WELCOME TO THE
ASCE 142ND ANNUAL CIVIL ENGINEERING CONFERENCE
Prevention Through Design: Construction Safety
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Eli Bintner, Principal Engineer, Offsite Infrastructure
PtD Facts

- PtD is required in EU and other regions and encouraged in other nations.
- Clients and GCs in US are increasingly concerned about safety, in all market sectors.
- Several large DBs/EPCs have initiated PtD programs.
- Several large owners have initiated PtD programs.
- NIOSH is encouraging PtD. OSHA has promoted PtD but has no legislation in works.
PtD Questions

• Is PtD the ethical thing to do?
• Does PtD deliver tangible benefits?
• Does PtD carry excessive risks to project parties?
• How should ASCE profession respond to the PtD initiative?
• How should individual firms respond to the PtD initiative?
Eli Bintner
Principal Engineer Offsite Infrastructure
BHP Billiton
Safety Moment

Bus barns unsafe for hybrids: driver

BY JANET FRENCH, THE STARPHOENIX AUGUST 15, 2011

ATTENTION HYBRID BUS OPERATORS
817, 818, 819, & 820
DO NOT USE TRACK 8 OR 9
614, 615, 616, & 617
USE TRACK A OR SOUTH DOORS ONLY

Dust Area

Dunlop said another bus barn in the city’s north end has plenty of room to accommodate the taller buses, but it could be expensive to shuttle bus drivers back and forth from downtown to pick up and drop off the buses at the beginning and end of the day.

• **http://www.thestarphoenix.com/technology/barns+unsafe+hybrids+driver/5258724/story.html**
• **Background:** A minority of the city’s fleet are hybrid buses (diesel-electric) which were introduced 5 years ago. They are too tall to enter most of the bus barn.
  – Several incidents since they were introduced
• **Hazard:** Equipment interactions with infrastructure
• **Risk Event:** Explosion due to gas lines being struck and sparks generated
  – Risk = Severity x Likelihood (recurring event with a severe potential and frequent exposure)
• **Controls:** Training and Signage
Presentation Overview

• Background on BHPB and Jansen Project
• History of PtD on Project
• PtD Process Overview
• PtD Tools in Place
• Path Forwards
Company and Project Background

Who we are globally and what we are doing in Saskatchewan...
History of PtD on Project

- Informal to Formal
PtD Tools in Use

Prevention through Design Program

7.1. KEY PERFORMANCE INDICATOR'S

The purpose of the Key Performance Indicator's (KPIs) developed for this program are:

<table>
<thead>
<tr>
<th>Item</th>
<th>Priority</th>
<th>Suggestion / Description</th>
<th>Initiator</th>
<th>Initiator Discipline</th>
<th>Initiated Date</th>
<th>Project Phase</th>
<th>Responsible Contractor</th>
<th>Area</th>
<th>Affected Discipline</th>
<th>Status</th>
<th>Revision Date (week ending, mm/dd/yy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Medium</td>
<td>The description should be as detailed as required to ensure clarity of the item.</td>
<td>Joe Guy</td>
<td></td>
<td>1/24/09</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Open</td>
<td>1/24/09</td>
</tr>
</tbody>
</table>
Model Review Checklists – 30/60/90

<table>
<thead>
<tr>
<th>Design Area:</th>
<th>Confirmed</th>
<th>Comments</th>
<th>Action by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity / Work Plan</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Access</strong> – Can we get to the piece of equipment safely and easily?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is height or reach a problem?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is there potential for personnel to fall 2 metres?</td>
<td></td>
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</tbody>
</table>
Program Process

Prevention through Design
Process – Six Steps
Resolve PtD Ideas

Prevention through Design Decision Process Flow

Risk Reduction Matrix for Evaluating Human Factors in Design

Consequence

Increasing Probability

P A E

Never heard of in the industry

A

B

C

D

E

1st aid

Slight damage

Slight impact

Health effect

No effect

No impact

Medical treatment

Minor damage

Minor impact

Minor effect

Minor impact

Lost time

Moderate damage

Moderate impact

Major damage

Major impact

PTD or up to 1 fatalities

Extensive damage

Massive impact

Extensive impact

Massive impact

More than 2 fatalities

Massive impact

Several times per year

Within a similar operation

Within a similar operation

Within a similar operation

Within a similar operation

Within a similar operation

Categories

Low

Medium

High

Area 1

Area 2

Area 3

Legend

EM - Engineering Manager

PFL - Project Engineering Lead

*Please Note*: For a detailed description of the PtD Decision Making Process please reference the Prevention through Design Program document.
Training

- Leadership Engagement face to face in a “kick-off” style forum
  - By consultants and in-house.
- Online for all designers. Mandatory completion within 10 days of being assigned to project.
  - EPCM, sub-consultants, vendor supplied packages.
- Lunch and Learns for refreshers and updates.

- Training Statistics:
  - 440 designers completed trained
  - Approx 3 hours to complete
  - Positive feedback received
Accountabilities and Responsibilities

10.1. PTD EXECUTION ORGANIZATION

- Project Director
  - Engineering Manager
  - Construction Manager
  - PEL's
  - PtD Champion

Figure 2 PtD Execution Organization
Where are we going from here........

• Road to excellence:
  – Leading the way in BHPB with a focus on being the internal standard to follow for Global Projects

• Continual improvement:
  – Upgrading excel based log to online database
  – Implementing new revision of PtD Management Plan with efficiencies

• Use on future projects within Potash:
  – Lessons Learned passed on
  – Ease of use for Vendor design packages (ie: Procurement Process)
THANK YOU FOR ATTENDING THE ASCE 142ND ANNUAL CIVIL ENGINEERING CONFERENCE

WE LOOK FORWARD TO SEEING YOU NEXT YEAR IN CHARLOTTE, NC!