City of Rohnert Park
Development Services

DATE: December 9, 2016

TO: ALL PLANHOLDERS

SUBJECT: CITY OF ROHNERT PARK
ROHNERT PARK STREET SMART PROJECT
PROJECT NO. 2013-02;

NO. OF PAGES: 50 (including attachments and divider sheets)
(10 page addendum; 32 page attachments; 8 page dividers)

ADDENDUM NO. 3

This package provides an addendum to the Project Contract Documents. This Addendum shall become part of the Contract and all provisions of the Contract shall apply thereto.

Bidders shall acknowledge receipt of this Addendum by signing the acknowledgement located in the Bid Proposal documents, under "Addendum Acknowledgement." Failure to do so may cause your bid to become non-responsive and subject to rejection.

1. **CHANGE to PART 1 - BID DOCUMENTS, Schedule of Bid Prices – Page 1-10 through 1-11 (Note: Addendum #3 Schedule of Bid Prices to be completed by Contractor is located in Attachment A)**

REVISE:

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
23	RECTANGULAR RAPID FLASHING BEACON SYSTEM WITH SIGNAGE	5	EA		
24	WAYFINDING SIGNS	6	EA		
25	BICYCLE RACKS	1	LS		
	TOTAL				

TO READ:

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
23	RECTANGULAR RAPID FLASHING BEACON SYSTEM WITH SIGNAGE *(Enterprise)*	*1*	EA		
24	*RECTANGULAR RAPID FLASHING BEACON SYSTEM WITH SIGNAGE (Enterprise-Seed Farm)*	*1*	EA		
25	*RECTANGULAR RAPID FLASHING BEACON SYSTEM WITH SIGNAGE (Seed Farm)*	*2*	*EA*		
26	WAYFINDING SIGNS	6	EA		
27	BICYCLE RACKS	1	LS		

2. CHANGE to PART 4 – TECHNICAL SPECIFICATIONS, SECTION 01270 MEASUREMENT AND PAYMENT, PART 2 PRODUCTS - Pages 10 through 11 (Replacement document found in Attachment B)

2.22 IN-ROADWAY WARNING LIGHTED CROSSING SYSTEM WITH SIGNAGE (Bid Item No. 22)

REVISE:

“…wiring, connections, in-roadway signals, electrical components, pull boxes, startup…”

TO READ:

“…wiring, connections, in-roadway signals, **push buttons**, electrical components, pull boxes, startup…”

2.23 RECTANGULAR RAPID FLASHING BEACON SYSTEM WITH SIGNAGE (Bid Item No. 23)

REVISE

“2.23 RECTANGULAR RAPID FLASHING BEACON SYSTEM WITH SIGNAGE (Bid Item No. 23)”

TO READ:

“2.23 RECTANGULAR RAPID FLASHING BEACON SYSTEM WITH SIGNAGE **(Enterprise)** (Bid Item No. 23)”

AND

“…RRFB’s, electrical components, connections, startup, testing, trenching, paving…”

REVISE TO READ:

“…RRFB’s, **push buttons**, electrical components, connections, startup, testing, trenching, paving…”

ADD THE FOLLOWING BID ITEM:

“2.24 RECTANGULAR RAPID FLASHING BEACON SYSTEM WITH SIGNAGE (Enterprise-Seed Farm) (Bid Item No. 24)

A. Measurement for payment for this bid item will be based upon, but not limited to, completion of all necessary work to furnish and install rectangular rapid fishing beacon system and associated signage, per the manufacturers recommendations, including electrical service equipment enclosure, hardware, wiring, RRFB’s, push buttons, electrical components, connections, startup, testing, paving,

foundations, posts and signs and all labor, materials, tools and equipment in performing the work required per the Contract Documents.

B. Payment for rectangular rapid flashing beacon system with signage will be made at the unit bid price per each (EA), which price shall constitute full compensation for the completion of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor.”

ADD THE FOLLOWING BID ITEM:

“2.25 RECTANGULAR RAPID FLASHING BEACON SYSTEM WITH SIGNAGE (Seed Farm) (Bid Item No. 25)

A. Measurement for payment for this bid item will be based upon, but not limited to, completion of all necessary work to furnish and install rectangular rapid fishing beacon system and associated signage, per the manufacturers recommendations, including electrical service equipment enclosure, hardware, wiring, RRFB’s, push buttons, electrical components, connections, startup, testing, paving, foundations, posts and signs and all labor, materials, tools and equipment in performing the work required per the Contract Documents.

B. Payment for rectangular rapid flashing beacon system with signage will be made at the unit bid price per each (EA), which price shall constitute full compensation for the completion of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor.”

REVISE:

“2.24 WAYFINDING SIGN (Bid Item No. 24)”

TO READ:

“2.*26* WAYFINDING SIGN (Bid Item No. *26*)”

REVISE:

“2.25 BICYCLE RACKS (Bid Item No. 25)”

TO READ:

“2.*27* BICYCLE RACKS (Bid Item No. *27*)”

3. **CHANGE to PART 4 – TECHNICAL SPECIFICATIONS, SECTION 02750 ELECTRICAL SYSTEMS, Page 1 (Replacement document found in Attachment B)**

   REVISE:

   “SECTION 02750 ELECTRICAL SYSTEMS”

   TO READ

   “SECTION 02750 *SIGNALS, LIGHTING, AND* ELECTRICAL SYSTEMS”

4. **CHANGE to PART 4 – TECHNICAL SPECIFICATIONS, SECTION 02750 ELECTRICAL SYSTEMS, Page 6 (Replacement document found in Attachment B)**

   REVISE:

   “2.14 RECTANGULAR RAPID FLASHING BEACON SYSTEM “

   TO READ:

   “2.14 RECTANGULAR RAPID FLASHING BEACON SYSTEM – *ENTERPRISE DRIVE”*

5. **CHANGE to PART 4 – TECHNICAL SPECIFICATIONS, SECTION 02750 ELECTRICAL SYSTEMS, Page 7 (Replacement document found in Attachment B)**

   ADD FOLLOWING SECTION:

   “2.15 RECTANGULAR RAPID FLASHING BEACON SYSTEM – ENTERPRISE-SEED FARM AND SEED FARM

   Rectangular Rapid Flashing Beacon (RRFB) System assembly shall consist of supporting structure (pole, concrete foundation, sign supports), flashing bar indicators and associated mounting equipment, pedestrian push button, signage, pull boxes, and electrical components. The assembly shall include the signs, RRFB flashing bars, the pedestrian push buttons and pedestrian push button control unit and pedestrian push button post(s), and signal posts. RRFB assemblies shall conform to all provisions documented within the MUTCD Interim Approval IA-11, Section 56, "Signs" and Section 86 “Electrical Systems” of the Standard Specifications, Standard Plans, and these Special Provisions. Warranty of 3 years, unconditional.

   A. Rectangular Rapid Flashing Beacons:
      1. The RRFB shall be a TAPCO-XLS-RRFB, or approved equivalent, meeting the following requirements:

         Operating Voltage: 12 VDC
         Enclosure Type: NEMA 3R (Aluminum)

Enclosure Size: 15” H x 12.5” W x 9.8” D
Daylight Visibility: 1000 ft
Night Visibility: 5280 ft

B. Rectangular Rapid Flashing Beacons:

1. The RRFB shall be a TAPCO-XLS-RRFB, or approved equivalent, meeting the following requirements:

   Operating Voltage: 12 VDC
   Enclosure Type: NEMA 3R (Aluminum)
   Enclosure Size: 15” H x 12.5” W x 9.8” D
   Daylight Visibility: 1000 ft
   Night Visibility: 5280 ft

2. The RRFB indications shall be actuated by pedestrian push buttons that shall have an integrated LED indicator directed toward pedestrians waiting to cross and a customizable audible message and compliant with the requirements outlined in CA MUTCD Section 4E.

   All RRFB flash indications in the system shall initiate activation simultaneously within 120msec of actuation. The period of operation of the RRFB flash indication shall be based on CA MUTCD procedures for timing of pedestrian clearance times for pedestrian signals. In order to address field conditions that may not be consistent with predetermined pedestrian clearance times, the duration of RRFB flash indication shall be adjustable in the field to one second increments. If additional actuation occurs while the system is activated, the flash duration shall reset. That is, given an established flash duration of 15 seconds, if an additional actuation occurs after the RRFB has been activated for 10 seconds, the flash shall remain active for an additional 15 seconds, or 25 seconds in total.

C. Supporting Structures and Signs:

1. Posts, concrete foundations, and sign supports, associated with the RRFB assembly shall be consistent with details shown on the plans and the 2010 Caltrans Standard Plans and Specifications. Posts shall comply with Section 86-2.04 “Standards, Poles, Steel Pedestals, and Posts” of the 2010 Caltrans Standard Specifications. Concrete for foundations must conform to Section 90-2 “Minor Concrete” of the 2010 Caltrans Standard Specifications.Signs:
2. Signage required for the RRFB assembly shall be consistent
3. with materials requirements outlined within subsection 4.18 “Signs” of these Special Provisions.

D. Crossing Power Control Unit (PCU):

1. The contractor shall provide a PCU compatible with RRFB operation. The PCU with 12 VDC output and audible crosswalk

(sound card) compatible with pushbuttons to be installed in the new service cabinet locations, as shown on the plans, shall conform to the provisions in the CA MUTCD and these Special Provisions. A newly-installed PCU shall be a TAPCO XL2 and audible crosswalk upgrade (sound card) compatible with pushbuttons, or approved equivalent, installed per the manufacturer’s specifications, and meet the following requirements:

a. Integrated constant-current LED drivers with a minimum of two-channel output for driving one or two RRFB units;
b. Multiple programmable function options:
c. Run for a programmable time period when activated via switch, button contact closure or when triggered from an external sensor such as a wireless transmitter, radar, presence detector or loop detector with a compatible sensor output;
d. Integrated Real Time Clock (RTC) with on-board battery backup;
e. RS232 communication for programming with Windows-based software;
f. Two General Purpose Inputs and Outputs (GPIO);
g. Seamlessly integrate with the 900 MHz FHSS wireless transceiver to form a network of connected devices;
h. Independently replaceable of other control panel components;
i. Monitor internal temperature;
j. Operate between the temperatures of -40° to +176°F (-40° to +80°C)

2. The installed system shall comply with National Electric Code (NEC) Article 300, Chapter 7, Section 725-3 rated as “Low Voltage”. The System shall be installed to manufacturers recommended specifications and conform to federal, state or local regulations.

3. The system shall be able to automatically transmit system notifications to the board mounted 8-bit microcomputer by an interconnect RS 232 protocol. Usage data stored in the system microcomputer showing activation time and dates shall be accessible via a user push button located on the control panel.

4. The system shall be able to transmit this data via RS 232 port. The system shall include a logic control device designed to run all timing parameters, keep count of the number of valid activations received and monitor the system for basic faults. The logic device shall include a 2 line by 20-character LCD display. The device shall be capable of displaying messages to help the user determine the status of the system. Messages are displayed on the screen based user selections. The onsite user shall be able to view messages being displayed.

5. Flashing rates provided by the PCU shall be consistent with rates specified within MUTCD Interim Approval IA-11. In order to adjust for future revisions to MUTCD or State guidelines regarding flash patterns, the PCU shall have the ability to reconfigure these flash patterns. The device shall provide a minimum of one- 10A circuit to drive the flasher circuit. The device shall also be capable of accepting replacement module for field upgrade of the software.

6. The logic control device software shall be capable of running diagnostics from a user push button located on the control panel. During the diagnostic mode, the unit will display a message on the LCD screen indicating it is in this mode. The software shall also allow one input to be a manual override function for special event use in which continuous operation would be needed.

7. During manual override, the system shall display a message to this effect on the LCD screen so that the user is aware of the operational mode. For crosswalk applications, the unit shall be capable of incorporating time clock based operation of the flashers for applications such as school crossings. The software shall allow a basic program to be run that provides up to 3 on cycles per day.

E. 900 MHz FHSS Wireless Transceiver

1. Seamlessly integrate with the RRFB controller to ensure sequential activation of other radio-equipped devices in the system
2. Include an integrated LCD and two user-interface buttons for setup and troubleshooting, including readouts of flash duration (timeout), battery conditions, and LED testing functionality
3. Include two LED indicators for status and troubleshooting
4. Capable of operating as a Parent (Gateway) or Child (Node or Repeater)
5. Capable of providing site-survey data for verification of signal strength between network devices
6. Include network-wide modification of sign controller settings and output durations, using programmability from any networked transceiver without the use of additional equipment or software
7. Synchronize the system components to activate the indications within 120msec of one other and remain synchronized throughout the duration of the flash (timeout) cycle.
8. Operate on the license-free ISM band
9. Comply with part 15 of FCC rules
10. Operate from 3.3VDC to 15VDC
11. Shall be, in the unlikely event of failure, replaceable independently of other components.

F. Solar Charge Controller
1. Utilize an intelligent 4-stage algorithm and Pulse Width Modulation (PWM) for battery charging
2. Automatically provide Low Voltage Disconnect (LVD) to protect batteries when needed
3. Automatically provide Load-Reconnection once battery levels have been restored to an acceptable value
4. Protect against and automatically recover from: short circuit, overload, reverse polarity, high temperature, lightning and transient surge, as well as voltage spikes
5. Be independently replaceable of other control panel components
6. Operate from -40° to +140°F (-40° to +60°C)

G. Battery Power
1. A nominal output voltage of 12VDC and a capacity of 48Ah at a C/100 discharge rate
2. Valve regulated, gelled electrolyte
3. Sealed and spill proof
4. Terminals that accept screw or bolts for secure wiring connections.
5. Replaceable independently of other components.
6. Fused for short circuit protection

H. Solar Panel
1. IEC61215, TUV, and UL 1703 certified.
2. Operate at 12VDC nominal with a maximum output rating of 85W.
3. Include an IP65 rated junction box with terminals sized for 8-16AWG wire.
4. Anodized aluminum frame, high-transmission 1/8" tempered glass, with silicon cells encapsulated in double-layer EVA, and with a white polymer backing.
5. Affixed to an aluminum plate and bracket, adjustable at an angle of 45°- 60° to facilitate adjustment for maximum solar collection to optimize battery charging.
6. Attached to a panel, plate and bracket to facilitate mounting and adjustment for maximum solar collection and optimal battery strength.
7. Maximum power voltage 18.18V
8. Maximum power current 3.1A
9. Short circuit current 3.31A
10. Open circuit voltage 22.1V
11. Operate from -40° to +194°F (-40° to +90°C)”

6. CHANGE to PART 5 – DRAWINGS
(Replacement drawings, refer to Attachment C)
C102
TS101
TS103
TS104

7. RESPONSES TO QUESTIONS RECEIVED:

No questions were received.

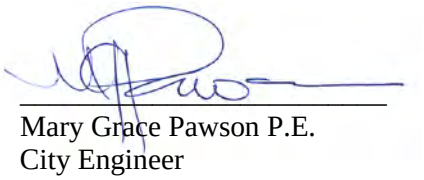
ATTACHMENTS

Attachment A – BID DOCUMENTS:
Schedule of Bid Prices

Attachment B – TECHNICAL SPECIFICATIONS:
Technical Specification: 01270 Measurement and Payment
Technical Specification: 02750 Systems, Lighting, and Electrical Systems

Attachment C – DRAWINGS:
C102
TS101
TS103
TS104

Addendum No. 3 approved by:



Mary Grace Pawson P.E.
City Engineer

December 9, 2016
Date

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ATTACHMENT A

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PART 1 - BID DOCUMENTS

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SCHEDULE OF BID PRICES

ROHNERT PARK STREET SMART PROJECT

PROJECT NO. 2013-02

In accordance with the plans and specifications therefor approved by the City of Rohnert Park, the undersigned bidder is herewith submitting the following bid prices for the performance of the entire proposed work as described in these specifications and attached drawings:

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
1	MOBILIZATION	1	LS		
2	TEMPORARY TRAFFIC CONTROL	1	LS		
3	WATER POLLUTION CONTROL (SWPPP IMPLEMENTATION)	1	LS		
4	CLEARING AND GRUBBING	1	LS		
5	REMOVE PAVEMENT MARKING	1,780	SF		
6	REMOVE BARRICADE	45	LF		
7	REMOVE CURB & GUTTER	290	LF		
8	REMOVE MEDIAN CURB	70	LF		
9	REMOVE PAVEMENT SECTION	1,725	SF		
10	REMOVE CONCRETE SIDEWALK	1,530	SF		
11	CLASS 2 AGGREGATE BASE	85	CY		
12	HMA PAVING	70	TON		
13	CONCRETE - CURB AND GUTTER	275	LF		
14	CONCRETE - MEDIAN CURB	100	LF		
15	CONCRETE - SIDEWALK	335	SF		
16	CONCRETE - CURB RAMP	1,055	SF		
17	MINOR CONCRETE	10	CY		
18	SIDEWALK BARRIER	1	EA		
19	STREET SIGN	9	EA		
20	THERMOPLASTIC CROSSWALK (WHT) AND PAVEMENT MARKINGS	2,160	SF		
21	PAVEMENT STRIPING - DETAIL 21/39A	110	LF		
22	IN-GROUND LIGHTED CROSSING WITH SIGNAGE	1	EA		

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
23	RECTANGULAR RAPID FLASHING BEACON SYSTEM WITH SIGNAGE (Enterprise)	1	EA		
24	RECTANGULAR RAPID FLASHING BEACON SYSTEM WITH SIGNAGE (Enterprise-Seed Farm)	1	EA		
25	RECTANGULAR RAPID FLASHING BEACON SYSTEM WITH SIGNAGE (Seed Farm)	2	EA		
26	WAYFINDING SIGNS	6	EA		
27	BICYCLE RACKS	1	LS		
	TOTAL				

PART 4 – TECHNICAL SPECIFICATIONS

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SECTION 01270

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SCOPE

A. Payment for the various items of the Bid Sheets, as further specified herein, shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor, operations, and incidentals appurtenant to the items of work being described, as necessary to complete the various items of work as specified and shown on the Drawings, including all appurtenances thereto, and including all costs of compliance with the regulations of public agencies having jurisdiction, including Safety and Health Requirements of the California Division of Industrial Safety. No separate payment will be made for any item that is not specifically set forth in the Bid Sheet(s), and all costs therefore shall be included in the prices named in the Bid Sheet(s) for the various appurtenant items of work.

1.02 WORK INCLUDED UNDER ALL BID ITEMS

A. For all bid item work, Contractor's responsibilities shall conform to the provisions of Section 7 – "Legal Relations and Responsibility" of the Standard Specifications, except as modified herein, in the Special Provisions, or in the Detailed Project Specifications. Additionally, Contractor shall ensure each of the following is included as part of the work under each bid item:

1. The safety of personnel, subcontractor's personnel, and the public. Safety measures shall include, but are not limited to, confined space entry, abrasive blasting, fall protection, electrical safety and warning signs as may be necessary. Engineer may direct Contractor to erect any safety feature as may be necessary in his opinion.
2. Make available all work for inspection and/or testing by the Engineer.
3. Clear, prune, and/or remove from the site of work all items that might interfere with contract work, including landscaping, sidewalks, curbs and gutters, retaining structures, and AC paving. Also adjust existing valves boxes, manholes, and other structures as may be necessary to complete work.
4. Restore all surfaces to their original, existing condition as nearly as possible including landscaping, sidewalks, street and driveway pavement, and curbs and gutters. All materials for restoration work shall be furnished by Contractor.
5. Protection of all trees and their roots.
6. Proper removal and disposal of surface improvements as required to complete construction of the work.
7. Proper restraint of existing facilities. Temporary restraints may be necessary to prevent facilities from being damaged. Damage to existing facilities that occurs due to improper restraint shall be repaired by Contractor at his own expense.
8. Cost of any water used on the project.
9. Disposal of all excess or waste materials.
10. Cleanup and sweeping of the project site.

11. Quality control.
12. Provide advance notice of lane closures.
13. Noise and sound control.
14. Submittals for the project.
15. As-built drawings. No portion of the work shall be deemed complete unless reflected on the as-built drawings.

1.03 BID SCHEDULE

A. All pay line items will be paid for at the unit prices named in the Bid Sheet(s) for the respective items of work. The quantities of work or material stated as unit price items on the Bid Sheet(s) are supplied only to give an indication of the general scope of the Work.

B. Immediately after award of the contract, the Contractor shall submit a cost breakdown list to the Engineer for lump sum bid items (i.e., Schedule of Values). This list shall consist of the major items of work that make up the schedule and shall be used for determining progress pay estimates. The Contractor shall fill in the amounts for each item, giving both unit and total costs, and prorating general costs such as setup, overhead, and profit in each item. The total of all items shall equal the total of the schedule. The amounts the contract indicates for any items on the list may be revised as deemed necessary by the Engineer, if it appears such items are unbalanced, unless the Contractor can substantiate these costs.

Only items of work of value to the Owner shall be included in the list. An item for cleanup shall be listed in the breakdown in the amount of at least 1 percent of the total schedule. If cleanup proceeds as the job progresses, then partial payments of this amount will be made accordingly. An item for fulfilling the submittal requirements of Section 01330, “Contractor Submittals” shall be listed in the breakdown in the amount of at least 1 percent of the total schedule. Partial payments of this amount will be made as the requirements are met.

1.04 INCREASE OR DECREASE IN BID ITEMS

A. In the event of an increase or a decrease in the amount of the Engineer’s Estimated quantities, such increase or decrease shall not be considered an alteration in excess of the 25 percent of the contract amount of such items under provisions of Section 4-1.03B of the Standard Specifications and no adjustment of the contract unit price will be made by reason of such increase or decrease. Work items may be adjusted based on available funding.

PART 2 PRODUCTS

2.01 MOBILIZATION (Bid Item No. 1)

A. Measurement for payment for this bid item will be based upon completion of such work as a lump sum (LS), non-prorateable pay item, and shall require completion of all of the items listed in Section 11-1.01, Description, of Section 11 Mobilization of the State Standard Specifications.

B. Payment for Mobilization (includes demobilization) will be made in two (2) equal payments totaling the lump sum (LS) allowance named in the Bid Schedule under Item No. 1, one at mobilization and one at demobilization, which price shall constitute full compensation for all such work. Payment for mobilization will be made in the form of a single, lump sum, non-prorateable payment, no part of which will be approved for payment under the Contract until all mobilization items listed herein have been completed as specified. The scope of the work included under this bid item shall include the obtaining of all bonds, insurance, and permits; moving onto the project site, inclusive of any staging areas, all equipment, personnel, and permanent and temporary facilities as required for the proper performance and completion of the Work. Mobilization shall include but not be limited to the following principal items:

1. Arrangement with and payment for project staging areas with necessary responsible parties, inclusive of all necessary site investigation, reporting, permitting, traffic control, screened fencing, temporary crushed rock surfacing (if required), stormwater best management practices, and all other improvements upon the land and work associated with the establishment and ongoing maintenance of staging areas.
2. Moving on to the project site of all Contractor's equipment, personnel, and temporary and permanent facilities required for the project.
3. Installing temporary construction power, wiring, and lighting facilities (if required).
4. Installing a minimum of two (2) project identification signs, including all necessary work to manufacture, label, place, maintain, remove, and dispose of such identification signs and all labor, materials, tools, and equipment in performing the work required per the Contract Documents.
5. Establishing fire protection systems.
6. Providing on-site sanitary facilities and potable water facilities.
7. Furnishing, installing, and maintaining all storage buildings or sheds required for temporary storage of products, equipment, or materials that have not yet been installed in the Work. All such storage shall meet manufacturer's specified storage requirements, and the specific provisions of the specifications, including temperature and humidity control, if recommended by the manufacturer, and for all security.
8. Any work, coordination, hardware/software, Internet, and related technical or process-based activities associated with the project’s web-based document management system.
9. Obtaining and paying for all required bonds, insurance, and permits and licenses.
10. Posting all OSHA required notices and establishment of safety programs.
11. Submittal of required Construction Schedule.
12. Conducting a pre-construction photographic survey of all work areas.

Payment for demobilization shall occur when all required items per the contract are fulfilled, including the submittal and acceptance of Contractor’s record drawings, and the site is free of equipment, spare materials, temporary facilities, and is clean.

Note: Contractor is advised that no payment for the “Mobilization” bid item will be made unless the construction schedule and traffic control plan have been submitted and accepted by the Engineer.

C. In addition to the requirements specified above, all submittals shall conform to the applicable requirements of Section 01330, "Contractor Submittals."

D. Maximum limit for Mobilization is 6% of the Total Bid Price; 3% for mobilization and 3% for demobilization.

E. No payment for any of the listed mobilization and demobilization work items will be made until all of the listed items have been completed, as specified, to the satisfaction of the Engineer.

F. The aforementioned amount will be retained by the City as the agreed, estimated value of completing all of the mobilization items listed. Any such retention of money for failure to complete all such mobilization items as a lump-sum item shall be in addition to the retention of any payments due to the Contractor as specified in Section 9 of the General Provisions.

2.02 TEMPORARY TRAFFIC CONTROL (Bid Item No. 2)

A. Measurement for payment for this bid item will be based upon, but not limited to, all work required for Traffic Control under Section 01555, “Temporary Traffic Control Systems” and as otherwise required in these Contract Documents, permits, construction area signs, lighted and changeable message boards as required, installation and maintaining all measures throughout the project limits, inclusive of staging areas, and advance of the project limits to temporarily control, detour, or stage traffic during construction and all other related work per the Contract Documents.

B. The first payment for traffic control shall be no more than twenty-five percent (25%) of the bid item amount. The remainder of the bid item amount shall be divided evenly among the entire schedule and will be paid in monthly payments so long as the Contractor continues to properly implement the approved plan.

C. Payment for temporary traffic control will be made at the lump sum (LS) bid price, which price shall constitute full compensation for the completion of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor.

2.03 WATER POLLUTION CONTROL PROGRAM (Bid Item No. 3)

A. Measurement for payment for this bid item will be based upon, but not limited to, furnishing, installing, and maintaining all plant, labor, materials, tools, permits, permit fees, and equipment required for preparation, placement, implementation and maintenance of stormwater pollution prevention measures as outlined in the Water Pollution Control Program (WPCP) and incorporating WPCP modifications as necessary by the Contractor during the project. Bid item price shall include, preparation and updating of WPCP as-needed during construction to temporarily control erosion, sedimentation and water pollution, consisting of installation of Best Management Practices (BMPs),inspection, sampling, testing, maintaining BMP’s, reporting, and other activities as necessary..

B. Payment for WPCP preparation and implementation will be made at the lump sum (LS) bid price, which price shall constitute full compensation for the completion of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor.

2.04 CLEARING AND GRUBBING (Bid Item No. 4)

A. Measurement for payment for this bid item will be based upon, but not limited to, completion of all the necessary measures to clear and grub the work area, including, but not limited to furnishing all plant, labor, materials, tools, equipment, and all other related work per the Contract Documents.

B. Payment for clearing and grubbing will be made at the Contract lump sum (LS) bid price, which price shall constitute full compensation for the completion of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor.

2.05 REMOVE PAVEMENT MARKING (Bid Item No. 5)

A. Measurement for payment for this bid item will be based upon, but not limited to, all labor, materials, tools and equipment for the removal of pavement markings as required per the Contract Documents. Pavement markings do not include lane lines or bike lane lines.

B. Payment for remove pavement marking will be made at the unit bid price per square foot (SF), which price shall constitute full compensation of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor.

2.06 REMOVE BARRICADE (Bid Item No. 6)

A. Measurement for payment for this bid item will be based upon, but not limited to, all labor, materials, tools and equipment for the removal of existing barricade as required per the Contract Documents.

B. Payment for remove barricade will be made at the unit bid price per linear foot (LF), which price shall constitute full compensation of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor.

2.07 REMOVE CURB AND GUTTER (Bid Item No. 7)

A. Measurement for payment for this bid item will be based upon, but not limited to, all labor, materials, tools and equipment for the removal of curb and gutter, including clean sawcut edges, proper disposal, salvage, or recycling of the associated materials, and site restoration, as required per the Contract Documents.

B. Payment for remove curb and gutter will be made at the unit bid price per linear foot

(LF), which price shall constitute full compensation of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor.

2.08 REMOVE MEDIAN CURB (Bid Item No. 8)

A. Measurement for payment for this bid item will be based upon, but not limited to, all labor, materials, tools and equipment for the removal of median curb, including clean sawcut edges, proper disposal, salvage, or recycling of the associated materials, and site restoration, as required per the Contract Documents.

B. Payment for remove median curb will be made at the unit bid price per linear foot (LF), which price shall constitute full compensation of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor.

2.09 REMOVE PAVEMENT SECTION (Bid Item No. 9)

A. Measurement for payment for this bid item will be based upon, but not limited to, all labor, materials, tools and equipment for the removal of AC pavement and aggregate base, including clean sawcut edges, proper disposal, salvage, or recycling of the associated materials, and site restoration, as required per the Contract Documents.

B. Payment for remove pavement section will be made at the unit bid price per square foot (SF), which price shall constitute full compensation of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor.

2.10 REMOVE CONCRETE SIDEWALK (Bid Item No. 10)

A. Measurement for payment for this bid item will be based upon, but not limited to, all labor, materials, tools and equipment for the removal of concrete sidewalk, including clean sawcut edges, proper disposal, salvage, or recycling of the associated materials, and site restoration, as required per the Contract Documents

B. Payment for remove concrete sidewalk will be made at the unit bid price per square foot (SF), which price shall constitute full compensation of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor.

2.11 CLASS 2 AGGREGATE BASE (Bid Item No. 11)

A. Measurement for payment for this bid item will be based upon, but not limited to, furnishing and installing all plant, labor, materials, tools, and equipment, and doing all the work involved in furnishing and placing class 2 aggregate base material, including furnishing, hauling, compacting and applying water as directed by the Engineer, as shown on the Drawings, and as required per the Contract Documents.

B. Payment for class 2 aggregate base will be made at the unit bid price per cubic yard

(CY), which price shall constitute full compensation for the completion of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor.

2.12 HOT MIX ASPHALT (TYPE A) (Bid Item No. 12)

A. Measurement for payment for this bid item will be based upon, but not limited to, completion of all necessary work to place hot mix asphalt (HMA) paving including compacting and testing, and all labor, materials, tools and equipment in performing the work required per the Contract Documents. All work shall comply with Caltrans Construction Quality Assurance Program requirements for materials, workmanship, and quality control, unless otherwise approved by the Engineer.

B. Payment for Hot Mix Asphalt (Type A) will be made at the unit bid price per ton (TON), which price shall constitute full compensation for the completion of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor.

2.13 CONCRETE - CURB AND GUTTER (Bid Item No. 13)

A. Measurement for payment for this bid item will be based upon, but not limited to, furnishing and installing all plant, labor, materials, tools, and equipment, and doing all the work involved in constructing curb and gutter, including curing materials, forming and constructing curb openings for driveways, removing discoloring, placing expansion joint filler, constructing weakened plane joints, excavating, backfilling with Class 2 AB, and compaction, as specified in the City Standards, the Standard Specifications, as shown on the Drawings, and as required per the Contract Documents.

B. Payment for concrete - curb and gutter will be made at the unit bid price per linear foot (LF), which price shall constitute full compensation for the completion of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor. No separate payment will be made for surface concrete facilities that are included in other Bid Items as part of these Contract Documents, including “Concrete – Median Curb,” “Concrete- Sidewalk,” “Concrete – Curb Ramp”, and “Minor Concrete.”

2.14 CONCRETE - MEDIAN CURB (Bid Item No. 14)

A. Measurement for payment for this bid item will be based upon, but not limited to, furnishing and installing all plant, labor, materials, tools, and equipment, and doing all the work involved in constructing median curb (including fall away gutter as applicable), including curing materials, forming, removing discoloring, placing expansion joint filler, constructing weakened plane joints, excavating, backfilling with Class 2 AB, and compaction, as specified in the City Standards, the Standard Specifications, as shown on the Drawings, and as required per the Contract Documents.

B. Payment for concrete - median curb will be made at the unit bid price per linear foot (LF), which price shall constitute full compensation for the completion of all such work as required per the Contract Documents, as specified in the Standard Specifications and

these special provisions, and no additional allowances will be made therefor. No separate payment will be made for surface concrete facilities that are included in other Bid Items as part of these Contract Documents, including "Concrete – Curb and Gutter," "Concrete- Sidewalk," "Concrete – Curb Ramp", and "Minor Concrete."

2.15 CONCRETE - SIDEWALK (Bid Item No. 15)

A. Measurement for payment for this bid item will be based upon, but not limited to, furnishing and installing all plant, labor, materials, tools, and equipment, and doing all the work involved in constructing concrete sidewalk, including curing materials, forming, removing discoloring, placing expansion joint filler, constructing weakened plane joints, excavating, backfilling with Class 2 AB, and compaction, as specified in the City Standards, the Standard Specifications, as shown on the Drawings, and as required per the Contract Documents.

B. Payment for concrete - sidewalk will be made at the unit bid price per square foot (SF), which price shall constitute full compensation for the completion of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor. No separate payment will be made for surface concrete facilities that are included in other Bid Items as part of these Contract Documents, including "Concrete – Median Curb," "Concrete- Curb and Gutter," "Concrete – Curb Ramp", and "Minor Concrete."

2.16 CONCRETE - CURB RAMP (Bid Item No. 16)

A. Measurement for payment for this bid item will be based upon, but not limited to, furnishing and installing all plant, labor, materials, tools, and equipment, and doing all the work involved in constructing concrete curb ramp, including truncated domes, dowel bars, curing materials, forming, removing discoloring, expansion joint and filler, constructing weakened plane joints, excavating, backfilling with Class 2 AB, and compaction, as specified in the City Standards, the Standard Specifications, as shown on the Drawings, and as required per the Contract Documents. At locations adjacent to new sidewalk, the limit of work for each curb ramp shall be up to and including the 1-foot border limits of the curb ramp and include any complete, or portion thereof, curb and gutter in front of the ramp, integral curb along the sides or back of the ramp, retaining curb at the back of ramp (where required), flared sides, ramp, and landing. At locations adjacent to existing sidewalk, the curb ramp limits shall also include one section of new concrete sidewalk on each side, as applicable, to conform to the existing sidewalk.

B. Payment for curb ramp will be made at the unit bid price per square foot (SF), which price shall constitute full compensation of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor. No separate payment will be made for surface concrete facilities that are included in other Bid Items as part of these Contract Documents, including "Concrete – Median Curb," "Concrete- Sidewalk," "Concrete – Curb and Gutter", and "Minor Concrete."

2.17 MINOR CONCRETE (Bid Item No. 17)

A. Measurement for payment for this bid item will be based upon, but not limited to, furnishing and installing all plant, labor, materials, tools, and equipment, and doing all the work involved in constructing minor concrete (in-ground lighting crossings, etc.), including curing materials, forming, removing discoloring, placing expansion joint filler, constructing weakened plane joints, excavating, backfilling with Class 2 AB, and compaction, as specified in the City Standards, the Standard Specifications, as shown on the Drawings, and as required per the Contract Documents.

B. Payment for minor concrete will be made at the unit bid price per square foot (SF), which price shall constitute full compensation for the completion of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor. No separate payment will be made for surface concrete facilities that are included in other Bid Items as part of these Contract Documents, including "Concrete – Median Curb," "Concrete- Sidewalk," "Concrete – Curb Ramp", and "Concrete – Curb and Gutter."

2.18 SIDEWALK BARRIER (Bid Item No. 18)

A. Measurement for payment for this bid item will be based upon, but not limited to, furnishing and installing all plant, labor, materials, tools, and equipment, to install sidewalk barrier, complete in place, as shown on the Drawings and as required per the Contract Documents.

B. Payment for sidewalk barrier will be made at the unit bid price per each (EA), which price shall constitute full compensation for the completion of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor.

2.19 STREET SIGN (Bid Item No. 19)

A. Measurement for payment for this bid item will be based upon, but not limited to, furnishing and installing all plant, labor, materials, tools, and equipment, to install street sign(s) on post and foundation, complete in place, as shown on the Drawings and as required per the Contract Documents.

B. Payment for street sign will be made at the unit bid price per each (EA), which price shall constitute full compensation for the completion of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor.

2.20 THERMOPLASTIC CROSSWALK AND PAVEMENT MARKINGS (Bid Item No. 20)

A. Measurement for payment for this bid item will be based upon, but not limited to, completion of all necessary work to furnish and place white thermoplastic crosswalk and pavement markings, including temporary traffic stripes and pavement markings and replacement of damaged stripes and markings and all labor, materials, tools and equipment in performing the work required per the Contract Documents.

B. Payment for thermoplastic crosswalk and pavement markings will be made at the unit bid

price per square foot (SF), which price shall constitute full compensation for the completion of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor.

2.21 PAVEMENT STRIPING – DETAIL 21/39A (Bid Item No. 21)

A. Measurement for payment for this bid item will be based upon, but not limited to, furnishing and installing all plant, labor, materials, tools, and equipment, to install pavement striping, complete in place, as shown on the Drawings and as required per the Contract Documents.

B. Payment for install sign will be made at the unit bid price per linear foot (LF), which price shall constitute full compensation for the completion of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor.

2.22 IN-ROADWAY WARNING LIGHTED CROSSING SYSTEM WITH SIGNAGE (Bid Item No. 22)

A. Measurement for payment for this bid item will be based upon, but not limited to, completion of all necessary work to furnish and install in-roadway warning lighted crossing system, per the manufacturers recommendations, including a complete functioning system with all hardware, conduit, wiring, connections, in-roadway signals, push buttons, electrical components, pull boxes, startup, testing, trenching, paving, foundations, posts and signs and all labor, materials, tools and equipment in performing the work required per the Contract Documents.

B. Payment for in-roadway warning lighted crossing system with signage will be made at the unit bid price per each (EA), which price shall constitute full compensation for the completion of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor.

2.23 RECTANGULAR RAPID FLASHING BEACON SYSTEM WITH SIGNAGE (Enterprise) (Bid Item No. 23)

A. Measurement for payment for this bid item will be based upon, but not limited to, completion of all necessary work to furnish and install rectangular rapid fishing beacon system and associated signage, per the manufacturers recommendations, including all coordination with PG&E for electrical service, electrical service equipment enclosure, hardware, conduit, pull boxes, wiring, RRFB's, push buttons, electrical components, connections, startup, testing, trenching, paving, foundations, posts and signs and all labor, materials, tools and equipment in performing the work required per the Contract Documents.

B. Payment for rectangular rapid flashing beacon system with signage will be made at the unit bid price per each (EA), which price shall constitute full compensation for the completion of all such work as required per the Contract Documents, as specified in the

Standard Specifications and these special provisions, and no additional allowances will be made therefor.

2.24 RECTANGULAR RAPID FLASHING BEACON SYSTEM WITH SIGNAGE (Enterprise-Seed Farm) (Bid Item No. 24)

A. Measurement for payment for this bid item will be based upon, but not limited to, completion of all necessary work to furnish and install rectangular rapid fishing beacon system and associated signage, per the manufacturers recommendations, including electrical service equipment enclosure, hardware, wiring, RRFB's, push buttons, electrical components, connections, startup, testing, paving, foundations, posts and signs and all labor, materials, tools and equipment in performing the work required per the Contract Documents.

B. Payment for rectangular rapid flashing beacon system with signage will be made at the unit bid price per each (EA), which price shall constitute full compensation for the completion of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor.

2.25 RECTANGULAR RAPID FLASHING BEACON SYSTEM WITH SIGNAGE (Seed Farm) (Bid Item No. 25)

A. Measurement for payment for this bid item will be based upon, but not limited to, completion of all necessary work to furnish and install rectangular rapid fishing beacon system and associated signage, per the manufacturers recommendations, including electrical service equipment enclosure, hardware, wiring, RRFB's, push buttons, electrical components, connections, startup, testing, paving, foundations, posts and signs and all labor, materials, tools and equipment in performing the work required per the Contract Documents.

B. Payment for rectangular rapid flashing beacon system with signage will be made at the unit bid price per each (EA), which price shall constitute full compensation for the completion of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor.

2.26 WAYFINDING SIGN (Bid Item No. 26)

A. Measurement for payment for this bid item will be based upon, but not limited to, completion of all necessary work to furnish and install wayfinding signs (directional, confirmation, and trail), including all hardware, excavation, concrete, foundations, reinforcement, finishes, and all labor, materials, tools and equipment in performing the work required per the Contract Documents.

B. Payment for wayfinding sign will be made at the unit bid price per each (EA), which price shall constitute full compensation for the completion of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special

provisions, and no additional allowances will be made therefor.

2.27 BICYCLE RACKS (Bid Item No. 27)

A. Measurement for payment for this bid item will be based upon, but not limited to, furnishing all plant, labor, materials, tools, and equipment, to install bicycle racks per manufacturer recommendations, complete in place, as shown on the Drawings and as required per the Contract Documents.

B. Payment for bicycle racks will be made at the unit lump sum (LS) bid price, which price shall constitute full compensation for the completion of all such work as required per the Contract Documents, as specified in the Standard Specifications and these special provisions, and no additional allowances will be made therefor.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 02750

SIGNALS, LIGHTING AND ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

A. The Contractor shall furnish and install in-roadway warning light (IRWL) system(s) and rectangular rapid flashing beacon (RRFB) system(s) at the location(s) shown on the plans in conformance with the applicable provisions of Section 86, "Electrical Systems", of the Caltrans Standard Specifications, Standard Plans, the City Traffic Design Standards, these special provisions, and as directed by the Engineer.

B. The Contractor shall contact PG&E for arrangement, coordination and connection of signal service point. Full compensation for arrangement, coordination and service connection, not otherwise provided for, shall be considered incidental to the Contractor's work.

1.02 SCHEDULING OF WORK

A. Scheduling of work shall conform to Section 86-1.07 of the Caltrans Standard Specifications except that no system turn-on shall be scheduled for Monday, Friday, or the day before or after a legal State holiday.

1.03 TRAFFIC SIGNALS

A. In-Roadway Warning Light System(s) (IRWL's) shall be paid for as part of contract item In-Roadway Warning Light System(s) (above), which price shall include full compensation for furnishing all labor, material, tools, equipment, and doing all work involved to install IRWL's complete, and no additional allowance will be made therefor.

B. Rectangular Rapid Flashing Beacon System(s) (RRFB's) shall be paid for as part of contract item Rectangular Rapid Flashing Beacon System(s) (above), which price shall include full compensation for furnishing all labor, material, tools, equipment and doing all work invoived to install RRFB's complete, and no additional allowance will be made therefor.

1.04 SUBMITTALS

A. Submit all data on all products to be incorporated into the work. Submit certificate of compliance in compliance with Section 6-3.05E of the Caltrans Standard Specifications for all materials.

1.05 SERVICE

A. The Contractor shall contact PG&Eat (707) 765-5162 for arrangement, coordination and connection of signal service point. Full compensation for arrangement, coordination and service connection, not otherwise provided for, shall be considered as included in the

prices paid for in the Pedestrian Signal System lump sum and no additional compensation will be allowed.

B. The Contractor shall obtain approval from the Engineer for the location prior to the installation of the service.

C. The Contractor shall notify the Engineer at least five working days for inspection of service. Acceptance of the service must be obtained prior to the system turn-on.

PART 2 PRODUCTS

2.01 PEDESTRIAN BARRICADE

A. Pedestrian barricades shall be Type I and shall be installed at the locations shown on the plans per State Standard ES-7Q.

2.02 FOUNDATIONS

A. The Contractor shall construct foundations for signal posts and push button posts per 86-2.03, Foundations, of the Caltrans Standard Specifications.

B. Minor portland cement concrete shall be produced from commercial quality aggregates and cement and shall contain not less than six sacks of cement per cubic yard and with a minimum 28 day compressive strength of 4000 psi.

2.03 STANDARDS, STEEL PEDESTALS AND POSTS

A. Traffic signal standards, steel pedestals and posts, and related appurtenances shall be installed per Volume 1, Section 3 of the City Traffic Design Standards and Caltrans Standard Specifications.

2.04 CONDUIT

A. Conduit shall conform to 86-2.05 of the Caltrans Standard Specifications and Volume 1, Section 3-F of the City Traffic Design Standards.

B. Trenching depth shall be per Section 86-2.01 and 86-2.05C of the Caltrans Standard Specifications and these Special Provisions. Install conduit to a depth of not less than indicated in the plans.

C. Conduit shall be installed in a “T” trench per the “T” trench detail on Caltrans Standard Plan ES-5D. Minor HMA and concrete backfill per Caltrans Standard Specifications and these Special Provisions. “T” trench final surface restoration width of minor HMA shall be 1.5 feet wide.

2.05 PULL BOXES

A. Pull boxes shall conform to STD 730 of the City Traffic Detail Drawings, Volume 1, Section 3-G of the City Traffic Design Standards, these Special Provisions and Section 86-2.06 of the Caltrans Standard Specifications.

B. Vandal proof devices shall be installed in secured pull boxes, McCain M42075, Madruga Iron Works, Inc. or equivalent.

2.06 CONDUCTORS

A. All conductors for traffic signal shall conform to Section 86-2.08 of the Caltrans Standard Specifications, Volume 1, Section 3-H of the City Traffic Design Standards, as shown on the plans, or as specified herein.

2.07 WIRING

A. Wiring shall conform to Section 86-2.09 of the Caltrans Standard Specifications and Volume 1, Section 3-I of the City Traffic Design Standards.

2.08 BONDING AND GROUNDING

A. Bonding and grounding shall conform to the provisions in Section 86-2.10, "Bonding and Grounding", of the Caltrans Standard Specifications.

B. Grounding jumper shall be attached by a 3/16-inch or larger brass bolt in the standard and shall be run to the ground. Grounding jumper shall be visible after cap has been poured on foundation.

2.09 SERVICE

A. Electrical service shall be per STD 733A of the City Traffic Detail Drawings. Service cabinet shall be equipped with P.G. & E. approved manual test bypass facilities.

B. The service cabinet shall be a Tesco Type III-BF installed at the location shown on the plans and conform to State Std. Plan ES-2E and Volume 1, Section 3-E of the City Traffic Design Standards.

2.10 CONTROLLER ASSEMBLIES

A. Controller assemblies shall include an Lightguard Smart Crosswalk Dual System Power Control Unit (PCU)), or equal approved by the Engineer, solid state controller with Type G cabinet at all IRWL system(s) and RRFP system(s) locations, as indicated in the plans, and shall conform to Volume 1, of the City Traffic Design Standards.

B. The Contractor shall construct the controller cabinet foundation (including furnishing and installing anchor bolts), shall install the controller cabinet on the said foundation, and shall make all field wiring connections to terminal blocks in the controller cabinet. The foundation for the Type G cabinet shall conform to State Standard Plan ES-3C. The controller cabinet shall be mounted no closer than four feet from the service cabinet.

C. To allow for proper testing of equipment and adjustment of work schedules, the Contractor shall give a minimum of one week's notice to the Signal Section Supervisor prior to:

1. Turning IRWL or RRFB systems ON

D. The Contractor shall be responsible for and do all field wire hookup, including energizing the system and placing it in operation.

2.11 SERVICE CABINET

A. Service cabinet shall be a Tesco Model 28 - 105 Type III BF or approved equal. Foundation for service cabinets shall be constructed in accordance with State Standard ES-2E.

B. Electrical service wiring shall be per STD 731 of the City Traffic Detail Drawings.

C. All signal cabinet wiring shall be completed in a workmanship like manner, clean and neat in appearance. All wiring shall be labeled.

2.12 PEDESTRIAN PUSH BUTTON SYSTEM

A. Pedestrian pushbutton systems must conform to Section 86 of the 2010 Caltrans Standard Specifications, Caltrans Standard Plan ES-5C and ES-7A and Volume 1, Section 3-M of the City Traffic Design Standards.

B. Pedestrian pushbuttons shall be Polara Model XAV2E-LED with integrated LED display and audible message and control unit (XAVCU2) to be mounted within the service cabinet, or equal approved by the engineer.

C. The pushbutton LED group display shall be yellow and flash in sync with the flashing beacons upon actuation.

D. The pushbutton unit shall come equipped with a digital audio synthesizer so that customized voice message “the crosswalk warning lights have been activated,” or other message approved by the Engineer, can be used. The audio must be capable of proportional volume controlled output with a 45-decibel maximum and self-adjust from minimum volume settings based upon noise level.

E. Prior to programming the custom audio message, submit to the Engineer for review.

2.13 IN-ROADWAY WARNING LIGHT SYSTEM

A. **In-Roadway Warning System(s) shall** comply with National Electric Code (NEC) Article 300, Chapter 7, Section 725-3 rated as “Low Voltage”, and these Special Provisions. The System(s) shall be installed to manufacturers recommended specifications and conform to federal, state or local regulations. The system(s) shall also meet the requirements for In-Roadway Warning Light systems as found in the latest edition of the California MUTCD, Section 4N.

B. All material shall be new and of good quality. All workmanship shall be within the Manufacturer’s Technical Specifications and Installation Manual. The Contractor shall guarantee the products and work to be free of defective materials or workmanship for a period of at least two (2) years from the date of final payment is approved by the City of Rohnert Park.

C. The installed system(s) shall include:

1. LED Signal Heads – LGS-9x
2. 10” Baseplate – LGS-SD10-C
3. Power Control Unit (PCU) – LGS-PCU-AC or LGS-PCU/A DUAL
4. System Activation – LGS-PBA-POL-PAIR
5. LED Illuminated Signs – LGS-W63/S-2-1-B

D. Concrete Installation
1. Conduit shall be 2" metal or PVC, and should be placed 3" to 4" below the surface of the roadway. "T" connections with a stub that extends at least 1" above the surface (after concrete is poured) shall be installed at each location where an In-Roadway Warning Light Base Plate will be placed.
2. A circular wooden plug cut-out 1 1/8" thick and (10.25" in diameter for the 10" Base Plate & 14.25" in diameter for the 14" Base Plate) with a center hole (the same diameter as the conduit stub protruding up from the road bed) will be placed over the conduit stub during the concrete pour to create a depression to install the base plate in when concrete is dry. The wooden plug is removed after the concrete is dry. The extended conduit can then be cut flush to the surface inside the depression before installing the Base Plate.

E. Crossing Power Control Unit (PCU):
1. PCU shall conform to the provisions in the CA MUTCD and these Special Provisions.
2. The PCU shall be installed within the Service Enclosure, at the locations shown on the plans. The PCU shall be a LightGuard LGS-PCU-AC, or approved equivalent, meeting the following requirements. Inclusive of the following upgrade kits for use of the system warning beacons and dual-zone activation (LGS-PCU/A DUAL). Shall be installed per the manufacturer’s specifications.
   a. Battery Back-Up
   b. Lightning Surge Protection
   c. Internal Branch Circuit Protection
   d. Mounts to within Service Enclosure
   e. 120 VAC Single Phase or 240 VAC Two Phase
   f. 8-Bit Micro-controller With RS232 Serial Data Port

F. System Notification Capable, Remote Data Available: The system shall be able to automatically transmit system notifications to the board mounted 8-bit microcomputer by an interconnect RS 232 protocol. Usage data stored in the system microcomputer showing activation time and dates shall be accessible via the network.

G. The system shall be able to transmit this data via RS 232 port. The system shall include a logic control device designed to run all timing parameters, keep count of the number of valid activations received and monitor the system for basic faults. The logic device shall include a 2 line by 20-character LCD display. The device shall be capable of displaying messages to help the user determine the status of the system. Messages are displayed on the screen based user selections. Either the onsite or remote user shall be able to view messages being displayed.

H. When triggered by a push button input, the unit will commence operation. A panel indicator shall indicate that the output is enabled. Run time shall be re-trigger able, meaning that if another button input is received while the system is in the run mode, the elapsed time function shall be reset to 0, and the count started over again which has the

effect of extending the run time of the unit. The normal flash rate for the lamps will be set to 50-60 flash cycles per minute.

I. The device shall allow the user to modify the timing parameters for run time by using the LCD screen and the user buttons on the face of the device. User activations for crosswalk applications shall allow for the programming of run times from 1-99 seconds in duration. The device shall provide a minimum of one- 10A circuit to drive the flasher circuit. The device shall also be capable of accepting replacement module for field upgrade of the software.

J. The logic control device software shall be capable of running diagnostics from a user push button located on the control panel or by a remote operator. During the diagnostic mode, the unit will display a message on the LCD screen indicating it is in this mode. The software shall also allow one input to be a manual override function for special event use in which continuous operation would be needed.

K. During manual override, the system shall display a message to this effect on the LCD screen so that the user is aware of the operational mode. For crosswalk applications, the unit shall be capable of incorporating time clock based operation of the flashers for applications such as school crossings. The software shall allow a basic program to be run that provides up to 3 on cycles per day. A data sheet on the device shall be included with the bid submission or the response shall be considered incomplete.

2.14 RECTANGULAR RAPID FLASHING BEACON SYSTEM – ENTERPRISE DRIVE

Rectangular Rapid Flashing Beacon (RRFB) System assembly shall consist of supporting structure (pole, concrete foundation, sign supports), flashing bar indicators and associated mounting equipment, pedestrian push button, signage, pull boxes, and electrical components. The assembly shall include the signs, RRFB flashing bars, the pedestrian push buttons and pedestrian push button control unit and pedestrian push button post(s), and signal posts. RRFB assemblies shall conform to all provisions documented within the MUTCD Interim Approval IA-11, Section 56, "Signs" and Section 86 “Electrical Systems” of the Standard Specifications, Standard Plans, and these Special Provisions.

A. Rectangular Rapid Flashing Beacons:

1. The RRFB shall be a LightGuard LGS-RRFB-F, or approved equivalent, meeting the following requirements:

Power:	5 watt
Operating Temp:	0 degrees C to + 50 degree C
Operating Voltage:	12 VDC
Enclosure Type:	NEMA 4 (Aluminum)
Enclosure Color:	Black
Enclosure Size: 5” H x 24” W x 2” D	
Daylight Visibility:	1000 ft
Night Visibility:	2000 ft

2. The RRFB indications shall be actuated by pedestrian push buttons that shall have an integrated LED indicator directed toward pedestrians waiting to cross and a customizable audible message and compliant with the requirements outlined in CA MUTCD Section 4E.

All RRFB flash indications in the system shall initiate activation simultaneously within 120msec of actuation. The period of operation of the RRFB flash indication shall be based on CA MUTCD procedures for timing of pedestrian clearance times for pedestrian signals. In order to address field conditions that may not be consistent with predetermined pedestrian clearance times, the duration of RRFB flash indication shall be adjustable in the field to one second increments. If additional actuation occurs while the system is activated, the flash duration shall reset. That is, given an established flash duration of 15 seconds, if an additional actuation occurs after the RRFB has been activated for 10 seconds, the flash shall remain active for an additional 15 seconds, or 25 seconds in total.

B. Supporting Structures and Signs:

1. Posts, concrete foundations, and sign supports, associated with the RRFB assembly shall be consistent with details shown on the plans and the 2010 Caltrans Standard Plans and Specifications. Posts shall comply with Section 86-2.04 "Standards, Poles, Steel Pedestals, and Posts" of the 2010 Caltrans Standard Specifications. Concrete for foundations must conform to Section 90-2 "Minor Concrete" of the 2010 Caltrans Standard Specifications.Signs:
2. Signage required for the RRFB assembly shall be consistent
3. with materials requirements outlined within subsection 4.18 "Signs" of these Special Provisions.

C. Crossing Power Control Unit (PCU):

1. The contractor shall provide a PCU compatible with RRFB operation. The PCU with 12 VDC output upgrade kit and audible crosswalk upgrade (sound card) compatible with pushbuttons to be installed in the new service cabinet locations, as shown on the plans, shall conform to the provisions in the CA MUTCD and these Special Provisions. A newly-installed PCU shall be a LightGuard LGS-PCU-AC with Lightguard LGS-DC-OUT-UPGD upgrade kit and audible crosswalk upgrade (sound card) compatible with pushbuttons, or approved equivalent, installed per the manufacturer's specifications, and meet the following requirements:

   Battery Back-Up
   Lightning Surge Protection
   Internal Branch Circuit Protection
   Mounts within specified Service Enclosure
   120 VAC Single Phase or 240 VAC Two Phase
   8-Bit Micro-controller With RS232 Serial Data Port

2. The installed system shall comply with National Electric Code (NEC) Article 300, Chapter 7, Section 725-3 rated as "Low Voltage". The System shall be installed to manufacturers recommended specifications and conform to federal, state or local regulations.

3. The system shall be able to automatically transmit system notifications to the board mounted 8-bit microcomputer by an interconnect RS 232 protocol. Usage data stored in the system microcomputer showing activation time and dates shall be accessible via a user push button located on the control panel.

4. The system shall be able to transmit this data via RS 232 port. The system shall include a logic control device designed to run all timing parameters, keep count of the number of valid activations received and monitor the system for basic faults. The logic device shall include a 2 line by 20-character LCD display. The device shall be capable of displaying messages to help the user determine the status of the system. Messages are displayed on the screen based user selections. The onsite user shall be able to view messages being displayed.

5. Flashing rates provided by the PCU shall be consistent with rates specified within MUTCD Interim Approval IA-11. In order to adjust for future revisions to MUTCD or State guidelines regarding flash patterns, the PCU shall have the ability to reconfigure these flash patterns. The device shall provide a minimum of one- 10A circuit to drive the flasher circuit. The device shall also be capable of accepting replacement module for field upgrade of the software.

6. The logic control device software shall be capable of running diagnostics from a user push button located on the control panel. During the diagnostic mode, the unit will display a message on the LCD screen indicating it is in this mode. The software shall also allow one input to be a manual override function for special event use in which continuous operation would be needed.

7. During manual override, the system shall display a message to this effect on the LCD screen so that the user is aware of the operational mode. For crosswalk applications, the unit shall be capable of incorporating time clock based operation of the flashers for applications such as school crossings. The software shall allow a basic program to be run that provides up to 3 on cycles per day.

2.15 RECTANGULAR RAPID FLASHING BEACON SYSTEM – ENTERPRISE-SEED FARM AND SEED FARM

Rectangular Rapid Flashing Beacon (RRFB) System assembly shall consist of supporting structure (pole, concrete foundation, sign supports), flashing bar indicators and associated mounting equipment, pedestrian push button, signage, pull boxes, and electrical components. The assembly shall include the signs, RRFB flashing bars, the pedestrian push buttons and pedestrian push button control unit and pedestrian push button post(s), and signal posts. RRFB assemblies shall conform to all provisions documented within the MUTCD Interim Approval IA-11, Section 56, "Signs" and Section 86 “Electrical Systems” of the Standard Specifications, Standard Plans, and these Special Provisions. Warranty of 3 years, unconditional.

A. Rectangular Rapid Flashing Beacons:

1. The RRFB shall be a TAPCO-XLS-RRFB, or approved equivalent, meeting the following requirements:

Operating Voltage:	12 VDC
Enclosure Type:	NEMA 3R (Aluminum)
Enclosure Size: 15” H x 12.5” W x 9.8” D	
Daylight Visibility:	1000 ft
Night Visibility:	5280 ft

2. The RRFB indications shall be actuated by pedestrian push buttons that shall have an integrated LED indicator directed toward pedestrians waiting to cross and a customizable audible message and compliant with the requirements outlined in CA MUTCD Section 4E.

All RRFB flash indications in the system shall initiate activation simultaneously within 120msec of actuation. The period of operation of the RRFB flash indication shall be based on CA MUTCD procedures for timing of pedestrian clearance times for pedestrian signals. In order to address field conditions that may not be consistent with predetermined pedestrian clearance times, the duration of RRFB flash indication shall be adjustable in the field to one second increments. If additional actuation occurs while the system is activated, the flash duration shall reset. That is, given an established flash duration of 15 seconds, if an additional actuation occurs after the RRFB has been activated for 10 seconds, the flash shall remain active for an additional 15 seconds, or 25 seconds in total.

B. Supporting Structures and Signs:

1. Posts, concrete foundations, and sign supports, associated with the RRFB assembly shall be consistent with details shown on the plans and the 2010 Caltrans Standard Plans and Specifications. Posts shall comply with Section 86-2.04 “Standards, Poles, Steel Pedestals, and Posts” of the 2010 Caltrans Standard Specifications. Concrete for foundations must conform to Section 90-2 “Minor Concrete” of the 2010 Caltrans Standard Specifications.Signs:
2. Signage required for the RRFB assembly shall be consistent
3. with materials requirements outlined within subsection 4.18 “Signs” of these Special Provisions.

C. Crossing Power Control Unit (PCU):

1. The contractor shall provide a PCU compatible with RRFB operation. The PCU with 12 VDC output and audible crosswalk (sound card) compatible with pushbuttons to be installed in the new service cabinet locations, as shown on the plans, shall conform to the provisions in the CA MUTCD and these Special Provisions. A newly-installed PCU shall be a TAPCO XL2 and audible crosswalk upgrade (sound card) compatible with pushbuttons, or approved equivalent, installed per the manufacturer’s specifications, and meet the following requirements:
   a. Integrated constant-current LED drivers with a minimum of two-channel output for driving one or two RRFB units;
   b. Multiple programmable function options:
   c. Run for a programmable time period when activated via switch, button contact closure or when triggered from an external sensor such as a wireless transmitter, radar, presence detector or loop detector with a compatible sensor output;
   d. Integrated Real Time Clock (RTC) with on-board battery backup;
   e. RS232 communication for programming with Windows-based software;
   f. Two General Purpose Inputs and Outputs (GPIO);
   g. Seamlessly integrate with the 900 MHz FHSS wireless transceiver to form a network of connected devices;
   h. Independently replaceable of other control panel components;
   i. Monitor internal temperature;

j. Operate between the temperatures of -40° to +176°F (-40° to +80°C)

2. The installed system shall comply with National Electric Code (NEC) Article 300, Chapter 7, Section 725-3 rated as “Low Voltage”. The System shall be installed to manufacturers recommended specifications and conform to federal, state or local regulations.

3. The system shall be able to automatically transmit system notifications to the board mounted 8-bit microcomputer by an interconnect RS 232 protocol. Usage data stored in the system microcomputer showing activation time and dates shall be accessible via a user push button located on the control panel.

4. The system shall be able to transmit this data via RS 232 port. The system shall include a logic control device designed to run all timing parameters, keep count of the number of valid activations received and monitor the system for basic faults. The logic device shall include a 2 line by 20-character LCD display. The device shall be capable of displaying messages to help the user determine the status of the system. Messages are displayed on the screen based user selections. The onsite user shall be able to view messages being displayed.

5. Flashing rates provided by the PCU shall be consistent with rates specified within MUTCD Interim Approval IA-11. In order to adjust for future revisions to MUTCD or State guidelines regarding flash patterns, the PCU shall have the ability to reconfigure these flash patterns. The device shall provide a minimum of one- 10A circuit to drive the flasher circuit. The device shall also be capable of accepting replacement module for field upgrade of the software.

6. The logic control device software shall be capable of running diagnostics from a user push button located on the control panel. During the diagnostic mode, the unit will display a message on the LCD screen indicating it is in this mode. The software shall also allow one input to be a manual override function for special event use in which continuous operation would be needed.

7. During manual override, the system shall display a message to this effect on the LCD screen so that the user is aware of the operational mode. For crosswalk applications, the unit shall be capable of incorporating time clock based operation of the flashers for applications such as school crossings. The software shall allow a basic program to be run that provides up to 3 on cycles per day.

D. 900 MHz FHSS Wireless Transceiver

1. Seamlessly integrate with the RRFB controller to ensure sequential activation of other radio-equipped devices in the system
2. Include an integrated LCD and two user-interface buttons for setup and troubleshooting, including readouts of flash duration (timeout), battery conditions, and LED testing functionality
3. Include two LED indicators for status and troubleshooting
4. Capable of operating as a Parent (Gateway) or Child (Node or Repeater)
5. Capable of providing site-survey data for verification of signal strength between network devices

6. Include network-wide modification of sign controller settings and output durations, using programmability from any networked transceiver without the use of additional equipment or software
7. Synchronize the system components to activate the indications within 120msec of one other and remain synchronized throughout the duration of the flash (timeout) cycle.
8. Operate on the license-free ISM band
9. Comply with part 15 of FCC rules
10. Operate from 3.3VDC to 15VDC
11. Shall be, in the unlikely event of failure, replaceable independently of other components.

E. Solar Charge Controller
1. Utilize an intelligent 4-stage algorithm and Pulse Width Modulation (PWM) for battery charging
2. Automatically provide Low Voltage Disconnect (LVD) to protect batteries when needed
3. Automatically provide Load-Reconnection once battery levels have been restored to an acceptable value
4. Protect against and automatically recover from: short circuit, overload, reverse polarity, high temperature, lightning and transient surge, as well as voltage spikes
5. Be independently replaceable of other control panel components
6. Operate from -40° to +140°F (-40° to +60°C)

F. Battery Power
1. A nominal output voltage of 12VDC and a capacity of 48Ah at a C/100 discharge rate
2. Valve regulated, gelled electrolyte
3. Sealed and spill proof
4. Terminals that accept screw or bolts for secure wiring connections.
5. Replaceable independently of other components.
6. Fused for short circuit protection

G. Solar Panel
1. IEC61215, TUV, and UL 1703 certified.
2. Operate at 12VDC nominal with a maximum output rating of 85W.
3. Include an IP65 rated junction box with terminals sized for 8-16AWG wire.
4. Anodized aluminum frame, high-transmission 1/8" tempered glass, with silicon cells encapsulated in double-layer EVA, and with a white polymer backing.
5. Affixed to an aluminum plate and bracket, adjustable at an angle of 45°- 60° to facilitate adjustment for maximum solar collection to optimize battery charging.
6. Attached to a panel, plate and bracket to facilitate mounting and adjustment for maximum solar collection and optimal battery strength.
7. Maximum power voltage 18.18V
8. Maximum power current 3.1A
9. Short circuit current 3.31A
10. Open circuit voltage 22.1V
11. Operate from -40° to +194°F (-40° to +90°C)

PART 3 EXECUTION

3.01 EXCAVATING AND BACKFILL

A. All trench spoils shall be removed from the work area as they are generated.

B. Native material shall not be used as trench backfill.

C. Installations within existing roadway section:

D. Where conduit containing conductors of 100 volts or less is installed parallel and adjacent to the existing gutter lip, the trench shall be approximately 2 inches wider than the outside diameter of the conduit and shall not exceed 6 inches in width. Trench depth shall not exceed conduit trade-diameter plus 10 inches, except that at pull boxes the trench may be hand dug to required depth. The conduit shall be placed in the bottom of the trench with the top of the conduit a minimum of 12 inches below finish grade.

E. When conduit containing conductors of 100 volts or less is not installed adjacent to the lip of gutter it shall be installed with a minimum of 18 inches of cover.

F. All conduits containing conductors of more than 100 volts or crossing road shall be installed with a minimum of 24 inches of cover.

G. Where existing facilities prevent installing conduit with 24 inches of cover, the Contractor shall depress the new conduit under the existing facilities without exception.

H. Trench backfill and surfacing for trenches shall conform to City STD.-215 or as shown on the plans.

I. Installations within new roadway pavement sections (typical):

J. All conduits in the roadway shall be installed with a minimum of 42 inches of cover.

3.02 PUSHBUTTON SYSTEMS (ASSEMBLIES)

A. Install per the manufacturer’s written installation instructions and requirements, the plans, Caltrans Standard Specifications and Plans, and these Special Provisions.

3.03 IN-ROADWAY WARNING LIGHT SYSTEM

A. Install per the manufacturer’s written installation instructions and requirements, the plans, Caltrans Standard Specifications and Plans, and these Special Provisions.

3.04 RECTANGULAR RAPID FLASHING BEACON SYSTEM

A. Install per the manufacturer’s written installation instructions and requirements, the plans, Caltrans Standard Specifications and Plans, and these Special Provisions.

3.05 FUNCTIONAL TESTING

A. The functional test for each system shall consist of not less than 48 hours of continuous, satisfactory operation. If unsatisfactory performance of the system develops, the

conditions shall be corrected and the test shall be repeated until the 48 hours of continuous, satisfactory operation is obtained.

END OF SECTION

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PART 5 – DRAWINGS

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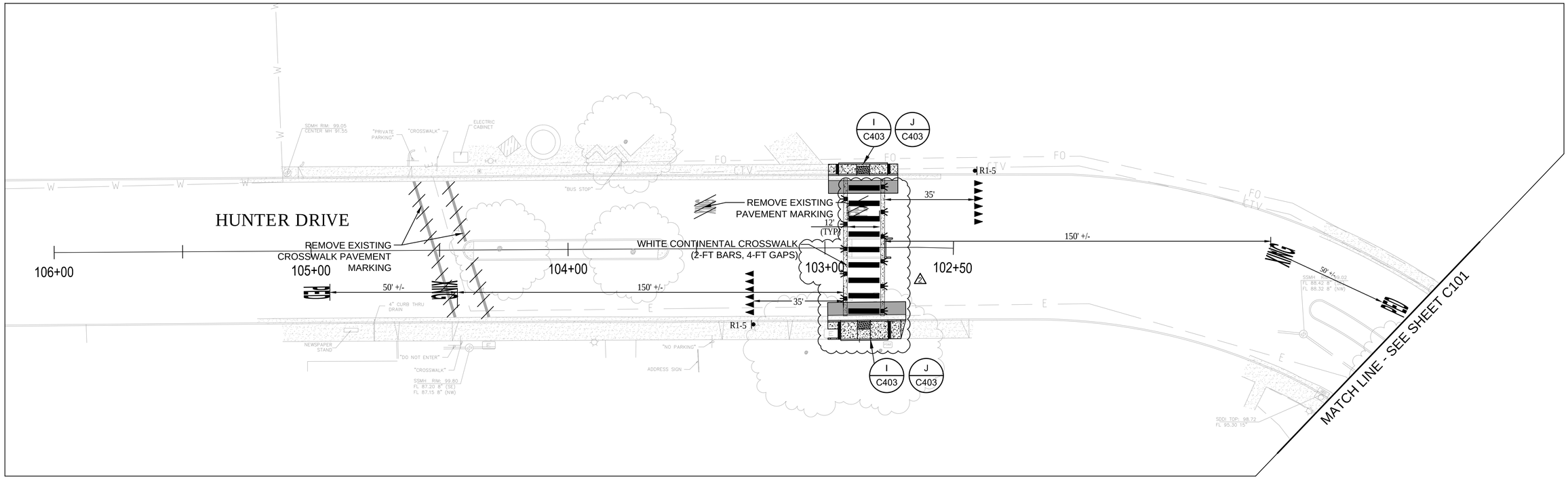

PLAN

SCALE: 1"=20'

STRIPING AND SIGNING GENERAL NOTES

1. ALL SIGNING, STRIPING, PAVEMENT MARKINGS, AND MARKERS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CALTRANS STANDARD PLANS AND STANDARD SPECIFICATIONS, AND VOLUME 1, SECTION 1 & 2 OF THE CITY TRAFFIC DESIGN STANDARDS. CONTRACTOR SHALL LAYOUT ALL SIGNING, STRIPING, AND PAVEMENT MARKINGS IN THE FIELD 48 HOURS PRIOR TO FINAL (PERMANENT) INSTALLATION FOR APPROVAL BY THE ENGINEER.
2. CONTRACTOR TO PROVIDE TEMPORARY PAVEMENT MARKINGS UNTIL PROPOSED STRIPING IS INSTALLED.
3. ALL DELINEATION AND MARKINGS SHALL BE THERMOPLASTIC PER SECTION 84 OF THE CALTRANS STANDARD SPECIFICATIONS. RAISED PAVEMENT MARKERS SHALL BE PER SECTION 85 OF THE CALTRANS STANDARD SPECIFICATIONS.
4. CONTRACTOR SHALL REMOVE EXISTING SIGNS, STRIPING, MARKINGS, AND MARKERS THAT CONFLICT WITH PROPOSED SIGNS, STRIPING, MARKINGS, AND MARKERS, AS INDICATED. 2
5. CONTRACTOR RESPONSIBLE FOR REPLACING EXISTING TO REMAIN OR PROPOSED SIGNING, STRIPING, MARKINGS, AND MARKERS DAMAGED DURING CONSTRUCTION.

LEGEND

PED — "PED" LEGEND PER CALTRANS STD PLAN A24D

XING — "XING" LEGEND PER CALTRANS STD PLAN A24D

STOP — "STOP" LEGEND PER CALTRANS STD PLAN A24D

YIELD LINE PER CALTRANS STD PLAN A24E

COMBINED SIGN AND PEDESTRIAN PUSH BUTTON POLE (SEE CALTRANS STANDARD PLAN ES-7A) WITH ENHANCED SIGN

IN-ROADWAY WARNING LIGHT PER 1/TS102

SCALE
0' 20' 40' 60'
1" = 20'

LOCATION OF EXISTING UTILITIES AND STRUCTURES ARE FROM AVAILABLE RECORD MAPS. EXACT LOCATION AND COMPLETENESS ARE NOT GUARANTEED. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) AT (800) 227-2600 OR DIAL 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION AND POTHOLE FOR EXACT LOCATION.

MARK	DATE	DESCRIPTION	BY	APPR.
2	12/07/2016	IN-GROUND LIGHTING MODIFICATIONS		

REGISTERED PROFESSIONAL ENGINEER WILLIAM M. SILVA C58235 Exp. 6/30/18 CIVIL STATE OF CALIFORNIA

ROHNERT PARK CALIFORNIA 1962

DSGN	JZ
DRWN	JZ
CHKD	WS
SCALE	NONE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

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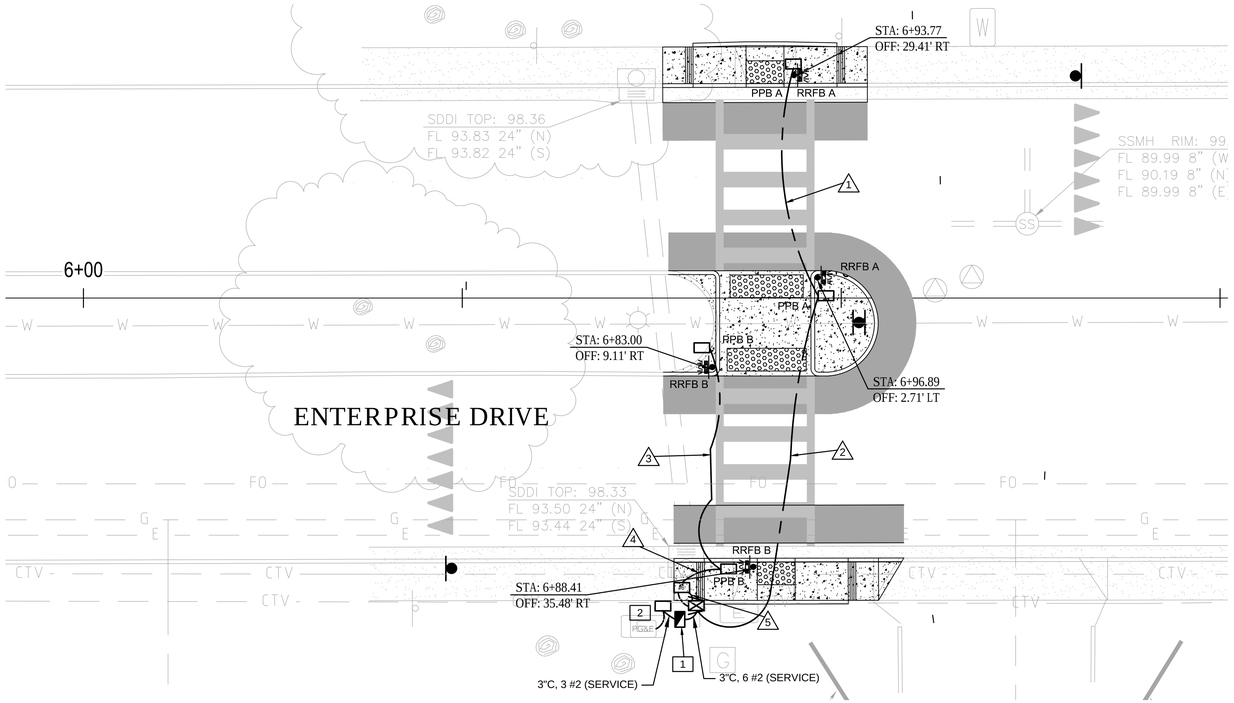
CITY OF ROHNERT PARK
ROHNERT PARK STREET SMART

CIVIL IMPROVEMENT PLAN - HUNTER DRIVE

PROJECT NO. 8412063

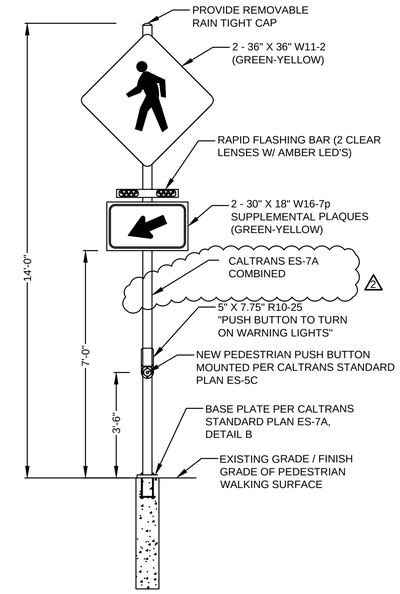
DRAWING NO. C102

SHT 6 OF 22



PLAN

SCALE: 1"=10'



1 RECTANGULAR RAPID FLASHING BEACON (RRFB) SYSTEM WITH PEDESTRIAN PUSH BUTTON

NOT TO SCALE

CONDUCTOR AND CONDUIT SCHEDULE

CONDUCTOR DESIGNATION	NO. OF CONDUCTORS RUN NUMBER 1	2	3	4	5		
NO. 14 CONDUCTORS							
RRFB A	2	4			4		
RRFB B			2	4	4		
SPARES	2	4	2	4	8		
PPB COMMON	1	2	1	2	4		
TOTAL NO. 14 CONDUCTORS	**5**	**10**	**5**	**10**	**20**		
CABLES							
PPB A*	2	4			4		
PPB B*			2	4	4		
TOTAL CABLES	1	2	1	2	4		
NO. 12 CONDUCTORS							
EQUIPMENT GROUND	1	1	1	1	2		
TOTAL NO. 12 CONDUCTORS	1	1	1	1	2		
CONDUIT — NEW / EXISTING	N	N	N	N	N		
CONDUIT — QUANTITY	1	1	1	1	2		
CONDUIT — SIZE	3"	3"	3"	3"	3"		

* 8 CONDUCTOR #18 AWG – BELDEN 27601A, OR EQUAL

TRAFFIC SIGNAL GENERAL NOTES

1. ALL PULL BOXES SHALL BE No.5 UNLESS NOTED ON PLAN.
2. SIGN/RRFB LOCATIONS SHALL BE MARKED IN THE FIELD 5 DAYS IN ADVANCE OF VERIFICATION. POLES AND PULL BOXES SHALL BE VERIFIED BY THE ENGINEER PRIOR TO INSTALLATION.
3. THE WORK ON THESE PLANS SHALL BE PERFORMED IN CONFORMANCE WITH THE LATEST EDITIONS OF THE CALTRANS STANDARD PLANS, STANDARD SPECIFICATIONS, SIGN SPECIFICATION SHEETS, CITY TRAFFIC STANDARDS, AND THE CALIFORNIA MUTCD.
4. THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY.
5. CONTRACTOR SHALL VERIFY OVERHEAD AND UNDERGROUND CLEARANCE WITH ALL UTILITY COMPANIES PRIOR TO START OF WORK.
6. PULL BOXES FOR SIGNAL STANDARDS SHALL BE LOCATED WITHIN FIVE FEET OF THE STANDARD.
7. ALL PEDESTRIAN PUSH BUTTON SYSTEMS SHALL BE POLARA MODEL XAV2E-LED WITH XAVCU2 CONTROL UNIT MOUNTED IN CONTROLLER CABINET, OR EQUAL (APPROVED BY ENGINEER).
8. CONTRACTOR SHALL FURNISH AND INSTALL FOUNDATIONS AND ALL ANCILLARY HARDWARE (INCLUDING BOLTS, NUTS, MOUNTINGS, ETC.) FOR A COMPLETE INSTALLATION PER THESE PLANS.
9. AS-BUILT OR RECORD DRAWINGS SHALL BE PROVIDED TO THE CITY OF ROHNERT PARK AT THE CLOSE OF THE PROJECT.
10. ALL NEW SIGNAL POLES SHALL BE HOT-DIPPED GALVANIZED.
11. CONTRACTOR SHALL PROVIDE ALL CONDUCTORS NECESSARY TO PERFORM ALL FUNCTIONS REQUIRED.
12. CONDUITS SHALL HAVE 36 INCHES MINIMUM COVER, OR BE 6-INCHES BELOW SUBGRADE ELEVATION, WHICHEVER IS DEEPER, IN EXISTING AND NEW ROADWAY SECTIONS. CONDUITS SHALL HAVE 24 INCHES MINIMUM COVER UNDER EXISTING AND NEW SIDEWALKS AND EXISTING/NEW LANDSCAPE AREAS. WHERE NEW CONDUIT CONFLICTS WITH EXISTING UTILITIES, NEW CONDUIT SHALL BE INSTALLED UNDER EXISTING UTILITIES WITHOUT EXCEPTION.

CONSTRUCTION NOTES

1. FURNISH AND INSTALL IN CONTROLLER CABINET; LIGHT GUARD POWER CONTROL UNIT (PCU), "DC-OUT" UPGRADE KIT, AND DUAL ZONE UPGRADE KIT. INSTALL POLARA XAVCU 2 CONTROL UNIT.
2. PROVIDE CONDUIT AND CONDUCTORS TO NEW PULLBOX ADJACENT TO PG&E POINT OF CONNECTION. CONTRACTOR TO COORDINATE SERVICE CONNECTION WITH PG&E, (707) 579-6300.

STANDARD NOTES

(#) (N) CONDUCTOR SCHEDULE

LEGEND

- #6 — (N) PULL BOX NO. 6 (SEE CALTRANS STANDARD PLAN ES-8)
- (N) PULL BOX NO. 5 (SEE CALTRANS STANDARD PLAN ES-8)
- (N) TYPE G CONTROLLER CABINET PEDESTAL AND FOUNDATION PER CALTRANS STANDARD PLANS ES-3A AND ES-3C
- (N) TYPE III-BF SERVICE EQUIPMENT ENCLOSURE AND FOUNDATION PER CALTRANS STANDARD PLAN ES-2E. THE ENCLOSURE SHALL BE ALUMINUM. DOOR SHALL FACE CROSSING
- (N) TRAFFIC SIGNAL CONDUIT
- INSTALL NEW SIGN, POST, AND FOUNDATION PER CITY STANDARDS 701, 702, AND 704A. SIGN PER CA MUTCD DETAIL.
- XAV — COMBINED PEDESTRIAN PUSH BUTTON AND SIGN POST PER WITH RECTANGULAR RAPID FLASHING BEACON (RRFB) SYSTEM PER (1/-)
- PG&E — POINT OF PROPOSED POWER CONNECTION (COORDINATE & VERIFY WITH PG&E)

N

SCALE

0' 10' 20' 30'

1" = 10'

LOCATION OF EXISTING UTILITIES AND STRUCTURES ARE FROM AVAILABLE RECORD MAPS. EXACT LOCATION AND COMPLETENESS ARE NOT GUARANTEED. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) AT (800) 227-2600 OR DIAL 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION AND POTHOLE FOR EXACT LOCATION.

MARK	DATE	DESCRIPTION	BY	APPR.
2	12/07/2016	RRFB MODIFICATIONS		

REGISTERED PROFESSIONAL ENGINEER WILLIAM M. SILVA C58235 Exp. 6/30/18 CIVIL STATE OF CALIFORNIA

ROHNERT PARK CALIFORNIA 1962

DSGN	JZ
DRWN	JZ
CHKD	WS
SCALE	NONE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

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CITY OF ROHNERT PARK
ROHNERT PARK STREET SMART

RRFB SYSTEM PLAN AND DETAILS - ENTERPRISE DRIVE

PROJECT NO. 8412063

DRAWING NO. TS101

SHT 15 OF 22

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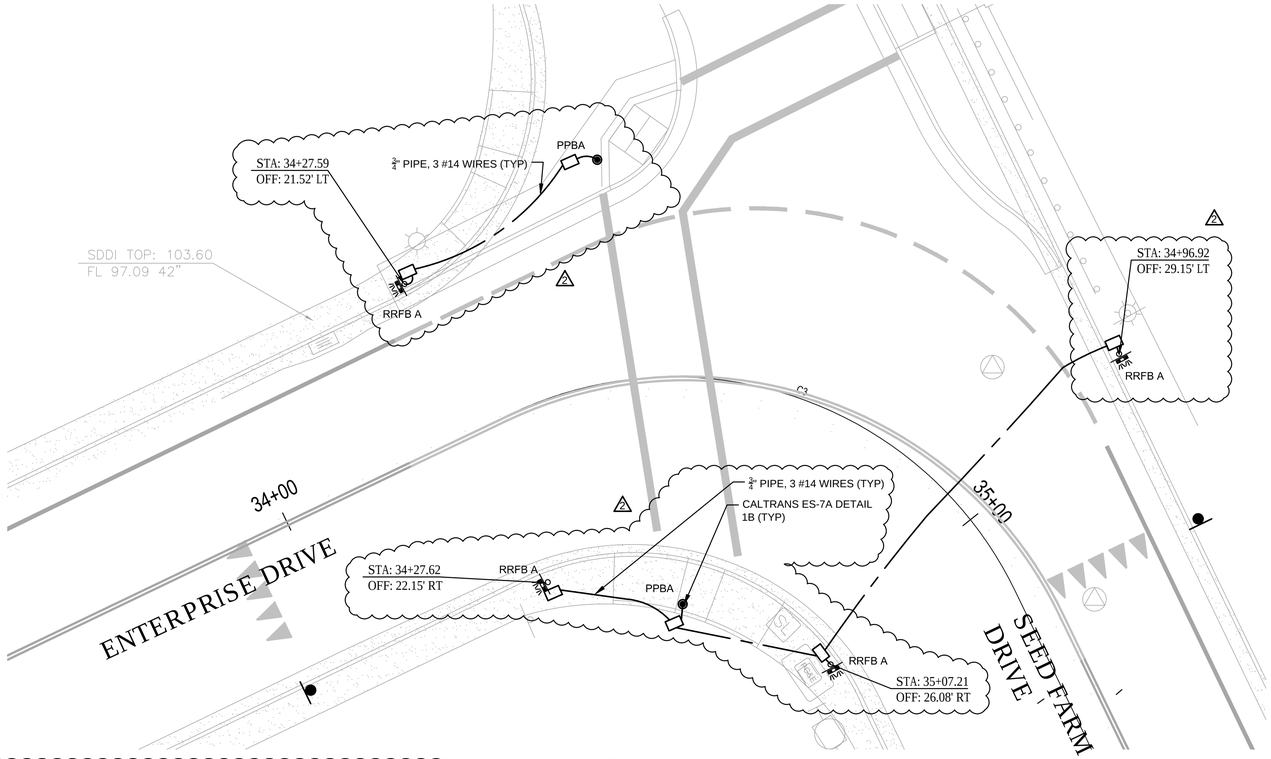
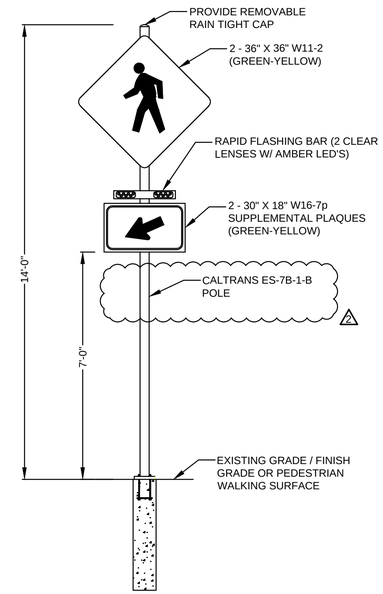


PLAN

SCALE: 1"=10'



1 RECTANGULAR RAPID FLASHING BEACON (RRFB) SYSTEM

NOT TO SCALE

TRAFFIC SIGNAL GENERAL NOTES

1. SIGN/RRFB LOCATIONS SHALL BE MARKED IN THE FIELD 5 DAYS IN ADVANCE OF VERIFICATION. POLES SHALL BE VERIFIED BY THE ENGINEER PRIOR TO INSTALLATION.
2. THE WORK ON THESE PLANS SHALL BE PERFORMED IN CONFORMANCE WITH THE LATEST EDITIONS OF THE CALTRANS STANDARD PLANS, STANDARD SPECIFICATIONS, SIGN SPECIFICATION SHEETS, CITY TRAFFIC STANDARDS, AND THE CALIFORNIA MUTCD.
3. THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY.
4. CONTRACTOR SHALL VERIFY OVERHEAD AND UNDERGROUND CLEARANCE WITH ALL UTILITY COMPANIES PRIOR TO START OF WORK.
5. PULL BOXES FOR SIGNAL STANDARDS SHALL BE LOCATED WITHIN FIVE FEET OF THE STANDARD.
6. AS-BUILT OR RECORD DRAWINGS SHALL BE PROVIDED TO THE CITY OF ROHNERT PARK AT THE CLOSE OF THE PROJECT.
7. ALL NEW SIGNAL POLES SHALL BE HOT-DIPPED GALVANIZED.

CONSTRUCTION NOTES

RRFB-A - FURNISH AND INSTALL TAPCO RECTANGULAR RAPID FLASHING BEACON SYSTEM - SOLAR POWERED 85 WATT XL2

PPBA - PROVIDE WIRELESS COMMUNICATION TO ALL RRFB-A

LEGEND

- #6 — (N) PULLBOX NO.6 (SEE CALTRANS STANDARD PLAN ES-8)
- (N) PULL BOX NO. 5 (SEE CALTRANS STANDARD PLAN ES-8)
- (N) TYPE G CONTROLLER CABINET, PEDESTAL, AND FOUNDATION PER CALTRANS STANDARD PLAN ES-3A AND ES-3C
- (N) TYPE 111-BF SERVICE EQUIPMENT ENCLOSURE AND FOUNDATION PER CALTRANS STANDARD PLAN ES-2E. THE ENCLOSURE SHALL BE ALUMINUM. DOOR SHALL FACE CROSSING
- (N) TRAFFIC SIGNAL CONDUIT
- INSTALL NEW SIGN, POST, AND FOUNDATION PER CITY STANDARDS 701, 702, AND 704A. SIGN PER CA MUTCD DETAIL.
- COMBINED PEDESTRIAN PUSH BUTTON AND SIGN POST WITH RECTANGULAR RAPID FLASHING BEACON (RRFB) SYSTEM PER 1/TS101
- SIGN POST WITH RECTANGULAR RAPID FLASHING BEACON (RRFB) SYSTEM PER 1/-
- PGE — EXISTING PG&E BOX - POINT OF PROPOSED POWER CONNECTION (COORDINATE & VERIFY WITH PG&E)
- PEDESTRIAN PUSH BUTTON ON PEDESTRIAN PUSH BUTTON POST PER CALTRANS REVISED STANDARD PLAN ES-7A

STANDARD NOTES

- # — (N) CONDUCTOR SCHEDULE

SCALE
0' 10' 20' 30'
1" = 10'

N

LOCATION OF EXISTING UTILITIES AND STRUCTURES ARE FROM AVAILABLE RECORD MAPS. EXACT LOCATION AND COMPLETENESS ARE NOT GUARANTEED. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) AT (800) 227-2600 OR DIAL 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION AND POTHOLE FOR EXACT LOCATION.

MARK	DATE	DESCRIPTION	BY	APPR.
2	12/07/2016	RRFB MODIFICATIONS		

REGISTERED PROFESSIONAL ENGINEER WILLIAM M. SILVA C58235 Exp. 6/30/18 CIVIL STATE OF CALIFORNIA

ROHNERT PARK CALIFORNIA 1962

DSGN	JZ
DRWN	JZ
CHKD	WS
SCALE	NONE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"
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CITY OF ROHNERT PARK
ROHNERT PARK STREET SMART

RRFB SYSTEM PLAN AND DETAILS - ENTERPRISE DRIVE AND SEED FARM DRIVE

PROJECT NO. 8412063

DRAWING NO. TS103

SHT 17 OF 22

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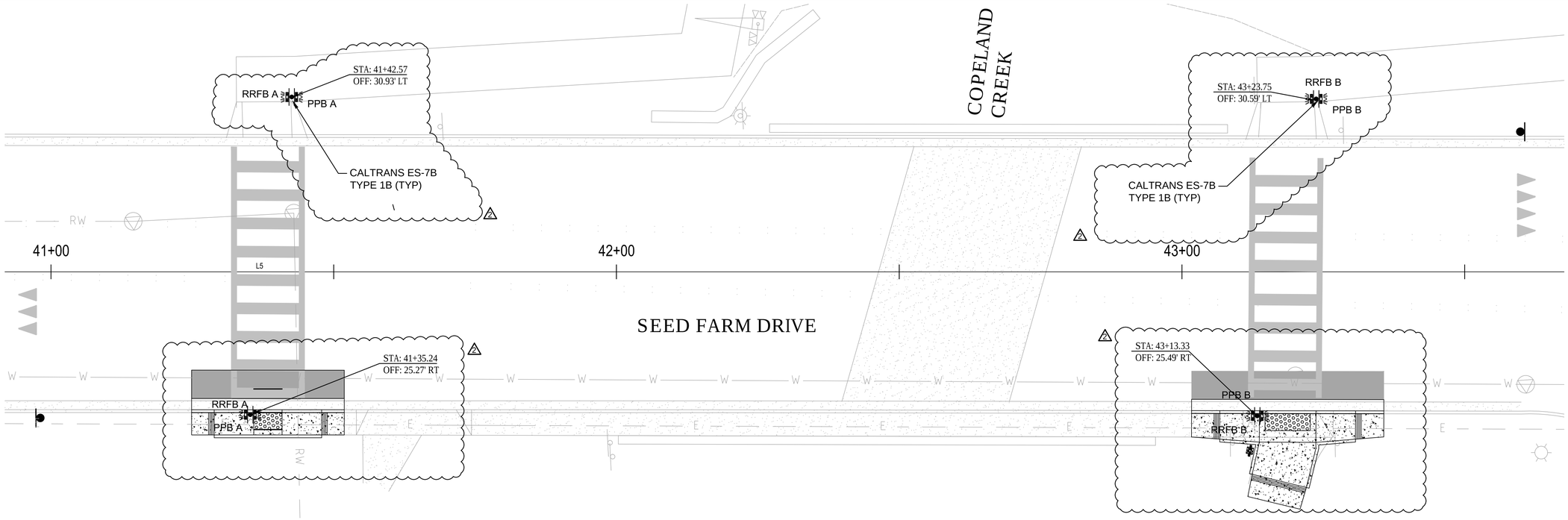

PLAN

SCALE: 1"=10'

TRAFFIC SIGNAL GENERAL NOTES

1. SIGN/RRFB LOCATIONS SHALL BE MARKED IN THE FIELD 5 DAYS IN ADVANCE OF VERIFICATION. POLES AND SHALL BE VERIFIED BY THE ENGINEER PRIOR TO INSTALLATION.
2. THE WORK ON THESE PLANS SHALL BE PERFORMED IN CONFORMANCE WITH THE LATEST EDITIONS OF THE CALTRANS STANDARD PLANS, STANDARD SPECIFICATIONS, SIGN SPECIFICATION SHEETS, CITY TRAFFIC STANDARDS, AND THE CALIFORNIA MUTCD.
3. THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY.
4. CONTRACTOR SHALL VERIFY OVERHEAD AND UNDERGROUND CLEARANCE WITH ALL UTILITY COMPANIES PRIOR TO START OF WORK.
5. CONTRACTOR SHALL FURNISH AND INSTALL FOUNDATIONS AND ALL ANCILLARY HARDWARE (INCLUDING BOLTS, NUTS, MOUNTINGS, LUMINAIRES, ETC.) FOR A COMPLETE SIGNAL STANDARD INSTALLATION PER THESE PLANS.
6. AS-BUILT OR RECORD DRAWINGS SHALL BE PROVIDED TO THE CITY OF ROHNERT PARK AT THE CLOSE OF THE PROJECT.
7. ALL NEW SIGNAL POLES SHALL BE HOT-DIPPED GALVANIZED.
8. CONTRACTOR SHALL PROVIDE ALL CONDUCTORS NECESSARY TO PERFORM ALL FUNCTIONS REQUIRED.

CONSTRUCTION NOTES

RRFB-A/RRFB-B - FURNISH AND INSTALL TAPCO RECTANGULAR RAPID FLASHING BEACON SYSTEM - SOLAR POWERED 85 WATT XL2

PPB-A/PPB-B - PROVIDE WIRELESS COMMUNICATION TO ALL RRFB-A/RRFB-B

LEGEND

- (N) PULL BOX NO. 5 (SEE CALTRANS STANDARD PLAN ES-8)
- #6 (N) PULL BOX NO.6 (SEE CALTRANS STANDARD PLAN ES-8)
- (N) TYPE III-BF SERVICE EQUIPMENT ENCLOSURE AND FOUNDATION PER CALTRANS STANDARD PLAN ES-2E. THE ENCLOSURE SHALL BE ALUMINUM. DOOR SHALL FACE CROSSING
- (N) TRAFFIC SIGNAL CONDUIT
- (N) TYPE G CONTROLLER CABINET, PEDESTAL AND FOUNDATION PER CALTRANS STANDARD PLANS ES-3A AND ES-3C
- INSTALL NEW SIGN, POST, AND FOUNDATION PER CITY STANDARDS 701, 702, AND 704A. SIGN PER CA MUTCD DETAIL.
- COMBINED PEDESTRIAN PUSH BUTTON AND SIGN POST WITH RECTANGULAR RAPID FLASHING BEACON (RRFB) SYSTEM; BACK-TO-BACK MOUNTING OF RAPID FLASHING BARS AND SIGNS (W11-2 & W16-7p) AT MOUNTING HEIGHTS PER 1/TS101
- PGE POINT OF PROPOSED POWER CONNECTION (COORDINATE & VERIFY WITH PG&E)

STANDARD NOTES

(N) CONDUCTOR SCHEDULE

SCALE

0' 10' 20' 30'

1" = 10'

LOCATION OF EXISTING UTILITIES AND STRUCTURES ARE FROM AVAILABLE RECORD MAPS. EXACT LOCATION AND COMPLETENESS ARE NOT GUARANTEED. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) AT (800) 227-2600 OR DIAL 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION AND POTHOLE FOR EXACT LOCATION.

MARK	DATE	DESCRIPTION	BY	APPR.
2	12/07/2016	RRFB MODIFICATIONS		

REGISTERED PROFESSIONAL ENGINEER WILLIAM M. SLAVIN C58235 Exp. 6/30/18 CIVIL STATE OF CALIFORNIA

ROHNERT PARK 1962 CALIFORNIA

DSGN	JZ
DRWN	JZ
CHKD	WS
SCALE	NONE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

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CITY OF ROHNERT PARK

ROHNERT PARK STREET SMART

RRFB SYSTEM PLAN AND DETAILS - SEED FARM DRIVE

PROJECT NO. 8412063

DRAWING NO. TS104

SHT 18 OF 22

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