

DESIGN CRITERIA

1. Related Sections: See related Division 32, Division 05, and Division 26 Design Criteria and related Design Standard Plates.
2. General:
 - A. Truck/Trailer to Wall Relationship: A major consideration in design of recessed receiving areas for semi-trailer trucks is to prevent the rear top of the trailer from hitting the wall first when docking. A vertically parallel relationship with the building wall can best be achieved by providing a pavement surface that permits both front and rear axles to be at the same elevation when docking. To accommodate typical semi-trailer delivery vehicles (WB-50, WB-65, and WB-67), the pavement 50'-0" to 55'-0" from the face of the building should be approximately the same elevation as that adjacent to the building wall. A continuous trench drain, parallel to the building wall, should be located 26' from the building wall with a pavement slope of 2 percent to this trench drain. Rear top of trucks on shorter trailers will then, because of slope to drain, be angled safely away from the wall. Where this optimal dimension cannot be achieved and slopes cannot be designed to maintain a vertically parallel relationship, thicker dock bumpers must be provided to prevent impact damage to the building wall. In this event, however, thicker bumpers may impose requirements for special dock levelers having deeper lip extensions to compensate for increased bed to dock distance. Tapered dock seals shall also be provided where trailer bed slope could exceed 2 percent. Refer to Design Standard Plates 11 13 00-01 and 11 13 00-02.

Should site conditions warrant, it is also permissible to drain the entire recessed receiving area away from the face of the building, at a minimum grade of 0.75%, but not to exceed 1.0%. This configuration allows for elimination of the trench drain noted above, which is necessary in the standard recessed condition. Tapered dock seals should be specified if this recessed receiving area configuration is used.
 - B. Dock Height: Normally, a 48" height from recessed receiving area pavement to staging/receiving area floor level, in combination with dock leveler, will accommodate most semi-trailer bed heights. Establish dock height at 47'-1/2"; otherwise OSHA requires a guard railing across opening heights 48" and higher. Refer to Design Standard Plate 11 13 00-03.
 - C. Slopes: Slopes of between 1.0% and 5.0% are considered optimum for all pavement within the receiving area, except for ramps into recessed areas which shall have minimum slope required, up to a 10 percent maximum. Where ramp must be at or near maximum slope in northern climates, give special consideration to providing traction for driving wheels; i.e., ribbed surface, snow/ice melting device, etc. Notwithstanding maximum and minimum allowable grades in the receiving area, there should be no locations where the grade change between two adjacent slopes (a.k.a. break-over) exceeds 8.0% (7.0% desirable). This condition, if allowed to occur, leads to the trailers landing gear catching on and scraping the ridge in the pavement, especially if the driver neglects to fully raise the landing gear.
 - D. Paving: Pavement in both the recessed and grade level areas shall be 6" minimum thickness reinforced concrete on compacted, stabilized base, sufficient to withstand a minimum bearing capacity of 31,900 lbs. under tandem axle.
 - E. Lane Markers: To facilitate accurate backing of semi-trailer vehicles, paint 6" wide white guidelines on receiving area pavement and up dock wall to finish floor level. Specify epoxy type paint that is specially formulated for use as pavement marking.
3. Loading Dock Equipment shall include following:
 - A. Dock Bumpers.
 - B. Dock Levelers.
 - C. Truck Restraints.
 - D. Dock Seals.

- E. Metal Hoods (above dock seals).
 - F. Wheel Chocks (connected by heavy chains to dock wall).
4. Receiving Areas:
- A. Equip each overhead receiving door at recessed dock area of commissary with loading dock equipment listed above. Dock lights shall also be provided at each of these receiving doors as specified in Division 26.
 - B. Coordinate specified interlocks between dock leveler, overhead door, and truck restraint system. Dock leveler shall not operate if overhead door is in closed position and dock restraint is not engaged.
 - C. Nominal size of dock leveler shall be 6'-0" wide by 8'-0" deep. On projects with narrow receiving aisles, a nominal 6'-0" wide by 6'-0" deep may be used if approved by the DeCA Project Manager.
 - D. Provide Interlocking control to prevent dock leveler from operating when associated door is in closed position.
 - E. Laminated tire tread dock bumpers are typically 6" thick. Increase thickness of bumpers if site constraints prevent optimal grading at receiving docks as indicated above.
 - F. Provide dock bumpers at receiving and trash platforms. Provide 24" long bumpers evenly spaced (approximately 5'-0" apart) so that trash dumpsters or trucks will contact no less than two bumpers. Refer to Design Standard Plate 11 13 00-03.
 - G. Provide 8" diameter concrete filled steel pipe bumper posts with domed tops at interior jambs of overhead doors with dock levelers. Provide 8" diameter concrete filled steel pipe bumper posts with domed tops at both interior and exterior jambs of overhead door at grade level receiving areas. Embed posts 18" deep minimum in 18" diameter concrete foundations – Depth of foundation at interior locations shall be 24" minimum. Depth of foundation at exterior locations shall be 24" minimum or deeper as required to accommodate frost depth.
 - H. Provide polyethylene thermoplastic sleeves over interior bumper posts (located in non-customer areas). Color shall be "safety yellow". Refer to Section 05 50 00 for further guidance. Coordinate with Installation Design Guide (IDG), or other Installation criteria controlling exterior architectural design, for required appearance of exterior bumper posts.
 - I. Provide 120-volt exterior weatherproof duplex receptacle adjacent to each overhead receiving door. Refer to Division 26 criteria for additional information.
 - J. Provide exterior-type weatherproof push button adjacent to receiving area personnel doors, connected to an interior buzzer. Push buttons shall be provided to activate buzzers in Produce Processing, Meat Processing, and Staging / Receiving Area. Provide individual push buttons at each receiving area personnel door for each individual area, with signage identifying same. Buzzers shall have different tones for each area. Refer to Division 26 criteria for additional information.
 - K. Trash containers are not allowed within the unobstructed space (33 feet) unless the containers are secured to preclude concealment of explosives as described 3-3.1 or if they are enclosed in accordance with 3-3.5 (UFC 4-010-01 latest edition, Standard 2). See Design Standard Plate 11 13 00-03 for DeCA standard approach to securing a trash container and trash platform using a chain-link enclosure when the trash container is located within the unobstructed space.

END OF SECTION