

**Design Analysis Cover Sheet**

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Complete only applicable items.

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<p>1) Originator's Responsibility:</p> <ul style="list-style-type: none"> <li>a. R. Novotny prepared the structural analysis of the transporter including Attachment I.</li> <li>b. D.C. Weddle prepared the mechanical analysis for the transporter including Attachments II and III.</li> <li>c. J. Cron prepared the mechanical analysis of the reusable rail car including the balance of the report.</li> </ul> <p>2) Checker's Responsibility:</p> <ul style="list-style-type: none"> <li>a. R. Kahle-Clark checked the structural analysis including Attachment I.</li> <li>b. A. Munio checked the mechanical analysis including Attachments II and III.</li> <li>c. J. Hilton checked the compliance check plus check of the balance and other analyses.</li> </ul> <p>3) This analysis supersedes portions of DI BCA000000-01717-0200-0012 (Ref. 5.8). Portions superseded by this analysis include the waste package transporter and Attachments I and III.</p> <p>The following TBD/TBV are contained in this document:</p> <table style="margin-left: 40px;"> <tr> <td style="text-align: center;"><u>TBD</u></td> <td style="text-align: center;"><u>TBV</u></td> </tr> <tr> <td style="text-align: center;">240</td> <td style="text-align: center;">228    274</td> </tr> <tr> <td></td> <td style="text-align: center;">246    302</td> </tr> <tr> <td></td> <td style="text-align: center;">252    305</td> </tr> <tr> <td></td> <td style="text-align: center;">253    306</td> </tr> <tr> <td></td> <td style="text-align: center;">256    308</td> </tr> <tr> <td></td> <td style="text-align: center;">257    309</td> </tr> <tr> <td></td> <td style="text-align: center;">268    310</td> </tr> <tr> <td></td> <td style="text-align: center;">326</td> </tr> </table>				<u>TBD</u>	<u>TBV</u>	240	228    274		246    302		252    305		253    306		256    308		257    309		268    310		326
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### Design Analysis Revision Record

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## ACRONYMS AND ABBREVIATIONS

AAR	Association of American Railroads
AISC	American Institute of Steel Construction
ALARA	As low as reasonably achievable
ANSI	American National Standards Institute
AREA	American Railroad Engineering Association
ASCE	American Society of Civil Engineers
ASD	Allowable stress design
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
C	Celsius
CFR	Code of Federal Regulations
CSCI	Computer Software Configuration Item
psi	Pounds per square inch
cm	Centimeter
CMAA	Crane Manufacturers Association of America, Inc.
CRWMS	Civilian Radioactive Waste Management System
DBF	Design basis fuel
DLF	Dead load factor
g	Gram
g	Gravity
H	Height
HIF	Horizontal impact force
HLF	Live load impact
hp	Horsepower
hr	hour
in	Inch
kg	Kilogram
km	Kilometer
ksi	1,000 pounds per square inch
lb	Pound
LTF	Longitudinal thrust force
m/s	meters per second
m	meter
M&O	Management and Operating Contractor
MGDS	Mined Geologic Disposal System
Min.	Minute
mm	Millimeter
Mot	Overturning moment
mph	Miles per hour
Mr	Resisting moment
mrem	Millirem
MT	Metric ton

Para.	Paragraph
Pg.	Page
pp.	pages
QARD	Quality Assurance Requirements and Description
r/s	Revolutions per second
Ref.	Reference
rpm	Revolutions per minute
SDD	<i>System Description Document for the Waste Emplacement System</i>
SF	Safety factor
SSC	Structures, systems, and components
T	Thickness
TBD	To be determined
TBV	To be verified
TOR	Top of rail
Typ.	Typical
WP	Waste package
yd	Yard
TMB	Transporter maintenance building
YMP	Yucca Mountain Site Characterization Project



## 1. PURPOSE

The purpose of this Design Analysis is to develop preliminary design of the waste package transporter used for waste package (WP) transport and related functions in the subsurface repository. This analysis refines the conceptual design that was started in Phase I of the Viability Assessment.

This analysis supports the development of a reliable emplacement concept and a retrieval concept for license application design.

The scope of this analysis includes the following activities:

- Assess features of the transporter design and evaluate alternative design solutions for mechanical components.
- Develop mechanical equipment details for the transporter.
- Prepare a preliminary structural evaluation for the transporter.
- Identify and recommend the equipment design for waste package transport and related functions.
- Investigate transport equipment interface tolerances.

This analysis supports the development of the waste package transporter for the transport, emplacement, and retrieval of packaged radioactive waste forms in the subsurface repository. Once the waste containers are closed and accepted, the packaged radioactive waste forms are termed waste packages (WP). This terminology was finalized as this analysis neared completion; therefore, the term disposal container is used in several references (i.e., the System Description Document (SDD) (Ref. 5.6). In this analysis and the applicable reference documents, the term “disposal container” is synonymous with “waste package.”

## 2. QUALITY ASSURANCE

A classification of permanent items has been performed in accordance with QAP-2-3, *Classification of Permanent Items*, for the waste package emplacement equipment considered in this analysis (Reference [Ref.] 5.2) (TBV 228). This classification and the project Q-list (Ref. 5.3) specify that waste package emplacement equipment is quality-affecting; therefore, the items evaluated in this analysis will be treated as Q items. The activity for performing this design analysis has been evaluated in accordance with QAP-2-0, *Conduct of Activities* (Ref. 5.26), and has been found to be subject to the requirements of the *Quality Assurance Requirements and Description* (QARD), Ref. 5.19.

The use of input previously identified as TBV/TBD in other analyses (Reference 5.6, 5.8, and 5.30) was necessary to establish the bounding characteristics for the design criteria. The

inclusion of this input does not disqualify the results of the analysis due to the conservative margin used in establishing the bounding design criteria. Additionally, the bounding design criteria do not affect waste isolation or nuclear safety.

### 3. METHOD

This analysis is a refinement of previous work (Ref. 5.4) performed to select a system design from various alternatives for handling waste packages. This Design Analysis also refines previous work (Ref. 5.8) that sized and established, in a preliminary fashion, the equipment required for transportation and emplacement of waste packages. This analysis uses that basic information to develop more precise technical data for the design or selection of various components by considering mechanical, structural, electrical, remote handling, instrumentation, and control and operational implications. The methods used to develop this information include:

1. Gathering relevant design criteria for the waste emplacement system (Ref. 5.6).
2. Preparing figures and drawings to define alternative solutions for evaluation and to establish revised equipment arrangements for the full range of anticipated waste packages.
3. Preparing both hand and computer calculations for selection of individual mechanical components and sizing of the structural systems of the transporter. Hand calculations were used during selection of mechanical components and some weight determinations for the transporter. Computer calculations were used only for the structural analysis of the transporter.
4. Selecting standard vendor equipment for the mechanical arrangement drawing of the mechanical equipment, where appropriate.
5. Designing the waste package transporter structure using static load analysis. STAAD-III computer software was used to perform the stress analysis for the transporter structural frame. STAAD-III facilities for steel design are based on the American Institute of Steel Construction-Allowable Stress Design (AISC-ASD) code (4.4.1).
6. Developing the mechanical aspects of the transporter and stationary equipment, including mechanical arrangements, and, where required, identifying the size and describing those systems and components, such as couplers and wheels.
7. Performing a structural analysis for major equipment where total operating weight will have an effect on the outcome and conclusions of this analysis.
8. Incorporate radiation shielding considerations for the transporter.
9. Evaluating alternative solutions to design issues such as horizontal and vertical alignment at the emplacement drift dock and alternative rail car unloading mechanisms.

10. A formal, detailed Reliability, Availability, Maintainability (RAM) Analysis is not part of these preliminary evaluations, but evaluations include obvious reliability, availability, or maintainability aspects.
11. A formal radiological safety analysis is not part of these preliminary evaluations. A future radiological safety analysis is planned.

Recommendations for a preliminary waste package transporter design, including dimensional relationships, are in Section 8.

## **4. DESIGN INPUTS**

### **4.1 DESIGN PARAMETERS**

**4.1.1** None.

### **4.2 CRITERIA**

The applicable requirements document is the *System Description Document (SDD) for the Waste Emplacement System (WES)* (Ref. 5.6). The following are specific criteria for sections or parts of the SDD which are applicable to this analysis.

**4.2.1** The system shall be capable of transporting and emplacing waste packages with a maximum throughput of 524 waste packages per year over the emplacement period (rail transportation; used throughout).

[Ref. 5.6, Para. 1.2.1.2](TBV-257)

**4.2.2** The system shall transport waste packages by rail from the Waste Handling Building to the emplacement drift entrance within the subsurface repository, over a maximum distance of 10 kilometers (km) (rail transportation; used throughout).

[Ref. 5.6, Para. 1.2.1.3]

**4.2.3** The system shall transport and emplace waste packages over a maximum grade of +/-2.5 percent, between the surface and the emplacement drift and a maximum grade of +/-1 percent within the emplacement drifts. (A maximum grade of 1 percent is also used for the emplacement drift turnout grade.) (used in Attachment II, Section 3.3.3 and Attachment III, Section 2.0).

[Ref. 5.6, Para. 1.2.1.4]

**4.2.4** The system shall transport and emplace waste packages with the characteristics defined in Table 1. (The maximum waste package weight, for this analysis only, is 85,000 kg. This bounding condition allows for slight increases in the waste package weight without affecting the analysis results.)

**Table 1 Waste Package Characteristics**

<b>Length</b>	3,700 to 6,200 mm
<b>Diameter</b>	1,250 to 2,000 mm
<b>Weight</b>	83,000 kg maximum

(used throughout) [Ref. 5.6, Para. 1.2.1.7](TBV-246)

4.2.5 The system shall be capable of removing an intact emplaced waste package and transporting it to the Waste Handling Building (addressed in Section 8.4.5).

[Ref. 5.6, Para. 1.2.1.9]

4.2.6 The transporter speed shall be limited to 8 km/hr (used in Attachment I, Section 1.3 and Attachment II, Section 3.1).

[Ref. 5.6, Para. 1.2.2.1.2](TBV-252)

4.2.7 The system shall be designed to operate during and after exposure to the natural environments at the surface repository under conditions shown in Table 2:

**Table 2 Surface Natural Environments**

<b>Surface Environment</b>	<b>Range</b>
Temperature	-15 to 47°C
Precipitation	5 in. maximum in 24-hr period
Humidity	(TBD)
Wind Speed	<40 m/s maximum 1-minute wind speed at 10 m above ground level at the north portal area 53 m/s maximum 1-second-gust wind speed at 10 m above ground level at the north portal area
Snowfall	Maximum daily snowfall of 10 in. Maximum monthly snowfall of 17 in. Maximum annual snowfall of 51 in.
Lightning	TBD

(used in Attachment I) [Ref. 5.6, Para. 1.2.3.1](TBD-240)

4.2.8 The system shall operate within the subsurface facility system radii shown in Table 3:

**Table 3 Subsurface Facility System Radii**

<b>Location</b>	<b>Maximum Radius</b>
North ramp curvature	305 m
Emplacement drift turnout curvature	20 m

(used in Section 7.3.12) [Ref. 5.6, Para. 1.2.4.2](TBV-253)

4.2.9 The system shall receive normal, standby, and emergency power from the subsurface electrical power system (used in Section 8.4.10).

[Ref. 5.6, Para. 1.2.4.5](TBV-256)

4.2.10 The system shall operate within the Ground Control System physical envelopes as defined in Table 4, including clearance provisions for subsurface emplacement transportation system equipment, ventilation equipment and drift access doors, and utilities.

Table 4 Physical Envelopes

Drift Types	Outline Dimensions for Waste Emplacement System
Main drifts and ramps	Equipment height: 5.60 m Equipment width: 3.55 m
Drift turnouts	Equipment height: 5.60 m Equipment width: 6.15 m
Emplacement drifts	Equipment height: 3.72 m Equipment width: 3.51 m

(used in Section 8.2) [Ref. 5.6, Para. 1.2.4.7](TBV-253)

4.2.11 The system shall accommodate the track gage of 1.44 m (56½ in.) for both the transporter and the reusable rail car (used in figures throughout).

[Ref. 5.6, Para. 1.2.4.9](TBV-274)

4.2.12 The transport system shall prevent the waste package from being ejected by the transport system under the design basis event conditions listed below. The predicted frequency of occurrence of each of these events shall be shown by analysis to be less than  $2 \times 10^{-4}$ /yr.

- Failures in mechanical systems
- Failures in control systems
- Failures in actuation systems

(TBV-268)

(used in Section 7.3.4 [Ref. 5.6, Para. 1.2.2.1.5])

### 4.3 ASSUMPTIONS

The assumptions used in this analysis are listed below. The rationale for the assumptions is cited in the *Controlled Design Assumptions Document* (CDA) (Ref. 5.1) or is included as part of the assumption. All controlled design assumptions require confirmation as the design proceeds. Other design assumptions, either from previous work or generated specifically for this analysis, will be verified, and any deviations will be addressed in Section 8.4.

4.3.1 For this analysis, the weight of each waste package is assumed to be uniformly distributed throughout the volume of the waste package. Radioactive waste material will be placed in symmetrically oriented basket assemblies, which will result in uniform distribution of weight and a center of gravity located near the center of the waste package (used in Attachment II). (TBV-308)

4.3.2 Classification of structures, systems, and components (SSCs) to determine the consequences of failure and to specify functional safety criteria needed to comply with 10 CFR 60 dose limits has not been completed, as outlined in the topical report on preclosure seismic design (Ref. 5.10, Appendix B); consequently, the application of annual frequencies of either  $10^{-3}$  (Category 1) or  $10^{-4}$  (Category 2) to determine earthquake loading is preliminary. For purposes of this analysis, the waste transporter is

assumed to be important to radiological safety and must therefore be designed to meet the requirements of 10 CFR 60.111(a) regarding dose limits for a Category 1 design basis event. It is furthermore assumed that failure of the waste transporter will not result in exceeding the dose limit requirements of 10 CFR 60.136 for a Category 2 event.

The basis for these assumptions is that failure of the transporter due to a seismic event is envisioned mainly as overturning, which effectively results in dropping the waste package. Because the waste package has been designed to withstand a vertical and horizontal drop as indicated in 5.6, Section 1.2.2.1.8, it appears unlikely that the transporter overturning would result in damage that would exceed the Category 2 limits, although it is conservatively assumed here that Category 1 limits could be exceeded. In addition, the waste package transporter is not a permanent SSC, but has a service life of about 20 years at the beginning of the preclosure period. The transporter does not operate continuously, but travels periodically into the repository, two to three times a day, and operates between the surface facilities and the subsurface emplacement drifts, spending most of the time underground.

Because the transporter operates on the surface at least some of the time, the surface ground motions, which are higher than those of the subsurface, govern. Seismic design inputs for Category 1 for values at the ground surface (in the absence of the structure) are a horizontal acceleration of 0.266 g and a vertical acceleration of 0.169 g (Ref. 5.7, Table 6.2-2a). Category 1, peak ground velocities at the surface are 20.52 cm/s for horizontal motion and 9.42 cm/s for vertical motion (Ref. 5.7, Table 6.2-2b). For purposes of this analysis, seismic excitation to the waste package transporter is rounded to 0.27 g and 0.17 g, for horizontal and vertical acceleration respectively.)

This is a preliminary sizing calculation. However, future revisions of this analysis will address relevant criteria in NUREG-0800. (used in Attachment I). (TBV-309)

- 4.3.3** An American Railroad Engineering Association (AREA) (Ref. 4.4.5) rail of 57 kg/m (115 lb/yd) will be used for waste package transport in the north ramp and main and access drifts (Ref. 5.5, Appendix E) (used in Attachment II, Section 3.1). (TBV-306)
- 4.3.4** An American Society of Civil Engineers (ASCE) rail of 44.6 kg/m (90 lb/yd) will be used for the rail car rail inside the waste package transporter and on the transfer dock inside the emplacement drift entrance (Ref. 5.5, Appendix E) (used in Attachment II, Section 3.3.7). (TBV-305)
- 4.3.5** Radiation shielding used on the waste package transporter to provide protection from gamma and neutron radiation will consist of materials and thickness as follows:

**Table 5 Radiation Shielding Materials**

Material	Material Density (kg/m <sup>3</sup> )	Reference for Material Type and Density	Material Thickness	Reference for Thickness
Borated Polyethylene (1.5%)	920	Ref. 5.25, pg 5.3-6	101.6 mm one layer *76.2 mm one layer	Ref. 5.30, pg 84 Ref. 5.30, pg 84
Carbon Steel	7832	Ref. 5.12, pg 5&6	152.4 mm one layer *177.8 mm one layer	Ref. 5.30, pg 84 Ref. 5.30, pg 84
Stainless Steel	7949.7	Ref. 5.12, pg 14	5 mm two layers	Ref. 5.30, pg 84

\*The radiation shielding dimensions and materials for the waste package transporter are assumed to be:  
 Radial direction:  
 • 5 mm SS316L + 152.4 mm A516 carbon steel  
 • 101.6 mm borated (1.5% boron) polyethylene  
 • 5 mm SS316L; and  
 Axial direction:  
 • 5 mm SS316L + 177.8 mm A516 carbon steel  
 • 76.2 mm borated polyethylene  
 • 5 mm SS316L.  
 Rationale: The radial radiation shielding dimensions are based on the results of a detailed radiation shielding analysis (Ref. 5.30) to limit the transporter surface dose rate to less than 50 mrem/hr. The axial radiation shielding dimensions are derived from the radial radiation shielding thickness by increasing the carbon steel thickness by 25.4 mm to account for the increased gamma radiation field from the fuel assembly end fitting sources, and by decreasing the reduced neutron field on the ends.

(used in Attachment I, Sections 3.1 and 3.2 and Attachment III, Section 3.1) (TBV-326)

- 4.3.6** Waste packages to be transferred between surface and subsurface repository will be placed on a rail car at the Waste Handling Building and then moved inside a radiation-shielded waste package transporter. This operating concept was established in a previous analysis (Ref. 5.4, Section 7.7) (used throughout).
- 4.3.7** The transporter door weighs 7,464 kg. This weight is developed in Attachment II of this analysis. Component weights are: Upper section – 2,580 kg; lower section – 3,647 kg; hinges – 863 kg; pin – 374 kg (used in Attachment I, Section 1.1. and Attachment II, Section 3.2.1). (TBV-303)
- 4.3.8** Estimated transporter truck weight is 4,989 kg (Ref. 5.8, Attachment VIII, Section 2.1) (used in Attachment I). (TBV-302)
- 4.3.9** Estimated transporter coupler weight is 79.4 kg (Ref. 5.8, Attachment IV, Section 2.0) (used in Attachment I). (TBV-310)
- 4.3.10** Not used.
- 4.3.11** The reusable rail car unloading speed is assumed to be 7.6 m/min (25 ft/min). Rationale: The suggested slow operating speed for a 150-ton bridge crane is 7.6 m/min (25 ft/min) (Ref. Section 4.4.4, pg. 80) (used in Attachment II, Section 3.3.7).

4.3.12 Maximum operating weight of the reusable rail car, loaded with the heaviest waste package, is 95 metric tons (Ref. 5.9, Attachment IV, Section 3.1) (used in Attachment III, Section 3.1). (TBV 246)

4.3.13 Transporter door swing is 270 degrees to eliminate interference with the drift isolation doors at the waste emplacement drift. Time to open and close the transporter doors is approximately 1 minute. The design can be completed for any reasonable speed. One minute was selected because less horsepower is required due to the slow operating rate and a slow rate is much safer; this does not require verification (used in Attachment II, Section 3.3.7).

4.3.14 Gantry length is 12.070 m (Ref. 5.9, Section 7.2.3.1) (used in Attachment II, Section 2.6). (TBV 302)

#### 4.4 CODES AND STANDARDS

##### 4.4.1 American Institute of Steel Construction (AISC)

AISC M016-89 *Manual of Steel Construction, Allowable Stress Design, Ninth Edition, 1989*

##### 4.4.2 American Society of Mechanical Engineers (ASME)

ASME NOG-1-1995 *Rules for Construction of Overhead and Gantry Cranes (Top Running Bridge, Multiple Girder)*

##### 4.4.3 American National Standards Institute (ANSI)

ANSI N14.6-1993 *For Radioactive Materials – Special Lifting Devices for Shipping Containers Weighing 10,000 Pounds (4500 kg) or More*

##### 4.4.4 Crane Manufacturers Association of America Inc. (CMAA)

CMAA No. 70 *Specification for Top-Running Bridge and Gantry Type Multiple Girder Electric Overhead Traveling Cranes, Revised 1994*

##### 4.4.5 American Railroad Engineering Association (AREA)

AREA *Manual for Railway Engineering, 1994*

##### 4.4.6 Association of American Railroads (AAR)

AAR *Manual of Standards and Recommended Practices, Section C-Part II, Specifications for Design, Fabrication, and Construction of Freight Cars, M-1001, Volume I Standard, Issue of 1988*



#### 4.4.7 American Society of Civil Engineers (ASCE)

ANSI/ASCE 7-95 *Minimum Design Loads for Buildings and Other Structures*  
(Revision of ANSI/ASCE 7-93), June 6, 1996

#### 4.4.8 Code of Federal Regulations (CFR)

10 CFR 60 *Disposal of High-Level Wastes in Geologic Repositories, July 1,  
1997*

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- 5.2 CRWMS M&O 1997. *Classification of Preliminary MGDS Repository Design*. DI:B00000000-01717-0200-00134, Rev. 00. Las Vegas, Nevada: Author. MOL.19980211.1192.
- 5.3 DOE (U.S. Department of Energy) 1998. *Q-List*. YMP/90-55Q. Rev. 5. Office of Civilian Radioactive Waste Management. Las Vegas, Nevada: Author. MOL.19980513.0132.
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- 5.7 CRWMS M&O 1998. *Seismic Design Inputs for a High Level Waste Repository at Yucca Mountain*. B00000000-01717-5700-00018, Rev. 00. Las Vegas, Nevada: Author. MOL.19980806.0711.
- 5.8 CRWMS M&O 1997. *Preliminary Waste Package Transport and Emplacement Equipment Design*. DI:BCA000000-01717-0200-00012, Rev. 00. Las Vegas, Nevada: Author. MOL.19980511.0131.
- 5.9 CRWMS M&O 1998. *Mobile Waste Handling Support Equipment Design Analysis*. DI:BCAF00000-01717-0200-00006, Rev. 00. Las Vegas, Nevada: Author. MOL.19980819.0397.

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- 5.10 YMP (Yucca Mountain Site Characterization Project). *Topical Report II, Preclosure Seismic Design Methodology for a Geologic Repository at Yucca Mountain*. YMP/TR-003-NP, Rev. 2. Dated August 1997. Las Vegas, Nevada: Author. MOL.19971009.0412.
- 5.11 CRWMS M&O 1998. *Interface Control Document for the Mined Geologic Disposal System Waste Package and Repository Subsurface Facilities and Systems for Mechanical Envelope Interfaces Between Engineering Barrier System Operation and Waste Package Operations*. B00000000-01717-8100-00009, Rev. 00. Las Vegas, Nevada: Author. MOL.19980629.0245.
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- 5.13 CRWMS M&O 1998. *Repository Waste Handling Integrated Model Development Report*. DI:BC0000000-01717-6700-00003, Rev. 00. Las Vegas, Nevada: Author: MOL. 19980220.0087.
- 5.14 L.B. Foster Company. *Foster Rail Products Product Catalog*. Page I-14. 237868.
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- 5.26 CRWMS M&O 1998. *Conduct of Activities*. QAP-2-0, Rev. 4. Las Vegas, Nevada: Author. MOL.19971031.0060.
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- 5.30 CRWMS M&O 1997. *MGDS Subsurface Radiation Shielding Analysis*. DI:BCAE00000-01717-0200-00001, Rev. 00. Las Vegas, Nevada: Author. MOL.19971204.0497.

## 6. USE OF COMPUTER SOFTWARE

The commercially available computer program STAAD-III, Version 22.3a, was used for the structural analysis of the waste package transporter. This program is a specialized computer code developed specifically for solving structural problems. The computer software was obtained from Software Configuration Management in accordance with appropriate procedures. The program, which is installed on an IBM-compatible computer equipped with a Pentium microprocessor, has been verified and validated (CSCI Number 30024 V22) in accordance with the QAP-SI-series of CRWMS M&O's computer software quality assurance procedures (Ref. 5.28). In this analysis, the computer software was used only within the range of validation that is described in the verification and validation documentation. STAAD III is appropriate for the applications in this analysis.

## 7. DESIGN ANALYSIS

### 7.1 GENERAL DESCRIPTION

The purpose of the waste package transporter (transporter) is to safely transport waste packages to and from (for retrieval) the transfer dock at each emplacement drift entrance. Waste packages rest on the reusable rail car within the transporter. The transporter is a fully enclosed (radiation shielded) rail car with outline dimensions and pertinent features as depicted in Figures 1 through 4. The design contains the necessary flexibility to transport waste packages of varying sizes and weights up to and including a waste

package that is 2.00 m in diameter, 6.20 m long, and weighs 85 MT. In addition to its transporting function, the transporter provides the following:

- Radiological shielding for workers during transport and emplacement operations.
- A safe, stable platform for transporting the waste package and reusable rail car.
- Structural integrity for supporting the load, coupling to the locomotive(s), and braking systems to aid in stopping and speed control.
- Alignment of the transporter and reusable rail car rails to the transfer dock rails.
- Remote loading and unloading capability for the reusable rail car containing a waste package.
- Operable radiation shielding doors.
- Connections to the locomotive for power, controls, air brakes, and redundant brake system.

Major component systems of the transporter include the radiological shielding, undercarriage, couplers and connectors, brake systems, door operators, reusable rail car restraint, reusable rail car unloading system, wiring, interlocks, and instrumentation and controls. The length and weight of the waste package affects some of these components, including the radiation shielding, undercarriage, reusable rail car restraint, and reusable rail car unloading system.

## **7.2 INTERFACES**

The waste package transporter will interface with the following equipment items or systems. Interfaces between engineered barrier system operations and waste package operations described in an interface control document (Ref. 5.11) include:

- Transporter maintenance building dock
- Reusable rail car
- Waste packages
- Transport locomotive
  1. Couplers
  2. Electrical, control, and instrumentation system
  3. Air brake and redundant and diverse brake system
- Rail and switch systems included in north ramp, main drift, and drift turnouts
- Emplacement access turnouts
- Emplacement drift transfer dock
- Rail car unload system guides in emplacement drift
- Rail car rails in the emplacement drift
- Waste handling building loading dock

Figure 1 Waste Package Transporter, Isometric View

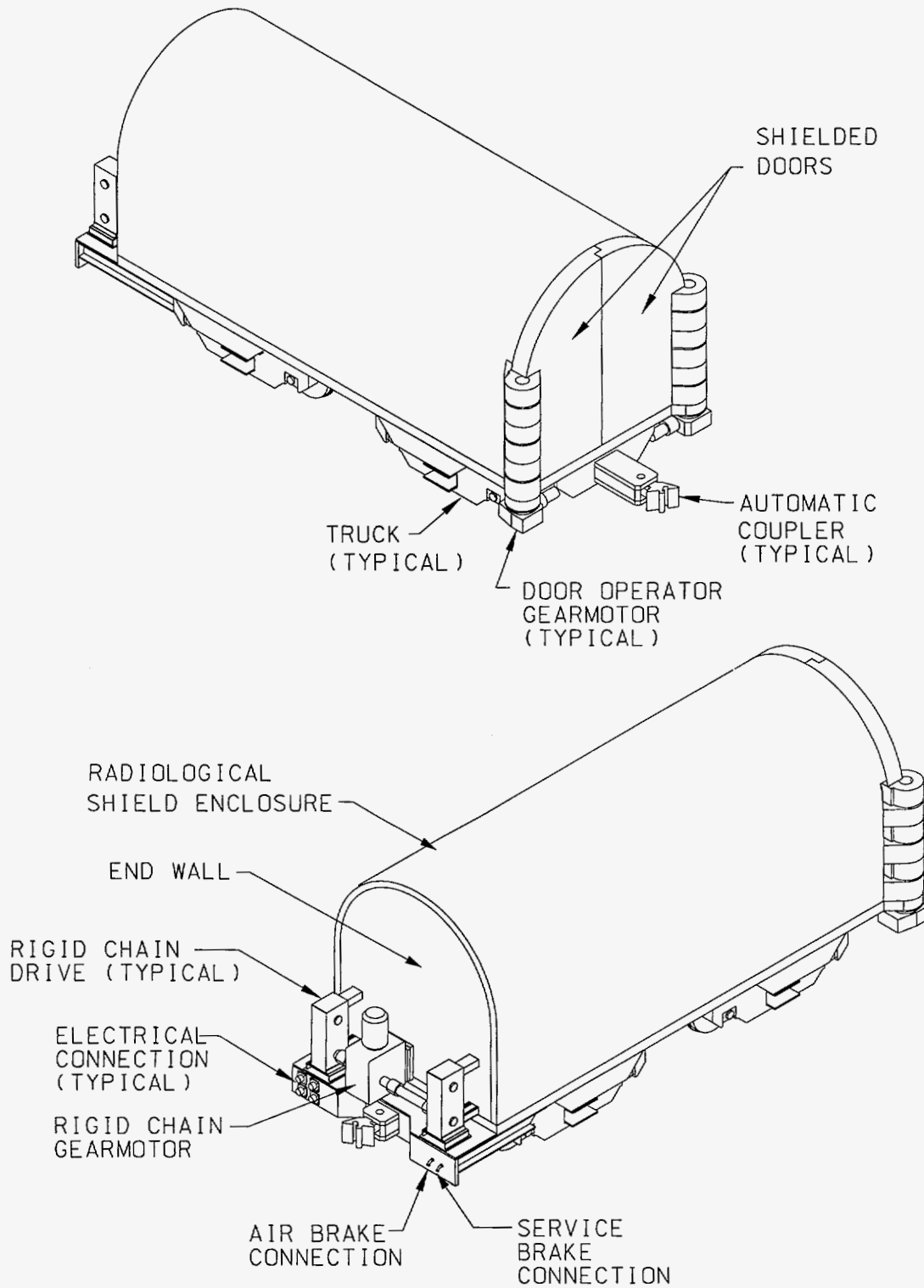
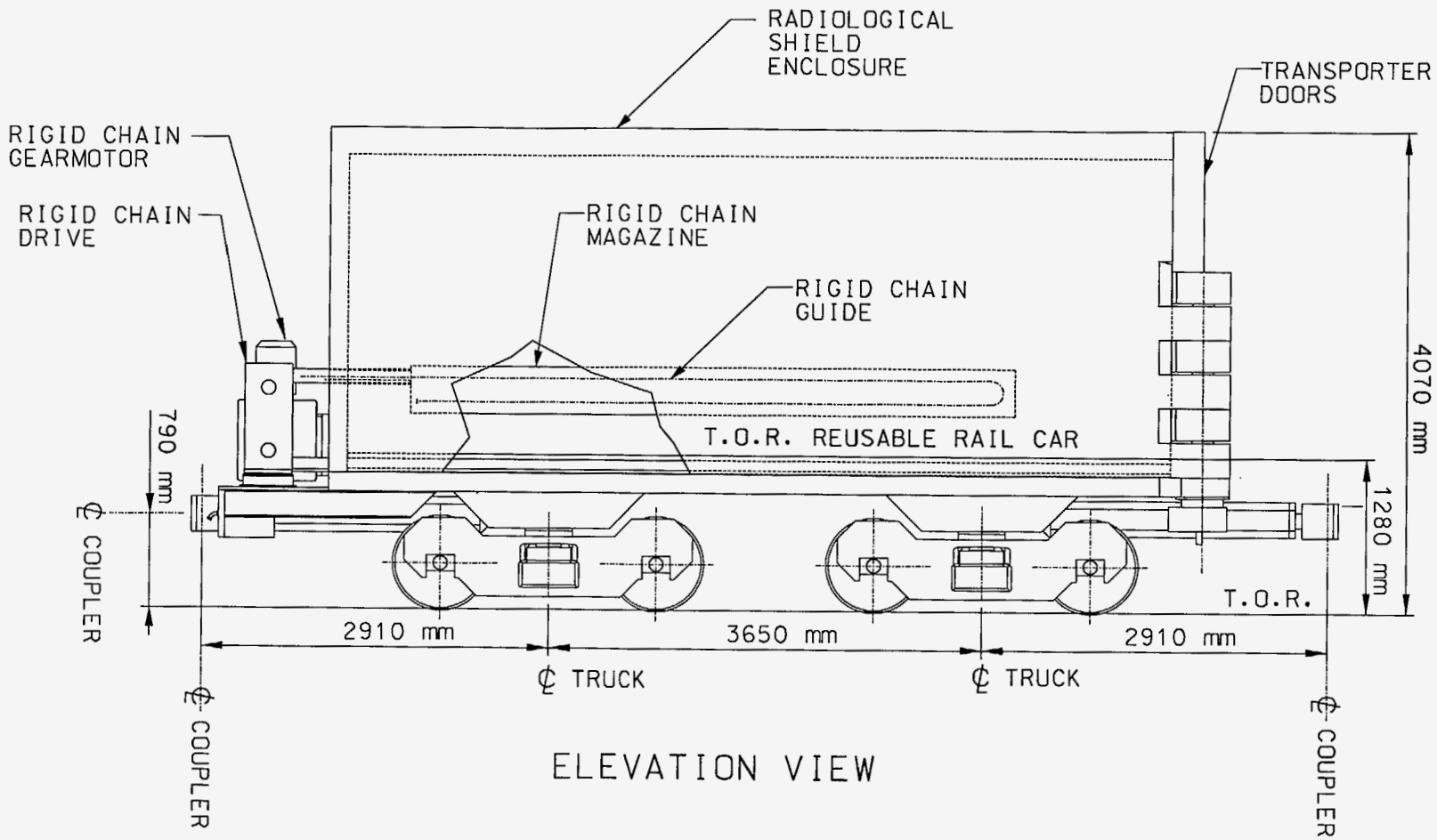
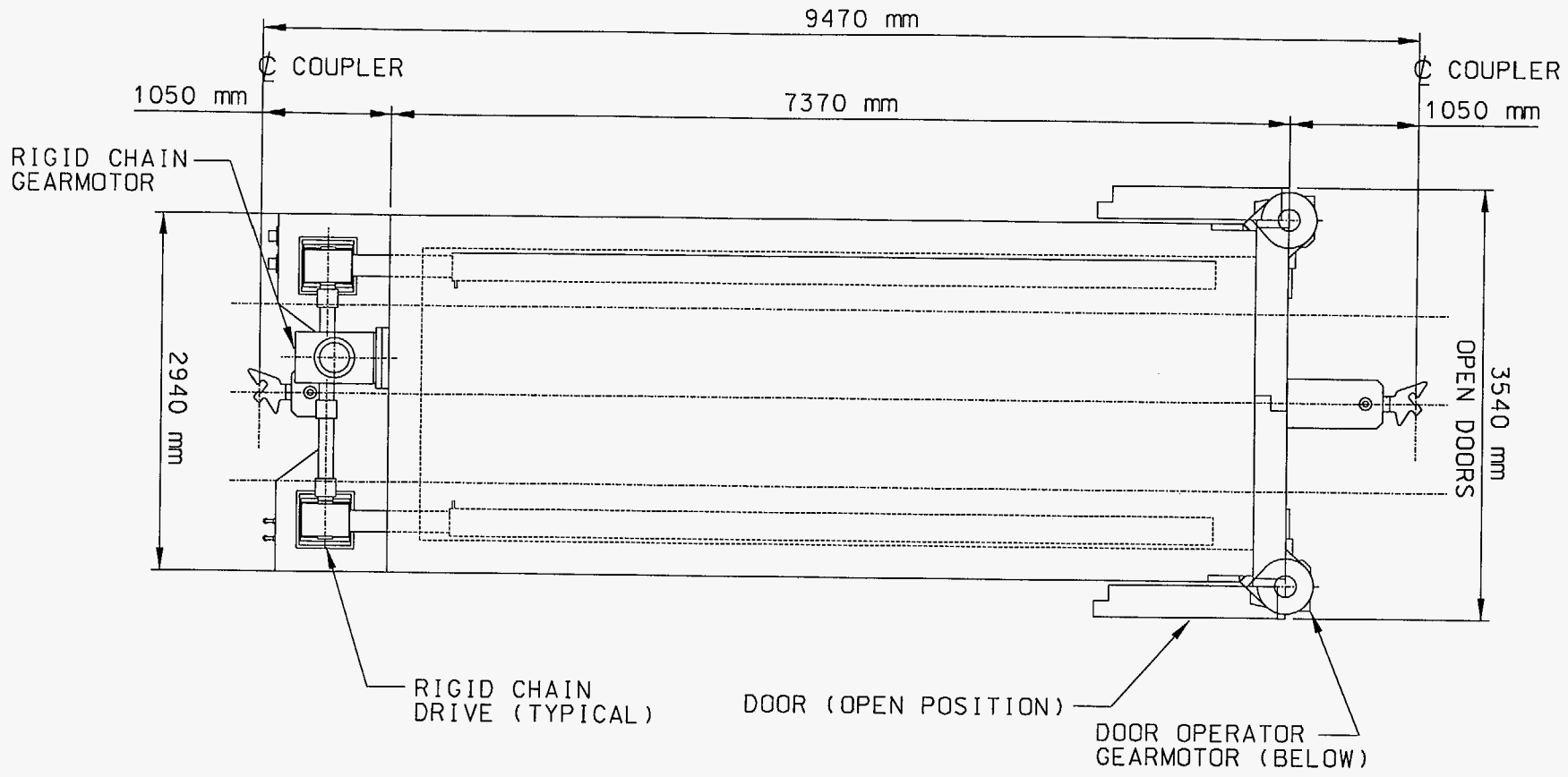


Figure 2 Waste Package Transporter, Side Elevation



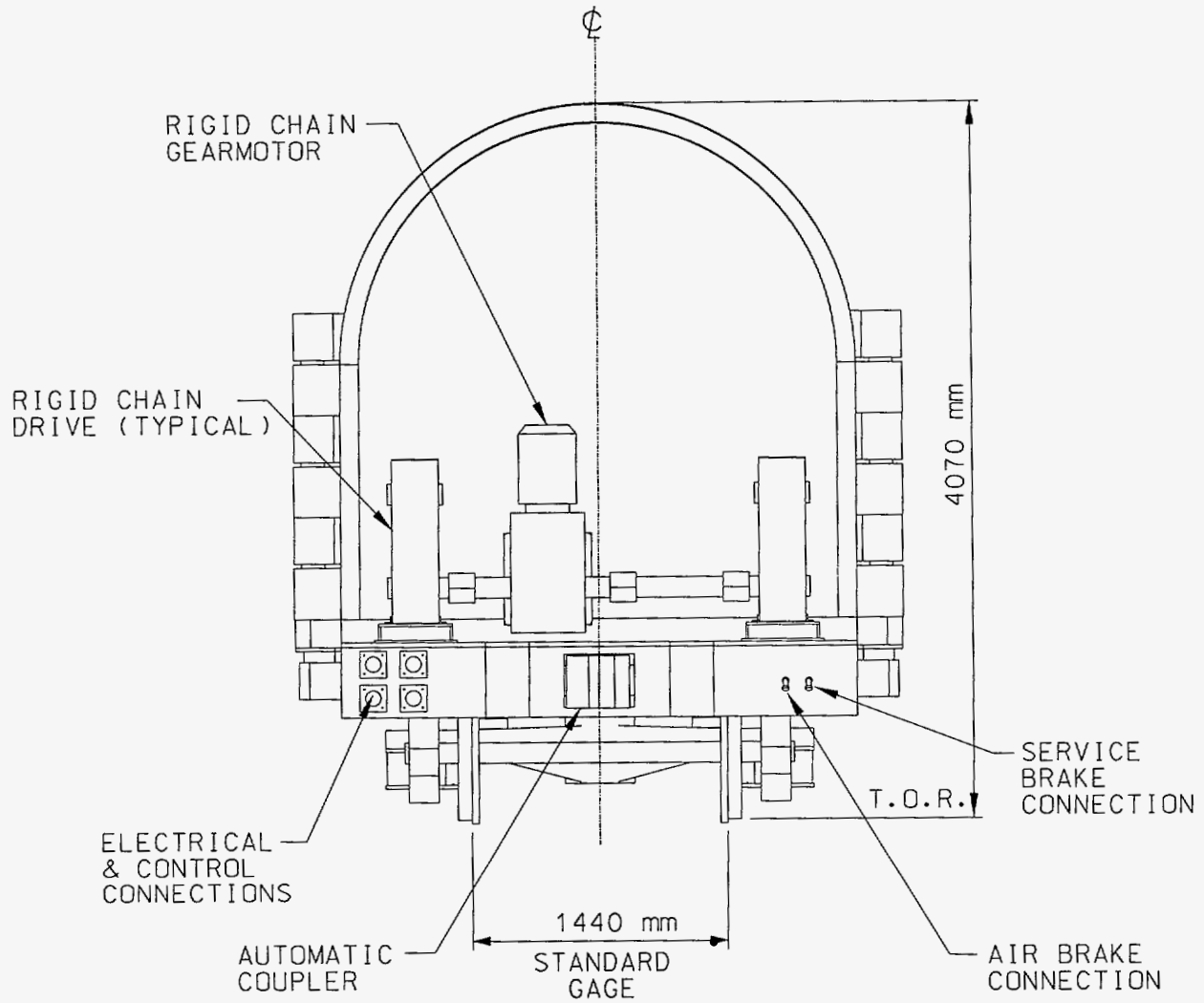
ELEVATION VIEW

Figure 3 Waste Package Transporter, Plan View



WASTE PACKAGE TRANSPORTER  
PLAN VIEW

Figure 4 Waste Package Transporter, End Elevation



WASTE PACKAGE TRANSPORTER  
END ELEVATION VIEW

NOTE:  
RADIOLOGICAL SHIELDING AROUND RIGID  
CHAIN DRIVES NOT SHOWN FOR CLARITY



### **7.3 DESIGN ISSUES**

The dimensions and weight of the waste packages affect the size and design of the rail car and the transporter. Any increases in the waste package length from current dimensions will result in an increase in the overall length of the transporter. Also, any increase in the maximum weight of the waste packages will require that the load capacity of the selected transporter wheels, brake systems, and trucks be verified for the new loads.

The transporter design in this analysis is based on the maximum waste package values indicated in Table 1. The analysis also addresses the following specific design issues:

- Transporter length
- Transporter wheel size
- Mechanical restraint for the reusable rail car
- Interface mechanism between pushbar and reusable rail car
- Door operators and locking devices
- Radiation shielding material
- Door configuration/radiation seal
- Radiation seal/cover for rigid chain cut-outs
- Transporter dock alignment device
- Brake system
- Reusable rail car loading/unloading system alternatives
- Remote control interfaces
- Transporter structural analysis
- Turning radius
- Transport tolerances

#### **7.3.1 Transporter Length**

The transporter is sized to contain the reusable rail car (rail car) with the largest waste package of 2,000 mm diameter and 6,200 mm long on the rail car. The rail car, which is designed to accept the full range of waste packages, has an overall length of 6,800 mm (Figure 3 of Ref. 5.9). Allowing for a 10 mm clearance between the transporter door and the rail car and a 30 mm clearance on the pushbar end of the rail car results in a minimum transporter inside dimension of 6,840 mm (10 mm + 6,800 mm + 30 mm). The door and wall thickness to account for transporter radiation shielding is 264 mm (Assumption 4.3.5). The inside dimension plus radiation shielding of the wall and door equates to an overall length for the radiation shielded compartment of 7,370 mm (264 mm + 6,840 mm + 264 mm = 7,368 mm, rounded to 7,370 mm).

Figure 3 illustrates additional components, including the rail car unloading mechanism and transporter couplers, which results in the transporter length of 9,470 mm from centerline coupler to centerline coupler.

### 7.3.2 Transporter Wheel Size

A preliminary wheel selection for the transporter and a preliminary rail selection based on the anticipated loads is presented in Attachment II. The transporter wheel and rail gravity loads anticipated include the transporter dead load of 154 MT (170 tons) developed in Attachment II, plus a waste package weighing 85 MT (Criteria 4.2.4) and an empty rail car weighing 10 MT (Attachment IV, Section 3.3 of Ref. 5.9). With this load, it was determined that the 30-inch-diameter wheel and 57 kg/m (115 lb/yd) AREA rail are not satisfactory for supporting the loaded transporter. A recommendation was made to change to 49.5 kg/m (100 lb/yd) ASCE rail or standardize rail systems using the selected gantry rail. This recommended change was necessary due to the smaller effective width of the rail head on the 57 kg/m (115 lb/yd) AREA rail. Wheel rims must be surface-hardened to a Brinell hardness number of 615 as indicated in Attachment II (Ref. Standard 4.4.4).

### 7.3.3 Reusable Rail Car Loading/Unloading System Alternatives

#### 7.3.3.1 General Requirements

One of the major operations in the final placement of the waste package is the unloading function of the waste package on the reusable rail car from the transporter onto the emplacement drift transfer dock. Two types of rail car loading/unloading (handling) systems have been evaluated:

- Single-stage rail car handling systems in which all mechanical components are installed on the transporter. These components have the capacity and capability to move the waste package on the rail car to a position on the transfer dock where the waste package can be accessed and lifted by the emplacement gantry.
- Two-stage rail car handling systems requiring that mechanical components be installed both in the transporter and on the emplacement drift transfer dock to move the rail car as necessary. The transporter handling system pushes the rail car only far enough to engage the transfer dock handling system, which in turn moves the rail car to its unloading position.

Single- and two-stage rail car handling systems were evaluated. These systems include five single-stage systems (Ref. 7.3.3.3.1 - 7.3.3.3.5) and two-stage systems consisting of one of the five single-stage systems with reduced travel or Concept 6 (Ref. 7.3.3.4.1) as the first stage combined with two second-stage concepts (Ref. 7.3.3.4.2). The following requirements were established for the design of these systems and are used in addition to criteria established in Section 4.2 of this analysis:

1. Transporter loading/unloading functions are remotely-controlled and monitored from the operator control station through the transport locomotive communication system.
2. The handling mechanism shall be capable of moving the reusable rail car a distance of 12 m (39.4 ft) from the back wall of the transporter to allow 4,700 mm clearance

between the rail car and transporter for positioning of the 12,070 mm-long emplacement gantry over the rail car.

3. The transfer dock must be designed to support and align the rail connection with the transporter.
4. The rail car handling system shall have the capacity to move the loaded rail car (combined weight of 95 MT) equipped with anti-friction bearings. Estimated horizontal drawbar force is 862 kg (1,900 lb) (Attachment II, Section 3.3.6).
5. For two-stage handling systems, the transfer dock handling units are designed for temporary installation during placement operations, with subsequent removal and reinstallation at the next emplacement drift.

### 7.3.3.2 Evaluation Basis Factors

Evaluation of these alternative solutions to transporter loading/unloading design features is not intended to be a formal reliability, availability, maintainability (RAM) evaluation. However, factors that affect the reliability, availability, maintainability, and operability are included in the evaluation. The alternative evaluations presented in this analysis include descriptions of each system, a general discussion of advantages and disadvantages and a comparison of the chosen factors which result in recommendations (see Table 6). The factors chosen and the importance of these factors for the loading/unloading system are as follows:

- Drive Location. The drive location affects the transporter maintainability. If the drive is located inside the shielding, it is more difficult to maintain and impossible to maintain if a waste package is inside the transporter. Reliability is also affected if the heat from the waste package increases the temperature in the transporter above equipment design levels.
- Magazine Location. The magazine location affects the chain maintainability and the transporter reliability as described for the drive location.
- Interference with the Waste Package. Interference between the loading/unloading system equipment and the waste package or other parts of the transporter affects the transporter design and cost or its operability. Impacts to the design could include raising the height of the transporter, which affects the transporter weight, stability and cost. Such transporter design changes can also affect design of the tunnels and emplacement drift docks.
- Number of Penetrations. The penetrations considered are through the radiation shielding. These are considered potential radiological safety concerns which require additional shielding. The extent of the concern will be addressed in a later radiological analysis.

- Extended Radiation Shield. Several alternatives require the radiation shield to be enlarged because of interference with loading/unloading system components or to contain the components. Additional shielding adds weight and can affect the design of the frame, wheels, rails, braces, and locomotive selection. Weight also can affect wheel and rail wear, although this is considered a minor affect because the increased weight anticipated is not significant when compared to the weight of the loaded transporter.
- Increased Number of Components. In general, the number of components required by the loading/unloading system affects the reliability and availability of the system. Each component has an expected reliability and as the number of components increases, the reliability of the system decreases unless the additional components are for redundancy or allow more reliable components throughout the system. The availability is also affected in the same manner because system availability is the product of individual component availabilities.
- Increased Controls. The number and complexity of the controls affects the reliability and availability of the loading/unloading system. The same rationale applies here as discussed for increased number of components.
- Additional Brakes and Restraints. Additional features required for operations affects the availability and reliability of the transporter. The same rationale presented for increased number of components also applies here.

### 7.3.3.3 Single-Stage Handling for Transfer of Reusable Rail Car

From the standpoint of equipment requirements, the single-stage handling system is the most attractive system for loading and unloading the rail car from the transporter because it minimizes the number of drives and controls. Minimizing these components improves the reliability and reduces maintenance requirements. Five concepts were developed for evaluation as single-stage handling concepts:

1. The single rigid chain with the drive mechanism mounted inside the radiation shield (Concept No. 1, Section 7.3.3.3.1).
2. The single rigid chain with the drive mechanism outside the radiation shield (Concept No. 2, Section 7.3.3.3.2).
3. Dual rigid chains with chain storage inside and the drive mechanism mounted outside the radiation shield (Concept No. 3). A second related concept (Concept 3A) has the chain storage outside of the radiation shield (Section 7.3.3.3.3).
4. Single rigid chain system and ball screws (Concept No. 4, Section 7.3.3.3.4).
5. Electric motor-driven wheels of the rail car (Concept No. 5, Section 7.3.3.3.5).

Table 6 summarizes the single-stage handling factors and provides the basis for recommending a rail car loading/unloading system. The numbers assigned to the

selection factors indicate a favorable (+) or unfavorable (-) weighted rating for each option based on the forgoing evaluations. Zeros indicate that the factor is not applicable.

Selection factors that address the maintainability (drive location), radiological safety (penetrations), and reliability (number of components) are weighted greater than other criteria. Also, the criteria “interference with WP” is weighted heavier because this requires the shielding to be higher to eliminate the interference which raises the center-of-gravity and makes the transporter more unstable during a seismic event. The greater weight is given to these factors by assigning (+2) as favorable concept and (-2) as unfavorable concept.

**Table 6 Single-Stage Handling Selection**

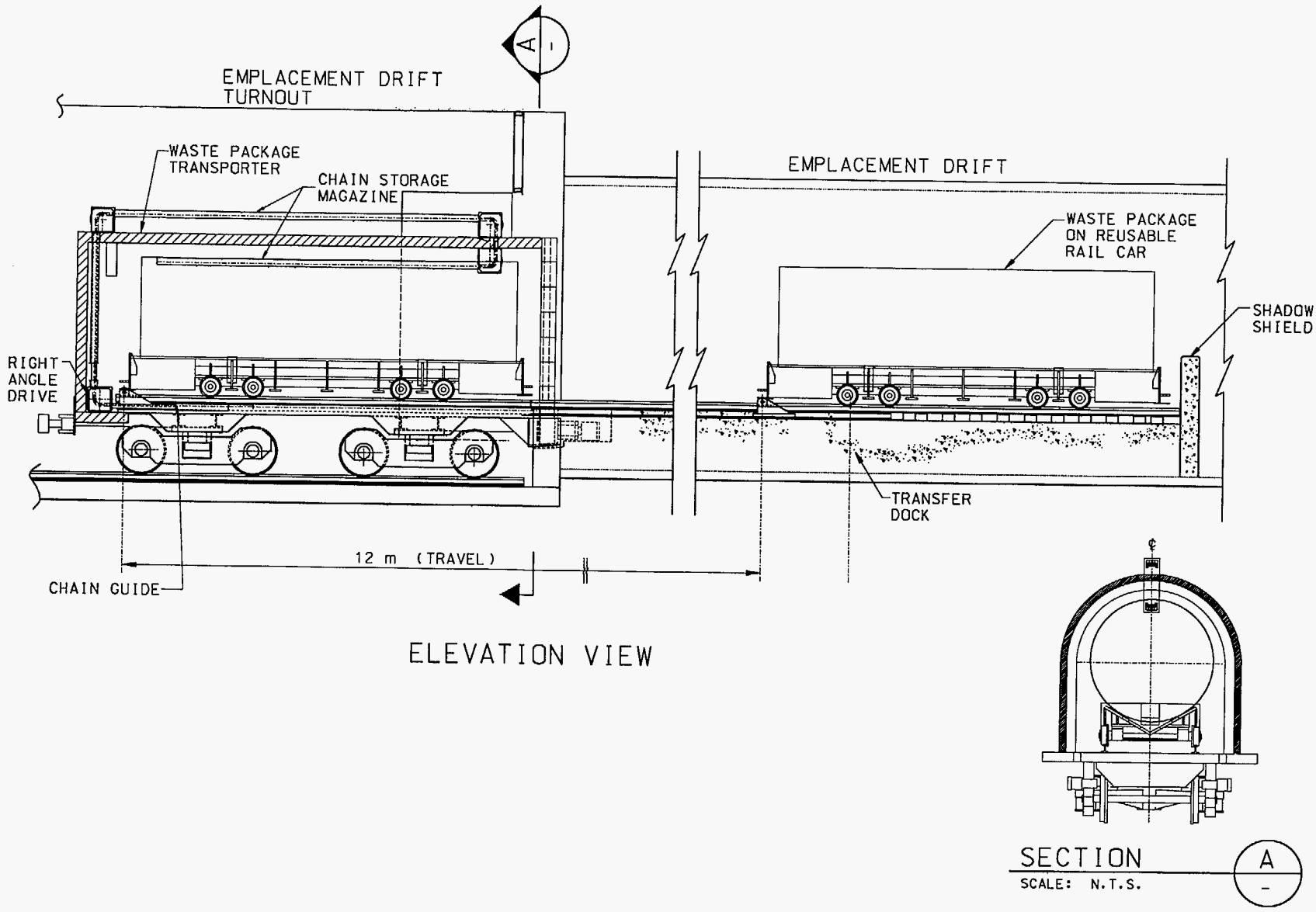
Selection Factors	Concept No. 1	Concept No. 2	Concept No. 3	Concept No. 3A	Concept No. 4	Concept No. 5
Drive Location					1 Inside	
Inside radiation shield (-2)	Inside	Outside	Outside	Outside	1 Outside	Inside
Outside radiation shield (+2)	-2	+2	+2	+2	-2	-2
Magazine Location						
Inside radiation shield (-1)	Inside and outside	Inside and outside	Inside	Outside	Outside	None
Outside radiation shield (+1)	-1	-1	-1	+1	+1	0
Interference with WP	Yes	Yes	No	No	No	No
Yes (-2) or No (+2)	-2	-2	+2	+2	+2	+2
Number of Penetrations	2	2	4	2	1	0
≥2 (-2) or <2 (+2)	-2	-2	-2	-2	+2	+2
Extended Radiation shield Length	Yes	No	No	No	No	Yes
Yes (-1) or No (+1)	-1	+1	+1	+1	+1	-1
Increased Number of Components Comparing to Concept No. 1	N/A	No	Yes	Yes	Yes	Yes
Yes (-2) or No (+2)	+0	+2	-2	-2	-2	-2
Increased Controls	No	No	No	No	Yes	Yes
Yes (-1) or No (+1)	+1	+1	+1	+1	-1	-1
Additional Brakes and Restraints	No	No	No	No	No	Yes
Yes (-1) or No (+1)	+1	+1	+1	+1	+1	-1
Totals	-6	+2	+2	+4	+2	-3

Recommendation: Based on the sum of the responses, Concept 3A, dual rigid chain with storage magazine located high outside the radiation shield, is the single-stage recommended handling system.

**7.3.3.3.1 Concept No. 1 - Single Rigid Chain With Drive Inside Radiation shield**

Concept No. 1 (Figure 5) uses a proprietary chain design that allows the chain to be coiled like a conventional chain but then assumes the characteristics of a rigid bar when it is uncoiled and subjected to a compressive force along its uncoiled length. This feature allows for enough storage of chain in the coiled state to provide the 12 m of travel required for single-stage unloading. The main chain components are the storage magazine, a right-angle chain drive, and a guide for the chain in the rigid state. Concept 1

Figure 5 Concept No. 1 - Single Rigid Chain with Drive Inside Transporter



ELEVATION VIEW

SECTION  
SCALE: N.T.S.

uses a single rigid-chain system located down the center of the transporter between the rail car rails, with the storage magazine located both above and below the radiation shielded roof line. The drive and gearmotor are located inside the transporter radiation shield on the floor at the end wall. With the drive inside the transporter penetrations through the shielding end wall are eliminated, which eliminates a potential for radiation leakage in line-of-sight with the locomotive operator. The rigid chain from the drive mechanism runs in a chain guide in the transporter floor and continues into the entrance of the emplacement drift, within the guide installed in the transfer dock floor. One end of the rigid chain is connected to the pushbar, which is bolted to plates on the rail car and moves it through the open transporter doors into the emplacement drift.

The alignment of the rail car rails and the rigid chain guide at the interface point is critical for proper operation. Since this concept employs permanently installed features on the transfer dock (rigid chain guide), this unloader is also used to retract the reusable rail car back into the transporter. For this handling system, the preliminary equipment selection is as follows:

- Chain: Serapid rigid chain, type 90SG single chain with rollers, 90 mm pitch, 862 kg (1,900 lb) pushing force, type 90SG guide, 90-degree single-drive housing. (Ref. 5.16)
- Gearmotor: SEW Eurodrive helical bevel gearmotor, Model KAF 86, flanged mounted with hollow shaft, 1750 revolutions per minute (rpm) input, 20 rpm output, 9,450 in.-lb torque, 3.0 hp. (Ref. 5.15)

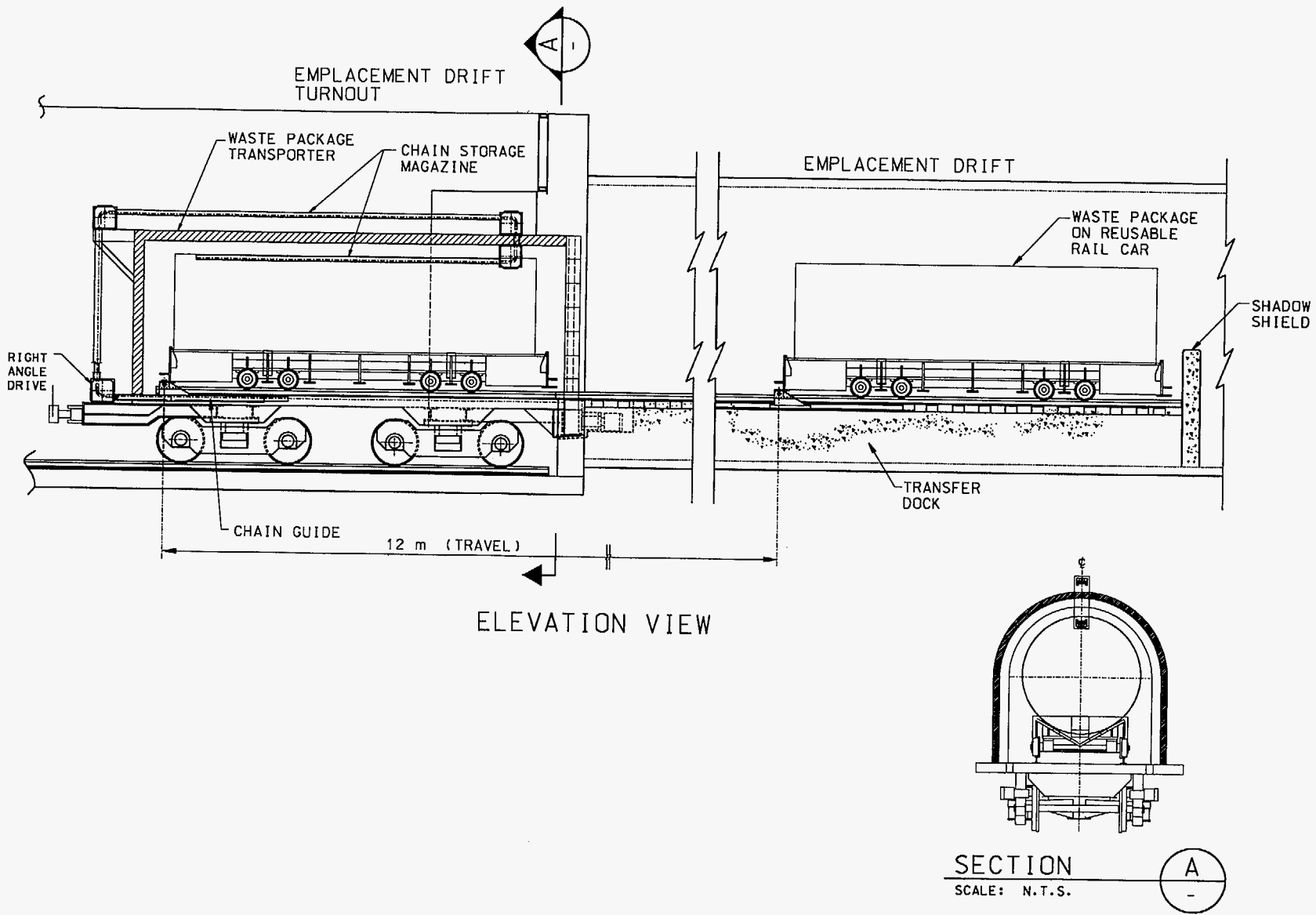
The advantages of this concept are that it requires only one rigid chain. Having only one rigid chain is an advantage because less maintenance is required when compared with other systems that include two chains or combinations of different types of equipment.

The disadvantages of this concept are that the rigid chain magazine, as presented, interferes with the waste package in the transporter. A single chain does not include any redundancy to improve system reliability and the location of the drive affects the maintainability. This interference could be eliminated by raising the height of the transporter roof, but doing so would increase the weight of the transporter which will negatively affect stability and require additional clearance. Other disadvantages are the location of the drive mechanism inside the radiation shield, which increases the transporter length and the weight of the radiation shield and it makes access and repairs to the drive impossible when a waste package is in the transporter.

#### **7.3.3.3.2 Concept No. 2 - Single Rigid Chain with Drive Outside Radiation shield**

Concept No. 2 ( Figure 6) is the same as Concept No. 1, with the exception that the drive is located outside the radiation shield on an equipment platform that provides access to

Figure 6 Concept No. 2 - Single Rigid Chain with Drive Outside Radiation Shield





the drive mechanism for emergency repair or service. The chain storage magazines are again located above and below the transporter roof. The rigid chain from the drive mechanism runs in the chain guide and, in this concept, penetrates the transporter wall and continues in the same manner as Concept No. 1. The preliminary equipment selection is the same as for Concept No 1.

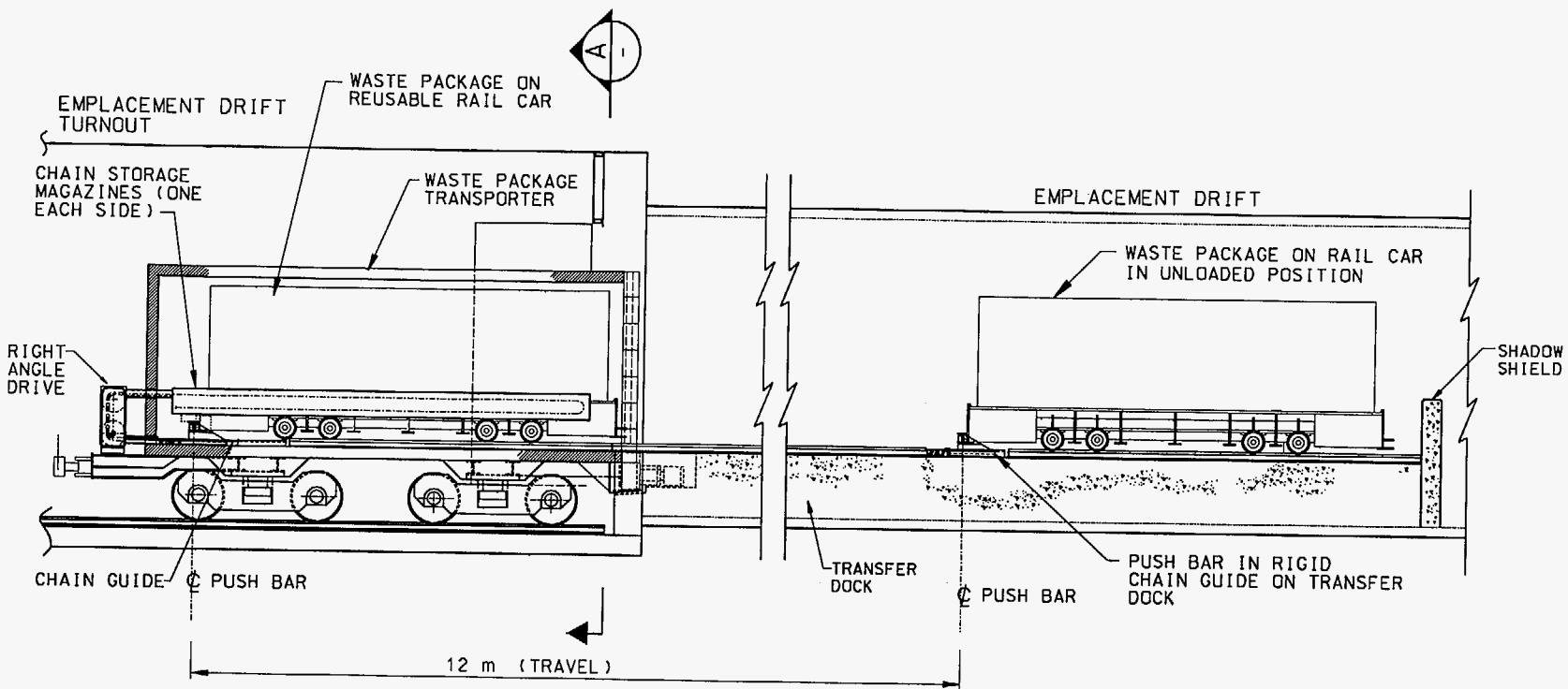
The advantages of this concept are the same as Concept No. 1, except that because the chain drive is located outside the radiation shield, the radiation shield length can be reduced, which also reduces the overall weight of the transporter. Also, with the drive mechanism located outside the radiation shield, it is accessible for maintenance and repair. This concept shares two disadvantages with Concept No. 1: the interference between the chain drive storage magazine and the waste package and it lacks any redundancy. To eliminate the interference, the roof of the transporter can be raised; however, this could lead to interference and clearance problems with dimensions in the existing ramps, mains, and drift turnouts and to transporter stability concerns.

#### **7.3.3.3 Concept No. 3 - Dual Rigid Chains With Chain Storage Inside and Drive Outside**

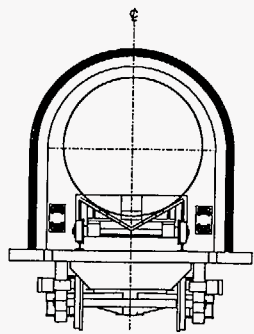
This concept uses the same proprietary chain design as the previous concepts except that two separate rigid chains eliminate the potential for interference with a waste package, allowing all chain storage inside the transporter on each side of the reusable rail car under the curvature of the waste package (Figure 7). Again, the main chain components are the storage magazine, right-angle chain drive, and a guide for the chain in its rigid state. This application uses two identical rigid chain systems with storage magazines located inside the radiation shielded transporter at the side walls, and the drives located outside on an equipment platform. The two chain drives are connected to a common gearmotor for synchronous operation. Each of the rigid chains is drawn from its magazine through a penetration in the transporter shielding to the drive and then driven back through another penetration in the transporter shielding wall. Inside the transporter, the rigid chain runs in a chain guide installed on the floor, where it is connected to a pushbar engaging the rear plate of the rail car and moving it through the open transporter doors into the emplacement drift. The pushbar is supported by the rail car. The rigid chains run in chain guides on the transporter floor and continue on into the drift in identical guides installed in the transfer dock. The chain ends are bolted to the pushbar, which is bolted between two towing bars welded to the reusable rail car end plate. As the rigid chain is retracted into the chain magazine, the rail car is drawn back into the transporter.

An alternative to this concept is to raise the magazines to an area outside the radiation shielded enclosure above the arched roof of the transporter. This concept (3A), depicted in Figure 7A, has the advantage of eliminating the upper chain penetrations.

Figure 7 Concept No. 3 - Dual Rigid Chains with Chain Storage Inside and Drive Outside Transporter

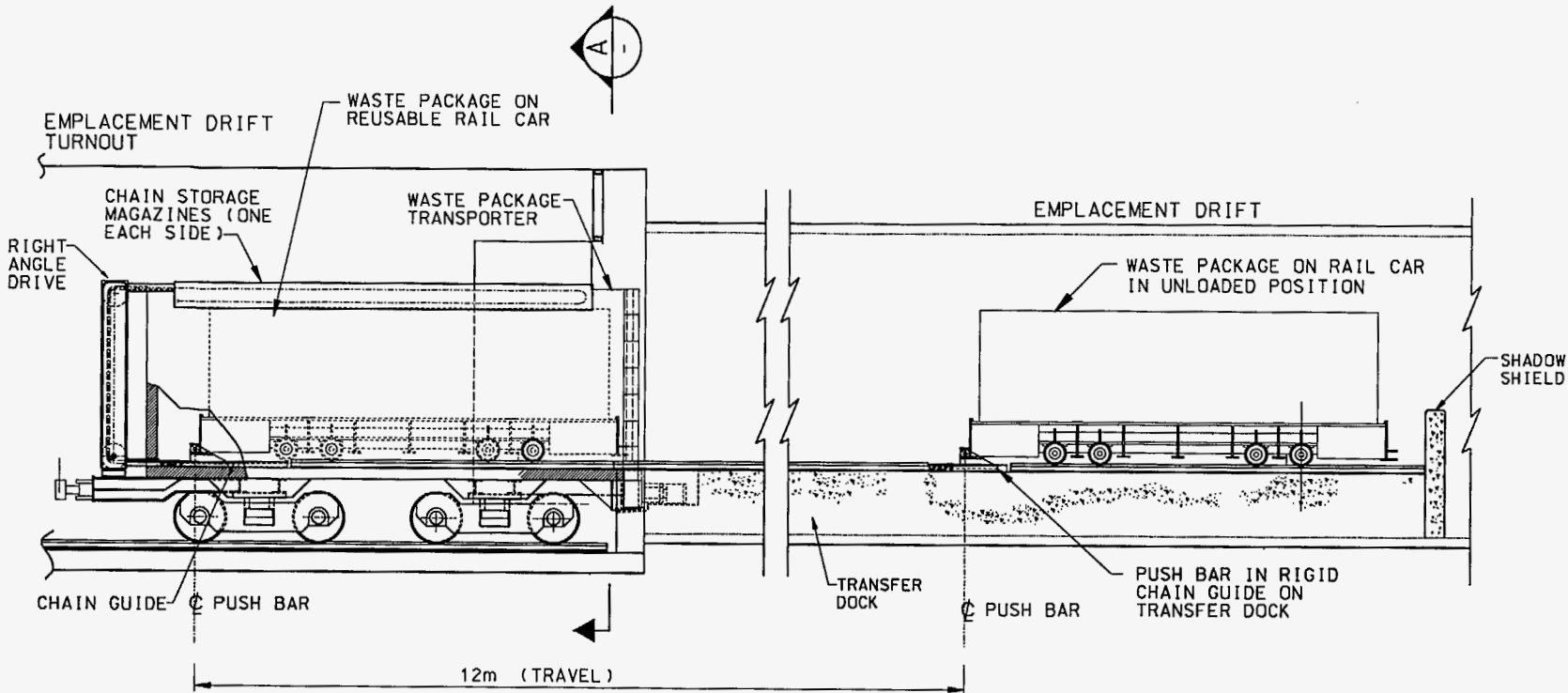


ELEVATION VIEW

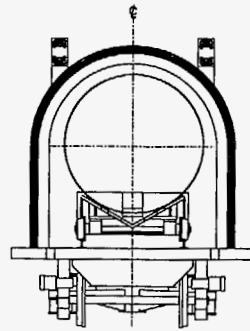


SECTION  
SCALE: N.T.S.

Figure 7A Concept No. 3A - Dual Rigid Chains with Chain Storage and Drive Outside Transporter



ELEVATION VIEW



SECTION  
SCALE: N.T.S.



The alignment of the rail car tracks and the two rigid chain guides at the interface point is critical for proper operation. Because it employs permanently installed features in the drift (rigid chain guides), this unloader concept may also be used to load or retract waste packages into the transporter for future retrieval operations if required.

The preliminary equipment selections are the same as for Concept No. 1, except that two rigid chains, chain magazines, chain drive housings, and chain guides are required.

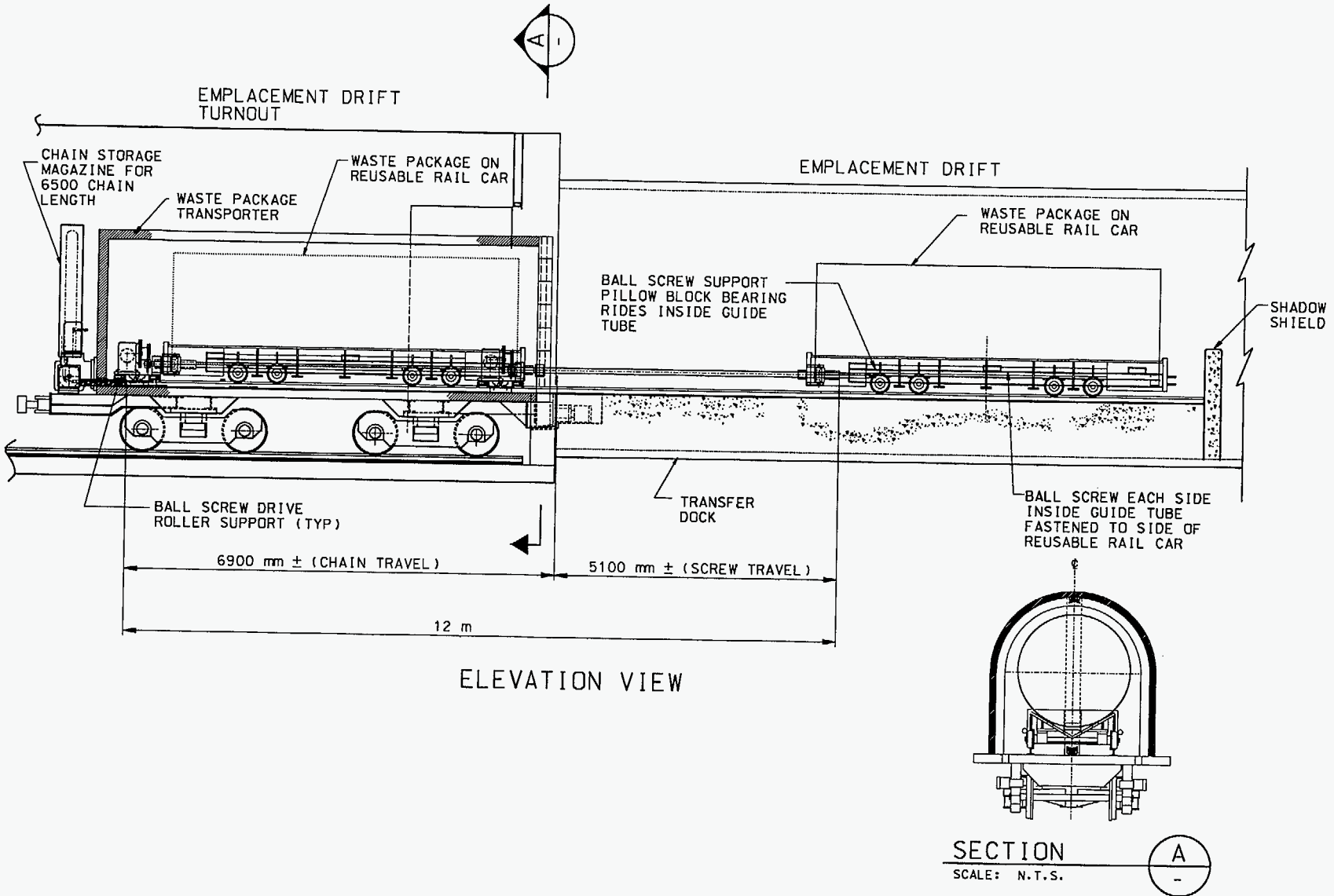
One advantage the two chain systems have over the single chain system is the system has partial redundancy. Retrieving the rail car is still possible, even if one chain fails. The system is only partially redundant because redundant drives are not included. Concept No. 3 also has all the advantages of Concept No. 2 and eliminates the interference between the rigid chain storage magazine and the waste package. The primary disadvantage of this concept is the four penetrations required to locate the storage magazine inside the transporter. Concept No. 3A reduces the number of penetrations to two. The additional components are not considered a disadvantage because they provide partial redundancy described above.

#### 7.3.3.3.4 Concept No. 4 - Single Rigid Chain with Ball Screws

Concept No. 4, which is depicted in Figure 8, uses the single rigid chain design developed in Concept No. 2 to move the reusable rail car out of the transporter and a ball screw system that is mounted with the pushbar to position the rail car on the transfer dock. For this concept, the rigid chain gearmotor, chain drive housing, and chain magazine are mounted on an equipment platform outside of the radiological shield. The chain magazine is vertically mounted, and since a shorter travel distance is required, the magazine can be smaller. The chain is fed out of the chain drive housing horizontally and penetrates the radiation shield at only one location. The ball screw drive is supported by rollers that travel in guides and move with the pushbar and rail car. Once the rail car is outside the transporter, the drive activates the ball screws to position the rail car on the transfer dock. Power to the ball screw drive is supplied through spring-loaded contactors from a third rail on the transfer dock. Preliminary equipment selection is as follows:

- Chain: Serapid rigid chain, type 90SG single chain with rollers, 90 mm pitch, 862 kg (1,900 lb) pushing force, type 90SG guide, 90-degree single-drive housing (Ref. 5.16).
- Chain Gearmotor: SEW Eurodrive helical bevel gearmotor, Model KAF 86, flanged mounted with hollow shaft, 1750 rpm input, 20 rpm output, 9450 in.-lb torque, 3.0 hp (Ref. 5.15).
- Ball Screw: Rockford ball screws (two), Model No. R-61, 25.4-mm diameter, 453 kg operating load, 25.4-mm per revolution lead screw, 5.1 m (16.7 ft) length (Ref. 5.27).

Figure 8 Concept No. 4 - Single Rigid Chain with Ball Screws



- Chain: Rex E Series roller chain, No. 40, 13 mm (0.5 inch) pitch, 1,676 kg average tensile strength (Ref. 5.20). Sprockets: Rex fabricated steel, 13 mm (0.5 inch) pitch (Ref. 5.20)
  - Ball Screw: 3.672 in. pitch diameter
  - Gearmotor: 3.831 in. pitch diameter
- Ball Screw Gearmotor: SEW Eurodrive, parallel helical gearmotor, foot-mounted, model RX71, 1750 rpm input, 467 rpm output, 4.6 m-kG (400 in.-lb) (Ref. 5.15)

Concept No. 4 has the following advantages:

- The chain drive and storage magazine are located outside of the radiation shield.
- Since the length of the rigid chain is shorter than required for Concepts 1, 2, and 3, the storage magazine can be mounted vertically on the equipment plate at the rear of the transporter. The vertical mounted chain allows for a lower center of gravity, eliminates the need for additional penetrations through the radiation shield and eliminates the waste package interference associated with other single-chain concepts.
- This arrangement requires only one penetration through the radiation shield.

Concept No. 4 has the following disadvantages:

- Although the chain drive housing is outside the radiation shield, the ball screw drive is still inside the radiation shield and requires that the radiation shield be long enough to cover this drive system. The extended radiation shield length and extra mechanical components required for the ball screw handling system increase the transporter operating weight by a measurable amount.
- The system maintainability is hindered by the ball screw handling system, which is inside the shielding when the chain is in its retracted position.
- The ball screw system requires two, long, unsupported screw lengths that have the potential for buckling.
- Concept 4 is less reliable than Concept No. 3 because of the increased number of systems (ball screw system, ball screw controls, and ball screw power) that must function concurrently for a complete, operational unload system.

#### **7.3.3.3.5 Concept No. 5 - Electric Motor Driven Wheels on Reusable Rail Car**

In Concept No. 5, the reusable rail car is driven out of the transporter by applying power to one set of its wheels. To make the rail car self-propelled, a gearmotor is installed on the rail car and applies power to the wheel set through a chain drive. Power to the gearmotor is supplied from the transporter through a festoon electric cable, cable reel, or third rail installed on the floor of the transporter. This would allow the rail car to move

out of the transporter and be positioned on the transfer dock. Although the details of this concept have not been completed, the preliminary equipment requirements are:

- Gearmotor: SEW Eurodrive, parallel helical gearmotor, Model R152R93, 1,750 rpm input, 3.1 rpm output, 2 hp, 35,900 inch-lb torque (Ref. 5.15).
- Sprockets: Rex type E, Chain No. 160, 6.0755-inch pitch diameter (Ref. 5.20)

Concept No. 5 has the following advantages:

- No penetrations of the radiation shield are required.
- The rigid chain guides and the requirement to maintain their alignment are eliminated.

Concept No. 5 has the following disadvantages:

- The drive is normally within the radiation shield, making access for maintenance difficult when the drive fails while inside the shielding.
- A braking system and method of securing the rail car in the transporter is required.
- This handling system would potentially require additional space inside the shield for a third rail or electric cable reel to supply power to the car from the transporter and additional maintenance will be required for the power system.
- Controls are required to prevent the rail car from traveling farther than necessary. There is not a solid connection to the transporter and a failure could result in the rail car being stranded in the emplacement drift.

#### **7.3.3.4 Two-Stage Handling for Transfer of Reusable Rail Car**

Two-stage handling systems use mechanisms mounted both on the transporter and on the transfer dock. The mechanisms on the transporter move the reusable rail car out of or into the transporter, while the mechanism mounted on the transfer dock positions the rail car so that the gantry can access and lift the waste package.

The two-stage systems are less desirable than single-stage systems because of reliability, availability, maintainability, and potential failure events. Two-stage systems typically will be less reliable and have lower availability because additional equipment, controls, and power distribution systems are required to function properly for a complete, operable system. The maintainability is reduced because portions of the unload system are mounted on the emplacement drift dock, which is a potentially radioactive area. The potential for a failure requiring additional effort for recovery is increased because of the rail car separation from the transporter and the need to reconnect to the transporter before the rail car (with the waste package in the case of retrieval) can be retracted into the transporter. Although Concepts 1, 2, 3, 3A, and 4 are used as single-stage handling schemes, they can also be used as the transporter stage of two-stage handling systems.

These systems would have the same ranking as listed in Table 6. In addition to these schemes, another two-stage scheme, Concept 6, was also developed for the first (transporter) stage. The rankings of all of these concepts must be combined with Concepts 7 or 8 to arrive at the evaluation total for two-stage handling. Table 7 summarizes the rankings of Concepts 7 and 8, and also ranks Concept 6 since it was not ranked as a single-stage system. A numerical ranking system similar to that used for single-stage handling was used.

**Table 7 Two-Stage Handling Selection**

Selection Factors	Concept No. 6	Concept No. 7	Concept No. 8
Drive Location			
Inside radiation shield (-2)	Outside	N/A	N/A
Outside radiation shield (+2)	+2	0	0
Magazine Location			
Inside radiation shield (-1)	None	N/A	N/A
Outside radiation shield (+1)	0	0	0
Interference with WP			
Yes (-2) or No (+2)	No +2	N/A 0	N/A 0
Number of Penetrations			
≥2 (-2) or <2 (+2)	2 -2	N/A 0	N/A 0
Extended Radiation shield Length			
Yes (-1) or No (+1)	No +1	N/A 0	N/A 0
Increased Number of Components Comparing to Concept No. 1			
Yes (-2) or No (+2)	Yes -2	Yes -2	Yes -2
Increased Controls			
Yes (-1) or No (+1)	Yes -1	Yes -1	Yes -1
Additional Brakes and Restraints			
Yes (-1) or No (+1)	No +1	N/A 0	N/A 0
<b>Totals</b>	<b>+1</b>	<b>-2</b>	<b>-2</b>
<b>Total for Concept 3A</b>		<b>+4</b>	<b>+4</b>
<b>Total Two-Stage for Single-Stage Comparison (compare to Table 6)</b>		<b>+2</b>	<b>+2</b>

Recommendation: There is no clear-cut advantage between the two-stage concepts (7 and 8). After combining the rankings of the five single-stage options with either Concept 7 or 8, the results show that a combination with Concept 3A is the optimal two-stage system. However, the ranking of this optimal two-stage system is less than the ranking of Concept 3A as a single-stage system. Therefore, further consideration of two-stage handling is not recommended. These concepts are fully described in Sections 7.3.3.4.1 and 7.3.3.4.2.

**7.3.3.4.1 Concept No. 6 – Transporter Loading/Unloading Systems**

The first stage of the two-stage systems is composed of features mounted on the transporter that are basically the same as in Concepts 1, 2, 3, 3A, and 4 (single-stage handling systems), except that the first-stage transporter mechanism only moves the rail car out of the transporter to engage the second-stage transfer dock handling system. The preliminary equipment selected for these concepts is the same for two-stage handling. Concept No. 6 is another alternative to the first-stage concept. It uses ball screws in the transporter to move the reusable rail car in a manner similar to Concept No. 3, with the pushbar now connected to two ball screw nuts, one located on each side of the reusable



rail car in the transporter. The screws exit the radiation shield through penetrations in the end wall (Figure 9). These penetrations are smaller than those required for the rigid chain. The screws are supported by bearings at the wall penetration points and are connected to chain sprockets outside the radiation shield. Both ball screw sprockets are chain driven from a single gearmotor for synchronous operation. The drive gearmotor is installed on the equipment platform outside the radiation shield. The pushbar is held against the rail car front plate with an engagement hook that is released when the cam on the transporter floor trips the follower on the hook at the end of the unloader travel. Preliminary ball screw and drive equipment selections for this concept are the same as for Concept No. 4.

#### **7.3.3.4.2 Transfer Dock Loading/Unloading Systems**

Two additional concepts were investigated for positioning the rail car on the transfer dock. These systems include a chain drive mechanism and a ball screw mechanism.

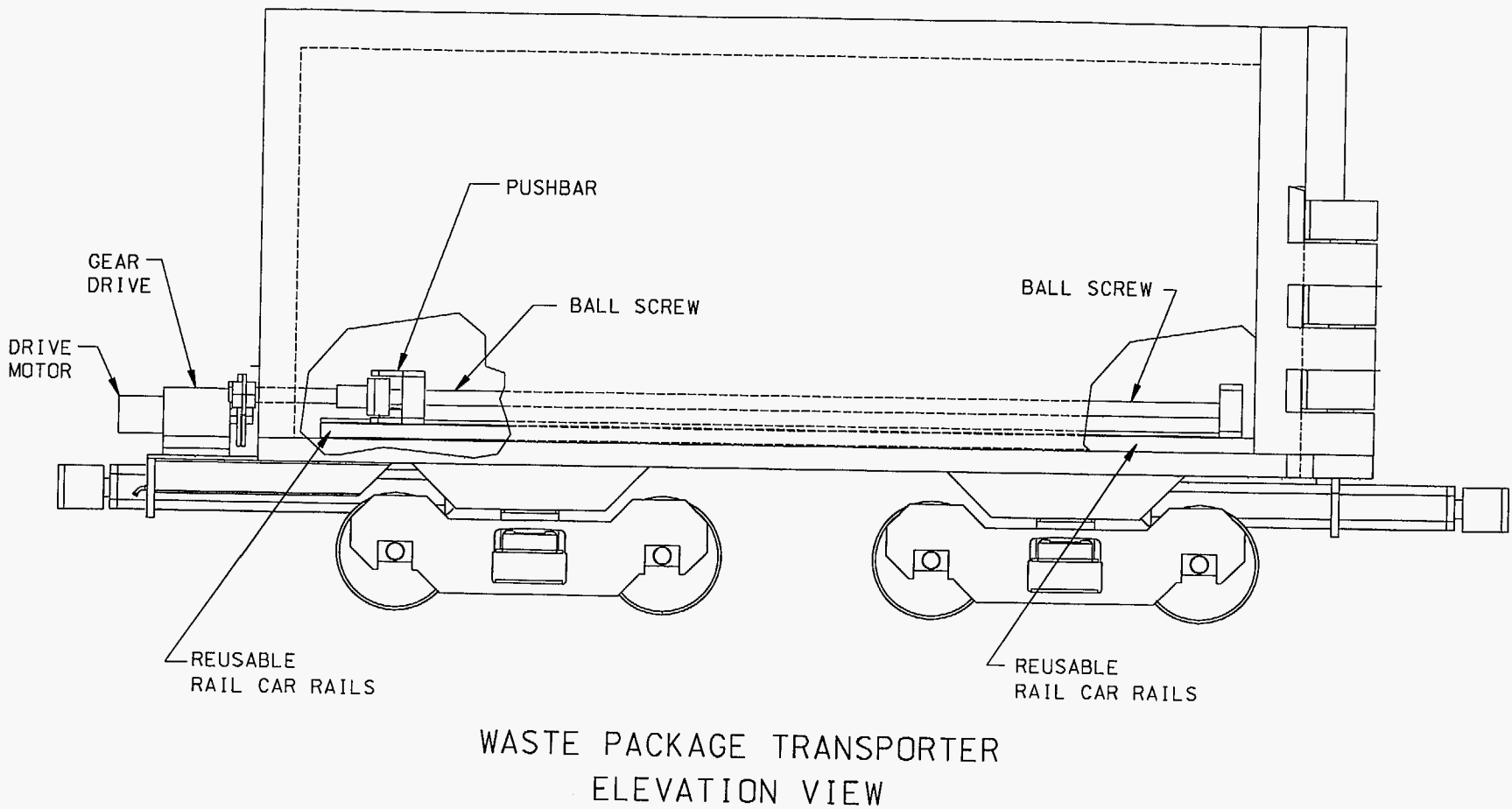
##### **7.3.3.4.2.1 Concept No. 7 – Chain Drive**

Concept No. 7 is similar to a drag chain used to unload material at the bottom of a hopper or individual items such as logs in a trough. In this application, the unloader chain does not move continuously, but travels back and forth in a guide on the transfer dock floor centered between the rails (Figure 10).

The unloader comprises the chain assembly (chain, drive sprocket, tail sprocket, pushbar, and housing), motor and reducer, and inner connecting drive shaft. All of these components are installed below the transfer dock floor level in trenches or pits. The chain drive sprocket and gearmotor drive are located at the far end of the unloader away from the drift entrance. A pushbar with a spring-loaded catch is connected to the chain and traverses back and forth in a guide on top of the unloader housing. The pushbar engages the rail car front plate and when driven by the chain below, transports the rail car to the gantry pick-up position on the transfer dock. Due to the size of the drive installation, a small recess is required in the side of the drift. This unloader, with modular components, may be relocated from one drift to the next. Preliminary equipment selection for Concept No. 7 is as follows:

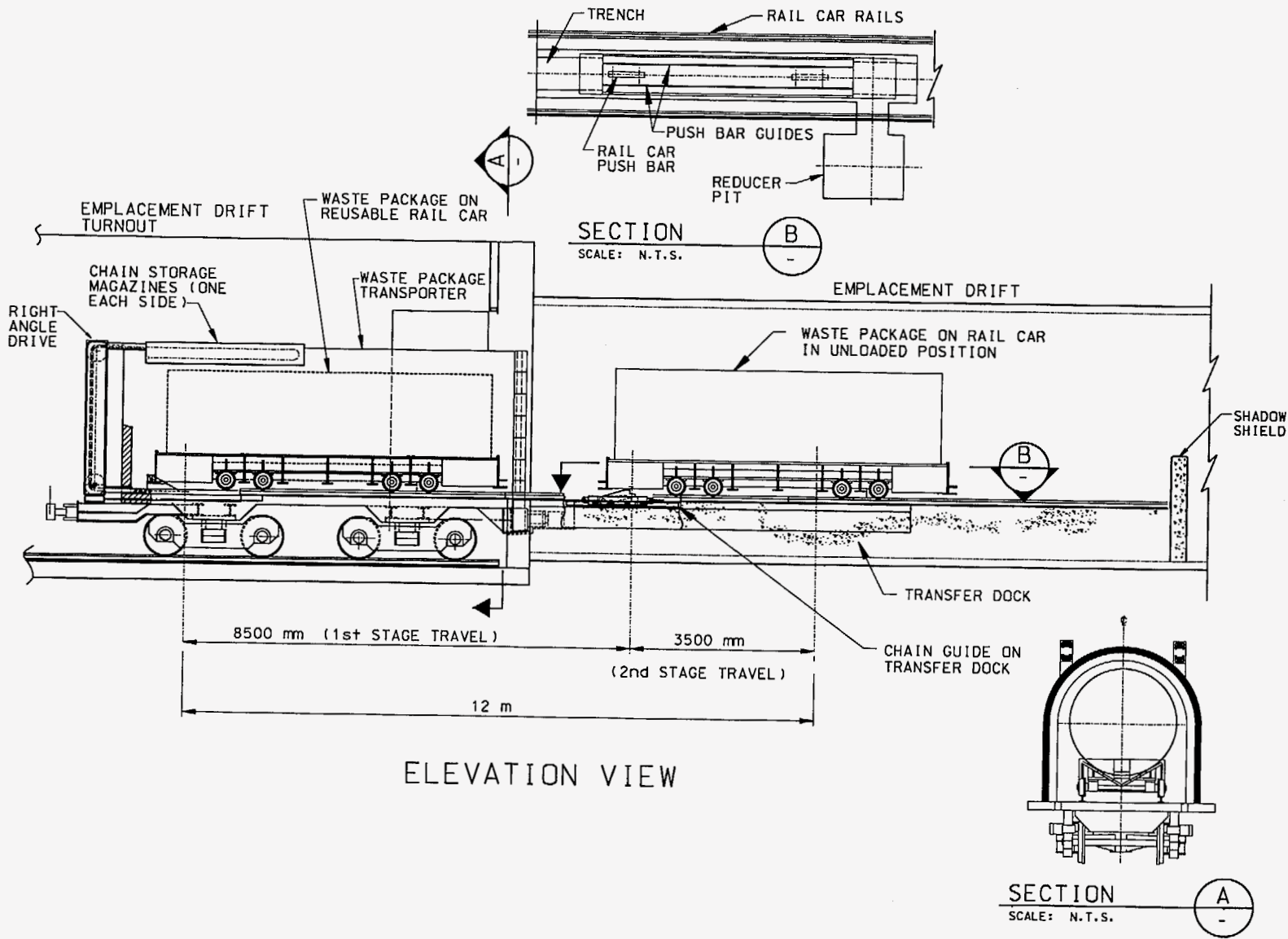
- Chain: Rex E Series roller chain, No. 40, single strand, 13-mm (0.5-inch) pitch, 1,676 kg average ultimate strength (Ref. 5.15).
- Sprockets: Rex fabricated steel, 2-inch pitch (Ref. 5.20)  
Drive Takeup: 24-inch diameter, 11-inch diameter x 8-inch hub (Ref. 5.20).
- Gearmotor: SEW Eurodrive helical bevel gearmotor, Model KAF 86, 1,750 rpm input, 20 rpm output, 9,450 lb-inch torque, 3 hp: (Ref. 5.15).

Figure 9 Concept No. 6 – Ball Screw with Drive Mechanism Outside End Wall



WASTE PACKAGE TRANSPORTER  
ELEVATION VIEW

Figure 10 Roller Chain on Transfer Dock - Concept No. 7



#### 7.3.3.4.2.2 Concept No. 8 – Ball Screws

This concept is similar to Concept No. 7, with the exception that the pushbar is now driven by a ball screw, and the entire loader/unloading system is in one housing, which requires only a trench in the transfer dock for installation (Figure 11). The drive is an

in-line gearmotor located at the end closest to the emplacement drift entrance for shorter electrical connections and better access for emergency repair. This unloader is also relocatable to the next drift. The preliminary equipment selection for this concept is:

- Ball Screw: Rockford ball screws, Model No. R-61, 25.4-mm diameter, 1,906 kg operating load, 25.4-mm-per-revolution lead screw, 24-ft maximum length (Ref. 5.27).
- Gearmotor: SEW Eurodrive parallel helical gearmotor, Model KAF 86, flanged mounted, 1,750-rpm input, 20-rpm output, 9,450 lb-inch torque, 3 hp (Ref. 5.15).

#### 7.3.4 Reusable Railcar/Transporter Interface

The recommended rail car load/unload system (Concept 3A) consists of powered rigid chains that connect to the rail car through a pushbar. The chain system and the pushbar are integral to the transporter. As described in the previous section, the pushbar is attached to the ends of two gear-driven rigid chains that run in floor-mounted guides on either side of and parallel to the rail car as it rests on the transporter. The chain guides extend along the transfer dock at each emplacement drift. The ends of the chain guides adjacent to the transporter guides are flared to prevent binding due to misalignment. The pushbar, which is bolted to the end plate of the rail car, is used to push the rail car out of and draw it back into the transporter (see Figure 12) (Ref. 5.9, Section 7.1.4.1)

This bolted-pushbar design permits the pushbar to be retracted all the way to the inside rear surface of the transporter radiation shielding. This capability, with a 150-mm-wide pushbar, has made it possible to avoid increasing the length of the transporter. Under normal conditions, the rail car will be unbolted from the pushbar in the transporter maintenance building after the rail car is unloaded from the transporter. Unbolting the rail car while a waste package is in the transporter is not a desired action.

The bolted connection holding the pushbar and rail car end plate together helps prevent forward or backward motion of the rail car in the direction of the rails during transporter travel. However, the full load of any uncontrolled horizontal forces would be directed through the pushbar to the chains and drives, causing unnecessary impact loading when slack is left in the chain. Transporter design criteria calls for the system to prevent the waste package from being inadvertently ejected from the transporter under certain design basis event conditions (Ref. 4.2.12). Therefore, a supplemental rail car restraint is proposed to reduce the possibility of an inadvertent waste package ejection due to failure of interface systems.

Figure 11 Ball Screw on Transfer Dock - Concept No. 8

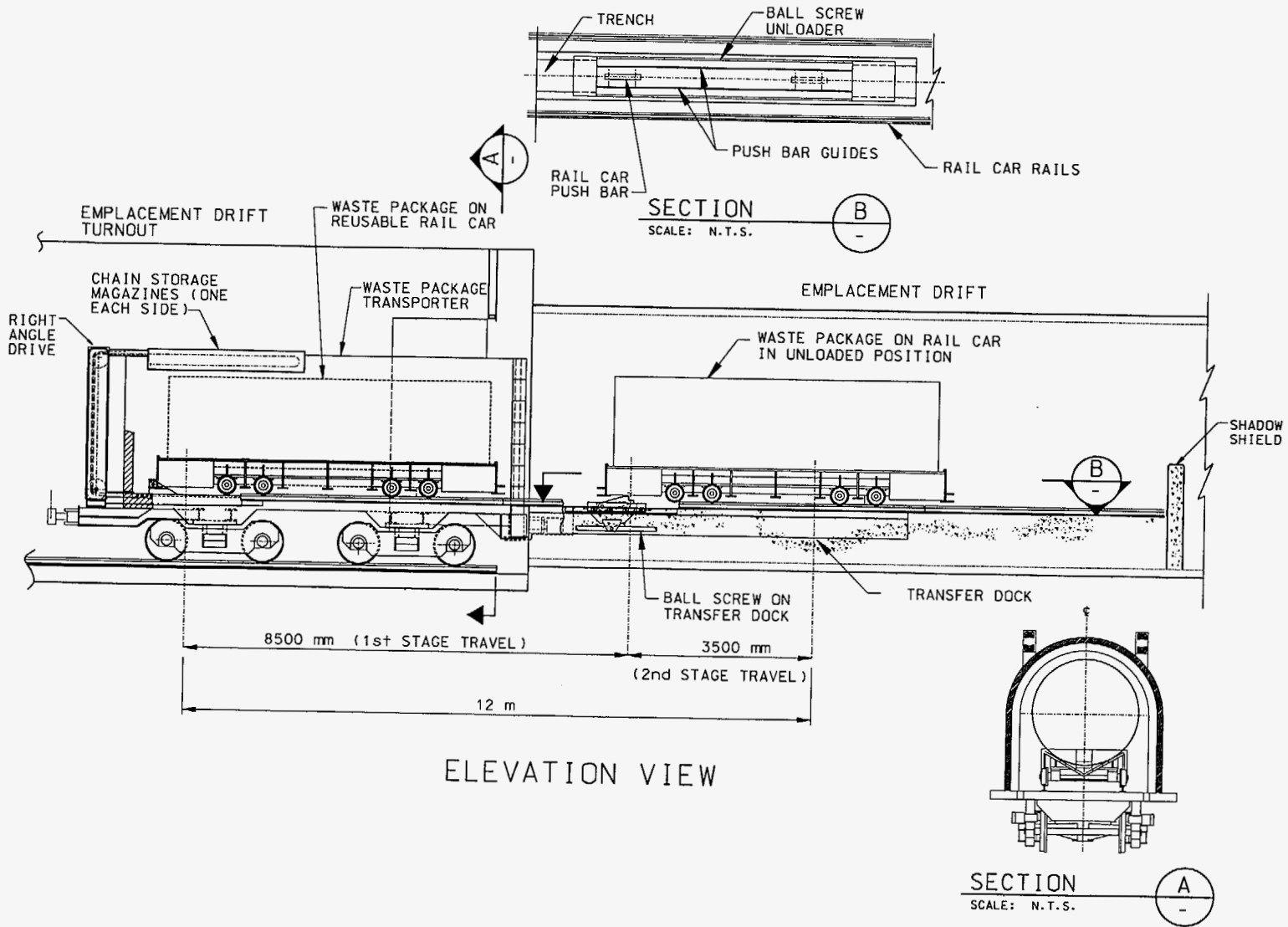
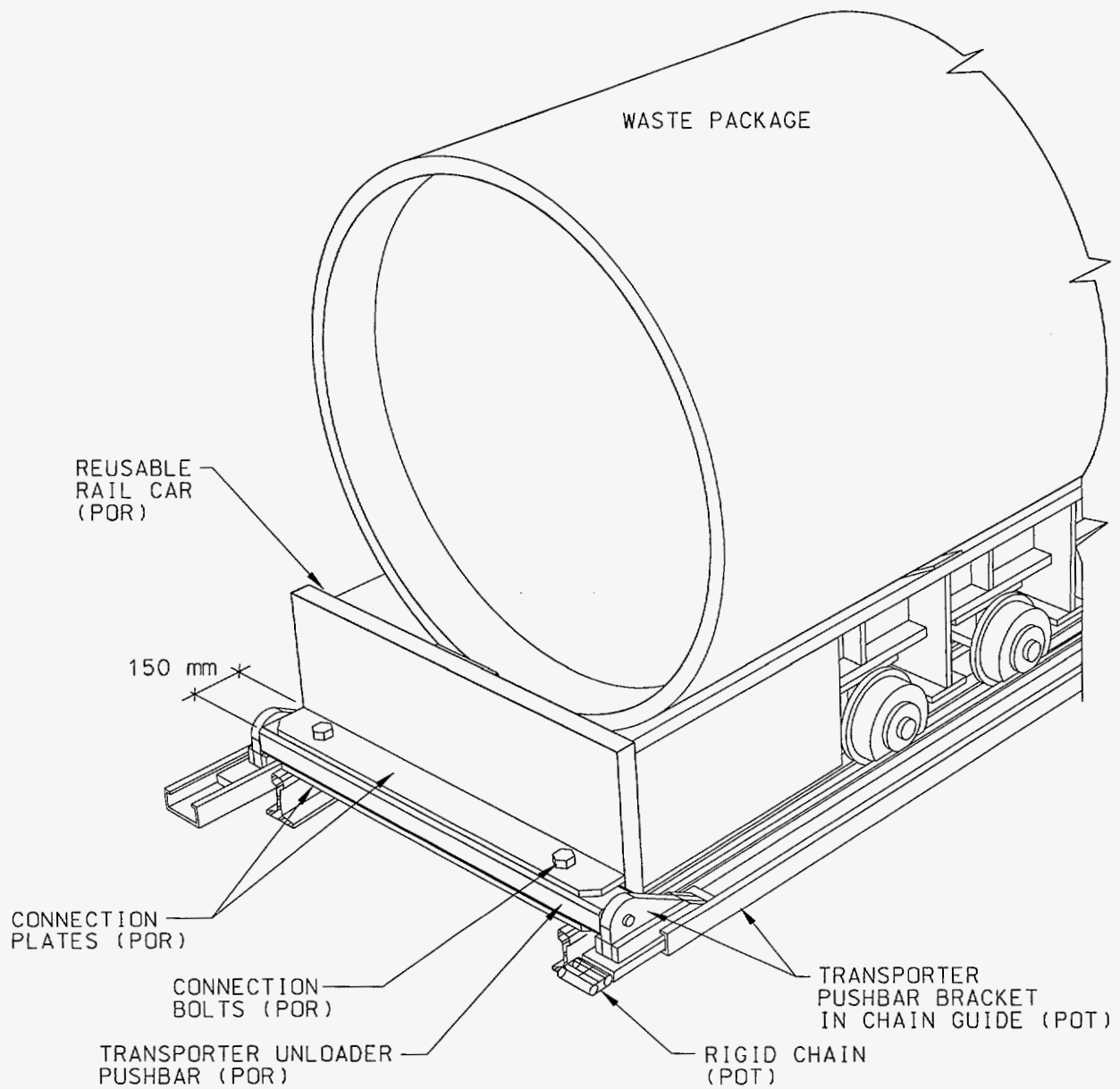


Figure 12 Reusable Rail Car – Pushbar Connections



POT: PART OF TRANSPORTER  
POR: PART OF RAILCAR

ISOMETRIC VIEW

### 7.3.5 Mechanical Restraint for Reusable Rail Car

Several options for restraining the reusable rail car within the transporter were addressed in Ref. 5.9, Section 7.1.3.3. These options included:

- Actuator-operated engagement hook holding reusable rail car end plate
- Fixed-wheel chock blocks and retractable axle restraints
- Fixed-restraint bumpers on the end wall and doors of the transporter radiation shielding

As a result of this previous investigation (Ref. 5.9, Section 7.1.4.2), it was concluded that placing restraint bumpers inside the transporter is the optimal arrangement for restraining the rail car. However, additional investigations are required to evaluate methods for locking the transporter doors to prevent accidental unloading of the reusable rail car should the connection between the rail car and the rail car unloader mechanism fail during transport operations and the doors inadvertently come open, releasing the fixed-restraint bumpers at that end of the transporter. Investigations into alternative door locking devices are presented in Section 7.3.6 of this analysis. An accidentally unloaded rail car is considered a design basis event defined as an inadvertent waste package ejection. A door locking device will reduce the probability of this event.

### 7.3.6 Door Operators and Locking Devices

The transporter doors will be opened or closed by an automatic door operator controlled from a remote location through the locomotive communication system. Each door is equipped with an operator and working in unison, the two operators will open and close the radiation shielded doors for loading the reusable rail car with waste packages (or unloading in the retrieval mode) at the surface Waste Handling Building, rail car unloading (or loading for retrieval) at the emplacement drift, and for maintenance or service of the rail car or transporter at the surface transporter maintenance building. Each door weighs approximately 7,464 kg (Attachment II, Section 3.2.1) and is fixed to a hinge pin, which rotates in the lubricated sleeve bearings of the door hinge, allowing the door to swing 270 degrees to a location at the side of the transporter. The door hinge includes a thrust bearing to support the vertical load of the door. The doors are rotated in either direction for opening or closing by the 178-mm (7-in. diameter) hinge pin that extends through the radiation shield floor and is connected at the top through a spline joint to a low-speed (1 rpm) motor gear reducer. The size of the motor gear reducer will depend on whether the reducer will be used as a door locking device.

Door locks are required on the transporter to prevent the accidental unloading of the rail car in the event that the rigid chain or pushbar mechanism fails to restrain the rail car during transport. The locking system must only prevent an unplanned opening of the doors. It is not necessary for the locking system to provide an airtight seal between the door and door seat. However, tight seating of the doors against the door seat is desirable to control radiation emissions. Several types of door locking systems are available. These include:

- Positive-acting cam lock
- Dead bolt locks
- Door operators

### 7.3.6.1 Evaluation Basis Factors

Evaluation of these alternative solutions to transporter door locking devices is not intended to be a formal reliability, availability, maintainability (RAM) evaluation. However, factors that affect the reliability, availability, maintainability, and operability are included in the evaluation. The alternative evaluations presented in this analysis include descriptions of each system and a comparison of the chosen factors which result in recommendations (see Table 8). The factors chosen and the importance of these factors for the door locking devices are as follows:

- Transporter Design Modification Required – At least one concept requires significant modifications to the transporter design. The modifications that are considered significant are those which affect other critical features of the design. An example is extending the transporter bottom plate which affects the features developed to align the transporter at the docks.
- Positive Seal – An important function of the door locking device is assuring a positive seal by keeping the doors closed tight. This is important from a radiological safety standpoint.
- Added Equipment – In general, the number of equipment components required by the door locking device affects the reliability and availability of the system. Each component has an expected reliability and as the number of components increases, the reliability of the system decreases unless the additional components are for redundancy or allow more reliable components throughout the system. The availability is also affected in the same manner because system availability is the product of individual component availabilities.
- Added Controls – The number and complexity of the controls affects the reliability and availability of the loading/unloading system. The same rationale applies here as discussed for increased number of components.
- Door Locked at Top and Bottom – Latching the doors at both the top of the door and the bottom of the door provides a more secure locking system. A single latch at the top or bottom has greater likelihood of door deformation if impacted with sufficient force. Door deformation could result in radiation leakage through gaps created in the door.
- Door Open if Operator Fails – One of the concepts evaluated has potential for the doors to be pushed open if the door operator drive fails. This increases the potential for radiation leakage or for an inadvertent waste package ejection.



- Increases Transporter Width – Increasing the width increases the clearance concerns. Transporter designs incorporating each concept are within the physical envelopes indicated in Criteria 4.2.10 but may interfere with the current drift isolation bulk head door design.
- Interference with Transporter Alignment Features – A door locking device interfering with the dock alignment feature design requires redesign of the alignment features or the locking device.
- Door Swing of 270 Degrees – The transporter doors are designed to swing 270 degrees so that the opening required at the emplacement dock is minimized. Interference with the amount of swing can force redesign of the doors or concerns with clearances at the emplacement dock.

### 7.3.6.2 Door Locking Device Recommendation

Table 8 summarizes the transporter door locking device selection criteria and provides the basis for recommending a locking device. The numbers assigned to the selection criteria indicate a favorable (+1) or unfavorable (-1) rating for each option. Zeros indicate that the criteria are not applicable.

All concepts are evenly ranked from a reliability standpoint. However, there is differences in the potential radiological safety and prevention of inadvertent waste package ejection potential. These criteria are deemed more important and are therefore weighted heavier at +2.

**Table 8 Door Locking Device Selection**

Selection Factors	Concept No. 1 Cam Lock	Concept No. 2 Dead Bolt	Concept No. 3 Dead Bolt	Concept No. 4 Dead Bolt	Concept No. 5 Door Operator with Input Shaft Brake	Concept No. 6 Door Operator with Output Shaft Brake
Transporter Design Modification Required Yes (-1), No (+1)	No +1	No +1	Yes -1	No +1	No +1	No +1
Positive Seal Yes (+2), No (-2)	Yes +2	No -2	Yes +2	Yes +2	Yes +2	Yes +2
Added Equipment Yes (-1), No (+1)	Yes -1	Yes -1	Yes -1	Yes -1	Yes -1	Yes -1
Added Controls Yes (-1), No (+1)	No +1	No +1	No +1	No +1	No +1	No +1
Door Locked at Top and Bottom Yes (+1), No (-1)	No -1	Yes +1	Yes +1	Yes +1	0	0
Door Open if Operator Fails Yes (-2), No (+2)	No +2	No +2	No +2	No +2	Yes -2	No +2
Increases Transporter Width Yes (-1), No (+1)	No +1	No +1	No +1	No +1	Yes -1	Yes -1
Interference with Transporter Alignment Features Yes (-1), No (+1)	No +1	No +1	No +1	No +1	Yes -1	Yes -1
Door swing of 270° Yes (+1); No (-1)	Yes +1	No -1	No -1	Yes +1	Yes +1	Yes +1
Totals	+7	+1	+3	+9	0	+4

**Recommendation:** Based on the sum of these responses, Concept 4, which uses solenoid-operated dead bolts, is the recommended system for maintaining the doors in a closed position, thereby restraining a loose rail car within the transporter. These concepts are fully described in Section 7.3.6.3, 7.3.6.4, and 7.3.6.5.

### **7.3.6.3 Positive Acting Cam Locks – Concept No. 1**

This type of locking device is used to provide positive pressure between the closed door and the door seat. It employs a pivot-mounted actuating arm eccentrically attached to a latch plate. As the lever arm is moved to the locking position, the latch plate is moved to engage the locking boss on the door and, as the lever arm moves farther past its dead-center position, the eccentric position of the latch plate pulls the door against the door seat. As the lever arm is moved to the unlocked position, the latch plate swings clear of the locking boss and the door can swing open. This arrangement is shown in Figure 13.

With the design of the door closing against the transporter enclosure, this type of lock system could only be mounted on the top of the transporter roof and will only lock the top of the doors. Actuating this type of lock can be accomplished with pneumatic cylinders. Although there will be compressed air available on the transporter, the use of this type of door locking device will require the installation of additional equipment on the transporter. Controls can be interlocked to operate the lock with the door operators.

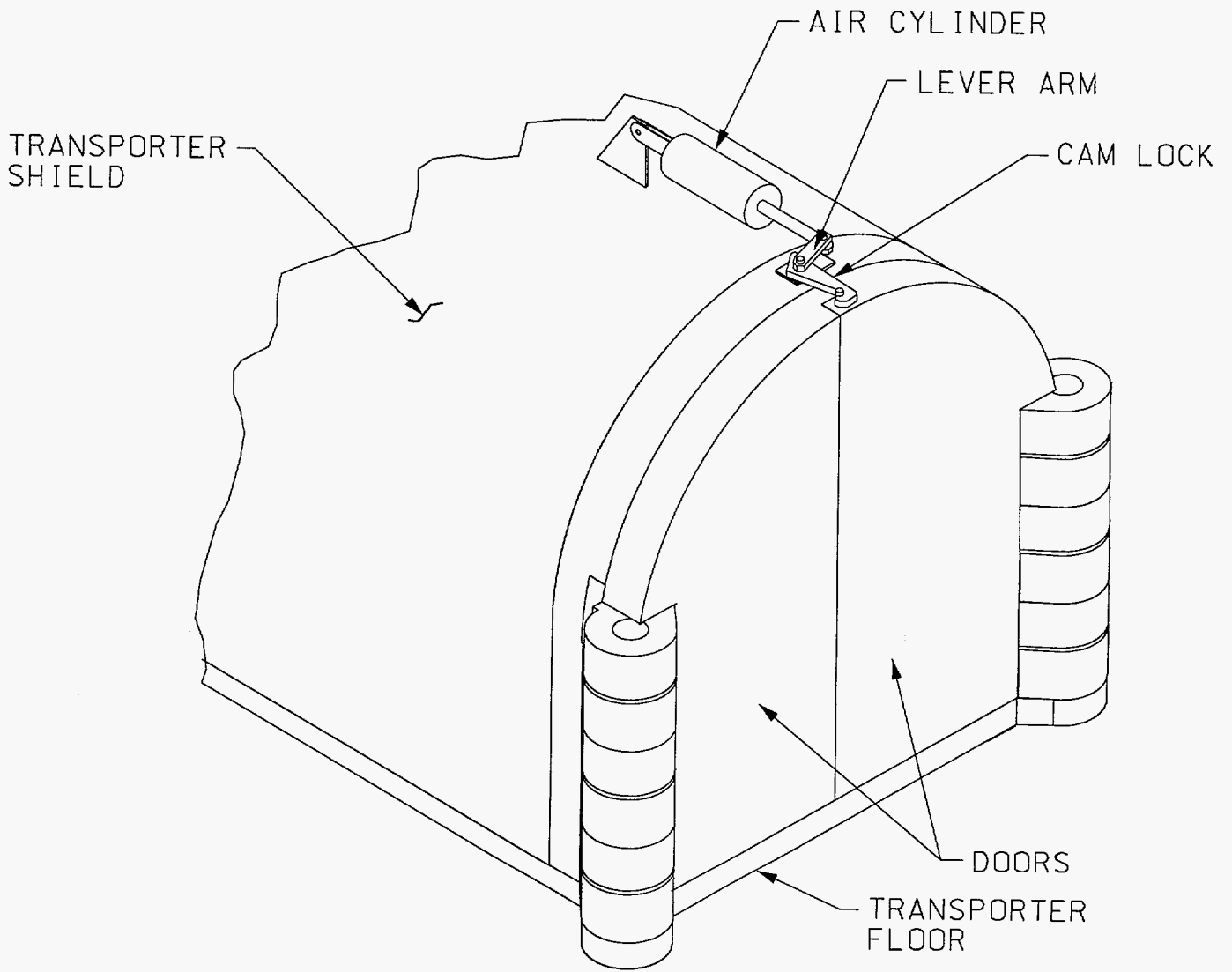
Top-mounted actuators impact the overall height of the transporter. The maximum overall height with this actuator or other door lock actuators evaluated increases by 206 mm to approximately 4276 mm. This maximum expected height is still well within the allowable main drift equipment height of 5600 mm (Criteria 4.2.11).

### **7.3.6.4 Dead Bolt Locks – Concepts Nos. 2, 3, and 4**

Dead bolt locks generally operate by intersecting the parallel surfaces between the doors or between the doors and the door frame with a heavy metal shaft. This shaft is held in place by guides that allow it to be moved into locking position or retract for unlocking the doors. With the door closing against the transporter radiation shield, only the lock intersecting the parallel surfaces of the doors can be effectively used to hold the doors closed without modifying the radiation shield and door designs. Figure 14A depicts this installation. This type of lock, Concept No. 2, has the advantage that a lock can be installed at the top and bottom of the doors. However, depending on the tolerances used in fabricating the shaft guides, the seal between the doors and radiation shield may not provide good radiation emission control.

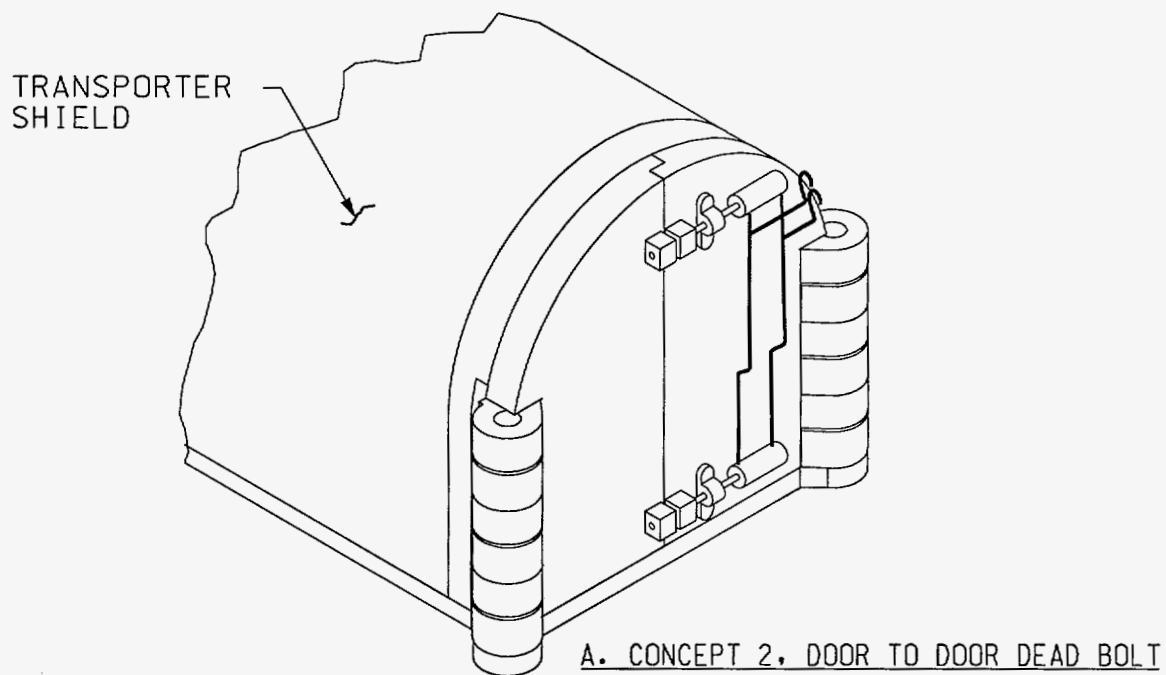
Another dead bolt type lock, Concept No. 3, is normally installed within the door itself. Since the radiation shield does not form a frame around the door, a locking plate must be mounted on the top of the transporter radiation shielding. This installation is depicted in Figure 14B. To have the door locks at top and bottom, the transporter floor must be extended past the door for the lock to engage. This type of lock system has the advantage of being more positive. It will maintain a better seal between door and radiation shield than the “door-to-door” lock depicted in Figure 14A.

Figure 13 Positive Acting Cam Lock – Concept No. 1

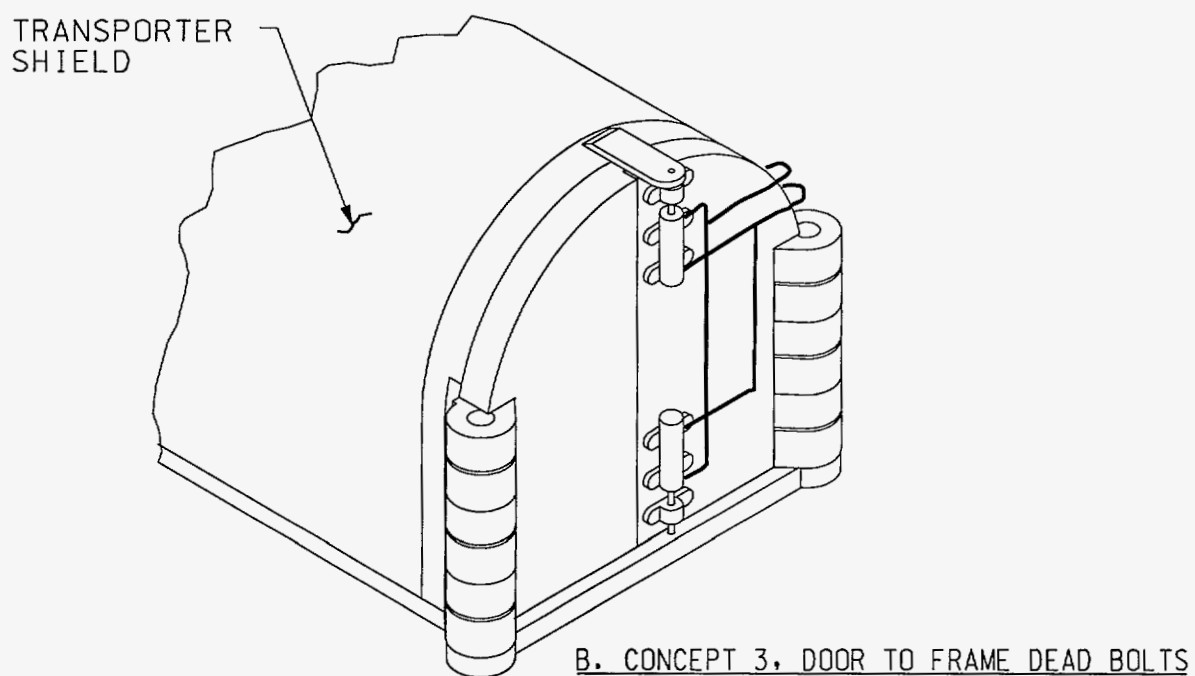


ISOMETRIC VIEW

Figure 14 Dead Bolt Locks – Concepts 2 & 3



ISOMETRIC VIEW



ISOMETRIC VIEW

For both of these locking systems (Concept Nos. 2 and 3), the locks and actuators must be mounted on the outside door surface, which restricts the swing opening to less than 270 degrees. To eliminate this problem, another type of dead bolt system, Concept No. 4, is depicted in Figure 15. One-inch-diameter dead bolts are installed on the bottom of the transporter floor and project up through holes in the floor and the bottom edge of the door. Another set of dead bolts is attached to lock plates welded to the top of the transporter radiation shield. Dead bolts project down through the lock plate and into holes in the top edge of the transporter door.

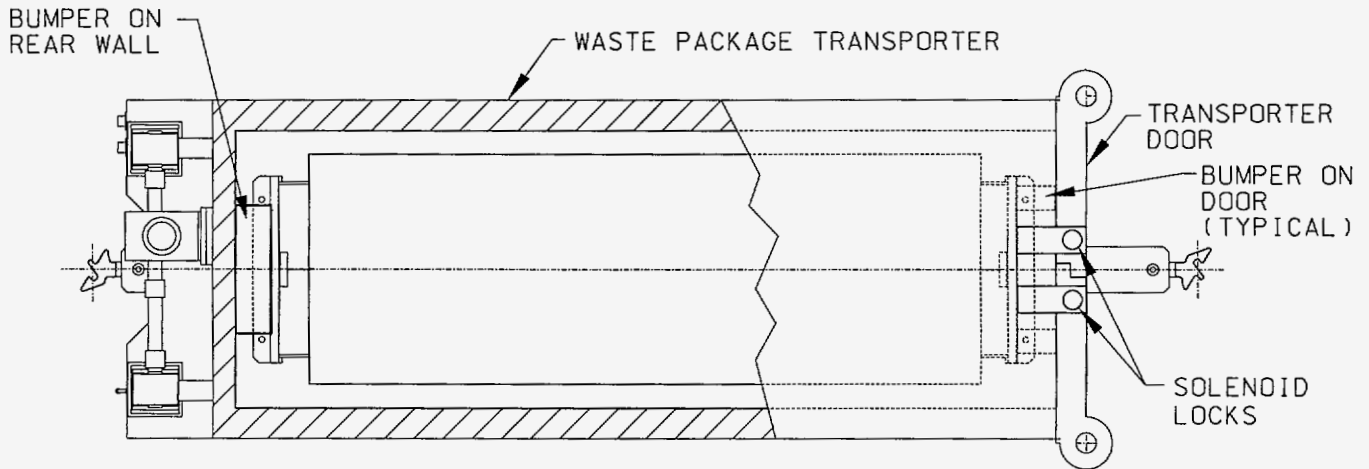
All of these locking systems can be operated either pneumatically or electrically, and all have the disadvantage of requiring the installation of additional equipment on board the transporter. Controls can be integrated with door operators; therefore, impact to the control system is minimal. The additional equipment negatively affects the reliability of the transporter and in the case of Concept 4, increases the clearance height of the transporter, similar to Concept 1.

#### **7.3.6.5 Door Operators – Concept Nos. 5 and 6**

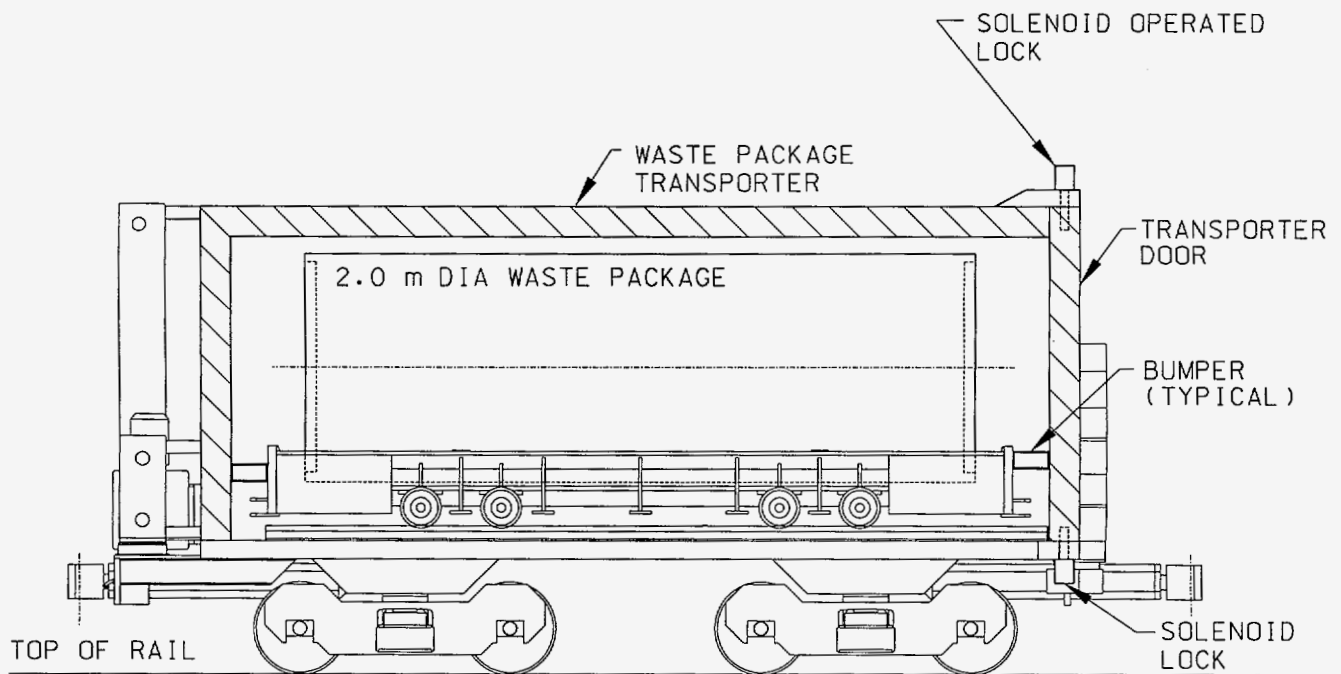
The door operators incorporated into the transporter design are single-reduction helical-worm gearmotors. These units provide an output speed of 1 rpm and have an output torque capacity rating of 266.8 m-kG (23,200 in.-lb). This is the torque rating required for door operation only. For the door operators to restrain the loaded rail car, a torque capacity of 963 m-kG (83,600 in.-lb) is required. Refer to Attachment III, Section 3.2. A double-reduction double worm gearmotor providing a 1 rpm output speed at this torque rating could restrain the reusable rail car without rotating backwards, preventing an unintentional ejection. However, to be absolutely certain that the reducer does not rotate backwards due to forces from the railcar, vendors recommend the use of a spring-actuated/electric-release or an air-actuated spring-release brake. Depending on which type of brake is used, the brake can be placed either on the input shaft or output shaft. If placed on the input shaft, Concept No. 5, the drive must be sized for the largest torque capacity, and a spring-actuated/electric-release brake can be used. With this arrangement, the doors can open upon failure of the drive. If placed on the output shaft, Concept No. 6, the smaller drive can be selected with the air-operated brake on the hinge pin. With this option, the doors will remain closed if the drive fails. This option requires a larger brake and is depicted in Figure 16 and Figure 17.

Although this concept requires the addition of a brake in the door operator mechanism, it has the advantage that an additional control system is not required since the brake will be electrically connected to operate in conjunction with the gearmotor. This is an advantage from a cost and reliability standpoint, but can be disadvantageous if a common cause failure results in waste package ejection from the transporter. As the system is selected and design progresses and operational procedures are established, the potential for common cause failures will be considered.

Figure 15 Solenoid Operated Dead Bolt Lock – Concept No. 4



PLAN SECTION VIEW



ELEVATION SECTION VIEW

Figure 16 Door Operators with Brake - Concept No. 6 Plan View

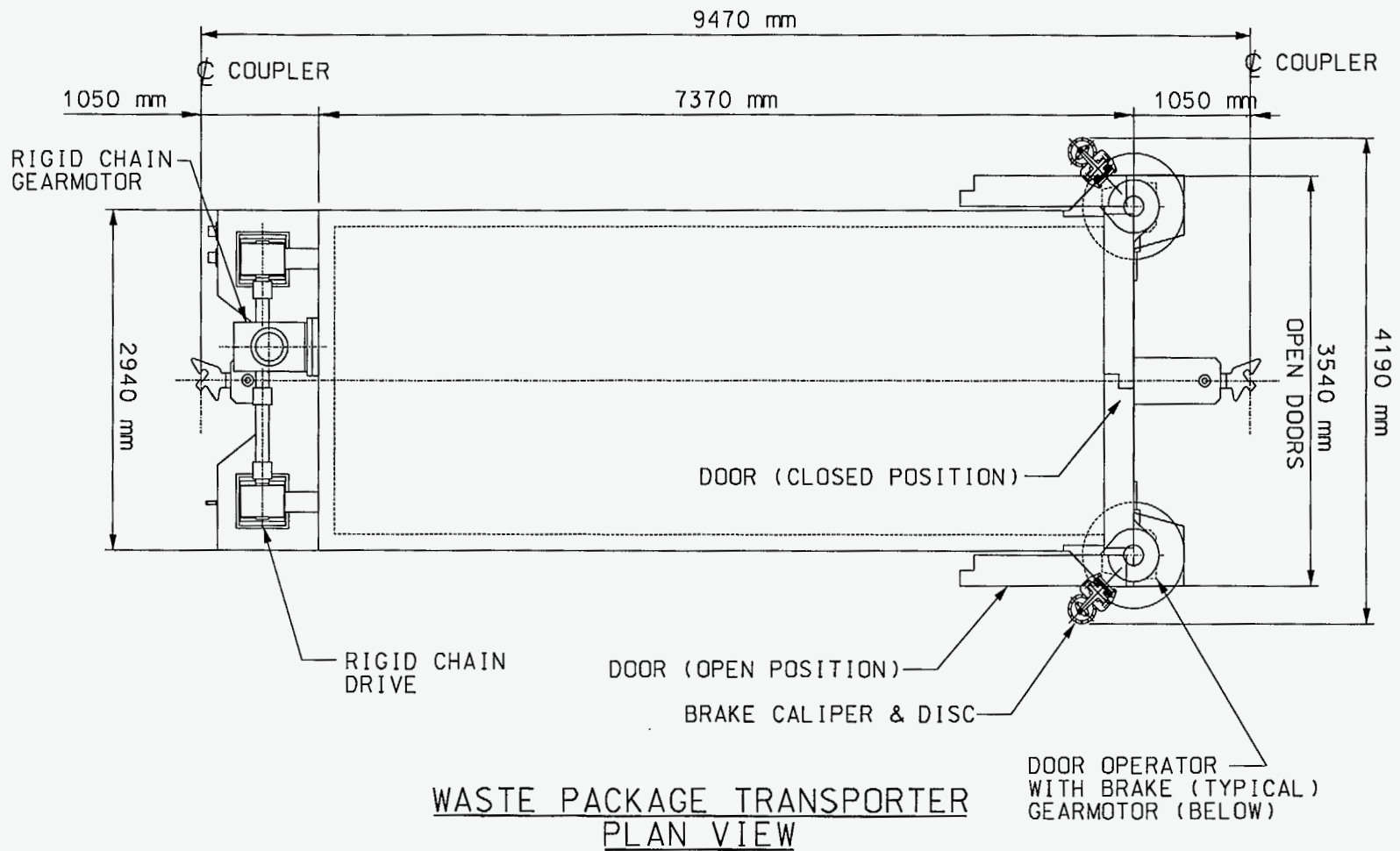
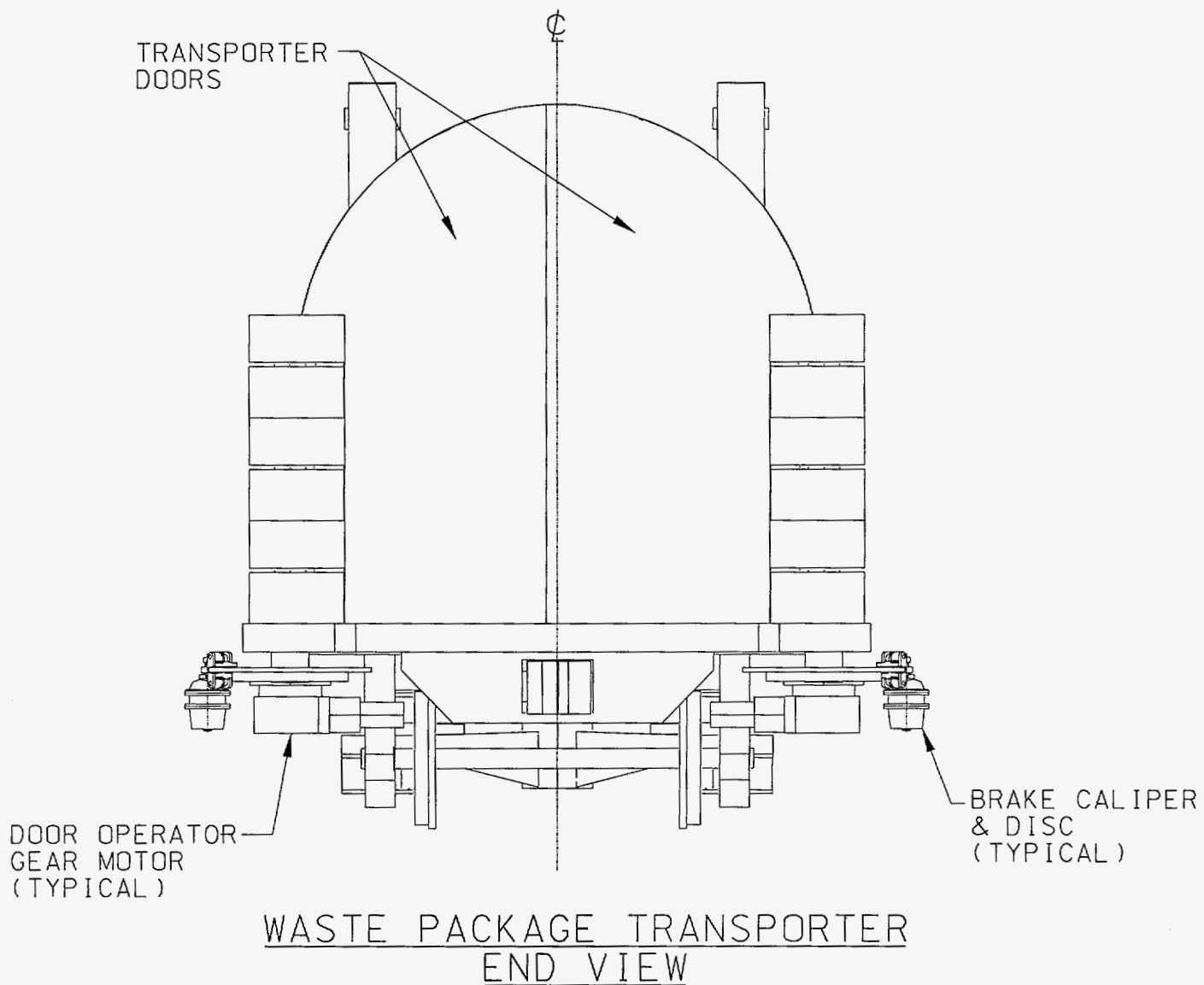


Figure 17 Door Operators with Output Shaft Brake – Concept No. 6 End View





### **7.3.7 Backup Systems for Door Operator and Chain Drive**

Several types of failures could cause the transporter door operators or chain drive systems to become inoperable. The failures most likely to cause these systems to shut down are electrical system failure, motor failure, or gear reducer failure. Any one of these failures could make it impossible to load or unload a waste package or may even result in a waste package and reusable railcar being stranded in a position half way out of the transporter. To handle these situations, backup systems and/or procedures are required to return the waste package to the transporter so it is shielded or to complete the extraction so the waste package can be emplaced and rail car retrieved. These backup procedures will allow the emplacement drift doors to be closed and the system to be returned to a safe condition and are included in a separate analysis.

#### **7.3.7.1 Electrical System Failures**

Electrical system failures can be divided into two groups: the trolley electrical system and the transporter electrical systems. A backup electrical system source is planned for the underground system. This system is designed to start up automatically when the trolley system fails. Failures of the transporter electrical system or the trolley system, other than at the source, will be diagnosed and corrected by replacing failed electrical parts. Transporter electrical system parts will be installed so that they are easily accessible and replaceable.

#### **7.3.7.2 Electric Motor and Gear Reducer Failures**

Damaged electric motors and gear reducers for the transporter door operators and rail car unload system chain drives that have failed will normally be repaired or replaced at the surface. The presence of exposed waste packages on the transporter or in the emplacement drift will limit access of personnel or require portable shielding for manual operations geared to returning the transporter to a safe condition before transportation to the surface for maintenance. Procedures and systems for doing this are covered in a separate analysis. Electric motors will be C-face type and may be ordered with an extended shaft to facilitate remote operation using a specially adapted low-torque pneumatic drive wrench. Gear reducers with shaft couplings may be installed to simplify removal and replacement.

#### **7.3.7.3 Other Failures**

Other failures, such as broken shafts or failed unload system chain drives, may be repaired in place if worker safety is assured. It is considered that critical parts of the transporter such as door operators, chain drive gear reducers, shafts, chain sprockets, and chain drive will be kept on hand as spare parts. Stocks of critical spare parts will be available as part of an integrated logistical support program.

### 7.3.8 Transfer Dock Alignment

Each emplacement drift will have a permanent transfer dock positioned at the drift entrance behind a set of drift isolation doors. The purpose of the transfer dock is to accept the rail car carrying a waste package to be placed in the emplacement drift. To provide for a smooth transfer of the rail car, the dock will be equipped with a rail system that matches identical rail systems on the transporter. Therefore, a clean interface between the transporter and the transfer dock is essential for an uninterrupted rail transfer. The system, when properly aligned, will meet this requirement. However, to obtain the desired alignment for transfer into or out of the emplacement drift and at the docks in the Waste Handling Building and the transporter maintenance building, the following alignments must be assured:

- Vertical
- Horizontal or lateral alignment
- Full contact with the transfer dock and rails or longitudinal alignment

#### 7.3.8.1 Vertical Alignment of the Transporter at Transfer Dock

Several options for assuring correct vertical alignment of the transporter with the transfer dock have been identified in Ref. 5.9. These options include:

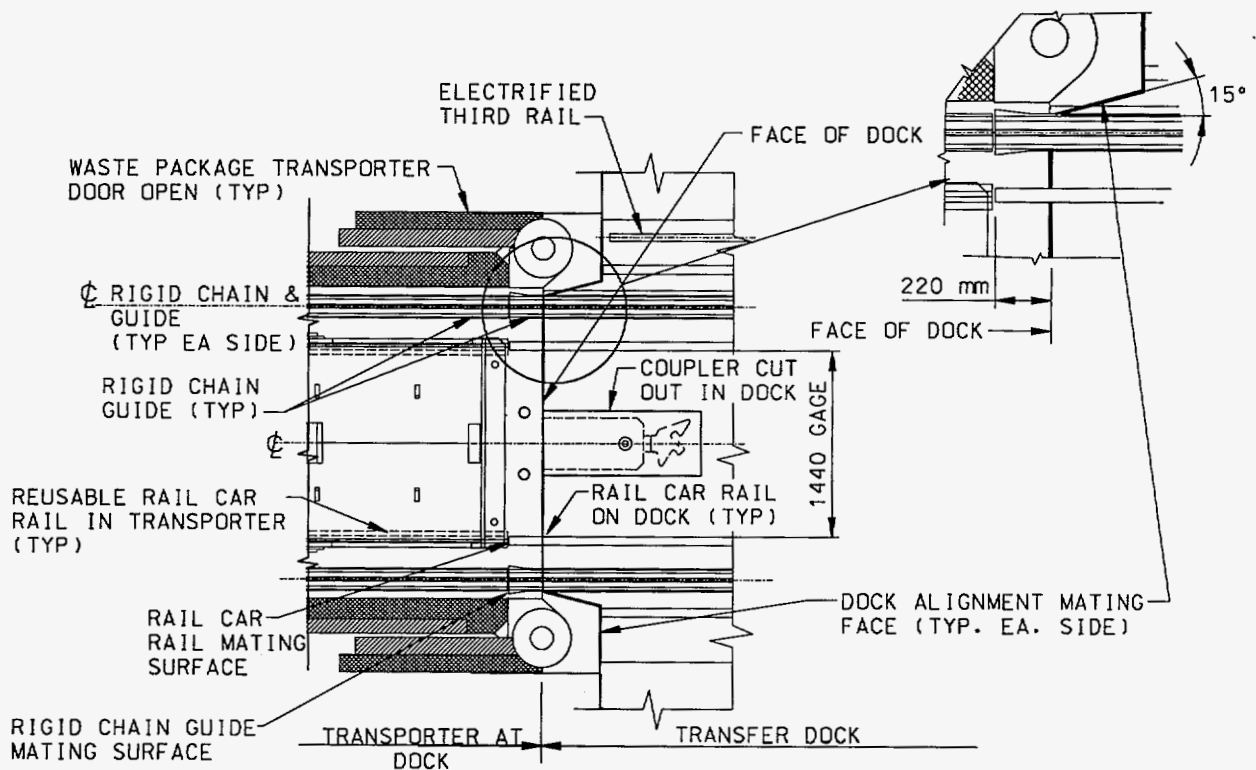
- Hydraulic stabilizers
- Pneumatic suspension
- Ramp stabilizers
- Springless trucks

These options are addressed for the gantry carrier in detail in Ref. 5.9, Section 7.2.3.5.1, and are the same for the transporter. As a result of these evaluations, the springless truck was selected as being the optimal choice for maintaining the vertical alignment of the transporter with the transfer dock. This alternative, which requires a custom-built truck, eliminates requirements of additional equipment that reduce reliability and eliminates control systems required by other options. Because there is still potential for vertical misalignment due to deflection, a sloped ledge built into the dock that matches a sloped bottom transporter mating surface is recommended (Figure 18). This sloped bottom is not intended to accommodate vertical misalignment greater than 20 mm; therefore, a slope of only six percent will be needed. A Teflon sliding surface is planned to reduce the sliding friction.

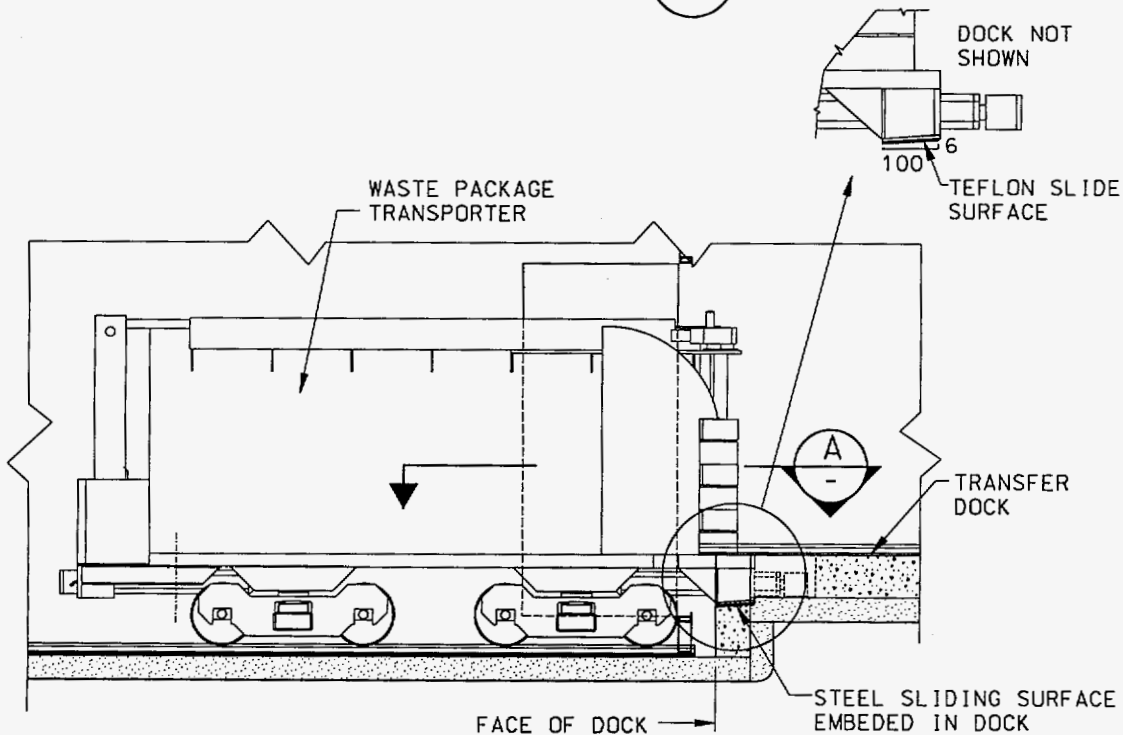
#### 7.3.8.2 Horizontal or Lateral Alignment of Transporter

A system common to the gantry carrier alignment system is recommended for lateral location control of the transporter and the loading docks. The front of the transfer docks and the front of the transporter will have two 15-degree mating bevels. As the transporter approaches the emplacement drift transfer dock, any lateral misalignment will be reduced as the two surfaces interact and self-center the transporter with the emplacement drift transfer dock, resulting in laterally aligned rails. See Figure 18.

Figure 18 Transporter Dock Alignment Interface



PLAN - SECTION A



ELEVATION VIEW

### **7.3.8.3 Longitudinal Alignment at the Emplacement Drift Transfer Dock**

The longitudinal alignment of the transporter at the emplacement drift transfer dock will be maintained using one of the following systems:

- The locomotive braking system
- Electric or pneumatic jacking system
- Gravity-actuated/pneumatic release hook system

For the gantry carrier, these options are addressed in detail in subsections to Ref. 5.9, Section 7.2.3.5.3, and are the same for the transporter. As a result of these evaluations, the locomotive braking system is selected as being the optimal choice for maintaining the longitudinal alignment during the unloading operation.

### **7.3.9 Brake System**

The transporter is equipped with primary and redundant brake systems that are interconnected and operate in conjunction with the transport locomotive. The primary brake system is similar to the brake system used in the railroad industry. The air brakes are connected to the locomotive with rail industry standard manual connections.

#### **7.3.9.1 Primary Brake System**

The transporter primary brake system is an automatic (fail-safe) air brake system that is activated by a decrease, rather than an increase, of air pressure in the brake cylinders. With this system, stopping force is provided by powerful compression springs that push the brake shoes against the wheels. Air pressure is used to collapse the springs, thereby releasing the brake shoe from the transporter wheels. Typically, compressed air is supplied from the locomotive compressor for brake application at 6.2 bar (90 psi), and air is stored in the main brake system reservoir. If an accidental air leak causes the brakes to stay on, the brakes can be released by using a hand wheel.

#### **7.3.9.2 Redundant Brake System**

The transporter redundant and diverse brake system is a disc and caliper mounted on each axle of the transporter. Calipers are hydraulic-applied spring release. Pressure is applied to the brake calipers through a hydraulic connection to the locomotive hydraulic system.

#### **7.3.9.3 Transporter Runaway Prevention**

Potential design basis events (DBEs) include brake system failure which may result in a transporter runaway and damage to the transported waste package. The potential for such a runaway is reduced by redundant brake systems. Several operating and redundant equipment measures are planned to assist in the prevention of a runaway. These include:

- Addition of a second transport locomotive with ample braking capability

- Dynamic braking system on the locomotives to control travel speed
- Redundant braking systems on the locomotives and on the waste package transporter

The potential for common cause failures may exist. As design develops and operational and maintenance procedures are developed, the possibilities for common cause failures will be identified and mitigated in the design.

#### **7.3.9.3.1 Second Transport Locomotive**

The current operating plan includes one locomotive at the front of a transporter train and a second locomotive at the back. This arrangement allows for a locomotive to be downhill of a loaded waste package transporter at all times except when entering or leaving a turnout. Arranging the train with the second locomotive downhill from the transporter provides braking capability for the transporter if the automatic coupler between the primary locomotive and the transporter fails. Each locomotive has primary and redundant braking capacity to stop the train without assistance from the other vehicles.

#### **7.3.9.3.2 Dynamic Braking System**

Dynamic braking employs the use of the locomotive motors to control train speed on steep grades. By allowing the locomotive wheel to turn de-energized motor armatures, the motors become generators, producing power and providing a braking effect on the locomotive. The power generated in dynamic braking is consumed in resistor banks as heat. Extended-range dynamic braking may be included on the locomotive. This system enables dynamic braking to be used at speeds as low as 4.8 km/hr (3 mph). Dynamic braking is ideal for holding speed constant while the locomotive descends the north ramp with the loaded transporter, but is not used to slow down or stop the train. The main brake system is always used for slowing or stopping the train.

#### **7.3.9.3.3 Brake System on Waste Package Transporter**

The transporter and each locomotive are equipped with primary, redundant and diverse braking systems. The locomotive is also equipped with a parking brake system. The three braking systems provide needed redundancy to prevent a transporter runaway.

The three brake systems offer various levels of redundancy, diverse types of braking systems, different activation methods, and multiple braking points. Table 9 summarizes the features of the three braking systems: the primary system, the redundant system, and the parking brake system.

**Table 9 Brake System**

Type	Primary System Shoe brake	Redundant System Disc brake	Parking Brake Disc brake
Braking points – locomotive	8, one on each wheel	Each transmission	Each transmission (separate caliper)
Braking points – transporter	8, one on each wheel	4, each axle	Not included
Application method	Spring applied	Hydraulic pressure	Spring applied
Release Method	Air pressure	Spring released	Hydraulic pressure
Fail-safe (Applied)	Yes	No (3)	Yes
Application	(1)	(1)	(2)
(1) From either locomotive to both locomotives and transporter. (2) From locomotive to its onboard brake. (3) As presently envisioned, making this fail safe adds complexity to operations and requires additional analysis to determine spring-loaded brake capability and would require the operator to manually apply the hydraulic pressure for operations.			

**7.3.10 Transporter Structural Analysis**

A comprehensive structural analysis was performed on the transporter structure using STAAD-III/IDS, a computer software program with specific application for analyzing and designing steel frames and accessories (Ref. 5.28). The level of detail included in this analysis is considered appropriate since the verification of the transporter structure, including total operating weight, and resulting envelope, was essential to the sizing of the trucks, wheels, rails, and locomotives.

The structural analysis for the transporter, presented in Attachment I, includes a design basis that was generated for this equipment. Input for the analysis is identified and described in the input sections of this analysis. The results of this analysis are reflected in the structural member size and arrangement of the transporter design.

**7.3.11 Radiation Shielding**

**7.3.11.1 Radiation Shielding Materials and Material Thickness**

Radiation shielding is provided to reduce the radiation from the waste package inside the transporter to a level of less than 50 mrem/hr at the surface of the transporter, which is compatible with the operations within the main drifts (Ref. 5.30.). For this analysis, the radiation shielding is assumed to consist of a composite of stainless steel, carbon steel, and a borated polyethylene material with a total thickness of 264 mm (10.4 in.) (Assumption 4.3.5). The individual thicknesses of the carbon steel and the borated polyethylene that make up the total radiation shield thickness vary with the location of the radiation shielding in relation to the waste package. Refer to Assumption 4.3.5 for the respective radiation shielding material thicknesses in the radial or axial direction from the waste package and the supporting rationale. The carbon steel radiation shield faces toward the inside of the transporter providing the gamma radiation shielding and serving as the radiation shielding structure. The 1.5 percent B-poly neutron radiation shielding

material is attached to the outside surface of the carbon steel. The 1.5 percent B-poly is covered on the outside with stainless steel. The transporter has two swinging doors for reusable rail car unloading. The doors are constructed of composite material and swing 270 degrees out and around to the side of the transporter. The carbon-steel inner radiation shield material can be fabricated and machined into door hinges and other features as required.

#### **7.3.11.2 Transporter Radiation Shielding Weight Evaluations**

Future analyses may be undertaken to evaluate alternative radiation shielding materials for the waste package. Alternate materials may effectively reduce radiation levels in the vicinity of the transporter, and at the same time, reduce transporter weight. Since radiation from the bottom of the transporter is toward the ground, personnel exposure from the bottom is less significant, and the thickness of the transporter floor radiation shielding material may be decreased. These evaluations will require detailed modeling of a non-symmetric geometry to determine the amount of scattered radiation a worker will likely be exposed to during routine operations, as well as possible upset conditions such as a de-railed transporter

#### **7.3.11.3 Shielding Design Optimization**

The shielding configuration of the transporter has not been optimized to achieve a minimum transporter weight. This evaluation has been deferred until the design has evolved sufficiently to identify some of the more important issues, such as shielding material selection, bottom shielding design, the transporter door and the drive chain box design.

#### **7.3.11.4 Radiation Seal/Cover for Rigid Chain Penetrations**

The rigid chain guides penetrate the rear wall of the transporter. Although these guides are steel, the material thickness of the guides and chain drive housing is not enough to prevent radiation exposure in the area of the penetrations through the radiation shielding. Furthermore, gaps between the chains and the wall openings form a leakage path for radiation. To prevent radiation emission in this area, additional radiation shielding material is required. Two methods are available to provide this radiation shielding:

- Concept 1 – Side walls to enclose the chain drive housings
- Concept 2 – Radiation shielding around the chain guides in the space between the transporter radiation shield and the chain drive housing

Concept 1, installation of side walls to enclose the chain drive housings, is depicted in Figure 19 and Figure 20. Additional radiation shielding walls composed of inner and outer layers of 5-mm stainless steel, 152.4-mm carbon steel gamma radiation shielding, and 101.6 mm of 1.5 percent borated polyethylene neutron radiation shielding are added to the corners of the transporter. These walls are approximately 1150 mm high. Weight of the added radiation shielding is calculated as follows:

Figure 19 Chain Guide Radiation Shielding Plan – Concept 1

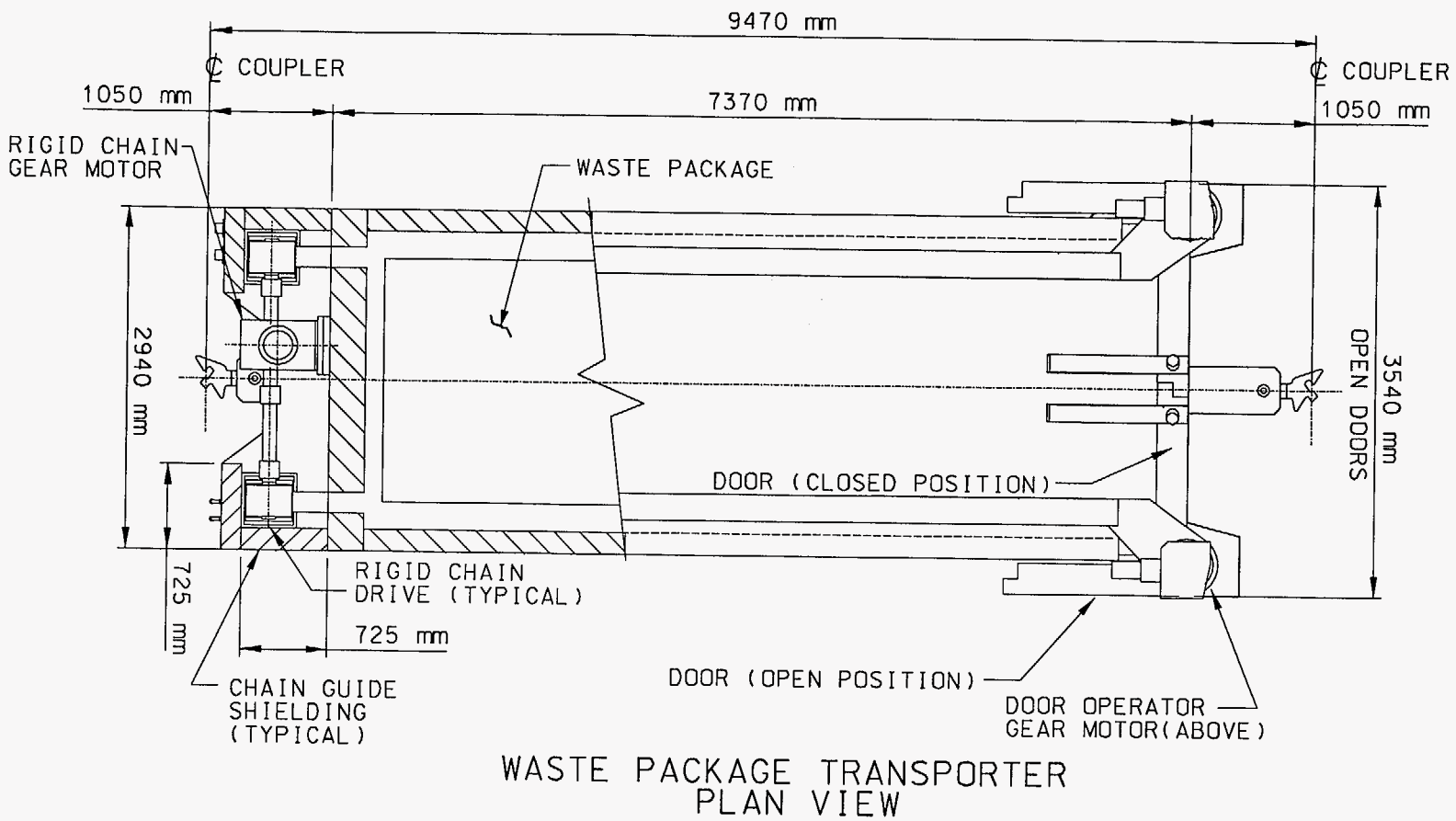
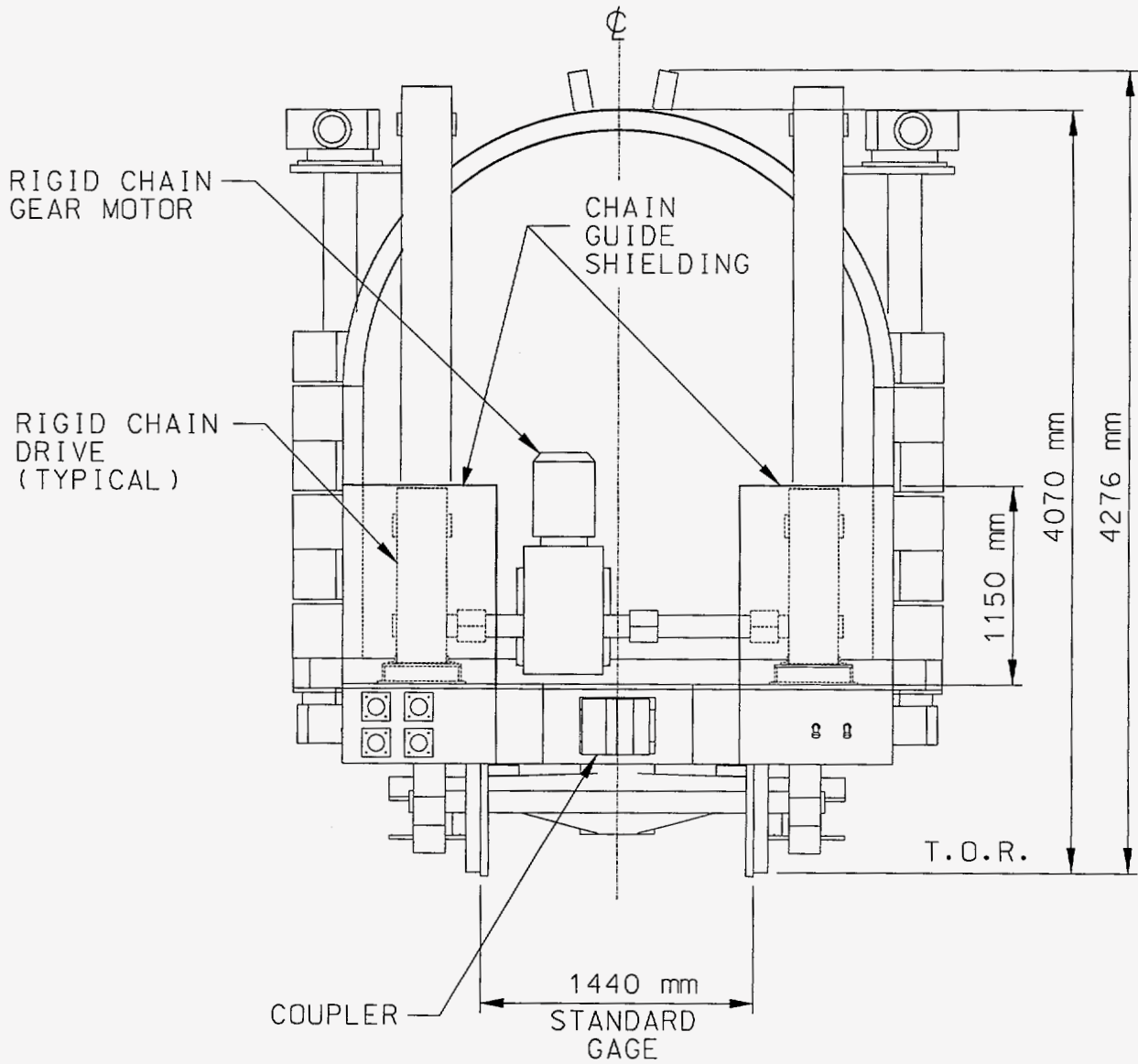




Figure 20 Chain Guide Radiation Shielding Elevation – Concept 1



NOTE: (T.O.R.) TOP OF RAIL

WASTE PACKAGE TRANSPORTER  
END VIEW

Material	Density (kg/m <sup>3</sup> )	Thickness (m)	Wt/m <sup>2</sup> (kg/m <sup>2</sup> )	Area (m <sup>2</sup> )	Weight (kg)
B-Poly	920.0	0.1016	70.0	1.7	119
2 Layer Stainless Steel	7949.7	0.010	79.5	1.7	135
Carbon Steel	7832.0	0.1524	1394.0	1.7	2370
Total Wt/Radiation shield					2624 kg

Since there are two radiation shields, total added weight is 5248 kg or 5.3 MT (2624 kg x 2).

These walls will be bolted to the transporter floor and will have lifting lugs for removal during maintenance of the chain drive housing.

Concept 2 is depicted in Figure 21 and Figure 22. Due to the arrangement of the waste package within the transporter with respect to the chain guide holes, a direct radiation route through the chain guide penetration is not possible. Indirect radiation can be prevented by extending the transporter wall radiation shielding to the chain drive housing. The weight of the added radiation shielding for this option is calculated as follows:

Material	Density (kg/m <sup>3</sup> )	Thickness (m)	Wt/m <sup>2</sup> (kg/m <sup>2</sup> )	Area (m <sup>2</sup> )	Weight (kg)
B-Poly	920.0	0.1016	70.0	0.74	51.8
1 Layer Stainless Steel	7949.7	0.005	40.0	0.74	29.6
Carbon Steel	7832.0	0.1524	1394.0	0.74	1031.6
Total					1113.0 kg

The weight of the two radiation shields is 2226 kg or 2.23 MT (2 x 1113.0 kg).

Although Concept 1 results in the largest increase in transporter weight, it has the advantage of providing the highest radiation protection and, as a result of this brief evaluation, is selected as the preferred choice of the concepts considered for radiation shielding the rigid chain holes. Concept 2 allows radiation to travel in a straight line through the shielding penetrations through a thin-walled reducer housing. Concept 1 appears to provide better protection for the locomotive operator because radiation traveling in a straight line through the penetration is reflected or adsorbed by shielding. Future analyses will evaluate the complete transporter radiation shield arrangement and provide recommendations for reducing radiation emissions and the weight of the transporter. As a result of these future analyses, additional radiation shielding arrangements for the rigid chain penetrations will be proposed and further development of the current radiation shielding designs will be delayed until the results of the penetration analysis are known.

Figure 21 Chain Guide Radiation Shielding Plan – Concept 2

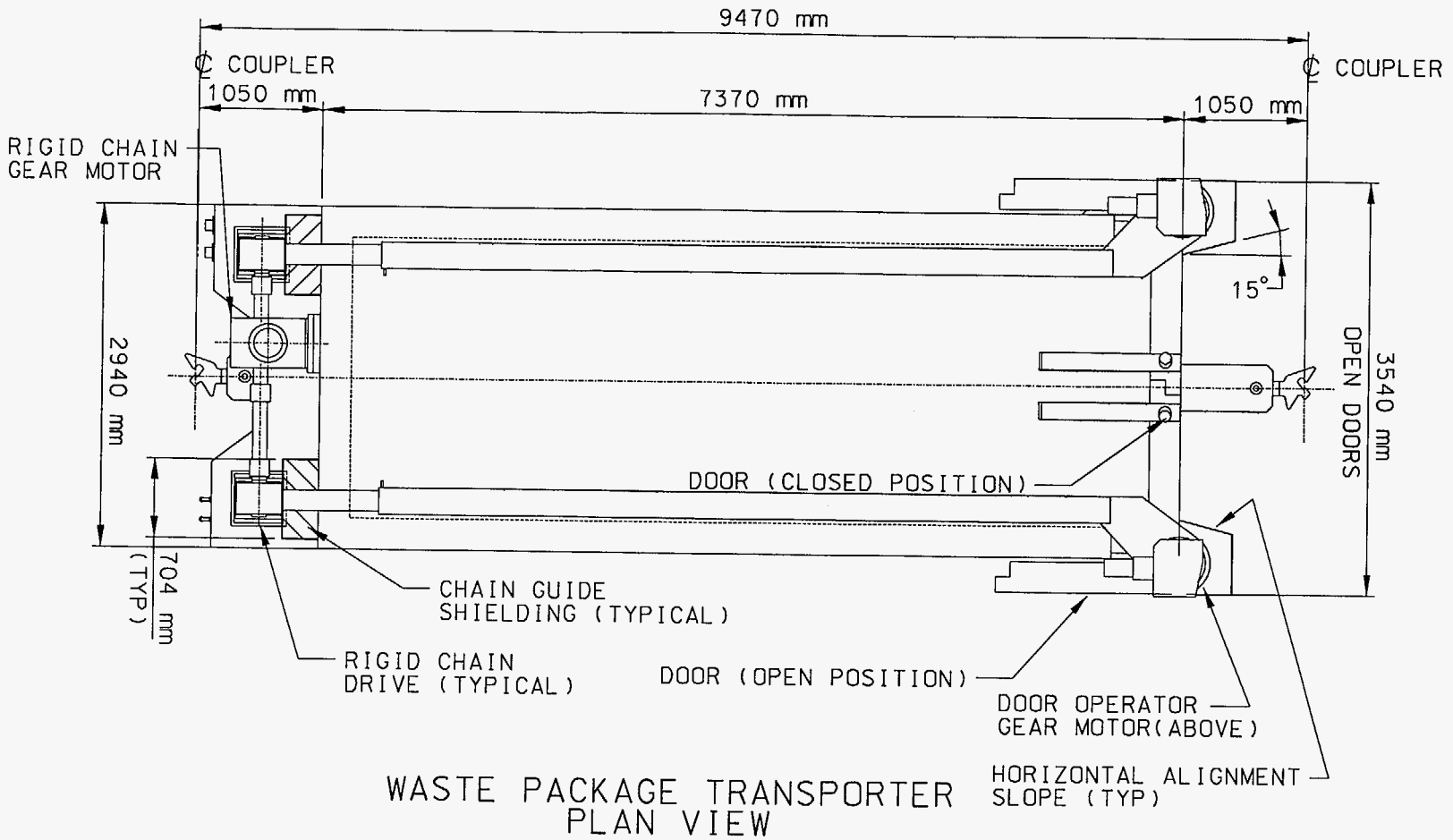
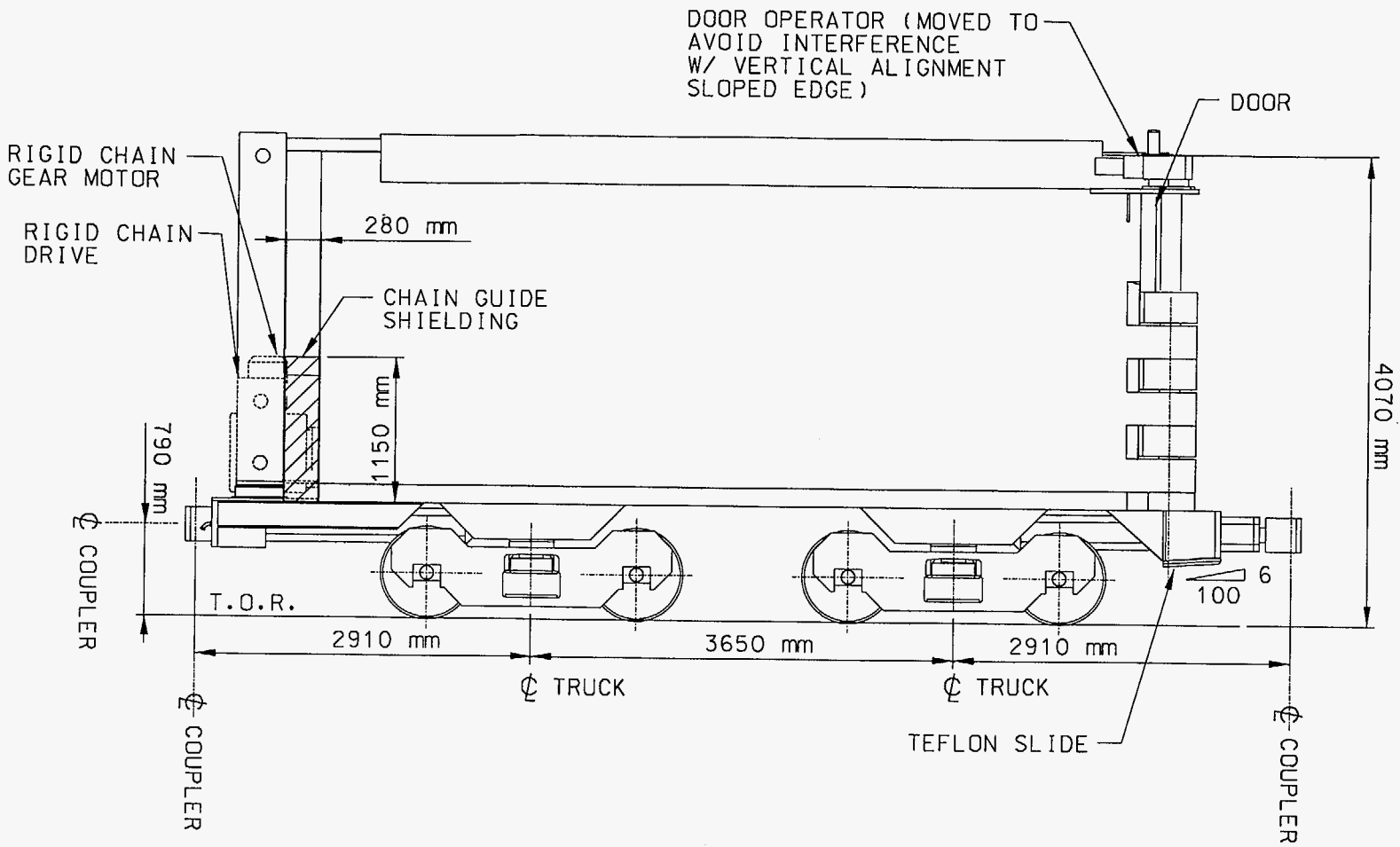


Figure 22 Chain Guide Radiation Shielding Side Elevation – Concept 2



WASTE PACKAGE TRANSPORTER  
ELEVATION VIEW

### **7.3.12 Turning Radius**

The minimum radius of curvature that the transporter can negotiate is a function of the wheel base and the diameter of the wheels. Wheel base is defined as the distance between the wheels of a transporter truck. The wheel base on Naco's rail car truck is 73 in. (1,854 mm) (Ref. 5.29). Using the 73-in. wheel base and 30-in. (762 mm)-diameter wheel (refer to Attachment II, Section 3.1), the chart for "minimal radius of curve" (Ref. 5.14) shows that the minimum radius of curve is approximately 10.3 m (34 ft) and, therefore, the transporter can negotiate the 20-m (65.6-ft)-radius curve (Criteria 4.2.8) in the emplacement drift turnout. Other factors, such as coupling design and installation, may increase the minimum radius of curvature. These details must be addressed by the manufacturer during design of the transporter.

### **7.3.13 Automatic Couplers**

Transporter couplers will be the Willisen automatic type similar to the locomotive couplers. These couplers are designed to automatically engage the locomotive couplers when they come into contact. Release of the couplers is accomplished by activating a single release mechanism on the locomotive.

## **7.4 Transport Tolerances**

Interfaces between engineered barrier system operations and waste package operations are described in an interface control document (Ref. 5.11). In Section 7.2, equipment interfaces are identified for the transporter. The tolerance requirements of some of these interfaces may impact the feasibility of the conceptual designs evaluated for the transport and emplacement systems. Table 10 identifies the interfaces impacting the mechanical equipment associated with the transporter and limiting factors for critical interfaces required to determine suitable tolerances.

**Table 10 Transporter Interface Tolerances**

Interface Description	Remarks
Transporter face to emplacement drift transfer dock, transporter maintenance building dock, and Waste Handling Building loading dock face	Transporter-to-dock alignment interface is critical to operation.
Transporter frame to main drift walls	Interface is critical to concept; however, envelope dimensions in Criteria 4.2.10 are adequate.
Transporter's reusable rail car rail to transporter maintenance building dock rail, emplacement transfer dock rail, and Waste Handling Building loading dock rail	Rail alignment tolerances include vertical offset, lateral offset, slope differential between adjoining rails, gap between adjoining rails. Ref. 4.4.4, Section 1.4 indicates the maximum allowable industry standard tolerances as follows: Vertical alignment      ¼ in. in 20 feet (6 mm in 6.1 m) Lateral alignment        ¼ in. in 20 feet (6 mm in 6.1 m) Rail gap                    1/16 in. (1.6 mm) Estimated allowable lateral and vertical displacement tolerances are as follows: Vertical displacement at gap      1/16 in. (1.6 mm) Lateral displacement at gap        1/16 in. (1.6 mm)
Transporter restraint bumper on door to reusable rail car	Interface not critical to concept. Clearances of 6 mm are anticipated; a means of adjusting bumpers needs to be provided for a tight fit.
Transporter pushbar to rail car	Based on tolerance requirements for pin/bolt insertion and removal.
Transporter's reusable rail car rails to reusable rail car wheels	Rail alignment tolerance/track play according to rail industry standards.
Transporter rigid chain guides to Waste Handling Building and maintenance building loading dock and emplacement transfer dock guides	Interface critical to concept. Guides to be installed in accordance with manufacturer's tolerances.
Transporter to waste package	Interface not critical.
Transporter couplers to locomotive couplers	Interface not critical to concept; manufacturer's standards are adequate.
Transporter electrical, air, and hydraulic connections to locomotive	Interface not critical to concept; manufacturer's standards are adequate.
Transporter wheels to main drift rail system	Interface not critical to concept; manufacturer's standards are adequate.
Transporter doors/shield to emplacement drift doors clearance	Interface not critical. Concept developed in this analysis provides approximately 100 mm of clearance on each side of the transporter with doors open and against transporter sides, to emplacement drift side walls.

**7.4.1 Summary**

As noted in Table 10, many interfaces are not critical to the conceptual design of the transport and emplacement systems. In some cases, such as the transport locomotive coupler interface, acceptable tolerances are dictated by standard industrial design practices. However, Table 10 also identifies several interfaces requiring special consideration in the current design evaluation.

The most critical interfaces are those that require precise alignment of the reusable rail car rail sections on the waste package transporter to the fixed-rail sections on the Waste

Handling Building loading dock and the emplacement drift transfer dock. The interfaces are shown on Figure 18. Specifically, the interfaces involve the rail car rail and the rigid chain guides for the rail car delivery and retrieval system. Alignment depends primarily on component design tolerances, on eliminating vertical movement during weight transfer to and from the dock, and on providing suitable allowances for thermal expansion. The transfer dock alignment features (Section 7.3.8) will help minimize these alignment concerns.

## **8. CONCLUSIONS**

### **8.1 GENERAL**

The conclusions of this analysis confirm that the use of rail-based systems for the transportation and emplacement of waste packages is a suitable concept. Each waste package will be transported in a radiation shielded transporter. A reusable rail car will be used to move the waste package into and out of the transporter and into the emplacement drift for access by the gantry.

This analysis is affected by a number of TBVs and TBDs, which are noted on the cover sheet. As those items are verified and determined, the design will reflect the resolution of those TBVs.

### **8.2 TRANSPORTER**

Results of this analysis confirm that the transporter with rail car is a viable concept for transporting the waste package from the surface Waste Handling Building to the emplacement drifts. Evaluations of the transporter general arrangement, wheel load capability, reusable rail car loading/unloading systems, pushbar configuration, rail car restraints, door locking devices, rigid chain guide, and rail alignment at the transfer docks were developed or confirmed in this analysis. Specific conclusions concerning the transporter are as follows:

1. The transporter length is 9470 mm (see Figure 3). This length is required to accommodate waste packages having the lengths and weights specified in Criteria 4.2.4.
2. This analysis concluded that 30-in.-diameter wheels and 100 lb/yard ASCE rail are satisfactory for supporting the loads anticipated from an 85+MT waste package (Section 7.3.2). It is recommended that transporter rails and gantry rails be standardized.
3. A system consisting of dual rigid chains connected to a pushbar is recommended as the reusable rail car load/unload mechanism. This system, which is addressed and evaluated in Section 7.3.3, offers only two penetrations through the radiation shielding and has no interference with the waste package compared with other alternatives, but the overall height is increased due to the chain magazine and

door locks to approximately 4,276 mm. This overall height is within clearance envelopes identified in Criteria 4.2.10.

4. The current operations concept entails the reusable rail car and waste package transporter working together as a unit. Consequently, the simplest, most reliable connection between the two pieces of equipment is desirable. Therefore, the connection between the transporter pushbar and the rail car should be a simple bolted connection (Section 7.3.4). This allows the rail car to be easily detachable from the transporter without the risk of failure of a latching mechanism.
5. Waste package transporter doors will be designed for remote operation. The drive selected for positive closure of the doors consists of a low-speed (1 rpm) motor gear reducer with a splined joint at the top of the door hinge pin. (Section 7.3.6 and Attachment II, Section 3.2.1.)
6. Several alternative means of locking the transporter doors during transit were evaluated. Locking the doors is necessary because the door operators are not adequate for preventing inadvertent rail car and waste package ejection if the rigid chains used to load/unload and restrain the rail car fail. The six door-locking concepts evaluated included high-capacity door operators used as the positive locks. The analysis concluded that solenoid-operated dead bolts, as described in Section 7.3.6.4, are the recommended positive door locking concept.
7. Alignment between the rail car rails and transfer dock rails and between rigid chain guides on the transporter and on the transfer dock is critical. The three directions of alignment resolved in this analysis are vertical, lateral, and longitudinal. The optimal choice for maintaining the vertical alignment of the gantry carrier, as established in Ref. 5.9, is to use springless trucks. This system is also recommended for the waste package transporter (Section 7.3.8.1). This alternative, which requires a custom-built truck, eliminates requirements of additional equipment that reduce reliability and eliminates control systems required by other options. Because there is still potential for misalignment due to deflection, a 6-percent sloped ledge built into the dock that matches the sloped bottom of the transporter, as described in Section 7.3.8.1, is also recommended.

A common system is recommended for maintaining lateral alignment of both the gantry carrier and the waste package transporter. The recommended method is to have two 15-degree mating bevels on the approaching end of the transporter and at the docks (Section 7.3.8.2). As the transporter approaches, lateral misalignment will be reduced as the two surfaces interact and self-center the transporter with the docks.

Longitudinal alignment maintains the gap between the transporter rail car rails and dock rail car rails. Ref. 5.9 concluded that the locomotive braking system has ample capacity for holding the transporter at the transfer dock. Because this capability exists and redundancy is provided through the transporter braking



system and the redundant brake systems, this method is recommended (Section 7.3.8.3).

This alignment is critical to the safe operation of the emplacement system and the recommendations indicated are unproven. Therefore, proof testing with a full-scale system is recommended prior to construction.

8. Radiation shielding to reduce the radiation from a waste package for safe transportation is a primary function of the waste package transporter. Preliminary concepts and radiation shielding material are addressed in Section 7.3.11. However, further analysis evaluating alternative radiation shielding materials and exposure are recommended to finalize the radiation shielding design.
9. Based on railroad car truck manufacturer's literature, the waste package transporter design is suitable for negotiating the 20-m radius curves at the emplacement drift turnouts.

### 8.3 STRUCTURAL ANALYSIS

The transporter analysis is in Attachment I. Figures I-1 and I-2 of Attachment I show the structural details developed by this analysis for the transporter. The transporter consists of two major parts:

1. A transporter shell including doors with structural frame
2. Transporter trucks

The transporter was designed to withstand dead, live, wind, seismic, and anticipated impact forces. Both maximum stress and fatigue stress range were considered in the analysis. Maximum stress, as well as transporter stability, were evaluated to provide overall structural integrity to the transporter.

The transporter was designed using ASTM A516 steel materials. The following major components of the transporter were designed in Attachment I:

- The transporter radiation shield: Fabricated from A516 steel plate (Figure I-1)
- The transporter structural frame: Fabricated from wide flange sections.

The transporter, as analyzed, is satisfactory for the operational loading of the transporter with load capacity (developed in this analysis) for the range of waste package characteristics shown in Section 4.2.4. The structural analysis determined that the transporter can be designed using ASTM A516 steel materials to structurally resist the loadings from the waste package and rail car.

Design seismic forces were applied separately and independently in each of three orthogonal directions. If project requirements change to specify simultaneous application of seismic forces in three orthogonal directions and/or if greater stability overturning safety factor is specified, then a substantial increase in rail gage is required to obtain necessary overturning stability.

This is a preliminary sizing calculation. However, future revisions of this analysis will address relevant criteria in NUREG-0800.

#### **8.4 CRITERIA COMPARISON**

This section compares the criteria derived from the applicable SDD (Ref. 5.6) and the results of this analysis to show to what extent the criteria have been met and to identify criteria that need further proof. Only the criteria listed in Section 4.2 of this analysis are evaluated. Because this analysis addresses only the transporter, criteria addressing the emplacement system can only be partially satisfied. Criteria addressing other parts of the emplacement system including the locomotives, reusable rail car, and gantry carrier are satisfied in Reference 5.9, Section 8.3.

##### **8.4.1 Criterion 4.2.1 (SDD, Para 1.2.1.2)**

Annual waste package throughput was verified in the simulation model summarized in Section 8 of Ref. 5.13. The simulation indicates that the current repository design is capable of achieving the required waste throughput.

##### **8.4.2 Criterion 4.2.2 (SDD, Para. 1.2.1.2 and 1.2.1.3)**

See Ref. 5.13, Section 8, for results of the integrated model that verified the number of trains necessary to accommodate the annual throughput of waste packages for distances of 10 km between the Waste Handling Building and emplacement in the repository.

##### **8.4.3 Criterion 4.2.3 (SDD, Para. 1.2.1.4)**

The transporter is designed to transport the waste package up a grade of 2.5 percent and down a grade of 2.5 percent.

##### **8.4.4 Criterion 4.2.4 (SDD, Para. 1.2.1.7)**

Design of the transporter, included in this analysis, is based on waste packages up to 6,200 mm long, 2,000 mm diameter, and weighing up to 85,000 kg.

##### **8.4.5 Criterion 4.2.4 (Para. 1.2.1.7) and 4.2.5 (SDD, Para. 1.2.1.3 and 1.2.1.9)**

The transporter rail car handling system is designed to either unload or load rail cars with waste packages at the emplacement drift.

##### **8.4.6 Criterion 4.2.6 (SDD, Para 1.2.2.1.2)**

The transporter is sized to travel at speeds up to 8 km/hr. A dynamic braking system on the locomotive is planned to assist in maintaining the train speed in a range of 3 to 8 km/hr. Primary braking systems are provided to slow or stop the train; if the dynamic brake fails, the primary braking systems will be used to prevent speeds from exceeding 8 km/hr.

**8.4.7 Criterion 4.2.7 (SDD, Para. 1.2.3.1)**

The natural surface environments indicated in Table 2 have very little effect on the transporter. The transporter structural analysis load combinations include the loads due to wind.

**8.4.8 Criterion 4.2.8 (SDD, Para. 1.2.4.2)**

The transporter truck wheel base is designed to negotiate a 10.3 m radius curve. This value is smaller than the minimum curve radii addressed in Section 4.2.8. Therefore, the minimum curve radii indicated in Criterion 4.2.8 can be negotiated with the current truck design as discussed in Section 7.3.12.

**8.4.9 Criterion 4.2.9 (SDD, Para. 1.2.4.5)**

Electric power for the transporter is planned to be fed from the transport locomotive through a quick disconnect cable, as discussed in Ref. 5.9, Section 7.3.3.3. Source of power (normal power, standby or emergency power) will be addressed in other analyses.

**8.4.10 Criterion 4.2.10 (SDD, Para. 1.2.4.7)**

The transporter is designed to operate within the drift turnout physical envelope within the clearances indicated. The critical equipment are the emplacement gantry, which is the largest piece of emplacement equipment to operate in the emplacement drift. Within the main drift, turnouts and ramps, the emplacement gantry riding on the carrier creates the largest outline of emplacement equipment. Design of the emplacement gantry will be addressed in another analysis.

**8.4.11 Criterion 4.2.11 (SDD, Para. 1.2.4.9)**

The waste package transporter and the reusable rail car are designed to accommodate the track gage of 1.44 m (56½ in.) and track for the reusable rail car is 1.44 m (56½ in.). Changes in the seismic criteria and how the seismic criteria are applied could force the rail gage wider to maintain stability.

**8.4.12 Criterion 4.2.12 (SDD, Para. 1.2.2.1.5)**

Results of this analysis do not eliminate the possibility of an inadvertent waste package ejection from the transporter. However, features such as the door locking device have been added to reduce the probability of inadvertent ejection.

## 9. ATTACHMENTS

Attachments	Pages	Description
I	301	Waste Package Transporter Structural Analysis
II	20	Waste Package Transporter Mechanical Equipment Selections
III	10	Waste Package Transporter Door Operator and Lock Selection for Reusable Rail Car Restraint

## **ATTACHMENT I**

### **WASTE PACKAGE TRANSPORTER STRUCTURAL ANALYSIS**

**NOTE:** DOE policy requires the subsurface design to be performed using metric units. Quantities and values derived in the main body of this analysis are presented only in metric units. However, much of the source information (e.g., vendor equipment data or standard structural steel members) used for design calculations and derivations in the attachments is available only in English units. Because of this, calculations and derivations in the attachments are generally performed in English units. The results are converted to metric for presentation in the main body of the analysis (Sections 7 and 8), followed by the corresponding English values in parentheses.

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## WASTE PACKAGE TRANSPORTER STRUCTURAL ANALYSIS

This structural analysis is for the waste package transporter. The analysis considers only those loadings that most significantly affect the design. Loadings such as grade and out-of-plumb forces, skewing forces, horizontal racking forces, vertical racking forces, temperature forces, lateral forces due to angularity of couplers, draft loads, and forces resulting from potential accident scenarios are not considered in this analysis.

### 1.0 PRINCIPAL LOADS

#### 1.1 Dead Load (DL) (CMAA 70, Section 3.3.2.1.1.1, Ref. 4.4.4)

The weights of all effective parts of the transporter structure, the machinery parts, and the fixed equipment supported by the structure.

- Rigid Chain Gear Motor = 320 kg (0.71 kips) (Attachment II, Section 3.3.9)
- Rigid Chain Drive (Ea.) = 120 kg (0.26 kips) (Attachment II, Section 3.3.6)
- Rigid Chain and Magazine (Ea.) = 630 kg (1.39 kips) (Attachment II, Section 3.3.11)
- Rigid Chain Guide (Ea.) = 43 kg/M (0.03 kips/ft) (Attachment II, Section 3.3.6)
- Truck (Ea.) = 4,989 kg (11.0 kips) (Section 4.3.8)
- Coupler (Ea.) = 79.4 kg (0.175 kips) (Section 4.3.9)
- 90-lb ASCE Rail = 44.6 kg/m (90 lb/yd) = 30 lb/ft (Section 4.3.4)
- Transporter Door (each) = 7464 kg (16.5 kips) (Section 4.3.7)
- Door Operator Gear Motor (each) = 200 kg (0.44 kips) (Attachment II, Section 3.2.5)
- Rigid Chain Drive Removable Shield (each) = 2624 kg (5.8 kips) (Section 7.3.11.4)
- Door Locks – negligible
- Electrical Controls – negligible
- Waste Package Transporter Material Weights (Section 4.3.5)
  - Floor, Sides and Top (Radial Direction)
    - Stainless Steel = 5mm (0.20 inches) = 8.14 psf, round to 8.2 psf
    - Borated Polyethylene = 101.6 mm (4.0 inches) = 19.14 psf, round to 19.2 psf
    - Carbon Steel = 152.4 mm (6.0 inches) = 244.47 psf, round to 244.5 psf
    - Stainless Steel = 5 mm (0.20 inches) = 8.14 psf, round to 8.2 psf
  - End Sections (Axial Direction)
    - Stainless Steel = 5 mm (0.20 inches) = 8.14 psf, round to 8.2 psf
    - Borated Polyethylene = 76.2 mm (3.0 inches) = 14.4 psf
    - Carbon Steel = 177.8 mm (7.0 inches) = 285.2 psf
    - Stainless Steel = 5 mm (0.20 inches) = 8.14 psf, round to 8.2 psf
- Estimated Total Self-Weight of Transporter = 155 MT = 342 kips (excludes WP and reusable rail car) – verified by this analysis.

**1.2** Live Load (LL) (CMAA 70, Section 3.3.2.1.1.3, Ref. 4.4.4)

Empty Weight Reusable Rail Car = 10.0 MT = 22.1 kips (Attachment I, Section 9.1, Ref. 5.9)

Waste package (WP) to be transported (Section 4.2.4)

Waste package diameter = 2000 mm  
Waste package length = 6200 mm  
Waste package loaded mass = 83,000 kg (bounded at 85 MT for this analysis)

**1.3** Dead and Live Load Impact (Vertical Inertia Forces, CMAA 70, Section 3.3.2.1.1.4, Ref. 4.4.4)

Vertical Inertia Forces include those due to the motion of the transporter, and are included by the application of a separate factor by which the vertical acting loads are multiplied.

**1.3.1** Dead Load Factor (DLF) (CMAA 70, Section 3.3.2.1.1.4.1, Ref. 4.4.4)

Transporter travel speed = 8 km/hr = 437 ft/min. (Section 4.2.6)  
Use DLF = 1.2

**1.3.2** Live Load Impact Factor (HLF)

Transporter of equivalent service Class "F" crane is reasonable because transporter performs critical tasks and must provide highest reliability (CMAA 70, Section 2.7, Ref. 4.4.4).  
Use HFL = 0.50

**2.0** EXTRAORDINARY LOADS

**2.1** Stored Wind Load (WLS) (CMAA 70, Section 3.3.2.1.3.1, Ref. 4.4.4 and ASCE 7-95, Ref. 4.4.7) - See Wind Load Analysis, Attachment I, Section 8.0

Wind Velocity (Section 4.2.7):  
1-minute wind speed = 40 m/sec maximum  
1-second gust wind speed = 53 m/sec maximum  
Use WLS = 45 psf (Attachment I, Section 8.0)

**2.2** Seismic (EQF) (Section 4.3.2)

**2.2.1** Seismic Loading:

Horizontal Acceleration = 0.266 g, rounded to 0.27 g for this analysis  
Vertical Acceleration = 0.169 g, rounded to 0.17 g for this analysis



**2.2.2** Direction of Seismic Load:

Design seismic forces are applied separately and independently in each of two orthogonal (horizontal) directions (Section 9.2.2.5.2.3, Ref. 4.4.7). The vertical component of earthquake ground motion will not be combined with the horizontal seismic component because the transporter is a steel frame structure without horizontal and vertical structural irregularities and without horizontal cantilever and horizontal prestressed components (Section 9.2.2.5.4.3, Ref. 4.4.7).

**2.3** Vertical Loads on Coupler (VLC) (AAR M-1001, Vol 1, Section 4.1.5.3, Ref. 4.4.6)

All cars shall have the capability to sustain a vertical up and down load of 50,000 lbs at the pulling face of the coupler.

Use VLC = 50.0 kips (up or down)

**2.4** Jacking Load (JL) (AAR M-1001, Vol. 1, Section 4.1.6, Ref. 4.4.6)

Car structure shall be designed to sustain forty percent of gross rail load applied to each jacking pad.

$JL = 40\% \times [\text{transporter} + \text{WP} + \text{reusable rail car}]$

Use JL = 0.40 [155 + 85 + 10 MT] = 100.0 MT = 221 kips

**2.5** Roof Load (RL) (AAR M-1001, Vol. 1, Section 4.1.7, Ref. 4.4.6)

Roof of cars shall be capable of sustaining a uniformly distributed load of 15 pounds per square foot of projected area plus a concentrated load of 300 pounds.

Use RL uniform (RLU) = 0.015 kips per square foot

Use RL concentrated (RLC) = 0.3 kips

**2.6** Compressive End Load (CEL) (AAR M-1001, Vol. 1, Section 4.1.9, Ref. 4.4.6)

The car structure shall be designed to sustain a compressive columnar load of 1,000,000 pounds applied at the rear draft lugs at each end of car on the nominal centerline of couplers.

Use CEL = 1,000,000 lbs = 1,000 kips

**2.7** Impact Loads (AAR M-1001, Vol. 1, Ref. 4.4.6)

**2.7.1** Horizontal Impact Force (HIF) (AAR M-1001 Vol. 1, Section 4.1.10.1)

The car structure shall be designed to sustain the reaction and inertia forces resulting from a single ended impact.

Coupler Force = 1,250,000 lbs applied to one end of the car

Use HIF = 1,250,000 lbs = 1,250 kips

2.7.2 Vertical Dynamic Amplification Factor (AAR M-1001 Vol. 1, Section 4.1.11.1)

$$a = 1 + \frac{2hH}{bW}$$

where: a = amplification factor

b = distance between truck centers in feet = 3.65 m (12.0 ft)

h = vertical distance, centerline of coupler to maximum center of gravity height in feet = 1.70 m (5.58 ft)

Note: Distance top of rail (T.O.R.) to car center of gravity = 98 inches maximum (AAR M-1001, Vol. 1, Section 2.1.3, Ref. 4.4.6) – to be verified by this analysis

Distance T.O.R to centerline coupler = 0.790 m (31 in.) (Fig. I-2)

h = 98 in. – 31 in. = 67 in. (5.58 ft)

W = rail load limit less weight of trucks in pounds =

$$155 + 85 + 10 \text{ MT} - \frac{2(11.0 \text{ kips})}{2.205 \text{ kips/MT}} = 240.0 \text{ MT} (529,250 \text{ lb})$$

H = horizontal impact force (HIF) in pounds = 1,250,000 lb

Amplification Factor, a = 3.2

### 3.0 LOAD COMBINATION

The combined stresses shall be calculated for the following design cases:

3.1 Load Combination 1 (STAAD-III Analysis Load Combination 101; Attachment I, Section 11.0):

Transporter in normal operating condition under principal loading; Stress Level 1 (CMAA 70, Section 3.3.2.4, Ref. 4.4.4)

$$DL(DLF) + LL(1+HLF)$$

Note: TL (DLF) and IFD not applicable to this analysis.

3.2 Load Combination 3 (STAAD-III Analysis Load Combinations 102, 103, 104, and 105; Attachment I, Section 11.0):

Extraordinary Loads; Stress Level 3 (CMAA 70, Section 3.3.2.4, Ref. 4.4.4)

3.2.1 Transporter subjected to stored wind loading

$$DL + LL + WLS$$

**3.2.2** Transporter subjected to seismic force

$$DL + LL + EQF$$

**3.3** Load Combination 4 (STAAD-III Analysis Load Combinations 106, 107, and 108; Attachment 1, Section 11.0):

Critical Load Condition; Stress Level 4 (AAR M-1001 Vol. 1, Sections 4.2.2.5 and 4.2.2.6, Ref. 4.4.6)

**3.3.1** Transporter subjected to compressive end loads, roof loads, jacking loads, and coupler vertical loads

$$DL + LL + VLC + JL + RLU + RLC + CEL$$

**3.3.2** Transporter subjected to critical impact loads

$$a (DL + LL) + 1.0 (HIF)$$

**3.4** Load Combination 5 (STAAD-III Analysis Load Combination 109, Attachment 1, Section 11.0):

Critical Load Condition; Stress Level 4 (ANSI N14.6-1993, Sections 4.2.1.1, 7.1 and 7.2.1, Ref. 4.4.3)

**3.4.1** Transporter subjected to increased stress design factors (SDF) for the handling of a critical load with a non-dual load path resisting system

$$\begin{aligned} &SDF (DL + LL) \\ &Use SDF = 10 \end{aligned}$$

**4.0 ALLOWABLE STRESSES****4.1** Maximum Allowable Stresses in Structural Steel Members

CMAA 70, Section 2.7, Ref. 4.4.4: Consider transporter to be of equivalent crane Service Class "F" because:

- Performs critical tasks
- Must provide highest reliability

CMAA 70, Tables 3.4.7-1 and 3.4.7-2A, Ref. 4.4.4  
Service Class "F"

Joint Category B; allowable fatigue stress range = 17.0 ksi

Note: Joint Category B is selected because transporter is principally a built-up box section (CMAA 70, Table 3.4.7-2A)

Plus Approximate Transporter Dead Load Stress (to be verified by this analysis) = 1.0 ksi

Use Total Allowable Stress = 18.0 ksi

AISC, M016-89 (F1-1 & F3-1) pg. 5-45 & 5-48 (Ref. 4.4.1);  $F_b = 0.66 F_y$

For STAAD analysis, limit the allowable stress range for fatigue by reducing  $F_y$  for ASTM A36 steel:

$$\text{Use reduced } F_y = \frac{F_b}{0.66} = \frac{18.0 \text{ ksi}}{0.66} = 27.3 \text{ ksi, ASTM A36 steel}$$

#### 4.2 Allowable Stress Level

Stress Level 1, Stress Increase =  $\frac{0.60}{0.60} = 1.0$ ; 0% stress increase (CMAA 70, Section 3.4, Ref. 4.4.4)

Stress Level 3, Stress Increase =  $\frac{0.75}{0.60} = 1.25$ ; 25% stress increase (CMAA 70, Section 3.4, Ref. 4.4.4)

Note: The allowable stress increase for Stress Level 3 is a percentage increase above the allowable combined stress level under principal loading, Stress Level 1, Load Combination 1.

Stress Level 4, Stress Increase =  $\frac{1}{0.66} \left( \frac{36.0}{27.3} \right) = 2.00$ ; 200% stress increase (AAR M-1001 Vol. 1, Sections 4.2.2.5 and 4.2.2.6, Ref. 4.4.6; ANSI N14.6-1993, Sections 4.2.1.1, 7.1 and 7.2.1, Ref. 4.4.3)

Note: The factor of  $\frac{1}{0.66}$  increases the allowable stress from normal bending stress of  $0.66 F_y$  to the Reduced  $F_y$  for STAAD analysis of 27.3 ksi for ASTM A36 steel. The factor of  $\left( \frac{36.0}{27.3} \right)$  increases the allowable stress from Reduced  $F_y$  for STAAD analysis of 27.3 ksi to ultimate load-carrying capacity of 36 ksi for ASTM A36 steel.

## 5.0 TRANSPORTER STABILITY

### 5.1 Stability (ASME NOG-1-1995, Section NOG-4457, Ref. 4.4.2)

The transporter stability safety factors against overturning of NOG-4457 when subjected to the load combinations for normal and extreme environmental loads (ASME NOG1-1995, Section NOG-4140) are by inspection comparable and appropriate for use with the CMAA 70, Section 3.3.2.4, Ref. 4.4.4, load combinations.

#### Normal Operating Condition

Overturning Safety Factor  $\geq 1.5$  (Load Combination 1, Attachment I, Section 3.1)

Extraordinary (Extreme Environmental) Loading Condition  
Overturning Safety Factor  $\geq 1.1$  (Load Combination 3, Attachment I, Section 3.2)

**5.2** Vertical Center of Gravity (AAR M-1001, Vol. 1, Section 2.1.3, Ref. 4.4.6)

Height of center of gravity of fully loaded car (including height of trucks) shall not exceed 98 inches above top of rail.

**5.3** Vertical center of gravity of WP + rail car combined (Attachment I, Section 9.2.1.A, Ref. 5.9)

$$\text{Vertical c.g.} = \frac{2868 \text{ kip-in.}}{0.27(187.4 + 21.7k)} = 50.8 \text{ in. above top of rail car rail}$$

**6.0 DESIGN METHODS**

The waste package transporter will be designed using static load analysis. STAAD-III computer software will be used to perform the stress analysis for the transporter structural frame. STAAD-III facilities for steel design will be based on AISC, M016-89 (Ref. 4.4.1).

## **7.0 STAAD-III MODEL**

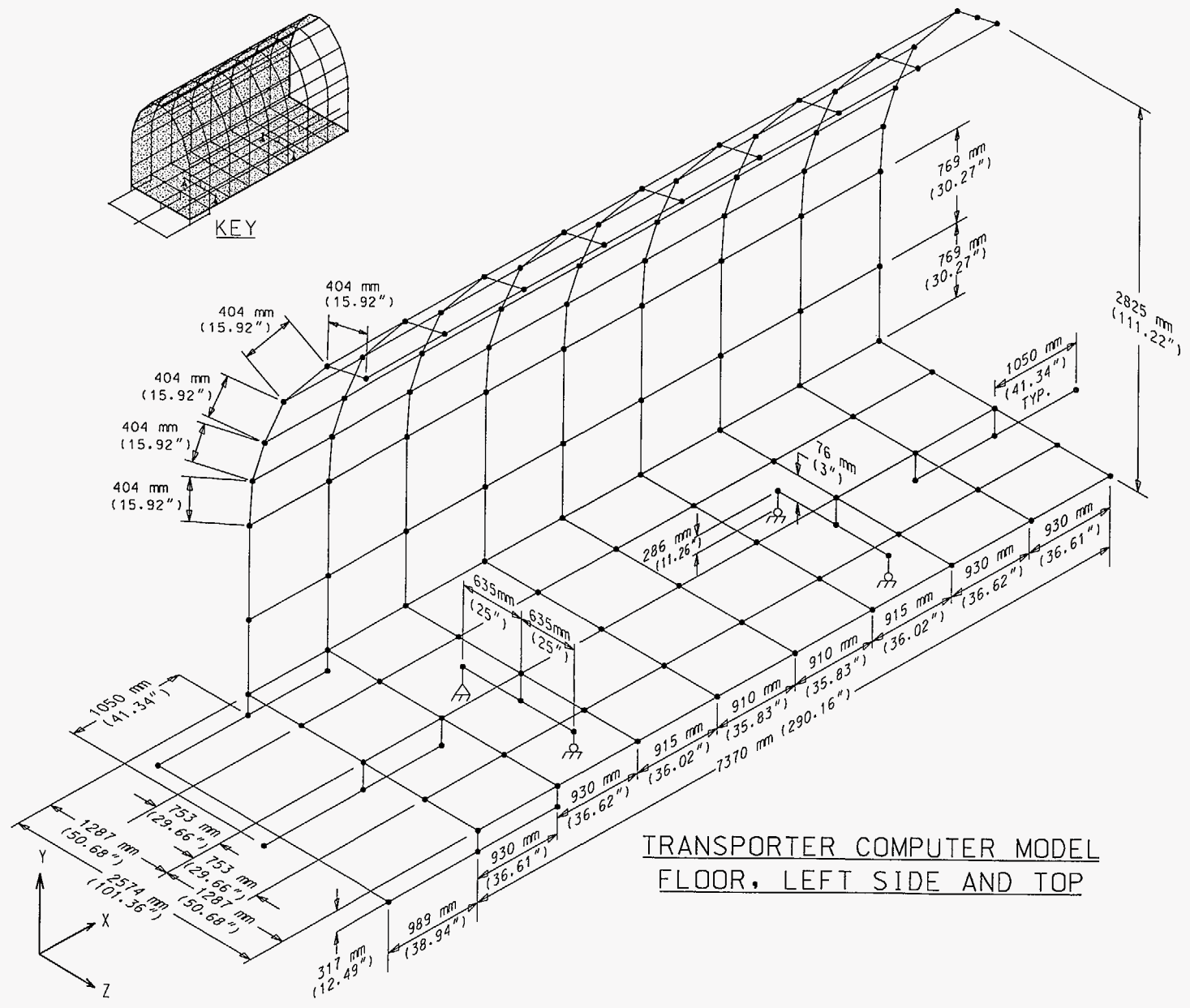
STAAD-III model diagrams indicate model configurations with model dimensions, members and joints identified:

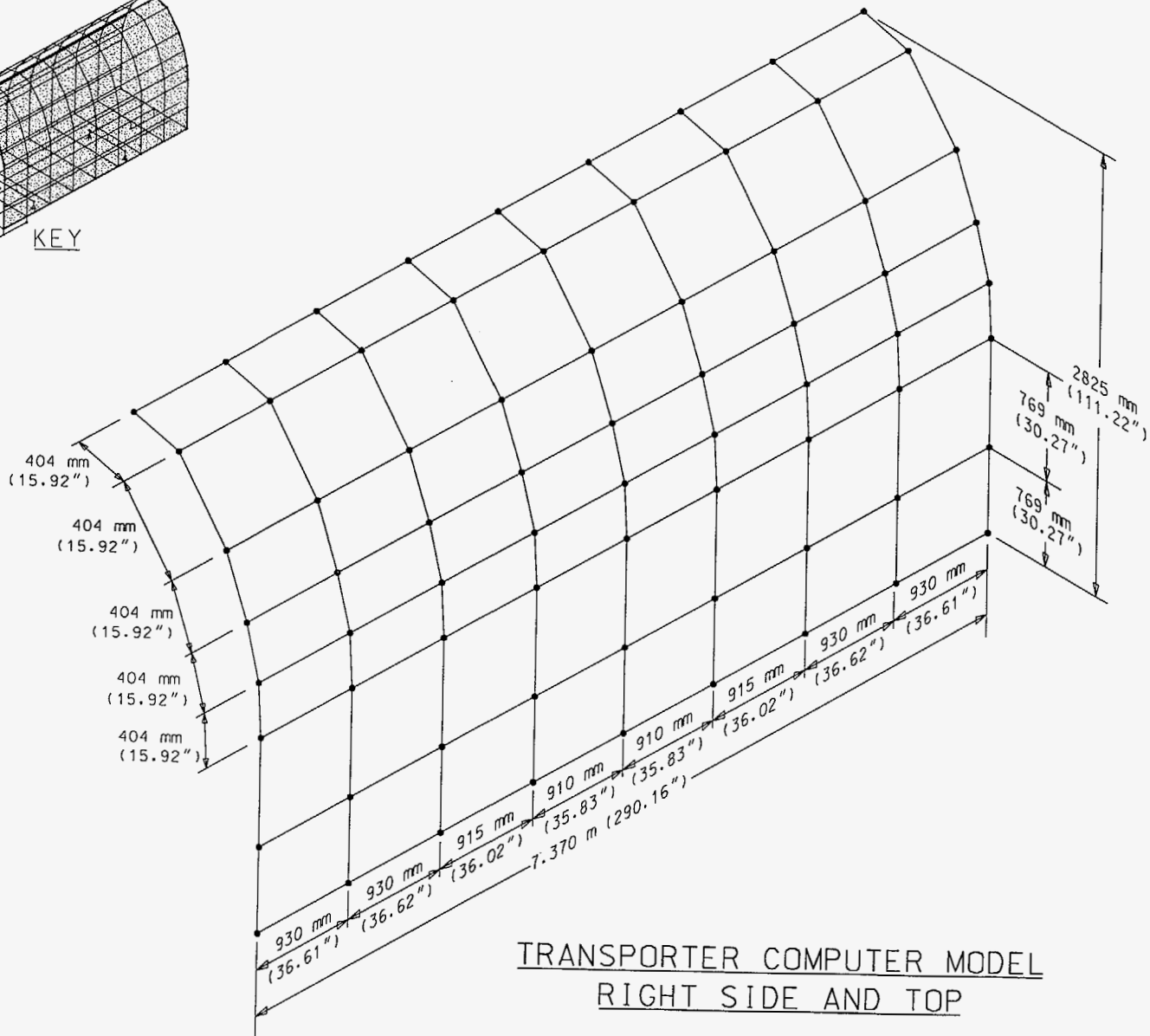
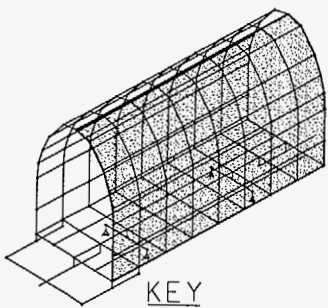
Waste Package Transporter Computer Model – Dimensions  
Waste Package Transporter Computer Model – Members  
Waste Package Transporter Computer Model – Joints

The basis for the computer model is shown in the following:

Figure I-1 (Attachment I, Section 7.0)  
Figure I-2 (Attachment I, Section 7.0)

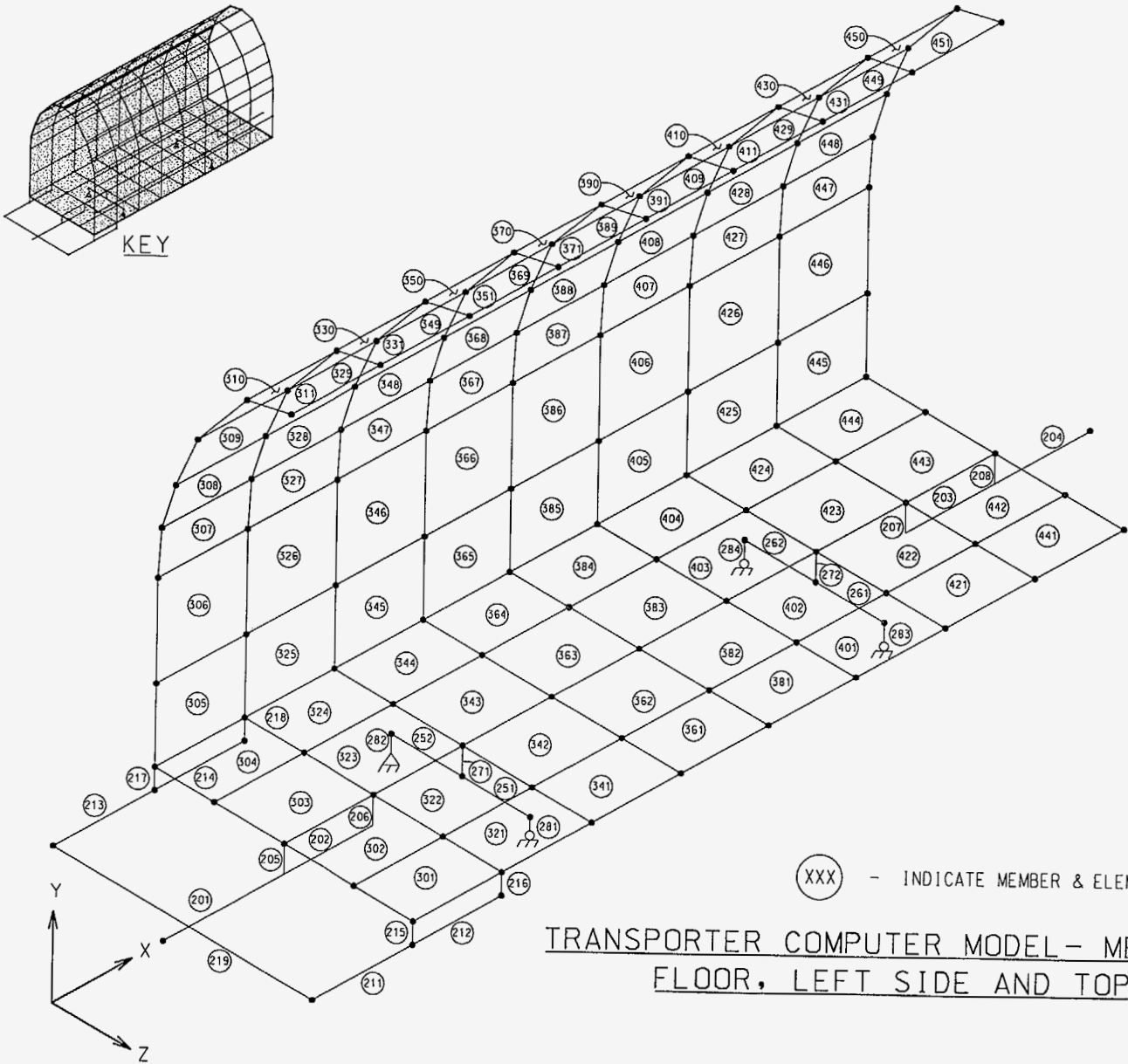
All dimensions shown on the above referenced diagrams and figures and used in the STAAD-III computer model are bounded dimensions for this analysis.

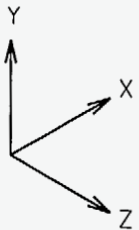
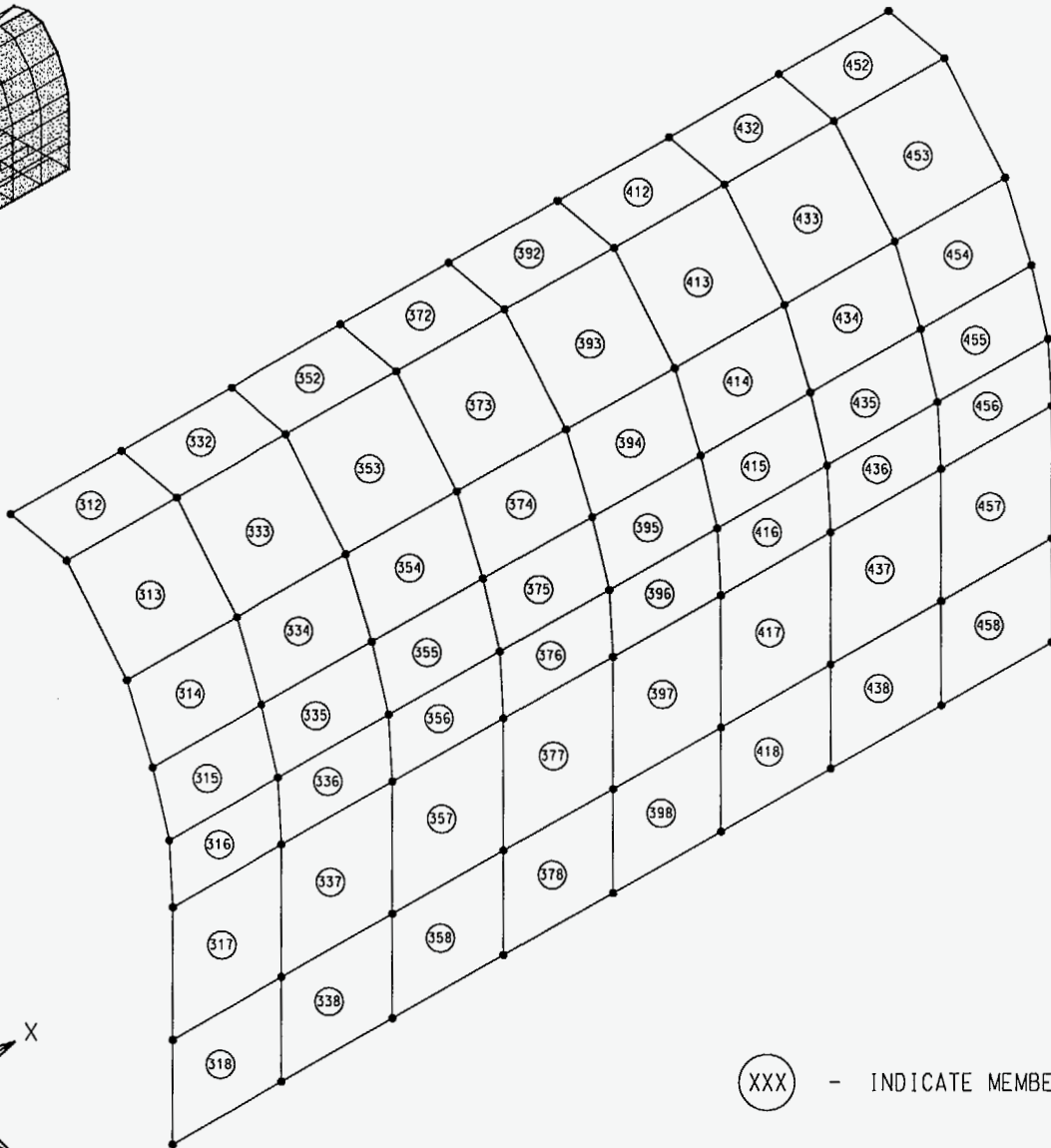
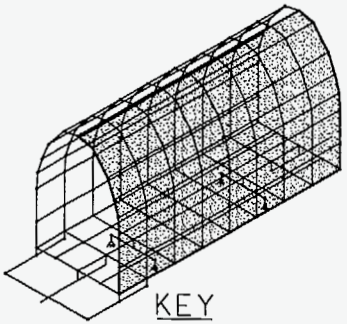




TRANSPORTER COMPUTER MODEL  
RIGHT SIDE AND TOP

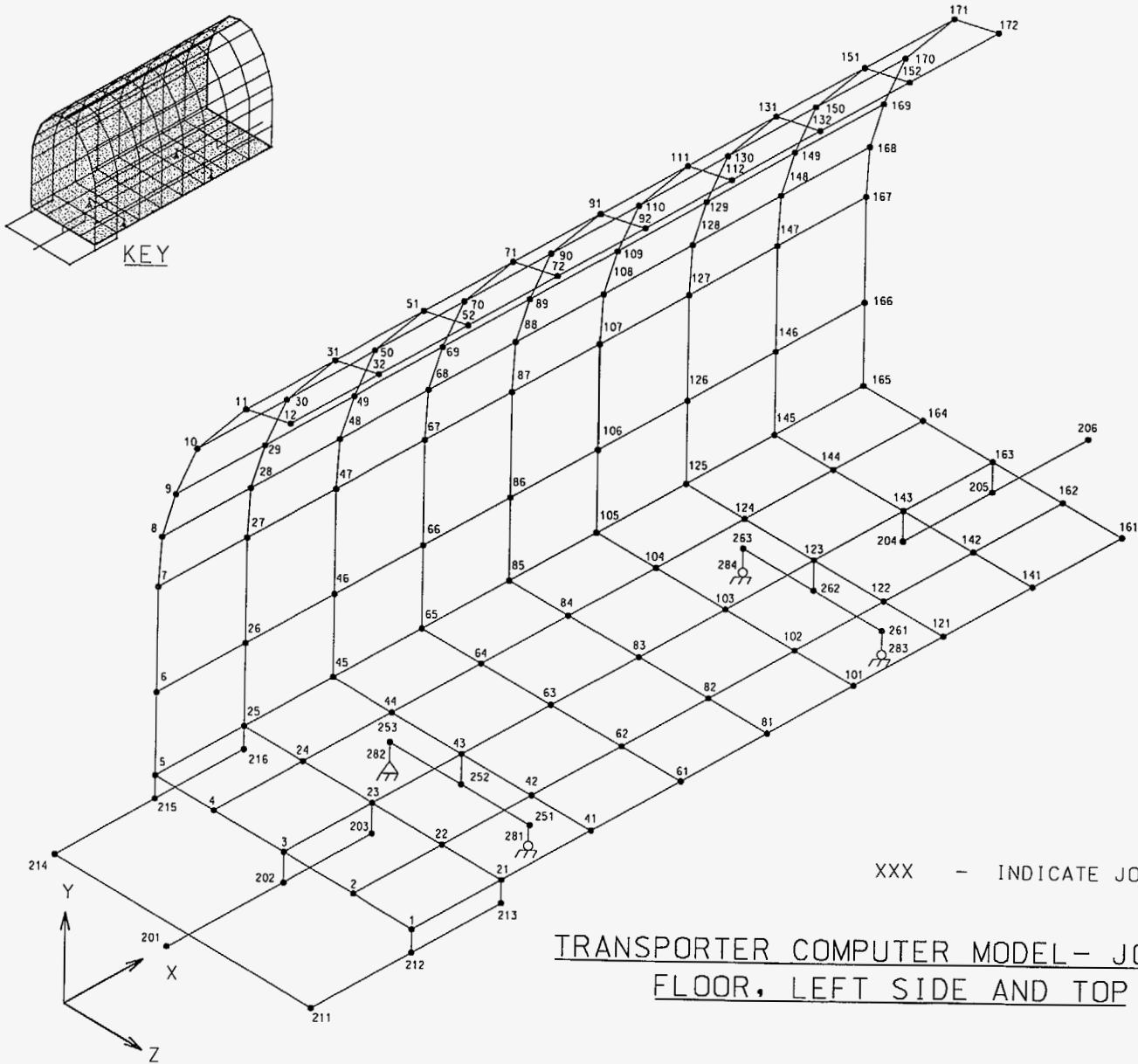






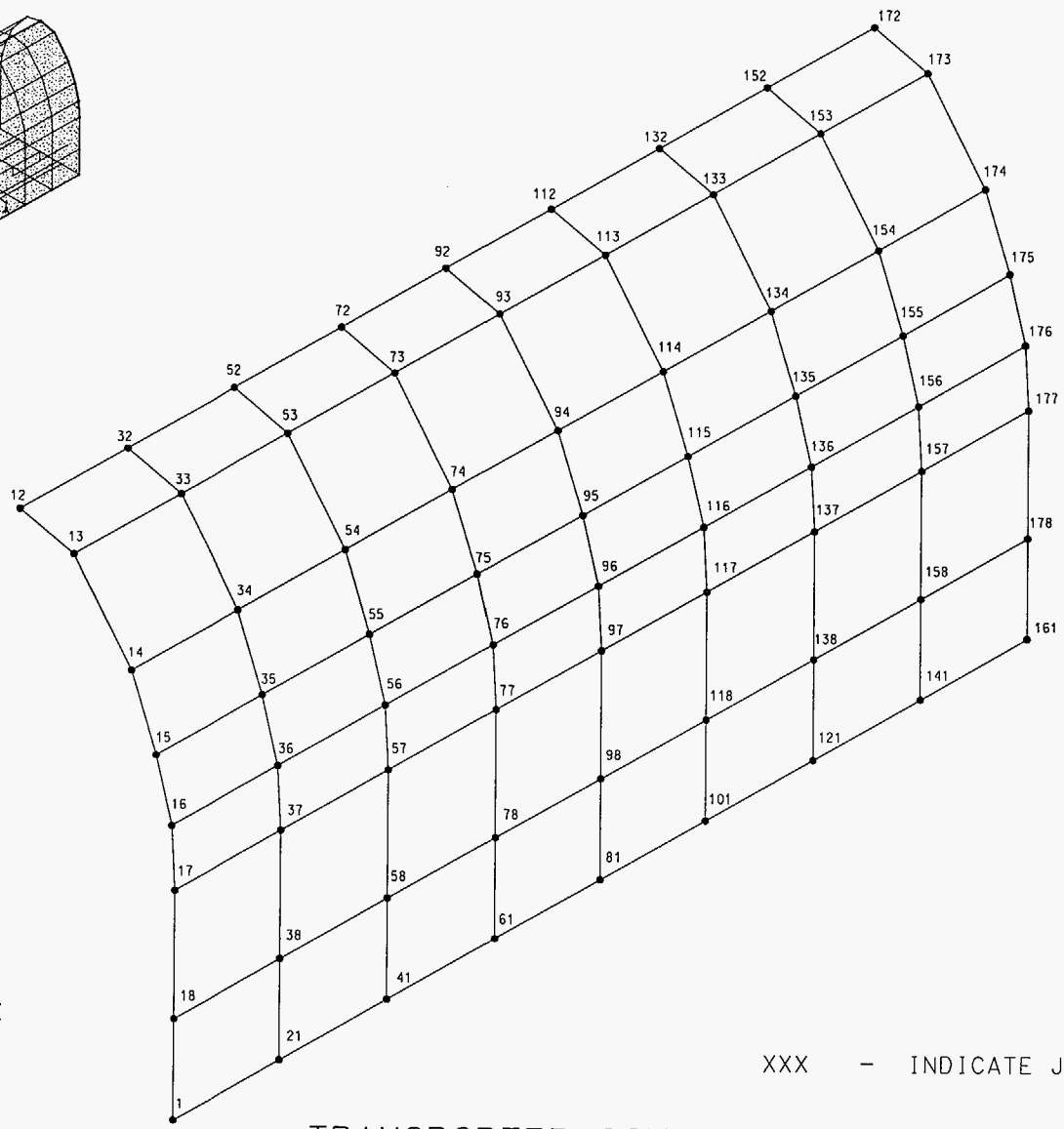
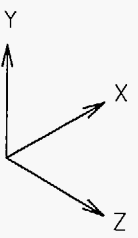
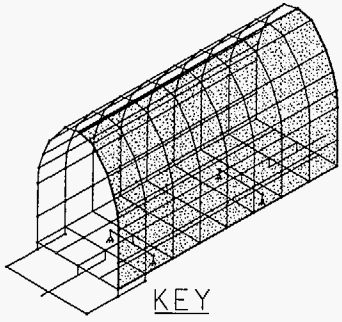
(XXX) - INDICATE MEMBER & ELEMENT NUMBER

TRANSPORTER COMPUTER MODEL - MEMBERS  
RIGHT SIDE AND TOP



XXX - INDICATE JOINT NUMBER

TRANSPORTER COMPUTER MODEL- JOINTS  
FLOOR, LEFT SIDE AND TOP



XXX - INDICATE JOINT NUMBER

TRANSPORTER COMPUTER MODEL - JOINTS  
RIGHT SIDE AND TOP

Figure I-1 Waste Package Transporter End Elevation

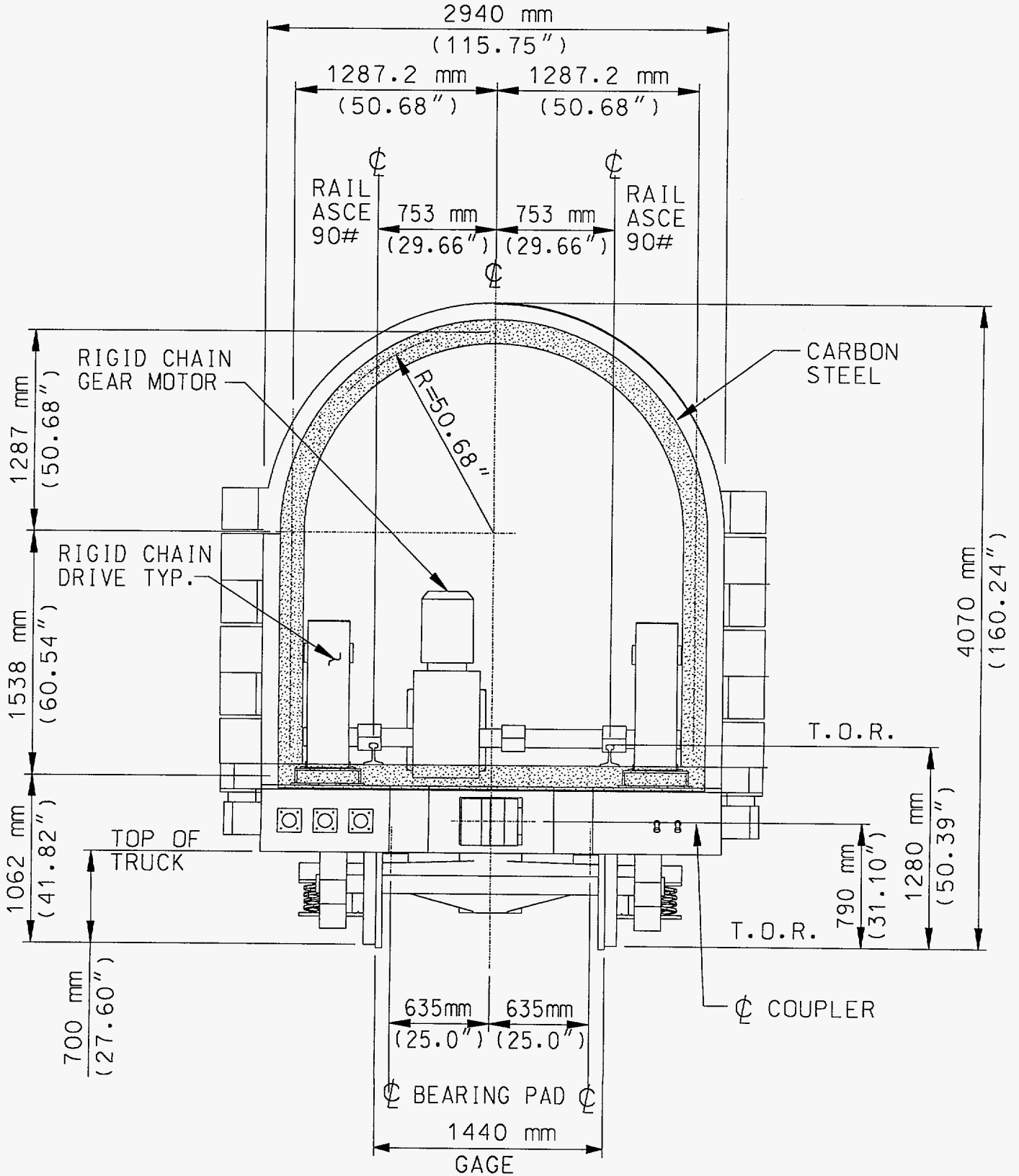
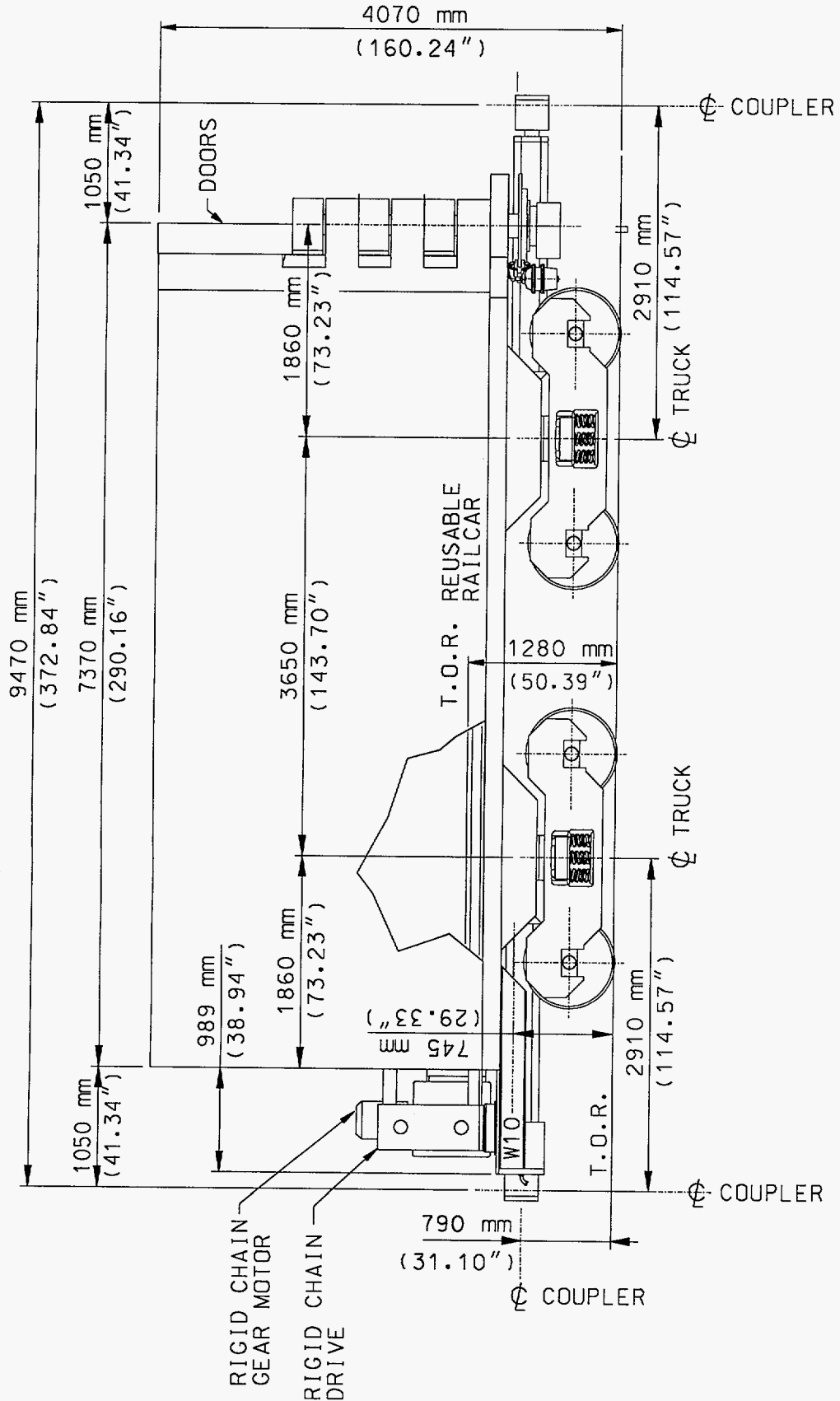


Figure I-2 Waste Package Transporter Side Elevation



## 8.0 WIND LOAD ANALYSIS

ASCE Standard ANSI/ASCE 7-95, *Minimum Design Loads for Buildings and Other Structures* (Ref. 4.4.7)

Transporter Ratio: Height/least horizontal dimension = 4070 mm/2940 mm = 1.4

Design wind pressure,  $F = qz G C_f A_f$  (ASCE 7-95, Table 6-1)

Velocity pressure at height  $z$  above ground,  $qz$  (psf)

$qz = 0.00256 K_z K_{zt} (V)^2 I$  (ASCE 7-95, Section 6.5.1)

Velocity pressure exposure coefficient,  $k_z = 0.90$  (ASCE 7-95, Table 6-3)

For height above ground level,  $z < 20$  ft – conservative (transporter height = 4070 mm (13.3 ft)

For site exposure category “C” (Ref. 5.21, Section 0111 – 2.4.2 General Design Criteria, Wind Load, Building and Other Structures)

Topographic coefficient,  $K_{zt} = 1.0$  (ASCE 7-95, Section 6.5.5):

The effect of wind speed-up shall not be required to be considered when  $H < 15$  ft for Exposure “C”

Basic Wind Speed ( $V$ ): Values are 3-second gust speeds for Exposure “C” (ASCE 7-95, Section 6.5.1 and Fig. 6-1)

Wind velocity (Section 4.2.7):

1-minute wind speed = 40 m/s maximum (90 mph)

1-second gust wind speed = 53 m/s maximum (119 mph)

Use  $V = 119$  mph – conservative

Importance factor,  $I = 1.15$  (ASCE 7-95, Table 6-2)

For category IV classification – essential facility (ASCE 7-95, Table 1-1)

$qz = 0.00256 \times 0.90 \times 1.0 \times (119)^2 \times 1.15 = 37.5$  psf

Gust effect factor,  $G = 0.85$  (ASCE 7-95, Section 6.6.1)

Force coefficient,  $C_f = 1.4$  (ASCE 7-95, Table 6-7)

For square cross section and  $h/d < 7$  (transporter,  $h/d = 4070$  mm/2940 mm = 1.4)

Design wind pressure,  $F = qz G C_f = 37.5 \times 0.85 \times 1.4 = 45$  psf

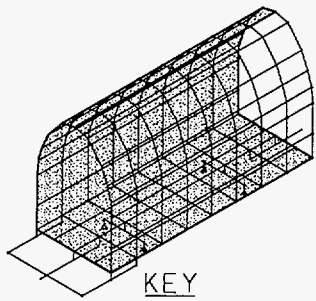
## 9.0 STAAD-III MODEL LOAD DIAGRAMS

STAAD-III model load diagrams indicate model configuration with applicable model members and joints identified:

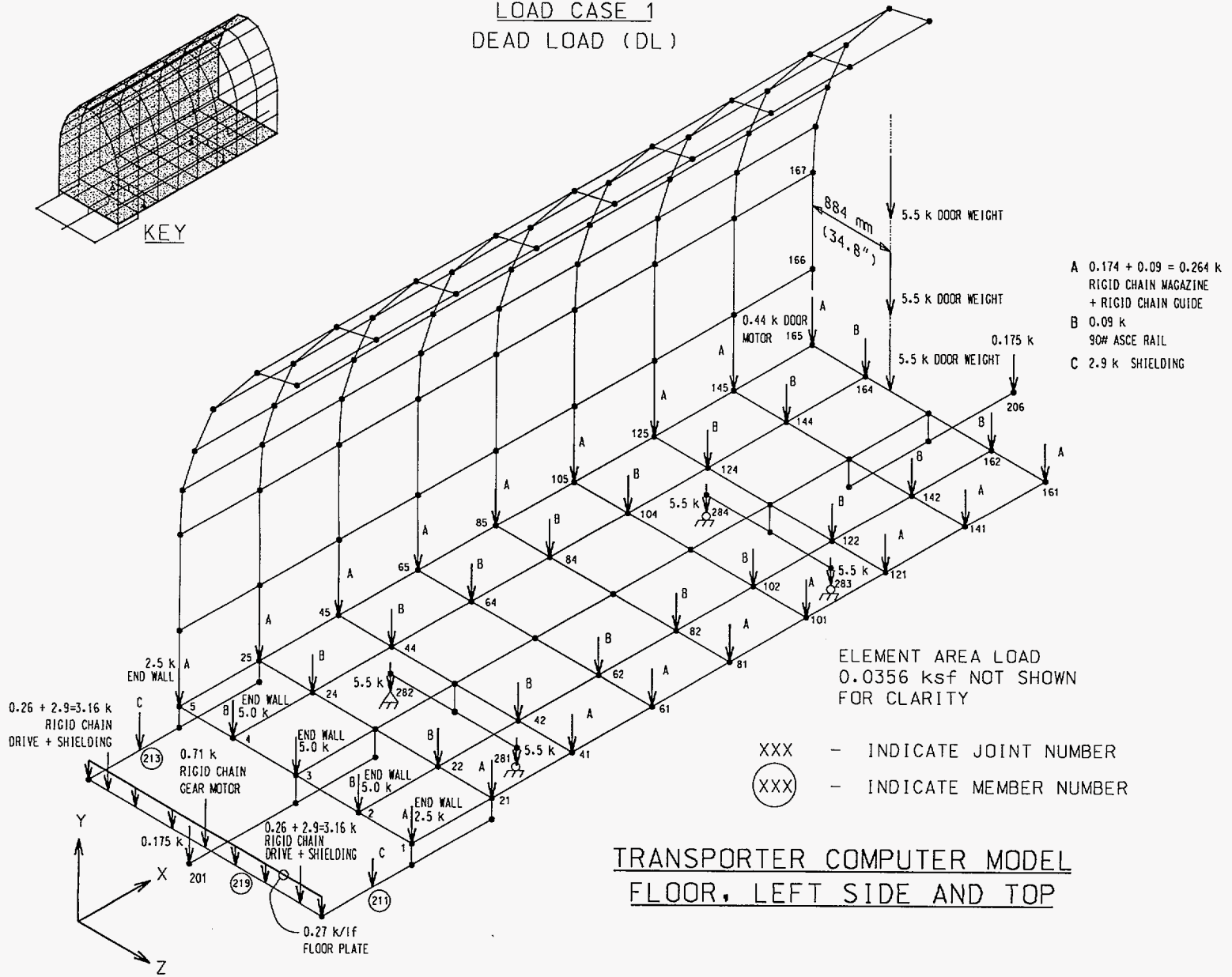
- Load Case 1, Dead Load (DL) – Doors Closed
- Load Case 2, Dead Load (DL) – Doors Open 90°
- Load Case 3, Dead Load (DL) – Doors Open 180°
- Load Case 4, Dead Load (DL) – Doors Open 270°
- Load Case 5, Live Load (LL) – Waste Package and Reusable Rail Car Load
- Load Case 6, Transverse Wind Load (WLS)
- Load Case 7, Transverse Seismic Load (EQF)
- Load Case 8, Longitudinal Seismic Load (EQF)
- Load Case 9, Vertical Seismic Load (EQF)
- Load Case 10, Vertical Loads on Coupler (VLC) - Down
- Load Case 11, Vertical Loads on Coupler (VLC) – Up
- Load Case 12, Roof Loads (RL)
- Load Case 13, Compressive End Load (CEL)
- Load Case 14, Horizontal Impact Load (HIF)
- Load Case 15, Jacking Load (JL)

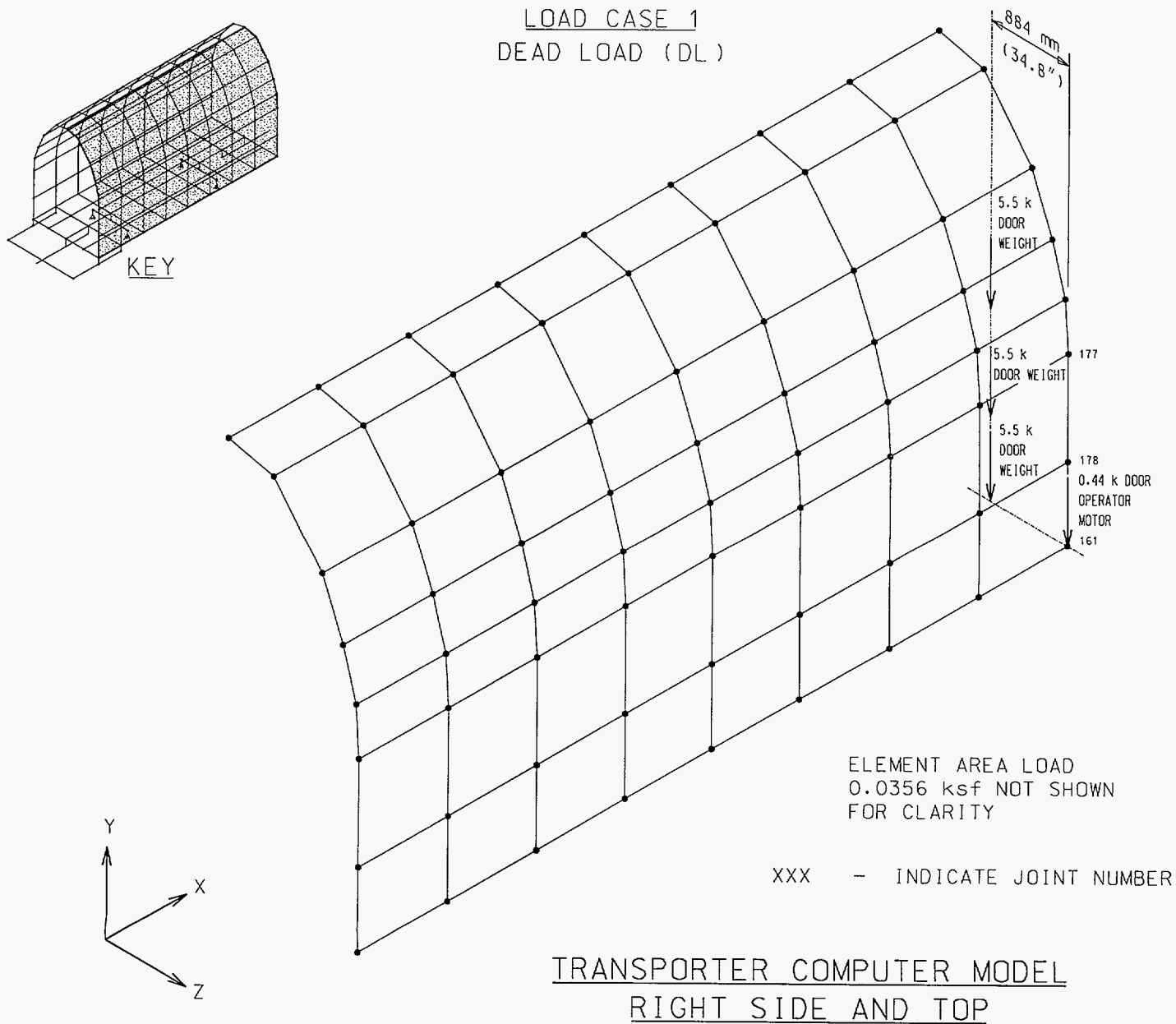
All loads and dimensions shown on the above-referenced load diagrams and used in the STAAD-III computer model are bounded loads and dimensions for this analysis.

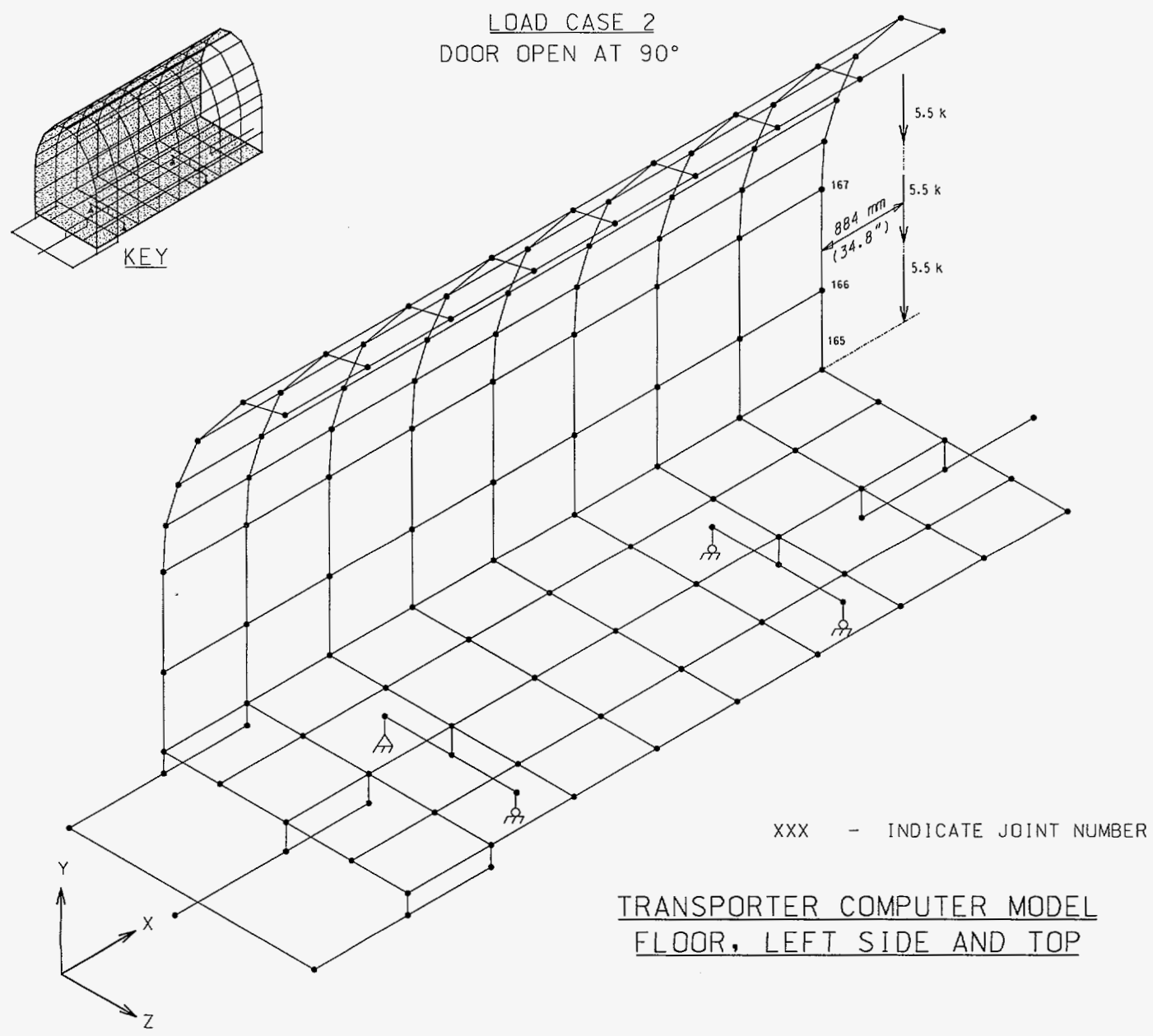




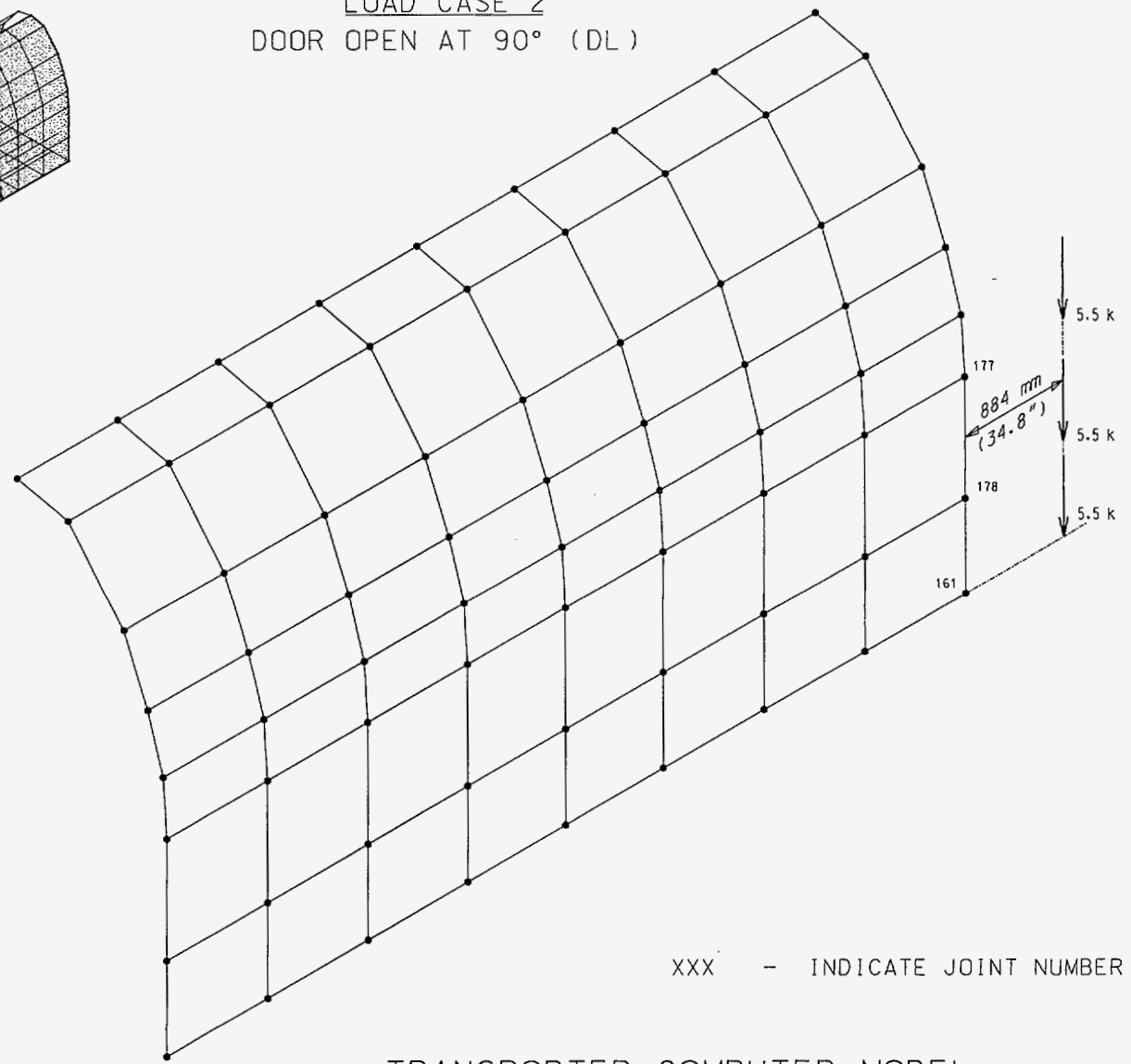
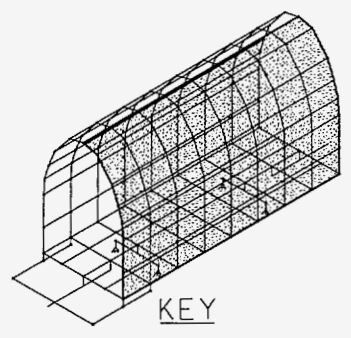
LOAD CASE 1  
DEAD LOAD (DL)





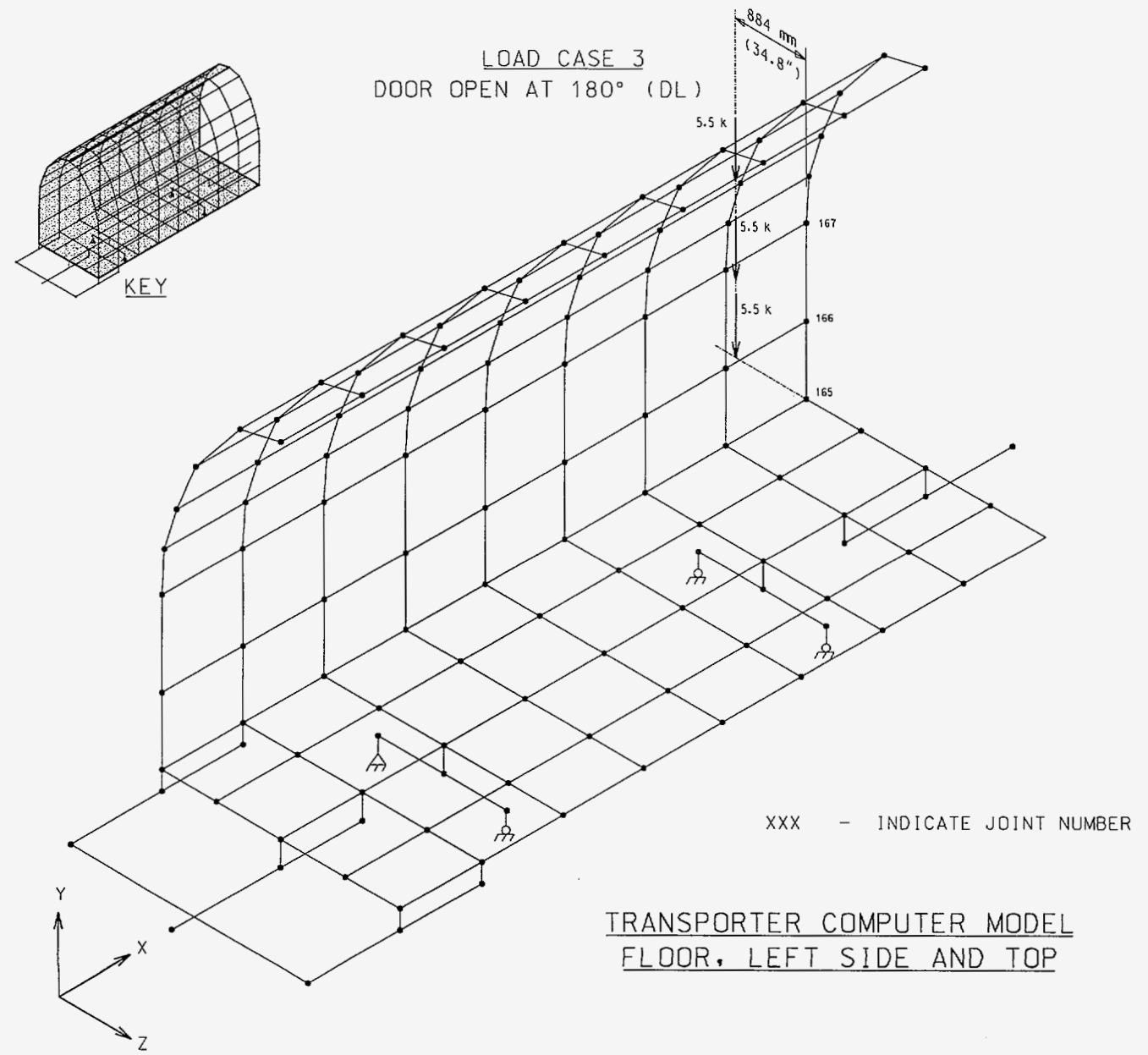


LOAD CASE 2  
DOOR OPEN AT 90° (DL)

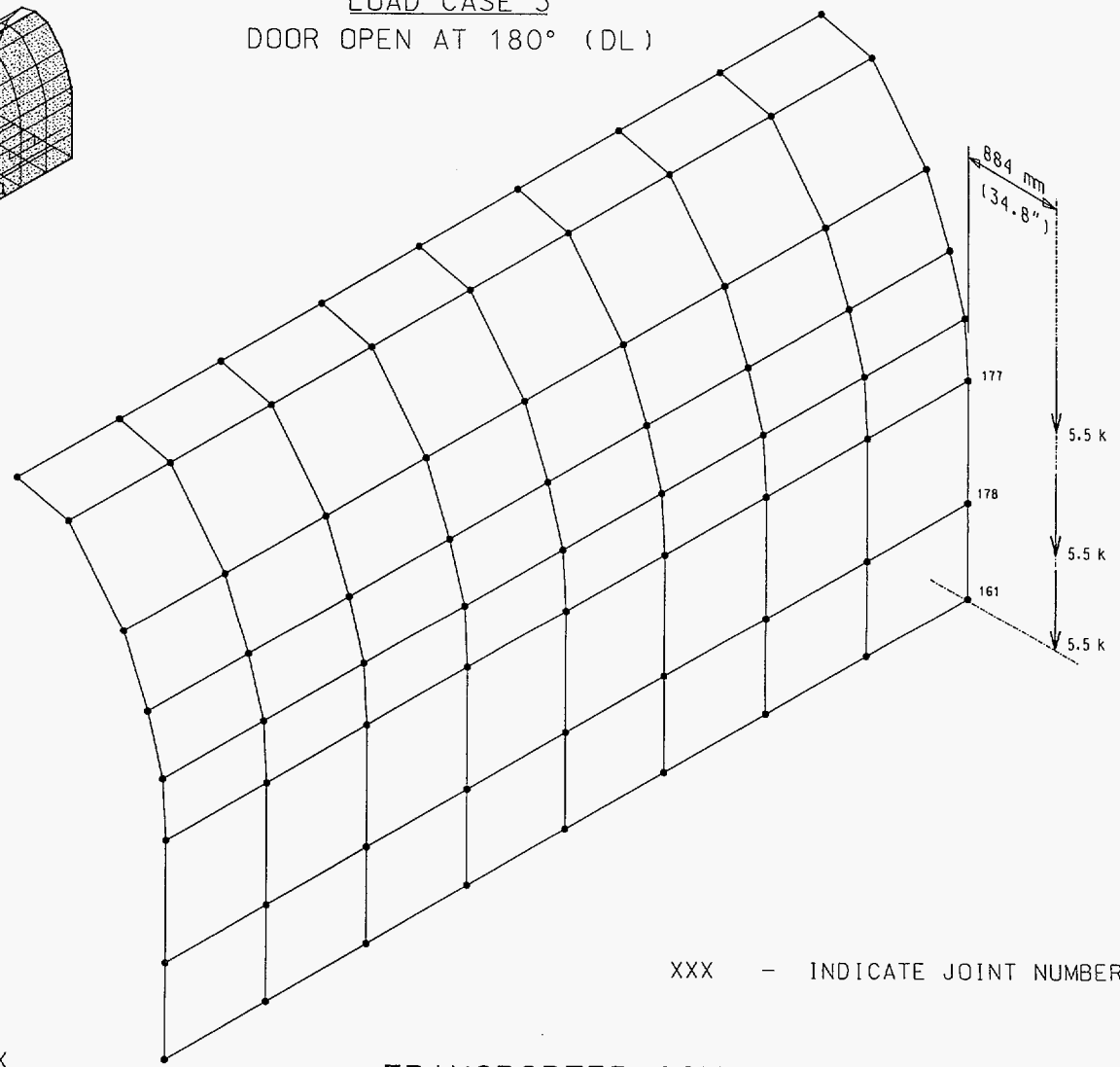
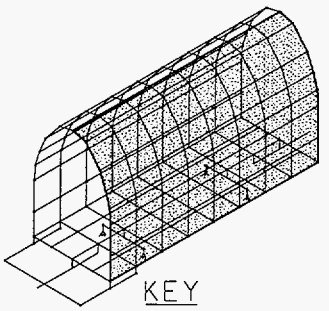


xxx - INDICATE JOINT NUMBER

TRANSPORTER COMPUTER MODEL  
RIGHT SIDE AND TOP

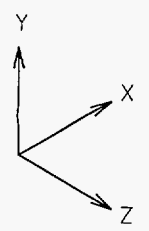


LOAD CASE 3  
DOOR OPEN AT 180° (DL)

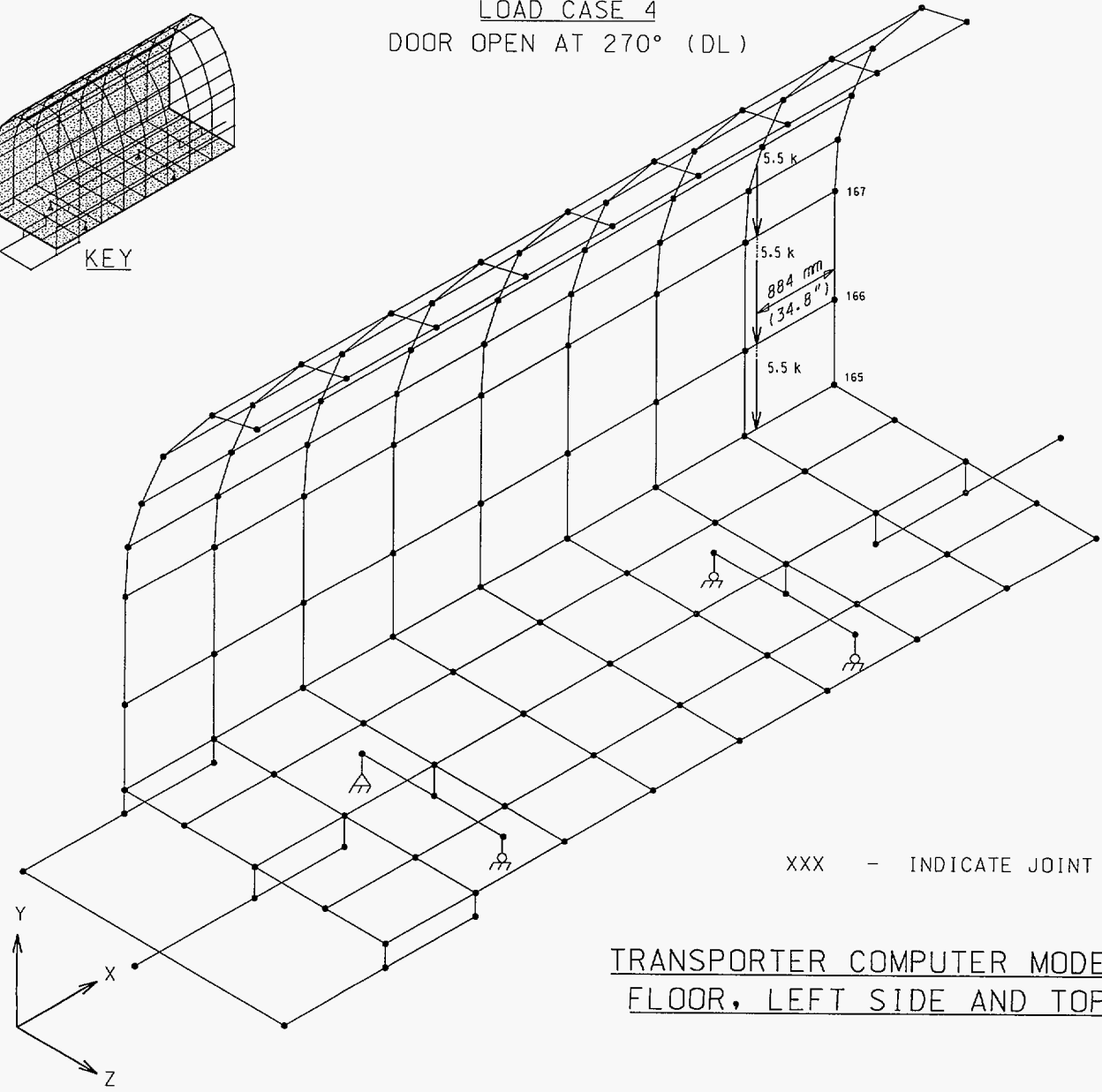
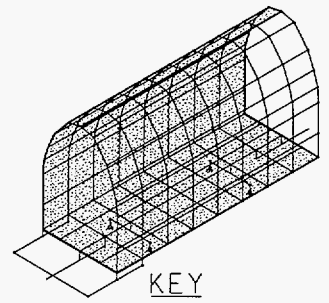


XXX - INDICATE JOINT NUMBER

TRANSPORTER COMPUTER MODEL  
RIGHT SIDE AND TOP



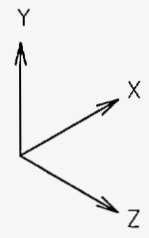
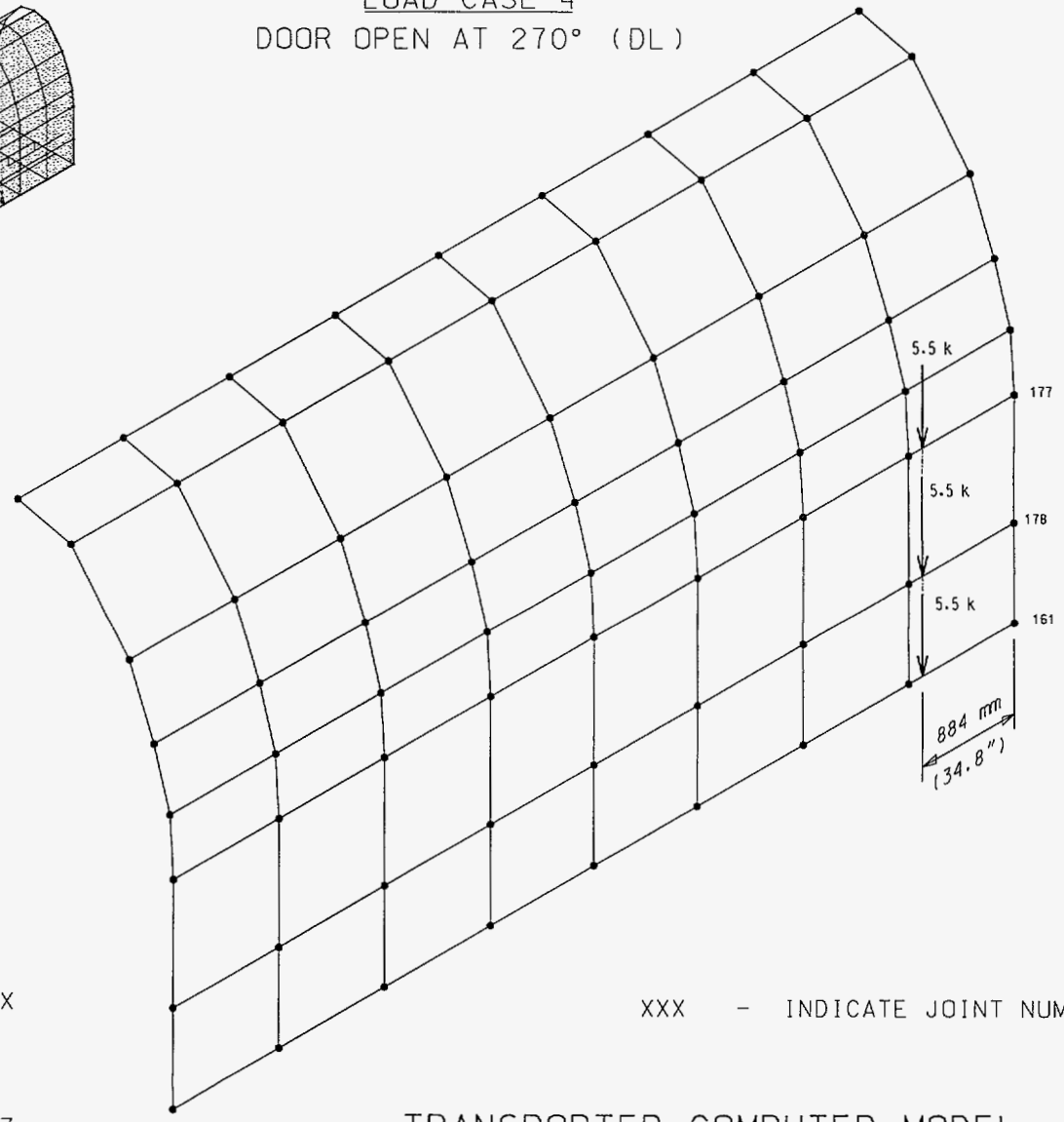
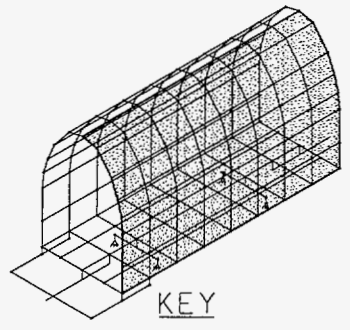
LOAD CASE 4  
DOOR OPEN AT 270° (DL)



XXX - INDICATE JOINT NUMBER

TRANSPORTER COMPUTER MODEL  
FLOOR, LEFT SIDE AND TOP

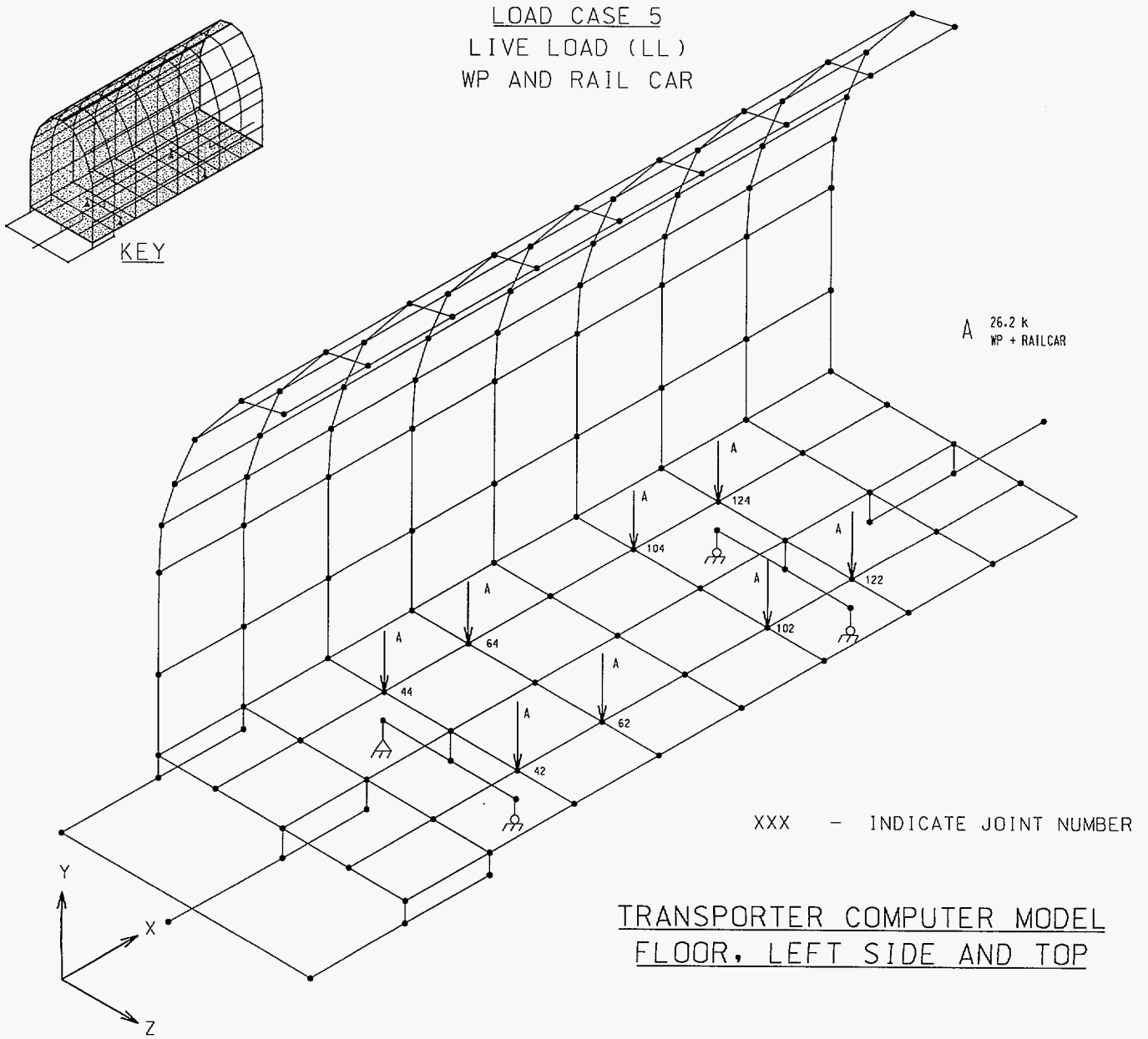
LOAD CASE 4  
DOOR OPEN AT 270° (DL)

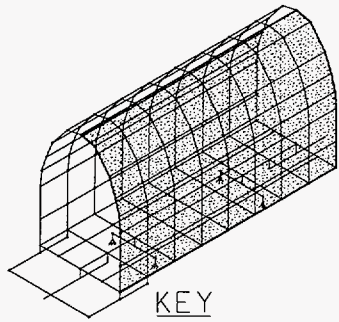


XXX - INDICATE JOINT NUMBER

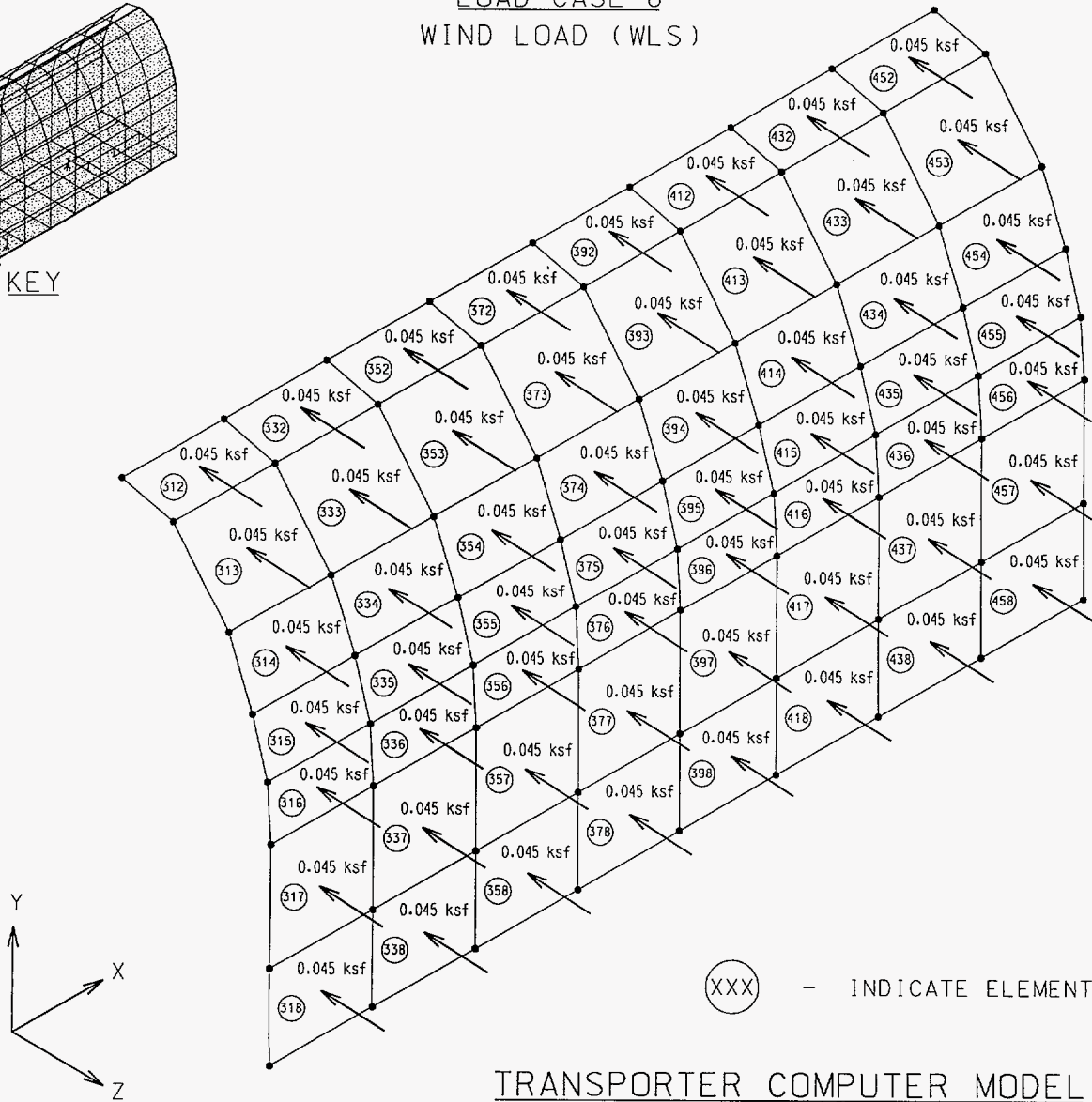
TRANSPORTER COMPUTER MODEL  
RIGHT SIDE AND TOP







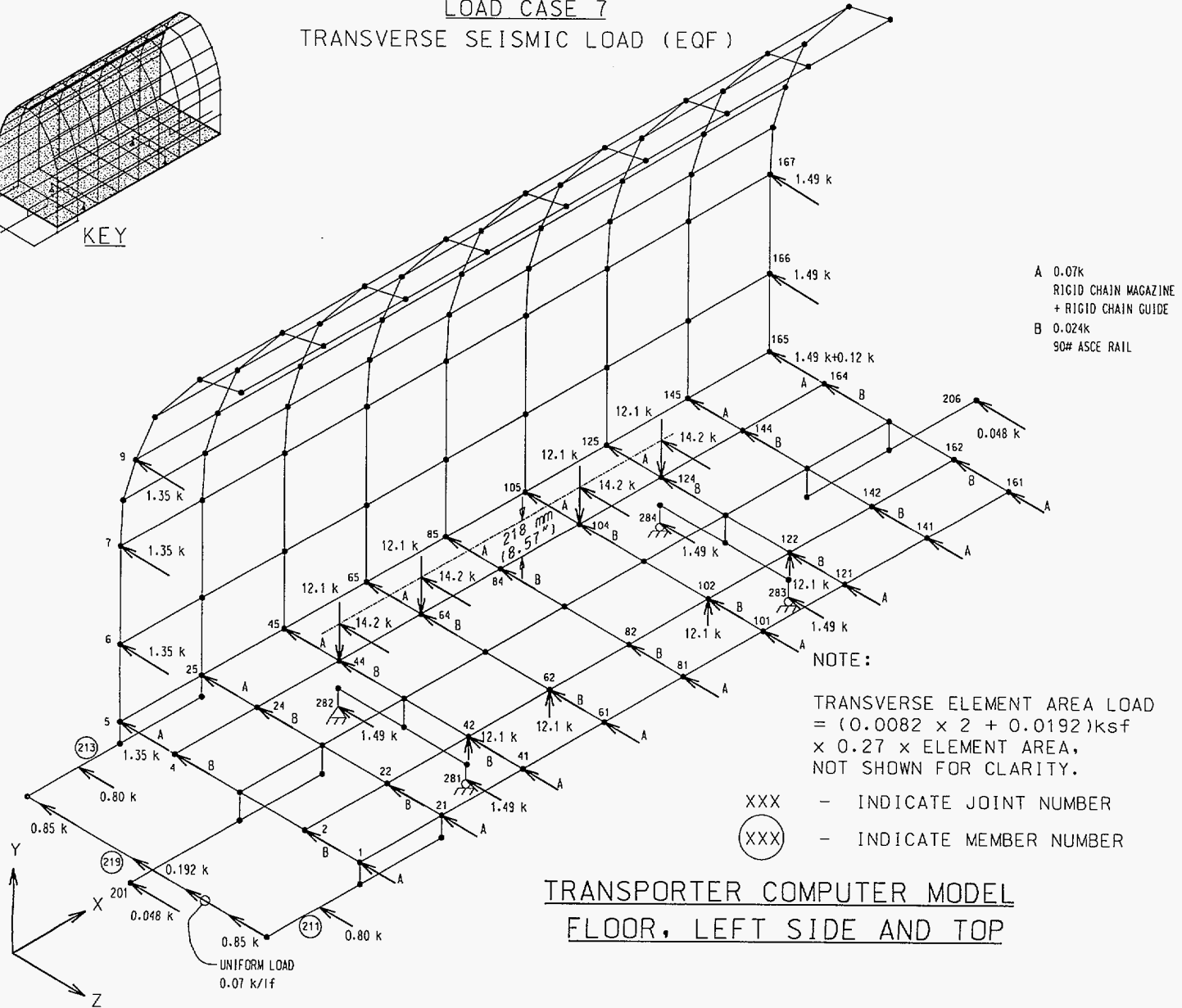
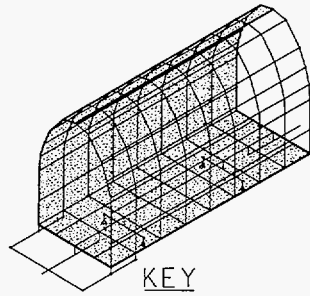
LOAD CASE 6  
WIND LOAD (WLS)

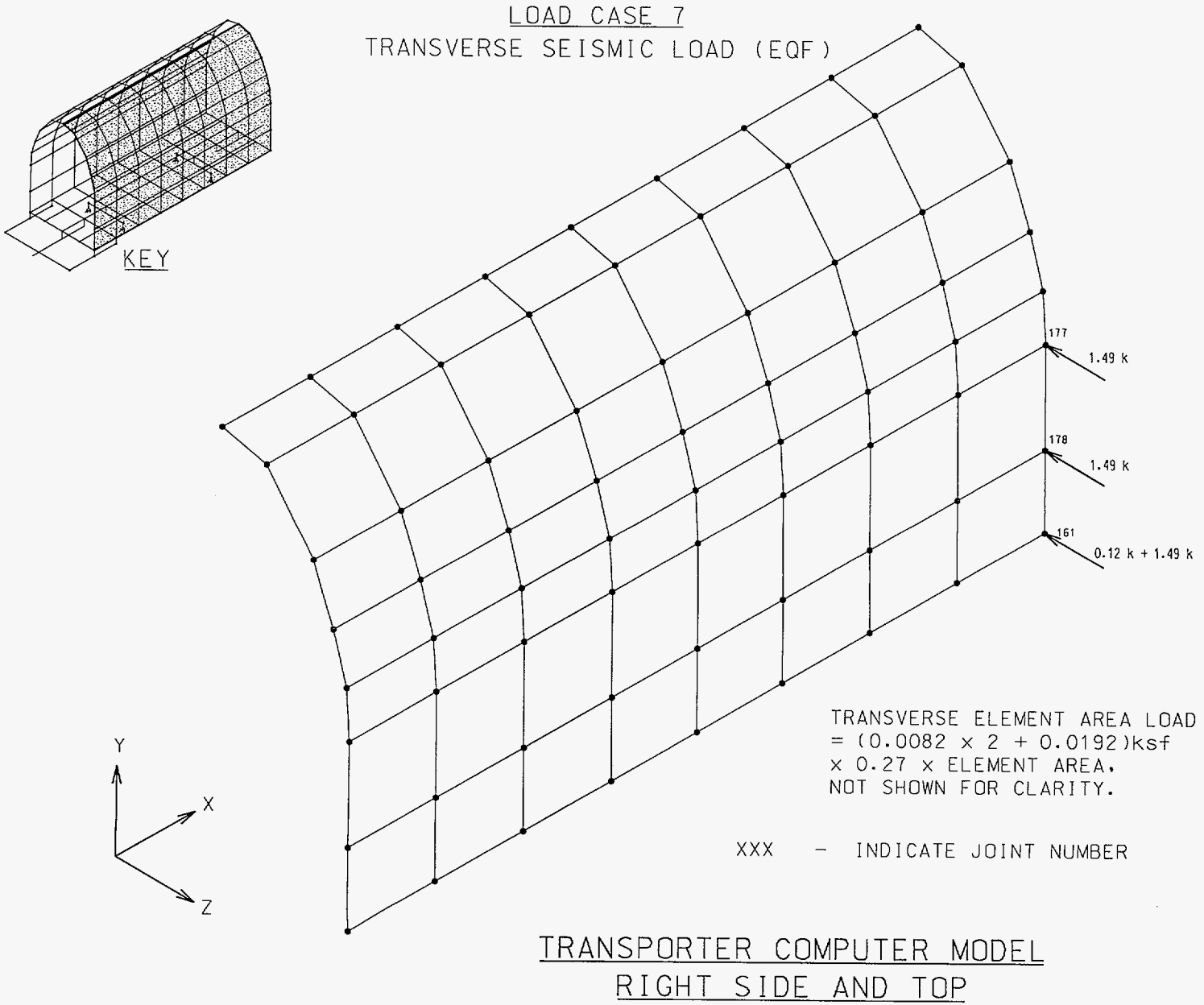


(XXX) - INDICATE ELEMENT NUMBER

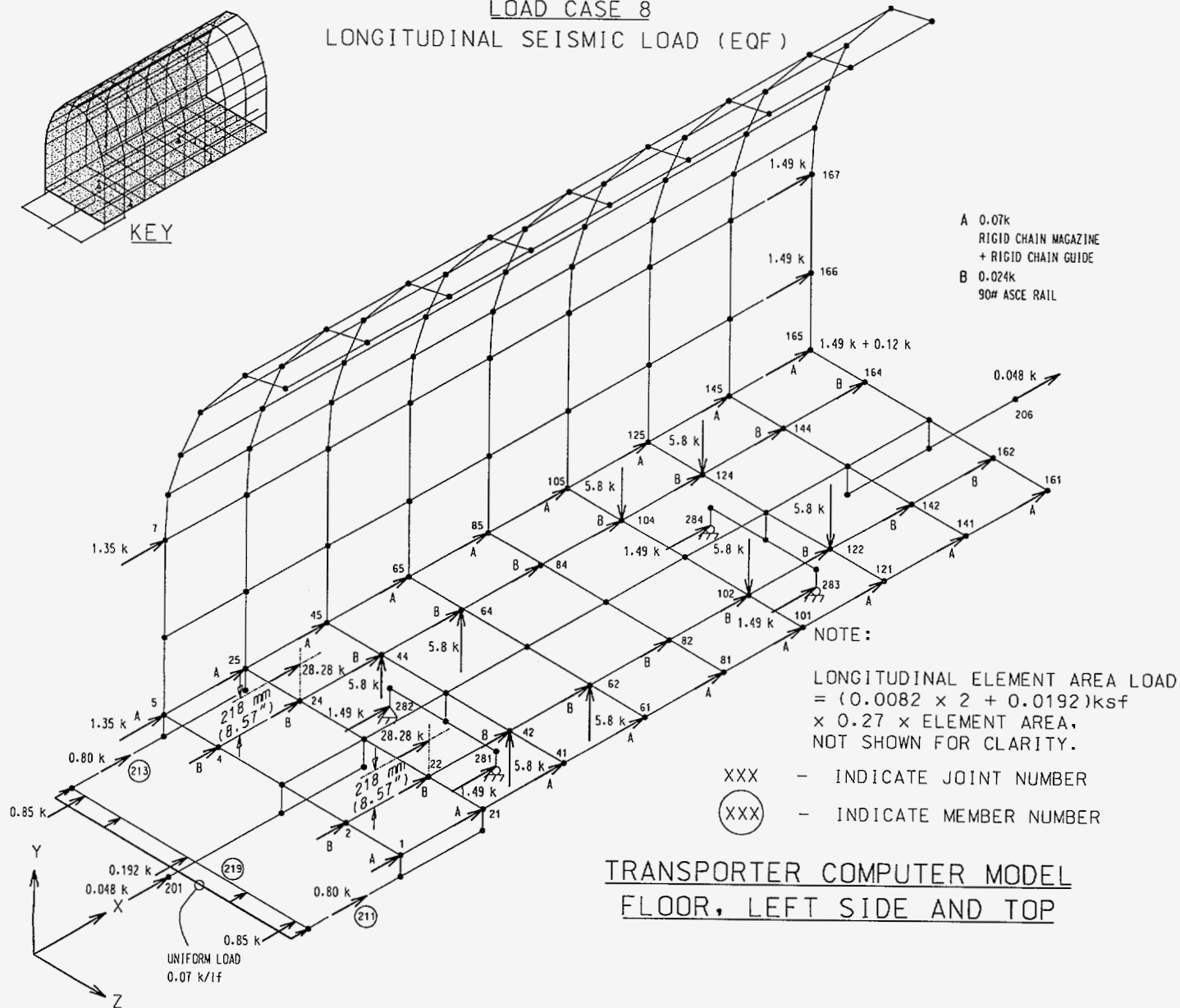
TRANSPORTER COMPUTER MODEL  
RIGHT SIDE AND TOP

LOAD CASE 7  
TRANSVERSE SEISMIC LOAD (EQF)

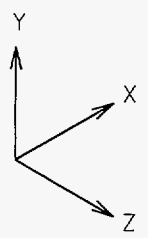
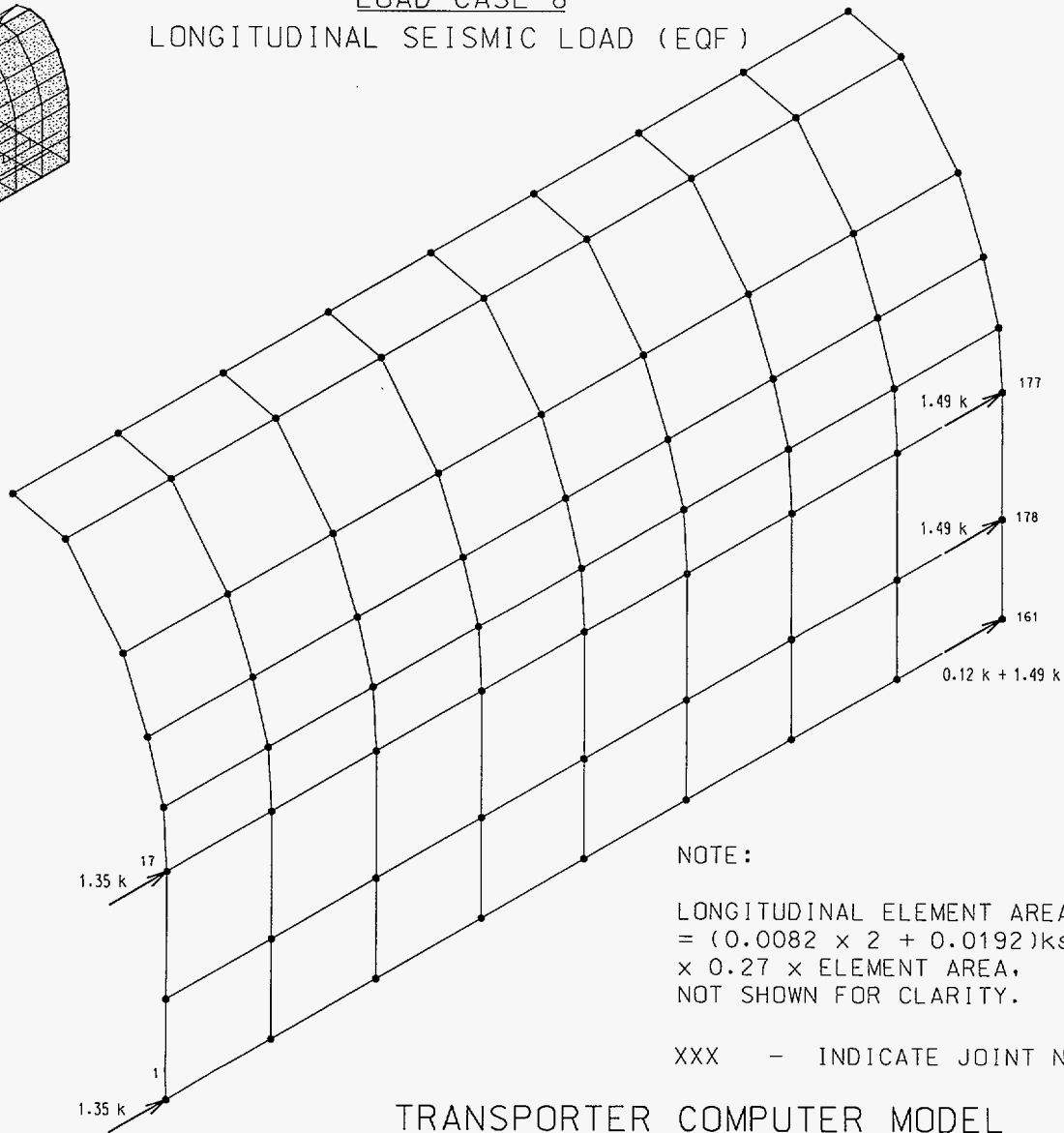
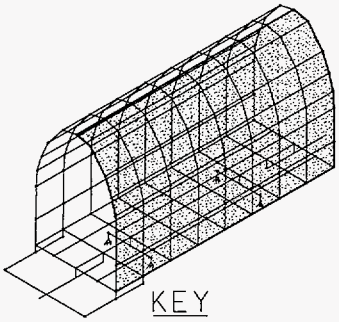




LOAD CASE 8  
LONGITUDINAL SEISMIC LOAD (EQF)



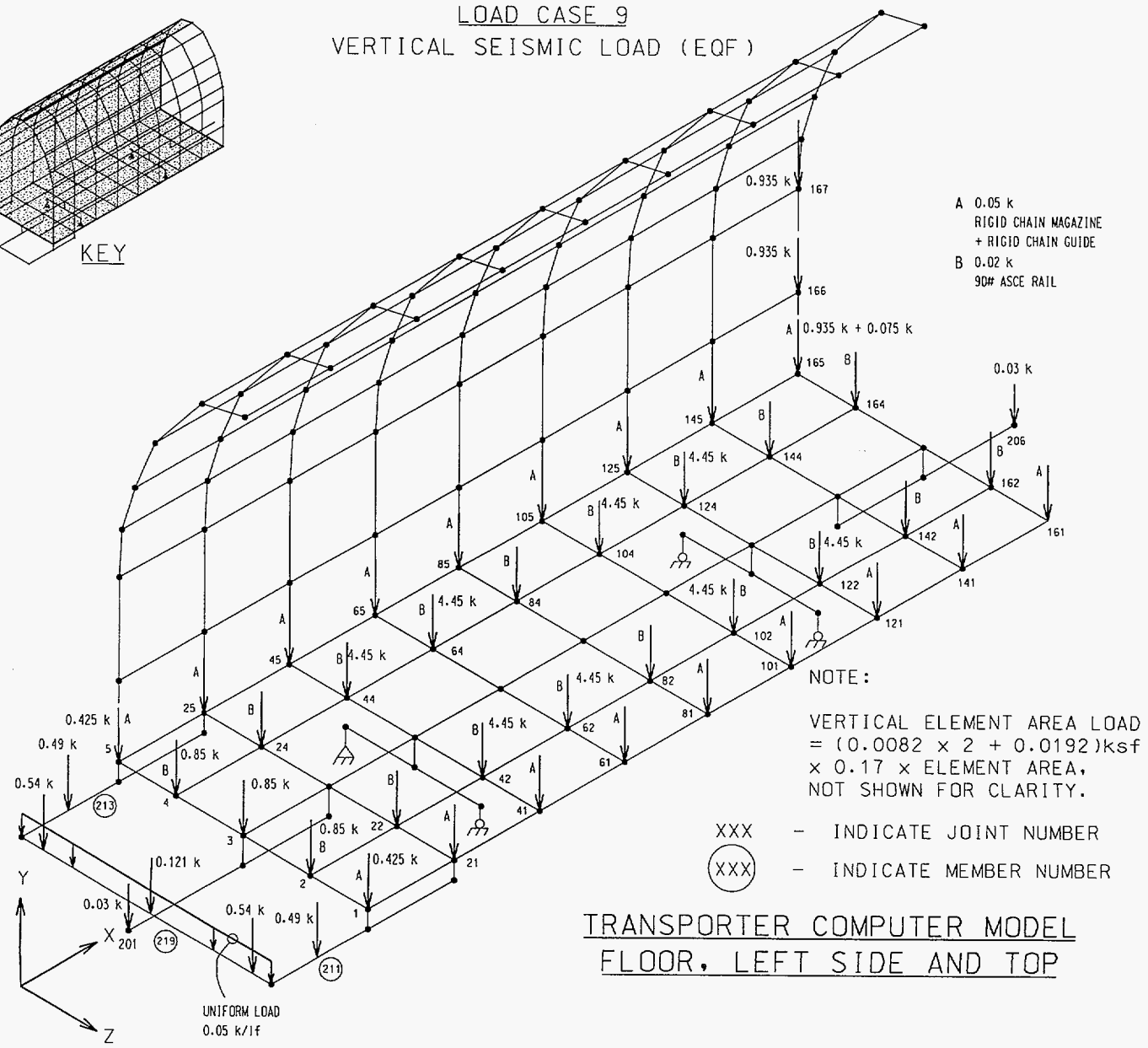
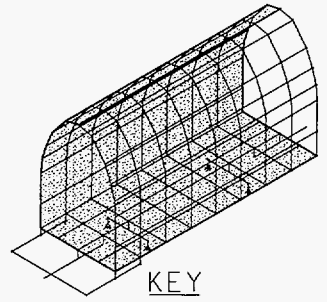
LOAD CASE 8  
LONGITUDINAL SEISMIC LOAD (EQF)



NOTE:  
LONGITUDINAL ELEMENT AREA LOAD  
=  $(0.0082 \times 2 + 0.0192)$ ksf  
 $\times 0.27 \times$  ELEMENT AREA,  
NOT SHOWN FOR CLARITY.  
XXX - INDICATE JOINT NUMBER

TRANSPORTER COMPUTER MODEL  
RIGHT SIDE AND TOP

LOAD CASE 9  
VERTICAL SEISMIC LOAD (EQF)

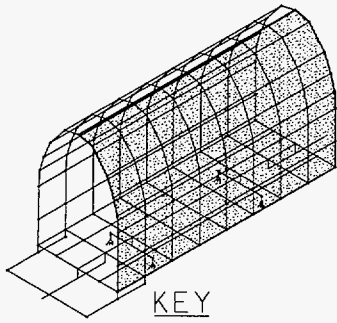


A 0.05 k  
RIGID CHAIN MAGAZINE  
+ RIGID CHAIN GUIDE  
B 0.02 k  
90# ASCE RAIL

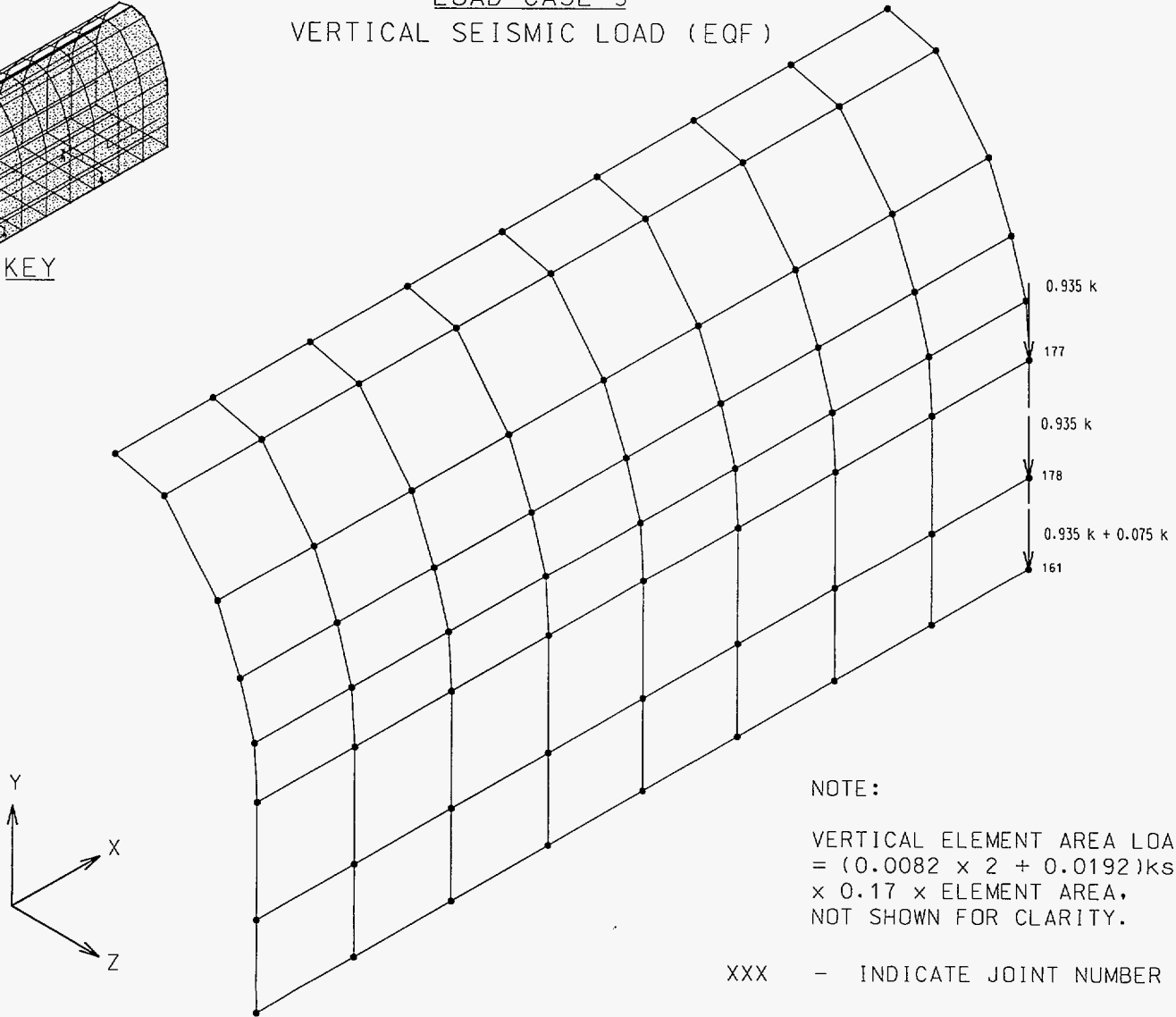
NOTE:  
VERTICAL ELEMENT AREA LOAD  
= (0.0082 x 2 + 0.0192)ksf  
x 0.17 x ELEMENT AREA,  
NOT SHOWN FOR CLARITY.

XXX - INDICATE JOINT NUMBER  
(XXX) - INDICATE MEMBER NUMBER

TRANSPORTER COMPUTER MODEL  
FLOOR, LEFT SIDE AND TOP

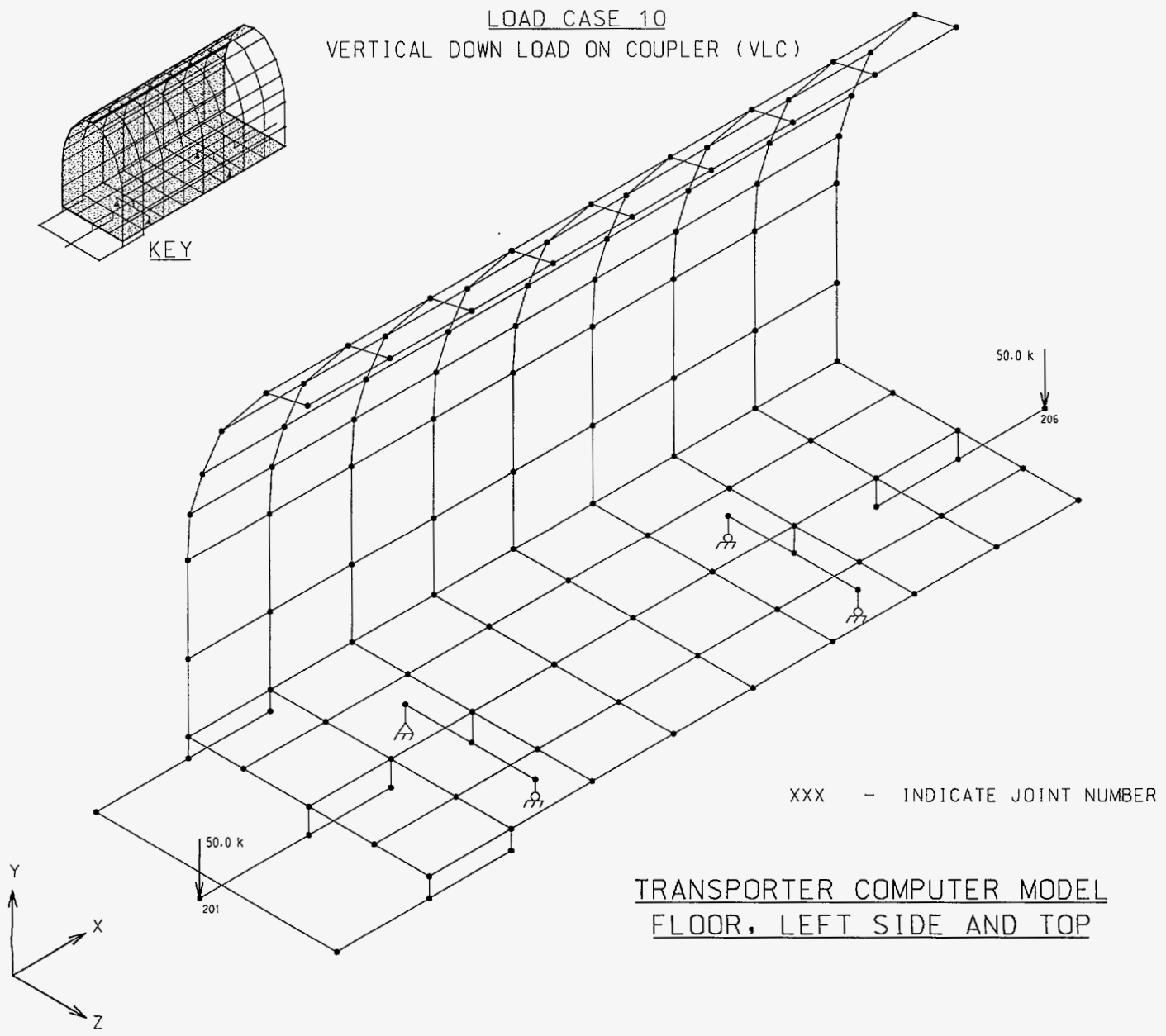


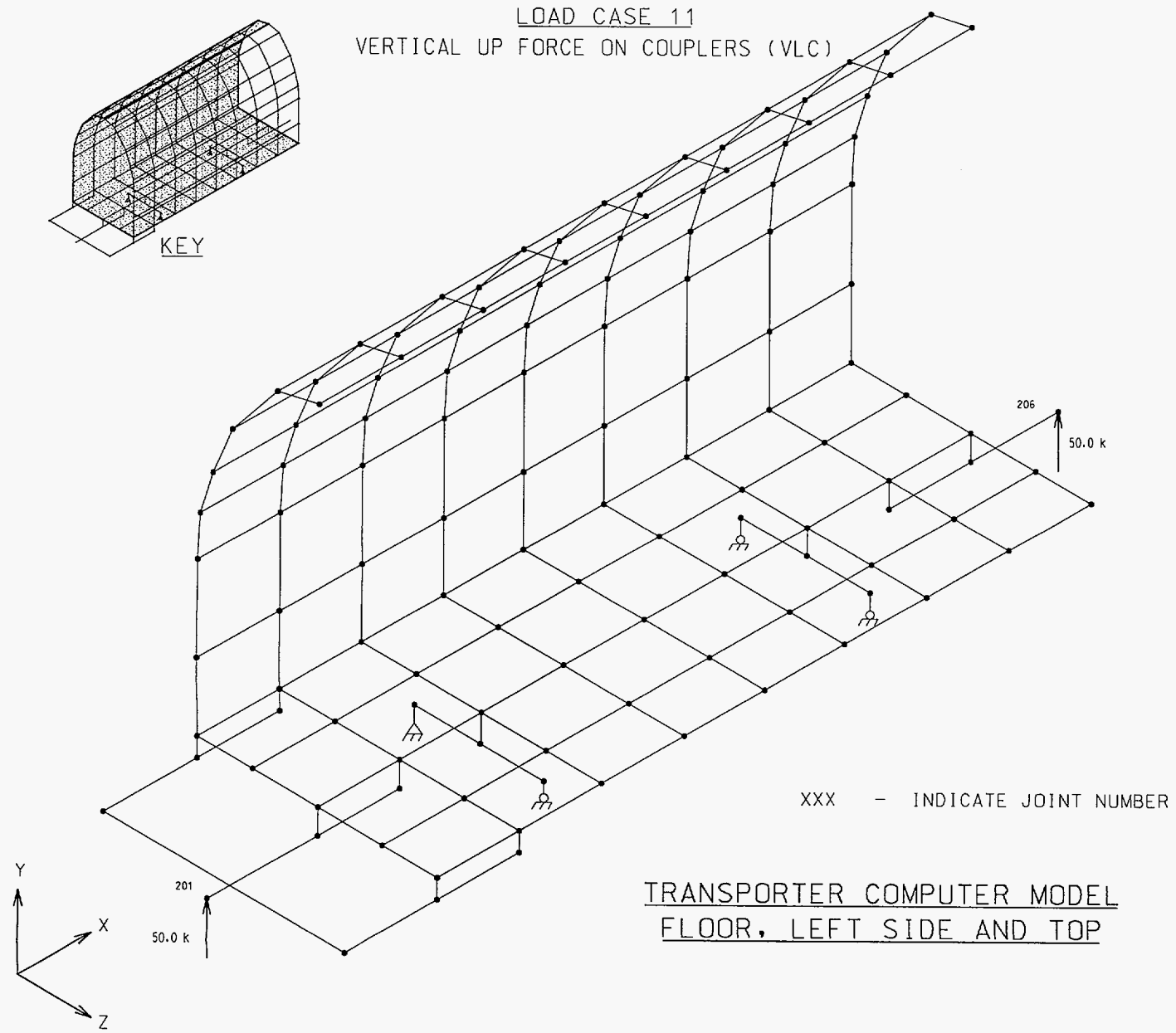
LOAD CASE 9  
VERTICAL SEISMIC LOAD (EQF)



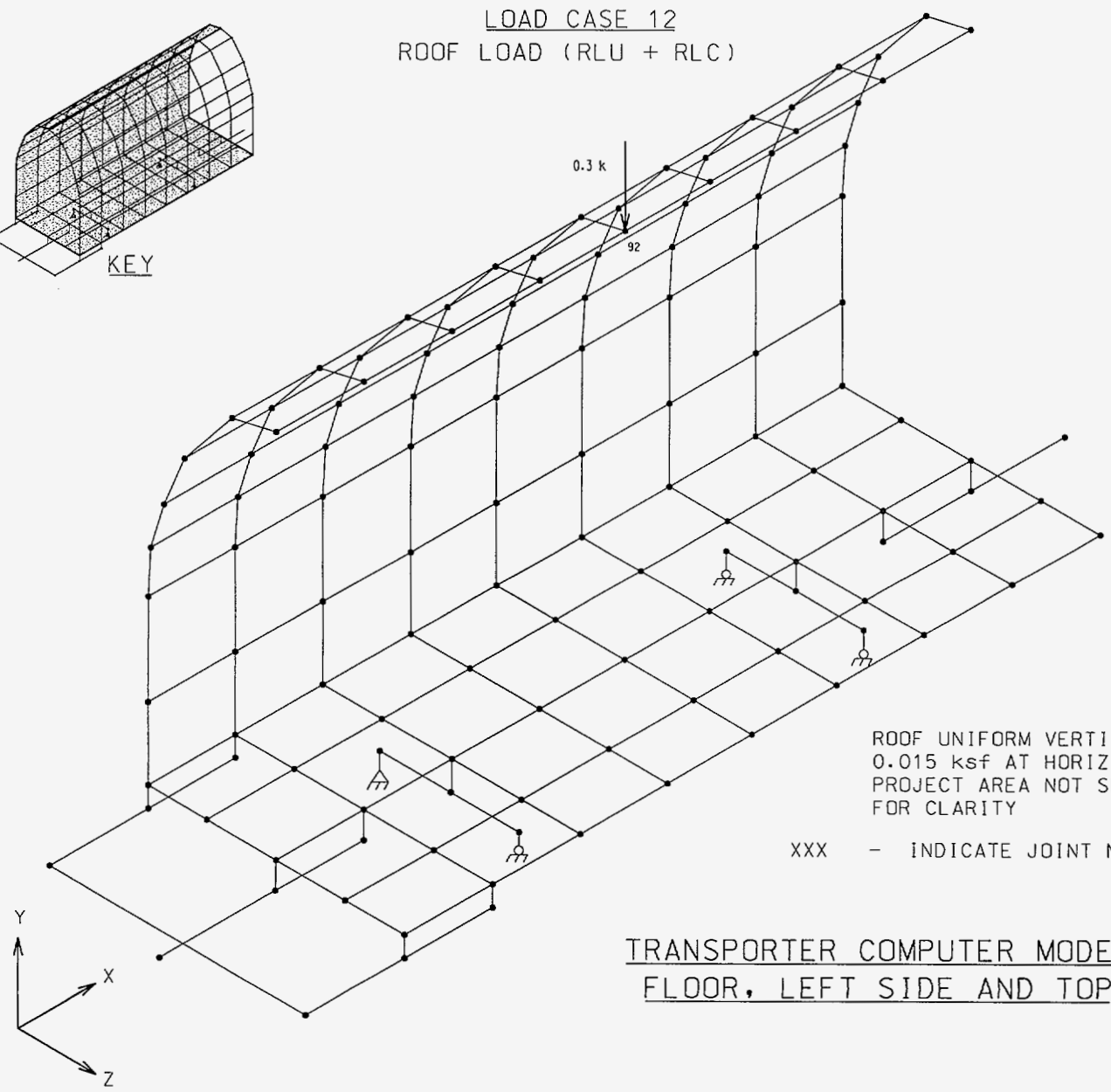
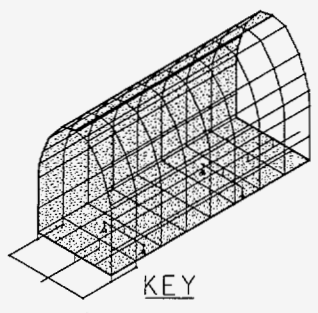
TRANSPORTER COMPUTER MODEL  
RIGHT SIDE AND TOP







LOAD CASE 12  
ROOF LOAD (RLU + RLC)

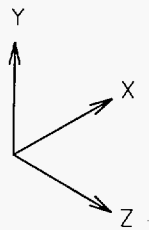
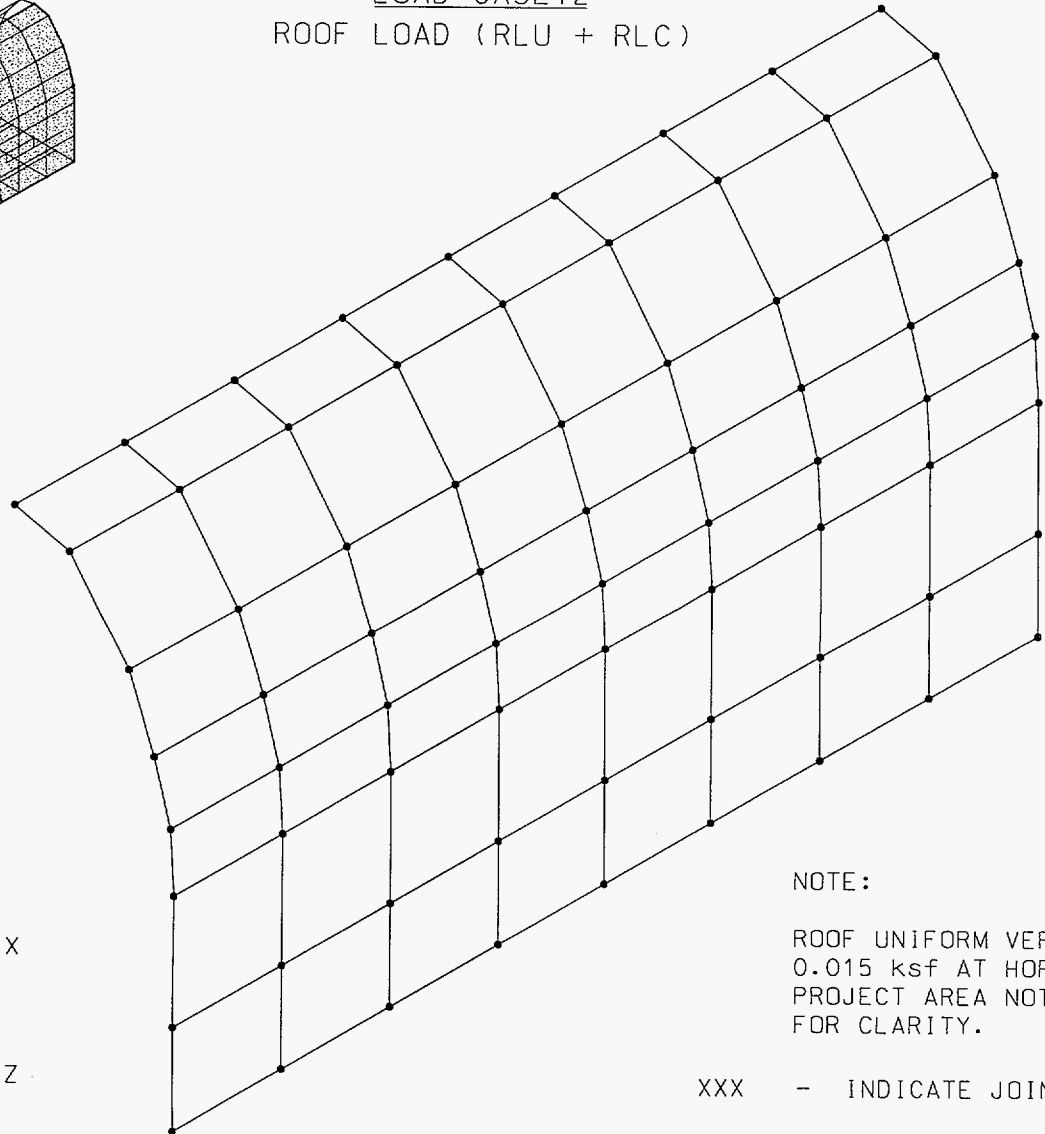
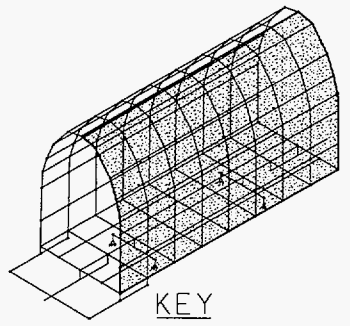


ROOF UNIFORM VERTICAL LOAD  
0.015 ksf AT HORIZONTAL  
PROJECT AREA NOT SHOWN  
FOR CLARITY

XXX - INDICATE JOINT NUMBER

TRANSPORTER COMPUTER MODEL  
FLOOR, LEFT SIDE AND TOP

LOAD CASE 12  
ROOF LOAD (RLU + RLC)

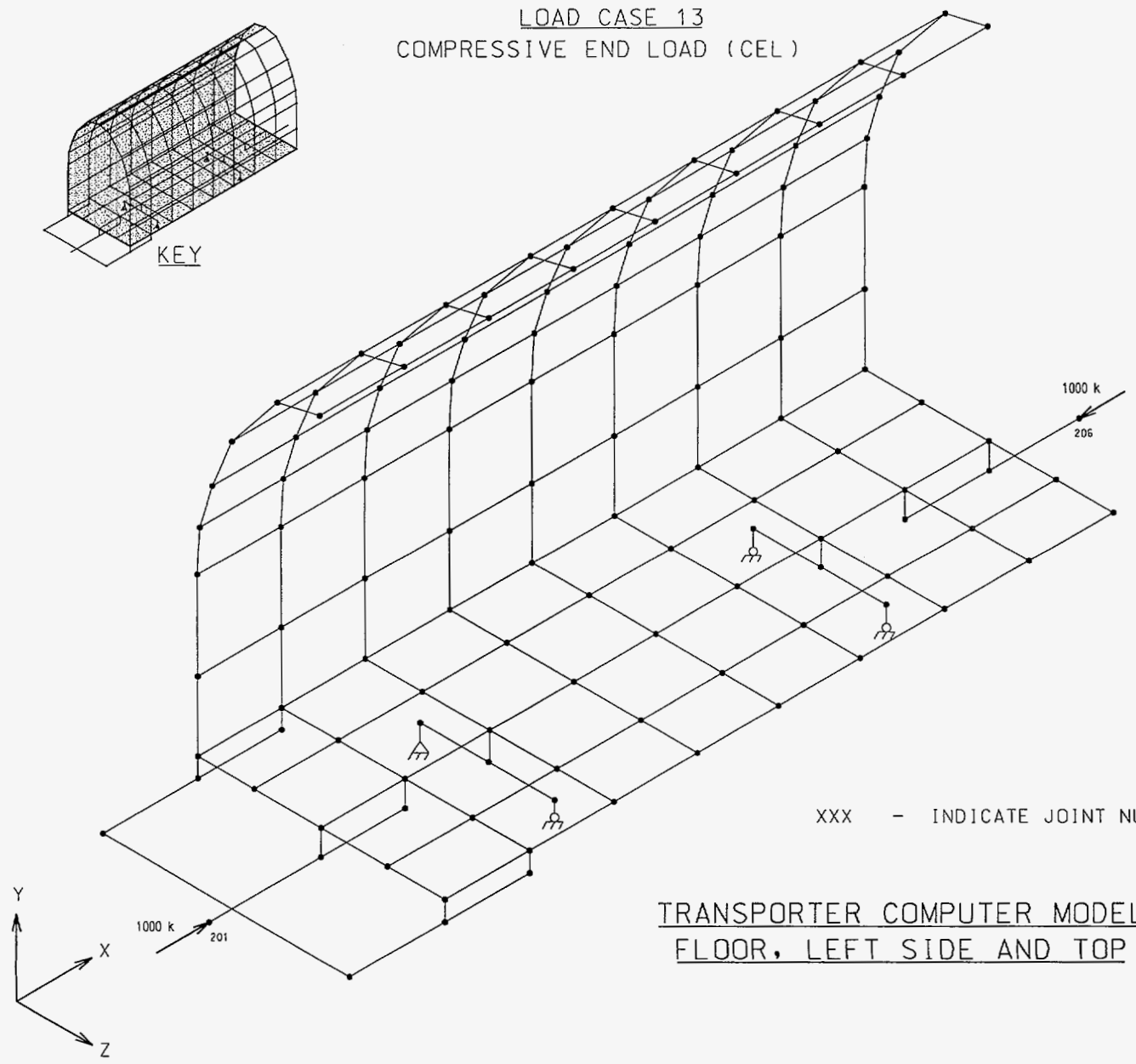
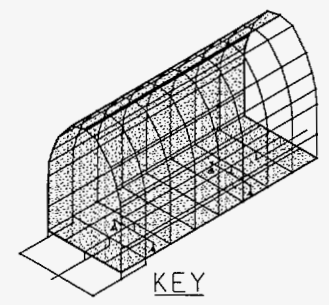


NOTE:  
ROOF UNIFORM VERTICAL LOAD  
0.015 ksf AT HORIZONTAL  
PROJECT AREA NOT SHOWN  
FOR CLARITY.

XXX - INDICATE JOINT NUMBER

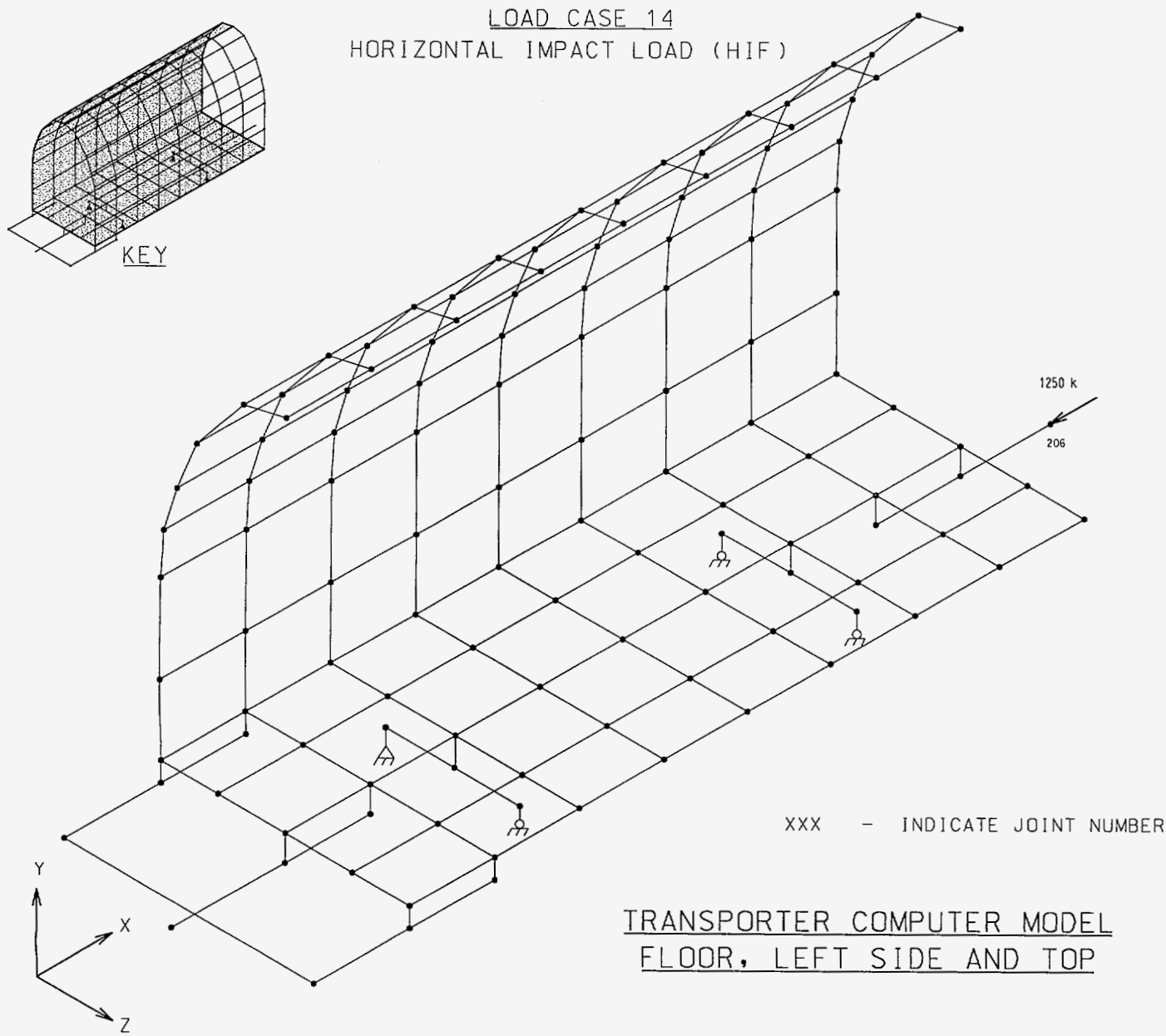
TRANSPORTER COMPUTER MODEL  
RIGHT SIDE AND TOP

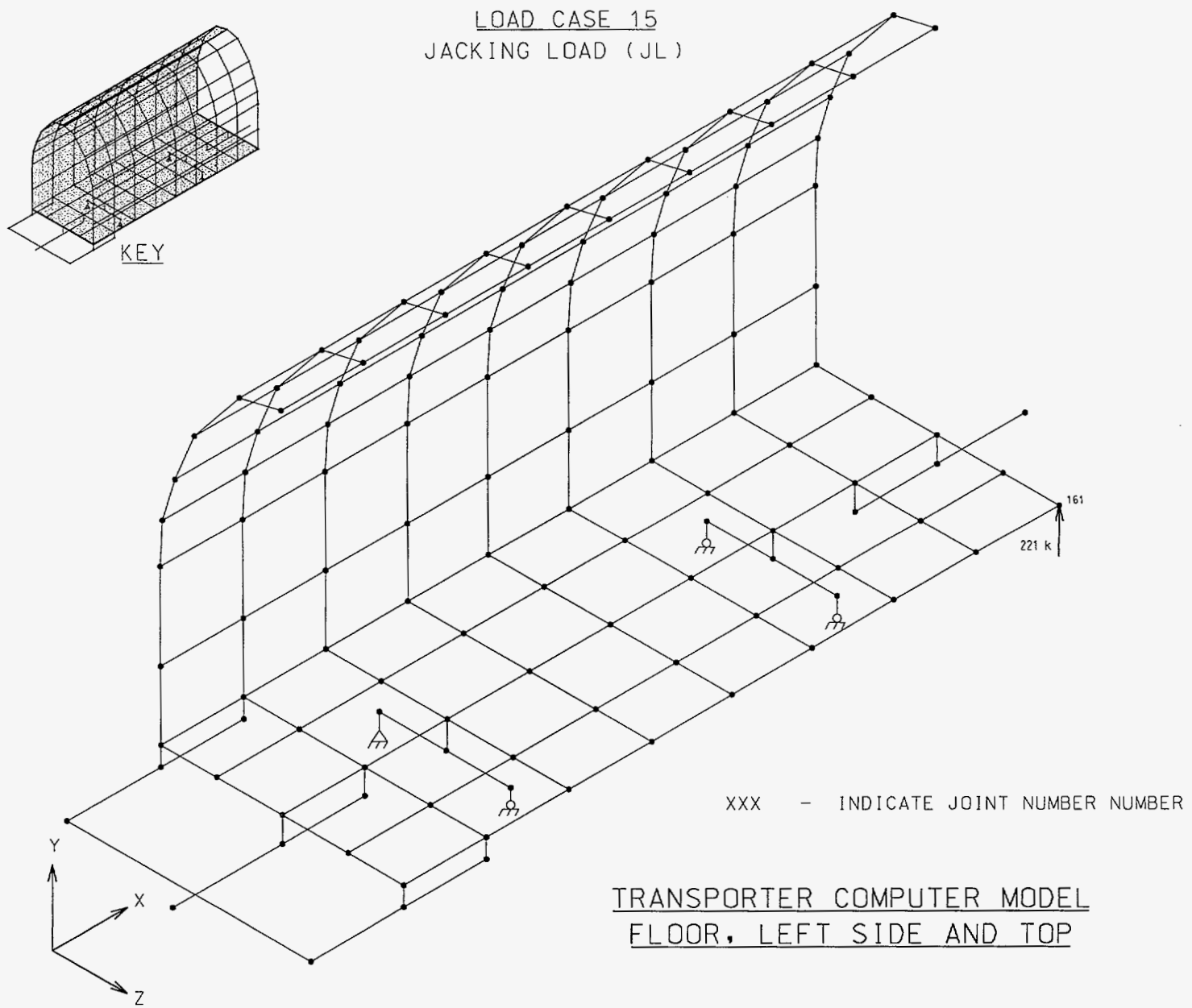
LOAD CASE 13  
COMPRESSIVE END LOAD (CEL)



XXX - INDICATE JOINT NUMBER

TRANSPORTER COMPUTER MODEL  
FLOOR, LEFT SIDE AND TOP





**10.0 STABILITY ANALYSIS**

The application of the equivalent static design method has resulted in structures, in general, having performed well with regard to overall stability because:

- Some lateral force resisting systems such as the transporter are subject to rocking on their base.
- The resulting displacements may not approach an incipient overturning condition.
- The maximum displacement is limited by the short time interval between load reversals.

For purposes of this stability analysis, the equivalent static design method is used and the design base shear is considered to be fully resisted by the inside flanges of the transporter wheels.

**10.1 Transporter Self-weight**

Support reactions from STAAD III output file " TRANSPTR.ANL". (Attachment I, Section 11.0)

transporter self-weight with trucks		at top of rail
Support joint	Load case 1 Dead Load (kips)	MT
281	87.73	
282	87.69	
283	81.08	
284	81.05	
Total =	337.55	153.1
transporter selfweight without trucks		at top of trucks
153.1 MT	- 11 kips X 2 / 2.205 =	143.1 MT

Transporter Self-weight 153.1 MT (337.55 kips), which is less than estimated transporter weight = 155 MT (342 kips), (Attachment I, Section 1.1)

Rail car self-weight = 10 MT, (Attachment I, Section 1.2)

WP self-weight = 85 MT, (Attachment I, Section 1.2)



**10.2 Calculate Center of Gravity for Transporter, Rail Car and WP Above Top of Rail (Figure I-3)**

- Center gravity of transporter above the top of rail

Center gravity of transporter = 83.58 inches, See TRANSPTR.ANL

add 3 % to center gravity dimension to account for miscellaneous materials and equipment which is small percentage weight of total selfweight of the transporter to be conservative.

Use center gravity of Transporter = 83.58 X 1.03 = 86.09 inches; round to 86.10 inches

- Center gravity of rail car = 1280 mm + 520 mm = 1800 mm (70.87 inches), (Attachment I, Figure I-3; Attachment I, Figure I-3, Ref. 5.9)
- Center gravity of WP = 1280 mm + 1380 mm = 2660 mm (104.72 inches), (Attachment I, Figure I-3; Attachment I, Figure I-3, Ref. 5.9)
- Center gravity of transporter, rail car and WP on the top of truck

items	Center gravity to top of rail inches )				Center gravity to top of truck (inches)
Transporter	86.10	-	27.6	=	58.50
Rail Car	70.87	-	27.6	=	43.27
WP	104.72	-	27.6	=	77.12

**10.3 Transporter Stability - Normal Operating Condition**

Vertical gravity center of transporter including rail car and WP above top of rail:

top of the rail				moment arm		Mot
Items	self-weight (MT)		klps/MT	inches		klps/inches
Transporter	153.1	X	2.205	X	86.10	= 29066
Rail Car	10	X	2.205	X	70.87	= 1563
WP	85	X	2.205	X	104.72	= 19627
total	248.1					50256

Total weight = 248.1 MT X 2.205 = 547.1 klps

Vertical gravity center at top of rail = 50256 / 547.1 = 91.9 inch < 98 inch, (Attachment I, Section 5.2), OK

## 10.4 Transporter Stability - Extraordinary Loading Condition

### 1. Transporter stability: wind load (transverse)

#### A. Transporter wind load from transverse direction

Wind pressure = 45 psf (Attachment I, Section 8.0)

Length of Transporter = 9470 mm (31.1 ft), conservative

Height of Transporter = 4070 mm (13.4 ft), conservative

Wind force = 31.1 ft X 13.4 ft X 0.045 ksf = 18.8 kips

Center of wind force to top of rail = 13.4 ft/2 X 12 = 80.4 in.

Overturning moment by wind = 18.8 X 80.4 = 1512 kips - inches

#### B. Transporter stability at top of rail with wind load from transverse direction (without weight of rail car and WP)

Transporter resistance arm at top of rail = 59.2 / 2 = 29.6 inches  
(Attachment I, Figure I-3)

Transporter resistance moment at top of rail = 153.1 X 2.205 X 29.6 =  
9993 kips - inches

Safety factor = 9993 / 1512 = 6.6 > 1.1 (Attachment I, Section 5.1), OK

#### C. Transporter stability at top of truck with wind load from transverse direction (without weight of rail car and WP)

Transporter resistance arm at top of rail = 25.0 inches (Attachment I,  
Figure I-3)

Transporter resistance moment at top of truck = 143.1 X 2.205 X 25.0 =  
7888 kips - inches

Safety factor = 7888 / 1512 (conservative) = 5.2 > 1.1 (Attachment I,  
Section 5.1), OK

#### D. Transporter stability with wind load from longitudinal direction

Overturning safety factors (longitudinal direction) at top of truck and top of rail by inspection are OK, because wind force is much smaller and because longitudinal supports (truck spacing) provides longer moment arm than transverse supports (space between truck pads and between rails), which creates a larger resisting moment.

2. Transporter stability: seismic load (horizontal acceleration = 0.27 g)

A. Transporter stability at top of rail with seismic load in transverse direction

Overturning moment, Mot at top of rail:

top of the rail								
Items	Self-weight (MT)		klps/MT			inches		klps/inches
Transporter	153.1	X	2.205	X	0.27	X	86.10	= 7848
Rail Car	10	X	2.205	X	0.27	X	70.87	= 422
WP	85	X	2.205	X	0.27	X	104.72	= 5299
					total		Mot	= 13569

Transporter resistance arm at top of rail = 59.2 / 2 = 29.6 inches  
(Attachment I, Figure I-3)

Transporter resistance moment, Mr at top of rail:

$$Mr = (153.1 + 10 + 85) \times 2.205 \times 29.6 = 16193 \text{ klps} \cdot \text{inches}$$

Overturning safety factor in transverse direction at top of rail = Mr / Mot

$$= 16193 / 13569 = 1.19 > 1.1 \quad (\text{Attachment I, Section 5.1}), \text{ OK}$$

B. Transporter stability at top of truck with seismic load in transverse direction

Overturning moment, Mot at top of truck:

Items	Self-weight (MT)		klps/MT			inches		klps/inches
Transporter without trucks	143.1	X	2.205	X	0.27	X	58.5	= 4984
Rail car	10	X	2.205	X	0.27	X	43.27	= 258
WP	85	X	2.205	X	0.27	X	77.12	= 3903
					total			9145

Transporter resistance arm at top of truck = 25.0 inches (Attachment I, Figure I-3)

Transporter resistance moment, Mr at top of truck:

$$Mr = (143.1 + 10 + 85) \times 2.205 \times 25.0 = 13125 \text{ klps} \cdot \text{inches}$$

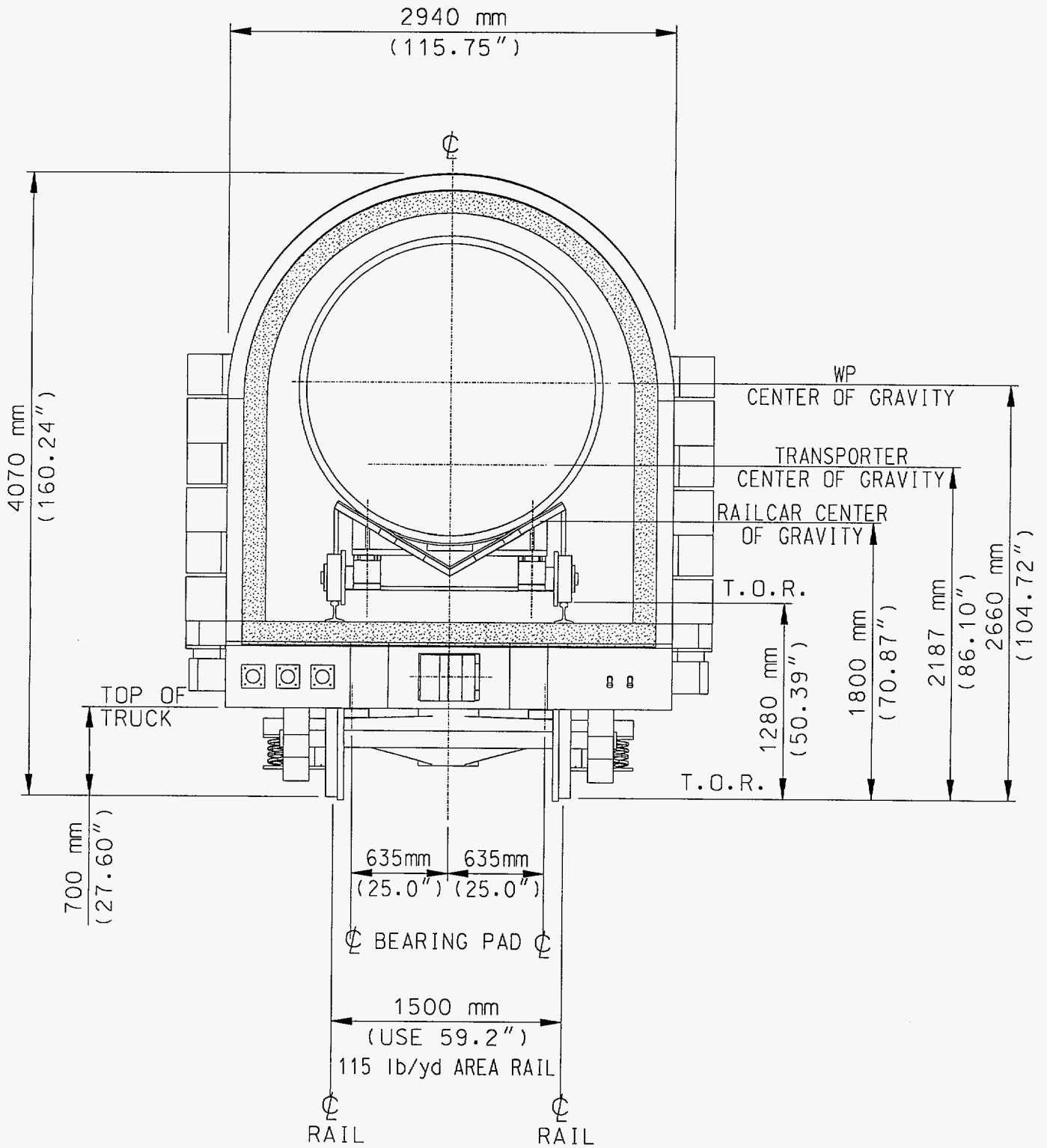
Overturning safety factor in transverse direction at top of truck = Mr / Mot

$$= 13125 / 9145 = 1.4 > 1.1 \quad (\text{Attachment I, Section 5.1}), \text{ OK}$$

C. Transporter stability with seismic loading in longitudinal direction:

Overturning safety factors (longitudinal direction) at top of truck and top of rail by inspection are OK, because longitudinal supports (truck spacing) provides longer moment arm than transverse supports (space between truck pads and between rails), which create a larger resisting moment.

Figure I-3 Waste Package Transporter



## 11.0 STAAD-III ANALYSIS

11.1 STAAD-III analysis portion of this attachment comprises:

STAAD-III Input File: TRANSPTR.STD

STAAD-III Output File: TRANSPTR.ANL

Summary of Maximum Stress of Transporter Elements

11.2 The jacking load (JL) in load combinations 106 and 107 causes an overstress condition of the transporter elements =  $\left(1 - \frac{23.09}{18.0} \text{ ksi}\right) = 28$  percent, based on the jacking load location selected in this analysis. To mitigate this overstress, alternate and/or multiple points of jacking may be required.

staad space Preliminary Design of Transporter

\* DI: BCAF00000-01717-0200-00007

\* Attachment I

set nl 20

page length 72

unit kip inch

joint coordinates

```

1 41.34 41.82 50.68; 2 41.34 41.82 29.66; 3 41.34 41.82 0.0
4 41.34 41.82 -29.66; 5 41.34 41.82 -50.68; 6 41.34 72.09 -50.68
7 41.34 102.36 -50.68; 8 41.34 118.02 -48.20; 9 41.34 132.15 -41.0
10 41.34 143.36 -29.79;11 41.34 150.56 -15.66;12 41.34 153.04 0.0
13 41.34 150.56 15.66;14 41.34 143.36 29.79;15 41.34 132.15 41.0
16 41.34 118.02 48.20;17 41.34 102.36 50.68;18 41.34 72.09 50.68
21 77.95 41.82 50.68;22 77.95 41.82 29.66;23 77.95 41.82 0.0
24 77.95 41.82 -29.66;25 77.95 41.82 -50.68;26 77.95 72.09 -50.68
27 77.95 102.36 -50.68;28 77.95 118.02 -48.20;29 77.95 132.15 -41.0
30 77.95 143.36 -29.79;31 77.95 150.56 -15.66;32 77.95 153.04 0.0
33 77.95 150.56 15.66;34 77.95 143.36 29.79;35 77.95 132.15 41.0
36 77.95 118.02 48.20;37 77.95 102.36 50.68;38 77.95 72.09 50.68
41 114.57 41.82 50.68;42 114.57 41.82 29.66;43 114.57 41.82 0.0
44 114.57 41.82 -29.66;45 114.57 41.82 -50.68;46 114.57 72.09 -50.68
47 114.57 102.36 -50.68;48 114.57 118.02 -48.20;49 114.57 132.15 -41.0
50 114.57 143.36 -29.79;51 114.57 150.56 -15.66;52 114.57 153.04 0.0
53 114.57 150.56 15.66;54 114.57 143.36 29.79;55 114.57 132.15 41.0
56 114.57 118.02 48.20;57 114.57 102.36 50.68;58 114.57 72.09 50.68
61 150.59 41.82 50.68;62 150.59 41.82 29.66;63 150.59 41.82 0.0
64 150.59 41.82 -29.66;65 150.59 41.82 -50.68;66 150.59 72.09 -50.68
67 150.59 102.36 -50.68;68 150.59 118.02 -48.20;69 150.59 132.15 -41.0
70 150.59 143.36 -29.79;71 150.59 150.56 -15.66;72 150.59 153.04 0.0
73 150.59 150.56 15.66;74 150.59 143.36 29.79;75 150.59 132.15 41.0
76 150.59 118.02 48.20;77 150.59 102.36 50.68;78 150.59 72.09 50.68
81 186.42 41.82 50.68;82 186.42 41.82 29.66;83 186.42 41.82 0.0
84 186.42 41.82 -29.66;85 186.42 41.82 -50.68;86 186.42 72.09 -50.68
87 186.42 102.36 -50.68;88 186.42 118.02 -48.20;89 186.42 132.15 -41.0
90 186.42 143.36 -29.79;91 186.42 150.56 -15.66;92 186.42 153.04 0.0
93 186.42 150.56 15.66;94 186.42 143.36 29.79;95 186.42 132.15 41.0
96 186.42 118.02 48.20;97 186.42 102.36 50.68;98 186.42 72.09 50.68
101 222.25 41.82 50.68;102 222.25 41.82 29.66
103 222.25 41.82 0.0 ;104 222.25 41.82 -29.66
105 222.25 41.82 -50.68;106 222.25 72.09 -50.68
107 222.25 102.36 -50.68;108 222.25 118.02 -48.20
109 222.25 132.15 -41.0 ;110 222.25 143.36 -29.79
111 222.25 150.56 -15.66;112 222.25 153.04 0.0
113 222.25 150.56 15.66;114 222.25 143.36 29.79
115 222.25 132.15 41.0 ;116 222.25 118.02 48.20
117 222.25 102.36 50.68;118 222.25 72.09 50.68
121 258.27 41.82 50.68;122 258.27 41.82 29.66
123 258.27 41.82 0.0 ;124 258.27 41.82 -29.66
125 258.27 41.82 -50.68;126 258.27 72.09 -50.68
127 258.27 102.36 -50.68;128 258.27 118.02 -48.20
129 258.27 132.15 -41.0 ;130 258.27 143.36 -29.79
131 258.27 150.56 -15.66;132 258.27 153.04 0.0
133 258.27 150.56 15.66;134 258.27 143.36 29.79
135 258.27 132.15 41.0 ;136 258.27 118.02 48.20
137 258.27 102.36 50.68;138 258.27 72.09 50.68
141 294.89 41.82 50.68;142 294.89 41.82 29.66
143 294.89 41.82 0.0 ;144 294.89 41.82 -29.66
145 294.89 41.82 -50.68;146 294.89 72.09 -50.68
147 294.89 102.36 -50.68;148 294.89 118.02 -48.20
149 294.89 132.15 -41.0 ;150 294.89 143.36 -29.79
151 294.89 150.56 -15.66;152 294.89 153.04 0.0
153 294.89 150.56 15.66;154 294.89 143.36 29.79
155 294.89 132.15 41.0 ;156 294.89 118.02 48.20
157 294.89 102.36 50.68;158 294.89 72.09 50.68
161 331.50 41.82 50.68;162 331.50 41.82 29.66

```

```

163 331.50 41.82 0.0 ;164 331.50 41.82 -29.66
165 331.50 41.82 -50.68;166 331.50 72.09 -50.68
167 331.50 102.36 -50.68;168 331.50 118.02 -48.20
169 331.50 132.15 -41.0 ;170 331.50 143.36 -29.79
171 331.50 150.56 -15.66;172 331.50 153.04 0.0
173 331.50 150.56 15.66;174 331.50 143.36 29.79
175 331.50 132.15 41.0 ;176 331.50 118.02 48.20
177 331.50 102.36 50.68;178 331.50 72.09 50.68
201 0.0 31.1 0.0 ;202 41.34 31.1 0.0
203 77.95 31.1 0.0 ;204 294.89 31.1 0.0
205 331.5 31.1 0.0 ;206 372.84 31.1 0.0
211 2.40 29.33 50.68;212 41.34 29.33 50.68
213 77.95 29.33 50.68;214 2.40 29.33 -50.68
215 41.34 29.33 -50.68;216 77.95 29.33 -50.68
251 114.57 38.82 25.0 ;252 114.57 38.82 0.0
253 114.57 38.82 -25.0
261 258.27 38.82 25.0 ;262 258.27 38.82 0.0
263 258.27 38.82 -25.0
281 114.57 27.56 25.0 ;282 114.57 27.56 -25.0
283 258.27 27.56 25.0 ;284 258.27 27.56 -25.0

```

## member incidences

```

201 201 202 202;203 204 205 204
205 202 3;206 203 23;207 204 143;208 205 163
211 211 212 212;213 214 215 214;215 212 1;216 213 21
217 215 5;218 216 25;219 211 214
251 251 252 252;261 261 262 262
271 252 43;272 262 123
281 251 281;282 253 282;283 261 283;284 263 284

```

## element incidences

```

301 1 21 22 2 1;repeat 16 1 1;318 18 38 21 1 18
321 21 41 42 22 21;repeat 16 1 1;338 38 58 41 21 38
341 41 61 62 42 41;repeat 16 1 1;358 58 78 61 41 58
361 61 81 82 62 61;repeat 16 1 1;378 78 98 81 61 78
381 81 101 102 82 81;repeat 16 1 1;398 98 118 101 81 98
401 101 121 122 102 101;repeat 16 1 1;418 118 138 121 101 118
421 121 141 142 122 121;repeat 16 1 1;438 138 158 141 121 138
441 141 161 162 142 141;repeat 16 1 1;458 158 178 161 141 158

```

## constant

```

E steel all
density steel all

```

## start user table

```

table 1
pipe
pip 24.5
24.5 2.0 468.29 468.29
end

```

## member property

```

201 to 204 table st w14x370
205 to 208 table tb w14x550 wp 16.5 th 3.5
211 to 219 table st w10x77
251 252 261 262 table tb w14x665 wp 16.5 th 4.0
271 272 UPT 1 pip 24.5
281 to 284 table tb w14x665 wp 16.5 th 5.0

```

## element properties

```

* shielding carbon steel
301 to 318 321 to 338 341 to 358 361 to 378 thickness 6
381 to 398 401 to 418 421 to 438 441 to 458 thickness 6

```

## support

```

281 fixed but fz mx my mz

```



282 pinned  
283 fixed but fx fy fz my  
284 fixed but fx fy mx my mz

loading 15 ( JL ) Jacking load on transportor  
joint load  
161 fy 221

perform analysis  
print support reaction

change

unit kip FEET  
support  
281 fixed but fz mx my mz  
282 pinned  
283 fixed but fx fz mx my mz  
284 fixed but fx mx my mz

LOADing 1 ( DL ) dead load

SELFWEIGHT Y -1.0

member load

\* rigid chain gear motor

219 con gy -0.71

\* rigid chain drive with bounding dimension

219 con gy -0.26 0.8

219 con gy -0.26 7.6

\* floor plate 2" thick x 38.94 " wide = 265 plf

219 uni gy -0.27

joint load

\* rigid chain magazine  $1.39k/8 = 0.174$

1 5 21 25 41 45 61 65 81 85 101 105 121 125 141 145 161 165 fy -0.174

\* rigid chain guide  $0.03k/ft \times 36.61/12 = 0.09k$

1 5 21 25 41 45 61 65 81 85 101 105 121 125 141 145 161 165 fy -0.09

\* truck 11.0 k each /2 = 5.5 k

281 to 284 fy -5.5

\* coupler

201 206 fy -0.175

\* rail weight  $0.03k/ft \times 36.61 /12 = 0.09 k$

2 4 22 24 42 44 62 64 82 84 102 104 122 124 142 144 162 164 fy -0.09

\* door 16.5 k each / 3 = 5.5 k

161 165 166 167 177 178 fy -5.5

\* moment arm of door =  $4.82 \times 3/5 = 2.9 ft = 34.8"$  bounded dimension

\* closed door moment =  $5.5 k \times 2.9 ft = 15.95 k-ft$

161 177 178 mx -15.95

165 166 167 mx 15.95

\* door operator motor weight

161 165 fy -0.44

\* rigid chain drive removable shielding weight 5.8 k each with bounded dimensions

member load

219 con gy -2.9 0.8

219 con gy -2.9 7.6

211 213 con gy -2.9

joint load

\* end wall 63 sf X 0.316 ksf = 20 k

2 3 4 fy -5.0

1 5 fy -2.5

element load

\* shielding of shell = 0.0356 lb/sf(stainless steel+borated poly)

301 to 318 321 to 338 341 to 358 361 to 378 pressure gy -0.0356

381 to 398 401 to 418 421 to 438 441 to 458 pressure gy -0.0356

calculate natural frequency

LOADing 2 door dead load @ door open 90 degree

joint load

\* door 16.5 k each / 3 = 5.5 k  
 161 165 166 167 177 178 fy -5.5  
 \* moment arm of door =  $4.82 \times 3/5 = 2.9$  ft bounded dimension  
 161 165 166 167 177 178 mz -15.95

LOADing 3 door dead load @ door open 180 degree

joint load

\* door 16.5 k each / 3 = 5.5 k  
 161 165 166 167 177 178 fy -5.5  
 \* moment arm of door =  $4.82 \times 3/5 = 2.9$  ft bounded dimension  
 161 177 178 mx 15.95  
 165 166 167 mx -15.95

LOADing 4 door dead load @ door open 270 degree

joint load

\* door 16.5 k each / 3 = 5.5 k  
 161 165 166 167 177 178 fy -5.5  
 \* moment arm of door =  $4.82 \times 3/5 = 2.9$  ft bounded dimension  
 161 165 166 167 177 178 mz 15.95

loading 5 ( LL ) live load

\* WP + rail car =  $(85+10) \times 2.205/8 = 26.2$  k/wheel  
 \* joint load only approximate actual wheel locations  
 joint load  
 42 44 62 64 102 104 122 124 fy -26.2

loading 6 ( WLS ) transverse wind load ( wind pressure = 45 psf )

element load

312 to 318 332 to 338 352 to 358 372 to 378 pressure gz -0.045  
 392 to 398 412 to 418 432 to 438 452 to 458 pressure gz -0.045

loading 7 ( EQF ) transverse seismic load

selfweight z -0.27

joint load

\* neglect vertical offset of equip. cg to member or joint except rail car + WP  
 \* rigid chain magazine + guide ( 0.174 + 0.09 ) x 0.27=0.07  
 1 5 21 25 41 45 61 65 81 85 101 105 121 125 141 145 161 165 fz -0.07  
 \* truck 5.5 X 0.27 = 1.49  
 281 to 284 fz -1.49  
 \* rail 0.09 X 0.27 = 0.024  
 2 4 22 24 42 44 62 64 82 84 102 104 122 124 142 144 162 164 fz -0.024  
 \* coupler 0.175 x 0.27 = 0.048  
 201 206 fz -0.048  
 \* door 5.5 X 0.27= 1.49 k  
 161 165 166 167 177 178 fz -1.49  
 \* rail car + WP  $[(85+10) \times 2.205/4] \times 0.27 = 14.2$   
 \* joint loads only approximate actual wheel locations  
 44 64 104 124 fz -14.2  
 \* mom arm =  $[(5+3/8)+(5/25.4)+(152.4/2)/25.4]/12 = 0.714' = 8.57''$   
 44 64 104 124 mx -10.14  
 \*  $[(10+85) \times 2.205 \times 50.8 / (2 \times 29.66 \times 4)] \times 0.27 = 12.1$  k  
 42 62 102 122 fy 12.1  
 44 64 104 124 fy -12.1  
 \* door operator motor weight 0.44 x 0.27 = 0.12  
 161 165 fz -0.12  
 \* end wall 20 k / 4 X 0.27 = 1.35 k  
 5 6 7 9 fz -1.35  
 member load  
 \* rigid chain gear motor 0.71 X 0.27 = 0.192  
 219 con gz -0.192  
 \* shielding + rigid chain drive  $(2.9+0.26) \times 0.27 = 0.85$   
 219 con gz -0.85 0.8  
 219 con gz -0.85 7.6  
 \* removable shielding 2.9 X 0.27 = 0.80  
 211 213 con gz -0.80

\* floor plate  $0.27 \times 0.27 = 0.07$   
 219 uni gz  $-0.07$   
 element load  
 \*stainless steel + borated polyethylene  $0.0356 \times 0.27 = 0.01$   
 301 to 318 321 to 338 341 to 358 361 to 378 pressure gz  $-0.01$   
 381 to 398 401 to 418 421 to 438 441 to 458 pressure gz  $-0.01$

loading 8 ( EQF ) longitudinal seismic load  
 selfweight  $\times 0.27$   
 joint load  
 \* neglect vertical offset of equip. cg to member or joint except rail car + WP  
 \* rigid chain magazine+guide (  $0.174 + 0.09$  )  $\times 0.27 = 0.07$   
 1 5 21 25 41 45 61 65 81 85 101 105 121 125 141 145 161 165 fx  $0.07$   
 \* truck  $5.5 \times 0.27 = 1.49$   
 281 to 284 fx  $1.49$   
 \* rail  $0.09 \times 0.27 = 0.024$   
 2 4 22 24 42 44 62 64 82 84 102 104 122 124 142 144 162 164 fx  $0.024$   
 \* coupler  $0.175 \times 0.27 = 0.048$   
 201 206 fx  $0.048$   
 \* door  $5.5 \times 0.27 = 1.49$  k  
 161 165 166 167 177 178 fx  $1.49$   
 \* rail car + WP  $[(85+10) \times 2.205/2] \times 0.27 = 28.28$   
 \* joint loads only approximate lock locations  
 22 24 fx  $28.28$   
 \* mom arm =  $[5+3/8 + 5/25.4 + (152.4/2)/25.4]/12 = 0.714' = 8.57"$   
 22 24 mz  $-20.19$   
 \*  $[(10+85) \times 2.205 \times 50.8 / (3140/25.4/4)] \times 0.27 = 5.8$  k  
 102 104 122 124 fy  $-5.8$   
 42 44 62 64 fy  $5.8$   
 \* door operator motor weight  $0.44 \times 0.27 = 0.12$   
 161 165 fx  $0.12$   
 \* end wall  $20$  k / 4  $\times 0.27 = 1.35$  k  
 1 5 7 17 fx  $1.35$

member load  
 \* rigid chain gear motor  $0.71 \times 0.27 = 0.192$   
 219 con gx  $0.192$   
 \* shielding + rigid chain drive  $(2.9+0.26) \times 0.27 = 0.85$   
 219 con gx  $0.85$   $0.8$   
 219 con gx  $0.85$   $7.6$   
 \* removable shielding  $2.9 \times 0.27 = 0.80$   
 211 213 con gx  $0.80$   
 \* floor plate  $0.27 \times 0.27 = 0.07$   
 219 uni gx  $0.07$   
 element load  
 \*stainless steel+borated polyethylene  $0.0356 \times 0.27 = 0.01$   
 301 to 318 321 to 338 341 to 358 361 to 378 pressure gx  $0.01$   
 381 to 398 401 to 418 421 to 438 441 to 458 pressure gx  $0.01$

loading 9 ( EQF ) vertical seismic load  
 selfweight y  $-0.17$   
 joint load  
 \* neglect horizontal offset of equip. cg to member or joint  
 \* rigid chain magazine+guide (  $0.174 + 0.09$  )  $\times 0.17 = 0.05$   
 1 5 21 25 41 45 61 65 81 85 101 105 121 125 141 145 161 165 fy  $-0.05$   
 \* rail  $0.09 \times 0.17 = 0.02$   
 2 4 22 24 42 44 62 64 82 84 102 104 122 124 142 144 162 164 fy  $-0.02$   
 \* coupler  $0.175 \times 0.17 = 0.03$   
 201 206 fy  $-0.03$   
 \* door  $5.5 \times 0.17 = 0.935$  k  
 161 165 166 167 177 178 fy  $-0.935$   
 \* rail car + WP  $[(85+10) \times 2.205/8] \times 0.17 = 4.45$   
 \* joint loads only approximate actual wheel locations  
 42 44 62 64 102 104 122 124 fy  $-4.45$   
 \* door operator motor weight  $0.44 \times 0.17 = 0.075$   
 161 165 fy  $-0.075$   
 \* end wall  $20$  k / 4  $\times 0.17 = 0.85$

2 3 4 fy -0.85  
 1 5 fy -0.425  
 member load  
 \* rigid chain gear motor  $0.71 \times 0.17 = 0.121$   
 219 con gy -0.121  
 \* removable shielding + rigid chain drive  $(2.9+0.26) \times 0.17 = 0.54$   
 219 con gy -0.54 0.8  
 219 con gy -0.54 7.6  
 \* removable shielding  $2.9 \times 0.17 = 0.49$   
 211 213 con gy -0.49  
 \* floor plate  $0.27 \times 0.17 = 0.05$   
 219 uni gy -0.05  
 element load  
 \*stainless steel+borated polyethylene  $0.0356 \times 0.17 = 0.01$   
 301 to 318 321 to 338 341 to 358 361 to 378 pressure gy -0.01  
 381 to 398 401 to 418 421 to 438 441 to 458 pressure gy -0.01  
  
 loading 10 ( VLC ) vertical load down on coupler ( VLC = 50.0 k )  
 joint load  
 201 206 fy -50.0  
  
 loading 11 ( VLC ) vertical load up on coupler ( VLC = 50.0 k )  
 joint load  
 201 206 fy 50.0  
  
 loading 12 ( RL ) roof load ( RLU = 0.015 ksf and RLC = 0.3 k )  
 element load  
 307 to 316 327 to 336 347 to 356 367 to 376 pressure gy -0.015  
 387 to 396 407 to 416 427 to 436 447 to 456 pressure gy -0.015  
 joint load  
 92 fy -0.3  
  
 loading 13 ( CEL ) compressive end load ( CEL = 1,000 k )  
 joint load  
 201 fx 1000  
 206 fx -1000  
  
 loading 14 ( HIF ) horizontal impact ( HIF = 1250 k )  
 joint load  
 206 fx -1250  
  
 load combination 101 normal operation  
 \* DL(DLF)+LL(1+HLF) DLF = 1.2 HLF = 0.5 ( 0 % allow stress increase )  
 1 1.2 5 1.5  
 load combination 102 extraordinary load  
 \* DL+LL+WLS ( allow stress increase 25 % )  
 1 0.8 5 0.8 6 0.8  
 load combination 103 extraordinary load  
 \* DL+LL+EQF ( allow stress increase 25 % )  
 1 0.8 5 0.8 7 0.8  
 load combination 104 extraordinary load  
 \* DL+LL+EQF ( allow stress increase 25 % )  
 1 0.8 5 0.8 8 0.8  
 load combination 105 extraordinary load  
 \* DL+LL+EQF ( allow stress increase 25 % )  
 1 0.8 5 0.8 9 0.8  
 load combination 106 critical load  
 \* DL+LL+VLC+JL+RLU+RLC+CEL ( allow stress increase 200 % )  
 1 0.5 5 0.5 10 0.5 15 0.5 12 0.5 13 0.5  
 load combination 107 critical load  
 \* DL+LL+VLC+JL+RLU+RLC+CEL ( allow stress increase 200 % )  
 1 0.5 5 0.5 11 0.5 15 0.5 12 0.5 13 0.5  
 load combination 108 critical load  
 \* a ( DL + LL ) + 1.0 ( HIF ) ( allow stress increase 200 % )  
 \* a = factor,  $3.2 / 2 = 1.6$ ,  $1 / 2 = 0.5$   
 1 1.6 5 1.6 14 0.5

load combination 109 critical load  
\* SDF ( DL + LL ), SDF = 10.0, 10/2.0= 5.0, ( allow stress increase 200 % )  
1 5.0 5 5.0

PERFORM ANALYSIS  
unit inch  
parameters  
fyld 27.3  
code aisc  
check code  
print support reaction  
print CG  
load list 1  
print member stress  
print element force  
load list 2 to 15 101 to 109  
print element force  
  
finish

PAGE NO. 1

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*****
*
*           S T A A D - III
*           Revision 22.3a
*           Proprietary Program of
*           Research Engineers, Inc.
*           Date=       JUL 28, 1998
*           Time=      14:56:10
*           Build No.   2434
*           USER ID: TRW
*
*****

```

☐

1. STAAD SPACE PRELIMINARY DESIGN OF TRANSPORTER
2. \* DI: BCAF00000-01717-0200-00007
3. \* ATTACHMENT I
4. SET NL 20
5. PAGE LENGTH 72
6. UNIT KIP INCH
8. JOINT COORDINATES
9. 1 41.34 41.82 50.68; 2 41.34 41.82 29.66; 3 41.34 41.82 0.0
10. 4 41.34 41.82 -29.66; 5 41.34 41.82 -50.68; 6 41.34 72.09 -50.68
11. 7 41.34 102.36 -50.68; 8 41.34 118.02 -48.20; 9 41.34 132.15 -41.0
12. 10 41.34 143.36 -29.79;11 41.34 150.56 -15.66;12 41.34 153.04 0.0
13. 13 41.34 150.56 15.66;14 41.34 143.36 29.79;15 41.34 132.15 41.0
14. 16 41.34 118.02 48.20;17 41.34 102.36 50.68;18 41.34 72.09 50.68
15. 21 77.95 41.82 50.68;22 77.95 41.82 29.66;23 77.95 41.82 0.0
16. 24 77.95 41.82 -29.66;25 77.95 41.82 -50.68;26 77.95 72.09 -50.68
17. 27 77.95 102.36 -50.68;28 77.95 118.02 -48.20;29 77.95 132.15 -41.0
18. 30 77.95 143.36 -29.79;31 77.95 150.56 -15.66;32 77.95 153.04 0.0
19. 33 77.95 150.56 15.66;34 77.95 143.36 29.79;35 77.95 132.15 41.0
20. 36 77.95 118.02 48.20;37 77.95 102.36 50.68;38 77.95 72.09 50.68
21. 41 114.57 41.82 50.68;42 114.57 41.82 29.66;43 114.57 41.82 0.0
22. 44 114.57 41.82 -29.66;45 114.57 41.82 -50.68;46 114.57 72.09 -50.68
23. 47 114.57 102.36 -50.68;48 114.57 118.02 -48.20;49 114.57 132.15 -41.0
24. 50 114.57 143.36 -29.79;51 114.57 150.56 -15.66;52 114.57 153.04 0.0
25. 53 114.57 150.56 15.66;54 114.57 143.36 29.79;55 114.57 132.15 41.0
26. 56 114.57 118.02 48.20;57 114.57 102.36 50.68;58 114.57 72.09 50.68
27. 61 150.59 41.82 50.68;62 150.59 41.82 29.66;63 150.59 41.82 0.0
28. 64 150.59 41.82 -29.66;65 150.59 41.82 -50.68;66 150.59 72.09 -50.68
29. 67 150.59 102.36 -50.68;68 150.59 118.02 -48.20;69 150.59 132.15 -41.0
30. 70 150.59 143.36 -29.79;71 150.59 150.56 -15.66;72 150.59 153.04 0.0
31. 73 150.59 150.56 15.66;74 150.59 143.36 29.79;75 150.59 132.15 41.0
32. 76 150.59 118.02 48.20;77 150.59 102.36 50.68;78 150.59 72.09 50.68
33. 81 186.42 41.82 50.68;82 186.42 41.82 29.66;83 186.42 41.82 0.0
34. 84 186.42 41.82 -29.66;85 186.42 41.82 -50.68;86 186.42 72.09 -50.68
35. 87 186.42 102.36 -50.68;88 186.42 118.02 -48.20;89 186.42 132.15 -41.0
36. 90 186.42 143.36 -29.79;91 186.42 150.56 -15.66;92 186.42 153.04 0.0
37. 93 186.42 150.56 15.66;94 186.42 143.36 29.79;95 186.42 132.15 41.0
38. 96 186.42 118.02 48.20;97 186.42 102.36 50.68;98 186.42 72.09 50.68
39. 101 222.25 41.82 50.68;102 222.25 41.82 29.66
40. 103 222.25 41.82 0.0 ;104 222.25 41.82 -29.66
41. 105 222.25 41.82 -50.68;106 222.25 72.09 -50.68
42. 107 222.25 102.36 -50.68;108 222.25 118.02 -48.20
43. 109 222.25 132.15 -41.0 ;110 222.25 143.36 -29.79
44. 111 222.25 150.56 -15.66;112 222.25 153.04 0.0
45. 113 222.25 150.56 15.66;114 222.25 143.36 29.79
46. 115 222.25 132.15 41.0 ;116 222.25 118.02 48.20
47. 117 222.25 102.36 50.68;118 222.25 72.09 50.68
48. 121 258.27 41.82 50.68;122 258.27 41.82 29.66
49. 123 258.27 41.82 0.0 ;124 258.27 41.82 -29.66
50. 125 258.27 41.82 -50.68;126 258.27 72.09 -50.68
51. 127 258.27 102.36 -50.68;128 258.27 118.02 -48.20
52. 129 258.27 132.15 -41.0 ;130 258.27 143.36 -29.79
53. 131 258.27 150.56 -15.66;132 258.27 153.04 0.0
54. 133 258.27 150.56 15.66;134 258.27 143.36 29.79
55. 135 258.27 132.15 41.0 ;136 258.27 118.02 48.20
56. 137 258.27 102.36 50.68;138 258.27 72.09 50.68

PRELIMINARY DESIGN OF TRANSPORTER  
 \* DI: BCAF00000-01717-0200-00007  
 -- PAGE NO. 2

57.	141	294.89	41.82	50.68;142	294.89	41.82	29.66
58.	143	294.89	41.82	0.0 ;144	294.89	41.82	-29.66
59.	145	294.89	41.82	-50.68;146	294.89	72.09	-50.68
60.	147	294.89	102.36	-50.68;148	294.89	118.02	-48.20
61.	149	294.89	132.15	-41.0 ;150	294.89	143.36	-29.79
62.	151	294.89	150.56	-15.66;152	294.89	153.04	0.0
63.	153	294.89	150.56	15.66;154	294.89	143.36	29.79
64.	155	294.89	132.15	41.0 ;156	294.89	118.02	48.20
65.	157	294.89	102.36	50.68;158	294.89	72.09	50.68
66.	161	331.50	41.82	50.68;162	331.50	41.82	29.66
67.	163	331.50	41.82	0.0 ;164	331.50	41.82	-29.66
68.	165	331.50	41.82	-50.68;166	331.50	72.09	-50.68
69.	167	331.50	102.36	-50.68;168	331.50	118.02	-48.20
70.	169	331.50	132.15	-41.0 ;170	331.50	143.36	-29.79
71.	171	331.50	150.56	-15.66;172	331.50	153.04	0.0
72.	173	331.50	150.56	15.66;174	331.50	143.36	29.79
73.	175	331.50	132.15	41.0 ;176	331.50	118.02	48.20
74.	177	331.50	102.36	50.68;178	331.50	72.09	50.68
75.	201	0.0	31.1	0.0 ;202	41.34	31.1	0.0
76.	203	77.95	31.1	0.0 ;204	294.89	31.1	0.0
77.	205	331.5	31.1	0.0 ;206	372.84	31.1	0.0
78.	211	2.40	29.33	50.68;212	41.34	29.33	50.68
79.	213	77.95	29.33	50.68;214	2.40	29.33	-50.68
80.	215	41.34	29.33	-50.68;216	77.95	29.33	-50.68
81.	251	114.57	38.82	25.0 ;252	114.57	38.82	0.0
82.	253	114.57	38.82	-25.0			
83.	261	258.27	38.82	25.0 ;262	258.27	38.82	0.0
84.	263	258.27	38.82	-25.0			
85.	281	114.57	27.56	25.0 ;282	114.57	27.56	-25.0
86.	283	258.27	27.56	25.0 ;284	258.27	27.56	-25.0

88. MEMBER INCIDENCES  
 89. 201 201 202 202;203 204 205 204  
 90. 205 202 3;206 203 23;207 204 143;208 205 163  
 91. 211 211 212 212;213 214 215 214;215 212 1;216 213 21  
 92. 217 215 5;218 216 25;219 211 214  
 93. 251 251 252 252;261 261 262 262  
 94. 271 252 43;272 262 123  
 95. 281 251 281;282 253 282;283 261 283;284 263 284

97. ELEMENT INCIDENCES  
 98. 301 1 21 22 2 1;REPEAT 16 1 1;318 18 38 21 1 18  
 99. 321 21 41 42 22 21;REPEAT 16 1 1;338 38 58 41 21 38  
 100. 341 41 61 62 42 41;REPEAT 16 1 1;358 58 78 61 41 58  
 101. 361 61 81 82 62 61;REPEAT 16 1 1;378 78 98 81 61 78  
 102. 381 81 101 102 82 81;REPEAT 16 1 1;398 98 118 101 81 98  
 103. 401 101 121 122 102 101;REPEAT 16 1 1;418 118 138 121 101 118  
 104. 421 121 141 142 122 121;REPEAT 16 1 1;438 138 158 141 121 138  
 105. 441 141 161 162 142 141;REPEAT 16 1 1;458 158 178 161 141 158

107. CONSTANT  
 108. E STEEL ALL  
 109. DENSITY STEEL ALL  
 111. START USER TABLE  
 112. TABLE 1  
 113. PIPE  
 114. PIP 24.5  
 115. 24.5 2.0 468.29 468.29  
 116. END

118. MEMBER PROPERTY  
 119. 201 TO 204 TABLE ST W14X370  
 120. 205 TO 208 TABLE TB W14X550 WP 16.5 TH 3.5  
 121. 211 TO 219 TABLE ST W10X77  
 122. 251 252 261 262 TABLE TB W14X665 WP 16.5 TH 4.0  
 123. 271 272 UPT 1 PIP 24.5  
 124. 281 TO 284 TABLE TB W14X665 WP 16.5 TH 5.0

126. ELEMENT PROPERTIES  
 127. \* SHIELDING CARBON STEEL  
 128. 301 TO 318 321 TO 338 341 TO 358 361 TO 378 THICKNESS 6  
 129. 381 TO 398 401 TO 418 421 TO 438 441 TO 458 THICKNESS 6

131. SUPPORT  
 132. 281 FIXED BUT FZ MX MY MZ  
 133. 282 PINNED

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- 134. 283 FIXED BUT FX FY FZ MY
- 135. 284 FIXED BUT FX FY MX MY MZ
- 137. LOADING 15 ( JL ) JACKING LOAD ON TRANSPORTOR
- 138. JOINT LOAD
- 139. 161 FY 221
- 141. PERFORM ANALYSIS

□

P R O B L E M   S T A T I S T I C S

-----  
NUMBER OF JOINTS/MEMBER+ELEMENTS/SUPPORTS = 184/ 171/ 4  
ORIGINAL/FINAL BAND-WIDTH = 169/ 30  
TOTAL PRIMARY LOAD CASES = 1, TOTAL DEGREES OF FREEDOM = 1096  
SIZE OF STIFFNESS MATRIX = 203856 DOUBLE PREC. WORDS  
REQRD/AVAIL. DISK SPACE = 13.89/ 1088.8 MB, EXMEM = 1969.1 MB

□

++ Processing Element Stiffness Matrix.	14:56:11
++ Processing Global Stiffness Matrix.	14:56:12
++ Processing Triangular Factorization.	14:56:12
++ Calculating Joint Displacements.	14:56:14
++ Calculating Member Forces.	14:56:15

142. PRINT SUPPORT REACTION



PRELIMINARY DESIGN OF TRANSPORTER  
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SUPPORT REACTIONS -UNIT KIP INCH STRUCTURE TYPE = SPACE

JOINT	LOAD	FORCE-X	FORCE-Y	FORCE-Z	MOM-X	MOM-Y	MOM Z
281	15	-1.73	-220.79	.00	.00	.00	.00
282	15	1.73	-.21	.60	.00	.00	.00
283	15	.00	.00	.00	5686.00	.00	-47941.67
284	15	.00	.00	-.61	.00	.00	.00

\*\*\*\*\* END OF LATEST ANALYSIS RESULT \*\*\*\*\*

144. CHANGE  
 146. UNIT KIP FEET  
 147. SUPPORT  
 148. 281 FIXED BUT FZ MX MY MZ  
 149. 282 PINNED  
 150. 283 FIXED BUT FX FZ MX MY MZ  
 151. 284 FIXED BUT FX MX MY MZ  
 154. LOADING 1 ( DL ) DEAD LOAD  
 155. SELFWEIGHT Y -1.0  
 156. MEMBER LOAD  
 157. \* RIGID CHAIN GEAR MOTOR  
 158. 219 CON GY -0.71  
 159. \* RIGID CHAIN DRIVE WITH BOUNDING DIMENSION  
 160. 219 CON GY -0.26 0.8  
 161. 219 CON GY -0.26 7.6  
 162. \* FLOOR PLATE 2" THICK X 38.94 " WIDE = 265 PLF  
 163. 219 UNI GY -0.27  
 164. JOINT LOAD  
 165. \* RIGID CHAIN MAGAZINE 1.39K/8= 0.174  
 166. 1 5 21 25 41 45 61 65 81 85 101 105 121 125 141 145 161 165 FY -0.174  
 167. \* RIGID CHAIN GUIDE 0.03K/FT X 36.61/12 = 0.09K  
 168. 1 5 21 25 41 45 61 65 81 85 101 105 121 125 141 145 161 165 FY -0.09  
 169. \* TRUCK 11.0 K EACH /2 = 5.5 K  
 170. 281 TO 284 FY -5.5  
 171. \* COUPLER  
 172. 201 206 FY -0.175  
 173. \* RAIL WEIGHT 0.03K/FT X 36.61 /12 = 0.09 K  
 174. 2 4 22 24 42 44 62 64 82 84 102 104 122 124 142 144 162 164 FY -0.09  
 175. \* DOOR 16.5 K EACH / 3 = 5.5 K  
 176. 161 165 166 167 177 178 FY -5.5  
 177. \* MOMENT ARM OF DOOR = 4.82 X 3/5= 2.9 FT = 34.8" BOUNDED DIMENSION  
 178. \* CLOSED DOOR MOMENT = 5.5 K X 2.9 FT = 15.95 K-FT  
 179. 161 177 178 MX -15.95  
 180. 165 166 167 MX 15.95  
 181. \* DOOR OPERATOR MOTOR WEIGHT  
 182. 161 165 FY -0.44  
 183. \* RIGID CHAIN DRIVE REMOVABLE SHIELDING WEIGHT 5.8 K EACH WITH BOUNDED DIM  
 184. MEMBER LOAD  
 185. 219 CON GY -2.9 0.8  
 186. 219 CON GY -2.9 7.6  
 187. 211 213 CON GY -2.9  
 188. JOINT LOAD  
 189. \* END WALL 63 SF X 0.316 KSF = 20 K  
 190. 2 3 4 FY -5.0  
 191. 1 5 FY -2.5  
 192. ELEMENT LOAD  
 193. \* SHIELDING OF SHELL = 0.0356 LB/SF (STAINLESS STEEL+BORATED POLY)  
 194. 301 TO 318 321 TO 338 341 TO 358 361 TO 378 PRESSURE GY -0.0356  
 195. 381 TO 398 401 TO 418 421 TO 438 441 TO 458 PRESSURE GY -0.0356  
 196. CALCULATE NATURAL FREQUENCY

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198. LOADING 2 DOOR DEAD LOAD @ DOOR OPEN 90 DEGREE  
199. JOINT LOAD  
200. \* DOOR 16.5 K EACH / 3 = 5.5 K  
201. 161 165 166 167 177 178 FY -5.5  
202. \* MOMENT ARM OF DOOR = 4.82 X 3/5= 2.9 FT BOUNDED DIMENSION  
203. 161 165 166 167 177 178 MZ -15.95  
205. LOADING 3 DOOR DEAD LOAD @ DOOR OPEN 180 DEGREE  
206. JOINT LOAD  
207. \* DOOR 16.5 K EACH / 3 = 5.5 K  
208. 161 165 166 167 177 178 FY -5.5  
209. \* MOMENT ARM OF DOOR = 4.82 X 3/5= 2.9 FT BOUNDED DIMENSION  
210. 161 177 178 MX 15.95  
211. 165 166 167 MX -15.95  
213. LOADING 4 DOOR DEAD LOAD @ DOOR OPEN 270 DEGREE  
214. JOINT LOAD  
215. \* DOOR 16.5 K EACH / 3 = 5.5 K  
216. 161 165 166 167 177 178 FY -5.5  
217. \* MOMENT ARM OF DOOR = 4.82 X 3/5= 2.9 FT BOUNDED DIMENSION  
218. 161 165 166 167 177 178 MZ 15.95  
220. LOADING 5 ( LL ) LIVE LOAD  
221. \* WP + RAIL CAR = (85+10)X2.205/8= 26.2 K/WHEEL  
222. \* JOINT LOAD ONLY APPROXIMATE ACTUAL WHEEL LOCATIONS  
223. JOINT LOAD  
224. 42 44 62 64 102 104 122 124 FY -26.2  
226. LOADING 6 ( WLS ) TRANSVERSE WIND LOAD ( WIND PRESSURE = 45 PSF )  
227. ELEMENT LOAD  
228. 312 TO 318 332 TO 338 352 TO 358 372 TO 378 PRESSURE GZ -0.045  
229. 392 TO 398 412 TO 418 432 TO 438 452 TO 458 PRESSURE GZ -0.045  
231. LOADING 7 ( EQF ) TRANSVERSE SEISMIC LOAD  
232. SELFWEIGHT Z -0.27  
233. JOINT LOAD  
234. \* NEGLECT VERTICAL OFFSET OF EQUIP. CG TO MEMBER OR JOINT EXCEPT RAIL CAR  
235. \* RIGID CHAIN MAGAZINE + GUIDE ( 0.174 + 0.09 ) X 0.27=0.07  
236. 1 5 21 25 41 45 61 65 81 85 101 105 121 125 141 145 161 165 FZ -0.07  
237. \* TRUCK 5.5 X 0.27 = 1.49  
238. 281 TO 284 FZ -1.49  
239. \* RAIL 0.09 X 0.27 = 0.024  
240. 2 4 22 24 42 44 62 64 82 84 102 104 122 124 142 144 162 164 FZ -0.024  
241. \* COUPLER 0.175 X 0.27 = 0.048  
242. 201 206 FZ -0.048  
243. \* DOOR 5.5 X 0.27= 1.49 K  
244. 161 165 166 167 177 178 FZ -1.49  
245. \* RAIL CAR + WP [(85+10) X 2.205/ 4] X 0.27 = 14.2  
246. \* JOINT LOADS ONLY APPROXIMATE ACTUAL WHEEL LOCATIONS  
247. 44 64 104 124 FZ -14.2  
248. \* MOM ARM = [ (5+3/8)+(5/25.4)+(152.4/2)/25.4]/12= 0.714' = 8.57"  
249. 44 64 104 124 MX -10.14  
250. \* [(10+85)X2.205X50.8/(2X29.66X4)] X 0.27 = 12.1 K  
251. 42 62 102 122 FY 12.1  
252. 44 64 104 124 FY -12.1  
253. \* DOOR OPERATOR MOTOR WEIGHT 0.44 X 0.27 = 0.12  
254. 161 165 FZ -0.12  
255. \* END WALL 20 K / 4 X 0.27 = 1.35 K  
256. 5 6 7 9 FZ -1.35  
257. MEMBER LOAD  
258. \* RIGID CHAIN GEAR MOTOR 0.71 X 0.27 = 0.192  
259. 219 CON GZ -0.192  
260. \* SHIELDING + RIGID CHAIN DRIVE (2.9+0.26)X0.27 = 0.85  
261. 219 CON GZ -0.85 0.8  
262. 219 CON GZ -0.85 7.6  
263. \* REMOVABLE SHIELDING 2.9 X 0.27 = 0.80  
264. 211 213 CON GZ -0.80  
265. \* FLOOR PLATE 0.27 X 0.27 = 0.07  
266. 219 UNI GZ -0.07  
267. ELEMENT LOAD  
268. \*STAINLESS STEEL + BORATED POLYETHYLENE 0.0356X0.27= 0.01  
269. 301 TO 318 321 TO 338 341 TO 358 361 TO 378 PRESSURE GZ -0.01  
270. 381 TO 398 401 TO 418 421 TO 438 441 TO 458 PRESSURE GZ -0.01  
272. LOADING 8 ( EQF ) LONGITUDINAL SEISMIC LOAD  
273. SELFWEIGHT X 0.27

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274. JOINT LOAD  
 275. \* NEGLECT VERTICAL OFFSET OF EQUIP. CG TO MEMBER OR JOINT EXCEPT RAIL CAR  
 276. \* RIGID CHAIN MAGAZINE+GUIDE ( 0.174 + 0.09 ) X 0.27=0.07  
 277. 1 5 21 25 41 45 61 65 81 85 101 105 121 125 141 145 161 165 FX 0.07  
 278. \* TRUCK 5.5 X 0.27 = 1.49  
 279. 281 TO 284 FX 1.49  
 280. \* RAIL 0.09 X 0.27 = 0.024  
 281. 2 4 22 24 42 44 62 64 82 84 102 104 122 124 142 144 162 164 FX 0.024  
 282. \* COUPLER 0.175 X0.27 = 0.048  
 283. 201 206 FX 0.048  
 284. \* DOOR 5.5 X 0.27= 1.49 K  
 285. 161 165 166 167 177 178 FX 1.49  
 286. \* RAIL CAR + WP [(85+10) X 2.205/2] X 0.27 = 28.28  
 287. \* JOINT LOADS ONLY APPROXIMATE LOCK LOCATIONS  
 288. 22 24 FX 28.28  
 289. \* MOM ARM = [5+3/8 + 5/25.4 + (152.4/2)/25.4]/12= 0.714'=8.57"  
 290. 22 24 MZ -20.19  
 291. \* [(10+85)X2.205X50.8/(3140/25.4/4)] X 0.27 = 5.8 K  
 292. 102 104 122 124 FY -5.8  
 293. 42 44 62 64 FY 5.8  
 294. \* DOOR OPERATOR MOTOR WEIGHT 0.44 X0.27 = 0.12  
 295. 161 165 FX 0.12  
 296. \* END WALL 20 K / 4 X 0.27 = 1.35 K  
 297. 1 5 7 17 FX 1.35  
 298. MEMBER LOAD  
 299. \* RIGID CHAIN GEAR MOTOR 0.71 X 0.27 = 0.192  
 300. 219 CON GX 0.192  
 301. \* SHIELDING + RIGID CHAIN DRIVE (2.9+0.26)X0.27 = 0.85  
 302. 219 CON GX 0.85 0.8  
 303. 219 CON GX 0.85 7.6  
 304. \* REMOVABLE SHIELDING 2.9 X 0.27 = 0.80  
 305. 211 213 CON GX 0.80  
 306. \* FLOOR PLATE 0.27 X 0.27 = 0.07  
 307. 219 UNI GX 0.07  
 308. ELEMENT LOAD  
 309. \*STAINLESS STEEL+BORATED POLYETHYLENE 0.0356 X 0.27= 0.01  
 310. 301 TO 318 321 TO 338 341 TO 358 361 TO 378 PRESSURE GX 0.01  
 311. 381 TO 398 401 TO 418 421 TO 438 441 TO 458 PRESSURE GX 0.01  
 313. LOADING 9 ( EQF ) VERTICAL SEISMIC LOAD  
 314. SELFWEIGHT Y -0.17  
 315. JOINT LOAD  
 316. \* NEGLECT HORIZONTAL OFFSET OF EQUIP. CG TO MEMBER OR JOINT  
 317. \* RIGID CHAIN MAGAZINE+GUIDE ( 0.174 + 0.09 ) X 0.17 = 0.05  
 318. 1 5 21 25 41 45 61 65 81 85 101 105 121 125 141 145 161 165 FY -0.05  
 319. \* RAIL 0.09 X 0.17 = 0.02  
 320. 2 4 22 24 42 44 62 64 82 84 102 104 122 124 142 144 162 164 FY -0.02  
 321. \* COUPLER 0.175 X0.17 = 0.03  
 322. 201 206 FY -0.03  
 323. \* DOOR 5.5 X 0.17= 0.935 K  
 324. 161 165 166 167 177 178 FY -0.935  
 325. \* RAIL CAR + WP [(85+10)X 2.205/8]X0.17 = 4.45  
 326. \* JOINT LOADS ONLY APPROXIMATE ACTUAL WHEEL LOCATIONS  
 327. 42 44 62 64 102 104 122 124 FY -4.45  
 328. \* DOOR OPERATOR MOTOR WEIGHT 0.44 X0.17 = 0.075  
 329. 161 165 FY -0.075  
 330. \* END WALL 20 K / 4 X 0.17 = 0.85  
 331. 2 3 4 FY -0.85  
 332. 1 5 FY -0.425  
 333. MEMBER LOAD  
 334. \* RIGID CHAIN GEAR MOTOR 0.71 X 0.17 = 0.121  
 335. 219 CON GY -0.121  
 336. \* REMOVABLE SHIELDING + RIGID CHAIN DRIVE (2.9+0.26)X0.17 = 0.54  
 337. 219 CON GY -0.54 0.8  
 338. 219 CON GY -0.54 7.6  
 339. \* REMOVABLE SHIELDING 2.9 X 0.17 = 0.49  
 340. 211 213 CON GY -0.49  
 341. \* FLOOR PLATE 0.27 X 0.17 = 0.05  
 342. 219 UNI GY -0.05  
 343. ELEMENT LOAD  
 344. \*STAINLESS STEEL+BORATED POLYETHYLENE 0.0356X0.17= 0.01

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- 345. 301 TO 318 321 TO 338 341 TO 358 361 TO 378 PRESSURE GY -0.01
- 346. 381 TO 398 401 TO 418 421 TO 438 441 TO 458 PRESSURE GY -0.01
- 348. LOADING 10 ( VLC ) VERTICAL LOAD DOWN ON COUPLER ( VLC = 50.0 K)
- 349. JOINT LOAD
- 350. 201 206 FY -50.0
- 352. LOADING 11 ( VLC ) VERTICAL LOAD UP ON COUPLER ( VLC = 50.0 K)
- 353. JOINT LOAD
- 354. 201 206 FY 50.0
- 356. LOADING 12 ( RL ) ROOF LOAD ( RLU = 0.015 KSF AND RLC = 0.3 K )
- 357. ELEMENT LOAD
- 358. 307 TO 316 327 TO 336 347 TO 356 367 TO 376 PRESSURE GY -0.015
- 359. 387 TO 396 407 TO 416 427 TO 436 447 TO 456 PRESSURE GY -0.015
- 360. JOINT LOAD
- 361. 92 FY -0.3
- 363. LOADING 13 ( CEL ) COMPRESSIVE END LOAD ( CEL = 1,000 K )
- 364. JOINT LOAD
- 365. 201 FX 1000
- 366. 206 FX -1000
- 368. LOADING 14 ( HIF ) HORIZONTAL IMPACT ( HIF = 1250 K )
- 369. JOINT LOAD
- 370. 206 FX -1250
- 372. LOAD COMBINATION 101 NORMAL OPERATION
- 373. \* DL(DLF)+LL(1+HLF) DLF = 1.2 HLF = 0.5 ( 0 % ALLOW STRESS INCREASE )
- 374. 1 1.2 5 1.5
- 375. LOAD COMBINATION 102 EXTRAORDINARY LOAD
- 376. \* DL+LL+WLS ( ALLOW STRESS INCREASE 25 % )
- 377. 1 0.8 5 0.8 6 0.8
- 378. LOAD COMBINATION 103 EXTRAORDINARY LOAD
- 379. \* DL+LL+EQF ( ALLOW STRESS INCREASE 25 % )
- 380. 1 0.8 5 0.8 7 0.8
- 381. LOAD COMBINATION 104 EXTRAORDINARY LOAD
- 382. \* DL+LL+EQF ( ALLOW STRESS INCREASE 25 % )
- 383. 1 0.8 5 0.8 8 0.8
- 384. LOAD COMBINATION 105 EXTRAORDINARY LOAD
- 385. \* DL+LL+EQF ( ALLOW STRESS INCREASE 25 % )
- 386. 1 0.8 5 0.8 9 0.8
- 387. LOAD COMBINATION 106 CRITICAL LOAD
- 388. \* DL+LL+VLC+JL+RLU+RLC+CEL ( ALLOW STRESS INCREASE 200 % )
- 389. 1 0.5 5 0.5 10 0.5 15 0.5 12 0.5 13 0.5
- 390. LOAD COMBINATION 107 CRITICAL LOAD
- 391. \* DL+LL+VLC+JL+RLU+RLC+CEL ( ALLOW STRESS INCREASE 200 % )
- 392. 1 0.5 5 0.5 11 0.5 15 0.5 12 0.5 13 0.5
- 393. LOAD COMBINATION 108 CRITICAL LOAD
- 394. \* A ( DL + LL ) + 1.0 ( HIF ) ( ALLOW STRESS INCREASE 200 % )
- 395. \* A = FACTOR, 3.2 / 2 = 1.6, 1 / 2 = 0.5
- 396. 1 1.6 5 1.6 14 0.5
- 397. LOAD COMBINATION 109 CRITICAL LOAD
- 398. \* SDF ( DL + LL ), SDF = 10.0, 10/2.0 = 5.0, ( ALLOW STRESS INCREASE 200 % )
- 399. 1 5.0 5 5.0

401. PERFORM ANALYSIS

++ Processing Element Stiffness Matrix. 14:56:16

++ Processing Global Stiffness Matrix. 14:56:17

++ Processing Triangular Factorization. 14:56:17

++ Calculating Joint Displacements. 14:56:19

\*\*\*\*\*

\* NATURAL FREQUENCY FOR LOADING 1 = 18.20236 CPS \*

\* MAX DEFLECTION = .05862 INCH GLO Y, AT JOINT 201 \*

\*\*\*\*\*

++ Calculating Member Forces. 14:56:21

- 402. UNIT INCH
- 403. PARAMETERS
- 404. FYLD 27.3
- 405. CODE AISC
- 406. CHECK CODE

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□

STAAD-III CODE CHECKING - (AISC)  
\*\*\*\*\*

□

□

ALL UNITS ARE - KIP INCH (UNLESS OTHERWISE NOTED)

MEMBER	TABLE	RESULT/ FX	CRITICAL COND/ MY	RATIO/ MZ	LOADING/ LOCATION
201	ST W14 X370	PASS 1000.00 C	AISC- H1-1 .00	.570 .00	13 .00
202	ST W14 X370	PASS 552.03 C	AISC- H1-2 .00	.761 4942.78	13 .00
203	ST W14 X370	PASS 690.77 C	AISC- H1-2 .02	.952 6182.85	14 36.61
204	ST W14 X370	PASS 1249.99 C	AISC- H1-1 .00	.712 .01	14 .00
205	TB W14 X550	PASS 150.66 T	SHEAR -Y .00	.633 -4942.76	13 .00
206	TB W14 X550	PASS 150.74 C	SHEAR -Y .00	.780 -575.49	13 .00
207	TB W14 X550	PASS 188.24 C	SHEAR -Y .01	.976 708.93	14 .00
208	TB W14 X550	PASS 188.21 T	SHEAR -Y .00	.790 6182.96	14 .00
211	ST W10 X77	PASS .00 T	AISC- H2-1 -52.41	.912 1279.43	109 38.94
212	ST W10 X77	PASS 18.96 C	AISC- H1-3 -55.77	.554 636.11	109 .00
213	ST W10 X77	PASS .00 C	AISC- H1-3 52.42	.907 1272.68	109 38.94

□

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ALL UNITS ARE - KIP INCH (UNLESS OTHERWISE NOTED)

MEMBER	TABLE	RESULT/ FX	CRITICAL COND/ MY	RATIO/ MZ	LOADING/ LOCATION
--------	-------	---------------	----------------------	--------------	----------------------

214	ST W10 X77	PASS 18.88 C	AISC- H1-3 55.79	.552 632.95	109 .00
215	ST W10 X77	PASS 61.28 T	AISC- H2-1 .69	.583 643.33	109 .00
216	ST W10 X77	PASS 19.38 C	SHEAR -Y 3.36	.309 -94.71	109 .00
217	ST W10 X77	PASS 61.01 T	AISC- H2-1 -.73	.580 639.73	109 .00
218	ST W10 X77	PASS 19.28 C	SHEAR -Y -3.36	.308 -94.32	109 .00
219	ST W10 X77	PASS .97 T	SHEAR -Y 14.70	.407 4.05	109 .00
251	TB W14 X665	PASS .00 T	AISC- H2-1 15623.90	.949 -384.82	14 25.00
252	TB W14 X665	PASS .02 C	AISC- H1-3 15626.08	.949 -384.84	14 .00
261	TB W14 X665	PASS .00 T	SHEAR -Y .00	.692 .00	109 .00
262	TB W14 X665	PASS .02 T	SHEAR -Y .00	.692 -.18	109 25.00
271	ST PIP 24.5	PASS 30.79 C	AISC- H1-3 .00	.689 17825.02	14 3.00
272	ST PIP 24.5	PASS 153.45 C	AISC- H1-3 .00	.948 24137.95	106 .00

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□

ALL UNITS ARE - KIP INCH (UNLESS OTHERWISE NOTED)

MEMBER	TABLE	RESULT/ FX	CRITICAL COND/ MY	RATIO/ MZ	LOADING/ LOCATION
281	TB W14 X665	PASS 15.39 C	SHEAR -Y .00	.639 -7036.74	14 .00
282	TB W14 X665	PASS 15.40 C	SHEAR -Y .17	.639 -7038.06	14 .00
283	TB W14 X665	PASS 77.14 C	AISC- H1-3 -2843.00	.669 23970.84	106 11.26
284	TB W14 X665	PASS 639.74 C	AISC- H1-3 .00	.109 .00	109 11.26

□

407. PRINT SUPPORT REACTION

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SUPPORT REACTIONS -UNIT KIP INCH STRUCTURE TYPE = SPACE

JOINT	LOAD	FORCE-X	FORCE-Y	FORCE-Z	MOM-X	MOM-Y	MOM Z
281	1	-.01	87.73	.00	.00	.00	.00
	2	.06	-12.40	.00	.00	.00	.00
	3	.05	-8.40	.00	.00	.00	.00
	4	.04	-4.41	.00	.00	.00	.00
	5	.00	52.40	.00	.00	.00	.00
	6	-.02	-10.12	.00	.00	.00	.00
	7	-.12	-86.71	.00	.00	.00	.00
	8	-73.93	-28.37	.00	.00	.00	.00
	9	.00	23.71	.00	.00	.00	.00
	10	.00	25.00	.00	.00	.00	.00
	11	.00	-25.00	.00	.00	.00	.00
	12	.00	1.27	.00	.00	.00	.00
	13	.00	.00	.00	.00	.00	.00
	14	624.96	15.39	.00	.00	.00	.00
101	-.01	183.88	.00	.00	.00	.00	
102	-.03	104.00	.00	.00	.00	.00	
103	-.10	42.74	.00	.00	.00	.00	
104	-59.15	89.41	.00	.00	.00	.00	
105	-.01	131.07	.00	.00	.00	.00	
106	-.87	-27.20	.00	.00	.00	.00	
107	-.87	-52.20	.00	.00	.00	.00	
108	312.46	231.90	.00	.00	.00	.00	
109	-.05	700.65	.00	.00	.00	.00	
282	1	.01	87.69	.00	.00	.00	.00
	2	-.06	-12.41	-.02	.00	.00	.00
	3	-.05	-8.41	-.02	.00	.00	.00
	4	-.04	-4.42	-.01	.00	.00	.00
	5	.00	52.40	.00	.00	.00	.00
	6	.02	10.12	6.35	.00	.00	.00
	7	.12	86.71	75.94	.00	.00	.00
	8	-74.09	-28.39	-.03	.00	.00	.00
	9	.00	23.71	.00	.00	.00	.00
	10	.00	25.00	.00	.00	.00	.00
	11	.00	-25.00	.00	.00	.00	.00
	12	.00	1.27	.00	.00	.00	.00
	13	.00	.00	.00	.00	.00	.00
	14	625.04	15.40	.01	.00	.00	.00
101	.01	183.83	.00	.00	.00	.00	
102	.03	120.17	5.08	.00	.00	.00	
103	.10	181.44	60.75	.00	.00	.00	
104	-59.27	89.36	-.02	.00	.00	.00	
105	.01	131.04	.00	.00	.00	.00	
106	.87	83.08	.30	.00	.00	.00	
107	.87	58.08	.30	.00	.00	.00	
108	312.54	231.85	.01	.00	.00	.00	
109	.05	700.46	.02	.00	.00	.00	
283	1	.00	81.08	.00	.00	.00	.00
	2	.00	28.90	.00	.00	.00	.00
	3	.00	24.90	.00	.00	.00	.00
	4	.00	20.91	.00	.00	.00	.00
	5	.00	52.40	.00	.00	.00	.00
	6	.00	-10.12	.00	.00	.00	.00
	7	.00	-85.61	.00	.00	.00	.00
	8	.00	28.37	.00	.00	.00	.00
	9	.00	22.54	.00	.00	.00	.00
	10	.00	25.00	.00	.00	.00	.00
	11	.00	-25.00	.00	.00	.00	.00
	12	.00	1.27	.00	.00	.00	.00
	13	.00	.00	.00	.00	.00	.00
	14	.00	-15.39	.00	.00	.00	.00
101	.00	175.90	.00	.00	.00	.00	
102	.00	98.69	.00	.00	.00	.00	



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□

SUPPORT REACTIONS -UNIT KIP INCH STRUCTURE TYPE = SPACE

JOINT	LOAD	FORCE-X	FORCE-Y	FORCE-Z	MOM-X	MOM-Y	MOM Z
□							
	103	.00	38.30	.00	.00	.00	.00
	104	.00	129.48	.00	.00	.00	.00
	105	.00	124.81	.00	.00	.00	.00
	106	.00	79.88	.00	2843.00	.00	-23970.84
	107	.00	54.88	.00	2843.00	.00	-23970.84
	108	.00	205.87	.00	.00	.00	.00
	109	.00	667.40	.00	.00	.00	.00
284	1	.00	81.05	.00	.00	.00	.00
	2	.00	28.91	.02	.00	.00	.00
	3	.00	24.91	.02	.00	.00	.00
	4	.00	20.92	.01	.00	.00	.00
	5	.00	52.40	.00	.00	.00	.00
	6	.00	10.12	6.33	.00	.00	.00
	7	.00	85.61	72.33	.00	.00	.00
	8	.00	28.39	.03	.00	.00	.00
	9	.00	22.53	.00	.00	.00	.00
	10	.00	25.00	.00	.00	.00	.00
	11	.00	-25.00	.00	.00	.00	.00
	12	.00	1.27	.00	.00	.00	.00
	13	.00	.00	.00	.00	.00	.00
	14	.00	-15.40	-.01	.00	.00	.00
	101	.00	175.86	.00	.00	.00	.00
	102	.00	114.85	5.06	.00	.00	.00
	103	.00	175.24	57.86	.00	.00	.00
	104	.00	129.47	.02	.00	.00	.00
	105	.00	124.78	.00	.00	.00	.00
	106	.00	79.86	-.31	.00	.00	.00
	107	.00	54.86	-.31	.00	.00	.00
	108	.00	205.82	-.01	.00	.00	.00
	109	.00	667.24	-.02	.00	.00	.00

\*\*\*\*\* END OF LATEST ANALYSIS RESULT \*\*\*\*\*

408. PRINT CG

CENTER OF GRAVITY OF THE STRUCTURE IS LOCATED AT: (INCH UNIT)

X = 185.00 Y = 83.58 Z = .00

409. LOAD LIST 1

410. PRINT MEMBER STRESS

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□

MEMBER STRESSES

ALL UNITS ARE KIP /SQ INCH

MEMB	LD	SECT	AXIAL	BEND-Y	BEND-Z	COMBINED	SHEAR-Y	SHEAR-Z
201	1	.0 1.00	.0 T .0 T	.0 .0	.0 .1	.0 .1	.0 .0	.0 .0
202	1	.0 1.00	.0 C .0 C	.0 .0	.1 .1	.1 .1	.1 .1	.0 .0
203	1	.0 1.00	.0 T .0 T	.0 .0	.1 .1	.1 .1	.1 .1	.0 .0
204	1	.0 1.00	.0 C .0 C	.0 .0	.1 .0	.1 .0	.0 .0	.0 .0
205	1	.0 1.00	.0 T .0 T	.0 .0	.0 .0	.0 .1	.0 .0	.0 .0
206	1	.0 1.00	.0 C .0 C	.0 .0	.0 .0	.0 .0	.0 .0	.0 .0
207	1	.0 1.00	.0 C .0 C	.0 .0	.0 .0	.0 .0	.0 .0	.0 .0
208	1	.0 1.00	.0 T .0 T	.0 .0	.0 .0	.0 .0	.0 .0	.0 .0
211	1	.0 1.00	.0 T .0 T	.0 .5	.0 3.0	.0 3.4	.9 1.4	.0 .0
212	1	.0 1.00	.2 C .2 C	.5 .0	1.5 .2	2.1 .4	.7 .7	.0 .0
213	1	.0 1.00	.0 C .0 C	.0 .5	.0 3.0	.0 3.4	.9 1.4	.0 .0
214	1	.0 1.00	.2 C .2 C	.5 .0	1.5 .2	2.1 .4	.7 .7	.0 .0
215	1	.0 1.00	.5 T .5 T	.0 .3	1.5 1.0	2.0 1.8	.6 .6	.1 .1
216	1	.0 1.00	.2 C .2 C	.0 .2	.2 .3	.4 .6	.6 .6	.0 .0
217	1	.0 1.00	.5 T .5 T	.0 .3	1.5 1.0	2.0 1.8	.6 .6	.1 .1
218	1	.0 1.00	.2 C .2 C	.0 .2	.2 .3	.4 .6	.6 .6	.0 .0
219	1	.0 1.00	.0 T .0 T	.0 .0	.0 .0	.0 .0	.9 .9	.0 .0
251	1	.0 1.00	.0 T .0 T	.0 .0	.0 .9	.0 .9	1.0 .9	.0 .0
252	1	.0 1.00	.0 C .0 C	.0 .0	.9 .0	.9 .0	.9 1.0	.0 .0
261	1	.0 1.00	.0 T .0 T	.0 .0	.0 .8	.0 .8	.9 .9	.0 .0
262	1	.0 1.00	.0 T .0 T	.0 .0	.8 .0	.8 .0	.9 .9	.0 .0

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□

MEMBER STRESSES

ALL UNITS ARE KIP /SQ INCH

□

MEMB	LD	SECT	AXIAL	BEND-Y	BEND-Z	COMBINED	SHEAR-Y	SHEAR-Z
271	1	.0	.3 C	.0	.0	.3	.0	.0
		1.00	.3 C	.0	.0	.3	.0	.0
272	1	.0	.3 C	.0	.0	.3	.0	.0
		1.00	.3 C	.0	.0	.3	.0	.0
281	1	.0	.2 C	.0	.0	.2	.0	.0
		1.00	.2 C	.0	.0	.2	.0	.0
282	1	.0	.2 C	.0	.0	.2	.0	.0
		1.00	.2 C	.0	.0	.2	.0	.0
283	1	.0	.2 C	.0	.0	.2	.0	.0
		1.00	.2 C	.0	.0	.2	.0	.0
284	1	.0	.2 C	.0	.0	.2	.0	.0
		1.00	.2 C	.0	.0	.2	.0	.0

\*\*\*\*\* END OF LATEST ANALYSIS RESULT \*\*\*\*\*

411. PRINT ELEMENT FORCE

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

-----  
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
301	1	-.05 1.27	-.03 1.15	.13 -.08	-.13 .02						
	TOP :	SMAX=.70	SMIN=	-.76	TMAX=.73	ANGLE=	90.0				
	BOTT:	SMAX=.64	SMIN=	-.69	TMAX=.66	ANGLE=	-41.9				
302	1	.05 1.01	-.01 .94	.87 .00	4.05 .04						
	TOP :	SMAX=.96	SMIN=	-.10	TMAX=.53	ANGLE=	28.5				
	BOTT:	SMAX=.11	SMIN=	-.89	TMAX=.50	ANGLE=	30.3				
303	1	.05 1.01	.01 .94	.87 .00	4.05 .04						
	TOP :	SMAX=.96	SMIN=	-.10	TMAX=.53	ANGLE=	-28.5				
	BOTT:	SMAX=.11	SMIN=	-.89	TMAX=.50	ANGLE=	-30.3				
304	1	-.05 1.27	.03 1.15	.13 -.08	-.13 .02						
	TOP :	SMAX=.70	SMIN=	-.76	TMAX=.73	ANGLE=	90.0				
	BOTT:	SMAX=.64	SMIN=	-.69	TMAX=.66	ANGLE=	42.0				
305	1	-.02 .54	-.01 .42	-.20 .04	-2.02 .08						
	TOP :	SMAX=.18	SMIN=	-.43	TMAX=.31	ANGLE=	32.1				
	BOTT:	SMAX=.44	SMIN=	.05	TMAX=.19	ANGLE=	14.0				
306	1	.00 .42	.00 .51	-.28 .01	-2.81 .03						
	TOP :	SMAX=	SMIN=	-.44	TMAX=.20	ANGLE=	.6				
	BOTT:	SMAX=.53	SMIN=	.03	TMAX=.25	ANGLE=	-14.4				
307	1	.00 .32	.00 .33	-.25 .02	-1.84 -.01						
	TOP :	SMAX=	SMIN=	-.32	TMAX=.15	ANGLE=	-7.9				
	BOTT:	SMAX=.34	SMIN=	.02	TMAX=.16	ANGLE=	-21.2				
308	1	.00 .17	.01 .17	-.13 .01	-.75 -.02						
	TOP :	SMAX=.01	SMIN=	-.16	TMAX=.09	ANGLE=	-19.0				
	BOTT:	SMAX=.16	SMIN=	-.02	TMAX=.09	ANGLE=	90.0				
309	1	.00 .10	.01 .13	.06 .01	.55 -.01						
	TOP :	SMAX=.10	SMIN=	.00	TMAX=.05	ANGLE=	90.0				
	BOTT:	SMAX=.02	SMIN=	-.12	TMAX=.07	ANGLE=	21.8				
310	1	.01 .27	.01 .28	.23 .00	1.72 .00						
	TOP :	SMAX=.29	SMIN=	.04	TMAX=.12	ANGLE=	6.1				
	BOTT:	SMAX=	SMIN=	-.29	TMAX=.13	ANGLE=	5.1				
311	1	.01 .38	.00 .37	.34 .00	2.41 .00						
	TOP :	SMAX=.41	SMIN=	.06	TMAX=.18	ANGLE=	1.4				
	BOTT:	SMAX=	SMIN=	-.40	TMAX=.17	ANGLE=	1.0				
312	1	.01 .38	.00 .37	.34 .00	2.42 .00						
	TOP :	SMAX=.41	SMIN=	.06	TMAX=.18	ANGLE=	-1.4				
	BOTT:	SMAX=	SMIN=	-.40	TMAX=.17	ANGLE=	-1.1				
313	1	.01 .27	-.01 .28	.23 .00	1.72 .00						
	TOP :	SMAX=.29	SMIN=	.04	TMAX=.12	ANGLE=	-6.1				
	BOTT:	SMAX=	SMIN=	-.29	TMAX=.13	ANGLE=	-5.2				

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
314	1	.00	-.01	.06	.55	.28					
		.10	.13	.01	-.01	.00					
	TOP :	SMAX=.10	SMIN=	.00	TMAX=.05	ANGLE=90.0					
	BOTT:	SMAX=.02	SMIN=	-.12	TMAX=.07	ANGLE=-21.8					
315	1	.00	-.01	-.12	-.75	.40					
		.17	.17	.01	-.02	-.01					
	TOP :	SMAX=.01	SMIN=	-.16	TMAX=.09	ANGLE=19.1					
	BOTT:	SMAX=.16	SMIN=	-.02	TMAX=.09	ANGLE=90.0					
316	1	.00	.00	-.25	-1.83	.44					
		.32	.33	.02	-.01	-.03					
	TOP :	SMAX=	SMIN=	-.32	TMAX=.15	ANGLE=7.9					
	BOTT:	SMAX=.33	SMIN=	.02	TMAX=.16	ANGLE=21.2					
317	1	.00	.00	-.28	-2.81	.35					
		.42	.51	.01	.03	-.06					
	TOP :	SMAX=	SMIN=	-.44	TMAX=.20	ANGLE=-.6					
	BOTT:	SMAX=.53	SMIN=	.03	TMAX=.25	ANGLE=14.4					
318	1	-.02	.01	-.20	-2.03	-1.10					
		.54	.42	.04	.08	-.09					
	TOP :	SMAX=.18	SMIN=	-.43	TMAX=.31	ANGLE=-32.1					
	BOTT:	SMAX=.44	SMIN=	.05	TMAX=.20	ANGLE=-14.0					
321	1	-.05	.14	1.33	-3.30	-2.74					
		1.05	1.06	-.11	-.03	-.02					
	TOP :	SMAX=.36	SMIN=	-.83	TMAX=.59	ANGLE=-27.1					
	BOTT:	SMAX=.70	SMIN=	-.51	TMAX=.61	ANGLE=-22.8					
322	1	.15	.16	8.18	12.64	-1.68					
		1.88	1.95	-.04	-.04	-.01					
	TOP :	SMAX=2.16	SMIN=	1.22	TMAX=.47	ANGLE=19.2					
	BOTT:	SMAX=-1.32	SMIN=	-2.23	TMAX=.46	ANGLE=17.7					
323	1	.15	-.16	8.18	12.63	1.68					
		1.88	1.94	-.04	-.04	.01					
	TOP :	SMAX=2.16	SMIN=	1.22	TMAX=.47	ANGLE=-19.3					
	BOTT:	SMAX=-1.31	SMIN=	-2.23	TMAX=.46	ANGLE=-17.7					
324	1	-.05	-.14	1.33	-3.30	2.74					
		1.05	1.06	-.11	-.03	.02					
	TOP :	SMAX=.36	SMIN=	-.83	TMAX=.59	ANGLE=27.1					
	BOTT:	SMAX=.70	SMIN=	-.51	TMAX=.61	ANGLE=22.9					
325	1	-.02	.03	-2.31	-6.92	.80					
		1.16	.92	-.04	-.13	.04					
	TOP :	SMAX=	SMIN=	-1.31	TMAX=.46	ANGLE=10.8					
	BOTT:	SMAX=1.04	SMIN=	.33	TMAX=.36	ANGLE=8.0					
326	1	-.01	.01	-1.53	-3.59	-.24					
		.59	.50	.06	-.06	.06					
	TOP :	SMAX=	SMIN=	-.66	TMAX=.24	ANGLE=2.7					
	BOTT:	SMAX=.57	SMIN=	.28	TMAX=.15	ANGLE=-21.7					
327	1	.00	.02	-.78	-1.97	-.43					
		.34	.33	.08	-.03	.04					
	TOP :	SMAX=	SMIN=	-.36	TMAX=.16	ANGLE=-6.7					
	BOTT:	SMAX=.38	SMIN=	.14	TMAX=.12	ANGLE=90.0					
328	1	.00	.02	-.26	-.56	-.40					
		.15	.17	.06	-.01	.01					
	TOP :	SMAX=.04	SMIN=	-.12	TMAX=.08	ANGLE=-20.9					
	BOTT:	SMAX=.18	SMIN=	.02	TMAX=.08	ANGLE=90.0					

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
329	1	.00	.02	.24	.94						
		.17	.17	.03	.00						
	TOP :	SMAX=.18	SMIN=	.05	TMAX=.07	ANGLE=	90.0				
	BOTT:	SMAX=.01	SMIN=	-.17	TMAX=.09	ANGLE=	17.3				
330	1	.00	.01	.62	2.16						
		.33	.32	.00	.01						
	TOP :	SMAX=.37	SMIN=	.10	TMAX=.14	ANGLE=	8.4				
	BOTT:	SMAX=-.10	SMIN=	-.36	TMAX=.13	ANGLE=	5.7				
331	1	.00	.00	.82	2.84						
		.43	.41	-.01	.01						
	TOP :	SMAX=.48	SMIN=	.12	TMAX=.18	ANGLE=	2.2				
	BOTT:	SMAX=-.15	SMIN=	-.47	TMAX=.16	ANGLE=	1.4				
332	1	.00	.00	.82	2.84						
		.43	.41	-.01	.01						
	TOP :	SMAX=.48	SMIN=	.12	TMAX=.18	ANGLE=	-2.2				
	BOTT:	SMAX=-.15	SMIN=	-.47	TMAX=.16	ANGLE=	-1.4				
333	1	.00	-.01	.62	2.16						
		.33	.32	.00	.01						
	TOP :	SMAX=.37	SMIN=	.10	TMAX=.14	ANGLE=	-8.4				
	BOTT:	SMAX=-.10	SMIN=	-.36	TMAX=.13	ANGLE=	-5.7				
334	1	.00	-.02	.24	.94						
		.17	.17	.03	.00						
	TOP :	SMAX=.18	SMIN=	.05	TMAX=.07	ANGLE=	90.0				
	BOTT:	SMAX=.01	SMIN=	-.17	TMAX=.09	ANGLE=	-17.3				
335	1	.00	-.02	-.26	-.56						
		.15	.17	.06	-.01						
	TOP :	SMAX=.04	SMIN=	-.12	TMAX=.08	ANGLE=	20.9				
	BOTT:	SMAX=.18	SMIN=	.02	TMAX=.08	ANGLE=	90.0				
336	1	.00	-.02	-.78	-1.97						
		.34	.33	.08	-.03						
	TOP :	SMAX=-.04	SMIN=	-.36	TMAX=.16	ANGLE=	6.6				
	BOTT:	SMAX=.38	SMIN=	.14	TMAX=.12	ANGLE=	90.0				
337	1	-.01	-.01	-1.53	-3.59						
		.59	.50	.06	-.06						
	TOP :	SMAX=-.19	SMIN=	-.66	TMAX=.24	ANGLE=	-2.7				
	BOTT:	SMAX=.57	SMIN=	.28	TMAX=.15	ANGLE=	21.7				
338	1	-.02	-.03	-2.31	-6.92						
		1.17	.92	-.04	-.13						
	TOP :	SMAX=-.39	SMIN=	-1.31	TMAX=.46	ANGLE=	-10.8				
	BOTT:	SMAX=1.04	SMIN=	.33	TMAX=.36	ANGLE=	-8.0				
341	1	.02	.13	1.00	-3.53						
		.86	.96	-.10	-.03						
	TOP :	SMAX=.19	SMIN=	-.74	TMAX=.47	ANGLE=	21.4				
	BOTT:	SMAX=.69	SMIN=	-.40	TMAX=.54	ANGLE=	20.3				
342	1	-.14	.16	7.83	13.41						
		1.93	2.01	-.06	-.04						
	TOP :	SMAX=2.22	SMIN=	1.22	TMAX=.50	ANGLE=	-9.3				
	BOTT:	SMAX=-1.33	SMIN=	-2.31	TMAX=.49	ANGLE=	-10.9				
343	1	-.14	-.16	7.82	13.40						
		1.93	2.00	-.06	-.04						
	TOP :	SMAX=2.22	SMIN=	1.22	TMAX=.50	ANGLE=	9.4				
	BOTT:	SMAX=-1.33	SMIN=	-2.31	TMAX=.49	ANGLE=	11.0				

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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH				
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH						
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FXY
344	1	.02 .85	-.13 .95	1.00 -.10	-3.53 -.03	-2.02 .02
	TOP :	SMAX=.19	SMIN=	TMAX=-.74	ANGLE=.47	-21.4
	BOTT:	SMAX=.69	SMIN=	TMAX=-.40	ANGLE=.54	-20.3
345	1	.02 1.21	.02 1.01	-2.41 -.05	-7.50 -.11	-.31 -.01
	TOP :	SMAX=-.45	SMIN=	TMAX=-1.36	ANGLE=.46	-3.7
	BOTT:	SMAX=1.14	SMIN=	TMAX=.35	ANGLE=.39	-3.2
346	1	.00 .65	.02 .53	-1.66 .05	-4.01 -.06	.21 .00
	TOP :	SMAX=-.22	SMIN=	TMAX=-.73	ANGLE=.25	3.7
	BOTT:	SMAX=.62	SMIN=	TMAX=.32	ANGLE=.15	7.6
347	1	.00 .37	.02 .31	-.91 .11	-2.20 -.02	.00 .01
	TOP :	SMAX=-.04	SMIN=	TMAX=-.39	ANGLE=.17	1.5
	BOTT:	SMAX=.35	SMIN=	TMAX=.26	ANGLE=.04	90.0
348	1	.00 .13	.02 .13	-.33 .09	-.62 .00	-.08 .01
	TOP :	SMAX=.04	SMIN=	TMAX=-.11	ANGLE=.07	-1.4
	BOTT:	SMAX=.15	SMIN=	TMAX=.09	ANGLE=.03	90.0
349	1	.00 .16	.02 .18	.24 .05	1.05 .00	-.13 .01
	TOP :	SMAX=.18	SMIN=	TMAX=.08	ANGLE=.05	90.0
	BOTT:	SMAX=.01	SMIN=	TMAX=-.18	ANGLE=.09	8.4
350	1	.00 .37	.01 .35	.66 .01	2.40 .01	-.11 .00
	TOP :	SMAX=.41	SMIN=	TMAX=.12	ANGLE=.15	3.3
	BOTT:	SMAX=-.10	SMIN=	TMAX=-.39	ANGLE=.14	3.9
351	1	.00 .48	.00 .45	.89 -.02	3.14 .01	-.04 .00
	TOP :	SMAX=.54	SMIN=	TMAX=.13	ANGLE=.20	1.0
	BOTT:	SMAX=-.17	SMIN=	TMAX=-.51	ANGLE=.17	1.2
352	1	.00 .48	.00 .45	.89 -.02	3.14 .01	.04 .00
	TOP :	SMAX=.54	SMIN=	TMAX=.13	ANGLE=.20	-1.0
	BOTT:	SMAX=-.17	SMIN=	TMAX=-.51	ANGLE=.17	-1.2
353	1	.00 .37	-.01 .35	.66 .01	2.40 .01	.11 .00
	TOP :	SMAX=.41	SMIN=	TMAX=.12	ANGLE=.15	-3.3
	BOTT:	SMAX=-.10	SMIN=	TMAX=-.39	ANGLE=.14	-3.9
354	1	.00 .16	-.02 .18	.24 .05	1.05 .00	.13 -.01
	TOP :	SMAX=.18	SMIN=	TMAX=.08	ANGLE=.05	90.0
	BOTT:	SMAX=.01	SMIN=	TMAX=-.18	ANGLE=.09	-8.4
355	1	.00 .13	-.02 .13	-.33 .09	-.62 .00	.08 -.01
	TOP :	SMAX=.04	SMIN=	TMAX=-.11	ANGLE=.07	1.3
	BOTT:	SMAX=.15	SMIN=	TMAX=.09	ANGLE=.03	90.0
356	1	.00 .37	-.02 .31	-.91 .11	-2.20 -.02	.00 -.01
	TOP :	SMAX=-.04	SMIN=	TMAX=-.39	ANGLE=.17	-1.5
	BOTT:	SMAX=.35	SMIN=	TMAX=.26	ANGLE=.04	90.0

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
357	1	.00	-.02	-1.66	-4.02						
		.65	.53	.05	-.06						
	TOP :	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
	BOTT:	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
		-.22		-.73	.25	-39.7					
		.62		.32	.15	-7.6					
358	1	.02	-.02	-2.41	-7.50						
		1.21	1.01	-.05	-.11						
	TOP :	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
	BOTT:	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
		-.45		-1.37	.46	3.7					
		1.14		.35	.40	3.2					
361	1	.02	.02	-1.76	-1.17						
		.70	.69	-.05	.00						
	TOP :	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
	BOTT:	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
		.10		-.64	.37	-39.2					
		.60		-.16	.38	90.0					
362	1	-.03	.01	-2.05	6.64						
		1.40	1.31	-.08	.00						
	TOP :	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
	BOTT:	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
		1.13		-.44	.78	-7.2					
		.30		-1.14	.72	-8.3					
363	1	-.03	-.01	-2.05	6.64						
		1.40	1.31	-.08	.00						
	TOP :	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
	BOTT:	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
		1.13		-.44	.78	7.2					
		.30		-1.14	.72	8.3					
364	1	.02	-.02	-1.76	-1.17						
		.70	.69	-.05	.00						
	TOP :	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
	BOTT:	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
		.10		-.64	.37	39.2					
		.60		-.16	.38	90.0					
365	1	.02	.00	-.94	-4.73						
		.75	.72	-.04	-.02						
	TOP :	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
	BOTT:	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
		-.18		-.82	.32	-9.1					
		.77		.11	.33	-5.4					
366	1	.00	.01	-.76	-3.85						
		.64	.55	.03	-.04						
	TOP :	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
	BOTT:	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
		-.09		-.68	.29	1.7					
		.61		.16	.23	6.3					
367	1	.00	.01	-.66	-2.43						
		.42	.33	.08	-.03						
	TOP :	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
	BOTT:	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
		-.03		-.44	.21	2.5					
		.38		.19	.09	8.0					
368	1	.00	.02	-.30	-.86						
		.18	.13	.09	-.02						
	TOP :	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
	BOTT:	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
		.04		-.16	.10	4.0					
		.14		.12	.01	90.0					
369	1	.00	.02	.19	.93						
		.13	.17	.06	.00						
	TOP :	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
	BOTT:	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
		.15		.09	.03	90.0					
		.02		-.16	.09	.0					
370	1	.00	.01	.64	2.42						
		.37	.36	.01	.01						
	TOP :	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
	BOTT:	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
		.41		.12	.15	.2					
		-.09		-.39	.15	.4					
371	1	.00	.00	.91	3.26						
		.51	.47	-.02	.02						
	TOP :	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
	BOTT:	SMAX=	SMIN=	TMAX=	TMAX=	ANGLE=	ANGLE=				
		.56		.13	.21	.2					
		-.17		-.53	.18	.2					



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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
372	1	.00	.00	.91	3.26	.01	.01	.01	.01	.01	.01
		.51	.47	-.02	.02	.00	.00	.00	.00	.00	.00
	TOP :	SMAX=	SMIN=	.13	TMAX=	.21	ANGLE=	-.2			
	BOTT:	SMAX=	SMIN=	-.53	TMAX=	.18	ANGLE=	-.2			
373	1	.00	-.01	.64	2.42	.01	.01	.01	.01	.01	.01
		.37	.36	.01	.01	.00	.00	.00	.00	.00	.00
	TOP :	SMAX=	SMIN=	.12	TMAX=	.15	ANGLE=	-.2			
	BOTT:	SMAX=	SMIN=	-.39	TMAX=	.15	ANGLE=	-.5			
374	1	.00	-.02	.19	.93	-.01	-.01	-.01	-.01	-.01	-.01
		.13	.17	.06	.00	.00	.00	.00	.00	.00	.00
	TOP :	SMAX=	SMIN=	.09	TMAX=	.03	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.16	TMAX=	.09	ANGLE=	.0			
375	1	.00	-.02	-.30	-.86	-.07	-.07	-.07	-.07	-.07	-.07
		.18	.13	.09	-.02	.00	.00	.00	.00	.00	.00
	TOP :	SMAX=	SMIN=	-.16	TMAX=	.10	ANGLE=	-4.0			
	BOTT:	SMAX=	SMIN=	.12	TMAX=	.01	ANGLE=	90.0			
376	1	.00	-.01	-.66	-2.43	-.13	-.13	-.13	-.13	-.13	-.13
		.42	.33	.08	-.03	.00	.00	.00	.00	.00	.00
	TOP :	SMAX=	SMIN=	-.44	TMAX=	.21	ANGLE=	-2.5			
	BOTT:	SMAX=	SMIN=	.19	TMAX=	.09	ANGLE=	-8.0			
377	1	.00	-.01	-.76	-3.85	-.20	-.20	-.20	-.20	-.20	-.20
		.64	.55	.03	-.04	.02	.02	.02	.02	.02	.02
	TOP :	SMAX=	SMIN=	-.68	TMAX=	.29	ANGLE=	-1.7			
	BOTT:	SMAX=	SMIN=	.16	TMAX=	.23	ANGLE=	-6.3			
378	1	.02	.00	-.94	-4.73	.49	.49	.49	.49	.49	.49
		.75	.73	-.04	-.02	.02	.02	.02	.02	.02	.02
	TOP :	SMAX=	SMIN=	-.82	TMAX=	.32	ANGLE=	9.1			
	BOTT:	SMAX=	SMIN=	.11	TMAX=	.33	ANGLE=	5.4			
381	1	-.02	.02	-1.69	-1.05	-1.71	-1.71	-1.71	-1.71	-1.71	-1.71
		.55	.56	-.05	.00	.01	.01	.01	.01	.01	.01
	TOP :	SMAX=	SMIN=	-.54	TMAX=	.28	ANGLE=	37.1			
	BOTT:	SMAX=	SMIN=	-.10	TMAX=	.30	ANGLE=	90.0			
382	1	.03	.01	-2.09	6.25	-.94	-.94	-.94	-.94	-.94	-.94
		1.33	1.24	-.07	.00	.01	.01	.01	.01	.01	.01
	TOP :	SMAX=	SMIN=	-.44	TMAX=	.75	ANGLE=	5.8			
	BOTT:	SMAX=	SMIN=	-1.07	TMAX=	.68	ANGLE=	7.0			
383	1	.03	-.01	-2.09	6.25	.94	.94	.94	.94	.94	.94
		1.33	1.24	-.07	.00	-.01	-.01	-.01	-.01	-.01	-.01
	TOP :	SMAX=	SMIN=	-.44	TMAX=	.75	ANGLE=	-5.8			
	BOTT:	SMAX=	SMIN=	-1.07	TMAX=	.68	ANGLE=	-7.0			
384	1	-.02	-.02	-1.69	-1.05	1.71	1.71	1.71	1.71	1.71	1.71
		.55	.56	-.05	.00	-.01	-.01	-.01	-.01	-.01	-.01
	TOP :	SMAX=	SMIN=	-.54	TMAX=	.28	ANGLE=	-37.1			
	BOTT:	SMAX=	SMIN=	-.10	TMAX=	.30	ANGLE=	90.0			
385	1	-.01	.00	-.84	-4.46	.27	.27	.27	.27	.27	.27
		.70	.68	-.04	-.02	.01	.01	.01	.01	.01	.01
	TOP :	SMAX=	SMIN=	-.77	TMAX=	.30	ANGLE=	5.7			
	BOTT:	SMAX=	SMIN=	.10	TMAX=	.32	ANGLE=	2.9			
386	1	.00	.01	-.70	-3.70	-.21	-.21	-.21	-.21	-.21	-.21
		.61	.53	.03	-.03	.01	.01	.01	.01	.01	.01
	TOP :	SMAX=	SMIN=	-.65	TMAX=	.29	ANGLE=	-2.5			
	BOTT:	SMAX=	SMIN=	.15	TMAX=	.22	ANGLE=	-5.8			

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
387	1	.00	.01	-.64	-2.33	-.04					
		.41	.31	.08	-.03	.00					
	TOP :	SMAX=	SMIN=	-.42	TMAX=	.20	ANGLE=				
	BOTT:	SMAX=	SMIN=	.19	TMAX=	.08	ANGLE=				
388	1	.00	.02	-.30	-.81	.06					
		.18	.13	.09	-.02	-.01					
	TOP :	SMAX=	SMIN=	-.15	TMAX=	.10	ANGLE=				
	BOTT:	SMAX=	SMIN=	.10	TMAX=	.02	ANGLE=				
389	1	.00	.02	.17	.90	.13					
		.13	.18	.05	.00	-.01					
	TOP :	SMAX=	SMIN=	.08	TMAX=	.03	ANGLE=				
	BOTT:	SMAX=	SMIN=	-.16	TMAX=	.09	ANGLE=				
390	1	.00	.01	.61	2.32	.12					
		.35	.34	.01	.01	-.01					
	TOP :	SMAX=	SMIN=	.11	TMAX=	.14	ANGLE=				
	BOTT:	SMAX=	SMIN=	-.38	TMAX=	.14	ANGLE=				
391	1	.00	.00	.88	3.12	.05					
		.49	.44	-.02	.02	.00					
	TOP :	SMAX=	SMIN=	.12	TMAX=	.21	ANGLE=				
	BOTT:	SMAX=	SMIN=	-.50	TMAX=	.17	ANGLE=				
392	1	.00	.00	.88	3.12	-.05					
		.49	.44	-.02	.02	.00					
	TOP :	SMAX=	SMIN=	.12	TMAX=	.21	ANGLE=				
	BOTT:	SMAX=	SMIN=	-.50	TMAX=	.17	ANGLE=				
393	1	.00	-.01	.61	2.32	-.11					
		.35	.34	.01	.01	.01					
	TOP :	SMAX=	SMIN=	.11	TMAX=	.14	ANGLE=				
	BOTT:	SMAX=	SMIN=	-.38	TMAX=	.14	ANGLE=				
394	1	.00	-.02	.17	.89	-.13					
		.13	.18	.05	.00	.01					
	TOP :	SMAX=	SMIN=	.08	TMAX=	.03	ANGLE=				
	BOTT:	SMAX=	SMIN=	-.16	TMAX=	.09	ANGLE=				
395	1	.00	-.02	-.30	-.81	-.06					
		.18	.13	.09	-.02	.01					
	TOP :	SMAX=	SMIN=	-.15	TMAX=	.10	ANGLE=				
	BOTT:	SMAX=	SMIN=	.10	TMAX=	.02	ANGLE=				
396	1	.00	-.01	-.64	-2.33	.04					
		.41	.31	.08	-.03	.00					
	TOP :	SMAX=	SMIN=	-.42	TMAX=	.20	ANGLE=				
	BOTT:	SMAX=	SMIN=	.19	TMAX=	.08	ANGLE=				
397	1	.00	-.01	-.70	-3.70	.21					
		.61	.53	.03	-.03	-.01					
	TOP :	SMAX=	SMIN=	-.65	TMAX=	.29	ANGLE=				
	BOTT:	SMAX=	SMIN=	.15	TMAX=	.22	ANGLE=				
398	1	-.01	.00	-.84	-4.46	-.27					
		.70	.68	-.04	-.02	-.01					
	TOP :	SMAX=	SMIN=	-.77	TMAX=	.30	ANGLE=				
	BOTT:	SMAX=	SMIN=	.10	TMAX=	.32	ANGLE=				
401	1	-.02	.12	.81	-3.32	-1.68					
		.75	.85	-.09	-.03	.02					
	TOP :	SMAX=	SMIN=	-.67	TMAX=	.40	ANGLE=				
	BOTT:	SMAX=	SMIN=	-.33	TMAX=	.48	ANGLE=				

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
402	1	.13	.15	6.94	12.17								
		1.74	1.82	-.05	-.04								
	TOP :	SMAX=	SMIN=	1.08	TMAX=	.46	ANGLE=	8.5					
	BOTT:	SMAX=	SMIN=	-2.09	TMAX=	.46	ANGLE=	10.4					
403	1	.13	-.15	6.94	12.16								
		1.74	1.82	-.05	-.04								
	TOP :	SMAX=	SMIN=	1.08	TMAX=	.46	ANGLE=	-8.5					
	BOTT:	SMAX=	SMIN=	-2.09	TMAX=	.46	ANGLE=	-10.5					
404	1	-.02	-.12	.80	-3.32								
		.75	.85	-.09	-.03								
	TOP :	SMAX=	SMIN=	-.67	TMAX=	.40	ANGLE=	19.7					
	BOTT:	SMAX=	SMIN=	-.33	TMAX=	.48	ANGLE=	19.4					
405	1	-.02	.02	-2.18	-6.88								
		1.10	.93	-.05	-.10								
	TOP :	SMAX=	SMIN=	-1.24	TMAX=	.42	ANGLE=	1.6					
	BOTT:	SMAX=	SMIN=	.31	TMAX=	.37	ANGLE=	1.3					
406	1	.00	.01	-1.47	-3.60								
		.58	.49	.05	-.05								
	TOP :	SMAX=	SMIN=	-.65	TMAX=	.23	ANGLE=	-6.0					
	BOTT:	SMAX=	SMIN=	.29	TMAX=	.14	ANGLE=	-11.0					
407	1	.00	.02	-.76	-1.78								
		.31	.26	.11	-.02								
	TOP :	SMAX=	SMIN=	-.32	TMAX=	.15	ANGLE=	-.9					
	BOTT:	SMAX=	SMIN=	.23	TMAX=	.03	ANGLE=	90.0					
408	1	.00	.02	-.26	-.41								
		.11	.14	.10	-.01								
	TOP :	SMAX=	SMIN=	-.08	TMAX=	.07	ANGLE=	5.6					
	BOTT:	SMAX=	SMIN=	.04	TMAX=	.06	ANGLE=	90.0					
409	1	.00	.01	.23	1.01								
		.16	.20	.05	.00								
	TOP :	SMAX=	SMIN=	.08	TMAX=	.05	ANGLE=	90.0					
	BOTT:	SMAX=	SMIN=	-.19	TMAX=	.11	ANGLE=	-16.9					
410	1	.00	.01	.61	2.10								
		.32	.32	.00	.01								
	TOP :	SMAX=	SMIN=	.09	TMAX=	.13	ANGLE=	-6.9					
	BOTT:	SMAX=	SMIN=	-.35	TMAX=	.13	ANGLE=	-10.9					
411	1	.00	.00	.81	2.68								
		.41	.39	-.04	.01								
	TOP :	SMAX=	SMIN=	.10	TMAX=	.18	ANGLE=	-2.1					
	BOTT:	SMAX=	SMIN=	-.44	TMAX=	.14	ANGLE=	-3.8					
412	1	.00	.00	.81	2.68								
		.41	.39	-.04	.01								
	TOP :	SMAX=	SMIN=	.10	TMAX=	.18	ANGLE=	2.1					
	BOTT:	SMAX=	SMIN=	-.44	TMAX=	.14	ANGLE=	3.8					
413	1	.00	-.01	.61	2.10								
		.32	.32	.00	.01								
	TOP :	SMAX=	SMIN=	.09	TMAX=	.13	ANGLE=	6.9					
	BOTT:	SMAX=	SMIN=	-.35	TMAX=	.13	ANGLE=	10.9					
414	1	.00	-.01	.23	1.01								
		.16	.20	.05	.00								
	TOP :	SMAX=	SMIN=	.08	TMAX=	.05	ANGLE=	90.0					
	BOTT:	SMAX=	SMIN=	-.18	TMAX=	.11	ANGLE=	16.9					

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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
415	1	.00	-.02	-.26	-.42	-.17					
		.11	.14	.10	-.01	.02					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
416	1	.00	-.02	-.76	-1.78	-.04					
		.31	.26	.11	-.02	.01					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
417	1	.00	-.01	-1.47	-3.60	.30					
		.58	.49	.05	-.05	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
418	1	-.02	-.02	-2.18	-6.88	-.12					
		1.10	.93	-.05	-.10	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
421	1	.04	.12	1.19	-3.07	2.45					
		.98	.94	-.10	-.04	.03					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
422	1	-.13	.15	7.16	11.50	1.33					
		1.69	1.75	-.02	-.04	.01					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
423	1	-.13	-.15	7.16	11.49	-1.33					
		1.69	1.75	-.02	-.04	-.01					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
424	1	.04	-.12	1.19	-3.08	-2.45					
		.98	.94	-.10	-.04	-.03					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
425	1	.01	.03	-2.16	-6.56	-.71					
		1.09	.89	-.05	-.10	-.05					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
426	1	.01	.02	-1.42	-2.99	.19					
		.48	.43	.05	-.04	-.05					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
427	1	.00	.02	-.85	-1.53	.48					
		.26	.31	.10	.00	-.03					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
428	1	.00	.02	-.27	-.08	.55					
		.15	.21	.08	.01	-.01					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
429	1	.00	.01	.22	.91	.52					
		.21	.20	.03	.01	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
430	1	.00	.01	.52	1.61	.36					
		.27	.25	-.01	.00	.01					
	TOP :	SMAX=.29	SMIN=	.05	TMAX=.12	ANGLE=-17.1					
	BOTT:	SMAX=-.08	SMIN=	-.28	TMAX=.10	ANGLE=-15.7					
431	1	.00	.00	.65	1.99	.12					
		.30	.29	-.04	.00	.00					
	TOP :	SMAX=.33	SMIN=	.07	TMAX=.13	ANGLE=-5.4					
	BOTT:	SMAX=-.14	SMIN=	-.33	TMAX=.10	ANGLE=-5.0					
432	1	.00	.00	.65	1.99	-.12					
		.30	.29	-.04	.00	.00					
	TOP :	SMAX=.33	SMIN=	.07	TMAX=.13	ANGLE=5.4					
	BOTT:	SMAX=-.14	SMIN=	-.33	TMAX=.10	ANGLE=5.0					
433	1	.00	-.01	.52	1.61	-.36					
		.27	.25	-.01	.00	-.01					
	TOP :	SMAX=.29	SMIN=	.05	TMAX=.12	ANGLE=17.1					
	BOTT:	SMAX=-.08	SMIN=	-.28	TMAX=.10	ANGLE=15.7					
434	1	.00	-.01	.22	.91	-.52					
		.21	.20	.03	.01	.00					
	TOP :	SMAX=.21	SMIN=	.01	TMAX=.10	ANGLE=90.0					
	BOTT:	SMAX=.03	SMIN=	-.18	TMAX=.11	ANGLE=25.0					
435	1	.00	-.02	-.27	-.08	-.55					
		.15	.21	.08	.01	.01					
	TOP :	SMAX=.10	SMIN=	-.07	TMAX=.08	ANGLE=90.0					
	BOTT:	SMAX=.19	SMIN=	-.04	TMAX=.11	ANGLE=30.9					
436	1	.00	-.02	-.85	-1.53	-.48					
		.26	.31	.10	.00	.03					
	TOP :	SMAX=-.03	SMIN=	-.27	TMAX=.12	ANGLE=-13.2					
	BOTT:	SMAX=.35	SMIN=	.14	TMAX=.11	ANGLE=90.0					
437	1	.01	-.02	-1.42	-2.99	-.19					
		.48	.43	.05	-.04	.05					
	TOP :	SMAX=-.19	SMIN=	-.54	TMAX=.18	ANGLE=3.4					
	BOTT:	SMAX=.49	SMIN=	.25	TMAX=.12	ANGLE=-22.1					
438	1	.01	-.03	-2.16	-6.56	.71					
		1.09	.89	-.05	-.10	.05					
	TOP :	SMAX=-.37	SMIN=	-1.23	TMAX=.43	ANGLE=11.8					
	BOTT:	SMAX=1.00	SMIN=	.31	TMAX=.35	ANGLE=5.4					
441	1	.03	.00	-.92	-2.24	3.92					
		1.19	1.17	-.05	.05	.02					
	TOP :	SMAX=.41	SMIN=	-.93	TMAX=.67	ANGLE=42.6					
	BOTT:	SMAX=.92	SMIN=	-.39	TMAX=.66	ANGLE=37.9					
442	1	-.03	.00	.55	4.25	2.10					
		.95	.86	.00	.06	.00					
	TOP :	SMAX=.92	SMIN=	-.06	TMAX=.49	ANGLE=-22.8					
	BOTT:	SMAX=.08	SMIN=	-.81	TMAX=.45	ANGLE=-25.9					
443	1	-.03	.00	.55	4.25	-2.10					
		.95	.85	.00	.06	.00					
	TOP :	SMAX=.92	SMIN=	-.06	TMAX=.49	ANGLE=22.8					
	BOTT:	SMAX=.08	SMIN=	-.81	TMAX=.45	ANGLE=25.9					
444	1	.03	.00	-.92	-2.24	-3.92					
		1.19	1.17	-.05	.05	-.02					
	TOP :	SMAX=.41	SMIN=	-.93	TMAX=.67	ANGLE=-42.6					
	BOTT:	SMAX=.92	SMIN=	-.39	TMAX=.66	ANGLE=-37.9					

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
445	1	.02	-.04	-.38	-2.32						
		.67	.51	.00	.01						
	TOP :	SMAX=.15	SMIN=	-.59	TMAX=.37	ANGLE=					
	BOTT:	SMAX=.49	SMIN=	-.03	TMAX=.26	ANGLE=					
446	1	.00	-.03	-.20	-2.21						
		.45	.33	.01	-.02						
	TOP :	SMAX=.02	SMIN=	-.44	TMAX=.23	ANGLE=					
	BOTT:	SMAX=.35	SMIN=	.04	TMAX=.15	ANGLE=					
447	1	.02	-.02	.26	1.04						
		.13	.22	.04	-.03						
	TOP :	SMAX=.15	SMIN=	.07	TMAX=.04	ANGLE=					
	BOTT:	SMAX=.00	SMIN=	-.21	TMAX=.11	ANGLE=					
448	1	.00	-.01	-.08	.17						
		.23	.26	.03	-.04						
	TOP :	SMAX=.13	SMIN=	-.13	TMAX=.13	ANGLE=					
	BOTT:	SMAX=.14	SMIN=	-.16	TMAX=.15	ANGLE=					
449	1	.00	.00	-.01	.29						
		.21	.19	.01	-.03						
	TOP :	SMAX=.13	SMIN=	-.11	TMAX=.12	ANGLE=					
	BOTT:	SMAX=.07	SMIN=	-.14	TMAX=.11	ANGLE=					
450	1	-.01	.00	.08	.78						
		.16	.16	.00	-.02						
	TOP :	SMAX=.15	SMIN=	-.03	TMAX=.09	ANGLE=					
	BOTT:	SMAX=.00	SMIN=	-.16	TMAX=.08	ANGLE=					
451	1	-.01	.00	.14	1.15						
		.18	.19	-.01	-.01						
	TOP :	SMAX=.18	SMIN=	.01	TMAX=.09	ANGLE=					
	BOTT:	SMAX=-.03	SMIN=	-.20	TMAX=.09	ANGLE=					
452	1	-.01	.00	.13	1.15						
		.18	.19	-.01	-.01						
	TOP :	SMAX=.18	SMIN=	.01	TMAX=.09	ANGLE=					
	BOTT:	SMAX=-.03	SMIN=	-.20	TMAX=.09	ANGLE=					
453	1	-.01	.00	.08	.78						
		.16	.16	.00	-.02						
	TOP :	SMAX=.15	SMIN=	-.03	TMAX=.09	ANGLE=					
	BOTT:	SMAX=.00	SMIN=	-.16	TMAX=.08	ANGLE=					
454	1	.00	.00	-.01	.29						
		.21	.19	.01	-.03						
	TOP :	SMAX=.13	SMIN=	-.11	TMAX=.12	ANGLE=					
	BOTT:	SMAX=.07	SMIN=	-.14	TMAX=.11	ANGLE=					
455	1	.00	.01	-.08	.16						
		.23	.26	.03	-.04						
	TOP :	SMAX=.13	SMIN=	-.13	TMAX=.13	ANGLE=					
	BOTT:	SMAX=.14	SMIN=	-.16	TMAX=.15	ANGLE=					
456	1	.02	.02	.26	1.04						
		.13	.22	.04	-.03						
	TOP :	SMAX=.15	SMIN=	.07	TMAX=.04	ANGLE=					
	BOTT:	SMAX=.00	SMIN=	-.21	TMAX=.11	ANGLE=					
457	1	.00	.03	-.20	-2.21						
		.45	.33	.01	-.02						
	TOP :	SMAX=.02	SMIN=	-.44	TMAX=.23	ANGLE=					
	BOTT:	SMAX=.35	SMIN=	.04	TMAX=.15	ANGLE=					

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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH  
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FORCE OR STRESS = FORCE/WIDTH/THICK,    MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY
458	1	.02	.04	-.38	-2.32	1.61	
		.67	.51	.00	.01	.06	
	TOP :	SMAX=	SMIN=	-.59	TMAX=	.37	ANGLE= 32.4
	BOTT:	SMAX=	SMIN=	-.03	TMAX=	.26	ANGLE= 25.5

\*\*\*\*\*END OF ELEMENT FORCES\*\*\*\*\*

412. LOAD LIST 2 TO 15 101 TO 109  
413. PRINT ELEMENT FORCE

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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP INCH  
 -----  
 FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	ANGLE
301	15	.07	.02	1.90	-6.52	4.99				
		1.91	1.94	.04	-.04	-.05				
	TOP :	SMAX=	SMIN=	-1.46	TMAX=	1.08	ANGLE=	23.3		
	BOTT:	SMAX=	SMIN=	-.72	TMAX=	1.10	ANGLE=	26.5		
	2	.01	.00	.17	.17	.34				
		.10	.10	.00	.00	.00				
	TOP :	SMAX=	SMIN=	-.03	TMAX=	.06	ANGLE=	90.0		
	BOTT:	SMAX=	SMIN=	-.08	TMAX=	.06	ANGLE=	90.0		
	3	.00	.00	.10	.04	.27				
		.08	.08	.00	.00	.00				
	TOP :	SMAX=	SMIN=	-.03	TMAX=	.05	ANGLE=	90.0		
	BOTT:	SMAX=	SMIN=	-.06	TMAX=	.04	ANGLE=	90.0		
	4	.00	.00	.05	.00	.21				
		.06	.06	.00	.00	.00				
	TOP :	SMAX=	SMIN=	-.03	TMAX=	.03	ANGLE=	90.0		
	BOTT:	SMAX=	SMIN=	-.04	TMAX=	.04	ANGLE=	90.0		
	5	-.01	.01	-.61	-.87	-1.18				
		.35	.38	-.01	.00	.01				
	TOP :	SMAX=	SMIN=	-.32	TMAX=	.19	ANGLE=	90.0		
	BOTT:	SMAX=	SMIN=	-.09	TMAX=	.21	ANGLE=	90.0		
	6	.00	.00	.00	-.83	.11				
		.15	.14	.00	-.01	.00				
	TOP :	SMAX=	SMIN=	-.15	TMAX=	.07	ANGLE=	6.5		
	BOTT:	SMAX=	SMIN=	.00	TMAX=	.07	ANGLE=	8.5		
	7	.00	.02	.54	-2.99	.99				
		.63	.61	.00	-.03	-.02				
	TOP :	SMAX=	SMIN=	-.56	TMAX=	.34	ANGLE=	12.2		
	BOTT:	SMAX=	SMIN=	-.15	TMAX=	.34	ANGLE=	17.2		
	8	.02	.04	.93	-.62	.88				
		.33	.35	-.01	-.01	-.01				
	TOP :	SMAX=	SMIN=	-.17	TMAX=	.19	ANGLE=	23.5		
	BOTT:	SMAX=	SMIN=	-.23	TMAX=	.20	ANGLE=	25.2		
	9	-.01	.00	-.09	-.19	-.94				
		.28	.27	-.01	.00	.00				
	TOP :	SMAX=	SMIN=	-.19	TMAX=	.16	ANGLE=	90.0		
	BOTT:	SMAX=	SMIN=	-.14	TMAX=	.15	ANGLE=	90.0		
	10	-.07	-.18	2.46	6.22	-9.15				
		2.88	2.71	-.08	.05	-.04				
	TOP :	SMAX=	SMIN=	-.90	TMAX=	1.61	ANGLE=	38.2		
	BOTT:	SMAX=	SMIN=	-2.24	TMAX=	1.50	ANGLE=	40.2		
	11	.07	.18	-2.46	-6.22	9.15				
		2.88	2.71	.08	-.05	.04				
	TOP :	SMAX=	SMIN=	-2.32	TMAX=	1.61	ANGLE=	38.2		
	BOTT:	SMAX=	SMIN=	-.77	TMAX=	1.50	ANGLE=	40.2		
	12	.00	.00	-.02	.00	-.05				
		.01	.01	.00	.00	.00				
	TOP :	SMAX=	SMIN=	-.01	TMAX=	.01	ANGLE=	90.0		
	BOTT:	SMAX=	SMIN=	-.01	TMAX=	.01	ANGLE=	90.0		
	13	-.12	-.37	7.16	13.44	-20.68				
		6.11	6.46	-.32	-.01	.10				
	TOP :	SMAX=	SMIN=	-1.86	TMAX=	3.41	ANGLE=	39.2		
	BOTT:	SMAX=	SMIN=	-5.45	TMAX=	3.57	ANGLE=	42.1		
	14	.00	-.18	2.22	9.42	4.91				
		2.29	1.78	.11	-.01	.24				
	TOP :	SMAX=	SMIN=	-.17	TMAX=	1.19	ANGLE=	-31.4		
	BOTT:	SMAX=	SMIN=	-1.80	TMAX=	.88	ANGLE=	-20.7		
	101	-.08	-.02	-.76	-1.47	-6.78				
		2.02	1.92	-.10	.02	-.03				
	TOP :	SMAX=	SMIN=	-1.39	TMAX=	1.16	ANGLE=	90.0		
	BOTT:	SMAX=	SMIN=	-.96	TMAX=	1.11	ANGLE=	-41.9		



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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		-.05	-.01	-.38	-1.47						
		1.27	1.20	-.07	.01						
TOP :	SMAX=	.54	SMIN=	-.91	TMAX=	.72	ANGLE=	-42.9			
BOTT:	SMAX=	.81	SMIN=	-.56	TMAX=	.69	ANGLE=	-39.6			
103		-.05	.00	.05	-3.19						
		1.20	1.09	-.07	-.01						
TOP :	SMAX=	.37	SMIN=	-.97	TMAX=	.67	ANGLE=	-34.4			
BOTT:	SMAX=	.84	SMIN=	-.39	TMAX=	.62	ANGLE=	-30.6			
104		-.03	.02	.36	-1.30						
		1.10	1.03	-.07	.01						
TOP :	SMAX=	.52	SMIN=	-.74	TMAX=	.63	ANGLE=	-40.5			
BOTT:	SMAX=	.64	SMIN=	-.55	TMAX=	.60	ANGLE=	-36.3			
105		-.06	-.02	-.45	-.95						
		1.51	1.42	-.08	.01						
TOP :	SMAX=	.72	SMIN=	-1.01	TMAX=	.87	ANGLE=	90.0			
BOTT:	SMAX=	.90	SMIN=	-.73	TMAX=	.82	ANGLE=	-41.9			
106		-.09	-.28	5.52	6.06						
		4.47	4.49	-.22	.01						
TOP :	SMAX=	3.39	SMIN=	-1.67	TMAX=	2.53	ANGLE=	43.2			
BOTT:	SMAX=	1.44	SMIN=	-3.59	TMAX=	2.52	ANGLE=	-44.2			
107		-.02	-.10	3.06	-.16						
		1.71	1.90	-.15	-.04						
TOP :	SMAX=	1.13	SMIN=	-.84	TMAX=	.98	ANGLE=	-38.7			
BOTT:	SMAX=	.74	SMIN=	-1.42	TMAX=	1.08	ANGLE=	-36.4			
108		-.10	-.12	.35	3.11						
		1.72	1.95	-.08	.02						
TOP :	SMAX=	1.24	SMIN=	-.73	TMAX=	.98	ANGLE=	36.7			
BOTT:	SMAX=	.79	SMIN=	-1.43	TMAX=	1.11	ANGLE=	40.4			
109		-.33	-.11	-2.39	-5.02						
		8.00	7.55	-.42	.08						
TOP :	SMAX=	3.81	SMIN=	-5.39	TMAX=	4.60	ANGLE=	90.0			
BOTT:	SMAX=	4.80	SMIN=	-3.91	TMAX=	4.35	ANGLE=	-41.9			
302	15	-.05	.06	.31	-13.11						
		2.31	2.41	.01	.02						
TOP :	SMAX=	.14	SMIN=	-2.24	TMAX=	1.19	ANGLE=	10.5			
BOTT:	SMAX=	2.33	SMIN=	-.17	TMAX=	1.25	ANGLE=	12.7			
2		-.01	.00	-.16	-1.21						
		.21	.21	.00	.00						
TOP :	SMAX=	-.02	SMIN=	-.21	TMAX=	.10	ANGLE=	13.5			
BOTT:	SMAX=	.21	SMIN=	.02	TMAX=	.10	ANGLE=	14.5			
3		.00	.00	-.11	-.86						
		.15	.14	.00	.00						
TOP :	SMAX=	-.01	SMIN=	-.15	TMAX=	.07	ANGLE=	12.0			
BOTT:	SMAX=	.15	SMIN=	.01	TMAX=	.07	ANGLE=	13.1			
4		.00	.00	-.04	-.43						
		.07	.07	.00	.00						
TOP :	SMAX=	.00	SMIN=	-.07	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	.07	SMIN=	.00	TMAX=	.03	ANGLE=	90.0			
5		.01	.00	.33	3.19						
		.53	.55	.00	-.01						
TOP :	SMAX=	.55	SMIN=	.03	TMAX=	.26	ANGLE=	12.5			
BOTT:	SMAX=	-.03	SMIN=	-.57	TMAX=	.27	ANGLE=	13.2			
6		.00	.01	.10	-.38						
		.08	.07	.00	.00						
TOP :	SMAX=	.02	SMIN=	-.07	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	.06	SMIN=	-.02	TMAX=	.04	ANGLE=	90.0			
7		.00	.04	1.04	-1.01						
		.32	.28	.01	.00						
TOP :	SMAX=	.19	SMIN=	-.18	TMAX=	.18	ANGLE=	-7.2			
BOTT:	SMAX=	.17	SMIN=	-.16	TMAX=	.16	ANGLE=	-3.3			

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.02	-.01	1.34	1.48						.22
		.26	.25	.00	.04						-.03
TOP :	SMAX=	.29	SMIN=	.22	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	-.15	SMIN=	-.28	TMAX=	.07	ANGLE=	90.0			
	9	.01	.00	.21	1.29						-.58
		.27	.26	.00	.01						.00
TOP :	SMAX=	.26	SMIN=	-.01	TMAX=	.13	ANGLE=	23.1			
BOTT:	SMAX=	.01	SMIN=	-.25	TMAX=	.13	ANGLE=	24.1			
	10	.09	-.21	.08	-11.86						-8.63
		3.27	3.11	.19	.08						-.06
TOP :	SMAX=	.98	SMIN=	-2.67	TMAX=	1.82	ANGLE=	-27.5			
BOTT:	SMAX=	2.79	SMIN=	-.56	TMAX=	1.67	ANGLE=	-27.8			
	11	-.09	.21	-.08	11.86						8.63
		3.27	3.11	-.19	-.08						.06
TOP :	SMAX=	2.67	SMIN=	-.98	TMAX=	1.82	ANGLE=	-27.5			
BOTT:	SMAX=	.56	SMIN=	-2.79	TMAX=	1.67	ANGLE=	-27.8			
	12	.00	.00	.02	.14						-.03
		.02	.02	.00	.00						.00
TOP :	SMAX=	.03	SMIN=	.00	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
	13	.12	-.46	2.15	-24.06						-23.75
		6.61	9.66	-1.12	-.45						.98
TOP :	SMAX=	.89	SMIN=	-6.11	TMAX=	3.50	ANGLE=	-29.1			
BOTT:	SMAX=	6.59	SMIN=	-4.50	TMAX=	5.55	ANGLE=	-31.5			
	14	-.15	.04	-6.11	-26.00						2.92
		4.45	3.59	.02	-.40						.13
TOP :	SMAX=	-.90	SMIN=	-4.83	TMAX=	1.96	ANGLE=	9.1			
BOTT:	SMAX=	3.98	SMIN=	.99	TMAX=	1.49	ANGLE=	7.0			
	101	.08	-.01	1.55	9.64						-4.17
		1.95	1.89	.00	.04						.00
TOP :	SMAX=	1.93	SMIN=	-.03	TMAX=	.98	ANGLE=	22.5			
BOTT:	SMAX=	.04	SMIN=	-1.87	TMAX=	.96	ANGLE=	23.4			
	102	.05	.00	1.05	5.49						-2.65
		1.16	1.12	.00	.03						.00
TOP :	SMAX=	1.14	SMIN=	-.03	TMAX=	.58	ANGLE=	24.6			
BOTT:	SMAX=	.04	SMIN=	-1.10	TMAX=	.57	ANGLE=	25.5			
	103	.05	.02	1.79	4.98						-2.76
		1.12	1.04	.01	.03						-.02
TOP :	SMAX=	1.13	SMIN=	.03	TMAX=	.55	ANGLE=	30.1			
BOTT:	SMAX=	-.03	SMIN=	-1.06	TMAX=	.51	ANGLE=	29.9			
	104	.06	-.02	2.04	6.98						-2.47
		1.33	1.18	.00	.06						-.02
TOP :	SMAX=	1.40	SMIN=	.16	TMAX=	.62	ANGLE=	22.3			
BOTT:	SMAX=	-.18	SMIN=	-1.26	TMAX=	.54	ANGLE=	22.8			
	105	.06	-.01	1.13	6.82						-3.11
		1.41	1.36	.00	.03						.00
TOP :	SMAX=	1.39	SMIN=	-.03	TMAX=	.71	ANGLE=	23.3			
BOTT:	SMAX=	.05	SMIN=	-1.34	TMAX=	.69	ANGLE=	24.3			
	106	.12	-.31	1.88	-20.82						-16.42
		5.34	6.66	-.46	-.15						.44
TOP :	SMAX=	.99	SMIN=	-4.77	TMAX=	2.88	ANGLE=	-26.5			
BOTT:	SMAX=	5.05	SMIN=	-2.51	TMAX=	3.78	ANGLE=	-28.6			
	107	.02	-.10	1.80	-8.96						-7.79
		2.11	3.64	-.65	-.24						.49
TOP :	SMAX=	.02	SMIN=	-2.10	TMAX=	1.06	ANGLE=	-24.7			
BOTT:	SMAX=	2.26	SMIN=	-1.95	TMAX=	2.10	ANGLE=	-29.2			
	108	.02	.00	-1.13	-1.42						-3.83
		1.05	1.23	.01	-.14						.06
TOP :	SMAX=	.30	SMIN=	-.86	TMAX=	.58	ANGLE=	-40.0			
BOTT:	SMAX=	.85	SMIN=	-.56	TMAX=	.70	ANGLE=	42.9			
	109	.30	-.06	6.02	36.19						-16.53
		7.48	7.23	.00	.17						.01
TOP :	SMAX=	7.39	SMIN=	-.18	TMAX=	3.78	ANGLE=	23.3			
BOTT:	SMAX=	.24	SMIN=	-7.11	TMAX=	3.67	ANGLE=	24.4			

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
303	15	-.04 .98	.10 1.07	-2.86 -.01	-6.05 .07	-1.83 .00
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	2	-.01 .21	.00 .21	-.16 .00	-1.21 .00	-.28 .00
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	3	.00 .15	.00 .14	-.11 .00	-.86 .00	-.18 .00
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	4	.00 .07	.00 .07	-.04 .00	-.43 .00	-.08 .00
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	5	.01 .53	.00 .55	.33 .00	3.19 -.01	.69 -.01
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	6	.00 .05	.01 .05	-.13 .00	.24 .00	-.01 .00
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	7	.00 .40	.04 .36	-.95 -.01	1.64 .01	-.04 -.03
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	8	.02 .26	.01 .25	1.34 .00	1.48 .04	-.22 .03
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	9	.01 .27	.00 .26	.21 .00	1.29 .01	.58 .00
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	10	.09 3.27	.21 3.11	.08 .19	-11.86 .08	8.63 .06
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	11	-.09 3.27	-.21 3.11	-.08 -.19	11.86 -.08	-8.63 -.06
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	12	.00 .02	.00 .02	.02 .00	.14 .00	.03 .00
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	13	.12 6.61	.46 9.66	2.15 -1.12	-24.06 -.45	23.75 -.98
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	14	-.15 4.45	-.04 3.59	-6.11 .02	-26.00 -.40	-2.92 -.13
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	101	.08 1.95	.01 1.89	1.55 .00	9.64 .04	4.17 .00
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.05	.01	.86	5.98		2.64				
		1.22	1.19	.00	.03		.00				
TOP :	SMAX=	1.20	SMIN=	-.04	TMAX=	.62	ANGLE=	-22.4			
BOTT:	SMAX=	.05	SMIN=	-1.16	TMAX=	.60	ANGLE=	-23.5			
103		.05	.04	.20	7.10		2.62				
		1.41	1.38	-.01	.04		-.02				
TOP :	SMAX=	1.35	SMIN=	-.10	TMAX=	.73	ANGLE=	-17.3			
BOTT:	SMAX=	.12	SMIN=	-1.31	TMAX=	.72	ANGLE=	-19.9			
104		.06	.02	2.04	6.98		2.47				
		1.33	1.18	.00	.06		.02				
TOP :	SMAX=	1.40	SMIN=	.16	TMAX=	.62	ANGLE=	-22.3			
BOTT:	SMAX=	-.18	SMIN=	-1.26	TMAX=	.54	ANGLE=	-22.8			
105		.06	.01	1.13	6.82		3.11				
		1.41	1.36	.00	.03		.00				
TOP :	SMAX=	1.39	SMIN=	-.03	TMAX=	.71	ANGLE=	-23.3			
BOTT:	SMAX=	.05	SMIN=	-1.34	TMAX=	.69	ANGLE=	-24.3			
106		.12	.39	.30	-17.29		16.94				
		4.96	6.46	-.47	-.13		-.47				
TOP :	SMAX=	.97	SMIN=	-4.41	TMAX=	2.69	ANGLE=	30.6			
BOTT:	SMAX=	4.79	SMIN=	-2.56	TMAX=	3.67	ANGLE=	31.8			
107		.03	.18	.21	-5.43		8.31				
		1.78	3.51	-.66	-.22		-.52				
TOP :	SMAX=	.03	SMIN=	-1.77	TMAX=	.90	ANGLE=	36.9			
BOTT:	SMAX=	2.03	SMIN=	-2.03	TMAX=	2.03	ANGLE=	35.0			
108		.02	.00	-1.13	-1.42		3.83				
		1.05	1.23	.01	-.14		-.06				
TOP :	SMAX=	.30	SMIN=	-.86	TMAX=	.58	ANGLE=	40.0			
BOTT:	SMAX=	.85	SMIN=	-.56	TMAX=	.71	ANGLE=	-42.9			
109		.30	.06	6.03	36.19		16.53				
		7.48	7.23	.00	.17		-.01				
TOP :	SMAX=	7.39	SMIN=	-.18	TMAX=	3.79	ANGLE=	-23.3			
BOTT:	SMAX=	.24	SMIN=	-7.11	TMAX=	3.68	ANGLE=	-24.4			
304	15	.05	.09	1.31	11.62		-1.34				
		1.94	1.82	.00	.07		.03				
TOP :	SMAX=	2.03	SMIN=	.20	TMAX=	.92	ANGLE=	6.2			
BOTT:	SMAX=	-.18	SMIN=	-1.90	TMAX=	.86	ANGLE=	8.5			
2		.01	.00	.17	.17		-.33				
		.10	.10	.00	.00		.00				
TOP :	SMAX=	.08	SMIN=	-.03	TMAX=	.05	ANGLE=	90.0			
BOTT:	SMAX=	.03	SMIN=	-.08	TMAX=	.06	ANGLE=	90.0			
3		.00	.00	.10	.04		-.27				
		.08	.08	.00	.00		.00				
TOP :	SMAX=	.06	SMIN=	-.03	TMAX=	.05	ANGLE=	90.0			
BOTT:	SMAX=	.03	SMIN=	-.06	TMAX=	.04	ANGLE=	90.0			
4		.00	.00	.05	.00		-.21				
		.06	.06	.00	.00		.00				
TOP :	SMAX=	.04	SMIN=	-.03	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.03	SMIN=	-.04	TMAX=	.04	ANGLE=	90.0			
5		-.01	-.01	-.61	-.87		1.18				
		.35	.38	-.01	.00		-.01				
TOP :	SMAX=	.06	SMIN=	-.32	TMAX=	.19	ANGLE=	90.0			
BOTT:	SMAX=	.32	SMIN=	-.09	TMAX=	.21	ANGLE=	90.0			
6		.00	.00	-.02	.69		.12				
		.12	.12	.00	.00		.00				
TOP :	SMAX=	.12	SMIN=	-.01	TMAX=	.06	ANGLE=	-8.6			
BOTT:	SMAX=	.01	SMIN=	-.12	TMAX=	.06	ANGLE=	-10.2			
7		.00	.02	-.48	3.38		1.04				
		.69	.67	.00	.04		-.03				
TOP :	SMAX=	.63	SMIN=	-.11	TMAX=	.37	ANGLE=	-11.1			
BOTT:	SMAX=	.15	SMIN=	-.59	TMAX=	.37	ANGLE=	-17.3			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.02	-.04	.93	-.62						
		.33	.35	-.01	-.01						
TOP :	SMAX=	.21	SMIN=	-.17	TMAX=	.19	ANGLE=				-23.4
BOTT:	SMAX=	.17	SMIN=	-.23	TMAX=	.20	ANGLE=				-25.2
	9	-.01	.00	-.09	-.19						.94
		.28	.27	-.01	.00						.00
TOP :	SMAX=	.13	SMIN=	-.19	TMAX=	.16	ANGLE=				90.0
BOTT:	SMAX=	.17	SMIN=	-.14	TMAX=	.15	ANGLE=				90.0
	10	-.07	.18	2.46	6.22						9.15
		2.88	2.71	-.08	.05						.04
TOP :	SMAX=	2.32	SMIN=	-.90	TMAX=	1.61	ANGLE=				-38.2
BOTT:	SMAX=	.77	SMIN=	-2.24	TMAX=	1.50	ANGLE=				-40.2
	11	.07	-.18	-2.46	-6.22						-9.15
		2.88	2.71	.08	-.05						-.04
TOP :	SMAX=	.90	SMIN=	-2.32	TMAX=	1.61	ANGLE=				-38.2
BOTT:	SMAX=	2.24	SMIN=	-.77	TMAX=	1.50	ANGLE=				-40.2
	12	.00	.00	-.02	.00						.05
		.01	.01	.00	.00						.00
TOP :	SMAX=	.01	SMIN=	-.01	TMAX=	.01	ANGLE=				90.0
BOTT:	SMAX=	.01	SMIN=	-.01	TMAX=	.01	ANGLE=				90.0
	13	-.12	.37	7.16	13.44						20.68
		6.11	6.46	-.32	-.01						-.10
TOP :	SMAX=	4.96	SMIN=	-1.86	TMAX=	3.41	ANGLE=				-39.2
BOTT:	SMAX=	1.69	SMIN=	-5.45	TMAX=	3.57	ANGLE=				-42.1
	14	.00	.18	2.22	9.42						-4.91
		2.29	1.78	.11	-.01						-.24
TOP :	SMAX=	2.20	SMIN=	-.17	TMAX=	1.19	ANGLE=				31.4
BOTT:	SMAX=	-.05	SMIN=	-1.80	TMAX=	.88	ANGLE=				20.7
	101	-.08	.02	-.76	-1.46						6.78
		2.02	1.92	-.10	.02						.03
TOP :	SMAX=	.93	SMIN=	-1.39	TMAX=	1.16	ANGLE=				90.0
BOTT:	SMAX=	1.25	SMIN=	-.96	TMAX=	1.11	ANGLE=				41.9
	102	-.05	.02	-.40	-.25						4.38
		1.31	1.23	-.07	.01						.02
TOP :	SMAX=	.67	SMIN=	-.83	TMAX=	.75	ANGLE=				-42.9
BOTT:	SMAX=	.74	SMIN=	-.68	TMAX=	.71	ANGLE=				90.0
	103	-.05	.03	-.77	1.91						5.12
		1.55	1.52	-.07	.05						-.01
TOP :	SMAX=	.98	SMIN=	-.81	TMAX=	.89	ANGLE=				-35.9
BOTT:	SMAX=	.77	SMIN=	-.98	TMAX=	.88	ANGLE=				-39.5
	104	-.03	-.02	.36	-1.30						3.58
		1.10	1.03	-.07	.01						.03
TOP :	SMAX=	.52	SMIN=	-.74	TMAX=	.63	ANGLE=				40.5
BOTT:	SMAX=	.64	SMIN=	-.55	TMAX=	.60	ANGLE=				36.3
	105	-.06	.02	-.46	-.95						5.04
		1.51	1.42	-.08	.01						.03
TOP :	SMAX=	.72	SMIN=	-1.01	TMAX=	.87	ANGLE=				90.0
BOTT:	SMAX=	.90	SMIN=	-.73	TMAX=	.82	ANGLE=				41.9
	106	-.11	.33	5.22	15.14						16.95
		5.42	5.34	-.24	.07						.00
TOP :	SMAX=	4.59	SMIN=	-1.38	TMAX=	2.99	ANGLE=				-35.4
BOTT:	SMAX=	1.12	SMIN=	-4.69	TMAX=	2.91	ANGLE=				-38.3
	107	-.04	.15	2.76	8.91						7.79
		2.57	2.66	-.17	.01						-.05
TOP :	SMAX=	2.29	SMIN=	-.49	TMAX=	1.39	ANGLE=				-32.1
BOTT:	SMAX=	.36	SMIN=	-2.46	TMAX=	1.41	ANGLE=				-36.3
	108	-.10	.12	.35	3.11						6.12
		1.73	1.95	-.08	.02						-.08
TOP :	SMAX=	1.24	SMIN=	-.73	TMAX=	.98	ANGLE=				-36.7
BOTT:	SMAX=	.79	SMIN=	-1.43	TMAX=	1.11	ANGLE=				-40.4
	109	-.33	.11	-2.39	-5.00						26.78
		8.00	7.55	-.42	.08						.13
TOP :	SMAX=	3.81	SMIN=	-5.39	TMAX=	4.60	ANGLE=				90.0
BOTT:	SMAX=	4.80	SMIN=	-3.91	TMAX=	4.35	ANGLE=				41.9

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
305	15	.02	-.05	2.46	11.75	-.10
		1.84	1.74	-.01	.05	.02
	TOP : SMAX=	2.01	SMIN=	.40	TMAX=	.80 ANGLE=
	BOTT: SMAX=	-.41	SMIN=	-1.91	TMAX=	.75 ANGLE=
	2	.00	.00	.13	.71	-.01
		.11	.11	.00	.00	.00
	TOP : SMAX=	.12	SMIN=	.02	TMAX=	.05 ANGLE=
	BOTT: SMAX=	-.02	SMIN=	-.11	TMAX=	.05 ANGLE=
	3	.00	.00	.09	.51	.02
		.08	.07	.00	.00	.00
	TOP : SMAX=	.09	SMIN=	.02	TMAX=	.04 ANGLE=
	BOTT: SMAX=	-.01	SMIN=	-.08	TMAX=	.03 ANGLE=
	4	.00	.00	.06	.31	.02
		.05	.05	.00	.00	.00
	TOP : SMAX=	.05	SMIN=	.01	TMAX=	.02 ANGLE=
	BOTT: SMAX=	-.01	SMIN=	-.05	TMAX=	.02 ANGLE=
	5	-.01	.00	-.44	-2.11	.06
		.33	.31	.00	-.01	.00
	TOP : SMAX=	-.07	SMIN=	-.36	TMAX=	.15 ANGLE=
	BOTT: SMAX=	.34	SMIN=	.08	TMAX=	.13 ANGLE=
	6	.00	.00	.09	.43	.05
		.07	.06	.00	.00	.00
	TOP : SMAX=	.08	SMIN=	.01	TMAX=	.03 ANGLE=
	BOTT: SMAX=	-.01	SMIN=	-.07	TMAX=	.03 ANGLE=
	7	-.01	-.03	.61	1.74	.26
		.28	.25	-.01	.01	.00
	TOP : SMAX=	.31	SMIN=	.08	TMAX=	.12 ANGLE=
	BOTT: SMAX=	-.10	SMIN=	-.29	TMAX=	.09 ANGLE=
	8	.00	.01	-.30	-.94	-.36
		.21	.13	.00	-.03	-.02
	TOP : SMAX=	-.01	SMIN=	-.22	TMAX=	.10 ANGLE=
	BOTT: SMAX=	.14	SMIN=	.03	TMAX=	.06 ANGLE=
	9	-.01	.00	-.11	-.74	.21
		.14	.13	.01	.01	.02
	TOP : SMAX=	.01	SMIN=	-.13	TMAX=	.07 ANGLE=
	BOTT: SMAX=	.14	SMIN=	.02	TMAX=	.06 ANGLE=
	10	-.02	-.04	1.43	7.69	2.30
		1.58	1.13	.01	.17	.10
	TOP : SMAX=	1.62	SMIN=	.08	TMAX=	.77 ANGLE=
	BOTT: SMAX=	-.15	SMIN=	-1.19	TMAX=	.52 ANGLE=
	11	.02	.04	-1.43	-7.69	-2.30
		1.58	1.13	-.01	-.17	-.10
	TOP : SMAX=	-.08	SMIN=	-1.62	TMAX=	.77 ANGLE=
	BOTT: SMAX=	1.19	SMIN=	.15	TMAX=	.52 ANGLE=
	12	.00	.00	-.01	-.08	.01
		.01	.01	.00	.00	.00
	TOP : SMAX=	.00	SMIN=	-.01	TMAX=	.01 ANGLE=
	BOTT: SMAX=	.01	SMIN=	.00	TMAX=	.01 ANGLE=
	13	-.08	-.08	2.17	14.98	5.50
		3.33	2.32	-.02	.42	.16
	TOP : SMAX=	3.31	SMIN=	-.05	TMAX=	1.68 ANGLE=
	BOTT: SMAX=	-.09	SMIN=	-2.37	TMAX=	1.14 ANGLE=
	14	.04	-.06	4.29	16.67	2.08
		2.83	2.33	-.16	.22	-.01
	TOP : SMAX=	3.05	SMIN=	.51	TMAX=	1.27 ANGLE=
	BOTT: SMAX=	-.80	SMIN=	-2.63	TMAX=	.91 ANGLE=
	101	-.04	-.01	-.90	-5.60	1.40
		1.00	.96	.06	.08	.11
	TOP : SMAX=	.04	SMIN=	-.98	TMAX=	.51 ANGLE=
	BOTT: SMAX=	1.03	SMIN=	.19	TMAX=	.42 ANGLE=



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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
8		.00	.00	-.08	.23	-.08	.23	-.08	.23	-.08	.23
		.05	.08	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01
	TOP : SMAX=	.04	SMIN=	-.03	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	.03	SMIN=	-.07	TMAX=	.05	ANGLE=	90.0			
9		.00	.00	-.08	-.72	-.08	-.72	-.08	-.72	-.08	-.72
		.11	.12	.00	.00	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	-.01	SMIN=	-.12	TMAX=	.05	ANGLE=	-.8			
	BOTT: SMAX=	.13	SMIN=	.01	TMAX=	.06	ANGLE=	-11.6			
10		.00	-.02	.25	2.14	.25	2.14	.25	2.14	.25	2.14
		.40	.47	.02	.05	.02	.05	.02	.05	.02	.05
	TOP : SMAX=	.42	SMIN=	.05	TMAX=	.18	ANGLE=	10.0			
	BOTT: SMAX=	.09	SMIN=	-.41	TMAX=	.25	ANGLE=	27.7			
11		.00	.02	-.25	-2.14	-.25	-2.14	-.25	-2.14	-.25	-2.14
		.40	.47	-.02	-.05	-.02	-.05	-.02	-.05	-.02	-.05
	TOP : SMAX=	-.05	SMIN=	-.42	TMAX=	.18	ANGLE=	10.0			
	BOTT: SMAX=	.41	SMIN=	-.09	TMAX=	.25	ANGLE=	27.7			
12		.00	.00	-.01	-.09	-.01	-.09	-.01	-.09	-.01	-.09
		.02	.01	.00	.00	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.01	SMIN=	.00	TMAX=	.01	ANGLE=	90.0			
13		.00	-.03	.36	4.95	.36	4.95	.36	4.95	.36	4.95
		1.01	1.04	.03	.20	.03	.20	.03	.20	.03	.20
	TOP : SMAX=	1.04	SMIN=	.08	TMAX=	.48	ANGLE=	7.9			
	BOTT: SMAX=	.25	SMIN=	-.90	TMAX=	.57	ANGLE=	29.2			
14		-.01	-.03	1.80	6.84	1.80	6.84	1.80	6.84	1.80	6.84
		1.19	.88	.00	.16	.00	.16	.00	.16	.00	.16
	TOP : SMAX=	1.31	SMIN=	.30	TMAX=	.51	ANGLE=	-4.5			
	BOTT: SMAX=	-.29	SMIN=	-.99	TMAX=	.35	ANGLE=	7.2			
101		.00	.01	-.62	-5.25	-.62	-5.25	-.62	-5.25	-.62	-5.25
		.81	.89	.01	.02	.01	.02	.01	.02	.01	.02
	TOP : SMAX=	-.09	SMIN=	-.85	TMAX=	.38	ANGLE=	-1.2			
	BOTT: SMAX=	.93	SMIN=	.08	TMAX=	.42	ANGLE=	-11.5			
102		.00	.00	-.39	-3.31	-.39	-3.31	-.39	-3.31	-.39	-3.31
		.51	.57	.01	.01	.01	.01	.01	.01	.01	.01
	TOP : SMAX=	-.05	SMIN=	-.54	TMAX=	.24	ANGLE=	-1.2			
	BOTT: SMAX=	.59	SMIN=	.05	TMAX=	.27	ANGLE=	-12.3			
103		.00	.00	-.31	-4.42	-.31	-4.42	-.31	-4.42	-.31	-4.42
		.70	.77	.01	.02	.01	.02	.01	.02	.01	.02
	TOP : SMAX=	-.04	SMIN=	-.72	TMAX=	.34	ANGLE=	-2.9			
	BOTT: SMAX=	.78	SMIN=	.03	TMAX=	.37	ANGLE=	-11.1			
104		.00	.01	-.44	-3.07	-.44	-3.07	-.44	-3.07	-.44	-3.07
		.47	.51	.00	.01	.00	.01	.00	.01	.00	.01
	TOP : SMAX=	-.07	SMIN=	-.50	TMAX=	.21	ANGLE=	.5			
	BOTT: SMAX=	.53	SMIN=	.06	TMAX=	.24	ANGLE=	-9.1			
105		.00	.01	-.44	-3.82	-.44	-3.82	-.44	-3.82	-.44	-3.82
		.59	.65	.01	.02	.01	.02	.01	.02	.01	.02
	TOP : SMAX=	-.06	SMIN=	-.62	TMAX=	.28	ANGLE=	-.9			
	BOTT: SMAX=	.68	SMIN=	.06	TMAX=	.31	ANGLE=	-11.9			
106		.00	-.05	.26	2.40	.26	2.40	.26	2.40	.26	2.40
		.56	.88	.04	.13	.04	.13	.04	.13	.04	.13
	TOP : SMAX=	.58	SMIN=	.04	TMAX=	.27	ANGLE=	17.0			
	BOTT: SMAX=	.36	SMIN=	-.64	TMAX=	.50	ANGLE=	37.3			
107		.00	-.03	.01	.26	.01	.26	.01	.26	.01	.26
		.19	.47	.01	.07	.01	.07	.01	.07	.01	.07
	TOP : SMAX=	.17	SMIN=	-.04	TMAX=	.10	ANGLE=	29.8			
	BOTT: SMAX=	.30	SMIN=	-.25	TMAX=	.27	ANGLE=	90.0			
108		-.01	-.01	.14	-3.07	.14	-3.07	.14	-3.07	.14	-3.07
		.43	.77	.02	.11	.02	.11	.02	.11	.02	.11
	TOP : SMAX=	.05	SMIN=	-.40	TMAX=	.22	ANGLE=	3.2			
	BOTT: SMAX=	.72	SMIN=	-.10	TMAX=	.41	ANGLE=	-19.7			
109		-.02	.03	-2.36	-20.30	-.02	-20.30	-.02	-20.30	-.02	-20.30
		3.13	3.47	.06	.10	.06	.10	.06	.10	.06	.10
	TOP : SMAX=	-.34	SMIN=	-3.29	TMAX=	1.48	ANGLE=	-.9			
	BOTT: SMAX=	3.62	SMIN=	.31	TMAX=	1.65	ANGLE=	-11.9			



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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FXY
307	15	-.01 .87	-.04 .77	-.56 .00	-4.94 -.06	-.86 .01
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	2	.00 .08	.00 .07	.08 .00	.48 .01	.02 .00
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	3	.00 .08	.00 .06	.07 .00	.44 .01	-.02 .00
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	4	.00 .03	.00 .03	.03 .00	.16 .00	-.05 .00
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	5	.00 .09	.01 .08	-.10 .00	-.54 .00	.06 .00
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	6	.00 .06	.00 .06	-.06 .00	-.38 .00	-.03 .00
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	7	.00 .41	.00 .40	-.19 .00	-2.50 -.01	.05 .00
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	8	.00 .10	.00 .11	.04 -.01	.38 .01	.27 -.01
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	9	.00 .07	.00 .07	-.06 .00	-.41 .00	-.07 .01
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	10	.00 .28	-.02 .39	.09 .03	.43 .00	-1.13 .03
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	11	.00 .28	.02 .39	-.09 -.03	-.43 .00	1.13 -.03
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	12	.00 .01	.00 .01	-.01 .00	-.07 .00	.00 .00
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	13	.00 .67	-.04 .98	.29 .07	2.14 .05	-2.58 .10
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	14	.01 .65	-.04 .81	.70 .01	2.82 .05	-2.02 .08
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
	101	.00 .50	.01 .48	-.44 .03	-3.01 -.02	-.44 .04
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=	
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=	
		.00 .51	.01 SMIN=	-.52 .07	.24 .22	-4.6 -14.9

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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.00	.01	-.32	-2.20	-.32	-2.20	-.32	-2.20	-.32	-2.20
		.37	.35	.02	-.01	.02	-.01	.02	-.01	.02	-.01
TOP :	SMAX=	-.03	SMIN=	-.38	TMAX=	.17	ANGLE=	-.5.0			
BOTT:	SMAX=	.37	SMIN=	.05	TMAX=	.16	ANGLE=	-14.7			
103		-.01	.01	-.43	-3.90	-.43	-3.90	-.43	-3.90	-.43	-3.90
		.64	.61	.01	-.02	.01	-.02	.01	-.02	.01	-.02
TOP :	SMAX=	-.06	SMIN=	-.67	TMAX=	.30	ANGLE=	-1.6			
BOTT:	SMAX=	.64	SMIN=	.08	TMAX=	.28	ANGLE=	-7.4			
104		.00	.01	-.25	-1.59	-.25	-1.59	-.25	-1.59	-.25	-1.59
		.26	.25	.01	-.01	.01	-.01	.01	-.01	.01	-.01
TOP :	SMAX=	-.03	SMIN=	-.27	TMAX=	.12	ANGLE=	.6			
BOTT:	SMAX=	.26	SMIN=	.04	TMAX=	.11	ANGLE=	-8.5			
105		.00	.01	-.32	-2.22	-.32	-2.22	-.32	-2.22	-.32	-2.22
		.37	.36	.02	-.01	.02	-.01	.02	-.01	.02	-.01
TOP :	SMAX=	-.03	SMIN=	-.39	TMAX=	.18	ANGLE=	-5.2			
BOTT:	SMAX=	.38	SMIN=	.05	TMAX=	.17	ANGLE=	-16.1			
106		.00	-.05	-.27	-2.41	-.27	-2.41	-.27	-2.41	-.27	-2.41
		.71	.93	.06	-.01	.06	-.01	.06	-.01	.06	-.01
TOP :	SMAX=	.19	SMIN=	-.59	TMAX=	.39	ANGLE=	-28.3			
BOTT:	SMAX=	.77	SMIN=	-.27	TMAX=	.52	ANGLE=	-37.1			
107		.00	-.03	-.36	-2.84	-.36	-2.84	-.36	-2.84	-.36	-2.84
		.55	.65	.03	-.01	.03	-.01	.03	-.01	.03	-.01
TOP :	SMAX=	.03	SMIN=	-.54	TMAX=	.28	ANGLE=	-18.1			
BOTT:	SMAX=	.62	SMIN=	-.06	TMAX=	.34	ANGLE=	-28.3			
108		.00	-.01	-.20	-2.39	-.20	-2.39	-.20	-2.39	-.20	-2.39
		.51	.72	.04	.00	.04	.00	.04	.00	.04	.00
TOP :	SMAX=	.08	SMIN=	-.47	TMAX=	.27	ANGLE=	-21.1			
BOTT:	SMAX=	.63	SMIN=	-.16	TMAX=	.39	ANGLE=	-32.8			
109		-.01	.05	-1.73	-11.86	-.01	-11.86	-.01	-11.86	-.01	-11.86
		1.99	1.92	.11	-.07	.11	-.07	.11	-.07	.11	-.07
TOP :	SMAX=	-.17	SMIN=	-2.07	TMAX=	.95	ANGLE=	-5.2			
BOTT:	SMAX=	2.04	SMIN=	.26	TMAX=	.89	ANGLE=	-16.0			
308	15	-.01	-.02	-1.24	-7.97	-.01	-7.97	-.01	-7.97	-.01	-7.97
		1.35	1.18	.01	-.09	.01	-.09	.01	-.09	.01	-.09
TOP :	SMAX=	-.19	SMIN=	-1.43	TMAX=	.62	ANGLE=	-6.1			
BOTT:	SMAX=	1.26	SMIN=	.19	TMAX=	.53	ANGLE=	-8.1			
2		.00	.00	.04	.20	.04	.20	.04	.20	.04	.20
		.04	.03	.00	.01	.04	.01	.04	.01	.04	.01
TOP :	SMAX=	.04	SMIN=	.00	TMAX=	.02	ANGLE=	90.0			
BOTT:	SMAX=	.00	SMIN=	-.03	TMAX=	.01	ANGLE=	90.0			
3		.00	.00	.04	.24	.04	.24	.04	.24	.04	.24
		.05	.05	.00	.01	.05	.01	.05	.01	.05	.01
TOP :	SMAX=	.05	SMIN=	.00	TMAX=	.02	ANGLE=	90.0			
BOTT:	SMAX=	.00	SMIN=	-.04	TMAX=	.02	ANGLE=	90.0			
4		.00	.00	.01	.09	.01	.09	.01	.09	.01	.09
		.03	.04	.00	.00	.03	.00	.03	.00	.03	.00
TOP :	SMAX=	.02	SMIN=	-.01	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.01	SMIN=	-.03	TMAX=	.02	ANGLE=	90.0			
5		.00	.01	-.01	-.03	-.01	-.03	-.01	-.03	-.01	-.03
		.03	.03	.00	.00	.03	.00	.03	.00	.03	.00
TOP :	SMAX=	.01	SMIN=	-.02	TMAX=	.02	ANGLE=	90.0			
BOTT:	SMAX=	.02	SMIN=	-.02	TMAX=	.02	ANGLE=	90.0			
6		.00	.00	-.08	-.51	-.08	-.51	-.08	-.51	-.08	-.51
		.08	.07	.00	.00	.08	.00	.08	.00	.08	.00
TOP :	SMAX=	-.01	SMIN=	-.09	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	.08	SMIN=	.01	TMAX=	.03	ANGLE=	90.0			
7		.00	.00	-.28	-2.51	-.28	-2.51	-.28	-2.51	-.28	-2.51
		.40	.39	-.01	-.01	.40	-.01	.40	-.01	.40	-.01
TOP :	SMAX=	-.05	SMIN=	-.43	TMAX=	.19	ANGLE=	2.0			
BOTT:	SMAX=	.41	SMIN=	.04	TMAX=	.18	ANGLE=	-.4			

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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
	8	.00	.00	.05	.30	.21
		.08	.07	-.01	.01	.00
TOP :	SMAX=	.07	SMIN=	-.02	TMAX=	.05 ANGLE= 90.0
BOTT:	SMAX=	.01	SMIN=	-.06	TMAX=	.04 ANGLE= 90.0
	9	.00	.00	-.02	-.13	-.06
		.03	.03	.00	.00	.00
TOP :	SMAX=	.00	SMIN=	-.03	TMAX=	.01 ANGLE= 90.0
BOTT:	SMAX=	.03	SMIN=	.00	TMAX=	.01 ANGLE= 90.0
	10	.00	-.01	-.07	-.45	-.99
		.30	.29	.02	-.02	.00
TOP :	SMAX=	.13	SMIN=	-.21	TMAX=	.17 ANGLE= -36.2
BOTT:	SMAX=	.21	SMIN=	-.12	TMAX=	.17 ANGLE= 90.0
	11	.00	.01	.07	.45	.99
		.30	.29	-.02	.02	.00
TOP :	SMAX=	.21	SMIN=	-.13	TMAX=	.17 ANGLE= -36.2
BOTT:	SMAX=	.12	SMIN=	-.21	TMAX=	.17 ANGLE= 90.0
	12	.00	.00	-.01	-.04	.00
		.01	.00	.00	.00	.00
TOP :	SMAX=	.00	SMIN=	-.01	TMAX=	.00 ANGLE= 90.0
BOTT:	SMAX=	.01	SMIN=	.00	TMAX=	.00 ANGLE= 90.0
	13	.01	-.04	.00	-.01	-2.52
		.67	.80	.05	-.02	.04
TOP :	SMAX=	.40	SMIN=	-.37	TMAX=	.38 ANGLE= 90.0
BOTT:	SMAX=	.48	SMIN=	-.44	TMAX=	.46 ANGLE= 90.0
	14	.00	-.04	.02	-.03	-2.41
		.61	.78	.03	-.01	.05
TOP :	SMAX=	.36	SMIN=	-.35	TMAX=	.35 ANGLE= 90.0
BOTT:	SMAX=	.46	SMIN=	-.44	TMAX=	.45 ANGLE= 90.0
	101	.00	.02	-.16	-.95	-.33
		.19	.17	.01	-.02	.01
TOP :	SMAX=	.00	SMIN=	-.19	TMAX=	.09 ANGLE= -13.0
BOTT:	SMAX=	.17	SMIN=	.00	TMAX=	.08 ANGLE= 90.0
	102	.00	.01	-.17	-1.03	-.26
		.19	.17	.01	-.02	.01
TOP :	SMAX=	-.01	SMIN=	-.19	TMAX=	.09 ANGLE= -10.5
BOTT:	SMAX=	.17	SMIN=	.02	TMAX=	.08 ANGLE= -21.1
	103	.00	.01	-.33	-2.63	-.21
		.44	.40	.00	-.02	.02
TOP :	SMAX=	-.05	SMIN=	-.46	TMAX=	.21 ANGLE= -2.8
BOTT:	SMAX=	.43	SMIN=	.05	TMAX=	.19 ANGLE= -8.1
	104	.00	.01	-.07	-.39	-.08
		.07	.07	.00	-.01	.01
TOP :	SMAX=	-.01	SMIN=	-.07	TMAX=	.03 ANGLE= 90.0
BOTT:	SMAX=	.07	SMIN=	.00	TMAX=	.03 ANGLE= 90.0
	105	.00	.01	-.12	-.73	-.28
		.15	.14	.01	-.02	.01
TOP :	SMAX=	.00	SMIN=	-.15	TMAX=	.07 ANGLE= -14.5
BOTT:	SMAX=	.14	SMIN=	.00	TMAX=	.07 ANGLE= 90.0
	106	.00	-.03	-.72	-4.62	-2.32
		1.02	.96	.04	-.07	.03
TOP :	SMAX=	.06	SMIN=	-.98	TMAX=	.52 ANGLE= -21.4
BOTT:	SMAX=	.93	SMIN=	-.06	TMAX=	.49 ANGLE= -28.8
	107	.00	-.02	-.65	-4.17	-1.34
		.79	.73	.03	-.05	.03
TOP :	SMAX=	-.03	SMIN=	-.80	TMAX=	.39 ANGLE= -15.1
BOTT:	SMAX=	.75	SMIN=	.03	TMAX=	.36 ANGLE= -22.3
	108	.00	.00	-.20	-1.26	-1.69
		.48	.58	.04	-.04	.04
TOP :	SMAX=	.15	SMIN=	-.39	TMAX=	.27 ANGLE= -31.1
BOTT:	SMAX=	.45	SMIN=	-.21	TMAX=	.33 ANGLE= -40.3
	109	.01	.07	-.65	-3.90	-1.50
		.79	.74	.06	-.09	.06
TOP :	SMAX=	.00	SMIN=	-.79	TMAX=	.39 ANGLE= -14.3
BOTT:	SMAX=	.73	SMIN=	.00	TMAX=	.37 ANGLE= -28.9



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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	102	.00	.01	.03	.33								
		.05	.07	.01	-.01								
	TOP : SMAX=	.05	SMIN=	.00	TMAX=	.03	ANGLE=	90.0					
	BOTT: SMAX=	.01	SMIN=	-.07	TMAX=	.04	ANGLE=	90.0					
	103	.00	.02	-.10	-.87								
		.15	.13	.00	-.01								
	TOP : SMAX=	-.01	SMIN=	-.15	TMAX=	.07	ANGLE=	2.4					
	BOTT: SMAX=	.14	SMIN=	.02	TMAX=	.06	ANGLE=	-6.3					
	104	.00	.01	.12	.81								
		.12	.13	.00	.00								
	TOP : SMAX=	.13	SMIN=	.02	TMAX=	.06	ANGLE=	-.8					
	BOTT: SMAX=	-.02	SMIN=	-.14	TMAX=	.06	ANGLE=	5.3					
	105	.00	.01	.12	.89								
		.13	.16	.01	-.01								
	TOP : SMAX=	.14	SMIN=	.02	TMAX=	.06	ANGLE=	10.5					
	BOTT: SMAX=	-.01	SMIN=	-.16	TMAX=	.08	ANGLE=	10.0					
	106	.00	-.01	-.85	-5.18								
		1.03	.85	.02	-.09								
	TOP : SMAX=	-.03	SMIN=	-1.04	TMAX=	.51	ANGLE=	-17.5					
	BOTT: SMAX=	.88	SMIN=	.06	TMAX=	.41	ANGLE=	-20.9					
	107	.00	.00	-.69	-4.22								
		.77	.66	.02	-.06								
	TOP : SMAX=	-.06	SMIN=	-.80	TMAX=	.37	ANGLE=	-12.9					
	BOTT: SMAX=	.69	SMIN=	.08	TMAX=	.31	ANGLE=	-16.9					
	108	.01	.01	-.03	.28								
		.38	.43	.02	-.04								
	TOP : SMAX=	.23	SMIN=	-.21	TMAX=	.22	ANGLE=	90.0					
	BOTT: SMAX=	.22	SMIN=	-.27	TMAX=	.25	ANGLE=	38.4					
	109	.02	.08	.65	4.70								
		.71	.82	.04	-.04								
	TOP : SMAX=	.77	SMIN=	.12	TMAX=	.32	ANGLE=	10.5					
	BOTT: SMAX=	-.05	SMIN=	-.85	TMAX=	.40	ANGLE=	9.8					
310	15	-.01	.03	-1.13	-6.65								
		1.10	.96	.00	-.07								
	TOP : SMAX=	-.19	SMIN=	-1.18	TMAX=	.50	ANGLE=	-.6					
	BOTT: SMAX=	1.04	SMIN=	.19	TMAX=	.42	ANGLE=	.7					
	2	.00	.00	-.06	-.44								
		.08	.07	.00	.00								
	TOP : SMAX=	-.01	SMIN=	-.08	TMAX=	.04	ANGLE=	90.0					
	BOTT: SMAX=	.07	SMIN=	.01	TMAX=	.03	ANGLE=	90.0					
	3	.00	.00	-.07	-.38								
		.07	.07	.00	-.01								
	TOP : SMAX=	-.01	SMIN=	-.07	TMAX=	.03	ANGLE=	90.0					
	BOTT: SMAX=	.07	SMIN=	.00	TMAX=	.03	ANGLE=	90.0					
	4	.00	.00	-.04	-.16								
		.04	.04	.00	.00								
	TOP : SMAX=	.00	SMIN=	-.04	TMAX=	.02	ANGLE=	90.0					
	BOTT: SMAX=	.03	SMIN=	.00	TMAX=	.02	ANGLE=	90.0					
	5	.00	.00	.12	.69								
		.12	.10	.00	.01								
	TOP : SMAX=	.12	SMIN=	.02	TMAX=	.05	ANGLE=	-8.9					
	BOTT: SMAX=	-.02	SMIN=	-.11	TMAX=	.05	ANGLE=	90.0					
	6	.00	.00	-.08	-.45								
		.07	.07	.00	.00								
	TOP : SMAX=	-.01	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0					
	BOTT: SMAX=	.07	SMIN=	.01	TMAX=	.03	ANGLE=	90.0					
	7	.00	.01	-.17	-1.12								
		.18	.17	.00	.00								
	TOP : SMAX=	-.02	SMIN=	-.19	TMAX=	.08	ANGLE=	9.0					
	BOTT: SMAX=	.19	SMIN=	.03	TMAX=	.08	ANGLE=	1.7					

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
8		.00	.00	-.03	-.20	.00	.00	.03	.04	.00	.00	.00	.00
TOP :	SMAX=	.04	.03	.00	.00	.03	.04	.00	.01	.00	.00	.00	.00
BOTT:	SMAX=	.00	.00	-.04	.02	.00	.01	.00	90.0	.00	.00	.00	.00
9		.00	.00	.06	.42	.00	.00	.07	-.01	.00	.00	.00	.00
TOP :	SMAX=	.07	.07	.00	.00	.07	.07	.00	.00	.00	.00	.00	.00
BOTT:	SMAX=	.00	.00	.01	.03	.00	.03	.00	90.0	.00	.00	.00	.00
10		.00	.00	-.20	-1.15	.00	.00	.24	-.39	.00	.00	.00	.00
TOP :	SMAX=	.24	.18	.00	-.02	.24	.12	.00	-.01	.00	.00	.00	.00
BOTT:	SMAX=	-.01	.18	-.24	.12	.01	.09	.00	-21.5	.00	.00	.00	.00
11		.00	.00	.20	1.15	.00	.00	.24	.39	.00	.00	.00	.00
TOP :	SMAX=	.24	.18	.00	.02	.00	.02	.00	.01	.00	.00	.00	.00
BOTT:	SMAX=	-.01	.18	-.19	.09	.00	.09	.00	-17.5	.00	.00	.00	.00
12		.00	.00	.01	.06	.00	.00	.01	.00	.00	.00	.00	.00
TOP :	SMAX=	.01	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
BOTT:	SMAX=	.00	.00	-.01	.00	.00	.00	.00	90.0	.00	.00	.00	.00
13		.00	-.02	-.52	-3.12	.00	.00	.66	-1.21	.00	.00	.00	.00
TOP :	SMAX=	.66	.53	.00	-.06	.00	.06	.00	-.02	.00	.00	.00	.00
BOTT:	SMAX=	.00	.53	-.66	.33	.00	.33	.00	-21.2	.00	.00	.00	.00
14		.00	-.02	-.76	-3.98	.00	.00	.82	-1.57	.00	.00	.00	.00
TOP :	SMAX=	.82	.70	.01	-.07	.00	.07	.00	.00	.00	.00	.00	.00
BOTT:	SMAX=	-.02	.70	-.83	.40	.00	.35	.00	-20.6	.00	.00	.00	.00
101		.01	.01	.47	3.09	.00	.00	.49	-.03	.00	.00	.00	.00
TOP :	SMAX=	.52	.48	.00	.01	.00	.01	.00	.00	.00	.00	.00	.00
BOTT:	SMAX=	-.07	.48	-.51	.22	.00	.22	.00	.9	.00	.00	.00	.00
102		.00	.01	.22	1.56	.00	.00	.24	-.04	.00	.00	.00	.00
TOP :	SMAX=	.26	.24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
BOTT:	SMAX=	-.04	.24	-.26	.11	.00	.11	.00	2.0	.00	.00	.00	.00
103		.00	.02	.15	1.03	.00	.00	.16	.03	.00	.00	.00	.00
TOP :	SMAX=	.18	.16	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00
BOTT:	SMAX=	-.02	.16	-.17	.07	.00	.07	.00	-4.9	.00	.00	.00	.00
104		.00	.01	.26	1.76	.00	.00	.28	.6	.00	.00	.00	.00
TOP :	SMAX=	.30	.27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
BOTT:	SMAX=	-.04	.27	-.29	.13	.00	.13	.00	-.6	.00	.00	.00	.00
105		.01	.01	.34	2.26	.00	.00	.36	-.05	.00	.00	.00	.00
TOP :	SMAX=	.38	.35	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
BOTT:	SMAX=	-.05	.35	-.37	.16	.00	.16	.00	1.7	.00	.00	.00	.00
106		.00	.01	-.75	-4.23	.00	.00	.77	-.83	.00	.00	.00	.00
TOP :	SMAX=	.09	.62	.00	-.07	.00	.07	.00	-.02	.00	.00	.00	.00
BOTT:	SMAX=	-.09	.62	-.81	.36	.00	.36	.00	-13.2	.00	.00	.00	.00
107		.00	.01	-.54	-3.07	.00	.00	.54	-.44	.00	.00	.00	.00
TOP :	SMAX=	.07	.44	.00	-.05	.00	.05	.00	-.01	.00	.00	.00	.00
BOTT:	SMAX=	.47	.44	-.58	.25	.00	.25	.00	-9.4	.00	.00	.00	.00
108		.01	.01	.19	1.86	.00	.00	.37	-.87	.00	.00	.00	.00
TOP :	SMAX=	.35	.40	.01	-.03	.00	.03	.00	.00	.00	.00	.00	.00
BOTT:	SMAX=	.03	.40	-.39	.19	.00	.19	.00	25.3	.00	.00	.00	.00
109		.03	.06	1.78	12.03	.00	.00	1.89	-.25	.00	.00	.00	.00
TOP :	SMAX=	1.89	1.86	.01	.02	.00	.02	.00	.01	.00	.00	.00	.00
BOTT:	SMAX=	2.03	.06	.31	.86	.00	.86	.00	1.7	.00	.00	.00	.00
		-.28	.06	-1.98	.85	.00	.85	.00	1.1	.00	.00	.00	.00

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
311	15	.00	.04	-.63	-3.47	.65					
		.59	.54	.00	-.03	-.01					
	TOP :	SMAX=	SMIN=	-.63	TMAX=	.27	ANGLE=	10.2			
	BOTT:	SMAX=	SMIN=	.07	TMAX=	.25	ANGLE=	14.7			
	2	.00	.00	-.09	-.60	-.04					
		.10	.09	.00	-.01	.00					
	TOP :	SMAX=	SMIN=	-.11	TMAX=	.05	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	.02	TMAX=	.04	ANGLE=	90.0			
	3	.00	.00	-.10	-.56	-.04					
		.10	.08	.00	-.01	.00					
	TOP :	SMAX=	SMIN=	-.10	TMAX=	.05	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	.02	TMAX=	.03	ANGLE=	90.0			
	4	.00	.00	-.06	-.24	-.03					
		.04	.03	.00	-.01	.00					
	TOP :	SMAX=	SMIN=	-.05	TMAX=	.02	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	.01	TMAX=	.01	ANGLE=	90.0			
	5	.00	.00	.15	.83	.04					
		.14	.12	.00	.01	.00					
	TOP :	SMAX=	SMIN=	.02	TMAX=	.06	ANGLE=	-2.9			
	BOTT:	SMAX=	SMIN=	-.13	TMAX=	.05	ANGLE=	-3.2			
	6	.00	.00	-.05	-.27	.01					
		.04	.04	.00	.00	.00					
	TOP :	SMAX=	SMIN=	-.05	TMAX=	.02	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	.01	TMAX=	.02	ANGLE=	90.0			
	7	.00	.01	-.02	-.13	.05					
		.03	.02	.00	.00	.01					
	TOP :	SMAX=	SMIN=	-.03	TMAX=	.02	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	.01	TMAX=	.01	ANGLE=	90.0			
	8	.00	.00	-.06	-.37	.01					
		.06	.05	.00	.00	.00					
	TOP :	SMAX=	SMIN=	-.07	TMAX=	.03	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	.01	TMAX=	.02	ANGLE=	90.0			
	9	.00	.00	.08	.56	.00					
		.09	.09	.00	.00	.00					
	TOP :	SMAX=	SMIN=	.01	TMAX=	.04	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.09	TMAX=	.04	ANGLE=	90.0			
	10	.00	.00	-.22	-1.18	-.12					
		.20	.18	-.01	-.01	-.01					
	TOP :	SMAX=	SMIN=	-.21	TMAX=	.09	ANGLE=	-9.0			
	BOTT:	SMAX=	SMIN=	.02	TMAX=	.08	ANGLE=	-5.2			
	11	.00	.00	.22	1.18	.12					
		.20	.18	.01	.01	.01					
	TOP :	SMAX=	SMIN=	.04	TMAX=	.09	ANGLE=	-9.0			
	BOTT:	SMAX=	SMIN=	-.19	TMAX=	.08	ANGLE=	-5.2			
	12	.00	.00	.01	.09	.00					
		.01	.01	.00	.00	.00					
	TOP :	SMAX=	SMIN=	.00	TMAX=	.01	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
	13	.00	.00	-.64	-3.66	-.40					
		.62	.53	-.02	-.05	-.01					
	TOP :	SMAX=	SMIN=	-.67	TMAX=	.28	ANGLE=	-7.9			
	BOTT:	SMAX=	SMIN=	.08	TMAX=	.24	ANGLE=	-7.0			
	14	.01	-.01	-.87	-4.66	-.56					
		.80	.67	-.01	-.07	.00					
	TOP :	SMAX=	SMIN=	-.86	TMAX=	.36	ANGLE=	-7.8			
	BOTT:	SMAX=	SMIN=	.12	TMAX=	.30	ANGLE=	-8.6			
	101	.01	.01	.63	4.14	.00					
		.66	.63	.00	.02	.00					
	TOP :	SMAX=	SMIN=	.11	TMAX=	.30	ANGLE=	.1			
	BOTT:	SMAX=	SMIN=	-.67	TMAX=	.28	ANGLE=	-.1			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	102	.00	.01	.35	2.38	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	.38	.36	.00	.01	.00	.00	.00	.00	.00	.00
	BOTT: SMAX=	.40	SMIN=	.06	TMAX=	.17	ANGLE=	.0			
		-.06	SMIN=	-.39	TMAX=	.17	ANGLE=	-.1			
	103	.00	.01	.37	2.49	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	.40	.38	.00	.01	.00	.00	.00	.00	.00	.00
	BOTT: SMAX=	.43	SMIN=	.06	TMAX=	.18	ANGLE=	-1.8			
		-.06	SMIN=	-.40	TMAX=	.17	ANGLE=	.2			
	104	.00	.00	.34	2.30	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	.36	.35	.00	.01	.00	.00	.00	.00	.00	.00
	BOTT: SMAX=	.39	SMIN=	.06	TMAX=	.16	ANGLE=	-.2			
		-.05	SMIN=	-.38	TMAX=	.16	ANGLE=	.3			
	105	.01	.00	.46	3.04	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	.48	.46	.00	.01	.00	.00	.00	.00	.00	.00
	BOTT: SMAX=	.52	SMIN=	.08	TMAX=	.22	ANGLE=	.3			
		-.08	SMIN=	-.50	TMAX=	.21	ANGLE=	.1			
	106	.01	.02	-.49	-2.49	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	.42	.35	-.01	-.04	.00	.00	.00	.00	.00	.00
	BOTT: SMAX=	-.09	SMIN=	-.46	TMAX=	.18	ANGLE=	-.9			
		.37	SMIN=	.07	TMAX=	.15	ANGLE=	4.7			
	107	.00	.02	-.27	-1.30	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	.23	.18	.00	-.03	.00	.00	.00	.00	.00	.00
	BOTT: SMAX=	-.05	SMIN=	-.25	TMAX=	.10	ANGLE=	5.9			
		.20	SMIN=	.03	TMAX=	.08	ANGLE=	14.6			
	108	.01	.00	.34	2.86	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	.45	.47	.00	-.02	.00	.00	.00	.00	.00	.00
	BOTT: SMAX=	.47	SMIN=	.05	TMAX=	.21	ANGLE=	7.2			
		-.06	SMIN=	-.50	TMAX=	.22	ANGLE=	5.9			
	109	.03	.02	2.44	16.22	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	2.58	2.47	.00	.06	.00	.00	.00	.00	.00	.00
	BOTT: SMAX=	2.76	SMIN=	.41	TMAX=	1.18	ANGLE=	.3			
		-.40	SMIN=	-2.65	TMAX=	1.12	ANGLE=	.0			
312	15	.00	.04	-.03	.08	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	.29	.36	.00	.00	.00	.00	.00	.00	.00	.00
	BOTT: SMAX=	.18	SMIN=	-.16	TMAX=	.17	ANGLE=	90.0			
		.21	SMIN=	-.21	TMAX=	.21	ANGLE=	90.0			
	2	.00	.00	-.09	-.60	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	.10	.09	.00	-.01	.00	.00	.00	.00	.00	.00
	BOTT: SMAX=	-.01	SMIN=	-.11	TMAX=	.05	ANGLE=	90.0			
		.09	SMIN=	.02	TMAX=	.04	ANGLE=	90.0			
	3	.00	.00	-.10	-.56	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	.10	.08	.00	-.01	.00	.00	.00	.00	.00	.00
	BOTT: SMAX=	-.01	SMIN=	-.10	TMAX=	.05	ANGLE=	90.0			
		.09	SMIN=	.02	TMAX=	.03	ANGLE=	90.0			
	4	.00	.00	-.06	-.24	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	.04	.03	.00	-.01	.00	.00	.00	.00	.00	.00
	BOTT: SMAX=	-.01	SMIN=	-.05	TMAX=	.02	ANGLE=	90.0			
		.04	SMIN=	.01	TMAX=	.01	ANGLE=	90.0			
	5	.00	.00	.15	.83	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	.14	.12	.00	.01	.00	.00	.00	.00	.00	.00
	BOTT: SMAX=	.15	SMIN=	.02	TMAX=	.06	ANGLE=	2.9			
		-.02	SMIN=	-.13	TMAX=	.05	ANGLE=	3.2			
	6	.00	.00	.00	-.01	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00
	BOTT: SMAX=	.00	SMIN=	-.01	TMAX=	.00	ANGLE=	90.0			
		.00	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
	7	.00	.01	.14	.84	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	.14	.13	.00	.01	.00	.00	.00	.00	.00	.00
	BOTT: SMAX=	.15	SMIN=	.03	TMAX=	.06	ANGLE=	-4.0			
		-.02	SMIN=	-.13	TMAX=	.06	ANGLE=	1.9			



PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
	8	.00	.00	-.06	-.37	-.01
		.06	.05	.00	.00	.00
	TOP : SMAX=	-.01	SMIN=	-.07	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.06	SMIN=	.01	TMAX=	.02 ANGLE= 90.0
	9	.00	.00	.08	.56	.00
		.09	.09	.00	.00	.00
	TOP : SMAX=	.10	SMIN=	.01	TMAX=	.04 ANGLE= 90.0
	BOTT: SMAX=	-.01	SMIN=	-.09	TMAX=	.04 ANGLE= 90.0
	10	.00	.00	-.22	-1.18	.12
		.20	.18	-.01	-.01	.01
	TOP : SMAX=	-.04	SMIN=	-.21	TMAX=	.09 ANGLE= 9.0
	BOTT: SMAX=	.19	SMIN=	.02	TMAX=	.08 ANGLE= 5.2
	11	.00	.00	.22	1.18	-.12
		.20	.18	.01	.01	-.01
	TOP : SMAX=	.21	SMIN=	.04	TMAX=	.09 ANGLE= 9.0
	BOTT: SMAX=	-.02	SMIN=	-.19	TMAX=	.08 ANGLE= 5.2
	12	.00	.00	.01	.09	.00
		.01	.01	.00	.00	.00
	TOP : SMAX=	.02	SMIN=	.00	TMAX=	.01 ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	-.02	TMAX=	.01 ANGLE= 90.0
	13	.00	.00	-.64	-3.66	.40
		.62	.53	-.02	-.05	.01
	TOP : SMAX=	-.11	SMIN=	-.67	TMAX=	.28 ANGLE= 7.9
	BOTT: SMAX=	.57	SMIN=	.08	TMAX=	.24 ANGLE= 7.0
	14	.01	.01	-.87	-4.66	.56
		.80	.67	-.01	-.07	.00
	TOP : SMAX=	-.14	SMIN=	-.86	TMAX=	.36 ANGLE= 7.8
	BOTT: SMAX=	.72	SMIN=	.12	TMAX=	.30 ANGLE= 8.6
	101	.01	-.01	.63	4.14	.00
		.66	.63	.00	.02	.00
	TOP : SMAX=	.71	SMIN=	.11	TMAX=	.30 ANGLE= -1.1
	BOTT: SMAX=	-.10	SMIN=	-.67	TMAX=	.28 ANGLE= .1
	102	.01	.00	.39	2.58	.02
		.41	.39	.00	.01	.00
	TOP : SMAX=	.44	SMIN=	.06	TMAX=	.19 ANGLE= -1.7
	BOTT: SMAX=	-.06	SMIN=	-.42	TMAX=	.18 ANGLE= -1.2
	103	.01	.00	.50	3.27	.02
		.52	.50	.00	.01	.01
	TOP : SMAX=	.56	SMIN=	.09	TMAX=	.24 ANGLE= -1.0
	BOTT: SMAX=	-.08	SMIN=	-.53	TMAX=	.23 ANGLE= .3
	104	.00	.00	.34	2.30	.00
		.36	.35	.00	.01	.00
	TOP : SMAX=	.39	SMIN=	.06	TMAX=	.16 ANGLE= .2
	BOTT: SMAX=	-.05	SMIN=	-.38	TMAX=	.16 ANGLE= -1.3
	105	.01	.00	.46	3.04	.01
		.48	.46	.00	.01	.00
	TOP : SMAX=	.52	SMIN=	.08	TMAX=	.22 ANGLE= -1.3
	BOTT: SMAX=	-.08	SMIN=	-.50	TMAX=	.21 ANGLE= -1.1
	106	.01	.02	-.19	-.71	.84
		.27	.26	-.01	-.02	.00
	TOP : SMAX=	.05	SMIN=	-.24	TMAX=	.15 ANGLE= 90.0
	BOTT: SMAX=	.20	SMIN=	-.09	TMAX=	.15 ANGLE= 90.0
	107	.01	.02	.02	.47	.71
		.20	.24	.00	-.01	-.01
	TOP : SMAX=	.15	SMIN=	-.08	TMAX=	.12 ANGLE= 90.0
	BOTT: SMAX=	.09	SMIN=	-.18	TMAX=	.13 ANGLE= 90.0
	108	.01	.00	.34	2.86	.29
		.45	.47	.00	-.02	.00
	TOP : SMAX=	.47	SMIN=	.05	TMAX=	.21 ANGLE= -7.2
	BOTT: SMAX=	-.06	SMIN=	-.50	TMAX=	.22 ANGLE= -5.9
	109	.03	-.02	2.44	16.22	.04
		2.58	2.47	.00	.06	.00
	TOP : SMAX=	2.76	SMIN=	.41	TMAX=	1.18 ANGLE= -1.3
	BOTT: SMAX=	-.40	SMIN=	-2.65	TMAX=	1.12 ANGLE= -1.1

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
313	15	.00	.03	.52	3.21	1.21					
		.62	.60	.00	.04	-.02					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	2	.00	.00	-.06	-.44	.09					
		.08	.07	.00	.00	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	3	.00	.00	-.07	-.38	.11					
		.07	.07	.00	-.01	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	4	.00	.00	-.04	-.16	.09					
		.04	.04	.00	.00	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	5	.00	.00	.12	.69	-.10					
		.12	.10	.00	.01	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	6	.00	.00	.04	.27	.01					
		.04	.04	.00	.00	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	7	.00	.01	.27	1.65	-.02					
		.26	.25	.00	.01	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	8	.00	.00	-.03	-.20	-.04					
		.04	.03	.00	.00	-.01					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	9	.00	.00	.06	.42	.01					
		.07	.07	.00	.00	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	10	.00	.00	-.20	-1.15	.39					
		.24	.18	.00	-.02	.01					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	11	.00	.00	.20	1.15	-.39					
		.24	.18	.00	.02	-.01					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	12	.00	.00	.01	.06	.00					
		.01	.01	.00	.00	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	13	.00	.02	-.52	-3.12	1.21					
		.66	.53	.00	-.06	.02					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	14	.00	.02	-.76	-3.98	1.57					
		.82	.70	.01	-.07	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	101	.01	-.01	.47	3.09	.03					
		.49	.48	.00	.01	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	102	.01	-.01	.32	2.14	.05					
		.34	.33	.00	.00	.00					
	TOP : SMAX=	.36	SMIN=	.05	TMAX=	.15	ANGLE=	-1.9			
	BOTT: SMAX=	-.05	SMIN=	-.35	TMAX=	.15	ANGLE=	-1.1			
	103	.01	.00	.50	3.25	.03					
		.51	.50	.00	.01	.00					
	TOP : SMAX=	.55	SMIN=	.09	TMAX=	.23	ANGLE=	-1.0			
	BOTT: SMAX=	-.08	SMIN=	-.53	TMAX=	.23	ANGLE=	-.2			
	104	.00	-.01	.26	1.77	.01					
		.28	.27	.00	.00	.00					
	TOP : SMAX=	.30	SMIN=	.05	TMAX=	.13	ANGLE=	.5			
	BOTT: SMAX=	-.04	SMIN=	-.29	TMAX=	.12	ANGLE=	-1.2			
	105	.01	-.01	.34	2.26	.05					
		.36	.35	.00	.00	.00					
	TOP : SMAX=	.38	SMIN=	.06	TMAX=	.16	ANGLE=	-1.7			
	BOTT: SMAX=	-.05	SMIN=	-.37	TMAX=	.16	ANGLE=	-1.3			
	106	.01	.02	.08	.70	1.43					
		.44	.42	.00	-.02	.01					
	TOP : SMAX=	.31	SMIN=	-.19	TMAX=	.25	ANGLE=	90.0			
	BOTT: SMAX=	.16	SMIN=	-.31	TMAX=	.24	ANGLE=	-37.9			
	107	.01	.02	.28	1.86	1.04					
		.41	.43	.00	.00	-.01					
	TOP : SMAX=	.39	SMIN=	-.03	TMAX=	.21	ANGLE=	-25.9			
	BOTT: SMAX=	.05	SMIN=	-.40	TMAX=	.22	ANGLE=	-26.9			
	108	.01	-.01	.19	1.86	.87					
		.37	.41	.01	-.03	.00					
	TOP : SMAX=	.35	SMIN=	-.03	TMAX=	.19	ANGLE=	-25.3			
	BOTT: SMAX=	.03	SMIN=	-.39	TMAX=	.21	ANGLE=	-21.0			
	109	.03	-.06	1.79	12.03	.26					
		1.89	1.86	.01	.02	.01					
	TOP : SMAX=	2.03	SMIN=	.31	TMAX=	.86	ANGLE=	-1.7			
	BOTT: SMAX=	-.29	SMIN=	-1.99	TMAX=	.85	ANGLE=	-1.1			
314	15	.00	.02	.96	5.50	.76					
		.93	.82	.00	.06	-.02					
	TOP : SMAX=	.99	SMIN=	.14	TMAX=	.43	ANGLE=	-7.4			
	BOTT: SMAX=	-.13	SMIN=	-.88	TMAX=	.37	ANGLE=	-11.4			
	2	.00	.00	-.01	-.14	.09					
		.03	.04	.00	.00	.00					
	TOP : SMAX=	.00	SMIN=	-.03	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	.04	SMIN=	-.01	TMAX=	.02	ANGLE=	90.0			
	3	.00	.00	-.01	-.08	.13					
		.03	.05	.00	.00	-.01					
	TOP : SMAX=	.01	SMIN=	-.02	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	.03	SMIN=	-.02	TMAX=	.03	ANGLE=	90.0			
	4	.00	.00	-.02	-.04	.11					
		.03	.04	.00	.00	.00					
	TOP : SMAX=	.01	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.03	SMIN=	-.02	TMAX=	.02	ANGLE=	90.0			
	5	.00	.00	.07	.39	-.13					
		.07	.07	.00	.00	.00					
	TOP : SMAX=	.08	SMIN=	.01	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	-.07	TMAX=	.03	ANGLE=	90.0			
	6	.00	.00	.08	.50	.00					
		.08	.08	.00	.00	.00					
	TOP : SMAX=	.09	SMIN=	.01	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	-.01	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			
	7	.00	.00	.35	2.18	-.06					
		.35	.33	.00	.01	.00					
	TOP : SMAX=	.38	SMIN=	.06	TMAX=	.16	ANGLE=	1.8			
	BOTT: SMAX=	-.06	SMIN=	-.35	TMAX=	.15	ANGLE=	1.8			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
8		.00	.00	.02	.07	.02	.07	.02	.07	.02	.07
		.05	.02	.00	.01	.00	.01	.00	.01	.00	.01
	TOP : SMAX=	.03	SMIN=	-.02	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	.01	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
9		.00	.00	.02	.17	.02	.17	.02	.17	.02	.17
		.03	.03	.00	.00	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	.03	SMIN=	.00	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	-.03	TMAX=	.01	ANGLE=	90.0			
10		.00	.01	-.16	-.96	-.16	-.96	-.16	-.96	-.16	-.96
		.28	.22	.01	-.02	.01	-.02	.01	-.02	.01	-.02
	TOP : SMAX=	.05	SMIN=	-.26	TMAX=	.15	ANGLE=	28.9			
	BOTT: SMAX=	.20	SMIN=	-.03	TMAX=	.12	ANGLE=	31.6			
11		.00	-.01	.16	.96	.16	.96	.16	.96	.16	.96
		.28	.22	-.01	.02	-.01	.02	-.01	.02	-.01	.02
	TOP : SMAX=	.26	SMIN=	-.05	TMAX=	.15	ANGLE=	28.9			
	BOTT: SMAX=	.03	SMIN=	-.20	TMAX=	.12	ANGLE=	31.6			
12		.00	.00	.00	.02	.00	.02	.00	.02	.00	.02
		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
13		.01	.03	-.29	-1.92	-.29	-1.92	-.29	-1.92	-.29	-1.92
		.68	.61	.02	-.05	.02	-.05	.02	-.05	.02	-.05
	TOP : SMAX=	.18	SMIN=	-.58	TMAX=	.38	ANGLE=	31.4			
	BOTT: SMAX=	.51	SMIN=	-.17	TMAX=	.34	ANGLE=	36.5			
14		.00	.03	-.48	-2.46	-.48	-2.46	-.48	-2.46	-.48	-2.46
		.77	.76	.02	-.05	.02	-.05	.02	-.05	.02	-.05
	TOP : SMAX=	.16	SMIN=	-.68	TMAX=	.42	ANGLE=	30.5			
	BOTT: SMAX=	.65	SMIN=	-.18	TMAX=	.42	ANGLE=	36.1			
101		.01	-.02	.18	1.25	.18	1.25	.18	1.25	.18	1.25
		.19	.21	.01	-.01	.01	-.01	.01	-.01	.01	-.01
	TOP : SMAX=	.20	SMIN=	.03	TMAX=	.08	ANGLE=	-7.5			
	BOTT: SMAX=	-.02	SMIN=	-.22	TMAX=	.10	ANGLE=	-7.3			
102		.00	-.01	.16	1.16	.16	1.16	.16	1.16	.16	1.16
		.18	.19	.01	.00	.01	.00	.01	.00	.01	.00
	TOP : SMAX=	.19	SMIN=	.03	TMAX=	.08	ANGLE=	-7.1			
	BOTT: SMAX=	-.02	SMIN=	-.20	TMAX=	.09	ANGLE=	-6.7			
103		.01	-.01	.39	2.50	.39	2.50	.39	2.50	.39	2.50
		.39	.39	.01	.00	.01	.00	.01	.00	.01	.00
	TOP : SMAX=	.42	SMIN=	.07	TMAX=	.17	ANGLE=	-1.8			
	BOTT: SMAX=	-.06	SMIN=	-.41	TMAX=	.18	ANGLE=	-2.2			
104		.00	-.01	.12	.81	.12	.81	.12	.81	.12	.81
		.12	.13	.00	.00	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	.13	SMIN=	.02	TMAX=	.06	ANGLE=	.8			
	BOTT: SMAX=	-.02	SMIN=	-.14	TMAX=	.06	ANGLE=	-5.3			
105		.00	-.01	.12	.89	.12	.89	.12	.89	.12	.89
		.14	.16	.01	-.01	.01	-.01	.01	-.01	.01	-.01
	TOP : SMAX=	.15	SMIN=	.02	TMAX=	.06	ANGLE=	-10.5			
	BOTT: SMAX=	-.01	SMIN=	-.16	TMAX=	.08	ANGLE=	-10.0			
106		.01	.02	.32	1.79	.32	1.79	.32	1.79	.32	1.79
		.58	.59	.02	-.01	.02	-.01	.02	-.01	.02	-.01
	TOP : SMAX=	.50	SMIN=	-.14	TMAX=	.32	ANGLE=	-34.9			
	BOTT: SMAX=	.16	SMIN=	-.50	TMAX=	.33	ANGLE=	-32.8			
107		.00	.01	.48	2.75	.48	2.75	.48	2.75	.48	2.75
		.52	.53	.01	.01	.01	.01	.01	.01	.01	.01
	TOP : SMAX=	.54	SMIN=	.03	TMAX=	.26	ANGLE=	-20.7			
	BOTT: SMAX=	.01	SMIN=	-.53	TMAX=	.27	ANGLE=	-23.1			
108		.01	-.01	-.03	.28	-.03	.28	-.03	.28	-.03	.28
		.38	.43	.02	-.04	.02	-.04	.02	-.04	.02	-.04
	TOP : SMAX=	.23	SMIN=	-.21	TMAX=	.22	ANGLE=	90.0			
	BOTT: SMAX=	.22	SMIN=	-.28	TMAX=	.25	ANGLE=	-38.4			
109		.02	-.08	.65	4.71	.65	4.71	.65	4.71	.65	4.71
		.71	.82	.04	-.04	.04	-.04	.04	-.04	.04	-.04
	TOP : SMAX=	.77	SMIN=	.12	TMAX=	.32	ANGLE=	-10.5			
	BOTT: SMAX=	-.05	SMIN=	-.85	TMAX=	.40	ANGLE=	-9.8			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
315	15	.00	.00	1.20	6.78						
		1.13	.96	-.01	.08						
	TOP :	SMAX=	SMIN=	.19	TMAX=	.51	ANGLE=	1.8			
	BOTT:	SMAX=	SMIN=	-1.05	TMAX=	.42	ANGLE=	1.3			
	2	.00	.00	.04	.20						
		.04	.03	.00	.01						
	TOP :	SMAX=	SMIN=	.00	TMAX=	.02	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.03	TMAX=	.01	ANGLE=	90.0			
	3	.00	.00	.04	.24						
		.05	.05	.00	.01						
	TOP :	SMAX=	SMIN=	.00	TMAX=	.02	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.04	TMAX=	.02	ANGLE=	90.0			
	4	.00	.00	.01	.09						
		.03	.04	.00	.00						
	TOP :	SMAX=	SMIN=	-.01	TMAX=	.01	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.03	TMAX=	.02	ANGLE=	90.0			
	5	.00	-.01	-.01	-.03						
		.03	.03	.00	.00						
	TOP :	SMAX=	SMIN=	-.02	TMAX=	.02	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.02	TMAX=	.02	ANGLE=	90.0			
	6	.00	.00	.09	.63						
		.10	.10	.00	.00						
	TOP :	SMAX=	SMIN=	.02	TMAX=	.05	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.10	TMAX=	.04	ANGLE=	90.0			
	7	.00	.00	.37	2.30						
		.37	.34	.00	.01						
	TOP :	SMAX=	SMIN=	.06	TMAX=	.17	ANGLE=	3.2			
	BOTT:	SMAX=	SMIN=	-.37	TMAX=	.15	ANGLE=	3.5			
	8	.00	.00	.05	.30						
		.08	.07	-.01	.01						
	TOP :	SMAX=	SMIN=	-.02	TMAX=	.05	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.06	TMAX=	.04	ANGLE=	90.0			
	9	.00	.00	-.02	-.13						
		.03	.03	.00	.00						
	TOP :	SMAX=	SMIN=	-.03	TMAX=	.01	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	.00	TMAX=	.01	ANGLE=	90.0			
	10	.00	.01	-.07	-.45						
		.30	.29	.02	-.02						
	TOP :	SMAX=	SMIN=	-.21	TMAX=	.17	ANGLE=	36.2			
	BOTT:	SMAX=	SMIN=	-.12	TMAX=	.17	ANGLE=	90.0			
	11	.00	-.01	.07	.45						
		.30	.29	-.02	.02						
	TOP :	SMAX=	SMIN=	-.13	TMAX=	.17	ANGLE=	36.2			
	BOTT:	SMAX=	SMIN=	-.21	TMAX=	.17	ANGLE=	90.0			
	12	.00	.00	-.01	-.04						
		.01	.00	.00	.00						
	TOP :	SMAX=	SMIN=	-.01	TMAX=	.00	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
	13	.01	.04	.00	-.01						
		.67	.80	.05	-.02						
	TOP :	SMAX=	SMIN=	-.37	TMAX=	.38	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.44	TMAX=	.46	ANGLE=	90.0			
	14	.00	.04	.02	-.03						
		.61	.78	.03	-.01						
	TOP :	SMAX=	SMIN=	-.35	TMAX=	.35	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.44	TMAX=	.45	ANGLE=	90.0			
	101	.00	-.02	-.16	-.94						
		.19	.17	.01	-.02						
	TOP :	SMAX=	SMIN=	-.19	TMAX=	.09	ANGLE=	13.0			
	BOTT:	SMAX=	SMIN=	.00	TMAX=	.08	ANGLE=	90.0			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.00	-.01	-.03	-.12						.24
		.06	.09	.01	-.01						-.01
	TOP : SMAX=	.02	SMIN=	-.05	TMAX=	.03	ANGLE=				90.0
	BOTT: SMAX=	.06	SMIN=	-.04	TMAX=	.05	ANGLE=				90.0
103		.00	-.01	.19	1.22						.15
		.19	.20	.01	.00						-.01
	TOP : SMAX=	.20	SMIN=	.04	TMAX=	.08	ANGLE=				-5.3
	BOTT: SMAX=	-.02	SMIN=	-.21	TMAX=	.10	ANGLE=				-10.4
104		.00	-.01	-.07	-.39						.08
		.07	.07	.00	-.01						-.01
	TOP : SMAX=	-.01	SMIN=	-.07	TMAX=	.03	ANGLE=				90.0
	BOTT: SMAX=	.07	SMIN=	.00	TMAX=	.03	ANGLE=				90.0
105		.00	-.01	-.12	-.72						.28
		.15	.14	.01	-.02						-.01
	TOP : SMAX=	.00	SMIN=	-.15	TMAX=	.07	ANGLE=				14.5
	BOTT: SMAX=	.14	SMIN=	.00	TMAX=	.07	ANGLE=				90.0
106		.00	.02	.49	2.75						1.83
		.64	.72	.04	.01						-.03
	TOP : SMAX=	.62	SMIN=	-.03	TMAX=	.33	ANGLE=				-28.7
	BOTT: SMAX=	.14	SMIN=	-.64	TMAX=	.39	ANGLE=				-29.4
107		.00	.01	.57	3.20						.84
		.55	.55	.02	.03						-.03
	TOP : SMAX=	.59	SMIN=	.08	TMAX=	.25	ANGLE=				-13.2
	BOTT: SMAX=	-.02	SMIN=	-.56	TMAX=	.27	ANGLE=				-19.1
108		.00	.00	-.20	-1.26						1.69
		.48	.58	.04	-.04						-.04
	TOP : SMAX=	.15	SMIN=	-.39	TMAX=	.27	ANGLE=				31.1
	BOTT: SMAX=	.45	SMIN=	-.21	TMAX=	.33	ANGLE=				40.4
109		.01	-.07	-.65	-3.89						1.50
		.78	.74	.06	-.09						-.06
	TOP : SMAX=	.00	SMIN=	-.79	TMAX=	.39	ANGLE=				14.3
	BOTT: SMAX=	.73	SMIN=	.00	TMAX=	.37	ANGLE=				28.9
316	15	.01	-.02	1.21	6.98						-1.00
		1.19	1.05	-.03	.07						.02
	TOP : SMAX=	1.26	SMIN=	.15	TMAX=	.55	ANGLE=				7.8
	BOTT: SMAX=	-.19	SMIN=	-1.13	TMAX=	.47	ANGLE=				11.7
2		.00	.00	.08	.48						-.02
		.08	.07	.00	.01						.00
	TOP : SMAX=	.09	SMIN=	.01	TMAX=	.04	ANGLE=				90.0
	BOTT: SMAX=	-.02	SMIN=	-.07	TMAX=	.03	ANGLE=				90.0
3		.00	.00	.07	.44						.02
		.08	.06	.00	.01						.00
	TOP : SMAX=	.08	SMIN=	.01	TMAX=	.04	ANGLE=				90.0
	BOTT: SMAX=	-.01	SMIN=	-.06	TMAX=	.03	ANGLE=				90.0
4		.00	.00	.03	.16						.05
		.03	.03	.00	.00						.00
	TOP : SMAX=	.03	SMIN=	.00	TMAX=	.01	ANGLE=				90.0
	BOTT: SMAX=	.00	SMIN=	-.03	TMAX=	.01	ANGLE=				90.0
5		.00	-.01	-.10	-.54						-.06
		.09	.08	.00	.00						.00
	TOP : SMAX=	-.01	SMIN=	-.09	TMAX=	.04	ANGLE=				90.0
	BOTT: SMAX=	.09	SMIN=	.02	TMAX=	.04	ANGLE=				90.0
6		.00	.00	.08	.61						-.01
		.10	.09	.00	.00						.00
	TOP : SMAX=	.11	SMIN=	.01	TMAX=	.05	ANGLE=				90.0
	BOTT: SMAX=	-.01	SMIN=	-.10	TMAX=	.04	ANGLE=				90.0
7		.00	-.01	.28	1.95						-.14
		.32	.30	.00	.01						.00
	TOP : SMAX=	.34	SMIN=	.04	TMAX=	.15	ANGLE=				4.0
	BOTT: SMAX=	-.05	SMIN=	-.32	TMAX=	.13	ANGLE=				5.9

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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
8		.00	.00	.04	.38						
		.10	.11	-.01	.01						
TOP :	SMAX=	.09	SMIN=	-.02	TMAX=	.05	ANGLE=	90.0			
BOTT:	SMAX=	.02	SMIN=	-.10	TMAX=	.06	ANGLE=	90.0			
9		.00	.00	-.06	-.41						
		.07	.07	.00	.00						
TOP :	SMAX=	-.01	SMIN=	-.07	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.07	SMIN=	.01	TMAX=	.03	ANGLE=	90.0			
10		.00	.02	.09	.43						
		.28	.39	.03	.00						
TOP :	SMAX=	.22	SMIN=	-.10	TMAX=	.16	ANGLE=	90.0			
BOTT:	SMAX=	.19	SMIN=	-.25	TMAX=	.22	ANGLE=	90.0			
11		.00	-.02	-.09	-.43						
		.28	.39	-.03	.00						
TOP :	SMAX=	.10	SMIN=	-.22	TMAX=	.16	ANGLE=	90.0			
BOTT:	SMAX=	.25	SMIN=	-.19	TMAX=	.22	ANGLE=	90.0			
12		.00	.00	-.01	-.07						
		.01	.01	.00	.00						
TOP :	SMAX=	.00	SMIN=	-.01	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.01	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
13		.00	.04	.29	2.14						
		.67	.98	.07	.05						
TOP :	SMAX=	.62	SMIN=	-.09	TMAX=	.36	ANGLE=	-33.1			
BOTT:	SMAX=	.42	SMIN=	-.70	TMAX=	.56	ANGLE=	-36.5			
14		.01	.04	.70	2.82						
		.65	.81	.01	.05						
TOP :	SMAX=	.65	SMIN=	.00	TMAX=	.32	ANGLE=	-26.4			
BOTT:	SMAX=	.18	SMIN=	-.71	TMAX=	.44	ANGLE=	-34.6			
101		.00	-.01	-.44	-3.01						
		.50	.48	.03	-.02						
TOP :	SMAX=	-.04	SMIN=	-.52	TMAX=	.24	ANGLE=	4.6			
BOTT:	SMAX=	.51	SMIN=	.07	TMAX=	.22	ANGLE=	15.0			
102		.00	-.01	-.22	-1.40						
		.24	.24	.02	-.01						
TOP :	SMAX=	-.02	SMIN=	-.25	TMAX=	.12	ANGLE=	6.6			
BOTT:	SMAX=	.25	SMIN=	.03	TMAX=	.11	ANGLE=	20.4			
103		.00	-.01	-.05	-.33						
		.06	.10	.01	.00						
TOP :	SMAX=	.01	SMIN=	-.06	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.09	SMIN=	-.02	TMAX=	.06	ANGLE=	90.0			
104		.00	-.01	-.25	-1.59						
		.26	.25	.01	-.01						
TOP :	SMAX=	-.03	SMIN=	-.27	TMAX=	.12	ANGLE=	-.6			
BOTT:	SMAX=	.26	SMIN=	.04	TMAX=	.11	ANGLE=	8.5			
105		.00	-.01	-.32	-2.22						
		.37	.36	.02	-.01						
TOP :	SMAX=	-.03	SMIN=	-.39	TMAX=	.18	ANGLE=	5.2			
BOTT:	SMAX=	.38	SMIN=	.05	TMAX=	.17	ANGLE=	16.1			
106		.00	.02	.61	3.55						
		.67	.77	.05	.05						
TOP :	SMAX=	.71	SMIN=	.09	TMAX=	.31	ANGLE=	-18.5			
BOTT:	SMAX=	.11	SMIN=	-.71	TMAX=	.41	ANGLE=	-26.8			
107		.00	.00	.53	3.12						
		.53	.48	.02	.05						
TOP :	SMAX=	.58	SMIN=	.10	TMAX=	.24	ANGLE=	-3.3			
BOTT:	SMAX=	-.04	SMIN=	-.49	TMAX=	.23	ANGLE=	-14.8			
108		.00	.01	-.20	-2.38						
		.51	.72	.04	.00						
TOP :	SMAX=	.08	SMIN=	-.47	TMAX=	.27	ANGLE=	21.1			
BOTT:	SMAX=	.63	SMIN=	-.16	TMAX=	.39	ANGLE=	32.8			
109		-.01	-.05	-1.73	-11.85						
		1.99	1.92	.11	-.07						
TOP :	SMAX=	-.16	SMIN=	-2.07	TMAX=	.95	ANGLE=	5.2			
BOTT:	SMAX=	2.04	SMIN=	.26	TMAX=	.89	ANGLE=	16.0			

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
317	15	.00	-.03	.76	5.59						-1.93
		1.03	1.05	-.01	.04						.05
	TOP :	SMAX=	SMIN=	.03	TMAX=	.51	ANGLE=	16.2			
	BOTT:	SMAX=	SMIN=	-1.04	TMAX=	.53	ANGLE=	22.3			
	2	.00	.00	.08	.65						-.10
		.11	.10	.00	.01						.00
	TOP :	SMAX=	SMIN=	.01	TMAX=	.05	ANGLE=	7.1			
	BOTT:	SMAX=	SMIN=	-.11	TMAX=	.05	ANGLE=	90.0			
	3	.00	.00	.06	.51						-.08
		.09	.07	.00	.01						.00
	TOP :	SMAX=	SMIN=	.01	TMAX=	.04	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			
	4	.00	.00	.03	.22						-.03
		.04	.03	.00	.01						.00
	TOP :	SMAX=	SMIN=	.00	TMAX=	.02	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.03	TMAX=	.01	ANGLE=	90.0			
	5	.00	.00	-.19	-1.25						.08
		.20	.19	.00	-.01						.00
	TOP :	SMAX=	SMIN=	-.22	TMAX=	.09	ANGLE=	4.2			
	BOTT:	SMAX=	SMIN=	.03	TMAX=	.09	ANGLE=	4.5			
	6	.00	.00	.02	.32						-.03
		.05	.05	.00	.00						.00
	TOP :	SMAX=	SMIN=	.00	TMAX=	.03	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.05	TMAX=	.03	ANGLE=	90.0			
	7	.00	-.01	.10	.71						-.21
		.12	.13	.00	.00						.01
	TOP :	SMAX=	SMIN=	.01	TMAX=	.06	ANGLE=	12.9			
	BOTT:	SMAX=	SMIN=	-.13	TMAX=	.07	ANGLE=	90.0			
	8	.00	.00	-.08	.23						-.17
		.05	.08	-.01	-.01						.01
	TOP :	SMAX=	SMIN=	-.03	TMAX=	.03	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.07	TMAX=	.05	ANGLE=	90.0			
	9	.00	.00	-.08	-.72						.07
		.11	.12	.00	.00						-.01
	TOP :	SMAX=	SMIN=	-.12	TMAX=	.05	ANGLE=	.8			
	BOTT:	SMAX=	SMIN=	.01	TMAX=	.06	ANGLE=	11.6			
	10	.00	.02	.25	2.14						.81
		.40	.47	.02	.05						-.07
	TOP :	SMAX=	SMIN=	.05	TMAX=	.18	ANGLE=	-10.0			
	BOTT:	SMAX=	SMIN=	-.41	TMAX=	.25	ANGLE=	-27.7			
	11	.00	-.02	-.25	-2.14						-.81
		.40	.47	-.02	-.05						.07
	TOP :	SMAX=	SMIN=	-.42	TMAX=	.18	ANGLE=	-10.0			
	BOTT:	SMAX=	SMIN=	-.09	TMAX=	.25	ANGLE=	-27.7			
	12	.00	.00	-.01	-.09						.00
		.02	.01	.00	.00						.00
	TOP :	SMAX=	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	.00	TMAX=	.01	ANGLE=	90.0			
	13	.00	.03	.36	4.95						1.86
		1.01	1.04	.03	.20						-.18
	TOP :	SMAX=	SMIN=	.08	TMAX=	.48	ANGLE=	-7.9			
	BOTT:	SMAX=	SMIN=	-.90	TMAX=	.57	ANGLE=	-29.2			
	14	-.01	.03	1.80	6.84						.02
		1.19	.88	.00	.16						-.08
	TOP :	SMAX=	SMIN=	.30	TMAX=	.51	ANGLE=	4.5			
	BOTT:	SMAX=	SMIN=	-.99	TMAX=	.35	ANGLE=	-7.2			
	101	.00	-.01	-.63	-5.25						.54
		.81	.89	.01	.02						-.07
	TOP :	SMAX=	SMIN=	-.85	TMAX=	.38	ANGLE=	1.2			
	BOTT:	SMAX=	SMIN=	.08	TMAX=	.42	ANGLE=	11.5			



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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.00	-.01	-.36	-2.99	.32					
		.46	.51	.01	.02	-.05					
TOP :	SMAX=	-.05	SMIN=	-.48	TMAX=	.22	ANGLE=	.6			
BOTT:	SMAX=	.54	SMIN=	.05	TMAX=	.24	ANGLE=	12.3			
103		.00	-.01	-.30	-2.68	.18					
		.41	.45	.01	.02	-.04					
TOP :	SMAX=	-.04	SMIN=	-.43	TMAX=	.19	ANGLE=	-1.9			
BOTT:	SMAX=	.48	SMIN=	.05	TMAX=	.21	ANGLE=	9.7			
104		.00	-.01	-.44	-3.07	.21					
		.47	.51	.00	.01	-.04					
TOP :	SMAX=	-.07	SMIN=	-.50	TMAX=	.21	ANGLE=	-6			
BOTT:	SMAX=	.53	SMIN=	.06	TMAX=	.24	ANGLE=	9.1			
105		.00	-.01	-.44	-3.82	.40					
		.59	.65	.01	.02	-.06					
TOP :	SMAX=	-.06	SMIN=	-.62	TMAX=	.28	ANGLE=	.9			
BOTT:	SMAX=	.68	SMIN=	.06	TMAX=	.31	ANGLE=	11.9			
106		.00	.01	.44	4.27	.59					
		.82	.67	.03	.16	-.13					
TOP :	SMAX=	.87	SMIN=	.10	TMAX=	.38	ANGLE=	2.6			
BOTT:	SMAX=	.04	SMIN=	-.64	TMAX=	.34	ANGLE=	-21.0			
107		.00	-.01	.20	2.12	-.23					
		.47	.24	.00	.10	-.06					
TOP :	SMAX=	.48	SMIN=	.01	TMAX=	.23	ANGLE=	12.5			
BOTT:	SMAX=	-.03	SMIN=	-.25	TMAX=	.11	ANGLE=	-5.6			
108		-.01	.01	.14	-3.07	.70					
		.43	.77	.02	.11	-.14					
TOP :	SMAX=	.05	SMIN=	-.40	TMAX=	.22	ANGLE=	-3.2			
BOTT:	SMAX=	.72	SMIN=	-.10	TMAX=	.41	ANGLE=	19.7			
109		-.02	-.03	-2.37	-20.29	2.14					
		3.13	3.47	.06	.10	-.31					
TOP :	SMAX=	-.34	SMIN=	-3.29	TMAX=	1.48	ANGLE=	.9			
BOTT:	SMAX=	3.62	SMIN=	.31	TMAX=	1.65	ANGLE=	11.9			
318	15	.04	-.05	.22	1.45	.24					
		.25	.24	.02	-.01	.04					
TOP :	SMAX=	.26	SMIN=	.03	TMAX=	.12	ANGLE=	-20.4			
BOTT:	SMAX=	-.02	SMIN=	-.25	TMAX=	.12	ANGLE=	-1.2			
2		.00	.00	.13	.71	.00					
		.11	.11	.00	.00	.00					
TOP :	SMAX=	.12	SMIN=	.02	TMAX=	.05	ANGLE=	-3.1			
BOTT:	SMAX=	-.02	SMIN=	-.11	TMAX=	.05	ANGLE=	90.0			
3		.00	.00	.09	.50	-.02					
		.08	.07	.00	.00	.00					
TOP :	SMAX=	.09	SMIN=	.02	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	-.01	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			
4		.00	.00	.06	.31	-.02					
		.05	.04	.00	.00	.00					
TOP :	SMAX=	.05	SMIN=	.01	TMAX=	.02	ANGLE=	90.0			
BOTT:	SMAX=	-.01	SMIN=	-.05	TMAX=	.02	ANGLE=	90.0			
5		-.01	.00	-.44	-2.11	-.06					
		.33	.31	.00	-.01	.00					
TOP :	SMAX=	-.07	SMIN=	-.36	TMAX=	.15	ANGLE=	-1.9			
BOTT:	SMAX=	.34	SMIN=	.08	TMAX=	.13	ANGLE=	-1.9			
6		.00	-.01	-.11	-.40	.03					
		.06	.06	.00	.00	.00					
TOP :	SMAX=	-.02	SMIN=	-.07	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.06	SMIN=	.02	TMAX=	.02	ANGLE=	90.0			
7		.01	-.02	-.44	-2.03	.45					
		.35	.32	.01	-.01	.00					
TOP :	SMAX=	-.04	SMIN=	-.37	TMAX=	.16	ANGLE=	13.7			
BOTT:	SMAX=	.35	SMIN=	.06	TMAX=	.14	ANGLE=	15.8			

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.00	-.01	-.30	-.94		.35				
		.21	.13	.00	-.03		.02				
TOP :	SMAX=	-.01	SMIN=	-.22	TMAX=	.10	ANGLE=	24.0			
BOTT:	SMAX=	.14	SMIN=	.03	TMAX=	.06	ANGLE=	90.0			
	9	-.01	.00	-.11	-.74		-.21				
		.14	.13	.01	.01		-.02				
TOP :	SMAX=	.01	SMIN=	-.13	TMAX=	.07	ANGLE=	-22.5			
BOTT:	SMAX=	.14	SMIN=	.02	TMAX=	.06	ANGLE=	-9.3			
	10	-.02	.04	1.43	7.69		-2.30				
		1.58	1.13	.01	.17		-.10				
TOP :	SMAX=	1.62	SMIN=	.08	TMAX=	.77	ANGLE=	19.6			
BOTT:	SMAX=	-.15	SMIN=	-1.19	TMAX=	.52	ANGLE=	16.1			
	11	.02	-.04	-1.43	-7.69		2.30				
		1.58	1.13	-.01	-.17		.10				
TOP :	SMAX=	-.08	SMIN=	-1.62	TMAX=	.77	ANGLE=	19.6			
BOTT:	SMAX=	1.19	SMIN=	.15	TMAX=	.52	ANGLE=	16.1			
	12	.00	.00	-.01	-.08		-.01				
		.01	.01	.00	.00		.00				
TOP :	SMAX=	.00	SMIN=	-.01	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.01	SMIN=	.00	TMAX=	.01	ANGLE=	90.0			
	13	-.08	.08	2.17	14.98		-5.50				
		3.33	2.32	-.02	.42		-.16				
TOP :	SMAX=	3.31	SMIN=	-.05	TMAX=	1.68	ANGLE=	19.9			
BOTT:	SMAX=	-.09	SMIN=	-2.37	TMAX=	1.14	ANGLE=	20.9			
	14	.04	.06	4.29	16.67		-2.07				
		2.83	2.33	-.16	.22		.01				
TOP :	SMAX=	3.05	SMIN=	.51	TMAX=	1.27	ANGLE=	7.6			
BOTT:	SMAX=	-.80	SMIN=	-2.63	TMAX=	.91	ANGLE=	11.5			
	101	-.04	.01	-.90	-5.60		-1.40				
		1.01	.96	.06	.08		-.11				
TOP :	SMAX=	.04	SMIN=	-.98	TMAX=	.51	ANGLE=	-21.2			
BOTT:	SMAX=	1.04	SMIN=	.19	TMAX=	.42	ANGLE=	-8.4			
	102	-.02	.00	-.60	-3.63		-.90				
		.65	.62	.04	.06		-.07				
TOP :	SMAX=	.03	SMIN=	-.64	TMAX=	.33	ANGLE=	-21.2			
BOTT:	SMAX=	.67	SMIN=	.13	TMAX=	.27	ANGLE=	-8.2			
	103	-.02	-.01	-.86	-4.94		-.57				
		.79	.79	.05	.05		-.07				
TOP :	SMAX=	-.06	SMIN=	-.81	TMAX=	.38	ANGLE=	-13.2			
BOTT:	SMAX=	.87	SMIN=	.19	TMAX=	.34	ANGLE=	-1.7			
	104	-.02	.00	-.75	-4.06		-.64				
		.67	.65	.04	.03		-.06				
TOP :	SMAX=	-.04	SMIN=	-.69	TMAX=	.32	ANGLE=	-15.5			
BOTT:	SMAX=	.72	SMIN=	.16	TMAX=	.28	ANGLE=	-4.9			
	105	-.03	.01	-.60	-3.91		-1.09				
		.73	.68	.04	.07		-.09				
TOP :	SMAX=	.06	SMIN=	-.70	TMAX=	.38	ANGLE=	-22.8			
BOTT:	SMAX=	.73	SMIN=	.13	TMAX=	.30	ANGLE=	-9.1			
	106	-.05	.04	1.58	9.95		-4.36				
		2.41	1.58	.03	.33		-.16				
TOP :	SMAX=	2.36	SMIN=	-.08	TMAX=	1.22	ANGLE=	23.2			
BOTT:	SMAX=	.01	SMIN=	-1.57	TMAX=	.79	ANGLE=	22.9			
	107	-.02	.00	.15	2.26		-2.06				
		.86	.54	.02	.16		-.06				
TOP :	SMAX=	.76	SMIN=	-.18	TMAX=	.47	ANGLE=	29.2			
BOTT:	SMAX=	.19	SMIN=	-.42	TMAX=	.31	ANGLE=	34.8			
	108	-.03	.04	1.12	1.71		-2.89				
		1.17	.61	-.01	.23		-.14				
TOP :	SMAX=	.99	SMIN=	-.30	TMAX=	.65	ANGLE=	37.6			
BOTT:	SMAX=	.22	SMIN=	-.47	TMAX=	.35	ANGLE=	-39.4			
	109	-.14	.05	-3.19	-20.70		-5.78				
		3.85	3.60	.23	.36		-.46				
TOP :	SMAX=	.30	SMIN=	-3.69	TMAX=	1.99	ANGLE=	-22.8			
BOTT:	SMAX=	3.89	SMIN=	.68	TMAX=	1.60	ANGLE=	-9.1			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
321	15	.10	-.34	-5.58	-.92	3.65
		1.10	1.63	.16	.09	-.14
	TOP : SMAX=	.17	SMIN=	-1.01	TMAX=	.59 ANGLE= -26.5
	BOTT: SMAX=	1.52	SMIN=	-.20	TMAX=	.86 ANGLE= -30.2
	2	.01	-.02	-.17	.64	.14
		.13	.13	.01	.01	.00
	TOP : SMAX=	.12	SMIN=	-.02	TMAX=	.07 ANGLE= -7.9
	BOTT: SMAX=	.04	SMIN=	-.10	TMAX=	.07 ANGLE= -10.9
	3	.00	-.02	-.14	.40	.15
		.09	.09	.01	.00	.00
	TOP : SMAX=	.08	SMIN=	-.02	TMAX=	.05 ANGLE= 90.0
	BOTT: SMAX=	.04	SMIN=	-.07	TMAX=	.05 ANGLE= 90.0
	4	.00	-.01	-.08	.23	.17
		.07	.07	.00	.00	.00
	TOP : SMAX=	.05	SMIN=	-.02	TMAX=	.04 ANGLE= 90.0
	BOTT: SMAX=	.03	SMIN=	-.05	TMAX=	.04 ANGLE= 90.0
	5	-.04	.04	.38	-2.75	-.43
		.51	.50	-.01	-.02	.01
	TOP : SMAX=	.06	SMIN=	-.48	TMAX=	.27 ANGLE= -6.5
	BOTT: SMAX=	.46	SMIN=	-.09	TMAX=	.27 ANGLE= -9.0
	6	.00	-.01	-.36	-.83	.18
		.13	.13	.01	.00	.00
	TOP : SMAX=	-.05	SMIN=	-.15	TMAX=	.05 ANGLE= 90.0
	BOTT: SMAX=	.15	SMIN=	.05	TMAX=	.05 ANGLE= 90.0
	7	.03	-.06	-2.02	-3.15	1.23
		.56	.61	.06	-.01	-.02
	TOP : SMAX=	-.18	SMIN=	-.63	TMAX=	.22 ANGLE= 27.2
	BOTT: SMAX=	.69	SMIN=	.22	TMAX=	.23 ANGLE= 38.0
	8	.01	-.02	-.40	.15	2.19
		.63	.64	-.01	.01	.00
	TOP : SMAX=	.35	SMIN=	-.38	TMAX=	.37 ANGLE= -40.7
	BOTT: SMAX=	.39	SMIN=	-.35	TMAX=	.37 ANGLE= 90.0
	9	-.01	.03	.30	-1.07	-.56
		.26	.27	-.02	-.01	.00
	TOP : SMAX=	.07	SMIN=	-.22	TMAX=	.14 ANGLE= -20.7
	BOTT: SMAX=	.20	SMIN=	-.10	TMAX=	.15 ANGLE= -18.8
	10	-.03	.11	2.97	-1.35	-4.66
		1.55	1.43	-.10	-.02	-.06
	TOP : SMAX=	.97	SMIN=	-.82	TMAX=	.90 ANGLE= -34.5
	BOTT: SMAX=	.62	SMIN=	-1.02	TMAX=	.82 ANGLE= -30.5
	11	.03	-.11	-2.97	1.35	4.66
		1.55	1.43	.10	.02	.06
	TOP : SMAX=	.82	SMIN=	-.97	TMAX=	.90 ANGLE= -34.5
	BOTT: SMAX=	1.02	SMIN=	-.62	TMAX=	.82 ANGLE= -30.5
	12	.00	.00	.02	-.05	-.04
		.01	.01	.00	.00	.00
	TOP : SMAX=	.00	SMIN=	-.01	TMAX=	.01 ANGLE= 90.0
	BOTT: SMAX=	.01	SMIN=	-.01	TMAX=	.01 ANGLE= 90.0
	13	.00	.30	7.02	-4.66	-7.55
		1.72	3.95	-1.10	-.03	.40
	TOP : SMAX=	.60	SMIN=	-1.34	TMAX=	.97 ANGLE= -31.5
	BOTT: SMAX=	1.47	SMIN=	-3.00	TMAX=	2.24 ANGLE= -23.8
	14	.21	-.40	-5.35	8.54	-9.73
		3.56	3.49	-.57	.06	.19
	TOP : SMAX=	2.07	SMIN=	-2.05	TMAX=	2.06 ANGLE= 22.1
	BOTT: SMAX=	1.47	SMIN=	-2.51	TMAX=	1.99 ANGLE= 32.5
	101	-.11	.23	2.16	-8.09	-3.94
		1.91	1.95	-.14	-.06	-.01
	TOP : SMAX=	.45	SMIN=	-1.65	TMAX=	1.05 ANGLE= -19.7
	BOTT: SMAX=	1.50	SMIN=	-.71	TMAX=	1.11 ANGLE= -17.9

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		-.06	.14	1.07	-5.50						
		1.23	1.24	-.09	-.04						
TOP :	SMAX=	.23	SMIN=	-1.10	TMAX=	.67	ANGLE=	-19.0			
BOTT:	SMAX=	1.00	SMIN=	-.39	TMAX=	.69	ANGLE=	-17.0			
103		-.04	.10	-.26	-7.36						
		1.33	1.25	-.04	-.05						
TOP :	SMAX=	-.02	SMIN=	-1.34	TMAX=	.66	ANGLE=	-12.9			
BOTT:	SMAX=	1.23	SMIN=	-.05	TMAX=	.64	ANGLE=	-10.8			
104		-.06	.13	1.04	-4.72						
		.89	.95	-.10	-.03						
TOP :	SMAX=	.10	SMIN=	-.84	TMAX=	.47	ANGLE=	-8.9			
BOTT:	SMAX=	.77	SMIN=	-.29	TMAX=	.53	ANGLE=	-6.5			
105		-.08	.17	1.60	-5.70						
		1.39	1.42	-.11	-.04						
TOP :	SMAX=	.35	SMIN=	-1.19	TMAX=	.77	ANGLE=	-20.8			
BOTT:	SMAX=	1.07	SMIN=	-.54	TMAX=	.81	ANGLE=	-18.6			
106		.00	.13	3.06	-6.51						
		1.87	2.64	-.58	-.01						
TOP :	SMAX=	.44	SMIN=	-1.61	TMAX=	1.02	ANGLE=	-30.0			
BOTT:	SMAX=	1.52	SMIN=	-1.54	TMAX=	1.53	ANGLE=	-22.4			
107		.03	.02	.10	-5.16						
		.74	1.35	-.48	.01						
TOP :	SMAX=	-.46	SMIN=	-.85	TMAX=	.20	ANGLE=	-7.7			
BOTT:	SMAX=	.96	SMIN=	-.59	TMAX=	.77	ANGLE=	-13.7			
108		-.03	.10	.05	-5.42						
		2.86	3.22	-.47	-.04						
TOP :	SMAX=	.89	SMIN=	-2.30	TMAX=	1.60	ANGLE=	-40.7			
BOTT:	SMAX=	2.05	SMIN=	-1.67	TMAX=	1.86	ANGLE=	-34.4			
109		-.41	.92	8.51	-30.26						
		7.40	7.55	-.59	-.23						
TOP :	SMAX=	1.85	SMIN=	-6.30	TMAX=	4.08	ANGLE=	-20.8			
BOTT:	SMAX=	5.69	SMIN=	-2.88	TMAX=	4.28	ANGLE=	-18.6			
322	15	-.48	-.40	-20.59	-43.99						
		6.41	6.55	-.07	.11						
TOP :	SMAX=	-3.32	SMIN=	-7.39	TMAX=	2.03	ANGLE=	-12.0			
BOTT:	SMAX=	7.54	SMIN=	3.27	TMAX=	2.13	ANGLE=	-8.5			
2		-.02	-.03	-1.28	-2.17						
		.31	.32	.00	.01						
TOP :	SMAX=	-.21	SMIN=	-.35	TMAX=	.07	ANGLE=	7.9			
BOTT:	SMAX=	.37	SMIN=	.21	TMAX=	.08	ANGLE=	7.8			
3		-.01	-.02	-.89	-1.49						
		.21	.22	.00	.01						
TOP :	SMAX=	-.15	SMIN=	-.24	TMAX=	.05	ANGLE=	90.0			
BOTT:	SMAX=	.25	SMIN=	.15	TMAX=	.05	ANGLE=	5.0			
4		-.01	-.01	-.47	-.76						
		.11	.11	.00	.00						
TOP :	SMAX=	-.08	SMIN=	-.12	TMAX=	.02	ANGLE=	90.0			
BOTT:	SMAX=	.13	SMIN=	.08	TMAX=	.03	ANGLE=	90.0			
5		.07	.11	3.94	5.86						
		.85	.87	.01	-.02						
TOP :	SMAX=	.96	SMIN=	.67	TMAX=	.15	ANGLE=	1.0			
BOTT:	SMAX=	-.64	SMIN=	-.99	TMAX=	.18	ANGLE=	1.5			
6		-.02	-.01	-.67	-2.11						
		.35	.33	.00	-.01						
TOP :	SMAX=	-.09	SMIN=	-.38	TMAX=	.15	ANGLE=	-16.3			
BOTT:	SMAX=	.36	SMIN=	.09	TMAX=	.13	ANGLE=	-14.9			
7		-.15	-.11	-4.69	-14.15						
		2.38	2.23	-.01	-.04						
TOP :	SMAX=	-.58	SMIN=	-2.62	TMAX=	1.02	ANGLE=	-18.8			
BOTT:	SMAX=	2.47	SMIN=	.62	TMAX=	.92	ANGLE=	-16.8			

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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.04	.07	4.50	-.57					3.30	
		.98	1.51	-.17	-.02					-.12	
TOP :	SMAX=	.78	SMIN=	-.31	TMAX=	.55	ANGLE=	25.4			
BOTT:	SMAX=	.42	SMIN=	-1.26	TMAX=	.84	ANGLE=	26.8			
	9	.04	.05	2.13	3.28					-.31	
		.48	.50	.00	-.01					.00	
TOP :	SMAX=	.55	SMIN=	.34	TMAX=	.11	ANGLE=	14.9			
BOTT:	SMAX=	-.35	SMIN=	-.57	TMAX=	.11	ANGLE=	13.2			
	10	-.01	.16	12.15	4.67					-4.44	
		2.11	2.26	-.08	-.05					.02	
TOP :	SMAX=	2.27	SMIN=	.39	TMAX=	.94	ANGLE=	-24.9			
BOTT:	SMAX=	-.48	SMIN=	-2.46	TMAX=	.99	ANGLE=	-24.9			
	11	.01	-.16	-12.15	-4.67					4.44	
		2.11	2.26	.08	.05					-.02	
TOP :	SMAX=	-.39	SMIN=	-2.27	TMAX=	.94	ANGLE=	-24.9			
BOTT:	SMAX=	2.46	SMIN=	.48	TMAX=	.99	ANGLE=	-24.9			
	12	.00	.00	.12	.25					-.02	
		.04	.04	.00	.00					.00	
TOP :	SMAX=	.04	SMIN=	.02	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	-.02	SMIN=	-.04	TMAX=	.01	ANGLE=	90.0			
	13	-.30	.46	35.36	14.20					-11.24	
		4.07	8.24	-2.01	.11					.59	
TOP :	SMAX=	4.65	SMIN=	1.71	TMAX=	1.47	ANGLE=	-30.7			
BOTT:	SMAX=	-1.34	SMIN=	-8.83	TMAX=	3.74	ANGLE=	-20.5			
	14	-.62	-1.02	-68.49	-32.54					-28.57	
		11.45	14.36	.65	.24					.92	
TOP :	SMAX=	-3.23	SMIN=	-12.72	TMAX=	4.75	ANGLE=	27.0			
BOTT:	SMAX=	15.38	SMIN=	2.34	TMAX=	6.52	ANGLE=	30.3			
	101	.28	.36	15.72	23.95					-2.08	
		3.51	3.62	-.02	-.08					-.01	
TOP :	SMAX=	4.01	SMIN=	2.51	TMAX=	.75	ANGLE=	14.3			
BOTT:	SMAX=	-2.57	SMIN=	-4.14	TMAX=	.79	ANGLE=	12.5			
	102	.15	.21	9.16	13.11					-1.73	
		1.97	2.04	-.02	-.05					-.01	
TOP :	SMAX=	2.25	SMIN=	1.39	TMAX=	.43	ANGLE=	22.0			
BOTT:	SMAX=	-1.45	SMIN=	-2.33	TMAX=	.44	ANGLE=	19.2			
	103	.05	.13	5.94	3.48					-4.10	
		1.53	1.41	-.02	-.08					-.05	
TOP :	SMAX=	1.51	SMIN=	-.04	TMAX=	.77	ANGLE=	-36.1			
BOTT:	SMAX=	-.18	SMIN=	-1.49	TMAX=	.65	ANGLE=	-37.2			
	104	.20	.28	13.29	14.34					1.27	
		2.22	2.47	-.15	-.06					-.11	
TOP :	SMAX=	2.36	SMIN=	2.03	TMAX=	.17	ANGLE=	-18.7			
BOTT:	SMAX=	-2.09	SMIN=	-2.73	TMAX=	.32	ANGLE=	90.0			
	105	.20	.26	11.40	17.42					-1.62	
		2.55	2.64	-.02	-.06					-.01	
TOP :	SMAX=	2.92	SMIN=	1.80	TMAX=	.56	ANGLE=	15.0			
BOTT:	SMAX=	-1.86	SMIN=	-3.02	TMAX=	.58	ANGLE=	13.3			
	106	-.29	.25	19.58	-3.19					-10.87	
		3.65	5.88	-1.09	.06					.25	
TOP :	SMAX=	2.90	SMIN=	-1.20	TMAX=	2.05	ANGLE=	-24.9			
BOTT:	SMAX=	1.33	SMIN=	-5.10	TMAX=	3.22	ANGLE=	-19.9			
	107	-.28	.09	7.43	-7.85					-6.44	
		1.98	3.91	-1.01	.11					.23	
TOP :	SMAX=	.62	SMIN=	-1.59	TMAX=	1.11	ANGLE=	-24.9			
BOTT:	SMAX=	1.83	SMIN=	-2.66	TMAX=	2.25	ANGLE=	-17.7			
	108	.03	-.07	-14.86	13.33					-17.03	
		5.65	7.13	.29	.02					.44	
TOP :	SMAX=	3.29	SMIN=	-3.24	TMAX=	3.26	ANGLE=	23.6			
BOTT:	SMAX=	4.40	SMIN=	-3.83	TMAX=	4.11	ANGLE=	26.5			
	109	1.07	1.37	60.58	92.48					-8.59	
		13.56	14.01	-.11	-.29					-.05	
TOP :	SMAX=	15.52	SMIN=	9.58	TMAX=	2.97	ANGLE=	15.0			
BOTT:	SMAX=	-9.88	SMIN=	-16.03	TMAX=	3.08	ANGLE=	13.3			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH				
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH						
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FXY
323	15	.07	.06	-3.68	8.30	-5.67
		2.57	2.26	-.12	.11	-.02
TOP :	SMAX=	1.85	SMIN=	-1.09	TMAX=	1.47 ANGLE= 20.5
BOTT:	SMAX=	.89	SMIN=	-1.67	TMAX=	1.28 ANGLE= 23.1
	2	-.02	.03	-1.28	-2.17	-.12
		.31	.32	.00	.01	.00
TOP :	SMAX=	-.21	SMIN=	-.35	TMAX=	.07 ANGLE= -7.9
BOTT:	SMAX=	.37	SMIN=	.21	TMAX=	.08 ANGLE= -7.8
	3	-.01	.02	-.89	-1.49	-.05
		.21	.22	.00	.01	.00
TOP :	SMAX=	-.15	SMIN=	-.24	TMAX=	.05 ANGLE= 90.0
BOTT:	SMAX=	.25	SMIN=	.15	TMAX=	.05 ANGLE= -5.0
	4	-.01	.01	-.47	-.76	.00
		.11	.11	.00	.00	.00
TOP :	SMAX=	-.08	SMIN=	-.12	TMAX=	.02 ANGLE= 90.0
BOTT:	SMAX=	.13	SMIN=	.08	TMAX=	.03 ANGLE= 90.0
	5	.07	-.11	3.94	5.86	.04
		.85	.87	.01	-.02	.00
TOP :	SMAX=	.96	SMIN=	.67	TMAX=	.15 ANGLE= -1.0
BOTT:	SMAX=	-.64	SMIN=	-.99	TMAX=	.18 ANGLE= -1.5
	6	.02	-.01	.64	1.98	-.44
		.33	.31	.00	.00	-.01
TOP :	SMAX=	.36	SMIN=	.08	TMAX=	.14 ANGLE= 17.3
BOTT:	SMAX=	-.09	SMIN=	-.34	TMAX=	.13 ANGLE= 15.7
	7	.16	-.11	4.97	15.34	-3.19
		2.54	2.34	.01	.08	-.05
TOP :	SMAX=	2.81	SMIN=	.67	TMAX=	1.07 ANGLE= 16.4
BOTT:	SMAX=	-.69	SMIN=	-2.61	TMAX=	.96 ANGLE= 15.0
	8	.04	-.07	4.50	-.57	-3.30
		.98	1.51	-.17	-.02	.13
TOP :	SMAX=	.78	SMIN=	-.31	TMAX=	.55 ANGLE= -25.4
BOTT:	SMAX=	.42	SMIN=	-1.26	TMAX=	.84 ANGLE= -26.8
	9	.04	-.05	2.13	3.28	.31
		.48	.50	.00	-.01	.00
TOP :	SMAX=	.55	SMIN=	.34	TMAX=	.11 ANGLE= -14.9
BOTT:	SMAX=	-.35	SMIN=	-.57	TMAX=	.11 ANGLE= -13.2
	10	-.01	-.16	12.15	4.67	4.44
		2.11	2.26	-.08	-.05	-.02
TOP :	SMAX=	2.27	SMIN=	.39	TMAX=	.94 ANGLE= 24.9
BOTT:	SMAX=	-.48	SMIN=	-2.46	TMAX=	.99 ANGLE= 24.9
	11	.01	.16	-12.15	-4.67	-4.44
		2.11	2.26	.08	.05	.02
TOP :	SMAX=	-.39	SMIN=	-2.27	TMAX=	.94 ANGLE= 24.9
BOTT:	SMAX=	2.46	SMIN=	.48	TMAX=	.99 ANGLE= 24.9
	12	.00	.00	.12	.25	.02
		.04	.04	.00	.00	.00
TOP :	SMAX=	.04	SMIN=	.02	TMAX=	.01 ANGLE= 90.0
BOTT:	SMAX=	-.02	SMIN=	-.04	TMAX=	.01 ANGLE= 90.0
	13	-.30	-.46	35.36	14.20	11.24
		4.07	8.24	-2.01	.11	-.59
TOP :	SMAX=	4.65	SMIN=	1.71	TMAX=	1.47 ANGLE= 30.7
BOTT:	SMAX=	-1.34	SMIN=	-8.83	TMAX=	3.74 ANGLE= 20.5
	14	-.62	1.02	-68.49	-32.54	28.57
		11.45	14.36	.65	.24	-.92
TOP :	SMAX=	-3.23	SMIN=	-12.72	TMAX=	4.75 ANGLE= -27.0
BOTT:	SMAX=	15.38	SMIN=	2.34	TMAX=	6.52 ANGLE= -30.3
	101	.28	-.36	15.72	23.94	2.08
		3.51	3.62	-.02	-.08	.01
TOP :	SMAX=	4.01	SMIN=	2.51	TMAX=	.75 ANGLE= -14.3
BOTT:	SMAX=	-2.57	SMIN=	-4.14	TMAX=	.79 ANGLE= -12.6

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.19	-.23	10.20	16.37					1.03	
		2.37	2.44	-.02	-.04					.00	
TOP :	SMAX=	2.72	SMIN=	1.65	TMAX=	.53	ANGLE=			-9.6	
BOTT:	SMAX=	-1.69	SMIN=	-2.80	TMAX=	.55	ANGLE=			-8.8	
103		.30	-.31	13.67	27.07					-1.17	
		3.94	3.90	-.01	.02					-.03	
TOP :	SMAX=	4.55	SMIN=	2.25	TMAX=	1.15	ANGLE=			5.7	
BOTT:	SMAX=	-2.27	SMIN=	-4.51	TMAX=	1.12	ANGLE=			4.2	
104		.20	-.28	13.29	14.33					-1.26	
		2.22	2.47	-.15	-.06					.11	
TOP :	SMAX=	2.36	SMIN=	2.03	TMAX=	.17	ANGLE=			18.7	
BOTT:	SMAX=	-2.09	SMIN=	-2.73	TMAX=	.32	ANGLE=			90.0	
105		.20	-.26	11.40	17.41					1.62	
		2.55	2.64	-.02	-.06					.01	
TOP :	SMAX=	2.92	SMIN=	1.80	TMAX=	.56	ANGLE=			-15.0	
BOTT:	SMAX=	-1.86	SMIN=	-3.02	TMAX=	.58	ANGLE=			-13.3	
106		-.01	-.42	28.03	22.95					5.87	
		3.90	5.56	-1.12	.05					-.31	
TOP :	SMAX=	4.41	SMIN=	3.03	TMAX=	.69	ANGLE=			-38.2	
BOTT:	SMAX=	-3.15	SMIN=	-6.41	TMAX=	1.63	ANGLE=			26.0	
107		.00	-.26	15.89	18.28					1.43	
		2.73	3.49	-1.03	.10					-.29	
TOP :	SMAX=	3.15	SMIN=	1.61	TMAX=	.77	ANGLE=			1.8	
BOTT:	SMAX=	-2.67	SMIN=	-3.95	TMAX=	.64	ANGLE=			27.5	
108		.03	.07	-14.86	13.31					17.04	
		5.65	7.13	.29	.02					-.44	
TOP :	SMAX=	3.29	SMIN=	-3.24	TMAX=	3.26	ANGLE=			-23.6	
BOTT:	SMAX=	4.40	SMIN=	-3.83	TMAX=	4.11	ANGLE=			-26.5	
109		1.07	-1.37	60.57	92.45					8.61	
		13.56	14.01	-.11	-.29					.05	
TOP :	SMAX=	15.51	SMIN=	9.58	TMAX=	2.97	ANGLE=			-15.1	
BOTT:	SMAX=	-9.88	SMIN=	-16.03	TMAX=	3.07	ANGLE=			-13.3	
324	15	.02	.07	2.26	13.97					1.66	
		2.34	2.09	-.05	.08					.07	
TOP :	SMAX=	2.47	SMIN=	.27	TMAX=	1.10	ANGLE=			-9.2	
BOTT:	SMAX=	-.40	SMIN=	-2.27	TMAX=	.93	ANGLE=			-6.4	
2		.01	.02	-.17	.64					-.14	
		.13	.13	.01	.01					.00	
TOP :	SMAX=	.12	SMIN=	-.02	TMAX=	.07	ANGLE=			7.9	
BOTT:	SMAX=	.04	SMIN=	-.10	TMAX=	.07	ANGLE=			10.9	
3		.00	.02	-.14	.40					-.15	
		.09	.09	.01	.00					.00	
TOP :	SMAX=	.08	SMIN=	-.02	TMAX=	.05	ANGLE=			90.0	
BOTT:	SMAX=	.04	SMIN=	-.07	TMAX=	.05	ANGLE=			90.0	
4		.00	.01	-.08	.23					-.17	
		.07	.07	.00	.00					.00	
TOP :	SMAX=	.05	SMIN=	-.02	TMAX=	.04	ANGLE=			90.0	
BOTT:	SMAX=	.03	SMIN=	-.05	TMAX=	.04	ANGLE=			90.0	
5		-.04	-.04	.38	-2.75					.43	
		.51	.50	-.01	-.02					-.01	
TOP :	SMAX=	.06	SMIN=	-.48	TMAX=	.27	ANGLE=			6.5	
BOTT:	SMAX=	.46	SMIN=	-.09	TMAX=	.27	ANGLE=			9.0	
6		.00	-.01	.33	.69					.19	
		.11	.11	-.01	.00					.00	
TOP :	SMAX=	.13	SMIN=	.04	TMAX=	.04	ANGLE=			90.0	
BOTT:	SMAX=	-.05	SMIN=	-.13	TMAX=	.04	ANGLE=			90.0	
7		-.04	-.06	1.91	2.70					1.46	
		.56	.61	-.06	.01					-.01	
TOP :	SMAX=	.61	SMIN=	.11	TMAX=	.25	ANGLE=			-33.0	
BOTT:	SMAX=	-.15	SMIN=	-.67	TMAX=	.26	ANGLE=			90.0	

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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

Table with columns: ELEMENT, LOAD, QX, QY, MX, MY, MXY. Rows include elements 8 through 109, each with associated force and stress values.



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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
325	15	.00	-.07	3.80	11.65						.46
		1.80	1.66	-.04	.05						.13
	TOP :	SMAX=	SMIN=	.56	TMAX=	.73	ANGLE=				-8.2
	BOTT:	SMAX=	SMIN=	-1.90	TMAX=	.61	ANGLE=				2.4
	2	.00	-.01	.43	1.27						.05
		.21	.17	.00	.02						.00
	TOP :	SMAX=	SMIN=	.07	TMAX=	.08	ANGLE=				-3.4
	BOTT:	SMAX=	SMIN=	-.19	TMAX=	.06	ANGLE=				-3.1
	3	.00	.00	.30	.86						.06
		.14	.12	.00	.01						.00
	TOP :	SMAX=	SMIN=	.05	TMAX=	.05	ANGLE=				-4.5
	BOTT:	SMAX=	SMIN=	-.13	TMAX=	.04	ANGLE=				90.0
	4	.00	.00	.16	.46						.04
		.08	.06	.00	.01						.00
	TOP :	SMAX=	SMIN=	.03	TMAX=	.03	ANGLE=				90.0
	BOTT:	SMAX=	SMIN=	-.07	TMAX=	.02	ANGLE=				90.0
	5	.00	.01	-.90	-2.70						-.17
		.44	.36	.00	-.03						-.02
	TOP :	SMAX=	SMIN=	-.49	TMAX=	.17	ANGLE=				-7.6
	BOTT:	SMAX=	SMIN=	.15	TMAX=	.13	ANGLE=				-2.5
	6	.00	.00	.02	.20						.04
		.03	.04	.00	-.01						.00
	TOP :	SMAX=	SMIN=	.00	TMAX=	.02	ANGLE=				90.0
	BOTT:	SMAX=	SMIN=	-.04	TMAX=	.02	ANGLE=				90.0
	7	-.01	.00	-.29	-.26						.11
		.10	.04	-.03	-.06						.00
	TOP :	SMAX=	SMIN=	-.11	TMAX=	.02	ANGLE=				90.0
	BOTT:	SMAX=	SMIN=	-.02	TMAX=	.03	ANGLE=				90.0
	8	.02	.00	.44	1.36						-.63
		.30	.24	.02	.01						-.02
	TOP :	SMAX=	SMIN=	.02	TMAX=	.15	ANGLE=				30.0
	BOTT:	SMAX=	SMIN=	-.25	TMAX=	.11	ANGLE=				22.8
	9	.00	.01	-.57	-1.71						.12
		.28	.23	-.01	-.03						.00
	TOP :	SMAX=	SMIN=	-.32	TMAX=	.11	ANGLE=				5.9
	BOTT:	SMAX=	SMIN=	.09	TMAX=	.09	ANGLE=				5.5
	10	-.02	.02	-.95	-.84						1.66
		.64	.38	-.03	-.10						.07
	TOP :	SMAX=	SMIN=	-.56	TMAX=	.35	ANGLE=				90.0
	BOTT:	SMAX=	SMIN=	-.13	TMAX=	.21	ANGLE=				90.0
	11	.02	-.02	.95	.84						-1.66
		.64	.38	.03	.10						-.07
	TOP :	SMAX=	SMIN=	-.13	TMAX=	.35	ANGLE=				90.0
	BOTT:	SMAX=	SMIN=	-.29	TMAX=	.21	ANGLE=				90.0
	12	.00	.00	-.04	-.14						.01
		.02	.02	.00	.00						.00
	TOP :	SMAX=	SMIN=	-.03	TMAX=	.01	ANGLE=				90.0
	BOTT:	SMAX=	SMIN=	.01	TMAX=	.01	ANGLE=				90.0
	13	-.06	.05	-2.84	-2.88						3.77
		1.32	1.15	-.38	-.26						-.02
	TOP :	SMAX=	SMIN=	-1.40	TMAX=	.61	ANGLE=				-42.3
	BOTT:	SMAX=	SMIN=	-.50	TMAX=	.65	ANGLE=				42.2
	14	-.09	-.06	3.15	8.43						5.31
		2.39	1.71	-.44	.30						.10
	TOP :	SMAX=	SMIN=	-.38	TMAX=	1.28	ANGLE=				-25.3
	BOTT:	SMAX=	SMIN=	-1.82	TMAX=	.78	ANGLE=				-42.5
	101	-.02	.05	-4.12	-12.35						.71
		2.01	1.64	-.05	-.20						.02
	TOP :	SMAX=	SMIN=	-2.27	TMAX=	.77	ANGLE=				5.0
	BOTT:	SMAX=	SMIN=	.63	TMAX=	.62	ANGLE=				4.7

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		-.01	.03	-2.55	-7.53						.54
		1.24	.99	-.04	-.13						.02
TOP :	SMAX=	-.45	SMIN=	-1.40	TMAX=	.48	ANGLE=				6.4
BOTT:	SMAX=	1.13	SMIN=	.38	TMAX=	.37	ANGLE=				5.7
103		-.02	.03	-2.80	-7.90						.60
		1.32	1.02	-.06	-.17						.01
TOP :	SMAX=	-.51	SMIN=	-1.50	TMAX=	.50	ANGLE=				6.6
BOTT:	SMAX=	1.15	SMIN=	.40	TMAX=	.38	ANGLE=				6.6
104		.00	.03	-2.22	-6.61						.00
		1.08	.86	-.02	-.12						.00
TOP :	SMAX=	-.39	SMIN=	-1.22	TMAX=	.42	ANGLE=				-.1
BOTT:	SMAX=	.98	SMIN=	.35	TMAX=	.32	ANGLE=				.3
105		-.01	.04	-3.02	-9.06						.60
		1.48	1.21	-.04	-.15						.02
TOP :	SMAX=	-.53	SMIN=	-1.67	TMAX=	.57	ANGLE=				5.9
BOTT:	SMAX=	1.37	SMIN=	.46	TMAX=	.46	ANGLE=				5.2
106		-.05	.02	-1.62	-.91						3.27
		1.20	.78	-.24	-.24						.10
TOP :	SMAX=	.19	SMIN=	-1.10	TMAX=	.64	ANGLE=				-42.2
BOTT:	SMAX=	.42	SMIN=	-.48	TMAX=	.45	ANGLE=				-41.5
107		-.02	.00	-.67	-.08						1.61
		.58	.43	-.21	-.13						.03
TOP :	SMAX=	.07	SMIN=	-.54	TMAX=	.31	ANGLE=				-36.6
BOTT:	SMAX=	.13	SMIN=	-.35	TMAX=	.24	ANGLE=				90.0
108		-.07	.03	-3.56	-11.17						3.66
		2.08	1.87	-.28	-.10						.08
TOP :	SMAX=	-.54	SMIN=	-2.30	TMAX=	.88	ANGLE=				25.9
BOTT:	SMAX=	1.93	SMIN=	.14	TMAX=	.90	ANGLE=				18.1
109		-.07	.19	-16.04	-48.08						3.16
		7.86	6.39	-.21	-.80						.09
TOP :	SMAX=	-2.81	SMIN=	-8.88	TMAX=	3.03	ANGLE=				5.9
BOTT:	SMAX=	7.25	SMIN=	2.43	TMAX=	2.41	ANGLE=				5.2
326	15	-.01	-.06	1.19	.59						-.60
		.21	.41	.03	-.04						.12
TOP :	SMAX=	.23	SMIN=	.05	TMAX=	.09	ANGLE=				6.5
BOTT:	SMAX=	.07	SMIN=	-.38	TMAX=	.22	ANGLE=				90.0
2		.00	.00	.28	.55						.10
		.09	.08	-.01	.01						.00
TOP :	SMAX=	.10	SMIN=	.03	TMAX=	.04	ANGLE=				90.0
BOTT:	SMAX=	-.05	SMIN=	-.09	TMAX=	.02	ANGLE=				90.0
3		.00	.00	.21	.41						.07
		.07	.06	-.01	.01						.00
TOP :	SMAX=	.08	SMIN=	.02	TMAX=	.03	ANGLE=				90.0
BOTT:	SMAX=	-.04	SMIN=	-.07	TMAX=	.01	ANGLE=				90.0
4		.00	.00	.11	.16						.03
		.03	.02	.00	.00						.00
TOP :	SMAX=	.03	SMIN=	.01	TMAX=	.01	ANGLE=				90.0
BOTT:	SMAX=	-.02	SMIN=	-.03	TMAX=	.00	ANGLE=				90.0
5		.00	.01	-.52	-1.09						-.02
		.17	.15	.00	-.01						-.02
TOP :	SMAX=	-.08	SMIN=	-.19	TMAX=	.06	ANGLE=				-10.2
BOTT:	SMAX=	.18	SMIN=	.08	TMAX=	.05	ANGLE=				90.0
6		.00	.00	-.07	-.11						-.01
		.02	.01	.00	.00						.00
TOP :	SMAX=	-.01	SMIN=	-.02	TMAX=	.01	ANGLE=				90.0
BOTT:	SMAX=	.02	SMIN=	.01	TMAX=	.00	ANGLE=				90.0
7		.00	-.01	-.61	-1.43						-.10
		.24	.18	.00	-.03						.00
TOP :	SMAX=	-.10	SMIN=	-.27	TMAX=	.08	ANGLE=				-4.5
BOTT:	SMAX=	.21	SMIN=	.09	TMAX=	.06	ANGLE=				-9.7

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
8		.00 .11	.00 .15	.29 -.03	.67 .00	.25 -.03
TOP :	SMAX=	.12	SMIN=	.02	TMAX=	.05 ANGLE= 90.0
BOTT:	SMAX=	-.02	SMIN=	-.16	TMAX=	.07 ANGLE= 90.0
9		.00 .13	.00 .11	-.36 .01	-.83 -.01	-.04 .01
TOP :	SMAX=	-.05	SMIN=	-.15	TMAX=	.05 ANGLE= .2
BOTT:	SMAX=	.13	SMIN=	.07	TMAX=	.03 ANGLE= 90.0
10		-.01 .08	.00 .38	-.68 .09	.48 -.02	-.42 .09
TOP :	SMAX=	.06	SMIN=	-.03	TMAX=	.05 ANGLE= 90.0
BOTT:	SMAX=	.26	SMIN=	-.17	TMAX=	.22 ANGLE= 23.0
11		.01 .08	.00 .38	.68 -.09	-.48 .02	.42 -.09
TOP :	SMAX=	.03	SMIN=	-.06	TMAX=	.05 ANGLE= 90.0
BOTT:	SMAX=	.17	SMIN=	-.26	TMAX=	.22 ANGLE= 23.0
12		.00 .02	.00 .01	-.03 .00	-.10 .00	.00 .00
TOP :	SMAX=	-.01	SMIN=	-.02	TMAX=	.01 ANGLE= 90.0
BOTT:	SMAX=	.01	SMIN=	.01	TMAX=	.00 ANGLE= 90.0
13		-.02 .38	.01 .78	-2.04 .06	1.02 -.05	-1.02 .20
TOP :	SMAX=	.14	SMIN=	-.29	TMAX=	.21 ANGLE= -10.6
BOTT:	SMAX=	.54	SMIN=	-.36	TMAX=	.45 ANGLE= 23.2
14		-.03 .45	-.03 .80	1.78 -.04	2.61 .06	-1.01 .25
TOP :	SMAX=	.52	SMIN=	.23	TMAX=	.14 ANGLE= -16.2
BOTT:	SMAX=	.06	SMIN=	-.77	TMAX=	.41 ANGLE= 90.0
101		-.01 .95	.03 .80	-2.62 .08	-5.95 -.09	-.31 .05
TOP :	SMAX=	-.36	SMIN=	-1.08	TMAX=	.36 ANGLE= -.2
BOTT:	SMAX=	.93	SMIN=	.49	TMAX=	.22 ANGLE= -13.7
102		.00 .62	.02 .52	-1.69 .05	-3.83 -.06	-.21 .04
TOP :	SMAX=	-.23	SMIN=	-.70	TMAX=	.24 ANGLE= .3
BOTT:	SMAX=	.60	SMIN=	.32	TMAX=	.14 ANGLE= -15.5
103		.00 .79	.01 .65	-2.13 .05	-4.89 -.08	-.28 .04
TOP :	SMAX=	-.30	SMIN=	-.90	TMAX=	.30 ANGLE= -.8
BOTT:	SMAX=	.75	SMIN=	.38	TMAX=	.18 ANGLE= -13.7
104		.00 .52	.02 .42	-1.41 .03	-3.21 -.05	-.01 .02
TOP :	SMAX=	-.20	SMIN=	-.59	TMAX=	.19 ANGLE= 2.2
BOTT:	SMAX=	.48	SMIN=	.26	TMAX=	.11 ANGLE= -4.4
105		.00 .71	.02 .60	-1.93 .06	-4.41 -.07	-.24 .04
TOP :	SMAX=	-.26	SMIN=	-.80	TMAX=	.27 ANGLE= .3
BOTT:	SMAX=	.69	SMIN=	.36	TMAX=	.16 ANGLE= -14.9
106		-.02 .29	-.01 .78	-1.81 .12	-1.35 -.09	-1.01 .23
TOP :	SMAX=	-.16	SMIN=	-.34	TMAX=	.09 ANGLE= 19.9
BOTT:	SMAX=	.70	SMIN=	-.14	TMAX=	.42 ANGLE= 34.9
107		-.01 .34	-.01 .47	-1.13 .04	-1.83 -.07	-.59 .14
TOP :	SMAX=	-.14	SMIN=	-.38	TMAX=	.12 ANGLE= 10.5
BOTT:	SMAX=	.47	SMIN=	-.01	TMAX=	.24 ANGLE= 90.0
108		-.02 1.00	.02 1.01	-2.39 .08	-6.19 -.09	-.91 .19
TOP :	SMAX=	-.31	SMIN=	-1.12	TMAX=	.40 ANGLE= 3.1
BOTT:	SMAX=	1.13	SMIN=	.30	TMAX=	.42 ANGLE= -28.1
109		-.02 3.77	.11 3.17	-10.26 .32	-23.41 -.36	-1.26 .22
TOP :	SMAX=	-1.39	SMIN=	-4.27	TMAX=	1.44 ANGLE= .3
BOTT:	SMAX=	3.65	SMIN=	1.92	TMAX=	.87 ANGLE= -15.0

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
327	15	.01	-.04	-.99	-5.55	-1.24					
		1.00	.88	.07	-.09	.06					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	2	.00	.00	.13	.20	.01					
		.03	.03	-.01	.00	.01					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	3	.00	.00	.12	.20	-.04					
		.03	.04	-.01	.00	.01					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	4	.00	.00	.05	.04	-.08					
		.01	.03	-.01	.00	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	5	.00	.01	-.16	-.35	.11					
		.05	.07	.00	.00	-.01					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	6	.00	.00	-.12	-.38	-.01					
		.06	.05	.00	.00	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	7	.00	.00	-.70	-2.39	-.02					
		.37	.34	.00	-.02	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	8	.00	.00	.17	.28	.29					
		.09	.12	-.05	.00	-.01					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	9	.00	.00	-.16	-.40	-.06					
		.07	.06	.01	.00	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	10	.00	.00	-.30	.27	-.94					
		.20	.40	.12	.00	.05					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	11	.00	.00	.30	-.27	.94					
		.20	.40	-.12	.00	-.05					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	12	.00	.00	-.02	-.08	.00					
		.01	.01	.00	.00	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	13	.00	.01	-.81	.95	-1.96					
		.32	.98	.27	.00	.16					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	14	-.01	-.02	.23	.63	-2.59					
		.47	1.08	.15	-.02	.18					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	101	.00	.03	-1.19	-2.89	-.35					
		.47	.43	.10	-.03	.03					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.00	.02	-.85	-2.16						
		.35	.32	.07	-.02						
TOP :	SMAX=	-.07	SMIN=	-.38	TMAX=	.15	ANGLE=				-4.4
BOTT:	SMAX=	.37	SMIN=	.18	TMAX=	.09	ANGLE=				-22.4
103		.00	.02	-1.31	-3.77						
		.60	.53	.07	-.03						
TOP :	SMAX=	-.15	SMIN=	-.66	TMAX=	.25	ANGLE=				-2.7
BOTT:	SMAX=	.61	SMIN=	.27	TMAX=	.17	ANGLE=				-11.9
104		.00	.02	-.62	-1.63						
		.26	.22	.03	-.02						
TOP :	SMAX=	-.07	SMIN=	-.29	TMAX=	.11	ANGLE=				2.5
BOTT:	SMAX=	.26	SMIN=	.13	TMAX=	.06	ANGLE=				-7.7
105		.00	.02	-.89	-2.18						
		.36	.33	.07	-.02						
TOP :	SMAX=	-.07	SMIN=	-.39	TMAX=	.16	ANGLE=				-5.0
BOTT:	SMAX=	.38	SMIN=	.19	TMAX=	.10	ANGLE=				-25.5
106		.00	.00	-1.53	-3.36						
		.73	1.04	.27	-.06						
TOP :	SMAX=	.08	SMIN=	-.69	TMAX=	.39	ANGLE=				-17.8
BOTT:	SMAX=	1.03	SMIN=	-.01	TMAX=	.52	ANGLE=				90.0
107		.00	.00	-1.23	-3.63						
		.66	.73	.15	-.06						
TOP :	SMAX=	-.04	SMIN=	-.68	TMAX=	.32	ANGLE=				-10.3
BOTT:	SMAX=	.78	SMIN=	.12	TMAX=	.33	ANGLE=				-36.3
108		.00	.03	-1.40	-3.40						
		.67	.89	.21	-.04						
TOP :	SMAX=	.02	SMIN=	-.66	TMAX=	.34	ANGLE=				-15.4
BOTT:	SMAX=	.91	SMIN=	.05	TMAX=	.43	ANGLE=				90.0
109		.00	.12	-4.73	-11.60						
		1.90	1.74	.40	-.11						
TOP :	SMAX=	-.37	SMIN=	-2.05	TMAX=	.84	ANGLE=				-5.0
BOTT:	SMAX=	2.01	SMIN=	1.00	TMAX=	.50	ANGLE=				-25.5
328	15	.00	-.01	-1.88	-7.47						
		1.28	1.05	.09	-.10						
TOP :	SMAX=	-.20	SMIN=	-1.37	TMAX=	.59	ANGLE=				-8.9
BOTT:	SMAX=	1.19	SMIN=	.36	TMAX=	.41	ANGLE=				-12.6
2		.00	.00	.03	-.02						
		.01	.03	-.01	.00						
TOP :	SMAX=	.00	SMIN=	-.01	TMAX=	.00	ANGLE=				90.0
BOTT:	SMAX=	.01	SMIN=	-.02	TMAX=	.02	ANGLE=				90.0
3		.00	.00	.04	.05						
		.01	.05	-.01	.00						
TOP :	SMAX=	.01	SMIN=	.00	TMAX=	.01	ANGLE=				90.0
BOTT:	SMAX=	.02	SMIN=	-.04	TMAX=	.03	ANGLE=				90.0
4		.00	.00	.01	-.02						
		.03	.05	.00	.00						
TOP :	SMAX=	.01	SMIN=	-.02	TMAX=	.01	ANGLE=				90.0
BOTT:	SMAX=	.03	SMIN=	-.03	TMAX=	.03	ANGLE=				90.0
5		.00	.00	.00	.06						
		.04	.05	-.01	.01						
TOP :	SMAX=	.02	SMIN=	-.02	TMAX=	.02	ANGLE=				90.0
BOTT:	SMAX=	.02	SMIN=	-.03	TMAX=	.03	ANGLE=				90.0
6		.00	.00	-.14	-.50						
		.08	.07	.00	.00						
TOP :	SMAX=	-.02	SMIN=	-.09	TMAX=	.03	ANGLE=				90.0
BOTT:	SMAX=	.08	SMIN=	.02	TMAX=	.03	ANGLE=				90.0
7		.00	.00	-.68	-2.50						
		.38	.36	.00	-.01						
TOP :	SMAX=	-.12	SMIN=	-.43	TMAX=	.15	ANGLE=				1.2
BOTT:	SMAX=	.40	SMIN=	.11	TMAX=	.15	ANGLE=				.8

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
8		.00	.00	.06	.01	.21					
		.07	.07	-.04	.00	.00					
TOP :	SMAX=	.03	SMIN=	-.05	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	.01	SMIN=	-.06	TMAX=	.04	ANGLE=	90.0			
9		.00	.00	-.04	-.08	-.05					
		.02	.02	.01	.00	.00					
TOP :	SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.03	SMIN=	.00	TMAX=	.01	ANGLE=	90.0			
10		.00	.00	-.14	.07	-.83					
		.23	.29	.09	.01	.01					
TOP :	SMAX=	.17	SMIN=	-.09	TMAX=	.13	ANGLE=	90.0			
BOTT:	SMAX=	.22	SMIN=	-.11	TMAX=	.16	ANGLE=	34.1			
11		.00	.00	.14	-.07	.83					
		.23	.29	-.09	-.01	-.01					
TOP :	SMAX=	.09	SMIN=	-.17	TMAX=	.13	ANGLE=	90.0			
BOTT:	SMAX=	.11	SMIN=	-.22	TMAX=	.16	ANGLE=	34.1			
12		.00	.00	-.01	-.04	.00					
		.01	.00	.00	.00	.00					
TOP :	SMAX=	.00	SMIN=	-.01	TMAX=	.00	ANGLE=	90.0			
BOTT:	SMAX=	.01	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
13		.00	.00	-.37	.49	-2.04					
		.46	.81	.24	.02	.09					
TOP :	SMAX=	.39	SMIN=	-.12	TMAX=	.25	ANGLE=	90.0			
BOTT:	SMAX=	.58	SMIN=	-.35	TMAX=	.46	ANGLE=	33.6			
14		.00	-.01	-.18	-.28	-2.67					
		.66	.94	.18	-.03	.08					
TOP :	SMAX=	.42	SMIN=	-.34	TMAX=	.38	ANGLE=	-36.2			
BOTT:	SMAX=	.66	SMIN=	-.42	TMAX=	.54	ANGLE=	39.8			
101		.00	.03	-.32	-.59	-.29					
		.13	.15	.07	.00	.01					
TOP :	SMAX=	.03	SMIN=	-.11	TMAX=	.07	ANGLE=	-17.9			
BOTT:	SMAX=	.17	SMIN=	.05	TMAX=	.06	ANGLE=	90.0			
102		.00	.02	-.32	-.81	-.22					
		.14	.14	.05	.00	.01					
TOP :	SMAX=	.00	SMIN=	-.14	TMAX=	.07	ANGLE=	-12.6			
BOTT:	SMAX=	.16	SMIN=	.07	TMAX=	.05	ANGLE=	90.0			
103		.00	.02	-.76	-2.40	-.19					
		.38	.35	.04	-.01	.01					
TOP :	SMAX=	-.08	SMIN=	-.41	TMAX=	.16	ANGLE=	-4.3			
BOTT:	SMAX=	.40	SMIN=	.16	TMAX=	.12	ANGLE=	-9.7			
104		.00	.02	-.17	-.40	-.05					
		.06	.07	.02	.00	.01					
TOP :	SMAX=	-.01	SMIN=	-.07	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.08	SMIN=	.03	TMAX=	.02	ANGLE=	90.0			
105		.00	.02	-.25	-.47	-.26					
		.11	.12	.05	.00	.01					
TOP :	SMAX=	.02	SMIN=	-.09	TMAX=	.06	ANGLE=	90.0			
BOTT:	SMAX=	.14	SMIN=	.04	TMAX=	.05	ANGLE=	90.0			
106		.00	.01	-1.34	-3.73	-2.10					
		.84	.88	.24	-.04	.05					
TOP :	SMAX=	.13	SMIN=	-.77	TMAX=	.45	ANGLE=	-20.8			
BOTT:	SMAX=	.93	SMIN=	.11	TMAX=	.41	ANGLE=	-40.6			
107		.00	.01	-1.19	-3.79	-1.27					
		.71	.68	.15	-.04	.04					
TOP :	SMAX=	-.01	SMIN=	-.72	TMAX=	.35	ANGLE=	-14.3			
BOTT:	SMAX=	.75	SMIN=	.19	TMAX=	.28	ANGLE=	-32.1			
108		.00	.03	-.52	-.95	-1.77					
		.48	.65	.18	-.01	.05					
TOP :	SMAX=	.24	SMIN=	-.31	TMAX=	.28	ANGLE=	-30.3			
BOTT:	SMAX=	.56	SMIN=	-.15	TMAX=	.36	ANGLE=	39.9			
109		.01	.12	-1.33	-2.53	-1.36					
		.56	.66	.29	.00	.04					
TOP :	SMAX=	.13	SMIN=	-.49	TMAX=	.31	ANGLE=	-18.7			
BOTT:	SMAX=	.73	SMIN=	.20	TMAX=	.27	ANGLE=	90.0			

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
329	15	.01	.02	-1.89	-6.82						
		1.15	.95	.08	-.06						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	2	.00	.00	-.05	-.18						
		.03	.05	.00	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	3	.00	.00	-.04	.02						
		.05	.00	-.01	.03						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	4	.00	.00	-.03	.01						
		.03	.06	.00	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	5	.00	.00	-.02	.02						
		.03	.05	-.02	.03						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	6	.00	.00	.10	.36						
		.07	.06	-.01	.01						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	7	.00	.00	.00	.03						
		.07	.08	-.07	.03						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	8	.00	.00	-.09	.03						
		.08	.08	.02	.03						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	9	.00	.00	-.55	-2.07						
		.32	.30	.00	-.01						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	10	.00	.00	-.35	.13						
		.34	.09	.09	.13						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	11	.00	.00	-.05	-.21						
		.06	.04	-.01	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	12	.00	.00	-.06	.03						
		.03	.00	-.01	.02						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	13	.00	.00	.06	.23						
		.04	.04	.00	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	14	.00	.00	-.04	.02						
		.21	.17	-.04	-.14						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	15	.00	.00	.12	.12						
		.13	.17	-.12	.10						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	16	.00	.00	-.06	.10						
		.21	.17	-.03	-.01						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	17	.00	.00	.04	.14						
		.21	.17	-.03	-.01						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	18	.00	.00	-.13	.12						
		.12	.00	-.13	.10						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	19	.00	.00	.01	.02						
		.00	.00	.00	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	20	.00	.00	.00	.00						
		.01	.00	-.12	-.17						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	21	.00	.00	.12	.01						
		.48	.57	-.23	.28						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	22	.00	.00	-.23	.32						
		.41	.00	-.23	.32						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	23	.00	.00	-.34	-.91						
		.67	.70	.13	-.02						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	24	.00	.00	.13	.39						
		.34	.00	-.44	.39						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	25	.00	.00	-.24	.45						
		.26	.25	.03	.01						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	26	.00	.00	.10	.10						
		.29	.10	-.27	.11						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.00	.02	.17	.62						
		.10	.10	.02	.00						
TOP :	SMAX=	.12	SMIN=	.04	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	.00	SMIN=	-.11	TMAX=	.05	ANGLE=	90.0			
103		.00	.02	-.17	-.62						
		.11	.10	.02	.00						
TOP :	SMAX=	-.01	SMIN=	-.11	TMAX=	.05	ANGLE=	90.0			
BOTT:	SMAX=	.11	SMIN=	.04	TMAX=	.04	ANGLE=	90.0			
104		.00	.01	.24	.87						
		.13	.13	.01	.00						
TOP :	SMAX=	.15	SMIN=	.05	TMAX=	.05	ANGLE=	2.0			
BOTT:	SMAX=	-.03	SMIN=	-.15	TMAX=	.06	ANGLE=	9.1			
105		.00	.02	.33	1.22						
		.19	.19	.02	.01						
TOP :	SMAX=	.22	SMIN=	.07	TMAX=	.07	ANGLE=	12.7			
BOTT:	SMAX=	-.03	SMIN=	-.20	TMAX=	.09	ANGLE=	9.2			
106		.01	.02	-.85	-2.90						
		.73	.60	.13	-.02						
TOP :	SMAX=	.14	SMIN=	-.65	TMAX=	.39	ANGLE=	-25.5			
BOTT:	SMAX=	.64	SMIN=	.10	TMAX=	.27	ANGLE=	-34.7			
107		.01	.02	-.81	-2.77						
		.57	.47	.10	-.02						
TOP :	SMAX=	.03	SMIN=	-.55	TMAX=	.29	ANGLE=	-19.9			
BOTT:	SMAX=	.52	SMIN=	.14	TMAX=	.19	ANGLE=	-28.6			
108		.01	.03	.38	1.62						
		.48	.51	.10	.00						
TOP :	SMAX=	.46	SMIN=	-.02	TMAX=	.24	ANGLE=	38.7			
BOTT:	SMAX=	.17	SMIN=	-.40	TMAX=	.29	ANGLE=	28.9			
109		.01	.10	1.73	6.49						
		1.02	1.00	.12	.03						
TOP :	SMAX=	1.15	SMIN=	.37	TMAX=	.39	ANGLE=	12.8			
BOTT:	SMAX=	-.14	SMIN=	-1.07	TMAX=	.46	ANGLE=	8.8			
330	15	.01	.03	-1.29	-4.44						
		.72	.65	.04	-.02						
TOP :	SMAX=	-.15	SMIN=	-.78	TMAX=	.31	ANGLE=	-10.9			
BOTT:	SMAX=	.73	SMIN=	.24	TMAX=	.24	ANGLE=	8.3			
2		.00	.00	-.09	-.28						
		.05	.05	.01	.00						
TOP :	SMAX=	.00	SMIN=	-.05	TMAX=	.02	ANGLE=	90.0			
BOTT:	SMAX=	.06	SMIN=	.01	TMAX=	.02	ANGLE=	90.0			
3		.00	.00	-.08	-.23						
		.04	.06	.01	.00						
TOP :	SMAX=	.00	SMIN=	-.04	TMAX=	.02	ANGLE=	90.0			
BOTT:	SMAX=	.06	SMIN=	.00	TMAX=	.03	ANGLE=	90.0			
4		.00	.00	-.03	-.08						
		.03	.04	.01	.00						
TOP :	SMAX=	.01	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.03	SMIN=	-.01	TMAX=	.02	ANGLE=	90.0			
5		.00	.00	.15	.55						
		.09	.08	.00	.00						
TOP :	SMAX=	.10	SMIN=	.02	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	-.02	SMIN=	-.09	TMAX=	.03	ANGLE=	90.0			
6		.00	.00	-.11	-.44						
		.07	.06	.00	.00						
TOP :	SMAX=	-.02	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.07	SMIN=	.02	TMAX=	.03	ANGLE=	90.0			
7		.00	.01	-.34	-1.27						
		.19	.19	.00	.00						
TOP :	SMAX=	-.06	SMIN=	-.22	TMAX=	.08	ANGLE=	2.0			
BOTT:	SMAX=	.21	SMIN=	.06	TMAX=	.08	ANGLE=	.2			



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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
8		.00	.00	-.12	-.36	.04					
		.06	.05	.01	.00	.01					
	TOP : SMAX=	-.01	SMIN=	-.07	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	.06	SMIN=	.02	TMAX=	.02	ANGLE=	90.0			
9		.00	.00	.14	.48	-.02					
		.07	.07	.00	.00	.00					
	TOP : SMAX=	.08	SMIN=	.02	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	-.02	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			
10		.00	.00	-.01	-.30	-.39					
		.15	.10	-.02	.00	-.02					
	TOP : SMAX=	.05	SMIN=	-.12	TMAX=	.08	ANGLE=	90.0			
	BOTT: SMAX=	.08	SMIN=	-.04	TMAX=	.06	ANGLE=	90.0			
11		.00	.00	.01	.30	.39					
		.15	.10	.02	.00	.02					
	TOP : SMAX=	.12	SMIN=	-.05	TMAX=	.08	ANGLE=	90.0			
	BOTT: SMAX=	.04	SMIN=	-.08	TMAX=	.06	ANGLE=	90.0			
12		.00	.00	.02	.07	.00					
		.01	.01	.00	.00	.00					
	TOP : SMAX=	.01	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	-.01	TMAX=	.00	ANGLE=	90.0			
13		.01	.00	-.05	-.78	-1.17					
		.37	.35	.01	.00	-.01					
	TOP : SMAX=	.15	SMIN=	-.27	TMAX=	.21	ANGLE=	-36.4			
	BOTT: SMAX=	.27	SMIN=	-.12	TMAX=	.20	ANGLE=	-36.4			
14		.02	.00	-.30	-1.25	-1.52					
		.51	.45	.03	.00	-.02					
	TOP : SMAX=	.17	SMIN=	-.40	TMAX=	.29	ANGLE=	-35.4			
	BOTT: SMAX=	.39	SMIN=	-.10	TMAX=	.24	ANGLE=	-37.5			
101		.00	.02	.97	3.42	-.10					
		.52	.50	.00	.01	-.01					
	TOP : SMAX=	.58	SMIN=	.16	TMAX=	.21	ANGLE=	3.1			
	BOTT: SMAX=	-.16	SMIN=	-.56	TMAX=	.20	ANGLE=	1.6			
102		.00	.01	.53	1.81	-.09					
		.28	.27	.00	.00	.00					
	TOP : SMAX=	.31	SMIN=	.09	TMAX=	.11	ANGLE=	5.0			
	BOTT: SMAX=	-.09	SMIN=	-.30	TMAX=	.11	ANGLE=	2.8			
103		.00	.02	.35	1.15	-.07					
		.18	.17	.00	.00	.00					
	TOP : SMAX=	.20	SMIN=	.06	TMAX=	.07	ANGLE=	5.7			
	BOTT: SMAX=	-.06	SMIN=	-.19	TMAX=	.07	ANGLE=	4.2			
104		.00	.01	.52	1.88	-.06					
		.28	.28	.00	.00	.00					
	TOP : SMAX=	.32	SMIN=	.09	TMAX=	.11	ANGLE=	1.2			
	BOTT: SMAX=	-.08	SMIN=	-.31	TMAX=	.11	ANGLE=	3.5			
105		.00	.01	.73	2.55	-.10					
		.39	.37	.00	.01	.00					
	TOP : SMAX=	.43	SMIN=	.12	TMAX=	.16	ANGLE=	3.9			
	BOTT: SMAX=	-.12	SMIN=	-.42	TMAX=	.15	ANGLE=	2.4			
106		.01	.02	-.28	-1.37	-.91					
		.42	.26	.02	.00	-.06					
	TOP : SMAX=	.10	SMIN=	-.36	TMAX=	.23	ANGLE=	-32.4			
	BOTT: SMAX=	.27	SMIN=	.02	TMAX=	.12	ANGLE=	-23.9			
107		.01	.02	-.27	-1.07	-.52					
		.29	.17	.03	.00	-.04					
	TOP : SMAX=	.06	SMIN=	-.25	TMAX=	.15	ANGLE=	-28.6			
	BOTT: SMAX=	.19	SMIN=	.06	TMAX=	.06	ANGLE=	90.0			
108		.01	.02	1.08	3.71	-.93					
		.64	.59	.02	.01	-.02					
	TOP : SMAX=	.69	SMIN=	.14	TMAX=	.28	ANGLE=	19.1			
	BOTT: SMAX=	-.12	SMIN=	-.64	TMAX=	.26	ANGLE=	16.1			
109		.00	.07	3.86	13.55	-.53					
		2.07	1.98	.00	.05	-.03					
	TOP : SMAX=	2.31	SMIN=	.64	TMAX=	.84	ANGLE=	3.9			
	BOTT: SMAX=	-.64	SMIN=	-2.22	TMAX=	.79	ANGLE=	2.3			

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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH							
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH									
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
331	15	.01	.03	-.47	-1.42	.52			
		.19	.37	-.01	.02	-.08			
	TOP : SMAX=	-.09	SMIN=	-.22	TMAX=	.06	ANGLE=	1.4	
	BOTT: SMAX=	.36	SMIN=	-.03	TMAX=	.20	ANGLE=	30.2	
	2	.00	.00	-.11	-.33	-.04			
		.05	.05	.01	.00	.00			
	TOP : SMAX=	-.01	SMIN=	-.06	TMAX=	.03	ANGLE=	90.0	
	BOTT: SMAX=	.06	SMIN=	.03	TMAX=	.01	ANGLE=	90.0	
	3	.00	.00	-.10	-.30	-.04			
		.05	.05	.02	.00	.00			
	TOP : SMAX=	.00	SMIN=	-.05	TMAX=	.03	ANGLE=	90.0	
	BOTT: SMAX=	.05	SMIN=	.03	TMAX=	.01	ANGLE=	90.0	
	4	.00	.00	-.03	-.08	-.04			
		.02	.02	.01	.00	.00			
	TOP : SMAX=	.00	SMIN=	-.01	TMAX=	.01	ANGLE=	90.0	
	BOTT: SMAX=	.02	SMIN=	.01	TMAX=	.01	ANGLE=	90.0	
	5	.00	.00	.17	.64	.03			
		.10	.10	.00	.00	.00			
	TOP : SMAX=	.11	SMIN=	.03	TMAX=	.04	ANGLE=	90.0	
	BOTT: SMAX=	-.03	SMIN=	-.11	TMAX=	.04	ANGLE=	90.0	
	6	.00	.00	-.07	-.27	.00			
		.04	.04	.00	.00	.00			
	TOP : SMAX=	-.01	SMIN=	-.05	TMAX=	.02	ANGLE=	90.0	
	BOTT: SMAX=	.04	SMIN=	.01	TMAX=	.02	ANGLE=	90.0	
	7	.00	.01	-.08	-.25	-.01			
		.04	.04	.01	.00	.00			
	TOP : SMAX=	-.01	SMIN=	-.04	TMAX=	.02	ANGLE=	90.0	
	BOTT: SMAX=	.04	SMIN=	.02	TMAX=	.01	ANGLE=	90.0	
	8	.00	.00	-.16	-.43	.01			
		.07	.06	.02	.00	.00			
	TOP : SMAX=	-.01	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0	
	BOTT: SMAX=	.07	SMIN=	.04	TMAX=	.01	ANGLE=	90.0	
	9	.00	.00	.17	.61	-.01			
		.09	.09	.00	.00	.00			
	TOP : SMAX=	.10	SMIN=	.03	TMAX=	.04	ANGLE=	90.0	
	BOTT: SMAX=	-.03	SMIN=	-.10	TMAX=	.04	ANGLE=	90.0	
	10	.00	.00	.00	-.39	-.13			
		.08	.10	-.04	.00	-.01			
	TOP : SMAX=	-.02	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0	
	BOTT: SMAX=	.07	SMIN=	-.04	TMAX=	.06	ANGLE=	-7.4	
	11	.00	.00	.00	.39	.13			
		.08	.10	.04	.00	.01			
	TOP : SMAX=	.08	SMIN=	.02	TMAX=	.03	ANGLE=	90.0	
	BOTT: SMAX=	.04	SMIN=	-.07	TMAX=	.06	ANGLE=	-7.4	
	12	.00	.00	.03	.10	.00			
		.01	.01	.00	.00	.00			
	TOP : SMAX=	.02	SMIN=	.00	TMAX=	.01	ANGLE=	90.0	
	BOTT: SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0	
	13	.01	.00	-.05	-1.12	-.41			
		.21	.24	-.06	.00	-.01			
	TOP : SMAX=	-.03	SMIN=	-.22	TMAX=	.10	ANGLE=	-25.0	
	BOTT: SMAX=	.20	SMIN=	-.06	TMAX=	.13	ANGLE=	-14.0	
	14	.02	.00	-.24	-1.38	-.53			
		.26	.27	-.04	.01	-.01			
	TOP : SMAX=	-.03	SMIN=	-.27	TMAX=	.12	ANGLE=	-26.9	
	BOTT: SMAX=	.26	SMIN=	-.02	TMAX=	.14	ANGLE=	-16.7	
	101	.00	.01	1.24	4.38	-.03			
		.67	.64	-.01	.01	.00			
	TOP : SMAX=	.74	SMIN=	.19	TMAX=	.27	ANGLE=	.8	
	BOTT: SMAX=	-.22	SMIN=	-.72	TMAX=	.25	ANGLE=	.3	

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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.00	.01	.74	2.58	-.03					
		.39	.38	-.01	.01	.00					
TOP :	SMAX=	.44	SMIN=	.11	TMAX=	.16	ANGLE=	1.3			
BOTT:	SMAX=	-.13	SMIN=	-.42	TMAX=	.15	ANGLE=	.5			
103		.00	.01	.73	2.59	-.04					
		.39	.38	.00	.01	.00					
TOP :	SMAX=	.44	SMIN=	.12	TMAX=	.16	ANGLE=	1.0			
BOTT:	SMAX=	-.12	SMIN=	-.42	TMAX=	.15	ANGLE=	1.4			
104		.00	.00	.67	2.45	-.02					
		.37	.36	.01	.00	.00					
TOP :	SMAX=	.41	SMIN=	.12	TMAX=	.15	ANGLE=	.4			
BOTT:	SMAX=	-.11	SMIN=	-.40	TMAX=	.15	ANGLE=	1.0			
105		.00	.00	.93	3.28	-.03					
		.50	.48	-.01	.01	.00					
TOP :	SMAX=	.56	SMIN=	.15	TMAX=	.20	ANGLE=	1.0			
BOTT:	SMAX=	-.16	SMIN=	-.54	TMAX=	.19	ANGLE=	.5			
106		.01	.02	.25	.33	-.03					
		.12	.12	-.06	.02	-.05					
TOP :	SMAX=	.09	SMIN=	-.04	TMAX=	.07	ANGLE=	90.0			
BOTT:	SMAX=	-.02	SMIN=	-.13	TMAX=	.05	ANGLE=	90.0			
107		.01	.02	.25	.71	.10					
		.13	.14	-.02	.01	-.04					
TOP :	SMAX=	.14	SMIN=	.02	TMAX=	.06	ANGLE=	12.4			
BOTT:	SMAX=	-.02	SMIN=	-.15	TMAX=	.06	ANGLE=	90.0			
108		.01	.01	1.46	4.89	-.32					
		.76	.70	-.03	.02	-.01					
TOP :	SMAX=	.84	SMIN=	.20	TMAX=	.32	ANGLE=	5.6			
BOTT:	SMAX=	-.27	SMIN=	-.80	TMAX=	.26	ANGLE=	4.9			
109		.00	.02	4.95	17.43	-.17					
		2.65	2.54	-.05	.05	-.01					
TOP :	SMAX=	2.95	SMIN=	.77	TMAX=	1.09	ANGLE=	1.0			
BOTT:	SMAX=	-.88	SMIN=	-2.86	TMAX=	.99	ANGLE=	.5			
332	15	.00	.02	.23	1.25	1.01					
		.32	.41	-.03	.04	-.05					
TOP :	SMAX=	.29	SMIN=	-.04	TMAX=	.17	ANGLE=	-22.4			
BOTT:	SMAX=	.10	SMIN=	-.34	TMAX=	.22	ANGLE=	-38.5			
2		.00	.00	-.11	-.33	.04					
		.05	.05	.01	.00	.00					
TOP :	SMAX=	-.01	SMIN=	-.06	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.06	SMIN=	.03	TMAX=	.01	ANGLE=	90.0			
3		.00	.00	-.10	-.30	.04					
		.05	.05	.02	.00	.00					
TOP :	SMAX=	.00	SMIN=	-.05	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.05	SMIN=	.03	TMAX=	.01	ANGLE=	90.0			
4		.00	.00	-.03	-.08	.04					
		.02	.02	.01	.00	.00					
TOP :	SMAX=	.00	SMIN=	-.01	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.02	SMIN=	.01	TMAX=	.01	ANGLE=	90.0			
5		.00	.00	.17	.64	-.03					
		.10	.10	.00	.00	.00					
TOP :	SMAX=	.11	SMIN=	.03	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	-.03	SMIN=	-.11	TMAX=	.04	ANGLE=	90.0			
6		.00	.00	.00	-.01	.00					
		.00	.00	.00	.00	.00					
TOP :	SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
BOTT:	SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
7		.00	.01	.18	.78	-.04					
		.12	.12	.01	.00	.00					
TOP :	SMAX=	.13	SMIN=	.04	TMAX=	.05	ANGLE=	90.0			
BOTT:	SMAX=	-.02	SMIN=	-.13	TMAX=	.05	ANGLE=	4.9			

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.00	.00	-.16	-.43	-.16	-.43	-.16	-.43	-.16	-.43
		.07	.06	.02	.00	.02	.00	.02	.00	.02	.00
	TOP : SMAX=	-.01	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	.07	SMIN=	.04	TMAX=	.01	ANGLE=	90.0			
	9	.00	.00	.17	.61	.17	.61	.17	.61	.17	.61
		.09	.09	.00	.00	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	.10	SMIN=	.03	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	-.03	SMIN=	-.10	TMAX=	.04	ANGLE=	90.0			
	10	.00	.00	.00	-.39	.00	-.39	.00	-.39	.00	-.39
		.08	.10	-.04	.00	-.04	.00	-.04	.00	-.04	.00
	TOP : SMAX=	-.02	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	.07	SMIN=	-.04	TMAX=	.06	ANGLE=	7.4			
	11	.00	.00	.00	.39	.00	.39	.00	.39	.00	.39
		.08	.10	.04	.00	.04	.00	.04	.00	.04	.00
	TOP : SMAX=	.08	SMIN=	.02	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	.04	SMIN=	-.07	TMAX=	.06	ANGLE=	7.4			
	12	.00	.00	.03	.10	.03	.10	.03	.10	.03	.10
		.01	.01	.00	.00	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	.02	SMIN=	.00	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
	13	.01	.00	-.05	-1.12	-.05	-1.12	-.05	-1.12	-.05	-1.12
		.21	.24	-.06	.00	-.06	.00	-.06	.00	-.06	.00
	TOP : SMAX=	-.03	SMIN=	-.22	TMAX=	.10	ANGLE=	25.0			
	BOTT: SMAX=	.20	SMIN=	-.06	TMAX=	.13	ANGLE=	14.0			
	14	.02	.00	-.24	-1.38	-.24	-1.38	-.24	-1.38	-.24	-1.38
		.26	.27	-.04	.01	-.04	.01	-.04	.01	-.04	.01
	TOP : SMAX=	-.03	SMIN=	-.27	TMAX=	.12	ANGLE=	26.9			
	BOTT: SMAX=	.26	SMIN=	-.02	TMAX=	.14	ANGLE=	16.7			
	101	.00	-.01	1.24	4.38	.00	4.38	.00	4.38	.00	4.38
		.67	.64	-.01	.01	-.01	.01	-.01	.01	-.01	.01
	TOP : SMAX=	.74	SMIN=	.19	TMAX=	.27	ANGLE=	-.8			
	BOTT: SMAX=	-.22	SMIN=	-.72	TMAX=	.25	ANGLE=	-.3			
	102	.00	.00	.79	2.78	.00	2.78	.00	2.78	.00	2.78
		.42	.41	-.01	.01	-.01	.01	-.01	.01	-.01	.01
	TOP : SMAX=	.47	SMIN=	.12	TMAX=	.17	ANGLE=	-.9			
	BOTT: SMAX=	-.14	SMIN=	-.46	TMAX=	.16	ANGLE=	-.5			
	103	.00	.01	.94	3.41	.00	3.41	.00	3.41	.00	3.41
		.52	.50	.00	.01	.00	.01	.00	.01	.00	.01
	TOP : SMAX=	.58	SMIN=	.16	TMAX=	.21	ANGLE=	-.5			
	BOTT: SMAX=	-.16	SMIN=	-.56	TMAX=	.20	ANGLE=	.6			
	104	.00	.00	.67	2.45	.00	2.45	.00	2.45	.00	2.45
		.37	.36	.01	.00	.01	.00	.01	.00	.01	.00
	TOP : SMAX=	.41	SMIN=	.12	TMAX=	.15	ANGLE=	-.4			
	BOTT: SMAX=	-.11	SMIN=	-.40	TMAX=	.15	ANGLE=	-1.0			
	105	.00	.00	.93	3.28	.00	3.28	.00	3.28	.00	3.28
		.50	.48	-.01	.01	-.01	.01	-.01	.01	-.01	.01
	TOP : SMAX=	.56	SMIN=	.15	TMAX=	.20	ANGLE=	-1.1			
	BOTT: SMAX=	-.16	SMIN=	-.54	TMAX=	.19	ANGLE=	-.5			
	106	.01	.01	.60	1.66	.01	1.66	.01	1.66	.01	1.66
		.35	.34	-.07	.02	-.07	.02	-.07	.02	-.07	.02
	TOP : SMAX=	.34	SMIN=	-.01	TMAX=	.18	ANGLE=	-20.1			
	BOTT: SMAX=	-.06	SMIN=	-.37	TMAX=	.15	ANGLE=	90.0			
	107	.01	.01	.60	2.05	.01	2.05	.01	2.05	.01	2.05
		.37	.36	-.03	.02	-.03	.02	-.03	.02	-.03	.02
	TOP : SMAX=	.39	SMIN=	.05	TMAX=	.17	ANGLE=	-15.3			
	BOTT: SMAX=	-.06	SMIN=	-.39	TMAX=	.17	ANGLE=	-27.3			
	108	.01	-.01	1.46	4.89	.01	4.89	.01	4.89	.01	4.89
		.76	.70	-.03	.02	-.03	.02	-.03	.02	-.03	.02
	TOP : SMAX=	.84	SMIN=	.20	TMAX=	.32	ANGLE=	-5.6			
	BOTT: SMAX=	-.27	SMIN=	-.80	TMAX=	.26	ANGLE=	-4.9			
	109	.00	-.02	4.95	17.43	.00	17.43	.00	17.43	.00	17.43
		2.65	2.54	-.05	.05	-.05	.05	-.05	.05	-.05	.05
	TOP : SMAX=	2.95	SMIN=	.77	TMAX=	1.09	ANGLE=	-1.1			
	BOTT: SMAX=	-.88	SMIN=	-2.86	TMAX=	.99	ANGLE=	-.5			

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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH				
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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH						
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FXY
333	15	.00	.01	.68	3.01	1.17
		.57	.56	-.02	.03	-.02
TOP :	SMAX=	.59	SMIN=	.03	TMAX=	.28 ANGLE= -19.6
BOTT:	SMAX=	-.03	SMIN=	-.58	TMAX=	.27 ANGLE= -25.6
	2	.00	.00	-.09	-.28	.09
		.05	.05	.01	.00	-.01
TOP :	SMAX=	.00	SMIN=	-.05	TMAX=	.02 ANGLE= 90.0
BOTT:	SMAX=	.06	SMIN=	.01	TMAX=	.02 ANGLE= 90.0
	3	.00	.00	-.08	-.23	.11
		.04	.06	.01	.00	-.01
TOP :	SMAX=	.00	SMIN=	-.04	TMAX=	.02 ANGLE= 90.0
BOTT:	SMAX=	.06	SMIN=	.00	TMAX=	.03 ANGLE= 90.0
	4	.00	.00	-.03	-.08	.10
		.03	.04	.01	.00	.00
TOP :	SMAX=	.01	SMIN=	-.02	TMAX=	.01 ANGLE= 90.0
BOTT:	SMAX=	.03	SMIN=	-.01	TMAX=	.02 ANGLE= 90.0
	5	.00	.00	.15	.55	-.09
		.09	.08	.00	.00	.00
TOP :	SMAX=	.10	SMIN=	.02	TMAX=	.04 ANGLE= 90.0
BOTT:	SMAX=	-.02	SMIN=	-.09	TMAX=	.03 ANGLE= 90.0
	6	.00	.00	.07	.27	.00
		.04	.04	.00	.00	.00
TOP :	SMAX=	.04	SMIN=	.01	TMAX=	.02 ANGLE= 90.0
BOTT:	SMAX=	-.01	SMIN=	-.04	TMAX=	.02 ANGLE= 90.0
	7	.00	.01	.41	1.63	-.05
		.25	.24	.01	.01	.00
TOP :	SMAX=	.28	SMIN=	.08	TMAX=	.10 ANGLE= 1.9
BOTT:	SMAX=	-.06	SMIN=	-.27	TMAX=	.10 ANGLE= 2.6
	8	.00	.00	-.12	-.36	-.04
		.06	.05	.01	.00	-.01
TOP :	SMAX=	-.01	SMIN=	-.07	TMAX=	.03 ANGLE= 90.0
BOTT:	SMAX=	.06	SMIN=	.02	TMAX=	.02 ANGLE= 90.0
	9	.00	.00	.14	.48	.02
		.07	.07	.00	.00	.00
TOP :	SMAX=	.08	SMIN=	.02	TMAX=	.03 ANGLE= 90.0
BOTT:	SMAX=	-.02	SMIN=	-.08	TMAX=	.03 ANGLE= 90.0
	10	.00	.00	-.01	-.30	.39
		.15	.10	-.02	.00	.02
TOP :	SMAX=	.05	SMIN=	-.12	TMAX=	.08 ANGLE= 90.0
BOTT:	SMAX=	.08	SMIN=	-.04	TMAX=	.06 ANGLE= 90.0
	11	.00	.00	.01	.30	-.39
		.15	.10	.02	.00	-.02
TOP :	SMAX=	.12	SMIN=	-.05	TMAX=	.08 ANGLE= 90.0
BOTT:	SMAX=	.04	SMIN=	-.08	TMAX=	.06 ANGLE= 90.0
	12	.00	.00	.02	.07	.00
		.01	.01	.00	.00	.00
TOP :	SMAX=	.01	SMIN=	.00	TMAX=	.00 ANGLE= 90.0
BOTT:	SMAX=	.00	SMIN=	-.01	TMAX=	.00 ANGLE= 90.0
	13	.01	.00	-.05	-.78	1.17
		.37	.35	.01	.00	.01
TOP :	SMAX=	.15	SMIN=	-.27	TMAX=	.21 ANGLE= 36.4
BOTT:	SMAX=	.27	SMIN=	-.12	TMAX=	.20 ANGLE= 36.4
	14	.02	.00	-.30	-1.25	1.52
		.51	.45	.03	.00	.02
TOP :	SMAX=	.17	SMIN=	-.40	TMAX=	.29 ANGLE= 35.4
BOTT:	SMAX=	.39	SMIN=	-.10	TMAX=	.24 ANGLE= 37.5
	101	.00	-.02	.97	3.42	.10
		.52	.50	.00	.01	.01
TOP :	SMAX=	.58	SMIN=	.16	TMAX=	.21 ANGLE= -3.1
BOTT:	SMAX=	-.16	SMIN=	-.56	TMAX=	.20 ANGLE= -1.6

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.00	-.01	.67	2.38	.08							
		.36	.35	.00	.01	.00							
TOP :	SMAX=	.41	SMIN=	.11	TMAX=	.15	ANGLE=	-3.4					
BOTT:	SMAX=	-.11	SMIN=	-.39	TMAX=	.14	ANGLE=	-2.0					
103		.00	.00	.94	3.48	.05							
		.53	.51	.01	.01	.01							
TOP :	SMAX=	.59	SMIN=	.17	TMAX=	.21	ANGLE=	-1.7					
BOTT:	SMAX=	-.15	SMIN=	-.57	TMAX=	.21	ANGLE=	-.4					
104		.00	-.01	.52	1.88	.06							
		.28	.28	.00	.00	.00							
TOP :	SMAX=	.32	SMIN=	.09	TMAX=	.11	ANGLE=	-1.2					
BOTT:	SMAX=	-.08	SMIN=	-.31	TMAX=	.11	ANGLE=	-3.5					
105		.00	-.01	.73	2.55	.10							
		.39	.37	.00	.01	.00							
TOP :	SMAX=	.44	SMIN=	.12	TMAX=	.16	ANGLE=	-3.9					
BOTT:	SMAX=	-.12	SMIN=	-.42	TMAX=	.15	ANGLE=	-2.5					
106		.01	.00	.71	2.36	1.42							
		.56	.52	-.01	.02	.00							
TOP :	SMAX=	.55	SMIN=	-.03	TMAX=	.29	ANGLE=	-28.7					
BOTT:	SMAX=	.01	SMIN=	-.51	TMAX=	.26	ANGLE=	-31.3					
107		.00	.00	.72	2.66	1.03							
		.50	.50	.00	.02	-.01							
TOP :	SMAX=	.52	SMIN=	.06	TMAX=	.23	ANGLE=	-21.6					
BOTT:	SMAX=	-.03	SMIN=	-.51	TMAX=	.24	ANGLE=	-25.0					
108		.01	-.02	1.09	3.71	.93							
		.64	.59	.02	.01	.02							
TOP :	SMAX=	.69	SMIN=	.14	TMAX=	.28	ANGLE=	-19.1					
BOTT:	SMAX=	-.12	SMIN=	-.64	TMAX=	.26	ANGLE=	-16.1					
109		.00	-.07	3.86	13.56	.53							
		2.07	1.98	.00	.05	.03							
TOP :	SMAX=	2.31	SMIN=	.64	TMAX=	.84	ANGLE=	-3.9					
BOTT:	SMAX=	-.64	SMIN=	-2.22	TMAX=	.79	ANGLE=	-2.3					
334	15	-.01	.01	.98	3.81	.92							
		.63	.63	-.02	.00	.00							
TOP :	SMAX=	.67	SMIN=	.10	TMAX=	.29	ANGLE=	-16.1					
BOTT:	SMAX=	-.13	SMIN=	-.69	TMAX=	.28	ANGLE=	-17.1					
2		.00	.00	-.05	-.18	.10							
		.03	.05	.00	.00	-.01							
TOP :	SMAX=	.00	SMIN=	-.04	TMAX=	.02	ANGLE=	90.0					
BOTT:	SMAX=	.05	SMIN=	-.01	TMAX=	.03	ANGLE=	90.0					
3		.00	.00	-.03	-.11	.13							
		.03	.06	.00	.00	-.01							
TOP :	SMAX=	.00	SMIN=	-.03	TMAX=	.01	ANGLE=	90.0					
BOTT:	SMAX=	.05	SMIN=	-.02	TMAX=	.03	ANGLE=	90.0					
4		.00	.00	-.01	-.06	.13							
		.03	.05	.00	.00	-.01							
TOP :	SMAX=	.01	SMIN=	-.02	TMAX=	.02	ANGLE=	90.0					
BOTT:	SMAX=	.03	SMIN=	-.02	TMAX=	.03	ANGLE=	90.0					
5		.00	.00	.10	.36	-.13							
		.07	.06	-.01	.01	.00							
TOP :	SMAX=	.07	SMIN=	.00	TMAX=	.03	ANGLE=	90.0					
BOTT:	SMAX=	-.01	SMIN=	-.07	TMAX=	.03	ANGLE=	90.0					
6		.00	.00	.13	.50	-.01							
		.08	.07	.00	.00	.00							
TOP :	SMAX=	.09	SMIN=	.02	TMAX=	.03	ANGLE=	90.0					
BOTT:	SMAX=	-.02	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0					
7		.00	.00	.57	2.17	-.05							
		.33	.32	.00	.01	.00							
TOP :	SMAX=	.37	SMIN=	.10	TMAX=	.14	ANGLE=	1.8					
BOTT:	SMAX=	-.09	SMIN=	-.35	TMAX=	.13	ANGLE=	1.9					



PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
335	15	-.02	.01	1.40	4.08	.21					
		.59	.62	-.04	-.03	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	2	.00	.00	.03	-.02	.04					
		.01	.03	-.01	.00	-.01					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	3	.00	.00	.04	.05	.10					
		.01	.05	-.01	.00	-.01					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	4	.00	.00	.01	-.02	.13					
		.03	.05	.00	.00	-.01					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	5	.00	.00	.00	.06	-.13					
		.04	.05	-.01	.01	.01					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	6	.00	.00	.17	.64	-.01					
		.10	.09	.00	.00	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	7	.00	.00	.66	2.30	-.05					
		.35	.33	-.01	.01	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	8	.00	.00	.06	.01	-.21					
		.07	.07	-.04	.00	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	9	.00	.00	.01	.00	.00					
		.02	.02	-.02	.01	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	10	.00	.00	-.14	.07	.83					
		.23	.29	.09	.01	-.01					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	11	.00	.00	.14	-.07	-.83					
		.23	.29	-.09	-.01	.01					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	12	.00	.00	-.17	.13	.00					
		.01	.00	-.22	.16	-.34.1					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	13	.00	.00	-.01	.00	.00					
		.01	.00	.00	.00	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	14	.00	.00	-.37	.49	2.04					
		.46	.81	.24	.02	-.09					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	15	.00	.01	-.18	-.28	2.67					
		.66	.94	.18	-.03	-.08					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	101	.00	-.03	-.32	-.59	.29					
		.12	.15	.07	.00	-.01					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						



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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	102	.00	-.02	-.07	.11	.21							
		.06	.10	.05	.00	-.01							
	TOP : SMAX=	.06	SMIN=	.00	TMAX=	.03	ANGLE=	90.0					
	BOTT: SMAX=	.08	SMIN=	-.03	TMAX=	.06	ANGLE=	90.0					
	103	.00	-.02	.31	1.43	.17							
		.22	.24	.04	.01	-.01							
	TOP : SMAX=	.25	SMIN=	.09	TMAX=	.08	ANGLE=	-8.5					
	BOTT: SMAX=	-.01	SMIN=	-.24	TMAX=	.12	ANGLE=	-8.8					
	104	.00	-.02	-.17	-.39	.05							
		.06	.07	.02	.00	-.01							
	TOP : SMAX=	-.01	SMIN=	-.07	TMAX=	.03	ANGLE=	90.0					
	BOTT: SMAX=	.08	SMIN=	.03	TMAX=	.02	ANGLE=	90.0					
	105	.00	-.02	-.25	-.47	.26							
		.10	.12	.05	.00	-.01							
	TOP : SMAX=	.02	SMIN=	-.09	TMAX=	.06	ANGLE=	90.0					
	BOTT: SMAX=	.14	SMIN=	.03	TMAX=	.05	ANGLE=	90.0					
	106	-.01	-.01	.30	2.05	1.68							
		.49	.71	.17	.00	-.05							
	TOP : SMAX=	.51	SMIN=	.05	TMAX=	.23	ANGLE=	-37.6					
	BOTT: SMAX=	.30	SMIN=	-.52	TMAX=	.41	ANGLE=	-27.7					
	107	-.01	-.01	.45	1.98	.85							
		.33	.47	.08	-.01	-.04							
	TOP : SMAX=	.37	SMIN=	.11	TMAX=	.13	ANGLE=	-24.5					
	BOTT: SMAX=	.09	SMIN=	-.42	TMAX=	.25	ANGLE=	-23.6					
	108	.00	-.03	-.52	-.95	1.77							
		.48	.65	.18	-.01	-.06							
	TOP : SMAX=	.24	SMIN=	-.31	TMAX=	.28	ANGLE=	30.3					
	BOTT: SMAX=	.56	SMIN=	-.15	TMAX=	.36	ANGLE=	-39.9					
	109	.01	-.12	-1.33	-2.52	1.36							
		.56	.66	.29	.00	-.04							
	TOP : SMAX=	.13	SMIN=	-.48	TMAX=	.31	ANGLE=	18.7					
	BOTT: SMAX=	.73	SMIN=	.19	TMAX=	.27	ANGLE=	90.0					
336	15	.00	.01	2.11	4.30	-.46							
		.63	.64	-.07	-.01	-.01							
	TOP : SMAX=	.72	SMIN=	.26	TMAX=	.23	ANGLE=	10.6					
	BOTT: SMAX=	-.41	SMIN=	-.74	TMAX=	.17	ANGLE=	12.8					
	2	.00	.00	.13	.20	-.01							
		.03	.03	-.01	.00	-.01							
	TOP : SMAX=	.04	SMIN=	.01	TMAX=	.01	ANGLE=	90.0					
	BOTT: SMAX=	-.03	SMIN=	-.04	TMAX=	.00	ANGLE=	90.0					
	3	.00	.00	.12	.20	.04							
		.03	.04	-.01	.00	-.01							
	TOP : SMAX=	.04	SMIN=	.00	TMAX=	.02	ANGLE=	90.0					
	BOTT: SMAX=	-.02	SMIN=	-.05	TMAX=	.01	ANGLE=	90.0					
	4	.00	.00	.05	.04	.08							
		.01	.03	-.01	.00	.00							
	TOP : SMAX=	.01	SMIN=	-.01	TMAX=	.01	ANGLE=	90.0					
	BOTT: SMAX=	.01	SMIN=	-.03	TMAX=	.02	ANGLE=	90.0					
	5	.00	-.01	-.16	-.35	-.11							
		.05	.07	.00	.00	.01							
	TOP : SMAX=	-.03	SMIN=	-.06	TMAX=	.01	ANGLE=	90.0					
	BOTT: SMAX=	.08	SMIN=	.01	TMAX=	.03	ANGLE=	90.0					
	6	.00	.00	.18	.63	-.01							
		.10	.09	.00	.00	.00							
	TOP : SMAX=	.11	SMIN=	.03	TMAX=	.04	ANGLE=	90.0					
	BOTT: SMAX=	-.03	SMIN=	-.10	TMAX=	.03	ANGLE=	90.0					
	7	.00	.00	.66	1.98	-.06							
		.31	.28	-.02	.01	.00							
	TOP : SMAX=	.34	SMIN=	.09	TMAX=	.12	ANGLE=	1.8					
	BOTT: SMAX=	-.13	SMIN=	-.32	TMAX=	.10	ANGLE=	3.6					

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK,    MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FY	MY FX
	8	.00 .09	.00 .12	.17 -.05	.28 .00	-.29 .01	
	TOP : SMAX=	.07	SMIN=	-.04	TMAX=	.05	ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	-.12	TMAX=	.06	ANGLE= 90.0
	9	.00 .07	.00 .06	-.16 .01	-.40 .00	.06 .00	
	TOP : SMAX=	-.01	SMIN=	-.07	TMAX=	.03	ANGLE= 90.0
	BOTT: SMAX=	.07	SMIN=	.03	TMAX=	.02	ANGLE= 90.0
	10	.00 .20	.00 .40	-.30 .12	.27 .00	.94 -.05	
	TOP : SMAX=	.17	SMIN=	-.05	TMAX=	.11	ANGLE= 90.0
	BOTT: SMAX=	.29	SMIN=	-.17	TMAX=	.23	ANGLE= -30.9
	11	.00 .20	.00 .40	.30 -.12	-.27 .00	-.94 .05	
	TOP : SMAX=	.05	SMIN=	-.17	TMAX=	.11	ANGLE= 90.0
	BOTT: SMAX=	.17	SMIN=	-.29	TMAX=	.23	ANGLE= -30.9
	12	.00 .01	.00 .01	-.02 .00	-.08 .00	.00 .00	
	TOP : SMAX=	.00	SMIN=	-.01	TMAX=	.01	ANGLE= 90.0
	BOTT: SMAX=	.01	SMIN=	.00	TMAX=	.00	ANGLE= 90.0
	13	.00 .32	-.01 .98	-.81 .27	.95 .00	1.96 -.16	
	TOP : SMAX=	.31	SMIN=	-.02	TMAX=	.16	ANGLE= 90.0
	BOTT: SMAX=	.69	SMIN=	-.44	TMAX=	.56	ANGLE= -30.3
	14	-.01 .47	.02 1.08	.23 .15	.63 -.02	2.59 -.18	
	TOP : SMAX=	.40	SMIN=	-.12	TMAX=	.26	ANGLE= 39.2
	BOTT: SMAX=	.62	SMIN=	-.62	TMAX=	.62	ANGLE= -39.5
	101	.00 .47	-.03 .43	-1.19 .10	-2.89 -.03	.35 -.03	
	TOP : SMAX=	-.10	SMIN=	-.51	TMAX=	.20	ANGLE= 4.6
	BOTT: SMAX=	.49	SMIN=	.26	TMAX=	.12	ANGLE= 23.2
	102	.00 .23	-.02 .22	-.61 .06	-1.35 -.02	.25 -.02	
	TOP : SMAX=	-.04	SMIN=	-.24	TMAX=	.10	ANGLE= 6.4
	BOTT: SMAX=	.25	SMIN=	.12	TMAX=	.06	ANGLE= 90.0
	103	.00 .07	-.02 .12	-.23 .05	-.27 -.01	.21 -.02	
	TOP : SMAX=	.02	SMIN=	-.06	TMAX=	.04	ANGLE= 90.0
	BOTT: SMAX=	.12	SMIN=	.00	TMAX=	.06	ANGLE= 90.0
	104	.00 .26	-.02 .22	-.62 .03	-1.63 -.02	.02 -.01	
	TOP : SMAX=	-.07	SMIN=	-.29	TMAX=	.11	ANGLE= -2.5
	BOTT: SMAX=	.26	SMIN=	.13	TMAX=	.06	ANGLE= 7.8
	105	.00 .36	-.02 .33	-.89 .07	-2.18 -.02	.30 -.02	
	TOP : SMAX=	-.07	SMIN=	-.39	TMAX=	.16	ANGLE= 5.0
	BOTT: SMAX=	.38	SMIN=	.19	TMAX=	.10	ANGLE= 25.6
	106	.00 .30	-.01 .73	.01 .20	1.56 -.01	1.38 -.12	
	TOP : SMAX=	.34	SMIN=	.11	TMAX=	.11	ANGLE= 90.0
	BOTT: SMAX=	.38	SMIN=	-.46	TMAX=	.42	ANGLE= -28.1
	107	.00 .18	-.01 .35	.32 .07	1.30 -.01	.44 -.07	
	TOP : SMAX=	.20	SMIN=	.13	TMAX=	.04	ANGLE= 90.0
	BOTT: SMAX=	.09	SMIN=	-.30	TMAX=	.19	ANGLE= -24.8
	108	.00 .67	-.03 .89	-1.40 .21	-3.40 -.04	1.81 -.13	
	TOP : SMAX=	.02	SMIN=	-.66	TMAX=	.34	ANGLE= 15.4
	BOTT: SMAX=	.91	SMIN=	.05	TMAX=	.43	ANGLE= 90.0
	109	.00 1.89	-.12 1.74	-4.73 .40	-11.59 -.11	1.61 -.12	
	TOP : SMAX=	-.37	SMIN=	-2.05	TMAX=	.84	ANGLE= 5.0
	BOTT: SMAX=	2.01	SMIN=	1.00	TMAX=	.50	ANGLE= 25.6

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH				
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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH						
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MYX FXY
337	15	-.01	.02	3.29	4.92	-1.65
		.94	.80	-.02	.09	-.02
TOP :	SMAX=	1.07	SMIN=	.37	TMAX=	.35 ANGLE= 28.6
BOTT:	SMAX=	-.38	SMIN=	-.92	TMAX=	.27 ANGLE= 36.0
	2	.00	.00	.28	.55	-.10
		.09	.08	-.01	.01	.00
TOP :	SMAX=	.10	SMIN=	.03	TMAX=	.04 ANGLE= 90.0
BOTT:	SMAX=	-.05	SMIN=	-.09	TMAX=	.02 ANGLE= 90.0
	3	.00	.00	.21	.41	-.07
		.07	.06	-.01	.01	.00
TOP :	SMAX=	.08	SMIN=	.02	TMAX=	.03 ANGLE= 90.0
BOTT:	SMAX=	-.04	SMIN=	-.07	TMAX=	.01 ANGLE= 90.0
	4	.00	.00	.11	.16	-.03
		.03	.02	.00	.00	.00
TOP :	SMAX=	.03	SMIN=	.01	TMAX=	.01 ANGLE= 90.0
BOTT:	SMAX=	-.02	SMIN=	-.03	TMAX=	.00 ANGLE= 90.0
	5	.00	-.01	-.52	-1.09	.02
		.17	.15	.00	-.01	.02
TOP :	SMAX=	-.08	SMIN=	-.19	TMAX=	.06 ANGLE= 10.2
BOTT:	SMAX=	.18	SMIN=	.08	TMAX=	.05 ANGLE= 90.0
	6	.00	.00	.12	.35	-.01
		.06	.05	.00	.00	.00
TOP :	SMAX=	.06	SMIN=	.02	TMAX=	.02 ANGLE= 90.0
BOTT:	SMAX=	-.02	SMIN=	-.05	TMAX=	.02 ANGLE= 90.0
	7	.00	-.01	.55	.91	-.04
		.15	.11	.00	.03	.00
TOP :	SMAX=	.18	SMIN=	.09	TMAX=	.05 ANGLE= 90.0
BOTT:	SMAX=	-.09	SMIN=	-.13	TMAX=	.02 ANGLE= 90.0
	8	.00	.00	.29	.67	-.24
		.11	.15	-.03	.00	.03
TOP :	SMAX=	.12	SMIN=	.02	TMAX=	.05 ANGLE= 90.0
BOTT:	SMAX=	-.02	SMIN=	-.16	TMAX=	.07 ANGLE= 90.0
	9	.00	.00	-.36	-.83	.04
		.13	.11	.01	-.01	-.01
TOP :	SMAX=	-.05	SMIN=	-.15	TMAX=	.05 ANGLE= -.2
BOTT:	SMAX=	.13	SMIN=	.07	TMAX=	.03 ANGLE= 90.0
	10	-.01	.00	-.68	.48	.42
		.08	.38	.09	-.02	-.09
TOP :	SMAX=	.06	SMIN=	-.03	TMAX=	.05 ANGLE= 90.0
BOTT:	SMAX=	.26	SMIN=	-.17	TMAX=	.22 ANGLE= -23.0
	11	.01	.00	.68	-.48	-.42
		.08	.38	-.09	.02	.09
TOP :	SMAX=	.03	SMIN=	-.06	TMAX=	.05 ANGLE= 90.0
BOTT:	SMAX=	.17	SMIN=	-.26	TMAX=	.22 ANGLE= -23.0
	12	.00	.00	-.03	-.10	.00
		.02	.01	.00	.00	.00
TOP :	SMAX=	-.01	SMIN=	-.02	TMAX=	.01 ANGLE= 90.0
BOTT:	SMAX=	.01	SMIN=	.01	TMAX=	.00 ANGLE= 90.0
	13	-.02	-.01	-2.04	1.02	.74
		.38	.78	.06	-.05	-.20
TOP :	SMAX=	.14	SMIN=	-.29	TMAX=	.21 ANGLE= 10.6
BOTT:	SMAX=	.54	SMIN=	-.36	TMAX=	.45 ANGLE= -23.2
	14	-.03	.03	1.78	2.61	1.01
		.45	.80	-.04	.06	-.25
TOP :	SMAX=	.52	SMIN=	.23	TMAX=	.14 ANGLE= 16.2
BOTT:	SMAX=	.06	SMIN=	-.77	TMAX=	.41 ANGLE= 90.0
	101	-.01	-.03	-2.62	-5.95	.31
		.95	.80	.08	-.09	-.05
TOP :	SMAX=	-.36	SMIN=	-1.08	TMAX=	.36 ANGLE= .2
BOTT:	SMAX=	.93	SMIN=	.49	TMAX=	.22 ANGLE= 13.7

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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MAXY FGY		
102		.00	-.02	-1.54	-3.46	.19		
		.56	.47	.05	-.05	-.03		
TOP :	SMAX=	-.21	SMIN=	-.63	TMAX=	.21	ANGLE=	-.2
BOTT:	SMAX=	.54	SMIN=	.29	TMAX=	.13	ANGLE=	15.9
103		.00	-.02	-1.20	-3.02	.17		
		.48	.42	.05	-.04	-.03		
TOP :	SMAX=	-.15	SMIN=	-.54	TMAX=	.19	ANGLE=	-.6
BOTT:	SMAX=	.48	SMIN=	.23	TMAX=	.12	ANGLE=	14.6
104		.00	-.02	-1.41	-3.21	.01		
		.52	.42	.03	-.05	-.02		
TOP :	SMAX=	-.20	SMIN=	-.59	TMAX=	.19	ANGLE=	-2.2
BOTT:	SMAX=	.48	SMIN=	.26	TMAX=	.11	ANGLE=	4.4
105		.00	-.02	-1.93	-4.41	.24		
		.71	.60	.06	-.07	-.04		
TOP :	SMAX=	-.26	SMIN=	-.80	TMAX=	.27	ANGLE=	-.3
BOTT:	SMAX=	.69	SMIN=	.36	TMAX=	.16	ANGLE=	14.9
106		-.02	-.01	-.76	.82	-.11		
		.36	.43	.10	-.03	-.17		
TOP :	SMAX=	.24	SMIN=	-.17	TMAX=	.20	ANGLE=	35.2
BOTT:	SMAX=	.28	SMIN=	-.22	TMAX=	.25	ANGLE=	-19.4
107		-.01	-.01	-.08	.34	-.54		
		.31	.08	.01	-.01	-.09		
TOP :	SMAX=	.20	SMIN=	-.16	TMAX=	.18	ANGLE=	90.0
BOTT:	SMAX=	.02	SMIN=	-.06	TMAX=	.04	ANGLE=	90.0
108		-.02	-.02	-2.39	-6.19	.91		
		1.00	1.01	.08	-.09	-.19		
TOP :	SMAX=	-.31	SMIN=	-1.12	TMAX=	.40	ANGLE=	-3.1
BOTT:	SMAX=	1.13	SMIN=	.30	TMAX=	.42	ANGLE=	28.1
109		-.02	-.11	-10.26	-23.41	1.26		
		3.77	3.17	.32	-.36	-.22		
TOP :	SMAX=	-1.39	SMIN=	-4.27	TMAX=	1.44	ANGLE=	-.3
BOTT:	SMAX=	3.65	SMIN=	1.92	TMAX=	.87	ANGLE=	15.0
338	15	.05	.05	4.24	10.06	-.58		
		1.71	1.23	.09	.27	-.06		
TOP :	SMAX=	1.96	SMIN=	.77	TMAX=	.59	ANGLE=	7.7
BOTT:	SMAX=	-.62	SMIN=	-1.41	TMAX=	.40	ANGLE=	2.5
2		.00	.01	.43	1.27	-.05		
		.21	.17	.00	.02	.00		
TOP :	SMAX=	.23	SMIN=	.07	TMAX=	.08	ANGLE=	3.5
BOTT:	SMAX=	-.07	SMIN=	-.19	TMAX=	.06	ANGLE=	3.2
3		.00	.00	.30	.86	-.06		
		.14	.12	.00	.01	.00		
TOP :	SMAX=	.16	SMIN=	.05	TMAX=	.05	ANGLE=	4.6
BOTT:	SMAX=	-.05	SMIN=	-.13	TMAX=	.04	ANGLE=	90.0
4		.00	.00	.16	.46	-.04		
		.08	.06	.00	.01	.00		
TOP :	SMAX=	.09	SMIN=	.03	TMAX=	.03	ANGLE=	90.0
BOTT:	SMAX=	-.02	SMIN=	-.07	TMAX=	.02	ANGLE=	90.0
5		.00	-.01	-.90	-2.70	.17		
		.44	.36	.00	-.03	.02		
TOP :	SMAX=	-.14	SMIN=	-.49	TMAX=	.17	ANGLE=	7.6
BOTT:	SMAX=	.42	SMIN=	.15	TMAX=	.13	ANGLE=	2.5
6		.00	.00	-.01	-.16	.04		
		.02	.03	.00	.01	.00		
TOP :	SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0
BOTT:	SMAX=	.04	SMIN=	.01	TMAX=	.02	ANGLE=	90.0
7		.00	.00	.20	-.24	.18		
		.08	.10	.03	.05	.00		
TOP :	SMAX=	.08	SMIN=	.00	TMAX=	.04	ANGLE=	90.0
BOTT:	SMAX=	.10	SMIN=	-.01	TMAX=	.05	ANGLE=	90.0

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.02	.00	.44	1.36	.62					
		.30	.24	.02	.01	.02					
TOP :	SMAX=	.31	SMIN=	.02	TMAX=	.15	ANGLE=	-30.0			
BOTT:	SMAX=	-.02	SMIN=	-.25	TMAX=	.11	ANGLE=	-22.7			
	9	.00	-.01	-.57	-1.71	-.12					
		.28	.23	-.01	-.03	.00					
TOP :	SMAX=	-.10	SMIN=	-.32	TMAX=	.11	ANGLE=	-5.9			
BOTT:	SMAX=	.26	SMIN=	.09	TMAX=	.09	ANGLE=	-5.5			
	10	-.02	-.02	-.95	-.84	-1.66					
		.64	.38	-.03	-.10	-.07					
TOP :	SMAX=	.13	SMIN=	-.56	TMAX=	.35	ANGLE=	90.0			
BOTT:	SMAX=	.29	SMIN=	-.13	TMAX=	.21	ANGLE=	90.0			
	11	.02	.02	.95	.84	1.66					
		.64	.38	.03	.10	.07					
TOP :	SMAX=	.56	SMIN=	-.13	TMAX=	.35	ANGLE=	90.0			
BOTT:	SMAX=	.13	SMIN=	-.29	TMAX=	.21	ANGLE=	90.0			
	12	.00	.00	-.04	-.14	-.01					
		.02	.02	.00	.00	.00					
TOP :	SMAX=	-.01	SMIN=	-.03	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.02	SMIN=	.01	TMAX=	.01	ANGLE=	90.0			
	13	-.06	-.05	-2.84	-2.88	-3.77					
		1.32	1.15	-.38	-.26	.02					
TOP :	SMAX=	-.19	SMIN=	-1.40	TMAX=	.61	ANGLE=	42.3			
BOTT:	SMAX=	.81	SMIN=	-.50	TMAX=	.65	ANGLE=	-42.2			
	14	-.09	.06	3.15	8.43	-5.31					
		2.39	1.71	-.44	.30	-.10					
TOP :	SMAX=	2.18	SMIN=	-.38	TMAX=	1.28	ANGLE=	25.3			
BOTT:	SMAX=	-.25	SMIN=	-1.82	TMAX=	.78	ANGLE=	42.5			
	101	-.02	-.05	-4.12	-12.35	-.71					
		2.01	1.64	-.05	-.20	-.02					
TOP :	SMAX=	-.72	SMIN=	-2.27	TMAX=	.77	ANGLE=	-5.0			
BOTT:	SMAX=	1.86	SMIN=	.63	TMAX=	.62	ANGLE=	-4.7			
	102	-.01	-.03	-2.58	-7.82	-.47					
		1.27	1.05	-.03	-.12	-.01					
TOP :	SMAX=	-.45	SMIN=	-1.43	TMAX=	.49	ANGLE=	-5.4			
BOTT:	SMAX=	1.19	SMIN=	.39	TMAX=	.40	ANGLE=	-4.7			
	103	-.01	-.03	-2.41	-7.88	-.36					
		1.25	1.09	-.01	-.09	-.01					
TOP :	SMAX=	-.40	SMIN=	-1.40	TMAX=	.50	ANGLE=	-4.2			
BOTT:	SMAX=	1.23	SMIN=	.39	TMAX=	.42	ANGLE=	-3.2			
	104	.00	-.03	-2.22	-6.61	-.01					
		1.08	.86	-.02	-.12	.00					
TOP :	SMAX=	-.39	SMIN=	-1.22	TMAX=	.42	ANGLE=	.1			
BOTT:	SMAX=	.98	SMIN=	.35	TMAX=	.32	ANGLE=	-.4			
	105	-.01	-.04	-3.02	-9.07	-.60					
		1.48	1.21	-.04	-.15	-.02					
TOP :	SMAX=	-.53	SMIN=	-1.67	TMAX=	.57	ANGLE=	-5.9			
BOTT:	SMAX=	1.37	SMIN=	.46	TMAX=	.46	ANGLE=	-5.2			
	106	-.02	-.03	-1.40	-1.71	-3.33					
		1.15	.86	-.18	-.13	-.06					
TOP :	SMAX=	.21	SMIN=	-1.03	TMAX=	.62	ANGLE=	90.0			
BOTT:	SMAX=	.60	SMIN=	-.39	TMAX=	.49	ANGLE=	-41.9			
	107	.00	-.01	-.45	-.87	-1.66					
		.51	.52	-.15	-.03	.01					
TOP :	SMAX=	.07	SMIN=	-.47	TMAX=	.27	ANGLE=	90.0			
BOTT:	SMAX=	.32	SMIN=	-.28	TMAX=	.30	ANGLE=	-35.5			
	108	-.07	-.03	-3.56	-11.17	-3.66					
		2.08	1.87	-.28	-.10	-.08					
TOP :	SMAX=	-.54	SMIN=	-2.30	TMAX=	.88	ANGLE=	-25.9			
BOTT:	SMAX=	1.93	SMIN=	.14	TMAX=	.90	ANGLE=	-18.1			
	109	-.07	-.19	-16.05	-48.09	-3.16					
		7.86	6.40	-.21	-.80	-.09					
TOP :	SMAX=	-2.82	SMIN=	-8.88	TMAX=	3.03	ANGLE=	-5.9			
BOTT:	SMAX=	7.26	SMIN=	2.43	TMAX=	2.41	ANGLE=	-5.2			

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
341	15	-.09	-.35	-6.79	.09						
		3.62	3.07	.12	.08						
	TOP : SMAX=	1.61	SMIN=	-2.53	TMAX=	2.07	ANGLE=	37.3			
	BOTT: SMAX=	2.39	SMIN=	-1.08	TMAX=	1.73	ANGLE=	35.0			
	2	.00	-.02	-.20	.72						
		.27	.24	.01	.01						
	TOP : SMAX=	.20	SMIN=	-.10	TMAX=	.15	ANGLE=	29.4			
	BOTT: SMAX=	.10	SMIN=	-.17	TMAX=	.13	ANGLE=	28.0			
	3	-.01	-.02	-.18	.47						
		.16	.15	.01	.01						
	TOP : SMAX=	.12	SMIN=	-.06	TMAX=	.09	ANGLE=	27.6			
	BOTT: SMAX=	.07	SMIN=	-.11	TMAX=	.09	ANGLE=	25.5			
	4	-.01	-.01	-.13	.26						
		.07	.06	.00	.00						
	TOP : SMAX=	.06	SMIN=	-.03	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	.03	SMIN=	-.04	TMAX=	.04	ANGLE=	90.0			
	5	.02	-.01	-.18	-2.95						
		.70	.66	.02	.00						
	TOP : SMAX=	.13	SMIN=	-.63	TMAX=	.38	ANGLE=	24.8			
	BOTT: SMAX=	.62	SMIN=	-.08	TMAX=	.35	ANGLE=	25.8			
	6	.00	-.01	-.36	-.83						
		.13	.13	.01	.00						
	TOP : SMAX=	-.05	SMIN=	-.15	TMAX=	.05	ANGLE=	90.0			
	BOTT: SMAX=	.15	SMIN=	.05	TMAX=	.05	ANGLE=	90.0			
	7	-.02	-.04	-1.71	-2.81						
		.56	.62	.04	-.01						
	TOP : SMAX=	-.12	SMIN=	-.61	TMAX=	.25	ANGLE=	-30.8			
	BOTT: SMAX=	.67	SMIN=	.11	TMAX=	.28	ANGLE=	-38.4			
	8	-.04	-.08	-.99	2.63						
		.52	.57	.06	.02						
	TOP : SMAX=	.46	SMIN=	-.11	TMAX=	.28	ANGLE=	3.8			
	BOTT: SMAX=	.22	SMIN=	-.42	TMAX=	.32	ANGLE=	-.5			
	9	.01	.02	.15	-1.14						
		.27	.28	-.01	-.01						
	TOP : SMAX=	.06	SMIN=	-.24	TMAX=	.15	ANGLE=	22.9			
	BOTT: SMAX=	.23	SMIN=	-.08	TMAX=	.16	ANGLE=	22.4			
	10	.00	.05	.45	-2.50						
		.45	.60	-.14	-.03						
	TOP : SMAX=	-.04	SMIN=	-.47	TMAX=	.21	ANGLE=	14.3			
	BOTT: SMAX=	.43	SMIN=	-.26	TMAX=	.34	ANGLE=	14.0			
	11	.00	-.05	-.45	2.50						
		.45	.60	.14	.03						
	TOP : SMAX=	.47	SMIN=	.04	TMAX=	.21	ANGLE=	14.3			
	BOTT: SMAX=	.26	SMIN=	-.43	TMAX=	.34	ANGLE=	14.0			
	12	.00	.00	.02	-.04						
		.01	.01	.00	.00						
	TOP : SMAX=	.00	SMIN=	-.01	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.01	SMIN=	-.01	TMAX=	.01	ANGLE=	90.0			
	13	.01	.04	-.53	-4.88						
		1.87	1.92	-1.37	-.01						
	TOP : SMAX=	-.28	SMIN=	-2.00	TMAX=	.86	ANGLE=	-34.3			
	BOTT: SMAX=	.86	SMIN=	-1.34	TMAX=	1.10	ANGLE=	9.5			
	14	.23	.45	7.26	-9.65						
		2.70	4.32	-1.17	-.04						
	TOP : SMAX=	.68	SMIN=	-2.29	TMAX=	1.49	ANGLE=	-27.7			
	BOTT: SMAX=	2.08	SMIN=	-2.89	TMAX=	2.48	ANGLE=	-18.7			
	101	.06	.14	.94	-8.66						
		2.07	2.11	-.08	-.04						
	TOP : SMAX=	.42	SMIN=	-1.83	TMAX=	1.12	ANGLE=	23.1			
	BOTT: SMAX=	1.76	SMIN=	-.59	TMAX=	1.17	ANGLE=	22.7			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.03	.09	.37	-5.85						2.81
		1.28	1.31	-.06	-.03						-.01
TOP :	SMAX=	.18	SMIN=	-1.18	TMAX=	.68	ANGLE=				21.2
BOTT:	SMAX=	1.13	SMIN=	-.30	TMAX=	.71	ANGLE=				20.9
103		.02	.06	-.71	-7.43						1.78
		1.32	1.26	-.03	-.04						.01
TOP :	SMAX=	-.07	SMIN=	-1.35	TMAX=	.64	ANGLE=				14.4
BOTT:	SMAX=	1.27	SMIN=	.02	TMAX=	.62	ANGLE=				13.5
104		.00	.04	-.13	-3.08						2.88
		.93	1.01	-.01	-.01						-.03
TOP :	SMAX=	.24	SMIN=	-.79	TMAX=	.51	ANGLE=				30.9
BOTT:	SMAX=	.82	SMIN=	-.31	TMAX=	.56	ANGLE=				32.0
105		.04	.11	.78	-6.10						3.48
		1.46	1.50	-.07	-.03						-.01
TOP :	SMAX=	.30	SMIN=	-1.29	TMAX=	.79	ANGLE=				22.9
BOTT:	SMAX=	1.23	SMIN=	-.44	TMAX=	.84	ANGLE=				22.4
106		-.02	-.07	-3.01	-6.91						-1.44
		1.27	1.35	-.73	.00						.00
TOP :	SMAX=	-.95	SMIN=	-1.44	TMAX=	.25	ANGLE=				90.0
BOTT:	SMAX=	1.19	SMIN=	-.27	TMAX=	.73	ANGLE=				-9.5
107		-.02	-.12	-3.46	-4.41						-2.23
		1.18	1.04	-.59	.03						.03
TOP :	SMAX=	-.52	SMIN=	-1.35	TMAX=	.42	ANGLE=				28.1
BOTT:	SMAX=	.93	SMIN=	-.18	TMAX=	.56	ANGLE=				-22.9
108		.18	.42	4.95	-15.20						1.82
		2.73	3.52	-.71	-.07						.05
TOP :	SMAX=	.16	SMIN=	-2.65	TMAX=	1.41	ANGLE=				7.3
BOTT:	SMAX=	2.48	SMIN=	-1.55	TMAX=	2.01	ANGLE=				3.6
109		.22	.61	4.13	-32.40						18.48
		7.74	7.99	-.38	-.15						-.06
TOP :	SMAX=	1.58	SMIN=	-6.83	TMAX=	4.21	ANGLE=				22.9
BOTT:	SMAX=	6.54	SMIN=	-2.37	TMAX=	4.45	ANGLE=				22.4
342	15	.50	-.41	-23.18	-39.29						2.30
		5.67	5.82	-.16	.09						-.10
TOP :	SMAX=	-3.99	SMIN=	-6.49	TMAX=	1.25	ANGLE=				6.6
BOTT:	SMAX=	6.72	SMIN=	3.62	TMAX=	1.55	ANGLE=				9.1
2		.02	-.03	-1.43	-1.94						-.31
		.30	.31	-.01	.01						.00
TOP :	SMAX=	-.22	SMIN=	-.34	TMAX=	.06	ANGLE=				90.0
BOTT:	SMAX=	.35	SMIN=	.21	TMAX=	.07	ANGLE=				-21.0
3		.02	-.02	-1.01	-1.28						-.26
		.21	.21	.00	.01						.00
TOP :	SMAX=	-.14	SMIN=	-.24	TMAX=	.05	ANGLE=				90.0
BOTT:	SMAX=	.24	SMIN=	.14	TMAX=	.05	ANGLE=				90.0
4		.01	-.01	-.56	-.62						-.19
		.11	.11	.00	.01						.00
TOP :	SMAX=	-.07	SMIN=	-.13	TMAX=	.03	ANGLE=				90.0
BOTT:	SMAX=	.13	SMIN=	.07	TMAX=	.03	ANGLE=				90.0
5		-.10	.12	2.39	4.36						.95
		.69	.69	.02	.00						.00
TOP :	SMAX=	.79	SMIN=	.35	TMAX=	.22	ANGLE=				-22.9
BOTT:	SMAX=	-.32	SMIN=	-.79	TMAX=	.24	ANGLE=				-20.9
6		.02	-.01	-.67	-2.13						.44
		.35	.33	.00	-.01						.01
TOP :	SMAX=	-.09	SMIN=	-.38	TMAX=	.15	ANGLE=				16.2
BOTT:	SMAX=	.36	SMIN=	.09	TMAX=	.14	ANGLE=				14.7
7		.17	-.12	-4.28	-13.73						3.50
		2.36	2.18	-.01	-.04						.07
TOP :	SMAX=	-.49	SMIN=	-2.57	TMAX=	1.04	ANGLE=				19.6
BOTT:	SMAX=	2.40	SMIN=	.55	TMAX=	.93	ANGLE=				16.7

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
8		.13	-.19	-10.87	-7.87						2.59
		1.58	2.00	.19	.04						-.10
	TOP : SMAX=	-1.07	SMIN=	-1.82	TMAX=	.37	ANGLE=	-30.9			
	BOTT: SMAX=	2.30	SMIN=	1.05	TMAX=	.62	ANGLE=	-29.4			
9		-.04	.05	1.81	3.16						.35
		.46	.48	-.01	-.01						.00
	TOP : SMAX=	.53	SMIN=	.28	TMAX=	.13	ANGLE=	-13.3			
	BOTT: SMAX=	-.29	SMIN=	-.55	TMAX=	.13	ANGLE=	-13.8			
10		-.06	.05	4.25	6.21						.42
		.88	.98	-.11	-.03						-.01
	TOP : SMAX=	1.01	SMIN=	.59	TMAX=	.21	ANGLE=	-7.9			
	BOTT: SMAX=	-.79	SMIN=	-1.09	TMAX=	.15	ANGLE=	-16.6			
11		.06	-.05	-4.25	-6.21						-.42
		.88	.98	.11	.03						.01
	TOP : SMAX=	-.59	SMIN=	-1.01	TMAX=	.21	ANGLE=	-7.9			
	BOTT: SMAX=	1.09	SMIN=	.79	TMAX=	.15	ANGLE=	-16.6			
12		.00	.00	.13	.25						.02
		.04	.04	.00	.00						.00
	TOP : SMAX=	.04	SMIN=	.02	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	-.02	SMIN=	-.04	TMAX=	.01	ANGLE=	90.0			
13		-.08	-.02	4.15	10.54						2.07
		2.64	2.02	-1.55	.22						.12
	TOP : SMAX=	2.05	SMIN=	-.93	TMAX=	1.49	ANGLE=	-9.1			
	BOTT: SMAX=	-1.47	SMIN=	-2.31	TMAX=	.42	ANGLE=	16.3			
14		-.68	1.09	74.51	35.83						-27.59
		10.72	16.13	-2.53	-.19						.91
	TOP : SMAX=	12.06	SMIN=	3.61	TMAX=	4.23	ANGLE=	-30.4			
	BOTT: SMAX=	-3.51	SMIN=	-17.60	TMAX=	7.04	ANGLE=	-25.7			
101		-.32	.38	12.97	22.63						2.65
		3.32	3.41	-.04	-.05						-.01
	TOP : SMAX=	3.83	SMIN=	2.01	TMAX=	.91	ANGLE=	-14.1			
	BOTT: SMAX=	-2.08	SMIN=	-3.94	TMAX=	.93	ANGLE=	-14.7			
102		-.18	.22	7.63	12.51						1.93
		1.87	1.94	-.03	-.04						.00
	TOP : SMAX=	2.16	SMIN=	1.13	TMAX=	.51	ANGLE=	-19.1			
	BOTT: SMAX=	-1.19	SMIN=	-2.24	TMAX=	.52	ANGLE=	-19.2			
103		-.06	.13	4.75	3.23						4.38
		1.50	1.39	-.04	-.07						.05
	TOP : SMAX=	1.40	SMIN=	-.18	TMAX=	.79	ANGLE=	40.0			
	BOTT: SMAX=	-.03	SMIN=	-1.41	TMAX=	.69	ANGLE=	40.2			
104		-.09	.08	-.53	7.92						3.65
		1.59	1.87	.12	.00						-.09
	TOP : SMAX=	1.51	SMIN=	-.15	TMAX=	.83	ANGLE=	-19.4			
	BOTT: SMAX=	.48	SMIN=	-1.59	TMAX=	1.03	ANGLE=	-21.3			
105		-.23	.27	9.62	16.74						1.86
		2.45	2.52	-.04	-.04						-.01
	TOP : SMAX=	2.82	SMIN=	1.50	TMAX=	.66	ANGLE=	-13.4			
	BOTT: SMAX=	-1.56	SMIN=	-2.91	TMAX=	.67	ANGLE=	-14.1			
106		.06	-.05	-2.22	-2.26						3.39
		1.54	1.34	-.93	.12						.00
	TOP : SMAX=	-.01	SMIN=	-1.55	TMAX=	.77	ANGLE=	-23.7			
	BOTT: SMAX=	.74	SMIN=	-.81	TMAX=	.77	ANGLE=	23.5			
107		.12	-.09	-6.46	-8.47						2.98
		1.89	1.68	-.82	.15						.01
	TOP : SMAX=	-.98	SMIN=	-2.18	TMAX=	.60	ANGLE=	-29.0			
	BOTT: SMAX=	1.72	SMIN=	.10	TMAX=	.81	ANGLE=	18.2			
108		-.73	1.00	53.60	46.34						-10.64
		7.93	10.06	-1.33	-.16						.44
	TOP : SMAX=	8.92	SMIN=	6.25	TMAX=	1.34	ANGLE=	90.0			
	BOTT: SMAX=	-6.56	SMIN=	-11.58	TMAX=	2.51	ANGLE=	-30.9			
109		-1.22	1.42	51.06	88.84						9.87
		12.99	13.37	-.20	-.19						-.05
	TOP : SMAX=	14.99	SMIN=	7.93	TMAX=	3.53	ANGLE=	-13.4			
	BOTT: SMAX=	-8.28	SMIN=	-15.43	TMAX=	3.57	ANGLE=	-14.2			



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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
343	15	-.07 4.36	.06 3.96	-6.59 -.26	12.10 .10	10.82 .00					
	TOP :	SMAX= 2.88	SMIN=	-2.13	TMAX= 2.51	ANGLE= -23.1					
	BOTT:	SMAX= 1.73	SMIN=	-2.81	TMAX= 2.27	ANGLE= -26.3					
	2	.02 .30	.03 .31	-1.43 -.01	-1.94 .01	.31 .00					
	TOP :	SMAX= -.22	SMIN=	-.34	TMAX= .06	ANGLE= 90.0					
	BOTT:	SMAX= .35	SMIN=	.21	TMAX= .07	ANGLE= 21.1					
	3	.02 .21	.02 .21	-1.01 .00	-1.28 .01	.26 .00					
	TOP :	SMAX= -.14	SMIN=	-.24	TMAX= .05	ANGLE= 90.0					
	BOTT:	SMAX= .24	SMIN=	.14	TMAX= .05	ANGLE= 90.0					
	4	.01 .11	.01 .11	-.56 .00	-.62 .00	.19 .00					
	TOP :	SMAX= -.07	SMIN=	-.13	TMAX= .03	ANGLE= 90.0					
	BOTT:	SMAX= .13	SMIN=	.07	TMAX= .03	ANGLE= 90.0					
	5	-.10 .69	-.12 .69	2.39 .02	4.36 .00	-.95 .00					
	TOP :	SMAX= .79	SMIN=	.35	TMAX= .22	ANGLE= 22.9					
	BOTT:	SMAX= -.32	SMIN=	-.79	TMAX= .24	ANGLE= 20.9					
	6	-.02 .33	-.01 .31	.64 .00	1.99 .00	.44 .01					
	TOP :	SMAX= .36	SMIN=	.08	TMAX= .14	ANGLE= -17.3					
	BOTT:	SMAX= -.09	SMIN=	-.35	TMAX= .13	ANGLE= -15.5					
	7	-.17 2.64	-.12 2.36	5.08 .02	15.53 .10	3.51 .07					
	TOP :	SMAX= 2.90	SMIN=	.66	TMAX= 1.12	ANGLE= -17.8					
	BOTT:	SMAX= -.68	SMIN=	-2.63	TMAX= .98	ANGLE= -15.9					
	8	.13 1.58	.19 2.00	-10.87 .19	-7.87 .04	-2.59 .10					
	TOP :	SMAX= -1.07	SMIN=	-1.82	TMAX= .37	ANGLE= 30.9					
	BOTT:	SMAX= 2.30	SMIN=	1.05	TMAX= .62	ANGLE= 29.4					
	9	-.04 .46	-.05 .47	1.81 -.01	3.16 -.01	-.35 .00					
	TOP :	SMAX= .53	SMIN=	.28	TMAX= .13	ANGLE= 13.3					
	BOTT:	SMAX= -.29	SMIN=	-.55	TMAX= .13	ANGLE= 13.8					
	10	-.06 .88	-.05 .98	4.25 -.11	6.21 -.03	-.42 .01					
	TOP :	SMAX= 1.01	SMIN=	.59	TMAX= .21	ANGLE= 7.9					
	BOTT:	SMAX= -.79	SMIN=	-1.09	TMAX= .15	ANGLE= 16.6					
	11	.06 .88	.05 .98	-4.25 .11	-6.21 .03	.42 -.01					
	TOP :	SMAX= -.59	SMIN=	-1.01	TMAX= .21	ANGLE= 7.9					
	BOTT:	SMAX= 1.09	SMIN=	.79	TMAX= .15	ANGLE= 16.6					
	12	.00 .04	.00 .04	.13 .00	.25 .00	-.02 .00					
	TOP :	SMAX= .04	SMIN=	.02	TMAX= .01	ANGLE= 90.0					
	BOTT:	SMAX= -.02	SMIN=	-.04	TMAX= .01	ANGLE= 90.0					
	13	-.08 2.64	.02 2.02	4.15 -1.55	10.54 .22	-2.07 -.12					
	TOP :	SMAX= 2.05	SMIN=	-.93	TMAX= 1.49	ANGLE= 9.1					
	BOTT:	SMAX= -1.47	SMIN=	-2.31	TMAX= .42	ANGLE= -16.3					
	14	-.68 10.72	-1.09 16.13	74.51 -2.53	35.83 -.19	27.59 -.91					
	TOP :	SMAX= 12.06	SMIN=	3.61	TMAX= 4.23	ANGLE= 30.4					
	BOTT:	SMAX= -3.51	SMIN=	-17.60	TMAX= 7.04	ANGLE= 25.7					
	101	-.32 3.32	-.38 3.41	12.97 -.04	22.62 -.05	-2.66 .01					
	TOP :	SMAX= 3.83	SMIN=	2.01	TMAX= .91	ANGLE= 14.1					
	BOTT:	SMAX= -2.08	SMIN=	-3.94	TMAX= .93	ANGLE= 14.7					

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		-.21	-.24	8.68	15.80						
		2.28	2.34	-.03	-.03						
TOP :	SMAX=	2.64	SMIN=	1.38	TMAX=	.63	ANGLE=	8.9			
BOTT:	SMAX=	-1.44	SMIN=	-2.70	TMAX=	.63	ANGLE=	10.1			
103		-.33	-.32	12.23	26.63						
		3.92	3.81	-.02	.05						
TOP :	SMAX=	4.52	SMIN=	1.99	TMAX=	1.26	ANGLE=	-6.2			
BOTT:	SMAX=	-2.05	SMIN=	-4.39	TMAX=	1.17	ANGLE=	-3.4			
104		-.09	-.08	-.53	7.91						
		1.58	1.87	.12	.00						
TOP :	SMAX=	1.50	SMIN=	-.15	TMAX=	.83	ANGLE=	19.4			
BOTT:	SMAX=	.48	SMIN=	-1.59	TMAX=	1.03	ANGLE=	21.3			
105		-.23	-.27	9.62	16.73						
		2.45	2.52	-.04	-.04						
TOP :	SMAX=	2.82	SMIN=	1.49	TMAX=	.66	ANGLE=	13.4			
BOTT:	SMAX=	-1.56	SMIN=	-2.91	TMAX=	.67	ANGLE=	14.1			
106		-.23	-.13	6.07	23.43						
		4.10	3.43	-.98	.12						
TOP :	SMAX=	4.08	SMIN=	-.02	TMAX=	2.05	ANGLE=	-6.8			
BOTT:	SMAX=	-1.82	SMIN=	-3.95	TMAX=	1.06	ANGLE=	-16.4			
107		-.16	-.08	1.83	17.22						
		3.47	2.62	-.87	.15						
TOP :	SMAX=	3.10	SMIN=	-.65	TMAX=	1.87	ANGLE=	-8.3			
BOTT:	SMAX=	-.93	SMIN=	-2.96	TMAX=	1.01	ANGLE=	-20.3			
108		-.73	-1.00	53.59	46.33						
		7.93	10.06	-1.33	-.16						
TOP :	SMAX=	8.92	SMIN=	6.25	TMAX=	1.34	ANGLE=	90.0			
BOTT:	SMAX=	-6.56	SMIN=	-11.58	TMAX=	2.51	ANGLE=	30.8			
109		-1.22	-1.42	51.05	88.79						
		12.99	13.37	-.20	-.19						
TOP :	SMAX=	14.99	SMIN=	7.93	TMAX=	3.53	ANGLE=	13.5			
BOTT:	SMAX=	-8.28	SMIN=	-15.42	TMAX=	3.57	ANGLE=	14.2			
344	15	-.03	.07	.17	11.71						
		2.96	2.43	-.17	.08						
TOP :	SMAX=	2.56	SMIN=	-.68	TMAX=	1.62	ANGLE=	-23.9			
BOTT:	SMAX=	.23	SMIN=	-2.30	TMAX=	1.27	ANGLE=	-24.3			
2		.00	.02	-.20	.72						
		.27	.24	.01	.01						
TOP :	SMAX=	.20	SMIN=	-.10	TMAX=	.15	ANGLE=	-29.4			
BOTT:	SMAX=	.10	SMIN=	-.17	TMAX=	.13	ANGLE=	-28.0			
3		-.01	.02	-.18	.47						
		.16	.15	.01	.01						
TOP :	SMAX=	.12	SMIN=	-.06	TMAX=	.09	ANGLE=	-27.6			
BOTT:	SMAX=	.07	SMIN=	-.11	TMAX=	.09	ANGLE=	-25.5			
4		-.01	.01	-.13	.26						
		.07	.06	.00	.00						
TOP :	SMAX=	.06	SMIN=	-.03	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	.03	SMIN=	-.04	TMAX=	.04	ANGLE=	90.0			
5		.02	.01	-.18	-2.95						
		.70	.66	.02	.00						
TOP :	SMAX=	.13	SMIN=	-.63	TMAX=	.38	ANGLE=	-24.8			
BOTT:	SMAX=	.62	SMIN=	-.08	TMAX=	.35	ANGLE=	-25.8			
6		.00	-.01	.32	.69						
		.11	.11	-.01	.00						
TOP :	SMAX=	.13	SMIN=	.04	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	-.04	SMIN=	-.13	TMAX=	.04	ANGLE=	90.0			
7		.02	-.04	1.49	1.63						
		.46	.54	-.04	.01						
TOP :	SMAX=	.47	SMIN=	.03	TMAX=	.22	ANGLE=	90.0			
BOTT:	SMAX=	.00	SMIN=	-.54	TMAX=	.27	ANGLE=	90.0			

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	-.04	.08	-.99	2.63						.10
		.52	.57	.06	.02						.02
TOP :	SMAX=	.46	SMIN=	-.11	TMAX=	.28	ANGLE=				-3.8
BOTT:	SMAX=	.22	SMIN=	-.42	TMAX=	.32	ANGLE=				.5
	9	.01	-.02	.15	-1.14						-.65
		.27	.28	-.01	-.01						.00
TOP :	SMAX=	.06	SMIN=	-.24	TMAX=	.15	ANGLE=				-22.9
BOTT:	SMAX=	.23	SMIN=	-.08	TMAX=	.16	ANGLE=				-22.4
	10	.00	-.05	.45	-2.50						-.79
		.45	.60	-.14	-.03						.03
TOP :	SMAX=	-.04	SMIN=	-.47	TMAX=	.21	ANGLE=				-14.3
BOTT:	SMAX=	.43	SMIN=	-.26	TMAX=	.34	ANGLE=				-14.0
	11	.00	.05	-.45	2.50						.79
		.45	.60	.14	.03						-.03
TOP :	SMAX=	.47	SMIN=	.04	TMAX=	.21	ANGLE=				-14.3
BOTT:	SMAX=	.26	SMIN=	-.43	TMAX=	.34	ANGLE=				-14.0
	12	.00	.00	.02	-.04						-.03
		.01	.01	.00	.00						.00
TOP :	SMAX=	.00	SMIN=	-.01	TMAX=	.01	ANGLE=				90.0
BOTT:	SMAX=	.01	SMIN=	-.01	TMAX=	.01	ANGLE=				90.0
	13	.01	-.04	-.53	-4.88						-3.47
		1.87	1.92	-1.37	-.01						-.22
TOP :	SMAX=	-.28	SMIN=	-2.00	TMAX=	.86	ANGLE=				34.3
BOTT:	SMAX=	.86	SMIN=	-1.34	TMAX=	1.10	ANGLE=				-9.5
	14	.23	-.45	7.26	-9.65						8.19
		2.70	4.32	-1.17	-.04						-.14
TOP :	SMAX=	.68	SMIN=	-2.29	TMAX=	1.49	ANGLE=				27.7
BOTT:	SMAX=	2.08	SMIN=	-2.89	TMAX=	2.48	ANGLE=				18.7
	101	.06	-.14	.94	-8.66						-4.94
		2.07	2.11	-.08	-.04						.01
TOP :	SMAX=	.42	SMIN=	-1.83	TMAX=	1.12	ANGLE=				-23.1
BOTT:	SMAX=	1.76	SMIN=	-.59	TMAX=	1.17	ANGLE=				-22.7
	102	.04	-.10	.92	-4.63						-3.10
		1.21	1.27	-.07	-.02						.01
TOP :	SMAX=	.32	SMIN=	-1.02	TMAX=	.67	ANGLE=				-24.4
BOTT:	SMAX=	.98	SMIN=	-.45	TMAX=	.72	ANGLE=				-23.8
	103	.05	-.13	1.85	-3.88						-4.13
		1.38	1.54	-.09	-.01						.03
TOP :	SMAX=	.57	SMIN=	-1.01	TMAX=	.79	ANGLE=				-28.2
BOTT:	SMAX=	1.00	SMIN=	-.77	TMAX=	.89	ANGLE=				-27.1
	104	.00	-.04	-.13	-3.08						-2.88
		.93	1.01	-.01	-.01						.03
TOP :	SMAX=	.24	SMIN=	-.79	TMAX=	.51	ANGLE=				-30.9
BOTT:	SMAX=	.82	SMIN=	-.31	TMAX=	.56	ANGLE=				-32.0
	105	.04	-.11	.78	-6.10						-3.48
		1.46	1.50	-.07	-.03						.01
TOP :	SMAX=	.30	SMIN=	-1.29	TMAX=	.79	ANGLE=				-22.9
BOTT:	SMAX=	1.23	SMIN=	-.44	TMAX=	.84	ANGLE=				-22.4
	106	.01	-.07	.47	-1.10						-.78
		.78	1.08	-.88	.00						-.03
TOP :	SMAX=	-.14	SMIN=	-.84	TMAX=	.35	ANGLE=				13.4
BOTT:	SMAX=	.19	SMIN=	-.97	TMAX=	.58	ANGLE=				-5.0
	107	.01	-.02	.02	1.40						.02
		.90	.67	-.74	.03						-.06
TOP :	SMAX=	.27	SMIN=	-.74	TMAX=	.50	ANGLE=				3.1
BOTT:	SMAX=	-.20	SMIN=	-.75	TMAX=	.27	ANGLE=				6.3
	108	.18	-.42	4.95	-15.20						-1.82
		2.73	3.52	-.71	-.07						-.05
TOP :	SMAX=	.16	SMIN=	-2.65	TMAX=	1.41	ANGLE=				-7.3
BOTT:	SMAX=	2.48	SMIN=	-1.55	TMAX=	2.01	ANGLE=				-3.6
	109	.22	-.61	4.12	-32.40						-18.48
		7.74	7.99	-.38	-.15						.06
TOP :	SMAX=	1.58	SMIN=	-6.83	TMAX=	4.21	ANGLE=				-22.9
BOTT:	SMAX=	6.54	SMIN=	-2.36	TMAX=	4.45	ANGLE=				-22.4

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
345	15	-.03	-.07	3.17	6.80						2.03
		1.45	.96	-.15	.06						.24
	TOP :	SMAX= 1.49	SMIN=	.08	TMAX=	.70	ANGLE=	-27.4			
	BOTT:	SMAX= -.66	SMIN=	-1.10	TMAX=	.22	ANGLE=	-13.4			
	2	.00	-.01	.44	1.15						.27
		.21	.16	.00	.02						.02
	TOP :	SMAX= .23	SMIN=	.05	TMAX=	.09	ANGLE=	-21.0			
	BOTT:	SMAX= -.07	SMIN=	-.18	TMAX=	.06	ANGLE=	90.0			
	3	.00	.00	.32	.77						.23
		.15	.11	.00	.01						.01
	TOP :	SMAX= .16	SMIN=	.03	TMAX=	.06	ANGLE=	90.0			
	BOTT:	SMAX= -.04	SMIN=	-.13	TMAX=	.04	ANGLE=	90.0			
	4	.00	.00	.18	.39						.14
		.08	.06	.00	.01						.01
	TOP :	SMAX= .09	SMIN=	.01	TMAX=	.04	ANGLE=	90.0			
	BOTT:	SMAX= -.02	SMIN=	-.07	TMAX=	.02	ANGLE=	90.0			
	5	.01	.00	-.41	-1.50						-.46
		.28	.25	.01	.02						-.03
	TOP :	SMAX= -.01	SMIN=	-.29	TMAX=	.14	ANGLE=	-25.6			
	BOTT:	SMAX= .28	SMIN=	.06	TMAX=	.11	ANGLE=	-13.1			
	6	.00	.00	.02	.20						-.04
		.03	.04	.00	-.01						.00
	TOP :	SMAX= .03	SMIN=	.00	TMAX=	.02	ANGLE=	90.0			
	BOTT:	SMAX= -.01	SMIN=	-.04	TMAX=	.02	ANGLE=	90.0			
	7	.01	-.01	-.16	.04						-.37
		.15	.08	-.02	-.03						-.02
	TOP :	SMAX= .05	SMIN=	-.12	TMAX=	.08	ANGLE=	90.0			
	BOTT:	SMAX= .03	SMIN=	-.06	TMAX=	.04	ANGLE=	90.0			
	8	.00	-.02	1.27	3.25						-.10
		.53	.42	.02	.06						.01
	TOP :	SMAX= .60	SMIN=	.23	TMAX=	.18	ANGLE=	.4			
	BOTT:	SMAX= -.19	SMIN=	-.48	TMAX=	.15	ANGLE=	6.1			
	9	.00	.01	-.50	-1.61						-.13
		.26	.22	-.01	-.02						-.01
	TOP :	SMAX= -.09	SMIN=	-.29	TMAX=	.10	ANGLE=	-8.4			
	BOTT:	SMAX= .25	SMIN=	.08	TMAX=	.09	ANGLE=	-4.7			
	10	.01	.02	-1.65	-3.68						.27
		.59	.49	-.04	-.05						.02
	TOP :	SMAX= -.31	SMIN=	-.68	TMAX=	.19	ANGLE=	10.7			
	BOTT:	SMAX= .56	SMIN=	.23	TMAX=	.17	ANGLE=	3.6			
	11	-.01	-.02	1.65	3.68						-.27
		.59	.49	.04	.05						-.02
	TOP :	SMAX= .68	SMIN=	.31	TMAX=	.19	ANGLE=	10.7			
	BOTT:	SMAX= -.23	SMIN=	-.56	TMAX=	.17	ANGLE=	3.6			
	12	.00	.00	-.04	-.14						-.01
		.02	.02	.00	.00						.00
	TOP :	SMAX= -.01	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
	BOTT:	SMAX= .02	SMIN=	.01	TMAX=	.01	ANGLE=	90.0			
	13	.03	.04	-3.09	-6.77						.53
		1.24	1.17	-.72	-.12						-.08
	TOP :	SMAX= -1.23	SMIN=	-1.25	TMAX=	.01	ANGLE=	90.0			
	BOTT:	SMAX= 1.04	SMIN=	-.23	TMAX=	.63	ANGLE=	7.9			
	14	-.09	.07	-4.63	-9.98						4.55
		2.34	1.68	-.65	-.36						.11
	TOP :	SMAX= -.81	SMIN=	-2.64	TMAX=	.92	ANGLE=	35.5			
	BOTT:	SMAX= 1.59	SMIN=	-.17	TMAX=	.88	ANGLE=	23.9			
	101	.03	.04	-3.51	-11.24						-1.06
		1.80	1.58	-.05	-.11						-.06
	TOP :	SMAX= -.59	SMIN=	-2.02	TMAX=	.72	ANGLE=	-9.5			
	BOTT:	SMAX= 1.78	SMIN=	.53	TMAX=	.63	ANGLE=	-5.6			

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.02	.02	-2.24	-7.04						
		1.14	.97	-.04	-.08						
TOP :	SMAX=	-.39	SMIN=	-1.28	TMAX=	.45	ANGLE=	-9.2			
BOTT:	SMAX=	1.10	SMIN=	.33	TMAX=	.38	ANGLE=	-5.7			
103		.03	.02	-2.38	-7.17						
		1.19	.99	-.05	-.10						
TOP :	SMAX=	-.40	SMIN=	-1.34	TMAX=	.47	ANGLE=	-12.6			
BOTT:	SMAX=	1.11	SMIN=	.33	TMAX=	.39	ANGLE=	-7.8			
104		.02	.01	-1.24	-4.60						
		.75	.68	-.02	-.03						
TOP :	SMAX=	-.19	SMIN=	-.82	TMAX=	.32	ANGLE=	-12.7			
BOTT:	SMAX=	.75	SMIN=	.17	TMAX=	.29	ANGLE=	-9.8			
105		.02	.03	-2.66	-8.48						
		1.36	1.18	-.04	-.09						
TOP :	SMAX=	-.46	SMIN=	-1.53	TMAX=	.53	ANGLE=	-8.5			
BOTT:	SMAX=	1.33	SMIN=	.40	TMAX=	.47	ANGLE=	-5.1			
106		.02	.01	-2.22	-6.39						
		1.13	1.03	-.48	-.11						
TOP :	SMAX=	-.72	SMIN=	-1.30	TMAX=	.29	ANGLE=	28.1			
BOTT:	SMAX=	.97	SMIN=	-.12	TMAX=	.54	ANGLE=	5.4			
107		.01	-.01	-.56	-2.71						
		.60	.66	-.43	-.05						
TOP :	SMAX=	-.34	SMIN=	-.69	TMAX=	.17	ANGLE=	90.0			
BOTT:	SMAX=	.41	SMIN=	-.35	TMAX=	.38	ANGLE=	6.1			
108		.00	.08	-6.83	-19.38						
		3.11	2.62	-.39	-.33						
TOP :	SMAX=	-1.52	SMIN=	-3.58	TMAX=	1.03	ANGLE=	4.6			
BOTT:	SMAX=	2.91	SMIN=	.73	TMAX=	1.09	ANGLE=	4.8			
109		.13	.15	-14.10	-44.98						
		7.20	6.28	-.21	-.48						
TOP :	SMAX=	-2.43	SMIN=	-8.10	TMAX=	2.83	ANGLE=	-8.5			
BOTT:	SMAX=	7.06	SMIN=	2.10	TMAX=	2.48	ANGLE=	-5.2			
346	15	-.02	-.04	.96	-2.15						
		.62	.90	.15	-.04						
TOP :	SMAX=	.31	SMIN=	-.40	TMAX=	.36	ANGLE=	-3.5			
BOTT:	SMAX=	.66	SMIN=	-.36	TMAX=	.51	ANGLE=	-35.6			
2		.00	.00	.26	.29						
		.06	.06	-.01	.00						
TOP :	SMAX=	.06	SMIN=	.02	TMAX=	.02	ANGLE=	90.0			
BOTT:	SMAX=	-.03	SMIN=	-.06	TMAX=	.02	ANGLE=	90.0			
3		.00	.00	.20	.16						
		.04	.04	-.01	.00						
TOP :	SMAX=	.04	SMIN=	.01	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	-.02	SMIN=	-.05	TMAX=	.01	ANGLE=	90.0			
4		.00	.00	.10	.01						
		.02	.03	-.01	.00						
TOP :	SMAX=	.02	SMIN=	.00	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
5		.00	.00	-.19	-.74						
		.10	.15	-.01	.01						
TOP :	SMAX=	-.04	SMIN=	-.12	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	.15	SMIN=	.00	TMAX=	.08	ANGLE=	22.2			
6		.00	.00	-.06	-.11						
		.02	.02	.00	.00						
TOP :	SMAX=	-.01	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.02	SMIN=	.01	TMAX=	.01	ANGLE=	90.0			
7		.00	-.01	-.51	-1.29						
		.20	.19	-.01	-.02						
TOP :	SMAX=	-.10	SMIN=	-.23	TMAX=	.07	ANGLE=	-2.1			
BOTT:	SMAX=	.21	SMIN=	.06	TMAX=	.08	ANGLE=	17.8			

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.00	-.01	.81	.99	.08					
		.16	.16	-.04	.01	.00					
TOP :	SMAX=	.18	SMIN=	.10	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	-.15	SMIN=	-.18	TMAX=	.01	ANGLE=	90.0			
	9	.00	.00	-.33	-.85	.07					
		.13	.12	.01	-.01	-.01					
TOP :	SMAX=	-.05	SMIN=	-.15	TMAX=	.05	ANGLE=	2.7			
BOTT:	SMAX=	.14	SMIN=	.06	TMAX=	.04	ANGLE=	90.0			
	10	-.01	.01	-1.13	-.90	.10					
		.17	.24	.09	-.02	.02					
TOP :	SMAX=	-.08	SMIN=	-.19	TMAX=	.06	ANGLE=	90.0			
BOTT:	SMAX=	.28	SMIN=	.13	TMAX=	.08	ANGLE=	3.0			
	11	.01	-.01	1.13	.90	-.10					
		.17	.24	-.09	.02	-.02					
TOP :	SMAX=	.19	SMIN=	.08	TMAX=	.06	ANGLE=	90.0			
BOTT:	SMAX=	-.13	SMIN=	-.28	TMAX=	.08	ANGLE=	3.0			
	12	.00	.00	-.03	-.10	.00					
		.02	.01	.00	.00	.00					
TOP :	SMAX=	-.01	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.02	SMIN=	.01	TMAX=	.00	ANGLE=	90.0			
	13	-.01	.02	-2.50	-1.98	.51					
		.50	.33	-.05	-.08	.06					
TOP :	SMAX=	-.29	SMIN=	-.58	TMAX=	.14	ANGLE=	90.0			
BOTT:	SMAX=	.38	SMIN=	.24	TMAX=	.07	ANGLE=	-13.0			
	14	-.02	.03	-3.44	-2.62	-1.06					
		.57	.86	-.02	-.10	.23					
TOP :	SMAX=	-.50	SMIN=	-.63	TMAX=	.06	ANGLE=	90.0			
BOTT:	SMAX=	.87	SMIN=	.02	TMAX=	.43	ANGLE=	37.4			
	101	.00	.02	-2.28	-5.92	.47					
		.93	.83	.05	-.06	-.05					
TOP :	SMAX=	-.33	SMIN=	-1.05	TMAX=	.36	ANGLE=	2.5			
BOTT:	SMAX=	.96	SMIN=	.40	TMAX=	.28	ANGLE=	13.3			
	102	.00	.01	-1.54	-3.89	.30					
		.61	.54	.03	-.04	-.03					
TOP :	SMAX=	-.22	SMIN=	-.69	TMAX=	.24	ANGLE=	2.8			
BOTT:	SMAX=	.62	SMIN=	.27	TMAX=	.18	ANGLE=	13.1			
	103	.00	.01	-1.89	-4.84	.38					
		.76	.68	.02	-.06	-.05					
TOP :	SMAX=	-.29	SMIN=	-.86	TMAX=	.29	ANGLE=	1.8			
BOTT:	SMAX=	.78	SMIN=	.31	TMAX=	.23	ANGLE=	13.9			
	104	.00	.01	-.83	-3.01	.35					
		.48	.44	.00	-.03	-.02					
TOP :	SMAX=	-.13	SMIN=	-.53	TMAX=	.20	ANGLE=	5.0			
BOTT:	SMAX=	.49	SMIN=	.12	TMAX=	.18	ANGLE=	13.3			
	105	.00	.02	-1.75	-4.48	.34					
		.71	.62	.04	-.05	-.03					
TOP :	SMAX=	-.25	SMIN=	-.80	TMAX=	.27	ANGLE=	2.7			
BOTT:	SMAX=	.72	SMIN=	.31	TMAX=	.20	ANGLE=	12.6			
	106	-.02	.00	-2.28	-4.94	-.30					
		.84	.72	.12	-.10	.13					
TOP :	SMAX=	-.25	SMIN=	-.93	TMAX=	.34	ANGLE=	7.1			
BOTT:	SMAX=	.83	SMIN=	.40	TMAX=	.22	ANGLE=	-29.2			
	107	-.01	-.01	-1.15	-4.04	-.40					
		.69	.61	.03	-.08	.11					
TOP :	SMAX=	-.16	SMIN=	-.75	TMAX=	.29	ANGLE=	4.1			
BOTT:	SMAX=	.67	SMIN=	.15	TMAX=	.26	ANGLE=	-21.4			
	108	-.01	.05	-4.69	-8.92	.05					
		1.41	1.19	.06	-.13	.07					
TOP :	SMAX=	-.72	SMIN=	-1.63	TMAX=	.45	ANGLE=	4.7			
BOTT:	SMAX=	1.36	SMIN=	.83	TMAX=	.26	ANGLE=	-6.4			
	109	.01	.10	-9.28	-23.76	1.79					
		3.74	3.31	.21	-.26	-.16					
TOP :	SMAX=	-1.33	SMIN=	-4.22	TMAX=	1.45	ANGLE=	2.7			
BOTT:	SMAX=	3.81	SMIN=	1.65	TMAX=	1.08	ANGLE=	12.6			

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
347	15	.01	-.02	-1.06	-5.37	-2.34					
		1.19	1.06	.29	-.09	.07					
	TOP : SMAX=	.20	SMIN=	-1.07	TMAX=	.64	ANGLE=	-14.9			
	BOTT: SMAX=	1.13	SMIN=	.14	TMAX=	.49	ANGLE=	-35.1			
	2	.00	.00	.09	-.05	-.10					
		.02	.06	-.01	.00	.01					
	TOP : SMAX=	.01	SMIN=	-.01	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.02	SMIN=	-.04	TMAX=	.03	ANGLE=	90.0			
	3	.00	.00	.09	-.05	-.14					
		.02	.07	-.02	.00	.01					
	TOP : SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.02	SMIN=	-.06	TMAX=	.04	ANGLE=	90.0			
	4	.00	.00	.03	-.11	-.15					
		.04	.06	-.01	.00	.01					
	TOP : SMAX=	.01	SMIN=	-.03	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	.04	SMIN=	-.03	TMAX=	.03	ANGLE=	90.0			
	5	.00	.00	-.03	-.26	.21					
		.05	.10	-.03	.00	-.01					
	TOP : SMAX=	-.01	SMIN=	-.06	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	.07	SMIN=	-.05	TMAX=	.06	ANGLE=	90.0			
	6	.00	.00	-.11	-.39	.01					
		.06	.05	.00	.00	.00					
	TOP : SMAX=	-.02	SMIN=	-.07	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	.06	SMIN=	.02	TMAX=	.02	ANGLE=	90.0			
	7	.00	.00	-.62	-2.30	.12					
		.35	.34	-.01	-.01	-.01					
	TOP : SMAX=	-.11	SMIN=	-.40	TMAX=	.14	ANGLE=	1.8			
	BOTT: SMAX=	.37	SMIN=	.09	TMAX=	.14	ANGLE=	6.2			
	8	.00	-.01	.33	.16	.06					
		.04	.12	-.07	-.01	.00					
	TOP : SMAX=	.02	SMIN=	-.02	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	-.03	SMIN=	-.13	TMAX=	.05	ANGLE=	90.0			
	9	.00	.00	-.16	-.44	.03					
		.07	.06	.01	.00	.00					
	TOP : SMAX=	-.01	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	.07	SMIN=	.04	TMAX=	.02	ANGLE=	90.0			
	10	.00	.01	-.57	-.12	-.39					
		.12	.30	.18	.00	.02					
	TOP : SMAX=	.10	SMIN=	-.03	TMAX=	.07	ANGLE=	90.0			
	BOTT: SMAX=	.30	SMIN=	.00	TMAX=	.15	ANGLE=	17.5			
	11	.00	-.01	.57	.12	.39					
		.12	.30	-.18	.00	-.02					
	TOP : SMAX=	.03	SMIN=	-.10	TMAX=	.07	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	-.30	TMAX=	.15	ANGLE=	17.5			
	12	.00	.00	-.02	-.08	.00					
		.01	.01	.00	.00	.00					
	TOP : SMAX=	.00	SMIN=	-.01	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.01	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
	13	.00	.02	-1.54	-.74	-.65					
		.20	.67	.35	-.01	.10					
	TOP : SMAX=	.10	SMIN=	-.14	TMAX=	.12	ANGLE=	-2.6			
	BOTT: SMAX=	.68	SMIN=	.04	TMAX=	.32	ANGLE=	19.9			
	14	.00	.02	-1.79	-.88	-2.19					
		.42	1.11	.40	-.01	.16					
	TOP : SMAX=	.21	SMIN=	-.27	TMAX=	.24	ANGLE=	-29.0			
	BOTT: SMAX=	1.01	SMIN=	-.18	TMAX=	.59	ANGLE=	30.8			
	101	.00	.03	-1.13	-3.02	.31					
		.49	.43	.09	-.02	-.01					
	TOP : SMAX=	-.09	SMIN=	-.53	TMAX=	.22	ANGLE=	5.8			
	BOTT: SMAX=	.50	SMIN=	.26	TMAX=	.12	ANGLE=	15.1			

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	ANGLE
102		.00	.02	-.84	-2.27	.17		
		.37	.32	.07	-.02	.00		
TOP :	SMAX=	-.07	SMIN=	-.40	TMAX=	.16	ANGLE=	4.6
BOTT:	SMAX=	.37	SMIN=	.20	TMAX=	.08	ANGLE=	11.3
103		.00	.01	-1.25	-3.80	.26		
		.60	.54	.06	-.03	-.01		
TOP :	SMAX=	-.15	SMIN=	-.66	TMAX=	.26	ANGLE=	3.6
BOTT:	SMAX=	.62	SMIN=	.26	TMAX=	.18	ANGLE=	8.8
104		.00	.01	-.48	-1.84	.22		
		.30	.26	.01	-.02	.00		
TOP :	SMAX=	-.07	SMIN=	-.33	TMAX=	.13	ANGLE=	7.7
BOTT:	SMAX=	.29	SMIN=	.08	TMAX=	.11	ANGLE=	10.1
105		.00	.02	-.88	-2.31	.19		
		.38	.33	.08	-.02	.00		
TOP :	SMAX=	-.07	SMIN=	-.41	TMAX=	.17	ANGLE=	5.0
BOTT:	SMAX=	.38	SMIN=	.21	TMAX=	.08	ANGLE=	12.6
106		.01	.01	-2.06	-4.38	-1.59		
		.90	.97	.45	-.06	.09		
TOP :	SMAX=	.14	SMIN=	-.82	TMAX=	.48	ANGLE=	-10.3
BOTT:	SMAX=	1.10	SMIN=	.37	TMAX=	.36	ANGLE=	40.0
107		.00	.00	-1.49	-4.26	-1.19		
		.82	.76	.28	-.06	.07		
TOP :	SMAX=	.05	SMIN=	-.79	TMAX=	.42	ANGLE=	-8.7
BOTT:	SMAX=	.86	SMIN=	.31	TMAX=	.28	ANGLE=	-38.6
108		.00	.05	-2.39	-4.36	-.76		
		.74	.79	.33	-.04	.07		
TOP :	SMAX=	-.07	SMIN=	-.77	TMAX=	.35	ANGLE=	-4.4
BOTT:	SMAX=	.91	SMIN=	.51	TMAX=	.20	ANGLE=	90.0
109		.01	.11	-4.68	-12.27	1.03		
		2.00	1.74	.41	-.09	-.02		
TOP :	SMAX=	-.36	SMIN=	-2.15	TMAX=	.90	ANGLE=	5.0
BOTT:	SMAX=	2.00	SMIN=	1.14	TMAX=	.43	ANGLE=	13.0
348	15	.00	.00	-1.62	-5.56	-1.57		
		1.18	.82	.32	-.09	-.06		
TOP :	SMAX=	.14	SMIN=	-1.10	TMAX=	.62	ANGLE=	-15.7
BOTT:	SMAX=	.95	SMIN=	.47	TMAX=	.24	ANGLE=	-28.7
2		.00	.00	-.01	-.17	-.12		
		.04	.05	.00	-.01	.01		
TOP :	SMAX=	.00	SMIN=	-.04	TMAX=	.02	ANGLE=	90.0
BOTT:	SMAX=	.04	SMIN=	-.02	TMAX=	.03	ANGLE=	90.0
3		.00	.00	.02	-.10	-.17		
		.04	.07	-.01	.00	.01		
TOP :	SMAX=	.00	SMIN=	-.03	TMAX=	.02	ANGLE=	90.0
BOTT:	SMAX=	.04	SMIN=	-.04	TMAX=	.04	ANGLE=	90.0
4		.00	.00	.00	-.10	-.18		
		.05	.06	.00	.00	.01		
TOP :	SMAX=	.01	SMIN=	-.04	TMAX=	.03	ANGLE=	90.0
BOTT:	SMAX=	.04	SMIN=	-.03	TMAX=	.04	ANGLE=	90.0
5		.00	.00	.04	.01	.17		
		.05	.06	-.03	.00	.00		
TOP :	SMAX=	.02	SMIN=	-.04	TMAX=	.03	ANGLE=	90.0
BOTT:	SMAX=	.02	SMIN=	-.05	TMAX=	.03	ANGLE=	90.0
6		.00	.00	-.13	-.51	.01		
		.08	.07	.00	.00	.00		
TOP :	SMAX=	-.02	SMIN=	-.09	TMAX=	.03	ANGLE=	90.0
BOTT:	SMAX=	.08	SMIN=	.02	TMAX=	.03	ANGLE=	90.0
7		.00	.00	-.62	-2.48	.11		
		.38	.37	-.01	-.01	.00		
TOP :	SMAX=	-.11	SMIN=	-.43	TMAX=	.16	ANGLE=	3.0
BOTT:	SMAX=	.40	SMIN=	.09	TMAX=	.16	ANGLE=	3.6



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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
8		.00	.00	.08	-.21	.03					
		.05	.08	-.06	-.01	.00					
TOP :	SMAX=	-.03	SMIN=	-.05	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.02	SMIN=	-.07	TMAX=	.05	ANGLE=	90.0			
9		.00	.00	-.05	-.11	.01					
		.02	.02	.01	.00	.00					
TOP :	SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.02	SMIN=	.02	TMAX=	.00	ANGLE=	90.0			
10		.00	.01	-.20	.21	-.43					
		.14	.23	.14	.01	.01					
TOP :	SMAX=	.15	SMIN=	.01	TMAX=	.07	ANGLE=	90.0			
BOTT:	SMAX=	.21	SMIN=	-.05	TMAX=	.13	ANGLE=	19.4			
11		.00	-.01	.20	-.21	.43					
		.14	.23	-.14	-.01	-.01					
TOP :	SMAX=	-.01	SMIN=	-.15	TMAX=	.07	ANGLE=	90.0			
BOTT:	SMAX=	.05	SMIN=	-.21	TMAX=	.13	ANGLE=	19.4			
12		.00	.00	-.01	-.04	.00					
		.01	.00	.00	.00	.00					
TOP :	SMAX=	.00	SMIN=	-.01	TMAX=	.00	ANGLE=	90.0			
BOTT:	SMAX=	.01	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
13		.00	.01	-.74	.05	-.99					
		.28	.64	.36	.01	.08					
TOP :	SMAX=	.27	SMIN=	-.01	TMAX=	.14	ANGLE=	-20.0			
BOTT:	SMAX=	.58	SMIN=	-.09	TMAX=	.34	ANGLE=	22.6			
14		.00	.02	-.86	.06	-2.15					
		.57	.91	.41	.02	.06					
TOP :	SMAX=	.46	SMIN=	-.17	TMAX=	.32	ANGLE=	-34.1			
BOTT:	SMAX=	.78	SMIN=	-.22	TMAX=	.50	ANGLE=	28.6			
101		.00	.03	-.33	-.72	.16					
		.14	.13	.07	.00	.01					
TOP :	SMAX=	.02	SMIN=	-.13	TMAX=	.08	ANGLE=	14.2			
BOTT:	SMAX=	.14	SMIN=	.10	TMAX=	.02	ANGLE=	90.0			
102		.00	.02	-.34	-.89	.08					
		.15	.13	.05	.00	.01					
TOP :	SMAX=	.00	SMIN=	-.15	TMAX=	.08	ANGLE=	7.7			
BOTT:	SMAX=	.15	SMIN=	.11	TMAX=	.02	ANGLE=	90.0			
103		.00	.02	-.73	-2.46	.16					
		.39	.35	.04	-.01	.01					
TOP :	SMAX=	-.08	SMIN=	-.42	TMAX=	.17	ANGLE=	5.3			
BOTT:	SMAX=	.40	SMIN=	.16	TMAX=	.12	ANGLE=	5.2			
104		.00	.01	-.17	-.65	.10					
		.12	.09	.01	-.01	.01					
TOP :	SMAX=	-.01	SMIN=	-.13	TMAX=	.06	ANGLE=	90.0			
BOTT:	SMAX=	.10	SMIN=	.03	TMAX=	.03	ANGLE=	90.0			
105		.00	.02	-.27	-.57	.08					
		.11	.10	.06	.00	.01					
TOP :	SMAX=	.02	SMIN=	-.10	TMAX=	.06	ANGLE=	11.0			
BOTT:	SMAX=	.11	SMIN=	.09	TMAX=	.01	ANGLE=	90.0			
106		.00	.02	-1.43	-2.97	-1.45					
		.76	.75	.44	-.03	.02					
TOP :	SMAX=	.27	SMIN=	-.59	TMAX=	.43	ANGLE=	-15.8			
BOTT:	SMAX=	.85	SMIN=	.29	TMAX=	.28	ANGLE=	33.6			
107		.00	.02	-1.22	-3.18	-1.02					
		.69	.58	.30	-.04	.01					
TOP :	SMAX=	.13	SMIN=	-.61	TMAX=	.37	ANGLE=	-13.1			
BOTT:	SMAX=	.67	SMIN=	.32	TMAX=	.18	ANGLE=	90.0			
108		.00	.05	-.89	-.94	-.93					
		.33	.53	.31	.01	.04					
TOP :	SMAX=	.19	SMIN=	-.19	TMAX=	.19	ANGLE=	-17.7			
BOTT:	SMAX=	.56	SMIN=	.06	TMAX=	.25	ANGLE=	26.7			
109		-.01	.11	-1.44	-3.02	.47					
		.60	.54	.32	-.01	.04					
TOP :	SMAX=	.11	SMIN=	-.54	TMAX=	.32	ANGLE=	10.9			
BOTT:	SMAX=	.58	SMIN=	.48	TMAX=	.05	ANGLE=	90.0			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MAXY FGY
349	15	.01	.02	-1.30	-4.09	-.70
		.86	.57	.21	-.04	-.15
	TOP : SMAX=	.09	SMIN=	-.81	TMAX=	.45 ANGLE= -18.4
	BOTT: SMAX=	.65	SMIN=	.42	TMAX=	.11 ANGLE= 9.0
	2	.00	.00	-.05	-.15	-.13
		.04	.05	.01	.00	.00
	TOP : SMAX=	.01	SMIN=	-.04	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	.05	SMIN=	-.01	TMAX=	.03 ANGLE= 90.0
	3	.00	.00	-.02	-.09	-.18
		.04	.07	.01	.00	.01
	TOP : SMAX=	.01	SMIN=	-.03	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	.05	SMIN=	-.03	TMAX=	.04 ANGLE= 90.0
	4	.00	.00	-.01	-.04	-.16
		.04	.05	.00	.00	.00
	TOP : SMAX=	.02	SMIN=	-.03	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	.03	SMIN=	-.02	TMAX=	.03 ANGLE= 90.0
	5	.00	.00	.07	.23	.12
		.06	.04	-.01	.00	.00
	TOP : SMAX=	.05	SMIN=	-.01	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	-.02	SMIN=	-.05	TMAX=	.02 ANGLE= 90.0
	6	.00	.00	-.13	-.53	.00
		.08	.08	.00	.00	.00
	TOP : SMAX=	-.02	SMIN=	-.09	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.08	SMIN=	.02	TMAX=	.03 ANGLE= 90.0
	7	.00	.01	-.52	-2.14	.06
		.33	.32	-.01	-.01	.00
	TOP : SMAX=	-.10	SMIN=	-.37	TMAX=	.14 ANGLE= 2.7
	BOTT: SMAX=	.35	SMIN=	.08	TMAX=	.13 ANGLE= 1.6
	8	.00	.00	-.09	-.39	.00
		.06	.06	-.02	-.01	.01
	TOP : SMAX=	-.04	SMIN=	-.07	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	.06	SMIN=	-.01	TMAX=	.03 ANGLE= 90.0
	9	.00	.00	.06	.23	-.01
		.03	.04	.01	.00	.00
	TOP : SMAX=	.04	SMIN=	.01	TMAX=	.01 ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	-.04	TMAX=	.02 ANGLE= 90.0
	10	.00	.00	.07	.36	-.41
		.14	.14	.06	.01	.00
	TOP : SMAX=	.14	SMIN=	.00	TMAX=	.07 ANGLE= 90.0
	BOTT: SMAX=	.08	SMIN=	-.08	TMAX=	.08 ANGLE= 26.2
	11	.00	.00	-.07	-.36	.41
		.14	.14	-.06	-.01	.00
	TOP : SMAX=	.00	SMIN=	-.14	TMAX=	.07 ANGLE= 90.0
	BOTT: SMAX=	.08	SMIN=	-.08	TMAX=	.08 ANGLE= 26.2
	12	.00	.00	.00	.02	.00
		.00	.00	.00	.00	.00
	TOP : SMAX=	.00	SMIN=	.00	TMAX=	.00 ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	.00	TMAX=	.00 ANGLE= 90.0
	13	.00	.01	-.01	.70	-1.11
		.31	.48	.22	.02	.04
	TOP : SMAX=	.33	SMIN=	.03	TMAX=	.15 ANGLE= 90.0
	BOTT: SMAX=	.34	SMIN=	-.21	TMAX=	.27 ANGLE= 27.4
	14	.01	.01	-.01	.85	-1.76
		.56	.59	.24	.02	-.01
	TOP : SMAX=	.50	SMIN=	-.10	TMAX=	.30 ANGLE= 90.0
	BOTT: SMAX=	.40	SMIN=	-.28	TMAX=	.34 ANGLE= 29.0
	101	.00	.02	.39	1.61	.02
		.24	.25	.04	.01	.01
	TOP : SMAX=	.28	SMIN=	.10	TMAX=	.09 ANGLE= -5.6
	BOTT: SMAX=	-.03	SMIN=	-.26	TMAX=	.12 ANGLE= 2.5

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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH				
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH						
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
	102	.00	.02	.14	.61	-.01
		.09	.10	.03	.00	.01
	TOP : SMAX=	.10	SMIN=	.05	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	-.10	TMAX=	.05 ANGLE= 5.6
	103	.00	.02	-.17	-.69	.04
		.12	.10	.02	.00	.01
	TOP : SMAX=	-.01	SMIN=	-.12	TMAX=	.06 ANGLE= 8.8
	BOTT: SMAX=	.11	SMIN=	.05	TMAX=	.03 ANGLE= 90.0
	104	.00	.01	.18	.72	-.01
		.11	.12	.01	.00	.01
	TOP : SMAX=	.12	SMIN=	.04	TMAX=	.04 ANGLE= 90.0
	BOTT: SMAX=	-.02	SMIN=	-.12	TMAX=	.05 ANGLE= 8.2
	105	.00	.02	.29	1.21	-.01
		.18	.19	.03	.01	.01
	TOP : SMAX=	.21	SMIN=	.08	TMAX=	.06 ANGLE= -3.7
	BOTT: SMAX=	-.02	SMIN=	-.20	TMAX=	.09 ANGLE= 4.2
	106	.01	.03	-.46	-.86	-1.12
		.50	.38	.26	.00	-.05
	TOP : SMAX=	.31	SMIN=	-.27	TMAX=	.29 ANGLE= -27.6
	BOTT: SMAX=	.41	SMIN=	.07	TMAX=	.17 ANGLE= 26.8
	107	.00	.02	-.53	-1.23	-.71
		.41	.28	.20	-.01	-.05
	TOP : SMAX=	.18	SMIN=	-.29	TMAX=	.24 ANGLE= -22.7
	BOTT: SMAX=	.32	SMIN=	.16	TMAX=	.08 ANGLE= 90.0
	108	.00	.04	.49	2.48	-.90
		.45	.53	.17	.02	.01
	TOP : SMAX=	.51	SMIN=	.18	TMAX=	.16 ANGLE= 28.3
	BOTT: SMAX=	.14	SMIN=	-.44	TMAX=	.29 ANGLE= 17.1
	109	.00	.10	1.55	6.41	-.05
		.96	1.00	.17	.03	.05
	TOP : SMAX=	1.10	SMIN=	.42	TMAX=	.34 ANGLE= -3.6
	BOTT: SMAX=	-.09	SMIN=	-1.04	TMAX=	.48 ANGLE= 3.7
350	15	.01	.03	-.48	-1.85	.15
		.38	.44	.03	.00	-.17
	TOP : SMAX=	.02	SMIN=	-.37	TMAX=	.19 ANGLE= -24.4
	BOTT: SMAX=	.43	SMIN=	-.01	TMAX=	.22 ANGLE= 31.6
	2	.00	.00	-.04	-.08	-.10
		.03	.04	.02	.00	.00
	TOP : SMAX=	.02	SMIN=	-.02	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	.04	SMIN=	.00	TMAX=	.02 ANGLE= 90.0
	3	.00	.00	-.04	-.04	-.13
		.03	.05	.02	.00	.01
	TOP : SMAX=	.02	SMIN=	-.01	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	.05	SMIN=	-.01	TMAX=	.03 ANGLE= 90.0
	4	.00	.00	.00	.04	-.11
		.03	.04	.01	.00	.00
	TOP : SMAX=	.02	SMIN=	-.01	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	.02	SMIN=	-.02	TMAX=	.02 ANGLE= 90.0
	5	.00	.00	.08	.39	.06
		.07	.06	.00	.00	.01
	TOP : SMAX=	.07	SMIN=	.01	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	-.01	SMIN=	-.06	TMAX=	.02 ANGLE= 90.0
	6	.00	.00	-.11	-.44	.00
		.07	.06	.00	.00	.00
	TOP : SMAX=	-.02	SMIN=	-.08	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.07	SMIN=	.02	TMAX=	.03 ANGLE= 90.0
	7	.00	.01	-.34	-1.37	.02
		.21	.20	.00	-.01	.00
	TOP : SMAX=	-.06	SMIN=	-.24	TMAX=	.09 ANGLE= 2.3
	BOTT: SMAX=	.22	SMIN=	.05	TMAX=	.08 ANGLE= -.2

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.00	.00	-.17	-.43						
		.07	.06	.01	.00						
TOP :	SMAX=	-.02	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.07	SMIN=	.04	TMAX=	.02	ANGLE=	90.0			
	9	.00	.00	.13	.50						
		.08	.07	.00	.00						
TOP :	SMAX=	.08	SMIN=	.02	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	-.02	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			
	10	.00	.00	.23	.38						
		.11	.09	-.02	.01						
TOP :	SMAX=	.10	SMIN=	-.02	TMAX=	.06	ANGLE=	90.0			
BOTT:	SMAX=	-.02	SMIN=	-.10	TMAX=	.04	ANGLE=	90.0			
	11	.00	.00	-.23	-.38						
		.11	.09	.02	-.01						
TOP :	SMAX=	.02	SMIN=	-.10	TMAX=	.06	ANGLE=	90.0			
BOTT:	SMAX=	.10	SMIN=	.02	TMAX=	.04	ANGLE=	90.0			
	12	.00	.00	.02	.07						
		.01	.01	.00	.00						
TOP :	SMAX=	.01	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
BOTT:	SMAX=	.00	SMIN=	-.01	TMAX=	.00	ANGLE=	90.0			
	13	.01	.00	.50	1.07						
		.28	.30	.05	.02						
TOP :	SMAX=	.29	SMIN=	.03	TMAX=	.13	ANGLE=	90.0			
BOTT:	SMAX=	.06	SMIN=	-.26	TMAX=	.16	ANGLE=	33.9			
	14	.01	.01	.60	1.35						
		.43	.33	.04	.02						
TOP :	SMAX=	.42	SMIN=	-.03	TMAX=	.22	ANGLE=	38.0			
BOTT:	SMAX=	.04	SMIN=	-.31	TMAX=	.18	ANGLE=	33.2			
	101	.00	.02	.92	3.46						
		.53	.51	.01	.01						
TOP :	SMAX=	.59	SMIN=	.16	TMAX=	.22	ANGLE=	-.4			
BOTT:	SMAX=	-.15	SMIN=	-.56	TMAX=	.21	ANGLE=	2.1			
	102	.00	.01	.51	1.88						
		.28	.28	.00	.01						
TOP :	SMAX=	.32	SMIN=	.09	TMAX=	.11	ANGLE=	.3			
BOTT:	SMAX=	-.08	SMIN=	-.31	TMAX=	.11	ANGLE=	3.0			
	103	.00	.02	.33	1.13						
		.17	.17	.00	.00						
TOP :	SMAX=	.19	SMIN=	.06	TMAX=	.07	ANGLE=	-1.9			
BOTT:	SMAX=	-.05	SMIN=	-.19	TMAX=	.07	ANGLE=	5.1			
	104	.00	.01	.46	1.89						
		.29	.28	.01	.01						
TOP :	SMAX=	.32	SMIN=	.09	TMAX=	.12	ANGLE=	-.2			
BOTT:	SMAX=	-.06	SMIN=	-.31	TMAX=	.12	ANGLE=	4.0			
	105	.00	.01	.70	2.63						
		.40	.39	.01	.01						
TOP :	SMAX=	.45	SMIN=	.12	TMAX=	.16	ANGLE=	-.2			
BOTT:	SMAX=	-.11	SMIN=	-.43	TMAX=	.16	ANGLE=	2.7			
	106	.01	.02	.51	1.23						
		.35	.17	.03	.02						
TOP :	SMAX=	.34	SMIN=	-.01	TMAX=	.17	ANGLE=	36.0			
BOTT:	SMAX=	-.05	SMIN=	-.19	TMAX=	.07	ANGLE=	1.6			
	107	.00	.02	.28	.85						
		.23	.14	.05	.01						
TOP :	SMAX=	.24	SMIN=	.01	TMAX=	.11	ANGLE=	90.0			
BOTT:	SMAX=	.01	SMIN=	-.14	TMAX=	.08	ANGLE=	-14.1			
	108	.01	.02	1.50	5.13						
		.81	.76	.03	.03						
TOP :	SMAX=	.90	SMIN=	.26	TMAX=	.32	ANGLE=	10.1			
BOTT:	SMAX=	-.21	SMIN=	-.84	TMAX=	.32	ANGLE=	9.5			
	109	.00	.06	3.74	13.94						
		2.13	2.04	.03	.06						
TOP :	SMAX=	2.38	SMIN=	.65	TMAX=	.86	ANGLE=	.2			
BOTT:	SMAX=	-.59	SMIN=	-2.27	TMAX=	.84	ANGLE=	2.4			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
351	15	.00	.02	.33	.41	.69					
		.15	.44	-.13	.03	-.12					
	TOP : SMAX=	.10	SMIN=	-.08	TMAX=	.09	ANGLE=	2.3			
	BOTT: SMAX=	.13	SMIN=	-.36	TMAX=	.25	ANGLE=	36.3			
	2	.00	.00	-.03	-.02	-.04					
		.02	.02	.02	.00	.00					
	TOP : SMAX=	.02	SMIN=	.00	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.02	SMIN=	.00	TMAX=	.01	ANGLE=	90.0			
	3	.00	.00	-.04	.00	-.05					
		.02	.04	.03	.00	.00					
	TOP : SMAX=	.02	SMIN=	.00	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.04	SMIN=	.00	TMAX=	.02	ANGLE=	90.0			
	4	.00	.00	.01	.09	-.04					
		.02	.02	.01	.00	.00					
	TOP : SMAX=	.02	SMIN=	.01	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.01	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
	5	.00	.00	.09	.47	.02					
		.07	.07	.01	.00	.00					
	TOP : SMAX=	.08	SMIN=	.02	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	-.01	SMIN=	-.08	TMAX=	.04	ANGLE=	90.0			
	6	.00	.00	-.07	-.27	.00					
		.04	.04	.00	.00	.00					
	TOP : SMAX=	-.01	SMIN=	-.05	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	.04	SMIN=	.01	TMAX=	.02	ANGLE=	90.0			
	7	.00	.01	-.09	-.35	-.02					
		.05	.05	.01	.00	.00					
	TOP : SMAX=	-.01	SMIN=	-.06	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	.06	SMIN=	.02	TMAX=	.02	ANGLE=	90.0			
	8	.00	.00	-.20	-.43	-.01					
		.07	.07	.03	.00	.00					
	TOP : SMAX=	.00	SMIN=	-.07	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	.07	SMIN=	.06	TMAX=	.01	ANGLE=	90.0			
	9	.00	.00	.17	.64	-.01					
		.10	.09	.00	.00	.00					
	TOP : SMAX=	.11	SMIN=	.03	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	-.03	SMIN=	-.11	TMAX=	.04	ANGLE=	90.0			
	10	.00	.00	.30	.36	-.10					
		.08	.10	-.07	.00	.00					
	TOP : SMAX=	.07	SMIN=	-.02	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	-.06	SMIN=	-.12	TMAX=	.03	ANGLE=	90.0			
	11	.00	.00	-.30	-.36	.10					
		.08	.10	.07	.00	.00					
	TOP : SMAX=	.02	SMIN=	-.07	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	.12	SMIN=	.06	TMAX=	.03	ANGLE=	90.0			
	12	.00	.00	.03	.10	.00					
		.02	.02	.00	.00	.00					
	TOP : SMAX=	.02	SMIN=	.00	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
	13	.01	.00	.75	1.21	-.31					
		.21	.21	-.06	.01	.00					
	TOP : SMAX=	.23	SMIN=	.05	TMAX=	.09	ANGLE=	16.6			
	BOTT: SMAX=	-.14	SMIN=	-.24	TMAX=	.05	ANGLE=	90.0			
	14	.01	.00	.91	1.58	-.39					
		.29	.26	-.09	.02	-.01					
	TOP : SMAX=	.31	SMIN=	.03	TMAX=	.14	ANGLE=	17.7			
	BOTT: SMAX=	-.19	SMIN=	-.30	TMAX=	.05	ANGLE=	90.0			
	101	.00	.01	1.20	4.48	-.02					
		.69	.65	-.01	.02	.00					
	TOP : SMAX=	.76	SMIN=	.19	TMAX=	.29	ANGLE=	.1			
	BOTT: SMAX=	-.21	SMIN=	-.73	TMAX=	.26	ANGLE=	.7			

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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.00	.01	.73	2.68						
		.41	.39	-.01	.01						
TOP :	SMAX=	.46	SMIN=	.11	TMAX=	.17	ANGLE=			.3	
BOTT:	SMAX=	-.13	SMIN=	-.44	TMAX=	.15	ANGLE=			.9	
103		.00	.01	.71	2.62						
		.40	.38	.00	.01						
TOP :	SMAX=	.45	SMIN=	.11	TMAX=	.17	ANGLE=			.2	
BOTT:	SMAX=	-.12	SMIN=	-.43	TMAX=	.15	ANGLE=			1.9	
104		.00	.00	.63	2.55						
		.39	.38	.01	.01						
TOP :	SMAX=	.44	SMIN=	.12	TMAX=	.16	ANGLE=			.2	
BOTT:	SMAX=	-.09	SMIN=	-.42	TMAX=	.16	ANGLE=			1.2	
105		.00	.00	.92	3.41						
		.52	.50	-.01	.01						
TOP :	SMAX=	.58	SMIN=	.15	TMAX=	.22	ANGLE=			.2	
BOTT:	SMAX=	-.16	SMIN=	-.56	TMAX=	.20	ANGLE=			.9	
106		.01	.01	1.19	2.85						
		.48	.43	-.14	.03						
TOP :	SMAX=	.51	SMIN=	.06	TMAX=	.22	ANGLE=			5.1	
BOTT:	SMAX=	-.29	SMIN=	-.49	TMAX=	.10	ANGLE=			-27.9	
107		.00	.01	.90	2.49						
		.41	.37	-.07	.03						
TOP :	SMAX=	.44	SMIN=	.08	TMAX=	.18	ANGLE=			3.1	
BOTT:	SMAX=	-.18	SMIN=	-.43	TMAX=	.13	ANGLE=			-24.1	
108		.01	.01	2.02	6.58						
		1.02	.93	-.06	.03						
TOP :	SMAX=	1.13	SMIN=	.27	TMAX=	.43	ANGLE=			2.9	
BOTT:	SMAX=	-.40	SMIN=	-1.07	TMAX=	.33	ANGLE=			3.0	
109		.00	.02	4.89	18.09						
		2.78	2.62	-.05	.07						
TOP :	SMAX=	3.08	SMIN=	.77	TMAX=	1.16	ANGLE=			.2	
BOTT:	SMAX=	-.86	SMIN=	-2.95	TMAX=	1.04	ANGLE=			.8	
352	15	.00	.01	.80	2.17						
		.48	.45	-.19	.04						
TOP :	SMAX=	.43	SMIN=	-.08	TMAX=	.26	ANGLE=			-13.8	
BOTT:	SMAX=	-.14	SMIN=	-.50	TMAX=	.18	ANGLE=			90.0	
2		.00	.00	-.03	-.02						
		.02	.02	.02	.00						
TOP :	SMAX=	.02	SMIN=	.00	TMAX=	.01	ANGLE=			90.0	
BOTT:	SMAX=	.02	SMIN=	.00	TMAX=	.01	ANGLE=			90.0	
3		.00	.00	-.04	.00						
		.02	.04	.03	.00						
TOP :	SMAX=	.02	SMIN=	.00	TMAX=	.01	ANGLE=			90.0	
BOTT:	SMAX=	.04	SMIN=	.00	TMAX=	.02	ANGLE=			90.0	
4		.00	.00	.01	.09						
		.02	.02	.01	.00						
TOP :	SMAX=	.02	SMIN=	.01	TMAX=	.01	ANGLE=			90.0	
BOTT:	SMAX=	.01	SMIN=	-.02	TMAX=	.01	ANGLE=			90.0	
5		.00	.00	.09	.47						
		.07	.07	.01	.00						
TOP :	SMAX=	.08	SMIN=	.02	TMAX=	.03	ANGLE=			90.0	
BOTT:	SMAX=	-.01	SMIN=	-.08	TMAX=	.04	ANGLE=			90.0	
6		.00	.00	.00	-.01						
		.00	.00	.00	.00						
TOP :	SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=			90.0	
BOTT:	SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=			90.0	
7		.00	.01	.16	.73						
		.11	.11	.01	.00						
TOP :	SMAX=	.13	SMIN=	.04	TMAX=	.04	ANGLE=			90.0	
BOTT:	SMAX=	-.02	SMIN=	-.12	TMAX=	.05	ANGLE=			6.2	

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
8		.00	.00	-.20	-.43						.01
		.07	.07	.03	.00						.00
	TOP : SMAX=	.00	SMIN=	-.07	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	.07	SMIN=	.06	TMAX=	.01	ANGLE=	90.0			
9		.00	.00	.17	.64						.01
		.10	.09	.00	.00						.00
	TOP : SMAX=	.11	SMIN=	.03	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	-.03	SMIN=	-.11	TMAX=	.04	ANGLE=	90.0			
10		.00	.00	.30	.36						.10
		.08	.10	-.07	.00						.00
	TOP : SMAX=	.07	SMIN=	-.02	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	-.06	SMIN=	-.12	TMAX=	.03	ANGLE=	90.0			
11		.00	.00	-.30	-.36						-.10
		.08	.10	.07	.00						.00
	TOP : SMAX=	.02	SMIN=	-.07	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	.12	SMIN=	.06	TMAX=	.03	ANGLE=	90.0			
12		.00	.00	.03	.10						.00
		.02	.02	.00	.00						.00
	TOP : SMAX=	.02	SMIN=	.00	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
13		.01	.00	.75	1.21						.31
		.21	.21	-.06	.01						.00
	TOP : SMAX=	.23	SMIN=	.05	TMAX=	.09	ANGLE=	-16.6			
	BOTT: SMAX=	-.14	SMIN=	-.24	TMAX=	.05	ANGLE=	90.0			
14		.01	.00	.91	1.58						.39
		.29	.26	-.09	.02						.01
	TOP : SMAX=	.31	SMIN=	.03	TMAX=	.14	ANGLE=	-17.7			
	BOTT: SMAX=	-.19	SMIN=	-.30	TMAX=	.05	ANGLE=	90.0			
101		.00	-.01	1.20	4.48						.02
		.69	.65	-.01	.02						.00
	TOP : SMAX=	.76	SMIN=	.19	TMAX=	.29	ANGLE=	-.1			
	BOTT: SMAX=	-.21	SMIN=	-.73	TMAX=	.26	ANGLE=	-.7			
102		.00	.00	.78	2.88						.02
		.44	.42	-.01	.01						.00
	TOP : SMAX=	.49	SMIN=	.12	TMAX=	.18	ANGLE=	-.2			
	BOTT: SMAX=	-.14	SMIN=	-.47	TMAX=	.17	ANGLE=	-.8			
103		.00	.00	.91	3.48						-.01
		.53	.51	.00	.01						.00
	TOP : SMAX=	.59	SMIN=	.15	TMAX=	.22	ANGLE=	.0			
	BOTT: SMAX=	-.15	SMIN=	-.57	TMAX=	.21	ANGLE=	.6			
104		.00	.00	.63	2.55						.02
		.39	.38	.01	.01						.00
	TOP : SMAX=	.44	SMIN=	.12	TMAX=	.16	ANGLE=	-.2			
	BOTT: SMAX=	-.09	SMIN=	-.42	TMAX=	.16	ANGLE=	-1.2			
105		.00	.00	.92	3.41						.02
		.52	.50	-.01	.01						.00
	TOP : SMAX=	.58	SMIN=	.15	TMAX=	.22	ANGLE=	-.2			
	BOTT: SMAX=	-.16	SMIN=	-.56	TMAX=	.20	ANGLE=	-.9			
106		.01	.00	1.43	3.73						.67
		.65	.57	-.16	.03						-.02
	TOP : SMAX=	.67	SMIN=	.06	TMAX=	.31	ANGLE=	-9.1			
	BOTT: SMAX=	-.34	SMIN=	-.65	TMAX=	.16	ANGLE=	-27.0			
107		.00	.00	1.13	3.37						.57
		.57	.50	-.10	.03						-.02
	TOP : SMAX=	.61	SMIN=	.08	TMAX=	.26	ANGLE=	-8.4			
	BOTT: SMAX=	-.24	SMIN=	-.57	TMAX=	.17	ANGLE=	-21.7			
108		.01	-.01	2.02	6.58						.23
		1.02	.93	-.06	.03						.00
	TOP : SMAX=	1.13	SMIN=	.27	TMAX=	.43	ANGLE=	-2.9			
	BOTT: SMAX=	-.40	SMIN=	-1.07	TMAX=	.33	ANGLE=	-3.0			
109		.00	-.02	4.89	18.09						.12
		2.78	2.62	-.05	.07						-.01
	TOP : SMAX=	3.08	SMIN=	.77	TMAX=	1.16	ANGLE=	-.3			
	BOTT: SMAX=	-.86	SMIN=	-2.95	TMAX=	1.04	ANGLE=	-.8			

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
353	15	.00	.00	.86	3.14	.98					
		.65	.48	-.12	.03	.05					
	TOP : SMAX=	.63	SMIN=	-.05	TMAX=	.34	ANGLE=	-19.1			
	BOTT: SMAX=	-.22	SMIN=	-.55	TMAX=	.16	ANGLE=	-23.1			
	2	.00	.00	-.04	-.08	.10					
		.03	.04	.02	.00	.00					
	TOP : SMAX=	.02	SMIN=	-.02	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	.04	SMIN=	.00	TMAX=	.02	ANGLE=	90.0			
	3	.00	.00	-.04	-.04	.13					
		.03	.05	.02	.00	-.01					
	TOP : SMAX=	.02	SMIN=	-.01	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	.05	SMIN=	-.01	TMAX=	.03	ANGLE=	90.0			
	4	.00	.00	.00	.04	.11					
		.03	.04	.01	.00	.00					
	TOP : SMAX=	.02	SMIN=	-.01	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	.02	SMIN=	-.02	TMAX=	.02	ANGLE=	90.0			
	5	.00	.00	.08	.39	-.06					
		.07	.06	.00	.00	-.01					
	TOP : SMAX=	.07	SMIN=	.01	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	-.01	SMIN=	-.06	TMAX=	.02	ANGLE=	90.0			
	6	.00	.00	.07	.27	.00					
		.04	.04	.00	.00	.00					
	TOP : SMAX=	.04	SMIN=	.01	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	-.01	SMIN=	-.04	TMAX=	.02	ANGLE=	90.0			
	7	.00	.01	.39	1.65	-.03					
		.25	.24	.01	.01	.01					
	TOP : SMAX=	.28	SMIN=	.08	TMAX=	.10	ANGLE=	90.0			
	BOTT: SMAX=	-.05	SMIN=	-.27	TMAX=	.11	ANGLE=	90.0			
	8	.00	.00	-.17	-.43	.01					
		.07	.06	.01	.00	.00					
	TOP : SMAX=	-.02	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	.07	SMIN=	.04	TMAX=	.02	ANGLE=	90.0			
	9	.00	.00	.13	.50	.01					
		.08	.07	.00	.00	.00					
	TOP : SMAX=	.08	SMIN=	.02	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	-.02	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			
	10	.00	.00	.23	.38	.28					
		.11	.09	-.02	.01	.01					
	TOP : SMAX=	.10	SMIN=	-.02	TMAX=	.06	ANGLE=	90.0			
	BOTT: SMAX=	-.02	SMIN=	-.10	TMAX=	.04	ANGLE=	90.0			
	11	.00	.00	-.23	-.38	-.28					
		.11	.09	.02	-.01	-.01					
	TOP : SMAX=	.02	SMIN=	-.10	TMAX=	.06	ANGLE=	90.0			
	BOTT: SMAX=	.10	SMIN=	.02	TMAX=	.04	ANGLE=	90.0			
	12	.00	.00	.02	.07	.00					
		.01	.01	.00	.00	.00					
	TOP : SMAX=	.01	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	-.01	TMAX=	.00	ANGLE=	90.0			
	13	.01	.00	.50	1.07	.84					
		.28	.30	.05	.02	-.01					
	TOP : SMAX=	.29	SMIN=	.03	TMAX=	.13	ANGLE=	90.0			
	BOTT: SMAX=	.06	SMIN=	-.26	TMAX=	.16	ANGLE=	90.0			
	14	.01	-.01	.60	1.35	1.14					
		.43	.33	.04	.02	.03					
	TOP : SMAX=	.42	SMIN=	-.03	TMAX=	.22	ANGLE=	90.0			
	BOTT: SMAX=	.04	SMIN=	-.31	TMAX=	.18	ANGLE=	90.0			
	101	.00	-.02	.92	3.46	.04					
		.53	.51	.01	.01	-.01					
	TOP : SMAX=	.59	SMIN=	.16	TMAX=	.22	ANGLE=	90.0			
	BOTT: SMAX=	-.15	SMIN=	-.56	TMAX=	.21	ANGLE=	90.0			



PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.00	-.01	.65	2.44						.04
		.37	.36	.00	.01						.00
TOP :	SMAX=	.42	SMIN=	.11	TMAX=	.15	ANGLE=				-.2
BOTT:	SMAX=	-.10	SMIN=	-.40	TMAX=	.15	ANGLE=				-2.2
103		.00	.00	.91	3.55						.01
		.54	.52	.01	.02						.00
TOP :	SMAX=	.61	SMIN=	.17	TMAX=	.22	ANGLE=				-.2
BOTT:	SMAX=	-.14	SMIN=	-.58	TMAX=	.22	ANGLE=				-.4
104		.00	-.01	.46	1.89						.05
		.29	.28	.01	.01						-.01
TOP :	SMAX=	.32	SMIN=	.09	TMAX=	.12	ANGLE=				.2
BOTT:	SMAX=	-.06	SMIN=	-.31	TMAX=	.12	ANGLE=				-4.0
105		.00	-.01	.70	2.63						.05
		.40	.39	.01	.01						-.01
TOP :	SMAX=	.45	SMIN=	.12	TMAX=	.16	ANGLE=				-.2
BOTT:	SMAX=	-.11	SMIN=	-.43	TMAX=	.16	ANGLE=				-2.7
106		.00	-.01	1.18	3.73						1.08
		.68	.58	-.05	.03						.02
TOP :	SMAX=	.72	SMIN=	.08	TMAX=	.32	ANGLE=				-19.1
BOTT:	SMAX=	-.18	SMIN=	-.65	TMAX=	.24	ANGLE=				-21.5
107		.00	-.01	.95	3.34						.80
		.59	.51	-.03	.03						.01
TOP :	SMAX=	.63	SMIN=	.09	TMAX=	.27	ANGLE=				-16.1
BOTT:	SMAX=	-.15	SMIN=	-.57	TMAX=	.21	ANGLE=				-17.7
108		.01	-.02	1.50	5.14						.64
		.81	.76	.03	.03						.00
TOP :	SMAX=	.90	SMIN=	.26	TMAX=	.32	ANGLE=				-10.1
BOTT:	SMAX=	-.21	SMIN=	-.85	TMAX=	.32	ANGLE=				-9.5
109		.00	-.06	3.74	13.94						.24
		2.13	2.04	.03	.06						-.03
TOP :	SMAX=	2.38	SMIN=	.65	TMAX=	.86	ANGLE=				-.3
BOTT:	SMAX=	-.59	SMIN=	-2.27	TMAX=	.84	ANGLE=				-2.5
354	15	.00	.00	.72	3.27						1.08
		.67	.52	-.01	.00						.08
TOP :	SMAX=	.67	SMIN=	-.01	TMAX=	.34	ANGLE=				-25.1
BOTT:	SMAX=	-.10	SMIN=	-.57	TMAX=	.23	ANGLE=				-13.0
2		.00	.00	-.05	-.15						.13
		.04	.05	.01	.00						.00
TOP :	SMAX=	.01	SMIN=	-.04	TMAX=	.02	ANGLE=				90.0
BOTT:	SMAX=	.05	SMIN=	-.01	TMAX=	.03	ANGLE=				90.0
3		.00	.00	-.02	-.09						.18
		.04	.07	.01	.00						-.01
TOP :	SMAX=	.01	SMIN=	-.03	TMAX=	.02	ANGLE=				90.0
BOTT:	SMAX=	.05	SMIN=	-.03	TMAX=	.04	ANGLE=				90.0
4		.00	.00	-.01	-.04						.16
		.04	.05	.00	.00						.00
TOP :	SMAX=	.02	SMIN=	-.03	TMAX=	.02	ANGLE=				90.0
BOTT:	SMAX=	.03	SMIN=	-.02	TMAX=	.03	ANGLE=				90.0
5		.00	.00	.07	.23						-.12
		.06	.04	-.01	.00						.00
TOP :	SMAX=	.05	SMIN=	-.01	TMAX=	.03	ANGLE=				90.0
BOTT:	SMAX=	-.02	SMIN=	-.05	TMAX=	.02	ANGLE=				90.0
6		.00	.00	.13	.50						.00
		.08	.07	.00	.00						.00
TOP :	SMAX=	.09	SMIN=	.02	TMAX=	.03	ANGLE=				90.0
BOTT:	SMAX=	-.02	SMIN=	-.08	TMAX=	.03	ANGLE=				90.0
7		.00	.00	.55	2.24						.01
		.35	.33	.01	.01						.01
TOP :	SMAX=	.38	SMIN=	.10	TMAX=	.14	ANGLE=				-1.3
BOTT:	SMAX=	-.08	SMIN=	-.36	TMAX=	.14	ANGLE=				.9

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.00	.00	-.09	-.39	.00					
		.06	.06	-.02	-.01	-.01					
	TOP : SMAX=	-.04	SMIN=	-.07	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	.06	SMIN=	-.01	TMAX=	.03	ANGLE=	90.0			
	9	.00	.00	.06	.23	.01					
		.03	.04	.01	.00	.00					
	TOP : SMAX=	.04	SMIN=	.02	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	-.04	TMAX=	.02	ANGLE=	90.0			
	10	.00	.00	.07	.36	.41					
		.14	.14	.06	.01	.00					
	TOP : SMAX=	.14	SMIN=	.00	TMAX=	.07	ANGLE=	90.0			
	BOTT: SMAX=	.08	SMIN=	-.08	TMAX=	.08	ANGLE=	-26.2			
	11	.00	.00	-.07	-.36	-.41					
		.14	.14	-.06	-.01	.00					
	TOP : SMAX=	.00	SMIN=	-.14	TMAX=	.07	ANGLE=	90.0			
	BOTT: SMAX=	.08	SMIN=	-.08	TMAX=	.08	ANGLE=	-26.2			
	12	.00	.00	.00	.02	.00					
		.00	.00	.00	.00	.00					
	TOP : SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
	13	.00	-.01	-.01	.70	1.11					
		.31	.48	.22	.02	-.04					
	TOP : SMAX=	.33	SMIN=	.03	TMAX=	.15	ANGLE=	90.0			
	BOTT: SMAX=	.34	SMIN=	-.21	TMAX=	.27	ANGLE=	-27.4			
	14	.01	-.01	-.01	.85	1.76					
		.56	.59	.24	.02	.01					
	TOP : SMAX=	.50	SMIN=	-.10	TMAX=	.30	ANGLE=	90.0			
	BOTT: SMAX=	.40	SMIN=	-.28	TMAX=	.34	ANGLE=	-29.0			
	101	.00	-.02	.39	1.61	-.02					
		.24	.25	.04	.01	-.01					
	TOP : SMAX=	.28	SMIN=	.10	TMAX=	.09	ANGLE=	5.6			
	BOTT: SMAX=	-.03	SMIN=	-.26	TMAX=	.12	ANGLE=	-2.5			
	102	.00	-.01	.35	1.43	.01					
		.22	.22	.03	.01	-.01					
	TOP : SMAX=	.24	SMIN=	.08	TMAX=	.08	ANGLE=	2.2			
	BOTT: SMAX=	-.03	SMIN=	-.23	TMAX=	.10	ANGLE=	-2.8			
	103	.00	-.01	.69	2.82	.01					
		.43	.42	.03	.01	.00					
	TOP : SMAX=	.48	SMIN=	.15	TMAX=	.17	ANGLE=	.3			
	BOTT: SMAX=	-.08	SMIN=	-.46	TMAX=	.19	ANGLE=	-1.0			
	104	.00	-.01	.18	.72	.01					
		.11	.12	.01	.00	-.01					
	TOP : SMAX=	.12	SMIN=	.04	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	-.02	SMIN=	-.12	TMAX=	.05	ANGLE=	-8.2			
	105	.00	-.02	.29	1.21	.01					
		.18	.19	.03	.01	-.01					
	TOP : SMAX=	.21	SMIN=	.08	TMAX=	.06	ANGLE=	3.7			
	BOTT: SMAX=	-.02	SMIN=	-.20	TMAX=	.09	ANGLE=	-4.2			
	106	.00	-.02	.55	2.82	1.31					
		.59	.60	.15	.02	.02					
	TOP : SMAX=	.63	SMIN=	.10	TMAX=	.26	ANGLE=	-31.2			
	BOTT: SMAX=	.13	SMIN=	-.52	TMAX=	.33	ANGLE=	-19.1			
	107	.00	-.01	.48	2.45	.90					
		.46	.47	.09	.01	.01					
	TOP : SMAX=	.50	SMIN=	.09	TMAX=	.20	ANGLE=	-26.4			
	BOTT: SMAX=	.05	SMIN=	-.44	TMAX=	.25	ANGLE=	-16.8			
	108	.00	-.04	.49	2.48	.90					
		.45	.53	.17	.02	-.01					
	TOP : SMAX=	.51	SMIN=	.18	TMAX=	.16	ANGLE=	-28.3			
	BOTT: SMAX=	.14	SMIN=	-.44	TMAX=	.29	ANGLE=	-17.1			
	109	.00	-.10	1.55	6.42	.06					
		.96	1.00	.17	.03	-.05					
	TOP : SMAX=	1.10	SMIN=	.42	TMAX=	.34	ANGLE=	3.6			
	BOTT: SMAX=	-.09	SMIN=	-1.04	TMAX=	.48	ANGLE=	-3.7			

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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH				
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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH						
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MY FXY
355	15	.00	.00	.78	2.79	1.14
		.54	.54	.07	-.03	.03
	TOP : SMAX=	.57	SMIN=	.07	TMAX=	.25 ANGLE= -30.8
	BOTT: SMAX=	-.01	SMIN=	-.55	TMAX=	.27 ANGLE= -18.2
	2	.00	.00	-.01	-.17	.12
		.04	.05	.00	-.01	-.01
	TOP : SMAX=	.00	SMIN=	-.04	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	.04	SMIN=	-.02	TMAX=	.03 ANGLE= 90.0
	3	.00	.00	.02	-.10	.17
		.04	.07	-.01	.00	-.01
	TOP : SMAX=	.00	SMIN=	-.03	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	.04	SMIN=	-.04	TMAX=	.04 ANGLE= 90.0
	4	.00	.00	.00	-.10	.18
		.05	.06	.00	.00	-.01
	TOP : SMAX=	.01	SMIN=	-.04	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.04	SMIN=	-.03	TMAX=	.04 ANGLE= 90.0
	5	.00	.00	.04	.01	-.17
		.05	.06	-.03	.00	.00
	TOP : SMAX=	.02	SMIN=	-.04	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.02	SMIN=	-.05	TMAX=	.03 ANGLE= 90.0
	6	.00	.00	.16	.64	.01
		.10	.09	.00	.00	.00
	TOP : SMAX=	.11	SMIN=	.03	TMAX=	.04 ANGLE= 90.0
	BOTT: SMAX=	-.03	SMIN=	-.10	TMAX=	.04 ANGLE= 90.0
	7	.00	.00	.62	2.38	.07
		.37	.35	.00	.01	.00
	TOP : SMAX=	.41	SMIN=	.10	TMAX=	.15 ANGLE= -2.2
	BOTT: SMAX=	-.10	SMIN=	-.39	TMAX=	.14 ANGLE= -2.3
	8	.00	.00	.08	-.21	-.03
		.05	.08	-.06	-.01	.00
	TOP : SMAX=	-.03	SMIN=	-.05	TMAX=	.01 ANGLE= 90.0
	BOTT: SMAX=	.02	SMIN=	-.07	TMAX=	.05 ANGLE= 90.0
	9	.00	.00	-.05	-.11	-.01
		.02	.02	.01	.00	.00
	TOP : SMAX=	.00	SMIN=	-.02	TMAX=	.01 ANGLE= 90.0
	BOTT: SMAX=	.02	SMIN=	.02	TMAX=	.00 ANGLE= 90.0
	10	.00	-.01	-.20	.21	.43
		.14	.23	.14	.01	-.01
	TOP : SMAX=	.15	SMIN=	.01	TMAX=	.07 ANGLE= 90.0
	BOTT: SMAX=	.21	SMIN=	-.05	TMAX=	.13 ANGLE= -19.4
	11	.00	.01	.20	-.21	-.43
		.14	.23	-.14	-.01	.01
	TOP : SMAX=	-.01	SMIN=	-.15	TMAX=	.07 ANGLE= 90.0
	BOTT: SMAX=	.05	SMIN=	-.21	TMAX=	.13 ANGLE= -19.4
	12	.00	.00	-.01	-.04	.00
		.01	.00	.00	.00	.00
	TOP : SMAX=	.00	SMIN=	-.01	TMAX=	.00 ANGLE= 90.0
	BOTT: SMAX=	.01	SMIN=	.00	TMAX=	.00 ANGLE= 90.0
	13	.00	-.01	-.74	.05	.99
		.28	.64	.36	.01	-.08
	TOP : SMAX=	.27	SMIN=	-.01	TMAX=	.14 ANGLE= 20.0
	BOTT: SMAX=	.58	SMIN=	-.09	TMAX=	.34 ANGLE= -22.6
	14	.00	-.02	-.86	.06	2.15
		.57	.91	.41	.02	-.06
	TOP : SMAX=	.46	SMIN=	-.17	TMAX=	.32 ANGLE= 34.1
	BOTT: SMAX=	.78	SMIN=	-.22	TMAX=	.50 ANGLE= -28.6
	101	.00	-.03	-.33	-.72	-.16
		.14	.13	.07	.00	-.01
	TOP : SMAX=	.02	SMIN=	-.13	TMAX=	.08 ANGLE= -14.3
	BOTT: SMAX=	.14	SMIN=	.10	TMAX=	.02 ANGLE= 90.0

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
102		.00	-.02	-.10	.03	-.07
		.04	.07	.05	.00	-.01
TOP :	SMAX=	.04	SMIN=	.00	TMAX=	.02 ANGLE= 90.0
BOTT:	SMAX=	.07	SMIN=	.00	TMAX=	.04 ANGLE= 90.0
103		.00	-.02	.27	1.42	-.02
		.21	.23	.05	.01	-.01
TOP :	SMAX=	.24	SMIN=	.10	TMAX=	.07 ANGLE= 3.9
BOTT:	SMAX=	.01	SMIN=	-.23	TMAX=	.12 ANGLE= -.8
104		.00	-.01	-.17	-.65	-.10
		.12	.09	.01	-.01	-.01
TOP :	SMAX=	-.01	SMIN=	-.13	TMAX=	.06 ANGLE= 90.0
BOTT:	SMAX=	.10	SMIN=	.03	TMAX=	.03 ANGLE= 90.0
105		.00	-.02	-.27	-.57	-.08
		.11	.10	.06	.00	-.01
TOP :	SMAX=	.02	SMIN=	-.10	TMAX=	.06 ANGLE= -11.0
BOTT:	SMAX=	.11	SMIN=	.09	TMAX=	.01 ANGLE= 90.0
106		.00	-.02	-.23	1.21	1.23
		.39	.64	.32	.00	-.03
TOP :	SMAX=	.42	SMIN=	.06	TMAX=	.18 ANGLE= 90.0
BOTT:	SMAX=	.44	SMIN=	-.29	TMAX=	.37 ANGLE= -20.1
107		.00	-.02	-.03	1.00	.81
		.26	.41	.18	-.01	-.02
TOP :	SMAX=	.28	SMIN=	.05	TMAX=	.11 ANGLE= 90.0
BOTT:	SMAX=	.24	SMIN=	-.24	TMAX=	.24 ANGLE= -20.4
108		.00	-.05	-.89	-.94	.93
		.33	.53	.31	.01	-.04
TOP :	SMAX=	.19	SMIN=	-.19	TMAX=	.19 ANGLE= 17.7
BOTT:	SMAX=	.56	SMIN=	.06	TMAX=	.25 ANGLE= -26.7
109		-.01	-.11	-1.44	-3.01	-.47
		.60	.54	.32	-.01	-.04
TOP :	SMAX=	.11	SMIN=	-.53	TMAX=	.32 ANGLE= -10.9
BOTT:	SMAX=	.58	SMIN=	.48	TMAX=	.05 ANGLE= 90.0
356	15	.00	.01	1.32	2.19	1.22
		.39	.59	.08	-.02	-.08
TOP :	SMAX=	.45	SMIN=	.20	TMAX=	.13 ANGLE= 90.0
BOTT:	SMAX=	.05	SMIN=	-.57	TMAX=	.31 ANGLE= -33.2
2		.00	.00	.09	-.05	.10
		.02	.06	-.01	.00	-.01
TOP :	SMAX=	.01	SMIN=	-.01	TMAX=	.01 ANGLE= 90.0
BOTT:	SMAX=	.02	SMIN=	-.04	TMAX=	.03 ANGLE= 90.0
3		.00	.00	.09	-.05	.14
		.02	.07	-.02	.00	-.01
TOP :	SMAX=	.00	SMIN=	-.02	TMAX=	.01 ANGLE= 90.0
BOTT:	SMAX=	.02	SMIN=	-.06	TMAX=	.04 ANGLE= 90.0
4		.00	.00	.03	-.11	.15
		.04	.06	-.01	.00	-.01
TOP :	SMAX=	.01	SMIN=	-.03	TMAX=	.02 ANGLE= 90.0
BOTT:	SMAX=	.04	SMIN=	-.03	TMAX=	.03 ANGLE= 90.0
5		.00	.00	-.03	-.26	-.21
		.05	.10	-.03	.00	.01
TOP :	SMAX=	-.01	SMIN=	-.06	TMAX=	.02 ANGLE= 90.0
BOTT:	SMAX=	.07	SMIN=	-.05	TMAX=	.06 ANGLE= 90.0
6		.00	.00	.17	.63	.01
		.10	.09	.00	.00	.00
TOP :	SMAX=	.11	SMIN=	.03	TMAX=	.04 ANGLE= 90.0
BOTT:	SMAX=	-.03	SMIN=	-.10	TMAX=	.04 ANGLE= 90.0
7		.00	.00	.59	2.03	.11
		.31	.29	.00	.01	-.01
TOP :	SMAX=	.35	SMIN=	.09	TMAX=	.13 ANGLE= -1.8
BOTT:	SMAX=	-.10	SMIN=	-.33	TMAX=	.12 ANGLE= -7.3

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
8		.00	.01	.33	.16						
		.04	.12	-.07	-.01						
TOP :	SMAX=	.02	SMIN=	-.02	TMAX=	.02	ANGLE=	90.0			
BOTT:	SMAX=	-.03	SMIN=	-.13	TMAX=	.05	ANGLE=	90.0			
9		.00	.00	-.16	-.44						
		.07	.06	.01	.00						
TOP :	SMAX=	-.01	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.07	SMIN=	.04	TMAX=	.02	ANGLE=	90.0			
10		.00	-.01	-.57	-.12						
		.12	.30	.18	.00						
TOP :	SMAX=	.10	SMIN=	-.03	TMAX=	.07	ANGLE=	90.0			
BOTT:	SMAX=	.30	SMIN=	.00	TMAX=	.15	ANGLE=	-17.5			
11		.00	.01	.57	.12						
		.12	.30	-.18	.00						
TOP :	SMAX=	.03	SMIN=	-.10	TMAX=	.07	ANGLE=	90.0			
BOTT:	SMAX=	.00	SMIN=	-.30	TMAX=	.15	ANGLE=	-17.5			
12		.00	.00	-.02	-.08						
		.01	.01	.00	.00						
TOP :	SMAX=	.00	SMIN=	-.01	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.01	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
13		.00	-.02	-1.54	-.74						
		.20	.67	.35	-.01						
TOP :	SMAX=	.10	SMIN=	-.14	TMAX=	.12	ANGLE=	2.6			
BOTT:	SMAX=	.68	SMIN=	.04	TMAX=	.32	ANGLE=	-19.9			
14		.00	-.02	-1.79	-.88						
		.42	1.11	.40	-.01						
TOP :	SMAX=	.21	SMIN=	-.27	TMAX=	.24	ANGLE=	29.0			
BOTT:	SMAX=	1.01	SMIN=	-.18	TMAX=	.59	ANGLE=	-30.8			
101		.00	-.03	-1.13	-3.02						
		.49	.43	.09	-.02						
TOP :	SMAX=	-.09	SMIN=	-.53	TMAX=	.22	ANGLE=	-5.8			
BOTT:	SMAX=	.50	SMIN=	.26	TMAX=	.12	ANGLE=	-15.1			
102		.00	-.02	-.61	-1.46						
		.24	.21	.06	-.01						
TOP :	SMAX=	-.04	SMIN=	-.26	TMAX=	.11	ANGLE=	-6.2			
BOTT:	SMAX=	.24	SMIN=	.16	TMAX=	.04	ANGLE=	90.0			
103		.00	-.02	-.28	-.34						
		.08	.09	.06	-.01						
TOP :	SMAX=	.02	SMIN=	-.07	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	.11	SMIN=	.05	TMAX=	.03	ANGLE=	90.0			
104		.00	-.01	-.48	-1.84						
		.30	.26	.01	-.02						
TOP :	SMAX=	-.07	SMIN=	-.33	TMAX=	.13	ANGLE=	-7.7			
BOTT:	SMAX=	.29	SMIN=	.08	TMAX=	.11	ANGLE=	-10.1			
105		.00	-.02	-.88	-2.31						
		.38	.33	.08	-.02						
TOP :	SMAX=	-.07	SMIN=	-.41	TMAX=	.17	ANGLE=	-5.0			
BOTT:	SMAX=	.38	SMIN=	.21	TMAX=	.08	ANGLE=	-12.6			
106		.00	-.02	-.87	-.60						
		.31	.66	.35	-.02						
TOP :	SMAX=	.22	SMIN=	-.14	TMAX=	.18	ANGLE=	12.2			
BOTT:	SMAX=	.63	SMIN=	-.06	TMAX=	.34	ANGLE=	-26.1			
107		.00	-.01	-.30	-.48						
		.20	.37	.17	-.03						
TOP :	SMAX=	.12	SMIN=	-.11	TMAX=	.12	ANGLE=	7.6			
BOTT:	SMAX=	.34	SMIN=	-.06	TMAX=	.20	ANGLE=	-32.7			
108		.00	-.05	-2.39	-4.36						
		.74	.79	.33	-.04						
TOP :	SMAX=	-.07	SMIN=	-.77	TMAX=	.35	ANGLE=	4.4			
BOTT:	SMAX=	.91	SMIN=	.51	TMAX=	.20	ANGLE=	90.0			
109		.01	-.11	-4.68	-12.27						
		2.00	1.74	.41	-.09						
TOP :	SMAX=	-.36	SMIN=	-2.15	TMAX=	.90	ANGLE=	-5.0			
BOTT:	SMAX=	2.00	SMIN=	1.15	TMAX=	.43	ANGLE=	-13.0			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
357	15	-.03	.01	3.00	1.94						
		.66	.55	.10	.08						.05
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						-.24
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						-33.3
	2	.00	.00	.26	.29						-.01
		.06	.06	-.01	.00						-.02
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						90.0
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						90.0
	3	.00	.00	.20	.16						-.02
		.04	.04	-.01	.00						-.01
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						90.0
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						90.0
	4	.00	.00	.10	.01						.00
		.02	.03	-.01	.00						-.01
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						90.0
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						90.0
	5	.00	.00	-.19	-.74						-.15
		.10	.15	-.01	.01						.03
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						90.0
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						90.0
	6	.00	.00	.13	.36						.02
		.06	.05	.00	.00						.00
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						90.0
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						90.0
	7	.00	-.01	.42	.87						.15
		.14	.14	.00	.02						-.03
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						90.0
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						90.0
	8	.00	.01	.81	.99						-.08
		.16	.16	-.04	.01						.00
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						90.0
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						90.0
	9	.00	.00	-.33	-.85						-.07
		.13	.12	.01	-.01						.01
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						-2.7
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						90.0
	10	-.01	-.01	-1.13	-.90						-.10
		.17	.24	.09	-.02						-.02
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						90.0
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						-3.0
	11	.01	.01	1.13	.90						.10
		.17	.24	-.09	.02						.02
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						90.0
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						-3.0
	12	.00	.00	-.03	-.10						.00
		.02	.01	.00	.00						.00
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						90.0
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						90.0
	13	-.01	-.02	-2.50	-1.98						-.51
		.50	.33	-.05	-.08						-.06
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						90.0
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						13.0
	14	-.02	-.03	-3.44	-2.62						1.05
		.57	.86	-.02	-.10						-.24
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						90.0
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						-37.4
	101	.00	-.02	-2.28	-5.93						-.47
		.93	.83	.05	-.06						.05
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						-2.6
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						-13.4

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MAX FXY
102		.00	-.02	-1.38	-3.52	-.27
		.55	.49	.03	-.04	.02
TOP :	SMAX=	-.20	SMIN=	-.63	TMAX=	.21 ANGLE= -2.9
BOTT:	SMAX=	.56	SMIN=	.25	TMAX=	.16 ANGLE= -13.0
103		.00	-.02	-1.15	-3.11	-.17
		.49	.43	.03	-.03	.00
TOP :	SMAX=	-.16	SMIN=	-.55	TMAX=	.20 ANGLE= -3.4
BOTT:	SMAX=	.50	SMIN=	.22	TMAX=	.14 ANGLE= -6.8
104		.00	-.01	-.83	-3.01	-.35
		.48	.44	.00	-.03	.02
TOP :	SMAX=	-.13	SMIN=	-.53	TMAX=	.20 ANGLE= -5.0
BOTT:	SMAX=	.49	SMIN=	.12	TMAX=	.18 ANGLE= -13.3
105		.00	-.02	-1.75	-4.48	-.34
		.71	.62	.04	-.05	.03
TOP :	SMAX=	-.25	SMIN=	-.80	TMAX=	.27 ANGLE= -2.7
BOTT:	SMAX=	.72	SMIN=	.31	TMAX=	.20 ANGLE= -12.6
106		-.02	-.02	-1.26	-2.89	-.46
		.61	.41	.09	-.04	-.14
TOP :	SMAX=	-.02	SMIN=	-.62	TMAX=	.30 ANGLE= -23.7
BOTT:	SMAX=	.47	SMIN=	.28	TMAX=	.10 ANGLE= 21.7
107		-.01	.00	-.13	-2.00	-.36
		.46	.32	.00	-.02	-.12
TOP :	SMAX=	.06	SMIN=	-.43	TMAX=	.24 ANGLE= -23.7
BOTT:	SMAX=	.33	SMIN=	.01	TMAX=	.16 ANGLE= 10.9
108		-.01	-.05	-4.69	-8.92	-.05
		1.41	1.19	.06	-.13	-.07
TOP :	SMAX=	-.72	SMIN=	-1.63	TMAX=	.45 ANGLE= -4.7
BOTT:	SMAX=	1.36	SMIN=	.83	TMAX=	.26 ANGLE= 6.4
109		.01	-.10	-9.28	-23.77	-1.79
		3.74	3.31	.21	-.26	.16
TOP :	SMAX=	-1.33	SMIN=	-4.23	TMAX=	1.45 ANGLE= -2.8
BOTT:	SMAX=	3.81	SMIN=	1.65	TMAX=	1.08 ANGLE= -12.6
358	15	-.04	.06	4.24	7.82	-4.18
		2.21	1.12	.07	.29	-.30
TOP :	SMAX=	2.26	SMIN=	.11	TMAX=	1.07 ANGLE= 33.9
BOTT:	SMAX=	-.39	SMIN=	-1.27	TMAX=	.44 ANGLE= 32.3
2		.00	.01	.44	1.15	-.27
		.21	.16	.00	.02	-.02
TOP :	SMAX=	.23	SMIN=	.05	TMAX=	.09 ANGLE= 21.1
BOTT:	SMAX=	-.07	SMIN=	-.18	TMAX=	.06 ANGLE= 90.0
3		.00	.00	.32	.77	-.24
		.15	.11	.00	.01	-.01
TOP :	SMAX=	.16	SMIN=	.03	TMAX=	.06 ANGLE= 90.0
BOTT:	SMAX=	-.04	SMIN=	-.13	TMAX=	.04 ANGLE= 90.0
4		.00	.00	.18	.39	-.15
		.08	.06	.00	.01	-.01
TOP :	SMAX=	.09	SMIN=	.01	TMAX=	.04 ANGLE= 90.0
BOTT:	SMAX=	-.02	SMIN=	-.07	TMAX=	.02 ANGLE= 90.0
5		.01	.00	-.41	-1.50	.46
		.28	.25	.01	.02	.03
TOP :	SMAX=	-.01	SMIN=	-.29	TMAX=	.14 ANGLE= 25.6
BOTT:	SMAX=	.28	SMIN=	.06	TMAX=	.11 ANGLE= 13.1
6		.00	.00	-.01	-.16	-.04
		.03	.03	.00	.01	.00
TOP :	SMAX=	.01	SMIN=	-.02	TMAX=	.01 ANGLE= 90.0
BOTT:	SMAX=	.04	SMIN=	.01	TMAX=	.02 ANGLE= 90.0
7		-.01	-.01	-.01	-.65	-.35
		.17	.15	.03	.04	-.02
TOP :	SMAX=	.07	SMIN=	-.12	TMAX=	.09 ANGLE= -28.9
BOTT:	SMAX=	.16	SMIN=	.02	TMAX=	.07 ANGLE= -16.0

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

-----  
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
8		.00	.02	1.27	3.25		.10				
		.53	.42	.02	.06		-.01				
TOP :	SMAX=	.60	SMIN=	.23	TMAX=	.18	ANGLE=				-.4
BOTT:	SMAX=	-.19	SMIN=	-.48	TMAX=	.15	ANGLE=				-6.0
9		.00	-.01	-.50	-1.61		.13				
		.26	.22	-.01	-.02		.01				
TOP :	SMAX=	-.09	SMIN=	-.29	TMAX=	.10	ANGLE=				8.4
BOTT:	SMAX=	.25	SMIN=	.08	TMAX=	.09	ANGLE=				4.7
10		.01	-.02	-1.65	-3.68		-.27				
		.59	.49	-.04	-.05		-.02				
TOP :	SMAX=	-.31	SMIN=	-.68	TMAX=	.19	ANGLE=				-10.7
BOTT:	SMAX=	.56	SMIN=	.23	TMAX=	.17	ANGLE=				-3.6
11		-.01	.02	1.65	3.68		.27				
		.59	.49	.04	.05		.02				
TOP :	SMAX=	.68	SMIN=	.31	TMAX=	.19	ANGLE=				-10.7
BOTT:	SMAX=	-.23	SMIN=	-.56	TMAX=	.17	ANGLE=				-3.6
12		.00	.00	-.04	-.14		.01				
		.02	.02	.00	.00		.00				
TOP :	SMAX=	-.01	SMIN=	-.02	TMAX=	.01	ANGLE=				90.0
BOTT:	SMAX=	.02	SMIN=	.01	TMAX=	.01	ANGLE=				90.0
13		.03	-.04	-3.09	-6.77		-.53				
		1.24	1.17	-.72	-.12		.08				
TOP :	SMAX=	-1.23	SMIN=	-1.25	TMAX=	.01	ANGLE=				90.0
BOTT:	SMAX=	1.04	SMIN=	-.23	TMAX=	.63	ANGLE=				-7.9
14		-.09	-.07	-4.63	-9.98		-4.55				
		2.34	1.68	-.65	-.36		-.11				
TOP :	SMAX=	-.81	SMIN=	-2.64	TMAX=	.92	ANGLE=				-35.5
BOTT:	SMAX=	1.59	SMIN=	-.17	TMAX=	.88	ANGLE=				-23.9
101		.03	-.04	-3.51	-11.25		1.06				
		1.80	1.58	-.05	-.11		.06				
TOP :	SMAX=	-.59	SMIN=	-2.02	TMAX=	.72	ANGLE=				9.5
BOTT:	SMAX=	1.78	SMIN=	.53	TMAX=	.63	ANGLE=				5.6
102		.02	-.03	-2.27	-7.33		.58				
		1.16	1.03	-.03	-.07		.03				
TOP :	SMAX=	-.39	SMIN=	-1.31	TMAX=	.46	ANGLE=				8.0
BOTT:	SMAX=	1.16	SMIN=	.34	TMAX=	.41	ANGLE=				4.8
103		.01	-.03	-2.26	-7.72		.34				
		1.20	1.10	-.01	-.05		.01				
TOP :	SMAX=	-.38	SMIN=	-1.34	TMAX=	.48	ANGLE=				4.2
BOTT:	SMAX=	1.24	SMIN=	.36	TMAX=	.44	ANGLE=				2.8
104		.02	-.01	-1.24	-4.60		.70				
		.75	.68	-.02	-.03		.02				
TOP :	SMAX=	-.19	SMIN=	-.82	TMAX=	.32	ANGLE=				12.6
BOTT:	SMAX=	.75	SMIN=	.17	TMAX=	.29	ANGLE=				9.7
105		.02	-.03	-2.66	-8.48		.72				
		1.36	1.18	-.04	-.09		.04				
TOP :	SMAX=	-.46	SMIN=	-1.53	TMAX=	.53	ANGLE=				8.5
BOTT:	SMAX=	1.33	SMIN=	.40	TMAX=	.47	ANGLE=				5.1
106		.02	-.01	-1.68	-5.88		-2.10				
		1.16	1.12	-.37	.01		-.10				
TOP :	SMAX=	-.33	SMIN=	-1.29	TMAX=	.48	ANGLE=				-35.2
BOTT:	SMAX=	1.05	SMIN=	-.14	TMAX=	.59	ANGLE=				-12.4
107		.00	.01	-.03	-2.20		-1.83				
		.73	.76	-.32	.06		-.08				
TOP :	SMAX=	.07	SMIN=	-.70	TMAX=	.38	ANGLE=				90.0
BOTT:	SMAX=	.50	SMIN=	-.38	TMAX=	.44	ANGLE=				-15.7
108		.00	-.08	-6.83	-19.39		-1.05				
		3.11	2.62	-.39	-.33		.01				
TOP :	SMAX=	-1.52	SMIN=	-3.58	TMAX=	1.03	ANGLE=				-4.6
BOTT:	SMAX=	2.91	SMIN=	.73	TMAX=	1.09	ANGLE=				-4.8
109		.13	-.15	-14.10	-44.99		3.85				
		7.20	6.28	-.21	-.48		.19				
TOP :	SMAX=	-2.43	SMIN=	-8.10	TMAX=	2.84	ANGLE=				8.5
BOTT:	SMAX=	7.06	SMIN=	2.10	TMAX=	2.48	ANGLE=				5.2



PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
361	15	-.04	.16	-.17	-2.88	-18.43					
		5.59	5.09	-.20	-.06	-.15					
	TOP : SMAX=	2.84	SMIN=	-3.60	TMAX=	3.22	ANGLE=	-43.6			
	BOTT: SMAX=	3.07	SMIN=	-2.81	TMAX=	2.94	ANGLE=	-42.1			
	2	.00	.00	.08	.36	-1.21					
		.38	.33	-.01	.00	-.01					
	TOP : SMAX=	.25	SMIN=	-.19	TMAX=	.22	ANGLE=	90.0			
	BOTT: SMAX=	.15	SMIN=	-.23	TMAX=	.19	ANGLE=	90.0			
	3	-.01	.00	-.02	.25	-.80					
		.25	.22	.00	.00	-.01					
	TOP : SMAX=	.16	SMIN=	-.12	TMAX=	.14	ANGLE=	90.0			
	BOTT: SMAX=	.11	SMIN=	-.15	TMAX=	.13	ANGLE=	90.0			
	4	-.01	.00	-.09	.10	-.34					
		.12	.09	.00	.00	-.01					
	TOP : SMAX=	.07	SMIN=	-.07	TMAX=	.07	ANGLE=	90.0			
	BOTT: SMAX=	.05	SMIN=	-.06	TMAX=	.05	ANGLE=	90.0			
	5	.04	-.04	-1.32	-1.11	1.19					
		.39	.41	.04	.01	.00					
	TOP : SMAX=	.02	SMIN=	-.38	TMAX=	.20	ANGLE=	90.0			
	BOTT: SMAX=	.43	SMIN=	.03	TMAX=	.20	ANGLE=	90.0			
	6	.00	.00	-.07	-.87	-.15					
		.15	.14	.00	-.01	.00					
	TOP : SMAX=	-.01	SMIN=	-.15	TMAX=	.07	ANGLE=	-9.5			
	BOTT: SMAX=	.14	SMIN=	.00	TMAX=	.07	ANGLE=	-11.6			
	7	-.02	.04	.33	-3.26	-1.13					
		.64	.68	-.04	-.02	.02					
	TOP : SMAX=	.06	SMIN=	-.61	TMAX=	.33	ANGLE=	-14.9			
	BOTT: SMAX=	.59	SMIN=	-.16	TMAX=	.38	ANGLE=	-17.1			
	8	-.02	-.01	.68	2.01	-2.26					
		.80	.65	.10	.01	-.05					
	TOP : SMAX=	.71	SMIN=	-.15	TMAX=	.43	ANGLE=	40.5			
	BOTT: SMAX=	.19	SMIN=	-.53	TMAX=	.36	ANGLE=	32.4			
	9	.01	.00	-.55	-.40	.60					
		.19	.19	.00	.00	.00					
	TOP : SMAX=	.02	SMIN=	-.18	TMAX=	.10	ANGLE=	90.0			
	BOTT: SMAX=	.18	SMIN=	-.02	TMAX=	.10	ANGLE=	90.0			
	10	.00	.02	-.59	-.61	.76					
		.28	.26	-.12	-.01	-.01					
	TOP : SMAX=	-.04	SMIN=	-.29	TMAX=	.13	ANGLE=	-32.7			
	BOTT: SMAX=	.19	SMIN=	-.11	TMAX=	.15	ANGLE=	33.7			
	11	.00	-.02	.59	.61	-.76					
		.28	.26	.12	.01	.01					
	TOP : SMAX=	.29	SMIN=	.04	TMAX=	.13	ANGLE=	-32.7			
	BOTT: SMAX=	.11	SMIN=	-.19	TMAX=	.15	ANGLE=	33.7			
	12	.00	.00	-.03	-.01	.03					
		.01	.01	.00	.00	.00					
	TOP : SMAX=	.00	SMIN=	-.01	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.01	SMIN=	.00	TMAX=	.01	ANGLE=	90.0			
	13	.00	.03	-.26	.35	1.08					
		1.45	1.27	-1.30	.04	.05					
	TOP : SMAX=	.14	SMIN=	-1.38	TMAX=	.76	ANGLE=	-8.9			
	BOTT: SMAX=	.00	SMIN=	-1.27	TMAX=	.63	ANGLE=	5.9			
	14	.01	.15	-1.88	-11.18	7.92					
		3.38	3.40	-1.79	-.06	.25					
	TOP : SMAX=	-.44	SMIN=	-3.58	TMAX=	1.57	ANGLE=	-43.3			
	BOTT: SMAX=	2.13	SMIN=	-1.80	TMAX=	1.96	ANGLE=	16.6			
	101	.08	-.04	-4.09	-3.07	4.46					
		1.41	1.44	.00	.01	-.01					
	TOP : SMAX=	.15	SMIN=	-1.33	TMAX=	.74	ANGLE=	-41.6			
	BOTT: SMAX=	1.36	SMIN=	-.15	TMAX=	.75	ANGLE=	-41.9			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH								
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH										
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	ANGLE
102		.04	-.02	-2.52	-2.52	2.61				
		.86	.86	-.01	.00	.00				
TOP :	SMAX=	.01	SMIN=	-.86	TMAX=	.43	ANGLE=	90.0		
BOTT:	SMAX=	.85	SMIN=	-.02	TMAX=	.44	ANGLE=	90.0		
103		.03	.01	-2.20	-4.43	1.83				
		.85	.81	-.04	-.01	.01				
TOP :	SMAX=	-.22	SMIN=	-.94	TMAX=	.36	ANGLE=	30.9		
BOTT:	SMAX=	.88	SMIN=	.17	TMAX=	.35	ANGLE=	27.7		
104		.03	-.03	-1.92	-.22	.92				
		.30	.50	.07	.02	-.04				
TOP :	SMAX=	.02	SMIN=	-.29	TMAX=	.16	ANGLE=	-22.2		
BOTT:	SMAX=	.48	SMIN=	-.04	TMAX=	.26	ANGLE=	-24.6		
105		.05	-.02	-2.90	-2.14	3.21				
		1.02	1.03	-.01	.01	-.01				
TOP :	SMAX=	.11	SMIN=	-.95	TMAX=	.53	ANGLE=	-41.3		
BOTT:	SMAX=	.96	SMIN=	-.12	TMAX=	.54	ANGLE=	-42.0		
106		.01	.09	-2.06	-2.72	-6.57				
		2.23	1.96	-.81	-.01	-.06				
TOP :	SMAX=	.39	SMIN=	-2.01	TMAX=	1.20	ANGLE=	36.6		
BOTT:	SMAX=	1.12	SMIN=	-1.15	TMAX=	1.13	ANGLE=	-33.1		
107		.00	.07	-1.47	-2.10	-7.33				
		2.34	2.15	-.69	.00	-.05				
TOP :	SMAX=	.66	SMIN=	-1.95	TMAX=	1.30	ANGLE=	38.5		
BOTT:	SMAX=	1.19	SMIN=	-1.29	TMAX=	1.24	ANGLE=	-35.6		
108		.09	.03	-5.87	-9.23	9.43				
		3.40	2.93	-.91	-.02	.11				
TOP :	SMAX=	-.03	SMIN=	-3.41	TMAX=	1.69	ANGLE=	-42.2		
BOTT:	SMAX=	2.42	SMIN=	-.83	TMAX=	1.63	ANGLE=	31.8		
109		.29	-.12	-15.39	-11.40	17.08				
		5.41	5.48	-.04	.03	-.03				
TOP :	SMAX=	.61	SMIN=	-5.08	TMAX=	2.84	ANGLE=	-41.3		
BOTT:	SMAX=	5.12	SMIN=	-.66	TMAX=	2.89	ANGLE=	-42.0		
362	15	.11	.16	-6.77	4.87	-8.94				
		3.29	2.89	-.27	-.08	-.07				
TOP :	SMAX=	1.56	SMIN=	-2.22	TMAX=	1.89	ANGLE=	27.9		
BOTT:	SMAX=	1.66	SMIN=	-1.68	TMAX=	1.67	ANGLE=	29.2		
2		.01	.00	-.30	-.26	-.59				
		.19	.17	-.02	.00	.00				
TOP :	SMAX=	.05	SMIN=	-.16	TMAX=	.10	ANGLE=	90.0		
BOTT:	SMAX=	.13	SMIN=	-.06	TMAX=	.10	ANGLE=	90.0		
3		.01	.00	-.30	-.03	-.51				
		.16	.15	-.01	.00	.00				
TOP :	SMAX=	.06	SMIN=	-.12	TMAX=	.09	ANGLE=	90.0		
BOTT:	SMAX=	.11	SMIN=	-.06	TMAX=	.08	ANGLE=	90.0		
4		.00	.00	-.26	.12	-.38				
		.13	.12	-.01	.00	.00				
TOP :	SMAX=	.06	SMIN=	-.09	TMAX=	.08	ANGLE=	90.0		
BOTT:	SMAX=	.07	SMIN=	-.06	TMAX=	.07	ANGLE=	90.0		
5		.00	.01	-2.35	.28	.61				
		.44	.47	.02	.01	.00				
TOP :	SMAX=	.08	SMIN=	-.39	TMAX=	.24	ANGLE=	-12.9		
BOTT:	SMAX=	.44	SMIN=	-.06	TMAX=	.25	ANGLE=	-12.2		
6		.00	.01	.04	-.40	.03				
		.07	.07	.00	.00	.00				
TOP :	SMAX=	.01	SMIN=	-.07	TMAX=	.04	ANGLE=	90.0		
BOTT:	SMAX=	.06	SMIN=	-.01	TMAX=	.04	ANGLE=	90.0		
7		-.01	.04	.95	-.27	.21				
		.21	.19	.01	.01	.02				
TOP :	SMAX=	.18	SMIN=	-.05	TMAX=	.11	ANGLE=	13.8		
BOTT:	SMAX=	.05	SMIN=	-.15	TMAX=	.10	ANGLE=	4.4		

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.03	.01	-.63	-3.71						
		.78	.65	.11	-.01						
TOP :	SMAX=	.10	SMIN=	-.72	TMAX=	.41	ANGLE=				-19.6
BOTT:	SMAX=	.70	SMIN=	.12	TMAX=	.29	ANGLE=				-24.1
	9	-.01	.00	-.77	1.25						.32
		.32	.30	-.01	.00						.00
TOP :	SMAX=	.22	SMIN=	-.14	TMAX=	.18	ANGLE=				-8.3
BOTT:	SMAX=	.13	SMIN=	-.22	TMAX=	.17	ANGLE=				-9.0
	10	-.01	.01	-.77	2.96						.47
		.66	.52	-.13	-.01						.00
TOP :	SMAX=	.49	SMIN=	-.26	TMAX=	.38	ANGLE=				-5.6
BOTT:	SMAX=	.01	SMIN=	-.52	TMAX=	.27	ANGLE=				-9.1
	11	.01	-.01	.77	-2.96						-.47
		.66	.52	.13	.01						.00
TOP :	SMAX=	.26	SMIN=	-.49	TMAX=	.38	ANGLE=				-5.6
BOTT:	SMAX=	.52	SMIN=	-.01	TMAX=	.27	ANGLE=				-9.1
	12	.00	.00	-.03	.14						.02
		.03	.03	.00	.00						.00
TOP :	SMAX=	.02	SMIN=	-.01	TMAX=	.01	ANGLE=				90.0
BOTT:	SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=				90.0
	13	-.01	.02	-1.61	3.88						.81
		2.20	1.02	-1.43	.12						.02
TOP :	SMAX=	.77	SMIN=	-1.70	TMAX=	1.24	ANGLE=				-3.6
BOTT:	SMAX=	-.51	SMIN=	-1.18	TMAX=	.33	ANGLE=				9.9
	14	-.17	-.07	7.64	24.13						5.59
		5.00	3.82	-1.99	.21						.14
TOP :	SMAX=	4.46	SMIN=	-.94	TMAX=	2.70	ANGLE=				-11.7
BOTT:	SMAX=	-2.70	SMIN=	-4.37	TMAX=	.83	ANGLE=				-35.5
	101	-.03	.02	-5.98	8.40						2.35
		2.24	2.14	-.06	.01						-.01
TOP :	SMAX=	1.47	SMIN=	-1.11	TMAX=	1.29	ANGLE=				-8.7
BOTT:	SMAX=	1.01	SMIN=	-1.45	TMAX=	1.23	ANGLE=				-9.4
	102	-.02	.02	-3.48	5.22						1.47
		1.37	1.30	-.04	.00						.00
TOP :	SMAX=	.91	SMIN=	-.66	TMAX=	.79	ANGLE=				-9.0
BOTT:	SMAX=	.58	SMIN=	-.91	TMAX=	.74	ANGLE=				-9.7
	103	-.03	.04	-2.75	5.33						1.61
		1.32	1.23	-.04	.01						.01
TOP :	SMAX=	.95	SMIN=	-.55	TMAX=	.75	ANGLE=				-10.9
BOTT:	SMAX=	.47	SMIN=	-.92	TMAX=	.70	ANGLE=				-10.8
	104	.00	.02	-4.02	2.57						.30
		.91	1.02	.05	.00						-.02
TOP :	SMAX=	.43	SMIN=	-.62	TMAX=	.52	ANGLE=				-1.6
BOTT:	SMAX=	.72	SMIN=	-.44	TMAX=	.58	ANGLE=				-3.6
	105	-.03	.01	-4.13	6.54						1.70
		1.67	1.59	-.05	.01						.00
TOP :	SMAX=	1.14	SMIN=	-.78	TMAX=	.96	ANGLE=				-8.5
BOTT:	SMAX=	.69	SMIN=	-1.13	TMAX=	.91	ANGLE=				-9.2
	106	.03	.10	-6.79	9.39						-2.92
		3.29	1.83	-.94	.02						-.03
TOP :	SMAX=	1.65	SMIN=	-2.14	TMAX=	1.90	ANGLE=				7.9
BOTT:	SMAX=	.31	SMIN=	-1.66	TMAX=	.98	ANGLE=				13.9
	107	.04	.09	-6.02	6.43						-3.39
		2.74	1.49	-.81	.03						-.02
TOP :	SMAX=	1.21	SMIN=	-1.93	TMAX=	1.57	ANGLE=				11.0
BOTT:	SMAX=	.40	SMIN=	-1.25	TMAX=	.82	ANGLE=				20.6
	108	-.13	-.01	-3.21	23.15						5.69
		5.28	3.82	-1.08	.12						.06
TOP :	SMAX=	4.15	SMIN=	-1.79	TMAX=	2.97	ANGLE=				-10.0
BOTT:	SMAX=	-.32	SMIN=	-3.97	TMAX=	1.83	ANGLE=				-14.5
	109	-.14	.07	-21.97	34.63						9.04
		8.86	8.42	-.26	.04						-.02
TOP :	SMAX=	6.03	SMIN=	-4.14	TMAX=	5.09	ANGLE=				-8.5
BOTT:	SMAX=	3.65	SMIN=	-5.98	TMAX=	4.82	ANGLE=				-9.3

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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	ANGLE
363	15	.11	-.03	-9.28	9.35		11.28	
		4.36	4.12	-.39	-.06		-.05	
	TOP : SMAX=	2.29	SMIN=	-2.73	TMAX=	2.51	ANGLE=	-23.4
	BOTT: SMAX=	2.14	SMIN=	-2.61	TMAX=	2.37	ANGLE=	-27.1
	2	.01	.00	-.30	-.26		.59	
		.19	.17	-.02	.00		.00	
	TOP : SMAX=	.05	SMIN=	-.16	TMAX=	.10	ANGLE=	90.0
	BOTT: SMAX=	.13	SMIN=	-.06	TMAX=	.10	ANGLE=	90.0
	3	.01	.00	-.30	-.03		.51	
		.16	.15	-.01	.00		.00	
	TOP : SMAX=	.06	SMIN=	-.12	TMAX=	.09	ANGLE=	90.0
	BOTT: SMAX=	.11	SMIN=	-.06	TMAX=	.08	ANGLE=	90.0
	4	.00	.00	-.26	.12		.38	
		.13	.12	-.01	.00		.00	
	TOP : SMAX=	.06	SMIN=	-.09	TMAX=	.08	ANGLE=	90.0
	BOTT: SMAX=	.07	SMIN=	-.06	TMAX=	.07	ANGLE=	90.0
	5	.00	-.01	-2.35	.28		-.61	
		.44	.47	.02	.01		.00	
	TOP : SMAX=	.08	SMIN=	-.39	TMAX=	.24	ANGLE=	12.9
	BOTT: SMAX=	.44	SMIN=	-.06	TMAX=	.25	ANGLE=	12.2
	6	.00	.01	-.07	.27		.03	
		.05	.05	.00	.00		.00	
	TOP : SMAX=	.05	SMIN=	-.01	TMAX=	.03	ANGLE=	90.0
	BOTT: SMAX=	.01	SMIN=	-.04	TMAX=	.03	ANGLE=	90.0
	7	.01	.03	-.78	1.53		.03	
		.36	.32	.00	.03		.01	
	TOP : SMAX=	.28	SMIN=	-.13	TMAX=	.21	ANGLE=	-2.0
	BOTT: SMAX=	.13	SMIN=	-.23	TMAX=	.18	ANGLE=	.7
	8	.03	-.01	-.63	-3.71		1.43	
		.78	.65	.11	-.01		.02	
	TOP : SMAX=	.10	SMIN=	-.72	TMAX=	.41	ANGLE=	19.6
	BOTT: SMAX=	.70	SMIN=	.12	TMAX=	.29	ANGLE=	24.1
	9	-.01	.00	-.77	1.25		-.32	
		.32	.30	-.01	.00		.00	
	TOP : SMAX=	.22	SMIN=	-.14	TMAX=	.18	ANGLE=	8.3
	BOTT: SMAX=	.13	SMIN=	-.22	TMAX=	.17	ANGLE=	9.0
	10	-.01	-.01	-.77	2.96		-.47	
		.66	.52	-.13	-.01		.00	
	TOP : SMAX=	.49	SMIN=	-.26	TMAX=	.38	ANGLE=	5.6
	BOTT: SMAX=	.01	SMIN=	-.52	TMAX=	.27	ANGLE=	9.1
	11	.01	.01	.77	-2.96		.47	
		.66	.52	.13	.01		.00	
	TOP : SMAX=	.26	SMIN=	-.49	TMAX=	.38	ANGLE=	5.6
	BOTT: SMAX=	.52	SMIN=	-.01	TMAX=	.27	ANGLE=	9.1
	12	.00	.00	-.03	.14		-.02	
		.03	.03	.00	.00		.00	
	TOP : SMAX=	.02	SMIN=	-.01	TMAX=	.01	ANGLE=	90.0
	BOTT: SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0
	13	-.01	-.02	-1.61	3.88		-.81	
		2.20	1.02	-1.43	.12		-.02	
	TOP : SMAX=	.77	SMIN=	-1.70	TMAX=	1.24	ANGLE=	3.6
	BOTT: SMAX=	-.51	SMIN=	-1.18	TMAX=	.33	ANGLE=	-9.9
	14	-.17	.07	7.64	24.13		-5.59	
		5.00	3.82	-1.99	.21		-.14	
	TOP : SMAX=	4.46	SMIN=	-.94	TMAX=	2.70	ANGLE=	11.7
	BOTT: SMAX=	-2.70	SMIN=	-4.37	TMAX=	.83	ANGLE=	35.5
	101	-.03	-.02	-5.98	8.39		-2.35	
		2.24	2.14	-.06	.01		.01	
	TOP : SMAX=	1.47	SMIN=	-1.11	TMAX=	1.29	ANGLE=	8.7
	BOTT: SMAX=	1.01	SMIN=	-1.45	TMAX=	1.23	ANGLE=	9.4

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		-.02	-.01	-3.57	5.75						
		1.45	1.38	-.04	.01						
TOP :	SMAX=	1.00	SMIN=	-.67	TMAX=	.83	ANGLE=	8.1			
BOTT:	SMAX=	.59	SMIN=	-.99	TMAX=	.79	ANGLE=	8.9			
103		-.02	.02	-4.14	6.76						
		1.69	1.59	-.04	.03						
TOP :	SMAX=	1.18	SMIN=	-.76	TMAX=	.97	ANGLE=	6.7			
BOTT:	SMAX=	.69	SMIN=	-1.13	TMAX=	.91	ANGLE=	7.9			
104		.00	-.02	-4.02	2.57						
		.91	1.02	.05	.00						
TOP :	SMAX=	.43	SMIN=	-.62	TMAX=	.52	ANGLE=	1.6			
BOTT:	SMAX=	.72	SMIN=	-.44	TMAX=	.58	ANGLE=	3.6			
105		-.03	-.01	-4.13	6.54						
		1.67	1.59	-.05	.01						
TOP :	SMAX=	1.14	SMIN=	-.78	TMAX=	.96	ANGLE=	8.5			
BOTT:	SMAX=	.69	SMIN=	-1.13	TMAX=	.91	ANGLE=	9.2			
106		.03	-.04	-8.04	11.63						
		3.90	2.44	-1.00	.03						
TOP :	SMAX=	2.06	SMIN=	-2.44	TMAX=	2.25	ANGLE=	-8.4			
BOTT:	SMAX=	.55	SMIN=	-2.12	TMAX=	1.33	ANGLE=	-16.1			
107		.04	-.03	-7.27	8.67						
		3.35	2.11	-.87	.04						
TOP :	SMAX=	1.62	SMIN=	-2.22	TMAX=	1.92	ANGLE=	-11.1			
BOTT:	SMAX=	.65	SMIN=	-1.71	TMAX=	1.18	ANGLE=	-21.1			
108		-.13	.01	-3.21	23.15						
		5.28	3.82	-1.08	.12						
TOP :	SMAX=	4.15	SMIN=	-1.79	TMAX=	2.97	ANGLE=	10.0			
BOTT:	SMAX=	-.32	SMIN=	-3.97	TMAX=	1.83	ANGLE=	14.5			
109		-.14	-.07	-21.97	34.63						
		8.86	8.42	-.26	.04						
TOP :	SMAX=	6.03	SMIN=	-4.14	TMAX=	5.09	ANGLE=	8.5			
BOTT:	SMAX=	3.65	SMIN=	-5.98	TMAX=	4.82	ANGLE=	9.3			
364	15	-.02	-.11	-1.55	6.55						14.80
		4.67	4.27	-.45	-.01						.07
TOP :	SMAX=	2.88	SMIN=	-2.51	TMAX=	2.69	ANGLE=	-35.3			
BOTT:	SMAX=	1.79	SMIN=	-3.08	TMAX=	2.44	ANGLE=	-39.6			
2		.00	.00	.08	.36						1.21
		.38	.33	-.01	.00						.01
TOP :	SMAX=	.25	SMIN=	-.19	TMAX=	.22	ANGLE=	90.0			
BOTT:	SMAX=	.15	SMIN=	-.23	TMAX=	.19	ANGLE=	90.0			
3		-.01	.00	-.02	.25						.80
		.25	.22	.00	.00						.01
TOP :	SMAX=	.16	SMIN=	-.12	TMAX=	.14	ANGLE=	90.0			
BOTT:	SMAX=	.11	SMIN=	-.15	TMAX=	.13	ANGLE=	90.0			
4		-.01	.00	-.09	.10						.34
		.12	.09	.00	.00						.01
TOP :	SMAX=	.07	SMIN=	-.07	TMAX=	.07	ANGLE=	90.0			
BOTT:	SMAX=	.05	SMIN=	-.06	TMAX=	.05	ANGLE=	90.0			
5		.04	.04	-1.32	-1.11						-1.19
		.39	.41	.04	.01						.00
TOP :	SMAX=	.02	SMIN=	-.38	TMAX=	.20	ANGLE=	90.0			
BOTT:	SMAX=	.43	SMIN=	.03	TMAX=	.20	ANGLE=	90.0			
6		.00	.00	.03	.73						-.15
		.13	.13	.00	.00						.00
TOP :	SMAX=	.13	SMIN=	.00	TMAX=	.06	ANGLE=	10.9			
BOTT:	SMAX=	.00	SMIN=	-.13	TMAX=	.06	ANGLE=	12.9			
7		.03	.04	-.50	2.65						-1.30
		.60	.63	.04	.02						.01
TOP :	SMAX=	.53	SMIN=	-.12	TMAX=	.32	ANGLE=	19.6			
BOTT:	SMAX=	.21	SMIN=	-.51	TMAX=	.36	ANGLE=	19.8			

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	-.02	.01	.68	2.01					2.26	
		.80	.65	.10	.01					.05	
	TOP : SMAX=	.71	SMIN=	-.15	TMAX=	.43	ANGLE=			-40.5	
	BOTT: SMAX=	.19	SMIN=	-.53	TMAX=	.36	ANGLE=			-32.4	
	9	.01	.00	-.55	-.40					-.60	
		.19	.19	.00	.00					.00	
	TOP : SMAX=	.02	SMIN=	-.18	TMAX=	.10	ANGLE=			90.0	
	BOTT: SMAX=	.18	SMIN=	-.02	TMAX=	.10	ANGLE=			90.0	
	10	.00	-.02	-.59	-.61					-.76	
		.28	.26	-.12	-.01					.01	
	TOP : SMAX=	-.04	SMIN=	-.29	TMAX=	.13	ANGLE=			32.7	
	BOTT: SMAX=	.19	SMIN=	-.11	TMAX=	.15	ANGLE=			-33.7	
	11	.00	.02	.59	.61					.76	
		.28	.26	.12	.01					-.01	
	TOP : SMAX=	.29	SMIN=	.04	TMAX=	.13	ANGLE=			32.7	
	BOTT: SMAX=	.11	SMIN=	-.19	TMAX=	.15	ANGLE=			-33.7	
	12	.00	.00	-.03	-.01					-.03	
		.01	.01	.00	.00					.00	
	TOP : SMAX=	.00	SMIN=	-.01	TMAX=	.01	ANGLE=			90.0	
	BOTT: SMAX=	.01	SMIN=	.00	TMAX=	.01	ANGLE=			90.0	
	13	.00	-.03	-.26	.35					-1.08	
		1.45	1.27	-1.30	.04					-.05	
	TOP : SMAX=	.14	SMIN=	-1.38	TMAX=	.76	ANGLE=			8.9	
	BOTT: SMAX=	.00	SMIN=	-1.27	TMAX=	.63	ANGLE=			-5.9	
	14	.01	-.15	-1.88	-11.18					-7.92	
		3.38	3.40	-1.79	-.06					-.25	
	TOP : SMAX=	-.44	SMIN=	-3.58	TMAX=	1.57	ANGLE=			43.3	
	BOTT: SMAX=	2.13	SMIN=	-1.80	TMAX=	1.96	ANGLE=			-16.6	
	101	.08	.04	-4.09	-3.07					-4.46	
		1.41	1.44	.00	.01					.01	
	TOP : SMAX=	.15	SMIN=	-1.33	TMAX=	.74	ANGLE=			41.6	
	BOTT: SMAX=	1.36	SMIN=	-.15	TMAX=	.75	ANGLE=			41.9	
	102	.05	.02	-2.44	-1.24					-2.86	
		.89	.91	.00	.01					.01	
	TOP : SMAX=	.18	SMIN=	-.79	TMAX=	.48	ANGLE=			38.7	
	BOTT: SMAX=	.80	SMIN=	-.18	TMAX=	.49	ANGLE=			39.5	
	103	.07	.05	-2.87	.30					-3.77	
		1.17	1.23	.03	.02					.01	
	TOP : SMAX=	.48	SMIN=	-.86	TMAX=	.67	ANGLE=			33.5	
	BOTT: SMAX=	.93	SMIN=	-.46	TMAX=	.70	ANGLE=			33.7	
	104	.03	.03	-1.92	-.22					-.92	
		.30	.50	.07	.02					.04	
	TOP : SMAX=	.02	SMIN=	-.29	TMAX=	.16	ANGLE=			22.2	
	BOTT: SMAX=	.48	SMIN=	-.04	TMAX=	.26	ANGLE=			24.6	
	105	.05	.02	-2.90	-2.14					-3.21	
		1.02	1.03	-.01	.01					.01	
	TOP : SMAX=	.11	SMIN=	-.95	TMAX=	.53	ANGLE=			41.3	
	BOTT: SMAX=	.96	SMIN=	-.12	TMAX=	.54	ANGLE=			42.0	
	106	.02	-.06	-2.75	2.00					4.75	
		2.13	1.40	-.94	.02					.02	
	TOP : SMAX=	.67	SMIN=	-1.72	TMAX=	1.19	ANGLE=			-21.5	
	BOTT: SMAX=	.38	SMIN=	-1.18	TMAX=	.78	ANGLE=			42.0	
	107	.02	-.05	-2.16	2.61					5.52	
		2.17	1.64	-.82	.02					.01	
	TOP : SMAX=	.88	SMIN=	-1.60	TMAX=	1.24	ANGLE=			-24.3	
	BOTT: SMAX=	.48	SMIN=	-1.35	TMAX=	.91	ANGLE=			90.0	
	108	.09	-.03	-5.86	-9.24					-9.43	
		3.40	2.93	-.91	-.02					-.11	
	TOP : SMAX=	-.03	SMIN=	-3.41	TMAX=	1.69	ANGLE=			42.2	
	BOTT: SMAX=	2.42	SMIN=	-.83	TMAX=	1.63	ANGLE=			-31.8	
	109	.29	.12	-15.39	-11.40					-17.08	
		5.40	5.48	-.04	.03					.03	
	TOP : SMAX=	.60	SMIN=	-5.08	TMAX=	2.84	ANGLE=			41.3	
	BOTT: SMAX=	5.12	SMIN=	-.66	TMAX=	2.89	ANGLE=			42.0	

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
365	15	-.11 2.04	-.02 1.60	-1.79 -.28	-8.65 .00	4.00 .26					
	TOP :	SMAX=.01	SMIN=	-2.03	TMAX=	1.02	ANGLE=	32.4			
	BOTT:	SMAX=1.55	SMIN=	-.09	TMAX=	.82	ANGLE=	15.1			
	2	.00 .18	.00 .09	.14 -.01	.17 .00	.44 .03					
	TOP :	SMAX=.12	SMIN=	-.08	TMAX=	.10	ANGLE=	90.0			
	BOTT:	SMAX=.01	SMIN=	-.08	TMAX=	.05	ANGLE=	90.0			
	3	.00 .14	.00 .09	.11 -.01	.04 .00	.39 .02					
	TOP :	SMAX=.09	SMIN=	-.07	TMAX=	.08	ANGLE=	90.0			
	BOTT:	SMAX=.03	SMIN=	-.07	TMAX=	.05	ANGLE=	90.0			
	4	.00 .10	.00 .05	.06 .00	-.07 .00	.25 .01					
	TOP :	SMAX=.05	SMIN=	-.06	TMAX=	.05	ANGLE=	90.0			
	BOTT:	SMAX=.03	SMIN=	-.03	TMAX=	.03	ANGLE=	90.0			
	5	.00 .11	-.01 .05	.29 .02	.09 .03	-.22 -.01					
	TOP :	SMAX=.11	SMIN=	.01	TMAX=	.05	ANGLE=	90.0			
	BOTT:	SMAX=.03	SMIN=	-.04	TMAX=	.03	ANGLE=	90.0			
	6	.00 .07	.00 .06	.14 .00	.45 .00	-.04 .00					
	TOP :	SMAX=.08	SMIN=	.02	TMAX=	.03	ANGLE=	90.0			
	BOTT:	SMAX=-.02	SMIN=	-.07	TMAX=	.02	ANGLE=	90.0			
	7	.01 .30	-.02 .24	.65 .00	1.74 .03	-.30 -.02					
	TOP :	SMAX=.34	SMIN=	.09	TMAX=	.12	ANGLE=	16.3			
	BOTT:	SMAX=-.10	SMIN=	-.27	TMAX=	.09	ANGLE=	11.8			
	8	-.01 .42	-.01 .34	.87 .03	2.33 .02	.52 .04					
	TOP :	SMAX=.46	SMIN=	.12	TMAX=	.17	ANGLE=	-24.0			
	BOTT:	SMAX=-.11	SMIN=	-.38	TMAX=	.13	ANGLE=	-9.6			
	9	.00 .14	.00 .14	-.12 .00	-.84 .00	-.12 -.01					
	TOP :	SMAX=	SMIN=	-.14	TMAX=	.06	ANGLE=	-12.3			
	BOTT:	SMAX=.14	SMIN=	.01	TMAX=	.06	ANGLE=	-5.8			
	10	.01 .37	.00 .37	-.66 -.05	-2.47 -.01	-.07 .00					
	TOP :	SMAX=	SMIN=	-.43	TMAX=	.13	ANGLE=	-2.2			
	BOTT:	SMAX=.40	SMIN=	.06	TMAX=	.17	ANGLE=	-2.3			
	11	-.01 .37	.00 .37	.66 .05	2.47 .01	.07 .00					
	TOP :	SMAX=.43	SMIN=	.17	TMAX=	.13	ANGLE=	-2.2			
	BOTT:	SMAX=	SMIN=	-.40	TMAX=	.17	ANGLE=	-2.3			
	12	.00 .01	.00 .01	-.02 .00	-.09 .00	-.01 .00					
	TOP :	SMAX=.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
	BOTT:	SMAX=.01	SMIN=	.00	TMAX=	.01	ANGLE=	90.0			
	13	.01 .88	-.01 1.10	-.74 -.88	-3.31 -.05	-.04 -.03					
	TOP :	SMAX=	SMIN=	-1.01	TMAX=	.20	ANGLE=	5.6			
	BOTT:	SMAX=.50	SMIN=	-.76	TMAX=	.63	ANGLE=	1.2			
	14	.04 2.35	.07 2.23	-5.89 -.90	-14.72 -.18	-.13 -.02					
	TOP :	SMAX=	SMIN=	-2.64	TMAX=	.38	ANGLE=	-3.4			
	BOTT:	SMAX=	SMIN=	.08	TMAX=	1.10	ANGLE=	.1			
	101	.03 .91	-.01 .92	-.69 -.02	-5.53 .02	-.92 -.04					
	TOP :	SMAX=	SMIN=	-.95	TMAX=	.43	ANGLE=	-13.6			
	BOTT:	SMAX=.96	SMIN=	.09	TMAX=	.44	ANGLE=	-7.2			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.02	-.01	-.41	-3.35						
		.56	.56	-.02	.01						
TOP :	SMAX=	-.05	SMIN=	-.58	TMAX=	.27	ANGLE=	-14.6			
BOTT:	SMAX=	.58	SMIN=	.04	TMAX=	.27	ANGLE=	-7.7			
103		.02	-.02	.00	-2.31						
		.46	.45	-.01	.03						
TOP :	SMAX=	.06	SMIN=	-.43	TMAX=	.24	ANGLE=	-22.6			
BOTT:	SMAX=	.44	SMIN=	-.03	TMAX=	.23	ANGLE=	-12.0			
104		.01	-.01	.18	-1.85						
		.31	.35	.01	.02						
TOP :	SMAX=	.04	SMIN=	-.29	TMAX=	.16	ANGLE=	-3.4			
BOTT:	SMAX=	.33	SMIN=	-.02	TMAX=	.18	ANGLE=	-5.1			
105		.02	-.01	-.61	-4.38						
		.71	.71	-.02	.01						
TOP :	SMAX=	-.09	SMIN=	-.75	TMAX=	.33	ANGLE=	-12.7			
BOTT:	SMAX=	.75	SMIN=	.07	TMAX=	.34	ANGLE=	-6.7			
106		-.03	-.02	-1.93	-9.58						
		1.54	1.76	-.61	-.03						
TOP :	SMAX=	-.78	SMIN=	-1.78	TMAX=	.50	ANGLE=	23.1			
BOTT:	SMAX=	1.58	SMIN=	-.31	TMAX=	.95	ANGLE=	5.2			
107		-.04	-.02	-1.27	-7.11						
		1.23	1.41	-.56	-.01						
TOP :	SMAX=	-.56	SMIN=	-1.41	TMAX=	.43	ANGLE=	30.0			
BOTT:	SMAX=	1.19	SMIN=	-.37	TMAX=	.78	ANGLE=	6.8			
108		.05	.02	-3.98	-14.78						
		2.25	2.32	-.48	-.07						
TOP :	SMAX=	-1.09	SMIN=	-2.58	TMAX=	.74	ANGLE=	-10.5			
BOTT:	SMAX=	2.40	SMIN=	.18	TMAX=	1.11	ANGLE=	-3.5			
109		.10	-.03	-3.24	-23.17						
		3.77	3.79	-.10	.06						
TOP :	SMAX=	-.46	SMIN=	-3.98	TMAX=	1.76	ANGLE=	-12.8			
BOTT:	SMAX=	3.97	SMIN=	.40	TMAX=	1.79	ANGLE=	-6.8			
366	15	-.02	.01	-1.85	-6.16						
		1.17	1.68	.33	-.03						
TOP :	SMAX=	.09	SMIN=	-1.12	TMAX=	.61	ANGLE=	-13.7			
BOTT:	SMAX=	1.67	SMIN=	-.03	TMAX=	.85	ANGLE=	-38.8			
2		.00	.00	.06	-.19						
		.05	.08	.00	.00						
TOP :	SMAX=	.02	SMIN=	-.04	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.05	SMIN=	-.03	TMAX=	.04	ANGLE=	90.0			
3		.00	.00	.06	-.27						
		.05	.07	-.01	.00						
TOP :	SMAX=	.00	SMIN=	-.05	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.05	SMIN=	-.03	TMAX=	.04	ANGLE=	90.0			
4		.00	.00	.02	-.26						
		.05	.06	.00	.00						
TOP :	SMAX=	.00	SMIN=	-.05	TMAX=	.02	ANGLE=	90.0			
BOTT:	SMAX=	.05	SMIN=	-.01	TMAX=	.03	ANGLE=	90.0			
5		.00	.00	.24	-.41						
		.07	.13	-.03	.01						
TOP :	SMAX=	.01	SMIN=	-.06	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	.08	SMIN=	-.07	TMAX=	.08	ANGLE=	10.5			
6		.00	.00	.01	-.08						
		.02	.02	.00	.00						
TOP :	SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.01	SMIN=	-.01	TMAX=	.01	ANGLE=	90.0			
7		.00	-.01	.03	-1.04						
		.17	.20	-.02	.00						
TOP :	SMAX=	-.02	SMIN=	-.17	TMAX=	.08	ANGLE=	.4			
BOTT:	SMAX=	.18	SMIN=	-.03	TMAX=	.11	ANGLE=	9.4			



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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
8		.00	-.01	.57	.77						
		.12	.16	-.02	.01						
TOP :	SMAX=	.14	SMIN=	.07	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	-.06	SMIN=	-.18	TMAX=	.06	ANGLE=	90.0			
9		.00	.00	-.09	-.77						
		.13	.12	.00	.00						
TOP :	SMAX=	-.02	SMIN=	-.13	TMAX=	.06	ANGLE=	1.7			
BOTT:	SMAX=	.13	SMIN=	.01	TMAX=	.06	ANGLE=	7.6			
10		.00	.00	-.55	-1.37						
		.25	.21	.09	-.01						
TOP :	SMAX=	.00	SMIN=	-.24	TMAX=	.12	ANGLE=	6.2			
BOTT:	SMAX=	.23	SMIN=	.17	TMAX=	.03	ANGLE=	90.0			
11		.00	.00	.55	1.37						
		.25	.21	-.09	.01						
TOP :	SMAX=	.24	SMIN=	.00	TMAX=	.12	ANGLE=	6.2			
BOTT:	SMAX=	-.17	SMIN=	-.23	TMAX=	.03	ANGLE=	90.0			
12		.00	.00	-.02	-.10						
		.02	.01	.00	.00						
TOP :	SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.02	SMIN=	.00	TMAX=	.01	ANGLE=	90.0			
13		.00	.00	-1.17	-2.97						
		.51	.40	-.11	-.08						
TOP :	SMAX=	-.29	SMIN=	-.59	TMAX=	.15	ANGLE=	14.3			
BOTT:	SMAX=	.43	SMIN=	.07	TMAX=	.18	ANGLE=	9.7			
14		-.01	.04	-4.34	-5.48						
		.95	.75	-.03	-.11						
TOP :	SMAX=	-.70	SMIN=	-1.08	TMAX=	.19	ANGLE=	21.9			
BOTT:	SMAX=	.80	SMIN=	.69	TMAX=	.06	ANGLE=	4.1			
101		.00	.01	-.56	-5.24						
		.86	.82	.00	-.03						
TOP :	SMAX=	-.09	SMIN=	-.90	TMAX=	.41	ANGLE=	1.6			
BOTT:	SMAX=	.86	SMIN=	.08	TMAX=	.39	ANGLE=	7.6			
102		.00	.00	-.41	-3.48						
		.57	.54	.01	-.02						
TOP :	SMAX=	-.06	SMIN=	-.60	TMAX=	.27	ANGLE=	1.6			
BOTT:	SMAX=	.57	SMIN=	.07	TMAX=	.25	ANGLE=	7.6			
103		.00	-.01	-.40	-4.24						
		.69	.68	-.01	-.02						
TOP :	SMAX=	-.08	SMIN=	-.73	TMAX=	.32	ANGLE=	1.4			
BOTT:	SMAX=	.70	SMIN=	.04	TMAX=	.33	ANGLE=	7.9			
104		.00	.00	.04	-2.80						
		.48	.46	-.01	-.01						
TOP :	SMAX=	.00	SMIN=	-.48	TMAX=	.24	ANGLE=	2.4			
BOTT:	SMAX=	.45	SMIN=	-.02	TMAX=	.24	ANGLE=	1.9			
105		.00	.00	-.49	-4.03						
		.66	.62	.01	-.02						
TOP :	SMAX=	-.07	SMIN=	-.70	TMAX=	.31	ANGLE=	1.6			
BOTT:	SMAX=	.66	SMIN=	.08	TMAX=	.29	ANGLE=	7.4			
106		-.01	.01	-2.06	-7.43						
		1.24	1.17	.16	-.07						
TOP :	SMAX=	-.18	SMIN=	-1.31	TMAX=	.57	ANGLE=	-4.1			
BOTT:	SMAX=	1.31	SMIN=	.36	TMAX=	.47	ANGLE=	-22.6			
107		-.01	.00	-1.50	-6.06						
		1.01	1.04	.07	-.06						
TOP :	SMAX=	-.17	SMIN=	-1.08	TMAX=	.46	ANGLE=	-6.8			
BOTT:	SMAX=	1.11	SMIN=	.16	TMAX=	.48	ANGLE=	-24.2			
108		.00	.03	-3.01	-9.56						
		1.51	1.34	.00	-.09						
TOP :	SMAX=	-.50	SMIN=	-1.70	TMAX=	.60	ANGLE=	4.5			
BOTT:	SMAX=	1.51	SMIN=	.48	TMAX=	.52	ANGLE=	7.2			
109		.01	.03	-2.62	-21.31						
		3.50	3.28	.05	-.12						
TOP :	SMAX=	-.39	SMIN=	-3.68	TMAX=	1.64	ANGLE=	1.6			
BOTT:	SMAX=	3.48	SMIN=	.43	TMAX=	1.52	ANGLE=	7.4			

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MAX FXY
367	15	.00	.02	-2.21	-3.36	-2.87
		1.05	1.32	.69	-.01	-.07
	TOP : SMAX=	.48	SMIN=	-.72	TMAX=	.60 ANGLE= -21.4
	BOTT: SMAX=	1.41	SMIN=	.20	TMAX=	.60 ANGLE= 32.6
	2	.00	.00	-.02	-.25	-.20
		.06	.09	.01	-.01	.01
	TOP : SMAX=	.01	SMIN=	-.05	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.07	SMIN=	-.02	TMAX=	.05 ANGLE= 90.0
	3	.00	.00	.01	-.28	-.24
		.06	.11	-.02	.00	.01
	TOP : SMAX=	.00	SMIN=	-.07	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.07	SMIN=	-.05	TMAX=	.06 ANGLE= 90.0
	4	.00	.00	-.02	-.22	-.23
		.06	.09	.00	.00	.01
	TOP : SMAX=	.01	SMIN=	-.06	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.07	SMIN=	-.03	TMAX=	.05 ANGLE= 90.0
	5	.00	.00	.12	-.28	.11
		.05	.11	-.05	.00	-.01
	TOP : SMAX=	-.03	SMIN=	-.06	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	.05	SMIN=	-.08	TMAX=	.06 ANGLE= 10.9
	6	.00	.00	-.09	-.40	.01
		.06	.06	.00	.00	.00
	TOP : SMAX=	-.02	SMIN=	-.07	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.06	SMIN=	.01	TMAX=	.02 ANGLE= 90.0
	7	.00	-.01	-.45	-2.31	.10
		.36	.35	-.04	-.01	-.01
	TOP : SMAX=	-.11	SMIN=	-.40	TMAX=	.15 ANGLE= 1.8
	BOTT: SMAX=	.37	SMIN=	.04	TMAX=	.17 ANGLE= 4.1
	8	.00	-.01	.26	.11	-.25
		.05	.14	-.06	-.01	.01
	TOP : SMAX=	.03	SMIN=	-.03	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	-.13	TMAX=	.07 ANGLE= 90.0
	9	.00	.00	-.09	-.50	.04
		.08	.07	.00	-.01	.00
	TOP : SMAX=	-.01	SMIN=	-.09	TMAX=	.04 ANGLE= 90.0
	BOTT: SMAX=	.08	SMIN=	.02	TMAX=	.03 ANGLE= 90.0
	10	.00	.01	-.47	-.51	-.04
		.16	.23	.18	.00	.00
	TOP : SMAX=	.10	SMIN=	-.09	TMAX=	.10 ANGLE= -9.9
	BOTT: SMAX=	.26	SMIN=	.08	TMAX=	.09 ANGLE= 3.8
	11	.00	-.01	.47	.51	.04
		.16	.23	-.18	.00	.00
	TOP : SMAX=	.09	SMIN=	-.10	TMAX=	.10 ANGLE= -9.9
	BOTT: SMAX=	-.08	SMIN=	-.26	TMAX=	.09 ANGLE= 3.8
	12	.00	.00	-.02	-.08	.00
		.01	.01	.00	.00	.00
	TOP : SMAX=	.00	SMIN=	-.02	TMAX=	.01 ANGLE= 90.0
	BOTT: SMAX=	.01	SMIN=	.00	TMAX=	.00 ANGLE= 90.0
	13	.00	.01	-1.41	-2.11	-.01
		.45	.49	.33	-.05	.03
	TOP : SMAX=	.09	SMIN=	-.40	TMAX=	.25 ANGLE= 2.9
	BOTT: SMAX=	.57	SMIN=	.30	TMAX=	.13 ANGLE= 6.6
	14	.00	.03	-2.49	-2.03	-.51
		.43	.87	.53	-.02	.06
	TOP : SMAX=	.12	SMIN=	-.35	TMAX=	.24 ANGLE= -2.6
	BOTT: SMAX=	.98	SMIN=	.29	TMAX=	.35 ANGLE= 12.8
	101	.00	.01	-.62	-3.34	.32
		.56	.48	.02	-.04	-.01
	TOP : SMAX=	-.08	SMIN=	-.60	TMAX=	.26 ANGLE= 4.5
	BOTT: SMAX=	.53	SMIN=	.11	TMAX=	.21 ANGLE= 9.3

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.00	.01	-.51	-2.49	.20					
		.42	.35	.02	-.03	-.01					
TOP :	SMAX=	-.06	SMIN=	-.45	TMAX=	.19	ANGLE=	3.8			
BOTT:	SMAX=	.39	SMIN=	.10	TMAX=	.14	ANGLE=	8.4			
103		.00	.00	-.79	-4.02	.27					
		.65	.59	.00	-.04	-.01					
TOP :	SMAX=	-.13	SMIN=	-.71	TMAX=	.29	ANGLE=	3.2			
BOTT:	SMAX=	.64	SMIN=	.12	TMAX=	.26	ANGLE=	6.5			
104		.00	.00	-.23	-2.08	-.01					
		.35	.31	-.02	-.03	.00					
TOP :	SMAX=	-.06	SMIN=	-.38	TMAX=	.16	ANGLE=	.5			
BOTT:	SMAX=	.32	SMIN=	.01	TMAX=	.15	ANGLE=	-1.0			
105		.00	.01	-.51	-2.57	.22					
		.44	.36	.03	-.03	-.01					
TOP :	SMAX=	-.06	SMIN=	-.46	TMAX=	.20	ANGLE=	4.1			
BOTT:	SMAX=	.40	SMIN=	.11	TMAX=	.15	ANGLE=	8.9			
106		.00	.02	-2.33	-4.39	-1.34					
		.96	1.00	.61	-.05	.05					
TOP :	SMAX=	.26	SMIN=	-.81	TMAX=	.53	ANGLE=	-9.8			
BOTT:	SMAX=	1.16	SMIN=	.53	TMAX=	.31	ANGLE=	29.8			
107		.00	.02	-1.86	-3.87	-1.30					
		.82	.82	.43	-.04	.04					
TOP :	SMAX=	.16	SMIN=	-.72	TMAX=	.44	ANGLE=	-11.6			
BOTT:	SMAX=	.94	SMIN=	.41	TMAX=	.27	ANGLE=	37.4			
108		.00	.04	-2.12	-5.35	.13					
		.94	.76	.32	-.06	.02					
TOP :	SMAX=	-.03	SMIN=	-.95	TMAX=	.46	ANGLE=	2.4			
BOTT:	SMAX=	.83	SMIN=	.67	TMAX=	.08	ANGLE=	1.2			
109		.00	.06	-2.73	-13.56	1.20					
		2.31	1.91	.16	-.16	-.05					
TOP :	SMAX=	-.28	SMIN=	-2.43	TMAX=	1.08	ANGLE=	4.1			
BOTT:	SMAX=	2.14	SMIN=	.57	TMAX=	.78	ANGLE=	9.2			
368	15	.01	.02	-1.32	-1.48	-1.48					
		.84	.79	.63	.01	-.11					
TOP :	SMAX=	.57	SMIN=	-.39	TMAX=	.48	ANGLE=	-23.8			
BOTT:	SMAX=	.88	SMIN=	.23	TMAX=	.33	ANGLE=	12.6			
2		.00	.00	-.05	-.17	-.17					
		.06	.06	.02	.00	.00					
TOP :	SMAX=	.02	SMIN=	-.04	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.06	SMIN=	-.01	TMAX=	.03	ANGLE=	90.0			
3		.00	.00	-.01	-.16	-.25					
		.06	.09	.00	.00	.01					
TOP :	SMAX=	.02	SMIN=	-.05	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	.06	SMIN=	-.04	TMAX=	.05	ANGLE=	90.0			
4		.00	.00	-.02	-.10	-.24					
		.07	.07	.00	.00	.00					
TOP :	SMAX=	.03	SMIN=	-.05	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	.05	SMIN=	-.03	TMAX=	.04	ANGLE=	90.0			
5		.00	.00	.06	-.12	.08					
		.04	.07	-.04	.00	.00					
TOP :	SMAX=	-.01	SMIN=	-.04	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.02	SMIN=	-.05	TMAX=	.04	ANGLE=	90.0			
6		.00	.00	-.13	-.53	.01					
		.08	.07	.00	.00	.00					
TOP :	SMAX=	-.02	SMIN=	-.09	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	.08	SMIN=	.02	TMAX=	.03	ANGLE=	90.0			
7		.00	.00	-.59	-2.58	.08					
		.40	.38	-.03	-.02	.00					
TOP :	SMAX=	-.12	SMIN=	-.45	TMAX=	.16	ANGLE=	2.0			
BOTT:	SMAX=	.41	SMIN=	.07	TMAX=	.17	ANGLE=	2.4			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FXY
	8	.00	.00	.06	-.18	-.20
		.07	.10	-.05	-.01	.00
TOP :	SMAX=	-.01	SMIN=	-.07	TMAX=	.03    ANGLE= 90.0
BOTT:	SMAX=	.03	SMIN=	-.07	TMAX=	.05    ANGLE= 90.0
	9	.00	.00	-.04	-.18	.02
		.03	.02	.01	.00	.00
TOP :	SMAX=	.00	SMIN=	-.03	TMAX=	.02    ANGLE= 90.0
BOTT:	SMAX=	.03	SMIN=	.01	TMAX=	.01    ANGLE= 90.0
	10	.00	.01	-.22	.05	-.09
		.12	.20	.16	.00	.00
TOP :	SMAX=	.12	SMIN=	.01	TMAX=	.06    ANGLE= -5.6
BOTT:	SMAX=	.20	SMIN=	-.01	TMAX=	.10    ANGLE= 5.7
	11	.00	-.01	.22	-.05	.09
		.12	.20	-.16	.00	.00
TOP :	SMAX=	-.01	SMIN=	-.12	TMAX=	.06    ANGLE= -5.6
BOTT:	SMAX=	.01	SMIN=	-.20	TMAX=	.10    ANGLE= 5.7
	12	.00	.00	-.01	-.04	.00
		.01	.01	.00	.00	.00
TOP :	SMAX=	.00	SMIN=	-.01	TMAX=	.00    ANGLE= 90.0
BOTT:	SMAX=	.01	SMIN=	.00	TMAX=	.00    ANGLE= 90.0
	13	.00	.02	-.91	-.77	-.22
		.34	.52	.40	-.02	.03
TOP :	SMAX=	.25	SMIN=	-.15	TMAX=	.20    ANGLE= -.7
BOTT:	SMAX=	.56	SMIN=	.10	TMAX=	.23    ANGLE= 8.5
	14	.00	.03	-1.12	.10	-.72
		.37	.78	.55	.03	.04
TOP :	SMAX=	.38	SMIN=	.02	TMAX=	.18    ANGLE= -13.8
BOTT:	SMAX=	.77	SMIN=	-.02	TMAX=	.39    ANGLE= 11.6
	101	.00	.02	-.27	-1.21	.21
		.24	.16	.04	-.03	.00
TOP :	SMAX=	.00	SMIN=	-.24	TMAX=	.12    ANGLE= 9.3
BOTT:	SMAX=	.18	SMIN=	.08	TMAX=	.05    ANGLE= 90.0
	102	.00	.01	-.30	-1.20	.13
		.22	.16	.04	-.02	.00
TOP :	SMAX=	-.01	SMIN=	-.22	TMAX=	.11    ANGLE= 6.4
BOTT:	SMAX=	.18	SMIN=	.08	TMAX=	.05    ANGLE= 90.0
	103	.00	.01	-.66	-2.84	.18
		.47	.40	.01	-.03	.00
TOP :	SMAX=	-.09	SMIN=	-.51	TMAX=	.21    ANGLE= 4.3
BOTT:	SMAX=	.44	SMIN=	.12	TMAX=	.16    ANGLE= 5.3
	104	.00	.01	-.14	-.92	-.04
		.17	.12	-.01	-.02	.00
TOP :	SMAX=	-.03	SMIN=	-.18	TMAX=	.07    ANGLE= -.9
BOTT:	SMAX=	.13	SMIN=	.02	TMAX=	.06    ANGLE= -5.0
	105	.00	.02	-.22	-.92	.14
		.18	.12	.04	-.02	.00
TOP :	SMAX=	.01	SMIN=	-.18	TMAX=	.09    ANGLE= 8.2
BOTT:	SMAX=	.14	SMIN=	.07	TMAX=	.03    ANGLE= 90.0
	106	.00	.03	-1.35	-1.61	-.82
		.66	.77	.62	-.01	-.03
TOP :	SMAX=	.43	SMIN=	-.32	TMAX=	.38    ANGLE= -13.5
BOTT:	SMAX=	.86	SMIN=	.24	TMAX=	.31    ANGLE= 9.6
	107	.01	.02	-1.13	-1.66	-.73
		.56	.58	.46	-.02	-.04
TOP :	SMAX=	.31	SMIN=	-.34	TMAX=	.32    ANGLE= -14.8
BOTT:	SMAX=	.66	SMIN=	.24	TMAX=	.21    ANGLE= 11.5
	108	.00	.05	-.95	-1.51	-.11
		.40	.44	.34	-.02	.02
TOP :	SMAX=	.19	SMIN=	-.28	TMAX=	.23    ANGLE= .4
BOTT:	SMAX=	.51	SMIN=	.22	TMAX=	.14    ANGLE= 8.2
	109	-.01	.10	-1.21	-4.87	.77
		.97	.64	.22	-.11	.01
TOP :	SMAX=	.04	SMIN=	-.95	TMAX=	.49    ANGLE= 8.3
BOTT:	SMAX=	.74	SMIN=	.38	TMAX=	.18    ANGLE= 20.0

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
369	15	.01	.01	-.38	-.20	-.10
		.46	.48	.33	.02	-.20
	TOP : SMAX=	.38	SMIN=	-.13	TMAX=	.26 ANGLE= -28.8
	BOTT: SMAX=	.47	SMIN=	-.02	TMAX=	.25 ANGLE= -23.7
	2	.00	.00	-.02	.00	-.15
		.05	.04	.02	.00	.00
	TOP : SMAX=	.04	SMIN=	-.02	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.03	SMIN=	-.01	TMAX=	.02 ANGLE= 90.0
	3	.00	.00	.00	.03	-.22
		.06	.07	.01	.00	.00
	TOP : SMAX=	.04	SMIN=	-.02	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.05	SMIN=	-.04	TMAX=	.04 ANGLE= 90.0
	4	.00	.00	.01	.05	-.18
		.06	.05	.01	.00	.00
	TOP : SMAX=	.04	SMIN=	-.02	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.03	SMIN=	-.03	TMAX=	.03 ANGLE= 90.0
	5	.00	.00	.03	.08	.05
		.03	.02	-.02	.00	.00
	TOP : SMAX=	.02	SMIN=	-.02	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	-.01	SMIN=	-.03	TMAX=	.01 ANGLE= 90.0
	6	.00	.00	-.14	-.54	.00
		.09	.08	.00	.00	.00
	TOP : SMAX=	-.02	SMIN=	-.09	TMAX=	.04 ANGLE= 90.0
	BOTT: SMAX=	.09	SMIN=	.02	TMAX=	.03 ANGLE= 90.0
	7	.00	.01	-.57	-2.28	.04
		.35	.33	-.01	-.02	.00
	TOP : SMAX=	-.11	SMIN=	-.39	TMAX=	.14 ANGLE= 1.5
	BOTT: SMAX=	.36	SMIN=	.08	TMAX=	.14 ANGLE= 1.1
	8	.00	.00	-.07	-.31	-.13
		.07	.06	-.02	-.01	.00
	TOP : SMAX=	-.02	SMIN=	-.07	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.05	SMIN=	-.01	TMAX=	.03 ANGLE= 90.0
	9	.00	.00	.04	.18	.00
		.03	.03	.01	.00	.00
	TOP : SMAX=	.03	SMIN=	.01	TMAX=	.01 ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	-.03	TMAX=	.02 ANGLE= 90.0
	10	.00	.00	.06	.47	-.13
		.09	.13	.08	.01	.00
	TOP : SMAX=	.11	SMIN=	.07	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	.07	SMIN=	-.07	TMAX=	.07 ANGLE= 9.0
	11	.00	.00	-.06	-.47	.13
		.09	.13	-.08	-.01	.00
	TOP : SMAX=	-.07	SMIN=	-.11	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	.07	SMIN=	-.07	TMAX=	.07 ANGLE= 9.0
	12	.00	.00	.00	.01	.00
		.00	.00	.00	.00	.00
	TOP : SMAX=	.00	SMIN=	.00	TMAX=	.00 ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	.00	TMAX=	.00 ANGLE= 90.0
	13	.00	.02	-.13	.75	-.35
		.23	.39	.27	.01	.02
	TOP : SMAX=	.26	SMIN=	.13	TMAX=	.07 ANGLE= -16.4
	BOTT: SMAX=	.31	SMIN=	-.13	TMAX=	.22 ANGLE= 10.7
	14	.00	.02	.15	1.82	-.71
		.40	.53	.32	.04	.00
	TOP : SMAX=	.46	SMIN=	.23	TMAX=	.11 ANGLE= 90.0
	BOTT: SMAX=	.32	SMIN=	-.29	TMAX=	.31 ANGLE= 11.8
	101	.00	.03	.27	1.24	.09
		.18	.21	.04	-.01	.01
	TOP : SMAX=	.21	SMIN=	.08	TMAX=	.06 ANGLE= -10.2
	BOTT: SMAX=	-.01	SMIN=	-.21	TMAX=	.10 ANGLE= -2.0

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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH									
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH											
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	102	.00	.02	.07	.38	.05					
		.06	.08	.03	-.01	.00					
	TOP : SMAX=	.06	SMIN=	.03	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	.02	SMIN=	-.07	TMAX=	.04	ANGLE=	90.0			
	103	.00	.02	-.28	-1.01	.08					
		.17	.13	.02	-.02	.01					
	TOP : SMAX=	-.03	SMIN=	-.19	TMAX=	.08	ANGLE=	6.7			
	BOTT: SMAX=	.15	SMIN=	.06	TMAX=	.04	ANGLE=	90.0			
	104	.00	.02	.12	.57	-.06					
		.08	.10	.01	-.01	.00					
	TOP : SMAX=	.09	SMIN=	.03	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	-.01	SMIN=	-.10	TMAX=	.05	ANGLE=	90.0			
	105	.00	.02	.21	.96	.05					
		.14	.16	.03	.00	.01					
	TOP : SMAX=	.16	SMIN=	.07	TMAX=	.05	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	-.16	TMAX=	.08	ANGLE=	-.8			
	106	.01	.03	-.11	1.03	-.26					
		.37	.48	.36	.02	-.09					
	TOP : SMAX=	.41	SMIN=	.11	TMAX=	.15	ANGLE=	-30.0			
	BOTT: SMAX=	.38	SMIN=	-.16	TMAX=	.27	ANGLE=	-4.5			
	107	.01	.02	-.17	.55	-.13					
		.29	.37	.28	.01	-.09					
	TOP : SMAX=	.31	SMIN=	.05	TMAX=	.13	ANGLE=	-27.9			
	BOTT: SMAX=	.32	SMIN=	-.09	TMAX=	.21	ANGLE=	-9.2			
	108	.00	.04	.43	2.53	-.26					
		.39	.51	.22	.01	.01					
	TOP : SMAX=	.44	SMIN=	.28	TMAX=	.08	ANGLE=	11.9			
	BOTT: SMAX=	.15	SMIN=	-.42	TMAX=	.28	ANGLE=	5.4			
	109	-.01	.10	1.10	5.08	.30					
		.73	.87	.18	-.02	.03					
	TOP : SMAX=	.84	SMIN=	.35	TMAX=	.24	ANGLE=	-9.4			
	BOTT: SMAX=	.00	SMIN=	-.87	TMAX=	.43	ANGLE=	-1.6			
370	15	.01	.01	.45	.55	.78					
		.15	.57	-.05	.01	-.20					
	TOP : SMAX=	.14	SMIN=	-.01	TMAX=	.08	ANGLE=	90.0			
	BOTT: SMAX=	.23	SMIN=	-.43	TMAX=	.33	ANGLE=	90.0			
	2	.00	.00	.03	.18	-.10					
		.05	.04	.02	.00	-.01					
	TOP : SMAX=	.05	SMIN=	.00	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	.01	SMIN=	-.03	TMAX=	.02	ANGLE=	90.0			
	3	.00	.00	.02	.22	-.15					
		.05	.07	.03	.00	.00					
	TOP : SMAX=	.06	SMIN=	.01	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	.03	SMIN=	-.04	TMAX=	.04	ANGLE=	90.0			
	4	.00	.00	.04	.18	-.11					
		.05	.04	.01	.00	.00					
	TOP : SMAX=	.05	SMIN=	.00	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	.01	SMIN=	-.04	TMAX=	.02	ANGLE=	90.0			
	5	.00	.00	.03	.27	.02					
		.04	.04	.00	.00	.00					
	TOP : SMAX=	.05	SMIN=	.01	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	-.04	TMAX=	.02	ANGLE=	90.0			
	6	.00	.00	-.12	-.45	.00					
		.07	.06	.00	.00	.00					
	TOP : SMAX=	-.02	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	.07	SMIN=	.02	TMAX=	.03	ANGLE=	90.0			
	7	.00	.01	-.39	-1.50	.01					
		.23	.22	.00	-.01	.00					
	TOP : SMAX=	-.07	SMIN=	-.26	TMAX=	.10	ANGLE=	.6			
	BOTT: SMAX=	.24	SMIN=	.06	TMAX=	.09	ANGLE=	.0			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MAX FXY
8		.00	.00	-.14	-.33	-.07
		.06	.05	.01	.00	.00
TOP :	SMAX=	-.01	SMIN=	-.06	TMAX=	.03 ANGLE= 90.0
BOTT:	SMAX=	.05	SMIN=	.03	TMAX=	.01 ANGLE= 90.0
9		.00	.00	.12	.49	-.01
		.07	.07	.01	.00	.00
TOP :	SMAX=	.08	SMIN=	.02	TMAX=	.03 ANGLE= 90.0
BOTT:	SMAX=	-.01	SMIN=	-.08	TMAX=	.03 ANGLE= 90.0
10		.00	.00	.29	.70	-.10
		.12	.10	-.02	.01	.00
TOP :	SMAX=	.13	SMIN=	.03	TMAX=	.05 ANGLE= 90.0
BOTT:	SMAX=	-.06	SMIN=	-.11	TMAX=	.03 ANGLE= 90.0
11		.00	.00	-.29	-.70	.10
		.12	.10	.02	-.01	.00
TOP :	SMAX=	-.03	SMIN=	-.13	TMAX=	.05 ANGLE= 90.0
BOTT:	SMAX=	.11	SMIN=	.06	TMAX=	.03 ANGLE= 90.0
12		.00	.00	.02	.07	.00
		.01	.01	.00	.00	.00
TOP :	SMAX=	.01	SMIN=	.00	TMAX=	.00 ANGLE= 90.0
BOTT:	SMAX=	.00	SMIN=	-.01	TMAX=	.00 ANGLE= 90.0
13		.00	.01	.62	1.93	-.30
		.31	.30	.08	.03	.01
TOP :	SMAX=	.36	SMIN=	.18	TMAX=	.09 ANGLE= 12.9
BOTT:	SMAX=	-.01	SMIN=	-.30	TMAX=	.15 ANGLE= 11.7
14		.00	.01	1.06	2.87	-.49
		.48	.41	.04	.04	-.01
TOP :	SMAX=	.54	SMIN=	.19	TMAX=	.17 ANGLE= 16.2
BOTT:	SMAX=	-.12	SMIN=	-.46	TMAX=	.17 ANGLE= 12.4
101		.00	.02	.82	3.32	.02
		.51	.49	.02	.01	.00
TOP :	SMAX=	.57	SMIN=	.16	TMAX=	.21 ANGLE= -1.1
BOTT:	SMAX=	-.12	SMIN=	-.54	TMAX=	.21 ANGLE= .2
102		.00	.01	.44	1.80	.01
		.27	.27	.01	.01	.00
TOP :	SMAX=	.31	SMIN=	.09	TMAX=	.11 ANGLE= -1.1
BOTT:	SMAX=	-.06	SMIN=	-.29	TMAX=	.12 ANGLE= .4
103		.00	.02	.22	.96	.01
		.14	.15	.01	.00	.00
TOP :	SMAX=	.16	SMIN=	.05	TMAX=	.06 ANGLE= -3.0
BOTT:	SMAX=	-.03	SMIN=	-.16	TMAX=	.07 ANGLE= .5
104		.00	.01	.43	1.89	-.05
		.29	.29	.02	.01	.00
TOP :	SMAX=	.32	SMIN=	.09	TMAX=	.12 ANGLE= 2.2
BOTT:	SMAX=	-.05	SMIN=	-.31	TMAX=	.13 ANGLE= 1.6
105		.00	.01	.63	2.55	.00
		.39	.38	.02	.01	.00
TOP :	SMAX=	.44	SMIN=	.12	TMAX=	.16 ANGLE= -0.9
BOTT:	SMAX=	-.09	SMIN=	-.42	TMAX=	.16 ANGLE= .6
106		.00	.02	1.03	2.97	.20
		.47	.46	.02	.03	-.09
TOP :	SMAX=	.54	SMIN=	.18	TMAX=	.18 ANGLE= 9.6
BOTT:	SMAX=	-.11	SMIN=	-.51	TMAX=	.20 ANGLE= -19.5
107		.00	.02	.74	2.27	.30
		.36	.40	.03	.02	-.09
TOP :	SMAX=	.41	SMIN=	.15	TMAX=	.13 ANGLE= 9.3
BOTT:	SMAX=	-.03	SMIN=	-.42	TMAX=	.19 ANGLE= -23.3
108		.00	.03	1.61	5.75	-.23
		.88	.84	.05	.04	.00
TOP :	SMAX=	1.00	SMIN=	.31	TMAX=	.34 ANGLE= 3.2
BOTT:	SMAX=	-.22	SMIN=	-.93	TMAX=	.35 ANGLE= 3.1
109		.00	.08	3.36	13.49	.05
		2.06	2.00	.08	.05	.02
TOP :	SMAX=	2.30	SMIN=	.64	TMAX=	.83 ANGLE= -0.9
BOTT:	SMAX=	-.48	SMIN=	-2.19	TMAX=	.86 ANGLE= .3

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
371	15	.00	.01	1.05	1.17	1.00					
		.31	.67	-.32	.00						
	TOP : SMAX=	.20	SMIN=	-.15	TMAX=	.18	ANGLE=				
	BOTT: SMAX=	-.01	SMIN=	-.68	TMAX=	.33	ANGLE=				
	2	.00	.00	.07	.29						
		.05	.04	.01	.00						
	TOP : SMAX=	.05	SMIN=	.02	TMAX=	.02	ANGLE=				
	BOTT: SMAX=	.00	SMIN=	-.04	TMAX=	.02	ANGLE=				
	3	.00	.00	.04	.33						
		.05	.07	.03	.00						
	TOP : SMAX=	.06	SMIN=	.04	TMAX=	.01	ANGLE=				
	BOTT: SMAX=	.03	SMIN=	-.05	TMAX=	.04	ANGLE=				
	4	.00	.00	.06	.26						
		.04	.04	.01	.00						
	TOP : SMAX=	.05	SMIN=	.02	TMAX=	.02	ANGLE=				
	BOTT: SMAX=	.00	SMIN=	-.04	TMAX=	.02	ANGLE=				
	5	.00	.00	.04	.39						
		.06	.07	.02	.00						
	TOP : SMAX=	.07	SMIN=	.02	TMAX=	.02	ANGLE=				
	BOTT: SMAX=	.01	SMIN=	-.06	TMAX=	.04	ANGLE=				
	6	.00	.00	-.07	-.27						
		.04	.04	.00	.00						
	TOP : SMAX=	-.01	SMIN=	-.05	TMAX=	.02	ANGLE=				
	BOTT: SMAX=	.04	SMIN=	.01	TMAX=	.02	ANGLE=				
	7	.00	.01	-.12	-.43						
		.07	.06	.00	.00						
	TOP : SMAX=	-.02	SMIN=	-.07	TMAX=	.03	ANGLE=				
	BOTT: SMAX=	.07	SMIN=	.02	TMAX=	.02	ANGLE=				
	8	.00	.00	-.16	-.32						
		.05	.05	.02	.00						
	TOP : SMAX=	.00	SMIN=	-.05	TMAX=	.03	ANGLE=				
	BOTT: SMAX=	.05	SMIN=	.05	TMAX=	.00	ANGLE=				
	9	.00	.00	.17	.67						
		.10	.10	.00	.00						
	TOP : SMAX=	.11	SMIN=	.03	TMAX=	.04	ANGLE=				
	BOTT: SMAX=	-.02	SMIN=	-.11	TMAX=	.04	ANGLE=				
	10	.00	.00	.41	.79						
		.14	.14	-.08	.01						
	TOP : SMAX=	.14	SMIN=	-.01	TMAX=	.07	ANGLE=				
	BOTT: SMAX=	-.12	SMIN=	-.15	TMAX=	.01	ANGLE=				
	11	.00	.00	-.41	-.79						
		.14	.14	.08	-.01						
	TOP : SMAX=	.01	SMIN=	-.14	TMAX=	.07	ANGLE=				
	BOTT: SMAX=	.15	SMIN=	.12	TMAX=	.01	ANGLE=				
	12	.00	.00	.03	.11						
		.02	.02	.00	.00						
	TOP : SMAX=	.02	SMIN=	.00	TMAX=	.01	ANGLE=				
	BOTT: SMAX=	-.01	SMIN=	-.02	TMAX=	.01	ANGLE=				
	13	.00	.00	1.07	2.53						
		.41	.34	-.05	.04						
	TOP : SMAX=	.46	SMIN=	.13	TMAX=	.17	ANGLE=				
	BOTT: SMAX=	-.23	SMIN=	-.39	TMAX=	.08	ANGLE=				
	14	.01	.00	1.53	3.34						
		.54	.47	-.14	.03						
	TOP : SMAX=	.59	SMIN=	.12	TMAX=	.24	ANGLE=				
	BOTT: SMAX=	-.39	SMIN=	-.53	TMAX=	.07	ANGLE=				
	101	.00	.01	1.15	4.50						
		.70	.65	.00	.02						
	TOP : SMAX=	.77	SMIN=	.19	TMAX=	.29	ANGLE=				
	BOTT: SMAX=	-.19	SMIN=	-.73	TMAX=	.27	ANGLE=				





PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

-----  
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
	8	.00	.00	-.16	-.32	.02
		.05	.05	.02	.00	.00
	TOP : SMAX=	.00	SMIN=	-.05	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.05	SMIN=	.05	TMAX=	.00 ANGLE= 90.0
	9	.00	.00	.17	.67	.00
		.10	.10	.00	.00	.00
	TOP : SMAX=	.11	SMIN=	.03	TMAX=	.04 ANGLE= 90.0
	BOTT: SMAX=	-.02	SMIN=	-.11	TMAX=	.04 ANGLE= 90.0
	10	.00	.00	.41	.79	.04
		.14	.14	-.08	.01	.00
	TOP : SMAX=	.14	SMIN=	-.01	TMAX=	.07 ANGLE= -2.8
	BOTT: SMAX=	-.12	SMIN=	-.15	TMAX=	.01 ANGLE= 90.0
	11	.00	.00	-.41	-.79	-.04
		.14	.14	.08	-.01	.00
	TOP : SMAX=	.01	SMIN=	-.14	TMAX=	.07 ANGLE= -2.8
	BOTT: SMAX=	.15	SMIN=	.12	TMAX=	.01 ANGLE= 90.0
	12	.00	.00	.03	.11	.00
		.02	.02	.00	.00	.00
	TOP : SMAX=	.02	SMIN=	.00	TMAX=	.01 ANGLE= 90.0
	BOTT: SMAX=	-.01	SMIN=	-.02	TMAX=	.01 ANGLE= 90.0
	13	.00	.00	1.07	2.53	.11
		.41	.34	-.05	.04	.00
	TOP : SMAX=	.46	SMIN=	.13	TMAX=	.17 ANGLE= -2.9
	BOTT: SMAX=	-.23	SMIN=	-.39	TMAX=	.08 ANGLE= -7.6
	14	.01	.00	1.53	3.34	.18
		.54	.47	-.14	.03	.01
	TOP : SMAX=	.59	SMIN=	.12	TMAX=	.24 ANGLE= -4.3
	BOTT: SMAX=	-.39	SMIN=	-.53	TMAX=	.07 ANGLE= -9.5
	101	.00	-.01	1.15	4.50	.00
		.70	.65	.00	.02	.00
	TOP : SMAX=	.77	SMIN=	.19	TMAX=	.29 ANGLE= .1
	BOTT: SMAX=	-.19	SMIN=	-.73	TMAX=	.27 ANGLE= -.2
	102	.00	.00	.76	2.91	.00
		.45	.42	.00	.01	.00
	TOP : SMAX=	.50	SMIN=	.12	TMAX=	.19 ANGLE= .1
	BOTT: SMAX=	-.13	SMIN=	-.47	TMAX=	.17 ANGLE= -.1
	103	.00	.01	.90	3.49	-.02
		.54	.51	.00	.02	.00
	TOP : SMAX=	.60	SMIN=	.15	TMAX=	.22 ANGLE= .4
	BOTT: SMAX=	-.15	SMIN=	-.56	TMAX=	.21 ANGLE= .6
	104	.00	.00	.63	2.66	.02
		.41	.39	.02	.02	.00
	TOP : SMAX=	.46	SMIN=	.12	TMAX=	.17 ANGLE= -.6
	BOTT: SMAX=	-.09	SMIN=	-.43	TMAX=	.17 ANGLE= -.4
	105	.00	-.01	.89	3.45	.00
		.53	.50	.00	.02	.00
	TOP : SMAX=	.59	SMIN=	.15	TMAX=	.22 ANGLE= .1
	BOTT: SMAX=	-.15	SMIN=	-.56	TMAX=	.21 ANGLE= -.3
	106	.00	.00	1.92	4.58	.46
		.78	.69	-.27	.03	-.02
	TOP : SMAX=	.80	SMIN=	.05	TMAX=	.38 ANGLE= -4.5
	BOTT: SMAX=	-.54	SMIN=	-.78	TMAX=	.12 ANGLE= -27.0
	107	.00	.00	1.51	3.79	.42
		.64	.56	-.19	.03	-.02
	TOP : SMAX=	.66	SMIN=	.05	TMAX=	.31 ANGLE= -4.9
	BOTT: SMAX=	-.41	SMIN=	-.64	TMAX=	.12 ANGLE= -24.2
	108	.00	-.01	2.28	7.51	.09
		1.17	1.05	-.07	.05	.00
	TOP : SMAX=	1.30	SMIN=	.31	TMAX=	.49 ANGLE= -1.0
	BOTT: SMAX=	-.45	SMIN=	-1.20	TMAX=	.38 ANGLE= -1.0
	109	.00	-.03	4.72	18.25	.01
		2.83	2.64	-.01	.10	.00
	TOP : SMAX=	3.14	SMIN=	.78	TMAX=	1.18 ANGLE= .1
	BOTT: SMAX=	-.79	SMIN=	-2.95	TMAX=	1.08 ANGLE= -.2

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
373	15	.00	.01	1.44	3.23	.49					
		.63	.52	-.29	.02	.06					
	TOP : SMAX=	.59	SMIN=	-.08	TMAX=	.33	ANGLE=	-12.2			
	BOTT: SMAX=	-.49	SMIN=	-.55	TMAX=	.03	ANGLE=	90.0			
	2	.00	.00	.03	.18	.10					
		.05	.04	.02	.00	.01					
	TOP : SMAX=	.05	SMIN=	.00	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	.01	SMIN=	-.03	TMAX=	.02	ANGLE=	90.0			
	3	.00	.00	.02	.22	.15					
		.05	.07	.03	.00	.00					
	TOP : SMAX=	.06	SMIN=	.01	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	.03	SMIN=	-.04	TMAX=	.04	ANGLE=	90.0			
	4	.00	.00	.04	.18	.11					
		.05	.04	.01	.00	.00					
	TOP : SMAX=	.05	SMIN=	.00	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	.01	SMIN=	-.04	TMAX=	.02	ANGLE=	90.0			
	5	.00	.00	.03	.27	-.02					
		.04	.04	.00	.00	.00					
	TOP : SMAX=	.05	SMIN=	.01	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	-.04	TMAX=	.02	ANGLE=	90.0			
	6	.00	.00	.07	.28	.00					
		.04	.04	.00	.00	.00					
	TOP : SMAX=	.05	SMIN=	.01	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	-.01	SMIN=	-.05	TMAX=	.02	ANGLE=	90.0			
	7	.00	.01	.44	1.72	-.02					
		.27	.25	.01	.01	.00					
	TOP : SMAX=	.30	SMIN=	.08	TMAX=	.11	ANGLE=	.0			
	BOTT: SMAX=	-.07	SMIN=	-.28	TMAX=	.11	ANGLE=	2.1			
	8	.00	.00	-.14	-.33	.07					
		.06	.05	.01	.00	.00					
	TOP : SMAX=	-.01	SMIN=	-.06	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	.05	SMIN=	.03	TMAX=	.01	ANGLE=	90.0			
	9	.00	.00	.12	.49	.01					
		.07	.07	.01	.00	.00					
	TOP : SMAX=	.08	SMIN=	.02	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	-.01	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			
	10	.00	.00	.29	.70	.10					
		.12	.10	-.02	.01	.00					
	TOP : SMAX=	.13	SMIN=	.03	TMAX=	.05	ANGLE=	90.0			
	BOTT: SMAX=	-.06	SMIN=	-.11	TMAX=	.03	ANGLE=	90.0			
	11	.00	.00	-.29	-.70	-.10					
		.12	.10	.02	-.01	.00					
	TOP : SMAX=	-.03	SMIN=	-.13	TMAX=	.05	ANGLE=	90.0			
	BOTT: SMAX=	.11	SMIN=	.06	TMAX=	.03	ANGLE=	90.0			
	12	.00	.00	.02	.07	.00					
		.01	.01	.00	.00	.00					
	TOP : SMAX=	.01	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	-.01	TMAX=	.00	ANGLE=	90.0			
	13	.00	-.01	.62	1.93	.30					
		.31	.30	.08	.03	-.01					
	TOP : SMAX=	.36	SMIN=	.18	TMAX=	.09	ANGLE=	-12.9			
	BOTT: SMAX=	-.01	SMIN=	-.30	TMAX=	.15	ANGLE=	-11.7			
	14	.00	-.01	1.06	2.87	.49					
		.48	.41	.04	.04	.01					
	TOP : SMAX=	.54	SMIN=	.19	TMAX=	.17	ANGLE=	-16.2			
	BOTT: SMAX=	-.12	SMIN=	-.46	TMAX=	.17	ANGLE=	-12.4			
	101	.00	-.02	.82	3.32	-.02					
		.51	.49	.02	.01	.00					
	TOP : SMAX=	.57	SMIN=	.16	TMAX=	.21	ANGLE=	1.1			
	BOTT: SMAX=	-.12	SMIN=	-.54	TMAX=	.21	ANGLE=	-2			

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.00	-.01	.60	2.38						
		.36	.35	.01	.01						
TOP :	SMAX=	.41	SMIN=	.11	TMAX=	.15	ANGLE=	.8			
BOTT:	SMAX=	-.09	SMIN=	-.39	TMAX=	.15	ANGLE=	-.2			
103		.00	.00	.89	3.54						
		.54	.52	.02	.02						
TOP :	SMAX=	.61	SMIN=	.17	TMAX=	.22	ANGLE=	.5			
BOTT:	SMAX=	-.13	SMIN=	-.57	TMAX=	.22	ANGLE=	.6			
104		.00	-.01	.43	1.89						
		.29	.29	.02	.01						
TOP :	SMAX=	.32	SMIN=	.09	TMAX=	.12	ANGLE=	-2.2			
BOTT:	SMAX=	-.05	SMIN=	-.31	TMAX=	.13	ANGLE=	-1.6			
105		.00	-.01	.63	2.55						
		.39	.38	.02	.01						
TOP :	SMAX=	.44	SMIN=	.12	TMAX=	.16	ANGLE=	.9			
BOTT:	SMAX=	-.09	SMIN=	-.42	TMAX=	.16	ANGLE=	-.6			
106		.00	-.01	1.52	4.31						
		.71	.60	-.10	.04						
TOP :	SMAX=	.77	SMIN=	.14	TMAX=	.32	ANGLE=	-8.7			
BOTT:	SMAX=	-.35	SMIN=	-.69	TMAX=	.17	ANGLE=	-8.6			
107		.00	-.01	1.23	3.61						
		.59	.50	-.09	.03						
TOP :	SMAX=	.64	SMIN=	.11	TMAX=	.27	ANGLE=	-8.5			
BOTT:	SMAX=	-.29	SMIN=	-.58	TMAX=	.15	ANGLE=	-7.0			
108		.00	-.03	1.61	5.75						
		.88	.84	.05	.04						
TOP :	SMAX=	1.00	SMIN=	.31	TMAX=	.34	ANGLE=	-3.2			
BOTT:	SMAX=	-.22	SMIN=	-.93	TMAX=	.35	ANGLE=	-3.1			
109		.00	-.08	3.36	13.49						
		2.06	2.00	.08	.05						
TOP :	SMAX=	2.30	SMIN=	.64	TMAX=	.83	ANGLE=	.9			
BOTT:	SMAX=	-.48	SMIN=	-2.19	TMAX=	.86	ANGLE=	-.3			
374	15	.01	.00	1.10	4.15						
		.74	.57	.00	.05						
TOP :	SMAX=	.80	SMIN=	.12	TMAX=	.34	ANGLE=	-17.1			
BOTT:	SMAX=	-.18	SMIN=	-.64	TMAX=	.23	ANGLE=	1.1			
2		.00	.00	-.02	.00						
		.05	.04	.02	.00						
TOP :	SMAX=	.04	SMIN=	-.02	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.03	SMIN=	-.01	TMAX=	.02	ANGLE=	90.0			
3		.00	.00	.00	.03						
		.06	.07	.01	.00						
TOP :	SMAX=	.04	SMIN=	-.02	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.05	SMIN=	-.04	TMAX=	.04	ANGLE=	90.0			
4		.00	.00	.01	.05						
		.06	.05	.01	.00						
TOP :	SMAX=	.04	SMIN=	-.02	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.03	SMIN=	-.03	TMAX=	.03	ANGLE=	90.0			
5		.00	.00	.03	.08						
		.03	.02	-.02	.00						
TOP :	SMAX=	.02	SMIN=	-.02	TMAX=	.02	ANGLE=	90.0			
BOTT:	SMAX=	-.01	SMIN=	-.03	TMAX=	.01	ANGLE=	90.0			
6		.00	.00	.13	.52						
		.08	.08	.00	.00						
TOP :	SMAX=	.09	SMIN=	.02	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	-.02	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			
7		.00	.00	.60	2.39						
		.37	.35	.01	.02						
TOP :	SMAX=	.41	SMIN=	.11	TMAX=	.15	ANGLE=	-1.0			
BOTT:	SMAX=	-.09	SMIN=	-.38	TMAX=	.15	ANGLE=	.7			

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MY FXY
	8	.00	.00	-.07	-.31	.13
		.07	.06	-.02	-.01	.00
	TOP : SMAX=	-.02	SMIN=	-.07	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.05	SMIN=	-.01	TMAX=	.03 ANGLE= 90.0
	9	.00	.00	.04	.18	.00
		.03	.03	.01	.00	.00
	TOP : SMAX=	.03	SMIN=	.01	TMAX=	.01 ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	-.03	TMAX=	.02 ANGLE= 90.0
	10	.00	.00	.06	.47	.13
		.09	.13	.08	.01	.00
	TOP : SMAX=	.11	SMIN=	.07	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	.07	SMIN=	-.07	TMAX=	.07 ANGLE= -9.0
	11	.00	.00	-.06	-.47	-.13
		.09	.13	-.08	-.01	.00
	TOP : SMAX=	-.07	SMIN=	-.11	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	.07	SMIN=	-.07	TMAX=	.07 ANGLE= -9.0
	12	.00	.00	.00	.01	.00
		.00	.00	.00	.00	.00
	TOP : SMAX=	.00	SMIN=	.00	TMAX=	.00 ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	.00	TMAX=	.00 ANGLE= 90.0
	13	.00	-.02	-.13	.75	.35
		.23	.39	.27	.01	-.02
	TOP : SMAX=	.26	SMIN=	.13	TMAX=	.07 ANGLE= 16.4
	BOTT: SMAX=	.31	SMIN=	-.13	TMAX=	.22 ANGLE= -10.7
	14	.00	-.02	.15	1.82	.71
		.40	.53	.32	.04	.00
	TOP : SMAX=	.46	SMIN=	.23	TMAX=	.11 ANGLE= 90.0
	BOTT: SMAX=	.32	SMIN=	-.29	TMAX=	.31 ANGLE= -11.8
	101	.00	-.03	.27	1.24	-.09
		.18	.21	.04	-.01	-.01
	TOP : SMAX=	.21	SMIN=	.08	TMAX=	.06 ANGLE= 10.2
	BOTT: SMAX=	-.01	SMIN=	-.21	TMAX=	.10 ANGLE= 2.0
	102	.00	-.01	.28	1.23	-.05
		.18	.20	.03	.00	.00
	TOP : SMAX=	.20	SMIN=	.07	TMAX=	.06 ANGLE= 5.3
	BOTT: SMAX=	-.02	SMIN=	-.21	TMAX=	.09 ANGLE= 1.1
	103	.00	-.01	.65	2.72	-.04
		.41	.41	.04	.01	.00
	TOP : SMAX=	.46	SMIN=	.15	TMAX=	.16 ANGLE= 1.5
	BOTT: SMAX=	-.07	SMIN=	-.44	TMAX=	.19 ANGLE= 1.0
	104	.00	-.02	.12	.57	.06
		.08	.10	.01	-.01	.00
	TOP : SMAX=	.09	SMIN=	.03	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	-.01	SMIN=	-.10	TMAX=	.05 ANGLE= 90.0
	105	.00	-.02	.21	.96	-.05
		.14	.16	.03	.00	-.01
	TOP : SMAX=	.16	SMIN=	.07	TMAX=	.05 ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	-.16	TMAX=	.08 ANGLE= .7
	106	.00	-.02	.63	3.20	.48
		.53	.56	.19	.03	.04
	TOP : SMAX=	.61	SMIN=	.25	TMAX=	.18 ANGLE= -20.4
	BOTT: SMAX=	.09	SMIN=	-.51	TMAX=	.30 ANGLE= -4.3
	107	.00	-.02	.57	2.73	.35
		.45	.44	.12	.02	.04
	TOP : SMAX=	.51	SMIN=	.18	TMAX=	.16 ANGLE= -17.8
	BOTT: SMAX=	.02	SMIN=	-.43	TMAX=	.23 ANGLE= -2.8
	108	.00	-.04	.43	2.53	.26
		.39	.51	.22	.01	-.01
	TOP : SMAX=	.44	SMIN=	.28	TMAX=	.08 ANGLE= -11.9
	BOTT: SMAX=	.15	SMIN=	-.42	TMAX=	.28 ANGLE= -5.4
	109	-.01	-.10	1.10	5.08	-.30
		.73	.87	.18	-.02	-.03
	TOP : SMAX=	.84	SMIN=	.35	TMAX=	.24 ANGLE= 9.4
	BOTT: SMAX=	.00	SMIN=	-.87	TMAX=	.43 ANGLE= 1.5

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
375	15	.01	-.01	.32	4.02						1.01
		.74	.80	.32	.06						.04
	TOP : SMAX=	.83	SMIN=	.27	TMAX=	.28	ANGLE=				-24.7
	BOTT: SMAX=	.28	SMIN=	-.62	TMAX=	.45	ANGLE=				-8.0
	2	.00	.00	-.05	-.18						.17
		.06	.06	.02	.00						.00
	TOP : SMAX=	.02	SMIN=	-.04	TMAX=	.03	ANGLE=				90.0
	BOTT: SMAX=	.06	SMIN=	-.01	TMAX=	.03	ANGLE=				90.0
	3	.00	.00	-.01	-.16						.25
		.06	.09	.00	.00						-.01
	TOP : SMAX=	.02	SMIN=	-.05	TMAX=	.04	ANGLE=				90.0
	BOTT: SMAX=	.06	SMIN=	-.04	TMAX=	.05	ANGLE=				90.0
	4	.00	.00	-.02	-.10						.24
		.07	.07	.00	.00						.00
	TOP : SMAX=	.03	SMIN=	-.05	TMAX=	.04	ANGLE=				90.0
	BOTT: SMAX=	.05	SMIN=	-.03	TMAX=	.04	ANGLE=				90.0
	5	.00	.00	.06	-.12						-.08
		.04	.07	-.04	.00						.00
	TOP : SMAX=	-.01	SMIN=	-.04	TMAX=	.01	ANGLE=				90.0
	BOTT: SMAX=	.02	SMIN=	-.05	TMAX=	.04	ANGLE=				90.0
	6	.00	.00	.16	.66						.01
		.10	.10	.00	.00						.00
	TOP : SMAX=	.11	SMIN=	.03	TMAX=	.04	ANGLE=				90.0
	BOTT: SMAX=	-.03	SMIN=	-.11	TMAX=	.04	ANGLE=				90.0
	7	.00	.00	.59	2.56						.05
		.40	.37	.02	.02						.00
	TOP : SMAX=	.45	SMIN=	.12	TMAX=	.16	ANGLE=				-1.7
	BOTT: SMAX=	-.08	SMIN=	-.41	TMAX=	.16	ANGLE=				-1.4
	8	.00	.00	.06	-.18						.20
		.07	.10	-.05	-.01						.00
	TOP : SMAX=	-.01	SMIN=	-.07	TMAX=	.03	ANGLE=				90.0
	BOTT: SMAX=	.03	SMIN=	-.07	TMAX=	.05	ANGLE=				90.0
	9	.00	.00	-.04	-.18						-.02
		.03	.02	.01	.00						.00
	TOP : SMAX=	.00	SMIN=	-.03	TMAX=	.02	ANGLE=				90.0
	BOTT: SMAX=	.03	SMIN=	.01	TMAX=	.01	ANGLE=				90.0
	10	.00	-.01	-.22	.05						.09
		.12	.20	.16	.00						.00
	TOP : SMAX=	.12	SMIN=	.01	TMAX=	.06	ANGLE=				5.6
	BOTT: SMAX=	.20	SMIN=	-.01	TMAX=	.10	ANGLE=				-5.7
	11	.00	.01	.22	-.05						-.09
		.12	.20	-.16	.00						.00
	TOP : SMAX=	-.01	SMIN=	-.12	TMAX=	.06	ANGLE=				5.6
	BOTT: SMAX=	.01	SMIN=	-.20	TMAX=	.10	ANGLE=				-5.7
	12	.00	.00	-.01	-.04						.00
		.01	.01	.00	.00						.00
	TOP : SMAX=	.00	SMIN=	-.01	TMAX=	.00	ANGLE=				90.0
	BOTT: SMAX=	.01	SMIN=	.00	TMAX=	.00	ANGLE=				90.0
	13	.00	-.02	-.91	-.77						.22
		.34	.52	.40	-.02						-.03
	TOP : SMAX=	.25	SMIN=	-.15	TMAX=	.20	ANGLE=				.7
	BOTT: SMAX=	.56	SMIN=	.10	TMAX=	.23	ANGLE=				-8.5
	14	.00	-.03	-1.12	.10						.72
		.37	.78	.55	.03						-.04
	TOP : SMAX=	.38	SMIN=	.02	TMAX=	.18	ANGLE=				13.8
	BOTT: SMAX=	.77	SMIN=	-.02	TMAX=	.39	ANGLE=				-11.6
	101	.00	-.02	-.27	-1.21						-.21
		.24	.16	.04	-.03						.00
	TOP : SMAX=	.00	SMIN=	-.24	TMAX=	.12	ANGLE=				-9.3
	BOTT: SMAX=	.18	SMIN=	.08	TMAX=	.05	ANGLE=				90.0

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.00	-.02	-.06	-.26						
		.08	.05	.04	-.02						
TOP :	SMAX=	.03	SMIN=	-.06	TMAX=	.05	ANGLE=	90.0			
BOTT:	SMAX=	.06	SMIN=	.02	TMAX=	.02	ANGLE=	90.0			
103		.00	-.02	.28	1.26						
		.18	.22	.05	.00						
TOP :	SMAX=	.21	SMIN=	.10	TMAX=	.06	ANGLE=	7.5			
BOTT:	SMAX=	.01	SMIN=	-.21	TMAX=	.11	ANGLE=	3.2			
104		.00	-.01	-.14	-.92						
		.17	.12	-.01	-.02						
TOP :	SMAX=	-.03	SMIN=	-.18	TMAX=	.07	ANGLE=	.9			
BOTT:	SMAX=	.13	SMIN=	.02	TMAX=	.06	ANGLE=	5.0			
105		.00	-.02	-.22	-.92						
		.18	.12	.04	-.02						
TOP :	SMAX=	.01	SMIN=	-.18	TMAX=	.09	ANGLE=	-8.2			
BOTT:	SMAX=	.14	SMIN=	.07	TMAX=	.03	ANGLE=	90.0			
106		.00	-.03	-.53	1.14						
		.37	.67	.46	.01						
TOP :	SMAX=	.42	SMIN=	.16	TMAX=	.13	ANGLE=	25.0			
BOTT:	SMAX=	.56	SMIN=	-.19	TMAX=	.37	ANGLE=	-7.3			
107		.00	-.02	-.31	1.09						
		.27	.48	.30	.01						
TOP :	SMAX=	.31	SMIN=	.13	TMAX=	.09	ANGLE=	90.0			
BOTT:	SMAX=	.36	SMIN=	-.18	TMAX=	.27	ANGLE=	-7.9			
108		.00	-.05	-.95	-1.51						
		.40	.44	.35	-.02						
TOP :	SMAX=	.19	SMIN=	-.28	TMAX=	.23	ANGLE=	-4			
BOTT:	SMAX=	.51	SMIN=	.22	TMAX=	.14	ANGLE=	-8.2			
109		-.01	-.10	-1.21	-4.87						
		.97	.64	.22	-.11						
TOP :	SMAX=	.04	SMIN=	-.95	TMAX=	.49	ANGLE=	-8.3			
BOTT:	SMAX=	.74	SMIN=	.38	TMAX=	.18	ANGLE=	-20.0			
376	15	.00	-.03	-.91	2.13						
		.48	1.06	.48	.06						
TOP :	SMAX=	.54	SMIN=	.20	TMAX=	.17	ANGLE=	90.0			
BOTT:	SMAX=	.77	SMIN=	-.44	TMAX=	.60	ANGLE=	-19.7			
2		.00	.00	-.02	-.25						
		.06	.09	.01	-.01						
TOP :	SMAX=	.01	SMIN=	-.05	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.07	SMIN=	-.02	TMAX=	.05	ANGLE=	90.0			
3		.00	.00	.01	-.28						
		.06	.11	-.02	.00						
TOP :	SMAX=	.00	SMIN=	-.07	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.07	SMIN=	-.05	TMAX=	.06	ANGLE=	90.0			
4		.00	.00	-.02	-.22						
		.06	.09	.00	.00						
TOP :	SMAX=	.01	SMIN=	-.06	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.07	SMIN=	-.03	TMAX=	.05	ANGLE=	90.0			
5		.00	.00	.12	-.28						
		.05	.11	-.05	.00						
TOP :	SMAX=	-.03	SMIN=	-.06	TMAX=	.02	ANGLE=	90.0			
BOTT:	SMAX=	.05	SMIN=	-.08	TMAX=	.06	ANGLE=	-10.9			
6		.00	.00	.15	.64						
		.10	.09	.00	.00						
TOP :	SMAX=	.11	SMIN=	.03	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	-.02	SMIN=	-.10	TMAX=	.04	ANGLE=	90.0			
7		.00	-.01	.42	2.14						
		.33	.32	.03	.01						
TOP :	SMAX=	.37	SMIN=	.10	TMAX=	.14	ANGLE=	-1.7			
BOTT:	SMAX=	-.04	SMIN=	-.34	TMAX=	.15	ANGLE=	-4.2			

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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK,    MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.00	.01	.26	.11	.25					
		.05	.14	-.06	-.01	-.01					
TOP :	SMAX=	.03	SMIN=	-.03	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.00	SMIN=	-.13	TMAX=	.07	ANGLE=	90.0			
	9	.00	.00	-.09	-.50	-.04					
		.08	.07	.00	-.01	.00					
TOP :	SMAX=	-.01	SMIN=	-.09	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	.08	SMIN=	.02	TMAX=	.03	ANGLE=	90.0			
	10	.00	-.01	-.47	-.51	.04					
		.16	.23	.18	.00	.00					
TOP :	SMAX=	.10	SMIN=	-.09	TMAX=	.10	ANGLE=	.9			
BOTT:	SMAX=	.26	SMIN=	.08	TMAX=	.09	ANGLE=	-3.8			
	11	.00	.01	.47	.51	-.04					
		.16	.23	-.18	.00	.00					
TOP :	SMAX=	.09	SMIN=	-.10	TMAX=	.10	ANGLE=	.9			
BOTT:	SMAX=	-.08	SMIN=	-.26	TMAX=	.09	ANGLE=	-3.8			
	12	.00	.00	-.02	-.08	.00					
		.01	.01	.00	.00	.00					
TOP :	SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.01	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
	13	.00	-.01	-1.41	-2.11	.01					
		.45	.49	.33	-.05	-.03					
TOP :	SMAX=	.09	SMIN=	-.40	TMAX=	.25	ANGLE=	-2.9			
BOTT:	SMAX=	.57	SMIN=	.30	TMAX=	.13	ANGLE=	-6.6			
	14	.00	-.03	-2.49	-2.03	.51					
		.43	.87	.53	-.02	-.06					
TOP :	SMAX=	.12	SMIN=	-.35	TMAX=	.24	ANGLE=	2.6			
BOTT:	SMAX=	.98	SMIN=	.29	TMAX=	.35	ANGLE=	-12.9			
	101	.00	-.01	-.62	-3.34	-.32					
		.57	.48	.02	-.04	.01					
TOP :	SMAX=	-.08	SMIN=	-.60	TMAX=	.26	ANGLE=	-4.5			
BOTT:	SMAX=	.53	SMIN=	.12	TMAX=	.21	ANGLE=	-9.3			
	102	.00	-.01	-.32	-1.66	-.18					
		.29	.23	.03	-.02	.01					
TOP :	SMAX=	-.02	SMIN=	-.30	TMAX=	.14	ANGLE=	-4.9			
BOTT:	SMAX=	.26	SMIN=	.07	TMAX=	.09	ANGLE=	-11.6			
	103	.00	-.02	-.10	-.46	-.12					
		.11	.07	.05	-.01	.00					
TOP :	SMAX=	.03	SMIN=	-.09	TMAX=	.06	ANGLE=	-8.4			
BOTT:	SMAX=	.08	SMIN=	.04	TMAX=	.02	ANGLE=	90.0			
	104	.00	.00	-.23	-2.08	.01					
		.35	.31	-.02	-.03	.00					
TOP :	SMAX=	-.06	SMIN=	-.38	TMAX=	.16	ANGLE=	-.6			
BOTT:	SMAX=	.32	SMIN=	.01	TMAX=	.15	ANGLE=	1.0			
	105	.00	-.01	-.51	-2.57	-.22					
		.44	.36	.03	-.03	.01					
TOP :	SMAX=	-.06	SMIN=	-.46	TMAX=	.20	ANGLE=	-4.1			
BOTT:	SMAX=	.40	SMIN=	.11	TMAX=	.15	ANGLE=	-8.9			
	106	.00	-.03	-1.68	-1.64	.73					
		.46	.77	.51	-.01	-.07					
TOP :	SMAX=	.24	SMIN=	-.29	TMAX=	.27	ANGLE=	6.2			
BOTT:	SMAX=	.85	SMIN=	.20	TMAX=	.32	ANGLE=	-17.6			
	107	.00	-.02	-1.20	-1.13	.69					
		.30	.56	.33	-.01	-.06					
TOP :	SMAX=	.14	SMIN=	-.21	TMAX=	.17	ANGLE=	9.0			
BOTT:	SMAX=	.60	SMIN=	.10	TMAX=	.25	ANGLE=	-22.4			
	108	.00	-.04	-2.12	-5.35	-.13					
		.94	.76	.32	-.06	-.02					
TOP :	SMAX=	-.03	SMIN=	-.95	TMAX=	.46	ANGLE=	-2.4			
BOTT:	SMAX=	.83	SMIN=	.67	TMAX=	.08	ANGLE=	-1.2			
	109	.00	-.06	-2.73	-13.56	-1.20					
		2.31	1.91	.16	-.16	.05					
TOP :	SMAX=	-.28	SMIN=	-2.44	TMAX=	1.08	ANGLE=	-4.1			
BOTT:	SMAX=	2.14	SMIN=	.57	TMAX=	.78	ANGLE=	-9.2			



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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MY FXY
377	15	-.03 .48	-.04 1.20	-1.93 .33	-2.98 .02	1.65 -.32
	TOP :	SMAX=.01	SMIN=	-.48	TMAX=.24	ANGLE=-5.7
	BOTT:	SMAX=1.19	SMIN=	-.02	TMAX=.60	ANGLE=-42.0
	2	.00 .05	.00 .08	.06 .00	-.19 .00	.07 -.03
	TOP :	SMAX=.02	SMIN=	-.04	TMAX=.03	ANGLE=90.0
	BOTT:	SMAX=.05	SMIN=	-.03	TMAX=.04	ANGLE=90.0
	3	.00 .05	.00 .07	.06 -.01	-.27 .00	.03 -.02
	TOP :	SMAX=.00	SMIN=	-.05	TMAX=.03	ANGLE=90.0
	BOTT:	SMAX=.05	SMIN=	-.03	TMAX=.04	ANGLE=90.0
	4	.00 .05	.00 .06	.02 .00	-.26 .00	.05 -.01
	TOP :	SMAX=.00	SMIN=	-.05	TMAX=.02	ANGLE=90.0
	BOTT:	SMAX=.05	SMIN=	-.01	TMAX=.03	ANGLE=90.0
	5	.00 .07	.00 .13	.24 -.03	-.41 .01	-.09 .01
	TOP :	SMAX=.01	SMIN=	-.06	TMAX=.04	ANGLE=90.0
	BOTT:	SMAX=.08	SMIN=	-.07	TMAX=.08	ANGLE=-10.5
	6	.00 .05	.00 .05	.05 .00	.33 .00	.02 .00
	TOP :	SMAX=.06	SMIN=	.01	TMAX=.02	ANGLE=90.0
	BOTT:	SMAX=	SMIN=	-.05	TMAX=.02	ANGLE=90.0
	7	.00 .11	-.01 .15	-.12 .02	.65 .00	.12 -.02
	TOP :	SMAX=.11	SMIN=	.00	TMAX=.05	ANGLE=-.4
	BOTT:	SMAX=.05	SMIN=	-.12	TMAX=.08	ANGLE=-14.3
	8	.00 .12	.01 .16	.57 -.02	.77 .01	.16 -.03
	TOP :	SMAX=.14	SMIN=	.07	TMAX=.03	ANGLE=90.0
	BOTT:	SMAX=	SMIN=	-.18	TMAX=.06	ANGLE=90.0
	9	.00 .13	.00 .12	-.09 .00	-.77 .00	-.06 .01
	TOP :	SMAX=	SMIN=	-.13	TMAX=.06	ANGLE=-1.7
	BOTT:	SMAX=.13	SMIN=	.01	TMAX=.06	ANGLE=-7.6
	10	.00 .25	.00 .21	-.55 .09	-1.37 -.01	-.15 .00
	TOP :	SMAX=.00	SMIN=	-.24	TMAX=.12	ANGLE=-6.2
	BOTT:	SMAX=.23	SMIN=	.17	TMAX=.03	ANGLE=90.0
	11	.00 .25	.00 .21	.55 -.09	1.37 .01	.15 .00
	TOP :	SMAX=.24	SMIN=	.00	TMAX=.12	ANGLE=-6.2
	BOTT:	SMAX=	SMIN=	-.23	TMAX=.03	ANGLE=90.0
	12	.00 .02	.00 .01	-.02 .00	-.10 .00	.00 .00
	TOP :	SMAX=.00	SMIN=	-.02	TMAX=.01	ANGLE=90.0
	BOTT:	SMAX=.02	SMIN=	.00	TMAX=.01	ANGLE=90.0
	13	.00 .51	.00 .40	-1.17 -.11	-2.97 -.08	-.39 -.01
	TOP :	SMAX=	SMIN=	-.59	TMAX=.15	ANGLE=-14.3
	BOTT:	SMAX=.43	SMIN=	.07	TMAX=.18	ANGLE=-9.7
	14	-.01 .95	-.04 .75	-4.34 -.03	-5.48 -.11	-.41 -.06
	TOP :	SMAX=	SMIN=	-1.08	TMAX=.19	ANGLE=-21.9
	BOTT:	SMAX=.80	SMIN=	.69	TMAX=.06	ANGLE=-4.2
	101	.00 .86	-.01 .82	-.56 .00	-5.24 -.03	-.37 .04
	TOP :	SMAX=	SMIN=	-.90	TMAX=.41	ANGLE=-1.6
	BOTT:	SMAX=.86	SMIN=	.08	TMAX=.39	ANGLE=-7.6

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.00	-.01	-.38	-3.15						
		.52	.48	.01	-.02						.02
TOP :	SMAX=	-.05	SMIN=	-.54	TMAX=	.24	ANGLE=				-1.7
BOTT:	SMAX=	.51	SMIN=	.07	TMAX=	.22	ANGLE=				-7.5
103		.00	-.02	-.51	-2.89						
		.47	.42	.02	-.02						.01
TOP :	SMAX=	-.06	SMIN=	-.50	TMAX=	.22	ANGLE=				-1.9
BOTT:	SMAX=	.46	SMIN=	.11	TMAX=	.18	ANGLE=				-4.8
104		.00	.00	.04	-2.80						
		.48	.46	-.01	-.01						.00
TOP :	SMAX=	.00	SMIN=	-.48	TMAX=	.24	ANGLE=				-2.4
BOTT:	SMAX=	.45	SMIN=	-.02	TMAX=	.24	ANGLE=				-1.9
105		.00	.00	-.49	-4.03						
		.66	.62	.01	-.02						.03
TOP :	SMAX=	-.07	SMIN=	-.70	TMAX=	.31	ANGLE=				-1.6
BOTT:	SMAX=	.66	SMIN=	.08	TMAX=	.29	ANGLE=				-7.4
106		-.01	-.02	-2.10	-5.84						.41
		.95	.89	.16	-.04						-.15
TOP :	SMAX=	-.18	SMIN=	-1.03	TMAX=	.42	ANGLE=				-5.7
BOTT:	SMAX=	1.02	SMIN=	.41	TMAX=	.30	ANGLE=				23.1
107		-.01	-.02	-1.54	-4.47						.56
		.71	.75	.06	-.03						-.15
TOP :	SMAX=	-.19	SMIN=	-.78	TMAX=	.30	ANGLE=				-5.5
BOTT:	SMAX=	.83	SMIN=	.21	TMAX=	.31	ANGLE=				25.6
108		.00	-.03	-3.01	-9.56						-.67
		1.51	1.34	.00	-.09						.02
TOP :	SMAX=	-.50	SMIN=	-1.70	TMAX=	.60	ANGLE=				-4.5
BOTT:	SMAX=	1.51	SMIN=	.48	TMAX=	.52	ANGLE=				-7.2
109		.01	-.03	-2.62	-21.31						-1.45
		3.50	3.28	.05	-.12						.15
TOP :	SMAX=	-.39	SMIN=	-3.68	TMAX=	1.64	ANGLE=				-1.6
BOTT:	SMAX=	3.48	SMIN=	.43	TMAX=	1.52	ANGLE=				-7.4
378	15	-.12	-.03	-3.43	-11.49						-6.30
		2.97	2.08	-.01	-.02						-.35
TOP :	SMAX=	.30	SMIN=	-2.81	TMAX=	1.55	ANGLE=				-32.0
BOTT:	SMAX=	2.19	SMIN=	.26	TMAX=	.97	ANGLE=				-23.3
2		.00	.00	.14	.17						-.44
		.18	.09	-.01	.00						-.03
TOP :	SMAX=	.12	SMIN=	-.08	TMAX=	.10	ANGLE=				90.0
BOTT:	SMAX=	.02	SMIN=	-.08	TMAX=	.05	ANGLE=				90.0
3		.00	.00	.12	.04						-.39
		.14	.09	-.01	.00						-.02
TOP :	SMAX=	.09	SMIN=	-.07	TMAX=	.08	ANGLE=				90.0
BOTT:	SMAX=	.03	SMIN=	-.07	TMAX=	.05	ANGLE=				90.0
4		.00	.00	.06	-.07						-.25
		.10	.05	.00	.00						-.01
TOP :	SMAX=	.05	SMIN=	-.06	TMAX=	.06	ANGLE=				90.0
BOTT:	SMAX=	.03	SMIN=	-.03	TMAX=	.03	ANGLE=				90.0
5		.00	.01	.29	.09						.22
		.11	.05	.02	.03						.01
TOP :	SMAX=	.11	SMIN=	.01	TMAX=	.05	ANGLE=				90.0
BOTT:	SMAX=	.03	SMIN=	-.04	TMAX=	.03	ANGLE=				90.0
6		.00	-.01	-.13	-.41						-.04
		.07	.06	.00	.00						.00
TOP :	SMAX=	-.02	SMIN=	-.07	TMAX=	.03	ANGLE=				90.0
BOTT:	SMAX=	.07	SMIN=	.02	TMAX=	.02	ANGLE=				90.0
7		-.01	-.02	-.81	-2.42						-.29
		.40	.33	-.01	-.03						-.02
TOP :	SMAX=	-.13	SMIN=	-.45	TMAX=	.16	ANGLE=				-12.4
BOTT:	SMAX=	.38	SMIN=	.12	TMAX=	.13	ANGLE=				-6.9

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
	8	-.01	.01	.87	2.33	-.52
		.42	.34	.03	.02	-.04
TOP :	SMAX=	.46	SMIN=	.12	TMAX=	.17 ANGLE= 24.0
BOTT:	SMAX=	-.11	SMIN=	-.38	TMAX=	.13 ANGLE= 9.7
	9	.00	.00	-.12	-.84	.12
		.14	.14	.00	.00	.01
TOP :	SMAX=	-.02	SMIN=	-.14	TMAX=	.06 ANGLE= 12.3
BOTT:	SMAX=	.14	SMIN=	.01	TMAX=	.06 ANGLE= 5.8
	10	.01	.00	-.66	-2.47	.07
		.37	.37	-.05	-.01	.00
TOP :	SMAX=	-.17	SMIN=	-.43	TMAX=	.13 ANGLE= 2.2
BOTT:	SMAX=	.40	SMIN=	.06	TMAX=	.17 ANGLE= 2.3
	11	-.01	.00	.66	2.47	-.07
		.37	.37	.05	.01	.00
TOP :	SMAX=	.43	SMIN=	.17	TMAX=	.13 ANGLE= 2.2
BOTT:	SMAX=	-.06	SMIN=	-.40	TMAX=	.17 ANGLE= 2.3
	12	.00	.00	-.02	-.09	.01
		.01	.01	.00	.00	.00
TOP :	SMAX=	.00	SMIN=	-.02	TMAX=	.01 ANGLE= 90.0
BOTT:	SMAX=	.01	SMIN=	.00	TMAX=	.01 ANGLE= 90.0
	13	.01	.01	-.74	-3.31	.04
		.88	1.10	-.88	-.05	.03
TOP :	SMAX=	-.60	SMIN=	-1.01	TMAX=	.20 ANGLE= -5.6
BOTT:	SMAX=	.50	SMIN=	-.76	TMAX=	.63 ANGLE= -1.2
	14	.04	-.07	-5.89	-14.72	.13
		2.35	2.23	-.90	-.18	.02
TOP :	SMAX=	-1.88	SMIN=	-2.64	TMAX=	.38 ANGLE= 3.4
BOTT:	SMAX=	2.27	SMIN=	.08	TMAX=	1.10 ANGLE= -.1
	101	.03	.01	-.69	-5.53	.92
		.91	.92	-.02	.02	.04
TOP :	SMAX=	-.08	SMIN=	-.95	TMAX=	.43 ANGLE= 13.6
BOTT:	SMAX=	.96	SMIN=	.09	TMAX=	.44 ANGLE= 7.2
	102	.01	.00	-.62	-4.03	.53
		.65	.65	-.01	.01	.03
TOP :	SMAX=	-.10	SMIN=	-.69	TMAX=	.30 ANGLE= 11.3
BOTT:	SMAX=	.69	SMIN=	.08	TMAX=	.30 ANGLE= 6.1
	103	.01	-.01	-1.17	-5.64	.33
		.88	.85	-.02	-.02	.01
TOP :	SMAX=	-.21	SMIN=	-.96	TMAX=	.38 ANGLE= 5.2
BOTT:	SMAX=	.93	SMIN=	.17	TMAX=	.38 ANGLE= 3.3
	104	.01	.01	.18	-1.85	.15
		.31	.35	.01	.02	-.01
TOP :	SMAX=	.04	SMIN=	-.29	TMAX=	.16 ANGLE= 3.3
BOTT:	SMAX=	.33	SMIN=	-.02	TMAX=	.18 ANGLE= 5.1
	105	.02	.01	-.61	-4.38	.66
		.71	.71	-.02	.01	.03
TOP :	SMAX=	-.09	SMIN=	-.75	TMAX=	.33 ANGLE= 12.7
BOTT:	SMAX=	.75	SMIN=	.07	TMAX=	.34 ANGLE= 6.7
	106	-.04	-.01	-2.75	-11.00	-2.74
		1.92	1.89	-.48	-.04	-.14
TOP :	SMAX=	-.65	SMIN=	-2.16	TMAX=	.76 ANGLE= -26.0
BOTT:	SMAX=	1.85	SMIN=	-.08	TMAX=	.96 ANGLE= -9.6
	107	-.05	-.01	-2.08	-8.53	-2.81
		1.64	1.55	-.43	-.03	-.14
TOP :	SMAX=	-.42	SMIN=	-1.80	TMAX=	.69 ANGLE= -30.5
BOTT:	SMAX=	1.47	SMIN=	-.15	TMAX=	.81 ANGLE= -12.0
	108	.05	-.02	-3.98	-14.78	1.20
		2.25	2.32	-.48	-.07	.07
TOP :	SMAX=	-1.09	SMIN=	-2.58	TMAX=	.74 ANGLE= 10.5
BOTT:	SMAX=	2.40	SMIN=	.18	TMAX=	1.11 ANGLE= 3.5
	109	.10	.03	-3.24	-23.17	3.54
		3.77	3.79	-.10	.06	.17
TOP :	SMAX=	-.46	SMIN=	-3.98	TMAX=	1.76 ANGLE= 12.8
BOTT:	SMAX=	3.97	SMIN=	.39	TMAX=	1.79 ANGLE= 6.8

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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH				
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH						
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MY FXY
381	15	.02	.39	-2.80	-33.41	-21.39
		8.16	8.21	-.58	-.26	-.02
TOP :	SMAX=	.84	SMIN=	-7.71	TMAX=	4.27 ANGLE= -28.0
BOTT:	SMAX=	7.09	SMIN=	-1.90	TMAX=	4.50 ANGLE= -26.4
	2	.00	.01	-.35	-.54	-1.72
		.52	.48	-.04	-.01	-.01
TOP :	SMAX=	.20	SMIN=	-.39	TMAX=	.30 ANGLE= 90.0
BOTT:	SMAX=	.33	SMIN=	-.22	TMAX=	.28 ANGLE= 90.0
	3	-.01	.01	-.40	-4.46	-1.25
		.38	.36	-.01	.00	-.01
TOP :	SMAX=	.13	SMIN=	-.29	TMAX=	.21 ANGLE= 90.0
BOTT:	SMAX=	.27	SMIN=	-.14	TMAX=	.20 ANGLE= 90.0
	4	-.02	.00	-.39	-4.48	-.69
		.22	.21	-.02	.00	.00
TOP :	SMAX=	.04	SMIN=	-.20	TMAX=	.12 ANGLE= 90.0
BOTT:	SMAX=	.18	SMIN=	-.05	TMAX=	.11 ANGLE= 90.0
	5	-.04	-.04	-1.32	-1.11	-1.19
		.39	.41	.04	.01	.00
TOP :	SMAX=	.02	SMIN=	-.38	TMAX=	.20 ANGLE= 90.0
BOTT:	SMAX=	.43	SMIN=	.03	TMAX=	.20 ANGLE= 90.0
	6	.00	.00	-.07	-.87	.15
		.15	.14	.00	-.01	.00
TOP :	SMAX=	-.01	SMIN=	-.15	TMAX=	.07 ANGLE= 9.5
BOTT:	SMAX=	.14	SMIN=	.00	TMAX=	.07 ANGLE= 11.6
	7	.02	.04	.33	-3.28	1.14
		.64	.69	-.04	-.02	-.02
TOP :	SMAX=	.06	SMIN=	-.61	TMAX=	.33 ANGLE= 15.1
BOTT:	SMAX=	.59	SMIN=	-.16	TMAX=	.38 ANGLE= 17.0
	8	-.02	-.02	-.32	-.62	-1.79
		.58	.47	.06	.00	-.03
TOP :	SMAX=	.29	SMIN=	-.38	TMAX=	.33 ANGLE= -40.1
BOTT:	SMAX=	.37	SMIN=	-.16	TMAX=	.27 ANGLE= 90.0
	9	-.01	.00	-.54	-.37	-.52
		.17	.17	.00	.00	.00
TOP :	SMAX=	.01	SMIN=	-.16	TMAX=	.09 ANGLE= 90.0
BOTT:	SMAX=	.17	SMIN=	-.01	TMAX=	.09 ANGLE= 90.0
	10	.00	.02	-.58	-.61	-.80
		.28	.27	-.12	-.01	.01
TOP :	SMAX=	-.03	SMIN=	-.30	TMAX=	.13 ANGLE= 33.3
BOTT:	SMAX=	.19	SMIN=	-.12	TMAX=	.15 ANGLE= -34.0
	11	.00	-.02	.58	.61	.80
		.28	.27	.12	.01	-.01
TOP :	SMAX=	.30	SMIN=	.03	TMAX=	.13 ANGLE= 33.3
BOTT:	SMAX=	.12	SMIN=	-.19	TMAX=	.15 ANGLE= -34.0
	12	.00	.00	-.03	-.01	-.03
		.01	.01	.00	.00	.00
TOP :	SMAX=	.00	SMIN=	-.01	TMAX=	.01 ANGLE= 90.0
BOTT:	SMAX=	.01	SMIN=	.00	TMAX=	.01 ANGLE= 90.0
	13	.01	.03	-.24	.35	-1.17
		1.46	1.28	-1.30	.04	-.05
TOP :	SMAX=	.14	SMIN=	-1.38	TMAX=	.76 ANGLE= 9.4
BOTT:	SMAX=	.00	SMIN=	-1.28	TMAX=	.64 ANGLE= -6.5
	14	.01	.09	-.86	.40	2.76
		2.06	1.72	-1.69	.03	.01
TOP :	SMAX=	.21	SMIN=	-1.94	TMAX=	1.08 ANGLE= -13.1
BOTT:	SMAX=	.09	SMIN=	-1.67	TMAX=	.88 ANGLE= 15.2
	101	-.08	-.04	-4.01	-2.93	-3.84
		1.24	1.28	.01	.01	.01
TOP :	SMAX=	.07	SMIN=	-1.21	TMAX=	.64 ANGLE= 40.8
BOTT:	SMAX=	1.24	SMIN=	-.07	TMAX=	.66 ANGLE= 41.1

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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH				
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH						
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MY FXY
	102	-.04	-.02	-2.46	-2.42	-2.20
		.75	.76	-.01	.00	.01
	TOP : SMAX=	-.05	SMIN=	-.77	TMAX=	.36 ANGLE= 90.0
	BOTT: SMAX=	.78	SMIN=	.03	TMAX=	.37 ANGLE= 90.0
	103	-.03	.01	-2.15	-4.35	-1.41
		.77	.73	-.04	-.01	-.01
	TOP : SMAX=	-.27	SMIN=	-.86	TMAX=	.30 ANGLE= -27.7
	BOTT: SMAX=	.82	SMIN=	.22	TMAX=	.30 ANGLE= -24.4
	104	-.06	-.03	-2.67	-2.23	-3.75
		1.18	1.14	.05	.00	-.02
	TOP : SMAX=	.26	SMIN=	-1.03	TMAX=	.64 ANGLE= 90.0
	BOTT: SMAX=	1.04	SMIN=	-.18	TMAX=	.61 ANGLE= 42.3
	105	-.05	-.02	-2.84	-2.02	-2.74
		.88	.91	.00	.01	.01
	TOP : SMAX=	.05	SMIN=	-.86	TMAX=	.45 ANGLE= 40.4
	BOTT: SMAX=	.88	SMIN=	-.06	TMAX=	.47 ANGLE= 41.1
	106	-.02	.21	-3.33	-17.92	-13.15
		4.65	4.91	-1.00	-.11	.00
	TOP : SMAX=	.00	SMIN=	-4.65	TMAX=	2.33 ANGLE= -35.4
	BOTT: SMAX=	3.96	SMIN=	-1.53	TMAX=	2.75 ANGLE= -26.4
	107	-.01	.19	-2.75	-17.31	-12.35
		4.43	4.65	-.89	-.10	-.01
	TOP : SMAX=	.07	SMIN=	-4.39	TMAX=	2.23 ANGLE= -34.2
	BOTT: SMAX=	3.78	SMIN=	-1.42	TMAX=	2.60 ANGLE= -25.9
	108	-.08	.01	-5.25	-3.26	-3.27
		1.78	1.13	-.85	.03	.02
	TOP : SMAX=	-.32	SMIN=	-1.92	TMAX=	.80 ANGLE= 20.3
	BOTT: SMAX=	.93	SMIN=	-.33	TMAX=	.63 ANGLE= -32.1
	109	-.28	-.13	-15.06	-10.80	-14.52
		4.68	4.83	-.03	.03	.05
	TOP : SMAX=	.25	SMIN=	-4.55	TMAX=	2.40 ANGLE= 40.4
	BOTT: SMAX=	4.65	SMIN=	-.33	TMAX=	2.49 ANGLE= 41.2
382	15	.47	-.14	24.21	54.65	-15.48
		8.85	9.32	-.24	-.35	-.03
	TOP : SMAX=	9.88	SMIN=	2.68	TMAX=	3.60 ANGLE= 23.2
	BOTT: SMAX=	-3.23	SMIN=	-10.50	TMAX=	3.64 ANGLE= 22.3
	2	.01	.00	-.07	1.97	-.81
		.42	.40	-.03	-.01	.00
	TOP : SMAX=	.37	SMIN=	-.09	TMAX=	.23 ANGLE= 18.7
	BOTT: SMAX=	.03	SMIN=	-.38	TMAX=	.21 ANGLE= 20.0
	3	.01	.00	-.14	1.82	-.76
		.39	.38	-.01	.00	.00
	TOP : SMAX=	.34	SMIN=	-.08	TMAX=	.21 ANGLE= 18.6
	BOTT: SMAX=	.05	SMIN=	-.35	TMAX=	.20 ANGLE= 19.1
	4	.01	.00	-.13	1.47	-.63
		.32	.31	-.01	-.01	.00
	TOP : SMAX=	.28	SMIN=	-.07	TMAX=	.17 ANGLE= 18.7
	BOTT: SMAX=	.05	SMIN=	-.29	TMAX=	.17 ANGLE= 19.5
	5	.00	.01	-2.35	.28	-.61
		.44	.47	.02	.01	.00
	TOP : SMAX=	.08	SMIN=	-.39	TMAX=	.24 ANGLE= 12.9
	BOTT: SMAX=	.44	SMIN=	-.06	TMAX=	.25 ANGLE= 12.2
	6	.00	.01	.04	-.40	-.03
		.07	.07	.00	.00	.00
	TOP : SMAX=	.01	SMIN=	-.07	TMAX=	.04 ANGLE= 90.0
	BOTT: SMAX=	.06	SMIN=	-.01	TMAX=	.04 ANGLE= 90.0
	7	.01	.04	.95	-.29	-.21
		.21	.19	.01	.01	-.01
	TOP : SMAX=	.18	SMIN=	-.05	TMAX=	.11 ANGLE= -12.6
	BOTT: SMAX=	.06	SMIN=	-.16	TMAX=	.11 ANGLE= -5.4

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
8		.01	.00	.14	.31						-1.07
		.34	.31	.08	-.02						-.01
TOP :	SMAX=	.26	SMIN=	-.13	TMAX=	.19	ANGLE=	90.0			
BOTT:	SMAX=	.17	SMIN=	-.19	TMAX=	.18	ANGLE=	35.2			
9		.00	.00	-.79	1.19						-.28
		.31	.29	-.01	.00						.00
TOP :	SMAX=	.21	SMIN=	-.14	TMAX=	.18	ANGLE=	7.6			
BOTT:	SMAX=	.13	SMIN=	-.20	TMAX=	.17	ANGLE=	8.3			
10		.01	.01	-.76	2.96						-.46
		.66	.52	-.13	-.01						.00
TOP :	SMAX=	.49	SMIN=	-.26	TMAX=	.38	ANGLE=	5.5			
BOTT:	SMAX=	.01	SMIN=	-.52	TMAX=	.26	ANGLE=	9.0			
11		-.01	-.01	.76	-2.96						.46
		.66	.52	.13	.01						.00
TOP :	SMAX=	.26	SMIN=	-.49	TMAX=	.38	ANGLE=	5.5			
BOTT:	SMAX=	.52	SMIN=	-.01	TMAX=	.26	ANGLE=	9.0			
12		.00	.00	-.03	.14						-.02
		.03	.03	.00	.00						.00
TOP :	SMAX=	.02	SMIN=	-.01	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
13		.01	.02	-1.60	3.88						-.79
		2.19	1.02	-1.43	.12						-.02
TOP :	SMAX=	.77	SMIN=	-1.70	TMAX=	1.24	ANGLE=	3.6			
BOTT:	SMAX=	-.51	SMIN=	-1.18	TMAX=	.33	ANGLE=	-9.7			
14		-.02	.06	-4.85	8.46						1.80
		3.82	1.25	-1.89	.21						.01
TOP :	SMAX=	1.64	SMIN=	-2.72	TMAX=	2.18	ANGLE=	-4.0			
BOTT:	SMAX=	-.84	SMIN=	-1.44	TMAX=	.30	ANGLE=	-39.3			
101		.03	.02	-6.03	7.93						-2.05
		2.16	2.06	-.05	.01						.01
TOP :	SMAX=	1.38	SMIN=	-1.10	TMAX=	1.24	ANGLE=	7.8			
BOTT:	SMAX=	1.00	SMIN=	-1.36	TMAX=	1.18	ANGLE=	8.6			
102		.02	.02	-3.52	4.91						-1.27
		1.31	1.24	-.04	.00						.00
TOP :	SMAX=	.85	SMIN=	-.66	TMAX=	.75	ANGLE=	8.0			
BOTT:	SMAX=	.58	SMIN=	-.85	TMAX=	.71	ANGLE=	8.7			
103		.03	.04	-2.79	5.00						-1.41
		1.25	1.17	-.04	.01						-.01
TOP :	SMAX=	.89	SMIN=	-.54	TMAX=	.71	ANGLE=	9.9			
BOTT:	SMAX=	.47	SMIN=	-.86	TMAX=	.67	ANGLE=	10.1			
104		.03	.01	-3.44	5.48						-2.11
		1.42	1.45	.02	-.01						.00
TOP :	SMAX=	.99	SMIN=	-.64	TMAX=	.81	ANGLE=	13.0			
BOTT:	SMAX=	.67	SMIN=	-1.00	TMAX=	.83	ANGLE=	12.3			
105		.02	.01	-4.18	6.18						-1.47
		1.60	1.52	-.05	.01						.01
TOP :	SMAX=	1.07	SMIN=	-.77	TMAX=	.92	ANGLE=	7.5			
BOTT:	SMAX=	.69	SMIN=	-1.06	TMAX=	.87	ANGLE=	8.4			
106		.26	-.05	8.69	34.09						-9.15
		5.95	5.68	-.92	-.12						-.02
TOP :	SMAX=	6.00	SMIN=	.09	TMAX=	2.95	ANGLE=	15.8			
BOTT:	SMAX=	-1.80	SMIN=	-6.37	TMAX=	2.28	ANGLE=	20.6			
107		.25	-.06	9.45	31.13						-8.69
		5.38	5.21	-.79	-.11						-.03
TOP :	SMAX=	5.54	SMIN=	.33	TMAX=	2.61	ANGLE=	17.2			
BOTT:	SMAX=	-1.79	SMIN=	-5.87	TMAX=	2.04	ANGLE=	22.1			
108		.03	.05	-9.53	14.69						-1.59
		4.51	2.70	-1.03	.12						.01
TOP :	SMAX=	2.58	SMIN=	-2.63	TMAX=	2.60	ANGLE=	2.8			
BOTT:	SMAX=	.59	SMIN=	-2.36	TMAX=	1.47	ANGLE=	5.4			
109		.12	.07	-22.19	32.68						-7.79
		8.49	8.07	-.25	.04						.03
TOP :	SMAX=	5.65	SMIN=	-4.12	TMAX=	4.88	ANGLE=	7.5			
BOTT:	SMAX=	3.64	SMIN=	-5.61	TMAX=	4.62	ANGLE=	8.4			

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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH				
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH						
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MYX FXY
383	15	.45	.26	21.25	57.78	16.66
		9.37	10.06	-.39	-.33	-.15
	TOP : SMAX=	10.27	SMIN=	2.18	TMAX=	4.04 ANGLE= -20.3
	BOTT: SMAX=	-2.75	SMIN=	-11.15	TMAX=	4.20 ANGLE= -22.0
	2	.01	.00	-.07	1.97	.81
		.42	.40	-.03	-.01	.00
	TOP : SMAX=	.37	SMIN=	-.09	TMAX=	.23 ANGLE= -18.7
	BOTT: SMAX=	.03	SMIN=	-.38	TMAX=	.21 ANGLE= -20.0
	3	.01	.00	-.14	1.82	.76
		.39	.38	-.01	.00	.00
	TOP : SMAX=	.34	SMIN=	-.08	TMAX=	.21 ANGLE= -18.6
	BOTT: SMAX=	.05	SMIN=	-.35	TMAX=	.20 ANGLE= -19.1
	4	.01	.00	-.13	1.47	.63
		.32	.31	-.01	-.01	.00
	TOP : SMAX=	.28	SMIN=	-.07	TMAX=	.17 ANGLE= -18.7
	BOTT: SMAX=	.05	SMIN=	-.29	TMAX=	.17 ANGLE= -19.5
	5	.00	-.01	-2.35	.28	.61
		.44	.47	.02	.01	.00
	TOP : SMAX=	.08	SMIN=	-.39	TMAX=	.24 ANGLE= -12.9
	BOTT: SMAX=	.44	SMIN=	-.06	TMAX=	.25 ANGLE= -12.2
	6	.00	.01	-.07	.27	-.03
		.05	.05	.00	.00	.00
	TOP : SMAX=	.05	SMIN=	-.01	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.01	SMIN=	-.04	TMAX=	.03 ANGLE= 90.0
	7	-.01	.03	-.78	1.52	-.05
		.36	.31	.00	.03	.00
	TOP : SMAX=	.28	SMIN=	-.13	TMAX=	.20 ANGLE= 1.7
	BOTT: SMAX=	.13	SMIN=	-.23	TMAX=	.18 ANGLE= .7
	8	.01	.00	.14	.31	1.07
		.34	.31	.08	-.02	.01
	TOP : SMAX=	.26	SMIN=	-.13	TMAX=	.19 ANGLE= 90.0
	BOTT: SMAX=	.17	SMIN=	-.19	TMAX=	.18 ANGLE= -35.2
	9	.00	.00	-.78	1.19	.28
		.31	.29	-.01	.00	.00
	TOP : SMAX=	.21	SMIN=	-.14	TMAX=	.18 ANGLE= -7.6
	BOTT: SMAX=	.13	SMIN=	-.20	TMAX=	.17 ANGLE= -8.4
	10	.01	-.01	-.76	2.96	.46
		.66	.52	-.13	-.01	.00
	TOP : SMAX=	.49	SMIN=	-.26	TMAX=	.38 ANGLE= -5.5
	BOTT: SMAX=	.01	SMIN=	-.52	TMAX=	.26 ANGLE= -9.0
	11	-.01	.01	.76	-2.96	-.46
		.66	.52	.13	.01	.00
	TOP : SMAX=	.26	SMIN=	-.49	TMAX=	.38 ANGLE= -5.5
	BOTT: SMAX=	.52	SMIN=	-.01	TMAX=	.26 ANGLE= -9.0
	12	.00	.00	-.03	.14	.02
		.03	.03	.00	.00	.00
	TOP : SMAX=	.02	SMIN=	-.01	TMAX=	.01 ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	-.02	TMAX=	.01 ANGLE= 90.0
	13	.01	-.02	-1.60	3.88	.79
		2.19	1.02	-1.43	.12	.02
	TOP : SMAX=	.77	SMIN=	-1.70	TMAX=	1.24 ANGLE= -3.6
	BOTT: SMAX=	-.51	SMIN=	-1.18	TMAX=	.33 ANGLE= 9.7
	14	-.02	-.06	-4.85	8.46	-1.80
		3.82	1.25	-1.89	.21	-.01
	TOP : SMAX=	1.64	SMIN=	-2.72	TMAX=	2.18 ANGLE= 4.0
	BOTT: SMAX=	-.84	SMIN=	-1.44	TMAX=	.30 ANGLE= 39.3
	101	.03	-.02	-6.03	7.93	2.05
		2.16	2.06	-.05	.01	-.01
	TOP : SMAX=	1.38	SMIN=	-1.10	TMAX=	1.24 ANGLE= -7.8
	BOTT: SMAX=	1.00	SMIN=	-1.36	TMAX=	1.18 ANGLE= -8.6

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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK,    MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.02	-.01	-3.61	5.44						1.23
		1.40	1.33	-.04	.01						-.01
	TOP : SMAX=	.94	SMIN=	-.67	TMAX=	.80	ANGLE=				-7.1
	BOTT: SMAX=	.59	SMIN=	-.93	TMAX=	.76	ANGLE=				-8.1
103		.02	.02	-4.18	6.44						1.21
		1.63	1.53	-.04	.03						-.01
	TOP : SMAX=	1.12	SMIN=	-.75	TMAX=	.94	ANGLE=				-5.9
	BOTT: SMAX=	.68	SMIN=	-1.07	TMAX=	.88	ANGLE=				-6.9
104		.03	-.01	-3.44	5.48						2.11
		1.42	1.45	.02	-.01						.00
	TOP : SMAX=	.99	SMIN=	-.63	TMAX=	.81	ANGLE=				-13.0
	BOTT: SMAX=	.67	SMIN=	-1.00	TMAX=	.83	ANGLE=				-12.3
105		.02	-.01	-4.18	6.18						1.47
		1.60	1.52	-.05	.01						-.01
	TOP : SMAX=	1.07	SMIN=	-.77	TMAX=	.92	ANGLE=				-7.5
	BOTT: SMAX=	.69	SMIN=	-1.06	TMAX=	.87	ANGLE=				-8.4
106		.25	.11	7.21	35.65						9.74
		6.33	6.06	-1.00	-.11						-.07
	TOP : SMAX=	6.23	SMIN=	-.20	TMAX=	3.21	ANGLE=				-14.5
	BOTT: SMAX=	-1.56	SMIN=	-6.69	TMAX=	2.56	ANGLE=				-20.6
107		.24	.12	7.97	32.69						9.28
		5.74	5.59	-.87	-.10						-.06
	TOP : SMAX=	5.76	SMIN=	.05	TMAX=	2.86	ANGLE=				-15.6
	BOTT: SMAX=	-1.55	SMIN=	-6.20	TMAX=	2.32	ANGLE=				-21.9
108		.03	-.05	-9.53	14.69						1.59
		4.51	2.70	-1.03	.12						-.01
	TOP : SMAX=	2.58	SMIN=	-2.63	TMAX=	2.60	ANGLE=				-2.8
	BOTT: SMAX=	.59	SMIN=	-2.36	TMAX=	1.47	ANGLE=				-5.4
109		.12	-.07	-22.19	32.68						7.79
		8.49	8.07	-.25	.04						-.03
	TOP : SMAX=	5.65	SMIN=	-4.12	TMAX=	4.88	ANGLE=				-7.5
	BOTT: SMAX=	3.64	SMIN=	-5.61	TMAX=	4.62	ANGLE=				-8.4
384	15	-.04	-.35	-5.15	-27.61						26.18
		8.43	8.98	-.93	-.23						-.16
	TOP : SMAX=	1.16	SMIN=	-7.79	TMAX=	4.47	ANGLE=				35.1
	BOTT: SMAX=	7.18	SMIN=	-2.89	TMAX=	5.03	ANGLE=				31.9
	2	.00	-.01	-.35	-.54						1.72
		.52	.48	-.04	-.01						.01
	TOP : SMAX=	.20	SMIN=	-.39	TMAX=	.30	ANGLE=				90.0
	BOTT: SMAX=	.33	SMIN=	-.22	TMAX=	.28	ANGLE=				90.0
	3	-.01	-.01	-.40	-.46						1.25
		.38	.36	-.01	.00						.01
	TOP : SMAX=	.13	SMIN=	-.29	TMAX=	.21	ANGLE=				90.0
	BOTT: SMAX=	.27	SMIN=	-.14	TMAX=	.20	ANGLE=				90.0
	4	-.02	.00	-.39	-.48						.69
		.22	.21	-.02	.00						.00
	TOP : SMAX=	.04	SMIN=	-.20	TMAX=	.12	ANGLE=				90.0
	BOTT: SMAX=	.18	SMIN=	-.05	TMAX=	.11	ANGLE=				90.0
	5	-.04	.04	-1.32	-1.11						1.19
		.39	.41	.04	.01						.00
	TOP : SMAX=	.02	SMIN=	-.38	TMAX=	.20	ANGLE=				90.0
	BOTT: SMAX=	.43	SMIN=	.03	TMAX=	.20	ANGLE=				90.0
	6	.00	.00	.03	.73						.15
		.13	.13	.00	.00						.00
	TOP : SMAX=	.13	SMIN=	.00	TMAX=	.06	ANGLE=				-10.9
	BOTT: SMAX=	.00	SMIN=	-.13	TMAX=	.06	ANGLE=				-12.9
	7	-.03	.04	-.50	2.65						1.26
		.60	.62	.04	.02						-.01
	TOP : SMAX=	.53	SMIN=	-.12	TMAX=	.32	ANGLE=				-19.6
	BOTT: SMAX=	.20	SMIN=	-.50	TMAX=	.35	ANGLE=				-19.1



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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH				
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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH						
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
	8	-.02	.02	-.32	-.62	1.79
		.58	.47	.06	.00	.03
	TOP : SMAX=	.29	SMIN=	-.38	TMAX=	.33 ANGLE= 40.1
	BOTT: SMAX=	.37	SMIN=	-.16	TMAX=	.27 ANGLE= 90.0
	9	-.01	.00	-.54	-.37	.52
		.17	.17	.00	.00	.00
	TOP : SMAX=	.01	SMIN=	-.16	TMAX=	.09 ANGLE= 90.0
	BOTT: SMAX=	.17	SMIN=	-.01	TMAX=	.09 ANGLE= 90.0
	10	.00	-.02	-.58	-.61	.80
		.28	.27	-.12	-.01	-.01
	TOP : SMAX=	-.03	SMIN=	-.30	TMAX=	.13 ANGLE= -33.3
	BOTT: SMAX=	.19	SMIN=	-.12	TMAX=	.15 ANGLE= 34.0
	11	.00	.02	.58	.61	-.80
		.28	.27	.12	.01	.01
	TOP : SMAX=	.30	SMIN=	.03	TMAX=	.13 ANGLE= -33.3
	BOTT: SMAX=	.12	SMIN=	-.19	TMAX=	.15 ANGLE= 34.0
	12	.00	.00	-.03	-.01	.03
		.01	.01	.00	.00	.00
	TOP : SMAX=	.00	SMIN=	-.01	TMAX=	.01 ANGLE= 90.0
	BOTT: SMAX=	.01	SMIN=	.00	TMAX=	.01 ANGLE= 90.0
	13	.01	-.03	-.24	.35	1.17
		1.46	1.28	-1.30	.04	.05
	TOP : SMAX=	.14	SMIN=	-1.38	TMAX=	.76 ANGLE= -9.4
	BOTT: SMAX=	.00	SMIN=	-1.28	TMAX=	.64 ANGLE= 6.5
	14	.01	-.09	-.86	.40	-2.76
		2.06	1.72	-1.69	.03	-.01
	TOP : SMAX=	.21	SMIN=	-1.94	TMAX=	1.08 ANGLE= 13.1
	BOTT: SMAX=	.09	SMIN=	-1.67	TMAX=	.88 ANGLE= -15.2
	101	-.08	.04	-4.01	-2.93	3.84
		1.24	1.28	.01	.01	-.01
	TOP : SMAX=	.07	SMIN=	-1.21	TMAX=	.64 ANGLE= -40.8
	BOTT: SMAX=	1.24	SMIN=	-.07	TMAX=	.66 ANGLE= -41.1
	102	-.05	.02	-2.38	-1.14	2.45
		.77	.80	.00	.01	-.01
	TOP : SMAX=	.12	SMIN=	-.70	TMAX=	.41 ANGLE= -37.4
	BOTT: SMAX=	.73	SMIN=	-.13	TMAX=	.43 ANGLE= -38.4
	103	-.07	.05	-2.81	.39	3.33
		1.06	1.11	.03	.02	-.01
	TOP : SMAX=	.42	SMIN=	-.78	TMAX=	.60 ANGLE= -32.1
	BOTT: SMAX=	.86	SMIN=	-.40	TMAX=	.63 ANGLE= -32.2
	104	-.06	.03	-2.67	-2.23	3.75
		1.18	1.14	.05	.00	.02
	TOP : SMAX=	.26	SMIN=	-1.03	TMAX=	.64 ANGLE= 90.0
	BOTT: SMAX=	1.04	SMIN=	-.18	TMAX=	.61 ANGLE= -42.3
	105	-.05	.02	-2.84	-2.03	2.74
		.88	.91	.00	.01	-.01
	TOP : SMAX=	.05	SMIN=	-.86	TMAX=	.45 ANGLE= -40.4
	BOTT: SMAX=	.88	SMIN=	-.06	TMAX=	.47 ANGLE= -41.2
	106	-.04	-.19	-4.51	-15.02	15.54
		4.96	5.30	-1.18	-.10	-.06
	TOP : SMAX=	.28	SMIN=	-4.82	TMAX=	2.55 ANGLE= 41.2
	BOTT: SMAX=	4.00	SMIN=	-2.02	TMAX=	3.01 ANGLE= 30.9
	107	-.04	-.17	-3.93	-14.41	14.74
		4.71	5.03	-1.06	-.09	-.05
	TOP : SMAX=	.33	SMIN=	-4.54	TMAX=	2.44 ANGLE= 40.4
	BOTT: SMAX=	3.81	SMIN=	-1.90	TMAX=	2.85 ANGLE= 30.8
	108	-.08	-.01	-5.25	-3.26	3.26
		1.78	1.13	-.85	.03	-.02
	TOP : SMAX=	-.32	SMIN=	-1.92	TMAX=	.80 ANGLE= -20.3
	BOTT: SMAX=	.93	SMIN=	-.33	TMAX=	.63 ANGLE= 32.1
	109	-.28	.13	-15.06	-10.81	14.52
		4.68	4.83	-.03	.03	-.05
	TOP : SMAX=	.25	SMIN=	-4.55	TMAX=	2.40 ANGLE= -40.4
	BOTT: SMAX=	4.65	SMIN=	-.33	TMAX=	2.49 ANGLE= -41.3

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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH				
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH						
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MYX FX
385	15	-.18	.19	-14.21	-34.35	2.34
		5.41	4.66	-.34	-.43	.09
	TOP : SMAX=	-2.64	SMIN=	-6.22	TMAX=	1.79 ANGLE= 7.8
	BOTT: SMAX=	5.32	SMIN=	2.01	TMAX=	1.66 ANGLE= 5.1
	2	-.01	.00	-.40	-1.42	.51
		.29	.23	-.03	-.01	.03
	TOP : SMAX=	-.04	SMIN=	-.31	TMAX=	.14 ANGLE= 28.1
	BOTT: SMAX=	.24	SMIN=	.02	TMAX=	.11 ANGLE= 15.7
	3	-.01	.00	-.31	-1.23	.49
		.26	.21	-.02	-.01	.02
	TOP : SMAX=	-.02	SMIN=	-.27	TMAX=	.12 ANGLE= 26.8
	BOTT: SMAX=	.22	SMIN=	.01	TMAX=	.10 ANGLE= 19.1
	4	.00	.00	-.26	-1.02	.33
		.20	.16	-.01	-.01	.02
	TOP : SMAX=	-.02	SMIN=	-.21	TMAX=	.09 ANGLE= 24.1
	BOTT: SMAX=	.18	SMIN=	.03	TMAX=	.07 ANGLE= 16.0
	5	.00	-.01	.29	.09	.22
		.11	.05	.02	.03	.01
	TOP : SMAX=	.11	SMIN=	.01	TMAX=	.05 ANGLE= 90.0
	BOTT: SMAX=	.03	SMIN=	-.04	TMAX=	.03 ANGLE= 90.0
	6	.00	.00	.14	.45	.04
		.07	.06	.00	.00	.00
	TOP : SMAX=	.08	SMIN=	.02	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	-.02	SMIN=	-.07	TMAX=	.02 ANGLE= 90.0
	7	-.01	-.02	.66	1.75	.28
		.30	.24	.01	.03	.02
	TOP : SMAX=	.34	SMIN=	.10	TMAX=	.12 ANGLE= -15.8
	BOTT: SMAX=	-.10	SMIN=	-.27	TMAX=	.09 ANGLE= -9.8
	8	-.01	.00	-.04	.03	.62
		.26	.10	.03	.01	.05
	TOP : SMAX=	.17	SMIN=	-.13	TMAX=	.15 ANGLE= 90.0
	BOTT: SMAX=	.08	SMIN=	-.04	TMAX=	.06 ANGLE= 90.0
	9	.00	.00	-.10	-.79	.10
		.13	.13	.00	.00	.00
	TOP : SMAX=	-.02	SMIN=	-.13	TMAX=	.06 ANGLE= 10.4
	BOTT: SMAX=	.14	SMIN=	.01	TMAX=	.06 ANGLE= 5.7
	10	-.01	.00	-.67	-2.48	.07
		.37	.37	-.06	-.01	.00
	TOP : SMAX=	-.17	SMIN=	-.43	TMAX=	.13 ANGLE= 2.0
	BOTT: SMAX=	.40	SMIN=	.06	TMAX=	.17 ANGLE= 2.1
	11	.01	.00	.67	2.48	-.07
		.37	.37	.06	.01	.00
	TOP : SMAX=	.43	SMIN=	.17	TMAX=	.13 ANGLE= 2.0
	BOTT: SMAX=	-.06	SMIN=	-.40	TMAX=	.17 ANGLE= 2.1
	12	.00	.00	-.02	-.09	.01
		.01	.01	.00	.00	.00
	TOP : SMAX=	.00	SMIN=	-.02	TMAX=	.01 ANGLE= 90.0
	BOTT: SMAX=	.01	SMIN=	.00	TMAX=	.01 ANGLE= 90.0
	13	-.01	-.01	-.75	-3.32	.03
		.88	1.10	-.88	-.05	.03
	TOP : SMAX=	-.60	SMIN=	-1.01	TMAX=	.20 ANGLE= -5.4
	BOTT: SMAX=	.50	SMIN=	-.76	TMAX=	.63 ANGLE= -1.3
	14	.01	.00	-2.06	-8.57	-1.06
		1.52	1.83	-1.08	-1.10	-.03
	TOP : SMAX=	-1.27	SMIN=	-1.69	TMAX=	.21 ANGLE= -37.4
	BOTT: SMAX=	1.34	SMIN=	-.75	TMAX=	1.04 ANGLE= -4.2
	101	-.02	-.01	-.57	-5.22	.66
		.83	.87	-.01	.03	.04
	TOP : SMAX=	-.08	SMIN=	-.87	TMAX=	.39 ANGLE= 11.0
	BOTT: SMAX=	.90	SMIN=	.07	TMAX=	.41 ANGLE= 5.0

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		-.02	-.01	-.33	-3.14						.43
		.51	.52	-.02	.01						.02
TOP :	SMAX=	-.05	SMIN=	-.53	TMAX=	.24	ANGLE=	11.8			
BOTT:	SMAX=	.54	SMIN=	.04	TMAX=	.25	ANGLE=	5.3			
103		-.02	-.02	.08	-2.09						.61
		.40	.41	-.01	.03						.04
TOP :	SMAX=	.06	SMIN=	-.37	TMAX=	.21	ANGLE=	20.4			
BOTT:	SMAX=	.39	SMIN=	-.03	TMAX=	.21	ANGLE=	9.1			
104		-.02	.00	-.47	-3.48						.89
		.64	.58	.01	.02						.06
TOP :	SMAX=	.01	SMIN=	-.64	TMAX=	.32	ANGLE=	20.1			
BOTT:	SMAX=	.61	SMIN=	.08	TMAX=	.27	ANGLE=	9.6			
105		-.02	-.01	-.52	-4.13						.47
		.66	.68	-.02	.01						.03
TOP :	SMAX=	-.08	SMIN=	-.69	TMAX=	.30	ANGLE=	10.1			
BOTT:	SMAX=	.71	SMIN=	.07	TMAX=	.32	ANGLE=	4.7			
106		-.11	.09	-8.10	-22.31						1.47
		3.47	3.20	-.64	-.24						.08
TOP :	SMAX=	-1.94	SMIN=	-4.01	TMAX=	1.03	ANGLE=	9.1			
BOTT:	SMAX=	3.49	SMIN=	.70	TMAX=	1.40	ANGLE=	3.4			
107		-.10	.09	-7.43	-19.83						1.40
		3.11	2.82	-.59	-.23						.08
TOP :	SMAX=	-1.77	SMIN=	-3.59	TMAX=	.91	ANGLE=	10.1			
BOTT:	SMAX=	3.09	SMIN=	.64	TMAX=	1.23	ANGLE=	3.6			
108		-.02	-.01	-1.91	-11.28						.26
		1.66	1.99	-.57	-.03						.03
TOP :	SMAX=	-.88	SMIN=	-1.91	TMAX=	.52	ANGLE=	4.1			
BOTT:	SMAX=	1.85	SMIN=	-.25	TMAX=	1.05	ANGLE=	.3			
109		-.09	-.03	-2.75	-21.86						2.46
		3.46	3.58	-.09	.07						.14
TOP :	SMAX=	-.45	SMIN=	-3.67	TMAX=	1.61	ANGLE=	10.0			
BOTT:	SMAX=	3.74	SMIN=	.35	TMAX=	1.70	ANGLE=	4.6			
386	15	.01	.10	-9.24	-8.31						-2.78
		1.48	2.03	.48	-.13						.11
TOP :	SMAX=	-.86	SMIN=	-1.71	TMAX=	.43	ANGLE=	-28.6			
BOTT:	SMAX=	2.33	SMIN=	.95	TMAX=	.69	ANGLE=	28.0			
2		.00	.00	-.28	-.78						-.11
		.13	.13	.02	-.01						.03
TOP :	SMAX=	-.03	SMIN=	-.14	TMAX=	.05	ANGLE=	4.9			
BOTT:	SMAX=	.15	SMIN=	.04	TMAX=	.06	ANGLE=	90.0			
3		.00	.00	-.20	-.85						-.07
		.13	.13	-.01	-.01						.02
TOP :	SMAX=	-.04	SMIN=	-.15	TMAX=	.05	ANGLE=	3.8			
BOTT:	SMAX=	.14	SMIN=	.02	TMAX=	.06	ANGLE=	-15.3			
4		.00	.00	-.19	-.62						-.10
		.10	.10	.00	-.01						.01
TOP :	SMAX=	-.03	SMIN=	-.11	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	.11	SMIN=	.02	TMAX=	.04	ANGLE=	90.0			
5		.00	.00	.24	-.41						-.09
		.07	.13	-.03	.01						.01
TOP :	SMAX=	.01	SMIN=	-.06	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	.08	SMIN=	-.07	TMAX=	.08	ANGLE=	-10.5			
6		.00	.00	.01	-.08						-.02
		.02	.02	.00	.00						.00
TOP :	SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.01	SMIN=	-.01	TMAX=	.01	ANGLE=	90.0			
7		.00	-.01	.03	-1.02						-.11
		.16	.20	-.02	.00						.02
TOP :	SMAX=	-.02	SMIN=	-.17	TMAX=	.08	ANGLE=	-.7			
BOTT:	SMAX=	.18	SMIN=	-.03	TMAX=	.11	ANGLE=	-9.4			

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.00	.00	.03	.13	.03	.13	.03	.13	.03	.13
		.03	.13	-.01	.00	-.01	.00	-.01	.00	-.01	.00
TOP :	SMAX=	.03	SMIN=	-.01	TMAX=	.02	ANGLE=	90.0			
BOTT:	SMAX=	.06	SMIN=	-.09	TMAX=	.07	ANGLE=	90.0			
	9	.00	.00	-.08	-.77	-.08	-.77	-.08	-.77	-.08	-.77
		.13	.12	.00	.00	.00	.00	.00	.00	.00	.00
TOP :	SMAX=	-.01	SMIN=	-.13	TMAX=	.06	ANGLE=	-2.0			
BOTT:	SMAX=	.12	SMIN=	.01	TMAX=	.06	ANGLE=	-5.8			
	10	.00	.01	-.55	-1.37	-.55	-1.37	-.55	-1.37	-.55	-1.37
		.24	.21	.09	-.01	.09	-.01	.09	-.01	.09	-.01
TOP :	SMAX=	.01	SMIN=	-.24	TMAX=	.12	ANGLE=	-6.3			
BOTT:	SMAX=	.23	SMIN=	.17	TMAX=	.03	ANGLE=	90.0			
	11	.00	-.01	.55	1.37	.55	1.37	.55	1.37	.55	1.37
		.24	.21	-.09	.01	-.09	.01	-.09	.01	-.09	.01
TOP :	SMAX=	.24	SMIN=	-.01	TMAX=	.12	ANGLE=	-6.3			
BOTT:	SMAX=	-.17	SMIN=	-.23	TMAX=	.03	ANGLE=	90.0			
	12	.00	.00	-.02	-.10	-.02	-.10	-.02	-.10	-.02	-.10
		.02	.01	.00	.00	.00	.00	.00	.00	.00	.00
TOP :	SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.02	SMIN=	.00	TMAX=	.01	ANGLE=	90.0			
	13	.00	.00	-1.17	-2.96	-1.17	-2.96	-1.17	-2.96	-1.17	-2.96
		.51	.40	-.11	-.08	-.11	-.08	-.11	-.08	-.11	-.08
TOP :	SMAX=	-.29	SMIN=	-.59	TMAX=	.15	ANGLE=	-14.6			
BOTT:	SMAX=	.43	SMIN=	.07	TMAX=	.18	ANGLE=	-9.9			
	14	.01	.01	-2.24	-5.37	-2.24	-5.37	-2.24	-5.37	-2.24	-5.37
		.86	.71	-.04	-.09	-.04	-.09	-.04	-.09	-.04	-.09
TOP :	SMAX=	-.41	SMIN=	-.99	TMAX=	.29	ANGLE=	.8			
BOTT:	SMAX=	.81	SMIN=	.32	TMAX=	.24	ANGLE=	7.9			
	101	.00	.01	-.48	-5.06	-.48	-5.06	-.48	-5.06	-.48	-5.06
		.83	.80	.00	-.02	.00	-.02	.00	-.02	.00	-.02
TOP :	SMAX=	-.08	SMIN=	-.87	TMAX=	.40	ANGLE=	-2.3			
BOTT:	SMAX=	.83	SMIN=	.07	TMAX=	.38	ANGLE=	-7.2			
	102	.00	.00	-.36	-3.36	-.36	-3.36	-.36	-3.36	-.36	-3.36
		.56	.52	.01	-.02	.01	-.02	.01	-.02	.01	-.02
TOP :	SMAX=	-.05	SMIN=	-.58	TMAX=	.26	ANGLE=	-2.4			
BOTT:	SMAX=	.55	SMIN=	.06	TMAX=	.25	ANGLE=	-7.3			
	103	.00	-.01	-.34	-4.11	-.34	-4.11	-.34	-4.11	-.34	-4.11
		.67	.66	-.01	-.02	-.01	-.02	-.01	-.02	-.01	-.02
TOP :	SMAX=	-.07	SMIN=	-.70	TMAX=	.32	ANGLE=	-2.1			
BOTT:	SMAX=	.68	SMIN=	.03	TMAX=	.32	ANGLE=	-7.6			
	104	.00	.00	-.35	-3.19	-.35	-3.19	-.35	-3.19	-.35	-3.19
		.52	.53	.00	-.01	.00	-.01	.00	-.01	.00	-.01
TOP :	SMAX=	-.05	SMIN=	-.55	TMAX=	.25	ANGLE=	-1.4			
BOTT:	SMAX=	.55	SMIN=	.03	TMAX=	.26	ANGLE=	-13.4			
	105	.00	.00	-.43	-3.91	-.43	-3.91	-.43	-3.91	-.43	-3.91
		.64	.61	.01	-.02	.01	-.02	.01	-.02	.01	-.02
TOP :	SMAX=	-.06	SMIN=	-.67	TMAX=	.30	ANGLE=	-2.3			
BOTT:	SMAX=	.64	SMIN=	.07	TMAX=	.28	ANGLE=	-6.8			
	106	.01	.06	-5.72	-8.43	-.01	-.06	-5.72	-8.43	-.01	-.06
		1.39	1.39	.24	-.12	.24	-.12	.24	-.12	.24	-.12
TOP :	SMAX=	-.65	SMIN=	-1.59	TMAX=	.47	ANGLE=	-15.5			
BOTT:	SMAX=	1.60	SMIN=	.87	TMAX=	.37	ANGLE=	90.0			
	107	.01	.05	-5.17	-7.06	-.01	-.05	-5.17	-7.06	-.01	-.05
		1.18	1.19	.14	-.11	.14	-.11	.14	-.11	.14	-.11
TOP :	SMAX=	-.64	SMIN=	-1.36	TMAX=	.36	ANGLE=	-18.6			
BOTT:	SMAX=	1.38	SMIN=	.70	TMAX=	.34	ANGLE=	90.0			
	108	.00	.01	-1.86	-9.27	-.00	-.01	-1.86	-9.27	-.00	-.01
		1.50	1.34	-.01	-.08	-.01	-.08	-.01	-.08	-.01	-.08
TOP :	SMAX=	-.31	SMIN=	-1.63	TMAX=	.66	ANGLE=	-1.7			
BOTT:	SMAX=	1.47	SMIN=	.30	TMAX=	.59	ANGLE=	-4.0			
	109	-.01	.03	-2.31	-20.58	-.01	.03	-2.31	-20.58	-.01	.03
		3.39	3.19	.05	-.11	.05	-.11	.05	-.11	.05	-.11
TOP :	SMAX=	-.33	SMIN=	-3.55	TMAX=	1.61	ANGLE=	-2.4			
BOTT:	SMAX=	3.36	SMIN=	.39	TMAX=	1.49	ANGLE=	-7.0			

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
387	15	-.01	.08	-4.00	.23						
		.40	1.72	1.08	.10						
	TOP : SMAX=	.44	SMIN=	.11	TMAX=	.16	ANGLE=	-17.0			
	BOTT: SMAX=	1.75	SMIN=	.06	TMAX=	.84	ANGLE=	1.5			
	2	.00	.00	-.18	-.37						
		.08	.10	.05	.00						
	TOP : SMAX=	.02	SMIN=	-.07	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	.11	SMIN=	.03	TMAX=	.04	ANGLE=	90.0			
	3	.00	.00	-.11	-.50						
		.10	.12	.00	.00						
	TOP : SMAX=	.00	SMIN=	-.10	TMAX=	.05	ANGLE=	90.0			
	BOTT: SMAX=	.11	SMIN=	-.02	TMAX=	.07	ANGLE=	90.0			
	4	.00	.00	-.11	-.29						
		.08	.10	.01	.00						
	TOP : SMAX=	.02	SMIN=	-.07	TMAX=	.05	ANGLE=	90.0			
	BOTT: SMAX=	.09	SMIN=	-.02	TMAX=	.05	ANGLE=	90.0			
	5	.00	.00	.12	-.28						
		.05	.11	-.05	.00						
	TOP : SMAX=	-.03	SMIN=	-.06	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	.05	SMIN=	-.08	TMAX=	.06	ANGLE=	-11.0			
	6	.00	.00	-.09	-.40						
		.06	.06	.00	.00						
	TOP : SMAX=	-.02	SMIN=	-.07	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	.06	SMIN=	.01	TMAX=	.02	ANGLE=	90.0			
	7	.00	-.01	-.44	-2.29						
		.36	.35	-.03	-.01						
	TOP : SMAX=	-.11	SMIN=	-.40	TMAX=	.14	ANGLE=	-1.7			
	BOTT: SMAX=	.37	SMIN=	.04	TMAX=	.17	ANGLE=	-3.4			
	8	.00	.00	.07	.10						
		.08	.14	-.02	.00						
	TOP : SMAX=	.05	SMIN=	-.04	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	.06	SMIN=	-.11	TMAX=	.08	ANGLE=	90.0			
	9	.00	.00	-.09	-.50						
		.08	.07	.00	-.01						
	TOP : SMAX=	-.01	SMIN=	-.09	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	.08	SMIN=	.01	TMAX=	.03	ANGLE=	90.0			
	10	.00	.01	-.47	-.50						
		.16	.23	.18	.00						
	TOP : SMAX=	.10	SMIN=	-.09	TMAX=	.09	ANGLE=	1.5			
	BOTT: SMAX=	.26	SMIN=	.08	TMAX=	.09	ANGLE=	-4.8			
	11	.00	-.01	.47	.50						
		.16	.23	-.18	.00						
	TOP : SMAX=	.09	SMIN=	-.10	TMAX=	.09	ANGLE=	1.5			
	BOTT: SMAX=	-.08	SMIN=	-.26	TMAX=	.09	ANGLE=	-4.8			
	12	.00	.00	-.02	-.08						
		.01	.01	.00	.00						
	TOP : SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.01	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
	13	.00	.01	-1.41	-2.09						
		.45	.49	.33	-.05						
	TOP : SMAX=	.09	SMIN=	-.40	TMAX=	.24	ANGLE=	-2.5			
	BOTT: SMAX=	.57	SMIN=	.30	TMAX=	.14	ANGLE=	-8.1			
	14	.00	.02	-2.16	-2.53						
		.57	.80	.53	-.04						
	TOP : SMAX=	.17	SMIN=	-.47	TMAX=	.32	ANGLE=	6.1			
	BOTT: SMAX=	.91	SMIN=	.36	TMAX=	.28	ANGLE=	-12.6			
	101	.00	.01	-.59	-3.22						
		.55	.46	.02	-.04						
	TOP : SMAX=	-.07	SMIN=	-.58	TMAX=	.25	ANGLE=	-3.5			
	BOTT: SMAX=	.50	SMIN=	.12	TMAX=	.19	ANGLE=	-5.7			

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.00	.01	-.49	-2.41	-.13					
		.41	.34	.03	-.03	.00					
TOP :	SMAX=	-.05	SMIN=	-.43	TMAX=	.19	ANGLE=	-2.9			
BOTT:	SMAX=	.38	SMIN=	.10	TMAX=	.14	ANGLE=	-4.9			
103		.00	.00	-.77	-3.93	-.18					
		.64	.57	.00	-.04	.01					
TOP :	SMAX=	-.13	SMIN=	-.69	TMAX=	.28	ANGLE=	-2.5			
BOTT:	SMAX=	.62	SMIN=	.12	TMAX=	.25	ANGLE=	-4.2			
104		.00	.01	-.36	-2.01	-.41					
		.35	.32	.01	-.02	.02					
TOP :	SMAX=	-.05	SMIN=	-.37	TMAX=	.16	ANGLE=	-9.1			
BOTT:	SMAX=	.34	SMIN=	.04	TMAX=	.15	ANGLE=	-17.4			
105		.00	.01	-.49	-2.49	-.14					
		.42	.35	.03	-.03	.00					
TOP :	SMAX=	-.05	SMIN=	-.45	TMAX=	.20	ANGLE=	-3.2			
BOTT:	SMAX=	.39	SMIN=	.11	TMAX=	.14	ANGLE=	-5.3			
106		.00	.05	-3.21	-2.53	-.22					
		.61	1.19	.81	.01	-.03					
TOP :	SMAX=	.28	SMIN=	-.42	TMAX=	.35	ANGLE=	-5.4			
BOTT:	SMAX=	1.35	SMIN=	.43	TMAX=	.46	ANGLE=	.5			
107		.00	.05	-2.74	-2.03	-.28					
		.45	.96	.63	.01	-.02					
TOP :	SMAX=	.18	SMIN=	-.34	TMAX=	.26	ANGLE=	-7.9			
BOTT:	SMAX=	1.09	SMIN=	.35	TMAX=	.37	ANGLE=	1.8			
108		.00	.03	-1.91	-5.45	.05					
		.98	.76	.32	-.07	-.01					
TOP :	SMAX=	.00	SMIN=	-.98	TMAX=	.49	ANGLE=	-.1			
BOTT:	SMAX=	.84	SMIN=	.63	TMAX=	.10	ANGLE=	4.9			
109		.00	.06	-2.60	-13.08	-.73					
		2.22	1.81	.16	-.16	.01					
TOP :	SMAX=	-.26	SMIN=	-2.34	TMAX=	1.04	ANGLE=	-3.1			
BOTT:	SMAX=	2.03	SMIN=	.58	TMAX=	.72	ANGLE=	-5.2			
388	15	.01	.04	-1.14	2.99	.59					
		.67	1.32	.87	.15	-.09					
TOP :	SMAX=	.69	SMIN=	.65	TMAX=	.02	ANGLE=	90.0			
BOTT:	SMAX=	1.09	SMIN=	-.38	TMAX=	.73	ANGLE=	-7.5			
2		.00	.00	-.07	-.06	-.14					
		.06	.06	.04	.00	.00					
TOP :	SMAX=	.04	SMIN=	-.02	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.07	SMIN=	.00	TMAX=	.03	ANGLE=	90.0			
3		.00	.00	-.03	-.16	-.29					
		.08	.09	.01	.00	.00					
TOP :	SMAX=	.03	SMIN=	-.06	TMAX=	.05	ANGLE=	90.0			
BOTT:	SMAX=	.07	SMIN=	-.03	TMAX=	.05	ANGLE=	90.0			
4		.00	.00	-.03	-.03	-.27					
		.08	.08	.01	.00	.00					
TOP :	SMAX=	.05	SMIN=	-.04	TMAX=	.05	ANGLE=	90.0			
BOTT:	SMAX=	.06	SMIN=	-.03	TMAX=	.05	ANGLE=	90.0			
5		.00	.00	.06	-.12	-.08					
		.04	.07	-.04	.00	.00					
TOP :	SMAX=	-.01	SMIN=	-.04	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.02	SMIN=	-.05	TMAX=	.04	ANGLE=	90.0			
6		.00	.00	-.13	-.53	-.01					
		.08	.07	.00	.00	.00					
TOP :	SMAX=	-.02	SMIN=	-.09	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	.08	SMIN=	.02	TMAX=	.03	ANGLE=	90.0			
7		.00	.00	-.59	-2.57	-.05					
		.40	.38	-.03	-.02	.00					
TOP :	SMAX=	-.12	SMIN=	-.45	TMAX=	.16	ANGLE=	-1.7			
BOTT:	SMAX=	.41	SMIN=	.07	TMAX=	.17	ANGLE=	-1.3			

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FXY
	8	.00	.00	.05	.04	-.31
		.09	.10	-.03	.00	.00
	TOP : SMAX=	.05	SMIN=	-.05	TMAX=	.05 ANGLE= 90.0
	BOTT: SMAX=	.04	SMIN=	-.08	TMAX=	.06 ANGLE= 90.0
	9	.00	.00	-.04	-.19	-.02
		.04	.02	.00	.00	.00
	TOP : SMAX=	.00	SMIN=	-.04	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	.03	SMIN=	.01	TMAX=	.01 ANGLE= 90.0
	10	.00	.01	-.21	.06	.12
		.12	.20	.16	.00	-.01
	TOP : SMAX=	.12	SMIN=	.01	TMAX=	.06 ANGLE= 7.0
	BOTT: SMAX=	.20	SMIN=	-.01	TMAX=	.10 ANGLE= -7.0
	11	.00	-.01	.21	-.06	-.12
		.12	.20	-.16	.00	.01
	TOP : SMAX=	-.01	SMIN=	-.12	TMAX=	.06 ANGLE= 7.0
	BOTT: SMAX=	.01	SMIN=	-.20	TMAX=	.10 ANGLE= -7.0
	12	.00	.00	-.01	-.04	.00
		.01	.01	.00	.00	.00
	TOP : SMAX=	.00	SMIN=	-.01	TMAX=	.00 ANGLE= 90.0
	BOTT: SMAX=	.01	SMIN=	.00	TMAX=	.00 ANGLE= 90.0
	13	.00	.02	-.91	-.76	.27
		.34	.52	.40	-.02	-.03
	TOP : SMAX=	.25	SMIN=	-.14	TMAX=	.20 ANGLE= 1.6
	BOTT: SMAX=	.56	SMIN=	.10	TMAX=	.23 ANGLE= -9.7
	14	.00	.03	-1.11	-.20	.53
		.42	.76	.57	.00	-.02
	TOP : SMAX=	.40	SMIN=	-.04	TMAX=	.22 ANGLE= 9.6
	BOTT: SMAX=	.77	SMIN=	.02	TMAX=	.37 ANGLE= -8.0
	101	.00	.02	-.27	-1.15	-.06
		.22	.14	.04	-.03	-.01
	TOP : SMAX=	.00	SMIN=	-.22	TMAX=	.11 ANGLE= -5.8
	BOTT: SMAX=	.16	SMIN=	.09	TMAX=	.04 ANGLE= 90.0
	102	.00	.01	-.30	-1.16	-.03
		.21	.15	.04	-.02	-.01
	TOP : SMAX=	-.01	SMIN=	-.22	TMAX=	.10 ANGLE= -3.7
	BOTT: SMAX=	.17	SMIN=	.09	TMAX=	.04 ANGLE= 90.0
	103	.00	.01	-.66	-2.80	-.06
		.46	.39	.02	-.03	-.01
	TOP : SMAX=	-.09	SMIN=	-.50	TMAX=	.20 ANGLE= -2.8
	BOTT: SMAX=	.43	SMIN=	.13	TMAX=	.15 ANGLE= -.3
	104	.00	.01	-.15	-.71	-.27
		.16	.11	.02	-.02	-.01
	TOP : SMAX=	.01	SMIN=	-.15	TMAX=	.08 ANGLE= -19.4
	BOTT: SMAX=	.12	SMIN=	.02	TMAX=	.05 ANGLE= 90.0
	105	.00	.02	-.22	-.89	-.04
		.17	.11	.04	-.02	-.01
	TOP : SMAX=	.00	SMIN=	-.17	TMAX=	.09 ANGLE= -5.1
	BOTT: SMAX=	.13	SMIN=	.08	TMAX=	.03 ANGLE= 90.0
	106	.01	.04	-1.25	.66	.47
		.47	1.01	.74	.06	-.07
	TOP : SMAX=	.53	SMIN=	.17	TMAX=	.18 ANGLE= 1.3
	BOTT: SMAX=	.97	SMIN=	-.08	TMAX=	.52 ANGLE= -8.3
	107	.01	.03	-1.04	.60	.36
		.36	.81	.58	.05	-.06
	TOP : SMAX=	.41	SMIN=	.15	TMAX=	.13 ANGLE= -1.2
	BOTT: SMAX=	.77	SMIN=	-.07	TMAX=	.42 ANGLE= -8.6
	108	.00	.04	-.94	-1.58	.22
		.44	.46	.36	-.03	-.02
	TOP : SMAX=	.20	SMIN=	-.30	TMAX=	.25 ANGLE= 1.4
	BOTT: SMAX=	.53	SMIN=	.22	TMAX=	.15 ANGLE= -11.7
	109	.01	.10	-1.20	-4.63	-.13
		.91	.58	.22	-.11	-.05
	TOP : SMAX=	.03	SMIN=	-.89	TMAX=	.46 ANGLE= -4.7
	BOTT: SMAX=	.66	SMIN=	.42	TMAX=	.12 ANGLE= 7.3

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH									
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH											
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
389	15	.00	.00	.55	3.18	1.35					
		.59	.86	.37	.10	-.12					
	TOP : SMAX=	.68	SMIN=	.41	TMAX=	.14	ANGLE=	-26.6			
	BOTT: SMAX=	.42	SMIN=	-.57	TMAX=	.49	ANGLE=	-21.8			
	2	.00	.00	.04	.23	-.11					
		.06	.05	.03	.00	-.01					
	TOP : SMAX=	.07	SMIN=	.01	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	.02	SMIN=	-.04	TMAX=	.03	ANGLE=	90.0			
	3	.00	.00	.06	.22	-.25					
		.08	.08	.02	.00	.00					
	TOP : SMAX=	.08	SMIN=	-.01	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	.03	SMIN=	-.06	TMAX=	.05	ANGLE=	90.0			
	4	.00	.00	.04	.19	-.18					
		.07	.06	.01	.00	.00					
	TOP : SMAX=	.06	SMIN=	-.01	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	.02	SMIN=	-.04	TMAX=	.03	ANGLE=	90.0			
	5	.00	.00	.03	.08	-.05					
		.03	.02	-.02	.00	.00					
	TOP : SMAX=	.02	SMIN=	-.02	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	-.01	SMIN=	-.03	TMAX=	.01	ANGLE=	90.0			
	6	.00	.00	-.14	-.54	.00					
		.09	.08	.00	.00	.00					
	TOP : SMAX=	-.02	SMIN=	-.09	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	.09	SMIN=	.02	TMAX=	.03	ANGLE=	90.0			
	7	.00	.01	-.57	-2.28	-.01					
		.35	.33	-.01	-.02	.00					
	TOP : SMAX=	-.11	SMIN=	-.40	TMAX=	.14	ANGLE=	-1.3			
	BOTT: SMAX=	.37	SMIN=	.08	TMAX=	.14	ANGLE=	.3			
	8	.00	.00	.01	-.03	-.22					
		.07	.05	-.01	.00	-.01					
	TOP : SMAX=	.03	SMIN=	-.05	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	.03	SMIN=	-.04	TMAX=	.03	ANGLE=	90.0			
	9	.00	.00	.04	.18	.00					
		.03	.03	.01	.00	.00					
	TOP : SMAX=	.03	SMIN=	.01	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	-.03	TMAX=	.02	ANGLE=	90.0			
	10	.00	.00	.06	.47	.15					
		.09	.13	.08	.01	.00					
	TOP : SMAX=	.11	SMIN=	.06	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	.07	SMIN=	-.08	TMAX=	.07	ANGLE=	-10.7			
	11	.00	.00	-.06	-.47	-.15					
		.09	.13	-.08	-.01	.00					
	TOP : SMAX=	-.06	SMIN=	-.11	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	.08	SMIN=	-.07	TMAX=	.07	ANGLE=	-10.7			
	12	.00	.00	.00	.01	.00					
		.00	.00	.00	.00	.00					
	TOP : SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
	13	.00	.02	-.13	.76	.39					
		.23	.40	.27	.01	-.02					
	TOP : SMAX=	.27	SMIN=	.12	TMAX=	.07	ANGLE=	18.3			
	BOTT: SMAX=	.31	SMIN=	-.13	TMAX=	.22	ANGLE=	-11.8			
	14	.00	.02	.07	1.76	.46					
		.36	.54	.34	.03	-.01					
	TOP : SMAX=	.41	SMIN=	.27	TMAX=	.07	ANGLE=	90.0			
	BOTT: SMAX=	.34	SMIN=	-.27	TMAX=	.31	ANGLE=	-7.7			
	101	.00	.02	.25	1.20	.08					
		.17	.21	.04	-.01	-.02					
	TOP : SMAX=	.19	SMIN=	.08	TMAX=	.06	ANGLE=	2.2			
	BOTT: SMAX=	.00	SMIN=	-.21	TMAX=	.11	ANGLE=	-8.5			



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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	102	.00	.02	.05	.35	.06					
		.05	.09	.03	-.01	-.01					
	TOP : SMAX=	.05	SMIN=	.04	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.03	SMIN=	-.07	TMAX=	.05	ANGLE=	90.0			
	103	.00	.02	-.30	-1.04	.05					
		.18	.14	.02	-.02	-.01					
	TOP : SMAX=	-.03	SMIN=	-.19	TMAX=	.08	ANGLE=	-2.1			
	BOTT: SMAX=	.16	SMIN=	.06	TMAX=	.05	ANGLE=	90.0			
	104	.00	.02	.17	.76	-.11					
		.12	.13	.02	.00	-.02					
	TOP : SMAX=	.14	SMIN=	.03	TMAX=	.05	ANGLE=	90.0			
	BOTT: SMAX=	-.01	SMIN=	-.13	TMAX=	.06	ANGLE=	.9			
	105	.00	.02	.19	.92	.06					
		.13	.16	.03	.00	-.01					
	TOP : SMAX=	.15	SMIN=	.06	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	-.16	TMAX=	.08	ANGLE=	-7.7			
	106	.00	.02	.34	2.70	.98					
		.50	.75	.38	.06	-.08					
	TOP : SMAX=	.56	SMIN=	.38	TMAX=	.09	ANGLE=	90.0			
	BOTT: SMAX=	.39	SMIN=	-.47	TMAX=	.43	ANGLE=	-17.0			
	107	.00	.02	.28	2.22	.84					
		.40	.62	.30	.05	-.07					
	TOP : SMAX=	.46	SMIN=	.31	TMAX=	.07	ANGLE=	90.0			
	BOTT: SMAX=	.33	SMIN=	-.39	TMAX=	.36	ANGLE=	-18.3			
	108	.00	.04	.35	2.45	.36					
		.37	.53	.23	.01	-.02					
	TOP : SMAX=	.42	SMIN=	.28	TMAX=	.07	ANGLE=	-14.1			
	BOTT: SMAX=	.18	SMIN=	-.41	TMAX=	.30	ANGLE=	-8.2			
	109	.00	.10	1.00	4.89	.39					
		.69	.88	.18	-.02	-.07					
	TOP : SMAX=	.79	SMIN=	.34	TMAX=	.22	ANGLE=	.6			
	BOTT: SMAX=	.03	SMIN=	-.86	TMAX=	.45	ANGLE=	-8.8			
390	15	.00	-.01	1.19	1.88	1.62					
		.42	.71	-.13	.02	-.10					
	TOP : SMAX=	.42	SMIN=	-.01	TMAX=	.21	ANGLE=	-25.9			
	BOTT: SMAX=	.06	SMIN=	-.68	TMAX=	.37	ANGLE=	90.0			
	2	.00	.00	.13	.44	-.06					
		.08	.06	.01	.00	-.01					
	TOP : SMAX=	.08	SMIN=	.03	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	-.01	SMIN=	-.07	TMAX=	.03	ANGLE=	90.0			
	3	.00	.00	.12	.52	-.17					
		.09	.10	.03	.00	.00					
	TOP : SMAX=	.11	SMIN=	.03	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	.02	SMIN=	-.09	TMAX=	.05	ANGLE=	90.0			
	4	.00	.00	.09	.34	-.10					
		.06	.06	.01	.00	.00					
	TOP : SMAX=	.07	SMIN=	.01	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	-.06	TMAX=	.03	ANGLE=	90.0			
	5	.00	.00	.03	.27	-.02					
		.04	.04	.00	.00	.00					
	TOP : SMAX=	.05	SMIN=	.01	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	-.04	TMAX=	.02	ANGLE=	90.0			
	6	.00	.00	-.12	-.45	.00					
		.07	.06	.00	.00	.00					
	TOP : SMAX=	-.02	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	.07	SMIN=	.02	TMAX=	.03	ANGLE=	90.0			
	7	.00	.01	-.40	-1.52	.01					
		.24	.22	.00	-.01	.00					
	TOP : SMAX=	-.07	SMIN=	-.26	TMAX=	.10	ANGLE=	-.8			
	BOTT: SMAX=	.24	SMIN=	.06	TMAX=	.09	ANGLE=	1.7			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.00	.00	-.03	-.08	-.12					
		.05	.02	.00	.00	-.01					
	TOP : SMAX=	.02	SMIN=	-.04	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	.02	SMIN=	.00	TMAX=	.01	ANGLE=	90.0			
	9	.00	.00	.12	.49	.00					
		.07	.07	.01	.00	.00					
	TOP : SMAX=	.08	SMIN=	.02	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	-.01	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			
	10	.00	.00	.29	.69	.11					
		.12	.10	-.02	.01	.00					
	TOP : SMAX=	.13	SMIN=	.03	TMAX=	.05	ANGLE=	90.0			
	BOTT: SMAX=	-.06	SMIN=	-.11	TMAX=	.03	ANGLE=	90.0			
	11	.00	.00	-.29	-.69	-.11					
		.12	.10	.02	-.01	.00					
	TOP : SMAX=	-.03	SMIN=	-.13	TMAX=	.05	ANGLE=	90.0			
	BOTT: SMAX=	.11	SMIN=	.06	TMAX=	.03	ANGLE=	90.0			
	12	.00	.00	.02	.07	.00					
		.01	.01	.00	.00	.00					
	TOP : SMAX=	.01	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	-.01	TMAX=	.00	ANGLE=	90.0			
	13	.00	.01	.62	1.91	.33					
		.31	.30	.08	.03	-.01					
	TOP : SMAX=	.36	SMIN=	.17	TMAX=	.09	ANGLE=	-14.0			
	BOTT: SMAX=	-.01	SMIN=	-.30	TMAX=	.15	ANGLE=	-13.1			
	14	.00	.01	1.05	2.98	.31					
		.47	.42	.05	.04	.00					
	TOP : SMAX=	.54	SMIN=	.22	TMAX=	.16	ANGLE=	-9.0			
	BOTT: SMAX=	-.12	SMIN=	-.47	TMAX=	.17	ANGLE=	-8.7			
	101	.00	.02	.78	3.20	.11					
		.49	.48	.02	.01	-.01					
	TOP : SMAX=	.55	SMIN=	.15	TMAX=	.20	ANGLE=	-.6			
	BOTT: SMAX=	-.11	SMIN=	-.52	TMAX=	.20	ANGLE=	-4.3			
	102	.00	.01	.42	1.72	.08					
		.26	.26	.01	.01	-.01					
	TOP : SMAX=	.29	SMIN=	.08	TMAX=	.11	ANGLE=	-1.1			
	BOTT: SMAX=	-.06	SMIN=	-.28	TMAX=	.11	ANGLE=	-5.4			
	103	.00	.02	.20	.86	.08					
		.13	.14	.01	.00	-.01					
	TOP : SMAX=	.14	SMIN=	.04	TMAX=	.05	ANGLE=	-1.0			
	BOTT: SMAX=	-.02	SMIN=	-.15	TMAX=	.06	ANGLE=	-11.5			
	104	.00	.01	.49	2.01	-.02					
		.31	.30	.01	.01	-.01					
	TOP : SMAX=	.34	SMIN=	.09	TMAX=	.13	ANGLE=	4.1			
	BOTT: SMAX=	-.07	SMIN=	-.33	TMAX=	.13	ANGLE=	-2.5			
	105	.00	.01	.61	2.47	.08					
		.38	.37	.01	.01	-.01					
	TOP : SMAX=	.42	SMIN=	.12	TMAX=	.15	ANGLE=	-.7			
	BOTT: SMAX=	-.09	SMIN=	-.40	TMAX=	.16	ANGLE=	-3.9			
	106	.00	.01	1.38	3.57	1.08					
		.59	.64	-.03	.04	-.06					
	TOP : SMAX=	.66	SMIN=	.17	TMAX=	.24	ANGLE=	-14.5			
	BOTT: SMAX=	-.12	SMIN=	-.69	TMAX=	.28	ANGLE=	-28.8			
	107	.00	.01	1.09	2.88	.96					
		.48	.55	-.01	.03	-.06					
	TOP : SMAX=	.53	SMIN=	.15	TMAX=	.19	ANGLE=	-15.4			
	BOTT: SMAX=	-.06	SMIN=	-.58	TMAX=	.26	ANGLE=	-29.7			
	108	.00	.03	1.56	5.64	.30					
		.87	.83	.04	.04	-.02					
	TOP : SMAX=	.98	SMIN=	.30	TMAX=	.34	ANGLE=	-2.8			
	BOTT: SMAX=	-.21	SMIN=	-.91	TMAX=	.35	ANGLE=	-5.6			
	109	.00	.07	3.22	12.98	.47					
		1.98	1.93	.06	.05	-.05					
	TOP : SMAX=	2.21	SMIN=	.60	TMAX=	.81	ANGLE=	-.9			
	BOTT: SMAX=	-.47	SMIN=	-2.12	TMAX=	.83	ANGLE=	-4.5			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH				
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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH						
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
391	15	-.01	-.01	1.35	.63	1.37
		.38	.82	-.46	-.03	-.08
	TOP : SMAX=	.13	SMIN=	-.29	TMAX=	.21 ANGLE= -22.0
	BOTT: SMAX=	.00	SMIN=	-.82	TMAX=	.41 ANGLE= 24.2
	2	.00	.00	.17	.55	-.02
		.09	.08	.00	.00	.00
	TOP : SMAX=	.10	SMIN=	.03	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	-.03	SMIN=	-.09	TMAX=	.03 ANGLE= 90.0
	3	.00	.00	.15	.70	-.06
		.11	.12	.04	.01	.00
	TOP : SMAX=	.12	SMIN=	.06	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.01	SMIN=	-.11	TMAX=	.06 ANGLE= 4.4
	4	.00	.00	.12	.42	-.03
		.07	.06	.00	.00	.00
	TOP : SMAX=	.07	SMIN=	.02	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	-.02	SMIN=	-.07	TMAX=	.03 ANGLE= 90.0
	5	.00	.00	.04	.39	-.01
		.06	.07	.02	.00	.00
	TOP : SMAX=	.07	SMIN=	.02	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	.01	SMIN=	-.06	TMAX=	.04 ANGLE= 90.0
	6	.00	.00	-.07	-.27	.00
		.04	.04	.00	.00	.00
	TOP : SMAX=	-.01	SMIN=	-.05	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	.04	SMIN=	.01	TMAX=	.02 ANGLE= 90.0
	7	.00	.01	-.13	-.47	.01
		.07	.07	.00	.00	.00
	TOP : SMAX=	-.02	SMIN=	-.08	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.08	SMIN=	.02	TMAX=	.03 ANGLE= 90.0
	8	.00	.00	-.06	-.11	-.04
		.03	.02	.01	.00	.00
	TOP : SMAX=	.00	SMIN=	-.02	TMAX=	.01 ANGLE= 90.0
	BOTT: SMAX=	.02	SMIN=	.01	TMAX=	.00 ANGLE= 90.0
	9	.00	.00	.16	.67	.00
		.10	.10	.00	.00	.00
	TOP : SMAX=	.11	SMIN=	.03	TMAX=	.04 ANGLE= 90.0
	BOTT: SMAX=	-.02	SMIN=	-.11	TMAX=	.04 ANGLE= 90.0
	10	.00	.00	.41	.77	.04
		.14	.14	-.08	.01	.00
	TOP : SMAX=	.14	SMIN=	-.01	TMAX=	.07 ANGLE= -3.0
	BOTT: SMAX=	-.12	SMIN=	-.15	TMAX=	.01 ANGLE= 90.0
	11	.00	.00	-.41	-.77	-.04
		.14	.14	.08	-.01	.00
	TOP : SMAX=	.01	SMIN=	-.14	TMAX=	.07 ANGLE= -3.0
	BOTT: SMAX=	.15	SMIN=	.12	TMAX=	.01 ANGLE= 90.0
	12	.00	.00	.03	.11	.00
		.02	.02	.00	.00	.00
	TOP : SMAX=	.02	SMIN=	.00	TMAX=	.01 ANGLE= 90.0
	BOTT: SMAX=	-.01	SMIN=	-.02	TMAX=	.01 ANGLE= 90.0
	13	.00	.00	1.06	2.51	.13
		.41	.34	-.05	.04	.00
	TOP : SMAX=	.45	SMIN=	.12	TMAX=	.17 ANGLE= -3.2
	BOTT: SMAX=	-.23	SMIN=	-.39	TMAX=	.08 ANGLE= -8.7
	14	.00	.00	1.59	3.51	.11
		.57	.49	-.15	.04	.00
	TOP : SMAX=	.62	SMIN=	.12	TMAX=	.25 ANGLE= -2.1
	BOTT: SMAX=	-.41	SMIN=	-.55	TMAX=	.07 ANGLE= -7.5
	101	.00	.01	1.11	4.33	.05
		.67	.63	.00	.02	.00
	TOP : SMAX=	.74	SMIN=	.18	TMAX=	.28 ANGLE= -3
	BOTT: SMAX=	-.19	SMIN=	-.70	TMAX=	.25 ANGLE= -1.4

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
102		.00	.01	.68	2.59	.03
		.40	.37	-.01	.01	.00
TOP :	SMAX=	.44	SMIN=	.11	TMAX=	ANGLE=
BOTT:	SMAX=	-.12	SMIN=	-.42	TMAX=	ANGLE=
103		.00	.01	.63	2.43	.04
		.38	.35	.00	.01	-.01
TOP :	SMAX=	.42	SMIN=	.10	TMAX=	ANGLE=
BOTT:	SMAX=	-.11	SMIN=	-.39	TMAX=	ANGLE=
104		.00	.00	.68	2.72	.00
		.42	.40	.00	.01	-.01
TOP :	SMAX=	.47	SMIN=	.12	TMAX=	ANGLE=
BOTT:	SMAX=	-.11	SMIN=	-.44	TMAX=	ANGLE=
105		.00	.01	.86	3.34	.03
		.52	.48	.00	.02	.00
TOP :	SMAX=	.57	SMIN=	.14	TMAX=	ANGLE=
BOTT:	SMAX=	-.15	SMIN=	-.54	TMAX=	ANGLE=
106		-.01	.00	1.88	3.76	.79
		.65	.68	-.30	.02	-.04
TOP :	SMAX=	.66	SMIN=	.00	TMAX=	ANGLE=
BOTT:	SMAX=	-.44	SMIN=	-.79	TMAX=	ANGLE=
107		-.01	.00	1.47	2.99	.75
		.51	.56	-.22	.01	-.04
TOP :	SMAX=	.52	SMIN=	.01	TMAX=	ANGLE=
BOTT:	SMAX=	-.31	SMIN=	-.65	TMAX=	ANGLE=
108		.00	.01	2.26	7.37	.12
		1.16	1.03	-.09	.05	-.01
TOP :	SMAX=	1.28	SMIN=	.29	TMAX=	ANGLE=
BOTT:	SMAX=	-.46	SMIN=	-1.18	TMAX=	ANGLE=
109		.00	.03	4.57	17.54	.20
		2.73	2.53	-.04	.09	-.02
TOP :	SMAX=	3.02	SMIN=	.73	TMAX=	ANGLE=
BOTT:	SMAX=	-.80	SMIN=	-2.83	TMAX=	ANGLE=
392	15	-.01	.01	1.45	.55	.73
		.36	.81	-.56	-.04	-.06
TOP :	SMAX=	.06	SMIN=	-.33	TMAX=	ANGLE=
BOTT:	SMAX=	-.08	SMIN=	-.85	TMAX=	ANGLE=
2		.00	.00	.17	.55	.02
		.09	.08	.00	.00	.00
TOP :	SMAX=	.10	SMIN=	.03	TMAX=	ANGLE=
BOTT:	SMAX=	-.03	SMIN=	-.09	TMAX=	ANGLE=
3		.00	.00	.15	.70	.06
		.11	.12	.04	.01	.00
TOP :	SMAX=	.12	SMIN=	.06	TMAX=	ANGLE=
BOTT:	SMAX=	.01	SMIN=	-.11	TMAX=	ANGLE=
4		.00	.00	.12	.42	.03
		.07	.06	.00	.00	.00
TOP :	SMAX=	.07	SMIN=	.02	TMAX=	ANGLE=
BOTT:	SMAX=	-.02	SMIN=	-.07	TMAX=	ANGLE=
5		.00	.00	.04	.39	.01
		.06	.07	.02	.00	.00
TOP :	SMAX=	.07	SMIN=	.02	TMAX=	ANGLE=
BOTT:	SMAX=	.01	SMIN=	-.06	TMAX=	ANGLE=
6		.00	.00	.00	-.01	.00
		.00	.00	.00	.00	.00
TOP :	SMAX=	.00	SMIN=	.00	TMAX=	ANGLE=
BOTT:	SMAX=	.00	SMIN=	.00	TMAX=	ANGLE=
7		.00	.01	.18	.68	.01
		.11	.10	.00	.00	.00
TOP :	SMAX=	.12	SMIN=	.03	TMAX=	ANGLE=
BOTT:	SMAX=	-.03	SMIN=	-.11	TMAX=	ANGLE=

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH

FORCE OR STRESS = FORCE/WIDTH/THICK,    MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
	8	.00	.00	-.06	-.11	.04
		.03	.02	.01	.00	.00
	TOP : SMAX=	.00	SMIN=	-.02	TMAX=	.01 ANGLE= 90.0
	BOTT: SMAX=	.02	SMIN=	.01	TMAX=	.00 ANGLE= 90.0
	9	.00	.00	.16	.67	.00
		.10	.10	.00	.00	.00
	TOP : SMAX=	.11	SMIN=	.03	TMAX=	.04 ANGLE= 90.0
	BOTT: SMAX=	-.02	SMIN=	-.11	TMAX=	.04 ANGLE= 90.0
	10	.00	.00	.41	.77	-.04
		.14	.14	-.08	.01	.00
	TOP : SMAX=	.14	SMIN=	-.01	TMAX=	.07 ANGLE= 3.0
	BOTT: SMAX=	-.12	SMIN=	-.15	TMAX=	.01 ANGLE= 90.0
	11	.00	.00	-.41	-.77	.04
		.14	.14	.08	-.01	.00
	TOP : SMAX=	.01	SMIN=	-.14	TMAX=	.07 ANGLE= 3.0
	BOTT: SMAX=	.15	SMIN=	.12	TMAX=	.01 ANGLE= 90.0
	12	.00	.00	.03	.11	.00
		.02	.02	.00	.00	.00
	TOP : SMAX=	.02	SMIN=	.00	TMAX=	.01 ANGLE= 90.0
	BOTT: SMAX=	-.01	SMIN=	-.02	TMAX=	.01 ANGLE= 90.0
	13	.00	.00	1.06	2.51	-.13
		.41	.34	-.05	.04	.00
	TOP : SMAX=	.45	SMIN=	.12	TMAX=	.17 ANGLE= 3.2
	BOTT: SMAX=	-.23	SMIN=	-.39	TMAX=	.08 ANGLE= 8.7
	14	.00	.00	1.59	3.51	-.11
		.57	.49	-.15	.04	.00
	TOP : SMAX=	.62	SMIN=	.12	TMAX=	.25 ANGLE= 2.1
	BOTT: SMAX=	-.41	SMIN=	-.55	TMAX=	.07 ANGLE= 7.5
	101	.00	-.01	1.11	4.33	-.05
		.67	.63	.00	.02	.00
	TOP : SMAX=	.74	SMIN=	.18	TMAX=	.28 ANGLE= .3
	BOTT: SMAX=	-.19	SMIN=	-.70	TMAX=	.25 ANGLE= 1.4
	102	.00	.00	.73	2.80	-.03
		.43	.40	-.01	.01	.00
	TOP : SMAX=	.48	SMIN=	.12	TMAX=	.18 ANGLE= .3
	BOTT: SMAX=	-.13	SMIN=	-.45	TMAX=	.16 ANGLE= 1.4
	103	.00	.01	.87	3.35	-.03
		.52	.48	.00	.02	.00
	TOP : SMAX=	.58	SMIN=	.14	TMAX=	.22 ANGLE= .4
	BOTT: SMAX=	-.15	SMIN=	-.54	TMAX=	.20 ANGLE= .8
	104	.00	.00	.68	2.72	.00
		.42	.40	.00	.01	.01
	TOP : SMAX=	.47	SMIN=	.12	TMAX=	.18 ANGLE= -.8
	BOTT: SMAX=	-.11	SMIN=	-.44	TMAX=	.16 ANGLE= 1.0
	105	.00	-.01	.86	3.34	-.03
		.52	.48	.00	.02	.00
	TOP : SMAX=	.57	SMIN=	.14	TMAX=	.22 ANGLE= .3
	BOTT: SMAX=	-.15	SMIN=	-.54	TMAX=	.20 ANGLE= 1.3
	106	-.01	.00	1.94	3.72	.26
		.65	.65	-.35	.01	-.03
	TOP : SMAX=	.63	SMIN=	-.03	TMAX=	.33 ANGLE= -1.3
	BOTT: SMAX=	-.56	SMIN=	-.72	TMAX=	.08 ANGLE= 90.0
	107	-.01	.00	1.52	2.95	.30
		.51	.53	-.27	.00	-.03
	TOP : SMAX=	.50	SMIN=	-.02	TMAX=	.26 ANGLE= -2.5
	BOTT: SMAX=	-.43	SMIN=	-.59	TMAX=	.08 ANGLE= 90.0
	108	.00	-.01	2.26	7.37	-.12
		1.16	1.03	-.09	.05	.01
	TOP : SMAX=	1.28	SMIN=	.29	TMAX=	.49 ANGLE= .8
	BOTT: SMAX=	-.46	SMIN=	-1.18	TMAX=	.36 ANGLE= 2.0
	109	.00	-.03	4.57	17.54	-.20
		2.73	2.53	-.04	.09	.02
	TOP : SMAX=	3.02	SMIN=	.73	TMAX=	1.14 ANGLE= .4
	BOTT: SMAX=	-.80	SMIN=	-2.83	TMAX=	1.02 ANGLE= 1.5

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
393	15	-.01	.02	1.54	1.87						
		.43	.58	-.41	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	2	.00	.00	.13	.44						
		.08	.06	.01	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	3	.00	.00	.12	.52						
		.09	.10	.03	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	4	.00	.00	.09	.34						
		.06	.06	.01	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	5	.00	.00	.03	.27						
		.04	.04	.00	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	6	.00	.00	.07	.28						
		.04	.04	.00	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	7	.00	.01	.44	1.71						
		.27	.25	.01	.01						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	8	.00	.00	-.03	-.08						
		.05	.02	.00	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	9	.00	.00	.12	.49						
		.07	.07	.01	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	10	.00	.00	.29	.69						
		.12	.10	-.02	.01						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	11	.00	.00	-.29	-.69						
		.12	.10	.02	-.01						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	12	.00	.00	.02	.07						
		.01	.01	.00	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	13	.00	-.01	.62	1.91						
		.31	.30	.08	.03						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	14	.00	-.01	-.30	.15						
		.47	.42	.05	.04						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	101	.00	-.02	.78	3.20						
		.49	.48	.02	.01						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY		
102		.00	-.01	.57	2.30	-.07		
		.35	.34	.01	.01	.01		
TOP :	SMAX=	.39	SMIN=	.10	TMAX=	.14	ANGLE=	.8
BOTT:	SMAX=	-.09	SMIN=	-.38	TMAX=	.15	ANGLE=	4.0
103		.00	.00	.87	3.44	-.08		
		.53	.51	.01	.02	.01		
TOP :	SMAX=	.59	SMIN=	.16	TMAX=	.22	ANGLE=	.9
BOTT:	SMAX=	-.13	SMIN=	-.56	TMAX=	.21	ANGLE=	2.8
104		.00	-.01	.49	2.01	.02		
		.31	.30	.01	.01	.01		
TOP :	SMAX=	.34	SMIN=	.09	TMAX=	.13	ANGLE=	-4.1
BOTT:	SMAX=	-.07	SMIN=	-.33	TMAX=	.13	ANGLE=	2.5
105		.00	-.01	.61	2.47	-.08		
		.38	.37	.01	.01	.01		
TOP :	SMAX=	.42	SMIN=	.12	TMAX=	.15	ANGLE=	.7
BOTT:	SMAX=	-.09	SMIN=	-.40	TMAX=	.16	ANGLE=	3.9
106		-.01	-.01	1.55	3.57	-3.33		
		.59	.52	-.17	.03	-.01		
TOP :	SMAX=	.63	SMIN=	.08	TMAX=	.27	ANGLE=	7.0
BOTT:	SMAX=	-.41	SMIN=	-.58	TMAX=	.08	ANGLE=	15.2
107		-.01	.00	1.27	2.88	-.21		
		.48	.42	-.15	.02	-.01		
TOP :	SMAX=	.50	SMIN=	.06	TMAX=	.22	ANGLE=	6.1
BOTT:	SMAX=	-.35	SMIN=	-.47	TMAX=	.06	ANGLE=	12.4
108		.00	-.03	1.56	5.64	-.30		
		.87	.83	.04	.04	.02		
TOP :	SMAX=	.98	SMIN=	.30	TMAX=	.34	ANGLE=	2.8
BOTT:	SMAX=	-.21	SMIN=	-.91	TMAX=	.35	ANGLE=	5.5
109		.00	-.07	3.22	12.97	-.46		
		1.98	1.93	.06	.05	.05		
TOP :	SMAX=	2.21	SMIN=	.60	TMAX=	.81	ANGLE=	.9
BOTT:	SMAX=	-.47	SMIN=	-2.12	TMAX=	.83	ANGLE=	4.5
394	15	-.01	.01	1.18	3.84	-.91		
		.73	.53	-.02	.09	-.03		
TOP :	SMAX=	.78	SMIN=	.12	TMAX=	.33	ANGLE=	16.6
BOTT:	SMAX=	-.18	SMIN=	-.59	TMAX=	.21	ANGLE=	18.2
2		.00	.00	.04	.23	.11		
		.06	.05	.03	.00	.01		
TOP :	SMAX=	.07	SMIN=	.01	TMAX=	.03	ANGLE=	90.0
BOTT:	SMAX=	.02	SMIN=	-.04	TMAX=	.03	ANGLE=	90.0
3		.00	.00	.06	.22	.25		
		.08	.08	.02	.00	.00		
TOP :	SMAX=	.08	SMIN=	-.01	TMAX=	.04	ANGLE=	90.0
BOTT:	SMAX=	.03	SMIN=	-.06	TMAX=	.05	ANGLE=	90.0
4		.00	.00	.04	.19	.18		
		.07	.06	.01	.00	.00		
TOP :	SMAX=	.06	SMIN=	-.01	TMAX=	.04	ANGLE=	90.0
BOTT:	SMAX=	.02	SMIN=	-.04	TMAX=	.03	ANGLE=	90.0
5		.00	.00	.03	.08	.05		
		.03	.02	-.02	.00	.00		
TOP :	SMAX=	.02	SMIN=	-.02	TMAX=	.02	ANGLE=	90.0
BOTT:	SMAX=	-.01	SMIN=	-.03	TMAX=	.01	ANGLE=	90.0
6		.00	.00	.13	.52	.00		
		.08	.08	.00	.00	.00		
TOP :	SMAX=	.09	SMIN=	.02	TMAX=	.03	ANGLE=	90.0
BOTT:	SMAX=	-.02	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0
7		.00	.00	.60	2.40	-.04		
		.37	.35	.01	.02	.00		
TOP :	SMAX=	.42	SMIN=	.11	TMAX=	.15	ANGLE=	1.5
BOTT:	SMAX=	-.09	SMIN=	-.38	TMAX=	.15	ANGLE=	1.1

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.00	.00	.01	-.03						.22
		.07	.05	-.01	.00						.01
	TOP : SMAX=	.03	SMIN=	-.05	TMAX=	.04	ANGLE=				90.0
	BOTT: SMAX=	.03	SMIN=	-.04	TMAX=	.03	ANGLE=				90.0
	9	.00	.00	.04	.18						.00
		.02	.03	.01	.00						.00
	TOP : SMAX=	.03	SMIN=	.01	TMAX=	.01	ANGLE=				90.0
	BOTT: SMAX=	.00	SMIN=	-.03	TMAX=	.02	ANGLE=				90.0
	10	.00	.00	.06	.47						-.15
		.09	.13	.08	.01						.00
	TOP : SMAX=	.11	SMIN=	.06	TMAX=	.02	ANGLE=				90.0
	BOTT: SMAX=	.07	SMIN=	-.08	TMAX=	.07	ANGLE=				10.7
	11	.00	.00	-.06	-.47						.15
		.09	.13	-.08	-.01						.00
	TOP : SMAX=	-.06	SMIN=	-.11	TMAX=	.02	ANGLE=				90.0
	BOTT: SMAX=	.08	SMIN=	-.07	TMAX=	.07	ANGLE=				10.7
	12	.00	.00	.00	.01						.00
		.00	.00	.00	.00						.00
	TOP : SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=				90.0
	BOTT: SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=				90.0
	13	.00	-.02	-.13	.76						-.39
		.23	.40	.27	.01						.02
	TOP : SMAX=	.27	SMIN=	.12	TMAX=	.07	ANGLE=				-18.3
	BOTT: SMAX=	.31	SMIN=	-.13	TMAX=	.22	ANGLE=				11.8
	14	.00	-.02	.07	1.76						-.46
		.36	.54	.34	.03						.01
	TOP : SMAX=	.41	SMIN=	.27	TMAX=	.07	ANGLE=				90.0
	BOTT: SMAX=	.34	SMIN=	-.27	TMAX=	.31	ANGLE=				7.7
	101	.00	-.02	.25	1.20						-.08
		.17	.21	.04	-.01						.02
	TOP : SMAX=	.19	SMIN=	.08	TMAX=	.06	ANGLE=				-2.2
	BOTT: SMAX=	.00	SMIN=	-.21	TMAX=	.11	ANGLE=				8.5
	102	.00	-.01	.27	1.20						-.06
		.17	.20	.03	.00						.01
	TOP : SMAX=	.20	SMIN=	.07	TMAX=	.06	ANGLE=				-.1
	BOTT: SMAX=	-.01	SMIN=	-.20	TMAX=	.10	ANGLE=				6.5
	103	.00	-.01	.64	2.70						-.09
		.41	.41	.04	.01						.01
	TOP : SMAX=	.46	SMIN=	.14	TMAX=	.16	ANGLE=				1.0
	BOTT: SMAX=	-.07	SMIN=	-.44	TMAX=	.19	ANGLE=				4.0
	104	.00	-.02	.17	.76						.11
		.12	.13	.02	.00						.02
	TOP : SMAX=	.14	SMIN=	.03	TMAX=	.05	ANGLE=				90.0
	BOTT: SMAX=	-.01	SMIN=	-.13	TMAX=	.06	ANGLE=				-.9
	105	.00	-.02	.19	.92						-.06
		.13	.16	.03	.00						.01
	TOP : SMAX=	.15	SMIN=	.06	TMAX=	.04	ANGLE=				90.0
	BOTT: SMAX=	.00	SMIN=	-.16	TMAX=	.08	ANGLE=				7.7
	106	.00	-.02	.66	3.03						-.77
		.53	.55	.18	.05						.01
	TOP : SMAX=	.60	SMIN=	.24	TMAX=	.18	ANGLE=				21.3
	BOTT: SMAX=	.10	SMIN=	-.49	TMAX=	.30	ANGLE=				13.4
	107	.00	-.01	.60	2.56						-.62
		.44	.43	.11	.04						.00
	TOP : SMAX=	.50	SMIN=	.17	TMAX=	.17	ANGLE=				18.6
	BOTT: SMAX=	.03	SMIN=	-.41	TMAX=	.22	ANGLE=				14.3
	108	.00	-.04	.35	2.45						-.35
		.37	.53	.23	.01						.02
	TOP : SMAX=	.42	SMIN=	.28	TMAX=	.07	ANGLE=				14.1
	BOTT: SMAX=	.18	SMIN=	-.41	TMAX=	.30	ANGLE=				8.2
	109	.00	-.10	1.00	4.89						-.39
		.69	.88	.18	-.02						.07
	TOP : SMAX=	.79	SMIN=	.34	TMAX=	.22	ANGLE=				-.6
	BOTT: SMAX=	.03	SMIN=	-.86	TMAX=	.45	ANGLE=				8.8





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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MY FGY
102		.00	-.01	-.06	-.22	.02
		.07	.04	.04	-.02	.01
TOP :	SMAX=	.03	SMIN=	-.05	TMAX=	.04 ANGLE= 90.0
BOTT:	SMAX=	.05	SMIN=	.02	TMAX=	.01 ANGLE= 90.0
103		.00	-.02	.29	1.33	-.04
		.19	.23	.05	.00	.01
TOP :	SMAX=	.22	SMIN=	.10	TMAX=	.06 ANGLE= -1.5
BOTT:	SMAX=	.01	SMIN=	-.22	TMAX=	.12 ANGLE= 4.0
104		.00	-.01	-.15	-.71	.27
		.16	.11	.02	-.02	.01
TOP :	SMAX=	.01	SMIN=	-.15	TMAX=	.08 ANGLE= 19.3
BOTT:	SMAX=	.12	SMIN=	.02	TMAX=	.05 ANGLE= 90.0
105		.00	-.02	-.22	-.89	.04
		.17	.11	.04	-.02	.01
TOP :	SMAX=	.00	SMIN=	-.17	TMAX=	.09 ANGLE= 5.1
BOTT:	SMAX=	.13	SMIN=	.08	TMAX=	.03 ANGLE= 90.0
106		.00	-.03	-.83	1.57	-.91
		.44	.84	.54	.06	.01
TOP :	SMAX=	.51	SMIN=	.22	TMAX=	.14 ANGLE= 90.0
BOTT:	SMAX=	.71	SMIN=	-.23	TMAX=	.47 ANGLE= 10.2
107		.00	-.03	-.62	1.51	-.79
		.37	.65	.38	.06	.01
TOP :	SMAX=	.42	SMIN=	.17	TMAX=	.13 ANGLE= 90.0
BOTT:	SMAX=	.51	SMIN=	-.22	TMAX=	.36 ANGLE= 11.1
108		.00	-.04	-.94	-1.59	-.22
		.44	.46	.36	-.03	.02
TOP :	SMAX=	.20	SMIN=	-.30	TMAX=	.25 ANGLE= -1.4
BOTT:	SMAX=	.53	SMIN=	.22	TMAX=	.15 ANGLE= 11.7
109		.01	-.10	-1.20	-4.64	.13
		.91	.58	.23	-.11	.05
TOP :	SMAX=	.03	SMIN=	-.89	TMAX=	.46 ANGLE= 4.7
BOTT:	SMAX=	.67	SMIN=	.42	TMAX=	.12 ANGLE= -7.3
396	15	-.01	-.08	-3.21	3.05	-1.58
		.78	1.58	.78	.14	-.04
TOP :	SMAX=	.82	SMIN=	.08	TMAX=	.37 ANGLE= 28.5
BOTT:	SMAX=	1.35	SMIN=	-.40	TMAX=	.87 ANGLE= 7.3
2		.00	.00	-.18	-.37	.19
		.08	.10	.05	.00	-.01
TOP :	SMAX=	.02	SMIN=	-.07	TMAX=	.04 ANGLE= 90.0
BOTT:	SMAX=	.11	SMIN=	.03	TMAX=	.04 ANGLE= 90.0
3		.00	.00	-.11	-.50	.28
		.10	.12	.00	.00	-.01
TOP :	SMAX=	.00	SMIN=	-.10	TMAX=	.05 ANGLE= 90.0
BOTT:	SMAX=	.11	SMIN=	-.02	TMAX=	.07 ANGLE= 90.0
4		.00	.00	-.11	-.29	.28
		.08	.10	.01	.00	-.01
TOP :	SMAX=	.02	SMIN=	-.07	TMAX=	.05 ANGLE= 90.0
BOTT:	SMAX=	.09	SMIN=	-.02	TMAX=	.05 ANGLE= 90.0
5		.00	.00	.12	-.28	.11
		.05	.11	-.05	.00	-.01
TOP :	SMAX=	-.03	SMIN=	-.06	TMAX=	.02 ANGLE= 90.0
BOTT:	SMAX=	.05	SMIN=	-.08	TMAX=	.06 ANGLE= 11.0
6		.00	.00	.15	.64	-.01
		.10	.09	.00	.00	.00
TOP :	SMAX=	.11	SMIN=	.03	TMAX=	.04 ANGLE= 90.0
BOTT:	SMAX=	-.02	SMIN=	-.10	TMAX=	.04 ANGLE= 90.0
7		.00	-.01	.41	2.17	-.10
		.34	.33	.03	.02	.01
TOP :	SMAX=	.38	SMIN=	.10	TMAX=	.14 ANGLE= 1.9
BOTT:	SMAX=	-.04	SMIN=	-.35	TMAX=	.16 ANGLE= 4.3

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
	8	.00	.00	.07	.10	.36
		.08	.14	-.02	.00	-.02
	TOP : SMAX=	.05	SMIN=	-.04	TMAX=	.04 ANGLE= 90.0
	BOTT: SMAX=	.06	SMIN=	-.11	TMAX=	.08 ANGLE= 90.0
	9	.00	.00	-.09	-.50	.03
		.08	.07	.00	-.01	.00
	TOP : SMAX=	-.01	SMIN=	-.09	TMAX=	.04 ANGLE= 90.0
	BOTT: SMAX=	.08	SMIN=	.01	TMAX=	.03 ANGLE= 90.0
	10	.00	-.01	-.47	-.50	-.06
		.16	.23	.18	.00	.01
	TOP : SMAX=	.10	SMIN=	-.09	TMAX=	.09 ANGLE= -1.5
	BOTT: SMAX=	.26	SMIN=	.08	TMAX=	.09 ANGLE= 4.8
	11	.00	.01	.47	.50	.06
		.16	.23	-.18	.00	-.01
	TOP : SMAX=	.09	SMIN=	-.10	TMAX=	.09 ANGLE= -1.5
	BOTT: SMAX=	-.08	SMIN=	-.26	TMAX=	.09 ANGLE= 4.8
	12	.00	.00	-.02	-.08	.00
		.01	.01	.00	.00	.00
	TOP : SMAX=	.00	SMIN=	-.02	TMAX=	.01 ANGLE= 90.0
	BOTT: SMAX=	.01	SMIN=	.00	TMAX=	.00 ANGLE= 90.0
	13	.00	-.01	-1.41	-2.09	-.05
		.45	.49	.33	-.05	.03
	TOP : SMAX=	.09	SMIN=	-.40	TMAX=	.24 ANGLE= 2.5
	BOTT: SMAX=	.57	SMIN=	.30	TMAX=	.14 ANGLE= 8.1
	14	.00	-.02	-2.16	-2.53	-.56
		.57	.80	.53	-.04	.03
	TOP : SMAX=	.17	SMIN=	-.47	TMAX=	.32 ANGLE= -6.1
	BOTT: SMAX=	.91	SMIN=	.36	TMAX=	.28 ANGLE= 12.6
	101	.00	-.01	-.59	-3.23	.21
		.55	.46	.02	-.04	.00
	TOP : SMAX=	-.07	SMIN=	-.58	TMAX=	.25 ANGLE= 3.5
	BOTT: SMAX=	.50	SMIN=	.12	TMAX=	.19 ANGLE= 5.7
	102	.00	-.01	-.30	-1.58	.11
		.28	.22	.03	-.02	.00
	TOP : SMAX=	-.02	SMIN=	-.29	TMAX=	.13 ANGLE= 3.6
	BOTT: SMAX=	.24	SMIN=	.08	TMAX=	.08 ANGLE= 6.4
	103	.00	-.02	-.08	-.36	.04
		.10	.06	.05	-.01	.00
	TOP : SMAX=	.04	SMIN=	-.07	TMAX=	.06 ANGLE= 5.4
	BOTT: SMAX=	.06	SMIN=	.05	TMAX=	.01 ANGLE= 90.0
	104	.00	-.01	-.36	-2.01	.41
		.35	.32	.01	-.02	-.02
	TOP : SMAX=	-.05	SMIN=	-.37	TMAX=	.16 ANGLE= 9.1
	BOTT: SMAX=	.34	SMIN=	.04	TMAX=	.15 ANGLE= 17.4
	105	.00	-.01	-.49	-2.49	.14
		.42	.35	.03	-.03	.00
	TOP : SMAX=	-.05	SMIN=	-.45	TMAX=	.20 ANGLE= 3.2
	BOTT: SMAX=	.39	SMIN=	.11	TMAX=	.14 ANGLE= 5.3
	106	-.01	-.05	-2.82	-1.12	-.77
		.38	1.06	.66	.03	-.01
	TOP : SMAX=	.24	SMIN=	-.20	TMAX=	.22 ANGLE= -18.8
	BOTT: SMAX=	1.15	SMIN=	.20	TMAX=	.47 ANGLE= 7.5
	107	-.01	-.05	-2.35	-.62	-.71
		.27	.84	.48	.03	-.01
	TOP : SMAX=	.16	SMIN=	-.14	TMAX=	.15 ANGLE= -29.0
	BOTT: SMAX=	.89	SMIN=	.12	TMAX=	.38 ANGLE= 8.2
	108	.00	-.03	-1.91	-5.45	-.05
		.98	.76	.32	-.07	.01
	TOP : SMAX=	.00	SMIN=	-.98	TMAX=	.49 ANGLE= .1
	BOTT: SMAX=	.84	SMIN=	.63	TMAX=	.10 ANGLE= -4.9
	109	.00	-.06	-2.60	-13.08	.73
		2.22	1.81	.16	-.16	-.01
	TOP : SMAX=	-.26	SMIN=	-2.35	TMAX=	1.04 ANGLE= 3.1
	BOTT: SMAX=	2.03	SMIN=	.58	TMAX=	.72 ANGLE= 5.2

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
397	15	.01	-.11	-9.29	-5.44						
		1.05	1.75	.46	-.07						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	2	.00	.00	-.28	-.78						
		.13	.13	.02	-.01						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	3	.00	.00	-.20	-.85						
		.13	.13	-.01	-.01						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	4	.00	.00	-.19	-.62						
		.10	.10	.00	-.01						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	5	.00	.00	.24	-.41						
		.07	.13	-.03	.01						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	6	.00	.00	.05	.33						
		.05	.05	.00	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	7	.00	-.01	-.12	.67						
		.11	.15	.02	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	8	.00	.00	.03	.13						
		.03	.13	-.01	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	9	.00	.00	-.08	-.77						
		.13	.12	.00	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	10	.00	-.01	-.55	-1.37						
		.24	.21	.09	-.01						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	11	.00	.01	.55	1.37						
		.24	.21	-.09	.01						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	12	.00	.00	-.02	-.10						
		.02	.01	.00	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	13	.00	.00	-1.17	-2.96						
		.51	.40	-.11	-.08						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	14	.01	-.01	-2.24	-5.37						
		.86	.71	-.04	-.09						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	101	.00	-.01	-.48	-5.06						
		.83	.80	.00	-.02						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.00	-.01	-.33	-3.03								.22
		.50	.47	.01	-.02								-.02
TOP :	SMAX=	-.05	SMIN=	-.52	TMAX=	.24	ANGLE=						2.5
BOTT:	SMAX=	.50	SMIN=	.06	TMAX=	.22	ANGLE=						7.1
103		.00	-.02	-.47	-2.75								.16
		.45	.40	.02	-.02								.00
TOP :	SMAX=	-.05	SMIN=	-.48	TMAX=	.21	ANGLE=						2.9
BOTT:	SMAX=	.44	SMIN=	.10	TMAX=	.17	ANGLE=						5.2
104		.00	.00	-.35	-3.19								.38
		.52	.53	.00	-.01								-.05
TOP :	SMAX=	-.05	SMIN=	-.55	TMAX=	.25	ANGLE=						1.4
BOTT:	SMAX=	.55	SMIN=	.03	TMAX=	.26	ANGLE=						13.4
105		.00	.00	-.43	-3.91								.27
		.64	.61	.01	-.02								-.02
TOP :	SMAX=	-.06	SMIN=	-.67	TMAX=	.30	ANGLE=						2.3
BOTT:	SMAX=	.64	SMIN=	.07	TMAX=	.28	ANGLE=						6.8
106		.01	-.06	-5.75	-6.99								.40
		1.09	1.15	.23	-.09								-.05
TOP :	SMAX=	-.73	SMIN=	-1.26	TMAX=	.26	ANGLE=						1.3
BOTT:	SMAX=	1.26	SMIN=	1.00	TMAX=	.13	ANGLE=						-32.9
107		.01	-.06	-5.19	-5.62								.25
		.91	.95	.13	-.08								-.06
TOP :	SMAX=	-.73	SMIN=	-1.02	TMAX=	.14	ANGLE=						-3.2
BOTT:	SMAX=	1.05	SMIN=	.81	TMAX=	.12	ANGLE=						-27.3
108		.00	-.01	-1.86	-9.27								.36
		1.50	1.34	-.01	-.08								-.02
TOP :	SMAX=	-.31	SMIN=	-1.63	TMAX=	.66	ANGLE=						1.7
BOTT:	SMAX=	1.47	SMIN=	.30	TMAX=	.59	ANGLE=						4.0
109		-.01	-.03	-2.31	-20.59								1.48
		3.39	3.19	.05	-.11								-.11
TOP :	SMAX=	-.33	SMIN=	-3.55	TMAX=	1.61	ANGLE=						2.4
BOTT:	SMAX=	3.36	SMIN=	.39	TMAX=	1.49	ANGLE=						7.0
398	15	-.11	-.23	-15.06	-34.11								-2.56
		5.40	4.59	.00	-.43								-.08
TOP :	SMAX=	-2.44	SMIN=	-6.19	TMAX=	1.87	ANGLE=						-7.8
BOTT:	SMAX=	5.29	SMIN=	2.47	TMAX=	1.41	ANGLE=						-7.1
2		-.01	.00	-.40	-1.42								-.51
		.29	.23	-.03	-.01								-.03
TOP :	SMAX=	-.04	SMIN=	-.31	TMAX=	.14	ANGLE=						-28.1
BOTT:	SMAX=	.24	SMIN=	.02	TMAX=	.11	ANGLE=						-15.7
3		-.01	.00	-.31	-1.23								-.49
		.26	.21	-.02	-.01								-.02
TOP :	SMAX=	-.02	SMIN=	-.27	TMAX=	.12	ANGLE=						-26.8
BOTT:	SMAX=	.22	SMIN=	.01	TMAX=	.10	ANGLE=						-19.1
4		.00	.00	-.26	-1.02								-.33
		.20	.16	-.01	-.01								-.02
TOP :	SMAX=	-.02	SMIN=	-.21	TMAX=	.09	ANGLE=						-24.2
BOTT:	SMAX=	.18	SMIN=	.03	TMAX=	.07	ANGLE=						-16.0
5		.00	.01	.29	.09								-.22
		.11	.05	.02	.03								-.01
TOP :	SMAX=	.11	SMIN=	.01	TMAX=	.05	ANGLE=						90.0
BOTT:	SMAX=	.03	SMIN=	-.04	TMAX=	.03	ANGLE=						90.0
6		.00	-.01	-.13	-.41								.04
		.07	.06	.00	.00								.00
TOP :	SMAX=	-.02	SMIN=	-.07	TMAX=	.03	ANGLE=						90.0
BOTT:	SMAX=	.07	SMIN=	.02	TMAX=	.02	ANGLE=						90.0
7		.01	-.02	-.82	-2.42								.32
		.40	.34	-.01	-.03								.02
TOP :	SMAX=	-.13	SMIN=	-.45	TMAX=	.16	ANGLE=						12.6
BOTT:	SMAX=	.38	SMIN=	.12	TMAX=	.13	ANGLE=						8.4

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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	-.01	.00	-.04	.03	-.04	.03	-.04	.03	-.04	.03
		.26	.10	.03	.01	.03	.01	.03	.01	.03	.01
	TOP : SMAX=	.17	SMIN=	-.13	TMAX=	.15	ANGLE=	90.0			
	BOTT: SMAX=	.08	SMIN=	-.04	TMAX=	.06	ANGLE=	90.0			
	9	.00	.00	-.10	-.79	-.10	-.79	-.10	-.79	-.10	-.79
		.13	.13	.00	.00	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	-.02	SMIN=	-.13	TMAX=	.06	ANGLE=	-10.4			
	BOTT: SMAX=	.14	SMIN=	.01	TMAX=	.06	ANGLE=	-5.7			
	10	-.01	.00	-.67	-2.48	-.67	-2.48	-.67	-2.48	-.67	-2.48
		.37	.37	-.06	-.01	-.06	-.01	-.06	-.01	-.06	-.01
	TOP : SMAX=	-.17	SMIN=	-.43	TMAX=	.13	ANGLE=	-2.0			
	BOTT: SMAX=	.40	SMIN=	.06	TMAX=	.17	ANGLE=	-2.1			
	11	.01	.00	.67	2.48	.67	2.48	.67	2.48	.67	2.48
		.37	.37	.06	.01	.06	.01	.06	.01	.06	.01
	TOP : SMAX=	.43	SMIN=	.17	TMAX=	.13	ANGLE=	-2.0			
	BOTT: SMAX=	-.06	SMIN=	-.40	TMAX=	.17	ANGLE=	-2.1			
	12	.00	.00	-.02	-.09	-.02	-.09	-.02	-.09	-.02	-.09
		.01	.01	.00	.00	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.01	SMIN=	.00	TMAX=	.01	ANGLE=	90.0			
	13	-.01	.01	-.75	-3.32	-.75	-3.32	-.75	-3.32	-.75	-3.32
		.88	1.10	-.88	-.05	-.88	-.05	-.88	-.05	-.88	-.05
	TOP : SMAX=	-.60	SMIN=	-1.01	TMAX=	.20	ANGLE=	5.4			
	BOTT: SMAX=	.50	SMIN=	-.76	TMAX=	.63	ANGLE=	1.3			
	14	.01	.00	-2.06	-8.57	-2.06	-8.57	-2.06	-8.57	-2.06	-8.57
		1.52	1.83	-1.08	-.10	-1.08	-.10	-1.08	-.10	-1.08	-.10
	TOP : SMAX=	-1.27	SMIN=	-1.69	TMAX=	.21	ANGLE=	37.4			
	BOTT: SMAX=	1.34	SMIN=	-.75	TMAX=	1.04	ANGLE=	4.2			
	101	-.02	.01	-.57	-5.22	-.57	-5.22	-.57	-5.22	-.57	-5.22
		.83	.87	-.02	.03	-.02	.03	-.02	.03	-.02	.03
	TOP : SMAX=	-.08	SMIN=	-.87	TMAX=	.39	ANGLE=	-11.0			
	BOTT: SMAX=	.90	SMIN=	.07	TMAX=	.41	ANGLE=	-5.0			
	102	-.01	.00	-.55	-3.82	-.55	-3.82	-.55	-3.82	-.55	-3.82
		.60	.62	-.01	.01	-.01	.01	-.01	.01	-.01	.01
	TOP : SMAX=	-.09	SMIN=	-.64	TMAX=	.27	ANGLE=	-8.5			
	BOTT: SMAX=	.65	SMIN=	.07	TMAX=	.29	ANGLE=	-3.9			
	103	-.01	-.01	-1.10	-5.44	-1.10	-5.44	-1.10	-5.44	-1.10	-5.44
		.84	.83	-.02	-.01	-.02	-.01	-.02	-.01	-.02	-.01
	TOP : SMAX=	-.20	SMIN=	-.92	TMAX=	.36	ANGLE=	-2.7			
	BOTT: SMAX=	.89	SMIN=	.16	TMAX=	.37	ANGLE=	-1.0			
	104	-.02	.00	-.47	-3.48	-.47	-3.48	-.47	-3.48	-.47	-3.48
		.64	.58	.01	.02	.01	.02	.01	.02	.01	.02
	TOP : SMAX=	.01	SMIN=	-.64	TMAX=	.32	ANGLE=	-20.2			
	BOTT: SMAX=	.61	SMIN=	.08	TMAX=	.27	ANGLE=	-9.6			
	105	-.02	.01	-.52	-4.13	-.52	-4.13	-.52	-4.13	-.52	-4.13
		.66	.68	-.02	.01	-.02	.01	-.02	.01	-.02	.01
	TOP : SMAX=	-.08	SMIN=	-.69	TMAX=	.30	ANGLE=	-10.1			
	BOTT: SMAX=	.71	SMIN=	.07	TMAX=	.32	ANGLE=	-4.7			
	106	-.08	-.11	-8.52	-22.19	-.08	-22.19	-.08	-22.19	-.08	-22.19
		3.46	3.11	-.48	-.24	-.48	-.24	-.48	-.24	-.48	-.24
	TOP : SMAX=	-1.84	SMIN=	-3.99	TMAX=	1.07	ANGLE=	-9.0			
	BOTT: SMAX=	3.47	SMIN=	.93	TMAX=	1.27	ANGLE=	-4.4			
	107	-.07	-.10	-7.85	-19.71	-.07	-19.71	-.07	-19.71	-.07	-19.71
		3.09	2.74	-.42	-.23	-.42	-.23	-.42	-.23	-.42	-.23
	TOP : SMAX=	-1.67	SMIN=	-3.57	TMAX=	.95	ANGLE=	-10.0			
	BOTT: SMAX=	3.07	SMIN=	.87	TMAX=	1.10	ANGLE=	-4.7			
	108	-.02	.01	-1.91	-11.28	-.02	-11.28	-.02	-11.28	-.02	-11.28
		1.66	1.99	-.57	-.03	-.57	-.03	-.57	-.03	-.57	-.03
	TOP : SMAX=	-.88	SMIN=	-1.91	TMAX=	.52	ANGLE=	-4.1			
	BOTT: SMAX=	1.85	SMIN=	-.25	TMAX=	1.05	ANGLE=	-.3			
	109	-.09	.03	-2.75	-21.86	-.09	-21.86	-.09	-21.86	-.09	-21.86
		3.46	3.58	-.09	.07	-.09	.07	-.09	.07	-.09	.07
	TOP : SMAX=	-.45	SMIN=	-3.67	TMAX=	1.61	ANGLE=	-10.0			
	BOTT: SMAX=	3.74	SMIN=	.35	TMAX=	1.70	ANGLE=	-4.6			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	ANGLE
401	15	-.53 9.18	.97 9.32	16.31 -1.49	-25.24 -.26	24.21 .02		
	TOP :	SMAX= 4.14	SMIN=	-6.38	TMAX= 5.26	ANGLE= 25.3		
	BOTT:	SMAX= 5.75	SMIN=	-5.01	TMAX= 5.38	ANGLE= 24.1		
	2	.01 .48	.05 .51	.50 -.06	-1.42 -.02	-1.38 -.00		
	TOP :	SMAX= .15	SMIN=	-.38	TMAX= .27	ANGLE= -29.5		
	BOTT:	SMAX= .33	SMIN=	-.26	TMAX= .29	ANGLE= -25.8		
	3	-.01 .34	.05 .35	.35 -.03	-1.09 -.01	-.93 .00		
	TOP :	SMAX= .11	SMIN=	-.27	TMAX= .19	ANGLE= -27.4		
	BOTT:	SMAX= .24	SMIN=	-.16	TMAX= .20	ANGLE= -24.8		
	4	-.03 .22	.04 .24	.20 -.03	-1.14 -.01	-.29 .00		
	TOP :	SMAX= .01	SMIN=	-.21	TMAX= .11	ANGLE= -11.8		
	BOTT:	SMAX= .19	SMIN=	-.07	TMAX= .13	ANGLE= -11.8		
	5	-.02 .70	-.01 .66	-.18 .02	-2.95 .00	-1.68 -.01		
	TOP :	SMAX= .13	SMIN=	-.62	TMAX= .38	ANGLE= -24.8		
	BOTT:	SMAX= .62	SMIN=	-.08	TMAX= .35	ANGLE= -25.7		
	6	.00 .13	-.01 .13	-.36 .01	-.83 .00	.18 .00		
	TOP :	SMAX= -.05	SMIN=	-.15	TMAX= .05	ANGLE= 90.0		
	BOTT:	SMAX= .15	SMIN=	.05	TMAX= .05	ANGLE= 90.0		
	7	.02 .57	-.04 .63	-1.72 .03	-2.88 -.02	1.49 -.03		
	TOP :	SMAX= -.12	SMIN=	-.63	TMAX= .25	ANGLE= 30.9		
	BOTT:	SMAX= .67	SMIN=	.10	TMAX= .28	ANGLE= 37.4		
	8	-.01 .50	.03 .41	.27 .02	-1.55 -.01	-1.24 -.02		
	TOP :	SMAX= .18	SMIN=	-.38	TMAX= .28	ANGLE= -26.6		
	BOTT:	SMAX= .34	SMIN=	-.12	TMAX= .23	ANGLE= -27.2		
	9	-.01 .25	.02 .26	.11 -.01	-1.07 .00	-.61 .00		
	TOP :	SMAX= .05	SMIN=	-.22	TMAX= .14	ANGLE= -22.9		
	BOTT:	SMAX= .22	SMIN=	-.07	TMAX= .14	ANGLE= -22.9		
	10	.00 .46	.05 .61	.45 -.14	-2.51 -.03	-.83 .03		
	TOP :	SMAX= -.04	SMIN=	-.48	TMAX= .22	ANGLE= -14.7		
	BOTT:	SMAX= .43	SMIN=	-.26	TMAX= .35	ANGLE= -14.5		
	11	.00 .46	-.05 .61	-.45 .14	2.51 .03	.83 -.03		
	TOP :	SMAX= .48	SMIN=	.04	TMAX= .22	ANGLE= -14.7		
	BOTT:	SMAX= .26	SMIN=	-.43	TMAX= .35	ANGLE= -14.5		
	12	.00 .01	.00 .01	.02 .00	-.04 .00	-.03 .00		
	TOP :	SMAX= .00	SMIN=	-.01	TMAX= .01	ANGLE= 90.0		
	BOTT:	SMAX= .01	SMIN=	-.01	TMAX= .01	ANGLE= 90.0		
	13	.00 1.89	.04 1.93	-.52 -1.37	-4.91 -.02	-3.56 -.22		
	TOP :	SMAX= -.28	SMIN=	-2.01	TMAX= .87	ANGLE= 34.5		
	BOTT:	SMAX= .87	SMIN=	-1.35	TMAX= 1.11	ANGLE= -9.9		
	14	.01 2.03	.02 2.09	-1.54 -1.71	-5.47 .00	-2.42 -.23		
	TOP :	SMAX= -.61	SMIN=	-2.26	TMAX= .82	ANGLE= 25.0		
	BOTT:	SMAX= .93	SMIN=	-1.47	TMAX= 1.20	ANGLE= -4.2		
	101	-.06 1.93	.13 1.99	.70 -.07	-8.41 -.03	-4.53 .02		
	TOP :	SMAX= .34	SMIN=	-1.74	TMAX= 1.04	ANGLE= -22.4		
	BOTT:	SMAX= 1.69	SMIN=	-.51	TMAX= 1.10	ANGLE= -22.4		

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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH				
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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH						
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
102		-.03	.08	.21	-5.68	-2.54
		1.20	1.23	-.05	-.03	.01
TOP :	SMAX=	.14	SMIN=	-1.12	TMAX=	.63 ANGLE=
BOTT:	SMAX=	1.08	SMIN=	-.25	TMAX=	.66 ANGLE=
103		-.02	.05	-.87	-7.31	-1.49
		1.26	1.21	-.03	-.03	-.01
TOP :	SMAX=	-.12	SMIN=	-1.31	TMAX=	.60 ANGLE=
BOTT:	SMAX=	1.24	SMIN=	.06	TMAX=	.59 ANGLE=
104		-.05	.11	.71	-6.25	-3.67
		1.54	1.52	-.04	-.03	-.00
TOP :	SMAX=	.35	SMIN=	-1.34	TMAX=	.84 ANGLE=
BOTT:	SMAX=	1.27	SMIN=	-.42	TMAX=	.84 ANGLE=
105		-.04	.10	.59	-5.87	-3.17
		1.35	1.40	-.06	-.03	.02
TOP :	SMAX=	.25	SMIN=	-1.21	TMAX=	.73 ANGLE=
BOTT:	SMAX=	1.17	SMIN=	-.38	TMAX=	.78 ANGLE=
106		-.29	.59	8.44	-19.49	8.22
		4.25	5.41	-1.04	-.16	-.07
TOP :	SMAX=	.77	SMIN=	-3.81	TMAX=	2.29 ANGLE=
BOTT:	SMAX=	3.44	SMIN=	-2.80	TMAX=	3.12 ANGLE=
107		-.29	.54	7.99	-16.97	9.05
		4.02	5.10	-.89	-.14	-.10
TOP :	SMAX=	.94	SMIN=	-3.47	TMAX=	2.21 ANGLE=
BOTT:	SMAX=	3.17	SMIN=	-2.71	TMAX=	2.94 ANGLE=
108		-.07	.19	.23	-12.76	-6.58
		2.78	3.24	-.96	-.04	-.09
TOP :	SMAX=	-.21	SMIN=	-2.88	TMAX=	1.34 ANGLE=
BOTT:	SMAX=	2.39	SMIN=	-1.30	TMAX=	1.84 ANGLE=
109		-.23	.55	3.12	-31.34	-16.76
		7.19	7.48	-.34	-.14	-.09
TOP :	SMAX=	1.28	SMIN=	-6.46	TMAX=	3.87 ANGLE=
BOTT:	SMAX=	6.25	SMIN=	-2.03	TMAX=	4.14 ANGLE=
402	15	1.48	2.64	188.16	62.60	69.35
		34.00	34.30	-.13	-.26	-.09
TOP :	SMAX=	36.27	SMIN=	5.13	TMAX=	15.57 ANGLE=
BOTT:	SMAX=	-5.48	SMIN=	-36.71	TMAX=	15.61 ANGLE=
2		.05	.06	3.11	5.04	-.47
		.72	.77	-.03	-.02	.00
TOP :	SMAX=	.83	SMIN=	.47	TMAX=	.18 ANGLE=
BOTT:	SMAX=	-.53	SMIN=	-.88	TMAX=	.17 ANGLE=
3		.05	.05	2.59	4.54	-.56
		.67	.69	-.02	-.01	.00
TOP :	SMAX=	.77	SMIN=	.39	TMAX=	.19 ANGLE=
BOTT:	SMAX=	-.42	SMIN=	-.79	TMAX=	.19 ANGLE=
4		.04	.05	2.18	3.61	-.48
		.53	.56	-.01	-.01	.00
TOP :	SMAX=	.61	SMIN=	.33	TMAX=	.14 ANGLE=
BOTT:	SMAX=	-.35	SMIN=	-.64	TMAX=	.15 ANGLE=
5		.10	.12	2.39	4.36	-.95
		.69	.69	.02	.00	.00
TOP :	SMAX=	.79	SMIN=	.35	TMAX=	.22 ANGLE=
BOTT:	SMAX=	-.32	SMIN=	-.79	TMAX=	.24 ANGLE=
6		-.02	-.01	-.67	-2.13	-.44
		.35	.33	.00	-.01	-.01
TOP :	SMAX=	-.09	SMIN=	-.38	TMAX=	.15 ANGLE=
BOTT:	SMAX=	.36	SMIN=	.09	TMAX=	.14 ANGLE=
7		-.17	-.12	-4.27	-13.78	-3.49
		2.36	2.19	-.02	-.04	-.07
TOP :	SMAX=	-.50	SMIN=	-2.57	TMAX=	1.03 ANGLE=
BOTT:	SMAX=	2.41	SMIN=	.54	TMAX=	.93 ANGLE=



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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.05	.06	2.28	3.47						
		.56	.56	.05	-.02						
	TOP : SMAX=	.64	SMIN=	.35	TMAX=	.14	ANGLE=	31.6			
	BOTT: SMAX=	-.28	SMIN=	-.64	TMAX=	.18	ANGLE=	21.3			
	9	.04	.05	1.65	2.98						
		.44	.45	.00	-.01						
	TOP : SMAX=	.50	SMIN=	.26	TMAX=	.12	ANGLE=	13.2			
	BOTT: SMAX=	-.27	SMIN=	-.52	TMAX=	.13	ANGLE=	13.8			
	10	.06	.05	4.27	6.21						
		.88	.98	-.11	-.03						
	TOP : SMAX=	1.01	SMIN=	.60	TMAX=	.20	ANGLE=	7.3			
	BOTT: SMAX=	-.79	SMIN=	-1.09	TMAX=	.15	ANGLE=	16.2			
	11	-.06	-.05	-4.27	-6.21						
		.88	.98	.11	.03						
	TOP : SMAX=	-.60	SMIN=	-1.01	TMAX=	.20	ANGLE=	7.3			
	BOTT: SMAX=	1.09	SMIN=	.79	TMAX=	.15	ANGLE=	16.2			
	12	.00	.00	.13	.25						
		.04	.04	.00	.00						
	TOP : SMAX=	.04	SMIN=	.02	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	-.02	SMIN=	-.04	TMAX=	.01	ANGLE=	90.0			
	13	.08	-.02	4.20	10.53						
		2.62	2.03	-1.55	.21						
	TOP : SMAX=	2.04	SMIN=	-.92	TMAX=	1.48	ANGLE=	9.0			
	BOTT: SMAX=	-1.48	SMIN=	-2.31	TMAX=	.41	ANGLE=	-15.9			
	14	.06	-.06	2.53	12.28						
		3.47	2.17	-1.99	.30						
	TOP : SMAX=	2.38	SMIN=	-1.60	TMAX=	1.99	ANGLE=	5.6			
	BOTT: SMAX=	-1.73	SMIN=	-2.43	TMAX=	.35	ANGLE=	-9.7			
	101	.31	.36	11.91	21.14						
		3.10	3.19	-.03	-.05						
	TOP : SMAX=	3.58	SMIN=	1.85	TMAX=	.86	ANGLE=	13.8			
	BOTT: SMAX=	-1.91	SMIN=	-3.68	TMAX=	.89	ANGLE=	14.5			
	102	.17	.21	6.93	11.52						
		1.72	1.79	-.03	-.04						
	TOP : SMAX=	1.99	SMIN=	1.02	TMAX=	.48	ANGLE=	19.1			
	BOTT: SMAX=	-1.07	SMIN=	-2.06	TMAX=	.50	ANGLE=	19.3			
	103	.05	.12	4.04	2.20						
		1.42	1.31	-.04	-.06						
	TOP : SMAX=	1.24	SMIN=	-.30	TMAX=	.77	ANGLE=	-38.8			
	BOTT: SMAX=	.11	SMIN=	-1.25	TMAX=	.68	ANGLE=	-39.0			
	104	.23	.26	9.29	16.00						
		2.36	2.43	.01	-.04						
	TOP : SMAX=	2.72	SMIN=	1.46	TMAX=	.63	ANGLE=	16.3			
	BOTT: SMAX=	-1.44	SMIN=	-2.81	TMAX=	.69	ANGLE=	15.5			
	105	.22	.25	8.78	15.60						
		2.28	2.35	-.03	-.03						
	TOP : SMAX=	2.63	SMIN=	1.37	TMAX=	.63	ANGLE=	13.1			
	BOTT: SMAX=	-1.42	SMIN=	-2.71	TMAX=	.65	ANGLE=	14.0			
	106	.93	1.47	103.04	48.06						
		16.85	18.37	-.91	-.06						
	TOP : SMAX=	18.87	SMIN=	5.34	TMAX=	6.76	ANGLE=	26.0			
	BOTT: SMAX=	-5.63	SMIN=	-20.52	TMAX=	7.45	ANGLE=	23.9			
	107	.86	1.42	98.78	41.85						
		16.48	17.89	-.80	-.03						
	TOP : SMAX=	18.23	SMIN=	4.38	TMAX=	6.93	ANGLE=	25.5			
	BOTT: SMAX=	-4.54	SMIN=	-19.72	TMAX=	7.59	ANGLE=	23.7			
	108	.40	.40	16.19	32.58						
		5.04	4.85	-1.05	.09						
	TOP : SMAX=	5.63	SMIN=	1.54	TMAX=	2.04	ANGLE=	9.5			
	BOTT: SMAX=	-3.56	SMIN=	-5.52	TMAX=	.98	ANGLE=	17.8			
	109	1.15	1.35	46.64	82.63						
		12.06	12.44	-.17	-.19						
	TOP : SMAX=	13.93	SMIN=	7.27	TMAX=	3.33	ANGLE=	13.1			
	BOTT: SMAX=	-7.54	SMIN=	-14.36	TMAX=	3.41	ANGLE=	14.0			

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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH  
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FORCE OR STRESS = FORCE/WIDTH/THICK,    MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
403	15	2.05	-3.05	204.43	111.44						
		37.23	37.47	-.30	-.28						
	TOP :	SMAX= 41.40	SMIN=	10.67	TMAX= 15.36	ANGLE=					
	BOTT:	SMAX= -11.38	SMIN=	-41.84	TMAX= 15.23	ANGLE=					
	2	.05	-.06	3.11	5.04						
		.72	.77	-.03	-.02						
	TOP :	SMAX= .83	SMIN=	.47	TMAX= .18	ANGLE=					
	BOTT:	SMAX= -.53	SMIN=	-.88	TMAX= .17	ANGLE=					
	3	.05	-.05	2.59	4.54						
		.67	.69	-.02	-.01						
	TOP :	SMAX= .77	SMIN=	.39	TMAX= .19	ANGLE=					
	BOTT:	SMAX= -.42	SMIN=	-.79	TMAX= .19	ANGLE=					
	4	.04	-.05	2.18	3.61						
		.53	.56	-.01	-.01						
	TOP :	SMAX= .61	SMIN=	.33	TMAX= .14	ANGLE=					
	BOTT:	SMAX= -.35	SMIN=	-.64	TMAX= .15	ANGLE=					
	5	.10	-.12	2.39	4.36						
		.69	.69	.02	.00						
	TOP :	SMAX= .79	SMIN=	.35	TMAX= .22	ANGLE=					
	BOTT:	SMAX= -.32	SMIN=	-.79	TMAX= .24	ANGLE=					
	6	.02	-.01	.64	1.99						
		.33	.31	.00	.00						
	TOP :	SMAX= .36	SMIN=	.08	TMAX= .14	ANGLE=					
	BOTT:	SMAX= -.09	SMIN=	-.35	TMAX= .13	ANGLE=					
	7	.17	-.12	5.08	15.48						
		2.63	2.37	.02	.10						
	TOP :	SMAX= 2.89	SMIN=	.66	TMAX= 1.12	ANGLE=					
	BOTT:	SMAX= -.67	SMIN=	-2.63	TMAX= .98	ANGLE=					
	8	.05	-.06	2.28	3.47						
		.56	.56	.05	-.02						
	TOP :	SMAX= .64	SMIN=	.35	TMAX= .14	ANGLE=					
	BOTT:	SMAX= -.28	SMIN=	-.64	TMAX= .18	ANGLE=					
	9	.04	-.05	1.65	2.98						
		.44	.45	.00	-.01						
	TOP :	SMAX= .50	SMIN=	.26	TMAX= .12	ANGLE=					
	BOTT:	SMAX= -.26	SMIN=	-.52	TMAX= .13	ANGLE=					
	10	.06	-.05	4.27	6.21						
		.88	.98	-.11	-.03						
	TOP :	SMAX= 1.01	SMIN=	.60	TMAX= .20	ANGLE=					
	BOTT:	SMAX= -.79	SMIN=	-1.09	TMAX= .15	ANGLE=					
	11	-.06	.05	-4.27	-6.21						
		.88	.98	.11	.03						
	TOP :	SMAX= -.60	SMIN=	-1.01	TMAX= .20	ANGLE=					
	BOTT:	SMAX= 1.09	SMIN=	.79	TMAX= .15	ANGLE=					
	12	.00	.00	.13	.25						
		.04	.04	.00	.00						
	TOP :	SMAX= .04	SMIN=	.02	TMAX= .01	ANGLE=					
	BOTT:	SMAX= -.02	SMIN=	-.04	TMAX= .01	ANGLE=					
	13	.08	.02	4.20	10.53						
		2.62	2.03	-1.55	.21						
	TOP :	SMAX= 2.04	SMIN=	-.92	TMAX= 1.48	ANGLE=					
	BOTT:	SMAX= -1.48	SMIN=	-2.31	TMAX= .41	ANGLE=					
	14	.06	.06	2.53	12.28						
		3.47	2.17	-1.99	.30						
	TOP :	SMAX= 2.38	SMIN=	-1.60	TMAX= 1.99	ANGLE=					
	BOTT:	SMAX= -1.73	SMIN=	-2.43	TMAX= .35	ANGLE=					
	101	.31	-.36	11.91	21.13						
		3.10	3.19	-.03	-.05						
	TOP :	SMAX= 3.58	SMIN=	1.85	TMAX= .86	ANGLE=					
	BOTT:	SMAX= -1.91	SMIN=	-3.68	TMAX= .89	ANGLE=					

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.20	-.23	7.97	14.81					1.12	
		2.14	2.19	-.03	-.03					-.02	
TOP :	SMAX=	2.47	SMIN=	1.28	TMAX=	.59	ANGLE=			-8.4	
BOTT:	SMAX=	-1.32	SMIN=	-2.53	TMAX=	.60	ANGLE=			-9.8	
103		.32	-.31	11.53	25.60					-1.35	
		3.78	3.67	-.01	.05					-.06	
TOP :	SMAX=	4.35	SMIN=	1.88	TMAX=	1.24	ANGLE=			6.7	
BOTT:	SMAX=	-1.92	SMIN=	-4.23	TMAX=	1.15	ANGLE=			4.1	
104		.23	-.26	9.29	15.99					2.08	
		2.36	2.43	.01	-.04					-.01	
TOP :	SMAX=	2.72	SMIN=	1.46	TMAX=	.63	ANGLE=			-16.3	
BOTT:	SMAX=	-1.44	SMIN=	-2.81	TMAX=	.69	ANGLE=			-15.5	
105		.22	-.25	8.78	15.60					1.74	
		2.28	2.35	-.03	-.03					-.01	
TOP :	SMAX=	2.63	SMIN=	1.37	TMAX=	.63	ANGLE=			-13.1	
BOTT:	SMAX=	-1.42	SMIN=	-2.71	TMAX=	.65	ANGLE=			-14.0	
106		1.21	-1.67	111.17	72.48					-37.44	
		18.92	20.21	-.99	-.07					.01	
TOP :	SMAX=	21.59	SMIN=	7.95	TMAX=	6.82	ANGLE=			-33.0	
BOTT:	SMAX=	-8.58	SMIN=	-23.09	TMAX=	7.25	ANGLE=			-29.7	
107		1.15	-1.63	106.91	66.27					-37.83	
		18.44	19.63	-.89	-.04					.02	
TOP :	SMAX=	20.92	SMIN=	7.02	TMAX=	6.95	ANGLE=			-32.4	
BOTT:	SMAX=	-7.51	SMIN=	-22.28	TMAX=	7.38	ANGLE=			-29.5	
108		.40	-.40	16.19	32.57					3.70	
		5.04	4.85	-1.05	.09					.05	
TOP :	SMAX=	5.63	SMIN=	1.54	TMAX=	2.04	ANGLE=			-9.5	
BOTT:	SMAX=	-3.56	SMIN=	-5.52	TMAX=	.98	ANGLE=			-17.8	
109		1.15	-1.35	46.63	82.60					9.21	
		12.06	12.43	-.17	-.19					-.07	
TOP :	SMAX=	13.92	SMIN=	7.26	TMAX=	3.33	ANGLE=			-13.1	
BOTT:	SMAX=	-7.54	SMIN=	-14.35	TMAX=	3.41	ANGLE=			-14.0	
404	15	-.63	-1.30	20.86	-24.81					-18.64	
		8.25	8.89	-1.07	-.31					-.15	
TOP :	SMAX=	3.71	SMIN=	-5.74	TMAX=	4.73	ANGLE=			-21.8	
BOTT:	SMAX=	4.77	SMIN=	-5.48	TMAX=	5.13	ANGLE=			-17.6	
2		.01	-.05	.51	-1.42					1.38	
		.48	.51	-.06	-.02					.00	
TOP :	SMAX=	.15	SMIN=	-.38	TMAX=	.27	ANGLE=			29.5	
BOTT:	SMAX=	.33	SMIN=	-.26	TMAX=	.29	ANGLE=			25.8	
3		-.01	-.05	.35	-1.09					.93	
		.34	.35	-.03	-.01					.00	
TOP :	SMAX=	.11	SMIN=	-.27	TMAX=	.19	ANGLE=			27.4	
BOTT:	SMAX=	.24	SMIN=	-.16	TMAX=	.20	ANGLE=			24.8	
4		-.03	-.04	.20	-1.14					.29	
		.22	.24	-.03	-.01					.00	
TOP :	SMAX=	.01	SMIN=	-.21	TMAX=	.11	ANGLE=			11.8	
BOTT:	SMAX=	.19	SMIN=	-.07	TMAX=	.13	ANGLE=			11.8	
5		-.02	.01	-.18	-2.95					1.68	
		.70	.66	.02	.00					.01	
TOP :	SMAX=	.13	SMIN=	-.62	TMAX=	.38	ANGLE=			24.8	
BOTT:	SMAX=	.62	SMIN=	-.08	TMAX=	.35	ANGLE=			25.7	
6		.00	-.01	.32	.69					.18	
		.11	.11	-.01	.00					.00	
TOP :	SMAX=	.13	SMIN=	.04	TMAX=	.04	ANGLE=			90.0	
BOTT:	SMAX=	-.04	SMIN=	-.13	TMAX=	.04	ANGLE=			90.0	
7		-.02	-.04	1.49	1.64					1.42	
		.45	.53	-.03	.01					-.02	
TOP :	SMAX=	.47	SMIN=	.04	TMAX=	.22	ANGLE=			90.0	
BOTT:	SMAX=	-.01	SMIN=	-.53	TMAX=	.26	ANGLE=			90.0	

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MAX FXY
	8	-.01	-.03	.27	-1.55	1.24
		.50	.41	.02	-.01	.02
	TOP : SMAX=	.18	SMIN=	-.38	TMAX=	ANGLE= 26.6
	BOTT: SMAX=	.34	SMIN=	-.12	TMAX=	ANGLE= 27.2
	9	-.01	-.02	.11	-1.07	.61
		.25	.26	-.01	.00	.00
	TOP : SMAX=	.05	SMIN=	-.22	TMAX=	ANGLE= 22.9
	BOTT: SMAX=	.22	SMIN=	-.07	TMAX=	ANGLE= 22.8
	10	.00	-.05	.45	-2.51	.83
		.46	.61	-.14	-.03	-.03
	TOP : SMAX=	-.04	SMIN=	-.48	TMAX=	ANGLE= 14.7
	BOTT: SMAX=	.43	SMIN=	-.26	TMAX=	ANGLE= 14.5
	11	.00	.05	-.45	2.51	-.83
		.46	.61	.14	.03	.03
	TOP : SMAX=	.48	SMIN=	.04	TMAX=	ANGLE= 14.7
	BOTT: SMAX=	.26	SMIN=	-.43	TMAX=	ANGLE= 14.5
	12	.00	.00	.02	-.04	.03
		.01	.01	.00	.00	.00
	TOP : SMAX=	.00	SMIN=	-.01	TMAX=	ANGLE= 90.0
	BOTT: SMAX=	.01	SMIN=	-.01	TMAX=	ANGLE= 90.0
	13	.00	-.04	-.52	-4.91	3.56
		1.89	1.93	-1.37	-.02	.22
	TOP : SMAX=	-.28	SMIN=	-2.01	TMAX=	ANGLE= -34.5
	BOTT: SMAX=	.87	SMIN=	-1.35	TMAX=	ANGLE= 9.9
	14	.01	-.02	-1.54	-5.47	2.42
		2.03	2.09	-1.71	.00	.23
	TOP : SMAX=	-.61	SMIN=	-2.26	TMAX=	ANGLE= -25.0
	BOTT: SMAX=	.93	SMIN=	-1.47	TMAX=	ANGLE= 4.2
	101	-.06	-.13	.69	-8.41	4.53
		1.93	1.99	-.07	-.03	-.02
	TOP : SMAX=	.34	SMIN=	-1.74	TMAX=	ANGLE= 22.4
	BOTT: SMAX=	1.69	SMIN=	-.51	TMAX=	ANGLE= 22.4
	102	-.04	-.10	.76	-4.46	2.83
		1.12	1.19	-.06	-.02	-.02
	TOP : SMAX=	.27	SMIN=	-.97	TMAX=	ANGLE= 23.8
	BOTT: SMAX=	.93	SMIN=	-.40	TMAX=	ANGLE= 23.5
	103	-.05	-.12	1.69	-3.70	3.82
		1.29	1.44	-.08	-.01	-.03
	TOP : SMAX=	.52	SMIN=	-.95	TMAX=	ANGLE= 27.8
	BOTT: SMAX=	.95	SMIN=	-.71	TMAX=	ANGLE= 27.0
	104	-.05	-.11	.71	-6.25	3.67
		1.54	1.52	-.04	-.03	.00
	TOP : SMAX=	.35	SMIN=	-1.34	TMAX=	ANGLE= 23.3
	BOTT: SMAX=	1.27	SMIN=	-.42	TMAX=	ANGLE= 23.2
	105	-.04	-.10	.59	-5.87	3.17
		1.35	1.40	-.06	-.03	-.02
	TOP : SMAX=	.25	SMIN=	-1.21	TMAX=	ANGLE= 22.2
	BOTT: SMAX=	1.17	SMIN=	-.38	TMAX=	ANGLE= 22.2
	106	-.34	-.76	10.71	-19.27	-5.43
		3.97	5.54	-1.32	-.19	.01
	TOP : SMAX=	.66	SMIN=	-3.60	TMAX=	ANGLE= -12.4
	BOTT: SMAX=	3.16	SMIN=	-3.24	TMAX=	ANGLE= -8.3
	107	-.34	-.70	10.26	-16.76	-6.26
		3.69	5.14	-1.18	-.16	.04
	TOP : SMAX=	.80	SMIN=	-3.22	TMAX=	ANGLE= -15.0
	BOTT: SMAX=	2.84	SMIN=	-3.10	TMAX=	ANGLE= -10.7
	108	-.07	-.19	.23	-12.77	6.58
		2.78	3.24	-.96	-.04	.09
	TOP : SMAX=	-.21	SMIN=	-2.88	TMAX=	ANGLE= 31.1
	BOTT: SMAX=	2.39	SMIN=	-1.30	TMAX=	ANGLE= 16.6
	109	-.23	-.55	3.12	-31.35	16.76
		7.19	7.48	-.34	-.14	-.09
	TOP : SMAX=	1.28	SMIN=	-6.47	TMAX=	ANGLE= 22.1
	BOTT: SMAX=	6.25	SMIN=	-2.03	TMAX=	ANGLE= 22.1

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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH				
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH						
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FXY
405	15	.18	.21	-12.70	-27.26	-10.55
		6.08	3.88	-.24	-.99	-.39
	TOP :	SMAX=-1.27	SMIN=	-6.62	TMAX=2.67	ANGLE=-26.8
	BOTT:	SMAX=4.32	SMIN=	1.11	TMAX=1.60	ANGLE=-29.1
	2	-.01	.01	-1.02	-3.00	.30
		.49	.41	-.04	-.05	.01
	TOP :	SMAX=-.20	SMIN=	-.56	TMAX=.18	ANGLE=9.9
	BOTT:	SMAX=.46	SMIN=	.12	TMAX=.17	ANGLE=7.0
	3	.00	.01	-.79	-2.55	.42
		.43	.36	-.02	-.04	.01
	TOP :	SMAX=-.13	SMIN=	-.48	TMAX=.18	ANGLE=13.1
	BOTT:	SMAX=.40	SMIN=	.10	TMAX=.15	ANGLE=12.2
	4	.00	.01	-.67	-2.06	.21
		.34	.28	-.01	-.03	.01
	TOP :	SMAX=-.11	SMIN=	-.38	TMAX=.13	ANGLE=8.6
	BOTT:	SMAX=.32	SMIN=	.10	TMAX=.11	ANGLE=7.9
	5	-.01	.00	-.41	-1.50	.46
		.28	.25	.01	.02	.03
	TOP :	SMAX=-.01	SMIN=	-.29	TMAX=.14	ANGLE=25.6
	BOTT:	SMAX=.28	SMIN=	.06	TMAX=.11	ANGLE=13.1
	6	.00	.00	.02	.20	.04
		.03	.04	.00	-.01	.00
	TOP :	SMAX=.03	SMIN=	.00	TMAX=.02	ANGLE=90.0
	BOTT:	SMAX=-.01	SMIN=	-.04	TMAX=.02	ANGLE=90.0
	7	-.01	-.01	-.15	.07	.35
		.14	.08	-.02	-.03	.02
	TOP :	SMAX=.05	SMIN=	-.11	TMAX=.08	ANGLE=90.0
	BOTT:	SMAX=.03	SMIN=	-.06	TMAX=.04	ANGLE=90.0
	8	-.01	.01	-.67	-1.83	.48
		.35	.26	.02	-.02	.04
	TOP :	SMAX=-.04	SMIN=	-.37	TMAX=.17	ANGLE=22.5
	BOTT:	SMAX=.29	SMIN=	.12	TMAX=.09	ANGLE=14.6
	9	.00	.00	-.45	-1.50	.13
		.24	.21	-.01	-.02	.01
	TOP :	SMAX=-.08	SMIN=	-.27	TMAX=.10	ANGLE=8.4
	BOTT:	SMAX=.24	SMIN=	.07	TMAX=.08	ANGLE=5.4
	10	-.01	.02	-1.66	-3.69	-.28
		.59	.49	-.04	-.05	-.02
	TOP :	SMAX=-.31	SMIN=	-.68	TMAX=.19	ANGLE=-11.1
	BOTT:	SMAX=.56	SMIN=	.23	TMAX=.17	ANGLE=-3.8
	11	.01	-.02	1.66	3.69	.28
		.59	.49	.04	.05	.02
	TOP :	SMAX=.68	SMIN=	.31	TMAX=.19	ANGLE=-11.1
	BOTT:	SMAX=-.23	SMIN=	-.56	TMAX=.17	ANGLE=-3.8
	12	.00	.00	-.04	-.14	.01
		.02	.02	.00	.00	.00
	TOP :	SMAX=-.01	SMIN=	-.02	TMAX=.01	ANGLE=90.0
	BOTT:	SMAX=.02	SMIN=	.01	TMAX=.01	ANGLE=90.0
	13	-.03	.03	-3.11	-6.79	-.56
		1.24	1.17	-.72	-.11	.08
	TOP :	SMAX=-1.23	SMIN=	-1.25	TMAX=.01	ANGLE=90.0
	BOTT:	SMAX=1.04	SMIN=	-.23	TMAX=.64	ANGLE=-8.0
	14	-.03	.03	-3.34	-8.25	-1.42
		1.52	1.54	-.91	-.12	.04
	TOP :	SMAX=-1.29	SMIN=	-1.67	TMAX=.19	ANGLE=90.0
	BOTT:	SMAX=1.30	SMIN=	-.40	TMAX=.85	ANGLE=-9.6
	101	-.03	.03	-3.23	-10.50	.84
		1.66	1.48	-.05	-.09	.05
	TOP :	SMAX=-.56	SMIN=	-1.87	TMAX=.66	ANGLE=8.4
	BOTT:	SMAX=1.66	SMIN=	.48	TMAX=.59	ANGLE=4.4

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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH

FORCE OR STRESS = FORCE/WIDTH/THICK,    MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		-.02	.02	-2.05	-6.54					.50	
		1.04	.91	-.04	-.07					.03	
	TOP : SMAX=	-.36	SMIN=	-1.18	TMAX=	.41	ANGLE=			8.0	
	BOTT: SMAX=	1.02	SMIN=	.30	TMAX=	.36	ANGLE=			4.3	
103		-.03	.02	-2.19	-6.64					.74	
		1.09	.91	-.05	-.09					.04	
	TOP : SMAX=	-.38	SMIN=	-1.23	TMAX=	.43	ANGLE=			11.7	
	BOTT: SMAX=	1.03	SMIN=	.31	TMAX=	.36	ANGLE=			6.4	
104		-.03	.03	-2.61	-8.17					.85	
		1.32	1.14	-.02	-.08					.06	
	TOP : SMAX=	-.41	SMIN=	-1.48	TMAX=	.53	ANGLE=			10.9	
	BOTT: SMAX=	1.29	SMIN=	.41	TMAX=	.44	ANGLE=			5.5	
105		-.02	.02	-2.43	-7.90					.57	
		1.25	1.11	-.04	-.08					.03	
	TOP : SMAX=	-.43	SMIN=	-1.41	TMAX=	.49	ANGLE=			7.5	
	BOTT: SMAX=	1.24	SMIN=	.36	TMAX=	.44	ANGLE=			4.1	
106		.06	.15	-10.05	-23.13					-5.40	
		4.28	3.12	-.53	-.62					-.15	
	TOP : SMAX=	-1.79	SMIN=	-4.89	TMAX=	1.55	ANGLE=			-21.4	
	BOTT: SMAX=	3.48	SMIN=	.91	TMAX=	1.28	ANGLE=			-17.8	
107		.07	.12	-8.39	-19.44					-5.12	
		3.71	2.67	-.48	-.57					-.13	
	TOP : SMAX=	-1.47	SMIN=	-4.22	TMAX=	1.37	ANGLE=			-22.8	
	BOTT: SMAX=	2.93	SMIN=	.65	TMAX=	1.14	ANGLE=			-19.8	
108		-.06	.06	-5.81	-17.53					.22	
		2.70	2.54	-.52	-.19					.08	
	TOP : SMAX=	-1.48	SMIN=	-3.12	TMAX=	.82	ANGLE=			4.0	
	BOTT: SMAX=	2.73	SMIN=	.45	TMAX=	1.14	ANGLE=			-1.0	
109		-.13	.13	-12.93	-41.90					2.91	
		6.64	5.88	-.21	-.41					.17	
	TOP : SMAX=	-2.28	SMIN=	-7.48	TMAX=	2.60	ANGLE=			7.3	
	BOTT: SMAX=	6.60	SMIN=	1.92	TMAX=	2.34	ANGLE=			3.9	
406	15	.06	.10	-8.21	-3.29					1.60	
		.88	2.07	.47	-.19					-.43	
	TOP : SMAX=	-.64	SMIN=	-1.00	TMAX=	.18	ANGLE=			31.8	
	BOTT: SMAX=	2.11	SMIN=	.08	TMAX=	1.02	ANGLE=			-21.7	
	2	.00	.01	-.65	-1.24					-.06	
		.20	.17	.03	-.02					.01	
	TOP : SMAX=	-.08	SMIN=	-.22	TMAX=	.07	ANGLE=			-.9	
	BOTT: SMAX=	.20	SMIN=	.14	TMAX=	.03	ANGLE=			90.0	
	3	.00	.01	-.54	-1.42					.02	
		.23	.19	.00	-.02					.00	
	TOP : SMAX=	-.09	SMIN=	-.26	TMAX=	.08	ANGLE=			2.8	
	BOTT: SMAX=	.22	SMIN=	.09	TMAX=	.06	ANGLE=			-.1	
	4	.00	.01	-.45	-.92					-.06	
		.15	.13	.01	-.01					.00	
	TOP : SMAX=	-.07	SMIN=	-.17	TMAX=	.05	ANGLE=			-3.6	
	BOTT: SMAX=	.15	SMIN=	.08	TMAX=	.03	ANGLE=			90.0	
	5	.00	.00	-.19	-.74					-.15	
		.10	.15	-.01	.01					.03	
	TOP : SMAX=	-.04	SMIN=	-.12	TMAX=	.04	ANGLE=			90.0	
	BOTT: SMAX=	.15	SMIN=	.00	TMAX=	.08	ANGLE=			-22.1	
	6	.00	.00	-.06	-.11					-.02	
		.02	.02	.00	.00					.00	
	TOP : SMAX=	-.01	SMIN=	-.02	TMAX=	.01	ANGLE=			90.0	
	BOTT: SMAX=	.02	SMIN=	.01	TMAX=	.01	ANGLE=			90.0	
	7	.00	-.01	-.50	-1.24					-.11	
		.20	.18	-.01	-.02					.02	
	TOP : SMAX=	-.09	SMIN=	-.22	TMAX=	.07	ANGLE=			2.4	
	BOTT: SMAX=	.20	SMIN=	.06	TMAX=	.07	ANGLE=			-17.9	

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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH

-----  
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.00	.01	-.38	-.55						
		.09	.11	.01	.00						
TOP :	SMAX=	-.04	SMIN=	-.10	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.13	SMIN=	.04	TMAX=	.05	ANGLE=	90.0			
	9	.00	.00	-.30	-.84						
		.13	.12	.00	-.01						
TOP :	SMAX=	-.05	SMIN=	-.15	TMAX=	.05	ANGLE=	-3.1			
BOTT:	SMAX=	.13	SMIN=	.05	TMAX=	.04	ANGLE=	90.0			
	10	.01	.01	-1.13	-.87						
		.16	.24	.09	-.02						
TOP :	SMAX=	-.07	SMIN=	-.19	TMAX=	.06	ANGLE=	90.0			
BOTT:	SMAX=	.28	SMIN=	.12	TMAX=	.08	ANGLE=	-2.1			
	11	-.01	-.01	1.13	.87						
		.16	.24	-.09	.02						
TOP :	SMAX=	.19	SMIN=	.07	TMAX=	.06	ANGLE=	90.0			
BOTT:	SMAX=	-.12	SMIN=	-.28	TMAX=	.08	ANGLE=	-2.1			
	12	.00	.00	-.03	-.10						
		.02	.01	.00	.00						
TOP :	SMAX=	-.01	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.02	SMIN=	.01	TMAX=	.00	ANGLE=	90.0			
	13	.01	.01	-2.50	-1.92						
		.50	.33	-.04	-.08						
TOP :	SMAX=	-.28	SMIN=	-.58	TMAX=	.15	ANGLE=	90.0			
BOTT:	SMAX=	.38	SMIN=	.24	TMAX=	.07	ANGLE=	13.4			
	14	.02	.02	-2.87	-3.15						
		.65	.45	-.01	-.10						
TOP :	SMAX=	-.38	SMIN=	-.75	TMAX=	.19	ANGLE=	-34.2			
BOTT:	SMAX=	.49	SMIN=	.40	TMAX=	.05	ANGLE=	90.0			
	101	.00	.02	-2.06	-5.43						
		.85	.79	.05	-.05						
TOP :	SMAX=	-.29	SMIN=	-.95	TMAX=	.33	ANGLE=	-4.4			
BOTT:	SMAX=	.90	SMIN=	.35	TMAX=	.28	ANGLE=	-15.5			
	102	.00	.01	-1.38	-3.56						
		.56	.51	.03	-.04						
TOP :	SMAX=	-.19	SMIN=	-.63	TMAX=	.22	ANGLE=	-4.7			
BOTT:	SMAX=	.58	SMIN=	.24	TMAX=	.17	ANGLE=	-15.5			
	103	.00	.01	-1.73	-4.47						
		.70	.64	.03	-.05						
TOP :	SMAX=	-.26	SMIN=	-.79	TMAX=	.27	ANGLE=	-3.3			
BOTT:	SMAX=	.73	SMIN=	.28	TMAX=	.23	ANGLE=	-15.7			
	104	.00	.02	-1.64	-3.91						
		.60	.57	.04	-.03						
TOP :	SMAX=	-.23	SMIN=	-.69	TMAX=	.23	ANGLE=	-2.0			
BOTT:	SMAX=	.66	SMIN=	.27	TMAX=	.19	ANGLE=	-19.2			
	105	.00	.02	-1.57	-4.14						
		.65	.59	.04	-.04						
TOP :	SMAX=	-.22	SMIN=	-.73	TMAX=	.25	ANGLE=	-4.4			
BOTT:	SMAX=	.68	SMIN=	.27	TMAX=	.20	ANGLE=	-14.3			
	106	.04	.07	-6.77	-5.27						
		1.02	1.31	.28	-.17						
TOP :	SMAX=	-.73	SMIN=	-1.17	TMAX=	.22	ANGLE=	-31.9			
BOTT:	SMAX=	1.51	SMIN=	.61	TMAX=	.45	ANGLE=	-19.5			
	107	.03	.06	-5.64	-4.40						
		.87	1.09	.18	-.14						
TOP :	SMAX=	-.65	SMIN=	-.98	TMAX=	.17	ANGLE=	-34.2			
BOTT:	SMAX=	1.24	SMIN=	.47	TMAX=	.39	ANGLE=	-22.9			
	108	.01	.04	-4.10	-8.52						
		1.36	1.16	.06	-.12						
TOP :	SMAX=	-.60	SMIN=	-1.56	TMAX=	.48	ANGLE=	-9.5			
BOTT:	SMAX=	1.34	SMIN=	.71	TMAX=	.32	ANGLE=	-13.8			
	109	-.01	.08	-8.32	-21.71						
		3.40	3.10	.21	-.20						
TOP :	SMAX=	-1.16	SMIN=	-3.83	TMAX=	1.34	ANGLE=	-4.7			
BOTT:	SMAX=	3.56	SMIN=	1.45	TMAX=	1.05	ANGLE=	-14.9			

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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH

FORCE OR STRESS = FORCE/WIDTH/THICK,    MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
407	15	.00	.06	-2.99	2.97			4.33			
		1.02	2.36	.96	.08			-.22			
	TOP :	SMAX=	SMIN=	.02	TMAX=	.51	ANGLE=	-41.8			
	BOTT:	SMAX=	SMIN=	-.80	TMAX=	1.33	ANGLE=	-22.5			
	2	.00	.01	-.33	-.43			-.02			
		.08	.11	.08	.01			.00			
	TOP :	SMAX=	SMIN=	-.07	TMAX=	.04	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	.08	TMAX=	.03	ANGLE=	90.0			
	3	.00	.01	-.31	-.83			-.21			
		.14	.13	.01	.00			.00			
	TOP :	SMAX=	SMIN=	-.15	TMAX=	.06	ANGLE=	-17.1			
	BOTT:	SMAX=	SMIN=	.05	TMAX=	.05	ANGLE=	90.0			
	4	.00	.01	-.20	-.32			-.24			
		.09	.09	.02	.00			.00			
	TOP :	SMAX=	SMIN=	-.08	TMAX=	.05	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	.01	TMAX=	.04	ANGLE=	90.0			
	5	.00	.00	-.03	-.26			-.21			
		.05	.10	-.03	.00			.01			
	TOP :	SMAX=	SMIN=	-.06	TMAX=	.02	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.05	TMAX=	.06	ANGLE=	90.0			
	6	.00	.00	-.11	-.39			-.01			
		.06	.05	.00	.00			.00			
	TOP :	SMAX=	SMIN=	-.07	TMAX=	.03	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	.02	TMAX=	.02	ANGLE=	90.0			
	7	.00	.00	-.61	-2.24			-.11			
		.34	.33	-.01	-.01			.01			
	TOP :	SMAX=	SMIN=	-.39	TMAX=	.14	ANGLE=	-1.8			
	BOTT:	SMAX=	SMIN=	.09	TMAX=	.14	ANGLE=	-5.9			
	8	.00	.00	-.11	-.03			-.26			
		.04	.11	.01	.01			.02			
	TOP :	SMAX=	SMIN=	-.03	TMAX=	.02	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.04	TMAX=	.06	ANGLE=	90.0			
	9	.00	.00	-.15	-.45			-.04			
		.07	.06	.01	.00			.00			
	TOP :	SMAX=	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	.03	TMAX=	.02	ANGLE=	90.0			
	10	.00	.01	-.57	-.08			.42			
		.12	.31	.18	.01			-.02			
	TOP :	SMAX=	SMIN=	-.03	TMAX=	.07	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.01	TMAX=	.16	ANGLE=	-17.7			
	11	.00	-.01	.57	.08			-.42			
		.12	.31	-.18	-.01			.02			
	TOP :	SMAX=	SMIN=	-.11	TMAX=	.07	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.31	TMAX=	.16	ANGLE=	-17.7			
	12	.00	.00	-.02	-.08			.00			
		.01	.01	.00	.00			.00			
	TOP :	SMAX=	SMIN=	-.01	TMAX=	.01	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
	13	.00	.02	-1.54	-.67			.71			
		.20	.68	.36	-.01			-.10			
	TOP :	SMAX=	SMIN=	-.12	TMAX=	.11	ANGLE=	5.0			
	BOTT:	SMAX=	SMIN=	.02	TMAX=	.34	ANGLE=	-20.1			
	14	.00	.02	-1.97	-1.30			1.37			
		.40	.96	.50	-.02			-.12			
	TOP :	SMAX=	SMIN=	-.26	TMAX=	.23	ANGLE=	13.9			
	BOTT:	SMAX=	SMIN=	.04	TMAX=	.47	ANGLE=	-23.9			
	101	.00	.02	-.95	-2.52			-.27			
		.41	.36	.09	-.02			.01			
	TOP :	SMAX=	SMIN=	-.44	TMAX=	.19	ANGLE=	-5.9			
	BOTT:	SMAX=	SMIN=	.23	TMAX=	.09	ANGLE=	-17.1			



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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.00	.01	-.72	-1.94	-.15					
		.32	.27	.07	-.01	.00					
TOP :	SMAX=	-.05	SMIN=	-.34	TMAX=	.15	ANGLE=	-4.5			
BOTT:	SMAX=	.31	SMIN=	.18	TMAX=	.07	ANGLE=	-12.2			
103		.00	.01	-1.11	-3.42	-.23					
		.54	.48	.06	-.02	.01					
TOP :	SMAX=	-.12	SMIN=	-.59	TMAX=	.23	ANGLE=	-3.5			
BOTT:	SMAX=	.56	SMIN=	.24	TMAX=	.16	ANGLE=	-8.7			
104		.00	.02	-.72	-1.65	-.35					
		.27	.27	.07	-.01	.02					
TOP :	SMAX=	-.04	SMIN=	-.29	TMAX=	.13	ANGLE=	-9.5			
BOTT:	SMAX=	.32	SMIN=	.15	TMAX=	.08	ANGLE=	90.0			
105		.00	.02	-.75	-1.99	-.17					
		.33	.28	.07	-.02	.00					
TOP :	SMAX=	-.05	SMIN=	-.35	TMAX=	.15	ANGLE=	-5.2			
BOTT:	SMAX=	.32	SMIN=	.19	TMAX=	.07	ANGLE=	-13.9			
106		.00	.05	-2.96	.05	2.64					
		.55	1.65	.79	.03	-.17					
TOP :	SMAX=	.47	SMIN=	-.13	TMAX=	.30	ANGLE=	32.2			
BOTT:	SMAX=	1.53	SMIN=	-.22	TMAX=	.88	ANGLE=	-21.9			
107		.00	.05	-2.38	.14	2.22					
		.43	1.35	.61	.03	-.15					
TOP :	SMAX=	.37	SMIN=	-.11	TMAX=	.24	ANGLE=	34.8			
BOTT:	SMAX=	1.23	SMIN=	-.21	TMAX=	.72	ANGLE=	-22.8			
108		.00	.04	-2.24	-3.90	.41					
		.69	.73	.38	-.04	-.06					
TOP :	SMAX=	.01	SMIN=	-.69	TMAX=	.35	ANGLE=	.9			
BOTT:	SMAX=	.83	SMIN=	.54	TMAX=	.14	ANGLE=	-30.3			
109		.00	.09	-3.92	-10.18	-.87					
		1.68	1.45	.42	-.08	.01					
TOP :	SMAX=	-.22	SMIN=	-1.78	TMAX=	.78	ANGLE=	-5.0			
BOTT:	SMAX=	1.66	SMIN=	1.03	TMAX=	.32	ANGLE=	-14.8			
408	15	-.02	.03	-.67	4.29	3.99					
		1.32	1.78	.77	.13	-.05					
TOP :	SMAX=	1.38	SMIN=	.13	TMAX=	.62	ANGLE=	-40.6			
BOTT:	SMAX=	1.17	SMIN=	-.87	TMAX=	1.02	ANGLE=	-22.1			
2		.00	.01	-.11	.04	.01					
		.04	.08	.06	.01	.00					
TOP :	SMAX=	.05	SMIN=	.01	TMAX=	.02	ANGLE=	90.0			
BOTT:	SMAX=	.08	SMIN=	.00	TMAX=	.04	ANGLE=	90.0			
3		.00	.01	-.11	-.22	-.23					
		.08	.07	.02	.00	.00					
TOP :	SMAX=	.03	SMIN=	-.06	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	.07	SMIN=	.00	TMAX=	.04	ANGLE=	90.0			
4		.00	.00	-.04	.05	-.23					
		.08	.07	.02	.01	.00					
TOP :	SMAX=	.06	SMIN=	-.03	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	.05	SMIN=	-.03	TMAX=	.04	ANGLE=	90.0			
5		.00	.00	.04	.01	-.17					
		.05	.06	-.03	.00	.00					
TOP :	SMAX=	.02	SMIN=	-.04	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.02	SMIN=	-.05	TMAX=	.03	ANGLE=	90.0			
6		.00	.00	-.13	-.51	-.01					
		.08	.07	.00	.00	.00					
TOP :	SMAX=	-.02	SMIN=	-.09	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.08	SMIN=	.02	TMAX=	.03	ANGLE=	90.0			
7		.00	.00	-.62	-2.44	-.09					
		.38	.36	-.01	-.01	.00					
TOP :	SMAX=	-.11	SMIN=	-.42	TMAX=	.15	ANGLE=	-2.6			
BOTT:	SMAX=	.40	SMIN=	.09	TMAX=	.15	ANGLE=	-2.8			

PRELIMINARY DESIGN OF TRANSPORTER  
\* DI: BCAF00000-01717-0200-00007

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.00	.00	.02	.17						
		.07	.09	.00	.01						
	TOP : SMAX=	.06	SMIN=	-.02	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	.04	SMIN=	-.06	TMAX=	.05	ANGLE=	90.0			
	9	.00	.00	-.05	-.12						
		.02	.02	.01	.00						
	TOP : SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.02	SMIN=	.01	TMAX=	.00	ANGLE=	90.0			
	10	.00	.01	-.20	.23						
		.15	.24	.14	.01						
	TOP : SMAX=	.15	SMIN=	.01	TMAX=	.07	ANGLE=	90.0			
	BOTT: SMAX=	.21	SMIN=	-.06	TMAX=	.13	ANGLE=	-20.0			
	11	.00	-.01	.20	-.23						
		.15	.24	-.14	-.01						
	TOP : SMAX=	-.01	SMIN=	-.15	TMAX=	.07	ANGLE=	90.0			
	BOTT: SMAX=	.06	SMIN=	-.21	TMAX=	.13	ANGLE=	-20.0			
	12	.00	.00	-.01	-.04						
		.01	.00	.00	.00						
	TOP : SMAX=	.00	SMIN=	-.01	TMAX=	.00	ANGLE=	90.0			
	BOTT: SMAX=	.01	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
	13	.00	.01	-.73	.10						
		.29	.65	.36	.02						
	TOP : SMAX=	.28	SMIN=	-.01	TMAX=	.14	ANGLE=	21.8			
	BOTT: SMAX=	.59	SMIN=	-.11	TMAX=	.35	ANGLE=	-23.0			
	14	.00	.02	-.98	.05						
		.47	.88	.50	.01						
	TOP : SMAX=	.43	SMIN=	-.07	TMAX=	.25	ANGLE=	25.8			
	BOTT: SMAX=	.80	SMIN=	-.14	TMAX=	.47	ANGLE=	-23.1			
	101	.00	.02	-.25	-.48						
		.11	.10	.08	.00						
	TOP : SMAX=	.04	SMIN=	-.09	TMAX=	.06	ANGLE=	-12.0			
	BOTT: SMAX=	.12	SMIN=	.08	TMAX=	.02	ANGLE=	90.0			
	102	.00	.01	-.28	-.73						
		.13	.11	.06	-.01						
	TOP : SMAX=	.01	SMIN=	-.13	TMAX=	.07	ANGLE=	-5.4			
	BOTT: SMAX=	.12	SMIN=	.10	TMAX=	.01	ANGLE=	90.0			
	103	.00	.02	-.67	-2.28						
		.37	.32	.05	-.01						
	TOP : SMAX=	-.06	SMIN=	-.39	TMAX=	.17	ANGLE=	-4.0			
	BOTT: SMAX=	.37	SMIN=	.16	TMAX=	.10	ANGLE=	-.6			
	104	.00	.02	-.16	-.19						
		.09	.09	.06	.00						
	TOP : SMAX=	.05	SMIN=	-.05	TMAX=	.05	ANGLE=	90.0			
	BOTT: SMAX=	.10	SMIN=	.02	TMAX=	.04	ANGLE=	90.0			
	105	.00	.02	-.21	-.42						
		.09	.09	.06	.00						
	TOP : SMAX=	.03	SMIN=	-.08	TMAX=	.05	ANGLE=	-9.2			
	BOTT: SMAX=	.10	SMIN=	.06	TMAX=	.02	ANGLE=	90.0			
	106	-.01	.03	-.92	2.09						
		.82	1.35	.67	.08						
	TOP : SMAX=	.86	SMIN=	.09	TMAX=	.39	ANGLE=	90.0			
	BOTT: SMAX=	1.04	SMIN=	-.49	TMAX=	.76	ANGLE=	-22.0			
	107	-.01	.03	-.72	1.86						
		.68	1.11	.53	.07						
	TOP : SMAX=	.71	SMIN=	.08	TMAX=	.32	ANGLE=	90.0			
	BOTT: SMAX=	.83	SMIN=	-.43	TMAX=	.63	ANGLE=	-22.5			
	108	.01	.04	-.84	-.62						
		.31	.56	.36	.00						
	TOP : SMAX=	.24	SMIN=	-.12	TMAX=	.18	ANGLE=	12.5			
	BOTT: SMAX=	.58	SMIN=	.03	TMAX=	.27	ANGLE=	-22.0			
	109	.02	.09	-1.10	-2.02						
		.48	.48	.35	-.02						
	TOP : SMAX=	.18	SMIN=	-.36	TMAX=	.27	ANGLE=	-8.0			
	BOTT: SMAX=	.55	SMIN=	.30	TMAX=	.12	ANGLE=	-15.0			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
409	15	-.02 1.15	-.01 1.05	.59 .32	3.31 .09	3.23 .04
	TOP : SMAX=	1.12	SMIN=	-.06	TMAX=	.59 ANGLE= -39.6
	BOTT: SMAX=	.48	SMIN=	-.72	TMAX=	.60 ANGLE= -27.7
	2	.00 .07	.00 .07	.08 .03	.42 .01	-.02 -.01
	TOP : SMAX=	.08	SMIN=	.04	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	.02	SMIN=	-.06	TMAX=	.04 ANGLE= 90.0
	3	.00 .09	.01 .09	.07 .02	.35 .01	-.24 .00
	TOP : SMAX=	.09	SMIN=	.00	TMAX=	.05 ANGLE= 90.0
	BOTT: SMAX=	.03	SMIN=	-.07	TMAX=	.05 ANGLE= 90.0
	4	.00 .07	.00 .06	.07 .01	.31 .00	-.14 .00
	TOP : SMAX=	.07	SMIN=	.01	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.01	SMIN=	-.05	TMAX=	.03 ANGLE= 90.0
	5	.00 .06	.00 .04	.07 -.01	.23 .00	-.12 .00
	TOP : SMAX=	.05	SMIN=	-.01	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	-.02	SMIN=	-.05	TMAX=	.02 ANGLE= 90.0
	6	.00 .08	.00 .08	-.13 .00	-.53 .00	.00 .00
	TOP : SMAX=	-.02	SMIN=	-.09	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.08	SMIN=	.02	TMAX=	.03 ANGLE= 90.0
	7	.00 .33	.01 .32	-.53 -.01	-2.16 -.01	-.04 .00
	TOP : SMAX=	-.10	SMIN=	-.37	TMAX=	.14 ANGLE= -2.3
	BOTT: SMAX=	.35	SMIN=	.08	TMAX=	.13 ANGLE= -.4
	8	.00 .08	.00 .07	.07 -.01	.23 .00	-.23 .00
	TOP : SMAX=	.07	SMIN=	-.02	TMAX=	.04 ANGLE= 90.0
	BOTT: SMAX=	.01	SMIN=	-.06	TMAX=	.04 ANGLE= 90.0
	9	.00 .03	.00 .03	.05 .01	.22 .00	.00 .00
	TOP : SMAX=	.04	SMIN=	.01	TMAX=	.01 ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	-.04	TMAX=	.02 ANGLE= 90.0
	10	.00 .15	.00 .15	.07 .06	.36 .01	.43 .00
	TOP : SMAX=	.14	SMIN=	.00	TMAX=	.07 ANGLE= 90.0
	BOTT: SMAX=	.08	SMIN=	-.09	TMAX=	.09 ANGLE= 90.0
	11	.00 .15	.00 .15	-.07 -.06	-.36 -.01	-.43 .00
	TOP : SMAX=	.00	SMIN=	-.14	TMAX=	.07 ANGLE= 90.0
	BOTT: SMAX=	.09	SMIN=	-.08	TMAX=	.09 ANGLE= 90.0
	12	.00 .00	.00 .00	.00 .00	.02 .00	.00 .00
	TOP : SMAX=	.00	SMIN=	.00	TMAX=	.00 ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	.00	TMAX=	.00 ANGLE= 90.0
	13	.00 .33	.01 .49	-.01 .22	.71 .02	1.16 -.04
	TOP : SMAX=	.33	SMIN=	.02	TMAX=	.16 ANGLE= 90.0
	BOTT: SMAX=	.34	SMIN=	-.22	TMAX=	.28 ANGLE= -28.1
	14	.00 .49	.01 .62	.01 .28	1.12 .03	1.57 -.02
	TOP : SMAX=	.49	SMIN=	.01	TMAX=	.24 ANGLE= 90.0
	BOTT: SMAX=	.42	SMIN=	-.30	TMAX=	.36 ANGLE= -25.9
	101	.00 .23	.02 .26	.39 .04	1.56 .01	.15 -.02
	TOP : SMAX=	.27	SMIN=	.10	TMAX=	.08 ANGLE= -.3
	BOTT: SMAX=	-.02	SMIN=	-.26	TMAX=	.12 ANGLE= -11.6

PRELIMINARY DESIGN OF TRANSPORTER  
\* DI: BCAF00000-01717-0200-00007

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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK,    MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
	102	.00 .08	.01 .12	.14 .03	.57 .00	.12 -.02
	TOP : SMAX=	.10	SMIN=	.05	TMAX=	ANGLE= 90.0
	BOTT: SMAX=	.02	SMIN=	-.11	TMAX=	ANGLE= 90.0
	103	.00 .12	.02 .12	-.18 .02	-.73 -.01	.09 -.02
	TOP : SMAX=	-.01	SMIN=	-.13	TMAX=	ANGLE= -1.6
	BOTT: SMAX=	.13	SMIN=	.04	TMAX=	ANGLE= 90.0
	104	.00 .18	.01 .18	.30 .02	1.18 .01	-.06 -.01
	TOP : SMAX=	.21	SMIN=	.07	TMAX=	ANGLE= 10.4
	BOTT: SMAX=	-.03	SMIN=	-.19	TMAX=	ANGLE= -1.8
	105	.00 .17	.02 .19	.29 .03	1.17 .00	.12 -.02
	TOP : SMAX=	.20	SMIN=	.08	TMAX=	ANGLE= -1.5
	BOTT: SMAX=	-.01	SMIN=	-.20	TMAX=	ANGLE= -11.6
	106	-.01 .85	.01 .92	.48 .32	2.82 .06	2.49 -.01
	TOP : SMAX=	.88	SMIN=	.05	TMAX=	ANGLE= -40.3
	BOTT: SMAX=	.44	SMIN=	-.62	TMAX=	ANGLE= -26.3
	107	-.01 .71	.01 .78	.41 .25	2.46 .05	2.06 -.01
	TOP : SMAX=	.73	SMIN=	.05	TMAX=	ANGLE= -39.2
	BOTT: SMAX=	.36	SMIN=	-.53	TMAX=	ANGLE= -26.2
	108	.00 .45	.03 .60	.49 .20	2.55 .02	1.03 -.04
	TOP : SMAX=	.52	SMIN=	.20	TMAX=	ANGLE= -28.7
	BOTT: SMAX=	.19	SMIN=	-.48	TMAX=	ANGLE= -19.6
	109	.01 .92	.08 1.05	1.52 .17	6.21 .02	.76 -.09
	TOP : SMAX=	1.06	SMIN=	.42	TMAX=	ANGLE= -3.0
	BOTT: SMAX=	-.04	SMIN=	-1.07	TMAX=	ANGLE= -12.7
410	15	-.02 .80	-.02 .66	.89 -.12	1.03 .02	2.42 .05
	TOP : SMAX=	.57	SMIN=	-.35	TMAX=	ANGLE= -40.0
	BOTT: SMAX=	.15	SMIN=	-.57	TMAX=	ANGLE= 40.5
	2	.00 .10	.00 .09	.20 .01	.64 .01	-.01 -.01
	TOP : SMAX=	.11	SMIN=	.04	TMAX=	ANGLE= 90.0
	BOTT: SMAX=	-.03	SMIN=	-.10	TMAX=	ANGLE= 90.0
	3	.00 .14	.00 .14	.19 .03	.83 .01	-.18 .00
	TOP : SMAX=	.16	SMIN=	.05	TMAX=	ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	-.14	TMAX=	ANGLE= 12.2
	4	.00 .08	.00 .07	.14 .00	.46 .00	-.08 .00
	TOP : SMAX=	.09	SMIN=	.02	TMAX=	ANGLE= 90.0
	BOTT: SMAX=	-.02	SMIN=	-.08	TMAX=	ANGLE= 90.0
	5	.00 .07	.00 .06	.08 .00	.39 .00	-.06 -.01
	TOP : SMAX=	.07	SMIN=	.01	TMAX=	ANGLE= 90.0
	BOTT: SMAX=	-.01	SMIN=	-.06	TMAX=	ANGLE= 90.0
	6	.00 .07	.00 .06	-.11 .00	-.44 .00	.00 .00
	TOP : SMAX=	-.02	SMIN=	-.08	TMAX=	ANGLE= 90.0
	BOTT: SMAX=	.07	SMIN=	.02	TMAX=	ANGLE= 90.0
	7	.00 .22	.01 .21	-.36 .00	-1.44 -.01	.00 -.01
	TOP : SMAX=	-.06	SMIN=	-.25	TMAX=	ANGLE= -1.7
	BOTT: SMAX=	.23	SMIN=	.06	TMAX=	ANGLE= 2.2

PRELIMINARY DESIGN OF TRANSPORTER  
 \* DI: BCAF00000-01717-0200-00007

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.00	.00	.07	.21	-.15					
		.06	.05	-.01	.00	.00					
	TOP : SMAX=	.05	SMIN=	-.01	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	-.05	TMAX=	.02	ANGLE=	90.0			
	9	.00	.00	.13	.50	.01					
		.08	.07	.00	.00	.00					
	TOP : SMAX=	.08	SMIN=	.02	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	-.02	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			
	10	.00	.00	.23	.36	.30					
		.11	.09	-.02	.00	.01					
	TOP : SMAX=	.10	SMIN=	-.02	TMAX=	.06	ANGLE=	90.0			
	BOTT: SMAX=	-.01	SMIN=	-.10	TMAX=	.04	ANGLE=	90.0			
	11	.00	.00	-.23	-.36	-.30					
		.11	.09	.02	.00	-.01					
	TOP : SMAX=	.02	SMIN=	-.10	TMAX=	.06	ANGLE=	90.0			
	BOTT: SMAX=	.10	SMIN=	.01	TMAX=	.04	ANGLE=	90.0			
	12	.00	.00	.02	.07	.00					
		.01	.01	.00	.00	.00					
	TOP : SMAX=	.01	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	-.01	TMAX=	.00	ANGLE=	90.0			
	13	-.01	.00	.49	1.02	.87					
		.28	.31	.04	.02	-.01					
	TOP : SMAX=	.29	SMIN=	.02	TMAX=	.14	ANGLE=	90.0			
	BOTT: SMAX=	.07	SMIN=	-.26	TMAX=	.17	ANGLE=	-35.1			
	14	-.01	.01	.75	1.70	1.09					
		.43	.38	.03	.03	.01					
	TOP : SMAX=	.44	SMIN=	.03	TMAX=	.21	ANGLE=	-33.9			
	BOTT: SMAX=	.01	SMIN=	-.37	TMAX=	.19	ANGLE=	-32.3			
	101	.00	.01	.86	3.11	.19					
		.47	.46	-.01	.01	-.02					
	TOP : SMAX=	.53	SMIN=	.14	TMAX=	.20	ANGLE=	-2.1			
	BOTT: SMAX=	-.14	SMIN=	-.52	TMAX=	.19	ANGLE=	-7.6			
	102	.00	.01	.47	1.64	.14					
		.25	.25	.00	.00	-.01					
	TOP : SMAX=	.28	SMIN=	.07	TMAX=	.10	ANGLE=	-3.6			
	BOTT: SMAX=	-.08	SMIN=	-.28	TMAX=	.10	ANGLE=	-10.0			
	103	.00	.02	.27	.84	.14					
		.13	.14	-.01	.00	-.02					
	TOP : SMAX=	.14	SMIN=	.04	TMAX=	.05	ANGLE=	-4.7			
	BOTT: SMAX=	-.04	SMIN=	-.15	TMAX=	.06	ANGLE=	90.0			
	104	.00	.01	.61	2.17	.02					
		.33	.32	-.01	.01	-.01					
	TOP : SMAX=	.37	SMIN=	.09	TMAX=	.14	ANGLE=	1.9			
	BOTT: SMAX=	-.11	SMIN=	-.36	TMAX=	.12	ANGLE=	-3.8			
	105	.00	.01	.66	2.39	.14					
		.36	.36	.00	.01	-.01					
	TOP : SMAX=	.41	SMIN=	.11	TMAX=	.15	ANGLE=	-2.3			
	BOTT: SMAX=	-.11	SMIN=	-.40	TMAX=	.14	ANGLE=	-7.2			
	106	-.01	.00	1.16	2.49	1.88					
		.69	.62	-.05	.02	.01					
	TOP : SMAX=	.65	SMIN=	-.07	TMAX=	.36	ANGLE=	-32.9			
	BOTT: SMAX=	-.01	SMIN=	-.62	TMAX=	.31	ANGLE=	-38.1			
	107	-.01	.00	.94	2.13	1.59					
		.58	.53	-.03	.02	.01					
	TOP : SMAX=	.55	SMIN=	-.05	TMAX=	.30	ANGLE=	-32.8			
	BOTT: SMAX=	.01	SMIN=	-.53	TMAX=	.27	ANGLE=	-36.9			
	108	.00	.02	1.48	4.84	.82					
		.77	.74	.01	.02	-.02					
	TOP : SMAX=	.85	SMIN=	.23	TMAX=	.31	ANGLE=	-11.3			
	BOTT: SMAX=	-.20	SMIN=	-.82	TMAX=	.31	ANGLE=	-14.8			
	109	.00	.05	3.47	12.46	.87					
		1.90	1.85	-.03	.04	-.07					
	TOP : SMAX=	2.12	SMIN=	.55	TMAX=	.78	ANGLE=	-2.9			
	BOTT: SMAX=	-.57	SMIN=	-2.07	TMAX=	.75	ANGLE=	-8.1			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH				
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH						
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FXY
411	15	-.01 .53	-.02 .78	.72 -.40	-1.18 -.03	1.62 .00
	TOP :	SMAX=.01	SMIN=	-.52	TMAX=.27	ANGLE=90.0
	BOTT:	SMAX=.26	SMIN=	-.61	TMAX=.44	ANGLE=19.4
	2	.00 .11	.00 .10	.25 -.01	.73 .00	.00 .00
	TOP :	SMAX=.13	SMIN=	.03	TMAX=.05	ANGLE=90.0
	BOTT:	SMAX=	SMIN=	-.12	TMAX=.03	ANGLE=90.0
	3	.00 .17	.00 .17	.25 .03	1.11 .01	-.07 .00
	TOP :	SMAX=.20	SMIN=	.07	TMAX=.06	ANGLE=5.6
	BOTT:	SMAX=	SMIN=	-.18	TMAX=.08	ANGLE=3.6
	4	.00 .08	.00 .08	.16 .00	.53 .00	-.03 .00
	TOP :	SMAX=.09	SMIN=	.02	TMAX=.03	ANGLE=90.0
	BOTT:	SMAX=	SMIN=	-.09	TMAX=.03	ANGLE=90.0
	5	.00 .07	.00 .07	.09 .01	.48 .00	-.02 .00
	TOP :	SMAX=.08	SMIN=	.02	TMAX=.03	ANGLE=90.0
	BOTT:	SMAX=	SMIN=	-.08	TMAX=.04	ANGLE=90.0
	6	.00 .04	.00 .04	-.07 .00	-.27 .00	.00 .00
	TOP :	SMAX=	SMIN=	-.05	TMAX=.02	ANGLE=90.0
	BOTT:	SMAX=.04	SMIN=	.01	TMAX=.02	ANGLE=90.0
	7	.00 .07	.01 .07	-.11 .00	-.45 .00	.03 -.01
	TOP :	SMAX=	SMIN=	-.08	TMAX=.03	ANGLE=90.0
	BOTT:	SMAX=.07	SMIN=	.02	TMAX=.03	ANGLE=90.0
	8	.00 .03	.00 .03	.06 .00	.19 .00	-.05 .00
	TOP :	SMAX=.03	SMIN=	.00	TMAX=.02	ANGLE=90.0
	BOTT:	SMAX=	SMIN=	-.04	TMAX=.01	ANGLE=90.0
	9	.00 .10	.00 .10	.17 .00	.65 .00	.00 .00
	TOP :	SMAX=.11	SMIN=	.03	TMAX=.04	ANGLE=90.0
	BOTT:	SMAX=	SMIN=	-.11	TMAX=.04	ANGLE=90.0
	10	.00 .08	.00 .10	.29 -.07	.32 .00	.11 .00
	TOP :	SMAX=.06	SMIN=	-.03	TMAX=.04	ANGLE=90.0
	BOTT:	SMAX=	SMIN=	-.12	TMAX=.04	ANGLE=90.0
	11	.00 .08	.00 .10	-.29 .07	-.32 .00	-.11 .00
	TOP :	SMAX=.03	SMIN=	-.06	TMAX=.04	ANGLE=90.0
	BOTT:	SMAX=.12	SMIN=	.05	TMAX=.04	ANGLE=90.0
	12	.00 .02	.00 .02	.03 .00	.10 .00	.00 .00
	TOP :	SMAX=.02	SMIN=	.00	TMAX=.01	ANGLE=90.0
	BOTT:	SMAX=.00	SMIN=	-.02	TMAX=.01	ANGLE=90.0
	13	-.01 .20	.00 .21	.74 -.07	1.14 .01	.32 .00
	TOP :	SMAX=.22	SMIN=	.04	TMAX=.09	ANGLE=-17.9
	BOTT:	SMAX=	SMIN=	-.24	TMAX=.06	ANGLE=90.0
	14	-.01 .34	.00 .33	1.13 -.13	1.91 .02	.39 .01
	TOP :	SMAX=.36	SMIN=	.04	TMAX=.16	ANGLE=-13.4
	BOTT:	SMAX=	SMIN=	-.37	TMAX=.06	ANGLE=90.0
	101	.00 .60	.00 .57	1.11 -.03	3.93 .01	.08 -.01
	TOP :	SMAX=.67	SMIN=	.15	TMAX=.26	ANGLE=-.9
	BOTT:	SMAX=	SMIN=	-.65	TMAX=.22	ANGLE=-2.6

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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH						
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH								
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY		
	102	.00	.00	.67	2.32	.06		
		.35	.34	-.02	.00	.00		
TOP :	SMAX=	.39	SMIN=	.09	TMAX=	.15	ANGLE=	-1.3
BOTT:	SMAX=	-.13	SMIN=	-.38	TMAX=	.12	ANGLE=	-3.2
	103	.00	.01	.63	2.16	.08		
		.33	.32	-.02	.00	-.01		
TOP :	SMAX=	.37	SMIN=	.08	TMAX=	.14	ANGLE=	-1.0
BOTT:	SMAX=	-.12	SMIN=	-.36	TMAX=	.12	ANGLE=	-5.3
	104	.00	.00	.76	2.68	.02		
		.41	.39	-.03	.01	.00		
TOP :	SMAX=	.45	SMIN=	.10	TMAX=	.17	ANGLE=	.3
BOTT:	SMAX=	-.15	SMIN=	-.44	TMAX=	.14	ANGLE=	-1.5
	105	.00	.00	.85	3.05	.06		
		.47	.44	-.02	.01	.00		
TOP :	SMAX=	.52	SMIN=	.12	TMAX=	.20	ANGLE=	-.9
BOTT:	SMAX=	-.16	SMIN=	-.50	TMAX=	.17	ANGLE=	-2.5
	106	-.01	-.01	1.34	1.77	1.06		
		.44	.54	-.28	.00	.00		
TOP :	SMAX=	.36	SMIN=	-.13	TMAX=	.25	ANGLE=	-22.5
BOTT:	SMAX=	-.19	SMIN=	-.61	TMAX=	.21	ANGLE=	30.2
	107	-.01	-.01	1.04	1.45	.96		
		.37	.44	-.21	-.01	-.01		
TOP :	SMAX=	.30	SMIN=	-.11	TMAX=	.21	ANGLE=	-24.1
BOTT:	SMAX=	-.14	SMIN=	-.50	TMAX=	.18	ANGLE=	33.6
	108	-.01	.01	2.00	6.01	.31		
		.94	.85	-.11	.02	.00		
TOP :	SMAX=	1.03	SMIN=	.22	TMAX=	.40	ANGLE=	-3.5
BOTT:	SMAX=	-.44	SMIN=	-.98	TMAX=	.27	ANGLE=	-5.9
	109	-.01	.02	4.50	15.80	.37		
		2.43	2.29	-.14	.04	-.02		
TOP :	SMAX=	2.67	SMIN=	.61	TMAX=	1.03	ANGLE=	-1.1
BOTT:	SMAX=	-.88	SMIN=	-2.60	TMAX=	.86	ANGLE=	-2.8
412	15	-.02	.00	.49	-2.29	.66		
		.41	.85	-.47	-.05	-.09		
TOP :	SMAX=	-.38	SMIN=	-.44	TMAX=	.03	ANGLE=	90.0
BOTT:	SMAX=	.38	SMIN=	-.60	TMAX=	.49	ANGLE=	12.0
	2	.00	.00	.25	.73	.00		
		.11	.10	-.01	.00	.00		
TOP :	SMAX=	.13	SMIN=	.03	TMAX=	.05	ANGLE=	90.0
BOTT:	SMAX=	-.05	SMIN=	-.12	TMAX=	.03	ANGLE=	90.0
	3	.00	.00	.25	1.11	.07		
		.17	.17	.03	.01	.00		
TOP :	SMAX=	.20	SMIN=	.07	TMAX=	.06	ANGLE=	-5.6
BOTT:	SMAX=	-.01	SMIN=	-.18	TMAX=	.08	ANGLE=	-3.6
	4	.00	.00	.16	.53	.03		
		.08	.08	.00	.00	.00		
TOP :	SMAX=	.09	SMIN=	.02	TMAX=	.03	ANGLE=	90.0
BOTT:	SMAX=	-.03	SMIN=	-.09	TMAX=	.03	ANGLE=	90.0
	5	.00	.00	.09	.48	.02		
		.07	.07	.01	.00	.00		
TOP :	SMAX=	.08	SMIN=	.02	TMAX=	.03	ANGLE=	90.0
BOTT:	SMAX=	-.01	SMIN=	-.08	TMAX=	.04	ANGLE=	90.0
	6	.00	.00	.00	-.01	.00		
		.00	.00	.00	.00	.00		
TOP :	SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=	90.0
BOTT:	SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=	90.0
	7	.00	.01	.15	.63	.02		
		.10	.09	.00	.00	-.01		
TOP :	SMAX=	.11	SMIN=	.03	TMAX=	.04	ANGLE=	90.0
BOTT:	SMAX=	-.02	SMIN=	-.10	TMAX=	.04	ANGLE=	90.0

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
	8	.00 .03	.00 .03	.06 .00	.19 .00	.05 .00
TOP :	SMAX=	.03	SMIN=	.00	TMAX=	.02 ANGLE= 90.0
BOTT:	SMAX=	-.01	SMIN=	-.04	TMAX=	.01 ANGLE= 90.0
	9	.00 .10	.00 .10	.17 .00	.65 .00	.00 .00
TOP :	SMAX=	.11	SMIN=	.03	TMAX=	.04 ANGLE= 90.0
BOTT:	SMAX=	-.03	SMIN=	-.11	TMAX=	.04 ANGLE= 90.0
	10	.00 .08	.00 .10	.29 -.07	.32 .00	-.11 .00
TOP :	SMAX=	.06	SMIN=	-.03	TMAX=	.04 ANGLE= 90.0
BOTT:	SMAX=	-.05	SMIN=	-.12	TMAX=	.04 ANGLE= 90.0
	11	.00 .08	.00 .10	-.29 .07	-.32 .00	.11 .00
TOP :	SMAX=	.03	SMIN=	-.06	TMAX=	.04 ANGLE= 90.0
BOTT:	SMAX=	.12	SMIN=	.05	TMAX=	.04 ANGLE= 90.0
	12	.00 .02	.00 .02	.03 .00	.10 .00	.00 .00
TOP :	SMAX=	.02	SMIN=	.00	TMAX=	.01 ANGLE= 90.0
BOTT:	SMAX=	.00	SMIN=	-.02	TMAX=	.01 ANGLE= 90.0
	13	-.01 .20	.00 .21	.74 -.07	1.14 .01	-.32 .00
TOP :	SMAX=	.22	SMIN=	.04	TMAX=	.09 ANGLE= 17.9
BOTT:	SMAX=	-.13	SMIN=	-.24	TMAX=	.06 ANGLE= 90.0
	14	-.01 .34	.00 .33	1.13 -.13	1.91 .02	-.39 -.01
TOP :	SMAX=	.36	SMIN=	.04	TMAX=	.16 ANGLE= 13.4
BOTT:	SMAX=	-.25	SMIN=	-.37	TMAX=	.06 ANGLE= 90.0
	101	.00 .60	.00 .57	1.10 -.03	3.93 .01	-.08 .01
TOP :	SMAX=	.67	SMIN=	.15	TMAX=	.26 ANGLE= .9
BOTT:	SMAX=	-.21	SMIN=	-.65	TMAX=	.22 ANGLE= 2.6
	102	.00 .39	.00 .37	.72 -.02	2.52 .01	-.06 .00
TOP :	SMAX=	.43	SMIN=	.10	TMAX=	.16 ANGLE= 1.0
BOTT:	SMAX=	-.14	SMIN=	-.41	TMAX=	.14 ANGLE= 2.7
	103	.00 .47	.01 .44	.84 -.02	3.03 .01	-.04 .00
TOP :	SMAX=	.51	SMIN=	.12	TMAX=	.20 ANGLE= 1.1
BOTT:	SMAX=	-.16	SMIN=	-.50	TMAX=	.17 ANGLE= 1.1
	104	.00 .41	.00 .39	.76 -.03	2.68 .01	-.02 .00
TOP :	SMAX=	.45	SMIN=	.10	TMAX=	.17 ANGLE= -.3
BOTT:	SMAX=	-.15	SMIN=	-.44	TMAX=	.14 ANGLE= 1.5
	105	.00 .47	.00 .44	.85 -.02	3.05 .01	-.06 .00
TOP :	SMAX=	.52	SMIN=	.12	TMAX=	.20 ANGLE= .9
BOTT:	SMAX=	-.16	SMIN=	-.50	TMAX=	.17 ANGLE= 2.4
	106	-.01 .27	.00 .47	1.22 -.32	1.21 -.01	.08 -.04
TOP :	SMAX=	.19	SMIN=	-.12	TMAX=	.16 ANGLE= 5.4
BOTT:	SMAX=	-.20	SMIN=	-.53	TMAX=	.16 ANGLE= 10.0
	107	-.01 .20	.00 .37	.93 -.25	.89 -.01	.19 -.04
TOP :	SMAX=	.14	SMIN=	-.10	TMAX=	.12 ANGLE= 2.0
BOTT:	SMAX=	-.14	SMIN=	-.42	TMAX=	.14 ANGLE= 15.0
	108	-.01 .94	-.01 .85	2.00 -.11	6.01 .02	-.31 .00
TOP :	SMAX=	1.03	SMIN=	.22	TMAX=	.40 ANGLE= 3.5
BOTT:	SMAX=	-.44	SMIN=	-.98	TMAX=	.27 ANGLE= 5.9
	109	-.01 2.43	-.02 2.29	4.49 -.14	15.80 .04	-.37 .02
TOP :	SMAX=	2.67	SMIN=	.61	TMAX=	1.03 ANGLE= 1.1
BOTT:	SMAX=	-.88	SMIN=	-2.60	TMAX=	.86 ANGLE= 2.8



PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

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 FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
413	15	-.02 .58	.01 .61	.35 -.35	-1.89 -.03	-.69 -.17
	TOP : SMAX=	-.03	SMIN=	-.60	TMAX=	.28 ANGLE= 90.0
	BOTT: SMAX=	.29	SMIN=	-.41	TMAX=	.35 ANGLE= 4.4
	2	.00 .10	.00 .09	.20 .01	.64 .01	.01 .01
	TOP : SMAX=	.11	SMIN=	.04	TMAX=	.04 ANGLE= 90.0
	BOTT: SMAX=	-.03	SMIN=	-.10	TMAX=	.04 ANGLE= 90.0
	3	.00 .14	.00 .14	.19 .03	.83 .01	.18 .00
	TOP : SMAX=	.16	SMIN=	.05	TMAX=	.05 ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	-.14	TMAX=	.07 ANGLE= -12.2
	4	.00 .08	.00 .07	.14 .00	.46 .00	.08 .00
	TOP : SMAX=	.09	SMIN=	.02	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	-.02	SMIN=	-.08	TMAX=	.03 ANGLE= 90.0
	5	.00 .07	.00 .06	.08 .00	.39 .00	.06 .01
	TOP : SMAX=	.07	SMIN=	.01	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	-.01	SMIN=	-.06	TMAX=	.02 ANGLE= 90.0
	6	.00 .04	.00 .04	.07 .00	.27 .00	.00 .00
	TOP : SMAX=	.04	SMIN=	.01	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	-.01	SMIN=	-.04	TMAX=	.02 ANGLE= 90.0
	7	.00 .25	.01 .23	.39 .00	1.60 .01	-.01 .00
	TOP : SMAX=	.27	SMIN=	.07	TMAX=	.10 ANGLE= 1.8
	BOTT: SMAX=	-.06	SMIN=	-.26	TMAX=	.10 ANGLE= -.9
	8	.00 .06	.00 .05	.07 -.01	.21 .00	.15 .00
	TOP : SMAX=	.05	SMIN=	-.01	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	-.05	TMAX=	.02 ANGLE= 90.0
	9	.00 .08	.00 .07	.13 .00	.50 .00	-.01 .00
	TOP : SMAX=	.08	SMIN=	.02	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	-.02	SMIN=	-.08	TMAX=	.03 ANGLE= 90.0
	10	.00 .11	.00 .09	.23 -.02	.36 .00	-.30 -.01
	TOP : SMAX=	.10	SMIN=	-.02	TMAX=	.06 ANGLE= 90.0
	BOTT: SMAX=	-.01	SMIN=	-.10	TMAX=	.04 ANGLE= 90.0
	11	.00 .11	.00 .09	-.23 .02	-.36 .00	.30 .01
	TOP : SMAX=	.02	SMIN=	-.10	TMAX=	.06 ANGLE= 90.0
	BOTT: SMAX=	.10	SMIN=	.01	TMAX=	.04 ANGLE= 90.0
	12	.00 .01	.00 .01	.02 .00	.07 .00	.00 .00
	TOP : SMAX=	.01	SMIN=	.00	TMAX=	.00 ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	-.01	TMAX=	.00 ANGLE= 90.0
	13	-.01 .28	.00 .31	.49 .04	1.02 .02	-.87 .01
	TOP : SMAX=	.29	SMIN=	.02	TMAX=	.14 ANGLE= 90.0
	BOTT: SMAX=	.07	SMIN=	-.26	TMAX=	.17 ANGLE= 35.1
	14	-.01 .43	-.01 .38	.75 .03	1.70 .03	-1.09 -.01
	TOP : SMAX=	.44	SMIN=	.03	TMAX=	.21 ANGLE= 33.9
	BOTT: SMAX=	.01	SMIN=	-.37	TMAX=	.19 ANGLE= 32.3
	101	.00 .47	-.01 .46	.86 -.01	3.11 .01	-.19 .02
	TOP : SMAX=	.53	SMIN=	.14	TMAX=	.20 ANGLE= 2.1
	BOTT: SMAX=	-.14	SMIN=	-.52	TMAX=	.19 ANGLE= 7.6

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH				
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH						
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MYX FX
	102	.00	-.01	.61	2.21	-.14
		.34	.33	.00	.01	.01
	TOP : SMAX=	.37	SMIN=	.10	TMAX=	ANGLE= 2.6
	BOTT: SMAX=	-.10	SMIN=	-.37	TMAX=	ANGLE= 7.3
	103	.00	.00	.87	3.27	-.15
		.50	.48	.00	.01	.01
	TOP : SMAX=	.56	SMIN=	.14	TMAX=	ANGLE= 2.5
	BOTT: SMAX=	-.14	SMIN=	-.54	TMAX=	ANGLE= 4.6
	104	.00	-.01	.61	2.16	-.02
		.33	.32	-.01	.01	.01
	TOP : SMAX=	.37	SMIN=	.09	TMAX=	ANGLE= -1.9
	BOTT: SMAX=	-.11	SMIN=	-.36	TMAX=	ANGLE= 3.8
	105	.00	-.01	.66	2.39	-.14
		.36	.35	.00	.01	.01
	TOP : SMAX=	.41	SMIN=	.11	TMAX=	ANGLE= 2.3
	BOTT: SMAX=	-.11	SMIN=	-.40	TMAX=	ANGLE= 7.2
	106	-.02	.00	.89	1.03	-1.02
		.46	.32	-.16	.00	-.08
	TOP : SMAX=	.34	SMIN=	-.18	TMAX=	ANGLE= 34.5
	BOTT: SMAX=	-.12	SMIN=	-.36	TMAX=	ANGLE= -26.5
	107	-.01	.00	.66	.67	-.72
		.35	.24	-.14	.00	-.07
	TOP : SMAX=	.24	SMIN=	-.16	TMAX=	ANGLE= 34.8
	BOTT: SMAX=	-.10	SMIN=	-.27	TMAX=	ANGLE= -18.5
	108	.00	-.02	1.48	4.84	-.82
		.77	.74	.01	.02	.02
	TOP : SMAX=	.85	SMIN=	.23	TMAX=	ANGLE= 11.4
	BOTT: SMAX=	-.20	SMIN=	-.82	TMAX=	ANGLE= 14.8
	109	.00	-.05	3.47	12.46	-.87
		1.90	1.85	-.02	.04	.07
	TOP : SMAX=	2.12	SMIN=	.55	TMAX=	ANGLE= 2.9
	BOTT: SMAX=	-.57	SMIN=	-2.07	TMAX=	ANGLE= 8.1
414	15	-.03	.01	.12	-.30	-2.54
		1.08	.41	-.05	.03	-.20
	TOP : SMAX=	.60	SMIN=	-.65	TMAX=	ANGLE= 90.0
	BOTT: SMAX=	.24	SMIN=	-.23	TMAX=	ANGLE= -36.0
	2	.00	.00	.08	.42	.02
		.07	.07	.03	.01	.01
	TOP : SMAX=	.08	SMIN=	.04	TMAX=	ANGLE= 90.0
	BOTT: SMAX=	.02	SMIN=	-.06	TMAX=	ANGLE= 90.0
	3	.00	-.01	.07	.35	.24
		.09	.09	.02	.01	.00
	TOP : SMAX=	.09	SMIN=	.00	TMAX=	ANGLE= 90.0
	BOTT: SMAX=	.03	SMIN=	-.07	TMAX=	ANGLE= 90.0
	4	.00	.00	.07	.31	.14
		.07	.06	.01	.00	.00
	TOP : SMAX=	.07	SMIN=	.01	TMAX=	ANGLE= 90.0
	BOTT: SMAX=	.01	SMIN=	-.05	TMAX=	ANGLE= 90.0
	5	.00	.00	.07	.23	.12
		.06	.04	-.01	.00	.00
	TOP : SMAX=	.05	SMIN=	-.01	TMAX=	ANGLE= 90.0
	BOTT: SMAX=	-.02	SMIN=	-.05	TMAX=	ANGLE= 90.0
	6	.00	.00	.13	.50	.00
		.08	.07	.00	.00	.00
	TOP : SMAX=	.09	SMIN=	.02	TMAX=	ANGLE= 90.0
	BOTT: SMAX=	-.02	SMIN=	-.08	TMAX=	ANGLE= 90.0
	7	.00	.00	.56	2.26	-.06
		.35	.33	.01	.01	.00
	TOP : SMAX=	.39	SMIN=	.10	TMAX=	ANGLE= 2.5
	BOTT: SMAX=	-.09	SMIN=	-.37	TMAX=	ANGLE= 1.4

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MY FX
	8	.00	.00	.07	.23	.23		
		.08	.07	-.01	.00	.00		
	TOP : SMAX=	.07	SMIN=	-.02	TMAX=	.04	ANGLE=	90.0
	BOTT: SMAX=	.01	SMIN=	-.06	TMAX=	.04	ANGLE=	90.0
	9	.00	.00	.05	.22	.00		
		.03	.03	.01	.00	.00		
	TOP : SMAX=	.04	SMIN=	.01	TMAX=	.01	ANGLE=	90.0
	BOTT: SMAX=	.00	SMIN=	-.04	TMAX=	.02	ANGLE=	90.0
	10	.00	.00	.07	.36	-.43		
		.15	.15	.06	.01	.00		
	TOP : SMAX=	.14	SMIN=	.00	TMAX=	.07	ANGLE=	90.0
	BOTT: SMAX=	.08	SMIN=	-.09	TMAX=	.09	ANGLE=	90.0
	11	.00	.00	-.07	-.36	.43		
		.15	.15	-.06	-.01	.00		
	TOP : SMAX=	.00	SMIN=	-.14	TMAX=	.07	ANGLE=	90.0
	BOTT: SMAX=	.09	SMIN=	-.08	TMAX=	.09	ANGLE=	90.0
	12	.00	.00	.00	.02	.00		
		.00	.00	.00	.00	.00		
	TOP : SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=	90.0
	BOTT: SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=	90.0
	13	.00	-.01	-.01	.71	-1.16		
		.33	.49	.22	.02	.04		
	TOP : SMAX=	.33	SMIN=	.02	TMAX=	.16	ANGLE=	90.0
	BOTT: SMAX=	.34	SMIN=	-.22	TMAX=	.28	ANGLE=	28.1
	14	.00	-.01	.01	1.12	-1.57		
		.49	.62	.28	.03	.02		
	TOP : SMAX=	.49	SMIN=	.01	TMAX=	.24	ANGLE=	90.0
	BOTT: SMAX=	.42	SMIN=	-.30	TMAX=	.36	ANGLE=	25.9
	101	.00	-.02	.39	1.56	-.15		
		.23	.26	.04	.01	.02		
	TOP : SMAX=	.26	SMIN=	.10	TMAX=	.08	ANGLE=	3
	BOTT: SMAX=	-.02	SMIN=	-.26	TMAX=	.12	ANGLE=	11.6
	102	.00	-.01	.34	1.40	-.12		
		.21	.22	.03	.00	.01		
	TOP : SMAX=	.24	SMIN=	.08	TMAX=	.08	ANGLE=	2.3
	BOTT: SMAX=	-.03	SMIN=	-.23	TMAX=	.10	ANGLE=	9.8
	103	.00	-.01	.69	2.80	-.17		
		.43	.42	.03	.01	.01		
	TOP : SMAX=	.48	SMIN=	.15	TMAX=	.17	ANGLE=	2.7
	BOTT: SMAX=	-.08	SMIN=	-.46	TMAX=	.19	ANGLE=	6.2
	104	.00	-.01	.30	1.18	.06		
		.18	.18	.02	.01	.01		
	TOP : SMAX=	.21	SMIN=	.07	TMAX=	.07	ANGLE=	-10.4
	BOTT: SMAX=	-.03	SMIN=	-.19	TMAX=	.08	ANGLE=	1.8
	105	.00	-.02	.29	1.17	-.12		
		.17	.19	.03	.00	.02		
	TOP : SMAX=	.20	SMIN=	.08	TMAX=	.06	ANGLE=	1.5
	BOTT: SMAX=	-.01	SMIN=	-.20	TMAX=	.09	ANGLE=	11.6
	106	-.02	-.01	.25	1.02	-2.14		
		.76	.53	.13	.03	-.07		
	TOP : SMAX=	.61	SMIN=	-.24	TMAX=	.43	ANGLE=	90.0
	BOTT: SMAX=	.28	SMIN=	-.33	TMAX=	.31	ANGLE=	34.1
	107	-.02	.00	.18	.65	-1.71		
		.62	.39	.07	.02	-.07		
	TOP : SMAX=	.47	SMIN=	-.24	TMAX=	.35	ANGLE=	90.0
	BOTT: SMAX=	.20	SMIN=	-.25	TMAX=	.23	ANGLE=	36.7
	108	.00	-.03	.49	2.55	-1.03		
		.45	.60	.20	.02	.04		
	TOP : SMAX=	.52	SMIN=	.20	TMAX=	.16	ANGLE=	28.7
	BOTT: SMAX=	.19	SMIN=	-.48	TMAX=	.33	ANGLE=	19.6
	109	.01	-.08	1.52	6.20	-.76		
		.92	1.05	.17	.02	.09		
	TOP : SMAX=	1.05	SMIN=	.42	TMAX=	.32	ANGLE=	3.0
	BOTT: SMAX=	-.04	SMIN=	-1.06	TMAX=	.51	ANGLE=	12.7

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
415	15	-.03	.00	-.61	1.52						
		1.61	1.25	.32	.08						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	2	.00	-.01	-.11	.04						
		.04	.08	.06	.01						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	3	.00	-.01	-.11	-.22						
		.08	.07	.02	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	4	.00	.00	-.04	.05						
		.08	.07	.02	.01						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	5	.00	.00	.04	.01						
		.05	.06	-.03	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	6	.00	.00	.16	.64						
		.10	.09	.00	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	7	.00	.00	.63	2.47						
		.38	.36	.01	.01						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	8	.00	.00	.02	.17						
		.07	.09	.00	.01						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	9	.00	.00	-.05	-.12						
		.02	.02	.01	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	10	.00	-.01	-.20	.23						
		.15	.24	.14	.01						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	11	.00	.01	.20	-.23						
		.15	.24	-.14	-.01						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	12	.00	.00	-.01	-.04						
		.01	.00	.00	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	13	.00	-.01	-.73	.10						
		.29	.65	.36	.02						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	14	.00	-.02	-.98	.05						
		.47	.88	.50	.01						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	101	.00	-.02	-.25	-.48						
		.11	.10	.08	.00						
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	ANGLE
102		.00	-.01	-.04	.19			
		.05	.09	.06	.00			.01
TOP :	SMAX=	.05	SMIN=	.03	TMAX=	.01	ANGLE=	90.0
BOTT:	SMAX=	.06	SMIN=	-.03	TMAX=	.05	ANGLE=	90.0
103		.00	-.01	.33	1.65			-.08
		.25	.28	.06	.01			.01
TOP :	SMAX=	.28	SMIN=	.12	TMAX=	.08	ANGLE=	.5
BOTT:	SMAX=	.01	SMIN=	-.27	TMAX=	.14	ANGLE=	5.4
104		.00	-.02	-.16	-.19			.22
		.09	.09	.06	.00			.00
TOP :	SMAX=	.05	SMIN=	-.05	TMAX=	.05	ANGLE=	90.0
BOTT:	SMAX=	.10	SMIN=	.02	TMAX=	.04	ANGLE=	90.0
105		.00	-.02	-.21	-.42			.02
		.09	.09	.06	.00			.01
TOP :	SMAX=	.03	SMIN=	-.08	TMAX=	.05	ANGLE=	9.1
BOTT:	SMAX=	.10	SMIN=	.06	TMAX=	.02	ANGLE=	90.0
106		-.01	-.02	-.89	.71			-3.10
		.96	1.07	.45	.05			-.01
TOP :	SMAX=	.77	SMIN=	-.30	TMAX=	.54	ANGLE=	-41.6
BOTT:	SMAX=	.87	SMIN=	-.34	TMAX=	.60	ANGLE=	28.4
107		-.01	-.02	-.69	.47			-2.65
		.82	.84	.30	.04			-.02
TOP :	SMAX=	.62	SMIN=	-.31	TMAX=	.47	ANGLE=	90.0
BOTT:	SMAX=	.67	SMIN=	-.29	TMAX=	.48	ANGLE=	30.7
108		.01	-.04	-.84	-.62			-.80
		.31	.56	.36	.00			.06
TOP :	SMAX=	.24	SMIN=	-.12	TMAX=	.18	ANGLE=	-12.5
BOTT:	SMAX=	.58	SMIN=	.03	TMAX=	.27	ANGLE=	22.0
109		.02	-.09	-1.10	-2.02			.04
		.48	.48	.35	-.02			.07
TOP :	SMAX=	.18	SMIN=	-.36	TMAX=	.27	ANGLE=	7.9
BOTT:	SMAX=	.55	SMIN=	.30	TMAX=	.12	ANGLE=	15.0
416	15	-.01	-.03	-2.14	2.28			-6.35
		1.80	2.20	.53	.08			.05
TOP :	SMAX=	1.34	SMIN=	-.70	TMAX=	1.02	ANGLE=	41.0
BOTT:	SMAX=	1.55	SMIN=	-.96	TMAX=	1.26	ANGLE=	30.9
2		.00	-.01	-.33	-.43			.02
		.08	.11	.08	.01			.00
TOP :	SMAX=	.02	SMIN=	-.07	TMAX=	.04	ANGLE=	90.0
BOTT:	SMAX=	.13	SMIN=	.08	TMAX=	.03	ANGLE=	90.0
3		.00	-.01	-.31	-.83			.21
		.14	.13	.01	.00			.00
TOP :	SMAX=	-.03	SMIN=	-.15	TMAX=	.06	ANGLE=	17.1
BOTT:	SMAX=	.15	SMIN=	.05	TMAX=	.05	ANGLE=	90.0
4		.00	-.01	-.20	-.32			.24
		.09	.09	.02	.00			.00
TOP :	SMAX=	.01	SMIN=	-.08	TMAX=	.05	ANGLE=	90.0
BOTT:	SMAX=	.09	SMIN=	.01	TMAX=	.04	ANGLE=	90.0
5		.00	.00	-.03	-.26			.21
		.05	.10	-.03	.00			-.01
TOP :	SMAX=	-.01	SMIN=	-.06	TMAX=	.02	ANGLE=	90.0
BOTT:	SMAX=	.07	SMIN=	-.05	TMAX=	.06	ANGLE=	90.0
6		.00	.00	.17	.63			-.01
		.10	.09	.00	.00			.00
TOP :	SMAX=	.11	SMIN=	.03	TMAX=	.04	ANGLE=	90.0
BOTT:	SMAX=	-.03	SMIN=	-.10	TMAX=	.04	ANGLE=	90.0
7		.00	.00	.59	2.16			-.14
		.33	.32	.01	.01			.01
TOP :	SMAX=	.37	SMIN=	.10	TMAX=	.14	ANGLE=	2.5
BOTT:	SMAX=	-.09	SMIN=	-.35	TMAX=	.13	ANGLE=	7.4

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.00	.00	-.11	-.03						.26
		.04	.11	.01	.01						-.02
	TOP : SMAX=	.02	SMIN=	-.03	TMAX=	.02	ANGLE=				90.0
	BOTT: SMAX=	.08	SMIN=	-.04	TMAX=	.06	ANGLE=				90.0
	9	.00	.00	-.15	-.45						.04
		.07	.06	.01	.00						.00
	TOP : SMAX=	-.02	SMIN=	-.08	TMAX=	.03	ANGLE=				90.0
	BOTT: SMAX=	.07	SMIN=	.03	TMAX=	.02	ANGLE=				90.0
	10	.00	-.01	-.57	-.08						-.42
		.12	.31	.18	.01						.02
	TOP : SMAX=	.11	SMIN=	-.03	TMAX=	.07	ANGLE=				90.0
	BOTT: SMAX=	.31	SMIN=	-.01	TMAX=	.16	ANGLE=				17.7
	11	.00	.01	.57	.08						.42
		.12	.31	-.18	-.01						-.02
	TOP : SMAX=	.03	SMIN=	-.11	TMAX=	.07	ANGLE=				90.0
	BOTT: SMAX=	.01	SMIN=	-.31	TMAX=	.16	ANGLE=				17.7
	12	.00	.00	-.02	-.08						.00
		.01	.01	.00	.00						.00
	TOP : SMAX=	.00	SMIN=	-.01	TMAX=	.01	ANGLE=				90.0
	BOTT: SMAX=	.01	SMIN=	.00	TMAX=	.00	ANGLE=				90.0
	13	.00	-.02	-1.54	-.67						-.71
		.20	.68	.36	-.01						.10
	TOP : SMAX=	.10	SMIN=	-.12	TMAX=	.11	ANGLE=				-5.0
	BOTT: SMAX=	.69	SMIN=	.02	TMAX=	.34	ANGLE=				20.1
	14	.00	-.02	-1.97	-1.30						-1.37
		.40	.96	.50	-.02						.12
	TOP : SMAX=	.20	SMIN=	-.26	TMAX=	.23	ANGLE=				-13.9
	BOTT: SMAX=	.98	SMIN=	.04	TMAX=	.47	ANGLE=				23.9
	101	.00	-.02	-.95	-2.52						.27
		.41	.36	.09	-.02						-.01
	TOP : SMAX=	-.06	SMIN=	-.44	TMAX=	.19	ANGLE=				5.9
	BOTT: SMAX=	.42	SMIN=	.23	TMAX=	.09	ANGLE=				17.1
	102	.00	-.02	-.49	-1.13						.13
		.19	.17	.07	-.01						.00
	TOP : SMAX=	-.01	SMIN=	-.20	TMAX=	.09	ANGLE=				6.4
	BOTT: SMAX=	.19	SMIN=	.14	TMAX=	.03	ANGLE=				90.0
	103	.00	-.02	-.16	.09						.03
		.05	.11	.07	.00						.01
	TOP : SMAX=	.05	SMIN=	.01	TMAX=	.02	ANGLE=				90.0
	BOTT: SMAX=	.10	SMIN=	-.02	TMAX=	.06	ANGLE=				.9
	104	.00	-.02	-.72	-1.65						.35
		.27	.27	.07	-.01						-.02
	TOP : SMAX=	-.04	SMIN=	-.29	TMAX=	.13	ANGLE=				9.5
	BOTT: SMAX=	.32	SMIN=	.15	TMAX=	.08	ANGLE=				90.0
	105	.00	-.02	-.75	-1.99						.17
		.33	.28	.07	-.02						.00
	TOP : SMAX=	-.05	SMIN=	-.35	TMAX=	.15	ANGLE=				5.2
	BOTT: SMAX=	.32	SMIN=	.19	TMAX=	.07	ANGLE=				13.9
	106	.00	-.04	-2.53	-.29						-3.65
		.93	1.54	.58	.03						.08
	TOP : SMAX=	.60	SMIN=	-.46	TMAX=	.53	ANGLE=				-40.3
	BOTT: SMAX=	1.37	SMIN=	-.29	TMAX=	.83	ANGLE=				28.2
	107	.00	-.03	-1.96	-.21						-3.23
		.83	1.25	.40	.02						.06
	TOP : SMAX=	.51	SMIN=	-.45	TMAX=	.48	ANGLE=				90.0
	BOTT: SMAX=	1.08	SMIN=	-.29	TMAX=	.69	ANGLE=				30.5
	108	.00	-.04	-2.24	-3.91						-.41
		.69	.73	.38	-.04						.06
	TOP : SMAX=	.01	SMIN=	-.69	TMAX=	.35	ANGLE=				-.9
	BOTT: SMAX=	.83	SMIN=	.54	TMAX=	.14	ANGLE=				30.3
	109	.00	-.09	-3.92	-10.18						.87
		1.68	1.45	.42	-.08						-.01
	TOP : SMAX=	-.22	SMIN=	-1.78	TMAX=	.78	ANGLE=				5.0
	BOTT: SMAX=	1.66	SMIN=	1.03	TMAX=	.32	ANGLE=				14.8

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
417	15	.06	-.06	-6.10	-.31						-4.76
		1.00	2.39	.32	-.07						.35
	TOP :	SMAX=	.12	SMIN=	-.94	TMAX=	.53	ANGLE=	28.6		
	BOTT:	SMAX=	1.99	SMIN=	-.67	TMAX=	1.33	ANGLE=	29.6		
	2	.00	-.01	-.65	-1.24						.06
		.20	.17	.03	-.02						-.01
	TOP :	SMAX=	-.08	SMIN=	-.22	TMAX=	.07	ANGLE=	.9		
	BOTT:	SMAX=	.20	SMIN=	.14	TMAX=	.03	ANGLE=	90.0		
	3	.00	-.01	-.54	-1.42						-.02
		.23	.19	.00	-.02						.00
	TOP :	SMAX=	-.09	SMIN=	-.26	TMAX=	.08	ANGLE=	-2.7		
	BOTT:	SMAX=	.22	SMIN=	.09	TMAX=	.06	ANGLE=	.2		
	4	.00	-.01	-.45	-.92						.06
		.15	.13	.01	-.01						.00
	TOP :	SMAX=	-.07	SMIN=	-.17	TMAX=	.05	ANGLE=	3.6		
	BOTT:	SMAX=	.15	SMIN=	.08	TMAX=	.03	ANGLE=	90.0		
	5	.00	.00	-.19	-.74						.15
		.10	.15	-.01	.01						-.03
	TOP :	SMAX=	-.04	SMIN=	-.12	TMAX=	.04	ANGLE=	90.0		
	BOTT:	SMAX=	.15	SMIN=	.00	TMAX=	.08	ANGLE=	22.1		
	6	.00	.00	.13	.36						-.02
		.06	.05	.00	.00						.00
	TOP :	SMAX=	.06	SMIN=	.02	TMAX=	.02	ANGLE=	90.0		
	BOTT:	SMAX=	-.02	SMIN=	-.06	TMAX=	.02	ANGLE=	90.0		
	7	.00	-.01	.41	.95						-.11
		.16	.14	.01	.02						.02
	TOP :	SMAX=	.18	SMIN=	.07	TMAX=	.05	ANGLE=	-2.9		
	BOTT:	SMAX=	-.04	SMIN=	-.16	TMAX=	.06	ANGLE=	90.0		
	8	.00	-.01	-.38	-.55						.07
		.09	.11	.01	.00						-.03
	TOP :	SMAX=	-.04	SMIN=	-.10	TMAX=	.03	ANGLE=	90.0		
	BOTT:	SMAX=	.13	SMIN=	.04	TMAX=	.05	ANGLE=	90.0		
	9	.00	.00	-.30	-.84						.06
		.13	.12	.00	-.01						-.01
	TOP :	SMAX=	-.05	SMIN=	-.15	TMAX=	.05	ANGLE=	3.1		
	BOTT:	SMAX=	.13	SMIN=	.05	TMAX=	.04	ANGLE=	90.0		
	10	.01	-.01	-1.13	-.87						.11
		.16	.24	.09	-.02						.02
	TOP :	SMAX=	-.07	SMIN=	-.19	TMAX=	.06	ANGLE=	90.0		
	BOTT:	SMAX=	.28	SMIN=	.12	TMAX=	.08	ANGLE=	2.1		
	11	-.01	.01	1.13	.87						-.11
		.16	.24	-.09	.02						-.02
	TOP :	SMAX=	.19	SMIN=	.07	TMAX=	.06	ANGLE=	90.0		
	BOTT:	SMAX=	-.12	SMIN=	-.28	TMAX=	.08	ANGLE=	2.1		
	12	.00	.00	-.03	-.10						.00
		.02	.01	.00	.00						.00
	TOP :	SMAX=	-.01	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0		
	BOTT:	SMAX=	.02	SMIN=	.01	TMAX=	.00	ANGLE=	90.0		
	13	.01	-.01	-2.50	-1.92						.54
		.50	.33	-.04	-.08						.06
	TOP :	SMAX=	-.28	SMIN=	-.58	TMAX=	.15	ANGLE=	90.0		
	BOTT:	SMAX=	.38	SMIN=	.24	TMAX=	.07	ANGLE=	-13.4		
	14	.02	-.02	-2.87	-3.15						.39
		.65	.45	-.01	-.10						.11
	TOP :	SMAX=	-.38	SMIN=	-.75	TMAX=	.19	ANGLE=	34.2		
	BOTT:	SMAX=	.49	SMIN=	.40	TMAX=	.05	ANGLE=	90.0		
	101	.00	-.02	-2.06	-5.43						.58
		.85	.79	.05	-.05						-.05
	TOP :	SMAX=	-.29	SMIN=	-.96	TMAX=	.33	ANGLE=	4.4		
	BOTT:	SMAX=	.90	SMIN=	.35	TMAX=	.28	ANGLE=	15.5		

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.00	-.02	-1.23	-3.19						.34
		.50	.46	.03	-.03						-.02
TOP :	SMAX=	-.17	SMIN=	-.56	TMAX=	.20	ANGLE=				5.0
BOTT:	SMAX=	.53	SMIN=	.22	TMAX=	.15	ANGLE=				15.5
103		.00	-.02	-1.01	-2.72						.27
		.42	.39	.04	-.02						-.01
TOP :	SMAX=	-.13	SMIN=	-.47	TMAX=	.17	ANGLE=				6.5
BOTT:	SMAX=	.45	SMIN=	.20	TMAX=	.13	ANGLE=				11.7
104		.00	-.02	-1.64	-3.91						.41
		.60	.58	.04	-.03						-.05
TOP :	SMAX=	-.23	SMIN=	-.69	TMAX=	.23	ANGLE=				2.0
BOTT:	SMAX=	.66	SMIN=	.27	TMAX=	.19	ANGLE=				19.2
105		.00	-.02	-1.57	-4.14						.41
		.65	.59	.04	-.04						-.03
TOP :	SMAX=	-.22	SMIN=	-.73	TMAX=	.25	ANGLE=				4.4
BOTT:	SMAX=	.68	SMIN=	.27	TMAX=	.20	ANGLE=				14.3
106		.04	-.05	-5.71	-3.77						-1.83
		.76	1.33	.21	-.10						.20
TOP :	SMAX=	-.63	SMIN=	-.84	TMAX=	.11	ANGLE=				90.0
BOTT:	SMAX=	1.44	SMIN=	.25	TMAX=	.60	ANGLE=				28.9
107		.03	-.04	-4.58	-2.90						-1.94
		.67	1.15	.11	-.08						.17
TOP :	SMAX=	-.45	SMIN=	-.76	TMAX=	.16	ANGLE=				90.0
BOTT:	SMAX=	1.19	SMIN=	.09	TMAX=	.55	ANGLE=				32.3
108		.01	-.04	-4.10	-8.52						.91
		1.36	1.16	.06	-.12						.00
TOP :	SMAX=	-.60	SMIN=	-1.56	TMAX=	.48	ANGLE=				9.4
BOTT:	SMAX=	1.34	SMIN=	.71	TMAX=	.32	ANGLE=				13.8
109		-.01	-.08	-8.33	-21.71						2.23
		3.41	3.10	.21	-.20						-.15
TOP :	SMAX=	-1.16	SMIN=	-3.83	TMAX=	1.34	ANGLE=				4.7
BOTT:	SMAX=	3.56	SMIN=	1.45	TMAX=	1.05	ANGLE=				14.9
418	15	.24	-.16	-9.22	-16.89						10.00
		4.67	2.97	.16	-.68						.38
TOP :	SMAX=	-.13	SMIN=	-4.73	TMAX=	2.30	ANGLE=				31.3
BOTT:	SMAX=	3.23	SMIN=	.61	TMAX=	1.31	ANGLE=				40.2
2		-.01	-.01	-1.02	-3.00						-.30
		.49	.41	-.04	-.05						-.01
TOP :	SMAX=	-.20	SMIN=	-.56	TMAX=	.18	ANGLE=				-9.9
BOTT:	SMAX=	.46	SMIN=	.12	TMAX=	.17	ANGLE=				-7.1
3		.00	-.01	-.79	-2.55						-.42
		.43	.36	-.02	-.04						-.01
TOP :	SMAX=	-.13	SMIN=	-.48	TMAX=	.18	ANGLE=				-13.1
BOTT:	SMAX=	.40	SMIN=	.10	TMAX=	.15	ANGLE=				-12.2
4		.00	-.01	-.67	-2.06						-.21
		.34	.28	-.01	-.03						-.01
TOP :	SMAX=	-.11	SMIN=	-.38	TMAX=	.13	ANGLE=				-8.7
BOTT:	SMAX=	.32	SMIN=	.10	TMAX=	.11	ANGLE=				-7.9
5		-.01	.00	-.41	-1.50						-.46
		.28	.25	.01	.02						-.03
TOP :	SMAX=	-.01	SMIN=	-.29	TMAX=	.14	ANGLE=				-25.6
BOTT:	SMAX=	.28	SMIN=	.06	TMAX=	.11	ANGLE=				-13.1
6		.00	.00	-.01	-.16						.04
		.03	.03	.00	.01						.00
TOP :	SMAX=	.01	SMIN=	-.02	TMAX=	.01	ANGLE=				90.0
BOTT:	SMAX=	.04	SMIN=	.01	TMAX=	.02	ANGLE=				90.0
7		.01	-.01	-.03	-.68						.39
		.17	.16	.02	.04						.02
TOP :	SMAX=	.07	SMIN=	-.13	TMAX=	.10	ANGLE=				90.0
BOTT:	SMAX=	.16	SMIN=	.01	TMAX=	.08	ANGLE=				18.1



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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
8		-.01	-.01	-.67	-1.83						
		.35	.26	.02	-.02						
	TOP : SMAX=	-.04	SMIN=	-.37	TMAX=	.17	ANGLE=				-22.5
	BOTT: SMAX=	.29	SMIN=	.12	TMAX=	.09	ANGLE=				-14.6
9		.00	.00	-.45	-1.50						
		.24	.21	-.01	-.02						
	TOP : SMAX=	-.08	SMIN=	-.27	TMAX=	.10	ANGLE=				-8.4
	BOTT: SMAX=	.24	SMIN=	.07	TMAX=	.08	ANGLE=				-5.4
10		-.01	-.02	-1.66	-3.69						
		.59	.49	-.04	-.05						
	TOP : SMAX=	-.31	SMIN=	-.68	TMAX=	.19	ANGLE=				11.1
	BOTT: SMAX=	.56	SMIN=	.23	TMAX=	.17	ANGLE=				3.8
11		.01	.02	1.66	3.69						
		.59	.49	.04	.05						
	TOP : SMAX=	.68	SMIN=	.31	TMAX=	.19	ANGLE=				11.1
	BOTT: SMAX=	-.23	SMIN=	-.56	TMAX=	.17	ANGLE=				3.8
12		.00	.00	-.04	-.14						
		.02	.02	.00	.00						
	TOP : SMAX=	-.01	SMIN=	-.02	TMAX=	.01	ANGLE=				90.0
	BOTT: SMAX=	.02	SMIN=	.01	TMAX=	.01	ANGLE=				90.0
13		-.03	-.03	-3.11	-6.79						
		1.24	1.17	-.72	-.11						
	TOP : SMAX=	-1.23	SMIN=	-1.25	TMAX=	.01	ANGLE=				90.0
	BOTT: SMAX=	1.04	SMIN=	-.23	TMAX=	.64	ANGLE=				8.0
14		-.03	-.03	-3.34	-8.25						
		1.52	1.54	-.91	-.12						
	TOP : SMAX=	-1.29	SMIN=	-1.67	TMAX=	.19	ANGLE=				90.0
	BOTT: SMAX=	1.30	SMIN=	-.40	TMAX=	.85	ANGLE=				9.6
101		-.03	-.03	-3.23	-10.50						
		1.66	1.48	-.05	-.09						
	TOP : SMAX=	-.56	SMIN=	-1.87	TMAX=	.66	ANGLE=				-8.4
	BOTT: SMAX=	1.66	SMIN=	.48	TMAX=	.59	ANGLE=				-4.4
102		-.02	-.02	-2.08	-6.83						
		1.07	.97	-.03	-.06						
	TOP : SMAX=	-.37	SMIN=	-1.21	TMAX=	.42	ANGLE=				-6.7
	BOTT: SMAX=	1.08	SMIN=	.31	TMAX=	.38	ANGLE=				-3.5
103		-.01	-.03	-2.09	-7.25						
		1.11	1.05	-.02	-.04						
	TOP : SMAX=	-.36	SMIN=	-1.25	TMAX=	.44	ANGLE=				-2.4
	BOTT: SMAX=	1.17	SMIN=	.33	TMAX=	.42	ANGLE=				-1.0
104		-.03	-.03	-2.61	-8.17						
		1.32	1.14	-.02	-.08						
	TOP : SMAX=	-.41	SMIN=	-1.48	TMAX=	.53	ANGLE=				-10.9
	BOTT: SMAX=	1.29	SMIN=	.41	TMAX=	.44	ANGLE=				-5.5
105		-.02	-.02	-2.43	-7.90						
		1.25	1.11	-.04	-.08						
	TOP : SMAX=	-.43	SMIN=	-1.41	TMAX=	.49	ANGLE=				-7.5
	BOTT: SMAX=	1.24	SMIN=	.36	TMAX=	.44	ANGLE=				-4.1
106		.09	-.12	-8.31	-17.94						
		3.45	2.52	-.32	-.46						
	TOP : SMAX=	-1.26	SMIN=	-3.91	TMAX=	1.33	ANGLE=				24.4
	BOTT: SMAX=	2.81	SMIN=	.77	TMAX=	1.02	ANGLE=				22.1
107		.10	-.10	-6.65	-14.25						
		2.90	2.08	-.28	-.41						
	TOP : SMAX=	-.93	SMIN=	-3.25	TMAX=	1.16	ANGLE=				26.5
	BOTT: SMAX=	2.29	SMIN=	.50	TMAX=	.89	ANGLE=				25.3
108		-.06	-.06	-5.81	-17.53						
		2.70	2.54	-.52	-.19						
	TOP : SMAX=	-1.48	SMIN=	-3.12	TMAX=	.82	ANGLE=				-4.0
	BOTT: SMAX=	2.73	SMIN=	.45	TMAX=	1.14	ANGLE=				1.0
109		-.13	-.13	-12.93	-41.90						
		6.64	5.88	-.21	-.41						
	TOP : SMAX=	-2.28	SMIN=	-7.48	TMAX=	2.60	ANGLE=				-7.3
	BOTT: SMAX=	6.60	SMIN=	1.92	TMAX=	2.34	ANGLE=				-3.9

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

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 FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
421	15	-.56 8.83	-1.37 8.92	-15.98 .56	28.01 .20	21.12 .11
	TOP : SMAX=	6.41	SMIN=	-3.65	TMAX=	5.03 ANGLE=
	BOTT: SMAX=	4.52	SMIN=	-5.76	TMAX=	5.14 ANGLE=
	2	.04 .25	.06 .32	.56 -.07	-1.29 -.01	.20 .01
	TOP : SMAX=	.04	SMIN=	-.23	TMAX=	.14 ANGLE=
	BOTT: SMAX=	.20	SMIN=	-.16	TMAX=	.18 ANGLE=
	3	.00 .25	.05 .27	.08 -.03	-1.31 .00	.45 .00
	TOP : SMAX=	.01	SMIN=	-.24	TMAX=	.13 ANGLE=
	BOTT: SMAX=	.24	SMIN=	-.06	TMAX=	.15 ANGLE=
	4	-.02 .40	.04 .37	.05 -.02	-1.28 -.01	1.10 .01
	TOP : SMAX=	.10	SMIN=	-.34	TMAX=	.22 ANGLE=
	BOTT: SMAX=	.30	SMIN=	-.12	TMAX=	.21 ANGLE=
	5	.04 .51	.04 .51	.37 -.01	-2.76 -.01	.44 -.01
	TOP : SMAX=	.06	SMIN=	-.48	TMAX=	.27 ANGLE=
	BOTT: SMAX=	.46	SMIN=	-.08	TMAX=	.27 ANGLE=
	6	.00 .13	-.01 .13	-.36 .01	-.83 .00	-.18 .00
	TOP : SMAX=	-.05	SMIN=	-.15	TMAX=	.05 ANGLE=
	BOTT: SMAX=	.15	SMIN=	.05	TMAX=	.05 ANGLE=
	7	-.03 .57	-.06 .61	-1.99 .05	-3.27 -.01	-1.19 .02
	TOP : SMAX=	-.20	SMIN=	-.64	TMAX=	.22 ANGLE=
	BOTT: SMAX=	.69	SMIN=	.22	TMAX=	.23 ANGLE=
	8	.02 .31	.04 .30	.32 .00	-1.51 -.01	.38 -.01
	TOP : SMAX=	.06	SMIN=	-.27	TMAX=	.17 ANGLE=
	BOTT: SMAX=	.26	SMIN=	-.07	TMAX=	.16 ANGLE=
	9	.01 .24	.03 .24	.24 -.02	-1.03 -.01	.48 .00
	TOP : SMAX=	.05	SMIN=	-.21	TMAX=	.13 ANGLE=
	BOTT: SMAX=	.19	SMIN=	-.08	TMAX=	.13 ANGLE=
	10	.04 1.56	.11 1.42	3.13 -.11	-1.15 -.03	4.64 .07
	TOP : SMAX=	1.00	SMIN=	-.80	TMAX=	.90 ANGLE=
	BOTT: SMAX=	.57	SMIN=	-1.04	TMAX=	.81 ANGLE=
	11	-.04 1.56	-.11 1.42	-3.13 .11	1.15 .03	-4.64 -.07
	TOP : SMAX=	.80	SMIN=	-1.00	TMAX=	.90 ANGLE=
	BOTT: SMAX=	1.04	SMIN=	-.57	TMAX=	.81 ANGLE=
	12	.00 .01	.00 .01	.02 .00	-.05 .00	.03 .00
	TOP : SMAX=	.00	SMIN=	-.01	TMAX=	.01 ANGLE=
	BOTT: SMAX=	.01	SMIN=	-.01	TMAX=	.01 ANGLE=
	13	.01 1.71	.29 3.93	7.37 -1.12	-4.25 -.04	7.47 -.38
	TOP : SMAX=	.65	SMIN=	-1.29	TMAX=	.97 ANGLE=
	BOTT: SMAX=	1.37	SMIN=	-3.06	TMAX=	2.21 ANGLE=
	14	.01 2.10	.34 4.78	8.89 -1.39	-4.28 -.04	9.41 -.45
	TOP : SMAX=	.87	SMIN=	-1.53	TMAX=	1.20 ANGLE=
	BOTT: SMAX=	1.59	SMIN=	-3.78	TMAX=	2.69 ANGLE=
	101	.10 1.83	.21 1.82	1.98 -.13	-7.83 -.07	3.59 .02
	TOP : SMAX=	.42	SMIN=	-1.59	TMAX=	1.00 ANGLE=
	BOTT: SMAX=	1.41	SMIN=	-.64	TMAX=	1.03 ANGLE=

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.06	.13	.96	-5.33						2.16
		1.18	1.15	-.08	-.05						.02
TOP :	SMAX=	.21	SMIN=	-1.06	TMAX=	.63	ANGLE=				18.3
BOTT:	SMAX=	.94	SMIN=	-.34	TMAX=	.64	ANGLE=				16.2
103		.04	.08	-.34	-7.28						1.36
		1.30	1.20	-.04	-.05						.03
TOP :	SMAX=	-.05	SMIN=	-1.32	TMAX=	.64	ANGLE=				12.0
BOTT:	SMAX=	1.19	SMIN=	-.02	TMAX=	.60	ANGLE=				9.2
104		.07	.17	1.50	-5.88						2.61
		1.36	1.35	-.08	-.06						.01
TOP :	SMAX=	.31	SMIN=	-1.18	TMAX=	.75	ANGLE=				18.1
BOTT:	SMAX=	1.06	SMIN=	-.47	TMAX=	.76	ANGLE=				17.2
105		.07	.16	1.44	-5.49						2.69
		1.32	1.31	-.10	-.05						.02
TOP :	SMAX=	.31	SMIN=	-1.13	TMAX=	.72	ANGLE=				20.0
BOTT:	SMAX=	1.00	SMIN=	-.47	TMAX=	.74	ANGLE=				17.9
106		-.22	-.40	-1.95	8.37						18.07
		5.40	5.54	-.39	.04						-.09
TOP :	SMAX=	3.47	SMIN=	-2.76	TMAX=	3.11	ANGLE=				-34.9
BOTT:	SMAX=	2.46	SMIN=	-3.88	TMAX=	3.17	ANGLE=				-39.1
107		-.25	-.51	-5.09	9.52						13.43
		4.34	4.56	-.28	.07						-.16
TOP :	SMAX=	2.76	SMIN=	-2.24	TMAX=	2.50	ANGLE=				-28.1
BOTT:	SMAX=	2.14	SMIN=	-3.09	TMAX=	2.62	ANGLE=				-33.2
108		.13	.44	6.94	-11.48						9.32
		3.21	4.49	-.86	-.11						-.19
TOP :	SMAX=	.92	SMIN=	-2.65	TMAX=	1.79	ANGLE=				24.8
BOTT:	SMAX=	2.48	SMIN=	-2.70	TMAX=	2.59	ANGLE=				21.2
109		.38	.83	7.80	-29.17						14.42
		7.05	6.98	-.52	-.27						.10
TOP :	SMAX=	1.69	SMIN=	-6.05	TMAX=	3.87	ANGLE=				20.1
BOTT:	SMAX=	5.33	SMIN=	-2.56	TMAX=	3.95	ANGLE=				17.9
422	15	2.02	-3.04	-195.94	-118.78						83.38
		37.23	37.37	-.10	.31						-.09
TOP :	SMAX=	-10.80	SMIN=	-41.44	TMAX=	15.32	ANGLE=				-32.2
BOTT:	SMAX=	41.64	SMIN=	11.03	TMAX=	15.31	ANGLE=				-33.0
2		-.06	.06	2.90	5.12						.49
		.73	.78	-.03	-.03						.01
TOP :	SMAX=	.85	SMIN=	.43	TMAX=	.21	ANGLE=				-13.6
BOTT:	SMAX=	-.50	SMIN=	-.90	TMAX=	.20	ANGLE=				-10.3
3		-.04	.05	2.23	4.95						.10
		.70	.73	-.02	-.02						.00
TOP :	SMAX=	.81	SMIN=	.35	TMAX=	.23	ANGLE=				-2.5
BOTT:	SMAX=	-.39	SMIN=	-.84	TMAX=	.23	ANGLE=				-1.8
4		-.03	.04	2.03	3.77						.09
		.54	.55	-.01	-.01						.00
TOP :	SMAX=	.62	SMIN=	.33	TMAX=	.14	ANGLE=				-2.8
BOTT:	SMAX=	-.34	SMIN=	-.64	TMAX=	.15	ANGLE=				-3.0
5		-.07	.11	3.93	5.87						.04
		.85	.87	.01	-.02						.00
TOP :	SMAX=	.96	SMIN=	.67	TMAX=	.15	ANGLE=				-.9
BOTT:	SMAX=	-.64	SMIN=	-.99	TMAX=	.18	ANGLE=				-1.4
6		.02	-.01	-.67	-2.11						.44
		.35	.33	.00	-.01						.01
TOP :	SMAX=	-.09	SMIN=	-.38	TMAX=	.15	ANGLE=				16.3
BOTT:	SMAX=	.36	SMIN=	.09	TMAX=	.13	ANGLE=				14.9
7		.15	-.11	-4.68	-14.31						3.38
		2.40	2.25	-.01	-.04						.05
TOP :	SMAX=	-.58	SMIN=	-2.63	TMAX=	1.03	ANGLE=				18.4
BOTT:	SMAX=	2.49	SMIN=	.62	TMAX=	.94	ANGLE=				16.5

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MAX FXY
	8	-.05	.06	2.77	4.32	.06
		.62	.64	.02	-.02	.00
TOP :	SMAX=	.70	SMIN=	.48	TMAX=	.11 ANGLE= -2.1
BOTT:	SMAX=	-.44	SMIN=	-.74	TMAX=	.15 ANGLE= -2.2
	9	-.04	.05	1.92	3.17	.21
		.46	.47	.00	-.01	.00
TOP :	SMAX=	.53	SMIN=	.31	TMAX=	.11 ANGLE= -10.0
BOTT:	SMAX=	-.32	SMIN=	-.54	TMAX=	.11 ANGLE= -8.8
	10	.01	.16	12.29	4.60	4.51
		2.15	2.28	-.08	-.06	-.02
TOP :	SMAX=	2.31	SMIN=	.37	TMAX=	.97 ANGLE= 24.7
BOTT:	SMAX=	-.47	SMIN=	-2.48	TMAX=	1.01 ANGLE= 24.9
	11	-.01	-.16	-12.29	-4.60	-4.51
		2.15	2.28	.08	.06	.02
TOP :	SMAX=	-.37	SMIN=	-2.31	TMAX=	.97 ANGLE= 24.7
BOTT:	SMAX=	2.48	SMIN=	.47	TMAX=	1.01 ANGLE= 24.9
	12	.00	.00	.12	.25	.02
		.04	.04	.00	.00	.00
TOP :	SMAX=	.04	SMIN=	.02	TMAX=	.01 ANGLE= 90.0
BOTT:	SMAX=	-.02	SMIN=	-.04	TMAX=	.01 ANGLE= 90.0
	13	.30	.46	35.64	14.06	11.38
		4.13	8.29	-2.00	.10	-.58
TOP :	SMAX=	4.71	SMIN=	1.68	TMAX=	1.51 ANGLE= 30.2
BOTT:	SMAX=	-1.32	SMIN=	-8.87	TMAX=	3.77 ANGLE= 20.5
	14	.41	.55	42.60	15.39	14.26
		4.92	10.19	-2.52	.15	-.72
TOP :	SMAX=	5.55	SMIN=	1.74	TMAX=	1.91 ANGLE= 30.3
BOTT:	SMAX=	-1.27	SMIN=	-10.76	TMAX=	4.75 ANGLE= 20.3
	101	-.26	.34	14.49	22.60	1.66
		3.29	3.39	-.01	-.07	.01
TOP :	SMAX=	3.76	SMIN=	2.35	TMAX=	.71 ANGLE= -12.0
BOTT:	SMAX=	-2.37	SMIN=	-3.88	TMAX=	.75 ANGLE= -10.3
	102	-.15	.20	8.34	12.20	1.45
		1.82	1.88	-.01	-.05	.01
TOP :	SMAX=	2.08	SMIN=	1.29	TMAX=	.39 ANGLE= -20.0
BOTT:	SMAX=	-1.33	SMIN=	-2.15	TMAX=	.41 ANGLE= -16.9
	103	-.04	.12	5.13	2.44	3.80
		1.39	1.26	-.01	-.08	.05
TOP :	SMAX=	1.31	SMIN=	-.14	TMAX=	.73 ANGLE= 34.7
BOTT:	SMAX=	-.06	SMIN=	-1.29	TMAX=	.61 ANGLE= 35.9
	104	-.20	.25	11.09	17.35	1.14
		2.52	2.60	.01	-.06	.01
TOP :	SMAX=	2.87	SMIN=	1.82	TMAX=	.53 ANGLE= -11.0
BOTT:	SMAX=	-1.81	SMIN=	-2.98	TMAX=	.58 ANGLE= -9.2
	105	-.19	.24	10.40	16.43	1.27
		2.39	2.46	-.01	-.05	.01
TOP :	SMAX=	2.74	SMIN=	1.68	TMAX=	.53 ANGLE= -12.3
BOTT:	SMAX=	-1.71	SMIN=	-2.82	TMAX=	.56 ANGLE= -10.6
	106	1.07	-1.08	-68.40	-41.25	50.33
		17.65	17.65	-1.09	.15	-.34
TOP :	SMAX=	-1.06	SMIN=	-18.16	TMAX=	8.55 ANGLE= -35.2
BOTT:	SMAX=	17.54	SMIN=	-.21	TMAX=	8.88 ANGLE= -39.7
	107	1.06	-1.24	-80.68	-45.85	45.82
		17.82	17.56	-1.01	.21	-.32
TOP :	SMAX=	-2.83	SMIN=	-19.06	TMAX=	8.12 ANGLE= -32.2
BOTT:	SMAX=	18.42	SMIN=	1.86	TMAX=	8.28 ANGLE= -37.0
	108	-.12	.68	39.04	35.48	9.32
		5.98	7.77	-1.27	-.01	-.34
TOP :	SMAX=	6.83	SMIN=	4.31	TMAX=	1.26 ANGLE= -37.3
BOTT:	SMAX=	-4.74	SMIN=	-8.96	TMAX=	2.11 ANGLE= 32.0
	109	-1.02	1.28	55.45	86.83	6.86
		12.65	13.04	-.04	-.26	.05
TOP :	SMAX=	14.48	SMIN=	8.93	TMAX=	2.78 ANGLE= -12.7
BOTT:	SMAX=	-9.07	SMIN=	-14.94	TMAX=	2.93 ANGLE= -10.9

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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH							
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH									
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
423	15	1.44	2.62	-180.37	-72.27	-68.98			
		33.19	32.65	-.33	.23	-.01			
	TOP : SMAX=	-6.32	SMIN=	-35.89	TMAX=	14.79	ANGLE=	25.5	
	BOTT: SMAX=	35.43	SMIN=	6.58	TMAX=	14.43	ANGLE=	26.4	
	2	-.06	-.06	2.90	5.12	-.49			
		.73	.78	-.03	-.03	-.01			
	TOP : SMAX=	.85	SMIN=	.43	TMAX=	.21	ANGLE=	13.6	
	BOTT: SMAX=	-.50	SMIN=	-.90	TMAX=	.20	ANGLE=	10.3	
	3	-.04	-.05	2.23	4.95	-.10			
		.70	.73	-.02	-.02	.00			
	TOP : SMAX=	.81	SMIN=	.35	TMAX=	.23	ANGLE=	2.5	
	BOTT: SMAX=	-.39	SMIN=	-.84	TMAX=	.23	ANGLE=	1.8	
	4	-.03	-.04	2.03	3.77	-.09			
		.54	.55	-.01	-.01	.00			
	TOP : SMAX=	.62	SMIN=	.33	TMAX=	.14	ANGLE=	2.8	
	BOTT: SMAX=	-.34	SMIN=	-.64	TMAX=	.15	ANGLE=	3.0	
	5	-.07	-.11	3.93	5.87	-.04			
		.85	.87	.01	-.02	.00			
	TOP : SMAX=	.96	SMIN=	.67	TMAX=	.15	ANGLE=	.9	
	BOTT: SMAX=	-.64	SMIN=	-.99	TMAX=	.18	ANGLE=	1.4	
	6	-.02	-.01	.64	1.98	.43			
		.33	.31	.00	.00	.01			
	TOP : SMAX=	.36	SMIN=	.08	TMAX=	.14	ANGLE=	-17.3	
	BOTT: SMAX=	-.09	SMIN=	-.34	TMAX=	.13	ANGLE=	-15.7	
	7	-.16	-.11	4.94	15.32	3.12			
		2.53	2.33	.01	.08	.05			
	TOP : SMAX=	2.79	SMIN=	.67	TMAX=	1.06	ANGLE=	-16.1	
	BOTT: SMAX=	-.68	SMIN=	-2.60	TMAX=	.96	ANGLE=	-14.8	
	8	-.05	-.06	2.77	4.32	-.06			
		.62	.64	.02	-.02	.00			
	TOP : SMAX=	.70	SMIN=	.48	TMAX=	.11	ANGLE=	2.1	
	BOTT: SMAX=	-.44	SMIN=	-.74	TMAX=	.15	ANGLE=	2.2	
	9	-.04	-.05	1.92	3.17	-.21			
		.46	.47	.00	-.01	.00			
	TOP : SMAX=	.53	SMIN=	.31	TMAX=	.11	ANGLE=	10.0	
	BOTT: SMAX=	-.32	SMIN=	-.54	TMAX=	.11	ANGLE=	8.8	
	10	.01	-.16	12.29	4.60	-4.51			
		2.15	2.28	-.08	-.06	.02			
	TOP : SMAX=	2.31	SMIN=	.37	TMAX=	.97	ANGLE=	-24.7	
	BOTT: SMAX=	-.47	SMIN=	-2.48	TMAX=	1.01	ANGLE=	-24.9	
	11	-.01	.16	-12.29	-4.60	4.51			
		2.15	2.28	.08	.06	-.02			
	TOP : SMAX=	-.37	SMIN=	-2.31	TMAX=	.97	ANGLE=	-24.7	
	BOTT: SMAX=	2.48	SMIN=	.47	TMAX=	1.01	ANGLE=	-24.9	
	12	.00	.00	.12	.25	-.02			
		.04	.04	.00	.00	.00			
	TOP : SMAX=	.04	SMIN=	.02	TMAX=	.01	ANGLE=	90.0	
	BOTT: SMAX=	-.02	SMIN=	-.04	TMAX=	.01	ANGLE=	90.0	
	13	.30	-.46	35.64	14.06	-11.38			
		4.13	8.29	-2.00	.10	.58			
	TOP : SMAX=	4.71	SMIN=	1.68	TMAX=	1.51	ANGLE=	-30.2	
	BOTT: SMAX=	-1.32	SMIN=	-8.87	TMAX=	3.77	ANGLE=	-20.5	
	14	.41	-.55	42.60	15.39	-14.26			
		4.92	10.19	-2.52	.15	.72			
	TOP : SMAX=	5.55	SMIN=	1.74	TMAX=	1.91	ANGLE=	-30.3	
	BOTT: SMAX=	-1.27	SMIN=	-10.76	TMAX=	4.75	ANGLE=	-20.3	
	101	-.26	-.34	14.48	22.59	-1.66			
		3.29	3.39	-.01	-.07	-.01			
	TOP : SMAX=	3.76	SMIN=	2.35	TMAX=	.71	ANGLE=	12.0	
	BOTT: SMAX=	-2.37	SMIN=	-3.88	TMAX=	.75	ANGLE=	10.3	

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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH				
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH						
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
	102	-.18	-.21	9.38	15.47	-.75
		2.23	2.29	-.01	-.04	.00
	TOP : SMAX=	4.56	SMIN=	1.54	TMAX=	.51 ANGLE= 7.3
	BOTT: SMAX=	-1.56	SMIN=	-2.63	TMAX=	.54 ANGLE= 6.6
	103	-.29	-.29	12.82	26.14	1.40
		3.82	3.77	.00	.02	.03
	TOP : SMAX=	4.41	SMIN=	2.11	TMAX=	1.15 ANGLE= -6.6
	BOTT: SMAX=	-2.11	SMIN=	-4.35	TMAX=	1.12 ANGLE= -5.3
	104	-.20	-.25	11.08	17.34	-1.14
		2.52	2.60	.01	-.06	-.01
	TOP : SMAX=	2.87	SMIN=	1.82	TMAX=	.53 ANGLE= 11.0
	BOTT: SMAX=	-1.81	SMIN=	-2.97	TMAX=	.58 ANGLE= 9.2
	105	-.19	-.24	10.40	16.42	-1.27
		2.39	2.46	-.01	-.05	-.01
	TOP : SMAX=	2.74	SMIN=	1.68	TMAX=	.53 ANGLE= 12.3
	BOTT: SMAX=	-1.70	SMIN=	-2.82	TMAX=	.56 ANGLE= 10.6
	106	.78	.87	-60.62	-18.00	-43.13
		15.70	15.13	-1.20	.11	.29
	TOP : SMAX=	.98	SMIN=	-15.18	TMAX=	8.08 ANGLE= 29.3
	BOTT: SMAX=	14.02	SMIN=	-2.01	TMAX=	8.02 ANGLE= 34.4
	107	.77	1.03	-72.90	-22.60	-38.62
		15.98	15.12	-1.13	.17	.27
	TOP : SMAX=	-.60	SMIN=	-16.28	TMAX=	7.84 ANGLE= 25.9
	BOTT: SMAX=	15.07	SMIN=	-.11	TMAX=	7.59 ANGLE= 31.1
	108	-.12	-.68	39.04	35.47	-9.33
		5.98	7.77	-1.27	-.01	.34
	TOP : SMAX=	6.83	SMIN=	4.31	TMAX=	1.26 ANGLE= 37.3
	BOTT: SMAX=	-4.74	SMIN=	-8.96	TMAX=	2.11 ANGLE= -32.0
	109	-1.02	-1.28	55.43	86.79	-6.86
		12.65	13.03	-.04	-.26	-.05
	TOP : SMAX=	14.48	SMIN=	8.92	TMAX=	2.78 ANGLE= 12.7
	BOTT: SMAX=	-9.07	SMIN=	-14.94	TMAX=	2.93 ANGLE= 10.9
424	15	-.52	.99	-13.08	23.19	-25.75
		9.48	8.78	-.04	.19	-.17
	TOP : SMAX=	6.37	SMIN=	-4.53	TMAX=	5.45 ANGLE= 27.5
	BOTT: SMAX=	4.28	SMIN=	-5.81	TMAX=	5.05 ANGLE= 27.4
	2	.04	-.06	.56	-1.29	-.20
		.25	.32	-.07	-.01	-.01
	TOP : SMAX=	.04	SMIN=	-.23	TMAX=	.14 ANGLE= -9.7
	BOTT: SMAX=	.20	SMIN=	-.16	TMAX=	.18 ANGLE= -3.2
	3	.00	-.05	.08	-1.31	-.45
		.25	.27	-.03	.00	.00
	TOP : SMAX=	.01	SMIN=	-.24	TMAX=	.13 ANGLE= -17.7
	BOTT: SMAX=	.24	SMIN=	-.06	TMAX=	.15 ANGLE= -15.2
	4	-.02	-.04	.05	-1.28	-1.10
		.40	.37	-.02	-.01	-.01
	TOP : SMAX=	.10	SMIN=	-.34	TMAX=	.22 ANGLE= -30.5
	BOTT: SMAX=	.30	SMIN=	-.12	TMAX=	.21 ANGLE= -28.4
	5	.04	-.04	.37	-2.76	-.44
		.51	.51	-.01	-.01	.01
	TOP : SMAX=	.06	SMIN=	-.48	TMAX=	.27 ANGLE= -6.5
	BOTT: SMAX=	.46	SMIN=	-.08	TMAX=	.27 ANGLE= -9.1
	6	.00	-.01	.33	.69	-.18
		.11	.11	-.01	.00	.00
	TOP : SMAX=	.13	SMIN=	.04	TMAX=	.04 ANGLE= 90.0
	BOTT: SMAX=	-.05	SMIN=	-.13	TMAX=	.04 ANGLE= 90.0
	7	.04	-.06	1.86	2.65	-1.50
		.56	.61	-.05	.01	.02
	TOP : SMAX=	.61	SMIN=	.10	TMAX=	.25 ANGLE= 33.6
	BOTT: SMAX=	-.13	SMIN=	-.67	TMAX=	.27 ANGLE= 90.0

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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH				
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH						
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX
	8	.02	-.04	.32	-1.51	-.38
		.31	.30	.00	-.01	.01
	TOP : SMAX=	.06	SMIN=	-.27	TMAX=	.17 ANGLE= -8.7
	BOTT: SMAX=	.26	SMIN=	-.07	TMAX=	.16 ANGLE= -14.0
	9	.01	-.03	.24	-1.03	-.48
		.24	.24	-.02	-.01	.00
	TOP : SMAX=	.05	SMIN=	-.21	TMAX=	.13 ANGLE= -19.3
	BOTT: SMAX=	.19	SMIN=	-.08	TMAX=	.13 ANGLE= -17.8
	10	.04	-.11	3.13	-1.15	-4.64
		1.56	1.42	-.11	-.03	-.07
	TOP : SMAX=	1.00	SMIN=	-.80	TMAX=	.90 ANGLE= -34.7
	BOTT: SMAX=	.57	SMIN=	-1.04	TMAX=	.81 ANGLE= -30.3
	11	-.04	.11	-3.13	1.15	4.64
		1.56	1.42	.11	.03	.07
	TOP : SMAX=	.80	SMIN=	-1.00	TMAX=	.90 ANGLE= -34.7
	BOTT: SMAX=	1.04	SMIN=	-.57	TMAX=	.81 ANGLE= -30.3
	12	.00	.00	.02	-.05	-.03
		.01	.01	.00	.00	.00
	TOP : SMAX=	.00	SMIN=	-.01	TMAX=	.01 ANGLE= 90.0
	BOTT: SMAX=	.01	SMIN=	-.01	TMAX=	.01 ANGLE= 90.0
	13	.01	-.29	7.37	-4.25	-7.47
		1.71	3.93	-1.12	-.04	.38
	TOP : SMAX=	.65	SMIN=	-1.29	TMAX=	.97 ANGLE= -31.9
	BOTT: SMAX=	1.37	SMIN=	-3.06	TMAX=	2.21 ANGLE= -23.6
	14	.01	-.34	8.89	-4.28	-9.41
		2.10	4.78	-1.39	-.04	.45
	TOP : SMAX=	.87	SMIN=	-1.53	TMAX=	1.20 ANGLE= -34.8
	BOTT: SMAX=	1.59	SMIN=	-3.78	TMAX=	2.69 ANGLE= -24.3
	101	.10	-.21	1.98	-7.83	-3.59
		1.83	1.82	-.13	-.07	-.02
	TOP : SMAX=	.42	SMIN=	-1.59	TMAX=	1.00 ANGLE= -19.0
	BOTT: SMAX=	1.41	SMIN=	-.64	TMAX=	1.03 ANGLE= -17.2
	102	.06	-.14	1.51	-4.12	-2.45
		1.10	1.10	-.09	-.04	-.01
	TOP : SMAX=	.33	SMIN=	-.90	TMAX=	.61 ANGLE= -21.7
	BOTT: SMAX=	.78	SMIN=	-.48	TMAX=	.63 ANGLE= -19.4
	103	.09	-.18	2.73	-2.55	-3.51
		1.23	1.32	-.13	-.04	.00
	TOP : SMAX=	.64	SMIN=	-.77	TMAX=	.71 ANGLE= -28.0
	BOTT: SMAX=	.66	SMIN=	-.85	TMAX=	.76 ANGLE= -25.1
	104	.07	-.17	1.50	-5.88	-2.61
		1.36	1.35	-.08	-.06	-.01
	TOP : SMAX=	.31	SMIN=	-1.18	TMAX=	.75 ANGLE= -18.1
	BOTT: SMAX=	1.06	SMIN=	-.47	TMAX=	.76 ANGLE= -17.2
	105	.07	-.16	1.44	-5.49	-2.69
		1.32	1.31	-.10	-.05	-.02
	TOP : SMAX=	.31	SMIN=	-1.13	TMAX=	.72 ANGLE= -20.0
	BOTT: SMAX=	1.01	SMIN=	-.47	TMAX=	.74 ANGLE= -17.8
	106	-.20	.21	-.50	5.96	-20.39
		5.99	6.05	-.69	.03	.06
	TOP : SMAX=	3.58	SMIN=	-3.33	TMAX=	3.46 ANGLE= 37.5
	BOTT: SMAX=	2.68	SMIN=	-4.25	TMAX=	3.46 ANGLE= 43.5
	107	-.23	.32	-3.63	7.10	-15.75
		4.81	4.91	-.58	.06	.13
	TOP : SMAX=	2.81	SMIN=	-2.74	TMAX=	2.77 ANGLE= 32.0
	BOTT: SMAX=	2.27	SMIN=	-3.36	TMAX=	2.81 ANGLE= 39.1
	108	.13	-.44	6.94	-11.48	-9.32
		3.21	4.49	-.86	-.11	.19
	TOP : SMAX=	.92	SMIN=	-2.65	TMAX=	1.79 ANGLE= -24.8
	BOTT: SMAX=	2.48	SMIN=	-2.70	TMAX=	2.59 ANGLE= -21.2
	109	.38	-.83	7.79	-29.19	-14.42
		7.05	6.98	-.52	-.27	-.10
	TOP : SMAX=	1.69	SMIN=	-6.05	TMAX=	3.87 ANGLE= -20.1
	BOTT: SMAX=	5.33	SMIN=	-2.56	TMAX=	3.95 ANGLE= -17.9

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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH				
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH						
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
425	15	.21	-.13	7.55	20.13	-13.19
		6.02	3.66	-.26	.75	-.54
	TOP : SMAX=	5.70	SMIN=	-.59	TMAX=	3.15 ANGLE= 30.2
	BOTT: SMAX=	-.31	SMIN=	-3.81	TMAX=	1.75 ANGLE= 35.9
	2	.00	.01	-1.08	-3.17	-.15
		.50	.44	-.04	-.04	-.03
	TOP : SMAX=	-.22	SMIN=	-.57	TMAX=	.18 ANGLE= -8.4
	BOTT: SMAX=	.49	SMIN=	.14	TMAX=	.18 ANGLE= .2
	3	.01	.00	-.80	-2.80	-.03
		.45	.38	-.02	-.04	-.01
	TOP : SMAX=	-.15	SMIN=	-.51	TMAX=	.18 ANGLE= -1.8
	BOTT: SMAX=	.42	SMIN=	.11	TMAX=	.15 ANGLE= .5
	4	.01	.01	-.61	-2.11	-.11
		.35	.28	-.01	-.04	-.01
	TOP : SMAX=	-.11	SMIN=	-.40	TMAX=	.15 ANGLE= -6.2
	BOTT: SMAX=	.31	SMIN=	.09	TMAX=	.11 ANGLE= -1.1
	5	.00	.01	-.90	-2.69	.17
		.44	.36	.00	-.03	.02
	TOP : SMAX=	-.14	SMIN=	-.49	TMAX=	.17 ANGLE= 7.7
	BOTT: SMAX=	.42	SMIN=	.15	TMAX=	.13 ANGLE= 2.5
	6	.00	.00	.02	.20	-.04
		.03	.04	.00	-.01	.00
	TOP : SMAX=	.03	SMIN=	.00	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	-.01	SMIN=	-.04	TMAX=	.02 ANGLE= 90.0
	7	.01	.00	-.19	-.13	-.14
		.08	.06	-.03	-.06	.00
	TOP : SMAX=	-.05	SMIN=	-.09	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	.02	SMIN=	-.05	TMAX=	.03 ANGLE= 90.0
	8	.00	.01	-.79	-2.36	.10
		.38	.31	.01	-.03	.01
	TOP : SMAX=	-.12	SMIN=	-.43	TMAX=	.16 ANGLE= 5.3
	BOTT: SMAX=	.36	SMIN=	.14	TMAX=	.11 ANGLE= 1.5
	9	.00	.01	-.54	-1.67	-.08
		.27	.23	-.01	-.02	.00
	TOP : SMAX=	-.09	SMIN=	-.30	TMAX=	.10 ANGLE= -4.8
	BOTT: SMAX=	.25	SMIN=	.08	TMAX=	.09 ANGLE= -3.0
	10	.02	.02	-1.06	-.94	-1.66
		.65	.37	-.03	-.10	-.07
	TOP : SMAX=	.12	SMIN=	-.59	TMAX=	.35 ANGLE= 90.0
	BOTT: SMAX=	.31	SMIN=	-.11	TMAX=	.21 ANGLE= 90.0
	11	-.02	-.02	1.06	.94	1.66
		.65	.37	.03	.10	.07
	TOP : SMAX=	.59	SMIN=	-.12	TMAX=	.35 ANGLE= 90.0
	BOTT: SMAX=	.11	SMIN=	-.31	TMAX=	.21 ANGLE= 90.0
	12	.00	.00	-.04	-.14	-.01
		.02	.02	.00	.00	.00
	TOP : SMAX=	-.01	SMIN=	-.03	TMAX=	.01 ANGLE= 90.0
	BOTT: SMAX=	.02	SMIN=	.01	TMAX=	.01 ANGLE= 90.0
	13	.05	.05	-3.07	-3.09	-3.77
		1.35	1.13	-.38	-.26	.01
	TOP : SMAX=	-.21	SMIN=	-1.45	TMAX=	.62 ANGLE= 42.3
	BOTT: SMAX=	.84	SMIN=	-.45	TMAX=	.64 ANGLE= -42.2
	14	.06	.06	-3.22	-2.51	-4.90
		1.68	1.41	-.47	-.30	-.01
	TOP : SMAX=	-.03	SMIN=	-1.70	TMAX=	.83 ANGLE= 40.1
	BOTT: SMAX=	.90	SMIN=	-.72	TMAX=	.81 ANGLE= 90.0
	101	.01	.06	-3.94	-11.92	-.60
		1.92	1.61	-.05	-.17	-.04
	TOP : SMAX=	-.70	SMIN=	-2.17	TMAX=	.73 ANGLE= -5.4
	BOTT: SMAX=	1.82	SMIN=	.60	TMAX=	.61 ANGLE= -2.9



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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.01	.04	-2.43	-7.25						
		1.18	.97	-.04	-.11						
TOP :	SMAX=	-.43	SMIN=	-1.33	TMAX=	.45	ANGLE=	-6.9			
BOTT:	SMAX=	1.10	SMIN=	.36	TMAX=	.37	ANGLE=	-3.7			
103		.01	.03	-2.60	-7.50						
		1.25	.98	-.06	-.15						
TOP :	SMAX=	-.48	SMIN=	-1.42	TMAX=	.47	ANGLE=	-7.3			
BOTT:	SMAX=	1.11	SMIN=	.37	TMAX=	.37	ANGLE=	-4.9			
104		.01	.05	-3.08	-9.29						
		1.49	1.25	-.03	-.13						
TOP :	SMAX=	-.54	SMIN=	-1.69	TMAX=	.58	ANGLE=	-3.9			
BOTT:	SMAX=	1.42	SMIN=	.48	TMAX=	.47	ANGLE=	-2.3			
105		.01	.04	-2.88	-8.74						
		1.41	1.18	-.04	-.12						
TOP :	SMAX=	-.51	SMIN=	-1.59	TMAX=	.54	ANGLE=	-6.1			
BOTT:	SMAX=	1.34	SMIN=	.44	TMAX=	.45	ANGLE=	-3.2			
106		.15	-.01	.16	3.36						
		3.44	2.25	-.36	.13						
TOP :	SMAX=	2.16	SMIN=	-1.80	TMAX=	1.98	ANGLE=	37.6			
BOTT:	SMAX=	.87	SMIN=	-1.69	TMAX=	1.28	ANGLE=	90.0			
107		.12	-.03	1.22	4.29						
		2.89	1.93	-.32	.23						
TOP :	SMAX=	2.07	SMIN=	-1.24	TMAX=	1.65	ANGLE=	35.6			
BOTT:	SMAX=	.57	SMIN=	-1.58	TMAX=	1.08	ANGLE=	90.0			
108		.05	.10	-6.51	-16.06						
		2.84	2.21	-.31	-.36						
TOP :	SMAX=	-1.19	SMIN=	-3.24	TMAX=	1.03	ANGLE=	-18.3			
BOTT:	SMAX=	2.46	SMIN=	.63	TMAX=	.91	ANGLE=	-16.3			
109		.06	.24	-15.30	-46.28						
		7.46	6.24	-.23	-.66						
TOP :	SMAX=	-2.71	SMIN=	-8.44	TMAX=	2.87	ANGLE=	-6.4			
BOTT:	SMAX=	7.07	SMIN=	2.31	TMAX=	2.38	ANGLE=	-3.2			
426	15	.08	-.06	4.80	8.50						
		1.45	1.84	.18	.20						
TOP :	SMAX=	1.67	SMIN=	.93	TMAX=	.37	ANGLE=	15.9			
BOTT:	SMAX=	.00	SMIN=	-1.84	TMAX=	.92	ANGLE=	-35.5			
2		.00	.01	-.66	-1.34						
		.22	.20	.03	-.02						
TOP :	SMAX=	-.08	SMIN=	-.25	TMAX=	.08	ANGLE=	-2.7			
BOTT:	SMAX=	.23	SMIN=	.11	TMAX=	.06	ANGLE=	90.0			
3		.00	.00	-.51	-1.81						
		.30	.24	.01	-.03						
TOP :	SMAX=	-.08	SMIN=	-.33	TMAX=	.13	ANGLE=	-3.5			
BOTT:	SMAX=	.28	SMIN=	.09	TMAX=	.09	ANGLE=	6.4			
4		.00	.00	-.40	-1.01						
		.16	.14	.01	-.01						
TOP :	SMAX=	-.05	SMIN=	-.18	TMAX=	.06	ANGLE=	-7.7			
BOTT:	SMAX=	.16	SMIN=	.08	TMAX=	.04	ANGLE=	90.0			
5		.00	.01	-.52	-1.10						
		.17	.15	.00	-.01						
TOP :	SMAX=	-.08	SMIN=	-.20	TMAX=	.06	ANGLE=	10.1			
BOTT:	SMAX=	.18	SMIN=	.08	TMAX=	.05	ANGLE=	90.0			
6		.00	.00	-.07	-1.11						
		.02	.01	.00	.00						
TOP :	SMAX=	-.01	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.02	SMIN=	.01	TMAX=	.00	ANGLE=	90.0			
7		.00	-.01	-.53	-1.38						
		.23	.18	.00	-.03						
TOP :	SMAX=	-.09	SMIN=	-.26	TMAX=	.09	ANGLE=	3.7			
BOTT:	SMAX=	.20	SMIN=	.09	TMAX=	.06	ANGLE=	8.9			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH

FORCE OR STRESS = FORCE/WIDTH/THICK,    MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.00	.01	-.49	-.97						.10
		.16	.13	.02	-.01						.01
	TOP : SMAX=	-.06	SMIN=	-.18	TMAX=	.06	ANGLE=	13.0			
	BOTT: SMAX=	.15	SMIN=	.10	TMAX=	.03	ANGLE=	90.0			
	9	.00	.00	-.34	-.84						.03
		.13	.11	.01	-.01						-.01
	TOP : SMAX=	-.05	SMIN=	-.15	TMAX=	.05	ANGLE=	-.4			
	BOTT: SMAX=	.13	SMIN=	.06	TMAX=	.03	ANGLE=	90.0			
	10	.01	.00	-.74	.55						.44
		.10	.39	.08	-.02						-.09
	TOP : SMAX=	.07	SMIN=	-.04	TMAX=	.06	ANGLE=	6.4			
	BOTT: SMAX=	.27	SMIN=	-.18	TMAX=	.23	ANGLE=	-22.3			
	11	-.01	.00	.74	-.55						-.44
		.10	.39	-.08	.02						.09
	TOP : SMAX=	.04	SMIN=	-.07	TMAX=	.06	ANGLE=	6.4			
	BOTT: SMAX=	.18	SMIN=	-.27	TMAX=	.23	ANGLE=	-22.3			
	12	.00	.00	-.03	-.10						.00
		.02	.01	.00	.00						.00
	TOP : SMAX=	-.01	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.01	SMIN=	.01	TMAX=	.00	ANGLE=	90.0			
	13	.02	.01	-2.16	1.16						.77
		.42	.81	.06	-.05						-.20
	TOP : SMAX=	.16	SMIN=	-.31	TMAX=	.24	ANGLE=	9.1			
	BOTT: SMAX=	.55	SMIN=	-.38	TMAX=	.47	ANGLE=	-22.5			
	14	.03	.01	-2.37	1.44						.92
		.47	.99	.08	-.06						-.27
	TOP : SMAX=	.20	SMIN=	-.34	TMAX=	.27	ANGLE=	12.3			
	BOTT: SMAX=	.66	SMIN=	-.49	TMAX=	.57	ANGLE=	-23.6			
	101	.01	.04	-2.47	-5.24						.25
		.82	.72	.06	-.06						-.04
	TOP : SMAX=	-.35	SMIN=	-.94	TMAX=	.29	ANGLE=	.4			
	BOTT: SMAX=	.83	SMIN=	.45	TMAX=	.19	ANGLE=	12.5			
	102	.00	.02	-1.60	-3.36						.17
		.53	.46	.04	-.04						-.03
	TOP : SMAX=	-.23	SMIN=	-.60	TMAX=	.19	ANGLE=	-.3			
	BOTT: SMAX=	.53	SMIN=	.29	TMAX=	.12	ANGLE=	14.6			
	103	.00	.02	-1.97	-4.38						.23
		.70	.59	.04	-.06						-.03
	TOP : SMAX=	-.29	SMIN=	-.79	TMAX=	.25	ANGLE=	.9			
	BOTT: SMAX=	.68	SMIN=	.35	TMAX=	.16	ANGLE=	12.6			
	104	.00	.03	-1.94	-4.05						.24
		.63	.55	.05	-.05						-.02
	TOP : SMAX=	-.27	SMIN=	-.72	TMAX=	.23	ANGLE=	2.5			
	BOTT: SMAX=	.64	SMIN=	.36	TMAX=	.14	ANGLE=	12.8			
	105	.00	.03	-1.82	-3.95						.19
		.62	.54	.04	-.05						-.03
	TOP : SMAX=	-.26	SMIN=	-.71	TMAX=	.22	ANGLE=	-.2			
	BOTT: SMAX=	.62	SMIN=	.33	TMAX=	.15	ANGLE=	13.0			
	106	.06	.00	-.03	3.02						1.72
		.54	1.37	.19	.04						-.43
	TOP : SMAX=	.59	SMIN=	.13	TMAX=	.23	ANGLE=	19.1			
	BOTT: SMAX=	.65	SMIN=	-.92	TMAX=	.79	ANGLE=	-32.7			
	107	.05	-.01	.71	2.46						1.28
		.47	1.02	.10	.06						-.34
	TOP : SMAX=	.53	SMIN=	.17	TMAX=	.18	ANGLE=	23.0			
	BOTT: SMAX=	.40	SMIN=	-.76	TMAX=	.58	ANGLE=	-36.6			
	108	.02	.06	-4.28	-5.82						.78
		.95	1.01	.12	-.11						-.19
	TOP : SMAX=	-.59	SMIN=	-1.09	TMAX=	.25	ANGLE=	-6.8			
	BOTT: SMAX=	1.16	SMIN=	.52	TMAX=	.32	ANGLE=	90.0			
	109	.03	.16	-9.66	-20.44						1.02
		3.20	2.81	.24	-.25						-.18
	TOP : SMAX=	-1.37	SMIN=	-3.66	TMAX=	1.15	ANGLE=	-.2			
	BOTT: SMAX=	3.24	SMIN=	1.76	TMAX=	.74	ANGLE=	14.0			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
427	15	.00	-.04	1.64	5.09	5.80					
		1.45	2.31	.39	.02	-.26					
	TOP :	SMAX=	SMIN=	.05	TMAX=	.71	ANGLE=	-40.8			
	BOTT:	SMAX=	SMIN=	-1.67	TMAX=	1.32	ANGLE=	-34.5			
	2	.00	.01	-.32	-.50	.23					
		.10	.16	.09	.01	-.02					
	TOP :	SMAX=	SMIN=	-.08	TMAX=	.06	ANGLE=	11.4			
	BOTT:	SMAX=	SMIN=	.06	TMAX=	.06	ANGLE=	90.0			
	3	.00	.00	-.12	-.86	-.18					
		.18	.12	.01	-.02	-.02					
	TOP :	SMAX=	SMIN=	-.17	TMAX=	.09	ANGLE=	-16.8			
	BOTT:	SMAX=	SMIN=	.03	TMAX=	.05	ANGLE=	90.0			
	4	.00	.01	-.17	-.32	-.16					
		.09	.05	.00	-.01	-.01					
	TOP :	SMAX=	SMIN=	-.09	TMAX=	.04	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	.02	TMAX=	.02	ANGLE=	90.0			
	5	.00	.01	-.16	-.35	-.11					
		.05	.08	.00	.00	.01					
	TOP :	SMAX=	SMIN=	-.06	TMAX=	.01	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	.01	TMAX=	.04	ANGLE=	90.0			
	6	.00	.00	-.12	-.38	.01					
		.06	.05	.00	.00	.00					
	TOP :	SMAX=	SMIN=	-.07	TMAX=	.02	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	.02	TMAX=	.02	ANGLE=	90.0			
	7	.00	.00	-.65	-2.29	.00					
		.36	.33	.00	-.02	.00					
	TOP :	SMAX=	SMIN=	-.40	TMAX=	.14	ANGLE=	-.5			
	BOTT:	SMAX=	SMIN=	.11	TMAX=	.13	ANGLE=	.6			
	8	.00	.01	-.19	-.31	-.08					
		.04	.07	.02	.00	.01					
	TOP :	SMAX=	SMIN=	-.05	TMAX=	.02	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	.03	TMAX=	.02	ANGLE=	90.0			
	9	.00	.00	-.16	-.42	.03					
		.07	.06	.01	.00	.00					
	TOP :	SMAX=	SMIN=	-.07	TMAX=	.03	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	.03	TMAX=	.02	ANGLE=	90.0			
	10	.00	.00	-.31	.32	1.00					
		.22	.42	.12	.00	-.04					
	TOP :	SMAX=	SMIN=	-.06	TMAX=	.12	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.18	TMAX=	.24	ANGLE=	-30.8			
	11	.00	.00	.31	-.32	-1.00					
		.22	.42	-.12	.00	.04					
	TOP :	SMAX=	SMIN=	-.19	TMAX=	.12	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.30	TMAX=	.24	ANGLE=	-30.8			
	12	.00	.00	-.02	-.08	.00					
		.01	.01	.00	.00	.00					
	TOP :	SMAX=	SMIN=	-.01	TMAX=	.01	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
	13	.00	.01	-.84	1.05	2.08					
		.36	1.02	.27	.01	-.16					
	TOP :	SMAX=	SMIN=	-.03	TMAX=	.19	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.47	TMAX=	.59	ANGLE=	-30.2			
	14	.00	.01	-1.01	.89	2.77					
		.47	1.30	.34	-.01	-.21					
	TOP :	SMAX=	SMIN=	-.10	TMAX=	.26	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.57	TMAX=	.75	ANGLE=	-31.8			
	101	.00	.04	-1.26	-2.36	.40					
		.37	.39	.12	.00	-.01					
	TOP :	SMAX=	SMIN=	-.40	TMAX=	.16	ANGLE=	9.8			
	BOTT:	SMAX=	SMIN=	.27	TMAX=	.09	ANGLE=	90.0			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

-----  
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
102		.00	.02	-.90	-1.81	.30
		.28	.29	.08	.00	-.01
TOP :	SMAX=	-.06	SMIN=	-.31	TMAX=	.12 ANGLE=
BOTT:	SMAX=	.34	SMIN=	.19	TMAX=	.07 ANGLE=
103		.00	.02	-1.33	-3.33	.29
		.52	.48	.08	-.01	-.01
TOP :	SMAX=	-.14	SMIN=	-.57	TMAX=	.22 ANGLE=
BOTT:	SMAX=	.56	SMIN=	.29	TMAX=	.14 ANGLE=
104		.00	.03	-.96	-1.75	.23
		.27	.28	.09	.00	.00
TOP :	SMAX=	-.06	SMIN=	-.30	TMAX=	.12 ANGLE=
BOTT:	SMAX=	.32	SMIN=	.23	TMAX=	.04 ANGLE=
105		.00	.03	-.93	-1.84	.31
		.29	.30	.09	.00	-.01
TOP :	SMAX=	-.06	SMIN=	-.32	TMAX=	.13 ANGLE=
BOTT:	SMAX=	.35	SMIN=	.20	TMAX=	.07 ANGLE=
106		.00	.00	-.27	2.25	4.63
		1.00	1.90	.44	.01	-.24
TOP :	SMAX=	.92	SMIN=	-.14	TMAX=	.53 ANGLE=
BOTT:	SMAX=	1.16	SMIN=	-1.04	TMAX=	1.10 ANGLE=
107		.00	.00	.04	1.94	3.62
		.78	1.49	.31	.01	-.20
TOP :	SMAX=	.73	SMIN=	-.08	TMAX=	.41 ANGLE=
BOTT:	SMAX=	.86	SMIN=	-.86	TMAX=	.86 ANGLE=
108		.00	.05	-2.12	-2.56	1.97
		.55	.98	.33	.00	-.13
TOP :	SMAX=	.06	SMIN=	-.52	TMAX=	.29 ANGLE=
BOTT:	SMAX=	1.02	SMIN=	.08	TMAX=	.47 ANGLE=
109		-.01	.15	-5.05	-9.39	1.82
		1.48	1.59	.49	-.01	-.07
TOP :	SMAX=	-.31	SMIN=	-1.61	TMAX=	.65 ANGLE=
BOTT:	SMAX=	1.83	SMIN=	1.05	TMAX=	.39 ANGLE=
428	15	-.02	-.04	.75	3.03	5.28
		1.52	1.74	.35	-.02	-.05
TOP :	SMAX=	1.31	SMIN=	-.35	TMAX=	.83 ANGLE=
BOTT:	SMAX=	.85	SMIN=	-1.15	TMAX=	1.00 ANGLE=
2		.00	.01	-.09	.06	.22
		.06	.10	.06	.01	-.01
TOP :	SMAX=	.06	SMIN=	-.01	TMAX=	.03 ANGLE=
BOTT:	SMAX=	.09	SMIN=	-.02	TMAX=	.06 ANGLE=
3		.00	.01	-.02	-.41	-.23
		.12	.07	.01	-.01	-.01
TOP :	SMAX=	.03	SMIN=	-.10	TMAX=	.07 ANGLE=
BOTT:	SMAX=	.07	SMIN=	.00	TMAX=	.03 ANGLE=
4		.00	.00	-.03	.05	-.15
		.06	.04	.02	.00	-.01
TOP :	SMAX=	.04	SMIN=	-.02	TMAX=	.03 ANGLE=
BOTT:	SMAX=	.03	SMIN=	-.01	TMAX=	.02 ANGLE=
5		.00	.00	.00	.06	-.14
		.04	.05	-.01	.01	.01
TOP :	SMAX=	.03	SMIN=	-.02	TMAX=	.02 ANGLE=
BOTT:	SMAX=	.02	SMIN=	-.03	TMAX=	.03 ANGLE=
6		.00	.00	-.14	-5.50	.01
		.08	.07	.00	.00	.00
TOP :	SMAX=	-.02	SMIN=	-.09	TMAX=	.03 ANGLE=
BOTT:	SMAX=	.08	SMIN=	.02	TMAX=	.03 ANGLE=
7		.00	.00	-.66	-2.41	-.02
		.37	.35	.00	-.01	.00
TOP :	SMAX=	-.11	SMIN=	-.41	TMAX=	.15 ANGLE=
BOTT:	SMAX=	.39	SMIN=	.11	TMAX=	.14 ANGLE=

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.00	.00	-.02	.07	-.02	.07	-.02	.07	-.02	.07
		.03	.06	.01	.01	.01	.01	.01	.01	.01	.01
	TOP : SMAX=	.03	SMIN=	.00	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.04	SMIN=	-.03	TMAX=	.04	ANGLE=	90.0			
	9	.00	.00	-.04	-.09	-.04	-.09	-.04	-.09	-.04	-.09
		.02	.02	.01	.00	.01	.00	.01	.00	.01	.00
	TOP : SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.02	SMIN=	.01	TMAX=	.01	ANGLE=	90.0			
	10	.00	.00	-.15	.09	-.15	.09	-.15	.09	-.15	.09
		.24	.30	.09	.01	.09	.01	.09	.01	.09	.01
	TOP : SMAX=	.18	SMIN=	-.09	TMAX=	.14	ANGLE=	90.0			
	BOTT: SMAX=	.22	SMIN=	-.11	TMAX=	.17	ANGLE=	-34.2			
	11	.00	.00	.15	-.09	.15	-.09	.15	-.09	.15	-.09
		.24	.30	-.09	-.01	-.09	-.01	-.09	-.01	-.09	-.01
	TOP : SMAX=	.09	SMIN=	-.18	TMAX=	.14	ANGLE=	90.0			
	BOTT: SMAX=	.11	SMIN=	-.22	TMAX=	.17	ANGLE=	-34.2			
	12	.00	.00	-.01	-.04	-.01	-.04	-.01	-.04	-.01	-.04
		.01	.00	.00	.00	.00	.00	.00	.00	.00	.00
	TOP : SMAX=	.00	SMIN=	-.01	TMAX=	.00	ANGLE=	90.0			
	BOTT: SMAX=	.01	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
	13	.00	.00	-.38	.52	-.38	.52	-.38	.52	-.38	.52
		.49	.84	.24	.02	.24	.02	.24	.02	.24	.02
	TOP : SMAX=	.41	SMIN=	-.13	TMAX=	.27	ANGLE=	90.0			
	BOTT: SMAX=	.60	SMIN=	-.36	TMAX=	.48	ANGLE=	-33.7			
	14	.00	.00	-.56	.26	-.56	.26	-.56	.26	-.56	.26
		.67	1.08	.31	.02	.31	.02	.31	.02	.31	.02
	TOP : SMAX=	.52	SMIN=	-.24	TMAX=	.38	ANGLE=	39.0			
	BOTT: SMAX=	.80	SMIN=	-.42	TMAX=	.61	ANGLE=	-34.7			
	101	.00	.03	-.33	.00	-.33	.00	-.33	.00	-.33	.00
		.13	.19	.09	.02	.09	.02	.09	.02	.09	.02
	TOP : SMAX=	.10	SMIN=	-.05	TMAX=	.07	ANGLE=	90.0			
	BOTT: SMAX=	.18	SMIN=	-.02	TMAX=	.10	ANGLE=	-25.8			
	102	.00	.02	-.33	-.42	-.33	-.42	-.33	-.42	-.33	-.42
		.11	.15	.06	.01	.06	.01	.06	.01	.06	.01
	TOP : SMAX=	.03	SMIN=	-.09	TMAX=	.06	ANGLE=	90.0			
	BOTT: SMAX=	.16	SMIN=	.03	TMAX=	.06	ANGLE=	90.0			
	103	.00	.02	-.75	-1.94	-.75	-1.94	-.75	-1.94	-.75	-1.94
		.31	.30	.06	.00	.06	.00	.06	.00	.06	.00
	TOP : SMAX=	-.06	SMIN=	-.33	TMAX=	.14	ANGLE=	10.2			
	BOTT: SMAX=	.35	SMIN=	.17	TMAX=	.09	ANGLE=	19.2			
	104	.00	.02	-.24	.04	-.24	.04	-.24	.04	-.24	.04
		.07	.12	.07	.02	.07	.02	.07	.02	.07	.02
	TOP : SMAX=	.07	SMIN=	-.01	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	.12	SMIN=	.00	TMAX=	.06	ANGLE=	-15.4			
	105	.00	.02	-.26	-.09	-.26	-.09	-.26	-.09	-.26	-.09
		.10	.15	.07	.01	.07	.01	.07	.01	.07	.01
	TOP : SMAX=	.07	SMIN=	-.05	TMAX=	.06	ANGLE=	90.0			
	BOTT: SMAX=	.14	SMIN=	-.01	TMAX=	.08	ANGLE=	90.0			
	106	-.01	.00	-.03	1.80	-.03	1.80	-.03	1.80	-.03	1.80
		1.18	1.51	.38	.01	.38	.01	.38	.01	.38	.01
	TOP : SMAX=	.99	SMIN=	-.31	TMAX=	.65	ANGLE=	90.0			
	BOTT: SMAX=	.92	SMIN=	-.82	TMAX=	.87	ANGLE=	-33.6			
	107	-.01	-.01	.12	1.71	-.01	1.71	-.01	1.71	-.01	1.71
		.94	1.21	.29	.00	.29	.00	.29	.00	.29	.00
	TOP : SMAX=	.81	SMIN=	-.22	TMAX=	.51	ANGLE=	90.0			
	BOTT: SMAX=	.69	SMIN=	-.71	TMAX=	.70	ANGLE=	-33.5			
	108	.00	.04	-.72	.10	-.72	.10	-.72	.10	-.72	.10
		.52	.80	.28	.03	.28	.03	.28	.03	.28	.03
	TOP : SMAX=	.39	SMIN=	-.19	TMAX=	.29	ANGLE=	39.6			
	BOTT: SMAX=	.65	SMIN=	-.24	TMAX=	.45	ANGLE=	-32.3			
	109	.00	.11	-1.38	-.09	-1.38	-.09	-1.38	-.09	-1.38	-.09
		.57	.85	.38	.07	.38	.07	.38	.07	.38	.07
	TOP : SMAX=	.42	SMIN=	-.23	TMAX=	.33	ANGLE=	90.0			
	BOTT: SMAX=	.79	SMIN=	-.11	TMAX=	.45	ANGLE=	-27.1			

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
429	15	-.03	-.03	.08	.61					4.18	
		1.35	1.10	.18	-.01					.08	
	TOP : SMAX=	.92	SMIN=	-.63	TMAX=	.77	ANGLE=			43.1	
	BOTT: SMAX=	.66	SMIN=	-.61	TMAX=	.64	ANGLE=			-38.7	
	2	.00	.00	.10	.46					.12	
		.08	.08	.03	.01					.00	
	TOP : SMAX=	.09	SMIN=	.04	TMAX=	.03	ANGLE=			90.0	
	BOTT: SMAX=	.02	SMIN=	-.07	TMAX=	.05	ANGLE=			90.0	
	3	.00	.01	.12	.44					-.26	
		.11	.09	.02	.00					-.01	
	TOP : SMAX=	.11	SMIN=	.00	TMAX=	.05	ANGLE=			90.0	
	BOTT: SMAX=	.01	SMIN=	-.09	TMAX=	.05	ANGLE=			90.0	
	4	.00	.00	.08	.33					-.09	
		.06	.05	.01	.00					.00	
	TOP : SMAX=	.06	SMIN=	.02	TMAX=	.02	ANGLE=			90.0	
	BOTT: SMAX=	.00	SMIN=	-.05	TMAX=	.03	ANGLE=			90.0	
	5	.00	.00	.10	.36					-.13	
		.07	.06	-.01	.01					.00	
	TOP : SMAX=	.07	SMIN=	.00	TMAX=	.03	ANGLE=			90.0	
	BOTT: SMAX=	-.01	SMIN=	-.07	TMAX=	.03	ANGLE=			90.0	
	6	.00	.00	-.14	-.52					.01	
		.08	.08	.00	.00					.00	
	TOP : SMAX=	-.02	SMIN=	-.09	TMAX=	.03	ANGLE=			90.0	
	BOTT: SMAX=	.08	SMIN=	.02	TMAX=	.03	ANGLE=			90.0	
	7	.00	.01	-.55	-2.05					-.01	
		.31	.30	.00	-.01					.00	
	TOP : SMAX=	-.09	SMIN=	-.35	TMAX=	.13	ANGLE=			-1.0	
	BOTT: SMAX=	.33	SMIN=	.09	TMAX=	.12	ANGLE=			.0	
	8	.00	.00	.09	.33					-.19	
		.07	.08	.00	.01					.01	
	TOP : SMAX=	.07	SMIN=	.01	TMAX=	.03	ANGLE=			90.0	
	BOTT: SMAX=	.01	SMIN=	-.08	TMAX=	.04	ANGLE=			90.0	
	9	.00	.00	.06	.24					.02	
		.04	.04	.00	.00					.00	
	TOP : SMAX=	.04	SMIN=	.01	TMAX=	.01	ANGLE=			90.0	
	BOTT: SMAX=	-.01	SMIN=	-.04	TMAX=	.02	ANGLE=			90.0	
	10	.00	.00	-.05	-.16					.67	
		.22	.18	.03	.01					.01	
	TOP : SMAX=	.13	SMIN=	-.12	TMAX=	.13	ANGLE=			90.0	
	BOTT: SMAX=	.14	SMIN=	-.06	TMAX=	.10	ANGLE=			90.0	
	11	.00	.00	.05	.16					-.67	
		.22	.18	-.03	-.01					-.01	
	TOP : SMAX=	.12	SMIN=	-.13	TMAX=	.13	ANGLE=			90.0	
	BOTT: SMAX=	.06	SMIN=	-.14	TMAX=	.10	ANGLE=			90.0	
	12	.00	.00	.01	.02					.00	
		.00	.00	.00	.00					.00	
	TOP : SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=			90.0	
	BOTT: SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=			90.0	
	13	-.01	.00	-.12	-.21					1.83	
		.50	.58	.12	.02					-.02	
	TOP : SMAX=	.33	SMIN=	-.25	TMAX=	.29	ANGLE=			39.1	
	BOTT: SMAX=	.43	SMIN=	-.24	TMAX=	.33	ANGLE=			90.0	
	14	-.01	.00	-.22	-.38					2.43	
		.69	.75	.16	.01					-.01	
	TOP : SMAX=	.44	SMIN=	-.36	TMAX=	.40	ANGLE=			38.8	
	BOTT: SMAX=	.56	SMIN=	-.29	TMAX=	.42	ANGLE=			-41.1	
	101	.00	.02	.41	1.64					.43	
		.29	.27	.03	.02					.00	
	TOP : SMAX=	.32	SMIN=	.07	TMAX=	.12	ANGLE=			-19.2	
	BOTT: SMAX=	-.02	SMIN=	-.28	TMAX=	.13	ANGLE=			-15.9	

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.00	.01	.14	.60	.32					
		.14	.13	.02	.01	.00					
TOP :	SMAX=	.14	SMIN=	.01	TMAX=	.06	ANGLE=	90.0			
BOTT:	SMAX=	.02	SMIN=	-.12	TMAX=	.07	ANGLE=	90.0			
103		.00	.02	-.19	-.62	.30					
		.13	.13	.02	.00	.00					
TOP :	SMAX=	.01	SMIN=	-.12	TMAX=	.07	ANGLE=	90.0			
BOTT:	SMAX=	.14	SMIN=	.02	TMAX=	.06	ANGLE=	90.0			
104		.00	.01	.33	1.29	.16					
		.21	.19	.02	.01	.01					
TOP :	SMAX=	.24	SMIN=	.07	TMAX=	.09	ANGLE=	-12.9			
BOTT:	SMAX=	-.03	SMIN=	-.20	TMAX=	.08	ANGLE=	-6.0			
105		.00	.02	.30	1.21	.33					
		.21	.20	.02	.01	.00					
TOP :	SMAX=	.23	SMIN=	.05	TMAX=	.09	ANGLE=	-19.9			
BOTT:	SMAX=	-.01	SMIN=	-.21	TMAX=	.10	ANGLE=	-16.4			
106		-.02	-.01	.12	.77	3.54					
		1.09	.99	.18	.01	.03					
TOP :	SMAX=	.79	SMIN=	-.45	TMAX=	.62	ANGLE=	90.0			
BOTT:	SMAX=	.59	SMIN=	-.55	TMAX=	.57	ANGLE=	-38.0			
107		-.02	-.01	.16	.93	2.86					
		.88	.82	.15	.01	.02					
TOP :	SMAX=	.67	SMIN=	-.33	TMAX=	.50	ANGLE=	90.0			
BOTT:	SMAX=	.46	SMIN=	-.49	TMAX=	.47	ANGLE=	-36.8			
108		-.01	.02	.40	1.85	1.84					
		.61	.62	.12	.03	.00					
TOP :	SMAX=	.58	SMIN=	-.05	TMAX=	.32	ANGLE=	-38.1			
BOTT:	SMAX=	.24	SMIN=	-.46	TMAX=	.35	ANGLE=	-30.8			
109		.00	.08	1.59	6.38	1.96					
		1.16	1.08	.12	.06	.02					
TOP :	SMAX=	1.26	SMIN=	.25	TMAX=	.51	ANGLE=	-21.6			
BOTT:	SMAX=	-.04	SMIN=	-1.10	TMAX=	.53	ANGLE=	-17.8			
430	15	-.02	-.02	-.41	-1.92	2.91					
		1.04	.75	-.03	.01	.09					
TOP :	SMAX=	.38	SMIN=	-.79	TMAX=	.59	ANGLE=	39.9			
BOTT:	SMAX=	.60	SMIN=	-.24	TMAX=	.42	ANGLE=	34.8			
2		.00	.00	.22	.69	.07					
		.11	.10	.00	.01	.00					
TOP :	SMAX=	.12	SMIN=	.04	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	-.03	SMIN=	-.11	TMAX=	.04	ANGLE=	90.0			
3		.00	.01	.28	1.16	-.18					
		.19	.18	.02	.01	-.01					
TOP :	SMAX=	.21	SMIN=	.06	TMAX=	.07	ANGLE=	14.9			
BOTT:	SMAX=	-.02	SMIN=	-.19	TMAX=	.09	ANGLE=	8.2			
4		.00	.00	.14	.50	-.06					
		.08	.08	.00	.00	.00					
TOP :	SMAX=	.09	SMIN=	.02	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	-.02	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			
5		.00	.00	.15	.56	-.09					
		.09	.08	.00	.00	.00					
TOP :	SMAX=	.10	SMIN=	.02	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	-.02	SMIN=	-.09	TMAX=	.03	ANGLE=	90.0			
6		.00	.00	-.11	-.44	.00					
		.07	.06	.00	.00	.00					
TOP :	SMAX=	-.02	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.07	SMIN=	.02	TMAX=	.03	ANGLE=	90.0			
7		.00	.01	-.36	-1.35	.02					
		.21	.20	.00	.00	.00					
TOP :	SMAX=	-.06	SMIN=	-.23	TMAX=	.08	ANGLE=	-.3			
BOTT:	SMAX=	.22	SMIN=	.06	TMAX=	.08	ANGLE=	2.4			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MAXY FGY
	8	.00	.00	.15	.48	-.15
		.08	.08	.00	.00	.00
	TOP : SMAX=	.09	SMIN=	.01	TMAX=	.04 ANGLE= 90.0
	BOTT: SMAX=	-.02	SMIN=	-.09	TMAX=	.04 ANGLE= 90.0
	9	.00	.00	.14	.49	.01
		.07	.07	.00	.00	.00
	TOP : SMAX=	.08	SMIN=	.02	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	-.02	SMIN=	-.08	TMAX=	.03 ANGLE= 90.0
	10	.00	.00	-.02	-.35	.41
		.15	.11	-.02	.00	.02
	TOP : SMAX=	.05	SMIN=	-.12	TMAX=	.09 ANGLE= 90.0
	BOTT: SMAX=	.09	SMIN=	-.04	TMAX=	.06 ANGLE= 90.0
	11	.00	.00	.02	.35	-.41
		.15	.11	.02	.00	-.02
	TOP : SMAX=	.12	SMIN=	-.05	TMAX=	.09 ANGLE= 90.0
	BOTT: SMAX=	.04	SMIN=	-.09	TMAX=	.06 ANGLE= 90.0
	12	.00	.00	.02	.07	.00
		.01	.01	.00	.00	.00
	TOP : SMAX=	.01	SMIN=	.00	TMAX=	.00 ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	-.01	TMAX=	.00 ANGLE= 90.0
	13	-.01	.00	-.07	-.87	1.21
		.39	.37	.01	.00	.01
	TOP : SMAX=	.15	SMIN=	-.29	TMAX=	.22 ANGLE= 36.0
	BOTT: SMAX=	.29	SMIN=	-.12	TMAX=	.21 ANGLE= 35.6
	14	-.02	.00	-.06	-.90	1.60
		.52	.45	.00	.01	.02
	TOP : SMAX=	.22	SMIN=	-.37	TMAX=	.30 ANGLE= 38.4
	BOTT: SMAX=	.34	SMIN=	-.17	TMAX=	.25 ANGLE= 36.6
	101	.00	.01	.85	2.77	.29
		.43	.40	-.02	.01	.01
	TOP : SMAX=	.48	SMIN=	.11	TMAX=	.18 ANGLE= -9.0
	BOTT: SMAX=	-.15	SMIN=	-.46	TMAX=	.15 ANGLE= -7.9
	102	.00	.01	.44	1.38	.22
		.22	.21	-.01	.00	.01
	TOP : SMAX=	.24	SMIN=	.05	TMAX=	.10 ANGLE= -13.0
	BOTT: SMAX=	-.08	SMIN=	-.23	TMAX=	.08 ANGLE= -11.8
	103	.00	.01	.25	.65	.23
		.12	.11	-.01	.00	.00
	TOP : SMAX=	.13	SMIN=	.01	TMAX=	.06 ANGLE= 90.0
	BOTT: SMAX=	-.04	SMIN=	-.13	TMAX=	.05 ANGLE= 90.0
	104	.00	.01	.65	2.12	.10
		.33	.30	-.02	.01	.01
	TOP : SMAX=	.36	SMIN=	.09	TMAX=	.14 ANGLE= -5.3
	BOTT: SMAX=	-.12	SMIN=	-.35	TMAX=	.11 ANGLE= -1.7
	105	.00	.01	.64	2.13	.23
		.33	.31	-.01	.01	.01
	TOP : SMAX=	.37	SMIN=	.09	TMAX=	.14 ANGLE= -9.0
	BOTT: SMAX=	-.11	SMIN=	-.35	TMAX=	.12 ANGLE= -7.9
	106	-.02	-.01	.10	-.45	2.40
		.80	.60	-.03	.01	.06
	TOP : SMAX=	.42	SMIN=	-.50	TMAX=	.46 ANGLE= 90.0
	BOTT: SMAX=	.36	SMIN=	-.33	TMAX=	.34 ANGLE= 39.5
	107	-.02	-.01	.11	-.10	1.99
		.65	.50	-.01	.01	.04
	TOP : SMAX=	.37	SMIN=	-.38	TMAX=	.38 ANGLE= 90.0
	BOTT: SMAX=	.29	SMIN=	-.29	TMAX=	.29 ANGLE= 90.0
	108	-.01	.01	1.04	3.02	1.23
		.61	.53	-.02	.01	.02
	TOP : SMAX=	.63	SMIN=	.04	TMAX=	.29 ANGLE= -25.5
	BOTT: SMAX=	-.11	SMIN=	-.58	TMAX=	.23 ANGLE= -25.6
	109	-.01	.04	3.34	10.85	1.34
		1.71	1.59	-.07	.03	.03
	TOP : SMAX=	1.89	SMIN=	.44	TMAX=	.72 ANGLE= -10.4
	BOTT: SMAX=	-.60	SMIN=	-1.81	TMAX=	.60 ANGLE= -9.2



PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FXY
431	15	-.02	-.02	-.92	-4.31	1.70
		.82	.86	-.19	.01	.03
	TOP : SMAX=	-.16	SMIN=	-.89	TMAX=	.36    ANGLE= 30.0
	BOTT: SMAX=	.80	SMIN=	-.11	TMAX=	.46    ANGLE= 16.7
	2	.00	.00	.28	.78	.02
		.12	.11	-.01	.00	.00
	TOP : SMAX=	.14	SMIN=	.03	TMAX=	.05    ANGLE= -2.5
	BOTT: SMAX=	-.06	SMIN=	-.13	TMAX=	.03    ANGLE= 90.0
	3	.00	.00	.38	1.55	-.06
		.24	.23	.03	.01	.00
	TOP : SMAX=	.27	SMIN=	.09	TMAX=	.09    ANGLE= 4.2
	BOTT: SMAX=	-.04	SMIN=	-.25	TMAX=	.11    ANGLE= 2.3
	4	.00	.00	.18	.59	-.02
		.09	.09	.00	.00	.00
	TOP : SMAX=	.10	SMIN=	.03	TMAX=	.04    ANGLE= 90.0
	BOTT: SMAX=	-.03	SMIN=	-.10	TMAX=	.03    ANGLE= 90.0
	5	.00	.00	.17	.65	-.03
		.10	.10	.00	.00	.00
	TOP : SMAX=	.11	SMIN=	.03	TMAX=	.04    ANGLE= 90.0
	BOTT: SMAX=	-.03	SMIN=	-.11	TMAX=	.04    ANGLE= 90.0
	6	.00	.00	-.07	-.27	.00
		.04	.04	.00	.00	.00
	TOP : SMAX=	-.01	SMIN=	-.05	TMAX=	.02    ANGLE= 90.0
	BOTT: SMAX=	.04	SMIN=	.01	TMAX=	.02    ANGLE= 90.0
	7	.00	.01	-.11	-.43	.04
		.07	.07	.00	.00	.00
	TOP : SMAX=	-.02	SMIN=	-.07	TMAX=	.03    ANGLE= 90.0
	BOTT: SMAX=	.07	SMIN=	.02	TMAX=	.03    ANGLE= 90.0
	8	.00	.00	.17	.55	-.06
		.08	.08	-.01	.00	.00
	TOP : SMAX=	.09	SMIN=	.02	TMAX=	.04    ANGLE= 90.0
	BOTT: SMAX=	-.03	SMIN=	-.09	TMAX=	.03    ANGLE= 90.0
	9	.00	.00	.18	.63	.01
		.10	.09	.00	.00	.00
	TOP : SMAX=	.11	SMIN=	.03	TMAX=	.04    ANGLE= 90.0
	BOTT: SMAX=	-.03	SMIN=	-.10	TMAX=	.04    ANGLE= 90.0
	10	.00	.00	-.02	-.46	.13
		.08	.11	-.04	.00	.01
	TOP : SMAX=	-.03	SMIN=	-.09	TMAX=	.03    ANGLE= 90.0
	BOTT: SMAX=	.08	SMIN=	-.04	TMAX=	.06    ANGLE= 7.1
	11	.00	.00	.02	.46	-.13
		.08	.11	.04	.00	-.01
	TOP : SMAX=	.09	SMIN=	.03	TMAX=	.03    ANGLE= 90.0
	BOTT: SMAX=	.04	SMIN=	-.08	TMAX=	.06    ANGLE= 7.1
	12	.00	.00	.03	.10	.00
		.01	.01	.00	.00	.00
	TOP : SMAX=	.02	SMIN=	.00	TMAX=	.01    ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	-.02	TMAX=	.01    ANGLE= 90.0
	13	-.01	.00	-.08	-1.25	.42
		.23	.26	-.06	.00	.01
	TOP : SMAX=	-.04	SMIN=	-.24	TMAX=	.10    ANGLE= 23.8
	BOTT: SMAX=	.22	SMIN=	-.06	TMAX=	.14    ANGLE= 13.3
	14	-.02	.00	.00	-1.18	.55
		.25	.29	-.09	.01	.01
	TOP : SMAX=	-.02	SMIN=	-.26	TMAX=	.12    ANGLE= 32.1
	BOTT: SMAX=	.22	SMIN=	-.11	TMAX=	.17    ANGLE= 14.0
	101	.00	.00	1.04	3.36	.10
		.51	.49	-.04	.00	.00
	TOP : SMAX=	.56	SMIN=	.13	TMAX=	.22    ANGLE= -2.7
	BOTT: SMAX=	-.21	SMIN=	-.56	TMAX=	.17    ANGLE= -2.2

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES      FORCE,LENGTH UNITS= KIP    INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	ANGLE
102		.00	.00	.60	1.90	.08						
		.29	.28	-.03	.00	.00						
TOP :	SMAX=	.32	SMIN=	.07	TMAX=	.12	ANGLE=					-3.7
BOTT:	SMAX=	-.13	SMIN=	-.32	TMAX=	.09	ANGLE=					-3.0
103		.00	.01	.57	1.77	.11						
		.27	.26	-.03	.00	.00						
TOP :	SMAX=	.30	SMIN=	.07	TMAX=	.11	ANGLE=					-4.2
BOTT:	SMAX=	-.12	SMIN=	-.30	TMAX=	.09	ANGLE=					-6.1
104		.00	.00	.79	2.55	.03						
		.39	.37	-.03	.00	.00						
TOP :	SMAX=	.43	SMIN=	.10	TMAX=	.16	ANGLE=					-1.5
BOTT:	SMAX=	-.16	SMIN=	-.42	TMAX=	.13	ANGLE=					-.2
105		.00	.00	.80	2.61	.08						
		.40	.38	-.03	.00	.00						
TOP :	SMAX=	.44	SMIN=	.11	TMAX=	.17	ANGLE=					-2.7
BOTT:	SMAX=	-.16	SMIN=	-.43	TMAX=	.14	ANGLE=					-2.2
106		-.02	-.01	-.08	-1.64	1.17						
		.45	.48	-.16	.00	.02						
TOP :	SMAX=	.00	SMIN=	-.45	TMAX=	.22	ANGLE=					90.0
BOTT:	SMAX=	.34	SMIN=	-.21	TMAX=	.27	ANGLE=					19.4
107		-.02	-.01	-.07	-1.18	1.04						
		.37	.38	-.12	.00	.02						
TOP :	SMAX=	.03	SMIN=	-.36	TMAX=	.19	ANGLE=					90.0
BOTT:	SMAX=	.27	SMIN=	-.17	TMAX=	.22	ANGLE=					22.7
108		-.01	.00	1.32	3.63	.42						
		.58	.53	-.10	.01	.01						
TOP :	SMAX=	.62	SMIN=	.11	TMAX=	.26	ANGLE=					-9.3
BOTT:	SMAX=	-.31	SMIN=	-.61	TMAX=	.15	ANGLE=					-11.3
109		-.01	.01	4.12	13.19	.47						
		2.00	1.92	-.17	.01	.02						
TOP :	SMAX=	2.21	SMIN=	.51	TMAX=	.85	ANGLE=					-3.2
BOTT:	SMAX=	-.85	SMIN=	-2.19	TMAX=	.67	ANGLE=					-2.6
432	15	-.03	-.02	-1.46	-6.20	.45						
		.90	1.05	-.23	-.01	-.07						
TOP :	SMAX=	-.48	SMIN=	-1.04	TMAX=	.28	ANGLE=					.7
BOTT:	SMAX=	1.04	SMIN=	-.01	TMAX=	.53	ANGLE=					7.9
2		.00	.00	.28	.78	-.02						
		.12	.11	-.01	.00	.00						
TOP :	SMAX=	.14	SMIN=	.03	TMAX=	.05	ANGLE=					2.5
BOTT:	SMAX=	-.06	SMIN=	-.13	TMAX=	.03	ANGLE=					90.0
3		.00	.00	.38	1.55	.06						
		.24	.23	.03	.01	.00						
TOP :	SMAX=	.27	SMIN=	.09	TMAX=	.09	ANGLE=					-4.2
BOTT:	SMAX=	-.04	SMIN=	-.25	TMAX=	.11	ANGLE=					-2.3
4		.00	.00	.18	.59	.02						
		.09	.09	.00	.00	.00						
TOP :	SMAX=	.10	SMIN=	.03	TMAX=	.04	ANGLE=					90.0
BOTT:	SMAX=	-.03	SMIN=	-.10	TMAX=	.03	ANGLE=					90.0
5		.00	.00	.17	.65	.03						
		.10	.10	.00	.00	.00						
TOP :	SMAX=	.11	SMIN=	.03	TMAX=	.04	ANGLE=					90.0
BOTT:	SMAX=	-.03	SMIN=	-.11	TMAX=	.04	ANGLE=					90.0
6		.00	.00	.00	-.01	.00						
		.00	.00	.00	.00	.00						
TOP :	SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=					90.0
BOTT:	SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=					90.0
7		.00	.01	.15	.57	.04						
		.09	.09	.00	.00	.00						
TOP :	SMAX=	.10	SMIN=	.03	TMAX=	.04	ANGLE=					90.0
BOTT:	SMAX=	-.02	SMIN=	-.09	TMAX=	.04	ANGLE=					90.0

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.00	.00	.17	.55	.06					
		.08	.08	-.01	.00	.00					
	TOP : SMAX=	.09	SMIN=	.02	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	-.03	SMIN=	-.09	TMAX=	.03	ANGLE=	90.0			
	9	.00	.00	.18	.63	-.01					
		.10	.09	.00	.00	.00					
	TOP : SMAX=	.11	SMIN=	.03	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	-.03	SMIN=	-.10	TMAX=	.04	ANGLE=	90.0			
	10	.00	.00	-.02	-.46	-.13					
		.08	.11	-.04	.00	-.01					
	TOP : SMAX=	-.03	SMIN=	-.09	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	.08	SMIN=	-.04	TMAX=	.06	ANGLE=	-7.1			
	11	.00	.00	.02	.46	.13					
		.08	.11	.04	.00	.01					
	TOP : SMAX=	.09	SMIN=	.03	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	.04	SMIN=	-.08	TMAX=	.06	ANGLE=	-7.1			
	12	.00	.00	.03	.10	.00					
		.01	.01	.00	.00	.00					
	TOP : SMAX=	.02	SMIN=	.00	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
	13	-.01	.00	-.08	-1.25	-.42					
		.23	.26	-.06	.00	-.01					
	TOP : SMAX=	-.04	SMIN=	-.24	TMAX=	.10	ANGLE=	-23.8			
	BOTT: SMAX=	.22	SMIN=	-.06	TMAX=	.14	ANGLE=	-13.3			
	14	-.02	.00	.00	-1.18	-.55					
		.25	.29	-.09	.01	-.01					
	TOP : SMAX=	-.02	SMIN=	-.26	TMAX=	.12	ANGLE=	-32.1			
	BOTT: SMAX=	.22	SMIN=	-.11	TMAX=	.17	ANGLE=	-14.0			
	101	.00	.00	1.04	3.36	-.10					
		.51	.49	-.04	.00	.00					
	TOP : SMAX=	.56	SMIN=	.13	TMAX=	.22	ANGLE=	2.7			
	BOTT: SMAX=	-.21	SMIN=	-.56	TMAX=	.17	ANGLE=	2.2			
	102	.00	.00	.66	2.10	-.07					
		.32	.31	-.03	.00	.00					
	TOP : SMAX=	.35	SMIN=	.08	TMAX=	.13	ANGLE=	3.0			
	BOTT: SMAX=	-.14	SMIN=	-.35	TMAX=	.11	ANGLE=	2.6			
	103	.00	.01	.78	2.57	-.05					
		.39	.37	-.03	.00	-.01					
	TOP : SMAX=	.43	SMIN=	.10	TMAX=	.16	ANGLE=	2.3			
	BOTT: SMAX=	-.16	SMIN=	-.42	TMAX=	.13	ANGLE=	.4			
	104	.00	.00	.79	2.55	-.03					
		.39	.37	-.03	.00	.00					
	TOP : SMAX=	.43	SMIN=	.10	TMAX=	.16	ANGLE=	1.5			
	BOTT: SMAX=	-.16	SMIN=	-.42	TMAX=	.13	ANGLE=	.2			
	105	.00	.00	.80	2.61	-.08					
		.40	.38	-.03	.00	.00					
	TOP : SMAX=	.44	SMIN=	.11	TMAX=	.17	ANGLE=	2.7			
	BOTT: SMAX=	-.16	SMIN=	-.43	TMAX=	.14	ANGLE=	2.2			
	106	-.02	-.01	-.35	-2.58	-.10					
		.39	.50	-.19	.00	-.04					
	TOP : SMAX=	-.23	SMIN=	-.45	TMAX=	.11	ANGLE=	-15.8			
	BOTT: SMAX=	.43	SMIN=	-.13	TMAX=	.28	ANGLE=	2.7			
	107	-.02	-.01	-.34	-2.13	.04					
		.32	.40	-.14	.00	-.03					
	TOP : SMAX=	-.19	SMIN=	-.36	TMAX=	.09	ANGLE=	-9.8			
	BOTT: SMAX=	.35	SMIN=	-.09	TMAX=	.22	ANGLE=	5.3			
	108	-.01	.00	1.32	3.63	-.42					
		.58	.53	-.10	.01	-.01					
	TOP : SMAX=	.62	SMIN=	.11	TMAX=	.26	ANGLE=	9.3			
	BOTT: SMAX=	-.31	SMIN=	-.61	TMAX=	.15	ANGLE=	11.3			
	109	-.01	-.01	4.11	13.19	-.46					
		2.00	1.92	-.17	.01	-.02					
	TOP : SMAX=	2.21	SMIN=	.51	TMAX=	.85	ANGLE=	3.1			
	BOTT: SMAX=	-.85	SMIN=	-2.19	TMAX=	.67	ANGLE=	2.6			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
433	15	-.03	-.01	-1.86	-7.20	-1.08					
		1.24	1.10	-.17	-.04	-.16					
	TOP : SMAX=	-.34	SMIN=	-1.37	TMAX=	.51	ANGLE=	-21.0			
	BOTT: SMAX=	1.16	SMIN=	.14	TMAX=	.51	ANGLE=	-.8			
	2	.00	.00	.22	.69	-.07					
		.11	.10	.00	.01	.00					
	TOP : SMAX=	.12	SMIN=	.04	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	-.03	SMIN=	-.11	TMAX=	.04	ANGLE=	90.0			
	3	.00	-.01	.28	1.16	.18					
		.19	.18	.02	.01	.01					
	TOP : SMAX=	.21	SMIN=	.06	TMAX=	.07	ANGLE=	-14.9			
	BOTT: SMAX=	-.02	SMIN=	-.19	TMAX=	.09	ANGLE=	-8.2			
	4	.00	.00	.14	.50	.06					
		.08	.08	.00	.00	.00					
	TOP : SMAX=	.09	SMIN=	.02	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	-.02	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			
	5	.00	.00	.15	.56	.09					
		.09	.08	.00	.00	.00					
	TOP : SMAX=	.10	SMIN=	.02	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	-.02	SMIN=	-.09	TMAX=	.03	ANGLE=	90.0			
	6	.00	.00	.07	.27	.00					
		.04	.04	.00	.00	.00					
	TOP : SMAX=	.04	SMIN=	.01	TMAX=	.02	ANGLE=	90.0			
	BOTT: SMAX=	-.01	SMIN=	-.04	TMAX=	.02	ANGLE=	90.0			
	7	.00	.01	.39	1.47	.01					
		.23	.22	.00	.01	.00					
	TOP : SMAX=	.25	SMIN=	.07	TMAX=	.09	ANGLE=	.6			
	BOTT: SMAX=	-.06	SMIN=	-.24	TMAX=	.09	ANGLE=	-1.4			
	8	.00	.00	.15	.48	.15					
		.08	.08	.00	.00	.00					
	TOP : SMAX=	.09	SMIN=	.01	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	-.02	SMIN=	-.09	TMAX=	.04	ANGLE=	90.0			
	9	.00	.00	.14	.49	-.01					
		.07	.07	.00	.00	.00					
	TOP : SMAX=	.08	SMIN=	.02	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	-.02	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			
	10	.00	.00	-.02	-.35	-.41					
		.15	.11	-.02	.00	-.02					
	TOP : SMAX=	.05	SMIN=	-.12	TMAX=	.09	ANGLE=	90.0			
	BOTT: SMAX=	.09	SMIN=	-.04	TMAX=	.06	ANGLE=	90.0			
	11	.00	.00	.02	.35	.41					
		.15	.11	.02	.00	.02					
	TOP : SMAX=	.12	SMIN=	-.05	TMAX=	.09	ANGLE=	90.0			
	BOTT: SMAX=	.04	SMIN=	-.09	TMAX=	.06	ANGLE=	90.0			
	12	.00	.00	.02	.07	.00					
		.01	.01	.00	.00	.00					
	TOP : SMAX=	.01	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	-.01	TMAX=	.00	ANGLE=	90.0			
	13	-.01	.00	-.07	-.87	-1.21					
		.39	.37	.01	.00	-.01					
	TOP : SMAX=	.15	SMIN=	-.29	TMAX=	.22	ANGLE=	-36.0			
	BOTT: SMAX=	.29	SMIN=	-.12	TMAX=	.21	ANGLE=	-35.6			
	14	-.02	.00	-.06	-.90	-1.60					
		.52	.45	.00	.01	-.02					
	TOP : SMAX=	.22	SMIN=	-.37	TMAX=	.30	ANGLE=	-38.4			
	BOTT: SMAX=	.34	SMIN=	-.17	TMAX=	.25	ANGLE=	-36.6			
	101	.00	-.01	.85	2.77	-.29					
		.43	.40	-.02	.01	-.01					
	TOP : SMAX=	.48	SMIN=	.11	TMAX=	.18	ANGLE=	9.0			
	BOTT: SMAX=	-.15	SMIN=	-.46	TMAX=	.15	ANGLE=	7.9			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FXY
102		.00	.00	.59	1.95	-.21
		.30	.29	-.01	.00	.00
TOP :	SMAX=	.34	SMIN=	.08	TMAX=	.13 ANGLE= 9.1
BOTT:	SMAX=	-.11	SMIN=	-.32	TMAX=	.11 ANGLE= 8.0
103		.00	.00	.85	2.91	-.21
		.45	.42	-.01	.01	-.01
TOP :	SMAX=	.50	SMIN=	.13	TMAX=	.19 ANGLE= 6.6
BOTT:	SMAX=	-.15	SMIN=	-.48	TMAX=	.16 ANGLE= 4.7
104		.00	-.01	.65	2.12	-.10
		.33	.30	-.02	.01	-.01
TOP :	SMAX=	.36	SMIN=	.09	TMAX=	.14 ANGLE= 5.3
BOTT:	SMAX=	-.12	SMIN=	-.35	TMAX=	.11 ANGLE= 1.7
105		.00	-.01	.64	2.13	-.23
		.33	.31	-.01	.01	-.01
TOP :	SMAX=	.37	SMIN=	.09	TMAX=	.14 ANGLE= 9.0
BOTT:	SMAX=	-.11	SMIN=	-.35	TMAX=	.12 ANGLE= 7.9
106		-.03	-.01	-.63	-3.09	-1.48
		.76	.56	-.10	-.01	-.10
TOP :	SMAX=	.02	SMIN=	-.75	TMAX=	.38 ANGLE= -32.3
BOTT:	SMAX=	.54	SMIN=	-.03	TMAX=	.29 ANGLE= -15.6
107		-.02	-.01	-.61	-2.74	-1.08
		.61	.46	-.08	-.02	-.08
TOP :	SMAX=	-.03	SMIN=	-.63	TMAX=	.30 ANGLE= -30.4
BOTT:	SMAX=	.46	SMIN=	.00	TMAX=	.23 ANGLE= -12.6
108		-.01	-.01	1.04	3.02	-1.23
		.60	.53	-.02	.01	-.02
TOP :	SMAX=	.63	SMIN=	.04	TMAX=	.29 ANGLE= 25.5
BOTT:	SMAX=	-.11	SMIN=	-.58	TMAX=	.23 ANGLE= 25.6
109		-.01	-.04	3.34	10.84	-1.34
		1.71	1.59	-.07	.03	-.03
TOP :	SMAX=	1.88	SMIN=	.44	TMAX=	.72 ANGLE= 10.4
BOTT:	SMAX=	-.60	SMIN=	-1.81	TMAX=	.60 ANGLE= 9.1
434	15	-.04	.02	-1.78	-6.85	-3.03
		1.65	1.09	-.06	-.08	-.21
TOP :	SMAX=	.05	SMIN=	-1.62	TMAX=	.83 ANGLE= -29.4
BOTT:	SMAX=	1.16	SMIN=	.14	TMAX=	.51 ANGLE= -17.8
2		.00	.00	.10	.46	-.12
		.08	.08	.03	.01	.00
TOP :	SMAX=	.09	SMIN=	.04	TMAX=	.03 ANGLE= 90.0
BOTT:	SMAX=	.02	SMIN=	-.07	TMAX=	.05 ANGLE= 90.0
3		.00	-.01	.12	.44	.26
		.11	.09	.02	.00	.01
TOP :	SMAX=	.11	SMIN=	.00	TMAX=	.05 ANGLE= 90.0
BOTT:	SMAX=	.01	SMIN=	-.09	TMAX=	.05 ANGLE= 90.0
4		.00	.00	.08	.33	.09
		.06	.05	.01	.00	.00
TOP :	SMAX=	.06	SMIN=	.02	TMAX=	.02 ANGLE= 90.0
BOTT:	SMAX=	.00	SMIN=	-.05	TMAX=	.03 ANGLE= 90.0
5		.00	.00	.10	.36	.13
		.07	.06	-.01	.01	.00
TOP :	SMAX=	.07	SMIN=	.00	TMAX=	.03 ANGLE= 90.0
BOTT:	SMAX=	-.01	SMIN=	-.07	TMAX=	.03 ANGLE= 90.0
6		.00	.00	.13	.50	.01
		.08	.07	.00	.00	.00
TOP :	SMAX=	.09	SMIN=	.02	TMAX=	.03 ANGLE= 90.0
BOTT:	SMAX=	-.02	SMIN=	-.08	TMAX=	.03 ANGLE= 90.0
7		.00	.01	.57	2.14	-.03
		.33	.31	.00	.01	.00
TOP :	SMAX=	.36	SMIN=	.10	TMAX=	.13 ANGLE= 1.5
BOTT:	SMAX=	-.09	SMIN=	-.35	TMAX=	.13 ANGLE= .8

PRELIMINARY DESIGN OF TRANSPORTER  
\* DI: BCAF00000-01717-0200-00007

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
8		.00	.00	.09	.33	.19					
		.07	.08	.00	.01	-.01					
TOP :	SMAX=	.07	SMIN=	.01	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.01	SMIN=	-.08	TMAX=	.04	ANGLE=	90.0			
9		.00	.00	.06	.23	-.02					
		.04	.04	.00	.00	.00					
TOP :	SMAX=	.04	SMIN=	.01	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	-.01	SMIN=	-.04	TMAX=	.02	ANGLE=	90.0			
10		.00	.00	-.05	-.16	-.67					
		.22	.18	.03	.01	-.01					
TOP :	SMAX=	.13	SMIN=	-.12	TMAX=	.13	ANGLE=	90.0			
BOTT:	SMAX=	.14	SMIN=	-.06	TMAX=	.10	ANGLE=	90.0			
11		.00	.00	.05	.16	.67					
		.22	.18	-.03	-.01	.01					
TOP :	SMAX=	.12	SMIN=	-.13	TMAX=	.13	ANGLE=	90.0			
BOTT:	SMAX=	.06	SMIN=	-.14	TMAX=	.10	ANGLE=	90.0			
12		.00	.00	.01	.02	.00					
		.00	.00	.00	.00	.00					
TOP :	SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
BOTT:	SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
13		-.01	.00	-.12	-.21	-1.83					
		.50	.58	.12	.02	.02					
TOP :	SMAX=	.33	SMIN=	-.25	TMAX=	.29	ANGLE=	-39.1			
BOTT:	SMAX=	.43	SMIN=	-.24	TMAX=	.33	ANGLE=	90.0			
14		-.01	.00	-.22	-.38	-2.43					
		.69	.75	.16	.01	.01					
TOP :	SMAX=	.44	SMIN=	-.36	TMAX=	.40	ANGLE=	-38.8			
BOTT:	SMAX=	.56	SMIN=	-.29	TMAX=	.42	ANGLE=	41.1			
101		.00	-.02	.41	1.64	-.43					
		.29	.27	.03	.02	.00					
TOP :	SMAX=	.32	SMIN=	.07	TMAX=	.12	ANGLE=	19.2			
BOTT:	SMAX=	-.02	SMIN=	-.28	TMAX=	.13	ANGLE=	15.9			
102		.00	-.01	.36	1.42	-.31					
		.24	.23	.02	.01	.00					
TOP :	SMAX=	.26	SMIN=	.06	TMAX=	.10	ANGLE=	16.4			
BOTT:	SMAX=	-.03	SMIN=	-.24	TMAX=	.10	ANGLE=	13.8			
103		.00	-.01	.71	2.73	-.34					
		.43	.41	.02	.02	.00					
TOP :	SMAX=	.48	SMIN=	.13	TMAX=	.18	ANGLE=	10.1			
BOTT:	SMAX=	-.09	SMIN=	-.45	TMAX=	.18	ANGLE=	8.5			
104		.00	-.01	.33	1.29	-.16					
		.21	.19	.02	.01	-.01					
TOP :	SMAX=	.24	SMIN=	.07	TMAX=	.09	ANGLE=	12.9			
BOTT:	SMAX=	-.03	SMIN=	-.20	TMAX=	.08	ANGLE=	6.0			
105		.00	-.02	.30	1.21	-.33					
		.21	.20	.02	.01	.00					
TOP :	SMAX=	.23	SMIN=	.05	TMAX=	.09	ANGLE=	19.9			
BOTT:	SMAX=	-.01	SMIN=	-.21	TMAX=	.10	ANGLE=	16.4			
106		-.03	.00	-.81	-2.96	-2.96					
		1.14	.79	.06	-.02	-.10					
TOP :	SMAX=	.34	SMIN=	-.93	TMAX=	.63	ANGLE=	-34.8			
BOTT:	SMAX=	.75	SMIN=	-.08	TMAX=	.42	ANGLE=	-35.4			
107		-.02	.00	-.77	-2.80	-2.29					
		.93	.64	.03	-.03	-.09					
TOP :	SMAX=	.21	SMIN=	-.81	TMAX=	.51	ANGLE=	-33.7			
BOTT:	SMAX=	.62	SMIN=	-.03	TMAX=	.33	ANGLE=	-32.1			
108		-.01	-.02	.40	1.85	-1.84					
		.60	.62	.12	.03	.00					
TOP :	SMAX=	.58	SMIN=	-.05	TMAX=	.32	ANGLE=	38.1			
BOTT:	SMAX=	.24	SMIN=	-.46	TMAX=	.35	ANGLE=	30.8			
109		.00	-.08	1.58	6.37	-1.96					
		1.16	1.08	.12	.06	-.02					
TOP :	SMAX=	1.26	SMIN=	.25	TMAX=	.51	ANGLE=	21.6			
BOTT:	SMAX=	-.04	SMIN=	-1.10	TMAX=	.53	ANGLE=	17.8			

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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
435	15	-.04	.05	-.78	-4.55	-5.25					
		1.98	1.36	.00	-.09	-.17					
	TOP :	SMAX=	.62	SMIN=	-1.60	TMAX=	1.11	ANGLE=	-35.5		
	BOTT:	SMAX=	1.15	SMIN=	-.35	TMAX=	.75	ANGLE=	-34.6		
	2	.00	-.01	-.09	.06	-.22					
		.06	.10	.06	.01	.01					
	TOP :	SMAX=	.06	SMIN=	-.01	TMAX=	.03	ANGLE=	90.0		
	BOTT:	SMAX=	.09	SMIN=	-.02	TMAX=	.06	ANGLE=	90.0		
	3	.00	-.01	-.02	-.02	-.41					
		.12	.07	.01	-.01	.01					
	TOP :	SMAX=	.03	SMIN=	-.10	TMAX=	.07	ANGLE=	90.0		
	BOTT:	SMAX=	.07	SMIN=	.00	TMAX=	.03	ANGLE=	90.0		
	4	.00	.00	-.03	.05	.15					
		.06	.04	.02	.00	.01					
	TOP :	SMAX=	.04	SMIN=	-.02	TMAX=	.03	ANGLE=	90.0		
	BOTT:	SMAX=	.03	SMIN=	-.01	TMAX=	.02	ANGLE=	90.0		
	5	.00	.00	.00	.06	.14					
		.04	.05	-.01	.01	-.01					
	TOP :	SMAX=	.03	SMIN=	-.02	TMAX=	.02	ANGLE=	90.0		
	BOTT:	SMAX=	.02	SMIN=	-.03	TMAX=	.03	ANGLE=	90.0		
	6	.00	.00	.17	.64	.01					
		.10	.09	.00	.00	.00					
	TOP :	SMAX=	.11	SMIN=	.03	TMAX=	.04	ANGLE=	90.0		
	BOTT:	SMAX=	-.03	SMIN=	-.10	TMAX=	.04	ANGLE=	90.0		
	7	.00	.00	.67	2.43	-.05					
		.37	.35	.00	.01	.00					
	TOP :	SMAX=	.42	SMIN=	.11	TMAX=	.15	ANGLE=	1.7		
	BOTT:	SMAX=	-.11	SMIN=	-.39	TMAX=	.14	ANGLE=	1.5		
	8	.00	.00	-.02	.07	.15					
		.03	.06	.01	.01	-.01					
	TOP :	SMAX=	.03	SMIN=	.00	TMAX=	.01	ANGLE=	90.0		
	BOTT:	SMAX=	.04	SMIN=	-.03	TMAX=	.04	ANGLE=	90.0		
	9	.00	.00	-.04	-.09	-.03					
		.02	.02	.01	.00	.00					
	TOP :	SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0		
	BOTT:	SMAX=	.02	SMIN=	.01	TMAX=	.01	ANGLE=	90.0		
	10	.00	.00	-.15	.09	-.88					
		.24	.30	.09	.01	.01					
	TOP :	SMAX=	.18	SMIN=	-.09	TMAX=	.14	ANGLE=	90.0		
	BOTT:	SMAX=	.22	SMIN=	-.11	TMAX=	.17	ANGLE=	34.2		
	11	.00	.00	.15	-.09	.88					
		.24	.30	-.09	-.01	-.01					
	TOP :	SMAX=	.09	SMIN=	-.18	TMAX=	.14	ANGLE=	90.0		
	BOTT:	SMAX=	.11	SMIN=	-.22	TMAX=	.17	ANGLE=	34.2		
	12	.00	.00	-.01	-.04	.00					
		.01	.00	.00	.00	.00					
	TOP :	SMAX=	.00	SMIN=	-.01	TMAX=	.00	ANGLE=	90.0		
	BOTT:	SMAX=	.01	SMIN=	.00	TMAX=	.00	ANGLE=	90.0		
	13	.00	.00	-.38	.52	-2.13					
		.49	.84	.24	.02	.09					
	TOP :	SMAX=	.41	SMIN=	-.13	TMAX=	.27	ANGLE=	90.0		
	BOTT:	SMAX=	.60	SMIN=	-.36	TMAX=	.48	ANGLE=	33.7		
	14	.00	.00	-.56	.26	-2.83					
		.67	1.08	.31	.02	.10					
	TOP :	SMAX=	.52	SMIN=	-.24	TMAX=	.38	ANGLE=	-39.0		
	BOTT:	SMAX=	.80	SMIN=	-.42	TMAX=	.61	ANGLE=	34.7		
	101	.00	-.03	-.33	-.01	-.45					
		.13	.19	.09	.02	.00					
	TOP :	SMAX=	.10	SMIN=	-.05	TMAX=	.07	ANGLE=	90.0		
	BOTT:	SMAX=	.18	SMIN=	-.02	TMAX=	.10	ANGLE=	25.8		

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
102		.00	-.02	-.08	.49	-.32
		.12	.16	.06	.01	.00
TOP :	SMAX=	.13	SMIN=	.01	TMAX=	.06 ANGLE= 90.0
BOTT:	SMAX=	.09	SMIN=	-.09	TMAX=	.09 ANGLE= 19.2
103		.00	-.02	.31	1.93	-.37
		.32	.32	.06	.02	.00
TOP :	SMAX=	.36	SMIN=	.10	TMAX=	.13 ANGLE= 13.5
BOTT:	SMAX=	.02	SMIN=	-.31	TMAX=	.17 ANGLE= 11.3
104		.00	-.02	-.24	.04	-.21
		.07	.12	.07	.02	-.01
TOP :	SMAX=	.07	SMIN=	-.01	TMAX=	.04 ANGLE= 90.0
BOTT:	SMAX=	.12	SMIN=	.00	TMAX=	.06 ANGLE= 15.5
105		.00	-.02	-.26	-.09	-.35
		.10	.15	.07	.01	.00
TOP :	SMAX=	.07	SMIN=	-.05	TMAX=	.06 ANGLE= 90.0
BOTT:	SMAX=	.14	SMIN=	-.01	TMAX=	.08 ANGLE= 90.0
106		-.02	.01	-.80	-2.00	-4.34
		1.37	1.23	.21	-.02	-.04
TOP :	SMAX=	.65	SMIN=	-.93	TMAX=	.79 ANGLE= -37.1
BOTT:	SMAX=	1.01	SMIN=	-.36	TMAX=	.69 ANGLE= 90.0
107		-.02	.01	-.65	-2.09	-3.46
		1.15	.96	.11	-.03	-.05
TOP :	SMAX=	.46	SMIN=	-.84	TMAX=	.65 ANGLE= -36.5
BOTT:	SMAX=	.80	SMIN=	-.26	TMAX=	.53 ANGLE= 90.0
108		.00	-.04	-.72	.10	-2.07
		.52	.80	.28	.03	.06
TOP :	SMAX=	.39	SMIN=	-.19	TMAX=	.29 ANGLE= -39.6
BOTT:	SMAX=	.65	SMIN=	-.24	TMAX=	.45 ANGLE= 32.3
109		.00	-.11	-1.39	-.10	-2.06
		.57	.85	.38	.07	.02
TOP :	SMAX=	.42	SMIN=	-.23	TMAX=	.33 ANGLE= 90.0
BOTT:	SMAX=	.79	SMIN=	-.10	TMAX=	.45 ANGLE= 27.1
436	15	-.02	.09	1.13	.01	-7.10
		2.13	1.98	.01	-.02	-.04
TOP :	SMAX=	1.32	SMIN=	-1.14	TMAX=	1.23 ANGLE= -42.5
BOTT:	SMAX=	1.05	SMIN=	-1.24	TMAX=	1.14 ANGLE= -43.0
2		.00	-.01	-.32	-.50	-.23
		.10	.16	.09	.01	.02
TOP :	SMAX=	.04	SMIN=	-.08	TMAX=	.06 ANGLE= -11.4
BOTT:	SMAX=	.18	SMIN=	.06	TMAX=	.06 ANGLE= 90.0
3		.00	.00	-.12	-.86	.18
		.18	.12	.01	-.02	.02
TOP :	SMAX=	.00	SMIN=	-.17	TMAX=	.09 ANGLE= 16.8
BOTT:	SMAX=	.13	SMIN=	.03	TMAX=	.05 ANGLE= 90.0
4		.00	-.01	-.17	-.32	.16
		.09	.05	.00	-.01	.01
TOP :	SMAX=	.00	SMIN=	-.09	TMAX=	.04 ANGLE= 90.0
BOTT:	SMAX=	.06	SMIN=	.02	TMAX=	.02 ANGLE= 90.0
5		.00	-.01	-.16	-.35	.11
		.05	.08	.00	.00	-.01
TOP :	SMAX=	-.03	SMIN=	-.06	TMAX=	.01 ANGLE= 90.0
BOTT:	SMAX=	.08	SMIN=	.01	TMAX=	.04 ANGLE= 90.0
6		.00	.00	.18	.63	.01
		.10	.09	.00	.00	.00
TOP :	SMAX=	.11	SMIN=	.03	TMAX=	.04 ANGLE= 90.0
BOTT:	SMAX=	-.03	SMIN=	-.10	TMAX=	.04 ANGLE= 90.0
7		.00	.00	.64	2.21	-.03
		.35	.31	.00	.02	.00
TOP :	SMAX=	.39	SMIN=	.10	TMAX=	.14 ANGLE= 1.7
BOTT:	SMAX=	-.11	SMIN=	-.35	TMAX=	.12 ANGLE= .5



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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.00	-.01	-.19	-.31						.08
		.04	.07	.02	.00						-.01
TOP :	SMAX=	-.01	SMIN=	-.05	TMAX=	.02	ANGLE=	90.0			
BOTT:	SMAX=	.08	SMIN=	.03	TMAX=	.02	ANGLE=	90.0			
	9	.00	.00	-.16	-.42						-.03
		.07	.06	.01	.00						.00
TOP :	SMAX=	-.02	SMIN=	-.07	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	.07	SMIN=	.03	TMAX=	.02	ANGLE=	90.0			
	10	.00	.00	-.31	.32						-1.00
		.22	.42	.12	.00						.04
TOP :	SMAX=	.19	SMIN=	-.06	TMAX=	.12	ANGLE=	90.0			
BOTT:	SMAX=	.30	SMIN=	-.18	TMAX=	.24	ANGLE=	30.8			
	11	.00	.00	.31	-.32						1.00
		.22	.42	-.12	.00						-.04
TOP :	SMAX=	.06	SMIN=	-.19	TMAX=	.12	ANGLE=	90.0			
BOTT:	SMAX=	.18	SMIN=	-.30	TMAX=	.24	ANGLE=	30.8			
	12	.00	.00	-.02	-.08						.00
		.01	.01	.00	.00						.00
TOP :	SMAX=	.00	SMIN=	-.01	TMAX=	.01	ANGLE=	90.0			
BOTT:	SMAX=	.01	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
	13	.00	-.01	-.84	1.05						-2.08
		.36	1.02	.27	.01						.16
TOP :	SMAX=	.34	SMIN=	-.03	TMAX=	.19	ANGLE=	90.0			
BOTT:	SMAX=	.71	SMIN=	-.47	TMAX=	.59	ANGLE=	30.2			
	14	.00	-.01	-1.01	.89						-2.77
		.47	1.30	.34	-.01						.21
TOP :	SMAX=	.42	SMIN=	-.10	TMAX=	.26	ANGLE=	90.0			
BOTT:	SMAX=	.93	SMIN=	-.57	TMAX=	.75	ANGLE=	31.8			
	101	.00	-.04	-1.26	-2.36						-.40
		.37	.39	.12	.00						.01
TOP :	SMAX=	-.08	SMIN=	-.40	TMAX=	.16	ANGLE=	-9.8			
BOTT:	SMAX=	.45	SMIN=	.27	TMAX=	.09	ANGLE=	90.0			
	102	.00	-.03	-.66	-1.00						-.28
		.16	.20	.08	.00						.01
TOP :	SMAX=	-.02	SMIN=	-.18	TMAX=	.08	ANGLE=	-14.7			
BOTT:	SMAX=	.24	SMIN=	.12	TMAX=	.06	ANGLE=	90.0			
	103	.00	-.03	-.30	.27						-.32
		.09	.18	.08	.01						.01
TOP :	SMAX=	.09	SMIN=	-.01	TMAX=	.05	ANGLE=	90.0			
BOTT:	SMAX=	.15	SMIN=	-.05	TMAX=	.10	ANGLE=	19.0			
	104	.00	-.03	-.96	-1.75						-.23
		.27	.28	.09	.00						.00
TOP :	SMAX=	-.06	SMIN=	-.30	TMAX=	.12	ANGLE=	-8.9			
BOTT:	SMAX=	.32	SMIN=	.23	TMAX=	.04	ANGLE=	90.0			
	105	.00	-.03	-.93	-1.84						-.31
		.29	.30	.09	.00						.01
TOP :	SMAX=	-.06	SMIN=	-.32	TMAX=	.13	ANGLE=	-8.8			
BOTT:	SMAX=	.35	SMIN=	.20	TMAX=	.07	ANGLE=	90.0			
	106	-.01	.02	-.53	-.29						-5.27
		1.38	1.71	.25	-.01						.09
TOP :	SMAX=	.85	SMIN=	-.74	TMAX=	.80	ANGLE=	-41.1			
BOTT:	SMAX=	1.17	SMIN=	-.79	TMAX=	.98	ANGLE=	40.7			
	107	-.01	.02	-.21	-.61						-4.27
		1.17	1.32	.13	-.01						.05
TOP :	SMAX=	.67	SMIN=	-.68	TMAX=	.67	ANGLE=	-40.8			
BOTT:	SMAX=	.89	SMIN=	-.63	TMAX=	.76	ANGLE=	90.0			
	108	.00	-.05	-2.12	-2.56						-1.97
		.55	.99	.33	.00						.13
TOP :	SMAX=	.06	SMIN=	-.52	TMAX=	.29	ANGLE=	-22.5			
BOTT:	SMAX=	1.02	SMIN=	.08	TMAX=	.47	ANGLE=	37.0			
	109	-.01	-.15	-5.05	-9.40						-1.82
		1.48	1.60	.49	-.01						.07
TOP :	SMAX=	-.31	SMIN=	-1.61	TMAX=	.65	ANGLE=	-10.4			
BOTT:	SMAX=	1.84	SMIN=	1.05	TMAX=	.39	ANGLE=	-36.4			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

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 FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
437	15	.06	.12	6.52	10.33	-4.64
		2.03	2.11	-.11	.29	.17
	TOP : SMAX=	2.29	SMIN=	.70	TMAX=	.79 ANGLE= 24.5
	BOTT: SMAX=	-.36	SMIN=	-2.27	TMAX=	.96 ANGLE= 41.5
	2	.00	-.01	-.66	-1.34	-.12
		.22	.20	.03	-.02	.03
	TOP : SMAX=	-.08	SMIN=	-.25	TMAX=	.08 ANGLE= 2.8
	BOTT: SMAX=	.23	SMIN=	.11	TMAX=	.06 ANGLE= 90.0
	3	.00	.00	-.51	-1.81	-.01
		.30	.24	.01	-.03	.02
	TOP : SMAX=	-.08	SMIN=	-.33	TMAX=	.13 ANGLE= 3.5
	BOTT: SMAX=	.28	SMIN=	.09	TMAX=	.09 ANGLE= -6.4
	4	.00	.00	-.40	-1.01	.00
		.16	.14	.01	-.01	.02
	TOP : SMAX=	-.05	SMIN=	-.18	TMAX=	.06 ANGLE= 7.7
	BOTT: SMAX=	.16	SMIN=	.08	TMAX=	.04 ANGLE= 90.0
	5	.00	-.01	-.52	-1.10	-.01
		.17	.15	.00	-.01	-.02
	TOP : SMAX=	-.08	SMIN=	-.20	TMAX=	.06 ANGLE= -10.1
	BOTT: SMAX=	.18	SMIN=	.08	TMAX=	.05 ANGLE= 90.0
	6	.00	.00	.12	.35	.01
		.06	.05	.00	.00	.00
	TOP : SMAX=	.06	SMIN=	.02	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	-.02	SMIN=	-.05	TMAX=	.02 ANGLE= 90.0
	7	.00	-.01	.47	1.14	.07
		.19	.14	.00	.03	-.01
	TOP : SMAX=	.22	SMIN=	.08	TMAX=	.07 ANGLE= -2.4
	BOTT: SMAX=	-.07	SMIN=	-.16	TMAX=	.04 ANGLE= 90.0
	8	.00	-.01	-.49	-.97	-.10
		.16	.13	.02	-.01	-.01
	TOP : SMAX=	-.06	SMIN=	-.18	TMAX=	.06 ANGLE= -13.0
	BOTT: SMAX=	.15	SMIN=	.10	TMAX=	.03 ANGLE= 90.0
	9	.00	.00	-.34	-.84	-.03
		.13	.11	.01	-.01	.01
	TOP : SMAX=	-.05	SMIN=	-.15	TMAX=	.05 ANGLE= .4
	BOTT: SMAX=	.13	SMIN=	.06	TMAX=	.03 ANGLE= 90.0
	10	.01	.00	-.74	.55	-.44
		.10	.39	.08	-.02	.09
	TOP : SMAX=	.07	SMIN=	-.04	TMAX=	.06 ANGLE= -6.4
	BOTT: SMAX=	.27	SMIN=	-.18	TMAX=	.23 ANGLE= 22.3
	11	-.01	.00	.74	-.55	.44
		.10	.39	-.08	.02	-.09
	TOP : SMAX=	.04	SMIN=	-.07	TMAX=	.06 ANGLE= -6.4
	BOTT: SMAX=	.18	SMIN=	-.27	TMAX=	.23 ANGLE= 22.3
	12	.00	.00	-.03	-.10	.00
		.02	.01	.00	.00	.00
	TOP : SMAX=	-.01	SMIN=	-.02	TMAX=	.01 ANGLE= 90.0
	BOTT: SMAX=	.01	SMIN=	.01	TMAX=	.00 ANGLE= 90.0
	13	.02	-.01	-2.16	1.16	-.77
		.42	.81	.06	-.05	.20
	TOP : SMAX=	.16	SMIN=	-.31	TMAX=	.24 ANGLE= -9.1
	BOTT: SMAX=	.55	SMIN=	-.38	TMAX=	.47 ANGLE= 22.5
	14	.03	-.01	-2.37	1.44	-.92
		.47	.99	.08	-.06	.27
	TOP : SMAX=	.20	SMIN=	-.34	TMAX=	.27 ANGLE= -12.3
	BOTT: SMAX=	.66	SMIN=	-.49	TMAX=	.57 ANGLE= 23.6
	101	.01	-.04	-2.47	-5.24	-.25
		.82	.72	.06	-.06	.04
	TOP : SMAX=	-.35	SMIN=	-.94	TMAX=	.29 ANGLE= -.4
	BOTT: SMAX=	.83	SMIN=	.45	TMAX=	.19 ANGLE= -12.5

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.00	-.03	-1.45	-2.99						
		.47	.41	.04	-.04						
	TOP : SMAX=	-.20	SMIN=	-.54	TMAX=	.17	ANGLE=	.1			
	BOTT: SMAX=	.48	SMIN=	.27	TMAX=	.11	ANGLE=	-15.0			
103		.00	-.03	-1.17	-2.36						
		.36	.34	.04	-.02						
	TOP : SMAX=	-.16	SMIN=	-.41	TMAX=	.13	ANGLE=	1.4			
	BOTT: SMAX=	.39	SMIN=	.22	TMAX=	.08	ANGLE=	-15.4			
104		.00	-.03	-1.94	-4.05						
		.63	.55	.05	-.05						
	TOP : SMAX=	-.27	SMIN=	-.72	TMAX=	.23	ANGLE=	-2.5			
	BOTT: SMAX=	.64	SMIN=	.36	TMAX=	.14	ANGLE=	-12.8			
105		.00	-.03	-1.82	-3.95						
		.62	.54	.04	-.05						
	TOP : SMAX=	-.26	SMIN=	-.71	TMAX=	.22	ANGLE=	.2			
	BOTT: SMAX=	.62	SMIN=	.33	TMAX=	.15	ANGLE=	-13.0			
106		.05	.03	.83	3.93						
		.80	1.41	.04	.09						
	TOP : SMAX=	.84	SMIN=	.08	TMAX=	.38	ANGLE=	21.1			
	BOTT: SMAX=	.46	SMIN=	-1.12	TMAX=	.79	ANGLE=	36.3			
107		.04	.04	1.57	3.38						
		.75	1.11	-.04	.11						
	TOP : SMAX=	.80	SMIN=	.09	TMAX=	.35	ANGLE=	24.9			
	BOTT: SMAX=	.22	SMIN=	-.98	TMAX=	.60	ANGLE=	41.4			
108		.02	-.06	-4.28	-5.82						
		.95	1.01	.12	-.11						
	TOP : SMAX=	-.59	SMIN=	-1.09	TMAX=	.25	ANGLE=	6.8			
	BOTT: SMAX=	1.17	SMIN=	.52	TMAX=	.32	ANGLE=	90.0			
109		.03	-.16	-9.67	-20.45						
		3.20	2.81	.24	-.25						
	TOP : SMAX=	-1.37	SMIN=	-3.66	TMAX=	1.15	ANGLE=	.2			
	BOTT: SMAX=	3.24	SMIN=	1.76	TMAX=	.74	ANGLE=	-14.0			
438	15	.21	.21	11.99	34.36						
		6.96	4.72	.11	.97						
	TOP : SMAX=	7.51	SMIN=	1.30	TMAX=	3.11	ANGLE=	-21.2			
	BOTT: SMAX=	-1.38	SMIN=	-5.26	TMAX=	1.94	ANGLE=	-21.2			
2		.00	-.01	-1.08	-3.17						
		.50	.44	-.04	-.04						
	TOP : SMAX=	-.22	SMIN=	-.57	TMAX=	.18	ANGLE=	8.4			
	BOTT: SMAX=	.49	SMIN=	.14	TMAX=	.18	ANGLE=	-.2			
3		.01	.00	-.80	-2.80						
		.45	.38	-.02	-.04						
	TOP : SMAX=	-.15	SMIN=	-.51	TMAX=	.18	ANGLE=	1.8			
	BOTT: SMAX=	.42	SMIN=	.11	TMAX=	.15	ANGLE=	-.5			
4		.01	-.01	-.61	-2.11						
		.35	.28	-.01	-.04						
	TOP : SMAX=	-.11	SMIN=	-.40	TMAX=	.15	ANGLE=	6.2			
	BOTT: SMAX=	.31	SMIN=	.09	TMAX=	.11	ANGLE=	1.1			
5		.00	-.01	-.90	-2.69						
		.44	.36	.00	-.03						
	TOP : SMAX=	-.14	SMIN=	-.49	TMAX=	.17	ANGLE=	-7.7			
	BOTT: SMAX=	.42	SMIN=	.15	TMAX=	.13	ANGLE=	-2.5			
6		.00	.00	-.01	-.16						
		.02	.03	.00	.01						
	TOP : SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.04	SMIN=	.01	TMAX=	.02	ANGLE=	90.0			
7		-.01	-.01	.07	-.35						
		.05	.11	.03	.06						
	TOP : SMAX=	.04	SMIN=	-.01	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	.12	SMIN=	.01	TMAX=	.05	ANGLE=	90.0			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
8		.00	-.01	-.79	-2.36						
		.38	.31	.01	-.03						
	TOP : SMAX=	-.12	SMIN=	-.43	TMAX=	.16	ANGLE=				-5.4
	BOTT: SMAX=	.36	SMIN=	.14	TMAX=	.11	ANGLE=				-1.6
9		.00	-.01	-.54	-1.67						.08
		.27	.23	-.01	-.02						.00
	TOP : SMAX=	-.09	SMIN=	-.30	TMAX=	.10	ANGLE=				4.8
	BOTT: SMAX=	.25	SMIN=	.08	TMAX=	.09	ANGLE=				3.0
10		.02	-.02	-1.06	-.94						1.66
		.65	.37	-.03	-.10						.07
	TOP : SMAX=	.12	SMIN=	-.59	TMAX=	.35	ANGLE=				90.0
	BOTT: SMAX=	.31	SMIN=	-.11	TMAX=	.21	ANGLE=				90.0
11		-.02	.02	1.06	.94						-1.66
		.65	.37	.03	.10						-.07
	TOP : SMAX=	.59	SMIN=	-.12	TMAX=	.35	ANGLE=				90.0
	BOTT: SMAX=	.11	SMIN=	-.31	TMAX=	.21	ANGLE=				90.0
12		.00	.00	-.04	-.14						.01
		.02	.02	.00	.00						.00
	TOP : SMAX=	-.01	SMIN=	-.03	TMAX=	.01	ANGLE=				90.0
	BOTT: SMAX=	.02	SMIN=	.01	TMAX=	.01	ANGLE=				90.0
13		.05	-.05	-3.07	-3.09						3.77
		1.35	1.13	-.38	-.26						-.01
	TOP : SMAX=	-.21	SMIN=	-1.45	TMAX=	.62	ANGLE=				-42.3
	BOTT: SMAX=	.84	SMIN=	-.45	TMAX=	.64	ANGLE=				42.2
14		.06	-.06	-3.22	-2.51						4.90
		1.68	1.41	-.47	-.30						.01
	TOP : SMAX=	-.03	SMIN=	-1.70	TMAX=	.83	ANGLE=				-40.1
	BOTT: SMAX=	.90	SMIN=	-.72	TMAX=	.81	ANGLE=				90.0
101		.01	-.06	-3.94	-11.91						.60
		1.92	1.61	-.05	-.17						.04
	TOP : SMAX=	-.70	SMIN=	-2.17	TMAX=	.73	ANGLE=				5.4
	BOTT: SMAX=	1.82	SMIN=	.60	TMAX=	.61	ANGLE=				2.9
102		.01	-.04	-2.46	-7.53						.40
		1.21	1.02	-.03	-.10						.03
	TOP : SMAX=	-.43	SMIN=	-1.36	TMAX=	.47	ANGLE=				5.9
	BOTT: SMAX=	1.16	SMIN=	.37	TMAX=	.39	ANGLE=				2.8
103		.00	-.04	-2.39	-7.68						.36
		1.20	1.08	-.01	-.06						.03
	TOP : SMAX=	-.40	SMIN=	-1.35	TMAX=	.47	ANGLE=				5.4
	BOTT: SMAX=	1.22	SMIN=	.38	TMAX=	.42	ANGLE=				2.1
104		.01	-.05	-3.08	-9.29						.35
		1.49	1.25	-.03	-.13						.02
	TOP : SMAX=	-.54	SMIN=	-1.69	TMAX=	.58	ANGLE=				3.9
	BOTT: SMAX=	1.42	SMIN=	.48	TMAX=	.47	ANGLE=				2.3
105		.01	-.04	-2.88	-8.74						.49
		1.41	1.18	-.04	-.12						.03
	TOP : SMAX=	-.51	SMIN=	-1.59	TMAX=	.54	ANGLE=				6.1
	BOTT: SMAX=	1.34	SMIN=	.43	TMAX=	.45	ANGLE=				3.2
106		.15	.05	2.38	10.47						8.09
		3.34	2.32	-.17	.24						.25
	TOP : SMAX=	2.93	SMIN=	-.72	TMAX=	1.82	ANGLE=				-30.5
	BOTT: SMAX=	.16	SMIN=	-2.23	TMAX=	1.20	ANGLE=				-33.5
107		.13	.06	3.44	11.41						6.43
		2.98	2.06	-.14	.34						.17
	TOP : SMAX=	2.88	SMIN=	-.20	TMAX=	1.54	ANGLE=				-27.0
	BOTT: SMAX=	-.14	SMIN=	-2.13	TMAX=	.99	ANGLE=				-32.4
108		.05	-.10	-6.51	-16.06						3.31
		2.84	2.21	-.31	-.36						.06
	TOP : SMAX=	-1.19	SMIN=	-3.24	TMAX=	1.03	ANGLE=				18.3
	BOTT: SMAX=	2.46	SMIN=	.63	TMAX=	.91	ANGLE=				16.3
109		.06	-.24	-15.30	-46.27						2.70
		7.46	6.24	-.23	-.66						.18
	TOP : SMAX=	-2.71	SMIN=	-8.44	TMAX=	2.87	ANGLE=				6.4
	BOTT: SMAX=	7.07	SMIN=	2.31	TMAX=	2.38	ANGLE=				3.2



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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.03	.02	-1.22	-3.13					3.98	
		1.24	1.24	-.05	.03					.01	
TOP :	SMAX=	.31	SMIN=	-1.05	TMAX=	.68	ANGLE=	40.0			
BOTT:	SMAX=	1.04	SMIN=	-.33	TMAX=	.69	ANGLE=	36.5			
103		.03	.03	-.89	-5.61					3.46	
		1.34	1.32	-.05	.01					.02	
TOP :	SMAX=	.14	SMIN=	-1.26	TMAX=	.70	ANGLE=	29.5			
BOTT:	SMAX=	1.22	SMIN=	-.17	TMAX=	.70	ANGLE=	26.2			
104		.04	.02	-1.53	-2.82					4.71	
		1.42	1.43	-.05	.04					.00	
TOP :	SMAX=	.42	SMIN=	-1.16	TMAX=	.79	ANGLE=	42.6			
BOTT:	SMAX=	1.16	SMIN=	-.44	TMAX=	.80	ANGLE=	39.6			
105		.04	.01	-1.41	-2.66					4.67	
		1.41	1.40	-.05	.04					.01	
TOP :	SMAX=	.44	SMIN=	-1.14	TMAX=	.79	ANGLE=	42.9			
BOTT:	SMAX=	1.12	SMIN=	-.45	TMAX=	.78	ANGLE=	39.4			
106		.11	-.52	7.07	22.75					10.14	
		4.55	4.37	.17	.23					-.05	
TOP :	SMAX=	4.81	SMIN=	.57	TMAX=	2.12	ANGLE=	-25.4			
BOTT:	SMAX=	-.13	SMIN=	-4.44	TMAX=	2.15	ANGLE=	-26.8			
107		.04	-.34	4.61	17.01					.74	
		2.64	2.48	.25	.16					-.08	
TOP :	SMAX=	3.00	SMIN=	1.02	TMAX=	.99	ANGLE=	-1.4			
BOTT:	SMAX=	-.50	SMIN=	-2.69	TMAX=	1.09	ANGLE=	-5.3			
108		.13	-.21	2.15	3.10					21.15	
		6.03	6.24	-.30	.10					-.06	
TOP :	SMAX=	3.81	SMIN=	-3.14	TMAX=	3.47	ANGLE=	-42.7			
BOTT:	SMAX=	3.05	SMIN=	-4.13	TMAX=	3.59	ANGLE=	44.1			
109		.19	.08	-7.59	-15.39					25.43	
		7.70	7.67	-.30	.24					.04	
TOP :	SMAX=	2.35	SMIN=	-6.25	TMAX=	4.30	ANGLE=	42.5			
BOTT:	SMAX=	6.18	SMIN=	-2.41	TMAX=	4.29	ANGLE=	38.8			
442	15	.40	.13	-15.52	-73.15					-7.08	
		11.02	11.62	-.09	.23					.16	
TOP :	SMAX=	-2.56	SMIN=	-12.07	TMAX=	4.75	ANGLE=	-6.2			
BOTT:	SMAX=	12.60	SMIN=	2.32	TMAX=	5.14	ANGLE=	-7.5			
2		-.02	.01	.41	2.74					.76	
		.50	.46	.00	.02					.00	
TOP :	SMAX=	.52	SMIN=	.03	TMAX=	.24	ANGLE=	-15.8			
BOTT:	SMAX=	-.03	SMIN=	-.47	TMAX=	.22	ANGLE=	-17.5			
3		-.01	.00	.33	3.40					.50	
		.54	.58	-.01	-.02					.00	
TOP :	SMAX=	.56	SMIN=	.03	TMAX=	.26	ANGLE=	-9.7			
BOTT:	SMAX=	-.05	SMIN=	-.60	TMAX=	.27	ANGLE=	-8.5			
4		.00	.00	.17	2.01					.40	
		.35	.33	-.01	.00					.00	
TOP :	SMAX=	.35	SMIN=	.01	TMAX=	.17	ANGLE=	-11.7			
BOTT:	SMAX=	-.02	SMIN=	-.34	TMAX=	.16	ANGLE=	-11.6			
5		-.01	.00	.33	3.20					.68	
		.53	.56	.00	-.01					-.01	
TOP :	SMAX=	.55	SMIN=	.03	TMAX=	.26	ANGLE=	-12.5			
BOTT:	SMAX=	-.03	SMIN=	-.57	TMAX=	.27	ANGLE=	-13.0			
6		.00	.01	.10	-.38					.01	
		.08	.07	.00	.00					.00	
TOP :	SMAX=	.02	SMIN=	-.07	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	.06	SMIN=	-.02	TMAX=	.04	ANGLE=	90.0			
7		.00	.04	1.03	-1.35					.03	
		.36	.33	.01	-.01					.02	
TOP :	SMAX=	.19	SMIN=	-.23	TMAX=	.21	ANGLE=	3.0			
BOTT:	SMAX=	.22	SMIN=	-.16	TMAX=	.19	ANGLE=	-1.6			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH				
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH						
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FXY
	8	-.01 .40	.00 .42	.29 .00	2.43 .00	.51 .00
TOP :	SMAX=	.42	SMIN=	.03	TMAX=	.19
BOTT:	SMAX=	-.03	SMIN=	-.43	TMAX=	.20
	9	-.01 .28	.00 .27	.17 .00	1.50 .00	.48 .00
TOP :	SMAX=	.28	SMIN=	.00	TMAX=	.14
BOTT:	SMAX=	.00	SMIN=	-.27	TMAX=	.14
	10	-.09 3.28	-.21 3.16	.11 .19	-12.09 .10	8.65 .05
TOP :	SMAX=	.98	SMIN=	-2.68	TMAX=	1.83
BOTT:	SMAX=	2.84	SMIN=	-.55	TMAX=	1.70
	11	.09 3.28	.21 3.16	-.11 -.19	12.09 -1.10	-8.65 -.05
TOP :	SMAX=	2.68	SMIN=	-.98	TMAX=	1.83
BOTT:	SMAX=	.55	SMIN=	-2.84	TMAX=	1.70
	12	.00 .02	.00 .02	.02 .00	.14 .00	.03 .00
TOP :	SMAX=	.03	SMIN=	.00	TMAX=	.01
BOTT:	SMAX=	.00	SMIN=	-.02	TMAX=	.01
	13	-.13 6.63	-.46 9.74	2.20 -1.11	-24.50 -.41	23.81 -.99
TOP :	SMAX=	.90	SMIN=	-6.14	TMAX=	3.52
BOTT:	SMAX=	6.69	SMIN=	-4.49	TMAX=	5.59
	14	-.15 8.34	-.58 12.18	2.58 -1.38	-31.78 -.50	29.47 -1.24
TOP :	SMAX=	1.03	SMIN=	-7.78	TMAX=	4.40
BOTT:	SMAX=	8.47	SMIN=	-5.49	TMAX=	6.98
	101	-.06 1.91	.00 1.82	1.16 .00	9.91 .06	3.54 -.01
TOP :	SMAX=	1.91	SMIN=	.00	TMAX=	.96
BOTT:	SMAX=	.03	SMIN=	-1.81	TMAX=	.92
	102	-.04 1.13	.01 1.06	.79 .00	5.66 .04	2.23 .00
TOP :	SMAX=	1.12	SMIN=	-.01	TMAX=	.56
BOTT:	SMAX=	.02	SMIN=	-1.05	TMAX=	.54
	103	-.04 1.01	.04 .94	1.53 .01	4.88 .04	2.25 .01
TOP :	SMAX=	1.04	SMIN=	.07	TMAX=	.48
BOTT:	SMAX=	-.06	SMIN=	-.96	TMAX=	.45
	104	-.05 1.49	.01 1.43	.94 .00	7.91 .04	2.63 -.01
TOP :	SMAX=	1.50	SMIN=	.02	TMAX=	.74
BOTT:	SMAX=	.00	SMIN=	-1.43	TMAX=	.72
	105	-.04 1.39	.00 1.32	.84 .00	7.17 .05	2.61 .00
TOP :	SMAX=	1.39	SMIN=	-.01	TMAX=	.70
BOTT:	SMAX=	.02	SMIN=	-1.31	TMAX=	.67
	106	.07 8.57	-.27 9.52	-6.16 -.50	-51.07 -.01	14.09 -.39
TOP :	SMAX=	-1.02	SMIN=	-9.03	TMAX=	4.01
BOTT:	SMAX=	9.35	SMIN=	-.33	TMAX=	4.84
	107	.16 5.99	-.06 6.64	-6.26 -.69	-38.98 -.11	5.44 -.45
TOP :	SMAX=	-1.69	SMIN=	-6.66	TMAX=	2.48
BOTT:	SMAX=	6.67	SMIN=	.06	TMAX=	3.31
	108	-.15 4.51	-.29 6.78	2.70 -.69	-3.96 -.16	19.18 -.63
TOP :	SMAX=	2.05	SMIN=	-3.12	TMAX=	2.59
BOTT:	SMAX=	3.59	SMIN=	-4.23	TMAX=	3.91
	109	-.24 7.32	.01 6.92	4.42 -.01	37.28 .27	13.90 -.03
TOP :	SMAX=	7.29	SMIN=	-.07	TMAX=	3.68
BOTT:	SMAX=	.16	SMIN=	-6.84	TMAX=	3.50

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
443	15	.41	-.09	-19.59	-75.26	10.62					
		11.39	11.98	-.12	.25	-.07					
	TOP :	SMAX=	SMIN=	TMAX=		ANGLE=					
	BOTT:	SMAX=	SMIN=	TMAX=		ANGLE=					
	2	-.02	-.01	.41	2.74	-.76					
		.50	.46	.00	.02	.00					
	TOP :	SMAX=	SMIN=	TMAX=		ANGLE=					
	BOTT:	SMAX=	SMIN=	TMAX=		ANGLE=					
	3	-.01	.00	.33	3.40	-.50					
		.54	.58	-.01	-.02	.00					
	TOP :	SMAX=	SMIN=	TMAX=		ANGLE=					
	BOTT:	SMAX=	SMIN=	TMAX=		ANGLE=					
	4	.00	.00	.17	2.01	-.40					
		.35	.33	-.01	.00	.00					
	TOP :	SMAX=	SMIN=	TMAX=		ANGLE=					
	BOTT:	SMAX=	SMIN=	TMAX=		ANGLE=					
	5	-.01	.00	.33	3.20	-.68					
		.53	.56	.00	-.01	.01					
	TOP :	SMAX=	SMIN=	TMAX=		ANGLE=					
	BOTT:	SMAX=	SMIN=	TMAX=		ANGLE=					
	6	.00	.01	-.13	.24	.01					
		.05	.05	.00	.00	.00					
	TOP :	SMAX=	SMIN=	TMAX=		ANGLE=					
	BOTT:	SMAX=	SMIN=	TMAX=		ANGLE=					
	7	.00	.04	-.99	1.70	-.10					
		.41	.38	-.01	.00	.02					
	TOP :	SMAX=	SMIN=	TMAX=		ANGLE=					
	BOTT:	SMAX=	SMIN=	TMAX=		ANGLE=					
	8	-.01	.00	.29	2.43	-.51					
		.40	.42	.00	.00	.00					
	TOP :	SMAX=	SMIN=	TMAX=		ANGLE=					
	BOTT:	SMAX=	SMIN=	TMAX=		ANGLE=					
	9	-.01	.00	.17	1.50	-.48					
		.28	.27	.00	.00	.00					
	TOP :	SMAX=	SMIN=	TMAX=		ANGLE=					
	BOTT:	SMAX=	SMIN=	TMAX=		ANGLE=					
	10	-.09	.21	.11	-12.09	-8.65					
		3.28	3.16	.19	.10	-.05					
	TOP :	SMAX=	SMIN=	TMAX=		ANGLE=					
	BOTT:	SMAX=	SMIN=	TMAX=		ANGLE=					
	11	.09	-.21	-.11	12.09	8.65					
		3.28	3.16	-.19	-.10	.05					
	TOP :	SMAX=	SMIN=	TMAX=		ANGLE=					
	BOTT:	SMAX=	SMIN=	TMAX=		ANGLE=					
	12	.00	.00	.02	.14	-.03					
		.02	.02	.00	.00	.00					
	TOP :	SMAX=	SMIN=	TMAX=		ANGLE=					
	BOTT:	SMAX=	SMIN=	TMAX=		ANGLE=					
	13	-.13	.46	2.20	-24.50	-23.81					
		6.63	9.74	-1.11	-.41	.99					
	TOP :	SMAX=	SMIN=	TMAX=		ANGLE=					
	BOTT:	SMAX=	SMIN=	TMAX=		ANGLE=					
	14	-.15	.58	2.58	-31.78	-29.47					
		8.34	12.18	-1.38	-.50	1.24					
	TOP :	SMAX=	SMIN=	TMAX=		ANGLE=					
	BOTT:	SMAX=	SMIN=	TMAX=		ANGLE=					
	101	-.06	.00	1.16	9.91	-3.54					
		1.91	1.82	.00	.06	.01					
	TOP :	SMAX=	SMIN=	TMAX=		ANGLE=					
	BOTT:	SMAX=	SMIN=	TMAX=		ANGLE=					



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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		-.04	.00	.60	6.15						-2.22
		1.20	1.14	.00	.04						.01
	TOP : SMAX=	1.19	SMIN=	-.02	TMAX=	.61	ANGLE=				18.5
	BOTT: SMAX=	.04	SMIN=	-1.12	TMAX=	.58	ANGLE=				20.3
103		-.04	.03	-.08	7.32						-2.30
		1.43	1.37	-.01	.05						.02
	TOP : SMAX=	1.36	SMIN=	-.12	TMAX=	.74	ANGLE=				14.7
	BOTT: SMAX=	.13	SMIN=	-1.30	TMAX=	.71	ANGLE=				17.3
104		-.05	-.01	.94	7.91						-2.63
		1.49	1.43	.00	.04						.01
	TOP : SMAX=	1.50	SMIN=	.02	TMAX=	.74	ANGLE=				17.9
	BOTT: SMAX=	.00	SMIN=	-1.43	TMAX=	.72	ANGLE=				19.2
105		-.04	.00	.84	7.17						-2.61
		1.39	1.32	.00	.05						.00
	TOP : SMAX=	1.39	SMIN=	-.01	TMAX=	.70	ANGLE=				19.0
	BOTT: SMAX=	.02	SMIN=	-1.31	TMAX=	.67	ANGLE=				20.6
106		.07	.29	-8.19	-52.12						-12.32
		8.40	9.35	-.52	.00						.44
	TOP : SMAX=	-1.52	SMIN=	-9.05	TMAX=	3.77	ANGLE=				-12.7
	BOTT: SMAX=	9.41	SMIN=	.12	TMAX=	4.64	ANGLE=				-16.2
107		.16	.08	-8.30	-40.04						-3.67
		6.02	6.54	-.71	-.11						.49
	TOP : SMAX=	-2.09	SMIN=	-6.78	TMAX=	2.35	ANGLE=				-1.5
	BOTT: SMAX=	6.77	SMIN=	.48	TMAX=	3.14	ANGLE=				-10.3
108		-.15	.29	2.70	-3.96						-19.18
		4.51	6.78	-.69	-.16						.63
	TOP : SMAX=	2.05	SMIN=	-3.12	TMAX=	2.59	ANGLE=				-41.8
	BOTT: SMAX=	3.59	SMIN=	-4.23	TMAX=	3.91	ANGLE=				-38.9
109		-.24	-.01	4.42	37.27						-13.90
		7.32	6.92	-.01	.27						.03
	TOP : SMAX=	7.29	SMIN=	-.07	TMAX=	3.68	ANGLE=				19.3
	BOTT: SMAX=	.16	SMIN=	-6.84	TMAX=	3.50	ANGLE=				21.0
444	15	.00	.47	2.84	21.03						13.51
		4.96	5.28	.16	.21						-.19
	TOP : SMAX=	4.75	SMIN=	-.40	TMAX=	2.57	ANGLE=				-26.6
	BOTT: SMAX=	1.06	SMIN=	-4.67	TMAX=	2.86	ANGLE=				-29.3
2		.05	-.01	.07	-.88						-.19
		.16	.21	-.07	.00						-.03
	TOP : SMAX=	-.03	SMIN=	-.17	TMAX=	.07	ANGLE=				90.0
	BOTT: SMAX=	.15	SMIN=	-.09	TMAX=	.12	ANGLE=				-1.4
3		.02	.00	-.16	1.24						-.05
		.20	.25	-.01	-.04						-.02
	TOP : SMAX=	.17	SMIN=	-.04	TMAX=	.11	ANGLE=				8.0
	BOTT: SMAX=	.02	SMIN=	-.24	TMAX=	.13	ANGLE=				-2.6
4		-.03	-.01	-.73	-.04						-1.58
		.47	.47	.03	.00						.00
	TOP : SMAX=	.22	SMIN=	-.32	TMAX=	.27	ANGLE=				90.0
	BOTT: SMAX=	.35	SMIN=	-.19	TMAX=	.27	ANGLE=				37.5
5		.01	-.01	-.60	-.84						-1.16
		.35	.37	-.01	-.01						.01
	TOP : SMAX=	.06	SMIN=	-.31	TMAX=	.19	ANGLE=				90.0
	BOTT: SMAX=	.31	SMIN=	-.09	TMAX=	.20	ANGLE=				90.0
6		.00	.00	-.02	.69						-.12
		.12	.12	.00	.00						.00
	TOP : SMAX=	.12	SMIN=	-.01	TMAX=	.06	ANGLE=				8.8
	BOTT: SMAX=	.01	SMIN=	-.12	TMAX=	.06	ANGLE=				10.5
7		.01	.02	-.42	3.94						-.93
		.76	.74	.00	.03						.02
	TOP : SMAX=	.71	SMIN=	-.09	TMAX=	.40	ANGLE=				9.5
	BOTT: SMAX=	.12	SMIN=	-.67	TMAX=	.39	ANGLE=				13.6

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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.01	-.01	-.39	-.45						
		.23	.25	.00	.00						.81
	TOP :	SMAX=	SMIN=	-.20	TMAX=	.13	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.07	TMAX=	.14	ANGLE=	90.0			
	9	.01	.00	-.24	-.24						.75
		.23	.22	-.01	.00						.00
	TOP :	SMAX=	SMIN=	-.17	TMAX=	.13	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.09	TMAX=	.12	ANGLE=	90.0			
	10	.07	.18	2.45	5.74						-9.40
		2.91	2.77	-.08	.07						-.03
	TOP :	SMAX=	SMIN=	-.96	TMAX=	1.63	ANGLE=	38.9			
	BOTT:	SMAX=	SMIN=	-2.24	TMAX=	1.55	ANGLE=	41.3			
	11	-.07	-.18	-2.45	-5.74						9.40
		2.91	2.77	.08	-.07						.03
	TOP :	SMAX=	SMIN=	-2.31	TMAX=	1.63	ANGLE=	38.9			
	BOTT:	SMAX=	SMIN=	-.86	TMAX=	1.55	ANGLE=	41.3			
	12	.00	.00	-.02	.00						-.05
		.01	.01	.00	.00						.00
	TOP :	SMAX=	SMIN=	-.01	TMAX=	.01	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.01	TMAX=	.01	ANGLE=	90.0			
	13	.12	.37	7.16	12.46						-21.11
		6.15	6.58	-.32	.03						.13
	TOP :	SMAX=	SMIN=	-1.96	TMAX=	3.45	ANGLE=	39.8			
	BOTT:	SMAX=	SMIN=	-5.44	TMAX=	3.65	ANGLE=	42.9			
	14	.14	.46	9.16	16.04						-26.02
		7.62	8.12	-.40	.04						.15
	TOP :	SMAX=	SMIN=	-2.34	TMAX=	4.26	ANGLE=	39.6			
	BOTT:	SMAX=	SMIN=	-6.78	TMAX=	4.50	ANGLE=	42.7			
	101	.05	-.02	-2.00	-3.95						-6.45
		1.95	1.95	-.08	.06						-.01
	TOP :	SMAX=	SMIN=	-1.59	TMAX=	1.09	ANGLE=	-42.5			
	BOTT:	SMAX=	SMIN=	-.60	TMAX=	1.09	ANGLE=	-39.0			
	102	.03	-.01	-1.23	-1.92						-4.17
		1.24	1.23	-.05	.04						-.01
	TOP :	SMAX=	SMIN=	-.97	TMAX=	.70	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.44	TMAX=	.70	ANGLE=	-40.8			
	103	.03	.00	-1.56	.69						-4.81
		1.43	1.43	-.05	.06						.01
	TOP :	SMAX=	SMIN=	-.89	TMAX=	.83	ANGLE=	36.5			
	BOTT:	SMAX=	SMIN=	-.74	TMAX=	.83	ANGLE=	40.4			
	104	.04	-.02	-1.53	-2.82						-4.71
		1.42	1.43	-.05	.04						.00
	TOP :	SMAX=	SMIN=	-1.16	TMAX=	.79	ANGLE=	-42.6			
	BOTT:	SMAX=	SMIN=	-.44	TMAX=	.80	ANGLE=	-39.6			
	105	.04	-.01	-1.41	-2.66						-4.67
		1.41	1.40	-.05	.04						-.01
	TOP :	SMAX=	SMIN=	-1.14	TMAX=	.79	ANGLE=	-42.9			
	BOTT:	SMAX=	SMIN=	-.45	TMAX=	.78	ANGLE=	-39.4			
	106	.12	.50	5.46	18.07						-11.06
		4.37	3.98	-.15	.17						-.05
	TOP :	SMAX=	SMIN=	-.28	TMAX=	2.25	ANGLE=	28.7			
	BOTT:	SMAX=	SMIN=	-3.95	TMAX=	2.00	ANGLE=	31.8			
	107	.05	.32	3.01	12.33						-1.67
		2.05	1.79	-.07	.11						-.02
	TOP :	SMAX=	SMIN=	.38	TMAX=	.92	ANGLE=	9.5			
	BOTT:	SMAX=	SMIN=	-2.00	TMAX=	.73	ANGLE=	10.3			
	108	.13	.21	2.15	3.09						-21.15
		6.03	6.24	-.30	.10						.06
	TOP :	SMAX=	SMIN=	-3.14	TMAX=	3.47	ANGLE=	42.7			
	BOTT:	SMAX=	SMIN=	-4.12	TMAX=	3.59	ANGLE=	-44.1			
	109	.19	-.08	-7.60	-15.41						-25.43
		7.70	7.67	-.30	.24						-.04
	TOP :	SMAX=	SMIN=	-6.25	TMAX=	4.30	ANGLE=	-42.5			
	BOTT:	SMAX=	SMIN=	-2.41	TMAX=	4.29	ANGLE=	-38.8			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
445	15	-.12 7.37	-.15 6.31	11.20	44.35	11.20	44.35	-5.35			
	TOP :	SMAX= 8.03	SMIN=	1.58	TMAX= 3.22	1.58	3.22	ANGLE= 9.5			
	BOTT:	SMAX= -1.87	SMIN=	-7.03	TMAX= 2.58	-7.03	2.58	ANGLE= 8.2			
	2	.01 .32	.00 .24	-.17 .00	-1.49 .00	-.17	-1.49	-.43 -.05			
	TOP :	SMAX= .03	SMIN=	-.30	TMAX= .16	-.30	.16	ANGLE= -24.1			
	BOTT:	SMAX= .25	SMIN=	.03	TMAX= .11	.03	.11	ANGLE= -5.6			
	3	.01 .41	.04 .49	-.34 -.01	-2.56 .01	-.34	-2.56	.68 -.04			
	TOP :	SMAX= -.05	SMIN=	-.43	TMAX= .19	-.43	.19	ANGLE= 12.0			
	BOTT:	SMAX= .49	SMIN=	.00	TMAX= .25	.00	.25	ANGLE= 18.6			
	4	.00 .26	.00 .29	-.33 -.01	-1.75 .01	-.33	-1.75	.03 -.03			
	TOP :	SMAX= -.06	SMIN=	-.29	TMAX= .11	-.29	.11	ANGLE= -5.9			
	BOTT:	SMAX= .30	SMIN=	.04	TMAX= .13	.04	.13	ANGLE= 6.9			
	5	.01 .34	.00 .31	-.44 .00	-2.15 -.01	-.44	-2.15	-.04 .00			
	TOP :	SMAX= -.07	SMIN=	-.37	TMAX= .15	-.37	.15	ANGLE= -1.5			
	BOTT:	SMAX= .35	SMIN=	.08	TMAX= .13	.08	.13	ANGLE= -1.3			
	6	.00 .07	.00 .07	.09 .00	.44 .00	.09	.44	-.05 .00			
	TOP :	SMAX= .08	SMIN=	.01	TMAX= .03	.01	.03	ANGLE= 90.0			
	BOTT:	SMAX= -.01	SMIN=	-.07	TMAX= .03	-.07	.03	ANGLE= 90.0			
	7	.01 .24	-.02 .21	.57 -.01	1.52 .02	.57	1.52	-.10 .00			
	TOP :	SMAX= .27	SMIN=	.08	TMAX= .09	.08	.09	ANGLE= 5.3			
	BOTT:	SMAX= -.10	SMIN=	-.24	TMAX= .07	-.24	.07	ANGLE= 7.6			
	8	.01 .26	.00 .23	-.31 .01	-1.59 -.01	-.31	-1.59	.00 .00			
	TOP :	SMAX= -.04	SMIN=	-.27	TMAX= .12	-.27	.12	ANGLE= -.9			
	BOTT:	SMAX= .26	SMIN=	.06	TMAX= .10	.06	.10	ANGLE= .6			
	9	.00 .16	.00 .15	-.16 .00	-.96 .00	-.16	-.96	-.14 -.01			
	TOP :	SMAX= -.02	SMIN=	-.17	TMAX= .07	-.17	.07	ANGLE= -13.6			
	BOTT:	SMAX= .16	SMIN=	.03	TMAX= .07	.03	.07	ANGLE= -5.1			
	10	.03 1.69	-.04 1.24	1.53 .01	8.23 .17	1.53	8.23	-2.55 -.10			
	TOP :	SMAX= 1.73	SMIN=	.08	TMAX= .83	.08	.83	ANGLE= 19.7			
	BOTT:	SMAX= -.14	SMIN=	-1.31	TMAX= .58	-1.31	.58	ANGLE= 17.1			
	11	-.03 1.69	.04 1.24	-1.53 -.01	-8.23 -.17	-1.53	-8.23	2.55 -.10			
	TOP :	SMAX= -.08	SMIN=	-1.73	TMAX= .83	-1.73	.83	ANGLE= 19.7			
	BOTT:	SMAX= 1.31	SMIN=	.14	TMAX= .58	.14	.58	ANGLE= 17.1			
	12	.00 .01	.00 .01	-.01 .00	-.08 .00	-.01	-.08	-.01 .00			
	TOP :	SMAX= .00	SMIN=	-.01	TMAX= .01	-.01	.01	ANGLE= 90.0			
	BOTT:	SMAX= .01	SMIN=	.00	TMAX= .01	.00	.01	ANGLE= 90.0			
	13	.09 3.54	-.09 2.56	2.35 -.02	16.08 .42	2.35	16.08	-6.00 -.15			
	TOP :	SMAX= 3.52	SMIN=	-.05	TMAX= 1.78	-.05	1.78	ANGLE= 20.0			
	BOTT:	SMAX= -.08	SMIN=	-2.60	TMAX= 1.26	-2.60	1.26	ANGLE= 21.4			
	14	.11 4.54	-.11 3.31	3.16 -.02	21.01 .53	3.16	21.01	-7.52 -.18			
	TOP :	SMAX= 4.54	SMIN=	-.01	TMAX= 2.27	-.01	2.27	ANGLE= 19.6			
	BOTT:	SMAX= -.15	SMIN=	-3.38	TMAX= 1.62	-3.38	1.62	ANGLE= 20.7			
	101	.03 1.17	-.04 1.01	-1.12 .00	-6.00 -.01	-1.12	-6.00	-2.00 -.08			
	TOP :	SMAX= -.01	SMIN=	-1.18	TMAX= .58	-1.18	.58	ANGLE= -22.5			
	BOTT:	SMAX= 1.07	SMIN=	.12	TMAX= .48	.12	.48	ANGLE= -16.2			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

-----  
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
102		.02	-.03	-.59	-3.22						-1.37
		.69	.58	.00	.00						-.05
TOP :	SMAX=	.04	SMIN=	-.67	TMAX=	.36	ANGLE=				-25.9
BOTT:	SMAX=	.60	SMIN=	.04	TMAX=	.28	ANGLE=				-19.3
103		.02	-.05	-.20	-2.36						-1.41
		.62	.50	-.01	.01						-.05
TOP :	SMAX=	.12	SMIN=	-.54	TMAX=	.33	ANGLE=				-29.5
BOTT:	SMAX=	.48	SMIN=	-.05	TMAX=	.26	ANGLE=				-22.1
104		.02	-.03	-.91	-4.84						-1.33
		.89	.79	.01	-.01						-.05
TOP :	SMAX=	-.04	SMIN=	-.91	TMAX=	.44	ANGLE=				-19.6
BOTT:	SMAX=	.84	SMIN=	.12	TMAX=	.36	ANGLE=				-13.9
105		.02	-.03	-.79	-4.34						-1.44
		.85	.73	.00	.00						-.06
TOP :	SMAX=	.00	SMIN=	-.85	TMAX=	.42	ANGLE=				-22.6
BOTT:	SMAX=	.77	SMIN=	.08	TMAX=	.34	ANGLE=				-15.6
106		.01	-.16	7.12	32.06						-7.79
		6.01	4.71	-.06	.52						-.24
TOP :	SMAX=	6.32	SMIN=	.68	TMAX=	2.82	ANGLE=				16.5
BOTT:	SMAX=	-.95	SMIN=	-5.11	TMAX=	2.08	ANGLE=				15.3
107		-.01	-.11	5.60	23.82						-5.23
		4.33	3.48	-.07	.36						-.14
TOP :	SMAX=	4.60	SMIN=	.59	TMAX=	2.00	ANGLE=				15.1
BOTT:	SMAX=	-.81	SMIN=	-3.81	TMAX=	1.50	ANGLE=				14.7
108		.09	-.12	.26	3.36						-6.41
		2.33	1.54	-.01	.26						-.20
TOP :	SMAX=	1.75	SMIN=	-.90	TMAX=	1.32	ANGLE=				36.4
BOTT:	SMAX=	.71	SMIN=	-1.06	TMAX=	.88	ANGLE=				40.9
109		.12	-.19	-4.11	-22.34						-8.29
		4.54	3.87	.02	-.01						-.32
TOP :	SMAX=	.09	SMIN=	-4.50	TMAX=	2.29	ANGLE=				-24.0
BOTT:	SMAX=	4.04	SMIN=	.37	TMAX=	1.84	ANGLE=				-17.5
446	15	.03	-.09	4.52	17.92						-.17
		2.89	2.51	.06	.20						-.13
TOP :	SMAX=	3.20	SMIN=	.80	TMAX=	1.20	ANGLE=				3.9
BOTT:	SMAX=	-.69	SMIN=	-2.79	TMAX=	1.05	ANGLE=				-2.9
2		.00	.00	-.29	-1.22						.08
		.19	.22	-.01	.01						-.05
TOP :	SMAX=	-.04	SMIN=	-.21	TMAX=	.08	ANGLE=				-13.7
BOTT:	SMAX=	.23	SMIN=	.02	TMAX=	.11	ANGLE=				19.1
3		.00	.04	-.27	-1.87						.67
		.31	.39	.01	.02						-.03
TOP :	SMAX=	-.02	SMIN=	-.32	TMAX=	.15	ANGLE=				16.0
BOTT:	SMAX=	.39	SMIN=	-.01	TMAX=	.20	ANGLE=				23.0
4		.00	.01	.00	-.87						-.03
		.17	.14	.01	-.01						-.02
TOP :	SMAX=	.02	SMIN=	-.15	TMAX=	.09	ANGLE=				-9.8
BOTT:	SMAX=	.14	SMIN=	.01	TMAX=	.07	ANGLE=				9.1
5		.00	.00	-.19	-1.26						.08
		.21	.19	.00	-.01						.00
TOP :	SMAX=	-.03	SMIN=	-.22	TMAX=	.09	ANGLE=				3.9
BOTT:	SMAX=	.20	SMIN=	.03	TMAX=	.09	ANGLE=				4.2
6		.00	.00	-.01	-.07						.03
		.01	.02	.00	.00						.00
TOP :	SMAX=	.00	SMIN=	-.01	TMAX=	.01	ANGLE=				90.0
BOTT:	SMAX=	.02	SMIN=	.00	TMAX=	.01	ANGLE=				90.0
7		.00	-.01	.13	-1.47						.16
		.26	.27	.00	.00						-.01
TOP :	SMAX=	.02	SMIN=	-.24	TMAX=	.13	ANGLE=				4.7
BOTT:	SMAX=	.25	SMIN=	-.02	TMAX=	.14	ANGLE=				6.8



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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
447	15	-.04 1.66	-.09 1.86	1.89 .02	8.01 .01	4.41 -.08					
	TOP :	SMAX= 1.66	SMIN=	.01	TMAX= .83	ANGLE= -26.2					
	BOTT:	SMAX= .15	SMIN=	-1.78	TMAX= .96	ANGLE= -28.9					
	2	.00 .12	.00 .19	-.30 .08	-.44 -.01	.39 -.03					
	TOP :	SMAX= .04	SMIN=	-.09	TMAX= .07	ANGLE= 16.4					
	BOTT:	SMAX= .20	SMIN=	.00	TMAX= .10	ANGLE= 90.0					
	3	-.02 .45	.03 .52	-.65 .01	-3.14 .03	.28 -.02					
	TOP :	SMAX= -.10	SMIN=	-.50	TMAX= .20	ANGLE= 3.3					
	BOTT:	SMAX= .56	SMIN=	.11	TMAX= .23	ANGLE= 9.1					
	4	.00 .10	.00 .11	.09 -.04	-.28 .02	-.23 -.02					
	TOP :	SMAX= .03	SMIN=	-.08	TMAX= .06	ANGLE= 90.0					
	BOTT:	SMAX= .07	SMIN=	-.06	TMAX= .06	ANGLE= -9.1					
	5	.00 .09	.01 .08	-.10 .00	-.54 .00	-.06 .00					
	TOP :	SMAX= -.01	SMIN=	-.09	TMAX= .04	ANGLE= 90.0					
	BOTT:	SMAX= .09	SMIN=	.02	TMAX= .04	ANGLE= 90.0					
	6	.00 .06	.00 .06	-.06 .00	-.38 .00	.03 .00					
	TOP :	SMAX= -.01	SMIN=	-.07	TMAX= .03	ANGLE= 90.0					
	BOTT:	SMAX= .06	SMIN=	.01	TMAX= .03	ANGLE= 90.0					
	7	.00 .39	.00 .38	-.18 .00	-2.39 .00	-.14 -.01					
	TOP :	SMAX= -.03	SMIN=	-.40	TMAX= .19	ANGLE= -4.4					
	BOTT:	SMAX= .39	SMIN=	.03	TMAX= .18	ANGLE= -2.7					
	8	.00 .11	.00 .08	-.12 .01	-.63 -.01	-.02 .00					
	TOP :	SMAX= -.01	SMIN=	-.11	TMAX= .05	ANGLE= -1.9					
	BOTT:	SMAX= .10	SMIN=	.03	TMAX= .03	ANGLE= 90.0					
	9	.00 .07	.00 .06	-.07 .00	-.41 .00	.04 -.01					
	TOP :	SMAX= -.01	SMIN=	-.07	TMAX= .03	ANGLE= 90.0					
	BOTT:	SMAX= .07	SMIN=	.01	TMAX= .03	ANGLE= 90.0					
	10	.00 .31	-.02 .41	.09 .03	.46 .00	1.21 -.03					
	TOP :	SMAX= .23	SMIN=	-.11	TMAX= .17	ANGLE= 90.0					
	BOTT:	SMAX= .20	SMIN=	-.27	TMAX= .24	ANGLE= 90.0					
	11	.00 .31	.02 .41	-.09 -.03	-.46 .00	-1.21 .03					
	TOP :	SMAX= .11	SMIN=	-.23	TMAX= .17	ANGLE= 90.0					
	BOTT:	SMAX= .27	SMIN=	-.20	TMAX= .24	ANGLE= 90.0					
	12	.00 .01	.00 .01	-.01 .00	-.07 .00	.00 .00					
	TOP :	SMAX= .00	SMIN=	-.01	TMAX= .01	ANGLE= 90.0					
	BOTT:	SMAX= .01	SMIN=	.00	TMAX= .00	ANGLE= 90.0					
	13	.00 .72	-.04 1.02	.29 .07	2.18 .05	2.75 -1.10					
	TOP :	SMAX= .65	SMIN=	-.12	TMAX= .38	ANGLE= -33.9					
	BOTT:	SMAX= .44	SMIN=	-.73	TMAX= .58	ANGLE= -36.6					
	14	.00 .88	-.05 1.27	.38 .09	2.55 .05	3.45 -1.13					
	TOP :	SMAX= .79	SMIN=	-.16	TMAX= .48	ANGLE= -34.9					
	BOTT:	SMAX= .56	SMIN=	-.90	TMAX= .73	ANGLE= -37.2					
	101	.02 .10	-.02 .14	.16 .05	.44 -.04	-.02 -.04					
	TOP :	SMAX= .10	SMIN=	.01	TMAX= .05	ANGLE= 90.0					
	BOTT:	SMAX= .03	SMIN=	-.12	TMAX= .08	ANGLE= -13.6					

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ELEMENT FORCES      FORCE,LENGTH UNITS= KIP    INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY	
	102	.02	-.02	.08	.10	.02	
		.07	.08	.03	-.03	-.03	
TOP :	SMAX=	.05	SMIN=	-.02	TMAX=	.04	ANGLE= 90.0
BOTT:	SMAX=	.03	SMIN=	-.06	TMAX=	.04	ANGLE= 90.0
	103	.02	-.01	-.01	-1.51	-.11	
		.31	.21	.03	-.03	-.03	
TOP :	SMAX=	.03	SMIN=	-.29	TMAX=	.16	ANGLE= -8.8
BOTT:	SMAX=	.22	SMIN=	.03	TMAX=	.10	ANGLE= 3.5
	104	.02	-.01	.03	-.10	-.02	
		.10	.06	.04	-.03	-.03	
TOP :	SMAX=	.05	SMIN=	-.06	TMAX=	.06	ANGLE= 90.0
BOTT:	SMAX=	.04	SMIN=	-.03	TMAX=	.03	ANGLE= 90.0
	105	.02	-.01	.07	.07	.03	
		.07	.08	.03	-.03	-.03	
TOP :	SMAX=	.06	SMIN=	-.03	TMAX=	.04	ANGLE= 90.0
BOTT:	SMAX=	.04	SMIN=	-.06	TMAX=	.05	ANGLE= 90.0
	106	-.01	-.08	1.21	5.54	4.18	
		1.29	1.66	.08	.01	-.12	
TOP :	SMAX=	1.27	SMIN=	-.05	TMAX=	.66	ANGLE= -30.3
BOTT:	SMAX=	.39	SMIN=	-1.43	TMAX=	.91	ANGLE= -32.1
	107	-.01	-.06	1.12	5.08	2.97	
		1.04	1.28	.05	.01	-.09	
TOP :	SMAX=	1.05	SMIN=	.04	TMAX=	.51	ANGLE= -26.1
BOTT:	SMAX=	.20	SMIN=	-1.17	TMAX=	.68	ANGLE= -29.7
	108	.03	-.05	.44	2.07	1.72	
		.41	.80	.11	-.03	-.12	
TOP :	SMAX=	.43	SMIN=	.06	TMAX=	.18	ANGLE= -34.0
BOTT:	SMAX=	.28	SMIN=	-.62	TMAX=	.45	ANGLE= -31.6
	109	.10	-.09	.80	2.50	-.01	
		.41	.68	.19	-.17	-.16	
TOP :	SMAX=	.46	SMIN=	.12	TMAX=	.17	ANGLE= 90.0
BOTT:	SMAX=	.10	SMIN=	-.63	TMAX=	.36	ANGLE= -13.1
448	15	-.01	-.08	.38	2.40	4.61	
		1.33	1.44	.06	-.07	-.02	
TOP :	SMAX=	.98	SMIN=	-.53	TMAX=	.76	ANGLE= -41.1
BOTT:	SMAX=	.59	SMIN=	-1.06	TMAX=	.82	ANGLE= -36.7
	2	.00	.00	-.08	.00	.33	
		.08	.12	.03	.00	-.01	
TOP :	SMAX=	.05	SMIN=	-.04	TMAX=	.04	ANGLE= 90.0
BOTT:	SMAX=	.09	SMIN=	-.05	TMAX=	.07	ANGLE= 90.0
	3	.00	.02	-.05	-.74	-.45	
		.19	.17	.00	.03	-.02	
TOP :	SMAX=	.06	SMIN=	-.16	TMAX=	.11	ANGLE= 90.0
BOTT:	SMAX=	.17	SMIN=	-.01	TMAX=	.09	ANGLE= -18.2
	4	.00	.00	.05	.00	-.15	
		.05	.04	.00	.00	-.01	
TOP :	SMAX=	.04	SMIN=	-.03	TMAX=	.03	ANGLE= 90.0
BOTT:	SMAX=	.02	SMIN=	-.02	TMAX=	.02	ANGLE= 90.0
	5	.00	.01	.00	-.03	-.11	
		.03	.04	.00	.00	.00	
TOP :	SMAX=	.01	SMIN=	-.02	TMAX=	.02	ANGLE= 90.0
BOTT:	SMAX=	.02	SMIN=	-.02	TMAX=	.02	ANGLE= 90.0
	6	.00	.00	-.08	-.51	.02	
		.08	.07	.00	.00	.00	
TOP :	SMAX=	-.01	SMIN=	-.09	TMAX=	.04	ANGLE= 90.0
BOTT:	SMAX=	.08	SMIN=	.01	TMAX=	.03	ANGLE= 90.0
	7	.00	.00	-.32	-2.27	-.10	
		.36	.35	.00	-.01	-.01	
TOP :	SMAX=	-.05	SMIN=	-.39	TMAX=	.17	ANGLE= -4.0
BOTT:	SMAX=	.37	SMIN=	.05	TMAX=	.16	ANGLE= -1.6

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH				
FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH						
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FXY
	8	.00 .04	.01 .05	-.03 .00	-.18 .00	-.11 .00
TOP :	SMAX=	.00	SMIN=	-.04	TMAX=	ANGLE= 90.0
BOTT:	SMAX=	.04	SMIN=	-.01	TMAX=	ANGLE= 90.0
	9	.00 .02	.00 .02	-.02 .00	-.11 .00	.03 .00
TOP :	SMAX=	.00	SMIN=	-.02	TMAX=	ANGLE= 90.0
BOTT:	SMAX=	.02	SMIN=	.00	TMAX=	ANGLE= 90.0
	10	.00 .32	-.01 .31	-.08 .02	-.47 -.02	1.05 .00
TOP :	SMAX=	.13	SMIN=	-.23	TMAX=	ANGLE= 36.4
BOTT:	SMAX=	.22	SMIN=	-.13	TMAX=	ANGLE= 90.0
	11	.00 .32	.01 .31	.08 -.02	.47 .02	-1.05 .00
TOP :	SMAX=	.23	SMIN=	-.13	TMAX=	ANGLE= 36.4
BOTT:	SMAX=	.13	SMIN=	-.22	TMAX=	ANGLE= 90.0
	12	.00 .01	.00 .00	-.01 .00	-.04 .00	.00 .00
TOP :	SMAX=	.00	SMIN=	-.01	TMAX=	ANGLE= 90.0
BOTT:	SMAX=	.01	SMIN=	.00	TMAX=	ANGLE= 90.0
	13	-.01 .71	-.04 .83	-.02 .05	-.07 -.02	2.65 -.04
TOP :	SMAX=	.41	SMIN=	-.40	TMAX=	ANGLE= 90.0
BOTT:	SMAX=	.50	SMIN=	-.46	TMAX=	ANGLE= 90.0
	14	-.01 .91	-.05 1.06	-.07 .07	-.38 -.04	3.39 -.04
TOP :	SMAX=	.50	SMIN=	-.55	TMAX=	ANGLE= 40.8
BOTT:	SMAX=	.66	SMIN=	-.56	TMAX=	ANGLE= 90.0
	101	.00 .24	.00 .26	-.10 .03	.15 -.04	.83 .00
TOP :	SMAX=	.13	SMIN=	-.14	TMAX=	ANGLE= 90.0
BOTT:	SMAX=	.14	SMIN=	-.16	TMAX=	ANGLE= -33.9
	102	.00 .19	.00 .18	-.13 .02	-.30 -.03	.59 .00
TOP :	SMAX=	.06	SMIN=	-.15	TMAX=	ANGLE= 90.0
BOTT:	SMAX=	.13	SMIN=	-.07	TMAX=	ANGLE= 90.0
	103	.00 .33	.00 .27	-.32 .02	-1.71 -.03	.50 -.01
TOP :	SMAX=	-.02	SMIN=	-.34	TMAX=	ANGLE= 13.9
BOTT:	SMAX=	.29	SMIN=	.03	TMAX=	ANGLE= 22.7
	104	.00 .15	.00 .15	-.09 .02	-.03 -.03	.49 .00
TOP :	SMAX=	.07	SMIN=	-.10	TMAX=	ANGLE= 90.0
BOTT:	SMAX=	.09	SMIN=	-.08	TMAX=	ANGLE= 90.0
	105	.00 .17	.00 .19	-.09 .02	.02 -.03	.60 .00
TOP :	SMAX=	.09	SMIN=	-.11	TMAX=	ANGLE= 90.0
BOTT:	SMAX=	.11	SMIN=	-.11	TMAX=	ANGLE= 90.0
	106	-.01 1.25	-.07 1.38	.09 .08	.98 -.08	4.51 -.03
TOP :	SMAX=	.81	SMIN=	-.63	TMAX=	ANGLE= 90.0
BOTT:	SMAX=	.71	SMIN=	-.88	TMAX=	ANGLE= -39.5
	107	-.01 .96	-.05 1.10	.17 .06	1.45 -.05	3.47 -.03
TOP :	SMAX=	.69	SMIN=	-.41	TMAX=	ANGLE= -42.4
BOTT:	SMAX=	.50	SMIN=	-.76	TMAX=	ANGLE= -37.5
	108	-.01 .78	-.03 .88	-.17 .07	.03 -.08	2.84 -.03
TOP :	SMAX=	.44	SMIN=	-.46	TMAX=	ANGLE= 41.3
BOTT:	SMAX=	.52	SMIN=	-.50	TMAX=	ANGLE= -39.9
	109	-.01 1.02	-.01 1.14	-.42 .12	.68 -.18	3.59 -.01
TOP :	SMAX=	.58	SMIN=	-.60	TMAX=	ANGLE= 42.1
BOTT:	SMAX=	.61	SMIN=	-.71	TMAX=	ANGLE= -34.2



PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MXY FGY
449	15	-.01 1.32	-.06 1.15	-.59 .04	-2.07 -.09	4.13 .04
	TOP :	SMAX=.50	SMIN=	-1.00	TMAX=.75	ANGLE= 37.8
	BOTT:	SMAX=.85	SMIN=	-.46	TMAX=.65	ANGLE= 42.4
	2	.00 .08	.00 .08	.02 .01	.32 .00	.20 .00
	TOP :	SMAX=.07	SMIN=	-.01	TMAX=.04	ANGLE= 90.0
	BOTT:	SMAX=.02	SMIN=	-.07	TMAX=.04	ANGLE= 90.0
	3	.00 .19	.01 .11	.14 .01	.70 .02	-.37 -.02
	TOP :	SMAX=.18	SMIN=	-.01	TMAX=.10	ANGLE= 28.0
	BOTT:	SMAX=.00	SMIN=	-.11	TMAX=.06	ANGLE= 90.0
	4	.00 .05	.00 .04	.08 .00	.27 .00	-.10 .00
	TOP :	SMAX=.06	SMIN=	.01	TMAX=.03	ANGLE= 90.0
	BOTT:	SMAX=	SMIN=	-.05	TMAX=.02	ANGLE= 90.0
	5	.00 .08	.00 .07	.07 .00	.40 .01	-.13 .00
	TOP :	SMAX=.08	SMIN=	.01	TMAX=.04	ANGLE= 90.0
	BOTT:	SMAX=.00	SMIN=	-.07	TMAX=.03	ANGLE= 90.0
	6	.00 .09	.00 .08	-.09 .00	-.53 .00	.01 .00
	TOP :	SMAX=	SMIN=	-.09	TMAX=.04	ANGLE= 90.0
	BOTT:	SMAX=.08	SMIN=	.01	TMAX=.03	ANGLE= 90.0
	7	.00 .30	.01 .29	-.30 .00	-1.89 -.01	-.05 -.01
	TOP :	SMAX=	SMIN=	-.32	TMAX=.14	ANGLE= -3.2
	BOTT:	SMAX=.31	SMIN=	.05	TMAX=.13	ANGLE= -.2
	8	.00 .06	.01 .07	.05 .00	.30 .00	-.17 .01
	TOP :	SMAX=.06	SMIN=	.00	TMAX=.03	ANGLE= 90.0
	BOTT:	SMAX=.01	SMIN=	-.07	TMAX=.04	ANGLE= 90.0
	9	.00 .03	.00 .03	.03 .00	.19 .00	.02 .00
	TOP :	SMAX=.03	SMIN=	.01	TMAX=.01	ANGLE= 90.0
	BOTT:	SMAX=.00	SMIN=	-.03	TMAX=.02	ANGLE= 90.0
	10	.00 .30	-.01 .23	-.17 .01	-1.02 -.02	.73 .01
	TOP :	SMAX=.05	SMIN=	-.27	TMAX=.16	ANGLE= 28.8
	BOTT:	SMAX=.21	SMIN=	-.03	TMAX=.12	ANGLE= 31.4
	11	.00 .30	.01 .23	.17 -.01	1.02 .02	-.73 -.01
	TOP :	SMAX=.27	SMIN=	-.05	TMAX=.16	ANGLE= 28.8
	BOTT:	SMAX=.03	SMIN=	-.21	TMAX=.12	ANGLE= 31.4
	12	.00 .00	.00 .00	.00 .00	.02 .00	.00 .00
	TOP :	SMAX=.00	SMIN=	.00	TMAX=.00	ANGLE= 90.0
	BOTT:	SMAX=.00	SMIN=	.00	TMAX=.00	ANGLE= 90.0
	13	-.01 .71	-.03 .63	-.32 .02	-2.04 -.05	2.04 .01
	TOP :	SMAX=.18	SMIN=	-.61	TMAX=.39	ANGLE= 31.3
	BOTT:	SMAX=.53	SMIN=	-.17	TMAX=.35	ANGLE= 36.2
	14	-.01 .94	-.04 .83	-.44 .03	-2.75 -.07	2.67 .01
	TOP :	SMAX=.23	SMIN=	-.80	TMAX=.52	ANGLE= 31.0
	BOTT:	SMAX=.70	SMIN=	-.21	TMAX=.46	ANGLE= 35.8
	101	-.01 .23	.01 .23	.10 .01	.95 -.03	.58 .02
	TOP :	SMAX=.20	SMIN=	-.05	TMAX=.12	ANGLE= -32.9
	BOTT:	SMAX=.02	SMIN=	-.22	TMAX=.12	ANGLE= -20.9



PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.00	.00	.12	.68						
		.12	.11	.00	.01						
TOP :	SMAX=	.12	SMIN=	.02	TMAX=	.05	ANGLE=	10.9			
BOTT:	SMAX=	-.01	SMIN=	-.11	TMAX=	.05	ANGLE=	90.0			
	9	.00	.00	.07	.44						
		.07	.07	.00	.00						
TOP :	SMAX=	.08	SMIN=	.01	TMAX=	.03	ANGLE=	90.0			
BOTT:	SMAX=	-.01	SMIN=	-.07	TMAX=	.03	ANGLE=	90.0			
	10	.00	.00	-.22	-1.23						
		.25	.20	-.01	-.02						
TOP :	SMAX=	-.01	SMIN=	-.26	TMAX=	.12	ANGLE=	21.2			
BOTT:	SMAX=	.20	SMIN=	.01	TMAX=	.09	ANGLE=	17.1			
	11	.00	.00	.22	1.23						
		.25	.20	.01	.02						
TOP :	SMAX=	.26	SMIN=	.01	TMAX=	.12	ANGLE=	21.2			
BOTT:	SMAX=	-.01	SMIN=	-.20	TMAX=	.09	ANGLE=	17.1			
	12	.00	.00	.01	.06						
		.01	.01	.00	.00						
TOP :	SMAX=	.01	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
BOTT:	SMAX=	.00	SMIN=	-.01	TMAX=	.00	ANGLE=	90.0			
	13	-.01	-.02	-.55	-3.28						
		.69	.56	.00	-.06						
TOP :	SMAX=	-.01	SMIN=	-.69	TMAX=	.34	ANGLE=	21.0			
BOTT:	SMAX=	.56	SMIN=	.01	TMAX=	.27	ANGLE=	21.5			
	14	-.01	-.02	-.70	-4.11						
		.88	.71	-.01	-.07						
TOP :	SMAX=	.00	SMIN=	-.88	TMAX=	.44	ANGLE=	21.9			
BOTT:	SMAX=	.72	SMIN=	.01	TMAX=	.35	ANGLE=	22.3			
	101	-.01	.01	.29	1.97						
		.32	.32	-.01	-.01						
TOP :	SMAX=	.33	SMIN=	.03	TMAX=	.15	ANGLE=	-12.4			
BOTT:	SMAX=	-.05	SMIN=	-.35	TMAX=	.15	ANGLE=	-5.9			
	102	.00	.01	.11	.82						
		.14	.15	.00	-.01						
TOP :	SMAX=	.14	SMIN=	.00	TMAX=	.07	ANGLE=	-19.7			
BOTT:	SMAX=	-.02	SMIN=	-.15	TMAX=	.07	ANGLE=	-10.0			
	103	.00	.01	.00	.19						
		.07	.06	.00	-.01						
TOP :	SMAX=	.05	SMIN=	-.03	TMAX=	.04	ANGLE=	90.0			
BOTT:	SMAX=	.01	SMIN=	-.06	TMAX=	.03	ANGLE=	90.0			
	104	-.01	.01	.26	1.72						
		.27	.27	.00	.00						
TOP :	SMAX=	.29	SMIN=	.04	TMAX=	.12	ANGLE=	-6.7			
BOTT:	SMAX=	-.05	SMIN=	-.29	TMAX=	.12	ANGLE=	-1.1			
	105	-.01	.01	.22	1.53						
		.24	.25	.00	-.01						
TOP :	SMAX=	.25	SMIN=	.02	TMAX=	.12	ANGLE=	-11.7			
BOTT:	SMAX=	-.04	SMIN=	-.27	TMAX=	.12	ANGLE=	-6.1			
	106	-.01	-.03	-.85	-4.14						
		1.08	.83	-.01	-.08						
TOP :	SMAX=	.10	SMIN=	-1.02	TMAX=	.56	ANGLE=	28.1			
BOTT:	SMAX=	.80	SMIN=	-.06	TMAX=	.43	ANGLE=	28.3			
	107	-.01	-.03	-.63	-2.91						
		.83	.65	.00	-.06						
TOP :	SMAX=	.11	SMIN=	-.77	TMAX=	.44	ANGLE=	30.1			
BOTT:	SMAX=	.61	SMIN=	-.08	TMAX=	.34	ANGLE=	31.3			
	108	-.01	.00	-.02	.30						
		.42	.31	-.01	-.06						
TOP :	SMAX=	.23	SMIN=	-.25	TMAX=	.24	ANGLE=	90.0			
BOTT:	SMAX=	.12	SMIN=	-.23	TMAX=	.18	ANGLE=	-36.8			
	109	-.03	.03	1.04	7.36						
		1.20	1.23	-.02	-.07						
TOP :	SMAX=	1.23	SMIN=	.08	TMAX=	.58	ANGLE=	-14.6			
BOTT:	SMAX=	-.18	SMIN=	-1.31	TMAX=	.57	ANGLE=	-7.5			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES		FORCE, LENGTH UNITS= KIP INCH				
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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH						
ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FXY
451	15	.00	-.03	-1.57	-7.87	1.73
		1.38	1.23	-.03	-.07	.03
	TOP : SMAX=	-.21	SMIN=	-1.47	TMAX=	.63 ANGLE= 15.4
	BOTT: SMAX=	1.31	SMIN=	.17	TMAX=	.57 ANGLE= 13.3
	2	.00	.00	.12	.72	.02
		.11	.11	.00	.00	.00
	TOP : SMAX=	.12	SMIN=	.02	TMAX=	.05 ANGLE= -3.6
	BOTT: SMAX=	-.02	SMIN=	-.12	TMAX=	.05 ANGLE= 90.0
	3	.00	.00	.34	1.94	-.07
		.32	.28	.01	.02	.00
	TOP : SMAX=	.34	SMIN=	.06	TMAX=	.14 ANGLE= 3.1
	BOTT: SMAX=	-.05	SMIN=	-.30	TMAX=	.13 ANGLE= 1.5
	4	.00	.00	.13	.62	-.02
		.10	.09	.00	.01	.00
	TOP : SMAX=	.11	SMIN=	.02	TMAX=	.04 ANGLE= 90.0
	BOTT: SMAX=	-.02	SMIN=	-.10	TMAX=	.04 ANGLE= 90.0
	5	.00	.00	.15	.84	-.04
		.14	.12	.00	.01	.00
	TOP : SMAX=	.15	SMIN=	.02	TMAX=	.06 ANGLE= 2.9
	BOTT: SMAX=	-.02	SMIN=	-.13	TMAX=	.05 ANGLE= 3.2
	6	.00	.00	-.05	-.27	-.01
		.04	.04	.00	.00	.00
	TOP : SMAX=	-.01	SMIN=	-.05	TMAX=	.02 ANGLE= 90.0
	BOTT: SMAX=	.04	SMIN=	.01	TMAX=	.02 ANGLE= 90.0
	7	.00	.01	-.06	-.39	.00
		.06	.06	.00	.00	-.01
	TOP : SMAX=	-.01	SMIN=	-.07	TMAX=	.03 ANGLE= 90.0
	BOTT: SMAX=	.07	SMIN=	.01	TMAX=	.03 ANGLE= 90.0
	8	.00	.00	.16	.88	-.06
		.15	.13	.00	.01	.00
	TOP : SMAX=	.16	SMIN=	.02	TMAX=	.07 ANGLE= 3.5
	BOTT: SMAX=	-.03	SMIN=	-.14	TMAX=	.06 ANGLE= 5.8
	9	.00	.00	.09	.59	.00
		.09	.09	.00	.00	.00
	TOP : SMAX=	.10	SMIN=	.02	TMAX=	.04 ANGLE= 90.0
	BOTT: SMAX=	-.01	SMIN=	-.10	TMAX=	.04 ANGLE= 90.0
	10	.00	.00	-.23	-1.27	.13
		.21	.19	-.01	-.01	.01
	TOP : SMAX=	-.05	SMIN=	-.23	TMAX=	.09 ANGLE= 8.8
	BOTT: SMAX=	.20	SMIN=	.03	TMAX=	.09 ANGLE= 5.1
	11	.00	.00	.23	1.27	-.13
		.21	.19	.01	.01	-.01
	TOP : SMAX=	.23	SMIN=	.05	TMAX=	.09 ANGLE= 8.8
	BOTT: SMAX=	-.03	SMIN=	-.20	TMAX=	.09 ANGLE= 5.1
	12	.00	.00	.01	.09	.00
		.01	.01	.00	.00	.00
	TOP : SMAX=	.02	SMIN=	.00	TMAX=	.01 ANGLE= 90.0
	BOTT: SMAX=	.00	SMIN=	-.02	TMAX=	.01 ANGLE= 90.0
	13	.00	-.01	-.67	-3.84	.42
		.65	.55	-.02	-.05	.01
	TOP : SMAX=	-.12	SMIN=	-.70	TMAX=	.29 ANGLE= 7.8
	BOTT: SMAX=	.59	SMIN=	.09	TMAX=	.25 ANGLE= 6.8
	14	-.01	-.01	-.82	-4.66	.55
		.79	.68	-.02	-.06	.01
	TOP : SMAX=	-.15	SMIN=	-.86	TMAX=	.36 ANGLE= 8.6
	BOTT: SMAX=	.72	SMIN=	.10	TMAX=	.31 ANGLE= 7.4
	101	-.01	.00	.39	2.64	.07
		.41	.41	-.01	.00	.01
	TOP : SMAX=	.44	SMIN=	.05	TMAX=	.19 ANGLE= -2.8
	BOTT: SMAX=	-.07	SMIN=	-.44	TMAX=	.18 ANGLE= -1.0

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	102	.00	.00	.19	1.37	.05					
		.21	.22	-.01	-.01	.00					
	TOP : SMAX=	.22	SMIN=	.02	TMAX=	.10	ANGLE=	-3.4			
	BOTT: SMAX=	-.04	SMIN=	-.23	TMAX=	.10	ANGLE=	-1.4			
	103	.00	.01	.18	1.27	.06					
		.20	.20	-.01	.00	.00					
	TOP : SMAX=	.21	SMIN=	.02	TMAX=	.09	ANGLE=	-2.5			
	BOTT: SMAX=	-.04	SMIN=	-.22	TMAX=	.09	ANGLE=	-3.4			
	104	.00	.00	.35	2.30	.01					
		.37	.35	-.01	.01	.01					
	TOP : SMAX=	.39	SMIN=	.05	TMAX=	.17	ANGLE=	-1.2			
	BOTT: SMAX=	-.07	SMIN=	-.38	TMAX=	.16	ANGLE=	.7			
	105	-.01	.00	.30	2.06	.06					
		.32	.32	-.01	.00	.00					
	TOP : SMAX=	.34	SMIN=	.04	TMAX=	.15	ANGLE=	-2.6			
	BOTT: SMAX=	-.06	SMIN=	-.34	TMAX=	.14	ANGLE=	-1.1			
	106	-.01	-.02	-1.09	-5.45	1.17					
		.97	.83	-.04	-.07	.03					
	TOP : SMAX=	-.16	SMIN=	-1.04	TMAX=	.44	ANGLE=	15.2			
	BOTT: SMAX=	.88	SMIN=	.11	TMAX=	.39	ANGLE=	12.9			
	107	-.01	-.02	-.86	-4.18	1.05					
		.76	.65	-.02	-.06	.02					
	TOP : SMAX=	-.11	SMIN=	-.81	TMAX=	.35	ANGLE=	16.9			
	BOTT: SMAX=	.68	SMIN=	.08	TMAX=	.30	ANGLE=	15.1			
	108	-.01	.00	.04	.85	.39					
		.18	.19	-.03	-.04	.01					
	TOP : SMAX=	.14	SMIN=	-.06	TMAX=	.10	ANGLE=	-26.4			
	BOTT: SMAX=	-.02	SMIN=	-.20	TMAX=	.09	ANGLE=	-17.1			
	109	-.03	.01	1.42	9.94	.36					
		1.55	1.56	-.04	-.02	.03					
	TOP : SMAX=	1.64	SMIN=	.19	TMAX=	.72	ANGLE=	-3.4			
	BOTT: SMAX=	-.28	SMIN=	-1.68	TMAX=	.70	ANGLE=	-1.4			
452	15	.00	-.02	-2.00	-10.16	.34					
		1.62	1.50	-.04	-.08	-.01					
	TOP : SMAX=	-.38	SMIN=	-1.77	TMAX=	.70	ANGLE=	1.8			
	BOTT: SMAX=	1.62	SMIN=	.29	TMAX=	.67	ANGLE=	3.0			
	2	.00	.00	.12	.72	-.02					
		.11	.11	.00	.00	.00					
	TOP : SMAX=	.12	SMIN=	.02	TMAX=	.05	ANGLE=	3.6			
	BOTT: SMAX=	-.02	SMIN=	-.12	TMAX=	.05	ANGLE=	90.0			
	3	.00	.00	.34	1.94	.07					
		.32	.28	.01	.02	.00					
	TOP : SMAX=	.34	SMIN=	.06	TMAX=	.14	ANGLE=	-3.1			
	BOTT: SMAX=	-.05	SMIN=	-.30	TMAX=	.13	ANGLE=	-1.5			
	4	.00	.00	.13	.62	.02					
		.10	.09	.00	.01	.00					
	TOP : SMAX=	.11	SMIN=	.02	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	-.02	SMIN=	-.10	TMAX=	.04	ANGLE=	90.0			
	5	.00	.00	.15	.84	.04					
		.14	.12	.00	.01	.00					
	TOP : SMAX=	.15	SMIN=	.02	TMAX=	.06	ANGLE=	-2.9			
	BOTT: SMAX=	-.02	SMIN=	-.13	TMAX=	.05	ANGLE=	-3.2			
	6	.00	.00	.00	-.01	-.01					
		.01	.00	.00	.00	.00					
	TOP : SMAX=	.00	SMIN=	-.01	TMAX=	.00	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
	7	.00	.01	.08	.50	.00					
		.08	.08	.00	.00	-.01					
	TOP : SMAX=	.09	SMIN=	.01	TMAX=	.04	ANGLE=	90.0			
	BOTT: SMAX=	-.01	SMIN=	-.08	TMAX=	.03	ANGLE=	90.0			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	ANGLE
	8	.00	.00	.16	.88	.06				
		.15	.13	.00	.01	.00				
TOP :	SMAX=	.16	SMIN=	.02	TMAX=	.07	ANGLE=	-3.5		
BOTT:	SMAX=	-.03	SMIN=	-.14	TMAX=	.06	ANGLE=	-5.8		
	9	.00	.00	.09	.59	.00				
		.09	.09	.00	.00	.00				
TOP :	SMAX=	.10	SMIN=	.02	TMAX=	.04	ANGLE=	90.0		
BOTT:	SMAX=	-.01	SMIN=	-.10	TMAX=	.04	ANGLE=	90.0		
	10	.00	.00	-.23	-1.27	-.13				
		.21	.19	-.01	-.01	-.01				
TOP :	SMAX=	-.05	SMIN=	-.23	TMAX=	.09	ANGLE=	-8.8		
BOTT:	SMAX=	.20	SMIN=	.03	TMAX=	.09	ANGLE=	-5.1		
	11	.00	.00	.23	1.27	.13				
		.21	.19	.01	.01	.01				
TOP :	SMAX=	.23	SMIN=	.05	TMAX=	.09	ANGLE=	-8.8		
BOTT:	SMAX=	-.03	SMIN=	-.20	TMAX=	.09	ANGLE=	-5.1		
	12	.00	.00	.01	.09	.00				
		.01	.01	.00	.00	.00				
TOP :	SMAX=	.02	SMIN=	.00	TMAX=	.01	ANGLE=	90.0		
BOTT:	SMAX=	.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0		
	13	.00	.01	-.67	-3.84	-.42				
		.65	.55	-.02	-.05	-.01				
TOP :	SMAX=	-.12	SMIN=	-.70	TMAX=	.29	ANGLE=	-7.8		
BOTT:	SMAX=	.59	SMIN=	.09	TMAX=	.25	ANGLE=	-6.8		
	14	-.01	.01	-.82	-4.66	-.55				
		.79	.68	-.02	-.06	-.01				
TOP :	SMAX=	-.15	SMIN=	-.86	TMAX=	.36	ANGLE=	-8.6		
BOTT:	SMAX=	.72	SMIN=	.10	TMAX=	.31	ANGLE=	-7.4		
	101	-.01	.00	.39	2.63	-.07				
		.41	.41	-.01	.00	-.01				
TOP :	SMAX=	.44	SMIN=	.05	TMAX=	.19	ANGLE=	2.8		
BOTT:	SMAX=	-.07	SMIN=	-.44	TMAX=	.18	ANGLE=	.9		
	102	.00	.00	.22	1.58	-.07				
		.25	.25	-.01	.00	-.01				
TOP :	SMAX=	.26	SMIN=	.03	TMAX=	.12	ANGLE=	4.0		
BOTT:	SMAX=	-.04	SMIN=	-.27	TMAX=	.11	ANGLE=	1.6		
	103	-.01	.00	.29	1.99	-.06				
		.31	.31	-.01	.00	-.01				
TOP :	SMAX=	.33	SMIN=	.04	TMAX=	.15	ANGLE=	3.9		
BOTT:	SMAX=	-.06	SMIN=	-.33	TMAX=	.14	ANGLE=	.1		
	104	.00	.00	.35	2.30	-.01				
		.37	.35	-.01	.01	-.01				
TOP :	SMAX=	.39	SMIN=	.05	TMAX=	.17	ANGLE=	1.2		
BOTT:	SMAX=	-.07	SMIN=	-.38	TMAX=	.16	ANGLE=	-.7		
	105	-.01	.00	.30	2.06	-.06				
		.32	.32	-.01	.00	.00				
TOP :	SMAX=	.34	SMIN=	.04	TMAX=	.15	ANGLE=	2.6		
BOTT:	SMAX=	-.06	SMIN=	-.34	TMAX=	.14	ANGLE=	1.1		
	106	-.01	-.01	-1.31	-6.60	-.14				
		1.07	.95	-.04	-.07	-.02				
TOP :	SMAX=	-.26	SMIN=	-1.18	TMAX=	.46	ANGLE=	-2.5		
BOTT:	SMAX=	1.03	SMIN=	.18	TMAX=	.42	ANGLE=	-.4		
	107	.00	-.01	-1.07	-5.33	-.01				
		.86	.76	-.03	-.06	-.01				
TOP :	SMAX=	-.21	SMIN=	-.95	TMAX=	.37	ANGLE=	-1.0		
BOTT:	SMAX=	.83	SMIN=	.15	TMAX=	.34	ANGLE=	.8		
	108	-.01	.00	.04	.85	-.39				
		.18	.19	-.03	-.04	-.01				
TOP :	SMAX=	.14	SMIN=	-.06	TMAX=	.10	ANGLE=	26.4		
BOTT:	SMAX=	-.02	SMIN=	-.20	TMAX=	.09	ANGLE=	17.0		
	109	-.03	-.01	1.42	9.93	-.36				
		1.55	1.56	-.04	-.02	-.03				
TOP :	SMAX=	1.64	SMIN=	.19	TMAX=	.72	ANGLE=	3.4		
BOTT:	SMAX=	-.28	SMIN=	-1.68	TMAX=	.70	ANGLE=	1.3		

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
453	15	.00	-.01	-2.40	-11.91	-1.17					
		1.97	1.73	-.03	-.12	-.06					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	2	.00	.00	.09	.57	-.09					
		.09	.09	.00	.00	-.01					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	3	.00	-.01	.27	1.54	.21					
		.27	.22	.01	.02	.01					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	4	.00	.00	.11	.49	.06					
		.08	.07	.00	.01	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	5	.00	.00	.12	.69	.10					
		.12	.10	.00	.01	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	6	.00	.00	.04	.27	-.01					
		.04	.04	.00	.00	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	7	.00	.01	.22	1.33	-.02					
		.21	.20	.00	.00	-.01					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	8	.00	.00	.12	.68	.15					
		.12	.11	.00	.01	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	9	.00	.00	.07	.44	-.01					
		.07	.07	.00	.00	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	10	.00	.00	-.22	-1.23	-.41					
		.25	.20	-.01	-.02	-.02					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	11	.00	.00	.22	1.23	.41					
		.25	.20	.01	.02	.02					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	12	.00	.00	.01	.06	.00					
		.01	.01	.00	.00	.00					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	13	-.01	.02	-.55	-3.28	-1.25					
		.69	.56	.00	-.06	-.02					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	14	-.01	.02	-.70	-4.11	-1.65					
		.88	.71	-.01	-.07	-.03					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						
	101	-.01	-.01	.29	1.97	-.28					
		.31	.32	-.01	-.01	-.02					
	TOP :	SMAX=	SMIN=	TMAX=	ANGLE=						
	BOTT:	SMAX=	SMIN=	TMAX=	ANGLE=						

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	102	-.01 .22	.00 .23	.20 .00	1.39 -.01						
	TOP :	SMAX=.23	SMIN=	.02	TMAX=.11	ANGLE=	13.2				
	BOTT:	SMAX=	SMIN=	-.24	TMAX=.11	ANGLE=	6.5				
	103	-.01 .35	.00 .36	.34 .00	2.24 -.01						
	TOP :	SMAX=.37	SMIN=	.04	TMAX=.16	ANGLE=	9.5				
	BOTT:	SMAX=	SMIN=	-.38	TMAX=.16	ANGLE=	3.8				
	104	-.01 .27	-.01 .27	.26 .00	1.72 .00						
	TOP :	SMAX=.29	SMIN=	.04	TMAX=.12	ANGLE=	6.7				
	BOTT:	SMAX=	SMIN=	-.29	TMAX=.12	ANGLE=	.1				
	105	-.01 .24	-.01 .25	.22 .00	1.53 -.01						
	TOP :	SMAX=.25	SMIN=	.02	TMAX=.12	ANGLE=	11.7				
	BOTT:	SMAX=	SMIN=	-.27	TMAX=.12	ANGLE=	6.1				
	106	-.01 1.34	.00 1.10	-1.48 -.02	-7.45 -.10						
	TOP :	SMAX=-.19	SMIN=	-1.43	TMAX=.62	ANGLE=	-15.0				
	BOTT:	SMAX=	SMIN=	.18	TMAX=.50	ANGLE=	-12.0				
	107	.00 1.10	.00 .91	-1.26 -.02	-6.21 -.09						
	TOP :	SMAX=-.17	SMIN=	-1.18	TMAX=.50	ANGLE=	-13.5				
	BOTT:	SMAX=	SMIN=	.16	TMAX=.41	ANGLE=	-10.8				
	108	-.01 .42	.00 .31	-.02 -.01	.30 -.06						
	TOP :	SMAX=.23	SMIN=	-.25	TMAX=.24	ANGLE=	90.0				
	BOTT:	SMAX=	SMIN=	-.23	TMAX=.18	ANGLE=	90.0				
	109	-.03 1.19	-.03 1.23	1.04 -.02	7.35 -.07						
	TOP :	SMAX=	SMIN=	.08	TMAX=.58	ANGLE=	14.7				
	BOTT:	SMAX=	SMIN=	-1.31	TMAX=.57	ANGLE=	7.5				
454	15	.00 2.22	.02 1.80	-2.47 -.02	-12.10 -.17						
	TOP :	SMAX=-.28	SMIN=	-2.34	TMAX=	1.03	ANGLE=	-15.9			
	BOTT:	SMAX=	SMIN=	.30	TMAX=.82	ANGLE=	-13.8				
	2	.00 .08	.00 .08	.02 .01	.32 .00						
	TOP :	SMAX=.07	SMIN=	-.01	TMAX=.04	ANGLE=	90.0				
	BOTT:	SMAX=	SMIN=	-.07	TMAX=.04	ANGLE=	90.0				
	3	.00 .19	-.01 .11	.14 .01	.70 .02						
	TOP :	SMAX=.18	SMIN=	-.01	TMAX=.10	ANGLE=	-28.0				
	BOTT:	SMAX=	SMIN=	-.11	TMAX=.06	ANGLE=	90.0				
	4	.00 .05	.00 .04	.08 .00	.27 .00						
	TOP :	SMAX=.06	SMIN=	.01	TMAX=.03	ANGLE=	90.0				
	BOTT:	SMAX=	SMIN=	-.05	TMAX=.02	ANGLE=	90.0				
	5	.00 .08	.00 .07	.07 .00	.40 .01						
	TOP :	SMAX=.08	SMIN=	.01	TMAX=.04	ANGLE=	90.0				
	BOTT:	SMAX=	SMIN=	-.07	TMAX=.03	ANGLE=	90.0				
	6	.00 .08	.00 .08	.08 .00	.50 .00						
	TOP :	SMAX=.09	SMIN=	.01	TMAX=.04	ANGLE=	90.0				
	BOTT:	SMAX=	SMIN=	-.08	TMAX=.03	ANGLE=	90.0				
	7	.00 .31	.00 .30	.31 .00	1.95 .01						
	TOP :	SMAX=.33	SMIN=	.05	TMAX=.14	ANGLE=	3.5				
	BOTT:	SMAX=	SMIN=	-.32	TMAX=.13	ANGLE=	.8				



PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
8		.00	-.01	.05	.30	.17					
		.06	.07	.00	.00	-.01					
	TOP : SMAX=	.06	SMIN=	.00	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	.01	SMIN=	-.07	TMAX=	.04	ANGLE=	90.0			
9		.00	.00	.03	.19	-.02					
		.03	.03	.00	.00	.00					
	TOP : SMAX=	.03	SMIN=	.01	TMAX=	.01	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	-.03	TMAX=	.02	ANGLE=	90.0			
10		.00	.01	-.17	-1.02	-.73					
		.30	.23	.01	-.02	-.01					
	TOP : SMAX=	.05	SMIN=	-.27	TMAX=	.16	ANGLE=	-28.8			
	BOTT: SMAX=	.21	SMIN=	-.03	TMAX=	.12	ANGLE=	-31.4			
11		.00	-.01	.17	1.02	.73					
		.30	.23	-.01	.02	.01					
	TOP : SMAX=	.27	SMIN=	-.05	TMAX=	.16	ANGLE=	-28.8			
	BOTT: SMAX=	.03	SMIN=	-.21	TMAX=	.12	ANGLE=	-31.4			
12		.00	.00	.00	.02	.00					
		.00	.00	.00	.00	.00					
	TOP : SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
13		-.01	.03	-.32	-2.04	-2.04					
		.71	.63	.02	-.05	-.01					
	TOP : SMAX=	.18	SMIN=	-.61	TMAX=	.39	ANGLE=	-31.3			
	BOTT: SMAX=	.53	SMIN=	-.17	TMAX=	.35	ANGLE=	-36.2			
14		-.01	.04	-.44	-2.75	-2.67					
		.94	.83	.03	-.07	-.01					
	TOP : SMAX=	.23	SMIN=	-.80	TMAX=	.52	ANGLE=	-31.0			
	BOTT: SMAX=	.70	SMIN=	-.21	TMAX=	.46	ANGLE=	-35.8			
101		-.01	-.01	.10	.95	-.58					
		.23	.23	.01	-.03	-.02					
	TOP : SMAX=	.20	SMIN=	-.05	TMAX=	.12	ANGLE=	32.9			
	BOTT: SMAX=	.02	SMIN=	-.22	TMAX=	.12	ANGLE=	21.0			
102		.00	.00	.11	.96	-.42					
		.19	.20	.01	-.02	-.01					
	TOP : SMAX=	.18	SMIN=	-.02	TMAX=	.10	ANGLE=	27.4			
	BOTT: SMAX=	.01	SMIN=	-.20	TMAX=	.10	ANGLE=	17.5			
103		-.01	.00	.30	2.11	-.47					
		.35	.36	.01	-.02	-.02					
	TOP : SMAX=	.36	SMIN=	.03	TMAX=	.17	ANGLE=	16.9			
	BOTT: SMAX=	-.03	SMIN=	-.38	TMAX=	.17	ANGLE=	10.4			
104		.00	-.01	.09	.79	-.28					
		.15	.16	.01	-.02	-.02					
	TOP : SMAX=	.14	SMIN=	-.01	TMAX=	.08	ANGLE=	90.0			
	BOTT: SMAX=	.00	SMIN=	-.16	TMAX=	.08	ANGLE=	11.8			
105		.00	-.01	.07	.71	-.43					
		.17	.17	.01	-.02	-.01					
	TOP : SMAX=	.15	SMIN=	-.03	TMAX=	.09	ANGLE=	90.0			
	BOTT: SMAX=	.02	SMIN=	-.16	TMAX=	.09	ANGLE=	21.3			
106		-.01	.03	-1.45	-7.23	-3.03					
		1.58	1.23	.01	-.14	-.06					
	TOP : SMAX=	.00	SMIN=	-1.58	TMAX=	.79	ANGLE=	-22.7			
	BOTT: SMAX=	1.26	SMIN=	.05	TMAX=	.60	ANGLE=	-23.8			
107		.00	.02	-1.28	-6.20	-2.30					
		1.29	1.02	.00	-.12	-.05					
	TOP : SMAX=	-.04	SMIN=	-1.31	TMAX=	.64	ANGLE=	-21.2			
	BOTT: SMAX=	1.05	SMIN=	.08	TMAX=	.49	ANGLE=	-21.9			
108		-.01	.01	-.11	-.27	-2.16					
		.68	.58	.03	-.08	-.03					
	TOP : SMAX=	.34	SMIN=	-.45	TMAX=	.39	ANGLE=	-40.2			
	BOTT: SMAX=	.34	SMIN=	-.33	TMAX=	.33	ANGLE=	90.0			
109		-.03	-.02	.33	3.45	-2.59					
		.95	.94	.03	-.13	-.07					
	TOP : SMAX=	.79	SMIN=	-.26	TMAX=	.53	ANGLE=	35.3			
	BOTT: SMAX=	.14	SMIN=	-.87	TMAX=	.50	ANGLE=	23.3			

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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
455	15	-.01 2.15	.07 1.57	-1.74 -.03	-9.20 -.23	-4.19 -.11					
	TOP :	SMAX=.04	SMIN=	-2.12	TMAX=	1.08	ANGLE=	-24.1			
	BOTT:	SMAX=1.57	SMIN=	.00	TMAX=	.79	ANGLE=	-24.3			
	2	.00 .08	.00 .12	-.08 .03	.00 .00	-.33 .01					
	TOP :	SMAX=.05	SMIN=	-.04	TMAX=	.04	ANGLE=	90.0			
	BOTT:	SMAX=.09	SMIN=	-.05	TMAX=	.07	ANGLE=	90.0			
	3	.00 .19	-.02 .17	-.05 .00	-.74 .03	.45 .02					
	TOP :	SMAX=.06	SMIN=	-.16	TMAX=	.11	ANGLE=	90.0			
	BOTT:	SMAX=.17	SMIN=	-.01	TMAX=	.09	ANGLE=	18.2			
	4	.00 .05	.00 .04	.05 .00	.00 .00	.15 .01					
	TOP :	SMAX=.04	SMIN=	-.03	TMAX=	.03	ANGLE=	90.0			
	BOTT:	SMAX=.02	SMIN=	-.02	TMAX=	.02	ANGLE=	90.0			
	5	.00 .03	-.01 .04	.00 .00	-.03 .00	.11 .00					
	TOP :	SMAX=.01	SMIN=	-.02	TMAX=	.02	ANGLE=	90.0			
	BOTT:	SMAX=.02	SMIN=	-.02	TMAX=	.02	ANGLE=	90.0			
	6	.00 .10	.00 .10	.09 .00	.63 .00	.01 .00					
	TOP :	SMAX=.11	SMIN=	.02	TMAX=	.05	ANGLE=	90.0			
	BOTT:	SMAX=	SMIN=	-.10	TMAX=	.04	ANGLE=	90.0			
	7	.00 .37	.00 .35	.32 .00	2.28 .01	-.12 -.01					
	TOP :	SMAX=.39	SMIN=	.05	TMAX=	.17	ANGLE=	4.4			
	BOTT:	SMAX=	SMIN=	-.37	TMAX=	.16	ANGLE=	2.2			
	8	.00 .04	-.01 .05	-.03 .00	-.18 .00	.11 .00					
	TOP :	SMAX=.00	SMIN=	-.04	TMAX=	.02	ANGLE=	90.0			
	BOTT:	SMAX=.04	SMIN=	-.01	TMAX=	.02	ANGLE=	90.0			
	9	.00 .02	.00 .02	-.02 .00	-.11 .00	-.03 .00					
	TOP :	SMAX=.00	SMIN=	-.02	TMAX=	.01	ANGLE=	90.0			
	BOTT:	SMAX=.02	SMIN=	.00	TMAX=	.01	ANGLE=	90.0			
	10	.00 .32	.01 .31	-.08 .02	-.47 -.02	-1.05 .00					
	TOP :	SMAX=.13	SMIN=	-.23	TMAX=	.18	ANGLE=	-36.4			
	BOTT:	SMAX=.22	SMIN=	-.13	TMAX=	.18	ANGLE=	90.0			
	11	.00 .32	-.01 .31	.08 -.02	.47 .02	1.05 .00					
	TOP :	SMAX=.23	SMIN=	-.13	TMAX=	.18	ANGLE=	-36.4			
	BOTT:	SMAX=.13	SMIN=	-.22	TMAX=	.18	ANGLE=	90.0			
	12	.00 .01	.00 .00	-.01 .00	-.04 .00	.00 .00					
	TOP :	SMAX=.00	SMIN=	-.01	TMAX=	.00	ANGLE=	90.0			
	BOTT:	SMAX=.01	SMIN=	.00	TMAX=	.00	ANGLE=	90.0			
	13	-.01 .71	.04 .83	-.02 .05	-.07 .05	-2.65 -.04					
	TOP :	SMAX=.41	SMIN=	-.40	TMAX=	.41	ANGLE=	90.0			
	BOTT:	SMAX=.50	SMIN=	-.46	TMAX=	.48	ANGLE=	90.0			
	14	-.01 .91	.05 1.06	-.07 .07	-.38 -.04	-3.39 .04					
	TOP :	SMAX=.50	SMIN=	-.55	TMAX=	.53	ANGLE=	-40.8			
	BOTT:	SMAX=.66	SMIN=	-.56	TMAX=	.61	ANGLE=	90.0			
	101	.00 .24	.00 .26	-.10 .03	.15 -.04	-.83 .00					
	TOP :	SMAX=.13	SMIN=	-.14	TMAX=	.14	ANGLE=	90.0			
	BOTT:	SMAX=.14	SMIN=	-.16	TMAX=	.15	ANGLE=	34.0			

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX Y FX Y
	102	.00	.00	.01	.61	-.57
		.18	.22	.02	-.03	.00
	TOP : SMAX=	.15	SMIN=	-.05	TMAX=	.10 ANGLE= 90.0
	BOTT: SMAX=	.07	SMIN=	-.18	TMAX=	.12 ANGLE= 26.3
	103	.00	.00	.19	1.93	-.67
		.34	.39	.02	-.02	.00
	TOP : SMAX=	.34	SMIN=	.01	TMAX=	.17 ANGLE= 21.5
	BOTT: SMAX=	.02	SMIN=	-.38	TMAX=	.20 ANGLE= 16.4
	104	.00	.00	-.09	-.04	-.49
		.15	.15	.02	-.03	.00
	TOP : SMAX=	.07	SMIN=	-.10	TMAX=	.09 ANGLE= 90.0
	BOTT: SMAX=	.09	SMIN=	-.08	TMAX=	.09 ANGLE= 90.0
	105	.00	.00	-.09	.02	-.60
		.17	.19	.02	-.03	.00
	TOP : SMAX=	.09	SMIN=	-.11	TMAX=	.10 ANGLE= 90.0
	BOTT: SMAX=	.11	SMIN=	-.11	TMAX=	.11 ANGLE= 90.0
	106	-.01	.06	-.97	-4.82	-4.30
		1.58	1.31	.04	-.16	-.03
	TOP : SMAX=	.32	SMIN=	-1.40	TMAX=	.86 ANGLE= -30.5
	BOTT: SMAX=	1.14	SMIN=	-.30	TMAX=	.72 ANGLE= -35.9
	107	-.01	.05	-.89	-4.35	-3.26
		1.28	1.03	.02	-.13	-.04
	TOP : SMAX=	.19	SMIN=	-1.18	TMAX=	.68 ANGLE= -28.9
	BOTT: SMAX=	.93	SMIN=	-.17	TMAX=	.55 ANGLE= -33.6
	108	-.01	.03	-.17	.02	-2.84
		.78	.88	.07	-.08	.03
	TOP : SMAX=	.44	SMIN=	-.46	TMAX=	.45 ANGLE= -41.3
	BOTT: SMAX=	.52	SMIN=	-.50	TMAX=	.51 ANGLE= 39.9
	109	-.01	.01	-.42	.66	-3.59
		1.02	1.14	.12	-.18	.01
	TOP : SMAX=	.58	SMIN=	-.60	TMAX=	.59 ANGLE= -42.0
	BOTT: SMAX=	.61	SMIN=	-.71	TMAX=	.66 ANGLE= 34.2
456	15	-.03	.13	.39	-1.64	-5.29
		1.87	1.27	-.12	-.28	-.16
	TOP : SMAX=	.76	SMIN=	-1.37	TMAX=	1.07 ANGLE= -38.2
	BOTT: SMAX=	.64	SMIN=	-.83	TMAX=	.73 ANGLE= -41.6
	2	.00	.00	-.30	-.44	-.39
		.12	.20	.08	-.01	.03
	TOP : SMAX=	.04	SMIN=	-.09	TMAX=	.07 ANGLE= -16.4
	BOTT: SMAX=	.20	SMIN=	.00	TMAX=	.10 ANGLE= 90.0
	3	-.02	-.03	-.65	-3.14	-.28
		.45	.52	.01	.03	.02
	TOP : SMAX=	-.10	SMIN=	-.50	TMAX=	.20 ANGLE= -3.3
	BOTT: SMAX=	.56	SMIN=	.11	TMAX=	.23 ANGLE= -9.1
	4	.00	.00	.09	-.28	.23
		.10	.11	-.04	.02	.02
	TOP : SMAX=	.03	SMIN=	-.08	TMAX=	.06 ANGLE= 90.0
	BOTT: SMAX=	.07	SMIN=	-.06	TMAX=	.06 ANGLE= 9.1
	5	.00	-.01	-.10	-.54	.06
		.09	.08	.00	.00	.00
	TOP : SMAX=	-.01	SMIN=	-.09	TMAX=	.04 ANGLE= 90.0
	BOTT: SMAX=	.09	SMIN=	.02	TMAX=	.04 ANGLE= 90.0
	6	.00	.00	.08	.62	.01
		.10	.09	.00	.00	.00
	TOP : SMAX=	.11	SMIN=	.01	TMAX=	.05 ANGLE= 90.0
	BOTT: SMAX=	-.01	SMIN=	-.10	TMAX=	.04 ANGLE= 90.0
	7	.00	.00	.17	2.32	-.16
		.38	.37	.00	.00	-.01
	TOP : SMAX=	.39	SMIN=	.03	TMAX=	.18 ANGLE= 5.0
	BOTT: SMAX=	-.02	SMIN=	-.38	TMAX=	.18 ANGLE= 3.3

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES      FORCE, LENGTH UNITS= KIP    INCH

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FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.00	.00	-.12	-.63						.02
		.11	.08	.01	-.01						.00
	TOP : SMAX=	-.01	SMIN=	-.11	TMAX=	.05	ANGLE=				1.9
	BOTT: SMAX=	.10	SMIN=	.03	TMAX=	.03	ANGLE=				90.0
	9	.00	.00	-.07	-.41						-.04
		.07	.06	.00	.00						.01
	TOP : SMAX=	-.01	SMIN=	-.07	TMAX=	.03	ANGLE=				90.0
	BOTT: SMAX=	.07	SMIN=	.01	TMAX=	.03	ANGLE=				90.0
	10	.00	.02	.09	.46						-1.21
		.31	.41	.03	.00						.03
	TOP : SMAX=	.23	SMIN=	-.11	TMAX=	.17	ANGLE=				90.0
	BOTT: SMAX=	.20	SMIN=	-.27	TMAX=	.24	ANGLE=				90.0
	11	.00	-.02	-.09	-.46						1.21
		.31	.41	-.03	.00						-.03
	TOP : SMAX=	.11	SMIN=	-.23	TMAX=	.17	ANGLE=				90.0
	BOTT: SMAX=	.27	SMIN=	-.20	TMAX=	.24	ANGLE=				90.0
	12	.00	.00	-.01	-.07						.00
		.01	.01	.00	.00						.00
	TOP : SMAX=	.00	SMIN=	-.01	TMAX=	.01	ANGLE=				90.0
	BOTT: SMAX=	.01	SMIN=	.00	TMAX=	.00	ANGLE=				90.0
	13	.00	.04	.29	2.18						-2.75
		.72	1.02	.07	.05						.10
	TOP : SMAX=	.65	SMIN=	-.12	TMAX=	.38	ANGLE=				33.9
	BOTT: SMAX=	.44	SMIN=	-.73	TMAX=	.58	ANGLE=				36.6
	14	.00	.05	.38	2.55						-3.45
		.88	1.27	.09	.05						.13
	TOP : SMAX=	.79	SMIN=	-.16	TMAX=	.48	ANGLE=				34.9
	BOTT: SMAX=	.56	SMIN=	-.90	TMAX=	.73	ANGLE=				37.2
	101	.02	.02	.16	.44						.02
		.10	.14	.05	-.04						.04
	TOP : SMAX=	.10	SMIN=	.00	TMAX=	.05	ANGLE=				90.0
	BOTT: SMAX=	.03	SMIN=	-.12	TMAX=	.08	ANGLE=				13.6
	102	.02	.01	.19	.89						.01
		.12	.18	.03	-.03						.03
	TOP : SMAX=	.13	SMIN=	.05	TMAX=	.04	ANGLE=				90.0
	BOTT: SMAX=	.00	SMIN=	-.18	TMAX=	.09	ANGLE=				7.7
	103	.01	.01	.26	2.25						-.12
		.32	.40	.03	-.02						.02
	TOP : SMAX=	.35	SMIN=	.08	TMAX=	.14	ANGLE=				-.2
	BOTT: SMAX=	-.01	SMIN=	-.40	TMAX=	.20	ANGLE=				6.1
	104	.02	.01	.03	-.10						.02
		.10	.06	.04	-.03						.03
	TOP : SMAX=	.05	SMIN=	-.06	TMAX=	.06	ANGLE=				90.0
	BOTT: SMAX=	.04	SMIN=	-.03	TMAX=	.03	ANGLE=				90.0
	105	.02	.01	.07	.07						-.03
		.07	.08	.03	-.03						.03
	TOP : SMAX=	.06	SMIN=	-.03	TMAX=	.04	ANGLE=				90.0
	BOTT: SMAX=	.04	SMIN=	-.06	TMAX=	.05	ANGLE=				90.0
	106	-.01	.11	.46	.71						-4.62
		1.33	1.36	.01	-.14						.00
	TOP : SMAX=	.80	SMIN=	-.73	TMAX=	.77	ANGLE=				-43.0
	BOTT: SMAX=	.62	SMIN=	-.94	TMAX=	.78	ANGLE=				41.5
	107	-.01	.09	.37	.25						-3.41
		1.03	.95	-.02	-.13						-.02
	TOP : SMAX=	.57	SMIN=	-.62	TMAX=	.60	ANGLE=				-41.8
	BOTT: SMAX=	.42	SMIN=	-.67	TMAX=	.55	ANGLE=				90.0
	108	.03	.05	.44	2.07						-1.72
		.40	.80	.11	-.03						.12
	TOP : SMAX=	.43	SMIN=	.06	TMAX=	.18	ANGLE=				34.1
	BOTT: SMAX=	.28	SMIN=	-.62	TMAX=	.45	ANGLE=				31.6
	109	.10	.09	.79	2.49						.01
		.41	.68	.19	-.17						.16
	TOP : SMAX=	.45	SMIN=	.11	TMAX=	.17	ANGLE=				90.0
	BOTT: SMAX=	.10	SMIN=	-.62	TMAX=	.36	ANGLE=				13.2

PRELIMINARY DESIGN OF TRANSPORTER  
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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
457	15	.02	.18	4.44	17.60						
		2.60	3.00	.01	-.35						-2.60
	TOP :	SMAX=	SMIN=	.52	TMAX=	1.15	ANGLE=				18.7
	BOTT:	SMAX=	SMIN=	-3.29	TMAX=	1.29	ANGLE=				3.7
	2	.00	.00	-.29	-1.22						-.08
		.19	.22	-.01	.01						.05
	TOP :	SMAX=	SMIN=	-.21	TMAX=	.08	ANGLE=				13.7
	BOTT:	SMAX=	SMIN=	.02	TMAX=	.11	ANGLE=				-19.1
	3	.00	-.04	-.27	-1.87						-.67
		.31	.39	.01	.02						.03
	TOP :	SMAX=	SMIN=	-.32	TMAX=	.15	ANGLE=				-16.0
	BOTT:	SMAX=	SMIN=	-.01	TMAX=	.20	ANGLE=				-23.0
	4	.00	-.01	.00	-.87						.03
		.17	.14	.01	-.01						.02
	TOP :	SMAX=	SMIN=	-.15	TMAX=	.09	ANGLE=				9.8
	BOTT:	SMAX=	SMIN=	.01	TMAX=	.07	ANGLE=				-9.1
	5	.00	.00	-.19	-1.26						-.08
		.21	.19	.00	-.01						.00
	TOP :	SMAX=	SMIN=	-.22	TMAX=	.09	ANGLE=				-3.9
	BOTT:	SMAX=	SMIN=	.03	TMAX=	.09	ANGLE=				-4.2
	6	.00	.00	.02	.32						.03
		.05	.05	.00	.00						.00
	TOP :	SMAX=	SMIN=	.00	TMAX=	.03	ANGLE=				90.0
	BOTT:	SMAX=	SMIN=	-.05	TMAX=	.03	ANGLE=				90.0
	7	.00	-.01	-.14	1.28						.15
		.23	.24	.00	.00						-.01
	TOP :	SMAX=	SMIN=	-.03	TMAX=	.12	ANGLE=				-4.7
	BOTT:	SMAX=	SMIN=	-.22	TMAX=	.12	ANGLE=				-7.1
	8	.00	.00	-.15	-1.12						-.11
		.19	.16	.01	-.01						.00
	TOP :	SMAX=	SMIN=	-.20	TMAX=	.09	ANGLE=				-5.3
	BOTT:	SMAX=	SMIN=	.03	TMAX=	.07	ANGLE=				-8.2
	9	.00	.00	-.09	-.77						-.04
		.12	.12	.00	.00						.01
	TOP :	SMAX=	SMIN=	-.13	TMAX=	.06	ANGLE=				1.3
	BOTT:	SMAX=	SMIN=	.01	TMAX=	.06	ANGLE=				-8.7
	10	.00	.02	.22	2.29						-1.90
		.43	.50	.02	.05						.07
	TOP :	SMAX=	SMIN=	.05	TMAX=	.20	ANGLE=				11.4
	BOTT:	SMAX=	SMIN=	-.44	TMAX=	.27	ANGLE=				27.4
	11	.00	-.02	-.22	-2.29						.90
		.43	.50	-.02	-.05						-.07
	TOP :	SMAX=	SMIN=	-.45	TMAX=	.20	ANGLE=				11.4
	BOTT:	SMAX=	SMIN=	-.10	TMAX=	.27	ANGLE=				27.4
	12	.00	.00	-.01	-.09						.00
		.02	.01	.00	.00						.00
	TOP :	SMAX=	SMIN=	-.02	TMAX=	.01	ANGLE=				90.0
	BOTT:	SMAX=	SMIN=	.00	TMAX=	.01	ANGLE=				90.0
	13	.00	.04	.31	5.24						-2.04
		1.07	1.11	.03	.20						.18
	TOP :	SMAX=	SMIN=	.06	TMAX=	.52	ANGLE=				9.2
	BOTT:	SMAX=	SMIN=	-.96	TMAX=	.61	ANGLE=				28.8
	14	.00	.05	.47	6.80						-2.46
		1.36	1.40	.04	.24						.22
	TOP :	SMAX=	SMIN=	.09	TMAX=	.66	ANGLE=				8.4
	BOTT:	SMAX=	SMIN=	-1.22	TMAX=	.76	ANGLE=				27.9
	101	.00	.03	-.53	-4.55						.46
		.80	.68	.01	-.04						.08
	TOP :	SMAX=	SMIN=	-.82	TMAX=	.39	ANGLE=				11.6
	BOTT:	SMAX=	SMIN=	.10	TMAX=	.31	ANGLE=				.0

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ELEMENT FORCES FORCE, LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	102	.00	.02	-.30	-2.52	.34					
		.46	.37	.00	-.02	.05					
	TOP : SMAX=	-.02	SMIN=	-.47	TMAX=	.23	ANGLE=	14.2			
	BOTT: SMAX=	.40	SMIN=	.05	TMAX=	.17	ANGLE=	1.2			
	103	.00	.01	-.43	-1.75	.44					
		.36	.24	.00	-.03	.05					
	TOP : SMAX=	-.02	SMIN=	-.37	TMAX=	.17	ANGLE=	21.8			
	BOTT: SMAX=	.27	SMIN=	.07	TMAX=	.10	ANGLE=	8.0			
	104	.00	.02	-.44	-3.68	.23					
		.64	.54	.01	-.03	.05					
	TOP : SMAX=	-.05	SMIN=	-.66	TMAX=	.31	ANGLE=	8.6			
	BOTT: SMAX=	.58	SMIN=	.09	TMAX=	.25	ANGLE=	-1.6			
	105	.00	.02	-.39	-3.39	.29					
		.59	.51	.01	-.02	.06					
	TOP : SMAX=	-.04	SMIN=	-.61	TMAX=	.29	ANGLE=	10.9			
	BOTT: SMAX=	.54	SMIN=	.07	TMAX=	.24	ANGLE=	-1.3			
	106	.01	.13	2.29	10.78	-2.57					
		1.72	1.88	.04	-.06	.02					
	TOP : SMAX=	1.85	SMIN=	.30	TMAX=	.77	ANGLE=	15.9			
	BOTT: SMAX=	-.22	SMIN=	-1.98	TMAX=	.88	ANGLE=	15.4			
	107	.01	.11	2.06	8.50	-1.67					
		1.29	1.45	.01	-.12	-.05					
	TOP : SMAX=	1.40	SMIN=	.25	TMAX=	.57	ANGLE=	17.4			
	BOTT: SMAX=	-.29	SMIN=	-1.57	TMAX=	.64	ANGLE=	10.4			
	108	.00	.06	-.40	-2.15	-.59					
		.33	.67	.03	.08	.21					
	TOP : SMAX=	.01	SMIN=	-.33	TMAX=	.17	ANGLE=	21.2			
	BOTT: SMAX=	.62	SMIN=	-.09	TMAX=	.35	ANGLE=	-30.6			
	109	.01	.12	-1.97	-17.36	2.00					
		3.11	2.59	.03	-.14	.32					
	TOP : SMAX=	-.15	SMIN=	-3.18	TMAX=	1.52	ANGLE=	12.7			
	BOTT: SMAX=	2.75	SMIN=	.36	TMAX=	1.20	ANGLE=	.4			
458	15	-.13	.22	12.40	55.82	1.72					
		8.21	8.80	-.33	-.36	-.40					
	TOP : SMAX=	8.94	SMIN=	1.73	TMAX=	3.60	ANGLE=	.9			
	BOTT: SMAX=	-2.33	SMIN=	-9.73	TMAX=	3.70	ANGLE=	-5.3			
	2	.01	.00	-.17	-1.49	.43					
		.32	.24	.00	.00	.05					
	TOP : SMAX=	.03	SMIN=	-.30	TMAX=	.16	ANGLE=	24.1			
	BOTT: SMAX=	.25	SMIN=	.03	TMAX=	.11	ANGLE=	5.6			
	3	.01	-.04	-.34	-2.56	-.68					
		.41	.49	-.01	.01	.04					
	TOP : SMAX=	-.05	SMIN=	-.43	TMAX=	.19	ANGLE=	-12.0			
	BOTT: SMAX=	.49	SMIN=	.00	TMAX=	.25	ANGLE=	-18.6			
	4	.00	.00	-.33	-1.75	-.03					
		.26	.29	-.01	.01	.03					
	TOP : SMAX=	-.06	SMIN=	-.29	TMAX=	.11	ANGLE=	5.9			
	BOTT: SMAX=	.30	SMIN=	.04	TMAX=	.13	ANGLE=	-6.9			
	5	.01	.00	-.44	-2.15	.04					
		.34	.31	.00	-.01	.00					
	TOP : SMAX=	-.07	SMIN=	-.37	TMAX=	.15	ANGLE=	1.5			
	BOTT: SMAX=	.35	SMIN=	.08	TMAX=	.13	ANGLE=	1.3			
	6	.00	-.01	-.11	-.40	-.03					
		.06	.06	.00	.00	.00					
	TOP : SMAX=	-.02	SMIN=	-.07	TMAX=	.03	ANGLE=	90.0			
	BOTT: SMAX=	.06	SMIN=	.02	TMAX=	.02	ANGLE=	90.0			
	7	.00	-.02	-.60	-1.77	-.05					
		.28	.24	.01	-.02	.00					
	TOP : SMAX=	-.09	SMIN=	-.31	TMAX=	.11	ANGLE=	-2.2			
	BOTT: SMAX=	.28	SMIN=	.11	TMAX=	.08	ANGLE=	-3.1			

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ELEMENT FORCES FORCE,LENGTH UNITS= KIP INCH

FORCE OR STRESS = FORCE/WIDTH/THICK, MOMENT = FORCE-LENGTH/WIDTH

ELEMENT	LOAD	QX VONT	QY VONB	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY	MX FX	MY FY
	8	.01	.00	-.31	-1.59						.00
		.26	.23	.01	-.01						.00
TOP :	SMAX=	-.04	SMIN=	-.27	TMAX=	.12	ANGLE=				.9
BOTT:	SMAX=	.26	SMIN=	.06	TMAX=	.10	ANGLE=				-.6
	9	.00	.00	-.16	-.96						.14
		.16	.15	.00	.00						.01
TOP :	SMAX=	-.02	SMIN=	-.17	TMAX=	.07	ANGLE=				13.6
BOTT:	SMAX=	.16	SMIN=	.03	TMAX=	.07	ANGLE=				5.1
	10	.03	.04	1.53	8.23						2.55
		1.69	1.24	.01	.17						.10
TOP :	SMAX=	1.73	SMIN=	.08	TMAX=	.83	ANGLE=				-19.7
BOTT:	SMAX=	-.14	SMIN=	-1.31	TMAX=	.58	ANGLE=				-17.1
	11	-.03	-.04	-1.53	-8.23						-2.55
		1.69	1.24	-.01	-.17						-.10
TOP :	SMAX=	-.08	SMIN=	-1.73	TMAX=	.83	ANGLE=				-19.7
BOTT:	SMAX=	1.31	SMIN=	.14	TMAX=	.58	ANGLE=				-17.1
	12	.00	.00	-.01	-.08						.01
		.01	.01	.00	.00						.00
TOP :	SMAX=	.00	SMIN=	-.01	TMAX=	.01	ANGLE=				90.0
BOTT:	SMAX=	.01	SMIN=	.00	TMAX=	.01	ANGLE=				90.0
	13	.09	.09	2.35	16.08						6.00
		3.54	2.56	-.02	.42						.15
TOP :	SMAX=	3.52	SMIN=	-.05	TMAX=	1.78	ANGLE=				-20.0
BOTT:	SMAX=	-.08	SMIN=	-2.60	TMAX=	1.26	ANGLE=				-21.4
	14	.11	.11	3.16	21.01						7.52
		4.54	3.31	-.02	.53						.18
TOP :	SMAX=	4.54	SMIN=	-.01	TMAX=	2.27	ANGLE=				-19.6
BOTT:	SMAX=	-.15	SMIN=	-3.38	TMAX=	1.62	ANGLE=				-20.7
	101	.03	.04	-1.12	-6.00						2.00
		1.17	1.01	.00	-.01						.08
TOP :	SMAX=	-.01	SMIN=	-1.18	TMAX=	.58	ANGLE=				22.5
BOTT:	SMAX=	1.07	SMIN=	.12	TMAX=	.48	ANGLE=				16.2
	102	.02	.03	-.74	-3.89						1.30
		.76	.66	.00	.00						.05
TOP :	SMAX=	-.01	SMIN=	-.77	TMAX=	.38	ANGLE=				22.6
BOTT:	SMAX=	.69	SMIN=	.08	TMAX=	.31	ANGLE=				16.3
	103	.02	.01	-1.14	-4.99						1.28
		.90	.79	.01	-.02						.05
TOP :	SMAX=	-.09	SMIN=	-.94	TMAX=	.43	ANGLE=				19.3
BOTT:	SMAX=	.86	SMIN=	.16	TMAX=	.35	ANGLE=				13.8
	104	.02	.03	-.91	-4.84						1.33
		.89	.79	.01	-.01						.05
TOP :	SMAX=	-.04	SMIN=	-.91	TMAX=	.44	ANGLE=				19.6
BOTT:	SMAX=	.84	SMIN=	.12	TMAX=	.36	ANGLE=				13.9
	105	.02	.03	-.79	-4.34						1.44
		.85	.73	.00	.00						.06
TOP :	SMAX=	.00	SMIN=	-.85	TMAX=	.42	ANGLE=				22.6
BOTT:	SMAX=	.77	SMIN=	.08	TMAX=	.34	ANGLE=				15.6
	106	.01	.20	7.72	37.80						5.97
		6.16	5.89	-.17	.11						-.04
TOP :	SMAX=	6.58	SMIN=	.95	TMAX=	2.81	ANGLE=				-9.9
BOTT:	SMAX=	-1.24	SMIN=	-6.41	TMAX=	2.58	ANGLE=				-11.8
	107	-.02	.15	6.20	29.56						3.42
		4.56	4.67	-.18	-.06						-.14
TOP :	SMAX=	4.92	SMIN=	.81	TMAX=	2.05	ANGLE=				-6.0
BOTT:	SMAX=	-1.08	SMIN=	-5.11	TMAX=	2.02	ANGLE=				-10.3
	108	.09	.12	.26	3.36						6.41
		2.33	1.54	-.01	.26						.20
TOP :	SMAX=	1.75	SMIN=	-.90	TMAX=	1.32	ANGLE=				-36.4
BOTT:	SMAX=	.71	SMIN=	-1.06	TMAX=	.88	ANGLE=				-40.9
	109	.12	.19	-4.11	-22.33						8.29
		4.54	3.87	.02	-.01						.32
TOP :	SMAX=	.09	SMIN=	-4.49	TMAX=	2.29	ANGLE=				24.0
BOTT:	SMAX=	4.04	SMIN=	.37	TMAX=	1.84	ANGLE=				17.5

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\*\*\*\*\*END OF ELEMENT FORCES\*\*\*\*\*

415. FINISH

\*\*\*\*\* END OF STAAD-III \*\*\*\*\*

\*\*\*\* DATE= JUL 28,1998 TIME= 14:56:28 \*\*\*\*

\*\*\*\*\*  
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\*\*\*\*\*



**SUMMARY OF MAXIMUM STRESS OF TRANSPORTER ELEMENTS**  
(Attachment I, Section 11.0, TRANSPTR.ANL)

load case	max. Stress (ksi)	at elements
1 ( DL )	2.31	322, 323, 342, 343, 402, 403, 422, 423
2 ( DL door open 90 )	0.9	402, 403, 422, 423
3 ( DL door open 180 )	0.84	402, 403, 422, 423
4 ( DL door open 270 )	0.64	402, 403, 422, 423
5 ( LL )	0.99	322, 323, 422, 423
6 ( WLS )	0.38	322, 323, 342, 343, 402, 403, 422, 423
7 ( EQF )	2.9	322, 323, 342, 343, 402, 403, 422, 423
8 ( EQF )	2.3	342, 343,
9 ( EQF )	0.57	322, 323, 342, 343, 402, 403, 422, 423
10 ( VLC )	2.84	302, 303, 442, 443
11 ( VLC )	2.84	302, 303, 442, 443
12 ( RL )	0.04	322, 323, 342, 343, 402, 403, 422, 423
13 ( CEL )	8.87	322, 323, 422, 423
14 ( HIF )	17.6	322, 323, 342, 343
15 ( JL )	33.19 - 41.84	402, 403, 422, 423
load combinations		
101	4.14	322, 323, 342, 343, 402, 403, 422, 423
102	2.8	323, 343, 403, 423
103	4.55	323, 343, 403, 423
104	2.98	402, 403, 422, 423
105	3.02	322, 323, 342, 343, 402, 403, 422, 423
106	23.09	402, 403, 422
107	22.28	402, 403, 422
108	11.58	342, 343
109	16.03	322, 323, 342, 343, 402, 403, 422, 423

## **ATTACHMENT II**

### **WASTE PACKAGE TRANSPORTER – MECHANICAL EQUIPMENT SELECTIONS**

**NOTE:** DOE policy requires the subsurface design to be performed using metric units. Quantities and values derived in the main body of this analysis are presented only in metric units. However, much of the source information (e.g., vendor equipment data or standard structural steel members) used for design calculations and derivations in the attachments is available only in English units. Because of this, calculations and derivations in the attachments are generally performed in English units. The results are converted to metric for presentation in the main body of the analysis (Sections 7 and 8), followed by the corresponding English values in parentheses.

## WASTE PACKAGE TRANSPORTER – MECHANICAL EQUIPMENT SELECTIONS

### 1.0 PURPOSE

This calculation will provide the basis for selecting and/or verifying the following based on the design concept shown in Figures II-1 through II-4:

1. Transporter wheel load.
2. Transporter wheel and rail selection.
3. Door operator drive.
4. Unloader system.
5. Unloader system weight.

### 2.0 INITIAL DESIGN SELECTIONS

#### No. Input Description

1. Maximum load on one truck is 55 percent of the total transporter operating weight, which is considered good engineering practice to accommodate a minor degree of load shifting.
2. Maximum operating weight of the reusable rail car is 95 MT. (Section 4.5.12)
3. Brinell hardness of transporter wheels is 615 BHN, which is indicated in Section 4.4.4 Table 4.13.3-4 as the hardness required for bridge crane wheels with the maximum capacity.
4. The transporter truck wheel has a maximum diameter of 762 mm (30 in.) to attain the lowest profile and still have the wheel load capacity of a standard bridge crane wheel of that size.
5. Transporter door swing is 270° to provide minimum interference with isolation doors and opening time is approximately 1 minute, which is a reasonable and safe rotational rate for a large mass such as the transporter door.
6. Transporter rail car unloader shall have a minimum travel of 12.0 m determined as follows:
  - A. Outside longitudinal dimension of transporter shield is 7.37 m, Section 7.1, Figure 3.
  - B. Gantry length = 12.070 m, Section 4.3.14.

**No. Input Description**

- C. The length of the WP on the rail car is centered in the transporter shield.
- D. End of transporter shield is flush with transfer dock face for the WP unloading operation
- E. The unloader travel is the total of the following distances the center of the WP travels in the unloading operation:
- Middle of shield to transfer dock face =  $\frac{7.37 \text{ m}}{2} = 3.69 \text{ m}$
- Transfer dock face to end of gantry = 1.0 m
- End of gantry to middle of gantry =  $\frac{12.070 \text{ m}}{2} = 6.035 \text{ m}$
- Total Travel 10.725 m  
Rounded up to 12 m
- F. The length of the WP on the rail car in the unloader extended position is centered under the gantry.
- G. The end of the gantry in the lift-off position over the WP shall be 1 m behind face of transfer dock.
7. Reusable rail car unloading speed shall not exceed 7.6 m/min (25 ft/min). Suggested slow bridge operating speed for 150-ton bridge crane is 7.6 m/min (25 ft/min) (Section 4.4.4, pg. 80).
8. A distance of 1.32 m from centerline of largest diameter WP (2.0 m) mounted on the rail car to the top of the rail will be used. This is considered a reasonable dimension for the purpose of WP transport and transfer into the emplacement drift on a reusable rail car. This dimension does not address tolerances due to the preliminary nature of this analysis.
9. The distance from the top of the transporter rail to the top of the rail car rail is 1.28 m (Ref. 5.5, Fig. 8.6.4-1).
10. Maximum transport locomotive speed is 8 km/hr (5 mph) (Section 4.2.6).

### 3.0 SOLUTIONS

#### 3.1 Transporter Wheel Load

From Attachment III, Section 3.1, Ref. 5.9:

The maximum transporter operating weight = 250 MT (275.6 tons)

From Section 4.2.5, Ref. 5.9:

Maximum waste package weight is 85,000 kg or 85 MT.

Minimum operating weight = transporter operating weight - maximum WP weight  
 $= 250 \text{ MT} - 85 \text{ MT} = 165 \text{ MT} (182.0 \text{ tons})$

From Design Selection No. 1:

Maximum load on one of the two 4-wheel trucks is 55% of total operating weight.

Converting to English units for wheel selection using English units

Maximum truck load =  $(0.55) (275.6 \text{ tons} \times 2000 \text{ lb/ton}) = 303,160 \text{ lbs}$

Maximum wheel load =  $\frac{303,160 \text{ lbs}}{4 \text{ wheels}} = 75,790 \text{ lbs}$

For the same truck:

Minimum truck load =  $(0.55) (182.0 \text{ tons} \times 2000 \text{ lb/ton}) = 200,200 \text{ lbs}$

Minimum wheel load =  $\frac{200,200 \text{ lbs}}{4} = 50,050 \text{ lbs}$

The above wheel loads are for a static condition and requires adjustments for speed, load and service factors as follows:

From Section 4.4.4, pg. 49:

The equipment durability wheel load  $P_e$  is:

$$P_e = \text{maximum wheel load} \times K_{WL}$$

where:  $K_{WL}$  = wheel load service coefficient

$$= K_W \times C_S \times S_m$$

$K_W$  = mean effective load factor

$C_S$  = speed factor

$S_m$  = wheel service factor

From Section 4.4.4, pg. 33:

$$K_W = \frac{2(\text{maximum load}) + (\text{minimum load})}{3(\text{maximum load})} = \frac{2(75,790 \text{ lbs}) + (50,050 \text{ lbs})}{3(75,790 \text{ lbs})} = 0.89$$

From Section 4.2.6:

The maximum speed for transporter is 5 mph or:

$$5 \text{ mi/hr} \times 5280 \text{ ft/mi} \times \text{hr}/60 \text{ min} = 440 \text{ ft/min.}$$

From Design Selection No. 4:

The transporter wheels are 30 in. diameter

$$\text{Wheel speed} = \frac{1 \text{ rev}}{(\pi)(30) \text{ in.}} \times 440 \text{ ft/min.} \times 12 \text{ in/ft} = 56.0 \text{ rpm}$$

From Section 4.4.4, pg. 49:

For  $\text{rpm} \geq 31.5$

$$C_s = 1 + \left( \frac{\text{rpm} - 31.5}{328.5} \right) = 1 + 0.075 = 1.075$$

From Section 4.4.4, Section 2.7:

The transporter application is considered a Class F service which includes specially designed cranes for continuously handling loads approaching maximum capacity under severe conditions with the highest reliability.

From Section 4.4.4, pg. 50:

For Class F service crane:

$$S_m = 1.45$$

The equipment durability wheel load  $P_e$  is then:

$$P_e = \text{maximum wheel load} \times K_{WL}$$

$$\begin{aligned} K_{WL} &= K_W \times C_s \times S_m \\ &= 0.89 \times 1.075 \times 1.45 \\ &= 1.39 \end{aligned}$$

$$P_e = 75,790 \text{ lbs} \times 1.39 = 105,348 \text{ lbs}$$

For this application, the basic allowable wheel load ( $B_{WL}$ ) is indicated in Section 4.4.4, pg. 47:

and is the product of:

$$B_{WL} = DWK$$

where: D = wheel diameter (in.)

W = effective rail head width (in.) (head width - 2 x corner radius)

$$K = 1300 \left( \frac{\text{BHN}}{260} \right)^{0.33} \text{ for wheels with a hardness of 260 or greater}$$

From Design Selection No. 3:

Transporter wheel hardness = 615 BHN

$$K = 1300 \left( \frac{615}{260} \right)^{0.33} = 1727$$

From Section 4.3.3:

The rail is 57 kg/m (115 lb/yd) AREA

From Ref. 5.14:

$$\begin{aligned} W &= 2-23/32 \text{ in.} - (2) \left( \frac{3}{8} \text{ in.} \right) \\ &= 2-23/32 \text{ in.} - 24/32 \text{ in.} \\ &= 1-31/32 \text{ in.} = 1.968 \text{ in.} \end{aligned}$$

Basic allowable wheel load is then:

$$\begin{aligned} B_{WL} &= DWK \\ &= (30 \text{ in.}) (1.968 \text{ in.}) (1727) \\ &= 101,962 \text{ lbs} \end{aligned}$$

The durability wheel load (Pe) of 105,348 lbs is greater than the  $B_{WL}$  of 101,962 lbs.

Therefore, the 57 kg/m (115 lb/yd) AREA rail is not acceptable with a 762 mm (30 in.) diameter wheel.

From 4.4.4, Table 4.13.3-4:

For crane wheels with 615 BHN hardness, the respective wheel loadings are based on the corresponding rails having a minimum hardness of 320 BHN.

The 762-mm (30-in.)-diameter crane wheel with a 58 RC or 615 BHN hardness can be used with a 49.5 kg/m (100 lb/yd) ASCE rail hardened to 320 BHN. However, the selected rail should be equivalent to the gantry rail.

### 3.2 Door Operator Drive Selection

#### 3.2.1 Determine Weight of Door (from Figures II-1 and II-2):

$$A_1 = \frac{1}{4} \pi R^2 = \frac{\pi}{4} (1.46 \text{ m})^2$$
$$= (0.785) (2.13 \text{ m}^2) = 1.67 \text{ m}^2$$

$$A_2 = (1.460 \text{ m}) (1.618 \text{ m}) = 2.36 \text{ m}^2$$

From Section 4.3.5:

Door composition section is:

One 76.2-mm layer (B-poly) at 920 (kg/m<sup>3</sup>)

Two 5-mm stainless steel layers at 7949.7 (kg/m<sup>3</sup>)

One 177.8-mm layer carbon steel at 7832 (kg/m<sup>3</sup>)

Weight per m<sup>2</sup> = density (kg/m<sup>3</sup>) thickness (m)

Weight for one square meter of door:

<u>Materials</u>	<u>Density</u> (kg/m <sup>3</sup> )	<u>Thickness</u> (m)	<u>Wt/m<sup>2</sup></u> (kg/m <sup>2</sup> )
B-poly	920	0.0762	70.1
2 layers stainless steel	7949.7	0.010	79.5
Carbon steel	7832	0.178	1394.0
		Total	1543.6 kg/m

round up to 1545 kg/m<sup>2</sup>

Weight for each of the two areas:

$$WTA_1 = 1.67 \text{ m}^2 \times 1545 \text{ kg/m}^2 = 2580.2 \text{ kg} \text{ round to } 2580 \text{ kg}$$

$$WTA_2 = 2.36 \text{ m}^2 \times 1545 \text{ kg/m}^2 = 3646.2 \text{ kg} \text{ round to } 3647 \text{ kg}$$

Weight for three carbon steel door hinges:

$$WT = (3) \frac{\pi}{4} (D_0^2 - D_1^2) (0.260 \text{ m}) (7949.7 \text{ kg/m}^3)$$

where: D<sub>0</sub> = outside diameter = 0.457 m

D<sub>1</sub> = inside diameter = 0.178 m

$$WT = (2.36) (0.209 \text{ m}^2 - 0.032 \text{ m}^2) (0.260 \text{ m}) (7949.7 \text{ kg/m}^3)$$

$$= 863.4 \text{ kg}$$

round down to 863 kg



Figure II-1 Waste Package Transporter Arrangement

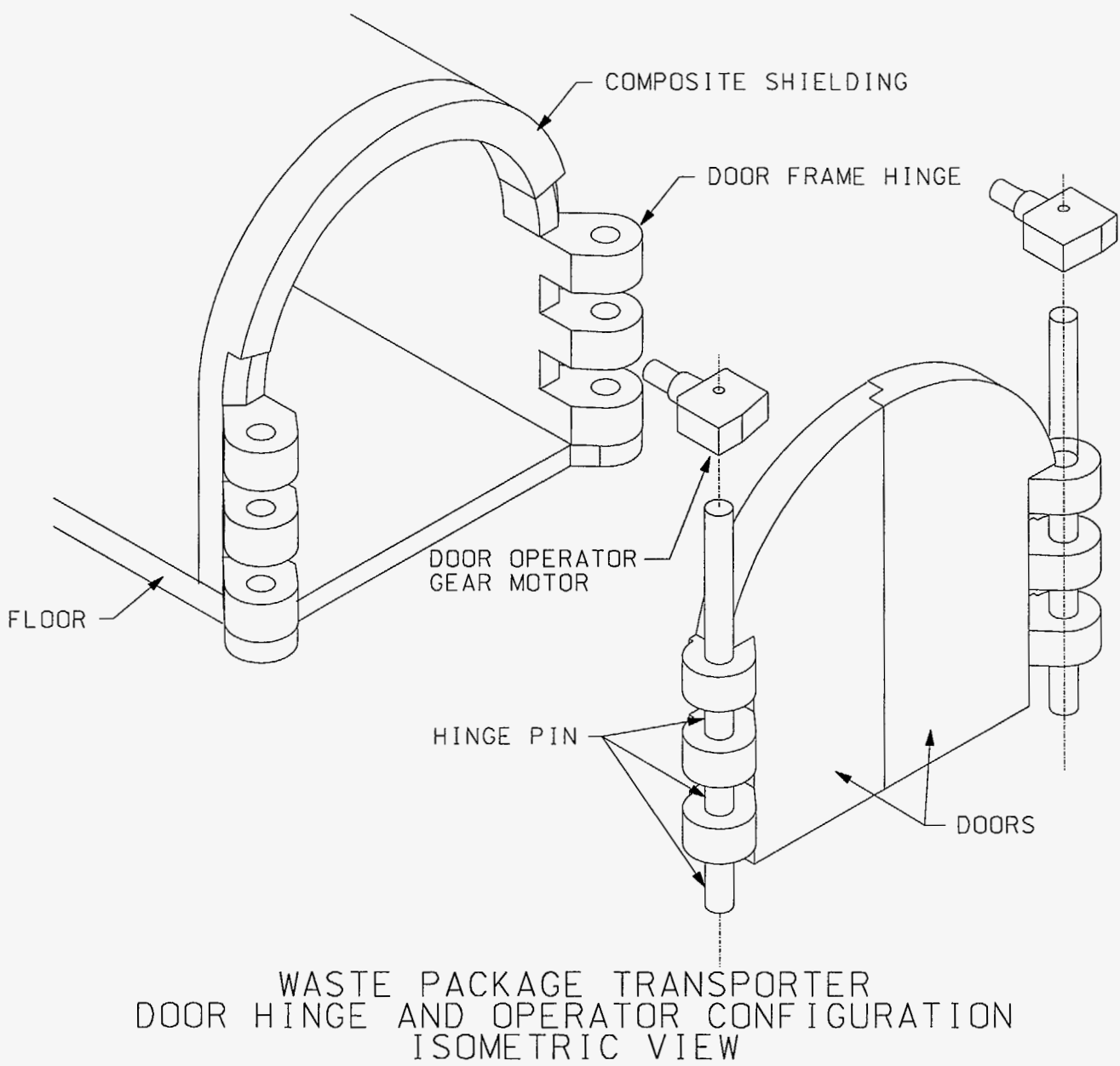
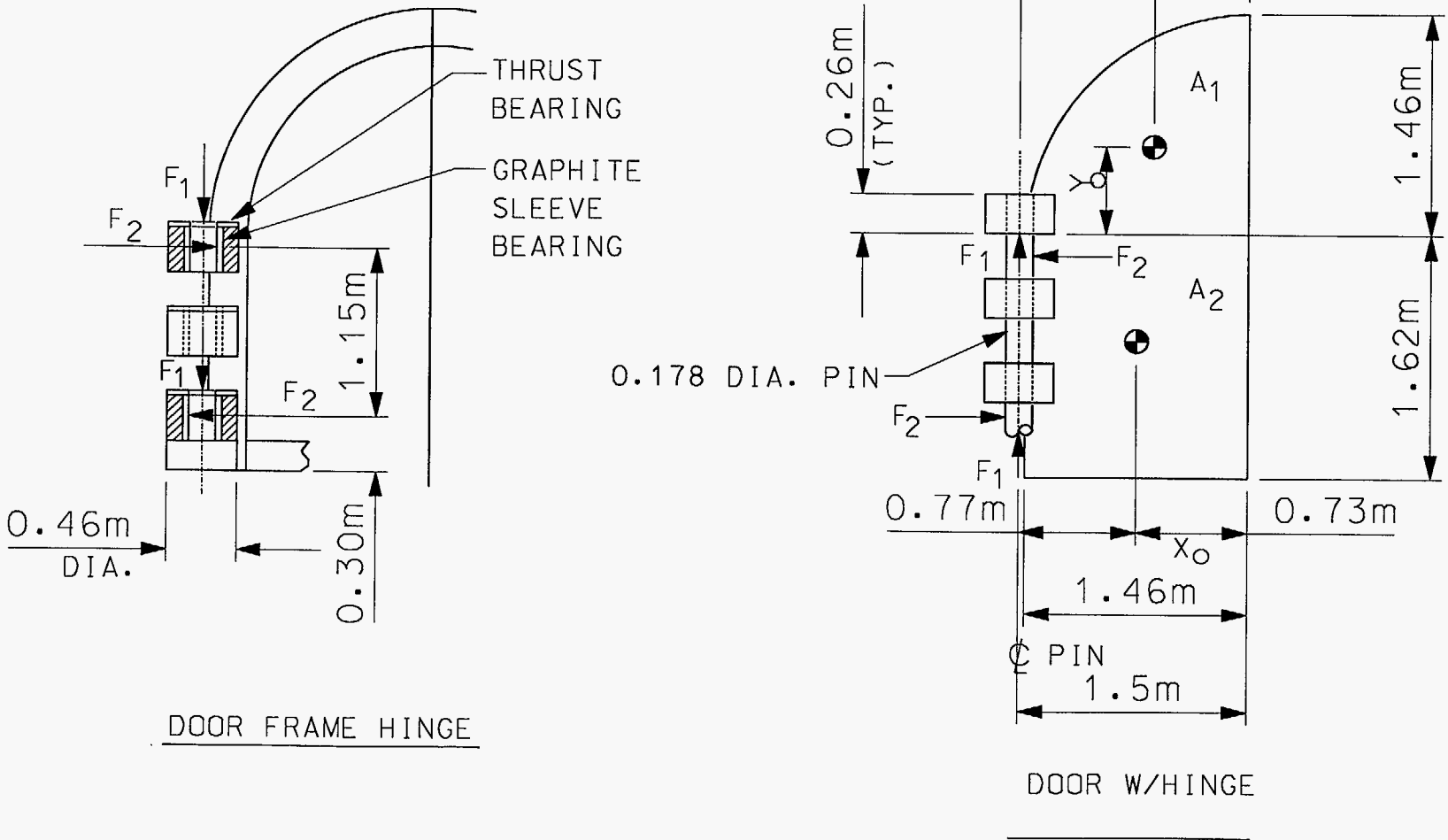


Figure II-2 Waste Package Transporter Side Elevation



WASTE PACKAGE TRANSPORTER  
DOOR AND HINGE

Weight for door hinge pin:

$$\begin{aligned} WT &= \frac{\pi D^2}{4} (1.618 + 0.260) (7949.7 \text{ kg/m}^3) \\ &= (0.79) (0.178 \text{ m})^2 (1.88 \text{ m}) (7949.7 \text{ kg/m}^3) \\ WT &= 374 \text{ kg} \end{aligned}$$

Total weight for door:

A <sub>1</sub>	2,580 kg
A <sub>2</sub>	3,647
Hinges	863
Pin	<u>374</u>
Total	7,464 kg

### 3.2.2 Axial Load on Hinge

Due to tolerances in fit between the door and the door frame hinges, assume that the axial load from the door is supported at the upper and lower hinge only.

### 3.2.3 Load on Thrust Bearings

Load on each of the two bearings is:

$$\begin{aligned} F_1 &= \frac{1}{2} (\text{axial load}) \\ &= \frac{1}{2} (7464) \text{ kg} = 3732 \text{ kg} (8,228 \text{ lbs}) \end{aligned}$$

### 3.2.4 Moment Forces on Door Frame Hinge

The upper and lower door frame hinge sleeve bearing will support the equal and opposite forces from the door hinge pin.

Determine CG of each of the two overhanging areas (A<sub>1</sub> and A<sub>2</sub>) from  $\perp$  pin for Area A<sub>1</sub>:

From Ref. 5.22, pg. 3-18:

The center of gravity for a quadrant of a circle:

$$X_o = Y_o = 0.4244 r$$

In this case,  $r = 1.46 \text{ m}$

$$X_o = (0.4244) (1.46 \text{ m}) = 0.62 \text{ m}$$

$$\begin{aligned} \text{CG of } A_1 \text{ from } \perp \text{ pin} &= 1.500 \text{ m} - 0.62 \text{ m} \\ &= 0.88 \text{ m} \end{aligned}$$

For Area A<sub>2</sub>:

$$A_2 \text{ is a rectangle and } X_o = \frac{1.460 \text{ m}}{2} = 0.730 \text{ m}$$

$$\begin{aligned} \text{CG of } A_2 \text{ from } \Phi \text{ pin} &= 1.500 \text{ m} - 0.730 \text{ m} \\ &= 0.77 \text{ m} \end{aligned}$$

$\Sigma M = 0$  at  $\Phi$  of pin

$$\begin{aligned} F_2 (1.15 \text{ m}) &= (0.88 \text{ m}) (\text{WTA}_1) + (0.77 \text{ m}) (\text{WTA}_2) \\ &= (0.88 \text{ m}) (2580 \text{ kg}) + (0.77 \text{ m}) (3647 \text{ kg}) \\ &= 5079 \text{ m}\cdot\text{kg} \\ F_2 &= 4416 \text{ kg, round up to } 4420 \text{ kg} \end{aligned}$$

Load of sleeve bearings is 4420 kg (9,744 lbs)

### 3.2.5 Door Hinge Friction

English units are used in the following calculation because catalog data is in English units.

From Ref. 5.22, pg. 3-48 to 3-49:

Torque from single journal bearing:

$$M_j = f P r \text{ (in.-lbs)}$$

where: P = total load of journal (lbs)

r = radius of journal (in.)

f = frictional coefficient

Torque for single thrust bearing:

$$M_T = \frac{1}{3} f L (D^3 - d^3) / (D^2 - d^2) \text{ (in.-lbs)}$$

where: L = total load of bearing (lbs)

D = outside diameter of bearing (in.)

d = inside diameter of bearing (in.)

f = frictional coefficient

From Ref. 5.22, pg. 3-40, Table 1:

For hard steel on lubricated graphite

For static condition: f = 0.09

Converting to English unit for use in formula

$$r = \frac{178 \text{ mm}}{2} \times \frac{\text{in.}}{25.4 \text{ mm}} = 3.5 \text{ in.}$$

$$D = 457 \text{ mm} \times \frac{\text{in.}}{25.4 \text{ mm}} = 18 \text{ in.}$$

$$d = 178 \text{ mm} \times \frac{\text{in.}}{25.4 \text{ mm}} = 7.0 \text{ in.}$$

$$M_J = f p r = (0.09) (9,744 \text{ lb}) (3.5 \text{ in.})$$

$$M_J = 3070 \text{ in.-lb per bearing}$$

$$M_T = \frac{1}{3} f L \frac{(D^3 - d^3)}{(D^2 - d^2)} = \frac{1}{2} (0.09) (8228 \text{ lb}) \frac{(18^3 - 7^3) \text{ in.}^3}{(18^2 - 7^2) \text{ in.}^2}$$

$$= \frac{1}{3} (0.09) (8228 \text{ lb}) \frac{(5832 - 343) \text{ in.}^3}{(324 - 49) \text{ in.}^2}$$

$$= (246.8) \frac{5489}{275} \text{ in.-lb}$$

$$M_T = 4926 \text{ in.-lbs per bearing}$$

$$\begin{aligned} \text{Total torque} &= 2M_J + 2M_T \\ &= (2) (3070) \text{ in.-lb} + 2(4926) \text{ in.-lbs} \\ &= 6140 \text{ in.-lb} + 9852 \text{ in.-lb} \end{aligned}$$

$$\text{Total torque} = 15,992 \text{ in.-lbs, round up to } 16,000 \text{ in.-lbs}$$

From Design Selection No. 5:

The 270 degree door swing shall take approximately 1 minute.

A 1-rpm gearmotor speed will satisfy that requirement.

Gearmotor selection criteria:

1. 16,000 in.-lbs of torque
2. 1 rpm output shaft speed
3. Flanged mount for mounting to transporter floor below door pin
4. Spline output shaft for a splined connection to the door pin for ease in installation and removal.
5. Right-angle gear drive for minimum obstruction of clearance envelop around rear of transporter.

6. Service factor for the application = 1.5 (see following for selection rationale)

From Ref. 5.15, pg. 7:

For right-angle helical-worm drives, select a reducer loading of extreme shock load (loads do not exceed 1.75 of normal input) due to the torque of starting the large inertia of the door from rest.

The associated safety factor (SF) for that condition which will occur less than 3 hours per day (door opening and closing twice a day) is 1.5.

From Ref. 5.15, pg. 346:

A S92R62 helical wormgear motor is selected with output speed = 1 rpm. Output torque = 23,200 and a SF of 1.6. Both torque and SF exceed the selection criteria selection for door gearmotor.

Door operator gearmotor selection

SEW Eurodrive helical-wormgear motor S92R62 w/0.75 hp DT80K4 motor flange mounted with keyed or splined output shaft.

From Ref. 5.15, pgs. 417, 422, 423:

Door operator gearmotor weight is as follows:

S92R62 w/DT80K4 motor	= 407 lbs
Lubricant for V1L mounting position 3.2 gals at 7.5 lb/gal	= <u>24 lbs</u>
Total weight	431 lbs
Round up to	440 lbs
	or 200 kg

### 3.3 Rail Car Unloader Equipment Selection

#### 3.3.1 General

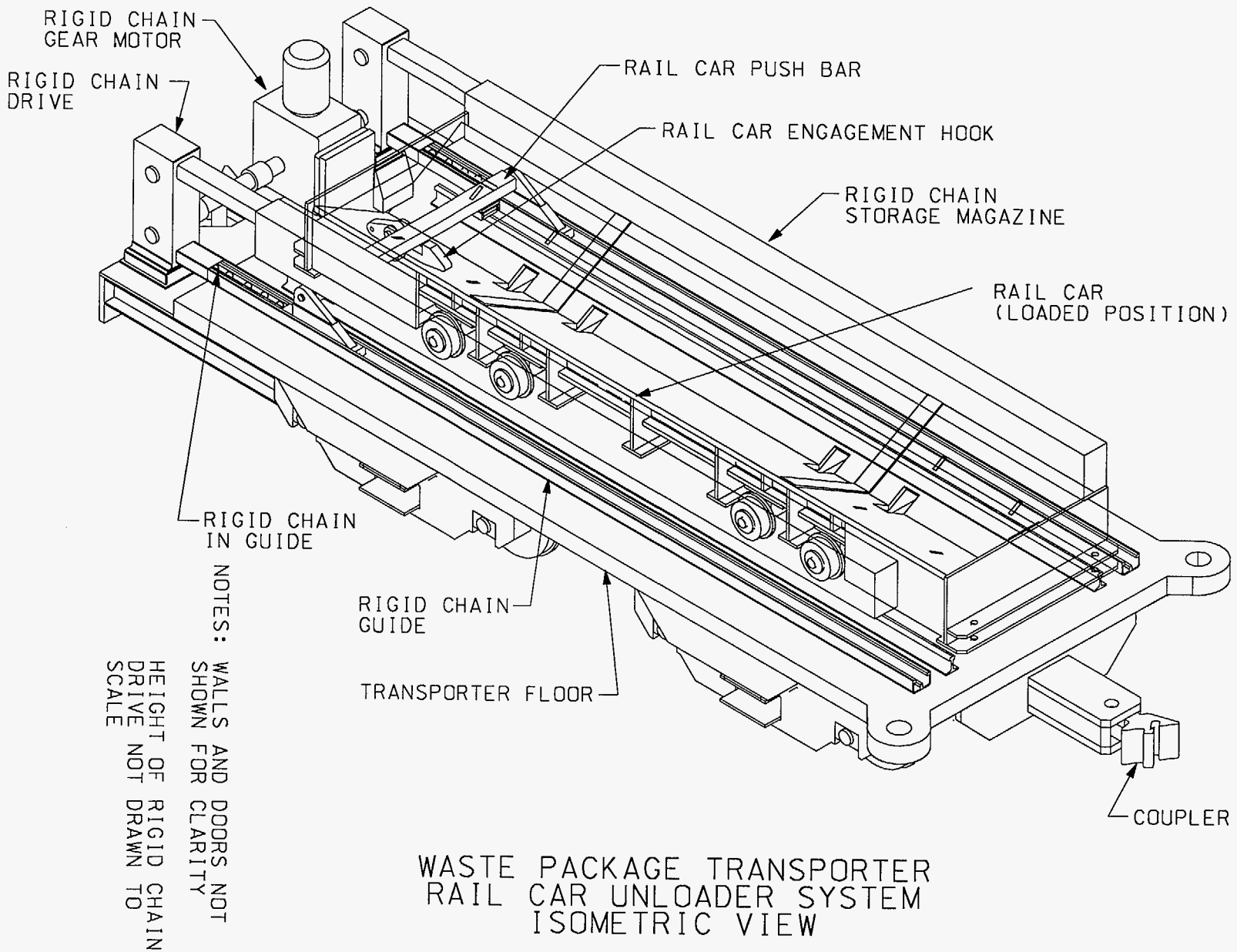
Rail car unloader utilizes two rigid chains and the associated drives to push the rail car loaded with the waste package from the inside of the transporter into the emplacement drift (see Figure II-3).

#### 3.3.2 Rail Car Rolling Resistance

From Ref. 5.23, Section 4068, pg. 1:

Rolling resistance from rail cars with ball or roller bearings is 10.02 kg/MT (20 lb/ton).

Figure II-3 Waste Package Transporter Plan



From Attachment I, Section 9.1, Ref. 5.9:

Rail Car Self-weight = 10.0 MT (11.0 tons)

Maximum Rail Car Operating Weight = 85 MT + 10.0 MT = 95 MT (104.7 tons)

$$\text{Rolling Resistance} = 20 \text{ lb/ton} \times \frac{0.48359 \text{ kg/lb}}{0.9072 \text{ MT/ton}} = 10.0 \text{ kg/MT}$$

Loaded Rolling Resistance = 10.0 kg/MT x 95 MT = 950 kg (2095 lb)

Unloaded Rolling Resistance = 10.0 kg/MT x 10.0 MT = 100 kg (221 lbs)

**3.3.3 Incline Force**

From Section 4.2.3:

Maximum grade in emplacement drift = 1.00%

$$\text{Drift angle} = \text{arc tan } 0.01 = 0.57^\circ$$

Incline Force (Loaded) = 95,000 kg x sin 0.57° = 945 kg (2083 lb)

Incline Force (Unloaded) = 10,000 kg x sin 0.57° = 99 kg (218 lb)

**3.3.4 Push Bar Force for Placing Loaded Rail Car**

Initial push bar force against rail car will be gradual due to the use of a variable-speed unloader drive and acceleration forces are negligible.

$$\begin{aligned} \text{Push bar force} &= \text{roll resistance} + \text{incline force} \\ &= 950 \text{ kg} + 945 \text{ kg} = 1895 \text{ kg} (4177.7 \text{ lbs}) \end{aligned}$$

**3.3.5 Push Bar Force Summary**

Rail Car Condition	Rolling Resistance		Incline Force		Push Bar Chain Force	
	Loaded (kg)	Empty (kg)	Loaded (kg)	Empty (kg)	Total (kg)	EA (kg)
Emplace loaded	950	N/A	945	N/A	+1895	+948
Retrieve loaded	950	N/A	945	N/A	-5	-2.5
Retrieve empty	N/A	100	N/A	99	+1	+0.5

**3.3.6 Rigid Chain Selection**

Maximum rigid chain compression force = 948 kg (2090 lb), round up to 950 kg (2094 lb)



From Ref. 5.16, Specification Sheet, pgs. 5 and 6:

Single row, 60-mm pitch, 60 SG chain capacity is 2500 daN or kg (force)  
Single row, 90-mm pitch, 90 SG chain capacity is 9000 daN or kg (force)

Both the 60 SG and the 90 SG chain capacities exceed the load requirements. In this analysis, the largest chain will be selected and used in the unloader design and drawings as the worst case for space and power requirements.

Chain selection is then Serapid single chain 90-mm pitch, 90 SG with rollers and maximum horizontal pushing force of 9000 daN used with a 90 SG guide.

From Ref. 5.16, Specification Sheet, pgs. 6, 8, and 9:

90 SG chain weight is 32 kg/m  
90 SG guide weight is 43 kg/m  
90-mm pitch, 90° drive housing weight is 120 kg

For a 180° drive housing, use 2 EA 90° drives for a total weight of 240 kg.

### 3.3.7 Chain Drive Power Requirement

From Ref. 5.16, Most Frequently Asked Questions on Serapid Chain, pg. 4 of 4:

$$\text{Torque} = \frac{\text{force} \times \text{chain pitch}}{\text{eff}}$$

Maximum chain force = 950 kg (2095 lbs)

Chain pitch = 90 mm (3.54 in.)

Eff = 0.8 (which includes friction of chain in glide)

$$\text{Torque} = \frac{(2095 \text{ lbs})(3.54 \text{ in.})}{0.8} = 9270 \text{ in.-lbs}$$

$$\text{Horsepower} = \frac{\text{torque (in - lb)} \times \text{shaft speed (rpm)}}{63,000 \times \text{eff}}$$

From Design Selection No. 7:

Rail car unloading rate is 7.6 m/min (25 ft/min)

From Ref. 5.16, pg. 9:

For 90-mm pitch drive, 1 rev is 540 mm (21.3 in.) of chain.

$$\text{Drive speed} = 25 \text{ ft/min} \times \frac{\text{rev}}{21.3 \text{ in.}} \times \frac{12 \text{ in.}}{\text{ft}} = 14 \text{ rpm}$$

Horsepower is now:

$$\text{hp} = \frac{(9270 \text{ in.} \cdot \text{lb})(14 \text{ rpm})}{63,000 \times 0.8}$$

Note:  $\text{eff} = 0.8$  is within the range of combined motor/reducer efficiencies

$$\text{hp} = 2.6 \text{ per chain}$$

Total drive hp for both chains:

$$\text{hp}_T = 5.2 \text{ hp, round up to 7.5 hp}$$

### 3.3.8 Motor-Reducer Selection

Selection criteria:

1. 1750 rpm input
2. 14 rpm output
3. Foot-mounted motor reducer with two output shafts, located between the two rigid chain drives
4. 7.5 hp minimum

From Ref. 5.15, pg. 7:

For right-angle helical gear motors, select:

AGMA Class II b

1. Moderate shock loads not exceeding  $1.25 \times$  rated load torque
2. Minimum service factor = 1.4

From Ref. 5.15, pg. 223:

For a 7.5-hp helical-bevel gearmotor, select a Model K106 w/DV132S4 motor  
13 rpm output, 1.5 service factor  
36,300 in.-lb of torque

Rigid chain drive gearmotor selection:

SEW Eurodrive helical-bevel gearmotor Model K106 with DV132S4 motor, reversible  
5 hp, 1750 rpm input, 13 rpm output, 36,300 in.-lb of torque, foot mounted.

Refer to Ref. 5.15, pg. 246 for gearmotor dimensions.

### 3.3.9 Gearmotor Weight

From Ref. 5.15:

Page 324: Mounting position B611

Page 334: 8.5 gallons of lube

Page 332: K106 w/DT132 weight is 659 lbs

<u>Item</u>	<u>Wt</u>
Gear motor	659 lb
Lube (8.5 gal x 7.5 lb/gal)	64 lb
	Total = 723 lb (328 kg)
	round up to 330 kg

320 kg was used in structural analysis (Attachment I)

### 3.3.10 Rigid Chain Magazine Storage Requirements

From Design Selection No. 6:

Transporter rail car unloader shall have a minimum travel and storage capacity for 12.0 m of rigid chain.

Rigid chain storage magazine arrangement is shown on Figure II-4.

From Figure II-4, total length of retrievable chain stored in magazine:

$$2I + \frac{\pi 0.2}{2} = 12.0 \text{ m}$$

$$2I = 12.0 \text{ m} - 0.314 \text{ m} = 11.69 \text{ m}$$

$$I = 5.84 \text{ m}$$

Total length of magazine:

$$\begin{aligned} L &= I + 0.050 \text{ m} + 0.300 \text{ m} \\ &= 5.84 \text{ m} + 0.350 \text{ m} = 6.19 \text{ m} \end{aligned}$$

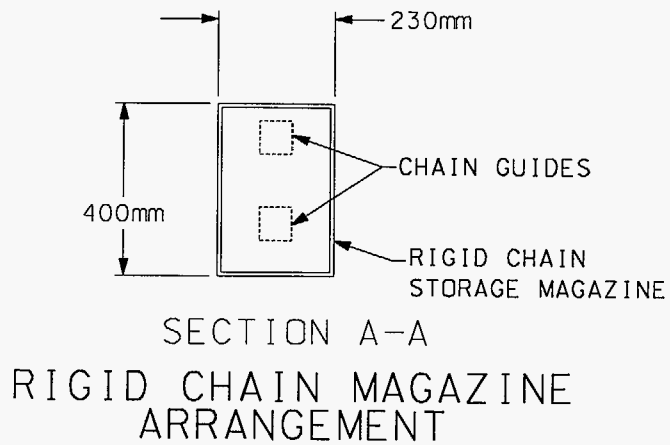
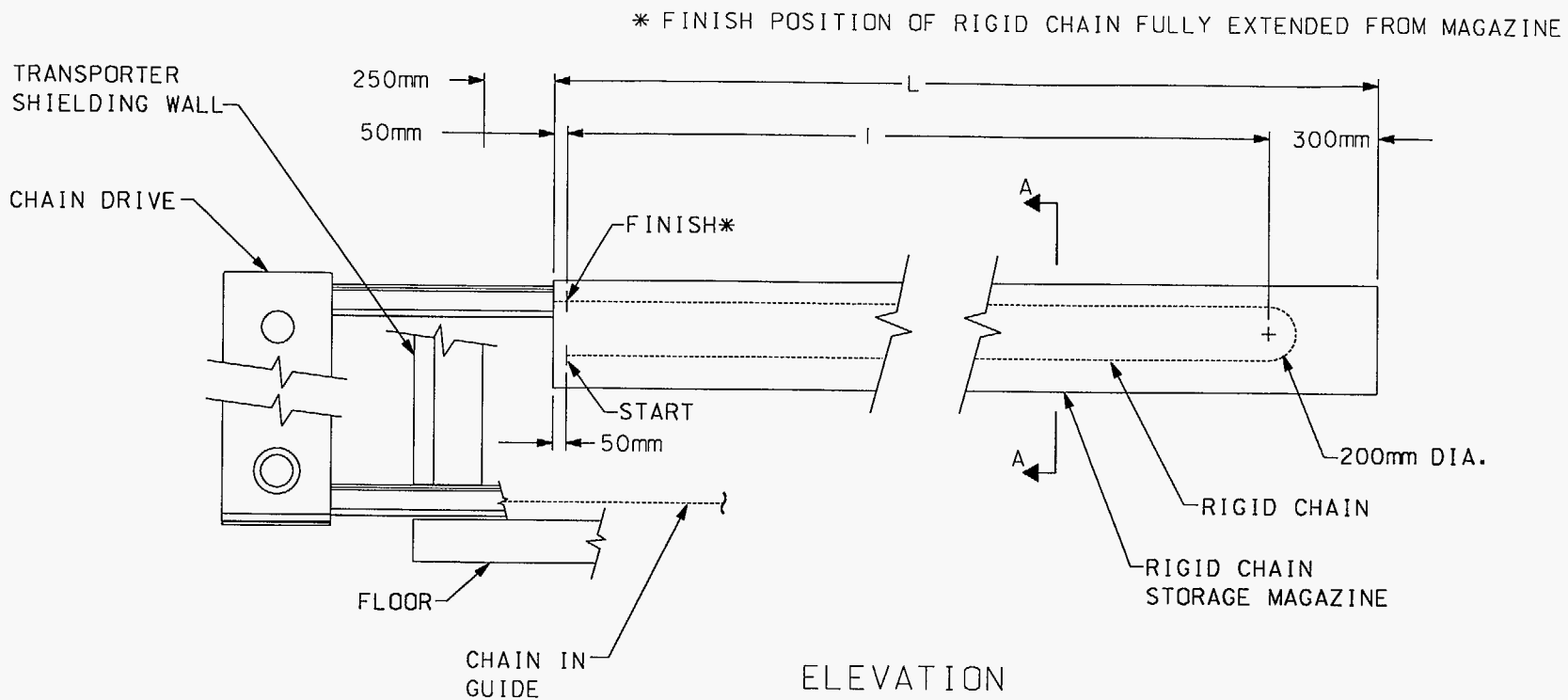
### 3.3.11 Rigid Chain Magazine Weight

From Figure II-4:

Magazine is 6.19 m long x 0.400 m high x 0.230 m wide

Magazine enclosure is constructed of 3.18 mm (0.125 in.) carbon-steel plate

Figure II-4 Waste Package Transporter End Elevation



Magazine surface area:

$$A = 2 (0.400 \text{ m} + 0.230 \text{ m}) (6.19 \text{ m}) \\ = 7.8 \text{ m}^2$$

From Section 4.4.1, pg. 6-8:

Density of cold-drawn steel = 490 lb/ft<sup>3</sup>

Converting to metric units:

$$D = 490 \text{ lb/ft}^3 \times \frac{\text{kg}}{2.205 \text{ lb}} \times \left(\frac{3.28 \text{ ft}}{\text{m}}\right)^3 \\ = 7842 \text{ kg/m}^3$$

For the thickness of 3.18 mm, the density per m<sup>2</sup> is:

$$\text{Density/m}^2 = 7842 \text{ kg/m}^3 \times 0.00318 \text{ m} \\ = 24.9 \text{ kg/m}^2$$

$$\text{Empty magazine weight} = (7.8 \text{ m}^2) (24.9 \text{ kg/m}^2) \\ = 194 \text{ kg}$$

Rigid chain weight:

From Ref. 5.16, page 6:

Type 90 SG rigid chain weight is 32 kg/m

$$\text{Rigid chain weight} = (12 \text{ m}) (32 \text{ kg/m}) = 384 \text{ kg}$$

Total magazine weight for each:

Rigid chain	384 kg
Magazine	<u>194</u>
	Total = 578 kg
Misc. support (10% of total)	<u>57</u>
	Total = 635 kg
	round down to 630 kg

### **ATTACHMENT III**

#### **WASTE PACKAGE TRANSPORTER DOOR OPERATOR AND LOCK SELECTION FOR RAIL CAR RESTRAINT**

**NOTE:** DOE policy requires the subsurface design to be performed using metric units. Quantities and values derived in the main body of this analysis are presented only in metric units. However, much of the source information (e.g., vendor equipment data or standard structural steel members) used for design calculations and derivations in the attachments is available only in English units. Because of this, calculations and derivations in the attachments are generally performed in English units. The results are converted to metric for presentation in the main body of the analysis (Sections 7 and 8), followed by the corresponding English values in parentheses.

**WASTE PACKAGE TRANSPORTER DOOR OPERATOR AND  
LOCK SELECTION FOR RAIL CAR RESTRAINT**

**1.0 PURPOSE**

This calculation provides the basis for selecting a door operator or lock with capacity to restrain a loose reusable rail car within the transporter.

**2.0 INITIAL DESIGN SELECTIONS**

**No. Input Description**

1. Maximum operating weight of the reusable rail car is 95 MT (Section 4.3.12).
2. Weight of the transporter door, less hinges and hinge pin, is 6,227 kg (Attachment II, Section 3.2.1).
3. Transporter door swing is 270 degrees to provide minimum interference with isolation doors and opening time is approximately 1 minute, which is a reasonable and safe rotational rate for a large mass such as the transporter door (Section 4.3.13).
4. Maximum grade between the surface and the emplacement drift is 2.5 percent (Section 4.2.3).

**3.0 SOLUTIONS**

**3.1 Verify that Selected Drive can Restrain Reusable Rail Car**

With the reusable rail car loose in the transporter, what force or torque is required to keep the doors closed if transporter is on a 2.5% grade. Refer to Figure III-1-A.

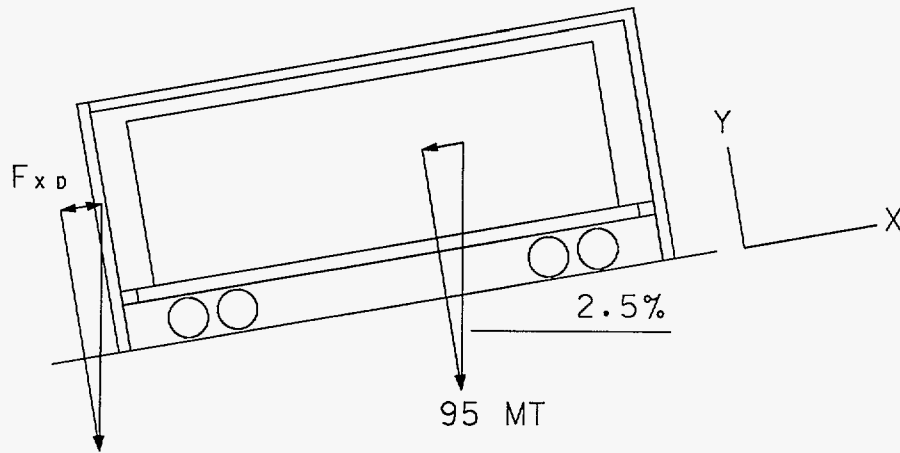
$$\text{Grade angle} = \arctan 0.025 = 1.43^\circ$$

$$\begin{aligned} \text{Weight of door downgrade } F_{XD} &= 6,227 \sin 1.43 \\ &= 155.4 \text{ kg} \end{aligned}$$

$$\begin{aligned} \text{Weight of reusable rail car against door } F_{RC} &= 95,000 \text{ kg} \times \sin 1.43 \\ &= 2,371 \text{ kg} \end{aligned}$$

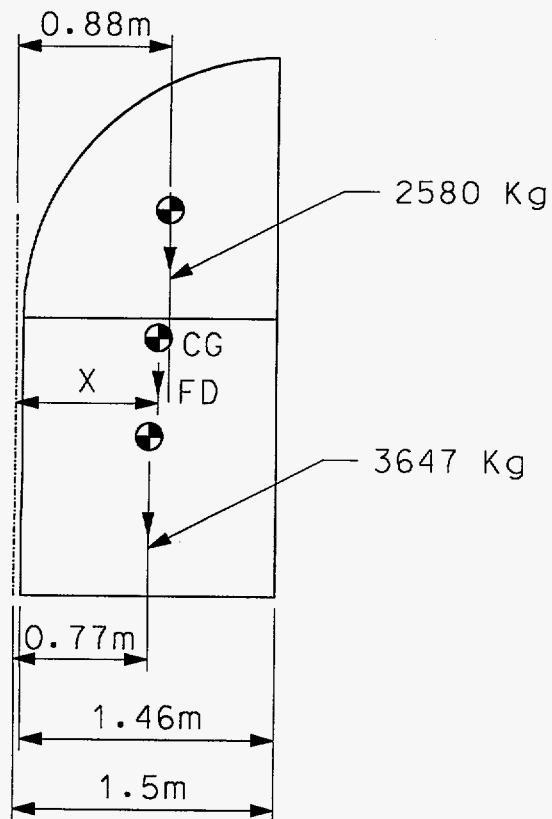
Only one-half of this load will act on a door.

Figure III-1 Waste Package Transporter Door Weight and Center of Gravity



DOOR .WT (LESS HINGES AND HINGE PIN)=  
6,227 Kg

A. GRADE LOADS



B. DOOR CENTER OF GRAVITY



Determine the center of gravity of the door. Refer to Figure III-1-B.

$$\text{Weight of upper door section} = 2580 \text{ kg (Section 4.3.10)}$$

$$\text{Weight of lower door section} = 3647 \text{ kg (Section 4.3.10)}$$

$$\begin{aligned} \text{Total door weight } F_D \text{ (less hinges and hinge pin)} &= 2580 \text{ kg} + 3647 \text{ kg} \\ &= 6227 \text{ kg} \end{aligned}$$

$$F_D X = 0.88 \times 2580 + 0.77 \times 3647$$

$$X = \frac{5079}{6227} = 0.82 \text{ m}$$

$$\begin{aligned} \text{Grade torque on door} &= 0.82 \text{ m} \times 155.4 \text{ kg} \\ &= 127.4 \text{ kg m} \end{aligned}$$

Assume that the corner of the reusable rail car will push the door open. Refer to Figure III-2-A.

From Attachment II, Section 3.2.5, torque due to friction required to rotate the door is 16,000 in.-lb.

Converting this to metric units:

$$M_F = \frac{16,000 \text{ in.} \cdot \text{lbs} \times 0.138 \text{ kg m/ft} \cdot \text{lb}}{12 \text{ in./ft}} = 184 \text{ kg-m}$$

$$\begin{aligned} \text{Torque on reducer to restrain the reusable rail car} &= \frac{2371}{2} \text{ kg-m} (1.5 - 0.81) + \\ &127.4 \text{ kg-m} - 184.0 \text{ kg-m} \\ &= 761.4 \text{ kg-m} \end{aligned}$$

The drive included in the transporter design is rated for 266.8 kg-m (23,200 in.-lb) of torque and will either backdrive or fail when placed under load of the reusable rail car.

### 3.2 Door Gear Reducer Selection for Restraining the Reusable Rail Car

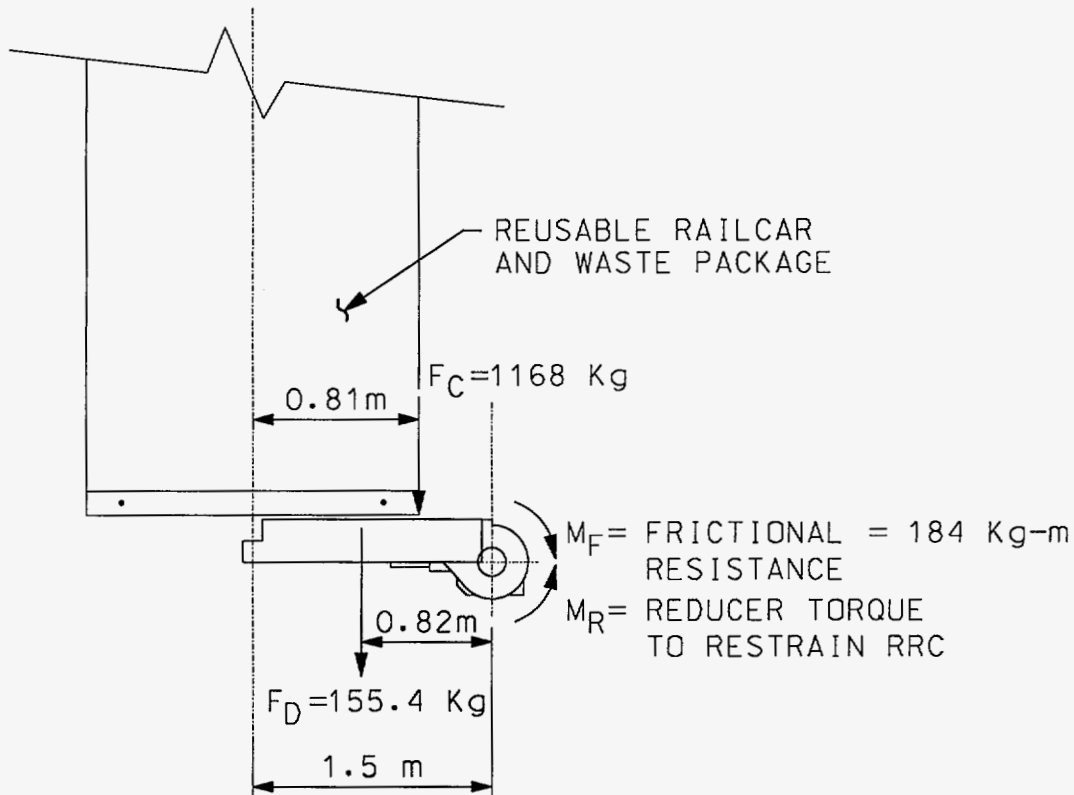
What capacity drive would be required to hold the loaded rail car?

$$\text{Torque on door drive} = 761.4 \text{ kg-m}$$

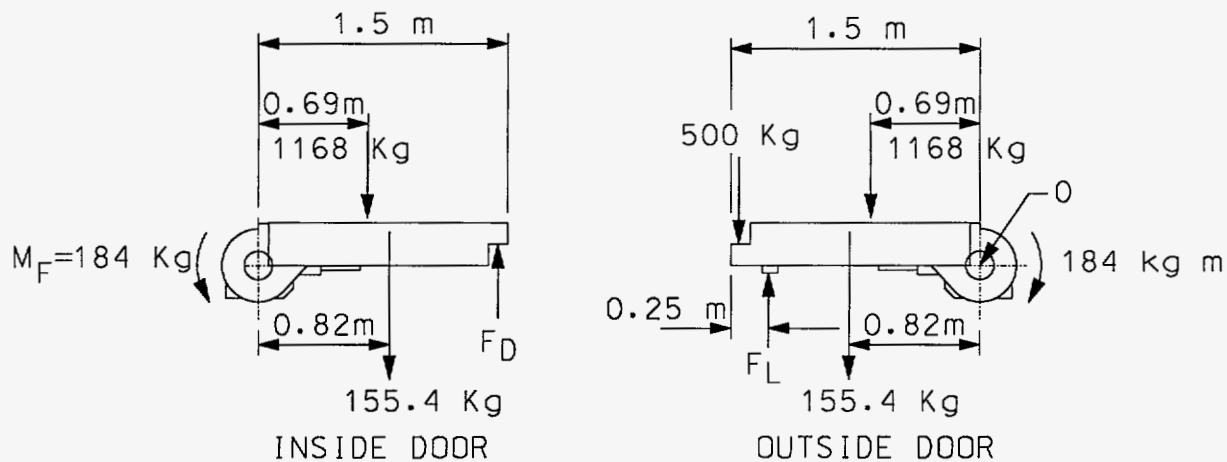
Since the catalog is in in.-lb, torque must be converted:

$$\text{Torque} = 761.4 \text{ kg-m} \times 7.233 \text{ ft-lb/kg-m} \times 12 \text{ in./ft} = 66,086.5 \text{ in.-lb}$$

Figure III-2 Waste Package Lock Door Loads



A. DOOR LOADS PLAN VIEW



B. DOOR LOCK LOADS PLAN VIEW

Selection of a double reduction worm gear reducer with a torque capacity larger than 761.4 kg-m (66,086.5 in.-lb) and output speed of 1 rpm may prevent backdriving of the door operator when the reusable rail car is against the door. However, worm gear vendors advise that as a worm gear reducer becomes worn, there is no guarantee that it will not backdrive under loaded conditions and recommend that a brake be installed either on the input shaft or output shaft to prevent backdriving.

For holding applications, brake manufacturers recommend a brake rated at 200 percent of load torque requirements. Therefore, for this application, a brake mounted on the input shaft requires a minimum capacity of  $\frac{761.4}{1800}$  kg-m x 2 = 0.85 kg-m (73.8 in.-lb), where 1800 is the reducer gear ratio. The advantages of mounting the brake on the input shaft are:

- A smaller brake can be used.
- A spring applied/electric release brake can be used.

The disadvantages of mounting the brake on the input shaft are:

- The reducer must be sized for the larger torque 761.4 kg-m (66,086.5 in.-lb).
- If the reducer gears fail, the transporter doors will open when loaded by the reusable rail car.

A brake mounted on the output shaft requires a capacity of 2 x 761.4 kg-m = 1522.8 kg-m (132,173 in.-lb). The advantages of mounting the brake on the output shaft are:

- The gear reducer can be sized for the smaller torque loading.
- Failure of the gear reducer will not allow the doors to open.

The disadvantages of mounting the brake on the output shaft are:

- A larger brake is required.
- Due to large torque requirements, the brake will have to be air operated.

### 3.3 Door Locks

Since one door is closed over the other, only the outside door requires locks. Determine the force of these locks.

For the inside door, referring to Figure III-2-B:

$$F_D(1.5) + 184 = 1168 \times 0.69 + 0.82 \times 155.4$$

$$F_D = 500 \text{ kg}$$

For the outside door:

$$+ M_o = 0$$

$$F_L (1.25) + 184 = 500 (1.5) + 1168 (0.69) + 155.4 (0.82)$$

$$F_L = 1200 \text{ kg (2645 lb)}$$

Using an allowable 6000 psi shear stress:

$$\text{With two locks } F_L = \frac{2645 \text{ lb}}{2} = 1322.5 \text{ lb}$$

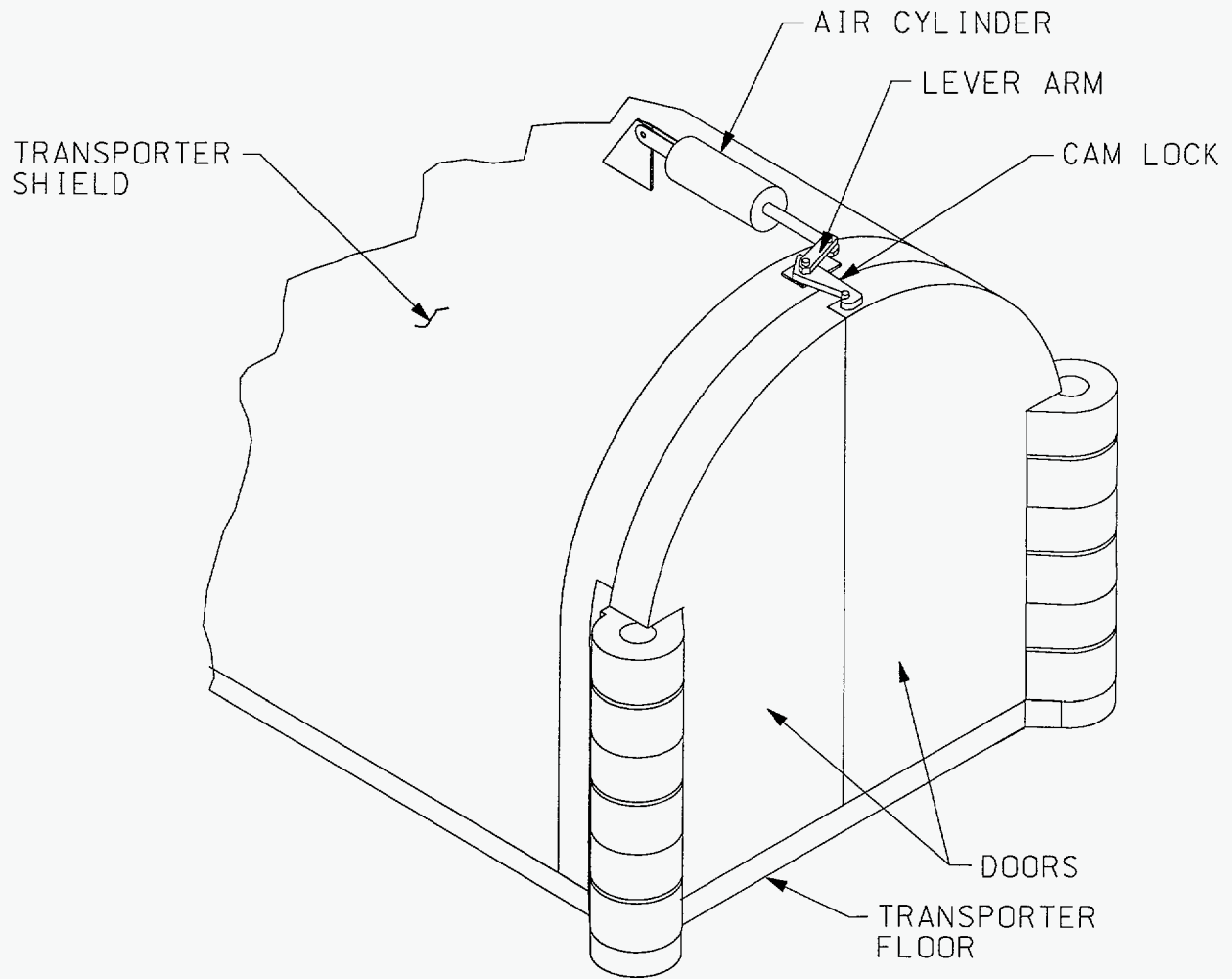
$$\text{Stress} = \frac{\text{Force}}{\text{Area}}$$

$$\text{Area} = \frac{\text{Force}}{\text{Stress}} = \frac{1322.5 \text{ lb}}{6000 \text{ lb/in}^2} = 0.2204 \text{ in.}^2$$

$$\text{Diameter} = \sqrt{\frac{4 \times 0.2204}{3}} = 0.54 \text{ in. round to 1 inch}$$

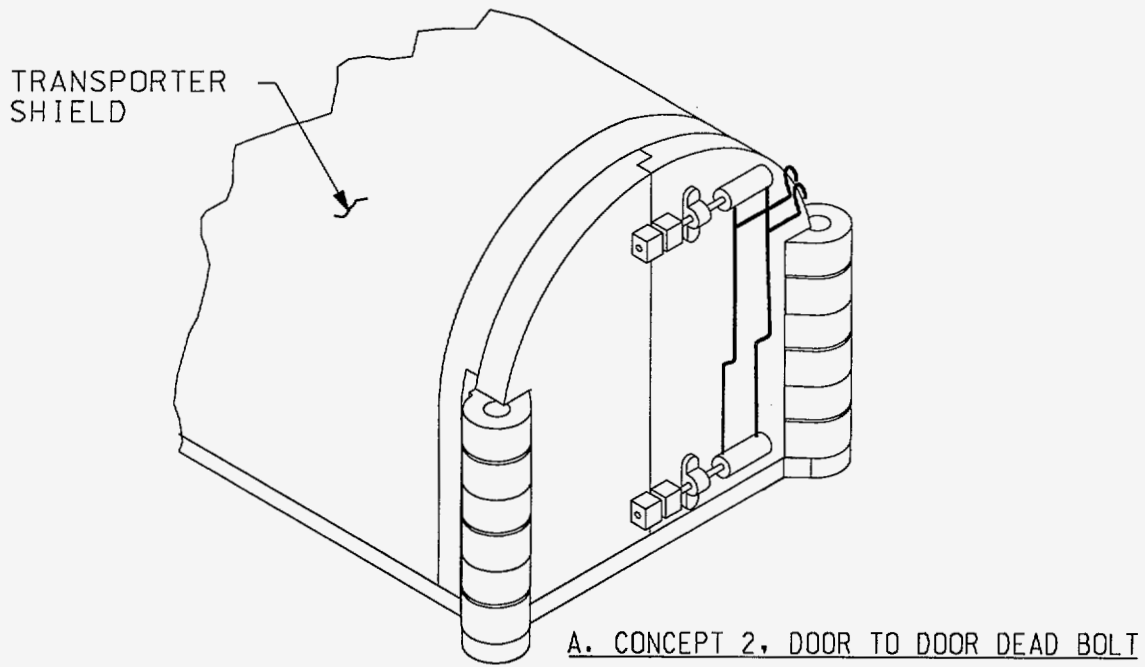
Figures III-3, III-4, and III-5 depict various door lock configurations considered appropriate for restraining the reusable rail car in the transporter.

Figure III-3 Positive Acting Cam Lock – Concept No. 1

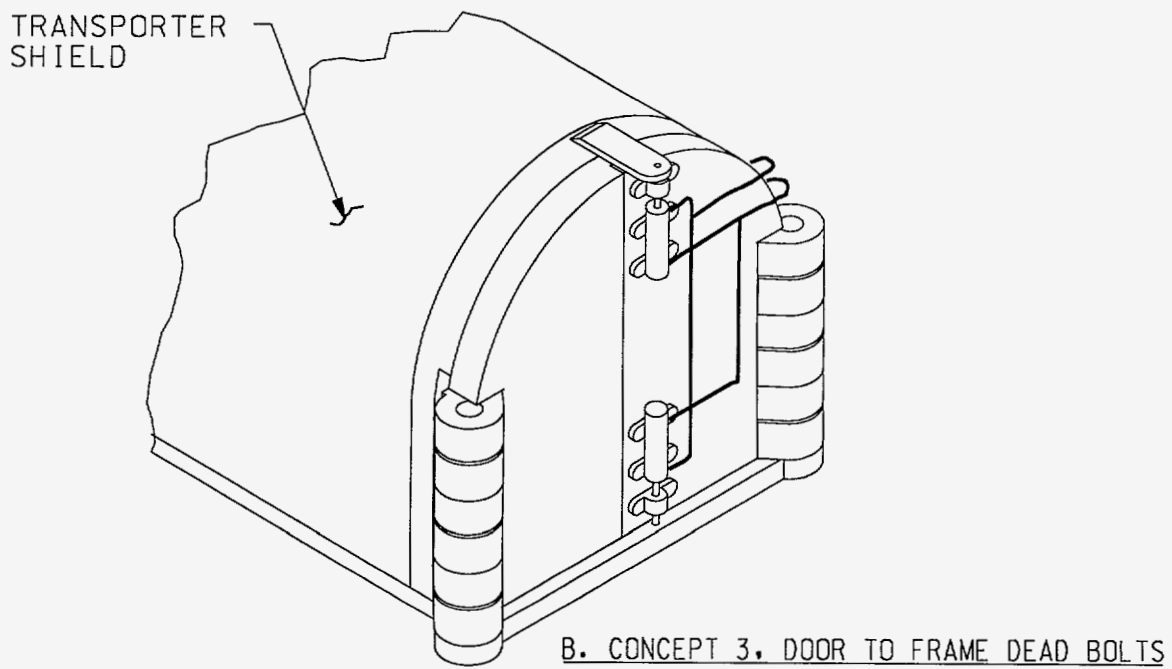


ISOMETRIC VIEW

Figure III-4 Dead Bolt Locks – Concepts 2 & 3

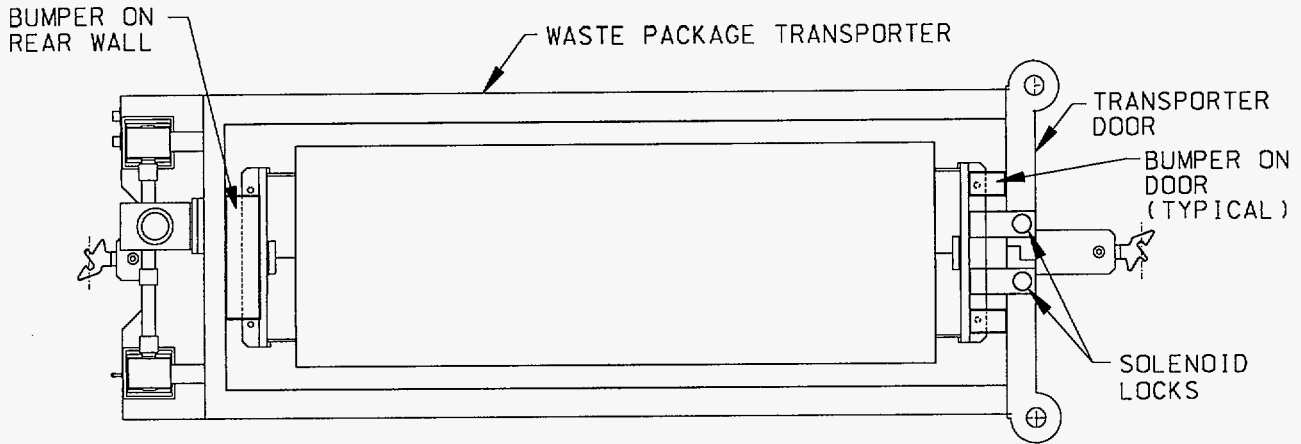


ISOMETRIC VIEW

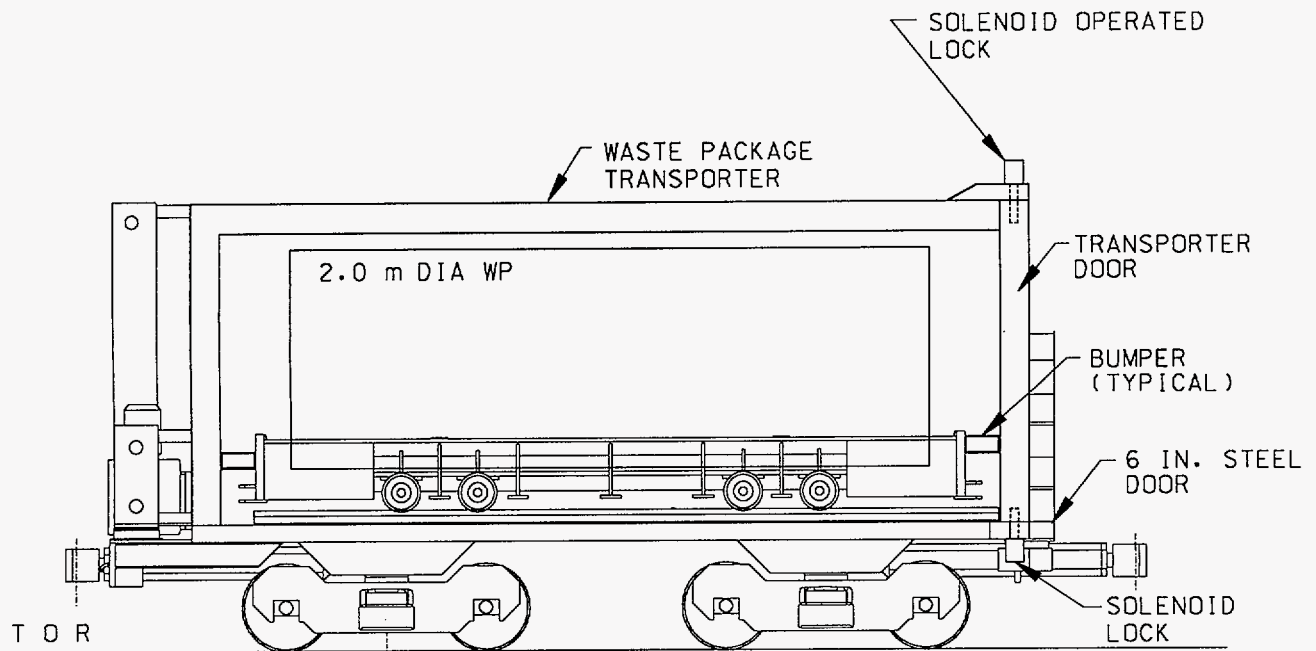


ISOMETRIC VIEW

Figure III-5 Solenoid-Operated Dead Bolt Lock – Concept No. 4



PLAN SECTION VIEW



ELEVATION SECTION VIEW

TOP OF RAIL (T O R)