UTAH COUNTY
PUBLIC WORKS DEPARTMENT
2855 South State Street
Provo, Utah 84606
(801) 851-8600

INVITATION TO BID
for
ADMINISTRATION BUILDING
NORTH STAIR REPLACEMENT

Bid # 2016-14R

CLOSING DATE FOR RECEIPT OF BIDS:	Wednesday, August 24, 2016
TIME:	3:00 p.m.(Mountain Time) Bids will be opened at 3:30 p.m.
PLACE:	Office of the Utah County Purchasing Agent 100 East Center Street Room 3600 Provo, Utah 84606

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1. INVITATION TO BID

1.1 INTENT

Through this Invitation to Bid (ITB), Utah County intends to select a qualified contractor to furnish and install replacement concrete stairs and landings and associated items as specified at the north entrance of the Utah County Administration Building, located at 100 East Center Street, Provo, Utah.

The Contractor shall furnish all labor, materials, equipment, tools, transportation and supplies required to complete the work in accordance with the terms hereof.

Pursuant to this ITB an agreement will be executed, a copy of which is attached as Attachment C.

1.2 PROCEDURE

A. The procedure for response to this ITB, evaluation of bids, and selection of a Contractor is as follows:
   1. Interested entities will prepare and submit their bids prior to the specified Closing Date for Receipt of Bids.
   2. Utah County and/or its representatives will evaluate all submitted bids to determine acceptance or rejection of the bids.
   3. The selected bidder(s) will be required to sign an agreement, a sample of which is included as Attachment C.

1.3 BID ORGANIZATION

A. Each respondent must submit its SEALED bid to the Utah County Purchasing Agent. The envelope containing the bid must be clearly labeled "SEALED BID - ADMIN BUILDING CONCRETE, BID # 2016-14R". The bid must be delivered to

   Utah County Purchasing Agent
   100 East Center, Room 3600
   Provo, Utah 84606

   LATE BIDS WILL NOT BE ACCEPTED EXCEPT AS SET FORTH IN UTAH COUNTY PROCUREMENT RULES AND REGULATIONS.

B. The bid must include:
   1. Completed Contractor's Cost Proposal (Exhibit B)
   2. Completed Contractor Information Form (Attachment A).
   3. Completed Certificate of Non Collusion (Attachment B).
   4. A copy of the bidder's current local business license.
   5. A copy of the bidder's current Contractor License issued by the Utah Department of Commerce, Division of Occupational and Professional Licensing.
   6. Proof of required insurance.
   7. Documentation from the County Treasurer of the bidder's county showing that bidder is current on its personal property taxes.

1.4 QUESTIONS AND CLARIFICATIONS

Questions regarding this ITB should be directed prior to the submission deadline date to :
Brady Christensen, Division Manager - Buildings & Grounds
Business Hours:Mon-Fri 8:00 a.m. to 5:00 p.m. Mountain Time
Telephone Number: (801) 851-8600

1.5 ACCEPTANCE OF BID

A. Utah County reserves the right to reject any or all bids or waive minor irregularities when to do so would be in the best interests of Utah County. Minor irregularities are those which will not have a significant adverse effect on overall competition or performance levels.

B. The responding party agrees that Utah County may terminate this procurement procedure at any time, and Utah County shall have no liability or responsibility to the responding party for any costs or expenses incurred in connection with this ITB, or such party's response.

1.6 DISQUALIFICATION OF BID

The occurrence of any of the following may result in disqualification of a bid:

A. Failure to respond within the established timetable.
B. Failure to completely answer all questions presented in the ITB.
C. Use of any other type of form or format other than those indicated in the ITB.
D. Failure to provide requested documentation at the time of bid submission.
E Illegible responses.
F. If the bidder adds any provisions reserving the right to accept or reject an award or to enter into an agreement pursuant to an award, or any other unauthorized conditions, limitations or provisions.
G. If the bidder is unable to evidence a satisfactory record of integrity.
H. If the bidder is not qualified legally to contract.
I. If the bid at the opening does not contain a signed bid, and a signed certificate of non-collusion.
J. Utah County reserves the right to reject any or all bids.

1.7 DISPOSITION OF BIDS

All bids (and the information contained therein) shall become the property of Utah County. No bid shall be returned to the respondent regardless of the outcome of the selection process.

1.8 EVALUATION CRITERIA

All bids will be evaluated by authorized representatives of Utah County for compliance with the terms and conditions contained in this ITB and the resulting agreement awarded to the lowest responsive and responsible bidder.

1.9 GENERAL

A. Utah County will award a contract in reliance upon the information contained in bids submitted in response to the ITB. Utah County will be legally bound only when and if there is a signed agreement entered into between Utah County and the awarded bidder.

B. It is vitally important that any person who signs a bid or agreement on behalf of a respondent certifies that he or she has the authority to so act. The bidder who has its bid accepted may be required to answer further questions and provide further clarification of its bid and responses.

C. Receiving this ITB or responding to it does not entitle any entity to participate in services or transactions resulting from or arising in connection with this ITB. Utah County shall have no liability to any person or entity under or in connection with this ITB, unless and until Utah County and such person have executed and entered into an agreement pursuant to the terms of this ITB.

D. By responding to this ITB each responding party acknowledges that neither Utah County nor any of its representatives is making or has made any representation or warranty, either express or implied, as to the accuracy or completeness of any portion of the information contained in this ITB. The responding party further agrees that neither Utah County nor any of its representatives shall have any liability to the responding party or any of its representatives as a result of this ITB process or the use of the information contained in this ITB. Only the terms and conditions contained in an agreement when, as, and if executed, and subject to such limitations and restrictions as may be specified therein, may be relied upon by the respondent in any manner as having any legal effect whatsoever.

1.10 INTERPRETATION OF ITB

The invalidity of any portion of this ITB shall not prevent the remainder from being carried into effect. Whenever the context of any provision shall require it, the singular number shall be held to include the plural number, and vice versa, and the use of any gender shall include all genders. The paragraph and section headings in this ITB are for convenience only and do not constitute a part of the provisions hereof.

1.11 PROPRIETARY INFORMATION

The Contractor shall mark proprietary information contained in the bid which is not to be disclosed to the public or used for purposes other than the evaluation of the bids. Pricing and service elements of the successful bid will not be considered proprietary.

1.12 RULES OF PROCUREMENT

A. This procurement shall conform to and is governed by The Utah County Division of Purchasing, Procurement Rules and Regulations.

B. For this procurement, all bids must be submitted in the bid format outlined herein.

C. All prospective bidders must meet the required criteria as of the date of submission. Respondents must provide all information requested in the Contractor Information Form.

D. Utah County has established certain requirements with respect to bids to be submitted by respondents. The use of "shall", "must", or "will", in this ITB indicates a requirement or condition from which a material deviation will not be approved by Utah County.

EXHIBIT A

A. SPECIFICATIONS

A.1 COMPLETION TIME

All work specified herein shall be completed prior to October 31, 2016:

A.2 REQUIRED EXPERIENCE

A. The Contractor must have a minimum of 3 years experience in the work specified herein. Proof of experience must be submitted with each bid.

B. Each bidder shall provide a list of at least 3 projects similar to this project, which are available for inspection by the County. The minimum information required may be supplied on the Contractor Information Form, however, bidders are encouraged to provide more detailed information, as they may see fit, with their bid submission.

C. The Contractor shall be the general contractor for the project and is required to have a Contractor License from the Utah Division of Occupational and Professional Licensing and a current local business license from the jurisdiction in which their business is located. A copy of the bidder's Contractor License and current local business license must be submitted with the bid.

A.3 BONDS

A. Before this contract is awarded by Utah County, the Contractor shall furnish to Utah County the following bonds:
   1. A performance bond satisfactory to County in an amount equal to 100% of the price specified in the contract, to assure the faithful performance of the contract, for the protection of Utah County, to be held until final acceptance by Utah County of all aspects of this project; and
   2. A payment bond satisfactory to the County in an amount equal to 100% of the price specified in the contract, for the protection of each person supplying labor, service, equipment, or material for the performance of the work provided for in the contract.

B. Each bond shall be:
   1. Biding upon the award of the contract;
   2. Executed by a surety company or companies duly authorized to do business in the State of Utah, or, in the form or cash or other certified funds.
   3. Payable to Utah County, A Body Corporate and Politic;
   4. Filed with the Utah County Public Works Department in a timely manner following the Closing date for Receipt of Bids.
   5. Increased if the contract price is increased by change order or otherwise subsequent to entering into the contract.

C. Utah County will hold the Payment Bond for 90 days subsequent to the completion of the project.

A.4 CHANGE ORDERS

A. Utah County may at any time, without notice to any sureties, by written order designated or indicated to be a change order, make changes to the work within the general scope of the contract and to the contract amount and/or contract deadlines.

B. The overhead, profit, and commission fees included in any change order bid shall not exceed the maximum percentages of the net cost of the bid as shown in the following table:

	Overhead & Profit	Commission
To prime Contractor on work performed by subcontractors	0%	10%
To prime Contractor or subcontractor for that portion of work performed with their respective forces	10%	0%

Only the Contractor or subcontractor who actually performs or furnishes the work may charge for overhead or profit regardless of the number of tiers of subcontractors, that is, the markup on work subcontracted by a subcontractor will be limited to one charge of 10% for overhead and profit and one charge of 10% for the prime Contractor's commission.

Overhead and profit includes, but is not limited to: estimating; field supervision above foreman level superintendents, assistant superintendents, general foremen, engineers, accountants, timekeepers, office manager, and other staff; office supplies; drinking water; temporary heat, light, and power; field toilets; small tools; and other costs of materials and/or equipment associated with performance of the contract.

On bids covering both increases and decreases in the contract amount, the overhead and profit shall be computed on the net change only.

C. Each change order shall be signed by the Contractor, the County Public Works Director, and the County Commission, and payment and performance bonds shall be increased by the Contractor to reflect any increase to the contract amount before the Contractor will be authorized to proceed with the work specified therein.
D. Failure of Contractor and the County to agree on an adjustment of contract amount or contract deadlines shall not excuse Contractor from proceeding with prosecution and performance of work. Contractor, subcontractors, and suppliers shall handle all disputes in a manner which will permit work to proceed on schedule while the matter in dispute is being resolved.
E. The County shall have the right within its sole discretion to require Contractor to commence performance of changes to work based on County requirements prior to the submission of a cost bid by the Contractor to the Project Coordinator, or approval of the cost bid by the County. In such case, Contractor shall proceed with the work so changed upon receipt of a Construction Change Directive from the County, and thereafter submit to the County as soon as possible any cost bid required.

A.5 PROJECT SPECIFICATIONS

A. Section 033000 CAST-IN-PLACE CONCRETE
B. Section 055213 PIPE AND TUBE RAILINGS
C. Project Drawing A2-0

SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general pr ovisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:

1. Footings.
2. Foundation walls.
3. Slabs-on-grade.
4. Exterior Stairs

B. Related Sections:

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, grou nd granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Design Mixtures: For each concret e mixture. Subm it alternate design m ixtures when characteristics of materi als, Project conditions, weather, test results, or other circumstances warrant adjustments.

1. Indicate amounts of mixing water to be withheld for later addition at Project site.

C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabricatio n, bending, and placement. Include bar sizes, lengths, materi al, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

D. Construction Joint Layou t: Indicate proposed construction joints required to construct the structure.

1. Location of construction joints is subject to approval of the Architect.

1.5 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Form materials and form-release agents.
4. Steel reinforcement and accessories.
5. Curing compounds.
6. Floor and slab treatments.
7. Bonding agents.
8. Adhesives.
9. Semirigid joint filler.
10. Joint-filler strips.
11. Repair materials.

C. Material Test Reports: For the f ollowing, from a qualified testing agency , indicating compliance with requirements:

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A qualified i nstaller who employs on Project personnel q ualified as ACI-certified Flatwork Technician and Finisher and a supervi sor who is an ACI-certified Concrete Flatwork Technician.

B. Manufacturer Qualifications: A firm experi enced in manufacturing read y-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according t o NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Testing Agency Qualifications: An independent agency, acceptable to authorities ha ving jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laborator y Testing Technician - Gra de I. Testing Agency

laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.

D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

E. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4/D 1.4M, "Structural Welding Code - Reinforcing Steel."

F. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301, "Specifications for Structural Concrete," Sections 1 through 5.
2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

G. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

1. Plywood, metal, or other approved panel materials.
2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:

B. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.

C. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.

D. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

E. Form Ties: 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.

1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.

2.2 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

B. Deformed-Steel Wire: ASTM A 496/A 496M.

C. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from as-drawn steel wire into flat sheets.

2.3 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.

B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.

2.4 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:

1. Portland Cement: ASTM C 150, Type I/V, gray. Supplement with the following:

a. Fly Ash: ASTM C 618, Class F.

B. Normal-Weight Aggregates: ASTM C 33, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.

1. Maximum Coarse-Aggregate Size: 3/4 inches nominal as indicated.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Water: ASTM C 94/C 94M and potable.

2.5 ADMIXTURES

A. Air-Entraining Admixture: ASTM C 260.

B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.6 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C 109/C 109M.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch and that can be filled in over a scarified surface to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109/C 109M.

2.7 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Fly Ash: 25 percent.
2. Combined Fly Ash and Pozzolan: 25 percent.
3. Ground Granulated Blast-Furnace Slag: 50 percent.
4. Combined Fly Ash or Pozzolan and Ground Granulated Blast-Furnace Slag: 50 percent portland cement minimum, with fly ash or pozzolan not exceeding 25 percent.
5. Silica Fume: 10 percent.
6. Combined Fly Ash, Pozzolans, and Silica Fume: 35 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.
7. Combined Fly Ash or Pozzolans, Ground Granulated Blast-Furnace Slag, and Silica Fume: 50 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.

C. Limit water-soluble, chloride-ion content in hardened concrete to 0.06 percent by weight of cement.

D. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

2.8 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Footings: Proportion normal-weight concrete mixture as indicated in the General Structural Notes.

B. Foundation Walls: Proportion normal-weight concrete mixture as indicated in the General Structural Notes.

C. Slabs-on-Grade: Proportion normal-weight concrete mixture as indicated in the General Structural Notes.

2.9 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.10 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:

1. Class A, 1/8 inch for smooth-formed finished surfaces.
2. Class B, 1/4 inch for rough-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

1. Install keyways, reglets, recesses, and the like, for easy removal.
2. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to

prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Chamfer exterior corners and edges of permanently exposed concrete.

I. Form openings, chases, offsets, sinkages, key ways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."

3.3 REMOVING AND REUSING FORMS

A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations and curing and protection operations need to be maintained.

1. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

B. Clean reinforcement of loose rust and mill scal e, earth, ice, and other foreign material s that would reduce bond to concrete.

C. Accurately position, support, and sec ure reinforcement against displace ment. Locate and support reinforcement with bar supp orts to main tain minimum concrete cover. Do not t ack weld crossing reinforcing bars.

1. Weld reinforcing bars according to AWS D1.4/D 1.4M, where indicated.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded wire reinforce ment in longest practicable lengths on bar supports spaced to minimize sagging. Lap ed ges and ends of adjoin ing sheets at le ast one mesh spacing. Offset laps of adjoining sheet widths to prevent continuo us laps in either direction. Lace overlaps w ith wire.

3.5 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of c oncrete are not im paired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforce ment through sides of strip placements of floors and slabs.
2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
3. Locate joints for beam s, slabs, joists, and gi rders in the m iddle third of spans. Offset joints in gir ders a minimum distance of twice the beam width from a beam-girder intersection.
4. Locate horizontal joints i n walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
5. Space vertical joints in walls as indicate d. Locate joints beside piers integral wi th walls, near corners, and in concealed locations where possible.
6. Use a bondi ng agent at l ocations where fresh concrete is placed against har dened or partially hardened concrete surfaces.
7. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Const ruct contraction joints for a depth equal to at least o ne-fourth of concrete thickness as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Section 079200 "Joint Sealants," are indicated.
3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.6 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

C. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Deposit concrete in horizontal layers of depth to not exceed for mwork design pressures and in a manner to avoid inclined construction joints.
2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time

necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

D. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
2. Maintain reinforcement in position on chairs during concrete placement.
3. Screed slab surfaces with a straightedge and strike off to correct elevations.
4. Slope surfaces uniformly to drains where required.
5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

E. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

F. Hot-Weather Placement: Comply with ACI 301 and as follows:

1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.7 FINISHING FORMED SURFACES

A. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces to be covered with a coating or covering material applied directly to concrete.

B. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.8 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

1. Apply float finish to surfaces to receive trowel finish.

B. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.9 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

3.10 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

a. Water.
b. Continuous water-fog spray.
c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

2. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.

3.11 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least one month(s). Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.12 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
6. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.13 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Inspections:

1. Steel reinforcement placement.
2. Verification of use of required design mixture.
3. Concrete placement, including conveying and depositing.
4. Verification of concrete strength before removal of shores and forms from beams and slabs.

C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
2. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.

    a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

3. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
4. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
5. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
6. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
7. Compression Test Specimens: ASTM C 31/C 31M.

a. Cast and laboratory cure at least two sets of two standard cylinder specimens for each composite sample.

8. Compressive-Strength Tests: ASTM C 39/C 39M; test one laboratory-cured specimens at 7 days and one set of two specimens at 28 days.

   a. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

9. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
10. Test results shall be reported in writing to Architect, Owner, Concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
11. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
12. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
13. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
14. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

D. Measure floor and slab flatness and levelness according to ASTM E 1155 within 48 hours of finishing.

END OF SECTION 033000

SECTION 055213 - PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general pr ovisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Steel pipe railings.

1.3 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop pri mers and topcoats are compatible with one another.

B. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sl eeves, concrete inserts, anchor bolts, and ite ms with integral anchors, that are to be embedded in concrete or masonry. Deliver such item s to Project site in time for installation.

C. Schedule installation so wall attach ments are made only to completed walls. Do not su pport railings temporarily by any means that do not satisfy structural performance requirements.

1.4 ACTION SUBMITTALS

A. Product Data: For the following:

1. Manufacturer's product lines of mechanically connected railings.
2. Railing brackets.
3. Grout, anchoring cement, and paint products.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

C. Samples: For each type of exposed finish required.

1. Sections of each distinctly different linear railing member, including handrails, top rails, posts, and balusters.
2. Fittings and brackets.

1.5 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.

C. Product Test Reports: For pipe and tube railings, for tests performed by a qualified testing agency, according to ASTM E 894 and ASTM E 935.

D. Evaluation Reports: For post-installed anchors from ICC-ES.

1.6 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."
3. AWS D1.6/D1.6M, "Structural Welding Code - Stainless Steel."

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

1.8 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain each type of railing from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Handrails and Top Rails of Guards:

a. Uniform load of 50 lbf/ ft. applied in any direction.
b. Concentrated load of 200 lbf applied in any direction.
c. Uniform and concentrated loads need not be assumed to act concurrently.

B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F.

2.3 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

1. Provide type of bracket with predrilled hole for exposed bolt anchorage and that provides 1-1/2-inch clearance from inside face of handrail to finished wall surface.

2.4 STEEL AND IRON

A. Pipe: ASTM A 53/A 53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.

B. Plates, Shapes, and Bars: ASTM A 36/A 36M.

C. Cast Iron: Either gray iron, ASTM A 48/A 48M, or malleable iron, ASTM A 47/A 47M, unless otherwise indicated.

2.5 FASTENERS

A. General: Provide the following:

1. Ungalvanized-Steel Railings: Plated steel fasteners complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5 for zinc coating.
2. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.

B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.

C. Fasteners for Interconnecting Railing Components:

1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless otherwise indicated.

2. Provide square or hex socket flat-head machine screws for exposed fasteners unless otherwise indicated.

D. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors capable of sustaining, without failure, a load equal to 6 times the load imposed when installed in unit masonry and 4 times the load imposed when installed in concrete, as determined by testing according to ASTM E 488/E 488M, conducted by a qualified independent testing agency.

1. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, unless otherwise indicated.
2. Material for Exterior Locations: Alloy Group 1, and nuts, ASTM F 594.

2.6 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Low-Emitting Materials: Paints and coatings shall comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

C. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.

1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

D. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

E. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.

1. Water-Resistant Product: At exterior locations provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

2.7 FABRICATION

A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.

B. Shop assemble railings to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units

for reassembly and coordinated installation. Use co nnections that maintain structural value of joined pieces.

C. Cut, drill, and punch m etals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indi cated. Remove sharp or rough areas on exposed surfaces.

D. Form work true to line and level with accurate angles and surfaces.

E. Fabricate connections that are exposed to weat her in a manner that excludes water. Provide weep holes where water may accumulate.

F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.

G. Connections: Fabricate railings with welded connections unless otherwise indicated.

H. Welded Connections: Cope co mponents at connec tions to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.

1. Use materials and methods that minimize distortion and develop st rength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove flux immediately.
4. At exposed connections, f inish exposed surfaces smooth and bl ended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.

I. Form Changes in Direction as Follows:

1. As detailed.
2. By bending.

J. For changes in direction made by bending, use jigs to produce uniform curvature for ea ch repetitive configuration r equired. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

K. Close exposed ends of railing members with prefabricated end fittings.

L. Provide wall returns at ends of wall- mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.

M. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, fl anges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.

N. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads im posed by railings. Coordinate anchorage devices with supporting structure.

2.8 STEEL AND IRON FINISHES

A. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."

B. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Shop, Field, and Maintenance Painting of Steel," for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.

A. Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

1. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Fit exposed connections together to form tight, hairline joints.

B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.

1. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
2. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.

C. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

D. Adjust railings before anchoring to ensure matching alignment at abutting joints.

E. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.2 RAILING CONNECTIONS

A. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.

3.3 ANCHORING POSTS

A. Anchor posts to metal surfaces with oval flanges, angle type, or floor type as required by conditions, connected to posts and to metal supporting members as follows:

1. For steel pipe railings, weld flanges to post and bolt to metal supporting surfaces.

3.4 ATTACHING RAILINGS

A. Anchor railing ends at walls with round flanges anchored to wall construction and welded to railing ends.

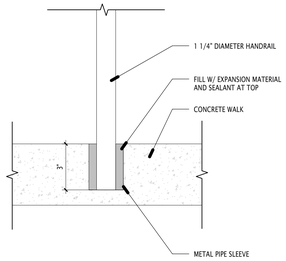
3.5 ADJUSTING AND CLEANING

A. Clean by washing thoroughly with clean water and soap and rinsing with clean water.

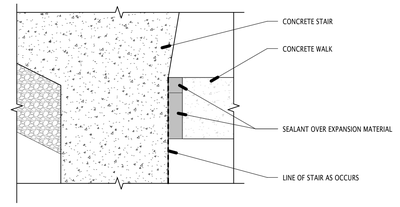
3.6 PROTECTION

A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

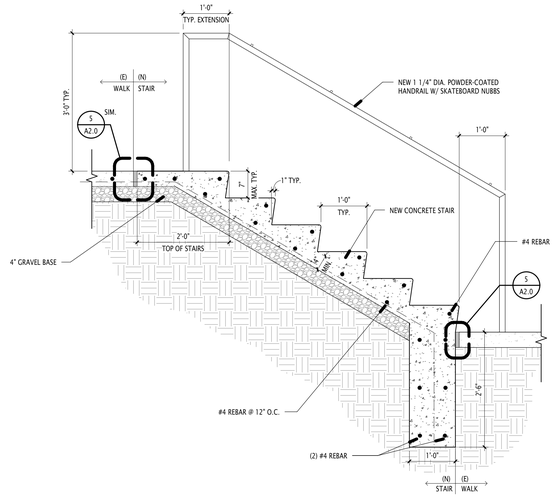
END OF SECTION 055213



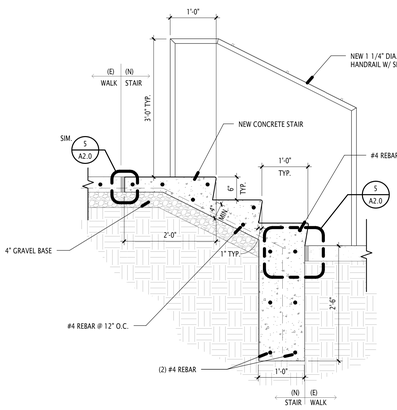
6 A2.0 RAIL IN SLEEVE
3" = 1'-0"



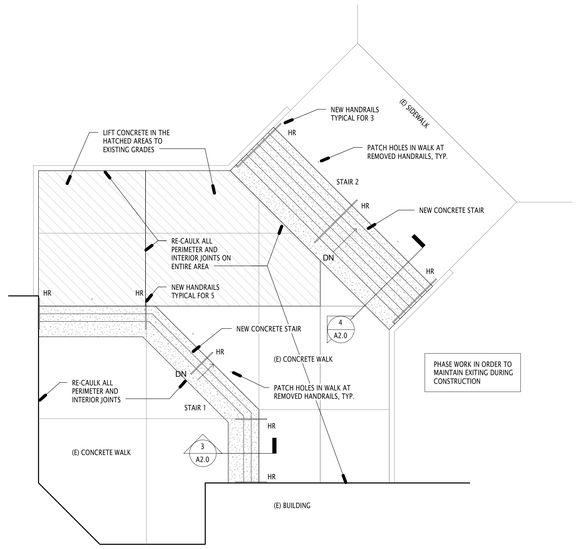
5 A2.0 EXPANSION JOINT DETAIL
3" = 1'-0"



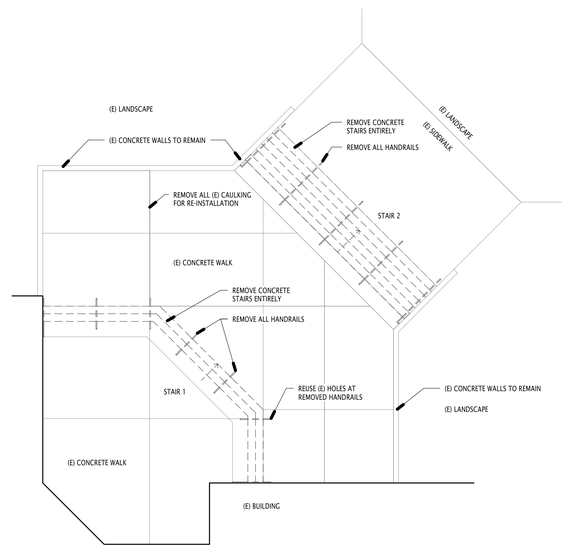
4 A2.0 STAIR 2 SECTION
3/4" = 1'-0"



3 A2.0 STAIR 1 SECTION
3/4" = 1'-0"



2 A2.0 REMODEL PLAN
1/8" = 1'-0"



1 A2.0 DEMOLITION PLAN
1/8" = 1'-0"

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REVISIONS:

UTAH COUNTY ADMINISTRATION BUILDING

100 EAST CENTER, PROVO, UTAH

UTAH COUNTY PUBLIC WORKS

2855 SOUTH STATE STREET PROVO, UTAH

OWNER PROJECT NO.:
GSBS PROJECT NO.: 2013.058.00
ISSUED DATE: 08/27/2014

STAIR REMODEL

A2.0

EXHIBIT B

CONTRACTOR'S COST PROPOSAL

1. LUMP SUM BID:

ITEM	TOTAL COST
Administration Building Concrete Replacement	$_____

2. CERTIFICATION OF BID:

I hereby certify that I have read, understand, and agree to all sections, Exhibits, and Attachments of this Invitation to Bid for Administration Building Concrete Replacement. I further certify that the information submitted by me/my company in response to this Invitation, including the pricing and other information, is true and accurate.

I understand that Utah County has the right to reject any or all bids, to waive minor irregularities when to do so would be in the best interests of Utah County, and to negotiate a price for the proposed services as determined to be in the best interest of Utah County.

_____
Signature

_____
Print name and Title

ATTACHMENT A

CONTRACTOR INFORMATION FORM

In order to receive consideration, submitted bids must contain responses to all questions.
Failure to respond to all questions may result in disqualification of the bid.

COMPANY NAME & ADDRESS: _____
_____
_____

Is this an Office:_____, Home:_____, Shop:_____, Other:_____
Telephone Number: (____) _____, Emergency Number: (____) _____.
Answering Machine: (____) _____, Fax Number: (____) _____ .
Email Address: _____

COMPANY OWNER: _____
COMPANY PRESIDENT: _____
CONTACT PERSON: _____ Phone:_____

Type of Company (Partnership, Corporation, Venture etc.): _____
_____
If a Corporation, in what State Incorporated: _____
Business License Number: _____
State of Utah Contractor License Number: _____
Federal Tax Identification Number: _____
D&B D-U-N-S Number: _____
How long has this company been in business: _____Years, and _____ Months.

Officers authorized to execute contracts: _____
_____
_____
What would happen to your company in the event of the owner's absence or death?
_____

Brief History of the Company: _____
_____
_____
_____

	YES	NO
Are there any judgments, suits or claims pending against your company? If Yes, attach a written explanation.	☐	☐
Has your company operated under any other name (s)? If Yes, attach a written explanation.	☐	☐

	YES	NO
Has your firm failed to complete a contract within the last five years? If "yes" attach explanation.	☐	☐
Has your firm or any partner or officers ever been involved in any bankruptcy action? If "yes" attach explanation.	☐	☐
Has your firm ever been listed on the Excluded Parties List System?	☐	☐
Are any of your firm's owners, officers, employees, or agents also employees of Utah County or related to any employees of Utah County If "yes" attach explanation.	☐	☐

FINANCIAL REFERENCES

1. Bank Name & Address _____
_____
_____
Manager _____ Phone _____

2. Bank Name & Address _____
_____
_____
Manager _____ Phone _____

CLIENT REFERENCES

1. Name: _____, Contact: _____
Address: _____, Phone: _____
_____
_____

2. Name: _____, Contact: _____
Address: _____, Phone: _____
_____
_____

3. Name: _____, Contact: _____
Address: _____, Phone: _____
_____
_____

4. Name: _____, Contact: _____
Address: _____, Phone: _____
_____
_____

ATTACHMENT B

CERTIFICATE OF NON-COLLUSION

STATE OF UTAH)
)SS
COUNTY OF UTAH)

Invitation to Bid
for
Administration Building Concrete Replacement

AFFIDAVIT

The undersigned of lawful age, being first duly sworn, disposes and says:
That as a condition precedent to the award of the Utah County project as above captioned,

I_____
(owner, partner, officer or delegate)

of_____do
(company)
solemnly swear that neither I, nor to the best of my knowledge any member or members of my firm or company have either directly or indirectly restrained free and competitive bidding on this project by entering into any agreement, participating in any collusion, or otherwise taking any action unauthorized by Utah County, with regard to this bid or potential agreement resulting therefrom.

_____
Contractor Signature

By: _____
Title: _____

****

Subscribed/sworn to before me this ____ day of _____ 2016A.D.
My Commission Expires _____
Residing at _____
_____ Seal
_____

By:_____
Notary Public

ATTACHMENT C

AGREEMENT

AGREEMENT NO. 2016-_____

AGREEMENT

THIS AGREEMENT is made and entered into this _____ day of August, 2016, by and between **UTAH COUNTY**, a body corporate and politic of the State of Utah, hereinafter referred to as the **COUNTY**, and **_____,** hereinafter referred to as **CONTRACTOR**.

WITNESSETH:

WHEREAS, COUNTY desires to obtain materials and services as herein defined and further to obtain such materials and services in accordance with Utah State Law; and

WHEREAS, CONTRACTOR is willing to provide such materials and services to COUNTY in consideration of receiving such fees as herein provided;

NOW, THEREFORE, in consideration of the mutual promises set forth herein, the parties hereto agree as follows:

1. DESCRIPTION OF WORK

In consideration of the compensation set forth in Section 2, the CONTRACTOR agrees to furnish all labor, materials, equipment, tools, transportation, and supplies required to complete the work as for COUNTY as set forth in the Specifications attached hereto as Exhibit A and the CONTRACTOR'S Cost Proposal attached hereto as Exhibit B, all of which are incorporated herein by this reference the same as if each and all had been set forth at length herein.

2. COMPENSATION

In exchange for services listed in Section 1, COUNTY will pay CONTRACTOR the applicable price stated in Exhibit B for items accepted by COUNTY which conforms to the Specifications in Exhibit A.

3. AMENDMENTS

No oral modifications or amendments to this Agreement shall be effective, but such may be modified or amended by a written agreement signed by the parties.

4. ALTERATION OF SPECIFICATIONS OR CHARACTER OF WORK

The County Commission, after recommendation by the County Public Works Director, reserves the right to make, at any time during the term of this Agreement, such increases

or decreases in quantities and such alterations in the details of the work, and the elimination of one or more items as may be found necessary or desirable and to adjust the contract price accordingly by change order. Such alterations shall not be considered as a waiver of nor release of any surety. CONTRACTOR agrees to accept the specifications as altered the same as if it had been a part of the original Agreement. CONTRACTOR shall proceed with the work alterations when ordered in writing. Financial increases to this Agreement must be approved by the County Commission before additional work is authorized and constructed.

5. ASSIGNMENT

The parties to this Agreement shall not assign said Agreement, or any part thereof, without the prior written consent of the other party to the Agreement. No assignment shall relieve the original parties from any liability hereunder.

6. AUTHORITY OF THE COUNTY COMMISSION AND THE COUNTY PUBLIC WORKS DIRECTOR

A. The County Commission and the County Public Works Director will decide all questions which may arise as to the quality, quantity and acceptability of materials furnished and work performed and as to the rate of progress of work. They will also decide all questions which may arise as to the acceptable fulfillment of the Agreement on the part of CONTRACTOR.

B. The County Commission or the County Public Works Director will have the authority by written order to suspend work wholly or in part due to the failure of CONTRACTOR to correct conditions unsafe for the workmen or general public, for failure to carry out provisions of the Agreement, for failure to carry out orders, for such periods as deemed necessary due to unsuitable weather, for conditions considered unsuitable for the progress of the work, or for any other condition or reason deemed to be in the public interest. Written orders shall state the reason for suspension.

7. EMPLOYMENT STATUS VERIFICATION

CONTRACTOR shall register and participate in the Status Verification System and comply with Utah Code Annotated Section 63G-11-103 of the Identity Documents and Verification Act. CONTRACTOR shall by contract require its contractors, subcontractors, contract employees, staffing agencies, or any contractors regardless of

their tier to register and participate in the Status Verification System and comply with Utah Code Annotated Section 63G-11-103 of the Identity Documents and Verification Act.

8. EXTRA WORK

Extra work shall be undertaken only when previously authorized in writing by Utah County and is defined as additional work which is neither shown nor defined in the Specifications. Miscellaneous items normally associated with the major work items shown, but which may not be specifically shown, shall be furnished by CONTRACTOR as if they had been shown, without additional cost to Utah County.

9. INDEMNIFICATION

CONTRACTOR shall defend, indemnify, save and hold harmless Utah County, its officers, employees, and agents, from and against any and all claims, demands, causes of action, orders, decrees, judgments, losses, damages, and liabilities (including all costs and attorney's fees incurred in defending any claim, demand, or cause of action) occasioned by, growing out of, or arising or resulting from (a) CONTRACTOR'S, its subcontractors, agents or employees performance of this Agreement or their provision of any services required herein to be performed by CONTRACTOR or its subcontractors, agents or employees, and (b) any act or omission of CONTRACTOR, or its subcontractors, agents or employees.

10. INDEPENDENT CONTRACTOR

A. CONTRACTOR states and affirms that it is acting as an independent contractor, holding itself out to the general public as an independent contractor for other work or contracts as it sees fit; that it advertises its services as it sees fit to the general public, maintains its office or place of employment separate from Utah County, and that this Agreement is not exclusive of other agreements, contracts or opportunities.

B. The parties intend that an independent contractor relationship will be created by this Agreement. Utah County is interested only in the results to be achieved, and the conduct and control of the work will lie solely with CONTRACTOR. CONTRACTOR is not to be considered an agent or employee of Utah County for any purpose, and the employees of CONTRACTOR are not entitled to any of the benefits that Utah County provides for County's employees. It is understood that

Utah County does not agree to use CONTRACTOR exclusively. It is further understood that CONTRACTOR is free to contract for similar services to be performed for others while working under the provisions of this Agreement with Utah County.

C. Both parties agree that CONTRACTOR shall be deemed an independent contractor in the performance of this Agreement, and shall comply with all laws regarding unemployment insurance, disability insurance, and workers' compensation. As such, CONTRACTOR shall have no authorization, express or implied, to bind Utah County to any agreement, settlement, liability, or understanding whatsoever, and agrees not to perform any acts as agent for Utah County. The compensation provided for herein shall be the total compensation payable hereunder by Utah County.

11. INSPECTION AND ACCEPTANCE

Utah County or its authorized representatives shall have the right to enter the premises of CONTRACTOR, or such other places where contract services are being performed, to inspect, audit, monitor or otherwise evaluate the services being provided and the financial records pertaining to the Agreement. CONTRACTOR must provide reasonable access to all facilities and assistance to Utah County or its authorized representatives.

12. INSURANCE

A. CONTRACTOR agrees to carry Commercial General Liability insurance coverage equal to or greater than $2,300,000 per occurrence or as modified by the risk manager pursuant to state statute during the term of this Agreement. This coverage shall provide liability insurance to cover the activities of CONTRACTOR including CONTRACTOR'S agents, employees and subcontractors, and for all equipment and vehicles, public or private, used in the performance of this Agreement. The successful bidder shall provide a Certificate of Insurance to Utah County evidencing that CONTRACTOR has this insurance in place and shall maintain said insurance for the duration of this Agreement.

B. CONTRACTOR shall furnish a Certificate of Insurance to COUNTY evidencing that CONTRACTOR has Workers Compensation Insurance for the CONTRACTOR, all subcontractors, and all employees of the CONTRACTOR and/or subcontractors.

13. INTERPRETATION OF AGREEMENT

The invalidity of any portion of this Agreement shall not prevent the remainder from being carried into effect. Whenever the context of any provision shall require it, the singular number shall be held to include the plural number, and vice versa, and the use of any gender shall include all genders. The paragraph and section headings in this Agreement are for convenience only and do not constitute a part of the provisions hereof.

14. KEYS

If it becomes necessary for the County to issue CONTRACTOR a key to County locks, final payment to CONTRACTOR will be held until the key has been returned and documented. It is illegal to duplicate County keys.

15. LEGAL

CONTRACTOR shall be responsible to provide all legal support for the project including but not limited to the preparation of contracts with subcontractors. This Agreement shall be interpreted pursuant to the laws of the State of Utah.

16. NO PRESUMPTION

Should any provision of this Agreement require judicial interpretation, the Court interpreting or construing the same shall not apply a presumption that the terms hereof shall be more strictly construed against a party, by reason of the rule of construction that a document is to be construed more strictly against the person who himself or through his agents prepared the same, it being acknowledged that all parties have participated in the preparation hereof.

17. NOTICES

All notices, demands and other communications required or permitted to be given hereunder shall be in writing and shall be deemed to have been properly given if delivered by hand or by certified mail, return receipt requested, postage paid, to the parties at their respective places of business, or at such other addresses as may be designated by notice given hereunder.

18. PAYMENTS

A. CONTRACTOR shall submit timely invoices for materials delivered to County. Upon verification of the validity of an invoice, County shall pay CONTRACTOR within 30 calendar day of receipt of the invoice.

B. Payment will be based upon verification of the actual quantities accepted by County which comply with these specifications.

C. Partial or progress payments shall not relieve CONTRACTOR of performance or obligations under this AGREEMENT, nor shall such payments be viewed as approval or acceptance of work performed.

D. The "Method of Measurement" and the "Basis of Payment" for all items shall be by the “Unit Price” specified by CONTRACTOR in the “Contractor’s Cost Proposal”.

19. SUCCESSORS IN INTEREST

This Agreement shall be binding upon the heirs, successors, administrators, and assigns of each of the parties thereto.

20. TERM

The term of this AGREEMENT shall commence upon execution hereof and shall terminate upon final payment by COUNTY as specified herein.

21. TERMINATION

A. The Agreement may be terminated for any reason by Utah County upon thirty (30) days written notice to CONTRACTOR, without prejudice to any other right or remedy Utah County may have.

B. Failure of CONTRACTOR to adhere to any of the performance requirements of the Agreement shall be cause for termination without prior notice.

C. The Agreement may be terminated for any reason by CONTRACTOR upon ninety (90) days written notice to Utah County.

22. WARRANTY

CONTRACTOR warrants to Utah County that all materials furnished under this Agreement will be new unless otherwise specified, and that all work will be of good quality, free from faults and defects and in conformance with this Agreement. All work and/or materials not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. If required by Utah County, CONTRACTOR shall furnish satisfactory evidence as to the kind and quality of materials.

23. ENTIRE AGREEMENT

This Agreement shall constitute the entire agreement between the parties and any prior understanding or representation of any kind preceding the date of this agreement shall not be binding upon either party except to the extent incorporated in this Agreement.

IN WITNESS WHEREOF the parties have caused this AGREEMENT to be duly executed on the date set forth above.

BOARD OF COUNTY COMMISSIONERS
UTAH COUNTY, UTAH

_____
LARRY ELLERTSON, Chairman

ATTEST:
BRYAN E. THOMPSON
County Auditor/Clerk

By: _____
Deputy

APPROVED AS TO FORM:
JEFFREY R. BUHMAN
Utah County Attorney

By: _____
Deputy County Attorney

CONTRACTOR

_____
By: