Tankhouse Maintenance Inc. presents The Primary Containment Unit (PCU) for Concrete Cells with Paraliners

Tankhouse Maintenance Inc. PCU

Combines FRP system with a polymer concrete floor to:

1. Eliminate the buffer sheets, liner and wood floor
2. Strengthen the structural integrity of the cell walls and floor
3. Reduce cell maintenance
4. Complete the work in a timely manner
5. Work can be completed on a maintenance schedule and budget!

Tankhouse Maintenance Inc. PCU

Program involves two stages:

1. Remove existing liner and cell components and repair the concrete cell.
2. Install the The PCU System

Tankhouse Maintenance Inc. PCU

Stage 1

1. Program included removing existing liner
2. Repairing cell walls and beams
3. Pouring new polymer concrete overflow box connecting to header

Tankhouse Maintenance Inc. PCU

Stage 2

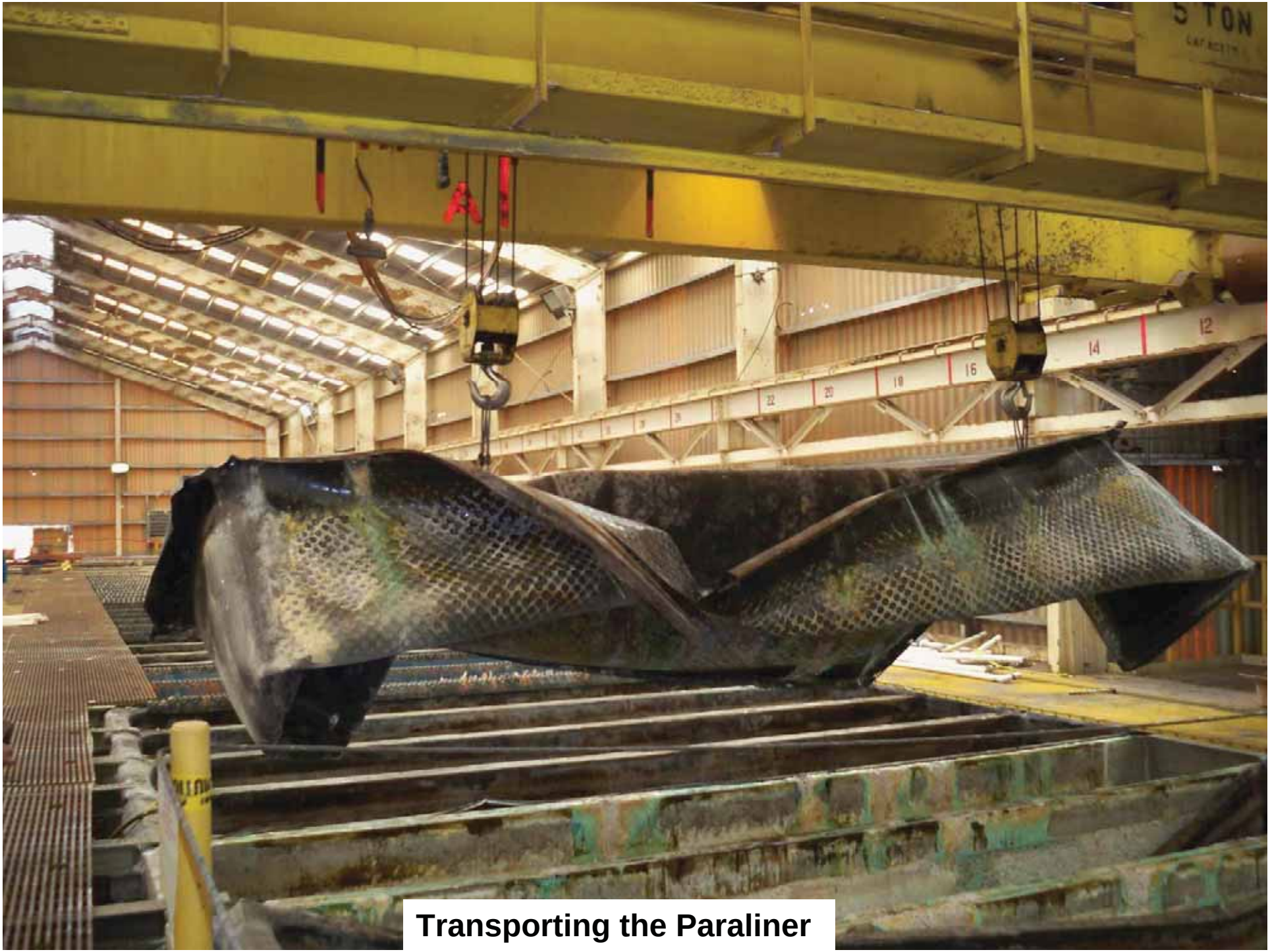
1. Install precast polymer concrete floor and grout perimeter
2. Apply FRP System to the side and end walls
3. Apply finishing resin coat to the cell
4. Additional activities can include a polymer concrete overflow box.

Stage 1 Details

- Buffer Sheets, paraliner, cell furniture are removed.
- Cells are power washed to remove scale, loose aggregate and clean area.
- Walls are ground to remove sulphate attached to concrete
- Walls are inspected to determine if they need replacement or simply grouted for repair.
- All floor boards are removed
- Cell shelf is also inspected to determine damage and subsequent repair

Concrete Cell with Paraliner after removal of electrodes and electrolyte

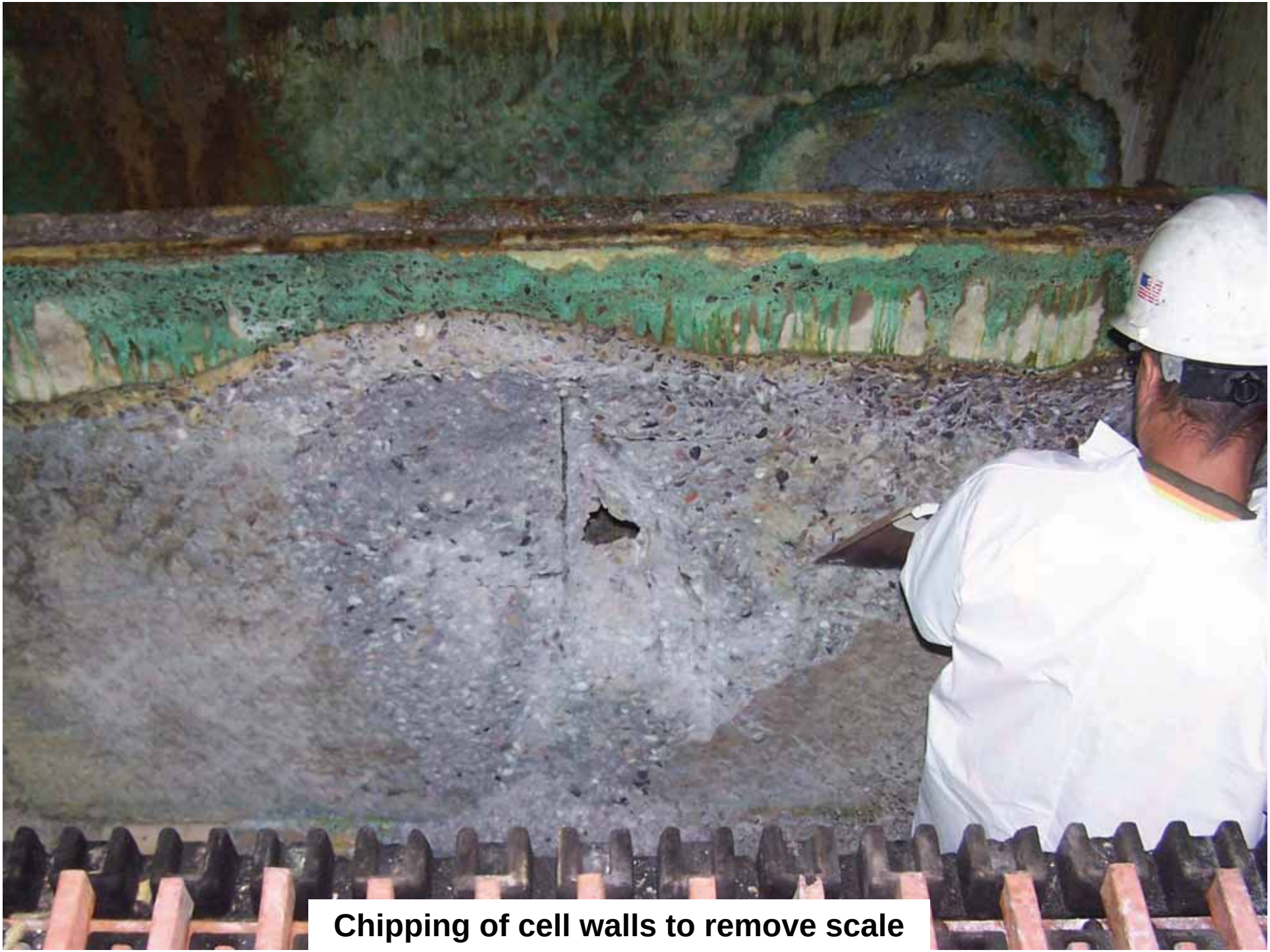
Removing the Paraliner



Transporting the Paraliner

Concrete Cell after removal of paraliner

Power washing the cells



Chipping of cell walls to remove scale

Cell Wall Condition Before Repair

Cut Out Damaged Section of Cell Wall

Stage 1 Details

- Complete repair work on walls and beams. Can include
  - adding quick set grout
  - Forming for new walls
  - Forming for beam or shelf repair
- Cutting end wall for overflow box installation.
- Begin pre-cut activities of FRP Material.

Grouting the beams and cell walls

Prepping Damaged Wall Section and Beam for Repair

Forming shelf for Pouring

Installing FRP Rebar for Cell Wall

Pouring new cell wall

Newly Poured Cell Wall and Beam

Grouting Corners (coving) to assist frp

Pre-cutting FRP material

Stage 1 Details

- Cut wall for Overflow Box installation
- Set mold and cast polymer concrete overflow box
- Buff walls in preparation of PCU system installation

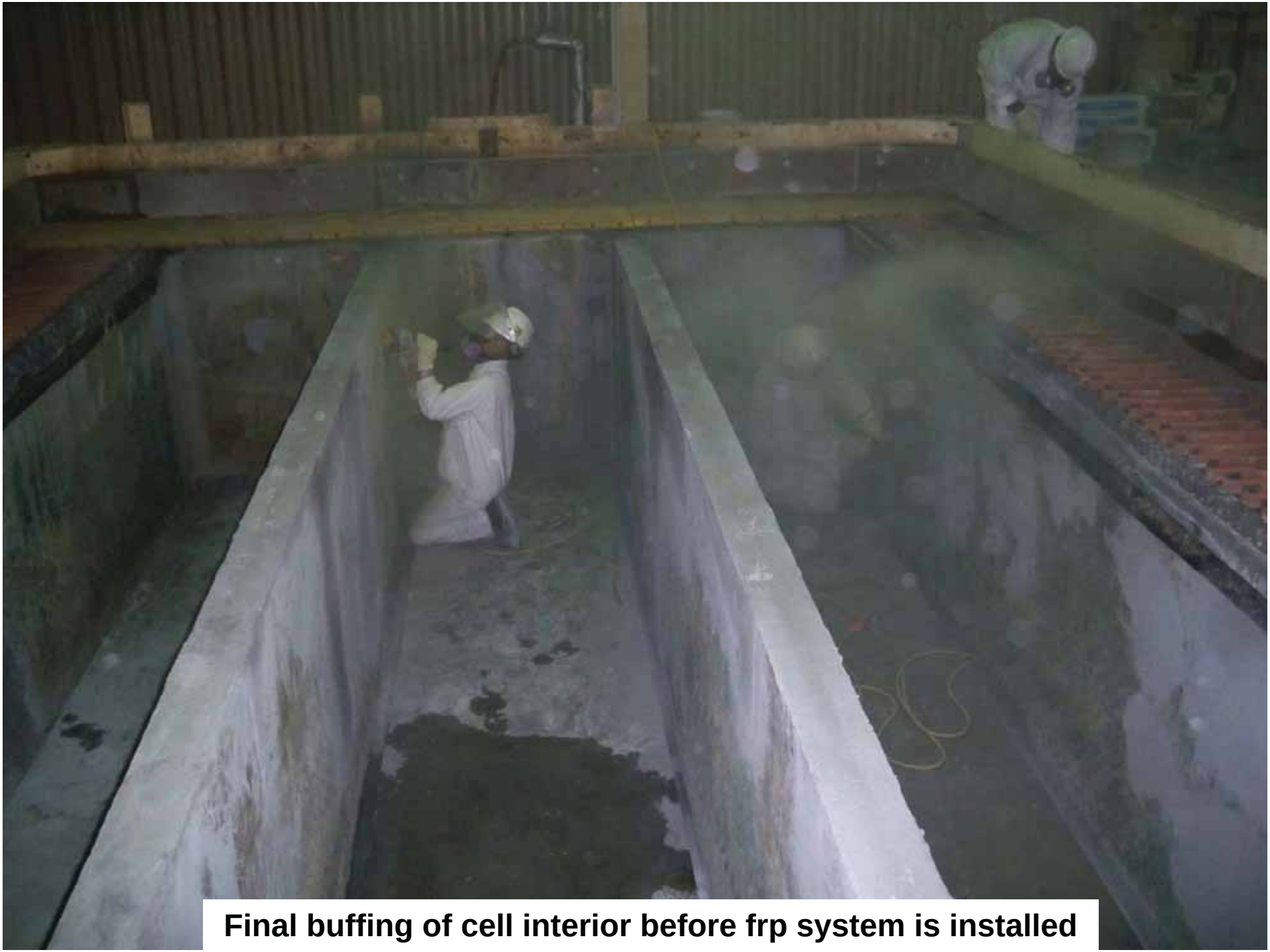
Wall is cut and frp rebar drilled into the walls in preparation of the overflow box installation

Prepping the overflow box exterior mold

Prepping the interior overflow box mold

Overflow Box Mold for new Polymer Concrete Overflow Box

PC Overflow Box – allows for 3 extra cathodes per cell



Final buffing of cell interior before frp system is installed

Stage 2 Details

- Pre-cast Polymer Concrete Floor
- Install and Grout Polymer Concrete Floor

Prepping Mold for Polymer Concrete Floor Pouring

FRP Rebar is set and pouring begins

Polymer Concrete pours into mold

Final touches to PC Floor

Removing the floor from the mold

Lugs hold floor in mold

Floor is demolded and lugs re-inserted to assist in transporting floor

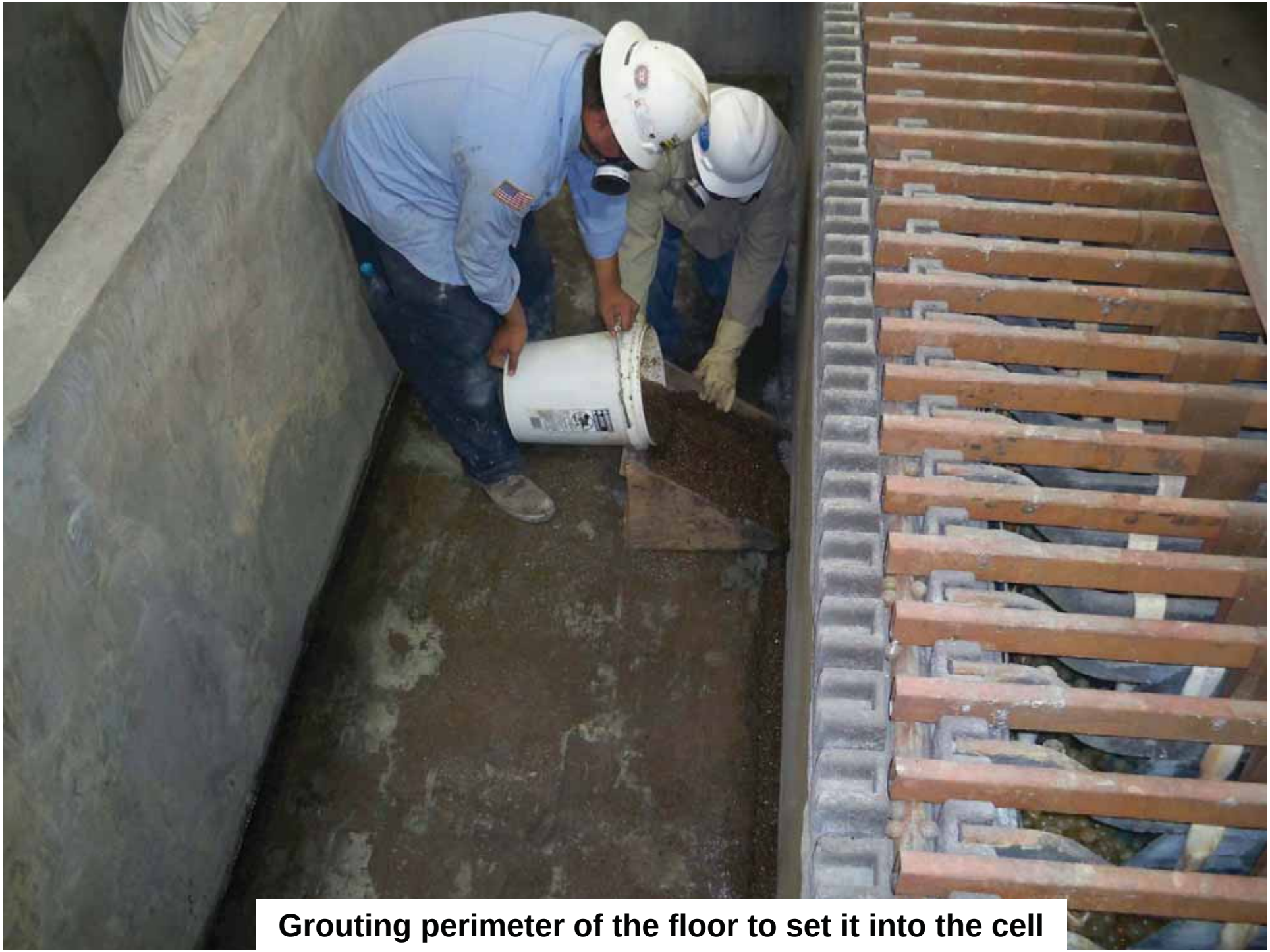
Floor is transported to the trailer

Mold is ready again for prepping

Transporting First Polymer Concrete Floor to the Cell

Installing Polymer Concrete Floor

Installed PC Floor sitting on beams

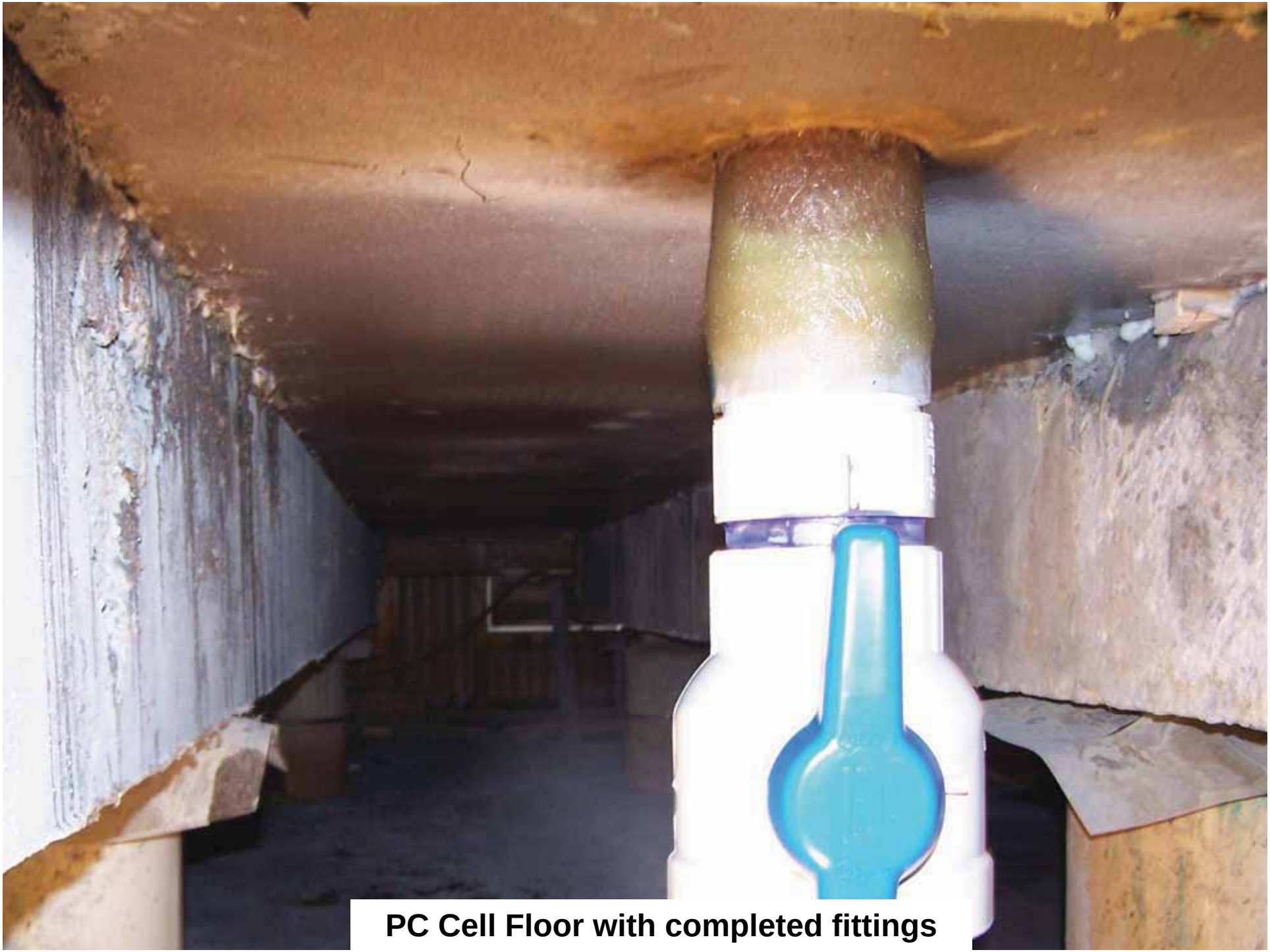


Grouting perimeter of the floor to set it into the cell

Stage 2 Details

- Add frp piping to cell drain.
- Install frp layer system to walls and floor
- Add final gel coat layer to cell interior and overflow box

FRP Drain Hole Fitting



PC Cell Floor with completed fittings

Five frp layer pcu system is installed

More frp installation

Installing frp system around overflow box

Completed Overflow Box with connection to existing piping

Cell interior after final gel coat

Tankhouse Maintenance Inc. PCU

- Program Time
- Stage 1 – variable depending on condition of cell (15-25 crew hours)
- Stage 2 – 24 hour period including cure time (for 2 cell production)

Tankhouse Maintenance Inc. PCU

- Advantages
- Limits production loss due to maintenance
- Adheres directly to the concrete walls
  - Reducing further erosion of cell
  - Reducing likelihood of leaks
  - Reducing likelihood of current leakage.
- Can be completed on site in a timely manner.

Tankhouse Maintenance Inc. PCU

- Advantages continued
- FRP is thinner than PC and reduces concern on reducing cell width
- Polymer concrete floor:
  - Material has excellent industry record in this application
  - Eliminates concerns with wood floor maintenance
  - Provides strong impact resistance for falling electrodes
  - Improves cell cleaning procedures.
- Reduction in leaks reduces damage to the tankhouse floor and slip hazards in the tankhouse.
- System has excellent corrosion resistance

Tankhouse Maintenance Inc. PCU

- Advantages continued
- Does not require buffer sheets
- Customized Design can include many other features such as PC overflow box, new drainage connections, sloped floor etc.
- Inclusion of overflow box allows additional electrodes increasing plant capacity
- System has a proven track record.
- Comes with a five year warranty