



CALCULATION COVER SHEET

Calculation No: 42112-C-002
 Project: OYSTER CREEK A-46
 Calculation Title: CABLE TRAY OUTLIER EVALUATION

 References: SECTION 5
 Attachments: A, B

Total Number of Pages (Including Cover Sheet): 123 + ATT'S

Revision Number	Approval Date	Description of Revision	Originator	Checker	Approver
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EQE INTERNATIONAL

SHEET NO. 2

JOB NO. 42112

JOB Oyster Creek A-46

BY TAD DATE 3-22-95

CALC. NO. C-002

SUBJECT Cable Tray Outlier Evaluation

CHKD DB DATE 3-22-95

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JOB

Oyster Creek A-46

BY

RDA

DATE

3-22-95CALC. NO. C-002

SUBJECT

Cable Tray Outlier Evaluation

CHKD

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DATE

3-22-95

1.0 Purpose

The purpose of this calculation is to document the Outlier evaluation of the safety-related electrical raceway at the Oyster Creek Nuclear Power Plant. The initial cable tray evaluation was performed in EQE calculation 42112-C-001 (Reference 2).

2.0 Methodology

The methodology to be utilized in this calculation is that detailed in Section 8.0 of the Generic Implementation Procedure (GIP) (Reference 1).

The supports were rewalked in the field to obtain more detailed (i.e. less conservative) tray fill estimations. These estimates were then incorporated in more explicit hand or computer analysis of the supports.

3.0 Calculations

Each of the supports analyzed in this calculation failed the limited analytical review guidelines of the GIP as found in Reference 2.

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SECTION 3.1

ANALYTICAL REVIEW No. RB-23-02

OUTLIER CONCERN: This support was found to be an Outlier in EQE calculation 42112-C-001. The support is suspended from the ceiling and is also bolted back to the wall. The suspended section anchors failed the 1.0 and the 3.0 times dead load checks. The wall mounted section Unistrut members failed the 1.0 times dead load check in addition to failing the lateral load check.

RESOLUTION METHODOLOGY: This calculation will remove some of the conservatism in load generation and will perform a computer analysis of the frame configuration.

The support is suspended from the ceiling and braced back to the wall. Both the vertical and the horizontal frames support cable trays and conduit.

Determine tray weight: Per Section 8.3.9 of the GIP, cable tray weight may be estimated as 25 psf for a 4" deep tray. All of the trays are 2 foot wide which yields the following linear weight for a 100% full tray.

$$\text{wt} := (25\text{-psf}) \cdot 2\text{-ft} \quad \text{wt} = 4.17 \cdot \frac{\text{lb}}{\text{in}} \quad \text{psf} := \frac{\text{lb}}{\text{ft}^2} \quad \text{psi} := \frac{\text{lb}}{\text{in}^2}$$

Determine conduit weight: Per Section 8.3.9 of the GIP, find the following conduit weights:

$$\text{three_quarter} := 1.4 \cdot \frac{\text{lb}}{\text{ft}} \quad \text{one} := 2.2 \cdot \frac{\text{lb}}{\text{ft}}$$

The support will be evaluated using the ALGOR SuperSap computer program. The computer model is as shown along with the location of the concentrated loads. The model will be run with 4 load cases: 1) Dead Load, 2) Lateral load in X direction, 3) Lateral load in Z direction, and 4) all of the above simultaneously.

Determine concentrated loads: The loading will be derived on a notal basis using the as-built information and cable tray fills.

$$\text{Node_7} := \text{wt} \cdot \left(\frac{18 + 34 + 54}{2} \cdot \text{in} \right) \cdot 0.10$$

$$\text{Node_7} = 22 \cdot \text{lb}$$

$$\text{Node_11} := \text{wt} \cdot \left(\frac{56 + 64 + 38}{2} \cdot \text{in} \right) \cdot 0.10$$

$$\text{Node_11} = 33 \cdot \text{lb}$$

$$\text{Node_8} := \text{wt} \cdot \left(\frac{18 + 34 + 46}{2} \cdot \text{in} \right) \cdot 0.10$$

$$\text{Node_8} = 20 \cdot \text{lb}$$

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$$\text{Node}_{12} := \text{wt} \cdot \left(\frac{56 + 64 + 24}{2} \cdot \text{in} \right) \cdot 0.20$$

$$\text{Node}_{12} = 60 \cdot \text{lb}$$

$$\text{Node}_9 := \text{wt} \cdot \left(\frac{18 + 34 + 38}{2} \cdot \text{in} \right) \cdot 0.10$$

$$\text{Node}_9 = 19 \cdot \text{lb}$$

$$\text{Node}_{13} := \text{wt} \cdot \left(\frac{56 + 64 + 12}{2} \cdot \text{in} \right) \cdot 0.20$$

$$\text{Node}_{13} = 55 \cdot \text{lb}$$

$$\text{Node}_{10} := \text{wt} \cdot \left(\frac{18 + 34 + 30}{2} \cdot \text{in} \right) \cdot 0.20$$

$$\text{Node}_{10} = 34 \cdot \text{lb}$$

$$\text{Node}_{14} := \text{wt} \cdot \left(\frac{56 + 64 + 24}{2} \cdot \text{in} \right) \cdot 0.30$$

$$\text{Node}_{14} = 90 \cdot \text{lb}$$

Note: Node 14 picks up 1/2 of the short riser load that is shared with Node 49.

$$\text{Node}_{28} := \text{wt} \cdot \left[\left(\frac{24 + 54}{2} + 98 \right) \cdot \text{in} \right] \cdot 0.10$$

$$\text{Node}_{28} = 57 \cdot \text{lb}$$

Note: the 98" dimension is the riser.

$$\text{Node}_{36} := \text{wt} \cdot \left[\left(\frac{40 + 38}{2} + 98 \right) \cdot \text{in} \right] \cdot 0.10$$

$$\text{Node}_{36} = 57 \cdot \text{lb}$$

$$\text{Node}_{29} := \text{wt} \cdot \left[\left(\frac{32 + 46}{2} + 98 \right) \cdot \text{in} \right] \cdot 0.10$$

$$\text{Node}_{29} = 57 \cdot \text{lb}$$

$$\text{Node}_{38} := \text{wt} \cdot \left[\left(\frac{24 + 54}{2} + 98 \right) \cdot \text{in} \right] \cdot 0.20$$

$$\text{Node}_{38} = 114 \cdot \text{lb}$$

$$\text{Node}_{30} := \text{wt} \cdot \left[\left(\frac{40 + 38}{2} + 98 \right) \cdot \text{in} \right] \cdot 0.10$$

$$\text{Node}_{30} = 57 \cdot \text{lb}$$

$$\text{Node}_{39} := \text{wt} \cdot \left[\left(\frac{12 + 66}{2} + 98 \right) \cdot \text{in} \right] \cdot 0.20$$

$$\text{Node}_{39} = 114 \cdot \text{lb}$$

$$\text{Node}_{31} := \text{wt} \cdot \left[\left(\frac{30 + 48}{2} + 98 \right) \cdot \text{in} \right] \cdot 0.20$$

$$\text{Node}_{31} = 114 \cdot \text{lb}$$

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$$\text{Node}_{49} := \text{wt} \cdot \left[\left(\frac{78}{2} + 98 \right) \cdot \text{in} \right] \cdot 0.30$$

$$\text{Node}_{49} = 171 \cdot \text{lb}$$

Determine conduit loading: There is additional conduit supported at Nodes 10, 14, 31, and 49. The conduit on these nodes has the same span as the trays. In addition, nodes 12 and 13 support short conduit spans.

$$\text{Conduit}_{10} := \left(\frac{18 + 34 + 30}{2} \cdot \text{in} \right) \cdot ((9 \cdot \text{three_quarter}) + (6 \cdot \text{one}))$$

$$\text{Conduit}_{10} = 88 \cdot \text{lb}$$

$$\text{Conduit}_{31} := \left[\left(\frac{30 + 48}{2} + 98 \right) \cdot \text{in} \right] \cdot ((9 \cdot \text{three_quarter}) + (6 \cdot \text{one}))$$

$$\text{Conduit}_{31} = 295 \cdot \text{lb}$$

$$\text{Conduit}_{14} := \left(\frac{56 + 64 + 24}{2} \cdot \text{in} \right) \cdot ((12 \cdot \text{three_quarter}) + (2 \cdot \text{one}))$$

$$\text{Conduit}_{14} = 127 \cdot \text{lb}$$

$$\text{Conduit}_{49} := \left[\left(\frac{78}{2} + 98 \right) \cdot \text{in} \right] \cdot ((12 \cdot \text{three_quarter}) + (2 \cdot \text{one}))$$

$$\text{Conduit}_{49} = 242 \cdot \text{lb}$$

$$\text{Conduit}_{12} := (9 \cdot \text{three_quarter}) \cdot (3 \cdot \text{ft})$$

$$\text{Conduit}_{12} = 38 \cdot \text{lb}$$

$$\text{Conduit}_{13} := (1 \cdot \text{three_quarter}) \cdot (3 \cdot \text{ft})$$

$$\text{Conduit}_{13} = 4 \cdot \text{lb}$$

Load Summary:

$$\text{Node}_7 = 22 \cdot \text{lb}$$

$$\text{Node}_8 = 20 \cdot \text{lb}$$

$$\text{Node}_9 = 19 \cdot \text{lb}$$

$$\text{Node}_{11} = 33 \cdot \text{lb}$$

$$\text{Node}_{28} = 57 \cdot \text{lb}$$

$$\text{Node}_{29} = 57 \cdot \text{lb}$$

$$\text{Node}_{30} = 57 \cdot \text{lb}$$

$$\text{Node}_{36} = 57 \cdot \text{lb}$$

$$\text{Node}_{38} = 114 \cdot \text{lb}$$

$$\text{Node}_{39} = 114 \cdot \text{lb}$$

$$\text{Node}_{10} := \text{Node}_{10} + \text{Conduit}_{10}$$

$$\text{Node}_{10} = 122 \cdot \text{lb}$$

$$\text{Node}_{12} := \text{Node}_{12} + \text{Conduit}_{12}$$

$$\text{Node}_{12} = 98 \cdot \text{lb}$$

$$\text{Node}_{13} := \text{Node}_{13} + \text{Conduit}_{13}$$

$$\text{Node}_{13} = 59 \cdot \text{lb}$$

$$\text{Node}_{14} := \text{Node}_{14} + \text{Conduit}_{14}$$

$$\text{Node}_{14} = 217 \cdot \text{lb}$$

$$\text{Node}_{31} := \text{Node}_{31} + \text{Conduit}_{31}$$

$$\text{Node}_{31} = 409 \cdot \text{lb}$$

$$\text{Node}_{49} := \text{Node}_{49} + \text{Conduit}_{49}$$

$$\text{Node}_{49} = 413 \cdot \text{lb}$$

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Determine P1000 properties: From Unistrut Catalog Rev. 10A.

$$A := 0.555 \cdot \text{in}^2 \quad S_3 := 0.203 \cdot \text{in}^3 \quad S_2 := 0.294 \cdot \text{in}^3 \quad I_3 := 0.186 \cdot \text{in}^4 \quad I_2 := 0.239 \cdot \text{in}^4$$

Per Figure 8-6 of the GIP, the first evaluation step is the entire support, including eccentricities, for a 1.0 times dead load using normal manufacturer allowable stresses.

Check member stresses: This step was performed by the SuperSap program in load case 1. From page 3.1-12 find the maximum bending stress to be 24.1 ksi in member 47. Per Unistrut Catalog 10A the allowable bending stress is 25 ksi. Therefore the bending stresses are acceptable for 1.0 times dead load.

Check the P1000 cross tie end connections for the horizontal frame: These members, 15, 17, 18, 20, 21, 23, 24, 26, 27, 29, 30, 32, 33, and 34, were modeled as fixed end members. The following maximum element based loads are for member 34 from pages 3.1-24 to 34 of this calc. The connection of member 34 is as shown in Section X-X of the walkdown data.

$$\text{shear}_{34} := 282 \cdot \text{lb} \quad \text{axial}_{34} := 125 \cdot \text{lb}$$

In Section X-X it is seen that the horizontal P1000 channel is secured to the vertical members with (3) 1/2" bolts. This connection is judged to be seismically adequate due the small loading.

The remaining cross tie channels are attached to the main runners with (1) P1026 type fitting at each end. This bracket has (1) 1/2" channel in each of the two connecting members. From the Unistrut catalog find the following allowable loads:

$$\text{allow_slip} := 1500 \cdot \text{lb} \quad \text{allow_pullout} := 2000 \cdot \text{lb}$$

Per review of the SuperSap output and the above load summaries it is seen that the connection brackets and their bolts are seismically adequate,

Check the connections to the ceiling: There are (2) 1/2" shell anchors holding the frame to the ceiling.

At node 1 there are two members framing into it, 35 and 45:

$$\text{axial}_{35} := 690 \cdot \text{lb} \quad \text{shear2}_{45} := 64 \cdot \text{lb}$$

$$\text{pullout_node_1} := \text{axial}_{35} + \text{shear2}_{45} \quad \text{pullout_node_1} = 754 \cdot \text{lb}$$

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At node 21 there is only one member:

$$\text{shear2_47} := 804 \cdot \text{lb}$$

$$\text{pullout_node_21} := \text{shear2_47}$$

$$\text{pullout_node_21} = 804 \cdot \text{lb}$$

Check 1/2" shell anchors:

Determine anchor bolt allowable loads: Use methodology of Appendix C of the GIP.

From Table C.2-1 of the GIP find the following anchor bolt allowable loads for a 1/2" shell anchor:

$$F_t := 2290 \cdot \text{lb}$$

$$F_v := 2380 \cdot \text{lb}$$

Reduction Factors:

$$RT_p := 0.75$$

$$RT_s := 0.75$$

Reduction factor for unknown anchor bolt type. (C.2.2)

$$RF_p := \frac{3000}{4000}$$

$$RF_s := \frac{3000}{10000} + 0.65$$

Reduction factor for assumed concrete strength = 3000 psi. (C.2.7)

$$RF_p = 0.75$$

$$RF_s = 0.95$$

Revised Allowable Loads:

$$F_t := F_t \cdot RT_p \cdot RF_p$$

$$F_v := F_v \cdot RT_s \cdot RF_s$$

$$F_t = 1288 \cdot \text{lb}$$

$$F_v = 1696 \cdot \text{lb}$$

Check Interaction: Use highest reaction load.

$$\frac{\text{pullout_node_21}}{F_t} = 0.62 < 1.0, \text{ Anchor Bolts are acceptable for 1.0 times dead load.}$$

SHEET NO. 3.1-6

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Check 1/2" rods: Conservatively use root area per pg. 4-147 of AISC 9th edition and assume A307 material:

$$\text{axial_member_40} := 868\text{-lb}$$

$$A := 0.129\text{-in}^2 \quad \sigma := \frac{\text{axial_member_40}}{A} \quad \sigma = 6729\text{-psi} \quad < 20\text{ ksi, therefore rods are adequate.}$$

Check wall connections: The horizontal part of the frame is secured to the wall at nodes 40 and 41. These are loaded by members 1 and 8 respectively. These members are attached to the wall with type P1325 brackets that have (2) 1/2" channel nuts into the strut and (2) 1/2" shell anchors into the wall.

$$\text{axial_1} := 33\text{-lb} \quad \text{shear3_1} := 183\text{-lb} \quad \text{axial_8} := 2\text{-lb} \quad \text{shear3_8} := 128\text{-lb}$$

Comparison to the ceiling connections and due to the small loads of the wall connections, the wall connections are adequate by engineering judgment.

CONCLUSION: The support is adequate for 1.0 times the dead load.

Per Figure 8-6 of the GIP, the next evaluation step is the Vertical Capacity Check. This is a check of the anchorage and primary support connections using an applied load of 3.0 times dead load.

As the member stress under 1.0 times dead load is 24 ksi; a factor of 3.0 times dead load is obviously not acceptable. The same goes for the ceiling anchorage which has an interaction value of 0.62 for 1.0 times dead load.

CONCLUSION: The support is not adequate for 3.0 times the dead load and must be classified as an Outlier.

Per Figure 8-6 of the GIP, the next evaluation step is the Ductile Response Check.

As this support is wall mounted in addition to being suspended from the ceiling, it must be subject to a lateral load evaluation.



EQE ENGINEERING

SHEET NO. 3.1-7

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Per Figure 8-6 of the GIP, the next evaluation step is the Lateral Load Check.

The Lateral Load check is in the form of an equivalent static load coefficient. Per Section 8.3.4 of the GIP, the lateral load check can consist of a dead load combined with, for elevations lower than about 40' above plant effective grade, a transverse acceleration of 2.5 times the floor ZPA.

The floor ZPA is defined as 0.17g in Reference 4 for the 51'-3" elevation.

ZPA := 0.17

accel_horiz := 2.5 · ZPA

accel_horiz = 0.425 g

As the nodal loads were developed for 1.0 times dead load above, those same loads will be multiplied by the horizontal acceleration for the lateral load input:

Load Summary:

Node_7 := Node_7 · accel_horiz	Node_7 = 9 · lb
Node_8 := Node_8 · accel_horiz	Node_8 = 9 · lb
Node_9 := Node_9 · accel_horiz	Node_9 = 8 · lb
Node_10 := Node_10 · accel_horiz	Node_10 = 52 · lb
Node_11 := Node_11 · accel_horiz	Node_11 = 14 · lb
Node_12 := Node_12 · accel_horiz	Node_12 = 42 · lb
Node_13 := Node_13 · accel_horiz	Node_13 = 25 · lb
Node_14 := Node_14 · accel_horiz	Node_14 = 92 · lb
Node_28 := Node_28 · accel_horiz	Node_28 = 24 · lb
Node_29 := Node_29 · accel_horiz	Node_29 = 24 · lb
Node_30 := Node_30 · accel_horiz	Node_30 = 24 · lb
Node_31 := Node_31 · accel_horiz	Node_31 = 174 · lb
Node_36 := Node_36 · accel_horiz	Node_36 = 24 · lb

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Node_38 := Node_38-accel_horiz Node_38 = 49-lb

Node_39 := Node_39-accel_horiz Node_39 = 49-lb

Node_49 := Node_49-accel_horiz Node_49 = 176-lb

$$\text{ksi} = 1000 \cdot \frac{\text{lb}}{\text{in}^2}$$

These loads were input in load cases 2, 3, and conservatively added together for load case 4.

Check member stresses: The maximum member stress occurs in member 47, load case 4. This stress is 31.7 ksi. Load case 4 is a direct summation of 1.0 times dead load + X acceleration + Z acceleration. Revise the bending moments by combining the dead load stress with the SRSS of the lateral load stresses as follows.

case_1 := 24.11-ksi

case_2 := 1.253-ksi

case_3 := 6.881-ksi

$$\sigma = \sqrt{\text{case}_2^2 + \text{case}_3^2} + \text{case}_1$$

$$\sigma = 31.1 \cdot \text{ksi}$$

The allowable stress is 25 ksi. The maximum of Dead Load + SSE is 31.1 ksi which is 24% over the allowable. This stress is still less than yield (33 ksi) and considered to be acceptable for momentary loading (could use 1.7 x allowable for structural steel).

-- Check Anchor Bolt Loads:

The ceiling bolts are located at nodes 1 and 21. From the computer output, generate nodal loads as follows:

At node 1 there are two members framing into it, 35 and 45:

Axial_35_DW := 690-lb Axial_35_X := 19-lb Axial_35_Z := 158-lb

Shear_2_35_DW := 43-lb Shear_2_35_X := 1-lb Shear_2_35_Z := 93-lb

Shear_3_35_DW := 20-lb Shear_3_35_X := 25-lb Shear_3_35_Z := 0-lb

Axial_45_DW := 5-lb Axial_45_X := 0-lb Axial_45_Z := 11-lb

Shear_2_45_DW := 64-lb Shear_2_45_X := 2-lb Shear_2_45_Z := 68-lb

Shear_3_45_DW := 1-lb Shear_3_45_X := 3-lb Shear_3_45_Z := 0-lb

$$\text{Pullout_node_1} := \left(\sqrt{\text{Axial_35_X}^2 + \text{Axial_35_Z}^2 + \text{Shear_2_45_X}^2 + \text{Shear_2_45_Z}^2} \right) \dots \\ + \text{Axial_35_DW} + \text{Shear_2_45_DW}$$

$$\text{Pullout_node_1} = 927 \cdot \text{lb}$$

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$$X_Shear_node_1 := (Shear_3_35_DW + Shear_3_45_DW) + \left(\sqrt{Shear_3_35_X^2 + Shear_3_35_Z^2 + Shear_3_45_X^2 + Shear_3_45_Z^2} \right)$$

$$X_Shear_node_1 = 46 \cdot lb$$

$$Z_Shear_node_1 := (Shear_2_35_DW + Axial_45_DW) + \left(\sqrt{Shear_2_35_X^2 + Shear_2_35_Z^2 + Axial_45_X^2 + Axial_45_Z^2} \right)$$

$$Z_Shear_node_1 = 142 \cdot lb$$

$$Shear_node_1 := \sqrt{X_Shear_node_1^2 + Z_Shear_node_1^2}$$

$$Shear_node_1 = 149 \cdot lb$$

At node 21 there is only one member framing into it, 47:

$$Axial_47_DW := 48 \cdot lb$$

$$Axial_47_X := 1 \cdot lb$$

$$Axial_47_Z := 108 \cdot lb$$

$$Shear_2_47_DW := 804 \cdot lb$$

$$Shear_2_47_X := 22 \cdot lb$$

$$Shear_2_47_Z := 226 \cdot lb$$

$$Shear_3_47_DW := 13 \cdot lb$$

$$Shear_3_47_X := 29 \cdot lb$$

$$Shear_3_47_Z := 0 \cdot lb$$

$$Pullout_node_21 := \left(\sqrt{Shear_2_47_X^2 + Shear_2_47_Z^2} \right) + Shear_2_47_DW$$

$$Pullout_node_21 = 1031 \cdot lb$$

$$X_Shear_node_21 := \left(\sqrt{Shear_3_47_X^2 + Shear_3_47_Z^2} \right) + Shear_3_47_DW$$

$$X_Shear_node_21 = 42 \cdot lb$$

$$Z_Shear_node_21 := \left(\sqrt{Axial_47_X^2 + Axial_47_Z^2} \right) + Axial_47_DW$$

$$Z_Shear_node_21 = 156 \cdot lb$$

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$$\text{Shear_node_21} := \sqrt{X_Shear_node_21^2 + Z_Shear_node_21^2}$$

$$\text{Shear_node_21} = 162 \cdot \text{lb}$$

Ceiling Anchor Bolt Load Summary:

$$\text{Pullout_node_1} = 927 \cdot \text{lb}$$

$$\text{Shear_node_1} = 149 \cdot \text{lb}$$

$$\text{Pullout_node_21} = 1031 \cdot \text{lb}$$

$$\text{Shear_node_21} = 162 \cdot \text{lb}$$

Node 21 Controls: Check Interaction

$$\frac{\text{Pullout_node_21}}{F_t} + \frac{\text{Shear_node_21}}{F_v} = 0.896 < 1.0, \text{ Anchorage is OK}$$

The wall bolts are located at nodes 40 and 41. From the computer output, generate nodal loads as follows:

Member 1:

$$\text{Axial_1_DW} := 33 \cdot \text{lb}$$

$$\text{Axial_1_X} := 348 \cdot \text{lb}$$

$$\text{Axial_1_Z} := 513 \cdot \text{lb}$$

$$\text{Shear_2_1_DW} := 5 \cdot \text{lb}$$

$$\text{Shear_2_1_X} := 2 \cdot \text{lb}$$

$$\text{Shear_2_1_Z} := 292 \cdot \text{lb}$$

$$\text{Shear_3_1_DW} := 183 \cdot \text{lb}$$

$$\text{Shear_3_1_X} := 19 \cdot \text{lb}$$

$$\text{Shear_3_1_Z} := 0 \cdot \text{lb}$$

Member 8:

$$\text{Axial_8_DW} := 2 \cdot \text{lb}$$

$$\text{Axial_8_X} := 390 \cdot \text{lb}$$

$$\text{Axial_8_Z} := 513 \cdot \text{lb}$$

$$\text{Shear_2_8_DW} := 5 \cdot \text{lb}$$

$$\text{Shear_2_8_X} := 2 \cdot \text{lb}$$

$$\text{Shear_2_8_Z} := 291 \cdot \text{lb}$$

$$\text{Shear_3_8_DW} := 128 \cdot \text{lb}$$

$$\text{Shear_3_8_X} := 24 \cdot \text{lb}$$

$$\text{Shear_3_8_Z} := 0 \cdot \text{lb}$$

$$\text{Pullout_node_40} := \left(\sqrt{\text{Axial_1_X}^2 + \text{Axial_1_Z}^2} \right) + \text{Axial_1_DW}$$

$$\text{Pullout_node_40} = 653 \cdot \text{lb}$$

$$\text{Y_Shear_node_40} := \left(\sqrt{\text{Shear_3_1_X}^2 + \text{Shear_3_1_Z}^2} \right) + \text{Shear_3_1_DW}$$

$$\text{Y_Shear_node_40} = 202 \cdot \text{lb}$$

JOB NO. 42112 JOB Oyster Creek A-46
 CALC. NO. 002 SUBJECT CABLE TRAY EVALUATION

BY TDA DATE 3-16-95
 CHK'D PB DATE 3-22-95

$$Z_Shear_node_40 := (\sqrt{Shear_2_1_X^2 + Shear_2_1_Z^2}) + Shear_2_1_DW$$

$$Z_Shear_node_40 = 297 \cdot lb$$

$$Shear_node_40 := \sqrt{Y_Shear_node_40^2 + Z_Shear_node_40^2}$$

$$Shear_node_40 = 359 \cdot lb$$

$$Pullout_node_41 := (\sqrt{Axial_8_X^2 + Axial_8_Z^2}) + Axial_8_DW$$

$$Pullout_node_41 = 646 \cdot lb$$

$$Y_Shear_node_41 := (\sqrt{Shear_3_8_X^2 + Shear_3_8_Z^2}) + Shear_3_8_DW$$

$$Y_Shear_node_41 = 152 \cdot lb$$

$$Z_Shear_node_41 := (\sqrt{Shear_2_8_X^2 + Shear_2_8_Z^2}) + Shear_2_8_DW$$

$$Z_Shear_node_41 = 296 \cdot lb$$

$$Shear_node_41 := \sqrt{Y_Shear_node_41^2 + Z_Shear_node_41^2}$$

$$Shear_node_41 = 333 \cdot lb$$

Ceiling Anchor Bolt Load Summary:

$$Pullout_node_40 = 653 \cdot lb$$

$$Shear_node_40 = 359 \cdot lb$$

$$Pullout_node_41 = 646 \cdot lb$$

$$Shear_node_41 = 333 \cdot lb$$

Node 40 Controls: Check Interaction

$$\frac{Pullout_node_40}{F_t} + \frac{Shear_node_41}{F_v} = 0.703 < 1.0, \text{ Anchorage is OK}$$

CONCLUSION: The support has been reevaluated and is found to be seismically adequate per the Outlier resolution guidelines of the GIP.

EQE

JOB OYSTER CREEK A-46

JOB NO. 42112

SUBJECT CABLE TRAY EVALUATION

CALC NO. 002

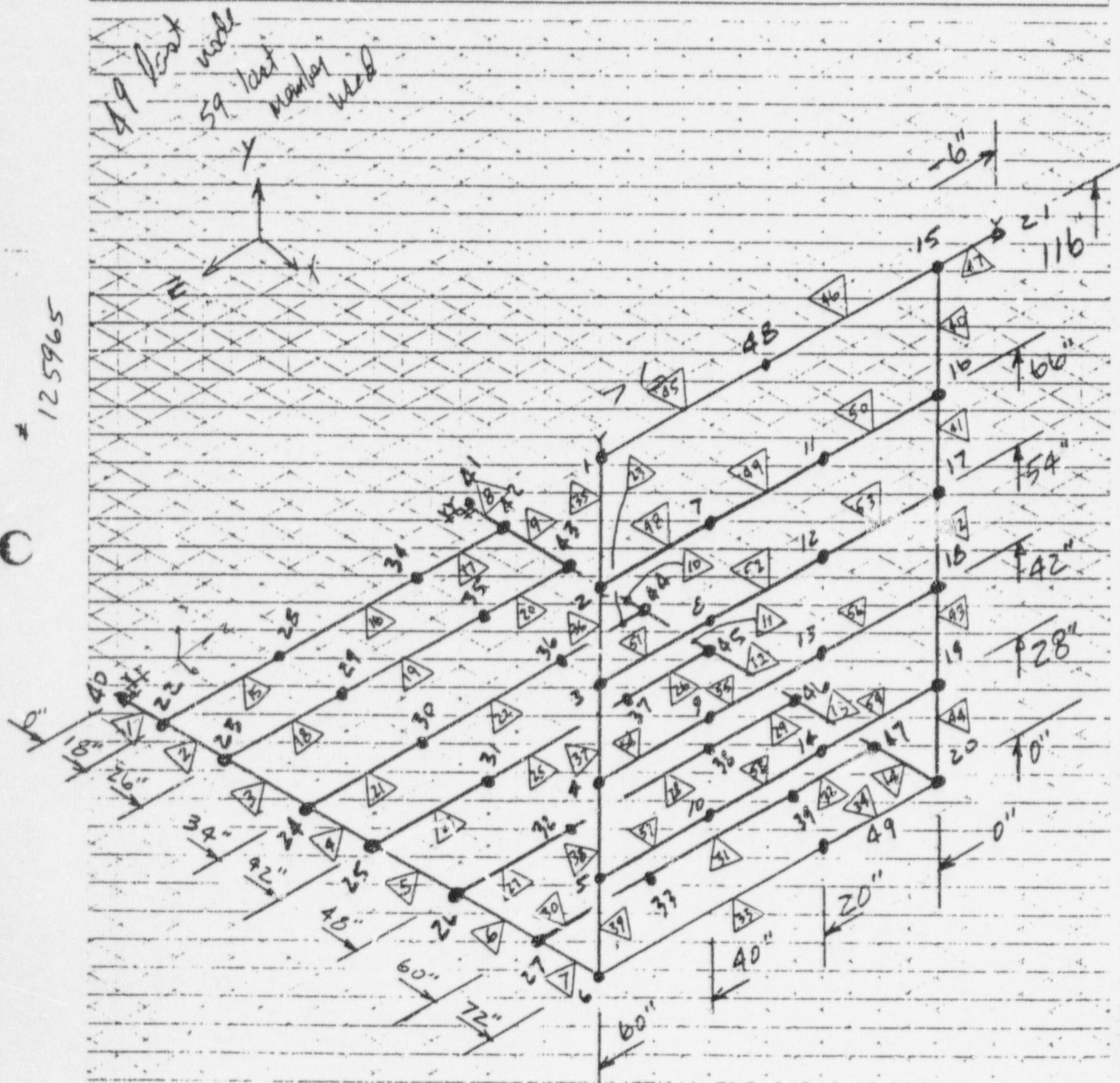
BY TRM

DATE 3-16-95

CHK'D PB

DATE 3-22-95

SHEET NO. 3.1-12 OF





EQE ENGINEERING

SHEET 301-13JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray EvaluationsBY PA DATE 3-16-95CALC. NO. 002 SUBJECTCK PA DATE 3-22-95

1**** Algor (c) Linear Stress Analysis - SSAP0H Rel. 01-SEP-94 Ver. 11.06-3H

DATE: FEBRUARY 14, 1995

TIME: 10:11 AM

INPUT FILE.....rb2302fx

Analytical Review No. RB-23-002, Oyster Creek

1**** CONTROL INFORMATION

number of node points	(NUMNP)	=	49
number of element types	(NELTYP)	=	1
number of load cases	(LL)	=	4
number of frequencies	(NF)	=	0
geometric stiffness flag	(GEOSTF)	=	0
analysis type code	(NDYN)	=	0
solution mode	(MODEX)	=	0
equations per block	(KEQB)	=	0
weight and c.g. flag	(IWTCG)	=	0
bandwidth minimization flag	(MINBND)	=	0
gravitational constant	(GRAV)	=	3.8600E+02

bandwidth minimization specified

1**** NODAL DATA

NODE NO.	BOUNDARY CONDITION CODES	NODAL POINT COORDINATES	T
	DX DY DZ RX RY RZ	X Y Z	
1	1 1 1 0 0 0	7.200E+01 1.160E+02 6.000E+01	0.000E+00
2	0 0 0 0 0 0	7.200E+01 6.600E+01 6.000E+01	0.000E+00
3	0 0 0 0 0 0	7.200E+01 5.400E+01 6.000E+01	0.000E+00
4	0 0 0 0 0 0	7.200E+01 4.200E+01 6.000E+01	0.000E+00
5	0 0 0 0 0 0	7.200E+01 2.800E+01 6.000E+01	0.000E+00
6	0 0 0 0 0 0	7.200E+01 0.000E+00 6.000E+01	0.000E+00
7	0 0 0 0 0 0	7.200E+01 6.600E+01 4.000E+01	0.000E+00
8	0 0 0 0 0 0	7.200E+01 5.400E+01 4.000E+01	0.000E+00
9	0 0 0 0 0 0	7.200E+01 4.200E+01 4.000E+01	0.000E+00
10	0 0 0 0 0 0	7.200E+01 2.800E+01 4.000E+01	0.000E+00
11	0 0 0 0 0 0	7.200E+01 6.600E+01 2.000E+01	0.000E+00
12	0 0 0 0 0 0	7.200E+01 5.400E+01 2.000E+01	0.000E+00
13	0 0 0 0 0 0	7.200E+01 4.200E+01 2.000E+01	0.000E+00
14	0 0 0 0 0 0	7.200E+01 2.800E+01 2.000E+01	0.000E+00
15	0 0 0 0 0 0	7.200E+01 1.160E+02 0.000E+00	0.000E+00
16	0 0 0 0 0 0	7.200E+01 6.600E+01 0.000E+00	0.000E+00
17	0 0 0 0 0 0	7.200E+01 5.400E+01 0.000E+00	0.000E+00
18	0 0 0 0 0 0	7.200E+01 4.200E+01 0.000E+00	0.000E+00
19	0 0 0 0 0 0	7.200E+01 2.800E+01 0.000E+00	0.000E+00
20	0 0 0 0 0 0	7.200E+01 0.000E+00 0.000E+00	0.000E+00
21	1 1 1 0 0 0	7.200E+01 1.160E+02 -6.000E+00	0.000E+00
22	0 0 0 0 0 0	1.800E+01 0.000E+00 6.000E+01	0.000E+00

EQE ENGINEERING

SHEET 3-1-14

JOB NO. 42112 JOB Oyster Creek A-46 Cable Trav Evaluations

BY TDA DATE 3-16-95

CALC. NO. 002 SUBJECT

CK PB DATE 3-22-95

23	0	0	0	0	0	0	2.600E+01	0.000E+00	6.000E+01	0.000E+00
24	0	0	0	0	0	0	3.400E+01	0.000E+00	6.000E+01	0.000E+00
25	0	0	0	0	0	0	4.200E+01	0.000E+00	6.000E+01	0.000E+00
26	0	0	0	0	0	0	4.800E+01	0.000E+00	6.000E+01	0.000E+00
27	0	0	0	0	0	0	6.000E+01	0.000E+00	6.000E+01	0.000E+00
28	0	0	0	0	0	0	1.800E+01	0.000E+00	4.000E+01	0.000E+00
29	0	0	0	0	0	0	2.600E+01	0.000E+00	4.000E+01	0.000E+00
30	0	0	0	0	0	0	3.400E+01	0.000E+00	4.000E+01	0.000E+00
31	0	0	0	0	0	0	4.200E+01	0.000E+00	4.000E+01	0.000E+00
32	0	0	0	0	0	0	4.800E+01	0.000E+00	4.000E+01	0.000E+00
33	0	0	0	0	0	0	6.000E+01	0.000E+00	4.000E+01	0.000E+00
34	0	0	0	0	0	0	1.800E+01	0.000E+00	2.000E+01	0.000E+00
35	0	0	0	0	0	0	2.600E+01	0.000E+00	2.000E+01	0.000E+00
36	0	0	0	0	0	0	3.400E+01	0.000E+00	2.000E+01	0.000E+00
37	0	0	0	0	0	0	4.200E+01	0.000E+00	2.000E+01	0.000E+00
38	0	0	0	0	0	0	4.800E+01	0.000E+00	2.000E+01	0.000E+00
39	0	0	0	0	0	0	6.000E+01	0.000E+00	2.000E+01	0.000E+00
40	1	1	1	0	0	0	0.000E+00	0.000E+00	6.000E+01	0.000E+00
41	1	1	1	0	0	0	0.000E+00	0.000E+00	0.000E+00	0.000E+00
42	0	0	0	0	0	0	1.800E+01	0.000E+00	0.000E+00	0.000E+00
43	0	0	0	0	0	0	2.600E+01	0.000E+00	0.000E+00	0.000E+00
44	0	0	0	0	0	0	3.400E+01	0.000E+00	0.000E+00	0.000E+00
45	0	0	0	0	0	0	4.200E+01	0.000E+00	0.000E+00	0.000E+00
46	0	0	0	0	0	0	4.800E+01	0.000E+00	0.000E+00	0.000E+00
47	0	0	0	0	0	0	6.000E+01	0.000E+00	0.000E+00	0.000E+00
48	0	0	0	0	0	0	7.200E+01	1.160E+02	3.000E+01	0.000E+00
49	0	0	0	0	0	0	7.200E+01	0.000E+00	2.000E+01	0.000E+00

**** PRINT OF EQUATION NUMBERS SUPPRESSED

1**** BEAM ELEMENTS

number of beam elements	=	59
number of area property sets	=	1
number of fixed end force sets	=	0
number of materials	=	1
number of intermediate load sets	=	0

1**** MATERIAL PROPERTIES

INDEX	E	MU	MASS DENSITY	WEIGHT DENSITY	THERMAL EXPANSION			REFERENCE TEMPERATURE
					X	Y	Z	
1	2.90E+07	.300	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.000E+00

1**** AREA PROPERTIES

INDEX	AREAS			TORSION	--FLEXURAL INERTIAS--	
	AXIAL A(1)	SHEAR A(2)	SHEAR A(3)	J. (.)	I(2)	I(3)
1	5.550E-01	3.410E-01	1.710E-01	1.000E-03	2.390E-01	1.860E-01



EQE ENGINEERING

SHEET 3.1-15JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray EvaluationsBY RDA DATE 3-16-85CALC. NO. 002 SUBJECT _____CK VB DATE 3-22-85

1**** STRESS PROPERTIES

INDEX ---SECTION MODULI---
S(2) S(3)

1 2.940E-01 2.030E-01

1**** ELEMENT LOAD FACTORS

	CASE A	CASE B	CASE C	CASE D
X-DIR	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Y-DIR	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Z-DIR	0.000E+00	0.000E+00	0.000E+00	0.000E+00

1**** ELEMENT CONNECTIVITY DATA

ELEMENT NO.	NODE I	NODE J	NODE K	MAT L INDEX	SECTN INDEX	---ELEMENT LOADS---	RELEASE CODES	MEMBER NO.
						A B C D	I-END J-END	
1	40	22	41	1	1	0 0 0 0	0 0	
2	22	23	41	1	1	0 0 0 0	0 0	
3	23	24	41	1	1	0 0 0 0	0 0	
4	24	25	41	1	1	0 0 0 0	0 0	
5	25	26	41	1	1	0 0 0 0	0 0	
6	26	27	41	1	1	0 0 0 0	0 0	
7	27	6	41	1	1	0 0 0 0	0 0	
8	41	42	40	1	1	0 0 0 0	0 0	
9	42	43	40	1	1	0 0 0 0	0 0	
10	43	44	40	1	1	0 0 0 0	0 0	
11	44	45	40	1	1	0 0 0 0	0 0	
12	45	46	40	1	1	0 0 0 0	0 0	
13	46	47	40	1	1	0 0 0 0	0 0	
14	47	20	40	1	1	0 0 0 0	0 0	
15	22	28	40	1	1	0 0 0 0	0 0	
16	28	34	40	1	1	0 0 0 0	0 0	
17	42	34	40	1	1	0 0 0 0	0 0	
18	23	29	40	1	1	0 0 0 0	0 0	
19	29	35	40	1	1	0 0 0 0	0 0	
20	43	35	40	1	1	0 0 0 0	0 0	
21	24	30	40	1	1	0 0 0 0	0 0	
22	30	36	40	1	1	0 0 0 0	0 0	
23	44	36	40	1	1	0 0 0 0	0 0	
24	25	31	40	1	1	0 0 0 0	0 0	
25	31	37	40	1	1	0 0 0 0	0 0	
26	45	37	40	1	1	0 0 0 0	0 0	
27	26	32	40	1	1	0 0 0 0	0 0	
28	32	38	40	1	1	0 0 0 0	0 0	
29	46	38	40	1	1	0 0 0 0	0 0	
30	27	33	40	1	1	0 0 0 0	0 0	
31	33	39	40	1	1	0 0 0 0	0 0	
32	47	39	40	1	1	0 0 0 0	0 0	
33	6	49	40	1	1	0 0 0 0	0 0	

EQE ENGINEERING

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations BY MDA SHEET 3.1-16
 CALC. NO. 002 SUBJECT _____ CK PB DATE 3-16-95
 DATE 3-22-95

34	20	49	40	1	1	0	0	0	0	0	0
35	1	2	15	1	1	0	0	0	0	0	0
36	2	3	15	1	1	0	0	0	0	0	0
37	3	4	15	1	1	0	0	0	0	0	0
38	4	5	15	1	1	0	0	0	0	0	0
39	5	6	15	1	1	0	0	0	0	0	0
40	15	16	1	1	1	0	0	0	0	0	0
41	16	17	1	1	1	0	0	0	0	0	0
42	17	18	1	1	1	0	0	0	0	0	0
43	18	19	1	1	1	0	0	0	0	0	0
44	19	20	1	1	1	0	0	0	0	0	0
45	1	48	6	1	1	0	0	0	0	0	0
46	48	15	6	1	1	0	0	0	0	0	0
47	15	21	6	1	1	0	0	0	0	0	0
48	2	7	6	1	1	0	0	0	0	0	0
49	7	11	6	1	1	0	0	0	0	0	0
50	16	11	6	1	1	0	0	0	0	0	0
51	3	8	6	1	1	0	0	0	0	0	0
52	8	12	6	1	1	0	0	0	0	0	0
53	17	12	6	1	1	0	0	0	0	0	0
54	4	9	6	1	1	0	0	0	0	0	0
55	9	13	6	1	1	0	0	0	0	0	0
56	18	13	6	1	1	0	0	0	0	0	0
57	5	10	6	1	1	0	0	0	0	0	0
58	10	14	6	1	1	0	0	0	0	0	0
59	19	14	6	1	1	0	0	0	0	0	0

1**** BANDWIDTH MINIMIZATION

minbnd (bandwidth control parameter) = 1
 bandwidth before resequencing = 276
 bandwidth after resequencing = 30

**** Hard disk file size information for processor:

Available hard disk space on drive = 37.183 megabytes

1**** NODAL LOADS (STATIC) OR MASSES (DYNAMIC)

NODE NUMBER	LOAD CASE	X-AXIS FORCE	Y-AXIS FORCE	Z-AXIS FORCE	X-AXIS MOMENT	Y-AXIS MOMENT	Z-AXIS MOMENT
7	1	0.000E+00	-2.200E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
8	1	0.000E+00	-2.000E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
9	1	0.000E+00	-1.900E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
10	1	0.000E+00	-1.220E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
11	1	0.000E+00	-3.300E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
12	1	0.000E+00	-9.800E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
13	1	0.000E+00	-5.900E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
14	1	0.000E+00	-2.170E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
28	1	0.000E+00	-5.700E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
29	1	0.000E+00	-5.700E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
30	1	0.000E+00	-5.700E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
31	1	0.000E+00	-4.090E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00

EQE ENGINEERING

SHEET 3.1-17

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations

BY TDA DATE 3-16-95

CALC. NO. 002 SUBJECT

CK PB DATE 3-22-95

36	1	0.000E+00	-5.700E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
38	1	0.000E+00	-1.140E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
39	1	0.000E+00	-1.140E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
49	1	0.000E+00	-4.130E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
7	2	9.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
8	2	9.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
9	2	8.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
10	2	5.200E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
11	2	1.400E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
12	2	4.200E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
13	2	2.500E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
14	2	9.200E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
28	2	2.400E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
29	2	2.400E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
30	2	2.400E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
31	2	1.740E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
36	2	2.400E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
38	2	4.900E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
39	2	4.900E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
49	2	1.760E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
7	3	0.000E+00	0.000E+00	9.000E+00	0.000E+00	0.000E+00	0.000E+00
8	3	0.000E+00	0.000E+00	9.000E+00	0.000E+00	0.000E+00	0.000E+00
9	3	0.000E+00	0.000E+00	8.000E+00	0.000E+00	0.000E+00	0.000E+00
10	3	0.000E+00	0.000E+00	5.200E+01	0.000E+00	0.000E+00	0.000E+00
11	3	0.000E+00	0.000E+00	1.400E+01	0.000E+00	0.000E+00	0.000E+00
12	3	0.000E+00	0.000E+00	4.200E+01	0.000E+00	0.000E+00	0.000E+00
13	3	0.000E+00	0.000E+00	2.500E+01	0.000E+00	0.000E+00	0.000E+00
14	3	0.000E+00	0.000E+00	9.200E+01	0.000E+00	0.000E+00	0.000E+00
28	3	0.000E+00	0.000E+00	2.400E+01	0.000E+00	0.000E+00	0.000E+00
29	3	0.000E+00	0.000E+00	2.400E+01	0.000E+00	0.000E+00	0.000E+00
30	3	0.000E+00	0.000E+00	2.400E+01	0.000E+00	0.000E+00	0.000E+00
31	3	0.000E+00	0.000E+00	1.740E+02	0.000E+00	0.000E+00	0.000E+00
36	3	0.000E+00	0.000E+00	2.400E+01	0.000E+00	0.000E+00	0.000E+00
38	3	0.000E+00	0.000E+00	4.900E+01	0.000E+00	0.000E+00	0.000E+00
39	3	0.000E+00	0.000E+00	4.900E+01	0.000E+00	0.000E+00	0.000E+00
49	3	0.000E+00	0.000E+00	1.760E+02	0.000E+00	0.000E+00	0.000E+00
7	4	9.000E+00	-2.200E+01	9.000E+00	0.000E+00	0.000E+00	0.000E+00
8	4	9.000E+00	-2.000E+01	9.000E+00	0.000E+00	0.000E+00	0.000E+00
9	4	8.000E+00	-1.900E+01	8.000E+00	0.000E+00	0.000E+00	0.000E+00
10	4	5.200E+01	-1.220E+02	5.200E+01	0.000E+00	0.000E+00	0.000E+00
11	4	1.400E+01	-3.300E+01	1.400E+01	0.000E+00	0.000E+00	0.000E+00
12	4	4.200E+01	-9.800E+01	4.200E+01	0.000E+00	0.000E+00	0.000E+00
13	4	2.500E+01	-5.900E+01	2.500E+01	0.000E+00	0.000E+00	0.000E+00
14	4	9.200E+01	-2.170E+02	9.200E+01	0.000E+00	0.000E+00	0.000E+00
28	4	2.400E+01	-5.700E+01	2.400E+01	0.000E+00	0.000E+00	0.000E+00
29	4	2.400E+01	-5.700E+01	2.400E+01	0.000E+00	0.000E+00	0.000E+00
30	4	2.400E+01	-5.700E+01	2.400E+01	0.000E+00	0.000E+00	0.000E+00
31	4	1.740E+02	-4.090E+02	1.740E+02	0.000E+00	0.000E+00	0.000E+00
36	4	2.400E+01	-5.700E+01	2.400E+01	0.000E+00	0.000E+00	0.000E+00
38	4	4.900E+01	-1.140E+02	4.900E+01	0.000E+00	0.000E+00	0.000E+00
39	4	4.900E+01	-1.140E+02	4.900E+01	0.000E+00	0.000E+00	0.000E+00
49	4	1.760E+02	-4.130E+02	1.760E+02	0.000E+00	0.000E+00	0.000E+00



EQE ENGINEERING

SHEET 3.1-18JOB NO. 42112 JOB Oyster Creek A-46 Cable Trav EvaluationsBY TZDA DATE 3-16-95CALC. NO. 002 SUBJECT _____CK DB DATE 3-22-95

1**** ELEMENT LOAD MULTIPLIERS

load case	case A	case B	case C	case D
1	1.000E+00	1.000E+00	1.000E+00	1.000E+00
2	0.000E+00	0.000E+00	0.000E+00	0.000E+00
3	0.000E+00	0.000E+00	0.000E+00	0.000E+00
4	0.000E+00	0.000E+00	0.000E+00	0.000E+00

**** EQUATION PARAMETERS

Number of equations = 282
Minimum bandwidth = 1
Maximum bandwidth = 30
Average bandwidth = 17
Storage required (bytes) = 41592
Total memory allocated (bytes) = 4538312
Total memory free (bytes) = 4522392

**** Proceeding with in-core fast solver ...

**** Begin in-core solution

**** load case #1

**** load case #2

**** load case #3

**** load case #4

**** End in-core solution

1**** STATIC ANALYSIS

LOAD CASE =

1

Displacements/Rotations(degrees) of nodes

NODE number	X- translation	Y- translation	Z- translation	X- rotation	Y- rotation	Z- rotation
1	0.0000E+00	0.0000E+00	0.0000E+00	-7.8420E-02	7.9802E-03	-3.7303E-01
2	-2.6551E-01	-2.1432E-03	-4.3329E-02	-1.2931E-02	-6.6375E-02	-1.6480E-01
3	-2.8884E-01	-2.6348E-03	-3.6060E-02	-5.4394E-02	-7.2446E-02	-5.2823E-02
4	-2.8621E-01	-3.0931E-03	-2.7684E-02	-3.9260E-02	-7.1933E-02	8.3159E-02
5	-2.4361E-01	-3.5994E-03	-1.8578E-02	-6.3914E-02	-6.1318E-02	2.7217E-01
6	1.2110E-04	-4.3467E-03	-1.0315E-02	-1.4110E-01	3.1522E-03	7.4835E-01
7	-2.4233E-01	-2.0638E-02	-4.3391E-02	-7.0406E-02	-6.6398E-02	-1.4999E-01
8	-2.6355E-01	-3.6361E-02	-3.5992E-02	-1.0601E-01	-7.2458E-02	-4.7900E-02
9	-2.6110E-01	-2.8715E-02	-2.7649E-02	-8.3404E-02	-7.1949E-02	7.6072E-02
10	-2.2220E-01	-6.7902E-02	-1.8522E-02	-1.9187E-01	-6.1351E-02	2.4837E-01
11	-2.1915E-01	-4.1786E-02	-4.3454E-02	-4.4371E-02	-6.6404E-02	-1.3518E-01
12	-2.3826E-01	-5.9967E-02	-3.5923E-02	-1.1185E-02	-7.2458E-02	-4.2976E-02
13	-2.3596E-01	-5.0098E-02	-2.7614E-02	-2.9007E-02	-7.1949E-02	6.8986E-02
14	-2.0079E-01	-9.3238E-02	-1.8467E-02	6.9273E-02	-6.1350E-02	2.2457E-01
15	-1.4414E-03	-5.2715E-02	1.8058E-05	3.8887E-01	-1.2025E-02	-2.7356E-01
16	-1.9598E-01	-5.5411E-02	-4.3516E-02	-5.1670E-02	-6.6394E-02	-1.2038E-01
17	-2.1297E-01	-5.6040E-02	-3.5854E-02	-2.0591E-02	-7.2446E-02	-3.8052E-02
18	-2.1087E-01	-5.6614E-02	-2.7579E-02	-4.1772E-02	-7.1933E-02	6.1899E-02



EQE ENGINEERING

SHEET 3.1-19JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray EvaluationsBY RDHDATE 3-16-95CALC. NO. 002 SUBJECTCK FBDATE 3-22-95

19	-1.7938E-01	-5.7244E-02	-1.8411E-02	-6.7049E-04	-6.1314E-02	2.0077E-01
20	3.5365E-05	-5.8180E-02	-1.0779E-02	1.5552E-01	5.5572E-03	5.5035E-01
21	0.0000E+00	0.0000E+00	0.0000E+00	5.4250E-01	-1.4027E-02	-2.7356E-01
22	3.6649E-05	-2.6313E-01	-4.7640E-03	-5.1052E-02	9.0638E-03	-6.6874E-01
23	5.1535E-05	-3.4012E-01	-5.8990E-03	-3.9322E-02	6.4421E-03	-4.1265E-01
24	6.5428E-05	-3.7632E-01	-6.7744E-03	-1.2391E-01	5.3421E-03	-8.9952E-02
25	7.8500E-05	-3.6397E-01	-7.5415E-03	-6.8865E-01	4.9009E-03	2.7427E-01
26	8.7741E-05	-3.2088E-01	-8.0942E-03	-1.3343E-01	5.1947E-03	5.2423E-01
27	1.0505E-04	-1.7486E-01	-9.3530E-03	-1.7440E-01	4.9667E-03	8.0274E-01
28	-6.7202E-04	-2.7404E-01	-4.7640E-03	1.1744E-02	-2.9210E-03	-6.2621E-01
29	-4.5794E-04	-3.4687E-01	-5.8990E-03	2.3891E-02	-2.0479E-03	-3.9534E-01
30	-3.6119E-04	-4.0888E-01	-6.7745E-03	-2.7873E-02	-1.6775E-03	-1.0260E-01
31	-3.1785E-04	-5.5565E-01	-7.5419E-03	-2.4284E-01	-1.5157E-03	2.2857E-01
32	-3.4641E-04	-3.6002E-01	-8.0922E-03	-6.7697E-02	-1.5467E-03	4.5845E-01
33	-2.1589E-04	-2.2886E-01	-9.3565E-03	-1.1174E-01	-1.8768E-03	7.2461E-01
34	7.1108E-04	-2.5147E-01	-4.7640E-03	1.0599E-01	-2.9211E-03	-5.8368E-01
35	5.1438E-04	-3.1999E-01	-5.8990E-03	1.1851E-01	-2.0479E-03	-3.7802E-01
36	4.3688E-04	-3.8544E-01	-6.7746E-03	1.6214E-01	-1.6749E-03	-1.1524E-01
37	4.0638E-04	-5.0865E-01	-7.5422E-03	4.2888E-01	-1.5196E-03	1.8286E-01
38	4.0698E-04	-3.5436E-01	-8.0902E-03	1.2333E-01	-1.6094E-03	3.9267E-01
39	5.9532E-04	-2.3904E-01	-9.3599E-03	7.6643E-02	-1.5200E-03	6.4648E-01
40	0.0000E+00	0.0000E+00	0.0000E+00	-5.1052E-02	1.8096E-02	-9.1373E-01
41	0.0000E+00	0.0000E+00	0.0000E+00	1.3743E-01	1.8096E-02	-7.1184E-01
42	2.4671E-06	-2.0696E-01	-4.7640E-03	1.3743E-01	9.0636E-03	-5.4115E-01
43	4.9656E-06	-2.7104E-01	-5.8990E-03	1.5031E-01	6.4418E-03	-3.6070E-01
44	8.4572E-06	-3.0608E-01	-6.7747E-03	2.5766E-01	5.3498E-03	-1.2789E-01
45	1.2770E-05	-3.0577E-01	-7.5426E-03	6.5031E-01	4.8890E-03	1.3715E-01
46	1.6568E-05	-2.8087E-01	-8.0882E-03	2.5117E-01	5.0068E-03	3.2689E-01
47	2.5335E-05	-1.8226E-01	-9.3634E-03	2.0227E-01	6.0369E-03	5.6835E-01
48	-3.3393E-03	-8.7526E-02	9.0288E-06	-1.5167E-01	3.0148E-03	-3.2330E-01
49	6.7366E-04	-1.2928E-01	-1.0624E-02	7.9374E-02	-9.1475E-04	6.1635E-01



EQE ENGINEERING

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations

SHEET 3.1-20

CALC. NO. 002 SUBJECT

BY ZK DATE 3-16-95

CK PB DATE 3-22-95

1**** STATIC ANALYSIS

LOAD CASE =

2

Displacements/Rotations(degrees) of nodes

NODE number	X- translation	Y- translation	Z- translation	X- rotation	Y- rotation	Z- rotation
1	0.0000E+00	0.0000E+00	0.0000E+00	-1.8663E-03	-1.7574E-02	3.5302E-01
2	2.3490E-01	-5.9085E-05	-1.7080E-03	-1.0373E-05	-1.0925E-01	9.9332E-02
3	2.4246E-01	-7.3097E-05	-1.5204E-03	-1.3135E-03	-1.5157E-01	-3.0660E-02
4	2.2178E-01	-8.7048E-05	-1.2558E-03	-1.2774E-03	-1.1849E-01	-1.6524E-01
5	1.6391E-01	-1.0329E-04	-9.2390E-04	-1.5417E-03	-2.7772E-01	-3.0191E-01
6	1.1433E-03	-1.3575E-04	-3.0485E-05	-1.8542E-03	-1.2500E-02	-2.6712E-01
7	2.7108E-01	-3.3997E-04	-1.7116E-03	-1.4329E-03	-9.1537E-02	1.0885E-01
8	2.9177E-01	-5.8698E-04	-1.5181E-03	-1.5696E-03	-1.1870E-01	-3.5342E-02
9	2.6058E-01	-5.6876E-04	-1.2558E-03	-1.4573E-03	-9.5427E-02	-1.8441E-01
10	2.4908E-01	-6.3893E-04	-9.2446E-04	-1.5140E-03	-1.7036E-01	-3.3407E-01
11	2.9655E-01	-9.5062E-04	-1.7153E-03	-1.8998E-03	-5.3399E-02	1.1837E-01
12	3.1969E-01	-1.1287E-03	-1.5158E-03	-1.4733E-03	-3.4582E-02	-4.0024E-02
13	2.8488E-01	-1.0878E-03	-1.2557E-03	-1.4914E-03	-4.0372E-02	-2.0358E-01
14	2.6853E-01	-1.1515E-03	-9.2503E-04	-1.4097E-03	6.7074E-02	-3.6623E-01
15	3.1522E-03	-1.4834E-03	4.3223E-07	1.1035E-02	2.6294E-02	4.6250E-01
16	3.1029E-01	-1.5574E-03	-1.7189E-03	-1.4109E-03	-3.2857E-02	1.2788E-01
17	3.1955E-01	-1.5754E-03	-1.5135E-03	-1.0245E-03	1.6472E-02	-4.4706E-02
18	2.9124E-01	-1.5934E-03	-1.2557E-03	-1.3799E-03	-7.8864E-03	-2.2275E-01
19	2.1414E-01	-1.6144E-03	-9.2559E-04	-1.2290E-03	1.9651E-01	-3.9839E-01
20	1.4621E-03	-1.6565E-03	-4.5965E-04	-9.7268E-04	6.9451E-02	-3.4781E-01
21	0.0000E+00	0.0000E+00	0.0000E+00	1.5234E-02	3.0678E-02	4.6250E-01
22	3.8969E-04	3.9208E-02	1.8444E-03	1.0790E-02	-8.6808E-03	1.0759E-01
23	5.5497E-04	5.2529E-02	2.7221E-03	1.4405E-02	-6.9413E-03	8.0450E-02
24	7.1236E-04	6.1371E-02	3.4834E-03	1.6758E-02	-7.3111E-03	4.3435E-02
25	8.5885E-04	6.4355E-02	4.8939E-03	1.7450E-02	-2.6812E-02	-3.4513E-03
26	9.2211E-04	6.1921E-02	5.7953E-03	1.6641E-02	-2.4249E-03	-4.5091E-02
27	1.0390E-03	4.2518E-02	3.9324E-03	1.0893E-02	1.7474E-02	-1.4501E-01
28	5.0953E-03	4.2972E-02	1.8679E-03	1.0780E-02	-6.5282E-03	1.1786E-01
29	4.8335E-03	5.7558E-02	2.7247E-03	1.4409E-02	-5.8576E-03	8.8031E-02
30	7.4618E-03	6.7222E-02	3.5750E-03	1.6763E-02	-1.5157E-02	4.7349E-02
31	3.1316E-02	7.0447E-02	4.9324E-03	1.7455E-02	-5.5414E-02	-4.1807E-03
32	6.6257E-03	6.7731E-02	5.6481E-03	1.6648E-02	-2.0709E-02	-4.9947E-02
33	4.1226E-03	4.6323E-02	4.0637E-03	1.0905E-02	-2.2628E-02	-1.5978E-01
34	3.0510E-03	4.6735E-02	1.8913E-03	1.0780E-02	1.2275E-02	1.2813E-01
35	2.7725E-03	6.2588E-02	2.7272E-03	1.4409E-02	1.1663E-02	9.5612E-02
36	6.4802E-03	7.3073E-02	3.6666E-03	1.6763E-02	1.9266E-02	5.1264E-02
37	2.1162E-02	7.6541E-02	4.9710E-03	1.7455E-02	7.7413E-02	-4.9102E-03
38	9.1238E-03	7.3543E-02	5.5009E-03	1.6648E-02	1.5942E-02	-5.4803E-02
39	8.6345E-03	5.0130E-02	4.1950E-03	1.0907E-02	9.2895E-03	-1.7455E-01
40	0.0000E+00	0.0000E+00	0.0000E+00	1.0790E-02	-4.5207E-03	1.3257E-01
41	0.0000E+00	0.0000E+00	0.0000E+00	1.0790E-02	-7.4584E-03	1.7082E-01
42	4.3574E-04	5.0500E-02	1.9147E-03	1.0790E-02	-3.2568E-03	1.3841E-01
43	6.2538E-04	6.7617E-02	2.7298E-03	1.4405E-02	-5.3647E-03	1.0319E-01
44	8.1099E-04	7.8924E-02	3.7583E-03	1.6758E-02	-6.0166E-03	5.5179E-02



EQE ENGINEERING

SHEET 31-21JOB NO. 42112 JOB Oyster Creek A-46 Cable Trav EvaluationsBY TDA DATE 3-16-95CALC. NO. 002 SUBJECTCK PA DATE 3-22-95

45	9.8364E-04	8.2633E-02	5.0095E-03	1.7450E-02	2.0176E-03	-5.6397E-03
46	1.0949E-03	7.9353E-02	5.3538E-03	1.6641E-02	3.4307E-03	-5.9659E-02
47	1.2904E-03	5.3936E-02	4.3264E-03	1.0896E-02	9.1278E-03	-1.8932E-01
48	7.3184E-03	-2.4304E-03	2.1612E-07	-4.3745E-03	-6.5628E-03	4.0776E-01
49	3.9526E-02	-1.2551E-03	-3.1659E-04	-1.3176E-03	5.9073E-02	-3.2091E-01

1**** STATIC ANALYSIS

LOAD CASE =

3

Displacements/Rotations(degrees) of nodes

NODE number	X- translation	Y- translation	Z- translation	X- rotation	Y- rotation	Z- rotation
1	0.0000E+00	0.0000E+00	0.0000E+00	-2.7289E-01	6.9761E-05	-9.1374E-04
2	-7.3615E-04	4.9098E-04	4.0096E-01	-2.3255E-01	4.7633E-04	-7.0200E-04
3	-8.7186E-04	5.5068E-04	4.4300E-01	-1.3715E-01	3.8075E-04	-5.1867E-04
4	-9.8133E-04	5.7652E-04	4.6772E-01	-8.0051E-02	1.5167E-04	-4.5152E-04
5	-1.0693E-03	5.8223E-04	4.8293E-01	-2.4515E-02	-3.7704E-04	-2.6183E-04
6	-1.0988E-03	5.7507E-04	4.7727E-01	2.0032E-02	-1.0259E-01	1.3706E-04
7	-9.0249E-04	-1.3663E-02	4.0093E-01	9.3895E-02	4.7666E-04	-6.3827E-04
8	-1.0048E-03	-7.6165E-03	4.4306E-01	5.6816E-02	3.8099E-04	-3.2434E-04
9	-1.0344E-03	-2.9431E-03	4.6774E-01	3.9151E-02	1.5207E-04	5.6710E-05
10	-9.5371E-04	1.3199E-03	4.8302E-01	2.0856E-02	-2.9960E-04	5.8595E-04
11	-1.0689E-03	2.8317E-02	4.0090E-01	8.9070E-02	4.7660E-04	-5.7454E-04
12	-1.1378E-03	1.8236E-02	4.4310E-01	5.7770E-02	3.8099E-04	-6.0003E-05
13	-1.0875E-03	1.4319E-02	4.6775E-01	3.9021E-02	1.5207E-04	5.6494E-04
14	-8.5159E-04	9.9742E-03	4.8305E-01	2.0843E-02	-2.9984E-04	1.4337E-03
15	-1.2511E-05	1.1286E-02	4.0426E-05	-1.4001E-01	-1.0434E-04	-1.8401E-03
16	-1.2352E-03	1.0795E-02	4.0085E-01	-2.4703E-01	4.7617E-04	-5.1080E-04
17	-1.2708E-03	1.0735E-02	4.4309E-01	-1.3429E-01	3.8075E-04	2.0433E-04
18	-1.1405E-03	1.0709E-02	4.6772E-01	-8.0442E-02	1.5166E-04	1.0732E-03
19	-7.3583E-04	1.0703E-02	4.8296E-01	-2.4554E-02	-3.7776E-04	2.2815E-03
20	1.0995E-03	1.0710E-02	4.7738E-01	1.9855E-02	-1.0301E-01	5.4036E-03
21	0.0000E+00	0.0000E+00	0.0000E+00	-9.6772E-02	-1.2176E-04	-1.8401E-03
22	-5.7336E-04	1.8939E-04	2.5863E-01	2.8174E-03	-4.8448E-01	5.8503E-04
23	-7.5315E-04	2.6917E-04	3.1819E-01	4.0239E-03	-3.2851E-01	5.5474E-04
24	-8.8215E-04	3.4384E-04	3.6106E-01	5.1875E-03	-2.4740E-01	5.1182E-04
25	-9.7304E-04	4.1164E-04	3.9389E-01	6.2923E-03	-1.8752E-01	4.5638E-04
26	-1.0196E-03	4.5693E-04	4.1292E-01	7.0739E-03	-1.6162E-01	4.0650E-04
27	-1.0754E-03	5.3004E-04	4.4857E-01	8.5061E-03	-1.4094E-01	2.8638E-04
28	3.7129E-02	1.1722E-03	2.5865E-01	2.8142E-03	1.5700E-01	3.6508E-03
29	2.4994E-02	1.6738E-03	3.1820E-01	4.0240E-03	1.0556E-01	3.5241E-03
30	1.8709E-02	2.1547E-03	3.6109E-01	5.1877E-03	7.8543E-02	3.3509E-03
31	1.3968E-02	2.6081E-03	3.9401E-01	6.2924E-03	5.8953E-02	3.1312E-03
32	1.1933E-02	2.9263E-03	4.1294E-01	7.0742E-03	5.0506E-02	2.9358E-03
33	1.0359E-02	3.4955E-03	4.4860E-01	8.4880E-03	4.3394E-02	2.4667E-03
34	-3.7127E-02	2.1544E-03	2.5863E-01	2.8142E-03	1.5700E-01	6.7165E-03
35	-2.5014E-02	3.0784E-03	3.1819E-01	4.0240E-03	1.0553E-01	6.4935E-03
36	-1.8612E-02	3.9655E-03	3.6108E-01	5.1877E-03	7.8680E-02	6.1900E-03
37	-1.4052E-02	4.8046E-03	3.9391E-01	6.2924E-03	5.8861E-02	5.8060E-03
38	-1.2096E-02	5.3956E-03	4.1297E-01	7.0742E-03	5.0272E-02	5.4651E-03

EQE ENGINEERING

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations

SHEET 3.1-22

CALC. NO. 002 SUBJECT

BY TGA DATE 3-16-95
CK PAB DATE 3-22-95

39	-1.0375E-02	6.4577E-03	4.4864E-01	8.4877E-03	4.3369E-02	4.6470E-03
40	0.0000E+00	0.0000E+00	0.0000E+00	2.8174E-03	-9.8605E-01	6.1087E-04
41	0.0000E+00	0.0000E+00	0.0000E+00	2.8174E-03	-9.8598E-01	1.0078E-02
42	5.7353E-04	3.1372E-03	2.5862E-01	2.8174E-03	-4.8447E-01	9.7822E-03
43	7.5339E-04	4.4831E-03	3.1818E-01	4.0239E-03	-3.2860E-01	9.4629E-03
44	8.8247E-04	5.7763E-03	3.6105E-01	5.1875E-03	-2.4699E-01	9.0291E-03
45	9.7343E-04	7.0010E-03	3.9381E-01	6.2923E-03	-1.8779E-01	8.4808E-03
46	1.0000E-03	7.8649E-03	4.1293E-01	7.0739E-03	-1.6232E-01	7.9943E-03
47	1.0759E-03	9.4230E-03	4.4861E-01	8.5054E-03	-1.4101E-01	6.8274E-03
48	-2.9045E-05	-1.1750E-02	2.0213E-05	1.1786E-01	2.6040E-05	-1.3769E-03
49	-7.4572E-03	6.5653E-03	4.7749E-01	6.3903E-03	3.0765E-02	3.6481E-03

1**** STATIC ANALYSIS

LOAD CASE =

4

Displacements/Rotations(degrees) of nodes

NODE number	X- translation	Y- translation	Z- translation	X- rotation	Y- rotation	Z- rotation
1	0.0000E+00	0.0000E+00	0.0000E+00	-3.5317E-01	-9.5242E-03	-2.0926E-02
2	-3.1348E-02	-1.7113E-03	3.5592E-01	-2.4549E-01	-1.7515E-01	-6.6168E-02
3	-4.7253E-02	-2.1572E-03	4.0542E-01	-1.9285E-01	-2.2363E-01	-8.4072E-02
4	-6.5412E-02	-2.6036E-03	4.3879E-01	-1.2059E-01	-1.9027E-01	-8.2533E-02
5	-8.0775E-02	-3.1205E-03	4.6343E-01	-8.9971E-02	-3.3941E-01	-3.0003E-02
6	1.6554E-04	-3.9073E-03	4.6693E-01	-1.2292E-01	-1.1193E-01	4.8137E-01
7	2.7842E-02	-3.4641E-02	3.5583E-01	2.2056E-02	-1.5746E-01	-4.1780E-02
8	2.7209E-02	-4.4564E-02	4.0555E-01	-5.0767E-02	-1.9078E-01	-8.3566E-02
9	-1.5585E-03	-3.2226E-02	4.3884E-01	-4.5711E-02	-1.6722E-01	-1.0828E-01
10	2.5925E-02	-6.7221E-02	4.6358E-01	-1.7253E-01	-2.3201E-01	-8.5116E-02
11	7.6329E-02	-1.4420E-02	3.5573E-01	4.2800E-02	-1.1933E-01	-1.7391E-02
12	8.0296E-02	-4.2861E-02	4.0566E-01	4.5112E-02	-1.0666E-01	-8.3060E-02
13	4.7811E-02	-3.6867E-02	4.3888E-01	8.5222E-03	-1.1217E-01	-1.3403E-01
14	6.6893E-02	-8.4416E-02	4.6366E-01	8.8707E-02	5.4247E-03	-1.4023E-01
15	1.6983E-03	-4.2912E-02	5.8916E-05	2.5990E-01	1.4165E-02	1.8710E-01
16	1.1308E-01	-4.6174E-02	3.5561E-01	-3.0011E-01	-9.8774E-02	6.9969E-03
17	1.0531E-01	-4.6880E-02	4.0573E-01	-1.5590E-01	-5.5593E-02	-8.2554E-02
18	7.9232E-02	-4.7498E-02	4.3889E-01	-1.2359E-01	-7.9668E-02	-1.5977E-01
19	3.4024E-02	-4.8155E-02	4.6362E-01	-2.6453E-02	1.3482E-01	-1.9534E-01
20	2.5969E-03	-4.9127E-02	4.6614E-01	1.7440E-01	-2.8003E-02	2.0794E-01
21	0.0000E+00	0.0000E+00	0.0000E+00	4.6096E-01	1.6528E-02	1.8710E-01
22	-1.4703E-04	-2.2373E-01	2.5571E-01	-3.7444E-02	-4.8410E-01	-5.6056E-01
23	-1.4665E-04	-2.8732E-01	3.1501E-01	-2.0892E-02	-3.2901E-01	-3.3165E-01
24	-1.0436E-04	-3.1460E-01	3.5777E-01	-1.0197E-01	-2.4937E-01	-4.6006E-02
25	-3.5693E-05	-2.9920E-01	3.9124E-01	-6.6491E-01	-2.0943E-01	2.7128E-01
26	-9.7175E-06	-2.5850E-01	4.1062E-01	-1.0972E-01	-1.5885E-01	4.7955E-01
27	6.8686E-05	-1.3181E-01	4.4315E-01	-1.5500E-01	-1.1850E-01	6.5801E-01
28	4.1553E-02	-2.2990E-01	2.5575E-01	2.5338E-02	1.4755E-01	-5.0469E-01
29	2.9370E-02	-2.8764E-01	3.1503E-01	4.2323E-02	9.7657E-02	-3.0378E-01
30	2.5809E-02	-3.3951E-01	3.5789E-01	-5.9227E-03	6.1708E-02	-5.1898E-02
31	4.4986E-02	-4.8259E-01	3.9140E-01	-2.1909E-01	2.0239E-03	2.2752E-01
32	1.8212E-02	-2.8937E-01	4.1050E-01	-4.3975E-02	2.8251E-02	4.1144E-01



EQE ENGINEERING

SHEET 3.1-23JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray EvaluationsBY RJA DATE 3-16-95CALC. NO. 002 SUBJECT _____CK PB DATE 3-22-95

33	1.4265E-02	-1.7904E-01	4.4331E-01	-9.2345E-02	1.8890E-02	5.6729E-01
34	-3.3365E-02	-2.0258E-01	2.5576E-01	1.1958E-01	1.6635E-01	-4.4883E-01
35	-2.1727E-02	-2.5432E-01	3.1502E-01	1.3695E-01	1.1515E-01	-2.7591E-01
36	-1.1695E-02	-3.0840E-01	3.5797E-01	1.8410E-01	9.6271E-02	-5.7790E-02
37	7.5160E-03	-4.2730E-01	3.9134E-01	4.5263E-01	1.3475E-01	1.8375E-01
38	-2.5654E-03	-2.7542E-01	4.1038E-01	1.4705E-01	6.4605E-02	3.4333E-01
39	-1.1455E-03	-1.8245E-01	4.4347E-01	9.6037E-02	5.1138E-02	4.7657E-01
40	0.0000E+00	0.0000E+00	0.0000E+00	-3.7444E-02	-9.7247E-01	-7.8055E-01
41	0.0000E+00	0.0000E+00	0.0000E+00	1.5104E-01	-9.7534E-01	-5.3094E-01
42	1.0117E-03	-1.5332E-01	2.5577E-01	1.5104E-01	-4.7866E-01	-3.9296E-01
43	1.3837E-03	-1.9894E-01	3.1501E-01	1.6874E-01	-3.2752E-01	-2.4805E-01
44	1.7019E-03	-2.2138E-01	3.5803E-01	2.7961E-01	-2.4766E-01	-6.3682E-02
45	1.9698E-03	-2.1613E-01	3.9128E-01	6.7405E-01	-1.8089E-01	1.3999E-01
46	2.1314E-03	-1.9366E-01	4.1020E-01	2.7489E-01	-1.5388E-01	2.7523E-01
47	2.3917E-03	-1.1890E-01	4.4357E-01	2.2167E-01	-1.2585E-01	3.8586E-01
48	3.9500E-03	-1.0171E-01	2.9458E-05	-3.8189E-02	-3.5220E-03	8.3086E-02
49	3.2743E-02	-1.2397E-01	4.6655E-01	8.4446E-02	8.8923E-02	2.9909E-01

1**** TEMPORARY FILE STORAGE (MEGABYTES)

UNIT NO. 7 :	.009
UNIT NO. 8 :	.003
UNIT NO. 9 :	.000
UNIT NO. 10 :	.000
UNIT NO. 11 :	.003
UNIT NO. 12 :	.009
UNIT NO. 13 :	.000
UNIT NO. 14 :	.002
UNIT NO. 15 :	.000
UNIT NO. 17 :	.000

TOTAL : .026

1**** End of file

EQE

EQE ENGINEERING

SHEET 3.1-24JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray EvaluationsBY TD A DATE 3-16-95CALC. NO. 002 SUBJECT _____CK PB DATE 3-22-95

1**** Algor (c) FEA Stress Processor MKNSO 01-SEP-94, Ver 11.08-3H

DATE: FEBRUARY 14, 1995

TIME: 10:11 AM

INPUT FILE.....rb2302fx

1**** BEAM ELEMENTS

number of beam elements	=	59
number of area property sets	=	1
number of fixed end force sets	=	0
number of materials	=	1
number of intermediate load sets	=	0

1**** BEAM ELEMENT FORCES AND MOMENTS

ELEMENT NO.	CASE (MODE)	AXIAL FORCE R1	SHEAR FORCE R2	SHEAR FORCE R3	TORSION MOMENT M1	BENDING MOMENT M2	BENDING MOMENT M3
1	1	-3.277E+01	-5.249E+00	1.829E+02	0.000E+00	0.000E+00	0.000E+00
		3.277E+01	5.249E+00	-1.829E+02	0.000E+00	-3.293E+03	-9.448E+01
1	2	-3.484E+02	-2.418E+00	-1.865E+01	0.000E+00	0.000E+00	0.000E+00
		3.484E+02	2.418E+00	1.865E+01	0.000E+00	3.357E+02	-4.352E+01
1	3	5.127E+02	2.915E+02	-1.929E-02	0.000E+00	0.000E+00	0.000E+00
		-5.127E+02	-2.915E+02	1.929E-02	0.000E+00	3.472E-01	5.247E+03
1	4	1.315E+02	2.838E+02	1.643E+02	0.000E+00	0.000E+00	0.000E+00
		-1.315E+02	-2.838E+02	-1.643E+02	0.000E+00	-2.957E+03	5.109E+03
2	1	-2.995E+01	-5.249E+00	1.449E+02	-2.854E-01	3.293E+03	9.855E+00
		2.995E+01	5.249E+00	-1.449E+02	2.854E-01	-4.452E+03	-5.185E+01
2	2	-3.325E+02	-2.127E+01	-1.865E+01	-8.797E-02	-3.358E+02	-1.055E+02
		3.325E+02	2.127E+01	1.865E+01	8.797E-02	4.850E+02	-6.460E+01
2	3	3.617E+02	2.795E+02	-2.027E-02	-2.936E-02	-3.770E-01	-7.173E+02
		-3.617E+02	-2.795E+02	2.027E-02	2.936E-02	5.392E-01	2.953E+03
2	4	-7.687E-01	2.530E+02	1.263E+02	-4.028E-01	2.956E+03	-8.130E+02
		7.687E-01	-2.530E+02	-1.263E+02	4.028E-01	-3.966E+03	2.837E+03
3	1	-2.795E+01	-5.260E+00	1.069E+02	2.058E+00	4.452E+03	-8.096E+00
		2.795E+01	5.260E+00	-1.069E+02	-2.058E+00	-5.307E+03	-3.399E+01
3	2	-3.167E+02	-2.333E+01	-1.865E+01	-5.726E-02	-4.851E+02	-8.899E+01
		3.167E+02	2.333E+01	1.865E+01	5.726E-02	6.343E+02	-9.769E+01
3	3	2.595E+02	2.665E+02	-2.023E-02	-2.832E-02	-5.681E-01	1.114E+02
		-2.595E+02	-2.665E+02	2.023E-02	2.832E-02	7.299E-01	2.020E+03
3	4	-8.507E+01	2.379E+02	8.826E+01	1.973E+00	3.966E+03	1.437E+01
		8.507E+01	-2.379E+02	-8.826E+01	-1.973E+00	-4.672E+03	1.889E+03



EQE ENGINEERING

JOB NO. 42112 JOB Ovster Creek A-46 Cable Trav Evaluations

BY

RDA

SHEET 3.1-25

DATE 3-16-95

CALC. NO. 002 SUBJECT

CK

PB

DATE 3-22-95

4	1	-2.630E+01	-5.194E+00	5.001E+01	1.374E+01	5.307E+03	-1.558E+01
		2.630E+01	5.194E+00	-5.001E+01	-1.374E+01	-5.708E+03	-2.597E+01
4	2	-2.947E+02	-9.705E+01	-1.865E+01	-1.683E-02	-6.344E+02	-1.587E+02
		2.947E+02	9.705E+01	1.865E+01	1.683E-02	7.836E+02	-6.177E+02
4	3	1.829E+02	2.463E+02	-2.019E-02	-2.688E-02	-7.576E-01	2.806E+02
		-1.829E+02	-2.463E+02	2.019E-02	2.688E-02	9.191E-01	1.690E+03
4	4	-1.382E+02	1.441E+02	3.134E+01	1.370E+01	4.672E+03	1.063E+02
		1.382E+02	-1.441E+02	-3.134E+01	-1.370E+01	-4.923E+03	1.046E+03
5	1	-2.479E+01	-4.906E+00	-2.228E+02	-1.801E+01	5.708E+03	-1.933E+01
		2.479E+01	4.906E+00	2.228E+02	1.801E+01	-4.371E+03	-1.011E+01
5	2	-1.697E+02	-1.281E+02	-1.865E+01	2.626E-02	-7.836E+02	-7.669E+02
		1.697E+02	1.281E+02	1.865E+01	-2.626E-02	8.955E+02	-1.557E+00
5	3	1.248E+02	1.522E+02	-2.013E-02	-2.536E-02	-9.451E-01	5.038E+01
		-1.248E+02	-1.522E+02	2.013E-02	2.536E-02	1.066E+00	8.630E+02
5	4	-6.968E+01	1.926E+01	-2.415E+02	-1.801E+01	4.923E+03	-7.358E+02
		6.968E+01	-1.926E+01	2.415E+02	1.801E+01	-3.475E+03	8.514E+02
6	1	-2.322E+01	-6.522E+00	-2.607E+02	6.646E-01	4.372E+03	-3.734E+01
		2.322E+01	6.522E+00	2.607E+02	-6.646E-01	-1.243E+03	-4.092E+01
6	2	-1.568E+02	-9.615E+00	-1.865E+01	9.325E-02	-8.954E+02	-2.138E+02
		1.568E+02	9.615E+00	1.865E+01	-9.325E-02	1.119E+03	9.842E+01
6	3	7.485E+01	1.329E+02	-2.006E-02	-2.323E-02	-1.091E+00	6.353E+02
		-7.485E+01	-1.329E+02	2.006E-02	2.323E-02	1.331E+00	9.598E+02
6	4	-1.052E+02	1.168E+02	-2.794E+02	7.346E-01	3.475E+03	3.841E+02
		1.052E+02	-1.168E+02	2.794E+02	-7.346E-01	-1.228E+02	1.017E+03
7	1	-2.152E+01	-3.746E+00	-2.987E+02	-5.402E-01	1.244E+03	-8.239E+00
		2.152E+01	3.746E+00	2.987E+02	5.402E-01	2.341E+03	-3.671E+01
7	2	-1.398E+02	-1.153E+02	-1.864E+01	2.068E-01	-1.119E+03	-4.567E+02
		1.398E+02	1.153E+02	1.864E+01	-2.068E-01	1.343E+03	-9.270E+02
7	3	3.146E+01	1.071E+02	-2.547E-02	-1.870E-01	-1.353E+00	3.418E+02
		-3.146E+01	-1.071E+02	2.547E-02	1.870E-01	1.658E+00	9.436E+02
7	4	-1.299E+02	-1.193E+01	-3.174E+02	-5.204E-01	1.237E+02	-1.231E+02
		1.299E+02	1.193E+01	3.174E+02	5.204E-01	3.685E+03	-2.010E+01
8	1	-2.206E+00	5.249E+00	-1.275E+02	0.000E+00	0.000E+00	0.000E+00
		2.206E+00	-5.249E+00	1.275E+02	0.000E+00	2.294E+03	9.448E+01
8	2	-3.896E+02	-2.442E+00	2.421E+01	0.000E+00	0.000E+00	0.000E+00
		3.896E+02	2.442E+00	-2.421E+01	0.000E+00	-4.357E+02	-4.395E+01
8	3	-5.128E+02	-2.914E+02	2.210E-01	0.000E+00	0.000E+00	0.000E+00
		5.128E+02	2.914E+02	-2.210E-01	0.000E+00	-3.978E+00	-5.246E+03
8	4	-9.047E+02	-2.886E+02	-1.030E+02	0.000E+00	0.000E+00	0.000E+00
		9.047E+02	2.886E+02	1.030E+02	0.000E+00	1.855E+03	-5.195E+03
9	1	-5.027E+00	5.248E+00	-1.085E+02	-3.133E-01	-2.295E+03	-9.859E+00
		5.027E+00	-5.248E+00	1.085E+02	3.133E-01	3.162E+03	5.185E+01
9	2	-3.815E+02	-2.129E+01	2.420E+01	-8.797E-02	4.356E+02	-1.100E+02
		3.815E+02	2.129E+01	-2.420E+01	8.797E-02	-6.293E+02	-6.036E+01
9	3	-3.619E+02	-2.794E+02	2.200E-01	-2.936E-02	3.948E+00	7.167E+02
		3.619E+02	2.794E+02	-2.200E-01	2.936E-02	-5.708E+00	-2.952E+03
9	4	-7.484E+02	-2.954E+02	-8.404E+01	-4.306E-01	-1.855E+03	5.969E+02
		7.484E+02	2.954E+02	8.404E+01	4.306E-01	2.527E+03	-2.960E+03



EQE ENGINEERING

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations

BY TGA

SHEET 3.1-26

DATE 3-16-95

CALC. NO. 002 SUBJECT

CK PB

DATE 3-22-95

10	1	-7.025E+00	5.237E+00	-8.947E+01	-2.612E+00	-3.163E+03	8.098E+00
		7.025E+00	-5.237E+00	8.947E+01	2.612E+00	3.878E+03	3.380E+01
10	2	-3.734E+02	-2.336E+01	2.421E+01	-5.726E-02	6.292E+02	-1.011E+02
		3.734E+02	2.336E+01	-2.421E+01	5.726E-02	-8.228E+02	-8.576E+01
10	3	-2.597E+02	-2.684E+02	2.200E-01	-2.832E-02	5.679E+00	-1.134E+02
		2.597E+02	2.684E+02	-2.200E-01	2.832E-02	-7.439E+00	-2.034E+03
10	4	-6.401E+02	-2.866E+02	-6.504E+01	-2.698E+00	-2.528E+03	-2.064E+02
		6.401E+02	2.866E+02	6.504E+01	2.698E+00	3.048E+03	-2.086E+03
11	1	-8.678E+00	5.304E+00	-3.239E+01	-9.555E+00	-3.878E+03	1.579E+01
		8.678E+00	-5.304E+00	3.239E+01	9.555E+00	4.137E+03	2.664E+01
11	2	-3.474E+02	-9.708E+01	2.421E+01	-1.683E-02	8.228E+02	-2.938E+02
		3.474E+02	9.708E+01	-2.421E+01	1.683E-02	-1.016E+03	-4.829E+02
11	3	-1.830E+02	-2.406E+02	2.201E-01	-2.688E-02	7.412E+00	-2.657E+02
		1.830E+02	2.406E+02	-2.201E-01	2.688E-02	-9.172E+00	-1.659E+03
11	4	-5.390E+02	-3.324E+02	-7.960E+00	-9.598E+00	-3.048E+03	-5.437E+02
		5.390E+02	3.324E+02	7.960E+00	9.598E+00	3.112E+03	-2.115E+03
12	1	-1.019E+01	5.591E+00	1.038E+02	1.295E+01	-4.137E+03	1.862E+01
		1.019E+01	-5.591E+00	-1.038E+02	-1.295E+01	3.514E+03	1.493E+01
12	2	-2.984E+02	-1.281E+02	2.421E+01	2.626E-02	1.016E+03	-3.621E+02
		2.984E+02	1.281E+02	-2.421E+01	-2.626E-02	-1.162E+03	-4.065E+02
12	3	-1.250E+02	-1.607E+02	2.201E-01	-2.536E-02	9.146E+00	-8.241E+01
		1.250E+02	1.607E+02	-2.201E-01	2.536E-02	-1.047E+01	-8.817E+02
12	4	-4.335E+02	-2.832E+02	1.282E+02	1.295E+01	-3.111E+03	-4.259E+02
		4.335E+02	2.832E+02	-1.282E+02	-1.295E+01	2.342E+03	-1.273E+03
13	1	-1.176E+01	3.976E+00	1.799E+02	7.934E-01	-3.513E+03	3.194E+01
		1.176E+01	-3.976E+00	-1.799E+02	-7.934E-01	1.355E+03	1.577E+01
13	2	-2.623E+02	-9.640E+00	2.421E+01	9.319E-02	1.162E+03	-1.314E+01
		2.623E+02	9.640E+00	-2.421E+01	-9.319E-02	-1.452E+03	-1.025E+02
13	3	-7.499E+01	-1.310E+02	2.202E-01	-2.322E-02	1.044E+01	-6.188E+02
		7.499E+01	1.310E+02	-2.202E-01	2.322E-02	-1.309E+01	-9.532E+02
13	4	-3.490E+02	-1.367E+02	2.043E+02	8.633E-01	-2.341E+03	-6.000E+02
		3.490E+02	1.367E+02	-2.043E+02	-8.633E-01	-1.108E+02	-1.040E+03
14	1	-1.345E+01	6.752E+00	2.559E+02	7.584E-01	-1.354E+03	3.675E+01
		1.345E+01	-6.752E+00	-2.559E+02	-7.584E-01	-1.717E+03	4.427E+01
14	2	-2.302E+02	-1.153E+02	2.421E+01	1.925E-01	1.452E+03	-2.187E+02
		2.302E+02	1.153E+02	-2.421E+01	-1.925E-01	-1.743E+03	-1.165E+03
14	3	-3.160E+01	-1.078E+02	2.148E-01	-1.841E-01	1.306E+01	-3.487E+02
		3.160E+01	1.078E+02	-2.148E-01	1.841E-01	-1.564E+01	-9.449E+02
14	4	-2.753E+02	-2.164E+02	2.803E+02	7.668E-01	1.116E+02	-5.306E+02
		2.753E+02	2.164E+02	-2.803E+02	-7.668E-01	-3.475E+03	-2.066E+03
15	1	4.655E-04	2.821E+00	3.801E+01	4.140E-01	-2.854E-01	8.462E+01
		-4.655E-04	-2.821E+00	-3.801E+01	-4.140E-01	-7.599E+02	-2.821E+01
15	2	1.885E+01	1.592E+01	2.932E-03	9.997E-02	-8.797E-02	1.491E+02
		-1.885E+01	-1.592E+01	-2.932E-03	-9.997E-02	2.932E-02	1.693E+02
15	3	1.195E+01	-1.510E+02	9.786E-04	2.984E-02	-2.936E-02	-4.529E+03
		-1.195E+01	1.510E+02	-9.786E-04	-2.984E-02	9.786E-03	1.510E+03
15	4	3.080E+01	-1.322E+02	3.801E+01	5.438E-01	-4.028E-01	-4.296E+03
		-3.080E+01	1.322E+02	-3.801E+01	-5.438E-01	-7.599E+02	1.651E+03



EQE ENGINEERING

SHEET 3-1-27

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations

BY RDA DATE 3-16-95

CALC. NO. 002 SUBJECT

CK PB DATE 3-22-95

16	1	4.655E-04	2.821E+00	-1.899E+01	4.140E-01	7.599E+02	2.821E+01
		-4.655E-04	-2.821E+00	1.899E+01	-4.140E-01	-3.801E+02	2.821E+01
16	2	1.885E+01	-8.081E+00	2.932E-03	9.997E-02	-2.932E-02	-1.693E+02
		-1.885E+01	8.081E+00	-2.932E-03	-9.997E-02	-2.932E-02	7.699E+00
16	3	-1.205E+01	-1.510E+02	9.786E-04	2.984E-02	-9.786E-03	-1.510E+03
		1.205E+01	1.510E+02	-9.786E-04	-2.984E-02	-9.786E-03	-1.510E+03
16	4	6.801E+00	-1.562E+02	-1.899E+01	5.438E-01	7.599E+02	-1.651E+03
		-6.801E+00	1.562E+02	1.899E+01	-5.438E-01	-3.802E+02	-1.474E+03
17	1	4.655E-04	-2.821E+00	-1.899E+01	4.140E-01	-3.133E-01	-8.462E+01
		-4.655E-04	2.821E+00	1.899E+01	-4.140E-01	3.801E+02	2.821E+01
17	2	1.885E+01	8.081E+00	2.932E-03	9.997E-02	-8.797E-02	1.539E+02
		-1.885E+01	-8.081E+00	-2.932E-03	-9.997E-02	2.932E-02	7.699E+00
17	3	-1.205E+01	1.510E+02	9.786E-04	2.984E-02	-2.936E-02	4.529E+03
		1.205E+01	-1.510E+02	-9.786E-04	-2.984E-02	9.786E-03	-1.510E+03
17	4	6.801E+00	1.562E+02	-1.899E+01	5.438E-01	-4.306E-01	4.599E+03
		-6.801E+00	-1.562E+02	1.899E+01	-5.438E-01	3.802E+02	-1.474E+03
18	1	1.121E-02	1.998E+00	3.800E+01	1.685E-01	2.344E+00	5.995E+01
		-1.121E-02	-1.998E+00	-3.800E+01	-1.685E-01	-7.623E+02	-1.998E+01
18	2	2.067E+00	1.587E+01	-1.024E-03	7.379E-02	3.071E-02	1.536E+02
		-2.067E+00	-1.587E+01	1.024E-03	-7.379E-02	-1.024E-02	1.638E+02
18	3	1.304E+01	-1.022E+02	-3.473E-05	2.890E-02	1.042E-03	-3.065E+03
		-1.304E+01	1.022E+02	3.473E-05	-2.890E-02	-3.473E-04	1.022E+03
18	4	1.512E+01	-8.430E+01	3.800E+01	2.712E-01	2.376E+00	-2.851E+03
		-1.512E+01	8.430E+01	-3.800E+01	-2.712E-01	-7.623E+02	1.165E+03
19	1	1.121E-02	1.998E+00	-1.900E+01	1.685E-01	7.623E+02	1.998E+01
		-1.121E-02	-1.998E+00	1.900E+01	-1.685E-01	-3.823E+02	1.998E+01
19	2	2.067E+00	-8.131E+00	-1.024E-03	7.379E-02	1.024E-02	-1.638E+02
		-2.067E+00	8.131E+00	1.024E-03	-7.379E-02	-1.024E-02	1.160E+00
19	3	-1.096E+01	-1.022E+02	-3.473E-05	2.890E-02	3.473E-04	-1.022E+03
		1.096E+01	1.022E+02	3.473E-05	-2.890E-02	-3.473E-04	-1.022E+03
19	4	-8.883E+00	-1.083E+02	-1.900E+01	2.712E-01	7.623E+02	-1.165E+03
		8.883E+00	1.083E+02	1.900E+01	-2.712E-01	-3.823E+02	-1.001E+03
20	1	1.121E-02	-1.998E+00	-1.900E+01	1.685E-01	-2.299E+00	-5.994E+01
		-1.121E-02	1.998E+00	1.900E+01	-1.685E-01	3.823E+02	1.998E+01
20	2	2.067E+00	8.131E+00	-1.024E-03	7.379E-02	3.071E-02	1.615E+02
		-2.067E+00	-8.131E+00	1.024E-03	-7.379E-02	-1.024E-02	1.160E+00
20	3	-1.096E+01	1.022E+02	-3.473E-05	2.890E-02	1.042E-03	3.065E+03
		1.096E+01	-1.022E+02	3.473E-05	-2.890E-02	-3.473E-04	-1.022E+03
20	4	-8.883E+00	1.083E+02	-1.900E+01	2.712E-01	-2.267E+00	3.167E+03
		8.883E+00	-1.083E+02	1.900E+01	-2.712E-01	3.823E+02	-1.001E+03
21	1	-6.680E-02	1.653E+00	5.692E+01	-1.231E-01	1.168E+01	4.957E+01
		6.680E-02	-1.653E+00	-5.692E+01	1.231E-01	-1.150E+03	-1.652E+01
21	2	7.372E+01	2.195E+01	-1.348E-03	3.810E-02	4.043E-02	2.564E+02
		-7.372E+01	-2.195E+01	1.348E-03	-3.810E-02	-1.348E-02	1.826E+02
21	3	2.015E+01	-7.668E+01	-4.777E-05	2.763E-02	1.433E-03	-2.301E+03
		-2.015E+01	7.668E+01	4.777E-05	-2.763E-02	-4.777E-04	7.675E+02
21	4	9.380E+01	-5.308E+01	5.692E+01	-5.735E-02	1.173E+01	-1.995E+03
		-9.380E+01	5.308E+01	-5.692E+01	5.735E-02	-1.150E+03	9.335E+02

EQE ENGINEERING

SHEET 3-1-28

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations

BY TZA DATE 3-16-95

CALC. NO. 002 SUBJECT _____

CK DB DATE 3-22-95

22	1	-6.680E-02	1.653E+00	-7.903E-02	-1.231E-01	1.150E+03	1.652E+01
		6.680E-02	-1.653E+00	7.903E-02	1.231E-01	-1.149E+03	1.654E+01
22	2	7.372E+01	-2.052E+00	-1.348E-03	3.810E-02	1.348E-02	-1.826E+02
		-7.372E+01	2.052E+00	1.348E-03	-3.810E-02	1.348E-02	1.415E+02
22	3	-3.855E+00	-7.668E+01	-4.777E-05	2.763E-02	4.777E-04	-7.675E+02
		3.855E+00	7.668E+01	4.777E-05	-2.763E-02	4.777E-04	-7.662E+02
22	4	6.980E+01	-7.708E+01	-8.042E-02	-5.735E-02	1.150E+03	-9.335E+02
		-6.980E+01	7.708E+01	8.042E-02	5.735E-02	-1.149E+03	-6.081E+02
23	1	-6.680E-02	-1.653E+00	<u>-5.708E+01</u>	-1.231E-01	-6.942E+00	-4.959E+01
		6.680E-02	1.653E+00	5.708E+01	1.231E-01	1.149E+03	1.654E+01
23	2	7.372E+01	2.605E+01	-1.348E-03	3.810E-02	4.043E-02	3.795E+02
		-7.372E+01	-2.605E+01	1.348E-03	-3.810E-02	-1.348E-02	1.415E+02
23	3	-2.785E+01	7.668E+01	-4.777E-05	2.763E-02	1.433E-03	2.300E+03
		2.785E+01	-7.668E+01	4.777E-05	-2.763E-02	-4.777E-04	-7.662E+02
23	4	4.580E+01	1.011E+02	-5.708E+01	-5.735E-02	-6.900E+00	2.630E+03
		-4.580E+01	-1.011E+02	5.708E+01	5.735E-02	1.149E+03	-6.081E+02
24	1	-2.873E-01	1.509E+00	<u>2.728E+02</u>	-4.449E-01	-3.176E+01	4.530E+01
		2.873E-01	-1.509E+00	-2.728E+02	4.449E-01	-5.425E+03	-1.511E+01
24	2	3.102E+01	1.250E+02	-1.436E-03	-7.100E-03	4.309E-02	1.385E+03
		-3.102E+01	-1.250E+02	1.436E-03	7.100E-03	-1.436E-02	1.115E+03
24	3	9.410E+01	-5.803E+01	-5.073E-05	2.604E-02	1.522E-03	-1.740E+03
		-9.410E+01	5.803E+01	5.073E-05	-2.604E-02	-5.072E-04	5.799E+02
24	4	1.248E+02	6.847E+01	2.728E+02	-4.260E-01	-3.171E+01	-3.106E+02
		-1.248E+02	-6.847E+01	-2.728E+02	4.260E-01	-5.425E+03	1.680E+03
25	1	-2.873E-01	1.509E+00	-1.362E+02	-4.449E-01	5.425E+03	1.511E+01
		2.873E-01	-1.509E+00	1.362E+02	4.449E-01	-2.701E+03	1.507E+01
25	2	3.102E+01	-4.901E+01	-1.436E-03	-7.100E-03	1.436E-02	-1.115E+03
		-3.102E+01	4.901E+01	1.436E-03	7.100E-03	1.436E-02	1.352E+02
25	3	-7.990E+01	-5.803E+01	-5.073E-05	2.604E-02	5.072E-04	-5.799E+02
		7.990E+01	5.803E+01	5.073E-05	-2.604E-02	5.073E-04	-5.807E+02
25	4	-4.917E+01	-1.055E+02	-1.362E+02	-4.260E-01	5.425E+03	-1.680E+03
		4.917E+01	1.055E+02	1.362E+02	4.260E-01	-2.701E+03	-4.305E+02
26	1	-2.873E-01	-1.509E+00	<u>-1.362E+02</u>	-4.449E-01	2.250E+01	-4.526E+01
		2.873E-01	1.509E+00	1.362E+02	4.449E-01	2.701E+03	1.507E+01
26	2	3.102E+01	4.901E+01	-1.436E-03	-7.100E-03	4.309E-02	8.450E+02
		-3.102E+01	-4.901E+01	1.436E-03	7.100E-03	-1.436E-02	1.352E+02
26	3	-7.990E+01	5.803E+01	-5.073E-05	2.604E-02	1.522E-03	1.741E+03
		7.990E+01	-5.803E+01	5.073E-05	-2.604E-02	-5.073E-04	-5.807E+02
26	4	-4.917E+01	1.055E+02	-1.362E+02	-4.260E-01	2.255E+01	2.541E+03
		4.917E+01	-1.055E+02	1.362E+02	4.260E-01	2.701E+03	-4.305E+02
27	1	1.616E+00	1.572E+00	<u>3.789E+01</u>	-6.403E-01	1.868E+01	4.745E+01
		-1.616E+00	-1.572E+00	-3.789E+01	6.403E-01	-7.765E+02	-1.601E+01
27	2	-1.185E+02	1.293E+01	-2.232E-03	-4.727E-02	6.699E-02	2.154E+02
		1.185E+02	-1.293E+01	2.232E-03	4.727E-02	-2.235E-02	4.323E+01
27	3	1.932E+01	-4.998E+01	-7.111E-05	2.462E-02	2.128E-03	-1.498E+03
		-1.932E+01	4.998E+01	7.111E-05	-2.462E-02	-7.054E-04	4.987E+02
27	4	-9.752E+01	-3.548E+01	3.789E+01	-6.629E-01	1.875E+01	-1.236E+03
		9.752E+01	3.548E+01	-3.789E+01	6.629E-01	-7.765E+02	5.259E+02

EQE ENGINEERING

SHEET 3.1-29

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations

BY TRDA

DATE 3-16-85

CALC. NO. 002 SUBJECT

CK PB

DATE 3-22-85

28	1	1.616E+00	1.572E+00	3.789E+01	-6.403E-01	7.765E+02	1.601E+01
		-1.616E+00	-1.572E+00	-3.789E+01	6.403E-01	-1.534E+03	1.542E+01
28	2	-1.185E+02	1.293E+01	-2.232E-03	-4.727E-02	2.235E-02	-4.323E+01
		1.185E+02	-1.293E+01	2.232E-03	4.727E-02	2.229E-02	3.018E+02
28	3	1.932E+01	-4.998E+01	-7.111E-05	2.462E-02	7.054E-04	-4.987E+02
		-1.932E+01	4.998E+01	7.111E-05	-2.462E-02	7.167E-04	-5.009E+02
28	4	-9.752E+01	-3.548E+01	3.789E+01	-6.629E-01	7.765E+02	-5.259E+02
		9.752E+01	3.548E+01	-3.789E+01	6.629E-01	-1.534E+03	-1.837E+02
29	1	1.616E+00	-1.572E+00	-7.611E+01	-6.403E-01	-1.216E+01	-4.686E+01
		-1.616E+00	1.572E+00	7.611E+01	6.403E-01	1.534E+03	1.542E+01
29	2	-1.185E+02	3.607E+01	-2.232E-03	-4.727E-02	6.694E-02	4.196E+02
		1.185E+02	-3.607E+01	2.232E-03	4.727E-02	-2.229E-02	3.018E+02
29	3	-2.968E+01	4.998E+01	-7.111E-05	2.462E-02	2.139E-03	1.501E+03
		2.968E+01	-4.998E+01	7.111E-05	-2.462E-02	-7.167E-04	-5.009E+02
29	4	-1.465E+02	8.448E+01	-7.611E+01	-6.629E-01	-1.209E+01	1.873E+03
		1.465E+02	-8.448E+01	7.611E+01	6.629E-01	1.534E+03	-1.837E+02
30	1	-2.776E+00	1.695E+00	3.802E+01	-7.605E-01	-1.205E+00	4.916E+01
		2.776E+00	-1.695E+00	-3.802E+01	7.605E-01	-7.592E+02	-1.527E+01
30	2	1.057E+02	1.695E+01	-3.548E-03	-1.437E-01	1.135E-01	3.583E+02
		-1.057E+02	-1.695E+01	3.548E-03	1.437E-01	-4.257E-02	-1.926E+01
30	3	2.580E+01	-4.339E+01	5.411E-03	2.122E-02	-1.637E-01	-1.302E+03
		-2.580E+01	4.339E+01	-5.411E-03	-2.122E-02	5.553E-02	4.338E+02
30	4	1.287E+02	-2.475E+01	3.802E+01	-8.830E-01	-1.255E+00	-8.942E+02
		-1.287E+02	2.475E+01	-3.802E+01	8.830E-01	-7.592E+02	3.993E+02
31	1	-2.776E+00	1.695E+00	3.802E+01	-7.605E-01	7.592E+02	1.527E+01
		2.776E+00	-1.695E+00	-3.802E+01	7.605E-01	-1.520E+03	1.863E+01
31	2	1.057E+02	1.695E+01	-3.548E-03	-1.437E-01	4.257E-02	1.926E+01
		-1.057E+02	-1.695E+01	3.548E-03	1.437E-01	2.839E-02	3.197E+02
31	3	2.580E+01	-4.339E+01	5.411E-03	2.122E-02	-5.553E-02	-4.338E+02
		-2.580E+01	4.339E+01	-5.411E-03	-2.122E-02	5.268E-02	-4.340E+02
31	4	1.287E+02	-2.475E+01	3.802E+01	-8.830E-01	7.592E+02	-3.993E+02
		-1.287E+02	2.475E+01	-3.802E+01	8.830E-01	-1.520E+03	-9.565E+01
32	1	-2.776E+00	-1.695E+00	-7.598E+01	-7.605E-01	-3.501E-02	-5.252E+01
		2.776E+00	1.695E+00	7.598E+01	7.605E-01	1.520E+03	1.863E+01
32	2	1.057E+02	3.205E+01	-3.548E-03	-1.437E-01	9.935E-02	3.213E+02
		-1.057E+02	-3.205E+01	3.548E-03	1.437E-01	-2.839E-02	3.197E+02
32	3	-2.320E+01	4.339E+01	5.411E-03	2.122E-02	-1.609E-01	1.302E+03
		2.320E+01	-4.339E+01	-5.411E-03	-2.122E-02	5.268E-02	-4.340E+02
32	4	7.971E+01	7.375E+01	-7.598E+01	-8.830E-01	-9.657E-02	1.571E+03
		-7.971E+01	-7.375E+01	7.598E+01	8.830E-01	1.520E+03	-9.565E+01
33	1	-1.245E+02	1.335E+00	1.308E+02	-6.424E-01	-1.949E+03	3.626E+01
		1.245E+02	-1.335E+00	-1.308E+02	6.424E-01	-3.283E+03	1.712E+01
33	2	-1.151E+02	5.468E+01	1.545E-02	-2.618E-01	1.314E+00	9.251E+02
		1.151E+02	-5.468E+01	-1.545E-02	2.618E-01	-1.932E+00	1.262E+03
33	3	8.762E+01	-3.145E+01	4.090E+00	1.709E-02	-1.231E+02	-9.429E+02
		-8.762E+01	3.145E+01	-4.090E+00	-1.709E-02	-4.054E+01	-3.152E+02
33	4	-1.520E+02	2.456E+01	1.349E+02	-8.871E-01	-2.071E+03	1.852E+01
		1.520E+02	-2.456E+01	-1.349E+02	8.871E-01	-3.325E+03	9.640E+02



EQE ENGINEERING

SHEET 3.1-30

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations

BY TDA DATE 3-16-95

CALC. NO. 002 SUBJECT

CK PB DATE 3-22-95

34	1	-1.245E+02	-1.335E+00	-2.822E+02	-6.424E-01	2.361E+03	-4.381E+01
		1.245E+02	1.335E+00	2.822E+02	6.424E-01	3.283E+03	1.712E+01
34	2	-1.151E+02	1.213E+02	1.545E-02	-2.618E-01	-2.241E+00	1.164E+03
		1.151E+02	-1.213E+02	-1.545E-02	2.618E-01	1.932E+00	1.262E+03
34	3	-8.838E+01	3.145E+01	4.090E+00	1.709E-02	-1.223E+02	9.442E+02
		8.838E+01	-3.145E+01	-4.090E+00	-1.709E-02	4.054E+01	-3.152E+02
34	4	-3.280E+02	1.514E+02	-2.781E+02	-8.871E-01	2.237E+03	2.065E+03
		3.280E+02	-1.514E+02	2.781E+02	8.871E-01	3.325E+03	9.640E+02
35	1	-6.899E+02	-4.279E+01	2.016E+01	-2.895E-01	-3.227E-01	-1.193E+03
		6.899E+02	4.279E+01	-2.016E+01	2.895E-01	-1.008E+03	-9.463E+02
35	2	-1.902E+01	-1.300E+00	-2.454E+01	-3.569E-01	-3.552E-01	-3.598E+01
		1.902E+01	1.300E+00	2.454E+01	3.569E-01	1.227E+03	-2.900E+01
35	3	1.580E+02	9.279E+01	2.037E-02	1.583E-03	3.006E-03	2.244E+03
		-1.580E+02	-9.279E+01	-2.037E-02	-1.583E-03	-1.022E+00	2.396E+03
35	4	-5.509E+02	4.871E+01	-4.351E+00	-6.448E-01	-6.749E-01	1.015E+03
		5.509E+02	-4.871E+01	4.351E+00	6.448E-01	2.182E+02	1.420E+03
36	1	-6.593E+02	7.327E+00	2.017E+01	-9.849E-02	1.008E+03	3.692E+02
		6.593E+02	-7.327E+00	-2.017E+01	9.849E-02	-1.250E+03	-2.813E+02
36	2	-1.879E+01	1.638E+00	-1.386E+01	-6.865E-01	-1.227E+03	2.005E+01
		1.879E+01	-1.638E+00	1.386E+01	6.865E-01	1.394E+03	-3.971E-01
36	3	8.008E+01	1.115E+02	2.026E-02	-1.551E-03	1.021E+00	-7.948E+01
		-8.008E+01	-1.115E+02	-2.026E-02	1.551E-03	-1.264E+00	1.417E+03
36	4	-5.980E+02	1.205E+02	6.332E+00	-7.866E-01	-2.185E+02	3.098E+02
		5.980E+02	-1.205E+02	-6.332E+00	7.866E-01	1.425E+02	1.136E+03
37	1	-6.148E+02	-4.793E+01	2.017E+01	8.318E-03	1.250E+03	-4.063E+02
		6.148E+02	4.793E+01	-2.017E+01	-8.318E-03	-1.492E+03	-1.689E+02
37	2	-1.871E+01	-2.258E-01	6.142E+00	5.366E-01	-1.394E+03	-1.638E+00
		1.871E+01	2.258E-01	-6.142E+00	-5.366E-01	1.320E+03	-1.072E+00
37	3	3.465E+01	6.629E+01	2.018E-02	-3.716E-03	1.261E+00	-5.019E+01
		-3.465E+01	-6.629E+01	-2.018E-02	3.716E-03	-1.504E+00	8.457E+02
37	4	-5.988E+02	1.813E+01	2.634E+01	5.412E-01	-1.425E+02	-4.582E+02
		5.988E+02	-1.813E+01	-2.634E+01	-5.412E-01	-1.735E+02	6.757E+02
38	1	-5.821E+02	-7.595E+01	2.018E+01	1.476E-01	1.492E+03	-3.659E+02
		5.821E+02	7.595E+01	-2.018E+01	-1.476E-01	-1.774E+03	-6.974E+02
38	2	-1.868E+01	-2.707E-01	1.982E+01	-2.214E+00	-1.320E+03	-1.177E-01
		1.868E+01	2.707E-01	-1.982E+01	2.214E+00	1.042E+03	-3.672E+00
38	3	6.566E+00	5.282E+01	2.006E-02	-7.352E-03	1.499E+00	-3.721E+00
		-6.566E+00	-5.282E+01	-2.006E-02	7.352E-03	-1.780E+00	7.432E+02
38	4	-5.942E+02	-2.340E+01	4.002E+01	-2.074E+00	1.738E+02	-3.697E+02
		5.942E+02	2.340E+01	-4.002E+01	2.074E+00	-7.340E+02	4.207E+01
39	1	-4.295E+02	-1.207E+02	2.019E+01	4.482E-01	1.775E+03	-1.431E+03
		4.295E+02	1.207E+02	-2.019E+01	-4.482E-01	-2.340E+03	-1.950E+03
39	2	-1.866E+01	1.837E-01	8.516E+01	1.844E+00	-1.042E+03	3.622E+00
		1.866E+01	-1.837E-01	-8.516E+01	-1.844E+00	-1.342E+03	1.521E+00
39	3	-4.115E+00	-1.950E+01	-3.429E-03	-7.106E-01	1.771E+00	-4.228E+02
		4.115E+00	1.950E+01	3.429E-03	7.106E-01	-1.675E+00	-1.232E+02
39	4	-4.523E+02	-1.400E+02	1.053E+02	1.582E+00	7.345E+02	-1.850E+03
		4.523E+02	1.400E+02	-1.053E+02	-1.582E+00	-3.684E+03	-2.071E+03

EQE ENGINEERING

SHEET 3.1-31JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray EvaluationsBY TDH DATE 3-16-95CALC. NO. 002 SUBJECTCK PR DATE 3-22-95

40	1	-8.677E+02	-5.328E+01	-1.481E+01	-2.117E-01	-3.227E-01	-2.162E+03
		8.677E+02	5.328E+01	1.481E+01	2.117E-01	7.409E+02	-5.026E+02
40	2	-2.384E+01	-1.275E+00	3.240E+01	-2.303E-01	-3.552E-01	-5.532E+01
		2.384E+01	1.275E+00	-3.240E+01	2.303E-01	-1.619E+03	-8.452E+00
40	3	-1.583E+02	-1.193E+02	-1.288E-01	2.260E-03	3.006E-03	-3.184E+03
		1.583E+02	1.193E+02	1.288E-01	-2.260E-03	6.435E+00	-2.781E+03
40	4	-1.050E+03	-1.738E+02	1.746E+01	-4.397E-01	-6.749E-01	-5.401E+03
		1.050E+03	1.738E+02	-1.746E+01	4.397E-01	-8.721E+02	-3.292E+03
41	1	-8.433E+02	-3.171E+00	-1.481E+01	-9.818E-02	-7.410E+02	2.248E+02
		8.433E+02	3.171E+00	1.481E+01	9.818E-02	9.187E+02	-2.628E+02
41	2	-2.406E+01	1.662E+00	2.007E+01	8.002E-01	1.619E+03	1.300E+01
		2.406E+01	-1.662E+00	-2.007E+01	-8.002E-01	-1.860E+03	6.940E+00
41	3	-8.032E+01	-7.758E+01	-1.289E-01	-1.548E-03	-6.436E+00	4.190E+02
		8.032E+01	7.758E+01	1.289E-01	1.548E-03	7.982E+00	-1.350E+03
41	4	-9.477E+02	-7.909E+01	5.140E+00	7.005E-01	8.719E+02	6.568E+02
		9.477E+02	7.909E+01	-5.140E+00	-7.005E-01	-9.336E+02	-1.606E+03
42	1	-7.698E+02	-5.843E+01	-1.480E+01	8.319E-03	-9.188E+02	-5.168E+02
		7.698E+02	5.843E+01	1.480E+01	-8.319E-03	1.096E+03	-1.844E+02
42	2	-2.415E+01	-2.016E-01	-1.092E+01	-3.952E-01	1.860E+03	-3.998E+00
		2.415E+01	2.016E-01	1.092E+01	3.952E-01	-1.729E+03	1.579E+00
42	3	-3.489E+01	-7.179E+01	-1.290E-01	-3.716E-03	-7.985E+00	-8.327E+00
		3.489E+01	7.179E+01	1.290E-01	3.716E-03	9.532E+00	-8.532E+02
42	4	-8.289E+02	-1.304E+02	-2.586E+01	-3.906E-01	9.336E+02	-5.291E+02
		8.289E+02	1.304E+02	2.586E+01	3.906E-01	-6.233E+02	-1.036E+03
43	1	-7.245E+02	-8.645E+01	-1.480E+01	1.477E-01	-1.096E+03	-3.287E+02
		7.245E+02	8.645E+01	1.480E+01	-1.477E-01	1.304E+03	-8.815E+02
43	2	-2.418E+01	-2.465E-01	-3.025E+01	2.842E+00	1.729E+03	-7.107E-01
		2.418E+01	2.465E-01	3.025E+01	-2.842E+00	-1.306E+03	-2.740E+00
43	3	-6.806E+00	-5.226E+01	-1.291E-01	-7.362E-03	-9.537E+00	9.977E+00
		6.806E+00	5.226E+01	1.291E-01	7.362E-03	1.134E+01	-7.417E+02
43	4	-7.555E+02	-1.390E+02	-4.518E+01	2.982E+00	6.235E+02	-3.195E+02
		7.555E+02	1.390E+02	4.518E+01	-2.982E+00	8.932E+00	-1.626E+03
44	1	-5.381E+02	-1.312E+02	-1.479E+01	4.649E-01	-1.303E+03	-1.312E+03
		5.381E+02	1.312E+02	1.479E+01	-4.649E-01	1.717E+03	-2.362E+03
44	2	-2.420E+01	2.078E-01	-1.089E+02	-8.834E-01	1.306E+03	3.771E+00
		2.420E+01	-2.078E-01	1.089E+02	8.834E-01	1.743E+03	2.048E+00
44	3	3.875E+00	1.942E+01	-1.526E-01	-7.136E-01	-1.135E+01	4.212E+02
		-3.875E+00	-1.942E+01	1.526E-01	7.136E-01	1.562E+01	1.225E+02
44	4	-5.584E+02	-1.116E+02	-1.239E+02	-1.132E+00	-8.395E+00	-8.870E+02
		5.584E+02	1.116E+02	1.239E+02	1.132E+00	3.476E+03	-2.238E+03
45	1	4.844E+00	-6.421E+01	-1.354E+00	3.227E-01	2.895E-01	-1.193E+03
		-4.844E+00	6.421E+01	1.354E+00	-3.227E-01	4.033E+01	-7.332E+02
45	2	1.159E-01	-1.874E+00	2.936E+00	3.552E-01	3.569E-01	-3.598E+01
		-1.159E-01	1.874E+00	-2.936E+00	-3.552E-01	-8.844E+01	-2.024E+01
45	3	1.084E+01	6.785E+01	-1.165E-02	-3.006E-03	-1.583E-03	2.244E+03
		-1.084E+01	-6.785E+01	1.165E-02	3.006E-03	3.510E-01	-2.085E+02
45	4	1.580E+01	1.767E+00	1.571E+00	6.749E-01	6.448E-01	1.015E+03
		-1.580E+01	-1.767E+00	-1.571E+00	-6.749E-01	-4.776E+01	-9.619E+02

EQE ENGINEERING

SHEET 3.1-32

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations

BY TDA DATE 3-16-95

CALC. NO. 002 SUBJECT

CK PB DATE 3-22-95

46	1	4.844E+00	-6.421E+01	-1.354E+00	3.227E-01	-4.033E+01	7.332E+02
		-4.844E+00	6.421E+01	1.354E+00	-3.227E-01	8.096E+01	-2.659E+03
46	2	1.159E-01	-1.874E+00	2.936E+00	3.552E-01	8.844E+01	2.024E+01
		-1.159E-01	1.874E+00	-2.936E+00	-3.552E-01	-1.765E+02	-7.647E+01
46	3	1.084E+01	6.785E+01	-1.165E-02	-3.006E-03	-3.510E-01	2.085E+02
		-1.084E+01	-6.785E+01	1.165E-02	3.006E-03	7.004E-01	1.827E+03
46	4	1.580E+01	1.767E+00	1.571E+00	6.749E-01	4.776E+01	9.619E+02
		-1.580E+01	-1.767E+00	-1.571E+00	-6.749E-01	-9.488E+01	-9.089E+02
47	1	-4.844E+01	8.035E+02	1.346E+01	0.000E+00	-8.074E+01	4.821E+03
		4.844E+01	-8.035E+02	-1.346E+01	0.000E+00	0.000E+00	0.000E+00
47	2	-1.159E+00	2.196E+01	-2.946E+01	0.000E+00	1.768E+02	1.318E+02
		1.159E+00	-2.196E+01	2.946E+01	0.000E+00	0.000E+00	0.000E+00
47	3	-1.084E+02	2.261E+02	1.171E-01	0.000E+00	-7.027E-01	1.357E+03
		1.084E+02	-2.261E+02	-1.171E-01	0.000E+00	0.000E+00	0.000E+00
47	4	-1.580E+02	1.052E+03	-1.589E+01	0.000E+00	9.531E+01	6.310E+03
		1.580E+02	-1.052E+03	1.589E+01	0.000E+00	0.000E+00	0.000E+00
48	1	-5.011E+01	-3.065E+01	5.075E-03	1.441E-01	-1.910E-01	-5.771E+02
		5.011E+01	3.065E+01	-5.075E-03	-1.441E-01	8.950E-02	-3.600E+01
48	2	-2.937E+00	-2.249E-01	1.068E+01	9.263E-02	3.296E-01	-8.546E+00
		2.937E+00	2.249E-01	-1.068E+01	-9.263E-02	-2.139E+02	4.447E+00
48	3	-1.871E+01	7.797E+01	-1.157E-04	6.203E-04	3.134E-03	2.316E+03
		1.871E+01	-7.797E+01	1.157E-04	-6.203E-04	-8.197E-04	-7.570E+02
48	4	-7.176E+01	4.709E+01	1.068E+01	2.374E-01	1.418E-01	1.730E+03
		7.176E+01	-4.709E+01	-1.068E+01	-2.374E-01	-2.138E+02	-7.885E+02
49	1	-5.011E+01	-8.655E+00	5.075E-03	1.441E-01	-8.950E-02	3.600E+01
		5.011E+01	8.655E+00	-5.075E-03	-1.441E-01	-1.200E-02	-2.091E+02
49	2	-2.937E+00	-2.249E-01	1.678E+00	9.263E-02	2.139E+02	-4.447E+00
		2.937E+00	2.249E-01	-1.678E+00	-9.263E-02	-2.475E+02	-5.189E-02
49	3	-2.771E+01	7.797E+01	-1.157E-04	6.203E-04	8.197E-04	7.570E+02
		2.771E+01	-7.797E+01	1.157E-04	-6.203E-04	1.494E-03	8.024E+02
49	4	-8.076E+01	6.909E+01	1.683E+00	2.374E-01	2.138E+02	7.885E+02
		8.076E+01	-6.909E+01	-1.683E+00	-2.374E-01	-2.475E+02	5.932E+02
50	1	-5.011E+01	-2.435E+01	5.075E-03	1.441E-01	-1.135E-01	-2.778E+02
		5.011E+01	2.435E+01	-5.075E-03	-1.441E-01	1.200E-02	-2.091E+02
50	2	-2.937E+00	2.249E-01	-1.232E+01	9.263E-02	-1.031E+00	4.551E+00
		2.937E+00	-2.249E-01	1.232E+01	-9.263E-02	2.475E+02	-5.189E-02
50	3	-4.171E+01	7.797E+01	-1.157E-04	6.203E-04	3.808E-03	-2.362E+03
		4.171E+01	-7.797E+01	1.157E-04	-6.203E-04	-1.494E-03	8.024E+02
50	4	-9.476E+01	-1.021E+02	-1.232E+01	2.374E-01	-1.140E+00	-2.635E+03
		9.476E+01	1.021E+02	1.232E+01	-2.374E-01	2.475E+02	5.932E+02
51	1	5.526E+01	-4.447E+01	3.555E-03	4.793E-02	-1.068E-01	-6.877E+02
		-5.526E+01	4.447E+01	-3.555E-03	-4.793E-02	3.571E-02	-2.017E+02
51	2	1.864E+00	-8.295E-02	2.000E+01	-4.557E-02	-1.223E+00	-2.035E+00
		-1.864E+00	8.295E-02	-2.000E+01	4.557E-02	-3.988E+02	3.760E-01
51	3	4.521E+01	4.543E+01	-7.223E-05	2.573E-03	2.166E-03	1.367E+03
		-4.521E+01	-4.543E+01	7.223E-05	-2.573E-03	-7.210E-04	-4.588E+02
51	4	1.023E+02	8.757E-01	2.000E+01	4.925E-03	-1.328E+00	6.776E+02
		-1.023E+02	-8.757E-01	-2.000E+01	-4.925E-03	-3.988E+02	-6.601E+02



EQE ENGINEERING

SHEET 3.1-33JOB NO. 42112 JOB Oyster Creek A-46 Cable Trav EvaluationsBY EDA DATE 3-16-95CALC. NO. DOZ SUBJECTCK PB DATE 3-22-95

52	1	5.526E+01	-2.447E+01	3.555E-03	4.793E-02	-3.571E-02	2.017E+02
		-5.526E+01	2.447E+01	-3.555E-03	-4.793E-02	-3.540E-02	-6.910E+02
52	2	1.864E+00	-8.295E-02	1.100E+01	-4.557E-02	3.988E+02	-3.760E-01
		-1.864E+00	8.295E-02	-1.100E+01	4.557E-02	-6.188E+02	-1.283E+00
52	3	3.621E+01	4.543E+01	-7.223E-05	2.573E-03	7.210E-04	4.588E+02
		-3.621E+01	-4.543E+01	7.223E-05	-2.573E-03	7.237E-04	4.498E+02
52	4	9.333E+01	2.088E+01	1.100E+01	4.925E-03	3.988E+02	6.601E+02
		-9.333E+01	-2.088E+01	-1.100E+01	-4.925E-03	-6.188E+02	-2.426E+02
53	1	5.526E+01	-7.353E+01	3.555E-03	4.793E-02	-1.065E-01	-7.796E+02
		-5.526E+01	7.353E+01	-3.555E-03	-4.793E-02	3.540E-02	-6.910E+02
53	2	1.864E+00	8.295E-02	-3.100E+01	-4.557E-02	1.195E+00	2.942E+00
		-1.864E+00	-8.295E-02	3.100E+01	4.557E-02	6.188E+02	-1.283E+00
53	3	-5.792E+00	-4.543E+01	-7.223E-05	2.573E-03	2.168E-03	-1.358E+03
		5.792E+00	4.543E+01	7.223E-05	-2.573E-03	-7.237E-04	4.498E+02
53	4	5.133E+01	-1.189E+02	-3.100E+01	4.925E-03	1.091E+00	-2.135E+03
		-5.133E+01	1.189E+02	3.100E+01	-4.925E-03	6.188E+02	-2.426E+02
54	1	2.802E+01	-3.269E+01	4.644E-03	-6.898E-02	-1.393E-01	-5.347E+02
		-2.802E+01	3.269E+01	-4.644E-03	6.898E-02	4.641E-02	-1.191E+02
54	2	4.489E-02	-3.429E-02	1.367E+01	-1.866E-01	2.751E+00	-1.189E+00
		-4.489E-02	3.429E-02	-1.367E+01	1.866E-01	-2.762E+02	5.036E-01
54	3	1.347E+01	2.809E+01	-1.213E-04	4.947E-03	3.635E-03	8.420E+02
		-1.347E+01	-2.809E+01	1.213E-04	-4.947E-03	-1.208E-03	-2.802E+02
54	4	4.153E+01	-4.641E+00	1.368E+01	-2.506E-01	2.615E+00	3.060E+02
		-4.153E+01	4.641E+00	-1.368E+01	2.506E-01	-2.762E+02	-3.989E+02
55	1	2.802E+01	-1.369E+01	4.644E-03	-6.898E-02	-4.641E-02	1.191E+02
		-2.802E+01	1.369E+01	-4.644E-03	6.898E-02	-4.647E-02	-3.930E+02
55	2	4.489E-02	-3.429E-02	5.675E+00	-1.866E-01	2.762E+02	-5.036E-01
		-4.489E-02	3.429E-02	-5.675E+00	1.866E-01	-3.897E+02	-1.821E-01
55	3	5.472E+00	2.809E+01	-1.213E-04	4.947E-03	1.208E-03	2.802E+02
		-5.472E+00	-2.809E+01	1.213E-04	-4.947E-03	1.218E-03	2.815E+02
55	4	3.353E+01	1.436E+01	5.679E+00	-2.506E-01	2.762E+02	3.989E+02
		-3.353E+01	-1.436E+01	-5.679E+00	2.506E-01	-3.898E+02	-1.117E+02
56	1	2.802E+01	-4.531E+01	4.644E-03	-6.898E-02	-1.393E-01	-5.132E+02
		-2.802E+01	4.531E+01	-4.644E-03	6.898E-02	4.647E-02	-3.930E+02
56	2	4.489E-02	3.429E-02	-1.933E+01	-1.866E-01	-3.237E+00	8.679E-01
		-4.489E-02	-3.429E-02	1.933E+01	1.866E-01	3.897E+02	-1.821E-01
56	3	-1.953E+01	-2.809E+01	-1.213E-04	4.947E-03	3.645E-03	-8.432E+02
		1.953E+01	2.809E+01	1.213E-04	-4.947E-03	-1.218E-03	2.815E+02
56	4	8.533E+00	-7.336E+01	-1.932E+01	-2.506E-01	-3.373E+00	-1.355E+03
		-8.533E+00	7.336E+01	1.932E+01	2.506E-01	3.898E+02	-1.117E+02
57	1	4.477E+01	-1.526E+02	1.030E-02	-2.317E-01	-3.006E-01	-2.128E+03
		-4.477E+01	1.526E+02	-1.030E-02	2.317E-01	9.466E-02	-9.235E+02
57	2	-4.543E-01	-1.801E-02	6.534E+01	-3.130E-01	-4.058E+00	-4.976E-02
		4.543E-01	1.801E-02	-6.534E+01	3.130E-01	-1.303E+03	-3.105E-01
57	3	7.232E+01	1.068E+01	-2.349E-02	8.252E-03	7.033E-01	3.204E+02
		-7.232E+01	-1.068E+01	2.349E-02	-8.252E-03	-2.334E-01	-1.068E+02
57	4	1.166E+02	-1.419E+02	6.533E+01	-5.364E-01	-3.655E+00	-1.808E+03
		-1.166E+02	1.419E+02	-6.533E+01	5.364E-01	-1.303E+03	-1.031E+03

EQE ENGINEERING

SHEET 3.1-34

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations

BY TDA DATE 3-16-95

CALC. NO. 002 SUBJECT

CK PCB DATE 3-22-95

58	1	4.477E+01	-3.058E+01	1.030E-02	-2.317E-01	-9.466E-02	9.235E+02
		-4.477E+01	3.058E+01	-1.030E-02	2.317E-01	-1.113E-01	-1.535E+03
58	2	-4.543E-01	-1.801E-02	1.334E+01	-3.130E-01	1.303E+03	3.105E-01
		4.543E-01	1.801E-02	-1.334E+01	3.130E-01	-1.569E+03	-6.708E-01
58	3	2.032E+01	1.068E+01	-2.349E-02	8.252E-03	2.334E-01	1.068E+02
		-2.032E+01	-1.068E+01	2.349E-02	-8.252E-03	2.364E-01	1.069E+02
58	4	6.464E+01	-1.991E+01	1.333E+01	-5.364E-01	1.303E+03	1.031E+03
		-6.464E+01	1.991E+01	-1.333E+01	5.364E-01	-1.569E+03	-1.429E+03
59	1	4.477E+01	-1.864E+02	1.030E-02	-2.317E-01	-3.173E-01	-2.193E+03
		-4.477E+01	1.864E+02	-1.030E-02	2.317E-01	1.113E-01	-1.535E+03
59	2	-4.543E-01	1.801E-02	-7.866E+01	-3.130E-01	3.726E+00	1.031E+00
		4.543E-01	-1.801E-02	7.866E+01	3.130E-01	1.569E+03	-6.708E-01
59	3	-7.168E+01	-1.068E+01	-7.349E-02	8.252E-03	7.062E-01	-3.205E+02
		7.168E+01	1.068E+01	7.349E-02	-8.252E-03	-2.364E-01	1.069E+02
59	4	-2.736E+01	-1.971E+02	-7.867E+01	-5.364E-01	4.114E+00	-2.513E+03
		2.736E+01	1.971E+02	7.867E+01	5.364E-01	1.569E+03	-1.429E+03

1**** BEAM ELEMENT STRESSES

ELEMENT NO.	CASE (MODE)	P/A	P/A+M2/S2	P/A-M2/S2	P/A+M3/S3	P/A-M3/S3	WORST SUM
1	1	5.905E+01	5.905E+01	5.905E+01	5.905E+01	5.905E+01	5.905E+01
		5.905E+01	-1.114E+04	1.126E+04	-4.064E+02	5.244E+02	1.172E+04
1	2	6.278E+02	6.278E+02	6.278E+02	6.278E+02	6.278E+02	6.278E+02
		6.278E+02	1.770E+03	-5.140E+02	4.135E+02	8.422E+02	1.984E+03
1	3	-9.238E+02	-9.238E+02	-9.238E+02	-9.238E+02	-9.238E+02	-9.238E+02
		-9.238E+02	-9.226E+02	-9.249E+02	2.492E+04	-2.677E+04	-2.677E+04
1	4	-2.369E+02	-2.369E+02	-2.369E+02	-2.369E+02	-2.369E+02	-2.369E+02
		-2.369E+02	-1.029E+04	9.821E+03	2.493E+04	-2.540E+04	-3.546E+04
2	1	5.396E+01	-1.115E+04	1.125E+04	5.415E+00	1.025E+02	1.130E+04
		5.396E+01	-1.509E+04	1.520E+04	-2.014E+02	3.094E+02	1.545E+04
2	2	5.991E+02	1.741E+03	-5.431E+02	1.119E+03	7.924E+01	2.261E+03
		5.991E+02	2.249E+03	-1.051E+03	2.809E+02	9.174E+02	2.567E+03
2	3	-6.517E+02	-6.504E+02	-6.530E+02	2.882E+03	-4.185E+03	-4.186E+03
		-6.517E+02	-6.499E+02	-6.536E+02	1.390E+04	-1.520E+04	-1.520E+04
2	4	1.385E+00	-1.005E+04	1.006E+04	4.006E+03	-4.003E+03	1.406E+04
		1.385E+00	-1.349E+04	1.349E+04	1.398E+04	-1.397E+04	2.747E+04
3	1	5.036E+01	-1.509E+04	1.519E+04	9.025E+01	1.048E+01	1.523E+04
		5.036E+01	-1.800E+04	1.810E+04	-1.171E+02	2.178E+02	1.827E+04
3	2	5.706E+02	2.221E+03	-1.079E+03	1.009E+03	1.322E+02	2.659E+03
		5.706E+02	2.728E+03	-1.587E+03	8.933E+01	1.052E+03	3.209E+03
3	3	-4.676E+02	-4.657E+02	-4.696E+02	-1.017E+03	8.137E+01	-1.019E+03
		-4.676E+02	-4.652E+02	-4.701E+02	9.485E+03	-1.042E+04	-1.042E+04
3	4	1.533E+02	-1.334E+04	1.364E+04	8.251E+01	2.241E+02	1.371E+04
		1.533E+02	-1.574E+04	1.605E+04	9.458E+03	-9.151E+03	2.535E+04

FAILS 2



EQE ENGINEERING

SHEET 3.1-35

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations

BY TGA

DATE 3-16-95

CALC. NO. 002 SUBJECT

CK PB

DATE 3-22-95

4	1	4.738E+01	-1.801E+04	1.810E+04	1.241E+02	-2.938E+01	1.818E+04
		4.730E+01	-1.937E+04	1.946E+04	-8.053E+01	1.753E+02	1.959E+04
4	2	5.310E+02	2.689E+03	-1.627E+03	1.313E+03	-2.509E+02	3.471E+03
		5.310E+02	3.196E+03	-2.134E+03	-2.512E+03	3.574E+03	6.239E+03
4	3	-3.295E+02	-3.269E+02	-3.320E+02	-1.712E+03	1.053E+03	-1.714E+03
		-3.295E+02	-3.263E+02	-3.326E+02	7.996E+03	-8.655E+03	-8.658E+03
4	4	2.489E+02	-1.564E+04	1.614E+04	-2.749E+02	7.727E+02	1.666E+04
		2.489E+02	-1.650E+04	1.699E+04	5.404E+03	-4.906E+03	2.215E+04
5	1	4.467E+01	-1.937E+04	1.946E+04	1.399E+02	-5.056E+01	1.955E+04
		4.467E+01	-1.482E+04	1.491E+04	-5.129E+00	9.446E+01	1.496E+04
5	2	3.058E+02	2.971E+03	-2.359E+03	4.083E+03	-3.472E+03	6.749E+03
		3.058E+02	3.352E+03	-2.740E+03	2.981E+02	3.135E+02	3.359E+03
5	3	-2.249E+02	-2.217E+02	-2.281E+02	-4.731E+02	2.326E+01	-4.763E+02
		-2.249E+02	-2.213E+02	-2.285E+02	4.027E+03	-4.476E+03	-4.480E+03
5	4	1.255E+02	-1.662E+04	1.687E+04	3.750E+03	-3.499E+03	2.050E+04
		1.255E+02	-1.169E+04	1.194E+04	4.320E+03	-4.068E+03	1.614E+04
6	1	4.183E+01	-1.483E+04	1.491E+04	2.258E+02	-1.421E+02	1.510E+04
		4.183E+01	-4.187E+03	4.271E+03	-1.597E+02	2.434E+02	4.472E+03
6	2	2.825E+02	3.328E+03	-2.763E+03	1.336E+03	-7.707E+02	4.381E+03
		2.825E+02	4.089E+03	-3.524E+03	7.673E+02	-2.023E+02	4.574E+03
6	3	-1.349E+02	-1.311E+02	-1.386E+02	-3.264E+01	2.995E+03	-3.268E+03
		-1.349E+02	-1.303E+02	-1.394E+02	4.593E+03	-4.863E+03	-4.367E+03
6	4	1.895E+02	-1.163E+04	1.201E+04	-1.703E+03	2.082E+03	1.390E+04
		1.895E+02	-2.283E+02	6.073E+02	5.201E+03	-4.822E+03	5.618E+03
7	1	3.878E+01	-4.193E+03	4.270E+03	7.937E+01	-1.806E+00	4.311E+03
		3.878E+01	8.000E+03	-7.922E+03	-1.421E+02	2.196E+02	8.181E+03
7	2	2.520E+02	4.058E+03	-7.554E+03	2.502E+03	-1.998E+03	6.308E+03
		2.520E+02	4.819E+03	-4.315E+03	-4.314E+03	4.818E+03	9.386E+03
7	3	-5.668E+01	-5.208E+01	-6.128E+01	-1.741E+03	1.627E+03	-1.745E+03
		-5.668E+01	-5.104E+01	-6.232E+01	4.592E+03	-4.705E+03	-4.711E+03
7	4	2.341E+02	-1.867E+02	6.549E+02	8.404E+02	-3.723E+02	1.261E+03
		2.341E+02	1.277E+04	-1.230E+04	1.350E+02	3.331E+02	1.287E+04
8	1	3.975E+00	3.975E+00	3.975E+00	3.975E+00	3.975E+00	3.975E+00
		3.975E+00	7.807E+03	-7.800E+03	4.694E+02	-4.614E+02	8.273E+03
8	2	7.020E+02	7.020E+02	7.020E+02	7.020E+02	7.020E+02	7.020E+02
		7.020E+02	-7.801E+02	2.184E+03	4.855E+02	9.185E+02	2.401E+03
8	3	9.240E+02	9.240E+02	9.240E+02	9.240E+02	9.240E+02	9.240E+02
		9.240E+02	9.105E+02	9.375E+02	-2.492E+04	2.677E+04	2.678E+04
8	4	1.630E+03	1.630E+03	1.630E+03	1.630E+03	1.630E+03	1.630E+03
		1.630E+03	7.938E+03	-4.678E+03	-2.396E+04	2.722E+04	3.353E+04
9	1	9.057E+00	7.814E+03	-7.796E+03	5.762E+01	-3.951E+01	7.863E+03
		9.057E+00	1.077E+04	-1.075E+04	2.645E+02	-2.463E+02	1.102E+04
9	2	6.875E+02	-7.943E+02	2.169E+03	1.229E+03	1.457E+02	2.711E+03
		6.875E+02	-1.453E+03	2.828E+03	3.901E+02	9.848E+02	3.125E+03
9	3	6.520E+02	6.386E+02	6.654E+02	-2.879E+03	4.183E+03	4.196E+03
		6.520E+02	6.326E+02	6.714E+02	-1.389E+04	1.519E+04	1.521E+04
9	4	1.349E+03	7.658E+03	-4.961E+03	-1.592E+03	4.289E+03	1.060E+04
		1.349E+03	9.945E+03	-7.248E+03	-1.323E+04	1.593E+04	2.453E+04

(2544)(6.7)
42.544
OK



EQE ENGINEERING

SHEET 3.1-36JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray EvaluationsBY EDA DATE 3-16-95CALC. NO. 002 SUBJECT _____CK PB DATE 3-22-95

10	1	1.266E+01	1.077E+04	-1.074E+04	-2.723E+01	5.255E+01	1.081E+04
		1.266E+01	1.320E+04	-1.318E+04	1.792E+02	-1.538E+02	1.337E+04
10	2	6.728E+02	-1.467E+03	2.813E+03	1.171E+03	1.748E+02	3.311E+03
		6.728E+02	-2.126E+03	3.472E+03	2.503E+02	1.095E+03	3.894E+03
10	3	4.679E+02	4.486E+02	4.872E+02	1.026E+03	-9.054E+01	1.046E+03
		4.679E+02	4.426E+02	4.932E+02	-9.552E+03	1.049E+04	1.051E+04
10	4	1.153E+03	9.751E+03	-7.444E+03	2.170E+03	1.368E+02	1.077E+04
		1.153E+03	1.152E+04	-9.214E+03	-9.123E+03	1.143E+04	2.180E+04
11	1	1.564E+01	1.321E+04	-1.318E+04	-6.217E+01	9.344E+01	1.328E+04
		1.564E+01	1.409E+04	-1.406E+04	1.469E+02	-1.156E+02	1.422E+04
11	2	6.259E+02	-2.173E+03	3.425E+03	2.073E+03	-8.212E+02	4.872E+03
		6.259E+02	-2.831E+03	4.083E+03	-1.753E+03	3.004E+03	6.462E+03
11	3	3.297E+02	3.045E+02	3.549E+02	1.639E+03	-9.791E+02	1.664E+03
		3.297E+02	2.985E+02	3.609E+02	-7.942E+03	8.502E+03	8.533E+03
11	4	9.712E+02	1.134E+04	-9.396E+03	3.649E+03	-1.707E+03	1.402E+04
		9.712E+02	1.156E+04	-9.613E+03	-9.448E+03	1.139E+04	2.197E+04
12	1	1.835E+01	1.409E+04	-1.405E+04	-7.337E+01	1.101E+02	1.418E+04
		1.835E+01	1.197E+04	-1.193E+04	9.189E+01	-5.518E+01	1.204E+04
12	2	5.376E+02	-2.920E+03	3.995E+03	2.321E+03	-1.246E+03	5.779E+03
		5.376E+02	-3.414E+03	4.489E+03	-1.465E+03	2.540E+03	6.491E+03
12	3	2.252E+02	1.941E+02	2.563E+02	6.011E+02	-1.808E+02	6.622E+02
		2.252E+02	1.896E+02	2.608E+02	-4.118E+03	4.568E+03	4.604E+03
12	4	7.811E+02	1.136E+04	-9.801E+03	2.879E+03	-1.317E+03	1.346E+04
		7.811E+02	8.747E+03	-7.184E+03	-5.491E+03	7.053E+03	1.502E+04
13	1	2.119E+01	1.197E+04	-1.193E+04	-1.361E+02	1.785E+02	1.213E+04
		2.119E+01	4.629E+03	-4.586E+03	9.888E+01	-5.650E+01	4.706E+03
13	2	4.726E+02	-3.479E+03	4.424E+03	5.373E+02	4.078E+02	4.489E+03
		4.726E+02	-4.467E+03	5.412E+03	-3.251E+01	9.777E+02	5.917E+03
13	3	1.351E+02	9.961E+01	1.706E+02	3.184E+03	-2.033E+03	3.219E+03
		1.351E+02	9.062E+01	1.796E+02	-4.560E+03	4.031E+03	4.875E+03
13	4	6.289E+02	8.592E+03	-7.334E+03	3.585E+03	-2.327E+03	1.155E+04
		6.289E+02	2.522E+02	1.006E+03	-4.494E+03	5.752E+03	6.128E+03
14	1	2.424E+01	4.629E+03	-4.581E+03	-1.568E+02	2.053E+02	4.810E+03
		2.424E+01	-5.815E+03	5.863E+03	2.423E+02	-1.939E+02	6.081E+03
14	2	4.148E+02	-4.525E+03	5.355E+03	1.492E+03	-6.626E+02	6.433E+03
		4.148E+02	-5.514E+03	6.343E+03	-5.325E+03	6.155E+03	1.208E+04
14	3	5.694E+01	1.251E+01	1.014E+02	1.774E+03	-1.661E+03	1.319E+03
		5.694E+01	3.743E+00	1.101E+02	-4.598E+03	4.712E+03	4.765E+03
14	4	4.960E+02	1.163E+02	8.758E+02	3.110E+03	-2.118E+03	3.490E+03
		4.960E+02	-1.132E+04	1.232E+04	-9.681E+03	1.067E+04	2.249E+04
15	1	-8.388E-04	9.700E-01	-9.717E-01	-4.169E+02	4.169E+02	-4.178E+02
		-8.545E-04	-2.585E+03	2.585E+03	-1.390E+02	1.390E+02	-2.724E+03
15	2	-3.396E+01	-3.366E+01	-3.426E+01	-7.682E+02	7.003E+02	-7.685E+02
		-3.396E+01	-3.386E+01	-3.406E+01	8.001E+02	-8.681E+02	-8.682E+02
15	3	-2.153E+01	-2.143E+01	-2.163E+01	2.229E+04	-2.233E+04	-2.233E+04
		-2.153E+01	-2.150E+01	-2.157E+01	7.416E+03	-7.459E+03	-7.459E+03
15	4	-5.550E+01	-5.413E+01	-5.687E+01	2.111E+04	-2.122E+04	-2.122E+04
		-5.550E+01	-2.640E+03	2.529E+03	8.077E+03	-8.188E+03	-1.077E+04

EQE ENGINEERING

SHEET 31-37

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations

BY PDA DATE 3-16-95

CALC. NO. 002 SUBJECT

CK DB DATE 3-22-95

16	1	-8.545E-04	-2.585E+03	2.585E+03	-1.390E+02	1.390E+02	-2.724E+03
		-8.545E-04	-1.293E+03	1.293E+03	1.389E+02	-1.390E+02	-1.432E+03
16	2	-3.396E+01	-3.386E+01	-3.406E+01	8.001E+02	-8.681E+02	-8.682E+02
		-3.396E+01	-3.406E+01	-3.386E+01	3.964E+00	-7.189E+01	-7.199E+01
16	3	2.171E+01	2.174E+01	2.168E+01	7.459E+03	-7.416E+03	7.459E+03
		2.171E+01	2.168E+01	2.174E+01	-7.415E+03	7.459E+03	7.459E+03
16	4	-1.225E+01	-2.597E+03	2.572E+03	8.120E+03	-8.145E+03	-1.073E+04
		-1.225E+01	-1.305E+03	1.281E+03	-7.273E+03	7.248E+03	-8.566E+03
17	1	-8.388E-04	1.065E+00	-1.066E+00	4.169E+02	-4.169E+02	-4.179E+02
		-8.545E-04	1.293E+03	-1.293E+03	1.389E+02	-1.390E+02	-1.432E+03
17	2	-3.396E+01	-3.366E+01	-3.426E+01	-7.922E+02	7.243E+02	-7.925E+02
		-3.396E+01	-3.386E+01	-3.406E+01	3.964E+00	-7.189E+01	-7.199E+01
17	3	2.171E+01	2.181E+01	2.161E+01	-2.229E+04	2.233E+04	2.233E+04
		2.171E+01	2.174E+01	2.168E+01	-7.415E+03	7.459E+03	7.459E+03
17	4	-1.225E+01	-1.079E+01	-1.372E+01	-2.267E+04	2.264E+04	-2.267E+04
		-1.225E+01	1.281E+03	-1.305E+03	-7.273E+03	7.248E+03	-8.566E+03
18	1	-2.020E-02	-7.993E+00	7.952E+00	-2.953E+02	2.953E+02	-3.033E+02
		-2.026E-02	-2.593E+03	2.593E+03	-9.845E+01	9.841E+01	-2.691E+03
18	2	-3.724E+00	-3.828E+00	-3.619E+00	-7.603E+02	7.529E+02	-7.604E+02
		-3.724E+00	-3.758E+00	-3.689E+00	8.031E+02	-8.106E+02	-8.106E+02
18	3	-2.349E+01	-2.350E+01	-2.349E+01	1.507E+04	-1.512E+04	-1.512E+04
		-2.349E+01	-2.350E+01	-2.349E+01	5.009E+03	-5.056E+03	-5.056E+03
18	4	-2.724E+01	-3.532E+01	-1.916E+01	1.402E+04	-1.407E+04	-1.408E+04
		-2.724E+01	-2.620E+03	2.566E+03	5.713E+03	-5.768E+03	-8.361E+03
19	1	-2.026E-02	-2.593E+03	2.593E+03	-9.845E+01	9.841E+01	-2.691E+03
		-2.020E-02	-1.300E+03	1.300E+03	9.841E+01	-9.845E+01	-1.399E+03
19	2	-3.724E+00	-3.758E+00	-3.689E+00	8.031E+02	-8.106E+02	-8.106E+02
		-3.724E+00	-3.689E+00	-3.758E+00	1.991E+00	-9.438E+00	-9.473E+00
19	3	1.975E+01	1.975E+01	1.975E+01	5.052E+03	-5.013E+03	5.052E+03
		1.975E+01	1.975E+01	1.975E+01	-5.014E+03	5.053E+03	5.053E+03
19	4	1.601E+01	-2.577E+03	2.609E+03	5.757E+03	-5.725E+03	8.350E+03
		1.601E+01	-1.284E+03	1.316E+03	-4.913E+03	4.945E+03	6.246E+03
20	1	-2.020E-02	7.800E+00	-7.840E+00	2.953E+02	-2.953E+02	-3.031E+02
		-2.020E-02	1.300E+03	-1.300E+03	9.841E+01	-9.845E+01	-1.399E+03
20	2	-3.724E+00	-3.828E+00	-3.619E+00	-7.991E+02	7.917E+02	-7.992E+02
		-3.724E+00	-3.758E+00	-3.689E+00	1.991E+00	-9.438E+00	-9.473E+00
20	3	1.975E+01	1.975E+01	1.975E+01	-1.508E+04	1.512E+04	1.512E+04
		1.975E+01	1.975E+01	1.975E+01	-5.014E+03	5.053E+03	5.053E+03
20	4	1.601E+01	2.372E+01	8.293E+00	-1.558E+04	1.562E+04	1.562E+04
		1.601E+01	1.316E+03	-1.284E+03	-4.913E+03	4.945E+03	6.246E+03
21	1	1.204E-01	-3.962E+01	3.986E+01	-2.441E+02	2.443E+02	2.840E+02
		1.204E-01	-3.912E+03	3.912E+03	-8.123E+01	8.148E+01	3.993E+03
21	2	-1.328E+02	-1.330E+02	-1.327E+02	-1.396E+03	1.130E+03	-1.396E+03
		-1.328E+02	-1.329E+02	-1.328E+02	7.664E+02	-1.032E+03	-1.032E+03
21	3	-3.630E+01	-3.630E+01	-3.629E+01	1.130E+04	-1.137E+04	-1.137E+04
		-3.630E+01	-3.630E+01	-3.630E+01	3.744E+03	-3.817E+03	-3.817E+03
21	4	-1.690E+02	-2.089E+02	-1.291E+02	9.659E+03	-9.997E+03	-1.004E+04
		-1.690E+02	-4.081E+03	3.743E+03	4.429E+03	-4.767E+03	-8.679E+03



EQE ENGINEERING

SHEET 3.1-38

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations

BY TZA DATE 3-16-95

CALC. NO. 02 SUBJECT

CK DB DATE 3-22-95

22	1	1.204E-01	-3.912E+03	3.912E+03	-8.123E+01	8.148E+01	3.990E+03
		1.204E-01	-3.906E+03	3.907E+03	8.160E+01	-6.135E+01	3.988E+03
22	2	-1.328E+02	-1.329E+02	-1.328E+02	7.664E+02	-1.032E+03	-1.032E+03
		-1.328E+02	-1.328E+02	-1.329E+02	5.643E+02	-8.299E+02	-8.300E+02
22	3	6.946E+00	6.944E+00	6.947E+00	3.788E+03	-3.774E+03	3.788E+03
		6.940E+00	6.947E+00	6.944E+00	-3.767E+03	3.781E+03	3.781E+03
22	4	-1.258E+02	-4.038E+03	3.786E+03	4.473E+03	-4.724E+03	-8.636E+03
		-1.258E+02	-4.032E+03	3.781E+03	-3.121E+03	2.870E+03	-7.028E+03
23	1	1.204E-01	2.173E+01	-2.349E+01	2.444E+02	-2.442E+02	2.680E+02
		1.204E-01	3.907E+03	-3.906E+03	8.160E+01	-8.135E+01	3.988E+03
23	2	-1.328E+02	-1.330E+02	-1.327E+02	-2.002E+03	1.737E+03	-2.003E+03
		-1.328E+02	-1.329E+02	-1.328E+02	5.643E+02	-8.299E+02	-8.300E+02
23	3	5.019E+01	5.018E+01	5.019E+01	-1.128E+04	1.138E+04	1.138E+04
		5.019E+01	5.019E+01	5.019E+01	-3.724E+03	3.824E+03	3.824E+03
23	4	-8.252E+01	-5.905E+01	-1.060E+02	-1.304E+04	1.287E+04	-1.306E+04
		-8.252E+01	3.824E+03	-3.989E+03	-3.078E+03	2.913E+03	-6.985E+03
24	1	5.176E-01	1.085E+02	-1.075E+02	-2.226E+02	2.237E+02	3.317E+02
		5.176E-01	-1.845E+04	1.845E+04	-7.392E+01	7.496E+01	1.853E+04
24	2	-5.589E+01	-5.603E+01	-5.574E+01	-6.876E+03	6.765E+03	-6.877E+03
		-5.589E+01	-5.593E+01	-5.584E+01	5.438E+03	-5.550E+03	-5.550E+03
24	3	-1.696E+02	-1.696E+02	-1.696E+02	8.404E+03	-8.743E+03	-8.743E+03
		-1.696E+02	-1.696E+02	-1.696E+02	2.687E+03	-3.026E+03	-3.026E+03
24	4	-2.249E+02	-1.171E+02	-3.328E+02	1.305E+03	-1.755E+03	-1.863E+03
		-2.249E+02	-1.868E+04	1.823E+04	8.051E+03	-8.501E+03	-2.695E+04
25	1	5.176E-01	-1.845E+04	1.845E+04	-7.392E+01	7.496E+01	1.853E+04
		5.176E-01	-9.187E+03	9.188E+03	7.477E+01	-7.374E+01	9.262E+03
25	2	-5.589E+01	-5.593E+01	-5.584E+01	5.438E+03	-5.550E+03	-5.550E+03
		-5.589E+01	-5.584E+01	-5.593E+01	6.100E+02	-7.217E+02	-7.218E+02
25	3	1.440E+02	1.440E+02	1.440E+02	3.000E+03	-2.713E+03	3.000E+03
		1.440E+02	1.440E+02	1.440E+02	-2.717E+03	3.005E+03	3.005E+03
25	4	8.859E+01	-1.836E+04	1.854E+04	8.365E+03	-8.188E+03	2.682E+04
		8.859E+01	-9.099E+03	9.276E+03	-2.032E+03	2.209E+03	1.140E+04
26	1	5.176E-01	-7.603E+01	7.706E+01	2.235E+02	-2.224E+02	3.000E+02
		5.176E-01	9.188E+03	-9.187E+03	7.477E+01	-7.374E+01	9.262E+03
26	2	-5.589E+01	-5.603E+01	-5.574E+01	-4.218E+03	4.106E+03	-4.218E+03
		-5.589E+01	-5.593E+01	-5.584E+01	6.100E+02	-7.217E+02	-7.218E+02
26	3	1.440E+02	1.440E+02	1.440E+02	-8.434E+03	8.722E+03	8.722E+03
		1.440E+02	1.440E+02	1.440E+02	-2.717E+03	3.005E+03	3.005E+03
26	4	8.859E+01	1.189E+01	1.653E+02	-1.243E+04	1.261E+04	1.268E+04
		8.859E+01	9.276E+03	-9.099E+03	-2.032E+03	2.209E+03	1.140E+04
27	1	-2.911E+00	-6.644E+01	6.062E+01	-2.367E+02	2.308E+02	-3.002E+02
		-2.911E+00	-2.644E+03	2.638E+03	-8.180E+01	7.598E+01	-2.723E+03
27	2	2.134E+02	2.132E+02	2.137E+02	-8.475E+02	1.274E+03	1.275E+03
		2.134E+02	2.134E+02	2.135E+02	4.264E+02	4.888E-01	4.264E+02
27	3	-3.481E+01	-3.481E+01	-3.480E+01	7.346E+03	-7.416E+03	-7.416E+03
		-3.481E+01	-3.481E+01	-3.481E+01	2.422E+03	-2.491E+03	-2.491E+03
27	4	1.757E+02	1.119E+02	2.395E+02	6.262E+03	-5.910E+03	6.326E+03
		1.757E+02	-2.466E+03	2.817E+03	2.766E+03	-2.415E+03	5.408E+03



EQE ENGINEERING

SHEET 3.1-39

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations

BY RDA DATE 3-16-95

CALC. NO. 002 SUBJECT

CK DB DATE 3-22-95

28	1	-2.911E+00	-2.644E+03	2.638E+03	-8.180E+01	7.598E+01	-2.723E+03
		-2.911E+00	-5.222E+03	5.216E+03	7.307E+01	-7.889E+01	-5.298E+03
28	2	2.134E+02	2.134E+02	2.135E+02	4.264E+02	4.988E-01	4.264E+02
		2.134E+02	2.135E+02	2.134E+02	1.700E+03	-1.273E+03	1.700E+03
28	3	-3.481E+01	-3.481E+01	-3.481E+01	2.422E+03	-2.491E+03	-2.491E+03
		-3.481E+01	-3.481E+01	-3.481E+01	-2.502E+03	2.433E+03	-2.502E+03
28	4	1.757E+02	-2.466E+03	2.817E+03	2.766E+03	-2.415E+03	5.408E+03
		1.757E+02	-5.043E+03	5.394E+03	-7.291E+02	1.080E+03	6.299E+03
29	1	-2.911E+00	3.844E+01	-4.426E+01	2.279E+02	-2.338E+02	-2.751E+02
		-2.911E+00	5.216E+03	-5.222E+03	7.307E+01	-7.889E+01	-5.298E+03
29	2	2.134E+02	2.132E+02	2.137E+02	-1.854E+03	2.280E+03	2.281E+03
		2.134E+02	2.134E+02	2.135E+02	1.700E+03	-1.273E+03	1.700E+03
29	3	5.348E+01	5.347E+01	5.349E+01	-7.338E+03	7.445E+03	7.445E+03
		5.348E+01	5.348E+01	5.348E+01	-2.414E+03	2.521E+03	2.521E+03
29	4	2.640E+02	3.051E+02	2.229E+02	-8.964E+03	9.492E+03	9.533E+03
		2.640E+02	5.483E+03	-4.955E+03	-6.408E+02	1.169E+03	6.388E+03
30	1	5.002E+00	9.100E+00	9.042E-01	-2.372E+02	2.472E+02	2.513E+02
		5.002E+00	-2.577E+03	2.587E+03	-7.021E+01	8.021E+01	2.663E+03
30	2	-1.904E+02	-1.908E+02	-1.900E+02	-1.955E+03	1.574E+03	-1.956E+03
		-1.904E+02	-1.906E+02	-1.903E+02	-2.853E+02	-9.554E+01	-2.855E+02
30	3	-4.649E+01	-4.593E+01	-4.704E+01	6.365E+03	-6.458E+03	-6.459E+03
		-4.649E+01	-4.630E+01	-4.667E+01	2.090E+03	-2.183E+03	-2.184E+03
30	4	-2.319E+02	-2.276E+02	-2.362E+02	4.173E+03	-4.637E+03	-4.641E+03
		-2.319E+02	-2.814E+03	2.350E+03	1.735E+03	-2.199E+03	-4.781E+03
31	1	5.002E+00	-2.577E+03	2.587E+03	-7.021E+01	8.021E+01	2.663E+03
		5.002E+00	-5.164E+03	5.174E+03	9.675E+01	-8.675E+01	5.266E+03
31	2	-1.904E+02	-1.906E+02	-1.903E+02	-2.853E+02	-9.554E+01	-2.855E+02
		-1.904E+02	-1.903E+02	-1.905E+02	1.385E+03	-1.766E+03	-1.766E+03
31	3	-4.649E+01	-4.630E+01	-4.667E+01	2.090E+03	-2.183E+03	-2.184E+03
		-4.649E+01	-4.666E+01	-4.631E+01	-2.185E+03	2.092E+03	-2.185E+03
31	4	-2.319E+02	-2.814E+03	2.350E+03	1.735E+03	-2.199E+03	-4.781E+03
		-2.319E+02	-5.401E+03	4.937E+03	-7.031E+02	2.393E+02	-5.872E+03
32	1	5.002E+00	5.121E+00	4.883E+00	2.637E+02	-2.537E+02	2.638E+02
		5.002E+00	5.174E+03	-5.164E+03	9.675E+01	-8.675E+01	5.266E+03
32	2	-1.904E+02	-1.908E+02	-1.901E+02	-1.773E+03	1.392E+03	-1.773E+03
		-1.904E+02	-1.905E+02	-1.903E+02	1.385E+03	-1.766E+03	-1.766E+03
32	3	4.180E+01	4.235E+01	4.126E+01	-6.371E+03	6.455E+03	6.455E+03
		4.180E+01	4.198E+01	4.162E+01	-2.096E+03	2.180E+03	2.180E+03
32	4	-1.436E+02	-1.433E+02	-1.440E+02	-7.880E+03	7.593E+03	-7.881E+03
		-1.436E+02	5.025E+03	-5.312E+03	-6.148E+02	3.276E+02	-5.784E+03
33	1	2.243E+02	6.854E+03	-6.405E+03	4.564E+01	4.029E+02	7.033E+03
		2.243E+02	-1.094E+04	1.139E+04	3.086E+02	1.399E+02	<u>1.147E+04</u>
33	2	2.074E+02	2.030E+02	2.119E+02	-4.350E+03	4.765E+03	4.769E+03
		2.074E+02	2.009E+02	2.140E+02	6.424E+03	-6.010E+03	6.431E+03
33	3	-1.579E+02	2.607E+02	-5.764E+02	4.487E+03	-4.803E+03	-5.221E+03
		-1.579E+02	-2.958E+02	-1.997E+01	-1.711E+03	1.395E+03	-1.848E+03
33	4	2.738E+02	7.318E+03	-6.770E+03	1.826E+02	3.651E+02	7.405E+03
		2.738E+02	-1.104E+04	1.158E+04	5.023E+03	-4.475E+03	1.633E+04

EQE ENGINEERING

SHEET 3.1-40JOB NO. 42112 JOB Oyster Creek A-46 Cable Trav EvaluationsBY TDA DATE 3-16-95CALC. NO. 002 SUBJECTCK PRB DATE 3-22-95

34	1	2.243E+02	-7.808E+03	6.257E+03	4.401E+02	8.459E+00	8.472E+03
		2.243E+02	1.139E+04	-1.094E+04	3.086E+02	1.399E+02	<u>1.147E+04</u>
34	2	2.074E+02	2.150E+02	1.998E+02	-5.528E+03	5.943E+03	5.951E+03
		2.074E+02	2.140E+02	2.009E+02	6.424E+03	-6.010E+03	6.431E+03
34	3	1.592E+02	5.754E+02	-2.569E+02	-4.492E+03	4.811E+03	5.227E+03
		1.592E+02	2.971E+02	2.135E+01	-1.393E+03	1.712E+03	1.850E+03
34	4	5.909E+02	-7.018E+03	8.200E+03	-9.580E+03	1.076E+04	1.837E+04
		5.909E+02	1.190E+04	-1.072E+04	5.340E+03	-4.158E+03	1.665E+04
35	1	1.243E+03	1.244E+03	1.242E+03	7.120E+03	-4.634E+03	7.121E+03
		1.243E+03	-2.185E+03	4.671E+03	-3.419E+03	5.905E+03	9.333E+03
35	2	3.427E+01	3.548E+01	3.306E+01	2.115E+02	-1.430E+02	2.127E+02
		3.427E+01	4.208E+03	-4.140E+03	-1.086E+02	1.771E+02	4.351E+03
35	3	-2.848E+02	-2.848E+02	-2.848E+02	-1.134E+04	1.077E+04	-1.134E+04
		-2.848E+02	-2.882E+02	-2.813E+02	1.152E+04	-1.209E+04	-1.209E+04
35	4	9.926E+02	9.949E+02	9.903E+02	-4.007E+03	5.992E+03	5.995E+03
		9.926E+02	1.735E+03	2.503E+02	7.990E+03	-6.005E+03	8.732E+03
36	1	1.188E+03	-2.240E+03	4.616E+03	-6.311E+02	3.007E+03	6.435E+03
		1.188E+03	-3.063E+03	5.439E+03	-1.980E+02	2.574E+03	6.825E+03
36	2	3.386E+01	4.208E+03	-4.141E+03	-6.490E+01	1.326E+02	4.307E+03
		3.386E+01	4.774E+03	-4.706E+03	3.191E+01	3.582E+01	4.776E+03
36	3	-1.443E+02	-1.478E+02	-1.408E+02	2.472E+02	-5.358E+02	-5.393E+02
		-1.443E+02	-1.486E+02	-1.400E+02	6.838E+03	-7.127E+03	-7.131E+03
36	4	1.077E+03	1.821E+03	3.343E+02	-4.488E+02	2.604E+03	3.347E+03
		1.077E+03	1.562E+03	5.927E+02	6.672E+03	-4.517E+03	7.157E+03
37	1	1.108E+03	-3.143E+03	5.359E+03	3.109E+03	-8.939E+02	7.360E+03
		1.108E+03	-3.967E+03	6.182E+03	2.759E+02	1.940E+03	7.014E+03
37	2	3.371E+01	4.774E+03	-4.706E+03	4.178E+01	2.565E+01	4.782E+03
		3.371E+01	4.523E+03	-4.455E+03	2.844E+01	3.899E+01	4.528E+03
37	3	-6.244E+01	-6.673E+01	-5.815E+01	1.848E+02	-3.097E+02	-3.140E+02
		-6.244E+01	-6.755E+01	-5.732E+01	4.103E+03	-4.228E+03	-4.233E+03
37	4	1.079E+03	1.564E+03	5.943E+02	3.336E+03	-1.178E+03	3.821E+03
		1.079E+03	4.888E+02	1.669E+03	4.408E+03	-2.250E+03	4.998E+03
38	1	1.049E+03	-4.026E+03	6.123E+03	2.851E+03	-7.534E+02	7.926E+03
		1.049E+03	-4.987E+03	7.084E+03	-2.387E+03	4.484E+03	<u>1.052E+04</u>
38	2	3.365E+01	4.522E+03	-4.455E+03	3.423E+01	3.307E+01	4.523E+03
		3.365E+01	3.579E+03	-3.511E+03	1.556E+01	5.174E+01	3.597E+03
38	3	-1.183E+01	-1.693E+01	-6.733E+00	6.498E+00	-3.016E+01	-3.526E+01
		-1.183E+01	-1.788E+01	-5.778E+00	3.649E+03	-3.673E+03	-3.679E+03
38	4	1.071E+03	4.795E+02	1.662E+03	2.892E+03	-7.505E+02	3.483E+03
		1.071E+03	-1.426E+03	3.567E+03	1.278E+03	8.634E+02	3.774E+03
39	1	7.739E+02	-5.262E+03	6.810E+03	7.821E+03	-6.274E+03	1.386E+04
		7.739E+02	-7.185E+03	8.733E+03	-8.830E+03	1.038E+04	<u>1.834E+04</u>
39	2	3.362E+01	3.577E+03	-3.510E+03	1.578E+01	5.146E+01	3.595E+03
		3.362E+01	-4.533E+03	4.600E+03	4.111E+01	2.613E+01	4.607E+03
39	3	7.415E+00	1.390E+00	1.344E+01	2.090E+03	-2.075E+03	2.096E+03
		7.415E+00	1.717E+00	1.311E+01	-5.997E+02	6.145E+02	6.202E+02
39	4	8.149E+02	-1.683E+03	3.313E+03	9.927E+03	-8.297E+03	1.243E+04
		8.149E+02	-1.172E+04	1.335E+04	-9.389E+03	1.102E+04	2.355E+04

EQE ENGINEERING

SHEET 3-1-41

JOB NO. 42112 JOB Oyster Creek A-46 Cable Trav Evaluations

BY EDA

DATE 3-16-95

CALC. NO. 002 SUBJECT

CK AB

DATE 3-22-95

40	1	1.563E+03	1.565E+03	1.562E+03	1.221E+04	-9.085E+03	1.221E+04
		1.563E+03	4.083E+03	-9.566E+02	-9.125E+02	4.039E+03	6.559E+03
40	2	4.295E+01	4.416E+01	4.174E+01	3.155E+02	-2.296E+02	3.167E+02
		4.295E+01	-5.465E+03	5.551E+03	1.316E+00	8.459E+01	5.593E+03
40	3	2.852E+02	2.852E+02	2.852E+02	1.597E+04	-1.540E+04	1.597E+04
		2.852E+02	3.071E+02	2.633E+02	-1.341E+04	1.398E+04	1.401E+04
40	4	1.892E+03	1.894E+03	1.889E+03	2.850E+04	-2.471E+04	2.850E+04
		1.892E+03	-1.075E+03	4.858E+03	-1.432E+04	1.811E+04	2.107E+04
41	1	1.520E+03	4.040E+03	-1.001E+03	4.122E+02	2.627E+03	5.147E+03
		1.520E+03	4.644E+03	-1.605E+03	2.248E+02	2.814E+03	5.939E+03
41	2	4.336E+01	-5.465E+03	5.551E+03	-2.070E+01	1.074E+02	5.616E+03
		4.336E+01	-6.284E+03	6.371E+03	7.754E+01	9.171E+00	6.405E+03
41	3	1.447E+02	1.666E+02	1.228E+02	-1.919E+03	2.209E+03	2.231E+03
		1.447E+02	1.719E+02	1.176E+02	-6.505E+03	6.795E+03	6.822E+03
41	4	1.708E+03	-1.258E+03	4.673E+03	-1.528E+03	4.943E+03	7.909E+03
		1.708E+03	-1.468E+03	4.883E+03	-6.203E+03	9.618E+03	1.279E+04
42	1	1.387E+03	4.512E+03	-1.738E+03	3.933E+03	-1.159E+03	7.058E+03
		1.387E+03	5.116E+03	-2.342E+03	4.786E+02	2.296E+03	6.025E+03
42	2	4.351E+01	-6.284E+03	6.371E+03	6.320E+01	2.381E+01	6.391E+03
		4.351E+01	-5.838E+03	5.925E+03	5.128E+01	3.573E+01	5.933E+03
42		6.287E+01	9.003E+01	3.571E+01	1.039E+02	2.185E+01	1.310E+02
		6.287E+01	9.529E+01	3.045E+01	-4.140E+03	4.266E+03	4.298E+03
42	4	1.493E+03	-1.682E+03	4.669E+03	4.100E+03	-1.113E+03	7.275E+03
		1.493E+03	-6.266E+02	3.613E+03	-3.610E+03	6.597E+03	8.717E+03
43	1	1.305E+03	5.034E+03	-2.424E+03	2.925E+03	-3.140E+02	6.654E+03
		1.305E+03	5.739E+03	-3.128E+03	-3.037E+03	5.648E+03	1.008E+04
43	2	4.357E+01	-5.839E+03	5.926E+03	4.707E+01	4.007E+01	5.929E+03
		4.357E+01	-4.398E+03	4.485E+03	3.007E+01	5.707E+01	4.499E+03
43	3	1.226E+01	4.470E+01	-2.018E+01	-3.689E+01	6.141E+01	9.385E+01
		1.226E+01	5.085E+01	-2.632E+01	-3.641E+03	3.666E+03	3.704E+03
43	4	1.361E+03	-7.597E+02	3.482E+03	2.935E+03	-2.125E+02	5.056E+03
		1.361E+03	1.392E+03	1.331E+03	-6.648E+03	9.371E+03	9.401E+03
44	1	9.695E+02	5.402E+03	-3.463E+03	7.432E+03	-5.493E+03	1.187E+04
		9.695E+02	6.811E+03	-4.872E+03	-1.067E+04	1.261E+04	1.845E+04
44	2	4.360E+01	-4.399E+03	4.487E+03	2.502E+01	6.218E+01	4.505E+03
		4.360E+01	5.973E+03	-5.886E+03	5.369E+01	3.351E+01	5.983E+03
44	3	-6.982E+00	3.163E+01	-4.560E+01	-2.082E+03	2.068E+03	-2.120E+03
		-6.982E+00	4.616E+01	-6.013E+01	5.966E+02	-6.105E+02	-6.637E+02
44	4	1.006E+03	1.035E+03	9.776E+02	5.376E+03	-3.363E+03	5.404E+03
		1.006E+03	1.283E+04	-1.082E+04	-1.002E+04	1.203E+04	2.385E+04
45	1	-8.728E+00	-9.713E+00	-7.743E+00	5.868E+03	-5.885E+03	-5.886E+03
		-8.728E+00	1.285E+02	-1.459E+02	-3.621E+03	3.603E+03	-3.758E+03
45	2	-2.089E-01	-1.423E+00	1.005E+00	1.771E+02	-1.775E+02	-1.787E+02
		-2.089E-01	-3.010E+02	3.006E+02	-9.992E+01	9.951E+01	-4.008E+02
45	3	-1.954E+01	-1.953E+01	-1.954E+01	-1.107E+04	1.103E+04	-1.107E+04
		-1.954E+01	-1.835E+01	-2.073E+01	-1.047E+03	1.008E+03	-1.048E+03
45	4	-2.848E+01	-3.067E+01	-2.628E+01	-5.028E+03	4.971E+03	-5.030E+03
		-2.848E+01	-1.909E+02	1.340E+02	-4.767E+03	4.710E+03	-4.930E+03

EQE ENGINEERING

SHEET 3.1-42

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations

BY TDA DATE 3-16-95

CALC. NO. 002 SUBJECT _____

CK DB DATE 3-22-95

46	1	-8.728E+00	1.285E+02	-1.459E+02	-3.621E+03	3.603E+03	-3.758E+03
		-8.728E+00	2.666E+02	-2.841E+02	-1.311E+04	1.309E+04	-1.338E+04
46	2	-2.089E-01	-3.010E+02	3.006E+02	-9.992E+01	9.951E+01	-4.008E+02
		-2.089E-01	-6.007E+02	6.002E+02	-3.769E+02	3.765E+02	-9.773E+02
46	3	-1.954E+01	-1.835E+01	-2.073E+01	-1.047E+03	1.008E+03	-1.048E+03
		-1.954E+01	-1.716E+01	-2.192E+01	8.980E+03	-9.019E+03	-9.021E+03
46	4	-2.848E+01	-1.909E+02	1.340E+02	-4.767E+03	4.710E+03	-4.930E+03
		-2.848E+01	-3.512E+02	2.942E+02	-4.506E+03	4.449E+03	-4.829E+03
47	1	8.728E+01	3.619E+02	-1.874E+02	-2.366E+04	2.384E+04	2.411E+04
		8.728E+01	8.728E+01	8.728E+01	8.728E+01	8.728E+01	8.728E+01
47	2	2.089E+00	-5.991E+02	6.033E+02	-6.471E+02	6.513E+02	1.253E+03
		2.089E+00	2.089E+00	2.089E+00	2.089E+00	2.089E+00	2.089E+00
47	3	1.954E+02	1.978E+02	1.930E+02	-6.488E+03	6.879E+03	6.881E+03
		1.954E+02	1.954E+02	1.954E+02	1.954E+02	1.954E+02	1.954E+02
47	4	2.848E+02	-3.944E+01	6.090E+02	-3.080E+04	3.137E+04	3.169E+04
		2.848E+02	2.848E+02	2.848E+02	2.848E+02	2.848E+02	2.848E+02
48	1	9.029E+01	9.094E+01	8.964E+01	2.933E+03	-2.753E+03	2.934E+03
		9.029E+01	9.060E+01	8.999E+01	-8.707E+01	2.677E+02	2.680E+02
48	2	5.292E+00	4.171E+00	6.414E+00	4.936E+01	-3.877E+01	5.048E+01
		5.292E+00	-7.222E+02	7.328E+02	2.720E+01	-1.661E+01	7.547E+02
48	3	3.370E+01	3.369E+01	3.371E+01	-1.138E+04	1.144E+04	1.144E+04
		3.370E+01	3.370E+01	3.371E+01	-3.695E+03	3.763E+03	3.763E+03
48	4	1.293E+02	1.288E+02	1.298E+02	-8.394E+03	8.653E+03	8.653E+03
		1.293E+02	-5.979E+02	8.565E+02	-3.755E+03	4.01E+03	4.741E+03
49	1	9.029E+01	9.060E+01	8.999E+01	-8.707E+01	2.677E+02	2.680E+02
		9.029E+01	9.025E+01	9.033E+01	-9.397E+02	1.120E+03	1.120E+03
49	2	5.292E+00	-7.222E+02	7.328E+02	2.720E+01	-1.661E+01	7.547E+02
		5.292E+00	-8.364E+02	8.470E+02	5.037E+00	5.548E+00	8.473E+02
49	3	4.992E+01	4.992E+01	4.992E+01	-3.679E+03	3.779E+03	3.779E+03
		4.992E+01	4.992E+01	4.992E+01	4.003E+03	-3.903E+03	4.003E+03
49	4	1.455E+02	-5.817E+02	8.727E+02	-3.739E+03	4.030E+03	4.757E+03
		1.455E+02	-6.962E+02	9.873E+02	3.068E+03	-2.777E+03	3.910E+03
50	1	9.029E+01	9.068E+01	8.991E+01	1.459E+03	-1.278E+03	1.459E+03
		9.029E+01	9.033E+01	9.025E+01	-9.397E+02	1.120E+03	1.120E+03
50	2	5.292E+00	8.798E+00	1.787E+00	-1.712E+01	2.771E+01	3.121E+01
		5.292E+00	8.470E+02	-8.364E+02	5.037E+00	5.548E+00	8.473E+02
50	3	7.515E+01	7.513E+01	7.516E+01	1.171E+04	-1.156E+04	1.171E+04
		7.515E+01	7.514E+01	7.515E+01	4.028E+03	-3.877E+03	4.028E+03
50	4	1.707E+02	1.746E+02	1.669E+02	1.315E+04	-1.281E+04	1.315E+04
		1.707E+02	1.012E+03	-6.710E+02	3.093E+03	-2.752E+03	3.935E+03
51	1	-9.957E+01	-9.921E+01	-9.993E+01	3.288E+03	-3.487E+03	-3.487E+03
		-9.957E+01	-9.945E+01	-9.969E+01	-1.093E+03	8.940E+02	-1.093E+03
51	2	-3.358E+00	8.026E-01	-7.518E+00	6.667E+00	-1.338E+01	-1.754E+01
		-3.358E+00	-1.360E+03	1.353E+03	-1.506E+00	-5.210E+00	-1.362E+03
51	3	-8.146E+01	-8.146E+01	-8.145E+01	-6.817E+03	6.654E+03	-6.817E+03
		-8.146E+01	-8.146E+01	-8.145E+01	-2.341E+03	2.178E+03	-2.341E+03
51	4	-1.844E+02	-1.799E+02	-1.889E+02	-3.522E+03	3.153E+03	-3.527E+03
		-1.844E+02	-1.541E+03	1.172E+03	-3.436E+03	3.067E+03	-4.792E+03



EQE ENGINEERING

SHEET 31-43JOB NO 42112 JOB Oyster Creek A-46 Cable Trav EvaluationsBY TSK DATE 3-16-95CALC 002 SUBJECTCK DB DATE 3-22-95

52	1	-9.957E+01	-9.945E+01	-9.969E+01	-1.093E+03	8.940E+02	-1.093E+03
		-9.957E+01	-9.969E+01	-9.945E+01	-3.504E+03	3.305E+03	-3.504E+03
52	2	-3.358E+00	-1.360E+03	1.353E+03	-1.506E+00	-5.210E+00	-1.362E+03
		-3.358E+00	-2.108E+03	2.101E+03	-9.678E+00	2.962E+00	-2.114E+03
52	3	-6.524E+01	-6.524E+01	-6.524E+01	-2.325E+03	2.195E+03	-2.325E+03
		-6.524E+01	-6.524E+01	-6.524E+01	2.150E+03	-2.281E+03	-2.281E+03
52	4	-1.682E+02	-1.524E+03	1.188E+03	-3.420E+03	3.083E+03	-4.776E+03
		-1.682E+02	-2.273E+03	1.937E+03	-1.363E+03	1.027E+03	-3.468E+03
53	1	-9.957E+01	-9.921E+01	-9.993E+01	3.741E+03	-3.940E+03	-3.940E+03
		-9.957E+01	-9.945E+01	-9.969E+01	-3.504E+03	3.305E+03	-3.504E+03
53	2	-3.358E+00	-7.424E+00	7.083E-01	-1.785E+01	1.113E+01	-2.192E+01
		-3.358E+00	2.101E+03	-2.108E+03	-9.678E+00	2.962E+00	-2.114E+03
53	3	1.044E+01	1.043E+01	1.044E+01	6.702E+03	-6.681E+03	6.702E+03
		1.044E+01	1.043E+01	1.044E+01	2.275E+03	-2.205E+03	2.226E+03
53	4	-9.249E+01	-9.620E+01	-8.878E+01	1.042E+04	-1.061E+04	-1.061E+04
		-9.249E+01	2.012E+03	-2.197E+03	-1.287E+03	1.102E+03	-3.392E+03
54	1	-5.048E+01	-5.001E+01	-5.095E+01	2.584E+03	-2.685E+03	-2.685E+03
		-5.048E+01	-5.032E+01	-5.064E+01	-6.373E+02	5.364E+02	-6.375E+02
54	2	-8.088E-02	-9.437E+00	9.275E+00	5.778E+00	-5.940E+00	-1.530E+01
		-8.090E-02	-9.397E+02	9.395E+02	2.400E+00	-2.562E+00	-9.422E+02
54	3	-2.427E+01	-2.429E+01	-2.426E+01	-4.172E+03	4.123E+03	-4.172E+03
		-2.427E+01	-2.428E+01	-2.427E+01	-1.405E+03	1.356E+03	-1.405E+03
54	4	-7.483E+01	-8.373E+01	-6.594E+01	-1.582E+03	1.433E+03	-1.591E+03
		-7.483E+01	-1.014E+03	8.646E+02	-2.040E+03	1.890E+03	-2.979E+03
55	1	-5.048E+01	-5.032E+01	-5.064E+01	-6.373E+02	5.364E+02	-6.375E+02
		-5.048E+01	-5.064E+01	-5.032E+01	-1.986E+03	1.885E+03	-1.987E+03
55	2	-8.090E-02	-9.397E+02	9.395E+02	2.400E+00	-2.562E+00	-9.422E+02
		-8.087E-02	-1.326E+03	1.326E+03	-9.780E-01	8.163E-01	-1.327E+03
55	3	-9.860E+00	-9.864E+00	-9.856E+00	-1.390E+03	1.371E+03	-1.390E+03
		-9.860E+00	-9.856E+00	-9.864E+00	1.377E+03	-1.396E+03	-1.396E+03
55	4	-6.042E+01	-9.999E+02	8.790E+02	-2.025E+03	1.904E+03	-2.965E+03
		-6.042E+01	-1.386E+03	1.265E+03	-6.107E+02	4.898E+02	1.936E+03
56	1	-5.048E+01	-5.001E+01	-5.095E+01	2.477E+03	-2.578E+03	-2.579E+03
		-5.048E+01	-5.032E+01	-5.064E+01	-1.986E+03	1.885E+03	-1.987E+03
56	2	-8.088E-02	1.093E+01	-1.109E+01	-4.356E+00	4.194E+00	-1.537E+01
		-8.087E-02	1.326E+03	-1.326E+03	-9.780E-01	8.163E-01	-1.327E+03
56	3	3.519E+01	3.517E+01	3.520E+01	4.189E+03	-4.118E+03	4.189E+03
		3.519E+01	3.518E+01	3.519E+01	1.422E+03	-1.351E+03	1.422E+03
56	4	-1.538E+01	-3.902E+00	-2.685E+01	6.662E+03	-6.693E+03	-6.704E+03
		-1.538E+01	1.310E+03	-1.341E+03	-5.656E+02	5.349E+02	-1.891E+03
57	1	-8.067E+01	-7.965E+01	-8.170E+01	1.040E+04	-1.056E+04	-1.056E+04
		-8.067E+01	-8.035E+01	-8.100E+01	-4.630E+03	4.468E+03	-4.630E+03
57	2	8.186E-01	1.462E+01	-1.298E+01	1.064E+00	5.735E-01	1.487E+01
		8.186E-01	-4.430E+03	4.432E+03	-7.111E-01	2.348E+00	4.433E+03
57	3	-1.303E+02	-1.327E+02	-1.279E+02	-1.709E+03	1.448E+03	-1.711E+03
		-1.303E+02	-1.311E+02	-1.295E+02	-6.562E+02	3.956E+02	-6.570E+02
57	4	-2.102E+02	-1.977E+02	-2.226E+02	8.695E+03	-9.115E+03	-9.128E+03
		-2.102E+02	-4.642E+03	4.221E+03	-5.287E+03	4.866E+03	-9.718E+03



EQE ENGINEERING

SHEET 3.1-44JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray EvaluationsBY RDADATE 3-16-95CALC. NO. 002 SUBJECT _____CK GPDATE 3-22-95

58	1	-8.067E+01	-8.035E+01	-8.100E+01	-4.630E+03	4.468E+03	-4.630E+03
		-8.067E+01	-8.105E+01	-8.030E+01	-7.642E+03	7.481E+03	-7.643E+03
58	2	8.186E-01	-4.430E+03	4.432E+03	-7.111E-01	2.348E+00	4.433E+03
		8.186E-01	-5.338E+03	5.339E+03	-2.486E+00	4.123E+00	5.343E+03
58	3	-3.661E+01	-3.741E+01	-3.582E+01	-5.625E+02	4.893E+02	-5.633E+02
		-3.661E+01	-3.581E+01	-3.742E+01	4.899E+02	-5.631E+02	-5.639E+02
58	4	-1.165E+02	-4.548E+03	4.315E+03	-5.193E+03	4.960E+03	-9.624E+03
		-1.165E+02	-5.454E+03	5.222E+03	-7.155E+03	6.922E+03	-1.249E+04
59	1	-8.067E+01	-7.960E+01	-8.175E+01	1.072E+04	-1.089E+04	-1.089E+04
		-8.067E+01	-8.030E+01	-8.105E+01	-7.642E+03	7.481E+03	-7.643E+03
59	2	8.186E-01	-1.185E+01	1.349E+01	-4.261E+00	5.898E+00	1.857E+01
		8.186E-01	5.339E+03	-5.338E+03	-2.486E+00	4.123E+00	5.343E+03
59	3	1.292E+02	1.268E+02	1.316E+02	1.708E+03	-1.450E+03	1.710E+03
		1.292E+02	1.283E+02	1.300E+02	6.556E+02	-3.973E+02	6.564E+02
59	4	4.930E+01	3.530E+01	6.329E+01	1.243E+04	-1.233E+04	1.244E+04
		4.930E+01	5.387E+03	-5.289E+03	-6.989E+03	7.088E+03	1.243E+04

1**** End of file

JOB NO. 47112 JOB OYSTER CREEK A-46
 CALC. NO. 002 SUBJECT CABLE TRAY EVALUATIONS

BY BDA DATE 3-13-95
 CHK'D PB DATE 3-14-95

ANALYTICAL REVIEW No. RB-23-03

The support is suspended from the ceiling on 1/2" rods and braced to the wall.

Determine tray weight: Per Section 8.3.9 of the GIP, cable tray weight may be estimated as 25 psf for a 4" deep tray. All of the trays are 2 foot wide which yields the following linear weight for a 100% full tray.

$$wt := (25 \text{ psf}) \cdot 2 \text{ ft}$$

$$wt = 4.17 \frac{\text{lb}}{\text{in}}$$

$$\text{psf} = \frac{\text{lb}}{\text{ft}^2}$$

$$\text{psi} = \frac{\text{lb}}{\text{in}^2}$$

Determine conduit weight: Per Section 8.3.9 of the GIP, find the following conduit weights:

$$\text{three_quarter} := 1.4 \frac{\text{lb}}{\text{ft}}$$

$$\text{one} := 2.2 \frac{\text{lb}}{\text{ft}}$$

$$\text{one_one_half} := 3.6 \frac{\text{lb}}{\text{ft}}$$

$$\text{four} := 16.5 \frac{\text{lb}}{\text{ft}}$$

$$\text{one_one_quarter} := 3.6 \frac{\text{lb}}{\text{ft}}$$

The support will be evaluated using the ALGOR SuperSap computer program. The computer model is as shown along with the location of the concentrated loads. The model will be run with a dead load case.

Determine concentrated loads: The loading will be derived on a nodal basis using the as-built information and cable tray fills.

$$\text{Node_14} := \text{three_quarter} \cdot 7 \text{ ft}$$

$$\text{Node_14} = 10 \cdot \text{lb}$$

$$\text{Node_16} := ((1 \cdot \text{one_one_half}) + (1 \cdot \text{one})) \cdot 7 \text{ ft}$$

$$\text{Node_16} = 41 \cdot \text{lb}$$

$$\text{Node_18} := \text{four} \cdot 10 \text{ ft}$$

$$\text{Node_18} = 165 \cdot \text{lb}$$

$$\text{Node_20} := wt \cdot (6 \text{ ft}) \cdot 0.20$$

$$\text{Node_20} = 60 \cdot \text{lb}$$

$$\text{Node_23} := wt \cdot (6 \text{ ft}) \cdot 0.20$$

$$\text{Node_23} = 60 \cdot \text{lb}$$

$$\text{Node_29} := wt \cdot (6 \text{ ft}) \cdot 0.05$$

$$\text{Node_29} = 15 \cdot \text{lb}$$

$$\text{Node_35} := (wt \cdot (6 \text{ ft}) \cdot 0.05) + ((9 \cdot \text{three_quarter}) + (6 \cdot \text{one})) \cdot 5 \text{ ft}$$

$$\text{Node_35} = 144 \cdot \text{lb}$$

$$\text{Node_26} := wt \cdot (6 \text{ ft}) \cdot 0.10$$

$$\text{Node_26} = 30 \cdot \text{lb}$$



EQE ENGINEERING

SHEET NO. 3.2-2JOB NO. 42112 JOB OYSTER CREEK A-46BY TJA DATE 3-13-95CALC. NO. 002 SUBJECT CABLE TRAY EVALUATIONSCHK'D PB DATE 3-14-95

$$\text{Node}_{32} := \text{wt} \cdot (6\text{-ft}) \cdot 0.20$$

$$\text{Node}_{32} = 60\text{-lb}$$

$$\text{Node}_{38} := \text{wt} \cdot (6\text{-ft}) \cdot 0.05$$

$$\text{Node}_{38} = 15\text{-lb}$$

$$\text{Node}_{44} := ((\text{wt} \cdot 0.75) + (\text{one} + 9\text{-three_quarter})) \cdot 41\text{-in}$$

$$\text{Node}_{44} = 179\text{-lb}$$

$$\text{Node}_{48} := ((1\text{-three_quarter}) + (1\text{-one}) + (1\text{-one_one_quarter})) \cdot 5\text{-ft}$$

$$\text{Node}_{48} = 36\text{-lb}$$

Determine P1000 properties: From Unistrut Catalog Rev. 10A.

$$A := 0.555\text{-in}^2$$

$$S_3 := 0.203\text{-in}^3$$

$$S_2 := 0.294\text{-in}^3$$

$$I_3 := 0.186\text{-in}^4$$

$$I_2 := 0.239\text{-in}^4$$

Per Figure 8-6 of the GIP, the first evaluation step is the entire support, including eccentricities, for a 1.0 times dead load using normal manufacturer allowable stresses.

Check member stresses: This step was performed by the SuperSap program in load case 1. From page 32-19 find the maximum bending stress to be 11.1 ksi in members 47 and 51. Per Unistrut Catalog 10A the allowable bending stress is 25 ksi. Therefore the bending stresses are acceptable for 1.0 times dead load. The program also checked the axial stress on the 1/2" rods and found the maximum to be:

$$\text{stress}_{48} := 1830\text{-psi}$$

Allowable stress, assuming A307 material, is 21 ksi which exceeds the actual stress.

Check the 1/2" rod connections to the ceiling mounted P1000 strut channel: These rods are threaded into standard unistrut nuts that have an allowable pullout load of 2,000 lbs. The members to be checked are 13, 17, 20, 21, 30, 35, 38, 39, 48, 54, and 57. The maximum is found to be:

$$\text{pullout}_{48} := 260\text{-lb}$$

As the actual pullout load is less than the allowable pullout load the connections are adequate.

Check the anchor bolts: These are 1/2" shell anchors.

At node 2 there are two members framing into it, 1 and 2:

$$\text{shear2}_1 := 0\text{-lb}$$

$$\text{shear2}_2 := 162\text{-lb}$$

$$\text{pullout_node}_1 := \text{shear2}_1 + \text{shear2}_2$$

$$\text{pullout_node}_1 = 162\text{-lb}$$

JOB NO. 42112 JOB OYSTER CREEL A-46BY TRDA DATE 3-13-95CALC. NO. 002 SUBJECT CABLE TAIL EVALUATIONSCHK'D DB DATE 3-14-95

At node 9 there are two members framing into it, 8 and 9:

$$\text{shear2_8} := 269\text{-lb}$$

$$\text{shear2_9} := 70\text{-lb}$$

$$\text{pullout_node_9} := \text{shear2_8} + \text{shear2_9}$$

$$\text{pullout_node_9} = 339\text{-lb}$$

At node 12 there are two members framing into it, 11 and 12:

$$\text{shear2_11} := 10\text{-lb}$$

$$\text{shear2_12} := 260\text{-lb}$$

$$\text{pullout_node_12} := \text{shear2_11} + \text{shear2_12}$$

$$\text{pullout_node_12} = 270\text{-lb}$$

At node 42 there is only one member framing into it, 53:

$$\text{axial_53} := 0\text{-lb}$$

$$\text{shear2_53} := 63\text{-lb}$$

$$\text{pullout_node_42} := \text{axial_53}$$

$$\text{pullout_node_42} = 0\text{-lb}$$

$$\text{shear_node_42} := \text{shear2_53}$$

$$\text{shear_node_42} = 63\text{-lb}$$

Check 1/2" shell anchors:

Determine anchor bolt allowable loads: Use methodology of Appendix C of the GIP.

From Table C.2-1 of the GIP find the following anchor bolt allowable loads for a 1/2" shell anchor:

$$F_t := 2290\text{-lb}$$

$$F_v := 2380\text{-lb}$$

Reduction Factors:

$$RT_p := 0.75$$

$$RT_s := 0.75$$

Reduction factor for unknown anchor bolt type. (C.2.2)

$$RF_p := \frac{3000}{4000}$$

$$RF_s := \frac{3000}{10000} + 0.65$$

Reduction factor for assumed concrete strength = 3000 psi. (C.2.7)

$$RF_p = 0.75$$

$$RF_s = 0.95$$



EQE ENGINEERING

SHEET NO. 3.2-4JOB NO. 02112 JOB OYSTER CREEK A-46BY TDA DATE 3-13-95CALC. NO. 002 SUBJECT CABLE TRAY EVALUATIONSCHK'D PB DATE 3-14-95

Revised Allowable Loads:

$$F_t := F_t \cdot RT_p \cdot RF_p$$

$$F_v := F_v \cdot RT_s \cdot RF_s$$

$$F_t = 1288 \cdot \text{lb}$$

$$F_v = 1696 \cdot \text{lb}$$

Check Interaction: Use highest reaction load.

$$\frac{\text{pullout_node_12}}{F_t} + \frac{\text{shear_node_42}}{F_v} = 0.25^* < 1.0, \text{ Anchor Bolts are acceptable for 1.0 times dead load.}$$

CONCLUSION: The support is adequate for 1.0 times the dead load.

Per Figure 8-6 of the GIP, the next evaluation step is the Vertical Capacity Check. This is a check of the anchorage and primary support connections using an applied load of 3.0 times dead load.

$$3 \cdot \left(\frac{\text{pullout_node_12}}{F_t} + \frac{\text{shear_node_42}}{F_v} \right) = 0.74^* < 1.0, \text{ Anchor Bolts are acceptable for 3.0 times dead load.}$$

CONCLUSION: The support is adequate for 3.0 times the dead load.

* Checker's note: conservative to use highest pullout and shear loads, normally use at same bolt location.

JOB NO. 42112 JOB OYSTER CREEK A-46 BY TDA DATE 3-13-95
 CALC. NO. 002 SUBJECT CABLE TRAY EVALUATIONS CHK'D PB DATE 3-14-95

Per Figure 8-6 of the GIP, the next evaluation step is the Ductile Response Check.

The Lateral Load check is in the form of an equivalent static load coefficient. Per Section 8.3.4 of the GIP, the lateral load check can consist of a dead load combined with, for elevations lower than about 40' above plant effective grade, a transverse acceleration of 2.5 times the floor ZPA.

The floor ZPA is defined as 0.17g in EQE Report 50124-R-002 for the 23'-6" elevation.

$$ZPA := 0.17 \quad accel_horiz := 2.5 \cdot ZPA \quad accel_horiz = 0.425 \quad g$$

Conservatively apply all of the lateral load at the single wall connection:

$$Lat_load := accel_horiz \cdot (Node_14 + Node_16 + Node_18 + Node_20 + Node_23 + Node_29 + Node_35 \dots \\ + Node_26 + Node_32 + Node_38 + Node_44 + Node_48)$$

$$Lat_load = 346 \cdot lb$$

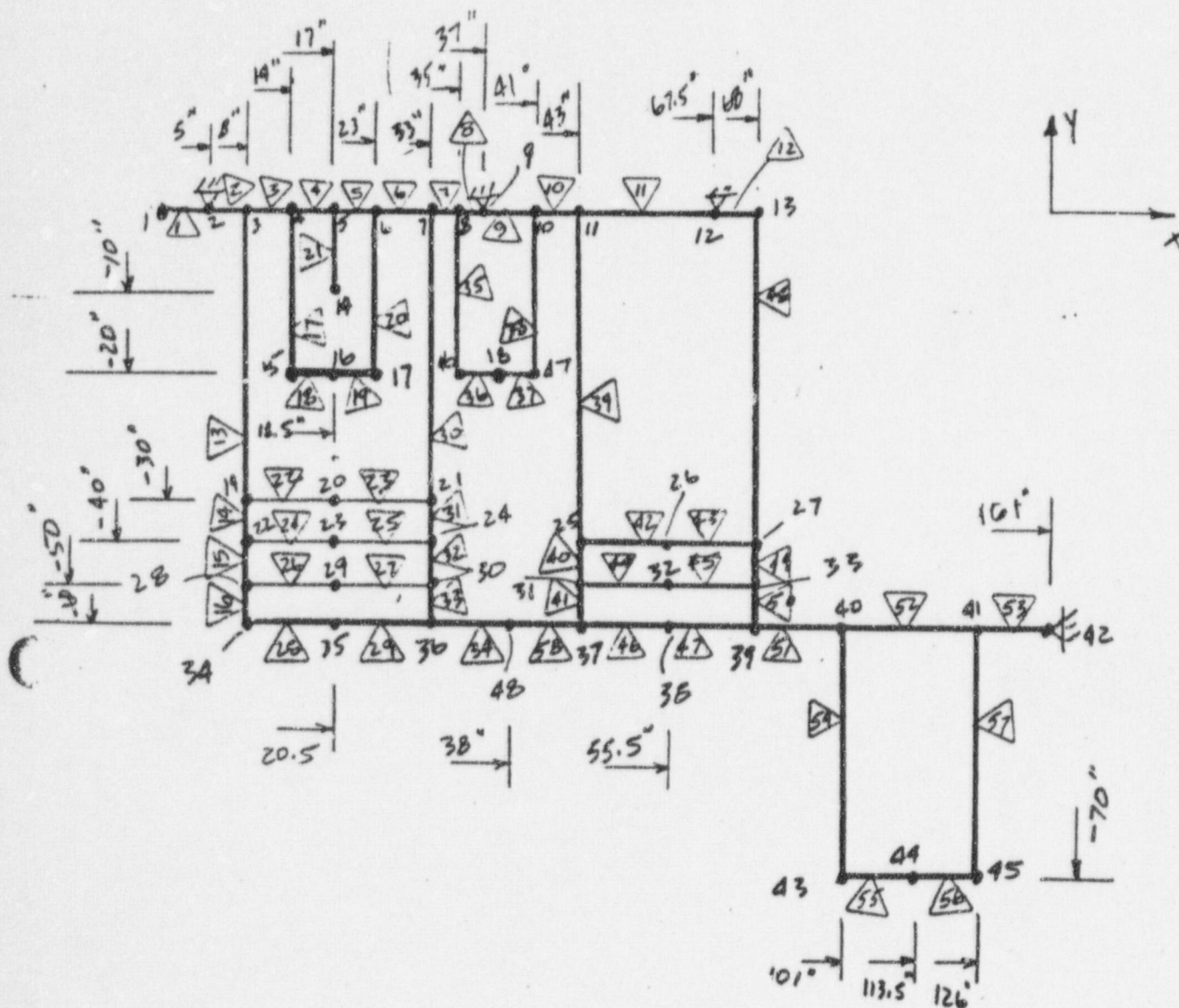
Check Interaction Equation:

$$pullout_node_42 := pullout_node_42 + Lat_load \quad pullout_node_42 = 346 \cdot lb$$

$$shear_node_42 = 63 \cdot lb$$

$$\frac{pullout_node_42}{F_t} + \frac{shear_node_42}{F_v} = 0.31 < 1.0, \text{ Anchor Bolts are acceptable for 1.0 times dead load.}$$

CONCLUSION: The support is found to be seismically adequate per the review guidelines of Section 8 of the GIP.

JOB NO. 42112 JOB OYSTER CREEK A-46BY RDA DATE 2-17-95CALC. NO. 002 SUBJECT CABLE TRAY EVALUATION'SCHK'D DB DATE 3-14-95

EQE ENGINEERING

SHEET 3.2-7

JOB NO. 42112 JOB Oyster Creek A-46 Cable Trav Evaluations

BY EDA DATE 3-13-95

CALC. NO. 002 SUBJECT _____

CK PB DATE 3-14-95

1**** Algor (c) Linear Stress Analysis - SSAP0H Rel. 01-SEP-94 Ver. 11.06-3H

DATE: MARCH 13, 1995

TIME: 10:55 AM

INPUT FILE.....rb2303

Analytical Review No. RB-23-003, Oyster Creek

1**** CONTROL INFORMATION

number of node points	(NUMNP)	=	48
number of element types	(NELTYP)	=	1
number of load cases	(LL)	=	1
number of frequencies	(NF)	=	0
geometric stiffness flag	(GEOSTF)	=	0
analysis type code	(NDYN)	=	0
solution mode	(MODEX)	=	0
equations per block	(KEQB)	=	0
weight and c.g. flag	(IWTCG)	=	0
bandwidth minimization flag	(MINBND)	=	0
gravitational constant	(GRAV)	=	3.8600E+02

bandwidth minimization specified

1**** NODAL DATA

NODE NO.	BOUNDARY CONDITION CODES						NODAL POINT COORDINATES				T
	DX	DY	DZ	RX	RY	RZ	X	Y	Z		
1	0	0	0	0	0	0	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
2	1	1	1	1	0	0	5.000E+00	0.000E+00	0.000E+00	0.000E+00	
3	0	0	0	0	0	0	8.000E+00	0.000E+00	0.000E+00	0.000E+00	
4	0	0	0	0	0	0	1.400E+01	0.000E+00	0.000E+00	0.000E+00	
5	0	0	0	0	0	0	1.700E+01	0.000E+00	0.000E+00	0.000E+00	
6	0	0	0	0	0	0	2.300E+01	0.000E+00	0.000E+00	0.000E+00	
7	0	0	0	0	0	0	3.300E+01	0.000E+00	0.000E+00	0.000E+00	
8	0	0	0	0	0	0	3.500E+01	0.000E+00	0.000E+00	0.000E+00	
9	1	1	1	1	0	0	3.700E+01	0.000E+00	0.000E+00	0.000E+00	
10	0	0	0	0	0	0	4.100E+01	0.000E+00	0.000E+00	0.000E+00	
11	0	0	0	0	0	0	4.300E+01	0.000E+00	0.000E+00	0.000E+00	
12	1	1	1	1	0	0	6.750E+01	0.000E+00	0.000E+00	0.000E+00	
13	0	0	0	0	0	0	6.800E+01	0.000E+00	0.000E+00	0.000E+00	
14	0	0	0	0	0	0	1.700E+01	-1.000E+01	0.000E+00	0.000E+00	
15	0	0	0	0	0	0	1.400E+01	-2.000E+01	0.000E+00	0.000E+00	
16	0	0	0	0	0	0	1.850E+01	-2.000E+01	0.000E+00	0.000E+00	
17	0	0	0	0	0	0	2.300E+01	-2.000E+01	0.000E+00	0.000E+00	
18	0	0	0	0	0	0	3.800E+01	-2.000E+01	0.000E+00	0.000E+00	
19	0	0	0	0	0	0	8.000E+00	-3.000E+01	0.000E+00	0.000E+00	
20	0	0	0	0	0	0	2.050E+01	-3.000E+01	0.000E+00	0.000E+00	
21	0	0	0	0	0	0	3.300E+01	-3.000E+01	0.000E+00	0.000E+00	
22	0	0	0	0	0	0	8.000E+00	-4.000E+01	0.000E+00	0.000E+00	
23	0	0	0	0	0	0	2.050E+01	-4.000E+01	0.000E+00	0.000E+00	

EQE ENGINEERING

SHEET 3.2-8

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluation

BY EDA DATE 3-13-95

CALC. NO. 002 SUBJECT

CK VB DATE 3-14-95

24	0	0	0	0	0	0	3.300E+01	-4.000E+01	0.000E+00	0.000E+00
25	0	0	0	0	0	0	4.300E+01	-4.000E+01	0.000E+00	0.000E+00
26	0	0	0	0	0	0	5.550E+01	-4.000E+01	0.000E+00	0.000E+00
27	0	0	0	0	0	0	6.800E+01	-4.000E+01	0.000E+00	0.000E+00
28	0	0	0	0	0	0	8.000E+00	-5.000E+01	0.000E+00	0.000E+00
29	0	0	0	0	0	0	2.050E+01	-5.000E+01	0.000E+00	0.000E+00
30	0	0	0	0	0	0	3.300E+01	-5.000E+01	0.000E+00	0.000E+00
31	0	0	0	0	0	0	4.300E+01	-5.000E+01	0.000E+00	0.000E+00
32	0	0	0	0	0	0	5.550E+01	-5.000E+01	0.000E+00	0.000E+00
33	0	0	0	0	0	0	6.800E+01	-5.000E+01	0.000E+00	0.000E+00
34	0	0	0	0	0	0	8.000E+00	-6.000E+01	0.000E+00	0.000E+00
35	0	0	0	0	0	0	2.050E+01	-6.000E+01	0.000E+00	0.000E+00
36	0	0	0	0	0	0	3.300E+01	-6.000E+01	0.000E+00	0.000E+00
37	0	0	0	0	0	0	4.300E+01	-6.000E+01	0.000E+00	0.000E+00
38	0	0	0	0	0	0	5.550E+01	-6.000E+01	0.000E+00	0.000E+00
39	0	0	0	0	0	0	6.800E+01	-6.000E+01	0.000E+00	0.000E+00
40	0	0	0	0	0	0	1.010E+02	-6.000E+01	0.000E+00	0.000E+00
41	0	0	0	0	0	0	1.260E+02	-6.000E+01	0.000E+00	0.000E+00
42	1	1	1	0	0	0	1.610E+02	-6.000E+01	0.000E+00	0.000E+00
43	0	0	0	0	0	0	1.010E+02	-7.000E+01	0.000E+00	0.000E+00
44	0	0	0	0	0	0	1.135E+02	-7.000E+01	0.000E+00	0.000E+00
45	0	0	0	0	0	0	1.260E+02	-7.000E+01	0.000E+00	0.000E+00
46	0	0	0	0	0	0	3.500E+01	-2.000E+01	0.000E+00	0.000E+00
47	0	0	0	0	0	0	4.100E+01	-2.000E+01	0.000E+00	0.000E+00
48	0	0	0	0	0	0	3.800E+01	-6.000E+01	0.000E+00	0.000E+00

**** PRINT OF EQUATION NUMBERS SUPPRESSED

1**** BEAM ELEMENTS

number of beam elements	=	58
number of area property sets	=	2
number of fixed end force sets	=	0
number of materials	=	1
number of intermediate load sets	=	0

1**** MATERIAL PROPERTIES

INDEX	E	MU	MASS DENSITY	WEIGHT DENSITY	THERMAL EXPANSION			REFERENCE TEMPERATURE
					X	Y	Z	
1	2.90E+07	.300	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.000E+00

1**** AREA PROPERTIES

INDEX	AREAS			TORSION	--FLEXURAL INERTIAS--		
	AXIAL A(1)	SHEAR A(2)	SHEAR A(3)	J(1)	I(2)	I(3)	
1	5.550E-01	3.410E-01	1.710E-01	1.000E-03	2.390E-01	1.860E-01	P1000
2	1.420E-01	1.420E-01	1.420E-01	1.000E+00	1.330E-03	1.330E-03	1/2" thick rods

EQE ENGINEERING

SHEET 3.2-9

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations

BY EDA DATE 3-13-95

CALC. NO. 002 SUBJECT _____

CK PB DATE 3-14-95

1**** STRESS PROPERTIES

INDEX	---SECTION S(2)	MODULI--- S(3)
1	2.940E-01	2.030E-01
2	6.500E-03	6.500E-03

1**** ELEMENT LOAD FACTORS

	CASE A	CASE B	CASE C	CASE D
X-DIR	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Y-DIR	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Z-DIR	0.000E+00	0.000E+00	0.000E+00	0.000E+00

1**** ELEMENT CONNECTIVITY DATA

ELEMENT NO.	NODE I	NODE J	NODE K	MAT'L INDEX	SECTN INDEX	---ELEMENT LOADS---	RELEASE I-END	CODES J-END	MEMBER NO.
						A B C D			
1	1	2	34	1	1	0 0 0 0	0	0	
2	2	3	34	1	1	0 0 0 0	0	0	
3	3	4	34	1	1	0 0 0 0	0	0	
4	4	5	34	1	1	0 0 0 0	0	0	
5	5	6	34	1	1	0 0 0 0	0	0	
6	6	7	34	1	1	0 0 0 0	0	0	
7	7	8	34	1	1	0 0 0 0	0	0	
8	8	9	34	1	1	0 0 0 0	0	0	
9	9	10	34	1	1	0 0 0 0	0	0	
10	10	11	34	1	1	0 0 0 0	0	0	
11	11	12	34	1	1	0 0 0 0	0	0	
12	12	13	34	1	1	0 0 0 0	0	0	
13	3	19	1	1	2	0 0 0 0	1	0	
14	19	22	1	1	2	0 0 0 0	0	0	
15	22	28	1	1	2	0 0 0 0	0	0	
16	28	34	1	1	2	0 0 0 0	0	0	
17	4	15	1	1	2	0 0 0 0	1	0	
18	15	16	1	1	1	0 0 0 0	1	0	
19	17	16	1	1	1	0 0 0 0	1	0	
20	6	17	1	1	2	0 0 0 0	1	0	
21	5	14	1	1	2	0 0 0 0	1	0	
22	19	20	1	1	1	0 0 0 0	1	0	
23	21	20	1	1	1	0 0 0 0	1	0	
24	22	23	1	1	1	0 0 0 0	1	0	
25	24	23	1	1	1	0 0 0 0	1	0	
26	28	29	1	1	1	0 0 0 0	1	0	
27	30	29	1	1	1	0 0 0 0	1	0	
28	34	35	1	1	1	0 0 0 0	1	0	
29	35	36	1	1	1	0 0 0 0	0	0	
30	7	21	1	1	2	0 0 0 0	1	0	
31	21	24	1	1	2	0 0 0 0	0	0	
32	24	30	1	1	2	0 0 0 0	0	0	
33	36	30	1	1	2	0 0 0 0	1	0	

EQE ENGINEERING

SHEET 3.2-10

JOB NO. 42112 JOB Oyster Creek A-46 Cable Trav Evaluations

BY DA DATE 3-13-95

CALC. NO. 002 SUBJECT _____

CK PB DATE 3-14-95

34	36	48	1	1	1	0	0	0	0	0	0
35	8	46	1	1	2	0	0	0	0	1	0
36	46	18	1	1	1	0	0	0	0	1	0
37	47	18	1	1	1	0	0	0	0	1	0
38	10	47	1	1	2	0	0	0	0	1	0
39	11	25	1	1	2	0	0	0	0	1	0
40	25	31	1	1	2	0	0	0	0	0	0
41	37	31	1	1	2	0	0	0	0	1	0
42	25	26	1	1	1	0	0	0	0	1	0
43	27	26	1	1	1	0	0	0	0	1	0
44	31	32	1	1	1	0	0	0	0	1	0
45	33	32	1	1	1	0	0	0	0	1	0
46	37	38	1	1	1	0	0	0	0	0	0
47	38	39	1	1	1	0	0	0	0	0	0
48	13	27	1	1	2	0	0	0	0	1	0
49	27	33	1	1	2	0	0	0	0	0	0
50	33	39	1	1	2	0	0	0	0	0	1
51	39	40	1	1	1	0	0	0	0	0	0
52	40	41	1	1	1	0	0	0	0	0	0
53	41	42	1	1	1	0	0	0	0	0	0
54	40	43	1	1	2	0	0	0	0	1	0
55	43	44	1	1	1	0	0	0	0	1	0
56	45	44	1	1	1	0	0	0	0	1	0
57	41	45	1	1	2	0	0	0	0	1	0
58	48	37	1	1	1	0	0	0	0	0	0

1**** BANDWIDTH MINIMIZATION

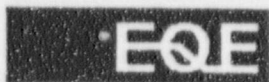
minbnd (bandwidth control parameter) = 1
bandwidth before resequencing = 223
bandwidth after resequencing = 36

**** Hard disk file size information for processor:

Available hard disk space on drive = 5.505 megabytes

1**** NODAL LOADS (STATIC) OR MASSES (DYNAMIC)

NODE NUMBER	LOAD CASE	X-AXIS FORCE	Y-AXIS FORCE	Z-AXIS FORCE	X-AXIS MOMENT	Y-AXIS MOMENT	Z-AXIS MOMENT
14	1	0.000E+00	-1.000E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
16	1	0.000E+00	-4.100E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
18	1	0.000E+00	-1.650E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
20	1	0.000E+00	-6.000E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
23	1	0.000E+00	-6.000E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
26	1	0.000E+00	-3.000E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
29	1	0.000E+00	-1.500E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
32	1	0.000E+00	-6.000E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
35	1	0.000E+00	-1.440E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
38	1	0.000E+00	-1.500E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
44	1	0.000E+00	-1.790E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
48	1	0.000E+00	-3.600E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00



EQE ENGINEERING

SHEET 3.2-11JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray EvaluationsBY RDADATE 3-13-95CALC. NO. 002 SUBJECT _____CK PBDATE 3-14-95

1**** ELEMENT LOAD MULTIPLIERS

load case	case A	case B	case C	case D
1	1.000E+00	1.000E+00	1.000E+00	1.000E+00

**** EQUATION PARAMETERS

Number of equations = 273
Minimum bandwidth = 1
Maximum bandwidth = 36
Average bandwidth = 20
Storage required (bytes) = 47208
Total memory allocated (bytes) = 4526056
Total memory free (bytes) = 4510616

**** Proceeding with in-core fast solver ...

**** Begin in-core solution

**** load case #1

warning: your model may not be tied down
enough or you may have a change in
stiffness somewhere in your model
which is too abrupt. Check DOF:

18

warning: your model may not be tied down
enough or you may have a change in
stiffness somewhere in your model
which is too abrupt. Check DOF:

44

**** End in-core solution



EQE ENGINEERING

SHEET 3.2-12

JOB NO. 42112 JOB Oyster Creek A-46 Cable Trav Evaluations

BY RDA DATE 3-13-95

CALC. NO. 002 SUBJECT

CK PB DATE 3-14-95

1**** STATIC ANALYSIS

LOAD CASE =

1

Displacements/Rotations(degrees) of nodes

NODE number	X- translation	Y- translation	Z- translation	X- rotation	Y- rotation	Z- rotation
1	0.0000E+00	7.2602E-03	0.0000E+00	0.0000E+00	0.0000E+00	-8.3196E-02
2	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	-8.3196E-02
3	0.0000E+00	-4.3487E-03	0.0000E+00	0.0000E+00	0.0000E+00	-7.5433E-02
4	0.0000E+00	-1.0510E-02	0.0000E+00	0.0000E+00	0.0000E+00	-4.0193E-02
5	0.0000E+00	-1.2099E-02	0.0000E+00	0.0000E+00	0.0000E+00	-2.0413E-02
6	0.0000E+00	-1.2202E-02	0.0000E+00	0.0000E+00	0.0000E+00	1.7634E-02
7	0.0000E+00	-4.6528E-03	0.0000E+00	0.0000E+00	0.0000E+00	6.2844E-02
8	0.0000E+00	-2.3032E-03	0.0000E+00	0.0000E+00	0.0000E+00	6.4826E-02
9	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	5.7120E-02
10	0.0000E+00	3.1152E-03	0.0000E+00	0.0000E+00	0.0000E+00	3.6223E-02
11	0.0000E+00	4.2527E-03	0.0000E+00	0.0000E+00	0.0000E+00	2.8491E-02
12	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	-3.7391E-02
13	0.0000E+00	-3.6248E-04	0.0000E+00	0.0000E+00	0.0000E+00	-3.7737E-02
14	0.0000E+00	-1.2123E-02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
15	9.2588E-06	-1.0610E-02	0.0000E+00	0.0000E+00	0.0000E+00	2.6524E-05
16	9.2588E-06	-1.1596E-02	0.0000E+00	0.0000E+00	0.0000E+00	-1.0769E-02
17	9.2588E-06	-1.2302E-02	0.0000E+00	0.0000E+00	0.0000E+00	2.6524E-05
18	0.0000E+00	-1.9742E-04	0.0000E+00	0.0000E+00	0.0000E+00	5.1742E-02
19	0.0000E+00	-5.3725E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
20	0.0000E+00	-9.3065E-03	0.0000E+00	0.0000E+00	0.0000E+00	-9.8330E-04
21	0.0000E+00	-5.8015E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
22	0.0000E+00	-5.6409E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
23	0.0000E+00	-9.5957E-03	0.0000E+00	0.0000E+00	0.0000E+00	-1.0788E-03
24	0.0000E+00	-6.1116E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
25	0.0000E+00	4.4707E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
26	0.0000E+00	-1.0680E-03	0.0000E+00	0.0000E+00	0.0000E+00	-1.6863E-02
27	0.0000E+00	-2.8872E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
28	0.0000E+00	-5.8364E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
29	0.0000E+00	-7.0225E-03	0.0000E+00	0.0000E+00	0.0000E+00	-1.1742E-03
30	0.0000E+00	-6.3488E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
31	0.0000E+00	4.5616E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
32	0.0000E+00	-3.1797E-03	0.0000E+00	0.0000E+00	0.0000E+00	-1.8434E-02
33	0.0000E+00	-3.4819E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
34	0.0000E+00	-6.0137E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
35	0.0000E+00	-1.5403E-02	0.0000E+00	0.0000E+00	0.0000E+00	-1.5375E-03
36	0.0000E+00	-6.5678E-03	0.0000E+00	0.0000E+00	0.0000E+00	6.0761E-02
37	0.0000E+00	4.7254E-03	0.0000E+00	0.0000E+00	0.0000E+00	6.8898E-02
38	0.0000E+00	1.5495E-02	0.0000E+00	0.0000E+00	0.0000E+00	3.9885E-03
39	0.0000E+00	-4.0038E-03	0.0000E+00	0.0000E+00	0.0000E+00	-2.1318E-01
40	0.0000E+00	-2.2705E-01	0.0000E+00	0.0000E+00	0.0000E+00	-3.3485E-01
41	0.0000E+00	-2.7022E-01	0.0000E+00	0.0000E+00	0.0000E+00	1.6676E-01
42	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	5.7872E-01
43	0.0000E+00	-2.2727E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
44	0.0000E+00	-2.5995E-01	0.0000E+00	0.0000E+00	0.0000E+00	-9.8922E-02
45	0.0000E+00	-2.7043E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00



EQE ENGINEERING

SHEET 3.2-13

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations

BY TDA

DATE 3-13-95

CALC. NO. 002 SUBJECT _____

CK PB

DATE 3-14-95

46	0.0000E+00	-2.7039E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
47	0.0000E+00	2.7145E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
48	0.0000E+00	-1.1571E-03	0.0000E+00	0.0000E+00	0.0000E+00	6.4670E-02

1**** TEMPORARY FILE STORAGE (MEGABYTES)

UNIT NO. 7 : .002
UNIT NO. 8 : .002
UNIT NO. 9 : .000
UNIT NO. 10 : .000
UNIT NO. 11 : .003
UNIT NO. 12 : .002
UNIT NO. 13 : .000
UNIT NO. 14 : .000
UNIT NO. 15 : .000
UNIT NO. 17 : .000

TOTAL : .010

1**** End of file

EQE ENGINEERING

SHEET 3.2-14

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations

BY RA DATE 3-13-95

CALC. NO. 002 SUBJECT

CK PB DATE 3-14-95

1**** Algor (c) FEA Stress Processor MKNSO 01-SEP-94, Ver 11.08-3H

DATE: MARCH 13, 1995

TIME: 10:55 AM

INPUT FILE.....rb2303

1**** BEAM ELEMENTS

number of beam elements	=	58
number of area property sets	=	2
number of fixed end force sets	=	0
number of materials	=	1
number of intermediate load sets	=	0

1**** BEAM ELEMENT FORCES AND MOMENTS

ELEMENT NO.	CASE (MODE)	AXIAL FORCE R1	SHEAR FORCE R2	SHEAR FORCE R3	TORSION MOMENT M1	BENDING MOMENT M2	BENDING MOMENT M3
1	1	0.000E+00 0.000E+00	<u>0.000E+00</u> 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00
2	1	0.000E+00 0.000E+00	<u>-1.624E+02</u> 1.624E+02	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 -4.873E+02
3	1	0.000E+00 0.000E+00	-2.189E+01 2.189E+01	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	4.873E+02 -6.186E+02
4	1	0.000E+00 0.000E+00	-1.394E+00 1.394E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	6.186E+02 -6.228E+02
5	1	0.000E+00 0.000E+00	8.606E+00 -8.606E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	6.228E+02 -5.712E+02
6	1	0.000E+00 0.000E+00	2.911E+01 -2.911E+01	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	5.712E+02 -2.801E+02
7	1	0.000E+00 0.000E+00	1.868E+02 -1.868E+02	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	2.801E+02 9.348E+01
8	1	0.000E+00 0.000E+00	2.693E+02 <u>-2.693E+02</u>	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-9.348E+01 6.321E+02
9	1	0.000E+00 0.000E+00	<u>-7.012E+01</u> 7.012E+01	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-6.321E+02 3.516E+02
10	1	0.000E+00 0.000E+00	1.238E+01 -1.238E+01	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-3.516E+02 3.764E+02

EQE ENGINEERING

SHEET 3.2-15

JOB NO. 42112 JOB Oyster Creek A-46 Cable Trav Evaluations

BY TDA DATE 3-13-95

CALC. NO. 002 SUBJECT _____

CK PR DATE 3-14-95

11	1	0.000E+00	<u>-1.006E+01</u>	0.000E+00	0.000E+00	0.000E+00	-3.764E+02
		0.000E+00	1.006E+01	0.000E+00	0.000E+00	0.000E+00	1.300E+02
12	1	0.000E+00	<u>-2.599E+02</u>	0.000E+00	0.000E+00	0.000E+00	-1.300E+02
		0.000E+00	2.599E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
13	<u>1</u>	<u>-1.405E+02</u>	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		1.405E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
14	1	-1.105E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		1.105E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
15	1	-8.052E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		8.052E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
16	1	-7.302E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		7.302E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
17	<u>1</u>	<u>-2.050E+01</u>	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		2.050E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
18	1	0.000E+00	2.050E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		0.000E+00	-2.050E+01	0.000E+00	0.000E+00	0.000E+00	9.225E+01
19	1	0.000E+00	2.050E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		0.000E+00	-2.050E+01	0.000E+00	0.000E+00	0.000E+00	9.225E+01
20	<u>1</u>	<u>-2.050E+01</u>	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		2.050E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
21	<u>1</u>	<u>-1.000E+01</u>	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		1.000E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
22	1	0.000E+00	3.000E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		0.000E+00	-3.000E+01	0.000E+00	0.000E+00	0.000E+00	3.750E+02
23	1	0.000E+00	3.000E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		0.000E+00	-3.000E+01	0.000E+00	0.000E+00	0.000E+00	3.750E+02
24	1	0.000E+00	3.000E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		0.000E+00	-3.000E+01	0.000E+00	0.000E+00	0.000E+00	3.750E+02
25	1	0.000E+00	3.000E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		0.000E+00	-3.000E+01	0.000E+00	0.000E+00	0.000E+00	3.750E+02
26	1	0.000E+00	7.500E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		0.000E+00	-7.500E+00	0.000E+00	0.000E+00	0.000E+00	9.375E+01
27	1	0.000E+00	7.500E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		0.000E+00	-7.500E+00	0.000E+00	0.000E+00	0.000E+00	9.375E+01
28	1	0.000E+00	7.302E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		0.000E+00	-7.302E+01	0.000E+00	0.000E+00	0.000E+00	9.128E+02



EQE ENGINEERING

SHEET 3.2-16JOB NO. 42112 JOB Oyster Creek A-46 Cable Trav EvaluationsBY DSADATE 3-13-95CALC. NO. 002 SUBJECT _____CK PGDATE 3-14-95

29	1	0.000E+00	-7.098E+01	0.000E+00	0.000E+00	0.000E+00	-9.128E+02
		0.000E+00	7.098E+01	0.000E+00	0.000E+00	0.000E+00	2.559E+01
30	<u>1</u>	<u>-1.577E+02</u>	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		1.577E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
31	1	-1.277E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		1.277E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
32	1	-9.768E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		9.768E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
33	1	-9.018E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		9.018E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
34	1	0.000E+00	1.920E+01	0.000E+00	0.000E+00	0.000E+00	-2.559E+01
		0.000E+00	-1.920E+01	0.000E+00	0.000E+00	0.000E+00	1.216E+02
35	<u>1</u>	<u>-8.250E+01</u>	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		8.250E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
36	1	0.000E+00	8.250E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		0.000E+00	-8.250E+01	0.000E+00	0.000E+00	0.000E+00	2.475E+02
37	1	0.000E+00	8.250E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		0.000E+00	-8.250E+01	0.000E+00	0.000E+00	0.000E+00	2.475E+02
38	<u>1</u>	<u>-8.250E+01</u>	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		8.250E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
39	<u>1</u>	<u>2.244E+01</u>	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		-2.244E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
40	1	3.744E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		-3.744E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
41	1	6.744E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		-6.744E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
42	1	0.000E+00	1.500E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		0.000E+00	-1.500E+01	0.000E+00	0.000E+00	0.000E+00	1.875E+02
43	1	0.000E+00	1.500E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		0.000E+00	-1.500E+01	0.000E+00	0.000E+00	0.000E+00	1.875E+02
44	1	0.000E+00	3.000E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		0.000E+00	-3.000E+01	0.000E+00	0.000E+00	0.000E+00	3.750E+02
45	1	0.000E+00	3.000E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		0.000E+00	-3.000E+01	0.000E+00	0.000E+00	0.000E+00	3.750E+02
46	1	0.000E+00	-8.424E+01	0.000E+00	0.000E+00	0.000E+00	-3.762E+01
		0.000E+00	8.424E+01	0.000E+00	0.000E+00	0.000E+00	-1.015E+03

EQE ENGINEERING

SHEET 3.2-17

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations

BY RDA DATE 3-13-95

CALC. NO. 002 SUBJECT _____

CK PB DATE 3-14-95

47	1	0.000E+00	-9.924E+01	0.000E+00	0.000E+00	0.000E+00	1.015E+03
		0.000E+00	9.924E+01	0.000E+00	0.000E+00	0.000E+00	-2.256E+03
48	<u>1</u>	<u>-2.599E+02</u>	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		2.599E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
49	1	-2.449E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		2.449E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
50	1	-2.149E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		2.149E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
51	1	0.000E+00	1.157E+02	0.000E+00	0.000E+00	0.000E+00	2.256E+03
		0.000E+00	-1.157E+02	0.000E+00	0.000E+00	0.000E+00	1.562E+03
52	1	0.000E+00	2.618E+01	0.000E+00	0.000E+00	0.000E+00	-1.562E+03
		0.000E+00	-2.618E+01	0.000E+00	0.000E+00	0.000E+00	2.216E+03
53	1	0.000E+00	-6.332E+01	0.000E+00	0.000E+00	0.000E+00	-2.216E+03
		<u>0.000E+00</u>	<u>6.332E+01</u>	0.000E+00	0.000E+00	0.000E+00	0.000E+00
54	<u>1</u>	<u>-8.950E+01</u>	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		8.950E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
55	1	0.000E+00	8.950E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		0.000E+00	-8.950E+01	0.000E+00	0.000E+00	0.000E+00	1.119E+03
56	1	0.000E+00	8.950E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		0.000E+00	-8.950E+01	0.000E+00	0.000E+00	0.000E+00	1.119E+03
57	<u>1</u>	<u>-8.950E+01</u>	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		8.950E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
58	1	0.000E+00	-1.680E+01	0.000E+00	0.000E+00	0.000E+00	-1.216E+02
		0.000E+00	1.680E+01	0.000E+00	0.000E+00	0.000E+00	3.762E+01



EQE ENGINEERING

SHEET 2.2-18JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray EvaluationsBY RDA DATE 3-13-95CALC. NO. 002 SUBJECT _____CK RO DATE 3-14-95

1**** BEAM ELEMENT STRESSES

ELEMENT NO.	CASE (MODE)	P/A	P/A+M2/S2	P/A-M2/S2	P/A+M3/S3	P/A-M3/S3	WORST SUM
1	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00
2	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 -2.400E+03	0.000E+00 2.400E+03	0.000E+00 -2.400E+03
3	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-2.400E+03 -3.047E+03	2.400E+03 3.047E+03	-2.400E+03 -3.047E+03
4	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-3.047E+03 -3.068E+03	3.047E+03 3.068E+03	3.047E+03 3.068E+03
5	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-3.068E+03 -2.814E+03	3.068E+03 2.814E+03	3.068E+03 2.814E+03
6	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-2.814E+03 -1.380E+03	2.814E+03 1.380E+03	-2.814E+03 -1.380E+03
7	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-1.380E+03 4.605E+02	1.380E+03 -4.605E+02	-1.380E+03 -4.605E+02
8	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	4.605E+02 3.114E+03	-4.605E+02 -3.114E+03	-4.605E+02 -3.114E+03
9	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	3.114E+03 1.732E+03	-3.114E+03 -1.732E+03	3.114E+03 1.732E+03
10	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	1.732E+03 1.854E+03	-1.732E+03 -1.854E+03	1.732E+03 1.854E+03
11	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	1.854E+03 6.402E+02	-1.854E+03 -6.402E+02	-1.854E+03 -6.402E+02
12	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	6.402E+02 0.000E+00	-6.402E+02 0.000E+00	-6.402E+02 0.000E+00
13	1	9.896E+02 9.896E+02	9.896E+02 9.896E+02	9.896E+02 9.896E+02	9.896E+02 9.896E+02	9.896E+02 9.896E+02	9.896E+02 9.896E+02
14	1	7.783E+02 7.783E+02	7.783E+02 7.783E+02	7.783E+02 7.783E+02	7.783E+02 7.783E+02	7.783E+02 7.783E+02	7.783E+02 7.783E+02
15	1	5.671E+02 5.671E+02	5.671E+02 5.671E+02	5.671E+02 5.671E+02	5.671E+02 5.671E+02	5.671E+02 5.671E+02	5.671E+02 5.671E+02
16	1	5.143E+02 5.143E+02	5.143E+02 5.143E+02	5.143E+02 5.143E+02	5.143E+02 5.143E+02	5.143E+02 5.143E+02	5.143E+02 5.143E+02

EQE ENGINEERING

SHEET 3.2-19

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations

BY 25A DATE 3-13-95

CALC. NO. 002 SUBJECT

CK V.B DATE 3-14-95

17	1	1.444E+02	1.444E+02	1.444E+02	1.444E+02	1.444E+02	1.444E+02	1.444E+02	205
		1.444E+02	1.444E+02	1.444E+02	1.444E+02	1.444E+02	1.444E+02	1.444E+02	
18	1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
		0.000E+00	0.000E+00	0.000E+00	4.544E+02	-4.544E+02	-4.544E+02	-4.544E+02	
19	1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
		0.000E+00	0.000E+00	0.000E+00	4.544E+02	-4.544E+02	-4.544E+02	-4.544E+02	
20	1	1.444E+02	1.444E+02	1.444E+02	1.444E+02	1.444E+02	1.444E+02	1.444E+02	205
		1.444E+02	1.444E+02	1.444E+02	1.444E+02	1.444E+02	1.444E+02	1.444E+02	
21	1	7.042E+01	7.042E+01	7.042E+01	7.042E+01	7.042E+01	7.042E+01	7.042E+01	205
		7.042E+01	7.042E+01	7.042E+01	7.042E+01	7.042E+01	7.042E+01	7.042E+01	
22	1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
		0.000E+00	0.000E+00	0.000E+00	1.847E+03	-1.847E+03	1.847E+03	1.847E+03	
23	1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
		0.000E+00	0.000E+00	0.000E+00	1.847E+03	-1.847E+03	1.847E+03	1.847E+03	
24	1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
		0.000E+00	0.000E+00	0.000E+00	1.847E+03	-1.847E+03	-1.847E+03	-1.847E+03	
25	1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
		0.000E+00	0.000E+00	0.000E+00	1.847E+03	-1.847E+03	-1.847E+03	-1.847E+03	
26	1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
		0.000E+00	0.000E+00	0.000E+00	4.618E+02	-4.618E+02	4.618E+02	4.618E+02	
27	1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
		0.000E+00	0.000E+00	0.000E+00	4.618E+02	-4.618E+02	4.618E+02	4.618E+02	
28	1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
		0.000E+00	0.000E+00	0.000E+00	4.497E+03	-4.497E+03	-4.497E+03	-4.497E+03	
29	1	0.000E+00	0.000E+00	0.000E+00	4.497E+03	-4.497E+03	-4.497E+03	-4.497E+03	
		0.000E+00	0.000E+00	0.000E+00	1.261E+02	-1.261E+02	-1.261E+02	-1.261E+02	
30	1	1.110E+03	1.110E+03	1.110E+03	1.110E+03	1.110E+03	1.110E+03	1.110E+03	205
		1.110E+03	1.110E+03	1.110E+03	1.110E+03	1.110E+03	1.110E+03	1.110E+03	
31	1	8.991E+02	8.991E+02	8.991E+02	8.991E+02	8.991E+02	8.991E+02	8.991E+02	
		8.991E+02	8.991E+02	8.991E+02	8.991E+02	8.991E+02	8.991E+02	8.991E+02	
32	1	6.879E+02	6.879E+02	6.879E+02	6.879E+02	6.879E+02	6.879E+02	6.879E+02	
		6.879E+02	6.879E+02	6.879E+02	6.879E+02	6.879E+02	6.879E+02	6.879E+02	
33	1	6.351E+02	6.351E+02	6.351E+02	6.351E+02	6.351E+02	6.351E+02	6.351E+02	
		6.351E+02	6.351E+02	6.351E+02	6.351E+02	6.351E+02	6.351E+02	6.351E+02	
34	1	0.000E+00	0.000E+00	0.000E+00	1.261E+02	-1.261E+02	-1.261E+02	-1.261E+02	
		0.000E+00	0.000E+00	0.000E+00	5.991E+02	-5.991E+02	-5.991E+02	-5.991E+02	

EQE ENGINEERING

SHEET 3.2-20

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations

BY RDA DATE 3-13-95

CALC. NO. 002 SUBJECT

CK PCB DATE 3-14-95

35	1	5.810E+02	5.810E+02	5.810E+02	5.810E+02	5.810E+02	5.810E+02	5.810E+02	200
		5.810E+02	5.810E+02	5.810E+02	5.810E+02	5.810E+02	5.810E+02	5.810E+02	
36	1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
		0.000E+00	0.000E+00	0.000E+00	1.219E+03	-1.219E+03	-1.219E+03	-1.219E+03	
37	1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
		0.000E+00	0.000E+00	0.000E+00	1.219E+03	-1.219E+03	1.219E+03	1.219E+03	
38	1	5.810E+02	5.810E+02	5.810E+02	5.810E+02	5.810E+02	5.810E+02	5.810E+02	200
		5.810E+02	5.810E+02	5.810E+02	5.810E+02	5.810E+02	5.810E+02	5.810E+02	
39	1	-1.580E+02	-1.580E+02	-1.580E+02	-1.580E+02	-1.580E+02	-1.580E+02	-1.580E+02	200
		-1.580E+02	-1.580E+02	-1.580E+02	-1.580E+02	-1.580E+02	-1.580E+02	-1.580E+02	
40	1	-2.637E+02	-2.637E+02	-2.637E+02	-2.637E+02	-2.637E+02	-2.637E+02	-2.637E+02	
		-2.637E+02	-2.637E+02	-2.637E+02	-2.637E+02	-2.637E+02	-2.637E+02	-2.637E+02	
41	1	-4.749E+02	-4.749E+02	-4.749E+02	-4.749E+02	-4.749E+02	-4.749E+02	-4.749E+02	
		-4.749E+02	-4.749E+02	-4.749E+02	-4.749E+02	-4.749E+02	-4.749E+02	-4.749E+02	
42	1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
		0.000E+00	0.000E+00	0.000E+00	9.236E+02	-9.236E+02	9.236E+02	9.236E+02	
43	1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
		0.000E+00	0.000E+00	0.000E+00	9.236E+02	-9.236E+02	9.236E+02	9.236E+02	
44	1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
		0.000E+00	0.000E+00	0.000E+00	1.847E+03	-1.847E+03	-1.847E+03	-1.847E+03	
45	1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
		0.000E+00	0.000E+00	0.000E+00	1.847E+03	-1.847E+03	-1.847E+03	-1.847E+03	
46	1	0.000E+00	0.000E+00	0.000E+00	1.853E+02	-1.853E+02	-1.853E+02	-1.853E+02	
		0.000E+00	0.000E+00	0.000E+00	-5.002E+03	5.002E+03	-5.002E+03	-5.002E+03	
47	1	0.000E+00	0.000E+00	0.000E+00	-5.002E+03	5.002E+03	-5.002E+03	-5.002E+03	
		0.000E+00	0.000E+00	0.000E+00	-1.111E+04	1.111E+04	-1.111E+04	-1.111E+04	channel
48	1	1.830E+03	1.830E+03	1.830E+03	1.830E+03	1.830E+03	1.830E+03	1.830E+03	rod
		1.830E+03	1.830E+03	1.830E+03	1.830E+03	1.830E+03	1.830E+03	1.830E+03	
49	1	1.725E+03	1.725E+03	1.725E+03	1.725E+03	1.725E+03	1.725E+03	1.725E+03	
		1.725E+03	1.725E+03	1.725E+03	1.725E+03	1.725E+03	1.725E+03	1.725E+03	
50	1	1.514E+03	1.514E+03	1.514E+03	1.514E+03	1.514E+03	1.514E+03	1.514E+03	
		1.514E+03	1.514E+03	1.514E+03	1.514E+03	1.514E+03	1.514E+03	1.514E+03	
51	1	0.000E+00	0.000E+00	0.000E+00	-1.111E+04	1.111E+04	-1.111E+04	-1.111E+04	channel
		0.000E+00	0.000E+00	0.000E+00	7.693E+03	-7.693E+03	-7.693E+03	-7.693E+03	
52	1	0.000E+00	0.000E+00	0.000E+00	7.693E+03	-7.693E+03	-7.693E+03	-7.693E+03	
		0.000E+00	0.000E+00	0.000E+00	1.092E+04	-1.092E+04	-1.092E+04	-1.092E+04	channel



EQE ENGINEERING

SHEET 3.2-21JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray EvaluationsBY ADA DATE 3-13-95CALC. NO. 002 SUBJECT _____CK PB DATE 3-14-95

53	1	0.000E+00	0.000E+00	0.000E+00	1.092E+04	-1.092E+04	<u>-1.092E+04</u>	channel
		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
54	1	6.303E+02	6.303E+02	6.303E+02	6.303E+02	6.303E+02	<u>6.303E+02</u>	rod
		6.303E+02	6.303E+02	6.303E+02	6.303E+02	6.303E+02	6.303E+02	
55	1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
		0.000E+00	0.000E+00	0.000E+00	5.511E+03	-5.511E+03	5.511E+03	
56	1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
		0.000E+00	0.000E+00	0.000E+00	5.511E+03	-5.511E+03	5.511E+03	
57	1	6.303E+02	6.303E+02	6.303E+02	6.303E+02	6.303E+02	<u>6.303E+02</u>	rod
		6.303E+02	6.303E+02	6.303E+02	6.303E+02	6.303E+02	6.303E+02	
58	1	0.000E+00	0.000E+00	0.000E+00	5.991E+02	-5.991E+02	-5.991E+02	
		0.000E+00	0.000E+00	0.000E+00	1.853E+02	-1.853E+02	-1.853E+02	

1**** End of file

JOB NO. 42112 JOB OYSTER CREEK A-46
 CALC. NO. C-002 SUBJECT CABLE TRAY OUTLIER EVALUATION

SHEET NO. 3.3-1
 BY RB DATE 1-30-95
 CHK'D JW DATE 3-22-95

RB-23-005D

⇒ OUTLIER CONCERN: ANCHORAGE FAILED 3X DL CHECK. (REF CALC: EQE 42112-C-001)

ATTEMPT TO QUALIFY INITIAL OUTLIER BY RECALCULATING ANCHORAGE LOADS BASED ON REVISED WALKDOWN DATA FOR TRAY FILL AND TRIBUTARY LENGTHS, AND USING $RT_p = .75$ (REF. 3)

LABEL TIERS AS 1 THROUGH 4 (TOP TO BOTTOM)

- TIER 1 (91% FULL 4x24 TRAY) (TOP TRAY)

$$\text{TRAY LOAD} = [(2 + 3.5 + 8)/2] \cdot .95 (50 \#/\text{FT}) = 321 \#$$
- TIER 2 (15% FULL 4x24 TRAY)

$$\text{TRAY LOAD} = [(2 + 3.5 + 8)/2] \cdot .15 (50 \#/\text{FT}) = 51 \#$$
- TIER 3 (15% FULL 4x24 TRAY AND 3 CONDUIT)

$$\text{TRAY LOAD} = [(2 + 3.5 + 8)/2] \cdot .15 (50 \#/\text{FT}) = 51 \#$$

JOB NO. 42112 JOB OYSTER CREEK A-46
 CALC. NO. C-002 SUBJECT CABLE TRAY OUTLIER EVALUATION

SHEET NO. 3.3-2
 BY RB DATE 1-30-95
 CHK'D JW DATE 3-22-95

RB-23-COORD (CONT'D)

CONDUIT LOAD:

$$\text{TRIB. SPAN FOR 4-2\frac{1}{2}" \phi \text{ CONDUIT} = (2 + 3.5 + 3 + 3)/2 = 5.8'$$

$$\text{TRIB SPAN FOR REMAINING CONDUIT} = (2 + 3.5 + 8)/2 = 6.8'$$

$$\therefore 4-2\frac{1}{2}" \phi \text{ CONDUIT LOAD} = 4(5.8') / (8.94/\text{ft}) = \underline{\underline{206\#}}$$

$$\begin{array}{rcll} \text{REMAINING CONDUIT LOADS} & = & 6.8(3.6) & = 24.5 \quad (1\frac{1}{2}" \phi) \\ & & 6.8(3.6) & = 24.5 \quad (1\frac{1}{4}" \phi) \\ & & 6.8(1.4)(2) & = 19 \quad (3/4" \phi) \\ & & & \underline{\underline{68\#}} \end{array}$$

• TIER 4 (4 CONDUIT) (BOTTOM TIER)

$$\text{TRIB SPAN} = (2 + 3.5 + 3 + 3)/2 = 5.8'$$

$$\begin{array}{rcll} \therefore \text{LOADS} & = & 5.8(3.6)(2) & = 42\# \quad (1\frac{1}{4}" \phi) \\ & & 5.8(1.4)(2) & = 16\# \quad (3/4" \phi) \\ & & & \underline{\underline{58\#}} \end{array}$$

└ DUE TO OFFSET
FROM E OF SUPPORT
APPLY AN WGP
TO SINGLE ROD.

$\therefore$ TOTAL LOAD ON ANCHORAGE (WORST CASE)

$$= (321 + 51 + 51 + 206 + 68)/2 + 58$$

$$= \underline{\underline{407\#}}$$

JOB NO. 42112 JOB OYSTER CREEK A-46
CALC. NO. C-002 SUBJECT CABLE TRAY OUTLIER EVALUATION

SHEET NO. 3.3-3

BY RB DATE 1-30-95
CHK'D JW DATE 3-22-95

RB-23-005D (cont'd)

CHECK $\frac{1}{2}" \phi$ STEELS:

$$P_{nom} = 2290 \#$$

$$R_{Tp} = .75$$

$$R_{Fp} = .75$$

$$\therefore P_{all} = 2290 (.75)(.75) = 1288 \# / \text{bolt}$$

$$3.0 \times \text{DEAD LOAD} = 3(407) = 1221 \# / \text{bolt}$$

$$3 \times DL = 1221 < 1288 = P_{all} \therefore \underline{\underline{OK}}$$

OUTLIER RESOLVED

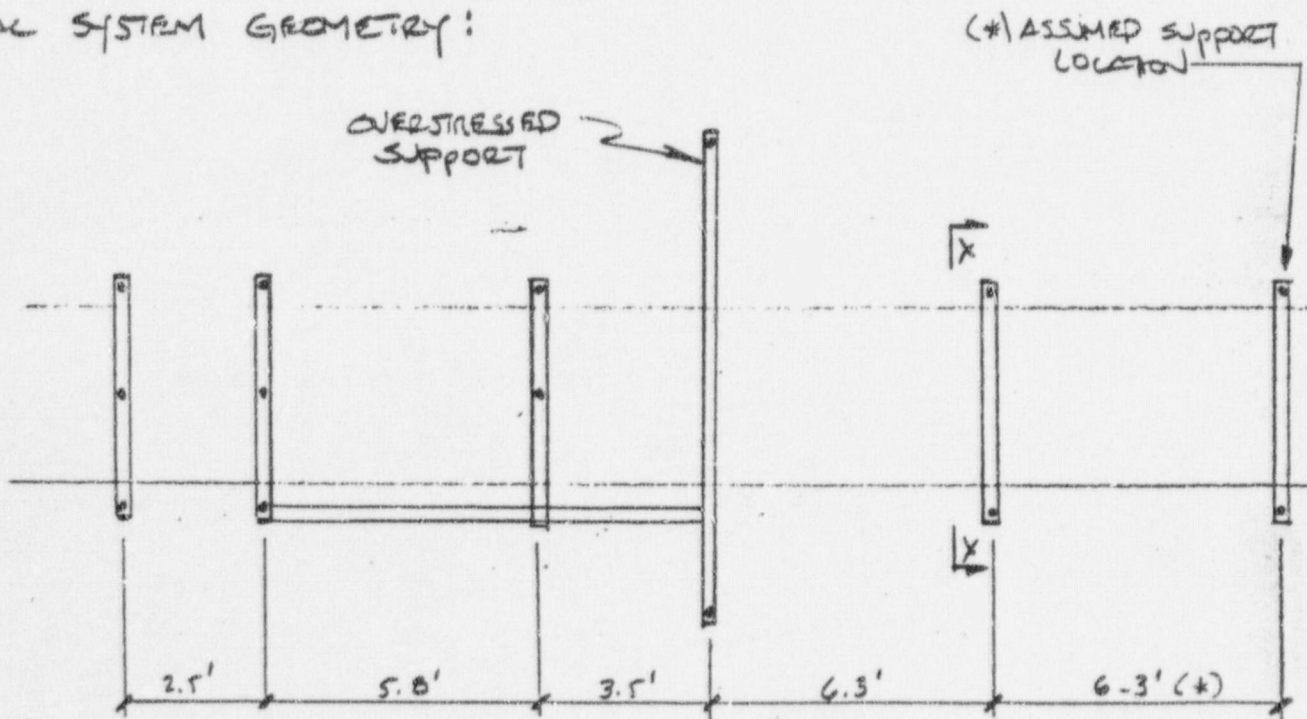
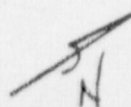
NO FURTHER ACTION REQ'D

JOB NO. 42112 JOB OYSTER CREEK. A-46BY JBDATE 1-31-95CALC. NO. C-002 SUBJECT CABLE TRAY EVALUATIONCHK'D EDADATE 2-24-95RB-51-002

⇒ OUTLIER CONCERN: HORIZONTAL UNISTRUT MEMBER
OVERSTRESSED UNDER THE
1 X DL CHECK, (REF. CALL: EQE
42112-C-001)

ATTEMPT TO RESOLVE OUTLIER BY ASSUMING
THE SUBJECT SUPPORT HAS ZERO CAPACITY AND
EVALUATING THE ADJACENT SUPPORTS FOR THE
RESULTING INCREASED LOADS.

LOCAL SYSTEM GEOMETRY:

PLAN

WORST CASE ADJACENT
SUPPORT; BASED ON
TRIP SPANS, AND
LACK OF CENTER ROD.

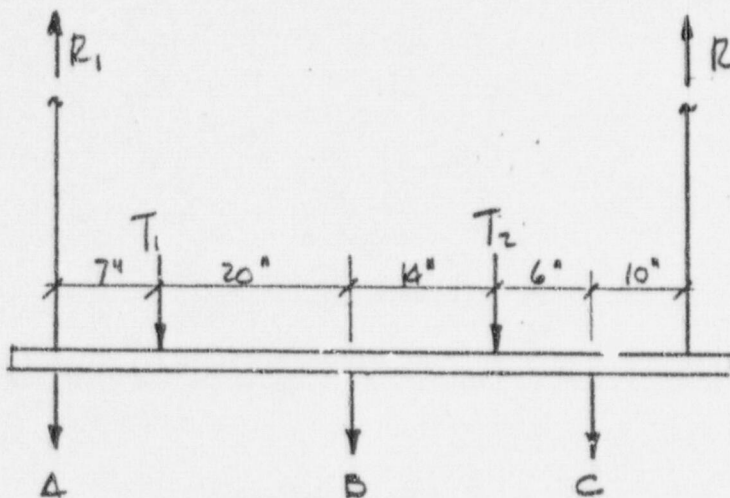
JOB NO. 42112 JOB OYSTER CREEK A-46

BY JCB DATE 1-31-95

CALC. NO. C-002 SUBJECT CABLE TRAY EVALUATION

CHK'D BDA DATE 2-25-94

(R3-51-002 cont'd)

ADJACENT (WORST CASE) SUPPORT GEOMETRYSECT. X-X

$$[\text{TRAY SPAN} = (3.5 + 6.3)/2 + 6.3/2 = 8']$$

$$T_1 = 25 \text{ psf} (2') (8') (.25 \text{ FIL}) = 100\# \text{ (TRAY)}$$

$$T_2 = 25 \text{ psf} (2') (8') (.75 \text{ FIL}) = 300\# \text{ (TRAY)}$$

$$\begin{array}{lcl}
 A = & 2(5.1)(8') = 82\# & (2-2''\phi \text{ CND}) \\
 & 2(3.6)(8') = 58\# & (2-1\frac{1}{4}''\phi \text{ CND}) \\
 & 2(2.2)(8') = 35\# & (2-1''\phi \text{ CND}) \\
 & \underline{175\#} &
 \end{array}
 \left. \begin{array}{l} \text{ASSUMES } 2-3/4''\phi \text{ EMPTY} \\ \text{CONVERT AREA OF} \\ \text{NEGLECTABLE WEIGHT.} \end{array} \right\}$$

$$\begin{array}{lcl}
 B = & 2(1.4)(8') = 22\# & (2-3/4''\phi \text{ CND}) \\
 & 1(2.2)(8') = 18\# & (1-1''\phi \text{ CND}) \\
 & \underline{40\#} &
 \end{array}$$

$$\begin{array}{lcl}
 C = & 3(1.4)(8) = 34\# & (3-3/4''\phi \text{ CND}) \\
 & 1(5.1)(8) = 41\# & (1-2''\phi \text{ CND}) \\
 & \underline{75\#} &
 \end{array}$$

JOB NO. 42112 JOB OYSTER CREEK A-46BY DJBDATE 1-31-95CALC. NO. C-002 SUBJECT CABLE TRAY EVALUATIONCHK'D TAADATE 2-26-95

(RB-SI-002 cont'd)

$$\sum M_1 = 0$$

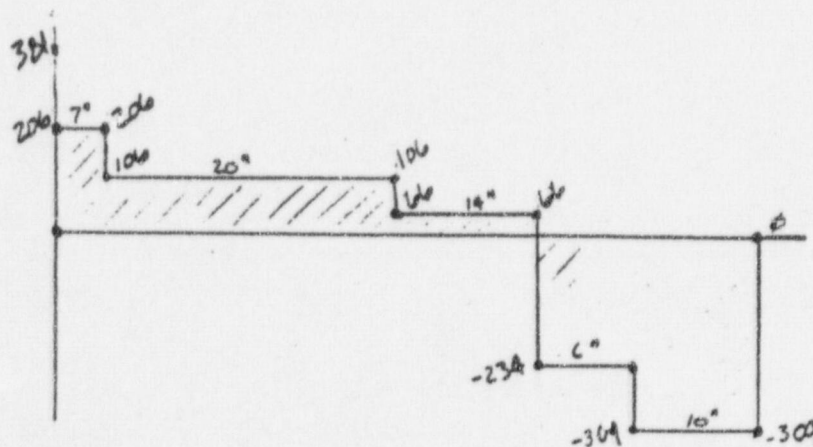
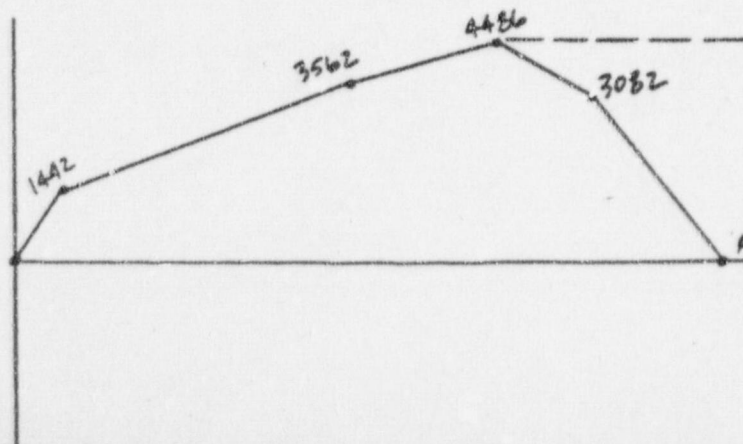
$$R_2 = \frac{100(7) + 40(27) + 300(41) + 75(47)}{57''}$$

$$= 309^{\#}$$

$$\sum F_y = 0$$

$$R_1 = 309 - (116 + 300 + 40 + 100 + 175)$$

$$= 381^{\#}$$

SHEAR
DIAGRAMMOMENT
DIAGRAMMAXIMUM
MOMENT = 4486"

JOB NO. 42112 JOB OYSTER CREEK A-46 SHEET NO. 3.4-4
 CALC. NO. C-002 SUBJECT CABLE TRAY EVALUATION BY BUB DATE 1-31-95
 CHK'D FLDA DATE 2-24-95

(RB-SI-002 cont'd)

CHECK ANCHORAGE FOR 3X DL

1/2" SLEW ANCHOR

$$P_{nom} = 2290 \#$$

$$RT_p = .75 \quad (REF.)$$

$$RF_p = .75 \quad (f'_c = 3000 \text{ psi})$$

$$\therefore P_{all} = 2290 (.75)(.75) = 1283 \# / \text{rod}$$

$$3 \times DL = 3 \left(\overset{R}{381} \right) = 1143 < 1283 = P_{all} \therefore \underline{\underline{OK}}$$

JOB NO. 42112 JOB OYSTER CREEK A-46BY JBDATE 1-31-95CALC. NO. C-002 SUBJECT CABLE TRAY EVALUATIONCHK'D JDADATE 2-24-95

(RB-51-002 cont'd)

CHECK HORIZONTAL P1000 UNISTRUT FOR BENDING:

$$M_{max} = 4773 \text{ " \#}$$

$$S = .202 \text{ in}^3$$

$$f_b = \frac{M}{S} = \frac{4486}{.202} = 22,208 \text{ psi}$$

$$f_b = 22,208 \text{ psi} < 25000 \text{ psi} = F_b \quad \therefore \underline{\underline{OK}}$$

(REMAINDER OF SUPPORT OK BY
COMPARISON TO CALC. EGR-42112-001)

OUTLINE RESOLVED

NO FURTHER ACTION REQ'D

JOB NO. 42112 JOB OYSTER CREEK A-46
 CALC. NO. 002 SUBJECT CABLE TRAY EVALUATION

BY TDA DATE 2-24-95
 CHK'D PB DATE 3-14-95

OUTLIER EVALUATION RB-51-003 UNISTRUT A

This support was previously evaluated and found to be an outlier. The support was rewalked to obtain more accurate tray fill percentages.

This calc. will use the previous calc. for tray spans and support dimensions but will utilize the latest tray fill estimates.

Determine support loading:

$$R_A = R_B = \left[3' + \left(\frac{2.5' + 3'}{2} \right) \right] (25 \text{ psf}) (2' \text{ wide}) (2) (0.125) / 2 = 36^\#$$

$$1.05 (36^\#) = 38^\#$$

$$R_C = \left[3' + \left(\frac{2.5' + 2'}{2} \right) \right] (25 \text{ psf} \times 2' \text{ wide}) (0.05) + 4(3')(5.1^\# / 4) + 2(5' + 1')(5.1^\# / 4) \\ + 4(3')(3.6^\# / 4) + 2(1' + 5')(3.6^\# / 4) / 2 = 111^\#$$

$$1.05 (111^\#) = 117^\#$$

$$R_D = 117^\#$$

$$R_E = \left[(6')(25 \text{ psf}) (2' \text{ wide}) (0.25) + 2(2' + 5.5')(5.1^\# / 4) + 2(7.5')(3.6^\# / 4) \right. \\ \left. + 2(7.5')(1.4^\# / 4) + 10(7')(1.4^\# / 4) \right] / 2 = 162^\#$$

$$1.05 (162^\#) = 170^\#$$

JOB NO. 42112 JOB OYSTER CREEK A-46

BY DA DATE 2-21-95

CALC. NO. 002 SUBJECT CABLE TRAY EVALUATION

CHK'D PB DATE 3-14-95

$$R_F = 162.3^{\#} + 38.2^{\#} = 201^{\#}$$

$$1.05(201^{\#}) = 211^{\#}$$

$$R_G = 38.2^{\#} + [(6')(25\text{psf})(2'\text{wide})(0.75) + 6(4.5')(1.4^{\#}/ft)]/2 = 170^{\#}$$

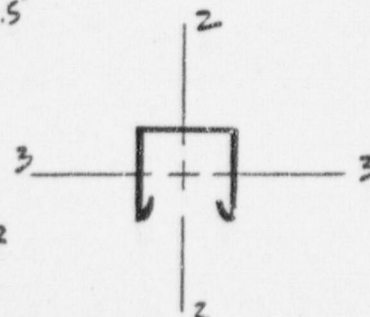
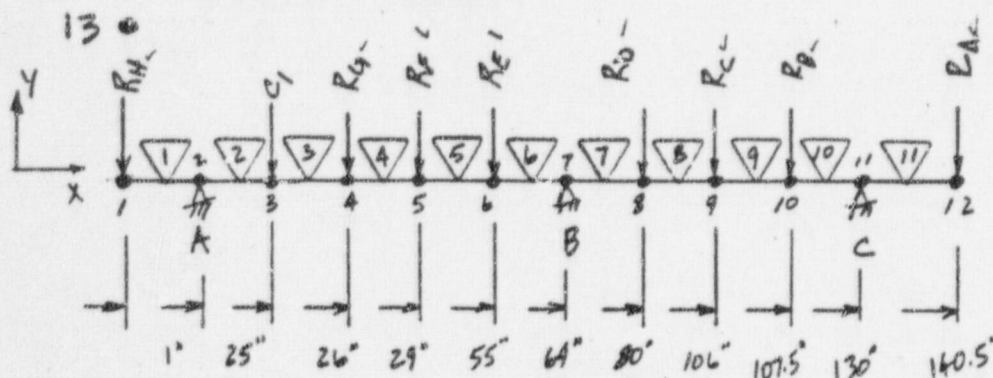
$$1.05(170^{\#}) = 179^{\#}$$

$$R_H = [(6')(25\text{psf})(2'\text{wide})(0.75) + 6(4.5')(1.4^{\#}/ft)]/2 = 131^{\#}$$

$$1.05(131^{\#}) = 138^{\#}$$

$$C_1 = 5'(2.2^{\#}/ft) = 11^{\#}$$

These loads were applied to Unistrut 'A' and was analyzed by the Algor Super Sap program. The model is shown below.



$$A = 0.555 \text{ in}^2 \quad A_3 = (15/8'')(.105'') = 0.171 \text{ in}^2$$

$$A_2 = 2(15/8'')(.105'') = 0.341 \text{ in}^2$$

$$I_2 = 0.239 \text{ in}^4 \quad I_3 = 0.186 \text{ in}^4$$

$$S_2 = 0.294 \text{ in}^3 \quad S_3 = 0.203 \text{ in}^3$$



EQE ENGINEERING

SHEET 3.5-3JOB NO. 42112 JOB Oyster Creek A-46 Cable Trav EvaluationsBY RDA DATE 2-24-95CALC. NO. 002 SUBJECT _____CK DB DATE 3-14-95

1**** Algor (c) Linear Stress Analysis - SSAP0H Rel. 01-SEP-94 Ver. 11.06-3H

DATE: FEBRUARY 24, 1995

TIME: 11:42 AM

INPUT FILE.....rb5103_a

Analytical Review No. RB-51-003 Unistrut Channel A, Oyster Creek

1**** CONTROL INFORMATION

number of node points	(NUMNP)	=	13
number of element types	(NELTYP)	=	1
number of load cases	(LL)	=	1
number of frequencies	(NF)	=	0
geometric stiffness flag	(GEOSTF)	=	0
analysis type code	(NDYN)	=	0
solution mode	(MODEX)	=	0
equations per block	(KEQB)	=	0
weight and c.g. flag	(IWTCG)	=	0
bandwidth minimization flag	(MINBND)	=	0
gravitational constant	(GRAV)	=	3.8600E+02

bandwidth minimization specified

1**** NODAL DATA

NODE NO.	DX	DY	DZ	RX	RY	RZ	X	Y	Z	T
1	0	0	0	0	0	0	0.000E+00	0.000E+00	0.000E+00	0.000E+00
2	1	1	1	1	0	0	1.000E+00	0.000E+00	0.000E+00	0.000E+00
3	0	0	0	0	0	0	2.500E+01	0.000E+00	0.000E+00	0.000E+00
4	0	0	0	0	0	0	2.600E+01	0.000E+00	0.000E+00	0.000E+00
5	0	0	0	0	0	0	2.900E+01	0.000E+00	0.000E+00	0.000E+00
6	0	0	0	0	0	0	5.500E+01	0.000E+00	0.000E+00	0.000E+00
7	1	1	1	1	0	0	6.400E+01	0.000E+00	0.000E+00	0.000E+00
8	0	0	0	0	0	0	8.000E+01	0.000E+00	0.000E+00	0.000E+00
9	0	0	0	0	0	0	1.060E+02	0.000E+00	0.000E+00	0.000E+00
10	0	0	0	0	0	0	1.075E+02	0.000E+00	0.000E+00	0.000E+00
11	1	1	1	1	0	0	1.300E+02	0.000E+00	0.000E+00	0.000E+00
12	0	0	0	0	0	0	1.405E+02	0.000E+00	0.000E+00	0.000E+00
13	1	1	1	1	1	1	0.000E+00	1.000E+01	0.000E+00	0.000E+00

**** PRINT OF EQUATION NUMBERS SUPPRESSED

1**** BEAM ELEMENTS

number of beam elements	=	11
number of area property sets	=	1
number of fixed end force sets	=	0
number of materials	=	1
number of intermediate load sets	=	0

EQE ENGINEERING

SHEET 3.5-4

JOB NO. 42112 JOB Oyster Creek A-46 Cable Trav Evaluations

BY EDA DATE 2-24-95

CALC. NO. 002 SUBJECT

CK DB DATE 3-14-95

1**** MATERIAL PROPERTIES

INDEX	E	MU	MASS DENSITY	WEIGHT DENSITY	THERMAL EXPANSION			REFERENCE TEMPERATURE
					X	Y	Z	
1	2.90E+07	.300	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.000E+00

1**** AREA PROPERTIES

INDEX	AREAS			TORSION	--FLEXURAL INERTIAS--		
	AXIAL A(1)	SHEAR A(2)	SHEAR A(3)	J(1)	I(2)	I(3)	
1	5.550E-01	3.410E-01	1.710E-01	1.000E-03	2.390E-01	1.860E-01	

1**** STRESS PROPERTIES

INDEX	SECTION S(2)	MODULI S(3)
1	2.940E-01	2.030E-01

1**** ELEMENT LOAD FACTORS

	CASE A	CASE B	CASE C	CASE D
X-DIR	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Y-DIR	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Z-DIR	0.000E+00	0.000E+00	0.000E+00	0.000E+00

1**** ELEMENT CONNECTIVITY DATA

ELEMENT NO.	NODE I	NODE J	NODE K	MAT'L INDEX	SECTN INDEX	---ELEMENT LOADS---				RELEASE CODES		MEMBER NO.
						A	B	C	D	I-END	J-END	
1	1	2	13	1	1	0	0	0	0	0	0	0
2	2	3	13	1	1	0	0	0	0	0	0	0
3	3	4	13	1	1	0	0	0	0	0	0	0
4	4	5	13	1	1	0	0	0	0	0	0	0
5	5	6	13	1	1	0	0	0	0	0	0	0
6	6	7	13	1	1	0	0	0	0	0	0	0
7	7	8	13	1	1	0	0	0	0	0	0	0
8	8	9	13	1	1	0	0	0	0	0	0	0
9	9	10	13	1	1	0	0	0	0	0	0	0
10	10	11	13	1	1	0	0	0	0	0	0	0
11	11	12	13	1	1	0	0	0	0	0	0	0

1**** BANDWIDTH MINIMIZATION

minbnd (bandwidth control parameter) = 1

**** MINIMIZER DID NOT NEED TO REDUCE BANDWIDTH

**** Hard disk file size information for processor:

Available hard disk space on drive = 61.882 megabytes



EQE ENGINEERING

SHEET 3.5-5JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray EvaluationsBY DA DATE 2-24-95CALC. NO. 002 SUBJECT _____CK PB DATE 3-14-95

1**** NODAL LOADS (STATIC) OR MASSES (DYNAMIC)

NODE NUMBER	LOAD CASE	X-AXIS FORCE	Y-AXIS FORCE	Z-AXIS FORCE	X-AXIS MOMENT	Y-AXIS MOMENT	Z-AXIS MOMENT
1	1	0.000E+00	-1.310E+02*	0.000E+00	0.000E+00	0.000E+00	0.000E+00
3	1	0.000E+00	-1.100E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
4	1	0.000E+00	-1.780E+02**	0.000E+00	0.000E+00	0.000E+00	0.000E+00
5	1	0.000E+00	-2.110E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
6	1	0.000E+00	-1.700E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
8	1	0.000E+00	-1.170E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
9	1	0.000E+00	-1.170E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
10	1	0.000E+00	-3.800E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
12	1	0.000E+00	-3.800E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00

1**** ELEMENT LOAD MULTIPLIERS

load case	case A	case B	case C	case D
1	1.000E+00	1.000E+00	1.000E+00	1.000E+00

**** EQUATION PARAMETERS

Number of equations = 60
Minimum bandwidth = 1
Maximum bandwidth = 12
Average bandwidth = 6
Storage required (bytes) = 3600
Total memory allocated (bytes) = 4538312
Total memory free (bytes) = 4534776

**** Proceeding with in-core fast solver ...

**** Begin in-core solution

**** load case #1

**** End in-core solution

* checker note: should be 138, OK

** checker note: should be 179, OK

EQE ENGINEERING

SHEET 3.5-6

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations

BY TADA DATE 2-24-95

CALC. NO. 002 SUBJECT _____

CK OB DATE 3-14-95

1**** STATIC ANALYSIS

LOAD CASE =

1

Displacements/Rotations(degrees) of nodes

NODE number	X- translation	Y- translation	Z- translation	X- rotation	Y- rotation	Z- rotation
1	0.0000E+00	1.3349E-02	0.0000E+00	0.0000E+00	0.0000E+00	-7.6656E-01
2	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	-7.6725E-01
3	0.0000E+00	-2.4689E-01	0.0000E+00	0.0000E+00	0.0000E+00	-2.0825E-01
4	0.0000E+00	-2.5015E-01	0.0000E+00	0.0000E+00	0.0000E+00	-1.5931E-01
5	0.0000E+00	-2.5457E-01	0.0000E+00	0.0000E+00	0.0000E+00	-9.3434E-03
6	0.0000E+00	-7.4132E-02	0.0000E+00	0.0000E+00	0.0000E+00	5.5141E-01
7	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	3.2716E-01
8	0.0000E+00	1.9890E-02	0.0000E+00	0.0000E+00	0.0000E+00	-8.8384E-02
9	0.0000E+00	-2.9394E-02	0.0000E+00	0.0000E+00	0.0000E+00	-2.7863E-02
10	0.0000E+00	-2.9845E-02	0.0000E+00	0.0000E+00	0.0000E+00	-7.7410E-03
11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	9.2386E-02
12	0.0000E+00	1.4107E-02	0.0000E+00	0.0000E+00	0.0000E+00	7.0136E-02
13	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

1**** TEMPORARY FILE STORAGE (MEGABYTES)

```

UNIT NO. 7 : .000
UNIT NO. 8 : .001
UNIT NO. 9 : .000
UNIT NO. 10 : .000
UNIT NO. 11 : .001
UNIT NO. 12 : .000
UNIT NO. 13 : .000
UNIT NO. 14 : .000
UNIT NO. 15 : .000
UNIT NO. 17 : .000

TOTAL : .002

```

1**** End of file

EQE ENGINEERING

SHEET 3.5-7JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray EvaluationsBY ZDADATE 2-24-95CALC. NO. 002 SUBJECT _____CK DBDATE 3-14-95

1**** Algor (c) FEA Stress Processor MKNSO 01-SEP-94, Ver 11.08-3H

DATE: FEBRUARY 24, 1995

TIME: 11:42 AM

INPUT FILE.....rb5103_a

1**** BEAM ELEMENTS

number of beam elements	=	11
number of area property sets	=	1
number of fixed end force sets	=	0
number of materials	=	1
number of intermediate load sets	=	0

EQE ENGINEERING

SHEET 3.5-8

JOB NO. 42112 JOB Oyster Creek A-46 Cable Trav Evaluations

BY DA

DATE 2-24-95

CALC. NO. 002 SUBJECT

CK DB

DATE 3-14-95

1**** BEAM ELEMENT FORCES AND MOMENTS

ELEMENT NO.	CASE (MODE)	AXIAL FORCE R1	SHEAR FORCE R2	SHEAR FORCE R3	TORSION MOMENT M1	BENDING MOMENT M2	BENDING MOMENT M3
1	1	0.000E+00 0.000E+00	-1.310E+02 <u>1.310E+02</u>	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 -1.310E+02
2	1	0.000E+00 0.000E+00	<u>1.936E+02</u> -1.936E+02	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	1.310E+02 4.516E+03
3	1	0.000E+00 0.000E+00	1.826E+02 -1.826E+02	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-4.516E+03 4.699E+03
4	1	0.000E+00 0.000E+00	4.645E+00 -4.645E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-4.699E+03 4.713E+03
5	1	0.000E+00 0.000E+00	-2.064E+02 2.064E+02	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-4.713E+03 -6.522E+02
6	1	0.000E+00 0.000E+00	-3.764E+02 <u>3.764E+02</u>	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	6.522E+02 -4.039E+03
7	1	0.000E+00 0.000E+00	<u>1.993E+02</u> -1.993E+02	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	4.039E+03 -8.507E+02
8	1	0.000E+00 0.000E+00	8.229E+01 -8.229E+01	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	8.507E+02 1.289E+03
9	1	0.000E+00 0.000E+00	-3.471E+01 3.471E+01	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-1.289E+03 1.237E+03
10	1	0.000E+00 0.000E+00	-7.271E+01 <u>7.271E+01</u>	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-1.237E+03 -3.990E+02
11	1	0.000E+00 0.000E+00	<u>3.800E+01</u> -3.800E+01	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	3.990E+02 0.000E+00



EQE ENGINEERING

SHEET 3.5-9JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray EvaluationsBY DDA DATE 2-24-95CALC. NO. 002 SUBJECTCK DB DATE 3-14-95

1**** BEAM ELEMENT STRESSES

ELEMENT NO.	CASE (MODE)	P/A	P/A+M2/S2	P/A-M2/S2	P/A+M3/S3	P/A-M3/S3	WORST SUM
1	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 -6.453E+02	0.000E+00 6.453E+02	0.000E+00 6.453E+02
2	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-6.453E+02 2.225E+04	6.453E+02 -2.225E+04	6.453E+02 2.225E+04
3	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	2.225E+04 2.315E+04	-2.225E+04 -2.315E+04	2.225E+04 2.315E+04
4	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	2.315E+04 2.322E+04	-2.315E+04 -2.322E+04	2.315E+04 2.322E+04
5	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	2.322E+04 -3.213E+03	-2.322E+04 3.213E+03	2.322E+04 3.213E+03
6	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-3.213E+03 -1.990E+04	3.213E+03 1.990E+04	3.213E+03 1.990E+04
7	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-1.990E+04 -4.191E+03	1.990E+04 4.191E+03	1.990E+04 4.191E+03
8	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-4.191E+03 6.350E+03	4.191E+03 -6.350E+03	4.191E+03 6.350E+03
9	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	6.350E+03 6.093E+03	-6.350E+03 -6.093E+03	6.350E+03 6.093E+03
10	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	6.093E+03 -1.966E+03	-6.093E+03 1.966E+03	6.093E+03 1.966E+03
11	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-1.966E+03 0.000E+00	1.966E+03 0.000E+00	1.966E+03 0.000E+00

1**** End of file

JOB NO. 42112 JOB Oyster Creek A-46 BY TRD DATE 2-29-95
 CALC. NO. 002 SUBJECT CABLE TRAY EVALUATION CHK'D DB DATE 3-14-95

From page — find the maximum stress in the
 P1000 channel = 23.2 ksi which is less than the 25 ksi
 allowable.

STRESS OK FOR 1.0 DEAD LOAD

SUMMARIZE ANCHOR BOLT LOADS:

$$A = E1 + B2 = 131^{\#} + 194^{\#} = 325^{\#}$$

$$B = E6 + B7 = 376^{\#} + 194^{\#} = 575^{\#}$$

$$C = E10 + B11 = 73^{\#} + 38^{\#} = 111^{\#}$$

From the previous calculation find the allowable pullout
 for a 1/2" shell anchor as follows: (Using unknown anchor
 capacity reduction
 factor = 0.6)

$$F_t = 1031^{\#}$$

$$\frac{575}{1031} = 0.56 < 1.0 \} \text{ Anchorage OK for 1.0} \\ \text{times Dead Load}$$

VERTICAL CAPACITY CHECK

Check anchor bolts:

$$3(575^{\#}) = 1725^{\#}$$

Revise anchor bolt allowable to use a capacity reduction
 factor = 0.75

JOB NO. 42112 JOB OYSTER CREEK A 46 SHEET NO. 3.5-11
CALC. NO. 002 SUBJECT CABLE TRAY EVALUATION BY RDA DATE 2-24-95
CHK'D PB DATE 3-14-95

$$\left(\frac{1031^{\#}}{0.6} \right) (0.75) = 1289^{\#} = F_t$$

INTERACTION: $\frac{1725^{\#}}{1289^{\#}} = 1.34 > 1.0$ } Anchorage not
adequate for 3.0
times D.L.

$$F.S. \text{ against D.L.} = \frac{1289^{\#}}{575^{\#}} = 2.24 < 3.0$$

CONCLUSION: Support is still an outlier as the anchorage does not meet $3 \times D.L.$

JOB NO. 42112 JOB OYSTER CREEK A-16
 CALC. NO. 002 SUBJECT CABLE TRAY EVALUATION

BY RDA DATE 3-13-95
 CHK'D PG DATE 3-14-95

UNISTRUT B

DETERMINE SUPPORT LOADINGS:

$$R_{CC} = \left(\frac{6'}{2} + 7'\right) \left[(25 \text{ psf})(2' \text{ wide})(0.05) + (11)(1.4 \text{ #/ft}) + (1)(5.1 \text{ #/ft}) \right] = 230 \text{ #}$$

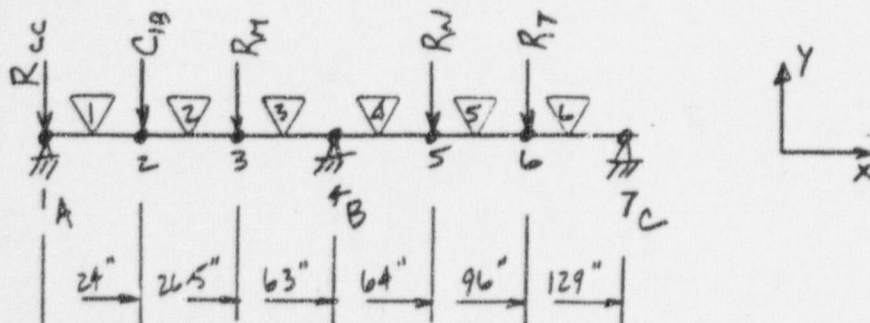
$$C_{1B} = 4.5' (2.7 \text{ #/ft}) = 9.9 \text{ #}$$

$$R_M = (25 \text{ psf})(2' \text{ wide})(.05 \times 12' + .15 \times 6' + .10 \times 6') + \left[(170 \text{ #} - 38.2 \text{ #}) + (131 \text{ #}) \right] 1.05' = 356 \text{ #}$$

$$R_N = (25 \text{ psf})(2' \text{ wide})(.05 \times 4.5' + .15 \times 4.5' + .10 \times 4.5') + \left[\frac{(R_E)}{170 \text{ #}} + \frac{(R_F)}{211 \text{ #}} - 38.2 \text{ #} \right] 1.05' = 427 \text{ #}$$

$$R_T = 20 \text{ #}$$

These loads were applied to Unistrut "B" and it was analyzed by the Algor Super Sap program. The model is shown below.



EQE ENGINEERING

SHEET 3.5-13

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations

BY EDA DATE 3-17-95

CALC. NO. 002 SUBJECT _____

CK PB DATE 3-14-95

1**** Algor (c) Linear Stress Analysis - SSAP0H Rel. 01-SEP-94 Ver. 11.06-3H

DATE: MARCH 13, 1995

TIME: 01:54 PM

INPUT FILE.....rb5103_

Analytical Review No. RB-51-003 Unistrut Channel B, Oyster Creek

1**** CONTROL INFORMATION

number of node points	(NUMNP)	=	8
number of element types	(NELTYP)	=	1
number of load cases	(LL)	=	1
number of frequencies	(NF)	=	0
geometric stiffness flag	(GEOSTF)	=	0
analysis type code	(NDYN)	=	0
solution mode	(MODEX)	=	0
equations per block	(KEQB)	=	0
weight and c.g. flag	(IWTCG)	=	0
bandwidth minimization flag	(MINBND)	=	0
gravitational constant	(GRAV)	=	3.8600E+02

bandwidth minimization specified

1**** NODAL DATA

NODE NO.	BOUNDARY CONDITION CODES						NODAL POINT COORDINATES			
	DX	DY	DZ	RX	RY	RZ	X	Y	Z	T
1	1	1	1	1	0	0	0.000E+00	0.000E+00	0.000E+00	0.000E+00
2	0	0	0	0	0	0	2.400E+01	0.000E+00	0.000E+00	0.000E+00
3	0	0	0	0	0	0	2.650E+01	0.000E+00	0.000E+00	0.000E+00
4	1	1	1	1	0	0	6.300E+01	0.000E+00	0.000E+00	0.000E+00
5	0	0	0	0	0	0	6.400E+01	0.000E+00	0.000E+00	0.000E+00
6	0	0	0	0	0	0	9.600E+01	0.000E+00	0.000E+00	0.000E+00
7	1	1	1	1	0	0	1.290E+02	0.000E+00	0.000E+00	0.000E+00
8	1	1	1	1	1	1	0.000E+00	1.000E+01	0.000E+00	0.000E+00

**** PRINT OF EQUATION NUMBERS SUPPRESSED

1**** BEAM ELEMENTS

number of beam elements	=	6
number of area property sets	=	1
number of fixed end force sets	=	0
number of materials	=	1
number of intermediate load sets	=	0



EQE ENGINEERING

SHEET 3-5-14JOB NO. 42112 JOB Oyster Creek A-46 Cable Trav EvaluationsBY TDA DATE 3-13-95CALC. NO. 002 SUBJECT _____CK DB DATE 3-14-95

1**** MATERIAL PROPERTIES

INDEX	E	MU	MASS DENSITY	WEIGHT DENSITY	THERMAL EXPANSION			REFERENCE TEMPERATURE
					X	Y	Z	
1	2.90E+07	.300	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.000E+00

1**** AREA PROPERTIES

INDEX	AREAS			TORSION	--FLEXURAL INERTIAS--	
	AXIAL A(1)	SHEAR A(2)	SHEAR A(3)	J(1)	I(2)	I(3)
1	5.550E-01	3.410E-01	1.710E-01	1.000E-03	2.390E-01	1.860E-01

1**** STRESS PROPERTIES

INDEX	---SECTION S(2)	MODULI--- S(3)
1	2.940E-01	2.030E-01

1**** ELEMENT LOAD FACTORS

	CASE A	CASE B	CASE C	CASE D
X-DIR	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Y-DIR	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Z-DIR	0.000E+00	0.000E+00	0.000E+00	0.000E+00

1**** ELEMENT CONNECTIVITY DATA

ELEMENT NO.	NODE I	NODE J	NODE K	MAT'L INDEX	SECTN INDEX	---ELEMENT LOADS---				RELEASE CODES		MEMBER NO.
						A	B	C	D	I-END	J-END	
1	1	2	8	1	1	0	0	0	0	0	0	0
2	2	3	8	1	1	0	0	0	0	0	0	0
3	3	4	8	1	1	0	0	0	0	0	0	0
4	4	5	8	1	1	0	0	0	0	0	0	0
5	5	6	8	1	1	0	0	0	0	0	0	0
6	6	7	8	1	1	0	0	0	0	0	0	0

1**** BANDWIDTH MINIMIZATION

minbnd (bandwidth control parameter) = 1

**** MINIMIZER DID NOT NEED TO REDUCE BANDWIDTH

**** Hard disk file size information for processor:

Available hard disk space on drive = 5.210 megabytes



EQE ENGINEERING

SHEET 3.5-15JOB NO. 42112 JOB Oyster Creek A-46 Cable Trav EvaluationsBY RDA DATE 3-13-95CALC. NO. 002 SUBJECT _____CK PB DATE 3-14-95

1**** NODAL LOADS (STATIC) OR MASSES (DYNAMIC)

NODE NUMBER	LOAD CASE	X-AXIS FORCE	Y-AXIS FORCE	Z-AXIS FORCE	X-AXIS MOMENT	Y-AXIS MOMENT	Z-AXIS MOMENT
1	1	0.000E+00	-2.300E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
2	1	0.000E+00	-9.900E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
3	1	0.000E+00	-3.560E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
5	1	0.000E+00	-4.270E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
6	1	0.000E+00	-2.000E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00

1**** ELEMENT LOAD MULTIPLIERS

load case	case A	case B	case C	case D
1	1.000E+00	1.000E+00	1.000E+00	1.000E+00

**** EQUATION PARAMETERS

Number of equations = 30
Minimum bandwidth = 1
Maximum bandwidth = 12
Average bandwidth = 6
Storage required (bytes) = 1704
Total memory allocated (bytes) = 4526056
Total memory free (bytes) = 4524200

**** Proceeding with in-core fast solver ...

**** Begin in-core solution

**** load case #1

**** End in-core solution

1**** STAT1. ANALYSIS

LOAD CASE =

1

Displacements/Rotations(degrees) of nodes

NODE number	X- translation	Y- translation	Z- translation	X- rotation	Y- rotation	Z- rotation
1	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	-7.3522E-01
2	0.0000E+00	-2.3384E-01	0.0000E+00	0.0000E+00	0.0000E+00	-1.9638E-01
3	0.0000E+00	-2.3999E-01	0.0000E+00	0.0000E+00	0.0000E+00	-7.8607E-02
4	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	3.7877E-01
5	0.0000E+00	6.2913E-03	0.0000E+00	0.0000E+00	0.0000E+00	3.5699E-01
6	0.0000E+00	7.1357E-02	0.0000E+00	0.0000E+00	0.0000E+00	-5.3719E-02
7	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	-1.5857E-01
8	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00



EQE ENGINEERING

SHEET 3.5-16

JOB NO. 42112 JOB Oyster Creek A-46 Cable Trav Evaluations

BY DA

DATE 3-13-95

CALC. NO. 002 SUBJECT _____

CK DB

DATE 3-14-95

1**** TEMPORARY FILE STORAGE (MEGABYTES)

UNIT NO. 7 :	.000
UNIT NO. 8 :	.000
UNIT NO. 9 :	.000
UNIT NO. 10 :	.000
UNIT NO. 11 :	.000
UNIT NO. 12 :	.000
UNIT NO. 13 :	.000
UNIT NO. 14 :	.000
UNIT NO. 15 :	.000
UNIT NO. 17 :	.000
TOTAL :	.001

1**** End of file

EQE ENGINEERING

SHEET 3.5-17

JOB NO. 42112 JOB Oyster Creek A-46 Cable Trav Evaluations

BY RAA

DATE 3-13-95

CALC. NO. 002 SUBJECT _____

CK PB

DATE 3-14-95

1**** Algor (c) FEA Stress Processor MKNSO 01-SEP-94, Ver 11.08-3H

DATE: MARCH 13, 1995

TIME: 01:54 PM

INPUT FILE.....rb5103_b

1**** BEAM ELEMENTS

number of beam elements	=	6
number of area property sets	=	1
number of fixed end force sets	=	0
number of materials	=	1
number of intermediate load sets	=	0

1**** BEAM ELEMENT FORCES AND MOMENTS

ELEMENT NO.	CASE (MODE)	AXIAL FORCE R1	SHEAR FORCE R2	SHEAR FORCE R3	TORSION MOMENT M1	BENDING MOMENT M2	BENDING MOMENT M3
1	1	0.000E+00	<u>1.761E+02</u>	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		0.000E+00	-1.761E+02	0.000E+00	0.000E+00	0.000E+00	4.227E+03
2	1	0.000E+00	1.662E+02	0.000E+00	0.000E+00	0.000E+00	-4.227E+03
		0.000E+00	-1.662E+02	0.000E+00	0.000E+00	0.000E+00	4.643E+03
3	1	0.000E+00	-1.898E+02	0.000E+00	0.000E+00	0.000E+00	-4.643E+03
		0.000E+00	<u>1.898E+02</u>	0.000E+00	0.000E+00	0.000E+00	-2.283E+03
4	1	0.000E+00	<u>4.651E+02</u>	0.000E+00	0.000E+00	0.000E+00	2.283E+03
		0.000E+00	-4.651E+02	0.000E+00	0.000E+00	0.000E+00	-1.818E+03
5	1	0.000E+00	3.813E+01	0.000E+00	0.000E+00	0.000E+00	1.818E+03
		0.000E+00	-3.813E+01	0.000E+00	0.000E+00	0.000E+00	-5.982E+02
6	1	0.000E+00	1.813E+01	0.000E+00	0.000E+00	0.000E+00	5.982E+02
		0.000E+00	<u>-1.813E+01</u>	0.000E+00	0.000E+00	0.000E+00	0.000E+00

EQE ENGINEERING

SHEET 3.5-19

JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations

BY JBH

DATE 3-13-95

CALC. NO. 002 SUBJECT _____

CK PB

DATE 3-14-95

1**** BEAM ELEMENT STRESSES

ELEMENT NO.	CASE (MODE)	P/A	P/A+M2/S2	P/A-M2/S2	P/A+M3/S3	P/A-M3/S3	WORST SUM
1	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 2.082E+04	0.000E+00 -2.082E+04	0.000E+00 2.082E+04
2	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	2.082E+04 2.287E+04	-2.082E+04 -2.287E+04	2.082E+04 2.287E+04
3	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	2.287E+04 -1.125E+04	-2.287E+04 1.125E+04	<u>2.287E+04</u> 1.125E+04
4	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-1.125E+04 -8.957E+03	1.125E+04 8.957E+03	1.125E+04 8.957E+03
5	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-8.957E+03 -2.947E+03	8.957E+03 2.947E+03	8.957E+03 2.947E+03
6	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-2.947E+03 0.000E+00	2.947E+03 0.000E+00	2.947E+03 0.000E+00

1**** End of file

JOB NO. 42112 JOB OYSTER CREEK A-46
 CALC. NO. 002 SUBJECT CABLE TRAY EVALUATION

SHEET NO. 3.5-19

BY RDA DATE 2-24-95
 CHK'D PB DATE 3-14-95

From page 3.5-18 find the maximum stress in the P1000 channel to be 22.9 ksi which is less than 25^{ksi} allowable.

OK FOR 1.0 x DEAD LOAD

SUMMARIZE BOLT LOADS

$$A = B1 + R_{cc} = 176^{\#} + 230^{\#} = 406^{\#}$$

$$B = E3 + B4 = 190^{\#} + 465^{\#} = 655^{\#}$$

$$C = E6 = 18^{\#}$$

From the previous calculation find the allowable pullout for a 1/2" shell anchor as follows: (Using unknown anchor capacity reduction factor = 0.75)

$$F_t = 1288^{\#}$$

$$\frac{F_t}{F_T} = \frac{655}{1288} = 0.51 < 1.0 \} \text{ Anchors OK for 1.0 times DL}$$

VERTICAL CAPACITY CHECK

As interaction for 1.0 x DL = 0.51, interaction for 3.0 x D.L.

$$3(0.51) = 1.53 \} \text{ Anchors also Good for 3 x DL}$$

CONCLUSION: SUPPORT IS AN OUTLIER

JOB NO. 42112 JOB OYSTER CREEK A-46

BY TDA

DATE 3-14-95

CALC. NO. 002 SUBJECT CABLE TRAY EVALUATION

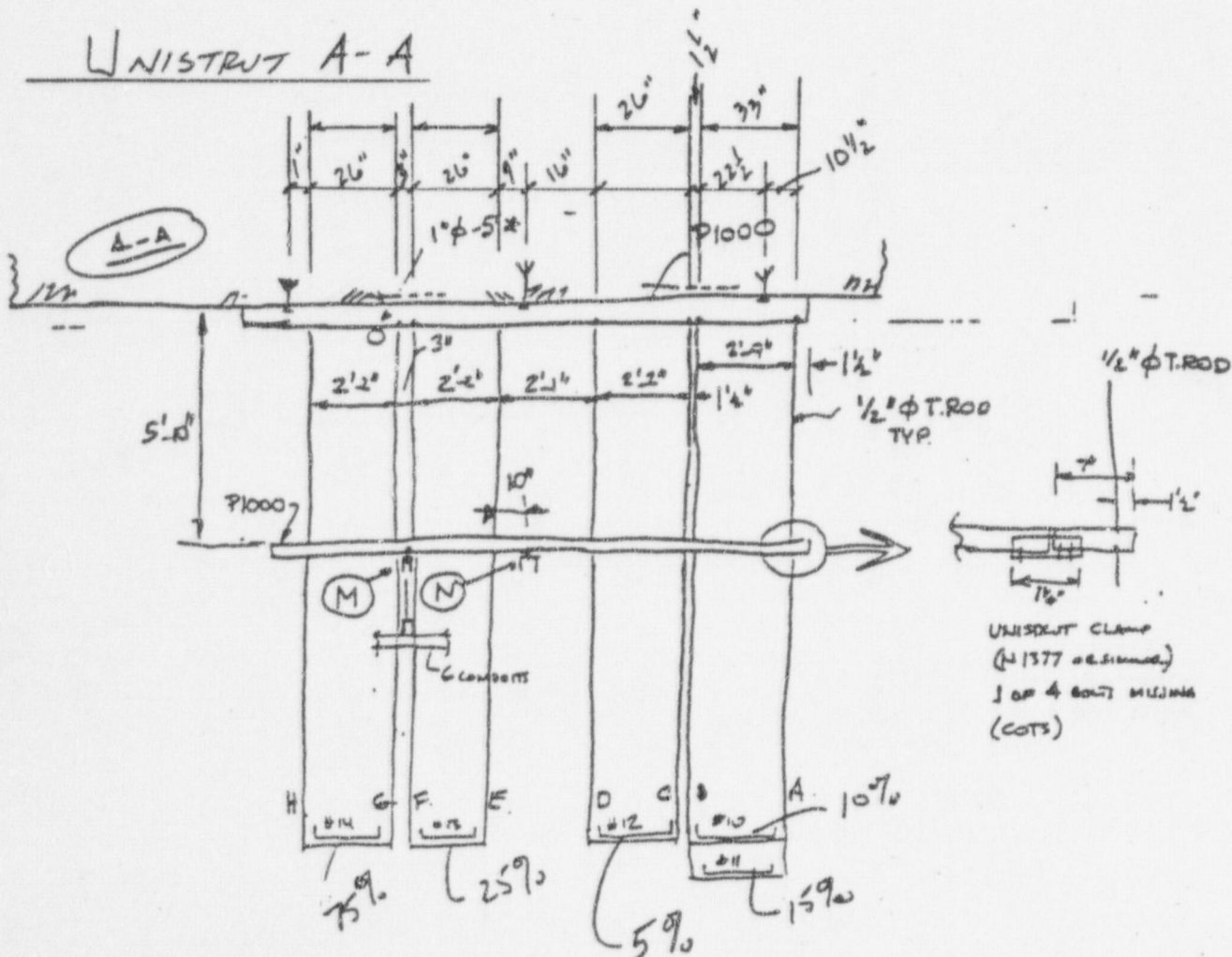
CHK'D PB

DATE 3-15-95

OUTLIER RESOLUTION:

Per Section 8.4.8 of the GIP, a Limit State Evaluation may be used to resolve outliers that do not meet the vertical capacity requirements.

This methodology places a plastic hinge at all credible joint locations. The load on the anchorage created by the plastic hinges is then added to the anchorage load due to the dead load. If the anchorage is then found adequate the Outlier is considered to be resolved.

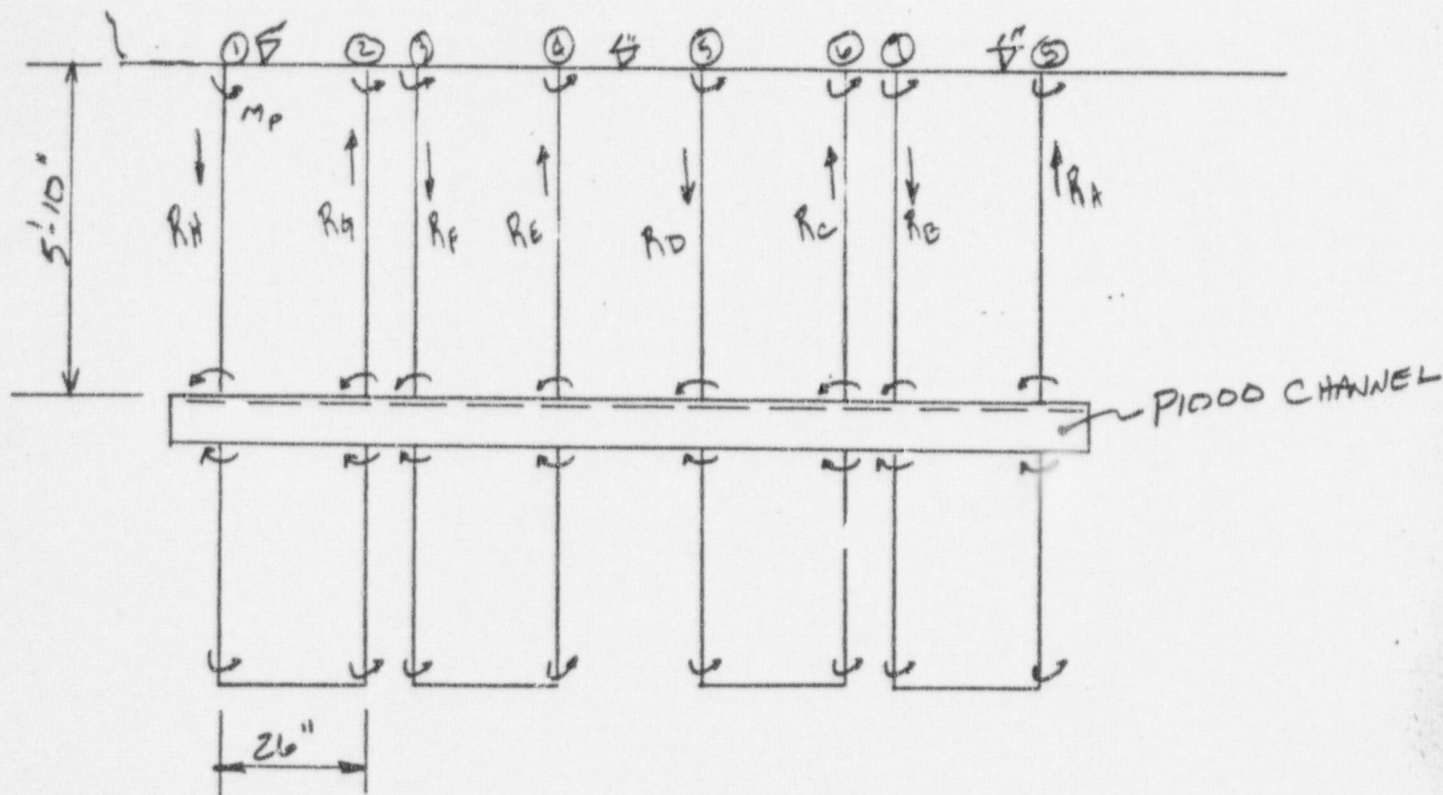
UNISTRUT A-A

JOB NO. 42112 JOB OYSTER CREEK A-46

BY EDA DATE 3-14-95

CALC. NO. 002 SUBJECT CABLE TRAY EVALUATION

CHK'D PB DATE 3-14-95



M_p = moment required to create plastic hinge in rod.
 = 1,010 # in for a $\frac{1}{2}$ " threaded rod per section 8.4.8 of the GIP

- Determine additional load on the anchor bolts and add it to the bolt loading determined in the Dead Load check section of this calc.

$$\sum M_2 = 0$$

$$R_H (26") = 8 M_p \Rightarrow = \frac{8(1010)}{26"} = -311 \#$$

$$R_H = 311 \#, R_F = -311 \#, R_E = 311 \#, R_D = -311 \#, R_C = 311 \#, R_B = -311 \#, R_A = 311 \#$$

- Rerun the Algor model using the revised loads.

EQE ENGINEERING

SHEET 3.5-22

JOB NO. 42112 JOB Oyster Creek A-46 Cable Trv Evaluations

BY TDA DATE 3-14-95

CALC. NO. 002 SUBJECT _____

CK DB DATE 3-14-95

1**** Algor (c) Linear Stress Analysis - SSAPCH Rel. 01-SEP-94 Ver. 11.06-3H

DATE: MARCH 14, 1995

TIME: 04:10 PM

INPUT FILE.....1st5103a

Analytical Review No. RB-51-003 Unistrut Channel A, Oyster Creek

1**** CONTROL INFORMATION

number of node points	(NUMNP)	=	13
number of element types	(NELTYP)	=	1
number of load cases	(LL)	=	1
number of frequencies	(NF)	=	0
geometric stiffness flag	(GEOSTF)	=	0
analysis type code	(NDYN)	=	0
solution mode	(MODEX)	=	0
equations per block	(KEQB)	=	0
weight and c.g. flag	(IWTCG)	=	0
bandwidth minimization flag	(MINBND)	=	0
gravitational constant	(GRAV)	=	3.8600E+02

bandwidth minimization specified

1**** NODAL DATA

NODE NO.	BOUNDARY CONDITION CODES						NODAL POINT COORDINATES			
	DX	DY	DZ	RX	RY	RZ	X	Y	Z	T
1	0	0	0	0	0	0	0.000E+00	0.000E+00	0.000E+00	0.000E+00
2	1	1	1	1	0	0	1.000E+00	0.000E+00	0.000E+00	0.000E+00
3	0	0	0	0	0	0	2.500E+01	0.000E+00	0.000E+00	0.000E+00
4	0	0	0	0	0	0	2.600E+01	0.000E+00	0.000E+00	0.000E+00
5	0	0	0	0	0	0	2.900E+01	0.000E+00	0.000E+00	0.000E+00
6	0	0	0	0	0	0	5.500E+01	0.000E+00	0.000E+00	0.000E+00
7	1	1	1	1	0	0	6.400E+01	0.000E+00	0.000E+00	0.000E+00
8	0	0	0	0	0	0	8.000E+01	0.000E+00	0.000E+00	0.000E+00
9	0	0	0	0	0	0	1.060E+02	0.000E+00	0.000E+00	0.000E+00
10	0	0	0	0	0	0	1.075E+02	0.000E+00	0.000E+00	0.000E+00
11	1	1	1	1	0	0	1.300E+02	0.000E+00	0.000E+00	0.000E+00
12	0	0	0	0	0	0	1.405E+02	0.000E+00	0.000E+00	0.000E+00
13	1	1	1	1	1	1	0.000E+00	1.000E+01	0.000E+00	0.000E+00

**** PRINT OF EQUATION NUMBERS SUPPRESSED

1**** BEAM ELEMENTS

number of beam elements	=	11
number of area property sets	=	1
number of fixed end force sets	=	0
number of materials	=	1
number of intermediate load sets	=	0

EQE ENGINEERING

SHEET 35-23

JOB NO. 42112 JOB Oyster Creek A-46 Cat Trav Evaluations

BY WDA DATE 3-14-95

CALC. NO. 002 SUBJECT _____

CK OB DATE 3-14-95

1**** MATERIAL PROPERTIES

INDEX	E	MU	MASS DENSITY	WEIGHT DENSITY	THERMAL EXPANSION			REFERENCE TEMPERATURE
					X	Y	Z	
1	2.90E+07	.300	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.000E+00

1**** AREA PROPERTIES

INDEX	AREAS			TORSION	--FLEXURAL INERTIAS--	
	AXIAL A(1)	SHEAR A(2)	SHEAR A(3)	J(1)	I(2)	I(3)
1	5.550E-01	3.410E-01	1.710E-01	1.000E-03	2.390E-01	1.860E-01

1**** STRESS PROPERTIES

INDEX	---SECTION S(2)	MODULI--- S(3)
1	2.940E-01	2.030E-01

1**** ELEMENT LOAD FACTORS

	CASE A	CASE B	CASE C	CASE D
X-DIR	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Y-DIR	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Z-DIR	0.000E+00	0.000E+00	0.000E+00	0.000E+00

1**** ELEMENT CONNECTIVITY DATA

ELEMENT NO.	NODE I	NODE J	NODE K	MAT'L INDEX	SECTN INDEX	---ELEMENT LOADS---				RELEASE CODES		MEMBER NO.
						A	B	C	D	I-END	J-END	
1	1	2	13	1	1	0	0	0	0	0	0	0
2	2	3	13	1	1	0	0	0	0	0	0	0
3	3	4	13	1	1	0	0	0	0	0	0	0
4	4	5	13	1	1	0	0	0	0	0	0	0
5	5	6	13	1	1	0	0	0	0	0	0	0
6	6	7	13	1	1	0	0	0	0	0	0	0
7	7	8	13	1	1	0	0	0	0	0	0	0
8	8	9	13	1	1	0	0	0	0	0	0	0
9	9	10	13	1	1	0	0	0	0	0	0	0
10	10	11	13	1	1	0	0	0	0	0	0	0
11	11	12	13	1	1	0	0	0	0	0	0	0

EQE

EQE ENGINEERING

SHEET 3.5-24JOB NO. 42112 JOB Oyster Creek A-46 Cable Trav EvaluationsBY BSA DATE 3-14-95CALC. NO. 002 SUBJECT _____CK PB DATE 3-14-95

1**** BANDWIDTH MINIMIZATION

minbnd (bandwidth control parameter) =

**** MINIMIZER DID NOT NEED TO REDUCE BANDWIDTH

**** Hard disk file size information for processor:

Available hard disk space on drive = 5.317 megabytes

1**** NODAL LOADS (STATIC) OR MASSES (DYNAMIC)

NODE NUMBER	LOAD CASE	X-AXIS FORCE	Y-AXIS FORCE	Z-AXIS FORCE	X-AXIS MOMENT	Y-AXIS MOMENT	Z-AXIS MOMENT
1	1	0.000E+00	-3.110E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
4	1	0.000E+00	3.110E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
5	1	0.000E+00	-3.110E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
6	1	0.000E+00	3.110E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
8	1	0.000E+00	-3.110E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
9	1	0.000E+00	3.110E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
10	1	0.000E+00	-3.110E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
12	1	0.000E+00	3.110E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00

1**** ELEMENT LOAD MULTIPLIERS

load case	case A	case B	case C	case D
1	1.000E+00	1.000E+00	1.000E+00	1.000E+00

**** EQUATION PARAMETERS

Number of equations = 60
Minimum bandwidth = 1
Maximum bandwidth = 12
Average bandwidth = 6
Storage required (bytes) = 3600
Total memory allocated (bytes) = 4526056
Total memory free (bytes) = 4522520

**** Proceeding with in-core fast solver ...

**** Begin in-core solution

**** load case #1

**** End in-core solution

EQE ENGINEERING

SHEET 3.5-25

JOB NO. 42112 JOB Oyster Creek A-46 Cable Trav Evaluations

BY EDR DATE 3-14-95

CALC. NO. 002 SUBJECT

CK DB DATE 3-14-95

1**** STATIC ANALYSIS

LOAD CASE =

1

Displacements/Rotations(degrees) of nodes

NODE number	X- translation	Y- translation	Z- translation	X- rotation	Y- rotation	Z- rotation
1	0.0000E+00	-9.3470E-03	0.0000E+00	0.0000E+00	0.0000E+00	5.3141E-01
2	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	5.2976E-01
3	0.0000E+00	1.7313E-01	0.0000E+00	0.0000E+00	0.0000E+00	2.1660E-01
4	0.0000E+00	1.7673E-01	0.0000E+00	0.0000E+00	0.0000E+00	1.9340E-01
5	0.0000E+00	1.8501E-01	0.0000E+00	0.0000E+00	0.0000E+00	1.3380E-01
6	0.0000E+00	1.0957E-01	0.0000E+00	0.0000E+00	0.0000E+00	-5.6007E-01
7	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	-7.9436E-01
8	0.0000E+00	-2.1834E-01	0.0000E+00	0.0000E+00	0.0000E+00	-6.2476E-01
9	0.0000E+00	-2.9570E-01	0.0000E+00	0.0000E+00	0.0000E+00	2.6928E-01
10	0.0000E+00	-2.8809E-01	0.0000E+00	0.0000E+00	0.0000E+00	3.2198E-01
11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	1.1343E+00
12	0.0000E+00	2.3097E-01	0.0000E+00	0.0000E+00	0.0000E+00	1.3164E+00
13	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

1**** TEMPORARY FILE STORAGE (MEGABYTES)

UNIT NO. 7 :	.000
UNIT NO. 8 :	.001
UNIT NO. 9 :	.000
UNIT NO. 10 :	.000
UNIT NO. 11 :	.001
UNIT NO. 12 :	.000
UNIT NO. 13 :	.000
UNIT NO. 14 :	.000
UNIT NO. 15 :	.000
UNIT NO. 17 :	.000
TOTAL :	.002

1**** End of file

EQE ENGINEERING

SHEET 3.5-26

JOB NO. 42112 JOB Oyster Creek A-46 Cable Truss Evaluations

BY TDA

DATE 3-14-95

CALC. NO. 002 SUBJECT

CK

DATE

1**** Algor (c) FEA Stress Processor MKNSO 01-SEP-94, Ver 11.08-3H

DATE: MARCH 14, 1995

TIME: 04:10 PM

INPUT FILE.....1st5103a

1**** BEAM ELEMENTS

number of beam elements	=	11
number of area property sets	=	1
number of fixed end force sets	=	0
number of materials	=	1
number of intermediate load sets	=	0

1**** BEAM ELEMENT FORCES AND MOMENTS

ELEMENT NO.	CASE (MODE)	AXIAL FORCE R1	SHEAR FORCE R2	SHEAR FORCE R3	TORSION MOMENT M1	BENDING MOMENT M2	BENDING MOMENT M3
1	1	0.000E+00	-3.110E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		0.000E+00	3.110E+02	0.000E+00	0.000E+00	0.000E+00	-3.110E+02
2	1	0.000E+00	-7.645E+01	0.000E+00	0.000E+00	0.000E+00	3.110E+03
		0.000E+00	7.645E+01	0.000E+00	0.000E+00	0.000E+00	-2.146E+03
3	1	0.000E+00	-7.645E+01	0.000E+00	0.000E+00	0.000E+00	2.146E+03
		0.000E+00	7.645E+01	0.000E+00	0.000E+00	0.000E+00	-2.222E+03
4	1	0.000E+00	2.346E+02	0.000E+00	0.000E+00	0.000E+00	2.222E+03
		0.000E+00	-2.346E+02	0.000E+00	0.000E+00	0.000E+00	-1.519E+03
5	1	0.000E+00	-7.645E+01	0.000E+00	0.000E+00	0.000E+00	1.519E+03
		0.000E+00	7.645E+01	0.000E+00	0.000E+00	0.000E+00	-3.506E+03
6	1	0.000E+00	2.346E+02	0.000E+00	0.000E+00	0.000E+00	3.506E+03
		0.000E+00	-2.346E+02	0.000E+00	0.000E+00	0.000E+00	-1.395E+03
7	1	0.000E+00	2.992E+02	0.000E+00	0.000E+00	0.000E+00	1.395E+03
		0.000E+00	-2.992E+02	0.000E+00	0.000E+00	0.000E+00	3.391E+03
8	1	0.000E+00	-1.184E+01	0.000E+00	0.000E+00	0.000E+00	-3.391E+03
		0.000E+00	1.184E+01	0.000E+00	0.000E+00	0.000E+00	3.083E+03
9	1	0.000E+00	2.992E+02	0.000E+00	0.000E+00	0.000E+00	-3.083E+03
		0.000E+00	-2.992E+02	0.000E+00	0.000E+00	0.000E+00	3.532E+03
10	1	0.000E+00	-1.184E+01	0.000E+00	0.000E+00	0.000E+00	-3.532E+03
		0.000E+00	1.184E+01	0.000E+00	0.000E+00	0.000E+00	3.265E+03

EQE

EQE ENGINEERING

JOB NO. 42112 JOB Ovster Creek A-46 Cable Tray Evaluations

SHEET 3.5-27

BY TZA DATE 3-14-95

CALC. NO. 002 SUBJECT

CK DATE

11	1	0.000E+00	-3.110E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	-3.265E+03
		0.000E+00	3.110E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

1**** BEAM ELEMENT STRESSES

ELEMENT NO.	CASE (MODE)	P/A	P/A+M2/S2	P/A-M2/S2	P/A+M3/S3	P/A-M3/S3	WORST SUM
1	1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		0.000E+00	0.000E+00	0.000E+00	-1.532E+03	1.532E+03	1.532E+03
2	1	0.000E+00	0.000E+00	0.000E+00	-1.532E+03	1.532E+03	1.532E+03
		0.000E+00	0.000E+00	0.000E+00	-1.057E+04	1.057E+04	1.057E+04
3	1	0.000E+00	0.000E+00	0.000E+00	-1.057E+04	1.057E+04	1.057E+04
		0.000E+00	0.000E+00	0.000E+00	-1.095E+04	1.095E+04	1.095E+04
4	1	0.000E+00	0.000E+00	0.000E+00	-1.095E+04	1.095E+04	1.095E+04
		0.000E+00	0.000E+00	0.000E+00	-7.481E+03	7.481E+03	7.481E+03
5	1	0.000E+00	0.000E+00	0.000E+00	-7.481E+03	7.481E+03	7.481E+03
		0.000E+00	0.000E+00	0.000E+00	-1.727E+04	1.727E+04	1.727E+04
6	1	0.000E+00	0.000E+00	0.000E+00	-1.727E+04	1.727E+04	1.727E+04
		0.000E+00	0.000E+00	0.000E+00	-6.873E+03	6.873E+03	6.873E+03
7	1	0.000E+00	0.000E+00	0.000E+00	-6.873E+03	6.873E+03	6.873E+03
		0.000E+00	0.000E+00	0.000E+00	1.671E+04	-1.671E+04	1.671E+04
8	1	0.000E+00	0.000E+00	0.000E+00	1.671E+04	-1.671E+04	1.671E+04
		0.000E+00	0.000E+00	0.000E+00	1.519E+04	-1.519E+04	1.519E+04
9	1	0.000E+00	0.000E+00	0.000E+00	1.519E+04	-1.519E+04	1.519E+04
		0.000E+00	0.000E+00	0.000E+00	1.740E+04	-1.740E+04	1.740E+04
10	1	0.000E+00	0.000E+00	0.000E+00	1.740E+04	-1.740E+04	1.740E+04
		0.000E+00	0.000E+00	0.000E+00	1.609E+04	-1.609E+04	1.609E+04
11	1	0.000E+00	0.000E+00	0.000E+00	1.609E+04	-1.609E+04	1.609E+04
		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

1**** End of file

JOB NO. 42112 JOB OYSTER CREEK A-46 BY RDJ SHEET NO. 3.5-28
 CALC. NO. 002 SUBJECT CABLE TRAY EVALUATION CHK'D PB DATE 3-14-95

SUMMARIZE ANCHOR BOLT LOADS: (PLASTIC MOMENT)

$$A = E1 + B2 = 311 - 76 = 235^{\#}$$

$$B = E6 + B7 = -235 + 299 = 64^{\#}$$

$$C = E10 + B11 = 11.8 - 311 = -300^{\#}$$

ANCHOR BOLT LOADS (DEAD LOADS)

$$A = 325^{\#}$$

$$B = 575^{\#}$$

$$C = 111^{\#}$$

$$\begin{array}{r} + \quad 235 \\ \hline 560^{\#} \end{array}$$

$$\begin{array}{r} + \quad 64 \\ \hline 639^{\#} \end{array}$$

$$\begin{array}{r} + \quad 300 \\ \hline 411^{\#} \end{array}$$

Plastic

Check Interaction Equation

$$\frac{639^{\#}}{1289^{\#}} = 0.50 < 1.0 \quad \left. \vphantom{\frac{639^{\#}}{1289^{\#}}} \right\} \text{Anchorage OK}$$

- Unknown Anchor KDF = 0.75
- Accounting for Dead Load
- Accounting for Plastic Moments in members.

CONCLUSION

METABER A OK FOR LIMIT STATE EVALUATION

JOB NO. 42112 JOB OYSTER CREEK A-46

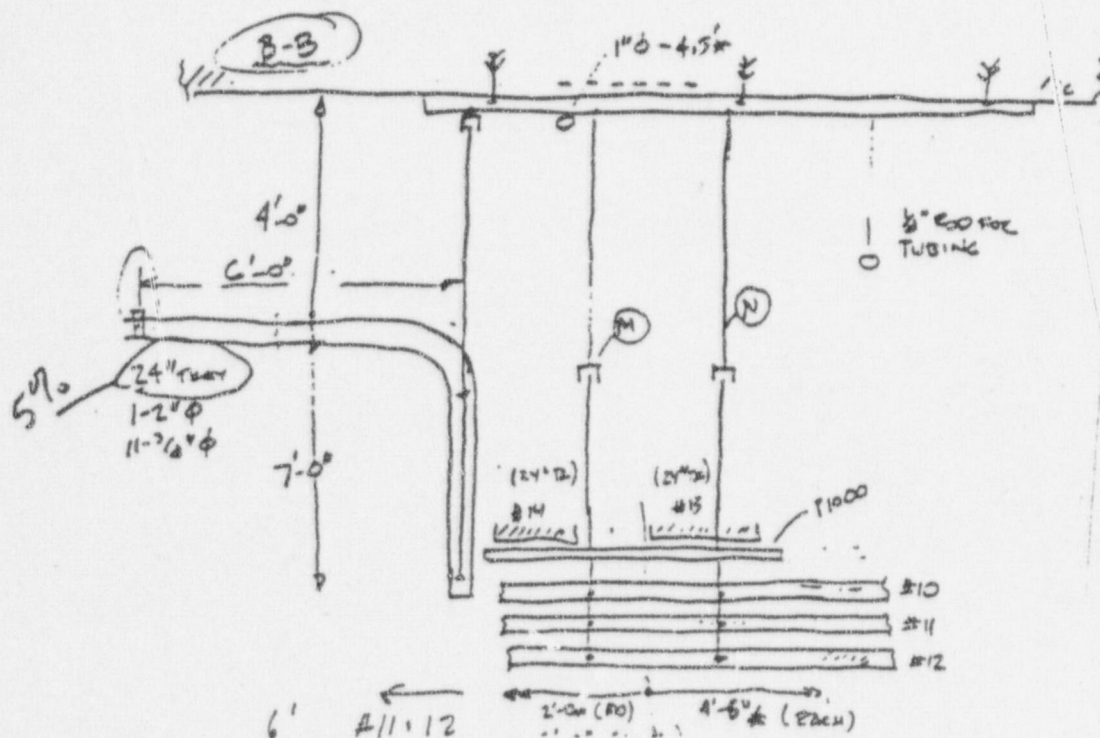
BY RDA

DATE 3-14-95

CALC. NO. 002 SUBJECT CABLE TRAY EVALUATION

CHK'D PB

DATE 3-14-95

UNISTRUT B

Plastic hinge moments in the rods going to members M & N will be released by torsional rotation of member B. As such the plastic hinge will not form and no additional load will be taken by the anchorage of Unistrut B.

Therefore Unistrut B passes the Limit State Evaluation.

CONCLUSION: BOTH OF THE VERTICAL CAPACITY OUTLIERS FOR UNISTRUT A & UNISTRUT B ARE RESOLVED BY LIMIT STATE EVALUATION.

JOB NO. 42112 JOB OYSTER CREEK A-46 BY JJB DATE 1-30-95
 CALC. NO. 002 SUBJECT CABLE TRAY OUTLIER EVALUATION CHK'D JWR DATE 3-22-95

TB-0.0-002

⇒ OUTLIER CONCERN: ANCHORAGE FAILED INITIAL
 LATERAL LOAD CHECK
 REF. CALC: EQE 42112-C-001

RECALCULATE ANCHORAGE ALLOWABLES USING
 $RT = .75$ INSTEAD OF $.60$. (REF. 3)

$$F_{t_{\text{red}}} = F_t (RT_p)(RF_p)(RS_p) = 1460 (.75)(.75)(.95) = 780 \#$$

$$F_{V_{\text{red}}} = F_v (RT_s)(RF_s)(RS_s) = 1420 (.75)(.95)(1.0) = 1012 \#$$

• CHECK INTERACTION: $\left[f_v = 37/6 = 6 \#/\text{bolt} \right]$

$$\frac{f_t}{F_t} + \frac{f_v}{F_v} = \frac{739}{780} + \frac{6}{1012} = .95 < 1.0 \therefore \underline{\underline{OK}}$$

OUTLIER RESOLVED

NO FURTHER ACTION REQ'D

JOB NO. 42112 JOB OYSTER CREEK A-46 BY TDA DATE 3-16-95
 CALC. NO. 002 SUBJECT CABLE TRAY EVALUATION CHK'D PB DATE 3-22-95

ANALYTICAL REVIEW No. TB-36-02

OUTLIER CONCERN: This support was found to be an Outlier in EQE calculation 42112-C-001. The support is suspended from the ceiling. The anchors failed the 1.0 and the 3.0 times dead load checks. The unistrut member was overstressed for 1.0 times dead load.

RESOLUTION METHODOLOGY: This calculation will remove some of the conservatism in load generation and will perform a computer analysis of the support configuration.

The support is a long series of P1000 channels suspended from the ceiling. It is secured to the ceiling by 1/2" shell anchors of unknown manufacturer. There are many trays supported from this support. Refer to the field sketch for tray locations, supported lengths and percent tray fills.

Determine tray weight: Per Section 8.3.9 of the GIP, cable tray weight may be estimated as 25 psf for a 4" deep tray. All of the trays are 2 foot wide which yields the following linear weight for a 100% full tray.

$$wt := (25 \cdot \text{psf}) \cdot 2 \cdot \text{ft} \quad wt = 4.17 \cdot \frac{\text{lb}}{\text{in}} \quad \text{psf} = \frac{\text{lb}}{\text{ft}^2} \quad \text{psi} = \frac{\text{lb}}{\text{in}^2}$$

Following the guidelines of Section 8 of the GIP, all supports selected for limited analytical review should first pass a 1.0 x Dead Load check accounting for all eccentricities:

GIP Section 8.3.1: 1.0 x Dead Load: The cable trays are suspended from the ceiling by threaded rods into Unistrut strut nuts in a horizontal channel. The deadweight of the cable trays and conduit is resisted by pullout of the two rod nuts.

From page 3.7.15 find the maximum stress for the P1000 unistrut channel = 12.5 ksi which is less than the 25 ksi allowable for 1.0 times dead load.

SUPPORT STRESS IS OK FOR 1.0 TIMES DEAD LOAD

JOB NO. 42112 JOB OYSTER CREEK A-46 BY RDA SHEET NO. 3.7-2
 CALC. NO. 002 SUBJECT CABLE TRAY EVALUATION CHK'D DR DATE 3-16-95
 DATE 3-22-95

From pages 3.7-13 to 3.7-14 find the following reaction summaries of the elements. The support reactions are derived by adding the member forces of the members framing into the node. B1 indicates the shear load from the beginning of member 1 and E1 indicates the shear load at the end of member 1.

B1 := 23.4-lb		R1 := B1	R1 = 23-lb
E3 := 66.2-lb	B4 := 130.4-lb	R2 := E3 + B4	R2 = 197-lb
E8 := 126.3-lb	B9 := 217.4-lb	R3 := E8 + B9	R3 = 344-lb
E13 := 255.6-lb	B14 := 452.7-lb	R4 := E13 + B14	R4 = 708-lb
E17 := 237.6-lb	B18 := 472.3-lb	R5 := E17 + B18	R5 = 710-lb
E21 := 140.4-lb		R6 := E21	R6 = 140-lb

Check 1/2" strut nuts:

From Reference 2 find the following allowable 1/2" strut nut loads:

Allow_pullout := 2000-lb

Allow_slip := 1500-lb

As all loads, A to M, and all reactions, R1 to R6, are less than the allowable pullout load, the strut nuts are adequate.

Check 1/2" rods: Conservatively use root area per pg. 4-147 of Reference 3 and assume A307 material:

$$A := 0.129\text{-in}^2 \quad \sigma := \frac{R5}{A} \quad \sigma = 5503\text{-psi} < 20\text{ ksi, therefore rods are adequate.}$$

JOB NO. 42112 JOB OYSTER CREEK A-46BY TDA DATE 3-16-95CALC. NO. 002 SUBJECT CABLE TRAY EVALUATIONCHK'D PB DATE 3-22-95Check 1/2" shell anchors:

Determine anchor bolt allowable loads: Use methodology of Appendix C of the GIP.
From Table C.2-1 of the GIP find the following anchor bolt allowable loads.

$$F_t := 2290 \cdot \text{lb}$$

$$F_v := 2380 \cdot \text{lb}$$

Reduction Factors:

$$RT_p := 0.75$$

$$RT_s := 0.75$$

Reduction factor for unknown
anchor bolt type. (C.2.2)

$$RF_p := \frac{3000}{4000}$$

$$RF_s := \frac{3000}{10000} + 0.65$$

Reduction factor for assumed
concrete strength = 3000 psi.
(C.2.7)

$$RF_p = 0.75$$

$$RF_s = 0.95$$

Revised Allowable Loads:

$$F_t := F_t \cdot RT_p \cdot RF_p$$

$$F_v := F_v \cdot RT_s \cdot RF_s$$

$$F_t = 1288 \cdot \text{lb}$$

$$F_v = 1696 \cdot \text{lb}$$

Check Interaction: Use highest reaction load.

$$\frac{R_5}{F_t} = 0.55 < 1.0, \text{ Anchor Bolts are acceptable for 1.0 times dead load.}$$

Per Figure 8-6 of the GIP, the next check is a vertical capacity check.

JOB NO. 42112 JOB OYSTER CREEK A-46 BY TDM DATE 3-16-95
 CALC. NO. 002 SUBJECT CABLE TRAY EVALUATION CHK'D PB DATE 3-22-95

GIP Section 8.3.2: Vertical Capacity Check This check concentrates on the support anchorage, focusing on the weak link in the support anchorage load path. The Vertical Capacity Check is an equivalent static load check, in which the support is subjected to 3.0 times Dead Load in the downward direction. This check is limited to the primary raceway support connections and the anchorage of suspended support systems.

$$DL_3 = 3 \cdot R5$$

$$DL_3 = 2130 \cdot \text{lb}$$

As the unistrut channel stress for a loading of 1.0 times dead load = 12.5 ksi, a loading of 3.0 times dead load equates to a stress of 37.5 ksi which exceeds the allowable stress of 25 ksi. In addition, the anchor bolt interaction equation value of 0.55 for 1.0 times dead load equates to a value of 1.65 for 3.0 times dead load.

Therefore the support is not adequate for the vertical capacity check.

The pullout on the strut nuts will be 3.0 times R5:

$$3.0 \cdot R5 = 2130 \cdot \text{lb} \quad \text{which exceeds} \quad \text{Allow}_{\text{pullout}} = 2000 \cdot \text{lb}$$

$$\frac{3.0 \cdot R5}{\text{Allow}_{\text{pullout}}} = 1.06 \quad 6\% \text{ overstress judged to be acceptable.}$$

Per Figure 8-6 of the GIP, the next check is a ductile response check.

GIP Section 8.3.3: Ductile Response Check This support is suspended from the ceiling on threaded rods. Therefore it is classified as a ductile support.

GIP Section 8.3.4: Lateral Load Check The cable trays are rigidly restrained by angle supports at the south end of the runs where the trays terminate. This provides lateral load restraint in the N-S direction. Likewise, the tray system is laterally supported in the E-W direction by penetrations through the wall at the north end of the room. It is judged that this restraint configuration meets the intent of the lateral load check for this support.

GIP Section 8.3.5: Rod Hanger Fatigue Evaluations The threaded rods are in shell anchors in the ceiling. This is a fixed end configuration which must be evaluated for fatigue loading.

The support is located in the Lower Cable Spread room, El. 36'-0". It is suspended from the ceiling above. This is El. 46'-6". The 5% damped floor response spectra for El. 46'-6" from Figure 6-6 of Reference 5 is enveloped by the Rod Fatigue Bounding Spectrum anchored at 0.33g, Figure 8-9 of the GIP. From Figure 8-12 of the GIP, the 14-1/2" long 1/2" diameter rod has an acceptable loading of 1,100 lbs. As this exceeds all of the reaction loads, R1 to R6, the rods are acceptable for fatigue loading.

CONCLUSION: This support does not pass the 3 times dead load analytical review guidelines of the GIP and is classified as an OUTLIER.



EQE ENGINEERING

SHEET NO. 3.7-5

JOB NO. 42112 JOB OYSTER CREEK A-46 BY RDA DATE 3-16-95
CALC. NO. 002 SUBJECT CABLE TRAY EVALUATION CHK'D OB DATE 3-22-95

OUTLIER EVALUATION:

Per Section 8.4.8 of the GIP, a lateral load evaluation may be used to resolve supports that are classified as Outliers because they do not meet the vertical capacity check. As this support was shown to meet the intent of the lateral load check the Outlier is considered to be resolved.

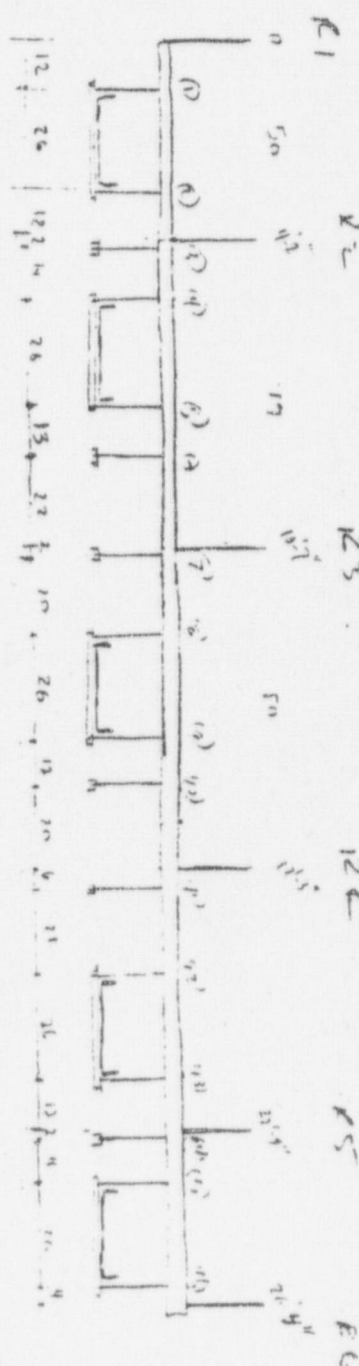
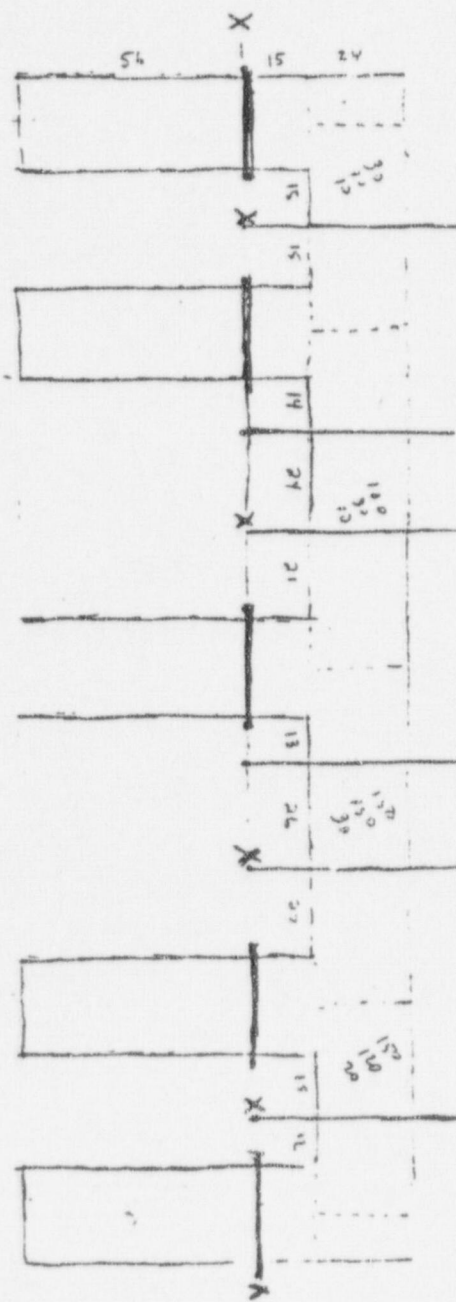
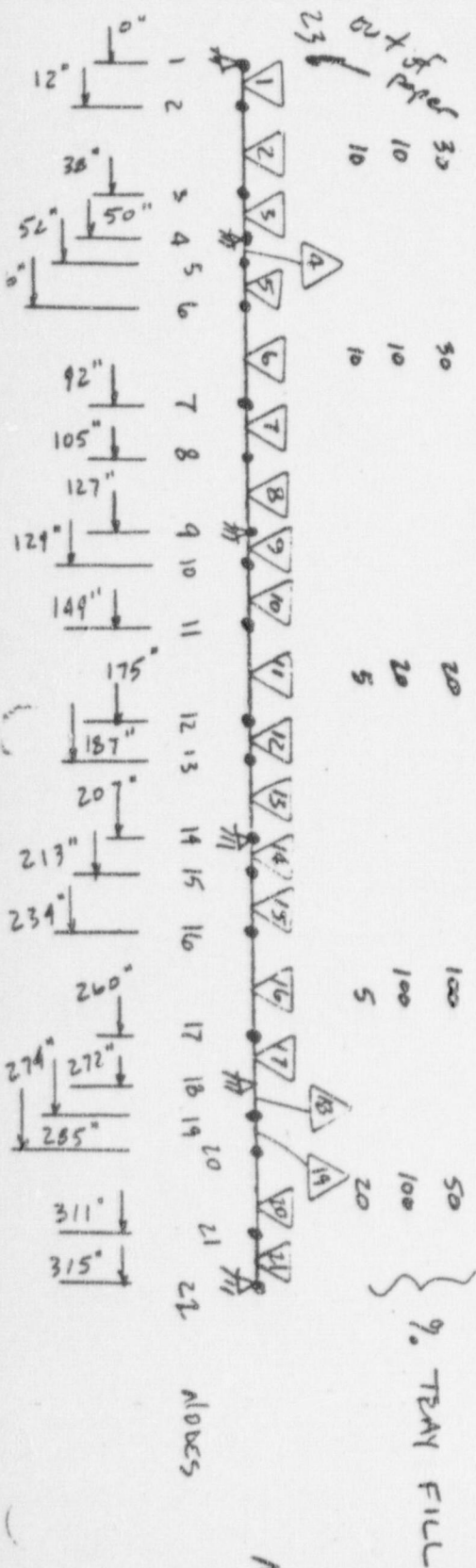
JOB NO. 42112 JOB Oyster Creek A-46

CALC. NO. 002 SUBJECT CABLE TRAY EVALUATION

SHEET NO. 3.7-6

BY JDA DATE 2-21-95

CHK'D POB DATE 3-14-95



MODE

Consider addition 0000 for more than to the base 2 of decimal. This
for improved to $\frac{1}{2}$ of 4.3 2. of 4.12 1.2 1.2

$$8'_{f, h} = \left(\frac{7}{1}\right) (2^2) (41 + 0) (4 + 0) (51 + \frac{7}{2}) \frac{7}{1} \quad (1) \quad 2$$

$h' h =$ ① $\rightarrow$ $m m =$ ② $\rightarrow$

$$3.95 = \left(\frac{7}{1}\right) (0.5) (0.1 + 0.1 + 0.01) (7 + 5 + 5 + 0.1)^{\frac{1}{2}} \quad (3) \quad 5$$

$$2'44 = \begin{pmatrix} 2 \\ 1 \end{pmatrix} (cs) (c1' + a1' + oc') \quad (s1 + \frac{2}{43}) \frac{21}{7} \quad \text{W} \quad 7$$

7 ⑤ no mod ⑥ = 44.8

$$3.011 = \left(\frac{2}{1}\right)(0.5)(0.1' + 0.2' + 0.01') (21 + 11 + 21) \frac{21}{1} \quad (7) \quad 6$$

$$10 \quad \textcircled{7} \quad \frac{1}{2} (12 + 21 + 12) (1.00 + 1.01 + 1.02 + 1.03) = 131.2$$

$$11 \quad \textcircled{8} \quad \int_0^{\frac{1}{2}} \left(\frac{2}{99} \cdot 1.0 \right) \cdot (2.0 + .05) \cdot (2.0) \cdot \frac{1}{2} \cdot 1.0 \cdot 3 = 140.3$$

[illegible]

$$13 \quad (10) \quad \frac{1}{4} (12 + 13 + 15) (1.527 + 1.55 + 1.56) (5) = 261.2$$

$$15 \quad (M) \quad \frac{1}{12}(13-22+12) \quad (3.3)(50) \left(\frac{7}{1}\right) = 323.1$$

$$7. \text{E} 31 = \begin{pmatrix} 7 \\ 1 \end{pmatrix} (100, (50 + 001 + 001)) \left(51 + \frac{7}{100} \right) \frac{71}{100} \quad (31) \quad 71$$

17 13 12 11 10 9 8 7 6 5 4 3 2 1

$$1000 = (3 + 65)(7 + 9 + 11 + 13) = 68(30) = 2040 \quad \text{---}$$



EQE ENGINEERING

SHEET 3.7-8JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray Evaluations BY WDA DATE 2-22-95CALC. NO. 007 SUBJECT _____ CK PB DATE 3-14-95

1**** Algor (c) Linear Stress Analysis - SSAP0H Rel. 01-SEP-94 Ver. 11.06-3H

DATE: FEBRUARY 22, 1995

TIME: 08:58 AM

INPUT FILE.....tb3602r2

Analytical Review No. TB-36-002, Oyster Creek

1**** CONTROL INFORMATION

number of node points	(NUMNP)	=	23
number of element types	(NELTYP)	=	1
number of load cases	(LL)	=	1
number of frequencies	(NF)	=	0
geometric stiffness flag	(GEOSTF)	=	0
analysis type code	(NDYN)	=	0
solution mode	(MODEX)	=	0
equations per block	(KEQB)	=	0
weight and c.g. flag	(IWTCG)	=	0
bandwidth minimization flag	(MINBND)	=	0
gravitational constant	(GRAV)	=	3.8600E+02

bandwidth minimization specified

1**** NODAL DATA

NODE NO.	BOUNDARY CONDITION CODES						NODAL POINT COORDINATES				T
	DX	DY	DZ	RX	RY	RZ	X	Y	Z		
1	1	1	1	1	0	0	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
2	0	0	0	0	0	0	1.200E+01	0.000E+00	0.000E+00	0.000E+00	
3	0	0	0	0	0	0	3.800E+01	0.000E+00	0.000E+00	0.000E+00	
4	1	1	1	1	0	0	5.000E+01	0.000E+00	0.000E+00	0.000E+00	
5	0	0	0	0	0	0	5.200E+01	0.000E+00	0.000E+00	0.000E+00	
6	0	0	0	0	0	0	6.600E+01	0.000E+00	0.000E+00	0.000E+00	
7	0	0	0	0	0	0	9.200E+01	0.000E+00	0.000E+00	0.000E+00	
8	0	0	0	0	0	0	1.050E+02	0.000E+00	0.000E+00	0.000E+00	
9	1	1	1	1	0	0	1.270E+02	0.000E+00	0.000E+00	0.000E+00	
10	0	0	0	0	0	0	1.290E+02	0.000E+00	0.000E+00	0.000E+00	
11	0	0	0	0	0	0	1.490E+02	0.000E+00	0.000E+00	0.000E+00	
12	0	0	0	0	0	0	1.750E+02	0.000E+00	0.000E+00	0.000E+00	
13	0	0	0	0	0	0	1.870E+02	0.000E+00	0.000E+00	0.000E+00	
14	1	1	1	1	0	0	2.070E+02	0.000E+00	0.000E+00	0.000E+00	
15	0	0	0	0	0	0	2.130E+02	0.000E+00	0.000E+00	0.000E+00	
16	0	0	0	0	0	0	2.340E+02	0.000E+00	0.000E+00	0.000E+00	
17	0	0	0	0	0	0	2.600E+02	0.000E+00	0.000E+00	0.000E+00	
18	1	1	1	1	0	0	2.720E+02	0.000E+00	0.000E+00	0.000E+00	
19	0	0	0	0	0	0	2.740E+02	0.000E+00	0.000E+00	0.000E+00	
20	0	0	0	0	0	0	2.850E+02	0.000E+00	0.000E+00	0.000E+00	
21	0	0	0	0	0	0	3.110E+02	0.000E+00	0.000E+00	0.000E+00	
22	1	1	1	1	0	0	3.150E+02	0.000E+00	0.000E+00	0.000E+00	
23	1	1	1	1	1	1	0.000E+00	0.000E+00	1.000E+01	0.000E+00	

EQE

EQE ENGINEERING

SHEET 3.7-9JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray EvaluationsBY RDADATE 2-22-95CALC. NO. 002 SUBJECT _____CK PBDATE 3-14-95

**** PRINT OF EQUATION NUMBERS SUPPRESSED

1**** BEAM ELEMENTS

number of beam elements	=	21
number of area property sets	=	1
number of fixed end force sets	=	0
number of materials	=	1
number of intermediate load sets	=	0

1**** MATERIAL PROPERTIES

INDEX	E	MU	MASS DENSITY	WEIGHT DENSITY	THERMAL EXPANSION X	Y	Z	REFERENCE TEMPERATURE
1	2.90E+07	.300	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.000E+00

1**** AREA PROPERTIES

INDEX	AXIAL A(1)	SHEAR A(2)	SHEAR A(3)	TORSION J(1)	---FLEXURAL INERTIAS---	I(2)	I(3)
1	5.550E-01	3.410E-01	1.710E-01	1.000E-03	2.390E-01	1.860E-01	

1**** STRESS PROPERTIES

INDEX	---SECTION S(2)	MODULI--- S(3)
1	2.940E-01	2.030E-01

1**** ELEMENT LOAD FACTORS

	CASE A	CASE B	CASE C	CASE D
X-DIR	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Y-DIR	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Z-DIR	0.000E+00	0.000E+00	0.000E+00	0.000E+00

EQE

EQE ENGINEERING

SHEET 3-7-10JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray EvaluationsBY PAK DATE 2-22-95CALC. NO. 002 SUBJECT _____CK OB DATE 3-14-95

1**** ELEMENT CONNECTIVITY DATA

ELEMENT NO.	NODE I	NODE J	NODE K	MAT'L INDEX	SECTN INDEX	---ELEMENT A	LOADS--- B	--- C	--- D	RELEASE I-END	CODES J-END	MEMBER NO.
1	1	2	23	1	1	0	0	0	0	0	0	0
2	2	3	23	1	1	0	0	0	0	0	0	0
3	3	4	23	1	1	0	0	0	0	0	0	0
4	4	5	23	1	1	0	0	0	0	0	0	0
5	5	6	23	1	1	0	0	0	0	0	0	0
6	6	7	23	1	1	0	0	0	0	0	0	0
7	7	8	23	1	1	0	0	0	0	0	0	0
8	8	9	23	1	1	0	0	0	0	0	0	0
9	9	10	23	1	1	0	0	0	0	0	0	0
10	10	11	23	1	1	0	0	0	0	0	0	0
11	11	12	23	1	1	0	0	0	0	0	0	0
12	12	13	23	1	1	0	0	0	0	0	0	0
13	13	14	23	1	1	0	0	0	0	0	0	0
14	14	15	23	1	1	0	0	0	0	0	0	0
15	15	16	23	1	1	0	0	0	0	0	0	0
16	16	17	23	1	1	0	0	0	0	0	0	0
17	17	18	23	1	1	0	0	0	0	0	0	0
18	18	19	23	1	1	0	0	0	0	0	0	0
19	19	20	23	1	1	0	0	0	0	0	0	0
20	20	21	23	1	1	0	0	0	0	0	0	0
21	21	22	23	1	1	0	0	0	0	0	0	0

1**** BANDWIDTH MINIMIZATION

minbnd (bandwidth control parameter) = 1

**** MINIMIZER DID NOT NEED TO REDUCE BANDWIDTH

**** Hard disk file size information for processor:

Available hard disk space on drive = 61.645 megabytes

EQE

EQE ENGINEERING

SHEET 3.7-11JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray EvaluationsBY PJADATE 2-22-95CALC. NO. 002 SUBJECT _____CK PBDATE 3-14-95

1**** NODAL LOADS (STATIC) OR MASSES (DYNAMIC)

NODE NUMBER	LOAD CASE	X-AXIS FORCE	Y-AXIS FORCE	Z-AXIS FORCE	X-AXIS MOMENT	Y-AXIS MOMENT	Z-AXIS MOMENT
2	1	0.000E+00	-4.480E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
3	1	0.000E+00	-4.480E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
5	1	0.000E+00	-5.630E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
6	1	0.000E+00	-4.480E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
7	1	0.000E+00	-4.480E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
8	1	0.000E+00	-1.108E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
10	1	0.000E+00	-1.312E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
11	1	0.000E+00	-4.030E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
12	1	0.000E+00	-4.030E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
13	1	0.000E+00	-2.612E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
15	1	0.000E+00	-3.231E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
16	1	0.000E+00	-1.836E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
17	1	0.000E+00	-1.836E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
19	1	0.000E+00	-3.081E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
20	1	0.000E+00	-1.523E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00
21	1	0.000E+00	-1.523E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00

1**** ELEMENT LOAD MULTIPLIERS

load case	case A	case B	case C	case D
1	1.000E+00	1.000E+00	1.000E+00	1.000E+00

**** EQUATION PARAMETERS

Number of equations = 108
Minimum bandwidth = 1
Maximum bandwidth = 12
Average bandwidth = 7
Storage required (bytes) = 6960
Total memory allocated (bytes) = 4538312
Total memory free (bytes) = 4531992

**** Proceeding with in-core fast solver ...

**** Begin in-core solution

**** load case #1

**** End in-core solution

EQE

EQE ENGINEERING

SHEET 3.7-12JOB NO. 42112 JOB Oyster Creek A-46 Cable Trav EvaluationsBY DA DATE 2-22-95CALC. NO. 052 SUBJECTCK PB DATE 3-14-95

1**** STATIC ANALYSIS

LOAD CASE =

1

Displacements/Rotations(degrees) of nodes

NODE number	X- translation	Y- translation	Z- translation	X- rotation	Y- rotation	Z- rotation
1	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	-1.1536E-02
2	0.0000E+00	-1.5892E-03	0.0000E+00	0.0000E+00	0.0000E+00	2.4207E-03
3	0.0000E+00	4.4981E-03	0.0000E+00	0.0000E+00	0.0000E+00	3.2390E-03
4	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	-6.3291E-02
5	0.0000E+00	-2.6290E-03	0.0000E+00	0.0000E+00	0.0000E+00	-7.8786E-02
6	0.0000E+00	-2.8943E-02	0.0000E+00	0.0000E+00	0.0000E+00	-1.1214E-01
7	0.0000E+00	-5.6612E-02	0.0000E+00	0.0000E+00	0.0000E+00	1.9231E-02
8	0.0000E+00	-4.0868E-02	0.0000E+00	0.0000E+00	0.0000E+00	1.1500E-01
9	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	6.0509E-03
10	0.0000E+00	-5.4875E-04	0.0000E+00	0.0000E+00	0.0000E+00	-2.3230E-02
11	0.0000E+00	-3.7804E-02	0.0000E+00	0.0000E+00	0.0000E+00	-1.3752E-01
12	0.0000E+00	-7.3085E-02	0.0000E+00	0.0000E+00	0.0000E+00	2.7571E-02
13	0.0000E+00	-5.2929E-02	0.0000E+00	0.0000E+00	0.0000E+00	1.6635E-01
14	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	-1.9291E-02
15	0.0000E+00	-1.0646E-02	0.0000E+00	0.0000E+00	0.0000E+00	-1.3439E-01
16	0.0000E+00	-6.3101E-02	0.0000E+00	0.0000E+00	0.0000E+00	-6.5340E-02
17	0.0000E+00	-2.9119E-02	0.0000E+00	0.0000E+00	0.0000E+00	1.6153E-01
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	5.5106E-02
19	0.0000E+00	7.9815E-04	0.0000E+00	0.0000E+00	0.0000E+00	2.1603E-02
20	0.0000E+00	-4.3115E-03	0.0000E+00	0.0000E+00	0.0000E+00	-3.7593E-02
21	0.0000E+00	-4.2070E-03	0.0000E+00	0.0000E+00	0.0000E+00	4.9854E-02
22	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	5.9139E-02
23	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

1**** TEMPORARY FILE STORAGE (MEGABYTES)

UNIT NO. 7 :	.001
UNIT NO. 8 :	.001
UNIT NO. 9 :	.000
UNIT NO. 10 :	.000
UNIT NO. 11 :	.001
UNIT NO. 12 :	.001
UNIT NO. 13 :	.000
UNIT NO. 14 :	.000
UNIT NO. 15 :	.000
UNIT NO. 17 :	.000
TOTAL :	.004

1**** End of file



EQE ENGINEERING

SHEET 3.7-13JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray EvaluationsBY WDA DATE 2-22-95CALC. NO. 002 SUBJECT _____CK DB DATE 3-14-95

1**** Algor (c) FEA Stress Processor MKNSO 01-SEP-94, Ver 11.08-3H

DATE: FEBRUARY 22, 1995

TIME: 08:59 AM

INPUT FILE.....tb3602r2

1**** BEAM ELEMENTS

number of beam elements	=	21
number of area property sets	=	1
number of fixed end force sets	=	0
number of materials	=	1
number of intermediate load sets	=	0

1**** BEAM ELEMENT FORCES AND MOMENTS

ELEMENT NO.	CASE (MODE)	AXIAL FORCE R1	SHEAR FORCE R2	SHEAR FORCE R3	TORSION MOMENT M1	BENDING MOMENT M2	BENDING MOMENT M3
1	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-2.345E+01 2.345E+01	0.000E+00 0.000E+00	0.000E+00 2.814E+02	0.000E+00 0.000E+00
2	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	2.135E+01 -2.135E+01	0.000E+00 0.000E+00	-2.814E+02 -2.738E+02	0.000E+00 0.000E+00
3	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	6.615E+01 -6.615E+01	0.000E+00 0.000E+00	2.738E+02 -1.068E+03	0.000E+00 0.000E+00
4	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-1.304E+02 1.304E+02	0.000E+00 0.000E+00	1.068E+03 -8.068E+02	0.000E+00 0.000E+00
5	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-7.409E+01 7.409E+01	0.000E+00 0.000E+00	8.068E+02 2.304E+02	0.000E+00 0.000E+00
6	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-2.929E+01 2.929E+01	0.000E+00 0.000E+00	-2.304E+02 9.920E+02	0.000E+00 0.000E+00
7	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	1.551E+01 -1.551E+01	0.000E+00 0.000E+00	-9.920E+02 7.903E+02	0.000E+00 0.000E+00
8	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	1.263E+02 -1.263E+02	0.000E+00 0.000E+00	-7.903E+02 -1.988E+03	0.000E+00 0.000E+00
9	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-2.174E+02 2.174E+02	0.000E+00 0.000E+00	1.988E+03 -1.554E+03	0.000E+00 0.000E+00
10	1	0.000E+00 0.000E+00	0.000E+00 0.000E+00	-8.623E+01 8.623E+01	0.000E+00 0.000E+00	1.554E+03 1.710E+02	0.000E+00 0.000E+00

EQE ENGINEERING

SHEET 3.7-14

JOB NO. 42112 JOB Ovster Creek A-46 Cable Tray Evaluations

BY WDA DATE 2-22-95

CALC. NO. 002 SUBJECT

CK QB DATE 3-14-95

11	1	0.000E+00	0.000E+00	-4.593E+01	0.000E+00	-1.710E+02	0.000E+00
		0.000E+00	0.000E+00	4.593E+01	0.000E+00	1.365E+03	0.000E+00
12	1	0.000E+00	0.000E+00	-5.632E+00	0.000E+00	-1.365E+03	0.000E+00
		0.000E+00	0.000E+00	5.632E+00	0.000E+00	1.433E+03	0.000E+00
13	1	0.000E+00	0.000E+00	2.556E+02	0.000E+00	-1.433E+03	0.000E+00
		0.000E+00	0.000E+00	<u>-2.556E+02</u>	0.000E+00	-3.679E+03	0.000E+00
14	1	0.000E+00	0.000E+00	<u>-4.527E+02</u>	0.000E+00	3.679E+03	0.000E+00
		0.000E+00	0.000E+00	4.527E+02	0.000E+00	-9.626E+02	0.000E+00
15	1	0.000E+00	0.000E+00	-1.296E+02	0.000E+00	9.626E+02	0.000E+00
		0.000E+00	0.000E+00	1.296E+02	0.000E+00	1.758E+03	0.000E+00
16	1	0.000E+00	0.000E+00	5.404E+01	0.000E+00	-1.758E+03	0.000E+00
		0.000E+00	0.000E+00	-5.404E+01	0.000E+00	3.530E+02	0.000E+00
17	1	0.000E+00	0.000E+00	2.376E+02	0.000E+00	-3.530E+02	0.000E+00
		0.000E+00	0.000E+00	<u>-2.376E+02</u>	0.000E+00	-2.499E+03	0.000E+00
18	1	0.000E+00	0.000E+00	<u>-4.723E+02</u>	0.000E+00	2.499E+03	0.000E+00
		0.000E+00	0.000E+00	4.723E+02	0.000E+00	-1.554E+03	0.000E+00
19	1	0.000E+00	0.000E+00	-1.642E+02	0.000E+00	1.554E+03	0.000E+00
		0.000E+00	0.000E+00	1.642E+02	0.000E+00	2.521E+02	0.000E+00
20	1	0.000E+00	0.000E+00	-1.190E+01	0.000E+00	-2.521E+02	0.000E+00
		0.000E+00	0.000E+00	1.190E+01	0.000E+00	5.616E+02	0.000E+00
21	1	0.000E+00	0.000E+00	1.404E+02	0.000E+00	-5.616E+02	0.000E+00
		0.000E+00	0.000E+00	<u>-1.404E+02</u>	0.000E+00	0.000E+00	0.000E+00

1**** BEAM ELEMENT STRESSES

ELEMENT NO.	CASE (MODE)	P/A	P/A+M2/S2	P/A-M2/S2	P/A+M3/S3	P/A-M3/S3	WORST SUM
1	1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
		0.000E+00	9.571E+02	-9.571E+02	0.000E+00	0.000E+00	9.571E+02
2	1	0.000E+00	9.571E+02	-9.571E+02	0.000E+00	0.000E+00	9.571E+02
		0.000E+00	-9.312E+02	9.312E+02	0.000E+00	0.000E+00	9.312E+02
3	1	0.000E+00	-9.312E+02	9.312E+02	0.000E+00	0.000E+00	9.312E+02
		0.000E+00	-3.631E+03	3.631E+03	0.000E+00	0.000E+00	3.631E+03
4	1	0.000E+00	-3.631E+03	3.631E+03	0.000E+00	0.000E+00	3.631E+03
		0.000E+00	-2.744E+03	2.744E+03	0.000E+00	0.000E+00	2.744E+03
5	1	0.000E+00	-2.744E+03	2.744E+03	0.000E+00	0.000E+00	2.744E+03
		0.000E+00	7.838E+02	-7.838E+02	0.000E+00	0.000E+00	7.838E+02

EQE

EQE ENGINEERING

SHEET 3.7-15JOB NO. 42112 JOB Oyster Creek A-46 Cable Tray EvaluationsBY TDA DATE 2-22-95CALC. NO. 002 SUBJECT _____CK RB DATE 3-14-95

6	1	0.000E+00	7.838E+02	-7.838E+02	0.000E+00	0.000E+00	7.838E+02
		0.000E+00	3.374E+03	-3.374E+03	0.000E+00	0.000E+00	3.374E+03
7	1	0.000E+00	3.374E+03	-3.374E+03	0.000E+00	0.000E+00	3.374E+03
		0.000E+00	2.688E+03	-2.688E+03	0.000E+00	0.000E+00	2.688E+03
8	1	0.000E+00	2.688E+03	-2.688E+03	0.000E+00	0.000E+00	2.688E+03
		0.000E+00	-6.764E+03	6.764E+03	0.000E+00	0.000E+00	6.764E+03
9	1	0.000E+00	-6.764E+03	6.764E+03	0.000E+00	0.000E+00	6.764E+03
		0.000E+00	-5.284E+03	5.284E+03	0.000E+00	0.000E+00	5.284E+03
10	1	0.000E+00	-5.284E+03	5.284E+03	0.000E+00	0.000E+00	5.284E+03
		0.000E+00	5.817E+02	-5.817E+02	0.000E+00	0.000E+00	5.817E+02
11	1	0.000E+00	5.817E+02	-5.817E+02	0.000E+00	0.000E+00	5.817E+02
		0.000E+00	4.644E+03	-4.644E+03	0.000E+00	0.000E+00	4.644E+03
12	1	0.000E+00	4.644E+03	-4.644E+03	0.000E+00	0.000E+00	4.644E+03
		0.000E+00	4.874E+03	-4.874E+03	0.000E+00	0.000E+00	4.874E+03
13	1	0.000E+00	4.874E+03	-4.874E+03	0.000E+00	0.000E+00	4.874E+03
		0.000E+00	-1.251E+04	1.251E+04	0.000E+00	0.000E+00	<u>1.251E+04</u>
14	1	0.000E+00	-1.251E+04	1.251E+04	0.000E+00	0.000E+00	<u>1.251E+04</u>
		0.000E+00	-3.274E+03	3.274E+03	0.000E+00	0.000E+00	<u>3.274E+03</u>
15	1	0.000E+00	-3.274E+03	3.274E+03	0.000E+00	0.000E+00	3.274E+03
		0.000E+00	5.980E+03	-5.980E+03	0.000E+00	0.000E+00	5.980E+03
16	1	0.000E+00	5.980E+03	-5.980E+03	0.000E+00	0.000E+00	5.980E+03
		0.000E+00	1.201E+03	-1.201E+03	0.000E+00	0.000E+00	1.201E+03
17	1	0.000E+00	1.201E+03	-1.201E+03	0.000E+00	0.000E+00	1.201E+03
		0.000E+00	-8.499E+03	8.499E+03	0.000E+00	0.000E+00	8.499E+03
18	1	0.000E+00	-8.499E+03	8.499E+03	0.000E+00	0.000E+00	8.499E+03
		0.000E+00	-5.286E+03	5.286E+03	0.000E+00	0.000E+00	5.286E+03
19	1	0.000E+00	-5.286E+03	5.286E+03	0.000E+00	0.000E+00	5.286E+03
		0.000E+00	8.576E+02	-8.576E+02	0.000E+00	0.000E+00	8.576E+02
20	1	0.000E+00	8.576E+02	-8.576E+02	0.000E+00	0.000E+00	8.576E+02
		0.000E+00	1.910E+03	-1.910E+03	0.000E+00	0.000E+00	1.910E+03
21	1	0.000E+00	1.910E+03	-1.910E+03	0.000E+00	0.000E+00	1.910E+03
		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

1**** End of file



EQE INTERNATIONAL

SHEET NO. 5

JOB NO. 42112 JOB Oyster Creek A-46 BY TDA DATE 3-22-95
CALC. NO. C-002 SUBJECT Cable Tray Outlier Evaluation CHKD PB DATE 3-22-95

4.0 Conclusion

This calculation resolved all of the Outliers listed in the Table of Contents.

5.0 References

1. Generic Implementation Procedure for the Seismic Verification of Nuclear Power Plant Equipment, Revision 2, corrected February 14, 1994. Prepared for the Seismic Qualification Utility Group
2. EQE Calculation 42112-C-001, "USI A-46 Cable Tray and Conduit Limited Analytical Review". Revision 0, dated March 8, 1995.
3. Draft letter from Mr. Neil Smith (SQUG Chairman) to Mr. Roy Zimmerman (USNRC), Subject: Revision 3 of the GIP.
4. EQE Report 50124-R-002, "In-Structure Response Spectra for the Oyster Creek Nuclear Generating Station Reactor Building, Compilation of Response Spectra for use in USI A-46 Program". Revision 0 dated June 1994.
5. EQE Report 50124-R-001, "In-Structure Response Spectra for the Oyster Creek Nuclear Generating Station, Compilation of Response Spectra for use in USI A-46 Program". Revision 0 dated May 1994.



EQE INTERNATIONAL

SHEET NO. A1 of 16

JOB NO. 42112 JOB Oyster Creek A-46 BY _____ DATE _____
CALC. NO. C-002 SUBJECT Cable Tray Outlier Evaluation CHK'D _____ DATE _____

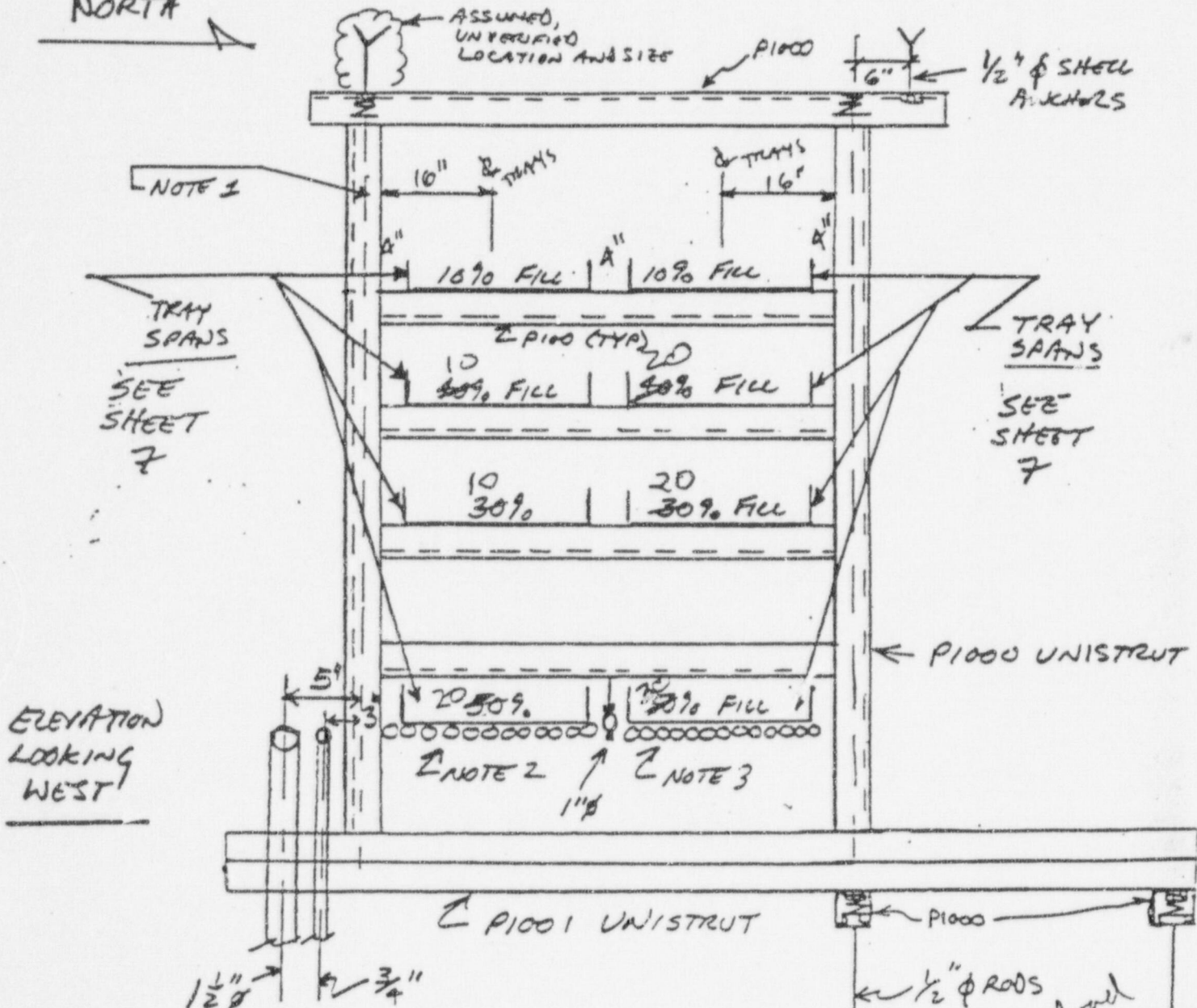
Attachment A

Additional Walkdown Information Gathered to Resolve Outliers

Calculation Sheet

Subject RB-23-002		Calc No.	Rev. No.	Sheet No. 2 of 7
Originator J.R. Dwyer	Date 10/10/94	Reviewed by R+LH		Date 2 Nov 94

NORTH



NOTES:

1. ALL THROUGH RODS EXTEND VERTICALLY THROUGH THE VERTICAL UNISTRUT MEMBERS SHOWN. SEE CONNECTION DETAILS.

ELEVATION LOOKING WEST

2. 15 conduits supported at this location. 9- $\frac{3}{4}$ " ϕ and 6-1" ϕ conduits with the same span as the lower cable tray.

Steel supported
steel rods

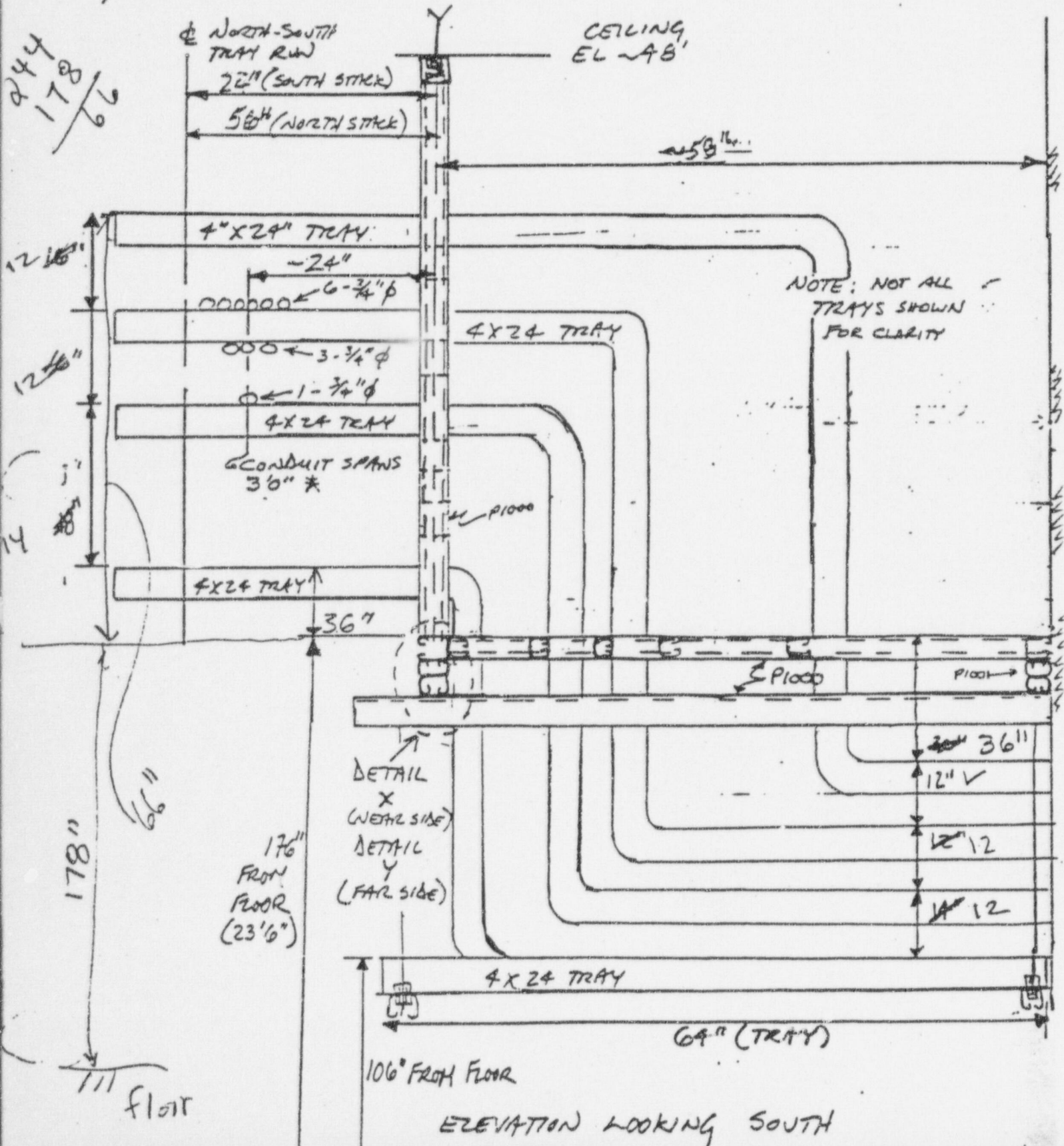
Calc. 42112-C-002

SHT A 3

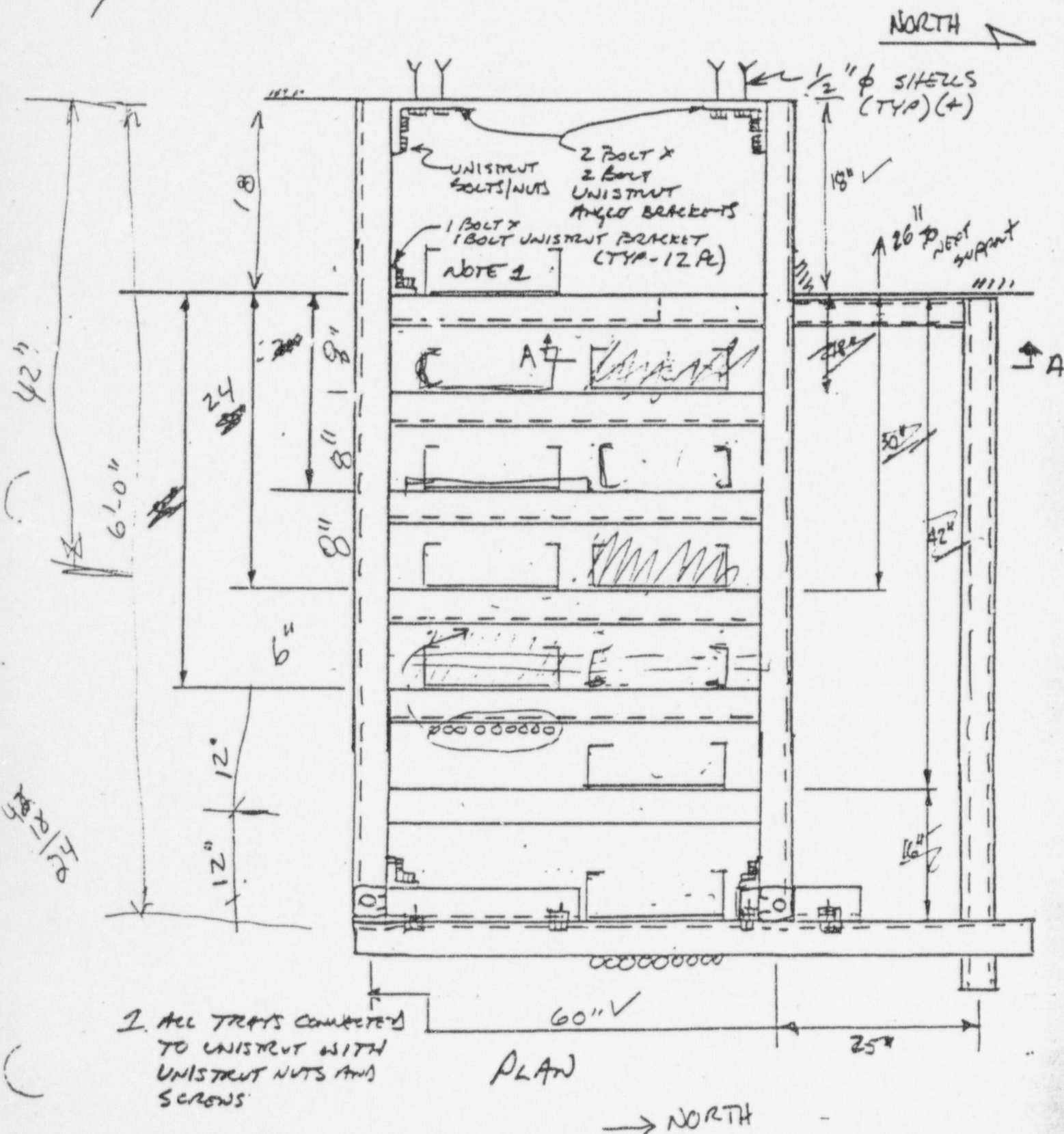
GPU Nuclear

Calculation Sheet

Subject	RB-23-002	Calc No.		Rev. No.		Sheet No.	3 of 7
Originator	J.R. Dissore	Date	10/10/94	Reviewed by	R.L.H.	Date	3 NOV 94

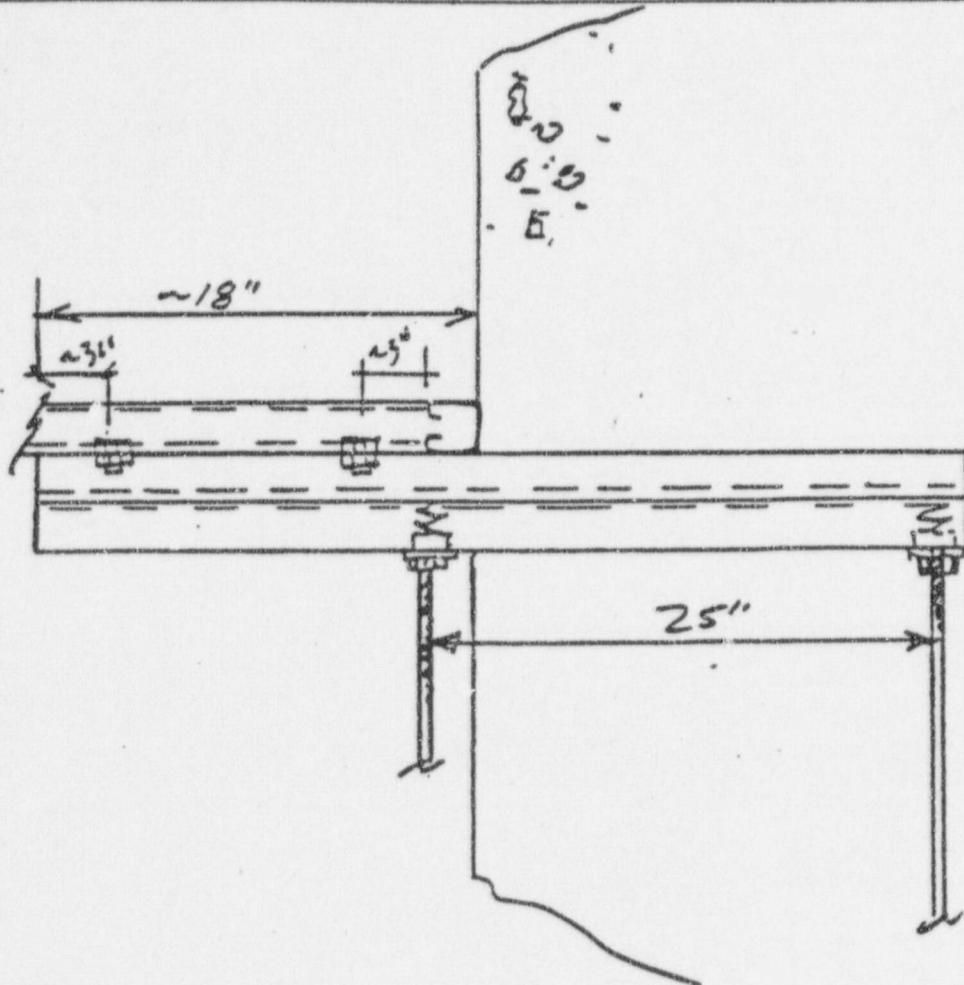


Subject RB-23-002	Calc No.	Rev. No.	Sheet No. 4 of 7
Originator J. R. Disser	Date 10/10/94	Reviewed by R & C	Date JAN 94

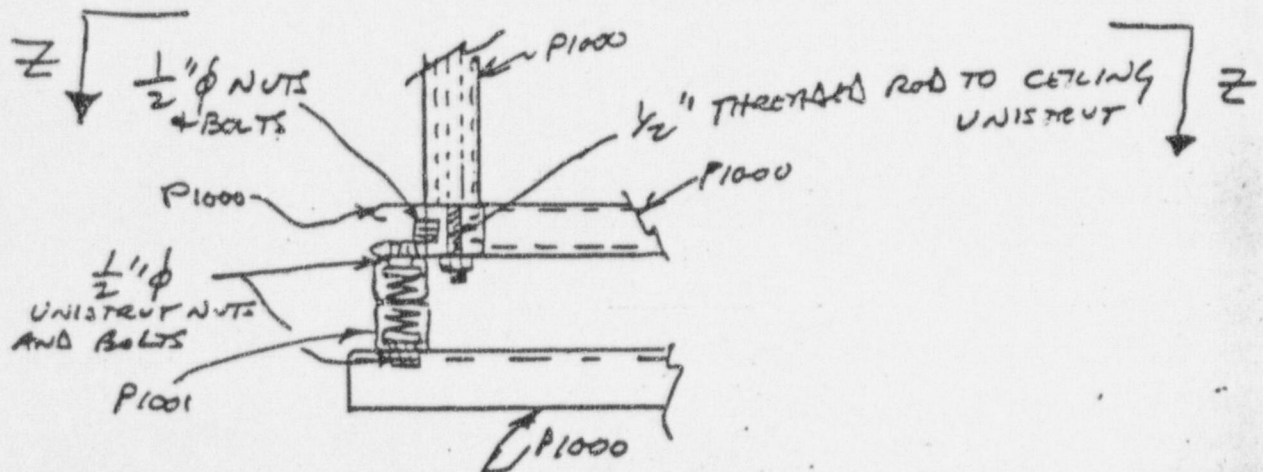


Calculation Sheet

Subject RB-23-002	Calc No.	Rev. No.	Sheet No. 5 of 7
Originator J.R. Dwyer	Date 10/10/94	Reviewed by R. S. L.	Date 10/27/94



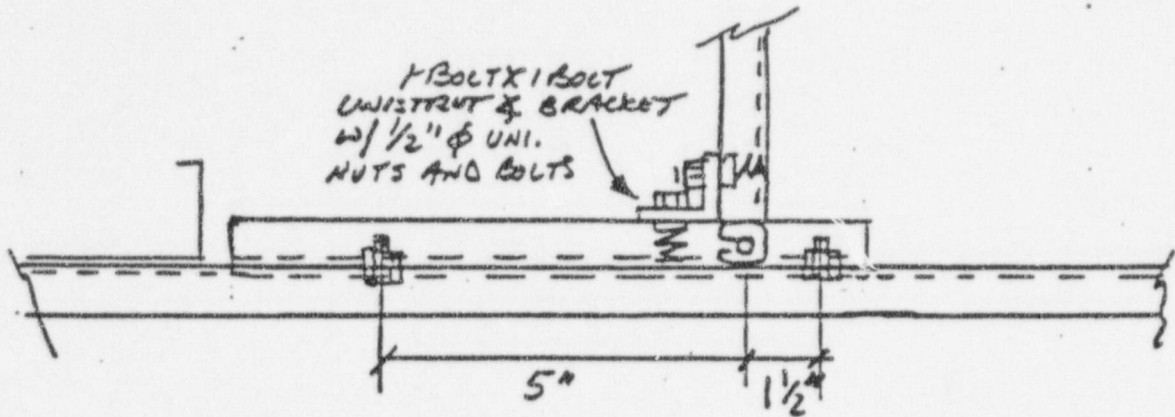
A-A



DETAIL X

Calculation Sheet

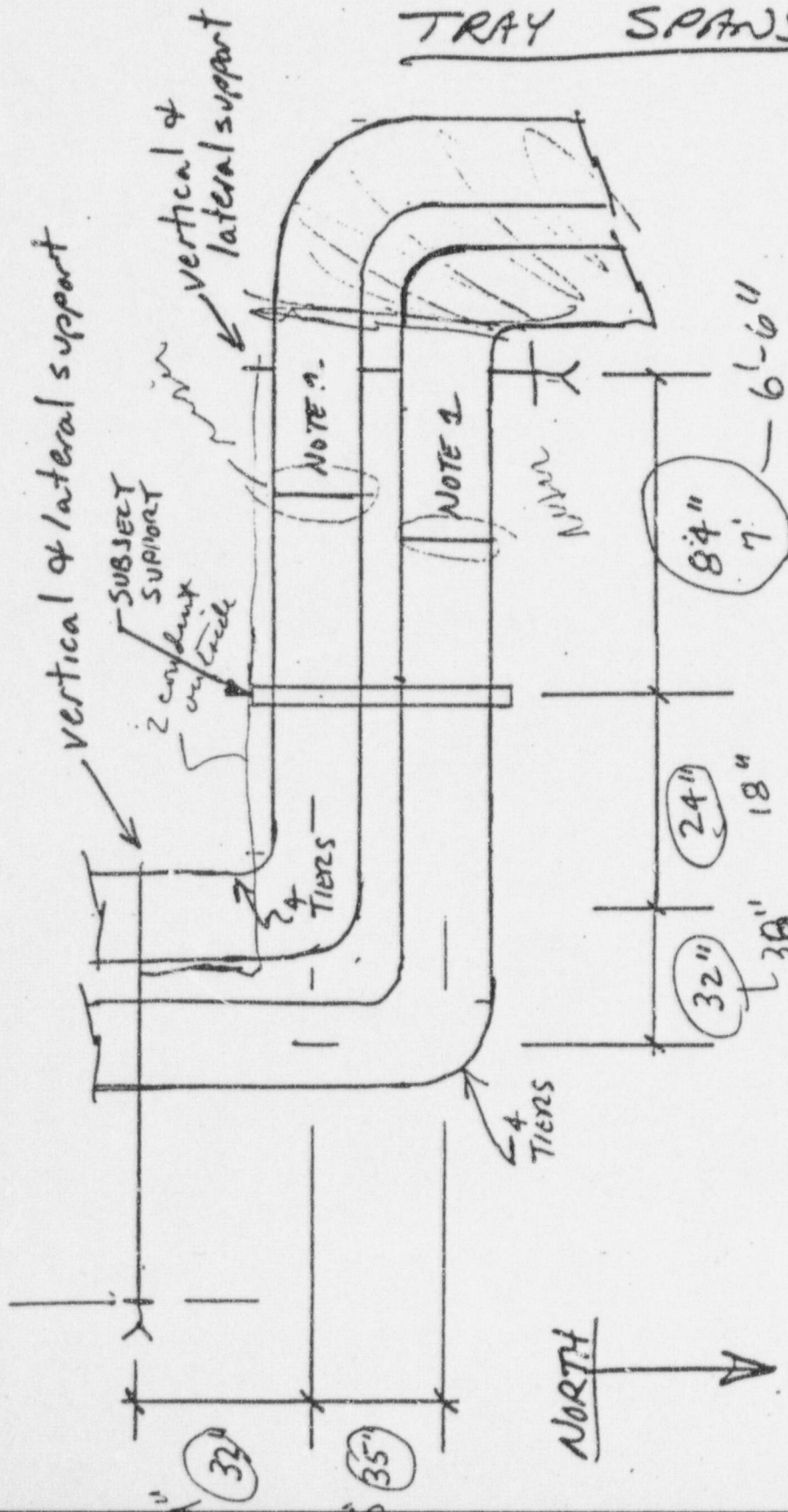
Subject RB-23-002	Calc No.	Rev. No.	Sheet No. 6 of 7
Originator J.R. DISSER	Date 10/10/94	Reviewed by RALTE	Date 7 Nov 94



DETAIL Y IS SIMILAR, BUT
OPPOSITE HAND.

Subject RB-23-002	Calc No.	Rev. No.	Sheet No. 7 of 7
Originator J.R. Dissere	Date 10/10/94	Reviewed by RASL	Date 7/20/94

TRAY SPANS



NOTE 1 - ADD RISER LENGTH TO SPANS - SEE ELEVATION LOOKING SOUTH

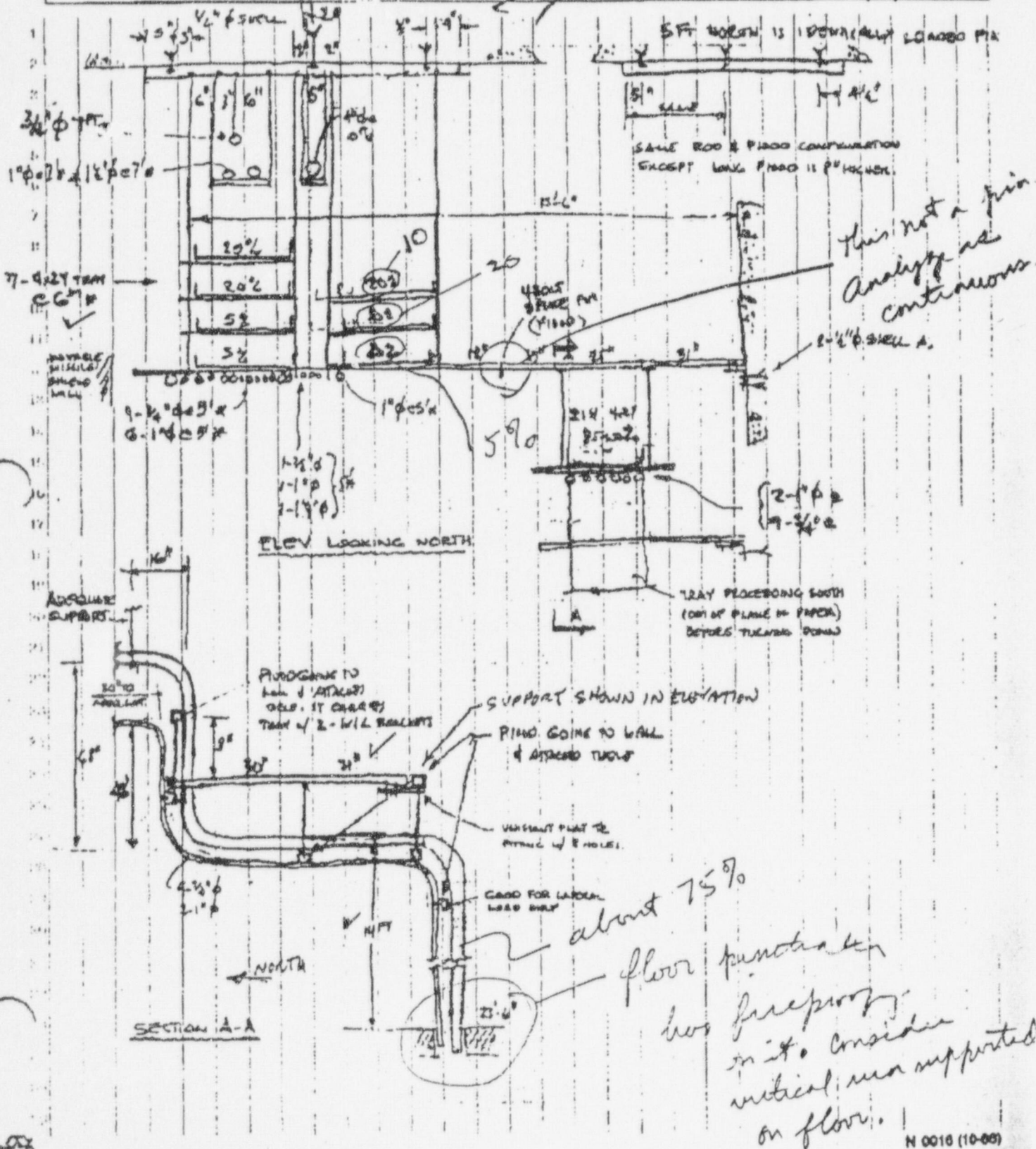
CALC. 42112-C-ROZ

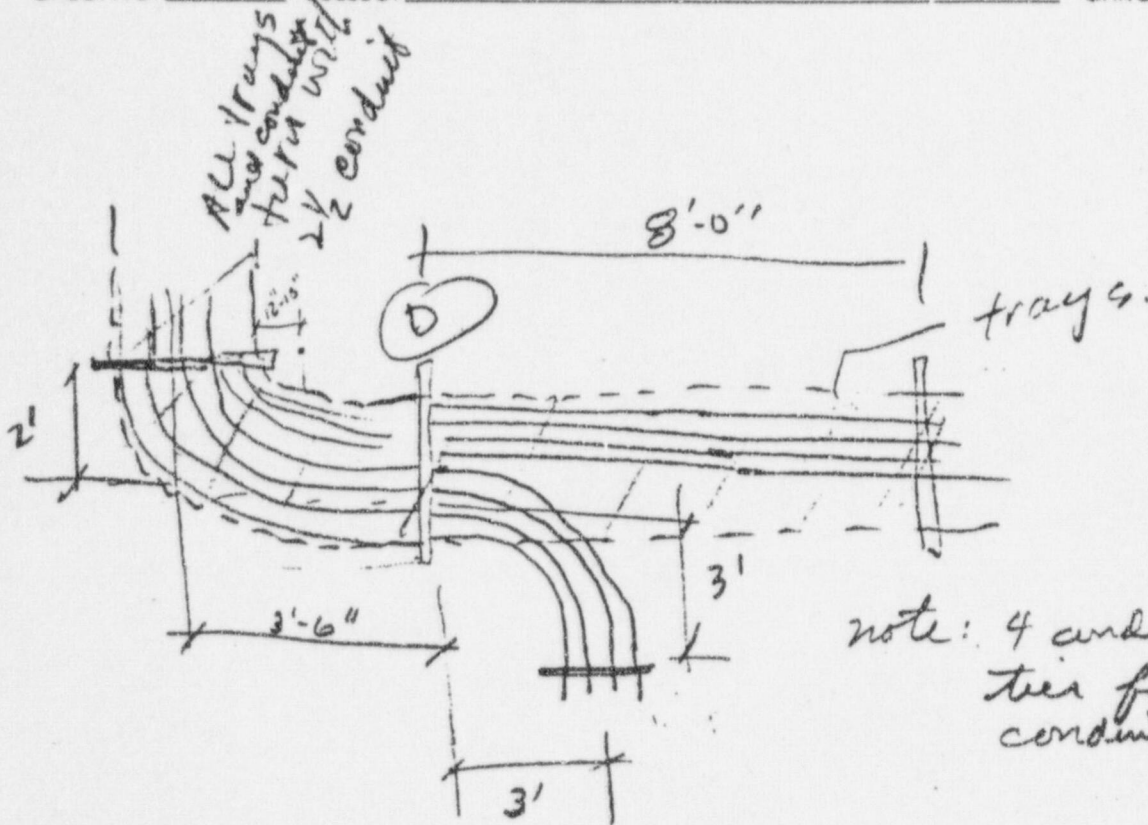
SHT A7

GPU Nuclear

Calculation Sheet

Subject	SELECTION: RB.21-003	Calc No.	Rev No.	Sheet No.
Originator	RAI	Date	Reviewed By	Date
		29 SEPT 94	J.R. DISSER	10/5/94



JOB NO. _____ JOB _____ BY QB DATE 1-26-95CALC. NO. _____ SUBJECT RB-23-005 CHK'D RHS DATE 2/6/95

Detail X1 (PLAN)

GPU Nuclear

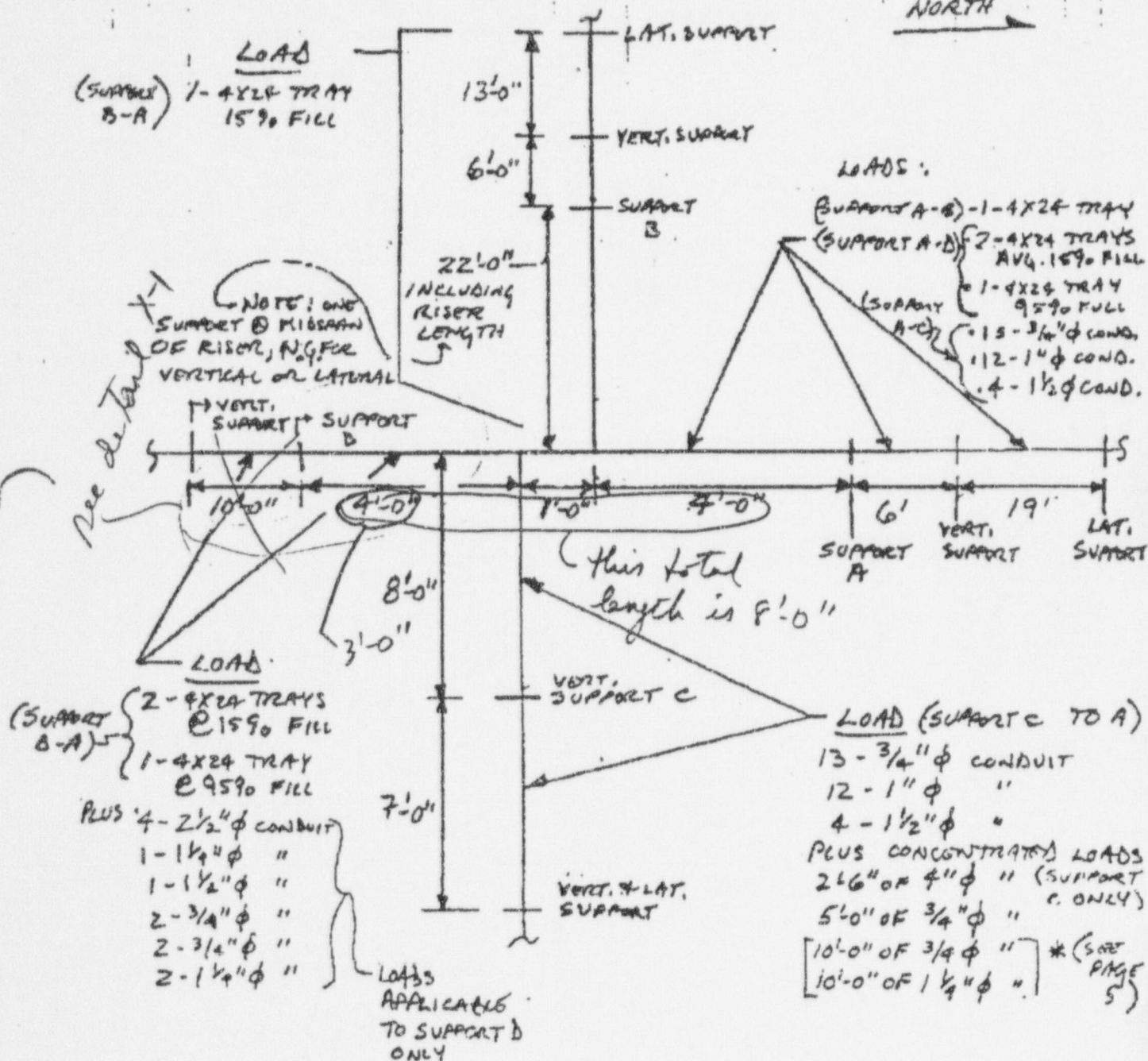
CALC 42112-C-002

SHT A 9

Calculation Sheet

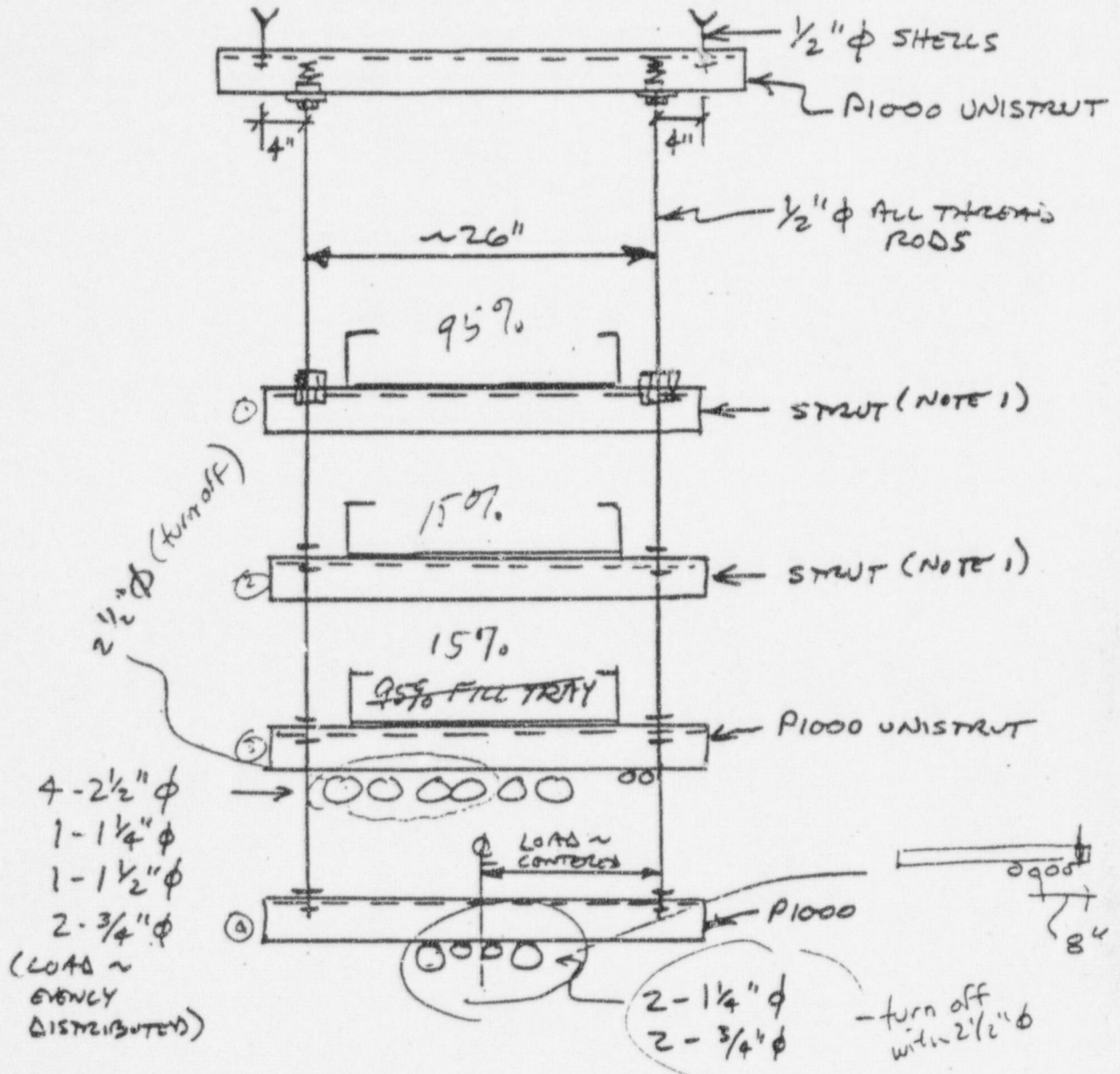
Subject	ARDS	Calc No.	Rev. No.	Sheet No.
	RB-23-005			2 of 6
Originator	J.R. DISBOR	Date	Reviewed by	Date
	18/12/94		RAKER	2 Nov 95

NORTH

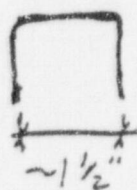


Calculation Sheet

Subject	AROS RB-23-005		Calc No.	Rev. No.	Sheet No. 6 of 6
Originator	J.R. Dwyer	Date 10/12/94	Reviewed by RA Smith		Date 2 Nov 94



NOTE: 1) STRUT MANUFACTURE UNKNOWN - CROSS SECTION



~ 1 1/2"

$t \approx 16 \mu\text{sec}$

SUPPORT Δ

ELEVATION LOOKING SOUTH

JOB NO. _____

JOB _____

BY DB

DATE 1-26-95

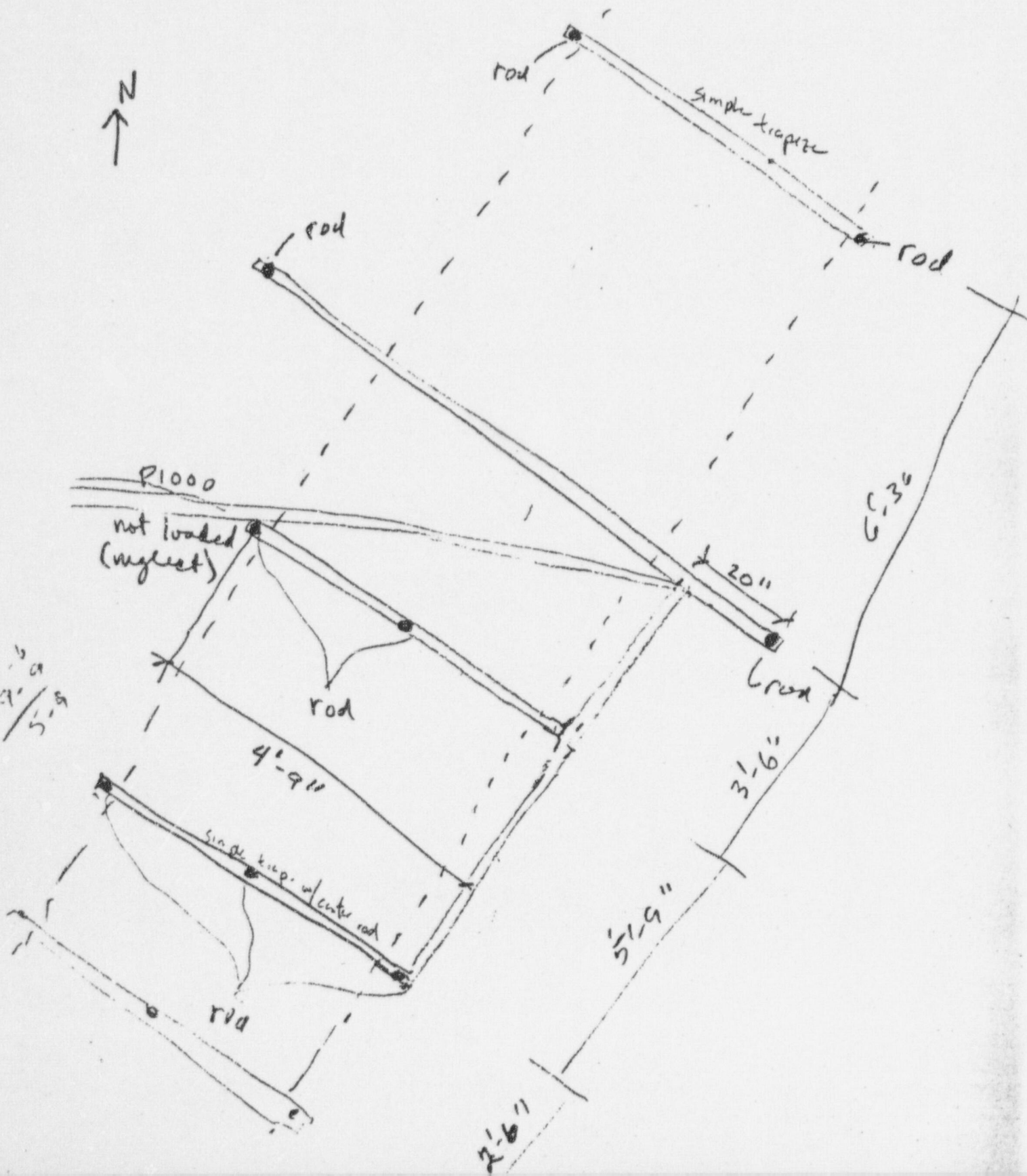
CALC. NO. _____

SUBJECT

RB-51-002

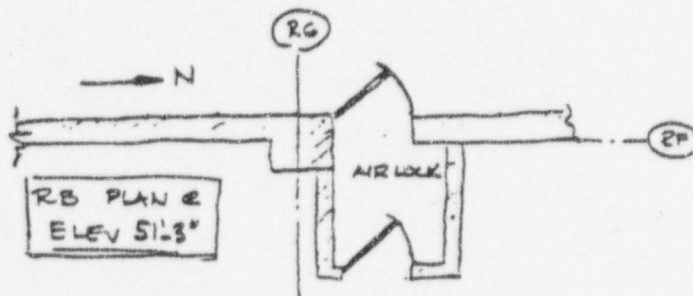
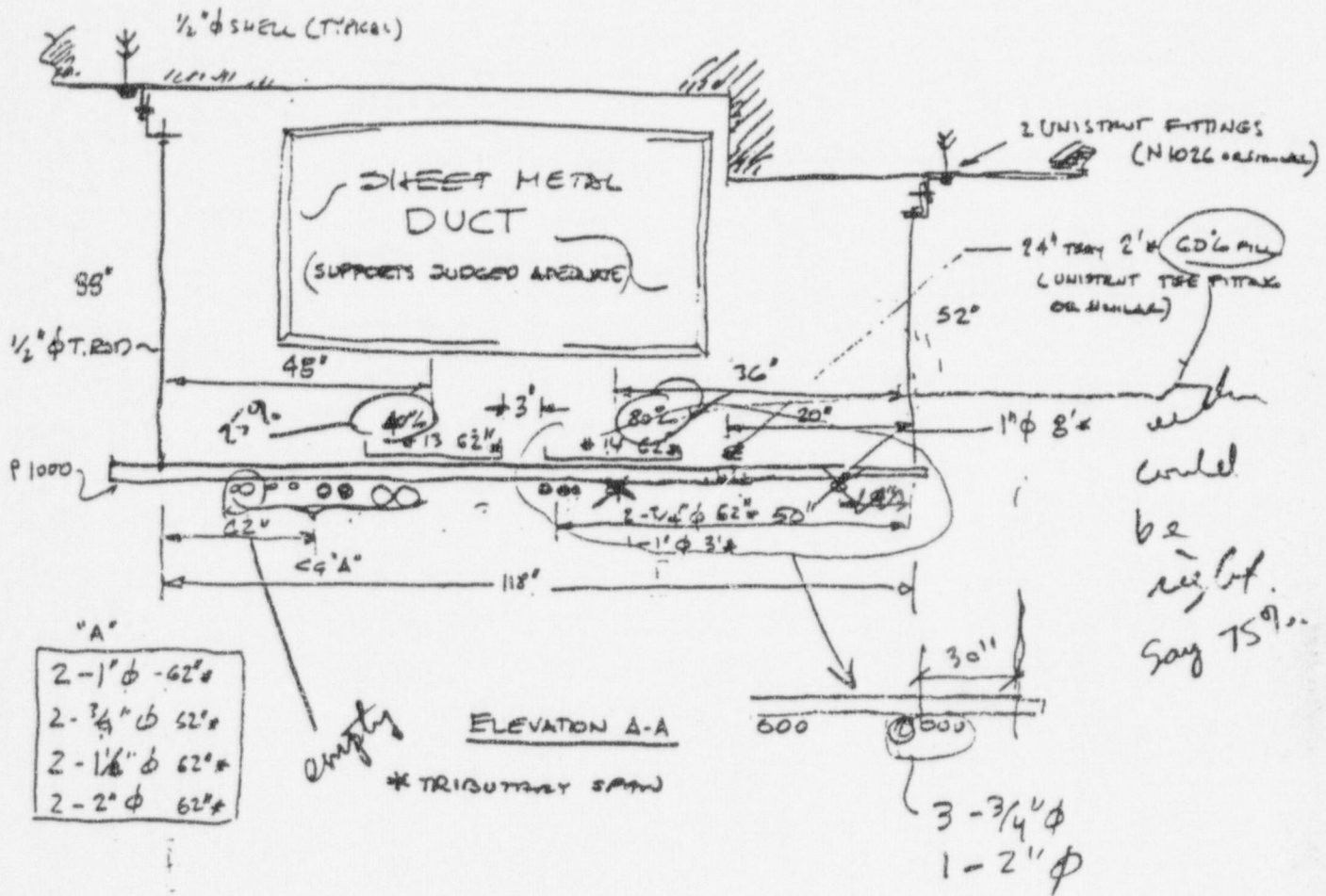
CHK'D BH

DATE 1-26-95



Calculation Sheet

Subject RB 51-3°	Calc No.	Rev. No.	Sheet No.
RB-51-002			2 of 2
Originator	Date	Reviewed by	Date
RJL	1/11/94	J.R. DISSER	10/1/94



CALC 42112-C-002

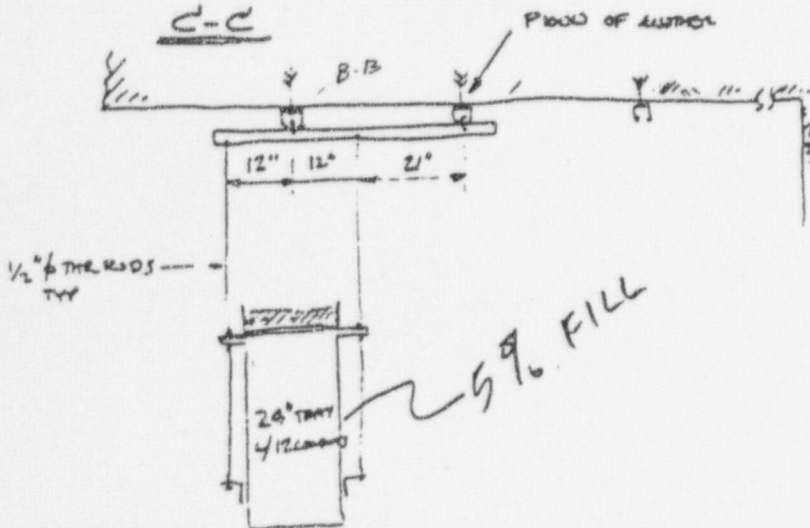
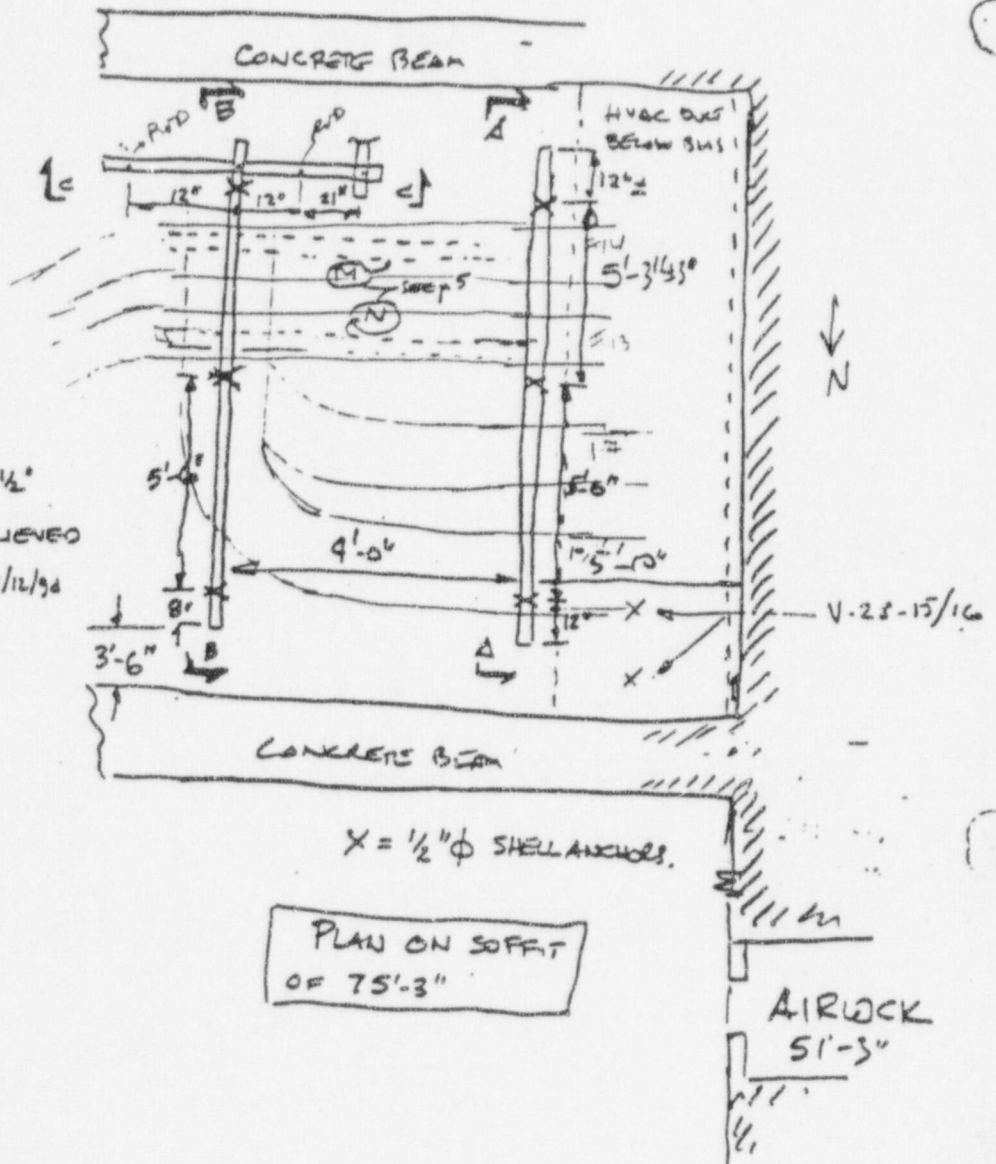
SHT A13

SHEET 2/5

SECTION RB-SI-003

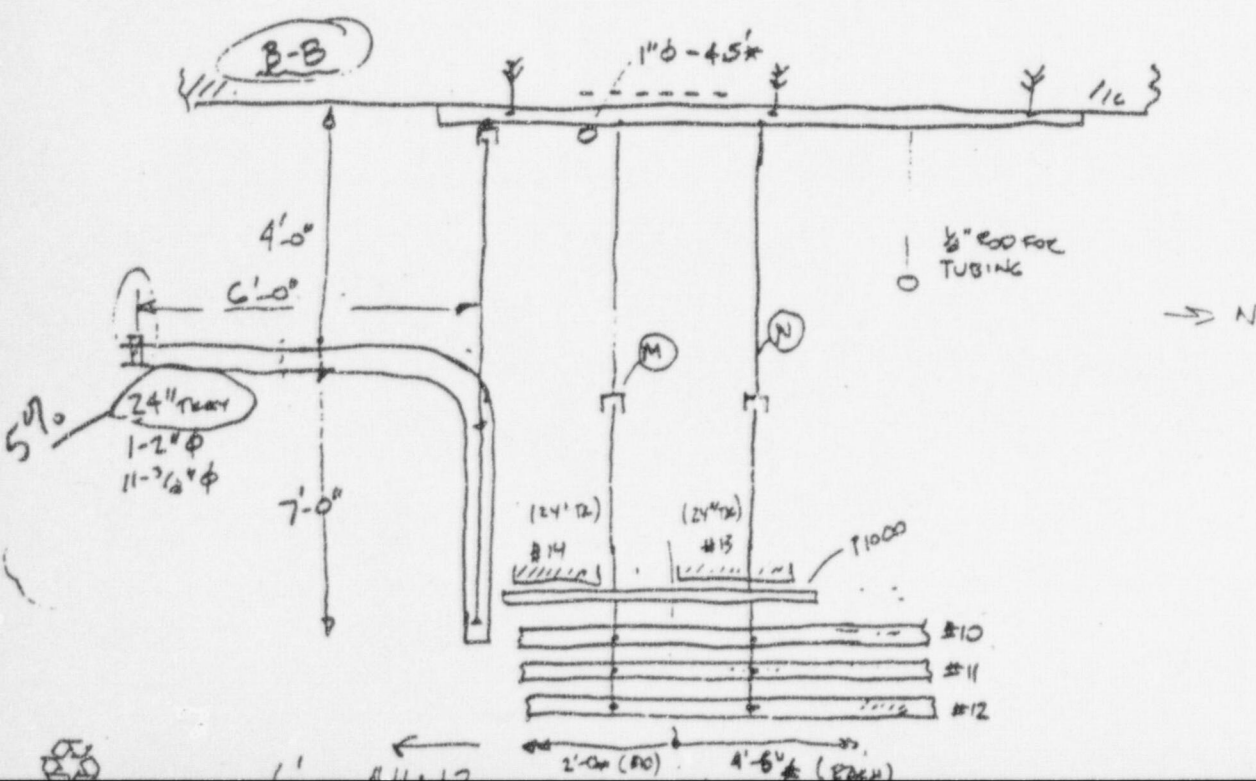
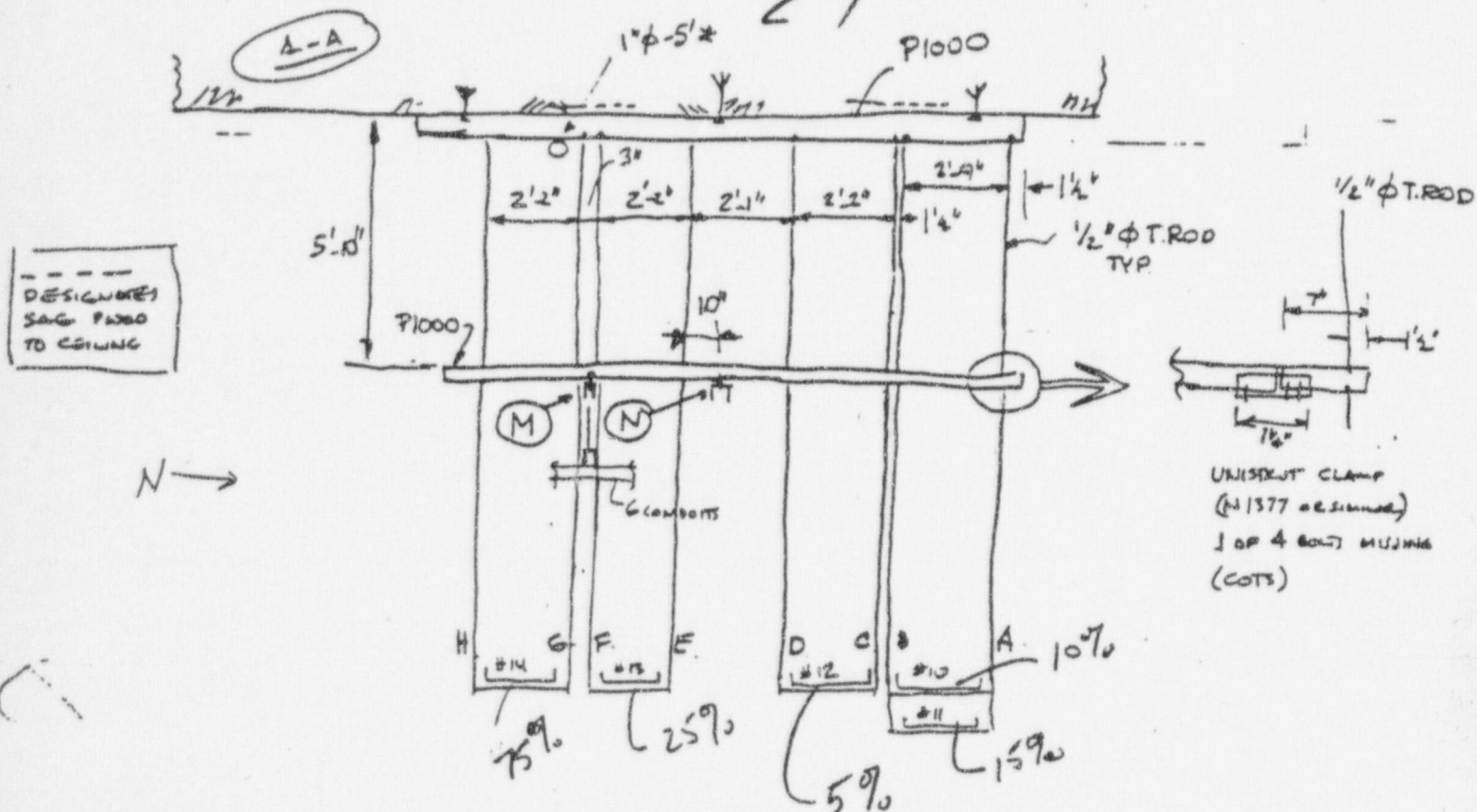
SUPPORT VERY COMPLEX &
IMPRACTICAL TO AS-BUILD IN
TOTAL (PER RAD-CON ADVICE).

TWO P1000 UNISTRUTS SHOWING $\frac{1}{8}$ - $\frac{1}{2}$ "
GAPS BETWEEN CEILING & STRUT, BELIEVED
TO BE CRITICAL, WERE AS-BUILT 9/12/94
AND SHOWN ON THESE PAGES.



J.R. Dissner 10/1/94

Subject	SELECTION: RB-57-003	Calc No.	Rev. No.	Sheet No.
Originator	R. S. L.	Date	Reviewed by	Date
	1/NOV/94		J. R. DISSE	10/1/94





EQE ENGINEERING

CALC 42112-C-002

SHT A 16

SHEET NO. _____

JOB NO. _____ JOB _____

BY PB

DATE 1-24-95

CALC. NO. _____ SUBJECT TS-36-002

CHK'D 241

DATE 1.26.95

2
↓

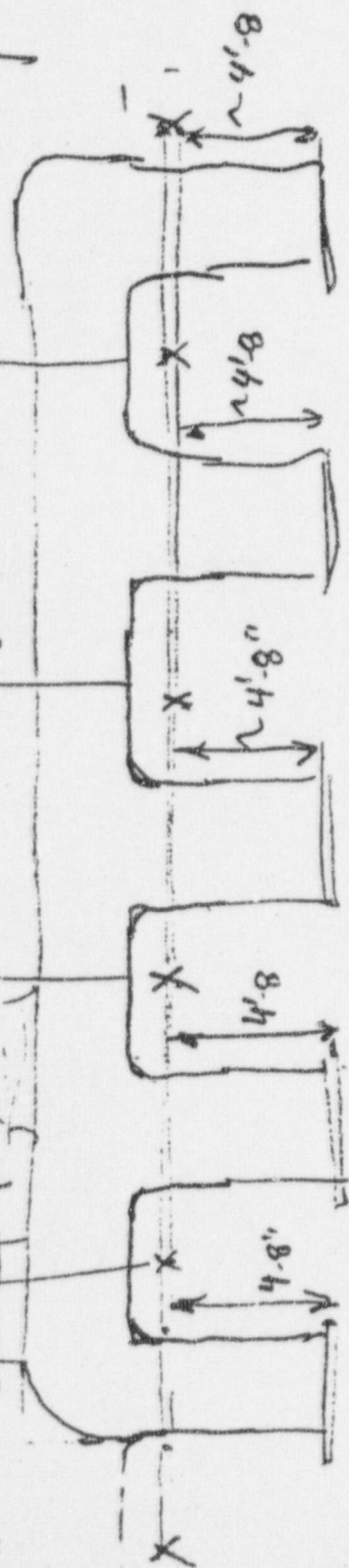
T-1507
M-1207
B-207

T=150
M=150
B=30

T=100
M=30
B=10

Top = 30
Mid = 10
Bot = 10

Small Section



Top	30%	30%	20%	50%
Mid	10%	10%	100%	100%
Bottom	10%	10%	5%	20%



EQE INTERNATIONAL

SHEET NO. B1 of 4

JOB NO. 42112

JOB

Oyster Creek A-46

BY

DATE

CALC. NO. C-002

SUBJECT

Cable Tray Outlier Evaluation

CHKD

DATE

Attachment B

Checking Criteria Checklist

CHECKING CRITERIA CHECKLIST

Client GPUN Project OVSTER CREEK A-46
 Job No. 42112 Calc. No. 002
 Revision No. 0

Criteria	Yes	No	N/A	Comment No.
1. Originator followed defined procedures.	✓			
2. Title, purpose and function of the work checked are adequately described.	✓			
3. Work method clearly stated and appropriate.	✓			
4. Assumptions identified. Open items flagged for subsequent verification where necessary.	✓			
5. Technical bases and references current, correctly selected, and incorporated.	✓			
6. Technical input properly selected and adequately identified. Any specific input to be excluded are adequately identified.	✓			
7. Applicable codes, standards and regulatory requirements identified and properly used.	✓			
8. Analytical steps can be verified without recourse to originator.	✓			
9. Each page of the work identified and traceable to originator, date and job or equivalent control number.	✓			
10. All markings legible and identifiable.	✓			

CHECKING CRITERIA CHECKLIST

Client GPUN Project SYSTEM CHECK A-46
 Job No. 42112 Calc. No. 002
 Revision No. 0

Criteria	Yes	No	N/A	Comment No.
11. Work clearly references any final supporting computer runs.	✓			
12. Final computer runs include input listing and output.	✓			
13. Final computer runs contain unique number identifier.	✓			
14. Results consistent with inputs, technical procedures, and other project criteria.	✓			
15. Results are reasonable.	✓			
16. Revisions are clearly documented.			✓	
17. Technical interface requirements in the Project Plan have been satisfied.			✓	
18. All documentation available to checker.	✓			
19. Computer program version identified.	✓			
20. Computer program version certified and application valid.	✓			

Checked by: *Barry D. Boyd* Date: 3-23-95

CHECKING CRITERIA CHECKLIST

Revision No. 0

CHECKING CRITERIA CHECKLIST

[illegible]