

APPENDIX A – PHOTOGRAPHS AND SKETCHES



Figure 1. Existing truss and support towers.



Figure 2. Existing truss and support towers with hanging roller doors.



Figure 3. Truss viewed from inside hangar.



Figure 4. Photograph showing the overlapping 3x truss members.



Figure 5. Inside of main truss showing transverse support trusses.



Figure 6. Photograph showing single bolt connections near truss midspan, and double bolt connections at steel angle splice.



Figure 7. Photograph showing 3x to steel angle connections using two (2) bolts per plank. Note significant deformation at connections and insufficient edge distance.



Figure 8. Photograph showing deformation at 3x plank to steel angle connection.



Figure 9. Photograph showing plank to angle connection. Note deformation and splitting of 3x plank members.



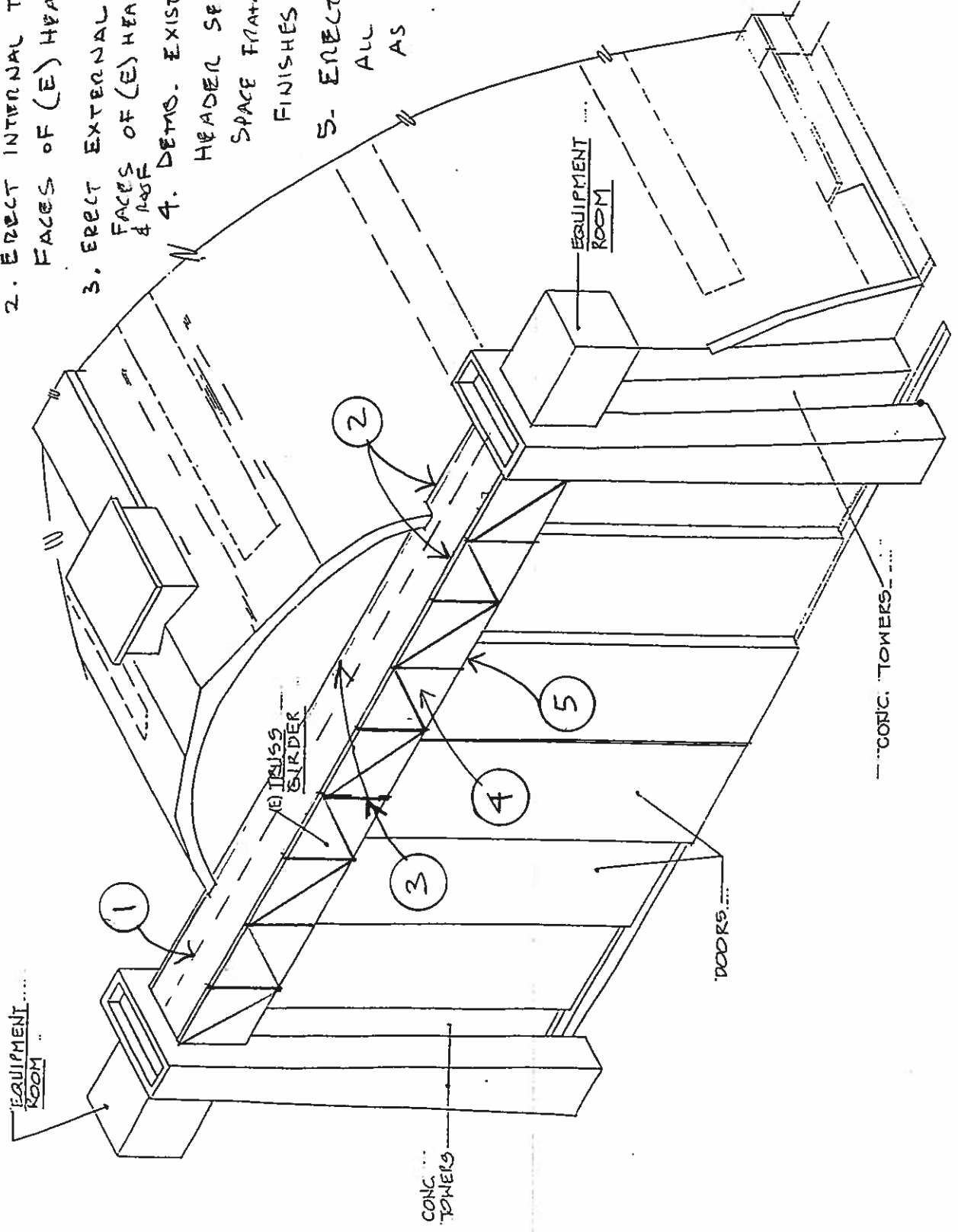
Figure 10. Truss to concrete tower wall connection.



Figure 11. Photograph showing possible water infiltration and damage to truss.

RETRO-FIT OPTIONS

1. ERECT INTERNAL TRUSS AT CENTERLINE OF EXISTING HEADER & APPLY (N) ROOFING
2. ERECT INTERNAL TRUSSES NEAR OUTSIDE FACES OF (E) HEADER & APPLY (N) ROOFING
3. ERECT EXTERNAL TRUSSES AT OUTSIDE FACES OF (E) HEADER. APPLY (N) FINISHES & ROOF
4. DEMO. EXISTING SIMPLE SPAN HEADER SECTION AND ERECT NEW SPACE FRAME HEADER, APPLY (N) FINISHES & ROOF
5. ERECT SHORING FOR ALL REPAIR OPTIONS AS REQUIRED.

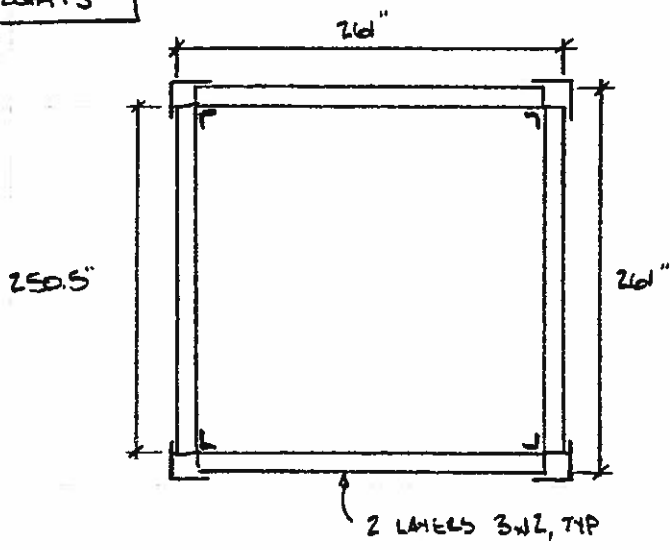


ANNOTATED SKETCH

SK1

APPENDIX B – CALCULATIONS

DOOR GIRDER WEIGHTS



PERIMETER = $4 \times 261'' = 1044''$

$$I = \frac{(261)(261)^3}{12} - \frac{(250.5)(250.5)^3}{12}$$

$$= 58,573,063 \text{ in}^4$$

3x12 @ 7.6 psf = $(7.6 \text{ psf})(2 \text{ LAYERS})(1044''/12) = 1323 \text{ plf}$
 ASBESTOS @ 4 psf = $(4 \text{ psf})(1044''/12) = 348 \text{ plf}$
 TRUSS RIBS @ 7'-1" O/C = $1182'' / 7.083' = 167 \text{ plf}$
 STEEL HARDWARE = 10% OF GIRDER (ASSUME)
 = $(0.1)(1323 + 348 + 167) = 184 \text{ plf}$

2022 plf For Box GIRDER
 = 436 plf
 = 292 plf
2750 plf

ADDL ROOF WT = $(12 \text{ psf})(1.7)(21.33')$
 MISL (ASSUMED)

CASE 1: DL ONLY
 CASE 2: DL + LL \Rightarrow ADDL $(12 \text{ psf})(21.33') = 256 \text{ plf}$

$V_{MAX} = 303.5^k \text{ DL } (\underline{332.2^k \text{ D+L}})$

$M_{MAX} = 3.01^k \text{ (220.75)^2 } \frac{1}{8} = \underline{18,335} \text{ K-FT D+L}$

DOOR GIRDER
SHEAR FLOW

$$q = \frac{VQ}{I}$$

$$V = w L/2$$

$$I = 58573063 \text{ in}^4$$

$$Q = A \bar{y} = (5.25' \times 250.5'') \left(\frac{261''}{2} - 5.25' \frac{''}{2} \right) = 168171 \text{ in}^3$$

$$V_1 = (2750 \text{ plf}) \left(\frac{220.75'}{2} \right) = 303532 \#$$

$$V_2 = (3010 \text{ plf}) \left(\frac{220.75'}{2} \right) = 332229 \#$$

$$q_1 = \frac{(303532 \#)(168171 \text{ in}^3)}{58573063 \text{ in}^4} = 872 \text{ lb/in} = 436 \text{ lb/in EACH EDGE}$$

$$q_1 = (436 \text{ lb/in})(12'') = 5232 \text{ plf}$$

$$q_2 = \frac{(332229 \#)(168171 \text{ in}^3)}{58573063 \text{ in}^4} = 954 \text{ lb/in} = 477 \text{ lb/in EACH EDGE}$$

$$q_2 = (477 \text{ lb/in})(12'') = 5724 \text{ plf}$$

GIRDER DEFLECTION

$$\Delta = \frac{5wL^4}{384EI}$$

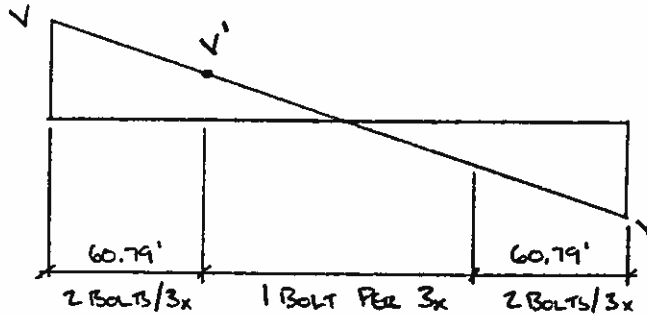
ASSUME $E = 1.7 \times 10^6 \text{ psi}$
 $L = 220.75' = 2649''$

$$\Delta_1 = \frac{(5)(2750/12)(2649'')^4}{(384)(1.7 \times 10^6)(58573063)} = 1.48''$$

$$\Delta_2 = \frac{(5)(3010/12)(2649'')^4}{(384)(1.7 \times 10^6)(58573063)} = 1.62''$$

$$V_1 = 2750 \text{ plf (OL ONLY)} \Rightarrow 305532^{\#} \text{ EACH END}$$

$$V_2 = 3010 \text{ plf (OL+LL)} \Rightarrow 332229^{\#} \text{ EACH END}$$



$$\frac{V}{110.375'} = \frac{V'}{49.59'}$$

$$V'_1 = 136373^{\#} \text{ (OL ONLY)}$$

$$V'_2 = 149266^{\#} \text{ (OL+LL)}$$

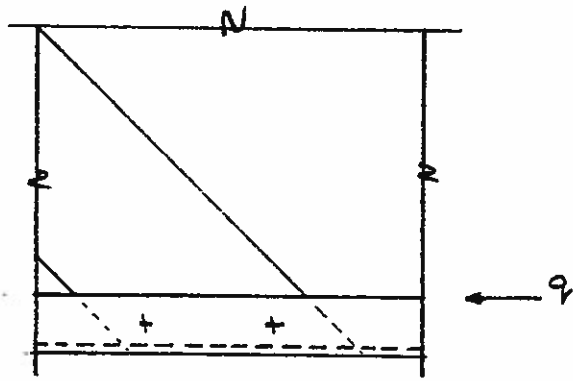
$$q'_1 = \frac{(136373^{\#})(168171 \text{ in}^3)}{58573063 \text{ in}^4} = 392 \text{ lb/in} = 196 \text{ lb/in EACH EDGE}$$

$$q'_2 = \frac{(149266^{\#})(168171 \text{ in}^3)}{58573063 \text{ in}^4} = 429 \text{ lb/in} = 215 \text{ lb/in EACH EDGE}$$

$$q''_1 = (196 \text{ lb/in})(12") = 2352 \text{ plf (OL ONLY)}$$

$$q''_2 = (215 \text{ lb/in})(12") = 2580 \text{ plf (OL+LL)}$$

**EMBER
HECK**



$q_1 = 5232 \text{ plf (DL)}$
 $q_2 = 5724 \text{ plf (DL + LL)}$

FORCE PER BOLT IS

$F_1 = \frac{(5232 \text{ plf})(1')}{2 \text{ BOLTS}} = 2616 \#$
 $F_2 = \frac{(5724 \text{ plf})(1')}{2 \text{ BOLTS}} = 2862 \#$

3x MEMBERS AT 45° ANGLE (ASSUMED)

HANGARS CONSTRUCTED CA. 1945

PER 1956 VALUES FOR DF STANDARD GRADE $F_b = 1200 \text{ psi}$
 $F_c = 1000 \text{ psi}$ $F_{c1} = 390 \text{ psi}$ $E = 1760000 \text{ psi}$

SEE NOS 2005 APPENDIX J FOR LOADING AT ANGLE TO MEMBER & CONNECTION

B-B
SHEAR
 $Z'_0 = \frac{Z'_1 Z'_2}{Z'_1 \sin^2 \theta + Z'_2 \cos^2 \theta}$ FOR $\frac{7}{8}'' \phi$ BOLTS

$C_D = 0.9$ FOR DL ONLY
 BEST CASE ALL OTHER FACTORS = 1.0

$Z'_1 = (1190 \#)(0.9) = 1071 \#$
 $Z'_2 = (410 \#)(0.9) = 369 \#$

↑ FROM NOS TABLE 11A

$t_m = 2\frac{1}{2}''$
 $t_b = 1\frac{1}{2}''$ (CONSERVATIVE)

R BOLT PER PLANK

$Z'_0 = \frac{(1071)(369)}{(1071)(0.5) + (369)(0.5)}$
 $= 548 \# < 2352 \# / \text{BOLT} \Rightarrow \underline{\underline{NCT}}$
 AT CORN U / NO SPLIT RING

→ D/C = 4.3

**BIGGS CARDOSA
ASSOCIATES INC.**

SECTION A-A
SPLIT RIBS

$$N' = \frac{P'Q'}{P' \sin^2 \phi + Q' \cos^2 \phi} \quad \text{For } 4" \phi \text{ SPLIT RIBS}$$

$C_0 = 0.9$ For DL ONLY

BEST CASE ALL OTHER FACTORS = 1.0

$$P' = (5000^{\#})(0.9) = 4500^{\#}$$

$$Q' = (3480^{\#})(0.9) = 3132^{\#}$$

↑
FROM NDS TABLE 12.2A,
SPECIES GROUP B

$$N' = \frac{(4500)(3132)}{(4500)(0.5) + (3132)(0.5)}$$

$$= 3693^{\#} > 2616^{\#} / \text{BOLT} \Rightarrow \text{OK}$$

VERIFY ALL OTHER FACTORS = 1.0

$$P' = C_0 C_m C_e C_g C_d C_i C_{st}$$

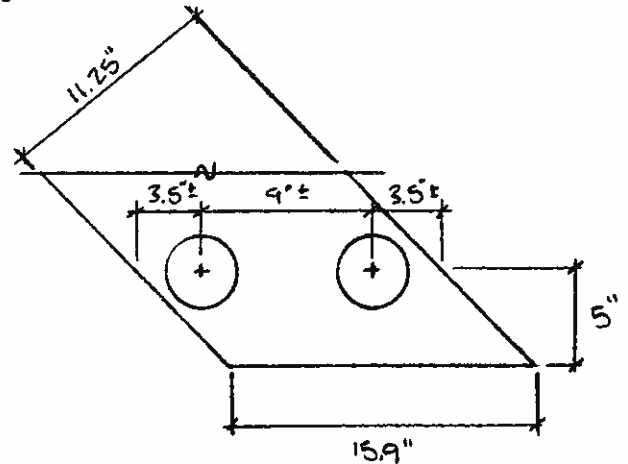
$$Q' = C_0 C_m C_e C_g C_d C_i \cdot$$

$$C_m = C_e = 1.0 \text{ OK}$$

$$A_m = A_s \Rightarrow C_g = 1.0 \text{ OK (SEE NDS 10.3.6)}$$

$$C_d = N/A \text{ OK}$$

$$C_{st} = N/A \text{ OK}$$



END DISTANCE = N/A JOK
 SPACING = 9" ± = 9" REQ'D JOK
 EDGE DISTANCE = 3.5" < 3.75" FOR C₁ = 1.0
 ⇒ USE MAX REDUCTION (CONSERV.)
 C₁ = 0.83

$$P' = (5000^{\#})(0.9)(0.83) = 3735^{\#}$$

$$Q' = (3480^{\#})(0.9)(0.83) = 2599^{\#}$$

$$N' = \frac{(3735)(2599)}{(3735)(0.5) + (2599)(0.5)}$$

= 3065# > 2616# / BOLT JOK WHERE SPLIT RING IS PROVIDED D/C = 0.854

SPLIT RING OK ⇒ CHECK 7/8" Ø BOLT IN DOUBLE SHEAR

SECTION A-A
DOUBLE SHEAR

$$Z'_0 = \frac{Z'_1 Z'_2}{Z'_1 \sin^2 \theta + Z'_2 \cos^2 \theta}$$

C₀ = 0.9 FOR DL ONLY

BEST CASE ALL OTHER FACTORS = 1.0

$$Z'_{11} = (4440^{\#})(0.9) = 3996^{\#}$$

$$Z'_{12} = (2210^{\#})(0.9) = 1989^{\#}$$

↑ AISC TABLE 11G

$$t_m = 5/16", t_s > 1/4"$$

$$Z'_0 = \frac{(3996)(1989)}{(3996)(0.5) + (1989)(0.5)}$$

= 2655# > 2616# / BOLT JOK D/C = 0.99

SUMMARY: SPLIT RING OK
 BOLTS WILL FAIL AT
 CONNECTION PER SECTION B-B
 OK AT SECTION A-A

BOX GIRDER CONN
TO CONK TOWER

$$V_{max} = 303.5^k \quad DL = 152^k / \text{SIDE DL}$$

$$= 332.2^k \quad DL + LL = 166.1^k / \text{SIDE DL + LL}$$

2 BOLTS / PLATE \Rightarrow \sim 26 BOLTS EACH SIDE

$$Z' = Z_c C_m C_t C_g C_a C_{g1} C_d C_{e1}$$

$$C_d = 0.9$$

$$C_m = C_t = C_d = C_{e1} = C_{g1} = C_a = 1.0$$

$$C_g \approx 0.99 \quad (\text{SEE NDS TABLE 10.3.6C})$$

$$Z'_0 = \frac{Z'_{||} Z'_{\perp}}{Z'_{||} \sin^2 \theta + Z'_{\perp} \cos^2 \theta}$$

$$\theta = 45^\circ$$

$$Z'_{||} = (1480^k)(0.9)(0.99) = 1318^k$$

$$Z'_{\perp} = (590^k)(0.9)(0.99) = 525^k$$

} SEE NDS TABLE 11D

CAPACITY IN DOUBLE SHEAR

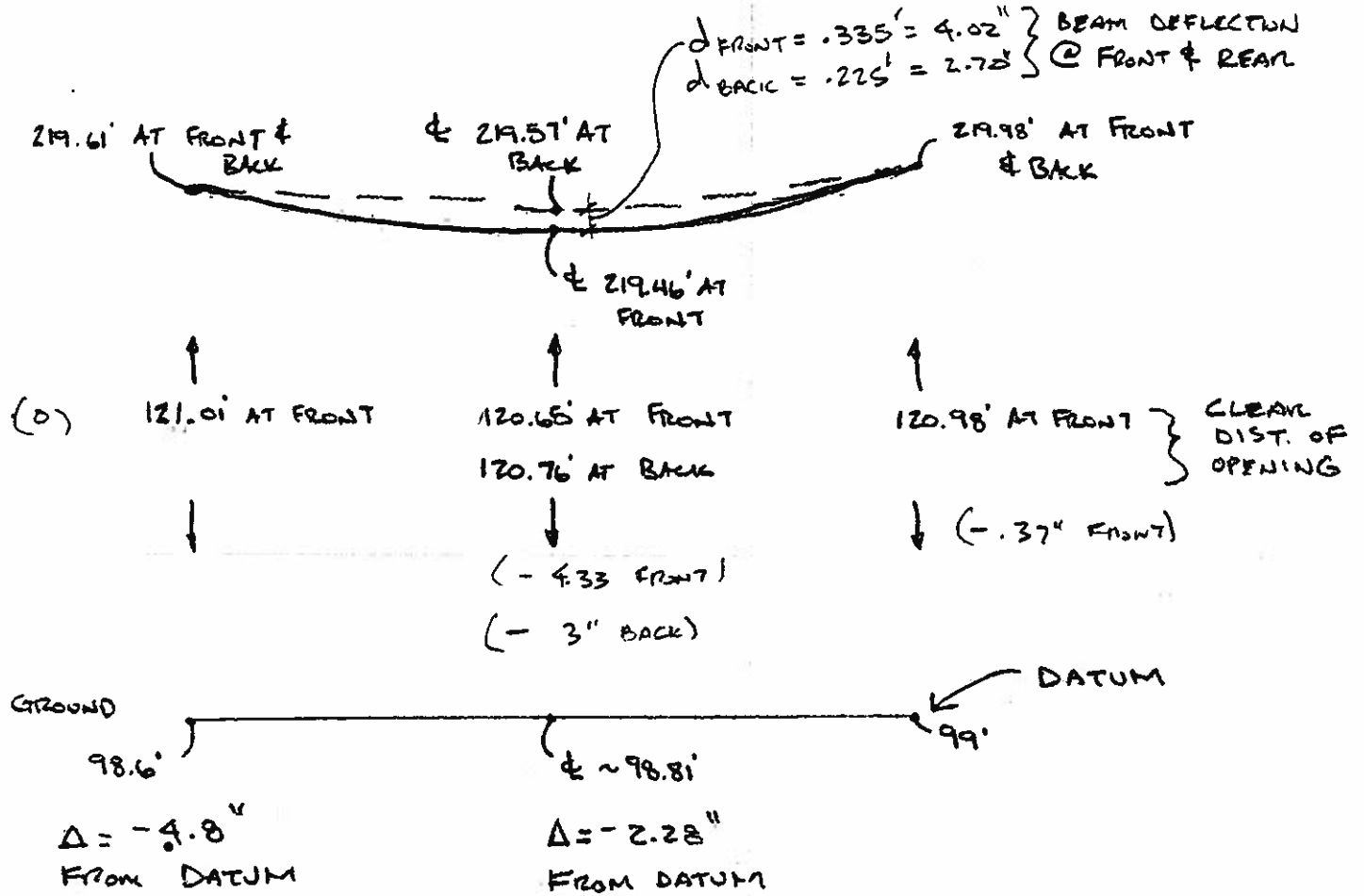
$$Z'_{||} = (2)(1318^k) = 2636^k$$

$$Z'_{\perp} = (2)(525^k) = 1050^k$$

$$Z'_0 = \frac{(2636)(1050)}{(2636)(0.5) + (1050)(0.5)} = 1501^k / \text{BOLT}$$

$$\text{CAPACITY} = (26)(1501^k / \text{BOLT}) = 39^k < 152^k \Rightarrow \underline{\underline{NG}}$$

$$DC = 3.9$$



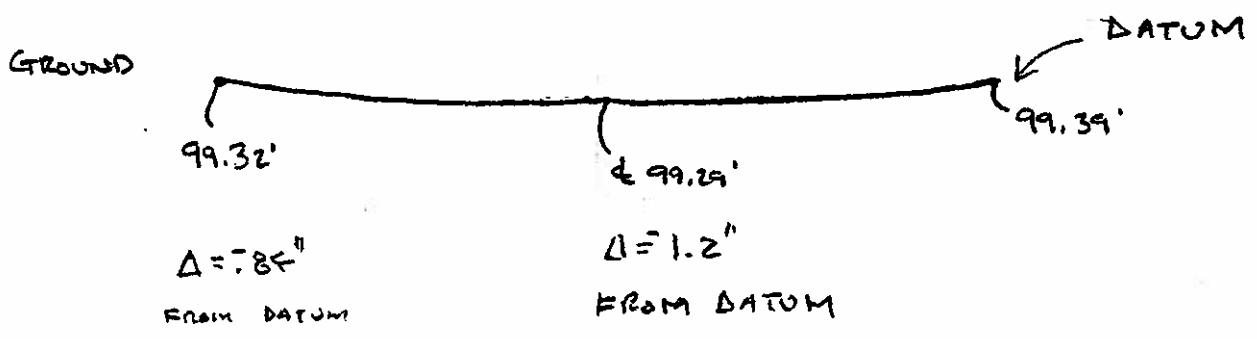
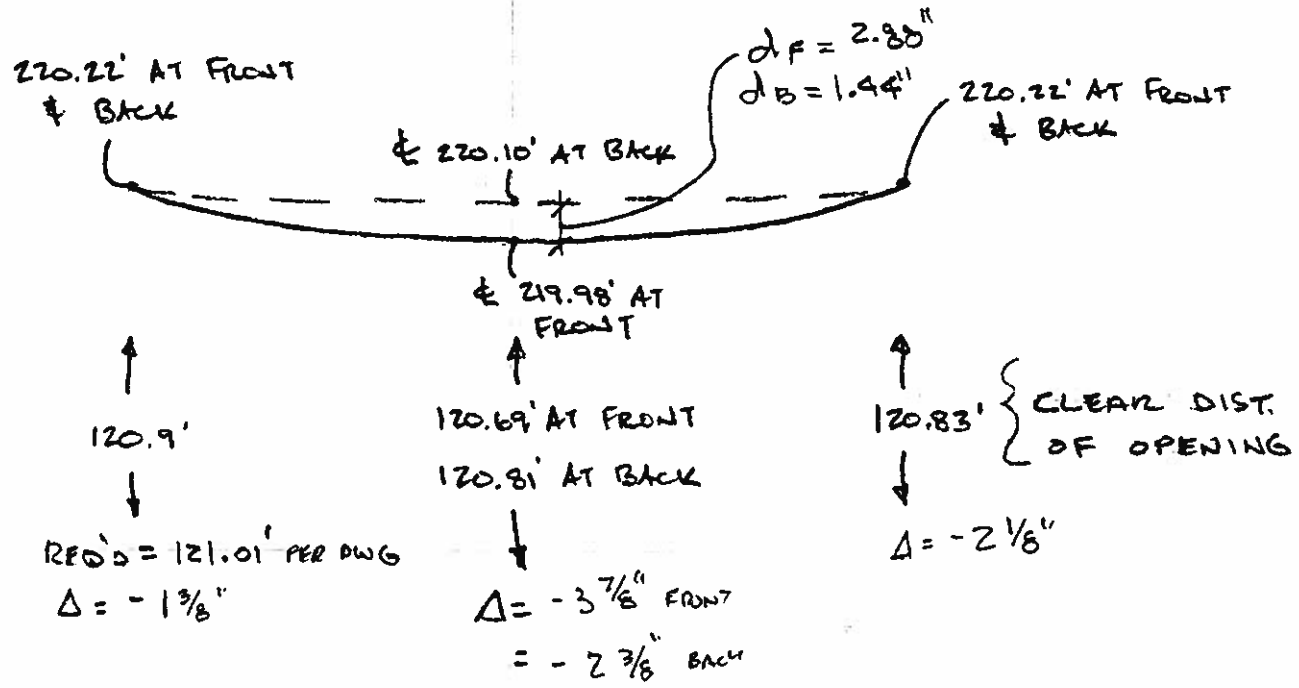


TABLE NO. 25-A—ALLOWABLE UNIT STRESSES FOR STRESS-GRADE LUMBER

Normal Loading—See also Section 2503(b),(c)

Table 25-A

SPECIES AND COMMERCIAL GRADE	SYMBOL:	ALLOWABLE UNIT STRESSES, POUNDS PER SQ. INCH					Rules under which Graded
		Compression Parallel to Grain (Short Columns L/d=11 or less)	Compression Perpendicular to Grain	Extreme Fiber in Bending (and Tension Parallel to Grain)	Maximum Horizontal Shear	Modulus of Elasticity	
		c or p	q	f	H	E	
CYPRESS, TIDEWATER RED:							
1700 f Grade	J.&P.-B.&S.	1,425		1,700	145		U.B.C. Standard No. 25-4
1300 f Grade	J.&P.-B.&S.	1,125	360	1,300	120	1,200,000	
1450 c Grade	P.&T.	1,450		—	—		
1200 c Grade	P.&T.	1,200		—	—		
DOUGLAS FIR, COAST REGION							
Dense Select Structural	J.&P.-B.&S.	1,550	455	2,150	145		U.B.C. Standard No. 25-5
Select Structural	J.&P.-B.&S.	1,450	415	1,900	120		
1700 f.—Dense No. 1	J.&P.-B.&S.	1,325	455	1,700	145		
1450 f.—No. 1	J.&P.-B.&S.	1,200	390	1,450	120		
1100 f.—No. 2	J.&P.-B.&S.	1,075	390	1,100	110	1,600,000	
Dense Select Structural	P.&T.	1,550	455	—	—		
Select Structural	P.&T.	1,450	415	—	—		
Dense No. 1	P.&T.	1,400	455	—	—		
No. 1	P.&T.	1,200	390	—	—		
HEMLOCK, EASTERN:							
Select Structural	J.&P.-B.&S.	850		1,300	85		U.B.C. Standard No. 25-6
Prime Structural	J.&P.	775		1,200	60		
Common Structural	J.&P.	650	360	1,100	60	1,100,000	
Utility Structural	J.&P.	600		950	60		
Select Structural	P.&T.	850		—	—		
HEMLOCK, WEST COAST:							
1600 f.—Select Structural	J.&P.	1,100		1,600	100		U.B.C. Standard No. 25-7
1450 f.—No. 1	J.&P.-B.&S.	1,075	360	1,450	100	1,400,000	
1100 f.—No. 2	J.&P.	850		1,100	90		
No. 1 Hemlock Timbers	P.&T.	1,075		—	—		
DOUGLAS FIR, INLAND REGION:							
Select Structural	J.&P.	1,750	455	2,150	145	1,600,000	U.B.C. Standard No. 25-8
Structural	J.&P.	1,400	400	1,900	100	1,500,000	
Common Structural	J.&P.	1,250	380	1,450	95	1,500,000	
Select Structural	P.&T.	1,750	455	—	—	1,600,000	
Structural	P.&T.	1,400	400	—	—	1,500,000	
Common Structural	P.&T.	1,250	380	—	—	1,500,000	

UNIFORM BUILDING CODE

1949 EDITION

LARCH:							
Select Structural	J.&P.	1,750	455	2,150	145		U.B.C. Standard No. 25-9
Structural	J.&P.	1,450	415	1,900	120	1,500,000	
Common Structural	J.&P.	1,325	390	1,450	120		
Select Structural	P.&T.	1,750	455	—	—		
Structural	P.&T.	1,450	415	—	—		
Common Structural	P.&T.	1,325	390	—	—		
OAK, RED AND WHITE:							
2150 f Grade	J.&P.	1,550		2,150	145		U.B.C. Standard No. 25-10
1900 f Grade	J.&P.-B.&S.	1,375		1,900	145		
1700 f Grade	J.&P.-B.&S.	1,200	600	1,700	145	1,500,000	
1450 f Grade	J.&P.-B.&S.	1,050		1,450	120		
1300 f Grade	B.&S.	950		1,300	120		
1325 c Grade	P.&T.	1,325		—	—		
1200 c Grade	P.&T.	1,200		—	—		
1075 c Grade	P.&T.	1,075		—	—		
PINE, SOUTHERN:							
Dense Select Structural	J.&P.-B.&S.	1,750	455	2,400	120		U.B.C. Standard No. 25-11
Dense Structural	J.&P.-B.&S.	1,400	455	2,000	120		
Dense Structural S.E.&S.	J.&P.-B.&S.	1,300	455	1,800	120		
Dense No. 1 Structural	J.&P.-B.&S.	1,150	455	1,600	120		
No. 1 Dense	J.&P.	1,400	455	1,700	150	1,600,000	
No. 1	J.&P.	1,200	390	1,450	125		
No. 2 Dense	J.&P.	1,025	455	1,250	100		
No. 2	J.&P.	875	390	1,100	85		
Dense Select Structural	P.&T.	1,750	455	—	—		
Dense Structural	P.&T.	1,400	455	—	—		
Dense Structural S.E.&S.	P.&T.	1,300	455	—	—		
Dense No. 1 Structural	P.&T.	1,150	455	—	—		
PINE, SOUTHERN LONGLEAF:							
Select Structural Longleaf	J.&P.-B.&S.	1,750		2,400	120		U.B.C. Standard No. 25-12
Prime Structural Longleaf	J.&P.-B.&S.	1,400		2,000	120		
Merchantable Structural Longleaf	J.&P.-B.&S.	1,300		1,800	120		
Structural S.E.&S. Longleaf	J.&P.-B.&S.	1,300		1,800	120		
No. 1 Structural Longleaf	J.&P.-B.&S.	1,150		1,600	120		
No. 1 Longleaf	J.&P.	1,400	455	1,700	150	1,600,000	
No. 2 Longleaf	J.&P.	1,025		1,250	100		
Select Structural Longleaf	P.&T.	1,750		—	—		
Prime Structural Longleaf	P.&T.	1,400		—	—		
Merchantable Structural Longleaf	P.&T.	1,300		—	—		
Structural S.E.&S. Longleaf	P.&T.	1,300		—	—		
No. 1 Structural Longleaf	P.&T.	1,150		—	—		
REDWOOD:							
Dense Structural	J.&P.-B.&S.	1,450		1,700	110		U.B.C. Standard No. 25-13
Heart Structural	J.&P.-B.&S.	1,100	320	1,300	95	1,200,000	
Dense Structural	P.&T.	1,450		—	—		
Heart Structural	P.&T.	1,100		—	—		

Table 25-A

ABBREVIATIONS:
 J.&P.: Joists and Planks
 B.&S.: Beams and Stringers
 P.&T.: Posts and Timbers

WHERE

- n = allowable unit stress on inclined surface, pounds per square inch.
- p = allowable compressive unit stress parallel to grain (see Table No. 25-A).
- q = allowable compressive unit stress perpendicular to grain (see Table No. 25-A).
- θ = angle between the direction of the load and the direction of the grain in degrees.

Bolted Joints

Sec. 2508. (a) Design of Bolted Joints. Bolted joints wherein bolts are used to resist stresses in wood structures shall be designed in accordance with the principles set forth in U.B.C. Standard No. 25-14, and in addition thereto shall comply with the requirements of this Section.

(b) Safe Loads, Double Shear. Safe loads, in pounds on bolts in seasoned lumber of the following species: cedar, eastern red; cypress, southern; Douglas fir (coast region); larch, western; pine, southern yellow; redwood and tamarack, in joints consisting of three members in which the side members are one-half the thickness of the main member, shall not exceed values set forth in Tables No. 25-C and 25-D.

(c) Loads at Angle to Grain. When a force is applied by means of a bolt at an angle with the fiber of a wood member, the safe load shall be determined in accordance with the formula:

$$n = \frac{p q}{p \sin^2 \theta + q \cos^2 \theta}$$

WHERE

- n = safe load in pounds on bolt.
- p = safe load on bolt parallel to grain as set forth in Table No. 25-C.
- q = safe load on bolt perpendicular to grain as set forth in Table No. 25-D.
- θ = angle between direction of load and direction of member, in degrees.

(d) Bolts in Other Species of Wood. For species of wood other than those specified in Subsection (b) of this Section, bolt values shall be derived in accordance with the principles stated in U.B.C. Standard No. 25-14.

(e) Joints Other than Double Shear. When a joint consists of two members (single shear) of equal thickness, one-half the tabulated load for a piece twice the thickness of one of the members shall be used. When members of a two-member joint are of unequal thickness, one-half the tabulated load for a piece twice the thickness of the thinner member shall be used.

For multiple-member joints other than two or three members, the load for each shear plane shall be computed in the same manner as for a two-member joint.

(f) Metal Side Plates. When metal plates are used on each side of a wood member, tabulated bolt values may be increased one-quarter for values parallel to the grain.

TABLE NO 25-C—HOLDING POWER OF BOLTS
Loads Parallel to Grain (p)

LENGTH OF BOLT IN MAIN MEMBER* (Inches)	DIAMETER OF BOLT (INCHES)				
	1/2	5/8	3/4	1	1 1/4
2	960	1280	1550	1820	2080
3	1050	1620	2160	2660	3090
4	1050	1640	2360	3110	3850
5	1050	1640	2360	3210	4190
6	1640	2360	3210	4190	5330
7	1640	2360	3210	4190	5330
8	1640	2360	3210	4190	5330
10	1640	2360	3210	4190	5330
12	1640	2360	3210	4190	5330

* This assumes full size lumber, i.e., not dressed sizes. Safe loads on dressed sizes may be obtained by interpolation.

TABLE NO. 25-D—HOLDING POWER OF BOLTS
Loads Perpendicular to Grain (q)

LENGTH OF BOLT IN MAIN MEMBER* (Inches)	DIAMETER OF BOLT (INCHES)				
	1/2	5/8	3/4	1	1 1/4
2	460	520	570	640	700
3	690	780	890	960	1050
4	810	1040	1160	1280	1400
5	780	1150	1440	1600	1750
6	1110	1540	1880	2100	2280
7	1060	1500	1970	2390	2660
8	980	1440	1940	2460	2940
10	1800	2340	2970	3610	4270
12	2180	2820	3460	4270	5000

* This assumes full size lumber, i.e., not dressed sizes. Safe loads on dressed sizes may be obtained by interpolation.

(g) Joints in Wet Locations. When the joint is to be used in a location "occasionally wet but quickly dried," tabulated bolt values shall be reduced one-quarter.

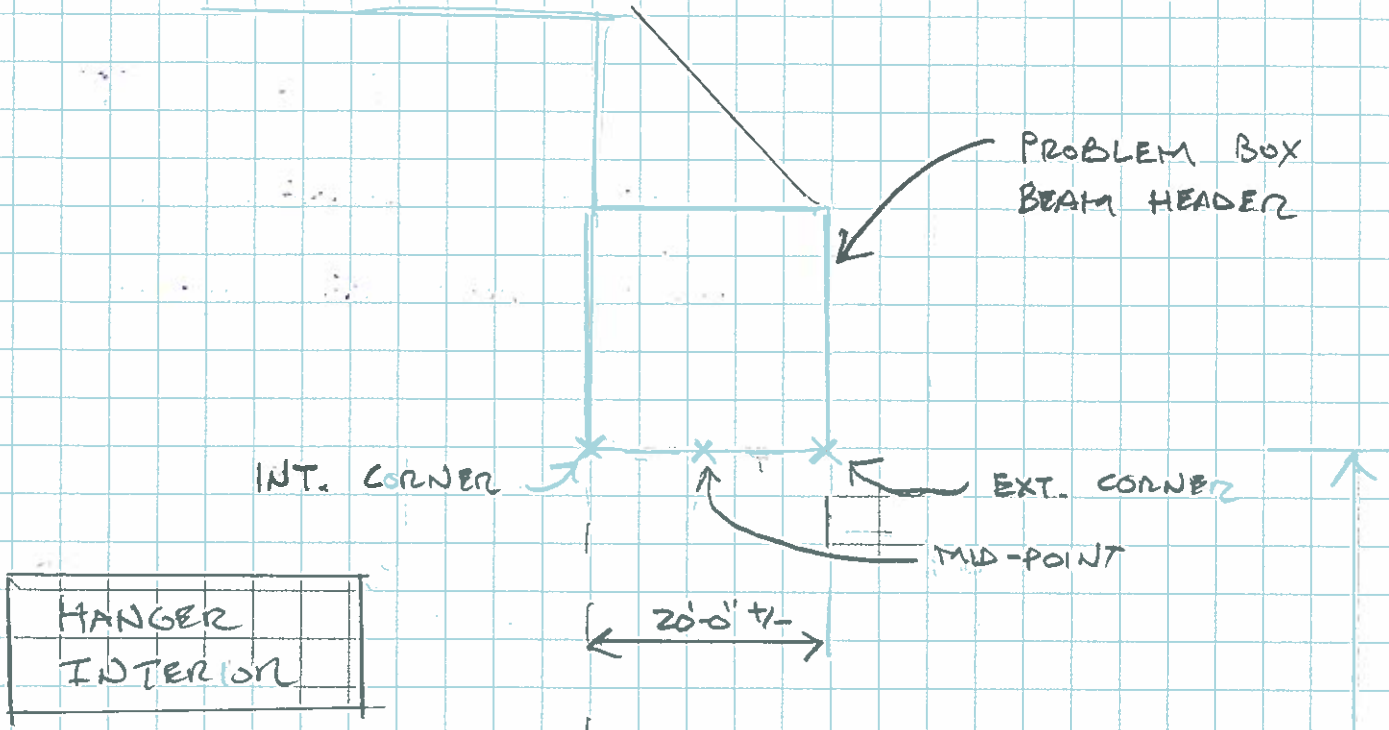
In locations "usually wet," tabulated bolt values shall be reduced one-third.

(h) Definition of Seasoned Lumber. "Seasoned lumber," for the purpose of this Section, is defined as lumber which has been air-dried for at least 60 days, or which has at the time of installation in the structure reached a moisture content approximately equal to that which it will eventually contain in service.

Where green or recently cut lumber is used, tabulated bolt values shall be reduced one-third.

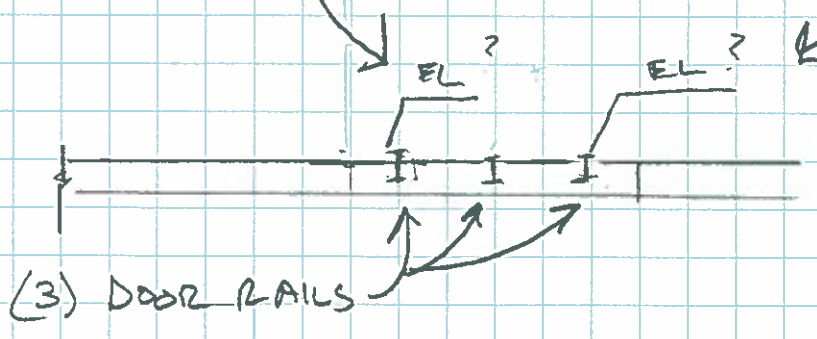
(i) Bolt Holes. Bolt holes in wood members shall be made the same diameter as the bolt, unless otherwise specified on plans. Bolt holes may be specified to be not more than one-

APPENDIX C – SURVEYOR’S DATA

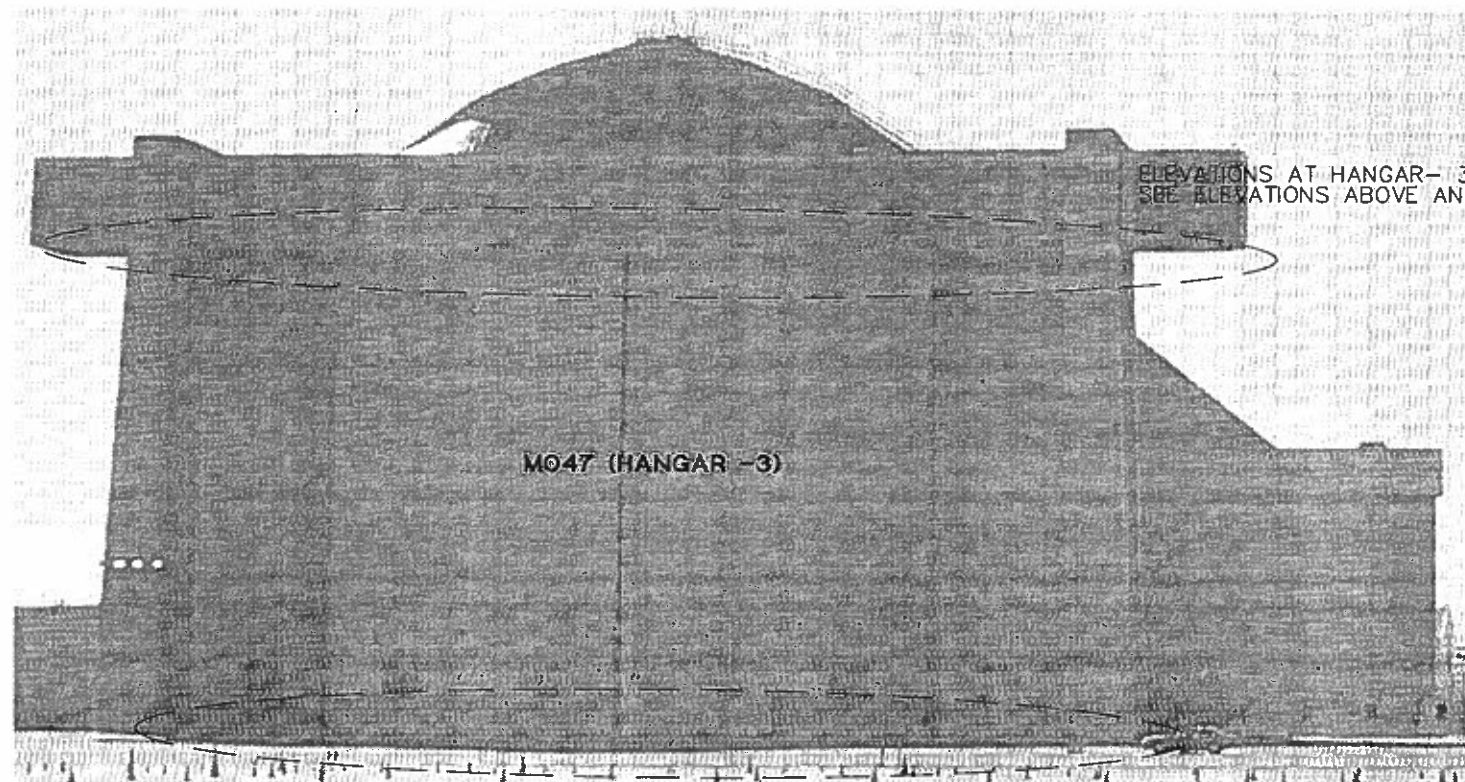
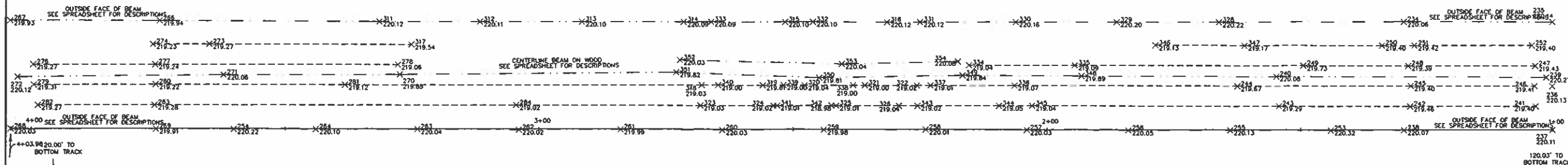


① NEED SHOOT (3) POINTS ALONG ENTIRE SPAN OF HEADER AT TOP

② NEED TO SHOOT INTERIOR & EXTERIOR RAILS ALONG ENTIRE OPENING LENGTH

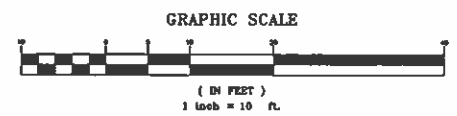


ELEVATIONS AT HANGAR- 3 ON TOP TRACK
SEE SPREADSHEET FOR DESCRIPTIONS

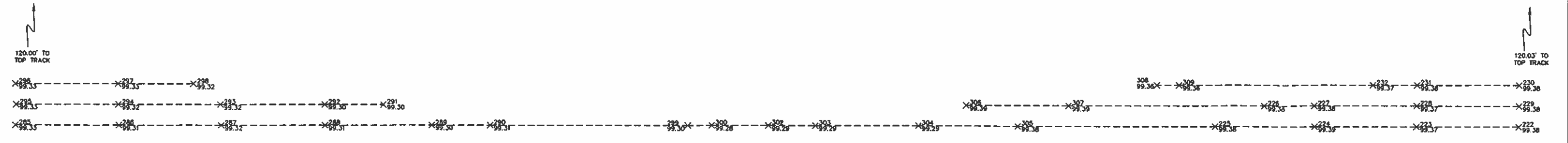


MO47 (HANGAR-3)

ELEVATIONS AT HANGAR- 3 ON TOP TRACK
SEE ELEVATIONS ABOVE AND SPREADSHEET FOR DESCRIPTIONS



ELEVATIONS AT HANGAR- 3 ON BOTTOM TRACK
SEE ELEVATIONS BELOW AND SPREADSHEET FOR DESCRIPTIONS



ELEVATIONS AT HANGAR- 3 ON BOTTOM TRACK
SEE SPREADSHEET FOR DESCRIPTIONS

1650 TECHNOLOGY DRIVE
SUITE 650
SAN JOSE, CA 95110
408-467-9100
408-467-9199 (FAX)



CALIFORNIA

MOFFETT FEDERAL AIR FIELD
MO47 (HANGAR-3)

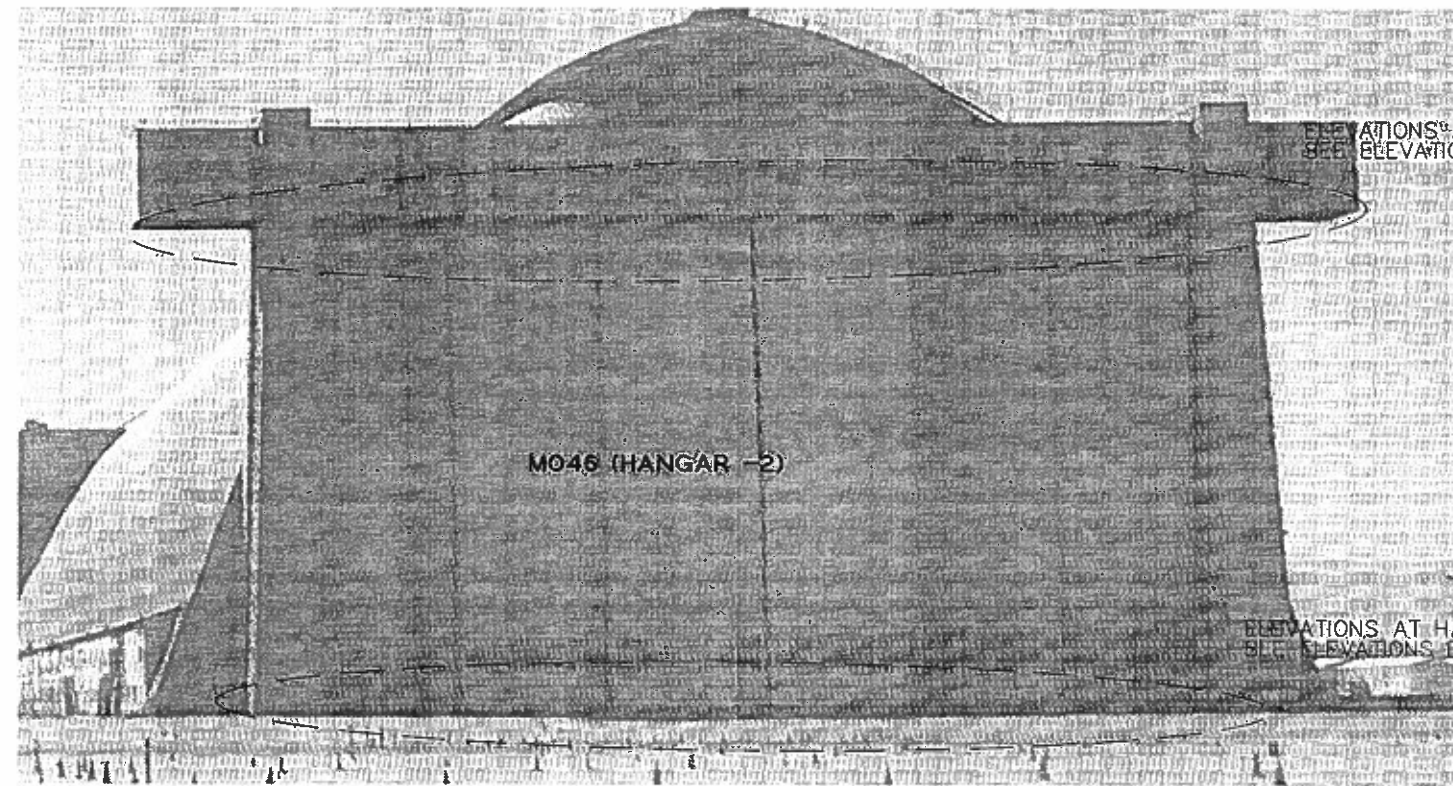
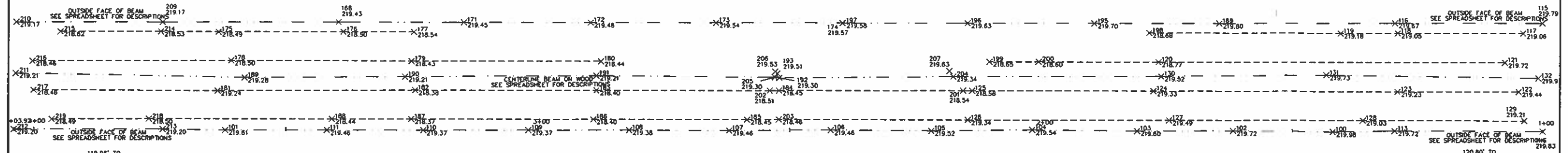
SANTA CLARA COUNTY

MOUNTAIN VIEW

Revisions	
No.	Description

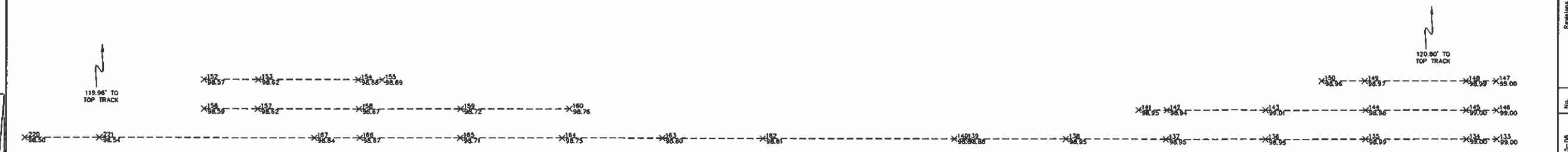
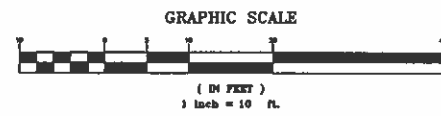
Date: 5-15-06
Scale: 1"=10'
Drawn: DM
Approved: DT
Job No: 2006042
Drawing Number:

ELEVATIONS AT HANGAR- 2 ON TOP TRACK
SEE SPREADSHEET FOR DESCRIPTIONS



ELEVATIONS AT HANGAR- 2 ON TOP TRACK
SEE ELEVATIONS ABOVE AND SPREADSHEET FOR DESCRIPTIONS

ELEVATIONS AT HANGAR- 2 ON BOTTOM TRACK
SEE ELEVATIONS BELOW AND SPREADSHEET FOR DESCRIPTIONS



ELEVATIONS AT HANGAR- 2 ON BOTTOM TRACK
SEE SPREADSHEET FOR DESCRIPTIONS

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408-467-9100 (FAX)
408-467-9199 (FAX)



MOUNTAIN VIEW SANTA CLARA COUNTY CALIFORNIA
MOFFETT FEDERAL AIR FIELD
MO46 (HANGAR-2)

Date: 5-15-08	Revisions:
Scale: 1"=10'	No.
Drawn: SM	
Approved: DT	
Job No: 20080012	
Drawing Number:	

BKF

1650 Technology Drive, Suite 650
 San Jose, CA 95110
 Phone (408) 467 9100 Fax (408) 467-9199

GRADE SHEET

Path:K:

REMARKS:

Job No. 20086042-50
 Project Name MOFFETT FEDERAL AIR FIELD
 Project Desc. HANGAR #2
 Prepared By JG Date 5/23/2008
 Party Chief Date Survey

ATTENTION CONTRACTORS - Grades are given from the top of a stake or nail. Regarding the curb, the given grade refers to the top of the curb at the street face of the curb, in case of a pipe or culvert, it refers to the elevation of the invert.
 CONTRACTORS ARE CAUTIONED Prior to the start of construction the contractor shall verify size and elevation of existing features at all join conditions. Contractors are also cautioned to observe the following rule in using the grade stakes given by this office for putting in curbs, walks, pipes, channels and all other work. Three consecutive points that are shown to be on the same rate of slope must be used in common in order that any variation out of a perfect straight grade may be detected, and in case any such discrepancy is found, the same must be reported, otherwise this office will not be responsible for any error in grade of the finished work.

Point	North	East	Station	Offset	Hub Elev.	Grade	C/E	O/S	Description	Notes
114			1+00	0.00	219.83				(BEAM)	
115			1+00.08	21.37	219.79				(BEAM)	
132			1+00.89	10.51	219.97				(WOOD)	
129			1+03.72	2.06	219.21				(TRACK)	
117			1+03.95	19.35	219.06				(TRACK)	
122			1+04.86	7.82	219.44				(TRACK)	
133			1+05.17	4.82	99.00				TRACK	
146			1+05.23	10.56	99.00				TRACK	
147			1+05.30	16.33	99.00				TRACK	
121			1+07.62	13.58	219.72				(TRACK)	
134			1+11.28	4.83	99.00				TRACK	
145			1+11.28	10.58	99.00				TRACK	
148			1+11.34	16.33	98.99				TRACK	
118			1+29	19.36	219.05				(TRACK)	
123			1+29.02	7.81	219.23				(TRACK)	

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GRADE SHEET

REMARKS:

Path:K:

Job No. 20086042-50
 Project Name MOFFETT FEDERAL AIR FIELD
 Project Desc. HANGAR #2
 Prepared By JG Date 5/23/2008
 Party Chief Date Survey

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Point	North	East	Station	Offset	Hub Elev.	Grade	C/F	O/S	Description	Notes
116			1+29.52	21.37	219.67				(BEAM)	
113			1+29.58	0.03	219.72				(BEAM)	
135			1+31.25	4.80	98.99				TRACK	
144			1+31.28	10.56	98.98				TRACK	
149			1+31.43	16.32	98.97				TRACK	
128			1+35.90	2.11	219.03				(TRACK)	
150			1+40.03	16.32	98.96				TRACK	
119			1+40.35	19.32	219.18				(TRACK)	
100			1+41.89	-0.13	219.98				(BEAM)	
131			1+43.17	11.07	219.73				(WOOD)	
143			1+51.22	10.55	99.01				TRACK	
136			1+51.24	4.80	98.98				TRACK	
102			1+61.80	0.03	219.72				(BEAM)	
169			1+64.57	21.25	219.80				(BEAM)	
142			1+71.06	10.55	98.94				TRACK	

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GRADE SHEET

REMARKS:

Path:K:

Job No. 20086042-50
 Project Name MOFFETT FEDERAL AIR FIELD
 Project Desc. HANGAR #2
 Prepared By JG Date 5/23/2008
 Party Chief Date Survey

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 CONTRACTORS ARE CAUTIONED Prior to the start of construction the contractor shall verify size and elevation of existing features at all join conditions. Contractors are also cautioned to observe the following rule in using the grade stakes given by this office for putting in curbs, walks, pipes, channels and all other work. Three consecutive points that are shown to be on the same rate of slope must be used in common in order that any variation out of a perfect straight grade may be detected, and in case any such discrepancy is found, the same must be reported, otherwise this office will not be responsible for any error in grade of the finished work.

Point	North	East	Station	Offset	Hub Elev.	Grade	C/F	O/S	Description	Notes
137			1+71.24	4.77	98.95				TRACK	
127			1+74.67	2.08	219.49				(TRACK)	
130			1+76.30	10.79	219.52				(WOOD)	
141			1+76.77	10.55	98.95				TRACK	
120			1+76.83	13.62	218.77				(TRACK)	
124			1+77.84	7.87	219.33				(TRACK)	
198			1+78.69	19.38	218.68				(TRACK)	
103			1+81.09	-0.03	219.60				(BEAM)	
195			1+89.63	21.26	219.70				(BEAM)	
138			1+91.21	4.78	98.95				TRACK	
200			2+00.60	13.64	218.60				(TRACK)	
104			2+01.80	0.15	219.54				(BEAM)	
199			2+10.27	13.64	218.65				(TRACK)	
139			2+11.22	4.76	98.88				TRACK	
140			2+13.34	4.77	98.87				TRACK	

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 Phone (408) 467 9100 Fax (408) 467-3199

GRADE SHEET

REMARKS:

Path:K:

Job No. 20086042-50
 Project Name MOFFETT FEDERAL AIR FIELD
 Project Desc. HANGAR #2
 Prepared By JG Date 5/23/2008
 Party Chief _____ Date Survey _____

ATTENTION CONTRACTORS - Grades are given from the top of a stake or nail. Regarding the curb, the given grade refers to the top of the curb at the street face of the curb, in case of a pipe or culvert, it refers to the elevation of the invert.
 CONTRACTORS ARE CAUTIONED Prior to the start of construction, the contractor shall verify size and elevation of existing features at all join conditions. Contractors are also cautioned to observe the following rule in using the grade stakes given by this office for putting in curbs, walks, pipes, channels and all other work. Three consecutive points that are shown to be on the same rate of slope must be used in common in order that any variation out of a perfect, straight grade may be detected, and in case any such discrepancy is found, the same must be reported, otherwise this office will not be responsible for any error in grade of the finished work.

Point	North	East	Station	Offset	Hub Elev.	Grade	C/F	O/S	Description	Notes
125			2+13.72	7.89	218.58				(TRACK)	
126			2+14.61	2.10	219.34				(TRACK)	
196			2+14.64	21.25	219.63				(BEAM)	
201			2+15.52	7.88	218.54				(TRACK)	
204			2+17.50	10.68	219.34				(WOOD)	
207			2+18.25	11.76	219.63				(WOOD)	
105			2+21.87	-0.06	219.52				(BEAM)	
197			2+39.51	21.24	219.58				(BEAM)	
174			2+39.65	21.23	219.57				(BEAM)	
106			2+41.87	0.06	219.46				(BEAM)	
162			2+51.42	4.79	98.81				TRACK	
192			2+52.01	10.32	219.30				(WOOD)	
184			2+52.09	7.84	218.45				(TRACK)	
203			2+52.13	2.13	218.46				(TRACK)	
193			2+52.43	11.22	219.51				(WOOD)	

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 San Jose, CA 95110
 Phone (408) 467 9100 Fax (408) 467-9199

Path: K: _____

Job No. 20086042-50
 Project Name MOFFETT FEDERAL AIR FIELD
 Project Desc. HANGAR #2
 Prepared By JG Date 5/23/2008
 Party Chief _____ Date Survey _____

GRADE SHEET

REMARKS: _____

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Point	North	East	Station	Offset	Hub Elev.	Grade	C/E	O/S	Description	Notes
206			2+52.83	11.59	219.53				(WOOD)	
205			2+52.94	10.47	219.30				(WOOD)	
202			2+53.92	7.84	218.51				(TRACK)	
185			2+58.33	2.10	218.45				(TRACK)	
107			2+61.89	-0.06	219.46				(BEAM)	
173			2+64.53	21.24	219.54				(BEAM)	
163			2+71.44	4.78	98.80				TRACK	
108			2+81.91	-0.02	219.38				(BEAM)	
180			2+87.54	13.58	218.44				(TRACK)	
183			2+88.45	7.82	218.40				(TRACK)	
191			2+88.46	10.75	219.21				(WOOD)	
186			2+89.07	2.10	218.40				(TRACK)	
172			2+89.61	21.24	219.48				(BEAM)	
160			2+89.98	10.53	98.76				TRACK	
164			2+91.41	4.79	98.75				TRACK	

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GRADE SHEET

REMARKS:

Path:K:

Job No. 20086042-50
 Project Name MOFFETT FEDERAL AIR FIELD
 Project Desc. HANGAR #2
 Prepared By JG Date 5/23/2008
 Party Chief Date Survey

ATTENTION CONTRACTORS - Grades are given from the top of a stake or nail. Regarding the curb, the given grade refers to the top of the curb at the street face of the curb, in case of a pipe or culvert, it refers to the elevation of the invert.
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Point	North	East	Station	Offset	Hub Elev.	Grade	C/F	O/S	Description	Notes
109			3+01.91	-0.07	219.37				(BEAM)	
159			3+11.34	10.52	98.72				TRACK	
165			3+11.41	4.77	98.71				TRACK	
171			3+14.65	21.23	219.45				(BEAM)	
110			3+22.69	-0.12	219.37				(BEAM)	
182			3+24.32	7.80	218.38				(TRACK)	
177			3+24.56	19.30	218.54				(TRACK)	
179			3+25.03	13.55	218.43				(TRACK)	
187			3+25.07	2.06	218.37				(TRACK)	
190			3+26.32	10.46	219.21				(WOOD)	
155			3+26.98	16.27	98.69				TRACK	
166			3+31.43	4.78	98.67				TRACK	
158			3+31.57	10.50	98.67				TRACK	
154			3+31.74	16.27	98.68				TRACK	
176			3+38.63	19.30	218.50				(TRACK)	

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1650 Technology Drive, Suite 660
 San Jose, CA 95110
 Phone (408) 467 9100 Fax (408) 467-9199

Path:K: _____

Job No. 20086042-50
 Project Name MOFFETT FEDERAL AIR FIELD
 Project Desc. HANGAR #2
 Prepared By JG Date 5/23/2008
 Party Chief _____ Date Survey _____

GRADE SHEET

REMARKS: _____

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Point	North	East	Station	Offset	Hub Elev.	Grade	C/E	O/S	Description	Notes
168			3+39.60	21.24	219.43				(BEAM)	
167			3+40.45	4.77	98.64				TRACK	
188			3+40.89	2.05	218.44				(TRACK)	
111			3+41.89	-0.16	219.46				(BEAM)	
153			3+51.44	16.29	98.62				TRACK	
157			3+51.58	10.50	98.62				TRACK	
189			3+58.13	10.23	219.28				(WOOD)	
178			3+60.79	13.58	218.50				(TRACK)	
101			3+61.96	-0.17	219.61				(BEAM)	
156			3+62.22	10.51	98.59				TRACK	
152			3+62.24	16.26	98.57				TRACK	
175			3+63.30	19.28	218.49				(TRACK)	
181			3+63.49	7.60	219.24				(TRACK)	
213			3+74.46	0.00	219.20				(BEAM)	
209			3+74.47	21.21	219.17				(BEAM)	

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Path: K: _____

Job No. 20086042-50
 Project Name **MOFFETT FEDERAL AIR FIELD**
 Project Desc. **HANGAR #3**
 Prepared By **JG** Date **5/23/2008**
 Party Chief _____ Date Survey _____

GRADE SHEET

REMARKS: _____

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Point	North	East	Station	Offset	Hub Elev.	Grade	C/F	O/S	Description	Notes
237			1+00	0.00	220.11				BEAM	
235			1+00.08	21.28	220.14				BEAM	
236			1+00.09	8.64	220.13				BEAM	
239			1+01.29	10.35	220.27				WOOD	
241			1+03.36	4.63	219.40				TRACK	
247			1+03.50	12.61	219.43				TRACK	
246			1+03.61	8.62	219.41				TRACK	
252			1+04.16	16.64	219.40				TRACK	
230			1+05.64	14.38	99.38				TRACK	
229			1+05.66	10.36	99.38				TRACK	
222			1+05.77	6.36	99.38				TRACK	
231			1+25.56	14.38	99.38				TRACK	
228			1+25.63	10.40	99.37				TRACK	
223			1+25.69	6.35	99.37				TRACK	
251			1+27.35	16.61	219.42				TRACK	

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GRADE SHEET

Path: K:

REMARKS:

Job No. 20086042-50
 Project Name MOFFETT FEDERAL AIR FIELD
 Project Desc. HANGAR #3
 Prepared By JG Date 5/23/2008
 Party Chief Date Survey

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Point	North	East	Station	Offset	Hub Elev.	Grade	C/F	O/S	Description	Notes
245			1+28.07	8.63	219.40				TRACK	
242			1+28.16	4.61	219.46				TRACK	
248			1+28.57	12.61	219.39				TRACK	
238			1+29.38	-0.06	220.07				BEAM	
234			1+29.46	21.30	220.06				BEAM	
250			1+33.77	16.62	219.40				TRACK	
232			1+34.20	14.39	99.37				TRACK	
253			1+43.98	-0.12	220.32				BEAM	
224			1+45.69	6.39	99.39				TRACK	
227			1+45.76	10.41	99.38				TRACK	
249			1+49.48	12.64	219.73				TRACK	
243			1+54.38	4.66	219.29				TRACK	
240			1+54.91	10.52	220.08				WOOD	
226			1+55.62	10.39	99.38				TRACK	
347			1+61.18	16.65	219.17				TRACK	

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GRADE SHEET

Path: K:

REMARKS:

Job No. 20086042-50
 Project Name MOFFETT FEDERAL AIR FIELD
 Project Desc. HANGAR #3
 Prepared By JG Date 5/23/2008
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Point	North	East	Station	Offset	Hub Elev.	Grade	C/F	O/S	Description	Notes
244			1+62.56	8.66	219.67				TRACK	
255			1+63.95	-0.05	220.13				BEAM	
225			1+65.14	6.40	99.38				TRACK	
328			1+66.20	21.21	220.22				BEAM	
309			1+72.24	14.40	99.36				TRACK	
308			1+76.55	14.42	99.36				TRACK	
346			1+78.73	16.67	219.13				TRACK	
256			1+83.98	-0.13	220.05				BEAM	
329			1+86.27	21.21	220.20				BEAM	
348			1+93.16	10.57	219.89				WOOD	
307			1+93.66	10.42	99.39				TRACK	
335			1+94.52	12.67	219.09				TRACK	
345			2+02.90	4.69	219.04				TRACK	
305			2+03.55	6.43	99.38				TRACK	
257			2+03.98	-0.09	220.03				BEAM	

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GRADE SHEET

REMARKS:

Path: K:

Job No. 20086042-50
 Project Name **MOFFETT FEDERAL AIR FIELD**
 Project Desc. **HANGAR #3**
 Prepared By **JG** Date 5/23/2008
 Party Chief _____ Date Survey _____

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Point	North	East	Station	Offset	Hub Elev.	Grade	C/F	O/S	Description	Notes
330			2+06.17	21.19	220.16				BEAM	
336			2+06.39	8.69	219.07				TRACK	
344			2+09.45	4.69	219.05				TRACK	
306			2+13.65	10.45	99.39				TRACK	
334			2+15.38	12.69	219.04				TRACK	
349			2+16.68	10.68	219.84				WOOD	
354			2+17.60	13.40	220.08				WOOD	
304			2+23	6.48	99.29				TRACK	
337			2+23.02	8.71	219.01				TRACK	
258			2+23.97	-0.03	220.01				BEAM	
331			2+25.09	21.18	220.12				BEAM	
343			2+25.59	4.67	219.02				TRACK	
322			2+25.71	8.69	219.02				TRACK	
326			2+29.26	4.66	219.04				TRACK	
316			2+31.59	21.12	220.12				BEAM	

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 San Jose, CA 95110
 Phone (408) 467 9100 Fax (408) 467-9199

GRADE SHEET

REMARKS:

Path:K:

Job No. 20086042-50
 Project Name **MOFFETT FEDERAL AIR FIELD**
 Project Desc. **HANGAR #3**
 Prepared By **JG** Date **5/23/2008**
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Point	North	East	Station	Offset	Hub Elev.	Grade	C/F	O/S	Description	Notes
321			2+35.92	8.69	219.00				TRACK	
338			2+38.22	8.70	219.00				TRACK	
353			2+40.44	12.88	220.04				WOOD	
325			2+41.57	4.67	219.01				TRACK	
342			2+42.46	4.69	218.98				TRACK	
303			2+43.02	6.50	99.29				TRACK	
259			2+43.98	-0.05	219.98				BEAM	
350			2+44.88	10.17	219.81				WOOD	
332			2+46.13	21.17	220.10				BEAM	
320			2+47.73	8.68	219.04				TRACK	
315			2+51.63	21.12	220.10				BEAM	
339			2+51.95	8.69	219.00				TRACK	
302			2+52.17	6.51	99.29				TRACK	
301			2+52.21	6.51	99.29				TRACK	
341			2+53.21	4.67	219.01				TRACK	

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Point	North	East	Station	Offset	Hub Elev.	Grade	C/F	O/S	Description	Notes
324			2+53.96	4.65	219.02				TRACK	
319			2+56.02	8.68	219.01				TRACK	
300			2+63.15	6.54	99.28				TRACK	
260			2+63.98	-0.16	220.03				BEAM	
340			2+64.80	8.70	219.00				TRACK	
333			2+66.20	21.17	220.09				BEAM	
299			2+67.81	6.51	99.30				TRACK	
318			2+68.02	8.67	219.03				TRACK	
323			2+68.31	4.66	219.03				TRACK	
314			2+71.55	21.13	220.09				BEAM	
352			2+72.30	13.64	220.03				WOOD	
351			2+73.01	11.19	219.82				WOOD	
261			2+83.99	-0.07	219.99				BEAM	
313			2+91.59	21.13	220.10				BEAM	
262			3+03.97	-0.16	220.02				BEAM	

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Point	North	East	Station	Offset	Hub Elev.	Grade	C/F	O/S	Description	Notes
284			3+04.49	4.70	219.02				TRACK	
290			3+06.18	6.52	99.31				TRACK	
312			3+11.61	21.13	220.11				BEAM	
289			3+17.53	6.53	99.30				TRACK	
263			3+23.99	-0.09	220.04				BEAM	
317			3+25.19	16.59	219.54				TRACK	
291			3+26.98	10.52	99.30				TRACK	
270			3+27.50	10.71	219.85				WOOD	
278			3+27.88	12.66	219.06				TRACK	
311			3+31.54	21.14	220.12				BEAM	
288			3+38.32	6.52	99.31				TRACK	
281			3+38.32	8.66	219.12				TRACK	
292			3+38.36	10.53	99.30				TRACK	
264			3+43.99	-0.09	220.10				BEAM	
287			3+58.29	6.52	99.32				TRACK	

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Point	North	East	Station	Offset	Hub Elev.	Grade	C/F	O/S	Description	Notes
293			3+58.43	10.53	99.32				TRACK	
254			3+59.95	-0.10	220.22				BEAM	
271			3+61.98	10.60	220.06				WOOD	
298			3+63.63	14.51	99.32				TRACK	
273			3+64.74	16.65	219.27				TRACK	
266			3+74.64	21.27	219.94				BEAM	
269			3+75.37	-0.04	219.91				BEAM	
280			3+75.43	8.71	219.22				TRACK	
277			3+75.54	12.65	219.24				TRACK	
283			3+75.65	4.67	219.28				TRACK	
274			3+75.98	16.66	219.23				TRACK	
286			3+78.24	6.49	99.31				TRACK	
294			3+78.29	10.50	99.32				TRACK	
297			3+78.35	14.51	99.33				TRACK	
295			3+98.20	10.50	99.33				TRACK	

