

Allen, Pam, NMENV

From: Maestas, Ricardo, NMENV
Sent: Thursday, August 14, 2014 2:00 PM
To: Flynn, Ryan, NMENV; Kendall, Jeff, NMENV
Cc: Winchester, Jim, NMENV; Tongate, Butch, NMENV; Schwender, Erika, NMENV; Blaine, Tom, NMENV; Skibitski, Thomas, NMENV; Kieling, John, NMENV; Holmes, Steve, NMENV; LucasKamat, Susan, NMENV; Turner, Jill, NMENV; Nelson, Morgan, NMENV; Ines Triay; Maestas, Ricardo, NMENV; Smith, Coleman, NMENV; Simon, Martin, NMENV; Cobrain, Dave, NMENV; Pullen, Steve, NMENV; Briley, Siona, NMENV; Hall, Timothy, NMENV; Kliphuis, Trais, NMENV; Allen, Pam, NMENV
Subject: FW: Drawings and Spec for Project REACH
Attachments: REACH_Electrical_Architecture 20140804 tty.pdf; REACH_Joint Connection_Concept Overview 20140727 a cdh.pptx; REACH_Structure and Boom_Updated Design Details 20140730 BMP b.pptx

FYI.

I will be sending the notes from today's 8:30am call and 1pm call shortly

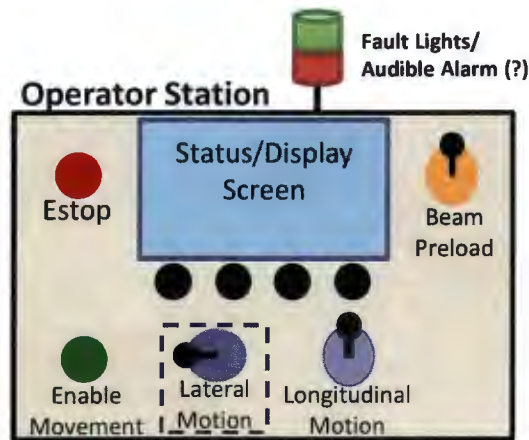
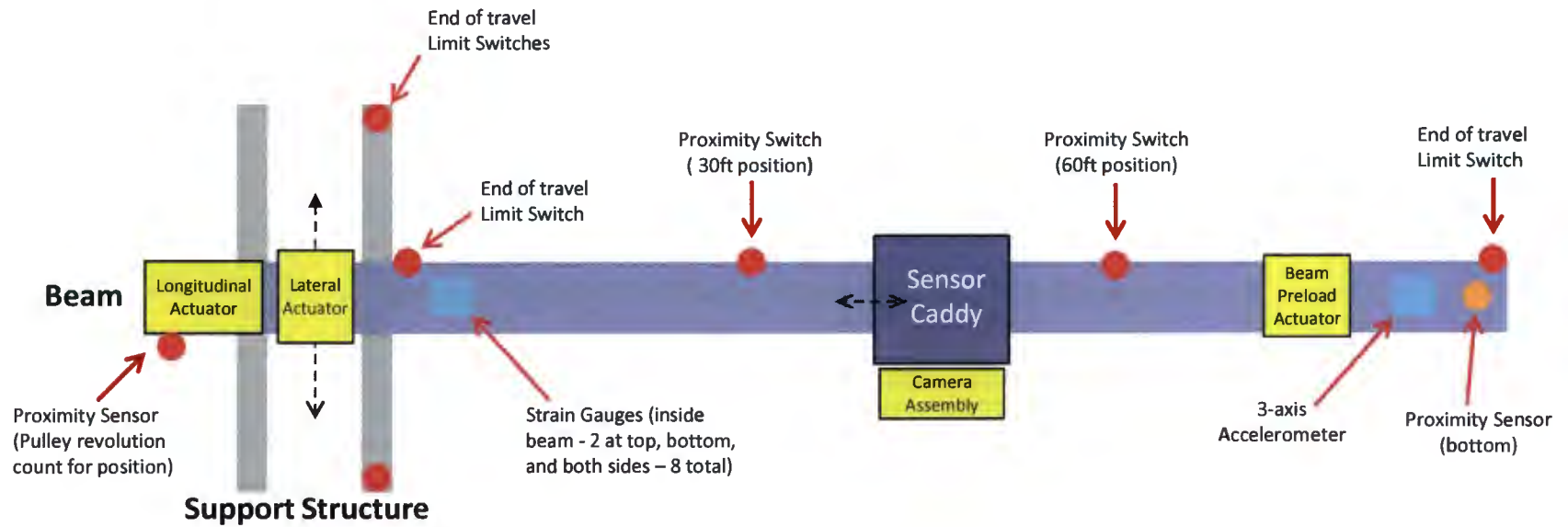
Ricardo.

From: Patterson, Russ - DOE [<mailto:Russ.Patterson@wipp.ws>]
Sent: Thursday, August 14, 2014 8:38 AM
To: Peake.Tom@epa.gov; Walsh.Jonathan@epa.gov; Economy.Kathleen@epa.gov; stone.nick@epa.gov; Kliphuis, Trais, NMENV; Maestas, Ricardo, NMENV; Holmes, Steve, NMENV; Smith, Coleman, NMENV
Subject: FW: Drawings and Spec for Project REACH

I've asked Dale to attach these to the data sent for the call this afternoon; but thought perhaps I would send them to you all a little sooner.

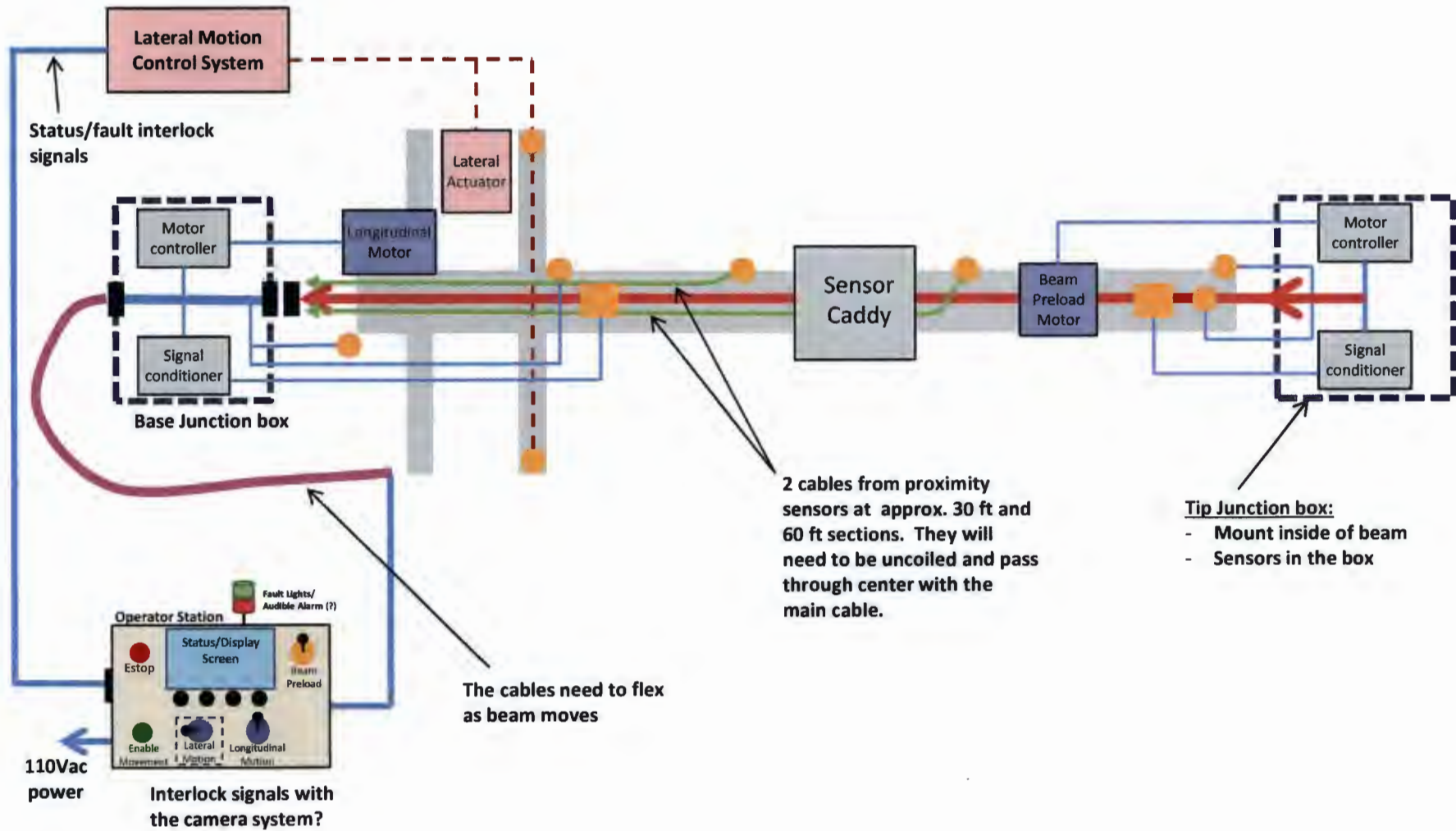
Russ

System Architecture



↑ Movement requires two-hand operation by pressing this button and actuating applicable joystick

System Wiring

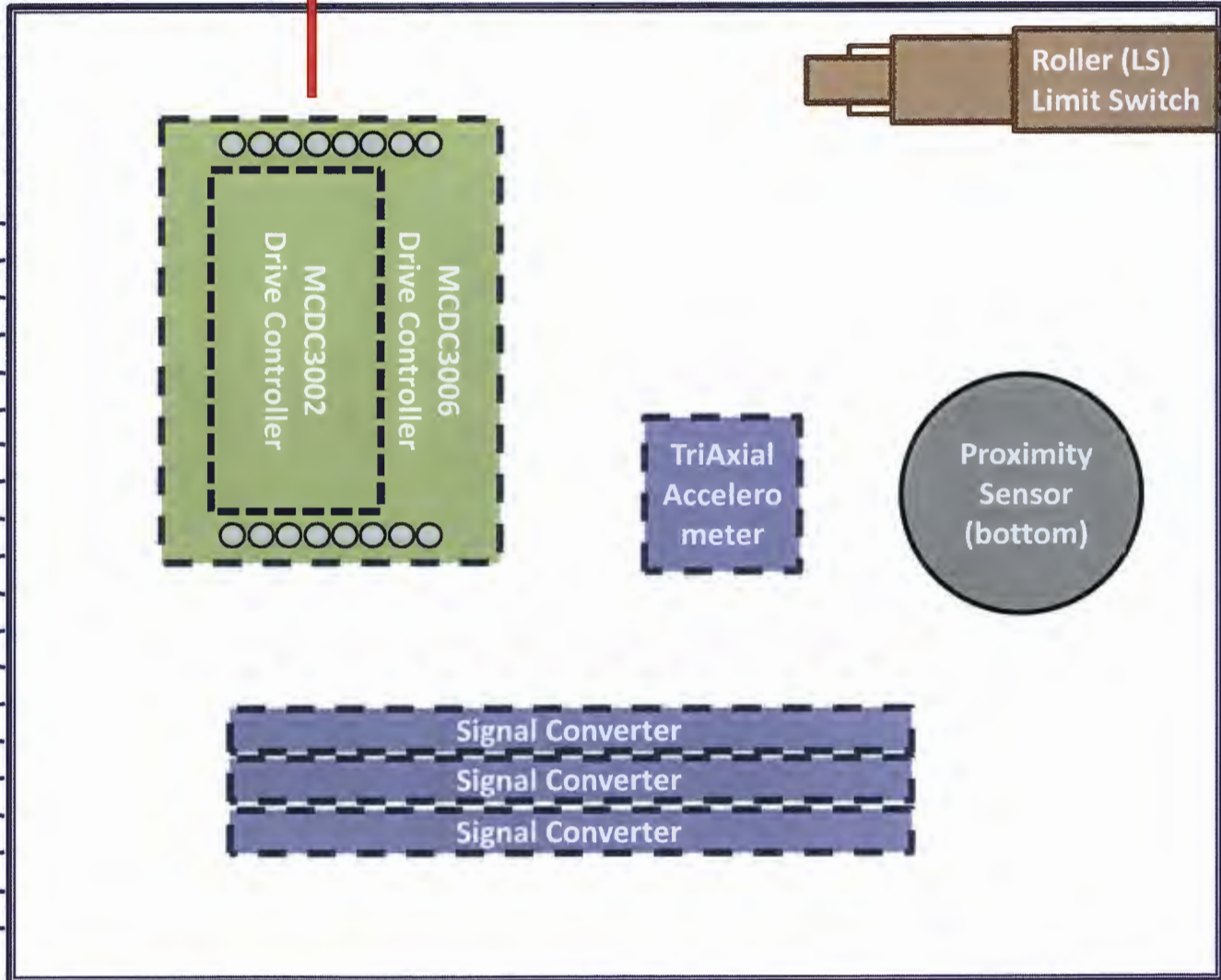


Beam Tip Junction Box

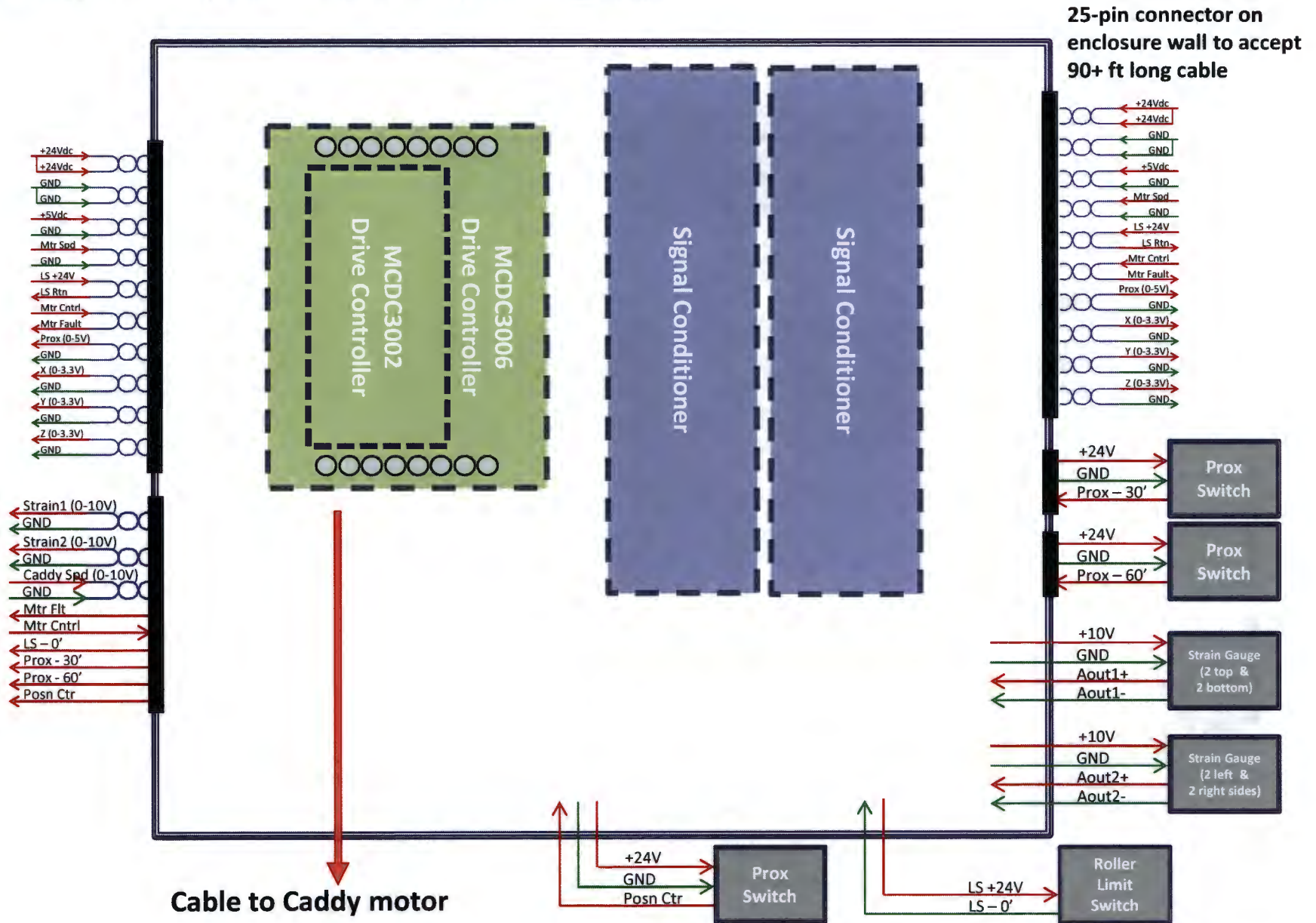
25-pin connector at the end of 90+ ft long cable

- +24Vdc
- +24Vdc
- GND
- GND
- +5Vdc
- GND
- Mtr Spd
- GND
- LS +24V
- LS Rtn
- Mtr Cntrl
- Mtr Fault
- Prox (0-5V)
- GND
- X (0-3.3V)
- GND
- Y (0-3.3V)
- GND
- Z (0-3.3V)
- GND

Cable to Beam Preload motor



Beam Base Junction Box



Preliminary Composite Beam Design



CRG, Inc.
2750 Indian Ripple Rd.
Beavercreek, OH 45440
www.crggrp.com

Composite Beam Preliminary Design

- Carbon fiber reinforced, epoxy matrix composite
- 90 feet reach beam – sections 1 to 10 are 9 feet long
- Sections 1 to 10 – continuous taper, cantilevered
- Sections 11 to 12 – constant cross-section
 - Sized to counter cantilever loads

Cantilever reaction
load into ceiling

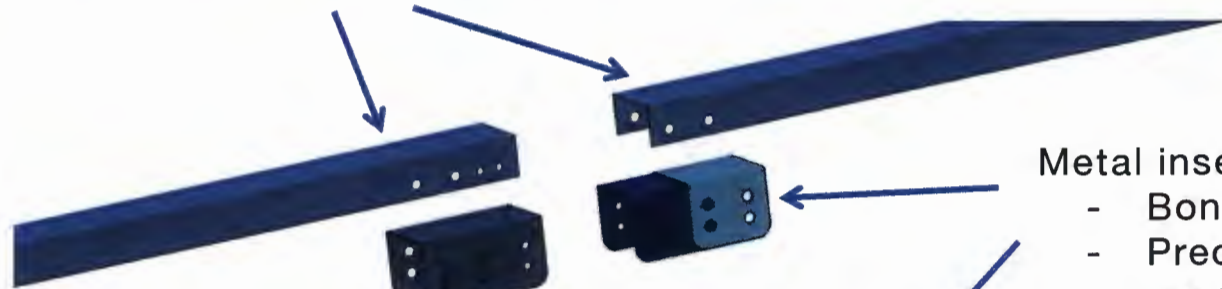


Cantilever reaction
load into floor

- Ply drops in outboard sections for reduced tip weight
- Multiple unidirectional plies in caps to resist tension & compression loads
- Reinforced, pinned joints for easy assembly and proper load transfer

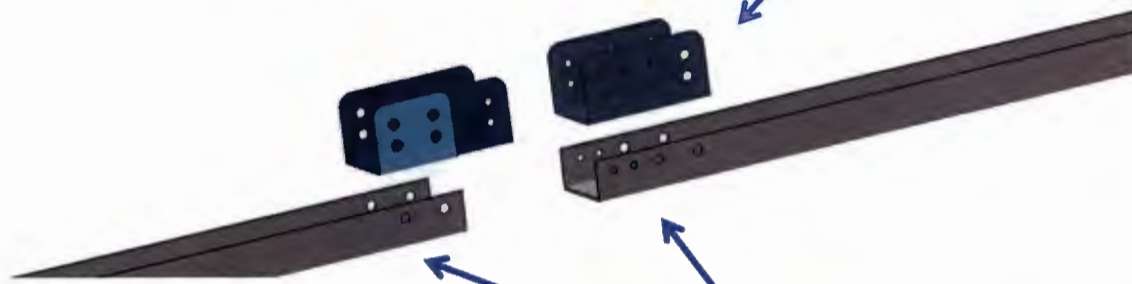
Joint Construction

Composite beam tension caps



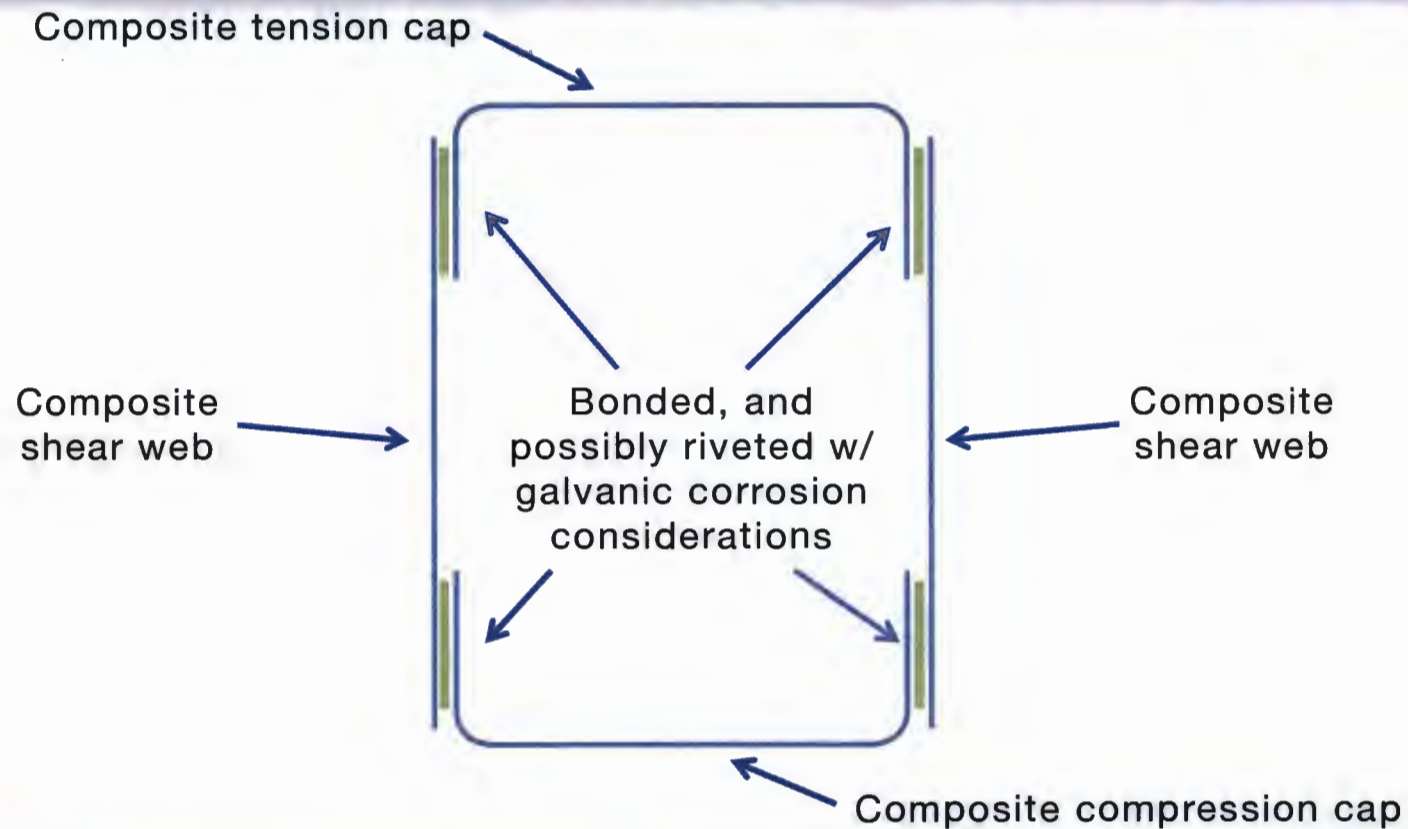
Metal inserts

- Bonded and riveted in place
- Precision holes for pin connections
- Consideration for galvanic corrosion



Composite beam compression caps

Composite Beam Cross-Section



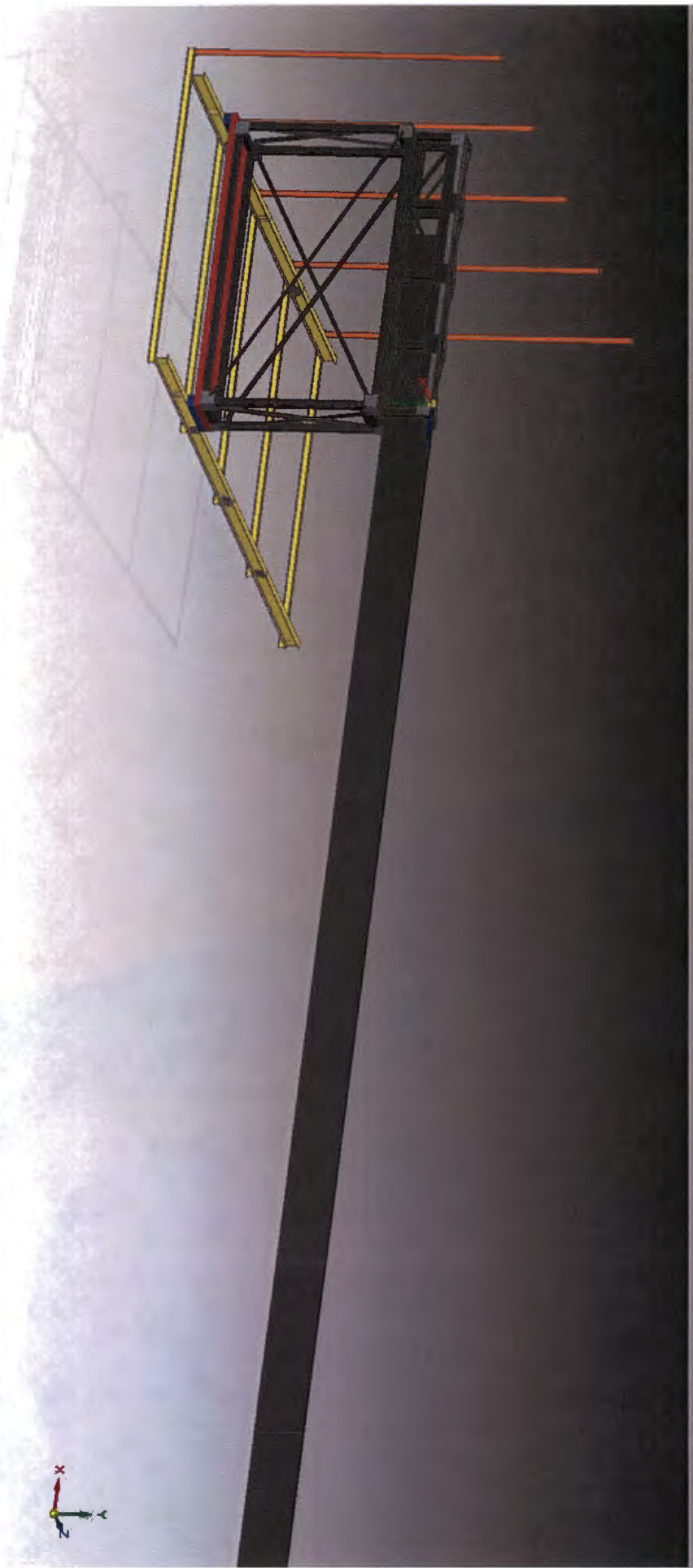
Design Overview

30 July 2014



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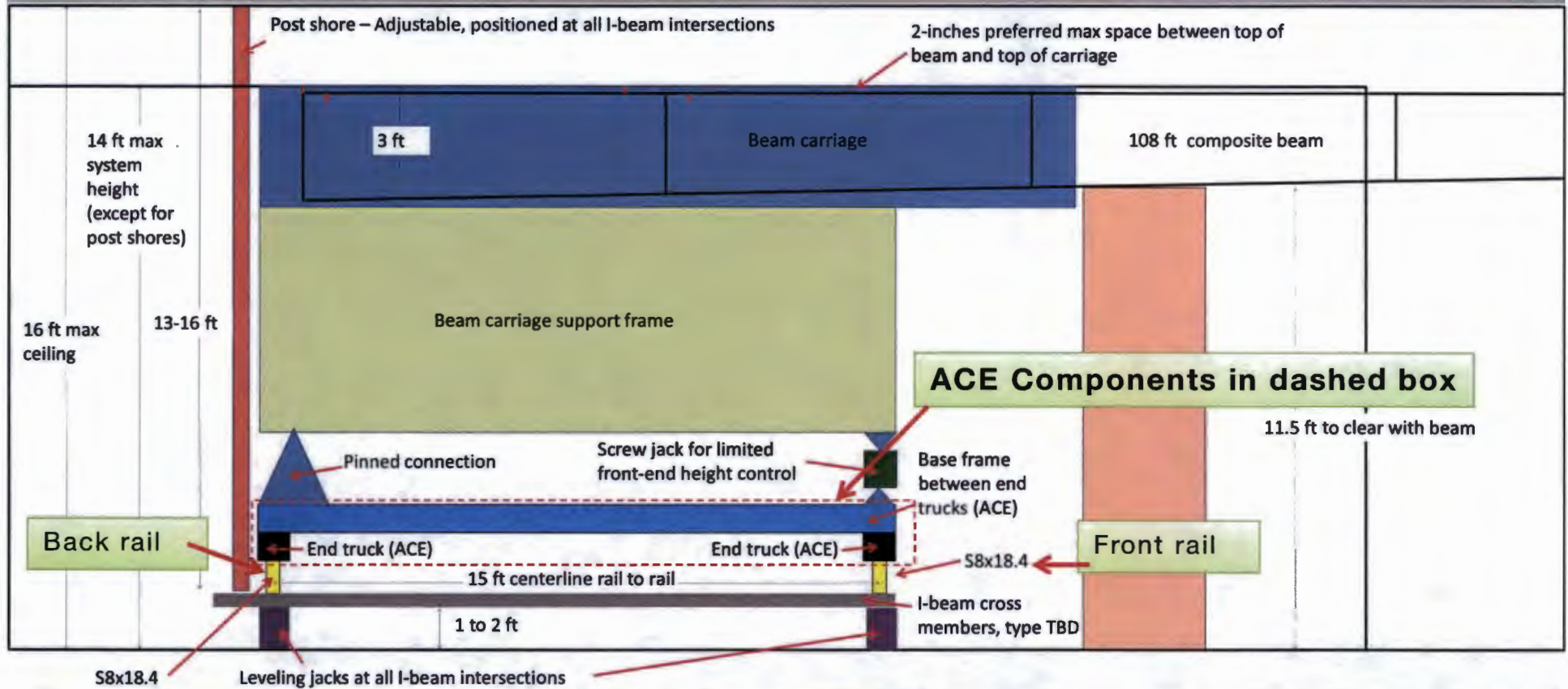
3D System Concept



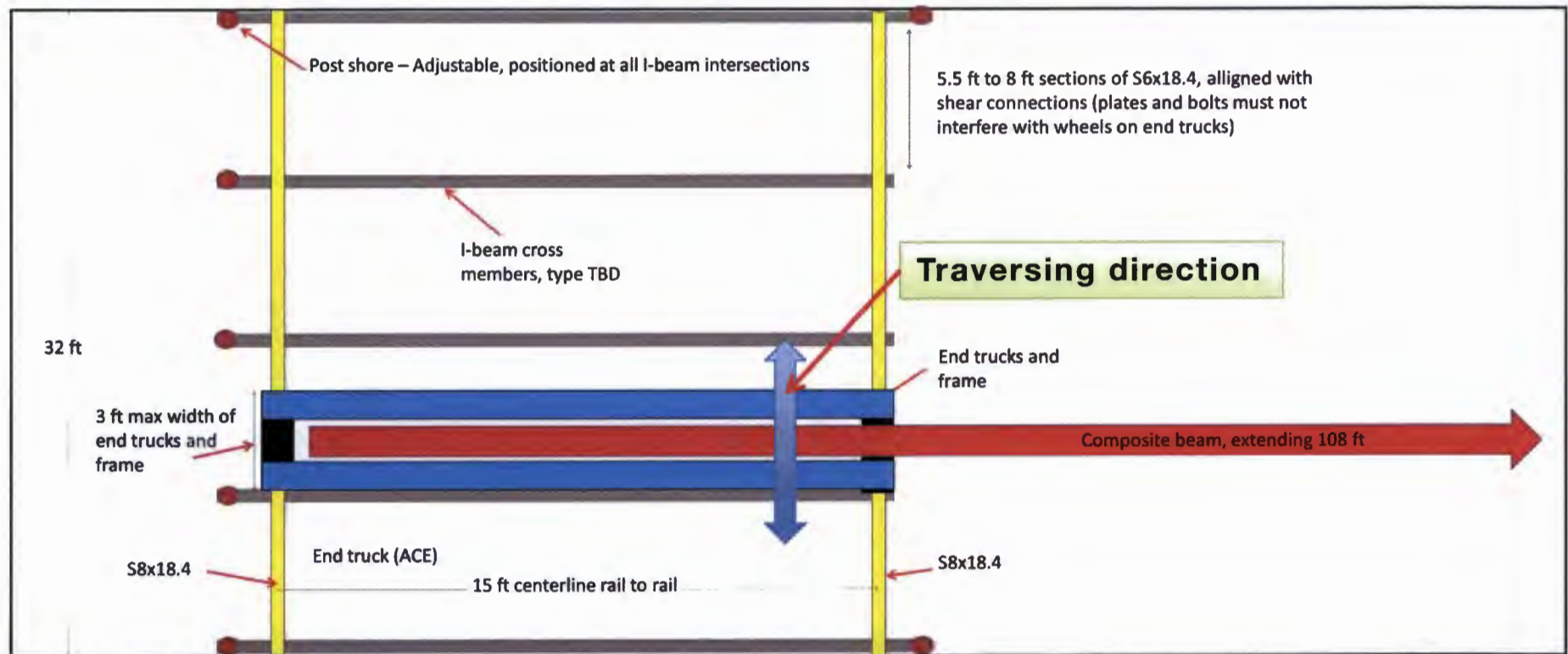
3D System Concept



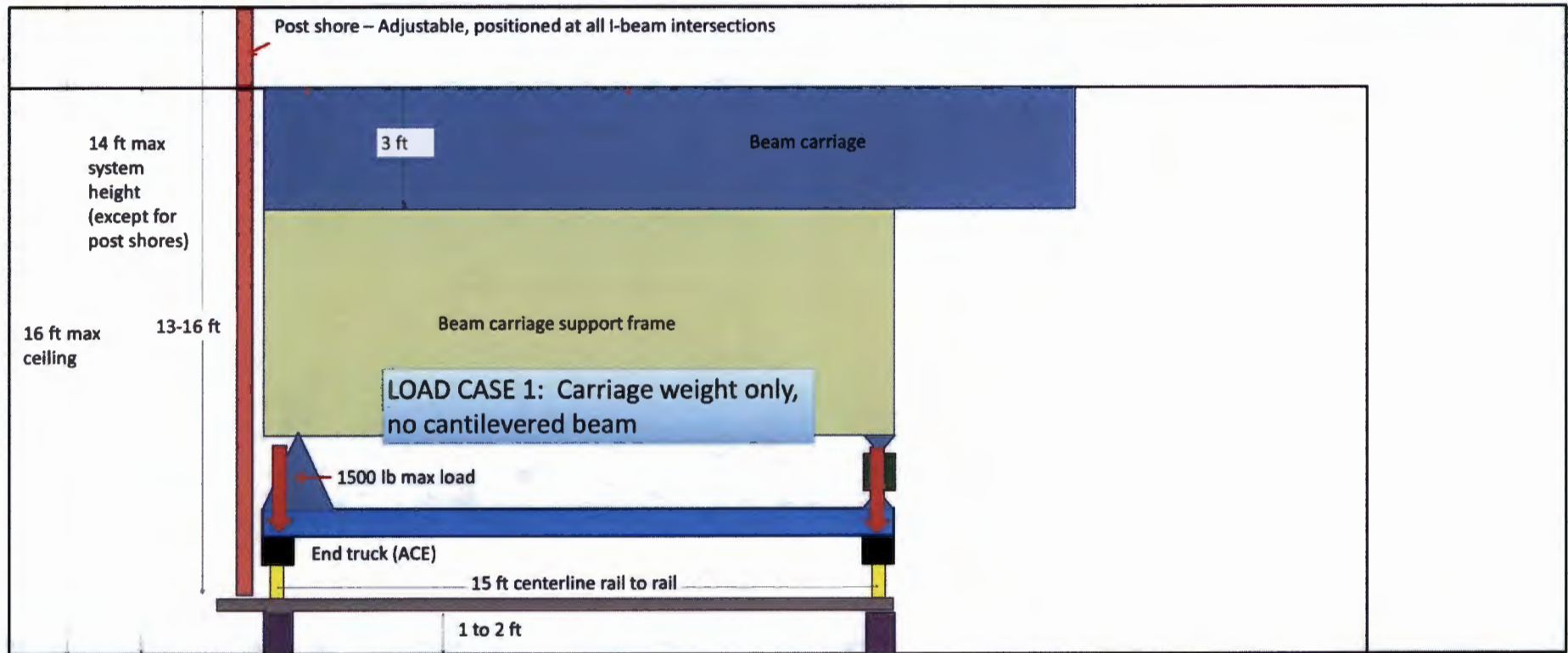
System Concept - Side View



System Concept – Top View



Load Case 1



Load Case 2

