

CERTIFICATE OF DESIGN AND MANUFACTURING CONFORMANCE

This certificate is to confirm that all components of the steel building system described below have been or will be designed and fabricated in accordance with the standards and loads listed below.

1. DESCRIPTION

House Order Number: 82551
 Building Type: FIRE TRAINING TOWER
 Building I Size: 21'-11" x 11'-8" x 34'-4 1/4" TOWER
 Building II Size: 21'-11" x 33'-0" x 23'-6" RESIDENTIAL
 Building III Size: 21'-11" x 14'-6" x 9'-4 1/4" ANNEX
 Intended Use and Occupancy: COMMERCIAL
 Site Location: RAPID CITY, SD
 Builder's Name and Address: WERNER-HERBISON-PADGETT, OVERLAND PARK, KS
 Owner's Name and Address: CITY OF RAPID CITY, SD, RAPID CITY, SD

2. DESIGN CRITERIA

Building Code	ASCE7-02/ IBC 2003
Roof Live	100 psf
Floor Live	100 psf
Attic Live	100 psf
Collateral	5 psf
Dead	5 psf
4" Concrete Slab	36 psf
Padgirite	4 psf
Wind Load	100 mph
Wind Exposure	C
Wind Importance	I
Seismic Use Group	I
Seismic Site Class	D
Seismic Design Cat	A
Seismic Importance	I
Seismic Coef - Ss	0.2
Seismic Coef - S1	0.1

DESIGN IS IN ACCORDANCE WITH APPLICABLE SECTIONS OF THE SPECIFICATIONS 1989 4th EDITION AISC "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS - ALLOWABLE STRESS DESIGN" 2001 AISI - NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS

GENERAL

THIS DRAWING INCLUDING INFORMATION HEREON, REMAINS THE PROPERTY OF BEHLEN INDUSTRIES. IT IS PROVIDED SOLELY FOR ERECTING THE BUILDING DESCRIBED IN THE PURCHASE ORDER AND SHALL NOT BE MODIFIED, REPRODUCED OR USED FOR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN APPROVAL OF BEHLEN INDUSTRIES.

THE GENERAL CONTRACTOR AND/OR ERECTOR IS SOLELY RESPONSIBLE FOR ACCURATE, GOOD QUALITY WORKMANSHIP IN ERECTING THIS BUILDING IN CONFORMANCE WITH THIS DRAWING, DETAILS REFERENCED IN THIS DRAWING AND INDUSTRY STANDARDS PERTAINING TO PROPER ERECTION INCLUDING THE PROPER USE OF TEMPORARY BRACING. BEHLEN INDUSTRIES IS NOT RESPONSIBLE FOR ERRORS, OMISSIONS OR DAMAGES INCURRED IN THE ERECTION OF THE COMPONENTS SHOWN ON THIS DRAWING, NOR FOR THE INSPECTION OF ERECTED COMPONENTS TO DETERMINE SAME.

THIS CERTIFICATION AND ENGINEERING SEAL APPLIES ONLY TO PRODUCTS DESIGNED AND FABRICATED BY BEHLEN INDUSTRIES FOR THE LOADING CONDITIONS DESIGNATED ON THESE DRAWINGS. CONCRETE FOUNDATIONS, STEEL COMPONENTS BY OTHERS AND ERECTION SUPERVISION ARE NOT THE RESPONSIBILITIES OF BEHLEN INDUSTRIES OR THE CERTIFYING ENGINEER.

ANCHOR BOLTS

ANCHOR BOLTS ARE NOT FURNISHED AS PART OF DRAWING PACKAGE.

ANCHOR BOLT DIAMETERS ARE DETERMINED IN ACCORDANCE WITH THE AISC MANUAL USING Fy = 36 KSI. ANCHOR BOLT LENGTHS AND LOAD TRANSFER TO THE FOUNDATION ARE TO BE DETERMINED BY OTHERS.

FOUNDATION MUST BE LEVEL, SQUARE AND SMOOTH. ANCHOR BOLTS MUST BE ACCURATELY PLACED AS SHOWN ON THE DRAWINGS.

THE CONCRETE CROSS SECTIONS SHOW SOME RECOMMENDED MINIMUMS BUT IS NOT MEANT TO BE USED AS A FINAL DESIGN. THE CONCRETE FOUNDATION THAT IS USED IN THIS BUILDING SHOULD BE IN ACCORDANCE WITH LOCAL PRACTICES, AND SATISFY THE LOCAL BUILDING CODES.

ALL DIMENSIONS SHOWN ARE TO THE BUILDING CONCRETE LINE.

FINISHED FLOOR ELEVATION IS 100'-0" UNLESS NOTED. UNDERSIDE OF FOOTINGS CHANNEL AND UNDERSIDE OF BASE PLATE ARE AS NOTED.

ERECTION

THE ERECTOR MUST PROVIDE SAFE WORKING CONDITIONS AND PRACTICES CONFORMING TO ALL SAFETY REGULATIONS. ALL LIFTING DEVICES ARE TO BE SPECIFICALLY DESIGNED TO LIFT THE VARIOUS BUILDING COMPONENTS. SLINGS AND SPREADER BARS ARE TO BE USED TO PREVENT PERMANENT DEFORMATION OF ALL STRUCTURAL COMPONENTS.

ERECTION SHOULD START AT ONE ENDWALL. ERECT FIRST SIDEWALL PANEL WITH CORNER PANEL. USE TEMPORARY BRACING AS REQUIRED TO ENSURE STABILITY OF THE PANELS. RAISE FIRST CEILING PANEL AND MISCELLANEOUS ENDWALL PANELS, LEAVING ENDWALL PARTIALLY OPEN TO MINIMIZE WIND PRESSURE. CONTINUE ERECTION, INSTALLING SIDEWALL AND CEILING PANELS, GUSSETS AND STRUTS, ROOF PANELS, BOLTS AND SEALANTS AS SPECIFIED ON THE ERECTION DRAWINGS, AND THE BEHLEN ERECTION PROCEDURES MANUAL.

ENSURE THE STRUCTURE REMAINS PLUMB AND SQUARE. ERECTION TOLERANCES SHALL NOT EXCEED 1:300.

ALL PRE PUNCHED HOLES TO BE BOLTED UNLESS OTHERWISE SPECIFIED.

ERECTION OF STRUCTURAL STEEL SHOULD START AT THE SAME ENDWALL, ERECT AND TEMPORARILY SUPPORT FRAMES. USE TEMPORARY BRACING AS REQUIRED TO ENSURE STABILITY OF THE FRAMES. PLUMB AND SQUARE FRAMES. INSTALL ALL FINAL BRACING.

FAS-1EN FOOTING CHANNEL OF STUB WALL PANELS TO TOP OF STRUCTURAL STEEL BY BUDDLE WELDING PLATE WASHERS AT 20 1/2" AS SPECIFIED ON THE ERECTION DRAWINGS.

PANEL STORAGE

GALVANIZED, ALUMINIZED, AND COLORED MATERIALS ARE SUBJECT TO CORROSION AND DISCOLORATION IF THEY ARE IMPROPERLY STORED. THESE MATERIALS MUST BE KEPT DRY AT ALL TIMES. PROTECTION FROM RAINFALL ALONE IS OFTEN INADEQUATE. HUMID AIR COMBINED WITH TEMPERATURE CHANGES MAY CAUSE CONDENSATION, WHICH CAN CAUSE MOISTURE TO FORM BETWEEN THE PANELS. TO AVOID DAMAGE, THE MATERIALS MUST BE SEPARATED TO ALLOW AIR FLOW ON ALL SURFACES.

BEHLEN INDUSTRIES SHALL NOT BE HELD RESPONSIBLE FOR MATERIALS WHICH ARE IMPROPERLY PROTECTED AFTER DELIVERY.

STRUCTURAL BOLTS

ALL ASTM A325 & A440 BOLTS SHALL BE TIGHTENED IN ACCORDANCE WITH ASTM STANDARDS. ALL PRIMARY FRAMING CONNECTION BOLTS SHALL BE BROUGHT TO A "SNUG-TIGHT" CONDITION ENSURING THAT THE CONNECTION PLATES ARE IN FULL CONTACT WITH EACH OTHER. "SNUG-TIGHT" CONDITION IS ATTAINED BY A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF A PERSON USING A SPUD WRENCH. WHEN ALL BOLTS ARE "SNUG-TIGHT" EACH BOLT SHALL THEN BE TIGHTENED ADDITIONALLY BY THE APPLICABLE NUT ROTATION GIVEN IN THE TABLE BELOW, WITH TIGHTENING PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID PART OF THE CONNECTION TO THE FREE EDGES. DURING THE OPERATION THERE SHALL BE NO ROTATION OF THE PART NOT TURNED BY THE WRENCH.

BOLT LENGTH (MEASURED FROM UNDERSIDE OF THE HEAD TO THE EXTREME END OF POINT) UP TO AND INCLUDING 4 DIAMETERS	TURNS
UP TO AND INCLUDING 4 DIAMETERS	1/3
OVER 4 DIAMETERS AND NOT EXCEEDING 8 DIAMETERS OR 8 INCHES	1/2
EXCEEDING 8 DIAMETERS OR 8 INCHES	2/3

NOTE: NUT ROTATION IS ROTATION RELATIVE TO A BOLT REGARDLESS THE NUT OR BOLT BEING TURNED. TOLERANCE ON ROTATION: 30° OVER OR UNDER.

MATERIAL SPECIFICATIONS

ROLLED STRUCTURAL C SECTIONS CONFORM TO ASTM A572 GRADE 50
 ALL OTHER ROLLED STRUCTURAL SECTIONS CONFORM TO ASTM A572 GRADE 50
 HES SECTIONS CONFORM TO ASTM 500 OR ASTM 501 GRADE 50
 SHOP PRIMER CONFRONS TO SPECIFICATION SSPC-15
 MATERIAL FOR LIGHT GAUGE SECTIONS CONFORM TO ASTM A653 SQ GR 55 CL1 640 ZINC COATING
 GALVANIZED SHEET STEEL PANELS CONFORM TO ASTM A653 SQ GR 40 WITH 640 ZINC COATING
 ALL BOLTS LARGER THAN 1/2" DIA CONFORM TO ASTM A325 OR A440
 ALL 1/2" DIA BOLTS CONFORM TO SAE GR. 8.2 ELECTROPLATE FINISH
 ALL 3/8" DIA BOLTS CONFORM TO AISI 1018/1020, DT 1500 FINISH
 STRUCTURAL PLATE CONFORMS TO THE FOLLOWING SPECIFICATIONS
 FLANGES ASTM A572 GR 50
 WEBS ASTM A572 GR 50
 DIAGONAL BRACE ROD STEEL MINIMUM YIELD STRESS 36 KSI.
 DIAGONAL BRACE STEEL CABLE EXTRA HIGH STRENGTH PER ASTM A475

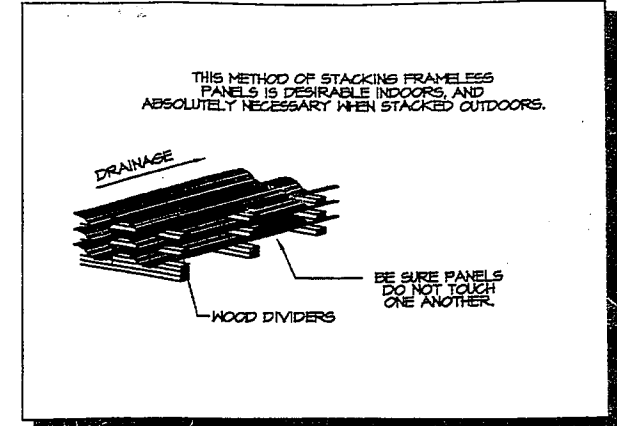
PARTITION WALLS

THE ROOF SYSTEM WILL DEFLECT UNDER LIVE LOAD AND WITH TEMPERATURE VARIANCES. INTERIOR PARTITION WALLS MUST BE CONSTRUCTED WITH A SUFFICIENT SPACE BETWEEN THE TOP OF WALL AND THE UNDERSIDE OF CEILING SO THAT NO CONTACT IS MADE UNDER MAXIMUM DEFLECTION. FAILURE TO DO SO WILL CREATE EXCESSIVE STRESSES IN THE ROOF SYSTEM. CONSULT FACTORY FOR DEFLECTION SPECIFICATIONS AND/OR CONNECTION DETAILS.

ALL WALL PANELS ARE 12GA 4 1/2 UNLESS NOTED OTHERWISE
 ALL ROOF PANELS ARE 13GA 7 1/2 UNLESS NOTED OTHERWISE
 ALL FLOOR JOISTS ARE 10 c 14 (10" DEEP, 14 GA) UNLESS NOTED OTHERWISE
 ALL DOOR JAMBS ARE 4 1/2 c 12 (4 1/2" DEEP, 12GA) UNLESS NOTED OTHERWISE
 ALL STAMPED LOUVERS ARE FACTORED INTO DESIGN.

FASTENER SCHEDULE					
	QTY	PART NO.	DESCRIPTION	GRADE/TYPE	COLOR
ROOF PANEL WALL PANEL	-	999815250	PHILLIPS KIT 1000 - 3/8" x 1 1/4"	2 DT1500	--
ACCENT PANEL	-	999815160	PHILLIPS KIT 1000 - 3/8" x 1 1/4"	2 DT1500	--
ACCESSORIES					
GABLES	-	T50250121000	TEK SCREN 12-14 x 1"	--	--
FRAMES	-	T5031121000	TEK SCREN 12-14 x 1"	--	--
CHF (SP)	-	T5031121500	TEK SCREN 12-14 x 1 1/2"	--	--
EAVE FLASHING	-	990250140750	STITCH SCREN 14-1/4 x 3/4"	--	--

ALL FASTENERS LISTED ARE TYPICAL UNLESS NOTED OTHERWISE ON DRAWINGS.



LETTER	DESCRIPTION	NAME	DATE
	REVISIONS		

FOR CONSTRUCTION

BUILDING TYPE: FIRE TOWER
 USE: COMMERCIAL
 DRAWN BY: TV
 CHECKED BY:
 SCALE GIVEN:
 82551
 DATE: Mar 23/07

CORR-SPAN®

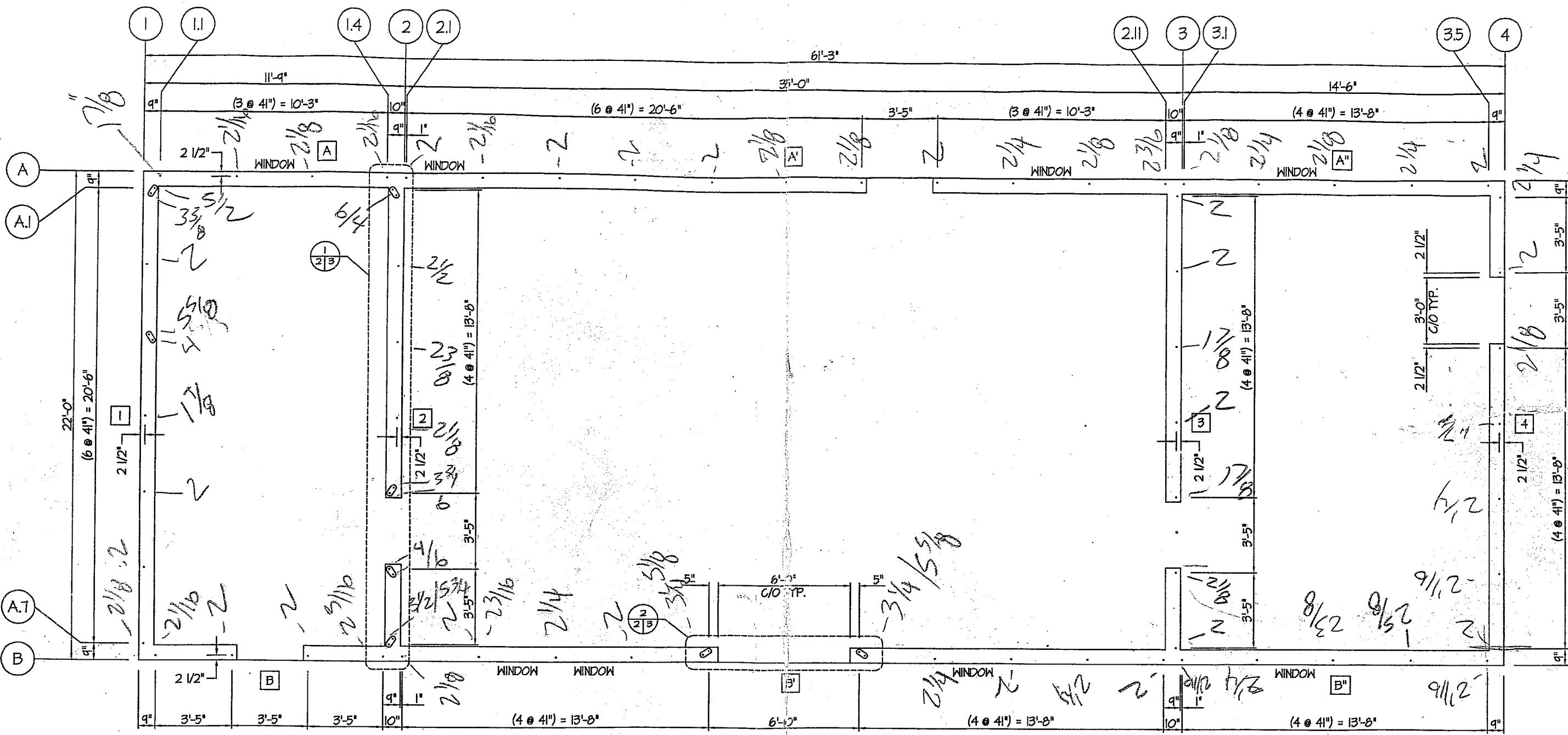
21'-11" x 11'-8" x 34'-4 1/4" TOWER
 21'-11" x 33'-0" x 23'-6" RESIDENTIAL
 21'-11" x 14'-6" x 9'-4 1/4" ANNEX
 GENERAL INFORMATION AND CONFORMANCE

DEALER: WERNER-HERBISON-PADGETT OVERLAND PARK, KANSAS, 66214
 CUSTOMER: CITY OF RAPID CITY, SD RAPID CITY, SD
 BUILDING NAME: FIRE TRAINING SIMULATOR
 BUILDING JOB SITE: RAPID CITY, SD

SHT. 1 OF 3

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 3340 SOUTH SERVICE ROAD, BURLINGTON, ON, 405.631.4144



[A] ~ TYPICAL WALL MARK INDICATOR, SEE SCHEDULE ON PAGE 3
 (1) ~ TYPICAL GRIDLINE AT 4" INCREMENTS

10-24"
 57-14"
 5-14"
 2-24"

LETTER	DESCRIPTION	NAME	DATE

FOR CONSTRUCTION		21'-11" X 11'-0" X 34'-4 1/4" TOWER	SHT. 2
		21'-11" X 35'-0" X 23'-6" RESIDENTIAL	
		21'-11" X 14'-6" X 9'-4 1/4" ANNEX	SHT. 3
		ANCHOR BOLT PLAN	
		DEALER: WERNER HERBISON-PADGETT OVERLAND PARK, KANSAS, 66214	SHT. 3
		CUSTOMER: CITY OF RAPID CITY, SD RAPID CITY, SD	
		BUILDING NAME: FIRE TRAINING SIMULATOR	SHT. 3
		BUILDING JOB SITE: RAPID CITY, SD	
CORR-SPAN®		BEHLEN INDUSTRIES LP	
		927 DOUGLAS STREET, BRANDON, MANITOBA, 204.728.1188 3340 SOUTH SERVICE ROAD, BURLINGTON, ON. 905.631.9194	

9"
 3 5"
 2 1/2"
 4 4 1/2"

RAPID CITY, SD

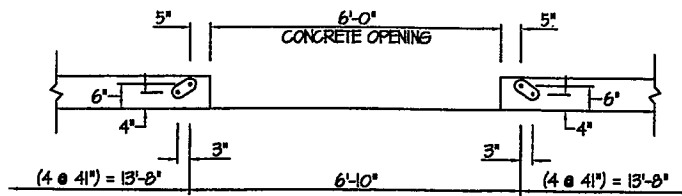
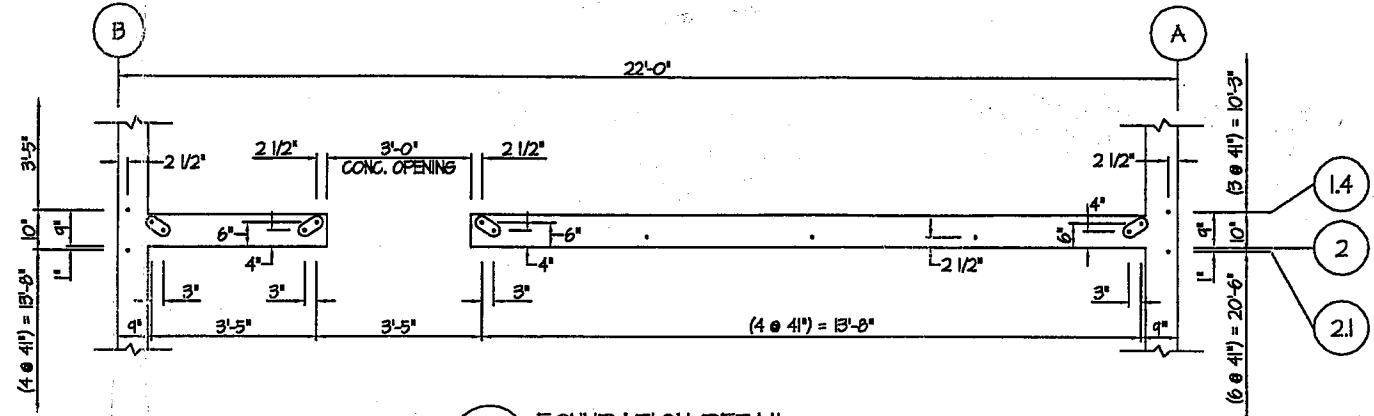
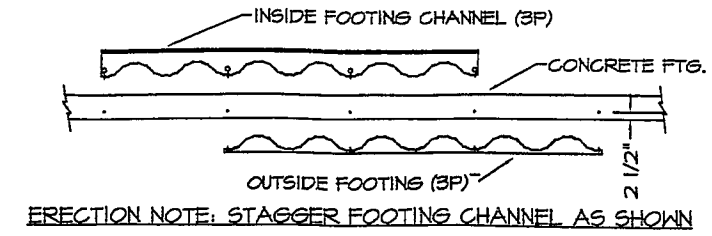
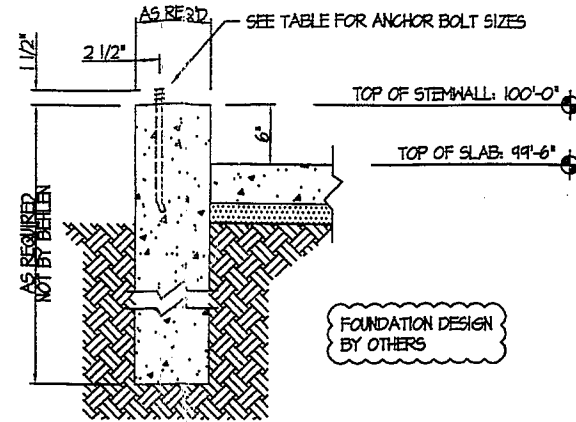
DESIGN LOADS
(ASCE 7-02 / IBC 2003)

ROOF LIVE	100 psf
FLOOR LIVE	100 psf
ATTIC LIVE	100 psf
COLLATERAL	5 psf
DEAD	5 psf
4' CONCRETE SLAB	30 psf
PADGENTE	9 psf
WIND LOAD	100 mph
WIND EXPOSURE	C
WIND IMPORTANCE	I
SEISMIC USE GROUP	I
SEISMIC SITE CLASS	D
SEISMIC DESIGN CAT	A
SEISMIC IMPORTANCE	I
SEISMIC COEF - S _s	15.2
SEISMIC COEF - S ₁	4.1
ROOF PANELS SPAN	N-5
FLOOR JOISTS SPAN	N-5
ROOF TRUSSES SPAN	N-5

TOWER	
BUILDING SPAN	21'-11"
BUILDING LENGTH	11'-0"
BUILDING HEIGHT	39'-4 1/4"
RESIDENTIAL	
BUILDING SPAN	21'-11"
BUILDING LENGTH	33'-0"
BUILDING HEIGHT	23'-6"
ANNEX	
BUILDING SPAN	21'-11"
BUILDING LENGTH	14'-6"
BUILDING HEIGHT	9'-4 1/4"

NOTES:
 1. ALL GRID LINES INDICATE CONCRETE LINES.
 2. SHEAR LOADS & UPLIFT REACTIONS HAVE NOT BEEN REDUCED.
 + DOWNWARD, - UPLIFT
 3. SHEAR LOADS MAY REVERSE.
 4. ** DENOTES REACTIONS FROM EXTERIOR STAIRS/PLATFORMS.

WALL ID	ANCHOR BOLTS	GRAVITY LOAD (lbs/ft)	SHEAR LOAD (lbs)	CONCENTRATED REACTIONS		
				GRIDLINE	R (+) kips	R (-) kips
A	1"	6075	10450	1.1	7.68	-7.68
				1.2	18.06	-7.68
				1.3	18.06	-7.68
				1.4	7.68	-7.68
B	1"	6075	10450	1.1	9.88	-4.88
				1.2	20.26	-4.88
				1.3	20.26	-4.88
				1.4	9.88	-4.88
A'	1"	4648	10450	2.1	7.44	—
				2.1 **	1.87	—
				2.2	15.62	-7.68
				2.2 **	1.87	—
				2.7	15.62	-7.68
				2.8	15.62	-7.68
				2.9	15.62	-7.68
				2.10	15.62	-7.68
B'	1"	4648	10450	2.1	9.88	-4.88
				2.2	17.82	-4.88
				2.3	15.88	—
				2.4	17.82	-4.88
				2.5	25.76	-4.88
				2.7	25.76	-4.88
				2.8	17.82	-4.88
				2.9	17.82	-4.88
A''	3/4"	1305	—	3.2	2.23	—
				3.3	2.23	—
B''	3/4"	1305	—	3.2	2.23	—
				3.3	2.23	—
1	1"	554	5548	A1	6.12	-6.12
				A1 **	1.54	—
				A3 **	1.54	—
				A.7	6.12	-6.12
2	1"	978	17243	A1	19.02	-19.02
				A.5	20.69	-19.02
				A.6	20.69	-19.02
				A.7	19.02	-19.02
5	1"	543	12605	A1	12.21	-12.21
				A.5	13.14	-12.21
				A.6	13.14	-12.21
				A.7	12.21	-12.21
4	3/4"	114	910	A1	0.53	-0.53
				A.2	0.73	-0.53
				A.3	0.73	-0.53
				A.7	0.53	-0.53



2 FOUNDATION DETAIL

LETTER	DESCRIPTION	DATE	NAME	DATE	DATE

FOR CONSTRUCTION

BUILDING TYPE: FIRE TOWER
 COMMERCIAL
 DRAWN BY: TV
 CHECKED BY:
 NAME: 82551
 DATE: Mar 23/07

CORR-SPAN®

21'-11" X 11'-0" X 39'-4 1/4" TOWER
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 ANCHOR BOLT DETAILS

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