Otr 4. (2)

OCT 01 1998 ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT 624831

2. To: (Receiving Organization)	3. From: (Originating Organization)	4. Related EDT No.:
Distribution	Interim Stabilization Eng.	N/A
5. Proj./Prog./Dept./Div.:	6. Design Authority/ Design Agent/Cog. Engr.:	7. Purchase Order No.:
241-SX Tank Farm/TWRS/ISE	CB McVey	N/A
8. Originator Remarks: Release of Formal Design Review report (HNF 3433) on the 241-SX-106 Cover Plates		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: 241-SX-106
11. Receiver Remarks: 11A. Design Baseline Document? [] Yes [X] No Release HND-3433		12. Major Assm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: N/A

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Approval Designator	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1	HNF-3433	1-19	0	Design Review Report for ECN 638521 (241-SX-106 Cover Plate Installation)	N/A	2	1	1

16. KEY

Approval Designator (F)	Reason for Transmittal (G)	Disposition (H) & (I)
E, S, Q, D or N/A (see WHC-CM-3-5, Sec.12.7)	1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION
(See Approval Designator for required signatures)

(G) Reason	(H) Disp.	(J) Name (K) Signature (L) Date (M) MSIN	(G) Reason	(H) Disp.	(J) Name (K) Signature (L) Date (M) MSIN
		Design Authority			
		Design Agent			
2	1	Cog.Eng. CB McVey CBMcVey 10/1/98 S7-20			
2	1	Cog. Mgr. MR Koch MRKoch 10/1/98 S7-20			
		QA			
		Safety			
		Env.			

18.	19.	20.	21. DOE APPROVAL (if required) Ctrl. No. N/A
CB McVey CBMcVey 10/1/98		MR Koch MRKoch 10/1/98	[] Approved [] Approved w/comments [] Disapproved w/comments
Signature of EDT Originator / Date	Authorized Representative for Receiving Organization / Date	Design Authority/ Cognizant Manager / Date	

BD-7400-172-2 (05/96) GEF097

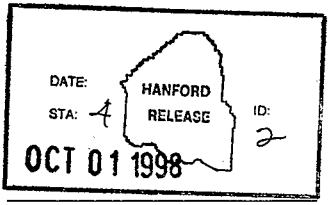
DESIGN REVIEW REPORT FOR ECN 638521 (241-SX-106 COVER PLATE INSTALLATION)

C. B. MCVEY
Lockheed Martin Hanford Company, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-96RL13200

EDT/ECN: ~~624829/638521~~ 624831 UC: 500
Org Code: 74920 Charge Code: N1WGD
B&R Code: EW3120071 Total Pages: 19

Key Words: 241-SX-106, DESIGN REVIEW REPORT, COVER PLATES

Abstract: The design for the cover plates on 241-SX-106 was reviewed on 9/10/98. All comments were resolved to the satisfaction of the reviewers. A design calculation for seismic movement was performed and resulted the a design addition to prevent cover block movement. Also calculations were performed for radiological design and are included. The formal design review has no outstanding action items remaining and supports the use of 2" steel cover plates to provide personnel, shielding and spray knock down protection (as required by the BIO).



10/1/98
Release Approval Date

Release Stamp

Approved for Public Release

TABLE OF CONTENTS

1.0 SCOPE

A design review meeting was held to review ECN 612026. During the review meeting it was determined to release ECN 612026 as a fabrication ECN only and to issue ECN 638521, 241-SX-106 Cover Plate Installation as the installation ECN. The cover plates for the 241-SX-106 pump pit are considered safety class items (HNF-SD-WM-BIO-001, 5.3.2.20) since they perform the function as a transfer system cover.

Documents Reviewed:

1) ECN-638521, 241-SX-106 Cover Plate Installation
2) USQ TF-98-0607, IS: 241-SX-106 - Preparation for Installation of Saltwell Pumping Equipment
3) Dose Rate Reduction Due to Installation of 2" Steel Cover Plate At 241-SX-106 Pump Pit, 9/23/98
4) Design Calculation, 241-SX-106 Cover Plate Seismic Restraints, 9/21/98

The ECN provided the layout of the plates in relation to the pump pit and the existing concrete key block. It showed the general locations of the seismic restraints and the design of the restraints as required by the calculations (Appendix D).

The USQ (TF-98-0607, Rev 5) provided the screening for the cover plates and was found to have all "No" or "N/A" responses which showed that a Determination was not required.

The Dose Rate Reduction calculation provided documentation of the dose rate due to the removal of the concrete cover block and replacing it with a 2" steel plate. The calculation also provided documentation of the Life Cycle Exposure Differential which showed that it was >1 person-REM (Appendix C).

The Design Calculation provided seismic calculation for the restraints that are being placed on the cover plates (Appendix D).

All documents are related to the Interim Stabilization program for Saltwell Pumping of 241-SX-106 tank in SX Tank Farm.

The objectives of the review were to establish design approval for the safety class cover plates on 241-SX-106.

2.0 SUMMARY

The design review meeting was held on 9/10/98. The meeting minutes are attached in Appendix B. All comments were recorded either by RCR comments or by the meeting minutes. An additional request was made by the Design Authority to provide seismic calculations on the cover plate clips. The conclusion of the meeting was that the design was approved with the incorporation of the comments from the RCR from a previous review meeting on cover plates and meeting minutes.

No outstanding action items remain on the design for the cover plates for 241-SX-106.

3.0 DOCUMENTATION

Design Review Committee Members:

G. P. Janicek	Design Authority
M. R. Koch	Cognizant Manager - ISE
C. B. McVey	Cognizant Engineer - ISE
T. J. Volkman	Quality Assurance
L. S. Krogsrud	Safety
P. C. Miller	Environmental
D. D. Wiggins	Mechanical - ISE
J. N. Doeler	Cognizant Engineer - SX Farm
M. R. Brown	Mechanical Engineer - SX Farm

Documents:

Engineering Data Transmittal, 624829

Meeting Minutes, Distribution, dated 9/10/98

Does Rate Reduction Due to Installation of 2" Steel Cover Plate At 241-SX-106, D. J. Foust, dated September 25, 1998.

Design Calculation, 241-SX-106 Cover Plate Seismic Restraints, J. Elsen, dated 9/21/98

APPENDIX A

ENGINEERING DATA TRANSMITTAL
624829

ENGINEERING DATA TRANSMITTAL

Page 1 of _____

1. EDT 624829

2. To: (Receiving Organization)	3. From: (Originating Organization)	4. Related EDT No.:
Distribution	Interim Stabilization Engineering	N/A
5. Proj./Prog./Dept./Div.:	6. Design Authority/Design Agent/Cog. Engr.:	7. Purchase Order No.:
241-SX Tank Farm/TWRS/ISE	GP Janicek/CB McVey	N/A
8. Originator Remarks:		9. Equip./Component No.:
Review and approval of ECN ~~612026~~ 638521 CW 9/23/98, which provides the design for the cover plates for 241-SX-106.		N/A
		10. System/Bldg./Facility:
		241-SX-106
11. Receiver Remarks: 11A. Design Baseline Document? [X] Yes [ ] No		12. Major Assm. Dwg. No.:
If unable to attend, please send an alternate.		N/A
		13. Permit/Permit Application No.:
		N/A
		14. Required Response Date:
		9/16/98

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Approval Desig-nator	(G) Reason for Trans-mittal	(H) Origi-nator Dispo-sition	(I) Receiv-er Dispo-sition
1	ECN ~~612026~~ 638521 CW 9/23/98	1-87	0	241-SX-106 COVER PLATES	X	1	1	

16. KEY

Approval Designator (F)	Reason for Transmittal (G)	Disposition (H) & (I)
(E), S, Q, D OR N/A (See WHC-CM-3-5, Sec. 12.7)	1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION
(See Approval Designator for required signatures)

(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN
1	2	Design Authority GP JANICEK		57-12		1	1	~~Cog Mgr~~ OTHER ~~Desg~~ DD WIGGINS	D.D. Wiggins	9/24/98	
		Design Agent				1	1	JN DOELER	RE Larson for JND	9/23/98	74-07
1	1	Cog. Eng. CB MCVEY	C.B. McVey	9/23/98	57-20	1	1	MR BROWN	M.R. Brown	9-23-98	T4-07
1	1	Cog. Mgr. MR KOCH	M.R. Koch	9/23/98	57-20						
1	1	QA TJ VOLKMAN	T.J. Volkman	9/23/98							
1	1	Safety LS KROGSRUD	L.S. Krogsrud	9/23/98							
1	1	Env. PC MILLER	P.C. Miller	9/23/98							

18. C.B. McVey 9/23/98
Signature of EDT Originator — Date

19. _____ _____
Authorized Representative for Receiving Organization — Date

20. M.R. Koch 9/23/98
Design Authority/ Cognizant Manager — Date

21. DOE APPROVAL (if required)
Ctrl No. N/A
[ ] Approved
[ ] Approved w/comments
[ ] Disapproved w/comments

APPENDIX B

MEETING MINUTES
DESIGN REVIEW MEETING ECN 612026,
241-SX-106 COVER PLATES

MEETING MINUTES

SUBJECT: DESIGN REVIEW MEETING ECN 612026, 241-SX-106 COVER PLATES

TO:	BUILDING
DISTRIBUTION	2704HV
FROM:	CHAIRMAN
Interim Stabilization Engineering	C. B. McVey

DEPARTMENT-OPERATION-COMPONENT	AREA	SHIFT	DATE OF MEETING	NUMBER ATTENDING
ISE	200-E		09/16/98	5

Distribution:
MH Brown*
JN Doeler
GP Janicek*
MR Koch
LS Krogsrud
CB McVey*
PC Miller
RW Reed
TJ Volkman*
WF Zuroff*
DD Wiggins*

This design review meeting was called in response to a field condition on 241-SX-106. The cover blocks on the pump pit had core drilled holes which did not align with the saltwell jet pump. This misalignment required two new 2" steel plates to be fabricated and installed on the pump pit after the key block was moved to come into alignment with the pump.

The design review was for the fabrication of the plates and installation. Review Comment Records were not taken for this review. The comments on a previous review (ECN 638517) were incorporated onto ECN 638521. Comments were taken during the meeting. These comments are recorded as follows:

1) Material certifications on the steel would not be required since the critical loading analysis was provided in the ECN on Page 7.

2) Due to the urgency for ordering the material and fabrication, this ECN should be separated into a fabrication ECN (612026) and an installation ECN (638521).

3) The installation ECN (638521) must have a Dose Rate calculation done and a Life Cycle Exposure Differential performed as part of the Design Review Report.

4) The installation ECN (638521) shall also have a seismic analysis performed on the restraints. This was discussed as to the requirement. After the discussion it was decided that it would be good engineering practice to provide as backup in the Design Review Report.

APPENDIX C

DOSE RATE REDUCTION DUE TO INSTALLATION OF 2" STEEL COVER PLATE AT 241-SX-106 PUMP PIT

Dose Rate Reduction Due to Installation of 2" Steel Cover Plate At 241-SX-106 Pump Pit

September 25, 1998, Page 1 of 2
Prepared By: D. J. Foust
Senior Health Physicist, TWRS Radiological Engineering & Technical Support

1. Scope

This document describes the determination of the expected dose rate over the 241-SX-106 pump pit after the installation of a 5.1 cm (2 inch) cover plates. The existing concrete cover block must be offset from its original position to align the pump valve access ports. The remaining pit opening will be covered by 5.1 cm (2 inch) steel plate.

2. Assumptions

- Based on current radiological survey reports, the maximum unshielded dose rate over the area of the pump pit to be covered by the carbon steel plate is 200 mrem/hr.
- The majority of the penetrating radiation from the pump pit is due the 0.662 Mev gamma emitted by the ^{137m}Ba daughter of ^{137}Cs.
- The half-value layer for ^{137}Cs in iron is approximately 1.9 (0.75 inch)[1].

3. Calculation

$Dose\ Rate_{\max_{SteelShielded}} = Dose\ Rate_{\max_{Unshielded}} \times (.5)^n$ where n = number of half-value layers

$$n = \frac{5.1\ cm}{1.9\ cm} = 2.7$$

$$Dose\ Rate_{\max_{SteelShielded}} = \frac{200\ mrem}{hr} \times (.5)^{2.7} = \frac{31\ mrem}{hr}$$

4. Life Cycle Exposure Differential

- Maximum personnel occupancy over the carbon steel cover plate is expected to be 15 minutes (0.25 hr) per week.
- SX-106 pumping schedule is 502 days (conservative estimate of 2 years will be used for calculation).
- Half-value layer of concrete cover block to be replace by the carbon steel plates is 5 cm (2 inches)[2].
- Thickness of concrete cover block replaced by carbon steel plate is 38 cm (15 inches).

$$n = \frac{38\ cm}{5\ cm} = 7.6$$

$$Dose\ Rate_{ConcreteShielded} = \frac{200\ mrem}{hr} \times (.5)^{7.6} = \frac{1\ mrem}{hr}$$

[1,2] Bernard Shleien, The Health Physics and Radiological Health Handbook, Revised Edition, 1992, page192

Dose Rate Reduction Due to Installation of 2" Steel Cover Plate At 241-SX-106 Pump Pit

Prepared By: D. J. Foust
Senior Health Physicist, TWRS Radiological Engineering & Technical Support

$$\frac{31\ mrem}{hr} - \frac{1\ mrem}{hr} = \frac{30\ mrem}{hr}$$

$$\frac{30\ mrem}{hr} \times \frac{0.25\ hr}{week} \times \frac{52\ week}{yr} \times 2\ yr = 780\ mrem$$

5. Conclusion

The calculated exposure increase due to the proposed installation of the carbon steel cover plate is 780 mrem for the life cycle of the project. This calculated exposure is based on several conservative assumptions. Actual dose rates should be verified by field measurements after installation of the cover plate. Exposure may be further reduced by administratively limiting personnel occupancy over the cover plate.

APPENDIX D

DESIGN CALCULATION
241-SX-106 COVER PLATE SEISMIC RESTRAINTS

(1) Drawing _____ (2) Doc. No. _____ (3) Page _____ of _____
(4) Building _____ (5) Rev. _____ (6) Job No. _____
(7) Subject 241-SX-106 COVER PLAT SEISMIC RESTRAINTS
(8) Originator John Tsai Date 9-21-98
(9) Checker Brian Anderson Date 9-22-98

(10)

A seismic analysis is required for the installation of steel cover block plates on the 241-SX-106 pump pit. The SX-106 pump pit requires the installation of two steel plates to act as spray control and radiation shielding covers. The layout of the pump pit covers is shown in the following figure. The pump pit is constructed from concrete and is located within the ground. The top of the pit extends beyond elevation by approximately six inches while the bottom of the pit extends into the ground six feet. The steel cover blocks are constructed from 2-inch thick A-36 carbon steel and will rest on the edge of the pump pit and existing concrete cover block. The steel cover block is being viewed as falling within the range of a rigid structure, based upon the above description of the application within the field and engineering experience.

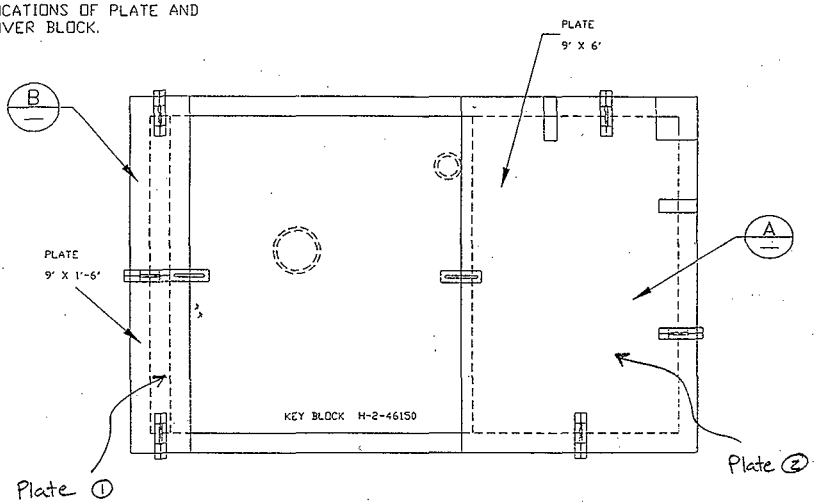
Seismic loading for this application is taken from HNF-PRO-097, Engineering Design and Evaluation. While the performance category (PC) for this application falls within the PC1 and PC2 range for earthquake loading, implying application of Uniform Building Code seismic zone 2B loading. Performance category three (PC3) horizontal accelerations will be used as a measure of conservatism. Only horizontal forces shall be applied to the seismic retraints for the steel cover blocks. Concern has been expressed over the possibility of the steel cover plates to lift off during a seismic event. Thereby, exposing personnel or releasing radioactive spray into the atmosphere. The vertical component of the seismic load is insufficient to overcome the dead weight of the steel cover plates and therefore will not result in the cover plates lifting off of the pump pit. Even under worse case vertical loading, the vertical response spectra does not exceed a value of 1.0 g, thereby the uplifting force cannot exceed the dead weight of the cover plates and the plates will not lift off.

The following calculations validate the use of steel cover plates and their seismic retraints on conformance with existing Hanford Site design requirements..

(1) Drawing _____ (2) Doc. No. _____ (3) Page _____ of _____
(4) Building _____ (5) Rev. _____ (6) Job No. _____
(7) Subject 241-SX-106 COVER PLATE RESTRAINTS
(8) Originator _____ Date 9-21-98
(9) Checker Basam Andrea Date 9-22-98

H-2-46150, Sheet 1, Rev. 3: Modify Key Cover Block (241-SX-106) as shown:

NOTE: FIELD TO DETERMINE LOCATIONS OF PLATE AND COVER BLOCK.



PLAN PUMP PIT 241-SX-106A ONLY

GENERAL LOCATION

Plate ① $W_1 = 108 in\,(18 in)(2 in) = 3888\ in^3\,(0.282\ lb/in^3) = 1096\ lb$

Plate ② $W_2 = 108 in\,(72 in)(2 in) \approx 15{,}552\ in^3\,(0.282\ lb/in^3) = 4386\ lb$

[APPROXIMATE DIMENSIONS]

ALLOWABLE STRESS

ASTM-A36 $\sigma_y = 36000$ psi $\sigma_{ult} = 58000$ psi

bending $\sigma_{B_{all}} = .6\sigma_y = 21600$ psi

shear $\tau = .4\sigma_y = 14400$ psi

PAGE 2/6

(1) Drawing _____ (2) Doc. No. _____ (3) Page _____ of _____
(4) Building _____ (5) Rev. _____ (6) Job No. _____
(7) Subject 241-SX-106 COVER PLATE SEISMIC RESTRAINTS
(8) Originator John Fem Date 9-22-98
(9) Checker Ruben Andrea Date 9-22-98

(10) HORIZONTAL LOADS

LATERAL SEISMIC FORCES SHALL BE APPLIED AT 100% IN BOTH THE NORTH-SOUTH AND EAST-WEST DIRECTIONS, TO EXERT MAXIMUM DESIGN LOADS UPON SEISMIC RESTRAINTS.

$F_H = 0.37 \frac{a}{g}$ per; HNF-PRO-97, Engineering Design and Evaluation, Table 6.

Plate ①

$P_H = F_H W_1$

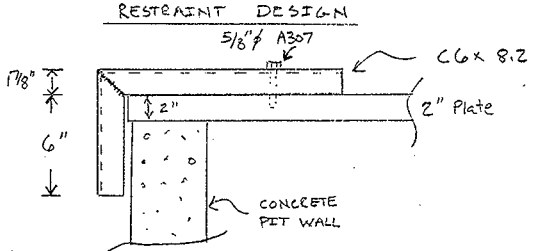
$P_H = 0.37 (1096\ lb) = 406\ lb.$ (N-S) (E-W)

Plate ②

$P_H = F_H W_2$

$P_H = 0.37 (4386\ lb) = 1623\ lb$ (maximum horizontal)

RESTRAINT DESIGN

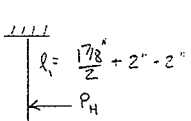


per; AISC 9th Ed.

$A = 2.40\ in^2$

$S_x = 4.38\ in^3$

$S_y = 0.492\ in^3$



$M_1 = P_H l_1$

$M_1 = 1623\ lb\ (4.9975\ in)$

$M_1 = 8014\ in \cdot lb$

(1) Drawing _____ (2) Doc. No. _____ (3) Page _____ of _____
(4) Building _____ (5) Rev. _____ (6) Job No. _____
(7) Subject 241-SX-106 COVER PLATE SEISMIC RESTRAINTS
(8) Originator [signature] Date 9-22-98
(9) Checker Barron Andrea Date 9-22-98

(10) RESTRAINT DESIGN (CONT.)

$\sigma_b = M_y / S_y$

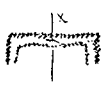
$\sigma_b = \frac{8014 \text{ in-lb}}{0.492 \text{ in}^3} = 16289 \text{ lb/in}^2$

$IR = \frac{\sigma_b}{\sigma_{Ball}} \quad \frac{16289 \text{ lb/in}^2}{21600 \text{ lb/in}^2} = 0.75 < 1.0$ OK

C6x8.2 OK TO RESIST BENDING STRESS

WELD DESIGN;

WELD DESIGN AND ANALYSIS CONDUCTED PER, "WELDING FORMULAS AND TABLES FOR STRUCTURAL AND MECHANICAL ENGINEERS, T.S. HOBERT, 2nd Ed.



C6 x 8.2 $L = 18.6$ in
$S_x = 29.8^2$
$S_y = 13.0^2$

$f = \frac{P}{L} + \frac{M_z}{S_y} \quad f = \frac{1623 \text{ lb}}{18.6 \text{ in}} + \frac{8014 \text{ in-lb}}{13.0 \text{ in}^2} = 703.7 \text{ lb/in}$

FOR E70 ELECTRODE WITH 1/8" LEG SIZE $f_{all} = 1800$ lb/in

$IR = \frac{f}{f_{all}} \quad \frac{703.7 \text{ lb/in}}{1800 \text{ lb/in}} = 0.39 < 1.0$ OK

(1) Drawing _____ (2) Doc. No. _____ (3) Page _____ of _____
(4) Building _____ (5) Rev. _____ (6) Job No. _____
(7) Subject 241-SX-106 COVER PLATE SEISMIC RESTRAINTS
(8) Originator John Yun Date 9-22-98
(9) Checker Barry Clarkson Date 9-22-98

(10) BOLTING

USE 5/8" DIA. ASTM A307 BOLTS.
SHEAR AREA BASED UPON THREADS IN THE LOAD PATH

$A_s = \frac{\pi}{4} D_{min}^2$

D_{min} = minor diameter threads per; Machinery's Handbook 24th Table 3a, p. 530. [0.5168in]

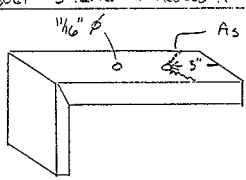
$A_s = \frac{\pi}{4}(0.5168in)^2 = 0.21 in^2$

$\tau = P/A \quad \frac{1623\ lb}{0.21\ in^2} = 7729\ lb/in^2$

$IR = \frac{\tau^3}{\tau_{all}}$ $\tau_{all} = 0.17\ \tau_{ult}$ per; AISC 9th Ed., p. 4-5, for threads in shear plane.

$IR = \frac{7729\ lb/in^2}{0.17(60{,}000\ lb/in^2)} = 0.76 < 1.0$ OK

BOLT SHEAR THROUGH CHANNEL WEB



$A_s = 2\left[t\left(EM - \frac{d}{2}\cos 40\right)\right]$

$A_s = 2\left[\frac{3}{16}"\left(3" - \frac{11/16"}{2}\cos 40\right)\right]$

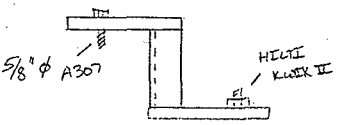
$A_s = 1.03 in^2$

$\tau = P/A_s \quad \frac{1623\ lb}{1.03 in^2} = 1576\ lb/in^2$

$IR = \frac{\tau}{\tau_{all}} \quad \frac{1576\ lb/in^2}{14400\ lb/in^2} = 0.11 < 1.0$ OK

(1) Drawing _____ (2) Doc. No. _____ (3) Page _____ of _____
(4) Building _____ (5) Rev. _____ (6) Job No. _____
(7) Subject 241-SX-106 COVER PLATE SEISMIC RESTRAINTS
(8) Originator _____ Date 9-22-98
(9) Checker Rasim Andrea Date 9-22-98

(10) STEEL PLATE TO CONCRETE COVER RESTRAINT



P_H = 1623 lb

$P_V = 0.27g\,(4386\,lb) = 1184\,lb$

VERTICAL FORCE INDUCED BY VERTICAL RESTRAINT.

WELD $f = \frac{P_H}{L} + \frac{P_V}{L}$

$f = \frac{1623\,lb}{18.6\,in} + \frac{1184\,lb}{18.6\,in} = 150.9\,lb/in$

$IR = \frac{f}{f_{all}}$ $\frac{150.9\,lb/in}{1800\,lb/in} = 0.08 < 1.0$ OK

HILTI BOLT ANALYSIS

$V = P_H = 1623\,lb$

$T = P_V = 1184\,lb$

per; HILTI Product Technical Guide, ICBO Approved expansion anchor.

$\frac{V_{app}}{V_{all}} + \frac{T_{app}}{T_{all}} < 1.0$

5/8" ϕ KWIK BOLT II WITH 4" EMBED IN 2000 psi CONCRETE

$V_{all} = 3840\,lb$

$T_{all} = 2400\,lb$

$\frac{1623\,lb}{3840\,lb} + \frac{1184\,lb}{2400\,lb} = 0.92 < 1.0$ OK

USE 5/8" ϕ HILTI KWIK BOLT II's WITH 4" MINIMUM EMBEDMENT.

DISTRIBUTION SHEET

To	From	Page 1 of 1
Distribution	Interim Stabilization Engineering	Date 9/25/98
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Design Review Report for ECN 638521 (241-SX-106 Cover Plate Install)		ECN No. 638521

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
Brown, M. H.	T4-07	X			
Doeler, J. N.	T4-07				X
Johnson, M. N.	S7-20				X
Koch, M. R.	S7-20	X			
Krogsrud, L. S.	T4-07	X			
McVey, C. B.	S7-20	X			
Miller, P. C.	R1-51		X		
Volkman, T. J.	S7-07	X			
Wiggins, D. D.	S7-20				X
Zuroff, W. F.	S7-20	X			
Janicek, G. P.	S7-12	X			