

SECTION 01 3220

PHOTOGRAPHIC DOCUMENTATION

PART 1 GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for the following:
1. Photographic Documentation:
 - a. Preconstruction photographs.
 - b. Periodic construction photographs.
 - c. Final Completion construction photographs.
 2. Site Photographs During Construction:
 - a. Contractor shall provide and pay for a minimum of three web-accessed site cameras, located as approved by the Architect, each taking one picture every 10 minutes until Substantial Completion.
 3. Site video:
 - a. Contractor shall provide live-streamed video access for the Architect to the entire site, operated by one of the Contractor's employees, in the event the site becomes inaccessible to the Architect due to pandemic, air quality (such as smoke from forest fires), and other events legitimately acknowledged as being outside of any human control.
 - b. Provide an HD camera enabled drone and operator during Architect's site visits to facilitate architect's review of construction.

1.2 SUBMITTALS

- A. Qualification Data: For photographer and web-based photographic documentation service provider.
- B. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include the same label information as the corresponding set of photographs.
- C. Digital Photographs: Within ten (10) days of taking digital photographs, the Contractor shall submit to the Architect a digital storage device with the digital photographs. On the device, the contractor shall identify each electronic file by title. The device shall be identified by project title, number and date of photographs.
1. Format: Unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.
 2. Identification: Provide the following information with each image description in file metadata tag:
 - a. Owner name.
 - b. Name of Project.
 - c. Architect's Project No.
 - d. Name of Contractor.
 - e. Name of Photographer.
 - f. Date photograph was taken.
 - g. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - h. Unique sequential identifier keyed to accompanying key plan.

1.3 QUALITY ASSURANCE

- A. Photographer Qualifications for Final Construction Photographs: An individual of established reputation who has been regularly engaged as a professional photographer for not less than three years.

1.4 COORDINATION

- A. Auxiliary Services: Cooperate with photographer and provide auxiliary services requested, including access to Project site and use of temporary facilities including temporary lighting.

1.5 USAGE RIGHTS

- A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

PART 2 PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

- A. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of 8.0 megapixels, and at an image resolution of not less than 3200 by 2400 pixels.
- B. Aerial Images: Provide aerial images in accordance with requirements for digital images above, captured by drone, building-mounted cameras, or a combination of those listed as acceptable to Architect.

2.2 SITE CAMERA REQUIREMENTS

- A. The Contractor shall be required to provide site cameras for the Work on Site.
 - 1. Provide fixed and controllable internationally accessible IP-based camera solutions with software interface and user priorities.
 - a. The system shall require data and power connections. The Contractor shall evaluate if the system needs additional power supply. Provide with the system the suitable software to combine the images into video clips at regular intervals and upon Final Completion at project close.
 - 2. Provide a draft maintenance contract, including daily cleaning, repairs, replacement and call-out charges and software support.
- B. Wireless Hand-Held Camera: The Contractor shall provide portable camera system capable of producing images complying with requirements in this Section, with wireless transmission to service provider's network enabling a live image stream viewable by multiple parties.
 - 1. Provide battery charger, spare battery pack, base station hub, and base station connections in a number and distribution adequate to enable wireless camera operation throughout the Site.
 - 2. Provide power supply, active high-speed data connection to service provider's network, and static public IP address at base station hub. Provide power supply, conduit, and data wiring between base station hub and base station connections.
- C. Web-Based Image Access: The Contractor shall supply password-protected access for Project team administered by Contractor, providing current image access and archival image access by date and time, with images downloadable to viewer's device.
 - 1. Provide public viewer open access to most recent project camera image.

2.3 COPYRIGHT, PATENT RIGHTS

- A. The copyright in any photographs for this project shall be vested in the Architect and Owner and shall not be reproduced elsewhere without the Architect's and Employer's/ Owners written permission.

PART 3 EXECUTION

3.1 PHOTOGRAPHS, GENERAL

- A. Photographer: Engage a qualified photographer to take final construction photographs; preconstruction and progress photographs may be taken by a non-professional competent in the operation of the camera(s). Date Stamp: Unless otherwise indicated, date and time stamp each photograph as it is being taken so stamp is integral to photograph.
 - 1. Take photographs with maximum depth of field and in focus.
 - 2. Maintain key plan with each set of construction photographs that identifies each photographic location.
- B. Indexing: Indexing and navigation system shall utilize actual construction drawings. For all documentation referenced herein, indexing and navigation must be organized by both time (date-stamped) and location throughout the project.
 - 1. Documentation shall combine indexing and navigation system with inspection-grade digital photography designed to capture actual conditions throughout construction and at critical milestones.

3.2 CONSTRUCTION PHOTOGRAPHS

- A. Preconstruction Photographs: Before commencement of the Work, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.
 - 1. Flag excavation areas and construction limits of each site before taking construction photographs.
 - 2. The building pad, adjacent streets, roadways, parkways, driveways, curbs, sidewalks, landscaping, adjacent utilities and adjacent structures surrounding the building pad and site shall be documented. Overlapping photographic techniques shall be used to ensure maximum coverage.
 - a. If site work or pad preparation is extensive, this documentation may be required immediately before construction and at several pre-determined intervals before building work commences.
 - 3. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.
- B. Concealed Work Photographs: Before proceeding with installing work that will conceal other work, take photographs sufficient in number, with annotated descriptions, to record nature and location of concealed Work, including, but not limited to, the following:
 - 1. Underground utilities.
 - 2. Underslab services.
 - 3. Piping.
 - 4. Electrical conduit.
 - 5. Waterproofing and weather-resistant barriers.

- C. Periodic Construction Photographs: At least 24 color progress photographs shall be taken biweekly. The actual number and location of views shall be directed by the Architect. Photographs shall be taken at the start and finish of various elements of construction designated by the Architect.
 - 1. Exterior Progressions shall track 360 degrees around the site and each building.
 - 2. Interior Progressions shall track interior improvements beginning when stud work commences and continuing until Project completion.
- D. Time-Lapse Sequence Construction Photographs: Take 24 photographs as indicated, to show status of construction and progress since last photographs were taken.
 - 1. Frequency: Take photographs bi-weekly, with timing each month adjusted to coincide with the cutoff date associated with each Application for Payment.
 - 2. Vantage Points: Following suggestions by Architect and Contractor, photographer shall select vantage points. During each of the following construction phases, take not less than five of the required shots from the same vantage point each time to create a time-lapse sequence as follows:
 - a. Exterior Work, through date of Substantial Completion.
 - b. Interior Work, through date of Substantial Completion.
- E. As-Built Construction Photographs:
 - 1. As-built condition of pre-foundation utilities and site utilities shall be documented prior to pouring footers, placing concrete and/or backfilling. This process shall include all underground and in-slab utilities within the building(s) envelope(s) and utility runs in the immediate vicinity of the building(s) envelope(s). This may also include utilities enclosed in slab-on-deck in multi-story buildings. Overlapping photographic techniques shall be used to insure maximum coverage.
 - 2. As-built conditions of mechanical, electrical, plumbing and all other systems shall be documented post-inspection and pre-insulation, sheet rock or dry wall installation. This process shall include all finished systems located in the walls and ceilings of all buildings at the Project. Overlapping photographic techniques shall be used to insure maximum coverage.
 - 3. As-built conditions of exterior skin and elevations shall be documented with an increased concentration of digital photographs as directed by the Architect in order to capture pre-determined focal points, such as waterproofing, window flashing, radiused steel work, architectural detailing, and the like. Overlapping photographic techniques shall be used to insure maximum coverage.
 - 4. As-built finished conditions of the interior of each building including floors, ceilings and walls shall be documented at certificate of occupancy or equivalent, as directed by the Architect. Overlapping photographic techniques shall be used to insure maximum coverage.
- F. Final Construction Photographs: Take 60 color photographs after date of Substantial Completion for submission as Project Record Documents. The Architect will direct photographer for desired vantage points.
 - 1. Prepare written text and photographic report of observations made during the inspections for project closeout regarding conditions of new work and adjacent items that were examined for the Pre-Condition of the Site Survey report. Identify any defects and the affect of Contractor operations on the defect. Submit electronically to the Architect within 10 days after the Final Inspection.
- G. Additional Photographs: The Architect may issue requests for additional photographs, in addition to periodic photographs specified. Additional photographs will be paid for by Change Order and

are not included in the Contract Sum.

1. Photographer will be given three days' notice, where feasible.
2. In emergency situations, photographer shall take additional photographs within 24 hours of request.
3. Circumstances that could require additional photographs include, but are not limited to, the following:
 - a. Special events planned at Project site.
 - b. Immediate follow-up when on-site events result in construction damage or losses.
 - c. Photographs to be taken at fabrication locations away from Project site. These photographs are not subject to unit prices.
 - d. Salvage materials prior to removal.
 - e. Substantial Completion of a major phase or component of the Work.
 - f. Extra record photographs at time of final acceptance.
 - g. Owner's request for special publicity photographs.

3.3 SITE CAMERA INSTALLATION

- A. All of the Site camera provisions shall be installed prior to commencement of Work on Site.
- B. The Contractor shall clean and maintain the camera and associated systems on a regular basis and until 2 months past the date the Architect issues the Performance Certificate to the Contractor. Refer to Section 01 4200 References for the definition of Performance Certificate.
- C. Theft Protection: The Contractor shall be responsible to protect the cameras from theft for the full duration of Work on the Site.

3.4 WEB-BASED CONSTRUCTION PHOTOGRAPHIC DOCUMENTATION REQUIREMENTS

- A. Live Streaming Construction Site Images: The Contractor shall provide Web-accessible image of current Site image from fixed location camera, updated at 15 minute intervals throughout the 24 hour day.
- B. Time-Lapse Sequence Construction Site Recordings: The Contractor shall provide video recording from a fixed-location camera to show status of construction and progress.
 1. Frequency: Record 1 No. frame of video recording every 60 minutes, from same vantage point each time, to create a time-lapse sequence of construction activities.
 2. Timer: Provide timer to automatically start and stop video recorder so recording occurs only during daylight construction work hours.
 3. Maintain cameras and Web-based access in good working order according to Web-based construction photographic documentation service provider's written instructions until Final Completion. Provide for service of cameras and related networking devices and software.
 4. Archive Requirements: The Contractor shall archive based on the manufacturer's recommendation.

END OF SECTION

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