

Request for Proposal UK-2177-22 Proposal Due Date – 08/13/2021

IT Infrastructure Upgrade W.T. Young Library



UNIVERSITY OF KENTUCKY Purchasing Division

REQUEST FOR PROPOSAL (RFP)

ATTENTION: This is not an order. Read all instructions, terms and conditions carefully.

PROPOSAL NO.: UK-2177-22 07/27/2021 Issue Date:

IT Infrastructure Upgrade - W.T. Young Library Title:

859-257-9102 / kesc245@uky.edu

Purchasing Officer: Ken Scott

Phone/Email:

RETURN ORIGINAL COPY OF PROPOSAL TO: UNIVERSITY OF KENTUCKY

PURCHASING DIVISION 411 S LIMESTONE

ROOM 322 PETERSON SERVICE BLDG.

LEXINGTON, KY 40506-0005

IMPORTANT: PROPOSALS MUST BE RECEIVED BY: 08/13/2021 3 P.M. LEXINGTON, KY TIME.

NOTICE OF REQUIREMENTS

- The University's General Terms and Conditions and Instructions to Bidders, viewable at www.uky.edu/Purchasing/terms.htm, apply to this RFP. When the 1. RFP includes construction services, the University's General Conditions for Construction and Instructions to Bidders, viewable at www.uky.edu/Purchasing/ccphome.htm, apply to the RFP.
- Contracts resulting from this RFP must be governed by and in accordance with the laws of the Commonwealth of Kentucky.
- Any agreement or collusion among offerors or prospective offerors, which restrains, tends to restrain, or is reasonably calculated to restrain competition by 3. agreement to bid at a fixed price or to refrain from offering, or otherwise, is prohibited.
- Any person who violates any provisions of KRS 45A.325 shall be guilty of a felony and shall be punished by a fine of not less than five thousand dollars nor more than ten thousand dollars, or be imprisoned not less than one year nor more than five years, or both such fine and imprisonment. Any firm, corporation, or association who violates any of the provisions of KRS 45A.325 shall, upon conviction, be fined not less than ten thousand dollars or more than twenty thousand dollars.

AUTHENTICATION OF BID AND STATEMENT OF NON-COLLUSION AND NON-CONFLICT OF INTEREST

I hereby swear (or affirm) under the penalty for false swearing as provided by KRS 523.040:

- That I am the offeror (if the offeror is an individual), a partner, (if the offeror is a partnership), or an officer or employee of the bidding corporation having authority to sign on its behalf (if the offeror is a corporation);
- That the attached proposal has been arrived at by the offeror independently and has been submitted without collusion with, and without any agreement, understanding or planned common course of action with, any other Contractor of materials, supplies, equipment or services described in the RFP, designed to limit independent bidding or competition;
- That the contents of the proposal have not been communicated by the offeror or its employees or agents to any person not an employee or agent of the offeror or its surety on any bond furnished with the proposal and will not be communicated to any such person prior to the official closing of the RFP:
- 4. That the offeror is legally entitled to enter into contracts with the University of Kentucky and is not in violation of any prohibited conflict of interest, including, but not limited to, those prohibited by the provisions of KRS 45A.330 to .340, and164.390;
- That the offeror, and its affiliates, are duly registered with the Kentucky Department of Revenue to collect and remit the sale and use tax imposed by Chapter 139 to the extent required by Kentucky law and will remain registered for the duration of any contract award;
- That I have fully informed myself regarding the accuracy of the statement made above.

SWORN STATEMENT OF COMPLIANCE WITH CAMPAIGN FINANCE LAWS

In accordance with KRS45A.110 (2), the undersigned hereby swears under penalty of perjury that he/she has not knowingly violated any provision of the campaign finance laws of the Commonwealth of Kentucky and that the award of a contract to a bidder will not violate any provision of the campaign finance laws of the Commonwealth of Kentucky

CONTRACTOR REPORT OF PRIOR VIOLATIONS OF KRS CHAPTERS 136, 139, 141, 337, 338, 341 & 342

The contractor by signing and submitting a proposal agrees as required by 45A.485 to submit final determinations of any violations of the provisions of KRS Chapters 136, 139, 141, 337, 338, 341 and 342 that have occurred in the previous five (5) years prior to the award of a contract and agrees to remain in continuous compliance with the provisions of the statutes during the duration of any contract that may be established. Final determinations of violations of these statutes must be provided to the University by the successful contractor prior to the award of a contract.

CERTIFICATION OF NON-SEGREGATED FACILITIES

The contractor, by submitting a proposal, certifies that he/she is in compliance with the Code of Federal Regulations, No. 41 CFR 60-1.8(b) that prohibits the maintaining of segregated facilities.

SIGNATURE REQUIRED: This proposal cannot be considered valid unless signed and dated by an authorized agent of the offeror. Type or print the signatory's name, title, address, phone number and fax number in the spaces provided. Offers signed by an agent are to be accompanied by evidence of his/her authority unless such evidence has been previously furnished to the issuing office.

DELIVERY TIME:	NAME OF COMPANY:	DUNS#
PROPOSAL FIRM THROUGH:	ADDRESS:	Phone/Fax:
PAYMENT TERMS:	CITY, STATE & ZIP CODE:	E-MAIL:
SHIPPING TERMS: F. O. B. DESTINATION PREPAID AND ALLOWED	TYPED OR PRINTED NAME:	WEB ADDRESS:
FEDERAL EMPLOYER ID NO.:	SIGNATURE:	DATE:

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1.0 **DEFINITIONS**

The term "addenda" means written or graphic instructions issued by the University of Kentucky prior to the receipt of proposals that modify or interpret the RFP documents by additions, deletions, clarifications and/or corrections.

The term "competitive negotiations" means the method authorized in the Kentucky Revised Statutes, Chapter 45A.085.

The terms "offer" or "proposal" mean the offeror's/offerors' response to this RFP.

The term "offeror" means the entity or contractor group submitting the proposal.

The term "contractor" means the entity receiving a contract award.

The term "purchasing agency" means the University of Kentucky, Purchasing Division, Room 322 Peterson Service Building, Lexington, KY 40506-0005.

The term "purchasing official" means the University of Kentucky's appointed contracting representative.

The term "responsible offeror" means a person, company or corporation that has the capability in all respects to perform fully the contract requirements and the integrity and reliability that will assure good faith performance. In determining whether an offeror is responsible, the University may evaluate various factors including (but not limited to): financial resources; experience; organization; technical qualifications; available resources; record of performance; integrity; judgment; ability to perform successfully under the terms and conditions of the contract; adversarial relationship between the offeror and the University that is so serious and compelling that it may negatively impact the work performed under this RFP; or any other cause determined to be so serious and compelling as to affect the responsibility of the offeror.

The term "solicitation" means RFP.

The term "University" means University of Kentucky.

2.0 GENERAL OVERVIEW

2.1 Intent and Scope

The intent of this Request for Proposal (RFP) is to review offerors and platforms that can support a growing demand for enhanced engagement with our UK alumni. Specifically, we need a platform that can support goals to build a mentoring system with our UK alumni, increased and intentional engagement with our alumni, tools to increase our strategies related to alumni career services, increase networking capabilities, provide "value" to our UK alumni, demonstrate the ROI of a UK degree, develop alumni for philanthropic and donor-related strategies, and showcase the UK Alumni Association, UK Philanthropy and UK – as a "University of the future." Future efforts may also include enhanced faculty engagement, supporting Enrollment Management efforts, etc.

The offeror also must provide dedicated support for implementation and beyond, customizable branding, be a known entity in the field with a proven track record with benchmark institutions and schools similar to UK as well as aspirational institutions, provide a software package that is user-friendly and intuitive, secure, etc. In addition, we must deploy cutting edge technology that can also work with Salesforce, Handshake, LinkedIn, etc. This platform must also have robust data tools and reporting parameters. The offeror also must be able to detail the core package and what is included and what constitutes an "add-on" along with detailed pricing for implementation, annual costs, any maintenance costs, and options for multiple year contracts and pricing.

In all, as institutions across the country face challenges related to COVID, demonstrating the value of a degree, and pedagogical evolution – we must be able to provide services that support students during the lifecycle – and especially after graduation. Services must connect students to career possibilities, available jobs, mentoring and engagement with UK alumni who are in key corporate positions, and evolving the alumni office as a key and indispensable player for the University and the future.

By engaging our UK alumni in intentional and strategic ways, we are also developing our base of future philanthropist. The "Kentucky Can" Capital Campaign is such an important effort across the campus – we must be poised and ready for future campaigns.

The scope for this project not only supports the UK Alumni Associations (and specifically our Alumni Career Services), it also supports UK Philanthropy for the development of future donors. Beyond our office, we also want to support each of the UK academic colleges. The alumni staff in the colleges are also asking for help with a platform for alumni engagement and support. In addition, this platform can also support the Stuckert Career Center and their efforts to provide career services for current students and recent graduates (6-12 months out after graduation). The goal is to have a collaborative approach that serves all of these entities.

2.2 Background Information

Over the years, we have witnessed a growing demand for alumni career services. We have a very successful UK Alumni Career Services unit within the UK Alumni Association. The office is supported by two staff along with one or two graduate assistants. Other individuals within the UK Alumni Association as well as UK Philanthropy also support the UK Alumni Career Services efforts.

We continue to expand our services to meet the need: twice monthly job club sessions, networking events, outreach with UK alumni clubs, engagement with various UK alumni and businesses, individual and personal client sessions focused on - resumes, interviewing, and career search strategies, career management webinars, Facebook live events, etc.

With the current climate related to COVID, we are experiencing unprecedented demand for our services. As alumni face the loss of a job – they are turning to their University for assistance and support. Having a new platform will help us to engage with our alumni in even more meaningful ways. As we think about the background, we also must think about the future – our UK graduates are facing an ever-changing and evolving job market with less stability and tenure – we must be able to provide mentoring that will engage our successful alumni and tie them back to UK students and to the University they so fondly remember.

2.3 University Information

Since his arrival, President Eli Capilouto has set forth an ambitious agenda to extend and enhance our role as Kentucky's land-grant and flagship research university. By focusing on infrastructure growth and improvement; creating opportunities for innovative teaching, learning, and academic excellence; fostering a robust research and creative scholarship enterprise; providing life-saving subspecialty care; empowering communities through service and outreach; and encouraging a transparent and shared dialogue about institutional priorities; the University of Kentucky will ensure a new century of promise for the people we impact.

Founded in 1865 as a land-grant institution adjacent to downtown Lexington, UK is nestled in the scenic heart of the beautiful Bluegrass Region of Kentucky. From its early beginnings, with only 190 students and 10 professors, UK's campus now covers more than 918 acres and is home to more than 30,000 students and approximately 14,500 employees, including more than 2,300 full-time faculty. UK is one of a small number of universities in the United States that has programs in agriculture, engineering, a full complement of health colleges including medicine and pharmacy, law and fine arts on a single campus, leading to groundbreaking discoveries and unique interdisciplinary collaboration. The state's flagship university consists of 17 academic and professional colleges where students can choose from more than 200 majors and degree programs at the undergraduate and graduate levels. The colleges are Agriculture, Food and Environment; Arts and Sciences; Business and Economics; Communication and Information; Dentistry; Design; Education; Engineering; Fine Arts; Graduate School; Health Sciences; Law; Medicine; Nursing; Pharmacy; Public Health; and Social Work. These colleges are supported by a modern research library system.

Research at the University of Kentucky is a dynamic enterprise encompassing both traditional scholarship and emerging technologies, and UK's research faculty, staff and students are establishing UK as one of the nation's most prolific public research universities. UK's research enterprise attracted \$285 million in research grants and contracts from out-of-state sources, which generated a \$580 million impact on the Kentucky economy. Included in this portfolio is \$153 million in federal awards from the National Institutes of Health, non-NIH grants from the Department Health and Human Services, the National Science Foundation, Department of Energy, Department of Agriculture and NASA, among others. The National Science Foundation ranks UK's research enterprise 44th among public institutions.

With more than 50 research centers and institutes, UK researchers are discovering new knowledge, providing a rich training ground for current students and the next generation of researchers, and advancing the economic growth of the Commonwealth of Kentucky. Several centers excel in the services offered to the public. The Gluck Equine Research Center is one of only three facilities of its kind in the world, conducting research in equine diseases.

The Center for Applied Energy Research is pursuing groundbreaking discovery across the energy disciplines. CAER staff are pioneering new ways to sustainably utilize Kentucky natural resources through carbon-capture algae technology, biomass/coal to liquid products and the opening of UK's first LEED-certified research lab to support the development of Kentucky's growing alternative energy industry. Among the brightest examples of UK's investment in transformative research is the Markey Cancer Center. As a center of excellence and distinction at UK, Markey's robust research and clinical enterprise is the cornerstone of our commitment to Kentucky – fundamental to our success in uplifting lives through our endeavors and improving the general health and welfare of our state – burdened by the nation's highest rate of cancer deaths per 100,000 people. In 2013, Markey earned the prestigious National Cancer Institute-designation (NCI) – one of 68 nationally and the only one in Kentucky.

The University of Kentucky was awarded a \$20 million Clinical Translational Sciences Award (CTSA) from the National Institutes of Health (NIH). As one of only 60 institutions with this research distinction, UK was awarded the CTSA for its potential in moving research and discovery in the lab into practical field and community applications. The CTSA and NCI are part of a trifecta of federal research grants that includes an Alzheimer's Disease Center. UK is one of only 22 universities in the country to hold all three premier grants from NIH.

Established in 1957, the medical center at UK is one of the nation's finest academic medical centers and includes the University's clinical enterprise, UK HealthCare. The 569-bed UK Albert B. Chandler Hospital and Kentucky Children's Hospital, along with 256 beds at UK Good Samaritan Hospital, are supported by a growing faculty and staff providing the most advanced subspecialty care for the most critically injured and ill patients throughout the Commonwealth and beyond. Over the last several years, the number of patients served by the medical enterprise has increased from roughly 19,000 discharges to more than 36,000 discharges in 2014.

UK Chandler Hospital includes the only Level 1 Trauma Center for both adult and pediatric patients in Central and Eastern Kentucky. In addition, UK HealthCare recently opened one of the country's largest robotic hybrid operating rooms and the first of its kind in the region. While our new patient care pavilion is the leading healthcare facility for advanced medical procedures in the region, our talented physicians consult with and travel to our network of affiliate hospitals so Kentucky citizens can receive the best health care available close to their home and never need to leave the Bluegrass for complex subspecialty care.

UK's agenda remains committed to accelerating the University's movement toward academic excellence in all areas and gain worldwide recognition for its outstanding academic programs, its commitment to students, its investment in pioneering research and discovery, its success in building a diverse community and its engagement with the larger society. It is all part of the University's fulfillment of our promise to Kentucky to position our state as a leader in American prosperity.

2.4 **Supplier Diversity and Procurement**

The University of Kentucky is committed to serve as an advocate for diverse businesses in their efforts to conduct business. Diverse Business Enterprises (DBE) consist of minority, women, disabled, veteran and disabled veteran owned business firms that are at least fifty-one percent owned and operated by an individual(s) of the aforementioned categories. Also included in this category are disabled business enterprises and non-profit work centers for the blind and severely disabled.

The University is committed to increasing the amount of goods and services acquired from businesses owned and controlled by diverse persons to 10% of all procurement expenditures. The University expects its suppliers to support and assist in this effort.

Among the University's goals for DBE participation in procurement are:

- To ensure the absence of barriers that reduce the participation of diverse suppliers
- Educate vendors on "how to" do business with the University
- Support diverse vendors seeking to do business with the University in the areas of goods, services, construction, and other areas of procurement
- Encourage participation of qualified diverse vendors by directing them to agencies that can benefit from their product or service
- Provide resources for diverse vendors
- Sponsor events to assist diverse vendors in becoming active, responsible, and responsive participants in the University's purchasing opportunities

For additional information regarding how diverse suppliers may participate in this Request for Proposal, submit any questions to the Purchasing Officer as indicated in Section 3.2 by the Deadline for Written Questions date.

3.0 PROPOSAL REQUIREMENTS

3.1 Key Event Dates

Release of RFP	07/27/2021
Deadline for Written Questions	3 p.m. Lexington, KY Time on 08/03/2021
RFP Proposals Due	3 p.m. Lexington, KY Time on 08/13/2021

3.2 Offeror Communication

To ensure that RFP documentation and subsequent information (modifications, clarifications, addenda, Written Questions and Answers, etc.) are directed to the appropriate persons within the offeror's firm, each offeror who intends to participate in this RFP is to provide the following information to the purchasing officer. Prompt, thorough compliance is in the best interest of the offeror. Failure to comply may result in incomplete or delayed communication of addenda or other vital information. Contact information is the responsibility of the offeror. Without the prompt information, any communication shortfall shall reside with the offeror.

- Name of primary contact
- Mailing address of primary contact
- Telephone number of primary contact
- Fax number of primary contact
- E-mail address of primary contact
- Additional contact persons with same information provided as primary contact

This information shall be transmitted via fax or e-mail to:

Ken Scott Purchasing Division University of Kentucky 322 Peterson Service Building Lexington, KY 40506-0005 Phone: (859) 257-9102

Fax: (859) 257-1951 E-mail: kesc245@uky.edu

All communication with the University regarding this RFP shall only be directed to the purchasing officer listed above.

3.3 Offeror Presentations

All offerors whose proposals are judged acceptable for award may be required to make a presentation to the evaluation committee.

3.4 Preparation of Offers

The offeror is expected to follow all specifications, terms, conditions and instructions in this RFP.

The offeror will furnish all information required by this solicitation.

Proposals should be prepared simply and economically, providing a description of the offeror's capabilities to satisfy the requirements of the solicitation. Emphasis should be on completeness and clarity of content. All documentation submitted with the proposal should be bound in the single volume except as otherwise specified.

An electronic version of the RFP, in .PDF format only, is available through the University of Kentucky Purchasing Division website at: https://purchasing.uky.edu/bid-and-proposal-opportunities.

3.5 Proposed Deviations from the RFP

The stated requirements appearing elsewhere in this RFP shall become a part of the terms and conditions of any resulting contract. Any deviations therefrom must be specifically defined in accordance with the transmittal letter, Section 4.3 (d). If accepted by the University, the deviations shall become part of the contract, but such deviations must not be in conflict with the basic nature of this RFP.

Note: Offerors shall not submit their standard terms and conditions as exceptions to the University's General Terms and Conditions. Each exception to the University's General Terms and Conditions shall be individually addressed.

3.6 **Proposal Submission and Deadline**

Offeror must provide the following materials prior to 3 p.m. (Lexington, KY time) on the date specified in Section 3.1 and addressed to the purchasing officer listed in Section 3.2:

- **Technical Proposal:** Two (2) copies on electronic storage devices (USB) (1 copy per storage device) each <u>clearly marked</u> with the proposal number and name, firm name and what is included (Technical Proposal) and one (1) printed original copy
- **Financial Proposal:** Two (2) copies on electronic storage devices (USB) (1 copy per storage device) each <u>clearly marked</u> with the proposal number and name, firm name and what is included (Financial Proposal) and one (1) printed original copy

Note: Proposals received after the closing date and time will not be considered. In addition, proposals received via fax or e-mail are not acceptable.

The University of Kentucky accepts deliveries of RFPs Monday through Friday from 8 a.m. to 5 p.m. Lexington, KY time. However, RFPs must be received by 3 p.m. Lexington, KY time on the date specified on the RFP in order to be considered.

Proposals shall be enclosed in sealed envelopes to the above referenced address and shall show on the face of the envelope: the closing time and date specified, the solicitation number and the name and address of the offeror. The technical proposal shall be submitted in a sealed envelope and the financial proposal shall be submitted in a sealed envelope under separate cover. Both sealed envelopes shall have identical information on the cover, with the addition that one will state "Technical Information," and the other, "Financial Proposal."

Note: In accordance with the Kentucky Revised Statute 45A.085, there will be no public opening.

3.7 Modification or Withdrawal of Offer

An offer and/or modification of offer received at the office designated in the solicitation after the exact hour and date specified for receipt will not be considered.

An offer may be modified or withdrawn by written notice before the exact hour and date specified for receipt of offers. An offer also may be withdrawn in person by an offeror or an authorized representative, provided the identity of the person is made known and the person signs a receipt for the offer, but only if the withdrawal is made prior to the exact hour and date set for receipt of offers.

3.8 Acceptance or Rejection and Award of Proposal

The University reserves the right to accept or reject any or all proposals (or parts of proposals), to waive any informalities or technicalities, to clarify any ambiguities in proposals and (unless otherwise specified) to accept any item in the proposal. In case of error in extension or prices or other errors in calculation, the unit price shall govern. Further, the University reserves the right to make a single award, split awards, multiple awards or no award, whichever is in the best interest of the University.

3.9 Rejection

Grounds for the rejection of proposals include (but shall not be limited to):

- Failure of a proposal to conform to the essential requirements of the RFP.
- Imposition of conditions that would significantly modify the terms and conditions of the solicitation or limit the offeror's liability to the University on the contract awarded on the basis of such solicitation.
- Failure of the offeror to sign the University RFP. This includes the Authentication of Proposal and Statement of Non-Collusion and Non-Conflict of Interest statements.
- Receipt of proposal after the closing date and time specified in the RFP.

3.11 Addenda

Any addenda or instructions issued by the purchasing agency prior to the time for receiving proposals shall become a part of this RFP. Such addenda shall be acknowledged in the proposal. No instructions or changes shall be binding unless documented by a proper and duly issued addendum.

3.12 Disclosure of Offeror's Response

The RFP specifies the format, required information and general content of proposals submitted in response to this RFP. The purchasing agency will not disclose any portions of the proposals prior to contract award to anyone outside the Purchasing Division, the University's administrative staff, representatives of the state or federal government (if required) and the members of the committee evaluating the proposals. After a contract is awarded in whole or in part, the University shall have the right to duplicate, use or disclose all proposal data submitted by offerors in response to this RFP as a matter of public record.

Any submitted proposal shall remain valid six (6) months after the proposal due date.

The University shall have the right to use all system ideas, or adaptations of those ideas, contained in any proposal received in response to this RFP. Selection or rejection of the proposal will not affect this right.

3.13 Restrictions on Communications with University Staff

From the issue date of this RFP until a contractor is selected and a contract award is made, offerors are not allowed to communicate about the subject of the RFP with any University administrator, faculty, staff or members of the board of trustees except: the purchasing office representative, any University purchasing official representing the University administration, others authorized in writing by the purchasing office and University representatives during offeror presentations. If violation of this provision occurs, the University reserves the right to reject the offeror's proposal.

3.14 Cost of Preparing Proposal

Costs for developing the proposals and any subsequent activities prior to contract award are solely the responsibility of the offerors. The University will provide no reimbursement for such costs.

3.15 Disposition of Proposals

All proposals become the property of the University. The successful proposal will be incorporated into the resulting contract by reference.

3.16 <u>Alternate Proposals</u>

Offerors may submit alternate proposals. If more than one proposal is submitted, all must be complete (separate) and comply with the instructions set forth within this document. Each proposal will be evaluated on its own merits.

3.17 Questions

All questions should be submitted by either fax or e-mail to the purchasing officer listed in Section 3.2 no later than the date listed in Section 3.1.

3.18 Section Titles in the RFP

Section titles used herein are for the purpose of facilitating ease of reference only and shall not be construed to infer the construction of contractual language.

3.19 No Contingent Fees

No person or selling agency shall be employed or retained or given anything of monetary value to solicit or secure this contract, except bona fide employees of the offeror or bona fide established commercial or selling agencies maintained by the offeror for the purpose of securing business. For breach or violation of this provision, the University shall have the right to reject the proposal, annul the contract without liability, or, at its discretion, deduct from the contract price or otherwise recover the full amount of such commission, percentage, brokerage or contingent fee or other benefit.

3.20 Proposal Addenda and Rules for Withdrawal

Prior to the date specified for receipt of offers, a submitted proposal may be withdrawn by submitting a written request for its withdrawal to the University purchasing office, signed by the offeror. Unless requested by the University, the University will not accept revisions or alterations to proposals after the proposal due date.

3.21 Requirement To Perform Vendor Onboarding and Registration

As a condition of award, and for any renewals performed during the life of the contract, successful Contractor agrees to register their company with PaymentWorks, Inc., the University's vendor onboarding application. Registration information will be provided by the Purchasing Division as part of the award process. During the vendor registration process, successful Contractor agrees to provide any applicable information pertaining to diversity demographics for their company. Further, should any company or diversity information change during the life of the contract, successful Contractor agrees to update this information in PaymentWorks as applicable.

4.0 PROPOSAL FORMAT AND CONTENT

4.1 **Proposal Information and Criteria**

The following list specifies the items to be addressed in the proposal. Offerors should read it carefully and address it completely and in the order listed to facilitate the University's review of the proposal.

Proposals shall be organized into the sections identified below. The content of each section is detailed in the following pages. It is strongly suggested that offerors use the same numbers for the following content that are used in the RFP.

- Signed Authentication of Proposal and Statement of Non-Collusion and Non-Conflict of Interest Form
- Transmittal Letter
- Executive Summary and Proposal Overview
- Criteria 1 Offeror Qualifications
- Criteria 2 Services Defined
- Criteria 3 Financial Proposal
- Criteria 4 Evidence of Successful Performance and Implementation Schedule
- Criteria 5 Other Additional Information

4.2 <u>Signed Authentication of Proposal and Statements of Non-Collusion and Non-Conflict of</u> Interest Form

The Offeror will sign and return the proposal cover sheet and print or type their name, firm, address, telephone number and date. The person signing the offer must initial erasures or other changes. An offer signed by an agent is to be accompanied by evidence of their authority unless such evidence has been previously furnished to the purchasing agency. The signer shall further certify that the proposal is made without collusion with any other person, persons, company or parties submitting a proposal; that it is in all respects fair and in good faith without collusion or fraud; and that the signer is authorized to bind the principal offeror.

4.3 <u>Transmittal Letter</u>

The Transmittal Letter accompanying the RFP shall be in the form of a standard business letter and shall be signed by an individual authorized to legally bind the offeror. It shall include:

- A statement referencing all addenda and written questions, the answers and any clarifications
 to this RFP issued by the University and received by the offeror (If no addenda have been
 received, a statement to that effect should be included.).
- A statement that the offeror's proposal shall remain valid for six (6) months after the closing date of the receipt of the proposals.
- A statement that the offeror will accept financial responsibility for all travel expenses incurred for oral presentations (if required) and candidate interviews.
- A statement that summarizes any deviations or exceptions to the RFP requirements and includes a detailed justification for the deviation or exception.
- A statement that identifies the confidential information as described in Section 6.23.

4.4 <u>Executive Summary and Proposal Overview</u>

The Executive Summary and Proposal Overview shall condense and highlight the contents of the technical proposal in such a way as to provide the evaluation committee with a broad understanding of the entire proposal.

As part of the Executive Summary and Proposal Overview, Offeror shall submit with their response a summarized profile describing the demographic nature of their company or organization:

- 1. When was your organization established and/or incorporated?
- 2. Indicate whether your organization is classified as local, regional, national, or international.
- 3. Describe the size of your company in terms of number of employees, gross sales, etc.
- 4. Is your company certified as small business, minority-owned, women-owned, veteran-owned, disabled-owned, or similar classification?
- 5. Include other demographic information that you feel may be applicable to the Request for Proposal submission.
- 6. Offeror shall describe in detail their company's commitment to diversity, equity, and inclusion. Information shall be provided as to the number of diverse individuals that the vendor employees as well as a description of vendors efforts to do business with Diverse Business Enterprises as they conduct their own business. In additional, please indicate the diversity nature of your company as well as ownership race/ethnicity.

Check One Only	Diverse Business Description (If Diverse Business, determine the classification that is the best description)	Internal Code
	Minority Owned (only)	10
	Veteran Owned and Small Business	100
	Minority and Woman and Small Business	110
	Minority and Woman and Veteran-Owned Business	120
	Minority and Veteran and Small Business	130
	Woman and Veteran and Small Business	140
	Minority and Woman and Veteran-Owned Small Business	150
	Woman Owned (only)	20
	Small Business (only)	30
	Veteran Owned (only)	40
	Minority and Woman Owned	50
	Minority and Small Business	60
	Minority and Veteran-Owned	70
	Woman Owned and Small Business	80
	Woman and Veteran-Owned	90
	Diversity not indicated	999

Race/Ethnicity	Check One
Asian	
Black/African American	
Hispanic or Latino	
Native American	
Native Hawaiian/Pacific Islander	
White	
Other	

4.5 Criteria 1 - Offeror Qualifications

The purpose of the Offeror Qualifications section is to determine the ability of the offeror to respond to this RFP. Offerors must describe and offer evidence of their ability to meet each of the qualifications listed below.

- 1. Please provide a brief narrative describing the history of your business. Identify the number of employees in your business and the ownership.
- 2. Please describe your hours of operation and availability to work outside office hours and overtime.
- 3. Please describe licensing and certification of your company as outlined in the technical scope of work (section 7.1).
- 4. The offeror must have all necessary state, city, county and local licenses and permits as may be required to operate this type of business.

4.6 Criteria 2 – Services Defined

- 1. The Offeror's ability to provide each of the services required, listed in Section 7.1.
- 2. The Offeror's equipment and personnel available to support the scope of services.
- 3. The Offeror's approach toward safety and training as it relates to the scope of services.
- 4. Provide the name(s), title(s), and experience of the person(s) who will be the project representative(s) for the University account.

4.7 Criteria 3 – Financial Proposal

The Financial Summary Form shall contain the complete financial offer made to the University using the format contained in Section 8.0. All financial information must be submitted in a sealed envelope under separate cover.

4.8 Criteria 4 – Evidence of Successful Performance and Implementation Schedule

Provide evidence of the Offeror's experience in performing the services outlined herein. At a
minimum, the Offeror shall include the number of years of experience their business has in
performing the requested services as well as the experience of the key staff members who
would be assigned responsibility to the University.

- 2. Offeror shall supply the name, address, and telephone number of three (3) account references along with a brief description of the type of services provided to each where the Offeror has provided similar in scope and scale to those requested by the University herein. By providing such references, the Offeror grants permission to the University to contact these references.
- 3. Offeror shall complete all work as defined in Section 7.0 within 90 days of contract award date.

4.9 <u>Criteria 5 – Other Additional Information</u>

Please provide any additional information that the offeror feels should be considered when evaluating their proposal.

The offeror may present any creative approaches that might be appropriate. The offeror may also provide supporting documentation that would be pertinent to this RFP.

Offeror shall describe in detail their company's commitment to diversity, equity and inclusion. Information shall be provided as to the number of diverse individuals that the vendor employees as well as a description of vendors efforts to do business with Diverse Business Enterprises as they conduct their own business.

5.0 EVALUATION CRITERIA PROCESS

A committee of University officials appointed by the Chief Procurement Officer will evaluate proposals and make a recommendation to the Chief Procurement Officer. The evaluation will be based upon the information provided in the proposal, additional information requested by the University for clarification, information obtained from references and independent sources and oral presentations (if requested).

The evaluation of responsive proposals shall then be completed by an evaluation team, which will determine the ranking of proposals. Proposals will be evaluated strictly in accordance with the requirements set forth in this solicitation, including any addenda that are issued. The University will award the contract to the responsible offeror whose proposal is determined to be the most advantageous to the University, taking into consideration the evaluation factors set forth in this RFP.

The evaluation of proposals will include consideration of responses to the list of criteria in Section 4.0. Offerors must specifically address all criteria in their response. Any deviations or exceptions to the specifications or requirements must be described and justified in a transmittal letter. Failure to list such exceptions or deviations in the transmittal letter may be considered sufficient reason to reject the proposal.

The relative importance of the criteria is defined below:

Primary Criteria

- Offeror Qualifications
- Services Defined
- Financial Proposal
- Evidence of Successful Performance and Implementation

Secondary Criteria

Other Additional Services

The University will evaluate proposals as submitted and may not notify offerors of deficiencies in their responses.

Proposals must contain responses to each of the criteria, listed in Section 4 even if the offeror's response cannot satisfy those criteria. A proposal may be rejected if it is conditional or incomplete in the judgment of the University.

6.0 SPECIAL CONDITIONS

6.1 Contract Term

The contract and purchase order resulting from this RFP shall be effective on the date for "commencement of work" established by the Work Order and will not be renewable.

6.2 Effective Date

The effective date of the contract shall be the date upon which the parties execute it and all appropriate approvals, including that of the Commonwealth of Kentucky Government Contracts Review Committee, have been received.

6.3 Competitive Negotiation

It is the intent of the RFP to enter into competitive negotiation as authorized by KRS 45A.085.

The University will review all proposals properly submitted. However, the University reserves the right to request necessary modifications, reject all proposals, reject any proposal that does not meet mandatory requirement(s) or cancel this RFP, according to the best interests of the University.

Offeror(s) selected to participate in negotiations may be given an opportunity to submit a Best and Final Offer to the purchasing agency. All information-received prior to the cut-off time will be considered part of the offeror's Best and Final Offer.

The University also reserves the right to waive minor technicalities or irregularities in proposals providing such action is in the best interest of the University. Such waiver shall in no way modify the RFP requirements or excuse the offeror from full compliance with the RFP specifications and other contract requirements if the offeror is awarded the contract.

6.4 Appearance Before Committee

Any, all or no offerors may be requested to appear before the evaluation committee to explain their proposal and/or to respond to questions from the committee concerning the proposal. Offerors are prohibited from electronically recording these meetings. The committee reserves the right to request additional information.

6.5 Additions, Deletions or Contract Changes

The University reserves the right to add, delete, or change related items or services to the contract established from this RFP. No modification or change of any provision in the resulting contract shall be made unless such modification is mutually agreed to in writing by the contractor and the Chief Procurement Officer and incorporated as a written modification to the contract. Memoranda of understanding and correspondence shall not be interpreted as a modification to the contract.

6.6 Contractor Cooperation in Related Efforts

The University reserves the right to undertake or award other contracts for additional or related work to other entities. The contractor shall fully cooperate with such other contractors and University employees and carefully fit its work to such additional work. The contractor shall not commit or permit any act which will interfere with the performance of work by any other contractor or by University employees. This clause shall be included in the contracts of all contractors with whom this contractor will be required to cooperate. The University shall equitably enforce this clause to all contractors to prevent the imposition of unreasonable burdens on any contractor.

6.7 Entire Agreement

The RFP shall be incorporated into any resulting contract. The resulting contract, including the RFP and those portions of the offeror's response accepted by the University, shall be the entire agreement between the parties.

6.8 Governing Law

The contractor shall conform to and observe all laws, ordinances, rules and regulations of the United States of America, Commonwealth of Kentucky and all other local governments, public authorities, boards or offices relating to the property or the improvements upon same (or the use thereof) and will not permit the same to be used for any illegal or immoral purposes, business or occupation. The resulting contract shall be governed by Kentucky law and any claim relating to this contract shall only be brought in the Franklin Circuit Court in accordance with KRS 45A.245.

6.9 <u>Kentucky's Personal Information Security and Breach Investigation Procedures and</u> Practices Act

To the extent Company receives Personal Information as defined by and in accordance with Kentucky's Personal Information Security and Breach Investigation Procedures and Practices Act, KRS 61.931, 61.932 and 61.933 (the "Act"), Company shall secure and protect the Personal Information by, without limitation: (i) complying with all requirements applicable to non-affiliated third parties set forth in the Act; (ii) utilizing security and breach investigation procedures that are appropriate to the nature of the Personal Information disclosed, at least as stringent as University's and reasonably designed to protect the Personal Information from unauthorized access, use, modification, disclosure, manipulation, or destruction; (iii) notifying University of a security breach relating to Personal Information in the possession of Company or its agents or subcontractors within seventy-two (72) hours of discovery of an actual or suspected breach unless the exception set forth in KRS 61.932(2)(b)2 applies and Company abides by the requirements set forth in that exception; (iv) cooperating with University in complying with the response, mitigation, correction, investigation, and notification requirements of the Act, (v) paying all costs of notification, investigation and mitigation in the event of a security breach of Personal Information suffered by Company; and (vi) at University's discretion and direction, handling all administrative functions associated with notification, investigation and mitigation.

6.10 Termination for Convenience

The University of Kentucky, Purchasing Division, reserves the right to terminate the resulting contract without cause with a thirty (30) day written notice. Upon receipt by the contractor of a "notice of termination," the contractor shall discontinue all services with respect to the applicable contract. The cost of any agreed upon services provided by the contractor will be calculated at the agreed upon rate prior to a "notice of termination" and a fixed fee contract will be pro-rated (as appropriate).

6.11 Termination for Non-Performance

Default

The University may terminate the resulting contract for non-performance, as determined by the University, for such causes as:

- Failing to provide satisfactory quality of service, including, failure to maintain adequate
 personnel, whether arising from labor disputes, or otherwise any substantial change in
 ownership or proprietorship of the Contractor, which in the opinion of the University is not in its
 best interest, or failure to comply with the terms of this contract;
- Failing to keep or perform, within the time period set forth herein, or violation of, any of the covenants, conditions, provisions or agreements herein contained;

- Adjudicating as a voluntarily bankrupt, making a transfer in fraud of its creditors, filing a petition under any section from time to time, or under any similar law or statute of the United States or any state thereof, or if an order for relief shall be entered against the Contractor in any proceeding filed by or against contractor thereunder. In the event of any such involuntary bankruptcy proceeding being instituted against the Contractor, the fact of such an involuntary petition being filed shall not be considered an event of default until sixty (60) days after filing of said petition in order that Contractor might during that sixty (60) day period have the opportunity to seek dismissal of the involuntary petition or otherwise cure said potential default; or
- Making a general assignment for the benefit of its creditors, or taking the benefit of any
 insolvency act, or if a permanent receiver or trustee in bankruptcy shall be appointed for the
 Contractor.

Demand for Assurances

In the event the University has reason to believe Contractor will be unable to perform under the Contract, it may make a demand for reasonable assurances that Contractor will be able to timely perform all obligations under the Contract. If Contractor is unable to provide such adequate assurances, then such failure shall be an event of default and grounds for termination of the Contract.

Notification

The University will provide ten (10) calendar days written notice of default. Unless arrangements are made to correct the non-performance issues to the University's satisfaction within ten (10) calendar days, the University may terminate the contract by giving forty-five (45) days notice, by registered or certified mail, of its intent to cancel this contract.

6.12 Funding Out

The University may terminate this contract if funds are not appropriated or are not otherwise available for the purpose of making payments without incurring any obligation for payment after the date of termination, regardless of the terms of the contract. The University shall provide the contractor thirty (30) calendar days' written notice of termination under this provision.

6.13 Prime Contractor Responsibility

Any contracts that may result from the RFP shall specify that the contractor(s) is/are solely responsible for fulfillment of the contract with the University.

6.14 Assignment and Subcontracting

The Contractor(s) may not assign or delegate its rights and obligations under any contract in whole or in part without the prior written consent of the University. Any attempted assignment or subcontracting shall be void.

6.15 Permits, Licenses, Taxes

The contractor shall procure all necessary permits and licenses and abide by all applicable laws, regulations and ordinances of all federal, state and local governments in which work under this contract is performed.

The contractor must furnish certification of authority to conduct business in the Commonwealth of Kentucky as a condition of contract award. Such registration is obtained from the Secretary of State, who will also provide the certification thereof. However, the contractor need not be registered as a prerequisite for responding to the RFP.

The contractor shall pay any sales, use, personal property and other tax arising out of this contract and the transaction contemplated hereby. Any other taxes levied upon this contract, the transaction or the equipment or services delivered pursuant hereto shall be the responsibility of the contractor.

The contractor will be required to accept liability for payment of all payroll taxes or deductions required by local and federal law including (but not limited to) old age pension, social security or annuities.

6.16 Attorneys' Fees

In the event that either party deems it necessary to take legal action to enforce any provision of the contract and in the event that the University prevails, the contractor agrees to pay all expenses of such action including attorneys' fees and costs at all stages of litigation.

6.17 Royalties, Patents, Copyrights and Trademarks

The Contractor shall pay all applicable royalties and license fees. If a particular process, products or device is specified in the contract documents and it is known to be subject to patent rights or copyrights, the existence of such rights shall be disclosed in the contract documents and the Contractor is responsible for payment of all associated royalties. To the fullest extent permitted by law the Contractor shall indemnify, hold the University harmless, and defend all suits, claims, losses, damages or liability resulting from any infringement of patent, copyright, and trademark rights resulting from the incorporation in the Work or device specified in the Contract Documents.

Unless provided otherwise in the contract, the Contractor shall not use the University's name nor any of its trademarks or copyrights, although it may state that it has a Contract with the University.

6.18 Indemnification

The contractor shall indemnify, hold and save harmless the University, its affiliates and subsidiaries and their officers, agents and employees from losses, claims, suits, actions, expenses, damages, costs (including court costs and attorneys' fees of the University's attorneys), all liability of any nature or kind arising out of or relating to the Contractor's response to this RFP or its performance or failure to perform under the contract awarded from this RFP. This clause shall survive termination for as long as necessary to protect the University.

6.19 Insurance

The successful Contractor shall procure and maintain, at its expense, the following minimum insurance coverages insuring all services, work activities and contractual obligations undertaken in this contract. These insurance policies must be with insurers acceptable to the University.

COVERAGES
Workers' Compensation
Employer's Liability
Commercial General Liability including
operations/completed operations, products
and contractual liability (including defense
and investigation costs), and this contract
Business Automobile Liability covering
owned, leased, or non-owned autos

LIMITS
Statutory Requirements (Kentucky)
\$500,000/\$500,000/\$500,000
\$1,000,000 each occurrence
(BI & PD combined) \$2,000,000 Products
and Completed Operations Aggregate

\$1,000,000 each occurrence (BI & PD combined)

The successful contractor agrees to furnish Certificates of Insurance for the above described coverages and limits to the University of Kentucky, Purchasing Division. The University, its trustees and employees must be added as additional insured on the Commercial General Liability policy with regard to the scope of this solicitation. Any deductibles or self-insured retention in the above-described policies must be paid and are the sole responsibility of the contractor. Coverage is to be primary and non-contributory with other coverage (if any) purchased by the University. All of these required policies must include a Waiver of Subrogation (except Workers' Compensation) in favor of the University, its trustees and employees.

6.20 Method of Award

It is the intent of the University to award a contract to the qualified offeror whose offer, conforming to the conditions and requirements of the RFP, is determined to be the most advantageous to the University, cost and other factors considered.

Notwithstanding the above, this RFP does not commit the University to award a contract from this solicitation. The University reserves the right to reject any or all offers and to waive formalities and minor irregularities in the proposal received.

6.21 Reciprocal Preference

In accordance with KRS 45A.494, a resident offeror of the Commonwealth of Kentucky shall be given a preference against a nonresident offeror. In evaluating proposals, the University will apply a reciprocal preference against an offeror submitting a proposal from a state that grants residency preference equal to the preference given by the state of the nonresident offeror. Residency and non-residency shall be defined in accordance with KRS 45A.494(2) and 45A.494(3), respectively. Any offeror claiming Kentucky residency status shall submit with its proposal a notarized affidavit affirming that it meets the criteria as set forth in the above reference statute.

6.22 Confidentiality

The University recognizes an offeror's possible interest in preserving selected information and data included in the proposal; however, the University must treat such information and data as required by the Kentucky Open Records Act, KRS 61.870, et seq.

Information areas which normally might be considered proprietary, and therefore confidential, shall be limited to individual personnel data, customer references, formulae and company financial audits which, if disclosed, would permit an unfair advantage to competitors. If a proposal contains information in these areas and the offeror declares them to be proprietary in nature and not available for public disclosure, the offeror shall declare in the Transmittal Letter the inclusion of proprietary information and shall noticeably label as confidential or proprietary each sheet containing such information. Proposals containing information declared by the offeror to be proprietary or confidential, either wholly or in part, outside the areas listed above may be deemed non-responsive and may be rejected.

The University's General Counsel shall review each offeror's information claimed to be confidential and, in consultation with the offeror (if needed), make a final determination as to whether or not the confidential or proprietary nature of the information or data complies with the Kentucky Open Records Act.

6.23 Conflict of Interest

This Request for Proposal and resulting Contract are subject to provisions of the Kentucky Revised Statutes regarding conflict of interest and the University of Kentucky's Ethical Principles and Code of Conduct (www.uky.edu/Legal/ethicscode.htm). When submitting and signing a proposal, an offeror is certifying that no actual, apparent or potential conflict of interest exists between the interests of the University and the interests of the offeror. A conflict of interest (whether contractual, financial, organizational or otherwise) exists when any individual, contractor or subcontractor has a direct or indirect interest because of a financial or pecuniary interest, gift or other activities or relationships with other persons (including business, familial or household relationships) and is thus unable to render or is impeded from rendering impartial assistance or advice, has impaired objectivity in performing the proposed work or has an unfair competitive advantage.

Questions concerning this section or interpretation of this section should be directed to the University purchasing officer identified in this RFP.

6.24 Personal Service Contract Policies

Pursuant to the Kentucky Model Procurement Code (Code), the Government Contract Review Committee (GCRC) of the Kentucky General Assembly may establish policies that govern personal service contracts. Under the Code, a personal service contract is an agreement whereby an individual, firm, partnership or corporation is to perform certain services requiring professional skill or professional judgment for a specified period of time at an agreed upon price.

A. Professional Service Rate Schedules:

The GCRC has established rate schedules for certain professional services and may impact any contract established under the Code. These rate schedules are located on the GCRC website at the following link: https://apps.legislature.ky.gov/moreinfo/contracts/homepage.html. Access/click the dropdown menu within the web page for the rates information.

B. Invoicing of Personal Service Contracts:

The Kentucky Model Procurement Code was recently amended to establish conditions for invoicing for fees for personal service contracts. It states, "No payment shall be made on any personal service contract unless the individual, firm, partnership, or corporation awarded the personal service contract submits its invoice on a form established by the committee." The Government Contract Review Committee has adopted a personal service contract invoice form that must be submitted as a condition of payment. A copy of the form is located on the GCRC website at: https://apps.legislature.ky.gov/moreinfo/contracts/PSC%20INVOICE%20FORM.pdf.

6.25 Copyright Ownership and Title to Designs and Copy

The contractor and University intend this RFP to result in a contract for services, and both consider the products and results of the services to be rendered by the contractor hereunder to be a work made for hire. The contractor acknowledges and agrees that the work and all rights therein, including (without limitation) copyright, belongs to and shall be the sole and exclusive property of the University. For any work that is not considered a work made for hire under applicable law, title and copyright ownership shall be assigned to the University.

Title to all dies, type, cuts, artwork, negatives, positives, color separations, progressive proofs, plates, copy and any other requirement not stated herein required for completion of the finished product for use in connection with any University job shall be the property of and owned by the University. Such items shall be returned to the appropriate department upon completion and/or delivery of work unless otherwise authorized by the University. In the event that time of return is not specified, the contractor shall return all such items to the appropriate University department within one week of delivery.

6.26 <u>University Brand Standards</u>

The contractor must adhere to all University of Kentucky Brand Standards. University Brand Standards are maintained by the University Public Relations Office (UKPR) and can be viewed at http://www.uky.edu/prmarketing/brand-standards. Non-adherence to the standards can have a penalty up to and including contract cancellation. Only the UKPR Director or designee can approve exceptions to the University standards.

Graphics standards for the UK HealthCare areas are governed by UK HealthCare Clinical Enterprise Graphic Standards, found at: https://ukhealthcare.uky.edu/staff/brand-strategy.

Contractor warrants that its products or services provided hereunder will be in compliance with all applicable Federal disabilities laws and regulations, including without limitation the accessibility requirements of Section 255 of the Federal Telecommunications Act of 1996 (47 U.S.C. § 255) and Section 508 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794d), and its implementing

regulations set forth at Title 36, Code of Federal Regulations, Part 1194. For purposes of clarity, updated regulations under Section 508 standards now incorporate WCAG 2.0, and for purposes of this agreement WCAG 2.0 Level AA compliance is expressly included. Contractor agrees to promptly respond to, resolve and remediate any complaint regarding accessibility of products or services in a timely manner and provide an updated version to University at no cost. If deficiencies are identified, University reserves the right to request from Contractor, a timeline by which accessibility standards will be incorporated into the products or services provided by Contractor and shall provide such a timeline within a commercially reasonable duration of time. Failure to comply with these requirements shall constitute a material breach of this Agreement and shall be grounds for termination of this Agreement.

Where any customized web services are provided, Contractor represents that it has reviewed the University's Web Policy and all products or services will comply with its published standards.

Contractor will provide University with a current Voluntary Product Accessibility Template (VPAT) for any deliverable(s). If none is available, Vendor will provide sufficient information to reasonably assure the University that the products or services are fully compliant with current requirements.

6.27 **Printing Statutes**

The purchase of printing services for all state agencies is governed by Chapter 57 of the Kentucky Revised Statutes. Specifically, all printing must be awarded to the lowest responsive bidder and approved by the Governor of Kentucky. In compliance with these statutes, all printing must be provided by a contract established by the Purchasing Division.

6.28 Payment Terms

The University adheres to a strategic approach regarding payables management based on risk minimization, processing costs, and industry best practices. As such, suppliers and individuals doing business with the University will be paid based on the following protocol:

- The University utilizes Payment Plus (e-payables) as its primary default form of payment. By enrolling in Payment Plus, suppliers can receive payments immediately (all invoices will be paid immediately upon confirmation of goods receipt and invoice). The process is electronic and the supplier receives real-time payment notices. Additional information regarding Payment Plus (and enrollment form) can be found at: https://www.uky.edu/ufs/payment-plus-supplier-enrollment-form.
- 2. Payments by check. Payment terms for check payments are Net-30.
- 3. Individuals receiving payments from the University that require ACH direct payments will only be processed under special circumstances as approved by the Controller's office. Payment terms for ACH are Net-40.

7.0 SCOPE OF SERVICES

7.1 <u>Detailed Services Defined</u>

General Conditions:

- 1. The Contractor shall conduct their business in a courteous, orderly, ethical and business-like manner to maintain the confidence of the University community.
- 2. The University reserves the right to purchase the services defined herein from an alternate contractor if the selected contractor is unable to complete 25% of the scope of work within the first 30 days after contract award.
- 3. The Contractor shall coordinate all work including building access, schedule, technical questions, etc... with the Information Technology Services (ITS) project manager.

WTY Upgrade Scope of Work

<u>Fiber</u>

- Install Corning 48 strand plenum rated single mode fiber cable from BDFs B-2 and B-48A to each of eight basement IDFs (total of 8 x 2 = 16 cables) per logical layout drawing in Appendix A. Route cables per routing drawing in Appendix A.
- Install Corning 12 strand plenum rated single mode fiber cable from each basement IDF through existing floor cores to the five IDFs stacked above (total of 8 x 5 = 40 cables) per logical layout drawing in Appendix A
- Terminate all fiber on Corning splice cassettes
- Install Corning CCH fiber enclosures as needed (2U size minimum, 4U size required if more than four splice cassettes needed in a BDF/IDF)
- Test each fiber strand in both directions per UK ITS and BICSI standards and provide results in electronic format
- Firestop penetrations as needed per NFPA standards
- Contractor to provide all materials
- Inner-duct is not required
- All work to be performed in accordance with current UK ITS standards (270000S01 at https://www.uky.edu/cpmd/design-standards) unless specified differently in this scope of work
- Contractor shall have minimum 1 RCDD (Registered Communications Distribution Designer) on permanent staff both at bidding and throughout the entire construction schedule
- Minimum 50% of contractor technicians shall be certified under BICSI (Building Industry Consulting Services International) installation certification program

Pathways

- Install j-hook pathway from each wireless access point (WAP) location on wireless network design drawings in Appendix B to nearest cable tray
- See Appendix C for various WAP mounting details
- Install 2400 wiremold where surface mounted raceway is required on walls
- Install conduit sleeves through walls as required

- Install pull string in new pathways
- Install 4-11/16" square box with a single gang mud ring at each WAP location
- Install access panels as needed in hard ceiling areas to allow pathway and cable installation
- Patch and paint ceilings as necessary
- Firestop penetrations as needed per NFPA standards
- Contractor to provide all materials
- All work to be performed in accordance with current UK ITS standards (270000S01 at https://www.uky.edu/cpmd/design-standards) unless specified differently in this scope of work

Horizontal Cabling and WAP Installation

- Install one plenum rated green Cat 6A shielded cable (Commscope CS44P) to each of the 248 WAP locations shown on the wireless network design drawings in Appendix B
- See Appendix C for various WAP mounting details
- Terminate faceplate end with green jack and patch panel end with gray jack
- Install Cat 6A patch panels in UK ITS approved rack locations as needed
- Label all cables, faceplates, and patch panels per UK ITS standards (270000S01 at https://www.uky.edu/cpmd/design-standards)
- Test all cables with a permanent link test per UK ITS standards (270000S01 at https://www.uky.edu/cpmd/design-standards) and provide results in electronic format
- Install UK ITS provided WAP and mounting hardware per drawing and install a plenum rated yellow
 Cat 6A shielded patch cable from faceplate jack to WAP
- Contractor to provide all materials
- UK ITS will provide and install patch cables from patch panel to network switch
- All work to be performed in accordance with current UK ITS standards (270000S01
 at https://www.uky.edu/cpmd/design-standards) unless specified differently in this scope of work
- Contractor shall have minimum 1 RCDD (Registered Communications Distribution Designer) on permanent staff both at bidding and throughout the entire construction schedule
- Minimum 50% of contractor technicians shall be certified under BICSI (Building Industry Consulting Services International) installation certification program

UPS Electrical Receptacles

- BDF B-2: install two L6-30 receptacles, one on normal power and one on emergency power
- BDF B-48A: install two L6-30 receptacles, one on normal power and one on emergency power
- IDF B-14: install one L6-30 receptacle on emergency power
- IDF B-39: install one L6-30 receptacle on emergency power
- IDF B-44A: install one L5-30 receptacle on emergency power
- IDF B-97: install one L5-30 receptacle on emergency power
- Contractor to provide all materials
- Contractor is responsible for electrical permits and inspections as required
- All work to be performed in accordance with current NEC and UK standards

8.0 FINANCIAL OFFER SUMMARY

Offerors are to provide a fixed price for the services offered.

8.1 <u>Mandatory Services (Section 7.1)</u>

Please complete and attach Section 7.1 as a firm quote, by line-item, to provide support for your firm fixed price bid.

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GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION BY A GENERAL CONTRACTOR

University of Kentucky Capital Construction Division

These General Conditions are binding upon the General Contractor and all Sub-contractors as each are subject to the provisions contained herein.

ARTICLE 1 - DEFINITIONS

- 1.1 Wherever used in these General Conditions or in other Contract Documents, the following terms have the meaning indicated which are applicable to both the singular and plural thereof:
- 1.1.1 ARCHITECTS SUPPLEMENTAL INSTRUCTIONS (ASI) The term "ASI" means a written order issued by the Consultant that clarifies or interprets the Contract Documents, that orders minor changes in the Work, that does not require an adjustment in either cost or time, and that does not require a Change Order
- 1.1.2 BUSINESS DAY The term "Business Day" means a Calendar Day that is not a Saturday, Sunday or legal holiday in Fayette County, Kentucky.
- 1.1.3 CALENDAR DAY The term "Calendar Day" means a day of twenty-four hours measured from midnight to the next midnight.
- 1.1.4 CHANGE ORDER The term "Change Order" means a written order to the General Contractor, signed by the Owner and issued after the execution of the Contract, directing a change in the Work or an adjustment in the Contract Amount or the Contract Time. A Change Order may be an agreed change by the General Contractor and the Owner or it may be a unilateral change by the Owner.
- 1.1.5 CONSULTANT The term "Consultant" means the person and/or entity, whether singular or plural, either Architect, Engineer or other Consultant, who is or are identified as such in the Contract Documents.
- 1.1.6 CONTRACT The term "Contract" means the Contract between Owner and General Contractor and consists of all Contract Documents as defined in Article 1.1.8 of these General Conditions.
- 1.1.7 CONTRACT AMOUNT The term "Contract Amount" means the sum stated in the Agreement which represents the total amount payable by the Owner to the General Contractor for the performance of the Work under the Contract Documents, plus or minus adjustments as provided for in the Contract Documents or by approved Change Orders.
- 1.1.8 CONTRACT DOCUMENTS The "Contract Documents" include the Agreement of Contract between the Owner and the General Contractor (the "Agreement"); the General Conditions; the Special Conditions; the General Contractor's Form of Proposal; the General Contractor's Bonds; the Specifications, Drawings and Addenda for the construction of the Project; and any Change Orders issued after execution of this Contract. The Contract Documents shall not be construed to create a contractual relationship of any kind between the Owner and any Sub-contractor, or any person or entity other than the General Contractor. Documents not included or expressly contemplated in this Article do not, and shall not, form any part of the Contract for Construction. Without limiting the generality of the foregoing, shop drawings and other submittals from the General Contractor or its

Sub-contractors and suppliers do not constitute a part of the Contract Documents. Except as otherwise provided, where these Contract Documents obligate the General Contractor to certain responsibilities or require the General Contractor to perform certain actions, the General Contractor may require these same responsibilities and/or actions of one or more Sub-contractors. However, assignment of such responsibilities or actions to one or more Sub-contractors shall not be construed to relieve the General Contractor of its obligation to the University under this contract.

- CONTRACT TIME The term "Contract Time", unless otherwise provided, means the specified number of consecutive Calendar Days following the stipulated commencement of the Work as stated in the Work Order, plus or minus adjustments as provided for by approved Change Orders, within which the General Contractor shall complete the Work required by the Contract and shall achieve certification of substantial and final completion.
- 1.1.10 GENERAL CONTRACTOR or (GC) The term "General Contractor" or "GC" means the person or entity who will or has entered into a contract with the Owner that assumes the risk for construction of the Project as the general contractor, and who will provide consultation and collaboration regarding the construction during and after design of the Project. The GC shall execute and hold all construction Sub-contracts and Purchase Orders for the Project.
- 1.1.11 KRS REFERENCES Reference to "KRS" means the "Kentucky Revised Statutes" adopted by the Commonwealth of Kentucky, including all laws that may have been revised, amended, supplemented or new laws enacted.
- 1.1.12 OWNER The term "Owner" means the University of Kentucky, a statutory body corporate existing pursuant to Sections 164.100 et seq. of the Kentucky Revised Statutes.
- 1.1.13 PROJECT The term "Project" means the total construction of the Work performed under the Contract Documents, which may be the whole or a part, and which may include construction by the Owner or by separate contracts.
- 1.1.14 PROJECT MANAGER The term "Project Manager", when used alone, means the Owner's representative responsible for administration and management of the Project. The Owner's Project Manager during construction shall be the designated University of Kentucky Capital Projects Management Project Manager that is in charge of the Project. The term "General Contractor's Project Manager" or "GC Project Manager" means the individual employed by the General Contractor who is assigned to the Project to provide overall management during both the design and construction phases of the Project, and who has total responsibility for the successful completion of the Project
- 1.1.15 PROVIDE The term "Provide," as used throughout the specifications, shall mean furnish, install and pay for.
- 1.1.16 SHOP DRAWINGS The term "Shop Drawings" means drawings, diagrams, schedules, and other data specially prepared for the Work by the General Contractor or any Sub-contractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.
- 1.1.17 SUBSTANTIAL COMPLETION The term "Substantial Completion" is the point at which, as certified in writing by the Owner, a project is at the level of completion, in strict compliance with the contract, where (a) necessary approval by public regulatory authorities (and by other authorities having jurisdiction or as identified in Article 11.2, as necessary) has been given; (b) the Owner has received all required warranties and documentation, and (c) the Owner may enjoy beneficial use or

occupancy and may use, operate, and maintain the project in all respects, for its intended purpose. Partial use or occupancy shall not necessarily result in the project being deemed substantially complete and shall not be evidence of Substantial Completion. In order for the Owner to enjoy beneficial use or occupancy and use, operate, and maintain the project in all respects, for its intended purpose, the stage or progress of the Work or a designated portion thereof shall be sufficiently complete, accessible, operable and usable, and all parts, systems and site Work shall be 100% complete, cleaned and available for the Owner's full use without interruption in accordance with the Contract Documents, including but not limited to the provisions of Article 28 of these General Conditions. The Work will not be considered acceptable for Substantial Completion review until all Project systems included in the Work are operational as designed and scheduled, all designated or required governmental inspections and certifications have been made and approvals provided to the Owner, designated instruction of the Owner's personnel in the operation of systems has been completed, and all final finishes within the Contract Documents are in place. In general, the only remaining Work shall be minor in nature so that the Owner and/or the Owner's tenants could occupy the Project on that date and the completion of the Work by the General Contractor would not materially interfere or hamper the Owner's or the Owner's tenants' normal business operations. As a further condition of Substantial Completion acceptance, the General Contractor shall certify in writing that all remaining Work, the same being solely of a "punch list" nature, will be completed within thirty (30) consecutive Calendar Days following the date of Substantial Completion.

- 1.1.17.1The parties agree that "substantial completion" as defined in Article No. 2 of the Agreement and Article 1 of the General Conditions, as extended by approved Change Order(s) pursuant to Article 18.1 of the General Conditions, shall be the "date of completion specified in the contract" for purposes of KRS. 45A.250(2).
- 1.1.18 SUB-CONTRACTOR The term "Sub-contractor" means the person, company, corporation, joint venture or other legal entity with whom the General Contractor has executed a Contract for a portion of the Work.
- 1.1.19 WORK The term "Work" means the scope of construction and services required by the Contract Documents and all approved Change Orders, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the General Contractor to perform and complete the General Contractor's obligations under the Contract in an expeditious, orderly and workmanlike manner. The Work may constitute the whole or a part of the Project.
- 1.1.20 WORK ORDER The term "Work Order" means a written notice by the Owner to the General Contractor authorizing the General Contractor to commence Work under the Contract and establishing the beginning date from which the time for Substantial and Final Completion shall be established.
- 1.1.21 UNIT PRICE The term "Unit Price" means the amount per unit of measurement for materials or services as described in the bid documents.

ARTICLE 2 - CONSULTANT

- 2.1 The Consultant will be the Owner's representative during construction and until the Work is complete. The Consultant will advise and consult with the Owner. The Owner's instructions to the General Contractor may be forwarded through the Consultant.
- 2.2 The Consultant will regularly, but no less frequently that monthly, visit the site to become familiar with the progress of the Work, the quality of the Work being provided and to determine if the Rev 11/2020

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Work is proceeding in accordance with the Contract Documents. On the basis of these on-site inspections, the Consultant will inform the Owner of the progress of the Work, will advise the Owner of any defects and deficiencies observed in the Work and, when appropriate, will certify to the Owner that the Work in place equals or exceeds the amount requested by the General Contractor on all applications for progress payments.

- 2.2.1 If applicable for the Work, the Consultant will verify to the Owner that the General Contractor is performing erosion prevention and sediment control inspections as required by the Kentucky Division of Water Construction General Permit (KYR10) at least once every 7 days and shall include the findings in the site visit reports.
- 2.3 The Consultant will be the interpreter of the requirements of the drawings and specifications and any changes made to the drawings and specifications.
- 2.4 Claims, disputes, and other matters in question that arise relating to the execution or the progress of the Work shall be referred in writing to the Consultant by the General Contractor. The Consultant will provide a response in accordance with and subject to the provisions of Article 38 of these General Conditions
- 2.5 The Consultant will have the authority to reject Work which does not conform to the Contract Documents or to the required level of quality and performance.
- 2.6 The Consultant will review and approve, or take other appropriate action upon receipt of the General Contractor's submittals such as Shop Drawings, product data, and samples. The review of submittals will be for general conformance with the design concept of the work, and for compliance with the information provided by the Contract Documents. Such review will not relieve the General Contractor of any responsibility for errors or omissions in submittals, and will in no way constitute a waiver of or change to the requirements of the Contract Documents.
- 2.6.1 The Consultant's review and response will be completed with reasonable promptness with a goal of ten (10) business days or less. The Consultant's review of a specific item shall not indicate approval of an assembly of which the item is a component.
- 2.7 The Consultant will prepare Change Orders for the Owner to direct changes in the Work. Minor changes in the Work, not involving modifications to the contract cost or completion times and that are consistent with the purpose of Work, may be directed by the Consultant through Architectural Supplemental Instructions (ASI).
- 2.9 When requested by the General Contractor, the Consultant will conduct inspections to determine if the Project is at the level of completion required by and in strict compliance with the Contract such that the Owner may enjoy beneficial use or occupancy and may use, operate, and maintain the project in all respects, for its intended purpose, as further defined in the Contract. If the level of completion warrants, the Consultant will confirm that all necessary approvals by public regulatory authorities or other authorities having jurisdiction have been given, will confirm that the Owner has received all required warranties and documentation, will recommend dates for certification of Substantial Completion and Final Completion by the Owner, and will complete and submit the Notice of Termination of coverage under the KPDES General Permit for Storm Water Discharges Associated with Construction Activity.
- 2.10 The General Contractor will accept direction for the Work on the Project only from the Owner's Project Manager or from the Consultant. Requests for information from the General Contractor shall be directed to the Consultant.

ARTICLE 3 - CORRELATION AND INTENT OF CONTRACT DOCUMENTS

- 3.1 Execution of the Contract by the General Contractor is a representation that the General Contractor has or shall thoroughly and carefully examine the site of the of Work; shall timely investigate all conditions which can affect the Work or its cost, including but not limited to availability of labor, materials, supplies, water, electrical power, roads, access to the site, uncertainties of weather, water tables, the character of equipment and facilities needed to perform the Work, and local conditions under which the Work is to be performed; and further, that the General Contractor shall insure that the documents issued for bidding by Sub-contractors reflect the results of this investigation and are adequate to complete the Work. It is the responsibility of the General Contractor to be familiar with and comply with all Federal, State, and local laws, ordinances, and regulations which might affect those engaged in the Work, and to be familiar with the materials, equipment, or procedures to be used in the Work, or which in any other way could affect the completion of the Work. The General Contractor shall carefully study and compare the Contract Documents with each other and with other information provided to the General Contractor by the Consultant or the Owner pursuant to the Contract Documents and shall notify the Owner and the Consultant in writing of any errors, inconsistencies or omissions in the Contract Documents recognized by the General Contractor. Any failure to properly familiarize itself with the proposed Work shall not relieve the General Contractor from the responsibility for completing the Work in accordance with the Contract Documents.
- 3.2 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the General Contractor. Labor or materials which are reasonably inferable from the Contract Documents and which are necessary to produce the desired result, even though not specifically mentioned in the Contract Documents, shall be included in the Work at no additional cost to the Owner.
- 3.3 In the event a question arises regarding the meaning or intent of the Contract Documents, the General Contractor shall report it by preparing an RFI in eCommunication® to the Consultant. The Consultant shall furnish, with reasonable promptness and with a goal of three (3) business days and by whatever means as may be appropriate, additional instructions necessary for the proper execution of the Work. All such drawings and instructions shall be consistent with the Contract Documents, true developments thereof, and reasonably inferable therefrom. The Work shall be executed in conformity therewith and the General Contractor shall do no Work without proper drawings and instructions. Items indicated on drawings as "N.I.C." or "Not In Contract" are shown for explanation purposes only and are not to be included in this Contract.
- 3.4 The Contract Documents are complementary, and what is required by one shall be binding as if required by all. In case of conflicts between the various documents, the order of precedence will be as follows: (1) Addenda, (2) Special Conditions, (3) General Conditions, (4) Technical provisions of the Specifications and (5) Drawings.
- 3.5 Any notice to the General Contractor from the Owner regarding this Contract shall be in writing and delivery and service of such notice shall be considered complete when sent by certified mail to the General Contractor at General Contractor's last known address. Such notice may also, at the Owner's election, be hand-delivered to the General Contractor or the General Contractor's authorized representative.

ARTICLE 4 - PRE-CONSTRUCTION CONFERENCE

4.1 Following the execution of the Contract, a pre-construction conference will be held.

Representatives of the Capital Project Management Division, Consultant, General Contractor, and all

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major Sub-contractors shall be present to discuss the time for construction, methods and plan of operation, authority of the Consultant, procedures for handling shop drawings, progress estimates and requests for payments, and other relevant issues. The time and location of this meeting will be the responsibility of the General Contractor in consultation with the Consultant, Owner and other interested parties.

4.2 Environmental aspects of the project, including erosion prevention and sediment control (EPSC) and storm water management shall be discussed during this conference. The Group shall discuss the Storm Water Pollution Prevention Plan (SWPPP) to ensure that all parties understand the requirements. During this meeting the responsibility for reading the rain gage on a daily basis will be established. The Contractor will identify the initial measures to be installed prior to land disturbing activities beginning. Any modifications to the SWPPP due to constructability issues should be discussed at this conference.

ARTICLE 5 - SHOP DRAWINGS

- 5.1 The General Contractor shall submit a shop drawing and product sample submittal schedule to the Consultant establishing dates for the submission of Shop Drawings and product samples prior to the submittal of the General Contractor's first application for payment for construction phase services. The schedule shall have been coordinated with all Sub-contractors and material suppliers as well as the General Contractor's construction schedule and shall allow for adequate and reasonable time for review of the samples and submittals by the Consultant. The General Contractor shall be responsible for compliance with the submittal schedule and shall insure that the Submittal Schedule is maintained in order to accurately reflect the status of processing all required submittals.
- 5.2 The General Contractor shall review product samples and shop drawings for compliance with the requirements of the Contract Documents, and shall submit them to the Consultant in accordance with submittal procedure and schedule established. The General Contractor's review and submittal to the Consultant of any shop drawing or sample shall constitute a representation to the Owner and Consultant that a) the General Contractor has determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data, or assumes full responsibility for doing so, and that b) each shop drawing or sample has been reviewed or coordinated with the requirements of the Work and the Contract Documents. Shop drawings and submittal requirements shall not be deemed satisfied until approvable documents are received by the Consultant. Incorrect or incomplete submittals will be returned to the General Contractor without action. No claim for additional time or extension of the contract will be considered if such claim is the result of failure by the General Contractor to provide correct, accurate, complete and approvable submittals.
- 5.3 The Consultant will review submittals with reasonable promptness, and take appropriate action or return submittals to the General Contractor for corrections as may be required. The General Contractor shall make any corrections required by the Consultant for compliance with the Contract and shall return the required number of corrected copies of shop drawings and resubmit new samples until approved. The General Contractor shall direct specific attention, in writing, or on resubmitted shop drawings, to revisions other than the corrections called for by the Consultant on previous submissions.
- 5.4 Where a shop drawing or sample submission is required by the specifications, no related Work shall be commenced until the submission has been accepted in writing by the Consultant. The review and acceptance shall be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents. The acceptance of a separate item will not indicate acceptance of the assembly in which the item functions. A copy of each accepted

shop drawing and product sample shall be kept in good order by the General Contractor at the site and shall be made available to the Consultant on request.

5.5 The Consultant's acceptance of Shop Drawings or samples shall not relieve the General Contractor from the responsibility for any deviations from the requirements of the Contract Documents unless the General Contractor has in writing called the Consultant's attention to such deviation at the time of submission and the Consultant has given written approval to the specific deviation. Any acceptance by the Consultant does not relieve the General Contractor from responsibility for errors or omissions in the Shop Drawings.

ARTICLE 6 - LAYING OUT WORK

- 6.1 The General Contractor will secure all data at the site of the building such as grades of lot, convenience of receiving and sorting material, location of public services, and other information which will have a bearing proposals or on the execution of the Work and shall address these issues in the preparation of scopes of work for the Subcontract bid packages. No allowance shall be made for failure of the General Contractor to obtain such site information prior to submitting their proposal or to include such information in the Subcontract bid packages, and no adjustment to the General Contractor's Contract amount or stipulated time for completion shall be allowed when due to failure by the General Contractor to do so.
- Work executed under the Contract. The General Contractor shall verify the figures before laying out the Work and will be held responsible for any error resulting from failure to do so. Working from lines and levels established by the property survey or by other Contract Documents, and as shown in relation to the Work, the General Contractor will establish and maintain bench marks and other dependable markers to set lines and levels for Work at each area of construction and elsewhere on the site as needed to properly locate each element of the entire Project. The General Contractor shall calculate and measure from the bench marks and dependable markers required dimensions as shown (within recognized tolerances if not otherwise indicated), and shall not scale drawings to determine dimensions. The General Contractor shall advise Sub-contractors and trades persons performing Work of marked lines and levels provided for their use in layout work. The General Contractor shall verify layout information shown on drawings as required for the Work.
- 6.3 The General Contractor shall be responsible for coordination of the installation of all elements of the Work, including preparation of coordination drawings if required by the Contract Documents or deemed necessary by the General Contractor for performance of the Work.
- 6.4 If any encroachments are made by the General Contractor or any Sub-contractor on any adjacent property, the General Contractor shall, at the General Contractor's expense, and within thirty (30) Calendar Days after written notice from the Owner or the Consultant, correct any encroachments and obtain approval from the owner of such adjacent property for any encroachments that cannot be feasibly corrected. The General Contractor shall not be entitled to any adjustment to the Contract Amount or the Contract Time as a result of any such encroachment or the correction thereof.

ARTICLE 7 - PLANS, DRAWINGS, SPECIFICATIONS AND RECORD DRAWINGS

7.1 Unless otherwise provided in the Contract Documents, the Owner will furnish the General Contractor free of charge one electronic or reproducible copy of the Drawings and Specifications for execution of the Work. The General Contractor shall pay for the cost of duplication of all sets required over and above this amount.

- 7.2 The cost of additional plans, specifications and official contract documents for use by Subcontractors for bidding and for construction shall be borne by the General Contractor or by the Subcontractors. Arrangements for orders and payment for plans, specifications and other contract documents must be made with Lynn Imaging, Lexington, Kentucky (http://www.ukplanroom.com) or by phone at 1.800.888.0693 or 859.255.1021) before a set of documents will be issued.
- 7.3 The General Contractor shall keep one copy of all Contract Documents, including Drawings, Specifications and Shop Drawings on the site, in good order. A qualified representative of the General Contractor shall record on these documents, from day to day as Work progresses, all changes and deviations from the Contract Documents. Prior to Substantial Completion, the General Contractor shall complete and turn over to the Consultant the As-Built drawings, with a digital copy (in PDF format) submitted to the Owner simultaneously. The As-Built drawings shall consist of a set of drawings which indicate all field changes that were made to adapt to field conditions, changes resulting from Change Orders and all concealed and buried installations of piping, conduit and utility services. All buried and concealed items, both inside and outside the facility, shall be accurately located on the As-Built drawings as to depth and in relationship to not less than two permanent features such as interior or exterior wall faces. The As-Built drawings shall be clean and all changes, corrections and dimensions shall be given in a neat and legible manner in a contrasting color. For any changes or corrections in the Work which are made subsequent to the Substantial Completion Inspection, revisions shall be made to the As-Built drawings and submitted to the Consultant prior to final payment. Approval of the final payment request shall be contingent upon compliance with these provisions.
- 7.4 All drawings, specifications and copies thereof, furnished by the Consultant to the Owner, are the property of the University of Kentucky. They shall not be used by the Consultant, General Contractor, or any Sub-contractor or Supplier on any other Project.

ARTICLE 8 - TEMPORARY UTILITIES

- 8.1 The General Contractor shall provide and pay for, unless modified in the Special Conditions, all temporary conveniences including, but not limited to, wiring, lighting, power and electrical outlets, heat, water, and sanitary facilities required for construction. In the event the Owner elects to make available, at no cost to the General Contractor, the electric power required for construction activities, the electric power supplied shall not be utilized as a means to provide temporary heat or for welding.
- 8.2 The General Contractor is responsible for paying all utility costs, whether the costs are from an outside utility company or from the University, for utility services used in the course of completing the Work. The General Contractor shall provide temporary heating, ventilation, telephones, water, electricity, portable gas, lighting for the Work, safety lighting, security lighting, and trash removal/dumpster service for both General Contractor and Sub-contractor use during the Project. Work and safety lighting shall be provided continuously during working hours. Security lighting shall be provided at all hours of darkness.

ARTICLE 9 - MATERIALS, EQUIPMENT, APPLIANCES, AND EMPLOYEES

9.1 Unless otherwise provided in the Contract Documents, the General Contractor shall provide and pay for all materials, labor and personnel, tools, equipment, construction equipment and machinery, utilities, supplies, appliances, transportation, taxes, temporary facilities, licenses, permits and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and the proper execution and completion of the Work safely, without damage to persons and property, and in compliance with all applicable law. The General Contractor shall furnish, erect, maintain, and

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remove at the completion of the Contract, all temporary installations as may be required during the construction period.

- 9.2 Immediately following the execution of each of the sub-contracts, the General Contractor shall determine the source of supply for all materials required under that sub-contracts and the length of time required for their delivery, and shall assure that orders are placed for such materials in sufficient time to assure delivery to the site so that such materials are available to be incorporated into the Work when needed to comply with the schedule of Work.
- 9.3 The General Contractor shall immediately notify the Consultant in writing of any known problems with the procurement, fabrication or ordering of any materials. Unless changes are approved in writing by the Consultant, the General Contractor will not be excused for delays in securing materials specified.
- The General Contractor or Sub-contractors shall not place purchase orders or issue contracts for materials, supplies, equipment and services necessary to complete this Project using the name of the University of Kentucky. All orders placed by the General Contractor that are related to this Project must use the name of the General Contractor or Sub-contractor placing the order. The use of the University of Kentucky's name for ordering purposes is strictly prohibited. Payment for all goods and services required for the completion of the Work is the sole responsibility of the General Contractor. Any invoices received at the University that are related to this Project will be immediately forwarded to the General Contractor. Copies of these invoices will be made and placed in the General Contractor's file and proof must be provided that these invoices have been paid in full prior to the processing of the next scheduled application for progress payment.
- 9.5 The route for delivery of all materials to the Project shall be coordinated with the Owner's Project Manager.
- 9.6 The General Contractor shall be responsible for the proper and adequate storage of materials and equipment. Unless otherwise provided in the Contract Documents, all materials shall be of good quality and new. Workmanship and materials supplied and incorporated into this Work shall be of first quality. The General Contractor, if required, shall furnish satisfactory evidence as to the kind and quality of materials.
- 9.7 The General Contractor shall at all times enforce strict discipline and good order among all employees and Sub-contractors. The conduct of all individuals performing Work or operations related to the Work is the responsibility of the General Contractor. The consumption of alcohol or drugs on the job by any workers is strictly prohibited. Any individual apprehended under the influence of alcohol or drugs on the premises at any time shall be subject to automatic removal from the Project by the General Contractor, the Consultant or the Owner. Improper conduct of any kind will not be permitted and may result in the offending individual, Sub-contractor or General Contractor being barred from the Owner's premises. The General Contractor shall not permit the employment on the Project of any person unfit or not skilled in the Work assigned.

ARTICLE 10 - ROYALTIES AND PATENTS

10.1 The General Contractor shall pay all royalties and license fees. If a particular process, product or device is specified in the Contract Documents and it is known to be subject to patent rights or copyrights, the existence of such rights shall be disclosed in the Contract Documents and the General Contractor is responsible for payment of all associated royalties. The General Contractor hereby agrees to indemnify, defend and hold the Owner, and any subsidiary, parent, or affiliates of the Owner, or other persons or entities designated by the Owner, and their respective directors, officers, agents,

employees and designees (collectively, the "Indemnities") harmless from all losses, claims, liabilities, injuries, damages and expenses, including attorneys' fees and legal expenses, that the Indemnities may incur as a result of the General Contractor's failure to strictly comply with its obligations under this Paragraph 10.1.

ARTICLE 11 - SURVEYS, PERMITS, REGULATIONS, AND STANDARD CODES

- 11.1 The Owner will furnish only such surveys that are specifically required by the Contract Documents. Approvals, assessments, and easements for permanent structures or permanent changes in existing structures shall be secured and paid for by the Owner, unless otherwise specified. All required utility tap-on fees shall be secured and paid for by the General Contractor, or included in a sub-contract, including the Lexington-Fayette Urban County Government (LFUCG) sewer tap-on fee. All construction permits, where required by local ordinances, except excavation permit, shall be obtained by the General Contractor, but no fee shall be charged to or paid by the General Contractor as the Owner is exempt from such charges. A Contractor's license fee for doing business in the locale, if applicable, shall be paid for by the General Contractor.
- 11.2 All branches of Work shown on the plans and specifications shall be executed in strict compliance with all state and federal regulations and codes, with all national codes, and with the requirements of both ADA and JCAHO when applicable.
- 11.3 The Contractor, on projects disturbing 1 acre or more, or projects less than 1 acre that are part of a large common development plan, including grading, clearing, excavation, material laydown or other earth moving activities, shall assure full compliance with the requirements of the KYR10 and shall:
- 11.3.1 File a Notice of Intent (KPDES FORM eNOI-SWCA) with the Kentucky Division of Water and copy the UKCPM Project Manager and Water Quality Manager prior to the start of any excavation, grading or site development work.
- 11.3.2 The permittee (contractor) shall develop a Stormwater Pollution Prevention Plan (SWPPP) based on the Erosion Prevention and Sediment Control Plan (EPSC) as a minimum design standard. Ensure all requirements of KYR10 are fully addressed in the SWPPP. Once the SWPPP is written, forward a copy to the Capital Projects Project Manager and to the Water Quality Manager for approval. Work cannot begin until SWPPP is approved and permit coverage obtained.
- 11.3.3 Install BMP's such as, basins, traps, drainage, and sediment barriers before beginning land disturbing activities, including the construction entrance/exit. Once prevention measures have been installed, grading can commence. In the event a new construction entrance is added to the site, this new entrance must be built according to the EPSC design details with a wheel wash, a water supply and a sediment catch basin for washed wheel sediment.
- 11.3.4 Maintain all measures in working condition. Perform maintenance activities identified during inspections prior to the next rain event. Remove sediment from BMPs when 1/3 the storage volume has been filled.
- 11.3.5 Stabilize disturbed areas within 14 days of inactivity or reaching final grade on any portion of the site according to permit requirements.
- 11.3.6 Inspect the site every 7 calendar days and after each rainfall of ½"or more. Document site conditions, rainfall, maintenance activities needed and performed, stabilization needed and performed, and where new measures are needed. Discuss deficiencies with UK Project Manager and Water Quality Manager and note on the SWPPP Inspection Sheets.

Per the KPDES Permit, Section 2.1.7. "Inspections – Permittee Conducted". "Inspections shall be performed by personnel knowledgeable and skilled in assessing conditions at the construction site that could impact storm water quality and assessing the effectiveness of erosion prevention measures, sediment control measures, and other site management practices chosen to control the quality of the storm water discharges. Inspectors shall have training in storm water construction management such as Kentucky Erosion Prevention & Sediment Control (KEPSC), Certified Professional in Stormwater Quality (CPSWQ), Certified Erosion, Sediment and Stormwater Inspector (CESSWI), or other similar training."

Inspections shall include a tour of the total site and verification that all BMPs are performing as constructed. Inspector shall certify that all observations are correct as stated and sign and date the inspection form.

- 11.3.7 Keep Permit, SWPPP, weekly/rain event inspections sheets in binder in construction trailer. Any BMP change/alteration from SWPPP and EPSC plan must be noted on the EPSC and SWPPP.
- 11.3.8 No soil and sediment shall leave the construction site. BMPs shall be repaired immediately if failure has occurred. No Mud shall be permitted on any street. All entrances/exits shall have a means by which to wash wheels. If an entrance/exit does not have a wheel wash, that exit shall not be used in muddy conditions. If for any reason mud is tracked offsite, the area must be cleaned in such a way as to prevent sediment from entering the storm sewer system. The use of tractor brooms solely will not be permitted.
- 11.3.9 When it is necessary to dewater an excavation, proper BMPs must be implemented. Dewatering filter bags must be sized and used according to manufacturer's requirements and Standard Operating Procedures for Dewatering Bags.
- 11.3.10 UK (the MS4) routinely inspects sites for compliance with the EPSC/SWPPP. Any deficiencies noted become record for the Kentucky Division of Water and shall be remedied/installed as soon as site conditions are favorable but no more than 7 days from the inspection date.
- 11.3.11 At the conclusion of the project and all bare areas, slopes and ditches are 70% vegetated with the permanent ground cover, the contactor shall notify the UK Project Manager and Water Quality Manager and request a final site inspection prior to filing a "Notice of Termination (NOT) with the state. This inspection verifies that Construction BMPs can be removed, and Post-Construction BMPs are in place and functioning.
- 11.3.12 Failure of the site contractor (permitee of the KPDES Permit) to timely comply with requirements of KPDES, the Construction Manager shall inform the site contractor that a third party contractor shall be retained to remediate all BMP deficiencies immediately, and all third party costs shall be passed to the permitee of the KPDES Permit. Any fines or other costs resulting from failure to comply, levied against the Owner will be assessed against the Construction Manager's or General Constructor's funds.
- 11.3.13 Refer to 334000S01 STORM DRAINAGE UTILITIES Information for Consultants & Contractors.
- 11.3.14 Reference to standards, codes, specifications, and regulations refer to the latest edition of printing in effect at the date of issue shown in the Contract Documents unless another date is implied by the suffix number of the standard.
- 11.4 Reference to standards, codes, specifications, and regulations refer to the latest edition of printing in effect at the date of issue shown in the Contract Documents unless another date is implied by the suffix number of the standard.

- 11.5 The General Contractor shall furnish a final occupancy permit from the proper agency or agencies as required.
- 11.5 The General Contractor shall, by provision within each applicable sub-contract or by inclusion in the lump sum fee proposed to the Owner, insure the payment of all sales, consumer, use and similar taxes for materials, equipment and supplies incorporated into the Work, by unless otherwise specified in the bid documents.

ARTICLE 12 - PROTECTION OF WORK, PROPERTY, AND PUBLIC

- 12.1 The General Contractor shall continuously maintain adequate protection of all Work from damage and shall protect the Owner's property from injury or loss arising in connection with this Contract. Except as otherwise covered by Builder's Risk insurance, the General Contractor shall pay for any such damage, injury, or loss, except such as may be directly due to errors in the Contract Documents or caused by agents or employees of the Owner. The General Contractor shall adequately protect adjacent property as provided by law and the Contract Documents.
- 12.2 In an emergency affecting the safety of life, or of the Work, or of adjoining property, the General Contractor, without special instruction or authorization from the Consultant or the Owner, is obligated to act to prevent such threatened damage, loss or injury.
- 12.3 The General Contractor shall maintain fire protection as required by the Kentucky Building Code. Access to the Project site and surrounding buildings for local fire truck access must be maintained during construction. The General Contractor shall maintain construction to allow access to new, existing or temporarily relocated standpipes, fire hydrant connections and fire alarm communication panels pursuant to Section 3018.8 of the Kentucky Building Code. If the General Contractor utilizes the Owner's fire protection equipment, the General Contractor shall replace any such materials lost, consumed or misplaced during the Contract period. The General Contractor is responsible for any false alarms caused by dust created in the Work area or dust traveling to areas beyond the Work area due to inadequate dust protection barriers. Should there be a need for any existing or newly installed fire alarm system, or parts of a system that requires service, to be removed from service or disconnected, prior approval must be obtained from the Owner and the General Contractor shall immediately provide alternate protection such as a fire watch until such systems are returned to full normal operations. When work or service is completed on a disabled fire alarm system, the Owner shall be immediately notified so the system can be placed in service.
- 12.4 The General Contractor and Sub-contractors are responsible for the security of their own materials, tools and equipment at the Project site.
- 12.5 The General Contractor shall provide to the Owner's Project Manager a key to General Contractor's field office or job trailer.

ARTICLE 13 - BLASTING

13.1 Blasting is not allowed unless permission is granted in the Special Conditions. Should blasting be allowed by the Special Conditions, it shall be completed in accordance with all laws, regulations, ordinances and instructions contained in the Special Conditions.

ARTICLE 14 - CONSTRUCTION AND SAFETY DEVICES

- 14.1 The General Contractor shall provide safety controls for protection of the life and health of employees and visitors. The General Contractor will utilize precautionary methods for the prevention of damage to property, materials, supplies, and equipment, and for avoidance of work interruptions in the performance of this Contract. In order to provide such safety control, the General Contractor shall comply with all pertinent provisions of the Kentucky Fire Prevention Code, Kentucky Building Code, Kentucky Labor Cabinet's Division of Occupational Safety and Health Program Construction Standards and Federal Occupational Safety and Health (Construction) Standards that are in effect at the time the Contract is entered into and during the period in which the Contract is to be performed.
- 14.2 The General Contractor shall provide a written safety program which includes all pertinent written specialty standards such as, but not limited to, Control of Hazardous Energy Sources (Lockout/Tagout), Hazard Communications Program, First Aid, Blood Borne Pathogen Program, Respirator Use Program and Hearing Conservation Program. The General Contractor shall require all Sub-contractors to have an effective written safety program or be required to follow the General Contractor's written safety program.
- 14.3 The General Contractor shall maintain an accurate record of and shall report to Kentucky Labor Cabinet's Division of Occupational Safety and Health in the manner and on the forms prescribed by that Division, exposure data and all accidents resulting in death, traumatic injury, occupational disease. The General Contractor shall maintain an accurate record of and shall report to the Owner's Project Manager, any damage to property, materials, supplies, and equipment incident to Work under this Contract.
- 14.4 The Kentucky Labor Cabinet's Division of Occupational Safety and Health may notify the General Contractor of any noncompliance with the foregoing provisions. The General Contractor shall, upon receipt of such notice, immediately correct the cited conditions. Notice delivered to the General Contractor or the General Contractor's representative at the site of the Work shall be deemed sufficient for this purpose. If the General Contractor fails or refuses to comply promptly, the Owner may issue an order stopping all or part of the Work until satisfactory or corrective action has been taken. Failure or refusal to comply with the order will be grounds for reducing or stopping all payments due under the Contract to the General Contractor. No part of the construction time lost due to any such stop order shall be cause for, or the subject of a claim for, extension of time or for additional costs or damages by the General Contractor.
- 14.5 The General Contractor or any Sub-contractor shall immediately contact the University of Kentucky's Department of Occupational Health and Safety through the Owner's Project Manager should they be selected for an inspection by the Kentucky Occupational Safety and Health Compliance Division.
- 14.6 Compliance with the provisions of the foregoing sections by Sub-contractors shall be the responsibility of the General Contractor.
- 14.7 Nothing in the provisions of this Article 14 shall prohibit the U.S. Department of Labor or the Kentucky Department of Labor Division of Occupational Safety and Health from enforcing pertinent occupational safety and health standards as authorized under Federal or State Occupational Safety and Health Standards.
- 14.8 The General Contractor shall take all necessary precautions for the safety of employees on the Work, and shall comply with all applicable provisions of federal, state, and municipal safety laws and building codes to prevent accidents or injury to persons on, about, or adjacent to the premises

where the Work is being performed. If the General Contractor or any Sub-contractor has questions related to the health or safety required by their written safety program, they should contact the Kentucky Labor Cabinet Occupational Safety and Health Program Division of Education and Training. The General Contractor shall designate a responsible member of the on-site Work force as the safety officer and shall report to the Consultant and to the Owner the name of the person selected. The duties of the safety officer include the enforcement of safety regulations.

ARTICLE 15 - HAZARDOUS MATERIALS

- 15.1 If the General Contractor encounters material reasonably believed to be or suspected to be asbestos containing material, lead, polychlorinated biphenyls (PCBs), fluorescent light bulbs and ballasts, mercury or other hazardous material, the following procedures must be followed:
- 15.1.1 The General Contractor shall immediately stop Work in the affected area and notify the Owner's Project Manager. The Owner's Project Manager will contact the Owner's Environmental Health and Safety unit to arrange for collection of samples, review of existing data, or other testing necessary to confirm the presence of hazardous materials. The Owner's Project Manager will notify the General Contractor in writing of the results. Until that notification is received, the Work must not continue in the affected area.
- 15.1.2 If the material is confirmed to be asbestos, lead, polychlorinated biphenyls (PCBs), fluorescent light bulbs and ballasts, mercury or other hazardous material, the Owner will take appropriate action to remove the material before the General Contractor can continue Work in the affected area.
- 15.1.3 The General Contractor shall not be required to perform any Work related to asbestos, lead, polychlorinated biphenyls, or other hazardous material. The General Contractor is advised that certain classes of building materials (thermal system insulation, sprayed or troweled surfacing materials, and resilient flooring) installed before 1981 are required by law to be treated as asbestos containing until proven otherwise. These presumed asbestos containing materials must not be disturbed without confirmation from the Owner that asbestos is not present.
- 15.2 The Owner, the General Contractor, and Sub-contractors will be under the requirements of the OSHA Hazard Communication Standard (29) CFR 1910.1200. The General Contractor and Sub-contractors must provide their own written Hazard Communication Program. The Hazard Communication Standard must include: (1) A list of the hazardous chemicals to which the General Contractor's employees may be exposed; (2) Statement of the measures that General Contractor's employees and Sub-contractors may take to lessen the possibility of exposure to the hazardous materials; (3) The location of and access to the MSDS's related to the hazardous chemicals located in the Work area; (4) Procedures that the General Contractor's employees and Sub-contractors are to follow if they are exposed to hazardous chemicals above the Permissible Exposure Limit (PEL). Material Safety Data Sheets (MSDS) may be reviewed upon request by the General Contractor or any Sub-contractor as they pertain to the Work areas of the Project. Photocopies of the MSDS's may be made by General Contractor at its expense.
- 15.3 The General Contractor and Sub-contractors shall provide the Owner with a list of any hazardous materials that will be used on the job site that may be exposed to the Owner's employees. The General Contractor and Sub-contractors shall provide the Owner with copies of Material Data Sheets for materials to be used.
- 15.4 It is the policy of the Owner that PCB containing equipment will be treated by the General Contractor and the Owner in a manner that conforms to the intent of all applicable laws and

regulations (primarily 40 CFR Part 761). The following procedures shall be followed by the General Contractor and Sub-contractors while present on the Owner's Project or other property: (1) Only authorized, trained personnel may inspect, repair, or maintain PCB transformers; and (2) No combustible materials may be stored within a PCB transformer room or within five meters of a PCB transformer. Such materials include, but are not limited to, paints, solvents, plastic, paper, and wood. The General Contractor shall not use rooms containing PCB transformers for storage rooms, staging areas, job site offices or break rooms. Violation of this policy may be grounds for dismissal of the offending General Contractor and/or Sub-contractor from the Project. All PCB transformers at the University of Kentucky are identified by a PCB label as defined in federal regulations. If the General Contractor should have a question as to the location of a PCB transformer, it should contact the Owner's Project Manager.

15.5 The General Contractor shall ensure that NO asbestos-containing materials (including but not limited to: drywall, joint compound, roof mastic and floor tile adhesive) will be install on any University project without prior written approval of the University's Environmental Health and Safety Division. Additionally, the General Contractor shall submit MSDS sheets and have prior approval before installing any materials that contains hazardous substances or could pose an environmental hazard. If any environmental hazardous materials are installed without written approval of the University, the General Contractor will be responsible for all material replacement cost, all removal and all other associated damages. Any materials removed shall be taken out in accordance with all applicable federal, state and local regulations.

ARTICLE 16 - INSPECTION OF WORK

- 16.1 Inspections, tests, measurements or other acts of the Consultant are for the sole purpose of assisting the Consultant in determining if the Work, materials, rate of progress, and quantities comply with the Contract Documents. These acts or functions shall not relieve the General Contractor from performing the Work in full compliance with the Contract Documents, nor relieve the General Contractor from any of the responsibility for the Work assigned to it by the Contract Documents. No inspection by the Consultant shall constitute or imply acceptance. Approval of material is general and shall not constitute waiver of the Owner's right to demand full compliance with Contract Documents.
- 16.2 All Work completed and all materials incorporated for the Project are subject to inspection by the Owner, the Consultant or their representatives to determine conformance with the Contract Documents. The Owner, Consultant and their representatives shall at all times have access to the Work whenever it is in preparation or progress. The General Contractor shall provide, at no additional cost to the Owner, any facilities necessary for sufficient and safe access to the Work to complete any inspections required. The Consultant shall be given timely notification in order to arrange for the proper inspections to be performed on any Work outside of the normal working day or week. If the Consultant provides the General Contractor with a list of construction milestones that require inspection, the General Contractor shall provide the Consultant with at least five (5) Business Days written notice prior to the commencement of Work with respect to such milestone in order to permit the Consultant time to coordinate an inspection of the commencement of the applicable Work.
- 16.2.1 Normal Work hours are defined as a period between 7:00 a.m. and 5:00 p.m. Monday through Friday. The General Contractor shall notify the Owner's Project Manager at least one working day prior to performance of any Work for permission to do any Work during non-normal Work hours.
- 16.3 If this Contract, the Specifications, the Consultant's instructions, laws, ordinances, or any public authority require any Work to be specially inspected, tested or approved, the General Contractor shall give the Consultant timely notice of the readiness of the Work for inspection. The Consultant shall promptly make all required inspections. If any portion of the Work should be

covered contrary to the request of the Consultant, or to the requirements specifically expressed in the Contract Documents, the Work must be uncovered for inspection and observation and shall be uncovered and replaced at the General Contractor's expense.

16.4 If any other portion of the Work has been covered, which the Consultant has not specifically requested to observe prior to being covered, the Consultant, with the Owner's approval, may request to see such Work and it shall be uncovered by the General Contractor. If such Work is found to be in accordance with the Contract Documents, the cost of uncovering and replacement shall be charged to the Owner by appropriate Change Order. If such uncovered Work is not in accordance with the Contract Documents, the General Contractor shall pay all costs for uncovering and replacement of such Work.

ARTICLE 17 - SUPERINTENDENT - SUPERVISION

- 17.1 The General Contractor shall completely and thoroughly direct and superintend the Work in accordance with the highest standard of care for the General Contractor's profession so as to ensure expeditious, workmanlike performance in accordance with requirements of the Contract Documents. Except as otherwise dictated by specific requirements of the Contract Documents, the General Contractor shall be solely responsible for and have control over all construction means, methods, techniques, sequences and procedures. The General Contractor shall be responsible for the acts and omissions of all Sub-contractors and persons directly or indirectly employed by the General Contractor in the completion of the Work. The General Contractor shall be responsible for coordinating and scheduling all portions of the Work unless the Contract Documents give other specific instructions. The General Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by the activities of the Consultant in the administration of the Contract, or by tests, inspections or approvals required or performed by persons other than the General Contractor.
- 17.2 The General Contractor shall have a competent superintendent on the Project site at all times during the process of the Work. The superintendent shall have authority to act on the General Contractor's behalf with regard to all aspects of performance of this Contract. The superintendent shall have such assistants with individual specialized competencies as may be necessary to fully understand and oversee all aspects of the Work. The General Contractor shall also provide administrative, supervisory and coordinating personnel required to fully perform the Work and for interfacing the Work with other work of the Project. The superintendent and all assistants shall be physically fit for their work and capable of going to all locations where Work is being performed. A communication given to the superintendent shall be binding on the General Contractor. Immediately after the award of Contract, the General Contractor shall submit to the Consultant a list of General Contractor's employees and consultants, including names, positions held, addresses, telephone numbers and emergency contact numbers.
- 17.3 The superintendent assigned shall not be changed except under the following circumstances: (1) Where the superintendent ceases to be employed by the General Contractor, in which case the General Contractor shall give timely written notice to the Owner of the impending change of the superintendent and a reasonable explanation for the change; or (2) Where the Owner or the Consultant have reasonable grounds for dissatisfaction with the performance of the superintendent and give written notice to the General Contractor of the grounds. In either case, the General Contractor shall obtain prior written approval from the Owner of the qualifications of the proposed replacement superintendent. Such prior approval will not be unreasonably withheld.

17.4 If the Owner or Consultant determines that the superintendent is not performing, or is incompetent to perform the required Work, the Owner may direct the General Contractor to remove the superintendent from the Project and replace the superintendent with an employee who has the necessary expertise and skills to satisfactorily perform the Work.

ARTICLE 18 - CHANGES IN THE WORK

- 18.1 The Owner, at any time after execution of the Contract, may make changes within the general scope of the Contract or issue additional instructions, require additional Work, or direct the deletion of Work. The Owner's right to make changes shall not invalidate the Contract or relieve the General Contractor of any obligations under the Contract Documents. All such changes to the Work shall be authorized in writing by Change Order and shall be executed under the conditions of the Contract Document. Any adjustment of the Contract Amount or Time of Completion, as may be appropriate, shall be made only at the time of ordering such change. Change order proposals based on a reservation of rights, whether for additional compensation to be determined at a later date or for an extension of time to be determined at a later date, will not be considered for approval and shall be returned to the General Contractor without action.
- 18.2 The cost or credit resulting from a change in Work shall be determined in one or more of the following ways:
- 18.2.1 By unit prices named in the Contract or additional unit prices subsequently agreed upon;
- 18.2.2 By agreement on a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- 18.2.3 By an amount agreed upon by the General Contractor and the Owner as a mutually acceptable fixed or percentage fee.
- 18.3 All lump sum proposals shall include a detailed cost breakdown satisfactory to the Consultant and to the Owner for each component of Work indicating both labor and material costs. In computing labor costs, the hourly labor rates shall not exceed a mutually agreeable combined hourly labor rate plus fringe benefits negotiated with the Owner based on a presentation of acceptable documentation by the GC. For the purposes of this Article, the term "fringe benefits" shall mean those funds transferred irrevocably to a third party for payment/distribution. In addition, there may be added by the General Contractor and/or Sub-contractor an amount agreed upon, but not to exceed a combined total of fifteen percent (15%) of the actual costs, for overhead and profit. This cost breakdown shall be submitted to the Consultant promptly and with a goal of seven (7) Calendar Days or less after receipt of the proposal request.
- 18.4 If none of the above methods are mutually agreed upon or if the General Contractor does not respond promptly, a change may be made by unilateral determination by the Owner and/or the Consultant of reasonable costs or savings attributable to the change, including a reasonable allowance for overhead and profit. If this method is utilized, the General Contractor shall promptly proceed with the Work involved in the change upon receipt of a written order signed by the Owner. In such case, the General Contractor shall keep and present an itemized accounting of labor, equipment, material and other costs, in such form as may be prescribed by the Consultant.
- 18.5 In determining the cost or credit to the Owner resulting from a change, the allowances for all overhead (including home office and field overhead) and profit combined, shall be negotiated and shall not exceed (15%) fifteen percent.

- 18.6 In all cases where Change Orders are determined by unit prices set forth in the Contract Documents, no amount is to be added for additional overhead and profit.
- 18.7 The General Contractor shall keep and present in such form as the Consultant may direct, a correct account of all items comprising the net cost of such Work, together with vouchers. The determination of the Consultant and/or the Owner shall be final upon all questions of the amount and cost of extra Work and changes in the Work, and it shall include in such cost, the cost to the General Contractor of all materials used, the cost of all labor (including social security, old age and unemployment insurance, fringe benefits to which the employee is entitled, and Workers Compensation insurance), and the fair rental of all machinery used upon the extra Work, for the period of such use, which was upon the Work before or which shall be otherwise required by or used upon the Work before or after the extra Work is done. If the extra Work requires the use of machinery not already on the Project site, or to be otherwise used upon the Work, then the cost of transportation of such machinery to and from the Project site shall be added to the fair rental value. Transportation costs shall not be allowable for distances exceeding one hundred (100) miles.
- 18.8 The General Contractor shall not include or allow to be included in the cost of change in the Work any cost or rental of small tools, or any portion of the time of the General Contractor or the superintendent, or any allowance for the use of capital, or for the cost of insurance or bond premium or any actual or anticipated profit, or job or office overhead. These items are considered as being covered under the added amount for general overhead addressed in Article 18.3
- 18.8.1 The Owner will not pay claims made for lost opportunities, claims made for lost production or production inefficiencies or claims made that are formula based.
- 18.9 Pending final determination of value, partial payments on account of changes in the Work may be made on recommendation of the Consultant. All Change Orders shall be in full payment and final settlement of all claims for direct, indirect and consequential costs, including all items covered and affected. Any such claim not presented by the General Contractor for inclusion in the Change Order shall be waived.
- 18.10 The Consultant may authorize minor changes in the Work which do not involve additional cost or extension of the Contract Time, and which are not inconsistent with the intent of the Contract Documents. Such changes shall be made by an ASI issued by the Consultant, and shall be binding on the Owner and the General Contractor. The General Contractor shall carry out such orders promptly. If the General Contractor should claim that an ASI involves additional cost or delay to the completion of the Work, the General Contractor shall give the Consultant written notice thereof within ten (10) Calendar Days after receipt of the written ASI. If this notification does not occur, the General Contractor shall be deemed to have waived any right to claim or adjustment to the contract sum or to the contract completion time.
- 18.10.1 If the General Contractor claims that any instructions by the Consultant involve additional cost or time extension, the General Contractor shall give the Consultant written notice thereof within ten (10) Calendar Days after the receipt of such instructions and before proceeding to execute the change in Work. The written notice shall state the date, circumstances, whether a time extension will be requested, and the source of the order that the General Contractor regards as a Change Order. Unless the General Contractor acts in accordance with this procedure, any oral order shall not be treated as a change and the General Contractor hereby waives any claim for an increase of the Contract amount or extension of the contract time.
- 18.11 Requests for extension of time related to changes in the Work shall be submitted in accordance with the requirements of Article 21 of these General Conditions

ARTICLE 19 - RULES AND MEASUREMENTS FOR EXCAVATION

- 19.1 If applicable, the following Rules and Measurements shall apply to the use of Unit Prices for the excavation portion of the Work:
- 19.1.1 Except as provided in this Article 19 for arbitrary measurements, the quantity of excavation shall be its in-place volume before removal.
- 19.1.2 No allowance will be made for excavating additional material of any nature taken out for the convenience of the General Contractor beyond the quantity computed under these "Rules and Measurements."
- 19.1.3 The quantities of excavation shall be computed from instrument readings taken by the Consultant's representative in vertical cross sections located at such intervals that will assure accuracy.
- 19.1.4 "Trench Excavation" for pipes shall arbitrarily be assumed to be two feet (2') wider than the outside diameter of the pipe barrel and with sides vertical.
- 19.1.5 The quantities shall be computed from plan size, or if there are no drawings, from actual measurements of the Work in place.
- 19.1.6 Each unit price shall cover, among other things, engineering (surveying) costs and keeping excavating dry.
- 19.1.7 Earth excavation for structures will be measured between the vertical planes passing 18 inches beyond the outside of the footings and from the surface of the ground to the neat lines of the bottom of the structure.
- 19.1.8 Rock excavation for structures will be measured between the vertical planes passing 18 inches beyond the outside of the footings and from the surfaces of the rock to the neat lines of the bottoms of the structures or the actual elevation of the rock ledge.
- 19.1.9 Rock excavation for pipelines trenches, unless otherwise provided for in the Specifications, shall be measured as follows: An arbitrary width of 18 inches plus the nominal diameter of the pipe multiplied by the depth from the surface the rock to six (6) inches below the invert for pipe 24 inches in diameter or less and eight (8) inches below the invert for all pipe greater than 24 inches in diameter. No additional compensation will be allowed for excavation for bell holes, gates or other purposes. The measurement of rock excavation for manholes shall be in accordance with Section 19.1.8 above.
- 19.1.10 Unclassified excavation shall be measured in the same manner as earth excavation.

ARTICLE 20 - CONCEALED CONDITIONS

20.1 The Contract Drawings show the approximate location of the existing and new utility lines. These lines have been identified and located as accurately as possible using available information. The General Contractor is responsible for verifying all actual locations. If utilities require relocation or rerouting that is not shown or indicated to be relocated or rerouted, the General Contractor shall contact and cooperate with the Consultant to make the required adjustments. Any request for change

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in the Contract Amount by the General Contractor shall be made pursuant to Article 18 of the General Conditions.

- 20.2 If any charted or uncharted utility service is interrupted by activities of the General Contractor or the General Contractor's Sub-contractor(s) for any reason, the General Contractor shall work continuously to restore service to the satisfaction of the Owner.
- 20.2.1 If any charted utility service, or any uncharted utility service the existence of which could have been discovered by careful examination and investigation of the site of the Work by the General Contractor, is interrupted by activities of the General Contractor or the General Contractor's Subcontractor(s) for any reason, the entire cost to restore service to the satisfaction of the Owner shall be paid by the General Contractor. Should the General Contractor fail to proceed with appropriate repairs in an expedient manner, the Owner reserves the right to have the work/repairs completed and the cost of such work/repairs deducted from the monies due or to become due to the General Contractor pursuant to Article 22 of the General Conditions.
- 20.3 The General Contractor shall promptly, but in no case more than ten (10) Calendar Days from the time of discovery, and before the conditions are disturbed, notify Consultant in writing of:
- 20.3.1 Subsurface or latent physical conditions or any condition encountered at the site which differ materially from those indicated in the Contract Documents and which were not known by General Contractor or could not have been discovered by careful examination and investigation of the site of the proposed Work;
- 20.3.2 Unknown and unexpected physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered in the locale or generally recognized as inherent in the Work provided for in this Contract or,
- 20.3.3 Concealed or unknown conditions in an existing structure which are at variance with the conditions indicated by the Contract Documents, which are of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the Work provided for in this Contract, and which were not known by the General Contractor and could not have been discovered by careful examination and investigation of the site of the Work.
- 20.4 The Consultant shall promptly investigate the conditions discovered. If the Consultant finds that conditions, which are materially different from those ordinarily encountered and generally recognized as inherent in the Work provided for in this Contract, were not known by the General Contractor, and could not have been discovered by careful examination and investigation of the site of the Work, have caused or would cause a material increase or decrease in the General Contractor's cost of construction or the time required for performance of any part of the Work under this contract, the Consultant will recommend and the Owner will make an equitable adjustment in the Contract Amount and/or the time allotted for performance in the Contract Documents. Failure by the General Contractor to provide written notice to the Owner of such claims for additional compensation or time for performance within ten (10) Calendar Days of discovery of such conditions shall constitute a waiver by the General Contractor of the right to make such claims. The Owner will not pay claims made for lost opportunities, claims made for lost production or production inefficiencies or claims made that are formula based.
- 20.5 If the Consultant determines that changed conditions do not exist or are not materially different and no adjustment in the Contract Amount or time is warranted, the General Contractor shall continue performance of the Contract as directed by the Consultant. No claim by the General Contractor under this clause shall be allowed unless the required written notice is given and the

Consultant is given adequate opportunity to investigate the conditions encountered prior to disturbance. The failure of the General Contractor to give the Consultant proper notice of a differing site condition shall not affect the Owner's right to an equitable adjustment of the contract price or time if there is a decrease in the Contract Amount or time required to perform the Work.

ARTICLE 21 - DELAYS AND EXTENSION OF TIME

- 21.1 It is agreed that time is of essence for each and every portion of this Contract and where additional time is allowed for the completion of the Work or any part of the Work under this Contract, the new time limit fixed by such time extension shall be of the essence of this Contract. An extension of time shall not be cause for extra compensation under this Contract, except as set forth in Article 21.10 below.
- 21.2 The General Contractor will, subject to the provisions of Articles 21.7, 21.8 and 21.9 below, be granted an extension of time and/or relief from liquidated damages when the delay in completion of the Work is due to:
- 21.2.1 Any preference, priority, or allocation order duly issued by the government;
- 21.2.2 Unforeseeable causes beyond the control and without the fault or negligence of the General Contractor including, but not limited to, acts of God, or of the public enemy, acts of the Owner, acts of another contractor in the performance of a contract with the Owner, floods, epidemics, quarantine restrictions, strikes, and freight embargoes.
- 21.2.2.1For such delays which stop all work on the Project for thirty (30) Calendar Days or more, the General Contractor shall be authorized at its discretion to remove its people from the site and return when the normal progress of the work may continue.
- 21.2.3 Regardless of the cause of a delay, the General Contractor shall expend all reasonable effort to mitigate the impact of any delay.
- 21.2.4 Requests for additional time due to delays in transportation or due to failures of suppliers shall not be considered for approval.
- 21.3 Requests for extensions of time and/or relief from liquidated damages, except for weather related claims, shall be made in writing not later than ten (10) Calendar Days after the beginning of the delay. Requests for extension of time or relief from liquidated damages shall be stated in numbers of whole Calendar Days.
- 21.4 Except as otherwise provided in the Contract Documents, extensions of the contractually required completion dates may be granted for unusually bad weather on the Project. Unusually bad weather as used herein means daily temperature or precipitation that exceeds the normal weather recorded and expected for the locality and/or the season or seasons of the year. For the purposes of this contract, it is mutually agreed that the following chart accurately defines the number of days in each month on which bad weather can reasonably be anticipated to impact weather dependent construction operations, and the General Contractor shall anticipate this normal seasonal weather in the development of the Project baseline schedule.

Mean	Jan.	Feb	Mar	Ap	May	Jun	Jul.	Aug	Se	Oct	Nov.	Dec.
Number of				r.					p.			
Days When												

Max Temp 32° or Below	9	6	1	0	0	0	0	0	0	0	1	5
Precip. Is 0.10 Inch or Greater	7	6	9	7	8	8	8	6	5	5	7	7

For the purpose of this Contract, "unusually bad weather" shall be interpreted as either 1) those days in a given month on which rainfall was 0.10 inch or more that exceed the number of days shown in the row for "Precip" or 2) those days in a given month on which maximum temperature was 32 degrees F or below that exceed the number of days shown in the row for "Max Temp", whichever is greater.

- 21.4.1 Requests for extension of time due to unusually bad weather that could not reasonably have been anticipated at the time of execution of the Contract shall be made in writing not later than the tenth calendar day of the month following the month in which the delay occurred.
- 21.4.2 Requests for an extension of time due to unusually bad weather shall be considered for approval only if it is shown that a) the unusual weather event delayed work on a specific weather dependent activity or activities that had been planned to be underway on the date(s) on which the weather event occurred, as shown in the most recent update to the Project schedule that had been submitted to the Owner prior to the date of the event, and b) only if the delay to that activity or activities is shown to be the proximate cause of a corresponding delay to the contractually required completion dates for the Project shown in the most recent update to the Project schedule. The actual dates on which the delay(s) occurred must be stated and the specific activities that were directly impacted must be identified. In the event of concurrent delays, only those activities actually impacting contractually required completion dates will be considered in evaluating the merit of a delay request. Time extensions will not be considered if such adjustments do not exceed the total or remaining "float" associated with the impacted activities at the time of delay as shown in the most recent update to the Project schedule, nor for concurrent delays not caused by the Owner.
- 21.4.3 In anticipation of the possibility of delay due to unusually bad weather, the General Contractor shall identify those activities in the baseline schedules, and those activities subsequently added to updated schedules, that might reasonably be expected to be delayed by such weather.
- 21.4.4 Delays caused by unusually bad weather shall be incorporated in the Project schedule when the schedule is next updated by showing actual dates and/or percent complete for those activities that were impacted by the unusually bad weather as well as the effects of any effort to mitigate such delays. When claims are submitted for time extensions resulting from more than one occurrence of unusually bad weather during a month, the Project schedule shall be updated to reflect such separate events sequentially so that the impact of each subsequent occurrence is shown on an adjusted Project schedule that includes all prior claims for additional time.
- 21.5 In addition to the requirements of Article 21.7 and Article 21.8 below, any request for an extension of time for strikes or lockouts shall be supported by a written statement of facts concerning the strike including, but not limited to, the dates, the craft(s) affected, the reason for the strike, efforts to resolve the dispute, and efforts to minimize the impact of the strike on the Project.
- 21.6 Approval of time extensions for changes in the Work will depend upon the extent, if any, to which the changes cause delay in the completion of the various elements of construction. The Rev 11/2020

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Change Order granting the time extension may provide that the Contract Time will be extended only for those specific elements so delayed and that other Work will not be altered.

- 21.7 The Contract Time will only be adjusted for causes specified above. Extensions of time will only be approved if the General Contractor provides justification supported by the Project schedule or other acceptable data that 1) such changes are, in fact, on the critical path and extend the contractually required completion dates, and 2) the General Contractor has expended all reasonable effort to minimize the impact of such changes on the construction schedule. No additional extension of time will be granted subsequently for claims having the basis in previously approved extensions of time.
- In support of requests for an extension of time not caused by unusual inclement weather, and concurrently with the submittal of any such request, the General Contractor shall submit to the Consultant and the Owner a written impact analysis showing the influence of each such event on contractually required completion dates as shown in the updated Project schedule most recently submitted to the Owner prior to the event. The analysis shall include a partial network diagram showing a sequence of new or revised activities and/or durations that are proposed to be added to the existing schedule including related logic (a "fragnet"). This impact analysis and the fragnet shall include the new activities and/or activity revisions proposed to be added to the existing schedule and shall demonstrate the claimed impact on the critical path and the contractually required completion dates. The General Contractor will not be granted an extension of time and/or relief from liquidated damages when the delay to completion of the work is attributable to, within the control of, or due to the fault, negligence, acts, or omissions of the General Contractor and/or the General Contractor's contractors, subcontractors, suppliers, or their respective employees and agents. Time extensions will not be considered in the event such adjustments do not exceed the total or remaining "float" associated with the impacted activities at the time of delay, nor for concurrent delays not caused by the Owner. In the event of concurrent delays, only that event actually impacting contractually required completion dates will be considered in adjusting the schedule and evaluating the merit of a delay claim. Requests for an extension of time which are not supported by this information shall not be considered for approval.
- 21.9 Approved extensions of time not caused by unusual inclement weather shall be incorporated in a revised schedule at the time of approval. No subsequent requests for time extension will be considered unless all previous approved time extensions have been incorporated in the Project schedule on which the requests are based.
- 21.10 Except as provided for in Article 21.10.1 through 21.10.3 below, no payment or compensation shall be made to the General Contractor and extensions of the time fixed for completion of the Contract shall be the General Contractor's sole remedy for any and all delays, hindrances, obstructions or impacts in the orderly progress of the Work.
- 21.10.1 In addition to the provisions of Articles 18.3 above, and subject to the requirements of Article 21.8 and 21.8.1 above, if the Owner orders changes to the scope of Work for the Project that extend the then current contractually required completion dates of the Project, the General Contractor shall be entitled to reimbursement for job site, general conditions and staffing costs associated with such delay.
- 21.10.2 If delays, hindrances, impacts or obstructions of the General Contractor's performance of the Contract are in whole or in part within the control of the Owner and, subject to the requirements of Article 21.8 and 21.8.1, extend contractually required completion dates of the Project, the General Contractor shall be entitled to reimbursement for job site, general conditions and staffing costs for that portion of the costs caused by acts or omissions of the Owner.

21.10.3 Such reimbursements shall not include consequential or similar damages, exemplary damages, damages based on unjust enrichment theory, formula based delay claims, or any element of home office overhead.

ARTICLE 22 - CORRECTION OF WORK BEFORE FINAL PAYMENT

- 22.1 The General Contractor shall promptly remove from the site and replace any material and/or correct any Work found by the Consultant to be defective or that fails to conform to the requirements of the Contract, whether incorporated in the Work or not, and whether observed before or after Substantial or Final Completion. The General Contractor shall bear all costs of removing, replacing or correcting such Work or material including the cost of additional professional services necessary, and the cost of repairing or replacing all Work of separate contractors damaged by such removal or replacement.
- 22.2 The Consultant will notify the General Contractor and the Owner immediately upon its knowledge that additional services will be necessary. The Owner may consent to accept such nonconforming Work and materials with an appropriate adjustment in the Contract Amount. Otherwise, the General Contractor shall promptly replace and re-execute the Work in accordance with the Contract Documents and without expense to the Owner and shall bear the expense of making good all work of other contractors destroyed or damaged by such removal or replacement. If the General Contractor fails to commence and continue to correct non-conforming Work within a reasonable time as determined by the Consultant, the Owner may without limitation of other rights available to the Owner and without prejudice to other remedies, take any necessary action to make the necessary corrections. If the Owner makes required corrections for non conforming Work or materials, a Change Order will be issued reflecting an equitable deduction from the Contract Amount. This amount will be deducted from payments due to the General Contractor or, if no additional payments are due, General Contractor or the General Contractor's surety shall be responsible for payment of this amount.

ARTICLE 23 - CORRECTION OF WORK AFTER FINAL PAYMENT

- 23.1 Neither the final certificate of payment nor any provisions in the Contract Documents shall relieve the General Contractor of responsibility for materials and equipment incorporated into the Work that fail to meet specification requirements, or for use of faulty materials or poor quality workmanship. If within one year after the date of Substantial Completion of the Work or designated portion thereof, any of the Work is found to be defective or not in accordance with the requirements of the Contract Documents, the General Contractor shall correct it promptly after receipt of written notice from the Owner to do so. The General Contractor shall correct any defects due to these conditions and pay for any damage to other Work resulting from their use. Nothing contained in this clause shall be construed to establish a period of limitation with respect to any obligation of the General Contractor under the Contract including, but not limited to, Warranties. The obligation of the General Contractor under this section shall be in addition to and not in limitation of any obligations imposed by special guarantees or warranty required by the Contract, given by the General Contractor, or otherwise recognized or prescribed by law.
- 23.2 In addition to being responsible for correcting the Work and removing any non conforming Work or materials from the job site, the General Contractor shall bear all other costs of bringing the affected Work into compliance with the Contract requirements. This includes costs of any required additional testing and inspection services, Consultant's services and any resulting damages to other property or to work of other contractors or of the Owner.

23.3 If the General Contractor fails to correct nonconforming Work within a reasonable time as determined by the Consultant, the Owner may take necessary actions to make the necessary corrections. If the Owner makes required corrections for nonconforming Work or materials after Final Payment to the General Contractor, the Owner shall be entitled to recover all amounts for such corrections, including costs and attorney's fees, from General Contractor or surety.

ARTICLE 24 - TERMINATION OF CONTRACT FOR CONVENIENCE OF OWNER

24.1 The Owner, by written notice to the General Contractor, may terminate this Contract in whole or in part when it is in the interest of the Owner, at the sole discretion of the Owner. In such case, the General Contractor shall be paid for all Work in place and a reasonable allowance for profit and overhead on Work done, provided that such payments shall not exceed the total Contract price as reduced by the value of the Work as yet not completed. The General Contractor shall not be entitled to profit and overhead on Work not performed.

ARTICLE 25- OWNER'S RIGHT TO STOP WORK

25.1 If the General Contractor fails to correct defective Work as required, or persistently fails to carry out the Work in accordance with the Contract Documents, the Owner by written notice may order the General Contractor to stop the Work or any portion of the Work, until the cause for the order has been eliminated to the satisfaction of the Owner. The Consultant may stop Work without written notice for 24 hours whenever in its professional opinion such action is necessary or advisable to insure conformity with the Contract Documents. The General Contractor shall not be entitled to an adjustment in the Contract Time or Amount under this clause in the event such stoppages are determined to be the fault of the General Contractor or its Sub-contractor(s). The right of the Owner or Consultant to stop Work shall not give rise to a duty on the part of the Owner or Consultant to exercise this right for the benefit of the General Contractor or others.

ARTICLE 26 -TERMINATION OF CONTRACT FOR DEFAULT ACTION OF GENERAL CONTRACTOR

- 26.1 In addition to its rights under Articles 24 and 25, the Owner may terminate the contract upon the occurrence of any one or more of the following events:
- 26.1.1 If the General Contractor refuses or fails to prosecute the Work (or any separable part thereof) with such diligence as will insure its completion within the agreed upon time; or if the General Contractor fails to complete the Work within such time;
- 26.1.2 If the General Contractor is adjudged a bankrupt or insolvent, or makes a general assignment for the benefit of creditors, or if the General Contractor or a third party files a petition to take advantage of any debtor's act or to reorganize under the bankruptcy or similar laws concerning the General Contractor, or if a trustee or receiver is appointed for the General Contractor or for any of the General Contractor's property on account of the General Contractor's insolvency, and the General Contractor or its successor in interest does not provide adequate assurance of future performance in accordance with the Contract within 10 days of receipt of a request for assurance from the Owner;
- 26.1.3 If the General Contractor repeatedly fails to supply sufficient qualified supervision of the work, or repeatedly fails to ensure that Sub-contractors supply adequate supervision, suitable materials or equipment, or adequate numbers of skilled workmen and supervision to the Work;
- 26.1.4 If the General Contractor repeatedly fails to make prompt payments to Sub-contractors or suppliers at any tier, or for labor, materials or equipment;

- 26.1.5 If the General Contractor disregards laws, ordinances, rules, codes, regulations, orders or similar requirements of any public entity having jurisdiction;
- 26.1.6 If the General Contractor disregards the authority of the Consultant or the Owner;
- 26.1.7 If the General Contractor performs Work which deviates from the Contract Documents, and neglects or refuses to correct rejected Work; or
- 26.1.8 If the General Contractor otherwise violates in any material way any provisions or requirements of the Contract Documents.
- 26.2 Once the Owner determines that sufficient cause exists to justify the action, the Owner may terminate the Contract without prejudice to any other right or remedy the Owner may have, after giving the General Contractor and its Surety three (3) Calendar Days notice by issuing a written Declaration of Default. The Owner shall have the sole discretion to permit the General Contractor to remedy the cause for the contemplated termination without waiving the Owner's right to terminate the contract.
- 26.3 In the event that the Contract is terminated, the Owner may demand that the General Contractor's Surety take over and complete the Work on the Contract. The Owner may require that in so doing, the General Contractor's Surety not utilize the General Contractor in performing the Work. Upon the failure or refusal of the General Contractor's Surety to take over and begin completion of the Work within twenty (20) Calendar Days after the demand, the Owner may take over the Work and prosecute it to completion as provided below.
- 26.3.1 In the event that the Contract is terminated and the General Contractor's Surety fails or refuses to complete the Work, the Owner may take over the Work and prosecute it to completion in accordance with the laws of the Commonwealth, by contract or otherwise, and may exclude the General Contractor from the site. The Owner may take possession of the Work and of all of the General Contractor's tools, appliances, construction equipment, machinery, materials, and plant which may be on the site of the Work, and use the same to the full extent they could be used by the General Contractor, without liability to the General Contractor. At the Owner's sole discretion, the Owner has the right to take assignment of any or all portions of the contract work in order to prosecute the completion of the Work. In exercising the Owner's right to prosecute the completion of the Work, the Owner may also take possession of all materials and equipment stored at the site or for which the Owner has paid the General Contractor but which are stored elsewhere, and finish the Work as the Owner deems expedient. In such case, the General Contractor shall not be entitled to receive any further payment until the Work is finished.
- 26.3.2 If the unpaid balance of the Contract Price exceeds the direct and indirect costs and expenses of completing the Work including compensation for additional professional and Consultant services, such excess shall be used to pay the General Contractor for the cost of the Work it performed and a reasonable allowance for overhead and profit. If such costs exceed the unpaid balance, the General Contractor or the General Contractor's Surety shall pay the difference to the Owner. In exercising the Owner's right to prosecute the completion of the Work, the Owner shall have the right to exercise its sole discretion as to the manner, methods, and reasonableness of the costs of completing the Work and the Owner shall not be required to obtain the lowest figure for Work performed in completing the Contract. In the event that the Owner takes bids for remedial Work or completion of the Project, the General Contractor shall not be eligible for the award of such Contract.

- 26.3.3 The General Contractor shall be liable for any damage to the Owner resulting from the termination or the General Contractor's refusal or failure to complete the Work, and for all costs necessary for repair and completion of the Project above the amount of the Contract. The General Contractor shall be liable for all attorney's fees, costs and expenses incurred by the Owner to enforce the provisions of the Contract.
- 26.3.4 If liquidated damages are provided in the Contract and the Owner terminates the Contract, the General Contractor shall be liable for such liquidated damages, as provided for in Article 29.2 and 29.3 below, until Substantial Completion and Final Completion of the Work are achieved.
- 26.3.5 In the event the Contract is terminated, the termination shall not affect any rights of the Owner against the General Contractor. The rights and remedies of the Owner under this Article are in addition to any other rights and remedies provided by law or under this Contract. Any retention or payment of monies to the General Contractor by the Owner will not release the General Contractor from liability.
- 26.3.6 In the event the Contract is terminated under this Article, and it is determined for any reason that the General Contractor was not in default under the provisions of this Article, the termination shall be deemed a Termination for Convenience of the Owner pursuant to Article 24 and the rights and obligations of the parties shall be determined in accordance with Article 24.

ARTICLE 27 - SUSPENSION OF WORK

27.1 The Owner or the Consultant may, at any time and without cause, order the General Contractor in writing or cause the General Contractor to suspend, delay or interrupt all or any part of the Work for such period of time as the Owner may determine to be appropriate for its convenience. Adjustment may be made for any increase in the Contract time necessarily caused by such suspension or delay, in accordance with Article 21.

ARTICLE 28 - TIME OF COMPLETION

- 28.1 The General Contractor shall begin the Work on the date of commencement as specified in the Work Order. All time limits stated in the Contract Documents are of the essence of the Contract. The end of the Contract Time shall be the date specified on the approved certificate of Substantial Completion. The time for completion set forth in the Contract is a binding part of the Contract upon which the Owner may rely in planning the use of the facilities to be constructed and for all other purposes.
- 28.2 Substantial Completion is defined in Article 1.1.17 of these General Conditions. Only incidental corrective Work under punch lists and final cleaning (if required) for Owner's full use shall remain for Final Completion. The ability to occupy or utilize shall include regulatory authority approval unless regulatory approval is delayed due to actions of the Owner or the Consultant. When the Owner accepts and occupies a portion of the Project, the operation, maintenance, utilities, and insurance of that portion of the Project becomes the responsibility of the Owner.
- 28.3 The date of Substantial Completion shall be that date certified by the Owner, in accordance with the following procedures, that the Work is sufficiently complete to occupy or utilize as defined above.
- 28.3.1 When the General Contractor considers the entire Work is substantially complete as defined in Article 1.1.17 of these General Conditions, and is ready for its intended use, the General Contractor shall notify the Consultant in writing and request an inspection. The declaration and request shall be

accompanied by a list prepared by the General Contractor of those items of Work still to be completed or corrected. The failure of the General Contractor or Consultant to include any item or items, which are not completed or which need correction, on such list shall not alter the responsibility of the General Contractor to complete all Work in accordance with the Contract Documents.

- 28.3.2 The Consultant shall, within a reasonable time after receipt of notification from the General Contractor of a declaration of Substantial Completion and request for inspection, make such inspection. Prior to the Substantial Completion Inspection and within sufficient time to allow the Consultant's review, the General Contractor shall submit all As-Built drawings, Notice of Termination, catalog data, complete operating and maintenance instructions, manufacturer specifications, certificates, warranties, written guarantees and related documents required by the contract. The Consultant shall review said documents for accuracy and compliance with the Contract Documents and incorporate them into complete operating instructions and deliver them to the Owner.
- 28.3.3 If the Consultant considers the Work substantially complete, the Consultant shall recommend that the Owner prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion and the responsibilities between the Owner and General Contractor for security, maintenance, heat, utilities and insurance, if not otherwise provided for in the Contract Documents, and a tentative list of items to be completed or corrected, and shall fix the time within which the General Contractor shall complete the items listed therein. This time shall not exceed thirty (30) Calendar Days unless otherwise provided for in the Work Order. The Certificate of Substantial Completion shall be submitted to the Consultant and General Contractor for their written acceptance of the responsibilities assigned to them in the certificate. The Project shall not be deemed substantially complete until the certificate is issued. If, after making the inspection, the Consultant does not consider the Work substantially complete, the Consultant will notify the Owner and the General Contractor in writing, giving the reasons therefore.
- 28.4 Operation and Maintenance Manual Deliverables. In anticipation and preparation of completion of the Work and the closing out of the Project, and to facilitate training of the Owner's personnel in the maintenance and operation of the new installations, the Contractor shall comply with the requirements of Article 8.7 of the Special Conditions. (For the purposes of this article, air test and balance reports may be submitted at a later date with the request for certification of substantial completion.) These manuals shall be submitted to the Consultant for approval, and subsequently forwarded to the Owner's Project Manager by or before the time construction is 75% complete, as reflected by the Contractor's most recently submitted Application for Payment.
- 28.4.1 The provisions of Article 30.11 notwithstanding, if the General Contractor meets the requirements of Article 28.4 above with respect to timely submittal of approvable Operation and Maintenance manuals and provided the project construction is 1) at least 75% complete and 2) is equal to or ahead of the approved progress schedule and 3) the Work completed is in compliance with the requirements of the contract documents, the Owner, at the sole discretion of the Director, Capital Projects Management Division may reduce the retainage to (5%) of the current Contract Amount. 28.4.2 In the event the General Contractor fails to submit acceptable O&M manuals prior to reaching 75% completion, it is agreed that the Owner at its sole discretion may deduct from the current and subsequent Applications for Payment an amount deemed by the Owner to be sufficient to encourage prompt compliance with this contractual requirement, until such time as acceptable O&M manuals are received.
- 28.5 <u>Project Close Out.</u> When the General Contractor considers that all Work required by the Contract is 100% complete, including correction of any remaining punch list work or deficiencies, the General Contractor shall notify the Consultant in writing and request a final inspection. The Consultant, upon receipt of written notice from the General Contractor that the Work is complete and

is ready for final inspection and acceptance, will promptly make such inspection and when the Consultant finds the Work completed and acceptable under the Contract Documents and the Contract fully performed, the Consultant will so notify the General Contractor in writing to submit, and will certify to the Owner a final Certificate for Payment submitted in accordance with Articles 30.9 and 30.9.1 of these General Conditions. If the General Contractor does not complete the punch items within the time designated, the Owner retains the right to have these items corrected at the expense of the General Contractor including all architectural, engineering and inspection costs and expenses incurred by the Consultant and the Owner, and to deduct such costs and expenses from the funds being held in retainage. The Owner shall not be required to release the retainage until such items have been completed.

ARTICLE 29 - LIQUIDATED DAMAGES

- 29.1 The Owner and the General Contractor recognize and agree that time is of the essence of this Contract and that the Owner will suffer financial loss if the Work is not completed within the time specified in the Contract plus any extensions that may be allowed. The parties further recognize the delays, expense and difficulties involved in proving the actual loss suffered by the Owner should the Work not be completed on time. The Owner and the General Contractor agree on the amounts stated as liquidated damages in the Agreement. The Owner and General Contractor agree that the amount stated as liquidated damages are not intended to be penalties.
- 29.2 Should the General Contractor fail to satisfactorily complete the Work under Contract on or before the date stipulated for Substantial Completion, as adjusted by approved Change Orders, if any, the General Contractor will be required to pay liquidated damages to the Owner for each consecutive Calendar Day that the Owner is deprived of full use of the area beyond the date specified unless otherwise stipulated elsewhere by Owner. After the date for Substantial Completion has been certified by the Owner, the General Contractor shall cease to owe liquidated damages until the date established for Final Completion.
- 29.3 If Final Completion is not achieved by the date established for Final Completion, as adjusted by approved Change Orders, if any, liquidated damages in the amount stipulated in the Agreement will become due and collectable. The Contract will be considered complete and Final Completion shall be deemed to have occurred when all Work has been completed in compliance with the Contract Documents and the Certificate of Final Completion has been issued by the Owner. No deduction or payment of liquidated damages will, in any degree, release the General Contractor from further obligations and liabilities to complete the entire Contract. Permitting the General Contractor to continue and finish the Work, or any part of it, after expiration of the Contract Time, shall in no way constitute a waiver on the part of the Owner of any liquidated damages due under the Contract.

ARTICLE 30 - PAYMENT TO THE GENERAL CONTRACTOR

- 30.1 Payments on account of this Contract shall be made monthly as Work progresses. The General Contractor shall submit to the Consultant, in the manner and form prescribed, an application for each payment, and, if required, receipts or other vouchers showing payments made for materials and labor, including payments to Sub-contractors. All payments shall be subject to any withholding or retainage provisions of this contract. All pay request documents, except the final payment, shall be submitted in whole dollar amounts. All payment applications from the General Contractor shall include line items for overhead, profit and general condition costs.
- 30.2 The Consultant shall, within ten (10) Business Days after receipt of each application for payment, certify approval of payment in writing to the Owner and present the application to the Owner, or return the application to the General Contractor indicating in writing its reasons for

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refusing to approve payment. The Owner, provided no exception is taken to the application for payment submitted by the Consultant, will issue payment on or within thirty (30) Business Days from the date received from the Consultant. A reasonable delay on the part of the Owner in making payment to the General Contractor for any given payment shall not be grounds for breach of Contract. The Consultant may refuse to approve the whole or any part of any payment if it would be incorrect to make such presentation to the Owner.

- 30.3 If payment is requested on the basis of materials and equipment not incorporated in the Work, but delivered and suitably stored at an off jobsite location agreed to in writing by the Owner that meets the manufacturer's requirements for the stored material and not-comingled with other material, the General Contractor shall furnish the following:
- 30.3.1 A list of the materials consigned to the Project (which shall be clearly identified), giving the place of storage, together with copies of invoices.
- 30.3.2 Certification that all items have been tagged for delivery to the Project and that they will not be used for any other purpose.
- 30.3.3 A letter from the Surety indicating that the Surety agrees to the arrangements and that payment to the General Contractor shall not relieve either the General Contractor or its Surety of their responsibility to complete the Work.
- 30.3.4 Evidence of adequate insurance listing the Owner as an additional insured covering the material in storage.
- 30.3.5 Evidence that representatives of the Consultant have visited the General Contractor's place of storage and checked all items listed on the General Contractor's certificate. They shall certify, insofar as possible, that the items are in agreement with the Specifications and approve their incorporation into the Project.
- 30.4 The Owner will pay 80% of the invoiced value less retainage for materials stored off site providing the above conditions are met.
- 30.5 The General Contractor's signature on each subsequent application for payment shall certify that all previous progress payments received on account of the Work have been applied to discharge in full all of the General Contractor's obligations reflected in prior applications for payment.
- 30.6 Each payment made to the General Contractor shall be on account of the total amount payable to the General Contractor and the General Contractor warrants and guarantees that the title to all materials, equipment and Work covered by the paid partial payment shall become the sole property of Owner free and clear of all encumbrances. Nothing in this Article shall be construed as relieving General Contractor from the sole responsibility for care and protection of materials, equipment and Work upon which payments have been made or restoration of any damaged Work or as a waiver of the right of Owner to require fulfillment of all terms of the Contract Documents.
- 30.7 Prior to submitting the first application for payment, the General Contractor shall submit to the Consultant and the Owner for approval a detailed breakdown of the Contract Amount pursuant to CSI specification divisions, divided so as to facilitate payment and correlated to the schedule required by General Conditions Article 32 of the Contract Documents. The total value of all activities shall add up to the Contract Amount. When approved by the Consultant and the Owner, this schedule shall be used as a basis for General Contractor's applications for payment and may be used by the Owner to

determine costs or credits resulting from changes in the Work. Failure to obtain the approval of the Schedules of Values shall be a basis for withholding payment to the General Contractor.

- 30.8 Retainage – The Owner will retain ten percent (10%) of the General Contractor's progress payments until fifty one percent (51%) of the construction project has been completed. Thereafter, if the Work is fully in compliance with the requirements of the Contract and except as provided for in Article 28.4.1 above, the Owner shall retain five percent (5%) of the total contract amount until Substantial Completion and acceptance of all Work covered by this Contract, as collateral security to insure successful completion of the Work. For the purposes of this Article, the term "in full compliance" shall mean 1) that the progress of the Work is equal to or ahead of that predicted by the Project Baseline schedule and 2) the Work completed is in compliance with the requirements of the contract documents. Subsequent to the issuance of the Substantial Completion Certificate and depending upon the cost involved for the completion and/or correction of punch list items, the Consultant may recommend to the Owner an adjustment to the amount being held as retainage and, if approved by Owner, the amount of retainage may then be reduced and a sufficient sum retained by Owner to assure completion of the remaining unfinished Work. Retainage reduction as provided for in this Article 30.8 is contingent upon the General Contractor and/or Sub-contractors being on or ahead of the approved progress schedule and on verification by the Consultant that the Work completed is in compliance with the requirements of the contract documents
- 30.8.1 In addition to the retainage set forth above, the Owner may withhold from any monthly progress payments or nullify any progress payments in whole or in part as necessary to protect the Owner from loss on account of:
- 30.8.1.1Defective Work which has not been remedied or completed Work which has been damaged requiring correction or replacement, or
- 30.8.1.2Action required by the Owner to correct Defective Work or complete Work which the General Contractor has failed or refused to correct or complete, or
- 30.8.1.3 Failure of the General Contractor to perform any of its obligations under the Contract, or
- 30.8.1.4Failure of the General Contractor to make payment properly to Sub-contractors; suppliers of material, services or labor; or to reimburse the University for utilities or other services as provided for in the Contract;
- 30.8.1.5 Amounts to be withheld as liquidated damages for failure to complete the Project in the allotted Contract time.
- 30.8.2 When the Owner is satisfied that the General Contractor has remedied any such deficiency, payments shall be made of the amount being withheld on the next scheduled application for payment.
- 30.9 Final Payment When all Work is completed and acceptable and the Contract is fully performed, the General Contractor will be directed to submit a final payment application for certification and the entire balance shall be due and payable upon a certification of completion by the Consultant that the Work is in accordance with the Contract Documents.
- 30.9.1 Upon issuance of the Certificate of Final Completion by the Owner and submittal by the General Contractor of all required documents and releases, all retained amounts shall be paid to the General Contractor as part of the Final Payment. By accepting such payment, the General Contractor certifies that all amounts due or that may become due to any Sub-contractor, any Consultant of the General Contractor, or any vendors or material suppliers, have been paid or will be paid from the

proceeds of the final payment; and that, further, there are not liens, claims or disputes involving the Owner or the Consultant that are outstanding or unresolved.

- 30.10 The General Contractor shall promptly pay each Sub-contractor and material supplier upon receipt of payment from the Owner the amount to which said Sub-contractor and supplier is entitled, reflecting the percentage actually retained from payments to the General Contractor on account of such Sub-contractor's work. The General Contractor shall, by an appropriate Agreement with each Sub-contractor and material supplier, require each Sub-contractor and supplier to make payments to their sub-contractors, vendors and suppliers in similar manner.
- 30.10.1 The Consultant may, on request, furnish to any Sub-contractor or material supplier information regarding the percentages of completion applied for by the General Contractor and the action thereon by the Consultant.
- 30.10.2 Neither the Owner nor the Consultant shall have any obligation to make payment to any Sub-contractor or material supplier except as may otherwise be required by law.

ARTICLE 31 - AUDITS

- 31.1 The General Contractor's Trade Contractors', sub-contractors' and/or vendor's "records" shall upon reasonable notice be open to inspection and subject to audit and/or reproduction during normal business working hours as may be deemed necessary by the Owner at its sole discretion. Such audits may be performed by an Owner's representative or an outside representative engaged by the Owner. The Owner or its designee may conduct such audits or inspections throughout the term of this contract and for a period of three years after final payment, or longer if required by law. Owner's representative may (without limitation) conduct verifications such as counting employees at the Construction Site, witnessing the distribution of payroll, verifying information and amounts through interviews and written confirmations with General Contractor's employees, field and agency labor, Trade Contractors and vendors.
- 31.2 "Records" as referred to in this Contract shall include any and all information, materials and data of every kind and character, including without limitation, records, books, papers, documents, subscriptions, superintendents' reports, drawings, receipts, vouchers and memoranda, and any and all other agreements, sources of information and matters that may in the Owner's judgment have any bearing on or pertain to any matters, rights, duties or obligations under or covered by any Contract Document. Such records shall include hard copy, as well as computer readable data if it can be made available, written policies and procedures; time sheets; payroll registers; cancelled payroll checks; subcontract files (including proposals of successful and unsuccessful bidders, bid recaps, etc.); original estimates; estimating work sheets; correspondence; change order files (including documentation covering negotiated settlements); back charge logs and supporting documentation; invoices and related payment documentation; general ledger; records detailing cash and trade discounts earned; insurance rebates and dividends; and any other General Contractor or contractor records which may have a bearing on matters of interest to the Owner in connection with the General Contractor's dealings with the Owner (all foregoing hereinafter referred to as the "records") to the extent necessary to adequately permit evaluation and verification of any or all of the following:

Compliance with Contract requirements for deliverables;

Compliance with approved plans and specifications;

Compliance with Owner's business ethics expectations;

Compliance with Contract provisions regarding the pricing of change orders;

Accuracy of General Contractor representations regarding pricing of invoices; and

Accuracy of General Contractor representations related to claims submitted by the General Contractor or its payees.

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- 31.3 The General Contractor shall require all payees (examples of payees include Trade Contractors, Sub-contractors, vendors, and/or material suppliers) to comply with the provisions of this Article by including the requirements hereof in a written contract agreement between the General Contractor and payees. Such requirements to include flow-down right of audit provisions in contracts with payees will also apply to Subcontractors and Sub-subcontractors, material suppliers, etc. The General Contractor will cooperate fully and will cause all related parties and all of the General Contractor's Trade Contractors and/or subcontractors (including those entering into lump sum subcontracts) to cooperate fully in furnishing or in making available to Owner from time to time whenever requested, in an expeditious manner, any and all such information, materials and data.
- 31.4 Owner's authorized representative or designee shall have reasonable access to the General Contractor's facilities, shall be allowed to interview all current or former employees to discuss matters pertinent to the performance of this contract and shall provide adequate and appropriate work space in order to conduct audits in compliance with this Article. The General Contractor and its payees agree bear their costs and expenses relating to any inspections and audits.
- 31.5 If an audit inspection or examination in accordance with this Article discovers any fraud or misrepresentation, or discloses overpricing or overcharges (of any nature) by the General Contractor to the Owner, in addition to making adjustments for the overcharges, the reasonable actual cost of the Owner's audit shall be reimbursed to the Owner by the General Contractor. Any adjustments and/or payments that must be made as a result of any such audit or inspection of the General Contractor's invoices and/or records shall be made within Ninety (90) Calendar Days from presentation of the Owner's findings to the General Contractor.
- 31.6 The provisions of Articles 31.1, 31.2 and 31.5 notwithstanding, the Owner shall have the right to conduct inspections and audits of any matter relating to the Contract Documents or the Work, which shall be for the Owner's sole benefit and shall not relieve the General Contractor, its sureties, contractors, subcontractors suppliers and their respective employees and agents of any obligations under the Contract Documents.
- 31.7 Any audits or inspections under Article 31 shall not constitute a waiver of any right the Owner has to accounting or discovery of records in the possession, custody or control of the General Contractor, its sureties, contractors, subcontractors, vendors and their respective employees and agents

ARTICLE 32- PROGRESS & SCHEDULING

- 32.1 The schedules submitted for this Project shall be prepared using Primavera P6 scheduling software. If approved by the University, and at the sole discretion of the University, schedules submitted in other versions of Primavera scheduling software (Primavera Contractor saved in .xer format, Primavera SureTrak or Primavera P3) may be converted to Primavera P6 format by the University for review purposes. However, the University will not be responsible for any inaccuracies that may result from such conversions.
- 3.2 The schedules submitted for this Project shall coordinate Work in accordance with all schedules included in the Owner's approved Program. Construction work shall be scheduled and executed such that operations of the University are given first priority. This applies particularly to outages and restriction of access.

- 32.2.1 The schedules submitted for this Project shall not exceed time limits established for the Project. Schedules which reflect a duration less than the Contract Time are for the convenience of the General Contractor and shall not be the basis of any claim for delay or extension of time.
- 32.2.2 Schedules shall be revised at appropriate intervals as required by the condition of the Work and the Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.
- 32.2.3 The General Contractor shall also submit a payment schedule indicating the percentage of the Contract Amount and the amount of the anticipated monthly payments that will be requested as the Project proceeds.
- 32.2.4 The Owner may withhold approval of all or a portion of progress payments until the progress payment schedule and construction schedule have been submitted by the General Contractor.
- 32.3 The General Contractor shall prepare and keep current, for the Consultant's approval, a separate schedule of submittals coordinated with the General Contractor's CPM construction schedule that provides reasonable time for the Consultant to review the submittals.
- 32.4 The General Contractor shall cause the work to be performed pursuant to the most recent schedules.

ARTICLE 33 - USE OF COMPLETED PORTIONS

33.1 Upon mutual Agreement between the Owner, General Contractor, and Consultant, the Owner may use a completed portion of the Project after an inspection is made. Such possession and use shall not be deemed as acceptance of any Work not completed in accordance with the Contract Documents, nor shall such possession and use be considered to alter warranty obligations or cause any warranty period to commence prior to Substantial Completion.

ARTICLE 34 - INDEMNIFICATION

- 34.1 To the fullest extent permitted by law, the General Contractor shall indemnify and hold harmless the Owner, its consultants, and their respective employees and agents from and against all claims, damages, losses and expenses, including attorney's fees, provided that any such claim, loss, damage or expense: (a) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom, and (b) is caused in whole or in part by any negligent act or omission of the General Contractor, any Sub-contractor or material supplier, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable This basic obligation to indemnify shall not be construed to nullify or reduce other indemnification rights which the Owner, its consultants, and their respective employees and agents would otherwise have.
- 34.2 The General Contractor shall also indemnify and hold harmless the Owner, its consultants, and their respective employees and agents from any claims relating to the Project brought against the Owner, its consultants, and their respective employees and agents by any Sub-contractor unless such claims are due to the gross negligence or misconduct of the Owner or Consultant.
- 34.3 In any and all claims against the Owner its consultants, and their respective employees and agents, by any employee of the General Contractor, any Sub-contractor, any one directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this Article shall not be limited in any way by any limitation on the amount or type

of damages, compensation or benefits payable by or for the General Contractor or any Sub-contractor under Worker's Compensation acts, disability benefit acts or other employee benefit acts.

34.4 The obligations of the General Contractor under this Article shall not extend to the liability of the Consultant, his agents or employees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications, or (2) the giving of or the failure to give directions or instructions by the Consultant, his agents or employees, provided such giving or failure to give is the primary cause of injury or damage.

ARTICLE 35 - INSURANCE

- 35.1 The General Contractor shall furnish the Owner the Certificates of Insurance or other acceptable evidence that insurance is effective, and guarantee the maintenance of such coverage during the term of the Contract. Each policy of insurance, except Workers Compensation, shall name the University of Kentucky and the directors, officers, trustees and employees of the University as additional insured on a primary and non-contributory basis as their interest appears. Waiver of subrogation in favor of the University of Kentucky shall apply to all policies. Any endorsements required to validate such waiver of subrogation shall be obtained by the General Contractor at the General Contractor's expense.
- 35.2 The General Contractor shall not commence, nor allow any Sub-contractor to commence Work under this Contract, until the Owner has reviewed the certificates and approved coverages and limits as satisfying the requirements of the bidding process.
- 35.3 Workers' Compensation and Employers' Liability Insurance. The General Contractor shall acquire and maintain Workers' Compensation insurance with Kentucky's statutory limits and Employers' Liability insurance as defined in the Special Conditions for all employees who will be working at the Project site. In the event any Work is sublet, the General Contractor shall require any Sub-contractor to provide proof of this insurance for the Sub-contractors' employees, unless such employees are covered by insurance provided by the General Contractor.
- 35.4. The General Contractor shall either require each Sub-contractor to procure and maintain insurance of the type and limits stated during the terms of the Contract, or insure the activities of such Sub-contractors under a blanket form as described below:
- 35.4.1 Commercial General Liability Insurance. The General Contractor shall acquire and maintain a Broad Form Comprehensive General Liability (CGL) Insurance Policy including premises operations, products/completed operations, blanket contractual, broad form property damage, real property fire legal liability and personal injury liability coverage. The Insurance Policy must be on an "occurrence" form only, unless approved by the Owner. Contractual liability must be endorsed to include defense costs. Products and completed operations insurance must be carried for two years following completion of the Work. Policies which contain Absolute Pollution Exclusion endorsements are not acceptable. Coverage must include pollution from "hostile fires". Where required by the risks involved, Explosion, Collapse and Underground (XCU) coverages shall be added by endorsement. If the work involved requires the use of helicopters, a separate aviation liability policy as defined in the Special Conditions will be required. If cranes and rigging are involved, a separate inland marine policy with liability limits as defined in the Special Conditions will be required.
- 35.4.1.1The limits of liability shall not be less than defined in the Special Conditions.

- 35.4.2 Comprehensive Automobile Liability Insurance. The General Contractor shall show proof and guarantee the maintenance of insurance to cover all owned, hired, leased or non-owned vehicles used on the Project. Coverage shall be for all vehicles including off the road tractors, cranes and rigging equipment and include pollution liability from vehicle upset or overturn. Policy limits shall not be less than defined in the Special Conditions.
- 35.4.3 Excess or Umbrella Liability Insurance. The General Contractor shall acquire and maintain a policy of excess liability insurance in an umbrella form for excess coverages over the required primary policies of broad form commercial general liability insurance, business automobile liability insurance and employers' liability insurance. This policy shall have a minimum as defined in the Special Conditions for each occurrence in excess of the applicable limits in the primary policies. The excess liability policy shall not contain an absolute pollution exclusion and shall include coverages for pollution that may occur due to hostile fires and vehicle upset and overturn. The limits shall be increased as appropriate to cover any anticipated special exposures.
- 35.5 Builder's Risk Insurance. The General Contractor shall purchase and maintain an "all risk" Builder's Risk Insurance policy upon the Work at the site to the full insurable value thereof. Such insurance shall include interests of the Owner, General Contractor, and all Sub-contractors and of their subcontractors. It shall insure against perils of fire, extended coverage, vandalism and malicious mischief. General Contractor's work performed, and materials to be incorporated into the project and stored on the jobsite, will be covered. Builder's Risk does not include temporary buildings, or General Contractor or General Contractor's tools, equipment, or trailers and contents.
- 35.6 Insurance Agent and Company Insurance as required in the bidding process of the Project shall be written according to applicable state law in Kentucky. The policies shall be written by an insurer duly authorized to do business in Kentucky in compliance with KRS: 304.1-100 and -.110.

ARTICLE 36 - PERFORMANCE AND PAYMENT BONDS

- 36.1 The General Contractor shall furnish a Performance Bond in the form provided in the Contract Documents in the full amount of the Contract Amount as security for the faithful performance of the Contract. The General Contractor shall also furnish a Payment Bond in the form provided in the Contract Documents in the full amount of the Contract Amount for the protection of all persons performing labor or furnishing materials, equipment or supplies for the General Contractor or its Sub-contractors for the performance of the Work provided for in the Contract, including security for payment of all unemployment contributions which become due and payable under Kentucky Unemployment Insurance Law.
- Each bond furnished by the General Contractor shall incorporate by reference the terms of the Contract as fully as though they were set forth verbatim in such bonds. In the event the Contract Amount is adjusted by Change Order, the penal sum of both the performance bond and the payment bond shall be deemed increased by like amounts.
- The performance and payment bonds shall be executed by a surety company authorized to do business in the Commonwealth of Kentucky, and the contract instrument of bonds must be countersigned by a duly appointed and licensed resident agent.

ARTICLE 37 - DAMAGED FACILITIES

37.1 The General Contractor shall repair or replace, at no expense to the Owner, any damaged section of existing buildings, paving, landscaping, streets, drives, utilities, watersheds, etc. caused by Work performed under the Contract or incidental thereto, whether by the General Contractor's own

forces, Sub-contractors or by material suppliers. Such repair or replacement shall be performed by craftsmen skilled and experienced in the trade or craft for the original Work.

- 37.2 Water damage to the interior of any building caused by Work performed under the Contract or incidental thereto, whether by the General Contractor's own forces, Sub-contractors, or by material suppliers, and whether occurring in a new or existing building, shall be repaired by the General Contractor at the General Contractor's expense, and any materials damaged inside the building, including personal property, shall be repaired or replaced at the full replacement cost by the General Contractor at the General Contractor's expense.
- 37.3 For existing buildings, the General Contractor, along with the Owner's Representative and Consultant, will tour the Project site to evaluate existing conditions and determine any existing damage before any Work on this Contract is done.
- 37.4 Should the General Contractor fail to proceed with appropriate repairs in an expedient manner, the Owner reserves the right to have the Work/repairs completed and deduct the cost of such Work/repairs from amounts due or to become due to the General Contractor. If the Owner deems it not expedient to repair the damaged Work, or if repairs are not done in accordance with the Contract, an equitable deduction from the Contract price shall be made.

ARTICLE 38- CLAIMS & DISPUTE RESOLUTION

- 38.1 All General Contractor's claims and disputes shall be referred to the Consultant for review and recommendation. All claims shall be made in writing to the Consultant and Owner, not more than ten (10) days from the occurrence of the event which gives rise to the claim or dispute, or not more than ten (10) days from the date that the General Contractor knew or should have known of the claim or dispute. Unless the claim is made in accordance with these requirements, it shall be waived. Any claim not submitted before Final Payment shall be waived. The Consultant shall render a written decision within fifteen (15) days following receipt of a written demand for the resolution of a claim or dispute.
- 38.1.1 The provisions of Article 43.2 notwithstanding, claims and disputes between the General Contractor and any Sub-contractor or supplier shall not be referred to the Consultant except to request interpretation and/or clarification of the intent of the plans or specifications. Such claims and disputes between the General Contractor and any Sub-contractor shall be resolved between those parties as required by Article 43.4 of these General Conditions.
- 38.2 The Consultant's decision shall be final and binding on the General Contractor unless the General Contractor submits to the Consultant and the Project Manager a written notice of appeal within fifteen (15) Calendar Days of the Consultant's decision. The General Contractor must present within fifteen (15) Calendar Days of the notice to appeal a narrative claim in writing with complete supporting documentation. After receiving the written claim, the Project Manager will review the materials relating to the claim and may meet with the Consultant and/or the General Contractor to discuss the merits of the claim. The Project Manager will render a decision within thirty (30) Calendar Days after receiving the written claim and supporting documentation. The decision of the Project Manager shall be final and binding pending further appeal as provided for in Article 39. If the Consultant or the Project Manager do not issue a written decision within thirty (30) calendar days after receiving the claim and supporting documentation, or within a longer period as may be established by the parties to the Contract in writing, then the General Contractor may proceed as if an adverse decision had been received.

- 38.3 If the Project Manager does not agree with the Consultant's decision on a claim by the General Contractor, the Project Manager shall notify the General Contractor and the Consultant and direct the General Contractor to perform the Work about which the claim was made and the General Contractor shall proceed with such Work in accordance with the Project Manager's instruction. If the General Contractor disagrees with a decision of the Project Manager concerning a General Contractor's claim, the General Contractor shall proceed with the Work as indicated by the Project Manager's decision.
- 38.4 The General Contractor shall continue to diligently pursue Work under the Contract pending resolution of any dispute, and the Owner shall continue to pay for undisputed work in place.

ARTICLE 39 - CLAIMS FOR DAMAGE

- 39.1 Should either party to the Contract suffer damage because of wrongful act or neglect of the other party, or of anyone employed by them, or others for whose act they are legally liable, or other controversy arising under the Contract, such claim or controversy shall be made in writing to the other party within thirty (30) days after the first occurrence of the event. Prior to the institution of any action in court, the claim or controversy (together with supporting data) shall be presented in writing to the Director of the Capital Project Management Division at the University of Kentucky ("Director") or his designee for the University of Kentucky. The Director, or designee, is authorized, subject to any limitations or conditions imposed by regulations, to settle, comprise, pay, or otherwise adjust the claim or controversy with the General Contractor. The Director, or designee, shall promptly issue a decision in writing. A copy of the decision shall be mailed or otherwise furnished to the General Contractor. The decision rendered shall be final and conclusive unless the General Contractor files suit pursuant to KRS 45A.245. If the Director, or designee, does not issue a written decision within one hundred and twenty (120) days after written request for a final decision, or within a longer period as may be established by the parties to the Contract in writing, then the General Contractor may proceed as if an adverse decision had been received.
- 39.2 Any legal action on the Contract shall be brought in the Franklin Circuit Court and shall be tried by the Court sitting without a jury. All defenses in law or equity, except the defense of government immunity, shall be preserved to the Owner. The Owner shall recover from the General Contractor all attorney's fees, costs and expenses incurred to the extent the Owner prevails in defending or prosecuting each claim in litigation of disputes under the Contract. The Owner is the prevailing party under this provision and is entitled to recover attorneys' fees, costs and expenses on a claim-by-claim basis to the extent the Owner successfully defeats or prosecutes each claim. A recovery of a net judgment by the General Contractor shall not be determinative of the Owner's right to recover attorneys' fees, expenses and costs. Rather, such a determination shall be made based on the extent that the Owner successfully defends or prosecutes each distinct claim in litigation under the Contract, even if the Owner does not prevail on every claim. The General Contractor shall be liable to the Owner for all attorney's fees, costs and expenses incurred by the Owner to enforce the provisions of the Contract.

ARTICLE 40 - LIENS

- 40.1 The filing and perfection of liens for labor, materials, supplies, and rental equipment supplied on the Work are governed by KRS 376.195 et seq.
- 40.2 Statements of lien shall be filed with the Fayette County Clerk and any action to enforce the same must be instituted in the Fayette Circuit Court, pursuant to KRS 376.250 (2).

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40.3 The lien shall attach only to any unpaid balance due the General Contractor for the improvement from the time a copy of statement of lien, attested by the Fayette County Clerk, is delivered to the Owner, pursuant to the provisions of KRS 376.240.

ARTICLE 41 - ASSIGNMENT

41.1 Neither party to the Contract shall assign the Contract, or any portion thereof without the prior written consent of the other, which consent may be granted or withheld in the granting party's sole and absolute discretion. The General Contractor shall not assign any amount or part of the Contract or any of the funds to be received under the Contract unless the General Contractor has the prior written approval of the Owner (which approval may be granted or withheld in the Owner's sole and absolute discretion) and the Surety on the General Contractor's bond has given written consent to any such assignment.

ARTICLE 42 - SEPARATE CONTRACTS

- 42.1 The Owner reserves the right to enter into other Contracts in connection with the Project or to perform any work with the Owner's forces in the normal sequence of the work as depicted in the then current construction schedule. Except for work performed by University personnel, such contracts shall be assignable to the General Contractor and shall contain the same terms and conditions as the contracts between the General Contractor and the Sub-contractors. The General Contractor will be entitled to a maximum of 7% total fee on the value of such assigned contracts. The General Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work and shall properly connect and coordinate its Work with theirs in such manner as the Consultant may direct.
- 42.2 Should the General Contractor cause damage to any separate contractor on the Work, and the separate contractor sues the Owner on account of any damage alleged to have been so sustained, the General Contractor shall be responsible for all costs, attorney's fees and expenses incurred by the Owner for defending such proceedings unless the Owner prevails on behalf of the General Contractor in which case fees and expenses will be the responsibility of the separate contractor and if any judgment against the Owner arises therefrom, the General Contractor shall pay or satisfy it and shall pay all costs, attorney's fees and expenses incurred by the Owner.
- 42.3 If any part of the General Contractor's Work depends upon the work of any other separate contractor, the General Contractor shall promptly report to the Consultant any observed defects in such work that render it unsuitable for proper execution connection. The failure to inspect and report shall constitute an acceptance of the other contractor's work as fit and proper for the reception of the work, except as to defects which may develop in the other contractor's work after the execution of the work.
- 42.4 Whenever work being done by the Owner's forces or by other contractors is contiguous to work covered by this Contract, the respective rights of the various parties involved shall be established by the Owner to secure the completion of the various portions of the Work in general harmony.

ARTICLE 43 - GENERAL CONTRACTOR/SUB-CONTRACTOR RELATIONSHIP

43.1 The General Contractor is fully responsible to the Owner for the acts and omissions of the Sub-contractors and of persons either directly or indirectly employed by them. The General Contractor is responsible for the acts and omissions of persons employed directly by the General Contractor and for the coordination of the Work, including placement and fittings of the various

Rev 11/2020 41 General Conditions component parts. No claims for extra costs as a result of the failure to coordinate the Work, or by acts or omissions of the various Sub-contractors, will be paid by the Owner.

- 43.2 Except as otherwise provided in these Contract Documents, the General Contractor agrees to bind every Sub-contractor by the terms and conditions of the Contract Documents as far as applicable to their portion of the Work. Upon request, the General Contractor shall provide copies of any subcontracts and purchase orders to the Owner or Consultant.
- 43.3 The General Contractor shall make no substitution or change in any Sub-contractor listed and accepted by the Consultant or Owner except as approved in writing by the Owner. The General Contractor shall not employ any Sub-contractor or supplier against whom the Owner or the Consultant has made reasonable and timely objection.
- 43.4 Nothing contained in the Contract Documents shall create any contractual relationship between the Owner and any Sub-contractor, Trade Contractor or Supplier, nor shall the General Contractor include any language in their contracts with any Sub-contractor, Trade Contractor and/or Supplier that might Imply such a relationship. The General Contractor is hereby notified that it is the General Contractor's contractual obligation to settle disputes between Sub-contractors, Trade Contractors, and/or Suppliers. Neither the Owner nor the Consultant will settle disputes between the General Contractor and any Sub-contractor, Trade Contractor, and/or Supplier or between Sub-contractors, Trade Contractors, and/or Suppliers.
- 43.4.1 The Owner does not waive sovereign immunity under KRS 45A.245(1) for any claim or claims made by parties not having a written contract with the University of Kentucky.
- 43.4.2 Third party and/or flow-through type claims, from Sub-contractors and/or suppliers or any other entity not having a written contract directly with the University, are specifically prohibited by this Contract and no provision of the General Contractor's contracts with such entities shall indicate otherwise.
- 43.4.3 The General Contractor shall indemnify and hold harmless the Owner and its agents and employees from any claims relating to the Project brought against the Owner by any of the General Contractor's Sub-contractors or suppliers, or between their sub-contractors or suppliers.

ARTICLE 44 - CASH ALLOWANCE

44.1 The General Contractor is to provide or require the Sub-contractor(s) to include in the Contract Amount all costs necessary to complete the Work. Costs based on "allowances" shall be permitted only for objectively quantifiable material items and only with the prior written approval of the Owner.

ARTICLE 45 - PROJECT SITE LIMITS

45.1 The General Contractor shall confine the apparatus, the storage of materials, and the operations of Workmen to Project site limits indicated in the Contract Documents and as permitted by law, ordinances, and permits, and shall not unreasonably encumber the site with materials and equipment.

ARTICLE 46 - CLEAN UP

46.1 The General Contractor shall at all times keep the premises free from accumulation of waste material or rubbish caused by the operations in connection with the Work. All corridors and exit

doors must be kept clear at all times. All exit ways, walks, and drives must be kept free of debris, materials, tools and vehicles.

46.2 At the completion of the Work, and prior to final inspection and acceptance, the General Contractor shall remove all remaining waste materials, rubbish, General Contractor's construction equipment, tools, machinery, and surplus materials and shall leave the Work in a clean and usable condition, satisfactory to the Consultant and the Owner. If the General Contractor fails to clean up as provided in the Contract Documents, the Owner may perform the cleaning tasks and charge the cost to the General Contractor.

ARTICLE 47 - POINTS OF REFERENCE

47.1 The General Contractor shall carefully preserve bench marks, reference points and stakes, and in case of willful or careless destruction, the General Contractor shall be charged with the resulting expense of replacement and shall be responsible for any mistake that may be caused by their loss or disturbance.

ARTICLE 48 - SUBSTITUTION - MATERIALS AND EQUIPMENT

- 48.1 Reference to or the listing of items to be incorporated in the construction without referring to any specific article, device, equipment, product, material, fixture, patented process, form, method or type of construction, or by name, make, trade name, or catalog number shall be interpreted as establishing the general intent of the Contract and the general standard of quality for that item.
- 48.2 Specific references in the Contract Documents to any article, device, equipment, product, material, fixture, patented process, form, method or type of construction, or by name, make, trade name, or catalog number, with the words "or equal", shall be interpreted as establishing a minimum standard of quality, and shall not be construed as limiting competition.
- 48.2.1 Substitution of other equipment and materials as "or equal" to items named in the specifications will be allowed provided the proposed substitution is approved by the Consultant and will perform the functions called for by the general design, be similar and of equal quality to that specified and be suited to the same use and capable of performing the same function of that specified. The Contractor has the burden to prove equality of any substitution requested.
- 48.3 Specific references in the Contract Documents to any article, device, equipment, product, material, fixture, patented process, form, method or type of construction, or by name, make, trade name, or catalog number, without the words "or equal", shall be interpreted as defining an item or source that has after careful consideration been determined by the University as necessary to be compliant with, and/or to function properly within, the University operational system. No substitutions will be allowed.
- 48.3.1 In the event the Contract Documents contain specific reference to two (2) or more items as described in Article 48.3, any of those listed will be acceptable.
- 48.4 Substitution of equipment and materials previously submitted by the Contractor and approved by the Consultant will be considered only for the following reasons:
- 48.4.1 Unavailability of the materials or equipment due to conditions beyond the control of the supplier.
- 48.4.2 Inability of the supplier to meet Contract Schedule.

- 48.4.3 Technical noncompliance to specifications.
- 48.5 In substituting materials or equipment, the Contractor assumes responsibility for any changes in systems or modifications required in adjacent or related work to accommodate such substitutions, despite consultant approval, and all costs associated with the substitution shall be the responsibility of the Contractor. The Consultant shall be reimbursed by the Contractor for any architectural or engineering revisions required as the result of such substitutions.
- 48.6 Inclusion of a certain make or type of materials or equipment in the Contractor's bid proposal shall not obligate the Owner to accept such materials or equipment if they do not meet the requirements of the Contract Documents and any such substitutions in the preparation of the bid without written approval shall be at the sole risk of the Contractor.

ARTICLE 49 - TEST AND INSPECTION

- 49.1 Regulatory agencies of the government having jurisdiction may require any Work to be inspected, tested or approved. The General Contractor shall assume full responsibility therefore, pay all costs in connection therewith, unless otherwise noted, and furnish the Consultant the required certificates of inspection, testing or approval.
- 49.2 The General Contractor shall give the Consultant timely notice of readiness of the Work for all inspections, tests or approvals.
- 49.3 The technical specifications may indicate specific testing requirements to be performed by the General Contractor. Unless otherwise provided in the Contract Documents, the cost of all such testing shall be the responsibility of the General Contractor. Testing shall be completed using a testing facility or laboratory approved by the Owner.
- 49.4 The costs of all inspection fees as may be required to construct and occupy the Work shall be the responsibility of the General Contractor.

ARTICLE 50 - WARRANTY

50.1 The General Contractor warrants to the Owner and the Consultant that all materials and equipment furnished under this Contract shall be new and in accordance with the requirements of the Contract Documents, and that all Work shall be of good quality, free from faults and defects and in conformance with the Contract Documents. If required by the Consultant or the Owner, the General Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. If the General Contractor requests approval of a substitution of material or equipment, the General Contractor warrants that such installation, construction, material, or equipment will equally perform the function for which the original material or equipment was specified. The General Contractor explicitly warrants the merchantability, the fitness for a particular purpose, and quality of all substituted items in addition to any to any warranty given by the manufacturer and/or supplier. Approval of any such substitution is understood to rely on such warrant of performance. Prior to the Substantial Completion inspection, the General Contractor shall deliver to the Consultant all warranties and operating instructions required under the Contract or to which the General Contractor is entitled from manufacturers, suppliers, and Sub-contractors. All warranties for products and materials incorporated into the Work shall begin on the date of Substantial Completion. The warranty provided in this Article 50 shall be in addition to and not a limitation of any other warranty or remedy required by law or by the Contract Documents, and such warranty shall be interpreted to require the General Contractor to replace defective material and equipment and re-execute defective Work which

- is disclosed to the General Contractor by or on behalf of the Owner within a period of one (1) year after Substantial Completion of the entire Work in addition to other warranty obligations beyond one (1) year from Substantial Completion as provided for by law or by the Contract Documents.
- Neither the final payment, any provision in the Contract Documents nor partial or entire use or occupancy of the premises by the Owner shall constitute an acceptance of Work not done in accordance with Contract Documents or relieve the General Contractor or its Sureties of liability with respect to any warranties or responsibilities for faulty materials and workmanship. The General Contractor or its sureties shall remedy any defects in Work and any resulting damage to Work at the General Contractor's own expense. The General Contractor shall be liable for correction of all damage resulting from defective Work. If the General Contractor fails to remedy any defects or damage, the Owner may correct Work or repair damages and the cost and expense incurred in such event shall be paid by or be recoverable from the General Contractor or the surety. The Owner will give notice of observed defects with reasonable promptness.
- The General Contractor shall guarantee that labor, material, and equipment will be free of defects for a period of one (1) year from the date shown on the Certificate of Substantial Completion unless special conditions or additional warranty periods are required by the contract pursuant to Article 23 in addition to warranty obligations which extend beyond one year from Substantial Completion. The Owner will give notice of observed defects with reasonable promptness. Expendable items and wear from ordinary use are excluded from this warranty.
- 50.4 Should the General Contractor be required to perform tests that must be delayed due to climate conditions, it is understood that such tests will be accomplished by the General Contractor at the earliest possible date with provisions of the general warranty beginning upon satisfactory completion of said test. The responsibility of the General Contractor under this Article will not be abrogated if the Owner should elect to initiate final payment. If the Owner initiates final payment, consent of General Contractor's surety acknowledging that Work not yet tested is required. The General Contractor shall warrant that the entire Project will conform to the Contract Documents.
- 50.5 In addition to the foregoing, the General Contractor shall warrant for a period of one (1) year that all buildings and other improvements constructed as a part of the Work shall be watertight and leak proof at every point and in every area. The General Contractor shall, immediately upon notification by or on behalf of the Owner of water penetration, determine the source of water penetration and, at the General Contractor's expense, (a) do any work to be necessary to make such buildings or improvements watertight and (b) repair and replace any other damaged material, fences and furnishings damaged as a result of such water penetration and return the buildings or other improvements to their original condition.
- 50.6 The General Contractor shall address and resolve to the Owner's satisfaction any warranty claims made by or on behalf of the Owner during the above described warranty period and all repairs and replacements made by the General Contractor pursuant to this Article 50 shall be warranted by the General Contractor, on the terms set forth in this Article 50, for a period of time commencing upon the completion of such repairs and replacements and ending on the later of (a) the expiration of the one (1) year warranty period provided for above or (b) six (6) months after the date such repair or replacement is completed.
- All costs, attorney's fees and expenses incurred by the Owner as a result of the General Contractor's failure to honor any warranty for the Work shall be paid by or recoverable from the General Contractor.

ARTICLE 51 - PREVAILING WAGE LAW REQUIREMENTS (NO LONGER USED AS OF 1/9/2017)

ARTICLE 52 - APPRENTICES

52.1 Apprentices (for all classifications of work) shall be permitted to work only under an apprenticeship agreement approved by the Kentucky Supervisor of Apprenticeship and by the Kentucky Apprenticeship and Training, United States Department of Labor.

ARTICLE 53 - GOVERNING LAW

53.1 This Contract and all issues and disputes arising out of this Contract shall be governed by, construed and enforced in accordance with the laws of the Commonwealth of Kentucky without consideration of its conflicts of laws principles.

ARTICLE 54 - NONDISCRIMINATION IN EMPLOYMENT

- 54.1 During the performance of the Contract, the General Contractor agrees as follows:
- 54.1.1 The General Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age, national origin, or disability in employment. The General Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, age, national origin, or disability in employment. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. The General Contractor agrees to post in conspicuous places available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
- 54.1.2 The General Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the General Contractor; state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age, national origin or disability in employment.
- 54.1.3 The General Contractor will send to each labor union or representatives of workers with which it has a collective bargaining agreement or other contract or understanding, a notice advising the said labor union or workers' representatives of the General Contractor's commitments under this Article, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- 54.2 Failure to comply with the above nondiscrimination clause constitutes a material breach of Contract.

ARTICLE 55 - AFFIRMATIVE ACTION; REPORTING REQUIREMENTS

55.1 The General Contractor and any Sub-contractor is exempt from any affirmative action or reporting requirements, under the Kentucky Equal Employment Opportunity Act of 1978, KRS 45.550 to KRS 45.640 "The Act", if any of the following conditions are applicable:

- 55.1.1 The sub-contract awarded is in the amount of two hundred and fifty thousand dollars (\$250,000.00) or less, and the amount of the sub-contract is not a subterfuge to avoid compliance with the provisions of the Act;
- 55.1.2 The General Contractor or Sub-contractor utilizes the services of fewer than eight (8) employees during the course of the Contract;
- 55.1.3 The General Contractor or Sub-contractor employs only family members or relatives;
- 55.1.4 The General Contractor or Sub-contractor employs only persons having a direct ownership interest in the business and such interest is not a subterfuge to avoid compliance with the provisions of The Act.
- 55.2 The General Contractor and any Sub-contractor, not otherwise exempted, shall:
- 55.2.1 For the length of the Contract, hire DBE's from within the drawing area to satisfy the agreed upon goals and timetables. Should the union with which the General Contractor or Sub-contractor have collective bargaining agreements be unwilling to provide sufficient DBE's to satisfy the agreed upon goals and timetables, the General Contractor and Sub-contractors shall hire DBE's from other sources within the drawing area.

Diverse Business Enterprises (DBE) consist of minority, women, disabled, veteran and disabled veteran owned business firms that are at least fifty-one percent owned and operated by an individual(s) of the aforementioned categories. Also included in this category are disabled business enterprises and non-profit work centers for the blind and severely disabled. MBE, WBE, Veterans, Disabled Veterans and Disabled make up Diverse Business Enterprises (DBE)

- 55.2.2 The equal employment provisions of The Act may be met in part by the General Contractor contracting to a Diverse Business Enterprise (DBE) contractor or Sub-contractor.
- 55.2.3 Each General Contractor shall, for the length of the Contract, furnish such information as required by The Act and by such rules, regulations and orders issued pursuant thereto and will permit access to all books and records pertaining to its employment practices and Work sites by the contracting agency and the department for purposes of investigation to ascertain compliance with The Act and such rules, regulations and orders issued pursuant thereto.
- 55.3 If the General Contractor is found to have committed an unlawful practice against a provision of The Act during the course of performing under this Contract, a subcontract covered under The Act, the Owner may cancel or terminate the Contract, conditioned upon a program for future compliance approved by the Owner. The Owner may also declare such General Contractor ineligible to submit proposals on further contracts until such time as the General Contractor complies in full with the requirements of The Act.
- Any provisions of The Act notwithstanding, no General Contractor shall be required to terminate an existing employee, upon proof that employee was employed prior to the date of the Contract, nor hire anyone who fails to demonstrate the minimum skills required to perform a particular job.

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ARTICLE 01 GENERAL INFORMATION

- 1.1 These Special Conditions are intended to modify, supplement, or delete from, applicable Articles of the General Conditions.
- 1.2 Where any Article of the General Conditions is supplemented by these Special Conditions, the Article shall remain in effect and the supplement shall be added thereto.
- 1.3 Where Special Conditions conflict with General Conditions, provisions of the Special Conditions take precedence.

ARTICLE 02 FIELD CONDITIONS

2.1 General Contractor will secure all data at the site of the building such as grades of lot, convenience of receiving and sorting material, location of public services, and other information which will have a bearing proposals or on the execution of the Work and shall address these issues in the preparation of their bid. No allowance shall be made for failure of the General Contractor to obtain such site information prior to submitting their proposal, and no adjustment to the General Contractor's Contract amount or stipulated time for completion shall be allowed when due to failure by the General Contractor to do so.

ARTICLE 03 (NOT USED)

ARTICLE 04 CONSULTANT

4.1 Wherever in these Contract Documents reference is made to the Consultant, it shall be understood to mean <u>University of Kentucky ITS Division</u> or their duly authorized representatives. (See Article 2 of the General Conditions.)

ARTICLE 05 GEOTECHNICAL REPORT

5.1 No subsurface or geotechnical survey information is needed at this time.

ARTICLE 06 TIME FOR COMPLETION

6.1 The time for Substantial Completion as further defined in Article 1 of the General Conditions shall be sixty (60) consecutive calendar days from the date of commencement as specified in the Work Order letter, and Final Completion shall be thirty (30) days thereafter.

ARTICLE 07 LIQUIDATED DAMAGES

- 7.1 Should the General Contractor fail to achieve Substantial Completion of the Work under this Contract on or before the date stipulated for Substantial Completion (or such later date as may result from extensions in the Contract Time granted by the Owner), he agrees that the Owner is entitled to, and shall pay the Owner as liquidated damages the sum of one hundred dollars (\$150.00) for each consecutive calendar day that Substantial Completion has not been met. See Article 3 of the Agreement.
- 7.2 Should the General Contractor fail to achieve Final Completion of the Work under this Contract on or before the date stipulated for Final Completion (or such later date as may result from extensions in the Contract Time granted by the Owner), he agrees that the Owner is entitled to, and shall pay the Owner as liquidated damages the sum of seventy-five dollars (\$75.00) for each consecutive calendar day until Final Completion is reached. See Article 3 of the Agreement.

ARTICLE 08 SUBMITTALS AND SHOP DRAWINGS

- 8.1 SUBMISSIONS GENERAL
- 8.1.1 The General Contractor shall submit each set of Shop Drawings, product data, samples, and test and/or certification reports as a separate item in <u>UK E-Communication</u>. <u>Projects not utilizing UK E-Communication</u> must submit all items electronically to the Consultant and the <u>UK Project Manager and Administrative Coordinator</u>.
- 8.1.2 All sample selections for color shall be submitted for approval at the same time. Color selections shall not be submitted individually.
- 8.1.3 Any deviation from the Contract Documents shall be noted on the transmittal form comment section.
- 8.1.4 All submittals are to be reviewed by the General Contractor for compliance with the Contract Documents before submission for approval. All submittals are to be initiated by the General Contractor. Submittals made directly to the Consultant by sub-contractors, manufacturers or suppliers will not be accepted or reviewed.
- 8.1.5 Re-submittals shall conspicuously note all changes from earlier submissions. Special notation by the General Contractor shall be made to any changes other than those in response to the Consultant's review.
- 8.1.6 Manufacturers shall, when requested by the Consultant, submit test reports prepared by reputable firms or laboratories certifying as to performance, operation, construction, wearability, etc., to support claims made by the manufacturer of the equipment or materials proposed for inclusion in the Work. General Contractor shall also submit a list of three (3) installations where said equipment or materials have been in service for a minimum of five (5) years.
- 8.2 SUBMISSIONS REVIEW
- 8.2.1 Review of submittals is only for compliance with the design concept and the contract documents. THE CONSULTANT SHALL NOT BE RESPONSIBLE FOR CHECKING DEVIATIONS FROM CONTRACT DOCUMENT REQUIREMENTS OR CHANGES FROM EARLIER SUBMISSIONS NOT SPECIFICALLY NOTED.
- 8.2.2 The following shall be verified prior to making submittals:

Field Measurements, Field Construction Criteria, Catalog numbers and similar data, Quantities and Capacities, and Compliance with requirements, including verification of all dimensions,

- 8.2.3 Review Stamp designations shall be as follows:
- 8.2.3.1 "NET = No Exceptions Taken": Proceed with the Work, no corrections needed.
- 8.2.3.2 "FC= Furnish as Corrected": Proceed with the Work, noting the corrections/conditions of the approval.
- 8.2.3.3 "RR = Revise and Resubmit": Do not proceed with the Work, as the submittal does not comply with the Contract Documents. Revisions to the submittal are required for approval. On projects utilizing UK E-Communication, "Send Back a Step" is used in lieu of "Revise and Resubmit"
- 8.2.3.4 "R = Rejected": Do not proceed with the Work, the submittal is rejected.

8.3 SUBMISSIONS - SPECIAL PROVISIONS

- 8.3.1 In making a submittal, the General Contractor shall be deemed to be making the following representations:
- 8.3.1.1 The General Contractor understands and agrees that he shall bear full responsibility for the products furnished. The General Contractor expressly warrants that products described in the attached submittal will be usable and that they conform to the Contract requirements unless specifically noted otherwise.
- 8.3.1.2 The General Contractor understands and agrees that, without assuming design responsibility, he expressly warrants that products described in the attached submittal are capable of being used in accordance with the intent of the design documents and that they conform to the Contract requirements unless specifically noted otherwise.
- 8.3.1.3 The General Contractor acknowledges that the Owner will rely on the skill, judgment, and integrity of the General Contractor as to conformance requirements and subsequent usability.

8.4 SHOP DRAWING AND PROCUREMENT SUBMITTAL LOG

- 8.4.1 The General Contractor, within ten (10) days after the Pre-Construction meeting, shall begin uploading submittals using UK E-Communication®, to generate a log fixing the dates for submission of Shop Drawings, special order material items, certifications, guarantees, and any other items required to be submitted to the Consultant for review, approval or acceptance. Projects not utilizing UK E-Communication® will submit a Shop Drawing Log provided by the Owner during the Pre-Construction Meeting.
- 8.4.2 The log shall track all submittals to date. The updated log shall then be reviewed and discussed at each progress meeting to determine items that may impact the construction schedule.

8.5 Shop Drawings

- 8.5.1 The General Contractor shall review, approve, and submit Shop Drawings to the Consultant, in accordance with the Consultant's Shop Drawing & Procurement Submittal Log or UK E-Communication®, as herein detailed. By approving and submitting Shop Drawings, the General Contractor represents that he has determined and verified all materials, field measurements, and field construction criteria related thereto, or will do so, and that he has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.
- 8.5.2 The General Contractor shall submit Shop Drawings required for the Work and the Consultant will review and take appropriate action. The review and approval shall be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents. The approval of a separate item will not indicate approval of the assembly in which the item functions.
- 8.5.3 The General Contractor shall make any corrections required by the Consultant for compliance to the Contract and shall return the required number of corrected copies of Shop Drawings and resubmit new samples until approved. The General Contractor shall direct specific attention, in writing, or on resubmitted Shop Drawings, to revisions other than the corrections called for by the Consultant on previous submissions. The General Contractor's stamp of approval on any shop drawing or sample shall constitute a representation to Owner and Design Consultant that the General Contractor has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar date, or he assumes full responsibility for doing so, and that he has reviewed or coordinated each shop drawing or sample with the requirements of the Work and the Contract Documents.

- 8.5.4 Where a shop drawing or sample submission is required by the specifications, no related Work shall be commenced until the submission has been approved by the Design Consultant. A copy of each approved shop drawing and each approved sample shall be kept in good order by the General Contractor at the site and shall be available to the Consultant.
- 8.5.5 The Consultant's approval of Shop Drawings or samples shall not relieve the General Contractor from his responsibility for any deviations from the requirements of the Contract Documents unless the General Contractor has in writing called the Consultant's attention to such deviation at the time of submission and the Consultant has given written approval to the specific deviation. Any approval by the Consultant shall not relieve the General Contractor from responsibility for errors or omissions in the Shop Drawings.
- 8.5.6 All submittals are to be submitted electronically by the contractor. Shop Drawings submitted through UK E-Communication® shall be scanned and submitted in color. Mark-ups must be made using visible color when printed. Workflow in UK E-Communication® will be established during the workflow meeting. Each individual Shop Drawing shall have its respective specification number and description highlighted.
- 8.5.7 Where Shop Drawings include fire alarm, communication systems schematics, sprinkler systems, etc., a sepia of each drawing shall be submitted to the Consultant as part of the "Record" set of drawings.

8.6 SUBMISSIONS - SAMPLES

- 8.6.1 Office samples shall be of sufficient size and quantity to clearly illustrate functional characteristics of the product with integrally related parts and attachment devices, and full range of color, texture, and pattern.
- 8.6.2 Products shall not be used until the sample has been submitted to and approved by the Consultant.
- 8.6.3 A minimum of two (2) samples are required to be submitted to the Consultant for review and approval and will be distributed as follows:
 - a) One (1) to be retained by the University;
 - b) One (1) to be returned to the Design Consultant;
 - c) An additional sample or samples may be submitted, at the General Contractor's option, for distribution to a third party.
- 8.6.4 Field samples (block, brick, etc.) of materials to be constructed at the site shall be submitted for review as required by the individual section of the Contract Documents.

8.7 SUBMISSIONS - OPERATION AND MAINTENANCE MANUALS

8.7.1 The University requires a minimum of one (1) bound copies and one (1) digital copy of the final installation, training, operation, maintenance, and repair manuals to be turned over to the Owner's Project Manager and approved for content by the Consultant by or before the time construction is 75% complete. Projects utilizing e-Communication will create digital copy from the Document Library (Closeouts) in e-Communication. The Closeout Log must contain individual line items for each physical copy submitted with corresponding PDF attachments. Operation and maintenance manuals and materials, where specified, for mechanical and electrical equipment and for operating items other than mechanical and electrical equipment must be submitted in PDF format with a separate PDF file for each item. In the event the General Contractor fails to provide these required electronic submittals prior to reaching seventy-five (75%) completion, it is agreed that the Owner at its sole discretion may deduct from the current and subsequent Applications for Payment an amount deemed by the Owner to be sufficient to encourage prompt compliance with this contractual requirement, until such time as acceptable O&M manuals are received.

- 8.7.2 Manuals provided must be of sufficient detail to enable the Owner or others to install, calibrate, train, operate, maintain, service and repair every system, subsystem, and/or piece of equipment installed on or as part of this Contract. Closeout Documents submitted through UK E-Communication® shall be scanned and submitted in color. Mark-ups must be made using visible color when printed. Each manual must contain:
- 8.7.2.1 Project Title, Project number, Location, dates of submittals, names, addresses and phone number for the Consultant, General Contractor, and General Contractor's Sub-contractors;
- 8.7.2.2 An Equipment Index that includes vendor's names, addresses, and telephone numbers for all equipment purchased on the Project;
- 8.7.2.3 Emergency instructions with phone numbers and names of contact persons on warranty items shall be uploaded to UK E-Communication®;
- 8.7.2.4 Copies of each system's air balancing record and each system's hydronic balancing record (1) physical copy and (1) digital copy in eCommunication;
- 8.7.2.5 Copy of valve tag list;
- 8.7.2.6 Copy of As-Built temperature control system drawings and components and sequence of operation;
- 8.7.2.7 Original copies of the following provided by the manufacturer:

Installation manuals

Training manuals

Calibration manuals

Service Manual

Operation manuals

Parts list

Repair manuals

Reviewed Shop Drawings Wire list

Keying Bit List

- 8.7.2.8 Any Computer, Micro controller, and/or Microprocessor equipped equipment installed shall be provided with source code copies of all software and firmware (prom, EPROM, ROM, other) supplied on this Contract; and
- 8.7.2.9 Copies of all inspection and guarantee certificates, manufacturers' warranties with the University of Kentucky listed as the Owner for all equipment provided and/or installed.
- 8.7.2.10 All manuals shall be as follows: Bound in hard cover three(3) ring (D-type) binder, 1", 1.5" or 2" maximum, indexed and in CSI format, tabbed (4,5,8 or 16th cut), no more than 80% binder fill, white vinyl, presentation type with clear vinyl view cover on front, back and spine and with pockets on front and back. Maximum drawing size in binder shall be folded 11"x17" and shall be hole punched and reinforcements added. Do not put drawings in pockets. Top of all drawings shall be at top or spine side of the manual. Complete drawings must be viewed without opening rings. Provide binders as manufactured by Universal Office Products, Des Plaines, IL. 1"(S# B2-20742), 1.5"(B2-20744), or 2"(B2-20746) or equal.
- 8.7.2.11 If the binder includes manuals from any single vendor covering several different model numbers, the model used on the Project must be highlighted.
- 8.7.2.12 Included in the front of the "Operation and Maintenance Manual" shall be a copy of the Interior and Exterior Finish plan and Schedule listing all finish materials, the manufacturer, the finish color, and the manufacturer's paint number.

8.7.2.13 Photograph album containing photos and negatives or digital images (.pdf format) showing buried utilities and concealed items shall be included.

8.8 SUBMISSIONS – AS - BUILT SET OF DRAWINGS

- 8.8.1 The General Contractor shall submit one (1) electronic copy of As Built set of drawings in .pdf format indicating all deviations of construction as originally specified in the Contract Documents. These As-Built Drawings will compile information from the General Contractor as well as all Sub-contractors. The General Contractor shall provide a qualified representative to update the As Built set of drawings as construction progresses. As-Builts submitted through UK E-Communication® shall be scanned and submitted in color. Mark-ups must be made using visible color when printed
- 8.8.2 The General Contractor shall provide and utilize a camera to photograph the installation of buried utilities and concealed items. The General Contractor shall provide standard 3 1/2" x 5" photographs with negatives, or digital images (.jpeg format), which shall be submitted as part of the Operation and Maintenance Manuals submission. These photos should be mounted in a bound album with labeling as to subject of photo, date, and Project. Such album is to be kept at job site with the As Built set of drawings until submittal of same.
- 8.8.3 Approval of the Final Payment request will be contingent upon compliance with these provisions. The General Contractor's As Built set of drawings shall be delivered to the Consultant at their completion so that the Consultant may make any changes on the original contract drawings.

8.9 SUBMISSIONS - SAP EOUIPMENT LIST

- 8.9.1 Complete equipment list for use with SAP software in electronic spreadsheet format. Data is to be provided in Uniformat format with the information being provided for individual locations as noted in Attachment A Uniformat Component List. Information is to be provided as follows (PPDMC or CPPD will provide blank Excel spreadsheets in electronic form for use in compiling the information, if desired)
- 8.9.2 All materials that require preventative maintenance (PM) are listed as in Attachment A. The equipment list is to be provided in Excel spreadsheet format and is to include the information listed in Attachment B
- 8.9.3 Required maintenance procedure listing each work task in Excel spreadsheet format as shown in Attachment C.
- 8.9.4 Required frequency of maintenance for the work tasks outlined in 8.9.3 above and included in the Attachment C spreadsheet
- 8.9.5 Listing of maintenance parts and items: i.e. filters, lubricants, etc. for each work task listed in 8.9.3 above.

8.10 SUBMISSIONS – MAINTENANCE MATERIALS

8.10.1 If specified, Maintenance/Replacement Materials, Spare Parts, and special maintenance tools for proper maintenance shall be provided by the General Contractor.

ARTICLE 09 PLANS, DRAWINGS, AND SPECIFICATIONS (NOT USED)

ARTICLE 10 PROGRESS MEETINGS

- 10.1 In addition to specific coordination and pre-installation meetings for each element of Work, and other regular Project meetings held for other purposes, progress meetings will be held as outlined at the Preconstruction Meeting. Each entity then involved in planning, coordination or performance of Work shall be properly represented at each progress meeting. The following areas will be covered at each progress meeting: current status of work in place, General Contractor's review of upcoming work (1 month look ahead), schedule status, upcoming outages, new outage requests, shop drawings due from contractors, shop drawings being reviewed, outstanding RFI's, outstanding proposed change orders, change orders, new business, As-Built updated, close-out documents status, defective work in place issues, review "pencil copy" of payment application, safety issues and new business or other issues not covered above. With regard to schedule status, discuss whether each element of current work is ahead of schedule, on time, or behind schedule in relation with updated progress schedule; determine how behind-schedule Work will be expedited, and secure commitments from entities involved in doing so; discuss whether schedule revisions are required to ensure that current Work and subsequent Work will be completed within Contract Time; and review everything of significance which could affect the progress of the Work.
- 10.2 General Contractor shall prepare and submit at each progress meeting an updated schedule indicating Work completed to date and any needed revisions.
- 10.3 With the express purpose of expediting construction and providing the opportunity for cooperation of affected parties, progress meetings will be held and attended by representatives of:
 - (1) The Owner's Project Manager
 - (2) The Consultant.
 - (3) General Contractor.
 - (4) Sub-contractors.
 - (5) Others requested to attend (as deemed necessary by CPMD).
 - (6) Physical Plant Division Representative
- 10.4 A location near the site will be designated where such progress meetings will be held. Participants will be notified of the dates and times of the meetings by the Consultant.

ARTICLE 11 CONSTRUCTION SCHEDULE - BAR CHART

11.1 The General Contractor shall prepare construction schedules as a bar chart, with separate divisions for each major portion of the work, and in sufficient detail to identify the plan and sequence of construction to be followed in meeting the requirements of the Contract. Schedules shall include divisions for Work to be accomplished remote from the central construction site, e.g. utilities from outside the construction site to the site for chilled water, steam, electrical, communications, and/or fire service. Such Work shall be scheduled so that disruption resulting from construction will be minimized. Start dates and completion dates for such Work must be maintained and completed in the shortest reasonable time. The sequence of listings shall follow the Table of Contents of the Specifications. Maximum sheet size shall be 30" x 42". The schedule shall show the complete sequence of construction, by activity, with dates for beginning and completion of each element of the Work.

- 11.1.1 For projects requiring a bar chart schedule instead of a Critical Path Method (CPM) schedule, the following Articles of the General Conditions are amended as follows:
- 11.1.2 Article 21.4.2 of the General Conditions to the Contract is amended to read as follows:
 - 21.4.2 Requests for an extension of time due to unusually bad weather shall be considered for approval only if it is shown that a) the unusual weather event delayed work on a specific weather sensitive activity or activities that had been planned to be underway on the date(s) on which the weather event occurred, as shown in the most recent update to the Project schedule that had been submitted to the Owner prior to the date of the event and b) that the delay to that activity or activities is shown to be the proximate cause of a corresponding delay to the contractually required completion dates for the Project that were shown in the most recent update to the Project schedule. The actual dates on which the delay(s) occurred must be stated and the specific activities that were directly impacted must be identified. In the event of concurrent delays, only those activities actually impacting the Project contractually required completion dates will be considered in evaluating the merit of a delay request and in adjusting the schedule. Time extensions will not be considered for concurrent delays not caused by the Owner. Requests for an extension of time which are not supported by this information shall not be considered for approval by the Owner.
- 11.1.3 Article 21.4.3 of the General Conditions to the Contract is amended to read as follows:
 - 21.4.3 In anticipation of the possibility of delay due to unusual bad weather, the General Contractor shall identify those activities in the schedules, and those activities subsequently added to updated schedules, that might reasonably be expected to be delayed by bad weather.
- 11.1.4 Article 21.7 of the General Conditions to the Contract is amended to read as follows:
 - 21.7 The Contract Time will only be adjusted for causes specified above. Extensions of time will only be approved if the General Contractor can provide justification supported by the Project schedule or other acceptable data that such changes extend the contractually required date of Substantial Completion, and that the General Contractor has expended all reasonable effort to minimize the impact of such changes on the construction schedule. No additional extension of time will be granted subsequently for claims having the basis in previously approved extensions of time.
- 11.1.5 Article 21.8 of the General Conditions to the Contract is amended to read as follows:
 - In support of requests for an extension of time not caused by unusual inclement weather, and concurrently with the submittal of any such request, the General Contractor shall submit to the Consultant and the Owner a written impact analysis showing the influence of each such event on contractually required completion dates as shown in the updated Project schedule most recently submitted to the Owner prior to the event. The analysis shall include the sequence of new or revised activities and/or durations that are proposed to be added to the existing schedule including related logic. This impact analysis shall include the new activities and/or activity revisions proposed to be added to the existing schedule and shall demonstrate the claimed impact on the contractually required completion dates. The General Contractor will not be granted an extension of time and/or relief from liquidated damages when the delay to completion of the work is attributable to, within the control of, or due to the fault, negligence, acts, or omissions of the General Contractor and/or the General Contractor's contractors, subcontractors, suppliers, or their respective employees and agents. Time extensions will not be considered for concurrent delays not caused by the Owner. In the event of concurrent delays, only that event actually impacting contractually required completion dates will be considered in adjusting the schedule and evaluating the merit of a delay claim. Requests for an extension of time which are not supported by this information shall not be considered for approval.

- 11.1.6 Article 32.1 of the General Conditions to the Contract is amended to read as follows:
 - 32.1 The General Contractor shall prepare and submit to the Owner and the Consultant a barchart type construction schedule for the Work. The schedules shall include all activities necessary for performance of the work showing the duration and the planned start and finish dates for each activity. The schedules shall include, but not be limited to, submittal processing, fabrication and delivery of materials, construction, testing, clean-up, work and/or materials to be provided by the Owner, dates and durations for major utility outages requiring coordination with the Owner and the Owner's operations, and significant milestones related to the completion of the Project.
- 11.2 The schedule shall be submitted to the Consultant and to the Owner for review within thirty (30) calendar days after the date established for the start of Work on the Project as stated in the official Work Order and Notice to Proceed. Review will be only for general conformance to the requirements of the contract. Review comments and/or acceptance of the Contractor's schedule shall not relieve the Contractor of any obligation for compliance with all requirements of the Contract Documents. Such review and comments shall not constitute interference with the Contractor's means and methods of construction, which shall remain solely the responsibility of the Contractor.
- 11.3 Schedules shall be revised no less frequently than monthly to coincide with regular monthly Project progress meetings and submission of Applications for Payment and shall be updated to indicate progress of each activity to the date of submittal, the projected completion of each activity, any activities modified since previous submittal, any major changes in scope, and all other identifiable changes, and further shall be accompanied by a narrative report to define problem areas, anticipated delays, impact on the progress of the Work, and to report corrective action taken or proposed.
- 11.4 Initial schedules shall be submitted within thirty (30) calendar days after the date established in Notice to Proceed. After review, required revisions to the schedule shall be completed and incorporated in the schedule within ten (10) calendar days. Up-dated Progress Schedules shall be submitted with each Application for Payment. Submissions must include one (1) opaque reproduction and one (1) electronic copy (disk or CD) along with a transmittal letter.
- 11.5 Copies of reviewed Schedules are to be provided to the job site file and, as appropriate, to sub-contractors, suppliers, and other concerned entities, including separate contractors. Recipients are to be instructed to promptly report, in writing, problems anticipated by projections shown in schedules.
- 11.6 The processing of all progress payments is contingent upon the submission of updated schedules.
- 11.7 The processing of all Change Orders requesting a time extension to the contract are contingent upon the submission and approval of a revised schedule demonstrating that the change order does impact the date of completion for the entire project. Time extension requests associated with Change Orders that do not impact the date of completion for the entire project will be rejected.

ARTICLE 12 WALK-THROUGH

- 12.1 After the "Work Order" is issued but before Work by the General Contractor is started, a walk-through of the area is required to document the condition of the space, surfaces, or equipment. It is the responsibility of the General Contractor to schedule the walk-through with the Owner's Project Manager, the Consultant, and other interested parties.
- 12.2 During the walk-through, General Contractor shall identify all damaged surfaces or other defective items that exist prior to construction.
- 12.3 The walk-through shall be attended by Owner's Project Manager, a Representative of the user of the facility, the General Contractor and the Consultant.

Written documentation of the walk-through is to be provided by the Consultant with copies distributed to all parties. Polaroid type color photographs are to be provided and labeled by General Contractor and one (1) copy of such photographs are to be given to Consultant. (Digital photos in a .jpg format are acceptable if submitted on digital media storage) All parties attending the walk-through agree on the list of damages.

ARTICLE 13 OWNER'S CONSTRUCTION REPRESENTATIVE (NOT USED)

ARTICLE 14 FIELD OFFICE

14.1 A field office shall not be required for this Project.

ARTICLE 15 TELEPHONE SERVICE (NOT USED)

ARTICLE 16 CONSTRUCTION FENCE (NOT USED)

ARTICLE 17 PROJECT SIGN

17.1 No signs, except those attached to vehicles or equipment, may be displayed without permission from the Consultant and the Owner's Project Manager. No political signs will be permitted.

ARTICLE 18 PARKING

- 18.1 The University of Kentucky will make available for purchase by the General Contractor up to four (4) parking permits. The category of parking permit and location of parking is determined by the Director, Parking and Transportation Services, or a designee. Parking permits may be purchased by the General Contractor to be used by the Contractor and/or the Contractor's subcontractors and employees during the construction period. The cost of each permit is based on the pro-rata annual cost and may be purchased from Parking Services, 721 Press Avenue, after the Contract is executed. Necessary documents required to purchase the passes will be available at the Pre-Construction Conference.
- The Director, Parking and Transportation Services, or a designee will determine if parking is available for employees of the Contractor and subcontractors in the K lots at Commonwealth Stadium or elsewhere on Campus. The Contractor will be given thirty (30) days notice should conditions change that will affect parking at the designated parking area and it is necessary to relocate parking or terminate parking privileges. If parking is available, permits may be purchased from Parking Services, 721 Press Avenue at the appropriate monthly cost.

ARTICLE 19 SANITARY FACILITIES

19.1 Restroom facilities in one of the surrounding buildings will be designated at the Pre-Construction Meeting for use by the General Contractor's workforce during construction. The designated restroom(s) and areas accessible to General Contractor must be kept clean and neat during construction. Failure to keep them clean will result in the General Contractor being required to provide portable toilets at his cost at the site. Drinking water shall be provided from an approved safe source so piped or transported as to be kept clean and fresh and served from single service containers or satisfactory types of sanitary drinking stands or fountains. All such facilities and services shall be furnished in strict accordance with existing governing health regulations.

ARTICLE 20 RULES OF MEASUREMENT

20.1 Rules of Measurement shall be established by the Consultant in the field. Actual measurement shall be taken in the field. These amounts shall become binding upon the General Contractor and be adjusted as before mentioned.

20.2 The General Contractor shall pay for and coordinate through the Consultant and/or the Owner's Project Manager all associated Work by utility companies including relocation of utility poles, installation of new street lights, relocation of overhead or underground lines, and any other Work called for on the Plans and in the Specifications.

ARTICLE 21 ALLOWANCES (NOT USED)

ARTICLE 22 SEQUENCE OF CONSTRUCTION (NOT USED)

ARTICLE 23 CRANE & MATERIAL HOIST OPERATIONS

- 23.1 General Contractor shall provide appropriate barriers around crane and material hoist to protect pedestrian-and vehicular traffic around operating area. When crane is operating or moving, flag men provided by General Contractor shall be utilized to prevent pedestrian and vehicular traffic from crossing the pathway of crane lift. General Contractor's flag men shall coordinate these activities with the appropriate security personnel.
- 23.2 Cranes and material hoists shall be safely secured and inaccessible during non-operating hours. General Contractor shall coordinate operation or erection of a crane or material hoist in the vicinity of the Medical Center with Medical Center Aeromedical Operations (Med-evac helicopter).
- 23.3 Any damage to trees, shrubs or plant material at the placement of crane or material hoist shall be repaired by tree surgery or replaced as directed by Consultant.

ARTICLE 24 UTILITIES

24.1 This Article modifies Article 8 of the General Conditions. The Owner will provide water and electricity for this Project. The General Contractor shall provide for all temporary taps, hoses, lines, boxes, lighting and installation of the same for construction operations. Electricity shall not be used for heating purposes. In the event that the General Contractor is wasteful with these utilities, the Owner shall charge the General Contractor accordingly.

24.2 UTILITY OUTAGES

24.2.1 Interruption of Utilities and Services: No utilities or services may be interrupted without full consent and prior scheduling of the Owner. Owner approval is required in writing for each disruption.

24.2.1.1 ENTIRE BUILDING OUTAGE

The Owner's Project Manager is the General Contractor's contact with the University for requesting Utility Outages. The Owner's Project Manager will contact the proper departments and divisions within the University and receive approval from those units prior to allowing a planned outage to occur. The established standard within the University Departments and Divisions of an entire building or group of buildings shall be three weeks written notice. The written notice shall include the type of utility to be interrupted, reason for outage, length of outage, what will be affected by the outage and a statement of whether or not the materials are on hand to complete the Work. If a specific time is desired for the outage it should be included. The Owner's Project Manager will insure that all parties affected are contacted and that a time which is least disruptive to all parties is selected. At the appointed outage time, Work shall begin and proceed continuously with all required manpower until Work is complete at no added cost to the University. The Owner's Project Manager will then notify all affected departments or divisions.

24.2.1.2 SECTION OF A BUILDING OUTAGE

The Owner's Project Manager is the General Contractor's contact with the University for requesting Utility Outages. The Owner's Project Manager will contact the proper departments and divisions within the University and receive approval from those units prior to allowing a planned outage to occur. The established standard within the University Departments and Divisions of a section of a building shall be a written request one week prior to outage. The written request shall include the type of utility to be interrupted, when the outage is desired, reason for outage, length of outage, and what will be affected by the outage. The Owner's Project Manager will insure that all parties affected are contacted and that a time which is least disruptive to all parties is selected. At the appointed outage time Work shall begin and proceed continuously with all required manpower until Work is complete at no added cost to the University. The Owner's Project Manager will then notify all affected departments or divisions.

ARTICLE 25 CLEANING AND TRASH REMOVAL

- 25.1 The General Contractor shall keep clean the entire area of new construction and shall keep streets used as access to and from the site free of mud and debris.
- All exit ways, walks, drives, grass areas, and landscaping must be kept free from debris, materials, tools and vehicles at all times. Trim weeds and grass within the site area.
- 25.3 Upon completion of the Work, General Contractor shall thoroughly clean and re-sod grass areas damaged to match existing areas.
- 25.4 The General Contractor shall be responsible for removal from the site of all liquid waste or other waste (i.e. hazardous, toxic, etc.) that requires special handling on a daily basis.
- 25.5 Dumpsters will be provided and maintained by the General Contractor.
- 25.6 During Work at the Project site, the General Contractor shall clean and protect Work in progress and adjoining Work on a continuing basis. General Contractor shall apply suitable protective covering on newly installed Work where needed to prevent damage or deterioration until the time of Substantial Completion. General Contractor shall clean and perform maintenance on newly installed Work as frequently as necessary through remainder of construction period.
- 25.7 The General Contractor shall be responsible for daily cleaning of spillage's and debris resulting from his and his Sub-contractor's operations, (includes removal of dust and debris from wall cavities), and for providing closed, tight fitting (dustproof if required), waste receptacles to transport construction debris from the work area to the dumpster. Broom clean all floors no less than once a week. The General Contractor shall empty such receptacles into the trash container when full or when directed to be emptied by the Consultant and/or Owner's Project Manager, but not less than weekly. The use of hospital waste and trash receptacles is strictly prohibited, except as otherwise provided by the project specifications.
- 25.8 Failure to comply with the above requirements shall be cause for stopping work until the condition is corrected.

ARTICLE 26 BLASTING

26.1 There shall be no blasting under any conditions on University of Kentucky property unless specified in these Special Conditions.

ARTICLE 27 CUTTING AND PATCHING - NEW AND EXISTING WORK

- 27.1 New Work Cutting and patching shall be done by craftsmen skilled and experienced in the trade or craft that installed or furnished the original Work. Repairs shall be equal in quality and appearance to similar adjacent Work and shall not be obviously apparent as a patch or repair. Work that cannot be satisfactorily repaired shall be removed and replaced.
- 27.2 Existing Construction Refer to Architectural, Mechanical, and Electrical drawings for cutting and patching. All new Work shall be connected to the existing construction in a neat and workmanlike manner, presenting a minimum of contrast between old and new Work. Do all patching of the existing construction as may be required for the new construction to be done. Necessary patching, closing of existing openings, repairing and touching up shall be included as required for a proper, neat and workmanlike finished appearance. Any existing item that is to remain and is damaged during construction shall be replaced at the General Contractor's expense.

ARTICLE 28 UNRELATED PROJECTS

28.1 Unrelated construction Projects may be under way in the vicinity of this Project or the site utility work during the course of the Work related to this Project. The General Contractor for this Project must coordinate with any other contractors regarding overlapping areas. See Article 42 - Separate Contracts of the General Conditions.

ARTICLE 29 OWNER SUPPLIED MATERIALS

Owner, in an effort to expedite this Project, has pre-ordered certain long lead time items. The following is the list of material that has been pre-Ordered:

1. None

ARTICLE 30 REMOVED ITEMS (NOT USED)

ARTICLE 31 INTERIOR ENCLOSURE AND DUST ENCAPSULATION

- 31.1 Areas under construction or renovation shall be separated from occupied areas by suitable temporary enclosures furnished, erected and maintained by the General Contractor. Temporary enclosures shall be dust and smoke tight and constructed of non-combustible materials to prohibit dirt and air borne dust from entering occupied spaces. General Contractor to review with Consultant ways to provide ventilation for dust generated by demolition and fumes/vapors produced during installation of new materials.
- 31.2 General Contractor is responsible for coordinating with the Owner's Project Manager any equipment to be turned off prior to erecting temporary enclosures.
- 31.3 General Contractor shall protect all exhaust diffusers, equipment and electrical devices from the collection of dust. All areas shall be checked and cleaned prior to final acceptance of Work.
- 31.4 Dust and debris from Work operations shall be held to a minimum.
- 31.5 General Contractor shall construct temporary dust partitions at locations and as detailed on drawings. Closures used for dust barricade shall be constructed of <u>non-combustible materials</u>, (metal studs and gypsum board or fire retardant plywood).

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31.6 General Contractor shall provide additional devices and materials and required to contain dust within Work area and protect personnel during course of Work.

- 31.7 Areas of minor renovation, consisting of the removal of doors and frames, blocking of openings, and other limited Work shall be separated by a dust partition of fire retarded polyethylene on studs.
- Existing corridor doors may serve as dust barriers, except if removed for refinishing. In such cases, temporary wood doors must be substituted until original doors are replaced.
- 31.9 The General Contractor may assume existing walls which extend full height, floor to structure, shall be deemed appropriate to contain air borne dust. Cover any voids or penetrations.
- 31.10 Doors or windows in the perimeter walls surrounding the Project work area shall be sealed off with protective materials in a manner to prohibit dust from escaping the work area. These shall be left in place until all work creating dust is completed. Protective materials shall consist of fire retardant wood, metal studs, gypsum board or flame resistant plastic.
- 31.11 Entry passage to Work area shall be sealed off with zippered plastic opening or other acceptable means which allows periodic entry and closure of barricade closure.
- 31.12 Install and maintain a "sticky mat" on the floor in locations where construction crews leave the construction area and prior to entering ANY existing space in the building.
- 31.13 Install and maintain a temporary floor covering in any and all elevators being utilized for this project.

ARTICLE 32 UKIT COMMUNICATIONS AND NETWORK SYSTEMS

32.1 The University of Kentucky owns the campus Telephone system and the UK IT Communications and Network Systems is responsible for communications pre-wiring in all new and renovated facilities on the campus. The General Contractor, during the initial start up of construction, shall coordinate with a representative from UKIT Communications and Network Systems a time window as to when pre-wiring by University personnel for the phone system can start and when it must be finished prior to the installation of the finished ceiling. (Typically same time frame as electricians installing wire.) Thirty (30) days notice shall be given to UKIT Communications and Network Systems prior to the start of the time window for pre-wiring.

ARTICLE 33 EMERGENCY VEHICLE ACCESS

33.1 Emergency Vehicle Access must be maintained during construction. The General Contractor shall coordinate with the local Fire and Emergency Medical Services department(s) that would respond to an emergency during the initial start up of construction to ensure a complete understanding of their requirements.

ARTICLE 34 SMOKE DETECTORS / FIRE ALARM SYSTEMS- EXISTING AND/OR NEW FACILITIES

34.1 General Contractor shall protect all smoke detectors in Work areas to prevent false alarms. The General Contractor will be responsible for any false alarm caused by dust created in their Work areas or dust traveling to areas beyond the Work past inadequate protection barriers. If there is a need for an existing or newly installed fire alarm system or parts of that system to be serviced, turned off, or disconnected, prior approval must be obtained from the Owner's Project Manager and notification given to the Campus Dispatch Office. The General Contractor must follow the procedure outlined for Utility Outages and any documented costs charged by the responding fire department due to a false alarm shall be paid by the General Contractor. As soon as all Work is completed, notification must be given to the Owner's Project Manager and to the Campus Dispatch Office prior to reactivation of the system. Prior to Final Payment to the General Contractor, all protected smoke detectors will be uncovered and tested.

34.1.1 When the function of any fire alarm, detection or suppression system is impaired, a temporary system shall be provided. General Contractor shall provide daily reports indicating the Superintendent has walked through the project at the end of each work period, to satisfy himself there are no present conditions that may result in an accidental fire. Portable fire extinguishers shall be on site during this time. The General Contractor is responsible for inspecting and testing any temporary systems on a monthly basis.

ARTICLE 35 SURVEYS, RECORDS, and REPORTS

- 35.1 General: Working from lines and levels established by property survey, and as shown in relation to the Work, the General Contractor will establish and maintain bench marks and other dependable markers to set lines and levels for Work at each area of construction and elsewhere on site as needed to properly locate each element of the entire Project. The General Contractor shall calculate and measure from the bench marks and dependable markers required dimensions as shown (within recognized tolerances if not otherwise indicated), and shall not scale drawings to determine dimensions. General Contractor shall advise Sub-contractors performing Work of marked lines and levels provided for their use in layout of Work.
- 35.2 Survey Procedures: The General Contractor shall verify layout information shown on drawings, as required for his own Work. As Work proceeds, surveyor shall check every major element for line, level, and plumb (as applicable), and maintain an accurate Surveyor's log or Record Book of such checks available for General Contractor or Design Consultant's reference at reasonable times. Surveyor shall record deviations from required lines and levels, and advise Design Consultant or General Contractor promptly upon detection of deviations exceeding indicated or recognized tolerances. The General Contractor shall record deviations which are accepted (not corrected) on Record Drawings.

ARTICLE 36 TOBACCO PRODUCTS PROHIBITED

- 36.1 For areas located within Fayette County, Kentucky, the use of <u>all</u> tobacco products is prohibited on all property that is owned, operated, leased, occupied, or controlled by the University. "Property" for purposes of this paragraph includes buildings and structures, grounds, parking structures, enclosed bridges and walkways, sidewalks, parking lots, and vehicles, as well as personal vehicles in these areas. To view the Lexington campus boundaries: http://www.uky.edu/TobaccoFree/files/map.pdf.
- 36.2 For areas not located within Fayette County, Kentucky, smoking is prohibited in all owned, operated, leased, or controlled University buildings and structures, parking structures, enclosed bridges and walkways, and vehicles. Smoking is also prohibited outside buildings and structures within 20 feet of entrances, exits, air intakes, and windows, unless further restricted by division policy.
- 36.3 General Contractor employees violating this prohibition will be subject to dismissal from the Project.
- 36.4 For the full Administrative Regulation see University AR 6:5. http://www.uky.edu/Regs/files/ar/ar6-5.pdf

ARTICLE 37 ALTERNATES (NOT USED)

ARTICLE 38 FIELD CONSTRUCTED MOCK UPS (NOT USED)

ARTICLE 39 PROJECT COORDINATION VIA COMPUTER

39.1 The General Contractor and subcontractors are required to have an active email account to facilitate coordination of the project during construction and warranty.

- 39.2 To facilitate project construction coordination between the Consultant, the General Contractor, Subcontractors, and the University of Kentucky as the Owner, UK Capital Project Management Division (CPMD) is hosting an Internet/ Web-based Project Management System (WPMS) to help improve project communication and collaboration. The Consultant shall participate in the use of the WPMS (UK E-Communication® or other system at the Owner's discretion) providing collaboration between Owner, the Consultant and selected contractors.
- 39.2.1 Owner shall provide the General Contractor and subcontractors with user accounts and appropriate training for the web-based project management tool.
- 39.2.2 Utilization of, and training in the use of, the WPMS will be arranged for and supervised by Owner.
- 39.2.3 Participation of General Contractor is mandatory; others as determined by Owner. Participation of Subcontractors is not mandatory but will be offered at their discretion.
- 39.2.4 All participants are required to have access to the internet and the Microsoft Internet Explorer browser (version 5.0 or higher). A broadband connection to the internet (e.g. Cable modem, ISDN, DSL) is recommended, but not required.
- 39.2.5 The WPMS shall be utilized for the following functions, as a minimum: Posting Project Files, AE Amendments, Architect's Supplemental Information (ASI's), Closeouts, Consultant Invoices, Contracts, Defective Work in Place, Meeting Minutes, Payment Applications, Proposed Change Orders Change Orders (PCO to CO's), Punch Lists, Reports (Contractor Daily Reports, Field Reports, Commissioning Reports), RFIs, SAP Equipment List, Schedules, and Submittals. The Document Library (Bid set Plans, Specifications and Addenda will be uploaded by Lynn Imaging.
- 39.2.6 Site camera monitors may be included at Owner's discretion.
- 39.2.7 Utilization of the WPMS shall be implemented by the Owner's representative.
- 39.2.8 Use of the system will provide consistent, real-time information for decision making. Additionally, all project data entered into the system will be archived to facilitate project record keeping. It is anticipated that proper use of the WPMS will improve efficiency of communications and reduce project related paperwork and clerical workload.

ARTICLE 40 HOT WORK PERMITS

40.1 All work involving open flames or producing heat and/or sparks in occupied buildings on the University of Kentucky campus will require the General Contractor to obtain approval to perform "Hot Work" on site. This includes, but is not limited to: Brazing, Cutting, Grinding, Soldering, Thawing Pipe, Torch Applied Roofing, and Cadwelding. A copy of the Hot Work Permit and the Hot Work Permit Procedure will be passed out at the Preconstruction Conference for the General Contractor's use.

ARTICLE 41 INSURANCE

41.1 Refer to insurance requirements in the RFP documents.

ARTICLE 42 KEY ACCESS

- 42.1 If Construction Cores are NOT utilized, then one set of keys for access to the renovation project area will be provided to the General Contractor by the University's Project Manager. The General Contractor assumes responsibility for the safekeeping of the key(s) and its use. When leaving the renovation area all doors must be secured.
- 42.2 All keys must be returned to the University's Project Manager upon completion of project work as one of the requirements for Final Payment. Failure to return the keys may require re-keying of all doors in the work area up to and including the entire building if master keys are issued. The cost of re-keying of the door(s) accessed by the key(s) will be subtracted from the remaining contract dollars including contract retainage.
- 42.3 All lost or stolen keys must be reported immediately to the University's Project Manager.

ARTICLE 43 CEILING CLEARANCE

- Work above ceiling: All work above an area with lay-in ceiling must be coordinated and installed so there is a minimum of 4" between the top of the ceiling grid runners and bottom of the installation. Installation shall not obstruct equipment access space or equipment removal space. Also, conduit and pipe attached to the wall must be above the 4" minimum level.
- 43.2 Coordination Between Trades: Request and examine all drawings and specifications pertaining to the construction before installing above ceiling work. Cooperate with all other contractors in locating piping, ductwork, conduit, openings, chases, and equipment in order to avoid conflict with any other contractor's work. Give special attention to points where ducts or piping must cross other ducts and piping, and where ducts, piping and conduit must fur into the walls and columns. Make known to other trades intended positioning of materials and intended order of work. Determine intended position of work of other trades and intended order of installation.

ARTICLE 44 METAL ANCHORS

44.1 All anchoring devices utilized to secure materials to the building shall be <u>metal</u>. Plastic or plastic expansion components shall not be used. This shall include all fasteners for mechanical/electrical hangers.

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AFFIDAVIT

Comes the affiant and after having been duly sworn states as follows:

- 1. That affiant is the contractor awarded a contract by the University of Kentucky on Request for Proposals (RFP) UK-2177-22 IT Infrastructure Upgrade W.T. Young Library.
- 2. That all contractors and subcontractors employed, or that will be employed, under the provisions of this contract are in compliance with Kentucky requirements for Workers' Compensation Insurance according to KRS Chapter 342 and Unemployment Insurance according to KRS Chapter 341.

Further, the affiant sayeth naught.

	Ву:		
State of)			
County of)			
Subscribed and sworn to befo	ore me by	on this	
day of	, 2021.		
My commission expires			
	Notary Public	c, State at Large	

UNIVERSITY OF KENTUCKY CAPITAL CONSTRUCTION PROCUREMENT SECTION

PAYMENT BOND

Bond Number: [NUMBER]

KNOW ALL PERSONS BY THESE PRESENTS:

WHEREAS, the University of Kentucky (the "Owner") and [CONTRACTOR'S NAME] (the "Principal") have entered into a contract for Request for Proposals (RFP) UK-2177-22 IT Infrastructure Upgrade W.T. Young Library (the "Project"), with the contract price or amount of \$[AMOUNT].

WHEREAS, the Principal is required to furnish a payment bond for the protection of all persons performing, supplying, or furnishing labor, materials, equipment, or supplies to the contractor or its subcontractors for the performance of the work provided for in the contract, including security for payment of all unemployment contributions which become due and payable under Kentucky unemployment insurance law, in an amount equal to one hundred percent (100%) of the original contract price or amount, executed by a surety company authorized to do business in the Commonwealth of Kentucky, and satisfactory to the Commonwealth; and

WHEREAS, [SURETY'S NAME] (the "Surety"), a surety company authorized to do business in the Commonwealth of Kentucky, has agreed to issue such bond.

NOW, THEREFORE, for the value received and intending to be legally bound hereby, the Principal and Surety agree to the following terms and conditions of this obligation:

- 1. **Recitations:** The recitals above are true and substantive parts of this instrument.
- **Definitions:** The following terms are defined for the purposes of this instrument:
 - (a) Bond means this instrument and the terms and conditions of the Contract (as defined herein), both express and implied, which are incorporated herein by reference and constitute a part of this instrument to the same extent and effect as though copied verbatim herein, and are legally binding on the Principal and Surety including the obligations of the Surety provided therein.
 - (b) Claimants means all persons having just and lawful claims for (i) labor, materials, services, insurance, supplies, machinery, equipment, rentals, fuels, oils, implements, tools, appliances, and any other items of whatever nature, furnished for, used or consumed in the prosecution of the work called for by the Contract, whether lienable or non-lienable and whether or not permanently incorporated in said work; (ii) pension, welfare, vacation, and other supplemental employee benefit contributions payable under collective bargaining agreements with respect to persons employed upon said work; and (iii) federal, state, and local taxes and contributions required by law to be withheld and paid with respect to the employment of persons upon said work.

- (c) Contract means that certain agreement dated [DATE] for the construction of Request for Proposals (RFP) UK-2177-22 IT Infrastructure Upgrade W.T. Young Library (the "Project"), all documents that comprise the agreement, any documents incorporated therein by reference, and any Contract Changes (as defined herein).
- (d) Contract Change means any change order, change of time, extension of time, amendment, modification, addition, or other alteration, material or otherwise, to the Contract, the contract price or amount, the work to be performed under the Contract, or the specifications accompanying same.
- 3. <u>Guaranty:</u> The Principal and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner, as obligee of the Bond, to pay all Claimants having just and lawful claims (as defined above). The Principal and Surety likewise guarantee the faithful payment of the prevailing hourly wage as set forth in the schedule incorporated into the bid documents unless the Project is exempt from the prevailing wage requirements of KRS 337.505 through 337.550.
- **Bond Amount:** The bond amount is **[AMOUNT]**, which shall be increased automatically by Contract Changes to the contract price or amount and shall not limit the Surety's obligation or liability under the Bond for paying attorney fees, costs, or other legal expenses incurred by the Owner, which may be in excess of the bond amount as increased.
- 5. <u>Defeasance:</u> Except as provided by the Contract, the Principal and Surety shall have no obligations under the Bond if the Principal during the original term of the Contract, any extensions thereof which may be granted by the Owner with or without notice to the Surety, the guaranty period, the warranty period, and other periods limited only by statutes of limitation (a) promptly pays all Claimants; (b) satisfies all claims and demands incurred under the Contract; and (c) fully indemnifies and saves harmless the Owner from all costs, damages, attorney fees, consultant fees, and other expenses that it may suffer by reason of the Principal's failure to do so. The Bond will otherwise remain in full force and effect.
- **Amendment:** The Bond, including without limitation the Bond Amount, will be deemed amended, automatically and immediately without separate or written amendments hereto, upon any Contract Changes. The Principal and Surety agree to be bound by any Contract Changes. The Surety waives notice of any Contract Changes.
- 7. <u>Interpretation</u>: The Bond will be interpreted and enforced in accordance with Kentucky law. The Principal and Surety agree that they have taken part in drafting the Bond, which will not be construed against or in favor of any other party on the basis of drafting. To the extent that this instrument contradicts the Contract, the Contract will control.
- 8. <u>Beneficiaries:</u> The Principal and Surety agree that (a) the Bond will insure to the benefit of the Owner and all Claimants having just and lawful claims (as defined above) (collectively the "Beneficiaries"), whether or not they have any direct contractual relationship with the Principal; (b) the Beneficiaries may maintain independent actions upon this Bond in their own names; and (c) no final settlement between the Owner and Principal will abridge the right of other Beneficiaries with unsatisfied claims.

IN WITNESS WHEREOF, the Principal and Surety, by their duly authorized representatives, have executed this instrument, which is effective as of [DATE].

ATTEST: WITNESSES:	PRINCIPAL
Witness as to PRINCIPAL	By
Witness as to PRINCIPAL	Title
withess as to I KINCH AL	Titte
ATTEST:	
WITNESSES:	SURETY
Witness as to SURETY	By
Witness as to SURETY	Attorney-in-Fact

UNIVERSITY OF KENTUCKY CAPITAL CONSTRUCTION PROCUREMENT SECTION

PERFORMANCE BOND

Bond Number:	

KNOW ALL PERSONS BY THESE PRESENTS:

WHEREAS, the University of Kentucky (the "Owner") and [CONTRACTOR'S NAME] (the "Principal") have entered into a contract for the construction of Request for Proposals (RFP) UK-2177-22 IT Infrastructure Upgrade W.T. Young Library (the "Project"), with the contract price or amount of \$[AMOUNT].

WHEREAS, the Principal is required to furnish a performance bond for the faithful performance of the contract in an amount equal to one hundred percent (100%) of the contract price or amount as it may be increased, executed by a surety company authorized to do business in the Commonwealth of Kentucky, and satisfactory to the Commonwealth; and

WHEREAS, [SURETY'S NAME] (the "Surety"), a surety company authorized to do business in the Commonwealth of Kentucky, has agreed to issue such bond.

NOW, THEREFORE, for the value received and intending to be legally bound hereby, the Principal and Surety agree to the following terms and conditions of this obligation:

- 1. <u>Recitations:</u> The recitals above are true and substantive parts of this instrument.
- **2. Definitions:** The following terms are defined for the purposes of this instrument:
 - (a) Bond means this instrument and the terms and conditions of the Contract (as defined herein), both express and implied, which are incorporated herein by reference and constitute a part of this instrument to the same extent and effect as though copied verbatim herein, and are legally binding on the Principal and Surety including the obligations of the Surety provided therein.
 - (b) Contract means that certain agreement dated [DATE] for the construction of Request for Proposals (RFP) UK-2177-22 IT Infrastructure Upgrade W.T. Young Library (the "Project"), all documents that comprise the agreement, any documents incorporated therein by reference, and any Contract Changes (as defined herein).
 - (c) Contract Change means any change order, change of time, extensions of time, amendment, modification, addition, or other alteration, material or otherwise, to the Contract, the contract price or amount, the work to be performed under the Contract, or the specifications accompanying same.

- 3. <u>Guaranty:</u> The Principal and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner, as obligee of the Bond, for the full and faithful performance of the Contract and any Contract Changes. The Principal and Surety likewise guarantee the faithful performance of the prevailing hourly wage as set forth in the schedule incorporated into the bid documents unless the Project is exempt from the prevailing wage requirements of KRS 337.505 through 337.550.
- **Bond Amount:** The bond amount is **[AMOUNT]**, which shall be increased automatically by Contract Changes to the contract price or amount and shall not limit the Surety's obligation or liability under the Bond for paying attorney fees, costs, or other legal expenses incurred by the Owner, which may be in excess of the bond amount as increased.
- **Defeasance:** Except as provided by the Contract, the Principal and Surety shall have no obligations under the Bond if the Principal during the original term thereof, any extensions thereof which may be granted by the Owner with or without notice to the Surety, the guaranty period, the warranty period, and other periods limited only by statutes of limitation (a) well, truly, and faithfully performs its duties to the Owner; (b) performs the Contract; (c) satisfies all claims and demands incurred under the Contract; (d) fully indemnifies and saves harmless the Owner from all costs, damages, attorney fees, consultant fees, and other expenses that it may suffer by reason of the Principal's failure to do so; and (e) reimburses and repays the Owner all such expenses and outlay, without limitation, which the Owner may incur in making good any default. The Bond will otherwise remain in full force and effect.
- **Amendment:** The Bond, including without limitation the Bond Amount, will be deemed amended, automatically and immediately without separate or written amendments hereto, upon any Contract Changes. The Principal and Surety agree to be bound by any Contract Changes. The Surety waives notice of any Contract Changes.
- 7. <u>Interpretation:</u> The Bond will be interpreted and enforced in accordance with Kentucky law. The Principal and Surety agree that they have taken part in drafting the Bond, which will not be construed against or in favor of any other party on the basis of drafting. To the extent that this instrument contradicts the Contract, the Contract will control.

IN WITNESS WHEREOF, the Principal and Surety, by their duly authorized representatives, have executed this instrument, which is effective as of [DATE].

ATTEST: WITNESSES:	PRINCIPAL
Witness as to PRINCIPAL	Ву
Witness as to PRINCIPAL	Title
ATTEST: WITNESSES:	SURETY
Witness as to SURETY	Ву
Witness as to SURETY	Attorney-in-Fact



DBE Participation Goals

PART 1 - GENERAL

- 1.1 The University of Kentucky requests all potential contractors to make a concerted effort to include Diverse Business Enterprises (DBE's) as subcontractors or suppliers in their bids.
- 1.2 Toward that end, the University of Kentucky has established 10% of total procurement costs as a Goal for participation of Diverse Business Enterprises on this contract.
- 1.3 It is therefore a request of each Bidder to include in its bid, 10% for DBE participation and other requirements as outlined in this section.

PART 2 - PROCEDURES

- 2.1 The successful bidder will be required to report to the University of Kentucky, the dollar amounts of all purchase orders submitted to DBE subcontractors and suppliers for work done or materials purchased for this contract.
- 2.2 Replacement of a DBE subcontractor or supplier listed in the original submittal must be requested in writing and must be accompanied by documentation of Good Faith Efforts to replace the subcontractor / supplier with another DBE Firm; subject to approval by the University of Kentucky.
- 2.3 For assistance in identifying qualified, certified businesses to solicit for potential contracting opportunities, bidders may contact:
 - A. The University of Kentucky, Facilities Management Contractor/Supply chain Coordinator (859-257-3204)
 - B. Tri-State Minority Supplier Development Council in Louisville, KY (502-625-0135)
 - C. The Kentucky Cabinet for Economic Development, Small & Minority Business Division in Frankfort, KY (502-564-2064)
 - D. The Office of Equal Employment Opportunity, Contract Compliance Division in Frankfort, KY (502-564-2874)
- 2.4 The University of Kentucky will make every effort to notify interested DBE subcontractors and suppliers of each Bid Package, including information on the scope of work, the pre-bid meeting time and location, the bid date, and all other pertinent information regarding the project.

004539B01

PART 3 - DEFINITIONS

3.1 Diverse Business Enterprises (DBE) consist of minority, women, disabled, veteran and disabled veteran owned business firms that are at least fifty-one percent owned and operated by an individual(s) of the aforementioned categories. Also included in this category are disabled business enterprises and non-profit work centers for the blind and severely disabled. MBE, WBE, Veterans, Disable Veterans and Disabled make up Diverse Business Enterprises (DBE).

PART 4 - OBLIGATION OF BIDDER

- 4.1 The bidder shall make a Good Faith Effort to achieve the Participation Goal for DBE subcontractors/suppliers. The failure to meet the goal shall not necessarily be cause for disqualification of the bidder; however, bidders not meeting the goal are required to furnish with their bids written documentation of their Good Faith Efforts to do so.
- 4.2 Award of Contract shall be conditioned upon satisfaction of the requirements set forth herein.
- 4.3 The Form of Proposal includes a section entitled "Identification of Diverse Business Enterprise Subcontractors and Material Suppliers". The Advertisement for Bid includes a section entitled "Diverse Business Enterprise Participation". The Determination of Responsibility includes a section entitled "Participation of Diverse Business Enterprise owned contractors and businesses". The applicable information must be completed and submitted as outlined.
- 4.4 Failure to submit this information as requested may be cause for rejection of the bid.

PART 5 - DOCUMENTATION REQUIRED

- 5.1 The prime contractor must provide the University of Kentucky with a "DBE percent of contract report "detailing subcontracting activity within 90 days of prime contract award. Projects containing multiple bid packs will update reports within 90 days of contract award throughout project duration. The report shall reflect the total dollar amount awarded to all DBE subcontractors (including suppliers) utilized under this contract.
 - a. Prime Contractors will report the following items individually to satisfy reporting requirements
 - i. Project Name, UK Project Number, and UK CPMD Project Manager assigned to the project
 - ii. Total dollar value of the prime contract with the University of Kentucky
 - iii. Total dollar value of all contracts assigned to DBE firms
- 5.2 Bidders not reaching the Goal must submit both the "DBE percent of contract report "and a written statement documenting their Good Faith Effort to do so (If bid includes no DBE participation, bidder shall enter "None" on the subcontractor / supplier form). In addition, the bidder may submit the following as proof of Good Faith Efforts to meet the Participation Goal:

004539B01 DBE Participation Goals

Dated: 11/2020

Applies to: All Projects University of Kentucky

004539B01

- A. Advertisement by the bidder of DBE Contracting opportunities associated with this bid in at least two (2) of the following:
 - 1. A periodical in general circulation throughout the region
 - 2. A Minority-Focused periodical in general circulation throughout the region
 - 3. A Trade periodical aimed at the DBE community in general circulation throughout the region
 - 4. Bidder shall include copies of dated advertisement with his submittal
- B. Evidence of written notice of contracting opportunities to at least five (5) DBE firms serving the construction industry at least seven (7) days prior to the bid opening date.
- C. Copies of quotations submitted by DBE firms which were not used due to uncompetitive pricing or other factors and/or copies of responses from firms that were contacted indicating that they would not be submitting a bid.
- D. Documentation of Bidder's utilization of the agencies identified to help locate potential DBE firms for inclusion on the contract including responses from agencies.
- E. Failure to submit any of the documentation requested in this section may be cause for rejection of bid. Bidders may include any other documentation deemed relevant to this requirement. "Record of DBE Solicitation" and other required documentation of Good Faith Efforts are to be submitted with the bid, if participation Goal is not met.

Applies to: All Projects University of Kentucky

1) Identification of Participating DBEs

University of Kentucky – Capital Project Management DBE Percent of Contract Report

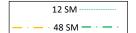
	\$ 9/6
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004539B01 DBE Participation Goals

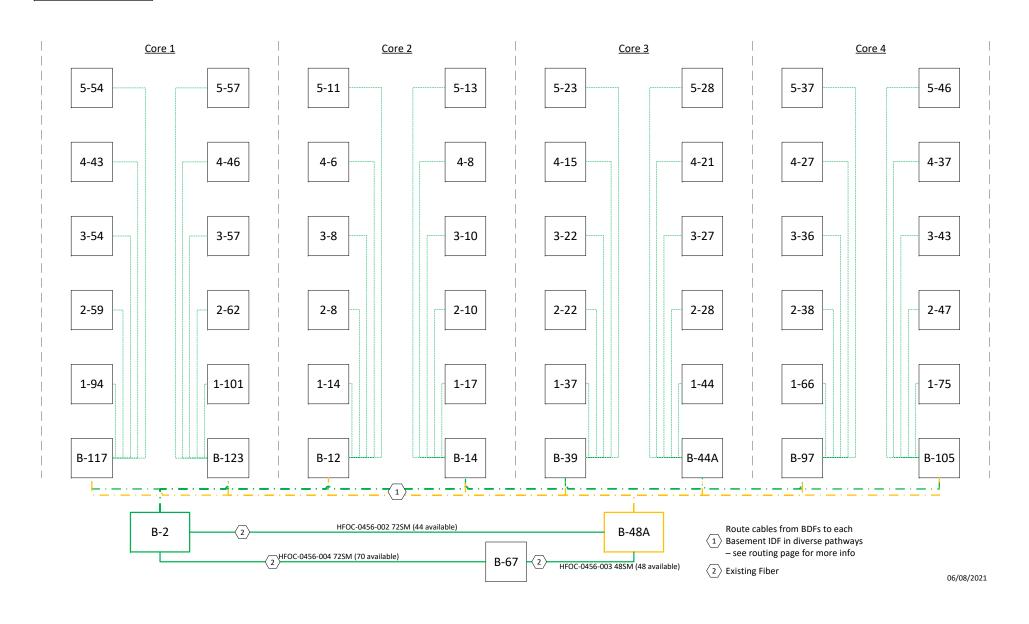
Dated: 11/2020

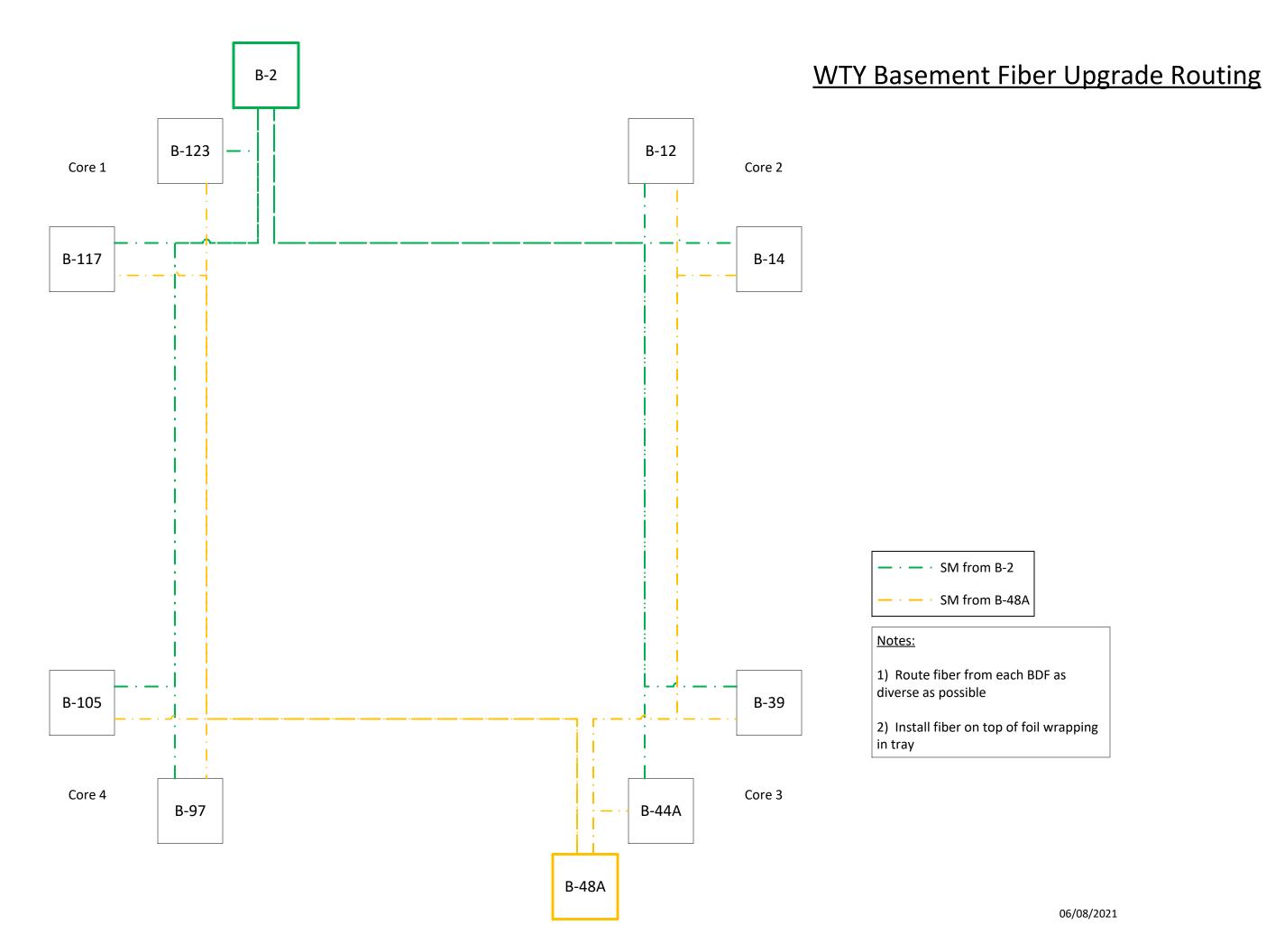
Applies to: All Projects University of Kentucky

Appendix A



WTY Fiber Upgrade – Logical Layout

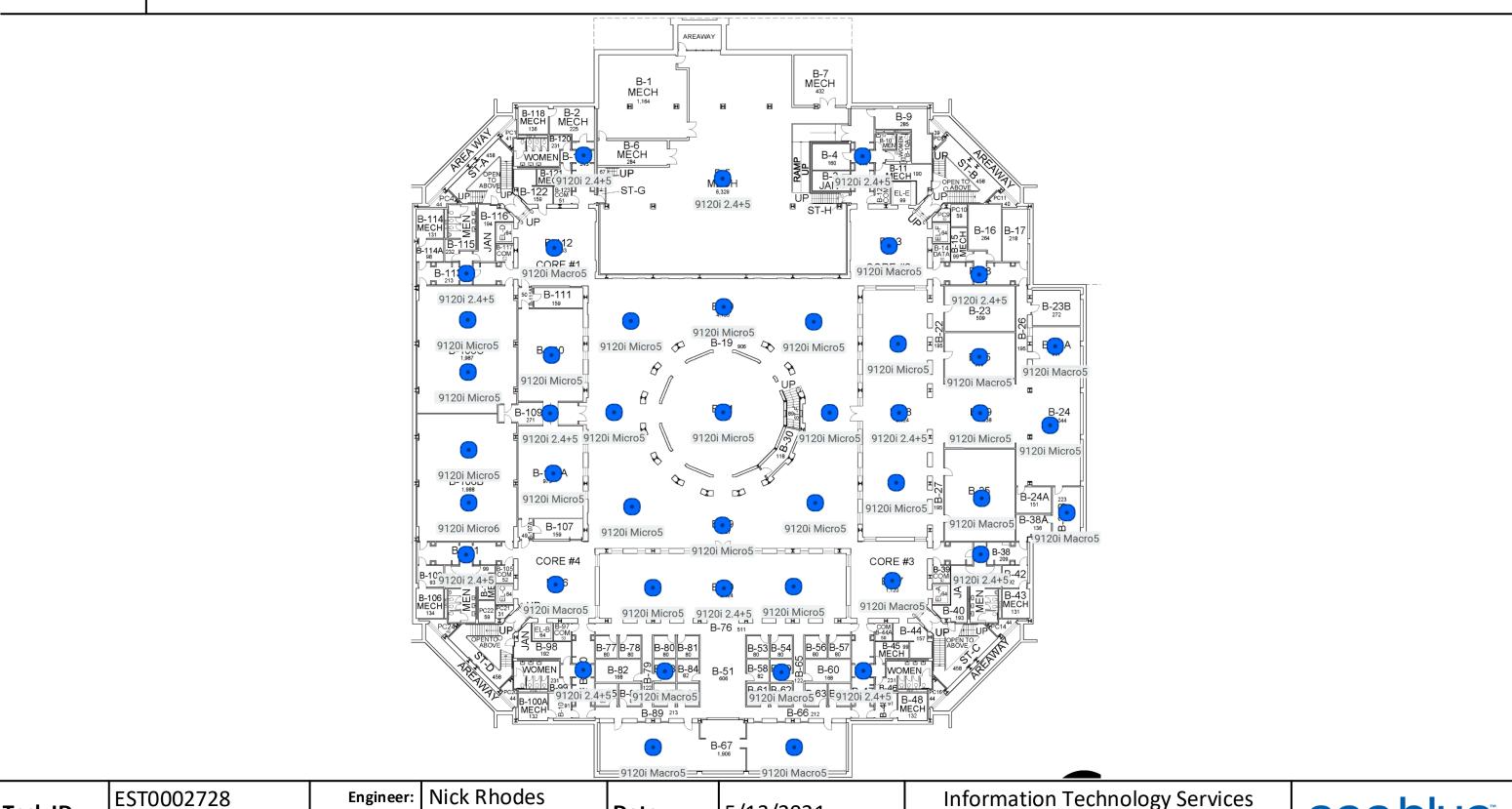






Appendix B

Basement



Task ID:

ESTSK0009932

Engineer: Nick Rhode

Design Time: 45 Hours

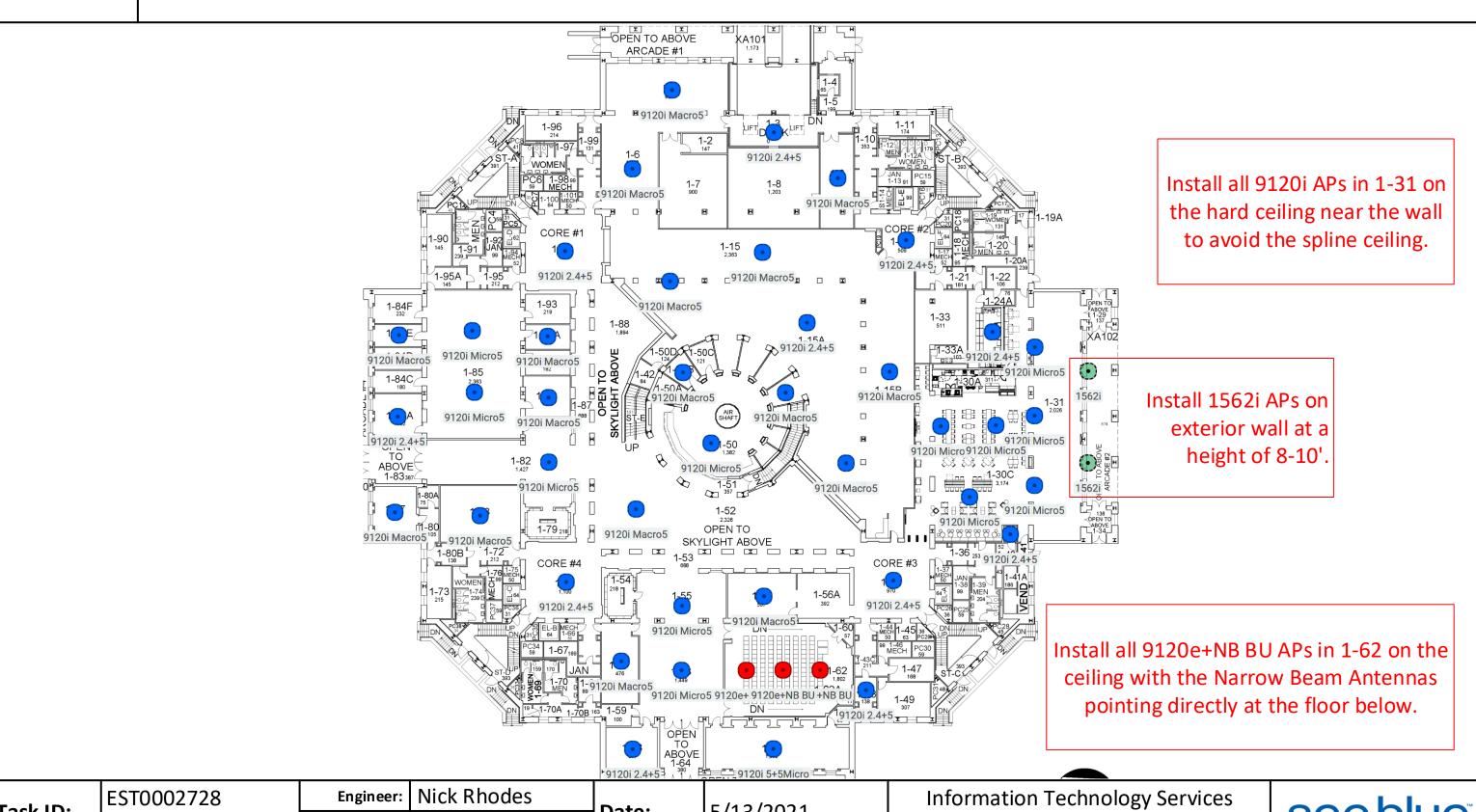
Date:

5/13/2021

Information Technology Services Network Design Group



First Floor



Task ID:

ESTSK0009932

45 Hours **Design Time:**

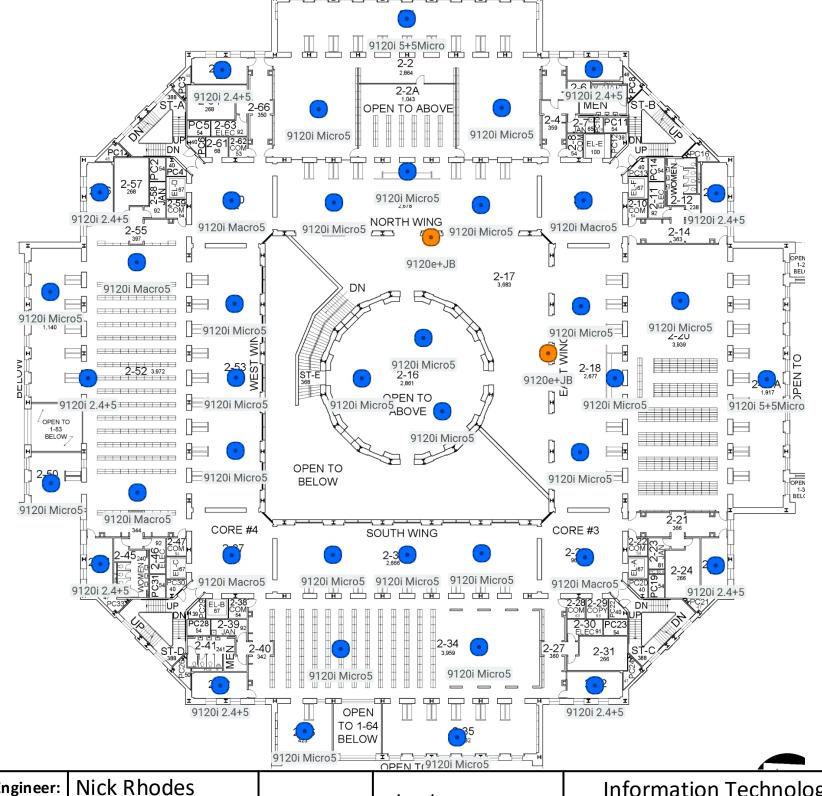
Date:

5/13/2021

Network Design Group



Second Floor



Install all Junction Box Antennas in 2-17 into the wall at standard outlet height. Adjust the antennas such that they point straight out from the wall toward 2-16.

Task ID:

EST0002728 ESTSK0009932

Install all 9120i APs in 2-16

underneath the table, near the

center, facing up. An enclosure

may be needed during installation

to ensure proper orientation.

Engineer: Nick Rhod
Design Time: 45 Hours

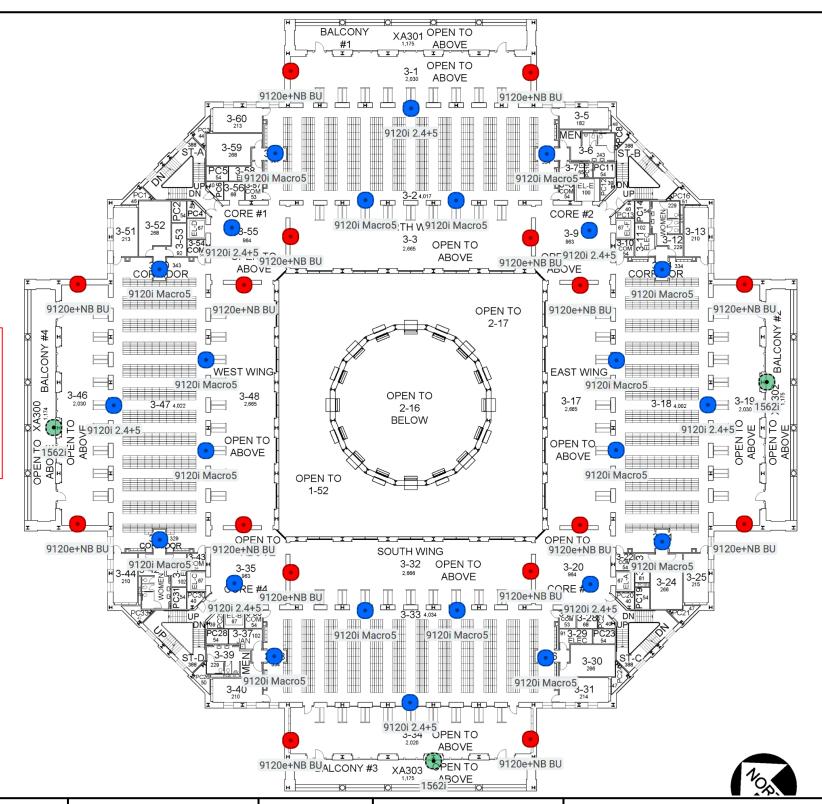
Date:

5/13/2021

Information Technology Services Network Design Group



Third Floor



5/13/2021

Task ID:

EST0002728 ESTSK0009932

Install all balcony 1562i APs on

exterior walls at a height of 8-10'.

Engineer: Nick Rhodes

Design Time: 45 Hours

Date:

Information Technology Services
Network Design Group

see blue.

Install all 9120e+NB BU APs on

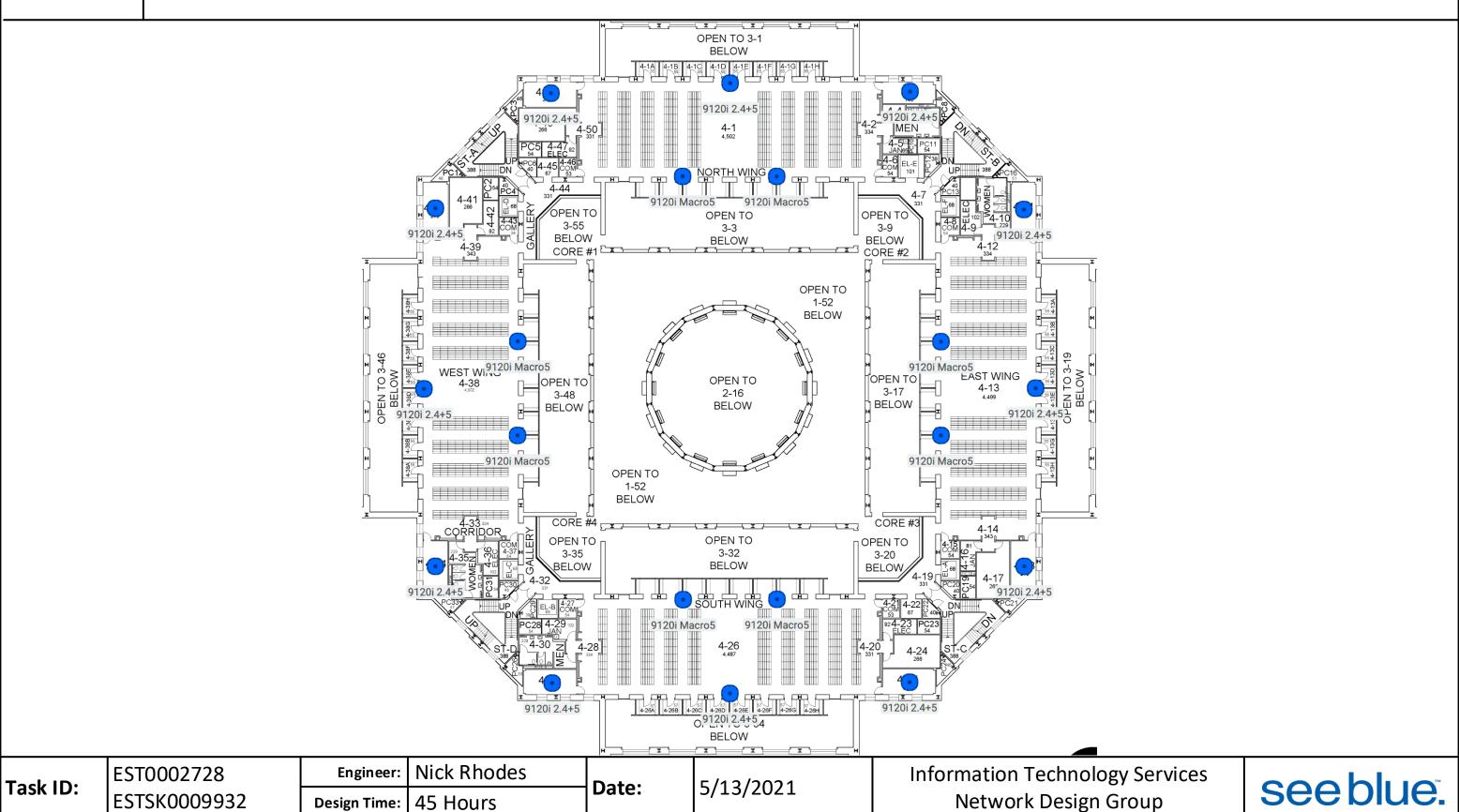
the wall at a height of 8' with the

Narrow Beam Antennas angled

20° down.

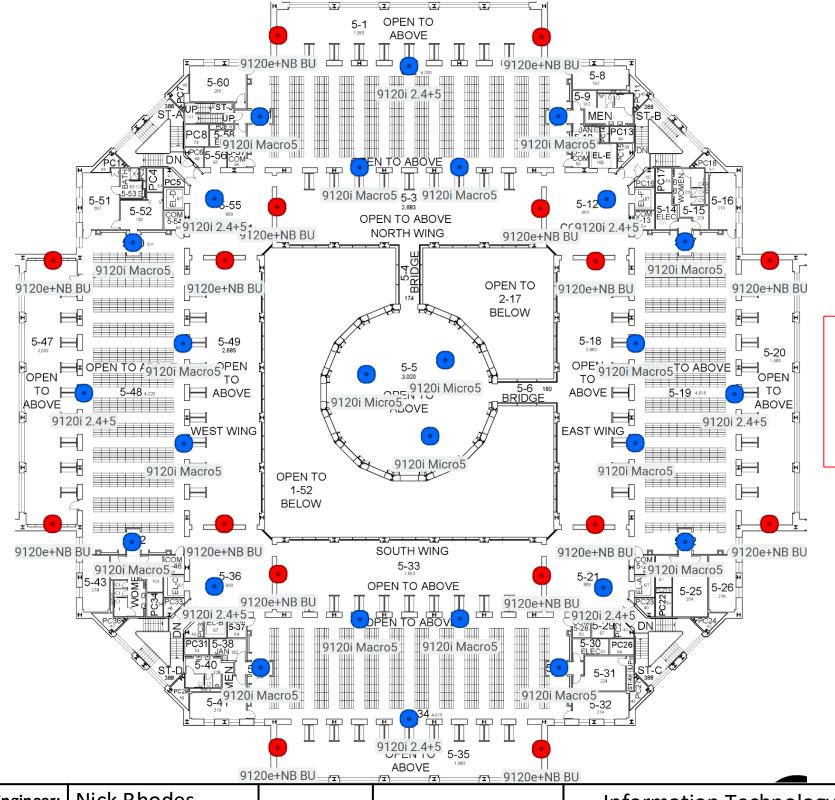


Fourth Floor





Fifth Floor



Install all 9120e+NB BU APs on the wall at a height of 8' with the Narrow Beam Antennas angled 20° down.

Task ID:

EST0002728 ESTSK0009932

Install all 9120i APs in 5-5

underneath the table, near the

center, facing up. An enclosure

may be needed during installation

to ensure proper orientation.

Engineer: Nick Rhodes

Design Time: 45 Hours

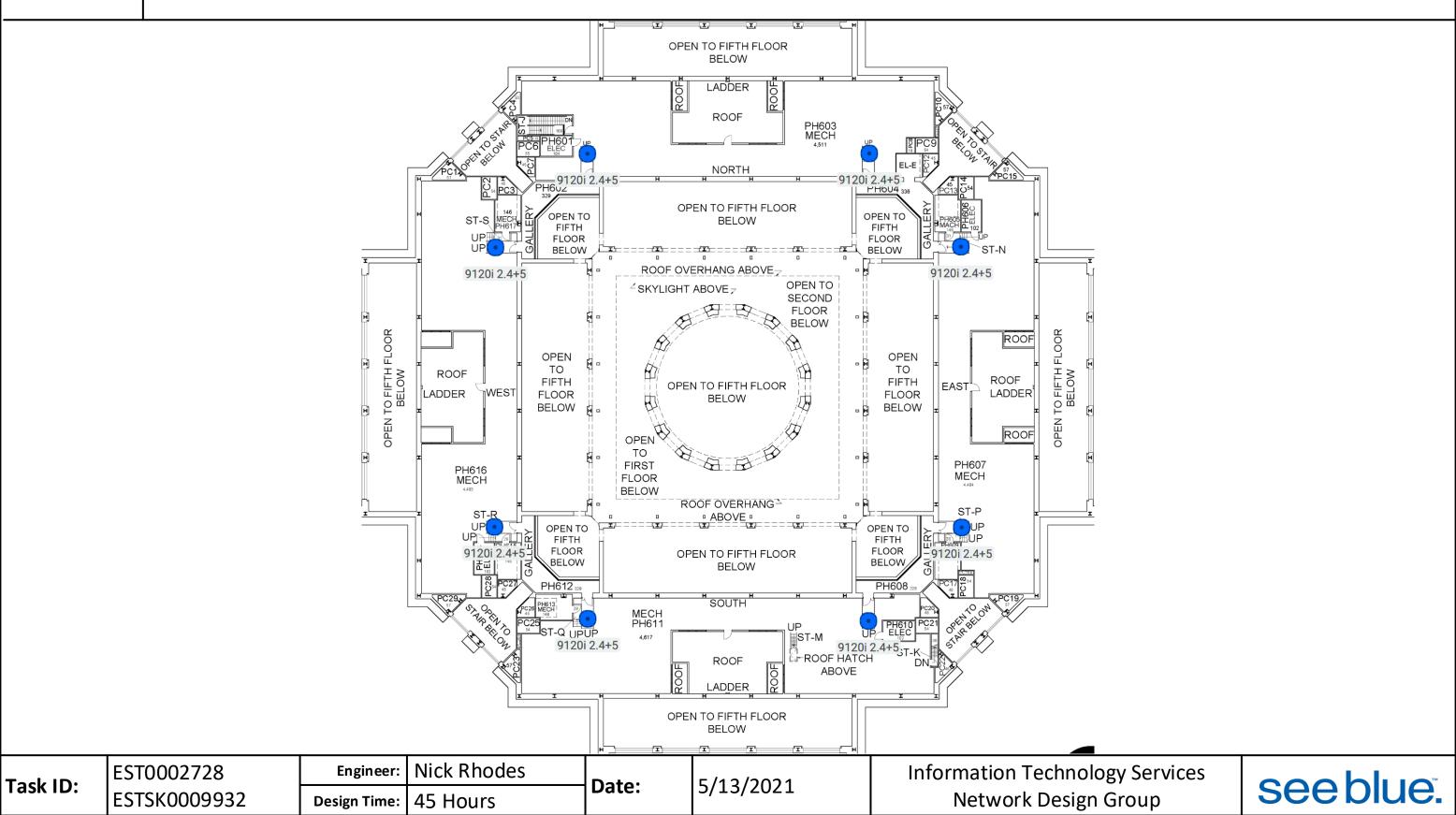
Date:

5/13/2021

Information Technology Services Network Design Group



Sixth Floor





Required Materials

Quantity	Description	Item Number
206	Cisco 9120i Wireless Access Point	C9120AXI-B
37	Cisco 9120e Wireless Access Point	C9120AXE-B
2	Ventev Junction Box Antenna	585813
35	6dBi Narrow Beam Antenna	515086
35	Ventev 9100 Co-Locating Mount	229741
5	Cisco 1562i Wireless Access Point (Local)	AIR-AP1562I-B-K9
5	Cisco 1562 Pole/Wall Bracket	AIR-ACC1530-PMK1=



0120



9120e+



9120e+NE

Task	ID:
Task	ID:

EST0002728
ESTSK0009932

Engineer:	Nick Rhodes		
Design Time:	45 Hours		

Date:

5/13/2021

Information Technology Services Network Design Group



Appendix C

WAP Mounting Details

	Location			
WAP Type	Туре	Pathway	Horizontal Cabling	WAP Install
9120i (Appendix D)	Drywall Ceiling	Box with single gang mud ring flush with ceiling surface	Terminate cable on jack in j-box, 3' patch cable to WAP	Mount directly to mud ring
9120i (Appendix D)	Accessible Ceiling	Box with single gang mud ring 6-12 inches above ceiling	Terminate cable on jack in faceplate, 10' patch cable to WAP	Mount to ceiling grid
9120i (Appendix D)	Table	N/A – use existing	Route cable out of floor box and in concealed path under table, terminate cable on biscuit jack, 3' patch cable to WAP	Mount under table top in Wi-Fi AP cover (Appendix E)
9120e+NB BU (Appendix D, F)	Accessible Ceiling	Box with single gang mud ring 6-12 inches above ceiling	Terminate cable on jack in faceplate, 10' patch cable to WAP	Mount antenna and WAP to colocating bracket on ceiling grid (Appendix G)
9120e+NB BU (Appendix D, F)	Interior Wall	Box with single gang mud ring in wall	Terminate cable on jack in j-box, 3' patch cable to WAP	Mount antenna and WAP to colocating bracket on mud ring (Appendix G)
9120e+NB BU (Appendix D)	Inside of Exterior Wall	Double gang box with single gang adapter, 2400 wiremold to nearest accessible ceiling	Terminate cable on jack in j-box, 3' patch cable to WAP	Mount antenna and WAP to co-lo bracket on adapter ring (Appendix G)
9120e+JB (Appendix D, H)	Wall	Box with single gang mud ring behind new access panel	Terminate cable on jack in j-box, 3' patch cable to WAP	Mount WAP directly to mud ring, install antenna in wall per wireless network design drawings (Appendix B)
1562i (Appendix I)	Exterior Wall	Box with single gang mud ring above ceiling near exterior wall, 3/4" sleeve through wall just below WAP mounting location	Terminate cable on jack in faceplate, 10' patch cable to WAP, weatherproof end of exterior sleeve	Mount WAP just above sleeve to pole mount bracket – lightning arrestor/grounding not required for this installation (Appendix J)



Data sheet Cisco public

Cisco Catalyst 9120AX Series Access Points

Contents

Secure infrastructure	5
Cisco DNA support	5
Product specifications	6
Licensing	22
Warranty information	22
Cisco environmental sustainability	22
Cisco Services	23
Cisco Capital	23
Smart Account	23

The Cisco® Catalyst® 9120AX Series Access Points are the next generation of enterprise access points. They are resilient, secure, and intelligent.



We are more dependent on our wireless networks than ever before. Additional devices connect to the network every year, and the Cisco Catalyst 9120AX Series Access Points will provide a seamless experience anywhere for everyone. Going beyond the Wi-Fi 6 (802.11ax) standard, the 9120AX Series provides integrated security, resiliency, and operational flexibility as well as increased network intelligence.

Extending Cisco's intent-based network and perfect for networks of all sizes, the Cisco Catalyst 9120AX Series scales to the growing demands of IoT while fully supporting the latest innovations and new technologies. Not only that, but the 9120AX Series is a leader in performance, security, and analytics.

The Cisco Catalyst 9120AX Series Access Points, paired with Cisco DNA, are enterprise-class products that will address your current and future needs. These access points are the first step in updating your network so that you can take better advantage of all of the features and benefits that Wi-Fi 6 provides.

Table 1. Features and benefits

Feature	Benefits
Wi-Fi 6 (802.11ax)	The IEEE 802.11ax emerging standard, also known as High-Efficiency-Wireless (HEW) or Wi-Fi 6, builds on 802.11ac. It delivers a better experience in typical environments with more predictable performance for advanced applications such as 4K or 8K video, high-density, high-definition collaboration apps, all-wireless offices, and IoT. Wi-Fi 6 is designed to use both the 2.4-GHz and 5-GHz bands, unlike the 802.11ac standard.
Cisco RF ASIC	Cisco RF ASIC is a fully integrated Software-Defined Radio (SDR) that can perform advanced RF spectrum analysis and delivers features like Cisco CleanAir®, Wireless Intrusion Prevention System (wIPS), Fast Locate*, and DFS detection. (*Future)
Uplink/downlink OFDMA	Orthogonal Frequency-Division Multiple Access (OFDMA)-based scheduling splits the bandwidth into smaller chunks called Resource Units (RUs), which can be allocated to individual clients in both the downlink and uplink directions to reduce overhead and latency.
MU-MIMO technology	Supporting four spatial streams, Multiuser Multiple Input, Multiple Output (MU-MIMO) enables access points to split spatial streams between client devices, to maximize throughput.

Feature	Benefits			
BSS coloring	Spatial reuse (also known as Basic Service Set [BSS] coloring) allows the access points and their clients to differentiate between BSSs, thus permitting more simultaneous transmissions.			
Target wake time	A new power savings mode called Target Wake Time (TWT) allows the client to stay asleep and to wake up only at prescheduled (target) times to exchange data with the access point. This offers significant energy savings for battery-operated devices, up to three to four times greater compared to 802.11n and 802.11ac.			
Intelligent Capture	Intelligent Capture probes the network and provides Cisco DNA Center with deep analysis. The software can track over 240 anomalies and instantaneously review all packets on demand, emulating the onsite network administrator. Intelligent Capture allows for more informed decisions on your wireless networks.			
Flexible Radio Assignment	Allows the access points to intelligently determine the operating mode of serving radios based on the RF environment. The access points can operate in the following modes: • 2.4-GHz and 5-GHz mode: One radio will serve clients in 2.4-GHz mode, while the other serves clients in 5-GHz mode. • Dual 5-GHz mode: Both radios inside the access point operate on the 5-GHz band, maximizing the benefits of Wi-Fi 6 and increasing client device capacity.			
Dual 5-GHz radio support	Enables both radios to operate in 5-GHz client serving mode, allowing an industry-leading 5.2 Gbps (2 x 2.6 Gbps) over-the-air speeds while increasing client capacity.			
Smart antenna connector	An intelligent second physical antenna connector is included on 9120AX Series access points with an external antenna. This connector provides advanced network design flexibility for high-density and large open-area environments such as auditoriums, convention centers, libraries, cafeterias, and arenas/stadiums, allowing two sets of antennas to be connected and active on a single access point.			
Cisco Embedded Wireless Controller	The 9120AX Series Wi-Fi 6 access points is available with a built-in controller. The Cisco Embedded Wireless Controller on Catalyst 9100 Access Points provides an easy-to-deploy and manage option that does not require a physical appliance. The control resides on the access point so there is no added footprint or complexity. And, because it uses Cisco Catalyst 9800 Series code, it's easy to migrate your network as your needs grow. For more details refer to the EWC data sheet .			
Application Hosting on Catalyst 9100 Access	Application Hosting on Catalyst 9100 Access Points helps future-proof and simplify IoT deployments by eliminating the need to install and manage overlay networks. Utilizing the USB interface, containerized applications and hardware modules can be deployed to reduce cost and complexity. Adding Cisco DNA Center provides workflows and deployment-wide application lifecycle management.			
Multigigabit Ethernet support	Provides uplink speeds of 2.5 Gbps, in addition to 100 Mbps and 1 Gbps. All speeds are supported on Category 5e cabling for an industry first, as well as 10GBASE-T (IEEE 802.3bz) cabling.			
Bluetooth® radio	Integrated Bluetooth Low Energy 5 radio to enable IoT use cases such as location tracking and wayfinding.			
Container support for applications	Enables edge computing capabilities for IoT applications on the host access point.			

Feature	Benefits	
Apple features	Apple and Cisco have partnered to create an optimal mobile experience for iOS devices on corporate networks based on Cisco technologies. Using new features in iOS 10, in combination with the latest software and hardware from Cisco, businesses can now more effectively use their network infrastructure to deliver an enhanced user experience across all business applications.	
	At the center of the collaboration is a unique handshake between the Cisco WLAN and Apple devices. This handshake enables the Cisco WLAN to provide an optimal Wi-Fi roaming experience to Apple devices. Additionally, the Cisco WLAN trusts Apple devices and gives priority treatment for business-critical applications specified by the Apple device. This feature is also known as Fast Lane.	

For more details about Wi-Fi 6, see Cisco's technical white paper on Wi-Fi 6.

For more details about C9120 feature support, see Cisco's Feature Matrix.

Secure infrastructure

Trustworthy systems built with Cisco Trust Anchor Technologies provide a highly secure foundation for Cisco products. With the Cisco Catalyst 9100 Access Points, these technologies enable hardware and software authenticity assurance for supply chain trust and strong mitigation against man-in-the-middle attacks that compromise software and firmware. Trust Anchor capabilities include:

- Image signing
- Secure Boot
- Cisco Trust Anchor module

Cisco DNA support

Pairing the Cisco Catalyst 9120AX Series Access Points with Cisco DNA allows for a total network transformation. Cisco DNA allows you to truly understand your network with real-time analytics, quickly detect and contain security threats, and easily provide networkwide consistency through automation and virtualization. The 9120AX Series supports Software-Defined Access (SD-Access), Cisco's leading enterprise architecture.

Working together, the Cisco Catalyst 9120AX Series and Cisco DNA offer such features as:

- · Cisco DNA Spaces
- Cisco Identity Services Engine
- Cisco DNA Analytics and Assurance

The result? Your network stays relevant, becomes digital ready, and is the lifeblood of your organization.

Note: For information about Cisco DNA, refer to the Cisco DNA Solution Overview.

Product specifications

Table 2.Specifications

Item	Specification		
Part numbers	Cisco Catalyst 9120AXI Access Point: Indoor environments, with internal antennas		
	C9120AXI-x: Cisco Catalyst 9120AX Series		
	Cisco Catalyst 9120AXE Access Point: Indoor, challenging environments, with external antennas		
	C9120AXE-x: Cisco Catalyst 9120AX Series		
	Cisco Catalyst 9120AXP Access Point: Indoor, professional installations		
	C9120AXP-x: Cisco Catalyst 9120AX Series		
	Cisco Catalyst 9120AXI Access Point: Indoor environments, with internal antennas, with embedded wireless controller		
	C9120AXI-EWC-x: Cisco Catalyst 9120AX Series		
	Cisco Catalyst 9120AXE Access Point: Indoor, challenging environments, with external antennas, with embedded wireless controller		
	C9120AXE-EWC-x: Cisco Catalyst 9120AX Series		
	Cisco Catalyst 9120AXP Access Point: Indoor, professional installations, with embedded wireless controller		
	C9120AXP-EWC-x: Cisco Catalyst 9120AX Series		
	Regulatory domains: (x = regulatory domain)		
	Customers are responsible for verifying approval for use in their individual countries. To verify approval and to identify the regulatory domain that corresponds to a particular country, visit https://www.cisco.com/go/aironet/compliance .		
	Not all regulatory domains have been approved. As they are approved, the part numbers will be available on the Global Price List.		
	Cisco Wireless LAN Services		
	AS-WLAN-CNSLT: <u>Cisco Wireless LAN Network Planning and Design Service</u>		
	AS-WLAN-CNSLT: <u>Cisco Wireless LAN 802.11n Migration Service</u>		
	AS-WLAN-CNSLT: <u>Cisco Wireless LAN Performance and Security Assessment Service</u>		
Software	Cisco Unified Wireless Network Software Release 8.9.x or later		
	Cisco IOS® XE Software Release 16.11 with AP Device Pack, or later		
Supported wireless LAN controllers	 Cisco Catalyst 9800 Series Wireless Controllers Cisco 3500, 5520, and 8540 Series Wireless Controllers and Cisco Virtual Wireless Controller 		
802.11n version 2.0 (and related) capabilities	 4x4 MIMO with four spatial streams Maximal Ratio Combining (MRC) 802.11n and 802.11a/g beamforming 20- and 40-MHz channels PHY data rates up to 890 Mbps (40 MHz with 5 GHz and 20 MHz with 2.4 GHz) Packet aggregation: A-MPDU (transmit and receive), A-MSDU (transmit and receive) 802.11 Dynamic Frequency Selection (DFS) Cyclic Shift Diversity (CSD) support 		

Item	Specification
802.11ac	 4x4 downlink MU-MIMO with four spatial streams MRC 802.11ac beamforming 20-, 40-, 80-, and 160-MHz channels PHY data rates up to 3.47 Gbps (160 MHz with 5 GHz) Packet aggregation: A-MPDU (transmit and receive), A-MSDU (transmit and receive) 802.11 DFS CSD support
802.11ax	 4x4 downlink MU-MIMO with four spatial streams Uplink/downlink OFDMA TWT BSS coloring MRC 802.11ax beamforming 20-, 40-, 80-, and 160-MHz channels PHY data rates up to 5.38 Gbps (160 MHz with 5 GHz and 20 MHz with 2.4 GHz) Packet aggregation: A-MPDU (transmit and receive), A-MSDU (transmit and receive) 802.11 DFS CSD support
Integrated antenna	Flexible radio (either on 2.4 GHz or on 5 GHz) • 2.4 GHz, peak gain 4 dBi, internal antenna, omnidirectional in azimuth • 5 GHz, peak gain 5 dBi, internal antenna, omnidirectional in azimuth Dedicated 5-GHz radio • 5 GHz, peak gain 5 dBi, internal antenna, omnidirectional in azimuth
External antenna (sold separately)	 Cisco Catalyst 9120AXE Access Points are certified for use with antenna gains up to 6 dBi (2.4 GHz and 5 GHz) Cisco Catalyst 9120AXP Access Points) are certified for use with antenna gains up to 13 dBi (2.4 GHz and 5 GHz) with the AIR-ANT2513P4M-N= antenna Cisco offers the industry's broadest selection of antennas, delivering optimal coverage for a variety of deployment scenarios Supports Self-Identifiable Antennas (SIA) on one RP-TNC port For more details, see the Catalyst 9120AX Series Deployment Guide.
Smart antenna connector	 Available on the 9120AXE and 9120AXP only Compact multi-RF connector with DART interface Requires the AIR-CAB002-DART-R= 2 ft smart antenna connector when used with antennas with RP-TNC connector Required when running the flexible radio as either a second 5-GHz serving radio or a Wireless Security Monitoring radio
Interfaces	 1x 100, 1000, 2500 Multigigabit Ethernet (RJ-45) - IEEE 802.3bz Auto-MDIX support Management console port (RJ-45) USB 2.0 @ 4.5W
Indicators	Status LED indicates boot loader status, association status, operating status, boot loader warnings, and boot loader errors
Dimensions	• Access point (without mounting brackets): C9120AXI: 8.5 x 8.5 x 1.7" (21.6 x 21.6 x 4.3 cm), C9120AXE and

Item	Specification Sp					
(W x L x H)	C9120AXP: 8.5 x 8.05 x 2.0" (21.6 x 21.6 x 5.1 cm)					
Weight	Cisco Catalyst 9120AXI • 2.87 lb (1.3 kg) Cisco Catalyst 9120AXE/P • 3 lb (1.36 kg)					
Input power requirements	 802.3at Power over Ethernet Plus (PoE+), 802.3bt Cisco Universal PoE (Cisco UPOE+, Cisco UPOE*) 802.3af PoE Cisco power injector, AIR-PWRINJ6= (Note: This injector supports only 802.3at) Cisco power injector, AIR-PWRINJ5= (Note: This injector supports only 802.3af) 					
Power draw	Catalyst 9120AXI					
	PoE power consumption	5-GHz radio	Link speed	USB	LLDP	
	802.3at (PoE+)	4x4	2.5G	Υ	25.5W	
	Catalyst 9120AXE, 9120AXP					
	PoE power consumption	5-GHz radio	Link speed	USB	LLDP	
	802.3at (PoE+)	4x4	2.5G	Υ	25.5W	
	Catalyst 9120AXI, 9120AXP					
	PoE power consumption	5-GHz radio	Link speed	USB	LLDP	

Item	Specifica	tion					
	802.3af	PoE	1x1	1G		N	13.4W
	802.3af	PoE	N	1G		N	13.4W
	802.3af	PoE	2x2	1G		N	13.4W
	Note: Pow environme			urce Equipme	nt (PSE	i) will depend on the cab	ole length and other
Environmental	Nonoper Operating Operating Operating Operating Note: Wheeler who we've recorded to the content of th	rating (storal rating (storal rating (storal rating temperate and storal rating temperate and storal rating (storal rating (storal rating (storal rating temperate and storal rating temperate and sto	age) temperature: -22 age) altitude test: 25° ure: 32° to 122° F (0 10% to 90% (noncor est: 40°C, 9843 ft.	C, 15,000 ft. to 50°C) ndensing) uperature exceptions, uplink Elenabled P to 158°F (-300 ft. 20° to 50°C)	eeds 40 Etherne	ጋ° C, the access point wi t will downgrade to 1 Gig	
System memory	2048 ME1024 ME						
Warranty	Limited life	etime harc	lware warranty				
Available transmit power settings	2.4 GHz • 23 dBm (200 mW) • -4dBm(0.39mW) 5 GHz • 23 dBm (200 mW) • -4dBm (0.39mW)						
Regulatory domains	approval a	and to ider	ntify the regulatory com/go/aironet/cor	domain that on the control of the co	corresp	use in their individual coronds to a particular cour ne <u>Cisco Regulatory Dom</u>	ntry, visit
Compliance	Safety:				• Radi	o:	

Item	Specifica	ation				
standards	• IEC 6 • EN 6 • UL 6 • CAN • AS/N • UL 2 • Class • Emissic • EN 5 • EN 5 • EN 6 • KN6 • KN6 • KN6 • AS/N • 47 C • ICES • VCC • VCC • CNS • KN-3 • KN-3 • KN-3 • KN-3 • EN 5 • EN 5 • EN 5 • EN 6 • KN6 • AS/N • AS/	50950-1 10950-1 10950-1 17CSA-C22.2 No. 60950-1 NZS 60950-1 043 Is III equipment 1005: 102 (rev. 2015) 1032 (rev. 2012/AC:2013) 1035 2010 1000-3-2 (rev. 2014) 1000-3-2 1000-3-3 NZS CISPR 32 Class B (rev. 2015) 1000-3-3 NZS CISPR 32 Class B (rev. 2015) 1000-3-1 1000-3-2 1000-3-3 NZS CISPR 32 Class B (rev. 2015) 1000-3-1 1000-3-2 1000-3-3 NZS CISPR 32 Class B (rev. 2015) 1000-3-3	,	RSP-100 RSS-GEN RSS-247 China regulation LP0002 (rev 201 Japan Std. 33a, RF safety: EN 50385 (rev. ARPANSA AS/NZS 2772 (rev.) EN 62209-1 (rev.) RSS-102 IEEE standards: IEEE 802.3 IEEE 802.3 IEEE 802.3ab IEEE 802.3ab IEEE 802.11 a/b IEEE 802.11h, 80 Security: 802.11i, Wi-Fi PWPA2, WPA 802.1X Advanced Encry EAP-Transport LEAP-Transport LEAP-Transport LEAP-Tunneled THandshake Auth (MSCHAPv2) Protected EAP (IEAP-FAST)	1.1) ev. 2017) tt 15C, 15.247, 15.407 s SRRC [8.1.10) Std. 66, and Std. 71 Aug 2002) ev. 2016) v. 2016) v. 2010) 310 and 2.1091	
Data rate, transmit power, receive sensitivity	• EAP-Subscriber Identity Module (SIM) For more detailed information about data rate, transmit power, and receive sensitivity, please refer to the Cisco RF details.					
Transmit power an	d receive	sensitivity				
		5-GHz radio	2.4-GHz flex	xible radio	5-GHz flexible radio	

Item	Specifica	tion					
	Spatial streams	Total transmit power (dBm)	Receive sensitivity (dBm)	Total transmit power (dBm)	Receive sensitivity (dBm)	Total transmit power (dBm)	Receive sensitivity (dBm)
802.11/11b							
1 Mbps	1	_	-	23	-98	_	-
11 Mbps	1	_	-	23	-90	_	-
802.11a/g							
6 Mbps	1	23	-100	23	-100	23	-100
24 Mbps	1	23	-92	23	-92	23	-92
54 Mbps	1	23	-83	23	-83	23	-83
802.11n HT20							
MCS0	1	23	-100	23	-100	23	-100
MCS4	1	23	-88	23	-88	23	-89
MCS7	1	23	-81	23	-81	23	-81
MCS8	2	23	-97	23	-97	23	-97
MCS12	2	23	-85	23	-85	23	-85
MCS15	2	23	-78	23	-78	23	-78
MCS16	3	23	-95	23	-95	23	-96
MCS20	3	23	-83	23	-83	23	-83
MCS23	3	23	-76	23	-76	23	-76
MCS24	4	23	-94	23	-94	23	-94
MCS28	4	23	-82	23	-82	23	-82
MCS31	4	23	-74	23	-74	23	-75
802.11n HT40							
MCS0	1	23	-97	-	-	23	-97
MCS4	1	23	-85	-	_	23	-86
MCS7	1	23	-78	-	-	23	-79
MCS8	2	23	-94	-	_	23	-94

Item	Specifica	ntion					
MCS12	2	23	-82	-	-	23	-82
MCS15	2	23	-75	-	_	23	-75
MCS16	3	23	-92	-	-	23	-93
MCS20	3	23	-80	-	-	23	-81
MCS23	3	23	-73	-	_	23	-73
MCS24	4	23	-91	-	_	23	-91
MCS28	4	23	-79	-	_	23	-79
MCS31	4	23	-72	-	_	23	-72
802.11ac VHT20							
MCS0	1	23	-100	-	_	23	-100
MCS4	1	23	-88	-	_	23	-89
MCS7	1	23	-81	-	_	23	-81
MCS8	1	23	-77	-	_	23	-77
MCS9	1	_	-	-	_	-	-
MCS0	2	23	-97	-	_	23	-97
MCS4	2	23	-85	-	_	23	-85
MCS7	2	23	-78	-	-	23	-78
MCS8	2	23	-73	-	_	23	-74
MCS9	2	-	-	-	-	-	-
MCS0	3	23	-95	-	-	23	-95
MCS4	3	23	-83	-	-	23	-83
MCS7	3	23	-76	-	_	23	-76
MCS8	3	23	-72	-	-	23	-72
MCS9	3	-	-	-	-	-	-
MCS0	4	23	-94	-	-	23	-94
MCS4	4	23	-82	-	-	23	-82
MCS7	4	23	-75	-	-	23	-75

Item	Specifica	ntion							
MCS8	4	23	-70	-	-	23	-71		
MCS9	4	-	-	-	-	-	-		
802.11ac VHT40									
MCS0	1	23	-97	-	-	23	-97		
MCS4	1	23	-85	_	_	23	-86		
MCS7	1	23	-78	-	_	23	-79		
MCS8	1	23	-74	_	_	23	-75		
MCS9	1	22	-72	-	-	22	-73		
MCS0	2	23	-94	-	-	23	-94		
MCS4	2	23	-82	-	_	23	-82		
MCS7	2	23	-75	-	-	23	-75		
MCS8	2	23	-71	-	_	23	-71		
MCS9	2	22	-69	-	_	22	-69		
MCS0	3	23	-92	-	_	23	-93		
MCS4	3	23	-80	-	_	23	-81		
MCS7	3	23	-73	-	_	23	-73		
MCS8	3	23	-69	-	_	23	-69		
MCS9	3	22	-67	-	_	22	-68		
MCS0	4	23	-91	-	_	23	-91		
MCS4	4	23	-79	-	_	23	-79		
MCS7	4	23	-72	_	_	23	-72		
MCS8	4	23	-67	-	-	23	-68		
MCS9	4	22	-66	-	_	22	-66		
802.11ac VHT80									
MCS0	1	23	-94	-	-	23	-94		
MCS4	1	23	-82	-	-	23	-83		
MCS7	1	23	-75	-	_	23	-75		

Item	Specifica	ntion					
MCS8	1	23	-71	-	-	23	-71
MCS9	1	22	-70	-	_	22	-70
MCS0	2	23	-91	-	-	23	-91
MCS4	2	23	-79	-	_	23	-79
MCS7	2	23	-72	-	_	23	-72
MCS8	2	23	-68	_	_	23	-68
MCS9	2	22	-66	-	_	22	-66
MCS0	3	23	-89	-	_	23	-89
MCS4	3	23	-77	-	-	23	-77
MCS7	3	23	-70	-	_	23	-70
MCS8	3	23	-66	-	_	23	-66
MCS9	3	22	-64	-	_	22	-65
MCS0	4	23	-88	-	_	23	-88
MCS4	4	23	-76	-	_	23	-76
MCS7	4	23	-69	-	-	23	-69
MCS8	4	23	-64	-	-	23	-65
MCS9	4	22	-63	-	_	22	-63
802.11ac VHT160							
MCS0	1	23	-87	-	-	23	-88
MCS4	1	23	-76	-	_	23	-77
MCS7	1	23	-69	-	-	23	-70
MCS8	1	23	-66	-	-	23	-66
MCS9	1	22	-64	-	-	22	-64
MCS0	2	23	-82	-	-	23	-82
MCS4	2	23	-70	-	-	23	-71
MCS7	2	23	-63	-	-	23	-64
MCS8	2	23	-60	-	-	23	-60

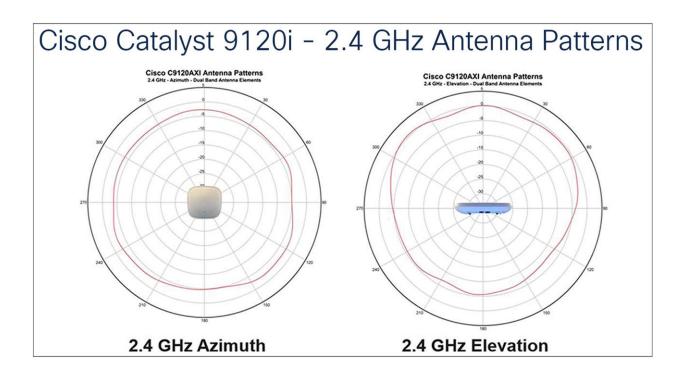
Item	Specifica	ition						
MCS9	2	22	-58	-	-	22	-58	
MCS0	3	23	-84	-	-	23	-84	
MCS4	3	23	-72	-	_	23	-72	
MCS7	3	23	-65	-	-	23	-65	
MCS8	3	23	-61	-	_	23	-61	
MCS9	3	_	-	-	-	-	-	
MCS0	4	23	-82	-	-	23	-82	
MCS4	4	23	-70	-	-	23	-70	
MCS7	4	23	-63	-	-	23	-63	
MCS8	4	23	-59	-	-	23	-59	
MCS9	4	22	-58	-	_	22	-58	
802.11ax HE20	802.11ax HE20							
MCS0	1	23	-98	23	-98	23	-98	
MCS4	1	23	-87	23	-87	23	-87	
MCS7	1	23	-81	21	-81	23	-81	
MCS8	1	23	-77	21	-77	23	-77	
MCS9	1	22	-75	21	-75	22	-76	
MCS10	1	20	-72	19	-72	20	-72	
MCS11	1	20	-70	19	-70	20	-70	
MCS0	2	23	-95	23	-95	23	-96	
MCS4	2	23	-85	23	-85	23	-85	
MCS7	2	23	-78	21	-78	23	-78	
MCS8	2	23	-74	21	-74	23	-75	
MCS9	2	22	-73	21	-73	22	-73	
MCS10	2	20	-70	19	-70	20	-70	
MCS11	2	20	-66	19	-70	20	-67	
MCS0	3	23	-95	23	-94	23	-95	

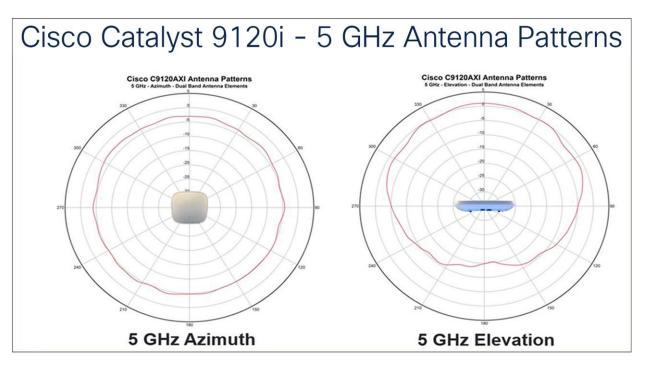
Item	Specifica	ition					
MCS4	3	23	-83	23	-83	23	-84
MCS7	3	23	-76	21	-76	23	-76
MCS8	3	23	-73	21	-73	23	-73
MCS9	3	22	-71	21	-71	22	-72
MCS10	3	20	-67	19	-67	20	-68
MCS11	3	20	-64	19	-65	20	-65
MCS0	4	23	-93	23	-93	23	-93
MCS4	4	23	-82	23	-82	23	-82
MCS7	4	23	-75	21	-75	23	-75
MCS8	4	23	-71	21	-71	23	-71
MCS9	4	22	-69	21	-69	22	-70
MCS10	4	20	-66	19	-67	20	-67
MCS11	4	20	-64	19	-64	20	-64
802.11ax HE40							
MCS0	1	23	-95	-	_	23	-95
MCS4	1	23	-84	-	_	23	-85
MCS7	1	23	-78	-	-	23	-78
MCS8	1	23	-74	-	_	23	-75
MCS9	1	22	-73	-	-	22	-73
MCS10	1	20	-70	-	_	20	-70
MCS11	1	20	-66	-	-	20	-67
MCS0	2	23	-93	-	_	23	-93
MCS4	2	23	-82	-	-	23	-82
MCS7	2	23	-75	-	-	23	-76
MCS8	2	23	-71	-	-	23	-72
MCS9	2	22	-69	-	-	22	-70
MCS10	2	20	-67	-	-	20	-67

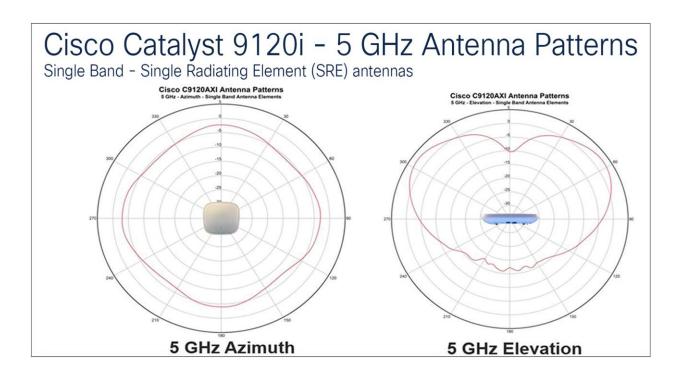
Item	Specifica	Specification						
MCS11	2	20	-64	-	-	20	-64	
MCS0	3	23	-92	-	-	23	-92	
MCS4	3	23	-80	-	_	23	-81	
MCS7	3	23	-73	-	-	23	-74	
MCS8	3	23	-70	-	_	23	-70	
MCS9	3	22	-68	-	_	22	-68	
MCS10	3	20	-64	-	_	20	-65	
MCS11	3	20	-62	-	-	20	-62	
MCS0	4	23	-90	-	_	23	-90	
MCS4	4	23	-79	-	-	23	-79	
MCS7	4	23	-72	-	_	23	-72	
MCS8	4	23	-68	-	_	23	-69	
MCS9	4	22	-66	-	_	22	-67	
MCS10	4	20	-63	-	-	20	-63	
MCS11	4	20	-60	-	_	20	-60	
802.11ax HE80								
MCS0	1	23	-92	-	-	23	-92	
MCS4	1	23	-82	-	-	23	-82	
MCS7	1	23	-75	-	-	23	-75	
MCS8	1	23	-72	-	-	23	-72	
MCS9	1	22	-70	-	-	22	-70	
MCS10	1	20	-66	-	-	20	-67	
MCS11	1	20	-64	-	-	20	-64	
MCS0	2	23	-89	-	-	23	-90	
MCS4	2	23	-79	-	-	23	-79	
MCS7	2	23	-72	-	-	23	-72	
MCS8	2	23	-68	-	_	23	-68	

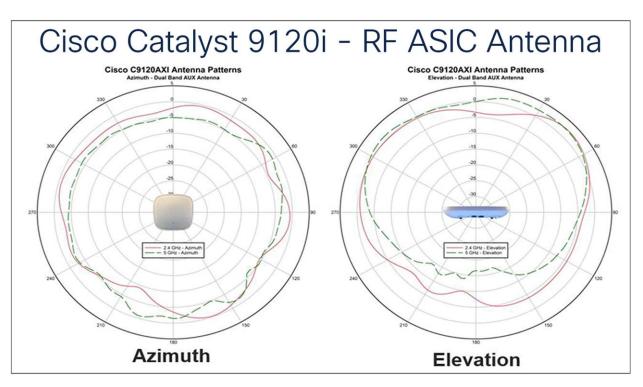
Item	Specifica	ition					
MCS9	2	22	-66	-	-	22	-66
MCS10	2	20	-63	-	-	20	-63
MCS11	2	20	-60	-	-	20	-60
MCS0	3	23	-89	-	-	23	-89
MCS4	3	23	-78	-	_	23	-78
MCS7	3	23	-70	-	-	23	-70
MCS8	3	23	-67	-	-	23	-67
MCS9	3	22	-65	-	_	22	-65
MCS10	3	20	-61	-	_	20	-61
MCS11	3	20	-59	-	_	20	-59
MCS0	4	23	-87	-	_	23	-87
MCS4	4	23	-76	-	_	23	-76
MCS7	4	23	-69	-	-	23	-69
MCS8	4	23	-65	-	_	23	-65
MCS9	4	22	-63	-	_	22	-63
MCS10	4	20	-60	-	_	20	-60
MCS11	4	20	-57	-	_	20	-57
802.11ax HE160							
MCS0	1	23	-89	-	_	23	-89
MCS4	1	23	-79	-	_	23	-79
MCS7	1	23	-72	-	_	23	-72
MCS8	1	23	-69	-	_	23	-69
MCS9	1	22	-67	-	-	22	-67
MCS10	1	20	-63	-	_	20	-63
MCS11	1	20	-61	-	-	20	-61
MCS0	2	23	-87	-	-	23	-87
MCS4	2	23	-76	-	-	23	-76

Item	Specifica	ation					
MCS7	2	23	-69	-	-	23	-69
MCS8	2	23	-66	-	-	23	-66
MCS9	2	22	-64	-	-	22	-64
MCS10	2	20	-60	-	-	20	-60
MCS11	2	20	-58	-	-	20	-58
MCS0	3	23	-86	-	-	23	-86
MCS4	3	23	-75	-	_	23	-75
MCS7	3	23	-68	-	-	23	-67
MCS8	3	23	-64	-	_	23	-64
MCS9	3	22	-62	-	-	22	-62
MCS10	3	20	-59	_	_	20	-58
MCS11	3	20	-56	-	-	20	-56
MCS0	4	23	-84	_	_	23	-84
MCS4	4	23	-73	-	-	23	-73
MCS7	4	23	-66	_	_	23	-66
MCS8	4	23	-63	-	-	23	-63
MCS9	4	22	-61	-	-	22	-61
MCS10	4	20	-57	-	-	20	-57
MCS11	4	20	-54	-	-	20	-54









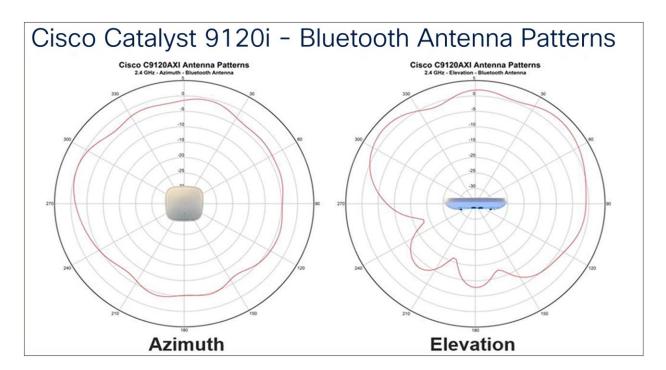


Figure 1. Antenna radiation patterns

Note: For information about feature support, refer to the Cisco Catalyst 9100 Release Notes.

Licensing

For information about licensing and packaging, refer to Cisco Licensing.

Warranty information

The Cisco Catalyst 9120AX Series Access Points come with a limited lifetime warranty that provides full warranty coverage of the hardware for as long as the original end user continues to own or use the product. The warranty includes 10-day advance hardware replacement and ensures that software media are defect-free for 90 days. For more details, visit https://www.cisco.com/go/warranty.

Cisco environmental sustainability

Information about Cisco's environmental sustainability policies and initiatives for our products, solutions, operations, and extended operations or supply chain is provided in the "Environment Sustainability" section of Cisco's <u>Corporate Social Responsibility</u> (CSR) Report.

Reference links to information are below

Information on product material content laws and regulations: Materials.

Information on electronic waste laws and regulations, including products, batteries, and packaging: <u>WEEE compliance</u>.

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Wi-Fi AP Cover for Common Larger APs



White AP Cover Tessco No. 290228 Product #: VN180060REV0



Clear AP Cover Tessco No. 234988 Product #: VN181351REV0

Ventev's Wi-Fi AP Cover for Common Larger APs is constructed of rugged polypropelene and is ideal for concealing and protecting Wi-Fi APs or any networking assets. Designed for indoor use, the cover mounts easily to ceilings, walls and flat surfaces to ensure a more aesthetically pleasing deployment. Every Ventev enclosure is covered by the company's two-year TerraNet warranty program.

For more information or to purchase, contact Ventev: 800.851.4965 or sales@ventev.com.

SPECIFICATIONS

Dimensions:

Overall volume: 11" x 11" x 3.31"

Inner volume: 10.18" x 10.18" x 3.15"

Construction:

Polypropelene

Weight:

.3 lbs / 0.14 kg

Compatible Access Points:

9130AXI, 9120AXI, 9117AXI, 9115AXI, 4800,

38021, 28021, 18521, 18401, 18321

Aruba 535, 515, 505, 345, 335, 325, 315, 305, 303,

207

Aerohive 410i, 305C, 550, 250, 150W, 130, 122, 505i

Fortinet 421E, 321E, 221E, 224E, 320C

Ruckus C110, H320, H510, R310, R320, R510, R610,

R650, R710, R720, R730

Mist BT11, AP21, AP41, AP43

Alcatel Lucent AP1101, AP1201, AP1221, AP1231, AP1321

FEATURES AND BENEFITS

- Durable and lightweight to allow quick installation and protect equipment from impact.
- Conceals AP and blends with the ceiling or wall for a more aesthetically pleasing solution
- Protects APs, antennas or electronics from impact or tampering
- · One design fits most APs in market

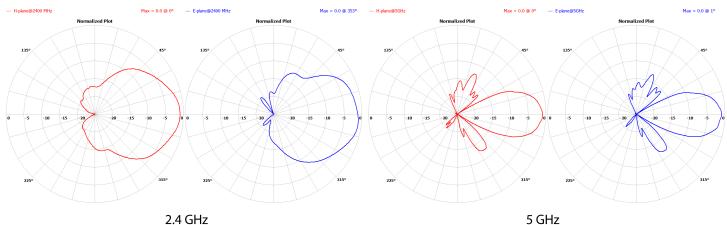


2.4/5 GHz 6 dBi MIMO Patch Antenna

Ventev's TerraWave 2.4/5 GHz 6 dBi MIMO Patch Antenna is ideal for high density venues such as lecture halls, stadiums and convention centers that require 2.4 /5 GHz frequency operation. It features a four-connector structure and has a low profile design with high gain. It supports 802.11a/b/g/n and MIMO. The antenna can be pole/mast mounted and includes a universal articulating mount. Every TerraWave antenna is covered by the company's two-year TerraNet warranty program. For questions and to purchase product, contact Ventev: 800-851-4965 or sales@ventev.com



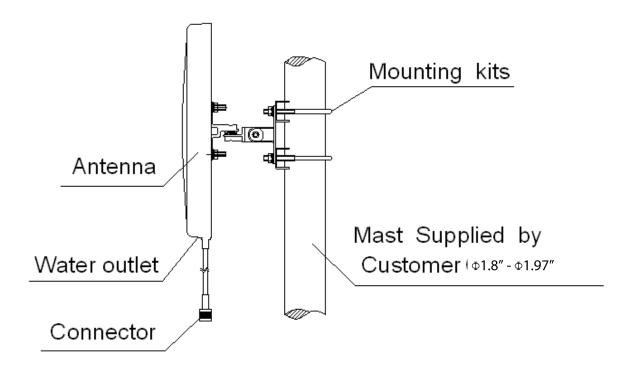
Specifications								
SKU	515	086						
Model	M6060060	P23602NB						
Frequency Range	2400 ~ 2500 MHz	5150 ~ 5850 MHz						
Bandwidth	100 MHz	700 MHz						
Gain	6 dBi	6 dBi						
Horizontal Beamwidth	55° ± 10°	35° ± 10°						
Vertical Beamwidth	55° ± 10°	35° ± 10°						
Impedance	50 Ohms							
Polarization	Vert	ical						
VSWR	≤ 2	≤ 2.5						
Maximum Power	20 W	/atts						
Connector	4 x RPTI	NC Plug						
Pigtail Length	36	5"						
Dimensions	10.3"x10.3"x1.4"							
Weight	2.31	2.31 lbs.						
Mounting	Mast Mo	ounting						





2.4/5 GHz 6 dBi MIMO Patch Antenna

Installation Sketch



www.ventev.com/infra sales@ventev.com 800-851-4965

Ventev Appendix G

Single-Axis Universal Co-Locating Mount for Cisco 9100 & Aruba 500 Series APs and Wi-Fi Antennas



Ventev's Single-Axis Universal Co-Locating Mount for Cisco 9100 Series and Aruba 500 Series access points (APs) and antennas simplifies deployments and presents an aesthetically pleasing appearance when mounted.

Every Ventev mount is RoHS compliant and is covered by Ventev's two-year TerraNet warranty program.

For more information or to purchase, contact Ventev: 800.851.4965 or sales@ventev.com.

SPECIFICATIONS

SKU: 229741

Product Number: TW-COLOMOUNT-MULT

Dimensions: 12.26" X 12.07" X 7.38"

Weight: 3 lbs

Materials: Powder-coated aluminum

Operating Temperature Range: -4° F to +131° F

Compatible Ventev Antennas

279467, 349502, 510701,515085, 515086, 540809, 295023, 527504, 537658, 274556

Compatible Cisco Antennas

C-ANT9103=, AIR-ANT-2566P4W-R=, AIR-ANT-2566P4W-RS=, AIR-ANT-2566P4W-DS=, AIR-ANT2566D4M-RS=, AIR-ANT2566D4M-RS=, AIR-ANT2566D4M-DS=

Compatible Aruba Antennas

AP-ANT-45, AP-ANT-48

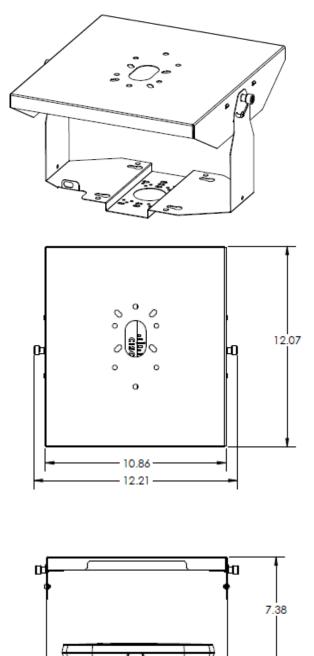
FEATURES AND BENEFITS

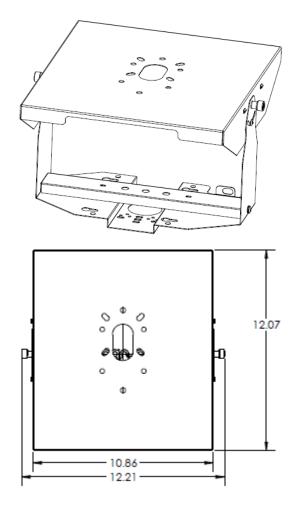
- Installs AP and antenna together, making it an ideal choice for difficult locations, such as high ceilings
- · Conceals the AP and cables
- Compatible with Cisco's 9100e Series APs
- Compatible with Aruba's 550 Series APs
- · Antenna mounting tray articulates:
 - +/- 45 degrees: Cisco
 - +/- 40 degrees: Aruba
- Ideal for auditoriums, convention centers, aisles in industrial venues

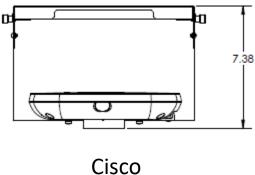


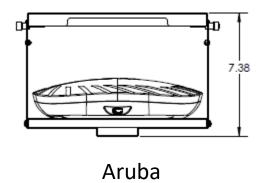
Single-Axis Universal Co-Locating Mount for Cisco 9100 & Aruba 500 Series APs and Wi-Fi Antennas

Technical Drawings











Ventev's TerraWave 2.4/5 GHz 5/6 dBi Directional Wi-Fi Junction Box Antenna with 4 RPTNC plugs is concealed within a standard three-gang electrical box, and is designed to operate with Cisco's 4-lead 802.11ac Waves I & II WLAN access points. The antenna's cover plate looks like a standard junction box cover, providing building managers, IT network operators, and building architects with an aesthetically appealing Wi-Fi antenna that will blend into existing room décor for "out of sight" coverage and capacity. The antenna is designed to be installed within a dry wall or drop ceiling tile cut-out where the 6' leads can connect to a nearby access point. The directional antenna provides 0– 45 degree articulation for excellent coverage and capacity in one or more rooms. Every TerraWave antenna is RoHS compliant, and covered by Ventev's two-year TerraNet warranty program. For more information: 800-851-4965 or sales@ventev.com or visit www.ventev.com/infra.

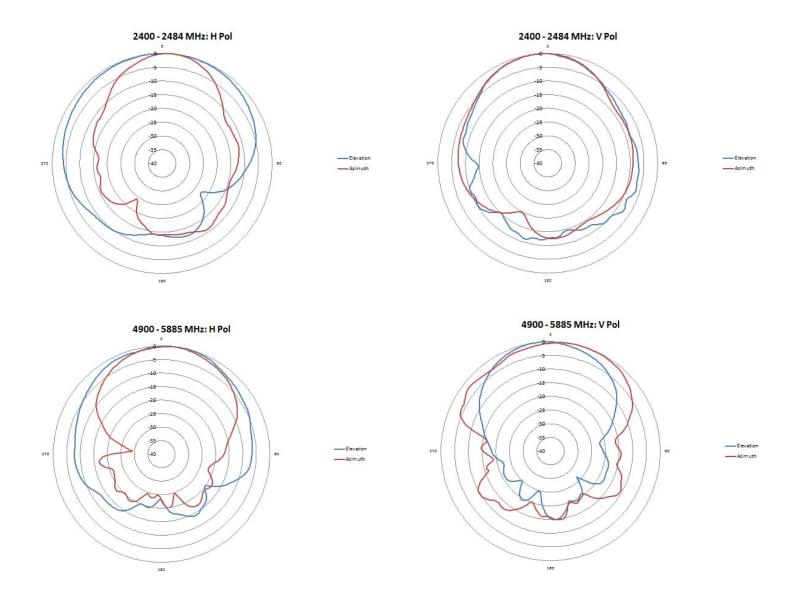




Specifications						
Model Number	M6050060I	D37202WST				
Frequency Range	2400 — 2484 MHz	4900 — 5885 MHz				
Gain	5dBi	6dBi				
Polarization	2 x Horizontal 2 x Vertical					
Horizontal Beamwidth	75° :	± 15°				
Vertical Beamwidth	75° :	± 15°				
Front to Back Ratio	9 dB	12 dB				
VSWR/Impedance	2	:1				
Isolation—Cross Polarized Ports	12 dB	20 dB				
Input Power	20	W				
Dimensions (L x W x H)	Gang Box Only	6" x 3.7" x 3.6"				
Differisions (E x w x n)	With Cover	6.75" x 3.85" x 4.88"				
Connector type	4 x RPT	NC Plug				
Pigtail Length	72′	'/ 6'				
Mounting Options	Drywall or Dr	op Ceiling Tile				
Construction	Three Gang	Electrical Box				
Tilt Option	0° -	0° - 45°				
Faceplate Color	White (Other C	olors Available)				



Radiation Patterns





INSTALLATION

Note 1: The Junction Box Wi-Fi Antenna is delivered with the antenna pointing straight forward at the 0° position. The antenna's standard position can be moved $\pm -45^{\circ}$ within the junction box so that the RF beam will provide a more precise coverage pattern.

Note 2: Precise beam positioning is accomplished through a combination of junction box orientation and antenna positioning within the junction box. Figure 1 identifies the antenna components that will be referenced in the antenna positioning steps.

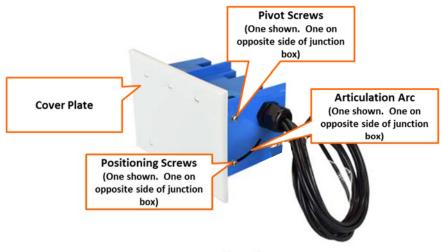
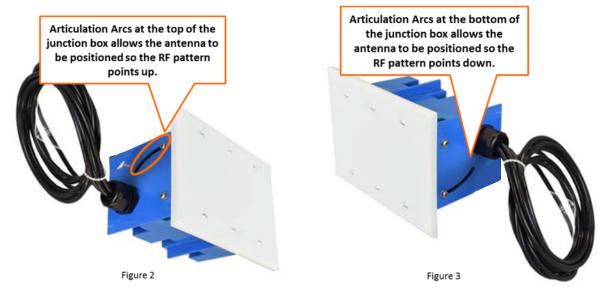


Figure 1

Antenna Positioning:

- 1. First, orient the junction box so that the antenna's RF beam can point in the desired direction.
 - a. Ensure the Articulation Arcs are at the top of the junction box for an RF beam that points up. Refer to Figure 2.
 - b. Ensure the Articulation Arcs are at the bottom of the junction box for an RF beam that points down. Refer to Figure 3.
 - c. Maintain the articulation arc in the desired orientation through the remainder of the antenna positioning steps





Antenna Positioning (cont.):

- 2. Remove the cover plate from the front of the junction box using a standard screwdriver.
- 3. Loosen the pivot screws on both sides of the junction box using a Phillips head screwdriver.
- 4. Loosen the positioning screws on both sides of the junction box using a Phillips head screwdriver.
- 5. Grip both positioning screws between thumbs and index fingers, and rotate the antenna to the desired position.
- 6. Hold one positioning screw in place and tighten the other screw at the desired position. Then, tighten the second positioning screw.
- 7. Tighten the pivot screws to lock the antenna's position.

Note 3: Do not reinstall the cover plate until after the antenna is positioned within the drywall as described in the next steps.

Junction Box Installation and Connection within Drywall:

Note 4: The Junction Box Wi-Fi Antenna can be installed in many different environments / locations. The procedures in this step describe a common in-wall installation environment.

Note 5: The following installation steps assume the location of the access point has already been selected.

Note 6: Reminder: When installing the junction box into the wall, ensure the articulation arc is at the top of the junction box for an upward pointing RF beam, or the bottom of the junction box for an downward pointing RF beam.

- 1. Trace the outline of the junction box on the drywall at the location of desired antenna placement.
- 2. Cut out the traced section of drywall with a utility knife or other tool. Remove the cut section of drywall.
- 3. Run a cable snake or pull cord inside drywall from the access point (AP) to the mounting hole for the junction box.
- 4. Attach the pull cord to the connector side of the antenna's cables.
- 5. Pull the cables through the rectangular hole in the drywall.
- 6. Install the edge of the junction box with the cables into the rectangular cut out in the drywall first.
- 7. Rotate the other side of the junction box into the hole just after the cable end of the junction box antenna clears the inside of the drywall.
- 8. Push the junction box fully into the hole until the face of the junction box is flush with the drywall.
- 9. Tighten the four junction box wall anchors by tightening the wall anchor screws with a Phillips head screwdriver. Ensure the junction box is secured within the drywall.
- 10. Cover the junction box with the wall plate that shipped with the antenna.
- 11. Connect the cables to the AP.



Junction Box Installation and Connection in Drop Ceiling Tile:

Note 7: The Junction Box Wi-Fi Antenna can be installed in many different environments / locations. The procedures in the following steps describe a common drop-ceiling tile installation environment.

Note 8: The following installation steps assume the location of the access point has already been selected.

Note 9: The following installation steps assume that antenna positioning/articulation is complete.

Note 10: Recommended: Create an installation template out of thick cardboard, thin plywood, or other suitable material to ease installation. Template should be 2' x 2', and should have a cut-out in the center that is the shape/dimensions of the blue gang-box section of the antenna.

Note 11: The following steps assume the use of a template as described in Note 10.

- 1. Remove the drop ceiling tile from the ceiling grid and place on a workbench or other work area.
- 2. Lay the template on the ceiling-facing side of a drop ceiling tile.
- 3. Trace the outline of the junction box on the drop ceiling tile drywall at the location of desired antenna placement.
- 4. Cut out the traced section of the drop ceiling tile with a utility knife or other tool. Remove the cut section of tile.
- 5. Install the edge of the junction box with the cables into the rectangular cut out in the ceiling tile first.
- 6. Rotate the other side of the junction box into the hole just after the cable end of the junction box antenna clears the inside of the drywall.
- 7. Push the junction box fully into the hole until the face of the junction box is flush with the drywall.
- 8. Tighten the four junction box wall anchors by tightening the wall anchor screws with a Phillips head screwdriver. Ensure the junction box is secured within the tile.
- 9. Cover the junction box with the wall plate that shipped with the antenna.
- 10. Place the ceiling tile into the overhead grid.
- 11. Connect the cables to the AP.



Data sheet Cisco public

Cisco Aironet 1560 Series Outdoor Access Points

Contents

Features and benefits	3
Prominent feature/differentiator/capability	4
Product specifications	5
Ordering Information	15
Warranty information	15
Cisco and partner services	15
Cisco Capital	15
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Cisco Aironet® 1560 Series Outdoor Access Points offer the latest 802.11ac Wave 2 functions in a rugged, low-profile housing that service providers and enterprises can deploy easily.



Ideal for applications requiring rugged outdoor Wi-Fi coverage, the Cisco Aironet 1560 Series Access Points offer the latest IEEE 802.11ac Wave 2 radio standard in a compact, aesthetically pleasing, easy-to-deploy package. The 1560 Series offers flexible deployment options for service providers and enterprise networks, that need the fastest links possible for mobile, outdoor clients (smartphones, tablets, and laptops) and wireless backhaul. With options for internal or external antennas, the 1560 Series Access Points give network operators the flexibility to balance their desired wireless coverage with their need for easy deployment. The Cisco Aironet 1560 Series is built on the strong base of Cisco® wireless innovations such as:

- Cisco CleanAir® technology for spectrum intelligence
- Cisco ClientLink technology for beamforming
- Radio Resource Management (RRM) for dynamic transmitter channel and power control

Whether deployed as a traditional access point or wireless mesh access point, the Cisco Aironet 1560 Series provides the throughput capacity needed for today's bandwidth-hungry devices.

Features and benefits

Table 1 lists the features and benefits of the Cisco Aironet 1560 Series.

Table 1. Features and Benefits of Cisco Aironet 1560 Series

Feature	Benefit
802.11ac Wave 2 radio	Provides up to 1.3-Gbps data rates with 3×3 Multiple Input, Multiple Output (MIMO) and up to three spatial streams
Multiuser MIMO (MU-MIMO)	Allows transmission of data to multiple 802.11ac Wave 2-capable clients simultaneously to improve client experience; prior to 802.11ac Wave 2, access points could transmit data to only one client at a time, typically referred to as single-user MIMO

Feature	Benefit
Flexible deployment modes	Allows for deployment of the 1560 in a variety of ways including point -to-point and mesh networks; it can also be deployed with the Cisco Mobility Express Solution, which is ideal f or small to medium -sized deployments that supports multiple access points without a physical controller; all deployment modes are easy to set up and configure
Small Form-Factor Pluggable (SFP) port	Supports optical fiber-based network connectivity for remote locations

Prominent feature/differentiator/capability

The Cisco Aironet 1560 Series offers the following features:

- Improved performance for multiple client devices: The 802.11ac Wave 2 access points use MU-MIMO technology, which allows different data streams to all flow at once from the access point to multiple 802.11ac Wave 2-supported devices. Now, multiple 802.11ac Wave 2 devices can connect at the same time, getting the information they need quicker.
- 5-GHz support: The Cisco Aironet 1560 Series doubles the scale of 5 -GHz mobile devices and raises the performance of high-density environments.
- 4G LTE Coexistence: The Cisco Aironet 1560 Series includes robust filtering around the 2.4 GHz unlicensed band to block out nearby licensed 4G LTE cellular signals.
- Cisco Flexible Antenna Port technology uses software configurable for either single- or dual-band antennas. It allows you to use the same antenna ports for either dual-band antennas to reduce footprint or single-band antennas to optimize radio coverage.
- Cisco Mobility Express: This solution is designed to bring enterprise-class wireless access to small and medium-sized networks. Easy to set up with low maintenance, Mobility Express includes advanced features from Cisco and does not require a physical controller appliance.
- Cisco High Density Experience (HDX): Cisco HDX comes standard on the 1560, giving this access point top-of-the-line network efficiency over a large number of wireless clients. HDX uses customized chipsets to target the needs of high-density networks. It is built with best-in-class RF architecture and gives a better user experience for high-performance applications.

Product specifications

Table 2 lists the specifications of the 1560 access point.

 Table 2.
 Specifications of Cisco Aironet 1560 Series

Item	Specification	on							
802.11ac Wave 1 and 2 capabilities	 1562I: 3 x 3 MIMO with three spatial streams 1562E/D 2 x 2 MIMO with two spatial streams Multi- and single-user MIMO Maximal Ratio Combining (MRC) 802.11ac beamforming (transmit beamforming) 20-, 40-, and 80-MHz channels PHY data rates up to 1.3 Gbps (80 MHz in 5 GHz) Packet aggregation: A-MPDU (Tx/Rx) and A-MSDU (Tx/Rx) 802.11 Dynamic Frequency Selection (DFS) Cyclic-Shift-Diversity (CSD) support 								
802.11n (and related) capabilities	 1562I: 3 x 3 MIMO with three spatial streams 1562E/D: 2 x 2 MIMO with two spatial streams MRC 20- and 40-MHz channels PHY data rates up to 450 Mbps Packet aggregation: A-MPDU (Tx/Rx) and A-MSDU (Tx/Rx) 802.11 DFS CSD support 								
Data rates supported	802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps 802.11b/g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps 802.11n data rates on 2.4 and 5 GHz:								
	MCS Index	GI4 = 800 ns		GI = 400 ns					
		20-MHz Rates (Mbps)	40-MHz Rates (Mbps)	20-MHz Rates (Mbps)	40-MHz Rates (Mbps)				
	0	6.5	13.5	7.2	15				
	1	13	27	14.4	30				
	2	19.5	40.5	21.7	45				
	3	26	54	28.9	60				
	4	39	81	43.3	90				
	5	52	108	57.8	120				
	6	58.5	121.5	65	135				
	7	65	135	72.2	150				
	8	13	27	14.4	30				
	9	26	54	28.9	60				

Item	Specificati	Specification								
	10	39		81		43.3		90		
	11	52	52		108 57.		57.8		120	
	12 78					86.7		180	180	
	13	104				115.6		240		
	14			243		130		270		
	15	130		270		144.4		300		
	16	19.5		40.5		21.7		45		
	17	39		81		43.3		90		
	18	58.5		121.5		65		135		
	19	78		162		86.7		180		
	20	117		243		130		270		
	21	156		324		173.3		360	360	
	22	175.5		364.5		195		405		
	23	195	40)5	216.7			450		
	802.11ac [ac Data Rates (5 GHz)								
	Spatial Streams	MCS	GI = 800	800 ns		G	GI = 400 ns			
			20 MHz	40 MHz	80 MI	-Iz 2	0 MHz	40 MHz	80 MHz	
	1	0	6.5	13.5	29.3	7	.2	15	32.5	
	1	1	13	27	58.5	1	4.4	30	65	
	1	2	19.5	40.5	87.8	2	1.7	45	97.5	
	1	3	26	54	117	2	8.9	60	130	
	1	4	39	81	175.5	5 4	3.3	90	195	
	1	5	52	108	234	5	7.8	120	260	
	1	6	58.5	121.5	263.3	3 6	5	135	292.5	
	1	7	65	135	292.5	5 7	2.2	150	325	
	1	8	78	162	351	8	6.7	180	390	
	1	9	_	180	390	-		200	433.3	
	2	0	13	27	58.5	1	4.4	30	65	
	2	1	26	54	117	2	8.9	60	130	
	2	2	39	81	175.5	5 4	3.3	90	195	
	2	3	52	108	234	5	7.8	120	260	
	2	4	78	162	351	8	6.7	180	390	
	2	5	104	216	468	1	15.6	240	520	

	Specification							
	2	6	117	243	526.5	130	270	585
	2	7	130	270	585	144.4	300	650
	2	8	156	324	702	173.3	360	780
	2	9	-	360	780	_	400	866.7
	3	0	19.5	40.5	87.8	21.7	45	97.5
	3	1	39	81	175.5	43.3	90	195
	3	2	58.5	121.5	263.3	65	135	292.5
	3	3	78	162	351	86.7	180	390
	3	4	117	243	526.5	130	270	585
	3	5	156	324	702	173.3	360	780
	3	6	175.5	364.5	-	195	405	_
	3	7	195	405	877.5	216.7	450	975
	3	8	234	486	1053	260	540	1170
	3	9	260	540	1170	288.9	600	1300
(regulatory domains)	5.660 to 5.7 5.745 to 5.8 B: 2.412 to 2.4 5.180 to 5.2	680 GHz, 5 ch 700 GHz, 3 ch 625 GHz, 5 ch 62 GHz, 11 c 640 GHz, 4 ch 620 GHz, 4 ch	annels annels hannels annels					

Item	Specification
	G:
	2.412 to 2.472 GHz, 13 channels
	5.745 to 5.825 GHz, 5 channels
	-Н:
	2.412 to 2.472 GHz, 13 channels
	5.745 to 5.825 GHz, 5 channels
	-I:
	2.412 to 2.472 GHz, 13 channels
	5.180 to 5.320 GHz, 8 channels
	-K:
	2.412 to 2.462 GHz, 11 channels
	5.280 to 5.320 GHz, 3 channels
	5.500 to 5.620 GHz, 7 channels
	5.745 to 5.805 GHz, 4 channels
	-L:
	2.412 to 2.472 GHz, 13 channels
	5.500 to 5.620 GHz, 7 channels
	5.745 to 5.865 GHz, 7 channels
	-M:
	2.412 to 2.472 GHz, 13 channels
	5.500 to 5.580 GHz, 5 channels
	5.660 to 5.700 GHz, 3 channels
	5.745 to 5.805 GHz, 4 channels
	-N:
	2.412 to 2.462 GHz, 11 channels
	5.745 to 5.825 GHz, 5 channels
	-Q:
	2.412 to 2.472 GHz, 13 channels
	5.500 to 5.700 GHz, 11 channels
	-R:
	2.412 to 2.472 GHz, 13 channels
	5.260 to 5.320 GHz, 4 channels
	5.660 to 5.700 GHz, 3 channels
	5.745 to 5.825 GHz, 5 channels
	-S:
	2.412 to 2.472 GHz, 13 channels
	5.500 to 5.700 GHz, 11 channels
	5.745 to 5.825 GHz, 5 channels
	-T:
	2.412 to 2.462 GHz, 11 channels
	5.500 to 5.580 GHz, 5 channels
	5.660 to 5.700 GHz, 3 channels

Item	Specification
	5.745 to 5.825 GHz, 5 channels
	-Z:
	2.412 to 2.462 GHz, 11 channels
	5.500 to 5.580 GHz, 5 channels
	5.660 to 5.700 GHz, 3 channels
	5.745 to 5.825 GHz, 5 channels

Note: Customers are responsible f or verifying approval f or use in their individual countries. To verify approval that corresponds t o a particular country, please visit https://www.cisco.com/go/aironet/compliance.

Maximum	2.4 GHz	5 GHz
number of	• 802.11b/g:	• 802.11a:
nonoverlapping channels	• 20 MHz: 3	• 20 MHz: 27
	• 802.11n:	• 802.11n:
	• 20 MHz: 3	• 20 MHz: 27
	• 40 MHz: 1 (hardware capable)	• 40 MHz: 13
		• 802.11ac:
		• 20 MHz: 27
		• 40 MHz: 13
		• 80 MHz: 6

Note: This number varies by regulatory domain. Refer to the product documentation f or specific details f or each regulatory domain.

Receive Sensitivit	ty							
			2.4 GHz Radio			5 GHz Radio		
	Spatial Stre	ams	1562I	1562D/E		15621	1562D/E	
802.11/11b								
1 Mbps	1	-100		-98	NA		NA	
11 Mbps	1	-88		-87	NA		NA	
802.11a/g								
6 Mbps	1	-92		-90	-94		-93	
24 Mbps	1	-86		-83	-89		-88	
54 Mbps	1	-76		-74	-80		-79	
802.11n HT20								
MCS0	1	-90		-89	-91		-90	
MCS4	1	-84		-82	-88		-86	
MCS7	1	-77		-75	-80		-78	
MCS8	2	-89		-88	-90		-89	

Item	Specification	on			
MCS12	2	-82	-80	-85	-83
MCS15	2	-75	-72	-78	-76
MCS16	3	-89		-90	
MCS20	3	-81		-84	
MCS23	3	-73		-76	
802.11n HT40					
MCS0	1	-88	-86	-90	-90
MCS4	1	-82	-80	-85	-83
MCS7	1	-75	-74	-78	-76
MCS8	2	-87	-86	-90	-90
MCS12	2	-80	-78	-82	-81
MCS15	2	-72	-70	-75	-73
MCS16	3	-87		-90	
MCS20	3	-78		-81	
MCS23	3	-71		-74	
802.11ac VHT20					
MCS0	1			-95	-94
MCS4	1			-88	-86
MCS7	1			-81	-79
MCS8	1			-77	-75
MCS0	2			-94	-93
MCS4	2			-86	-84
MCS7	2			-78	-76
MCS8	2			-74	-72
MCS0	3			-93	
MCS4	3			-85	

Item	Specification	n		
MCS7	3		-78	
MCS8	3		-72	
MCS9	3		-69	
802.11ac VHT40				
MCS0	1		-91	-90
MCS4	1		-85	-84
MCS7	1		-79	-77
MCS8	1		-75	-73
MCS9	1		-73	-71
MCS0	2		-91	-90
MCS4	2		-83	-82
MCS7	2		-76	-74
MCS8	2		-73	-70
MCS9	2		-71	-68
MCS0	3		-91	
MCS4	3		-82	
MCS7	3		-74	
MCS8	3		-69	
MCS9	3		-68	
802.11ac VHT80				
MCS0	1		-88	-88
MCS4	1		-83	-81
MCS7	1		-75	-73
MCS8	1		-71	-69
MCS9	1		-69	-67
MCS0	2		-88	-88
MCS4	2		-80	-78

Item	Specificatio	n		
MCS7	2		-73	-71
MCS8	2		-69	-67
MCS9	2		-67	-65
MCS0	3		-88	
MCS4	3		-78	
MCS7	3		-71	
MCS8	3		-67	
MCS9	3		-65	
Maximum conducted transmit power		9 dBm with 3 antennas dBm with 3 antennas	Bm with 2 antennas m with 2 antennas	1562E2.4 GHz: 27 dBm with 2 antennas5 GHz: 27 dBm with 2 antennas

Note: The maximum power setting will vary by channel and according to individual country regulations. Refer to the product documentation f or specific details.

Interfaces	 WAN port 10/100/1000BASE-T Ethernet, autosensing (RJ-45), PoE in SFP port (fiber or electrical) Management console port (RJ-45) Multicolor LED DC power input Reset button 			
Uplink options	Ethernet, SFP, and wireless mesh			
Dimensions (L x W x D)	1562I: 9.0 x 6.8 x 3.9 in. (22.9 x 17.1 x 9.8 cm) 1562D: 9.0 x 6.8 x 4.3 in. (22.9 x 17.1 x 10.9 cm) 1562E:: 9.0 x 6.8 x 3.9 in. (22.9 x 17.1 x 9.8 cm)			
Weight	1562l: 5.6 lb (2.5 kg) 1562D: 5.7 lb (2.6 kg) 1562E: 5.6 lb (2.5 kg)			
Environmental	Operating temperature: • -40 to 65°C (-40 to 149°F) ambient air with no solar loading • -40 to 55°C (-40 to 131°F) ambient air with solar loading Storage temperature: -40 to 85°C (-40 to 185°F) Humidity: 5 - 95%, non-condensing Wind resistance: • Up to 100-mph sustained winds • Up to 165-mph wind gusts			

Item	Specification				
Environmental ratings	 IEC 60529 IP67 NEMA Type 4X Icing protection NEMA 250-2008 Corrosion NEMA 250-2008 (600 hours) Solar radiation EN 60068-2-5 (1200 W/ m2) Vibration MIL-STD-810 				
Antennas	 Integrated dual-band semi-omnidirectional antenna radome, (1562l) 7 dBi (2.4 GHz), 4 dBi (5 GHz) Integrated dual-band directional antenna radome, (1562D) 9 dBi (2.4 GHz), 10 dBi (5 GHz) Dual Band AIR-ANT2568VG-N 6 dBi (2.4 GHz), 8 dBi (5 GHz) Omni AIR-ANT2547VG-N 4 dBi (2.4 GHz), 7 dBi (5 GHz) Omni AIR-ANT2547V-N 4 dBi (2.4 GHz), 7 dBi (5 GHz) Omni AIR-ANT2588P3M-N= 8 dBi (2.4 GHz), 8 dBi (5 GHz) Directional AIR-ANT2513P4M-N= 13 dBi (2.4 GHz), 13 dBi (5 GHz) Directional Single Band 2.4 GHz AIR-ANT2450VG-N= 5 dBi (2.4 GHz), Omni, vertical polarized AIR-ANT2450HG-N= 5 dBi (2.4 GHz), Omni, horizontal polarized AIR-ANT243P2M-N= 13 dBi (2.4 GHz), Omni AIR-ANT2413P2M-N= 13 dBi (2.4 GHz), Directional, dual polarized 5 GHz AIR-ANT5150VG-N= 5 dBi (5GHz), Omni, vertical polarized AIR-ANT5150VG-N= 5 dBi (5GHz), Omni, horizontal polarized AIR-ANT5180V-N= 8 dBi (5GHz), Omni, horizontal polarized AIR-ANT5180V-N= 8 dBi (5GHz), Omni, horizontal polarized AIR-ANT5114P2M-N= 14 dBi (5GHz), Directional, dual polarized For antenna details, please refer to the antenna webpage: https://www.cisco.com/go/antennas 				
Powering options	 AC (with AIR-PWRADPT-RGD1=, AC/DC outdoor power adapter) 44-57 VDC input Universal Power of Ethernet (Cisco UPoE+ and Cisco UPoE), 802.3at Cisco power injectors: AIR-PWRINJ-60RGD1= (outdoor rated, 60W, with NEMA 5-15 AC plug) AIR-PWRINJ-60RGD2= (outdoor rated, 60W, unterminated AC cable) AIR-PWRINJ6= (indoor, 802.3at) Note: If 802.3at Power over Ethernet (PoE) is the source of power, the 1562I radios will shift from 3 x 3 to 2 x 2. 				
Power consumption	1562I 32 W (3x3:3, full power) 1562D/E 25 W				

Item	Specification				
Compliance	Safety • UL60950, 2 nd Edition • CAN/CSA-C22.2 No. 60950, 2 nd Edition • IEC 60950, 2 nd Edition • EN 60950, 2 nd Edition Immunity • <= 5 mJ f or 6kV/3kA @ 8/20 ms waveform • ANSI/IEEE C62.41 • EN61000-4-5 Lev el 4 AC Surge Immunity • EN61000-4-4 Lev el 4 Electrical Fast Transient Burst Immunity				
	 EN61000-4-3 Lev el 4 EMC Field Immunity EN61000-4-2 Lev el 2 ESD Immunity EN60950 Overvoltage Category IV 				
	Radio Approvals FCC Part 15.247, 15.407 FCC Bulletin OET-65C RSS-247 RSS-102 AS/NZS 4268.2003 ARIB-STD 66 (Japan) ARIB-STD T71 (Japan) EN 300 328				
	• EN 301 893 EMI and Susceptibility • FCC part 15.107, 15.109 • ICES-003				
	 EN 301 489-1, -17 Security Wireless bridging/mesh (future availability) X.509 digital certificates MAC address authentication Advanced Encryption Standard (AES) 				
	 Wireless Access 802.11i, Wi-Fi Protected Access 2 (WPA2), and WPA 802.1X authentication, including Extensible Authentication Protocol (EAP) and Protected EAP (EAP-PEAP), EAP Transport Layer Security (EAP-TLS), EAP-Tunneled TLS (EAP-TTLS), EAP-Subscriber Identity Module - (EAP-SIM), and Cisco LEAP VPN pass-through IP Security (IPsec) Layer 2 Tunneling Protocol (L2TP) MAC address filtering 				
Warranty	1-year limited hardware warranty				

Ordering Information

Table 3 gives ordering information for the Cisco Aironet 1560 Series.

Table 3. Ordering Information for Cisco Aironet 1560 Series

Part Number	Product Description					
Aironet 1560 Series	 AIR-AP1562I-x-K9: Dual-band 802.11a/g/n/ac, Wave 2, internal semi-omni antennas AIR-AP1562E-x-K9: Dual-band 802.11a/g/n/ac, Wave 2, external antennas AIR-AP1562D-x-K9: Dual-band 802.11a/g/n/ac, Wave 2, internal directional antennas 					
	Regulatory domains: (x = regulatory domain) Customers are responsible f or verifying approval f or use in their individual countries. To verify approval that corresponds to a particular country or the regulatory domain used in a specific country, visit https://www.cisco.com/go/aironet/compliance.					
	Not all regulatory domains have been approved. As they are approved, the part numbers will be available on the Global Price List. • AIR-AP1562I-D-K9I: Dual-band 802.11a/g/n/ac, Wave 2, internal antennas (India only)					
	Cisco SMARTnet™ Service for the Cisco Aironet 1560 Series Access Points					
	Refer to the Service part numbers available on Cisco Commerce Workspace f or available service offerings.					

Warranty information

The Cisco Aironet 1560 Series Outdoor Access Points come with a 1 -year limited warranty that provides full warranty coverage of the hardware. The warranty includes 10 -day advance hardware replacement and helps ensure that software media are defect-free for 90 days. For more details, visit https://www.cisco.com/go/warranty.

Cisco and partner services

Realize the full business value of your technology investments faster with intelligent, customized services from Cisco and our partners. Backed by deep networking expertise and a broad ecosystem of partners, Cisco Wireless LAN Services help you deploy a sound, scalable mobility network that enables rich -media collaboration while improving the operational efficiency gained from a converged wired and wireless network infrastructure based on the Cisco Unified Wireless Network.

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For more information

For more information about the Cisco Aironet 1560 Series, visit https://www.cisco.com/go/wireless or contact your local Cisco account representative.

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Appendix J



Installing the Access Point

This chapter describes how to install the 1560 access point and its accessories. It contains the following sections:

- Unpacking the Access Point, page 2-2
- Mounting the Access Point, page 2-6
- Installing AP Cover AIR-ACC1560-CVR=, page 2-29
- Installing External Antennas, page 2-31
- Installing a Lightning Arrestor, page 2-40
- Grounding the Access Point, page 2-42
- Powering the Access Point, page 2-44
- Connecting Data Cables, page 2-52
- Configuring the Access Point, page 2-59

Unpacking the Access Point

To unpack the access point, follow these steps:

- **Step 1** Open the shipping container and carefully remove the contents.
- Step 2 Return all packing materials to the shipping container, and save it.
- **Step 3** Ensure that all items listed in "Package Contents" are included in the shipment. If any item is damaged or missing, notify your authorized Cisco sales representative.

Your shipment may also contain additional equipment as per your order, as listed in Optional Tools and Hardware From Cisco, page 2-2.

For additional hardware that is required for installation, see Additional Tools and Hardware Required for Installation, page 2-3.

Package Contents

Each access point package contains the following items:

- One 1560 series access point
- Two-pin DC power connector
- · Ground lug and screws with lock washers
- · Plastic cable gland and rubber seal
- Weatherization tape and anti-corrosion sealant
- Cisco product documentation and pointer card

Optional Tools and Hardware From Cisco

Depending on what you ordered, the following optional equipment may be part of your shipment:

- External antennas. See the "Installing External Antennas" section on page 2-31.
- Wall/Pole mount bracket AIR-ACC1530-PMK1=
- Wall/Pole mount bracket for AP and AC/DC power adapter AIR-ACC1560-PMK1=
- Wall/Pole mount bracket with tilt mechanism, spare only AIR-ACC1530-PMK2=
- Street light power tap (AIR-PWR-ST-LT-R3P=), works only with the AC/DC power adapter.
- Power injector AIR-PWRINJ6=
- AP cover / Solar Shield for 1560, AIR-ACC1560-CVR=. Spare only.
- AC/DC power adapter, AIR-PWRADPT-RGD1=. Spare only.
- AIR-PWRINJ-60-PMK= mounting bracket for AIR-PWRINJ-60RGDx=
- Spare Parts kit containing extra cable glands, power connector, ground lug, etc. (AIR-ACC1530-KIT1=)
- AIR-PWRINJ-60RGD1=
- AIR-PWRINJ-60RGD2=

- FIPS kit (AIRLAP-FIPSKIT=)
- Lightning Arrestor kit (AIR-ACC245LA-N=)

Additional Tools and Hardware Required for Installation

You need to independently procure the following tools and materials which maybe required during various stages of installing the AP:

- Ground lug crimping tool (Panduit CT-720 with CD-720-1 die)
- 6-AWG copper ground wire
- 10 mm open end or box wrench
- 13 mm box-end wrench or socket set
- 16 mm box-end wrench or socket set
- Large flat or Phillips screw driver (for port plugs)
- Small flat screwdriver for DC power connector
- Shielded outdoor-rated Ethernet (CAT5e or better) cable of 0.20 to 0.35 inches (0.51 to 0.89 cm) diameter.
- Ethernet RJ-45 connector and installation tool
- Shielded outdoor-rated DC power cable with 0.20 to 0.35 inch (.0.51 to 0.89 cm) diameter
- Ground rod, as required by local regulations

Pre-Installation Checks and Installation Guidelines

As the access point is a radio device, it is susceptible to common causes of interference that can reduce throughput and range. Follow these basic guidelines to ensure the best possible performance:

- Thoroughly review the information provided in Safety Guidelines and Warnings, page A-1.
- For information on planning and initially configuring your Cisco Mesh network, refer to the *Cisco Wireless Access Points*, *Design and Deployment Guide*, *Release 7.3*.
- Review the FCC guidelines for installing and operating outdoor wireless LAN devices at: http://www.cisco.com/c/en/us/products/collateral/routers/3200-series-rugged-integrated-services-routers-isr/data_sheet_c78-647116.html
- Install the access point in an area where structures, trees, or hills do not obstruct radio signals to and from the access point.
- We recommend installing the access points no higher than 40 feet to allow support for wireless
 clients on the ground. Best throughput is achieved when all the access points are mounted at the
 same height.
- The console port is under a sealed plug. Inspect the seal of the plug at the time of installation. Every time the plug is removed or replaced, properly tighten it. Tighten the plug to 15 lbf-in. If you do not tighten the plug properly, it will not meet IP67 criteria, and may lead to water leaking into the unit.
- If the DC power port, SFP port, or the PoE-In port is not in use, then the port's covering plug must be tightened to 12.5 lbf-in torque. Otherwise, it may lead to water leaking into the access point.



To calculate path loss and to determine how far apart to install access points, consult an RF planning expert.

Before you begin the installation process, ensure the following:

- Perform a site survey. See the "Performing Site Surveys" section on page A-5.
- Your network infrastructure devices must be operational and properly configured.
- Your controllers are connected to switch trunk ports.
- Your switch is configured with untagged access ports for connecting your access points.
- A DHCP server with Option 43 configured is reachable by your access points, or manually configure the controller information in the access point. For information on configuring the DHCP Option 43, visit the following URL:

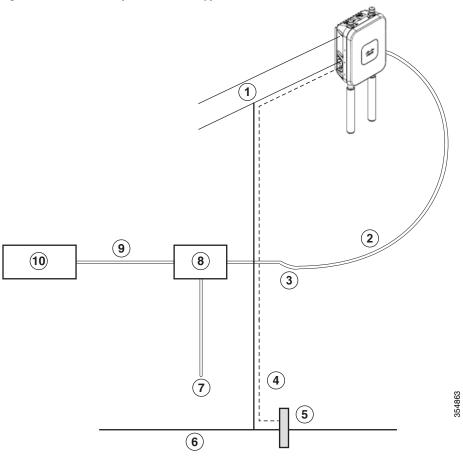
http://www.cisco.com/c/en/us/support/docs/wireless-mobility/wireless-lan-wlan/97066-dhcp-optio n-43-00.html

• Become familiar with the access point installation components. See the "Typical Access Point Installation Components" section on page 2-5.

Typical Access Point Installation Components

The access point is designed to be installed in an outdoor environment, such as the exterior roof overhang of a tall building or a streetlight pole. Carefully review Figure 2-1 to become familiar with the system components, connectors, indicators, cables, system interconnection, and grounding.

Figure 2-1 Components in a Typical Access Point Installation



1	Building roof-overhang	6	Ground
2	Shielded outdoor-rated Ethernet (CAT5e or better) cable ¹	7	Power cord
3	Water drip loop	8	Power injector
4	6-AWG copper grounding wire ¹	9	Shielded Ethernet (CAT5e or better) cable ¹
5	Ground rod ¹	10	Controller (through a switch)

^{1.} Independently sourced by the user.

Mounting the Access Point

This section provides instructions for installing your access points. Personnel installing the access point must have a good understanding of wireless access points, bridging techniques, and grounding methods.

Choosing a Mounting Kit

The 1560 Series Access Point can be wall, pole, or tower mounted. The available mounting kits are provided in the table below.

AP Mounting Kit	Purpose			
AIR-ACC1530-PMK1=	Fixed mounting kit for vertical mounting on wall and pole. See:			
	• Wall Mounting the Access Point with AIR-ACC1530-PMK1=, page 2-7			
	• Pole Mounting the Access Point with AIR-ACC1530-PMK1=, page 2-13			
AIR-ACC1560-PMK1=	Fixed mounting kit, allowing mounting of both AP and power supply, for vertical mounting on wall and pole. See:			
	• Wall Mounting the Access Point with AIR-ACC1560-PMK1=, page 2-10			
	• Pole Mounting the Access Point with the AIR-ACC1560-PMK1= Kit, page 2-15			
AIR-ACC1530-PMK2=	Pivoted mounting kit for both vertical and horizontal mounting, on wall and pole. See:			
	 Wall Mounting the AP using AIR-ACC1530-PMK2= Pivoting Mounting Kit, page 2-17 			
	 Pole Mounting the AP using AIR-ACC1530-PMK2= Pivoting Mounting Kit, page 2-22 			
	 Horizontally Mounting the Access Point using AIR-ACC1530-PMK2=, page 2-26 			



- When mounting an access point vertically, ensure that the access point is oriented with the LED indicators pointing down.
- You must also ensure the access point is mounted in such a way as to ensure that all antenna ports and the console port are accessible for future use.
- Omnidirectional antennas need to be mounted vertically.
- Directional antennas need to be installed with the main beam aimed parallel to or tilted down toward the horizon.

Wall Mounting the Access Point with AIR-ACC1530-PMK1=

The AIR-ACC1530-PMK1= mounting kit contains a mounting bracket for wall mounting or pole mounting.

You can use the mounting bracket as a template to mark the positions of the mounting holes for your installation, install the mounting bracket, and then attach the access point to the bracket.

Table 2-1 lists the materials needed for this installation.

Table 2-1 Materials Required to Mount Access Point Using AIR-ACC1530-PMK1=

Materials Required	In Kit?		
Ground lug and screws (provided with access point)	Yes		
Wall Mount Bracket	Yes		
Four M6 x 12-mm Hex-head Bolts	Yes		
Crimping tool for ground lug, Panduit CT-720 with CD-720-1 die (http://www.panduit.com)	No		
Four wall mounting screws	No		
Four wall anchors (specified for all material)	No		
Drill bit for wall anchors	No		
Electric drill and standard screwdriver	No		
#6 AWG ground wire	No		
Shielded outdoor-rated Ethernet (CAT5e or better) cable	No		
Grounding block	No		
Grounding rod	No		
10-mm box-end wrench or socket set	No		



The mounting wall, attaching screws, and wall anchors must be able to support a 50-lb (22.7 kg) static weight.

To mount the access point vertically on a wall, follow these instructions:

- **Step 1** Use the mounting bracket as a template to mark four screw hole locations on the mounting wall. The mounting bracket screw hole locations are shown in Figure 2-2. The dimensions of the mounting bracket is shown in Figure 2-3.
- **Step 2** Use four screws and, if required, wall anchors to attach the mounting plate to the mounting surface. These screws and anchors are to be sourced independently.



You can use an exterior-grade plywood backboard to mount the access point to stucco, cement, or drywall.



The mounting wall, attaching screws, and wall anchors must be able to support a 50-lb (22.7 kg) static weight.

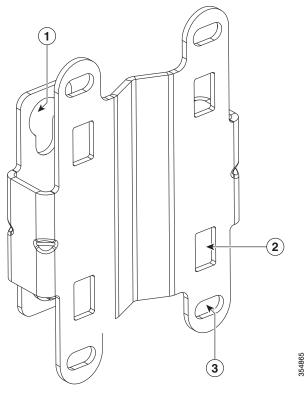
- Step 3 Screw an M6 x12 mm bolt into each of the four support bolt holes on the back of the access point. Do not screw the bolt all the way in, but leave a gap of approximately 0.13 inch (3.3 mm).
- **Step 4** Position the access point against mounting bracket such that the four support bolts on the back of the AP, slot into the keyhole slots on the mounting bracket.
- Step 5 Slide the access point down to sit securely in keyhole slots on the mounting bracket.



The access point should be mounted with the status LED on the base facing downwards.

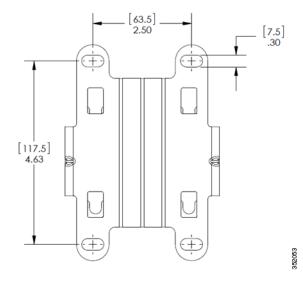
- Step 6 Using a 10mm wrench, tighten the four bolts that connect the access point to the bracket, to a torque of 40 lbf-in.
- **Step 7** Proceed with installing antennas (only for external antenna models), connecting the data cables, grounding the access point, powering and configuring the access point.

Figure 2-2 Mounting Bracket for Wall and Pole Mounting



1	One of four keyhole slots for mounting the AP.	Bracket mount holes for fastening bracket to the wall. You can use bolts of up to 1/4" or 6 mm in diameter.
	One of four slots for steel band clamps, used for pole mounting only.	

Figure 2-3 Mounting Bracket Dimensions



Wall Mounting the Access Point with AIR-ACC1560-PMK1=

The AIR-ACC1560-PMK1= mounting kit contains a mounting bracket, for wall mounting or pole mounting, the access point and the power supply together.

You can use the mounting bracket as a template to mark the positions of the mounting holes for your installation, install the mounting bracket, and then attach the access point to the bracket.

Table 2-1 lists the materials needed for this installation.

Table 2-2 Materials Required to Mount Access Point using AIR-ACC1560-PMK1=

Materials Required	In Kit?		
Ground lug and screws (provided with access point)	Yes		
Wall Mount Bracket	Yes		
Four M6 x 12-mm Hex-head Bolts	Yes		
Four #8-32 screws to mount the power supply	Yes		
Crimping tool for ground lug, Panduit CT-720 with CD-720-1 die (http://www.panduit.com)	No		
Four wall mounting screws	No		
Four wall anchors (specified for all material)	No		
Drill bit for wall anchors	No		
Electric drill and standard screwdriver	No		
#6 AWG ground wire	No		
Shielded outdoor-rated Ethernet (CAT5e or better) cable	No		
Grounding block	No		
Grounding rod	No		
10-mm box-end wrench or socket set	No		



The mounting wall, attaching screws, and wall anchors must be able to support a 50-lb (22.7 kg) static weight.

To mount the access point vertically on a wall, follow these instructions:

- **Step 1** Use the mounting bracket as a template to mark six screw hole locations on the mounting wall. The mounting bracket screw hole locations and the dimensions of the mounting bracket are shown in Figure 2-4.
- **Step 2** Use six screws and, if required, wall anchors to attach the mounting plate to the mounting surface. These screws and anchors are to be sourced independently.



You can use an exterior-grade plywood backboard to mount the access point to stucco, cement, or drywall.



Note

The mounting wall, attaching screws, and wall anchors must be able to support a 50-lb (22.7 kg) static weight.

- Step 3 Screw an M6 x12 mm bolt into each of the four support bolt holes on the back of the access point. Do not screw the bolt all the way in, but leave a gap of approximately 0.13 inch (3.3 mm).
- **Step 4** Position the access point against mounting bracket such that the four support bolts on the back of the AP, slot into the keyhole slots on the mounting bracket.
- Step 5 Slide the access point down to sit securely in keyhole slots on the mounting bracket.

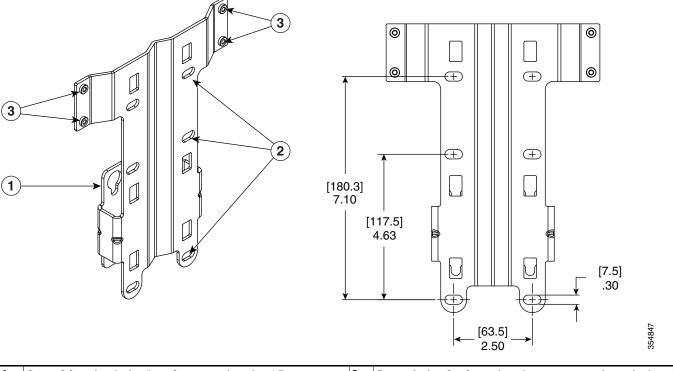


Note

The access point should be mounted with the status LED on the base facing downwards.

- Step 6 Using a 10mm wrench, tighten the four bolts that connect the access point to the bracket, to a torque of 40 lbf-in.
- **Step 7** Proceed with installing antennas (only for external antenna models), connecting the data cables, grounding the access point, powering and configuring the access point..

Figure 2-4 Mounting Bracket for Wall and Pole Mounting AP with Power Supply



1	One of four keyhole slots for mounting the AP.	3	Screw holes for fastening the power supply to the bracket.
	Three of six bracket mount holes for fastening the bracket to a wall. Support bolts of up to 1/4" (6 mm) in diameter.		

Pole Mounting the Access Point with AIR-ACC1530-PMK1=

The AIR-ACC1530-PMK1= mounting kit contains a mounting bracket that can be used for both wall mounting and pole mounting. This kit can be used to install the access point on a pole, mast or streetlight. It supports metal, wood or fiberglass poles from 2 to 8 inches in diameter.

Table 2-3 Materials Needed to Mount the AP on a Vertical Pole

Materials Needed	In Kit?
One wall mount bracket	Yes
Four M6 x12mm hex head bolts	Yes
Two stainless steel band clamps (adjustable 2"-5", 51-127 mm)	Yes
Two stainless steel band clamps (adjustable 5"-8", 127-203 mm)	Yes
10 mm box-end wrench	No
Outdoor rated shielded Ethernet cable	No
Ground lug (provided with the access point)	Yes
Ground block and rod	No
Crimping tool for ground lug, Panduit CT-720 with CD-720-1 die (http://www.panduit.com)	No
#6 AWG ground wire	No

To mount the access point onto a vertical pole, follow these steps:

Step 1 Select a mounting location on the pole to mount the access point. You can attach the access point to a pole having a diameter of 2 to 8 inches (5.1 to 20.1 cm).



Note

If you will be using a streetlight power tap adapter, position the access point within 3 ft (1 m) of the outdoor light control. An AC/DC adapter needs to be used for street light pole deployments.

- Step 2 Hold the bracket up against the pole, and slide the two band straps through the top and bottom sets of mounting slots on the mounting bracket (see Figure 2-5).
- Step 3 Wrap the band straps around the pole, lock them and then lightly tighten the clamps using a wrench. Only tighten them enough to keep the bracket from sliding down the pole
- Step 4 Screw an M6 bolt into each of the four bolt holes on the back side of the access point. Do not screw the bolt in all the way. Leave a gap of about 0.13" (3.3mm).
- Step 5 Position the four bolts on the access point into the bracket keyhole slots. Check to be sure that the access point is properly seated in the slots (see Figure 2-5).

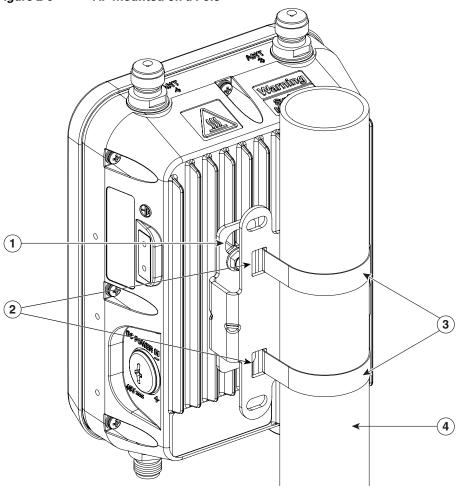


The access point should be mounted with the status LED on the base facing downwards.

Step 6 Using a 10mm wrench, tighten the four bolts that connect the access point to the bracket to a torque of 40 lbf-in.

- Step 7 Locate the access point to its final position. Tighten the band clamps with the wrench so that the access point does not slide on the pole. Ensure that the clamps are tight enough to not let the AP move.
- **Step 8** Proceed with installing antennas (only for external antenna models), connecting the data cables, grounding the access point, powering and configuring the access point.

Figure 2-5 AP Mounted on a Pole



	One of four M6 keyhole slots for mounting the AP on the bracket.	3	Top and bottom steel band clamps
2	Top and bottom sets of band clamp slots for passing the clamps through.		Pole (wood, metal, or fiberglass), 2 in. to 8 in. (50 mm to 203 mm) diameter

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Pole Mounting the Access Point with the AIR-ACC1560-PMK1= Kit

The AIR-ACC1560-PMK1= fixed mounting kit contains a mounting bracket, for both wall-mounting and pole-mounting, the access point along with the power supply kit. This mounting kit supports metal, wood or fiberglass poles from 2 to 8 inches in diameter.

Table 2-4 Materials Needed to Mount the AP

Materials Needed	In Kit?
One wall mount bracket	Yes
Four M6 x12mm hex head bolts	Yes
Four #8-32 screws to mount the power supply	Yes
Three stainless steel band clamps (adjustable 2"-5", 51-127 mm)	Yes
Three stainless steel band clamps (adjustable 5"-8", 127-203 mm)	Yes
10 mm box-end wrench	No
Outdoor rated shielded ethernet cable	No
Ground lug (provided with the access point)	Yes
Ground block and rod	No
Crimping tool for ground lug, Panduit CT-720 with CD-720-1 die (http://www.panduit.com)	No
#6 AWG ground wire	No

To mount the access point onto a vertical pole or streetlight pole, follow these steps:

Step 1 Select a mounting location on the pole to mount the access point. You can attach the access point to a pole having a diameter of 2 to 8 inches (5.1 to 20.1 cm).



Note

If you will be using a streetlight power tap adapter, position the access point within 3 ft (1 m) of the outdoor light control. An AC/DC adapter needs to be used for street light pole deployments.

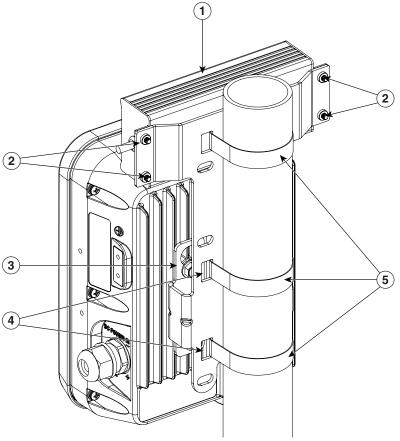
- Step 2 Hold the bracket up against the pole, and slide the three band straps through the top, middle, and bottom sets of mounting slots on the mounting bracket (see Figure 2-6).
- Step 3 Wrap the band straps around the pole, lock them and then lightly tighten the clamps using a wrench. Only tighten them enough to keep the bracket from sliding down the pole
- Step 4 Screw an M6 bolt into each of the four bolt holes on the back side of the access point. Do not screw the bolt in all the way. Leave a gap of about 0.13" (3.3mm).
- Step 5 Position the four bolts on the access point into the bracket keyhole slots. Check to be sure that the access point is properly seated in the slots (see Figure 2-6).



The access point should be mounted with the status LED on the base facing downwards.

- Step 6 Using a 10mm wrench, tighten the four bolts that connect the access point to the bracket to a torque of 40 lbf-in.
- **Step 7** Mount the power supply to the bracket with four #8-32 screws.
- **Step 8** Locate the access point to its final position. Tighten the band clamps with the wrench. Ensure that the clamps are tight enough to not let the AP move.
- **Step 9** Continue with the Grounding the Access Point, page 2-42.

Figure 2-6 AP and Power Supply Mounted on a Pole



1	Power supply.	4	Band clamp slots for passing the clamps through.
2	Screw holes for four #8-32 screws.	5	Steel band clamps.
3	One of four M6 keyhole slots for mounting the AP on the bracket.		

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Wall Mounting the AP using AIR-ACC1530-PMK2= Pivoting Mounting Kit

The optional pivoting mounting kit AIR-ACC1530-PMK2= contains a pivoting mounting bracket for both wall and pole mounting. This kit allows for adjusting the position of the AP by pivoting the AP along its vertical plane.

Table 2-5 Materials for Mounting on Wall with Pivoting Mounting Kit

Materials Required for mounting AP vertically on a wall with pivoting mounting kit	In Kit
Ground lug and screws (provided with access point)	Yes
Pivoting mount kit and hardware	Yes
(8) M6 x 12-mm Hex-head Bolts	Yes
Adapter bracket for option horizontal mount	Yes
Two stainless steel band clamps (adjustable 2"-5", 51 mm - 127 mm)	Yes
Two stainless steel band clamps (adjustable 5"-8", 127 mm - 203 mm)	Yes
Crimping tool for ground lug, Panduit CT-720 with CD-720-1 die (http://www.panduit.com)	No
Four wall mounting screws (6mm max)	No
Four wall anchors (specified for all material)	No
Drill bit for wall anchors	No
Electric drill and standard screwdriver	No
#6 AWG ground wire	No
Shielded outdoor-rated Ethernet (CAT5e or better) cable	No
Grounding block	No
Grounding rod	No
13-mm box-end wrench or socket set	No
10-mm box-end wrench	No



The mounting surface, attaching screws and optional wall anchors must be able to support a 50-lb (22.7 kg) static weight.

To mount the access point vertically on a wall, follow these instructions:

Step 1 Disassemble the pivot kit, if not already disassembled. See Figure 2-7.

Step 2 Use the wall-plate end of the mounting bracket as a template to mark four screw hole locations on the mounting surface. See Figure 2-7 for the mounting bracket screw hole locations (screw holes of maximum 6 mm in size).

See Figure 2-8 for the dimensions of the pivoting mounting bracket.

Step 3 Use four screws and, if required, wall anchors to attach the wall-plate end of the mounting bracket to the mounting surface. These screws and anchors are to be sourced independently.



Note

You can use an exterior-grade plywood backboard to mount the access point to stucco, cement, or drywall.



The mounting wall, attaching screws, and wall anchors must be able to support a 50-lb (22.7 kg) static weight.

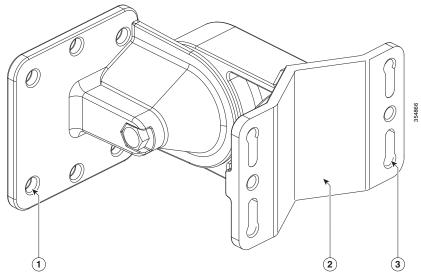
- Step 4 Align the AP-plate end of the bracket with the screw holes in the back of the access point.
- **Step 5** Fasten the bracket plate to the AP by using four M6 x12 mm bolts and a 10 mm box or socket wrench. Torque the bolts to 40 lbf-in.
- **Step 6** Using the 90.0 mm M8 long screw and the hardware supplied with the pivoting bracket, bolt the AP and bracket plate, to the wall plate mounted on the wall. See Figure 2-7 for this assembly. Do not fully tighten the assembly.



The access point should be mounted with the status LED on the base facing downwards.

- **Step 7** Pivot the AP as required, and then fully tighten the 90.0 mm M8 long screw using a 13 mm wrench.
- **Step 8** Proceed with installing antennas (only for external antenna models), connecting the data cables, grounding the access point, powering and configuring the access point..

Figure 2-7 Pivoting Mounting Bracket



1	One of four bolt holes for fastening to the back of the AP.	3	Screw holes for wall mounting. These screw holes can also be used as slots for
	This is the AP-plate end of the bracket, and is fastened to the back of the AP.		steel band clamps in pole-mount installations.
2	Wall-plate end of the bracket. This plate is fastened to the wall.		

Figure 2-8 Pivoting Mounting Bracket Dimensions

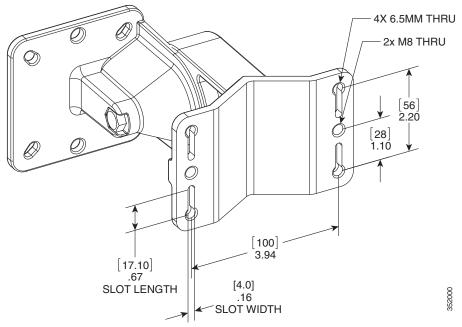
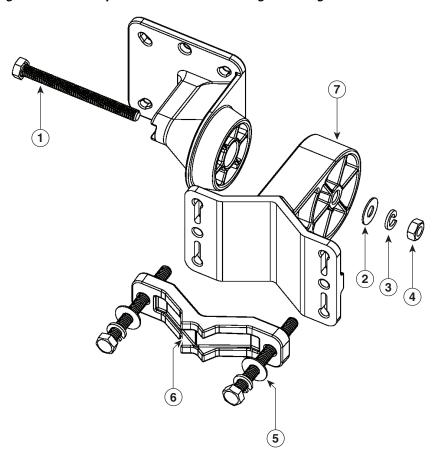
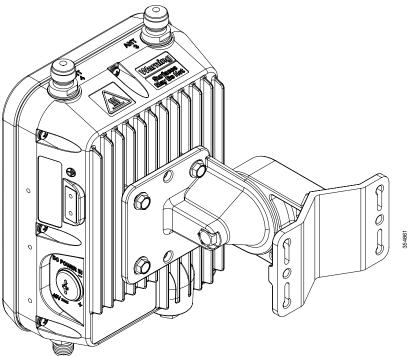


Figure 2-9 Exploded View of the Pivoting Mounting Kit



1	90.0 mm M8 screw		80.0 mm M8 screw with washer and spring washer, for
2	M8 washer		fastening the pole-mount screw clamp to the pivoting bracket base plate.
3	M8 spring washer	6	Pole-mount screw clamp
4	M8 nut	7	Pivoting bracket base plate





Pole Mounting the AP using AIR-ACC1530-PMK2= Pivoting Mounting Kit

The optional pivoting mounting kit AIR-ACC1530-PMK2= contains a pivoting mounting bracket for both wall and pole mounting. This kit can be used to install the access point on a pole, mast, or streetlight. It supports metal, wood or fiberglass poles from 2 to 8 inches in diameter.

The AIR-ACC1530-PMK2= pivoting mounting kit allows for adjusting the position of the AP by pivoting the AP along its vertical plane.

Table 2-6 Materials for Mounting the AP on a Pole using AIR-ACC1530-PMK2=

Materials Required	In Kit?
Ground lug and screws (provided with access point)	Yes
Pivoting mount kit and hardware	Yes
(8) M6 x 12-mm Hex-head Bolts	Yes
Adapter bracket for option horizontal mount	Yes
Two stainless steel band clamps (adjustable 2"-5", 51 mm - 127 mm)	Yes
Two stainless steel band clamps (adjustable 5"-8", 127 mm - 203 mm)	Yes
Crimping tool for ground lug, Panduit CT0720 with CD-720-1 die (http://www.panduit.com)	No
Four wall mounting screws (6mm max)	No
Four wall anchors (specified for all material)	No
Drill bit for wall anchors	No
Electric drill and standard screwdriver	No
#6 AWG ground wire	No
Shielded outdoor-rated Ethernet (CAT5e or better) cable	No
Grounding block	No
Grounding rod	No
13-mm box-end wrench or socket set	No
10-mm box-end wrench	No

To mount the access point on a pole, follow these steps:

Step 1 Select a mounting location on the pole to mount the access point. You can attach the access point to any pole with a diameter from 2 to 8 inches (5.1 to 40.6 cm).



If you will be using a streetlight power tap adapter, position the access point within 3 ft (1 m) of the outdoor light control.

Step 2 Disassemble the pivot kit, if not already disassembled. See Figure 2-7.

- **Step 3** Fasten the pivot bracket base plate to the pole using either one set of the adjustable band clamps or the screw clamp (the screw clamp can be used only on poles that are 2-3 inches (50-76 mm) in diameter).
- **Step 4** Position the pivot bracket base plate and clamp(s) on the pole. Tighten only enough to hold the bracket base plate in place, so as to prevent it from sliding along the pole but still pivot on the pole. Fully tighten only after the access point is mounted and positioned.
- **Step 5** Align the AP-plate end of the bracket with the screw holes in the back of the access point.
- **Step 6** Fasten the bracket plate to the AP by using four M6 x12 mm bolts and a 10 mm box or socket wrench. Torque the bolts to 40 lbf-in (4.5Nm).
- Step 7 Using the 90.0 mm M8 long screw and the hardware supplied with the pivoting bracket, bolt the AP and bracket plate, to the base plate mounted on the pole. See Figure 2-10 for this assembly. Do not fully tighten the assembly.



Note

The access point should be mounted with the status LED on the base facing downwards.

Step 8 Pivot and position the AP as required, and then fully tighten the 90.0 mm M8 long screw using a 13 mm wrench, and then tighten the clamps on the pole.



Note

Use caution when tightening the 80 mm bolts on the pole-mount screw clamp. See Figure 2-9. Ensure the clamp face remains parallel to the bracket base plate while tightening the bolts. Torque the M8 x 80 mm bolts to 52-61 lbf-in (5.9-6.9 Nm).

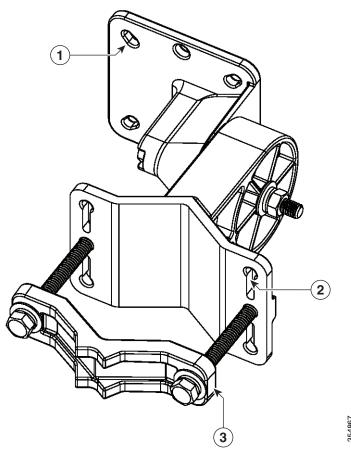


Caution

Misalignment and over torquing can result in breaking the screw clamp.

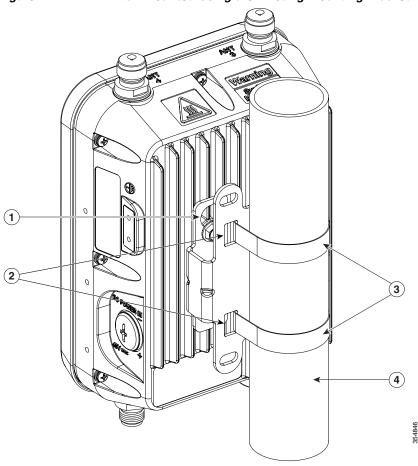
Step 9 Proceed with installing antennas (only for external antenna models), connecting the data cables, grounding the access point, powering and configuring the access point.

Figure 2-11 Pivoting Mounting Kit with Pole Mount Clamp



1	One of four mounting holes for the access point. This is the AP-plate end of the bracket, and is fastened to the back of the AP.	3	Pole mount screw clamp. It can fit poles having a diameter of up to 2-3 in. (50-76mm).
2	One of four slots for band clamps. This is the pivot bracket base plate, and is fastened to the pole.		
	Pole mount installation using band clamps are shown in Figure 2-12.		

Figure 2-12 AP Wall Mounted Using the Pivoting Mounting Bracket



	One of four mounting holes for mounting the access point to the bracket.	3	Steel band clamps.
2	Slots for band clamps.	4	Pole.

Horizontally Mounting the Access Point using AIR-ACC1530-PMK2=

The AIR-ACC1530-PMK2= pivoting pole mount kit contains a horizontal mount plate that allows the AP to be mounted horizontally, as shown in Figure 2-14. The horizontal mounting provides better omni antenna coverage.

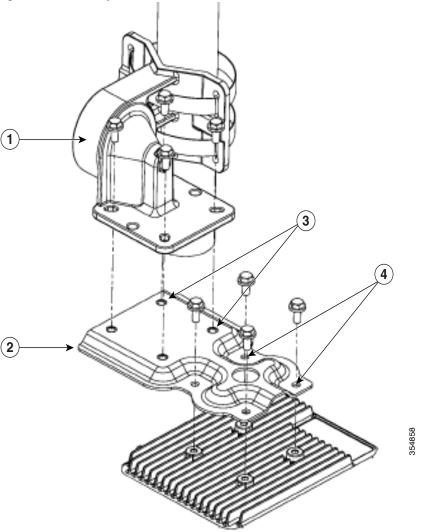
Table 2-7 Materials Needed for Horizontally Mounting the AP using AIR-ACC1530-PMK2=

Materials Required	In Kit?
Ground lug and screws (provided with access point)	Yes
Pivoting mount kit and hardware	Yes
8 M6 x 12-mm Hex-head Bolts	Yes
Adapter bracket for option horizontal mount	Yes
Two stainless steel band clamps (adjustable 2"-5", 51 mm - 127 mm)	Yes
Two stainless steel band clamps (adjustable 5"-8", 127 mm - 203 mm)	Yes
Crimping tool for ground lug, Panduit CT0720 with CD-720-1 die (http://www.panduit.com)	No
Four wall mounting screws (6mm max)	No
Four wall anchors (specified for all material)	No
Drill bit for wall anchors	No
Electric drill and standard screwdriver	No
#6 AWG ground wire	No
Shielded outdoor-rated Ethernet (CAT5e or better) cable	No
Grounding block	No
Grounding rod	No
13-mm box-end wrench or socket set	No
10-mm box-end wrench	No

To mount the AP horizontally using AIR-ACC1530-PMK2=, follow these steps:

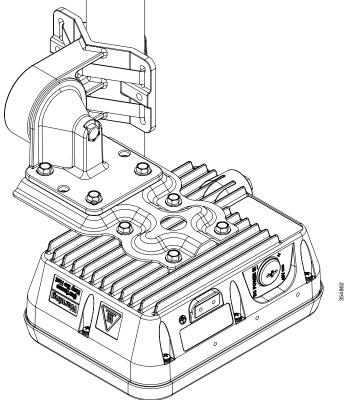
- **Step 1** Mount the pivot bracket to a wall or a pole as shown in the previous procedures. However, stop before mounting the pivot bracket plate directly to the access point.
- **Step 2** Using four M6 x 12 mm bolts, fasten the horizontal adapter plate to the pivot bracket plate.
- Step 3 Using the remaining four M6 x 12 mm bolts, mount the other side of the horizontal mounting plate to the AP. See Figure 2-13 for the exploded view.
- **Step 4** Using a 10 mm wrench or socket, tighten all M6 bolts to 40 lbf-in (4.5 Nm).
- Step 5 Position and orient the access point as needed and tighten the mount kit bolts using a 13 mm wrench or socket. See Figure 2-14.

Figure 2-13 Exploded View of the Pivot Bracket Parts with Horizontal Mount Plate



1	Pivoting bracket. Can be mounted on a pole or a wall.		Two out of four screw holes for mounting the horizontal mounting plate to the pivoting bracket.
2	Horizontal mounting plate.	4	Two out of four screw holes for mounting the access point to the horizontal mounting plate.





Installing AP Cover AIR-ACC1560-CVR=

You can install a cover AIR-ACC1560-CVR=, which also acts as a solar shield. The cover can be installed prior to or after all connections are made. However, if remote cabled antennas are to be installed, the shield must be installed before the antenna cables are attached to the AP.

Step 1 This step applies only to AP1562D models.

The cover AIR-ACC1560-CVR= is factory fitted with an adapter for installing on AP models AP1562I and AP1562E. You need to remove this adapter before installing the cover on AP1562D AP models. For this:

- **a.** Slide a large flat blade screw driver into the opening shown in Figure 2-15.
- b. Pry up the adapter while pushing the screw driver further into it, until the adapter pop out.
- c. Discard the adapter.
- **Step 2** Position and slide the cover over the AP as shown in Figure 2-16.
- **Step 3** Align the two holes on each side of the cover with the screw holes on corresponding side of the AP.
- **Step 4** Insert and install #8-32 screws through the screw holes in the cover and into the AP. Tighten the screws to 10 lb-in.

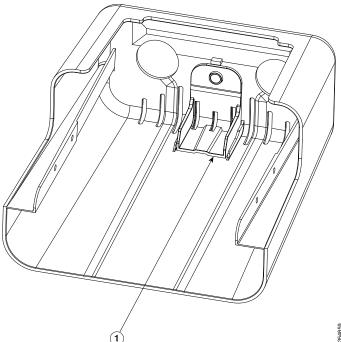
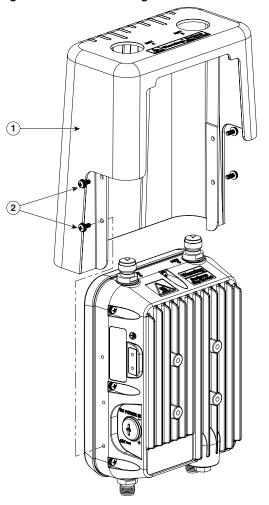


Figure 2-15 Only for AP1562D - Removing the Adapter from the Cover

1 Slide a large flat blade screw driver into this opening and the pry the adapter out.

Figure 2-16 Installing the Cover on the AP



1 Solar Shield 2 Two of four #8-32 screws

Installing External Antennas



When operating in the 5GHz UNII-1 band, all Omni Directional antennas should be installed vertically, and all directional antennas should be installed with the main beam aimed parallel to or tilted down toward the horizon.

Table 2-8 shows the external antennas supported by the 1562E access point and provides required quantities for each model.

Table 2-8 1562E Access Point Supported External Antennas

Product ID	Frequency Band	Gain	Туре
AIR-ANT2413P2M-N=	2.4 GHz	13 dBi	Directional
AIR-ANT2450V-N	2.4 GHz	5 dBi	Omnidirectional
AIR-ANT2480V-N	2.4 GHz	8 dBi	Omnidirectional
AIR-ANT2513P4M-N	2.4 / 5 GHz	13 / 13 dBi	Directional
AIR-ANT2547V-N	2.4 / 5 GHz	4 / 7 dBi	Omnidirectional (white)
AIR-ANT2547VG-N	2.4 / 5 GHz	4 / 7 dBi	Omnidirectional (gray)
AIR-ANT2568VG-N	2.4 / 5 GHz	6 / 8 dBi	Omnidirectional (gray)
AIR-ANT2588P3M-N=	2.4 / 5 GHz	8 / 8 dBi	Directional
AIR-ANT5114P2M-N=	5 GHz	14 dBi	Directional
AIR-ANT5180V-N	5 GHz	8 dBi	Omnidirectional

For installation instructions and detailed information on any of these antennas, refer to the antenna guide at:

http://www.cisco.com/c/en/us/support/wireless/aironet-antennas-accessories/products-installation-guid es-list.html

Follow all safety precautions when installing the antennas. For information on safety, refer to "Safety Precautions when Installing Antennas" section on page A-4.

Non-Cisco Antennas

Cisco does not support any third-party antennas. RF connectivity and compliance of third party antennas is the user's responsibility. Cisco does not recommend any third-party antennas, and Cisco Technical Assistance Center will not be able to provide any support for third-party antennas. Cisco's FCC Part 15 compliance is only guaranteed with Cisco antennas or antennas that are of the same design and gain as Cisco antennas.

Cisco Flexible Antenna Port

The Cisco Flexible Antenna Port feature on the 1562 series access points allows support for either dual-band or single-band antennas on the same AP. This is configurable using a CLI command from the wireless LAN controller.

To have dual-band ports, use the two antenna ports on the base (ports 1 and 2) to connect to dual-band omni or directional antennas.

To have single-band ports, use two separate 2.4 GHz and two 5 GHz antenna ports.

External Antenna Mounting Configurations

The selection of the antenna is determined in the configuration of the product. The 1562E antennas can be mounted on a wall, pole and/or tower mounted. Always refer to the *Ordering Guide* for the updated list of supported antennas.

The 1562E access point supports a variety of antennas designed for outdoor use with radios operating in the 2.4-GHz and 5-GHz frequency bands. The 1562E supports the external antennas listed in the following sections.

Cisco Aironet Dual-Band Omnidirectional Antenna (AIR-ANT2547V-N, AIR-ANT2547VG-N)

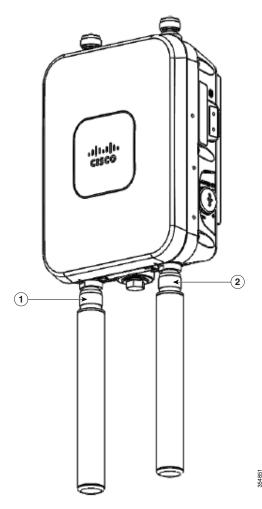
The Dual-Band Omnidirectional Antenna, referred to as a "stick" antenna, is designed for outdoor use with Cisco Aironet Outdoor Access Points with radios operating in the 2.4-GHz and 5-GHz frequency bands (Figure 2-17). Basic operating features of the antenna are:

- Omnidirectional collinear array
- Operates in the 2.4 GHz and 5 GHz frequency bands
- Gain:
 - 2400-2483 MHz 4-dBi
 - 5250–5875 MHz 7-dBi

The antenna is designed to create an omnidirectional broadcast pattern. To achieve this pattern, mount the access point clear of any obstructions to the sides of the radiating element.

For detailed information on this antenna, refer to the *Cisco Aironet Dual-Band Omnidirectional Antenna* (AIR-ANT2547V-N, AIR-ANT2547VG-N) document. Follow all safety precautions when installing the antennas. For information on safety, refer to "Safety Precautions when Installing Antennas" section on page A-4.

Figure 2-17 Cisco Aironet Dual-Band Omnidirectional Antenna - Installed Only on Model AIR-AP1562E-x-K9



1 Antenna connected to antenna port 1(Type-N connector) (TX/RX)

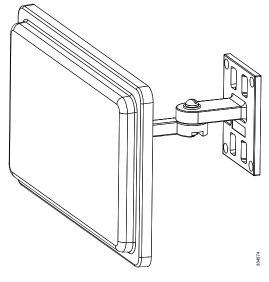
Antenna connected to antenna port 2(Type-N connector) (TX/RX)

Cisco Aironet 2.4-GHz/5-GHz 8-dBi Directional Antenna (AIR-ANT2588P3M-N)

The Cisco Aironet 2.4-GHz/5-GHz 8-dBi Directional Antenna is designed for outdoor use with Cisco Aironet Outdoor Access Points with radios operating in both the 2.4-GHz and 5-GHz frequency bands. This antenna has 8-dBi gain in both bands.

For detailed information on this antenna, refer to the *Cisco Aironet 2.4-GHz/5-GHz 8-dBi Directional Antenna (AIR-ANT2588P3M-N)* document. Follow all safety precautions when installing the antennas, for information on safety, refer to "Safety Precautions when Installing Antennas" section on page A-4.

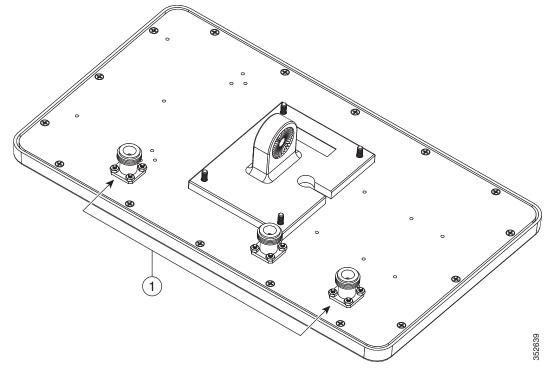
Figure 2-18 Cisco Aironet 2.4-GHz/5-GHz 8-dBi Directional Antenna - Installed Only on Model AIR-AP1562E-x-K9





When installing the AIR-ANT2588P3M-N with the Cisco Aironet 1560 Series AP, connect the outermost antenna ports (marked '1' in Figure 2-19) to the AP's dual band antenna ports.

Figure 2-19 Antenna Ports For Connection to AP's Dual Band Ports



Cisco Aironet 5-GHz 14-dBi 2-Port Directional Antenna (AIR-ANT5114P2M-N)

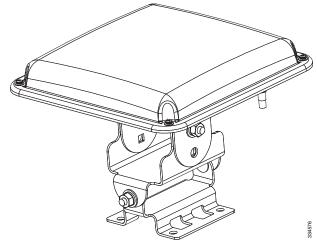
The Cisco Aironet 5-GHz 14-dBi 2-Port Directional Antenna is designed for outdoor use with Cisco Aironet Outdoor Access Points with radios operating in the 5-GHz frequency band. This antenna has 14-dBi in the 5-GHz band.

For more information, see the *Cisco Aironet 5-GHz 14-dBi Directional Antenna* document, at the following URL:

http://www.cisco.com/c/en/us/td/docs/wireless/antenna/installation/guide/ant5114p2m-n.html.

For detailed information on this antenna, see the *Cisco Aironet 5-GHz 14-dBi Directional Antenna* (AIR-ANT5114P2M-N) document. Follow all safety precautions when installing the antennas, for information on safety, refer to "Safety Precautions when Installing Antennas" section on page A-4.

Figure 2-20 Cisco Aironet 5-GHz 14-dBi Directional Antenna - Installed Only on Models AIR-AP1562E-x-K9

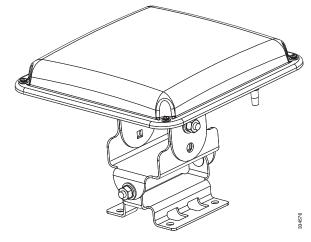


Cisco Aironet 2.4-GHz 13-dBi 2-Port Directional Antenna (AIR-ANT2413P2M-N)

The Cisco Aironet 2.4-GHz 13-dBi 2-Port Directional Antenna is designed for outdoor use with Cisco Aironet Outdoor Access Points with radios operating in the 2.4-GHz frequency band. This antenna has 13-dBi gain in the 2.4-GHz frequency band.

For detailed information on this antenna, refer to the *Cisco Aironet 2.4-GHz 13-dBi Directional Antenna* (*AIR-ANT2413P2M-N*) document. Follow all safety precautions when installing the antennas, for information on safety, refer to "Safety Precautions when Installing Antennas" section on page A-4.

Figure 2-21 Cisco Aironet 2.4-GHz 13-dBi Directional Antenna - Installed Only on Models AIR-AP1562E-x-K9



Cisco Aironet 2.4-GHz 5-dBi Omnidirectional Antenna (AIR-ANT2450V-N)

The Cisco Aironet 2.4-GHz 5-dBi Omnidirectional Antenna is designed for outdoor use with Cisco Aironet Outdoor Access Points with radios operating in the 2.4-GHz frequency band. This antenna has a 5-dBi gain in the 2.4-GHz band.

For detailed information on this antenna, refer to the document *Cisco Aironet 5-dBI Omnidirectional Antenna (AIR-ANT2450V-N)*. Follow all safety precautions when installing the antennas. For information on safety, refer to "Safety Precautions when Installing Antennas" section on page A-4.

Figure 2-22 Cisco Aironet 2.4-GHz 5-dBi Omni Antenna - Installed Only on Model AIR-AP1562E-x-K9



Cisco Aironet 2.4-GHz 8-dBi Omnidirectional Antenna (AIR-ANT2480V-N)

The Cisco Aironet 2.4-GHz 8-dBi Omnidirectional Antenna is designed for outdoor use with Cisco Aironet Outdoor Access Points with radios operating in the 2.4-GHz frequency band. This antenna has 8-dBi gain in the 2.4-GHz frequency band.

For detailed information on this antenna, refer to the document *Cisco Aironet 8-dBi Omnidirectional Antenna (AIR-ANT2480V-N)*. Follow all safety precautions when installing the antennas, for information on safety, refer to "Safety Precautions when Installing Antennas" section on page A-4.

Figure 2-23 Cisco Aironet 2.4-GHz 8-dBi Omni Antenna - Installed Only on Model AIR-AP1562E-x-K9i



Cisco Aironet 5-GHz 8-dBi Omnidirectional Antenna (AIR-ANT5180V-N)

The Cisco Aironet 5-GHz 8-dBi Omnidirectional Antenna is designed for outdoor use with Cisco Aironet Outdoor Access Points with radios operating in the 5-GHz frequency band. This antenna has 8-dBi gain in the 5-GHz frequency band.

For detailed information on this antenna, refer to the document *Cisco Aironet 8-dBi Omnidirectional Antenna (AIR-ANT5180V-N)*. Follow all safety precautions when installing the antennas, for information on safety, refer to "Safety Precautions when Installing Antennas" section on page A-4.

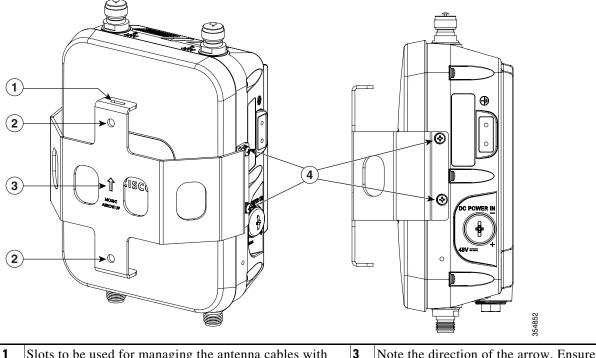
Figure 2-24 Cisco Aironet 5-GHz 8-dBi Omnidirectional Antenna - Installed Only on Model AIR-AP1562E-x-K9



Using a Mounting Bracket for External Directional Antennas

You can use the AIR-ACCAMK-2= bracket for mounting a directional antenna directly on the access point. See Figure 2-25.

Figure 2-25 Directional Antenna Mounting Bracket AIR-ACCAMK-2= Views



1	Slots to be used for managing the antenna cables with cable ties.	3	Note the direction of the arrow. Ensure that the bracket and AP are mounted with the arrow pointing upwards.
2	Mounting holes for the directional antenna.	4	Two of four #8-32 screws and the mounting points used to mount the bracket to the AP.

Installing a Lightning Arrestor

Overvoltage transients can be created through lightning static discharges, switch processes, direct contact with power lines, or through earth currents. The Cisco Aironet AIR-ACC245LA-N Lightning Arrestor limits the amplitude and duration of disturbing interference voltages and improves the over voltage resistance of in-line equipment, systems, and components. A lightning arrestor installed according to these mounting instructions balances the voltage potential, thus preventing inductive interference to parallel signal lines within the protected system.

Installation Considerations

Cisco recommends that you bulkhead mount the lightning arrestor so it can be installed as a wall-feed through on the wall of the protected space.

The importance of obtaining a good ground and bonding connection cannot be overstressed. Consider these points when grounding the lightning arrestor:

- Connect the lightning arrestor components directly to the grounding point.
- The contact points of the ground connection must be clean and free of dust and moisture.
- Tighten threaded contacts to the torque specified by the manufacturer.

Installation Notes

This lightning arrestor is designed to be installed between the antenna cable that is attached to an outdoor antenna and the Cisco Aironet wireless device. You can install the lightning arrestor either indoors or outdoors. It can be connected directly to a wireless device having an external N connector. It can also be mounted inline or as a feed-through. Feed-through installations require 5/8 in. (16 mm) hole to accommodate the lightning arrestor.



This lightning arrestor is part of a lightning arrestor kit. The kit contains a lightning arrestor and a grounding lug.

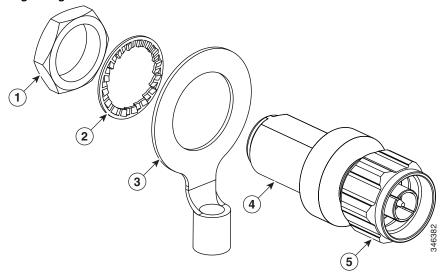


When you install the lightning arrestor, follow the regulations or best practices applicable to lightning protection installation in your local area.

Installing the Lightning Arrestor Outdoors

If you install the lightning arrestor outdoors, use the supplied ground lug and a heavy wire (#6 solid copper) to connect it to a good earth ground, such as a ground rod. The connection should be as short as possible.

Figure 2-26 Lightning Arrestor Details



1	Nut	4	Unprotected side (to antenna)
2	Lockwasher	5	Protected side (to wireless device)
3	Ground lug		

Cable for the Lightning Arrestor

Coaxial cable loses efficiency as the frequency increases, resulting in signal loss. The cable should be kept as short as possible because cable length also determines the amount of signal loss (the longer the run, the greater the loss).

Cisco recommends a high-quality, low-loss cable for use with the lightning arrestor.

Grounding the Access Point

The access point must be grounded before connecting power.

In all outdoor installations you must follow these instructions to properly ground the case:

- **Step 1** If using insulated 6-AWG copper ground wire, strip the insulation as required for the grounding lug.
- Step 2 Use the appropriate crimping tool to crimp the bare 6-AWG copper ground wire to the supplied grounding lug.



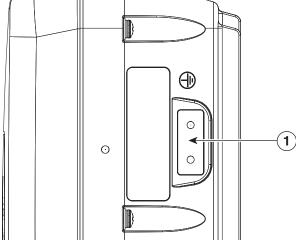
Note

The grounding lug and hardware used must comply with local and national electrical codes.

- Step 3 Open the anti-corrosion sealant (supplied), and apply a liberal amount over the metal surface, called the Ground Pad, where the ground strap screw holes are located (see Figure 2-27).
- **Step 4** Connect the grounding lug to the access point grounding screw holes (see Figure 2-27) using the supplied two Phillips head screws (M4 x10 mm) with lock washers. Tighten the grounding screw to 22 to 24 lb-in (2.49 to 2.71 Nm).

Step 5 If necessary, strip the other end of the ground wire and connect it to a reliable earth ground, such as a grounding rod or an appropriate grounding point on a metal streetlight pole that is grounded.

Figure 2-27 Position of the Ground Pad on the Right Side of the AP



1 Ground pad, where the ground strap screw holes are located.

Powering the Access Point

The 1560 access point supports these power sources:

- DC power 42- 57 VDC
- Power-over-Ethernet (PoE)

The 1560 access point can be powered via the PoE input from an in-line power injector or a suitably powered switch port. Depending on the configuration and regulatory domain, the required power for full operation is UPoE.

For the 1562I, UPoE powered switch port or a power injector is required for full operation of the 3x3 MIMO on the 2.4 GHz radio in the regulatory domains that allow for high 2.4 GHz transmit power (Regulatory domains -A, -D, -F, -K, -N, -Q, -T, -Z). If the 1562I is powered by a PoE+ (802.3at power) switch port then the access point will automatically disable one of the 2.4 GHz transmitters and the radio will operate in 2x2 MIMO mode.

Table 2-9 AP 1560 Power Matrix

Model	Configuration	Regulatory Domain	Switch Power	AIR-PWRINJ-60RGD1 AIR-PWRINJ-60RGD2	AIR-PWRINJ61	AD/DC Power Adapter AIR-PWRADPT-RGD1
1562I	3x3:3 (2.4 GHz)	A, B, D, I,	UPOE	Yes	No	Yes
	3x3:3 (5 GHz)	K, N, Q, T, Z				
	3x3:3 (2.4 GHz)	C, E, F, G,	UPOE		(Future Support)	
	3x3:3 (5 GHz)	H, L, M, R, S				
	2x2:2 (2.4 GHz)	A, B, C, D, E, F, G, H, I,	802.3at		Yes	
	2x2:2 (5 GHz)		FOE+			
		K, L, M, N, Q, R, S, T, Z				
1562D	2x2:2 (2.4 GHz)	A, B, C, D,	802.3at	Yes	Yes	Yes
	2x2:2 (5 GHz)	E, F, G, H, I, K, L, M,	PoE+			
1562E	2x2:2 (2.4 GHz)	N, Q, R, S,				
	2x2:2 (5 GHz)	T, Z				

^{1.} The AIR-PWRINJ6 power injector can only be used in an indoor environment. Therefore the cable from the injector must travel from the protected location to the outside mounted access point.

Connecting a Power Injector

The 1560 Series access point supports the following power injectors:

- AIR-PWRINJ-60RGD1
- AIR-PWRINJ-60RGD2

The power injector provides 56 VDC to the access point over the Ethernet cable and supports a total end-to-end Ethernet cable length of 100 m (328 ft) from the switch to the access point.

When your access point is powered by an optional power injector, follow these steps to complete the installation:

- **Step 1** Before applying PoE to the access point, ensure that the access point is grounded (see the "Grounding the Access Point" section on page 2-42).
- **Step 2** See the "Typical Access Point Installation Components" section on page 2-5, to identify the components needed for the installation.
- **Step 3** Connect a CAT5e or better Ethernet cable from your wired LAN network to the power injector.



To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord. Statement 1023



Note

The installer is responsible for ensuring that powering the access point from this type of power injector is allowed by local and/or national safety and telecommunications equipment standards.



Tin

To forward bridge traffic, add a switch between the power injector and controller. Refer to the *Cisco Wireless Mesh Access Points, Design and Deployment Guide, Release 7.0* for more information.

- **Step 4** Ensure that the antennas are connected and that a ground is attached to the access point before you apply power to the access point.
- Step 5 Connect a shielded outdoor-rated Ethernet (CAT5e or better) cable between the power injector and the PoE-in connector of the access point.
- Step 6 Connect the Ethernet cable to the access point PoE-In port. See "Connecting an Ethernet Cable to the Access Point" section on page 2-53.

Connecting a DC Power Cable to the Access Point

When powering the access point with DC power, you must ensure that DC power can be conveniently removed from the unit. The power should not be removed by disconnecting the DC power connector on the unit.



Connect the unit only to DC power source that complies with the safety extra-low voltage (SELV) requirements in IEC 60950 based safety standards. Statement 1033

To connect a DC power cable, you need to supply these tools and material:

- Shielded outdoor-rated DC power cable (minimum 18 AWG) with outside cable diameter of 0.20 to 0.35 inch (0.51 to 0.89 cm).
- Adjustable or open-end wrench
- Small flat screw driver
- Two-pin DC power connector (Cisco supplied)

To connect the DC power cable to the access point, follow these steps:

Step 1 Before connecting DC power to the access point, ensure that the ground is connected to the access point. See the "Grounding the Access Point" section on page 2-42.

Step 2 Turn off all power sources to the access point, including the DC power source.



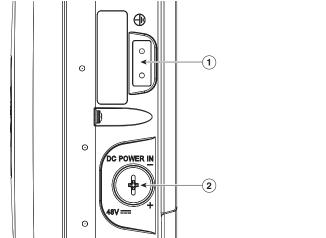
This unit might have more than one power supply connection. All connections must be removed to de-energize the unit. Statement 1028



When installing DC power to the access point, always connect the access point end of the cable FIRST. When removing the DC power connector, always disconnect the access point end of the cable LAST.

Step 3 Use a large Phillips or Flat Blade screw driver to remove the covering plug of the DC Power-In port. Do not discard plug and rubber seal unless you are certain that the port will not have to be re-plugged. (see Figure 2-28 for the location of the DC power connector).

Figure 2-28 Position of the DC Power-In Port on the Right Side of the AP



Ground pad. **2** DC Power-In Port (covered).

Step 4 Loosen the thread-lock sealing nut of the cable gland by turning it counter clockwise, but do not remove it (see Figure 2-29).

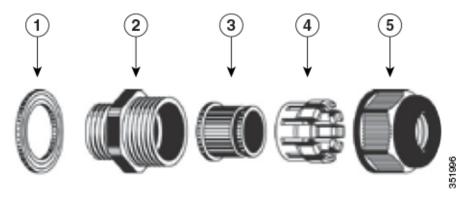


Verify that the cable gland has a rubber seal and ensure that it is not damaged.



Failure to install the Cable Gland properly will cause the cable grip to leak.

Figure 2-29 Cable Gland



1	Washer (Gasket)	4	Clamping claw
2	Body	5	Thread-lock sealing nut
3	Sealing insert		



Note

The cable gland accepts a cable diameter of 0.20 to 0.35 in. (0.51 to 0.89 cm).

Step 5 Insert a bare end of the DC power cable into the rounded end of the cable gland (see Figure 2-29), and pull approximately 6 inches of cable through the adapter.



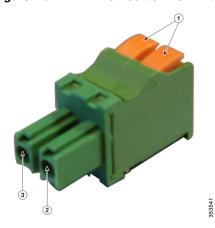
When installing the DC power cable, ensure that cable gland and the rubber gasket are present and installed properly, to avoid water leakage into the enclosure. See Figure 2-29 and Figure 2-32.

- Step 6 Strip the DC cable jacket back by about 1 inch to expose the wires and then strip the insulation by about 0.5 inch (or 12 mm) from each wire.
- **Step 7** Push in the orange colored spring-loaded securing tabs and insert the wire (see Figure 2-30) all the way into the two-position terminal block connector (Cisco Part Number 29-100226-01, Figure 2-31), and then release the tabs. Tug on the wire to ensure that it is properly secured.

Figure 2-30 Push in the securing tab, and wire, as the arrow shows



Figure 2-31 Two-Position Terminal Block Connector



1	Securing tabs	3	Ground (DC return)
2	DC +		

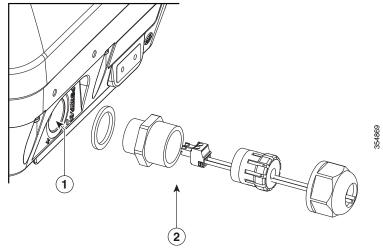
Step 8

Step 9 Insert the two-position terminal strip into the DC power opening in the access point case, and carefully push the terminal strip into the internal connector (see Figure 2-32).



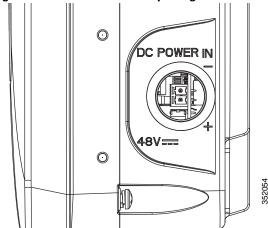
Ensure that the polarity of the terminal strip properly matches the polarity markings on the enclosure (see Figure 2-33)

Figure 2-32 Inserting the Terminal Strip into the DC Power Opening in the Access Point Case



1	DC power opening in access point case. Also see	2	Exploded view of the cable gland on the DC power cable
	Figure 2-33.		

Figure 2-33 DC Power Opening in the Access Point Case



- **Step 10** Slide the cable gland with the rubber seal towards the access point, and screw the threaded end of the body into the access point, and hand-tighten.
- Step 11 Use an adjustable wrench, a 28-mm wrench to tighten the threaded end of the body to 15 lb-in.
- Step 12 Use an adjustable wrench and tighten the thread-lock seal nut to 15 lb-in.
- Step 13 Ensure that the antennas are connected to the access point before you apply power to the access point.
- **Step 14** Turn on the DC power at the designated circuits.

Connecting Streetlight AC Power

The access point can be installed on a streetlight pole and powered from a streetlight outdoor light control using the optional streetlight power tap adapter and AC/DC power adapter, AIR-PWRADPT-RGD1=.

The AC/DC power adapter is used inline from the street light tap to the 1560 DC connector. The AC power tap only can be used with the AC/DC power adapter.

When powering the access point with AC power other than the streetlight power tap adapter, you must ensure that the following conditions are observed:

- 1. AC power can be conveniently cut from the unit, but not by disconnecting the AC power connector on the unit.
- 2. You must protect any AC power plugs and AC receptacles from water and other outdoor elements. You can use a UL-listed waterproofing enclosure suitable for covering the AC receptacle and AC power plug that supplies power to the unit as described in Article 406 of the NEC.
- **3.** When you install the access point outdoors or in a wet or damp location, the AC branch circuit that powers the access point should have ground fault protection (GFCI), as required by Article 210 of the National Electrical Code (NEC).



A readily accessible two-poled disconnect device must be incorporated in the fixed wiring. Statement 1022



Warning

Be very careful when connecting the streetlight adapter to Category 3 pole-top power. If you are not careful, you may electrocute yourself or fall. Statement 363



Before connecting or disconnecting a power cord, you must remove AC power from the power cord using a suitable service disconnect.

The schematics of installing the AP on a streetlight pole are given in Figure 2-34 and Figure 2-35. To install an access point on a streetlight pole, follow these steps:

- **Step 1** Turn off the AC power to the streetlight pole.
- **Step 2** Turn off power to the AC power source at the designated circuits.



Warning

This unit might have more than one power supply connection. All connections must be removed to de-energize the unit. Statement 1028



For your safety, when connecting the access point AC power connector, always connect the access point end of the cable FIRST. When removing the AC power connector, always disconnect the access point end of the cable LAST.

- **Step 3** Ensure that the power to the outdoor light control is turned off and then disconnect the outdoor light control from its fixture.
- **Step 4** Connect the streetlight power tap adapter, through a field termination unit, to the access point AC/DC power adapter.



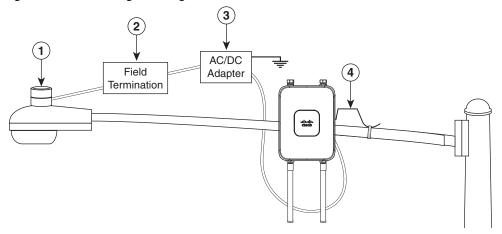
When installing the streetlight power tap adapter to the access point AC power connector, always connect the access point end of the cable **first**. When removing the streetlight power tap adapter, always disconnect the access point end of the cable **last**.



- The access point must be mounted within 3 feet (1 m) of the outdoor light control.
- The AC/DC power adapter must be grounded. The AC/DC power adapter has an operating range of 100 to 277 VAC 50/60 Hz.
- Step 5 Ground the access point to the streetlight pole using a 6-AWG ground wire. For more details, see Grounding the Access Point, page 2-42.
- **Step 6** Plug the streetlight power tap adapter into the outdoor light control fixture.
- **Step 7** Ensure that the antennas are connected to the access point.

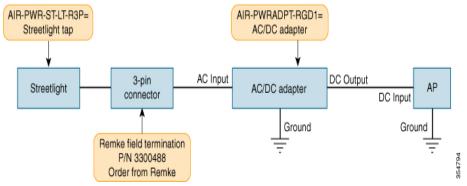
Step 8 Turn on the power to the outdoor light control fixture at the designated circuits, and thereby, turn on the power to the access point.

Figure 2-34 Using Streetlight Power



1	Outdoor light control	3	AC/DC power adapter
			The AC/DC power adapter must be grounded. The AC/DC power adapter has an operating range of 100 to 277 VAC 50/60 Hz.
2	Field termination	4	6-AWG copper grounding wire

Figure 2-35 Components of the Streetlight Deployment





Deployment of the AP as shown in the streetlight deployment in Figure 2-34 requires an alternate AP mounting kit.

Connecting Data Cables

All models of the AP support data connections through the Ethernet port and the Small Form-factor Pluggable (SFP) port. However, both the Ethernet port and the SFP port cannot be used for data at the same time.

If the SFP is detected and active, the Ethernet port is disconnected. If the SFP is not detected, the Ethernet port stays connected

If you are using the SFP port, to delivery data through a fiber-optic cable, then the AP needs to be powered by DC power, power adapter, or by a power injector.

For details on installing Ethernet, see Connecting an Ethernet Cable to the Access Point, page 2-53.

For details on installing a a fiber-optic cable, see Connecting a Fiber-optic Cable to the AP, page 2-55.

Connecting an Ethernet Cable to the Access Point

You need to supply these tools and materials:

- Shielded outdoor-rated Ethernet (CAT5e or better) cable with 0.2 to 0.35 in. (0.51 to 0.89 cm) diameter
- RJ-45 connector and installation tool
- Adjustable Wrench or 28 mm box wrench
- Large Phillips or Flat Blade screwdriver

To connect the shielded Ethernet cable to the access point, follow these steps:

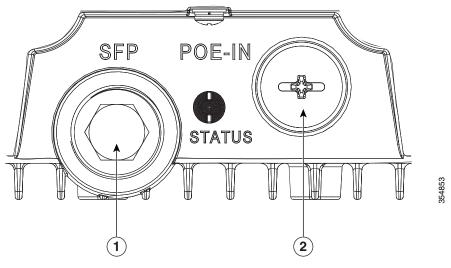
Step 1 Disconnect power to the power injector, and ensure all power sources to the access point are turned off.



This unit might have more than one power supply connection. All connections must be removed to de-energize the unit. Statement 1028

- Step 2 Ensure a 6 AWG ground wire is connected to the access point (see the "Grounding the Access Point" section on page 2-42).
- Step 3 Use a large Phillips or Flat Blade screw driver to remove the covering plug from the access point. Do not discard plug and rubber seal unless you are certain that the port will not have to be re-plugged (see Figure 2-36 for the location).

Figure 2-36 Access Point PoE-In Connector



1 SFP port (covered) 2 PoE-In port (covered)

Step 4 Loosen the Thread-Lock sealing nut of the cable gland by turning it counter clockwise, but do not remove it (see Figure 2-37).

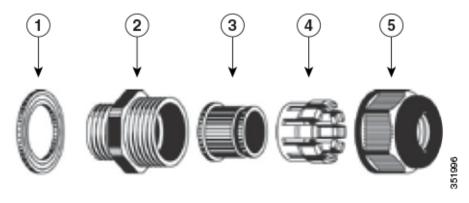


Verify that the cable gland has a rubber seal and ensure that it is not damaged.



Failure to install the cable gland and rubber gasket properly will cause the cable grip to leak.

Figure 2-37 Cable Gland



1	Washer (Rubber Gasket)	4	Clamping claw
2	Body	5	Thread-lock sealing nut
3	Sealing insert		

- Step 5 Insert the unterminated end of the Ethernet cable through the sealing nut end of the cable gland (see Figure 2-37), and pull several inches of cable through the adapter.
- **Step 6** Install an RJ-45 connector on the unterminated end of the Ethernet cable using your Ethernet cable installation tool.

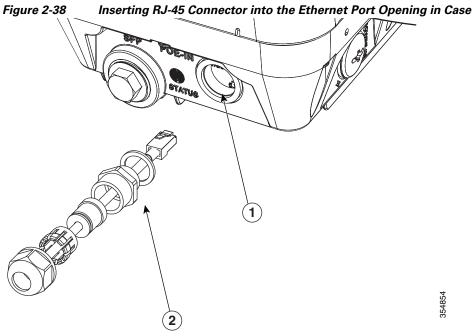


To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord. Statement 1023



When installing the RJ-45 connector, ensure that cable gland and the rubber gasket are present and installed properly, to avoid water leakage into the enclosure. See Figure 2-37 and Figure 2-38.

Step 7 Carefully insert the RJ-45 cable connector into the Ethernet port opening on the access point, and connect to the internal Ethernet connector (see Figure 2-38).



1	Ethernet port opening in access point case.	2	RJ-45 connector, on shielded outdoor-rated Ethernet
			(CAT5e or better) cable (with an exploded view of the
			cable gland, on the Ethernet cable).

- Step 8 Slide the cable gland with the rubber seal towards the access point, and screw the threaded end of the body into the access point, and hand-tighten.
- Step 9 Use an adjustable wrench or a 28-mm wrench to tighten the threaded end of the body into the enclosure. Tighten to 15 lb-in.
- **Step 10** Use an adjustable wrench and tighten the thread-lock seal nut to 15 lb-in.
- Step 11 Ensure that the antennas are connected to the access point before you apply power to the access point.
- **Step 12** Route your Ethernet cable, and cut off any excess cable.
- Step 13 Install an RJ-45 connector on the unterminated cable end, and insert it into the power injector.
- **Step 14** Turn on the power to the power injector.

Connecting a Fiber-optic Cable to the AP

The Cisco supplied fiber-optic kit enables the access point to support fiber-optic network connections. Your require the following materials for connecting the fiber-optic cable to the AP:

- Small form-factor pluggable (SFP) transceiver module
- SFP module adapter

- SC or Duplex LC fiber-optic cables. The outer diameter of the fiber optic cable should be 0.24-0.47 inches (6-12 mm).
- Cable gland. The cable gland cannot hold a cable with diameter more than 0.47" (12 mm).
- Adjustable wrench

You can connect the fiber-optic networking cable to the SFP port (labeled '4' on the base of the AP). The small form-factor pluggable (SFP) transceiver module is used to connect the cable to the SFP port. To install the SFP transceiver module and the cable, follow this procedure:

- **Step 1** Ensure that all power sources have been disconnected from the access point.
- **Step 2** Remove the covering plug from the SFP port by following the guidelines given in this step.

The SFP port covering plug is designed to be removed only once, and then be replaced with the SFP adapter. The plug does not have a rubber O-ring, but is fixed in place using a thread seal tape on the threads during manufacturing. While removing the plug, you need to ensure that its hex bolt-head does not get stripped. For this:

- **a.** Place the AP on it's back (resting on the heat fins) on a solid, but padded surface, to avoid scratching the paint.
- **b.** Pressing down with your hand on the face of the AP and holding the AP firmly in place, proceed to the next step.
- **c.** Use a 5/8" (16 mm) 6-point socket wrench to loosen the hex bolt-head SFP port plug. Firmly and carefully, turn the socket wrench counter-clockwise to loosen the plug. This requires a torque of 25 ft-lb (34 Nm).

Though not ideal, a 5/8" (16 mm) 12-point socket wrench can be used too. A crescent wrench is to be used only if the socket wrenches are not available. Do not use a pipe or monkey wrench for this task, as it will strip the hex bolt-head.

- **Step 3** Insert the SFP module into the SFP port, and ensure that it latches properly.
- **Step 4** Loosen the cable gland's nut (round end of the cable gland) by turning counterclockwise, but do not remove.
- Step 5 Thread the fiber optic cable, from its unterminated end, into the cable gland. See Figure 2-39 and Figure 2-40.

Thread the cable through the gland all the way till the gland is near the SC or LC optic fiber connectors. The cable gland's nut must remain loose at this time.



The SC or LC optic fiber connectors are too big to pass through the cable gland. That is the reason why you need to thread the cable through the gland from the unterminated end (even if the cable is quite long).

- Step 6 Insert the SC or LC optic fiber connector-end of the cable, into the SFP module adapter. Do not attach the cable gland to the adapter yet. See Figure 2-41.
- Step 7 Insert the SC or LC optic fiber connector into the SFP module and ensure that it latches into place. See Figure 2-41.
- **Step 8** Add sealant or tape around the adapter's pipe thread, and then it screw into the AP chassis.

- **Step 9** Keeping the cable gland nut loose, carefully screw the threaded end of the cable gland into the SFP module adapter and hand-tighten. Use an adjustable wrench to tighten the threaded end of the cable gland to 6-7 lb.ft (8.1 to 9.5 Nm).
- **Step 10** Tighten the cable gland nut until it is properly fastened around the fiber optic cable. Use an adjustable or open-end wrench to tighten to 2.7 to 3.2 lb.ft (3.66 to 4.34 Nm).



When removing this SFP assembly it is absolutely imperative that you proceed in the reverse order of this installation. Start by loosening the cable gland's nut.

Figure 2-39 SC Fiber-optic cable

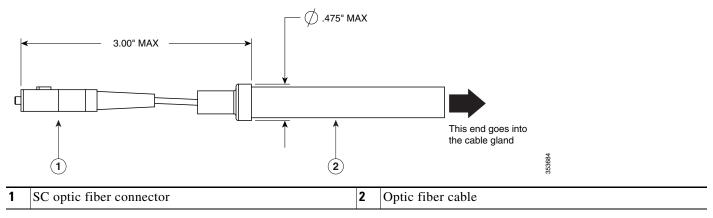


Figure 2-40 Duplex LC Fiber Optic Cable

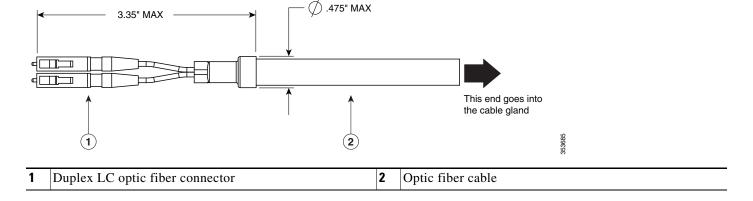
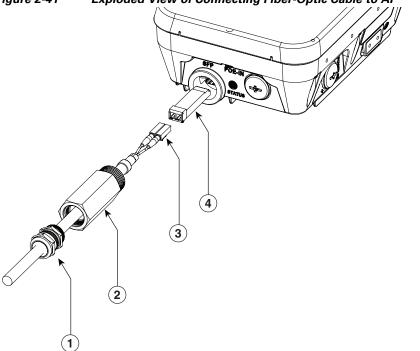
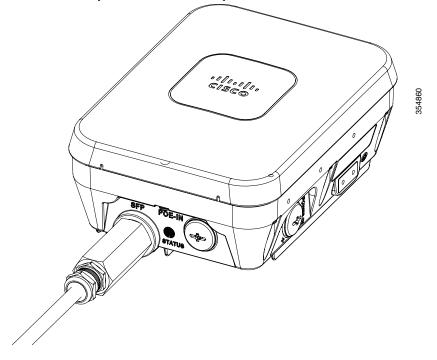


Figure 2-41 Exploded View of Connecting Fiber-Optic Cable to AP



1	Cable gland	3	Duplex LC Fiber-optic cable
2	SFP module adapter	4	SFP transceiver module

Figure 2-42 Fiber-optic Cable Successfully Connected to AP



Configuring the Access Point

When you power up an AP that is not connected to a wired Ethernet, fiber-optic, or cable network to the controller, the access point uses the Cisco Adaptive Wireless Path Protocol (AWPP) to bind to another mesh access point with the best path to a root access point (RAP) connected to the wired network to a controller. The access point sends a discovery request when powered up. If you have configured the access point in the controller correctly, the controller sends back a discovery response to the access point. When that happens, the access point sends out a join request to the controller, and the controller responds with a join confirmation response. Then the access point establishes a Control And Provisioning of Wireless Access Points (CAPWAP) connection to the controller and gets the shared secret configured on the controller.

For information on configuring the access point, refer the following documents for the software release you are using:

- For Lightweight Access Points and Mesh Access Points, see the *Cisco Wireless LAN Controller Configuration Guide*.
- For Mesh Access Points, see the Cisco Wireless Mesh Access Points, Design and Deployment Guide.

Configuring the Access Point

AGREEMENT BETWEEN UNIVERSITY OF KENTUCKY AND CONTRACTOR

THIS AGREEMENT, made the	day of	2021 by and between
	("Contractor"), a	and the UNIVERSITY OF
KENTUCKY, ("Owner"), is to bind to	the parties hereto to th	e principles and terms set forth
herein, and shall be binding upon the	ne parties hereto.	
WITNESSETH, that the Contractor	and Owner for the cor	nsideration hereinafter named,

WITNESSETH, that the Contractor and Owner for the consideration hereinafter named, agree as follows:

ARTICLE No. 1 SCOPE OF WORK:

WTY Upgrade Scope of Work

• Fiber

- Install Corning 48 strand plenum rated single mode fiber cable from BDFs B-2 and B-48A to each of eight basement IDFs (total of 8 x 2 = 16 cables) per logical layout drawing in Appendix A. Route cables per routing drawing in Appendix A.
- Install Corning 12 strand plenum rated single mode fiber cable from each basement IDF through existing floor cores to the five IDFs stacked above (total of 8 x 5 = 40 cables) per logical layout drawing in Appendix A
- Terminate all fiber on Corning splice cassettes
- o Install Corning CCH fiber enclosures as needed (2U size minimum, 4U size required if more than four splice cassettes needed in a BDF/IDF)
- Test each fiber strand in both directions per UK ITS and BICSI standards and provide results in electronic format
- o Firestop penetrations as needed per NFPA standards
- Contractor to provide all materials
- Innerduct is not required
- All work to be performed in accordance with current UK ITS standards (270000S01 at https://www.uky.edu/cpmd/design-standards) unless specified differently in this scope of work
- Contractor shall have minimum 1 RCDD (Registered Communications Distribution Designer)
 on permanent staff both at bidding and throughout the entire construction schedule
- Minimum 50% of contractor technicians shall be certified under BICSI (Building Industry Consulting Services International) installation certification program

Pathways

- Install j-hook pathway from each wireless access point (WAP) location on wireless network design drawings in Appendix B to nearest cable tray
- See Appendix C for various WAP mounting details
- o Install 2400 wiremold where surface mounted raceway is required on walls
- Install conduit sleeves through walls as required
- Install pull string in new pathways

- o Install 4-11/16" square box with a single gang mud ring at each WAP location
- o Install access panels as needed in hard ceiling areas to allow pathway and cable installation
- Patch and paint ceilings as necessary
- o Firestop penetrations as needed per NFPA standards
- Contractor to provide all materials
- All work to be performed in accordance with current UK ITS standards (270000S01 at https://www.uky.edu/cpmd/design-standards) unless specified differently in this scope of work

Horizontal Cabling and WAP Installation

- Install one plenum rated green Cat 6A shielded cable (Commscope CS44P) to each of the 248
 WAP locations shown on the wireless network design drawings in Appendix B
- See Appendix C for various WAP mounting details
- o Terminate faceplate end with green jack and patch panel end with gray jack
- o Install Cat 6A patch panels in UK ITS approved rack locations as needed
- Label all cables, faceplates, and patch panels per UK ITS standards (270000S01 at https://www.uky.edu/cpmd/design-standards)
- Test all cables with a permanent link test per UK ITS standards (270000S01 at https://www.uky.edu/cpmd/design-standards) and provide results in electronic format
- Install UK ITS provided WAP and mounting hardware per drawing and install a plenum rated yellow Cat 6A shielded patch cable from faceplate jack to WAP
- Contractor to provide all materials
- UK ITS will provide and install patch cables from patch panel to network switch
- All work to be performed in accordance with current UK ITS standards (270000S01 at https://www.uky.edu/cpmd/design-standards) unless specified differently in this scope of work
- Contractor shall have minimum 1 RCDD (Registered Communications Distribution Designer)
 on permanent staff both at bidding and throughout the entire construction schedule
- Minimum 50% of contractor technicians shall be certified under BICSI (Building Industry Consulting Services International) installation certification program

• UPS Electric Receptacles

- o BDF B-2: install two L6-30 receptacles, one on normal power and one on emergency power
- BDF B-48A: install two L6-30 receptacles, one on normal power and one on emergency power
- o IDF B-14: install one L6-30 receptacle on emergency power
- o IDF B-39: install one L6-30 receptacle on emergency power
- IDF B-44A: install one L5-30 receptacle on emergency power
- o IDF B-97: install one L5-30 receptacle on emergency power
- Contractor to provide all materials
- o Contractor is responsible for electrical permits and inspections as required
- All work to be performed in accordance with current NEC and UK standards

The Scope of Work consists of the Request for Proposals, dated July 23, 2021; the Contractor's Proposal dated August 13, 2021, including Addendums 1,2,3 etc, the General Conditions, the Special Conditions, the Contractor's Bonds and Insurance and Affidavit, the Specifications, the Drawings including Supplemental Drawings and Change Orders issued after execution of the Contract for the Work described in Article No. 1 of this Agreement, all of which are incorporated in and made a part thereof of reference, and which shall be binding upon the Contractor and Owner.

The Specifications and Drawings for this Work include the following:

Specifications:

On Plan Sheets as required

Drawing Index:

**With specifications

ARTICLE No. 2 TIME OF COMPLETION:

The Contractor must begin Work specified by the written Work Order from the Owner. Substantial Completion shall be Thirty (30) calendar days after the stipulated commencement date with Final Completion being Ten (10) calendar days after the date of Substantial Completion.

ARTICLE No. 3 LIQUIDATED DAMAGES:

It is mutually understood and agreed by and between the parties hereto that time is of the essence in the performance of this contract and that the Owner, the University of Kentucky, will sustain substantial monetary and other damages in the event of a failure or delay by the Contractor in the completion of the Work. It is further understood and agreed upon and made part of this Contract that the Work must be begun, performed, and completed without delay by the Contractor and if the Contractor fails to begin, perform without interruption, and complete said Work in due and proper time, the Contractor may be declared in default of this Agreement. If the Work is not substantially complete within the time required in Article No. 2 of this Agreement, the Contractor shall pay to the Owner, as liquidated damages for delay and not as a penalty, the sum of **One Hundred Fifty Dollars (\$150.00)** for each and every day after the date of Substantial Completion until the date of actual Substantial Completion.

If the Work is not finally completed within the time required in the preceding Article No. 2 of this Agreement, the Contractor shall pay to the Owner, as liquidated damages for delay and not as a penalty, the sum of **Seventy-Five Dollars (\$75.00)** for each and every day after the date of Final Completion until the date of actual Final Completion. In no event shall liquidated damages for delay in Final Completion be due before the date required for Final Completion in Article No. 2 of this Agreement.

This provision for liquidated damages is intended to compensate the Owner for delay only and shall not preclude the Owner from making claims for other damages.

If the Work is not commenced by the Contractor at the time specified in Article No. 2 of this Agreement, then the Contractor and its surety or sureties shall be liable for and pay to the Owner all damages sustained by reason of such failure or breach of contract and the Owner may immediately relet the Work.

ARTICLE No. 4 THE CONTRACT AMOUNT:

Dollars (\$).	
Contractor's satisfactory performance of the Contract obligations the sum of	
Contract Documents, the Owner shall pay the Contractor as full consideration for the	
Subject to additions and deductions for Change Orders made in accordance with the	

ARTICLE No. 5 SPECIAL NOTICE:

The Contractor hereby certifies that it is fully informed of the conditions relating to construction and labor under which the Work under this Agreement is to be performed, and agrees that it shall employ, methods and means in carrying out the Work so as not to interfere with or interrupt the Work of any other Contractor working on/or adjacent to the site for this Work.

IN WITNESS WHEREOF this Agreement is executed in two (2) counterparts, each one of which shall be deemed an original and adequate proof of this Agreement, on the date and year first herein before written.

WITNESS:	CONTRACTOR: Company Name
	BY:
Approved for Legality and Form	Recommended By:
APPROVED:	Chief Procurement Officer