

REMOVAL AND REPAIR OF GRATING SYSTEMS

REVISION DATE: 13-APR-21

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COMPLEX MAINTENANCE

LAKE CHARLES SOUTH

Purpose: This Procedure aids to improve walking working surfaces and documents the necessary steps to safely and routinely correct the hazards that come about on walking working surfaces with techniques for inspecting, removing, and installing. The goal is to maintain all walk-work surfaces in safe condition.

Reference Documents: PIP STE05530
PIP STF05530
OSHA 1910.22(d) (3)
Procedure # 4301-06-703

Required PPE: Hard Hat
Safety Glasses
Gloves
Hearing Protection (If in area that requires hearing protection)
Fire Retardant Clothing
Steel Toe Boots
Safety Harness (If level is higher than 4' above the ground)

Safe Work Permit Required? Yes No

1. General Information

a. Definitions

Opening: an uncovered hole measuring greater than 2 inches in its least dimension or more than 3 bearing bars are missing

Toe-Board: a safety barrier running vertically along the bottom edge to prevent items and people from falling.

Guard-Rail: a safety barrier running along the sides of the walking surfaces to prevent objects and people from falling.

Support Beam: The beam that the grating is supported by. This is the foundation of the walking working surface.

b. Grating System Design

Grating fabrication and design follow the PIP standards referenced above and as outlined in Procedure # 4301-06-703.

c. Grating Inspections

See Procedure # 4301-06-703 for inspecting grating systems.

2. Grating Installation/Re-installation

a. Grating Panels

1. Grating panels are to be installed by laying them across the support beam and held in place with the appropriately designed clips. (Saddle clips and Grating clips are preferred)
2. The panel-to-panel alignment needs to be accurate.
3. The panels must overlap the support beam by at least one inch.
4. The panel-to-panel edges must be the same height from the top of the support beam. There should be no uneven panels
5. The panels should not slip, slide, or scoot after being secured
6. The panels should not pop up or lift from support beam after being secured
7. All panels should be installed in a direction in accordance with the figure below from the PIP standard *STF05530*

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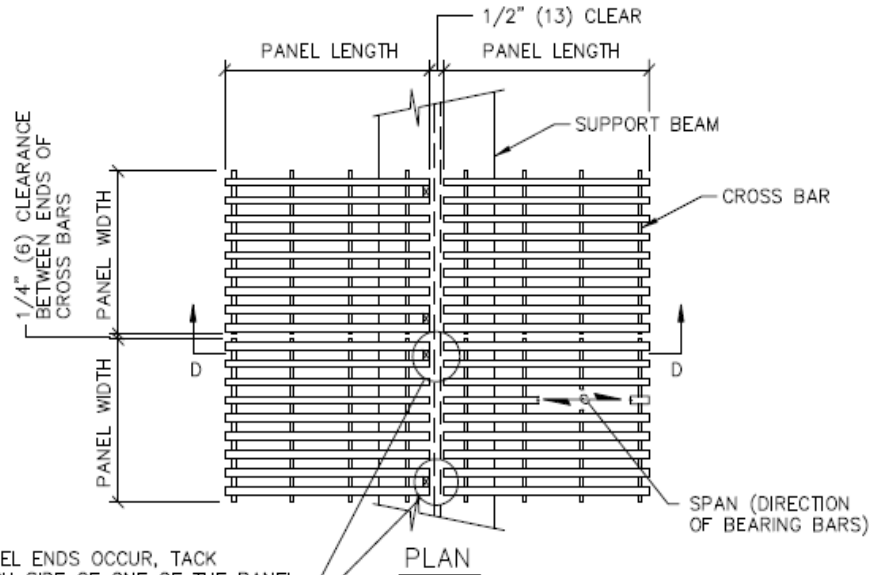
PROCESS INDUSTRY PRACTICES
FABRICATION/INSTALLATION DETAILS

STF05530

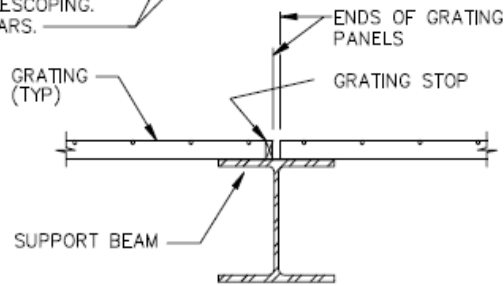
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GRATING FABRICATION DETAILS



WHERE BUTTING PANEL ENDS OCCUR, TACK WELD STOPS AT EACH SIDE OF ONE OF THE PANEL ENDS TO PREVENT PANELS FROM TELESCOPING. USE MATERIAL TO MATCH BEARING BARS.



SECTION D-D

DETAIL 7: TYPICAL GRATING PANEL LAYOUT

2.2 Toe Boards/Guards

- i. Toe boards and guards to be installed per PIP standard *STE05530* and *STF05530*.
- ii. Toe boards should not extend below the top surface of the grating.

2.3 Grating Clips

- 1) The properly designed grating clips must be installed at each corner of each panel and with a minimum of 2 clips on each support beam.
- 2) If the centerline of the clip fastener is on the edge or past the edge of the support steel, inspection should be completed to ensure adequate engagement of steel. For drilled type, the entire screw should be engaged within the steel. For clamp type, the majority of the throat should engage the steel.
- 3) The clip should not move after installation or after any load is exerted on it.

3. Grating Removal

Before removing grating, the unit supervisor must approve and communicate the work to be done.

If removing or repairing any structural integrity, according to OSHA guideline 1910.22(d)(3), when any correction or repair involves the structural integrity of the walking-working surface, a qualified person performs or supervises the correction or repair. Any maintenance Supervisor is qualified. If structural integrity is being replaced, it must be a like and kind replacement. If further modification is needed, the task needs to be escalated to the civil engineering group.

Once the removal is approved, the "Removal Form" (attached) must be completed and signed by the appropriate employees.

Grating removal must begin with a rigid barricade, cover, or guardrail that completely surrounds or covers the section of the grating being removed. **IF THERE IS GRATING BEING REMOVED JUST OUTSIDE OF A DOOR OR ANY ENTRY/EXIT, THE INSIDE OF THE DOOR MUST BE BARRICADED SO THAT EXITING THROUGH THE DOOR IS NOT PERMITTED.** Grating removal and installation is to be completed without interruption.

If the decision is made to cover the opening, the cover must:

- a) Be able to tolerate at least twice the heaviest load that will possibly be exerted on the walkway
- b) Be secured properly
- c) Have an identification declaration to identify the opening hazard

If the decision is made to use a rigid barricade or guardrail, it must:

- a) Be installed using wood (2"x 4"), angle iron, or other material strong enough to withstand twice the possible load being exerted.
- b) Have a full top rail in between 39" and 42" above the grating

- c) Have a mid-rail installed at the midpoint of the top rail and the grating
- d) Have a toe board, except in the designated area to access the grating for removal

3.1 Grating Removal includes:

1. Ensuring the surrounding grating panels will stay secure while removing the desired panel.
2. Placing removed grating panels out of the way as to not cause any further unsafe hazards to any person
3. Not stacking the grating up past the toe-board height or near the opening to ensure no grating can fall.
4. Adding extra lighting if needed to properly see the work being done
5. Communicating to other workers the job that is about to take place
6. Wearing PPE and considering every persons safety beforehand
7. Securing all tools
8. Never leaving an opening unguarded until the job is complete.

4. Grating Removal/Installation Steps:

1. Fill out Grating Removal Form and get appropriate approval signatures.
2. Once approved, communicate the work to all area workers and supervisors.
3. If the level of the grating is above 4' off the ground, each worker must be tied off and wearing a safety harness.
4. Before removing the desired grating panel, complete the task of creating a rigid barricade or placing a guard around the opening. All sides of the opening need to be barricaded except for the access point that will be chosen for grating removal. **IF THERE IS GRATING BEING REMOVED JUST OUTSIDE OF A DOOR OR ANY ENTRY/EXIT, THE INSIDE OF THE DOOR MUST BE BARRICADED SO THAT EXITING THROUGH THE DOOR IS NOT PERMITTED.**
5. Remove the desired grating panel and place in a location that is out of the way and will not cause any tripping hazards or any hazards for the people down below.
6. Install the new grating panel into the correct position with the correct guidelines as stated in this procedure and in procedure # 4301-06-703.
7. Secure the panel with the correct clips and ensure that the clips are installed correctly and the panel is secure.
8. Communicate that the job is complete and complete the "Grating/Guardrail removal Completion form" (attached)
9. Once the panel is secure and the form has been signed off by all parties, remove the opening guard rails around the replaced grating panel.
10. Turn the completed removal form into operations supervision along with the safe work permit.

Grating/Guardrail Removal Form

Unit/division/Specific Location: _____ / _____ / _____

Projected Start Date: _____ Projected Completion Date: _____

Reason For Removal:

Location and Amount of Grating/Guardrail Being Removed:

Proposed Hazard Safety Technique for the Opening (cover the opening or using rigid barricade or guardrail):

Are there any structured member/supports being removed or repaired? Yes No

If yes, name the person performing or supervising the correction or repair. _____

Requested By: _____ Date: _____

Approved By:

Operations/Maintenance Supervision _____ Date: _____

Grating/Guardrail Removal Completion Form

To ensure the safety of all personnel that will be working on the walking surfaces, the following items need to be double checked before this form is completed

1. Grating is replaced per guidelines in procedure # 4301-06-709
2. Grating is installed correctly, tightly, and safely for continuation of everyday use
3. Opening barriers are removed
4. Work is complete

Approved By:

Operations/Maintenance Supervision _____ Date: _____

Turn in completed form to Operations Supervision along with the safe work permit.