

PURCHASE COLLEGE

STATE UNIVERSITY OF NEW YORK

735 ANDERSON HILL RD PURCHASE, NY 10577-1400



CONSULTING ENGINEERS

AVON PARK NORTH
200 FISHER DRIVE
AVON, CT 06001

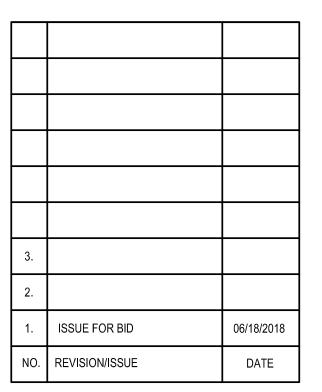
TEL: 860.677.4570
szewczakassociates.com

TAGE CONSULTANT

STAGES

300 Raritan Ave, 2nd Flr 732.333.8003

Highland Park, NJ 08904 stagesconsultants.com



INTERIOR
RENOVATION
MUSIC SOUND STAGE
RIGGING

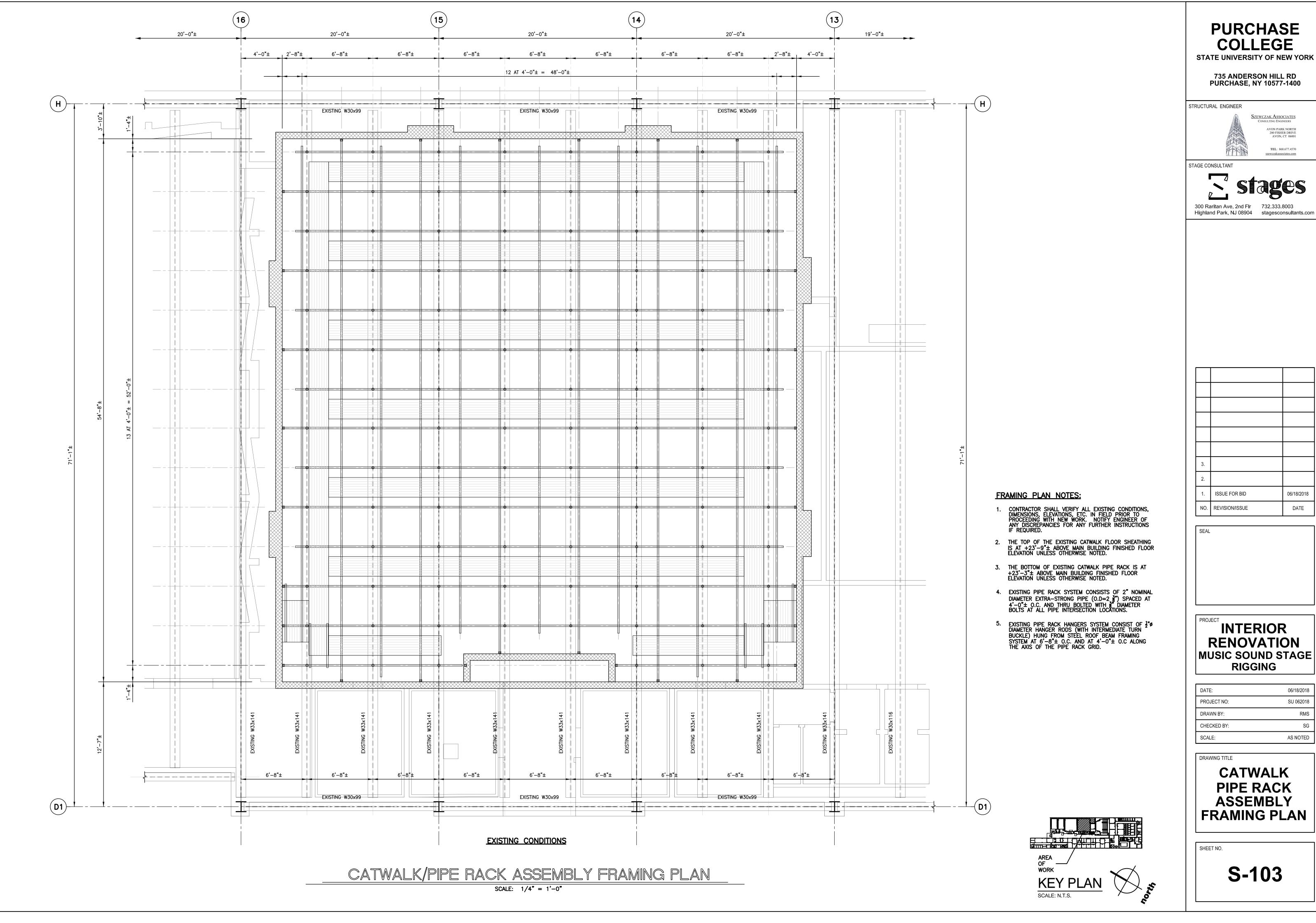
DATE:	06/18/2018
PROJECT NO:	SU 062018
DRAWN BY:	RMS
CHECKED BY:	SG
SCALE:	AS NOTED

DRAWING TITLE

STAGE RIGGING
PIPE RACK
DRAPERY TRACK
FRAMING PLAN

SHEET NO.

S-102



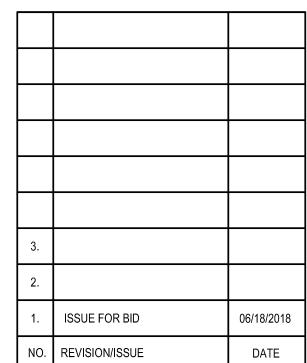
PURCHASE COLLEGE

STATE UNIVERSITY OF NEW YORK

735 ANDERSON HILL RD PURCHASE, NY 10577-1400

STRUCTURAL ENGINEER





INTERIOR RENOVATION MUSIC SOUND STAGE RIGGING

DATE:	06/18/2018
PROJECT NO:	SU 062018
DRAWN BY:	RMS
CHECKED BY:	SG
SCALE:	AS NOTED

DRAWING TITLE

CATWALK PIPE RACK **ASSEMBLY** FRAMING PLAN

SHEET NO.

S-103

SECTION 032004 CONCRETE REINFORCEMENT

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201—2007, "The General Conditions of the Contract for Construction,", the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work. Note also all Addenda.
- B. The General Provisions of the Contract, including the General and Supplementary Conditions, apply to the work specified in this Section.

1.2 DESCRIPTION OF WORK

A.Furnish all labor, supervision, materials, tools and equipment necessary for, or incidental to completion of the concrete reinforcement for cast—in—place concrete as shown on the Contract Drawings and/or specified.

1.3 RELATED WORK

A. Section 033004 - Cast-in-Place Concrete

1.4 QUALITY ASSURANCE

A. Allowable tolerances: Fabricating and placing tolerances as outlined in ACI 301, Section 3, except as modified by these specifications.

1.5 SUBMITTALS

A. Certificate

The manufacturer shall submit to the Engineer certified test results stating that the reinforcing steel and welded wire fabric conform to the chemical composition and tensile and bending requirements as outlined in ASTM A615 and ASTM A185.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver reinforcement to the project site in bundles, marked with metal tags indicating bar size, grade and

B. Store reinforcing on skids or other supports above ground and protect from any damage or surface contamination, which would impair its bonding qualities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. All reinforcing bars shall conform to the requirements of ASTM A615, Grade 60.

B. Welded wire fabric shall conform to the requirements of ASTM A185.

C.Metal Accessories

1. Provide all spacers, chairs, ties, clips and other devices required for proper placement.

2.2 FABRICATIO

A.Bar reinforcing shall be fabricated cold to dimensions given on the Contract Drawings. Conform to ACI standards 318 and 315 for forming hooks and bends and for detailing, fabricating, and erecting reinforcement.

B.Reinforcing shall be accurately formed to dimensions on drawings, details and schedules within the following

Sheared Length ± 1 inch Stirrups, Ties and Spirals $\pm 1/2$ inch

All Other Bends±1/2 inch

C.Reinforcing shall be bent cold and shall not be straightened or bent in a manner that will injure the materials.

PART 3 - EXECUTION

3.1 INSPECTION

A. The Contractor shall notify the Engineer twenty—four (24) hours prior to placing concrete to inspect secured reinforcing. No concrete shall be placed until reinforcing has been inspected.

3.2 INSTALLATION

A. Placement

1. Reinforcement shall be free of paint, dirt, oil, or excessive scale or rust that might reduce its bond

2.Reinforcement shall be accurately placed and secured against displacement before and during the placing of concrete. Provide metal chairs, supports, and spacers to secure steel in correct horizontal and vertical position. Conform to "Recommended Practice for Placing Reinforcing Bars" (CRSI) in spacing of bolsters for slab and beam bottom reinforcing and in spacing of support bars on continuous high chairs for top slab reinforcement. The use of individual high chairs is prohibited.

3. Reinforcement shall stop at expansion joints and continue through construction joints.

4. All reinforcing bars shall be supported and wired together to prevent displacement by construction loads or the placing of concrete beyond the tolerances specified below. Reinforcement shall be secured against displacement with annealed iron wire ties or suitable clips at all intersections, except reinforcing for footings may be wired at alternate intersections.

B. Cast-in-Place Concrete Reinforcing Cover

1. Slabs:

a. Not exposed to weather or in contact with the ground 3/4"

b. Exposed to weather or in contact with the ground

D. Splicing

1. Lap splices—tie securely with wire to prevent displacement during placement of concrete.

E. Welded Wire Fabric

1. Fabric shall be shipped in flat sheets.

2. Wire fabric end and side laps shall be even multiple of wiring spacing and shall be not less than six (6") inches.

3. Wire fabric reinforcement for structural slabs shall be supported on continuous high chairs at all slab support member locations.

4. Wire fabric reinforcement for slabs shall be placed in the upper third of slab depth.

5. Wire fabric for slabs on grade shall be supported on suitable supports at a spacing not to exceed four feet zero inch (4'-0'') on center.

END OF SECTION 032004

SECTION 033004 - CAST-IN-PLACE CONCRETE

B. Work shall include all slabs shown on the Contract Drawings.

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A.Instructions to Bidders, AIA Document A201—2007, "The General Conditions of the Contract for Construction,", the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work. Note also all Addenda.

B. The General Provisions of the Contract, including the General and Supplementary Conditions, apply to the work specified in this Section.

1.2 DESCRIPTION OF WORK

A.Furnish all labor, supervision, materials, tools and equipment necessary for or reasonably incidental to completion of all cast_in_place concrete as shown on the Contract Drawings and/or specified herein.

1.3 RELATED WORK

A. Section 03 20 04 - Concrete Reinforcement

1.4 QUALITY ASSURANCE

THE GOVERN NOOD

Concrete work shall conform to all requirements of ACI-301 "Specifications for Structural Concrete" latest edition.
 Design of concrete shall conform to all requirements of ACI-318 "Building Code Requirements for Structural Concrete"

B. Testing Agency

1. The Owner will engage and pay for an independent commercial testing laboratory to test concrete used on this

2. Testing required under Section 2.2, Proportions, shall be by an independent commercial laboratory as approved by the Engineer, and at the Contractor's expense.

C.Quality Control

1. Compression Tests

a. Tests shall be made in conformance with ASTM C39. Each test shall consist of four (4) cylinders made and tested by the laboratory during the progress of the project, testing as follows:

i. One (1) — after curing seven (7) days in the field.

ii. Three (3) — after curing twenty—eight (28) days in the laboratory.

b. At least one (1) test shall be made every one hundred (100 cy) cubic yards of concrete or fraction thereof, placed in any one concreting operation on any given day.

c.Concrete for each set of cylinders shall be from any one (1) sample, representative of the entire batch.

d. Specimens shall be made, cured and tested in accordance with ASTM C31.

e. When concrete is pumped, test cylinders shall be made from concrete taken at the discharge end of the pumping train.

2. Additional tests as follows shall be made from the concrete taken to mold the cylinders.

a.Slump test: in accordance with ASM C143.

b. Air_entrainment test: in accordance with ASTM C173 or ASTM C231.

3. The Contractor shall notify the Engineer and the testing laboratory twenty—four (24) hours before concrete placement and shall cooperate in making of cylinders by the testing laboratory.

1.5 STORAGE AND HANDLING

A. Store materials protected from exposure to harmful weather conditions and at a temperature above 40°Fahrenheit.

1.7 SUBMITTALS

A Test Renor

1. Report of tests shall be submitted to the Engineer and shall include: name of job, date and location of placement, class of concrete, mix data, and slump, air content, compressive strength, age and condition of test cylinders, weight of each cylinder tested for 7 day break, type of fracture, and method of curing.

2. One (1) copy of all test reports shall be promptly forwarded by the testing laboratory to the Engineer, plus one (1) copy each to the Architect, Contractor and Concrete Supplier.

B. Test Results

The average of the tests for any portion of the structure shall equal or exceed the specified twenty-eight (28) day compressive strength (fc).

2. No single strength test shall have a value less than 90% of the specified compressive strength (fc).

3. Where the concrete does not comply with these requirements, the Engineer may require other tests, such as cored cylinders (in conformance with ASTM C42) or load tests, all at the Contractor's expense. Should the concrete fail to pass such tests, it shall be removed and replaced at no additional cost to the Owner. In addition, the Contractor may be required to remove and replace sound portions of structure as necessary to insure safety, appearance, and durability of the structure. Additional load tests strengthening or removal and replacement of parts of structure and any costs associated with delay of projects shall be at Contractor's expense.

C. Concrete Proportions

1. See Section 2.2A thru 2.2J for additional requirements.

PART 2 - PRODUCTS 2.1 MATERIALS

A.Cement: domestic portland cement conforming to ASTM C150, Type I or Type II.

B. Fine aggregate: natural sand conforming to ASTM C33.

C.Coarse aggregate: crushed stone or crushed washed gravel conforming to ASTM C33.

D.Water: clean, potable

E. Admixtures: Each admixture shall be approved by the Engineer. No admixtures containing calcium chloride or other water soluble chlorides will be allowed. Each manufacturer shall submit a written notarized statement to the Engineer of the chloride content of each admixture. Formulate admixtures to avoid an increase in water—cement ratio or loss of strength.

1. Air entraining agent: ASTM C-260.

2.Retarder - Densifier: ASTM C-494, Type D.

3. Accelerator: ASTM C-494 Type C

4. Water-reducing agent: ASTM C-494, Type A.

F. Curing and sealing compound: Fed. Spec. TT-C-800A Type I, ASTM C-309.

G.Polyethylene film: white opaque, reinforced six (6) mils thick.

PART 2 - PRODUCTS Continued

2.2 PROPORTIONS

A. Concrete mix proportions shall be selected to produce an average compressive strength exceeding the required twenty—eight (28) day compressive strength (fc) in accordance with ACI 318 Chapter 5.3, proportioning on basis of field experience, or trial mixtures, or both. The Contractor shall submit to the Engineer the concrete strength to which the materials were proportioned, and copies of any records that the concrete supplier may have showing standard deviations in previous mixes.

B.Mix proportions shall be as outlined in ACI 301 Section 4 by the testing Jaboratory.

C. Where a concrete production facility has a record, based on at least thirty (30) consecutive strength tests that represent similar materials and conditions to those expected, required average compressive strength used as the basis for selecting concrete proportions shall exceed required fc at designated test age by at least:

- 400 psi if standard deviation is less than 300 psi 550 psi if standard deviation is 300 to 400 psi 700 psi if standard deviation is 400 to 500 psi 900 psi if standard deviation is 500 to 500 psi
- 900 psi if standard deviation is 500 to 600 psi

 1. If standard deviation exceeds 600 psi, concrete proportions shall be selected to produce an average strength at least
- D. Strength test data for determining standard deviation shall be considered to comply with Section 2.2C, if data represents either a group of at least thirty (30) consecutive tests or a statistical average for two (2) groups totaling
- E. Strength tests used to establish standard deviation shall represent concrete produced to meet a specified strength or strengths within 1000 psi of that specified for the proposed work.

F. Changes in materials and proportions within the population of background tests used to establish standard deviation shall not have been more closely restricted than for the proposed work.

G. After sufficient experience and test data become available from the job, using ACI 211 methods of evaluation, the standard deviation may be reduced when the probable frequency of tests more than 500 psi below required compressive strength will not exceed one in one hundred (1 in 100), and that probable frequency of an average of three (3) consecutive tests below required compressive strength will not exceed one in one hundred (1 in 100).

H.If it is intended to place any concrete by pumping, a corresponding mix shall be designed for such placement and so

I. No concrete shall be placed until tests of design mixes show a twenty—eight (28) day average compressive strength at least equal to the specified design compressive strength or until the concrete design mix proportions have been accepted by the Engineer.

J. Contractor shall submit the following data:

5. Admixture—types, brand and quantity.

1. Fine aggregate — organic content, sieve analysis, fineness modulus and specific gravity.

2. Coarse aggregate — sieve analysis and average weight loss in accordance with ASTM C-33.

3. Mix design, including cement brand, proportions of aggregate by weight, slump, water-cement ratio, percentage of air.4. Thirty (30) twenty-eight (28) day compressive test results on proposed mix that comply with Section 2.2C.

2.3 SPECIFIC REQUIREMENTS

A.Concrete for Interior Slabs shall also conform to the following requirements:

1. Mix shall include a mid—range water reducer such as Polyheed 997 as manufactured by Master Builders, Inc. or equivalent.

2. Mix shall be proportioned to provide a maximum 5" slump at point of discharge.

3.Interior concrete slabs—on—grade shall not be air entrained

4. Water to cement ratio shall not exceed 0.45.

3.2 MIXING

PART 3 — EXECUTION 3.1 PRIOR TO PLACING CONCRETE

B. Prior to placing any concrete, the Contractor shall notify the Engineer twenty—four (24) hours in advance so that reinforcing may be inspected. Do not place concrete until inspection has been made or waived.

A.Concrete shall be ready—mixed in conformance with the requirements of ASTM C94 for measurement of materials, batching, mixing and delivery, and shall be discharged within one and one—half (1 1/2) hours after water is first added to the mix except that in unusually but weather this maximum time may be reduced.

B. Mixing and conveying equipment shall be thoroughly clean and free from hardened concrete and foreign materials before concrete operation is started.C. All materials including water shall be added to ready_mixed concrete at the batching plant. Water shall not be added

to the mix on the project site. Mixing shall be continued for at least one and one—half (1 1/2) minutes prior to its use.

D.Mixer shall produce thoroughly mixed, uniform mass, and discharge mixture without segregation. Entire batch shall be discharged before mixer is recharged.

E. Partially hardened concrete shall not be retempered or used.

E. Partially hardened

3.2 MIXING - Continued F. Delivery Tickets

1. One (1) copy of all concrete delivery tickets shall be furnished to the Engineer on request. Contractor shall note on

tickets location of placement. Delivery tickets shall provide the following information:

a. Date and truck number
b. Name of ready—mix batch plant
c. Contractor and job location

e. Fine aggregate weight in pounds

f. Maximum size of aggregate g. Coarse aggregate weight in pounds h. Water in gallons

i. Admixture, name and amount in concrete, if any

j. Amount of conorete in cubic yards k. Time mix left plant

3.3 DEPOSITING CONCRETE

d. Cement brand, type mix number and weight in pounds

A. Depositing of all concrete shall be in accordance with ACI 304.

B. All Contractors whose work is related to the concrete or must be supported by it shall be given ample notice and opportunity to introduce and/or furnish embedded items before the concrete is placed.

C.Unless adequate protection is provided, and approved by the Engineer, concrete shall not be placed during rain, sleet, or snow.
 D.Concrete shall be conveyed from the mixer to the place of final deposit in a practically continuous flow by methods which will prevent the separation or loss of the ingredients. It shall be placed as nearly as practicable to its final

position and shall be thoroughly vibrated around all reinforcing bars and mesh to assure complete absence of voids. Under no circumstances shall partially hardened concrete be placed in the work.

E. Concrete may be pumped. Use of aluminum alloys in the pumping train is prohibited.

F. Concrete shall be thoroughly compacted and worked around the reinforcing by means of suitable mechanical vibrators. Sufficient vibrators shall be on hand to allow for breakdowns. Vibrators shall be run deep into the concrete and shall remain in one position until the concrete is thoroughly compacted, but not long enough to cause segregation of the

G.Concrete shall be deposited continuously, and in layers of such thickness that no concrete will be deposited on concrete which has hardened sufficiently to cause formation of seams and planes of weakness within section. If section cannot be placed continuously between planned construction joints, as specified, field joint and additional

reinforcement shall be introduced so as to preserve structural continuity. Engineer shall be notified in any such case.

3.5 CONSTRUCTION AND CONTROL JOINTS

A. Topping Slab

1. Sawcut control joints in slabs shall be saw cut within twenty—four (24) hours of concrete placement. Control joint shall be sawed to depth of one—quarter (1/4) of the slab thickness.

2. Unless otherwise shown on the Drawings, slabs on grade shall be broken down into sections with control and/or construction joints that do not exceed six hundred fifty (650 sf) square feet area and whose dimensions do not exceed a one and one half to one (1 1/2 to 1) ratio.

3.6 FINISHED CONCRETE SURFACES

B. Slabs Finishing

All interior concrete slabs shall be finished by screeding Notting, floated finish, and steel troweled to a smooth even surface in accordance with ACl 301, Section 5.3.4, unless otherwise noted.
 All exterior steps and slabs and interior slab scheduled for toppings shall be finished by screed floating, floated finish

and broom finish in accordance with ACl 301, Section 5.3.4.

3. Any slab surface finish not specified shall be finished in accordance with ACl 301, Section 5.3.4.2.j.

finishing.

5. Provide a positive pitch to all floor drains as shown. Pitch exterior slabs away from the building as shown on the

4.No dry cement or other materials shall be applied to surface of any concrete slab to absorb moisture prior to

6. Provide one—eighth (1/8") inch radius tooled edging at all exposed slabs and/or sidewalk edges.

7. Provide proper depression in concrete to accept specified finish floor materials.

3.8 CURING

A. All concrete shall be kept constantly moist and protected against any drying action for not less than seven (7) after placing of the concrete, and shall be accomplished in the following manner:

2. All slabs can be cured using curing compounds.

OF SECTION 033004 NOT IN CONTRACT

SECTION 051209 — ALL PURPOSE METAL FRAMING ("UNISTRUT") PART 1 — GENERAL

.1 RELATED DOCUMENTS

A.Instructions to Bidders, AIA Document A201—2007, "The General Conditions of the Contract for Construction,", the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work. Note also all Addenda.

A. Furnish all labor, supervision, materials, tools and equipment necessary for or reasonably incidental to completion of all

B. The General Provisions of the Contract, including the General and Supplementary Conditions, apply to the work specified in this Section.1.2 DESCRIPTION OF WORK

B. Work shall include all all purpose metal framing shown on the Contract Drawings. 1.3 ALL PURPOSE METAL FRAMING ("UNISTRUT")

NUTS WHICH ENGAGE THE INTURNED LIPS.

TO ASTM A307 AND SAE J429 GR2.

A. ALL PURPOSE METAL FRAMING CHANNELS AND CONTINUOUS INSERTS SHALL
BE ACCURATELY AND CAREFULLY COLD FORMED TO SIZE INDICATED FROM
LOW CARBON STRIP STEEL. ONE SIDE OF THE CHANNEL SHALL HAVE A
CONTINUOUS SLOT WITH INTURNED LIPS. ATTACHMENTS SHALL BE MADE
TO THE FRAMING MEMBER WITH THE USE OF HARDENED TOOTHED, SLOTTED

all purpose metal framing as shown on the Contract Drawings and/or specified herein.

B. STEEL MATERIAL SHALL CONFORM TO THE FOLLOWING ASTM SPECIFICATIONS: A570 GR 33. A446 GR A, A526, AND A366.

C. ALL PURPOSE METAL FRAMING FITTINGS, UNLESS NOTED OTHERWISE, SHALL BE PUNCH PRESS MADE FROM HOT ROLLED STEEL PLATES OR STRIP AND SHALL CONFORM TO ASTM A575.
 D. ALL PURPOSE METAL FRAMING NUTS SHALL BE MADE FROM STEEL BARS.

AFTER ALL MACHINING OPERATIONS ARE COMPLETED, THEY ARE TO BE THOROUGHLY CASE HARDENED. THEY SHALL BE RECTANGULAR WITH THE ENDS SO SHAPED AS TO PERMIT A QUARTER TURN CROSSWISE IN THE FRAMING MEMBER AFTER INSERTING THROUGH THE SLOTTED OPENING IN THE CHANNEL AND PREVENT ANY FUTHER TURNING OF THE NUT. TWO TOOTHED GROOVES IN THE TOP OF THE NUT ARE TO ENGAGE THE INTURNED LIPS OF THE CHANNEL AND, AFTER BOLTING OPERATIONS ARE COMPLETED, PREVENT ANY LONGITUDINAL MOVEMENT OF THE BOLT AND NUT WITHIN THE FRAMING MEMBER. ALL BOLTS AND NUTS SHALL HAVE UNIFIED AND AMERICAN COARSE SCREW THREADS. THE STANDARD FRAMING NUT SHALL BE 1/2" AND SHALL

E. ALL PURPOSE METAL FRAMING NUTS SHALL BE INSTALLED IN ACCORDANCE MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.

CONFORM TO ASTM 675 GR 60 (MATERIAL ONLY). SCREWS SHALL CONFORM

PURCHASE COLLEGE

STATE UNIVERSITY OF NEW YORK

735 ANDERSON HILL RD PURCHASE, NY 10577-1400

STRUCTURAL ENGINEER



szewczakassociates.com

STAGE CONSULTANT



300 Raritan Ave, 2nd Flr 732.333.8003 Highland Park, NJ 08904 stagesconsultants.com

3.
2.
1. ISSUE FOR BID 06/18/2018
NO. REVISION/ISSUE DATE

SEAL

INTERIOR
RENOVATION
MUSIC SOUND STAGE
RIGGING

DATE: 06/18/2018

PROJECT NO: SU 062018

DRAWN BY: RMS

CHECKED BY: SG

SCALE: AS NOTED

STRUCTURAL

SPECIFICATIONS

DRAWING TITLE

SHEET NO.

S-SPEC-01

NOT IN CONTRACT