

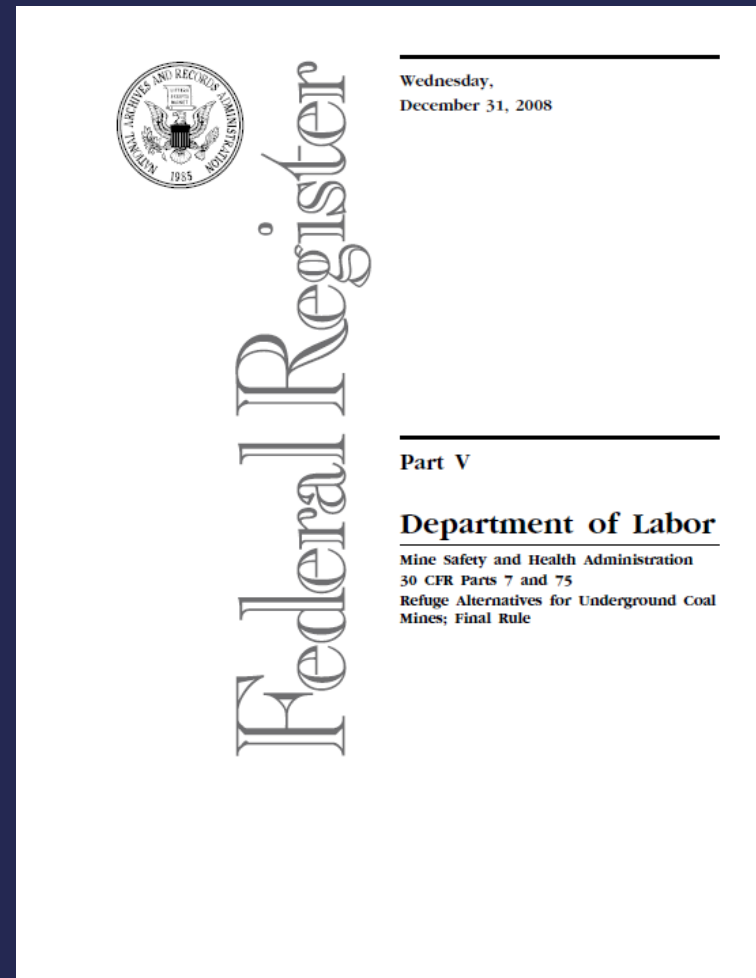


Refuge Alternative Partnership Meeting

November 19, 2021

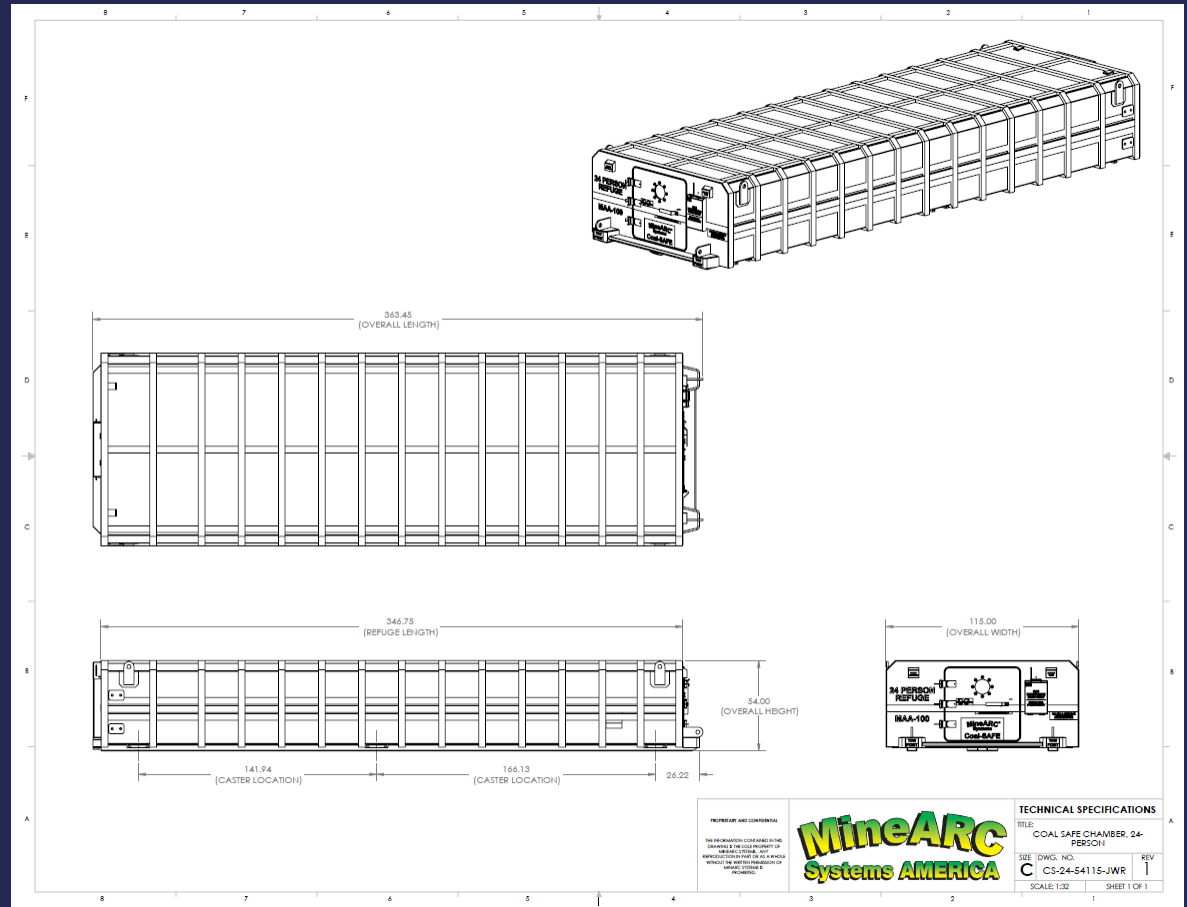
Topic – Warrior Met Coal’s Experience with Refuge Alternatives

- 2006 Miner Act
- Late 2006, Walter Energy (WE) decision to purchase 24 person RAs
- March 2007, WE places orders for Miner Act required equipment including 16 Strata RAs



- Based on further research into external temperature effects safety personnel decide some sort of cooling will be required in our mines.
- Between March of 2007 and December of 2008 Walter Energy learns of additional requirements for outby units as well as the availability of the MineARC RA with cooling capability.
- December 2008 - Walter Energy places an order for a total of 23 RAs at 24 person capacity with MineARC Systems.

- Chevron's North River Mine received their first unit before WE.
- It was 20 person capacity.
- Upon inspection it seemed very long and ours would be longer.
- Walter Energy assembled a risk assessment team.



Risk Assessment Findings

- The 24 Person unit is too long to hang on Hoist
- The length and width combine to make them unreasonably difficult to navigate the section.
- 24 person capacity is needed per section
- 6 RA fabrications were complete at 24 person
- Need to cut those down and make 16 person
- All future builds to be 12 person capacity
- Decision to keep two RAs on each section/longwall
- Section RAs to be towed like a lawn trailer, two wheels and a tongue.
- Longwall RAs to be track mounted (design TBD)

Initial Risk Assessment Work

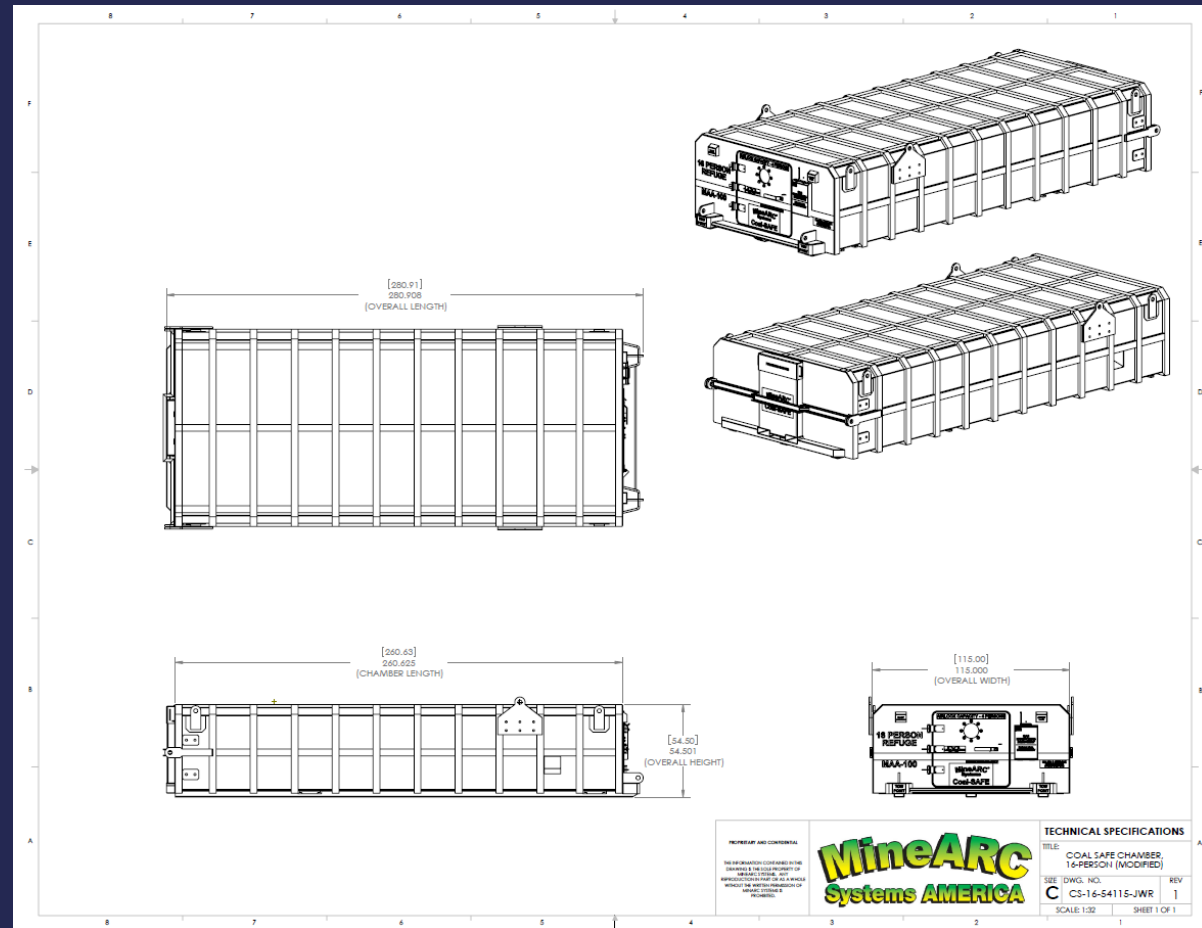
Section 1 Surface-Bottom		
Activity	Hazard	
1. Unloading	<p>3,000 lb 30' dia. balance must use correct No 7/4 IST min unit</p>	<p>mark to mark cog rack in rack out</p>
2. Remove rack (will BlueARC ship separate) cost (costs for shipping + two way)	<p>Use appropriate fork lift Match mark rack to unit</p>	<p>if unit comes disassembled do not fit outside? ask BlueARC if they are identical</p>
3. Send rack underground	<p>fork lift safety check for loose item insure caps installed</p>	<p>need 7' extended lift and/or mega track lift first</p>
4. Offload rack @ Bottom	<p>use approved lift, back off cage used in chamber</p>	
5. Hang chamber on cage. (wt = 24,000 lb) <p>hang door end up, kick bottom away from cage in bottom for 7E, kick bottom toward cage in bottom for 4.</p>	<p>need low boy dolly for pulling/pushing use proper rigging (winch rope stops) all loose items to be out of unit manual cage trip to ensure safety</p>	

Activity	Hazard
lower to level install rack (remove rack covers) (kick out immediately)	4 men job need proper rigging
roll of cage, lower in car (rack must be in prior to loading)	
place loose items inside chamber at this point	
lower chamber 6" from top and of car	

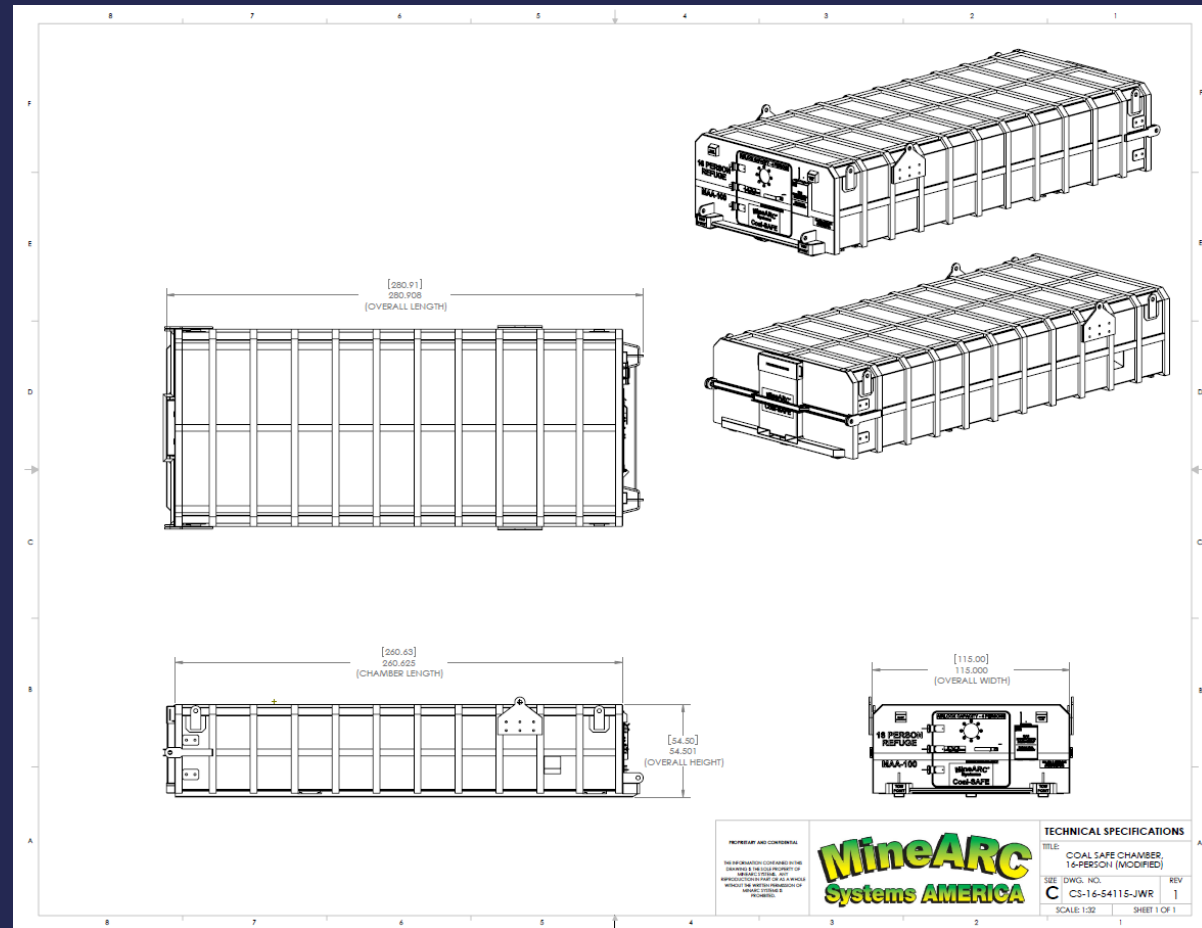
Risk Assessment Plans Develop

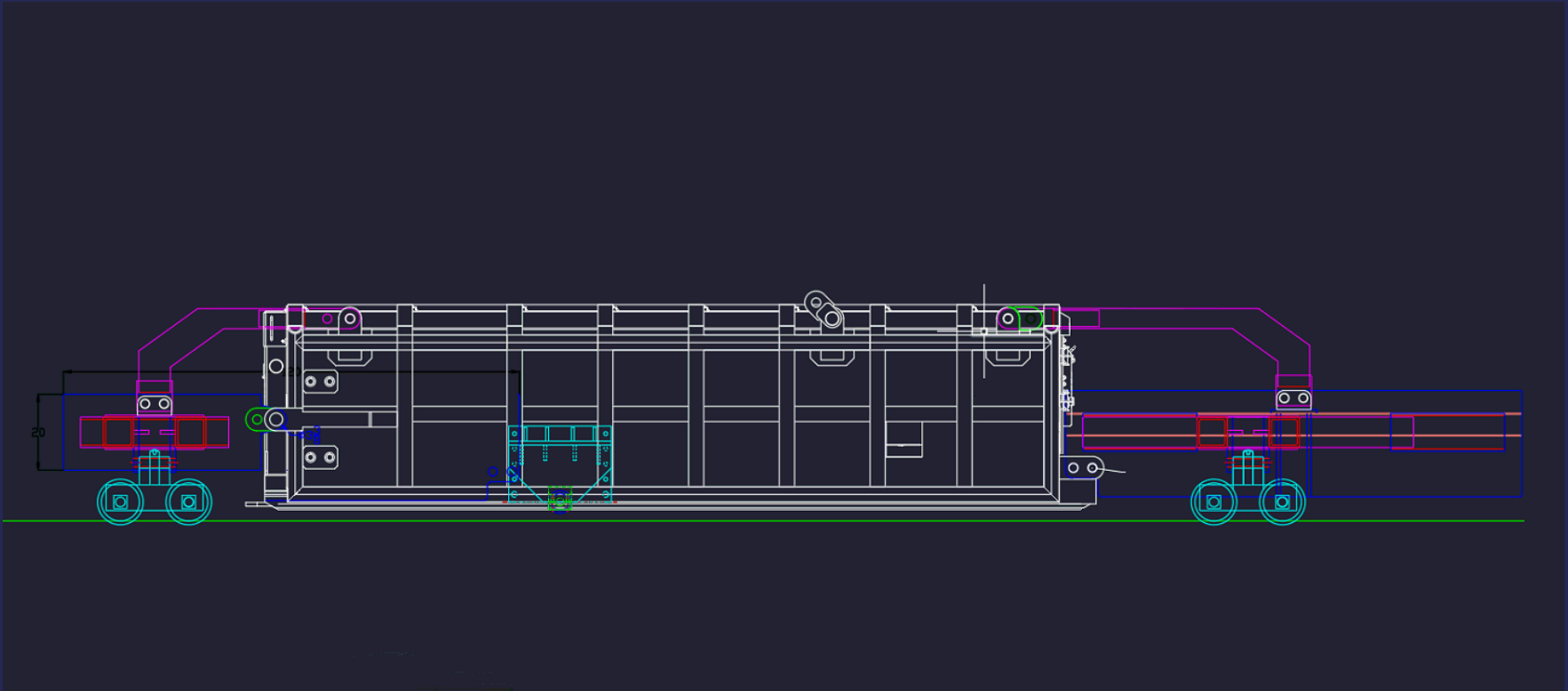
Section 1	Surface/Bottom				
Activity	Hazard	Comments			Person Responsible
1 Unloading	36,000 lb load unbalanced 30' length No. 4/7 to use 15Ton min fork truck	Request MineARC mark COG rack in / rack out			RA will do for rack in rack out will be center
2 Remove rack	Use approved fork lift Match mark each rack to unit	if unit comes disassembled do we test fit? Unit will be assembled. all units are identical per MineARC			
3 Send rack underground	fork lift safety check for loose items insure covers installed	Need 7 ton lift and/or mega trac			CG, BS
4 Offload rack @ bottom	use approved lift, back off cage wait on chamber				
5 Hang chamber on cage (wt 24,000 lb hang door end up, kick bottom away from crane in bottom for 7E, kick bottom toward crane in bottom for 4 mine.)	Need lowboy dolly built for pulling pushing. Use proper rigging (wire rope slings) all loose items to be removed from unit manual cage trip for safety				Shop Coord. No. 4/7
6 lower to level, install rack (remove rack covers) send covers out immediately	4 man job need proper rigging				
7 roll off cage, lower onto car (rack must be in prior to loading)	need proper rigging				
8 place loose items inside chamber at this point to insure transport					
9 leave chamber 6" to 8" from tongue end of car					

- The first units complete were the 16 person capacity units.
- These would measure 23'-5" long. This was a dimension we felt we could manage daily on the track for the longwalls.

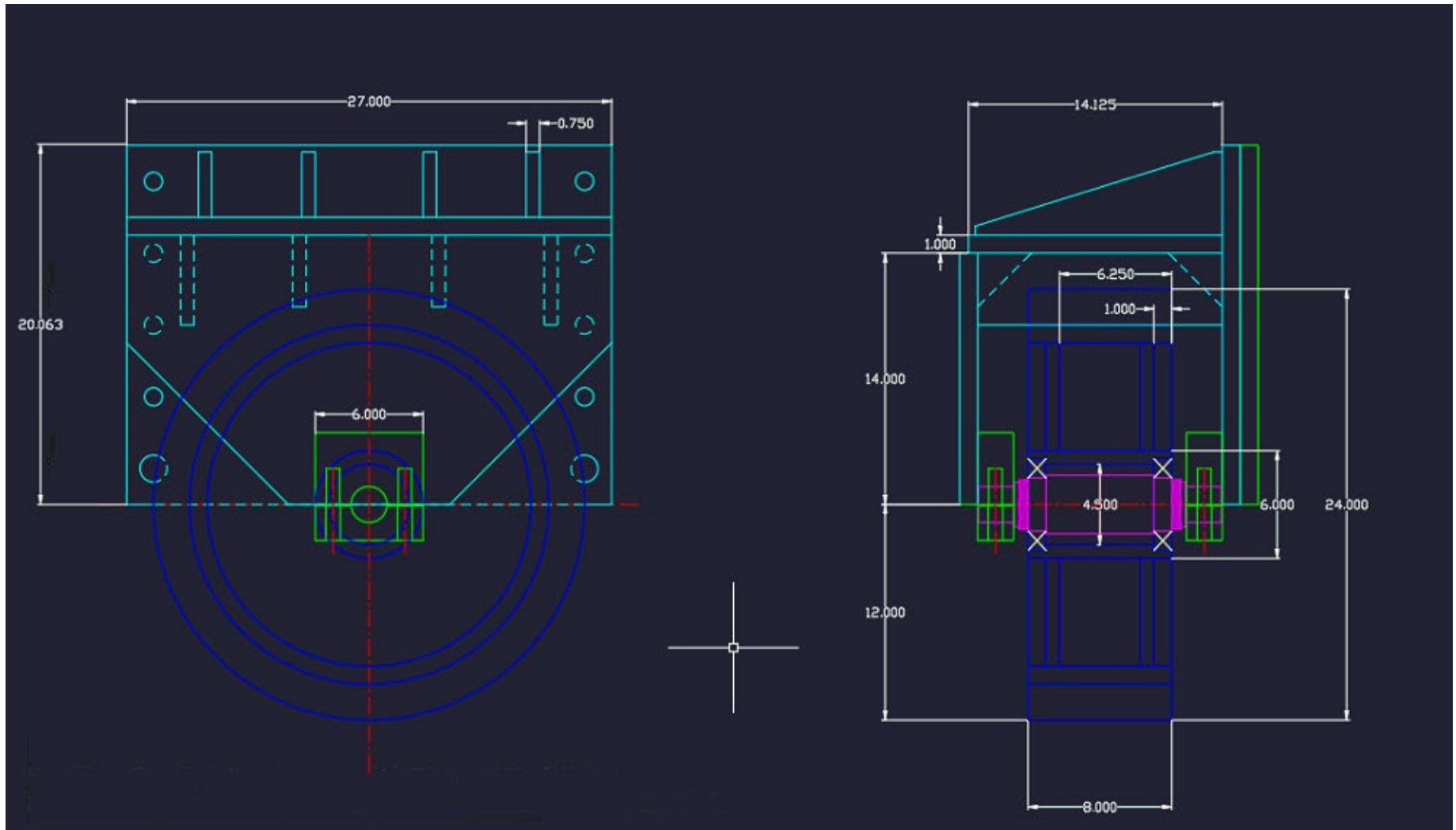


- Next would come the 12 person units.
- These would measure 18'-2" in length and would be much easier to handle on the sections with a regular 488 Scoop.





Longwall Truck Arrangement, 16 person
RA, from MineARC Systems



Off-road Wheel for 12 person RA



Towing tongue for 12 person RA with skeleton package

16 Person RA
showing
connections
for lifting and
attaching
towing
tongues.



Bottle Rack



Harmful Gas Removal Testing at MineARC



Strata RA



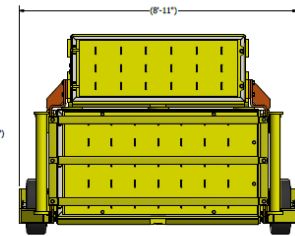
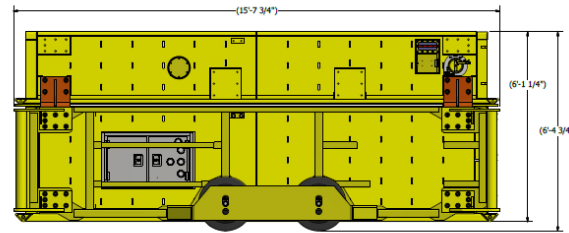
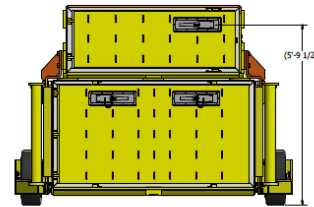
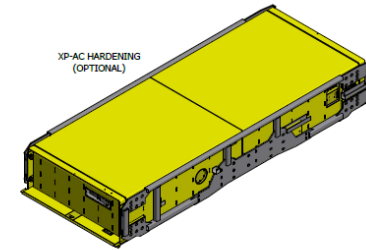
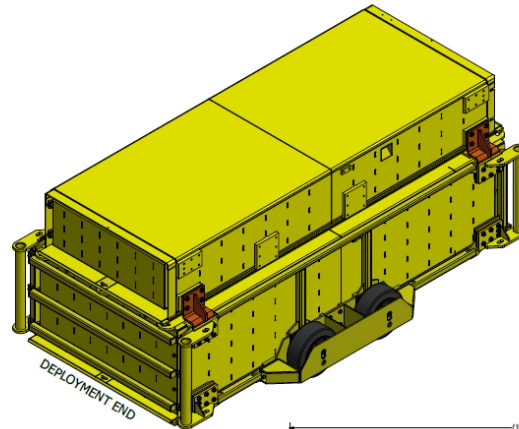
Puncture to side of Strata RA.



M36 AND XP-AC MOUNTED ASSY

SHOWN EQUIPPED WITH:
 GEN II M36 HARDENING (12-7225)
 WHEEL AND GUARD PKG (12-7229)
 POST BUMPERS (12-7220)

SHOWN BELOW OPTION:
 XP-AC HARDENING (53680006.D433)



NOTES:
 1. COMBINED ASSY WGT AS SHOWN: 36,000 LB.
 2. DIMS AND HEIGHTS WILL VARY DEPENDING ON USE OF WHEEL OPTIONS, HARDENING, AND PRESENCE OF FAB TOP LUGS, ETC.

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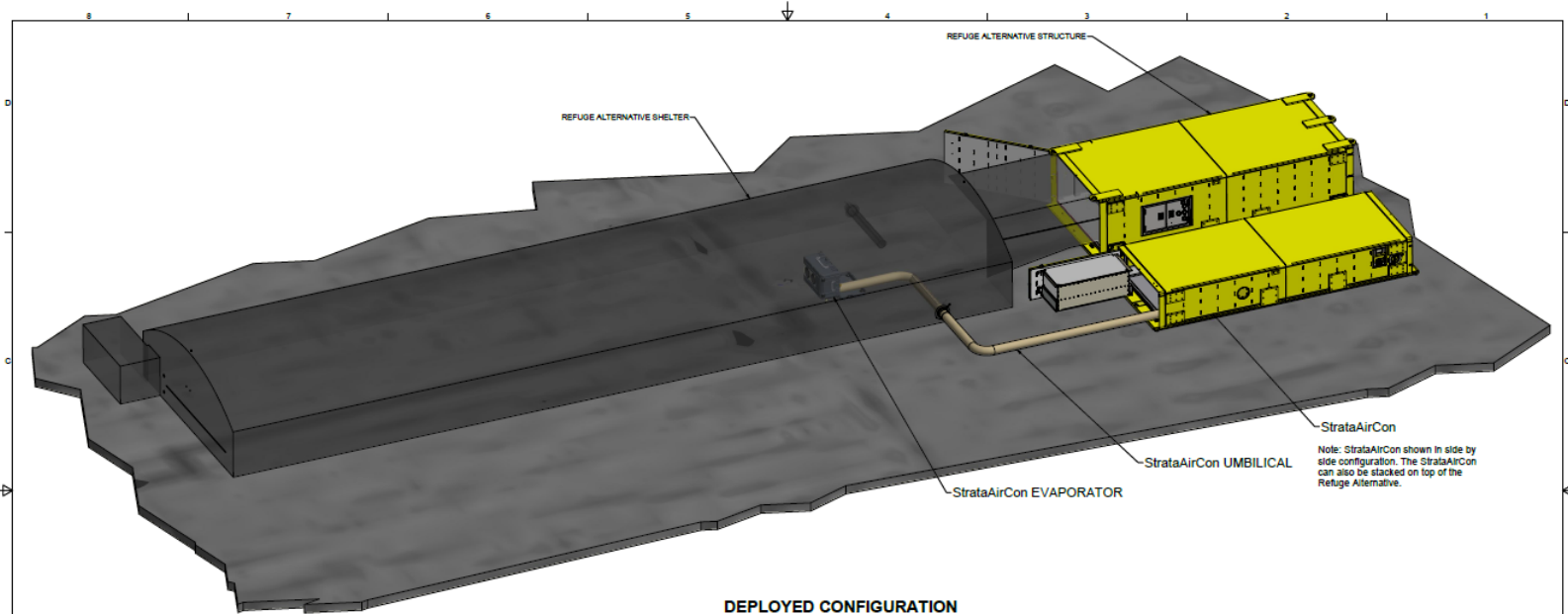
STRATA
 WORLDWIDE

STRATA SAFETY PRODUCTS, LLC
 8950 Roswell Road
 Sandy Springs, Ga 30350
 LOCAL: 770-321-2500
 TOLL FREE: 800-891-6663
 FAX: 770-321-2501

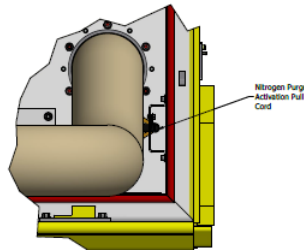
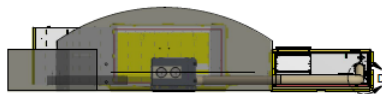
TOLERANCES:		DIM. SHOWN AS:		TOLERANCE U.N.C.		PROJECTION SYMBOL		M36 AND XP-AC MOUNTED ASSEMBLY	
ALL DIMENSIONS ARE INCH (mm) U.N.C.		± 0.05		± 0.05		FRAC		12-0200 7002 XP-AC M36 ASSY	
FRACTION		± 1/32 (0.7 mm)		± 0.02		X.XX		DATE: 12-02-00	
X.XX		± 0.01 (0.25 mm)		± 0.01		X.XXX		DRAWN: [blank]	
X.XXX		± 0.005 (0.127 mm)		± 0.005		X.XXX		SHEET 1 OF 1	

Strata M36 RA with Approved XP-AC top mounted

M36 RA with XP-AC deployed side-by-side



DEPLOYED CONFIGURATION



DETAIL D
SCALE 3" = 12"

Released

DO NOT CHANGE
WITHOUT MSHA APPROVAL

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PROJECTION SYMBOL	TOLERANCES	DESIGN	DATE
	ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED	Matthew Davis	10/26/18
	DIM. SHOWN AS	FR	
	TOLERANCE U.N.O.	FRFG	
	± .5"	APPROVED	
	± .1"		
	FRACTION		
	XXX		
	± .020		
	± .010		
	± .005		

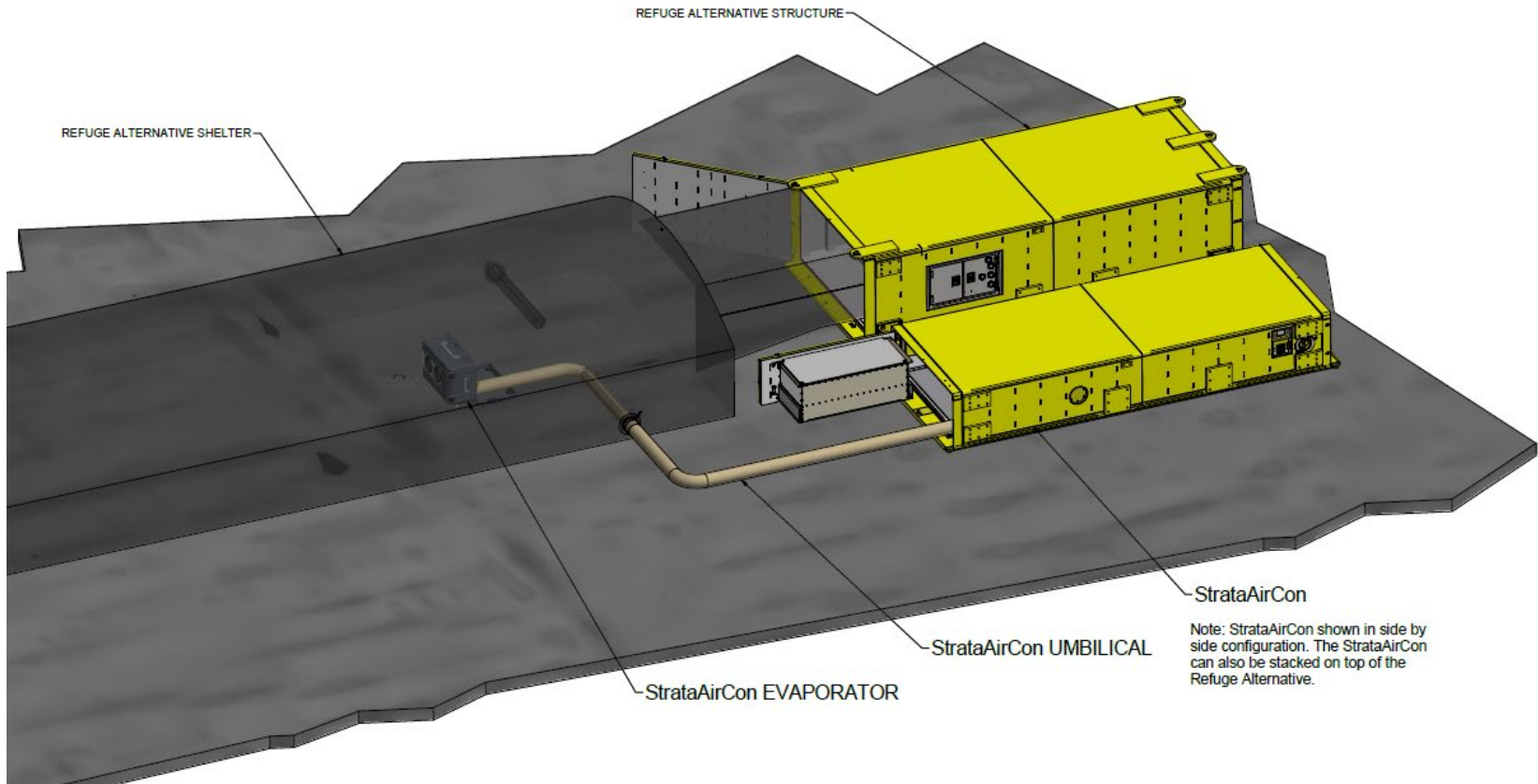
NEXT LEVEL	DATE	NONE
PREV. LEVEL	DATE	NONE

STRATA SAFETY PRODUCTS, LLC
8896 ROSWELL RD, SUITE 200 LOCAL: 770-321-2500
SANDY SPRING, GA 30086 TOLL FREE: 800-891-8801
FAC: 770-321-2500

STRATA XP-AC

SHEET	12-0201-MSHA	REV	1
D			
SCALE		SHEET 2 OF 6	

M36 RA with XP-AC deployed side-by-side



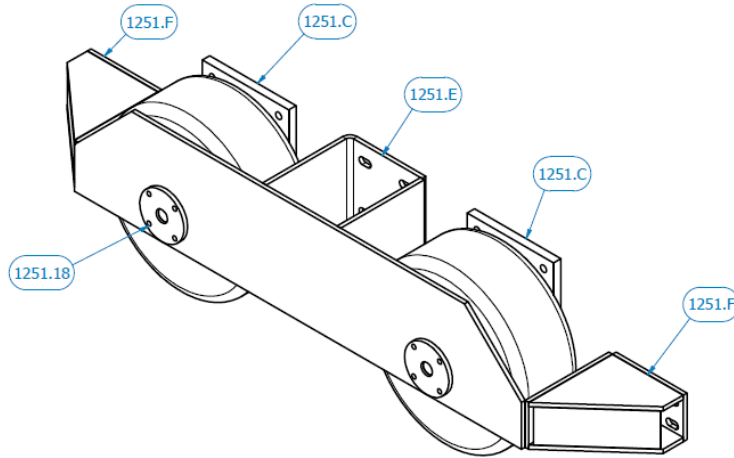
Strata
Provided
Training
Details



Fresh Air Bay (FAB) User Guide



PART NUMBER	MATERIAL	STOCK NUMBER	DESCRIPTION
1251.E			
1251.C			SHAFT ASSEMBLY
1251.18	Steel AISI 1015	6"	Round Bar
1251.F			
1251.19	Generic		



NOTE:

FOR EASE OF FIT;

1. MOUNT 1251.F ON TO EXISTING FRAME OF 36 MAN UNIT
2. BOLT ON WHEEL SHAFT (1251.C) TO 36 MAN UNIT
 - a. ATTACH WHEEL FOR 36 MAN.
 - b. LEAVE OFF WHEEL FOR 24 MAN AT THIS POINT
3. HOLD 1251.E IN PLACE AND THREAD FLANGE NUT ON TO SHAFT
4. BOLT 1251.E TO THE CHAMBER
5. WELD 1251.E TO 1251.29 WHILE EVERYTHING IS TIGHT

END FOR 36 MAN UNIT

FOR 24 MAN UNIT;

6. TAKE OFF WHOLE ASSEMBLY FROM ABOVE AS ONE PIECE TO KEEP HOLE PATTERN CONSISTENT
7. BOLT ON WELD PADS TO THE LOOSE ASSEMBLY.
8. HOLD UP ENTIRE ASSEMBLY ON SIDE OF 24 MAN UNIT
9. LINE UP MIDDLE PLATE WITH THE CENTER OF GRAVITY OF THE CHAMBER
10. MATCH THE GROUND CLEARANCE HEIGHT OF THE 36 MAN UNIT.
11. TACK THE WELD PLATES IN PLACE THEN UNBOLT ASSEMBLY
12. WELD PLATES TO CHAMBER AND REINSTALL THE ENTIRE ASSEMBLY INCLUDING WHEELS.

TOLERANCES UNLESS OTHERWISE STATED: Decimal Inches 0.12=±0.010; 0.123=±0.003; 0.1234=±0.001 Fractions 0" to 10' = ±½"; 10' to 20' = ±¼" Angles 0° ±1°; 0.1°=±0.5°

	DATE	DESCRIPTION	DATE	DESCRIPTION	DATE	DESCRIPTION	DATE	DESCRIPTION	DATE	DESCRIPTION
	CUSTOMER NAME: JIM WALTER	PART: 1251.00	12/10/2018 18723-1							

Rub Rail Wheel Mounts (double shear)

Strata AC
Charging
Apparatus

