

HIGH EFFICIENCY SPECIFICATION

DIVISION 3

SECTION 3A CONCRETE

3A.01 GENERAL: Comply with all of the Contract Documents.

3A.02 SCOPE OF WORK: Refer to "Division Scope of Work"

3A.03 WORK NOT INCLUDED

A. The following items are excluded from the work of this Section:

1. Providing pre-cast concrete benches by Section 2B.
2. Providing pre-cast concrete planters by Section 2B.

3A.04 GENERAL REQUIREMENTS

A. All work shall be performed in strict compliance with ACI 318-89 codes and all other latest applicable laws and regulation of the Department of Buildings, or other City Agencies having jurisdiction.

3A.05 MATERIALS

A.	Cement	ASTM C-150 Type I or Type III.
B.	Normal weight concrete aggregate	ASTM C-33
C.	Lightweight Aggregate	ASTM C-330
D.	Air Entraining admixtures	ASTM C-260
E.	Water	Suitable for drinking
F.	Reinforcing Bars	ASTM A-615 grade 60
G.	Welded Wire Fabric	ASTM A-185
H.	Steel Wire	ASTM A-82
I.	Vapor Barrier	6 mil polyethylene
J.	Integral Waterproofing	"Super-Mix" - Concrete Service Materials Company
K.	Pre-cast Concrete	Pre-cast Concrete Institute

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(PCI) MNL-117 "Manual for Quality Control for Plants and Production of Pre-cast Concrete Products." 5000 psi low absorption reinforced with 1/2" steel rod.

L. Non-shrink Grout

CRD-C 621, Factory Pre-mixed Gout, non-metallic

3A.06 SUPERVISION AND TESTING

- A. Preliminary design mixes, plant and field testing and engineering supervision shall be provided or performed by laboratories and professional engineers licensed in the state of N.Y. paid for by the contractor and subject to the engineer's and Architect's approval. The contractor is to file all necessary inspection amendments.

3A.07 MIXING AND DEPOSITING

- A. All concrete shall be transit mixed. Mixing shall not start until directed by testing laboratory. All concrete shall be deposited within one half hours after starting of mixing. Mix at least 15 minutes. Comply with ASTM C-94.

3A.08 FORM WORK, PLACING CONCRETE, CURING AND FINISHING

- A. Design, install and maintain form-work to support loads that might be applied until such loads can be supported by the structure. Comply with requirements of ACI 347.
- B. Place concrete continuously to avoid cold joints. Place joints where shown on drawings or as directed by engineers. Use mechanical vibrators for compaction of concrete. Avoid disturbing freshly set concrete or placing loads on same.
- C. Steel trowel finishes are required on interior slab work. Provide a broom type finish or wood float finish on exterior flat work after steel troweling.
- D. Patch defective exposed concrete as necessary to attain acceptable finish.
- E. Keep concrete continuously moist for not less than seven days, comply with ACI 301 Procedures.
- F. Concrete shall not be placed when temperature is anticipated to be below 40 degrees and falling within 48 hours after pouring, comply with ACI-306 Procedures. For hot weather placing of concrete, comply with ACI-305 Procedures.

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3A.09 SLABS AND SIDEWALKS

- A. Sidewalks and steel curbs shall be placed in accordance with Department of Transportation, Bureau of Highway Operations requirements. Sidewalks shall be 4" thick, 3500 psi, air entrained concrete on 6" stone base. Embedded into concrete shall be welded wire fabric 6" x 6" x 10/10. Provide expansion joints wherever any concrete abuts building, piers or posts and shall be installed a maximum of twenty (20) feet on center. Testing shall be as per Department of Transportation, Bureau of Highway Operations requirements. All permits and fees are to be borne by contractor, as well as surveyor's costs.
- B. Site slab work shall be 4" thick min, 3500 psi, air entrained stone concrete on a 6" thick compacted gravel base over well compacted sub-base. Embedded into concrete shall be welded wire fabric 6" x 6" w2.9xw2.9. Provide expansion joints wherever any concrete abuts building, walls, piers or posts and shall be installed a maximum twenty (20) feet on center in both directions. Provide score joints six (6) feet on center in both directions.
- C. Provide expansion joint fillers and joint sealant for sidewalks and concrete site slab work.
- D. Interior concrete slab on grade shall be 4" thick, 3500 psi air entrained stone concrete with 6 mil vapor barrier of polyethylene over well compacted soil sub-base. Embedded into concrete shall be welded wire fabric 6" x 6" w1.4xw1.4

3A.10 PRE-CAST CONCRETE WINDOW SILLS AND COPING

- A. Pre-cast concrete sills and coping shall be 5000 psi concrete of low absorption. Members shall be cast to shapes, lengths and profiles to match existing window sills and coping. Pre-cast concrete shall be properly cured after casting before delivery to site and shall be delivered to site properly protected and in good condition. Submit samples to Architect. for approval.
- B. Pre-cast concrete shall approximate color and texture of existing window sills and coping.
- C. Provide two (2) 1/2" diameter brass dowels per unit for anchoring in place.
- D. All sills and coping shall be provided with two (2) #3 reinforcing bars for entire length.

3A.11 LIGHT WEIGHT CONCRETE FILL (for metal deck)

- A. Install 3" thick light weight concrete fill at new composite metal floor deck unless noted on plans. Fill shall consist of Portland cement, water and approved light weight aggregate as specified under materials. Weight of dry finished concrete shall be not more than 108 pounds per cubic feet and shall have a compressive strength of not less than 3,000 pounds per square inch at 28 days.

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- B. Fill shall be reinforced with 6 x 6 W2.9 x W2.9 welded wire fabric.
- C. Immediately prior to the placement of concrete, composite floor deck shall be thoroughly cleaned of all dirt, debris, oil or other foreign matter to insure intended mechanical interlock. Supports for screeds shall be located directly over permanent or temporary floor deck supports. Construction joints shall be made at the center of the slab span and shall be keyed.
- D. Do not commence placement of light weight concrete fill until design mix have been reviewed and approved by Architect and all Governmental Agencies have jurisdiction and until copies are at the job site, the batch plant and the building department.

3A.12 SUMP PUMP PIT

- A. Provide 18" x 18" x 18" deep sump pump pit in boiler room or as shown on drawings. Slab around pit is to be properly pitched to pit, to allow for completed runoff.

3A.13 MECHANICAL EQUIPMENT PADS

- A. Provide a 4" thick 3000 psi concrete pad for mechanical equipment. Pad for boiler shall be 125% of boiler base area. Pads shall be reinforced with #4 steel reinforcing rods, as shown in structural detail drawing. Coordinate pad size with mechanical contractors.

3A.14 SHOP DRAWINGS

- A. Submit shop drawings prepared by a New York state licensed professional engineer for all structural concrete work. No work should commence before approval of shop drawings.

3A.15 GUARANTEES

- A. Guarantee all items of work furnished and installed under this Section for (1) one year, in addition to manufacturer's standard warranties. All guarantees to be from the date, when **Final Certificate of Occupancy** is issued from Department of Buildings.

END OF SECTION