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Hy-Grade Precast Stairs and Landings Specification for Applications in U.S.

Quality Assurance

1. The precast concrete stairs shall be designed and fabricated by a fully experienced and recognized manufacturer of precast concrete stairs whose manufacturing plant and facilities are equipped for this type of work.
2. Manufacturer of precast stairs and landings shall document minimum five consecutive years of activity in the field and have successfully completed projects of similar size and complexity.
3. Manufacturer of precast stairs and landings shall be a member of the National Precast Concrete Association (NPCA).
4. Approved manufacturer: Hy-Grade Precast Concrete Products, Inc. (877)897-2730

Submittals

Prepare and submit fully detailed Shop Drawings, containing all pertinent information in regard to the fabrication and erection of the precast concrete stairs and landings including:

1. Shop drawings to be sealed by professional engineer licensed to practice in jurisdiction of project.
2. Location of each unit in the completed structure and identifying marks for each unit
3. Size and dimensions of each stair complete with connection details
4. Reinforcing details, grade of reinforcement, concrete strength and admixtures
5. Locations and details for lifting hooks and handling points
6. Sequence of erection and any special instructions that may be required in handling, setting and temporary bracing. Actual bracing shall be provided by contractor.

Materials

1. Concrete Compressive Strength (28 Days): 5000psi
2. Cement: Portland Cement, Gray, Conforming to the requirements of ASTM C 150, Type I or Type III, of same type, brand and source.
3. Aggregates: Conforming to the requirements of ASTM C33
4. Reinforcements: Conforming to the requirements of ASTM A 615, Grade 60. All reinforcing steel to be weldable.
5. Tolerances: Fabricated precast concrete units shall be straight and true to dimensions as approved in Shop Drawings.
6. Formwork: All forms shall be steel, accurately constructed, well braced and stiffened to avoid deformations under pressure of wet concrete and vibrators. The quality of forms shall be such that all dimensional tolerances and exposed concrete quality can be consistently maintained.

Fabrication

1. The steel forms shall be manufactured to produce raised non-slip continuous parallel ridges near the tread nosing.
2. The underside of all precast stairs shall have a smooth trowel finish. Screed finish is not acceptable.
3. Accurately set reinforcing steel and weld at intersections. Vibrate continuously during casting of concrete.



4. Bearing areas shall be reinforced against diagonal tension, splitting, rupture and flexure. Extra ties, stirrups and reinforcing bars shall be placed at support points.
5. Support precast stair units uniformly while curing. Keep a daily check to detect any development of warpage or other distortion. Rearrange supports as required to compensate for warpage or distortion.
6. Cast in lifting devices required for erection of the precast concrete stair units. Ensure that lifting devices used externally or cast into units are capable of supporting the precast units in all positions that the units may be in during course of manufacture, transportation and installation. Ultimate capacity of lifting devices shall be sufficient to resist forces obtained by applying load factor of 4:1.

Storage, Delivery, Handling and Protection

1. Proper lifting devices for the stair units shall be incorporated to ensure that they will be safely and efficiently handled and not produce distortion, cracking or deflection nor strain or adversely affect the units.
2. Precast stair units shall be handled and adequately protected during fabrication, curing, storage and transport by methods that will prevent damage, warping, cracking, breakage, chipping, staining or other disfigurement. Units shall not be permitted to contact the earth or other staining influences.
3. Repair chipped, checked, cracked, blemished or defective units.
4. Precast stair units shall be delivered to the site clearly marked in an acceptable manner as indicated on the Shop Drawings. Markings shall be on part of the unit which will not be exposed. The sequence of delivery to the site shall conform to an erection schedule. The timing of the delivery shall be scheduled to suit the storage space available and the handling and erection operations.

Erection

1. Erection of the precast stairs and landings, at the site, shall be by the contractor.
2. All work shall be executed using workers skilled in the trade of precast erection.
3. All stair and landing units shall be set plumb, true and square, with joints parallel and uniform, all in accordance with approved Shop Drawings.
4. Units shall be anchored securely and rigidly to supporting work.
5. Contractor (not precast manufacturer) shall provide and supply all anchors, fixing devices, supports, and misc. installation hardware necessary
6. Grout joints at supports with non-shrink grout. Non-shrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, Portland cement, shrinkage-compensating agents, plasticizing and water-reducing agents, complying with ASTM C 1107, of consistency suitable for application.
7. Patch holes at lifting hook locations, to match adjacent surfaces

Cleaning

1. Clean soiled precast concrete surfaces by approved means to satisfaction of consultant.
2. Repair units that have minor visual defects to the satisfaction of consultant.

Inspection and Testing

1. All inspection and testing as directed by consultant. Costs incurred for all inspection and testing shall be the responsibility of the contractor.