



STATE OF CALIFORNIA

CITY OF PLACERVILLE
ENGINEERING DEPARTMENT

SPECIAL PROVISIONS

BOOK 2 OF 2

FOR CONSTRUCTION OF

WESTERN PLACERVILLE INTERCHANGES PROJECT

PHASE 2.2

CITY OF PLACERVILLE

CIP #41918

October 2020

For use in Connection with California Department of Transportation Standard Specifications Dated **2018**, Revised Standard Specifications current as of April 17th, 2020, Standard Plans Dated **2018**, Revised Standard Plans current as of April 17th, 2020; City of Placerville Standard Plans; State of California Labor Surcharge and Equipment Rental Rates; and Director of Industrial Relations General Prevailing Wage Rates.

Bids Open: November 12, 2020

Location: City Hall
Engineering Department
3101 Center Street,
3rd Floor
Placerville, CA 95667

CITY OF PLACERVILLE

WESTERN PLACERVILLE INTERCHANGES
PROJECT PHASE 2.2

CIP #41918

OCTOBER 14, 2020

The Special Provisions contained herein have been prepared by or under the direction of the following Registered Persons.

HIGHWAY



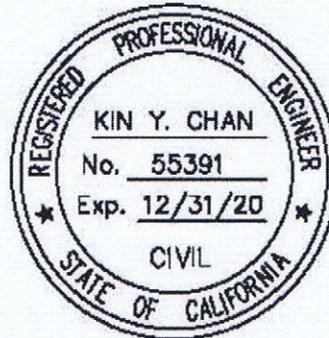
REGISTERED CIVIL ENGINEER



ELECTRICAL



REGISTERED CIVIL ENGINEER



**CITY OF PLACERVILLE, CALIFORNIA
ENGINEERING DEPARTMENT**

**WESTERN PLACERVILLE INTERCHANGES
PROJECT PHASE 2.2
CIP #41918**

TABLE OF CONTENTS

ORGANIZATION..... 3
DIVISION I GENERAL PROVISIONS 9
1 GENERAL..... 9
2 BIDDING 11
3 CONTRACT AWARD AND EXECUTION..... 12
4 SCOPE OF WORK..... 13
5 CONTROL OF WORK..... 13
6 CONTROL OF MATERIALS 16
7 LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC..... 16
8 PROSECUTION AND PROGRESS 17
9 PAYMENT 18
DIVISION II GENERAL CONSTRUCTION..... 19
10 GENERAL 19
12 TEMPORARY TRAFFIC CONTROL 19
13 WATER POLLUTION CONTROL..... 22
14 ENVIRONMENTAL STEWARDSHIP 23
15 EXISTING FACILITIES 25
DIVISION III EARTHWORK AND LANDSCAPE..... 26
17 GENERAL..... 26
19 EARTHWORK 27
21 EROSION CONTROL..... 28
DIVISION IV SUBBASES AND BASES..... 34
26 AGGREGATE BASES 34
DIVISION V SURFACINGS AND PAVEMENTS..... 34
36 GENERAL 34
39 ASPHALT CONCRETE 35
DIVISION VI STRUCTURES 38
51 CONCRETE STRUCTURES..... 38
WESTERN PLACERVILLE INTERCHANGES PROJECT PHASE 2.2
CIP #41918
Special Provisions
1

60 EXISTING STRUCTURES.....	38
DIVISION VII DRAINAGE FACILITIES.....	40
64 PLASTIC PIPE	40
70 MISCELLANEOUS DRAINAGE FACILITIES.....	40
71 EXISTING DRAINAGE FACILITIES.....	40
DIVISION VIII MISCELLANEOUS CONSTRUCTION.....	40
72 SLOPE PROTECTION	41
73 CONCRETE CURBS AND SIDEWALKS.....	41
75 MISCELLANEOUS METAL.....	41
80 FENCES.....	41
DIVISION IX TRAFFIC CONTROL DEVICES	42
84 MARKINGS	42
DIVISION X ELECTRICAL WORK.....	42
86 GENERAL	42
87 ELECTRICAL SYSTEMS.....	49
DIVISION XI MATERIALS	50
90 CONCRETE	50

APPENDIX A – GEOTECHNICAL REPORT

APPENDIX B – DRAINAGE REPORT

APPENDIX C – STORM WATER DATA REPORT

APPENDIX D – ENVIRONMENTAL COMMITMENTS RECORD

APPENDIX E – ENVIRONMENTAL PERMIT DOCUMENTS:

Regional Water Quality Control Board 401 Water Quality Certification

California Department of Fish and Wildlife 1602 Streambed Alteration Agreement

Army Corps 404 Letter of Permission

APPENDIX F – CALTRANS ENCROACHMENT PERMIT

ORGANIZATION

Special provisions are under headings that correspond with the main-section headings of the *Standard Specifications*. A main-section heading is a heading shown in the table of contents of the *Standard Specifications*.

Each special provision begins with a revision clause that describes or introduces a revision to the *Standard Specifications* as revised by any revised standard specification.

Any paragraph added or deleted by a revision clause does not change the paragraph numbering of the *Standard Specifications* for any other reference to a paragraph of the *Standard Specifications*.

ABBREVIATIONS, LINES, SYMBOLS, AND LEGEND

- A3A Abbreviations (Sheet 1 of 3)
- A3B Abbreviations (Sheet 2 of 3)
- A3C Abbreviations (Sheet 3 of 3)
- A10A Legend - Lines and Symbols (Sheet 1 of 5)
- A10B Legend - Lines and Symbols (Sheet 2 of 5)
- A10C Legend - Lines and Symbols (Sheet 3 of 5)
- A10D Legend - Lines and Symbols (Sheet 4 of 5)
- A10E Legend - Lines and Symbols (Sheet 5 of 5)

PAVEMENT MARKERS, TRAFFIC LINES, AND PAVEMENT MARKINGS

- A20A Pavement Markers and Traffic Lines - Typical Details
- A20B Pavement Markers and Traffic Lines - Typical Details
- A20C Pavement Markers and Traffic Lines - Typical Details
- A20D Pavement Markers and Traffic Lines - Typical Details
- A24A Pavement Markings -Arrows
- A24E Pavement Markings - Words, Limit and Yield Lines

EXCAVATION AND BACKFILL

- A62A Excavation and Backfill - Miscellaneous Details
- A62D Excavation and Backfill - Concrete Pipe Culverts
- A62DA Excavation and Backfill - Concrete Pipe Culverts - Indirect Design Method
- A62F Excavation and Backfill - Metal and Plastic Culverts

PORTABLE CONCRETE BARRIER

- A63A Portable Concrete Barrier (Type 60K)
- A63B Portable Concrete Barrier (Type 60K)

OBJECT MARKERS, DELINEATORS, CHANNELIZERS, AND BARRICADES

- A73A Object Markers
- A73B Markers
- A73C Delineators, Channelizers and Barricades

SURVEY MONUMENTS

- A74 Survey Monuments

MIDWEST GUARDRAIL SYSTEM - STANDARD RAILING SECTIONS

RSP A77L1 Midwest Guardrail System - Standard Railing Section (Wood Post with Wood Block)
A77M1 Midwest Guardrail System - Standard Hardware
RSP A77N1 Midwest Guardrail System - Wood Post and Wood Block Details
RSP A77N3 Midwest Guardrail System - Typical Line Post Embedment and Hinge Point Offset Details
A77N4 Midwest Guardrail System - Typical Railing Delineation and Dike Positioning Details

MIDWEST GUARDRAIL SYSTEM - TYPICAL VEGETATION CONTROL

A77N5 Midwest Guardrail System - Typical Vegetation Control Standard Railing Section
RSP A77N6 Midwest Guardrail System - Typical Vegetation Control for Terminal System End Treatments
A77N7 Midwest Guardrail System - Typical Vegetation Control at Structure Approach
A77N8 Midwest Guardrail System - Typical Vegetation Control at Fixed Object
A77N9 Midwest Guardrail System - Typical Vegetation Control at Fixed Object
A77N10 Midwest Guardrail System - Typical Vegetation Control at Fixed Object

MIDWEST GUARDRAIL SYSTEM - TYPICAL LAYOUTS FOR EMBANKMENTS

RSP A77P1 Midwest Guardrail System - Typical Layouts for Embankments
RSP A77P2 Midwest Guardrail System - Typical Layouts for Embankments
RSP A77P3 Midwest Guardrail System - Typical Layouts for Embankments
RSP A77P4 Midwest Guardrail System - Typical Layouts for Embankments
RSP A77P5 Midwest Guardrail System - Typical Layouts for Embankments
RSP A77P6 Midwest Guardrail System - Typical Layouts for Embankments

MIDWEST GUARDRAIL SYSTEM - TYPICAL LAYOUTS FOR STRUCTURES

RSP A77Q1 Midwest Guardrail System - Typical Layouts for Structure Approach
RSP A77Q2 Midwest Guardrail System - Typical Layouts for Structure Approach and Between Structures
RSP A77Q3 Midwest Guardrail System - Typical Layouts for Structure Approach
RSP A77Q4 Midwest Guardrail System - Typical Layouts for Structure Departure
A77Q5 Midwest Guardrail System - Typical Layouts for Structure Departure

MIDWEST GUARDRAIL SYSTEM - TYPICAL LAYOUTS FOR FIXED OBJECTS

RSP A77R1 Midwest Guardrail System - Typical Layouts for Fixed Objects Between Separate Roadbeds (Two-Way Traffic)
RSP A77R2 Midwest Guardrail System - Typical Layouts for Fixed Objects Between Separate Roadbeds (One-Way Traffic)
RSP A77R3 Midwest Guardrail System - Typical Layouts for Roadside Fixed Objects
RSP A77R4 Midwest Guardrail System - Typical Layouts for Roadside Fixed Objects
RSP A77R5 Midwest Guardrail System - Typical Layouts for Roadside Fixed Objects
RSP A77R6 Midwest Guardrail System - Typical Layouts for Roadside Fixed Objects
RSP A77R7 Midwest Guardrail System - Typical Layouts for Roadside Fixed Objects
RSP A77R8 Midwest Guardrail System - Typical Layouts for Roadside Fixed Objects

MIDWEST GUARDRAIL SYSTEM - END ANCHORAGE AND RAIL TENSIONING ASSEMBLY

A77S1 Midwest Guardrail System - End Anchor Assembly (Type SFT)
A77S2 Midwest Guardrail System - Rail Tensioning Assembly
A77S3 Metal Railing Anchor Cable and Anchor Plate Details
RSP A77T2 Midwest Guardrail System - Buried Post End Anchor

CRASH CUSHIONS

A81A Crash Cushion, Sand Filled (Unidirectional)

FENCES

RSP A85 Chain Link Fence
RSP A85A Chain Link Fence Details
A85B Chain Link Fence Details

CURBS, DRIVEWAYS, DIKES, CURB RAMPS, AND ACCESSIBLE PARKING

A87A Curbs and Driveways
RSP A87B Hot Mix Asphalt Dikes

PAVEMENTS

P70 Hot Mix Asphalt Paving (Longitudinal Tapered Notched Wedge Joint)
P74 Pavement Edge Treatments
P75 Pavement Edge Treatments - Overlays
P76 Pavement Edge Treatments - New Construction

SLOPE PAVING

xs4-210 Slope Paving – Full Slope – No Skew

DRAINAGE INLETS, PIPE INLETS AND GRATES

D71 Drainage Inlet Markers
RSP D72B CIP Drainage Inlets - Types G1, G2, G3, G4, G5 and G6
RSP D72C CIP Drainage Inlets - Types G1, G2, G3, G4, G5 and G6
RSP D72F CIP Drainage Inlets Notes
RSP D72G CIP Drainage Inlets Tables
RSP D73B Precast Drainage Inlets - Types G1, G2, G3, G4, G5 and G6
RSP D73C Precast Drainage Inlets - Types G2 and G4
RSP D73D Precast Drainage Inlets - Types GT1, GT2, GT3 and GT4
RSP D73E Precast Drainage Inlets - Types GO and GDO
RSP D73F Precast Drainage Inlets Notes
RSP D73G Precast Drainage Inlets Table
RSP D74 Drainage Inlet Details
D75A Steel Pipe Inlets
D75B Concrete Pipe Inlets
D77A Grate Details No. 1
D77B Grate Details No. 2

CONCRETE PIPE - DIRECT DESIGN METHOD

D79 Precast Reinforced Concrete Pipe - Direct Design Method
D79A Precast Reinforced Concrete Pipe - Direct Design Method

PIPE DOWNDRAINS, ANCHORAGE SYSTEMS AND OVERSIDE DRAINS

D87A Corrugated Metal Pipe Downdrain Details
D87D Overside Drains

CONSTRUCTION LOADS ON CULVERTS AND STRUT DETAILS

D88 Construction Loads on Culverts

FLARED END SECTIONS

WESTERN PLACERVILLE INTERCHANGES PROJECT PHASE 2.2
CIP #41918

Special Provisions

- D94A Metal and Plastic Flared End Sections
- D94B Concrete Flared End Sections

PIPE COUPLING AND JOINT DETAILS

- D97H Reinforced Concrete Pipe or Non-Reinforced Concrete Pipe - Standard and Positive Joints
- D97I Corrugated Polyvinyl Chloride Pipe with Smooth Interior - Standard and Positive Joints

LANDSCAPE AND EROSION CONTROL

- RSP H1 Landscape and Erosion Control Symbols
- H9 Landscape Details
- H51 Erosion Control Details - Fiber Roll and Compost Sock
- H52 Rolled Erosion Control Product

TEMPORARY CRASH CUSHIONS, RAILING AND TRAFFIC SCREEN

- T1A Temporary Crash Cushion, Sand Filled (Unidirectional)
- T1B Temporary Crash Cushion, Sand Filled (Bidirectional)
- T2 Temporary Crash Cushion, Sand Filled (Shoulder Installations)
- T3A Temporary Railing (Type K)
- T3B Temporary Railing (Type K)

TEMPORARY TRAFFIC CONTROL SYSTEMS

- RSP T9 Traffic Control System Tables for Lane and Ramp Closures
- RSP T10 Traffic Control System for Lane Closure on Freeways and Expressways
- T10A Traffic Control System for Lane Closure on Freeways and Expressways
- T11 Traffic Control System for Lane Closure on Multilane Conventional Highways
- T11A Traffic Control System for Changeable Lane Closure on Multilane Conventional Highways and Expressways
- T14 Traffic Control System for Ramp Closure
- T15 Traffic Control System for Moving Lane Closure on Multilane Highways
- T16 Traffic Control System for Moving Lane Closure on Multilane Highways
- T17 Traffic Control System for Moving Lane Closure on Two Lane Highways

TEMPORARY WATER POLLUTION CONTROL

- T51 Temporary Water Pollution Control Details (Temporary Silt Fence)
- T53 Temporary Water Pollution Control Details (Temporary Cover)
- T56 Temporary Water Pollution Control Details (Temporary Fiber Roll)
- T57 Temporary Water Pollution Control Details (Temporary Check Dam)
- T58 Temporary Water Pollution Control Details (Temporary Construction Entrance)
- T59 Temporary Water Pollution Control Details (Temporary Concrete Washout Facility)
- T60 Temporary Water Pollution Control Details (Temporary Reinforced Silt Fence)
- T61 Temporary Water Pollution Control Details (Temporary Drainage Inlet Protection)
- T62 Temporary Water Pollution Control Details (Temporary Drainage Inlet Protection)
- T63 Temporary Water Pollution Control Details (Temporary Drainage Inlet Protection)
- T64 Temporary Water Pollution Control Details (Temporary Drainage Inlet Protection)

ROADSIDE SIGNS

- RS1 Roadside Signs - Typical Installation Details No. 1
- RS2 Roadside Signs - Wood Post - Typical Installation Details No. 2
- RS4 Roadside Signs - Typical Installation Details No. 4

OVERHEAD AND ROADSIDE SIGNS PANELS

- S89 Roadside Sign - Formed Single Sheet Aluminum Panel
- S93 Framing Details for Framed Single Sheet Aluminum Signs, Rectangular Shape
- S94 Roadside Framed Single Sheet Aluminum Signs, Rectangular Shape
- S95 Roadside Single Sheet Aluminum Signs, Diamond Shape

ELECTRICAL SYSTEMS - LEGEND AND ABBREVIATIONS

- RSP ES-1A Electrical Systems (Legend)
- RSP ES-1B Electrical Systems (Legend)
- RSP ES-1C Electrical Systems (Legend and Abbreviations)

ELECTRICAL SYSTEMS - SERVICE EQUIPMENT AND WIRING DIAGRAMS

- ES-2A Electrical Systems (Service Equipment)
- ES-2C Electrical Systems (Service Equipment Enclosure Notes, Type III Series)
- RSP ES-2D Electrical Systems (Service Equipment Enclosure and Typical Wiring Diagram, Type III - A Series)

ELECTRICAL SYSTEMS – CONTROLLER CABINET

- RSP ES-3C Electrical Systems (Controller Cabinet Foundation and Pad Details)

ELECTRICAL SYSTEMS - TELEPHONE DEMARCATION CABINETS

- RSP ES-3E Electrical Systems (Telephone Demarcation Cabinet, Type B)

ELECTRICAL SYSTEMS - ELECTRONICS ASSEMBLY CONNECTION DIAGRAMS

- RSP ES-3I Electrical Systems (Electronics Assembly Connection Diagram, with Bypass Control Line)

ELECTRICAL SYSTEMS - SIGNAL HEADS, SIGNAL FACES AND MOUNTINGS

- RSP ES-4A Electrical Systems (Signal Heads and Mountings)
- ES-4C Electrical Systems (Signal Heads and Mountings)
- RSP ES-4D Electrical Systems (Signal Head Mounting)

ELECTRICAL SYSTEMS – DETECTORS

- ES-5A Electrical Systems (Loop Detectors)
- RSP ES-5B Electrical Systems (Detectors)
- RSP ES-5D Electrical Systems (Curb and Shoulder Termination, Trench, and Handhole Details)

ELECTRICAL SYSTEMS - LIGHTING STANDARDS

- ES-6E Electrical Systems (Lighting Standard, Types 30 and 31)
- RSP ES-6F Electrical Systems (Lighting Standard, Slip Base Plate)

ELECTRICAL SYSTEMS - SIGNAL AND LIGHTING STANDARDS

- RSP ES-7B Electrical Systems (Signal and Lighting Standard, Type 1 and Equipment Identification Characters)

ELECTRICAL SYSTEMS – FLASHING BEACONS

RSP ES-7J Electrical Systems (Flashing Beacon on a Type 1, Type 15-FBS and Type 40 Standard)

ELECTRICAL SYSTEMS - SIGNAL AND LIGHTING STANDARD DETAILS

RSP ES-7M Electrical Systems (Signal and Lighting Standard - Detail No. 1)

ES-7N Electrical Systems (Signal and Lighting Standard - Detail No. 2)

RSP ES-7O Electrical Systems (Signal and Lighting Standard - Detail No. 3)

ELECTRICAL SYSTEMS - PULL BOX

RSP ES-8A Electrical Systems (Non-Traffic Pull Box)

RSP ES-8B Electrical Systems (Traffic Pull Box)

ELECTRICAL SYSTEMS - ISOFOOTCANDLE CURVES AND FOUNDATION DETAILS

ES-11 Electrical Systems (Foundation Installations)

ELECTRICAL SYSTEMS - SPLICE INSULATION METHODS, FUSE RATING, KINKING AND BANDING DETAILS

ES-13A Electrical Systems (Splice Insulation Methods Details)

RSP ES-13B Electrical Systems (Fuse Rating, Kinking, and Banding Detail)

AA

DIVISION I GENERAL PROVISIONS

1 GENERAL

Add to section 1-1.01:

The work embraced herein shall be done in accordance with the Standard Specifications of the Department of Transportation dated 2018 supplemented by the Revised Standard Specifications of the Department of Transportation as of April 17th, 2020, hereinafter referred to as the Standard Specifications, and the Standard Plans of the Department of Transportation.

The components of the Contract Documents are intended to supplement each other. In the event of a conflict in the Contract Documents, the following order of precedence will govern interpretation of the Contract:

1. Field instruction or other written directives
2. Addenda
3. Special Provisions
4. Project Plans
5. Standard Specifications
6. Standard Plans

Add to section 1-1.07B:

A term not defined in the Contract Documents or Standard Specifications has the meaning defined in Means Illustrated Construction Dictionary, Condensed Version, Second Edition.

Approval of the Contract: Execution of the Contract by the City Council of the City of Placerville.

Caltrans/Department of Transportation: Department of Transportation as defined in the St & Hwy Code § 20 and authorized in St & Hwy Cod § 90; its authorized representatives.

City: The City of Placerville, a municipal corporation of the State of California.

City Council: City Council of the City of Placerville, State of California.

Contract: Written and executed Contract as approved by the City Council between the City of Placerville and the Contractor.

Contract Documents: Plans, Notice to Bidders, Special Provisions, and Proposal and Agreement

Contractor: Person or business or its legal representative approved by the City Council and entering into a Contract with the City of Placerville for performance of the work.

Department: The City of Placerville except that any reference to the Department's forms, websites, manuals, guides, and test methods shall be defined as forms, websites, manuals, guides, and test methods of Caltrans.

Design Engineer: R.E.Y. Engineers, Inc. and their subconsulting engineers.

Director: The City Engineer for the City of Placerville.

EID: El Dorado Irrigation District.

Engineer: The Resident Engineer of the City acting either directly or through properly authorized agents; such agents acting within the scope of the particular duties delegated to them.

Inspector or City Inspector: An authorized agent acting on behalf of the City Engineer and within the scope of the particular duties delegated to him/her.

Project Plans: The Project Plans are specific details and dimensions peculiar to the work and are supplemented by the Standard Plans insofar as they may apply.

Special Provisions: The Special Provisions are specific clauses required by the City setting forth conditions of requirements peculiar to the work and supplementary to the Standard Specifications of the State of California.

Standard Plans: 2018 Standard Plans of the State of California, Department of Transportation and the current Revised Standard Plans as of April 17th, 2020.

Standard Specifications: 2018 Standard Specifications of the State of California, Department of Transportation (Caltrans) and the current Revised Standard Specifications as of April 17th, 2020.

State: The State of California, including its agencies, departments or divisions whose conduct or action is related to the work or when referenced in the Standard Specifications "State" shall mean the City of Placerville, including its authorized officers, agents, consultants, and volunteers.

Project: The work as presented in these documents and the construction drawings.

Proposal: The un-approved offer as submitted to the City for the completion of the Project.

USDOT: The United States of America Department of Transportation.

Add to section 1-1.09:

This project is in a freeze-thaw area.

Add to section 1-1.11:

Web Sites, Addresses, and Telephone Numbers

Reference or agency or department unit	Web site	Address	Telephone no.
Public Purchase	http://www.publicpurchase.com	-	-
El Dorado County Fire Protection	http://www.eldoradocountyfire.com	4040 Carson Road Camino, CA	(530) 644-9630
Placerville Police Department	http://www.cityofplacerville.org/depts/police	730 Main Street Placerville, CA	(530) 642-5210
Placerville Downtown Association	http://www.placervilledowntown.org	-	(530) 672-3436
El Dorado Transit Authority	http://www.eldoradotransit.com/	6565 Commerce Way Diamond Springs, CA	(530) 642-5383
City of Placerville Public Works Department	https://www.cityofplacerville.org/public-works	3101 Center Street Placerville, CA	(530) 642-5232
Quest CDN	https://www.questcdn.com/	-	(952) 233-1632
El Dorado County Transportation Commission	https://www.edctc.org/	2828 Easy Street #1 Placerville, CA	(530) 642-5260

Replace the paragraph in section 1-1.12 with:

Make checks and bonds payable to the City of Placerville.

AA

2 BIDDING

Replace section 2-1.05 with:

2-1.05 FEDERAL LOBBYING RESTRICTIONS

Section 1352, Title 31, United States Code prohibits Federal funds from being expended by the recipient or any lower tier sub recipient of a Federal-aid contract to pay for any person for influencing or attempting to influence a Federal agency or Congress in connection with the awarding of any Federal aid contract, the making of any Federal grant or loan, or the entering into of any cooperative agreement.

If any funds other than Federal funds have been paid for the same purposes in connection with this Federal-aid contract, the recipient shall submit an executed certification and, if required, submit a completed disclosure form as part of the bid documents.

A certification for Federal-aid contracts regarding payment of funds to lobby Congress or a Federal agency is included in the Bid book. Standard Form - LLL, "Disclosure of Lobbying Activities," with instructions for completion of the Standard Form is also included in the Bid book. Signing the Bid book shall constitute signature of the Certification.

The above referenced certification and disclosure of lobbying activities shall be included in each subcontract and any lower-tier contracts exceeding \$100,000. All disclosure forms, but not certifications, shall be forwarded from tier to tier until received by the Engineer.

The Contractor, subcontractors and any lower-tier contractors shall file a disclosure form at the end of each calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed by the Contractor, subcontractors and any lower-tier contractors. An event that materially affects the accuracy of the information reported includes:

- (1) A cumulative increase if \$25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action; or
- (2) A change in the person(s) or individual(s) influencing or attempting to influence a covered Federal action; or
- (3) A change in the officer(s), employees(s), or Member(s) contacted to influence or attempt to influence a covered Federal Action.

Replace the paragraphs in section 2-1.06A with:

Standard Specifications and Standard Plans may be viewed at the Caltrans Office Engineer Web Site and may be purchased at the Publication Distribution Unit.

The Notice to Bidders, Special Provisions, Proposal and Agreement, and any Project Plans may be viewed and obtained at the locations stated in the Notice to Bidders.

Replace Section 2-1.12B (2) with:

2-1.12B(2) Disadvantaged Business Enterprises Commitment submittal

Submit DBE information on the Local Agency Bidder - DBE - Commitment form (DBE commitment form) included in the Proposal and Agreement Section. If the form is not submitted with the bid, remove the form from the Proposal and Agreement Section before submitting your bid.

If the DBE commitment form is not submitted with the bid, the apparent low bidder, the 2nd low bidder, and the 3rd low bidder must complete and submit the form to the City of Placerville. The DBE commitment forms must be received by Melissa McConnell, City of Placerville Engineering Department or email mmccConnell@cityofplacerville.org no later than 4:00 p.m. on the 4th business day after bid opening.

If Contractor utilizes cold mix asphalt (CMA) for temporary ramping or paving, the Contractor is responsible for maintaining the cold mix during non-working hours. Cold mix shall be properly compacted by an approved compaction device. Equipment tires or vehicle tires shall not be used for compaction of CMA, unless otherwise approved by the engineer.

At any time, if requested by the City, the Contractor shall provide a street sweeper. If requested after sweeping, the Contractor shall wash the work area with sufficient water to remove remaining debris.

Add to the end of section 5-1.20A:

During the progress of the work under this contract, work under the following contracts may be in progress at or near the job site of this Contract:

Contract No.	County-Route-Post Mile	Location	Type of Work
Queue Warning System Location 11b Ray Lawyer Drive	ED-50-PM 16.42	Along SR 50, approx. 150 ft west of this Project	Installation of queue warning system

Replace section 5-1.20D with:

5-1.20D Permits

The Contractor shall be responsible for the application process and fees associated with obtaining all permits required for the commencement and execution of the project, including but not limited to, storm water pollution prevention, discharge of construction water into the local drainage system, excavation and trench safety. Any work performed within the City right-of-way will require encroachment permit from the City. The Contractor shall obtain a no-fee encroachment permit from the City. Any work performed within Caltrans right-of-way will require an encroachment permit. The City has already obtained an Encroachment Permit from Caltrans for this project. A copy of the Caltrans Encroachment Permit is included in the Appendices. As stated in the permit, the Contractor will be required to obtain a double permit prior to starting work.

Replace the paragraph in section 5-1.20E with:

The Contractor must obtain a Temporary Water Use permit for construction water. This permit can be obtained from El Dorado Irrigation District 2890 Mosquito Road, Placerville, California 95667 Phone: (530) 622-4513. The permit fee is \$25.00. Construction meters require a three-thousand-dollar (\$3,000) deposit. The daily rental fee for the construction meter is five dollars (\$5) per day. The usage fee is a commodity charge of \$0.03566 per cubic foot.

The payment for the cost for this permit and water usage shall be included with the various items of the proposal and no separate payment will be made.

Replace Section 5-1.26 with:

5-1.26(A) CONSTRUCTION SURVEYS

The contractor must set construction stakes and markers to establish the lines and grades required for the completion of the work on the plans and as specified in the Standard Specifications and these Special Provisions and as necessary for the Engineer to check lines, grades, alignment and elevations.

All procedures, methods, and typical stake markings shall be in accordance with Chapter 12, Construction Surveys, of the Caltrans "Survey Manual." Copies of the "Survey Manual" may be purchased

from Caltrans Publications Unit, 1900 Royal Oaks Drive, Sacramento, and California 95815, (916) 445-3520 or downloaded at <https://dot.ca.gov/programs/right-of-way/surveys-manual-and-interim-guidelines>.

Staking must be performed under the direction of a licensed surveyor or registered civil engineer with the authority to perform land surveying.

5-1.26(B) GRADE QUALITY CONTROL

Use a GNSS rover, robotic total station equipment, or a level to check the grades at the frequencies shown in the following table:

Grade Checking Requirements

Type of work	Area or distance represented by the grade checking	Frequency (number of grade points)
Earthwork for cut and fill slopes ≤15 feet	200 feet	2
Earthwork for cut and fill slopes >15 feet	1,000 sq yd	1
Rough grading	1,000 sq yd	1
Trenching	100 feet	6
Subgrade	1 mi	30
Subbase layer	1 mi	50
Base layer	1 mi	100
Curb and gutter	100 feet	6
Concrete barrier	100 feet	5
Finishing roadway	1,000 sq yd	2

Increase the frequency of grade checking of a roadway:

1. Wherever its curve radius is 500 feet or less
2. In areas of a superelevation transition
3. At intersections

Notify the Engineer when an area is ready for line and grade inspection. Submit the grade checking results on a Grade Checking Report form as an informational submittal.

5-1.26C Payment

Construction surveys (contractor provided construction staking) shall be paid for under the Construction Staking bid item. Progress payments will be made based upon the percentage of work items requiring staking staked by that point. No additional compensation will be made for resetting stakes.

Replace the paragraphs in section 5-1.27E with:

Maintain separate records for change order work costs.

Submit change order bills to the Engineer.

Add to the end of section 5-1.31:

At any time, if requested by the City, the Contractor shall provide a street sweeper.

At the end of each working week, remove all equipment and materials from daily staging area(s) and transport them to an approved staging area.

All staging areas shall be cleaned to the satisfaction of the City and Engineer.

Add to the end of section 5-1.32:

Personal vehicles of Contractor’s employees must not be parked on the traveled way or shoulders, including sections closed to traffic.

Replace the paragraph in section 12-1.04 with:

There is no separate bid item for flagging, so that work shall be included within the Traffic Control System bid item and no additional compensation will be allowed therefore. The Contractor shall be responsible for the entire cost of flagging and is responsible for including that cost in the Traffic Control System bid item.

The development of all traffic control plans, and bicycle and pedestrian handling plans shall be paid for under the Traffic Control System bid item and no additional compensation will be allowed therefore.

Add to section 12-3.01C:

If pedestrian and/or vehicular signage is required during non-working hours, signage shall be placed to the satisfaction of the City and Engineer.

Replace the paragraph in section 12-3.11B(5) with:

Install one (1) Type 2 construction project funding sign at the location determined by the Engineer before starting major work activities visible to highway users.

The type 2 construction project funding sign is to be a 4-ft x 2.5-ft C48 (CA) sign and must comply with the details shown on the Department's Traffic Operations website. The upper left logo shall be City of Placerville, lower left logo shall be Caltrans, and lower right logo shall be FHWA. The sign must be a wood-post sign and must comply with Section 82-3.

Dispose of construction project funding signs upon completion of the project if authorized.

Replace the paragraph in section 12-3.11D with:

There is no separate bid item for the C48 sign, so that work shall be included within the Traffic Control System bid item and no additional compensation will be allowed therefore.

Add to section 12-4.02A(2):

Martin Luther King Jr. Day is a designated holiday that is observed on the 3rd Monday in January. The day after Thanksgiving is a designated holiday that is observed the day after Thanksgiving Day. Christmas Eve is a designated holiday that is observed on December 24th.

Add to section 12-4.02C(3)(a):

If you use an attenuator vehicle as a shadow vehicle, you are not required to close the adjacent traffic lane for the following activities:

1. Grinding
2. Grooving
3. Saw cutting of concrete slabs
4. Installing loop detectors

Replace *Reserved* in section 12-4.02C(3)(g) with:

Freeway lane closures must comply with the requirements shown in the following chart:

Chart No. G1 Freeway Lane Requirements																									
County: ED							Route/Direction: 50/EB							Post Mile: 16.4/16.8											
Closure limits: 16.0/16.6																									
Hour	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mon – Thu	1	1	1	1	1	1	1																1	1	1
Fri	1	1	1	1	1	1	1																1	1	1
Sat	1	1	1	1	1	1	1	1														1	1	1	1
Sun	1	1	1	1	1	1	1	1	1												1	1	1	1	1
Legend:																									
1 Provide at least 1 through freeway lane open in the direction of travel.																									
Work is allowed within the highway where a shoulder or lane closure is not required.																									
REMARKS: The number of through traffic lanes in the direction of travel is 2.																									

Replace the 3rd paragraph of section 12-4.04C with:

There is no separate bid item for construction of a temporary pedestrian access route. If a temporary pedestrian access route is required, it is considered incidental to the other items of work and no additional compensation is allowed therefore.

Replace “Reserved” in section 12-6.03D(1) with:

Temporary markers and/or markings shall be installed by the Contractor for any existing crosswalk line, limit line, arrow, and other legend or traffic lane line removed or damaged by the work activity prior to the end of the work shift and before opening the lanes for traffic.

Requirements for Placing Temporary Pavement Markings

Existing Striping	Temporary Striping
12-inch crosswalk line	3 – 4 inch white stripes appearing as 1– 12 inch stripe
8-inch solid line	1 – 4 inch white solid stripe
4-inch broken white	1 – 4 inch white stripe (typically 7' long, 17' gaps*)
4-inch broken yellow	1 – 4 inch yellow stripe (typically 7' long, 17' gaps*)
Double yellow	2 – 4 inch yellow solid stripes 3 inches apart

* Consult Chapter 3 of the California MUTCD for further details. The dimensions for broken lines apply for streets with posted speed limits of 35 MPH or less. For speed limits of 40 MPH or more, the dimensions are for 12' long stripes with 36' gaps.

Add to the end of section 12-6.04:

Payment quantity for the Temporary Traffic Stripe (Tape) bid item is to be paid for by linear foot of tape installed. Payment shall include removal of the temporary stripe prior to the installation of the permanent traffic striping.

Replace Section 12-8 with:

- 3. Storm water annual report.
- 4. Any temporary erosion control measures under Section 13.

Add to section 13-4.03G:

Dewatering must comply with the provisions of Order No. 2003-0003-DWQ adopted by the State Water Resource Control Board (Statewide General Waste Discharge Requirement for Discharges To Land With A Low Threat To Water Quality) or Resolution R5-2013-0145 adopted by the Central Valley RWQCB (Waiver Of Reports Of Waste Discharge And Waste Discharge Requirements For Specific Types Of Discharge Within The Central Valley Region), whichever is applicable. This permit or resolution is available at the State Water Resource Control Board or Central Valley RWQCB Web site.

Replace paragraphs in section 13-4.04 with:

Fugitive Dust Control, Street Sweeping, and Temporary Concrete Washout are included within the Job Site Management bid item and no additional compensation shall be allowed therefore.

BMP's shown on the contractor's approved SWPPP that differ from those shown on the Temporary Erosion Control Plans and do not have a specific bid item shall be paid for under the Job Site Management bid item and no additional compensation shall be allowed therefore.

Payment for maintenance of all installed temporary erosion control measures covered under Section 13 shall be included in the Job Site Management bid item and no additional compensation shall be allowed therefore.

Delete the last paragraph in section 13-5.04

Replace the paragraphs in section 13-6.04 with:

The payment quantity for temporary sediment control bid items paid for by the length is the length measured along the centerline of the installed material.

The payment quantity for temporary fiber roll does not include the additional quantity used for overlaps.

The Department does not pay for the relocation of temporary drainage inlet protection during work progress. The payment quantity for the Temporary Drainage Inlet Protection bid item is the number of inlets protected per the approved SWPPP. A single inlet with multiple openings is still counted as one (1) inlet.

Replace the paragraphs in section 13-7.03D with:

The payment quantity for the Temporary Construction Entrance bid item is the number of construction entrances per the approved SWPPP. The City does not pay for the relocation of temporary construction entrances or roadways during work progress.

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14 ENVIRONMENTAL STEWARDSHIP

Add to section 14-1.01:

The contractor shall comply with the requirements of all environmental permits and their requirements, including, but not limited to the Project's Army Corps 404 Letter of Permission, Regional Water Quality Control Board 401 Water Quality Certification, and California Department of Fish and Wildlife 1602 Streambed Alteration Agreement for all construction activities in or around the Phase 2 detention basin located in the southern quadrant of the Ray Lawyer Drive Interchange. These permit documents are included as Appendix E in these specifications. Drainage facilities in other areas of the project are not considered jurisdictional Waters of the U.S. or State and are not subject to these permit requirements.

The construction contractor shall be required to adhere to all construction related environmental measures and best management practices as provided in the attached Environmental Commitment Record (Appendix D). This includes but is not limited to the following:

- Air Quality – Measures AQ-1 through AQ-13
- Water Quality – Measures WQ-1 through WQ-9
- Biological Resources – Measures BIO-3 through BIO-8, BIO-13 through BIO-15, and BIO-20 through BIO-24. Additional measures are included in the environmental permits which are specific to work within jurisdictional Waters of the U.S. (see Appendix E)
- Hazardous Waste – Measures HAZ-6 through HAZ-12
- Cultural Resources – Measures CUL-1 through CUL-3

Water Quality Measure WQ-9 refers to a spill prevention and countermeasure plan. This plan is to comply with the requirements of section 13-4.03B of the Standard Specifications.

Add to section 14-1.02:

All native oak trees to remain in place and located within 25 ft of ground disturbances shall be temporarily fenced with orange plastic construction (exclusion) fencing throughout all grading and construction activities. The exclusion fencing shall be paid under the Temporary Fence bid item and be installed 6 ft outside the dripline of each specimen tree at the location(s) shown on the Project Plans, and shall be staked a minimum of every 6 ft. Refer to the Project Plans for location of temporary exclusion fencing. The fencing is intended to prevent equipment operations in the proximity of protected trees that may compact soil, crush roots, or collide with the tree trunk and/or overhanging branches.

Replace section 14-1.03 with:

14-1.03 PAYMENT

With the exception of the Temporary Fence and Lead Compliance Plan, there is no separate bid item for complying with the applicable permits and environmental mitigation measures. The work required to comply with the applicable permits and the measures shall be considered included in all bid items and no additional compensation will be allowed therefore.

The Temporary Fence bid item shall be paid by linear foot of fencing installed. The payment quantity for Temporary Fence does not include the additional quantity used for overlaps.

Replace section 14-3 with:

14-3 BIOHAZARD REMEDIATION PLAN

14-3.01 GENERAL

14-3.01A Summary

This section governs the work to prepare a plan to safely identify and dispose of human waste.

14-3.01B Submittals

The Contractor shall prepare and submit a Biohazard Remediation Plan that addresses the identification and removal of human waste including the safe disposal of bloodborne pathogens and fecal matter hazards. The Biohazard Remediation Plan shall be prepared by a Certified Industrial Hygienist (CIH) and the plan shall conform to Cal/OSHA standards.

The Contractor shall submit a list of employees and subcontractors who attended the training signed by the CIH.

14-3.02 CONSTRUCTION

Prior to construction, the Contractor shall attend a training session performed by the CIH who prepared the plan. During construction, human waste must be safely disposed of per the approved Biohazard Remediation Plan.

19 EARTHWORK

Replace 2nd sentence in 2nd paragraph under 19-1.01A with:

Excavation, embankment, and export required for other bid items shall be included in those bid items and no additional compensation shall be allowed therefore.

Add to section 19-1.03A:

The contractor should be aware that water is known to form in the bottom of the detention pond show in Drainage System 3. The contractor should use tracked vehicles working in and around this area.

Replace section 19-2.03E with:

Only excavation tools and equipment will be permitted for roadway excavation. Other methods of excavation including blasting, chemical expanders, or hydraulic splitters will not be allowed, unless permitted under Rock Excavation.

Add between the 8th and 9th paragraph of section 19-2.03G:

Roughen embankment slopes to receive erosion control materials by either track-walking or rolling with a sheepsfoot roller. Track-walk slopes by running track-mounted equipment perpendicular to the slope contours.

Add to section 19-2.04:

Excavation, embankment, and export required for other bid items shall be included in those bid items.

Roadway excavation requiring rock excavation shall be paid for under the Rock Excavation bid item as specified under section 19-4.

The unit price for Roadway Excavation does not include the price for exporting the material, if necessary. Excess roadway excavation not placed within the project limits shall be exported to and disposed of at an approved disposal site and paid for under the Export bid item. The payment quantity for the Export bid item is the volume of excess roadway excavation not used for embankment within the project limits.

Add to the end of section 19-4.01A(1):

Excavation will be considered Rock Excavation when:

1. The digging conditions (ability to rip the material) exceed the published performance rating of a CAT D9R tractor with a single shank ripper bar and other approved piece of similar equipment. The equipment must meet the following minimum specifications and must follow SAE rating:

- a. Flywheel Power of 405 hp.
- b. Operating Weight of 107,500 lbs.
- c. Ripper Penetration Force, shank vertical, of 34,500 lbs.
- d. Pryout Force, shank vertical, of 72,000 lbs.

2. When the digging conditions (ability to rip the material) exceed the published performance rating of a CAT 325 excavator with rock bucket and other industry approved piece of similar equipment. The excavator must meet the following minimum specifications and must follow SAE rating:

- a. Stick Crowd Force of 43,400 lbs.
- b. Bucked Breakout Force of 42,800 lbs.
- c. Front Lift Capacity of 30,000 lbs.

1. Compliance with the specified application rates.
2. Areas treated and quantity of material applied
3. Application date and time

21-2.01C(6) Hydraulic Biotic Growth Medium

At least 15 days prior to purchase of HBGM submit:

1. Manufacturer information
 - 1.1 Name
 - 1.2 Address
 - 1.3 Telephone number
 - 1.4 E-mail address
 - 1.5 Website
2. Product Label
3. Certification of compliance.

At least 20 days before HBGM installation review the soil testing results with the manufacturer to verify applications rates shown is sufficient. The contractor may submit any recommended HBGM design modifications as a result of the test.

21-2.01C(7) Endomycorrhizal Inoculum

At least 5 days prior to application of Endomycorrhizal Inoculum submit:

1. Supplier information
 - 1.1 Name
 - 1.2 Address
 - 1.3 Telephone number
 - 1.4 E-mail address
 - 1.5 Website
2. SDS
3. Product Label
4. Certificate of Compliance including:
 - 4-1 A supplier's guarantee of the number of live propagules per unit weight or volume of bulk material.
 - 4.2 Independent testing report of viable spores provided by manufacturer.

Add to section 21-2.01D:

21-2.01D(4) Endomycorrhizal Inoculum

Endomycorrhizal inoculum must be independently tested for actual counts of viable spores using standard spore extraction methods.

Add to section 21-2.02H:

Straw must be certified weed free under the Department of Food and Agriculture.

Replace section 21-2.02L with:

21-2.02L Fiber Reinforced Matrix

Materials must be stored and delivered in UV and weather resistant factory labeled packages. Store and handle materials in compliance with manufacturer's instructions and recommendations.

FRM must be composed of the following:

1. 70% defibrated long strand organic fibers. Fibers must be thermally processed and heated to a minimum temperature of 212 degrees Fahrenheit.
2. Water insoluble, cross-linked hydro-colloidal tackifiers
3. Interlocking, reinforcing, natural and/or synthetic fibers.

4. Flexible erosion control matrices that form a lofty interlocking composition creating airspace and water absorbing cavities that improve seed germination and reduces raindrop energy and soil loss.

Materials containing paper and/or cellulose fiber are not allowed.

FRM must comply with the requirements shown in the following table:

Fiber Reinforced Matrix		
Quality Characteristic	Test method	Requirement
Color	Observed	Colored to contrast application area, must not stain concrete painted surfaces or HMA
Organic Matter Content (min. %)	ASTM D2974	90
Minimum Water Holding Capacity (%)	ASTM D7367	700
Acute Toxicity	ASTM 7101 EPA 2021.0-1	Non-Toxic
Functional Longevity (Days)	Department Approved Testing Method	365
Maximum Slope Application (H:V)	Observed	1.0:1.0
Rainfall Event (R-factor)	ASTM D6459	160<R
Cover Factor	ASTM D6459	C ≤ 0.01
Functional Longevity (min Months)	ASTM D5338	12
Minimum Vegetation Establishment (%)	ASTM D7322	500

FRM must be one of the products below or an approved equal.

Product	Manufacturer	Contact
Flexterra™HP-FGM CocoFlex™ ET-FGM	Profile Products	750 W. Lake Cook Rd, Suite 440 Buffalo Grove, IL 60089 800-508-8681 http://www.profilevs.com
FlexGuard®	Mat, Inc	12402 Hwy 2 Floodwood, Minn 55736 888-477-3028 http://www.matinc.biz
Hydra CX2 Extreme Slope Matrix	North American Green	5401 St. Wendel-Cynthiana Road Poseyville, IN 47633 (800) 772-2040 https://nagreen.com
HY-C4	East Coast Erosion Blankets	443 Bricker Rd. Bernville, PA 19506 800-582-4005 http://www.eastcoasterosion.com

Replace section 21-2.02M with:

21-2.02M Hydraulic Biotic Growth Medium

HBGM must be non-toxic

HBGM must be certified weed free under the Department of Food and Agriculture.

HBMG must be a blend of organic and natural fibers with fast-acting soil building and growth components and must be derived and contain three or more of a combination of the following materials:

1. Biochar
2. Humus/Humic Acid
3. Mycorrhizae Fungi
4. Seaweed Extract
5. Trace Elements
6. Growth Stimulators
7. Beneficial Microorganisms
8. Micronutrients
9. Organic Growth Medium

HBMG must comply with the requirements shown in the following table:

Hydraulic Biotic Growth Medium		
Quality Characteristic	Test method	Requirement
Color	Observed	Colored to contrast application area, must not stain concrete painted surfaces or HMA
Organic Matter Content (min. %)	ASTM D586	85
Minimum Water Holding Capacity (%)	ASTM D7367	400
Acute Toxicity	ASTM 7101 EPA 2021.0-1	Non Toxic
Functional Longevity in Days	Department Approved Testing Method	Grass established in 90 days
C:N Ratio	ASTM E1508	10:1100:1
pH	ASTM D1293	5.0-8.5
Moisture Content (% wet weight)	ASTM 2974	10-50
Minimum Vegetation Establishment (%)	ASTM D7322	400

Replace section 21-2.02N with:

21-2.02N Endomycorrhizal Inoculum

Endomycorrhizal inoculum must consist of spores, mycelium, and mycorrhizal root fragments in a carrier suitable for hydroseeding equipment.

The inoculum must be comprised of a single species, *Glomus intraradices* or a blend of multiple Endomycorrhizal species with *Glomus intraradices* comprising at least 50% of the mix.

Endomycorrhizal inoculum must be one of the products below or an approved equal.

Product Name	Manufacturer	Address	Telephone no.
AM-120	Restoration Technologies http://www.reforest.com	5355 Monterey Frontage Rd. Gilroy, Ca 95020	(800) 784-4769
MycoApply® Ultrafine Endo	Mycorrhizal Applications http://mycorrhizae.com/	PO Box 1029 Grants Pass, OR 97528	(866) 476-7800
Endo 120	Tri C Enterprises http://naturalsoilutions.com	P.O. Box 1367 • Chino • California • 91708-1367	(800) 927-3311

Replace *biodegradable jute, sisal, or coir fiber* in the 1st paragraph of section 21-2.02P with:
photodegradable plastic

Add to section 21-2.02P:

Straw for fiber roll must be certified weed free under the Department of Food and Agriculture.

Replace section 21-2.03K with:

21-2.03K Fiber Reinforced Matrix

Apply FRM with hydraulic spray equipment.

Add water to FRM as recommended by the manufacturer and mix sufficiently to ensure an even application. A dispersing agent may be added to the mixture if authorized.

Equipment must have a built-in continuous agitation and discharge system capable of producing a homogeneous mixture and uniform application rate. The tank must have a minimum capacity of 1,000 gallons. You may use a smaller tank if authorized.

Apply FRM in the locations and at the rates shown and as follows:

1. Apply in successive passes as necessary to achieve the specified application rate.
2. Form a continuous uniform mat as follows:
 - 2.1 Apply in 2 or more directions if necessary
 - 2.2 Apply in layers as necessary to avoid slumping and aid drying.
3. Apply all Hydroseed and FGM materials shown for a single area within 72 hours.
4. Apply all Hydroseed and FGM materials shown for a single area prior to a forecasted rain event.

After final application, do not allow pedestrians or equipment on the treated areas.

Replace section 21-2.03L with:

21-2.03L Hydraulic Biotic Growth Medium

21-2.03L(1) General

Apply HBGM in the locations and rate as shown.

Do not apply HBGM within 24 hours of precipitation.

21-2.03L(2) Soil Testing and Analysis

After earthwork is completed, provide an agronomic soil test and analysis from a State certified laboratory using methods of soil analysis approved by the American Society of Agronomy and the Soil Science Society of America.

Testing samples must be collected from at least 3 different locations within each designated test site at a depth of 6 inches in areas that are a best representative of each of the areas that soil that will be used for HBGM work.

Submit test results and any recommended design modifications as a result of the tests.

Test must comply with the following methods:

Soil Testing Methods

Required Test	Testing Method
Texture/Particle size analysis	Hydrometer method
Soil pH and soluble salts	1:1 soil/water slurry and saturated paste extraction
Buffer pH	Sikora method
Cations (Ca, K, Mg, Na)	Ammonium Acetate extraction
Phosphorus	Bray 1 extraction or Olson extraction
Trace Elements (Zn, Mn, Cu, Fe)	DTPA extraction
Sulfur	Phosphate extraction
Boron	DTPA/Sorbitol
Nitrate Nitrogen	Cadmium reduction
Salinity evaluation	Saturated paste extraction
All soluble nutrients	Saturated paste extraction

Laboratory interpretation data must cite concentrations which are considered to be low, medium, and high, as well as nutritional deficiencies, excess, and potential toxicities. Test must include amendment recommendations for erosion control.

Test results must be submitted to the Engineer 20 days before any erosion control activities. At this time, Contractor may submit any recommended design modifications to the amendment products as a result of the test.

21-2.03L(3) Delivery, Storage and Handling

Products that are not pre-packaged by the manufacturer will not be accepted.

Prior to application, bags of HBGM must be stored where they are protected from precipitation, construction operations, and temperatures above 80 degrees Fahrenheit and temperatures below 32 degrees Fahrenheit.

Handle HBGM per manufacturer's recommendations.

Clean any spills promptly.

Replace section 21-2.03M with:

21-2.03M Endomycorrhizal Inoculum

Endomycorrhizal inoculum must be applied at the rate shown.

Endomycorrhizal inoculum is a live material. It must be stored, transported, and applied at temperatures less than 90 degrees Fahrenheit.

Add to section 21-2.04:

Additional HBGM and/or amendment products due to soil testing and analysis results is change order work.

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39 ASPHALT CONCRETE

Add to the list in the definition of *miscellaneous areas* in section 39-2.01A(2):

8. HMA (Textured Paving)

Replace Reserved in section 39-2.01A(3)(a):

For HMA (Textured Paving) use an 8" x 8" stamp pattern.

The color coating must be an integrally colored, polymer modified cementitious coating. The color must closely conform to the Federal Standard 595B, Color #30166.

Add to 1st paragraph of section 39-2.01C(4)(a):

If it is impractical or impossible for longitudinal joints to match the lane lines, then the Contractor shall limit the paving seams to the least amount practical.

Replace section 39-2.01D with:

39-2.01D Payment

Payment for tack coat is included in the payment for hot mix asphalt (HMA) under bid item Hot Mix Asphalt (Type A).

Type A HMA for the roadway shall be paid for under the Hot Mix Asphalt (Type A) bid item. The payment quantity for HMA shown on the Bid Item List is measured based on the combined mixture weight. If recorded batch weights are printed automatically, the bid item for HMA is measured by using the printed batch weights, provided:

1. Total aggregate and supplemental fine aggregate weight per batch is printed. If supplemental fine aggregate is weighed cumulatively with the aggregate, the total aggregate batch weight must include the supplemental fine aggregate weight.
2. Total virgin asphalt binder weight per batch is printed.
3. Each truckload's zero tolerance weight is printed before weighing the first batch and after weighing the last batch.
4. Time, date, mix number, load number and truck identification is correlated with a load slip.
5. Copy of the recorded batch weights is certified by a licensed weigh master and submitted.

Installation of HMA dikes shall be paid under the HMA dike type shown on the Bid Item List. The payment quantity for the HMA Dike bid items is the length measured parallel to the ground surface along the flowline of the dike. Payment for the HMA used to construct the HMA dike is included in the payment for the HMA Dike bid items and is not included in the HMA bid item.

The bid item Hot Mix Asphalt (Miscellaneous Areas) is shown on the Project Plans as HMA (Textured Paving). The payment quantity for Hot Mix Asphalt (Miscellaneous Areas) is the area measured for the in-place compacted area. Payment for the HMA used for miscellaneous areas is not included in the payment for place hot mix asphalt (miscellaneous areas).

The Engineer does not adjust the unit price for an increase or decrease in the prepaving grinding pay quantity.

The City will not adjust the unit price for an increase or decrease in the quantity of Hot Mix Asphalt (HMA).

Payment will not be made for any HMA outside of the limits determined by the Engineer. No additional payment will be made for HMA depths greater than what is indicated on the plans unless otherwise directed or approved by the Engineer.

Payment will not be made for any HMA used as temporary paving surface, tapers, or ramps.

Replace section 39-2.02B(3) with:

Asphalt binder used in HMA Type A must be PG 64-16.

Add after section 39-2.07:

39-2.08 HMA (Textured Paving)

Section 39-2.08 includes specifications for hot mix asphalt for textured paving.

39-2.08A Summary

HMA for textured paving must comply with section 39-2.02 except as specified in this section 39-2.08.

For HMA (Textured Paving) place hot mix asphalt (textured paving) at the locations shown on the plans.

39-2.08B Materials

For HMA (Textured Paving) use an 8" x 8" stamp pattern.

The color coating must be an integrally colored, polymer modified cementitious coating. The color must closely conform to the Federal Standard 595B, Color #30166.

Complete a test plot of 2 feet x 2 feet for approval prior to constructing the stamped paving. The test plot must demonstrate the stamped pattern, color coating and sealer/hardener, and be inspected by the Engineer.

In the event more than three test plots are required by the Engineer, each additional test slab will be paid for as extra work.

39-2.08C Construction

39-2.08C(1) Site Preparation

Earthwork for stamped paving areas must comply with section 19.

Areas to receive stamped paving must be cleared, excavated to the depth shown, graded to a smooth surface, and compacted to not less than 90% relative compaction.

Prior to placing stamped paving, the aggregate base must be smooth, firm, stable and free of rocks, clods, foliage, roots, or other material greater than 1 inch in diameter.

39-2.08C(2) Application

Spread the hot mix asphalt at a temperature not less than 250°F. Spread using methods that will produce a surfacing of uniform smoothness, texture and density.

Compact the hot mix asphalt using power rollers. When power rollers cannot be operated in certain areas due to the size or shape of the area, compact the asphalt using hand rollers, impactors, or other approved methods.

When asphalt is not applied adjacent to pavement, curbs or dikes, the free edge of the asphalt should be tamped at a neat 45-degree angle. The free edge must be neat and follow predefined lines.

Immediately after compaction of asphalt to 91% relative density, apply the pattern while the asphalt is still in a warm to hot pliable state. Achieve consistent patterning using steel rollers and/or vibratory plate compactors to the desired pattern and depth. Remove the template once the desired pattern and depth are achieved.

Double printing caused by template misalignment or due to movement during printing is not acceptable and must be repaired prior to coating.

Gaps in grout lines that butt between two templates or between printed areas and non-printed areas will not be accepted and must be repaired prior to coating.

Color and seal the asphalt in a 2-step process in the following sequence:

- A. Colored surface coating must be evenly applied to the asphalt when it has cooled sufficiently per manufacturer's application instructions. The coating must be an integrally colored, polymer modified cementitious coating and be applied a minimum of 1/32 inch thick. The color coat must be applied when the air temperature is above 45 degrees F and precipitation is not expected within 24 hours.
- B. Color coat hardener must be diluted per manufacturer's recommendations and evenly applied by a spray method after the color coat surface has dried. After spray application, the surface may be lightly broomed to ensure an even application. A second coat of hardener must be applied after the first has dried.

Replace section 39-3.04B with:

Temporary tapers must be either HMA or CMA. No additional payment will be made for the placement of temporary tapers.

Replace section 39-3.04C(1) with:

Do not use a heating device to soften the pavement.

The cold planing machine must be:

1. Equipped with a cutter head width that matches the planing width unless a wider cutter head is authorized.
2. Equipped with automatic controls for the longitudinal grade and transverse slope of the cutter head and:
 - 2.1. If a ski device is used, it must be at least 30 feet long, rigid, and a 1-piece unit. The entire length must be used in activating the sensor.
 - 2.2. If referencing from existing pavement, the cold planing machine must be controlled by a self-contained grade reference system. The system must be used at or near the centerline of the roadway. On the adjacent pass with the cold planing machine, a joint-matching shoe may be used.
3. Equipped to effectively control dust generated by the planing operation
4. Operated such that no fumes or smoke is produced.

Replace broken, missing, or worn machine teeth.

If you do not complete placing the HMA surfacing before opening the area to traffic, you must:

1. Construct a temporary HMA or CMA taper to the level of the existing pavement.
2. Place final HMA surface within 5 working days of cold planing.

Add to the end of section 86-1.02F(2)(a):

All conductors must be copper.

Replace *insulated* in the 2nd paragraph of section 86-1.02F(2)(c)(ii) with:

bare

Replace section 86-1.02Q(2) with:

86-1.02Q(2) Department Furnished Controller Cabinets

86-1.02Q(2)(a) General

A Department-furnished controller assembly consists of a model 2070E controller unit and a wired controller cabinet. The Department does not furnish anchor bolts.

Install the following components inside the controller cabinet:

1. Multiple AC outlet strip
2. RJ-11 modular jack
3. RJ-45 modular jack
4. DC terminal block
5. Ethernet extender switch combination unit
6. Remote ethernet power controller switch
7. Data surge suppressor
8. Standard half shelf
9. 24V DC power supply
10. 4G LTE wireless modern assembly

86-1.02Q(2)(b) Multiple AC Outlet Strip

The multiple AC outlet strip must:

1. Be 19 inch, rack mountable
2. Have a minimum of 6 receptacle outlets
3. Be rated for 15 A, 125 V(ac)
4. Have internal 12 A, 125 V(ac) circuit breaker
5. Be rated for 36,000 A surge current protection from Hot to Neutral
6. Have a UL 1449 rating for a minimum 400 V
7. Have a minimum 6-foot-long cord

86-1.02Q(2)(c) RJ-11 Modular Jack

The RJ-11 modular jack must:

1. Be DIN rail mounting
2. Have 6 interface positions
3. Be rated for 120V and 1A
4. Have dimensions of 2 inches (D) by 1.5 inches (W) by 3.25 inches (H)
5. Have a crew clamp connection

86-1.02Q(2)(d) RJ-45 Modular Jack

The RJ-45 modular jack must:

1. Be DIN rail mounting
2. Have 8 interface positions
3. Be rated for 120V and 1A
4. Have dimensions of 2 inches (D) by 1.5 inches (W) by 3.25 inches (H)
5. Have a crew clamp connection

86-1.02Q(2)(e) DC Terminal Block

The DC terminal block must:

1. Be rated for 250 V(ac)/DC voltage and 30 A current
2. Have an operating temperature from -13 to 122 degrees F
3. Have a maximum size of 3.9 inches (D) by 2.7 inches (W) by 2.7 inches (H)
4. Have a wire size for the input terminals of 26-10 AWG solid/strand
5. Have a wire size for the output terminals of 26-12 AWG solid/strand
6. Have a torque of at least 4.4 in-lb

86-1.02Q(2)(f) Ethernet Extender Switch Combination Unit

The Ethernet extender switch combination unit must meet the following requirements:

1. Provide a hardened managed 6-port 10/100Base Fast Ethernet switch and 2-port copper pair Ethernet extender and 2-Gigabit Ethernet combo switch ports. Two Single-Mode (1310/1550 nm) high-temperature-rated (185 Fahrenheit) SFPs must be included with each Ethernet extender switch combination unit. These SFPs must be fully compatible with the switch into which they will be inserted for operation.
2. Include everything needed to quickly deploy a 6-port switch and two high-speed point-to-point Ethernet links over extended distances to deliver data to remotely located networked devices
3. Be compact, industrial grade and designed for outdoor applications
4. Utilize existing phone lines or any network-grade twisted pair cable and only require one (1) twisted pair (2 wires) to operate
5. Plug and play ready at default extender line rate of 1 Mbps up to 100Mbps
6. Connect to network equipment on both sides of the link
7. Establish link automatically on power up when both units are connected to the power source

Description	Specifications
Ethernet Interface	10/100Base-TX
Ports	(6 Min) RJ-45 auto-cross, (2 Min) RJ-11, (2 Min) Terminal Block, DB9 TIA-232 console port, (2 Min) Gigabit Ethernet combo switch ports. 2 Single-Mode (1310/1550nm) SFP gbics.
LED Indicators	Unit Power; Ports: Link, Activity, Speed
Memory	2Mbits packet buffer
Manage Functions	SNMP/v1/v2/v3, VLAN, QoS, RSTP, IGMP, LACP
Security	MAC address filtering, port enable/disable
Alarm Contact	One relay contact (1A @ 24Vdc
Input Voltage	12 - 48V(dc) Terminal Block; 12 V(dc) (DC Jack)
Protection	Over current and Reverse polarity
Installation	DIN Rail mount
Dimensions (max)	3.0" (W) x 5.0" (D) x 6" (H)
Weight (max)	3.0 lbs
Operating Temp	-40°F to +167°F
Ambient Relative Humidity	5% to 95% (non-condensing)
Agency Compliance	FCC Part 15B, Class A

86-1.02Q(2)(g) Remote Ethernet Power Controller Switch

The Ethernet power controller switch must provide Remote Power Management and Control using two methods for accessing configuration and switching functions:

1. The Web Browser Interface method which consist of a series of simple, easy-to-use web page menus that allow the selection of configuration parameters or initiation of switching operations using the Ethernet network.
2. The Command Line Interface must be an ASCII menu system, which allows configuration and operation of the Ethernet power controller switch via telnet over TCP/IP network, via modem connection or via local PC using a terminal program such as Hyperterminal or Tera Term.

The Ethernet power controller switch must meet or exceed the following requirements:

1. Web Browser Access for easy setup and operation
2. Encrypted password security
3. Expandable to five individual outlets
4. Each Outlet can Switch a 15 Amp Load
5. On/Off/Reboot switching
6. IP addressed, 10Base-T interface
7. EIA-232 Modem / Console Port
8. Network Security features
9. Manual power control button
10. Telephone Control through phone keypads with access for control
11. Power Input / Output:
 - 11.1. AC Inputs: 15 Amperes (maximum)
 - 11.2. Voltage: 105 - 120 V(ac), 60 Hz
 - 11.3. Connectors: IEC-320 Inlet, Line Cord (supplied)
 - 11.4. AC Outputs: One, Expandable to five
 - 11.5. Connector: NEMA 5-15 Outlet
 - 11.6. Load: 15 Amperes (total)
12. Console / Modem Port Interface
 - 12.1 Connector: DB9M, EIA232C, DTC (9-to-9 Pin provided)
 - 12.2 Coding: Serial ASCII, 8 Bits, No Parity
13. Physical / Environmental:
 - 13.1. Size:
 - 13.1.1. Width: 19"
 - 13.1.2. Height: 3.5"
 - 13.1.3. Depth: 7.00"
 - 13.2. Operation Temperature:
 - 32°F to 122°F
 - 13.3. Humidity:
 - 10 percent to 90 percent (relative humidity)

86-1.02Q(2)(h) Data Surge Suppressor

Category 6 Data Surge Suppressor must meet or exceed the following requirements:

<u>Description</u>	<u>Specification</u>
Ethernet Connection Ports	8-RJ45 ports
Degree of Protection	IP20
Arrester rated voltage	≤3.3VDC
Arrester rated voltage	≤3.3VDC (±60VDC/ PoE) [core-core]
Arrester rated voltage	≤180VDC (core-earth)
Surge Suppression	<26 Vpk @ 100 A 10/1000µs
Suppression Response Time	≤1 ns (core -core); ≤100 ns (core-earth)
Total Surge Current (8/20) µs	10kA
Nominal Discharge surge current (8/20)µs	2kA (core-earth); 100A (core-core)
Operating Temperature	-40° F to + 185° F
Dimension (approximate)	5.5" (H) X 6" (W) X 1.5" (D)

86-1.02Q(2)(i) Standard Half Shelf

Shelf must be:

1. Gray, 15"(D) x 5"(H), half shelf, single sided, and rack mountable for communication equipment.
2. Made of sturdy 0.090 in thick aluminum with airflow vents.
3. Capable of holding at least 50.7 lbs.
4. Capable of holding equipment up to 1.72 inches wide.

86-1.02Q(2)(j) 4G LTE Wireless Modem Assembly

The wireless modem assembly consists of a modem, power supply, mounting bracket and hardware, serial communication cable, and antenna. The wireless modem must be carrier approved to be deployed over the AT&T or Verizon communication network system.

86-1.02Q(2)(j)(i) Modem

The modem must:

1. Have remote device management and be configurable either remotely through the wireless network or through the modem serial port
2. Be configured before acceptance.
3. Have minimum 60Mbps raw data transfer rate.
4. Have full duplex transceiver.
5. Have 700MHz Band 1700 AWS LTE as well as 850/1900/2100 MHz HSPA+ dual band networking (for fallback).
6. Have integrated Transmission Control Protocol (TCP)/Internet Protocol (IP) stack with User Datagram Protocol (UDP).
7. Have user configurable password protected access.
8. Includes a DC power cable at least 3 feet long with a connector compatible with the modem power connector, two Ethernet ports, one RS-232 serial port, one USB port, two digital I/O, and two cellular antenna connectors (all SMA female).
9. Have packet buffering and forwarding feature that provides discipline to the output of the serial port. The packet forwarding time interval must be configurable from a rate of 0 (undisciplined) to 400 ms in increments of 100 ms or less.
10. Comply with Portable Computer and Communications Association (PCCA) STD-101.
11. Have operating temperature range from -22 to 158 degrees F, with 90% relative humidity at 140 degrees F.
12. Weigh about 1.5 Lbs and have overall dimensions of about 5 in. x 3.5 in. x 2 in. The housing must be water resistant aluminum casing and IP 64 rated.
13. Have the following status indicators:
 - 13.1. Power on
 - 13.2. Channel acquired
 - 13.3. Link status
 - 13.4. Network registration
 - 13.5. Received signal strength indicator
 - 13.6. Transmit and receive data
 - 13.7. Block errors
14. Have the following standard interfaces:
 - 14.1. The AT command serial character stream using TCP/IP.
 - 14.2. Host communicates with modem using either UDP or TCP packet modes.
 - 14.3. Computer terminal platform using Windows 7 or later and Dial-Up Networking communicates with the modem using point to point protocol (PPP).

Provide the Engineer with the modem serial, Subscriber Identity Module (SIM) and International Mobile Equipment Identification (IMEI) numbers 30 days prior to requiring the Packet Data Protocol (PDP) context. The Engineer will provide the PDP context comprising the IP (assigned) and Access Point Name (APN) obtained from service provider.

The modem and associated firmware, software, hardware, protocol, and other features must be fully compatible with the existing 4G LTE network. The existing network utilizes the AT&T and Verizon Wireless cellular system (band compatible with this modem). Demonstrate the compatibility to the Engineer by actual installation or other methods approved by the Engineer.

86-1.02Q(2)(j)(ii) Power Supply

The power supply must:

1. Be vertically mountable on a 19-inch standard Din Rail.
2. Have provisions to attach the modem power cable securely without the need for modifying the cable.
3. Meet the requirements as shown in the following table:

Characteristics	Requirements
Power cord	Standard 120 V(ac), 3 prong cord, at least 3 feet long (may be added by Contractor)
Type	Switching mode type
Power rated	40 W minimum with no minimum load required
Operating humidity range	From 5 to 95 percent non-condensing
Input voltage	From 9 to 36 V (dc)
Working temperature ^a	-22°F to 158°F
Safety standards	UL 1012,

86-1.02Q(2)(j)(iii) Mounting Bracket and Hardware

The mounting bracket must:

1. Be stainless steel.
2. Be spring loaded and securely hold the modem in a vertical position with all cables and conductors installed.
3. Contain the modem using a method that allows the removal of the modem without tools or without removing the bracket from its attachment to the cabinet frame.

86-1.02Q(2)(j)(iv) Serial Communication Cable

The wireless modem connector must meet EIA-232 standard using a 9 pin Type D connector

86-1.02Q(2)(j)(v) Antenna

The antenna must:

1. Be configured for a multiple-input-multiple-output type operation with four cables in a single mounting hole.
2. Be made of ASA UV-stable plastic radome.
3. Meet the requirements as shown in the following table:

Parameter	Requirements
VSWR (at resonant point)	2:1 or less
Frequency	694-960 MHz, 3 dBi; 1710-2170 MHz, 4 dBi; 2400-2500 MHz, 5 dBi; 4900-6000 MHz, 5 dBi; 1575.42+/- 2 MHz, 26 dB, 5 dBi
Nominal Impedance	50 Ω
Maximum Power	10 Watt
Radiation Pattern	Omni-directional
Polarization	Vertical

86-1.02Q(2)(k) 24V DC Regulated Power Supply

Description	Specifications
Input Voltage	85~264 VAC
Rated Current	15.0 A
Rated Power	360 Watt
Regulated Output Voltages	24 VDC
Output Current Range	0 – 15.0 A
LED Indicators	Power
Protections	Short Circuit / Overload / Over Voltage
Operating Temperature	-13°F to +158°F
Max Weight	< 2 lb
Max Size	5.00" D x 3.00" W x 5.00" H

The regulated power supply must be DIN rail mounted, and the following:

1. Have LED indicator to indicate power-on status
2. Be Industrial Control Equipment (UL 508) approved
3. An AC power cord that meets the following requirements:

Description	Specifications
Cable Type	Outdoor AC power cord
Cable Length Range	5 feet to 8 feet
Cable Ends	1 X NEMA 5 - 15P 1 X Pigtails/Insulated copper wire
Voltage Rating	120 VAC
Current Rating	15 A
Conductor Gauge Range	12 AWG to 14 AWG
Number of Conductors	3 (Hot, Neutral, GND)
Wire Colors	Black for hot wire White for neutral wire Green for GND
Conductor Material	Copper/Stranded copper
Cord Type	SJTW

Add to the list in the 2nd paragraph of section 86-1.02R(4):

4. Be made of metal

AA

87 ELECTRICAL SYSTEMS

Replace the 1st sentence in the 9th paragraph of section 87-1.03A with:

The shutdown of traffic signal systems is allowed only between the hours of 9:00 a.m. and 3:00 p.m.

Add between the 22nd and 23rd paragraphs of section 87-1.03A with:

Where a Type A loop detector is shown, a Type E loop detector may be substituted. Use only one type loop detector per system.

Where a Type D loop detector is shown, a Type F loop detector may be substituted. Use only one type of loop detector per system.

Add to the end of section 87-1.03A:

Install loop detectors in the uppermost layer of the new pavement.

Add to the beginning of section 87-1.03B(3)(a):

Use Type 3 conduit for underground installation.

The steel lid for a traffic pull box must be welded to a Z-bar frame.

Replace the 3rd paragraph of section 87-1.03C(1) with:

Install a pull box on a bed of crushed rock.

Replace the 1st paragraph of section 87-1.03F(2)(c)(ii) with:

Install a Type B loop detector lead-in cable in conduit.

Replace the 1st paragraph of the RSS for section 87-1.03F(3)(c)(ii) with:

Use a Type 2 loop wire. Use only Type 2 loop wire for Type E and F loop detectors.

Replace the 2nd paragraph of section 87-1.03H(2) with:

Use Method B to insulate a splice.

Add to the end of section 87-1.03T:

Add between the 1st and 2nd sentences in the 2nd paragraph of section 87-1.03V(2):

Saw the slots to allow a minimum of 2 inches of sealant above the top of the uppermost loop wire in the slot.

Add between the 10th and 11th paragraphs of section 87-1.03V(2):

Use hot-melt rubberized sealant to fill slots.

Add to the end of section 87-21.03C:

Modifying a lighting system includes removing, adjusting, or adding:

1. Foundations
2. Pull boxes
3. Conduit
4. Conductors
5. Standards
6. Luminaires
7. Fuse splice connectors

