

ADDENDUM #1

Town of Wethersfield
Skate Park Concrete Repair
February 5, 2015 2 pm
#2015-15

SECTION 03300

CEMENT CONCRETE CAST IN PLACE

1. GENERAL

A. SUMMARY

1. This section specifies material and labor for furnishing, installing and finishing all concrete and related items.

B. RELATED DOCUMENTS

1. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this section.

C. QUALITY ASSURANCE

1. Concrete manufacturer is to be experienced in manufacturing ready-mixed concrete products complying with ASTM C94 Standard Specification for Ready-Mixed Concrete.
2. Concrete manufacturer must be certified according to the National Ready Mixed Concrete Association's Certification of Ready Mixed Concrete Production Facilities:
 1. Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, each aggregate from one source, and each admixture from the same manufacturer.
 2. All concrete reinforcing materials to be structurally sound, free of kinks, cracks, excess rust, or any other imperfections. Store all concrete reinforcing materials in a manner that prevents water damage, warping, corrosion, rusting and/or any other potential damages caused by exposure or construction activities.
 3. All concrete retaining wall forming materials to be structurally sound, free of voids, cracks, separations, splintering, splitting or any other imperfections. Forming material lengths shall be maximized to minimize concrete seams as is practical. Contractor shall incur all costs for the removal, replacement and delivery of damaged joint filler strips rejected by the Owner. The Contractor shall incur all costs associated with delays due to the rejection of any damaged joint filler strips by the Owner.

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II. MATERIALS

A. CONCRETE RETAINING WALL FORMING MATERIAL

1. Form all faces with 3/4" exterior grade plywood or better.
2. Frame all forming with 2"x4" structural framing grade pine or better.
3. Form-release agent to be a commercially formulated agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
4. Form ties to be factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
5. Furnish form ties that, when removed, will leave no corrodible metal closer than 1-1/2 inch (37.5 mm) to the plane of the exposed concrete surface.
6. Furnish form ties that, when removed, will leave holes not larger than 1 inch (25 mm) in diameter in concrete surface.

B. CAST-IN-PLACE CONCRETE FORMING MATERIALS

1. Form all faces with 3/4" exterior grade plywood or 3/4" pine board or better.
2. Frame all forming with 2" x 4" structural framing grade pine or better.
3. Form-release agent to be a commercially formulated agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
4. For item identified as "trash barrel" utilize 2-foot diameter Sonotube or equal paper form to create a likeness of a 55-gallon drum. Fill form with concrete, and remove the paper form before placing object.

C. CONCRETE REINFORCING

1. Steel reinforcing bar to be Grade 60 deformed as specified in ASTM A615/A 615M Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

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2. Steel carry and/or tie wire to be 40 gauge (AWG), commercially produced and comply with ASTM A82 Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.

D. ADMIXTURES

1. Concrete air-entraining admixture is to be a commercially produced agent and is to comply with ASTM C260 Standard Specification for Air-Entraining Admixtures for Concrete.
2. Concrete retarding admixture is to be commercially produced agent and is to comply with C494 Standard Specification for Chemical Admixtures for Concrete.

E. CONCRETE TREATMENT

1. Concrete treatment agent is to be Kaufman Sure Cure 25 or better. Concrete treatment is to be a commercially produced agent and is to comply with ASTM C1315 Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
2. Concrete bonding agent is to be commercially produced and it to comply with ASTM C1059 Standard Specification for Latex Agents for Bonding Fresh To Hardened Concrete.

F. CONCRETE

1. Type II Portland cement as specified in ASTM C150 Standard Specification for Portland Cement.
2. Silica Fume as specified in ASTM C1240 Standard Specification for Use of Silica Fume for Use as a Mineral Admixture in Hydraulic-Cement Concrete, Mortar, and Grout.
3. Aggregate is to be clean, hard and free of dirt, silt, clay, coal, mica, salts, and organic matter and to comply with ASTM C33 Standard Specification for Concrete Aggregates.
4. Water is to be clean and free from acids, alkalis, oils, and organic materials and is to comply with ASTM C94 Standard Specification for Ready-Mixed Concrete.

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5. The Contractor shall be responsible for requesting that retarding admixture be added to concrete batches directly from the concrete supplier.
6. The Contractor shall be responsible for specifying concrete slumps directly to the concrete manufacturer.

CONCRETE MIX DESIGN

Pour Type	Compression Strength (psi)	Max. Aggregate Size	Min. Aggregate Size	Cement (Sack/yd)	Air Entraining (%)	Retarding Admixture	Max. Slump (in)	Min. Slump (in)
Retaining Wall	4,000	3/4"	Class 3S	6.5 Sack	8	As Requested	7	5
Flat Work	4,000	3/4"	Class 3S	6.5 Sack	5	As Requested	5	2
Shotcrete (Pumped)	4,000	3/8"	Class 3S	7.5 Sack	3	As Requested	4	2

III. EXECUTION**A. EQUIPMENT**

1. The concrete vibrating equipment shall be selected by the Contractor, and shall be capable of consistently achieving the specified placement requirements. The selected concrete vibrating equipment shall meet the following minimum requirements:
 - a. Manually operated motorized concrete vibrator with a vibration frequency no less than 10,000 cycles per minute and a 1-1/2" diameter head minimum.

B. REINFORCEMENT FABRICATING**1. GENERAL**

- a. Rebar cage shall be 12" on center vertically and horizontally.
- b. Re-bar shall be centered to between concrete surface and Substrate.

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- c. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain required concrete cover.
- d. The maximum spacing of reinforcing rods is 1'-0" on center each way.
- e. Do not install reinforcement into previously placed concrete.
- f. Set wire ties at all reinforcing rod intersections.
- g. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- h. Over lap reinforcing rods a minimum of 2'-0" each way at all seams unless otherwise noted.
- i. Upright rebars shall be welded to steel coping no less than every 2'-0".

B. FORMS AND GUIDES

1. Sufficiently install all forms to prevent warping or other damage that may impair their usefulness and effectiveness.
2. Set forms so that all seams will be flush.

C. DRAIN INLETS

1. Install drain inlets where specified and in accordance with manufacturers directions.
2. Install all drain inlets so that the exposed edge matches adjacent finished grades.

D. CONCRETE PLACEMENT

1. GENERAL

- a. Remove all debris and loose fill in the area to be poured before placement begins.
- b. Apply water to all surfaces which concrete are to be poured against. Puddling, ponding and flooding are not permitted.
- c. Place all concrete to be free of voids or other imperfections that may impair its usefulness and effectiveness.

2. RETAINING WALLS

- a. Place all concrete in 1'-4" lifts maximum.

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- b. Fully penetrate each lift with a concrete vibrator a minimum of one minute per five lineal feet of all 8" walls before placing any concrete on top of such concrete or finishing activities for such concrete begin.
 - c. Where angled steel coping is present, place and finish concrete to be flush to coping along all vertical face of coping. Place and finish concrete to match all exposed edges of concrete as specified and to free of voids between concrete and said coping.
 - d. Where steel pipe coping is present, place concrete to embed coping a halfway. Slope top of concrete shelf approximately 30° away from coping to allow for drainage to flow away from the adjoining skate surface and coping. Top of concrete shelf to be a minimum of 1" below finish grade of adjoining deck.
3. SKATE STRUCTURES
- a. Use a Shotcrete method for placing concrete in areas over 5'-0" high, as measured from the toe plate of the same skate structure and along a common plane which is perpendicular to that toe.
 - b. Place concrete to thoroughly fill unexposed side of reinforcing before placing concrete against exposed surface side of reinforcing.
 - c. Place concrete as accurately as is logically possible to prevent the need for excess shaping efforts.
 - d. Continuously work concrete against sub-grade, using forms and guides to shape the concrete as specified and to prevent settling throughout the placement, curing and finishing process.
 - e. Remove concrete guides within first hour of concrete being poured. Fill voids left with fresh concrete from a common source. Thoroughly work fresh concrete into all voids left by removed guides.
 - f. Where steel pipe coping is present, place concrete to embed coping a halfway. Slope top of concrete shelf approximately 30° away from coping to allow for drainage to flow away from the adjoining skate surface and coping. Top of concrete shelf to be a minimum of 1" below finish grade of adjoining deck.

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- g. For item identified as "trash barrel" utilize 2-foot diameter Sonotube or equal paper form to create a likeness of a 55-gallon drum. Fill form with concrete, and remove the paper form before placing object.

E. CONCRETE FINISHING AND CURING

1. GENERAL

- a. Complete shaping all concrete to allow for necessary finishing time. Finished concrete surfaces to be accurate and true to all dimensions shown. Finished surfaces may not vary from dimensions shown.
- b. Finished skate surfaces to be free of kinks, voids or other abrupt changes in grade, unless otherwise noted, that would impair its usefulness or effectiveness as a finished skate surface.

2. COPING

- a. Where steel pipe coping is present, place and finish concrete to be directly against coping along all embedded coping edges. Place and finish concrete to form a continuous and straight line along embedded coping and to be free of voids between concrete and said coping.
- b. Where angled steel coping is present, place and finish concrete to be directly against coping along all embedded coping edges. Place and finish concrete to match all exposed edges of concrete as specified and to be free of voids between concrete and said coping.

3. VAPOR RETARDING

- a. Concrete to remain wet for no less than 24 hours immediately following placement. Following finishing and sealing activities apply water until puddling occurs. Where concrete is not level, consistently apply water to keep all newly poured concrete free of visibly dry areas.
- b. Following finishing, sealing and watering activities completely newly poured concrete with nonporous polyethylene tarp or better. All newly poured concrete to remain covered, except for watering activities, for no less than 24 hours immediately following placement.

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4. CURING SEALANT

- a. Apply concrete sealing agent to all exposed concrete surfaces as specified by manufacturer.
- b. Apply concrete sealing agent no more than 2 hours after finishing activities cease.

5. CAULKING

- a. All seams, cracks, voids, other imperfections or areas designated by the Owner to be completely filled with caulking.
- b. Apply caulking as specified by manufacturer.
- c. Apply caulking to be flush with adjoining surfaces. Clean concrete or coping of all excess caulking.

F. WARRANTY PERIOD

1. Contractor to warrant entire work for a period of one (1) year.
2. The contractor shall include in the warranty period a visual inspection every three (3) months concerning the condition of the concrete skate surface and make any and all repairs required, including:
 - a. Curing Sealant:
 - 1) Apply concrete sealing agent to all exposed concrete surfaces as specified by manufacturer.
 - 2) Apply concrete sealing agent a minimum of two (2) times during the warranty period.
 - b. Caulking:
 - 1) All seams, cracks, voids, other imperfections or areas designated by the Owner to be completely filled with caulking.
 - 2) Apply caulking as specified by manufacturer.
 - 3) Apply caulking to be flush with adjoining surfaces. Clean concrete or coping of all excess caulking.

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3. Provide the Town of Wethersfield with a maintenance booklet recommending procedures to be undertaken for continued maintenance of the skate park.

END OF SECTION