Y-12

OAK RIDGE Y-12 PLANT

LOCKHEED MARTIN

STRUCTURAL WALKDOWN PROCEDURE for NATURAL PHENOMENA ENGINEERING ANALYSES at the OAK RIDGE Y-12 PLANT

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Prepared by the Center for Natural
Phenomena Engineering

June 1992

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Oak Ridge Y-12 Plant
Oak Ridge, Tennessee 37831-8169
managed by
MARTIN MARIETTA ENERGY SYSTEMS, INC.
for the
U. S. DEPARTMENT OF ENERGY
under contract DE-AC05-84OR21400

MANAGED BY
LOCKHEED MARTIN ENERGY SYSTEMS, INC.
FOR THE UNITED STATES
DEPARTMENT OF ENERGY

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CONTENTS

ACRONYMS AND INITIALISMS	v
DEFINITIONS	v
1.0 PURPOSE AND SCOPE	1
2.0 SPECIAL REQUIREMENTS	3
3.0 INFORMATION TO BE COLLECTED	3
4.0 DEVELOPMENT OF SAMPLE WALKDOWN SCOPE	3
5.0 DEVELOPMENT OF FLOOR LOAD INVENTORY	7
5.1 WEIGHT OF COMPONENT	7
5.2 FOOTPRINT OF COMPONENT	7
5.3 ECCENTRICITY OF COMPONENT	7
5.4 LOCATION OF COMPONENT	8
5.5 FIELD INSPECTIONS	8
5.6 FLOOR LOAD DRAWINGS	8
6.0 DEVELOPMENT OF RED-LINE DRAWINGS	8
6.1 STRUCTURAL FEATURES	8
6.2 MASONRY WALLS	9
7.0 SCREENING CRITERIA	9
7.1 BACKGROUND	9
8.0 WALKDOWN PROCEDURE STEPS	14
9.0 DOCUMENTATION REQUIREMENTS	17
10.0 REFERENCES	17
ATTACHMENTS	
WALKDOWN WORKSHEETS	A1-1
LOAD INVENTORY DATABASE	A2-1
WALKTHROUGH INSPECTION CHECKLIST	A3-1
SAMPLE WALKDOWN PACKAGE	A4-1
FIGURES AND TABLES	
Figure 1	16
Table 1.1 Building List for the 9212 Complex at the Y-12 Plant	2
Table 4.1 Acceptable Quality Level for Walkdown Attributes	6
Table 7.1 Piping Support Spans/Loads	11
Table 7.2 Cable tray support reaction loads	12
Table 7.3 HVAC duct support reaction loads (lbs.) for ductwork with insulation.	13
Table 7.4 HVAC duct support reaction loads (lbs.) for ductwork without insulation.	14

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ACRONYMS AND INITIALISMS

ALARA	As Low As Reasonably Achievable
CAD	Computer Aided Drafting
DAC	Design Analysis and Calculations
DOE	Department of Energy
ES	Martin Marietta Energy Systems, Inc.
HCTW	Hollow Clay Tile Wall
HPFWS	High Pressure Fire Water System
HVAC	Heating, Ventilation, and Air Conditioning
LPSE	Lead Project Safety Engineer
LPWE	Lead Project Walkdown Engineer
QA	Quality Assurance
SNM	Special Nuclear Material

DEFINITIONS

Dead load - self weight of the structure plus the weight of permanently mounted equipment.

Live load - superimposed load on the building floor including the weight of stored and movable equipment.

Load maps - plan views of floor showing the location, foot-print, identification and weight of various equipment.

Lead Project Walkdown Engineer - individual who has overall accountability for the technical adequacy of the structural walkdown results and documentation.

Walkdown Team Leader - individual assigned at each site who has delegated responsibility to assure compliance with the walkdown procedure and to interface with appropriate ES site personnel.

Walkdown Team Member -individual assigned responsibility to implement the structural walkdown procedure.

Walkdown Team - A group of two or more walkdown team members working together to assure technical accuracy of the information collected.

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1.0 PURPOSE AND SCOPE

The purpose of this walkdown plan is to outline the process to be followed and the pertinent structural information to be collected with the objective of providing input for the assessment of the adequacy of existing natural phenomena analyses and for any required future analyses for the Oak Ridge Y-12 Plant.

This approach is being followed in order to develop input to assess that the critical facilities were constructed in accordance with the design drawings, that any major configuration changes to the principle structures are identified and that the location of major equipment loadings are defined.

This structural walkdown plan is not intended to collect detailed information for the purpose of developing as-built structural drawings. Additionally, this plan is not intended to evaluate equipment or safety system/component interaction.

Implementation of this plan is required for the walkdown phase of the Y-12 Plant natural phenomena analyses. The types of walkdowns to be performed in this procedure include:

- A walkdown based on a sampling approach to collect detailed structural design information relative to member sizes, orientation, connection, and base details to support the conclusion that the structural configuration is consistent with the design drawings. This is discussed in Section 5.0.
- A walkdown to collect detailed information relative to equipment loadings on top and bottom of floors and roof. This is discussed in Section 6.0.
- A walkthrough inspection of all areas of the building to identify any areas of major configuration change from design drawings. This is discussed in Section 7.0.

This plan defines the categories of information to be collected during the walkdowns, the procedural steps to be followed during data collection, and the documentation format and content. This plan includes screening criteria to be applied during the load inventory walkdowns to facilitate the selection of systems and components within each structure that require verification of configuration and weights.

Basic floor loading information such as size, location, and weight is to be obtained. Actual dead loads and live loads are to be determined. Floor load drawings will be developed to show the location, weights, etc., for major dead and live loads.

One walkdown package will be generated for each of the following Y-12 Plant structures (Table 1.1). Each package will contain the results of walkdowns performed within the scope of this procedure.

Table 1.1 Building List for the 9212 Complex at the Y-12 Plant

BUILDING	JUSTIFICATION
Building 9212 -Headhouse	Potential for release of radioactive and/or other hazardous materials
-A-Wing	Potential for release of radioactive and/or other hazardous materials
-A1-Wing	Potential for release of radioactive and/or other hazardous materials
-B-Wing	Potential for release of radioactive and/or other hazardous materials
-B1-Wing	Potential for release of radioactive and/or other hazardous materials
-C-Wing	Potential for release of radioactive and/or other hazardous materials
-C1-Wing	Potential for release of radioactive and/or other hazardous materials
-D-Wing	Potential for release of radioactive and/or other hazardous materials
-D1-Wing *	Potential for release of radioactive and/or other hazardous materials
-E-Wing *	Potential for release of radioactive and/or other hazardous materials
-E1-Wing	Potential for release of radioactive and/or other hazardous materials
-A2-Wing *	Potential for release of radioactive and/or other hazardous materials
Building 9980	Potential for release of radioactive and/or other hazardous materials
Building 9980	Potential for release of radioactive and/or other hazardous materials
Building 9996 *	Potential for release of radioactive and/or other hazardous materials
Building 9723-25	Potential for release of radioactive and/or other hazardous materials
Building 9828-1, -2, -3	Potential for release of radioactive and/or other hazardous materials
Building 9767-10	Potential for release of radioactive and/or other hazardous materials
Building 9812	Potential for release of radioactive and/or other hazardous materials
Building 9815	Potential for release of radioactive and/or other hazardous materials
Building 9818	Potential for release of radioactive and/or other hazardous materials
Building 9999	Potential for release of radioactive and/or other hazardous materials
Building 9423	Potential for release of radioactive and/or other hazardous materials

* include appropriate crane structure analysis

2.0 SPECIAL REQUIREMENTS

Walkdown personnel must possess an active DOE Q clearance to perform on-site work.

Walkdown personnel will receive documented training to required site specific procedures and this plan prior to the initiation of walkdowns.

The work required to accomplish the walkdowns shall be performed in accordance with the Energy Systems Quality Assurance Program as established by ES procedure EP-C-20 and ES-0.7-0. Personnel performing walkdowns shall be indoctrinated to the requirements of the QA Program. All work shall be signed by a preparer and a checker.

The Walkdown Team Leader is required to coordinate with appropriate site personnel to identify additional, special requirements for site and building access. This should be done in advance of the walkdown to assure no interruptions.

3.0 INFORMATION TO BE COLLECTED

The walkdowns are intended to focus only on certain "critical-to-analysis" attributes of a building structure that are necessary to perform and/or validate a structural integrity analysis for loadings due to natural phenomena. This walkdown plan does not require extensive collection of construction/installation details for the purpose of producing as-built drawings.

The "critical-to-analysis" attributes are those structural, mass, and configuration attributes that are a part of the load development/resistance path under defined loads. This is discussed in detail in Section 5.0, 6.0, and 7.0.

The attribute information to be collected and documented during the walkdowns include:

- Member Sizes (Sample Approach)
- Member Orientations (Sample Approach)
- Connections (Sample Approach)
- Column Anchorage (Sample Approach)
- Major Configuration Changes (Red-Line Drawings)
- Floor Loadings (Floor Load Drawings)
- Masonry and Non Load Bearing Walls (Walkthrough Inspection)
- Strength Discontinuities (Walkthrough Inspection)
- Vertical Eccentric Masses (Walkthrough Inspection)
- Parapets (Walkthrough Inspection)
- Expansion Joints/Separation Distances (Walkthrough Inspection)
- Foundation Type/Sizes (Design Drawing Review)
- Material Properties (Design Drawing Review)
- Concrete Strength (Design Drawing Review)
- Storm/Drain Gutters (Walkthrough Inspection)
- Structural Siding/Decking Attachment (Walkthrough Inspection)
- Bracing (Walkthrough Inspection)

4.0 DEVELOPMENT OF SAMPLE WALKDOWN SCOPE

The purpose of this walkdown using a sampling approach is to establish a probability determination that the essential structural members to include columns, beams, bases, and connections are consistent with design

drawings. A random sampling approach will be used to select and specify the assessable structural elements requiring the collection of detailed structural design information relative to member sizes, orientations, and connection details.

The sample approach is based on Military Standard (MIL-STD-105E), "Sampling Procedures and Tables for Inspection by Attributes" (Department of Defense, 1989). The method of the Military Standard is derived from a binomial approximate distribution. This distribution is created for a yes/no criteria. Inspection by attributes is the inspection of a product or item, where the classification of the item is simply yes or no. A yes will indicate that an inspection element is equal to the design drawing and a "no" will indicate the inspection element is not equal to the design drawing.

The acceptance criteria for the sample approach is a function of the lot size, inspection level, and acceptable quality level. The total number of columns within each building listed in the scope shall be the lot size. A normal inspection level will be used in this sampling approach as opposed to a reduced or tightened inspection level. Sample walkdown elements/attributes will have an assumed 4 percent acceptable quality level. Before undertaking any sampling procedure, a hypothesized acceptable quality level (AQL) must be identified. This AQL is the assumed defective rate of the columns or attributes being sampled. When the MIL-STD procedure is followed using a 4 percent AQL and the samples are acceptable, we can infer that the total column population, i.e., the lot size has a 4 percent or less defective rate with probability of 0.95. Table 4.1 identifies each of the elements/attributes being sampled.

For a given lot size the total population of columns will be identified. (A lot size may consist of several buildings). Discrete columns will be selected for detailing based on the random sampling process. Each discrete column will be identified in the walkdown package and the walkdown team will collect the required information for that column. That information includes collecting detail information for the column, column/base connection, column/beam connection and the beam. Since there may be more than one beam connected to each column, the most accessible beam may be selected. Elements associated with appurtenant structures, such as platforms, are not included in the sample unless they appear to significantly affect the mass or response of the building. Specific sample elements identified, that are located inside contaminated areas will be substituted based on ALARA considerations. These items must be identified and interfaced with site health physics personnel.

In the event a column is not accessible as a result of ALARA considerations, physical inaccessibility or encased in concrete, that column is to be substituted with another column selected on a random basis. Each walkdown package will contain a listing of acceptable substitute columns. If the column is accessible but the beam or beam/column connection is inaccessible even with the use of a lift device, i.e. ladder picker, another column should be selected on a random basis. In the event a column, beam and beam/column connection are accessible but the base and/or base connection are inaccessible, these elements may be selected.

Column bases for exterior columns may be substituted for interior column bases that are inaccessible. The substitution should be in the same general area as the sample element. All substitutions should be noted on the worksheets as a substitution, as well as the reason and the specific location of the substitution.

After the information has been collected it will be reviewed against the design drawing to determine compliance. If each structural element for the selected sample is in compliance with the design drawing and within the acceptance quality level, a 95 percent probability will be established that the particular structural element is consistent with the design drawing. On the other hand, if certain structural elements are reviewed and do not comply with design drawing, the 95 percent probability level will not be established for that element and additional action may be required. This action will generally involve either an expansion of the initial sample size, the performance of a more extensive walkdown focusing on discrepant attributes, or a diminishing of the target 95 percent probability level.

For columns and beams, a discrepancy is not identified until a combination of the four attribute measurements leads to the conclusion that the element identified in the sample is a different size than that specified on the design drawings. Additionally, certain attributes where the item is missing will not be considered discrepancies but will be identified as maintenance items.

Existing plant documentation and analyses will be used to the fullest extent possible. The analyses will also be reviewed to identify any assumptions that may require verification during the structural walkdown. These will be identified in the walkdown package prior to the initiation of the walkdown. Special data collection may also be required for unique features such as the exterior runway structure for certain buildings. These will also be specified for each building prior to the initiation of the walkdown.

The Lead Project Walkdown Engineer (LPWE) or designee, will have the responsibility for specifying the walkdown scope prior to performing the walkdown. The LPWE will initiate the walkdown package that specifies the walkdown requirements and worksheets that must be completed by the Walkdown Team.

Table 4.1 Acceptable Quality Level for Walkdown Attributes

Element	Attribute	Acceptable Quality Level
Column	Width	4 %
	Depth	4 %
	Flange Thickness	4 %
	Web Thickness	4 %
	Orientation	4 %
Beam	Width	4 %
	Depth	4 %
	Flange Thickness	4 %
	Web Thickness	4 %
Baseplate	Length	4 %
	Width	4 %
	Plate Thickness	4 %
Connections (Column to Base)	Weld Size	4 %
	Weld Pattern	4 %
	Bolt/Rivet Size	4 %
	Number of Bolt/Rivets	4 %
	Anchor Bolt Sizes	4 %
	Number of Anchor Bolts	4 %
	Clip Angle Sizes	4 %
Connections (Column to Beam)	Weld Size	4 %
	Weld Pattern	4 %
	Bolt/Rivet Size	4 %
	Number of Bolt/Rivets	4 %
	Clip Angle Sizes	4 %
	Beam Seat Size	4 %

5.0 DEVELOPMENT OF FLOOR LOAD INVENTORY

A dead and live load inventory of the entire facility will be performed in order to provide input for the analysis review. The ground floor of certain buildings may be exempt from this inventory based on the foundation/slab construction, i.e. floating slabs, slabs supported directly on rock foundations, etc. Prior to performing the load inventory walkdown, a review of the construction will be performed and a determination made concerning the requirements for the ground floor. This determination will be established in the walkdown package for each building. All data collected in the field will be checked in the field. Prior to performing the load inventory walkdown, it is important to meet with the Building Superintendent to determine equipment that may be stored or temporarily positioned within the building. When that equipment is inventoried it should be so noted for purposes of dead and live load specification.

The Walkdown Team will inventory each level and specify significant loading either resting on or hanging from that floor or roof. Significant loads will be determined according to the screening criteria presented in Section 8.0 of this procedure. Only significant loads will be surveyed and recorded. Section 8.0 describes the basic flow and process for collecting floor loads.

Standard inspection forms will be used by each inspection team (Attachment 2) to ensure consistency of recorded information among all team members.

The inventory may be performed by several inspection teams consisting of two individuals per team. The Walkdown Team Leader will interface with the owner's responsible engineer to coordinate access to the facility. It is anticipated that a large majority of the surveys can be completed with sufficient accuracy without the need of special lifts or scaffolds to reach high areas. Most of the high areas may be surveyed from the floor below.

The critical attributes for components are (1) weight, (2) footprint, (3) eccentricity, (4) location.

These are required to be determined only if the components exceed the screening values discussed in Section 8.0. Each attribute is discussed in more detail in the following sections.

5.1 WEIGHT OF COMPONENT

Minimum screening values are to be used in order to eliminate the gathering of information having insignificant impact on the structural integrity or response of the buildings.

When the weight information is required, the weight of a component will be determined from drawings, catalogs, vendor contact, or by calculation methods.

5.2 FOOTPRINT OF COMPONENT

It is important to obtain the footprint of each piece of equipment to be surveyed and to specify the type of load distribution either as uniformly distributed, line load or as a point load.

The footprint (width and length) of the component will be determined from drawings or field inspections.

5.3 ECCENTRICITY OF COMPONENT

The center of gravity (c.g.) of the component will either be determined from drawings or by conservative calculations. The eccentricity of the component will be measured in the field to the supporting structure stiffness center (e.g., top of floor).

5.4 LOCATION OF COMPONENT

The location of the components shall be defined from the closest column lines. Three dimensions are required; elevation, N-S, and E-W. These dimensions will be specified on the standard inspection form. When no direct line of sight exists to building columns, a common reference point should be used to determine the distance of the equipment from the columns.

5.5 FIELD INSPECTIONS

In order to document the critical attributes of a component, the following applicable information is to be recorded by the Walkdown Teams.

<u>Structure</u>	<u>Component</u>	<u>Location</u>
Building Number	Equipment ID	Distances from Column Lines
Building Elevation	Equipment Type	Surface (Top or Bottom of Floor/Roof)
Floor/Roof	Model Number	Eccentricity from Supporting Structure
	Manufacturer	
	System	
	Size/Capacity	
	Insulation	
	Footprint	
	Support/Attachment Type	
	Pipe Diameter	

5.6 FLOOR LOAD DRAWINGS

The information collected by the Walkdown Teams will be entered into an electronic database for subsequent development of floor load drawings.

Each floor or bay will be subdivided into a grid of square/rectangular areas. These areas will essentially all be the same size except for those near the boundaries. For example, a span of 20.5 ft. may be divided into nine 2-ft. lengths and one 2 ft., 6-inch length. The load locations from the specified column lines will be converted into grid coordinates and the sum of all weights within each grid will be determined.

Floor load drawings will be developed using Integraph CAD format which will show the column lines (boundaries of each bay) and the location of the significant loadings for each bay. These drawings will describe the location, magnitude and nature (i.e. point, uniform, line) of the loading.

6.0 DEVELOPMENT OF RED-LINE DRAWINGS

6.1 STRUCTURAL FEATURES

A walkthrough inspection of each area within a building will also be performed for the purpose of identifying major configuration changes to the structural design of the building. Strength discontinuities, changes in member sizes, and joint connection or configuration, undocumented or enlarged openings, non-reinforced masonry walls, etc. are to be identified. Documentation of the walkthrough will be performed through the utilization of a checklist. This checklist is presented in Attachment 3. Major configuration changes will be noted and, subsequently identified (red-lined) on the respective design drawings or may be detailed on a separate

8 ½ x 11 calculation form and referenced on the red-line drawing. The red-line drawings and sketches will ultimately become an integral part of the walkdown package prepared and issued for each building.

The walkthrough inspection will also focus on specific details relative to the susceptibility of the building to wind and flood loads resulting from local precipitation (i.e., ponding on roofs). This involves the identification of parapet heights, roof contour, presence of drains, gutters or other relieving openings, and providing sketches of the attachment of building siding and roof decking to the principle structure or purlins.

Departures from structural design that represent a significant safety concern must be identified immediately to the attention of the Lead Project Walkdown Engineer for subsequent evaluation, documentation, and escalation as appropriate in accordance with plant specific procedures.

6.2 MASONRY WALLS

Many of the buildings at the Y-12 Plant were constructed of reinforced concrete and/or steel frames with unreinforced infilled hollow clay tile walls (HCTW). The infilled walls are part of the lateral load carrying system of these buildings. Also, there are nonstructural interior partitions constructed of wallboard, hollow clay tile, and concrete block. HCTW data that was collected for some buildings at Y-12 Plant is given in reference (Lockwood Greene Engineers, Inc., 1991).

The later-load-carrying capability of infilled HCTW is influenced by the boundary conditions between the walls and frame members, openings in HCTW, and eccentricities between the infilled wall and frame members. The following data will be gathered for the structural walls.

- (1) Location, type materials, and dimensions (length, height and thickness).
- (2) The boundary between the HCTW panel will be visually inspected to determine if the gap between the HCTW and frame is filled. The location and size of gaps will be documented. The location of missing or broken tiles, extensive cracking, or other significant damaged conditions should be documented. This is especially important in the upper corners of the infilled panels.
- (3) The location and dimensions of openings in the HCTW will be identified and documented. Small piping and conduits (outside diameter less than 6 inches) penetrating a wall will not be documented.
- (4) Eccentricities between the center of the HCTW and the center line of the frame members will be estimated and noted.

The above information will be documented on drawings. Also, location of nonstructural masonry partitions - will be indicated on the drawings.

7.0 SCREENING CRITERIA

7.1 BACKGROUND

The purpose of the screening criteria is to identify structurally significant equipment and system (piping, electrical cable trays, HVAC duct work, etc.) load information to be collected during walkdowns for later use in the natural phenomena analysis. The screening criteria are written for structural evaluations in accordance with UCRL-15910 dated June 1990 (Kennedy, et al., 1990).

Equipment or system weight may be screened-out when it can be considered small in comparison with the weight of the floor or the roof which supports the equipment or systems. If numerous pieces of equipment and systems are supported by the same roof or floor, the cumulative effects can be too large to be screened-out. Under this situation, an equivalent uniform load over the entire floor or roof should be calculated to account for the cumulative effects of components or equipment.

- **Pre-walkdown preparation work** - Prior to the initiation of load inventory walkdowns the floor weights should be calculated for each building. Available drawings and specifications of equipment and systems should be reviewed to obtain information on pipe size/schedules, insulation thickness, cable tray sizes, etc. This information should be included in the walkdown package.
- **Initial walkthrough** - An initial walkthrough inspection should be performed prior to the detailed load inventory walkdown. This should be performed to identify the types of equipment and systems in each area of the building and their relative weights (i.e. light, heavy). This provides an overall assessment as to whether the loading should be characterized as uniformly distributed across the entire bay or as point loadings or a combination of the two.

This initial walkthrough should generally be performed at the same time as the walkthrough inspection performed to identify major structural configuration changes as described in Section 7.0

- **Load Inventory Walkdown** - Any single piece of equipment whose weight equals or exceeds 10% of the floor weight must be identified and documented on Attachment 2. This includes describing the foot-print, height and other attributes as described on Attachment 2.

When a bay contains either a single piece or multiple pieces of equipment and the cumulative weight of this equipment does not exceed 10% of the floor weight, the weight of all pieces of equipment in that bay may be used to calculate the uniform load distributed over the bay. Attachment 2 should be used to reflect the uniform load distributed over the bay.

When a bay contains multiple pieces of equipment and the cumulative weight of that equipment exceeds 10% of the floor weight, the weight of all pieces of equipment in that bay should be accounted for either by considering the equipment as discrete point loads, as uniformly distributed loads or as a combination of the two. This requires the determination of the number of pieces of equipment and their approximate weight. If the equipment is light in nature (i.e. less than 250 lbs. each) and is generally spread throughout the bay it should be specified as a uniformly distributed load.

For example if there were 20 pieces of equipment within a 20x20 bay and the load for each piece of equipment was 250 lbs. cumulatively they would exceed the 10% floor load screening criteria and must be considered. Since each piece of equipment is relatively light and is spread throughout the bay, the loading should be specified as a 12.5 psf uniformly distributed load (i.e. $(20 \times 250) \div 400 = 12.5$ psf)

Depending on the congestion, sequencing and the number of pieces of equipment in a specified area, it may become necessary to place temporary tags or indicators on equipment that has been inventoried, for the purpose of assuring that every piece of equipment has been inventoried.

- When a piece of equipment reaches 10% of the story weight and it has an intermediate supporting structure judged to be flexible, the foot print, height, and support information should be recorded during the walkdown. This information may be used to prepare a combined structural equipment model in future

analyses. Generally speaking, a horizontal pump or a horizontal heat exchanger supported directly on the floor by adequate anchorages can be considered rigid. When there are steel structural members in-between rigid equipment and floor, the equipment may be flexible. Vertical tanks are usually flexible.

- Tables 7.1, 7.2, 7.3 and 7.4 may be used to determine weights for various equipment to include pipe, cable tray and HVAC duct, respectively.

Table 7.1 Piping support spans/loads . *

NORMAL PIPE SIZE	WATER SERVICE		STEAM, GAS OR AIR SERVICE	
Inches	Span (Ft)	Weight (Lb)	Span (Ft)	Weight (Lb)
1	7	14	9	18
2	10	51	13	47
3	12	130	15	114
4	14	228	17	183
6	17	535	21	399
8	19	955	24	685
12	23	2268	30	1488
16	27	3826	35	2191
20	30	6138	39	3065
24	32	8909	42	3973

* Reference (American Society of Mechanical Engineers, 1992) establishes the suggested maximum spans for piping installation. The resulting reactions for the suggested is tabulated. Table does not apply where actual spans are appreciably different or where there are concentrated loads (i.e., flanges, valves) between supports. Individual calculations should be provided in these cases.

Table 7.2 Cable tray support reaction loads.

TRAY SIZE			WEIGHT @ SUPPORT VERSUS % OF CABLE TRAY FILL (lbs)				
Width (in.)	Height (in.)	Support Span (in.)	10%	30%	50%	70%	100%
9	4	8	86	202	319	435	609
9	4	12	129	304	478	652	914
9	4	16	172	405	637	870	1218
18	4	8	151	383	609	842	1190
18	4	12	226	566	914	1262	1785
18	4	16	302	766	1211	1683	2380
24	4	8	183	493	803	1113	1577
24	4	12	274	739	1204	1669	2366
24	4	16	366	986	1605	2225	3155
36	4	8	260	725	1190	1655	2352
36	4	12	391	1088	1785	2482	3528
36	4	16	521	1451	2380	3310	4704

These are representative weights for cable trays with cables. For actual weights that are not listed in the table, use the equation shown below to calculate the support reaction loads.

$$WS = (W \times H \times CF\% \times L \times 2.69) \times 0.75 + (CTW \times L)$$

WS = Support reaction load (lbs.)

W = Width of cable tray (in.)

H = Height of cable tray (in.)

CF% = Percent of tray filled with cable

L = Length of cable tray between supports

CTW = Weight of cable tray (lbs./linear ft.)

Table 7.3 HVAC duct support reaction loads (lbs.) for ductwork with insulation.

DUCT SIZES						
	Height (in.)					
	12	18	24	30	36	48
Width (in.)						
12	340	426	511	596	681	851
18	426	511	596	681	766	936
24	520	606	693	799	866	1039
30	606	693	779	866	952	1126
36	716	806	895	985	1074	1253
48	895	985	1074	1164	1253	1432

These are representative weights for HVAC duct. For actual weights that are not listed in the table, use the equations shown below to calculate the support reaction loads.

$$WS = [2 \times L \times (H + W); \times [td \times ps + ta \times pa]$$

L = Length between supports (72in.)

H = Height of duct (in.)

W = Width of duct

td = thickness of duct (in.) - Follow guidelines with respect to duct sizes to determine thickness

ps = Density of steel (0.283 lbs./in.³)

ta = thickness of asbestos (Assume one inch)

pa = density of asbestos (0.089 lbs./in.³)

Use longest side of duct to determine gage thickness for calculating loads by the following:

<18: Use 22 gage thk. (0.0336 in.)

>18 but <36: Use 20 gage thk. (0.0396 in.)

>36: Use 18 gage thk. (0.0516 in.)

Table 7.4 HVAC duct support reaction loads (lbs.) for ductwork without insulation.

DUCT SIZES						
	Height (in.)					
	12	18	24	30	36	48
Width (in >)						
12	32.9	41.1	49.3	57.5	65.7	82.2
18	41.1	49.3	57.5	65.7	73.9	90.4
24	58.1	67.8	77.5	87.1	96.8	116.2
36	67.8	77.5	87.1	96.8	106.5	125.9
36	100.9	113.6	126.2	138.8	151.4	176.6
48	126.2	138.3	151.4	164.0	176.6	201.9

These are representative weights for HVAC duct. For actual weights that are not listed in the table, use the equation shown below to calculate the support reaction loads.

$$WS = [2 \times L \times (H + W)] \times [td \times ps]$$

8.0 WALKDOWN PROCEDURE STEPS

Figure 1 presents the essential steps in the performance of the structural walkdown within the scope of this plan. This principally involves indoctrination and training to project and site specific procedures, coordination requirements for site and building access, data collection, and documentation.

- Walkdown personnel will receive documented training to all necessary site specific procedures and the contents of this procedure prior to performing the required walkdown. The LPWE will maintain a log and copies of all applicable training records.
- The Walkdown Team Lead will be required to coordinate with Plant Operations, Building Superintendent, Security, Health Physics, various craft personnel, etc., as necessary for site and building access.

Specific note should be made to determine either proposed or ongoing building modifications that could have an impact on the walkdowns being performed. Additionally the location of any spare or temporary equipment should be discussed with a Building Superintendent prior to the performance of the load inventory walkdowns for the basic determination of live and dead loads.

This type of information should be reflected on Attachment 2.

- General and site-specific safety practices should be followed in order to subject personnel to minimal risk while obtaining walkdown data. Walkdown activities required to be performed in contaminated areas or areas subject to radiation exposure are to be properly planned and executed so as to keep personnel exposure as low as reasonably achievable (ALARA).

- Data collection and documentation will be based on the specific requirements of the walkdown package and the requirements of this plan. Specific walkdown requirements will be identified in the walkdown package scope prior to the initiation of the walkdown. A walkdown team, consisting of at least two members will gather data as required per this procedure. Actual data collection will be done by a combination of checklists, field notes, and marked-up drawings. Physical dimensions may be obtained by use of, but not limited to, tape measure, rule, angle-finder, and electronic distance meter. Calibration of electronic equipment will be documented per site specific procedures. Measurements obtained by use of electronic equipment shall be noted as such and equipment description, model and serial numbers will be listed on applicable data sheets for each specified measurement. All information will be neatly recorded on applicable worksheets and checklists (Attachments 1 and 3) provided by this plan, and on any additional sheets as necessary. Detailed sketches are required for each connection (column-base and column-beam) within the sample. This is outlined in Attachment 1. The walkdown package will be assembled in accordance with Attachment 4 and the Walkdown Team will ensure that all required data is correctly recorded, complete, signed, and dated prior to submittal to the LPWE.

FIGURE 1
WALKDOWN PROCEDURAL STEPS

9.0 DOCUMENTATION REQUIREMENTS

Information collected as a result of the structural walkdown will be governed by ES Engineering Procedure EP-C-20, Design Analysis and Calculations (DAC) (Martin Marietta Energy Systems, Inc., 1991) and documented in accordance with ES Engineering Standard ES-0.7, Design Analysis and Calculations (Martin Marietta Energy Systems, Inc., 1989). This information will be compiled and issued into a separate DAC for each building. The LPWE is responsible for the overall preparation and submittal of the DAC to ES for issuance. The Walkdown Team Lead has the responsibility for insuring the collection, documentation, and review of information prior to submittal to the LPWE. The collection, documentation, and review shall be in accordance with applicable sections of this procedure. A sample walkdown package is presented in Attachment 4.

10.0 REFERENCES

Department of Defense, Military Standard, "Sampling Procedure and Tables for Inspection by Attribution," MIL-STD-105E, U. S. Department of Defense, 10 May 1989.

American Society of Mechanical Engineers, "An American National Standard, ASME Code for Pressure Piping, B31," ASME B31.1-1992 Edition, American Society of Mechanical Engineers, July 1, 1992.

R. P. Kennedy, et al. "Design and Evaluation Guidelines for Department of Energy Facilities Subjected to Natural Phenomena Hazards," Revision 1, UCRL-15910, U. S. Department of Energy, June 1990.

Martin Marietta Energy Systems, Inc., Engineering Procedure EP-C-20, "Design Analysis Calculations," March 28, 1991.

Martin Marietta Energy Systems, Inc., Engineering Standard ES-9.7, "Design Analysis Calculations (DAC), General," August 16, 1989.

"Building Wall Identification Survey for Buildings 9204-4, 9206, 9212, 9215, 9995, and 9998 at Y-12," prepared by Lockwood Greene Engineers, Inc. for U. S. Department of Energy, October 4, 1991.

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ATTACHMENT 1

WALKDOWN WORKSHEETS

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INSTRUCTIONS FOR COMPLETING WORKSHEETS AND CONNECTION SKETCHES

- A. The LPWE or designee will assign the location, reference drawing, detail number, and other information in the design column based on design drawings and other applicable references prior to the initiation of the walkdown.
- B. The Walkdown Team will provide recorded and checked information for all items in the as-configured column based on data obtained during the walkdown.
- C. The Walkdown Team will answer applicable questions on each worksheet and provide comments and sketches as necessary.
- D. The Walkdown Team will provide details (sketches) of each selected connection to the sample column (i.e., column-base, column-beam, brace). These sketches will include, but are not limited to, the following items:
 - 1. Bolt diameter - to be determined by measuring the dimension across the flat sides of a hex bolt head or a hex nut.
 - 2. Bolt type - self drilling expansion anchor, wedge bolt, grouted anchor, undercut anchor, etc.
 - 3. Bolt material - high strength A325 or A490 bolt will be identified by markings on the bolt head. If the markings are not visible, due to paint or other reasons, the bolt will be assumed to be consistent with the design drawings.
 - 4. Bolt/Rivet spacing - the edge distances and spacings of bolts/rivets shall be measured and noted for base plates, clip angle and other connecting plate.
 - 5. Plates - the dimensions and thicknesses for connection plates will be measured unless they are inaccessible, in which case the plates will be assumed to meet the design drawings.
 - 6. Rivets - diameter of rivets shall be determined by measuring the rivet head diameter.
 - 7. Welds - weld size, type (fillet, full or partial penetrations, etc.) and configuration shall be shown. Weld Fillet gages may be used for measuring the thickness of the weld.
 - 8. Clip or Seat Angles - the leg size, length and thickness of clip and seat angles will be included in the connection sketches.
- E. Measurements will be taken using rules, calipers or other measuring devices capable of measurements within the accuracy specified (measured). The measurements will then be recorded as measured. This data will be compared to the design data in order to verify the element size. In comparing the field measurements to design data, consideration must be given to mill tolerances. The measured data may be rounded to the nearest decimal equivalent ($\pm$) presented under the rounded column. For example the design column size is a W12x190. The actual measurement for the depth of the beam is 14.33". The design data for the depth of the beam is 14.38". By rounding the 14.33 to the nearest $\frac{1}{8}$ -inch decimal equivalent, the value is 14.375 which then compares favorably to the design data.

<u>ITEM</u>	<u>MEASURED</u>	<u>ROUNDED</u>
1. Structural Shapes		
a) Width	1/16	1/8
b) Depth	1/16	1/8
c) Thickness	1/32	1/16
2. Clip/Seat Angles		
a) Leg Length	1/16	1/8
b) Thickness	1/32	1/16
3. Plates		
a) Length	1/8	1/4
b) Width	1/8	1/4
c) Thickness	1/32	1/16
4. Bolts/Rivets		
a) Diameter	1/16	1/8
b) Spacing	1/8	1/4
5. Welds		
Weld sizes will be determined using special weld fillet gauges relying on the best fit.		
The weld size will be determined at each mid-point along any length of weld longer than 1-inch.		
6. Location		
Equipment locations will be recorded to the nearest foot.		

COLUMN ATTACHMENT WORKSHEET

Loc. _____		
Ref. DWG: _____ Det: _____		
	Design Nom: _____	As-Config.
d		
bf		
tw		
tf		
Web Direction	N/S or E/W	N/S or E/W
x		
z		
tbp		

1. Is Column welded to Base Plate? Y or N.
If Yes, Indicate location. _____
A. All round. B. Web only. C. Outside Flanges only. D. Web and Outside Flanges
2. Are Clip Angles used? Y or N.
If Yes, are Clip Angles Welded, Bolted, or Riveted, and indicate location. _____
A. Web B. Flanges C. Web and Flanges
3. Are Welded Bar Stiffeners used? Y or N.
If Yes, indicate location. _____
A. Web B. Flange C. Web and Flange
4. Are Anchor Bolts used for attachment of Base Plates? Y or N.
If Yes, indicate Qty. _____ and location. _____
A. Web B. Flange C. Corners
5. Comments.

Signatures:

Design Info. Prep. _____ Date _____ As-Configured Prep. _____ Date _____
 Design Info. Verif. _____ Date _____ As-Configured Verif. _____ Date _____

BEAM ATTACHMENT WORKSHEET

Location: _____ Ref _____ DWG: _____ Detail _____		
	Design Nominal WF _____	As-Configured
d		
bf		
tf		
tw		

1. Are clip or seat angles used to make beam end connection? Y or N.
 If Yes, Are Clip or Seat Angles Bolted, Riveted, or Welded and indicate location(s). _____
 A. _____ side of Web only. B. Both sides of Web. C. Bottom of flng. only. D. Top & Bottom of flanges.
 If No, explain.

2. Comments.

Signatures:

Design Info. Prep. _____ Date _____ As-Configured Prep. _____ Date _____
 Design Info. Verif. _____ Date _____ As-Configured Prep. _____ Date _____

ATTACHMENT 2
LOAD INVENTORY DATABASE

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LOAD INVENTORY DATA BASE

Building :
 Elevation :
 Floor/Roof :

Equipment ID	Type	Model Number	Manufacturer	System	Insulation	Support/ Attachment Type	Location	Surface (Top/Bottom)	Footprint	Eccentricity	Capacity/ Size	Weight	Term/Perm	Reference
XPMP	Centrifugal	C1234	I-R	Fire Water	No	Base Plate/Bolted	5'S CL5 10'E CLV	Top			3000 gpm	2800	Permanent	XXXX

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ATTACHMENT 3

WALKTHROUGH INSPECTION CHECKLIST

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WALKTHROUGH CHECKLIST

Building: _____

Area Inspected: _____ Elevation: _____

		<u>Yes</u>	<u>No</u>	<u>Comment</u>	<u>Initial</u>
1.	Are there visible signs of building settlement?	—	—	_____	—
	Cracking of load-bearing walls? Corrosion?	—	—	_____	—
2.	Are column bases of standard, acceptable configurations?	—	—	_____	—
3.	Are there any missing/additional members?	—	—	_____	—
4.	Are columns continuous without strength discontinuities?	—	—	_____	—
5.	Are column orientations consistent?	—	—	_____	—
6.	Are column sizes consistent?	—	—	_____	—
7.	Are column splices consistent with drawings?	—	—	_____	—
8.	Are there un-reinforced masonry walls?	—	—	_____	—
9.	Are there cut-outs or notches on columns or primary beams?	—	—	_____	—
10.	Are connections of standard acceptable configurations?	—	—	_____	—
11.	Are connections consistent with design drawings?	—	—	_____	—
12.	Do structural welds appear acceptable (continuous, adequate size, free of defects)?	—	—	_____	—
13.	Are there any undocumented openings in floors?	—	—	_____	—
	Are all opening sizes consistent with design drawings?	—	—	_____	—
14.	Do beam sizes appear consistent with design drawings?	—	—	_____	—

Building: _____

Area Inspected: _____ Elevation: _____

		<u>Yes</u>	<u>No</u>	<u>Comment</u>	<u>Initials</u>
15.	Are the braces installed per design drawings?	—	—	_____	—
16.	Are there structural configuration changes that represent significant safety concerns? (Note: Notify LPSE Immediately if this item is determined to be "YES".)	—	—	_____	—
17.	Are parapet heights consistent with design drawings?	—	—	_____	—
18.	Is there a potential for ponding? If no, provide justification.	—	—	_____	—
19.	Does the roof contain drains or other openings for ponding relief?	—	—	_____	—
20.	Are drains and other openings free from debris or other obstacles?	—	—	_____	—
21.	Is siding securely attached to building structure? Provide sketch of typical details.	—	—	_____	— ..
22.	Is roof decking securely attached to building structure? Provide sketch of typical detail.	—	—	_____	—

ATTACHMENT 4
SAMPLE WALKDOWN PACKAGE

MARTIN MARIETTA ENERGY SYSTEMS
DESIGN ANALYSIS AND CALCULATIONS -(DAC)

PROJECT NO/TITLE		STRUCTURAL WALKDOWN OF THE 9212 BUILDING COMPLEX	
PROJECT ENGINEER		RON KROON	ESO 921200
LOCATION SITE		Y-12	BUILDING(S) OR AREA/EIN C-1 WING

[illegible]

Upon Completion Forward For Signature / Date To:

LEAD DESIGNER	G.D. FELPEL SAIC	RED	M. BUTALA	SUPERVISOR	D. DENTON
	R. KROON	PJ		RECEIVED ENGR. SERVICES - RC	

MARTIN MARIETTA ENERGY SYSTEMS DESIGN ANALYSIS AND CALCULATIONS • (DAC)

DATE STARTED

PROJECT NO./TITLE STRUCTURAL WALKDOWN OF THE
9212 BUILDING COMPLEX

CALC. NO.:

DAC. - ST-921200-A027

LOCATION SITE

Y-12

BUILDING(S) OR AREA

C-1 WING

ESO

921200

PJ

BOB FEHLING

TEAM • PE

RON KROON

RED

M. BUTALA

SUPV

DEPT.

STRUCTURAL

DESIGNERS (CONTRIBUTING)

Applies to Project - WBS/Items/Systems:

And Reports/Dwgs./Rev. No.:

Signature / Date

Prepared by:

REV. 0	REV. 1	REV. 2	REV. 3
T.C. 4/15/93			
Lead Designer/IFA Date: GDFalpel / 4-21-93			
Other Designers: See Page ii			
Review - Approvals:			
Checked by: H. Banerjee			
Approved by RED: M. Butala 6/24/93			
Approved by Supervisor: [Signature] 6/24/93			
Reviewed by PE: [Signature] 6/24/93			
Other:			

PAGE NO.

CONTENTS DESCRIPTION (List Attachments)

st this DAC on contents page

TABLE OF CONTENTS

	Page
1.0 INTRODUCTION	1-1
2.0 STRUCTURAL WALKTHROUGH RESULTS	2-1
2.1 INTER-STRUCTURAL CONNECTIONS	2-1
3.0 STRUCTURAL MEMBER ELEMENTS	3-1
4.0 SAMPLING RESULTS	4-1
5.0 MAJOR CONFIGURATION CHANGES	5-1
6.0 RED-LINE DRAWINGS	6-1
7.0 ROOF AND FLOOR LOAD DRAWINGS	7-1
7.1 UNIFORM LOAD INVENTORY PROCEDURE	7-2
7.2 DEVELOPMENT OF UNIFORM LOADING INTENSITY	7-3
7.3 FIELD LOAD SURVEY PROCEDURES	7-4
8.0 MASONRY WALL CONFIGURATION AND PENETRATION MAPS	8-1
9.0 MATERIAL PROPERTIES	9-1
9.1 FOUNDATION CONDITION	9-1
10.0 REFERENCES	10-1
11.0 REFERENCE DRAWING LIST	11-1

ATTACHMENTS

	Page
A. WALKTHROUGH APPROACH AND PROCEDURE	A-1
B. COLUMN AND BEAM FIELD INSPECTION	B-1
C. LOAD INVENTORY DATABASE	C-1
D. FLOOR & ROOF LOAD CALCULATION AND FIELD NOTES	D-i

1.0 INTRODUCTION

A comprehensive field inspection of the Building 9212 Complex was performed according to the *Structural Walkdown Plan for Natural Phenomena Engineering Analyses* dated September 1992 (Ref. 10.1). Building 9212 is in the Y-12 plant located in Oak Ridge, Tennessee. An overall view of the Building 9212 Complex is shown in Figure 1.1.

This report documents the results of a structural walkdown of the C1-wing portion of Building 9212 Complex. C1-wing is a two-level steel structure with reinforced concrete slab on grade level without shear-resistant hollow clay tile infilled walls. The second level is an interior balcony. In plan, the C1-wing extends from column lines N' to R' (2 bays) in the north-south direction and from column lines 4' to 16 (12 bays) in the east-west direction with overall dimension of 48 ft x 278 ft.

The overall task is intended to:

- 1) Provide a documented overall description of the general condition for this area of Building 9212 Complex.
- 2) Establish and document a statistical determination, based on the methodology of MIL-STD-105E (Ref. 10.9), that the essential structural members are consistent with design drawings.
- 3) Document significant changes to the structural configuration of this area.
- 4) Document the intensity of loading on the roof and floors of this wing, and provide load maps.
- 5) Document the configurations of load carrying masonry walls for both vertical and horizontal loads. Provide masonry wall elevation drawings showing wall conditions and penetrations.
- 6) Provide a complete list of material properties and reference drawings suitable for developing mathematical models to update the existing analyses (Ref. 10.8) and perform future analysis of Natural Phenomena Hazard loadings. (e.g. wind, rain, and seismic)

The level of detail provided by this walkdown is not sufficient to document the complete "as-built" configuration of the structure. However, this effort complies with the requirements of UCRL-15910 for natural phenomena loading by collecting pertinent information for use in performing structural analyses.

BUILDING COMPLEX 9212

Figure 1.1 Overall view of Building Complex 9212

2.0 STRUCTURAL WALKTHROUGH RESULTS

A structural walkthrough was conducted to determine the general condition of the structure. This walkthrough was also used to determine if any major changes to the structure have been made which are not indicated on the drawings in hand. A detailed description of the walkthrough and the Walkthrough Data Sheets is contained in Attachment A.

It was found that this wing of the structure is in fair condition with various signs of chemical corrosion but no significant structural degradation.

A large number of roof bracings was missing or notched. The field observations are reported in Section 5.

2.1 INTER-STRUCTURAL CONNECTIONS

As shown in the original design drawing E2f-12124, C1-Wing structural frame is not connected to the Headhouse nor the adjacent building Wings. The roofs are continuously covered by roofing material but no structural ties exist.

3.0 STRUCTURAL MEMBER ELEMENTS SAMPLING INSPECTION

The purpose of the sampling inspection was to verify, based on a statistical determination, that the essential structural members are consistent with design drawings. Determinations made included columns, beams, column bases and connections.

The procedure was based on inspection by attributes, and the methodology allowed only a "yes" or "no" determination. The inspection attributes were defined as column size, column orientation, beam size, and member connections conforming with design drawings.

Column sizes, column orientations and beam sizes that do not conform with design drawings, even if they are larger than specified, are failure attributes. The bending properties of the elements affect the dynamic characteristics of the analysis if the properties are different from those specified.

For determining column and beam sizes, the member depth, member width, and flange thickness were field measured. These measured values were compared with limits established for each parameter established from the nominal dimension in *AISC Manual* (Ref. 10.2) and the measurement tolerance provided on Page A1-3 of the Structural Walkdown Plan. From these field measurements, the as-built beam designation was determined and compared with design drawings.

The acceptance criteria for the sample approach are a function of the lot size, inspection level, and acceptable quality level. A normal inspection level was used in this sampling approach as opposed to reduced or tightened inspection level. When the MIL-STD procedure was followed using a 4% AQL and the samples were acceptable, it could be inferred that the total column population had a four-percent or less defective rate with a probability of 0.95.

Table 3.1 lists the total population of column elements along with other pertinent information. A randomly generated number, assigned to each column, is also shown in this table. In Table 3.2, the columns are listed in ascending random number sequence. Candidate inspection elements were selected sequentially beginning at the top of the list. When an element was deemed inaccessible by field personnel, it was so noted and the next sequential element listed in Table 3.2 was substituted. Substitution was continued as necessary until the required sample size of 13 was inspected.

For each inspection sample, the column, one of its connecting girders, and that girder's connection to the column and its baseplate were also examined. See Attachment B for specific field notes.

Table 3.1 C1-Wing Column Inspection Population

Original Sequence	Column Location	Random Number	Inspection Order
1	R'4	877	32
2	R'5	529	15
3	R'6	845	31
4	R'7	571	16
5	R'8	709	24
6	R'9	744	26
7	R'10	440	10
8	R'11	489	13
9	R'12	501	14
10	R'13	698	23
11	R'14	833	30
12	R'15	447	11
13	P'4	745	27
14	P'5	939	35
15	P'6	602	18
16	P'7	433	9
17	P'8	809	29
18	P'9	891	33
19	P'10	803	28
20	P'11	207	4
21	P'12	736	25
22	P'13	652	21
23	P'14	465	12
24	P'15	205	3
25	N'4	341	7
26	N'5	996	36
27	N'6	193	2
28	N'7	639	19
29	N'8	118	1
30	N'9	671	22
31	N'10	367	8
32	N'11	593	17
33	N'12	334	6
34	N'13	901	34
35	N'14	241	5
36	N'15	740	20

Sample size required = 13

file: C1colsam.wb1

Table 3.2 C1-Wing Column Inspection Sequ

Inspection Order	Column Location	Field Action	Substituted By
1	N'8	inaccessible	R'5
2	N'6	inspected	
3	P'15	inspected	
4	P'11	inspected	
5	N'14	inspected	
6	N'12	inaccessible	R'7
7	N'4	inspected	
8	N'10	inaccessible	N'11
9	P'7	inspected	
10	R'10	inspected	
11	R'15	inspected	
12	P'14	inspected	
13	R'11	inaccessible	P'6
14	R'12	inaccessible	
15	N'15	inaccessible	
16	R'5	inspected	
17	R'7	inspected	
18	N'11	inspected	
19	P'6	inspected	
20	N'7		
21	P'13		
22	N'9		
23	R'13		
24	R'8		
25	P'12		
26	R'9		
27	P'4		
28	P'10		
29	P'8		
30	R'14		
31	R'6		
32	R'4		
33	P'9		
34	N'13		
35	P'5		
36	N'5		

Sample size required = 13

file: C1colsam.wb1

4.0 SAMPLING RESULTS

Field inspection notes were reviewed by experienced engineers and a pass/fail determination, based on the tolerance provided in the walkdown plan, was made for each attribute assessed. The required sample size is 13. The first available 13 columns were inspected. The inspection worksheets and assessments of attributes are included in Attachment B. The results are summarized below:

- Column and girder orientation

All inspected column and beam orientations agreed with the original design.

- Columns and girder cross-section

Of all the inspected sample columns or girders, there were no deviant conditions on the attributes. All of the inspected elements were installed as specified in the original design drawings. Therefore, no column/beam discrepancy was identified.

- Column-to-base connection.

From the final inspected samples, no column-to-base connection was accessible for inspection.

- Girder-to-column connection.

All inspected girder-to-column connections satisfied design drawing requirements.

5.0 MAJOR CONFIGURATION CHANGES

The cross-bracings below the roof beams were cut and severely notched. The as-noted configuration is shown on next page.

G LAGERBERG 6 APR 93

JOHN RAST
4/6/93

TC 4/9/93

GNL 930310 -6

6.0 RED-LINE DRAWINGS

The as-configured cross-bracings below the roof are shown here.

property of
SAIC,
removed.

7.0 ROOF AND FLOOR LOAD DRAWINGS

This section provides detailed roof and floor dead load information for this portion of the complex. Loadings considered include equipment, partitions, piping, HVAC ducting, conduit, cable trays. The information is presented as load maps that indicate both uniform and concentrated loads. The design live loads are noted on the maps but not included in the uniform dead load. Major structural elements, such as steel column, girder, HCTW shear wall, that will be modeled in the structural analysis as the finite elements, are not included in the map as dead load.

Concentrated loads are discrete equipment loads having a total weight equal to or greater than 10% of the dead weight of the bay floor or roof deck carrying the equipment. Equipment footprints are indicated on the load map drawings and are shown in detailed partial plans and entered in a database contained in Attachment C. The vertical eccentricity of the concentrated load's centroid is also noted.

Uniform dead loads supported by roofs and floors are indicated on the load maps as area loads. The uniform dead load consists of loading supported by the roof or floor on its upper surface, the roof or floor's self weight, and loading suspended from the underside of the floor or roof. Load intensities are noted in uniform load legends on each map.

To obtain the bay area load intensities, a walkthrough of the structure was used to group the bays into light, moderate and heavy load categories. After the bays were grouped, a survey of a typical bay was performed. Loads in the survey included equipment not qualifying as a concentrated load, partitions, piping, conduit, cable trays, HVAC and other miscellaneous items. These loads were summed and applied as a uniformly distributed load over the total bay. This process was performed for each load group, i.e., light, moderate and heavy load groups.

The field notes and calculations performed to develop the roof and floor load drawings are in Attachment D.

7.1 UNIFORM LOAD INVENTORY PROCEDURE

Terminology used in this procedure:

Loaded Floor	A major load-bearing horizontal structural surface that is supported by the structural columns. For example, the first floor above the basement, the mezzanine floor, and roof are "loaded floors." Slabs on grade are not loaded floors. In this procedure, LOAD FLOOR or FLOOR is used interchangeably with LOADED FLOOR. Each floor has two surfaces, namely, a top surface and a bottom surface.
Top Surface	The top surface of a loaded-floor, i.e. the surface on which equipment is supported, with or without anchorage.
Bottom Surface	The underside of a loaded-floor, to which equipment is attached by suspension.
Structural bay	A rectangular loaded-floor area surrounded and identified by four intersecting structural column lines. In this procedure, the term BAY is used interchangeably with STRUCTURAL BAY.
Load	The weight of the equipment that is either suspended or supported by the loaded floor. Examples are machinery, glovebox, stack, piping, and tanks.
Support type	The method of the load attachment, either suspended or supported.
Dead Load	The weight of either concentrated or uniform load that is permanently carried by the loaded floor. Temporary or transient loading is not counted as dead load.
Live Load	Temporary and transient loading. Established by original design, normally noted on design drawing and posted in the building.

Concentrated Load	An equipment or substructure dead load. Load whose total weight within its footprint is greater than or equal to 10% of the gross floor self weight of an entire floor bay. For concrete floors, equipment weights heavier than 4,000 pounds are generally considered a concentrated load. For a steel floor (mezzanine floor), 500 pounds is generally considered a concentrated load.
Uniform Load	The distributed weight of equipment or substructures not qualifying as concentrated loads.

7.2 DEVELOPMENT OF UNIFORM LOADING INTENSITY

Determination of load intensity on a loaded floor (top surface for example) was accomplished in the following manner. The existing load condition within a bay relative to the loading condition of all bays composing the loaded floor was established. The uniform load condition for a loaded floor was visually surveyed. Then a bay for which uniform load intensity best represented the average load level of all the bays on the loaded floor was selected. The average loaded bay ideally was one representative of most of the bays on the loaded floor. Some bays may have carried heavier uniform loading, while others may have carried smaller uniform loading. Uniform load level was based on the following parameters: the volume of similar kinds of equipment, the weights of different kinds of equipment, the total number of pipes, ducts, conduits and cable trays, etc. Moderate bay load in the field was defined as the average (based on volume, number of pipes, etc.) intensity of the total loading surveyed.

Each bay was grouped with similarly loaded bays, according to the load intensity it carried relative to the average loaded bay. Generally three load intensity categories used were light, moderate (average), and heavy. These distinctions were subjective. Where these grouping guidelines were inadequate, the number of groupings were increased or decreased to adequately describe the floor loading.

From each of the loading groups, a representative bay was selected and a detailed load inventory was recorded. The field inspection information was examined and detailed load calculations were made as required. This process minimized the subjectivity of the field inspection. The magnitude of uniform loading for each bay was determined from field information, handbooks (Refs. 10.2, 10.3, 10.4, 10.5, 10.6), vendor documentation, and calculation. The process was repeated for each side of each loaded floor in the structure. Load drawings were generated for each loaded floor.

7.3 FIELD LOAD SURVEY PROCEDURES

- Before the start of field work, each inspection team member was issued a field inspection procedure handbook and a general set of building layout and structural drawings including a set of master plans showing the floor bays and elevations to be surveyed.
- For each surface of the loaded floor surveyed a key plan was prepared and indicated relative load intensities and representative bays for which a detailed survey was performed.
- Prior to commencement of the dead load inventory, each field team completely walked through and surveyed all dead loading to which the structure is subjected.
- A threshold concentrated load was determined based on 10% of the supporting loaded floor self weight.
- The equipment loading on each bay was categorized as concentrated and/or uniform loading. Recording of these two load categories in the field was performed differently and is described below.

7.3.1 UNIFORM LOAD SURVEY PROCEDURE

Uniform dead loadings for all the bays on the structure were grouped according to similarity of load intensity as previously discussed.

- Each loaded floor surface was surveyed and grouped independently.
- The number of load groupings was minimized; however, sufficient categories were identified to adequately describe the general intensity of loading applied to the subject surface. Generally, light, moderate and heavy load categorizations were sufficient to adequately describe the distribution of uniform load over a floor surface.
- A uniform dead load map was made to reflect the load grouping assignments for each bay of the surveyed floor surface. Generally a load grouping applied to a rectangular bay bounded by column lines.

- A detailed load inventory of an area typical of each identified load grouping was conducted in the field. The resultant uniform dead load was calculated and applied to all areas of the group. For future reference, the calculation and the field notes are contained in Attachment D.
- The total load on a roof or floor was determined by summing the roof's or floor's self weight and the uniform dead loading from both surfaces of the roof or floor.

7.3.2 CONCENTRATED LOAD SURVEY PROCEDURE

- Potential concentrated loads were identified by recording the location, footprint, weight, and available vendor identification of the candidate concentrated load on a case by case basis. When it appeared unlikely that vendor-supplied weights would be found, the inspection team described the piece of equipment in sufficient detail that allowed a reasonable load and eccentricity (distance of C.G. above/below surface) to be calculated.

STRUCTURAL DRAWING REFERENCES:

S2E 116519	E2E 12074	E2F 12139
EA 47159	E2E 12434	E2F 14200
EA 47160	E2E 12645	E2F 12625
E2F 12124	E2E 12674	E2F 16037
		E2F 16039

															TEL-NO. MAILING OR-NO. SPECIFIED FUNCTIONS: 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 									
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ONY
5'/1027'

BUILDING 9212 COMPLEX

																				TELEPHONE		DES		MARTIN MARIETTA operated for the GOVERNMENT OF DENVER under U.S. GOVERNMENT contract DD FORM 1, November 1980		NATURAL PHENOMENA ENGINEERING ANALYSIS BALCONY LOADING BUILDING 9212 C1-WING WALKDOWN OF 9212 COMPLEX		TYPE P	
																				UNLESS OTHERWISE SPECIFIED		CHK 7/21/93							
																				FUNCTIONS - XX DECIMALS & XX INCHES & XX ANGLES BREAK SHARP CORNERS FROWN		SECT DEPT & PLANT							
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(A) CHIP BURNER S.S. ENCLOSURE
(B) DRY GLOVE R1003, CODE 80

PARTIAL PLAN 3
A273/A274

NOTES:

1. FOR GENERAL NOTES SEE S2B921200A272
2. COMPANION DRAWING: S2B921200A273

<p>UNLESS OTHERWISE SPECIFIED</p> <p>FRACTIONS & DECIMALS & ANGLES & DIMENSIONS SHALL BE IN INCHES & FEET</p>										<p>DESIGNED BY: T C 4/21/93</p> <p>CHECKED BY: [Signature]</p> <p>DATE: 4/21/93</p>										<p>MARTIN MARICETTA MARTIN MARICETTA ENERGY SYSTEMS, INC.</p> <p>DESIGNED FOR THE OPERATION OF CHEMICAL WASTE TREATMENT SYSTEMS</p>									
<p>PROJECT: NATURAL PHENOMENA ENGINEERING ANALYSIS</p> <p>CONCENTRATED BALCONY LOADING MAP</p> <p>BUILDING 9212 C1-WING</p>										<p>WALKDOWN OF 9212 COMPLEX</p>										<p>TYPE: U</p>									
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- 1.FOR GENERAL NOTES SEE
S2B921200A272
2.COMPANION DRAWING:
S2B921200A272

																				TOLERANCES UNLESS OTHERWISE SPECIFIED		DES		DATE		MARTIN MADRICH NORTH PHENOMENA ENERGY SYSTEMS, INC. Approved For the CLIENT by the ENGINEER in accordance with the provisions of the Professional Engineering Act of 1987, Chapter 10, Section 10.01, and the rules and regulations of the Board of Professional Engineers, State of California. DATE: 7/2/93	
																				FRACTIONS & XX DECIMALS & XX INCHES & XX FEET & XX FEET & XX FEET		CHK		7-2-93		NATURAL PHENOMENA ENGINEERING ANALYSIS CONCENTRATED ROOF LOADING MAP BUILDING 9212 C1-WING	
																				R1		FE				WALKDOWN OF 9212 COMPLEX	
																				R2		CR				TYPE P	
																				R3		PT				CLAS U	
																				R4		RED				REV D	
																				R5		DATE		SCALE		ID	
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(A) STACK
(B) EF 518
PARTIAL PI

HVA[†][illegible]

8.0 MASONRY WALL CONFIGURATION AND PENETRATION MAPS

This section documented the field survey results of the configurations of HCTWs. A previous work (Ref. 10.7) was used as reference. The drawings provide masonry wall elevation details and plan views showing wall location, type of material, dimension, eccentricity, and thickness of masonry walls. The location of missing or broken tiles, extensive cracking, or other significant damaged condition were documented. The location and dimensions of openings in the HCTW were identified and documented. The eccentricity between the center of the HCTW and the center line of the frame members were estimated and noted.

6.57'

BUILDING 9212 COMPLEX

REVISIONS 1. DATE: 11/11/11 BY: [Signature] FOR: [Signature] 2. DATE: 11/11/11 BY: [Signature] FOR: [Signature] 3. DATE: 11/11/11 BY: [Signature] FOR: [Signature]										TOLERANCES UNLESS OTHERWISE SPECIFIED FRACTIONS: 1/8" DECIMALS: 0.03125" ANGLES: 1/4° FINISH: AS SHOWN										DESIGNED: [Signature] DRAWN: [Signature] CHECKED: [Signature] DEPT. & PLANT: [Signature]										MARTIN MARIETTA MARTIN MARIETTA ENERGY SYSTEMS, INC. 10000 W. 11TH AVENUE, SUITE 1000, DENVER, CO 80202 303-750-0000									
PROJECT: NATURAL PHENOMENA ENGINEERING ANALYSIS BUILDING 9212 C1-WING WALKDOWN OF 9212 COMPLEX																																							
1. 11/11/11 2. 11/11/11 3. 11/11/11										4. 11/11/11 5. 11/11/11 6. 11/11/11										7. 11/11/11 8. 11/11/11 9. 11/11/11										10. 11/11/11 11. 11/11/11 12. 11/11/11									
SCALE: 1" = 10'-0" NOTED: [Signature]										DATE: 11/11/11										13. 11/11/11 14. 11/11/11 15. 11/11/11										16. 11/11/11 17. 11/11/11 18. 11/11/11									

8-2

COMPANION DRAWINGS:
S2B921200A512 AND
S2B921200A513

1027'

BUILDING 9212 COMPLEX

TEL: 800-451-7273 FAX: 800-451-7273 10000 WILLOW CREEK SUITE 100 DALLAS, TEXAS 75243															DES: S.A.M. NEWBY CHK: T.C. 4/26/93 DEPT & PLANT:															MARTIN MARIETTA MARTIN MARIETTA ENERGY SYSTEMS, INC. Provided for the requirement of DOE under G.A. agreement contract #D-00-000000 DOE HHS, Tennessee - Paducah, Kentucky														
FUNCTIONS: 1. SEE DESCRIPTIONS 2. SEE DESCRIPTIONS 3. ANGLES & 4. SPREAD SHEET 5. OTHER															FE: _____ CR: _____ PJ: _____ REC: _____ DATE: _____															NATURAL PHENOMENA ENGINEERING ANALYSIS BALCONY WALLS BUILDING 9212 C1-WING WALKDOWN OF 9212 COMPLEX														
1 40 47 20 3 C S B Y-12 9212 R 0 0 SCALE: 1" = 10' NOTED:															1 40 47 20 3 C S B Y-12 9212 R 0 0 SCALE: 1" = 10' NOTED:															1 40 47 20 3 C S B Y-12 9212 R 0 0 SCALE: 1" = 10' NOTED:														
SHEET: _____ OF: _____ DATE: _____															SHEET: _____ OF: _____ DATE: _____															SHEET: _____ OF: _____ DATE: _____														

COMPANION DRAWINGS:
S2B921200A515 THRU
S2B921200A516

LOOR
015'

BUILDING 9212 COMPLEX

TO: OWNER FROM: ENGINEER DATE: 5/24/93 BY: TC 4/24/93 PROJECT: NATURAL PHENOMENA ENGINEERING ANALYSIS BUILDING 9212 CI-WING WALKDOWN OF 9212 COMPLEX															MARTIN MARICETTA MARTIN MARICETTA ENERGY SYSTEMS, INC. 10000 N. 10th Ave., Suite 100, Phoenix, Arizona 85021 (602) 998-1000																													
FUNCTIONS: 1. DESIGN 2. ANALYSIS 3. DRAWING 4. CHECKING 5. REVISIONS 6. APPROVALS 7. SPECIAL STUDIES 8. OTHER															PE CR PJ RD															1 48 41 28 PLANT BLOC PL SHEET OF CLASS 3 C S B Y-12 9212 R 0 0 U SCALE NOTED DT S2B921200A514 REV 0														
REVISIONS: 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____															REVISIONS: 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____															REVISIONS: 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____														

9.0 MATERIAL PROPERTIES

This section provides a list of material properties and their reference drawings suitable for developing mathematical models to perform analyses for Natural Phenomena Hazard loadings. (e.g. wind, rain, and seismic).

The information given on page 9-2 was obtained from drawings cited:

Material	Reference	Code of record
Concrete	E2E-12645	ACI-318
Concrete block masonry	E-A-54701*	ASTM C-90
Masonry cement	E-A-54701*	ASTM C-91, type 11
Structural steel	E2E-12074	ASTM A-7, AISC-1947
HCTW	E-A-54701*	ASTM C-34, gr. LBX

* Standards were not found for C-1 wing. It is assumed Standards used for C1 wing were similar to those found on the referenced drawing.

HCTW weights were obtained from Ref. 10.12. Other properties will be determined by Center for Natural Phenomena Engineering (CNPE) of Martin Marietta Energy Systems.

9.1 FOUNDATION CONDITION

The Y-12 plant is located in Bear Creek Valley. The Bear Creek Valley site was modified by cut and fill activities during the construction of the Y-12 Plant in the early 1940s.

The floor slab of Building 9212 A1-Wing is at the elevation of 1015 ft. The foundation drawing (DWGs. E2E-12643 & E2f-12139) specified an allowable soil bearing stress of 4,000 lbs per sq. in. The footing piles were required to be placed at a depth where this allowable soil bearing stress could be realized. The soil sounding log (DWG. E2f-12902) indicated that the top of shale varies from 1004' to 1013'. Therefore, it is assessed that C1-Wing is founded on rock.

Material Properties

Material	Description	Code of Record	Reference DWG.
Concrete	Concrete: f'c = 2500 psi @28 days	ACI-318	E2E-12645
Structural Steel	All Shapes: ASTM A-7	AISC-1947	E2E-12074 E2E-12674 *FU-1608 *QU-1704
Roofing	Roofing covering material: 2" precast reinforced, T & G, light weight concrete plank 5-ply constructed with aggregate surface over entire area according to existing specification		E-A-47160
Miscellaneous	Hollow Clay Tile Walls 4" thick - 18 lb/ft ² 8" thick - 32 lb/ft ² 12" thick - 42 lb/ft ^{2**}		Ref. 10.12

- Design drawing of 9212 main building complex.

** the 12-in-thick HCTWs in the Building 9212 consist of a layer of 4-in thick blocks and a layer of 8-in thick blocks. The displayed value is for 12-in blocks only.

10.0 REFERENCES

- 10.1 STD. NO. SA-92-002, October 28, 1992, *Walkdown of 9212 Complex (One Structure)*, WORK ORDER S01101-16 (S0110), Project Engineer, R.E. Fehling, Martin Marietta Energy Systems, Inc.
- 10.2 *Manual of Steel Construction*, 6th Edition, 1967, American Institute of Steel Construction, Inc., N.Y.
- 10.3 *CRSI Design Handbook, Working Stress Design*, Reese, R. C., 1963, Concrete Reinforcing Steel Institute, Chicago.
- 10.4 *Timber Construction Manual*, 2nd Edition, 1974, American Institute of Timber Construction, John Wiley & Sons, Inc., N.Y.
- 10.5 *Unistrut General Engineering Catalog*, 1983, Unistrut Building Systems GTE Products Corporation, Wayne, MI.
- 10.6 *Pipe Hanger Design and Engineering*, 1979, ITT Grinnell, Providence, RI
- 10.7 *Building Wall Identification Survey for Building 9204-4, 9206, 9212, 9215, 9995, and 9998 at Y-12*, Lockwood-Greene Engineers, Inc., Oak Ridge, Tennessee, October 1991.
- 10.8 *Wind and Seismic Upgrade Evaluation Report for Building 9212 Complex, Y12*, Gilbert/Commonwealth, Inc., June, 1991.
- 10.9 *Sampling Procedures and Tables for Inspection by Attributes, MIL-STD-105E*, 10 May 1989, Department of Defense, Washington, D.C.
- 10.10 *Steel Construction - A Manual for Architects Engineers, and Fabricators of Buildings and other Steel Structures*, 5th Edition, 1948, American Institute of Steel Construction, N.Y.
- 10.11 *Iron and Steel Beams - 1873 to 1952*, Ferris, H. W., 1953, American Institute of Steel Construction, Chicago, IL.
- 10.12 *Kidder-Parker Architects' and Builders' Hand Book*, 18th Edition, 12th Printing, April, 1949, John Wiley & Sons, Inc., N.Y.

11.0 REFERENCE DRAWING LIST

11.1 DRAWINGS THAT ARE GENERAL TO BUILDING 9212

DWG. NO.	REV.	DESCRIPTION
A2E-34825-S2	0	ENERGY MONITOR & CONTROL SYS - BASEMENT PLAN
A2E-921200A-007	0	COMPARTMENTALIZATION OF B & C WING COLS-H/T
A2E-92905	1	CLOSURE AND CONTROL - PLENUM & PENTHOUSE
BE-106	4B	EQUIPMENT ARRANGEMENT PLAN - FIRST FLOOR
D-CV-25449	0	AREA 5 ROOF LADDERS LOCATION PLAN
E-A-70459	0	EQUIP PLAN E WING - MISC EQUIP & FACILITY...
E-A-82783	0	FIRE SAFETY MODIFICATION - KEY PLAN
E-A-83463	B	MONITOR SYSTEM FOR SPECIAL NUCLEAR MATERIALS
E-A-83958	A	MONITOR SYSTEM FOR SPECIAL NUCLEAR MATERIALS
E-A-83959	0	MONITOR SYSTEM FOR SPECIAL NUCLEAR MATERIALS
E-A-83960	B	MONITOR SYSTEM FOR SPECIAL NUCLEAR MATERIALS
E-B-3530	D	ROOF PLAN - D-1 & E WINGS (MASTER BLDG PLAN) ..
E-B-3564	C	MASTER BLDG PLAN BASEMENT AREAS A THRU E WIN
E-B-3565	A	MASTER BLDG PLANS - ROOF AREAS A-2 THRU D WI
E-B-3567	B	MASTER BLDG PLANS - 1ST FLOOR C, C-1, & D ..
E-B-3633	0	MASTER BLDG PLAN - 9219 AREA KEY PLAN
E-C-28885	0	PLAN - NITRIC ACID SYSTEM - AREA 5
E-C-28886	0	ELEVATION - NITRIC ACID SYSTEM - AREA 5
E-C-3570	B	MASTER EQPMNT PLANS - 1ST FL GEN MACHINE SHO
E-M-3569	0	MASTER EQPMNT PLANS - 1ST FL GEN MACHINE SHO
E-M-3574	A	MASTER EQPMNT PLANS - A, A-1, & B WINGS
E-M-3578	0	MASTER EQUIPMENT PLANS - SECTION III DRAWING
E-M-3605	0	EQUIPMENT LAYOUT - 9212 CHEMICAL AREA
E2E-12240	0	FOUNDATION REINF STEEL SCHEDULE - BLDG ADDIT
E2F-17800	0	ROOF REPAIR - LOCATION OF STUB COLUMN FOR ..
E2F-19052	A	ROOF REPAIR - ROOF PLAN & EQUIPMENT LAYOUT
E2F-19057	0	ROOF REPAIR - LOCATION OF STUB COLUMN
FU-1607	4	FOUNDATION KEY PLAN - CONCRETE - SUBSTRUCTUR
FU-1608	3	FOUNDATION DETAILS - CONC. SH 1 - SUBSTRUCT
FU-1649	B	FIRST FLOOR KEY PLAN - CONC. - SUBSTRUCTURE
FU-1654	2	FIRST FLOOR DETAILS - CONC. SH 1 - SUBSTRUCT
FU-1655	2	FOUNDATION DETAILS - CONCRETE- SUBSTRUCTURE
FU-1688	2	KEY PLAN - SUPERSTRUCTURE

FU-1692	1	ROOF PLAN - SUPERSTRUCTURE
FU-1693	2	WALL SECTIONS SH 1 - SUPERSTRUCTURE
FU-1694	3	WALL SECTIONS SH 2 - SUPERSTRUCTURE
FU-1695	3	WALL SECTIONS SH 3 - SUPERSTRUCTURE
FU-1736	1	FOUNDATION DETAILS - CONC. SH 3 - SUBSTRUCTU
FU-1778	1	FOUNDATION DETAILS - CONC. SH 4 - SUBSTRUCTU
FU-1823	1	FOUNDATION DETAILS - CONC. SH 5 - SUBSTRUCTU
FU-1838	2	ELEVATIONS - SUPERSTRUCTURE
FU-1839	1	ELEVATIONS & SECTIONS - SUPERSTRUCTURE
FU-1984	A	ROOF & UNDERFLOOR DRAIN LINES - BLDG. SERVIC
QU-1703	0	PLENUM CHAMBER FRAMING - STEEL STRUCTURE
QU-1704	2	SECOND FLOOR & LOW ROOF
QU-1710	0	COLUMN SCHEDULE & BASE DETAILS - STEEL STRUC
QU-1711	0	SECTIONS SH 1 - STEEL STRUCTURE
QU-1725	0	SECTIONS SH 2 - STEEL STRUCTURE
QU-1726	0	SECTIONS SH 3 - STEEL STRUCTURE
QU-1735	0	HIGH ROOF FRAMING - STEEL STRUCTURE
QU-1737	0	TYPICAL DETAILS SH 1 - STEEL STRUCTURE
QU-1738	0	SECTIONS SH 5 - STEEL STRUCTURE
QU-1741	0	SECTIONS SH 4 - STEEL STRUCTURE
QU-1822	0	TYPICAL DETAILS SH 2 - STEEL STRUCTURE
RU-1691	5	PLAN OF WINGS - SUPERSTRUCTURE
RU-2416	1	BASEMENT FLOOR - EXHAUST FAN ROOMS - CONCRET

11.2 DRAWINGS THAT ARE SPECIFIC TO C1-WING

DWG. NO.	REV.	DESCRIPTION
9212 MP 1 A		MASTER FLOOR PLAN, 1ST FLR, QUAD A
9212 MP 1 C		MASTER FLOOR PLAN, 1ST FLR, QUAD C
9212 MP B A		MASTER FLOOR PLAN, BSM FLR, QUAD A
9212 MP B C		MASTER FLOOR PLAN, BSM FLR, QUAD C
9212 MP P A		MASTER FLOOR PLAN, PLN FLR, QUAD A
9212 MP P C		MASTER FLOOR PLAN, PLN FLR, QUAD C
9212 MP R A		MASTER FLOOR PLAN, ROF FLR, QUAD A
9212 MP R C		MASTER FLOOR PLAN, ROF FLR, QUAD C
A2E- 91727		OSHA FLOOR LOAD SIGNS
A2E-112348	0	STACK RADIOLOGICAL MONITORING PLATFORM PLAN.
A2E-112349	0	STACK RADIOLOGICAL MONITORING ROOF PLAN
A2E-112453	0	STACK RADIOLOGICAL MONITORING PLATFORM PLAN.
A2E-112456	2	STACK RADIOLOGICAL MONITORING STANDARD....
A2E-113297	0	PROCESS VENTILATION ROOF PLAN & DETAILS
A2E-125754	0	VENTILATION IMPROVEMENTS, CHIP BURNER ENCLOS
A2E-127547	1	CONTROL ROOM LOCAL OPERATIONS CENTER FLOOR..
A2E-127548	0	WING CONTROL ROOM, FOREMAN'S OFFICES FLOOR..
A2E-127549	0	WING CONTROL ROOMS FOREMAN'S OFFICES & EXOC
A2E-129239	0	VENTILATION IMPROVEMENTS CHIP BURNER ENCLOSURE
A2E-132081	A	ARCHITECTURAL TYPICAL DETAILS
A2E-132277	1	EXHAUST SYSTEM ARCHITECTURAL ROOF PLAN
A2E-91727	D	OSHA FLOOR LOAD SIGNS
C2E-112462	0	PROCESS EXHAUST EQUIP RESTORATION PHASE I,..
C2E-120801	0	DECONTAMINATION FACILITY PARTIAL 1ST FLOOR
C2E-120928	0	DECONTAMINATION FACILITY MEZZANINE ISOLATION.
C2E-125706	B	C-1 WING PENTHOUSE PLN & EL
C2E-125707	A	DECONTAMINATION FACILITIES DOOR SCHEDULE &
C2E-132060	0	DRAWING INDEX
D-C-20539	0	CONTINUOUS SALVAGE PHASE 1 COLUMN ALTERATION
D-S-23948	0	SALT WASHING FACILITY BALCONY ALTERATIONS...
D-S-25797	A	ROOF EXHAUST FAN FROM JET SCRUBBERS...
D-S-27283	0	ACCESS PLATFORM MEZZANINE LEVEL PLAN & DETAIL
D-S-28118	0	PANEL BOARD VENTILATION BLOWER SUPPORT ...
D-S-28347	0	FUEL ELEMENT FACILITY MONORAIL FOR HOOD....
D-S-50537	0	MONORAIL CLEANING HOOD
D-S-52126	0	DUMBWAITER PIT MODIFICATION

D2E-16433	0	MIXER SETTLER INSTALLATION STRUCTURAL SUPPOR
D2E-16549	0	MIXER SETTLER INSTALLATION MIXER & TANK SUPP
DA-20740	0	CONTINUOUS SALVAGE PRIMARY & SECONDARY....
E-A-47159	0	REPLACE ROOF - ROOF PLAN
E-A-47160	0	REPLACE ROOF - DETAILS
E-A-70459		EQUIP PLAN E WING
E-A-79791	0	FIRE SAFETY - WATER BARRIER DOOR DETS
E-A-83463	B	MON SYST SPEC NUCLEAR MAT
E-A-83958	A	MON SYS SPEC NUCLEAR MAT
E-A-83960	B	MON SYST SPEC NUCLEAR MAT
E-B-3520	A	C-1 WING 1ST FL PL GR1015
E-B-3521	A	C-1 WING BAL PL GR1025 00
E-B-3522	A	C-1 WING ROOF PL GR1036 74
E-B-3528	A	ROOF PLAN - GR
E-B-3541	A	BALCONY PLAN
E-B-3565	A	ROOF AREAS A-2 - D WINGS
E-B-3567	B	C,C-1&D WINGS-1ST FLOOR PL
E-B-3620	A	FIRST FLOOR PLAN
E-C-25454	A	SRO EQUIPMENT LOCATION PLAN & ELEVATIONS
E-C-28888	0	CHLORIDE REMOVAL SYSTEM EQUIPMENT LOCATION..
E-C-3585	0	1ST FLOOR & BALCONY - EQUIPMENT PLAN
E-IND-24143	A	PROCESS VENTILATION SYSTEM DETAILS
E-IND-24144	6	PROCESS VENTILATION SYSTEM ELEVATIONS SHT 2
E-M- 3605		9212 CHEMICAL AREA
E-M-24500	0	AREA 5 EXPANSION 66" ROLLING MILL
E-M-50800	A	GLOVE BOXES & HOODS EQUIPMENT LAYOUT
E-S-24270	A	PROCESS VENTILATION SYSTEM VENT STACK...
E-S-24300	0	VENTILATION STACK AND FAN SUPPORTS
E-S-24301	D	VENTILATION ROOF PANELS & DUCT SUPPORTS...
E-S-24302	C	VENTILATION ROOF PANELS & DUCT SUPPORTS...
E-S-25841	A	SRO PROCESS FACILITY ALTERATIONS TO EXISTING
E-S-25842	A	SRO PROCESS FACILITY MISC. EQUIP SUPPORTS
E-S-26944	0	SCRAP URANIUM COUNTER LOCATION PLAN...
E-S-26996	A	DUMBWAITER RELOCATION PLANS SECTIONS DETAILS
E-S-43160	0	BALCONY ALT. & ADDITIONS
E-S-46019	0	ACCESS LADDER EXHAUST STACKS PLANS SECTIONS.
E-S-55179	B	PLAN SECTION DETAILS
E-S-70402	0	A5N MISC. PROCESS EQUIP JOB 4E - MISC EQUIP.
E-S-77749	0	MISC FRMG JOB O.Y. CHIP BURNER
E-S-77750	0	MISC FRMG JOB O.Y. CHIP BURNER...

E-S-77751	0	MISC FRMG JOB O.Y. CHIP BURNER...
E-S-83388	B	FIRE SAFETY MODIFICATIONS EAST CORRIDOR -...
E-S-83389	0	FIRE SAFETY MODIFICATIONS EAST CORRIDOR - ..
E-S-83391	8	FIRE SAFETY MODIFICATIONS EAST CORRIDOR - ..
E-S-83394	B	FIRE SAFETY MODIFICATIONS SECTIONS DETAILS..
E-S-85418	0	STAIR ACCESS TO HEADHOUSE ROOF PLANS.....
E-S-85928	0	BALCONY EXTENSION DEMO & FRAMING PLAN
E-S-85929	0	BALCONY EXTENSION SECTIONS & DETAILS
E-S-87060	0	EXHAUST FAN FLASHING - ROOF BASE
E2E-112459	E	STACK RADIOLOGICAL MONITORING PANELBOARD...
E2E-12074	A	BLDG W12P-100-3 BALCONY STEEL FRAMING
E2E-12434	2	BUILDING EXTENSION STORAGE BALCONY & OFFICE
E2E-12436	2	BUILDING EXTENSION STORAGE BALCONY & OFFICE
E2E-12482	A	ROOF ACCESS WALKS PLAN AND DETAILS
E2E-12625	0	BLDG W12P-100-3 STEEL FRAMING DETAILS
E2E-12643		FOUNDATION COL 10-15 C-1WG
E2E-12645	0	BLDG W12P-100-3 FOUNDATION PLANS & DETAILS
E2E-12674	A	BLDG W12P-100-3 BALCONY STEEL FRAMING
E2E-12675	C	BLDG W12P-100-3 BALCONY STAIRWAY DETAILS
E2E-12752	0	CARBON SHOP WALL SECTIONS & MISC DETAILS
E2F-12124	0	BLDG EXTENSION STEEL FRAMING LAYOUT
E2F-12139	0	BLDG EXTENSION CONCRETE FOOTING LOC & DETAIL
E2F-12142	A	BLDG EXTENSION FLOOR PLAN & CONC. DETAILS
E2F-12147	0	BLDG EXTENSION CARBON SHOP & CANOPY DETAILS
E2F-12148	0	BLDG EXTENSION BALCONY DETAILS
E2F-12157	0	BLDG EXTENS. FLOOR FOUNDATION PILING & BEAMS
E2F-12170	0	BLDG EXTENS. ROOF PLAN & PENTHOUSE DETAILS
E2F-12174	0	BLDG EXTENS. PLENUM CHANGES & FRAMING
E2F-12200	0	BLDG EXTENS. MONORAIL LOCATION
E2F-13656	D	BULK SALVAGE TANK FARM LOCATION & FOUNDATION
E2F-14200	B	STRUCTURAL ALTERATIONS & DETAILS
E2F-14201	0	STRUCTURAL ALTERATIONS & DETAILS
E2F-14202	B	STRUCTURAL ALTERATIONS & DETAILS
E2F-16037		SALVAGE PHASE 2 STRUCTURAL FRAMING
E2F-16038	0	SALVAGE PHASE 2 STRUCTURAL SECTIONS DETAILS
E2F-16039	1	STRUCTURAL FRAMING PLAN ALTERATIONS & DETAIL
E2F-19055	A	ROOF REPAIRS ROOF PLAN & EQUIP LAYOUT
E3F-12134	A	ROOF & FLOOR DRAINS
E3F-13040	A	SALVAGE PHASE 2 EQUIPMENT LAYOUT
E3F-13128	A	CARBON SHOP ROOF EQUIP & BASE PADS

E3F-13357	A	SALVAGE AREA EQUIP LOCATION PLAN SHEET 1
E3F-14203	D	EQUIP LAYOUT DISSOLVER AREA PHASE 1
E3F-14204	C	EQUIP LAYOUT DISSOLVER AREA PHASE 1
E3F-14806	A	ANP CHEMISTRY LAB AIR SUPPLY & HOOD EXHAUST
E3F-16050	B	SALVAGE PHASE 2 EQUIP LAYOUT
E4F-16044	D	SALVAGE PHASE 2 EQUIP LAYOUT PLAN COL 10-12
E4F-16045	D	SALVAGE PHASE 2 EQUIP LAYOUT PLAN COL 10-12
E4F-16046	D	SALVAGE PHASE 2 EQUIP LAYOUT SECT ELEV COL12
E4F-16047	D	SALVAGE PHASE 2 EQUIP LAYOUT PLAN COL 12-14
E4F-16048		SALVAGE PHASE 2 EQUIP LAYOUT PLAN COL 12-14
E4F-16049	D	SALVAGE PHASE 2 EQUIP LAYOUT SECT ELEV COL13
E4F-16051	2	SALVAGE PHASE 2 EQUIP LAYOUT -DISSOLVER AREA
E4F-16052	1	SALVAGE PHASE 2 EQUIP LAYOUT SECT ELEV COL14
E4F-16053	A	SALVAGE PHASE 2 EQUIP LAYOUT SECT ELEV COL16
E4F-16054	A	SALVAGE PHASE 2 EQUIP LAYOUT SECT ELEV COL15
E4F-16064	0	SALVAGE PHASE 2 EQUIP LAYOUT PRIMARY COLUMNS
E4F-16065	D	SALVAGE PHASE 2 EQUIP LAYOUT SECT ELEV
E4F-16066	A	SALVAGE PHASE 2 EQUIP LAYOUT SECT ELE COL P'
E4F-16067	0	SALVAGE PHASE 2 EQUIP LAYOUT SECT ELEV....
H2E-116483	0	VENTILATION FILTERS & TRAPS MODIFICATIONS
H2E-125549	0	VENTILATION IMPROVEMENTS CHIP BURNER ENCLOSURE
H2E-125591	0	VENTILATION IMPROVEMENTS INDEX & KEY PLAN
H2E-125593	B	DECONTAMINATION FACILITY PARTIAL MEZZANINE..
J2E-120784	B	VERTICAL STORAGE TANKS EQUIP ARRANGEMENT-1ST
J2E-120793	B	DECONTAMINATION FACILITY EQUIP ARRANGEMENT
J2E-120794	B	DECONTAMINATION FACILITY EQUIP ARRANGEMENT..
J2E-125766	1	DECONTAMINATION FACILITY DRAWING INDEX & ..
J2E-127448	0	DECONTAMINATION FACILITY DUMBWAITER
J2E-127528	B	VERTICAL STORAGE TANKS EQUIP ARRANGEMENT...
J2E-129160	4	CONTROL ROOMS DRAWING INDEX & KEY PLAN
M2E-125654	A	DECONTAMINATION FACILITY 1ST FLOOR EQUIP SUP
M2E-125655 0004	A	DECONTAMINATION FACILITY PAN FILTER ASSEMBLY
M2E-125715	0	VENTILATION IMPROVEMENTS CHIP BURNER ENCLOSURE
M2E-125716	0	VENTILATION IMPROVEMENTS OXIDE DISSOLVER...
M2E-127449	0	DECONTAMINATION FACILITY MEZZANINE EQUIP SUP
M2E-127456	B	DECONTAMINATION FACILITY MISC EQUIP & DUCT..
M2E-129244	0	VENTILATION IMPROVEMENTS OXIDE DISSOLVER VEN
P2E-112076	0	GAS & VENTILATION SYSTEMS RESTORATION PIPE..
P2E-125677	D	DECONTAMINATION FACILITY PIPING ARRANGEMENT.
P2E-125678	2	DECONTAMINATION FACILITY PIPING ARRANGEMENT.

P2E-131172	0	EVAPORATORS & CENTRIFUGE PROCESS PIPING....
P2E-131237	0	EVAPORATORS & CENTRIFUGE HIGH CAPACITY...
P2E-131238	0	EVAPORATORS & CENTRIFUGE INTERMEDIATE EVAPOR
S2E- 37546-SK		DEMOLITION- MEZZ FLOOR C-1
S2E- 39957-SK	B	C-1 WING STRUCTURAL DEMO
S2E- 42238-SK		C-1 EXH EQUIP SUPPRT DEMO
S2E- 42239-SK		VENT STACK-C-1 WING
S2E- 42240-SK		C-1 WING VENTILATION
S2E- 42241-SK		C-1 WING VENTILATION
S2E- 42242-SK		C-1 WING VENTILATION
S2E- 42243-SK		ROOF PL & SUPPORT DETS
S2E- 42244-SK		STACK MO PLT TEMP C1 49&50
S2E- 42297-SK		STACK-35 PLATF 9212
S2E- 44302-SK		A & WPCF AEC WBS 1.1.1.4 C-1 WING T
S2E-112350	A	STACK RADIOLOGICAL MONITORING PLATFORM PLANS
S2E-112441	3	STACK RADIOLOGICAL MONITORING STANDARD...
S2E-112442	3	STACK RADIOLOGICAL MONITORING STANDARD DETAI
S2E-112955	0	CAUSTIC FUSION, FULCH & ASH LEACHERS SYSTEM
S2E-113025	0	PROCESS VENTILATION ROOF FRAMING PLANS & SUP
S2E-113064	A	CAUSTIC FUSION, FULCH LEACHER, & ASH LEACHER
S2E-113065	A	CAUSTIC FUSION, FULCH LEACHER, & ASH LEACHER
S2E-113066	0	CAUSTIC FUSION, FULCH LEACHER & ASH LEACHER.
S2E-113067	0	CAUSTIC FUSION, FULCH LEACHER, & ASH LEACHER
S2E-113068	B	CAUSTIC FUSION, FULCH LEACHER, & ASH LEACHER
S2E-113069	A	CAUSTIC FUSION, FULCH LEACHER & ASH LEACHER
S2E-113070	A	CAUSTIC FUSION, FULCH LEACHER & ASH LEACHER
S2E-113742	0	EXTRACTION SOLVENT RECOVERY TANK SUPPORT DET
S2E-115892	0	FILTERS & TRAPS STRUCTURAL SUPPORTS
S2E-115892-S1		FILT & TRAP STRUCT SUPP
S2E-116518-A3	A	ROOF REPLACEMENT PLAN
S2E-116519-A4	A	ROOF REPLACEMENT - SECTIONS & DETAILS
S2E-116989-S1	0	EAST MONORAIL HOIST PLAN & DETAILS
S2E-117006-S2		FILT & TRAP STRUCT DETS
S2E-117525	0	CENTRIFUGE SUPPORT
S2E-120873	A	DECONTAMINATION FACILITY MISC. STRUCTURAL...
S2E-125652	0	DECONTAMINATION FACILITY 1ST FLR MONORAIL..
S2E-125653	B	DECONTAMINATION FACILITY PENTHOUSE PLANS...
S2E-125709	0	DECONTAMINATION FACILITY MEZZANINE MONORAIL.
S2E-127451	B	C-1 WING PENTHSE PLN & DET
S2E-127527	B	VERTICAL STORAGE TANKS STRUCTURAL PLANS & ..

S2E-127560	0	CONTROL ROOMS EXTRACTION OPERATIONS CENTER .
S2E-127561	0	CONTROL ROOMS EXTRACTION OPERATIONS CENTER..
S2E-129162	0	MOP WASH STATION EQUIP SUPPORT PLANS DETAILS
S2E-129192	B	VERTICAL STORAGE TANKS EQUIP SUPPORT DETAILS
S2E-131165	0	EVAPORATORS & CENTRIFUGE EQUIP SUPPORTS &..
S2E-131166	0	EVAPORATORS AND CENTRIFUGE EQUIP SUPPORTS &.
S2E-132261	3	EXHAUST STACKS PLANS SECTION & DETAILS
S2E-132263	2	STRUCTURAL STEEL PLANS - ROOF
S2E-132264	B	EXHAUST SYSTEM STRUCTURAL STEEL SECTIONS &..
S2E-132265	2	C-1 WING EXHAUST SYSTEM SCRUBBER SU
S2E-132266	2	EXHAUST SYSTEMS DUCT SUPPORTS PLAN SECTIONS.
S2E-132267	2	EXHAUST SYSTEMS DUCT SUPPORTS PLAN SECTIONS.
S2E-137991	0	DECONTAMINATION FACILITY A/C UNIT & DUCT SUP
S2E-137991-S1		DECON FAC COL 14/15-N/R
S2E-137992-S2	0	DECONTAMINATION FACILITY MISC DUCT & PIPE SU
S2E-141433-S2	0	DECONTAMINATION FACILITY STACK FABRICATION..
S2E-141452-S1	0	DECONTAMINATION FACILITY STACK BASE FRAMING
S2E-141453-S2		DECON FAC STACK FAB DET C1
S2E-144771	0	DECONTAMINATION FACILITY SAMPLING & PLATFORM
S2E-37546 SK	0	CAUSTIC FUSION, FULCH LEACHER, AND ASH LEACH
S2E-39857-SK	A	DECONTAMINATION FACILITY ROOF STRUCTURAL...
S2E-40266-SK	0	CONTROL ROOMS EURI OPERATIONS CENTER ...
S2E-42238SK	0	EXHAUST SYSTEM EQUIP SUPPORTS PLANS SECTIONS
S2E-42239SK	0	VENT STACK PLAN SECTION DETAILS
S2E-42240SK	0	VENTILATION STACK & FAN SUPPORTS PLAN SECTIO
S2E-42241SK	D	VENTILATION ROOF PANELS & DUCT SUPPORTS LOC.
S2E-42242SK	0	VENTILATION ROOF PANELS & DUCT SUPPORTS SECT
S2E-42243SK	0	PROCESS VENTILATION ROOF FRAMING PLANS &
S2E-42244SK	0	STACK RADIOLOGICAL MONITORING PLATFORM PLANS
S2E-921200-A016	A	C-1 WING DUMBWAITER REPLACEMENT HOU
S2E-921200-SK03		C-1 WING DUMBWAITER REPLACEMENT DEM

ATTACHMENT A

WALKTHROUGH APPROACH AND PROCEDURE

The overall structural walkthrough was performed to ascertain the general condition of the structure. The walkthrough was performed using a check-list-type set of data sheets, which were filled out in the field. Table A.1 lists the contents of the data sheets in a component oriented format and shows the inspection parameters considered.

In addition to the checklist procedure, the engineer performing the walkdown took notes relative to the analysis of the wing. These observations will be used in modeling and analysis procedures. These recorded observations relate to structural conditions which affect the analytical calculations and behavior of the structural components. Observations related to the necessity of considering interactions between wings are noted here.

Table A.1 Walkthrough Check Items

Item	Structural Components	Inspection Details
1.	General	<ul style="list-style-type: none">• Visible signs of settlement• Cracking of load bearing walls• Corrosion of structural elements• Deviation from design drawings
2.	Columns, Beams, & Connections	<ul style="list-style-type: none">• Missing members• Orientation of columns and beams• Notches and cutouts in members• General conformity with design Dwg.
3.	Welds	<ul style="list-style-type: none">• Free from defects• General condition of welds• Welds are continuous
4.	Floors	<ul style="list-style-type: none">• Undocumented openings in floors
5.	Ponding	<ul style="list-style-type: none">• Ponding• Roof attachments to structural steel• General condition of the roof• Drains and gutters are free of debris
6.	Siding	<ul style="list-style-type: none">• Properly attached to building

G. Lagerberg 10 Mar 93
J. Rasmussen 6 Apr 93

WALKTHROUGH CHECKLIST

Building: 0212

Area Inspected: C1, First Fl. Elevation: 1015

	Yes	No	Comment	Initials
1. Are there visible signs of building settlement?	☒	☐		
Cracking of load-bearing walls? Corrosion?	☐	☐	NA	
2. Are column bases of standard, acceptable configurations?	☐	☐	NA can't see	
3. Are there any missing/additional members?	☐	☒		
4. Are columns continuous without strength discontinuities?	☒	☐		
5. Are column orientations consistent?	☒	☐		
6. Are column sizes consistent?	☒	☐		
7. Are column splices consistent with drawings?	☐	☐	NA ^Δ	
8. Are there un-reinforced masonry walls?	☐	☐	X	
9. Are there cut-outs or notches on columns or primary beams?	☒	☐	See notes p 2	
10. Are connections of standard acceptable configurations?	☒	☐		
11. Are connections consistent with design drawings?	☒	☐		
12. Do structural welds appear acceptable (continuous, adequate size, free of defects)?	☒	☐		
13. Are there any undocumented openings in floors? Are all opening sizes consistent with design drawings?	☐	☒		
14. Do beam sizes appear consistent with design drawings?	☒	☐		TC
15. Are the braces installed per design drawings?	☐	☐	NA no vert bracing	

A3-2

X Non load bearing clay tile walls. May or may not be reinforced
Δ See insp sheets

G Lagerberg 10 Mar 93
JOHN RAST 4/6/93

WALKTHROUGH CHECKLIST (continued)

Building: 9212
Area Inspected: C1, First Fl. Elevation: 1015'

		Yes	No	Comment	Initials
16.	Are there structural configuration changes that represent significant safety concerns? (Note: Notify LPWE immediately if this item is determined to be "YES".)	—	/	—	—
17.	Are parapet heights consistent with design drawings?	—	—	NA	—
18.	Is there a potential for ponding? If no, provide justification.	—	—	NA	—
19.	Does the roof contain drains or other openings for ponding relief?	—	—		—
20.	Are drains and other openings free from debris or other obstacles?	—	—		—
21.	Is siding securely attached to building structure? Provide sketch of typical details.	—	—		—
22.	Is roof decking securely attached to building structure? Provide sketch of typical detail.	—	—		—

Check col at N.5/6.5 (1015-1025)

Openings from 6 to 9 in N'P bay

Col along N'.9 from 7 to 11

N. end of beam on 2nd floor, 10' W of 7, in PR' bay; 3 3/4" roped out of bottom, 1 1/2" on top

See note on girder R'7/P7 on column insp (filler)

Beam R'10/P10 at 1027 is 12L

2nd Fl (1027) beam N'12/P12 has hole (8-9"φ) cut in web

See insp. notes A3-3

2nd Fl (1027) beam N'11/P11 is doubled ( )

SS liner plate along S wall may be tied to both structure
also horiz tanks are braced to this liner,

GNL-330016

G Lagerberg 10 May 93
JOHN EAST 4/6/93

WALKTHROUGH CHECKLIST

Building: 9212

Area Inspected: C1, 2nd Floor Elevation: ~1027 ± 2

	Yes	No	Comment	Initials
1. Are there visible signs of building settlement?	—	✓		
Cracking of load-bearing walls? Corrosion?	—	—	N/A	
2. Are column bases of standard, acceptable configurations?	—	—	N/A	
3. Are there any missing/additional members?	✓	—		
4. Are columns continuous without strength discontinuities?	✓	—	SEE NOTES	
5. Are column orientations consistent?	✓	—	SEE INSPECTION	
6. Are column sizes consistent?	✓	—	SEE INSPECTION	
7. Are column splices consistent with drawings?	—	—	N/A	
8. Are there un-reinforced masonry walls?	✓	—		
9. Are there cut-outs or notches on columns or primary beams?	—	✓		
10. Are connections of standard acceptable configurations?	✓	—	SEE NOTES	
11. Are connections consistent with design drawings?	—	—	see col. insp. report	TC
12. Do structural welds appear acceptable (continuous, adequate size, free of defects)?	✓	—	WOULD REQUIRE CLOSER INSP.	
13. Are there any undocumented openings in floors? Are all opening sizes consistent with design drawings?	—	—	NO DRAWINGS	
	—	—	NO DRAWINGS	
14. Do beam sizes appear consistent with design drawings?	—	—	NO DRAWINGS	
15. Are the braces installed per design drawings?	—	✓	SEE NOTES	

THERE IS NO VERTICAL BRACING IN BUILDING
Roof cross-bracing removed from P4/R'6 bay.
" " " " has small notches in P4/N'5 bay
" " " " removed from N'5 to N' in 4/5
" " " " 5.2 to 5 in P/N' loc.
Col P5 at 1029 30 N end Flg & 1/3 of web cut & welded
No indication of weld prep

Roof CROSS BRACING REMOVED R'-P, 6-7. SEE SKETCH
Roof X BRACING IN R'-P, 10-11 SAME AS R'-P 9-10 &

G Lagerberg 19 May 93
JOHN RAST 4/6/93

WALKTHROUGH CHECKLIST (continued)

Building: 9212

Area Inspected: C1, Second Fl. Elevation: 1027 ± 2

	Yes	No	Comment	Initials
16. Are there structural configuration changes that represent significant safety concerns? (Note: Notify LPWE immediately if this item is determined to be "YES".)	—	—	ROOF BRACING MISSING	?
17. Are parapet heights consistent with design drawings?	—	—	N/A	—
18. Is there a potential for ponding? If no, provide justification.	—	—	N/A	—
19. Does the roof contain drains or other openings for ponding relief?	—	—	N/A	—
20. Are drains and other openings free from debris or other obstacles?	—	—	N/A	—
21. Is siding securely attached to building structure? Provide sketch of typical details.	—	—	N/A	—
22. Is roof decking securely attached to building structure? Provide sketch of typical detail.	✓	—	SHEET METAL CLIPS CONNECT PLANKS TO BEAMS. (GYP SUMMIT) concrete TC	—

- ROOF PLANKING APPEARS TO BE BUTTED AGAINST D-WING WALL.
- 2ND FLOOR R BUTTED AGAINST D-WING WALL
- CLAY TILE WALL, 16' EAST CL 15, RUNS N-S TO ROOF
- SECONDARY ROOF FRAMING_{A3.3} - CONNECTIONS TO GIRDER N10-P10, 1" FILLER R, INCOMPLETE WELDS.
- HORIZONTAL TANKS - 2ND LEVEL, CONNECTED TO N1 COLUMNS AND N (GWING) WALL.
- ROOF BEAM N17-N18 WELDED (OK) INSTEAD OF RIVETED TO BEAM & N17-6

G Lagerberg 9 Mar 93
J. RAST 3/9/93

WALKTHROUGH CHECKLIST

Building: C-1

Area Inspected: Roof Elevation: 1036'

	Yes	No	Comment	Initials
1. Are there visible signs of building settlement? Cracking of load-bearing walls? Corrosion?	—	✓	NA	—
2. Are column bases of standard, acceptable configurations?	—	—	NA	—
3. Are there any missing/additional members?	—	—	NA	—
4. Are columns continuous without strength discontinuities?	—	—	NA	—
5. Are column orientations consistent?	—	—	NA	—
6. Are column sizes consistent?	—	—	"	—
7. Are column splices consistent with drawings?	—	—	"	—
8. Are there un-reinforced masonry walls?	—	—	NA	—
9. Are there cut-outs or notches on columns or primary beams?	—	—	"	—
10. Are connections of standard acceptable configurations?	—	—	"	—
11. Are connections consistent with design drawings?	—	—	"	—
12. Do structural welds appear acceptable (continuous, adequate size, free of defects)?	—	—	"	—
13. Are there any undocumented openings in floors? Are all opening sizes consistent with design drawings?	—	—	* ?	—
14. Do beam sizes appear consistent with design drawings?	—	—	NA	—
15. Are the braces installed per design drawings?	—	—	"	—

* Significant rework of HVAC sys

914650509-11

A-7

G Lagerberg 9 Mar 93
J RAS 3/9/93

WALKTHROUGH CHECKLIST (continued)

Building: C-1 WING

Area Inspected: ROOF Elevation: 1036

	Yes	No	Comment	Initials
16. Are there structural configuration changes that represent significant safety concerns? (Note: Notify LPWE immediately if this item is determined to be "YES".)	—	—	<u>X</u>	—
17. Are parapet heights consistent with design drawings?	—	—	<u>NA</u>	—
18. Is there a potential for ponding? If no, provide justification.	<u>✓</u>	—	<u>XX</u>	—
19. Does the roof contain drains or other openings for ponding relief?	<u>✓</u>	—	—	—
20. Are drains and other openings free from debris or other obstacles?	<u>✓</u>	—	—	—
21. Is siding securely attached to building structure? Provide sketch of typical details.	—	—	<u>Δ</u>	—
22. Is roof decking securely attached to building structure? Provide sketch of typical detail.	—	—	<u>prob. can't see check drg.</u>	—

* No struc chg to main struct
Some misc platforms or quest integ
See 93309 notes

XX If roof drains plug, but no parapet
at east end from col 15 on to east
Δ guard removed from one drain. See
930309 notes A3-3

Note: There is a lot of construction on
C-1 roof and a lot of material staged
in area.

GNL-930310-5

A-9

G Lagerberg 10/14/93
with RST 4/6/93
(NON-structural)
Sampling column structure is braced
against D wing HCT wall at 1024' ?

(NON-structural)
One half inch gap between sampling
column frame and C-1 2nd floor.
Structure is welded to floor and
is stable w/o bracing to D wing.

GLAGERBERG 6 APR 93

JOHN RAST
4/6/9

GNL 930310-6

NOTE: GENERAL NOTES THE
THE FOR DRAWINGS!

NO 11275

מחצית מטר
0.90 מטר
כחצי מטר
0.90 מטר
כחצי מטר
מחצית מטר
מחצית מטר
מחצית מטר
מחצית מטר

Ref. Dwg. 52E-116 519-A4

Rel. DWG. 52E-116519-44

TYP. DETAIL C

SEE LEGEND "B" ON DWG. A5

NOTE: GENERAL NOTES THIS SHEET ARE
 TYP FOR DRAWINGS: 52E-116484 A1
 52E-116485 A2
 52E-116518 A3
 52E-116519 A4
 52E-116520 A5
 52E-116521 A6
 52E-117134 A1

TYP. DETAIL F

SEE LEGEND "B" ON DWG. A5

A-1 LETTER REVISION (A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z)
 FOR THE DEPARTMENT OF ENERGY, WASHINGTON, D.C.
 CONTRACT NO. DE-AC05-80-OR21400
 CONTRACTOR: MANTA ENERGY SYSTEMS, INC.
 DATE: APRIL 1, 1981
 BY: [Signature]

TYP. DETAIL G

SEE LEGEND "B" ON DWG. A5

TYP. **(A)** DETAIL
14" x 1'-0"

SEE LEGEND **(7)** ON DRAW. A3

TYP. **(B)** DETAIL
14" x 1'-0"

SEE LEGEND **(8)** ON DRAW. A3

TYP. **(C)** DETAIL
14" x 1'-0"

SEE LEGEND **(11)** ON DRAW. A3

TYP. **(D)** DETAIL
14" x 1'-0"

SEE LEGEND **(12)** ON DRAW. A3

INSTALL 4" x 8" OVER EXIST. OPENING
ATTACH W/ 4" x 8" TONGUE BOLTS
2" x 8" x 8". COVER W/ STRIP
FLASHING AS SHOWN

REMOVE EXIST. DUCT, FLASHING &
FRAMING.

TYP. **(E)** DETAIL
14" x 1'-0"

REMOVE EXIST. DUCT, FLASHING &
FRAMING.

SEE LEGEND **(13)** ON DRAW. A3

ATTACHMENT B

COLUMN AND BEAM FIELD INSPECTION

This attachment summarizes and contains the field inspection worksheets. Additional field notes are collected in Attachment D.

As stated in Section 3.0, there are 36 columns in the lot. Thirteen inspection samples were required by the sampling plan. The sampling plan was satisfactorily performed.

The measured dimensions were rounded to the nearest 1/16 in. for member depth (d), flange width (b_f), and to the nearest 1/32 in. for the flange thickness (t_f). The nominal dimensions for a pertinent section size were taken from *AISC Manual* (Refs. 10.10, 10.11). The tolerance provided for by the Walkdown Plan was applied to the nominal dimensions to establish the permissible limits.

All inspected elements showed good agreement between the flange thickness and permissible limits. The evaluation process used the measured dimensions to perform a search for an unique structural section within the handbook. Comparing the designed and the as-built sections resulted in the conclusion that no element deviated the original design. The inspected lot is assured to have passed the sampling plan based on the total acceptance of the column samples.

Field Inspection Worksheet
For Columns Inspected

N'4'

N'6

N'11

N'14

P'6

P'7

P'11

P'14

P'15

R'5

R'7

R'10

R'15

Field Inspection Worksheets of Column

N'4'

COLUMN ATTACHMENT WORKSHEET

Location: <u>N' 4'</u>		
Ref DWG: <u>E2F-12124</u> Detail: <u>COLUMN BASE</u>		
	Design Nominal: <u>10W49</u>	As-Configured: <u>10W49</u>
d	<u>10.00" ± 1/8"</u>	<u>10 1/2"</u> OK
bf	<u>10.00" ± 1/8"</u>	<u>10 1/16"</u> OK
tw	<u>0.34"</u>	<u>NI</u>
tf	<u>0.558 ± 1/16"</u>	<u>.611</u> OK
Web Direction	<u>(N/S) or E/W</u>	<u>(N/S) or E/W</u>
<u>BASE</u> <u>IP</u> x (N-S)	<u>12"</u>	<u>NI</u>
z (E-W)	<u>12"</u>	<u>NI</u>
tbp	<u>1"</u>	<u>NI</u>

- Is column welded to base plate? Y or N. NI
If Yes, indicate location: _____
(a) all round (b) web only (c) outside flanges only (d) web and outside flanges
- Are clip angles used? Y or N. NI
If Yes, are clip angles welded, bolted, or riveted, and indicate location: _____
(a) web (b) flanges (c) web and flanges
- Are welded bar stiffeners used? Y or N. NI
If Yes, indicate location: _____
(a) web (b) flange (c) web and flange
- Are anchor bolts used for attachment of base plates? Y or N. NI
If Yes, indicate quantity: _____ and location: _____
(a) web (b) flange (c) corners
- Comments: NI = NOT INSPECTED DUE TO INACCESSIBILITY
COLUMN SECTION IS WITHIN TOLERANCE LIMITS.
REF GNL 930305-10 (WALKDOWN)

Signatures:

Design Info. Verif. H.E Date 4/7/93 As-Configured Verif. TC Date 4/1/93

BEAM ATTACHMENT WORKSHEET

Location: <u>N 4' TO P 4'</u>		
Ref DWG: <u>E 2 F - 12124</u> Detail: <u>PLAN</u>		
	Design Nominal WF <u>24WF94</u>	As-Configured <u>24WF94</u>
d	<u>24.29 ± 1/8"</u>	<u>24 1/4"</u> OK
bf	<u>9.061" ± 1/8"</u>	<u>9 3/16"</u> OK
tf	<u>0.875" ± 1/16</u>	<u>0.904</u> OK
tw	<u>0.50</u>	<u>NI</u>

1. Are clip or seat angles used to make beam end connection? Y or N. NO SEAT ANGLE
 If Yes, are clip or seat angles bolted, riveted or welded and indicate location(s): b
 (a) one side of web (b) both sides of web (c) bottom of flng (d) top & bottom of flng
 If No, explain: _____

2. Comments: CLIP ANGLES WELDE TO GIRDER & RIVETED TO COLUMN
GIRDER SECTION IS COMPLIAT

REF: WALKDOWN: GNL 930305-11

Signatures:

Design Info. Verif. HA Date 4/5/92 As-Configured Verif. TC Date 4/10/93

Field Inspection Worksheets of Column

N'6

B-6

COLUMN ATTACHMENT WORKSHEET

Location: <u>N'-6</u>		
Ref DWG: <u>ET--511</u>		Detail: <u>COL. BASE</u>
	Design Nominal: <u>10WF49</u>	As-Configured: <u>10WF49</u>
d	<u>10.00 ± 1/8</u>	<u>10 1/8</u> OK
bf	<u>10.00 ± 1/8</u>	<u>10 1/10</u> OK
tw	<u>0.340</u>	<u>0.443 "</u> NOT USED
tf	<u>0.553 ± 1/16</u>	<u>0.596 "</u> OK
Web Direction	<u>N/S or E/W</u>	<u>(N/S) or E/W</u>
<u>BASE</u> <u>PL</u> x (N-S)	<u>12.0 "</u>	<u>NI</u>
z (E-W)	<u>12.0 "</u>	<u>NI</u>
tbp	<u>1.0 "</u>	<u>NI</u>

- Is column welded to base plate? Y or N. NI
If Yes, indicate location: _____
(a) all round (b) web only (c) outside flanges only (d) web and outside flanges
- Are clip angles used? Y or N. NI
If Yes, are clip angles welded, bolted, or riveted, and indicate location: _____
(a) web (b) flanges (c) web and flanges
- Are welded bar stiffeners used? Y or N. NI
If Yes, indicate location: _____
(a) web (b) flange (c) web and flange
- Are anchor bolts used for attachment of base plates? Y or N. NI
If Yes, indicate quantity: _____ and location: _____
(a) web (b) flange (c) corners

5. Comments: NI = NOT INSPECTED DUE TO INACCESSABILITY
COL. SECTION IS COMPLIANT

REF GUL 930205-2

Signatures:

Design Info. Prep. ML Date 4-1-93
Design Info. Verif. HB Date 4-5-93

Job No. 0664-006

B1

B-7

BEAM ATTACHMENT WORKSHEET

Location: <u>N'-10 To P'6</u>		
Ref DWG : <u>EEF-12124</u> Detail: <u>PLAN</u>		
	Design Nominal WF <u>24x94</u>	As-Configured <u>W124x94</u>
d	<u>24.29" ± 1/8</u>	<u>24 1/4"</u> OK
bf	<u>9.061" ± 1/8</u>	<u>9 1/4"</u> 1/16" OFF
tf	<u>TAPERED SECTION 1875" 1778" 1705"</u>	<u>0.682" (AVE)</u> OK
tw	<u>0.50</u>	<u>NI</u>

1. Are clip or seat angles used to make beam end connection? Y or N.
 If Yes, are clip or seat angles: bolted, riveted, or welded and indicate location(s): b
 (a) one side of web (b) both sides of web (c) bottom of flng (d) top & bottom of flng
 If No, explain: _____

2. Comments: BEAM SECTION IS COMPATIBLE
DT IS WITHIN MILL TOLERANCE (+1/4, -3/16)
REF ENL 920305-3 (WALK DOWN)

Signatures:

Design Info. Prep. TEP Date 1-10-93

Design Info. Verif. HL Date 1-8-93

BL

B-8

Field Inspection Worksheets of Column

N'11

COLUMN ATTACHMENT WORKSHEET

Location: <u>N' 11</u>		
Ref DWG: <u>E2E-12625</u> Detail: <u>MK COL-2</u>		
	Design Nominal: <u>10WF49</u>	As-Configured: <u>10WF49</u>
d	<u>10" ± 1/8"</u>	<u>10 1/16"</u> OK
bf	<u>10" ± 1/8"</u>	<u>10"</u> OK
tw	<u>0.340"</u>	<u>NI</u>
tf	<u>0.558 ± 1/16"</u>	<u>0.632" (AVE)</u> OK
Web Direction	<u>(N/S) or E/W</u>	<u>(N/S) or E/W</u>
<u>BASE</u> x (N-S)	<u>12"</u>	<u>NI</u>
z (E-W)	<u>12"</u>	<u>NI</u>
tbp	<u>1"</u>	<u>NI</u>

- Is column welded to base plate? Y or N. NI
If Yes, indicate location: _____
(a) all round (b) web only (c) outside flanges only (d) web and outside flanges
- Are clip angles used? Y or N. NI
If Yes, are clip angles welded, bolted, or riveted, and indicate location: _____
(a) web (b) flanges (c) web and flanges
- Are welded bar stiffeners used? Y or N. NI
If Yes, indicate location: _____
(a) web (b) flange (c) web and flange
- Are anchor bolts used for attachment of base plates? Y or N. NI
If Yes, indicate quantity: _____ and location: _____
(a) web (b) flange (c) corners
- Comments: NI = NOT INSPECTED DUE TO INACCESSIBILITY
COLUMN SECTION IS WITHIN TOLERANCE LIMITS
REF. GNL 930305-6

Signatures:

Design Info. Verif. HR Date 4/8/93 As-Configured Verif. TC Date 4/10/93

BEAM ATTACHMENT WORKSHEET

Location: <u>N'11 TO P'11</u>		
Ref DWG: <u>E2E-12625</u> Detail: <u>MK-1</u>		
	Design Nominal WF <u>24WF94</u>	As-Configured
d	<u>24.29" ± 1/8"</u>	<u>24.31</u>
bf	<u>9.061" ± 1/8"</u>	<u>9.062</u>
tf	<u>0.875 ± 1/16</u>	<u>0.868</u>
tw	<u>0.872" ± 1/16"</u>	<u>NI</u>

OK
OK
OK

- Are clip or seat angles used to make beam end connection? Y or N.
If Yes, are clip or seat angles bolted, riveted, or welded and indicate location(s): Δ
(a) one side of web (b) both sides of web (c) bottom of flng (d) top & bottom of flng
If No, explain: _____

- Comments: _____

Signatures:

Design Info. Verif. HB Date 4/6/93 As-Configured Verif. TC Date 4/10/93

Field Inspection Worksheets of Column

N'14

B-12

COLUMN ATTACHMENT WORKSHEET

Location: <u>N1-14</u>			
Ref DWG: <u>EZE-12625</u>		Detail: <u>MK COL 2</u>	
	Design Nominal: <u>10W49</u>	As-Configured: <u>10W49</u>	
d	10.00 ± 1/8	10 1/8 "	OK
bf	10.00 ± 1/8	10 "	OK
tw	0.340	NI	
tf	0.558 ± 1/16	0.632 HWT	OK
Web Direction	<u>N/S</u> or E/W	<u>N/S</u> or E/W	
BASE x N-S	12 "	NI	
z E-W	12 "	NI	
tbp	1 "	NI	

- Is column welded to base plate? Y or N. NI
If Yes, indicate location: _____
(a) all round (b) web only (c) outside flanges only (d) web and outside flanges
- Are clip angles used? Y or N. NI
If Yes, are clip angles welded, bolted, or riveted, and indicate location: _____
(a) web (b) flanges (c) web and flanges
- Are welded bar stiffeners used? Y or N. NI
If Yes, indicate location: _____
(a) web (b) flange (c) web and flange
- Are anchor bolts used for attachment of base plates? Y or N. NI
If Yes, indicate quantity: _____ and location: _____
(a) web (b) flange (c) corners

5. Comments: NI = NOT INSPECTED DUE TO INACCESSIBILITY
COLUMN SECTION IS COMPLIANT
SEE GAIL 930425 - 3 (WALK DOWN)

Signatures:

Design Info. Prep. TH Date 4-6-92
 Design Info. Verif. TC Date 4/10/92

Log 1/2 06-64 0000

B1

B-13

BEAM ATTACHMENT WORKSHEET

MEZZANINE
EL. 1025.0 & 1027.23

Location: <u>N'-14 TO P'14</u>		
Ref DWG: <u>E2F-16037</u> Detail: <u>MK-1</u>		
	Design Nominal WF <u>24 I 100</u>	As-Configured <u>24 I 100</u>
d	<u>24" ± 1/8"</u>	<u>24 1/16"</u>
bf	<u>7 1/4" ± 1/8"</u>	<u>7 5/16"</u>
tf	<u>0.875" ± 1/16"</u>	<u>0.857" (AVE.)</u>
tw	<u>0.375" ± 1/16"</u>	<u>NI</u>

1. Are clip or seat angles used to make beam end connection? Y or N.
If Yes, are clip or seat angles bolted, riveted, or welded and indicate location(s): b
(a) one side of web (b) both sides of web (c) bottom of flng (d) top & bottom of flng
If No, explain: _____

2. Comments: NT = NOT INSPECTED
BEAM IS IN COMPLIANT

WALK DOWN RFF. GNL 930305-9

Signatures:

Design Info. Prep. TL Date 4-1-93
Design Info. Verif. ML Date 4-8-93

~~BT~~

B-14

Field Inspection Worksheets of Column

P'6

B-15

COLUMN ATTACHMENT WORKSHEET

Location: <u>P'6</u>		
Ref DWG: <u>EZF-12625</u> Detail: <u>PLAN</u>		
	Design Nominal: <u>10W^F49</u>	As-Configured: <u>10W^F49</u>
d	<u>10" ± 1/8"</u>	<u>10 1/8"</u>
bf	<u>10 ± 1/16"</u>	<u>10 1/16"</u>
tw	<u>0.340"</u>	<u>NI</u>
tf	<u>0.558" ± 1/16"</u>	<u>612"</u>
Web Direction	<u>(N/S) or E/W</u>	<u>(N/S) or E/W</u>
x	<u>12"</u>	<u>NI</u>
z	<u>12"</u>	<u>NI</u>
tbp	<u>1"</u>	<u>NI</u>

- Is column welded to base plate? Y or N. NI
If Yes, indicate location: _____
(a) all round (b) web only (c) outside flanges only (d) web and outside flanges
- Are clip angles used? Y or N. NI
If Yes, are clip angles welded, bolted, or riveted, and indicate location: _____
(a) web (b) flanges (c) web and flanges
- Are welded bar stiffeners used? Y or N. NI
If Yes, indicate location: _____
(a) web (b) flange (c) web and flange
- Are anchor bolts used for attachment of base plates? Y or N. NI
If Yes, indicate quantity: _____ and location: _____
(a) web (b) flange (c) corners
- Comments: NI = NOT INSPECTED DUE TO INACCESSIBILITY
COLUMN SECTION IS WITHIN TOLERANCE LIMITS
REF. GNL G30305-6

Signatures:

Design Info. Verif. TC Date 4/8/93 As-Configured Verif. TC Date 4/10/93

BEAM ATTACHMENT WORKSHEET

Location: <u>P'6 TO P'5</u>		
Ref DWG : <u>E2E-12625</u> Detail: <u>PLAN</u>		
	Design Nominal WF <u>15I 42.9</u>	As-Configured <u>15I 42.9</u>
d	<u>15" ± 1/8"</u>	<u>15 1/16"</u> OK
bf	<u>5 1/2" ± 1/8"</u>	<u>5 9/16"</u> OK
tf	<u>5/8" ± 1/16"</u>	<u>.72" (AVE)</u> OK
tw	<u>7/16" ± 1/16"</u>	<u>NI</u>

- Are clip or seat angles used to make beam end connection? Y or N.
If Yes, are clip or seat angles bolted, riveted, or welded and indicate location(s): b
(a) one side of web (b) both sides of web (c) bottom of flng (d) top & bottom of flng
If No, explain: _____
- Comments: CLIP ANGLES WELDED TO GIRDER WEB AND
RIVETED TO COLUMN
GIRDER SECTION COMPLY WITH DESIGN
REF. WALK DOWN GNL 930305-27

Signatures:

Design Info. Verif. HK Date 6/6/93 As-Configured Verif. TC Date 4/10/93

Field Inspection Worksheets of Column

P'7

B-18

COLUMN ATTACHMENT WORKSHEET

Location: <u>P'7</u>		
Ref DWG: <u>E2F-12124</u> Detail: <u>COL. BASE</u>		
	Design Nominal: <u>10W49</u>	As-Configured: <u>10W49</u>
d	<u>10.00" ± 1/8"</u>	<u>10 1/16"</u> OK
bf	<u>10.00" ± 1/8"</u>	<u>10 1/16"</u> OK
tw	<u>0.34</u>	<u>NI</u>
tf	<u>0.558 ± 1/16</u>	<u>.622</u> OK
Web Direction	<u>(N/S) or E/W</u>	<u>(N/S) or E/W</u>
<u>BASE</u> - x (N-S)	<u>14"</u>	<u>NI</u>
z (E-S)	<u>12"</u>	<u>NI</u>
tbp	<u>1"</u>	<u>NI</u>

- Is column welded to base plate? Y or N. NI
If Yes, indicate location: _____
(a) all round (b) web only (c) outside flanges only (d) web and outside flanges
- Are clip angles used? Y or N. NI
If Yes, are clip angles welded, bolted, or riveted, and indicate location: _____
(a) web (b) flanges (c) web and flanges
- Are welded bar stiffeners used? Y or N. NI
If Yes, indicate location: _____
(a) web (b) flange (c) web and flange
- Are anchor bolts used for attachment of base plates? Y or N. NI
If Yes, indicate quantity: _____ and location: _____
(a) web (b) flange (c) corners
- Comments: NI = NOT INSPECTED DUE TO INACCESSIBILITY
COLUMN SECTION IS WITHIN TOLERANCE LIMIT.
REF. WALKDOWN: GNL930305-12

Signatures:

Design Info. Verif. HB Date 4/7/93 As-Configured Verif. TC Date 4/10/93

BEAM ATTACHMENT WORKSHEET

Location: <u>P'7 TO N'7</u>		
Ref DWG: <u>E2F-12124</u> Detail: <u>PLAN</u>		
	Design Nominal WF <u>24WF94</u>	As-Configured <u>24WF94</u>
d	<u>24.29" ± 1/8"</u>	<u>24 3/8"</u> OK
bf	<u>9.061 ± 1/8"</u>	<u>9 1/8"</u> OK
tf	<u>TAPERED SECTION .875 .978 .765</u>	<u>1825</u> OK
tw	<u>0.516</u>	<u>NI</u>

1. Are clip or seat angles used to make beam end connection? (Y) or N. NO SEAT ANGLE
 If Yes, are clip or seat angles bolted, (riveted) or (welded) and indicate location(s): b
 (a) one side of web (b) both sides of web (c) bottom of flng (d) top & bottom of flng
 If No, explain: _____

2. Comments: CLIP ANGLE WELDED TO GIRDER WEB
+ RIVETED TO COLUMN
BEAM SECTION IS COMPLAINT

REF. WALK DOWN: GNL 930 305 - 13

Signatures:

Design Info. Verif. HR Date 4/8/93 As-Configured Verif. TC Date 4/10/93

Field Inspection Worksheets of Column

P'11

B-21

COLUMN ATTACHMENT WORKSHEET

Location: <u>P'-11</u>		
Ref DWG: <u>E2E-12625</u>		Detail: <u>MK COL-1</u>
	Design Nominal: <u>10WF49</u>	As-Configured: <u>10WF49</u>
d	10.00 ± 1/8	10 1/8"
bf	10.00 ± 1/8	10"
tw	0.340	NI
tf	0.558 ± 1/10	.622
Web Direction	<u>NS</u> or E/W	<u>NS</u> or E/W
BASE R x N-S	14.0"	NI
z E-W	12.0	NI
tbp	1.0	NI

1. Is column welded to base plate? Y or N. *NI*
If Yes, indicate location: _____
(a) all round (b) web only (c) outside flanges only (d) web and outside flanges
2. Are clip angles used? Y or N. *NI*
If Yes, are clip angles welded, bolted, or riveted, and indicate location: _____
(a) web (b) flanges (c) web and flanges
3. Are welded bar stiffeners used? Y or N. *NI*
If Yes, indicate location: _____
(a) web (b) flange (c) web and flange
4. Are anchor bolts used for attachment of base plates? Y or N. *NI*
If Yes, indicate quantity: _____ and location: _____
(a) web (b) flange (c) corners
5. Comments: *NI = NOT INSPECTED DUE TO INACCESSABILITY*
COLUMN SECTION 1. INCOMPLETE
REF GNC 930305-6 (WALK DOWN)

Signatures:

Design Info. Prep. JPM Date 4-1-73
Design Info. Veri. HB Date 4-8-93

BEAM ATTACHMENT WORKSHEET

Location: <u>P-11 TO N-11</u>		
Ref DWG: <u>EZE-12625</u> Detail: <u>MK-1</u>		
	Design Nominal WF <u>24x94</u>	As-Configured WF <u>24x94</u>
d	<u>24.57" ± 1/8</u>	<u>24.5116" OK</u>
bf	<u>9.061" ± 1/8</u>	<u>9.1116" OK</u>
tf	<u>.875" ± 1/16</u>	<u>.868" OK</u>
tw	<u>0.50</u>	<u>NI</u>

1. Are clip or seat angles used to make beam end connection? Y or N.
 If Yes, are clip or seat angles: bolted, riveted, or welded and indicate location(s): b
 (a) one side of web (b) both sides of web (c) bottom of flange (d) top & bottom of flange
 If No, explain: _____

2. Comments: BEAM SECTION IS COMPLIANT

REF ENCL 930305-7

Signatures:

Design Info. Prep. TKK Date 4-4-93
 Design Info. Verif. HJA Date 4-8-93

BT- B-23

Field Inspection Worksheets of Column

P'14

B-24

COLUMN ATTACHMENT WORKSHEET

Location: <u>P'14</u>		
Ref DWG: <u>E2E-12625</u> Detail: _____		
	Design Nominal: <u>10WF49</u>	As-Configured: <u>10WF49</u>
d	<u>10.00 ± 1/8"</u>	<u>10 1/16"</u> OK
bf	<u>10.00 ± 1/8"</u>	<u>10 1/16"</u> OK
tw	<u>0.340</u>	<u>NI</u>
tf	<u>0.558 ± 1/16"</u>	<u>0.617 (AYE)</u> OK
Web Direction	<u>(N/S) or E/W</u>	<u>(N/S) or E/W</u>
<u>BASE</u> x	<u>12"</u>	<u>NI</u>
z	<u>12"</u>	<u>NI</u>
tbp	<u>1"</u>	<u>NI</u>

- Is column welded to base plate? Y or N. NI
If Yes, indicate location: _____
(a) all round (b) web only (c) outside flanges only (d) web and outside flanges
- Are clip angles used? Y or N. NI
If Yes, are clip angles welded, bolted, or riveted, and indicate location: _____
(a) web (b) flanges (c) web and flanges
- Are welded bar stiffeners used? Y or N. NI
If Yes, indicate location: _____
(a) web (b) flange (c) web and flange
- Are anchor bolts used for attachment of base plates? Y or N. NI
If Yes, indicate quantity: _____ and location: _____
(a) web (b) flange (c) corners
- Comments: NI = NOT INSPECTED DUE TO INACCESSIBILITY
COLUMN SECTION IS WITHIN TOLERANCE LIMITS.
REF GNL 930305-6

Signatures:

Design Info. Verif. HB Date 4/8/93 As-Configured Verif. TC Date 4/2/93

BEAM ATTACHMENT WORKSHEET

MEZZANINE
EL 1025.0 & 1027.23

Location: <u>P'14 TO R'14</u>		
Ref DWG: <u>E2F-16037</u> Detail: <u>PLAN</u>		
	Design Nominal WF <u>14WF38</u>	As-Configured <u>14WF38</u>
d	<u>14" ± 1/8"</u>	<u>14 3/16"</u>
bf	<u>6.776" ± 1/8"</u>	<u>6 3/4"</u>
tf	<u>0.513" ± 1/16"</u>	<u>0.463</u>
tw	<u>0.313" ± 1/16"</u>	<u>NI</u>

OK

OK

OK

- Are clip or seat angles used to make beam end connection? Y or N.
If Yes, are clip or seat angles bolted, riveted, or welded and indicate location(s): b
(a) one side of web (b) both sides of web (c) bottom of flange (d) top & bottom of flange
If No, explain: _____

- Comments: BEAM HAS 7/16" X 6" FLANGE PLATE AT BOTTOM

Signatures:

Design Info. Verif. HLS Date 4/1/93 As-Configured Verif. TC Date 4/1/93

Field Inspection Worksheets of Column

P'15

B-27

COLUMN ATTACHMENT WORKSHEET

Location: <u>P'-15</u>		
Ref DWG: <u>EZE-12025</u> Detail: <u>MK COL-1</u>		
	Design Nominal: <u>10WF49</u>	As-Configured: <u>10WF49</u>
d	<u>10.00</u> $\pm$ <u>1/8</u>	<u>10³/₁₆"</u> , <u>10¹/₈"</u>
bf	<u>10.00</u> $\pm$ <u>1/8</u>	<u>10"</u>
tw	<u>0.340</u>	<u>NI</u>
tf	<u>1.558</u> $\pm$ <u>1/16</u>	<u>.631 (AVG)</u>
Web Direction	<u>N/S</u> or E/W	<u>N/S</u> or E/W
BASE x N-S	<u>14"</u>	<u>NI</u>
z E-W	<u>12"</u>	<u>NI</u>
tbp	<u>10"</u>	<u>NI</u>

OK

OK

NOT USED

OK HEAVY MIN.

- Is column welded to base plate? Y or N. NI
If Yes, indicate location: _____
(a) all round (b) web only (c) outside flanges only (d) web and outside flanges
- Are clip angles used? Y or N. NI
If Yes, are clip angles welded, bolted, or riveted, and indicate location: _____
(a) web (b) flanges (c) web and flanges
- Are welded bar stiffeners used? Y or N. NI
If Yes, indicate location: _____
(a) web (b) flange (c) web and flange
- Are anchor bolts used for attachment of base plates? Y or N. NI
If Yes, indicate quantity: _____ and location: _____
(a) web (b) flange (c) corners

5. Comments: NI = NOT INSPECTED DUE TO INACCESSIBILITY
COLUMN SECTION IS COMPLIANT

REF CIVIL 701305-4 (WALK DOWN)

Signatures:

Design Info. Prep. TFX Date 4-1-93
Design Info. Verif. HB Date 4-8-93

J.E. Mc 04/04/93

BEAM ATTACHMENT WORKSHEET

Location: <u>P-15 TO N-15</u>		
Ref DWG: <u>E2R-12625</u> Detail: <u>MK-1</u>		
	Design Nominal WF <u>24x94</u>	As-Configured <u>WF 24x94</u>
d	<u>24.29"</u> $\pm 1/8$	<u>24 3/8"</u>
bf	<u>9.061"</u> $\pm 1/8$	<u>9 1/16"</u>
tf	<u>.875"</u> $\pm 1/16$	<u>0.849 (AVE)</u>
tw	<u>0.57</u>	<u>NI</u>

OK
OK
OK

- Are clip or seat angles used to make beam end connection? Y or N.
If Yes, are clip or seat angles bolted, riveted, or welded and indicate location(s): b
(a) one side of web (b) both sides of web (c) bottom of flng (d) top & bottom of flng
If No, explain: _____

- Comments: GIRDER SECTION IS COMPLIANT

REF GNL 930305-5 (WALK DOWN)

Signatures:

Design Info. Prep. JK Date 8-11-93
Design Info. Verif. AK Date 4-9-93

~~B1~~ B-29

Field Inspection Worksheets of Column

R'5

B - 30

COLUMN ATTACHMENT WORKSHEET

Location: <u>R'5</u>		
Ref DWG: <u>E2E-12625</u> Detail: <u>PLAN</u>		
	Design Nominal: <u>10WF49</u>	As-Configured: <u>10WF49</u>
d	<u>10.00 ± 1/8"</u>	<u>10"</u>
bf	<u>10.00 ± 1/8"</u>	<u>9 13/32"</u>
tw	<u>0.340"</u>	<u>NI</u>
tf	<u>0.558 ± 1/16"</u>	<u>0.596</u>
Web Direction	<u>(N/S) or E/W</u>	<u>(N/S) or E/W</u>
BASE x (N-S)	<u>12"</u>	<u>NI</u>
z (E-W)	<u>12"</u>	<u>NI</u>
tbp	<u>1"</u>	<u>NI</u>

OK

OK

OK

- Is column welded to base plate? Y or N. NI
If Yes, indicate location: _____
(a) all round (b) web only (c) outside flanges only (d) web and outside flanges
- Are clip angles used? Y or N. NI
If Yes, are clip angles welded, bolted, or riveted, and indicate location: _____
(a) web (b) flanges (c) web and flanges
- Are welded bar stiffeners used? Y or N. NI
If Yes, indicate location: _____
(a) web (b) flange (c) web and flange
- Are anchor bolts used for attachment of base plates? Y or N. NI
If Yes, indicate quantity: _____ and location: _____
(a) web (b) flange (c) corners

5. Comments: NI = NOT INSPECTED DUE TO INACCESSIBILITY
COLUMN SECTION IS WITHIN TOLERANCE LIMITS

REF GNL 930305-6

Signatures:

Design Info. Verif. HTB Date 4/8/93 As-Configured Verif. TC Date 4/10/93

BEAM ATTACHMENT WORKSHEET (MEZZANINE)
EL. 1025' & 1027.23'

Location: <u>R'5 TO P'5</u>		
Ref DWG: <u>E2F-1420D</u> Detail: <u>PLAN</u>		
	Design Nominal WF <u>18WF64</u>	As-Configured <u>18WF64</u>
d	<u>17 7/8" ± 1/8"</u>	<u>17 7/8"</u>
bf	<u>8 3/4" ± 1/8"</u>	<u>8 13/16"</u>
tf	<u>1 1/16" ± 1/16"</u>	<u>0.74 (AVE)</u>
tw	<u>7/16" ± 1/16"</u>	<u>NI</u>

1. Are clip or seat angles used to make beam end connection? Y or N.
If Yes, are clip or seat angles bolted, riveted, or welded and indicate location(s): b
(a) one side of web (b) both sides of web (c) bottom of flng (d) top & bottom of flng
If No, explain: _____

2. Comments: BEAM SECTION IS COMPLIANT

Signatures:

Design Info. Verif. Hr Date 4/9/97 As-Configured Verif. TC Date 4/10/93

Field Inspection Worksheets of Column

R'7

B-33

COLUMN ATTACHMENT WORKSHEET

Location: <u>R'7</u>		
Ref DWG: <u>E2F-12124</u> Detail: <u>PLAN</u>		
	Design Nominal: <u>10WF49</u>	As-Configured: <u>10WF49</u>
d	<u>10.00 ± 1/8"</u>	<u>9 5/16"</u>
bf	<u>10.00 ± 1/8"</u>	<u>10"</u>
tw	<u>0.340"</u>	<u>NI</u>
tf	<u>0.558 ± 1/16"</u>	<u>0.596</u>
Web Direction	<u>(N/S) or E/W</u>	<u>(N/S) or E/W</u>
x	<u>12"</u>	<u>NI</u>
z	<u>12"</u>	<u>NI</u>
tbp	<u>1"</u>	<u>NI</u>

OK
OK

- Is column welded to base plate? Y or N. NI
If Yes, indicate location: _____
(a) all round (b) web only (c) outside flanges only (d) web and outside flanges
- Are clip angles used? Y or N. NI
If Yes, are clip angles welded, bolted, or riveted, and indicate location: _____
(a) web (b) flanges (c) web and flanges
- Are welded bar stiffeners used? Y or N. NI
If Yes, indicate location: _____
(a) web (b) flange (c) web and flange
- Are anchor bolts used for attachment of base plates? Y or N. NI
If Yes, indicate quantity: _____ and location: _____
(a) web (b) flange (c) corners
- Comments: NI = NOT INSPECTED DUE TO INACCESSIBILITY
COLUMN SECTION IS WITHIN TOLERANCE LIMITS
REF. GNL 930305-6

Signatures:

Design Info. Verif. HR Date 4/8/93 As-Configured Verif. TC Date 4/10/93

BEAM ATTACHMENT WORKSHEET

MEZZANINE
EL. 1025.0' & 1027.2'

Location: <u>R7 TO P7</u>		
Ref DWG: <u>E2F-14200</u> Detail: <u>PLAN</u>		
	Design Nominal WF <u>10WF25</u>	As-Configured <u>10WF25</u>
d	<u>10 1/4" ± 1/8"</u>	<u>10 1/8"</u>
bf	<u>5.75" ± 1/8"</u>	<u>6"</u>
tf	<u>0.5 ± 1/16"</u>	<u>0.56" (AVE)</u>
tw	<u>5/16" ± 1/16"</u>	<u>NI</u>

- Are clip or seat angles used to make beam end connection? Y or N.
If Yes, are clip or seat angles bolted, riveted, or welded and indicate location(s): b
(a) one side of web (b) both sides of web (c) bottom of flng (d) top & bottom of flng
If No, explain: _____
- Comments: CLIP ANGLE WELDED TO WELDE TO WEB
OF GIRDER 4 TO COLUMN
BEAM SECTION IS COMPLAINT
REF. WALK DOWN: GNL 930305-23

Signatures:

Design Info. Verif. HB Date 4/5 As-Configured Verif. TL Date 4/10/93

Field Inspection Worksheets of Column

R'10

B-36

COLUMN ATTACHMENT WORKSHEET

Location: <u>R'10</u>		
Ref DWG: <u>E2E-12625</u> Detail: _____		
	Design Nominal: <u>10W49</u>	As-Configured: <u>10W49</u>
d	<u>10.00" $\pm \frac{1}{8}"$</u>	<u>9 ¹⁵/₁₆"</u>
bf	<u>10.00" $\pm \frac{1}{8}"$</u>	<u>10 ¹/₈"</u>
tw	<u>0.34"</u>	<u>NI</u>
tf	<u>0.558" $\pm \frac{1}{16}"$</u>	<u>.629"</u>
Web Direction	<u>(N/S) or E/W</u>	<u>(N/S) or E/W</u>
<u>BASE</u> <u>PL</u> x (N-S)	<u>12"</u>	<u>NI</u>
z (E-W)	<u>12"</u>	<u>NI</u>
tbp	<u>1"</u>	<u>NI</u>

O.K

OK

OK
VARIATION .009"

- Is column welded to base plate? Y or N. NI
If Yes, indicate location: _____
(a) all round (b) web only (c) outside flanges only (d) web and outside flanges
- Are clip angles used? Y or N. NI
If Yes, are clip angles welded, bolted, or riveted, and indicate location: _____
(a) web (b) flanges (c) web and flanges
- Are welded bar stiffeners used? Y or N. NI
If Yes, indicate location: _____
(a) web (b) flange (c) web and flange
- Are anchor bolts used for attachment of base plates? Y or N. NI
If Yes, indicate quantity: _____ and location: _____
(a) web (b) flange (c) corners
- Comments: NI = NOT INSPECTED DUE TO INACCESSIBILITY
COLUMN SECTION IS WITHIN TOLERANCE LIMIT
REF GNL 930 305-8

Signatures:

Design Info. Verif. HB Date 4/7/93 As-Configured Verif. TC Date 4/9/93

BEAM ATTACHMENT WORKSHEET

MEZZANINE
EL. 1027.23' (TOS)

Location: <u>R'10 TO R'11</u>		
Ref DWG: <u>E2F-14201</u> Detail: <u>MK-3</u>		
	Design Nominal WF <u>15I42.9</u>	As-Configured <u>14WF38</u>
d	<u>14.12" ± 1/8"</u>	<u>14 1/8"</u> OK
bf	<u>6.776 ± 1/8"</u>	<u>6 7/8"</u> OK
tf	<u>0.513" ± 1/16"</u>	<u>0.519 (AVE)</u> OK
tw	<u>0.313 ± 1/16</u>	<u>NI</u>

1. Are clip or seat angles used to make beam end connection? Y or N. NO SEAT ANGLE
 If Yes, are clip or seat angles bolted, riveted, or welded and indicate location(s): 6
 (a) one side of web (b) both sides of web (c) bottom of flng (d) top & bottom of flng
 If No, explain: _____

2. Comments: BEAM SECTION IS COMPLIANT
- _____
- _____
- _____

REF. WALK DOWN: GNL 930305

Signatures:

Design Info. Verif. H.B. Date 4/8/92 As-Configured Verif. TC Date 4/10/93

Field Inspection Worksheets of Column

R'15

B-39

COLUMN ATTACHMENT WORKSHEET

Location: <u>R'15</u>		
Ref DWG: <u>E2E-12625</u> Detail: <u>MK COL-2</u>		
	Design Nominal: <u>10WF49</u>	As-Configured: <u>10WF49</u>
d	<u>10.00 ± 1/8"</u>	<u>10 1/16"</u> OK
bf	<u>10.00 ± 1/8"</u>	<u>9 15/16"</u> OK
tw	<u>0.340" ± 1/16</u>	<u>NI</u>
tf	<u>0.558 ± 1/16</u>	<u>0.629</u> OK
Web Direction	<u>(N/S) or E/W</u>	<u>(N/S) or E/W</u>
BASE # x (N-S)	<u>12"</u>	<u>NI</u>
z (E-S)	<u>12"</u>	<u>NI</u>
tbp	<u>1"</u>	<u>NI</u>

- Is column welded to base plate? Y or N. NI
If Yes, indicate location: _____
(a) all round (b) web only (c) outside flanges only (d) web and outside flanges
- Are clip angles used? Y or N. NI
If Yes, are clip angles welded, bolted, or riveted, and indicate location: _____
(a) web (b) flanges (c) web and flanges
- Are welded bar stiffeners used? Y or N. NI
If Yes, indicate location: _____
(a) web (b) flange (c) web and flange
- Are anchor bolts used for attachment of base plates? Y or N. NI
If Yes, indicate quantity: _____ and location: _____
(a) web (b) flange (c) corners
- Comments: NI = NOT INSPECTED DUE TO INACCESSIBILITY
COLUMN SECTION IS WITHIN TOLERANCE LIMITS
WALK DOWN REF: GNL 930305-116

Signatures:

Design Info. Verif. HD Date 4/3/93 As-Configured Verif. TC Date 4/10/93

BEAM ATTACHMENT WORKSHEET

MEZZANINE
EL 1025.0 & 1027.2:

Location: <u>R'15 TO R'14</u>		
Ref DWG: <u>EZF-14200</u> Detail: <u>PLAN</u>		
	Design Nominal WF <u>14WF38</u>	As-Configured
d	$14\frac{1}{8} \pm \frac{1}{8}"$	14
bf	$6\frac{3}{4} \pm \frac{1}{8}"$	$6\frac{7}{8}$
tf	$0.5 \pm \frac{1}{16}"$	0.452
tw	$0.3125 \pm \frac{1}{16}"$	NI

OK

OK

OK

1. Are clip or seat angles used to make beam end connection? Y or N.
If Yes, are clip or seat angles bolted, riveted, or welded and indicate location(s): b
(a) one side of web (b) both sides of web (c) bottom of fling (d) top & bottom of fling
If No, explain: _____

2. Comments: BEAM SECTION IS COMPLIANT
- _____
- _____
- _____
- _____
- _____

Signatures:

Design Info. Verif. HA Date 4/8/92 As-Configured Verif. TC Date 4/10/93

ATTACHMENT C

LOAD INVENTORY DATA BASE

LOAD INVENTORY DATA BASE

Building: C-1 Wing
 Location: Roof
 Floor/Room: _____

Prepared by G Lagerberg 16Apr93
 Checked by _____

Equipment ID	Type	Model Number	Manufacturer	System	Insulation	Support/Attachment Type	Location	Surface (Top/Bottom)	Footprint	Eccentricity	Capacity/Size	Weight	Term/Perm	Reference
-	HVAC	RT33 BLA	Bohn	HVAC	-	Rigid	R'14	Top	14'x9'x8'H; 4'CG			4650lb	Perm	GNL93 0308-2
151	HEFA	E-62x2 77-F	Flanders	exh.	-		R'12		46'x11'	5'9'CG		6500	Perm	G193 0308-2
Y265828	Fan	AF660	Peerless - Whit Smith	exh.	+	Flex	P'10		5'x11'	6'6"CG	30HP	6400lb	Perm	G193 0308-10
Stack 12	Stack			exh.	-	Rigid	R'9	Top		20'CG	40'	5380lb	Perm	G193 0308-10
	Motor	5K8449 552.95	GE	exh.	+	Rigid	R'7					1750lb	Perm	G193 0308-10
Y253217	NH Fan	Design Clarage #2		exh.	-	Semi-rigid	R'9	Top	6'x7'	4'CG	25HP	2000lb	Perm	GNL93 0309-10

LOAD INVENTORY DATA BASE

Building: 9212 C-1 Wing
 Location: 1027 - 1029
 Floor: Floor

Prepared by G. Lagerberg 16 Apr 93
 Checked by

Equipment ID	Type	Model Number	Manufacturer	System	Insulation	Support/ Attachment Type	Location	Surface (Top/ Bottom)	Footprint	Eccentricity	Capacity/ Size	Weight	Term/ Perm	Reference
CHB-FHFH -001			Barneby-Cheney	HEPA	-	None	R-4	Top	5'4"x2'6"	1'5"		2000	Perm	GNL93 0302-2
Y227049	Dry Globe Box				No	Rigid	K-5	Top	4'0"x9'4"	4'		3700	Perm	GNL93 0302-2
	Chip Burner	1K-8.128-8	Lindberg HEVI Duty		Yes Firebrick	Rigid	P-5	Top	7'x6'8" x 12' Hi	6'		4000	Perm	GNL93 0302-2
F201-2	Tank			Caustic		Rigid	N'6	Top	2'x4'6"	2'		2700	Perm	GNL93 0226-4

ATTACHMENT B

COLUMN AND BEAM FIELD INSPECTION

This attachment summarizes and contains the field inspection worksheets. Additional field notes are collected in Attachment D.

As stated in Section 3.0, there are 36 columns in the lot. Thirteen inspection samples were required by the sampling plan. The sampling plan was satisfactorily performed.

The measured dimensions were rounded to the nearest 1/16 in. for member depth (d), flange width (b_f), and to the nearest 1/32 in. for the flange thickness (t_f). The nominal dimensions for a pertinent section size were taken from *AISC Manual* (Refs. 10.10, 10.11). The tolerance provided for by the Walkdown Plan was applied to the nominal dimensions to establish the permissible limits.

All inspected elements showed good agreement between the flange thickness and permissible limits. The evaluation process used the measured dimensions to perform a search for an unique structural section within the handbook. Comparing the designed and the as-built sections resulted in the conclusion that no element deviated the original design. The inspected lot is assured to have passed the sampling plan based on the total acceptance of the column samples.

Field Inspection Worksheet
For Columns Inspected

N'4'

N'6

N'11

N'14

P'6

P'7

P'11

P'14

P'15

R'5

R'7

R'10

R'15

Field Inspection Worksheets of Column

N'4'

COLUMN ATTACHMENT WORKSHEET

Location: <u>N' 4'</u>		
Ref DWG: <u>E2F-12124</u> Detail: <u>COLUMN BASE</u>		
	Design Nominal: <u>10W49</u>	As-Configured: <u>10W49</u>
d	<u>10.00" ± 1/8"</u>	<u>10 1/2"</u>
bf	<u>10.00" ± 1/8"</u>	<u>10 1/16"</u>
tw	<u>0.34"</u>	<u>NI</u>
tf	<u>0.558 ± 1/16"</u>	<u>.611</u>
Web Direction	<u>(N/S) or E/W</u>	<u>(N/S) or E/W</u>
<u>BASE</u> <u>PL</u> x (N-S)	<u>12"</u>	<u>NI</u>
z (E-W)	<u>12"</u>	<u>NI</u>
tbp	<u>1"</u>	<u>NI</u>

- Is column welded to base plate? Y or N. NI
If Yes, indicate location: _____
(a) all round (b) web only (c) outside flanges only (d) web and outside flanges
- Are clip angles used? Y or N. NI
If Yes, are clip angles welded, bolted, or riveted, and indicate location: _____
(a) web (b) flanges (c) web and flanges
- Are welded bar stiffeners used? Y or N. NI
If Yes, indicate location: _____
(a) web (b) flange (c) web and flange
- Are anchor bolts used for attachment of base plates? Y or N. NI
If Yes, indicate quantity: _____ and location: _____
(a) web (b) flange (c) corners
- Comments: NI = NOT INSPECTED DUE TO INACCESSIBILITY
COLUMN SECTION IS WITHIN TOLERANCE LIMITS.
REF GNL 930305-10 (WALK DOWN)

Signatures:

Design Info. Verif. H.E Date 4/1/93 As-Configured Verif. TC Date 4/1/93

BEAM ATTACHMENT WORKSHEET

Location: <u>N'4' TO P'4'</u>		
Ref DWG: <u>E2F-12124</u> Detail: <u>PLAN</u>		
	Design Nominal WF <u>24WF94</u>	As-Configured <u>24WF94</u>
d	<u>24.29 ± 1/8"</u>	<u>24 1/4"</u> OK
bf	<u>9.061" ± 1/8"</u>	<u>9 3/16"</u> OK
tf	<u>0.875" ± 1/16</u>	<u>0.904</u> OK
tw	<u>0.50</u>	<u>NI</u>

1. Are clip or seat angles used to make beam end connection? Y or N. NO SEAT ANGLE
 If Yes, are clip or seat angles bolted, riveted, or welded and indicate location(s): b
 (a) one side of web (b) both sides of web (c) bottom of flng (d) top & bottom of flng
 If No, explain: _____

2. Comments: CLIP ANGLES WELDE TO GIRDER & RIVETED TO COLUMN
GIRDER SECTION IS COMPLIAT

REF: WALK DOWN: GNL 430305-11

Signatures:

Design Info. Verif. HA Date 4/5/92 As-Configured Verif. TC Date 4/10/93

Field Inspection Worksheets of Column

N'6

COLUMN ATTACHMENT WORKSHEET

Location: <u>N'-6</u>		
Ref DWG: <u>EE-1111</u>		Detail: <u>COL. BASE</u>
	Design Nominal: <u>10WF49</u>	As-Configured: <u>10WF49</u>
d	<u>10.00 ± 1/8</u>	<u>10 1/8</u>
bf	<u>10.00 ± 1/8</u>	<u>10 1/10</u>
tw	<u>0.340</u>	<u>0.443 "</u>
tf	<u>0.553 ± 1/16</u>	<u>0.596 "</u>
Web Direction	<u>N/S or E/W</u>	<u>(N/S) or E/W</u>
BASE # x (N-S)	<u>12.0 "</u>	<u>NI</u>
z (E-W)	<u>12.0 "</u>	<u>NI</u>
tbp	<u>1.0 "</u>	<u>NI</u>

- Is column welded to base plate? Y or N. NI
If Yes, indicate location: _____
(a) all round (b) web only (c) outside flanges only (d) web and outside flanges
- Are clip angles used? Y or N. NI
If Yes, are clip angles welded, bolted, or riveted, and indicate location: _____
(a) web (b) flanges (c) web and flanges
- Are welded bar stiffeners used? Y or N. NI
If Yes, indicate location: _____
(a) web (b) flange (c) web and flange
- Are anchor bolts used for attachment of base plates? Y or N. NI
If Yes, indicate quantity: _____ and location: _____
(a) web (b) flange (c) corners
- Comments: NI = NOT INSPECTED DUE TO INACCESSABILITY
COL. SECTION IS COMPLIANT

REF SPEC 930301-2

Signatures:

Design Info. Prep. ML Date 4-1-93
Design Info. Verif. PL Date 4-5-93

Job No. 0664-006

B1

B-7

BEAM ATTACHMENT WORKSHEET

Location: <u>N'-10 To P'6</u>		
Ref DWG : <u>EE+-12124</u> Detail: <u>PLAN</u>		
	Design Nominal WF <u>24x94</u>	As-Configured <u>W124x94</u>
d	<u>24.29" ± 1/8</u>	<u>24 1/4"</u> OK
bf	<u>9.061" ± 1/8</u>	<u>9 1/4"</u> 1/16" OFF
tf	<u>TAPERED SECTION 1875" 1778" / 1705"</u>	<u>0.682" (AVE)</u> OK
tw	<u>0.50</u>	<u>NI</u>

1. Are clip or seat angles used to make beam end connection? (Y) or N.
 If Yes, are clip or seat angles: bolted, riveted, or welded and indicate location(s): b
 (a) one side of web (b) both sides of web (c) bottom of flng (d) top & bottom of flng
 If No, explain: _____

2. Comments: BRIFF SALTIN IS CONTINUITY
IT IS WITHIN MILL TOLERANCE (+1/4, -3/16)
REF ENL 930305-3 (WALK DOWN)

Signatures:

Design Info. Prep. TEP Date 1-1-93
 Design Info. Verif. HL Date 1-8-93

BL

B-8

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