

# Skid Mounted Decon System – 20’

## 1. PRODUCT COVERED

1.1 Modec 20' x 102", two-lane Decontamination/Medical Skid Mounted Unit.

## 2. PERFORMANCE CHARACTERISTICS

2.1.1 Each decontamination lane consists of 3 stations to provide optimal processing flow. Individual curtains will be installed in each station to provide personal privacy. Unit has 2 areas for donning/doffing at the beginning and end of the decon area. Shower areas are 3’.

2.1.2 A curtain will create gender separate processing lanes will be installed in the center of the decontamination lanes. This also affords first responders to pull the curtain back to maximize the processing area of personnel in Level A suits.

2.1.3 Heavy-duty grade plastic curtains (opaque finish) will separate the functional zones. Curtains are movable.



2.2.1 Dosatron metered injection system controls the mixing of decontamination solution with fresh heated water based upon water volume not water pressure.

2.2.2. Solution concentration levels adjustable from 0.2% to 1.6% (1: 64 to 1:500). Injection rate is adjusted at the bottom of the unit – shown with arrow – injection rate is displayed.

2.2.3 Metered injection system to supply decontamination solution to individual decontamination stations and exterior boom. Each station has a hand-held trigger sprayer (including one exterior).



2.3.1 A separate curtain will form each showering station with track mounted to the ceiling to form an enclosed private showering area. This curtain incorporates tiebacks that allow it to be withheld against the wall when not in use.

2.3.2 Each shower position has a separate decon line and sprayer.

2.3.3 Stainless steel grab bars (16") will be installed in each showering station and donning and doffing areas.



2.4 All fixtures will be manufactured from impervious material.

2.5 All faucets, exposed valves, and drains to be stainless steel or chrome plated.

2.6 Seamless and impervious material used on all internal walls. All corners have minimum 0.25" radii to prevent buildup of contaminants and for ease of cleaning.

### **3. UNDERSTRUCTURE CHASSIS AND FLOORING**

3.1 The unit frame will be manufactured with 8" "C" channel steel longerons. The floor joists are 4" steel "I" beam rails welded to the longerons. The outer frame rail is bolted to the "I" beams. The floor height of the trailer from the ground will be 12" and no steps/ladders are required. Fork lift pockets are installed on all sides, front and rear.

3.2 Sub-floor of trailer system consists of 1-1/16" marine grade plywood fastened to cross-members on 18" – 20" centers.



**Individual shower stalls are sloped to drains to prevent cross contamination between shower stalls.**

### **3.3 Flooring System**

Modec is incorporating its highly regarded three-part silica sand epoxy floor system that it introduced to the industry in 1993. Seamless, durable and chemical resistant, this system retains its excellent gripping characteristics even when fully flooded with water. It is extremely strong having a tensile strength (epoxy alone) of 7,800 psi. Our professional installers have done hundreds of decon systems. Being flexible, they can handle extreme temperature fluctuations. The entire decon area consists of an individual pans that slope to drains. Pan slope is approximately 1" for every 1'.



**Physical Properties:**

The finished floor has the following physical and chemical properties:

- \* Hardness (ASTM 2583 - Barcol): 46
- \* Tensile Strength (p.s.i.): 7,800
- \* Tensile Elongation: 3%
- \* Compressive (ASTM C579) (p.s.i.): 8,040
- \* Flexural Strength (p.s.i.): 12,500
- \* Bond Strength (p.s.i.): 230
- \* Izod impact (lbs./in.): .4
- \* Ambering (ASTM D822 - 200 hrs): 0

Abrasion Resistance (FTMS 141 no. 6197) (mg): 97  
Chemical Resistance - ASTM D1308-57 24 hour immersion) No effect from the following: 1-1/2% citric acid, coffee, 10% potassium hydroxide, 20% sulfuric acid, urine, gasoline, motor oil, brake fluids, blood, 10% sodium hydroxide, isopropanol, mustard, ink, 10% muriatic acid. Epoxy shall be 100% resin solids, reacted with suitable hardeners. Selected ceramic coated quartz aggregate (standard color tan is provided) is broadcast into place to provide a continuously bonded surface to the supporting substrate.

**4 EXTERIOR DESIGN**

4.1 System dimensions:

- 4.1.1 Trailer width: 102"
- 4.1.2 Trailer height interior: 84"
- 4.1.3 Van body length: 240"
- 4.1.4 Total height: 94"

4.2 Trailer body (See detailed specs in Section 15 herein):

- 4.2.1 Seamless aluminum roof.
- 4.2.2 0.040" pre-finished aluminum exterior siding.
- 4.2.3 Anodized aluminum roof cove and bottom trim.

4.3.1 Entry doors:

- 4.3.1.1 Two (2) 32" x 72" (min) FRP skin with aluminum frame doors (one (1) per lane).
- 4.3.1.2 Doors to swing outward. Door locks FMVSS Approved.

4.4.2 Exit doors:

4.4.2.1 Two (2) 32" x 72" min FRP skin with aluminum frame door,

4.4.2.2 Door to swing outward. Door locks FMVSS Approved.

4.5 Exterior paint and markings: Paint color: White.

4.6 Emergency scene light package:

4.6.1 Five (5) Wheylen (or Federal Signal) clear lens 8-32 degree halogen scene lights mounted on the exterior of the trailer street-side in the exterior processing area. These lights are for the exterior shower processing areas.



## 5. INTERIOR DESIGN

5.1 Undress and Shower areas consist of 46" area in the front of the unit provided for disrobing.

5.2 Plumbing products:

5.1.2.1 Decontamination System: Metered decontamination injection system: (Dispenses 7 GPM) (Solution concentration levels adjustable from 0.2% to 1.6% (1: 64 to 1:500). System delivers solutions separately from the heated rinse system so those patients have access to copious amounts of heated rinse at all times.

5.1.2.1.1 Standard high volume showerheads - dispensing 2.5 GPM.

5.1.2.1.2 Standard industry grade floor drains throughout, positioned in the center of the unit with sloped floor in each station.

5.1.3. Dividers consist of movable, Staph-check heavy-duty hospital grade curtains.

5.1.4 Electric: Six (6) wet location type, 2 bulb, 24", 60-watt fluorescent lights, two (2) in robbing and disrobing areas.

5.2.1 Lane Configuration:

5.2.1.1 Both decontamination lanes are separated by curtain.

5.2.1.2 Room spans full width of trailer. Exit doors to be on curbside and street side of trailer.

## 6. FRESH WATER SUPPLY

6.1 The Trailer is equipped to accept a 1-1/2" NPT connection for use with a fire hydrant or pumper truck. (Other NST industrial fitting or garden hose connections are not adequate enough to supply the output requirements of the unit). Minimum water pressure of 70 psi recommended for optimal performance of trailer.

6.2 A water pressure regulator will be installed to control the fresh water intake supply. Rated up to 300 psi. Tempered water to be supplied directly from the hospital

## 7. MISCELLANEOUS TRAILER PLUMBING

7.1 Internal plumbing supply lines consists of copper lines (where required) and rubber hose.

7.2 Plumbing supply lines are independently run from decon solution system. Metering control system for desired percentages of concentrated decon. Metering system to be controlled by water pressure, not volume. Heated motive flow will be provided.

## 8. TRAILER ELECTRICAL

8.1 Circuit Breaker Panel:

8.1.1 Panel to be located in the front of the unit.

8.1.2 All electric services can be turned on and off using main power disconnect box.

8.2 One (1) 110-15 AMP hospital grade double outlet located in the utility room and one (1) 110-15 AMP hospital grade double outlet exit room.

8.3 Electric Supply:

8.3.1 Two (2) 50' long shoreline power cord will be provided, transfer switch for external power supply hookup.

8.3.2 All AC electrical functions are controlled by one (1) 100-amp load center with properly sized circuit breakers. All trailer wiring per NEC specifications.



## 9. TRAILER HVAC SYSTEM

One - (1) positive pressure Heating and Air Conditioning units will be installed roof mounted. The units have 13,500 BTU capacity cooling and 5,600 Watts of heating each.

**10. EXTERIOR GRAY WATER BLADDER AND DRAIN SYSTEM:**

- 10.1 One - 500-gallon external bladder will be provided for each unit.
- 10.2 External bladders will come equipped with two (2) 1" female NST connections each.
- 10.3 A submersible gray water discharge pump installed integral to the permanent grey water tank (Capacity approximately 20 gallons) will be provided to automatically off-load the gray water to the external bladders. Pump does not require priming.
- 10.4 A 25-foot long hose will be furnished to attach the gray water discharge pump to the unit.

**11. EXTERNAL MASS DECON BOOMS AND ROLLER SYSTEM:**

- 11.1 Two (2) exterior stainless steel booms to be located on street side of trailer under awning.
- 11.2 All booms configured for dispensing fresh water rinse.
- 11.3 One port will be provided for dispensing decontamination solution.
- 11.4 All booms will be designed for quick-disconnect connections for hose connections.
- 11.5 Exterior permanently affixed stainless steel rollers. Rollers fold down into place onto stanchions.



- 11.6 For the exterior operations, two rollers will be equipped with an underneath spray arm that will dispense decon solutions and fresh rinse from beneath the rollers as shown across. Total length of rollers to be 12' (2 x 6' rollers)



**12. EXTERNAL MASS DECON AWNING 3-SIDED PRIVACY CURTAIN:**

- 12.1 One (1) 16' x 10' rollout awning will be installed to the street side of the trailer- over external booms.
- 12.2 Awning will include a 3-sided, full length, privacy curtain.
- 12.3 Wind braces are also provided.



**13. INTERIOR SHOWER DEVICES**

**Showerheads and Devices:** Modec will install 6 (six) high-flow (2.5 gpm) rated showerheads. Each showerhead also is equipped with quick disconnect fittings so that hoses with other delivery devices (booms, wands, brushes, etc) can be used as well.

Modec will supply each shower position with a separate decon wand that dispenses automated decon solutions.



**14. DECON PORTS**

**14.1 Decon Booms:** Modec will be supplying the unit with 2 exterior boom plates. These stainless steel plates are configured with quick-disconnect style stainless ports that can be used with a variety of devices including decon shower sprayers (2 provided), shower heads, brushes or wands.

Along with a 10' x 20' (8" sidewalls) Enpac custom berm to be supplied by Modec (with submersible drain pump).



## **15. DECONTAMINATION WALL AND CEILING SYSTEM:**

**Modec** will be producing its unique non-CFC urethane foam injected body system for the box. Constructed of impervious materials, the van bodies are extremely durable and designed to prevent any runoff or leakage from the unit. The design of these units provide for an extremely lightweight configuration (3 lbs. per sq. ft) - significantly lighter AND torsionally stronger than steel post construction. The following are the specifications regarding the Modec System:

### **Exterior Wall Panels:**

Seamless .040" exterior grade with white baked-on enamel finish, vacuum injected foamed to vertical studs. All unfinished edges are treated for moisture protection (riveted and sealed). Wall studs are vertical 1 3/4" Z-Bar aluminum, 16 gauge, placed on 24" centers.

### **Insulation:**

1-1/2" non-CFC injected urethane foam, R-14 minimum. The void between exterior aluminum skin, the vertical studs and the interior wall material is injected with polyurethane foam at a pressure that will assure no void exists in the foam insulation and will not distend the interior or exterior wall materials. This insures extremely high torsional strength.

### **Extruded Rails:**

Corners are sealed/bonded to an extruded aluminum corner molding. Top of wall is sealed/bonded and riveted to a top cap structure of extruded aluminum molding. Vertical studs are riveted to rub rail and top cap structure. Rear internal corner posts are 10 gauge steel 4" x 4-1/2".

### **Interior Wall Panel:**

.090" Seamless Fiberglass Reinforced Plastic Kemplite (FRP). All edges joints and seams are sealed for moisture protection. The exterior wall is bonded to interior wall surface with the 1-1/2" foam insulation injection. Interior color is white. All seams and joints are sealed with premium quality sealant and trimmed. Seamless exterior FRP that is coated with a rubberized sealant roof and seamless interior .090" FRP ceiling are bonded to roof support ribs. Doors have similar properties (aluminum exterior).

### **Integral Plumbing Inserts:**

Internal plumbing runs are incorporated as an integral part of the roadside wall for exterior decon during the foam injected process. 1-3/4" PVC piping will be installed at every Z-bar post to allow the installation of supply line piping. This will insure that the pipes are not exposed, eliminates the need for a false wall within the system interior, and allow for the removal of the pipe if damage occurs or repair is required.

### **Floor and Cross Members:**

1-1/16" T&G marine grade plywood (prior to epoxy) screwed to 4" steel I-beam on 18" to 20" centers. See Section 14 for stress analysis of van body performed by a Mechanical Engineer.

**Ceiling and Rafters:**

Steel tube structures set at 24" O.C and bonded to aluminum roof covering and interior ceiling covering. .090" FRP bonded by foam to exterior roof covering. Roof vents are installed in the power room closet areas. Vents are sealed to the roof material and are self-curling to minimize leaking.

**DETAILED VAN BODY SPECIFICATIONS:**

The following is the material requirements for a Class 91 foam injected van body used in the production of Modec's Mass Casualty Decontamination System. The van body can be removed from the chassis.

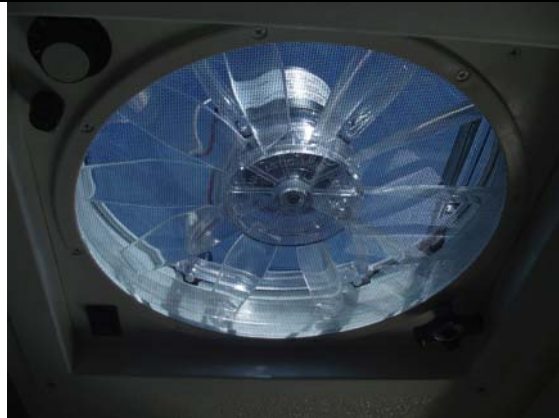
<b><u>Description</u></b>	<b><u>Part No.</u></b>
Z-post 4-02551-1336 83/1	43-05844-1336
Extruded 1-1/2" Z post Die No. 933	
Aluminum Corner Post	4-05777-1402
Extruded Aluminum Die No. 1007	
Dry Nose Assembly	5850-084
Cross members, 12 gauge, MS 4-15/16" x 101"	087-05849
12 Ga. Galvanieled 48 X 102	006-07871C-G
RH Rear LH Front Van Casting	00505779
LH Rear RH Front Van Casting	00505778
Upper Aluminum Rail (Extruded Die No. 5539)	00400092
1/8" Alum. Angle 1-1/4" x 3-1/2"	003-01824-0056
1/8" Alum. Angle 1-1/4" x 1-1/4"	003-01824
1/8" Steel Angle/ 1/8 x 1-1/2 x 2	98085
Lower Aluminum Rail (Extruded Die No. 5546)	00400104
Huck Bolt C6LB-12R-4G 3/8"	03201508
3/16" x 3/8" Rivet	03201425
3/16" x 1/2" Buck Rivet	03201427
5/16" x 1/4" Floor Panhead	03202765
1/16" x 1/4" V542 tape	038-01705
Aluminum Coil PPW .040 x 45-3/4	045-05846-1332
Van Body Side Assembly	06116-288084S
#10-16 x 1" Tex Phillips	032-01367
12 Ga. white HDT 40.0121.020W	031-01182
Roof Bow tape, 1/32 x 1 x 216'	V101
Reflectors 2" HDWE	98007Y/98007R
Aluminum Door Post (Extruded Die No. 100)	4057131336
Door Frame Header (Extruded Die No. 1006)	004057130640
285L2 92" WD x 500' 1/4" SM	045168441332L
385PWI x 85' Surface Seal	385-85
Gusset, 1/8" x 4 x 4 aluminum	040-06206
.080 Aluminum	002-13030
3/16 x 3/8 rivet	03201425
Aluminum Roof Rail (Extruded Die No. 5545)	0400078

102" Roof Coil, 4.56lb/ft  
Aluminum Roof Bow (Extruded Die No. 134)  
PUF C3 A/B Foam (1.9 lb/cu. ft.) Non-CFC  
Channel, 12 ga., 48 x 120  
Bullet Terminals  
1/4 MS Frame Channel, 10" WD

514-5-191B  
04-00087-1468  
036-04403  
006-07871B  
6SCB  
087-17103-1920

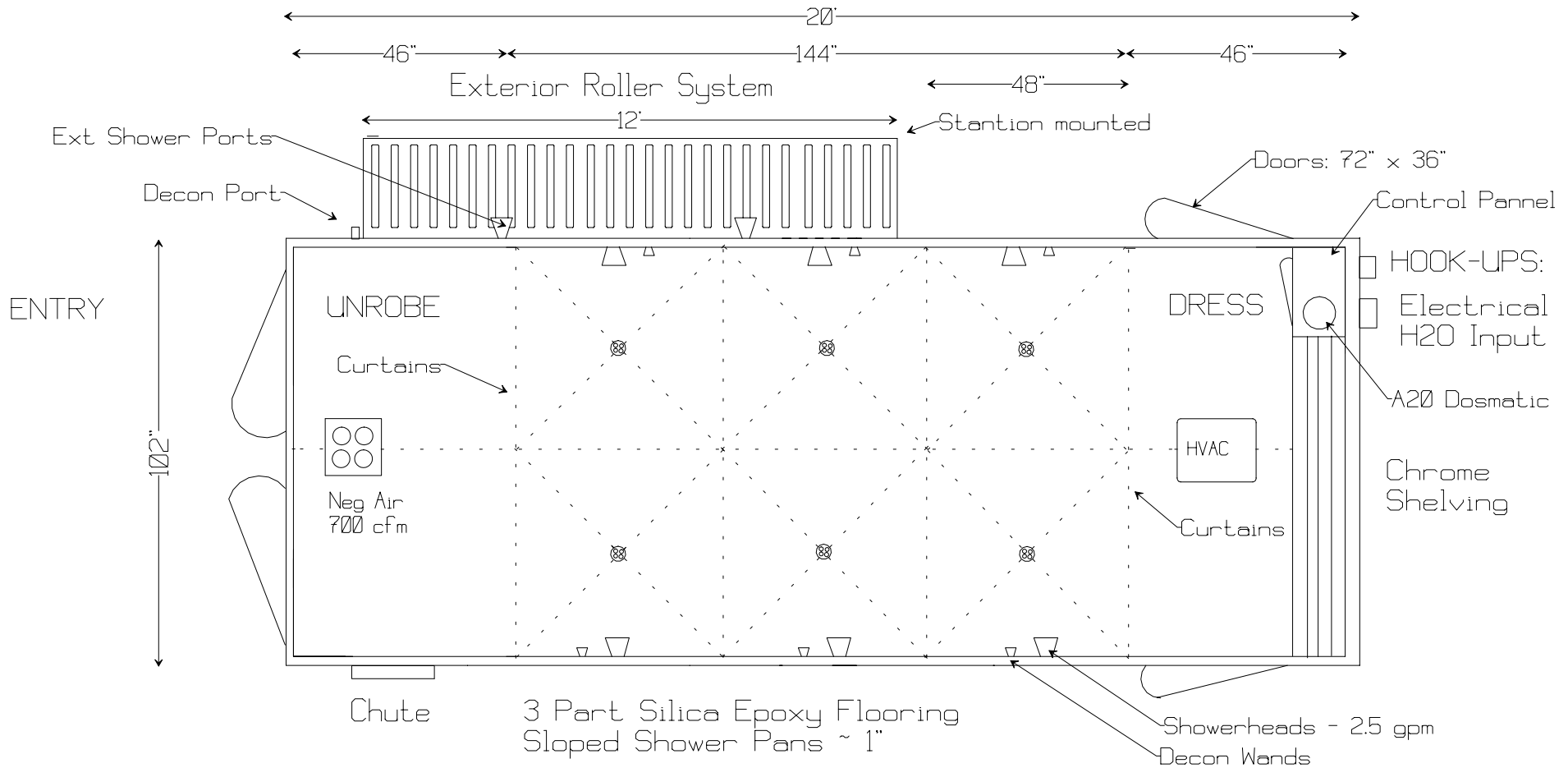
## 17. ROOF VENTS

17.1 Modec will install 2 (two) powered roof vents in each lane for each unit. Each vent has an adjustable cover for when the fan is not in use.



# MODEC SKID MOUNTED DECON SYSTEM

## Modec Field Decontamination System

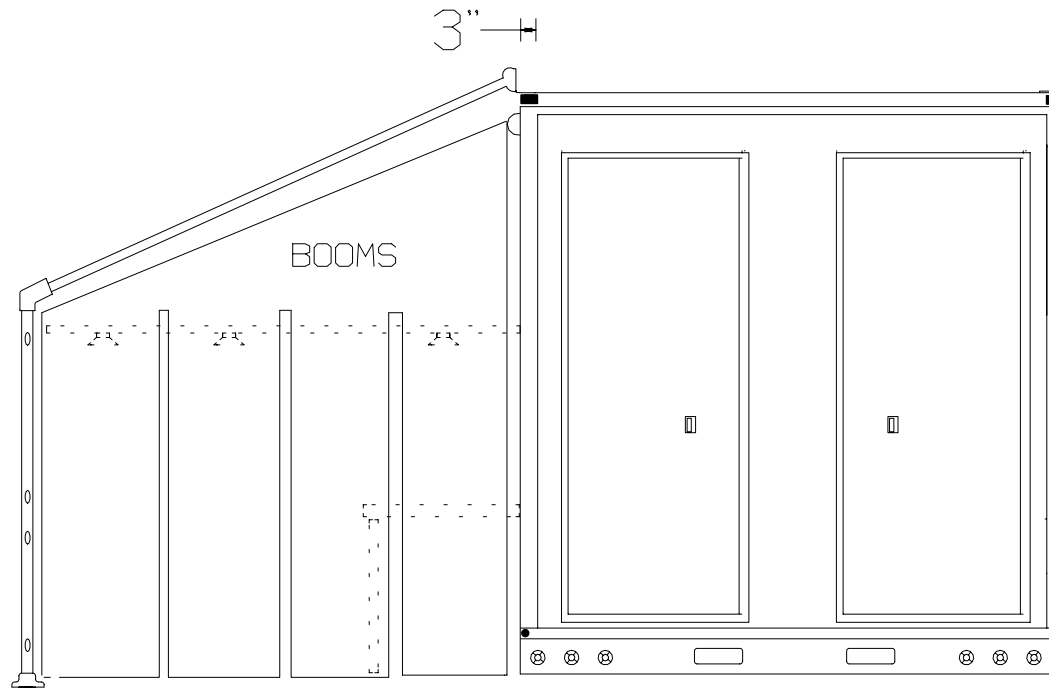


OVERALL DIMENSIONS:  
 Length: 240"  
 Width: 102"  
 Walls: 2"

Wall Weight: 3,000 lbs.  
 Curb Weight: 5,000  
 Interior Height: 84"  
 Overall Height: 94"  
 Shower Area: 12'

MODEC, INC.	
DENVER, COLORADO USA	
DECONTAMINATION TRAILER - SKID	
SUBMITTED: B. TELLER	DRAW: SKID LAYOUT
APPROVED BY:	DATE: 30 NOV 07
REV. NO. DATE:	SHEET OF

# MODEC SKID MOUNTED DECON SYSTEM REAR VIEW OF EXTERIOR OPERATION MODE



Exterior  
Roller  
System

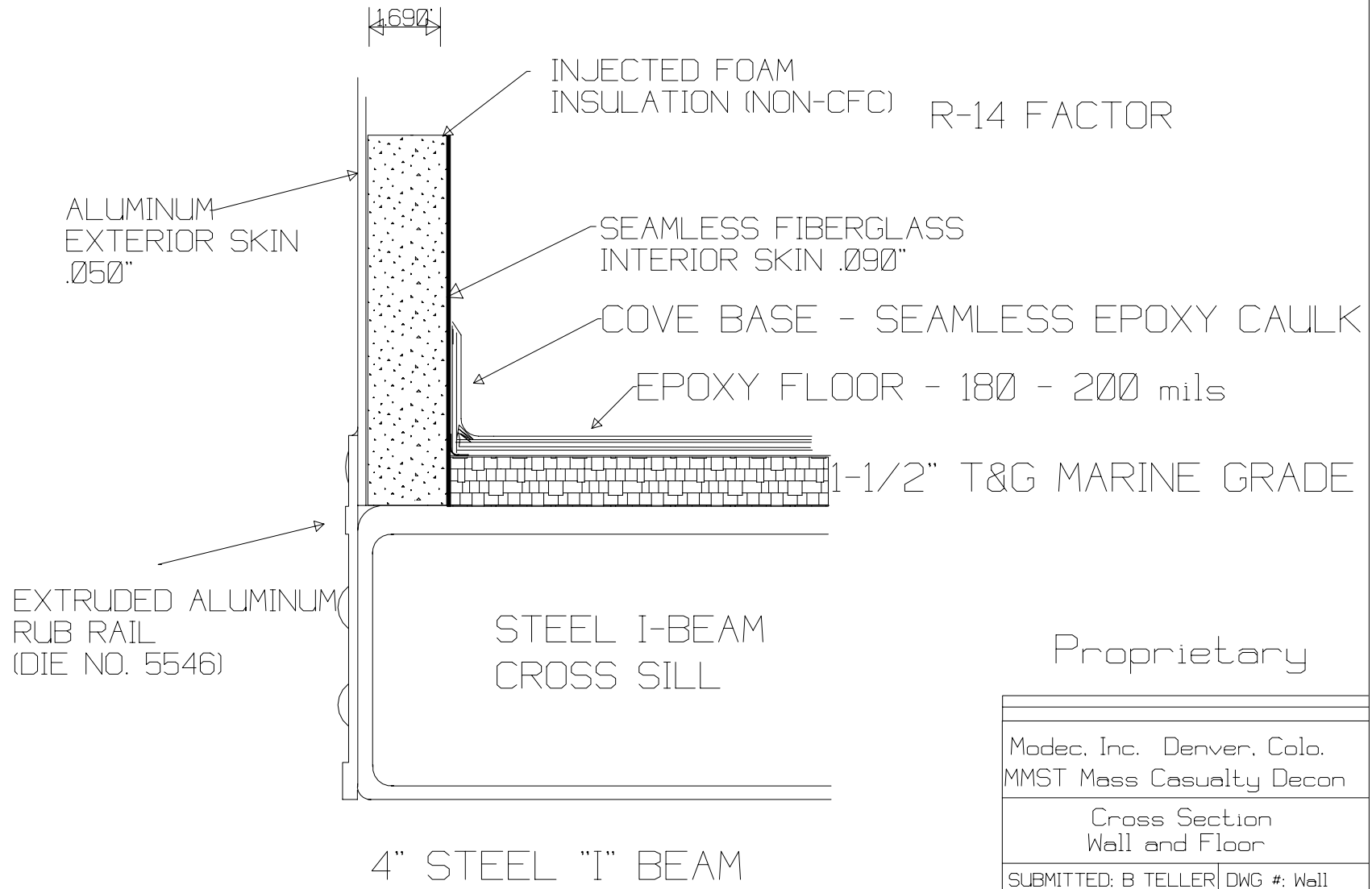
Proprietary

Modec, Inc. Denver, Colo.  
MMST Mass Casualty Decon

Skid Unit Rear View

SUBMITTED: Teller	DWG NO: EXT OPS
APPROVED	DATE 14 SEPT 07

# Modtec Skid Mounted Decon System Unit Flooring and Wall



Proprietary

Modtec, Inc. Denver, Colo. MMST Mass Casualty Decon	
Cross Section Wall and Floor	
SUBMITTED: B TELLER	DWG #: Wall
APPROVED	DATE 14 OCT 07