

***SPECIFICATIONS
AND
CALCULATIONS
FOR
WILLIAMS SCOTSMAN
CLASSROOM BUILDING WITH RESTROOM
TEXAS***

Texas Industrialized
Building Code Council
IBC. ☒ IRC. ☐

JUL 19 2004

Approved
PFS Corp.
IHDRA7



**WILLIAMS SCOTSMAN
DALLAS INDEPENDENT SCHOOL DISTRICT
RELEASED SPECIFICATIONS
DOUBLE CLASSROOM WITH RESTROOMS
SIZE 23'-6"x64'-0"**

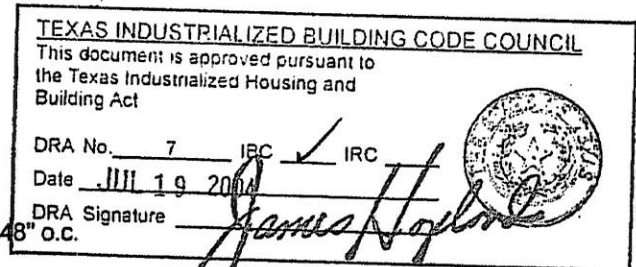


1.0 FRAME

- 1.1 TYPE:** Outrigger.
- 1.2 BEAM:** M12x11.8# I-beam.
- 1.3 OUTRIGGER:** 14 ga. formed steel @ 48" o.c.
- 1.4 CROSSMEMBER:** 14 ga. formed steel @ 48" o.c.
- 1.5 HEADERS:** 10 ga. formed member with tapered ends installed on front.
- 1.6 HITCH:** Demountable with 2-5/16" coupler and elevating jack.
- 1.7 AXLES:** Triple 5000# with electric brakes on 2 axles.

Each frame shall be equipped with one set of additional hangers to allow for future installation of one axle.

- 1.8 TIRES:** 8:00 x 14.5 10 ply rated.
- 1.9 PAINT:** Black asphalt on entire assembly less axles.



2.0 FLOOR

- 2.1 BOTTOM BOARD:** .040 one piece rolled type asphalt.
- 2.2 INSULATION:** R-11 (3-1/2") Kraft faced fiberglass batts.
- 2.3 JOISTS:** 2x6 #2 yellow pine installed transverse @ 16" o.c.
- 2.4 PERIMETER RAILS:** Double 2x6 #2 yellow pine on all sides and ends of each module.
- 2.5 DECKING:** Single layer 3/4" tongue and groove underlayment grade plywood installed perpendicular to floor joists.

Hold back decking 2" each side of mateline and ship loose 4" wide pieces of 3/4" plywood for site installation by Williams Scotsman.
- 2.6 COVERING:** 1/8" 12" x 12" vinyl composition tile shall be plant installed. Tile shall be held back at mateline and pieced in on site.

RMD shall ship loose tile to be installed at the mateline tile seam.

Tile shall be Armstrong #51839 Fortress White.



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3.0 EXTERIOR WALLS

- 3.1 TYPE: IBC framing.
- 3.2 STUDS: 2x4 #2 SYP @ 16" o.c.
- 3.3 BOTTOM PLATE: Single 2x4 #3 SYP.
- 3.4 TOP PLATE: Double 2x4 #3 SYP.
- 3.5 HEADERS: Double 2x4 #2 SYP on edge with 1/2" CDX plywood filler.
- 3.6 SILLS: Flat 2x4 #2 SYP.
- 3.7 WALL HEIGHT: Minimum 8'-1-1/2", refer to prints.
- 3.8 INTERIOR FINISH: 1/2" Vinyl covered gypsum wall board installed full height all walls.
- VCG shall be Patrick Industries Ruff Stuff White.
- VCG shall be installed flush to mateline. Ship loose 4" wide vinyl covered batten for installation by Williams Scotsman on site.
- 3.9 INSULATION: R-11 (3-1/2") Kraft faced fiberglass batts to roof.
- 3.10 SHEATHING: Structural thermoply sheathing installed full height entire exterior.
- 15# felt entire exterior.
- 3.11 SIDING: 29 ga. "R" panel steel with factory baked enamel finish.
Color to be Light Stone
- 3.12 TRIM: 29 ga. "Z" bottom trim.
Color to be Light Stone
- 29 ga. "J" trim around window & doors.
Color to be Light Stone
- 26 ga. Steel fascia and rake trim (Ramtech standard profile).
Color to be Kelly Green.
- 3.13 TIE DOWNS: Frame ties provided and installed by Williams Scotsman – see plans for location/quantity.

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1-10-04
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RAMTECH
Building Systems

B-3818

WILLIAMS SCOTSMAN
DALLAS INDEPENDENT SCHOOL DISTRICT
RELEASED SPECIFICATIONS
DOUBLE CLASSROOM WITH RESTROOMS
SIZE 23'-6"x64'-0"



- 5.2 VERTICAL: Prefinished vinyl wrapped wood battens installed on all seams.
- 5.3 WINDOWS: Windows shall be cased with prefinished #337 trim, color 2050.
- The jambs of all windows shall be finished with vinyl faced luan to match wall vinyl.

6.0 ROOF

- 6.1 RAFTERS: 2x6 #2 yellow pine installed @ 24" o.c.
Rafters to be installed so as to provide a minimum 2 IN 12 pitch.
- 6.2 RIDGE GIRDER: Single 3-1/2" x 24" pre-engineered wood girder each side of mate line.
- 6.3 BRIDGING: 1-1/2" steel angle installed @ 8' o.c. from girder to rafter.
- 6.4 CEILING: 2x4 acoustical mineral fiber in suspended T-grid system. Ceiling tiles shall be Armstrong 1729 or equal. Ceiling shall be installed at the factory.
- The ceiling tile and grid shall be installed independent in each modular section with a white melamine cap site installed at the mateline seam. Melamine cap shall be shipped loose.
- 6.5 CEILING HEIGHT: The finished ceiling height throughout the building is 7'-10 1/2".
- 6.6 INSULATION: R-19 (6") Un-faced fiberglass batts installed between the rafters. Insulation shall be held in place by the use of nylon/plastic netting.
- 6.7 SHEATHING: 1/2" CDX or 7/16" oriented strand board installed perpendicular to the roof joists.
- 6.8 ROOFING: 29 ga. galvalume "R" panel steel installed over one layer of 15# felt.
- 6.9 DRAFT STOP: N/A

7.0 EXTERIOR DOORS

- 7.1 DOORS: 1-3/4" x 36" x 80" 18 ga. hollow core commercial steel.
- 7.2 FRAMES: All exterior doors will be equipped with 16 ga. commercial steel frames.
- 7.3 LOCKSET/HARDWARE: All exterior doors will be equipped with a Schlage B663Px26D deadbolt assembly with two keys per door.

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Steel
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- 7.4 CLOSER:** A heavy hydraulic closer shall be provided on all exterior doors. Door closers shall be "Door-o-Matic" SC61, or equal.
- 7.5 EXTERIOR PULL/
INTERIOR PUSH:** Each exterior door shall be equipped with a Rockwood 70CXUS28 push/pull plate.
- 7.6 FINISH:** The interior and exterior side of the doors and frames will be painted to match trim; Kelly Green.

8.0 INTERIOR DOORS

- 8.1 DOORS:** 3/0"x6/8" Mohawk Birch Brown prefinished woodgrain hollow core wood door.
- 8.2 FRAMES:** All interior doors shall be set in 18 ga. prefinished Brown painted Redi-frames.
- 8.3 HARDWARE:** All interior doors shall be equipped with 1-1/2 pr. of mortise hinges.
- 8.4 LATCHSETS:** Restroom doors shall have Falcon lever handle locks with privacy function.

9.0 WINDOWS

- 9.1 TYPE:** All windows shall be 58"x24" horizontal slider with clear single strength glazing bronze painted finish frames and insect screen.
- Windows shall be H & R Series 600, or equal.
- 9.2 MINI-BLINDS:** All windows shall be equipped with 1" aluminum slat mini-blinds. Color shall be #026 Gray.

10.0 ELECTRICAL

- 10.1 SERVICE:** 120/240v, single phase, 3W, 60hz.
- 10.2 "MDP":** 1 phase, interior, flush mount with 200 AMP main breaker.
Panel shall be by Square "D", or equal.

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- 10.3 ENTRANCE:** Electrical service entry location shall be determined on site by others. No conduit shall be provided on the building by modular manufacturer. The penetration into the box shall be established at the site.
- 10.4 RACEWAY:** Minimum #12 AWG copper wire in concealed EMT conduit with set screw fittings. Wire insulation to be THHN.
- 10.5 LIGHTS:** 2'x4', 120v, four tube, recessed, fluorescent light with acrylic diffuser. Lights shall be equipped with T-8 lamps and electronic ballasts.
Lights shall be plant wired and secured to the roof joists for shipment to the job site.

Lights shall be Metalux 2GR8432UNLVEB8IU, or equal.

60 Watt incandescent light/fan combination installed in each restroom.
- 10.6 EXTERIOR LIGHT:** 70 Watt high pressure sodium exterior wall pack with photo cell; Lumark HPWM70P. Refer to drawings for location.
- 10.7 RECEPTACLES:** 120v Ivory duplex grounding type with matching plastic cover.

Receptacles shall be Leviton BR20-SI, or equal.

(1) 110 volt, wired dedicated circuit installed above the ceiling in each classroom Refer to the drawings for location.

(1) 110 volt dedicated outlet for fire alarm control panel.
- 10.8 SWITCHES:** 120v 20 AMP toggle type commercial specification grade. Device and cover shall be Ivory in color. (2) Switches shall be provided in each classroom and wired in a manner allowing half the fixtures to be illuminated at one time.

Switches shall be Leviton CS120-CI, or equal.
- 10.9 EXIT LIGHTS:** 110v illuminated exit signs with battery backup. (Plant installed)

Exit lights shall be LPX70RWH – Surelite, or equal.
- 10.10 LOW VOLTAGE:** J-boxes with conduit to above ceiling with pull wire shall be provided for fire alarm devices and computer/telephone. Refer to drawings for location and quantities. All wiring and devices provided and installed by others.

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11.0 PLUMBING

- 11.1 WATERLINES:** Type "L" copper with sweat copper fittings. All fixtures shall be provided with shut-off valves.
- 11.2 WASTELINES:** PVC-DWV-SCH-40 drain, waste and vent lines.
- 11.3 WATERHEATER:** N/A
- 11.4 WATER CLOSET:** White vitreous china tank type with open front seat and elongated bowl.
- 11.5 LAVATORIES:** Vitreous china wall hung with 4" washerless centerset.
- 11.6 ACCESSORIES:** Single roll toilet paper holder at each water closet.
S.S. grab bars at each water closet in each restroom.
18"X36" metal edged mirror over each lavatory.

12.0 H.V.A.C.

- 12.1 COOLING:** (2) 36,000 B.T.U. 240v 1 phase wall hung H.V.A.C. system with fresh air intake damper. HVAC units shall be Bard WA36A10, or equal.
- 12.2 HEATING:** 10kw 240v electric resistance heat strip in each air conditioner.
- 12.3 SUPPLY:** Through rigid foil faced fiberglass duct with 1" wall thickness installed below rafters with insulated circular flex duct to designated diffusers.
- 12.4 DIFFUSERS:** 24" x 24" White stamped metal with adjustable damper.
Diffusers shall be Airmate 705-8, or equal.
- 12.5 RETURN AIR:** Through a wall mounted grill located at the HVAC unit.
- 12.6 THERMOSTAT:** (1) Programmable thermostat shall be provided for each HVAC unit, Luxpro PSP511 or equal.
- 12.7 EXHAUST FANS:** (1) Combination 80 cfm exhaust fan/light fixture in each restroom.

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13.0 FURNISHINGS

- 13.1 TACKBOARDS:** Each classroom shall be equipped with (1) 4'-0" x 4'-0" or equal, tackboard with heavy duty satin finish aluminum frames. (To be plant installed.)

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Change #844F



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DOUBLE CLASSROOM WITH RESTROOMS
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- 13.2 MARKERBOARDS:** Each classroom will be equipped with (2) 4'-0" x 8'-0" Claridge #MLC 2048 or equal, 2048 white marker boards with heavy duty satin finished anodized aluminum frames and troughs. (To be plant installed)
- 13.3 FIRE EXTINGUISHER:** 5# ABC Surface mount fire extinguishers installed adjacent to each exterior door. Fire extinguishers shall be certified and tagged.

14.0 DESIGN CRITERIA

- 14.1 FLOORS:** The floor systems shall be constructed to accommodate a live load of 50lb/sft in addition to the dead loads.
- 14.2 WALLS:** The exterior walls shall be framed, braced and secured in accordance with the requirements of the IBC; 130 mph wind speed design load.
- 14.3 ROOFS:** All structural components of the roof system shall be designed and erected to span their respective areas and carry a live load of 20lb/sft and a dead load of 10lb/sft.
- 14.4 HEATING:** The heating system shall be designed to maintain an interior temperature of 75 degrees + or - 2 degrees.
- 14.5 COOLING:** The cooling system shall be designed to maintain an interior temperature of 75 degree + or - 2 degrees.
- 14.6 CODES:** The building shall be built in accordance with the following codes.
- A. International Building Code, 2003
 - B. International Plumbing Code, 2003
 - C. International Mechanical Code, 2003
 - D. National Electrical Code, 2002
 - E. International Energy Conservation Code, 2003
 - F. Texas Accessibility Standards, 1994
 - G. State of Texas Industrialized, Housing and Building Rules, as administered by the Texas Department of Licensing and Regulations.
 - H. In addition to Texas approvals, the building shall be approved for Louisiana, Arkansas and Oklahoma.

The scope of this design does not include accessibility elements required for the site. It is the owners responsibility to have these designs developed and to make submittal as required by the Texas Architectural Barriers Act, through their design professional. This submittal should be made to:

**Texas Department of Licensing and Regulations
Architectural Barriers Section
P.O. Box 12157
Austin, TX 78711**

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B-3823

**WILLIAMS SCOTSMAN
DALLAS INDEPENDENT SCHOOL DISTRICT
RELEASED SPECIFICATIONS
DOUBLE CLASSROOM WITH RESTROOMS
SIZE 23'-6"x64'-0"**



15.0 FIELD ACTIVITIES

- 15.1 SITE PREPARATION:** By Williams Scotsman
- 15.2 FOUNDATION** By Williams Scotsman
- 15.3 UTILITIES:** By Williams Scotsman
- 15.4 ENTRY ASSEMBLIES** By Williams Scotsman

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TRUS F-386 pg 1/2

The seal of the State of Texas Professional Engineers is circular. It features a five-pointed star in the center, with the words "STATE OF TEXAS" arched above it and "PROFESSIONAL ENGINEERS" arched below it. The name "THOMAS ALBAN" is inscribed across the middle of the seal.



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Cont.

U#0299 J#dd0065

REVIEWED BY:

Robbins Engineering, Inc.
PO Box 280055
Tampa, FL 33682

REFER TO ROBBINS ENG. GENERAL
NOTES AND SYMBOLS SHEET FOR
ADDITIONAL SPECIFICATIONS.

NOTES:

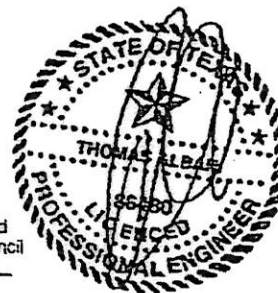
1. TRUSSES MANUFACTURED BY -
R.E. SWEENEY CO.
2. EMPIRICAL ANALOG IS USED.
3. UNBALANCED LOADS CHECKED
(UNBAL ID FAC = 1.00, .00).
4. TRUSS IS DESIGNED FOR
NO CRILING LOAD.
5. PREVENT TRUSS ROTATION AT
ALL BEARING LOCATIONS.

TRUS F-386 pg 2/2

Adequate drainage must be provided to prevent
ponding. If free runoff of water is restricted,
drains or scuppers are req'd to allow for
complete drainage.

Determination as to the suitability of this truss
component is the responsibility of the building
designer.

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JAN 15 2002

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BASIC DESIGN DATA

JOB: Double Classroom W/ RR
LOCATION: Texas

DATE: July 9, 2004
BUILDING CODE: 2003 IBC

FRAMING:

MATERIALS	(X) WOOD	() STEEL
	() CONCRETE	() COMBINATION
STUDS	2 x 4 #2 SYP @ 24" O.C.	
JOISTS	(ROOF) 2 x 6 #2 SYP @ 24" O.C.	
	(FLOOR) 2 x 6 #2 SYP @ 16" O.C.	
BEAMS	TPI DESIGNED & FABRICATED WOOD TRUSS	
COLUMNS	(3) 2 x 4 #2 SYP (MIN.)	
PLYWOOD	STRUCTURAL II PER PSI-83	

DESIGN LOADS:

ROOF	20 psf live load,	10 psf dead load
FLOOR	50 psf live load,	10 psf dead load
WIND	$V_{3s}=130$ mph, Exp. "B", 2003 IBC, $p=21.05$ psf Avg. Wall Pressure	

SEISMIC DESIGN CATEGORY B

Texas Industrialized
Building Code Council
IBC ☒ IRC ☐

INDEX OF CALCULATIONS

JUL 19 2004

• WIND LOAD	C5041 – C5044
• BLDG LATERAL & OVERTURNING	C5045 – C5052
• ROOF DIAPHRAGM & SHEAR WALLS	C5053 – C5054
• ROOF FRAMING	C5055 – C5056
• FLOOR FRAMING	C5057 – C5059
• HEADER	C5060
• COLUMN	C5061
• COLUMN UPLIFT	C5062
• EXTERIOR WALL UPLIFT	C5063
• HEAT LOSS / GAIN	D2266 – D2271
• COMCHECK EZ REPORT	D2272 – D2278

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C5040

2003 IBC WIND LOAD CALCULATIONS
SIMPLIFIED WIND LOAD METHOD

RAMTECH BUILDING SYSTEMS
1400 U.S. HWY. 287 S.
MANSFIELD, TX.
PH. (817)473-9376

WIND SPEED (V_{fm})= 80 MPH
WIND SPEED (V_{3s})= 100 MPH
ROOF ANGLE = 10 DEG.
EXPOSURE FACTOR= 1.00

BUILDING DIMENSIONS
HEIGHT (h)= 10.5 ft.
LENGTH (L)= 64 ft.
WIDTH (W)= 24 ft.
END ZONE DIST.(2Z)= 6 ft.

SIMPLIFIED DESIGN WIND PRESSURE
MAIN WINDFORCE-RESISTING SYSTEM

TRANSVERSE DIRECTION:

WALL: ZONE A (psf) 17.9 ZONE C (psf) 11.90

ROOF: ZONE E (psf) 19.10 ZONE F (psf) 11.6 ZONE G (psf) 13.30 ZONE H (psf) 8.9

AVERAGE WALL PRESSURE = 12.46 psf

AVERAGE ROOF PRESSURE = 11.50 psf

LONGITUDINAL DIRECTION:

WALL: ZONE A (psf) 17.9 ZONE C (psf) 11.90

ROOF: ZONE E (psf) 19.10 ZONE F (psf) 11.6 ZONE G (psf) 13.30 ZONE H (psf) 8.9

AVERAGE WALL PRESSURE = 13.40 psf

AVERAGE ROOF PRESSURE = 12.16 psf

FOR LATERAL & OVERTURNING USE AVERAGE WIND
PRESSURES IN TRANSVERSE DIRECTION (64 FT. SIDE)

REMARKS

2003 IBC
TABLE 1609.3.1

EXPOSURE B
SECT. 1609.4

TABLE 1609.6.2.1(1)

Roof Angle 10 deg.

Texas Industrialized
Building Code Council
IBC ☒ IRC ☐

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Reference
Fig. 1609.6.2.1
2003 IBC

C5041

**2003 IBC WIND LOAD CALCULATIONS
SIMPLIFIED WIND LOAD METHOD**

**RAMTECH BUILDING SYSTEMS
1400 U.S. HWY. 287 S.
MANSFIELD, TX.
PH. (817)473-9376**

WIND SPEED (V_{fm})= 90 MPH
WIND SPEED (V_{3s}) = 110 MPH
ROOF ANGLE = 10 DEG.
EXPOSURE FACTOR= 1.00

BUILDING DIMENSIONS

HEIGHT (h)= 10.5 ft.
LENGTH (L)= 64 ft.
WIDTH (W)= 24 ft.
END ZONE DIST.(2Z)= 6 ft.

**SIMPLIFIED DESIGN WIND PRESSURE
MAIN WINDFORCE-RESISTING SYSTEM**

TRANSVERSE DIRECTION:

WALL: ZONE A (psf) 21.6 ZONE C (psf) 14.40

ROOF: ZONE E (psf) 23.10 ZONE F (psf) 14.1 ZONE G (psf) 16.00 ZONE H (psf) 10.8

AVERAGE WALL PRESSURE = 15.08 psf

AVERAGE ROOF PRESSURE = 13.89 psf

LONGITUDINAL DIRECTION:

WALL: ZONE A (psf) 21.6 ZONE C (psf) 14.40

ROOF: ZONE E (psf) 23.10 ZONE F (psf) 14.1 ZONE G (psf) 16.00 ZONE H (psf) 10.8

AVERAGE WALL PRESSURE = 16.20 psf

AVERAGE ROOF PRESSURE = 14.70 psf

**FOR LATERAL & OVERTURNING USE AVERAGE WIND
PRESSURES IN TRANSVERSE DIRECTION (64 FT. SIDE)**

REMARKS

2003 IBC
TABLE 1609.3.1

EXPOSURE B
SECT. 1609.4

TABLE 1609.6.2.1(1)

Roof Angle 10 deg.

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Reference
Fig. 1609.6.2.1
2003 IBC

C5042

2003 IBC WIND LOAD CALCULATIONS
SIMPLIFIED WIND LOAD METHOD

RAMTECH BUILDING SYSTEMS
1400 U.S. HWY. 287 S.
MANSFIELD, TX.
PH. (817)473-9376

WIND SPEED (V_{fm})= 100 MPH
WIND SPEED (V_{3s}) = 120 MPH
ROOF ANGLE = 10 DEG.
EXPOSURE FACTOR= 1.00

BUILDING DIMENSIONS
HEIGHT (h)= 10.5 ft.
LENGTH (L)= 64 ft.
WIDTH (W)= 24 ft.
END ZONE DIST.(2Z)= 6 ft.

SIMPLIFIED DESIGN WIND PRESSURE
MAIN WINDFORCE-RESISTING SYSTEM

TRANSVERSE DIRECTION:

WALL: ZONE A (psf) 25.8 ZONE C (psf) 17.10

ROOF: ZONE E (psf) 27.40 ZONE F (psf) 16.8 ZONE G (psf) 19.10 ZONE H (psf) 12.9

AVERAGE WALL PRESSURE = 17.92 psf

AVERAGE ROOF PRESSURE = 16.57 psf

LONGITUDINAL DIRECTION:

WALL: ZONE A (psf) 25.8 ZONE C (psf) 17.10

ROOF: ZONE E (psf) 27.40 ZONE F (psf) 16.8 ZONE G (psf) 19.10 ZONE H (psf) 12.9

AVERAGE WALL PRESSURE = 19.28 psf

AVERAGE ROOF PRESSURE = 17.53 psf

FOR LATERAL & OVERTURNING USE AVERAGE WIND
PRESSURES IN TRANSVERSE DIRECTION (64 FT. SIDE)

REMARKS

2003 IBC
TABLE 1609.3.1

EXPOSURE B
SECT. 1609.4

TABLE 1609.6.2.1(1)

Roof Angle 10 deg.

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Reference
Fig. 1609.6.2.1
2003 IBC

05043

**2003 IBC WIND LOAD CALCULATIONS
SIMPLIFIED WIND LOAD METHOD**

**RAMTECH BUILDING SYSTEMS
1400 U.S. HWY. 287 S.
MANSFIELD, TX.
PH. (817)473-9376**

WIND SPEED (V_{fm})= 110 MPH
WIND SPEED (V_{3s}) = 130 MPH
ROOF ANGLE = 10 DEG.
EXPOSURE FACTOR= 1.00

BUILDING DIMENSIONS
HEIGHT (h)= 10.5 ft.
LENGTH (L)= 64 ft.
WIDTH (W)= 24 ft.
END ZONE DIST.(2Z)= 6 ft.

**SIMPLIFIED DESIGN WIND PRESSURE
MAIN WINDFORCE-RESISTING SYSTEM**

TRANSVERSE DIRECTION:

WALL: ZONE A (psf) 30.2 ZONE C (psf) 20.10

ROOF: ZONE E (psf) 32.20 ZONE F (psf) 19.7 ZONE G (psf) 22.40 ZONE H (psf) 15.1

AVERAGE WALL PRESSURE = 21.05 psf

AVERAGE ROOF PRESSURE = 19.43 psf

LONGITUDINAL DIRECTION:

WALL: ZONE A (psf) 30.2 ZONE C (psf) 20.10

ROOF: ZONE E (psf) 32.20 ZONE F (psf) 19.7 ZONE G (psf) 22.40 ZONE H (psf) 15.1

AVERAGE WALL PRESSURE = 22.63 psf

AVERAGE ROOF PRESSURE = 20.55 psf

**FOR LATERAL & OVERTURNING USE AVERAGE WIND
PRESSURES IN TRANSVERSE DIRECTION (64 FT. SIDE)**

REMARKS

2003 IBC
TABLE 1609.3.1

EXPOSURE B
SECT. 1609.4

TABLE 1609.6.2.1(1)

Roof Angle 10 deg.

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Reference
Fig. 1609.6.2.1
2003 IBC

C5044

24' X 64' BUILDING
LIGHT WOOD FRAMED BUILDING
LATERAL & OVERTURNING

RAMTECH MODULAR DESIGN
1400 U.S. HWY. 287 S.
MANSFIELD, TX.
PH. (817)473-9376

		REMARKS
CODE REQUIREMENTS:	BUILDING DATA	
DESIGN CODE: 2003 IBC	UNIT WIDTH = 24.00 ft	
WIND SPEED (V_{3s}) = 100 mph	UNIT LENGTH = 64.00 ft	
EXPOSURE = B	BLDG WIDTH = 24 ft	
	BLDG HEIGHT = 10.50 ft	
	ROOF SLOPE = 9.5 deg	
	SKID SPACING = 240 ins	
	# OF UNITS = 1	
	DEAD LOAD = 17 psf	
	WALL SURFACE AREA (WSA) = 672.0 sf	
	ROOF SURFACE AREA (RSA) = 778.7 sf	
1. CALCULATE OVERTURNING MOMENT:		
ROOF DESIGN PRESSURE (RP) =	11.5 psf	From IBC Wind Load Calc.
WALL DESIGN PRESSURE (WP) =	12.5 psf	
$M_o = WSA * WP * H/2 + RSA * RP * S/2 =$		
43959 + 89860	= 133818 lb-ft	
2. CALCULATE RESISTING MOMENT FROM DEAD LOAD AND PIERS:		
DEAD LOAD RESISTING MOMENT:		
$M_d = RSA * 0.6 * \text{UNIT DEAD LOAD} * (S/2)$	= 95310 lb-ft	Max. by code is .6D
RESISTING MOMENT FROM ANCHORS:		
# OF TIEDOWN ROWS RESISTING WIND	= 1	ALLOWABLE LOAD PER ANCHOR
# OF DIAGONAL ANCHORS PER ROW	= 4	IS PROPORTIONAL TO DIST. FROM
# OF VERTICAL ANCHORS PER ROW	= 0	O-TURNING POINT TO THE PIER
ALLOWABLE LOAD PER ANCHOR POINT	= 2227 lbs	3150 IS USED FOR VERT ANCHORS
TOTAL ANCHOR RESISTING MOMENT = 178191 lb-ft		2227 IS USED FOR DIAG. ANCHORS
3. CALCULATE ANCHORAGE ADEQUACY:		
OVERTURNING MOMENT / RESISTING MOMENT =	0.49	
RATIO IS LESS THAN 1.0; THEREFORE:		ANCHORAGE IS ADEQUATE
		Building Code Council
		IBC ☒ IRC ☐

JUL 19 2004

Approved
PFS Corp.
IHORA 7



C5045

24' X 64' BUILDING
LIGHT WOOD FRAMED BUILDING
LATERAL & OVERTURNING

RAMTECH MODULAR DESIGN
1400 U.S. HWY. 287 S.
MANSFIELD, TX.
PH. (817)473-9376

CODE REQUIREMENTS:		BUILDING DATA		REMARKS
DESIGN CODE:	2003 IBC	UNIT WIDTH	= 24.00 ft	
WIND SPEED =	100 mph	UNIT LENGTH	= 64.00 ft	
EXPOSURE =	B	BLDG HEIGHT	= 10.50 ft	
		ROOF SLOPE	= 9.5 deg	
		SKID SPACING	= 240 ins	
		# OF UNITS	= 1	
		DEAD LOAD	= 17 psf	
		WALL SURFACE AREA (WSA)	= 672.0 sf	
1. CALCULATE SLIDING FORCE DUE TO WIND:				
TOTAL WALL DESIGN PRESSURE (TWP)		=	12.46 psf	IBC WIND CALC
LATERAL WIND LOAD = F_w = WIND PRESSURE x WALL AREA				
= TWP x WSA =			8373 lbs	
2. CALCULATE FRICTION FORCE:				
WOOD TO CONCRETE FRICTION COEFFICIENT		=	0.00	CONSERVATIVE
RESISTING FORCE = RSA x DEAD LOAD x 0.33		=	0 lbs	
EXCESS SLIDING FORCE		=	8373 lbs	
HORIZONTAL HOLDING POWER OF DIAG ANCHOR		=	2227 lbs	
MIN NUMBER OF DIAGONAL TIE-DOWNS REQ'D		=	4 anchors	
NUMBER OF DIAG. TIES PROVIDED		=	4 anchors	
HOLDING PROVIDED BY DIAG TIES		=	8910 lbs	
3. CALCULATE LATERAL ANCHORAGE ADEQUACY:				
SLIDING FORCE / SLIDING RESISTANCE =			0.94	
RATIO IS LESS THAN 1.00 ;THEREFORE:		→		ANCHORAGE IS ADEQUATE

Texas Industrialized
Building Code Council
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JUL 19 2004

Approved
PFS Corp.
IHDRA 7



C5046

24' X 64' BUILDING
LIGHT WOOD FRAMED BUILDING
LATERAL & OVERTURNING

RAMTECH MODULAR DESIGN
1400 U.S. HWY. 287 S.
MANSFIELD, TX.
PH. (817)473-9376

CODE REQUIREMENTS:		BUILDING DATA		REMARKS
DESIGN CODE:	2003 IBC	UNIT WIDTH	= 24.00 ft	
WIND SPEED (V_{3s}) =	110 mph	UNIT LENGTH	= 64.00 ft	
EXPOSURE =	B	BLDG WIDTH	= 24 ft	
		BLDG HEIGHT	= 10.50 ft	
		ROOF SLOPE	= 9.5 deg	
		SKID SPACING	= 240 ins	
		# OF UNITS	= 1	
		DEAD LOAD	= 17 psf	
		WALL SURFACE AREA (WSA)	= 672.0 sf	
		ROOF SURFACE AREA (RSA)	= 778.7 sf	
1. CALCULATE OVERTURNING MOMENT:				
ROOF DESIGN PRESSURE (RP)	=	13.9 psf		From IBC Wind Load Calc.
WALL DESIGN PRESSURE (WP)	=	15.1 psf		
$M_o = WSA \cdot WP \cdot H/2 + RSA \cdot RP \cdot S/2 =$				
53202	+	108081	=	161283 lb-ft
2. CALCULATE RESISTING MOMENT FROM DEAD LOAD AND PIERS:				
DEAD LOAD RESISTING MOMENT:				
$M_d = RSA \cdot 0.6 \cdot \text{UNIT DEAD LOAD} \cdot (S/2)$		=	95310 lb-ft	Max. by code is .6D
RESISTING MOMENT FROM ANCHORS:				
# OF TIEDOWN ROWS RESISTING WIND	=	1		ALLOWABLE LOAD PER ANCHOR
# OF DIAGONAL ANCHORS PER ROW	=	5		IS PROPORTIONAL TO DIST. FROM
# OF VERTICAL ANCHORS PER ROW	=	0		O-TURNING POINT TO THE PIER
ALLOWABLE LOAD PER ANCHOR POINT	=	2227 lbs		3150 IS USED FOR VERT ANCHORS
TOTAL ANCHOR RESISTING MOMENT		=	222739 lb-ft	2227 IS USED FOR DIAG. ANCHORS
3. CALCULATE ANCHORAGE ADEQUACY:				
OVERTURNING MOMENT / RESISTING MOMENT =			0.51	
RATIO IS LESS THAN 1.0; THEREFORE:		→		ANCHORAGE IS ADEQUATE

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C5047

24' X 64' BUILDING
LIGHT WOOD FRAMED BUILDING
LATERAL & OVERTURNING

RAMTECH MODULAR DESIGN
1400 U.S. HWY. 287 S.
MANSFIELD, TX.
PH. (817)473-9376

CODE REQUIREMENTS:		BUILDING DATA		REMARKS
DESIGN CODE:	2003 IBC	UNIT WIDTH	= 24.00 ft	
WIND SPEED =	110 mph	UNIT LENGTH	= 64.00 ft	
EXPOSURE =	B	BLDG HEIGHT	= 10.50 ft	
		ROOF SLOPE	= 9.5 deg	
		SKID SPACING	= 240 ins	
		# OF UNITS	= 1	
		DEAD LOAD	= 17 psf	
		WALL SURFACE AREA (WSA)	= 672.0 sf	
1. CALCULATE SLIDING FORCE DUE TO WIND:				
TOTAL WALL DESIGN PRESSURE (TWP)		=	15.08 psf	IBC WIND CALC
LATERAL WIND LOAD = F_w = WIND PRESSURE x WALL AREA				
= TWP x WSA		=	10134 lbs	
2. CALCULATE FRICTION FORCE:				
WOOD TO CONCRETE FRICTION COEFFICIENT		=	0.00	CONSERVATIVE
RESISTING FORCE = $RSA \times DEAD\ LOAD \times 0.33$		=	0 lbs	
EXCESS SLIDING FORCE		=	10134 lbs	
HORIZONTAL HOLDING POWER OF DIAG ANCHOR		=	2227 lbs	
MIN NUMBER OF DIAGONAL TIE-DOWNS REQ'D		=	5 anchors	
NUMBER OF DIAG. TIES PROVIDED		=	5 anchors	
HOLDING PROVIDED BY DIAG TIES		=	11137 lbs	
3. CALCULATE LATERAL ANCHORAGE ADEQUACY:				
SLIDING FORCE / SLIDING RESISTANCE		=	0.91	
RATIO IS LESS THAN 1.00 ;THEREFORE:		→		ANCHORAGE IS ADEQUATE

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Building Code Council
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PFS Corp.
IHDRA 7



C5048

24' X 64' BUILDING
LIGHT WOOD FRAMED BUILDING
LATERAL & OVERTURNING

RAMTECH MODULAR DESIGN
1400 U.S. HWY. 287 S.
MANSFIELD, TX.
PH. (817)473-9376

CODE REQUIREMENTS:		BUILDING DATA		REMARKS
DESIGN CODE:	2003 IBC	UNIT WIDTH	= 24.00 ft	
WIND SPEED (V_{3s}) =	120 mph	UNIT LENGTH	= 64.00 ft	
EXPOSURE =	B	BLDG WIDTH	= 24 ft	
		BLDG HEIGHT	= 10.50 ft	
		ROOF SLOPE	= 9.5 deg	
		SKID SPACING	= 240 ins	
		# OF UNITS	= 1	
		DEAD LOAD	= 17 psf	
		WALL SURFACE AREA (WSA)	= 672.0 sf	
		ROOF SURFACE AREA (RSA)	= 778.7 sf	
1. CALCULATE OVERTURNING MOMENT:				
ROOF DESIGN PRESSURE (RP)	=	16.6 psf		From IBC Wind Load Calc.
WALL DESIGN PRESSURE (WP)	=	17.9 psf		
$M_o = WSA \cdot WP \cdot H/2 + RSA \cdot RP \cdot S/2 =$				
63222	+	129027	=	192249 lb-ft
2. CALCULATE RESISTING MOMENT FROM DEAD LOAD AND PIERS:				
DEAD LOAD RESISTING MOMENT:				
$M_d = RSA \cdot 0.6 \cdot \text{UNIT DEAD LOAD} \cdot (S/2)$		=	95310 lb-ft	Max. by code is .6D
RESISTING MOMENT FROM ANCHORS:				
# OF TIEDOWN ROWS RESISTING WIND	=	1		ALLOWABLE LOAD PER ANCHOR
# OF DIAGONAL ANCHORS PER ROW	=	6		IS PROPORTIONAL TO DIST. FROM
# OF VERTICAL ANCHORS PER ROW	=	0		O-TURNING POINT TO THE PIER
ALLOWABLE LOAD PER ANCHOR POINT	=	2227 lbs		3150 IS USED FOR VERT ANCHORS
				2227 IS USED FOR DIAG. ANCHORS
TOTAL ANCHOR RESISTING MOMENT	=	267286 lb-ft		
3. CALCULATE ANCHORAGE ADEQUACY:				
OVERTURNING MOMENT / RESISTING MOMENT =		0.53		
RATIO IS LESS THAN 1.0; THEREFORE:		→		ANCHORAGE IS ADEQUATE

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C5049

24' X 64' BUILDING
LIGHT WOOD FRAMED BUILDING
LATERAL & OVERTURNING

RAMTECH MODULAR DESIGN
1400 U.S. HWY. 287 S.
MANSFIELD, TX.
PH. (817)473-9376

CODE REQUIREMENTS:		BUILDING DATA		REMARKS
DESIGN CODE:	2003 IBC	UNIT WIDTH	= 24.00 ft	
WIND SPEED =	120 mph	UNIT LENGTH	= 64.00 ft	
EXPOSURE =	B	BLDG HEIGHT	= 10.50 ft	
		ROOF SLOPE	= 9.5 deg	
		SKID SPACING	= 240 ins	
		# OF UNITS	= 1	
		DEAD LOAD	= 17 psf	
		WALL SURFACE AREA (WSA)	= 672.0 sf	
1. CALCULATE SLIDING FORCE DUE TO WIND:				
TOTAL WALL DESIGN PRESSURE (TWP)		=	17.92 psf	IBC WIND CALC
LATERAL WIND LOAD = F_w = WIND PRESSURE x WALL AREA				
= TWP x WSA =			12042 lbs	
2. CALCULATE FRICTION FORCE:				
WOOD TO CONCRETE FRICTION COEFFICIENT		=	0.00	CONSERVATIVE
RESISTING FORCE = $RSA \times DEAD\ LOAD \times 0.33$		=	0 lbs	
EXCESS SLIDING FORCE		=	12042 lbs	
HORIZONTAL HOLDING POWER OF DIAG ANCHOR		=	2227 lbs	
MIN NUMBER OF DIAGONAL TIE-DOWNS REQ'D		=	6 anchors	
NUMBER OF DIAG. TIES PROVIDED		=	6 anchors	
HOLDING PROVIDED BY DIAG TIES		=	13364 lbs	
3. CALCULATE LATERAL ANCHORAGE ADEQUACY:				
SLIDING FORCE / SLIDING RESISTANCE =			0.90	
RATIO IS LESS THAN 1.00 ;THEREFORE:		→		ANCHORAGE IS ADEQUATE

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PFS Corp.
IHDRA7



C5050

24' X 64' BUILDING
LIGHT WOOD FRAMED BUILDING
LATERAL & OVERTURNING

RAMTECH MODULAR DESIGN
1400 U.S. HWY. 287 S.
MANSFIELD, TX.
PH. (817)473-9376

CODE REQUIREMENTS:		BUILDING DATA		REMARKS
DESIGN CODE:	2003 IBC	UNIT WIDTH	= 24.00 ft	
WIND SPEED (V_{3s}) =	130 mph	UNIT LENGTH	= 64.00 ft	
EXPOSURE =	B	BLDG WIDTH	= 24 ft	
		BLDG HEIGHT	= 10.50 ft	
		ROOF SLOPE	= 9.5 deg	
		SKID SPACING	= 240 ins	
		# OF UNITS	= 1	
		DEAD LOAD	= 17 psf	
		WALL SURFACE AREA (WSA)	= 672.0 sf	
		ROOF SURFACE AREA (RSA)	= 778.7 sf	
1. CALCULATE OVERTURNING MOMENT:				
ROOF DESIGN PRESSURE (RP) =		19.4 psf		From IBC Wind Load Calc.
WALL DESIGN PRESSURE (WP) =		21.1 psf		
$M_o = WSA \cdot WP \cdot H/2 + RSA \cdot RP \cdot S/2 =$				
	74264 + 151375	=	225640 lb-ft	
2. CALCULATE RESISTING MOMENT FROM DEAD LOAD AND PIERS:				
DEAD LOAD RESISTING MOMENT:				
$M_d = RSA \cdot 0.6 \cdot \text{UNIT DEAD LOAD} \cdot (S/2)$		=	95310 lb-ft	Max. by code is .6D
RESISTING MOMENT FROM ANCHORS:				
# OF TIEDOWN ROWS RESISTING WIND	=		1	ALLOWABLE LOAD PER ANCHOR
# OF DIAGONAL ANCHORS PER ROW	=		7	IS PROPORTIONAL TO DIST. FROM
# OF VERTICAL ANCHORS PER ROW	=		0	O-TURNING POINT TO THE PIER
ALLOWABLE LOAD PER ANCHOR POINT	=		2227 lbs	3150 IS USED FOR VERT ANCHORS
				2227 IS USED FOR DIAG. ANCHORS
TOTAL ANCHOR RESISTING MOMENT	=		311834 lb-ft	
3. CALCULATE ANCHORAGE ADEQUACY:				
OVERTURNING MOMENT / RESISTING MOMENT =			0.55	
RATIO IS LESS THAN 1.0; THEREFORE:			→	ANCHORAGE IS ADEQUATE

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PFS Corp.
IHDRA 7



05051

24' X 64' BUILDING
LIGHT WOOD FRAMED BUILDING
LATERAL & OVERTURNING

RAMTECH MODULAR DESIGN
1400 U.S. HWY. 287 S.
MANSFIELD, TX.
PH. (817)473-9376

CODE REQUIREMENTS:		BUILDING DATA		REMARKS
DESIGN CODE:	2003 IBC	UNIT WIDTH	= 24.00 ft	
WIND SPEED =	130 mph	UNIT LENGTH	= 64.00 ft	
EXPOSURE =	B	BLDG HEIGHT	= 10.50 ft	
		ROOF SLOPE	= 9.5 deg	
		SKID SPACING	= 240 ins	
		# OF UNITS	= 1	
		DEAD LOAD	= 17 psf	
		WALL SURFACE AREA (WSA)	= 672.0 sf	
1. CALCULATE SLIDING FORCE DUE TO WIND:				
TOTAL WALL DESIGN PRESSURE (TWP)		=	21.05 psf	IBC WIND CALC
LATERAL WIND LOAD = F_w = WIND PRESSURE x WALL AREA				
= TWP x WSA =			14146 lbs	
2. CALCULATE FRICTION FORCE:				
WOOD TO CONCRETE FRICTION COEFFICIENT		=	0.00	CONSERVATIVE
RESISTING FORCE = $RSA \times DEAD\ LOAD \times 0.33$		=	0 lbs	
EXCESS SLIDING FORCE		=	14146 lbs	
HORIZONTAL HOLDING POWER OF DIAG ANCHOR		=	2227 lbs	
MIN NUMBER OF DIAGONAL TIE-DOWNS REQ'D		=	7 anchors	
NUMBER OF DIAG. TIES PROVIDED		=	7 anchors	
HOLDING PROVIDED BY DIAG TIES		=	15592 lbs	
3. CALCULATE LATERAL ANCHORAGE ADEQUACY:				
SLIDING FORCE / SLIDING RESISTANCE =			0.91	
RATIO IS LESS THAN 1.00 ;THEREFORE:		→		ANCHORAGE IS ADEQUATE

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IHRA 7



05052

24' x 64' BUILDING
ROOF DIAPHRAGM & SHEAR WALLS

RAMTECH MODULAR DESIGN
1400 U.S. HWY. 287 S.
MANSFIELD, TX.
PH. (817)473-9376

				REMARKS
WIND DATA				2003 IBC
	WIND SPEED(V _{fm})=	110 mph		
	WIND SPEED(V _{3s})=	130 mph		
	WALL PRESSURE (p)=	21.1 psf		AVG. WALL PRESSURE
DIMENSIONS				Transverse Direction Longitudinal Direction
	WALL HEIGHT (h _x)=	8.125 ft.		
	O.A. HEIGHT (h)=	10.13 ft.		
	O.A. LENGTH (l)=	64.00 ft.		
	O.A. DEPTH (d)=	24.00 ft.		
	LOAD ON EXPOSED WALL SURFACE (w)= (p)(h _x /2)			
	W=	86 plf		
ROOF DIAPHRAGM AND SHEAR WALL STRESSES				
LINE X-X				
	DIST. BETWEEN SHEAR WALLS (L _x)=	64 ft.		
	ROOF DIAPHRAGM DEPTH (D _x)=	24 ft.		
	EFF. SHEAR WALL LENGTH (l _x)=	24 ft.		
	MIN. WALL PIER LENGTH (l _{px})=	12 ft.		
	ROOF DIAPHRAGM STRESS (V _{dx})= (W)(L _x)(1/2)(1/D _x)			
	V _{dx} =	114 plf		
REMARKS:				TECH. BULLETIN NER-272 GROUP II JOISTS
USE 7/16" OSB ATTACHED WITH 16 GA. STAPLES @ 6" O.C. PANEL EDGE, & 12" O.C. IN THE FIELD, V _{all} = 150 plf MATE LINE SHEAR ATTACHMENT USE 3/8" LAGS @ 32" O.C.				
	P =	420 lbs		TABLE C9.3-1 1991 NDS PARALLEL TO GRAIN
	LATERAL CAPACITY = (420)(12/32)(1.33) =	209 plf		
	SHEAR WALL STRESS (V _{wx})= (W)(L _x)(1/2)(1/l _x)			
	V _{wx} =	114 plf		
REMARKS:				GROUP II STUDS END WALLS ONLY
USE 7/16" O.S.B., ATTACH WITH .099 DIA. NAIL AT 6" O.C. (BLOCKED) V _{all} = 145 plf				
PLATE ATTACHMENT TO ROOF AND FLOOR				
CONNECTOR:	16d BOX	SHEAR VALUE, F _n =	101 lbs	TABLE 4 NER-272 Texas Industrialized Building Code Council IBC ☒ IRC
SPACING, g	8 in	LDF =	1.33	
TOENAIL	N	ADJ FACTOR, C _{tn} =	1	
	LAT. CAP. = F _n X LDF X (12/g) X C _{tn} =		201 lbs	JUL 1 9 2004

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PFS Corp.
IHDRA 7



C5053

SHEAR WALL OVERTURNING (T)= (Vwx)(lpx)(hx)(1/lpx)
T= 929 LBS.

REMARKS:

USE (1) 3/8" X 6" LAG BOLTS AT EACH WALL CORNER
INTO DOUBLE FLOOR JOIST BELOW.
WITHDRAWAL= (352)(6-1.5-.75)(1.33)(1)= 1756 LBS.

LINE Y-Y

WALL PRESSURE (p)= 22.63 psf

LOAD ON EXPOSED WALL SURFACE (w)= (p)(h/2)
W= 115 plf

DIST. BETWEEN SHEAR WALLS (Ly)= 24 ft.
ROOF DIAPHRAGM DEPTH (Dy)= 64 ft.
EFF. SHEAR WALL LENGTH (ly)= 29.67 ft.
MIN. WALL PIER LENGTH (lpy)= 6.67 ft.

ROOF DIAPHRAGM STRESSES (Vdy)= (W)(Ly)(1/2)(1/Dy)

Vdy= 16 plf

REMARKS:

USE SAME AS LINE X-X ABOVE.

SHEAR WALL STRESS (Vwy)= (W)(Ly)(1/2)(1/ly)

Vwy= 35 plf

REMARKS:

USE SAME AS LINE X-X ABOVE

SHEAR WALL OVERTURNING (T)= (Vwy)(lpy)(hx)(1/ly)

T= 282 LBS.

REMARKS:

STD. UPLIFT FASTENING ADEQUATE.

NO RESISTING DEAD
LOAD ASSUMED

USE WASHER
WITH LAG

AVG. WALL PRESSURE

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JUL 19 2004

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PFS Corp.
IHDRA 7



C5054

STANDARD ROOF JOIST
ROOF JOIST ANALYSIS:

2 x 6 (#2 SYP 19% M.C)
12'-0" MODULE

RAMTECH MODULAR DESIGN
1400 U.S. HWY. 287 S.
MANSFIELD, TX.
PH. (817)473-9376

ROOF LOADING:

LIVE= 20.00 psf LDF= 1.25
DEAD= 10.00 psf DEF = L/ 180
MISC.= 0.00 psf

JOIST SPACING= 24.00 in.

BEAM LENGTH= 141.0 in.

BEAM UNIFORM LOAD BASED ON ROOF LOADING

w= 5.00 pli

BENDING MOMENT

$$M = (w l^2) / 8$$

M= 12425.625 in. lbs.

SHEAR

$$V = (w l) / 2$$

V= 352.5 lbs.

SELECT MATERIAL PROPERTIES

b= 1.50 in. NO. OF MEMBERS= 1
d= 5.50 in.
Fb= 1438 psi
Fv= 90 psi
E= 1600000 psi

SECTION PROPERTIES

A= 8.25 in.^2
S= 7.56 in.^3
I= 20.80 in.^4

STRESSES IN MATERIAL SELECTED

FOR FIBER BENDING

$$f_b = M / (S)$$

f_b= 1643 psi < F_b' = 1797 psi

REMARKS

BASED ON SIMPLY
SUPPORTED BEAM
CONDITION

RECTANGULAR
MEMBERS ONLY
REPETITIVE MEMBER
VALUE

$$A = (b)(d)$$
$$S = (b)(d^2) / 6$$
$$I = (b)(d^3) / 12$$

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IHDRA 7



C5055

FOR SHEAR

$$fv = (3/2)(V/A)$$

$$fv = 64.09 \text{ psi} < Fv' = 112.50 \text{ psi}$$

BEAM DEFLECTION

$$DEF. = ((5)(w)(l^4))/((384)(E)(I))$$

$$DEF. = 0.77 \text{ in.}$$

$$\text{ALLOWABLE DEFLECTION} = 0.78 \text{ in.}$$

ALLOWABLE BASED
ON LIVE & DEAD
LOADS INCLUSIVE

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JUL 19 2004

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PFS Corp.
IHDRA7



C5056

PROJECT: 11'-9" FLOOR ON DR FRAME DATE: 3-07-01

TITLE: WOOD FLOOR @ 50 PSF L.L., 2x6 @ 16" O.C.



REMARKS

LOADING (UNIFORM)

	LIVE	DEAD	
ROOF	20	10	PSF
FLOOR	50	16	PSF
WALL		64	PLF

(CONCENTRATED)

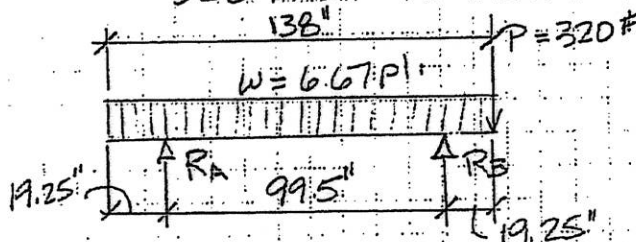
1000 LBS DISTRIBUTED OVER
2.5' x 2.5' AREA

FLOOR (W) & ROOF (P) LOAD

$$W = [(50 + 10) \left(\frac{16}{12}\right)] \left(\frac{1}{12}\right) = 6.67 \text{ PLF}$$

$$P = [(20 + 10) \left(\frac{11.75}{2}\right) \left(\frac{16}{12}\right)] + (64 \times \frac{16}{12})$$

$$= 320 \text{ LBS}$$



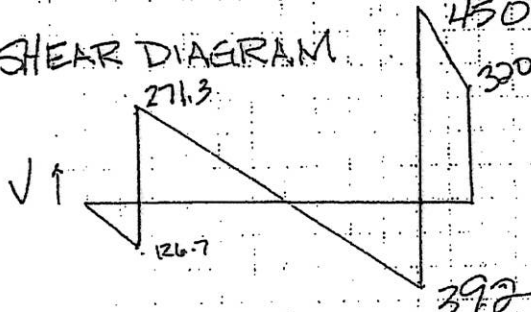
$$\sum M_A = (6.67 \times 138) \left(\frac{138}{2} - 19.25\right) - R_B(99.5) + 320(118.75) = 0$$

$$R_B = 842 \text{ lbs}$$

$$\sum F_y = 6.67(138) + 320 - 842 - R_A = 0$$

$$R_A = 398 \text{ lbs}$$

SHEAR DIAGRAM



V_{max} OCCURS @
 $x = 118.75 + 5.5 = 124.25$

$$V_{max} = 450 - 5.5(6.67) = 413 \text{ lbs}$$

$$M_{max} = 398(99.5 + 5.5) - 6.67(124.25) \left(\frac{124.25}{2}\right) + 842(5.5)$$

$$M_{max} = 5065.17 \text{ LB-FT}$$

Texas Industrialized
Building Code Council
IBC IRC

JUL 19 2004

Approved
PFS Corp.
HDRA 7



C5057

PROJECT: 11'-9" FLOOR ON O/R FRAME DATE: 3-07-01

TITLE: WOOD FLOOR @ 50 PSF L.L., 2x6 @ 16" O.C.

SHT 2 OF 3
RAMTECH
Building Systems, Inc.

REMARKS

FLOOR JOIST
2x6 w/ 3/4"
PLYWOOD T-JOIST

$S = 11.18 \text{ IN}^3$
 $I = 38.49 \text{ IN}^4$
 $A = 9.375 \text{ IN}^2$
#2 SYP
 $F_b = 1435 \text{ psi}$
(Rep.)
 $F_v = 90 \text{ psi}$
 $E = 1.6 \times 10^6 \text{ psi}$

$$M_{max} = 5065 \text{ in-lbs}$$

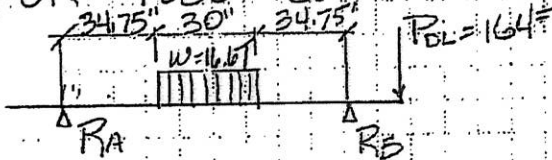
$$f_b = \frac{M}{S} = \frac{5065}{11.18} = 453 \text{ psi} < F_b = 1435$$

$$f_v = \frac{3}{2} \frac{V}{A} = \left(\frac{3}{2}\right) \left(\frac{413}{9.375}\right) = 66 \text{ psi} < F_v = 90$$

Δ_{max} - ESTIMATE BY USING UNIFORM
LOAD OVER SIMPLY SUPPORTED BEAM

$$\Delta = \frac{5(6.67)(99.5)^4}{384(1.6 \times 10^6)(38.49)} = .14'' \quad \frac{.14}{.240} = .41''$$

FOR 1000# CONCENTRATED



$$w_d = \left(\frac{1000}{2}\right) \left(\frac{1}{30}\right) = 16.67 \text{ pli}$$

$$P_{DL} = (10) \left(\frac{11.75}{2}\right) \left(\frac{16}{12}\right) + (64) \left(\frac{16}{12}\right) = 164 \text{ lbs}$$

$$w_{DL} = (10) \left(\frac{16}{12}\right) \left(\frac{1}{12}\right) = 1.11 \text{ pli}$$

$$\sum M_A = (16.67)(30)(49.75) - R_B(99.5) + 164(118.75) + (1.11)(138)(138/2 - 19.25) = 0$$

$$R_B = 522 \text{ lbs}$$

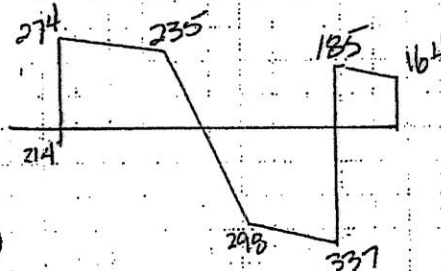
$$R_A = 295 \text{ lbs}$$

SHEAR DIAGRAM

$$V_{max} = 337 - 5.5(1.11) = 331 \text{ lbs}$$

$$M_{max} = 295(99.5 - 5.5) - 30(16.67)(55.25) - 1.11(113.25)\left(\frac{113.25}{2}\right)$$

$$M_{max} = 7019 \text{ in-lbs}$$



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PFS Corp.
IHDRA 7



C5059

PROJECT: 11'-9" FLOOR ON O/R DATE: 3-08-01

TITLE: 1000 LB CONC. LOAD, 2x6 @ 16" O.C.

SHT 3 OF 3

RAMTECH
Building Systems, Inc.

REMARKS

$$M_{max} = 7019 \text{ in-lbs}$$

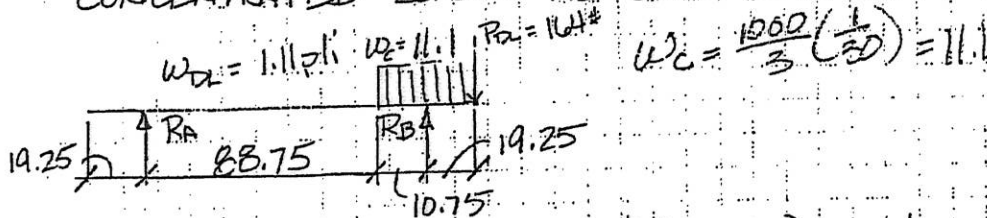
$$f_b = \frac{M}{S} = \frac{7019}{11.13} = 631 \text{ psi} < F_b = 1435 \text{ psi}$$

$$f_v = \frac{3V}{2A} = \frac{3}{2} \left(\frac{331}{9.375} \right) = 53 \text{ psi} < 90 \text{ psi}$$

$$\Delta_{max} = \frac{(1.78)(30)(99.5)^3}{48(1.6 \times 10^6)(38.49)} = .18" < \frac{1}{240}$$

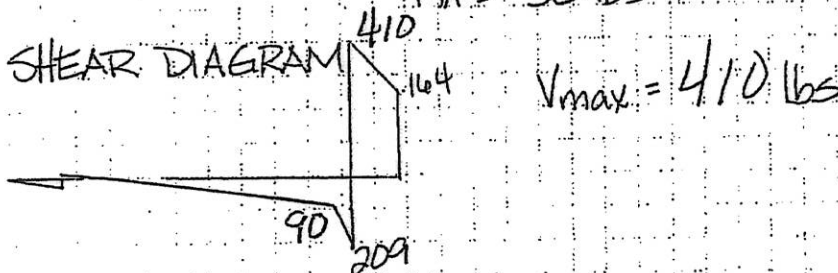
$$\frac{1}{240} = .41"$$

CONCENTRATED LOAD @ RB CANTILEVER



$$\Sigma M_A = 1.11(138)(49.75) + (11.1)(30)(103.75) + 164(18.75) - 99.5 R_B = 0$$

$$R_B = 620 \text{ lbs} \quad R_A = 1.11(138) + 11.1(30) + 164 = 620$$



SHEAR IS WORST CASE

$$f_v = \frac{3}{2} \left(\frac{410}{9.375} \right) = 66 \text{ psi} < F_v = 90 \text{ psi}$$

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C5059

DESCRIPTION: ALL HEADERS
 MAX. HEADER LENGTH (UNIFORM LOADING)
 2 - 2 x 4 #2 SYP

RAMTECH BUILDING SYSTEMS
 1400 U.S. HWY. 287 S.
 MANSFIELD, TX.
 PH. (817)473-9396

BEAM DATA: T= 6.00 ft per lineal ft
 d= 3.5 in.
 b= 1.5 in.
 Fb= 1500 psi
 Fv= 90 psi
 E= 1600000 psi
 NO. OF MEMBERS= 2 ea.

SECTION PROPERTIES:

A= 10.50 in.^2
 I= 10.72 in.^4
 S= 6.13 in.^3

LOADING:

LIVE: 20 psf
 DEAD: 10 psf
 LDF: 1.25

TRIBUTARY AREA:

DISTANCE= 6.00 ft/lineal ft

UNIFORM LOAD:

w= 15.0 pli

DETERMINE MAX. HEADER LENGTHS BASED ON
 FIBER BENDING, HORIZONTAL SHEAR, & DEFLECTION

FIBER BENDING:

MAXIMUM MOMENT $M_m = (F_b)(S)(LDF)$

$M_m = 11494$ IN. LBS.

$M = (W)(L^2)(1/8)$

$L = \text{SQRT}(M_m)(8)/W$

L= 78.3 in.

HORIZONTAL SHEAR:

MAXIMUM SHEAR $V_m = (F_v)(A)(2/3)(LDF)$

$V_m = 787.5$ lb

$V = (W)(L)(1/2)$

$L = (V_m)(2)/W$

L= 105.0 in.

DEFLECTION:

ALLOWABLE RATIO=

240

$\text{DEF.} = (5)(W)(L^4)/(384)(E)(I)$

L= 71.5 in.

ACTUAL DEFLECTION=

0.30 in.

CONCLUSION:

FOR CONDITION NOTED MAXIMUM
 HEADER LENGTH IS

71.5 in.

FOR CONDITION NOTED SUPPORTED
 LOAD (R) AT HEADER BEARING ENDS

R= 536 LBS.

REMARKS

Properties for
 2 - 2x4 Studs

LOAD DURATION FACTOR

AREA SUPPORTED BY MEMBER

SIMPLE SPAN BEAM
 NO END FIXITY

ASSUMES K= 1.0

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C5060

DATE: 7/9/2004

MAXIMUM COLUMN CAPACITY (UNBRACED)

RAMTECH BUILDING SYSTEMS
1400 U.S. HWY. 287 S.
MANSFIELD, TX.
PH. (817)473-9376

REMARKS

TRIBUTARY AREA= 188 SQ. FT.

ROOF LOAD= 20 psf (LIVE)
10 psf (DEAD)

LOAD ON COLUMN= (AREA)(LIVE + DEAD)

LOAD ON COLUMN= 5640 LBS. (Pact)

COLUMN DATA:

l= 97.5 in. (LENGTH)
d= 3.5 in. (DEPTH)
b= 4.5 in. (WIDTH)
Fc= 975 psi
E= 1600000 psi

DERIVED DATA:

l/d= 27.86

K= (.671)(SQRT(E/Fc))

K= 27.18

A= (d)(b)

A= 15.75 in²

COLUMN TYPE (BASED ON LENGTH)

l/d > 11 < K INTERMEDIATE CONDITION

l/d > K LONG CONDITION

COLUMN TYPE: LONG
COMPUTE COLUMN CAPACITY

Fc'= 618.54 psi

Pa= (Fc')(A)

Pa= 9742.01 LBS.

MINIMUM BEARING AREA REQUIRED FOR DESIGN

Ab= (Pact/Fc)(LDF)

LDF=

1.25

Ab= 4.63 SQ. IN.

: ENTER TRIBUTARY
: AREA SUPPORTED
: BY COLUMN.

: CONSIDER DEPTH AS
: LEAST DIMENSION.

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C5061

RAMTECH BUILDING SYSTEMS
1400 U.S. HWY. 287 S.
MANSFIELD, TX.
PH. (817)473-9376

COLUMN UPLIFT

WIND DATA

3 SEC. WIND SPEED= 130 MPH

LDF= 1.6

DESIGN UPLIFT PRESSURE

pu= 22.40 psf

TRIBUTARY AREA (A)

A= 188 ft²

RESISTING ROOF DEAD LOADS (RDL)

ROOF= RDL= 7 psf

RESISTING WALL DEAD LOAD (WDL)

WDL = (64plf)(12ft) = 768 lbs

UPLIFT PER COLUMN

P= ((A) (pu-RDL) - WDL) / LDF

P= 1329.50 LBS.

USE: ST-2215 BY SIMPSON OR EQUAL W/
.131" DIA. NAILS X 1 1/2" (MIN.)
LAT. STRENGTH/NAIL = 781bs

ALL. LOAD = (78) (1.25) (16) = 1560 lbs

REMARKS

2003 IBC

10 MIN. LDF
FOR WIND

ZONE G
ROOF PRESSURE

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C5662

RAMTECH MODULAR DESIGN
1400 U.S. HWY. 287 S.
MANSFIELD, TX.
PH. (817)473-9376

12'-0" UNIT WIDTH WITH NO OVERHANG
WALL UPLIFT (EXTERIOR SIDEWALL CONDITION)

REMARKS

WIND DATA

3 SEC. WIND SPEED= 130 MPH

TRIBUTARY AREA (A) (INTERIOR AREA)
A= 6 ft²

TRIBUTARY AREA (Ae) (EXTERIOR AREA)
Ae= 0 ft²

RESISTING ROOF DEAD LOADS (WDL)= (A)(DL)
ROOF= WDL= 7 psf

ROOF WIND PRESSURE (p_w)= 32.2 psf

LDF= 1.6

UPLIFT PER LINEAL FOOT ALONG STUD WALL

$$P = ((A)(p_w - WDL) + (Ae)(p_u')) / LDF$$
$$P = 94.50 \text{ plf}$$

EXT. WALL ATTACHMENT TO ROOF AND FLOOR

USE

1.5" X 30 GA. GALV. STL STRAP
ATTACHED WITH 16 GA. STAPLES (4) PER SIDE.
AT 32" O.C.

STRAP CAPACITY= (.0157)(1.5)(.6)(33KSI)(12/32)=174.5plf
STAPLE CAPACITY= (52)(1.25)(4)(12/32)= 97.5 plf

2003 IBC

Per lineal foot
of wall

Worst Case @
Zone E
10 min. Load
Duration Factor

LDF INCLUSIVE

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C5063

Load Express: Load Calculation Software

General Job

Job Description: 24' x 64' CLASSROOM BUILDING
Building Owner:
Program User:
Comments:

Program was Run: 7/ 2/2004 at 2:39:20 PM
Dataset Name: C:\CDS\LOAEXP\DATA\RT.LE

Alternative 1 Alt1

Geographical Data

Location: Dallas, Texas
Weather File: Dallas, Texas
Latitude: 32 deg
Elevation: 481 ft

Design Data

Summer Dsn Dry Bul 100.0 deg F
Summer Dsn Wet Bul 75.0 deg F
Winter Design Dry Bu 22.0 deg F
Density-Sp Heat Prod 1.0950 Btu-min/(hr-ft³-F)
Design Simulation per Aug To Sep

Building Peak Data

Month/Hour: Aug / 14
Cooling Capacity: 66.3 Mbh
Cooling Sensible: 47.9 Mbh
Sensible Heat Ratio (SH) 0.722
Heating Capacity -67.2 Mbh

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D2266

Load Express: Load Calculation Software

BlockSchool

Alternative 1 Alt1

General Job Data

Weather Location: Dallas, Texas
Weather Region: South Central
Cig Simulation Start Month: Aug
Cig Simulation End Month: Sep

Building Opening Time: 8 am
Building Closing Time: 3 pm
Building Direction: 0
Cig Sensible SF: 0.00
Cig Latent SF: 0
Htg Sensible SF: 0
People Diversity: 100 %
Bldg Simulation Type: Cooling and Heating

Zone Data

Alternative Number: 1
Zone Number: 1
Floor Width: 32 ft
Floor Length: 24 ft
Ceiling Height: 8 ft
Fir-to-Fir Height: 9 ft
No. of Dup Zones: 1
Ceiling U-Factor: 0.50 Btu/(hr-F-ft2)
Floor Calculation Type: Exposed Floor
Floor Slab Type: 1" Wood Floor, 3.33" Ins
Floor U-Factor: 0.08 Btu/(hr-F-ft2)
Floor Area: 768.00 ft2

Cooling Dry Bulb: 75 deg F
Relative Humidity: 50 %
Heating Dry Bulb: 70 deg F
People Density: 23 people
People Activity: Classrooms
People Sensible Load: 225 Btuh/pers
People Latent Load: 105 Btuh/pers
Misc. Equip. Type: School Elec
Misc. Equip. Sensible Load: 0.22 Watt/ft2
Misc. Equip. Latent Load: 0.00 Watt/ft2
Misc. Equip. Sensible to RA: 0 Btuh
Lighting Intensity: 768.00 Watts
Lighting Type: recessed fluorescent, not vented

W	H	Type	U-Factor	Color	Percent (%)	Direction	Susp	Cell Tilt	Cool Adj Spc Temp	Heat Adj Spc Temp	Dimension	% Glass	Shading Coeff	Shading
WALL	1	32 x 8	Steel Siding, 3.33" Ins	0.08	Light	North		0	0	0			0.00	
WALL	2	32 x 8	Steel Siding, 3.33" Ins	0.08	Light	South		0	0	0			0.00	
GLASS	1		Single Clear 1/4 In.	1.05	Plenum			0	0	0	Percent	12	0.95	No Shading
WALL	3	24 x 9	Steel Siding, 3.33" Ins	0.08	Light	West		0	0	0			0.00	
ROOF	1	32 x 24	1" Wood deck, 6" Ins, SusCig	0.04	Dark	North	Yes	0	0	0			0.00	

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D2267

Load Express: Load Calculation Software

Zone Data

Alternative Number: 1
Zone Number: 2
Floor Width: 32 ft
Floor Length: 24 ft
Ceiling Height: 8 ft
Fir-to-Fir Height: 9 ft
No. of Dup Zones: 1
Ceiling U-Factor: 0.50 Btu/(hr-F-ft2)
Floor Calculation Type: Exposed Floor
Floor Slab Type: 1" Wood Floor, 3.33" Ins
Floor U-Factor: 0.08 Btu/(hr-F-ft2)
Floor Area: 768.00 ft2

Cooling Dry Bulb: 75 deg F
Relative Humidity: 50 %
Heating Dry Bulb: 70 deg F
People Density: 22 people
People Activity: 225 Btu/pers
People Sensible Load: 105 Btu/pers
People Latent Load: School Elec
Misc. Equip. Type: 0.22 Wat/ft2
Misc. Equip. Sensible Load: 0.00 Wat/ft2
Misc. Equip. Latent Load: 0 Btu/h
Misc. Equip. Sensible to RA: 768.00 Watts
Lighting Intensity: ecessed fluorescent, not vented
Lighting Type: ecessed fluorescent, not vented

Ballast Factor: 1.20
% Percent Light to RA: 50 %
Vent Type: Classrooms
Vent Cool Design: 15.00 cfm/pers
Vent Heat Design: 15.00 cfm/pers
Supply Cool Design: 1,100 cfm
Supply Heat Design: 0 cfm
Infiltration Type: Pressurized, Tight Construction
Infil. Cooling Design: 0.00 ach/hr
Infil. Heating Design: 0.00 ach/hr
Room Exhaust: 0.00 cfm

W	H	Type	U-Factor	Color	Percent (%)	Direction	Susp	Cell Tilt	Cool Adj Spc Temp	Heat Adj Spc Temp	Dimension	% Glass	Shading Coeff	Shading
			Btu/(hr-F-ft2)						deg F	deg F				
WALL	1	32 x 8	Steel Siding, 3.33" Ins	0.08	Light	North			0	0			0.00	
WALL	2	32 x 9	Steel Siding, 4" Ins	0.07	Light	South			0	0			0.00	
GLASS	1		Single Clear 1/8 in.	1.04	Plenum				0	0	Percent	12	1.00	Internal
WALL	3	24 x 9	Steel Siding, 3.33" Ins	0.08	Light	East			0	0			0.00	
ROOF	1	32 x 24	1" Wood deck, 6" Ins	0.05	Dark	North	Yes		0	0			0.00	

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IDRA 7

D2268

ve' 2
Peak Load I. ation

Load Exprn .oad Calculation Software

Alternative 1

Design Cooling:

Air Handler #/Type	Airflow (cfm)		Cooling		S.H.R.	Cooling Coil				ft2/ton	cfm/ton	cfm/ft2	Total tons
	Total	Outside % O.A.	Total	Sensible		Entering DB	WB	Leaving DB	WB				
BLDG BLOCK			66,325.00	47,853.60	0.72					277.90			5.5
BLDG PEAK	1,100.00	345.00	66,325.00	47,853.60	0.72	83.01	70.00	63.23	61.25	277.90	404.5	1.4	5.5
1 CONSTANT		31.36	32,636.20	23,351.00	0.72	83.19	69.82	62.66	60.79	282.39	391.8	1.4	2.7
2 CONSTANT	1,100.00	330.00	33,688.80	24,502.70	0.73					273.56			2.8

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D2269

Peak Load Summary - Alternative 1 Alt1
Air Hand 1 AHU1

Areas (ft2)	Space Sens Load	14,025.6 Btuh	Heating Coil Peak	
Floor:	768.0 Spc Sens Ld W/Sfty Fctr	14,025.6 Btuh	Outside Air:	OADB: 22
SlabOnG/ExFlr:	768.0 Cool Airflow	1,100 cfm		
Roof:	768.0 Cool Airflw W/Sfty Fctr	1,100 cfm	Cooling Coil Peak	
Skylight:	0.0 Cooling Check	1.43 cfm/ft2	Peaked at Time:	Mo/Hr: 8 / 14
Wall:	696.0 Cool Check W/Sfty Fctr	1.43 cfm/ft2	Outside Air:	OADB: 95
Wall Glass:	32.0 Heat Airflow	1,100 cfm		WB: 77
Partition:	0.0 Heat Airflw W/Sfty Fctr	1,100 cfm		RELHUM: 44.3%

	Cooling Coil Peak			Heating Coil Peak	
	Total Load (Btuh)	Sens Load (Btuh)	Perct of Tot (%)	Peak Tot Sens (Btuh)	Perct of Tot (%)
ENVELOPE LOADS					
Solar				0.00	
Skylight Solar	0.00	0.00		0.00	
Glass Solar	2,505.07	2,505.07		0.00	0.00
Sub Total	2,505.07	2,505.07	7.68		
Conducted				0.00	
Skylight	0.00	0.00		-1,474.56	
Roof	1,300.05	1,300.05		-1,767.10	
Glass	680.22	680.22		-2,572.42	
Wall	1,483.93	1,483.93		0.00	
Partition	0.00	0.00		-2,764.80	
SlabOnG/ExFlr	717.71	717.71		-8,578.87	24.73
Sub Total	4,181.90	4,181.90	12.81		
INTERNAL LOADS				0.00	
Lights	2,798.67	2,798.67		0.00	
People	7,342.56	4,927.56		0.00	
Misc	549.09	549.09		0.00	
Sub Total	10,690.30	8,275.32	32.76	0.00	0.00
MISC LOADS				-18,133.70	
Outside Air	14,501.50	7,631.28		-7,979.75	
Humidification	0.00	0.00		0.00	
Infiltration	0.00	0.00		0.00	
Sup. Fan Heat	157.14	157.14		0.00	
Ret. Fan Heat	78.57	78.57		0.00	
Duct Heat Pkup	1,445.44	1,445.44		0.00	
Exhaust Heat	-923.77	-923.77		0.00	
Sub Total	15,258.90	8,388.67	46.75	-26,113.50	75.27
OV/UNDR Sizing	0.00	0.00		0.00	
Grand Total	32,636.20	23,351.00		-34,692.40	
W/Safety Factor	32,636.20	23,351.00		-34,692.40	

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IHDRA 7



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D2270

Peak Load Summary - Alternative 1 Alt1
Air Hand 2 AHU2

Areas (ft2)	Space Sens Load	14,506.1 Btuh
Floor: 768.0	Spc Sens Ld W/Sfty Fctr	14,506.1 Btuh
SlabOnG/ExFlr: 768.0	Cool Airflow	1,100 cfm
Roof: 768.0	Cool Airflw W/Sfty Fctr	1,100 cfm
Skylight: 0.0	Cooling Check	1.43 cfm/ft2
Wall: 724.0	Cool Check W/Sfty Fctr	1.43 cfm/ft2
Wall Glass: 36.0	Heat Airflow	1,100 cfm
Partition: 0.0	Heat Airflw W/Sfty Fctr	1,100 cfm

Heating Coil Peak
Outside Air: OADB: 22

Cooling Coil Peak
Peaked at Time: Mo/Hr: 8 / 14
Outside Air: OADB: 95
WB: 77
RELHUM: 44.3%

	Cooling Coil Peak			Heating Coil Peak	
	Total Load (Btuh)	Sens Load (Btuh)	Percent of Tot (%)	Peak Tot Sens (Btuh)	Percent of Tot (%)
ENVELOPE LOADS					
Solar	0.00	0.00		0.00	
Skylight Solar	0.00	0.00		0.00	
Glass Solar	3,321.11	3,321.11		0.00	0.00
Sub Total	3,321.11	3,321.11	9.86	0.00	0.00
Conducted					
Skylight	0.00	0.00		0.00	
Roof	1,907.89	1,907.89		-1,659.53	
Glass	758.65	758.65		-1,967.26	
Wall	1,498.95	1,498.95		-2,542.85	
Partition	0.00	0.00		0.00	
SlabOnG/ExFlr	717.71	717.71		-2,764.80	
Sub Total	4,883.19	4,883.19	14.49	-8,934.44	27.48
INTERNAL LOADS					
Lights	2,805.00	2,805.00		0.00	
People	7,023.31	4,713.31		0.00	
Misc	549.09	549.09		0.00	
Sub Total	10,377.40	8,067.40	30.80	0.00	0.00
MISC LOADS					
Outside Air	14,175.60	7,299.49		-17,345.30	
Humidification	0.00	0.00		-6,358.71	
Infiltration	0.00	0.00		0.00	
Sup. Fan Heat	117.33	117.33		0.00	
Ret. Fan Heat	58.67	58.67		0.00	
Duct Heat Pkup	1,806.80	1,806.80		0.00	
Exhaust Heat	-1,051.32	-1,051.32		124.47	
Sub Total	15,107.10	8,230.97	44.84	-23,579.60	72.52
OV/UNDR Sizing	0.00	0.00		0.00	
Grand Total	33,688.80	24,502.70		-32,514.00	
W/Safety Factor	33,688.80	24,502.70		-32,514.00	

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PFS Corp.
IHDRA 7



D2271

Permit Number

Checked By/Date

Envelope Compliance Certificate 2003 IECC

COMcheck-EZ Software Version 2.5 Release 1
Data filename: C:\Program Files\Check\COMcheck-EZL-classrm.ck

Section 1: Project Information

Project Name: 23'-6" x 64'-0" Double Classroom Building
Designer/Contractor: Ramtech Building Systems
Document Author: Diane Corrigan

Section 2: General Information

Building Location (for weather data): Dallas, Texas
Climate Zone: 5b
Heating Degree Days (base 65 degrees F): 2259
Cooling Degree Days (base 65 degrees F): 2763
Project Type: New Construction

Building Type	Floor Area
School	1504

Section 3: Requirements Checklist

Bldg.	
Dept.	
Use	
	Air Leakage, Component Certification, and Vapor Retarder Requirements
[]	1. All joints and penetrations are caulked, gasketed, weather-stripped, or otherwise sealed.
[]	2. Windows, doors, and skylights certified as meeting leakage requirements.
[]	3. Component R-values & U-factors labeled as certified.

Note: Vapor retarder not required in this location.

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D2272

Climate-Specific Requirements

<u>Component Name/Description</u>	<u>Gross Area</u>	<u>Cavity R-Value</u>	<u>Cont. R-Value</u>	<u>Proposed U-Factor</u>	<u>Budget U-Factor</u>
Roof 1: All-Wood Joist/Rafter/Truss	1504	19.0	0.0	0.054	0.057
Exterior Wall 1: Wood Frame, Any Spacing	1463	11.0	0.0	0.103	0.175
Window 1: Metal Frame, Single Pane, Clear, SHGC 0.78	40	---	---	1.130	1.230
Door 1: Solid	40	---	---	0.700	0.279
Floor 1: All-Wood Joist/Truss	1504	11.0	0.0	0.075	0.131

(a) Budget U-factors are used for software baseline calculations ONLY, and are not code requirements.

Envelope PASSES: Design 38% better than code

Section 4: Compliance Statement

The proposed envelope design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed envelope system has been designed to meet the 2003 IECC, Chapter 8, requirements in COMcheck-EZ Version 2.5 Release 1 and to comply with the mandatory requirements in the Requirements Checklist.

Diane Corrigan Diane Corrigan 7-09-04
Principal Envelope Designer-Name Signature Date

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D2273

Permit Number

Checked By/Date

Lighting Compliance Certificate 2003 IECC

COMcheck-EZ Software Version 2.5 Release 1

Data filename: C:\Program Files\Check\COMcheck-EZL-classrm.cck

Section 1: Project Information

Project Name: 23'-6" x 64'-0" Double Classroom Building
Designer/Contractor: Ramtech Building Systems
Document Author: Diane Corrigan

Section 2: General Information

Building Use Description by: Whole Building Type
Project Type: New Construction

Building Type	Floor Area
School	1504

Section 3: Requirements Checklist

- | | |
|-------|---|
| Bldg. | |
| Dept. | |
| Use | |
| [] | Interior Lighting |
| | 1. Total actual watts must be less than or equal to total allowed watts |
| | Allowed Watts Actual Watts Complies(Y/N) |
| | 1805 1736 YES |
| [] | Exterior Lighting |
| | 2. Efficacy greater than 45 lumens/W |
| | Exceptions: |
| | Specialized lighting highlighting features of historic buildings; signage; safety or security lighting; |
| | low-voltage landscape lighting. |
| [] | Controls, Switching, and Wiring |
| | 3. Independent controls for each space (switch/occupancy sensor). |
| | Exception: Areas that must be continuously lighted. |
| [] | 4. Master switch at entry to hotel/motel guest room. |
| [] | 5. Two switches or dimmer in each space to provide uniform light reduction capability. |
| | Exceptions: |
| | Only one luminaire in space; An occupant-sensing device controls the area; |
| | The area is a corridor, storage, restroom, or lobby; Areas that must be continuously lighted; |
| [] | 6. Photocell/astronomical time switch on exterior lights. |
| | Exceptions: Areas requiring lighting during daylight hours |
| [] | 7. Tandem wired one-lamp and three-lamp ballasted luminaires. |
| | Exceptions: |
| | Electronic high-frequency ballasts; Luminaires not on same switch |

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Section 4: Compliance Statement

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The proposed lighting design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed lighting system has been designed to meet the 2003 IECC, Chapter 8, requirements in COMcheck-EZ Version 2.5 Release 1 and to comply with the mandatory requirements in the Requirements Checklist.

Diane Corrigan Diane Corrigan 7-09-04
Principal Lighting Designer-Name Signature Date

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D2275

Lighting Application Worksheet

2003 IECC

COMcheck-EZ Software Version 2.5 Release 1

Section 1: Allowed Lighting Power Calculation

A	B	C	D
	Floor Area (ft ²)	Total Allowed Watts (watts/ft ²)	Allowed Watts (B x C)
Building Type			
School	1504	1.2	1805
Total Allowed Watts =			1805

Section 2: Actual Lighting Power Calculation

A	B	C	D	E	F
Fixture ID	Fixture Description / Lamp Description / Wattage Per Lamp / Ballast	Lamps/ Fixture	# of Fixtures	Fixture Watt.	(D x E)
I	Restroom Light / Incandescent 100W	1	2	100	200
NA	Lay-In Fluorescent / 48" T8 32W / Electronic	4	12	128	1536
Total Actual Watts =					1736

Section 3: Compliance Calculation

If the *Total Allowed Watts* minus the *Total Actual Watts* is greater than or equal to zero, the building complies.

Total Allowed Watts = 1805
 Total Actual Watts = 1736
 Project Compliance = 69

Lighting PASSES: Design 4% better than code

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Permit Number

Checked By/Date

Mechanical Compliance Certificate

2003 IECC

COMcheck-EZ Software Version 2.5 Release 1

Data filename: C:\Program Files\Check\COMcheck-EZL-classrm.cck

Section 1: Project Information

Project Name: 23'-6" x 64'-0" Double Classroom Building
Designer/Contractor: Ramtech Building Systems
Document Author: Diane Corrigan

Section 2: General Information

Building Location (for weather data): Dallas, Texas
Climate Zone: 5b
Heating Degree Days (base 65 degrees F): 2259
Cooling Degree Days (base 65 degrees F): 2763
Project Type: New Construction

Section 3: Mechanical Systems List

Quantity	System Type & Description
2	HVAC System 1: Heating: Other, Electric / Cooling: Other, Capacity <65 kBtu/h, Air-Cooled Condenser / Single Zone

Section 4: Requirements Checklist

Bldg.	Dept.	Use	Requirements Specific To: HVAC System 1
			Generic Requirements: Must be met by all systems to which the requirement is applicable
[]			1. Load calculations per 1997 ASHRAE Fundamentals
[]			2. Plant equipment and system capacity no greater than needed to meet loads - Exception: Standby equipment automatically off when primary system is operating - Exception: Multiple units controlled to sequence operation as a function of load
[]			3. Minimum one temperature control device per system
[]			4. Minimum one humidity control device per installed humidification/dehumidification system
[]			5. Thermostatic controls has 5 deg. F deadband - Exception: Thermostats requiring manual changeover between heating and cooling
[]			6. Automatic Controls: Setback to 55 deg. F (heat) and 85 deg. F (cool); 7-day clock, 2-hour occupant override, 10-hour backup - Exception: Continuously operating zones - Exception: 2 kW demand or less, submit calculations
[]			7. Automatic shut-off dampers on exhaust systems and supply systems with airflow >3,000 cfm
[]			8. Outside-air source for ventilation; system capable of reducing OSA to required minimum
[]			9. R-5 supply and return air duct insulation in unconditioned spaces R-8 supply and return air duct insulation outside the building R-8 insulation between ducts and the building exterior when ducts are part of a building assembly - Exception: Ducts located within equipment - Exception: Ducts with interior and exterior temperature difference not exceeding 15 deg. F.

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- [] | 10. Ducts sealed - longitudinal seams on rigid ducts; transverse seams on all ducts;
UL 181A or 181B tapes and mastics
- [] | 11. Mechanical fasteners and sealants used to connect ducts and air distribution equipment
- [] | 12. Operation and maintenance manual provided to building owner
- [] | 13. Balancing devices provided in accordance with IMC 603.15

Section 5: Compliance Statement

The proposed mechanical design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2003 IECC, Chapter 8, requirements in COMcheck-EZ Version 2.5 Release 1 and to comply with the mandatory requirements in the Requirements Checklist.

Diane Corrigan Diane Corrigan 7-09-04
Principal Mechanical Designer Name Signature Date

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