

GENERAL NOTES

- THIS PLAN SUPERSEDES ALL OTHER PLANS PREVIOUSLY APPROVED BY THE CITY OF CARLSBAD REGARDING IMPROVEMENTS SHOWN ON THIS SET OF PLANS.
- APPROVAL OF THIS PLAN DOES NOT LESSEN OR WAIVE ANY PORTION OF THE CARLSBAD MUNICIPAL CODE, RESOLUTION OF CONDITIONAL APPROVAL, CITY STANDARDS OR OTHER ADDITIONAL DOCUMENTS LISTED HEREON AS THEY MAY PERTAIN TO THIS PROJECT. THE ENGINEER IN RESPONSIBLE CHARGE SHALL REVISE THESE PLANS WHEN NON-COMFORMANCE IS DISCOVERED.
- A RIGHT-OF-WAY PERMIT FROM THE CITY WILL BE REQUIRED FOR ANY WORK IN THE PUBLIC RIGHT OF WAY. PRIOR TO PERMIT ISSUANCE, A CERTIFICATE OF INSURANCE MUST BE FILED NAMING THE CITY OF CARLSBAD AS AN ADDITIONAL INSURED ON THE PERMITTEE'S POLICY IN THE MINIMUM AMOUNT OF \$2,000,000.00 FOR EACH OCCURRENCE OF LIABILITY. THE INSURANCE COMPANY WRITING THE POLICY MUST HAVE A RATING OF "A-" OR BETTER AND A SIZE CATEGORY OF CLASS VII OR BETTER AS ESTABLISHED BY "BEST'S" KEY RATING GUIDE.
- NO WORK SHALL BE COMMENCED UNTIL ALL PERMITS HAVE BEEN OBTAINED FROM THE CITY AND OTHER APPROPRIATE AGENCIES.
- NO REVISIONS WILL BE MADE TO THESE PLANS WITHOUT THE WRITTEN APPROVAL OF THE TRANSPORTATION DIRECTOR, NOTED WITHIN THE REVISION BLOCK, ON THE APPROPRIATE SHEET OF THE PLANS AND TITLE SHEET.
- THE ORIGINAL DRAWING SHALL BE REVISED TO REFLECT AS-BUILT CONDITIONS BY THE CONTRACTOR PRIOR TO FINAL ACCEPTANCE OF THE WORK BY THE CITY.
- ACCESS FOR FIRE AND OTHER EMERGENCY VEHICLES SHALL BE MAINTAINED TO THE PROJECT SITE AT ALL TIMES DURING CONSTRUCTION.
- WHERE TRENCHES ARE WITHIN CITY EASEMENTS, CONTRACTOR IS RESPONSIBLE FOR PROVIDING A SOILS REPORT COMPRISED OF: (A) SUMMARY SHEET, (B) LABORATORY WORK SHEETS AND (C) COMPACTION CURVES, SHALL BE SUBMITTED BY A PROFESSIONAL ENGINEER OF THE STATE OF CALIFORNIA, PRINCIPALLY DOING BUSINESS IN THE FIELD OF APPLIED SOILS MECHANICS. THE SOILS REPORT WILL BE SUBMITTED TO THE CITY ENGINEERING INSPECTOR WITHIN TWO WORKING DAYS OF COMPLETION OF FIELD TESTS. THE WRITTEN FIELD COMPACTION REPORT(S) SHALL BE IMMEDIATELY SUBMITTED TO THE CITY ENGINEERING INSPECTOR UPON COMPLETION OF THE FIELD TESTS.
- A PRECONSTRUCTION MEETING SHALL BE HELD AT THE SITE PRIOR TO THE BEGINNING OF WORK AND SHALL BE ATTENDED BY ALL REPRESENTATIVES RESPONSIBLE FOR CONSTRUCTION, INSPECTION, SUPERVISION, TESTING AND ALL OTHER ASPECTS OF THE WORK. THE CONTRACTOR SHALL SCHEDULE THE MEETING BY CALLING THE INSPECTION LINE AT (760) 438-3891 AT LEAST FIVE (5) WORKING DAYS PRIOR TO STARTING CONSTRUCTION. APPROVED DRAWINGS MUST BE AVAILABLE PRIOR TO SCHEDULING.
- ALL INSPECTION REQUESTS OTHER THAN FOR PRECONSTRUCTION MEETING WILL BE MADE BY CALLING THE ENGINEERING 24-HOUR INSPECTION REQUEST LINE AT (760) 438-3891. INSPECTION REQUESTS MUST BE RECEIVED PRIOR TO 2:00 P.M. ON THE DAY BEFORE THE INSPECTION IS NEEDED. INSPECTIONS WILL BE MADE THE NEXT WORK DAY UNLESS YOU REQUEST OTHERWISE. REQUESTS MADE AFTER 2:00 P.M. WILL BE SCHEDULED FOR TWO FULL WORK DAYS LATER.
- THE CONTRACTOR SHALL DESIGN, CONSTRUCT AND MAINTAIN ALL SAFETY DEVICES, INCLUDING SHORING, AND SHALL BE SOLELY RESPONSIBLE FOR CONFORMING TO ALL LOCAL, STATE AND FEDERAL SAFETY AND HEALTH STANDARDS, LAWS AND REGULATIONS.
- THE CONTRACTOR SHALL CONFORM TO LABOR CODE SECTION 6705 BY SUBMITTING A DETAIL PLAN TO THE TRANSPORTATION DIRECTOR AND/OR CONCERNED AGENCY SHOWING THE DESIGN OF SHORING, BRACING SLOPE OR OTHER PROVISIONS TO BE MADE OF WORKER PROTECTION FROM THE HAZARD OF CAVING GROUND DURING THE EXCAVATION OF SUCH TRENCH OR TRENCHES OR DURING THE PIPE INSTALLATION THEREIN. THIS PLAN MUST BE PREPARED FOR ALL TRENCHES FIVE FEET (5') OR MORE IN DEPTH AND APPROVED BY THE TRANSPORTATION DIRECTOR AND/OR CONCERNED AGENCY PRIOR TO EXCAVATION. IF THE PLAN VARIES FROM THE SHORING SYSTEM STANDARDS ESTABLISHED BY THE CONSTRUCTION SAFETY ORDERS, TITLE 8 CALIFORNIA ADMINISTRATIVE CODE, THE PLAN SHALL BE PREPARED BY A REGISTERED ENGINEER AT THE CONTRACTORS EXPENSE. A COPY OF THE OSHA EXCAVATION PERMIT MUST BE SUBMITTED TO THE INSPECTOR PRIOR TO EXCAVATION.
- IF ANY ARCHAEOLOGICAL RESOURCES ARE DISCOVERED WITHIN ANY WORK ZONE DURING CONSTRUCTION, OPERATIONS WILL CEASE IMMEDIATELY, AND THE PERMITTEE WILL NOTIFY THE TRANSPORTATION DIRECTOR. OPERATIONS WILL NOT RESTART UNTIL THE PERMITTEE HAS RECEIVED WRITTEN AUTHORITY FROM THE TRANSPORTATION DIRECTOR TO DO SO.
- ALL OFF-SITE HAUL ROUTES SHALL BE SUBMITTED BY THE CONTRACTOR TO THE CITY FOR APPROVAL TWO FULL WORKING DAYS PRIOR TO BEGINNING OF WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DEBRIS OR DAMAGE OCCURRING ALONG THE HAUL ROUTE OR ADJACENT STREETS AS A RESULT OF THE GRADING OPERATION.
- NO BLASTING SHALL BE COMMENCED WITHOUT A CITY APPROVED BLASTING PROGRAM AND LASTING PERMIT.
- THE EXISTENCE AND LOCATION OF UTILITY STRUCTURES AND FACILITIES SHOWN ON THE CONSTRUCTION PLANS WERE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. ATTENTION IS CALLED TO THE POSSIBLE EXISTENCE OF OTHER UTILITY FACILITIES OR STRUCTURES NOT SHOWN OR IN A LOCATION DIFFERENT FROM THAT SHOWN ON THE PLANS. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES SHOWN ON THE PLANS AND ANY OTHER EXISTING FACILITIES OR STRUCTURES NOT SHOWN.
- AS FIRST ORDER OF WORK, THE CONTRACTOR SHALL POTHOLE POLE LOCATIONS PRIOR TO ORDERING POLES AND PROVIDE POTHOLE LOG TO ENGINEER IN ADVANCE FOR REVIEW. IF CONFLICTS ARE FOUND DURING POTHOLING, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE CITY. FAILURE TO COMPLY SHALL BE AT THE SOLE RESPONSIBILITY OF THE CONTRACTOR FOR ANY LOSS OF TIME, ADDITIONAL COST, AND DAMAGE.
- THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING FACILITIES (ABOVEGROUND AND UNDERGROUND) WITHIN THE PROJECT SITE SUFFICIENTLY AHEAD OF THE CONSTRUCTION TO PERMIT THE REVISIONS OF THE CONSTRUCTION PLANS IF IT IS FOUND THAT THE ACTUAL LOCATIONS ARE IN CONFLICT WITH THE PROPOSED WORK.
- THE CONTRACTOR SHALL NOTIFY AFFECTED UTILITY COMPANIES (SEE BELOW) AT LEAST TWO FULL WORKING DAYS PRIOR TO STARTING CONSTRUCTION NEAR THEIR FACILITIES AND SHALL COORDINATE WORK WITH A COMPANY REPRESENTATIVE.

UNDERGROUND SERVICE ALERT	(800)422-4133
SDG&E	(800)411-7343
AT&T	(800)892-0123
TIME WARNER CABLE	(760)438-7741
COX COMMUNICATIONS	(619)262-1122
CITY OF CARLSBAD (STREETS AND STORM DRAIN)	(760)434-2980
* CITY OF CARLSBAD (SEWER, WATER & RECLAIMED WATER)	(760)438-2722
* SAN DIEGUITO WATER DISTRICT	(760)633-2650
* LEUCADIA WASTEWATER DISTRICT	(760)753-0155
* VALLECITOS WATER DISTRICT	(760)744-0460
* OLIVENHAIN WATER DISTRICT	(760)753-6466
* BUENA SANITATION DISTRICT	(760)726-1340 x1330

AS APPROPRIATE *

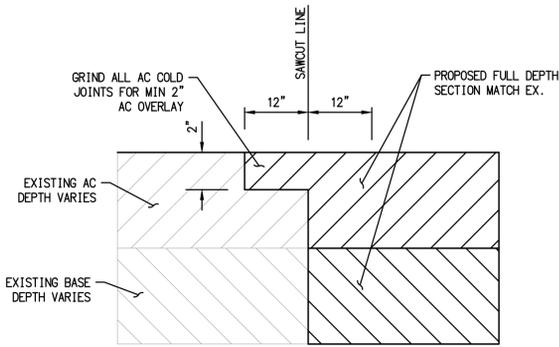
- IN ACCORDANCE WITH THE CITY STORM WATER STANDARDS ALL STORM DRAIN INLETS CONSTRUCTED BY THIS PLAN SHALL INCLUDE "STENCILS" TO PROHIBIT WASTE DISCHARGE DOWNSTREAM. STENCILS SHALL BE ADDED TO THE SATISFACTION OF THE TRANSPORTATION DIRECTOR.
- ALL NEW SIGNS INSTALLED SHALL BE VISIBLE. CONTRACTOR IS RESPONSIBLE FOR ANY TREE TRIMMING NEEDED.

ABBREVIATIONS

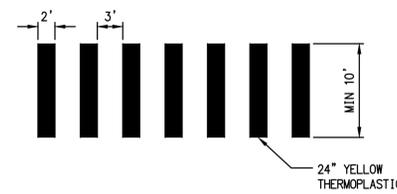
AB	AGGREGATE BASE
AC	ASPHALT CONCRETE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AVE	AVENUE
APS	ACCESSIBLE PEDESTRIAN SIGNAL
BCR	BEGIN CURB RETURN
CALMUTCD	CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
CMU	CONCRETE MASONRY UNIT
ECR	END CURB RETURN
EVP	EMERGENCY VEHICLE PREEMPTION
EX	EXISTING
EXT	EXTENSION
FL	FLOW LINE
FS	FINISHED SURFACE
GB	GRADE BREAK
HP	HIGH POINT
MIN	MINIMUM
N.T.S.	NOT TO SCALE
OSHA	OCCUPATION SAFETY AND HEALTH ADMINISTRATION
PCC	PORTLAND CEMENT CONCRETE
RS	REMOVE AND SALVAGE
R/W	RIGHT-OF-WAY
SDRSD	SAN DIEGO REGIONAL STANDARD DRAWINGS
SNS	STREET NAME SIGN
ST	STREET
STA	STATION
TC	TOP OF CURB
TYP	TYPICAL

STANDARD NOTES FOR SIGNING AND STRIPING PLANS

- THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ALL SIGNING AND STRIPING.
- ALL SIGNING, STRIPING AND PAVEMENT MARKINGS SHALL CONFORM TO THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (LATEST VERSION), THE CALTRANS STANDARD PLANS AND SPECIFICATIONS (LATEST VERSION), THESE PLANS AND THE SPECIAL PROVISIONS.
- ALL SIGNING AND STRIPING IS SUBJECT TO THE APPROVAL OF THE TRANSPORTATION DIRECTOR OR HIS REPRESENTATIVE, PRIOR TO INSTALLATION.
- ANY DEVIATION FROM THESE PLANS SHALL BE APPROVED BY THE TRANSPORTATION DIRECTOR OR HIS REPRESENTATIVE PRIOR TO ANY CHANGE IN THE FIELD.
- ALL STRIPING SHALL BE REFLECTIVE PER CALTRANS SPECIFICATIONS. STRIPING SHALL BE REPAINTED TWO WEEKS AFTER INITIAL PAINTING.
- ALL PERMANENT SIGNAGE SHALL BE REFLECTIVE PER ASTM DESIGNATION D4956 AND SHALL USE TYPE IV PRISMATIC REFLECTIVE SHEETING (HIGH INTENSITY PRISMATIC OR EQUAL) UNLESS OTHERWISE SPECIFIED. R1-1 "STOP", R1-2 "YIELD", R2-1 "SPEED LIMIT" AND STREET NAME SIGNS SHALL USE TYPE IX PRISMATIC CURB-CORNER REFLECTIVE SHEETING (DIAMOND GRADE VIP OR EQUAL).
- EXACT LOCATION OF STRIPING AND STOP LIMIT LINES SHALL BE APPROVED BY THE TRANSPORTATION DIRECTOR OR HIS REPRESENTATIVE PRIOR TO INSTALLATION.
- CONTRACTOR SHALL REMOVE ALL CONFLICTING PAINTED LINES, MARKINGS AND PAVEMENT LEGENDS BY GRINDING. CONTRACTOR SHALL CONTROL/MINIMIZE DAMAGE TO ROADWAY FROM GRINDING. GRINDING PROFILE IN EXCESS OF 1" DEPTH SHALL BE REPAIRED BY CONTRACTOR BY METHOD OF GRIND AND OVERLAY AC A MINIMUM OF 2" FOR ALL AFFECTED AREAS. DEBRIS SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR.
- ALL PAVEMENT LEGENDS SHALL BE THE LATEST VERSION OF THE CALTRANS STENCILS.
- LIMIT LINES AND CROSSWALKS SHALL BE FIELD LOCATED. CROSSWALKS SHALL BE HIGH VISIBILITY "CONTINENTAL" STYLE AND SHALL HAVE 10' INSIDE DIMENSION UNLESS OTHERWISE SPECIFIED.
- ALL CROSSWALKS, LIMIT LINES, STOP BARS, PAVEMENT ARROWS AND PAVEMENT LEGENDS INCLUDING BIKE LANE LEGENDS AND ARROWS SHALL BE THERMOPLASTIC UNLESS OTHERWISE SPECIFIED. PERFORMED THERMOPLASTIC ARROWS AND LEGENDS SHALL NOT BE ACCEPTABLE.
- SIZE OF SIGNS SHALL BE BASED UPON THE RECOMMENDED SIGN SIZES FOUND IN THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES UNLESS OTHERWISE SPECIFIED.
- SIGN POSTS SHALL BE SQUARE PERFORATED STEEL TUBING WITH BREAKAWAY BASE PER SAN DIEGO REGIONAL STANDARD DRAWING M-45.
- WHEN A SIGN IS ATTACHED TO A POLE, IT SHALL BE MOUNTED USING A STANDARD CITY OF CARLSBAD APPROVED MOUNTING BRACKET WITH STRAPS.
- EXISTING SIGNS REMOVED BY THE CONTRACTOR SHALL BE DELIVERED BY THE CONTRACTOR TO THE CITY OF CARLSBAD PUBLIC WORKS YARD AT 405 OAK AVENUE.
- ALL SIGNS SHOWN ON THESE PLANS SHALL BE NEW SIGNS PROVIDED AND INSTALLED BY THE CONTRACTOR EXCEPT THOSE SIGNS SPECIFICALLY SHOWN AS EXISTING TO BE RELOCATED OR TO REMAIN.
- CONTRACTOR SHALL COORDINATE SIGN POST LOCATION WITH THE TRANSPORTATION DIRECTOR OR HIS REPRESENTATIVE PRIOR TO INSTALLATION.
- ALL SIGNS AND EQUIPMENT SHALL BE MOUNTED USING 3/8" BAND IT" STEEL FASTENER FOR INSTALLATION.



**DETAIL "A"
AC PAVEMENT JOINT
N.T.S.**



**DETAIL "C"
CONTINENTAL CROSSWALK MARKINGS
N.T.S.**

TRAFFIC SIGNAL NOTES

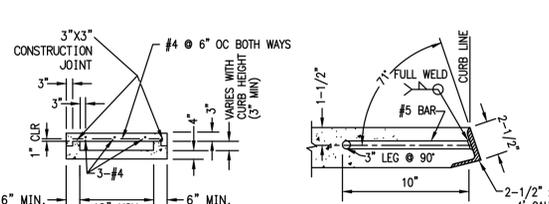
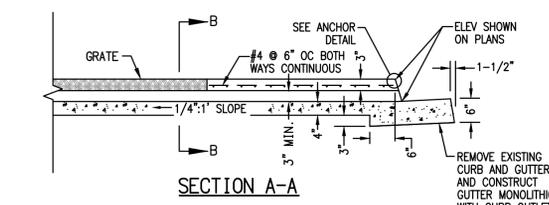
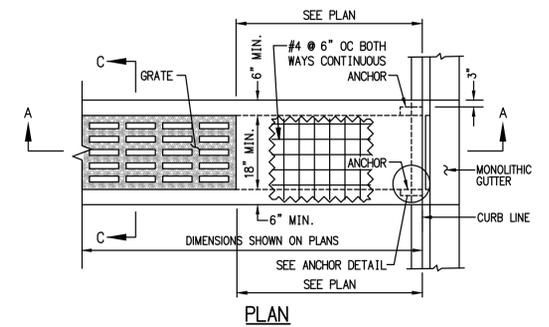
- THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING ALL TRAFFIC SIGNAL EQUIPMENT.
- TRAFFIC SIGNAL EQUIPMENT SHALL CONFORM TO THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (FHWA'S MUTCD, AS AMENDED FOR USE IN CALIFORNIA) LATEST VERSION, CALTRANS STANDARD SPECIFICATIONS (2018 OR LATEST VERSION THEREOF), THESE PLANS AND THE SPECIAL PROVISIONS.
- ALL SIGNS SHALL BE STANDARD SIZE AS SHOWN IN THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (FHWA'S MUTCD 2014 LATEST VERSION, AS AMENDED FOR USE IN CALIFORNIA) UNLESS OTHERWISE SPECIFIED.
- WHEN A SIGN IS ATTACHED TO A POLE, IT SHALL BE MOUNTED USING STANDARD CITY OF CARLSBAD MOUNTING WITH BRACKET STRAPS.
- ALL SIGNS SHOWN ON THESE PLANS SHALL BE NEW SIGNS PROVIDED AND INSTALLED BY THE CONTRACTOR EXCEPT THOSE SIGNS SPECIFICALLY SHOWN AS EXISTING TO BE RELOCATED OR TO REMAIN.
- THE CONTRACTOR SHALL VERIFY POLE LOCATIONS IN THE FIELD WITH CITY REPRESENTATIVE AND POT HOLE POLE FOUNDATION PRIOR TO ORDERING POLES AND MAST ARMS.
- CONTRACTOR SHALL PROVIDE NEW WIRING TO CONNECT SYSTEMS. NEW WIRING SHALL BE PER MANUFACTURER SPECIFICATIONS.
- ALL PULL BOXES SHALL BE #5 UNLESS OTHERWISE NOTED ON PLAN.

LEGEND

PROPOSED CONTROLLER CABINET	
PROPOSED SERVICE PEDESTAL	
PROPOSED PULL BOX	
PROPOSED CONDUIT	
PROPOSED SIGN ON POST	
EXISTING SIGN	
CURB	
GUTTER	
BACK OF SIDEWALK	

PROPOSED SIGN LEGEND

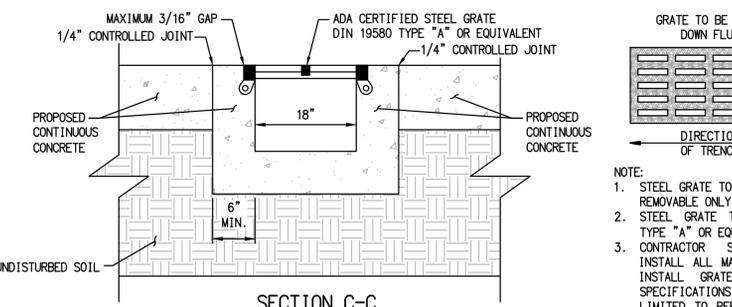
R10-23	R10-6	S1-1 (DOUBLE-SIDED)	W16-9P	SW24-2(CA) (DOUBLE-SIDED)



SECTION B-B

ANCHOR DETAIL

NOTE: FOR ADDITIONAL INFORMATION SEE SAN DIEGO REGIONAL STANDARD DRAWING D-25A.



SECTION C-C

**DETAIL "B"
CURB CHANNEL
N.T.S.**

ALL STANDARD DRAWINGS ARE SAN DIEGO REGIONAL STANDARD DRAWINGS (SDRSD) UNLESS NOTED OTHERWISE:
* CITY OF CARLSBAD STANDARD
** CARLSBAD MUNICIPAL WATER DISTRICT STANDARD DRAWING
*** SDRSD AS MODIFIED BY CITY OF CARLSBAD

"AS BUILT"

P.E. _____ EXP. _____ DATE _____

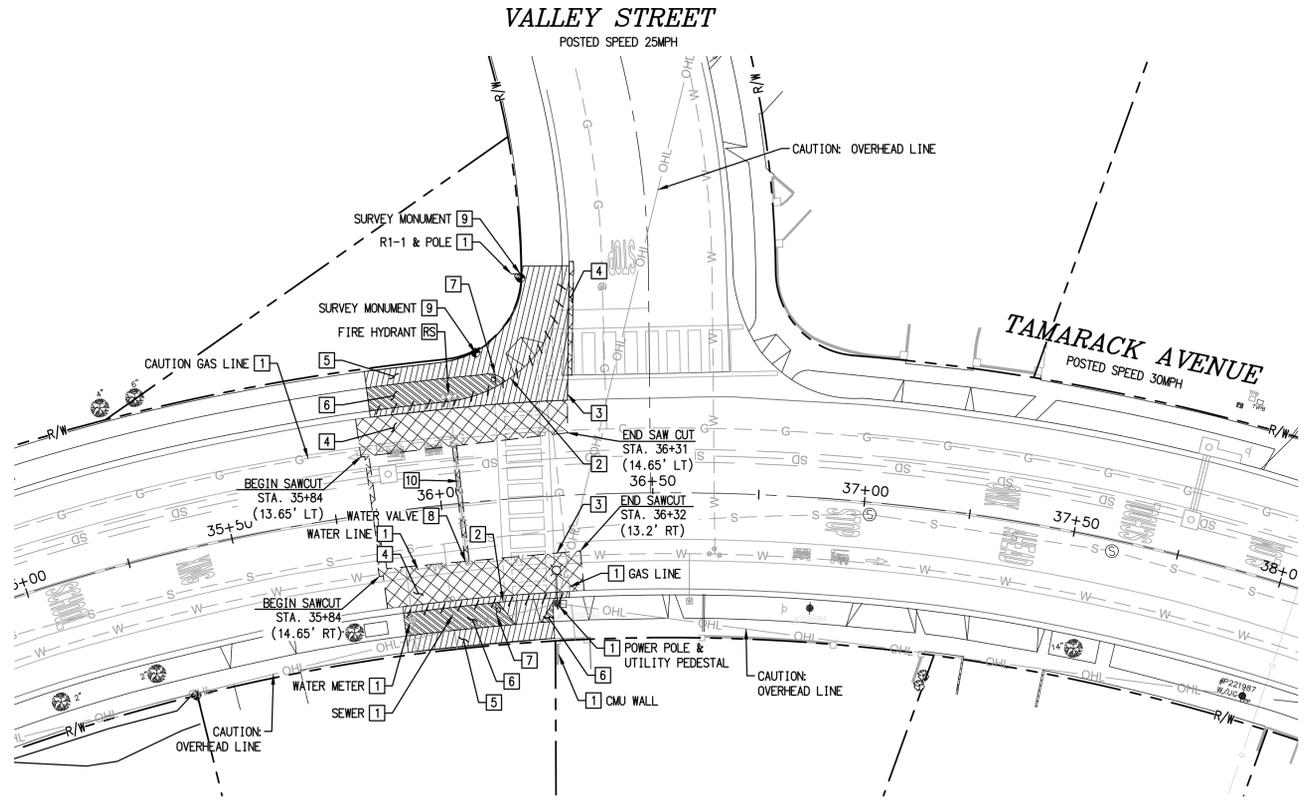
REVIEWED BY: _____ DATE _____

INSPECTOR _____ DATE _____

SHEET 2		CITY OF CARLSBAD ENGINEERING DEPARTMENT		SHEETS 6	
IMPROVEMENT PLANS FOR: TAMARACK AVENUE AND VALLEY STREET PEDESTRIAN IMPROVEMENTS DETAIL SHEET					
APPROVED THOMAS FRANK					
TRANSPORTATION DIRECTOR RCE 49070 09/30/20 DATE _____					
DWN BY: JW	PROJECT NO. 6335	DRAWING NO. 522-7			
CHKD BY: CL					
RYMD BY: NM					
DATE	INITIAL	DATE	INITIAL	DATE	INITIAL
ENGINEER OF WORK		OTHER APPROVAL		CITY APPROVAL	
REVISION DESCRIPTION					

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CONSTRUCTION NOTES

- 1) PROTECT IN PLACE.
- 2) REMOVE EXISTING CURB AND GUTTER.
- 3) SAWCUT EXISTING PAVEMENT PER DETAIL "A" ON SHEET 2.
- 4) REMOVE EXISTING AC PAVEMENT.
- 5) REMOVE EXISTING CONCRETE PAVEMENT.
- 6) REMOVE EXISTING LANDSCAPE/DIRT.
- 7) REMOVE AND SALVAGE EXISTING SOLAR RECTANGULAR-RAPID FLASHING BEACON COMPLETE AND RETURN TO CITY YARD. BREAK DOWN FOUNDATION 3" BELOW GRADE.
- 8) RELOCATE EXISTING WATER VALVE PER CARLSBAD MUNICIPAL WATER DISTRICT (CMWD) REQUIREMENTS. LOCATION OF PROPOSED WATER VALVE SHALL BE APPROVED BY THE CITY OF CARLSBAD'S FIRE DEPARTMENT.
- 9) EXISTING SURVEY MONUMENT TO BE REPLACED BY LICENSED SURVEYOR. COORDINATE WITH CITY REPRESENTATIVE PRIOR TO DEMOLITION.
- 10) REMOVE EXISTING WATER LINE COMPLETE PER CARLSBAD MUNICIPAL WATER DISTRICT (CMWD) REQUIREMENTS. BACKFILL AND RESURFACE PER CITY OF CARLSBAD SUPPLEMENTAL STANDARD NO. GS-24 AND GS-28.

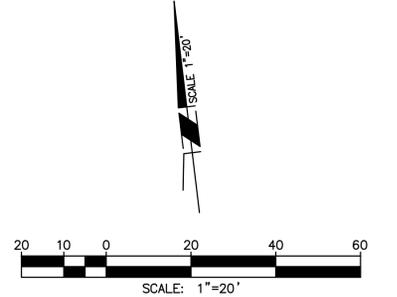
SIGN LEGEND:



R1-1

LEGEND:

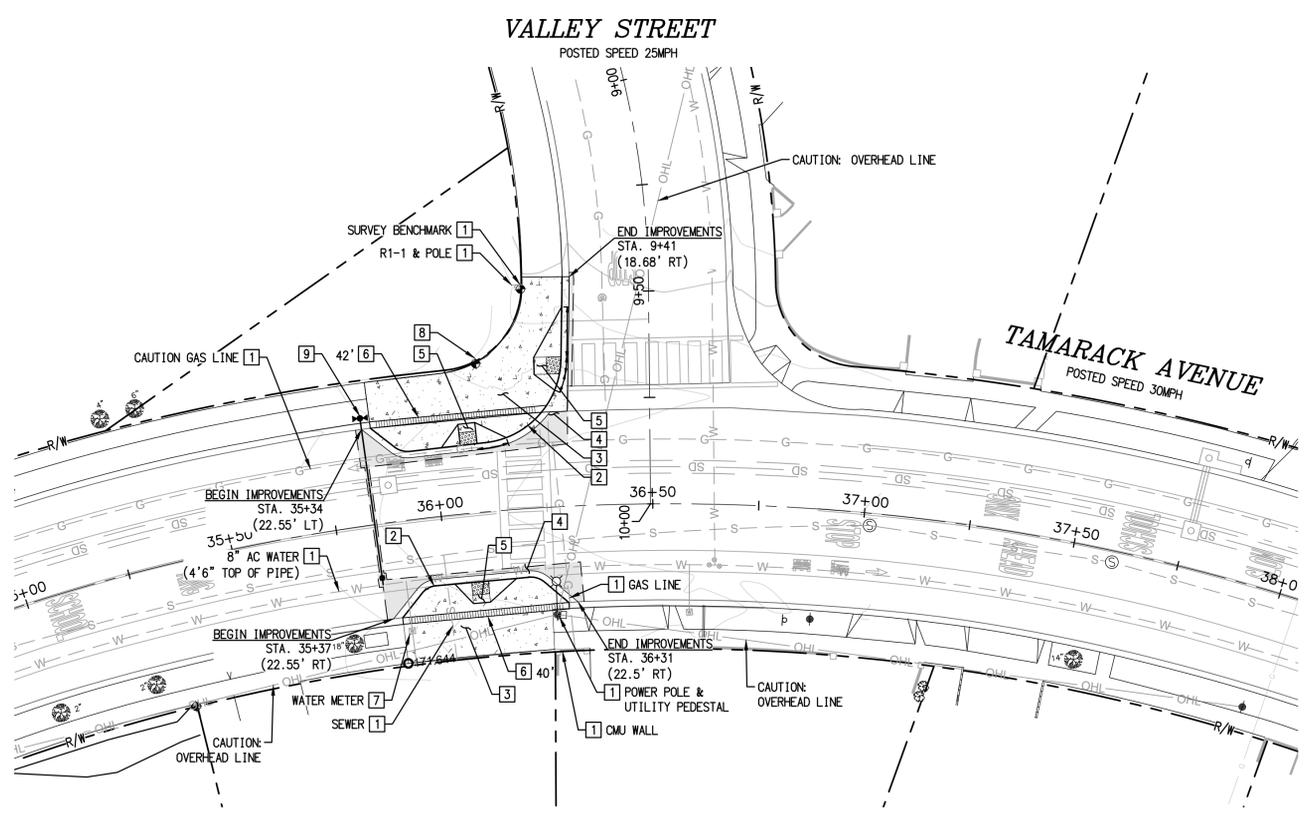
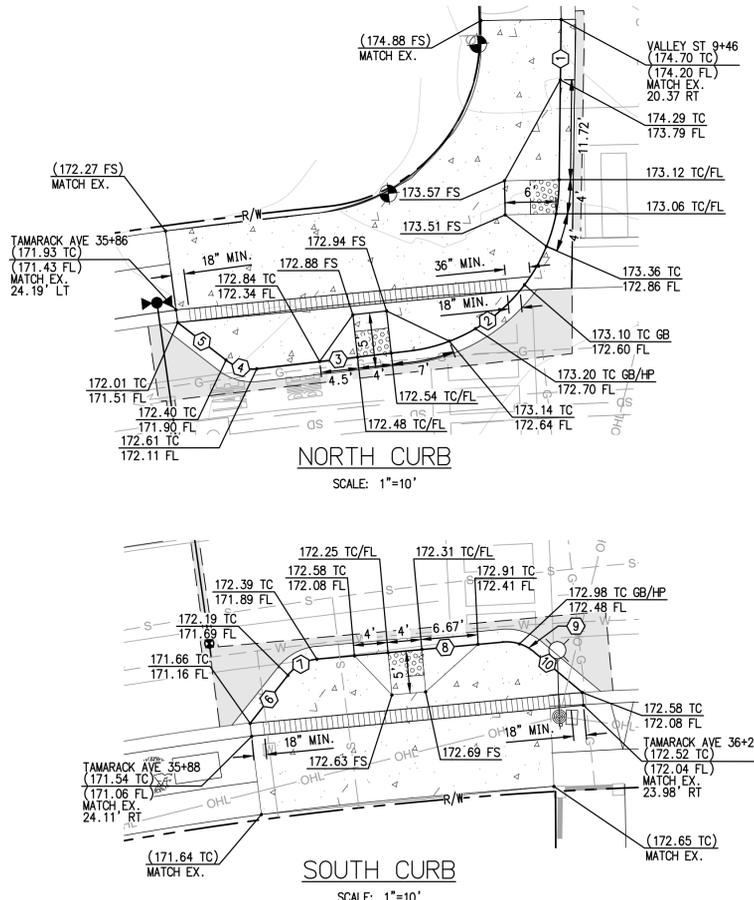
- SAWCUT
- [Cross-hatch] AC PAVEMENT REMOVAL
- [Diagonal lines] CONCRETE PAVEMENT REMOVAL
- [Horizontal lines] LANDSCAPE/DIRT REMOVAL
- - - - CURB REMOVAL



DATE	INITIAL	REVISION DESCRIPTION	DATE	INITIAL	OTHER APPROVAL	DATE	INITIAL	CITY APPROVAL

SHEET 3	CITY OF CARLSBAD ENGINEERING DEPARTMENT	SHEETS 6
IMPROVEMENT PLANS FOR: TAMARACK AVENUE AND VALLEY STREET PEDESTRIAN IMPROVEMENTS DEMOLITION PLAN		
APPROVED THOMAS FRANK TRANSPORTATION DIRECTOR RCE 49070 09/30/20 DATE		
DWN BY: JW CHKD BY: CL RVWD BY: NM	PROJECT NO. 6335	DRAWING NO. 522-7

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CONSTRUCTION NOTES

- 1] PROTECT IN PLACE.
- 2] CONSTRUCT 6" TYPE G CONCRETE CURB AND GUTTER PER SDRSD G-2.
- 3] CONSTRUCT 4" PCC SIDEWALK PER SDRSD G-7 AND G-9.
- 4] CONSTRUCT AC PAVEMENT. MATCH EXISTING SECTION IN KIND. MINIMUM 4" AC OVER 10" AB.
- 5] CONSTRUCT CURB RAMP PER SDRSD G-31 WITH YELLOW TRUNCATED DOMES PER SDRSD G-30.
- 6] FURNISH AND INSTALL CURB CHANNEL WITH STEEL GRATE PER DETAIL "B" ON SHEET 2. CURB CHANNEL SHALL MATCH THE GUTTER FLOW LINE AT BOTH SIDES OF THE CURB CHANNEL.
- 7] ADJUST TO GRADE EXISTING WATER METER BOX.
- 8] EXISTING CONCRETE SURVEY MARKINGS TO BE REPLACED BY LICENSED SURVEYOR. COORDINATE WITH CITY REPRESENTATIVE PRIOR TO DEMOLITION.
- 9] FURNISH AND INSTALL NEW FIRE HYDRANT ASSEMBLY COMPLETE PER CARLSBAD MUNICIPAL WATER DISTRICT (CMWD) STANDARD DRAWING NO. W-12 AND TRENCH PER DRAWING NO. W-2. LOCATION OF PROPOSED FIRE HYDRANT SHALL BE APPROVED BY THE CITY OF CARLSBAD'S FIRE DEPARTMENT AND SHALL HAVE A MINIMUM SURROUNDING CLEARANCE OF 3'. BACKFILL AND RESURFACE PER CITY OF CARLSBAD SUPPLEMENTAL STANDARD NO. GS-24 AND GS-28.

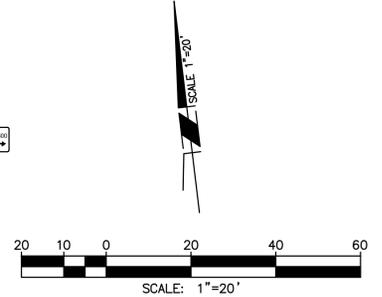
CURB DATA				
NO	BEARING/DELTA	RADIUS	LENGTH	NOTE
1	N 07°35'17" E	--	19.35'	6" CURB & GUTTER
2	Δ=82°46'43"	20.00'	28.90'	6" CURB & GUTTER
3	N 89°44'24" W	--	18.00'	6" CURB & GUTTER
4	Δ=44°10'26"	5.00'	3.85'	6" CURB & GUTTER
5	N 45°24'12" W	--	7.21'	6" CURB & GUTTER
6	N 45°10'52" E	--	7.20'	6" CURB & GUTTER
7	Δ=45°56'08"	5.00'	4.01'	6" CURB & GUTTER
8	N 88°21'22" W	--	22.00'	6" CURB & GUTTER
9	Δ=45°56'08"	5.00'	4.01'	6" CURB & GUTTER
10	N 43°11'15" W	--	7.39'	6" CURB & GUTTER

LEGEND:

- PROPOSED ASPHALT PAVEMENT
- PROPOSED CONCRETE PAVEMENT
- PROPOSED CURB CHANNEL

SIGN LEGEND

- R1-1
- SNS 1
- SNS 2

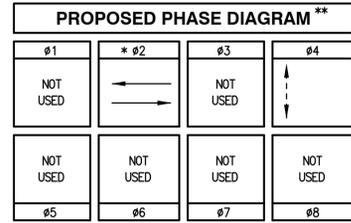


DATE	INITIAL	REVISION DESCRIPTION	DATE	INITIAL	OTHER APPROVAL	DATE	INITIAL	CITY APPROVAL

SHEET 4	CITY OF CARLSBAD ENGINEERING DEPARTMENT	SHEETS 6
IMPROVEMENT PLANS FOR: TAMARACK AVENUE AND VALLEY STREET PEDESTRIAN IMPROVEMENTS IMPROVEMENT PLAN		
APPROVED THOMAS FRANK		
TRANSPORTATION DIRECTOR RCE 49070 09/30/20 DATE		
DWN BY: JW	PROJECT NO. 6335	DRAWING NO. 522-7
CHKD BY: CL		
RVWD BY: NM		

• CONDUCTOR SCHEDULE		CONDUIT RUNS			
AWG OR CABLE SIZE	POLE OR CIRCUIT	1	2	3	4
3 CSC	POLE A #2, #4P	1	1	1	1
	POLE B #2, #4P			1	1
12 CSC	POLE C BLANK-OUT		1	1	1
		1	1	1	2
TOTAL 3 CSC / 12 CSC CABLES		1	1	1	3
#6	SERVICE	2			2
#8	GROUND	1	1	1	1
#10	SAFETY LIGHTING	2	2		
EVP CABLE		1			2
CAMERA CABLE (CAT6)			1		1
CONDUIT SIZE (INCHES)		3"	3"	3"	2-3"
CONDUIT FILL (%)		13	9	9	14

• ALL CONDUIT AND CONDUCTORS ARE NEW



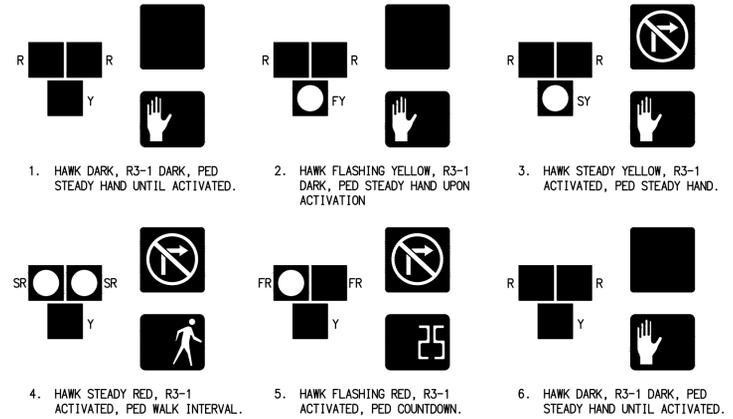
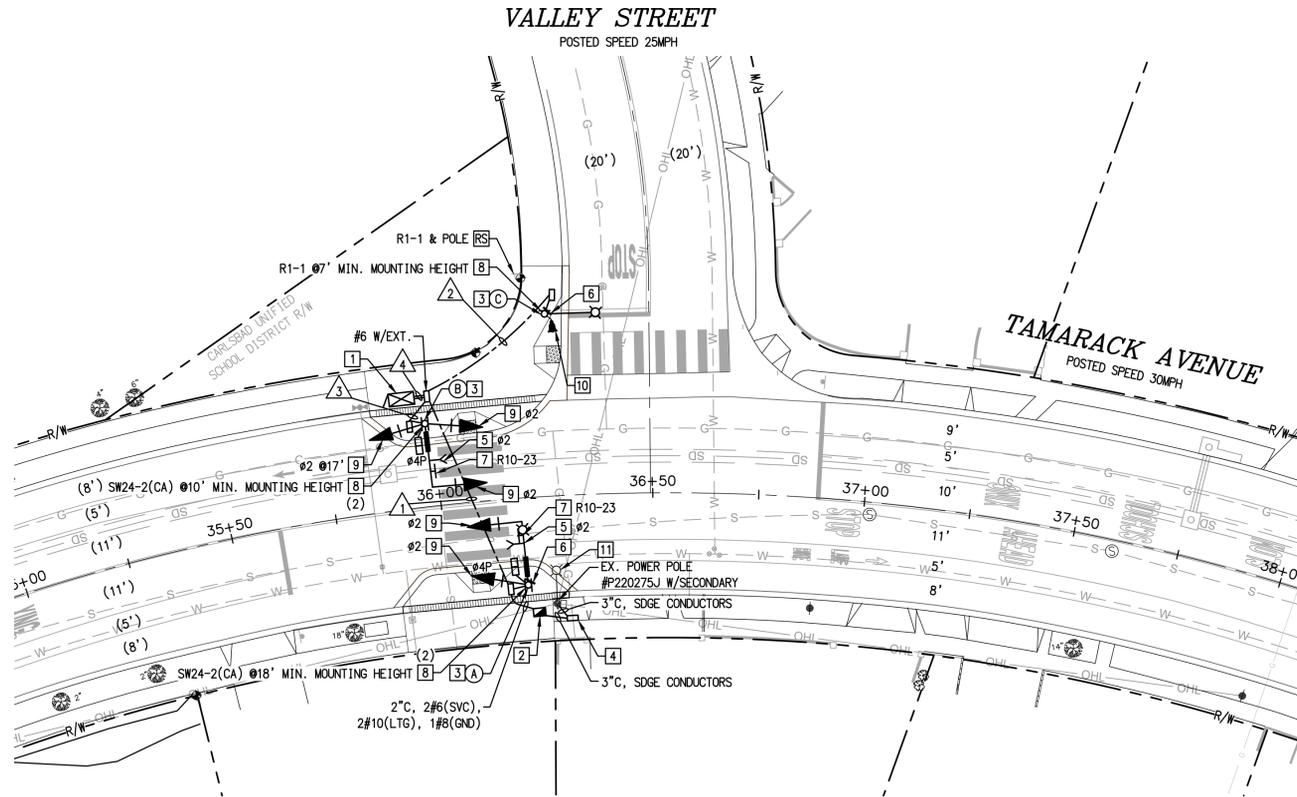
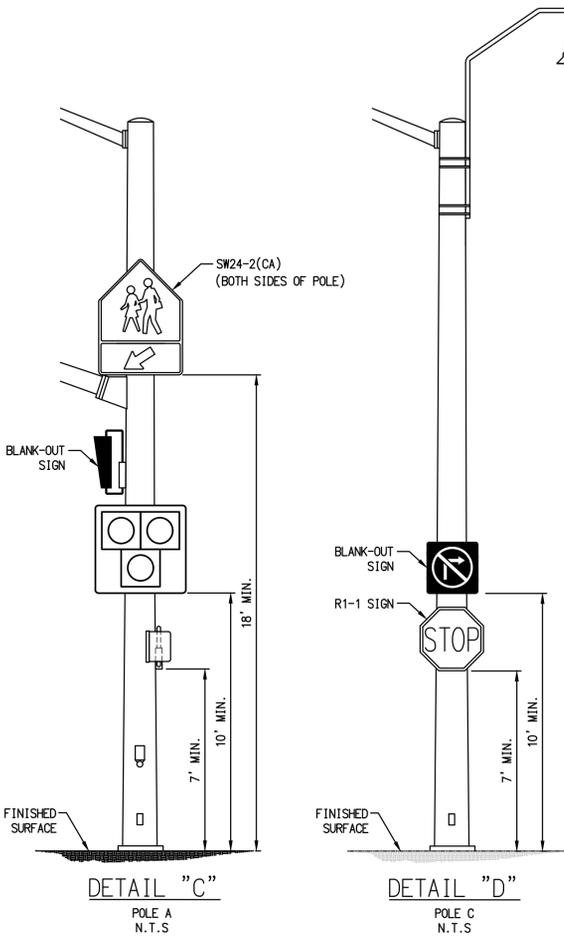
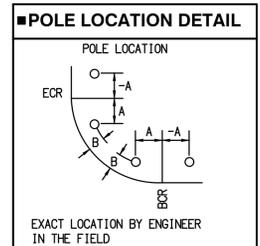
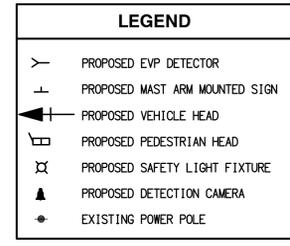
* HAWK VEHICLE HEADS SHALL BE DARK DURING #2.
** SEE PHASE SEQUENCE DIAGRAM.

AS FIRST ORDER OF WORK, THE CONTRACTOR SHALL POTHOLE POLE LOCATIONS PRIOR TO ORDERING POLES. IF CONFLICTS ARE FOUND DURING POTHOLING, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE CITY. FAILURE TO COMPLY SHALL BE AT THE SOLE RESPONSIBILITY OF THE CONTRACTOR FOR ANY LOSS OF TIME, ADDITIONAL COST, AND DAMAGE.

• POLE AND EQUIPMENT SCHEDULE													
No.	STANDARD				LED LUMINAIRE	SIG MTG			PPB PHASE	POLE LOCATION		RSNS	REMARKS
	TYPE	HEIGHT	SIG. M.A.	LUM. M.A.		VEHICLE	+ PED			A	B		
(A)	17-3-100	30'	15'	12'	120W	MAS-3A	SV-1-T	SP-1-T	#4	-0.5'	4'	Valley St 3800	-
(B)	16-3-100	18.5'	15'	-	-	MAS-3A	SV-1-T	SP-1-T	#4	4'	3.5'	Valley St 3800	(1)SV-1-T @ 17' MOUNTING
(C)	15TS	30'	-	12'	120W	-	-	-	-	-8'	4'	-	-

• ALL EQUIPMENT IS NEW
(■) = SEE POLE LOCATION DETAIL. POTHOLE POLE LOCATIONS PRIOR TO ORDERING POLES.
(+) = PEDESTRIAN HEADS SHALL BE LED COUNTDOWN TYPE.
(♦) = PUSH BUTTON ASSEMBLY SHALL BE APS AND ADA COMPLIANT WITH R10-3a(CA) SIGN.
(▲) = SAFETY LIGHTS SHALL BE GE ERL2-0-16-C3-40-D-GRAY-LY (16000 LUMENS).

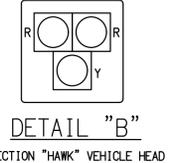
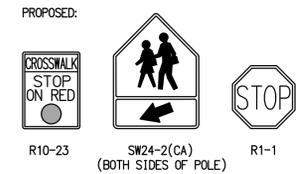
NOTE: CONSTRUCT POLE STANDARDS TO CALTRANS 2018 STANDARDS. CONTRACTOR SHALL SUBMIT MATERIALS CUT SHEETS PRIOR TO ORDERING OF MATERIALS.



CONSTRUCTION NOTES

- FURNISH AND INSTALL NEW MODEL 3521 ATC CABINET AND FOUNDATION COMPLETE PER CALTRANS STANDARD PLAN ES-3C. CABINET SHALL HAVE TWO INPUT AND ONE OUTPUT FILE, FRONT AND BACK INTERNAL LED LIGHTS, FRONT AND REAR DOOR SWITCHES, AND PULL OUT DOCUMENT DRAWER. CABINET SHALL BE FULLY EQUIPPED FOR THE INTENDED OPERATION INCLUDING BUT NOT LIMITED TO: NEW TRAFFICWARE 2070LX CONTROLLER ASSEMBLY EQUIPPED WITH SCOUT CONTROLLER SOFTWARE. NEW EDI QMip-2212-HV CONFLICT MONITOR. NEW EDI AUXILIARY DISPLAY UNIT FOR ATC CABINET. NEW OPTICOM 764 EVP DISCRIMINATOR MODULE. NEW POLICE PANEL PICKLESWITCH. NEW ETHERNET SWITCH. NEW APS CONTROL MODULE. NEW CELLULAR MODEM. NEW GRIDSMART GS2 PROCESSOR.
- FURNISH AND INSTALL TYPE III-BF SERVICE PEDESTAL WITH FOUNDATION COMPLETE PER CALTRANS STANDARD PLAN ES-2E. COORDINATE WITH SDGE FOR SERVICE POINT. PEDESTAL SHALL BE EQUIPPED WITH PHOTOELECTRIC CONTROL UNIT, "PLUG-IN" TYPE BREAKERS AND INCLUDE A 1P-50A TRAFFIC SIGNAL BREAKER (METERED) AND 1P-30A SAFETY LIGHT BREAKER (UN-METERED).
- FURNISH AND INSTALL TRAFFIC SIGNAL STANDARD WITH FOUNDATION COMPLETE PER CALTRANS STANDARD PLAN ES-7E AND EQUIPMENT PER PLAN.
- CONTRACTOR SHALL COORDINATE PROPOSED SDGE SERVICE POINT. FURNISH AND INSTALL PULL BOX PER SDGE REQUIREMENTS. LOCATION SHOWN ON PLAN IS NEAREST AND ASSUMED SDGE POINT OF CONNECTION. CONTRACTOR SHALL VERIFY FINAL POINT OF CONNECTION LOCATION AND CONNECTION REQUIREMENTS WITH SDGE PLANNER.
- FURNISH AND INSTALL EMERGENCY VEHICLE PREEMPTION OPTICAL DETECTOR ASSEMBLY COMPLETE WITH MOUNTING AND CABLING.
- FURNISH AND INSTALL POLE-MOUNTED BLANK-OUT SIGN PER DETAIL "A" THIS SHEET. FOR MOUNTING SEE DETAIL "C" AND DETAIL "D" THIS SHEET.
- FURNISH AND INSTALL MAST ARM MOUNTED SIGN R10-23 PER CALTRANS STANDARD PLAN ES-7N, DETAIL U.
- FURNISH AND INSTALL POLE MOUNTED SIGN PER PLAN. SEE PLAN FOR MOUNTING HEIGHT (MH).
- FURNISH AND INSTALL 3-SECTION "HAWK" VEHICLE HEAD PER DETAIL "B" THIS SHEET.
- FURNISH AND INSTALL GRIDSMART SMARTMOUNT BELL CAMERA #GS-3-SMK COMPLETE WITH MOUNTING AND CABLING. SYSTEM SHALL HAVE PEDESTRIAN AND VEHICLE DETECTION AND COUNTING CAPABILITY. CONTRACTOR SHALL COORDINATE WITH MANUFACTURER'S REPRESENTATIVE FOR BEST MOUNTING LOCATION.
- EXISTING SDGE LUMINAIRE PER SDGE REQUIREMENTS. COORDINATE WITH SDGE PRIOR TO BEGINNING WORK.

SIGN LEGEND



DATE	INITIAL	REVISION DESCRIPTION	DATE	INITIAL	OTHER APPROVAL	CITY APPROVAL

SHEET 6	CITY OF CARLSBAD ENGINEERING DEPARTMENT	SHEETS 6
IMPROVEMENT PLANS FOR: TAMARACK AVENUE AND VALLEY STREET PEDESTRIAN IMPROVEMENTS PEDESTRIAN HYBRID BEACON PLAN		
APPROVED THOMAS FRANK		
TRANSPORTATION DIRECTOR RCE 49070 09/30/20 DATE		
DWN BY: JW	PROJECT NO. 6335	DRAWING NO. 522-7
CHKD BY: CL		
RWMD BY: NM		

Jul 10, 2020 12:53pm R:\Shared With Me\STC Data\1942-19-0718_Ped Beacon Tamarack Ave Midblock\07_Engineering\CADD\DWG\19-0718_DIV_06_TS.dwg

SUPPLEMENTAL PROVISIONS TO STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION PART 2, CONSTRUCTION MATERIALS

SECTION 200 - ROCK MATERIALS

200-1 ROCK PRODUCTS

Add the following section:

200-1.2.2 Permeable Material. Permeable material shall consist of hard, durable, clean sand, gravel, or crushed stone, and shall be free from organic material, clay balls, or other deleterious substances. Class 1 and Class 2 permeable material shall have a Durability Index of not less than 40. Class 2 Permeable material shall have a Sand Equivalent value of not less than 75. Class 1 permeable material shall conform to the requirements in this section and Table 200-1.2.2(A). Class 2 permeable material shall conform to the requirements in this section and Table 200-1.2.2(B). When permeable material is required and the class or kind is not specified, Class 1 permeable material shall be used. The alternative gradings within Class 1 permeable material are identified by types. Unless otherwise shown on the plans the Contractor will be permitted to furnish and place any one of the types provided for this class. The percentage composition by mass of permeable material in place shall conform to the gradings in Tables 200-1.2.2(A) and 200-1.2.2(B).

**TABLE 200-1.2.2(A)
CLASS 1 PERMEABLE MATERIAL**

Sieve Sizes	Percentage Passing	
	Type A	Type B
50-mm (2")	---	100
37.5-mm (1½")	---	95-100
19-mm (¾")	100	50-100
12.5-mm (½")	95-100	---
9.5-mm (⅜")	70-100	15-55
4.75-mm (No. 4)	0-55	0-25
2.36-mm (No. 8)	0-10	0-5
75-µm (no. 200)	0-3	0-3

**TABLE 200-1.2.2(B)
CLASS 2 PERMEABLE MATERIAL**

Sieve Sizes	Percentage Passing
25-mm (1")	100
19-mm (¾")	90-100
9.5-mm (⅜")	40-100
4.75-mm (No. 4)	25-40
2.36-mm (No. 8)	18-33
600-µm (No. 30)	5-15
300-µm (No. 50)	0-7
75-µm (no. 200)	0-3



200-2 UNTREATED BASE MATERIALS

200-2.1 General. Add the following: Aggregate base shall be Class 2 Aggregate Base per Caltrans Standard Specification, July 1999, Section 26: Aggregate Bases, Subsection 26-1.02A Class 2 Aggregate Base and as specified herein.

Add the following section:

200-2.7 Class 2 Aggregate Base. Aggregate for Class 2 aggregate base shall be free from organic matter and other deleterious substances, and shall be of such nature that it can be compacted readily under watering and rolling to form a firm, stable base. Aggregate may include material processed from reclaimed asphalt concrete, portland cement concrete, lean concrete base, cement treated base or a combination of any of these materials.

Aggregate shall conform to the grading and quality requirements shown in the following tables. At the option of the Contractor, the grading for either the 1 1/2-inch maximum or 3/4 inch maximum shall be used, except that once a grading is selected it shall not be changed without the Engineer's written approval.

AGGREGATE GRADING REQUIREMENTS

Sieve Sizes	Percentage Passing	
	1 1/2" Maximum	3/4" Maximum
	Operating Range	Operating Range
2"	100	—
1 1/2"	90-100	—
1"	—	100
3/4"	50-85	90-100
No. 4	25-45	35-60
No. 30.....	10-25	10-30
No. 200	2-9	2-9

QUALITY REQUIREMENTS

Tests	Operating Range
Resistance (R-value)	78 Min.
Sand Equivalent	25 Min.
Durability Index	35 Min.

The aggregate shall not be treated with lime, cement or other chemical material before the Durability Index test is performed.

If the results of either or both the aggregate grading and Sand Equivalent tests do not meet the requirements specified for "Operating Range" but meet the "Contract Compliance" requirements, placement of the aggregate base may be continued for the remainder of that day. However, another day's work may not be started until tests, or other information, indicate to the satisfaction of the Engineer that the next material to be used in the work will comply with the requirements specified for "Operating Range."

If the results of either or both the aggregate grading and Sand Equivalent tests do not meet the requirements specified for "Contract Compliance," the aggregate base which is represented by these tests shall be removed. However, if requested by the Contractor and approved by the Engineer, the aggregate base may remain in place and the Contractor shall pay to the City \$2.25 per cubic yard for such aggregate base left in place. The City may deduct this amount from any moneys due, or that may become due, the Contractor under the contract. If both the aggregate grading and Sand Equivalent do not conform to the "Contract Compliance" requirements, only one adjustment shall apply.

No single aggregate grading or Sand Equivalent test shall represent more than 500 cubic yards or one day's production, whichever is smaller.



SECTION 201 - CONCRETE, MORTAR, AND RELATED MATERIALS

201-1 PORTLAND CEMENT CONCRETE

TABLE 201-1.1.2(A) Modify as follows:

**TABLE 201-1.1.2(A) ⁽³⁾
PORTLAND CEMENT CONCRETE**

Type of Construction	Concrete Class	Maximum Slump mm (Inches)
All Concrete Used Within the Right-of-Way	330-C-23 (560-C-3250) ⁽¹⁾	⁽²⁾
Trench Backfill Slurry	115-E-3 (190-E-400)	200 (8")
Street Light Foundations and Survey Monuments	330-C-23 (560-C-3250)	100 (4")
Traffic Signal Foundations	350-C-27 (590-C-3750)	100 (4")
Concreted-Rock Erosion Protection	310-C-17 (520-C-2500P)	per Table 300-11.3.1

(1) Except that concrete required to be of higher strength by Table 201-1.1.2(A) SSPWC shall be as per Table 201-1.1.2(A) SSPWC.

(2) As per Table 201-1.1.2(A) SSPWC.

(3) Portions of Table 201-1.1.2(A) of the Standard Specifications for Public Works Construction not shown herein as changed are not affected by this table.

201-1.2 Materials.

201-3 EXPANSION JOINT FILLER AND JOINT SEALANTS

201-3.4 Type "A" Sealant (Two-Part Polyurethane Sealant). Add the following:

All finished concrete surfaces shall have a 1/2" continuous expansion joint at locations indicated on the plans and notes and shall be located either parallel to perpendicular to the curb line. When not otherwise indicated, all expansion joints located adjacent to colored concrete shall be sealant Type "A" and colored to match the color of the concrete surface.

Contractor shall provide joint sealants that have been produced and installed to establish and to maintain watertight and airtight continuous seals without causing staining or deterioration of joint substrates.

Contractor shall submit product data from the manufacturer of each joint sealant product required, including instructions for joint preparation and joint sealer application. Contractor shall also submit samples for initial selection purposes in form of manufacturer's standard bead samples, consisting of strips of actual products showing full range of colors available, for each product exposed to view. Samples shall be submitted to Engineer. Submit complete schedule of type (and location where type is to be used) of each sealant.



Contractor shall engage an experienced installer who has completed joint sealant applications similar in material, design and extent to that indicated for Project that have resulted in construction with a record of successful in-service performance.

Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.

Provide color selections made by Engineer from manufacturer’s full range of standard colors for products of type indicated. Sealant color parallel to curb line shall match color of Paving Treatment Type “A” as specified in Section 201-1.2.4(a) of these Special Provisions.

Joint sealants shall be multi-component polyurethane sealant. Except as otherwise indicated, provide manufacturer’s standard, non-modified, 2-or-more-part, polyurethane-based, elastomeric sealant; complying with either ASTM-C-920-87, Type M, Grade P, Class 25, or FS TT-S 0227E Class A, non-sag, Type II.

Acceptable Products: “Sonneborn NP11”; Sonneborn Building Products Division; “Scofield Lithoseal Trafficalk 3-G”, L.M. Scofield Company; or equivalent, as approved by the Engineer.

Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

Plastic foam joint fillers shall be preformed, compressible, resilient, nonstaining, nonwaxing, nonextruding strips of flexible plastic foam either open-cell polyurethane foam or closed-cell polyethylene foam, subject to approval of sealant manufacturer, for cold-applied sealants only. Polystyrene foam is not acceptable.

201-3.7 Type “D” Joint Sealant. Add the following: Hot-melt rubberized asphalt shall be in solid form at room temperature and fluid at an application temperature of 190°C (375°F) to 205°C (400°F). Fumes from the material shall be non-toxic. Sealant shall be suitable for use in both asphalt concrete and portland cement concrete. Performance characteristics of the cured hot-melt rubberized asphalt shall be as per Table 201-3.7(A).

**TABLE 201-3.7(A)
CURED HOT-MELT RUBBERIZED ASPHALT**

Property	Measuring Standard (ASTM Designation)	Results	Conditions
Cone Penetration	ASTM D 3407, Sec. 5	3.5 mm, max.	25°C, 150 g, 5 s
Flow, 60°C	ASTM D 3407, Sec. 6	5 mm, max.	
Resilience	,ASTM D 3407, Sec. 8	25%, min.	25°C
Softening Point,	ASTM D 36	82 °C, min.	
Ductility,	ASTM D 113	300 mm, min.	25°C, 50 mm/min
Flash Point, COC, °C	ASTM D 92	288 °C, min.	
Viscosity, Brookfield Thermosel,	ASTM D 4402	2.5-3.5 Pa·s	No. 27 Spindle, 20 rpm, 190°C,



SECTION 203 - BITUMINOUS MATERIALS

203-6 ASPHALT CONCRETE.

ADD the following:

203-6.2.1 Acceptance. Wet Mix or Core sampled asphalt concrete will be considered in conformance with the mix design when the Asphalt Binder content is within +/-0.5% of the design mix and the gradation conforms to the grading as shown in Table 203-6.4.3 (A). Deviations in gradation may be considered in conformance with the mix design provided the stability of the completed mix complies with the requirements for Stabilometer Value per Table 203-6.4.3 (A)

Plant inspected asphalt concrete will be considered in conformance with the mix design when visually inspected and the combined gradation of the Bin samples show conformance to the grading as shown in Table 203-6.4.3 (A).

203-6.4 Asphalt Concrete Mixtures. Add the following: Conventional Asphalt concrete shall be class C2-PG64-10-RAP for surface course, and B-PG64-10-RAP for base course. Asphalt concrete shall be class D2-PG70-10 for dikes and class E-PG70-10 ditches.

203-6.4.3 Composition and Grading. Add the following: Evaluation of asphalt concrete shall be determined from samples of asphalt concrete taken after completion of all processing (Wet Mix) or by core sample analysis of the in-place asphalt concrete or by direct central plant inspection that confirms the production of a particular mix design and verifies using samples of aggregate taken before the addition of asphalt and mineral filler (Bin). All samples shall be taken in accordance with Calif. Test 125.

When Wet Mix or Core samples of asphalt concrete are to be used for evaluation, sufficient size samples shall be taken to ensure representative and adequate quantity of material for:

1. Asphalt Content and Gradation of Extraction using Calif. Test 382 or ASTM 2172, and Calif. Test 202.
2. Stability using:
 - a. Hveem stability Value using Calif. Tests 304 and 366 shall be the average of three individual Values
or
 - b. Marshall Stability¹ in accordance with the Asphalt Institute's MS-2 fabricated and tested for traffic volume and shall be the average of three specimens.

¹Only use Marshall Stability when the deviation between individual Hveem Stabilometer Values are greater than +/-5.

When using core sample analysis, the samples must be properly prepared to safeguard against influx of outside contaminants and so that the cut surfaces do not influence the test results.

203-6.8 Asphalt Concrete Storage. add the following: Open graded or Gap graded asphalt



concrete stored in excess of 2 hours, and any other asphalt concrete stored in excess of 10 hours, shall not be used in the work.

203-11 ASPHALT RUBBER HOT MIX (ARHM) WET PROCESS

203-11.3 Composition and Grading. Add the following: Asphalt Rubber Hot Mix shall be Gap Graded class ARHM-GG-C.

SECTION 204 - LUMBER AND TREATMENT WITH PRESERVATIVES

204-1 LUMBER AND PLYWOOD

TABLE 204-1.2(A) add the following:

TABLE 204-1.2(A)	
USES	GRADES
Headers for bituminous pavement up to 50 mm x 100 mm (2"x4")	Construction grade Redwood or preservative treated construction grade Douglas Fir
Headers for bituminous pavement larger than 50 mm x 100 mm (2"x4")	Number 1 grade Redwood, or preservative treated number 1 grade Douglas Fir

SECTION 206 - MISCELLANEOUS METAL ITEMS

Add the following section:

206-7 TRAFFIC SIGNS.

206-7.1 Roadside Signs. This work shall consist of furnishing and installing roadside signs in accordance with details shown on the plans, the California Sign Specifications and these special provisions. Permanent and temporary signs shall be free from blemishes that may affect the serviceability and detract from the general sign color and appearance when viewing during daytime and nighttime from a distance of 25 feet. The face of each finished sign shall be uniform, flat, smooth, and free of defects, scratches, wrinkles, gel, hard spots, streaks, extrusion marks, and air bubbles. The front, back and edges of the sign panels shall be free of router chatter marks, burns, sharp edges, loose rivets, delaminated skins, excessive adhesive overspray, and aluminum marks.

206-7.1.2 Sign Identification. The following notation shall be placed on the lower right side of the back of each sign where the notation shall not be blocked by the sign post or frame:

- A. **PROPERTY OF THE CITY OF CARLSBAD,**
- B. Name of the sign manufacturer,
- C. Month and year of fabrication,
- D. Type of retroreflective sheeting, and
- E. Manufacturer's identification and lot number of retroreflective sheeting.

The above notation shall be applied directly to the aluminum sign panels in 1/4-inch upper case letters and numerals by die-stamp and applied by similar method to the fiberglass reinforced plastic signs. Painting, screening, or engraving of the notation will not be allowed. The notation shall be applied without damaging the finish of the sign.



206-7.1.3 Drawings. Standard signs shall be as per the most recently approved California Sign Specifications. The date of approval shall be the date most closely preceding the date of manufacture of the sign(s) or the date of the "Notice to Proceed" of this contract, whichever is most recent.

206-7.1.4 Reflective Sheeting. All advisory signs, warning signs and all regulatory signs shall be fabricated with Type IV prismatic sheeting (High Intensity Prismatic or equivalent) or Type IX prismatic cube lens sheeting (Diamond Grade VIP or equivalent) in accordance to ASTM Designation D4956 and conforming to the requirements of these special provisions.

206-7.1.5 Sign Panel. Sign panels shall be fabricated from sheet aluminum in accordance with ASTM Designation B209. Sheet aluminum shall be pretreated in accordance to ASTM Designation B449. The surface of sheet aluminum shall be cleaned, deoxidized, and coated with a light and tightly adherent chromate conversion coating free of powdery residue. The conversion coating shall be Class 2 with a mass between 10 milligrams per square foot. Following the cleaning and coating process, the sheet aluminum shall be protected from exposure to grease, oils, dust, and contaminants. Sheet aluminum shall be free of buckles, warps, dents, cockles, burrs, and defects resulting from fabrication.

206-7.1.6 Mounting Traffic Signs. Traffic signs shall be installed on 10-gage or 12-gage cold-rolled steel perforated tubing posts as shown on San Diego Regional Standard drawing M-45 or, when the sign area exceeds the maximum area allowed for on that drawing, on multiple 10-gage or 12-gage cold-rolled steel perforated tubing posts. The number of posts shall be determined by the parameters in SDRS drawing M-45 or as approved by the Engineer. Traffic signs will be provided with back braces and mounting blocks as approved by the Engineer consisting of 10-gage or 12-gage cold-rolled steel perforated tubing when multiple posts are used.

206-7.1.6 Traffic Sign Posts. Posts shall be constructed of 10-gage or 12-gage cold-rolled steel perforated tubing posts as shown on San Diego Regional Standard drawing M-45.

206-7.2 Temporary Traffic Signs. Temporary traffic signs shall consist of all signs used for the direction, warning, and regulation of vehicle (including bicycle) and pedestrian traffic during the Contractor's performance of the Work. Temporary traffic signs include both stationary and portable signs.

206-7.2.1 General. This work shall consist of furnishing and installing temporary signs in accordance with details shown on the plans, the California Sign Specifications and these special provisions. Permanent and temporary signs shall be free from blemishes that may affect the serviceability and detract from the general sign color and appearance when viewing during daytime and nighttime from a distance of 25 feet. The face of each finished sign shall be uniform, flat, smooth, and free of defects, scratches, wrinkles, gel, hard spots, streaks, extrusion marks, and air bubbles. The front, back and edges of the sign panels shall be free of router chatter marks, burns, sharp edges, loose rivets, delaminated skins, excessive adhesive overspray, and aluminum marks.

206-7.2.2 Drawings. Standard signs shall be as per the most recently approved California Sign Specifications. The date of approval shall be the date most closely preceding the date of manufacture of the sign(s) or the date of the "Notice to Proceed" of this contract, whichever is most recent.



206-7.2.3 Reflective Sheeting. All advisory signs, warning signs and all regulatory signs shall be fabricated with Type IV prismatic sheeting (High Intensity Prismatic or equivalent) or Type IX prismatic cube lens sheeting (Diamond Grade VIP or equivalent) in accordance to ASTM Designation D4956 and conforming to the requirements of these special provisions.

206-7.2.4 Sign Panel. Sign panels shall be fabricated from sheet aluminum in accordance with ASTM Designation B209. Sheet aluminum shall be pretreated in accordance to ASTM Designation B449. The surface of sheet aluminum shall be cleaned, deoxidized, and coated with a light and tightly adherent chromate conversion coating free of powdery residue. The conversion coating shall be Class 2 with a mass between 10 milligrams per square foot. Following the cleaning and coating process, the sheet aluminum shall be protected from exposure to grease, oils, dust, and contaminants. Sheet aluminum shall be free of buckles, warps, dents, cockles, burrs, and defects resulting from fabrication.

206-7.2.5 Stationary Mounted Temporary Traffic Signs. Stationary mounted temporary traffic signs shall be installed on 10-gage and 12-gage cold-rolled steel perforated tubing posts in the same manner shown on the State of California, Department of Transportation Standard Plans RS1, RS2, RS3 and RS4 for installation of roadside signs, except as follows:

- a) Wood posts shall not be used.
- b) Back braces and blocks for sign panels will not be required.
- c) The height to the bottom of the sign panel above the edge of traveled way shall be at least 2.1 m (7').
- d) Unless otherwise shown on the plans traffic sign posts shall conform in materials and installation to SDRS drawing M-45 and shall have one post provided for each 0.48 m² (5 ft²) of sign area, or the signs may be installed on existing lighting standards when approved by the Engineer.
- e) Sign panels mounted on temporary traffic sign posts shall conform to the requirements of these special provisions.

206-7.2.6 Temporary Traffic Sign Posts. Posts shall be 10-gage or 12-gage cold-rolled steel perforated tubing used for the support and stabilization of stationary mounted temporary signs. Post size and number of posts shall be as shown on the plans, except that when stationary mounted signs are installed and the type of sign installation is not shown on the plans, post size and the number of posts will be determined by the Engineer. Sign panels for stationary mounted signs shall consist of reflective sheeting applied to a sign substrate.

206-7.2.7 Portable Temporary Traffic Signs. Each portable temporary traffic sign shall consist of a base, standard or framework and a sign panel. The units shall be capable of being delivered to the site of use and placed in immediate operation. Sign panels for portable signs shall conform to the requirements of these special provisions, or shall be cotton drill fabric, flexible industrial nylon fabric, or other approved fabric. Fabric signs shall not be used during the hours of darkness. Size, color, and legend requirements for portable signs shall be as described for stationary mounted sign panels in section 206-7.2 of these special provisions. The height to the bottom of the sign panel above the edge of traveled way shall be at least 0.3-m (12"). All parts of the sign standard or framework shall be finished with 2 applications of orange enamel which will match the color of the sign panel background. Testing of paint will not be required.

Add the following section:

206-8 LIGHT GAGE STEEL TUBING AND CONNECTORS.

Add the following section:

206-8.1 General. This Section pertains to 10-gage and 12-gage cold-rolled steel perforated tubing used for the support and stabilization of signs. All shapes shall have a galvanized finish



and shall be cold-roll-formed steel conforming to ASTM Designation A-446, Grade A. Galvanizing shall conform to ASTM A-525, Designation G-90. Galvanizing shall be performed after all forming and punching operations have been completed. Cold-rolled steel perforated tubing shall be perforated on all four faces with 11mm (7/16") holes on 25 mm (1") centers.

Add the following section:

206-8.2 Tolerances. Wall thickness tolerance shall not exceed +0.28 mm, -0.13 mm (+0.011", -0.005"). Convexity and concavity measured in the center of the flat side shall not exceed a tolerance of +0.25 mm (+0.010") applied to the specific size determined at the corner. Straightness tolerance variation shall not exceed 1.6 mm in 1 m (1/16 " in 3'). Tolerance for corner radius is 4.0mm (5/32"), plus or minus 0.40 mm (1/64"). Weld flash on corner-welded square tubing shall permit 3.60 mm (9/64") radius gage to be placed in the corner. Using 10-gage or 12-gage square tube, consecutive size tubes shall telescope freely for 3.1m (10'). Tolerance on hole size is plus or minus 0.40 mm (1/64") on a size. Tolerance on hole spacing is plus or minus 3.2 mm in 6.1 m (1/8" in 20'). In addition, for the following specific sizes of light gage steel tubing, dimensional tolerances shall not exceed those listed in tables 206-8.2 (A) and 206-8.2(B).

**TABLE 206-8.2(A)
LIGHT GAGE STEEL TUBING SIZE TOLERANCE**

Nominal Outside Dimensions		Outside Tolerance for All Sides at Corners	
mm	(inches)	mm	(inches)
25 x 25	(1 x 1)	0.13	0.005
32 x 32	(1 ¹ / ₄ x 1 ¹ / ₄)	0.15	0.006
38 x 38	(1 ¹ / ₂ x 1 ¹ / ₂)	0.15	0.006
44 x 44	(1 ³ / ₄ x 1 ³ / ₄)	0.20	0.008
51 x 51	(2 x 2)	0.20	0.008
56 x 56	(2 ³ / ₁₆ x 2 ³ / ₁₆)	0.25	0.010
57 x 57	(2 ¹ / ₄ x 2 ¹ / ₄)	0.25	0.010
64 x 64	(2 ¹ / ₂ x 2 ¹ / ₂)	0.25	0.010
51 x 76	(2 x 3)	0.25	0.010

**TABLE 206-8.2(B)
LIGHT GAGE STEEL TUBING SQUARENESS OF SIDES AND TWIST**

Nominal Outside Dimension		Squareness ⁽¹⁾		Twist Permissible in 900 mm (3")	
mm	(Inches)	mm	(Inches)	mm ⁽²⁾	(Inches) ⁽²⁾
25 x 25	(1 x 1)	0.15	0.006	1.3	0.050
32 x 32	(1 ⁻¹ / ₄ x 1 ⁻¹ / ₄)	0.18	0.007	1.3	0.050
38 x 38	(1 ⁻¹ / ₂ x 1 ⁻¹ / ₂)	0.20	0.009	1.3	0.050
44 x 44	(1 ⁻³ / ₄ x 1 ⁻³ / ₄)	0.25	0.010	1.6	0.062
51 x 51	(2 x 2)	0.30	0.012	1.6	0.062
56 x 56	(2 ⁻³ / ₁₆ x 2 ⁻³ / ₁₆)	0.36	0.014	1.6	0.062
57 x 57	(2 ⁻¹ / ₄ x 2 ⁻¹ / ₄)	0.36	1.014	1.6	0.062
64 x 64	(2 ⁻¹ / ₂ x 2 ⁻¹ / ₂)	0.38	0.015	1.9	0.075
51 x 76	(2 x 3)	0.46	0.018	1.9	0.075



- (1) Tubing may have its sides failing to be 90 degrees to each other by the tolerance listed.
- (2) Twist is measured by holding down the edge of one end of a square tube on a surface plate with the bottom side of the tube parallel to the surface plate, and noting the height that either corner on the opposite end of the bottom side is above the surface plate.

Add the following section:

206-8.3 Fasteners. Fasteners used to assemble cold-rolled steel perforated tubing shall be steel “pull-through” electrogalvanized rivets with 9.5 mm (3/8”) diameter shank, 22 mm (7/8”) diameter head, and a grip range of from 5 mm (0.200”) to 0.90 mm (0.356”). The fasteners shall conform to ASTM B-633, Type III

Add the following section:

206-9 PORTABLE CHANGEABLE MESSAGE SIGN

Add the following section:

206-9.1 General. Each portable changeable message sign (PCMS) unit shall consist of a controller unit, a power supply, and a structural support system all mounted on a trailer. The PCMS unit shall be assembled to form a complete self-contained portable changeable message sign, which can be delivered to the site of the work and placed in immediate operation. The complete PCMS unit shall be capable of operating in an ambient air temperature range of -20°C (-4°F) to +70°C (158°F) and shall not be affected by unauthorized mobile radio transmissions.

The trailer shall be equipped so that it can be leveled and plumbed. Full operation height shall be with the bottom of the sign at least 2.1 m (7') above the ground and the top no more than 4.4 m (14.5') above the ground. After initial placement, PCMS shall be moved from location to location as directed by the Engineer

Add the following section:

206-9.2 Message Board. The message displayed on the PCMS shall be visible from a distance of 460 m (1500') and shall be legible from a distance of 230 m (750'), at noon on a cloudless day, by persons with vision corrected to 20/20. The sign panel shall be 3-line matrix and shall display not less than 7 characters per line. Sign messages to be displayed shall be as approved by the Engineer. The sign face shall be flat black and shall be protected from glare of the sun by a method which does not interfere with the clarity of the sign message. The sign shall be raised and lowered by means of a power driven lifting mechanism. The matrix sign shall be capable of complete alphanumeric selection.

Lamp matrix type signs shall be equipped with an automatic dimming operational mode that automatically compensates for the influence of a temporary light source or other abnormal lighting conditions. The sign shall have manual dimming operation modes of 3 or more different lamp intensities.

Matrix signs not utilizing lamps shall be either internally or externally illuminated at night. The controller shall be an all solid-state unit containing all the necessary circuitry for the storage of at least 5 pre-programmed messages. The controller shall be installed in a location allowing the operator to perform all functions from one position. A keyboard entry system shall be provided to allow an operator to generate an infinite number of additional messages over the pre-programmed stored messages. The keyboard shall be equipped with a security lockout feature to prevent unauthorized use of the controller. The controller shall contain a nonvolatile memory to hold the keyboard created messages in memory during periods when the power is not activated. The controller shall provide for a variable message display rate which allows the operator to match the information display to the speed of the approaching traffic. The flashing off time shall be operator adjustable within the control cabinet.

Add the following section:



206-9.3 Operation and Maintenance. PCMS shall be furnished, placed, operated, and maintained at locations shown on the plans, specified herein, or designated by the Engineer. The PCMS will be diligently maintained and repaired by the Contractor throughout the project in accordance with the manufacturer's recommendations. When ownership is transferred to the City (at the end of the job), it must be demonstrated to be in good working condition, and meet the provisions of these specifications, including current registration.

Add the following section:

206-9.4 Measurement and Payment. The contract unit price PCMS shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in furnishing, placing, operating, maintaining, repairing, replacing, transporting from location to location, and delivery of the signs to the City at the completion of the construction, in good working order, and as directed by the Engineer, and no other compensation will be made.

206-10 STEEL GRATINGS

206-10.1 General. Steel grating shall meet the requirements of DIN 19580 and be certified ADA compliant and slip-resistant. Grate shall be Load Class A and withstand a design load up to or exceeding 3,372 lbs per foot (15 kn). Grates slots shall be ½" or less on gratings in walkways and elongated slots must be placed longitudinally so that they are perpendicular to the dominant direction of travel. Steel grating shall be galvanized steel and all bolts and fasteners shall be stainless steel.

Contractor shall submit product cutsheet for approval prior to ordering of material.

SECTION 207 - PIPE

207-2 REINFORCED CONCRETE PIPE.

207-2.5 Joints. Add the following: When watertight joints are indicated on the plans they shall be of the rubber-gasketed type meeting the requirements of ASTM Standard Specification designations C 361-95 and C 443-94.

Pipe designated in the plans as "pressure pipe" or with a 100-year hydraulic grade line at or above the soffit shall be bell and groove spigot joint with "O" rings conforming to ASTM C-443 and C-361 for the limits shown on the plans.

207-9 IRON PIPE AND FITTINGS

207-9.2.2 Pipe Joints Unless otherwise shown on the Plans, all joints shall be the push-on type joint. Joints and accessories shall conform to the requirements and dimensions specified in ANSI A21.11, AWWA C111. Rubber gasket material shall conform to 208-1.2 and AWWA C111 and ANSI A21.11-90.

207-9.2.3 Fittings. Add the following: Ductile iron pipe and fittings shall be manufactured in accordance with ANSI 21.50, AWWA C150 and ANSI 21.51, AWWA C151, and shall be of the size and thickness classes shown on the Plans. Unless otherwise specified, size 4-inches through 6-inches DIP shall be thickness Class 52, while size 8-inches and larger shall be thickness Class 50.

207-9.2.4 Lining and Coating. Replace with the following: Unless otherwise specified, all iron pipe and fittings shall be lined with double thickness, cement mortar lining with cement



conforming to ASTM C150 Type II, AWWA C104/A21.4.90 and outside coating of bituminous coating a minimum of 2 mils. thick in accordance with AWWA C151 or C100.

207-10 STEEL PIPE

add the following:

207-10.1 General Fabricated Steel Pipe and Fittings shall conform in all respects to Carlsbad Municipal Water District Rules and Regulations for Construction of (Potable or Reclaimed) Water Mains, latest edition.

207-10.1.2 Submittals. The Contractor shall furnish submittals in accordance with Section 2-5.3, Submittals Shop Drawings. Submittals are required for the following:

- | | |
|----------------------|--|
| Shop Drawings | Layout Drawings |
| Manufacturer's tests | Mill Reports or Plant Test Reports |
| Fabrication Details | Dimensional Checks |
| Protective Coatings | Welding Procedures/Certification for Field |

Welding

Shop Drawings shall be submitted and approved prior to manufacture of pipe.

207-10.1.3 Quality Assurance. Field welders shall be certified under Section IX, Part A of the ASME Boiler and Pressure Vessel Code or in accordance with AWWA C206, Section 3. Welders shall submit a copy of their certification to the District prior to performing any field welding. Certifications shall be dated within three (3) years of the job to be performed.

The top of all pipe and specials shall be clearly identified by marking the top with "T.O.P." for easy identifications in the field. Plainly mark each length of pipe at the bell end to identify the proper location of the pipe item by reference to the layout schedule.

207-10.1.4 Protective Coatings and Linings. All steel pipe and fittings exposed within a vault or above ground shall be cement-mortar lined in accordance with AWWA C205 and C602 and painted in accordance with CMWD Approved Materials List.

All steel pipe and fittings for underground service shall be cement-mortar lined, taped wrapped and cement-mortar coated in accordance with AWWA C205, C214 and C602 unless otherwise specified on the Drawings.

Add the following section:

207-25 UNDERGROUND UTILITY MARKING TAPE.

Add the following section:

207-25.1 Detectable Underground Utility Marking Tape: Detectable Underground Utility Marking Tape shall have a minimum 0.13 mm (0.005") overall thickness, with no less than a 35 gauge (AWG), 0.14 mm aluminum foil core. The foil must be visible from both sides. The layers shall be laminated together with the extrusion lamination process, not adhesives. No inks or printing shall extend to the edges of the tape. All printing shall be encased to avoid ink rub-off. Detectable Underground Utility Marking Tape shall conform to the properties listed in Tables 207-25(A) and 207-25 (B).

**TABLE 207-25.1(A)
DETECTABLE UNDERGROUND UTILITY MARKING TAPE PROPERTIES**

Property	Method	Value
Thickness	ASTM D2103	0114 mm (0.0056")
Tensile strength	ASTM D882	4500g/cm (25 lbs/inch) (5,500 PSI)
Elongation	ASTM D882-88	<50 percent at break
Printability	ASTM D2578	>50 dynes/square centimeter



Property	Method	Value
Flexibility	ASTM D671-81	Pliable hand
Inks	Manufacturing specifications	Heat-set Mylex
Message repeat	Manufacturing specifications	Every 500 mm(20")
Foil	Manufacturing specifications	Dead soft/annealed
Top layer	Manufacturing specifications	Virgin PET
Bottom layer	Manufacturing specifications	Virgin LDPE
Adhesives	Manufacturing specifications	>30 percent, solid 1.5#/R
Bond strength	Boiling H ₂ O at 100 degrees Celsius	Five hours without peel
Colors	APWA Code	See Table 207-25.1 (B)

**TABLE 207-25.1(B)
DETECTABLE UNDERGROUND UTILITY MARKING TAPE COLORS**

Color	Utility Marked
Red	Electric power, distribution, transmission, and municipal electric systems.
Yellow	Gas and oil distribution and transmission, dangerous materials, product and steam.
Orange	Telephone and telegraph systems, police and fire communications, and cable television.
Blue	Water systems.
Green	Sanitary and storm sewer systems, nonpotable.
Brown	Force mains.
Purple	Reclaimed water lines.

Add the following section:

207-25.2 Materials Approvals. Detectable Underground Utility Marking Tape shall meet the requirements of each of the following agency/association publications.

- A. Department of Transportation, Materials Transportation Bureau, Office of Pipeline Safety. USAS code for pressure piping B31.8, paragraph 192.321(e).
- B. National Transportation Safety Board, Washington, DC, Special Study Prevention of Damage to Pipelines. Adopted June 7, 1974. Report NTSB-PSS-73-1.
- C. American Petroleum Institute (API). Recommended practice for marking buried liquid petroleum pipelines - APR RP 1109.
- D. General Services Administration, Washington, DC, Public Buildings Service Guide Specification for Mechanical and Electrical Equipment - PBS 4-1501, Amendment 2, Page 501-14, Paragraph 18, Subparagraph 18.1, Clause 18.1.1.
- E. Rural Electrification Authority (REA), U.S. Department of Agriculture, Washington, DC, National Electrical Safety Code for Underground Construction for remote and immediate hazards.

ADD Section 212-4 the following:

212-4 HYDRANTS

212-4.1 General.

Fire hydrant assembly shall be per Carlsbad Municipal Water District (CMWD) approved materials list for use on construction of potable and recycled water facilities. Fire Hydrant installation shall conform to City of Carlsbad Engineering Standards Volume 3 Chapter 6 Section 15139 "Fire Hydrants," and CMWD Standard Drawing No. W-12. Trenching shall be per CMWD Standard Drawing W-2. Backfill and resurface shall be per City of Carlsbad Supplement Standard No. GS-24 and GS-28.



212-4.2 Existing Water Line Removal

Removal or existing water lines shall conform to City of Carlsbad Engineering Standards Volume 3 Chapter 6 Section 15000 Part 3.11. Backfill and resurface shall be per City of Carlsbad Supplement Standard No. GS-24 and GS-28.

SECTION 209 - ELECTRICAL COMPONENTS

209 ELECTRICAL COMPONENTS. Modify as follows: Section 86, "Signals, Lighting and Electrical Systems", of the Caltrans Standard Specifications replaces Section 209, "Electrical Components", and Section 307, "Street Lighting and Traffic Signals", of the SSPWC, in all matters pertaining to the specifications for measurement, payment, warranty, materials and methods of construction of street lighting and traffic signals. Section 86 of the Caltrans Standard Specifications is unmodified excepted as specified herein. For electrical components provided and installed in systems NOT including street lighting and traffic signals, Section 209 SSPWC is unmodified except as specified in sections other than Section 209, herein.

SECTION 86 - SIGNALS, LIGHTING AND TRAFFIC ELECTRICAL SYSTEMS

86-2 MATERIALS AND INSTALLATION

Replace Section 86-2.02 with the following:

86-2.02 Removing and Replacing Improvements. In addition to the requirements of sections 7-9, "Protection and Restoration of Existing Improvements" and 306-1.5, "Trench Resurfacing", improvements such as sidewalks, curbs, gutters, portland cement concrete and asphalt concrete pavement, underlying material, lawns and plants, and any other improvements removed, broken or damaged by the Contractor's operations, shall be replaced or reconstructed with the same kind of material as found on the work or with materials of equal quality. The new work shall be left in a serviceable condition.

Whenever a part of a square or slab of existing concrete sidewalk, curb, gutter, or driveway is broken or damaged, the entire square, section or slab shall be removed and the concrete reconstructed as above specified. The outline of all areas to be removed in portland cement concrete sidewalks and driveways and in pavements shall be cut to a minimum depth of 0.17 foot (2") with an abrasive type saw prior to removing the sidewalk, driveways and pavement material. Cuts shall be neat and true along score lines, with no shatter outside the removal area.

86-2.05 Conduit. To the City Supplement, ADD the following:

All conduit shall be two inches (2") minimum schedule 80 PVC unless otherwise shown on plans.

Replace Section 86-2.05B with the following:

86-2.05B Use. Exposed conduit installed on a painted structure shall be painted the same color as the structure. Unless otherwise indicated, the minimum metric trade size of conduit shall be:

- 1) From an electrolier to the adjacent pull box shall be Size 41 (1 1/2" dia).
- 2) From a pedestrian push button post to the adjacent pull box shall be Size 27 (1" dia).
- 3) From a signal standard to the adjacent pull box shall be Size 53 (2" dia).
- 4) From a controller cabinet to the adjacent pull box shall be Size 78 (3" dia).



- 5) For detector runs shall be Size 78 (3" dia).
- 6) Not otherwise specified shall be Size 78 (3" dia).

Add the following:

86-2.08 Conductors. Signal cable shall be used for all new traffic signal installations. Individual conductors shall not be used.

Add the following:

86-2.09B Installation. All conductors shall be pulled directly from the spool into the conduit and shall not be dragged on the ground as to cause damage to the conductors.

86-3 CONTROLLER ASSEMBLIES

86-3.01 Controller Assembly

Traffic signal controllers shall be Trafficware 2070 LX with SCOUT controller software and shall conform with the latest edition of Standard Specifications, State of California, Department of Transportation," Section 86, and "Traffic Signal Control Equipment Specifications," State of California. Controller assemblies shall be on the current State of California Qualified Products List (QPL). Traffic Signal Control Equipment Specifications shall have precedence over Caltrans Standard Specifications.

Add the following:

86-3.04A Cabinet Construction. Controller cabinets shall be fabricated from aluminum sheet and shall be McCain 352i ATC or approved equal. Controller cabinets shall have full size front and back two doors equipped with a Best Company lock core and lock. Key and lock core shall be unique to the City of Carlsbad. No other manufacturers shall be accepted.

Cabinet shall meet the following requirements:

Dimensions: 67"H x 24"W x 30"

Material: 5052-H32 aluminum, 0.125" thick

Finish: Anodized

Mounting: Base mounted including four (4) 3/4" x 16" anchor bolts

Ventilation: Thermostatically controlled 100 CFM fans (2) Louvered air intake in door, pleated fiber

Cabinet shall include the following features:

- One (1) Field output termination file
- Two (2) Field input termination file
- EDI auxiliary display unit or approved equal
- Flashable and programmable channels
- Hermetically sealed high-density FTR featuring an LED indicator
- Interior LED cabinet lights (2), front and back
- Model 2202 dual flasher/switch pack combination
- Continuously welded exterior
- Police Panel Pickleswitch

86-3.04B Layer 2 Ethernet Switch

Contractor shall coordinate with City to determine switch make and model prior to ordering of material. The Layer 2 Ethernet switch shall meet the following specifications:

- a) Layer 2 switch shall provide 8 Ethernet 10/100 ports and 2 dual-purpose fiber uplinks.



- b) Layer 2 switch shall include two 1000Base SFP ports.
- c) Layer 2 switch shall include SFP transceivers.
- d) SFP transceiver shall support 1000BASE-TX SMF, 1300nm wavelength, and reach 10km over single-mode fiber. SFP transceiver shall be compatible with Layer 3 switch transceivers. SFP transceiver shall NOT void warranty of approved switch.
- e) Layer 2 switch shall include power supply and din rail or 19" mounting kit.
- f) Layer 2 switch shall operate within a temperature range of -40 to 167°F.
- g) Layer 2 switch shall be supplied with a field hardened power supply unit.

86-3.04D Conflict Monitor Unit

The CMU shall be EDI CMUip-2212-HV or approved equal.

86-3.04E Accessible Pedestrian Signal (APS) Pedestrian Pushbutton System

The APS control module shall be Polara EZ COMM Navigator 2-wire System or approved equal. The pushbutton assembly housing shall be yellow.

86-3.04F Cellular Modem

Contractor shall coordinate with City for type of modem prior to ordering of material. The cell modem shall be Cradlepoint 4G LTE or approved equal.

Add the following section:

86-3.05F Document Tray. Controller cabinets shall have a pull-out type document tray.

86-4 TRAFFIC SIGNAL FACES AND FITTINGS

Replace Section 86-4.06 with the following:

86-4.06 Pedestrian Signal Faces. Message symbols for pedestrian signal faces shall be white WALKING PERSON, Portland orange UPRAISED HAND and COUNTDOWN DIGITS. Pedestrian signal faces shall conform to definitions and practices described in "Pedestrian Traffic Control Signal Indications" published in the *Equipment and Materials Standards of the Institute of Transportation Engineers*, (referred to in this document as "PTCSI") and in the Applicable Sections of Manual on Uniform Traffic Control Devices (MUTCD) 2003 Section 4E.

Add the following section:

86-4.06A Physical and Mechanical Requirements.

Add the following section:

86-4.06A(1) General. Modules shall not require special tools for installation and shall fit into existing pedestrian signal housings built for the PTCSI sizes stated in Section 1 of the "walking person" and "hand" icon pedestrian signal indication Standard without modification to the housing.

Installation of a retrofit replacement module into an existing pedestrian signal housing shall only require the removal of the existing optical unit components, i.e., lens, lamp module, gaskets, and reflector; shall be weather tight and fit securely in the housing; and shall connect directly to existing electrical wiring.

Add the following section:

86-4.06A(2) The Module under Physical and Mechanical Requirements.



- a. The LED module shall have a visual appearance similar to that of an incandescent lamp (ie: Smooth and non-pixelated).
- b. The module lens shall not be a replaceable part. Screwed on lenses are not allowed. Only modules with internal mask shall be utilized. No external silk-screen shall be permitted.
- c. The dividers inside the module that make up the icons and digits shall be black so as to eliminate sun phantom effect. When not illuminated with the sun shining into the module, the WALKING PERSON and UPRAISED HAND and COUNTDOWN DIGITS shall not be readily visible.
- d. The countdown digits of the pedestrian signal module shall be located adjacent to the associated UPRAISED HAND (symbolizing DON'T WALK). When displaying a number "1" for both digits, the number "1" shall use the two segments furthest to the right. The digits shall remain on during the entire count down cycle. Flashing digits are not allowed.
- e. The display of the number of remaining seconds shall begin only at the beginning of the pedestrian change interval. After the countdown displays zero, the display shall remain dark until the beginning of the next countdown.
- f. The walking person, hand icons and countdown digits (16"x18" size only) shall be incandescent looking. The configurations of the walking person icon, hand icon and numbers icons are illustrated in Figures 1, 2 (per PTCSI Part 2 Specification) and Figure 3 respectively.



Figure 1

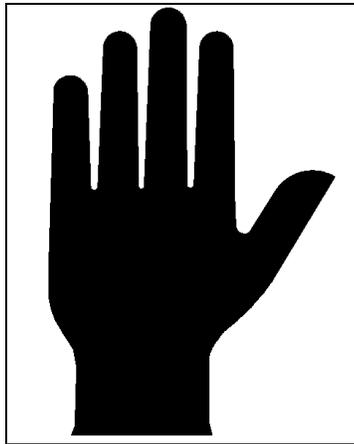


Figure 2

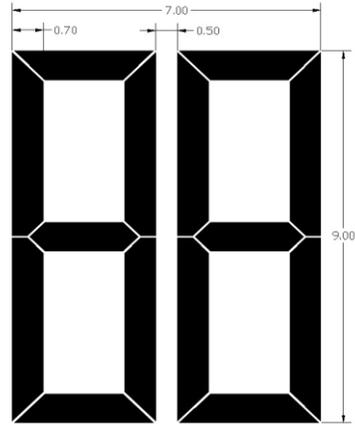


Figure 3

Dimensions for Figures 1, 2 and 3

For each nominal message bearing surface (module) size, use the corresponding minimum H (height) and W (width) measurements:

Module Size	Icon Height	Icon Width	Countdown Height	Countdown Width	Countdown Segment Width
406 x 457 mm (16 x 18 in)	297 mm 11 in	178 mm 7 in	229 mm 9 in	178 mm 7 in	17.78 mm 0.7 in

Note: The units shall not have any external attachments, dip switches, toggle switches or options that will allow the mode to be changed from counting the clearance cycle, to the full walk/don't walk cycle or any other modification to the icons or digits.



Add the following section:

86-4.06A(3) Environmental Requirements.

- a. All exposed components of a module shall be suitable for prolonged exposure to the environment, without appreciable degradation that would interfere with function or appearance. As a minimum, selected materials shall be rated for service for a period of a minimum of 60 months in a south-facing installation.
- b. The module shall be rated for use in the ambient operating temperature range, measured at the exposed rear of the module, of -40°C to +74°C. (-40°F to +165°F).
- c. A module shall be protected against dust and moisture intrusion, including rain and blowing rain. Shall be sealed and meet MIL-STD-810F Procedure I, Rain & Blowing Rain specifications.
- d. The module lens shall not crack, craze or yellow due to solar UV irradiation typical for a south-facing Arizona Desert installation after a minimum of 60 months in service.

Add the following section:

86-4.06A(4) Construction.

- a. To prevent water seepage between the back cover and the electrical wires, or between the copper and insulation of the wires, the electrical wires shall not penetrate the LED module housing.
- b. The module shall be a single, self-contained device, not requiring on-site assembly for installation into an existing pedestrian signal housing. The power supply shall be designed to fit and mount inside the pedestrian signal module.
- c. The assembly and manufacturing process for the module shall be designed to assure all internal LED and electronic components are adequately supported to withstand mechanical shock and vibration from high winds and other sources.

Add the following section:

86-4.06A(5) Materials.

- a. Materials used for the lens and LED module construction shall conform to ASTM specifications where applicable.
- b. Enclosures containing the power supply and electronic components of the LED module shall be made of UL94 flame retardant materials. The lens of the LED module is excluded from this requirement.
- c. The front window shall be a transparent polycarbonate material with internal masking to prevent the icons and digits from being visible when not in operation. External masking or silk-screen technology shall not be permitted. When not illuminated, the Walking Person, Hand and Countdown Digits shall not be readily visible.

Add the following section:

86-4.06A(6) Module Identification.

- a. Each module shall be identified on the backside with the manufacturer's name, model, serial number and operating characteristics of each symbol. The operating characteristics identified shall include the nominal operating voltage and stabilized power consumption, in watts and Volt-Amperes.
- b. Modules conforming to this specification (WALKING PERSON, UPRAISED HAND only), may have the following statement on an attached label: "Manufactured in Conformance



with the ITE Pedestrian Traffic Control Signal Indications - Part 2: Light Emitting Diode (LED) Pedestrian Signal Modules”.

Add the following section:

86-4.06B Photometric Requirements.

Add the following section:

86-4.06B(1) Luminance, Uniformity and Distribution.

- a. For a minimum period of 60 months, the maintained minimum luminance values for the modules under the operating conditions defined in Sections 2.3.1 and 4.2.1, when measured normal to the plane of the icon surface, shall not be less than:
 - Walking person: 2,200 cd/m²;
 - Hand: 1,400 cd/m².
 - Countdown digits: 1,400 cd/m²;

The luminance of the emitting surface, measured at angles from the normal of the surface, may decrease linearly to a value of 50% of the values listed above at an angle of 15 degrees. The light output requirements in this specification apply to pedestrian signal heads without any visors, hooded or louvered (egg-crate).

- b. The LED module shall have a visual appearance similar to that of an incandescent lamp (i.e., smooth and non-pixelated).
- c. Maximum permissible luminance: When operated within the temperature range specified in Section 2.3.2, the actual luminance for a module shall not exceed three times the required peak value of the minimum maintained luminance.
- d. Luminance uniformity: The uniformity of the signal output across the emitting section of the module lens (i.e. the hand, person or countdown icon) shall not exceed a ratio of 5 to 1 between the maximum and minimum luminance values (cd/m²).

Add the following section:

86-4.06B(2) Chromaticity.

- a. The standard colors for the LED Pedestrian Signal Module shall be White for the walking person and Portland Orange for the hand icon and the countdown digits. The colors for these icons shall conform to the following color regions, based on the 1931 CIE chromaticity diagram:

Walking Person —White:

Blue boundary:	$x = 0.280.$			
1 st Green boundary:	$0.280 \leq x < 0.400$			
	$y = 0.7917 \cdot x + 0.0983.$			
2 nd Green boundary:	$0.400 \leq x < 0.450$			
	$y = 0.4600 \cdot x + 0.2310.$			
Yellow boundary:	$x = 0.450$			



1st Purple boundary: $0.450 \leq x < 0.400$
 $y = 0.4600 \cdot x + 0.1810.$

2nd Purple boundary: $0.400 \leq x < 0.280$
 $y = 0.7917 \cdot x + 0.0483.$

White		
Point	x	y
1	0.280	0.320
2	0.400	0.415
3	0.450	0.438
4	0.450	0.388
5	0.400	0.365
6	0.280	0.270

Hand and Countdown Digits—Portland Orange:

Yellow boundary: $y = 0.390$
White boundary: $0.600 \leq x \leq 0.659$
 $y = 0.990 - x$
Red boundary: $y = 0.331.$

Portland Orange		
Point	X	Y
1	0.609	0.390
2	0.600	0.390
3	0.659	0.331
4	0.669	0.331

b. Color Uniformity:

Walking Person—White: $\sqrt{(\Delta x^2) + (\Delta y^2)} \leq 0.04$

where Δx and Δy are the differences in the chromaticity coordinates of the measured colors to the coordinates of the average color, using the CIE 1931 Chromaticity Diagram and a 2 degree Standard Observer.

Hand and Countdown Digits—Portland Orange:
The dominant wavelength for any individual color measurement of a portion of the emitting surface of a module shall be within $\pm 3\text{nm}$ of the dominant wavelength for the average color measurement of the emitting surface as a whole.

Add the following section:
86-4.06C Electrical.

Add the following section:
86-4.06C(1) General. All wiring and terminal blocks shall meet the requirements of Section 13.02 of the VTCSH Standard. Maximum of three secured, color coded, 1 meter (39 in) long 600 V, 16 AWG minimum, jacketed wires, conforming to the National Electrical Code, rated for



service at +105°C, are to be provided for electrical connection. The conductors shall be color coded with orange for the hand, blue for the walking person and white as the common lead.

Add the following section:

86-4.06C(2) Voltage.

- a. LED modules shall operate from a 60 ± 3 Hertz ac line power over a voltage range from 80 to 135 VAC RMS.
- b. Nominal operating voltage for all measurements shall be 120 ± 3 VAC RMS.
- c. Fluctuations in line voltage over the range of 80 to 135 VAC RMS shall not affect luminous intensity by more than $\pm 10\%$.
- d. Catastrophic failure of one LED light source in Man & Hand icons shall not result in the loss of more than the light from that one LED.
- e. To prevent the appearance of flicker, the module circuitry shall drive the LEDs at frequencies greater than 100 Hz when modulated, or at DC, over the voltage range specified in Section 4.2.1.
- f. Low Voltage Turn Off: There should be no illumination of the module when the applied voltage is less than 35 VAC RMS. To test for this condition, each icon must first be fully illuminated at the nominal operating voltage. The applied voltage shall then be reduced to the point where there is no illumination. This point must be greater than 35 VAC RMS.
- g. Turn-ON and Turn-OFF Time: A module shall reach 90% of full illumination (turn-ON) within 75 msec of the application of the nominal operating voltage. The signal shall cease emitting visible illumination (turn-OFF) within 75 msec of the removal of the nominal operating voltage.
- h. Default Condition: For abnormal conditions when nominal voltage is applied to the unit across the two-phase wires (rather than being applied to the phase wire and the neutral wire) the pedestrian signal unit shall default to the hand symbol.
- i. Icon Power Supplies: LED pedestrian countdown modules shall have two separate power supplies for powering the Walking Person and Upraised Hand icons. The circuitry shall be unrelated to power the LED Walking Person icon and the LED Upraised Hand icon, in order to virtually eliminate the risk of displaying the wrong icon

Add the following section:

86-4.06C(3) Transient Voltage Protection. The on-board circuitry of a module shall include voltage surge protection:

- To withstand high-repetition noise transients and low-repetition high-energy transients as specified in NEMA Standard TS-2 2003; Section 2.1.8
- Section 8.2 IEC 1000-4-5 & Section 6.1.2 ANSI/IEEE C62.41.2-2002, 3kV, 2 ohm
- Section 8.0 IEC 1000-4-12 & Section 6.1.1 ANSI/IEEE C62.41.2-2002, 6kV, 30 ohm

Add the following section:

86-4.06C(4) Electronic Noise. The LED signal and associated on-board circuitry shall meet the requirements of the Federal Communications Commission (FCC) Title 47, Subpart B, Section 15 regulations concerning the emission of electronic noise by Class A digital devices.

Add the following section:

86-4.06C(5) Power Factor (PF) and AC Harmonics.



- a. The modules shall provide a power factor of 0.90 or greater when operated at nominal operating voltage, and 25°C (77°F).
- b. Total harmonic distortion induced into an AC power line by the module, operated at nominal operating voltage, and at 25°C (77°F) shall not exceed 20%.

Add the following section:

86-4.06C(6) Controller assembly Compatibility.

- a. The current draw shall be sufficient to ensure compatibility and proper triggering and operation of load current switches and conflict monitors in signal controller units.
- b. Off State Voltage Decay: When the module is switched from the On state to the Off state the terminal voltage shall decay to a value less than 10 VAC RMS in less than 100 milliseconds when driven by a maximum allowed load switch leakage current of 10 milliamps peak (7.1 milliamps AC)

Add the following section:

86-4.06C(7) Constant Current Drive. The countdown digits shall be driven by constant current to improve LED efficiency and lifespan.

Add the following section:

86-4.06C(8) Power Consumption. Maximum power consumption requirements for the modules are as follows:

	<u>25°C</u>
"Hand"	11.0 Watts
"Walking Person"	8.0 Watts
"Count-Down Display"	6.0 Watts (when display shows "88")

Add the following section:

86-4.06D Module Functions.

Add the following section:

86-4.06D(1) Cycle. The module shall operate in one mode: *Clearance Cycle Countdown Mode Only*. The module shall start counting when the flashing don't walk turns on and will countdown to "0" and turn off when the steady "Don't Walk" signal turns on. The module shall not have user accessible switches or controls for the purpose of modifying the cycle, icons or digits.

Add the following section:

86-4.06D(2) Learning Cycle. At power on, the module enters a single automatic learning cycle. During the automatic learning cycle, the countdown display shall remain dark.

Add the following section:

86-4.06D(3) Cycle Modification. The unit shall re-program itself if it detects any increase or decrease of Pedestrian Timing. The digits shall go blank once a change is detected and then take one complete pedestrian cycle (with no counter during this cycle) to adjust its buffer timer.

Add the following section:

86-4.06D(4) Recycling. The module shall allow for consecutive cycles without displaying the steady Hand icon ("Don't Walk").

Add the following section:



86-4.06D(5) Pre-Emption. The module shall recognize preemption events and temporarily modify the crossing cycle accordingly.

- If the controller preempts during the walking man, the countdown shall follow the controller's directions and shall adjust from walking man to flashing hand. It shall start to count down during the flashing hand.
- If the controller preempts during the flashing hand, the countdown shall continue to count down without interruption.

The next cycle, following the preemption event, shall use the correct, initially programmed values. This specification is worded such that the flashing don't walk time is not modified.

Add the following section:

86-4.06D(6) "Don't Walk" Steady. If the controller output displays Don't Walk steady condition or if both the hand /person go dark and the unit has not arrived to zero, the unit suspends any timing and the digits shall go dark.

Add the following section:

86-4.06D(7) Power Outage. The digits will go dark for one pedestrian cycle after loss of power of more than 2.0 seconds.

Add the following section:

86-4.06D(8) Digit Operation. The digits shall remain continuously lit during the clearance cycle and shall not flash in conjunction with the Hand/Don't Walk icon.

Add the following section:

86-4.06E Quality Assurance.

Add the following section:

86-4.06E(1) General. Unless otherwise specified all of the test will be conducted at an ambient temperature of 25°C and at the nominal operating voltage of 120 VAC RMS.

- a. The modules shall be manufactured in accordance with a vendor quality assurance (QA) program.
- b. QA process and test result documentation shall be kept on file for a minimum period of seven years

Add the following section:

86-4.06E(2) Conformance. The module designs not satisfying design qualification testing and the production quality assurance testing performance requirements shall not be labeled, advertised, or sold as conforming to this specification.

Add the following section:

86-4.06E(3) Production Tests & Inspections. All lamps manufactured shall be affixed with an Intertek ETL Verified label (or other 3rd Party "Nationally Recognized Testing Laboratory/NRTL") to demonstrate compliance to Section 6.3 (Production Tests & Inspections) of the latest ITE PTCSI Pedestrian specification, dated March 19, 2004.

- a. All new LED modules tendered for sale shall undergo the following Production Test and Inspection prior to shipment. Failure of a module to meet requirements of these



Production Test and Inspection shall be cause for rejection. Test results shall be maintained for a period of 5 years following the production of the last production unit.

- b. All LED modules shall be tested for maintained minimum luminous intensity. A single point measurement with a correlation to the intensity requirements referred to in Section 3.0 may be used. The LED module shall be operated at nominal operating voltage and at an ambient temperature of 25°C (77°F).
- c. All LED modules shall be tested for power factor per the requirements of Section 4.6.1. A commercially available power factor meter may be used to perform this measurement.
- d. All LED modules shall be measured for current flow in Amperes. The measured current values shall be compared against those resulting from design qualification measurements in Section 5.4.6.1. Measured current values in excess of 120% of the design qualification current values shall be cause for rejection.
- e. All LED modules shall be visually inspected for any exterior physical damage or assembly anomalies.

Add the following section:

86-4.06E(4) Design Qualification Testing.

- a. Design Qualification testing shall be performed on new module designs, and when a major design change has been implemented on an existing design.
- b. High Temperature High Humidity (HTHH): 1000 hours at +60°C (+140°F), 90% Relative Humidity with cycling starting at 30 down to 0. This will ensure that each symbol is properly tested.
- c. Unless otherwise specified, all of the tests shall be conducted on the same set of randomly selected modules, hereafter called the sample set, at an ambient temperature of 25°C and at the nominal operating voltage of 120 VAC RMS.
- d. Testing shall be performed once every 5 years or when the module design or LED technology has been changed. The module manufacturer shall retain test data for a minimum period of 7 years and for a period of at least 5 years beyond the last date of manufacture of that model type.
- e. Conditioning: The module shall be energized for a minimum of 24 hours in an ambient temperature of +60°C (+140°F), 0% Relative Humidity with cycling starting at 99 down to 0. This will ensure that each symbol is properly conditioned.
- f. Mechanical Vibration: Mechanical vibration testing shall be performed per MIL-STD-883, Test Method 2007.
- g. Temperature Cycling: Temperature cycling shall be performed per MIL-STD-883, Test method 1010. The temperature range shall include the full ambient operating temperature range specified in Section 2.3.2.
- h. Moisture Resistance: Moisture resistance testing shall be performed per MIL-STD-810F, Test Method 506.4, Procedure I, Rain and Blowing Rain. The test shall be conducted on stand-alone modules, without a protective housing. The modules shall be vertically oriented, such that the lens is directed towards the wind source when at a zero rotation angle. The modules shall be energized throughout the test. The water shall be at 25° ± 5°C (77° ± 9°F). The wind velocity shall be 80 km/hr (50 mph).

Add the following section:

86-4.06E(5) Warranty. Manufacturers will provide the following warranty provisions. Replacement or repair of an LED signal module that fails to function as intended due to workmanship or material defects within the first 5 years (60 months) from the date of delivery.

86-4.07 LED Blank-Out Sign.



Blank-Out signs shall be manufactured by McCain or be a City approved equal meeting the following requirements:

Standard Features

- Conforms to applicable MUTCD standards
- LED's mounted on modular PCB's
- LED strings with no more than 4 LED's per string, are staggered to maintain symbol integrity if an LED fails
- Non-glare, high-impact, gray acrylic window
- Automatic dimming adjusts to ambient light level • Can withstand temperatures ranging from -37° C to 74° C and humidity from 0 to 95% (non-condensing)
- 7" sun visor
- Screened weep holes
- Reliable FR4 PCB's, black solder mask, conformal coated

Assemblies

- Modular message circuit boards (with LED's)
- Solid state power supply
- LED interface board (dimmer)
- Photocell
- Control relay
- Field connection terminal block

Housing: Material: 5052-H32 marine-grade aluminum, 0.125" thick; Finish: Black powder coat (custom colors available)
Access: Front, hinged door with padlock hasp
LED Type / Colors: Red: 630 nm λ and amber: 591 nm λ , high intensity, AlInGaP II White: x=0.31, y=0.31, high intensity, InGaN
Sign Viewing Angle: Red & white LED's: 23°, amber LED's: 30°
Power Supply: Solid state, 95 - 125 VAC input, 12-15 VDC output, >95% power factor
Power Consumption: 35 W - 105 W (varies per message)
Ventilation: Ventilation louvers provided on back of housing, includes washable filter

86-5 DETECTORS

Add the following section:

86-5.01B Emergency Vehicle Pre-Emption Detector System. Each emergency vehicle pre-emption detector system shall be Opticom and shall conform to the details shown on the plans and these special provisions and shall consist of an optical emitter assembly or assemblies located on the appropriate vehicle and an optical detector/discriminator assembly or assemblies located at the traffic signal. Each system shall permit detection of Class II emergency vehicles. Class II emergency vehicles shall be capable of being detected at any range up to 2,500 feet from the optical detector.

Add the following section:

86-5.01B(1) Optical Emitter Assembly. Each optical emitter assembly shall be Opticom and shall consist of an emitter unit, an emitter control unit and connecting cables and shall conform to the following:



Each optical emitter assembly, including lamp, shall be designed to operate over an ambient temperature range of -34°C to 74°C at both modulation frequencies and to operate continuously at the higher frequency for a minimum of 3,000 hours at 25°C ambient before failure of lamp or any other component.

Each emitter unit shall be controlled by a single, maintained-contact switch on the respective emitter control unit. The switch shall be capable of being positioned in a readily accessible location to the vehicle driver. The control unit shall contain a pilot light to indicate that the emitter power circuit is energized and shall be capable of generating only Class II modulating code.

Functional Requirements. Each emitter unit shall transmit optical energy in one direction only. The signal from each emitter unit shall be capable of being detected at a distance of 2,500 feet when used with a standard optical detection/discriminator assembly. The modulation frequency for Class II signal emitters shall be 14.035 Hz \pm 0.003 Hz. The standard optical detection/discriminator assembly to be used in conducting the range tests shall be available from the manufacturer of the system. A certified performance report shall be furnished by the contractor with each assembly.

The emitter unit shall be configured with a grating to provide precise directionality control.

Electrical Requirements. Each optical emitter assembly shall be capable of providing full light output with input voltages between 10 and 16 volts DC. An optical emitter assembly shall not be damaged by input voltages up to 7.5 volts DC about the supply voltage. The optical emitter assembly shall not generate voltage transient, on the input supply, which exceeds the supply voltage by more than 4 volts. Each optical emitter assembly shall not consume more than 100 watts at 17.5 volts DC and shall have a power input circuit breaker rated at 10 to 12 amperes, 12 volts DC.

The design and circuitry of each emitter unit shall permit its use on vehicles with either negative or positive ground without disassembly or rewiring of the unit.

Mechanical Requirements. Each emitter unit shall be housed in a weatherproof, corrosion-resistant housing. The housing shall be provided with facilities to permit mounting on various types of vehicles and shall have provision for proper alignment of the emitter unit and for locking of the emitter unit into proper alignment.

Each emitter control unit shall be provided with appurtenant hardware to permit its mounting in or on an emergency vehicle or mass transit vehicle. Where required for certain emergency vehicles, the emitter control unit and all exposed controls shall be weatherproof.

Each emitter shall include a multi-purpose port compliant with the SAE J1708 communication standard to enable unit configuration to be set into the emitter and read from the emitter.

Add the following section:

86-5.01B(2) Optical Detection/Discriminator Assembly. Optical detection/discriminator assembly shall consist of one or more optical detectors, connecting cable and a discriminator module and conform to the following:



Each such assembly, when used with standard emitters, shall have a range of up to 2,500 feet for Class II signals. Standard emitters for Class II signals shall be available from the manufacturer of the system. Range measurements shall be taken with all range adjustments on the discriminator module set to "maximum".

Add the following section:

86-5.01B(3) Optical Detector. Each optical detector shall be a waterproof unit capable of receiving optical energy from one or two separately aimable directions. The horizontal angle between the two directions shall be variable from 5 degrees to 180 degrees. The reception angle for each photocell assembly shall be a maximum of 8 degrees in all directions about the aiming axis of the assembly. Measurements of reception angle will be taken at a range of 2,500 feet for a Class II emitter.

All internal circuitry shall be solid state and electrical power shall be provided by the associated discriminator module.

Each optical detector shall be contained in a housing, which shall include one or two rotatable photocell assemblies, an electronic assembly and a base. The base shall have an opening to permit its mounting on a mast arm. Each optical detector shall weigh no more than 2.5 pounds and shall present a maximum wind load area of 36 square inches. The housing shall be provided with weep holes to permit drainage of condensed moisture. Each optical detector shall be installed, wired and aimed as specified by the manufacturer.

Add the following section:

86-5.01B(4) Optical Detector Cable. Optical detector cable shall meet the requirements of IPCEA-S-61-402/NEMA WC 5, Section 7.4, 600 volt control cable, 75°C, Type B and the following:

The cable shall contain three conductors, each of which shall be AWG #20 (7x28) stranded, tinned copper with low-density polyethylene insulation. Minimum average insulation thickness shall be 25 mils. The insulation of individual conductors shall be color coded as follows:

Yellow	-	Detector Signal #1
Blue	-	Detector Signal #2
Orange	-	Power (+)
Bare (Drain)	-	Common or Ground

The shield shall be either tinned copper braid or aluminized polyester film with a nominal 20 percent overlap. Where the film is used, a AWG #20 (7x28) standard, tinned, bare drain wire shall be placed between the insulated conductors and the shield and in contact with the conductive surface of the shield.

The jacket shall be black polyvinyl chloride with a minimum rating of 600 volts and 80°C and a minimum average thickness of 45 mils. The jacket shall be marked as required by IPCEA/NEMA. The finished outside diameter of the cable shall not exceed 0.3 inches.

The capacitance of the optical detector cable, as measured between any conductor and the other conductors and the shield, shall not exceed 14.3 microfarads per 1000 feet. The characteristic impedance of the optical detector cable shall be 0.6 ohms per 1000 feet.



Add the following section:

86-5.01B(5) Discriminator Module. Each discriminator module shall be Opticom 764 and shall be designed to be compatible and usable with Model 2070 controller unit and to be mounted in the input file of a Model 332 controller cabinet, and shall conform to the requirements of Chapter 1 of the State of California, Department of Transportation, "Traffic Signal Control Equipment Specifications", dated January 1989, and to all addenda thereto current at the time of project advertisement.

Each discriminator module shall be capable of operating one or two channels and shall be capable of:

1. Receiving Class II signals at a range of up to 2,500 feet.
2. Decoding the signal on the basis of frequency at $14.035 \text{ Hz} \pm 0.003 \text{ Hz}$ for Class II signals.
3. Establishing the validity of received signals on the basis of frequency and length of time received. A signal shall be considered valid only when received for more than 0.50 seconds. No combination of Class I signals shall be recognized as a Class II signal regardless of the number of signals being received, up to a maximum of ten signals. Once a valid signal has been recognized, its effect shall be held by the module in the event of temporary loss of the signal for a period adjustable from 4.5 seconds to 11 seconds in at least 2 steps at 5 ± 0.5 seconds and 10 ± 0.5 seconds.
4. Providing an output for each channel that will result in "low" or grounded condition of the appropriate input of a Model 170 controller unit. For Class II signals the output shall be steady.

Each discriminator module shall be powered from 115 volt (95 volts AC to 135 volts AC), 60 Hz mains and will contain an internal, regulated power supply that supports up to twelve optical detectors. Electric power, one detector input for each channel and one output for each channel, shall terminate at the printed circuit board edge connector pins listed below. Board edge connector pin assignments shall be as follows:

<u>Pins</u>	<u>Function</u>	<u>Pins</u>	<u>Function</u>
A	Ground	P	Not used
D	Channel A primary detector input	R	Detector 24 VDC power output
E	Detector 24 VDC power output	S	Not used
F	Channel A output, collector (+)	T	Not used
H	Channel A output, emitter (-)	U	Not used
J	Channel B primary detector input	V	Detector ground
K	Detector ground	W	Channel B output collector (+)
L	Earth ground	X	Channel B output emitter (-)
M	AC - (in)	Y	Not used
N	AC + (in)	Z	Not used

Two auxiliary inputs for each channel shall enter each module through the front panel connector. Pin assignment for the connector shall be as follows:

<u>Pins</u>	<u>Function</u>
13	Auxiliary detector 2 input, Channel A
14	Auxiliary detector 1 input, Channel B
15	Auxiliary detector 2 input, Channel B
28	Auxiliary detector 1 input, Channel A



Each channel output shall be an optically isolated NPN open collector transistor capable of sinking 50 milliamperes at 30 volts and shall be compatible with Model 170 controller unit inputs.

Each discriminator module shall be provided with means of preventing transients received by the detector from affecting the Model 170 controller assembly.

Each discriminator module shall have a single connector board, shall be capable of being inserted into the input file of a Model 332 cabinet and shall occupy one slot width of the input file. The front panel of each module shall have a handle to facilitate withdrawal and the following controls and indicators for each channel:

1. A Command (High) and Advantage (Low) solid-state LED indicator for each channel to display active calls.
2. A test switch for each channel to test proper operation of Command or Advantage priority.
3. A single confirmation light control output for each channel. These outputs shall be user configurable through software for a variety of confirmation light sequences.

The front panel shall be provided with a single circular, bayonet-captured, multi-pin connector for two auxiliary detector inputs for each channel. Connector shall be a mechanical configuration equivalent to a D-Shell 44-Pin front panel.

Wiring for a Model 332 cabinet shall conform to the following:

Slots 12 and 13 of the input file "J" shall be wired to accept a two-channel module. Field wiring for the primary detectors, except 24-volt DC power, shall terminate on either terminal board TB-9 in the controller cabinet or on the rear of input file "J", depending on cabinet configuration. Where TB-9 is used, position assignments shall be as follows:

<u>Position</u>	<u>Assignment</u>
4	Channel A detector input, 1 st module (Slot J-12)
5	Channel B detector input, 1 st module (Slot J-12)
7	Channel A detector input, 2 nd module (Slot J-13)
8	Channel B detector input, 2 nd module (Slot J-13)

The 24 volt cabinet DC power shall be available at Position 1 of terminal board TB-1 in the controller cabinet.

All field wiring for the auxiliary detectors shall terminate on terminal board TB-0 in the controller cabinet. Position assignments are as follows:

<u>Position</u>	<u>Assignment</u>
7	+24VDC from (J-13E)
8	Detector ground from (J-13K)
9	Channel A auxiliary detector input 1
10	Channel A auxiliary detector input 2
11	Channel B auxiliary detector input 1
12	Channel B auxiliary detector input 2



The contractor shall demonstrate that all of the components of the system will perform satisfactorily as a system. Satisfactory performance shall be determined using the following test procedure:

1. Each system to be used for testing shall consist of an optical emitter assembly, an optical detector, at least 200 feet of optical detector cable and a discriminator module.
2. The discriminator modules shall be installed in the proper input file slot of Model 332 controller cabinet. The controller cabinet, together with a Model 170 controller unit with the appropriate operating program, a Model 210 monitor unit and 120 volt AC power, will be available as shown on the plans and as indicated elsewhere in these special provisions.
3. One test shall be conducted using a Class II signal emitter and a distance of 2,500 feet between the emitter and the detector. All range adjustments on the module shall be set to "Maximum" for each test.
4. Each test shall be conducted for a period of one hour, during which the emitter shall be operated for 30 cycles, each consisting of a one minute "on" interval and a one minute "off" interval. During the total test period: (A) the emitter signal shall cause the proper response from the Model 170 controller unit during each "on" interval and (B) there shall be no improper operation of either the Model 170 controller unit or the monitor during each "off" interval.

86-5.01B(6) GridSmart Video Detection System. Video detection system shall be a Gridsmart System manufactured by GridSmart or approved equal. The system shall include all necessary components to run the system including but not limited to:

- GS-3-CBL 84" Cable Bracket
- GS-3-CAT5 Burial Grade CAT5E Cable
- GS-3-CBP Controller Breakout Panel
- GS-3-GS2 GridSmart GS2 Processor
- GS-3-RMB Rack Mount Bracket
- GS-2-TS1-OPT GS2 Processor TS1 Module
- GS-3-PFM+ Performance Plus Module
- GS-3-SMK SmartMount Bell Camera
- GS-3-TS1 TS1 Interface Cable

The contact documents show the location of the Gridsmart Bell Camera for quantity takeoff purposed only. The contractor shall coordinate with the manufacturer's representative to determine the best installation location of the Bell Camera for a fully functioning system. All system components shall be installed and configured per manufacturers specifications.

86-6 LIGHTING

Replace Section 86-6.02 with the following:

86-6.02 Luminaires for Safety Lighting. Luminaires for safety lighting on traffic signal standards shall be 1,600 lumen (120 watt). Safety lighting luminaires shall be General Electric catalog number ERL2-0-16-C3-40-D-GRAY-LY or approved equal.

Add the following:

86-6.07 Photoelectric Controls. Type IV photoelectric control shall be used unless otherwise shown on the plans or required by these special provisions and shall be installed in a receptacle integral with the luminaire.



ADD Section 209-6:

209-6 Measurement and Payment

Payment for Signals, Lighting and Traffic Electrical Systems shall be made at the contract lump sum for Traffic Signal Improvements and no other payments will be made.

SECTION 210 - PAINT AND PROTECTIVE COATINGS

210-1 PAINT.

210-1.5 Paint Systems. Add the following to Table 210-1.5(A)

TABLE 210-1.5 (A)

Surface to be Painted	Pre-Treatment / Surface Preparation	Primer	Finish Coats
Temporary Railing type (K)	Abrasive Blast Cleaning to a Roughened, Textured Appearance	None	Two coats white Acrylic Emulsion Paint ⁽¹⁾

(1) acrylic emulsion paint designed for use on exterior masonry. This paint shall comply in all respects to Federal Specification TT-P-19 (latest revision), Paint, Acrylic Emulsion, Exterior. This paint may be tinted by using "universal" or "all purpose" concentrates.

210-1.6 Paint for Traffic Striping, Pavement Marking, and Curb Marking. Modify as follows: Paint for traffic lane lines, turn pocket lines, edge lines, channelizing lines, bike lane lines, chevrons, and curbs shall be rapid dry water borne conforming to CALTRANS Specification No. PTWB-01. Paint for pavement legends, pavement symbols, pavement arrows, cross walks, parking stall markings and stop bars shall be alkyd thermoplastic conforming to CALTRANS Specification No. 8010-19A. Glass beads shall be applied to the surface of the rapid dry water borne paint and the molten thermoplastic material and shall conform to the requirements of CALTRANS Specification No. 8010-004 (Type II). CALTRANS Specifications for water borne paint, thermoplastic material and glass beads may be obtained from the CALTRANS Transportation Laboratory, P.O. Box 19128, Sacramento, CA 95819, telephone number (916) 227-7000.

210-3 GALVANIZING.

Add the following section:

210-3.6 Galvanizing for Traffic Signal Facilities. The requirements of this section shall pertain only to the preparation and galvanizing of traffic signal facilities. Galvanizing of products fabricated from rolled, pressed and forged steel shapes, plates, bars and strip 3.2 mm (1/8") thick or thicker, shall conform to the specifications of ASTM Designation: A 123, except that complete seal welding of tightly contacting surfaces of these products prior to galvanizing is required only where seal welding is shown on the plans or specified in these special provisions. Except for pre-galvanized standard pipe, galvanizing of material 3.2 mm (1/8") thick or thicker shall be performed after fabrication into the largest practical sections.

At the option of the Contractor, material thinner than 3.2 mm (1/8") shall be galvanized either before fabrication in conformance with the requirements of ASTM Designation: A 525M, Coating Designation Z600, or after fabrication in conformance with the requirements of ASTM



Designation: A 123, except that the weight of zinc coating shall average not less than 365 g per square meter (1.2 oz. per ft²) of actual surface area with no individual specimen having a coating weight of less than 305 g per square meter (1.0 oz. per ft²).

Galvanizing of standard pipe shall conform to the requirements of ASTM Designation: A 53. Galvanizing will not be required for stainless steel, monel metal and similar corrosion resistant parts.

Fabrication shall include all operations such as shearing, cutting, punching, forming, drilling, milling, bending, welding and riveting. All welded areas shall be thoroughly cleaned prior to galvanizing to remove all slab or other material that would interfere with the adherence of the zinc. When it is necessary to straighten any sections after galvanizing, the work shall be performed without damage to the zinc coating.

Galvanizing of iron and steel hardware and nuts and bolts, when specified or shown on the plans, shall conform to the specifications of ASTM Designation: A 153, except whenever threaded studs, bolts, nuts, and washers are specified to conform to ASTM Designation: A 307, A 325, A 325M, A 449, A 563, A 563M, or F 436 and zinc coating is required, they shall be hot-dip zinc coated or mechanically zinc coated in accordance with the requirements of the ASTM Designations. Unless otherwise specified, galvanizing shall be performed after fabrication. Components of bolted assemblies shall be galvanized separately before assembly. Tapping of nuts or other internally threaded parts to be used with zinc coated bolts, anchor bars or studs shall be done after galvanizing and shall conform to the requirements for thread dimensions and overtapping allowances in ASTM Designation: A 563 or A 563M. When specified, painting of zinc coated surfaces shall be in accordance with the procedures in Section 210.1 "Paint". Galvanized surfaces that are abraded or damaged at any time after the application of the zinc coating shall be repaired by thoroughly wire brushing the damaged areas and removing all loose and cracked coating, after which the cleaned areas shall be painted with two applications of unthinned zinc-rich primer (organic vehicle type) conforming to the provisions in Section 210-3.5, "Repair of Damaged Zinc Coating." Aerosol cans shall not be used.



SECTION 213 - ENGINEERING FABRICS

213-2 GEOTEXTILES.

213-2.1 General. Add the following: Geotextile types shall be used for the applications listed in Table 213-2.1(A)

**Table 213-2.1(A)
GEOTEXTILE APPLICATIONS**

Application of Geotextile	Type Designation
Separation of Soil and Street Structural Section	90WS
Separation of Soil and Subsurface Aggregate Drain	180N
Reinforcement of Street Structural Section	200WS
Remediation and Separation of Soil	270WS
Reinforcement of Soil	270WS
Drainage at the Interface of Soil Structures	N/A
Drainage at the Interface of Soil and Structures	N/A
Rock Slope Protection Fabric for Rock Sizes Below 225 kg (½ Ton)	180N
Rock Slope Protection Fabric for Rock Sizes Including and Above 225 kg (½ Ton)	250N
Plant Protection Covering	90N
Erosion Control Fence with 14 AWG - 150 mm x 150 mm (6"x6") Wire and 3 m (10') Post Spacing	90WS
Erosion Control Fence with 1.8 m (6') Post Spacing and No Wire Fencing	200WS

Add the following section:

213-3 EROSION CONTROL SPECIALTIES.

Add the following section:

213-3 Gravel bags. Gravel bags for the use of temporary erosion control shall be burlap type, filled with no less than 23kg (50 lbs) of 19 mm (¾") crushed rock and securely tied closed. Plastic bags are not acceptable.

SECTION 214 PAVEMENT MARKERS

214-5 REFLECTIVE PAVEMENT MARKERS

Add the following section:

214-5.1 Temporary Reflective Pavement Markers. Temporary pavement markers shown on the plans and required in the specifications shall be one of the types shown in Table 214-5.1(A), or equal thereto.



**TABLE 214-5.1(A)
TEMPORARY REFLECTIVE PAVEMENT MARKERS**

Type	Manufacturer of Distributor
TOM- Temporary Overlay Markers	Davidson Traffic Control Products, 3110 70 th Avenue East, Tacoma, WA 98424, (877) 335-4638

Add the following section:

14-5.2 Permanent Reflective Channelizer. Reflective Channelizer shall be new surface-mounted type and shall be furnished, placed, and maintained at the locations shown on the plans. Reflective channelizer posts shall be orange in color. Reflective channelizers shall have affixed white reflective sheeting as specified in the special provisions. The reflective sheeting shall be 75 mm x 300 mm in size. The reflective sheeting shall be visible at 300 m at night under illumination of legal high beam headlights, by persons with vision of or corrected to 20/20. Reflective channelizer shall be one of the types shown in Table 214-5.2(A), or equal thereto.

**TABLE 214-5.2(A)
REFLECTIVE CHANNELIZER**

Type	Manufacturer of Distributor
Safe-Hit SH336SMA	Safe-Hit, A Division of Energy Absorption Systems, Inc. 35 East Wacker Drive, Suite 1100 Chicago, IL 60602 (800) 537-8958
Carsonite "Super Duck" SDR3036	Carsonite Composites, LLC 605 Bob Gifford Boulevard Early Branch, SC 29916 (800) 648-7916
Repo "The Replaceable Post"	Western Highway Products 10680 Fern Avenue Stanton, CA 90680 (800) 854-3360

The Contractor shall provide the Engineer with a Certificate of Compliance in accordance with the provisions of Section 2-5.3.3 "Submittals". Said certificate shall certify that the permanent reflective channelizers comply with the plans and specifications and conform to the prequalified design and material requirements approved by the engineer and were manufactured in accordance with the approved quality control program.

SECTION 215 - FENCING

Add the following section:

215-1 ENVIRONMENTAL FENCING

Add the following section:

215-1.1 Materials. Environmental fence shall be minimum 4' high, orange colored plastic construction fencing installed prior to performing any work. Environmental fence shall be



constructed of non-toxic, non-conductive polyethylene capable of withstanding temperatures from -58F degrees to 194F degrees. Color shall be non-fading. Posts shall be 6'-6" long, shall be spaced no more than 10'-0" apart and buried portion shall be no less than 2'-6" deep. Used materials may be installed providing the used materials are good, sound, and are suitable for the purpose intended, as determined by the Engineer. Materials may be commercial quality providing the dimensions and sizes of the materials are equal to, or greater than, the dimensions and sizes specified herein. Posts shall be either metal or wood at the Contractor's option. Galvanizing and painting of steel items will not be required. Treating wood with wood preservatives will not be required. Concrete footings for metal posts will not be required.



**SUPPLEMENTAL PROVISIONS
TO
STANDARD SPECIFICATIONS FOR PUBLIC WORKS
CONSTRUCTION
PART 3, CONSTRUCTION METHODS**

SECTION 300 - EARTHWORK

300-1 CLEARING AND GRUBBING.

300-1.1 General. add the following to the third paragraph: During surface clearing operations, the Contractor shall not cover or bury any plant growth or other objectionable materials. If the Contractor cannot successfully separate the plant growth from the surface soil and advertently or inadvertently mixes organic or other objectionable materials with the soil, the soil so contaminated shall be removed from the site by the Contractor. All costs, if any, associated with removing the soil mixed with organic or other objectionable materials and importing soil to replace said contaminated soil shall be borne by the Contractor and no additional payment therefore shall be made to the Contractor.

300-1.3 Removal and Disposal of Materials. add the following: Also included in clearing and grubbing shall be removal and disposal of existing street poles and lights, metal guard rail, fences, asphalt concrete and aggregate base, concrete curb and gutter, concrete sidewalk, existing gate, existing headwalls, rip-rap, traffic signs, and other existing features which interfere with the work. Whether or not such items are shown on the plans they shall be removed as a part of clearing and grubbing. Existing underground pipes and conduits that are shown on the plans and designated to be removed shall be removed by the Contractor as a part of clearing and grubbing.

300-1.4 Payment. modify as follows: Payment for clearing and grubbing shall be made at the contract lump sum price for clearing and grubbing within the project limits and at stockpile locations and no other payments will be made. Unless otherwise noted on plans, the Contractor shall remove all existing abandoned pipelines and conduits of any type, or use, and pipelines and conduits of any type, or use, that are abandoned during the course of the work and shall replace said pipelines and conduits with properly compacted soils. Payment for removal and disposal of abandoned utilities shall be included in the lump-sum bid for Clearing and Grubbing, and no additional payment will be made.

300-5 BORROW EXCAVATION.

Add the following section:

300-5.2.1 Imported Borrow Properties. The Contractor shall provide imported borrow that is clean well graded soil consisting of material conforming to all of the requirements in Table 300-5.2.1(A) and the following requirements. Rock included in the top 1 m (3') of imported borrow shall be particles of less than 75 mm (3"). Rock included below the top 1 m (3') of imported borrow shall be particles of less than 150 mm (6").



**TABLE 300-5.2.1(A)
IMPORTED BORROW PROPERTIES**

Tests	Test Method No.	Requirements
R-Value	Calif. 301	40 Min.
Expansion Index	UBC Standard 18-2	10 Max.
Plasticity Index	ASTM D 424	4 Max.
Sieve Analysis	ASTM D 422	Percent Passing 75 μ (No. 200) 15 Max.

300-9 GEOTEXTILES FOR EROSION CONTROL. Modify as follows: **300-9 GEOTEXTILES FOR EROSION CONTROL AND WATER POLLUTION CONTROL.**

Add the following section:

300-9.2 General. The Contractor shall provide erosion control and water pollution control conforming to the requirements shown on the plans, as specified herein, and as elsewhere required by the Contract Documents. Erosion control and water pollution control shall include the work specified herein, and such additional measures, as may be directed by the Engineer, to meet Best Management Practices, as defined herein, and to properly control erosion and storm water damage of the limits of work and construction impacts upon areas receiving drainage flows from within the limits of work.

Add the following section:

300-9.2.1 Grading Controls. The Contractor shall protect all areas that have been graded and/or cleared and grubbed as well as areas that have not been graded and/or cleared and grubbed within the limits of work from erosion. The Contractor shall provide temporary earth berms, gravel bags, silt fences, stabilized construction entrances and similar measures, coordinated with its construction procedures, as necessary and as shown on the plans to control on site and off site erosion during the construction period. The Contractor will be required to protect areas which have been cleared and grubbed prior to excavation or embankment operations, and which are subject to runoff during the duration of the contract. The criteria used to determine the appropriate erosion control measures shall be the "Best Management Practices", hereinafter BMP, defined and described in the, "Stormwater Best Management Practices Handbook, Construction", January 2009 **edition** as published by the California Stormwater Quality Association. The Contractor shall maintain a copy of the "Stormwater Best Management Practices Handbook, Construction", January 2009 **edition** on the project site and shall conduct its operations in conformity to said Handbook.

Temporary erosion control measures provided by the Contractor shall include, but not be limited to, the following:

- a) Embankment areas, while being brought up to grade and during periods of completion prior to final roadbed construction, shall be graded so as to direct runoff into impoundment areas within the limits of work where such runoff shall have pollutants removed by BMP methods .
- b) The Contractor shall provide protection by BMP measures to eliminate erosion and the siltation of downstream facilities and adjacent areas. These measures shall include, but shall not be limited to: temporary down drains, either in the form of pipes or paved ditches with protected outfall berms; graded berms around areas to eliminate erosion of embankment slopes by surface runoff; confined ponding areas to desilt runoff; and to desilt runoff.
- c) Excavation areas, while being brought to grade, shall be protected from erosion and the resulting siltation of downstream facilities and adjacent areas by the use of BMP measures. These measures shall include, but shall not be limited to, methods shown on the plans and



described herein.

Add the following section:

300-9.2.2 Payment. Full compensation for performing erosion control and water pollution control, conforming to the operational requirements herein, of the BMP and conforming to the requirements of the Federal Water Pollution Control Act, including the latest amendments thereto, which is not a part of the planned permanent work or included as a separate bid item shall be considered as included in the contract price bid for unclassified excavation, and no additional compensation will be allowed therefore.

300-13 STORM WATER POLLUTION PREVENTION PLAN

Add the following section:

300-13.1 Storm Water Pollution Prevention Plan. As part of the storm water pollution prevention work, the Contractor shall prepare and submit Storm Water Pollution Prevention Plan, hereafter referred to as the "SWPPP,". The SWPPP shall conform to the requirements of the "Greenbook" Standard Specifications for Public Works Construction, the requirements in the California Storm Water Quality Association, Stormwater Best Management Practice Handbook, Construction ("Handbook"), the requirements of the Permit, the requirements in the plans and these supplemental provisions.

300-13.1.1 SWPPP Document

Within 15 calendar days after the execution of the contract, the Contractor shall submit 3 copies of the SWPPP to the Engineer, in accordance with Section 2-5.3.3 of these Special Provisions. Contractor will be provided the digital format for SWPPP to complete required sections. If revisions are required, as determined by the Engineer, the Contractor shall revise and resubmit the SWPPP within 15 days of receipt of the Engineer's comments and shall allow 5 days for the Engineer to review the revisions. Upon the Engineer's acceptance of the SWPPP, 3 additional copies of the SWPPP, incorporating the required changes, shall be submitted to the Engineer. In order to allow construction activities to proceed, the Engineer may conditionally approve the SWPPP while minor revisions are being completed.

The objectives of the SWPPP shall be to identify pollution sources that may adversely affect the quality of storm water discharges associated with the project and to identify, construct, implement and maintain storm water pollution prevention measures, hereafter referred to as control measures, to reduce to the extent feasible pollutants in storm water discharges from the construction site both during and after construction is completed under this contract.

The SWPPP shall incorporate control measures in the following categories:

1. Soil stabilization practices;
2. Sediment control practices;
3. Wind erosion control practices; and
4. Non-storm water management and waste management and disposal control practices.

Specific objectives and minimum requirements for each category of control measures are contained in the Handbook.

The Contractor shall designate a Water Pollution Control Manager who will have the responsibilities outlined in the SWPPP.



The SWPPP shall include, but not be limited to, the following items as described in the SWPPP:

1. Source Identification;
2. Erosion and Sediment Controls;
3. Non-Storm Water Management;
4. Waste Management and Disposal;
5. Maintenance, Inspection and Repair;
6. Training;
7. List of Contractors and Subcontractors;
8. Post-Construction Storm Water Management;
9. Preparer;
10. Copy of the local permit;
11. BMP Consideration Checklist;
12. SWPPP Checklist;
13. Schedule of Values; and
14. Storm Water Pollution Prevention Drawings.

The Contractor shall amend the SWPPP, graphically and in narrative form, whenever there is a change in construction activities or operations which may affect the discharge of significant quantities of pollutants to surface waters, ground waters, municipal storm drain systems, or when deemed necessary by the Engineer. The SWPPP shall also be amended if it is in violation of any condition of the Permit, or has not effectively achieved the objective of reducing pollutants in storm water discharges. Amendments shall show additional control measures or revised operations, including those in areas not shown in the initially accepted SWPPP, which are required on the project to control water pollution effectively. Amendments to the SWPPP shall be submitted for review and acceptance by the Engineer in the same manner specified for the initially accepted SWPPP. Accepted amendments shall be dated and logged in the SWPPP. Upon acceptance of the amendment, the Contractor shall implement the additional control measures or revised operations.

The Contractor shall keep a copy of the accepted SWPPP and accepted amendments at the project site. The SWPPP shall be made available upon request of a representative of the Regional Water Quality Control Board, State Water Resources Control Board, U.S. Environmental Protection Agency or local storm water management agency. Requests by the public shall be directed to the Engineer.

By June 15 of each year, the Contractor shall submit an annual certification to the Engineer stating compliance with the requirements governing the Permit. If the project is in non-compliance at any time, the Contractor shall make a written report to the Engineer within 15 days of identification of non-compliance.

Add the following section:

300-13-1.2 Availability of SWPPP template. A site-specific draft document intended for use as a template for the required SWPPP document will be made available for use at the Contractor's option, at no cost to the Contractor. The document is available for review in Appendix B. The Contractor shall review the template and modify it as necessary to reflect the Contractor's operations.



Add the following section:

300-13.1.3 Payment. Preparation, implementation and management of SWPPP shall be considered incidental to the items of work and no additional payment will be made therefore.

Add the following section:

300-13.1.4 SWPPP Implementation. Upon acceptance of the SWPPP, the Contractor shall be responsible throughout the duration of the project for installing, constructing, inspecting and maintaining the control measures included in the SWPPP and any amendments thereto and for removing and disposing of temporary control measures. Unless otherwise directed by the Engineer or specified in these supplemental provisions, the Contractor's responsibility for SWPPP implementation shall continue throughout any temporary suspension of work ordered in accordance with Section 6-3, "Suspension of Work". Requirements for installation, construction, inspection, maintenance, removal and disposal of control measures are specified in the "Handbook" and these supplemental provisions.

Soil stabilization practices and sediment control measures, including minimum requirements, shall be provided throughout the winter season, defined as between October 1 and April 30.

Implementation of soil stabilization practices and sediment control measures for soil-disturbed areas of the project site shall be completed, except as provided for below, no later than 20 days prior to the beginning of the winter season or upon start of applicable construction activities for projects which begin either during or within 20 days of the winter season.

The Contractor shall implement, year-round and throughout the duration of the project, control measures included in the SWPPP for sediment tracking, wind erosion, non-storm water management and waste management and disposal.

The Engineer may order the suspension of construction operations, at the Contractor's cost, which create water pollution if the Contractor fails to conform to the requirements of this section as determined by the Engineer.

Add the following section:

300-13.1.5 Maintenance. To ensure the proper implementation and functioning of control measures, the Contractor shall regularly inspect and maintain the construction site for the control measures identified in the SWPPP. The Contractor shall identify corrective actions and time frames to address any damaged measures or reinitiate any measures that have been discontinued.

The construction site inspection checklist provided in the "Handbook" shall be used to ensure that the necessary measures are being properly implemented, and to ensure that the control measures are functioning adequately. The Contractor shall submit one copy of each site inspection record to the Engineer, within two days of the inspection.

During the winter season, inspections of the construction site shall be conducted by the Contractor to identify deficient measures, as follows:

1. When the five-day rain probability forecast exceeds forty percent (40%).
2. After any precipitation which causes runoff capable of carrying sediment from the construction site;
3. At 24 hour intervals during extended precipitation events; and
4. Routinely, at a minimum of once every week.



If the Contractor or the Engineer identifies a deficiency in the deployment or functioning of an identified control measure, the deficiency shall be corrected by the Contractor immediately, or by a later date and time if requested by the Contractor and accepted by the Engineer in writing, but not later than the onset of subsequent precipitation events. The correction of deficiencies shall be at no additional cost to the City.

SECTION 301 - TREATED SOIL, SUBGRADE PREPARATION AND PLACEMENT OF BASE MATERIALS

301-1 SUBGRADE PREPARATION.

301-1.2 Preparation of Subgrade. Modify the second and third paragraphs as follows: Change each instance reading “150mm (6 inches)” to “300 mm (12)”.

301-1.3 Relative Compaction. Delete the first paragraph and substitute the following: The Contractor shall compact the upper 300 mm (12”) of subgrade beneath areas to be paved, have base or subbase material placed on them, or curb, gutter, curb and gutter, alley pavement, driveway or sidewalk constructed over them to no less than 95 percent maximum dry density as determined by ASTM test D-1557-91.

301-1.7 Payment. Modify the first paragraph as follows: Payment for subgrade preparation shall be included in the contract bid price for which the subgrade is prepared and shall include all labor, materials; including water, operations and equipment to scarify, adjust moisture, compact or recompact the subgrade, both in cut areas and in fill areas, and no further compensation will be allowed.

SECTION 302 - ROADWAY SURFACING

Add the following: The Contractor shall be responsible for tree trimming along the curb line as noted in Section 300-1 Clearing and Grubbing – so as to provide a clear travel way during the construction of the roadway resurfacing.

The Contractor shall treat all vegetation within the limits of the paved area to be surfaced with a post emergent herbicide. Herbicide shall be applied at least 2 (two) working days prior to surfacing the street. Allowance for the two day period shall be shown in the schedule required per section 6-1.

Payment for pavement surfacing shall include tree trimming and post emergent herbicide treatment of the areas to be surfaced and no extra payment will be made therefore.

Public Convenience and Traffic Control. The Contractor shall schedule the work so as to prevent damage by all traffic. The Contractor shall not schedule work so as to conflict with trash pickup. The trash hauling schedule can be obtained by calling Coast Waste Management at (760) 929-9400. At least two weeks prior to work, Contractor shall send, by first class mail, notification letters to all property addresses within 500’ of the work. Obtaining the appropriate addresses shall be the contractor’s responsibility. Letters shall be as shown in bold type as follows, with the appropriate information specific to the work inserted at the locations indicated in the brackets and italicized.



**(Name of Contractor)
(Address of Contractor)
(Contractor's License Number)**

(Date)

As a part of the City of Carlsbad's ongoing program to maintain its streets, your street will be **(insert type of resurfacing)**, beginning in two or three weeks. This process requires that your street be closed for **(X hours)** starting at 7:00 a.m. and continuing until the Contractor removes the traffic control devices. You will be notified 72 hours in advance of the day your street will be closed by a brightly colored 3 1/2" x 8 1/2" card attached to your doorknob. You will also notice temporary no parking signs on your street with a specific no parking date written on it.

A successful street maintenance program depends on your cooperation. Please do not drive, walk, play, skate or allow pets on the street until it is opened by the Contractor. Furthermore, please do not wash your car or turn on any sprinklers while you are waiting. If you don't plan to leave your home before 7:00 a.m. on the day your street will be surfaced, and you need to use your vehicle later in the day, please park your car on an adjacent street in your neighborhood that is not signed as a no parking zone. When walking to and from your car, remember not to walk on the newly surfaced street or you may have black residue on the bottom of your shoes. The residue may damage some surfaces, may mark surfaces that you track it on, and may be very difficult to remove.

(Name of Contractor) is the Contractor that will be performing the resurfacing work for the City and you may call them at **(24 hour per day attended telephone number in the 760 area code)** for any questions you may have about the project. On the day your street is surfaced mail delivery may be delayed until the next day. You will not know the exact date your street will be closed until you receive the 3 1/2" x 8 1/2" card. If you have a moving company scheduled to come to your house within the next two weeks, please call and inform the Contractor of the date. If you have any concerns which are not addressed by the Contractor, please call the City's Engineering Inspection Department at 602-2780. They will assist you in resolving the concerns.

The City of Carlsbad has some of the finest streets in the county due to the concern and cooperation of citizens like you. Your cooperation is greatly appreciated."



During operations, the Contractor's schedule for resurfacing shall be designed to provide residents and business owners sufficient paved parking within an 800 foot distance from their homes or businesses.

Seventy two hours prior to the start of any construction in the public right-of-way that affects vehicular traffic and/or parking or pedestrian routes, the Contractor shall give written notification of the impending disruption. For a full street closure, all residences and/or businesses on the affected street or alley shall be notified. For partial street closures, or curb, sidewalk and driveway repairs, the residences and/or businesses directly affected by the work shall be notified.

The Contractor shall deliver the notification which shall state the date and time the work will begin and its anticipated duration. The notification shall list two telephone numbers that may be called to obtain additional information. One number shall be the Contractor's permanent office or field office and the other number shall be a 24 hour number answered by a representative of the Contractor who is knowledgeable about the project. At least one of the phone numbers shall be in the (760) area code. An answering machine shall not be connected to either number. The notification shall also give a brief description of the work and simple instructions to the home or business owner on what they need to do to facilitate the construction. The Contractor shall submit the contents of the notification to the Engineer for approval. Notices shall not be distributed until approved by the Engineer.

For door hangers, the notification shall be pre-cut in a manner that enables it to be affixed to a doorknob without adhesives. It shall be a minimum size of 3-1/2 inches by 8-1/2 inches and shall be brightly colored with contrasting printing. The material shall be equivalent in strength and durability to 65 lb. card stock. The printing on the notice shall be no smaller than 12 point. The pre-cut notices shall be as shown on the example provided in Appendix "A", with the day of the week circled and appropriate information specific to the work inserted at the locations indicated in the italicized font.

The preparation, materials, printing and distribution of the notifications shall be included in the contract price bid for Traffic Control and the Contractor will not be entitled to any additional compensation for printing and distributing these notices.

302-5 ASPHALT CONCRETE PAVEMENT.

Add the following:

302-5.2 Pavement Transitions. The Contractor shall ramp the approaches and termini to all structures and vertical joints in the cold-milled area which are transverse to through traffic with temporary asphalt concrete pavement as specified in section 306-1.5.1. Ramps shall be constructed the same day as cold milling and removed the same day as permanent paving. Ramp dimensions and compaction shall be as approved by the Engineer.

302-5.5 Distribution and Spreading. Modify as follows: After second sentence of sixth paragraph, add: The Contractor shall provide the spreading and finishing machine used to construct the asphalt concrete surface course with an automatic screed control for surface course paving. The automatic screed control shall be 9 m (30') minimum length. The paving machine shall be operated by an operator and two full-time screed men during all paving. The



Contractor shall provide an on-site backup paving during all paving operations.

The use of windrow operations shall not be allowed.

302-5.6.1 General. modify as follows: Second paragraph, Part (2), add: Pinched joint rolling procedures shall be required, and vibratory rollers shall be limited to breakdown, unless otherwise directed by the Engineer.

modify as follows: After last paragraph, add: Unless directed otherwise by the Engineer, the initial breakdown rolling shall be followed by a pneumatic-tired roller as described in this section.

302-5.8 Manholes (and other structures). delete the first paragraph and replace with the following:

When placing the overlay the Contractor shall pave over appurtenances in the roadway which includes sanitary and storm access covers, water valve boxes, air vents, sewer dead end boxes and survey monument boxes. Each appurtenance shall be treated or covered to prevent adhesion of the overlay. Each appurtenance shall be located immediately after the overlay is placed and shall be thoroughly cleaned of any and all construction debris which may have entered due to the Contractor's operation. The contractor shall adjust all CMWD water valve boxes per CMWD Standard Drawing No. W11 or CMWD Standard Drawing No. W13. All City of Carlsbad sanitary sewer access covers shall be adjusted per CMWD Drawing No. S1. All storm sewer access covers shall be adjusted per SDRSD D-10. Riser rings or extensions shall not be used for the adjustment of these appurtenances.

Raising and adjusting to grade all appurtenances in the roadway shall be paid for at the contract unit price per each as shown in the Bid. Such price shall constitute full compensation for all labor, materials, and equipment necessary for completing the work as described in these specifications and plans.

302-5.9 Measurement and Payment. add the following: Payment for asphalt concrete shall be at the unit price bid per ton. No additional payment shall be made for any tack coat or sand blotter.

Add the following section:

302-11 ASPHALT PAVEMENT REPAIRS AND REMEDIATION

Add the following section.

302-11.1 General. Asphalt pavement Repairs and Remediation shall consist of the repair and restoration of existing asphalt pavement. Repair of asphalt pavement shall consist of the saw cutting, removal and disposal of existing asphalt pavement in conformance with section 300-1.3, compaction of existing subgrade in conformance with section 301-1, grading and compaction of base material in conformance with section 301-2, application of grade SS-1h emulsified asphalt and the placement of asphalt concrete base and wearing courses as specified herein

Add the following section.

302-11.2 Full Depth Asphalt Concrete Patch. Full depth asphalt concrete patch shall consist of removing asphalt concrete and/or aggregate base/subgrade to 300 mm (1') below existing asphalt surface and placing replacing the material so removed with asphalt concrete. The area shown on the plans or set forth in the bid item are for estimating purposes only, final quantity will be as measured in the field. The Engineer will designate and mark the final limits of the asphalt patch area by outlining the area to be patched. The Contractor shall cut such areas to straight lines in square or rectangular areas as marked. The area so cut shall have two of the



sides at right angles to the direction of traffic. The excavated faces of the base/subgrade shall be straight and vertical. The Contractor shall compact the upper 300mm (1') of subgrade to 95% relative compaction. A tack coat of SS-1h emulsified asphalt shall be applied uniformly to all asphalt to asphalt contact surfaces at a rate of 0.25 L/m² to 0.45 L/m² (0.05 to 0.10gallons per square yard) in accordance with subsection 302-5.4, SSPWC. The Contractor shall fill and compact areas designated to be removed with 300 mm (1.0') full depth asphalt concrete. Asphalt concrete for full depth asphalt concrete patch shall be B-AR-4000. The asphalt concrete so constructed shall have a finish surface and density conforming to subsection 302-5.6.2 SSPWC.

Add the following section.

302-11.3 Crack Sealing The Contractor shall wash, blow out and thoroughly dry all cracks designated to be sealed before installing hot poured rubber-asphalt joint sealant material. The sealant shall conform to the requirements of ASTM D1190. The Contractor shall dispose debris from crack cleaning outside the public way in accordance with Section 7-8.1, "Cleanup and Dust Control." The hot-melt rubberized asphalt shall be melted in a jacketed, double boiler type melting unit. Temperature of the heat transfer medium shall not exceed 245°C (475°F). Application of the hot-melt sealant shall be made with a pressure feed applicator or pour pot. Sealant shall be applied when the pavement surface temperature is greater than 4°C (40°F). Containers of hot-melt sealant shall be delivered to the job-site in unopened containers that are clearly marked with data showing the manufacturer's name, the product designation and the manufacturer's batch number and lot numbers. The level of the sealant shall be flush with the surface of the existing pavement. All excess sealant shall be removed from the crack with a minimum overlap onto adjacent pavement.

Add the following section:

302-11.4. Measurement and Payment. Quantities of full depth asphalt concrete patch and crack sealing set forth in the bid item are for estimating purposes only, final quantity will be as designated and measured in the field. The Engineer will designate and mark the limits of the Full depth asphalt concrete patch and crack sealant application areas. Payment for resurfacing shall include post emergent herbicide treatment. Full compensation for conforming to the requirements of constructing full depth asphalt concrete patch shall include but not be limited to: furnishing all labor, tools, equipment, and materials necessary for doing the work including, saw cutting and removing and disposing 300 mm (1') thick section of existing asphalt concrete, aggregate base/subbase and basement soil as designated by the engineer, placement of asphalt concrete, compaction of subbase and asphalt concrete, placement of SS-1h asphalt emulsion and all other work incidental to full depth asphalt concrete patch shall be considered as included in the contract unit price bid for full depth asphalt concrete patch and no additional compensation will be allowed therefore. Full compensation for conforming to the requirements of crack sealing shall include but not be limited to, furnishing all labor, materials, tools, equipment, and incidentals necessary to do the work. Crack cleaning, roadway clean up, application of sealant, removal of excess sealant and all other work incidental to crack sealing shall be considered as included in the contract unit price bid and no additional compensation will be allowed therefore.

SECTION 303 CONCRETE AND MASONRY CONSTRUCTION.

303-1 CONCRETE STRUCTURES

303-1.6.2 Falsework Design. add the following: The Contractor shall provide all temporary



bracing necessary to withstand all imposed loads during erection, construction, and removal of any falsework. The Contractor shall provide falsework drawings and calculations prepared by a registered professional engineer, civil or structural, that show provisions for resolution of all loads that may be imposed upon the falsework. Such plans and calculations shall include:

1. Resolution of all live, dead, wind, construction and impact loads that may be imposed on the falsework.
2. Temporary bracing or methods to be used during each phase of erection and removal of the falsework.
3. Concrete placement sequence.
4. Erection and removal sequence.
5. Deflection values for the falsework that include recommended methods to compensate for falsework deflections, vertical alignment, and anticipated falsework deflection.

Add the following section:

303-1.9.5 Surface Finish for Concrete Spillway. The Contractor shall provide a surface finish for concrete spillway to prevent the use of rollerblades, skateboards, and other rolling devices. Surface finish shall be a rough rake finish approved by the Engineer.

303-2 AIR-PLACED CONCRETE.

303-2.1.1 General. add the following: Modify Regional Standard Drawing D-75 as follows: replace stucco netting with 150mm x 150mm (6" x 6") by No. 10 by No. 10 welded wire mesh. Add the following section:

303-5 CONCRETE CURBS, WALKS, GUTTERS, CROSS GUTTERS, ALLEY INTERSECTIONS, ACCESS RAMPS, AND DRIVEWAYS.

303-5.5.2 Curb. add the following: The Contractor shall stamp the curb face with 75 mm (3") high block letters directly above the point that it is crossed by underground facilities with the marking specified in Table 303-5.5.2(A)

**TABLE 303-5.5.2(A)
Curb Face Markings**

Type of underground facilities	Marking
Water Service Lateral	W
Sewer Service Lateral	S
Irrigation Water Lateral or Sleeve	RW

303-5.9 Measurement and Payment. add the following: Curb and gutter, and curb, shall be considered as continuing across driveways and access ramps when constructed adjacent thereto. Neither curb and gutter nor curb will be paid for across the length of local depressions, except that which occurs in gutter transitions at each side of an inlet.

303-5.10 Curb Ramp Construction

303-5.10 Installation.

The curb ramp work will conform to the requirements of Section 303-5 of the Green Book as modified herein. The work will consist of the following:



- a) The Contractor shall be solely responsible for means and methods for laying out and verifying all proposed curb ramps' and appurtenances' grades, including all associated sidewalks, curbs, and gutter plates, in accordance with the standard drawings and as indicated in the construction documents. The final grades for all constructed curb ramps and appurtenances shall not exceed maximum grades indicated in the standard drawings and the construction documents. There shall be no construction tolerances allowed. Any curb ramps or appurtenances constructed in excess of maximum grades as indicated in the aforementioned documents shall be removed and replaced at the Contractor's sole expense. Removal or AC pavement disposal of existing concrete including curb and gutter or portion of spandrel as occurs, and sidewalk necessary to construct the ramp shall be made as straight edges and by the full depth saw cutting only. Removal limits shall be agreed to in writing prior to the saw cutting operation for each ramp location.
- b) The pedestrian ramps locations and types are shown on the plans. Details for saw cutting existing cross gutter spandrels and replacement of existing AC pavement are shown on the plans.

303-5.10.2 Payment. Payment for construction of curb ramps will be made at the contract unit price per each, and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work involved in providing and constructing the curb ramps including removal of and construction of curb, curb and gutter, cross gutter spandrel, alley apron, AC pavement and sidewalk, removal of existing ramps and sidewalk associated with ramp construction, and construction of curb, gutter and sidewalks in place, as necessary to achieve ADA compliant grades (regardless of replacement limits shown on plans), construction staking of curb ramps, removal and reconstruction of adjacent improvements including but not limited to private hardscape improvements and landscaping/irrigation improvements, repainting of new curb to match painting of existing curb, if any, prior to ramp construction, and joining work to tie proposed ramp into the adjacent existing PCC (doweling, epoxy, etc.) as shown on plans, complete in place as specified in the special provisions and as directed by the Engineer. The payment for curb ramps shall include the detectable warning strip. Payment for construction of curb ramps shall include full compensation for furnishing all labor, materials, tools, equipment, including but not limited to; saw cutting, removal & disposal of materials, compaction, adjacent asphalt paving and all related incidentals required to complete the work in place.

Add the following section:

303-9 Trench Drain/ Curb Channel Construction

303-9.1 General. Trench Drain/ Curb channel work will conform to Section 303-5 of the Green Book and shall be constructed as shown in the plans. The trench drain shall be graded to achieve positive drainage and ensure no water collects within the trench drain area. Steel grating shall be ADA compliant and installed in accordance with manufacturer's recommendation and City Engineer's approval.

303-9.2 Payment. Payment for Trench Drain/Curb Channel construction in accordance with these specifications shall be at the contract unit price for Curb Channel and Metal Grate in the



bid schedule. Payment shall include all labor, equipment, and material costs and no additional compensation will be made therefore.

SECTION 306 - UNDERGROUND CONDUIT CONSTRUCTION

306-1 OPEN TRENCH OPERATIONS

Add the following section:

306-1.1.7 Steel Plate Bridging - With a Non-Skid Surface. This section covers the use of steel plate bridging. The Contractor shall not employ the use or use steel plate bridging or trench plate that does not meet the requirements of this section both in application and circumstance of use.

Add the following section:

306-1.1.7.1 Requirements for Use. Alternate construction methods that avoid the use of steel plate bridging shall be used by the Contractor unless otherwise approved by the Engineer. It is recognized that to accommodate excavation work, steel plate bridging may be necessary. All conditions for use of steel plate bridging set forth in the following requirements must be fulfilled as conditions of approval of the use of steel plate bridging. Consideration of steel plate bridging in the review process will take into account the following factors:

1. Traffic volume and composition.
2. Duration of use of the steel plate bridging.
3. Size of the proposed excavation.
4. Weather conditions.

The following formula shall be used to score the permitted use of steel plate bridging:

$$PS = \left[\frac{ADT + EWL}{1000} + DAYS + 10 \times WEEKEND + 5 \times NIGHTS + 20 \times WEATHER + \frac{SPEED (kmh)}{8} + SLOPE \times 100 \right] \times LANES$$

$$PS = \left[\frac{ADT + EWL}{1000} + DAYS + 10 \times WEEKEND + 5 \times NIGHTS + 20 \times WEATHER + \frac{SPEED (mph)}{5} + SLOPE \times 100 \right] \times LANES$$

where:

- PS = plate score.
- ADT = average daily traffic as defined in the Federal Highway Administration (FHWA) Manual on Uniform Traffic Control Devices (MUTCD) 2003 Edition as amended by the MUTCD 2003 California Supplement.
- EWL = equivalent wheel loads as defined in the Federal Highway Administration (FHWA) Manual on Uniform Traffic Control Devices (MUTCD) 2003 Edition as amended by the MUTCD 2003 California Supplement.
- DAYS = total number of 24 hour periods during which the plates will be utilized at the site being considered.
- WEEKEND = total number of Saturdays, Sundays and holidays that the plates will be utilized at the site being considered.
- NIGHTS = total number of overnight periods that the plates will be in place, exclusive of Saturday, Sunday and holiday nights.
- WEATHER = total number of 24-hour periods that the plates will be utilized at the site being considered when the possibility of rain exceeds 40 percent.
- SPEED = the design speed in kilometers per hour or miles per hour, as applicable in the formulae above, of the street where the plates are to be installed. This number shall not be reduced for construction zone speed reductions.



- SLOPE = the quotient of the vertical differential divided by the horizontal distance. The vertical and horizontal dimensions shall be measured at the locations spanning a distance of 15 m (50') up and downstream of the position of the proposed steel plate bridging.
- LANES = the number of lanes where plates will be used.

When the computed value of the plate score exceeds 50, steel plate bridging shall not be used unless, and at the sole discretion of the Engineer, the Engineer determines that no alternative method of construction is possible in lieu of using steel plate bridging or that other overriding considerations make the use of steel plate bridging acceptable. Alternatives considered to bridging shall include, but not be limited to, detouring traffic, construction detour routes, tunneling, boring and other methods of trenchless construction. Unless specifically noted in the provisions of the Engineer's approval, the use of steel plate bridging at each location so approved shall not exceed four (4) consecutive working days in any given week.

Add the following section:

306-1.1.7.2 Additional Requirements. In all cases when the depth of the trench exceeds the width of the steel plate bridging resting on each side of the pavement adjacent to the trench, safety regulations require or the Engineer determines that shoring is necessary to protect the health or safety of workers or the public the Contractor shall install shoring conforming to Section 7-10.4.1 of the Standard Specifications. The trench shoring shall be designed and installed to support the steel plate bridging and traffic loads. All approvals for design, substitution of materials or methods shall be submitted by the Contractor in accordance with all provisions of section 2-5.3 Shop Drawings and Submittals. The Contractor shall backfill and resurface excavations in accordance with section 306-1.5.

Add the following section:

306-1.1.7.3 Installation. When backfilling operations of an excavation in the traveled way, whether transverse or longitudinal cannot be properly completed within a work day, steel plate bridging with a non-skid surface and shoring may be required to preserve unobstructed traffic flow. In such cases, the following conditions shall apply:

- a) Steel plate bridging when the plate score exceeds 50 is not allowed except when, at the sole discretion of the Engineer, it is approved as specified hereinbefore.
- b) Steel plates used for bridging must extend a minimum of 610 mm (2') beyond the edges of the trench.
- c) Steel plate bridging shall be installed to operate with minimum noise.

When the use of steel plate bridging and shoring is approved by the Engineer, the Contractor shall install using either Method (1) or (2) depending on the design speed of the portion of street where the steel plate bridging is proposed for use.

Method 1 [For speeds more than 70 Km/hr (45 MPH)]: The pavement shall be cold planed to a depth equal to the thickness of the plate and to a width and length equal to the dimensions of the plate. The cold milling shall produce a flat surface that the plate shall rest on with no horizontal or vertical movement. Horizontal gaps between the unmilled pavement and the plate shall not exceed 25 mm (1") and shall be filled with elastomeric sealant material which may, at the contractor's option, be mixed with no more that 50%, by volume, of Type I aggregate conforming to the requirements of tables 203-5.2(B) and 203-5.3(A) .

Method 2 [For speeds 70 Km/hr (45 MPH) or less]: Approach plate(s) and ending plate (if longitudinal placement) shall be attached to the roadway and shall be secured against displacement by using two adjustable cleats that are no less than 50 mm (2") shorter than the



width of the trench bolted to the underside of each plate and located within 150 mm (6") of the beginning and end of the trench for plates at the beginning and end of the trench, a minimum of two 300 mm long by 19 mm diameter (12" x 3/4") steel bolts placed through the plate and driven into holes drilled 300 mm (12") into the pavement section, or other devices approved by the Engineer. Subsequent plates shall be butted to each other. Fine graded asphalt concrete shall be compacted to form ramps, maximum slope 8.5% with a minimum 300 mm (12") taper to cover all edges of the steel plates. When steel plates are removed, the dowel holes in the pavement section shall be completely filled with elastomeric sealant material. At the Contractor's option, the methods required for Method 1 may be used. If the Contractor so elects, all requirements of Method 1 shall be used. The Contractor shall maintain the steel plates, shoring, and asphalt concrete ramps and maintain and restore the street surface during and after their use.

Add the following section:

306-1.1.7.4 Materials. The minimal thickness of steel plate bridging shall be as shown in Table 306-1.1.7.4(A)

**TABLE 306-1.1.7.4(A)
REQUIRED PLATE THICKNESS FOR A GIVEN TRENCH WIDTH**

Maximum Trench Width ⁽¹⁾	Minimum Plate Thickness
0.3 m (10")	13 mm (1/2")
0.6 m (23")	19 mm (3/4")
0.8 m (31")	22 mm (7/8")
1.0 m (41")	25 mm (1")
1.6 m (63")	32 mm (1 1/4")

(1) For spans greater than 1.6 m (5'), a structural design shall be prepared by a registered civil engineer and submitted to the Engineer for review and approval in accordance with section 2-5.3.

Steel plate bridging shall be steel plate designed to support the HS20-44 truck loading per CALTRANS Bridge Design Specifications Manual. The Contractor shall maintain a non-skid surface on the steel plate with no less than a coefficient of friction of 0.35 as determined by California Test Method 342. If a different test method is used, the Contractor may utilize standard test plates with known coefficients of friction available from the CALTRANS District 11 Materials Engineer to correlate skid resistance results to California Test Method 342. In addition to all other required construction signing, the Contractor shall install Rough Road (W33) sign with black lettering on an orange background in advance of steel plate bridging.

Add the following section:

306-1.1.7.5 Measurement and Payment. Steel plate bridge materials including, but not limited to: steel plates, anchoring devices, cold milling, elastomeric sealant material, asphalt ramping and padding, signage, placing, installation, removal, relocation, preparation and processing of shop drawings and submittals to support the use of steel plate bridging and all other materials, labor, supervision, overhead of any type or description will be paid for as an incidental to the work that the bridging is installed to facilitate. No separate payment for steel plate bridging will be made. No extension to contract time will be allowed for, or because of, the use of steel plate bridging.

306-1.2.1 Bedding. All installation of, and bedding for recycled water, or potable water mains shall conform to Carlsbad Municipal Water District Rules and Regulations for the Construction of (Potable or Reclaimed) Water Mains, latest edition.

306.1.2.2 Pipe Laying. add the following: The contractor shall coordinate with SDG&E to determine electrical service location. The contractor shall furnish and install electrical pull box,



electrical conduit, electrical conduit riser, and conductors per SDG&E requirements.

306-1.2.4 Field Jointing of Reinforced Concrete Pipe. add the following: The Contractor shall provide Gasket-type joints for reinforced concrete pipe (watertight joints) where indicated on plans.

306-1.3.1 General. add the following: The Contractor shall install detectable underground utility marking tape 230 mm x75 mm (9" x 3") above each or, in the case of bundled underground conduit of the same type, the upper underground conduit being installed by the open trench method. The type and color of detectable underground utility marking tape shall conform to the requirements of section 207-25 et seq.

306-1.3.4 Compaction Requirements. delete Section 306-1.3.4 and replace with the following: The Contractor shall densify trench backfill to a minimum of 90 percent relative compaction except that in the top 300 mm (12") of the street right-of-way, compaction shall be 95 percent.

306-1.5 Trench Resurfacing.

306-1.5.1 Temporary Resurfacing. Delete the fourth and fifth paragraphs and substitute the following: Temporary bituminous resurfacing materials which are placed by the Contractor are for its convenience and shall be at no cost to the Agency. Temporary bituminous resurfacing materials shall be used in lieu of permanent resurfacing only when approved by the Engineer. When temporary bituminous resurfacing materials are used in lieu of permanent resurfacing it shall be removed and replaced with permanent resurfacing within 7 days of placement. No additional payment will be made for temporary bituminous resurfacing materials. The price bid for the associated conduit or structure shall include full compensation for furnishing, placing, maintaining, removing, and disposing of such temporary resurfacing materials.

306-1.5.2 Permanent Resurfacing. Add the following: Except as provided in section 306-1.5.1, "Temporary Resurfacing," the Contractor shall perform permanent trench resurfacing within 24 hours after the completion of backfill and densification of backfill and aggregate base materials.

306-1.6 Basis of Payment for Open Trench Installation. add the following: Payment for utilities undergrounding which includes the utility trench for CATV and SDG&E and conduit for SDG&E's electric conversion shall be made on the basis of contract lump sum price for utilities undergrounding and no other payments will be made. Cox Cable will supply and deliver conduits and fittings to be installed by the Contractor. Cox Cable will install enclosures. The Contractor will furnish and install 6.4 mm ($\frac{1}{4}$ ") nylon pull ropes in all conduit.

306-5 ABANDONMENT OF CONDUITS AND STRUCTURES. Add the following: Unless otherwise noted on plans, the Contractor shall remove all existing abandoned pipelines and conduits of any type, or use, and pipelines and conduits of any type, or use, that are abandoned during the course of the work and shall replace said pipelines and conduits with properly compacted soils. Payment for removal and disposal of abandoned utilities shall be included in the lump-sum bid for Clearing and Grubbing, and no additional payment will be made.

SECTION 307 - STREET LIGHTING AND TRAFFIC SIGNALS



307 STREET LIGHTING AND TRAFFIC SIGNALS. Modify as follows: Section 86, "Signals, Lighting and Electrical Systems", of the Caltrans Standard Specifications replaces Section 209, "Electrical Components", and Section 307, "Street Lighting and Traffic Signals", of the SSPWC, in all matters pertaining to the specifications for measurement, payment, warranty, materials and methods of construction of street lighting and traffic signals.

SECTION 310 - PAINTING

310-5 PAINTING VARIOUS SURFACES.

310-5.6 Painting Traffic Striping, Pavement Markings and Curb Markings. Modify the fifth paragraph as follows: The Contractor shall furnish all equipment, materials, labor, and supervision necessary for painting traffic lanes, directional arrows, guidelines, curbs, parking lines, crosswalks, and other designated markings in accordance with the Plans, or for approved temporary detours essential for safe control of traffic through and around the construction site. The Contractor shall remove by wet grinding all existing or temporary traffic markings and lines that may confuse the public. When temporary detour striping or markings are no longer required, they shall be removed prior to painting the new traffic stripes or markings.

310-5.6.3 Equipment. Delete the ninth paragraph and substitute the following: The Contractor shall provide a wet grinding machine with sufficient capacity to completely remove all existing or temporary traffic striping or markings that conflict with the striping plan, or are contrary to the Traffic Manual, or that may be confusing to the public. The surface produced by grinding the existing or temporary traffic striping or markings on pavement shall not exceed variations from a uniform plane more than 3 mm ($\frac{1}{8}$ ") in 3 m (10') when measured parallel to the centerline of the street or more than 6 mm ($\frac{1}{4}$ ") in 3 m (10') when measured perpendicular to the centerline of the street. The use of any equipment that leaves ridges, indentations or other objectionable marks in the pavement shall be discontinued, and equipment capable of providing acceptable surface shall be furnished by the Contractor. This equipment shall meet all requirements of the air pollution control district having jurisdiction.

310-5.6.6 Preparation of Existing Surfaces. Modify the first paragraph as follows: The Contractor shall remove all existing markings and striping, either permanent or temporary, which are to be abandoned, obliterated or that conflict with the plans by wet grinding methods. Removal of striping by high velocity water jet may be permitted when there is neither potential of the water and detritus from the high velocity water jetting to damage vehicles or private property nor to flow from the street into any storm drain or water course and when approved by the Engineer. The Contractor shall vacuum all water and detritus resulting from high velocity water jet striping removal from the pavement immediately after the water jetting and shall not allow such materials to flow in the gutter, enter the storm drain system or to leave the pavement surface. Surface variation limitations for high velocity water jet striping removal shall be the same as for grinding. The Contractor shall not use dry or wet sandblasting in any areas. Alternate methods of paint removal require prior approval of the Engineer. Obliteration of traffic striping with black paint, light emulsion oil or any other masking method other than a minimum 30mm (0.10') thick asphalt concrete overlay is not permitted.

310-5.6.7 Layout, Alignment, and Spotting. Modify the first paragraph as follows: The Contractor shall establish the necessary control points for all required pavement striping and markings by surveying methods. No layout of traffic striping shall be performed by the Contractor before establishment of the necessary control points. The Contractor shall establish all traffic striping between these points by string line or other method to provide striping that will



vary less than 80mm per 100m (1/2 inch in 50 feet) from the specified alignment. The Contractor shall obliterate, straight stripes deviating more than 80mm per 100mm (1/2 inch in 50 feet) by wet grinding, and then correcting the markings. The Contractor shall lay out (cat track) immediately behind installation of surface course asphalt and as the work progresses.

310-5.6.8 Application of Paint. Modify the second paragraph as follows: The Contractor shall apply the first coat of paint immediately upon approval of striping layout by the Engineer. The Contractor shall paint the ends of each median nose yellow.
Add the following to the eighth paragraph: The Contractor shall apply temporary traffic stripes in one coat. Temporary traffic stripes shall be maintained by the Contractor so that the stripes are clearly visible both day and night.

310-5.6.10 Measurement and Payment. Final and temporary traffic striping, curb markings and pavement markings as shown on the plans and required by the specifications shall be included in the lump-sum price bid for temporary and final traffic striping, and no additional compensation will be allowed therefore. Reapplication of temporary stripes and markings shall be repainted at the Contractor's expense, and no additional compensation will be allowed, therefore. The lump sum prices bid and shall include all labor, tools, equipment, materials, and incidentals for doing all work in installing the final and temporary traffic striping.

Add the following Section:

310-7 PERMANENT SIGNING

Add the following Section:

310-7.1 General. Add the following section: The Contractor shall provide and install all permanent traffic control signs at locations shown on plans and as specified herein.

Add the following section:

310-7.2 Measurement And Payment. Permanent signing and appurtenances thereto shown on the plans or required in the specifications are a part of the lump-sum item for permanent signing and payment therefore shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in supplying and installing permanent signing and appurtenances, complete in place, as shown on the plans, as specified in the Standard Specification and these special provisions, and as directed by the Engineer.

SECTION 312 - PAVEMENT MARKER PLACEMENT AND REMOVAL

312-1 PLACEMENT. Add the following to the third paragraph:

- 4) When being installed on asphalt concrete pavement sooner than 14 days after placement of the asphalt concrete pavement course on which the pavement markers are to be placed.

Add the following section:

312-1.1 Reflective Channelizer Placement and Removal. The Contractor shall place and remove reflective channelizers the same as for pavement marker placement and removal. The Contractor shall place the channelizers uniformly, straight on tangent alignment and on a true arc on curved alignment to the same tolerances of position as for application of paint in section 310-5.6.8. The Contractor shall perform all layout work necessary to place the channelizers to the proper alignment. If the channelizers are displaced or fail to remain in an upright position,



from any cause, the channelizers shall immediately be replaced or restored to their original location, by the Contractor. When reflective channelizers are removed the pavement surface shall be restored to the same color and surface finish as the adjacent pavement.

SECTION 313 - TEMPORARY TRAFFIC CONTROL DEVICES

Add the following section:

313-1 TEMPORARY TRAFFIC PAVEMENT MARKERS.

Add the following section:

313-1.1 General. The Contractor shall supply and install temporary traffic pavement markers, channelizers, signing, railing (type K), crash cushions and appurtenances at the locations shown on the plans and as required in the specifications, complete in place prior to opening the traveled way served by said final and temporary traffic pavement markers, signing, railing (type K) and appurtenances to public traffic.

313-1.2 Temporary Pavement Markers. Temporary reflective raised pavement markers shall be placed in accordance with the manufacturer's instructions. Temporary reflective raised pavement markers shall be cemented to the surfacing with the adhesive recommended by the manufacturer, except epoxy adhesive shall not be used to place temporary reflective raised pavement markers in areas where removal of the markers will be required. Pavement striping, legends and markers which conflict with any traffic pattern shall be removed by grinding as determined by the Engineer. The Contractor shall use temporary reflective raised pavement markers for temporary pavement marking, except when the temporary pavement markers are used to replace patterns of temporary traffic stripe that will be in place for less than 30 days. Reflective pavement markers used in place of the removable-type pavement markers shall conform to the section 312 "Pavement Marker Placement and Removal", except the 14-day waiting period before placing the pavement markers on new asphalt concrete surfacing as specified in section 312-1 "Placement", shall not apply; and epoxy adhesive shall not be used to place pavement markers in areas where removal of the markers will be required.

Add the following section:

313-1.3 Channelizers. Channelizers shall be new surface-mounted type and shall be furnished, placed, and maintained at the locations shown on the plans. Channelizer posts shall be orange in color. Channelizers shall have affixed white reflective sheeting as specified in the special provisions. The reflective sheeting shall be 75 mm x 300 mm (3" x 12") in size. The reflective sheeting shall be visible at 300 m (1000') at night under illumination of legal high beam headlights, by persons with vision of or corrected to 20/20. The channelizer bases shall be cemented to the pavement in the same manner as provided for cementing pavement markers to pavement in section 312-1, "Placement." Channelizers shall be applied only on a clean, dry surface. Channelizers shall be placed on the alignment and location shown on the plans and as directed by the Engineer. The channelizers shall be placed uniformly, straight on tangent alignment and on a true arc on curved alignment. All layout work necessary to place the channelizers to the proper alignment shall be performed by the Contractor. If the channelizers are displaced or fail to remain in an upright position, from any cause, the channelizers shall immediately be replaced or restored to their original location, by the Contractor. The Contractor shall provide the Engineer with a Certificate of Compliance in accordance with the provisions of section 4-1.5, "Certification". Said certificate shall certify that the channelizers comply with the plans and specifications and conform to the prequalified design and material requirements approved by the Engineer and were manufactured in accordance with a quality control program



approved by the Engineer.

Add the following section:

313-2 TEMPORARY TRAFFIC SIGNING.

Add the following section:

313-2.1 General. The Contractor shall provide and install all temporary traffic control signs, markers, markings, and delineators at locations shown on plans and specified herein.

Add the following section:

313-2.2 Maintenance of Temporary Traffic Signs. If temporary traffic signs are displaced or overturned, from any cause, during the progress of the work, the Contractor shall immediately replace the signs in their original approved locations. The Contractor shall maintain all temporary traffic signs used in the Work in a clean, reflective and readable condition. The Contractor shall replace or restore graffiti marked temporary traffic signs and posts used in the Work within 18 hours of such marking being discovered during non-working hours or, when the marking is discovered during working hours, within 2 hours of such discovery of marking.

Add the following section:

313-3 TEMPORARY RAILING (TYPE K) AND CRASH CUSHIONS.

Add the following section:

313-3.1 Temporary Railing and Crash Cushions. Temporary railing (Type K) shall consist of interconnected new or undamaged used precast concrete barrier units as shown on the plans. Temporary sand-filled crash cushions shall consist of new or undamaged used temporary sand-filled crash cushions units as shown on the plans.

313-3.1.1 Appearance. Exposed surfaces of new and used units of Temporary railing (Type K) shall be freshly coated with a white color paint prior to their first use on the project. The paint shall conform to the provisions in sections 210-1.5 "Paint Systems" and 310 "Painting". Contractor shall be responsible for the removal and cleanup or painting over the graffiti from the K-Rails within 48 hours. The Contractor shall replace or repaint units of Temporary railing (Type K) or shall remove graffiti, tire or vehicle marks, dirt or any and all materials such that said marks or discoloration mar the appearance of said units when ordered by the Engineer after the units are in place.

Add the following section.

313-3.1.2 Manufacture of Temporary Railing. In addition to the requirements herein the temporary railing (Type K) shall be manufactured per CALTRANS Standard Drawing T3. Concrete used to manufacture Temporary railing (Type K) shall conform to the provisions in sections 201-1, "Portland Cement Concrete" and 303-1 "Concrete Structures". Load tickets and a Certificate of Compliance will not be required. Reinforcing steel shall conform to the provisions sections 201-1, "Portland Cement Concrete" and 303-1 "Concrete Structures". Steel bars to receive bolts at ends of concrete panels shall conform to ASTM Designation: A 36/A 36M. The bolts shall conform to ASTM Designation: A 307. A round bar of the same diameter may be substituted for the end-connecting bolt shown on the plans. The bar shall conform to ASTM Designation: A 36/A 36M, shall have a minimum length of 660 mm and shall have a 75 mm (3") diameter by 9 mm ($\frac{3}{8}$ ") thick plate welded on the upper end with a 5-mm ($\frac{3}{16}$ ") fillet weld. The final surface finish of temporary railings (Type K) shall conform to the provisions in section 303-1.9.2 "Ordinary Surface Finish." Exposed surfaces of concrete elements shall be cured by the water method, the forms-in-place method, or the pigmented curing compound method. The pigmented curing compound shall be type 2 curing compound. Temporary railing (Type K) may have the Contractor's name or logo on each panel. The name or logo shall not be more than 100 mm in height and shall be located not more than 300 mm above the bottom of the rail panel.



Add the following section.

313-3.1.3 Installation of Temporary Railing. In addition to the requirements herein the temporary railing (Type K) shall be installed per CALTRANS Standard Drawing T3. Temporary railing (Type K) shall be set on firm, stable foundation. The foundation shall be graded to provide a uniform bearing throughout the entire length of the railing. Abutting ends of precast concrete units shall be placed and maintained in alignment without substantial offset to each other. The precast concrete units shall be positioned straight on tangent alignment and on a true arc on curved alignment. Each rail unit placed within 3 m (10') of a traffic lane shall have a reflector installed on top of the rail as directed by the Engineer. Reflectors and adhesive will be furnished by the Contractor. A Type P marker panel conforming to the requirements of the Federal Highway Administration (FHWA) Manual on Uniform Traffic Control Devices (MUTCD) 2003 Edition as amended by the MUTCD 2003 California Supplement shall also be installed at each end of railing installed adjacent to a two-lane, two-way highway and at the end facing traffic of railing installed adjacent to a one-way roadbed. If the railing is placed on a skew, the marker shall be installed at the end of the skew nearest the traveled way. Type P marker panels shall conform to the provisions of section 206-7.2, "Temporary Traffic Signs". Where shown on the plans, threaded rods or dowels shall be bonded in holes drilled in existing concrete. When temporary railings (Type K) are removed, any area where temporary excavation or embankment was used to accommodate the temporary railing shall be restored to its previous condition, or constructed to its planned condition.

Add the following section:

313-3.2 Temporary Sand-Filled Crash Cushions. Temporary sand-filled crash cushion units shall be "Energite III" manufactured by Energy Absorption Systems, "Fitch Inertial Barrier System Modules" manufactured by Roadway Safety Service, or equal. Features required to determine equivalence of any other temporary sand-filled crash cushion units shall be approval of the system by CALTRANS and that the temporary sand-filled crash cushion units meet NCHRP 350 standards. Other features will be suitability to application, operational characteristics, durability and other such characteristics that the Engineer shall determine. Temporary sand-filled crash cushions (TSFCC) shall be of the type and array configurations shown on plans, and installed at every end of, or gap in, the temporary railing (Type K) whenever the closest point of approach of traffic, regardless of direction, is 4.6 m (15') or less to the end of the temporary railing (Type K) being considered. The TSFCC shall be installed per CALTRANS Standard Drawings T1 and T2 for approach speeds no less than the posted speed of the street prior to construction or 55 kilometers per hour (35 mph), whichever is the greater. The TSFCC array shall be appropriate to the application as shown on said standard drawings. A Type J and/or P marker panel conforming to the requirements of the Federal Highway Administration (FHWA) Manual on Uniform Traffic Control Devices (MUTCD) 2003 Edition as amended by the MUTCD 2003 California Supplement shall also be installed at each TSFCC array as shown in CALTRANS Standard Drawings T1 and T2. Particular care shall be taken to assure that crash cushions are installed with the soil supporting them and the adjacent soil leveled to match the elevation of the bottom of the temporary railing immediately adjacent to the crash cushion. All routes of approach to the TSFCC array shall be graded such that any vehicle diverging from the traveled way to strike the TSFCC will travel on a vertical alignment parallel to the segment of the travel lane that it departed from.

Add the following section:

313-4 MEASUREMENT AND PAYMENT. Temporary traffic pavement markers, temporary channelizers, temporary signing, temporary railing (type K), temporary crash cushions and temporary appurtenances thereto shown on the plans or required in the specifications are a part of the lump-sum item for traffic control and payment therefore shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in applying, installing, maintaining, and removing temporary traffic pavement markers,



channelizers, signing, railing (type K), crash cushions and appurtenances, complete in place, as shown on the plans, as specified in the Standard Specification and these special provisions, and as directed by the Engineer. Payment for temporary crash cushions, concrete barriers and the signs and reflectors marking them shall include the installation, grading for installation, grading for the approach path, maintenance, painting and re-painting, replacement of damaged units and removal and shall also be included in the lump-sum price bid for traffic control. Payment for installation and/or relocation of K-rails and crash cushions when not shown on the plans and requested by the Engineer shall be made per section 3-3, Extra Work, SSPWC.



SUPPLEMENTAL PROVISIONS TO STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

PART 6, MODIFIED ASPHALTS, PAVEMENTS AND PROCESSES

600-3 Rubberized Emulsion - Aggregate Slurry

600-3.2 Materials add the following: Aggregate for Rubberized Emulsion - Aggregate Slurry shall be Type I Slurry Aggregate.

600-3.4 Application of REAS add to the first paragraphs: No slurry shall be applied until the provisions of subsection 212-1.2.6, Herbicide Application, Section 302-11 Asphalt Concrete Pavement Crack Filling and Sealing, Section 312-3 Pavement Marker Removal have all been satisfied.

The Contractor shall remove all existing markings, legends and striping, either permanent or temporary in those areas to be slurried. Removal of striping by high velocity water jet may be permitted when there is neither potential of the water and detritus from the high velocity water jetting to damage vehicles or private property nor to flow from the street into any storm drain or water course and when approved by the Engineer. The Contractor shall vacuum all water and detritus resulting from high velocity water jet striping removal from the pavement immediately after the water jetting and shall not allow such materials to flow in the gutter, enter the storm drain system or to leave the pavement surface. Surface variation limitations for high velocity water jet striping removal shall be the same as for grinding. The Contractor shall not use dry or wet sandblasting in any areas.

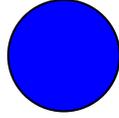
All cracks and areas between existing curb and gutter and edge of pavement that contain weeds or plant growth of any kind shall be treated with herbicides. Herbicides shall be applied at least 2(two) working days prior to sealing of street. Allowance for the two day period shall be shown in the schedule required per section 6-1. Contractor shall remove any visible plant growth prior to placement of Herbicide.

Full compensation for removal of striping and herbicide application shall include but not be limited to: furnishing all labor, tools, equipment, and materials necessary for doing the work and shall be considered as included in the contract unit price bid for Rubberized Emulsion Aggregate Slurry and no additional compensation will be allowed therefore.

600-3.6 Public Convenience and Traffic Control modify the first line with the following: Public Convenience and traffic control shall conform to 302-4.4.4. There shall be no stockpiling of material allowed on City right-of-way.



APPENDIX "A"



**CITY OF CARLSBAD
ROAD WORK**

ABC CONTRACTORS
OFFICE # (760)XXX-XXXX
FIELD # (760)XXX-XXXX

Dear resident:

As a part of the City of Carlsbad's ongoing program to maintain its streets, your street will be resurfaced with asphalt concrete over the existing roadway surface. This construction will require the closing of your street to through traffic for one day. Your street, from XYZ St. to DEF Ave. will be closed to through traffic and resurfaced on:

MON. TUE. WED. THU. FRI.
DATE: XX/XX/XX

from 7:00A.M. to 5:00 P.M.

If you don't plan to leave your home by 7:00 A.M. on the above date please park your car on an adjacent street in your neighborhood that will not be resurfaced. Streets scheduled for resurfacing can be determined by calling either the Contractor or the City of Carlsbad's Project Inspector. When walking to and from your car, remember not to walk on the newly overlaid street or you will have black residue on the bottom of your shoes. Please do not drive, walk on, walk pets, play, or skate on the newly overlaid asphalt. Also, please refrain from watering your lawns, washing cars, etc., approximately 6-8 hours after the asphalt is laid as running water will cause damage to the new surface.

ABC is the Contractor that will be performing the resurfacing work for the city and you may call them at the above phone number if you have any questions regarding the project. Resurfacing of your street will not occur on the day your trash is collected. Mail delivery may be delayed if the postman cannot reach the mailbox that day. If you have a moving company scheduled for that day please call and inform the Contractor of the date. If you have any concerns which cannot be addressed by the Contractor, you may call the City's Project Inspector @ (xxx) xxx-xxxx.

Thank you for your cooperation as we work to make a better City of Carlsbad.

