**GENERAL NOTES**

**PRESTRESSING STEEL:**

1/2" x 270 KSI, 7-WIRE STRAND, LOW RELAXATION (ASTM A-416, INCL. SUPPLEMENT 1)

**ULTIMATE STRENGTH:**

41.3 KPS

**MAX. TEMPORARY FORCE:**

31.0 KPS

**INITIAL FORCE:**

28.9 KPS

**AREA:**

0.153 SQ. IN.

**MODULUS OF ELASTICITY:**

28,000 KSI

**BEARING PLATES:**

MATERIAL: ASTM A536 GR. 80-55-06

**ANCHORHEAD:**

MATERIAL: ASTM A536 GR. 80-55-06

**WEDGES:**

MATERIAL: SPIRO-TYPE, RIGID, GALVANIZED DUCT

**DUCT:**

SIZE:

AS SHOWN IN TABLE

**GENERAL NOTES:**

PLACING, STRESSING AND GROUTING PROCEDURES ARE TO CONFORM TO THE STANDARD SPECIFICATIONS AND AS MODIFIED BY THE SPECIAL PROVISIONS.

GENERAL CONTRACTOR TO BE RESPONSIBLE FOR END BLOUSEHEADS, BUILOOUTS, BLOKOUTS, INCLUDING VENT PIPE BLOKOUTS AND CONSTRUCTION OF FORMS TO ATTACH POST-TENSIONING ANCHORAGES.

REINFORCING BARS SHALL BE ADJUSTED, OR RELOCATED, DURING THE INSTALLATION OF THE TENDON ENCOILERS TO PROVIDE PLANNED CLEARANCES TO THE POST-TENSIONING TENDONS, ANCHORAGES AND STRESSING EQUIPMENT AS DIRECTED BY THE ENGINEER.

IN CASE OF CONFLICT BETWEEN REINFORCING STEEL AND POST-TENSIONING TENDONS, THE LOCATION OF THE TENDONS SHALL TAKE PRECEDENCE. THE GENERAL CONTRACTOR SHALL COORDINATE THE DETAILS AND PLACEMENT OF ALL REINFORCING STEEL TO ELIMINATE CONFLICT WITH REQUIRED PRESTRESSING STEEL LOCATIONS.

ALL FORMS SHALL BE BRACED AND ANCHORED TO SUPPORT THE WEIGHT OF THE BEARING PLATES.

LOCATION OF STRANDS IN ANCHORHEAD:

ALL OUTSIDE HOLES SHALL BE FILLED FIRST.

**CAST BEARING PLATE VISUALIZATION**

**ANCHORHEAD VISUALIZATION**

**STRESSING JACK VISUALIZATION**

**PRESTRESSING DETAILS**

**GENERAL NOTES AND ANCHORAGE DETAILS**

**PROJECT:**

- 

**PROJECT NO:**

- 

**CONTRACT NO:**

- 

**PROJECT NO:**

- 

**CONTRACTOR:**

- 

**DESIGN BY:**

- 

**DATE:**

- 

**DRAWN BY:**

- 

**DATE:**

- 

**CHECKED BY:**

- 

**DATE:**

- 

**ISSUED BY:**

- 

**DATE:**

- 

**REVISION NO:**

- 

**AVAR JOB NO.**

- 

**REV.**

- 

**DRAWING NO:**

B1b

**AVAR Construction Systems, Inc.**

47375 Fremont Blvd

Fremont, California 94538

(510)334-2000
GENERAL NOTES

Prestressing Steel:
- 0.65" #270 KD, 7-wire strand, low relaxation (ASTM A-416 incl. Supplement 1)
- Ultimate Strength: 58.6 kips
- Max. Temporary Force (70%) 44.0 kips
- Initial Force (70%) 41.0 kips
- Area: 0.217 sq. in.
- Modulus of Elasticity: 28,000 ksi

Anchor Head:
- Material: ASTM A536 GR. B0-55-06 (Ductile Casting)

Wedges:
- Material: AISI 11L17 or 12L14 (L = 1.81 in.)

Duct:
- Material: Spiro-type, rigid, galvanized duct
- Size: As shown in shop drawing

Bolt Trumpet to the Form:
- Cast after stressing and before grouting of PT tendons (by others)

Grout Inlet/Outlet:
- Loose in use with multi-strand anchor head

Remove Form and Install Anchor Head:
- Attention shall be paid to vibrating well behind bearing plate.

General Notes:
- Placing, stressing and grouting procedures are to conform to the standard specifications and as modified by the special provisions.
- General contractor to be responsible for blockouts and construction of forms to attach post-tensioning anchorages.
- Reinforcing bars shall be adjusted, or relocated, during the stressing ram.
- In case of conflict between reinforcing steel and post-tensioning tendons, the location of the tendons shall take precedence.
- General contractor to coordinate the detailing and placement of all reinforcing steel to eliminate conflict with required prestressing steel locations.

Prestressing Details

Dimension Table

<table>
<thead>
<tr>
<th>Unit</th>
<th>Strand</th>
<th>Duct</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACS F-4,6</td>
<td>1 thru 4</td>
<td>2&quot;</td>
</tr>
</tbody>
</table>

Issued Mar 30 1989
For Information

NOTE: A min. of 5 ft of the tendon behind each bearing plate shall be straight and perpendicular to the bearing plate.
**Bolt Hole (tot. 2)**

*Drill 12\(\frac{9}{16}\)" holes in Formwork plate*

**Multi-Plane Option**

*Optional grout hole anchoring casting*

<table>
<thead>
<tr>
<th>O.D. MA Casting</th>
<th>6&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>O.D. Spiral</td>
<td>7 3/4&quot;</td>
</tr>
</tbody>
</table>

**Typ. Front View of Wedge Plate and MA Anchorage**

**Installation Detail**

*Contractor shall provide a hole (0\(3/2\))" in formwork for access to the inside of the tendon. This hole shall be located at the center of the anchorage. (See layout drawing details)*

**Part Description Material**

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Material Specification</th>
<th>Part No./Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-Part Wedge Plate</td>
<td>As specified in DSI Dwg. No. 68 05 212</td>
<td>68 05 212</td>
</tr>
<tr>
<td>5-0.6&quot; Cast Wedge Plate</td>
<td>As specified in DSI Dwg. No. 68 05 214</td>
<td>68 05 214</td>
</tr>
<tr>
<td>Duct</td>
<td>Galvanized</td>
<td>68 05 144</td>
</tr>
<tr>
<td>Duct &amp; Duct Coupler</td>
<td>Hard Polyethylene</td>
<td>68 05 088</td>
</tr>
<tr>
<td>5-0.6&quot; Standard Spiral</td>
<td>A.N.S. Center of Gravity</td>
<td>68 05 204</td>
</tr>
<tr>
<td>5-0.6&quot; MA System</td>
<td>(see DSI Dwg. No. 68 05 212)</td>
<td></td>
</tr>
</tbody>
</table>

**Intermediate Vent Details**

*(Use only when indicated on layout drawing)*

**Typical Longitudinal Section of Dywidag MA-Anchorages**

**Installation Procedure**

1. Preassemble the multi-plane anchor, bolted spiral, and PE trumpet. Lightly grease mounting studs to facilitate removal.
2. Bolt the multi-plane assembly to the formwork as shown. The anchor must be oriented such that the grout hole is at the top. Tape the grout hole to prevent concrete leakage.
3. Install duct as shown on shop drawings (tolerance = \(\pm 1/8\)) connect duct to transition trumpet as shown on this drawing. Tape all joints to ensure leak-tight connections.
4. Ducts must be tied at maximum 4" centers to prevent movement during concrete placement. Concrete placement may now proceed.
5. After initial cure and removal of formwork, install strands leaving sufficient length for stressing.
6. Inspect hardware for rust, dirt and grime. Disassemble rusty wedges. If necessary, clean wedge plate holes with wire brush.
7. Install wedge plate and wedges. Loosely seat wedges into holes.
8. Stressing may now proceed per plans.
9. After stressing, cut off strand tails approximately 3\(\frac{1}{2}\)' from wedge face.
10. Lightly grease grout cap and install over wedge plate with seal.
11. Thread grout tubing with attached valve into threaded hole at top of anchor.
12. Grillot tubing flush with anchor face.

**Notes**

1. For tendon sizes less than system capacity, eliminate the use of wedge holes concentrically from the center of the wedge plate outward.
2. The multi-plane anchorages may be used as stressing or dead-end anchorages.
3. Not all systems shown on this sheet may be required for this project.
POST TENSIONING GENERAL NOTES

PRESTRESSING STEEL

PRESTRESSING STEEL SUPPLIED FOR THE SDI PT SYSTEM SHALL BE CLEAN AND FREE FROM DELETERIOUS CORROSION. STRAND WILL BE SHIPPED IN REEL-LESS PACES FOR FIELD FABRICATION AND PLACEMENT. STEEL SHALL CONFORM TO ASTM A416, GRADE 270 LOW RELAXATION TYPE.

- NOMINAL STRAND DIAMETER (GRADE 270KSI): 0.6 IN
- CROSS-SECTIONAL AREA (ASSUMED): 0.375 SQ IN
- MODULUS OF ELASTICITY (ASSUMED): 28,500 KSI
- GUARANTEED ULTIMATE TENSILE STRENGTH (GUTS): 58.6 KIPS
- FINAL EFFECTIVE PRESTRESS FORCE: VARIES
- WEDGE SEATING: 0.375 IN
- FRICTION COEFFICIENT: VARIES
- WOBBLE COEFFICIENT: 0.0002/FT

CROSS-SECTIONAL AREA (ASSUMED): 0.217 SQ IN
MODULUS OF ELASTICITY (ASSUMED): 28,500 KSI
GUARANTEED ULTIMATE TENSILE STRENGTH (GUTS): 58.6 KIPS
MAXIMUM STRESSING FORCE PER STRAND (75% GUTS): 44 KIPS

BEARING PLATES AND ANCHOR HEADS

MATERIAL FOR THE CASTING OF BEARING PLATES AND ANCHOR HEADS SHALL CONFORM TO ASTM A536 GR. 80-55-06.

- SDI 12.6-8 BEARING PLATE
  - MATERIAL: ASTM A536 GR. 80-55-06
  - WEIGHT: 33.4 lbs
  - MAX. TOP POINT ON ALL TENDONS EXCEEDING 400 FEET IN LENGTH. SEE DRAWINGS FOR LOCATIONS AND DETAILS.

- SDI 19.6-8 BEARING PLATE
  - MATERIAL: ASTM A536 GR. 80-55-06
  - MAX. TOP POINT ON ALL TENDONS EXCEEDING 400 FEET IN LENGTH. SEE DRAWINGS FOR LOCATIONS AND DETAILS.

- SDI 22.6-8 BEARING PLATE
  - MATERIAL: ASTM A536 GR. 80-55-06
  - MAX. TOP POINT ON ALL TENDONS EXCEEDING 400 FEET IN LENGTH. SEE DRAWINGS FOR LOCATIONS AND DETAILS.

- SDI 27.6-8 ANCHORAGE (APPROVED FOR 3500 PSI CONC.)
  - MATERIAL: ASTM A536 GR. 80-55-06
  - MAX. TOP POINT ON ALL TENDONS EXCEEDING 400 FEET IN LENGTH. SEE DRAWINGS FOR LOCATIONS AND DETAILS.

- SDI 32.6-8 ANCHORAGE (APPROVED FOR 3500 PSI LT. WT. CONC.)
  - MATERIAL: ASTM A536 GR. 80-55-06
  - MAX. TOP POINT ON ALL TENDONS EXCEEDING 400 FEET IN LENGTH. SEE DRAWINGS FOR LOCATIONS AND DETAILS.

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