal of Tree. Payment for removal of tree shall be full compensation for all labor, equipment and materials required to complete the Work. All other trees to be removed with a diameter less than 6 inches measured at 4 feet above the ground will not be paid for separately but shall be included in the cost of item 201-00000 Clearing and Grubbing.

REVISION OF SECTION 202
REMOVAL OF STRUCTURES AND OBSTRUCTIONS

Section 202 of the CDOT Standard Specifications is hereby revised for this project to include the following:

Subsection 202.01 shall include:

This work includes the removal of the existing block retaining wall as shown in the plans.

Subsection 202.02 shall include:
The existing wall, in front of Monument Academy, shall be removed by the Contractor as shown in the plans and shall be disposed of by the Contractor in accordance with the Standard Specifications, as well as in accordance with applicable laws and ordinances. The existing wall shall not be removed until satisfactory arrangements have been made to accommodate traffic, pedestrian traffic, and drainage. Temporary shoring may be required for removal. All means and methods to ensure the stability of the structure during construction are included in the work.

Subsection 202.03 Salvable Material. Shall include the following:

Ground signs and their poles and sign panels designated for removal shall be carefully stockpiled in an orderly fashion, so they can be inspected by the Engineer prior to disposal. The County reserves the right to salvage any or all ground signs, and sign panels. All posts and signs designated by the County to be salvaged shall be delivered and stockpiled at the El Paso County yard at **3275 Akers Drive, Colorado Springs, Colorado 80922**. The Contractor shall get approval from the Engineer when the salvable material can be delivered. All removed signs not salvaged by the County will become the property of the Contractor.

The cost of transporting and unloading of these items will not be paid for separately but shall be included in the cost for the removals.

Subsection 202.07 shall include the following:
Material removed, including trash, shall not be left overnight but shall be removed from the work site or stockpiled in a dump truck or roll-off dumpster. The work site shall be inspected at the end of each day and all loose trash, including nails and other debris, shall be removed and the site thoroughly cleaned at the end of each day.

Subsection 202.11 shall include the following:
Removal of Wall will be measured by the linear foot and shall include demolition of wall, excavation support or any incidental labor and material to remove the wall and disposal of removed materials as shown in the plans.

REVISION OF SECTION 202
REMOVAL OF STRUCTURES AND OBSTRUCTIONS
-continued-

Subsection 202.12 shall include the following:

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	**Pay Unit**
Removal of Inlet	Each
Removal of Manhole	Each
Removal of Wall	Linear Foot
Removal of Sidewalk	Square Yard
Removal of Curb and Gutter	Linear Foot
Removal of Concrete Pavement	Square Yard
Removal of Ground Sign	Each
Removal of Sign Panel	Each
Removal of Fence	Each
Removal of Gate	Each
Removal of Guardrail Type 3	Linear Foot
Removal of End Anchorage	Each
Remove Boulder	Each

Removal of concrete curb ramp will not be paid for separately but shall be included under Removal of Sidewalk.

Removal of inlet shall include temporary plugging of connecting pipes as directed by the Engineer.

Sawcutting of existing concrete for removals will not be paid for separately but shall be included in the cost of the work.

Temporary shoring will not be paid for separately but shall be included in the cost of Removal of Wall.

Items that are not itemized, including but not limited to small stone removal, edging removal, and small shrub removal will not be paid for separately but shall be including in Clearing and Grubbing.

Remove Boulder shall include the removal of the boulders on the “Maguire Property” as identified in the plans and relocated to a spot identified by the OWNER of the property. Contractor shall coordinate with Engineer and OWNER to obtain proper right of entry.

REVISION OF SECTION 202
REMOVAL OF PIPE

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

Subsection 202.11 shall include the following:

Removal of Pipe will be measured by the linear foot and shall include pipe of any material and at any depth with a diameter of 2 inches or larger as shown in plans.

Subsection 202.12 shall include the following:

Payment will be made under:

Pay Item	**Pay Unit**
Removal of Pipe	Linear Foot

REVISION OF SECTION 202
REMOVAL OF ASPHALT MAT

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

Subsection 202.01 shall be revised to include the following:

Prior to removal, the Contractor will mark the limits of removals, and the Engineer will approve the limits of removal in the field.

In **Subsection 202.02** delete the seventh paragraph and replace with the following:

The existing asphalt mat, which varies in thickness from 6" to 12.5"X, shall be removed in a manner that minimizes contamination of the removed mat with underlying material. The removed mat shall become the property of the Contractor and shall be handled in one or more of the following ways:

1. Recycled into the hot mix asphalt in accordance with Version 6 of the Pikes Peak Region Asphalt Paving Specifications.
2. Disposed of off-site in accordance with the contract documents.
3. Reused on the project to construct embankments per subsection 203.07 and as approved by the Engineer. Additional processing of asphalt mat may be required.
4. Reused as Aggregate Base Course Class 6 in accordance with requirements specified in subsection 703.03.

Subsection 202.07 shall be revised to include the following:

Where old asphalt and concrete construction abuts new construction, concrete, edges of asphalt pavement, patching, etc., asphalt and concrete to be left in place shall be sawcut to a neat vertical face with minimal jagged edges to the satisfaction of the Engineer prior to removal and/or placement of new asphalt and concrete.

Subsection 202.11 shall be revised to include the following:

The removal of asphalt mat will be measured in square yards of pavement removed, regardless of depth and location. The cutting of asphalt mat to a neat line where removal of asphalt mat will abut a new pavement will not be paid for separately but shall be included in the Work. The Contractor shall perform necessary investigations required to determine the thickness and location of existing asphalt pavements designated for removal.

REVISION OF SECTION 202
REMOVAL OF ASPHALT MAT
-continued-

Subsection 202.12 is hereby deleted and replaced as follows:

Payment will be made under:

Pay Item	**Pay Unit**
Removal of Asphalt Mat	Square Yard

Unless otherwise specified in the Contract, the disposal of the asphalt mat or its use in other locations on the project will not be measured and paid for separately but shall be included in the work.

Sawcutting will not be paid for separately but shall be included in the work.

REVISION OF SECTION 202
REMOVAL OF TRAFFIC SIGNAL EQUIPMENT

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

Subsection 202.03 shall include the following:

The removed cabinets and all appurtenances including controller(s) and all other equipment internal to the cabinet shall be delivered to a El Paso County specified location.

All salvable material shown on the plans shall be removed, without unnecessary damage, in sections or pieces that may be readily transported, and delivered by the Contractor to the El Paso County yard at **3275 Akers Drive, Colorado Springs, Colorado 80922**, or as directed by the Engineer. The Contractor shall be held responsible for the safekeeping of all salvable materials during the period of the Contract until they are delivered to the located noted above. The Contractor shall make good or replace at his own expense any such materials damaged, stolen or otherwise lost prior to delivery. All salvable materials, as designated on the plans, shall remain the property of El Paso County. The Contractor shall dispose of all removed traffic signal equipment not salvaged by the County.

Subsection 202.04 shall include the following:

Removal of the traffic signal equipment shall include signal poles, mast arms, footings (removed two feet below final grade), backfill, pedestrian push buttons, signal heads, pedestrian signal heads, luminaires, pull boxes, attachment hardware, and all incidental equipment, except as itemized and noted on plans. Existing below ground electrical conduit, wire and circuits shall be completely removed as not to be conflicting to the proposed work. All wiring shall be removed from existing conduit and the conduit shall be abandoned in place.

Subsection 202.12 shall include the following:

Pay Item	**Pay Unit**
Removal of Traffic Signal Equipment	Lump Sum

Payment for removal of traffic signal equipment shall be for the complete removal of existing facilities and includes all labor and equipment required for the removal, disposal and salvage.

REVISION OF SECTION 202
CLEAN VALVE BOX

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

Subsection 202.02 shall include the following:

The Contractor shall clean each valve box of all foreign debris such that the operating nut of the valve is fully accessible to operation prior to adjustment. The Engineer will obtain the Owner's inspection and written approval before accepting the work.

Subsection 202.12 shall include the following:

Pay Item	**Pay Unit**
Clean Valve Box	Each

REVISION OF SECTION 203
EXCAVATION AND EMBANKMENT

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

Subsection 203.03 shall be revised to include the following:

On-site soils acquired from excavations that are free of topsoil, organic matter, claystone, and other deleterious materials may be hauled and placed as embankment material within the roadway prism as approved by the Engineer.

Materials imported to the project to be used as embankment material shall be free of topsoil, organic matter, claystone, and other deleterious materials.

Subsection 203.05(b), first paragraph, shall be revised to read as follows:

Unclassified. Excess or unsuitable excavated material, including rock and boulders, that cannot be used in embankments shall become the property of the Contractor and disposed of outside the project limits. All removed material shall become the property of the Contractor and shall be disposed of by the Contractor. All costs and permits related to the disposal site are the responsibility of the Contractor.

Subsection 203.05 shall include the following:

(g) Subgrade. The top 12 inches of existing subgrade directly below the proposed Aggregate Base Course within the roadway prism shall be moisture conditioned prior to placement of the Base Course. Moisture conditioning will not be paid for separately but shall be included in the work.

In **Subsection 203.06**, delete the tenth paragraph and replace with the following:

Frozen materials shall not be used in construction of embankments. In addition, embankment material shall not be placed on top of frozen material. Frozen material will be identified by the visual observation of ice crystals within the foundation or embankment material, or by measuring the temperature of the ground surface.

Subsection 203.07 shall include the following:
The bases of cuts and fill shall be scarified to a depth of 12 inches and compacted with compaction and moisture controls as specified under Subsection 203.06 Embankment.

REVISION OF SECTION 203
EXCAVATION AND EMBANKMENT
-continued-

Should wet, loose, soft or otherwise unsuitable material be exposed on surfaces to receive fill, as identified by the Project Engineer, those materials should be removed and replaced with low to non-expansive material, properly moisture conditioned and compacted**. Fill shall be placed in uniform lifts not exceeding eight (8) inches for heavy equipment and four (4) inches for hand-operated compactors, and compacted to the same moisture-density requirement as noted above.**

In **Subsection 203.08**, delete the first, second, and third paragraphs and replace with the following:

203.08 Proof Rolling. After final subgrade elevation has been reached and the required compaction has been obtained, the top of the subgrade material shall be proof rolled within 24 hours prior to commencing the paving operation.

Proof rolling shall be performed in the following manner:

a. Proof rolling shall be performed with a three-axle loaded truck with at least 18,000 pounds per axle load on two of the axles and tire pressures of at least 80 psi. A weigh ticket from an approved scale shall be furnished by the Contractor to substantiate this weight.
b. The loaded truck shall make a minimum of two complete passes.
c. The proof roller shall be operated in a systematic manner so that a record may be readily kept of the area tested. Areas that are observed to have soft spots in the subgrade, where deflection is not uniform or is excessive, or otherwise fail the proof roll as determined by the Engineer shall be ripped, scarified, wetted or dried as necessary and recompacted to meet the requirements for density and moisture. These areas shall then be proof rolled again and retested for acceptance to meet all requirements. If rain occurs after proof rolling and prior to the placement of aggregate base course, hot mix asphalt, or concrete pavement, additional testing and proof rolling will be required to identify potential areas which will need additional reconditions. Proof roll compaction and moisture tests are valid for up to 24 hours or until moisture (precipitation) occurs. **All Proof Rolling required by the Engineer shall not be paid for separately, but shall be included in the work.**
d. Prior to commencing proof rolling, the Contractor shall provide adequate notice to the Engineer to allow the Engineer to perform inspection and documentation of the proof rolling operations. This Work shall be done after the Contractor has performed their own quality control proof rolling and testing and has stabilized the subgrade.

REVISION OF SECTION 203
EXCAVATION AND EMBANKMENT
-continued-

Areas which, in the opinion of the Engineer, pump or deform an excessive amount during proof roll shall be reworked until such deformation does not occur during subsequent proof rolling. This rework may consist of additional compaction, excavation, and replacement of embankment and/or additional excavation of unsuitable subgrade material and additional proof rolling as directed by the Engineer. This rework will not be paid for, except that unsuitable material below the limits of embankment material will be treated as described in subsection 203.05(c).

Subsection 203.11 shall include the following:
The contract unit price for Unclassified Excavation (Complete In Place) shall be full compensation for all work necessary to complete the item including construction of embankments, unclassified excavation, compaction, moisture control, compaction of bases of cuts and filles, proof rolling, haul, and disposal of excess excavated material. No separate measurement or payment shall be made for the final reshaping of slopes to final template shape subsequent to the removal of abandonment of temporary access roads.

Subsection 203.12, shall include the following:

Payment shall be made under:

Pay Item	**Pay Unit**
Unclassified Excavation (Complete In Place)	Cubic Yard

Subgrade preparation and moisture conditioning and all reconditioning of soil below the paving section will not be paid for separately but shall be included in the cost of the work.

Excavated materials that require more than one handling prior to final placement will be paid for at the contract unit price for unclassified excavation, as appropriate. Such payment shall be considered full compensation with no additional payment being made for stockpiling, cross hauling, or subsequent handling.

REVISION OF SECTION 207
TOPSOIL

Section 207 of the Standard Specification is hereby revised for this project as follows:

Subsection 207.03 shall include the following:

Topsoil within the limits of the roadway shall be salvaged prior to beginning hauling, excavating, or fill operations by excavating and stockpiling the material at designated locations in a manner that will facilitate measurement, minimize sediment damage, and not obstruct natural drainage.

Topsoil shall be placed directly upon completed cut and fill slopes whenever conditions and the progress of construction will permit. Topsoil shall be placed at locations and to the thickness provided in the Contract and shall be keyed and tracked to the underlying material without creating a compacted surface by the use of harrows, bulldozers, rollers, or other equipment suitable for the purpose.

Salvaged topsoil exceeding the quantity required under the Contract shall be disposed of at locations acceptable to the Engineer.

Subsection 207.04 delete the first paragraph and replace with the following:

Topsoil salvaged from the roadway and placed in stockpiles will not be paid for separately but shall be included in the cost of 207-00700 Topsoil (Onsite).

REVISION OF SECTION 208
EROSION CONTROL

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

Subsection 208.01 shall include the following:

Water quality control during construction activity shall be in accordance with Section 107.25.

Subsection 208.02(l) shall be deleted and replace with the following:

Prefabricated Concrete Washout Structure (Type 1). Type 1 portable bins may be used at the Contractor's discretion as appropriate for the location and the work. It shall consist of a watertight multi-use container designed to contain liquid concrete washout wastewater, solid residual concrete waste from washout operations, and residue from saw cutting, coring, grinding, grooving, and hydro-concrete demolition. Minimum capacity including freeboard shall be 440 gallons. Prefabricated Concrete Washout Structure (Type 2). Type 2 portable bins may be used at the Contractor's discretion as appropriate for the location and the work. It shall consist of a watertight one-time use container designed to contain liquid concrete washout wastewater, solid residual concrete waste from washout operations, and residue from saw cutting, coring, grinding, grooving, and hydro-concrete demolition. The structure shall have a system to secure to the ground. Minimum capacity including freeboard shall be 50 gallons. No additional compensation will be provided to the Contractor for their use.

Subsection 208.02(m), fourth paragraph shall be deleted and replace with the following:

Prefabricated or manufactured vehicle tracking pads may be used at the Contractor's discretion as appropriate for the location and the work. Multi-use pads shall consist of industrial grade materials and shall be designed to minimize sediment leaving the project. No additional compensation will be provided to the Contractor for their use.

Subsection 208.03 shall include the following:

Project Review, Schedule, and Erosion Control Management Prior to construction, an on-site Environmental Preconstruction conference shall be held. The conference shall be attended by:

(1) The Engineer.
(2) The Superintendent.
(3) The Contractor's Stormwater Management Plan (SWMP) Administrator. The SWMP Administrator is equivalent to the CDPS-SCP Qualified Stormwater Manager.
(4) Supervisors or Foremen of subcontractors working on the project.
(5) El Paso County personnel who reviewed the Stormwater Management Plan (SWMP).
(6) CDOT personnel (e.g., CDOT Environmental).

Subsection 208.12 shall include the following:

Pay Item	**Pay Unit**
Concrete Washout Structure	Each
Vehicle Tracking Pad	Each

REVISION OF SECTION 208
PERMANENT WATER QUALITY BMP
AS CONSTRUCTED SURVEY

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

Subsection 208.10(b) shall include the following:

The permanent BMPs to be surveyed will be discussed at the Environmental Preconstruction Conference. Listed below are the permanent water quality BMPs to be surveyed:

Extended Detention Basin and associated features
Stilling Basin (Plunge Pool) and associated features

Construction surveying of permanent water quality BMPs will not be measured and paid for separately but shall be included in the item 625-00000 Construction Surveying (Lump Sum).

REVISION OF SECTION 209
DUST PALLIATIVES

Section 209 of the Standard Special Provisions is hereby revised for this project as follows:

Subsection 209.05 shall include:

Application of water for dust palliative may be required when Work is not in progress, including weekends, holidays, and nighttime.

Subsection 209.07 shall include the following:

Water for establishing growth for stabilization will be measured by the number of thousand gallons (M Gallon) used and accepted.

Subsection 209.08, third paragraph, shall be deleted and replace with the following:

Water required for all items of work will not be measured and paid for separately but shall be included in the work, except that water approved for establishing growth for stabilization and water ordered by the Engineer for the benefit or safety of the public will be measured and paid for separately per the Contract.

REVISION OF SECTION 210
VALVE BOX AND MANHOLE ADJUSTMENTS

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

Subsection 210.10 shall include the following:

The Contractor shall notify each utility company (Owner) prior to any construction that will involve the adjustment of its valve boxes or manholes.

Each Owner will mark all their valve boxes and manholes that will be involved in the specified construction area.

Prior to commencing construction, the Contractor shall coordinate and conduct, with the Engineer and each Owner, an inspection of all impacted manholes and valve boxes. The purpose of this inspection will be to account for all valve boxes and manholes involved in the construction and determine their accessibility and condition. The Contractor shall provide traffic control for this inspection and for the final inspection. The Contractor shall coordinate construction with the Owner to allow sufficient time for the Owner to make all necessary repairs to valve boxes and manholes before construction begins in the area of the valve boxes and manholes. All parties shall agree on the condition of each valve box and manhole prior to construction.

The Contractor shall replace all valve box sections damaged or misplaced during construction with new valve box sections complying with the requirements of the Owner's specifications. The Contractor shall set each valve box to be adjusted so that it is ¼ inch to ½ inch below the final grade of the paved surface, or to the satisfaction of the Owner, and so that it is plumb over the operating nut of the valve.

The Contractor shall adjust all manholes that require adjustment with materials conforming to the Owner's specifications. Some adjustments may require the addition, removal, or replacement of a manhole or cone section. If manhole adjustment requires a manhole cone or barrel section to be added, removed, or replaced, this work will not be considered as "Adjust Manhole", but shall be performed in accordance with the Section 210 requirements for the item "Modify Manhole".

The Contractor shall prevent tools, concrete, dirt, or debris of any kind from falling into the channel of the existing manhole. The Contractor shall clean or remove debris from downstream storm and sanitary sewer that enters as a result of the Contractor's work.

When the project includes planing prior to resurfacing, the Contractor shall first lower all valve boxes and manholes below the surface to be planed and then adjust them up to final grade after the paving operation is complete.

Prior to the final inspection, the Contractor shall thoroughly clean all valve boxes designated for cleaning. This work shall be performed in accordance with the Section 202 requirements for the item "Clean Valve Box."

The Contractor shall coordinate and conduct, with the Engineer and each Owner, a final inspection upon completion of construction. This inspection shall assure that all valve boxes and manholes are in compliance with these requirements. The Engineer will obtain the Owner's written approval before accepting the work.

REVISION OF SECTION 210
VALVE BOX AND MANHOLE ADJUSTMENTS
-continued-

Subsection 210.12 *shall include the following:*

The Contractor will be paid separately for each valve box or manhole adjustment completed down and for each adjustment completed up.

Subsection 210.13 *shall include the following:*

Payment will be made under:

Pay Item	**Pay Unit**
Adjust Valve Box	Each
Adjust Manhole	Each

Adjustments that include adding, removing, or replacing a manhole cone or barrel section will be paid for under the Section 210 pay item, Modify Manhole.

Cleaning designated valve boxes will be paid for under the Section 202 pay item, Clean Valve Box.

REVISION OF SECTION 210
MODIFY MANHOLE

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

DESCRIPTION

Subsection 210.01 shall include the following:

Modify manholes consists of raising existing sanitary and storm sewer manholes to the new grade lines established with construction of roadway improvements.

CONSTRUCTION REQUIREMENTS

Subsection 210.02 shall include the following:

Modification of manholes including adding, removing, or replacing a manhole cone or barrel section and shall be done in accordance with the details included in the plans and in conformance with the appropriate M Standard Plan.

METHOD OF MEASUREMENT

Subsection 210.12 shall include the following:

Modify manholes will be measured by the actual number modified which shall include all work required to: remove portion of existing manholes to the top of the barrel, construct new barrel section, build new eccentric cones, grade rings, and/or brick courses to the required height, add additional steps as required, and reset the manhole ring and cover to the finished grade. If the rings and covers are destroyed or in the opinion of the Owner and/or Engineer cannot be reused, new manhole rings and covers shall be provided.

BASIS OF PAYMENT

Subsection 210.13 shall include the following:

Payment will be made under:

Pay Item	**Pay Unit**
Modify Manhole	Each

Structure excavation and structure backfill required for "Modify Manhole" will not be measured and paid for separately but shall be included in the work. Reinforcing steel, structural concrete, pre-cast barrel sections, eccentric cones, grade rings, brick courses, manhole rings and covers, as well as all other materials required to complete the item shall be included in the work.

REVISION OF SECTION 210
RESET WALL

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

DESCRIPTION

Replace Subsection 210.01 shall include the following:

This work consists of removing, relaying, resetting, and adjusting the existing block retaining wall, located at the bank property at the NE corner of Knollwood and HWY105 and existing stone landscape retaining wall, located between the two residential properties on the eastside of Lake Woodmoor Drive, and related materials as shown in the plans. All designated items shall be carefully removed, stored, and reinstalled to their original location in a manner that will avoid loss or damage.

CONSTRUCTION REQUIREMENTS

Subsection 210.02 shall include the following:

The existing walls shall be removed, stored, and reinstalled to their original locations by the Contractor as shown in the plans. The existing wall shall not be removed until satisfactory arrangements have been made to accommodate traffic, pedestrian traffic, and drainage. Temporary shoring may be required for removal. All means and methods to ensure the stability of the structure during removal and construction are included in the work.

METHOD OF MEASUREMENT

Subsection 210.12 shall include the following:

Reset Wall will be measured by the linear foot and shall include removing, relaying, resetting, and adjusting of the walls, excavation support or any incidental labor and material to remove and reset the walls as shown in the plans.

BASIS OF PAYMENT

Subsection 210.13 shall include the following:

Payment will be made under:

Pay Item	**Pay Unit**
Reset Wall	Linear Foot

REVISION OF SECTION 211
DEWATERING

Section 211 of the Standard Specification is hereby revised as follows:

Section 211.02 of the Standard Specifications shall include:

If dewatering is anticipated or required, the Contractor shall obtain a dewatering permit prior to proceeding with dewatering activities. All dewatering activities shall meet the requirements of the permit.

Groundwater shall not be directly discharged into a storm sewer, ditch, wetlands or any Waters of the State. The Contractor shall furnish the Engineer with disposal manifest documents and any applicable concurrences or permits. Dewatering of excavations shall be conducted in a manner that avoids pollution and erosion.

The Contractor is advised to limit pumping of groundwater in all project excavations, by careful scheduling, expediting the work and use of conscientious construction methods. More specifically, the Contractor shall:

1. Minimize the disturbance of groundwater by avoidance.
2. Limit intrusion of groundwater into excavations.

METHOD OF MEASUREMENT AND PAYMENT

All permitting and work related to dewatering will not be paid for separately but shall be included in the cost of the work.

REVISION OF SECTION 212
SEEDING

Section 212 of the Standard Specification is hereby revised as follows:

Subsection 212.02(a) of the Standard Specifications shall include:

Unless otherwise shown in the plans, all disturbed areas, including temporarily disturbed habitat areas (1.75 acres) will be revegetated using the weed-free seed mix shown below. The wheat and oat seeds will be a sterile variety to prevent long-term establishment. Seed beds will be disked or raked prior to seeding, and tackifiers, straw, or wood mulch will be applied as needed to boost moisture holding capacity and minimize the risk of seed loss from wind.

Common Name	Scientific Name	Growth Form	Pounds PLS/ac
Sideoats grama	*Bouteloua curtipendula* var. Vaughn	Grass	2.0
Blue grama	*Bouteloua gracilis* var. Hachita	Grass	1.5
Little bluestem	*Schizachyrium scoparium* var. Pastura	Grass	3.0
Western wheatgrass	*Pascopyrum smithii* var. Arriba	Grass	5.0
Green needlegrass	*Stipa viridula*	Grass	2.0
Junegrass	*Koeleria macrantha*	Grass	0.3
Indiangrass	*Sorghastrum nutans* var. Holt	Grass	3.0
Switch grass	*Panicum virgatum* v. Nebraska 28	Grass	2.0
Smooth aster	*Symphyotrichum laeve*	Forb	0.1
Purple prairie clover	*Dalea purpurea*	Forb	0.5
Blanketflower	*Gaillardia aristata*	Forb	1.0
Blue flax	*Linum lewsii*	Forb	1.0
Woods' rose	*Rosa woodsii*	Shrub	1.0
Rabbitbrush	*Ericameria nauseosa*	Shrub	0.1
Threeleaf sumac	*Rhus trilobata*	Shrub	0.5
Snowberry	*Symphoricarpos albus*	Shrub	0.5
Chokecherry	*Prunus virginiana*	Shrub	0.5
Winter wheat (sterile)	*Triticum aestivum*	Grass - Cover	3.0
Common oat (sterile)	*Avena sativa*	Grass - Cover	3.0
		Total	**30.0**

Subsection 212.08 shall include:

Payment will be made under:

Pay Item	**Pay Unit**
Seeding (Native) Drill	Acre

REVISION OF SECTION 214
PLANTING

Section 214 of the Standard Specification is hereby revised as follows:

Subsection 214.03 shall include:

Vegetation

Twenty shrubs (5-gallon size) will be planted in the upland areas at the Mitigation Property, configured in clumps of 2-3 plants with approximately 5-foot spacing between individual plants. Golden currant (*Ribes aureum*) and skunkbrush sumac (*Rhus trilobata*) are preferred. If golden currant and/or sumac are not available, the Contractor shall provide alternatives to the Engineer for approval prior to ordering or purchasing alternative plants. Caging may be utilized on planted shrubs to provide protection during establishment from herbivory in the riparian corridor. Temporary supplemental irrigation of the planted shrubs shall be provided if necessary during establishment. Compensation will not be provided to replace dead shrubs due to neglect.

See Subsection 107.12 of these Project Special Provisions for requirements associated with entering the Mitigation Property.

Subsection 214.06 shall include:

Payment will be made under:

Pay Item	**Pay Unit**
Deciduous Shrub (5 Gallon Container)	Each

REVISION OF SECTION 240
ENVIRONMENTAL COMMITMENTS

Section 240 is hereby added to the Standard Specifications for this Project as follows:

DESCRIPTION

240.01 This work consists of minimizing and mitigating impacts to the Preble's jumping mouse habitat caused by constructing the Project. The materials and construction requirements below are committed to in the *SH 105 Improvements Projects (19734) Biological Opinion Report, signed in August 2022*.

CONSTRUCTION REQUIREMENTS

240.02 Conservation Measures

Limits of work fencing, signage, or other visible markers will be used to delineate access routes and work areas and to enforce no-entry zones.

Access routes will consist of constructed vehicle tracking pads to protect roots and the seed bank. Geotextiles or other materials will line the route, which will then be filled with rock or other acceptable material. All materials will be removed upon project completion, and the disturbed areas will be fully restored.

Areas where equipment will be stored, staged, and refueled will be stabilized and protected by BMPs and a spill protection plan.

Excavated material, trash and debris will be stored and stockpiled outside the riparian corridor and protected from stream flows or runoff.

Wildlife-proof garbage containers will be used, and/or waste will be promptly removed to avoid attracting predators.

Riprap will be buried with soil and seeded with native riparian vegetation.

Vegetation will be clipped or mowed to ground level one to two weeks prior to initiation of construction to discourage use by the Preble's mouse in vegetated areas that will be disturbed during the active season (approximately May 1-October 31). Shrubs that could provide hibernacula will be removed no later than October to discourage mice form hibernating in future work zones for disturbance that is anticipated during the hibernation period (approximately November 1-April 30).

Work site lighting will be restricted to the hibernation season (November 1-April 30). Any temporary lighting installed will use downcast LED full-cutoff fixtures that comply with the International Dark-Sky Association's recommendation for outdoor illumination. Shielding and directing of lighting will be used to minimize light spill off the site.

Only weed-free certified materials, including topsoil, seed, and mulch will be used.

Construction activities will be completed in an area before restoration or enhancement activities are initiated in that area.

A qualified environmental manager or management team will be designated to be onsite to inform workers of permit conditions, monitor construction, and assure that habitat avoidance and conservation measures are implemented.

A preconstruction briefing for onsite personnel will be held to explain the limits of work and other conservation measures.

REVISION OF SECTION 240
ENVIRONMENTAL COMMITMENTS
-continued-

Implementation of Preble's meadow jumping mouse habitat restoration will be supervised by a qualified ecologist experienced in habitat restoration. This includes implementation of an approved integrated weed management plan.

All work will stop, and the Service's Colorado Field Office in Lakewood will be contacted immediately at (303) 236-4773, if a Preble's mouse is found alive, dead, injured, or hibernating within the action area. In any other federally listed species is killed or injured during project activities, notify the Service's Colorado Field Office within ten (10) days.

Noxious Weed Management

The Contractor shall provide mechanical and chemical weed management in all areas disturbed by Project construction for the duration of the Contract as specified in Subsection 107.26 of these Project Special Provisions. See Subsection 107.12 of these Project Special Provisions for requirements associated with entering the Mitigation Property.

The following is for informational purposes only. The work associated with this requirement is not part of this Contract and the Contractor shall NOT include costs for this effort in their bid.

Mechanical and chemical weed management will occur according to CDOT specifications within restored habitat areas (1.75 acres). Herbicides used will be approved by CDOT for use in riparian areas. Weed management will occur in the spring and fall of each year following project.

El Paso County will develop and implement a noxious weed management plan at the Mitigation Property (4.375 acres). For the first 3-5 years following project completion, the area will be aggressively managed with mechanical removals and targeted herbicide applications in the spring and fall by a licensed applicator with the Colorado Department of Agriculture.

REVISION OF SECTION 240
PROTECTION OF MIGRATORY BIRDS
BIOLOGICAL WORK PERFORMED BY THE CONTRACTOR'S BIOLOGIST

Section 240 is hereby added to the Standard Specifications for this project as follows:

DESCRIPTION

240.01 This Work consists of protecting migratory birds during construction.

MATERIALS AND CONSTRUCTION REQUIREMENTS

240.02 The Contractor shall schedule clearing and grubbing operations and Work on structures to avoid taking (pursue, hunt, take, capture or kill; attempt to take, capture, kill or possess) migratory birds protected by the Migratory Bird Treaty Act (MBTA). The Contractor shall retain a qualified wildlife biologist for this project. The wildlife biologist shall have a minimum of three years' experience conducting migratory bird surveys and implementing the requirements of the MBTA. The Contractor shall submit documentation of the biologist's education and experience to the Engineer for acceptance. A biologist with less experience may be used by the Contractor subject to the approval of the Engineer based on review of the biologist's qualifications.

The wildlife biologist shall record the location of each protected nest, bird species, the protection method used, and the date installed. A copy of these records shall be submitted to the Engineer.

(a) *Vegetation Removal.* When possible, vegetation shall be cleared prior to the time when active nests are present. Vegetation removal activities shall be timed to avoid the migratory bird breeding season which begins on April 1 and runs to August 31. All areas scheduled for clearing and grubbing between April 1 and August 31 shall first be surveyed within the Work limits for active migratory bird nests. The Contractor's wildlife biologist shall also survey for active migratory bird nests within 50 feet outside Work limits. Contractor personnel shall enter areas outside El Paso County right of way only if a written, signed document granting permission to enter the property has been obtained from the property owner. The Contractor shall document all denials of permission to enter property. The Contractor shall avoid all active migratory bird nests. The Contractor shall avoid the area within 50 feet of the active nests or the area within the distance recommended by the biologist until all nests within that area have become inactive. Inactive nest removal and other necessary measures shall be incorporated into the Work as follows:

1. *Tree and Shrub Removal or Trimming.* Tree and shrub removal or trimming shall occur before April 1 or after August 31 if possible. If tree and shrub removal or trimming will occur between April 1 and August 31, a survey for active nests shall be conducted by the wildlife biologist within the seven days immediately prior to the beginning of Work in each area of tree and shrub removal or trimming. The survey shall be conducted for each phase of tree and shrub removal or trimming.

REVISION OF SECTION 240
PROTECTION OF MIGRATORY BIRDS
BIOLOGICAL WORK PERFORMED BY THE CONTRACTOR'S BIOLOGIST
-continued-

If an active nest containing eggs or young birds is found, the tree or shrub containing the active nest shall remain undisturbed and protected until the nest becomes inactive. The nest shall be protected by placing fence (plastic) a minimum distance of 50 feet from each nest to be undisturbed. This buffer dimension may be changed if determined appropriate by the wildlife biologist and approved by the Engineer. Work shall not proceed within the fenced buffer area until the young have fledged or the nests have become inactive.
If the fence is knocked down or destroyed by the Contractor, the Engineer will suspend the Work, wholly or in part, until the fence is satisfactorily repaired at the Contractor's expense. Time lost due to such suspension will not be considered a basis for adjustment of time charges but will be charged as contract time.

2. *Grasses and Other Vegetation Management*. Due to the potential for encountering ground nesting birds' habitat, if Work occurs between April 1 and August 31, the area shall be surveyed by a wildlife biologist within the seven days immediately prior to ground disturbing activities. The undisturbed ground cover to 50 feet beyond the planned disturbance, or to the right of way line, whichever is less, shall be maintained at a height of 6 inches or less beginning April 1 and continuing until August 31 or until the end of ground disturbance Work, whichever comes first. If birds establish a nest within the survey area, an appropriate buffer of 50 feet will be established around the nest by the El Paso County biologist. This buffer dimension may be changed if determined appropriate by the El Paso County biologist and approved by the Engineer. The Contractor shall install fence (plastic) at the perimeter of the buffer. Work shall not proceed within the buffer until the young have fledged or the nests have become inactive. If the fence is knocked down or destroyed by the Contractor, the Engineer will suspend the Work, wholly or in part, until the fence is satisfactorily repaired at the Contractor's expense. Time lost due to such suspension will not be considered a basis for adjustment of time charges, but will be charged as contract time.

(b) *Work on structures*. The Contractor shall prosecute Work on structures in a manner that does not result in a taking of migratory birds protected by the Migratory Bird Treaty Act (MBTA). The Contractor shall not prosecute the Work on structures during the primary breeding season, April 1 through August 31, unless they take the following actions:

(1) The Contractor shall remove existing nests prior to April 1. If the Contract is not awarded prior to April 1 and El Paso County has removed existing nests, then the monitoring of nest building shall become the Contractor's responsibility upon Notice to Proceed.

(2) During the time that the birds are trying to build or occupy their nests, between April 1 and August 31, the Contractor shall monitor the structures at least once every three days for any nesting activity.

REVISION OF SECTION 240
PROTECTION OF MIGRATORY BIRDS
BIOLOGICAL WORK PERFORMED BY THE CONTRACTOR'S BIOLOGIST
-continued-

(3) If the birds have started to build any nests, they shall be removed before the nest is completed. Water shall not be used to remove the nests if nests are located within 50 feet of any surface waters.

(4) Installation of netting may be used to prevent nest building. The netting shall be monitored and repaired or replaced as needed. Netting shall consist of a mesh with openings that are ¾ inch by ¾ inch or less.

If an active nest become established, i.e., there are eggs or young in the nest, all Work that could result in abandonment or destruction of the nest shall be avoided until the young have fledged or the nest is unoccupied as determined by the wildlife biologist and approved by the Engineer. The Contractor shall prevent construction activity from displacing birds after they have laid their eggs and before the young have fledged.

If the project continues into the following spring, this cycle shall be repeated. When Work on the structure is complete, the Contractor shall remove and properly dispose of netting used on the structure.

(c) *Taking of a Migratory Bird.* The taking of a migratory bird shall be reported to the Engineer. The Contractor shall be responsible for all penalties levied by the U. S. Fish and Wildlife Service (USFWS) for the taking of a migratory bird.

METHOD OF MEASUREMENT

240.07 Wildlife Biologist will be measured by the actual authorized number of hours a wildlife biologist is on site performing the required tasks.

Removal of nests will be measured by the actual number of man-hours spent removing inactive nests just prior to and during the breeding season, April 1 through August 31. During this period, the Contractor shall submit to the Engineer each week for approval a list of the Workers who removed nests and the number of hours each one spent removing nests.

Netting will be measured by the square yard of material placed to keep birds from nesting on the structure. Square yards will be calculated using the length of netting measured where it is attached to the ground and the average height of the netting where it is attached to the structure.

REVISION OF SECTION 240
PROTECTION OF MIGRATORY BIRDS
BIOLOGICAL WORK PERFORMED BY THE CONTRACTOR'S BIOLOGIST
-continued-

BASIS OF PAYMENT

240.08 The accepted quantities measured as provided above will be paid for at the contract unit price for each of the pay items listed below that appear in the bid schedule.

Payment will be made under:

Pay Item	**Pay Unit**
Wildlife Biologist	Hour
Removal of Nests	Hour

Payment for Wildlife Biologist will be full compensation for all Work and materials required to complete the item, including wildlife biologist, wildlife survey, and documentation (record of nest location and protection method)

Payment for Removal of Nests will be full compensation for all work and material required to complete the work.

Clearing and grubbing will be measured and paid for in accordance with Section 201. Mowing will not be measured and paid for separately but shall be included in the Work.

Removal and trimming of trees will be measured and paid for in accordance with Section 202.
Fence (Plastic) will be measured and paid for in accordance with Section 607.

REVISION OF SECTION 304
AGGREGATE BASE COURSE

Section 304 of the Standard Specifications is hereby revised for this project as follows:

Subsection 304.02 shall include the following:

Materials for the base course shall be Aggregate Base Course (Class 6) or reclaimed asphalt material (RAP) meeting the requirements shown in subsection 703.03. The base course must meet the gradation requirements and have a resistance value of at least 72 respectively when tested by the Hveem Stabilometer method, per the Geotechnical Report prepared by Shannon & Wilson, Inc. 1321 Bannock St., Denver, CO titled “Geotechnical & Pavement Design Report, Highway 105, Full Corridor Design, El Paso County, Colorado, dated July 6, 2017.

Subsection 304.07 is hereby revised to include the following:

The quantity for Aggregate Base Course (Class 6) will not be remeasured but will be the quantity designated in the Contract Documents unless field changes are ordered, or the Contractor fails to furnish plan quantity. If field changes are ordered or plan quantity not furnished, the quantity will be calculated using the revised dimension. The Engineer, prior to beginning the work, shall approve the additional or reduced volume in writing.

No allowances shall be made for shrinkage, swell, or subsidence due to compaction of the existing ground or any other losses. No separate measurement or payment will be made for processing and distributing the Aggregate Base Course (Class 6) as directed.

Subsection 304.08 is hereby revised to include the following:

The Contract Unit Price shall be full compensation for all labor, equipment and material needed to complete the work (including furnish, placement, compaction, fine grading, stockpile and redistribute as required during construction).

REVISION OF SECTION 304 AND 403
TICKET COLLECTION FOR
AGGREGATE BASE COURSE AND HOT MIX ASPHALT

Section 304 and 403 of the Standard Specifications is hereby revised for this project as follows:

Subsection 304.08 and 403.05 shall include the following:
The Contractor shall collect the scale ticket on each load when it is delivered to the project site, and ensure that the information required in subsection 109.01 is shown on each ticket. The Contractor's ticket collector shall add the placement location to each scale ticket using stationing and sign it.

The scale tickets shall be available on site for the Engineer to inspect.

Each day the Contractor shall provide to the Engineer envelopes which contain the previous day's signed tickets and the following:

(1) On each envelope: Project number, date of paving, type of material, daily total and cumulative total.
(2) One of the following:
    a. Two adding machine tape tabulations of the weight tickets with corresponding totals run and signed by different persons,
    b. One signed adding machine tape tabulation of the weight tickets that has been checked and signed by a second person,
    c. Signed check tape of computer scale tickets that have a cumulative total. These scale tickets must be consecutive and without voids adjustments.
(3) A listing of any overweight loads on the envelope, including ticket numbers and amount over legal limit.
(4) A comparison of the actual yield for each day's placement to the theoretical yield. Theoretical yield shall be based on the actual area paved, the planned thickness, and the actual density of the mixture being placed. Any variance greater than +2.5% shall be indicated on the envelope and a written explanation included.

The Contractor shall provide a vehicle identification sheet that contains the following information for each vehicle:

(1) Vehicle number
(2) Length
(3) Tare weight
(4) Number of axles
(5) Distance between extreme axles
(6) All other information required to determine legal weight.
(7) Legal weight limit.

REVISION OF SECTION 401
PLANT MIX PAVEMENTS – GENERAL

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

Materials, construction requirements, method of payment, and basis of payment for plant mix pavements shall follow the requirements set forth in Version 6 of the Pikes Peak Region Asphalt Paving Specifications unless otherwise specified in these Special Provisions or following approval by the Engineer.

REVISION OF SECTION 403
HOT MIX ASPHALT

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

Subsection 403.02 shall include the following:

The design mix for hot mix asphalt shall conform to the Pikes Peak Region Asphalt Paving Specifications, Version 6 unless otherwise specified in these Project Special Provisions or following approval by the Engineer. The Contractor shall prepare a quality control plan outlining the steps taken to minimize segregation of HMA. This plan shall be submitted to the Engineer and approved prior to beginning the paving operations. If 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 materials for hot mix asphalt shall conform to the requirements described in Version 6, Sections 2, 3, and 4(D) of the Pikes Peak Region Asphalt Paving Specifications unless otherwise specified in these Project Special Provisions or following approval by the Engineer.

Warm Mix Asphalt (WMA) may be allowed on this project in accordance with CP 59. Unique requirements for WMA design, production and acceptance testing shall be submitted and approved prior to any WMA production on the project. Delays to the project due to WMA submittal and review will be considered within the Contractor's control and will be non-excusable.

Subsection 403.03 shall include the following:

The construction requirements shall be as described in Version 6, Section 4 of the Pikes Peak Region Asphalt Paving Specifications unless otherwise specified in these Project Special Provisions or following approval by the Engineer.

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.

Delete **subsection 403.04** and replace with the following:

Hot mix asphalt will be measured as described in Version 6, Section 4 (P) of the Pikes Peak Region Asphalt Paving Specifications unless otherwise specified in these Project Special Provisions or following approval by the Engineer.

Delete **subsection 403.05** and replace with the following:

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

REVISION OF SECTION 403
HOT MIX ASPHALT
-continued-

Payment will be made under:

Pay Item	**Pay Unit**
Hot Mix Asphalt (Patching) (Asphalt)	Ton
Hot Mix Asphalt (Grading SX)(75)(PG 64-28)	Ton

Aggregate, asphalt recycling agent, asphalt cement, additives, hydrated lime, and all other Work and materials necessary to complete each hot mix asphalt item will not be paid for separately but shall be included in the unit price bid. When the pay item includes the PG binder grade, any change to the submitted mix design optimum asphalt cement content to establish production targets will not be measured and paid for separately but shall be included in the Work. No additional compensation will be considered or paid for any additional asphalt cement, plant modifications and additional personnel required to produce the HMA as a result in a change to the mix design asphalt cement content.

The accepted quantities of HMA pavement shall be paid for at the contract unit price for each pavement type and/or thickness listed in the bid schedule. The price will be full compensation, furnishing all materials, preparation, mixing, placing and compaction of these materials and for all labor, equipment, tools, safety edges, and incidentals necessary to complete the Work.

The Contractor should anticipate the asphalt cement increases typical of their mixes. Contractors bidding the project should anticipate this change and factor it into their unit price bid.

REVISION OF SECTION 405
HEATING AND SCARIFYING TREATMENT

Section 405 of the Standard Specifications is hereby revised for this project as follows:

Delete the first sentence of **Subsection 405.03** and replace it with the following:

Weather and temperature limitations shall be as described in Version 6 of the Pikes Peak Region Asphalt Paving Specifications.

REVISION OF SECTION 407
PRIME COAT, TACK COAT, AND REJUVANATING AGENT

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

Delete **Subsection 407.09** and replace it with the following:

407.02 Bituminous Material. The type and grade of bituminous material used for tack coating will meet the specifications described in Version 6 of the Pikes Peak Region Asphalt Paving Specifications. The bituminous material for prime coating shall meet the requirements of Section 702. The rejuvenating agent shall be accepted before loading into the distributor.

Subsection 407.09 shall include the following:

Tack coat will not be measured and paid for separately but shall be included in the cost of 403 Hot Mix Asphalt.

REVISION OF SECTION 504
WALLS

Section 504 of the CDOT Standard Special Provisions is hereby revised for this project as follows:

Section 504 shall be revised to include the following:

504.49 This Section includes furnishing all materials and labor required for the design and construction of a precast concrete modular block (PMB) retaining wall with or without geosynthetic reinforcement. Precast modular block retaining wall blocks under this section shall be cast utilizing a wet-cast concrete mix and exhibit a final handling weight in excess of 1,000 pounds (450 kg) per unit and may utilize concrete-reinforcing steel.

Scope of Work: The work shall consist of furnishing materials, labor, equipment and supervision for the construction of a precast modular block (PMB) retaining wall structure in accordance with the requirements of this section and in acceptable conformity with the lines, grades, design and dimensions shown in the project site plans.

504.50 Allowances. No allowance shall be made in the price of the retaining wall for excavation beyond the limits required for retaining wall construction as shown on the project plans. The cost of excavation for the purposes of site access shall be the responsibility of the General Contractor. Removal of unsuitable soils and replacement with select fill shall be as directed and approved in writing by the Owner or Owner's representative and shall be paid under separate pay items.

504.51 Unit Prices. The unit price for the precast modular block wall system shall include the design per section **504.55(1)** and construction of all modular wall units and capstones, cap unit adhesive, geogrid soil reinforcement (if required), reinforcement area fill, unit fill, structure excavation and backfill, free draining filter material and underdrain pipe, foundation (leveling pad) fill, all unexposed (buried) wall material as shown on drawings, and all other labor, equipment, materials and any other items defined in **504.54** required to complete the pay item. Payment will be made under:

Pay Item	**Pay Unit**
Item 504 - Block Facing	Square Foot

504.52 The unit of measurement for furnishing the precast modular block retaining wall system shall be the vertical area of the wall face surface as measured from the top of the leveling pad to the top of the wall including capstone. The final measured quantity shall include supply of all material components and the installation of the precast modular block system.

The final accepted quantities of the precast modular block retaining wall system will be compensated per the vertical face area as described above. The quantities of the precast modular block retaining wall as shown on the plans and as approved by the Owner shall be the basis for determination of the final payment quantity. Payment shall be made per square foot of vertical wall face.

REVISION OF SECTION 504
WALLS
-continued-

504.53 Where the specification and reference documents conflict, the Owner's designated representative will make the final determination of the applicable document.

504.54 Definitions:

(1) Precast Modular Block (PMB) Unit – machine-placed, "wet cast" concrete modular block retaining wall facing unit.
(2) Geotextile – a geosynthetic fabric manufactured for use as a separation and filtration medium between dissimilar soil materials.
(3) Geogrid – a geosynthetic material comprised of a regular network of tensile elements manufactured in a mesh-like configuration of consistent aperture openings. When connected to the PMB facing units and placed in horizontal layers in compacted fill, the geogrid prevents lateral deformation of the retaining wall face and provides effective tensile reinforcement to the contiguous reinforced fill material.
(4) Drainage Aggregate – clean, crushed stone placed within and immediately behind the precast modular block units to facilitate drainage and reduce compaction requirements immediately adjacent to and behind the precast modular block units.
(5) Unit Core Fill – clean, crushed stone placed within the hollow vertical core of a precast modular block unit. Typically, the same material used for drainage aggregate as defined above.
(6) Foundation Zone – soil zone immediately beneath the leveling pad and the reinforced zone.
(7) Retained Zone – soil zone immediately behind the drainage aggregate and wall infill for wall sections designed as modular gravity structures. Alternatively, in the case of wall sections designed with geosynthetic soil reinforcement, the retained zone is the soil zone immediately behind the reinforced zone.
(8) Reinforced Zone – structural fill zone within which successive horizontal layers of geogrid soil reinforcement have been placed to provide stability for the retaining wall face. The reinforced zone exists only for retaining wall sections that utilize geosynthetic soil reinforcement for stability.
(9) Reinforced Fill – structural fill placed within the reinforced zone.
(10) Leveling Pad – hard, flat surface upon which the bottom course of precast modular blocks is placed. The leveling pad may be constructed with crushed stone or cast-in-place concrete. A leveling pad is not a structural footing.
(11) Wall Infill – the fill material placed and compacted between the drainage aggregate and the excavated soil face in retaining wall sections designed as modular gravity structures.

504.55 Reference Standards

(1) Design
   a. AASHTO LRFD Bridge Design Specifications, 9th Edition, 2020.
   b. Minimum Design Loads for Buildings and Other Structures – ASCE/SEI 7-10.
   c. International Building Code, 2018 Edition.
   d. FHWA-NHI-10-024 Volume I and GEC 11 Design of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes.
   e. FHWA-NHI-10-025 Volume II and GEC 11 Design of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes.

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f. National Concrete Masonry Association (NCMA) Design Manual for Segmental Retaining Walls (ASD), 3rd Edition

g. Geotechnical report by Shannon & Wilson, Inc. 1321 Bannock St., Denver, CO titled "Geotechnical & Pavement Design Report, Highway 105, Full Corridor Design, El Paso County, Colorado, dated July 6, 2017.

(2) Precast Modular Block Units

a. ACI 201 – Guide to Durable Concrete
b. ACI 318 – Building Code Requirements for Structural Concrete
c. ASTM A615 – Steel Bars for Concrete Reinforcement
d. ASTM A767 – Galvanized Steel Bars for Concrete Reinforcement
e. ASTM A775 – Epoxy-Coated Steel Reinforcing Bars
f. ASTM C33 – Standard Specification for Concrete Aggregates
g. ASTM C39 – Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
h. ASTM C94 – Standard Specification for Ready-Mixed Concrete.
i. ASTM C136 – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
j. ASTM C143 – Standard Test Method for Slump of Hydraulic-Cement Concrete.
k. ASTM C150 – Standard Specification for Portland Cement
l. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
m. ASTM C260 – Standard Specification for Air-Entraining Admixtures for Concrete.
n. ASTM C494 – Standard Specification for Chemical Admixtures for Concrete.
o. ASTM C595 - Standard Specification for Blended Hydraulic Cements.
p. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
q. ASTM C666 – Standard Test Method for Concrete Resistance to Rapid Freezing and Thawing.
r. ASTM C845 - Standard Specification for Expansive Hydraulic Cement.
s. ASTM C920 – Standard Specification for Elastomeric Joint Sealants.
t. ASTM C989 - Standard Specification for Slag Cement for Use in Concrete and Mortars.
u. ASTM C1116 – Standard Specification for Fiber-Reinforced Concrete.
v. ASTM C1157 - Standard Performance Specification for Hydraulic Cement.
w. ASTM C1218 - Standard Test Method for Water-Soluble Chloride in Mortar and Concrete.
x. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures.
y. ASTM C1611 – Standard Test Method for Slump Flow of Self-Consolidating Concrete.
z. ASTM C1776 – Standard Specification for Wet-Cast Precast Modular Retaining Wall Units.

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aa. ASTM D6638 – Standard Test Method for Determining Connection Strength Between Geosynthetic Reinforcement and Segmental Concrete Units (Modular Concrete Blocks).
bb. ASTM D6916 – Standard Test Method for Determining Shear Strength Between Segmental Concrete Units (Modular Concrete Blocks).

(3) Geosynthetics
a. AASHTO M 288 – Geotextile Specification for Highway Applications.
b. ASTM D3786 – Standard Test Method for Bursting Strength of Textile Fabrics Diaphragm Bursting Strength Tester Method.
c. ASTM D4354 – Standard Practice for Sampling of Geosynthetics for Testing.
d. ASTM D4355 – Standard Test Method for Deterioration of Geotextiles
e. ASTM D4491 – Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
f. ASTM D4533 – Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
g. ASTM D4595 – Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
h. ASTM D4632 – Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
i. ASTM D4751 – Standard Test Method for Determining Apparent Opening Size of a Geotextile.
j. ASTM D4759 – Standard Practice for Determining Specification Conformance of Geosynthetics.
k. ASTM D4833 – Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products.
l. ASTM D4873 – Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples.
m. ASTM D5262 – Standard Test Method for Evaluating the Unconfined Tension Creep and Creep Rupture Behavior of Geosynthetics.
n. ASTM D5321 – Standard Test Method for Determining the Coefficient of Soil and Geosynthetic or Geosynthetic and Geosynthetic Friction by the Direct Shear Method.
o. ASTM D5818 – Standard Practice for Exposure and Retrieval of Samples to Evaluate Installation Damage of Geosynthetics.
p. ASTM D6241 – Standard Test Method for the Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe.
q. ASTM D6637 – Standard Test Method for Determining Tensile Properties of Geogrids by the Single or Multi-Rib Tensile Method.
r. ASTM D6706 – Standard Test Method for Measuring Geosynthetic Pullout Resistance in Soil.

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s. ASTM D6992 – Standard Test Method for Accelerated Tensile Creep and Creep-Rupture of Geosynthetic Materials Based on Time-Temperature Superposition Using the Stepped Isothermal Method.

(4) Soils

a. AASHTO M 145 – AASHTO Soil Classification System.
b. AASHTO T 104 – Standard Method of Test for Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate.
c. AASHTO T 267 – Standard Method of Test for Determination of Organic Content in Soils by Loss of Ignition.
d. ASTM C33 – Standard Specification for Concrete Aggregates.
e. ASTM D448 – Standard Classification for Sizes of Aggregates for Road and Bridge Construction.
f. ASTM D698 – Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort. (12,400 ft-lbf/ft (2,700 kN-m/m)).
g. ASTM D1241 – Standard Specification for Materials for Soil-Aggregate Subbase, Base and Surface Courses.
h. ASTM D1556 – Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method.
i. ASTM D1557 – Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort. (56,000 ft-lbf/ft (2,700 kN-m/m)).
j. ASTM D2487 – Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
k. ASTM D2488 – Standard Practice for Description and Identification of Soils (Visual-Manual Procedure).
l. ASTM D3080 – Standard Test Method for Direct Shear Test of Soils Under Consolidated Drained Conditions.
m. ASTM D4254 – Standard Test Method for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.
n. ASTM D4318 – Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
o. ASTM D4767- Test Method for Consolidated-Undrained Triaxial Compression Test for Cohesive Soils.
p. ASTM D4972 – Standard Test Method for pH of Soils.
q. ASTM D6913 – Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis.
r. ASTM D6938 – Standard Test Method for In-Place Density and Water Content of Soil and Aggregate by Nuclear Methods (Shallow Depth).
s. ASTM G51 – Standard Test Method for Measuring pH of Soil for Use in Corrosion Testing.

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t. ASTM G57 – Standard Test Method for Field Measurement of Soil Resistivity Using the Wenner Four-Electrode Method.

(5) Drainage Pipe
   a. ASTM D3034 – Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
   b. ASTM F2648 – Standard Specification for 2 to 60 inch [50 to 1500 mm] Annular Corrugated Profile Wall Polyethylene (PE) Pipe and Fittings for Land Drainage Applications.

ADMINISTRATIVE REQUIREMENTS

504.56 Preconstruction Meeting. As directed by the Owner, the General Contractor shall schedule a preconstruction meeting at the project site prior to commencement of retaining wall construction. Participation in the preconstruction meeting shall be required of the General Contractor, Retaining Wall Design Engineer (RWDE), Retaining Wall Installation Contractor (RWIC), Grading Contractor, and Inspection Engineer. The General Contractor shall provide notification to all parties at least 10 calendar days prior to the meeting.

(1) Preconstruction Meeting Agenda:
   a. The RWDE shall explain all aspects of the retaining wall construction drawings.
   b. The RWDE shall explain the required bearing capacity of soil below the retaining wall structure and the shear strength of in-situ soils assumed in the retaining wall design to the Inspection Engineer.
   c. The RWDE shall explain the required shear strength of fill soil in the reinforced, retained and foundation zones of the retaining wall to the Inspection Engineer.
   d. The RWDE shall explain any measures required for coordination of the installation of utilities or other obstructions in the reinforced or retained fill zones of the retaining wall.
   e. The RWIC shall explain all excavation needs, site access and material staging area requirements to the General Contractor and Grading Contractor.

SUBMITTALS

504.57 Product Data. At least 14 days prior to construction, the General Contractor shall submit the retaining wall product submittal package to the Owner's Representative for review and approval. The submittal package shall include technical specifications and product data from the manufacturer for the following:

(1) Precast Modular Block System brochure
(2) Test results for Precast Modular Block concrete specified in 504.66(2) as follows:
   a. 28-day compressive strength
   b. Air content
   c. Slump or Slump Flow (as applicable)
(3) Drainage Pipe
(4) Geotextile

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(5) Geosynthetic Soil Reinforcement (if required by the retaining wall design). The contractor shall provide certified manufacturer test reports for the geosynthetic soil reinforcement material in the manufactured roll width specified. The test report shall list the individual roll numbers for which the certified material properties are valid.

504.58 Installer Qualification Data. At least 14 days prior to construction, the General Contractor shall submit the qualifications of the business entity responsible for installation of the retaining wall, the RWIC, per **504.61**.

504.59 Retaining Wall Design Calculations and Construction Shop Drawings. At least 14 days prior to construction, the General Contractor shall furnish electronic versions construction shop drawings and the supporting structural calculations report to the Owner for review and approval. This submittal shall include the following:

(1) Signed, sealed and dated drawings and engineering calculations prepared in accordance with these specifications.
(2) Qualifications Statement by the RWDE summarizing their Experience.
(3) Certificate of Insurance of the RWDE as specified in 504.60, second paragraph.

CONSTRUCTION SHOP DRAWING PREPARATION

504.60 The RWDE shall coordinate the retaining wall construction shop drawing preparation with the project Civil Engineer, project Geotechnical Engineer and Owner's Representatives. The General Contractor shall furnish the RWDE the following project information required to prepare the construction shop drawings. This information shall include, but is not limited to, the following:

(1) Current versions of the site, grading, drainage, utility, erosion control, landscape, and irrigation plans;
(2) electronic CAD file of the civil site plans listed in (1);
(3) report of geotechnical investigation and all addenda and any supplemental reports;
(4) recommendations of the project Geotechnical Engineer regarding effective stress shear strength and total stress shear strength (when applicable) parameters for in-situ soils in the vicinity of the proposed retaining wall(s) and for any fill soil that may potentially be used as backfill in retained and/or foundation zones of the retaining wall.

The RWDE shall provide the Owner with a certificate of professional liability insurance verifying the minimum coverage limits of $1 million per claim and $1 million aggregate.

Design of the precast modular block retaining wall shall satisfy the requirements of this section. Where local, State, or national design or building code requirements exceed these specifications, these requirements shall also be satisfied.

The RWDE shall note any exceptions to the requirements of this section by listing them at the bottom right corner of the first page of the construction shop drawings.

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Approval or rejection of the exceptions taken by the Retaining Wall Design Engineer (RWDE) will be made in writing as directed by the Owner.

The RWDE shall determine the appropriate standard(s) to be utilized, and to which the precast modular block design shall be based upon, except as noted herein. Refer to **504.55(1).**

In the event that a conflict is discovered between these specifications and a reasonable interpretation of the design specifications and methods referenced in the paragraph above, these specifications shall prevail. If a reasonable interpretation is not possible, the conflict shall be resolved per the requirements in **504.53.**

Soil Shear Parameters. The RWDE shall prepare the construction shop drawings based upon soil shear strength parameters from the available project data and the recommendations of the project

Geotechnical Engineer. If insufficient data exists to develop the retaining wall design, the RWDE shall communicate the specific deficiency of the project information or data to the Owner in writing.

Allowable bearing pressure requirements for each retaining wall shall be clearly shown on the construction drawings.

Global Stability. Overall (global) stability shall be evaluated in accordance with the principals of limit equilibrium analysis as set forth in FHWA-NHI-10-024 Volume I and FHWA-NHI-10-025 Volume II GEC 11 Design of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes or in conjunction with the geotechnical report, as determined by the RWDE, as referenced **504.55(1)(g).** The minimum factors of safety shall be as follows:

Normal Service (Static)	1.3
Seismic	1.1
Rapid Drawdown (if applicable)	1.2

Note: RWDE to select appropriate FOS

Seismic Stability. Seismic loading shall be evaluated in accordance with AASHTO Load and Resistance Factor Design (LRFD) methodology, or NCMA (ASD) methodology as determined by the RWDE as referenced in **504.55(1).**

QUALITY ASSURANCE

504.61 RWIC Qualifications. In order to demonstrate basic competence in the construction of precast modular block walls, the RWIC shall possess the following:

1) Experience
    a. Construction experience with a minimum of 3,000 square feet (280 square meters) of the proposed precast modular block retaining wall system.

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   b. Construction of at least three (3) precast modular block (large block) retaining wall structures within the past three (3) years.
   c. Construction of at least 5,000 square feet (465 square meters) of precast modular block (large block) retaining walls within the past five (5) years.
2) RWIC experience documentation for each qualifying project shall include:
   a. Project name and location
   b. Date (month and year) of construction completion
   c. Contact information of Owner or General Contractor
   d. Type (trade name) of precast modular block system used
   e. Maximum height of the wall constructed
   f. Face area of the wall constructed
3) In lieu of these specific requirements, the contractor may submit alternate documentation demonstrating competency in Precast Modular Block retaining wall construction.**504.62** RWDE (RWDE) Qualifications and Statement of Experience. The RWDE shall submit a written statement affirming that he or she has the following minimum qualifications and experience.

1) The RWDE shall be licensed to practice in the jurisdiction of the project location.
2) The RWDE shall be independently capable of performing all internal and external stability analyses, including those for seismic loading, compound stability, rapid draw-down and deep-seated, global modes of failure.
3) The RWDE shall affirm in writing that he or she has personally supervised the design of the retaining walls for the project, that the design considers all the requirements listed in **504.60** and that he or she accepts responsibility as the design engineer of record for the retaining walls constructed on the project.
4) The RWDE shall affirm in writing that he or she has designed a minimum of approximately 3,000 face square feet (280 face square meters) of modular block earth retaining walls within the previous five (5) years.
5) In lieu of these specific requirements, the engineer may submit alternate documentation demonstrating competency in Precast Modular Block retaining wall design.

504.63 The Owner reserves the right to reject the services of any engineer, engineering firm, or contractor who, in the sole opinion of the Owner, does not possess the requisite experience or qualifications.

QUALITY CONTROL

504.64 The Owner's Representative shall review all submittals for materials, design, RWDE qualifications and the RWIC qualifications.

The General Contractor shall retain the services of an Inspection Engineer who is experienced with the construction of precast modular block retaining wall structures to perform inspection and testing. The

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cost of inspection shall be the responsibility of the General Contractor. Inspection shall be continuous throughout the construction of the retaining walls.

The Inspection Engineer shall perform the following duties:

1) Inspect the construction of the precast modular block structure for conformance with construction shop drawings and the requirements of this specification.
2) Verify that soil or aggregate fill placed and compacted in the reinforced, retained and foundation zones of the retaining wall conforms with **504.69** and **504.70** and exhibits the shear strength parameters specified by the RWDE.
3) Verify that the shear strength of the in-situ soil assumed by the RWDE is appropriate.
4) Inspect and document soil compaction in accordance with these specifications:
    a. Required dry unit weight
    b. Actual dry unit weight
    c. Allowable moisture content
    d. Actual moisture content
    e. Pass/fail assessment
    f. Test location – wall station number
    g. Test elevation
    h. Distance of test location behind the wall face
5) Verify that all excavated slopes in the vicinity of the retaining wall are bench-cut as required.
6) Notify the RWIC of any deficiencies in the retaining wall construction and provide the RWIC a reasonable opportunity to correct the deficiency.
7) Notify the General Contractor, Owner and RWDE of any construction deficiencies that have not been corrected in a timely manner.
8) Document all inspection results and provide reports to Owner, RWDE, and RWIC.
9) Test compacted density and moisture content of the retained backfill with the following frequency:
    a. At least once every 500 square feet (45 square meters) (in plan) per vertical lift, and
    b. At least once per every 18 inches (460 mm) of vertical wall construction.

The General Contractor's engagement of the Inspection Engineer does not relieve the RWIC of responsibility to construct the proposed retaining wall in accordance with the approved construction shop drawings and these specifications.

The RWIC shall inspect the on-site grades and excavations prior to construction and notify the RWDE and General Contractor if on-site conditions differ from the elevations, assumptions, and grading conditions depicted in the retaining wall construction shop drawings.

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DELIVERY, STORAGE AND HANDLING

504.65 The RWIC shall inspect the materials upon delivery to ensure that the proper type, grade and color of materials have been delivered.

The RWIC shall store and handle all materials in accordance with the manufacturer's recommendations as specified herein and in a manner that prevents deterioration or damage due to moisture, temperature changes, contaminants, corrosion, breaking, chipping, UV exposure or other causes. Damaged materials shall not be incorporated into the work.

1) Geosynthetics
    a. All geosynthetic materials shall be handled in accordance with ASTM D4873. The materials should be stored off the ground and protected from precipitation, sunlight, dirt and physical damage.

2) Precast Modular Blocks
    a. Precast modular blocks shall be stored in an area with positive drainage away from the blocks. Be careful to protect the block from mud and excessive chipping and breakage. Precast modular blocks shall not be stacked more than three (3) units high in the storage area.

3) Drainage Aggregate and Backfill Stockpiles
    a. Drainage aggregate or backfill material shall not be piled over unstable slopes or areas of the project site with buried utilities.
    b. Drainage aggregate and/or reinforced fill material shall not be staged where it may become mixed with or contaminated by poor draining fine-grained soils such as clay or silt.

MATERIALS

504.66 Precast Modular Block Retaining Wall Units:

1) All units shall be wet-cast precast modular retaining wall units conforming to ASTM C1776.

2) All units for the project shall be obtained from the same manufacturer. The manufacturer shall be licensed and authorized to produce the retaining wall units by the precast modular block system patent holder/licensor and shall document compliance with the published quality control standards of the proprietary precast modular block system licensor for the previous three (3) years or the total time the manufacturer has been licensed, whichever is less.

3) Concrete used in the production of the precast modular block units shall be first-purpose, fresh concrete. It shall not consist of returned, reconstituted, surplus or waste concrete. It shall be an original production mix meeting the requirements of ASTM C94 and exhibit the properties as shown in the following table:

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Concrete Mix Properties

Freeze Thaw Exposure Class[1]	Minimum 28-Day Compressive Strength[2]	Maximum Water Cement Ratio	Nominal Maximum Aggregate Size	Aggregate Class Designation[3]	Air Content[4]
Moderate	4,000 psi (27.6 MPa)	0.45	1 inch (25 mm)	3M	4.5% +/- 1.5%
Severe	4,000 psi (27.6 MPa)	0.45	1 inch (25 mm)	3S	6.0% +/- 1.5%
Very Severe	4,500 psi (30.0 MPa)	0.40	1 inch (25 mm)	4S	6.0% +/- 1.5%
Maximum Water-Soluble Chloride Ion (Cl^-) Content in Concrete, Percent by Weight of Cement[5,6]					0.15
Maximum Chloride as Cl^- Concentration in Mixing Water, Parts Per Million					1000
Maximum Percentage of Total Cementitious Materials By Weight [7,9] (Very Severe Exposure Class Only):					
Fly Ash or Other Pozzolans Conforming to ASTM C618					25
Slag Conforming to ASTM C989					50
Silica Fume Conforming to ASTM C1240					10
Total of Fly Ash or Other Pozzolans, Slag, and Silica Fume[8]					50
Total of Fly Ash or Other Pozzolans and Silica Fume[8]					35
Alkali-Aggregate Reactivity Mitigation per ACI 201					
Slump (Conventional Concrete) per ASTM C143[10]				5 inches +/- 1½ inches (125 mm +/- 40 mm)	
Slump Flow (Self-Consolidating Concrete) per ASTM C1611				18 inches – 32 inches (450 mm – 800 mm)	

[1]Exposure class is as described in ACI 318. "Moderate" describes concrete that is exposed to freezing and thawing cycles and occasional exposure to moisture. "Severe" describes concrete that is exposed to freezing and thawing cycles and in continuous contact with moisture. "Very Severe" describes concrete that is exposed to freezing and thawing cycles and in continuous contact with moisture and exposed to deicing chemicals. Exposure class should be specified by owner/purchaser prior to order placement.

[2]Test method ASTM C39.

[3]Defined in ASTM C33 Table 3 *Limits for Deleterious Substances and Physical Property Requirements of Coarse Aggregates for Concrete*.

[4]Test method ASTM C231.

[5]Test method ASTM C1218 at age between 28 and 42 days.

[6]Where used in high sulfate environments or where alkali-silica reactivity is an issue, water soluble chloride shall be limited to no more than trace amounts (from impurities in concrete-making components, not intended constituents.)

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[7]The total cementitious material also includes ASTM C150, C595, C845, C1157 cement. The maximum percentages shall include:

(a) Fly ash or other pozzolans in type IP, blended cement, ASTM C595, or ASTM C1157.

(b) Slag used in the manufacture of an IS blended cement, ASTM C595, or ASTM C1157.

(c) Silica fume, ASTM C1240, present in a blended cement.

[8]Fly ash or other pozzolans and silica fume shall constitute no more than 25 and 10 percent, respectively, of the total weight of the cementitious materials.

[9]Prescriptive limits shown may be waived for concrete mixes that demonstrate excellent freeze/thaw durability in a detailed and current testing program.

[10]Slump may be increased by a high-range water-reducing admixture.

4) Concrete reinforcing steel, when required for the specified block, shall conform to ASTM A615 and have a minimum yield strength of 60,000 psi. When required by the Owner to be galvanized or epoxy-coated, reinforcing steel shall conform to ASTM A767 or ASTM A775, respectively, and have a minimum yield strength of 60,000 psi.

5) At least 1 inch of concrete cover shall be maintained over all reinforcing steel bars.

6) Each concrete block shall be cast in a single continuous pour without cold joints. With the exception of half-block units, corner units and other special application units, the precast modular block units shall conform to the nominal dimensions listed in the table below and be produced to the dimensional tolerances shown.

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Block Type	Dimension	Nominal Value	Tolerance
28” (710 mm) Block	Height	18” (457 mm)	+/- 3/16” (5 mm)
	Length	46-1/8” (1172 mm)	+/- 1/2” (13 mm)
	Width*	28” (710 mm)	+/- 1/2” (13 mm)
41” (1030 mm) Block	Height	18” (457 mm)	+/- 3/16” (5 mm)
	Length	46-1/8” (1172 mm)	+/- 1/2” (13 mm)
	Width*	40-1/2” (1030 mm)	+/- 1/2” (13 mm)
60” (1520 mm) Block	Height	18” (457 mm)	+/- 3/16” (5 mm)
	Length	46-1/8” (1172 mm)	+/- 1/2” (13 mm)
	Width*	60” (1520 mm)	+/- 1/2” (13 mm)
52” (1320 mm) XL Block	Height	36” (914 mm)	+/- 3/16” (5 mm)
	Length	46-1/8” (1172 mm)	+/- 1/2” (13 mm)
	Width*	60” (1520 mm)	+/- 1/2” (13 mm)
72” (1830 mm) XL Block	Height	36” (914 mm)	+/- 3/16” (5 mm)
	Length	46-1/8” (1172 mm)	+/- 1/2” (13 mm)
	Width*	60” (1520 mm)	+/- 1/2” (13 mm)
96” (2440 mm) XL Block	Height	36” (914 mm)	+/- 3/16” (5 mm)
	Length	46-1/8” (1172 mm)	+/- 1/2” (13 mm)
	Width*	60” (1520 mm)	+/- 1/2” (13 mm)

* Block tolerance measurements shall exclude variable face texture

7) With the exception of half-block units, corner units and other special application units, the precast modular block units shall have two (2), circular dome shear knobs that are 10 inches (254 mm), 7.5 inches (190 mm), or 6.75 inches (171 mm) in diameter and 4 inches (102 mm) or 2 inches (51 mm) in height. The shear knobs shall fully index into a continuous semi-cylindrical shear channel in the bottom of the block course above. ThePeak interlock shear between any two (2) vertically stacked precast modular block units, with 10-inch (254 mm) diameter shear knobs, measured in accordance with ASTM D6916 shall exceed 6,500 lb/ft (95 kN/m) at a minimum normal load of 500 lb/ft (7kN/m). as well as an ultimate peak interface shear capacity in excess of 11,000 lb/ft (160 kN/m). The peak interlock shear between any two (2) vertically stacked precast modular block units, with 7.5-inch (190 mm) or 6.75-inch (171 mm) diameter shear knobs, measured in accordance with ASTM D6916 shall exceed 1,850 lb/ft (27 kN/m) at a minimum normal load of 500 lb/ft (7kN/m) as well as an ultimate peak interface shear capacity in excess of 10,000 lb/ft (146 kN/m).Test specimen blocks tested under ASTM D6916 shall be actual, full-scale production blocks of known compressive strength. The interface shear capacity reported shall be corrected for a 4,000 psi (27.6 MPa) concrete compressive strength. Regardless of precast modular block configuration, interface shear testing shall be completed without the inclusion of unit core infill aggregate.

8) The 28-inch (710 mm) and 41-inch (1030 mm) precast modular block units may be cast with a continuous vertical core slot that will permit the insertion of a 12-inch (305 mm) inch wide strip of

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9) geogrid reinforcement to pass completely through the block. When installed in this manner, the geogrid reinforcement shall form a non-normal load dependent, positive connection between the block unit and the reinforcement strip. The use of steel for the purposes of creating the geogrid-to-block connection is not acceptable.

10) Without field cutting or special modification, the precast modular block units shall be capable of achieving a minimum radius of 14 ft - 6 in (4.42 m).

11) The precast modular block units shall be manufactured with an integrally cast shear knobs that establishes a standard horizontal set-back for subsequent block courses. The precast modular block system shall be available in the standard horizontal set-back facing batter options listed below:

18-inch High Blocks Horizontal Set-Back/Blk. Course	Max. Facing Batter
3/8” (10 mm)	1.2˚
1-5/8” (41 mm)	5.2˚
9-3/8” (238 mm)	27.5˚
16-5/8” (422 mm)	42.7˚

36-inch High Blocks Horizontal Set-Back/Blk. Course	Max. Facing Batter
3-1/4” (83 mm)	5.2˚

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The precast modular block units shall be furnished with the required shear knobs that provide the facing batter required in the construction shop drawings.

12) The precast modular block unit face texture shall be selected by the owner from the available range of textures available from the precast modular block manufacturer. Each textured block facing unit shall be a minimum of 5.76 square feet (0.54 square meters) with a unique texture pattern that repeats with a maximum frequency of once in any 15 square feet (1.4 square meters) of wall face.

13) The block color shall be selected by the owner from the available range of colors available from the precast modular block manufacturer.

14) All precast modular block units shall be sound and free of cracks or other defects that would interfere with the proper installation of the unit, impair the strength or performance of the constructed wall. PMB units to be used in exposed wall construction shall not exhibit chips or cracks in the exposed face or faces of the unit that are not otherwise permitted. Chips smaller than 1.5” (38 mm) in its largest dimension and cracks not wider than 0.012” (0.3 mm) and not longer than 25% of the nominal height of the PMB unit shall be permitted. PMB units with bug holes in the exposed architectural face smaller than 0.75” (19 mm) in its largest dimension shall be permitted. Bug holes, water marks, and color variation on non-architectural faces are acceptable. PMB units that exhibit cracks that are continuous through any solid element of the PMB unit shall not be incorporated in the work regardless of the width or length of the crack.

15) Preapproved Manufacturers.
Manufacturers of Redi-Rock Retaining Wall Systems as licensed by Redi-Rock International, LLC, 05481 US 31 South, Charlevoix, MI 49720 USA; telephone (866) 222-8400; website www.redi-rock.com.

16) Substitutions. Technical information demonstrating conformance with the requirements of this specification for an alternative precast modular block retaining wall system must be submitted for preapproval at least 14 calendar days prior to the bid date. Acceptable alternative PMB retaining wall systems, otherwise found to be in conformance with this specification, shall be approved in writing by the owner 7 days prior to the bid date. The Owner’s Representative reserves the right to provide no response to submissions made out of the time requirements of this section or to submissions of block retaining wall systems that are determined to be unacceptable to the owner.

17) Value Engineering Alternatives. The owner may evaluate and accept systems that meet the requirements of this specification after the bid date that provide a minimum cost savings of 20% to the Owner. Construction expediency will not be considered as a contributing portion of the cost savings total.

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504.67 Geogrid Reinforcement

1) Geogrid reinforcement shall be a woven or knitted PVC coated geogrid manufactured from high-tenacity PET polyester fiber with an average molecular weight greater than 25,000 (M_n > 25,0000) and a carboxyl end group less than 30 (CEG < 30). The geogrid shall be furnished in prefabricated roll widths of certified tensile strength by the manufacturer. The prefabricated roll width of the geogrid shall be 12" (300 mm) +/- 1/2" (13 mm). No cutting of geogrid reinforcement down to the 12" (300 mm) roll width from a larger commercial roll width will be allowed under any circumstances.

2) The ultimate tensile strength (T_{ult}) of the geogrid reinforcement shall be measured in accordance with ASTM D6637.

3) Geogrid – Soil Friction Properties
   a. Friction factor, F*, shall be equal to 2/3 Tan ϕ, where ϕ is the effective angle of internal friction of the reinforced fill soil.
   b. Linear Scale Correction Factor, α, shall equal 0.8.

4) Long-Term Tensile Strength (T_{al}) of the geogrid reinforcement shall be calculated in accordance with Section 3.5.2 of FHWA-NHI-10-024 and as provided in this specification.
   a. The creep reduction factor (RF_{CR}) shall be determined in accordance with Appendix D of FHWA-NHI-10-025 for a minimum 75 year design life.
   b. Minimum installation damage reduction factor (RF_{ID}) shall be 1.25. The value of RF_{ID} shall be based upon documented full-scale tests in a soil that is comparable to the material proposed for use as reinforced backfill in accordance with ASTM D5818.
   c. Minimum durability reduction factor (RF_D) shall be 1.3 for a soil pH range of 3 to 9.

5) Connection between the PMB retaining wall unit and the geogrid reinforcement shall be determined from short-term testing per the requirements of FHWA NHI-10-025, Appendix B.4 for a minimum 75-year design life.

6) The minimum value of T_{al} for geogrid used in design of a reinforced precast modular block retaining wall shall be 2,000 lb/ft (29 kN/m) or greater.

7) The minimum length of geogrid reinforcement shall be the greater of the following:
   a. 0.7 times the wall design height, H.
   b. 6 feet (1.83 m).
   c. The length required by design to meet internal stability requirements, soil bearing pressure requirements and constructability requirements.

8) Constructability Requirements. Geogrid design embedment length shall be measured from the back of the precast modular block facing unit and shall be consistent for the entire height of a given retaining wall section.

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9) Geogrid shall be positively connected to every precast modular block unit. Design coverage ratio, Rc, as calculated in accordance with AASHTO LRFD Bridge Design Specifications Figure 11.10.6.4.1-2 shall not exceed 0.50.

10) Preapproved Geogrid Reinforcement Products.
    a. Miragrid XT Geogrids as manufactured by TenCate Geosynthetics of Pendergrass, Georgia USA and distributed by Manufacturers of the Redi-Rock Retaining Wall System.

11) Substitutions. No substitutions of geogrid reinforcement products shall be allowed.

504.68 Geotextile

1) Nonwoven geotextile fabric shall be placed as indicated on the retaining wall construction shop drawings. Additionally, the nonwoven geotextile fabric shall be placed in the v-shaped joint between adjacent block units on the same course. The nonwoven geotextile fabric shall meet the requirements Class 3 construction survivability in accordance with AASHTO M 288.

2) Preapproved Nonwoven Geotextile Products
    a. Mirafi 140N
    b. Propex Geotex 451
    c. Skaps GT-142
    d. Thrace-Linq 140EX
    e. Carthage Mills FX-40HS
    f. Stratatex ST 142

504.69 Drainage Aggregate and Wall Infill

1) Drainage aggregate (and wall infill for retaining walls designed as modular gravity structures) shall be a durable crushed stone conforming to No. 57 size per ASTM C33 with the following particle-size distribution requirements per ASTM D6913:

U.S. Standard Sieve Size	% Passing
1-½" (38 mm)	100
1" (25 mm)	95-100
½" (13 mm)	25-60
No. 4 (4.76 mm)	0-10
No. 8 (2.38 mm)	0-5

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504.70 Reinforced Fill

1) Material used as reinforced backfill material in the reinforced zone (if applicable) shall be a granular fill material meeting the requirements of USCS soil type GW, GP, SW or SP per ASTM D2487 or alternatively by AASHTO Group Classification A-1-a or A-3 per AASHTO M 145. The backfill shall exhibit a minimum effective internal angle of friction, ϕ = 34 degrees at a maximum 2% shear strain and meet the following particle-size distribution requirements per ASTM D6913.

U.S. Standard Sieve Size	% Passing
3/4" (19 mm)	100
No. 4 (4.76 mm)	0-100
No. 40 (0.42 mm)	0-60
No. 200 (0.07 mm)	0-15

2) The reinforced backfill material shall be free of sod, peat, roots or other organic or deleterious matter including, but not limited to, ice, snow or frozen soils. Materials passing the No. 40 (0.42 mm) sieve shall have a liquid limit less than 25 and plasticity index less than 6 per ASTM D4318. Organic content in the backfill material shall be less than 1% per AASHTO T-267 and the pH of the backfill material shall be between 5 and 8.

3) Soundness. The reinforced backfill material shall exhibit a magnesium sulfate soundness loss of less than 30% after four (4) cycles, or sodium sulfate soundness loss of less than 15% after five (5) cycles as measured in accordance with AASHTO T-104.

4) Reinforced backfill shall not be comprised of crushed or recycled concrete, recycled asphalt, bottom ash, shale or any other material that may degrade, creep or experience a loss in shear strength or a change in pH over time.

504.70 Leveling Pad

1) The precast modular block units shall be placed on a leveling pad constructed from crushed stone or unreinforced concrete. The leveling pad shall be constructed to the dimensions and limits shown on the retaining wall design drawings prepared by the RWDE.

2) Crushed stone used for construction of a granular leveling pad shall meet the requirements of the drainage aggregate and wall infill in **504.69** or a preapproved alternate material.

3) Concrete used for construction of an unreinforced concrete leveling pad shall satisfy the criteria for AASHTO Class B. The concrete should be cured a minimum of 12 hours prior to placement of the precast modular block wall retaining units and exhibit a minimum 28-day compressive strength of 2,500 psi (17.2 MPa).

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504.71 Drainage

1) Drainage Pipe
    a. Drainage collection pipe shall be a 4” (100 mm) diameter, 3-hole perforated, HDPE pipe with a minimum pipe stiffness of 22 psi (152 kPa) per ASTM D2412.
    b. The drainage pipe shall be manufactured in accordance with ASTM D1248 for HDPE pipe and fittings.

2) Preapproved Drainage Pipe Products
    a. ADS 3000 Triple Wall pipe as manufactured by Advanced Drainage Systems, or Equal

CONSTRUCTION REQUIREMENTS

504.72 All work shall be performed in accordance with OSHA safety standards, state and local building codes and manufacturer’s requirements.

The General Contractor is responsible for the location and protection of all existing underground utilities. Any new utilities proposed for installation in the vicinity of the retaining wall, shall be installed concurrent with retaining wall construction. The General Contractor shall coordinate the work of subcontractors affected by this requirement.

New utilities installed below the retaining wall shall be backfilled and compacted to a minimum of 98% maximum dry density per ASTM D698 standard proctor.

The General Contractor is responsible to ensure that safe excavations and embankments are maintained throughout the course of the project.

All work shall be inspected by the Inspection Engineer as directed by the Owner.

504.73 Examination

1) Prior to construction, the General Contractor, Grading Contractor, RWIC and Inspection Engineer shall examine the areas in which the retaining wall will be constructed to evaluate compliance with the requirements for installation tolerances, worker safety and any site conditions affecting performance of the completed structure. Installation shall proceed only after unsatisfactory conditions have been corrected.

504.74 Preparation

1) Fill Soil
    a. The Inspection Engineer shall verify that reinforced backfill placed in the reinforced soil zone satisfies the criteria of this section.
    b. The Inspection Engineer shall verify that any fill soil installed in the foundation and retained soil zones of the retaining wall satisfies the specification of the RWDE as shown on the construction drawings.

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1) Excavation
    a. The Grading Contractor shall excavate to the lines and grades required for construction of the precast modular block retaining wall as shown on the construction drawings. The Grading Contractor shall minimize over-excavation. Excavation support, if required, shall be the responsibility of the Grading Contractor.
    b. Over-excavated soil shall be replaced with compacted fill in conformance with the specifications of the RWDE and "Division 31, Section 31 20 00 – Earthmoving" of these project specifications.
    c. Embankment excavations shall be bench cut as directed by the project Geotechnical Engineer and inspected by the Inspection Engineer for compliance.

2) Foundation Preparation
    a. Prior to construction of the precast modular block retaining wall, the leveling pad area and undercut zone (if applicable) shall be cleared and grubbed. All topsoil, brush, frozen soil and organic material shall be removed. Additional foundation soils found to be unsatisfactory beyond the specified undercut limits shall be undercut and replaced with approved fill as directed by the project Geotechnical Engineer. The Inspection Engineer shall ensure that the undercut limits are consistent with the requirements of the project Geotechnical Engineer and that all soil fill material is properly compacted in accordance with project specifications. The Inspection Engineer shall document the volume of undercut and replacement.
    b. Following excavation for the leveling pad and undercut zone (if applicable), the Inspection Engineer shall evaluate the in-situ soil in the foundation and retained soil zones.
        i. The Inspection Engineer shall verify that the shear strength of the in-situ soil assumed by the RWDE is appropriate. The Inspection Engineer shall immediately stop work and notify the Owner if the in-situ shear strength is found to be inconsistent with the retaining wall design assumptions.
        ii. The Inspection Engineer shall verify that the foundation soil exhibits sufficient ultimate bearing capacity to satisfy the requirements indicated on the retaining wall construction shop drawings per paragraph 9 of **504.60**.

3) Leveling Pad
    a. The leveling pad shall be constructed to provide a level, hard surface on which to place the first course of precast modular block units. The leveling pad shall be placed in the dimensions shown on the retaining wall construction drawings and extend to the limits indicated.
    b. Crushed Stone Leveling Pad. Crushed stone shall be placed in uniform maximum lifts of 6" (150 mm). The crushed stone shall be compacted by a minimum of 3 passes of a vibratory compactor capable of exerting 2,000 lb (8.9 kN) of centrifugal force and to the satisfaction of the Inspection Engineer.
    c. Unreinforced Concrete Leveling Pad. The concrete shall be placed in the same dimensions as those required for the crushed stone leveling pad. The RWIC shall erect proper forms as required to ensure the accurate placement of the concrete leveling pad

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d. according to the retaining wall construction drawings.

504.75 Precast Modular Block Wall System Installation

1) The precast modular block structure shall be constructed in accordance with the construction drawings, these specifications and the recommendations of the retaining wall system component manufacturers. Where conflicts exist between the manufacturer's recommendations and these specifications, these specifications shall prevail.

2) Drainage components. Pipe, geotextile and drainage aggregate shall be installed as shown on the construction shop drawings.

3) Precast Modular Block Installation
   a. The first course of block units shall be placed with the front face edges tightly abutted together on the prepared leveling pad at the locations and elevations shown on the construction drawings. The RWIC shall take special care to ensure that the bottom course of block units are in full contact with the leveling pad, are set level and true and
   b. are properly aligned according to the locations shown on the construction drawings.
   c. Backfill shall be placed in front of the bottom course of blocks prior to placement of subsequent block courses. Nonwoven geotextile fabric shall be placed in the V-shaped joints between adjacent blocks. Drainage aggregate shall be placed in the V-shaped joints between adjacent blocks to a minimum distance of 12" (300 mm) behind the block unit. If stone infill of hollow core blocks exceeds 45% of the block design volume, drainage aggregate will not be required to extend beyond the back of the blocks, with the approval of the RWDE.
   d. Drainage aggregate shall be placed in 9-inch maximum lifts and compacted by a minimum of three (3) passes of a vibratory plate compactor capable exerting a minimum of 2,000 lb (8.9 kN) of centrifugal force.
   e. Unit core fill shall be placed in the precast modular block unit vertical core slot. The core fill shall completely fill the slot to the level of the top of the block unit. The top of the block unit shall be broom-cleaned prior to placement of subsequent block courses. No additional courses of precast modular blocks may be stacked before the unit core fill is installed in the blocks on the course below.
   f. Base course blocks for gravity wall designs (without geosynthetic soil reinforcement) may be furnished without vertical core slots. If so, disregard item 4 above, for the base course blocks in this application.
   g. Nonwoven geotextile fabric shall be placed between the drainage aggregate and the retained soil (gravity wall design) or between the drainage aggregate and the reinforced fill (reinforced wall design) as required on the retaining wall construction drawings.
   h. Subsequent courses of block units shall be installed with a running bond (half block horizontal course-to-course offset). With the exception of 90-degree corner units, the shear channel of the upper block shall be fully engaged with the shear knobs of the block course below. The upper block course shall be pushed forward to fully engage the interface shear key between the blocks and to ensure consistent face batter and wall alignment. Geogrid, drainage aggregate, unit core fill, geotextile and properly

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i. compacted backfill shall be complete and in-place for each course of block units before the next course of blocks is stacked.
j. The elevation of retained soil fill shall not be less than 1 block course (18 inches (457 mm)) below the elevation of the reinforced backfill throughout the construction of the retaining wall.
k. If included as part of the precast modular block wall design, cap units shall be secured with an adhesive in accordance with the precast modular block manufacturer's recommendation.

4) Geogrid Reinforcement Installation (if required)
   a. Geogrid reinforcement shall be installed at the locations and elevations shown on the construction drawings on level fill compacted to the requirements of this specification.
   b. Continuous 12" (300 mm) wide strips of geogrid reinforcement shall be passed completely through the vertical core slot of the precast modular block unit and extended to the embedment length shown on the construction plans. The strips shall be staked or anchored as necessary to maintain a taut condition.

   c. Reinforcement length (L) of the geogrid reinforcement is measured from the back of the precast modular block unit. The cut length (L_c) is two times the reinforcement length plus additional length through the block facing unit. The cut length is calculated as follows:

      L_c = 2*L + 3 ft (2*L + 0.9 m) (28" (710 mm) block unit)
      L_c = 2*L + 5 ft (2*L + 1.5 m) (41" (1030 mm) block unit)

   d. The geogrid strip shall be continuous throughout its entire length and may not be spliced. The geogrid shall be furnished in nominal, prefabricated roll widths of 12" (300 mm)+/- ½" (13 mm). No field modification of the geogrid roll width shall be permitted.
   e. Neither rubber tire nor track vehicles may operate directly on the geogrid. Construction vehicle traffic in the reinforced zone shall be limited to speeds of less than 5 mph (8 km/hr) once a minimum of 9 inches (230 mm) of compacted fill has been placed over the geogrid reinforcement. Sudden braking and turning of construction vehicles in the reinforced zone shall be avoided.

5) Construction Tolerance. Allowable construction tolerance of the retaining wall shall be as follows:
   a. Deviation from the design batter and horizontal alignment, when measured along a 10' (3 m) straight wall section, shall not exceed 3/4" (19 mm).
   b. Deviation from the overall design batter shall not exceed 1/2" (13 mm) per 10' (3 m) of wall height.
   c. The maximum allowable offset (horizontal bulge) of the face in any precast modular block joint shall be 1/2" (13 mm).
   d. The base of the precast modular block wall excavation shall be within 2" (50 mm) of the staked elevations, unless otherwise approved by the Inspection Engineer.

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e. Differential vertical settlement of the face shall not exceed 1’ (300 mm) along any 200’ (61 m) of wall length.
f. The maximum allowable vertical displacement of the face in any precast modular block joint shall be 1/2“ (13 mm).
g. The wall face shall be placed within 2” (50 mm) of the horizontal location staked.

504.76 Wall Infill and Reinforced Backfill Placement

1) Backfill material placed immediately behind the drainage aggregate shall be compacted as follows:
   a. 98% of maximum dry density at ± 2% optimum moisture content per ASTM D698 standard proctor or 85% relative density per ASTM D4254.

2) Compactive effort within 3’ (0.9 m) of the back of the precast modular blocks should be accomplished with walk-behind compactors. Compaction in this zone shall be within 95% of maximum dry density as measured in accordance with ASTM D698 standard proctor or 80% relative density per ASTM D 4254. Heavy equipment should not be operated within 3’ (0.9 m) of the back of the precast modular blocks.

3) Backfill material shall be installed in lifts that do not exceed a compacted thickness of 9” (230 mm).

4) At the end of each work day, the RWIC shall grade the surface of the last lift of the granular wall infill to a 3% ± 1% slope away from the precast modular block wall face and compact it.

5) The General Contractor shall direct the Grading Contractor to protect the precast modular block wall structure against surface water runoff at all times through the use of berms, diversion ditches, silt fence, temporary drains and/or any other necessary measures to prevent soil staining of the wall face, scour of the retaining wall foundation or erosion of the reinforced backfill or wall infill.

504.77 Obstruction in the Infill and Reinforced Zone

1) The RWIC shall make all required allowances for obstructions behind and through the wall face in accordance with the approved construction shop drawings.

2) Should unplanned obstructions become apparent for which the approved construction shop drawings do not account, the affected portion of the wall shall not be constructed until the RWDE can appropriately address the required procedures for construction of the wall section in question.

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504.78 Completion

1) For walls supporting unpaved areas, a minimum of 12” (300 mm) of compacted, low-permeability fill shall be placed over the granular wall infill zone of the precast modular block retaining wall structure. The adjacent retained soil shall be graded to prevent ponding of water behind the completed retaining wall.

2) For retaining walls with crest slopes of 5H:1V or steeper, silt fence shall be installed along the wall crest immediately following construction. The silt fence shall be located 3’ to 4’ (0.9 m to 1.2 m) behind the uppermost precast modular block unit. The crest slope above the wall shall be immediately seeded to establish vegetation. The General Contractor shall ensure that the seeded slope receives adequate irrigation and erosion protection to support germination and growth.

3) The General Contractor shall confirm that the as-built precast modular block wall geometries conform to the requirements of this section. The General Contractor shall notify the Owner of any deviations.

REVISION OF SECTION 504
MSE WALLS

Section 504 of the CDOT Standard Special Provisions is hereby revised for this project as follows:

Subsection 504.01 shall include the following:

The MSE walls shall be designed by an independent MSE wall designer. The contract plans are limited to general geometry and details to be used by the MSE wall designer. The MSE wall designer shall base their design on the AASHTO LRFD Bridge Design Specifications, 9th Edition, 2020, with 2021 errata and the FHWA Design and Construction of Mechanically Stabilized Earth Walls and Reinforced Slopes – Volumes I and II (FHWA-NHI-10-024) in accordance with the requirements of this section and in acceptable conformity with the lines, grades and dimensions shown in the contract plans. The design service life for the walls shall not be less than 75 years. The MSE wall designer shall provide shop drawings and calculations to the county for review and approval prior to fabricating elements. Shop drawings shall conform to the requirements of section 504.07 and shall include the design of the wall panels, the wall system, and any connecting elements between the panels and soil reinforcing. Calculations and shop drawings submitted for review shall be sealed by an engineer registered in the state of Colorado.

Delete **Subsection 504.02(e)** and replace with the following:

(e) *Soil Reinforcement Length (RL). The soil reinforcement length shall be measured from the front face of wall for panel less than 12 inches deep and from the back face of wall for panel greater than 12 inches deep to the end of the soil reinforcement as measured to the neat end. Soil reinforcement lengths shall not be less than the lengths specified on the plans.*

The Reinforcement Lengths shown on the shop drawings shall be the reinforcement length required for internal stability, pull-out, global stability, and external stability. Global stability and external stability (bearing pressure, sliding, and overturning) shall be designed in accordance with the design parameters given in the geotechnical report by Shannon & Wilson, Inc. 1321 Bannock St., Denver, CO titled "Geotechnical & Pavement Design Report, Highway 105, Full Corridor Design, El Paso County, Colorado, dated July 6, 2017.

Subsection 504.02 shall include the following:

(n) *Structural Concrete Stain. Structural concrete stain shall be the final finish for panel surfaces for MSE Retaining Wall 2 (RW-2) as designated on the plans and in these specifications. The color of the structural concrete stain shall have the written approval of the County prior to final batching and application on the project. The final color of the structural concrete stain shall be determined as follows:*

(1) Two 2 foot by 2 foot samples of the colors required by the Contract, shall be submitted to the County for approval. The stain samples shall be applied to a surface similar in texture to the concrete surface on which the stain will be applied on the project. The stain samples shall be applied by the same methods to be used in field application.

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(2) At least three weeks prior to beginning of the application of the structural concrete stain, 100 square foot test panels shall be prepared for the final color approved by the County. The test panels shall be produced on the actual concrete surface on which the final product will be placed, at a location designated by the County. The stain shall be applied to the test panels by the same methods to be used in the final field application. The County shall be allowed one week after application to the test panels for review and approval.

MATERIALS

The stain shall be selected from the CDOT approved product list and submitted to the project engineer for approval.
Application of the stain shall be per section 701 of the CDOT specifications.

Delete **Subsection 504.21** and replace with the following:

METHOD OF MEASUREMENT

504.21 MSE retaining walls will not be measured for payment in the field but will be paid for by the calculated quantities shown on the plans for the six major components of the wall: structure excavation, structure backfill, concrete panel facing, mechanical reinforcement of soil, geomembrane and structural concrete stain. The Contractor's construction of a system that requires increased or decreased quantities of any of the components to complete the wall to the dimensions shown will not result in a change in pay quantities. Exceptions will be made when field changes are ordered or when it is determined that there are discrepancies on the plans in an amount of at least plus or minus five percent of the plan quantity. Shoring, if required, will be provided at the contractor’s expense.

(1) The panel facing quantity was calculated for the square foot of wall front face area from the top of the leveling pad (or average pad elevations) as shown on the plans to the top of the anchoring slab for walls with railing, or to the top of the cast in place coping for walls without railing.

(2) The structure excavation quantity was calculated for the total volume of earth to be removed before the installation of the reinforced zone as shown on the plans.

(3) The structure backfill quantity was calculated for the total volume behind the wall (the retained structure backfill zone) including the material in the reinforced zone as shown on the plans.

(4) The mechanical reinforcement of soil quantity was calculated for the total volume of the reinforced zone as shown on the plans.

(5) Geomembrane was calculated as the design height (DH) plus soil reinforcement length (RL) plus 1.5 feet, disregarding the slope of the membrane.

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MSE WALLS
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(6) The structural concrete stain quantity was calculated for the total area of the stain limits as shown on the plans.

The square foot and cubic yard quantities computed for payment are the wall plan quantities based on the height measured at 20-foot maximum intervals along the wall layout line.

Subsection 504.23 shall include the following:

Pay Item	**Pay Unit**
Panel Facing	Square Foot
Structural Concrete Stain	Square Yard

Structural Concrete Stain will be paid for under the Section 601 Pay Item Structural Concrete Stain.

REVISION OF SECTION 506
SOIL RIPRAP

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

Subsection 506.02 shall include the following:

Materials. Soil riprap shall be a uniform mixture of riprap, of a size as called for on the plans, with voids filled with native soil as indicated on the plans. Soil riprap shall be mixed with topsoil at all locations.

Subsection 506.03 shall include the following:

Construction requirements. Soil riprap shall be placed in lifts; riprap shall be placed to a 1xD50 thickness, voids then filled with native soil material, with soil vibrated (by impact with excavator bucket or other means) or washed into the voids before the next lift of riprap is placed. The intention is to have an interlocking matrix of rock (a typical riprap placement), with only the voids filled with soil. Pre-mixing of soil and riprap is not permitted. Soil riprap shall be placed in this fashion, to the lines and grades shown in the drawings.

BASIS OF PAYMENT

Subsection 506.05 shall include the following:

The accepted Work will be paid for at the contract unit price for each of the items listed below that appears in the bid schedule. Measurement and payment for soil riprap includes the total volume, including both the riprap and the soil material in the voids.

Payment shall be made under:

Pay Item	**Pay Unit**
Soil Riprap (9 Inch)	Cubic Yard

Payment shall be made at the applicable contract unit price for Soil Riprap (9 Inch) and shall include full compensation for all labor, equipment, materials and all other Work to compensate the installation.

REVISION OF SECTION 507
CONCRETE SLOPE AND DITCH PAVING

Section 507 of the Standard Specifications is hereby revised for this project as follows:

Subsection 507.01 shall include the following:

The work shall include reinforced concrete paving for the forebay, trickle channel and spillway.

Subsection 507.02 shall include the following:

Reinforcement for the forebay, trickle channel and spillway shall include welded wire fabric and #4 rebar.

Subsection 507.14 shall include the following:

Payment shall be made under:

Pay Item	**Pay Unit**
Concrete Slope and Ditch Paving (Reinforced)	Cubic Yard

All materials and labor associated with the forebay, trickle channel and concrete spillway will not be paid for separately and shall be included in Concrete Slope and Ditch Paving (Reinforced).

REVISION OF SECTION 522
DUPLEX COATING SYSTEM

Section 522 of the standard specifications is hereby added to the Standard Specifications for this project as follows:

DESCRIPTION

522.01 This work consists of hot dip galvanizing and duplex coating steel structures as shown in the Contract.

MATERIALS AND CONSTRUCTION REQUIREMENTS

522.02

(a) *General*. The Contractor shall provide, install, and repair if necessary, all steel items that are prepared and coated in conformance with this Section. All repair and replacement of the finished coating necessary for final acceptance shall be at the Contractor's expense.

Steel products to be galvanized and coated shall be cleaned of weld spatter and bevel finished at exposed corners, edges and points. Areas having welds, cuts, bores, notches, or grooves shall also be beveled unless otherwise noted in the Contract or directed by the Engineer. Bevel work shall produce a uniform, smooth finish for galvanizing. Bevel size to be used is based on steel thickness and other criteria as follows:

Steel Thickness/Type	Bevel Size (inches)
Less than ½" thick	1/32" to 1/16"
Over ½" thick	1/16" to 1/8"
Bores, notches & grooves	root face of 1/32" to 1/16"

Welds shall be cleaned and finished according to AWS standards.

All coating measurements shall be taken with a Type 2 fixed probe Dry Film Thickness (DFT) gauge. The gauge shall be calibrated according to the Society for Protective Coatings (SSPC) Standard PA-2.

(b) *Galvanizing.* Galvanizing shall be done in accordance with the Contract requirements and AASHTO M 111 (ASTM A123) for the type of material being galvanized, except that items shall only be quenched with ambient air. The poles and arms for traffic signals and signs shall be hot dipped galvanized inside and outside. Chromate treatment of any type will not be permitted. Zinc-phosphate pretreatment or acrylic passivation pretreatments shall be as described in (d) below.

The Contractor shall submit a certificate of compliance (COC), conforming to subsection 106.12, confirming that all materials meet or exceed the galvanizing requirements described herein.
Spot areas not requiring galvanizing shall be marked and cleanly patched with material that prevents galvanization but does not weaken the adjacent spelter coating. Repair of patched areas shall be achieved by metallizing as described in (c) below.

REVISION OF SECTION 522
DUPLEX COATING SYSTEM
-continued-

Prior to galvanizing, the Contractor's galvanizer shall notify the Engineer in writing that the galvanized order is chromate free and air quenched. Products not certified chromate free by the Contractor's galvanizer shall be tested prior to galvanizing. The Contractor shall provide the Engineer with certification from an independent ASTM accredited laboratory listing all individual items that test chromate free. Testing shall comply with ASTM D-2092 Appendix X2. Test results shall be provided to the Engineer prior to galvanizing.

(c) *Repair of Galvanized Products.* Uncoated areas or damaged coating exceeding applicable specification limits shall be re-galvanized to meet the original specification requirements. Cuts made after galvanizing shall be ground, beveled, and smoothed before repair. Damaged galvanized areas shall be re-galvanized or metalized.

Metalizing shall conform to *ASTM* A-780, Annex A3, except that minor repair areas shall be cleaned according to SSPC method SP-3. SSPC Method SP-2 may be used to clean difficult access areas. Thickness of the repair coat shall match adjacent galvanizing, as measured by a calibrated DFT gauge.

Coating imperfections such as burring, runs or drips, high spots, heavy dross, or ash inclusion shall be removed and cleaned at the Contractor's expense. Areas of re-work falling below zinc thickness limits shall be repaired at the Contractor's expense.

Printed Technical Data Sheets (PTDS) shall be provided to the Engineer for repair materials used.

(d) *Preparing Galvanized Surfaces for Coating.* Products shall be inspected for shipping and handling damage before surface preparation begins. Damage shall be reported to the Contractor's galvanizer and to the Engineer prior to repair. The Engineer will determine whether damaged items are to be repaired or replaced. Minor repair of galvanizing shall conform to (c) above, and shall be at the Contractor's expense.

The Contractor shall prepare each surface to be coated so that it has a slightly roughened profile without removing over 1.0 mil of the galvanized coating. Minimum ASTM zinc thickness specifications shall still apply after preparation.

Surfaces of fasteners to be coated shall be lightly brushed or sanded in a manner that will remove the least amount of zinc.

Surfaces that become soiled after pretreatment shall be cleaned prior to coating by low pressure, mild detergent wash and rinse. Stained or oiled surfaces may also be mildly scrubbed with a soft bristle nylon brush. Stubborn stains may be mildly scrubbed with a mix of 1 - 2 percent ammonia solution and thoroughly rinsed. Wash and rinse pressure shall not exceed 100 psi at 185° F temperature.

REVISION OF SECTION 522
DUPLEX COATING SYSTEM
-continued-

Surface preparation work shall be done according to one of the following methods:

1. *Zinc-Phosphate Pretreatment.* This treatment may be used only on new galvanizing less than 48 hours of age.

   Items shall be immersed in a bath of acidic zinc-phosphate solution for 3 - 6 minutes, rinsed with clean water, and dried. The first epoxy coat shall be applied within 48 hours after immersion treatment. If treated items are shipped to a different coating facility they shall be rewashed, rinsed and dried to remove surface soiling. The first epoxy coat must still be applied within 48 hours after immersion treatment.

2. *Acrylic Passivation Pretreatment.* This treatment may be used only on fresh hot galvanizing or new galvanizing less than 48 hours of age. Only chrome-free solutions shall be used, applied by a method that ensures complete coverage of all surfaces to be coated. The Contractor shall provide the Engineer with treatment dates for each item and the PTDS for the solutions used.

   The Contractor's galvanizer may apply solution to fresh hot galvanizing that is less than 6 hours of age, still clean, and dry and that has cooled to treatment application temperature guidelines.

   If newly galvanized items are shipped to another treatment facility they shall be washed, rinsed and dried to remove surface soiling. The solution shall then be applied and cured according to the supplier's instructions.

   Fully cured and treated items shall be rewashed, rinsed, and dried again just before coating. Items not coated within 100 days of treatment shall be abrasive blasted in conformance with subsection (d) 3.

3. *Abrasive Blasting.* This treatment may be used on galvanized items of any age if beveling requirements as listed in the third and fourth paragraphs of subsection (a) have been met.

   The Contractor shall notify the Engineer in writing at least five working days before blasting begins. Zinc thickness shall be measured and recorded immediately after blasting and provided to the Engineer within 48 hours of blasting. Thickness limits and measurement frequency shall comply with the original applicable ASTM specification. Blast operations shall reasonably conform to ASTM Standard Practice D-6386, Subsection 5.4.1 except for small areas falling below required zinc thickness. These areas shall be repaired in accordance with subsection (c). No single area shall exceed 2 inches at its largest width or 12 inches at its longest dimension. The total repair area shall not exceed 1 percent of the coatable surface of the item; if limits are exceeded or zinc thickness is below the specification requirement, the item shall be re-galvanized in conformance with the original specification.

REVISION OF SECTION 522
DUPLEX COATING SYSTEM
-continued-

The Contractor shall measure and record the size, location and repair method used for all repairs. This information shall be included on the report of thickness measurements.

The first epoxy coat shall be applied within 90 minutes of abrasive blasting. Items shall be cleaned free of blast debris before coating. Compressed air used to clean items shall be free of oil, residue, oil and other harmful contaminants.

Thickness measurement is not required after surface preparation work has been completed.

(e) *Coating and Paint Systems.* Prepared items shall be coated with a two or three coat system described in this subsection. Alternative coating systems shall be pre-approved in writing by the Engineer. Manufacturer's PTDS for each coating type shall state test values for ASTM requirements of this subsection. Prior to product use the coating supplier shall provide the PTDS and certify to the Engineer in writing that all furnished coating materials meet applicable requirements of this subsection.

Faying surfaces shall not be painted unless written approval is given by the Engineer. All shop fabrication, including welds and attachments, shall be completed prior to coating unless otherwise specified in the Contract or directed in writing by the Engineer.

Inorganic zinc coatings shall not be used. Combined DFT of all coats applied over the galvanizing shall range from 6.5 to 10 mils with a topcoat DFT of 3 mils minimum. Dried color of the base coat and topcoat shall be visually contrasting. Finished color shall not vary more than 4 ΔE^*_{ab} units from the specified color determined in accordance with ASTM D 2244.

Volatile Organic Compound (VOC) levels shall not exceed 3.0 pounds per gallon for each applied coat. Dry films shall contain less than 1 percent lead and other toxic heavy metals. The zinc concentration of each epoxy coat shall not exceed 40 percent. Top coats shall have a semi-gloss value of 50-75.

All coatings shall be able to withstand temperatures up to 180° F without sag, blister, or peel damage. Topcoat formulation shall provide weathering, chemical, and ultraviolet (UV) resistance. All coatings shall meet the following ASTM requirements as amended:

(1) Corrosion Weathering. ASTM D-5894, minimum 6-cycles of exposure:
Corrosion rating of 8 or higher according to ASTM D-1654.
Blistering rating of 8 or higher according to ASTM D-714.

(2) Impact Resistance. ASTM D-2794, 30 day test:
Epoxies – Minimum 40 inch-pounds
All Topcoats – Minimum 90 inch-pounds

REVISION OF SECTION 522
DUPLEX COATING SYSTEM
-continued-

(3) Adhesion Testing. ASTM D-4541, 30 day test, Minimum 500 psi for either: Method B - flat surface or Method E - curved surface.

(4) Abrasion Resistance. ASTM D-4060, 30 day test: Maximum 90 mg loss after 1000 cycles with a CS10 or CS17 wheel.

(5) Flexibility. ASTM D-522, 30 day test - Method B: Epoxies shall pass a 180 degree bend over a ¾ inch mandrel. All Topcoats shall pass a 180 degree bend over a 3/8 inch mandrel.

Each coat shall be applied uniformly to provide an appearance free of laps, streaks, sags, drips, pinholes, and other discontinuities; all such defects shall be repaired prior to product shipment.

The Contractor's coater shall measure the DFT of each applied coat according to SSPC, Guide PA-2, except that measurements shall be taken with a calibrated Type 2 fixed probe gauge. Thickness records shall be provided to the Engineer prior to project shipment. The following two coating systems do not require pre-approval:

1. Powder Coating. The Contractor's coater shall oven preheat the articles to abate out-gassing potential. The Contractor's coater shall use compatible materials and coating processes to obtain proper coat to coat adhesion.

   The epoxy powder base coat shall measure 2 to 6 mils DFT and be applied by electrostatic or airstatic spray. The powder formulation shall be a non-hybrid epoxy of anti-gassing grade. The powder topcoat shall be electrostatic or airstatic spray applied and measure 3 to 6 mils DFT. The powder formulation shall be a non-acrylic, high-build, aliphatic-based, enhanced polyester or urethane polyester of anti-gassing grade.

2. Liquid Coating. The Contractor's coater shall apply coats by conventional or airless spray according to the supplier's guidelines. Minimal striping at difficult work areas is permissible. The Contractor's Coater shall use proper work methods and compatible materials to obtain proper coat adhesion. Thinning of paints shall be done according to the manufacturer's instructions so that thinned products conform to the solids content and VOC limits of this subsection.

   The epoxy base coat shall measure 2 to 6 mils DFT. Paint shall be a low-blush epoxy polyamide, or a low-blush cycloaliphatic bisphenol-A polyamine. Minimum solids by weight of all epoxies used shall be 68 percent.

   The topcoat shall measure 3 to 6 mils DFT. Paint shall be an aliphatic-based urethane polyester or aliphatic-based polyurea urethane. Specially formulated aliphatic-based polyaspartic polyureas may also be used over compatible epoxy bases.

(f) *Repair of Coated Products.* The Contractor shall repair damage from shipment, installation, field welding, or other activity during the construction. Damage shall be reported to the Engineer prior to repair. Repairs shall be as directed by the Engineer.

REVISION OF SECTION 522
DUPLEX COATING SYSTEM
-continued-

Significant repair procedures require written submittal of a proposed repair process from the Contractor. The Engineer shall approve the proposal in writing before repairs begin. Significant repairs are classified as:

(1) Any damaged area to the base coat material over 1 square inch
(2) Total repair areas exceeding 5 percent of the coating per item
(3) Any single topcoat repair area over 64 square inches

Minor and touchup repair of topcoats shall be done as follows:

A UV rated, aliphatic-based liquid topcoat paint shall be used. The paint shall be compatible with the existing topcoat material and closely match existing color. The paint shall meet the requirements of subsection (e). The paint supplier shall provide the Engineer with PTDS for the products used.

Single areas smaller than 8 square inches requiring repair shall be scuffed with 220 grit sandpaper or equivalent scuff material. Larger areas up to 64 square inches may be cleaned according to SSPC, Method SP-2. All border areas at the undamaged topcoat shall be scuffed with 220 grit material.

Cleaned, scuffed areas shall be bordered and coated by airless or conventional spray. Work areas shall be adequately shielded to contain errant spray. Fresh repair areas shall be protected as necessary during the initial cure. Repair thickness shall reasonably match the adjacent coating.

The repair coat shall provide an appearance free of sags, runs, streaks, drips, pinholes, or other discontinuities. Spray can paint repair shall not be used**.**

(g) *Conditions for Final Acceptance of Coating.* Within six weeks immediately prior to final project acceptance, the Engineer will conduct a final inspection of the coating. The Contractor's Superintendent shall also attend the inspection. Before final project acceptance, the Contractor shall repair the following defects found during the inspection:

i. Peeling on any portion of the coatings.
ii. Blistering on any portion of the coatings.
iii. Color fading below a 35 gloss rating.
iv. Mottling defects that exceed 3 percent of the topcoat surface.
v. Visible cracking of the topcoat material.
vi. Visible rusting discoloration on the coating.
vii. Sag or other evidence of coating adhesion loss.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Duplex Coating System will not be measured and paid for separately, but shall be included in the work of pay item Traffic Signal-Light Pole, Pedestrian Push Button Post Assembly, and/or Traffic Signal Pedestal Pole Steel. All post assemblies shall be galvanized finished, with no additional color.

REVISION OF SECTION 603
CULVERTS AND SEWERS
-continued-

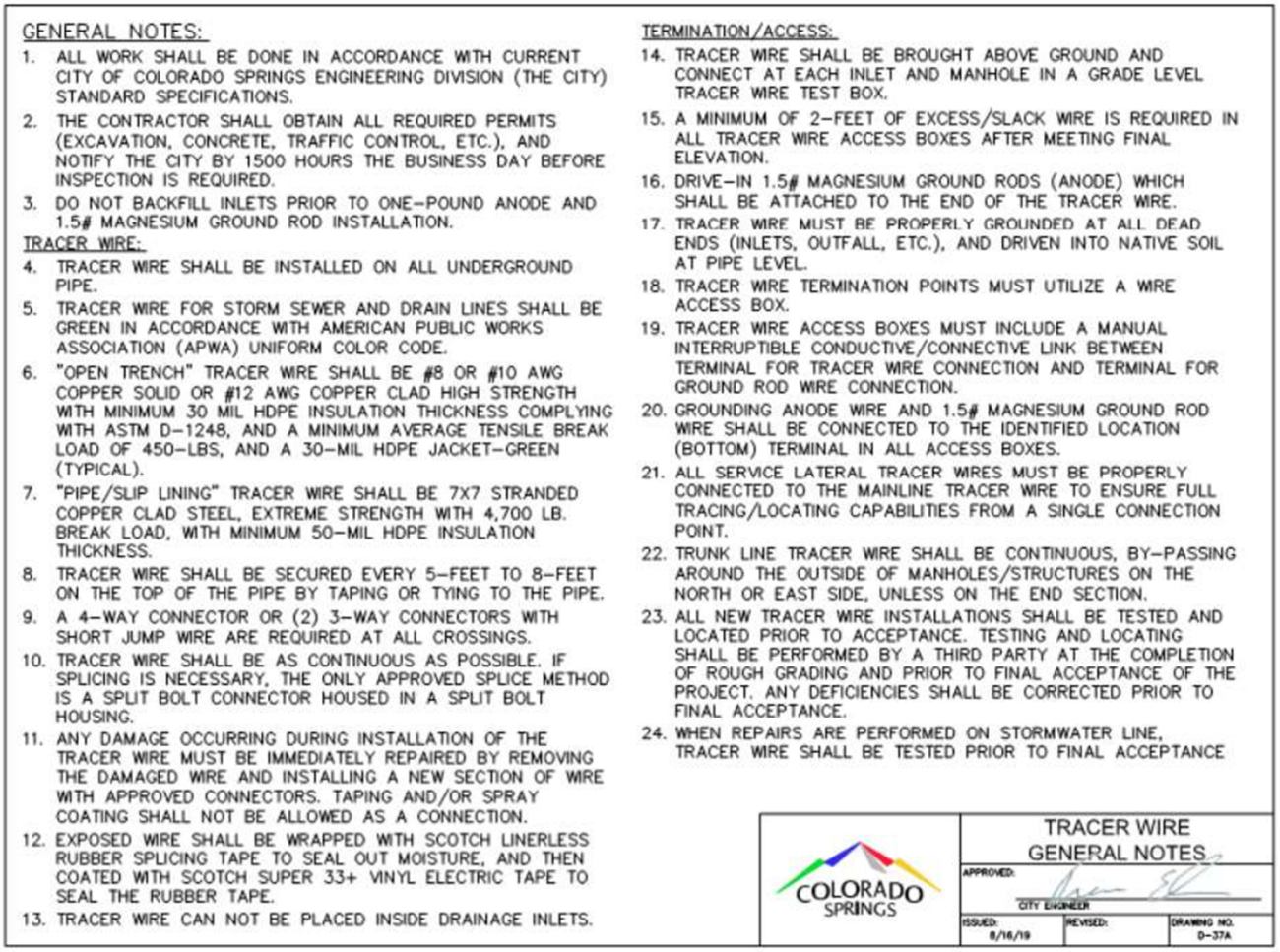
Section 603 of the Standard Specifications is hereby revised as follows:

Subsection 603.02 shall include the following:

Reinforced concrete pipe shall be manufactured from concrete that meets the requirements for severity of sulfate exposure Class 2 specified in subsection 601.04.

Subsection 603.03 is hereby revised to include the following:

Contractor shall install tracer wire on all underground stormwater facilities per the details below:



GENERAL NOTES:

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH CURRENT CITY OF COLORADO SPRINGS ENGINEERING DIVISION (THE CITY) STANDARD SPECIFICATIONS.
2. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS (EXCAVATION, CONCRETE, TRAFFIC CONTROL, ETC.), AND NOTIFY THE CITY BY 1500 HOURS THE BUSINESS DAY BEFORE INSPECTION IS REQUIRED.
3. DO NOT BACKFILL INLETS PRIOR TO ONE-POUND ANODE AND 1.5# MAGNESIUM GROUND ROD INSTALLATION.

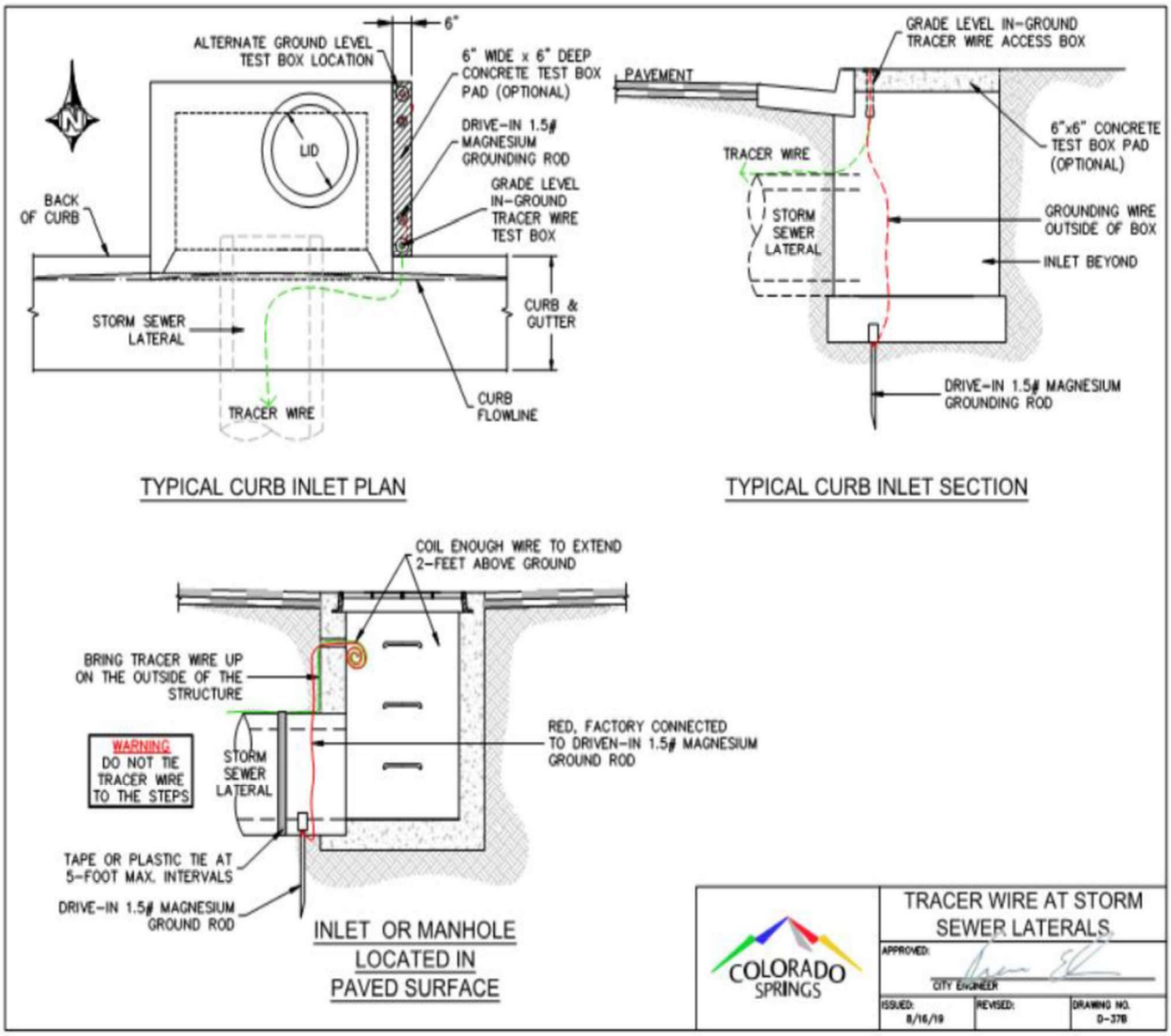
TRACER WIRE:

4. TRACER WIRE SHALL BE INSTALLED ON ALL UNDERGROUND PIPE.
5. TRACER WIRE FOR STORM SEWER AND DRAIN LINES SHALL BE GREEN IN ACCORDANCE WITH AMERICAN PUBLIC WORKS ASSOCIATION (APWA) UNIFORM COLOR CODE.
6. "OPEN TRENCH" TRACER WIRE SHALL BE #8 OR #10 AWG COPPER SOLID OR #12 AWG COPPER CLAD HIGH STRENGTH WITH MINIMUM 30 MIL HDPE INSULATION THICKNESS COMPLYING WITH ASTM D-1248, AND A MINIMUM AVERAGE TENSILE BREAK LOAD OF 450-LBS, AND A 30-MIL HDPE JACKET-GREEN (TYPICAL).
7. "PIPE/SLIP LINING" TRACER WIRE SHALL BE 7X7 STRANDED COPPER CLAD STEEL, EXTREME STRENGTH WITH 4,700 LB. BREAK LOAD, WITH MINIMUM 50-MIL HDPE INSULATION THICKNESS.
8. TRACER WIRE SHALL BE SECURED EVERY 5-FEET TO 8-FEET ON THE TOP OF THE PIPE BY TAPING OR TYING TO THE PIPE.
9. A 4-WAY CONNECTOR OR (2) 3-WAY CONNECTORS WITH SHORT JUMP WIRE ARE REQUIRED AT ALL CROSSINGS.
10. TRACER WIRE SHALL BE AS CONTINUOUS AS POSSIBLE. IF SPLICING IS NECESSARY, THE ONLY APPROVED SPLICE METHOD IS A SPLIT BOLT CONNECTOR HOUSED IN A SPLIT BOLT HOUSING.
11. ANY DAMAGE OCCURRING DURING INSTALLATION OF THE TRACER WIRE MUST BE IMMEDIATELY REPAIRED BY REMOVING THE DAMAGED WIRE AND INSTALLING A NEW SECTION OF WIRE WITH APPROVED CONNECTORS. TAPING AND/OR SPRAY COATING SHALL NOT BE ALLOWED AS A CONNECTION.
12. EXPOSED WIRE SHALL BE WRAPPED WITH SCOTCH LINERLESS RUBBER SPLICING TAPE TO SEAL OUT MOISTURE, AND THEN COATED WITH SCOTCH SUPER 33+ VINYL ELECTRIC TAPE TO SEAL THE RUBBER TAPE.
13. TRACER WIRE CAN NOT BE PLACED INSIDE DRAINAGE INLETS.

TERMINATION/ACCESS:

14. TRACER WIRE SHALL BE BROUGHT ABOVE GROUND AND CONNECT AT EACH INLET AND MANHOLE IN A GRADE LEVEL TRACER WIRE TEST BOX.
15. A MINIMUM OF 2-FEET OF EXCESS/SLACK WIRE IS REQUIRED IN ALL TRACER WIRE ACCESS BOXES AFTER MEETING FINAL ELEVATION.
16. DRIVE-IN 1.5# MAGNESIUM GROUND RODS (ANODE) WHICH SHALL BE ATTACHED TO THE END OF THE TRACER WIRE.
17. TRACER WIRE MUST BE PROPERLY GROUNDED AT ALL DEAD ENDS (INLETS, OUTFALL, ETC.), AND DRIVEN INTO NATIVE SOIL AT PIPE LEVEL.
18. TRACER WIRE TERMINATION POINTS MUST UTILIZE A WIRE ACCESS BOX.
19. TRACER WIRE ACCESS BOXES MUST INCLUDE A MANUAL INTERRUPTIBLE CONDUCTIVE/CONNECTIVE LINK BETWEEN TERMINAL FOR TRACER WIRE CONNECTION AND TERMINAL FOR GROUND ROD WIRE CONNECTION.
20. GROUNDING ANODE WIRE AND 1.5# MAGNESIUM GROUND ROD WIRE SHALL BE CONNECTED TO THE IDENTIFIED LOCATION (BOTTOM) TERMINAL IN ALL ACCESS BOXES.
21. ALL SERVICE LATERAL TRACER WIRES MUST BE PROPERLY CONNECTED TO THE MAINLINE TRACER WIRE TO ENSURE FULL TRACING/LOCATING CAPABILITIES FROM A SINGLE CONNECTION POINT.
22. TRUNK LINE TRACER WIRE SHALL BE CONTINUOUS, BY-PASSING AROUND THE OUTSIDE OF MANHOLES/STRUCTURES ON THE NORTH OR EAST SIDE, UNLESS ON THE END SECTION.
23. ALL NEW TRACER WIRE INSTALLATIONS SHALL BE TESTED AND LOCATED PRIOR TO ACCEPTANCE. TESTING AND LOCATING SHALL BE PERFORMED BY A THIRD PARTY AT THE COMPLETION OF ROUGH GRADING AND PRIOR TO FINAL ACCEPTANCE OF THE PROJECT. ANY DEFICIENCIES SHALL BE CORRECTED PRIOR TO FINAL ACCEPTANCE.
24. WHEN REPAIRS ARE PERFORMED ON STORMWATER LINE, TRACER WIRE SHALL BE TESTED PRIOR TO FINAL ACCEPTANCE

REVISION OF SECTION 603
CULVERTS AND SEWERS
-continued-



REVISION OF SECTION 603
CULVERTS AND SEWERS
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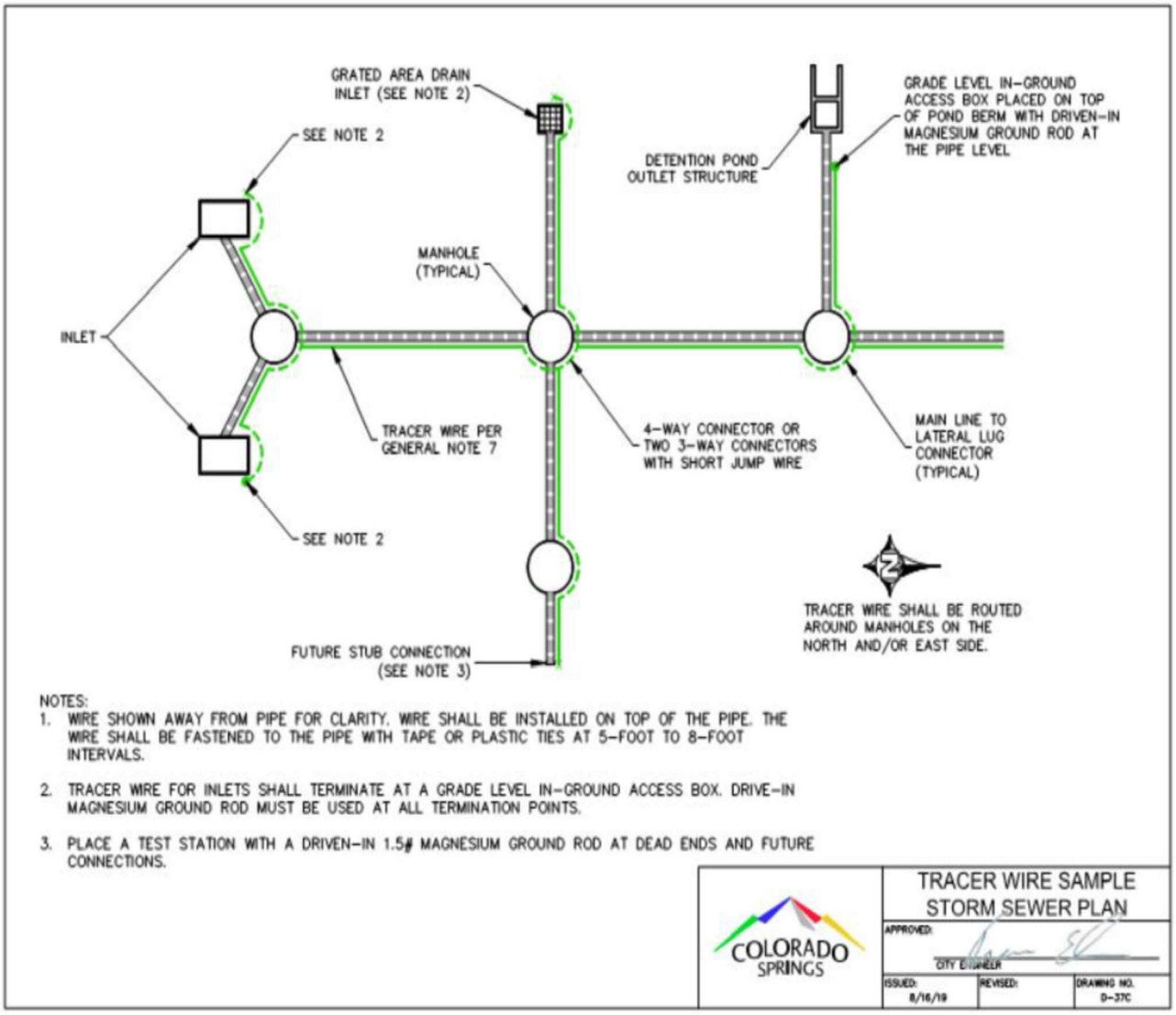

REVISION OF SECTION 603
CULVERTS AND SEWERS
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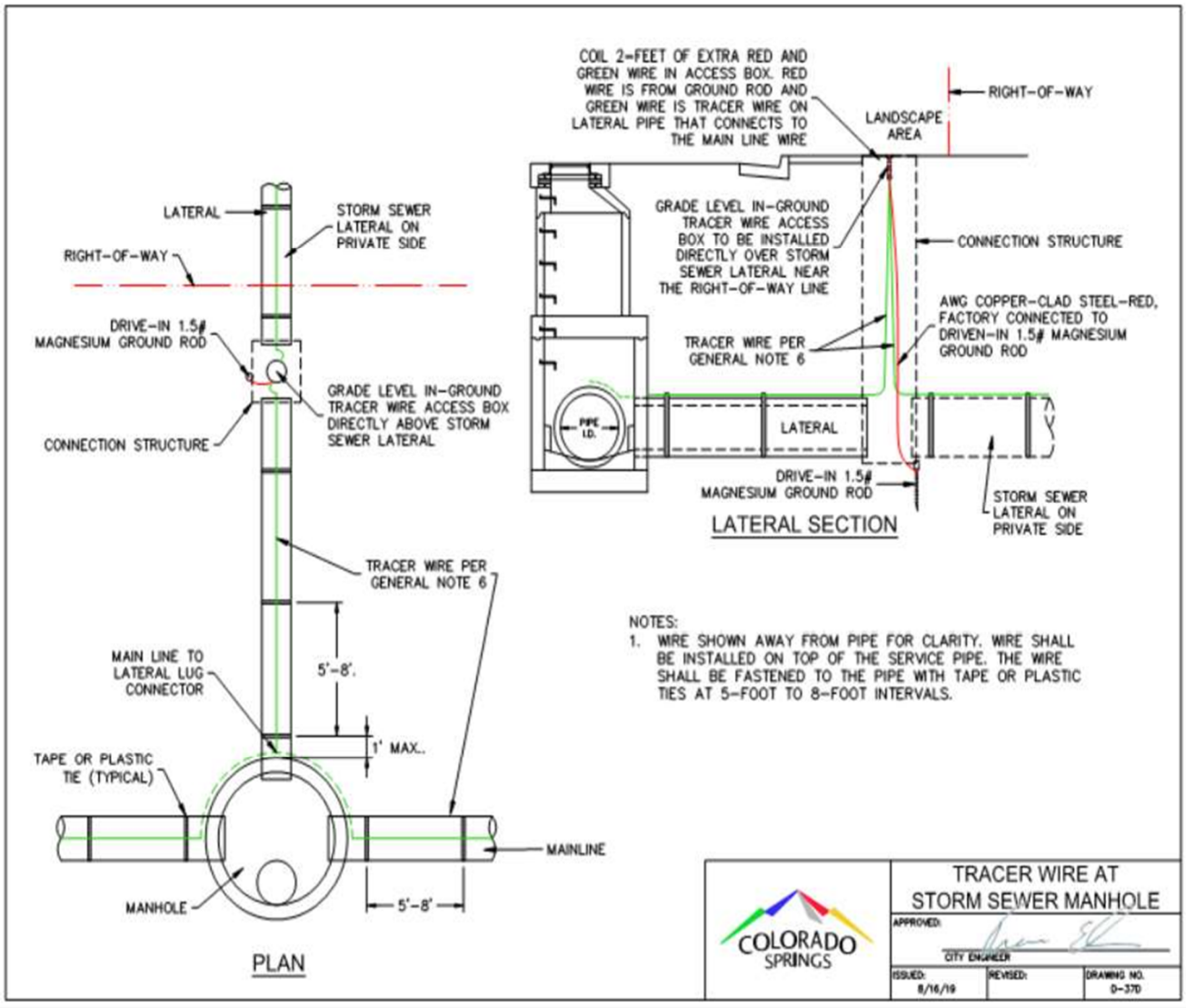

REVISION OF SECTION 603
CULVERTS AND SEWERS
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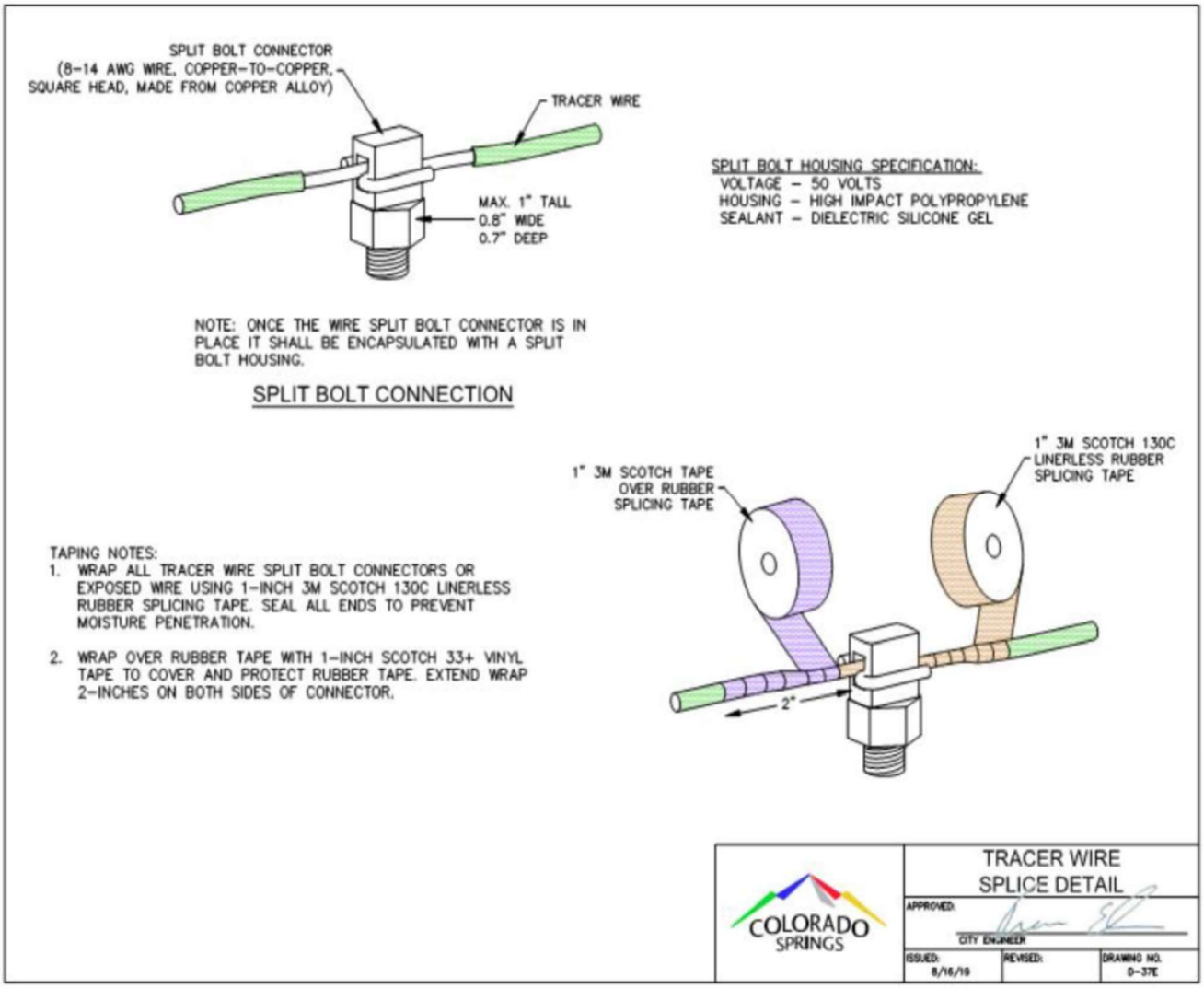

REVISION OF SECTION 603
CULVERTS AND SEWERS
-continued-

BASIS OF PAYMENT

Subsection 603.13 shall include the following:

Pay Item	Pay Unit
18 Inch Reinforced Concrete Pipe (Complete In Place)	Linear Foot
24 Inch Reinforced Concrete Pipe (Complete In Place)	Linear Foot
30 inch Reinforced Concrete Pipe (Complete In Place)	Linear Foot
36 inch Reinforced Concrete Pipe (Complete In Place)	Linear Foot
48 inch Reinforced Concrete Pipe (Complete In Place)	Linear Foot

Delete paragraph beginning “Structure excavation and backfill…” and replace with the following:

All Reinforced Concrete Pipe will be paid for as Complete-in-Place. Structure excavation, structure backfill, and bedding material will not be measured and paid for separately but shall be included in the work.

Tracer wire shall not be measured or paid for separately but shall be included in the cost of the underground stormwater facilities.

REVISION OF SECTION 604
OUTLET STRUCTURE AND INLET TYPE D (SPECIAL)

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

DESCRIPTION

604.01 shall be revised to include the following:

This work consists of the construction of the Outlet Structure of the water quality pond and the Inlet Type D (Special) at Lake Woodmoor Drive.

METHOD OF MEASUREMENT

604.06 shall be revised to include the following:

Outlet Structure and Inlet Type D (Special) will be measured by the actual number of units manufactured or constructed and installed. The pay item shall include all work, materials, and labor required to manufacture or construct and install the Outlet Structure and Inlet Type D (Special) as shown on the design plans and details.

BASIS OF PAYMENT

604.07 The accepted quantities, measured as provided above, will be paid for at the contract price for each of the pay items listed below that appear in the bid schedule.

Payment will be made under:

Pay Item	**Pay Unit**
Inlet Type D (Special)	Each
Outlet Structure	Each

All materials and labor associated with the Outlet Structure and Inlet Type D (Special) will not be measured and paid for separately but included in the work. Reinforcing steel, structural concrete, bedding material, grout, stainless steel trash rack, inlet grates, steel plates, anchors, sealants, as well as all other materials required to complete the item shall be included in the work.

REVISION OF SECTION 610
MEDIAN COVER MATERIAL

Section 610 of the Standard Specifications is hereby revised for this project to include the following:

Section 610.02 shall be revised to include the following:

Concrete for colored median shall meet the requirements of Class B Concrete.

Colored wax-curing compound and the hardener-enhancing compound shall be as approved by the Engineer and shall meet the requirements of ASTM C 309. Patterned concrete shall be colored as follows:

Davis Color: Sangria Pigment Number: 1117

Liquid Dose Rate: 2.13 lbs per 94-lb sack of cement

Powder Dose Rate: 1.5 lbs per 94-lb sack of cement Subsection

The Contractor shall place colored concrete, color hardener, and colored wax-curing compound on a 4-foot-by-4- foot test panel for approval by the Engineer prior to commencing the work. If the test panel is unacceptable to the Engineer, the Contractor shall construct additional test panels until the correct color and finish are approved by the Engineer. Workmen and equipment used on the test panel shall be the same as that used in the final construction of the colored concrete.

Colored hardener, if desired by the Engineer, shall be applied evenly to the concrete surface while it is in the "plastic" stage by the "dry-shake" method. Each application rate shall be a minimum of 60 pounds of hardener per 100 square feet of surface. Color hardener shall have two applications and be wood floated after each application, using a trowel on the final float.

The colored wax-curing compound, thinned in the proportion of 4 parts wax to 3 parts mineral spirits (paint thinner) shall be applied uniformly with a roller or motor-driven power sprayer. The coverage shall be 600 to 650 square feet per gallon of unthinned curing compound. The surface shall be broom-finished prior to the application of the colored wax compound.

Median cover shall be patterned concrete and shall conform to detail SD 2_2-1 in the El Paso County Engineering Criteria Manual. Coloring agent shall be as described in in the detail.
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Section 610.03 (b) shall be revised to include the following:

Concrete median cover surface finish and pattern shall conform to detail SD 2_2-1 in the El Paso County Engineering Criteria Manual. Transverse ½" expansion joints shall be provided every 20 feet along the median.

Section 610.05 shall include the following:

Payment will be made under:

Pay Item	**Pay Unit**
Median Cover Material (4 Inch Patterned Concrete)	Square Foot

REVISION OF SECTION 613
ELECTRICAL CONDUIT

Section 613 of the Standard Specifications is hereby revised for this project to include the following:

Subsection 613.01 shall include the following:

This work includes furnishing and installing new High-Density Polyethylene (HDPE) and Polyvinyl Chloride (PVC) electrical conduit for use with fiber optic cable, electrical conductors, and communications cabling.

Subsection 613.02(c) shall include the following:

All materials furnished, assembled, fabricated, or installed under this item shall be new, Underwriters Laboratories (UL) listed, corrosion resistant and National Electric Code (NEC) compliant. Materials shall be submitted to the Project Engineer for approval.

Electrical conduit shall be suitable for underground use and shall be Schedule 80 in the diameters, quantities and depths shown on the plans. Electrical conduit and fittings shall be UL listed and shall be fully compatible with signal wiring and fiber optic cable. Pipe connections shall be made with manufacturer approved fittings and/or butt fusing.

HDPE conduit and fittings shall be certified by the manufacturer as meeting American National Standards Institute (ANSI) ANSI/UL 651A. PVC conduit and fittings shall be certified by the manufacturer as meeting ANSI/UL 651. The manufacturer shall be ISO 9000 compliant. Transitions between polyurethane to metallic to PVC, if applicable, shall be made using UL listed and approved couplings per manufacturer's recommendations.

All HDPE conduit shall be low-friction, high-density conduit constructed of virgin high-density polyethylene resin. HDPE conduit shall be capable of being coiled on reels in continuous lengths, transported, stored outdoors, and subsequently used for installation, without affecting its properties or performance.

HDPE conduit to be used for fiber optic communications (specifically the proposed 2-2 inch electrical conduit along the north side of Hwy 105 and at the Knollwood Dr. traffic signal) shall be orange and conduit for electrical conductors shall be red. If additional spare conduits are installed in a common trench, the additional conduits shall be blue and black with an orange stripe. PVC conduit shall be labeled to match HDPE colors.

Electrical conduit shall be metallic when installed at building, VMS, or structure penetrations.

REVISION OF SECTION 613
ELECTRICAL CONDUIT
-continued-

Each conduit shall be equipped with a pull tape installed with or after all cabling for future use. The pull tape shall have a minimum tensile strength of 1800 pounds and be of a design to prevent cutting or burning of conduit walls during cable installation. The pull tape shall include a continuous 22-gauge tracer wire. Splices in the pull tape and tracer wire may occur inside manholes and pull boxes and shall not be permitted inside conduit. Pull tape shall be installed in conduits with electrical conductors carrying 50V or less.

A minimum 12-gauge tracer wire shall be included in at least one conduit within all conduit banks to be used for fiber optic communications (specifically the proposed 2-2 inch electrical conduit along the north side of Hwy 105 and at the Knollwood Dr. traffic signal). The tracer wire shall be orange in color. In conduit banks with multiple conduits, the 12-gauge tracer wire and pull tape shall be installed in the same conduit with the fiber optic cable.

Subsection 613-02(d) shall include the following:

A 2-inch-wide warning tape shall be provided in each conduit trench and placed a minimum 12 inches directly above the conduit and a minimum 12 inches below final grade. The warning tape and lettering shall be chemically inert, resistant to acid and alkali, designed for installation underground, and be constructed of polyethylene plastic. The warning tape shall have a minimum nominal thickness of 4 mil. The warning tape shall be red with the repeated phrase “CAUTION ELECTRIC LINE BURIED BELOW” if any conduit in the trench is designated for use with electrical conductors. The warning tape shall be orange with the repeated phrase “CAUTION FIBER OPTIC CABLE BURIED BELOW” for all other trenches. The text shall be black printed in a single line.

Subsection 613.07 shall include the following:

All conduit and fittings installation shall conform to the NEC.

Electrical Conduit (Bored) shall be HDPE and installed using a trenchless technology of either jacked conduit or directional boring. Partial or unsuccessful bores shall be filled with a preapproved cement grout. Surface damage due to boring processes or procedures between bore pits or splice pits shall be repaired to original condition.

Electrical Conduit (Plastic) shall be PVC or HDPE and installed by direct burial methods such as plowing, open trenching, or other excavation methods. Surface damage due to direct burial methods between pull boxes shall be repaired to original condition.

Electrical conduit should be located at the top of the back-slope of cuts or ditches or to the outside of ROW whenever possible. Conduit shall not be placed in the fore-slope, flowline, or beneath drainage structures to include swales. Conduits shall be installed at proper depths of cover.

For Electrical Conduit (Plastic) items, the contractor may select any of the trenching options provided in the typical detail in the Plans. The selected option may vary throughout the project, depending upon the conditions at each project location. The complete installation using any of the options will be paid for under the respective Electrical Conduit (Plastic) item.

REVISION OF SECTION 613
ELECTRICAL CONDUIT
-continued-

Prior to construction, the Contractor shall submit a trenching and boring plan to the Engineer for approval. The plan shall show the limits of the planned work areas and the areas of anticipated disturbance. All disturbances outside the planned work areas created by Contractor's operations shall be restored to their original condition at the Contractor's expense.

During construction operations, the contractor shall maintain boring logs that include the depth at specific distances along the bore. Boring logs shall be submitted on a weekly basis.

All trenches shall be backfilled by the end of each shift. Material from trenching operations shall be placed in a location that will not cause damage or obstruction to vehicular or pedestrian traffic or interfere with surface drainage.

The Contractor shall be responsible for damage due to over-excavating a trench and heaving damage to the existing asphalt and concrete mat, caused by equipment directly and by dislodging rocks or boulders. All damage from over-excavation and heaving shall be repaired at the Contractor's expense. The Contractor shall bear the cost of backfilling all over-excavated areas with the appropriate backfill material approved by the Engineer.

The Contractor shall restore all surface materials to their original condition or better, including but not limited to pavement, sidewalks, sprinkler systems, landscaping, shrubs, sod, and native vegetation that is disturbed by the conduit installation operation. All restoration shall be included in the cost of the conduit.

The Contractor shall use corrosion resistant splice couplings that comply with the NEC. All associated work to splice the conduit shall be included in the cost of the item. The coupling technology used to connect conduit ends shall require no special tools and form a watertight, airtight seal. The breaking force between segments shall exceed 250 pounds. Conduit splices shall be kept to a minimum and all such locations shall be approved and inspected by the Engineer and the authority having jurisdiction. Additional pull boxes shall not be substituted for conduit splices.

Conduits not containing cable shall be plugged with a plug that is watertight, removable, mechanical and equipped with a connection to secure a pull rope.

Conduit shall be plugged at all termination points including but not limited to pull boxes with duct seal and controller cabinets.

All open conduit ends shall be plugged at the end of each shift with an approved plug.

All conduits shall terminate between two inches and four inches from the bottom or sides of pull boxes and manholes.

REVISION OF SECTION 613
ELECTRICAL CONDUIT
-continued-

All conduit runs to be used for fiber optic communications (specifically the proposed 2-2 inch electrical conduit along the north side of Hwy 105 and at the Knollwood Dr. traffic signal) shall have a limited number of bends. The sum of the individual bends on a single conduit run between any two pull points shall not exceed 270 degrees. No individual bend shall exceed 90 degrees.

All conduit bends shall have a minimum radius of 24 inches. HDPE conduit minimum bending radius shall conform to Table 354.24 in the NEC.

New conduits may be installed into existing pull boxes, manholes and cabinet bases, and the Contractor shall carefully excavate around the existing facility and install the new conduit as shown on the plans. The Contractor shall not damage the existing facility or its contents. If the existing conduit, pull box, lid and concrete collars are damaged during conduit installation, the Contractor shall restore the damaged item or section to current CDOT requirements at no additional cost to the project. For locations where conduit is installed into existing pull boxes, manholes, and cabinet bases that are located in asphalt, concrete, or slope pavement, patching with asphalt, concrete or slope pavement will be required and shall be included in the cost of the conduit. The Contractor shall reseal all new conduit entries into an existing manhole with grout.

Conduit shall always enter a pull box, manhole, cabinet base and all other structure types from the direction of the run only.

A conduit bell end shall be installed on each conduit in pull boxes, manholes, cabinets, and pole bases. All conduits ends shall be free from sharp edges and burrs.

Conduits stubbing up through pole foundations shall be installed within 4 inches of the center of the caisson.

The Contractor shall refer to ITS As-Built Documentation and GPS specifications for documentation requirements.

METHOD OF MEASUREMENT

Subsection 613.13 shall include the following:

Electrical Conduit will be measured by the actual linear foot of conduit installed and accepted.

Electrical Conduit shall also include all groundwork, lubricants, anchors, bands, skids, sweeps, pull rope, pull tape, copper tracer wire, adaptors, fittings, splice couplings, conduit plugs, foam sealant, installation equipment, mounting brackets and hardware, structure anchors, adhesives, labor and all other items necessary to complete the work.

REVISION OF SECTION 613
ELECTRICAL CONDUIT
-continued-

BASIS OF PAYMENT

Subsection 613.14 shall include the following:

Electrical Conduit unit prices shall be full compensation for the work shown on the Plans and described above.

Payment will be made under:

Pay Item	**Pay Unit**
2 Inch Electrical Conduit	Linear Foot
2 Inch Electrical Conduit (Bored)	Linear Foot
2 Inch Electrical Conduit (Plastic)	Linear Foot
3 Inch Electrical Conduit (Bored)	Linear Foot
3 Inch Electrical Conduit (Plastic)	Linear Foot

Excavation and backfill of trenches, bore pits, splicing pits, shoring, materials, labor, equipment necessary for conduit installation shall not be paid for separately but shall be included in the work.

Restoring the ground to original grade and condition prior to trenching will not be measured for and paid for separately but shall be included in the work.

Partial or unsuccessful bores and any work necessary for abandonment, and the disposal of excess and demolition materials shall not be paid for separately but shall be included in the work.

REVISION OF SECTION 613
PULL BOXES

Section 613 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

Subsection 610.01 shall be revised to include the following:

Contractor shall furnish and install fiberglass reinforced polymer concrete pull boxes and concrete aprons at locations shown on the plans.

MATERIALS

Subsection 613.02 shall be revised to include the following:

Pull boxes and splice boxes shall be made of fiberglass reinforced polymer concrete.

The Contractor shall submit test results documenting the minimum lateral pressure capacity of 1200 pounds per square foot distributed can be accommodated over the sidewall of the box. The Contractor shall submit test results documenting the minimum vertical load capacity of 18000 lbs over 10 inches x 10 inches square over both the side wall and cover.

Pull boxes shall be verified by a 3rd Party Nationally Recognized Independent Testing Laboratory as meeting all test provisions of American National Standards Institute/Society of Cable Telecommunications Engineers (ANSI/SCTE) 77, 2013 Specification for Underground Enclosure Integrity, Tier 22 rating. Pull boxes shall be Underwriters Laboratories (UL) listed. Certification documents shall be submitted with material submittals.

Pull boxes shall include tamper resistant bolts for securing the lid(s) and gasketed waterproof lid(s).

Each pull box shall have an Electrical Marker System (EMS) locator disk manufactured into the lid for communication line locating. The locator disk shall be compatible with a CDOT cable locator utilize the APWA uniform color code standard for visual reference if disk is observable on the exterior of the lid. The locator disk shall utilize the proper locate frequency for the pull box type.

Pull boxes 24 inches by 36 inches and larger shall have removable split lids with a removable metal center support beam. Lid segment weight shall not exceed 120 pounds.

Pull box removable lids shall be provided with a skid-resistant surface. Pull boxes containing fiber optic cables shall have the words “FIBER”, “EMS MARKER EMBEDDED IN COVER” and the tier level rating cast into the surface. Pull boxes containing electrical conductors shall have the words “ELEC”, “EMS MARKER EMBEDDED IN COVER” and the tier level rating cast into the surface. Pull boxes containing traffic signal wiring shall have the words “TRAFFIC”, “EMS MARKER EMBEDDED IN COVER” and the tier level rating cast into the surface. Painting of words shall not be accepted. The cover shall be attached to the pull box body by means of 3/8-inch x 7-inch lag thread hex head stainless steel bolts.

One-piece lids shall have a minimum of two lift slots per lid, while split lids shall have a minimum of one lift slot per lid. Test point locations shall be integrated into the pull box lids to provide for attachment of

REVISION OF SECTION 613
PULL BOXES
-continued-

test leads of various connector types for underground conduit tracing. The minimum number of test point locations shall equal the number of conduit banks entering the pull box, up to a maximum of five

test points. Pull boxes with split lids shall have the test points on one split lid section only. Pull box lids shall be furnished with 3/8-inch x 1/16-inch-deep recesses at locations adjoining each test point for the application of direction arrow symbols indicating the direction of underground conduit exiting the pull box. Recesses shall be thoroughly cleaned with alcohol prior to applying arrow symbols.

Wire mesh shall be installed in a manor to completely surround the box as shown on the Plans. The wire mesh shall meet the material standard ANSI/American Society of Testing and Materials (ANSI/ASTM) A555-79 and made of T-304 stainless steel, 0.025-inch wire diameter minimum and shall have a spacing of 4 mesh per inch.

Pull boxes installed in dirt or landscaped areas shall have a Class B concrete apron or a pre-cast polymer concrete apron. Class B concrete shall be in accordance with Section 601.

Pull Boxes installed on slopes 5:1 or less shall be installed with the grade of the slope. Pull Boxes installed on slopes greater than 5:1 shall include a 2-foot leveled area surrounding the apron.

The pre-cast polymer concrete apron shall be skid-resistant non-metallic, non-conductive, and UV resistant, and shall include two lifting slots for placement in the field. The pre-cast polymer concrete apron shall be similar nominal dimensions of the concrete apron shown on the Plans. The gap between the pre-cast polymer concrete apron and outer wall of the pull box shall be a maximum of ¼ inch.

A 5/8 inch by 8-foot-long copper coated steel ground rod is required at ITS device locations.

Pull Box (Surface Mounted) shall be aluminum type with a hinged front door and have at least a National Electrical Manufacturers Association (NEMA) 3R rating. Pull Box (Surface Mounted) shall be Underwriters Laboratories (UL) listed. Certification documents shall be submitted with material submittals. The hinged door shall be provided with both a weather tight seal and an aluminum hasp. A keyed lock shall be provided. Surface mounted pull boxes shall be of the dimensions shown on the plans.

CONSTRUCTION REQUIREMENTS

Subsection 613.03 shall include the following:

Pull boxes shall not be constructed in a pedestrian access or ADA ramp.

A minimum of 12 inches of ¾ inch granite-gravel shall be installed as a base for the pull box. The granite-gravel shall be free of dirt and debris and spread evenly to facilitate a level base for the pull box. The Contractor shall ensure that sufficient compacting is met prior to the installation of granite-gravel to alleviate future settling.

REVISION OF SECTION 613
PULL BOXES
-continued-

Wire mesh shall be installed in to completely surround the box as shown on the plans. The wire mesh shall be gently cut to allow only the entrance of the conduit through at the bottom of the box. All openings cut in the wire mesh that are larger than the diameter of the conduit shall be covered with additional wire mesh in a manner to completely surround the pull box with wire mesh.

Tracer wire shall be attached to the trace test points on the underside of the pull box lid. Each trace wire shall be attached to an individual trace point, no two wires shall be attached to the same point.

The Contractor shall coil an additional 6 feet of tracer wire inside the pull box to ensure that the tracer wire will not disconnect from test points when the lids are removed.

Pull boxes shall be installed in areas that are easily accessible by maintenance personnel. The slope around the pull box in all directions shall not be steeper than 1:6.

At pull boxes installed in dirt and landscaped areas, the Contractor shall install a concrete apron or a pre-cast polymer concrete apron around the edges of the pull box. The dimensions of the concrete apron shall be as shown on Plans. Pull boxes shall not be installed above the grade of the apron. The concrete apron shall have a 1 percent slope away from the top of pull box to allow for drainage.

Pre-cast concrete aprons shall be installed per manufacturer's recommendations.

If new conduits are installed in existing pull boxes, manholes or cabinet bases the Contractor shall carefully excavate around the pull box or manhole and install the new conduit as shown in the plans. The Contractor shall not damage the existing pull box, manhole or their contents. If the existing pull box, lid, or the concrete collars are cracked or damaged during conduit installation, the Contractor shall restore the damaged section to preconstruction condition at no additional cost.

Pull Box (Surface Mounted) shall be mounted on or embedded into hard surfaces such as bridge decks, concrete barriers, retaining walls, or buildings, as shown on the plans. Surface mounted pull boxes shall be attached using 3/8-inch epoxy anchors or other methods approved by the Engineer. Surface mounted pull boxes shall not be used for ground installations. Pull tape and tracer wire shall be installed in surface mounted pull poxes.

METHOD OF MEASUREMENT

Subsection 613.13 shall include the following:

Pull Boxes will be measured by the actual number installed and accepted, and will include base, lid, lift slots, support beam, integrated location disk, integrated test points, arrow symbols, excavation, backfill, concrete apron, wire mesh, ground rod, and 3/4-inch granite-gravel. Pull Boxes shall also include the removal and patching of pavement, sidewalks, curb and gutters and their replacement in kind to match existing grade.

REVISION OF SECTION 613
PULL BOXES
-continued-

BASIS OF PAYMENT

Subsection 613.14 shall include the following:

Payment will be made under:

Pay Item	**Pay Unit**
Type One Pull Box	Each
Type Two Pull Box	Each
Type Three Pull Box	Each
Type Four Pull Box	Each
Type Five Pull Box	Each

The following items will not be measured and paid for separately, but shall be included in the work:

(1) Partial or unsuccessful bores and any work necessary to abandonment

(2) Restoring the ground to original grade and condition, including topsoil, seeding, mulching, mulch tackifier, soil retention blanket, sod, or turf reinforcement mat

(3) The disposal of excess and demolition materials

(4) Material required for pull box installations including gravel bedding, grounding rod, and concrete apron.

REVISION OF SECTION 613
LIGHTING

Section 613 of the Standard Specifications is hereby revised for this project to include the following:

Subsection 613.02 e Luminaires shall include the following:

Traffic signal luminaries shall be Streetlight LED, Type2, SL3X or approved equal.

Subsection 613.02 (k) (4) shall be replaced by the following:

(4) Luminaire manufacturer's product information including data in Illuminating Engineering Society of North America (IESNA) format, IESNA photometric distribution type for vertical and lateral distribution (example: B2-U0-G1, Type III Medium), and a photograph or line drawing showing the photometric zero azimuth in plan view and at least one elevation view. Product information shall also include all test results as required in section 715.04.

Subsection 613.02 (k) (5) shall be replaced by the following:

(5) Luminaire mounting hardware including any arms or brackets.

Subsection 613.02 (k) (6) shall be replaced by the following:

(6) Luminaire Lumen Range corresponding to the pay item description(s).

Subsection 613.05 Light Standards shall include the following:

All exposed surfaces of the metal light pole, mast arm or arms, base or transformer base, and luminaire housing shall be galvanized and coated in accordance with Project Special Provision 522, Duplex Coating System. Color shall match Federal Standard 595, Color No. 26120. The Contractor shall submit a color sample to the Engineer for approval.

Subsection 613.08 Wiring shall include the following:

All wiring shall be 600 Volt rated, Type: Conform to the applicable UL and ICEA Standards for the use intended. Copper conductors shall have 600-volt insulation unless otherwise specified or noted on the drawings. Stranded conductors for No. 8 and larger, with the exception of the ground rod conductor shall be #6 AWG solid, bare, copper and where specified or noted on the drawings.

Aluminum Conductors: Aluminum conductors of any type will not be permitted.

Insulation: Type THWN/THHN or XHHW insulation minimum unless otherwise specified or noted on the drawings.

Size: No. 12 minimum unless otherwise specified or noted on the drawings. Wire size shall not be less than NEC requirements for the system to be installed.

REVISION OF SECTION 613
LIGHTING
-continued-

Color Coding: Phase, neutral and ground conductors shall be color-coded in accordance with NEC. Connect all Conductors of the same color to the same phase conductor as follows:
120/240V-1PH-3W Color coding shall be:
1. Line 1 = Black
2. Line 2 = Red
3. Neutral = White
4. Ground = Green (4) Luminaire manufacturer's

Subsection 613.09 Lighting Control Center, Meter Power Pedestal and Secondary Service Pedestals shall include the following:

Lighting Control Center – 100 Amp, 120/240V-1ph-3w, provide all-in-one meter power pedestal in NEMA 3R enclosure on a concrete foundation pad complete w/ service entrance, meter disconnect, main circuit breaker, branch breakers as indicated on the panel schedule, one (1) 60A-3P lighting contactor to control the bottom load center. Provide built-in maintenance GFCI receptacle, HOA switch, concrete pad foundation. The lighting contactor shall be photocell "on/off" controlled via through the HOA switch. Contractor shall acquire an address from the city/county for the meter location shown on the plans. Contractor shall fill out the service application on the MVEA builder's call line for the meter shown on the plans and coordinate with MVEA for the connection and installation of MVEA furnished and installed meter.

METHOD OF MEASUREMENT

Subsection 613.13 shall include the following:

The accepted quantities will be paid for at the contract unit price for each of the pay items listed below that appear in the plans and bid schedule.

REVISION OF SECTION 613
LIGHTING
-continued-

BASIS OF PAYMENT

Subsection 613.14 shall include the following:

Payment will be made under:

Pay Item	**Pay Unit**
2 Inch Electrical Conduit (Plastic)	Linear Foot
Wiring	Lump Sum
Luminaire (LED) (6,100 Lumens)	Each
Luminaire (LED) (18,000 Lumens)	Each
Light Standard Aluminum (30 Foot)	Each
Concrete Foundation Pad	Each
Light Standard Foundation	Each
Transformer Base Aluminum	Each
Lighting Control Center	Each
Meter Power Pedestal	Each
Safety Switch NEMA 3R, 100 ampere, 2P, 240 Volts	Each

REVISION OF SECTION 614
SIGNAGE

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

Subsection 614.04 shall include the following:
The County will make available to the Contractor two 4 ft x 6 ft PPRTA sign panels that announce that the project is funded by the Pikes Peak Rural Transportation Authority. The sign panels are located at 3275 Akers Drive, Colorado Springs, CO 80922. The Contractor shall transport the two sign panels to and from the project site and erect them on posts provided by the Contractor. The signs shall be erected in public ROW or El Paso County acquired easements and outside of the clear zone and shall be placed in locations that are visible to passing traffic on the west and east ends of the Project. The Contractor shall obtain approval from the County on exact sign locations before erecting.

Subsection 614.09 shall include the following:
All street name signage design and layouts shall be reviewed by Engineer prior to procurement.

Subsection 614.13 shall include the following:
All costs related to County-provided PPRTA signs, including but not limited to transport, Contractor provided posts, erection, maintenance and removal shall be paid for under 614-00037 Sign Panel (Special).

REVISION OF SECTION 614
PEDESTRIAN PUSH BUTTONS

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

Subsection 614.08 paragraph (f) *Pedestrian Push Buttons* shall include the following:

Pedestrian push buttons shall be Polaris iNS23TN1-B-ES-Black iNS-Universal Navigator or approved equal, w/ 9 X 15 R10-3e Sign, No Braille, w/ Custom Voice, External Speaker, 2-Wire Push Button Station.

Subsection 614.08 paragraph (h) *Traffic Signal Poles* shall include the following:

Pedestrian push button post assemblies and pedestal poles shall be Pelco or approved equal, Steel, powder coat gloss Black, with Base, Cap & Anchor Bolts

Payment will be made under:

Pay Item	**Pay Unit**
Pedestrian Push Button	Each
Traffic Signal Pedestal Pole Steel	Each
Pedestrian Push Button Post Assembly	Each

REVISION OF SECTION 614
TRAFFIC SIGNAL FACES

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

Subsection 614.08 paragraph (i) *Traffic Signal Faces* shall include the following:

Signal Faces shall be 12", 1W45, 1W5S with Visor, LED Balls & LED Arrows. Signal faces shall be aluminum with powder coated gloss black finish and shall include 12 inch aluminum tunnel visors with the outside powder coated gloss black. All overhead signal faces shall use astro-type mounting assemblies and shall be installed approximately level with one another at a 17 to 19 foot vertical clearance above the high point of the pavement grade.

Pedestrian Signal Heads shall be 16" with Countdown Module. Pedestrian signal head installation shall include aluminum and powder coated gloss black signal heads with aluminum open visors with the outside powder coated gloss black.

AXIS T91L61 Wall & Pole Mounts, and AXIS Steel Straps, TX30, or approved equals shall be used to attached signal heads to poles and mast arms.

Subsection 614.08 paragraph (j) *Backplates* shall include the following:

Backplates shall be aluminum louvered and powder coated with gloss black finish, and shall include 1.5" border of reflective tape

Payment will be made under:

Pay Item	**Pay Unit**
Traffic Signal Face (12-12-12)	Each
Traffic Signal Face (12-12-12-12)	Each
Pedestrian Signal Face (16) (Countdown)	Each

REVISION OF SECTION 614
TRAFFIC SIGNAL VEHICLE DETECTOR

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

Subsection 614.08 shall include the following:

Vehicle detectors shall be Intersector-SBE, Microwave Vehicle Presence Sensor 2.0, or approved equal. Installation of the Intersector Interface Board, 4 output, Single Cabinet Slot, or it's approved equal, shall be included in the work. Installation of all detection devices shall be per the manufacturer's recommendations.

Payment will be made under:

Pay Item	**Pay Unit**
Traffic Signal Vehicle Detector (Special)	Each

REVISION OF SECTION 614
SIGNAL BONDING AND GROUNDING

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

Subsection 614.10 (c) shall include the following:

All metallic appurtenances containing electrical conductors shall be made mechanically and electrically secure to form a continuous system which shall be effectively grounded.

The grounding conductor shall be #6 AWG copper, solid or stranded, insulated or bare.

A stranded, insulated grounding conductor shall be installed in the same conduit as the signal field wiring to each pole, pedestal and control box. The grounding conductor shall be bonded to the grounding electrode at each pole, pedestal or control box.

The bonding of a stranded grounding conductor to the grounding electrode shall be made by connecting the stranded grounding conductor to a solid grounding conductor by means of an irreversible non-corrosive compression connector. The solid grounding conductor shall be a minimum of 12 inches in length and connected to the grounding electrode with an approved, listed grounding clamp.

The bonding of a stranded grounding conductor to a pole shall be made by connecting the stranded grounding conductor to a solid grounding conductor by means of an irreversible compression connector. The solid grounding conductor shall be bonded to the pole as shown in the detail.

Multiple stranded grounding conductors may be attached to one solid grounding conductor provided a minimum of 6 inch clearance is provided between the irreversible compression connectors, as approved by the Engineer.

The span and tether cables shall be bonded to the pole by means of a bare, solid grounding conductor. The grounding conductor shall be bonded to the span and tether cable by means of a listed irreversible compression connector installed after the strand vise connection to the pole. The grounding conductor shall be bonded to the pole by means of a listed lug installed with a minimum 5/16 inch diameter bolt, drilled and tapped into the pole. The lug shall be installed in the same horizontal plane as the connection of the span or tether cable. The grounding conductor shall be of sufficient length to provide a drip loop between cable connection and lug. The contact area of lug to pole shall be cleaned of all paint and foreign matter to bare metal, the lug installed and the bare metal shall then be primered and painted to match existing color of pole. A separate grounding conductor and lug shall be required for each span and tether cable.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Subsection 614.14 shall include the following:

Signal bonding and grounding will not be measured and paid for separately, but shall be included in the work of signal pole items or span wire signal items.

REVISION OF SECTION 614
TRAFFIC SIGNAL CONTROLLER

Section 614 of the Standard Specifications is hereby revised for this project to include the following:

Subsection 614.01 shall include the following:

The Contractor shall submit materials data sheets to the Engineer for approval prior to ordering equipment.

The Contractor shall use best practices to manage cables in a neat and workmanlike manner.

The Contractor shall be responsible for controller start up in accordance with El Paso County procedures covered in the general notes of the plans.

In **subsection 614.08**, delete item (b) and replace with the following:

(b) *Traffic Signal Controllers-General.*

The traffic signal controller shall be McCain ATC FLeX, Rack Mount version with C1 Connector and Omni Ex Software, or approved equal. Controller shall be constructed in accordance with FHWA-P-78-16 specification and only installed following County approval.

REVISION OF SECTION 614
TRAFFIC SIGNAL CONTROLLER CABINET

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

Subsection 614.08, (c) Controller Cabinets shall include the following:

(a) *Controller Cabinets.* The controller cabinet shall be a McCain 350i ATC with 24 Channel FITA and 16 Channel FOTA & ADU or approved equal. The cabinet assembly shall include all shelves, racks, and assemblies to house additional equipment as defined, but limited to:

The following items or their approved equal shall be included with the traffic signal controller cabinet:

Quantity	Item
1 ea.	Traffic signal controller.
1 ea.	Uninterrupted Power Supply- Clary, SP 1250 LX, 6 Battery, 302C No SNMP, w/ Battery
1 ea.	Managed Industrial Ethernet Switch- DYMMEC 3170 EMX 8 X 10/100/100 TX Port
1 ea.	Cellular Gateway- Microhard Bullet LTE-NA
1 ea.	Ethernet Surge Protection- Citel, RJ45, MJ8-POE-A
	Network Cable- CAT5E Outdoor Enhanced Shielded Cable, CMXT 350 MHz, Solid, 24 AWG, Foil Waterproof Tape 1000 Ft/Roll Part #CAT5EESNP4DBBK1S

A prefabricated foundation pad with skid resistant surfaces on both sides of the cabinet shall be included. Cabinet and foundation shall be positioned such that, with the front cabinet doors open, both the controller display and the signal installation will be visible from the same viewpoint and installed per the manufacturer's recommendations.

Subsection 614.10 (b) shall include the following:

All conductors and cabinet wiring shall be color coded and permanently tagged per Engineer direction and in accordance with the signal phase numbering and radar detection zone phase numbering information contained in the project plans.

All signal cable shall be continuous from connections made in the hand hole compartment of the signal pole base to the terminal compartment in the controller cabinet and shall contain no splices. Each signal head shall contain separate and continuous signal cable from the signal head to the above ground hand hole at the base of the signal pole and shall contain no splices.

All signal cable used for network communications in relation to any network cables and intersection detection systems shall use enhanced shielded Cat 5E Cable for all connections with the traffic signal system.

A separate and continuous 21-conductor cable shall run from the controller cabinet to the hand hole at each signal pole and shall contain no splices.

Subsection 614.14 shall include the following:

Traffic signal controller cabinet will be paid for at the unit contract price for each assembly installed. Work shall include foundation, conduit, equipment, materials, and personnel necessary for a complete assembly.

REVISION OF SECTION 614
TRAFFIC SIGNAL CONTROLLER CABINET
-continued-

Pay Item	**Pay Unit**
Traffic Signal Controller Cabinet	Each

All incidental items not shown in the summary of approximate quantities or tabulation of traffic signal equipment shall be considered to be included as part of the traffic signal installation and will not be measured and paid for separately. All quantities shown are approximate. The contractor shall be responsible for all work necessary to complete the construction of traffic signals shown on these plans.

REVISION OF SECTION 614
TRAFFIC SIGNAL CONTROLLER – OPERATIONS

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

Subsection 614.01 shall include the following:

The Contractor shall submit materials data sheets to the Engineer for approval prior to ordering equipment.

Prior to installing the approved controller, the Contractor shall verify that existing or proposed communications are operational. El Paso County traffic staff shall be notified at least 48 hours in advance of the proposed installation of the controller in order to conduct inspections on the controller, cabinet, and associated hardware prior to completing the installation.

The Contractor shall connect the controller to the proposed or existing power supply and cabinet and be responsible for the controller start up in accordance with EPC traffic staff procedures, which shall be verified with the Engineer prior to construction.

The Contractor shall coordinate traffic signal timing, controller programming and operation, and overall traffic signal operation services with EPC traffic staff that shall include, but not be limited to:

a. Developing all traffic signal timing and operational parameters for achieving isolated, full-actuated vehicle and pedestrian operation and, when documented to be necessary, coordinated traffic signal system timing plan operation during various times of the day.
b. Programming all signal timing parameters into the traffic signal controller.
c. Field implementing and fine-tuning/adjusting all traffic signal timing parameters, including follow-up field reviews as may be necessary.
d. Developing, programming, field implementing, and fine-tuning all vehicle detection zone dimensions, zone locations, and operational parameters.

Subsection 614.10 (i) shall include the following:

The Contractor shall be responsible for the 24 hour a day operation and maintenance of a traffic signal system from the time the Contractor changes any wire or cable connection, moves, adds, or removes a signal head, makes any connection modifications/changes to the controller cabinet, changes lane configuration that requires vehicle detection modification, or fiber optic equipment installation, testing, or splicing in the cabinet, any other work that might alter the operation of the signal until the Contractor has obtained final acceptance for that signal from the Department. The successful completion of the Turn On functional test does not constitute Department's final acceptance of the signal. If existing signal equipment fails or breaks and the Engineer determines the failure or break is not the fault of the Contractor, then the Department shall supply the replacement equipment to the Contractor. If the Engineer determines that the fault is the Contractor's, the repair or replacement of the equipment shall be at the Contractor's expense.

REVISION OF SECTION 614
TRAFFIC SIGNAL CONTROLLER – OPERATIONS
-continued-

The Contractor shall supply the name, office phone, cell phone, and home phone numbers of their primary and secondary emergency responsible people that will respond to signal operational problems when signal is under the Contractors responsibility. These emergency contacts shall respond and be available on site for signal operational problems within 45 minutes of notification. The work described above will not be measured and paid for separately but shall be included in the unit cost of the work.

In Subsection 614.10 (j), delete 4 and replace with the following:

4. A functional test shall be made in which it is demonstrated that each and every part of the system functions as specified or intended herein. The function al test for each traffic signal system shall consist of not less than 15 days of continuous satisfactory operation. If unsatisfactory performance of the system develops, the condition shall be corrected and the test shall be repeated until the 15 days of continuous, satisfactory operation is obtained.

Subsection 614.14 shall include the following:

The process for final acceptance of the signal shall be as follows:
1) Contractor shall complete work as described in the plans and any work described in any change orders or any work directed by the Engineer.
2) Contractor shall contact the Engineer to request a preliminary walk through by Operations personnel. Contractor shall allow at least one week from the request to the day of the actual walk through.
3) Contractor shall complete preliminary punch list items generated through the preliminary walk through.
4) Contractor shall turn on signal and operate in flash for a minimum of five days if intersection has never operated under signal control.
5) Contractor shall contact the Engineer to request a final walk through by Operations personnel. Contractor shall allow at least one week from the request to the day of the actual walk through.
6) Contractor shall complete final punch list items generated through the final walk through meeting.
7.) Contractor shall turn on signal and operate with existing plan or a provided plan for a minimum of 15 days.
8) Contractor shall complete all other work required in the construction documents.
9) Contractor shall request Engineer to issue final acceptance of project. The department will not issue a final acceptance of a signal separate from final acceptance of the project.

REVISION OF SECTION 627 AND 713
PREFORMED THERMOPLASTIC PAVEMENT MARKING

Section 627 of the Standard Special Provisions is hereby revised for this project as follows:

In **subsection 627.08**, delete the fourth, fifth and sixth paragraphs and replace with the following:

The air temperature shall be at least 60 °F.

In subsection **627.08 (a),** delete the first paragraph and replace with the following:

(a) *Inlaid Preformed Plastic Pavement Marking.* Shall be done for Xwalk and Stop Lines. The grooved width for inlaid preformed plastic pavement marking is called for in the Contract, grooved width shall be the pavement marking width plus 1 inch, with a tolerance of ± ¼ inch. The depth of the grooves shall be 130 mils ± 5 mils. Groove position shall be a minimum of 2 inches from the edge of the pavement marking to the longitudinal pavement joint. Grinding of existing preformed thermoplastic pavement marking and the inlaying of proposed preformed thermoplastic pavement marking shall not be measured and paid for separately but shall be included in the work.

Word Symbol, Preformed Thermoplastic Pavement Marking shall be surface applied.

In **subsection 627.08**, delete the fourteenth paragraph and replace with the following:

The preformed plastic pavement marking shall be inlaid on new and existing pavements as shown in the Contract. The material shall be capable of use for patching worn areas of the same type according to the manufacturer's recommendations.

Removal and application of temporary preformed plastic pavement marking associated with wet-cutting of pavement must be pre-approved by the Engineer and shall be at the Contractor's expense.

Subsection 627.09 shall include the following:

An epoxy resin primer shall be applied to all existing surfaces (concrete, asphalt, existing markings, etc.) prior to the application of any new preformed thermoplastic, plastic pavement marking. The epoxy resin primer shall conform to CDOT Standard Specifications subsection 708.07. Primer shall be required for all markings used including markings that manufacture does not require a primer. Primer and application will not be measured and paid for separately but shall be included in the work.

Surface shall be dry and free of dirt, dust, chemicals, and/or significant oily substances. Application procedures for Portland concrete pavement shall be as described above except a compatible primer sealer shall be applied before application of marking to assure proper adhesion.

REVISION OF SECTION 627 AND 713
PREFORMED THERMOPLASTIC PAVEMENT MARKING
-continued-

METHOD OF MEASUREMENT AND BASES OF PAYMENT

In **subsection 627.13** delete the second and third paragraphs and replace with the following:

Payment will be made under:

Pay Item	**Pay Unit**
Preformed Thermoplastic Pavement Marking (Inlaid)	Square Foot

Subsection 713.14 shall include the following:

(a) General.

Material such as lines, legends, or symbols shall be capable of being affixed to HMA or PCC pavements. Marking shall be capable of conforming to pavement contours, breaks, and faults etc. by the use of the normal heat of a propane torch. Marking shall be capable of withstanding the actions of traffic at normal pavement temperatures. Marking shall have resealing characteristics such that it is capable of fusing with itself and previously applied thermoplastic pavement markings when heated with the torch.

(b) Physical Requirements.

1. Marking shall have a factory applied coated surface of beads in addition to the intermixed beads at the
rate of 1 lb. (± 10%) per 11 sq. ft. The factory applied coated surface beads shall have the following specifications:

a) Minimum 80% round
b) Minimum refractive index of 1.50.
c) Minimum SiO_2 content of 70%
d) Maximum iron content of 0.1%
e)

Size Gradation	% Retained
14	0-3%
16	2-10%
18	10-30%
20	30-60%
30	50-80%
35	60-85%
45	95-100%
60	98-100%

REVISION OF SECTION 627 AND 713
PREFORMED THERMOPLASTIC PAVEMENT MARKING
-continued-

(c) Performance.

Marking, when applied in accordance with manufactures recommendations shall demonstrate a uniform level of sufficient night time retro-reflection when tested in accordance to ASTM E1710-97. The applied material must have an initial minimum intensity reading of 500 $mcd \cdot m^{-2} \cdot 1x^{-1}$ for white and 300 $mcd \cdot m^{-2} \cdot 1x^{-1}$ for yellow as measured with a retro-reflectometer.

The top surface of the stencils (the same side as the factory applied surface beads) shall have an indicator system for the contractor to properly gauge the correct amount of heat to apply during installation. The indicator system shall have a positive visual indication, such as beads changing color or indents closing together, when the material has reached the correct installation temperature. The indicator system must also provide a positive, visual indication if the material has not reached the correct installation temperature.

REVISION OF SECTION 625
CONSTRUCTION SURVEYING

Section 625 of the Standard Specifications is hereby revised as follows:

Subsection 625.04 is hereby revised to include the following:

All surveying staking required for this Project shall be provided by the Contractor. Any additional survey information required by the Contractor shall be requested in writing at least five (5) working days prior to when it is needed. There shall be no additional compensation beyond the lump sum for Construction Surveying to the Contractor for time lost due to requesting additional information.

All survey staking destroyed by the Contractor will be replaced at the Contractor's expense. The Contractor, at the Contractor's expense, shall replace all survey staking destroyed by vandalism or destroyed by any other reason. All existing survey monuments and property corners located inside and outside of the Project limits, as defined on the Plans by the right-of-way, permanent easements and temporary easements, that are damaged or destroyed by the Contractor shall be replaced at the Contractor's expense. Based on the plans it is anticipated to include, at a minimum, 4 control monuments and 7 ROW Monuments and/or property pins.

Subsection 625.05 is hereby deleted and replaced with the following:

As a minimum, the Contractor for this Project shall provide the following staking:

Control:
Location of horizontal and vertical control points shall be provided at approximately 1,000-foot intervals at a maximum. Monuments shall be set outside the limits of construction, but within the Project Limits as defined on the Plans.

Removal Limits (Section 202):
Provide limits of all removals as required.

Excavation and Embankment (Section 203):
One set of slope stakes at 50-foot intervals (stations) on each side of the road. Slope stakes and/or temporary fence stakes will be used to define the limits of disturbance within the temporary construction easements.

Roadway Bases (Reconditioning):
Provide correction stakes at the top of the moisture conditioned and recompacted subgrade area. Provide blue tops on 50-foot stations at completed subgrade to confirm the correct roadway grade.

Minor Structures (Drainage):
One set of offset stakes for the construction of storm drains, crossings, and culverts including driveway pans. "As Built" information is required on all manholes, inlets, and
end sections, including station, offset, flowline and rim elevations.

Roadway Bases/ Pavements:
Provide blue top paving stakes on 25-foot stations for pavement subgrade after completion of the subgrade preparation. Blue tops shall be set on centerline and the edge of pavement on both sides of the roadway. These blue tops will remain in place to be used for the paving operation.

REVISION OF SECTION 625
CONSTRUCTION SURVEYING
-continued-

Fences and Guardrail:
Provide one set of stakes at 100-foot stations and angle points for the construction of fence locations (including gates). Contractor is responsible for fine-tuning the location of fence so that it is compatible with installing gates. Provide offset stakes for all guardrail including radii and curve PC/PT points as required.

Monumentation (Section 629):
If necessary, perform survey work necessary to monument the roadway right-of-way and section corners as identified in the Plans and in accordance with Colorado Statutes. Restoring monuments, section corners, property pins and new right-of-way monuments, etc., shall be measured and paid as Force Account, under Bid Item 700, (F/A 01), Minor Contract Revisions. If necessary, perform survey work to delineate all temporary and permanent easements and provide temporary fencing as directed on the Plans.

Roadway Elements (Curb and Gutter):
Provide offset stakes for all curb and gutter including all radii and curve PC/PT points as required.

Pavement Marking (Section 627):
Provide stakes for the layout of signs and striping.
As-built road centerline and culverts.

BASIS OF PAYMENT

Subsection 625.13 is hereby revised to include the following:

Payment will be made under:

Pay Item	**Pay Unit**
Construction Surveying	Lump Sum
Construction Surveying (Hourly)	Hour

REVISION OF SECTION 630
TRAFFIC CONTROL (SPECIAL)

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

METHOD OF MEASUREMENT

Subsection 630.18 paragraphs 1-4 shall be deleted and replaced with the following:

Traffic control devices including signs, channelizing devices, and barricades will not be measured separately, but will be measured and paid for as a lump sum.

BASIS OF PAYMENT

Subsection 630.19 is hereby revised to include the following:

Payment of Traffic Control (Special) shall be made according to the percentage of the project schedule completed.

Pay Item	Pay Unit
Traffic Control (Special) LS	Lump Sum

REVISION OF SECTION 630
PORTABLE MESSAGE SIGN PANEL

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

Subsection 630.01 shall include the following:

This work includes furnishing, operating, and maintaining a portable message sign panel.

Add subsection 630.031 immediately following subsection 630.03 as follows:

630.031 Portable Message Sign Panel. Portable message sign panel shall be furnished as a device fully self-contained on a portable trailer, capable of being licensed for normal highway travel, and shall include leveling and stabilization jacks. The panel shall display a minimum of three - eight character lines. The panel shall be a dot-matrix type with an LED legend on a flat black background. LED signs shall have a pre-default message that activates before a power failure. The sign shall be solar powered with independent back-up battery power. The sign shall be capable of 360 degrees rotation and shall be able to be elevated to a height of at least five feet above the ground measured at the bottom of the sign. The sign shall be visible from one-half mile under both day and night conditions. The message shall be legible from a minimum of 750 feet. The sign shall automatically adjust its light source to meet the legibility requirements during the hours of darkness. The sign enclosure shall be weather tight and provide a clear polycarbonate front cover.

Solar powered message signs shall be capable of operating continuously for 10 days without any sun. All instrumentation and controls shall be contained in a lockable enclosure. The sign shall be capable of changing and displaying sign messages and other sign features such as flash rates, moving arrows, etc.

Each sign shall also conform to the following:

(1) In addition to the onboard solar power operation with battery back-up, each sign shall be capable of operating on a hard wire, 100-110 VAC, external power source.

(2) All electrical wiring, including connectors and switch controls necessary to enable all required sign functions shall be provided with each sign.

(3) Each sign shall be furnished with an operating and parts manual, wiring diagrams, and trouble-shooting guide.

(4) The portable message sign shall be capable of maintaining all required operations under Colorado mountain-winter weather conditions.

(5) Each sign shall be furnished with an attached license plate and mounting bracket.

(6) Each sign shall be wired with a 7-prong male electric plug for the brake light wiring system.

Subsection 630.13 shall include the following:

The portable message sign panel shall be on the project site at least 7 calendar days prior to the start of active roadway construction. Maintenance, storage, operation, relocation to different sites during the project, and all repairs of portable message sign panels shall be the responsibility of the Contractor.

REVISION OF SECTION 630
PORTABLE MESSAGE SIGN PANEL
-continued-

METHOD OF MEASUREMENT

Portable message sign panels will be measured one of the two following ways by the maximum number of approved units in use on the project at any one time.

Subsection 630.19 shall include the following:

Pay Item	**Pay Unit**
Portable Message Sign Panel	Each

REVISION OF SECTION 630
UNIFORM TRAFFIC CONTROL (LOCAL AGENCY)

Section 630 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

This work consists of furnishing uniformed police agency officers from the following local agency to perform uniformed traffic control:

El Paso County Sheriff's Office- Extra Duty Program
(719) 520-7579 Monday – Friday 8:00 am – 5:00 pm

When called for in the Contract, this work includes furnishing a vehicle for the officer to use in performing uniformed traffic control.

MATERIALS

(a) *Qualifications.* The local agency officer shall have completed "The Safe and Effective Use of Law Enforcement Personnel in Work Zones" Training Course. The Contractor shall provide copies of documentation certifying the officer's successful completion of this course.

(b) *Traffic Control Vehicles.* When called for in the Contract, the Contractor shall furnish white sedans to be used by uniformed police agency officers in the performance of Uniformed Traffic Control duties. The Contractor shall be responsible for licensing, insuring, servicing, and fueling the vehicle.

For each Traffic Control Vehicle furnished by the Contractor, the Contractor shall furnish Class 1 SAE certified light bar and control panel for exclusive use by uniformed police agency officers while performing Uniformed Traffic Control. The light bar shall have the following configuration:

(1) minimum of 44 inches in length, and shall be either permanently or temporarily attached to the top of the vehicle.
(2) flash red on the driver side and blue on the passenger side
(3) equipped with an amber-colored directional device in the rear of the bar.
(4) have alley and takedown lights.
(5) The control panel shall be capable of controlling the front of the bar and the rear of the bar separately.
(6) The traffic advisor shall be controlled separately.

The light bars shall be mounted on traffic control vehicles, and shall be maintained in good operating condition at all times. The Contractor shall obtain a permit from the police or sheriff department, as appropriate, for the use of the light bars. The Contractor shall keep the light bars covered at all times when the traffic control vehicle is being used by someone other than the authorized uniform police agency officer.

ADDITION OF SECTION 642
UTILITY COORDINATION MEETING

Section 642 of the Standard Specifications is hereby added for this project as follows:

DESCRIPTION

642.01 This work consists of the Contractor facilitating coordination meetings with utility providers, utility contractors, and the Project Engineer to develop schedules and work plan to complete required utility work in conjunction with other project activities.

MATERIALS

642.02 Submittals: The Contractor shall provide meeting agendas, sign in sheets, and meeting minutes to the Project Engineer and utility representatives within three (3) working days following meetings.

CONSTRUCTION REQUIREMENTS

642.03 The Contractor shall coordinate and schedule items including but not limited to construction activities, utility adjustments, utility relocations, utility removals, and service reconnections with the utility providers and utility contractors. These meetings may also be used to discuss potential strategies for existing utility exposure, utility service outages, and watch and protect requirements. When a utility service interruption is necessary, the Contractor shall meet with the utility provider and property owner to schedule this work.

METHOD OF MEASUREMENT

642.04 Utility coordination meetings will be measured by the hours of meetings conducted and documented as specified above.

BASIS OF PAYMENT

642 05 The accepted quantity for Utility Coordination Meeting will be paid for at the contract unit price for each for the pay items listed below that appear in the bid schedule.

Payment will be made under:

Pay Item	**Pay Unit**
Utility Coordination Meeting	Hour

TRAFFIC CONTROL PLAN - GENERAL

The key elements of the Contractor's method of handling traffic (MHT) are outlined in subsection 630.10(a).

The components of the TCP for this project are included in the following:

(1) Subsection 104.04 and Section 630 of the specifications.
(2) Standard Plan S-630-1, Traffic Controls for Highway Construction, and Standard Plan S-630-2.
(3) Schedule of Construction Traffic Control Devices.
(4) Signing Plans.
(5) Construction phasing details.

The following documents shall control the preparation of the MHT Plans and are listed in the order of precedence:

(1) Plans, Specifications and Special Provisions for this project
(2) *Manual on Uniform Traffic Control Devices* (MUTCD)
(3) El Paso County *Engineering Criteria Manual (latest version and July 2019 Revision)*
(4) Colorado Department of Transportation *Standard Specifications (2022 edition)*
(5) Colorado Department of Transportation *M&S Standards (2019 edition and updates)*

Unless otherwise approved by the Engineer, the Contractor’s equipment shall follow normal and legal traffic movements. The Contractor’s ingress and egress of the work area shall be accomplished with as little disruption to traffic as possible. Traffic control devices shall be removed by picking up the devices in a reverse sequence to that used for installation. This may require moving backwards through the work zone. When located behind barrier or at other locations shown on approved traffic control plans, equipment may operate in a direction opposite to adjacent traffic.

El Paso County may have entered into operating agreements with one or more law enforcement organizations for cooperative activities. Under such agreements, at the sole discretion of El Paso County, law enforcement personnel may enter the work zone for enforcement purposes and may participate in the Contractor’s traffic control activities. The responsibility under the Contract for all traffic control resides with the Contractor and any such participation by law enforcement personnel in Contractor traffic control activities will be per the Uniform Traffic Control Project Special Provision. Nothing in this Contract is intended to create an entitlement, on the part of the Contractor, to the services or participation of the law enforcement organization.

During the construction of this project, traffic shall use the present traveled roadway unless identified on the plans or approved by the Engineer. The Contractor shall not have construction equipment or materials in the lanes open to traffic at any time, unless approved by the Engineer.
At least one week prior to starting construction, the Contractor shall notify the Engineer of the date the Contractor intends to start construction. All costs incidental to the foregoing requirements shall be included in the original contract prices for the project.

REVISION OF SECTION 702
BITUMINOUS MATERIALS

Section 702 of the Standard Specifications is hereby revised for this project as follows:

Delete Table 702.01 and replace it with Table 2.06 from Version 6, Section 2 of the Pikes Peak Region Asphalt Paving Specifications.

TABLE 2.06
PROPERTIES OF PERFORMANCE GRADED BINDERS

Property	PG Graded Binder Requirements				AASHTO Test No.
	58-28	64-22	64-28	76-28[1]	
Original Binder Properties					
Flash Point Temperature, °C, minimum	230	230	230	230	T 48
Viscosity at 135 °C, Pa·s, maximum	3	3	3	3	T 316
Dynamic Shear, Temperature °C, where G*/Sin @ 10 rad/sec ≥ 1.00 kPa	58	64	64	76	T315
Ductility, 4°C (5cm/min) cm, minimum			50		T 51
Toughness, joules, minimum			12.4		CP L-2210[2]
Tenacity, joules, minimum			8.5		CP L-2210[2]
RTFO Residue Properties AASHTO T 240					
Mass Loss, percent maximum	1	1	1	1	T 240 CPL 2215
Dynamic Shear, Temperature °C where G*/Sin @ 10 rads ≥ 2.20 kPa	58	64	64	76	T315
Elastic Recovery, 25 °C, percent minimum				50	T-301
Ductility, 4 °C (5 cm/min) cm, minimum			20		T 51
Pressure Aging Vessel Residue Properties, Aging Temperature 100 °C AASHTO R28					
Dynamic Shear, Temperature °C where G*/Sin @ 10 rads ≤ 5000 kPa	19	25	22	28	T315
Creep Stiffness, @ 60 s, test Temp. in °C	-18	-12	-18	-18	T-313
S, maximum, MPa	300	300	300	300	T313
m-value, minimum	0.3	0.3	0.3	0.3	T313

[1] Special grades used for unique loading or climate conditions. [2] CDOT Test Method.

REVISION OF SECTION 703
AGGREGATES

Section 703 of the Standard Specifications is hereby revised for this project as follows:

Delete Subsection 703.04 and replace it with Version 6 of the Pikes Peak Region Asphalt Paving Specifications.

Delete Subsection 703.06 and replace it with Version 6 of the Pikes Peak Region Asphalt Paving Specifications.

REVISION OF SECTION 712
MISCELLANEOUS

Section 711 of the Standard Specifications is hereby revised for this project as follows:

Delete Subsection 712.03 and replace it with Version 6 of the Pikes Peak Region Asphalt Paving Specifications.

FORCE ACCOUNT ITEMS
DESCRIPTION

This special provision contains the Department's estimate for force account items included in the Contract. The estimated amounts marked with an asterisk will be added to the total bid to determine the amount of the performance and payment bonds. Force Account Work shall be performed as directed by the Engineer.

BASIS OF PAYMENT

Payment will be made in accordance with subsection 109.04. Payment will constitute full compensation for all Work necessary to complete the item.

Force account Work valued at $5,000 or less, that must be performed by a licensed journeyman in order to comply with federal, state, or local codes, may be paid for after receipt of an itemized statement endorsed by the Contractor.

Force Account Item	Estimated Quantity	Amount
F/A Minor Contract Revisions	F.A.	$ 500,000
F/A Asphalt Cement Cost Adjustment	F.A.	$ 200,000
F/A On the Job Trainee	F.A.	2000 hours
F/A Landscape & Irrigation Restoration	F.A	$ 30,000
F/A Furnish & Install Electrical Service	F.A.	$ 50,000
F/A Erosion Control	F.A.	$ 50,000
F/A Environmental Health and Safety Mgmt.	F.A.	$ 50,000
F/A Dewatering	F.A.	$20,000
F/A Traffic Signal Maintenance	F.A.	$5,000

F/A Minor Contract Revisions – Consists of minor Work authorized and approved by the Engineer, which is not included in the contract plans or specifications, and is necessary to accomplish the scope of Work of this contract.

F/A Asphalt Cement Cost Adjustment – Reference Revision of Section 109 Asphalt Cement Cost Adjustment (Asphalt Cement Paid Separately)

F/A On the Job Trainee – Payment for on-the-job trainee used on the project. This provides an incentive payment for the Contractor’s utilization of trainees who are enrolled in an approved training program. Reference CDOT Standard Special Provisions On the Job Training

FORCE ACCOUNT ITEMS
DESCRIPTION
-continued-

F/A Unanticipated Landscape & Irrigation Restoration - Removal and replacement of impacted landscape and/or irrigation system disturbed by the proposed improvements as shown on the plans along Highway 105.The Contractor shall submit a plan for the proposed work to the Engineer for review. Contractor shall incorporate Engineer's comments, revise proposed plan, and submit for review and approval.

F/A Furnish & Install Electrical Service – This work shall consist of all cost charges from the power service provider, and all necessary materials, labor, and coordination required to maintain existing or establish new power sources required for permanent operation of equipment as shown in the plans.

F/A Erosion Control – Supplemental erosion control measures approved by the Engineer, but not provided for in the contract plans or specifications. All items shall be approved by the Engineer prior to installation or they will be at no cost to the project.

F/A Environmental Health and Safety Management – This work shall consist of costs associated with removal, sampling, testing, containment, transportation, and disposal and treatment of contaminated groundwater, asbestos, and other containments in accordance with Section 250 Environmental Health and Safety Management. Removal of pipe shall be paid for in accordance with Revision of Section of 202 Removal of Pipe.

F/A Dewatering - Reference Revision of Section 211 Dewatering

F/A Traffic Signal Maintenance Reference Revision of Section 104 Construction Staging and Phasing, sub section 104.04 Traffic Signal Maintenance

UTILITIES

The known utilities within the limits of this project are:

UTILITY		CONTACT/EMAIL	PHONE/FAX
Black Hills Energy (BHE)	10 Primrose St., P.O. Box 668 Palmer Lake, CO 80133	Richie Bailey richie.bailey@blackhillscorp.com	Office: 719-728-9700
Colorado Department of Transportation	5615 Wills Blvd. Pueblo, CO 81008	Todd Ausbun Utility Manager, Region 2 todd.ausbun@state.co.us	Office: 719-546-5758
Comcast	8000 E. Iliff Ave. Denver, CO 80231	Steven Creighton steven_creighton@comcast.com	Office: 303-603-5621 Mobile: 720-854-5745
Force Broadband	15954 Jackson Creek Pkwy., Unit B Monument, CO 80132	Geoff Cannon geoff@forcebb.com	Office: 719-377-7424
El Paso County	3275 Akers Dr. Colorado Springs, CO 80922	Tim Stickel timstickel@elpasco.com	Mobile: 719-337-2837
	3275 Akers Dr. Colorado Springs, CO 80922	Alissa Were alissawerre@elpasoco.com	Mobile: 719-238-8080
Lumen (Formerly CenturyLink/Level 3) Represented by Terra Technologies		Robert McLeod (Terra Technologies) rmcleod@terrtechllc.net	Mobile: 303-949-2187
	14200 E. Jewell Ave. Aurora, CO 80012	Tom Longan (National) thomas.longan@centurylinkcom	Office: 303-482-9822
	700 W. Mineral Ave. Littleton, CO 80120	Andy Hekkers (Local) andrew.hekkers@centurylink.com	Mobile: 720-878-6311
Mountain View Electric Association (MVEA)		Wayne Baab (Design) wayne@wrbengcorp.com	Office: 719-487-9292 Mobile: 719-331-1651
	11140 E. Woodmen Rd. Falcon, CO 80831	Les Ulfers (Systems Eng) les.u@mvea.coop	Office: 719-494-2682
Stratus IQ (Formerly Falcon Broadband)	555 Hathaway Dr. Colorado Springs, CO 80915	Chris Otrin cotrin@stratusiq.com	Office: 719-492-6872
Unite Private Networks	317 Main, Ste. 2W Pueblo, CO 81003	Raymond Schwab raymond.schwab@upnfiber.com	Mobile: 720-354-6047

Verizon Business (Formerly MCI)	2424 Garden of the Gods Rd., Suite 350 Colorado Springs, CO 80919	Jared Williams jared.williams@verizon.com	Mobile: 303-961-0981
	2424 Garden of the Gods Rd., Suite 350 Colorado Springs, CO 80919	David McAllister david.mcallister@verizon.com	Mobile: 801-301-0937
Woodmoor Water & Sanitation District (WWSD)	1845 Woodmoor Dr. Monument, CO 80132	Jessie Schaffer jessies@woodmoorwater.com	Office: 719-488-2525 x 14
	1845 Woodmoor Dr. Monument, CO 80132	Ariel Hacker (Engineering) arielh@woodmoorwater.com	Office: 719-488-2525 x 13
	1845 Woodmoor Dr. Monument, CO 80132	Dan LaFontaine (Operations) danl@woodmoorwater.com	Office: 719-488-2525 x 18

UTILITIES
-continued-

The work described in these plans and specifications requires full cooperation between the Contractor and the utility owners in accordance with Subsection 105.11 in conducting their respective operations. Also, in accordance with the plans and specifications, and as directed by the Engineer, the Contractor shall keep each utility owner advised of any work being done to its facility, so that each utility owner can coordinate its inspections for final acceptance of the work with the Engineer.

The Contractor shall coordinate the work with the owners of the utilities impacted by the work. Coordination with utility owners includes, but is not limited to, progress meetings, staking construction features, providing and periodically updating an accurate construction schedule which includes all utility work elements, providing written notification of upcoming required utility work elements as the construction schedule indicates, allowing the expected number of working days for utilities to complete necessary relocation work, conducting necessary utility coordination meetings, and all other necessary accommodations as directed by the Project Engineer. Surveying and/or staking of utility relocations to be performed by the utility owner shall be the responsibility of the utility owner. The Contractor shall provide surveying staking as described in Revision of Section 625 Construction Surveying for proposed roadway improvements including but not limited to the proposed storm drain system.

Prior to excavating or performing any earthwork operations, the Contractor shall positively locate all potential conflicts with existing underground utilities and proposed construction, as determined by the Contractor according to proposed methods and schedule of construction. The Contractor shall recommend modifications to the construction plans to avoid existing underground facilities as needed, for approval by the Engineer.

The Contractor shall provide traffic control for any utility work expected to be coordinated with construction, and as directed by the Engineer. However, traffic control for utility work outside of typical project work hours and/or current phase of construction work zone traffic control limits shall be the responsibility of the utility owner.

Any new or modified utilities within CDOT right-of-way shall be inputted into CDOT data collection program, Pointman. This shall be completed prior to the final acceptance of the Project.

All costs incidental to the foregoing requirements will not be paid for separately but shall be included in the work.

PART 1 - <u>CONTRACTOR</u> SHALL PERFORM THE WORK LISTED BELOW:

General Requirements:

Coordinate the Pre-Construction conference and progress meetings with subcontractors, Engineer, and all utility owners or utility owner's representatives at least fourteen (14) days prior to beginning construction. Utility owners/representatives shall be notified at least 7 days prior to the meetings.

The Contractor shall contact, in writing, the utility owners or utility owner's representatives upon receipt of Notice to Proceed.

UTILITIES
-continued-

Coordinate project construction with the performance by the utility owner of each utility work element listed in Part 2 below. Perform preparatory work specified in Part 2 for each utility work element. Provide an accurate construction schedule that includes all utility work elements to the owner of each impacted utility.

The Contractor shall note that the project limits are highly congested with existing utilities and expected durations for utility elements listed below are approximate. The Contractor shall work with utility owners to identify required work elements, traffic control, stormwater management, and to verify schedules. No added time will be granted to the construction schedule unless approved by the Engineer. Changes to phasing or schedule by the Contractor shall be clearly communicated with the Utility Owners immediately.

Provide each utility owner with weekly updates to the schedule or more frequent updates, as applicable. Conduct detailed utility coordination during weekly project progress meetings, with utility representatives of utilities affected by that week's planned construction activities, coordinate all Contractor and utility requirements and Contractor and utility schedules, and provide other necessary accommodations as directed by the Engineer. Notify each utility owner in writing, with a copy to the Engineer, prior to the time each utility work element is to be performed by the utility owner. Provide notice with the number of days specified in Part 2 prior to the time the utility work must begin to meet the project schedule.

Provide traffic control for any utility work by the utility owner expected to be coordinated with construction. Traffic control for utility work outside of typical project work hours or current phase of construction shall be the responsibility of the utility owner. Utility owner, in coordination with the Contractor, shall provide MHT's to the Engineer and shall not proceed with utility work until the Contractor and the Engineer concur with utility owner's MHT's.

Provide erosion control for any utility work by the utility owner expected to be coordinated with construction. The Contractor shall coordinate with all utility owners prior to installation of erosion control devices and/or stockpiling of materials that may obstruct or conflict with the utility owner's access or work area. Erosion control for utility work outside of typical project work hours or current phase of construction shall be the responsibility of the utility owner. Utility owner, in coordination with the Contractor, shall provide erosion control plans/specifications to the Engineer shall not proceed with utility work until the Contractor and the Engineer concur with utility owner's erosion control plan/measures.

Perform each utility work element for every utility owner listed in Part 1. Notify each utility owner in advance of any work being done by the Contractor to or near its facility, so that the utility owner can coordinate its inspections for final acceptance of the work with the Engineer, as applicable.

The Contractor shall identity all existing utilities (by potholing if necessary) and protect in place when constructing the project, including sub-excavation work (work done below the base course.) The Contractor shall also identify all proposed locations for utilities, and if installation of proposed utilities is expected during that phase, Contractor shall not adversely affect the area when constructing the project, including but not limited to excavation work and temporary stockpiling of materials. If existing utilities are within close proximity horizontal or vertically, the Contractor shall alter the sub-excavation work limits, temporary stockpile locations, construction methods, and/or equipment to protect and

UTILITIES
-continued-

avoid impacting existing utilities and proposed utilities installed by the utility owners during construction.

Water & Sanitary Utilities:

Woodmoor Water and Sanitation District (WWSD):

The Contractor shall protect in-place all existing, adjusted, relocated, and/or modified WWSD water and sanitary infrastructure whether or not such infrastructure is identified in the plans and/or project specifications. The Contractor shall coordinate with WWSD forces when the Contractor needs to protect and support existing waterlines/sewer lines and associated appurtenances as necessary to facilitate excavation for the construction of proposed drainage improvements. Any damage to existing WWSD infrastructure due to the Contractor's construction activities will be repaired at the Contractor's cost.

Portions of existing WWSD water infrastructure will be relocated by WWSD Contractor(s) to accommodate proposed construction as noted in the plans. The Contractor shall coordinate with WWSD representatives to obtain the most current version of the Woodmoor Water and Sanitation District No. 1 CO 105 Utility Relocation Phase 1 Plans by JVA, Inc. for additional information. Once relocation work has been completed WWSD will retire and abandon in place existing water lines (in place) within the project area. The Contractor shall confirm with WWSD representatives that existing water lines and /or sewer lines and any associated appurtenances have been abandoned prior to performing any removal of the abandoned water/sewer infrastructure necessary to complete proposed roadway improvements. Removal of any abandoned waterline/sewer infrastructure required to meet Contract requirements shall be completed by the Contractor and shall be included in the cost of the project. The Contractor shall protect (especially from freezing) in place all unabandoned as well as relocated WWSD infrastructure. Any damages to relocated WWSD infrastructure due to the Contractor's construction activities will be repaired at the Contractor's cost.

The Contractor shall complete all adjustments and/or modifications to existing water and sanitary manholes and valve boxes as noted in the plans, in accordance with the most current version of the WWSD System Specifications for Design and Construction of Public or Private Water or Sewer System Improvements. Adjustments and modifications to existing water and sanitary manholes and valve boxes will be paid for in accordance with Revision of Section 210 Valve Box and Manhole Adjustments and 210 Modify Manhole Project Specifications.

Close coordination between onsite contractors is imperative. It shall be the sole responsibility of the Contractor to coordinate execution schedules, equipment, and working spaces to avoid any delays to the project. All project impacts and delays shall be the sole responsibility of the Contractor and shall under no circumstances incur costs to WWSD.

The Contractor shall coordinate with WWSD representatives fourteen (14) days in advance of any proposed water service interruptions and again at 48 hours in advance of planned work. The Contractor shall also notify all affected businesses/residents in writing (written form and language approved by WWSD) a minimum seven (7) days prior to any proposed water service interruption.

UTILITIES
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Throughout the various phases of construction of the project, the Contractor shall coordinate with WWSD representatives/WWSD Contractor(s) to identify/confirm the locations of existing water service lines. Known water service lines within the project limits are noted in the plans and include

but are not limited to Monument Academy (1150 Village Ridge Point) and The Church of Jesus Christ of Latter-day Saints (950 CO-105). WWSD forces will endeavor to relocate all service lines in conflict with proposed roadway improvements within five (5) days, however, additional time may be required dependent upon complexity, external factors and the like. All required work for the relocation of existing water services will be completed by WWSD forces/WWSD Contractor(s) at no cost to the project.

To protect the existing sanitary sewer line located within the NE quadrant of the Hwy 105/Knollwood Dr. intersection, the Contractor shall construct a concrete pipe saddle, as noted on drainage profile and detailed in the plans between the existing sanitary sewer line and the proposed storm drain pipe.

The Contractor shall contact, in writing, WWSD immediately upon receipt of Notice to Proceed. The Contractor shall schedule a pre-construction meeting with the Engineer and WWSD representative(s) fourteen (14) days prior to any work beginning in areas that will affect WWSD owned infrastructure.

The Contractor shall coordinate all required inspections with WWSD. The Contractor shall provide WWSD written notice fourteen (14) days immediately prior to each required work element or inspection to be completed by WWSD.

Tele Communications Utilities

Comcast Cable:

The Contractor shall protect in-place existing Comcast infrastructure. Any damage to existing Comcast infrastructure due to the Contractor's construction activities will be repaired at the Contractor's cost.

Portions of existing Comcast infrastructure will be adjusted, relocated, and/or modified by Comcast forces to accommodate proposed construction as noted in the plans. Once relocation work has been completed Comcast will retire and abandon existing fiber optic lines in place within the project area. The Contractor shall confirm with Comcast representatives that existing fiber optic lines have been abandoned prior to performing any removal of existing fiber optic facilities necessary to complete proposed roadway improvements. Removal of abandoned fiber optic conduits/cables that may impact construction shall be completed by the Contractor and shall be included in the work. The Contractor shall protect in place all relocated and/or modified Comcast infrastructure. Any damages to relocated or modified Comcast infrastructure due to the Contractor's construction activities will be repaired at the Contractor's cost.

The Contractor shall coordinate with Comcast forces to protect, support, relocate, and/or adjust in place fiber optic lines in the areas of storm drain construction as noted on the plans. The Contractor

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-continued-

will expose the lines for Comcast. Comcast forces shall over excavate the lines in order to generate enough slack so the storm drain facility can be installed. All required work for the supporting, relocating, and/or adjustment of Comcast infrastructure will be completed by Comcast forces at no cost to the project.

As specified in Part 2 Comcast forces shall adjust Comcast owned manholes and hand holes to finished grade. The Contractor shall establish finished grade and provide marking/staking necessary for Comcast forces to complete the work.

The Contractor shall contact, in writing, the utility owner immediately upon receipt of Notice to Proceed. The Contractor shall schedule a pre-construction meeting with the Engineer and Comcast representative(s) fourteen (14) days prior to any work beginning in areas that will affect Comcast owned infrastructure.

The Contractor shall coordinate all required inspections with Comcast forces. The Contractor shall provide the utility owner written notice fourteen (14) days immediately prior to each required work element or inspection to be completed by Comcast.

Force Broadband:

The Contractor shall protect in-place existing Force Broadband infrastructure. Any damage to existing Force Broadband infrastructure due to the Contractor's construction activities will be repaired at the Contractor's cost.

The Contractor shall coordinate with Force Broadband forces to protect, support, relocate, and/or adjust in place fiber optic lines in the areas of storm drain construction as noted on the plans. The

Contractor will expose the lines for Force Broadband. Force Broadband forces shall over excavate the lines in order to generate enough slack so the storm drain facility can be installed. All required work for the supporting, relocating, and/or adjustment of Force Broadband infrastructure will be completed by Force Broadband forces at no cost to the project.

The Contractor shall protect in place all existing and/or relocated Force Broadband infrastructure as identified in the plans. Force Broadband forces shall work with the Contractor to protect and support existing conduits/cables as necessary to facilitate excavation for the construction of proposed drainage improvements. Any damage to existing and/or relocated Force Broadband infrastructure due to the Contractor's construction activities will be repaired at the Contractor's cost.

As specified in Part 2 Force Broadband forces shall adjust Force Broadband owned hand holes to finished grade. The Contractor shall establish finished grade and provide marking/staking necessary for Force Broadband forces to complete the work.

The Contractor shall contact, in writing, the utility owner immediately upon receipt of Notice to Proceed. The Contractor shall schedule a pre-construction meeting with the Project Engineer and Force Broadband representative(s) fourteen (14) days prior to any work beginning in areas that will affect Force Broadband owned infrastructure.

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The Contractor shall coordinate all required inspections with Force Broadband forces. The Contractor shall provide the utility owner written notice fourteen (14) days immediately prior to each required work element or inspection to be completed by Force Broadband.

El Paso County:

The Contractor shall construct El Paso County fiber optic conduit and pull boxes as noted on the plans.

The Contractor shall coordinate with the WWSD Contractor(s) prior to the installation of the El Paso County fiber optic conduit/pull boxes along the north side of Highway 105 from approximately STA. 114+00 to STA. 116+00 due to the close proximity to the non-potable water line to be installed by WWSD Contractor(s) during construction.

Lumen Technologies:

The Contractor shall protect in-place existing Lumen infrastructure. Any damage to existing Lumen infrastructure due to the Contractor's construction activities will be repaired at the Contractor's cost.

Portions of existing Lumen infrastructure will be relocated by Lumen forces to accommodate proposed construction as noted in the plans from approximately Jackson Creek Pkwy. to Lake Woodmoor Dr. Once relocation work has been completed Lumen will retire and abandon existing fiber optic and telephone lines in place within the portions of the project area. The Contractor shall confirm with Lumen representatives that existing fiber optic and telephone lines have been abandoned prior to performing any removal of existing fiber optic and telephone facilities necessary to complete proposed roadway improvements. Removal of abandoned fiber optic conduits/ cables and telephone lines that may impact construction shall be completed by the Contractor and shall be included in the cost of the work. The Contractor shall protect in place all relocated Lumen infrastructure. Any damages to relocated Lumen infrastructure due to the Contractor's construction activities will be repaired at the Contractor's cost.

As needed to complete the work, the Contractor may need to remove abandoned underground conduits and remaining conductors that may impact construction. All conduits and conductors removed by the Contractor will become the property of the Contractor.

The Contractor shall coordinate with Lumen forces to protect, support, relocate, and/or adjust in place fiber optic and telephone lines in the areas of storm drain construction as noted on the plans. The Contractor will expose the lines for Lumen. Lumen forces shall over excavate the lines in order to generate enough slack so the storm drain facility can be installed. All required work for the supporting, relocating, and/or adjustment of Lumen infrastructure will be completed by Lumen forces at no cost to the project.

As specified in Part 2 Lumen forces shall adjust Lumen owned hand holes to finished grade. The Contractor shall establish finished grade and provide marking/staking necessary for Lumen forces to complete the work.

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The Contractor shall contact, in writing, the utility owner immediately upon receipt of Notice to Proceed. The Contractor shall schedule a pre-construction meeting with the Engineer and Lumen representative(s) fourteen (14) days prior to any work beginning in areas that will affect Lumen owned infrastructure.

The Contractor shall coordinate all required inspections with Lumen forces. The Contractor shall provide the utility owner written notice fourteen (14) days immediately prior to each required work element or inspection to be completed by Lumen.

Lumen Technologies (National Fiber):

No conflicts are anticipated with Lumen National facilities. If during construction a conflict is found, the Contractor shall notify the Engineer and Lumen Technologies immediately.

Any conflict with Lumen Technologies National Fiber found during construction will be relocated, adjusted, and/or modified by Lumen forces at no cost to the project.

The Contractor shall protect in place all existing Lumen infrastructure as identified in the plans and project specifications. Lumen forces shall work with the Contractor to protect and support existing conduits/cables as necessary to facilitate excavation for the construction of proposed drainage improvements. Any damage to existing Lumen National infrastructure due to the Contractor's construction activities will be repaired at the Contractor's cost.

The Contractor shall contact, in writing, the utility owner immediately upon receipt of Notice to Proceed.

Stratus IQ/Unite Private Networks:

The Contractor shall protect in-place existing Stratus IQ/Unite infrastructure. Any damage to existing Stratus IQ/Unite infrastructure due to the Contractor's construction activities will be repaired at the Contractor's cost.

Portions of existing Stratus IQ/Unite infrastructure will be adjusted, relocated, and/or modified by Stratus IQ/Unite forces to accommodate proposed construction as noted in the plans. Once relocation work has been completed Stratus IQ/Unite will retire and abandon existing fiber optic lines in place within the portions of the project area. The Contractor shall confirm with Stratus IQ/Unite representatives that existing fiber optic lines have been abandoned prior to performing any removal of existing fiber optic facilities necessary to complete proposed roadway improvements. Removal of abandoned fiber optic conduits/cables that may impact construction shall be completed by the Contractor and shall be included in the cost of the work. The Contractor shall protect in place all relocated and/or modified Stratus IQ/Unite infrastructure. Any damages to relocated or modified Stratus IQ/Unite infrastructure due to the Contractor's construction activities will be repaired at the Contractor's cost.

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The Contractor shall coordinate with Stratus IQ/Unite forces to protect, support, relocate, and/or adjust in place fiber optic lines in the areas of storm drain construction as noted on the plans. The Contractor will expose the lines for Stratus IQ/Unite. Stratus IQ/Unite forces shall over excavate the lines in order to generate enough slack so the storm drain facility can be installed. All required work for the supporting, relocating, and/or adjustment of Stratus IQ/Unite infrastructure will be completed by Stratus IQ/Unite forces at no cost to the project.

As specified in Part 2 Stratus IQ/Unite forces shall adjust Stratus IQ/Unite owned hand holes to finished grade. The Contractor shall establish finished grade and provide marking/staking necessary for Stratus IQ/Unite forces to complete the work.

The Contractor shall contact, in writing, the utility owner immediately upon receipt of Notice to Proceed. The Contractor shall schedule a pre-construction meeting with the Engineer and Stratus IQ/Unite representative(s) fourteen (14) days prior to any work beginning in areas that will affect Stratus IQ/Unite owned infrastructure.

The Contractor shall coordinate all required inspections with Stratus IQ/Unite forces. The Contractor shall provide the utility owner written notice fourteen (14) days immediately prior to each required work element or inspection to be completed by Stratus IQ/Unite.

Verizon Business (MCI):

The Contractor shall protect in-place existing Verizon infrastructure. Any damage to existing Verizon infrastructure due to the Contractor's construction activities will be repaired at the Contractor's cost.

Portions of existing Verizon infrastructure will be adjusted, relocated, and/or modified by Verizon forces to accommodate proposed construction as noted in the plans. Once relocation work has been completed Verizon will retire and abandon existing fiber optic lines in place within the portions of the project area. The Contractor shall confirm with Verizon representatives that existing fiber optic lines have been abandoned prior to performing any removal of existing fiber optic facilities necessary to complete proposed roadway improvements. Removal of abandoned fiber optic conduits/cables that may impact construction shall be completed by the Contractor and shall be included in the cost of the work. The Contractor shall protect in place all relocated and/or modified Verizon infrastructure. Any damages to relocated or modified Verizon infrastructure due to the Contractor's construction activities will be repaired at the Contractor's cost.

The Contractor shall coordinate with Verizon forces to protect, support, relocate, and/or adjust in place fiber optic lines in the areas of storm drain construction as noted on the plans. The Contractor will expose the lines for Verizon. Verizon forces shall over excavate the lines in order to generate enough slack so the storm drain facility can be installed. All required work for the supporting, relocating, and/or adjustment of Verizon infrastructure will be completed by Verizon forces at no cost to the project.

As specified in Part 2 Verizon forces shall adjust Verizon owned manholes and hand holes to finished grade. The Contractor shall establish finished grade and provide marking/staking necessary for Verizon forces to complete the work.

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The Contractor shall contact, in writing, the utility owner immediately upon receipt of Notice to Proceed. The Contractor shall schedule a pre-construction meeting with the Engineer and Verizon representative(s) fourteen (14) days prior to any work beginning in areas that will affect Verizon owned infrastructure.

The Contractor shall coordinate all required inspections with Verizon forces. The Contractor shall provide the utility owner written notice fourteen (14) days immediately prior to each required work element or inspection to be completed by Verizon.

Electric and Gas Utilities

Black Hills Energy (BHE) - Gas Operations

The Contractor shall protect in-place existing BHE gas infrastructure. Any damage to existing gas infrastructure due to the Contractor's construction activities will be repaired at the Contractor's cost. Portions of existing BHE gas infrastructure will be adjusted, relocated, and/or modified by BHE forces to accommodate proposed construction as noted in the plans.

Once relocation work has been completed BHE will retire and abandon existing gas lines in place within the project area. The Contractor shall confirm with BHE representatives that existing gas lines have been abandoned prior to performing any removal of existing gas facilities necessary to complete proposed roadway improvements. The Contractor shall protect in place all relocated BHE gas infrastructure. Any damages to relocated BHE infrastructure due to the Contractor's construction activities will be repaired at the Contractor's cost.

BHE forces shall work with the Contractor to protect, support, adjust, and/or relocate in place existing gas infrastructure as necessary to facilitate storm drain construction. The Contractor will expose the lines for BHE. BHE forces shall over excavate the lines to relocate the existing gas lines so the storm drain facility can be installed. This work is anticipated to take three (3) working days to complete at each location noted on the plans. All required work for the supporting, relocating, and/or adjustment of BHE infrastructure will be completed by BHE forces at no cost to the project.

The Contractor shall be aware that portions of BHE gas lines are within existing easements owned by BHE.

The Contractor shall be aware that existing BHE gas lines requiring removal may contain asbestos coated steel pipe. The Contractor shall follow all requirements described in Section 250 – Environmental Health and Safety Management regarding remediation and disposal of asbestos materials. Removal of pipe and any required remediation and disposal of pipe will be completed by the Contractor and included in the cost of the project. All gas lines removed by the Contractor will become the property of the Contractor.

As specified in Part 2 BHE forces shall relocate and adjust BHE owned gas valves to finished grade. The Contractor shall establish finished grade and provide marking/staking necessary for BHE forces to complete this work.

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Throughout the various phases of construction of the project, the Contractor shall coordinate with BHE forces to identify the locations of existing gas service lines. Known gas service lines within the project limits are noted in the plans and include but are not limited to The Church of Jesus Christ of Latter Day Saints (90 CO-105), and 660 & 670, Lake Woodmoor Dr. BHE forces shall relocate all service lines in conflict with proposed roadway improvements within five (5) days. All required work for the relocation of existing gas services will be completed by BHE forces at no cost to the project.

The Contractor shall contact, in writing, the utility owner immediately upon receipt of Notice to Proceed. The Contractor shall schedule a pre-construction meeting with the Engineer and BHE representative(s) fourteen (14) days prior to any work beginning in areas that will affect BHE owned infrastructure.

The Contractor shall coordinate all required inspections with BHE forces. The Contractor shall provide the utility owner written notice fourteen (14) days immediately prior to each required work element or inspection to be completed by BHE.

Mountain View Electric Association (MVEA):

Electric Distribution:

When the Contractor is working near underground or overhead electric distribution lines, it shall be assumed that the distribution line is energized. -The Contractor shall contact the MVEA representative a minimum of thirty (30) days in advance to inquire about the possibility for an outage. Due to the critical nature of the existing MVEA infrastructure within the project, the Contractor shall not assume an outage is possible. If possible, an outage will be arranged if it is determined to be necessary by MVEA.

The roadway construction activities will create safety concerns and conflicts with portions of the existing MVEA electric infrastructure. The existing electric infrastructure within the project area will remain energized for the duration of the project. New electric lines and infrastructure will need to be safely constructed before the existing facilities can be removed.

The Contractor shall notify MVEA prior to working within the vicinity of MVEA lines to establish the need for watch and protect. The Contractor shall assume MVEA watch and protect is required unless otherwise notified by MVEA for each location.

The Contractor shall protect in-place existing MVEA infrastructure, including but not limited to underground and overhead electric lines, conduits, transformers, junction cabinets, and switch cabinets. Any damages to existing MVEA infrastructure due the Contractor’s construction activities will be repaired at the Contractor’s cost.

Portions of the existing MVEA Electric infrastructure will be relocated by MVEA forces to accommodate proposed construction as noted in the plans and listed below.

- Underground electric crossing Knollwood Dr. and associated switch cabinet at the proposed roundabout with Village Ridge Point. New underground electric and electric infrastructure will be installed in Village Ridge Point.

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- Underground electric along Hwy 105 beginning at Knollwood Dr., running easterly along Hwy 105 and crossing at approximately 150 feet east of Knollwood Dr. New underground electric and electric infrastructure will be installed from Village Ridge Point, running to the southwest across Hwy 105 to the existing switch cabinet on the south side of Hwy 105 (just east of Knollwood Dr.)

- Existing pad mount switch cabinet along south side of Hwy 105 approximately 100 feet west of Morning Canyon Rd.
- Underground electric crossing Hwy 105 approximately 100 feet west of Morning Canyon Rd.
- Underground electric and associated infrastructure along north side of Hwy 105 at the Monument Academy School Property.

- Underground electric on the south side of Hwy 105 west of Morning Canyon Rd. to the existing pad mounted switch cabinet approximately 300 feet east of Morning Canyon Rd.
- Underground electric along south side of Hwy 105 at Lake Woodmoor Dr.
- Underground electric in Lake Woodmoor Dr.

The Contractor shall be aware that portions of MVEA electrical system are within existing easements owned by MVEA.

Once relocation work has been completed, MVEA will retire, remove, and/or abandon existing electric lines in place within the project area. The Contractor shall confirm with MVEA representatives that existing electric lines have been abandoned prior to performing any removal of existing underground electric lines necessary to complete the construction of the proposed roadway improvements.

Removal of abandoned underground electric lines shall be completed by the Contractor and shall be included in the cost of the work. All electric conduit and lines removed by the Contractor will become the property of the Contractor. The Contractor shall protect in place all relocated MVEA infrastructure. Any damages to the relocated MVEA infrastructure due to the Contractor's construction activities will be repaired at the Contractor's cost.

The Contractor shall contact, in writing, the utility owner immediately upon receipt of Notice to Proceed. The Contractor shall schedule a pre-construction meeting with the Engineer and MVEA representative(s) fourteen (14) days prior to any work beginning in areas that will affect MVEA owned infrastructure.

The Contractor shall coordinate all required inspections with MVEA forces. The Contractor shall provide the utility owner written notice fourteen (14) days immediately prior to each required work element or inspection to be completed by MVEA.

Roadway Power Source Connections:

The Contractor shall coordinate with MVEA to locate the meter pedestals. and schedule a connection to the power source. After the Contractor has completed the installation of the traffic signal and roadway lighting conduit and wiring to the meter pedestal locations, the contractor shall coordinate with

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MVEA forces to construct the meter pedestal and connect to the power source. This work is expected to be coordinated with construction and take three (3) working days to complete. All cost charges from the power service provider, and all necessary materials, labor and coordination required to maintain existing or establish new power sources required for permanent operation of equipment as shown in the plans shall be reimbursed from the Force Account Furnish and Install Electrical Service.

PART 2 - UTILITY OWNERS SHALL PERFORM THE WORK LISTED BELOW:

Although the Contractor shall provide Method of Handling Traffic (MHT) and traffic control for utility work expected to be coordinated with construction, traffic control for utility work outside of typical project work hours and current phase shall be the responsibility of the utility owner. The utility owner, in coordination with the Contractor, shall prepare and submit to the Engineer a Method of Handling Traffic Plan for utility work to be performed outside typical project work hours. The utility owner shall obtain acceptance of the Method of Handling Traffic Plan from the Engineer and the Contractor prior to beginning the utility work to be performed outside typical project work hours.

Water & Sanitary Utilities

Woodmoor Water and Sanitation District (WWSD):

WWSD forces to relocate water and non-potable water lines and associated infrastructure along Hwy 105 between Jackson Creek Pkwy. and Lake Woodmoor Dr. as noted in the plans. The Contractor shall coordinate with WWSD representatives to obtain the most current version of the Woodmoor Water and Sanitation District No. 1 CO 105 Utility Relocation Phase 1 Plans by JVA, Inc. for additional information. This work is to be coordinated with and constructed during the Hwy 105 Roadway Construction Project and completed at no cost to the project. WWSD shall coordinate all work with the Contactor. Construction schedule to be determined and agreed upon between WWSD and the Contractor.

The WWSD Contractor(s) shall coordinate with the Contractor prior to the installation of the non-potable water line to be installed along the north side of Highway 105 from approximately STA. 114+00 to STA. 116+00 due to the close proximity to the El Paso County fiber optic conduit/pull boxes to be installed by the Contractor during construction.

Attend Project Pre-Construction meeting(s), WWSD Work Element Pre-construction meeting(s), Weekly Progress Meetings, Utility Coordination meeting(s) as applicable with a minimum fourteen (14) day notice of meeting location and time.

If work associated with WWSD utilities by the Contractor is required by the Project, WWSD representative (s) shall Inspect utility work performed by the Contractor listed in Part 1 above given a minimum of fourteen (14) day notice by the Contractor.

WWSD will exercise/operate all water valves required to facilitate construction activities. The Contractor shall coordinate with WWSD representatives to schedule valve operations. If deemed necessary for the Project, the Contractor shall coordinate with WWSD representatives to schedule waterline shutdown at least fourteen (14) days prior to needed shutdown.

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If during construction additional conflicts are found, WWSD forces will endeavor to relocate their utility or remove the conflict within thirty (30) working days from notice of the conflict, but given size and scope of conflict, additional time maybe required.

Tele Communications Utilities

Comcast Cable:

Attend Project Pre-Construction meeting(s), Comcast Work Element Pre-construction meeting(s), Weekly Progress Meetings, and Utility Coordination meeting(s) as applicable with a minimum fourteen (14) day notice of meeting location and time.

Comcast forces shall work with the Contractor to protect, support, relocate, and/or adjust in place existing conduits/cables as necessary to facilitate storm drain construction noted in the plans and include but are not limited to four (4) locations (STA. 121+34, RT., STA. 126+60, RT., STA. 130+50, RT., STA. 139+33, RT.) The Contractor will expose the lines for Comcast. Comcast forces shall over excavate the lines in order to generate enough slack so the storm drain facility can be installed. This work is anticipated to take three (3) working days to complete at each location. All required work for the supporting, relocating, and/or adjustment of Comcast infrastructure will be completed by Comcast forces at no cost to the project. Comcast shall coordinate all work with the Contractor. Construction schedule to be determined and agreed upon between Comcast and the Contractor.

Comcast forces shall convert existing handholes, at two (2) locations (STA. 151+70, RT. and STA. 152+13, RT.), to traffic rated manholes as noted on the plans. **This work is anticipated to be coordinated and completed by Comcast forces during the construction of the Hwy 105 Roadway Improvements Project and is anticipated to take five (5) working days to complete at each location. Comcast shall coordinate all work with the Contractor. Construction schedule to be determined and agreed upon between Comcast and the Contractor.**

Comcast forces shall relocate existing fiber optic conduits, cables, and handholes as noted on the plans. **This work is anticipated to be coordinated and completed by Comcast forces during the construction of the Hwy 105 Roadway Improvements Project. Comcast shall coordinate all work with the Contractor. Construction schedule to be determined and agreed upon between Comcast and the Contractor.**

Comcast forces shall adjust manholes, at two (2) locations (STA. 151+70, RT. and STA. 152+13, RT.), to final pavement grade/finished grade as construction progresses. All manholes shall be adjusted to ¼" to ½" below final roadway surface. This work is anticipated to take one (1) working day at each location. As specified in Part 1 the Contractor shall establish finished grade and provide marking/staking necessary for Comcast forces to complete the work.

Comcast forces shall adjust handholes, at four (4) locations (Sta. 120+20, RT., STA. 133+90, RT., STA. 145+87, RT., and STA. 10+40, RT. Lake Woodmoor Dr.) to finished grade as construction progresses. This work is anticipated to take one (1) working day at each location. As specified in Part

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1 the Contractor shall establish finished grade and provide marking/staking necessary for Comcast forces to complete the work.

If during construction additional conflicts are found, Comcast forces shall relocate their facility within fourteen (14) working days from notice of the conflict.

Any additional conflict with Comcast infrastructure found during construction will be relocated, adjusted, and/or modified by Comcast forces at no cost to the project.

Force Broadband:

Attend Project Pre-Construction meeting(s), Force Broadband Work Element Pre-construction meeting(s), Weekly Progress Meetings, and Utility Coordination meeting(s) as applicable with a minimum fourteen (14) day notice of meeting location and time.

Force Broadband forces shall work with the Contractor to protect, support, relocate, and/or adjust in place existing conduits/cables as necessary to facilitate storm drain construction at one (1) location (STA. 113+88, RT.) The Contractor will expose the lines for Force Broadband. Force Broadband forces shall over excavate the lines in order to generate enough slack so the storm drain facility can be installed. This work is anticipated to take three (3) working days to complete at each location as noted in the plans. All required work for the supporting, relocating, and/or adjustment of Force Broadband infrastructure will be completed by Force Broadband forces at no cost to the project. Force shall coordinate all work with the Contractor. Construction schedule to be determined and agreed upon between Force and the Contractor.

Force Broadband forces shall relocate existing fiber optic conduits, cables, and handholes as noted on the plans. **This work is anticipated to be coordinated and completed by Force Broadband during construction of the Hwy 105 roadway improvements project. Force Broadband shall coordinate all work with the Contractor. Construction schedule to be determined and agreed upon between Force Broadband and the Contractor.**

Force Broadband forces shall adjust handholes, at one (1) location (STA. 113+88, LT.), to finished grade as construction progresses. This work is anticipated to take one (1) working day at each location noted in the plans. As specified in Part 1 the Contractor shall establish finished grade and provide marking/staking necessary for Force Broadband forces to complete the work.

If during construction additional conflicts are found, Force Broadband forces shall relocate their facility within fourteen (14) working days from notice of the conflict.

Any additional conflict with Force Broadband infrastructure found during construction will be relocated, adjusted, and/or modified by Force Broadband forces at no cost to the project.

El Paso County:

Attend Project Pre-Construction meeting(s), El Paso County Work Element Pre-construction meeting(s), Weekly Progress Meetings, and Utility Coordination meeting(s) as applicable with a minimum fourteen (14) day notice of meeting location and time.

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Inspect utility work performed by the Contractor listed in Part 1 above given a minimum of fourteen (14) day notice by the Contractor.

Lumen Technologies:

Attend Project Pre-Construction meeting(s), Lumen Work Element Pre-construction meeting(s), Weekly Progress Meetings, and Utility Coordination meeting(s) as applicable with a minimum fourteen (14) day notice of meeting location and time.

Lumen forces shall work with the Contractor to protect, support, and/or adjust in place existing conduits/cables as necessary to facilitate storm drain construction noted in the plans and include but are not limited to seven (7) locations (STA. 113+86, RT., STA. 114+00, RT., STA. 126+60, RT., STA. 130+50, RT., STA. 139+33, RT., STA. 145+95, RT., STA. 151+00, RT.). The Contractor will expose the lines for Lumen. Lumen forces shall over excavate the lines in order to generate enough slack so the storm drain facility can be installed. This work is anticipated to take three (3) working days to complete at each location. Lumen shall coordinate all work with the Contractor. Construction schedule to be determined and agreed upon between Lumen and the Contractor.

Lumen forces shall relocate fiber optic and telephone infrastructure, including but not limited to fiber optic/telephone conduit and cables, repeaters, manholes, pedestals, and handholes, from approximately Jackson Creek Pkwy. to Lake Woodmoor Dr. **This work is anticipated to be coordinated and completed by Lumen forces during construction of the Hwy 105 Roadway Improvements Project. Lumen shall coordinate all work with the Contractor. Construction schedule to be determined and agreed upon between Lumen and the Contractor.**

Lumen forces shall remove all pedestals, pull boxes, vaults, and all lines and appurtenances associated with their system to accommodate proposed construction as shown on the plan from approximately Jackson Creek Pkwy. to Knollwood Dr. Lumen forces shall coordinate this work with all other utility owners within the corridor. As needed to complete the work, the Contractor is free to remove abandoned underground conduits and remaining conductors that may impact construction. All conduits and conductors removed by the Contractor shall become the property of the Contractor. **This work is anticipated to be coordinated and completed by Lumen forces during construction of the Hwy 105 Roadway Improvements Project. Lumen shall coordinate all work with the Contractor. Construction schedule to be determined and agreed upon between Lumen and the Contractor.**

Throughout the various phases of construction of the project, the Contractor shall coordinate with Lumen forces to identify the locations of existing fiber optic/telephone service lines. Service lines noted in the plans and include but are not limited to The Church of Jesus Christ of Latter-day Saints (950 CO-105). Lumen forces shall relocate all service lines in conflict with proposed roadway improvements within five (5) days.

Lumen forces shall adjust manholes, at one (1) location (STA. 114+00, RT.), during construction for proposed traffic detours. These manholes shall be adjusted to ¼" to ½" below finished roadway elevation as shown on the plans. This work is anticipated to take one (1) working day at each location.

UTILITIES
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As specified in Part 1 the Contractor shall establish finished grade and provide marking/staking necessary for Lumen forces to complete the work.

Lumen forces shall adjust manholes, at one (1) location (STA. 114+00, RT.), to final pavement grade as construction progresses. All manholes shall be adjusted to ¼" to ½" below final roadway surface. This work is anticipated to take one (1) working day at each location. As specified in Part 1 the Contractor shall establish finished grade and provide marking/staking necessary for Lumen forces to complete the work.

Lumen forces shall adjust fiber optic and telephone infrastructure, including but not limited to fiber optic/telephone repeaters, manholes, pedestals, and handholes, from approximately Jackson Creek Pkwy. to Lake Woodmoor Dr.to finished grade as construction progresses. This work is anticipated to Take one (1) working day at each location. As specified in Part 1 the Contractor shall establish finished grade and provide marking/staking necessary for Lumen forces to complete the work.

If during construction additional conflicts are found, Lumen forces shall relocate their facilities within 90 working days from notice of the conflict.

Any additional conflict with Lumen infrastructure found during construction will be relocated, adjusted, and/or modified by Lumen forces at no cost to the project unless conflict is within a Lumen owned easement or equivalent.

Lumen Technologies (National):

No conflicts are anticipated. If during construction a conflict is found, Lumen forces shall relocate their facility within 90 working days from notice of the conflict.

Lumen representative(s) will attend Project Pre-Construction meeting(s) Lumen Work Element Pre-construction meeting (s), and Weekly Progress meeting(s) as applicable with a minimum fourteen (14) day notice of meeting location and time.

Any conflict with Lumen Technologies National Fiber found during construction will be relocated, adjusted, and/or modified by Lumen forces at no cost to the project unless conflict is within a Lumen owned easement or equivalent.

Stratus IQ/Unite:

Attend Project Pre-Construction meeting(s), Stratus IQ/Unite Work Element Pre-construction meeting(s), Weekly Progress Meetings, and Utility Coordination meeting(s) as applicable with a minimum fourteen (14) day notice of meeting location and time.

Stratus IQ/Unite forces shall work with the Contractor to protect, support, relocate, and/or adjust in place existing conduits/cables as necessary to facilitate storm drain construction noted in the plans in coordination with the Hwy 105 roadway improvements project construction and include but are not limited to four (4) locations (STA. 121+34, RT., STA. 126+60, RT., STA. 130+50, RT., STA. 151+00, RT.). The Contractor will expose the lines for Stratus IQ/Unite. Stratus IQ/Unite forces

UTILITIES
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shall over excavate the lines in order to generate enough slack so the storm drain facility can be installed. This work is anticipated to take three (3) working days to complete at each location.

Stratus IQ/Unite shall coordinate all work with the Contractor. Construction schedule to be determined and agreed upon between Stratus IQ/Unite and the Contractor.

Stratus IQ/Unite forces shall relocate existing fiber optic conduits, cables, and handholes as noted on the plans. **This work is anticipated to be coordinated and completed by Stratus IQ/Unite forces during construction of the Hwy 105 Roadway Improvements Project. Stratus IQ/Unite shall coordinate all work with the Contractor. Construction schedule to be determined and agreed upon between Stratus IQ/Unite and the Contractor.**

Stratus IQ/Unite forces shall adjust handholes, at four (4) locations (STA. 122+56, RT., STA. 138+25, RT., STA. 140+94, LT. & RT.) to finished grade as construction progresses. As specified in Part 1 the Contractor shall establish finished grade and provide marking/staking necessary for Stratus IQ/Unite forces to complete the work.

If during construction additional conflicts are found, Stratus IQ/Unite forces shall relocate their facility within 14 working days from notice of the conflict.

Any conflict with Stratus IQ/Unite infrastructure found during construction will be relocated, adjusted, and/or modified by Stratus IQ/Unite forces at no cost to the project.

Verizon Business (MCI):

Attend Project Pre-Construction meeting(s), Verizon Work Element Pre-construction meeting(s), Weekly Progress Meetings, and Utility Coordination meeting(s) as applicable with a minimum fourteen (14) day notice of meeting location and time.

Verizon forces shall work with the Contractor to protect, support, relocate, and/or adjust in place existing conduits/cables as necessary to facilitate storm drain construction noted in the plans in coordination with the Hwy 105 roadway improvements project construction and include but are not limited to six (6) locations (STA. 116+25, RT., STA. 121+34, RT., STA. 130+50, RT., STA. 139+33, RT., STA. 145+95, RT., STA. 151+00, RT.). The Contractor will expose the lines for Verizon. Verizon forces shall over excavate the lines in order to generate enough slack so the storm drain facility can be installed. This work is anticipated to take three (3) working days to complete at each location. Verizon shall coordinate all work with the Contractor. Construction schedule to be determined and agreed upon between Verizon and the Contractor. All required work for the supporting, relocating, and/or adjustment of Verizon infrastructure will be completed by Verizon forces at no cost to the project.

Verizon forces shall convert existing handhole, at one (1) location (STA. 132+00, RT.) to traffic rated manholes and install a traffic rated manhole, at one (1) location (STA. 150+16, RT.) as noted on the plans. **This work is anticipated to be completed by Verizon forces prior to the construction of the Hwy 105 Roadway Improvements Project.**

UTILITIES
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Verizon forces shall relocate existing fiber optic conduits, cables, and handholes as noted on the plans. **This work is anticipated to be coordinated and completed by Verizon forces during construction of the Hwy 105 Roadway Improvements Project. Verizon shall coordinate all work with the Contractor. Construction schedule to be determined and agreed upon between Verizon and the Contractor.**

Verizon forces shall adjust manholes, at two (2) locations (STA. 132+00, RT., STA. 150+16, RT.) to final pavement grade as construction progresses. All manholes shall be adjusted to ¼" to ½" below final roadway surface. This work is anticipated to take one (1) working day at each location. As specified in Part 1 the Contractor shall establish finished grade and provide marking/staking necessary for Verizon forces to complete this work.

Verizon forces shall adjust handholes, at three (3) locations (STA. 110+33, LT., STA. 119+85, RT., STA. 143+10, RT.) to finished grade as construction progresses. This work is anticipated to take one (1) working day at each location. As specified in Part 1 the Contractor shall establish finished grade and provide marking/staking necessary for Verizon forces to complete this work.

If during construction additional conflicts are found, Verizon forces shall relocate their facility within 14 working days from notice of the conflict.

Any conflict with Verizon infrastructure found during construction will be relocated, adjusted, and/or modified by Verizon forces at no cost to the project.

Electric and Gas Utilities

Black Hills Energy (BHE) - Gas Operations

Attend Project Pre-Construction meeting(s), BHE Work Element Pre-construction meeting(s), Weekly Progress Meetings, and Utility Coordination meeting(s) as applicable with a minimum fourteen (14) day notice of meeting location and time.

BHE forces shall work with the Contractor to protect, and/or support in place existing gas lines not slated for relocation to facilitate construction at no cost to the project.

Portions of existing BHE infrastructure will be relocated by BHE forces to accommodate proposed construction as noted in the plans. Once relocation work has been completed BHE will retire and abandon existing gas lines in place within the project area. The Contractor shall confirm with BHE representatives that existing gas lines have been abandoned prior to performing any removal of existing gas facilities necessary to complete proposed roadway improvements. The Contractor shall protect in place all relocated BHE infrastructure. Any damages to relocated BHE infrastructure due to the Contractor's construction activities will be repaired at the Contractor's cost. BHE shall coordinate all work with the Contractor. Construction schedule to be determined and agreed upon between BHE and the Contractor.

UTILITIES
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BHE forces to relocate, in coordination with the Hwy 105 roadway improvements project construction, existing gas infrastructure as noted in the plans and listed below:

- Construct proposed gas line along Knollwood Dr. and lower existing gas line to accommodate storm drain facility installation at the Knollwood Dr. roundabout
- Adjust and modify existing gas line as necessary to facility storm drain construction east of the intersection of Hwy 105/Morning Canyon Rd.
- Construct proposed gas line along Hwy 105 between Morning Canyon Rd. and Lake Woodmoor Dr.
- Construct proposed gas line along Lake Woodmoor Dr.
- Relocate gas service lines serving 950 Hwy 105 and 670 Lake Woodmoor Dr.

BHE shall coordinate all work with the Contractor. Construction schedule to be determined and agreed upon between BHE and the Contractor.

Throughout the various phases of construction of the project, the BHE forces shall coordinate with the Contractor to identify the locations of existing gas service lines. Service lines noted in the plans and include but are not limited to The Church of Jesus Christ of Latter-day Saints (950 CO-105) and 670 Lake Woodmoor Dr. BHE forces shall relocate all service lines in conflict with proposed roadway improvements within fourteen (14) working days. All required work for the relocation of existing gas services will be completed by BHE forces at no cost to the project.

BHE shall relocate and adjust gas valves to finished grade as construction progresses. This work is anticipated to take five (5) working days at each location. As specified in Part 1 the Contractor shall establish finished grade and provide marking/staking necessary for BHE forces to complete this work.

If during construction additional conflicts are found, BHE forces shall relocate their facility within thirty (30) working days from notice of the conflict.

Any conflict with BHE infrastructure found during construction will be relocated, adjusted, and/or modified by BHE forces at no cost to the project.

Mountain View Electric Association (MVEA):

Electric Distribution:

Attend Project Pre-Construction meeting(s), MVEA Work Element Pre-construction meeting(s), Weekly Progress Meetings, and Utility Coordination meeting(s) as applicable with a minimum fourteen (14) day notice of meeting location and time.

MVEA forces shall work with the Contractor to protect, support, and/or adjust in place existing conduits/cables as necessary to facilitate construction given proper notice from the Contractor.

Portions of the MVEA Electric infrastructure will be relocated by MVEA forces to accommodate proposed construction as noted in the plans. Once relocation work has been completed MVEA will retire, remove, and/or abandon existing electric lines in place within the project area. The Contractor shall confirm with MVEA representatives that existing electric lines have been abandoned prior to performing any removal of existing underground electric lines necessary to complete the construction of the proposed roadway improvements. The Contractor shall protect in place all relocated MVEA

UTILITIES
-continued-

infrastructure. Any damages to the relocated MVEA infrastructure due to the Contractor's construction activities will be repaired at the Contractor's cost.

MVEA forces to relocate existing and install new, in coordination with the Hwy 105 roadway improvements project construction, electric infrastructure as noted in the plans and listed below:

- Underground electric crossing Knollwood Dr. and associated switch cabinet at the proposed roundabout with Village Ridge Point. New underground electric and electric infrastructure will be installed in Village Ridge Point.
- Underground electric along Hwy 105 beginning at Knollwood Dr., running easterly along Hwy 105 and crossing at approximately 150 feet east of Knollwood Dr. New underground electric and electric infrastructure will be installed from Village Ridge Point, running to the southwest across Hwy 105 to the existing switch cabinet on the south side of Hwy 105 (just east of Knollwood Dr.)
- Existing pad mount switch cabinet along south side of Hwy 105 approximately 100 feet west of Morning Canyon Rd.
- Underground electric crossing Hwy 105 approximately 100 feet west of Morning Canyon Rd.
- Underground electric and associated infrastructure along north side of Hwy 105 at the Monument Academy School Property.
- Underground electric on the south side of Hwy 105 west of Morning Canyon Rd. to the existing pad mounted switch cabinet approximately 300 feet east of Morning Canyon Rd.
- Underground electric along south side of Hwy 105 at Lake Woodmoor Dr.
- Underground electric in Lake Woodmoor Dr.

MVEA shall coordinate all work with the Contractor. Construction schedule to be determined and agreed upon between MVEA and the Contractor.

Throughout the various phases of construction of the project, the MVEA forces shall coordinate with the Contractor to identify the locations of existing electric service lines. Service lines noted in the plans and include but are not limited to Monument Academy (1150 Village Ridge Point). MVEA forces shall relocate all service lines in conflict with proposed roadway improvements within fourteen (14) working days. All required work for the relocation of existing electric services will be completed by MVEA forces.

No additional conflicts are anticipated. If during construction a conflict is found, MVEA forces shall relocate their facility within ninety (90) working days from notice of the conflict depending on the severity of the conflict.

Roadway Power Source Connections:

After the Contractor has completed the installation of the traffic signal and roadway lighting conduit and wiring to the meter pedestal locations, the Contractor shall coordinate with MVEA forces to construct the meter pedestal and connect to the power source. This work is expected to be coordinated with construction and take three (3) working days to complete.

UTILITIES
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The Contractor shall provide the utility owner written notice fourteen (14) days immediately prior to each utility work element expected to be coordinated with construction.

GENERAL:

The Contractor and Utility providers shall comply with Article 1.5 of Title 9, CRS ("Excavation Requirements") when excavating or grading is planned in the area of underground utility facilities. The Contractor shall notify all affected utilities at least two (2) business days, not including the actual day of notice, prior to commencing such operations. The Contractor shall contact the Utility Notification Center of Colorado (UNCC) at phone no. **811,** to have locations of UNCC registered lines marked by member companies. All other underground facilities shall be located by contacting the respective owner. Utility service laterals shall also be located prior to beginning excavation or grading.

The location of utility facilities as shown on the plan and profile sheets, and herein described, were obtained from the best available information.

All costs incidental to the foregoing requirements will not be paid for separately but shall be included in the work, except as noted in this specification, Revision to Section 105 Cooperation with Utilities and Addition of Section 642 Utility Coordination Meeting in the Project Specifications.