

# RES

# INSTALLATION PROCEDURE

- PREASSEMBLE THE MULTI-PLANE ANCHOR, CUP BOLTED SPIRAL AND PE TRUMPET. GREASE THE 3 BOLTS TO FACILITATE REMOVAL LATER.
- 2. BOLT THE MULTI-PLANE ANCHOR WITH THE PE TRUMPET TO FORM AS SHOWN: THE ANCHOR SHOULD BE ORIENTED SUCH THAT THE BOLT NEXT TO THE GROUT HOLE POINTS UP.
- 3. Install the duct system as shown on shop drawings (tolerance  $\pm 7$  (1/4")). Connect duct to pe transition as shown on this drawing. Tape will ensure leak-tight connection.

#### CONCRETING CAN NOW PROCEED

- 4. AFTER THE CONCRETE HAS HARDENED INSTALL STRAND BUNDLE. ALLOW SUFFICIENT LENGTH FOR STRESSING.
- 5. CHECK THE WEDGE PLATE FOR RUST, DIRT AND CRIT. CLEAN WEDGE HOLES WITH WIRE BRUSH IF NECESSARY. LICHTLY GREASE OR OIL WEDGE HOLES.
- 6. CHECK WEDGES FOR RUST, DIRT OR CRIT. DISCARD RUSTY WEDGES. USE ONLY CLEAN WEDGES.
- 7. INSTALL WEDGE PLATE, SUP WEDGES OVER THE STRANDS AND LOOSLEY SEAT IN WEDGE HOLES.

## STRESSING CAN NOW PROCEED

- OPTION A -- GROUTING WITH GROUT CAP
- 8. AFTER STRESSING, CUT OFF STRANDS APPROXIMATELY 20 (3/4") AWAY FROM THE WEDGES.
- 9. LIGHTLY GREASE GROUT CAP AND INSTALL TOCETHER WITH SEAL OVER WEDGE PLATE, USING THREE BOLTS, GREASE BOLTS FOR EASY REMOVAL AFTER GROUTING.
- 10. THREAD 21mm CROUT TUBE COMPLETE WITH GROUT VALVE INTO THREADED HOLE PROVIDED IN THE MULTI-PLANE ANCHOR.
- Use the 3 (1/8")# Hole in the grout Cap for venting. During grouting close this
  hole with a golf tee when grout emerges.

#### GROWTING CAN NOW PROCE

- 12. REMOVE THE GROUT CAP AFTER THE GROUT HAS HARDENED BUT NOT LATER THAN 24 HOURS AFTER GROUTING.
- 13, CUT OFF GROUT TUBE PROTRUDING FROM ANCHOR AND FILL BLOCK-OUT WITH CONCRETE.
- OPTION B -- GROUTING WITHOUT GROUT CAP
- B. AFTER STRESSING CUT OFF STRANDS AS SHOWN IN DETAIL.
- 9. THREAD 21mm GROUT TUBE COMPLETE WITH GROUT VALVE INTO THREADED HOLE PROMDED IN THE MULTI-PLANE ANCHOR.
- 10, FILL BLOCK-OUT WITH CONCRETE.

#### GROUTING CAN NOW PROCEED

EXPLOSIVE AND CAN RESULT IN SEVERE INJURY.

11. CUT OFF CROUT TUBE PROTRUDING FROM CONCRETE FACE.

### NOTE

- 1. FOR TENDON SIZES LESS THAN THE MAX. CAPACITY OF THE SYSTEM, ELIMINATE THE USE OF WEDGE HOLES CONCENTRICALLY FROM THE CENTER OF THE WEDGE PLATE OUTWARDS.
- 2. THE MA-ANCHORAGES CAN BE USED AS STRESSING OR DEAD END ANCHORAGES.
- 3. NOT ALL THE SYSTEMS SHOWN ON THIS SHEET MAY BE NEEDED FOR THIS PROJECT.

  AT NO TIME DURING STRESSING AND REMOVAL OF JACKS SHALL PERSONS STAND IN LINE WITH
  BARS OR BEND OVER ALREADY STRESSED BARS. SHOULD A BAR BREAK SUCH BREAKAGE IS

# ALL DIMENSIONS ARE IN MILLIMETERS, EXCEPT AS NOTED.

DYVIDAG SYSTEMS INTERNATIONAL, USA INC. DDES NOT ASSUME ANY LIABILITY
FOR THE DESIGN OF THIS STRUCTURE. THIS SHOP DRAWING IS INTENDED TO
PROVIDE POST TENSIONING DETAILS ONLY

# TRABUCO CREEK BIKE TRAIL OVERCROSSING

CALIFORNIA

ORANGE COUNTY

DIST. COUNTY ROUTE KM POST BRIDGE NO. 12 Ora 241 30.1 55-95.3 W/O NO: EH23075

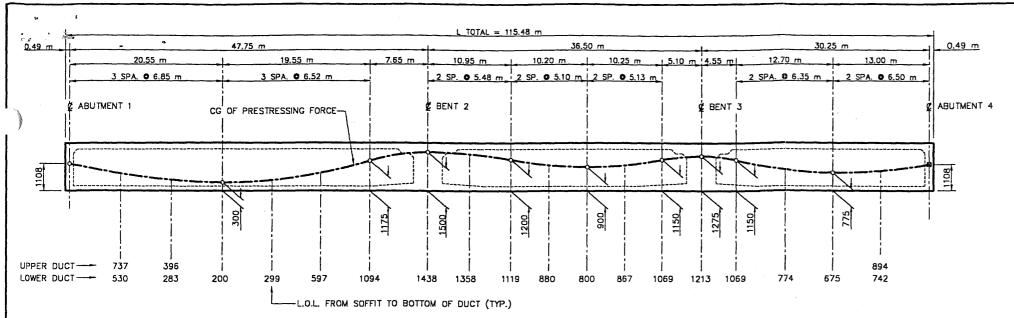
CONTRACTOR: LAPCO, INC.

DSI

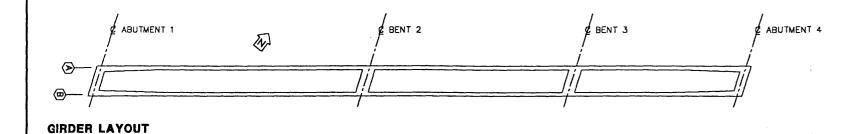
DYWIDAG Systems International, USA, Inc.

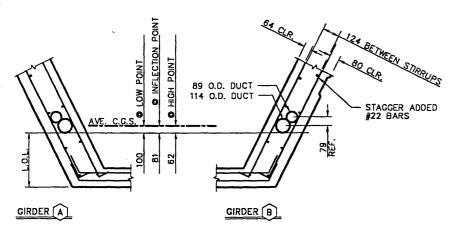
12-, AND 27-0.6"Ø STRESSING ANCHORAGES MA SYSTEM

REV. DATE	DATE	ISSUE DESCRIPTION		NAME	CHKO.	SCALE:	DRAWN BL	
	-			1		NO SCALE	CHKD.	
				<del>                                     </del>			APPD.	
				+		DATE 02,19.99	APPD.	
						JOB No.	420	537
				1		DWG. NO.	1 0	C 3



#### LONGITUDINAL SECTION





#### TYPICAL SECTION

APPROVED PURSUANT TO SECTION 5-1.02 OF THE CALTRANS STANDARD SPECIFICATIONS

JAN 19 2000

COUNTY OF ORANGE PUBLIC FACILITIES & RESOURCES DEPT. DESIGN DIVISION

Roth

APPROVAL STAMP MUST BE in red ink to be valid

#### PRESTRESSING CALCULATIONS

0.6 d, GRADE 270, LOW-RELAXATION, 7-WIRE STRAND (ASTM A416) GUARANTEED MINIMUM ULTIMATE STRENGTH = 260.7 km (58,600 LBS.)

GIVEN: MU = 0.20, K = 0, AND MODIFIED FOR HORIZONTAL CURVE, IF ANY; ANCHOR SET = 10 mm (3/8"); PROVISION FOR 20,000 PSI LOSS IN STRESS INITIAL FORCE AT 🛛 = 0.883 TIMES THE JACKING FORCE

PJACK: 15,250 kN NO. OF STRANDS: 15,250 kN / (0.75)(260.7 kN) = 78 STRANDS

PJACK = 5279 kN (1,187 KIPS) USE: 2 - TENDONS W/27 STRANDS EACH PJACK = 2346 kN (527 KIPS) 2 - TENDONS W/12 STRANDS EACH

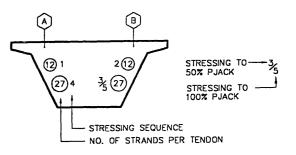
#### **ELONGATION:**

 $\frac{(195.5 \text{ kN})(1 + 0.883)}{2} \times \frac{(115.5 + 1.0 \text{ m})(10^{5})}{(140 \text{ mm}^{2})(193,000 \text{ MPa})} = 794 \text{ mm}$ STRESSING FROM ONE END :  $\Delta = AT ABUTMENT 1$ 

 $80\% \Delta = (0.8)(794) = 635 \text{ mm} (25")$ 

#### NOTES:

- 1. ASSUMED A = 140  $\text{mm}^2$  (0.217  $\text{IN}^2$ ) AND E = 193,000 MPa (28,000 KSI) USED FOR ELONGATION CALCULATIONS TO BE VERIFIED ON ACTUAL PRESTRESSING STEEL USED. THESE FIGURES MAY VARY, WHICH MAY RESULT IN A VARIANCE OF THE CALCULATED ELONGATION.
- 2. CONCRETE STRENGTH: f'ci = 25 MPa (3600 PSI) @ TIME OF STRESSING
- 3. SEE DRAWING NO. 1. FOR GENERAL NOTES AND ANCHORAGE DETAILS.



# STRESSING SEQUENCE

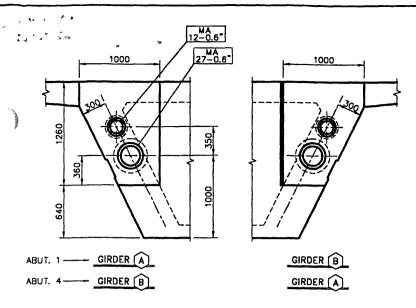
PFRD/CONSTRUCTION

**ISSUED** OCT 21 1999 For Approval

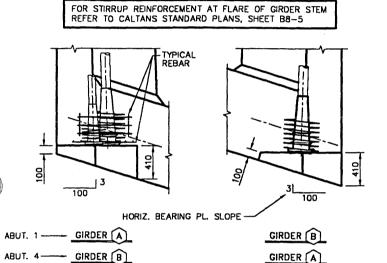
CLAUDIO HUNGER, P.E. 4774 TREGO DRIVE, SAN JOSE, CA 95118 9 CONSULTING ENGINEER TEL. (408) 269-1581 FAX (408) 269-1583

BILL OF MAT	ERIALS	(FOR INTERNAL	USE BY DSI)
ANCHOR CASTING	MA 12-0.6	68 12 212	4 EA.
ANCHOR CASTING	MA 27-0.6"	68 27 212	4 EA.
PE TRUMPET	MA 12-0.6"	68 12 586	4 EA.
PE TRUMPET	MA 27-0.6"	68 27 586	4 EAL
SPIRAL	MA 12-0.6"	68 12 214	4 EA.
SPIRAL	MA 27-0.6"	68 27 214	4 EA.
WEDGE PLATE	MA 12-0.6"	58 12 142	4 EA.
WEDGE PLATE	MA 27-0.5"	28 27 142	4 EA.
WEDGE	0.6*#	68 00 0536	160 PR.
DUCT, 25 GA.	3 1/2" 0.0.	~-	780 FT.
DUCT, 25 GA.	4 1/2" O.D.		780 FT.
CEMENT	TYPE II		85 SX.
STRAND	0.6"ø LOW-LAX		32,000 FT. (3.7 PACKS)

Т	RAB	uco	CREE	K I	BIKE	TR	AIL OVE	RCRO	SSING		
DIST.	COUNT	Y ROUTE	KM PO 30.1		RIDGE N		/O No. EH	23075			
	CONTRACTOR: LAPCO, INC.										
4					DYWIDAG Systems International, USA, Inc.						
				Р	ost-	-TE	NSIONIN	G DE	TAILS		
REV.	DATE	ISSUE	DESCRIPT	TION	NAME	CHKD.	SCALE	DRAWN	СН		
-							VARIES	CHKD.			
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#### **ELEVATION AT ABUTMENTS**

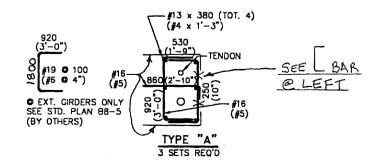


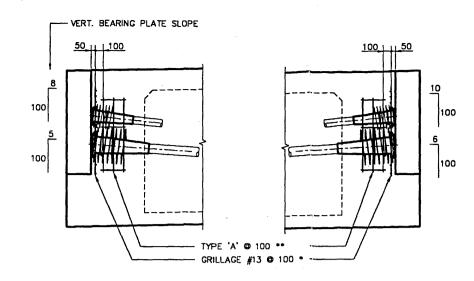
#### PLAN AT ABUTMENTS

#### NOTE:

\* REINFORCING IN THE ANCHORAGE ZONES CONFORMING TO CALTRANS STANDARD DRAWINGS, SHEET 88-5

\* ADDITIONAL REINFORCING CONFORMING TO CALTRANS LETTER OF APPROVAL OF DYMDAG MA SYSTEMS: 5-0.6" THRU 27-0.6" STRANDS FROM 9/17/91. ALL REBARS N.I.C. TO BE FURNISHED AND INSTALLED BY OTHERS.





#### SECTION AT ABUTMENTS

NOTE: PRIOR TO STRESSING, REINFORCING STEEL SHALL BE BENT (BY OTHERS)
IN THE AREA OF THE BLOCKOUT IN ORDER TO AVOID INTERFERENCE WITH
WITH STRESSING EQUIPMENT. FOR REQUIRED CLEARANCE SEE DRW. NO. 1.

APPROVAL STAMP MUST BE IN RED INK TO BE VALID Approved
Pursuant to Section 5-1.02
Of the Caltrans
Standard Specifications

JAN 19 2000

County of Orange Public Facilities & Resources Dept. Design Division

Rest

ISSUED OCT 21 1999 For Approval

CH CLAUDIO HUNGER, P.E. 4774 TREGO DRIVE, SAN JOSE, CA 95118 9 CONSULTING ENGINEER TEL. (408) 269-1581 FAX (408) 269-1583

TRABUCO	CREEK	BIKE	TRAIL	OVERCROSSING

TRABUCO CREEK BIKE TRAIL OVERCROSSII

DIST. COUNTY ROUTE KM POST BRIDGE NO. W/O No. EH23075

CONTRACTOR: LAPCO, INC.

DYWIDAG Systems International, USA, Inc.

POST-TENSIONING DETAILS

| REV. DATE | ISSUE DESCRIPTION | NAME | CHKD. | SCALE | CHKD. | CHKD. | CHKD. | CHKD. | CHKD. | APPD. | APPD.