Quakesmart Testimonial

CCS

Allen&Hoshall
since 1915

Marvin Windows & Doors

- Ripley, TN
- Manufacturing Facility
- 660 Associates
- 3-shifts

- 4 Main Buildings
- 480,000 sq ft
- 1980 – 1991 vintage

- New Madrid Seismic Zone

CCS Group, Inc.

MARVIN Windows and Doors

Allen&Hoshall since 1915

Why Mitigate Earthquake Risk?

- Marvin Family concerned about Associate and plant safety
- Corporate Risk Management legal review of obligations & responsibilities
- Corporate & local plant management involvement
- 1st Question - What is the earthquake risk or exposure at the plant?

Next Step

- Mitigation Plan -
  - Perform an earthquake risk assessment
  - Interview *Experienced* firms
  - Desire regional presence
  - Select most qualified firm
  - Quantify earthquake risk
  - Begin implementing risk reduction measures

Earthquake Risk Assessment

- 2005 – Selected the team of CCS Group and Allen & Hoshall to perform Earthquake Risk Assessment study. Three Tasks:
  1. Assess building structure risk
  2. Assess potential life-threatening hazards to plant associates – nonstructural risks
  3. Perform a financial risk analysis

Earthquake Risk Assessment Results

- Region of *high* seismicity
- High risk identified for all buildings
- Building egress/evacuation routes, exits, and signage require improvement
- Life-safety concerns from nonstructural components & contents
- Financial loss exceeds 50% of total insured value (bldgs & contents)

Mitigation Implementation

- 2006-2007:
  - Building egress routes improved, fire extinguisher and fire walls addressed, added additional building exits, & updated exit signage to current code requirements
  - Nonstructural component restraint/anchorage designed and constructed

Building Evacuation

- Exit markers difficult to see. Installed new signs.
- Evaluated egress routes and labeling.

Building Exits

- Installed:
  - 5 new exterior emergency exit doors
  - 2 new interior horizontal exit doors between bldg sections
  - 3 new fire rated doors in office area

Nonstructural Life-Safety Risks

- Addressed life-safety risks throughout the plant.

CCS Group, Inc.

MARVIN Windows and Doors

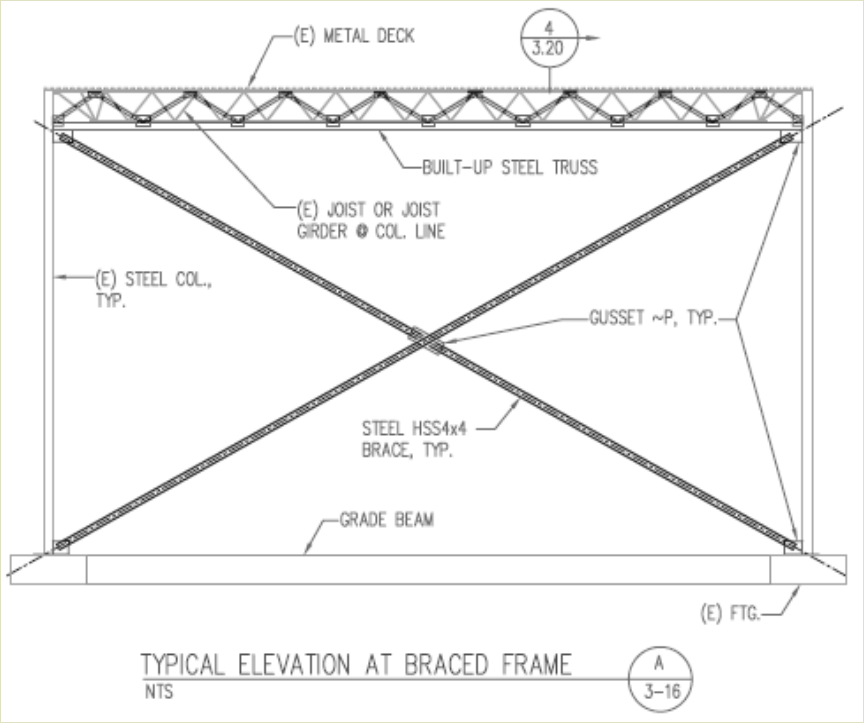
Allen&Hoshall since 1915

Nonstructural Life-Safety Risks

- Natural Gas Boiler

Mitigation Implementation (Cont.)

- 2008-2011: Building Strengthening
  - Building 1 & removal of Bldg. 3 roof ballast/re-roof
  - Building 2 & 3 strengthening
  - Building 6 strengthening, ballast removal & re-roof



Integration Opportunities

- Nonstructural Mitigation Project:
  - Install energy efficient high-bay lighting ballasts as lights were strengthened
  - Remove unused hanging piping & equipment in ceiling spaces reducing hazards
- Building Strengthening Project:
  - Remove heavy roof ballast & roof:
    - Reduced the seismic load to the building
    - Reduced disruption to operations
    - Reduced cost of overall strengthening
  - Install new energy star roofing system
    - Reduced heating & cooling costs
  - Used roof ballast for employee exercise track
    - Improved associate working environment & health

Questions?