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RESEARCH REPORT: RR 24038
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GENERAL APPROVAL – Renewal –Global Integrated Flooring Solution Tec-Crete Access Flooring System for computer rooms and general office areas.

DETAILS

The Tec-crete Access Flooring System consists of 2-foot-square panels of 1 1/8-inch deep or 1 ½ inch deep No. 25 gauge galvanized steel filled with structural lightweight concrete having a minimum ultimate strength of 3,000 psi at 28 days. The panels are supported on a grid system of pedestals.

The raised floors are designed to withstand an allowable super-imposed uniform load of 400 psf which includes a 10 psf partition load or a 1600-pound concentrated at any point of a floor panel.

Tec-Crete floor system is approved for computer rooms and general office installations in all types of construction subject to the following conditions:

A. **General Requirements:**

1. Permits - A Building permit will be required for the installation of any access floor system. Necessary Mechanical, Electrical, Fire and Plumbing permits will be required prior to the installation of any electrical wiring, telephone cabling, electronic communication or data cabling systems, fire protection systems, HVAC systems or other equipment within a new or existing access floor system.

2. Plans - Architectural and structural plans shall be submitted to Structural Plan Check for review and approval. The existing floor shall be investigated for additional floor and computer equipment loads. Where an access floor is intended to be used for electrical wiring, telephone cabling, electronic communications, or data cabling, fire protection systems or HVAC systems, appropriate electrical, mechanical and fire sprinkler plans shall be submitted to and approved by Mechanical Engineering or Electrical Engineering prior to obtaining the permit.

3. The maximum height of an access floor shall be 24 inches.

4. An access floor may only be covered by resilient tile or carpet squares no larger than 24" x 24" in size and which may be easily removed by the Fire Department.

5. Required fire-rated walls (corridor walls, occupancy or area separation walls, etc.) shall extend through the access floor to a fire-rated floor below. Penetration of these walls below the raised floor shall be protected as required by Code for openings in such wall.

6. Areas below access floors shall not be used for storage purposes.

7. Access floors including location of switches and outlets on the enclosing walls, shall comply with applicable handicapped access regulations (California State Accessibility Standards Title 24).

8. When a building contains raised access floors, signs containing the words "Raised Access Floors" in 1-inch block letters with ¼ inch stroke shall be posted as follows:

    a. Adjacent to the stairway numbering sign on floors when the entire floor level contains access floors.

    b. Adjacent to the entrance to the rooms or areas containing the access floors when the entire floor level does not contain access floors.

9. All fully enclosed rooms or areas including corridors containing access floors shall be protected by a smoke detection system.

    EXCEPTION: Fully sprinklered buildings.

10. Smoke detection systems shall comply with the following:

    a. Smoke detectors shall be installed in accordance with the more restrictive of their listing, manufacturer’s recommendations, or the National Fire Protection Association Standards (NFPA).

    b. Smoke detection systems shall be connected to the building fire where available. Where there is no fire control station, a fire alarm control panel and annunciator shall be provided in a location acceptable to the Fire Department.

c. Smoke detection systems shall comply with the Electrical and Fire Code requirements for automatic fire protective signaling systems.

d. Sufficient smoke detector horns, bells, or speakers shall be installed in all areas having access floors, and shall provide a sound level of 10 db above ambient noise level measured four feet above the floor throughout the area. A minimum of one speaker shall be required for each 5,000 sq. ft. access floor area or fraction of 5,000 sq. ft. State Fire Marshall approved strobe signaling devices shall be installed at the same location as the sounding devices.

e. Smoke detection systems shall be approved by the Fire Department

11. Air conditioning ducts located below access floors shall be constructed of approved materials and be installed in accordance with the Los Angeles City Mechanical Code.

12. Electrical wiring methods permitted beneath the access floor shall be rigid metal conduit, IMC, EMT, metal wireway and surface metal raceway with removable covers, flexible metal conduit, Type AC or MC cable, and listed manufactured wring systems. Their installation shall conform to the requirements of the City of Los Angeles Electrical Code.

    Exception: Class 2 or Class 3 power limited wiring using cables approved for plenums may be used in access floor space, and shall not be required to be one of the wiring methods noted above. Examples are data and video transmission cables, telephone cables, and communication cables. Where installed below corridor floors, these cables shall be contained in one of the metal conduit or cable systems noted above, and effectively sealed or plugged at each end by approved means, when entering or leaving the corridor.

13. Insert cavity modules used for electrical outlets or for providing access to data and telephone cables shall be permitted under the following conditions:

    a. Electrical utility boxes shall only be installed with approved access lids not to damage cables. The lids shall not collapse when subjected to an impact load such as a person walking over the lid, or furniture being set on or moved over the lid.

    b. The utility boxes shall be permanently connected with a wiring method mentioned in Number 13 above. When installing cables as permitted by the Exception to Number 13 above, the entry holes (knock outs) in the utility boxes shall be provided with bushings or grommets to protect the cables from abrasion. All unused openings shall be closed.

    c. The utility boxes shall be secured to the access floor panel in a permanent manner.

d. The cavity of electrical utility access boxes shall be designed and approved so that the cavity is 100 cu. in. or less to preclude power and communications cable storage below the lids.

e. The power receptacles shall be mounted in the electrical utility access box in a vertical or diagonal manner a minimum of ½" above the base of the box. The wiring to the receptacle outlets shall be accessible from the inside of the box.

Note: Installation of cables and conduits shall conform to the requirements of the National Electrical Code.

14. Flush mounted or pedestal mounted receptacles or outlet boxes will also be permitted to be installed in access floor panels. Where flush mounted, they shall be an approved floor outlet.

15. Installation of access floors shall be in accordance with this approval and the manufacturer's specifications. Installers of the floors shall be approved by Global Integrated Flooring Solutions, Inc.

16. Materials, welding methods and fabrication shall agree with the drawings on file with the Engineering Research Section and at the job site.

17. The Tec-Crete floor panels are precast lightweight concrete elements and shall be fabricated on the premises of a Type I fabricator approved by the Department or under the continuous inspection of a registered deputy building inspector for reinforced concrete. The supplier of the lightweight concrete aggregate shall execute a certificate indicating its conformance to ASTM C330 and C332.

18. Access floor shall be designed to support their own dead load, plus a minimum uniformly distributed live load as shown in Table 1 (which includes a 10 lbs/sq. ft. uniformly distributed partition load. In addition, an access floor shall be designed to support a 2000 lb. concentrated load placed upon any 2 ½ sq. ft. space whenever this load upon an otherwise unloaded floor would produce stresses greater than those caused by the required uniform live load.

19. The access floor shall be designed for a minimum seismic force in accordance with Section 13.3 and 13.5.7 of the ASCE-7-16.

20. The allowable overturning moment for each pedestal and anchorage method shall be per attached Table 2. Where mechanical anchors are used, pedestals shall be anchored to the building floor system by approved devices with current LARR; the minimum embedment for mechanical anchors is 2" into 2500 psi concrete.

21. The system is identified by the manufacturer’s product name on each of the containers.

Table 1
Minimum Uniformly Distributed Live Loads

Area	Minimum Live Load (lbs./sq. ft.)
General Office Area	50
Computer Floor	100
Corridor	100

Table 2
Allowable Overturning Moment for Pedestals

Base Type	Anchorage		
	Adhesive anchored to concrete		Mechanically anchored To concrete (in-lbf)
	Envirotec 105 (in-lbf)	Seal-Bond 95 (in-lbf)	
Global Integrated Flooring Solution Standard	242	418	538
Global Integrated Flooring Solution "Type 1"	581	844	831

B. Access floors used in computer rooms shall comply with the following additional requirements:

1. The installation of unenclosed conductors located below the raised floors is limited to computer circuits and power circuits servicing the computer equipment.

2. Heating and Ventilation: where the underfloor area is used as a conditioned air supply plenum and unenclosed data processing electrical wiring or necessary communication cable is contained therein, the entire underfloor area shall be sprinklered or provided with a special fire-extinguishing system that is acceptable to the Los Angeles City Fire Department. No combustible material, except as specified herein, shall be exposed within this air plenum.

C. Raised computer room floor air plenums shall comply with the following additional requirements:

1. Only listed wiring that is permitted by Article 645 of the Los Angeles Electrical Code and listed communication cable associated with the computer equipment shall be located within the raised floor plenum.

2. Ventilation, comfort heating or air conditioning duct systems serving the Computer room shall not serve any other portion of the building.

   EXCEPTION: This requirement shall not apply if:

   - The raised floor plenum area has a fire suppression system that is approved by the Los Angeles Department of Fire, or

   -All air duct inlets and outlets serving the computer room are provided with smoke control dampers to isolate the computer room from other areas.

   - Listed combustion products type smoke detectors shall be installed in the computer room ceiling at spacings not exceeding 30 feet, or accessible listed duct type products of combustion smoke detectors shall be installed in the exhaust or return air ducts when smoke is detected, the smoke control dampers shall automatically close and the air handling units serving the raised computer room floor shall stop.

3. Rooms having raised floor plenums where the total plenum area exceeds 5000 square feet but not more than 10,000 square feet:

   a. Comply with the requirements specified in item 1 above.

   b. Listed combustion products type smoke detectors shall be installed in the raised floor plenum area at spacings not exceeding 30 feet. This detector system shall be so arranged that when products of combustion are detected, it will activate an audible alarm in the computer room and shut off the air handling units serving the raised computer room floor.

   c. Any room with the under floor space used as an air plenum shall be separated from any other portion of the building by a minimum of one-hour fire-resistive construction with all openings in such separation protected by a fire assembly or fire damper having a minimum of one-hour fire-resistive rating.

      EXCEPTION: These requirements shall not apply if the raised floor plenum area has a fire suppression system that is approved by the Los Angeles Fire Department.

4. Rooms, having raised floor plenums where the total plenum area exceeds 10,000 square feet, shall be provided with a fire suppression system that is approved by the Los Angeles City Fire Department.

DISCUSSION

The report is in compliance with the 2020 Los Angeles City building Code.

The approval is based on tests, shop drawings and descriptive literature on file with the Engineering Research Section.

This general approval of an equivalent alternate to the Code is only valid where an engineer and/or inspector of this Department has determined that all conditions of this approval have been met in the project in which it is to be used.

Addressee to whom this Research Report is issued is responsible for providing copies of it, complete with any attachments indicated, to architects, engineers and builders using items approved herein in design or construction which must be approved by Department of Building and Safety Engineers and Inspectors.

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