
AGENDA
CUMBERLAND COUNTY BOARD OF COMMISSIONERS
REGULAR AGENDA SESSION
JUDGE E. MAURICE BRASWELL
CUMBERLAND COUNTY COURTHOUSE- ROOM 564
MAY 9, 2024
1:00 PM

INVOCATION - Commissioner Jeannette Council

PLEDGE OF ALLEGIANCE

1. APPROVAL OF AGENDA
2. CONSIDERATION OF AGENDA ITEMS
 - A. Resolution Authorizing the Expenditure of Opioid Settlement Funds and Associated Budget Ordinance Amendment B#241140
 - B. Fiscal Year 2024 Contract for Professional Auditing Services
 - C. Intent to Lease Real Property at 2210 Rich Walker Road for a Solid Waste Container Site
 - D. Resolution to Accept ARP Funding Offer for Asset Management & Financial Plan for NORCRESS
 - E. Resolution in Support of Cumberland County's FY2025 State Legislative Funding Requests
 - F. Bid Award for Emergency Services Chiller Replacement
 - G. LS3P Contract for Design of Homeless Support Center
 - H. Rate Increase for the Kelly Hills/Slocumb Road Sanitary Sewer System
 - I. Rate Increase for the Southpoint Water System, Grays Creek Water and Sewer District
 - J. ARP Committee Funding Recommendations
3. OTHER ITEMS
4. MONTHLY REPORTS
 - A. Financial Report
 - B. ARPA Quarterly Project and Expenditure Report as of March 31, 2024
 - C. Health Insurance Update
 - D. Project Updates
5. CLOSED SESSION: If Needed

ADJOURN

AGENDA SESSION MEETINGS:

June 13, 2024 (Thursday) 1:00 PM

****There are no Meetings in July****

WATCH THE MEETING LIVE

THIS MEETING WILL BE STREAMED LIVE THROUGH THE COUNTY'S WEBSITE, www.cumberlandcountync.gov. LOOK FOR THE LINK AT THE TOP OF THE HOMEPAGE.

THE MEETING WILL ALSO BE BROADCAST LIVE ON CCNC-TV SPECTRUM CHANNEL 5



DEPARTMENT OF PUBLIC HEALTH

**MEMORANDUM FOR THE AGENDA OF THE MAY 9, 2024
AGENDA SESSION**

TO: BOARD OF COUNTY COMMISSIONERS

FROM: DR. JENNIFER GREEN, PUBLIC HEALTH DIRECTOR

DATE: 4/11/2024

**SUBJECT: RESOLUTION AUTHORIZING THE EXPENDITURE OF OPIOID
SETTLEMENT FUNDS AND ASSOCIATED BUDGET ORDINANCE
AMENDMENT B#241140**

Requested by: MR. CLARENCE GRIER, COUNTY MANAGER

Presenter(s): DR. JENNIFER GREEN, PUBLIC HEALTH DIRECTOR

BACKGROUND

In July 2021, Attorney General Josh Stein announced a historic \$26 billion agreement that will help bring desperately needed resources to communities harmed by the opioid epidemic. A Memorandum of Agreement (MOA) between the State and local government directs how opioid settlement funds are distributed and used in our state. Cumberland County is set to receive \$30,822,230 over 18 years. In October 2022, a request for proposals (RFP) was issued for funding up to \$800,000 to implement several Option A strategies, including early intervention programs (strategy 6). Four agencies received funding for Option A strategies. However, no proposals were received for early intervention programs. Early intervention includes “programs, services, or training to encourage early identification and intervention for children or adolescents who may be struggling with problematic use of drugs or mental health conditions. Services include Youth Mental Health First Aid, peer-based programs, or similar approaches. Training programs may target parents, family members, caregivers, teachers, school staff, peers, neighbors, health or human services professionals, or others in contact with children or adolescents.

Staff issued a RFP on February 1, 2024 with the intent to award up to \$500,000 in total funding to no more than 2-3 agencies for two years. Six responsive proposals were reviewed and scored by a multi-disciplinary

committee. The following agencies are recommended for funding as they fill important gaps in supportive services for parents and caregivers.

Agency	Funding Level (for two years)
Camp Rockfish and Retreat	\$97,149.00
Mid Carolina Regional Council	\$350,000.00
Total	\$447,149.00

A Local Spending Authorization Resolution and a Budget Ordinance amendment are required to utilize opioid settlement funds.

RECOMMENDATION / PROPOSED ACTION

The Public Health Director recommend that the proposed actions below be placed on the May 20, 2024 Board of Commissioners agenda as a consent item:

- Approve the Local Spending Authorization Resolution for \$447,149.00 over two years in support of Early Intervention Projects for Camp Rockfish and Retreat (\$97,149.00) and Mid-Carolina Regional Council (\$350,000.00), and the associated Budget Ordinance Amendment B# 241140.

ATTACHMENTS:

Description	Type
RFP 24 Early Intervention Opioid Settlement Funds	Backup Material
MOA-Spending-Authorization-Resolution-NCACC-Cumberland Early Intervention	Backup Material

Opioid Settlement Funds: Early Intervention Recommendations

Jennifer Green

Health Director

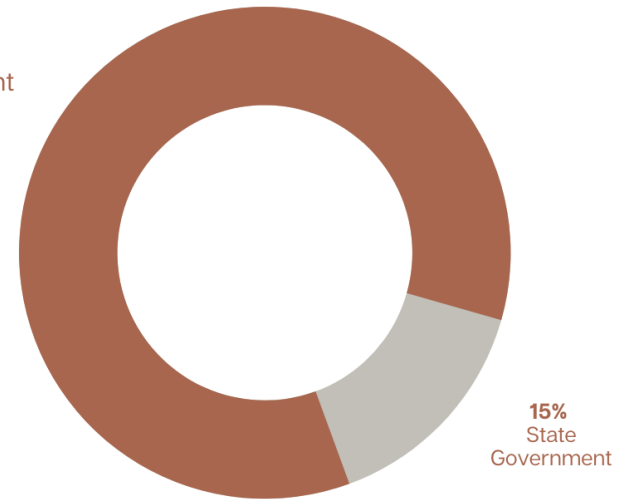
4/2024

Opioid Settlement Funds Background

- \$56 billion agreement to help communities harmed by the opioid epidemic
- A Memorandum of Agreement between the State and local government directs how opioid settlement funds are distributed
- 18 Year payment to Cumberland County government: \$30,822,230

85%

of NC settlement funds will go to counties and municipalities



Option A Strategies

- Commissioners approved the utilization of \$500,000 to initiate an RFP process for multi-year pilot projects to address Early intervention (Strategy 6)
- A multi-sector, diverse hiring panel, reviewed and scored submitted proposals

Early Intervention

- Programs, services, or training to encourage early identification and intervention for **children or adolescents who may be struggling with problematic use of drugs or mental health conditions**
- Youth Mental Health First Aid, peer-based programs, or similar approaches.
- Training programs may target parents, family members, caregivers, teachers, school staff, peers, neighbors, health or human services professionals, or others in contact with children or adolescents.
- Fund programs that help identify young people who may be struggling with drug use and provide them with the help they need

Funding Recommendations

Camp Rockfish Recovery and Retreat

- Funding recommendation: \$97,149
- Summer Day Camp (Camp Heal) for children/teens with problematic substance use or mental health
 - Training us 2 Evidence-based substance use prevention curriculum
 - Naloxone training
 - Mindfulness
 - “Green time”
- Family Saturday Events – parent engagement and education
- Collaboration with faith community

Mid-Carolina Regional Council

- Funding recommendation: \$350,000
- Support kinship caregivers of youth impacted by opioid use
 - Early identification
 - Peer support specialist
 - Naloxone education
 - Mental health first aid
 - Parenting skills
 - Community resources and linkages to care

Sample Metrics Impact Report

- # of Youth Mental Health First-Aid training programs held
- # of unique participants trained in Mental Health First-Aid
- # of peer-based training programs held
- # of unique participants trained in peer-based program
- # of early intervention programs held
- # improved knowledge and skills in supporting children and youth who may be struggling
- # of participants who report using training
- % of short-term suspensions

Summary Funding Recommendations

Agency	Funding Recommendation
Camp Rockfish and Retreat	\$97,149.00
Mid-Carolina Regional Council	\$350,000.00
Total Funding	\$447,149.00

Budget resolution and Grant Project Budget Ordinance Amendment

- A budget resolution and Budget Ordinance Amendment (#B 241140) is required to use the funds
- The proposed budget resolution and ordinance amendment includes
- **Total included in budget resolution is \$447,149.00**

Proposed Motion

- Motion to Approve The proposed action below be placed on the April 15, 2024 Board of Commissioners agenda as a consent item
- Approve Local Spending Authorization Resolution for \$500,000 over two years in support of Early Intervention Projects for Camp Rockfish and Retreat (\$97, 149.00) and Agency B (\$350,000.00) and associated Budget Ordinance Amendment B# 241140



CUMBERLAND **COUNTY**

NORTH CAROLINA

Department of Public Health



CUMBERLAND COUNTY

NORTH CAROLINA

Department of Public Health

CUMBERLAND COUNTY BOARD OF COMMISSIONERS

A RESOLUTION

AUTHORIZING THE EXPENDITURE OF OPIOID SETTLEMENT FUNDS

WHEREAS Cumberland County has joined national settlement agreements with companies engaged in the manufacturing, distribution, and dispensing of opioids.

WHEREAS the allocation, use, and reporting of funds stemming from these national settlement agreements and bankruptcy resolutions (“Opioid Settlement Funds”) are governed by the Memorandum of Agreement Between the State of North Carolina and Local Governments on Proceeds Relating to the Settlement of Opioid Litigation (“MOA”) and the Supplemental Agreement for Additional Funds from Additional Settlements of Opioid Litigation (“SAAF”);

WHEREAS Cumberland County has received Opioid Settlement Funds pursuant to these national settlement agreements and deposited the Opioid Settlement Funds in a separate special revenue fund as required by section D of the MOA;

WHEREAS section E.6 of the MOA states that, before spending opioid settlement funds, the local government’s governing body must adopt a resolution that:

- (i) indicates that it is an authorization for expenditure of opioid settlement funds; and,
- (ii) states the specific strategy or strategies the county or municipality intends to fund pursuant to Option A or Option B, using the item letter and/or number in Exhibit A or Exhibit B to identify each funded strategy; and,
- (iii) states the amount dedicated to each strategy for a specific period of time.

NOW, THEREFORE BE IT RESOLVED, in alignment with the NC MOA and SAAF, the expenditure of opioid settlement funds held in the special revenue fund established by the board of commissioners in accordance with Section D of the MOA is hereby authorized for the specific strategies pursuant to MOA Options A or B and in the amounts dedicated to each funded strategy for the specific period of time as set out below:

1. First strategy authorized

- a. Name of strategy: Early Intervention
- b. Strategy is included in MOA Exhibit A
- c. Item letter and/or number in Exhibit A:6
- d. Amount authorized for this strategy: \$447,149.00
- e. Period of time during which expenditure may take place: Start date July 1, 2024, through end date June 30, 2026
- f. Description of the program, project, or activity: Camp Rockfish and Retreat will provide a camp for children struggling with problematic use of drugs, mental health conditions or Adverse Childhood Experiences. Youth will receive naloxone training, substance use prevention training, and mindfulness training in a fun environment. Evidence-based support will be provided to the parents of these youth. Mid-Carolina Regional Council will engage with kinship caregivers of youth with parental substance use to provide training on early identify of substances, mental health first aid, community resources, naloxone, and peer support.

g. Provider: Camp Rockfish Center and Retreat and Mid-Carolina Regional Council

The total dollar amount of Opioid Settlement Funds appropriated across the strategies listed above is \$447,149.00, as revised with Project Budget Ordinance Amendment # B241140, incorporated herein by reference.

Within five days after adoption, copies of this resolution and the associated budget ordinance amendment shall be filed with the Finance Officer, Budget Officer, and Clerk to the Board, to be kept on file by them for their direction in the disbursement of County funds for this project.

Adopted . _____, to be effective April 15, 2024, nunc pro tunc.

Glenn Adams, Chair
Cumberland County Board of Commissioners

ATTEST:

Andrea Tebbe, Clerk to the Board

COUNTY SEAL



FINANCE DEPARTMENT

**MEMORANDUM FOR THE AGENDA OF THE MAY 9, 2024
AGENDA SESSION**

TO: BOARD OF COUNTY COMMISSIONERS

FROM: BRIAN HANEY, INTERIM FINANCE DIRECTOR

DATE: 5/2/2024

**SUBJECT: FISCAL YEAR 2024 CONTRACT FOR PROFESSIONAL AUDITING
SERVICES**

Requested by: CLARENCE GRIER, COUNTY MANAGER

Presenter(s): BRIAN HANEY, INTERIM FINANCE DIRECTOR

BACKGROUND

On February 21, 2022, the Board of Commissioners awarded the County's audit contract for fiscal years 2022, 2023 and 2024 to Cherry Bekaert LLP. Each fiscal year the audit contract requires approval by the Board of Commissioners. For fiscal year 2024, the total County contract cost is \$125,000 and the total cost for the Tourism Development Authority (TDA) is \$7,750. The contracted audit cost has increased above the 2023 proposed amounts (+\$4,500 County; +\$500 TDA). The Primary Unit contract includes the single audit of nine major programs. If the count of major programs increases above nine, an additional \$6,000 surcharge per program through an amendment contract would result.

In addition to Board of Commissioner approval of the contract and engagement letter, signatures are required of the Board of Commissioners' Chairperson, the Audit Committee Chairperson and the TDA Chairperson.

In an effort to better control the timeliness of issuing the report and provide a cost savings, finance staff began working in the current fiscal year toward implementation of report writing software that will enable the county to internally produce all schedules of the annual report moving forward. However, due to staff transitions, this implementation was not able to be completed for the FY2024 audit. It is staff's intent to implement this report writing software in the future, however staff will once again require assistance from Cherry Bekaert to write the

FY2024 financial report. Cherry Bekaert houses a separate division (Cherry Bekaert Advisory LLC) that focuses exclusively on Annual Comprehensive Financial Statement report writing. Last year, the report writing was added to the FY2023 Audit Contract as an amendment, however Cherry Bekaert has advised that it will not need to be added to the FY2024 Audit Contract because it is technically a different company from the audit firm doing the work. Staff have engaged Cherry Bekaert Advisory LLC regarding report writing services for the FY2024 audit and are moving that process forward.

RECOMMENDATION / PROPOSED ACTION

Staff recommend the following item be placed on the May 20, 2024 Board of Commissioners' Consent Agenda:

Approval of the fiscal year 2024 Audit Contract and Engagement Letter with Cherry Bekaert LLP.

ATTACHMENTS:

Description	Type
FY2024 Audit Contract	Backup Material
FY2024 Audit Engagement Letter	Backup Material

The	Governing Board
of	Board of Commissioners
	Primary Government Unit
	County of Cumberland, North Carolina
and	Discretely Presented Component Unit (DPCU) (if applicable)
	Cumberland County Tourism Development Authority

Primary Government Unit, together with DPCU (if applicable), hereinafter referred to as Governmental Unit(s)

and	Auditor Name
	Cherry Bekaert LLP
	Auditor Address
	3800 Glenwood Avenue, Suite 200 Raleigh, NC 27612

Hereinafter referred to as Auditor

for	Fiscal Year Ending	Date Audit Will Be Submitted to LGC
	06/30/24	10/31/24

Must be within four months of FYE

hereby agree as follows:

1. The Auditor shall audit all statements and disclosures required by U.S. generally accepted auditing standards (GAAS) and additional required legal statements and disclosures of all funds and/or divisions of the Governmental Unit(s). The non-major combining, and individual fund statements and schedules shall be subjected to the auditing procedures applied in the audit of the basic financial statements and an opinion shall be rendered in relation to (as applicable) the governmental activities, the business- type activities, the aggregate DPCUs, each major governmental and enterprise fund, and the aggregate remaining fund information (non-major government and enterprise funds, the internal service fund type, and the fiduciary fund types). The basic financial statements shall include budgetary comparison information in a budgetary comparison statement, rather than as RSI, for the General Fund and any annually budgeted Special Revenue funds.

2. At a minimum, the Auditor shall conduct the audit and render the report in accordance with GAAS. The Auditor shall perform the audit in accordance with *Government Auditing Standards (GAGAS)* if the Governmental Unit expended \$100,000 or more in combined Federal and State financial assistance during the reporting period. The auditor shall perform a Single Audit if required by Title 2 US Code of Federal Regulations Part 200 *Uniform Administration Requirements, Cost Principles, and Audit Requirements for Federal Awards, Subpart F* (Uniform Guidance) or the State Single Audit Implementation Act. This audit and all associated audit documentation may be subject to review by Federal and State agencies in accordance with Federal and State laws, including the staffs of the Office of State Auditor (OSA) and the Local Government Commission (LGC). If the audit requires a federal single audit in accordance with the Uniform Guidance (§200.501), it is recommended that the Auditor and Governmental Unit(s) jointly agree, in advance of the execution of this contract, which party is responsible for submission of the audit and the accompanying data collection form to the Federal Audit Clearinghouse as required under the Uniform Guidance (§200.512).

Effective for audits of fiscal years beginning on or after June 30, 2023, the LGC will allow auditors to consider whether a unit qualifies as a State low-risk auditee based upon federal criteria in the Uniform Guidance §200.520(a), and (b) through (e) as it applies to State awards. In addition to the federal criteria in the Uniform Guidance, audits must have been submitted timely to the LGC. If in the reporting year, or in either of the two previous years, the unit reported a Financial Performance Indicator of Concern that the audit was late, then

the report was not submitted timely for State low-risk auditee status. Please refer to "Discussion of Single Audits in North Carolina" on the LGC's website for more information.

If the audit and Auditor communication are found in this review to be substandard, the results of the review may be forwarded to the North Carolina State Board of CPA Examiners (NC State Board).

3. If an entity is determined to be a component of another government as defined by the group audit standards, the entity's auditor shall make a good faith effort to comply in a timely manner with the requests of the group auditor in accordance with AU-6 §600.41 - §600.42.

4. This contract contemplates an unmodified opinion being rendered. If during the process of conducting the audit, the Auditor determines that it will not be possible to render an unmodified opinion on the financial statements of the unit, the Auditor shall contact the LGC Staff to discuss the circumstances leading to that conclusion as soon as is practical and before the final report is issued. The audit shall include such tests of the accounting records and such other auditing procedures as are considered by the Auditor to be necessary in the circumstances. Any limitations or restrictions in scope which would lead to a qualification should be fully explained in an attachment to this contract.

5. If this audit engagement is subject to the standards for audit as defined in *Government Auditing Standards*, 2018 revision, issued by the Comptroller General of the United States, then by accepting this engagement, the Auditor warrants that he/she has met the requirements for a peer review and continuing education as specified in *Government Auditing Standards*. The Auditor agrees to provide a copy of the most recent peer review report to the Governmental Unit(s) and the Secretary of the LGC prior to the execution of an audit contract. Subsequent submissions of the report are required only upon report expiration or upon auditor's receipt of an updated peer review report. If the audit firm received a peer review rating other than pass, the Auditor shall not contract with the Governmental Unit(s) without first contacting the Secretary of the LGC for a peer review analysis that may result in additional contractual requirements.

If the audit engagement is not subject to *Government Auditing Standards* or if financial statements are not prepared in accordance with U.S. generally accepted accounting principles (GAAP) and fail to include all disclosures required by GAAP, the Auditor shall provide an explanation as to why in an attachment to this contract or in an amendment.

6. It is agreed that time is of the essence in this contract. All audits are to be performed and the report of audit submitted to LGC Staff within four months of fiscal year end. If it becomes necessary to amend the audit fee or the date that the audit report will be submitted to the LGC, an amended contract along with a written explanation of the change shall be submitted to the Secretary of the LGC for approval.

7. It is agreed that GAAS include a review of the Governmental Unit's (Units') systems of internal control and accounting as same relate to accountability of funds and adherence to budget and law requirements applicable thereto; that the Auditor shall make a written report, which may or may not be a part of the written report of audit, to the Governing Board setting forth his/her findings, together with his recommendations for improvement. That written report shall include all matters defined as "significant deficiencies and material weaknesses" in AU-C 265 of the *AICPA Professional Standards (Clarified)*. The Auditor shall file a copy of that report with the Secretary of the LGC.

For GAAS or *Government Auditing Standards* audits, if an auditor issues an AU-C §260 report, commonly referred to as "Governance Letter," LGC staff does not require the report to be submitted unless the auditor cites significant findings or issues from the audit, as defined in AU-C §260.12 - .14. This would include issues such as difficulties encountered during the audit, significant or unusual transactions, uncorrected misstatements, matters that are difficult or contentious reviewed with those charged with governance, and other significant matters. If matters identified during the audit were required to be reported as described in AU-C §260.12-.14 and were communicated in a method other than an AU-C §260 letter, the written documentation must be submitted.

8. All local government and public authority contracts for audit or audit-related work require the approval of the Secretary of the LGC. This includes annual or special audits, agreed upon procedures related to internal controls, bookkeeping or other assistance necessary to prepare the Governmental Unit's records for audit, financial statement preparation, any finance-related investigations, or any other audit-related work in the State of North Carolina. Approval is also required for the Alternative Compliance Examination Engagement for auditing the Coronavirus State and Local Fiscal Recovery Funds expenditures as allowed by US Treasury. Approval is not required on audit contracts and invoices for system improvements and similar services of a non-auditing nature.
9. Invoices for services rendered under these contracts shall not be paid by the Governmental Unit(s) until the invoice has been approved by the Secretary of the LGC. This also includes any progress billings [G.S. 159-34 and 115C-447]. All invoices for audit work shall be submitted in PDF format to the Secretary of the LGC for approval. The invoice marked 'approved' with approval date shall be returned to the Auditor to present to the Governmental Unit(s) for payment. This paragraph is not applicable to contracts for audits of hospitals.
10. In consideration of the satisfactory performance of the provisions of this contract, the Governmental Unit(s) shall pay to the Auditor, upon approval by the Secretary of the LGC if required, the fee, which includes any costs the Auditor may incur from work paper or peer reviews or any other quality assurance program required by third parties (federal and state grantor and oversight agencies or other organizations) as required under the Federal and State Single Audit Acts. This does not include fees for any pre-issuance reviews that may be required by the NC Association of CPAs (NCACPA) Peer Review Committee or NC State Board of CPA Examiners (see Item 13).
11. If the Governmental Unit(s) has/have outstanding revenue bonds, the Auditor shall submit to LGC Staff, either in the notes to the audited financial statements or as a separate report, a calculation demonstrating compliance with the revenue bond rate covenant. Additionally, the Auditor shall submit to LGC Staff simultaneously with the Governmental Unit's (Units') audited financial statements any other bond compliance statements or additional reports required by the authorizing bond documents, unless otherwise specified in the bond documents.
12. After completing the audit, the Auditor shall submit to the Governing Board a written report of audit. This report shall include, but not be limited to, the following information: (a) Management's Discussion and Analysis, (b) the financial statements and notes of the Governmental Unit(s) and all of its component units prepared in accordance with GAAP, (c) supplementary information requested by the Governmental Unit(s) or required for full disclosure under the law, and (d) the Auditor's opinion on the material presented. The Auditor shall furnish the required number of copies of the report of audit to the Governing Board upon completion.
13. If the audit firm is required by the NC State Board, the NCACPA Peer Review Committee, or the Secretary of the LGC to have a pre-issuance review of its audit work, there shall be a statement in the engagement letter indicating the pre-issuance review requirement. There also shall be a statement that the Governmental Unit(s) shall not be billed for the pre-issuance review. The pre-issuance review shall be performed prior to the completed audit being submitted to LGC Staff. The pre-issuance review report shall accompany the audit report upon submission to LGC Staff.

14. The Auditor shall submit the report of audit in PDF format to LGC Staff. For audits of units other than hospitals, the audit report should be submitted when (or prior to) submitting the final invoice for services rendered. The report of audit, as filed with the Secretary of the LGC, becomes a matter of public record for inspection, review and copy in the offices of the LGC by any interested parties. Any subsequent revisions to these reports shall be sent to the Secretary of the LGC. These audited financial statements, excluding the Auditors' opinion, may be used in the preparation of official statements for debt offerings by municipal bond rating services to fulfill secondary market disclosure requirements of the Securities and Exchange Commission and for other lawful purposes of the Governmental Unit(s) without requiring consent of the Auditor. If the LGC Staff determines that corrections need to be made to the Governmental Unit's (Units') financial statements and/or the compliance section, those corrections shall be provided within three business days of notification unless another deadline is agreed to by LGC Staff.
15. Should circumstances disclosed by the audit call for a more detailed investigation by the Auditor than necessary under ordinary circumstances, the Auditor shall inform the Governing Board in writing of the need for such additional investigation and the additional compensation required therefore. Upon approval by the Secretary of the LGC, this contract may be modified or amended to include the increased time, compensation, or both as may be agreed upon by the Governing Board and the Auditor.
16. If an approved contract needs to be modified or amended for any reason, the change shall be made in writing and pre-audited if the change includes a change in audit fee (pre-audit requirement does not apply to hospitals). This amended contract shall be completed in full, including a written explanation of the change, signed and dated by all original parties to the contract. It shall then be submitted to the Secretary of the LGC for approval. No change to the audit contract shall be effective unless approved by the Secretary of the LGC.
17. A copy of the engagement letter, issued by the Auditor and signed by both the Auditor and the Governmental Unit(s), shall be attached to this contract, and except for fees, work, and terms not related to audit services, shall be incorporated by reference as if fully set forth herein as part of this contract. In case of conflict between the terms of the engagement letter and the terms of this contract, the terms of this contract shall take precedence. Engagement letter terms that conflict with the contract are deemed to be void unless the conflicting terms of this contract are specifically deleted in Item 30 of this contract. Engagement letters containing indemnification clauses shall not be accepted by LGC Staff.
18. Special provisions should be limited. Please list any special provisions in an attachment.
19. A separate contract should not be made for each division to be audited or report to be submitted. If a DPCU is subject to the audit requirements detailed in the Local Government Budget and Fiscal Control Act and a separate audit report is issued, a separate audit contract is required. If a separate report is not to be issued and the DPCU is included in the primary government audit, the DPCU shall be named along with the primary government on this audit contract. DPCU Board approval date, signatures from the DPCU Board chairman and finance officer also shall be included on this contract.
20. The contract shall be executed, pre-audited (pre-audit requirement does not apply to hospitals), and physically signed by all parties including Governmental Unit(s) and the Auditor, then submitted in PDF format to the Secretary of the LGC.
21. The contract is not valid until it is approved by the Secretary of the LGC. The staff of the LGC shall notify the Governmental Unit and Auditor of contract approval by email. The audit should not be started before the contract is approved.
22. Retention of Client Records: Auditors are subject to the NC State Board of CPA Examiners' Retention of Client Records Rule 21 NCAC 08N .0305 as it relates to the provision of audit and other attest services, as well as non-attest services. Clients and former clients should be familiar with the requirements of this rule prior to requesting the return of records.

23. This contract may be terminated at any time by mutual consent and agreement of the Governmental Unit(s) and the Auditor, provided that (a) the consent to terminate is in writing and signed by both parties, (b) the parties have agreed on the fee amount which shall be paid to the Auditor (if applicable), and (c) no termination shall be effective until approved in writing by the Secretary of the LGC.

24. The Governmental Unit's (Units') failure or forbearance to enforce, or waiver of, any right or an event of breach or default on one occasion or instance shall not constitute the waiver of such right, breach or default on any subsequent occasion or instance.

25. There are no other agreements between the parties hereto and no other agreements relative hereto that shall be enforceable unless entered into in accordance with the procedure set out herein and approved by the Secretary of the LGC.

26. E-Verify. Auditor shall comply with the requirements of NCGS Chapter 64 Article 2. Further, if Auditor utilizes any subcontractor(s), Auditor shall require such subcontractor(s) to comply with the requirements of NCGS Chapter 64, Article 2.

27. **Applicable to audits with fiscal year ends of June 30, 2020 and later.** For all non-attest services, the Auditor shall adhere to the independence rules of the AICPA Professional Code of Conduct and *Government Auditing Standards, 2018 Revision* (as applicable). Financial statement preparation assistance shall be deemed a "significant threat" requiring the Auditor to apply safeguards sufficient to reduce the threat to an acceptable level. If the Auditor cannot reduce the threats to an acceptable level, the Auditor cannot complete the audit. If the Auditor is able to reduce the threats to an acceptable level, the documentation of this determination, including the safeguards applied, must be included in the audit workpapers.

All non-attest service(s) being performed by the Auditor that are necessary to perform the audit must be identified and included in this contract. The Governmental Unit shall designate an individual with the suitable skills, knowledge, and/or experience (SKE) necessary to oversee the services and accept responsibility for the results of the services performed. If the Auditor is able to identify an individual with the appropriate SKE, s/he must document and include in the audit workpapers how he/she reached that conclusion. If the Auditor determines that an individual with the appropriate SKE cannot be identified, the Auditor cannot perform both the non-attest service(s) and the audit. See "Fees for Audit Services" page of this contract to disclose the person identified as having the appropriate SKE for the Governmental Unit.

28. **Applicable to audits with fiscal year ends of June 30, 2021 and later.** The auditor shall present the audited financial statements including any compliance reports to the government unit's governing body or audit committee in an official meeting in open session as soon as the audited financial statements are available but not later than 45 days after the submission of the audit report to the Secretary. The auditor's presentation to the government unit's governing body or audit committee shall include:

- a) the description of each finding, including all material weaknesses and significant deficiencies, as found by the auditor, and any other issues related to the internal controls or fiscal health of the government unit as disclosed in the management letter, the Single Audit or Yellow Book reports, or any other communications from the auditor regarding internal controls as required by current auditing standards set by the Accounting Standards Board or its successor;
- b) the status of the prior year audit findings;
- c) the values of Financial Performance Indicators based on information presented in the audited financial statements; and
- d) notification to the governing body that the governing body shall develop a "Response to the Auditor's Findings, Recommendations, and Fiscal Matters," if required under 20 NCAC 03 .0508.

29. Information based on the audited financial statements shall be submitted to the Secretary for the purpose of identifying Financial Performance Indicators and Financial Performance Indicators of Concern. See 20 NCAC 03 .0502(c)(6).

30. All of the above paragraphs are understood and shall apply to this contract, except the following numbered paragraphs shall be deleted (See Item 17 for clarification).

31. The process for submitting contracts, audit reports and invoices is subject to change. Auditors and units should use the submission process and instructions in effect at the time of submission. Refer to the N.C. Department of State Treasurer website at <https://www.nctreasurer.com/state-and-local-government-finance-division/local-government-commission/submitting-your-audit>

32. All communications regarding audit contract requests for modification or official approvals will be sent to the email addresses provided on the signature pages that follow.

33. Modifications to the language and terms contained in this contract form (LGC-205) are not allowed.

FEES FOR AUDIT SERVICES

1. For all non-attest services, the Auditor shall adhere to the independence rules of the AICPA Professional Code of Conduct (as applicable) and *Government Auditing Standards, 2018 Revision*. Refer to Item 27 of this contract for specific requirements. The following information must be provided by the Auditor; contracts presented to the LGC without this information will be not be approved.

Financial statements were prepared by: ☐ Auditor ☐ Governmental Unit ☒ Third Party

If applicable: Individual at Governmental Unit designated to have the suitable skills, knowledge, and/or experience (SKE) necessary to oversee the non-attest services and accept responsibility for the results of these services:

Name:

Title and Unit / Company:

Email Address:

Brian Haney

Assistant County Manager

bhaney@cumberlandcountync.gov

OR Not Applicable ☐ (Identification of SKE Individual on the LGC-205 Contract is not applicable for GAAS-only audits or audits with FYEs prior to June 30, 2020.)

2. Fees may not be included in this contract for work performed on Annual Financial Information Reports (AFIRs), Form 990s, or other services not associated with audit fees and costs. Such fees may be included in the engagement letter but may not be included in this contract or in any invoices requiring approval of the LGC. See Items 8 and 13 for details on other allowable and excluded fees.

3. The audit fee information included in the table below for both the Primary Government Fees and the DPCU Fees (if applicable) should be reported as a specific dollar amount of audit fees for the year under this contract. If any language other than an amount is included here, the contract will be returned to the audit form for correction.

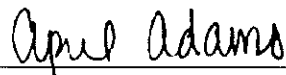
4. Prior to the submission of the completed audited financial report and applicable compliance reports subject to this contract, or to an amendment to this contract (if required) the Auditor may submit interim invoices for approval for services rendered under this contract to the Secretary of the LGC, not to exceed 75% of the billings for the unit's last annual audit that was submitted to the Secretary of the LGC. All invoices for services rendered in an audit engagement as defined in 20 NCAC .0503 shall be submitted to the Commission for approval before any payment is made. Payment before approval is a violation of law. (This paragraph not applicable to contracts and invoices associated with audits of hospitals).

Primary Government Unit	County of Cumberland, North Carolina
Audit Fee (financial and compliance if applicable)	\$ 125,000 (includes 9 single audit programs)
Fee per Major Program (if not included above)	\$ Any major programs over 9 are \$6,000 per program
Additional Fees Not Included Above (if applicable):	
Financial Statement Preparation (incl. notes and RSI)	\$
All Other Non-Attest Services	\$
TOTAL AMOUNT NOT TO EXCEED	\$ 125,000

Discretely Presented Component Unit	Cumberland County Tourism Development Authority
Audit Fee (financial and compliance if applicable)	\$ 7,750
Fee per Major Program (if not included above)	\$
Additional Fees Not Included Above (if applicable):	
Financial Statement Preparation (incl. notes and RSI)	\$
All Other Non-Attest Services	\$
TOTAL AMOUNT NOT TO EXCEED	\$ 7,750

SIGNATURE PAGE

AUDIT FIRM

Audit Firm* Cherry Bekaert LLP	
Authorized Firm Representative (typed or printed)* April Adams	Signature* 
Date* 04/02/24	Email Address* aadams@cbh.com

GOVERNMENTAL UNIT

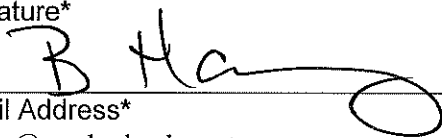
Governmental Unit* County of Cumberland, North Carolina	
Date Governing Board Approved Audit Contract* (Enter date in box to right)	
Mayor/Chairperson (typed or printed)* Glenn Adams	Signature*
Date	Email Address* gadams@cumberlandcountync.gov

Chair of Audit Committee (typed or printed, or "NA") Marshall Faircloth	Signature
Date	Email Address wmfaircloth@cumberlandcountync.gov

GOVERNMENTAL UNIT – PRE-AUDIT CERTIFICATE

Required by G.S. 159-28(a1) or G.S. 115C-441(a1). Not applicable to hospital contracts.

This instrument has been pre-audited in the manner required by The Local Government Budget and Fiscal Control Act or by the School Budget and Fiscal Control Act.

Sum Obligated by This Transaction:	\$ 125,000
Primary Governmental Unit Finance Officer* (typed or printed) Brian Haney	Signature* 
Date of Pre-Audit Certificate* 5-1-24	Email Address* bhaney@cumberlandcountync.gov

SIGNATURE PAGE – DPCU
(complete only if applicable)

DISCRETELY PRESENTED COMPONENT UNIT


DPCU*	
Cumberland County Tourism Development Authority	
Date DPCU Governing Board Approved Audit Contract* (Enter date in box to right)	
DPCU Chairperson (typed or printed)* Vivek Tandon	Signature*
Date*	Email Address* vivekt@trinityncsc.com

Chair of Audit Committee (typed or printed, or "NA") N/A	Signature
Date	Email Address

DPCU – PRE-AUDIT CERTIFICATE

Required by G.S. 159-28(a1) or G.S. 115C-441(a1). Not applicable to hospital contracts.

This instrument has been pre-audited in the manner required by The Local Government Budget and Fiscal Control Act or by the School Budget and Fiscal Control Act.

Sum Obligated by this Transaction:	\$ 7,750
DPCU Finance Officer (typed or printed)* Brian Haney	Signature* 
Date of Pre-Audit Certificate* 5-1-24	Email Address* bhaney@cumberlandcountync.gov

Remember to print this form, and obtain all
required signatures prior to submission.

PRINT

April 2, 2024,

VIA EMAIL:

bhaney@cumberlandcountync.gov

Mr. Brian Haney, Assistant County Manager
County of Cumberland, North Carolina, and Cumberland County Tourism Development
Authority
Post Office Drawer 1829
Fayetteville, North Carolina 28302

Dear Mr. Haney:

This engagement letter between County of Cumberland, North Carolina and Cumberland County Tourism Development (hereafter referred to as the "County and the TDA" or "you" or "your" or "management") and Cherry Bekaert LLP (the "Firm" or "Cherry Bekaert" or "we" or "us" or "our") sets forth the nature and scope of the services we will provide, the County and the TDA's required involvement and assistance in support of our services, the related fee arrangements, and other Terms and Conditions, which are attached hereto and incorporated by reference, designed to facilitate the performance of our professional services and to achieve the mutually agreed-upon objectives of the County and the TDA.

Summary of services

We will provide the following services to the County and the TDA as of and for the year ended June 30, 2024:

Audit and attestation services

1. We will audit the basic financial statements of the County and the TDA as of and for the year ended June 30, 2024 including the governmental activities, the business type activities, the Eastover Sanitary District, the Cumberland County Tourism Development Authority, each major fund, and the aggregate remaining fund information, including the disclosures. We will not audit the Cumberland County ABC Board. We will refer to the component auditor in our audit opinion.
2. We will audit the schedule of expenditures of federal and State awards. As part of our engagement, we will apply certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in *Government Auditing Standards*; the *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* in Title 2 U.S. Code of Federal Regulations (CFR) Part 200 ("Uniform Guidance"); and the State Single Audit Implementation Act.
3. We will audit the supplementary information. As part of our engagement, we will apply certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America.

4. We will apply limited procedures to the required supplementary information (e.g., pension plan information or County and the TDA's management's discussion and analysis (MD&A)), which will consist of inquiries of County and the TDA's management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the financial statements.

Nonattest accounting and other services

We will provide the following additional services:

1. Complete the appropriate sections of and sign the Data Collection Form.

Your expectations

Our services plan, which includes our audit plan, is designed to provide a foundation for an effective, efficient, and quality-focused approach to accomplish the engagement objectives and meet or exceed the County and the TDA's expectations. Our services plan will be reviewed with you periodically and will serve as a benchmark against which you will be able to measure our performance. Any additional services that you may request, and that we agree to provide, will be the subject of separate written arrangements.

The County and the TDA recognizes that our professional standards require that we be independent from the County and the TDA in our audit of the County and the TDA's financial statements and our accompanying report in order to ensure that our objectivity and professional skepticism have not been compromised. As a result, we cannot enter into a fiduciary relationship with the County and the TDA and the County and the TDA should not expect that we will act only with due regard to the County and the TDA's interest in the performance of this audit, and the County and the TDA should not impose on us special confidence that we will conduct this audit with only the County and the TDA's interest in mind. Because of our obligation to be independent of the County and the TDA, no fiduciary relationship will be created by this engagement or audit of the County and the TDA's financial statements.

The engagement will be led by April Adams, who will be responsible for assuring the overall quality, value, and timeliness of the services provided to you.

Audit and attestation services

Our audit will be conducted in accordance with auditing standards generally accepted in the United States of America; and the standards for financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States; the provisions of Uniform Guidance; the Single Audit Act Amendments of 1996; State Single Audit Implementation Act and OMB *Guidance for Grants and Agreements* (2 CFR 200) and the State Single Audit Implementation Act. The objective of our audit is to obtain reasonable assurance about whether the County and the TDA's basic financial statements as a whole are free from material misstatement, whether due to fraud or error, and issue an auditor's report that includes our opinion(s) about whether the County and the TDA's basic financial statements are presented fairly, in all material respects, in conformity with U.S. generally accepted accounting principles and to report on the fairness of the additional information referred to in the Summary of Services section when considered in relation to the basic financial statements taken as a whole. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in

accordance with GAAS and *Government Auditing Standards* will always detect a material misstatement when it exists. Misstatements, including omissions, can arise from fraud or error and are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment of a reasonable user made based on the financial statements in conformity with the basis of accounting noted above. The objective also includes reporting on:

- Internal control over financial reporting and compliance with the provisions of applicable laws, regulations, contracts, and grant agreements, noncompliance with which could have a material effect on the financial statements in accordance with *Government Auditing Standards*.
- Internal control over compliance related to major programs and an opinion (or disclaimer of opinion) on compliance with laws, regulations and the provisions of contracts or grant agreements that could have a direct and material effect on each major program in accordance with the Single Audit Act Amendments of 1996 and *Title 2 U.S. Code of Federal Regulations (CFR) Part 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* ("Uniform Guidance") and the State Single Audit Implementation Act.

Auditor's responsibilities for the audit of the financial statements

We will conduct our audit in accordance with GAAS and the standards for financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States, and will include tests of accounting records, a determination of major programs in accordance with Uniform Guidance and the State Single Audit Implementation Act, and other procedures as deemed necessary to enable us to express such an opinion or opinions about whether the financial statements are fairly presented, in all material respects, in conformity with accounting principles generally accepted in the United States of America ("GAAP"). We will also:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Obtain an understanding of the County and the TDA and its environment, including internal control relevant to the audit, sufficient to identify and assess the risks of material misstatement of the financial statements, whether due to error or fraud, and to design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion(s). The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentation, or the override of internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management. We will also evaluate the overall presentation of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstance, but not for the purpose of expressing an opinion on the effectiveness of the County and the TDA's internal control. However, we will communicate to you in writing concerning any significant deficiencies or material weaknesses in internal control relevant to the audit of the financial statements that we have identified during the audit.

- Conclude, based on the audit evidence obtained, whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the County and the TDA's ability to continue as a going concern for a reasonable period of time.

Nonattest accounting and other services

In connection with any of the audit, accounting, or other services noted below, we will provide a copy of all schedules or other support for you to maintain as part of your books and records supporting your basic financial statements. You agree to take responsibility for all documents provided by Cherry Bekaert and will retain copies based on your needs and document retention policies. By providing these documents to you, you confirm that Cherry Bekaert is not responsible for hosting your records or maintaining custody of your records or data and that Cherry Bekaert is not providing business continuity or disaster recovery services. You confirm you are responsible for maintaining internal controls over your books and records including business continuity and disaster recovery alternatives. In addition, any documents provided to Cherry Bekaert by the County and the TDA in connection with these services will be considered to be copies and will not be retained by Cherry Bekaert after completion of the accounting and other services. You are expected to retain anything you upload to a Cherry Bekaert portal and are responsible for downloading and retaining anything we upload in a timely manner. Portals are only meant as a method of transferring data, are not intended for the storage of client information, and may be deleted at any time. You are expected to maintain control over your accounting systems to include the licensing of applications and the hosting of said applications and data. We do not provide electronic security or back-up services for any of your data or records. Giving us access to your accounting system does not make us hosts of information contained within.

The accounting and other services described in this section are nonaudit services, which do not constitute audit services under *Government Auditing Standards*, and such services will not be conducted in accordance with *Government Auditing Standards*. We will perform the services in accordance with applicable professional standards. We, in our sole professional judgment, reserve the right to refuse to perform any procedure or take any action that could be construed as assuming County and the TDA's management responsibilities.

In conjunction with providing these accounting and other services, we may use third party software or templates created by Cherry Bekaert for use on third party software. Management expressly agrees that the County and the TDA has obtained no rights to use such software or templates and that Cherry Bekaert's use of the County and the TDA's data in those applications is not deemed to be hosting, maintaining custody, providing business continuity, or disaster recovery services.

Accounting services

We will advise County and the TDA's management about the application of appropriate accounting principles and may propose adjusting journal entries to the County and the TDA's financial statements. The County and the TDA's management are responsible for reviewing the entries and understanding the nature of any proposed entries and the impact they have on the County and the TDA's financial statements. If, while reviewing the journal entries, the County and the TDA's management determines that a journal entry is inappropriate, it will be the County and the TDA's management's responsibility to contact us to correct it.

Data collection form

We will complete the appropriate sections of and sign the Data Collection Form that summarizes our audit findings. We will provide copies of our reports to the County and the TDA; however, it is the County and the TDA's management's responsibility to submit the

**County of Cumberland, North Carolina, and Cumberland County Tourism
Development Authority**

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reporting package (including financial statements, schedule of expenditures of federal and State awards, summary schedule of prior audit findings, auditors' reports, and corrective action plan) along with the Data Collection Form to the designated federal audit clearinghouse and, if appropriate, to pass-through entities. The Data Collection Form and the reporting package must be submitted within the earlier of 30 days after receipt of the auditors' reports or nine months after the end of the audit period.

County and the TDA's management responsibilities related to accounting and other services

For all nonattest services we perform in connection with the engagement, you are responsible for designating a competent employee to oversee the services, make any management decisions, perform any management functions related to the services, evaluate the adequacy of the services, retain relevant copies supporting your books and records, and accept overall responsibility for the results of the services.

Prior to the release of the report, the County and the TDA's management will need to sign a representation letter acknowledging its responsibility for the results of these services and acknowledging receipt of all appropriate copies.

County and the TDA's management responsibilities related to the audit.

The County and the TDA's management is responsible for (1) designing, implementing, and maintaining internal controls, including internal controls over federal awards, and for evaluating and monitoring ongoing activities, relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error, and to help ensure that appropriate goals and objectives are met; (2) following laws and regulations; (3) ensuring that there is reasonable assurance that government programs are administered in compliance with compliance requirements; and (4) ensuring that the County and the TDA's management and financial information is reliable and properly reported. The County and the TDA's management are also responsible for implementing systems designed to achieve compliance with applicable laws, regulations, contracts, and grant agreements. You are also responsible for the selection and application of accounting principles; for the preparation and fair presentation of the financial statements, schedule of expenditures of federal and State awards and all accompanying information in conformity with U.S. generally accepted accounting principles; and for compliance with applicable laws and regulations (including federal statutes) and the provisions of contracts and grant agreements (including award agreements). Your responsibilities also include identifying significant contractor relationship in which the contractor has responsibility for program compliance and for the accuracy and completeness of that information.

The County and the TDA's management are responsible for making all financial records and related information available to us, including additional information that is requested for purposes of the audit (including information from outside of the general and subsidiary ledgers), and for the accuracy and completeness of that information. You are also responsible for providing us with (1) access to all information of which it is aware that is relevant to the preparation and fair presentation of the financial statements, such as records, documentation, identification of all related parties and all related-party relationships and transactions, and other matters, (2) access to personnel, accounts, books, records, supporting documentation, and other information as needed to perform an audit under the Uniform Guidance and the State Single Audit Implementation Act, (3) additional information that we may request for the purpose of the audit and (4) unrestricted access to persons within the County and the TDA from whom we determine it necessary to obtain audit evidence.

**County of Cumberland, North Carolina, and Cumberland County Tourism
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Your responsibilities include adjusting the financial statements to correct material misstatements and for confirming to us in the written representation letter that the effects of any uncorrected misstatements aggregated by us during the current engagement and pertaining to the latest period presented are immaterial, both individually and in the aggregate, to the financial statements taken as a whole.

You are responsible for the design and implementation of programs and controls to prevent and detect fraud, and for informing us about all known or suspected fraud affecting the County and the TDA involving (1) the County and the TDA's management, (2) employees who have significant roles in internal control, and (3) others where the fraud could have a material effect on the financial statements. Your responsibilities include informing us of your knowledge of any allegations of fraud or suspected fraud affecting the County and the TDA received in communications from employees, former employees, grantors, regulators, or other. In addition, you are responsible for identifying and ensuring that the County and the TDA complies with applicable laws, regulations contracts, agreements, and grants and for taking timely and appropriate steps to remedy fraud and noncompliance with provisions of laws, regulations, contracts, or grant agreements that we report. Additionally, as required by the Uniform Guidance and the State Single Audit Implementation Act, it is the County and the TDA's management's responsibility to evaluate and monitor noncompliance with federal statutes, regulations, and the terms and conditions of federal awards; take prompt action when instances of noncompliance are identified including noncompliance identified in audit findings; promptly follow up and take corrective action on reported audit findings; and prepare a summary schedule of prior audit findings and a separate corrective action plan.

The County and the TDA's management is responsible for identifying all federal awards received and understanding and complying with the compliance requirements and for the preparation of the schedule of expenditures of federal and State awards (including notes and noncash assistance received, and COVID-19 related concepts, such as lost revenues, if applicable) in conformity with the Uniform Guidance and the State Single Audit Implementation Act. You agree to include our report on the schedule of expenditures of federal and State awards in any document that contains and indicates that we have reported on the schedule of expenditures of federal and State awards. You also agree to include the audited financial statements with any presentation of the schedule of expenditures of federal and State and State awards that includes our report thereon OR make the audited financial statements readily available to intended users of the schedule of expenditures of federal and State and State awards no later than the date the schedule of expenditures of federal and State and State awards is issued with our report thereon. Your responsibilities include acknowledging to us in the written representation letter that (1) you are responsible for presentation of the schedule of expenditures of federal and State awards in accordance with the Uniform Guidance and the State Single Audit Implementation Act, (2) you believe the schedule of expenditures of federal and State awards, including its form and content, is stated fairly in accordance with the Uniform Guidance and the State Single Audit Implementation Act, (3) the methods of measurement or presentation have not changed from those used in the prior period or, if they have changed, the reasons for such changes), and (4) the County and the TDA has disclosed to us any significant assumptions or interpretations underlying the measurement or presentation of the schedule of expenditures of federal and State awards.

You are responsible for the preparation of the supplementary information, which we have been engaged to report on, in conformity with U.S. generally accepted accounting principles. You agree to include our report on the supplementary information in any document that contains and indicates that we have reported on the supplementary information. You also agree to include the audited financial statements with any presentation of the supplementary

**County of Cumberland, North Carolina, and Cumberland County Tourism
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April 2, 2024,

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information that includes our report thereon OR make the audited financial statements readily available to users of the supplementary information no later than the date the supplementary information is issued with our report thereon. Your responsibilities include acknowledging to us in the written representation letter that (1) you are responsible for presentation of the supplementary information in accordance with GAAP, (2) you believe the supplementary information, including its form and content, is fairly presented in accordance with GAAP, (3) the methods of measurement or presentation have not changed from those used in the prior period (or, if they have changed, the reasons for such changes), and (4) you have disclosed to us any significant assumptions or interpretations underlying the measurement or presentation of the supplementary information.

The County and the TDA's management is responsible for establishing and maintaining a process for tracking the status of audit findings and recommendations. The County and the TDA's management is also responsible for identifying and providing report copies of previous financial audits, attestation engagements, performance audits or other studies related to the objectives discussed in the *Audit and attestation services* section of this letter. This responsibility includes relaying to us corrective actions taken to address significant findings and recommendations resulting from those audits, attestation engagements, performance audits, or other studies. You are also responsible for providing County and the TDA's management views on our current findings, conclusions, and recommendations, as well as your planned corrective actions, for the report, and for the timing and format for providing that information.

The County and the TDA's management agree to assume all management responsibilities relating to the financial statements, schedule of expenditures of federal and State awards and disclosures, and any other nonaudit services we provide. You will be required to acknowledge in the management representation letter our assistance with preparation of the financial statements, schedule of expenditures of federal and State awards, and disclosures, and that you have reviewed and approved the financial statements, schedule of expenditures of federal and State awards, and disclosures prior to their issuance and have accepted responsibility for them. Further, you agree to oversee the nonaudit services by designating an individual, preferably from senior management, with suitable skill, knowledge, or experience; evaluate the adequacy and results of those services; and accept responsibility for them.

Reporting

Our report will be addressed to Board of Commissioners of the County and the TDA. Circumstances may arise in which our report may differ from its expected form and content based on the result of our audit. Depending on the nature of these circumstances, it may be necessary for us to modify our opinion or add emphasis-of-matter or other-matter paragraphs to our auditor's report, or if necessary, withdraw from this engagement. If our opinion is other than unmodified, we will discuss the reasons with you in advance. If, for any reason, we are unable to complete the audit or are unable to form or have not formed an opinion, we may decline to express opinions or issue reports, or may withdraw from this engagement.

We will also issue written reports upon completion of our Single Audit. The *Government Auditing Standards* report on internal control over financial reporting and on compliance and other matters will include a paragraph that states that (1) the purpose of the report is solely to describe the scope of testing of internal control and compliance and the result of that testing, and not to provide an opinion on the effectiveness of the County and the TDA's internal control or on compliance, and (2) the report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the entity's internal control and compliance. The Uniform Guidance report on internal control over compliance will

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include a paragraph that states that the purpose of the report on internal control over compliance is solely to describe the scope of testing of internal control over compliance and the results of that testing based on the requirements of the Uniform Guidance. Both reports will state that the report is not suitable for any other purpose.

Fees

The estimated fees contemplate only the services described in the Summary of Services section of this letter. You may request that we perform additional services not addressed in this engagement letter. If this occurs, we will communicate with you concerning the scope of the additional services and the estimated fees which will be at our standard billing rates noted in the table below. We also may issue a separate engagement letter covering the additional services. In the absence of any other written communication from us documenting such additional services, our services will continue to be governed by the terms of this engagement letter.

Standard Bill Rates

Skill Level	Bill Rate
Partner	\$ 550
Director	\$ 485
Senior Manager	\$ 470
Manager	\$ 355
Senior Accountant	\$ 310
Staff Accountant	\$ 230
Intern	\$ 100
Paraprofessional	\$ 190
Audit Service Center	\$ 115
Administrative	\$ 150

The following summarizes the estimated fees for the services described above:

Description of services

Estimated fee

Audit services

Audit of the financial statements - County

\$125,000*

Accounting services

Completion of Data Collection Form

Included above

Total

\$125,000

Audit services

Audit of the financial statements - TDA

\$ 7,750

*This fee assumes that major grant compliance work to be performed in accordance with Title 2 U.S. Code of Federal Regulations Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* ("Uniform Guidance") and the State Single Audit Implementation Act will remain at a similar level to prior years. The major programs differ in size, complexity, and the number of required compliance elements to be

**County of Cumberland, North Carolina, and Cumberland County Tourism
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completed in accordance with Uniform Guidance and the State Single Audit Implementation Act. Our existing fee assumes that we will be auditing **nine** single audit programs. If there are more than **nine** single audit programs required to be audited as major programs (including DSS Crosscutting), the fee above will be adjusted by \$6,000 per program.

The fees will be billed periodically. Invoices are due on presentation. A service charge will be added to past due accounts equal to 1½% per month (18% annually) on the previous month's balance less payments received during the month, with a minimum charge of \$2.00 per month.

If the foregoing is in accordance with your understanding, please sign a copy of this letter in the space provided and return it to us. No change, modification, addition, or amendment to this letter shall be valid unless in writing and signed by all parties. The parties agree that this letter may be electronically signed and that the electronic signatures will be deemed to have the same force and effect as handwritten signatures.

If you have any questions, please call April Adams at 919.782.1040.

Sincerely,

CHERRY BEKAERT LLP

Cherry Bekaert LLP

ATTACHMENT – Engagement Letter Terms and Conditions

**COUNTY OF CUMBERLAND, NORTH CAROLINA AND CUMBERLAND
COUNTY TOURISM DEVELOPMENT**

ACCEPTED BY: _____

TITLE: _____ DATE: _____

Cherry Bekaert LLP

Engagement Letter Terms and Conditions

The following terms and conditions are an integral part of the attached engagement letter and should be read in their entirety in conjunction with your review of the letter.

Limitations of the audit report

Should the County and the TDA wish to include or incorporate by reference these financial statements and our report thereon into any other document at some future date, we will consider granting permission to include our report into another such document at the time of the request. However, we may be required by generally accepted auditing standards ("GAAS") to perform certain procedures before we can give our permission to include our report in another document such as an annual report, private placement, regulator filing, official statement, offering of debt securities, etc. You agree that the County and the TDA will not include or incorporate by reference these financial statements and our report thereon, or our report into any other document without our prior written permission. In addition, to avoid unnecessary delay or misunderstandings, it is important to provide us with timely notice of your intention to issue any such document.

Limitations of the audit process

In conducting the audit, we will perform tests of the accounting records and such other procedures as we consider necessary in the circumstances to provide a reasonable basis for our opinion on the financial statements. We also will assess the accounting principles used and significant estimates made by the County and the TDA's management, as well as evaluate the overall financial statement presentation.

Our audit will include procedures designed to obtain reasonable assurance of detecting misstatements due to errors or fraud that are material to the financial statements. Absolute assurance is not attainable because of the nature of audit evidence and the characteristics of fraud. For example, audits performed in accordance with GAAS are based on the concept of selective testing of the data being examined and are, therefore, subject to the limitation that material misstatements due to errors or fraud, if they exist, may not be detected. Also, an audit is not designed to detect matters that are immaterial to the financial statements. In addition, an audit conducted in accordance with GAAS does not include procedures specifically designed to detect illegal acts having an indirect effect (e.g., violations of fraud and abuse statutes that result in fines or penalties being imposed on the County and the TDA) on the financial statements.

Similarly, in performing our audit we will be aware of the possibility that illegal acts may have occurred. However, it should be recognized that our audit provides no assurance that illegal acts generally will be detected, and only reasonable assurance that illegal acts having a direct and material effect on the determination of financial statement amounts will be detected. We will inform you with respect to errors and fraud, or illegal acts that come to our attention during the course of our audit unless clearly inconsequential. In the event that we have to consult with the County and the TDA's counsel or counsel of our choosing regarding any illegal acts we identify, additional fees incurred may be billed to the County and the TDA. You agree that the County and the TDA will cooperate fully with any procedures we deem necessary to perform with respect to these matters.

We will issue a written report upon completion of our audit of the County and the TDA's financial statements. If, for any reason, we are unable to complete the audit, or are unable to form, or have not formed an opinion on the financial statements, we may decline to express an opinion or decline to issue a report as a result of the engagement. We will notify the appropriate party within your organization of our decision and discuss the reasons supporting our position.

Audit procedures – general

An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements; therefore, our audit will involve professional judgment about the number of transactions to be examined and the areas to be tested. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by the County and the TDA's management, as well as evaluating the overall presentation of the financial statements. We will plan and perform the audit to obtain reasonable rather than absolute assurance about whether the financial statements are free of material misstatement, whether from (1) errors, (2) fraudulent financial reporting, (3) misappropriation of assets, or (4) violations of laws or governmental regulations that are attributable to the County and the TDA or to acts by the County and the TDA's management or employees acting on behalf of the County and the TDA. Because the determination of waste and abuse is subjective, *Government Auditing Standards* do not expect auditors to perform specific procedures to detect waste or abuse in financial audits, nor do they expect auditors to provide reasonable assurance of detecting waste and abuse.

Because of the inherent limitations of an audit, combined with the inherent limitations of internal control there is an unavoidable risk that some material misstatements may not be detected by us, even though the audit is properly planned and performed in accordance with U.S. generally accepted auditing standards and *Government Auditing Standards*. In addition, an audit is not designed to detect immaterial misstatements or violations of laws or governmental regulations that do not have a direct and material effect on the financial statements. However, we will inform the appropriate level of the County and the TDA's management of any material errors, fraudulent financial reporting, or misappropriation of assets that come to our attention. We will also inform the appropriate level of management of any violations of laws or governmental regulations that come to our attention, unless clearly inconsequential. Our responsibility as auditor is limited to the period covered by our audit and does not extend to any later periods for which we are not engaged as auditors.

Our procedures will include tests of documentary evidence supporting the transactions recorded in the accounts and may include tests of the physical existence of inventories, and direct confirmation of receivables and certain assets and liabilities by correspondence with selected customers, funding sources, creditors and financial institutions. We will request written representations from your attorneys as part of the engagement, and they may bill you for responding to this inquiry. At the conclusion of our audit, we will require certain written representations from you about your responsibilities for the financial statements; schedule of expenditures of federal and State awards; federal award programs; compliance with laws, regulations, contracts, and grant agreements; and other responsibilities required by generally accepted auditing standards.

Audit procedures – internal controls

Our audit will include obtaining an understanding of the County and the TDA and its environment, including internal controls relevant to the audit, sufficient to identify and assess the risks of material misstatement of the financial statements, whether due to error or fraud, and to design and perform audit procedures responsive to those risks and obtain evidence that is sufficient and appropriate to provide a basis for our opinion(s). The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentation, or the override of internal control. Tests of controls may be performed to test the effectiveness of certain controls that we consider relevant to preventing and detecting errors and fraud that are

material to the financial statements and to preventing and detecting misstatements resulting from illegal acts and other noncompliance matters that have a direct and material effect on the financial statements. Our tests, if performed, will be less in scope than would be necessary to render an opinion on internal control, including cybersecurity, and, accordingly, no opinion will be expressed in our report on internal control issued pursuant to *Government Auditing Standards*.

As required by the Uniform Guidance, we will perform tests of controls over compliance to evaluate the effectiveness of the design and operation of controls that we consider relevant to preventing or detecting material noncompliance with compliance requirements applicable to each major federal award program. However, our tests will be less in scope than would be necessary to render an opinion on those controls and, accordingly, no opinion will be expressed in our report on internal control issued pursuant to the Uniform Guidance.

An audit is not designed to provide assurance on internal control or to identify significant deficiencies or material weaknesses. However, during the audit, we will communicate to the County and the TDA's management and those charged with governance internal control related matters that are required to be communicated under American Institute of Certified Public Accountants ("AICPA") professional standards, *Government Auditing Standards*, and the Uniform Guidance and the State Single Audit Implementation Act.

Audit procedures - compliance

As part of obtaining reasonable assurance about whether the basic financial statements are free of material misstatement, we will perform tests of the County and the TDA's compliance with provisions of applicable laws and regulations, contracts, and agreements, including grant agreements. However, the objective of those procedures will not be to provide an opinion on overall compliance, and we will not express such an opinion in our report on compliance issued pursuant to *Government Auditing Standards*.

The Uniform Guidance and the State Single Audit Implementation Act requires that we also plan and perform the audit to obtain reasonable assurance about whether the auditee has complied with federal statutes, regulations, and the terms and conditions of federal awards applicable to major programs. Our procedures will consist of tests of transactions and other applicable procedures described in the *OMB Compliance Supplement* for the types of compliance requirements that could have a direct and material effect on each of the County and the TDA's major programs. For federal programs that are included in the Compliance Supplement, our compliance and internal control procedures will relate to the compliance requirements that the Compliance Supplement identifies as being subject to audit. The purpose of these procedures will be to express an opinion on the County and the TDA's compliance with requirements applicable to each of its major programs in our report on compliance issued pursuant to the Uniform Guidance and the State Single Audit Implementation Act.

Nonattest services (if applicable)

All nonattest services to be provided in the attached engagement letter (if applicable) shall be provided pursuant to the AICPA Code of Professional Conduct. The AICPA Code of Professional Conduct requires that we establish objectives of the engagement and the services to be performed, which are described under nonattest services in the attached letter.

You agree that the County and the TDA's designated individual will assume all the County and the TDA's management responsibilities for the nonattest services we provide; oversee the services by designating an individual, with suitable skill, knowledge, or experience; evaluate the adequacy and results of the services; and accept responsibility for them. In order to ensure we provide such services in compliance with all professional standards, the designated individual is responsible for:

- Making all financial records and related information available to us.
- Ensuring that all material information is disclosed to us.
- Granting unrestricted access to persons within the entity from whom we determine it necessary to obtain audit evidence.
- Identifying and ensuring that such nonattest complies with the laws and regulations.

The accuracy and appropriateness of such nonattest services shall be limited by the accuracy and sufficiency of the information provided by the County and the TDA's designated individual. In the course of providing such nonattest services, we may provide professional advice and guidance based on knowledge of accounting, tax and other compliance, and of the facts and circumstances as provided by the County and the TDA's designated individual. Such advice and guidance shall be limited as permitted under the AICPA Code of Professional Conduct.

Communications

At the conclusion of the audit engagement, we may provide the County and the TDA's management and those charged with governance a letter stating any significant deficiencies or material weaknesses which may have been identified by us during the audit and our recommendations designed to help the County and the TDA make improvements in its internal control structure and operations related to the identified matters discovered in the financial statement audit. As part of this engagement, we will ensure that certain additional matters are communicated to the appropriate members of the County and the TDA. Such matters include (1) our responsibilities under GAAS, (2) the initial selection of and changes in significant accounting policies and their application, (3) our independence with respect to the County and the TDA, (4) the process used by County and the TDA's management in formulating particularly sensitive accounting estimates and the basis for our conclusion regarding the reasonableness of those estimates, (5) audit adjustments, if any, that could, in our judgment, either individually or in the aggregate be significant to the financial statements or our report, (6) any disagreements with the County and the TDA's management concerning a financial accounting, reporting, or auditing matter that could be significant to the financial statements, (7) our views about matters that were the subject of the County and the TDA's management's consultation with other accountants about auditing and accounting matters, (8) major issues that were discussed with the County and the TDA's management in connection with the retention of our services, including, among other matters, any discussions regarding the application of accounting principles and auditing standards, and (9) serious difficulties that we encountered in dealing with the County and the TDA's management related to the performance of the audit.

Other matters

Access to working papers

The working papers and related documentation for the engagement are the property of the Firm and constitute confidential information. We have a responsibility to retain the documentation for a period of time to satisfy legal or regulatory requirements for records

retention. It is our policy to retain all workpapers and client information for seven years from the date of issuance of the report. It is our policy to retain emails and attachments to emails for a period of 12 months, except as required by any governmental regulation. Except as discussed below, any requests for access to our working papers will be discussed with you prior to making them available to requesting parties. Any parties seeking voluntary access to our working papers must agree to sign our standard access letter.

We may be requested to make certain documentation available to regulators, governmental agencies (e.g., SEC, PCAOB, HUD, DOL, etc.), or their representatives ("Regulators") pursuant to law or regulations. If requested, access to the documentation will be provided to the Regulators. The Regulators may intend to distribute to others, including other governmental agencies, our working papers and related documentation without our knowledge or express permission. You hereby acknowledge and authorize us to allow Regulators access to and copies of documentation as requested. In addition, our Firm, as well as all other major accounting firms, participates in a "peer review" program covering our audit and accounting practices as required by the AICPA. This program requires that once every three years we subject our quality assurance practices to an examination by another accounting firm. As part of the process, the other firm will review a sample of our work. It is possible that the work we perform for the County and the TDA may be selected by the other firm for their review. If it is, they are bound by professional standards to keep all information confidential. If you object to having the work, we do for you reviewed by our peer reviewer, please notify us in writing.

Electronic transmittals

During the course of our engagement, we may need to electronically transmit confidential information to each other, within the Firm, and to other entities engaged by either party. Although email is an efficient way to communicate, it is not always a secure means of communication and thus, confidentiality may be compromised. As an alternative, we recommend using our Client Portal ("Portal") to transmit documents. Portal allows the County and the TDA, us, and other involved entities to upload and download documents in a secure location. You agree to the use of email, Portal, and other electronic methods to transmit and receive information, including confidential information, between the Firm, the County and the TDA, and other third-party providers utilized by either party in connection with the engagement.

Use of third-party providers and alternative practice structure

Cherry Bekaert LLP and Cherry Bekaert Advisory LLC (an associated, but not affiliated entity) are parties to an administrative services agreement ("ASA"). Cherry Bekaert LLP and Cherry Bekaert Advisory LLC are operating in an arrangement commonly described as an "alternative practice structure". Pursuant to the ASA, Cherry Bekaert LLP leases professional and administrative staff, both of which are employed by Cherry Bekaert Advisory LLC, to support Cherry Bekaert LLP's performance under this engagement letter. As a result, Cherry Bekaert LLP will share your confidential information with Cherry Bekaert Advisory LLC so that the leased employees are able to support Cherry Bekaert LLP's performance under this engagement letter. These leased employees are under the direct control and supervision of Cherry Bekaert LLP, which is solely responsible for the professional performance of the services under this engagement letter. The leased employees are subject to the standards governing the accounting profession, including the requirement to maintain the confidentiality of client information, and Cherry Bekaert LLP and Cherry Bekaert Advisory LLC have contractual agreements requiring confidential treatment of all client information.

To the extent Cherry Bekaert Advisory LLC will provide tax, advisory, and/or consulting services to you, Cherry Bekaert LLP will provide Cherry Bekaert Advisory LLC with access to your accounting, financial, and other records that Cherry Bekaert LLP maintains to enable Cherry Bekaert Advisory LLC to provide those services to you.

In addition to the structure noted above, in the normal course of business, we may on occasion use the services of an independent contractor or a temporary or loaned employee, all of whom may be considered a third-party service provider. On these occasions, we remain responsible for the adequate oversight of all services performed by the third-party service provider and for ensuring that all services are performed with professional competence and due professional care. We will adequately plan and supervise the services provided by the third-party service provider; obtain sufficient relevant data to support the work product; and review compliance with technical standards applicable to the professional services rendered. We will enter into a contractual agreement with the third-party service provider to maintain the confidentiality of information and be reasonably assured that the third-party service provider has appropriate procedures in place to prevent the unauthorized release of confidential information to others.

Subpoenas

In the event we are requested or authorized by the County and the TDA, or required by government regulation, subpoena, or other legal process to produce our working papers or our personnel as witnesses with respect to our engagement for the County and the TDA, the County and the TDA will, so long as we are not a party to the proceeding in which the information is sought, reimburse us for our professional time and expense, as well as the fees and expenses of our counsel, incurred in responding to such a request at standard billing rates.

Dispute resolution provision

This Dispute Resolution Provision sets forth the dispute resolution process and procedures applicable to any dispute or claim arising out of or relating to this engagement letter or the services provided hereunder, or any other audit or attest services provided by or on behalf of the Firm or any of its subcontractors or agents to the County and the TDA or at its request ("Disputes"), and shall apply to the fullest extent of the law, whether in contract, statute, tort (such as negligence), or otherwise.

Mediation

All Disputes shall be first submitted to nonbinding confidential mediation by written notice to the parties and shall be treated as compromise and settlement negotiations under the standards set forth in the Federal Rules of Evidence and all applicable state counterparts, together with any applicable statutes protecting the confidentiality of mediations or settlement discussions. If the parties cannot agree on a mediator, the International Institute for Conflict Prevention and Resolution ("CPR"), at the written request of a party, shall designate a mediator.

Arbitration procedures

If a Dispute has not been resolved within 90 days after the effective date of the written notice beginning the mediation process (or such longer period, if the parties so agree in writing), the mediation shall terminate, and the Dispute shall be settled by binding arbitration to be held at a mutually agreeable location. The arbitration shall be conducted in accordance with the CPR Rules for Non-Administered Arbitration that are in effect at the time of the commencement of the arbitration, except to the extent modified by this Dispute Resolution Provision (the

"Rules"). The arbitration shall be conducted before a panel of three arbitrators. Each of the County and the TDA and the Firm shall designate one arbitrator in accordance with the "screened" appointment procedure provided in the Rules, and the two party-designated arbitrators shall jointly select the third in accordance with the Rules. No arbitrator may serve on the panel unless he or she has agreed in writing to enforce the terms of the engagement letter and to abide by the terms of the Rules. Except with respect to the interpretation and enforcement of these arbitration procedures (which shall be governed by the Federal Arbitration Act), the arbitrators shall apply the laws of the Commonwealth of Virginia (without giving effect to its choice of law principles) in connection with the Dispute. The arbitrators may render a summary disposition relative to all or some of the issues, provided that the responding party has had an adequate opportunity to respond to any such application for such disposition. Any discovery shall be conducted in accordance with the Rules. The result of the arbitration shall be binding on the parties, and judgment on the arbitration award may be entered in any court having jurisdiction.

North Carolina
per attached email
dated 4/26/24

Costs

Each party shall bear its own costs in both the mediation and the arbitration; however, the parties shall share the fees and expenses of both the mediators and the arbitrators equally.

Waiver of trial by jury

In the event the parties are unable to successfully arbitrate any dispute, controversy, or claim, the parties agree to WAIVE TRIAL BY JURY and agree that the court will hear any matter without a jury.

Independent contractor

Each party is an independent contractor with respect to the other and shall not be construed as having a trustee, joint venture, agency, or fiduciary relationship.

No third-party beneficiaries

The parties do not intend to benefit any third party by entering into this agreement, and nothing contained in this agreement confers any right or benefit upon any person or entity who or which is not a signatory of this agreement.

Statute of limitations

The County and the TDA agrees not to bring any claims against any partner or employee of the Firm in any form for any reason. The County and the TDA and the Firm agree that any suit arising out of or related to the services contemplated by this engagement letter must be filed within one year after the cause of action arises. The cause of action arises upon the earlier of (i) delivery of the final work product for which the firm has been engaged, (ii) where applicable, filing of the final work product for which the firm has been engaged, or (iii) the date which the services contemplated under this engagement letter are terminated by either party.

LAW the statute of
limitations per North
Carolina law
per email attached
dated 4/26/24

Terms and conditions supporting fees


The estimated fees set forth in the attached engagement letter are based on anticipated full cooperation from the County and the TDA's personnel, timely delivery of requested audit schedules and supporting information, timely communication of all significant accounting and financial reporting matters, the assumption that unexpected circumstances will not be

encountered during the audit, as well as working space and clerical assistance as mutually agreed upon and as is normal and reasonable in the circumstances. We strive to ensure that we have the right professionals scheduled on each engagement. As a result, sudden County and the TDA requested scheduling changes or scheduling changes necessitated by the agreed information not being ready on the agreed-upon dates can result in expensive downtime for our professionals. Any last-minute schedule changes that result in downtime for our professionals could result in additional fees. Our estimated fees do not include assistance in bookkeeping or other accounting services not previously described. If, for any reason, the County and the TDA is unable to provide such schedules, information, and assistance, the Firm, and the County and the TDA will mutually revise the fee to reflect additional services, if any, required of us to achieve these objectives.

The estimated fees contemplate that the County and the TDA will provide adequate documentation of its systems and controls related to significant transaction cycles and audit areas.

In providing our services, we will consult with the County and the TDA with respect to matters of accounting, financial reporting, or other significant business issues as permitted by professional standards. Accordingly, time necessary to affect a reasonable amount of such consultation is reflected in our fees. However, should a matter require research, consultation, or audit work beyond that amount, the Firm, and the County and the TDA will agree to an appropriate revision in our fee.

The estimated fees are based on auditing and accounting standards effective as of the date of this engagement letter and known to apply to the County and the TDA at this time. Unless otherwise indicated, estimated fees do not include any time related to the application of new auditing or accounting standards that impact the County and the TDA for the first time. If new auditing or accounting standards are issued subsequent to the date of this letter and are effective for the period under audit, we will estimate the impact of any such standard on the nature, timing, and extent of our planned audit procedures and will communicate with the County and the TDA concerning the scope of the additional procedures and the estimated fees.

 ~~The County and the TDA agrees to pay all costs of collection (including reasonable attorneys' fees) that the Firm may incur in connection with the collection of unpaid invoices.~~ In the event of nonpayment of any invoice rendered by us, we retain the right to (a) suspend the performance of our services, (b) change the payment conditions under this engagement letter, or (c) terminate our services. If we elect to suspend our services, such services will not be resumed until your account is paid. If we elect to terminate our services for nonpayment, the County and the TDA will be obligated to compensate us for all time expended and reimburse us for all expenses through the date of termination.

This engagement letter sets forth the entire understanding between the County and the TDA and the Firm regarding the services described herein and supersedes any previous proposals, correspondence, and understandings whether written or oral. Any subsequent changes to the terms of this letter, other than additional billings, will be rendered in writing and shall be executed by both parties. Should any portion of this engagement letter be ruled invalid, it is agreed that such invalidity will not affect any of the remaining portions.

Per email
attached dated
4/26/24

Contract Signature Page
Cherry Bekaert LLP
Contract #: 2024561
Amount: \$132,750.00

IRAN DIVESTMENT ACT CERTIFICATION. Contractor hereby certifies that Contractor, and all subcontractors, are not on the Iran Final Divestment List ("List") created by the North Carolina State Treasurer pursuant to N.C.G.S. 147-86.55-69. Contractor shall not utilize any subcontractor that is identified on the List.

E-VERIFY. CONTRACTOR shall comply with the requirements of Article 2 of Chapter 64 of the General Statutes. Further, if CONTRACTOR utilizes a subcontractor, CONTRACTOR shall require the subcontractor to comply with the requirements of Article 2 of Chapter 64 of the General Statutes.

NON-APPROPRIATION CLAUSE: This Agreement shall be subject to the annual appropriation of funds by the Cumberland County Board of Commissioners. Notwithstanding any provision herein to the contrary, in the event funds are not appropriated for this Agreement, County shall be entitled to immediately terminate this Agreement, without penalty or liability, except the payment of all contract fees due under this Agreement through and including the last day of service.

Approved for Legal Sufficiency upon
formal execution by all parties.

BY: _____

ctf/la 5/2/24
County Attorney's Office

*in amendment in the
body on pages 7-8
of terms.
CR*



SOLID WASTE MANAGEMENT

MEMORANDUM FOR THE AGENDA OF THE MAY 9, 2024 AGENDA SESSION

TO: BOARD OF COUNTY COMMISSIONERS

**FROM: AMANDA L. BADER, P.E., GENERAL MANAGER FOR NATURAL
RESOURCES**

DATE: 4/23/2024

**SUBJECT: INTENT TO LEASE REAL PROPERTY AT 2210 RICH WALKER ROAD
FOR A SOLID WASTE CONTAINER SITE**

Requested by: CLARENCE GRIER, COUNTY MANAGER

**Presenter(s): AMANDA L. BADER, P.E., GENERAL MANAGER FOR NATURAL
RESOURCES**

BACKGROUND

The Solid Waste Department operates the container site located at 2210 Rich Walker Road in Fayetteville. The current lease is with Robert Earl Cooper, DBA Shirley Beard Cooper Heirs. The lease agreement was entered into on January 1, 2019, and expires on December 31, 2023. The current lease term is for five years at a total cost of FIVE THOUSAND DOLLARS (\$5,000). The property owner has agreed to renew the lease for an additional five years at a total cost of SIX THOUSAND DOLLARS (\$6,000) with the option to renegotiate a new lease at the end of this period. The proposed effective date of the new lease is January 1, 2024, with an expiration date of December 31, 2028.

The extended processing time between leases is due to the passing of Robert Earl Cooper. Staff had difficulties locating all parties of the Shirley Beard Cooper Heirs and the new assigned executor.

It is critical that this site remains open to provide the necessary service to the citizens of the surrounding community.

RECOMMENDATION / PROPOSED ACTION

Staff recommends that the proposed actions below be placed on the May 20, 2024, Board of Commissioners agenda as consent items:

1. Approve the lease renewal for the Cooper Container Site.
2. Authorize the Chairman to execute the attached lease agreement that has been pre-audited and determined to be legally sufficient.

ATTACHMENTS:

Description

Lease Agreement

Type

Backup Material

STATE OF NORTH CAROLINA

LEASE AGREEMENT
(COOPER CONTAINER SITE)

COUNTY OF CUMBERLAND

Approved by the Board of Commissioners on _____, 2023.

THIS LEASE AGREEMENT made and entered into this 1st day of January 2024, by and between, SHIRLEY BEARD COOPER HEIRS, Nora Susann Cooper Bennett, James Fulton Cooper, Robert Laurin Cooper, and Robbi Cheryl Dywan of Cumberland County, North Carolina, hereinafter called "OWNER", and CUMBERLAND COUNTY, party of the second part hereinafter called "COUNTY".

WITNESSETH:

That subject to the terms and conditions herein contained, the OWNER does hereby lease and let unto the COUNTY, and the COUNTY accepts as LESSEE, that certain tract or parcel of land in EASTOVER Township, Cumberland County, North Carolina, being described as follows:

Containing 1.00 acre.

BEGINNING at a set re-bar in the southeast right-of-way (60' R/W) margin of SR 1719, Rich Walker Road, said point being the following courses from an NCDOT Right-of-way Disk at the intersection of the northern right-of-way margin of I-295 South and the southeast margin of the new right-of-way of SR 1719, Rich Walker Road: North 57 degrees 19 minutes 31 seconds East 98.43 feet to a Right-of-way Disk; thence North 32 degrees 40 minutes 29 seconds West 14.42 feet to a Right-of-way Disk in the old right-of-way of SR 1719, thence North 57 degrees 56 minutes 50 seconds East 106.38 feet to the point of beginning, thence for a first call with said right-of-way North 57 degrees 56 minutes 50 seconds East 200.00 feet to a set re-bar, said point being South 57 degrees 56 minutes 50 seconds West 22.48 feet from the northern line of the tract of which this is a part; thence South 32 degrees 03 minutes 10 seconds East 217.80 feet to a set re-bar; thence North 32 degrees 03 minutes 10 seconds West 217.80 feet to the point of beginning, containing 1.00 acre and being a portion of that tract belonging to Shirley Beard Cooper Heirs and described in Deed Book 2441, Page 172 of the Cumberland County Registry..

To have and to hold said lands for the term and upon the conditions as follows:

I.

The term of this Lease shall be for a period of five (5) years beginning on January 1, 2024. The COUNTY is granted the option to renew this Lease for an additional period

of five (5) years upon the same terms and conditions by tender of the same rental thirty (30) days prior to expiration of the original terms.

II.

The COUNTY will use this property for the purpose of maintaining a solid waste container site on said property with the necessary solid waste containers, ramps, pads, driveways, and fences for public use.

III.

The rental to be paid by the COUNTY to OWNER for said property for the five (5) year period shall be a lump sum of SIX THOUSAND DOLLARS (\$6,000.00) payable promptly after the execution of this Lease Agreement.

IV.

The COUNTY agrees to accept the said property in its present condition and make all improvements required to place said solid waste containers on property.

V.

The COUNTY will maintain said property in an orderly manner.

VI.

At the expiration of this Lease, the COUNTY shall remove any pads, ramps, fences, fill, or other materials placed on said property by the COUNTY if so required by the OWNER.

VII.

The OWNER stipulates she is the owner of the above described property, and has the authority to enter into this Lease.

VIII.

The COUNTY agrees that it shall indemnify and hold harmless the OWNER from any claims for damages, either personal or property, made by the employees, agents or contractors of the COUNTY arisen out of or in connection with the COUNTY'S operating and maintaining the Solid Waste Container Site on said property.

IX

IRAN DIVESTMENT ACT CERTIFICATION: Owners hereby certifies that Contractor, and all subcontractors, are not on the Iran Final Divestment List ("List") created by the North Carolina State Treasurer pursuant to N. C. G. S. 147-86.55-69. Contractor shall not utilize any subcontractor that is identified on the List.

E-VERIFY: OWNERS shall comply with the requirements of Article 2 of Chapter 64 of the General Statutes. Further, if CONTRACTOR utilizes a subcontractor, CONTRACTOR shall require the subcontractor to comply with the requirements of Article 2 of Chapter 64 of the General Statutes.

IN WITNESS WHEREOF, this instrument is duly executed the day and year first above written.

ATTEST

COUNTY OF CUMBERLAND

BY: _____

BY: _____

ANDREA TEBBE, Clerk

GLENN ADAMS, Chairman
Board of County Commissioners

OWNER(S)

BY: Nora Susann Cooper Bennett James Fulton Cooper
NORA SUSANN COOPER BENNETT JAMES FULTON COOPER

Robert Laurin Cooper
ROBERT LAURIN COOPER

Robbi Cheryl Dywan
ROBBI CHERYL DYWAN

THIS INSTRUMENT HAS BEEN PRE-AUDITED IN THE MANNER REQUIRED BY THE LOCAL GOVERNMENT BUDGET AND FISCAL CONTROL ACT.

Brian Haney
VICKI EVANS, County Finance Director

Brian Haney, Interim

APPROVED FOR LEGAL SUFFICIENCY
upon formal execution by all parties ^{on}

BY: [Signature] 4/17/24
County Attorney's Office

and upon approval by the Board

STATE OF NORTH CAROLINA
COUNTY OF CUMBERLAND

I, _____, a Notary Public in and for the County and State of North Carolina, do hereby certify that ANDREA TEBBE, who being duly sworn, personally appeared before me this day and acknowledged that she is the Clerk of the Cumberland County Board of Commissioners; that GLENN ADAMS, is the Chairman of the Cumberland County Board of Commissioners; that the seal affixed to the foregoing instrument was duly passed at a regular meeting of the Board of Commissioners as therein set forth and was signed, sealed, and attested by the said Clerk on behalf of said Board, all by its authority duly granted; and that said ANDREA TEBBE acknowledged the said Agreement to be the act and deed of the said Board.

WITNESS my hand and notarial seal this the ____ day of _____, 2023.

Notary Public

My Commission Expires:

STATE OF NORTH CAROLINA
COUNTY OF CUMBERLAND

I, William Frank Haynes, a Notary Public in and for the aforesaid County and State, do hereby certify that NORA SUSANN COOPER BENNETT personally appeared before me this day and acknowledged the due execution of the foregoing Lease Agreement for the purposes therein expressed.

WITNESS my hand and notarial seal this the 20 day of DEC, 2023.

William Frank Haynes
Notary Public

My Commission Expires: 1-21-2028

STATE OF NORTH CAROLINA
COUNTY OF CUMBERLAND

I, William Frank Hayes, a Notary Public in and for the aforesaid County and State, do hereby certify that JAMES FULTON COOPER personally appeared before me this day and acknowledged the due execution of the foregoing Lease Agreement for the purposes therein expressed.

WITNESS my hand and notarial seal this the 20th day of Dec, 2023.

William Frank Hayes

Notary Public

My Commission Expires: 1-21-2028

STATE OF NORTH CAROLINA
COUNTY OF CUMBERLAND

I, William Frank Hayes, a Notary Public in and for the aforesaid County and State, do hereby certify that ROBERT LAURIN COOPER personally appeared before me this day and acknowledged the due execution of the foregoing Lease Agreement for the purposes therein expressed.

WITNESS my hand and notarial seal this the 20th day of Dec, 2023.

William Frank Hayes

Notary Public

My Commission Expires: 1-21-2028

STATE OF NORTH CAROLINA
COUNTY OF CUMBERLAND

I, William Frank Hayes, a Notary Public in and for the aforesaid County and State, do hereby certify that ROBBI CHERYL DYWAN personally appeared before me this day and acknowledged the due execution of the foregoing Lease Agreement for the purposes therein expressed.

WITNESS my hand and notarial seal this the 20 day of Dec, 2023.

William Frank Hayes

Notary Public

My Commission Expires: 1-21-2028



**ASSISTANT COUNTY MANAGER STRATEGIC MANAGEMENT/ GOVERNMENTAL
AFFAIRS**

**MEMORANDUM FOR THE AGENDA OF THE MAY 9, 2024
AGENDA SESSION**

TO: BOARD OF COUNTY COMMISSIONERS

FROM: SALLY SHUTT, ASSISTANT COUNTY MANAGER

DATE: 5/2/2024

**SUBJECT: RESOLUTION TO ACCEPT ARP FUNDING OFFER FOR ASSET
MANAGEMENT & FINANCIAL PLAN FOR NORCRESS**

Requested by: CLARENCE GRIER, COUNTY MANAGER

Presenter(s): SALLY SHUTT, ASSISTANT COUNTY MANAGER

BACKGROUND

The Northern Cumberland County Regional Sewer System has been approved for American Rescue Plan (ARP) funding assistance in the amount of \$400,000 from the N.C. Department of Environmental Quality Division of Water Infrastructure to perform for an Asset Management & Financial Plan.

RECOMMENDATION / PROPOSED ACTION

County Management recommends that the proposed actions below be placed on the May 20, 2024, Board of Commissioners and the NORCRESS Governing Board agendas as consent items:

1. Approve the resolution for the acceptance of the ARP funding from the N.C. Department of Environmental Quality.
2. Designate the County Manager as the Authorized Representative for the project.

ATTACHMENTS:

Description

Type

Resolution to Accept ARP Funding

Backup Material

**RESOLUTION BY THE NORTHERN CUMBERLAND REGIONAL SEWER SYSTEM
GOVERNING BOARD TO ACCEPT ARP FUNDING**

WHEREAS, the American Rescue Plan (ARP) funded from the State Fiscal Recovery Fund was established in S.L. 2021-180 to assist eligible units of government with meeting their water/wastewater infrastructure needs, and

WHEREAS, the North Carolina Department of Environmental Quality has offered American Rescue Plan (ARP) funding in the amount of \$400,000 to perform an Asset Management and Financial plan detailed in the submitted application, and

WHEREAS, the Northern Cumberland Regional Sewer System (NORCRESS) District intends to perform said project in accordance with the agreed scope of work,

NOW, THEREFORE, BE IT RESOLVED BY THE CUMBERLAND COUNTY BOARD OF COMMISSIONERS ACTING AS THE GOVERNING BOARD OF THE NORCRESS DISTRICT:

That the NORCRESS District does hereby accept the American Rescue Plan (ARP) offer of \$400,000.

That the NORCRESS District does hereby give assurance to the North Carolina Department of Environmental Quality that any Conditions or Assurances contained in the Award Offer will be adhered to.

That Clarence Grier, County Manager, and successors so titled, is hereby authorized and directed to furnish such information as the appropriate State agency may request in connection with such application or the project; to make the assurances as contained above; and to execute such other documents as may be required by the Division of Water Infrastructure.

Adopted this the 20th day of May 2024 at Cumberland County, North Carolina.

Signature of Chief Executive Officer

Date



**ASSISTANT COUNTY MANAGER STRATEGIC MANAGEMENT/ GOVERNMENTAL
AFFAIRS**

**MEMORANDUM FOR THE AGENDA OF THE MAY 9, 2024
AGENDA SESSION**

TO: BOARD OF COUNTY COMMISSIONERS

FROM: SALLY SHUTT, ASSISTANT COUNTY MANAGER

DATE: 5/3/2024

**SUBJECT: RESOLUTION IN SUPPORT OF CUMBERLAND COUNTY'S FY2025
STATE LEGISLATIVE FUNDING REQUESTS**

Requested by: CLARENCE GRIER, COUNTY MANAGER

Presenter(s): SALLY SHUTT, ASSISTANT COUNTY MANAGER

BACKGROUND

Cumberland County forwarded state funding requests to the county's N.C. General Assembly delegation. The County is asking for \$30 million to assist in the construction of public water lines in the Gray's Creek Water and Sewer District; \$2 million for the purchase of a mobile incident command center for Emergency Services; and \$250,000 for a comprehensive landfill gas management, utilization, and optimization study.

RECOMMENDATION / PROPOSED ACTION

County Management recommends that the Board approve the attached resolution at the May 9, 2024, Agenda Session and forward the signed resolution formally supporting the requests to the Cumberland County N.C. General Assembly delegation.

ATTACHMENTS:

Description	Type
Resolution in Support of FY2025 State Funding	Backup Material
Mobile Incident Command Center	Backup Material

CUMBERLAND COUNTY BOARD OF COMMISSIONERS

RESOLUTION IN SUPPORT OF CUMBERLAND COUNTY'S STATE LEGISLATIVE FUNDING REQUESTS FOR FY2025

WHEREAS, the residents of Cumberland County need safe and reliable drinking water; and

WHEREAS, the Gray's Creek Water and Sewer District Phase 1 project will provide public water supply to residents who have wells contaminated with GENX; and

WHEREAS, the Board of County Commissioners has identified provision of safe drinking water as a priority for the Gray's Creek area; and

WHEREAS, the Board is seeking state funding from the N.C. General Assembly for this water project, as well as other items related to public safety and environmental projects.

THEREFORE, BE IT RESOLVED that the Cumberland County Board of Commissioners, meeting in agenda session on the 9th day of May 2024 requests funding as follows:

1. The Board requests \$30 million in funding for extending public water lines in the Gray's Creek area where private wells have been contaminated by GenX; and
2. The Board requests funding in the amount of \$2 million for a mobile incident command center for Cumberland County Emergency Services; and
3. The Board requests \$250,000 for a Comprehensive Landfill Gas Management, Utilization, and Optimization Study.

Adopted this 9th day of May 2024.

Glenn Adams, Chairman
Board of Commissioners

ATTEST:

Andrea Tebbe, Clerk
Board of Commissioners



Emergency Services Department

Cumberland County Emergency Services is requesting \$2 million for a mobile incident command center.

1. **Age and Maintenance**

- The command post currently in use was manufactured in 2005. Despite diligent maintenance, signs of wear and tear have become evident. Electrical components have required attention in the past. Notably, all the air conditioning units had to be recently replaced.

2. **Space: The new mobile command post will increase the number of staff that can work in the space from 6 to 25 people.**

- As incidents become increasingly complex in terms of size, duration, and type, more first responders are required on emergency scenes to manage them effectively. In North Carolina, a Type III incident management team with 10-20 members who hold valid credentials is commonly deployed to help manage significant incidents. However, our current command post has limited capacity and can accommodate a maximum of only 6 people, which is well below the minimum staffing levels required for such incidents.

3. **Layout: The proposed command post layout facilitates collaboration during complex incidents by offering designated space for breakout meetings.**

- The new command post will be equipped with two breakout meeting spaces, which will allow technical and general command staff meetings to occur simultaneously. Multiple meeting spaces increase efficiency and collaboration amongst responding agencies. It's worth noting that the existing command post does not have a dedicated meeting space.

4. **State-of-the-Art Technology:**

- The mobile command post offers comprehensive surveillance of the incident area through closed-caption cameras. It provides ample scene lighting for optimal visibility during operations. Multiple large screens are available for displaying critical information, aiding in decision-making. The telecommunicator workstation seamlessly integrates with Cumberland County and City of Fayetteville CAD software, facilitating efficient communication and coordination. Additionally, the command post ensures reliable communication with tri-band radios and satellite communication redundancy, ensuring connectivity even in remote or challenging environments.

5. **Tactical Dispatch Capability: The unit will be equipped with two tactical dispatch workstations that telecommunicator will use to reduce radio traffic and load on the primary 911 center(s).**

- During complex incidents, there is often a surge in radio communication from first responders who are present at the scene. This increased radio traffic can put a great deal of stress on telecommunicators who are managing the communication channels. In order to alleviate this pressure, two tactical telecommunicators from the administrative staff will be deployed with the unit. This will allow the 911 center to focus on handling



Emergency Services Department

calls that come in from citizens, while the tactical dispatchers can concentrate on the on-scene needs.

6. **Clean Idle Technology and Supplemental Solar Power: The new mobile command post will be equipped with technology that will reduce the carbon footprint while using the unit.**
 - The new mobile command post will feature a Tier 4 compliant generator, ensuring clean emissions even during prolonged incidents. Furthermore, it will be outfitted with solar-powered charging modules, reducing engine load when charging batteries.



Solid Waste Management

Comprehensive Landfill Gas Management, Utilization, and Optimization Study

Cumberland County landfill produces approximately 1000 scfm of landfill gas per day. Although this renewable fuel is currently sold to an industry as boiler fuel based on BTU value, there is no additional consideration of the value of other environmental attributes. Current gas sales are hindered by lack of storage and aging infrastructure. Cumberland County is committed to reduction of pollution in our operations.

Cumberland County is navigating options for **landfill expansion** and **waste diversion strategies** while **mitigating environmental justice impacts** in its community.

A comprehensive study is needed to identify and quantify opportunities that maximize the **triple bottom line** for the use of landfill gas as a valuable resource in an economically distressed community.

Cumberland County requests an appropriation of \$250,000 for a Comprehensive Landfill Gas Management, Utilization, and Optimization Study.

The elements of the study would include:

- Identify potential partners and end uses for landfill gas.
- Identify strategies to improve methane collection at the site.
- Development gas generation models for options including increased capacity with potential land acquisition, balefill reclamation, and organics diversion as part of transfer station operations. Consider the use of existing infrastructure for digestion and the cost of new digestion facilities.
- Determine methane storage and distribution system capacity including capacity of the gas main.
- Study scenarios for using environmental attributes of the landfill gas and the feasibility of their use in comparison with the value of thermal properties.
- Evaluate Renewable Natural Gas (RNG) opportunities including cost and schedule for implementation.
- Conduct waste characterization studies including existing waste streams and alternative waste streams.
- Identify potential funding opportunities for the various strategies.



ENGINEERING AND INFRASTRUCTURE DEPARTMENT

**MEMORANDUM FOR THE AGENDA OF THE MAY 9, 2024
AGENDA SESSION**

TO: BOARD OF COUNTY COMMISSIONERS

**FROM: JERMAINE WALKER, DIRECTOR OF ENGINEERING AND
INFRASTRUCTURE**

DATE: 4/25/2024

**SUBJECT: BID AWARD FOR EMERGENCY SERVICES CHILLER
REPLACEMENT**

Requested by: CLARENCE GRIER, COUNTY MANAGER

**Presenter(s): JERMAINE WALKER, DIRECTOR OF ENGINEERING AND
INFRASTRUCTURE**

BACKGROUND

The renovation of 500 Executive Place to become the new Cumberland County Emergency Services Center started on March 8, 2021. During the design phase, it was decided the preexisting 200-ton chiller was to remain as the primary heat exchanger to provide the necessary comfort cooling and dehumidification to maintain continuous operations.

The new Emergency Services Center went live on December 14, 2022, and since then several critical electrical and pneumatic components have had to be replaced on the current Air Stack chiller. The repairs have become more complicated and costly each time to the point that staff believes the chiller will soon require replacement.

The criticality of this facility necessitates that the chilled water system be operable 24 hours a day, seven days a week. The dehumidification is not only required for the personnel but also to maintain the temperature and relative humidity of the communications servers for their functionality.

This project was solicited in December 2023, and rebid in February 2024 with bids closing February 26, 2024.

Dail Mechanical Incorporated was determined to be the lowest responsive responsible bidder at \$419,000.

This project is currently an unfunded Capital Improvement Project, however there is \$778,672.71 remaining within the Emergency Operations Center Capital Project Fund (not including interest income) that could be used to fund this project, along with the chiller design (\$21,300), which was funded out of the County's Capital Investment Fund and should be included within this project.

The Board approved a Capital Project Budget Ordinance for 500 Executive Place on June 17, 2019 which authorized the County Manager to transfer funds between line items within the capital project ordinance.

RECOMMENDATION / PROPOSED ACTION

Staff recommends the Board move the following items forward for consideration at the May 20, 2024, regular meeting:

- Approval of bid award for the Emergency Services Center Chiller Replacement to Dail Mechanical Incorporated as the lowest responsive responsible bidder.
- Approval of request to fund the chiller replacement and chiller design costs out of the Emergency Operations Center Capital Project Fund, which has remaining capacity to cover these expenditures.

ATTACHMENTS:

Description	Type
Certified Bid Tab	Backup Material
Certified LOR	Backup Material
Chiller Drawings	Backup Material
Addendum 1	Backup Material
Project Solicitation and Specifications	Backup Material

Cumberland County EMS Center – Chiller Replacement



Bid Opening Monday, February 26, 2024, the stroke of 2:30 p.m.
TWC No. 2877-P

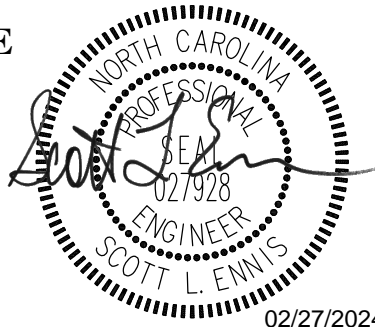
Contractor	License #	Bid Bond	MBE Documents	Base Bid (\$)	Remarks
Haire Plumbing & Mechanical Co., Inc	4230	✓	✓	489,000	
Dail Mechanical Inc.	7422	✓	✓	419,000	Low Bidder

This is to certify that the bids tabulated herein were opened and read by the Owner, and observed by the Contractors, at the stroke of **2:30 p.m.** on the **26th** day of **February 2024** at the **Office of Cumberland County Engineering Department, in the City of Fayetteville, NC, 130 Gillespie Street, Suite 214 Fayetteville, NC, 28301.**

Remarks:

1. N/A
2. N/A
3. N/A

Scott L. Ennis, PE
The Wooten Company



February 27, 2024

Mr. Jermain Walker
Cumberland County, Engineering Department
City of Fayetteville
130 Gillespie Street., Ste 214
Fayetteville, NC 28301

Re: Cumberland County EMS Center – Chiller Replacement

Dear Mr. Walker:

Enclosed for your review are the certified bid tabulations and low base bid contractor recommendation for the above referenced project.

The low single prime base bid for the Cumberland County EMS Center-Chiller Replacement in Fayetteville, North Carolina and associated electrical, mechanical, and controls work required in the Construction Documents:

Dail Mechanical Inc.
3200-110 Glen Royal Road
Raleigh, NC 27617
(919) 307-3100

Base Bid..... \$419,000.00

The Wooten Company recommends awarding the contract to the apparent low bidder, Dail Mechanical Inc., to include a Base Bid for Owner preferred equipment.

Sincerely,

THE WOOTEN COMPANY

Scott L. Ennis P.E.

REVISIONS

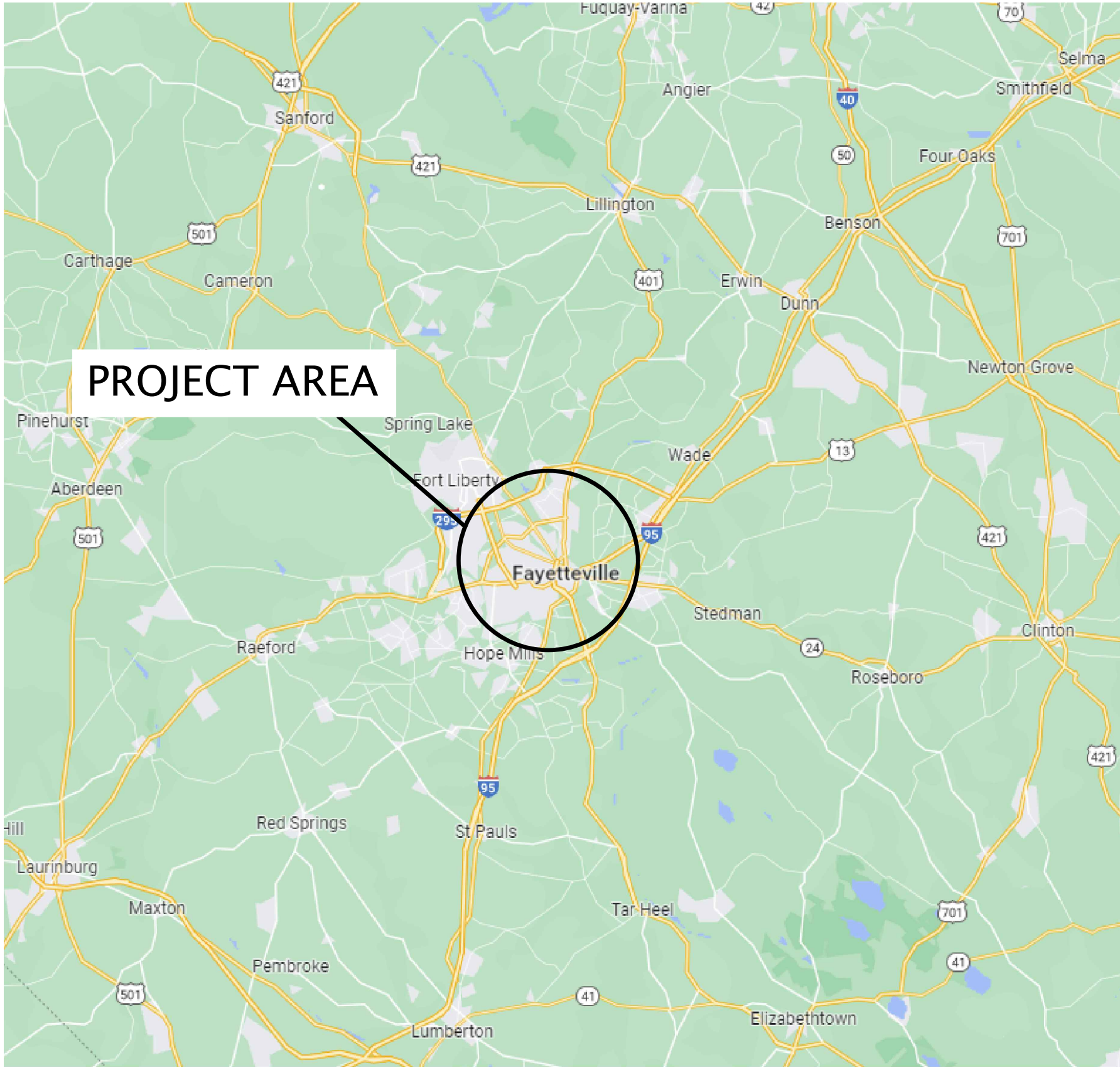
CUMBERLAND COUNTY

NORTH CAROLINA

EMS CENTER CHILLER UPGRADE

FEBRUARY 14, 2024

RE-BID #2 SET



VICINITY MAP
NOT TO SCALE

SHEET INDEX

CS	COVER
M-000	LEAD SHEET
MD-101	DEMOLITION PLAN
M-100	NEW WORK PLAN
M-201	CONTROLS 1
M-300	DETAILS
M-301	DETAILS
M-302	DETAILS
E-000	LEAD SHEET
ED-100	DEMOLITION PLAN
E-100	NEW WORK PLAN
E-200	DETAILS & PANEL SCHEDULES



120 North Boylan Avenue • Raleigh, NC 27603-1423
(919) 828-0531 • thewootencompany.com
License Number : F-0115



PROJECT AREA MAP
NOT TO SCALE

MECHANICAL SYMBOL LEGEND	
	SUPPLY DUCT PATTERN
	REFRIGERANT SUPPLY PIPING
	REFRIGERANT SUCTION PIPING
	CHW SUPPLY PIPING
	CHW RETURN PIPING
	CONDENSATE DRAIN PIPING
	DIRECTION OF SLOPE FOR PIPE OR DUCT
	SUPPLY DIFFUSER
	RETURN GRILLE OR REGISTER
	EXHAUST GRILLE OR REGISTER
	TEMPERATURE SENSOR - EQUIPMENT NUMBER
	HUMIDISTAT
	FIRE DAMPER
	SMOKE DAMPER
	SMOKE DETECTOR
	DUCT DOWN
	DUCT UP
	MANUAL VOLUME DAMPER
	BUTTERFLY VALVE
	PIPE TURN DOWN
	PIPE TURN UP
	PIPE REDUCER
	FLEXIBLE DUCT
	CARBON DIOXIDE SENSOR
	TWIST TIMER - EQUIPMENT NUMBER
	VAV THERMOSTAT WITH ADJUSTMENT
	DUCT STATIC PRESSURE SENSOR
	MOTOR OPERATED DAMPER
	MOTOR STARTER/DISCONNECT
	VAV FLAT PLATE TEMPERTURE SENSOR ONLY
	ROOM NUMBER
	POINT OF CONNECTION BETWEEN NEW AND EXISTING WORK
	POINT BETWEEN EXISTING WORK TO REMAIN AND EXISTING WORK TO BE REMOVED
	EXISTING WORK TO BE REMOVED
	EXISTING WORK TO REMAIN
	NEW WORK
	WATER SENSOR (LOCATED BELOW ACCESS FLOOR)
	HEAT DETECTOR
	SMOKE DETECTOR
	INTERVAL TIMER

GENERAL NOTES:

1. THE CONTRACTOR SHALL COORDINATE WORK WITH THAT OF THE OTHER TRADES PRIOR TO INSTALLATION OF ANY PIPING AND EQUIPMENT.
2. THE CONTRACTOR SHALL MAKE A COMPLETE REVIEW OF THE MECHANICAL PLANS, SCHEDULES, AND DETAILS PRIOR TO INSTALLATION OF THE MECHANICAL SYSTEMS AND REVIEW ANY CONFLICTS THAT ARE NOTED WITH THE ENGINEER.
3. THE MECHANICAL CONTRACTOR SHALL ENSURE THAT ITEMS TO BE FURNISHED UNDER THE CONTRACT WILL FIT THE SPACE AVAILABLE. THE CONTRACTOR SHALL MAKE NECESSARY FIELD MEASUREMENTS TO ASCERTAIN SPACE REQUIREMENTS, INCLUDING THOSE FOR CONNECTIONS, AND SHALL FURNISH AND INSTALL SUCH SIZES AND SHAPES OF EQUIPMENT AS NECESSARY.
4. ALL EQUIPMENT SHALL BE LOCATED AND INSTALLED TO PROVIDE MAXIMUM SPACE FOR PROPER MAINTENANCE AND SERVICE.
5. ALL POWER WIRING AND ASSOCIATED CONDUIT SHALL BE PROVIDED TO HVAC EQUIPMENT BY THE ELECTRICAL CONTRACTOR. THE HVAC CONTRACTOR SHALL FURNISH ALL MOTOR STARTERS, DISCONNECT SWITCHES, AND COMBINATION STARTERS FOR HVAC EQUIPMENT AND TURN THEM OVER TO THE ELECTRICAL CONTRACTOR FOR INSTALLATION. ALL FINAL POWER WIRING CONNECTIONS TO HVAC EQUIPMENT SHALL BE MADE BY THE HVAC CONTRACTOR FROM SLACK WIRE LEFT BY THE ELECTRICAL CONTRACTOR. REFER TO STANDARD ELECTRICAL CONNECTION DETAIL FOR DIVISION RESPONSIBILITY REGARDING ELECTRICAL REQUIREMENTS. MECHANICAL CONTRACTOR SHALL PROVIDE ALL CONTROL WIRING, IN CONDUIT, REQUIRED TO SATISFACTORILY CONTROL ALL EQUIPMENT INCLUDED IN THIS SECTION. FURNISH AND WIRE ALL CONTROL DEVICES SUCH AS THERMOSTATS, SWITCHES, RELAYS AND ANY OTHER DEVICES NECESSARY TO CONTROL THE EQUIPMENT FURNISHED IN THIS SECTION UNLESS NOTED OTHERWISE.
6. THE MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL HIS OWN SUPPORT DEVICES. ALL LOCATIONS SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR AND OTHER PRIME CONTRACTORS PRIOR TO INSTALLATION.
7. THE MECHANICAL CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR FLOOR PLAN DIMENSIONS. DO NOT SCALE THESE DRAWINGS.
8. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PENETRATIONS (PERTAINING TO HVAC WORK) THROUGH THE ROOF. THE MECHANICAL CONTRACTOR SHALL COORDINATE WITH THE ROOFING CONTRACTOR FOR WATER PROOFING AROUND THESE OPENINGS. ROOF CURBS FOR HVAC EQUIPMENT SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE ROOFING CONTRACTOR.
9. THE MECHANICAL CONTRACTOR SHALL COORDINATE SIZE AND LOCATION OF ALL PENETRATIONS THROUGH THE ROOF WITH THE GENERAL CONTRACTOR AND ROOFING SUB-CONTRACTOR.
10. ALL PIPING, AND EQUIPMENT LAYOUTS AND LOCATIONS SHOWN ARE DIAGRAMMATIC. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE PROJECT AND COORDINATE THE PIPE LAYOUT WITH ALL CONTRACTORS PRIOR TO INSTALLATION.
11. INSTALLED HYDRONIC PIPING SHALL BE PERMANENTLY IDENTIFIED BY THEIR CONTENT, FUNCTION, AND DIRECTION OF FLOW. ALL IDENTIFICATION MARKERS SHALL BE PERMANENTLY STENCILED ON THE PIPING IN A LEGIBLE MANNER AT NO GREATER DISTANCE THAN 10'-0" ON CENTER.
12. A MANUAL AIR VENT SHALL BE INSTALLED AT EVERY HIGH POINT OF THE ENTIRE HYDRONIC PIPING SYSTEM.
13. DO NOT INSTALL HYDRONIC PIPING OVER AND ELECTRICAL SWITCHGEAR OR PANEL BOARDS.
14. FLEXIBLE PIPE CONNECTIONS SHALL BE PROVIDED AT ALL HYDRONIC PIPING CONNECTIONS AT CHILLERS.
15. ALL BELT DRIVEN EQUIPMENT SHALL BE PROVIDED WITH A NEW BELT AT FINAL COMPLETION AND A NEW SPARE BELT SHALL BE TURNED OVER TO MAINTENANCE STAFF.

ABBREVIATIONS

AD	AREA DRAIN	DB	DRY BULB	FT	FOOT, FEET	MACH	MACHINE	REF	REFERENCE	VERT	VERTICAL
ADJ	ADJUSTABLE	DBL	DOUBLE	FTG	FOOTING	MAS	MASONRY	REG	REGISTER	VOL	VOLUME
AFB	ABOVE FINISHED FLOOR	DDC	DIRECT DIGITAL CONTROL	FURR	FURRING	MATL	MATERIAL	REINF	REINFORCED	VTR	VENT THRU ROOF
AFG	ABOVE FINISHED GRADE	DET	DETAIL	GA	GAUGE	MAX	MAXIMUM	REINFD	REQUIRED	W	WEST, WIDTH, WIDE
AGGR	AGGREGATE	DIA	DIAMETER	GAL	GALLON	MECH	MECHANICAL	REV	REVISED	WI	WITH
AL	ALUMINUM	DIAG	DIAGONAL	GC	GENERAL CONTRACTOR	MET	METAL	RH	RIGHT HAND	WO	WITHOUT
AP	ACCESS PANEL	DIM	DIMENSION	GND	GROUND	MFR	MANUFACTURER	RM	ROOM	WC	WATERCLOSET
APPD	APPROVED	DIST	DISTANCE	GPM	GALLONS PER MINUTE	MH	MANHOLE	RO	ROUGH OPENING	WB	WET BULB
APPROX	APPROXIMATE	DIV	DIVISION	GR	GRADE	MIN	MINIMUM	RWC	RAIN WATER CONDUCTOR	WGT	WEIGHT
ARCH	ARCHITECT	DN	DOWN	GW	GYPSUM WALL BOARD	MISC	MISCELLANEOUS	S	SOUTH	WL	WATERLINE
BAS	BUILDING AUTOMATION SYSTEM	DO	DITTO	H	HIGH	SA	MASONRY OPENING	SA	SUPPLY AIR	WP	WATERPROOF
BLDG	BUILDING	DWG	DRAWING	H2O	WATER	SD	MOUNTED	SB	SMOKE BARRIER	YD	YARD
BLK	BLOCK	E	EAST	HB	HOSE BIBB	MU	MAKE UP	SCHED	SCHEDULE	YR	YEAR
BLKG	BLOCKING	EA	EACH	HGT	HEIGHT	N	NORTH	SCUP	SCUPPER		
BM	BEAM	EAT	ENTERING AIR TEMPERATURE	HORIZ	HORIZONTAL	NC	NORMALLY CLOSED	SD	SMOKE DAMPER, SMOKE DETECTOR		
BOT	BOTTOM	ELEC	ELECTRICAL	HP	HIGH POINT	NG	NATURAL GAS	SEC	SECOND		
BRK	BRICK	ELEV	ELEVATION	HR	HOUR	NIC	NOT IN CONTRACT	SECT	SECTION		
BRKT	BRACKET	ENCL	ENCLOSURE	HVAC	HEATING, VENTILATION AND AIR CONDITIONING	NO	NUMBER, NORMALLY OPEN	SHWR	SHOWER		
BTU	BRITISH THERMAL UNIT	EP	ENCLOSURE PANELBOARD	HW	HOT WATER	NOM	NOMINAL	SHT	SHEET		
CB	CATCH BASIN	EQ	EQUAL	INT	INTERIOR	NTS	NOT TO SCALE	SM	SIMILAR		
CFM	CUBIC FEET PER MINUTE	EQUIP	EQUIPMENT	HHWR	HEATING HOT WATER RETURN	OA	OUTSIDE AIR	SP	SUMP PUMP		
CHWS	CHILLED WATER SUPPLY	EW	ELECTRIC WATER COOLER	ID	INSIDE DIAMETER	OC	ON CENTER	SPEC	SPECIFICATION		
CHWR	CHILLED WATER RETURN	EXIST	EXISTING	IN	INCH	OD	OUTSIDE DIAMETER	SQ	SQUARE		
CI	CAST IRON	EXP	EXPANSION	INCL	INCLUDE	OFF	OFFICE	SQ FT	SQUARE FEET		
CKT	CIRCUIT	EXT	EXTERIOR	OPNG	OPENING	SS	OPENING	SS	STAINLESS STEEL		
CL	CENTERLINE	F	FAHRENHEIT	INSUL	INSULATION	OPP	OPPOSITE	ST	STREET		
CLG	CEILING	FA	FIRE ALARM	INT	INTERIOR	OVHD	OVERHEAD	STA	STATION		
CLKG	CAULKING	FCU	FAN COIL UNIT	INV	INVERT	PART	PARTIAL, PARTITION	STD	STANDARD		
CLR	CLEAR	FD	FIRE DAMPER, FLOOR DRAIN	JAN	JANITOR	PD	PRESSURE DROP	STL	STEEL		
CMU	CONCRETE MASONRY UNIT	FE	FIRE EXTINGUISHER	KIT	KITCHEN	PERP	PERPENDICULAR	STRUCT	STRUCTURAL		
CO	CLEAN OUT	FE	FIRE EXTINGUISHER CABINET	L	LENGTH/LONG	PLUMB	PLUMBING	SUB	SUBSTITUTE		
COL	COLUMN	FF	FINISH FLOOR	LAB	LABORATORY	PNL	PANEL	SUSP	SUSPEND		
COM	COMMON	FHC	FIRE HOUSE CABINET	LA	LAUNDRY	POS	POSITION	SYM	SYMMETRICAL		
CONC	CONCRETE	FIG	FIGURE	LAT	LAUNDRY AIR TEMPERATURE	PREFAB	PREFABRICATED	TC	TOP OF CURB		
CONN	CONNECTION	FIN	FINISH	LAV	LAVATORY	P S L	PIPE SADDLE	TEL	TELEPHONE		
CONST	CONSTRUCTION	FIX	FIXTURE	LEV	LEVEL	PT	PAINT	TEMP	TEMPERATURE		
CONT	CONTINUOUS	FL	FLOOR	LF	LINEAR FOOT	PVC	POLYVINYL CHLORIDE	THK	THICK		
CONTR	CONTRACTOR	FLAS	FLASHING	LH	LEFT HAND	QTY	QUANTITY	TGS	TOP OF STEEL		
CTR	CENTER	FLOOR	FLUORESCENT	LXR RM	LOOKER ROOM	R	RADIUS	TP	TOP OF PAVEMENT		
CTRL	CONTROL	FOC	FACE OF CONCRETE	LOUV	LOUVER	RA	RETURN AIR	TV	TELEVISION		
CU FT	CUBIC FOOT	FOF	FACE OF FINISH	LP	LOW POINT	RD	ROOF DRAIN	TW	TOP OF WALL		
CW	COLD WATER	FOS	FACE OF STUD	LT	LIGHT	REC	RECESSED	TYP	TYPICAL		
D	DEPTH, DRAIN	FPRF	FIREPROOF	LTG	LIGHTING	RECP	RECEPTACLE	UNF	UNFINISHED		
		FPS	FIRE PULL STATION	LVT	LINE VOLTAGE THERMOSTAT	RECT	RECTANGLE	UNO	UNLESS NOTED OTHERWISE		
								VAR	VARIES, VARIABLE		

AIR COOLED CHILLER SCHEDULE

CHILLER NO.	MANUFACTURER	MODEL NUMBER	NOMINAL CAPACITY (TONS)	UNIT MCA	EER	REFRIG	COMPRESSOR MOTOR DATA				FAN MOTOR DATA				CHILLED WATER GPM	ENTERING WATER TEMP (°F)	LEAVING WATER TEMP (°F)	CHILLER DESIGN PRESSURE DROP (FT H2O)	AMBIENT AIR TEMP (°F)	NUMBER OF ISOLATED CIRCUITS	NOTES
							ELECTRICAL				NOHP	ELECTRICAL									
							KW	VOLTS	PHASE	HZ		VOLTS	PHASE	HZ							
CH-1	YORK	YMAE1005	105	206	10.2	454B	123.5	480	3	60	6/ECM	480	3	60	250	54	44	13.7	95	6	1

NOTES:

1. EER OF 10.2 AT 95°F AMBIENT PER AHRI 550/590. PROVIDE NEOPRENE VIBRATION ISOLATORS. PROVIDE ENCLOSURE PANELS AROUND COMPLETE UNIT WITH LOW SOUND FANS. PROVIDE SUCTION AND DISCHARGE SERVICE VALVE FOR EACH COMPRESSOR. PROVIDE SINGLE POINT 480 VOLT POWER CONNECTION THAT FEEDS CHILLER AND PROVIDE AN ADDITIONAL 120 VOLT POWER CONNECTION FOR THE EVAPORATOR HEAT TAPE, TEAO CONDENSER FAN MOTORS. PROVIDE FACTORY MOUNTED AND WIRED CONTROL TRANSFORMER, FACTORY MOUNTED AND WIRED EVAPORATOR HEATER FOR FREEZE PROTECTION TO -20°F. PROVIDE CONTROL PANEL FOR EACH MODULE (REDUNDANT) THAT PROVIDES CHILLED WATER SETPOINT ADJUSTMENT AND DEMAND LIMITING VIA A 4-20 mA INPUT. PROVIDE HIGH SHORT CIRCUIT CURRENT RATED CONTROL PANEL. CONTROL PANEL SCCR RATINGS SHALL BE MINIMUM 65 kA. PROVIDE BACNET CONTROL INTERFACE. MINIMUM EVAPORATOR FLOW = 136 GPM. EQUIVALENTS BY LG, AND CARRIER, OR AS LISTED IN SPECIFICATIONS. ALL COLD PARTS SHALL BE INSULATED WITH 1-1/2" CLOSED CELL FOAM INSULATION. IF 1-1/2" THICK INSULATION IS NOT AVAILABLE FROM FACTORY, CONTRACTOR SHALL PROVIDE ADDITIONAL INSULATION LAYERS IN THE FIELD. ONE MODULE FOR REDUNDANCY.

PUMP SCHEDULE

PUMP SCHEDULE	MANUF.	MODEL NUMBER	LOCATION	TYPE	SERVICE	CAPACITY (GPM)	TOTAL HEAD (FT)	MIN EFF	MIN Hp	SPEED (RPM)	ELECTRIC		NOTES
P-01	B&G	e-1510-2BD	PUMP PACKAGE	BASE MOUNTED	PRIMARY CHILLED WATER	170	45	70%	5	1750	480	3	1,2,3,4
P-02	B&G	e-1510-2BD	PUMP PACKAGE	BASE MOUNTED	PRIMARY CHILLED WATER	170	45	70%	5	1750	480	3	1,2,3,4

NOTES:

1. PROVIDE VARIABLE FREQUENCY DRIVE FOR PUMP MOTOR TO BE MOUNTED IN THE MECHANICAL ROOM. PROVIDE ELECTRICAL DISCONNECT AS PART OF PUMP PACKAGE.
2. PUMPS ARE CONTROLLED FOR LEAD / STANDBY OPERATION.
3. PROVIDE AS PART OF PUMP PACKAGE.
4. SEE PUMP DETAILS FOR OTHER PARTS TO BE INCLUDED IN PUMP PACKAGE.

AIR/WATER CONTROL

CHILLED WATER (PART OF PUMP PACKAGE) (EQUIVALENTS IN THE SPECIFICATIONS):
AS-01 - B&G - CRS-4F AIR/DIRT SEPARATOR, WITH STRAINER
EXP-01 - B&G - D15, 7.8 GALLON ASME BLADDER EXPANSION TANK WITH ACCEPTANCE VOLUME = 6.3 GALLONS PRECHARGE TO 26.0 PSI.
BT-01 - CHILLED WATER BUFFER TANK. CEMLINE CORPORATION. VERTICAL 200 GALLON ASME CODE STAMPED TANK WITH 4" FLANGED INLET AND OUTLET CONNECTIONS. PROVIDE VENT AND DRAIN CONNECTIONS.

ENERGY CODE COMPLIANCE STATEMENT

MECHANICAL SYSTEM, SERVICE SYSTEMS, AND EQUIPMENT METHOD OF COMPLIANCE

PREScriptive ☒ ENERGY COST BUDGET ☐

THERMAL ZONE: 4

EXTERIOR DESIGN CONDITIONS:

WINTER DRY BULB: 21.2°F
SUMMER DRY BULB: 96.4°F

INTERIOR DESIGN CONDITIONS:

WINTER DRY BULB: 70°F
SUMMER DRY BULB: 75°F
RELATIVE HUMIDITY: 50%

BUILDING HEATING LOAD: EXISTING

BUILDING COOLING LOAD: EXISTING

MECHANICAL SPACING CONDITIONING SYSTEM:

UNITARY - N/A
BOILER - N/A
CHILLER - SEE SCHEDULES - OVERSIZED FOR REDUNDANCY

EQUIPMENT EFFICIENCIES:
SEE SCHEDULES

EQUIPMENT SCHEDULES WITH MOTORS:
SEE SCHEDULES

DESIGNER STATEMENT:
TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE DESIGN OF THIS BUILDING COMPLIES WITH THE MECHANICAL SYSTEM AND EQUIPMENT REQUIREMENTS OF THE 2018 INTERNATIONAL MECHANICAL CODE.

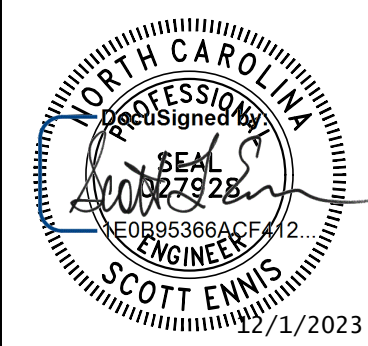
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CUMBERLAND COUNTY
FAYETTEVILLE EMS CHILLER UPGRADE

MECHANICAL LEAD SHEET



ISSUED FOR:

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12/01/2023

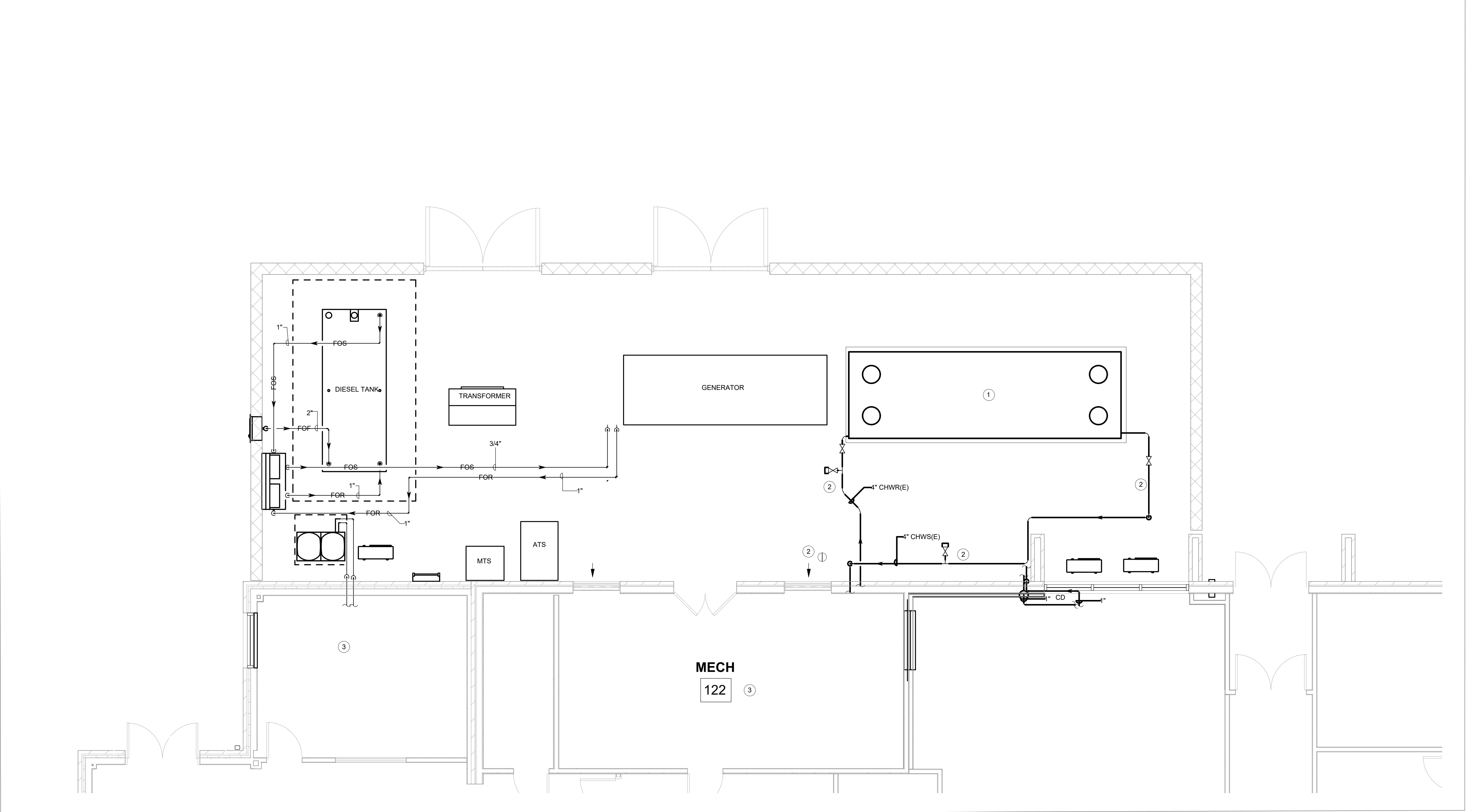
DESIGNED BY: SLE

DRAWN BY: JHF

CHECKED BY: SLE

PROJECT NO.: 2877-P

M-000



1 PIPING DEMOLITION PLAN
MD-101 SCALE: 1/4" = 1'-0"

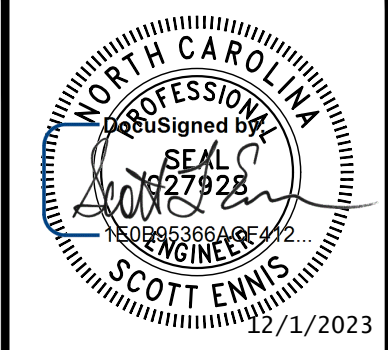
- KEY NOTES:**
- CHILLER TO BE DEMOLISHED. COORDINATE WITH THE CONTRACTOR. SEE NEW WORK SHEETS.
 - PIPING TO BE DEMOLISHED AND REROUTED FOR PROPER INSTALLMENT OF NEW CHILLER UNIT. PIPING SIZES TO REMAIN AT A 4" DIAMETER, COINCIDING WITH THE CURRENT MODEL SEEN ABOVE.
 - PIPING AND DUCT NETWORK THROUGHOUT THE BUILDING WILL NOT BE ALTERED.

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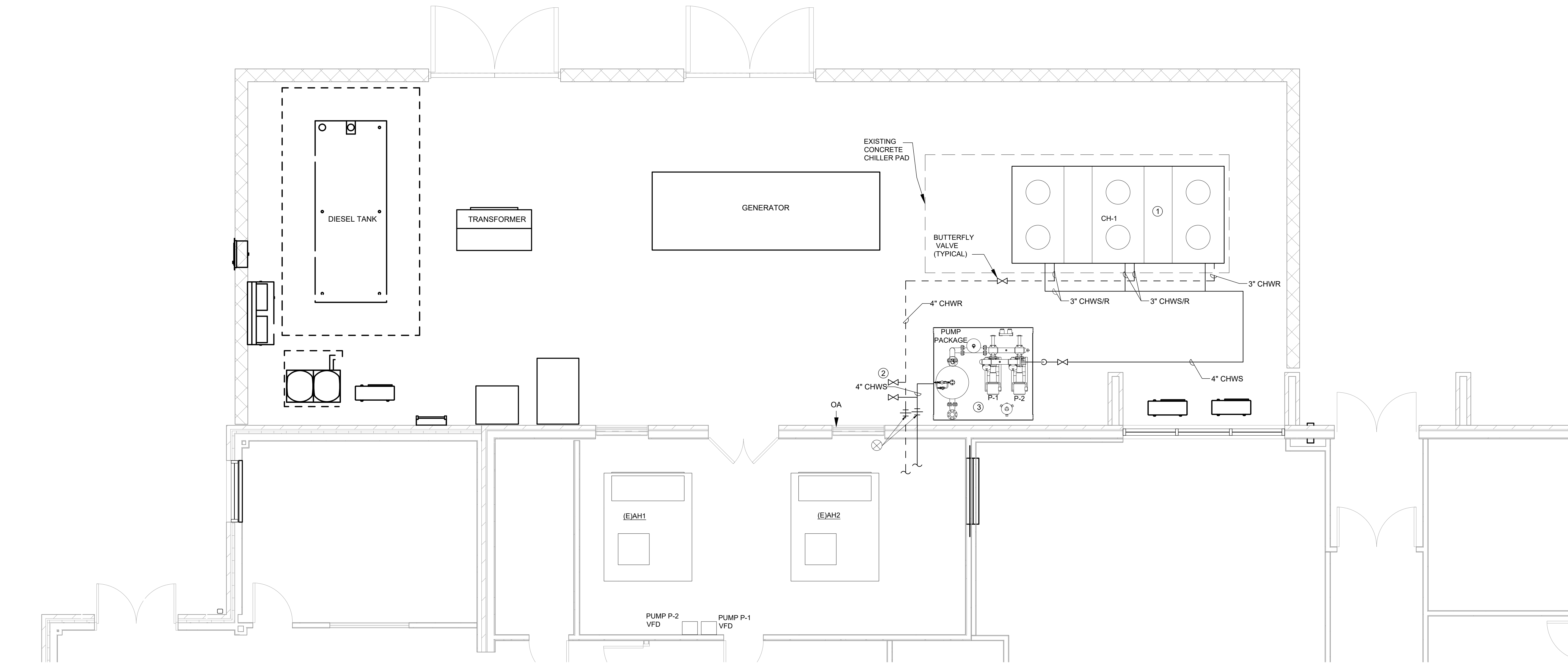
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FAYETTEVILLE EMS CHILLER UPGRADE	
PIPING DEMOLITION PLAN	



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ISSUED FOR:	
BIDS	
12/01/2023	
DESIGNED BY:	SLE
DRAWN BY:	JHF
CHECKED BY:	SLE
PROJECT NO.:	2877-P

MD-101



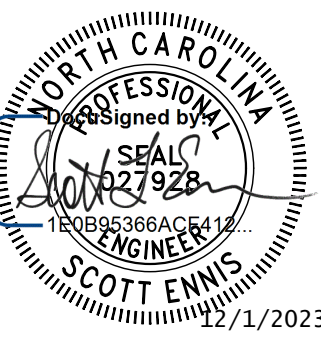
1 MECHANICAL NEW WORK PLAN
M-100 SCALE: 1/4" = 1'-0"

- KEY NOTES:**
1. PROVIDE CHILLER PER SCHEDULE. PROVIDE NEW PIPING AS SHOWN. CONNECT NEW CHILLER TO EXISTING WITH POINTS AND SEQUENCE IN DRAWINGS/
 2. PROVIDE BUTTERFLY VALVES AND BLIND FLANGES FOR TEMPORARY CHILLER CONNECTION.
 3. PROVIDE PUMP PACKAGE WITH AIR SEPARATOR, EXPANSION TANK AND BUFFER TANK PER SPECIFICATION. PUMPS TO BE CONTROLLED VIA VFD AND DDC. LEAD PER SEQUENCE.

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CUMBERLAND COUNTY NORTH CAROLINA
FAYETTEVILLE EMS CHILLER UPGRADE
MECHANICAL NEW WORK PLAN



ISSUED FOR:

BIDS

12/01/2023

DESIGNED BY: SLE

DRAWN BY: JHF

CHECKED BY: SLE

PROJECT NO.: 2877-P

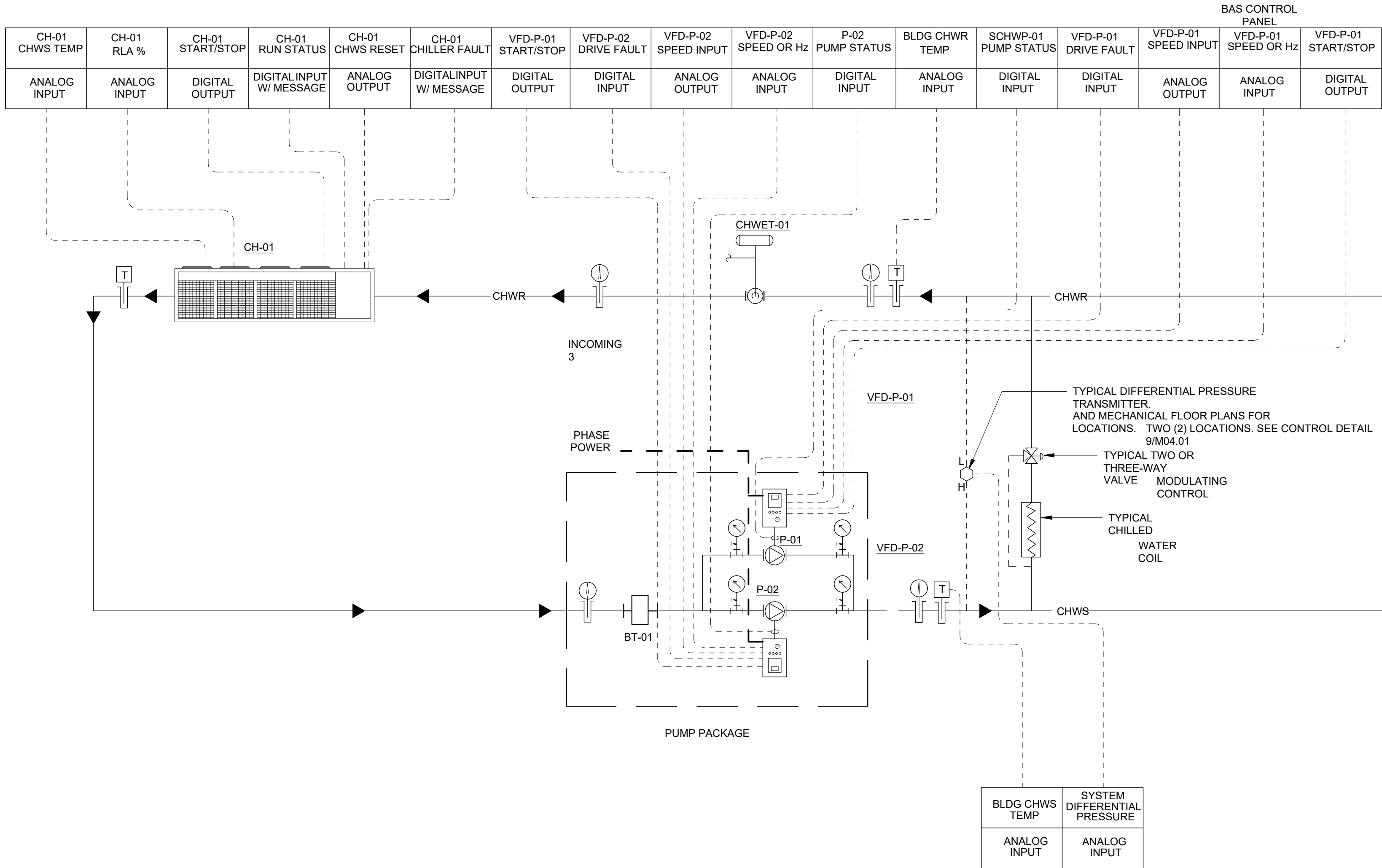
M-100

AIR COOLED CHILLER WITH PUMPS

- A. General: BAS shall fully control the chilled water system and equipment and provide monitoring and diagnostic information for management directly with the chiller and all available points shall be monitored and displayed via the operator interface. Refer to the control diagram purposes. BAS shall interface for additional information.
- Cooling Enable: Cooling shall be enabled when any chilled water valve opens more than 20% continuously for 5 min. (adj.) and the above 55°F (adj.). OR an AHU is calling for dehumidification. Once enabled the chilled water system will operate for a minimum of 30 outside air temperature is system shall also be enabled whenever manually enabled by the operator at the minutes. The chilled water operator interface.
 - Cooling Disable: Cooling shall be disabled when all chilled water valves are less than 5% open continuously for 10 minutes temperature is below 55°F. The chilled water system shall also be disabled whenever manually disabled by the operator at (adjustable) or the outside air the operator interface.
- B. Pump Control
- Start/Stop: Whenever the system is enabled, a chilled water pump shall be enabled to run continuously. When ever the system is shall be disabled after a 1 minute delay. disabled, thepumps.
 - Freeze Mode: The chilled water system shall be enabled for freeze protection whenever:
 - The OAT falls below 25°F (adjustable)
 - OR, any AHU (or other unit) is tripped off due to a freeze condition (auto or manual reset). This mode shall not cause the primary system to operate (i.e. chiller(s) are not enabled).
 - Proof: BAS shall prove pump operation and use the status indication to accumulate runtime. Upon failure of the lead pump, the BAS shall enable the standby
 - VSD Control: Whenever a pump is energized and status is proven for at least one of the pumps, the BAS shall control the speed of (lowest) differential pressure reading at setpoint. On start and stop, the VSD shall ramp to speed and slow down within adjustable the VSD to maintain the limits. acceleration and deceleration
 - VFD Interface: BAS shall monitor the VFD via direct interface. All available information shall be accessible via the interface for display on VFD alarm point shall be displayed on the main graphic and shall be alarmed via the BAS. All other points may be displayed on a separate the VFD graphic. THE from the system's graphic. Reference the VFD chart on project plans for additional information on points that should be hardwired versus graphic that is selected integrated through a direct interface.
6. Differential Pressure Setpoint:
 - Setpoint shall be initially seta at 15 psi (adjustable)
 - Setpoint shall be adjusted by the TAB contractor for optimized building and energy performance.
7. Lead/Standby: The BAS shall enabled the standby pump on/off as follows:
 - Enable Standby Pump: Upon failure of the lead pump, the BAS shall enable the standby pump and enunciate an alarm. Pump when standby pump is called rotation shall be advanced to run.
- D. Chiller Control
- Enable/Disable: Whenever the Chilled Water System is enabled, AND Either Secondary pump is proven the Chiller shall be enabled after a 1 minute delay (adjustable).
 - Proof/Failure assessment: Whenever the chiller is in alarm, the BAS shall enunciate and alarm. BAS shall assess the chiller being in alarm if:
 - chiller status is not proven ON in the first 10 minutes after the chiller is ON.
 - OR, anytime the chiller alarm point initially enabled.

EXISTING CHILLER BACnet POINT LIST (PART 2 OF 2)				
BACnet POINT DISRIPTION	OBJECT NAME	OBJECT TYPE	OBJECT INSTANCE	NOTES:
DIGITAL READ POINTS				
CHILLER ON/OFF STATUS	ON/OFF_STAT	BV	1	CHILLER ON=1 & CHILLER OFF=0
CHILLED WATER FLOW INPUT	CHW_FLOW	BV	2	FAULT=1 & NORMAL=0
POWER PHASE MONITOR INPUT	PWR_PH	BV	3	FAULT=1 & NORMAL=0
REMOTE START/STOP INPUT	REM_STOP	BV	4	STOPPED=1 & START=0
EX1 INPUT	EX1_FLT	BV	5	FAULT=1 & NORMAL=0
SYSTEM LOW LCHW TEMP	SYS_LCHW_TEMP	BV	6	FAULT=1 & NORMAL=0
SYSTEM LCHW SENSOR FAILURE	SYS_LCHW_SEN	BV	7	FAULT=1 & NORMAL=0
SYSTEM ECHW SENSOR FAILURE	SYS_ECHW_SEN	BV	8	FAULT=1 & NORMAL=0
GLOBAL ALARM	GLB_ALARM	BV	9	FAULT=1 & NORMAL=0
CHILLER ON/ OFF CONTROL	ON/OFF_CTRL	BV	10	CHILLER ON=1 & CHILLER OFF=0
SEQUENCING SV	SEQ_SV	BV	11	ODD/EVEN=1 & STANDARD=0
INDEXING SV	INDEX_SV	BV	12	INDEXING=1 & NON-INDEXING=0
CUSTOMER RESET ACTIVE	CST_RESET_ACT	BV	13	ACTIVE=1 & INACTIVE=0
LOAD LIMIT RESET ACTIVE	L_RESET_ACT	BV	14	ACTIVE=1 & INACTIVE=0
CHILLED WATER RESET ACTIVE	CHW_RESET_ACT	BV	15	ACTIVE=1 & INACTIVE=0
SYSTEM VARIABLES LOCKED	SYS_VAR_LOCK	BV	16	LOCKED=1 & UNLOCKED=0
FAHRENHEIT/CELSIUS READINGS	FAHR_CELC	BV	17	*C=1 & *F=0
MODULE 1 COMP 1 RUN STATUS	M1-1_RUN_STAT	BV	18	ON=1 & OFF=0
MODULE 1 COMP 2 RUN STATUS	M1-2_RUN_STAT	BV	19	ON=1 & OFF=0
MODULE 1 COMMUNICATION ERROR	M1_COMM_ERR	BV	20	FAULT=1 & NORMAL=0
MODULE 1 FAN 1 STATUS	M1_FAN1_STAT	BV	21	ON=1 & OFF=0
MODULE 1 FAN 2 STATUS	M1_FAN2_STAT	BV	22	ON=1 & OFF=0
MODULE 2 COMP 1 RUN STATUS	M2-1_RUN_STAT	BV	23	ON=1 & OFF=0
MODULE 2 COMP 2 RUN STATUS	M2-2_RUN_STAT	BV	24	ON=1 OFF=0
MODULE 2 COMMUNICATION ERROR	M2_COMM_ERR	BV	25	FAULT=1 & NORMAL=0
MODULE 2 FAN 1 STATUS	M2_FAN1_STAT	BV	26	ON=1 & OFF=0
MODULE 2 FAN 2 STATUS	M2_FAN2_STAT	BV	27	ON=1 & OFF=0
MODULE 3 COMP 1 RUN STATUS	M3-1_RUN_STAT	BV	28	ON=1 & OFF=0
MODULE 3 COMP 2 RUN STATUS	M3-2_RUN_STAT	BV	29	ON=1 & OFF=0
MODULE 3 COMMUNICATION ERROR	3_COMM_ERR	BV	30	FAULT=1 & NORMAL=0
PUMP 1 RUN STATUS	P1_RUN_STAT	BV	31	ON=1 & OFF=0
PUMP 2 RUN STATUS	P2_RUN_STAT	BV	32	ON=1 & OFF=0
ANALOG WRITE POINTS				
UPPER SETPOINT	UPSETPT_SV	AV	4	45-80F (MULTIPLY BY 10)
LOWER SETPOINT	LOWSETPT_SV	AV	5	40-70F (MULTIPLY BY 10)
MANUAL SETPOINT	MAN_SETPT_SV	AV	6	40-70F (MULTIPLY BY 10)
MANUAL RANGE	MAN_RANGE_SV	AV	7	2-20F (MULTIPLY BY 10)
MANUAL OFFSET	MAN_OFFSET_SV	AV	8	0-5F (MULTIPLY BY 10)
DIGITAL WRITE POINTS				
CHILLER ON/OFF CONTROL	ON/OFF_CTRL	BV	10	CHILLER ON=1 & CHILLER OFF=0
SEQUENCING SV	SEQ_SV	BV	11	ODD/EVEN=1 & STANDARD=0
INDEXING SV	INDEX_SV	BV	12	ON=1 & OFF=0

EXISTING CHILLER BACnet POINT LIST (PART 1 OF 2)				
BACnet POINT DISRIPTION	OBJECT NAME	OBJECT TYPE	OBJECT INSTANCE	NOTES
ANALOG READ POINTS				
SYSTEM ECHW TEMPERATURE	SYS_ECHW	AV	1	DIVIDE BY 10
SYSTEM LCHW TEMPERATURE	SYS_LCHW	AV	2	DIVIDE BY 10
CHILL WATER OFFSET	CHW_OFFSET	AV	3	DIVIDE BY 10
UPPER SETPOINT	UPSETPT_SV	AV	4	DIVIDE BY 10
LOWER SETPOINT	LOWSETPT_SV	AV	5	DIVIDE BY 10
MANUAL SETPOINT	MAN_SETPT_SV	AV	6	DIVIDE BY 10
MANUAL RANGE	MAN_RANGE_SV	AV	7	DIVIDE BY 10
MANUAL OFFSET	MAN_OFFSET_SV	AV	8	DIVIDE BY 10
MODULE 1 LCHW TEMP	M1_LCHW	AV	9	DIVIDE BY 10
MODULE 1 SUCTION TEMP	M1_SUCT	AV	10	DIVIDE BY 10
MODULE 2 LCHW TEMP	M2_LCHW	AV	11	DIVIDE BY 10
MODULE 2 SUCTION TEMP	M2_SUCT	AV	12	DIVIDE BY 10
MODULE 2 LCHW TEMP	M3_LCHW	AV	13	DIVIDE BY 10
MODULE 3 SUCTION TEMP	M3_SUCT	AV	14	DIVIDE BY 10
INTEGER READ POINTS				
CAPACITY	CAPACITY	AV	1001	DIVIDE BY 10
DEMAND	DEMAND	AV	1002	DIVIDE BY 10
TDIFF COUNTDOWN	TDIFF_COUNT	AV	1003	DIVIDE BY 10
SYSTEM COUNTDOWN	SYS_COUNT	AV	1004	DIVIDE BY 10
NUMBER OF FAULTS	NUM_FAULTS	AV	1005	DIVIDE BY 10
LEAD COMPRESSOR	LEAD_COMP	AV	1006	DIVIDE BY 10
LOAD LIMIT	LOAD_LMT	AV	1007	
VSP SETPOINT SV	VSP_SV	AV	1008	
LOAD LIMIT SV	LOAD_LMT_SV	AV	1009	
TOIFF SV	TDIFF_SV	AV	1010	
FAIL INDICATOR SV	FAIL_IND_SV	AV	1011	
LEAD COMPRESSOR SV	LEAD_COMP_SV	AV	1012	
NUMBER OF MODULES SV	NUM_MOD_SV	AV	1013	
FAN SETPOINT SV	FAN_SETPT_SV	AV	1014	
FAN OFFSET SV	FAN_OFFSET_SV	AV	1015	
HP CUTOUT SV	HP_CUTOUT_SV	AV	1016	
HOUR	HOUR	AV	1017	TIME
MINUTE	MINUTE	AV	1018	TIME
MONTH	MONTH	AV	1019	DATE
DAY	DAY	AV	1020	DATE
YEAR	YEAR	AV	1021	DATE
MODULE 1 FAULT	M1_FAULT	AV	1033	0-13 SEE MFR FAULT TABLE
MODULE 1 COMP 1 RUN HOURS	M1-1_RUN_HRS	AV	1034	
MODULE 1 COMP 2 RUN HOURS	M1-2_RUN_HRS	AV	1035	
MODULE 1 HIGH PRESSURE	M1_HP	AV	1036	
MODULE 1 LOW PRESSURE	M1_LP	AV	1037	
MODULE 1 CONTROL MODE	M1_CTRL_MODE	AV	1038	AUTO=1, MANUAL=2, DISABLED=3
MODULE 2 FAULT	M2_FAULT	AV	1039	0-13 SEE MFR FAULT TABLE
MODULE 2 COMP 1 RUN HOURS	M2-1_RUN_HRS	AV	1040	
MODULE 2 COMP 2 RUN HOURS	M2-2_RUN_HRS	AV	1041	
MODULE 2 HIGH PRESSURE	M2_HP	AV	1042	
MODULE 2 LOW PRESSURE	M2_LP	AV	1043	
MODULE 2 CONTROL MODE	M2_CTRL_MODE	AV	1044	AUTO=1, MANUAL=2, DISABLED=3
MODULE 3 FAULT	FAULT	AV	1045	0-13 SEE MFR FAULT TABLE
MODULE 3 COMP 1 RUN HOURS	M3-1_RUN_HRS	AV	1046	
MODULE 3 COMP 2 RUN HOURS	M3-2_RUN_HRS	AV	1047	
MODULE 3 HIGH PRESSURE	M3_HP	AV	1048	
MODULE 3 LOW PRESSURE	M3_LP	AV	1049	
MODULE 3 CONTROL MODE	M3_CTRL_MODE	AV	1050	AUTO=1, MANUAL=2, DISABLED=3



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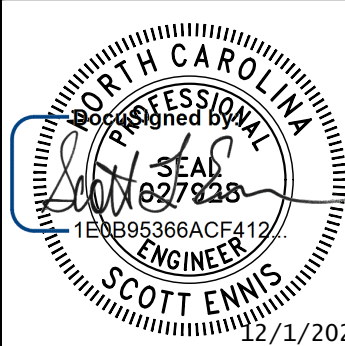
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CUMBERLAND COUNTY

FAYETTEVILLE EMS CHILLER UPGRADE

MECHANICAL CONTROLS



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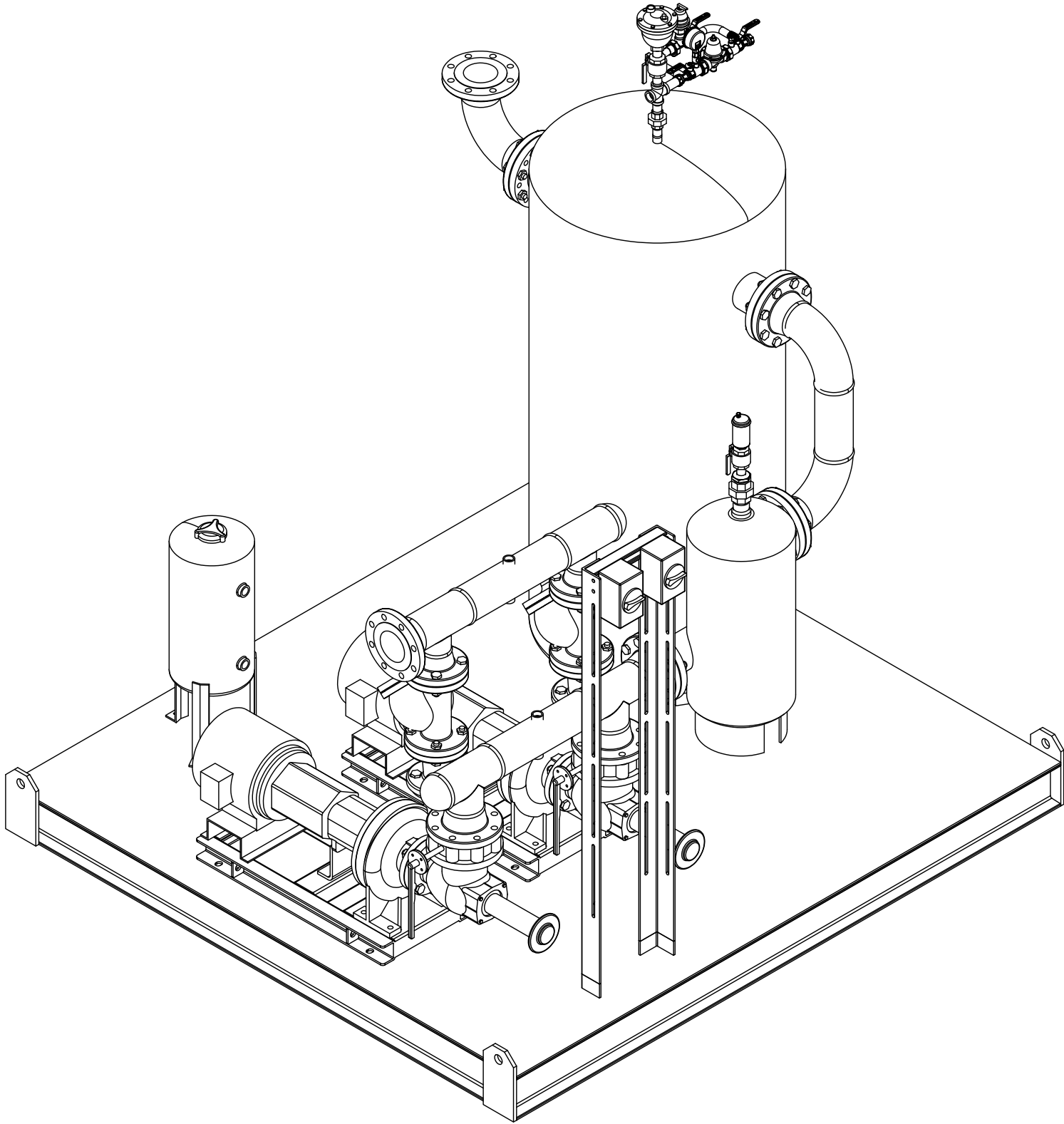
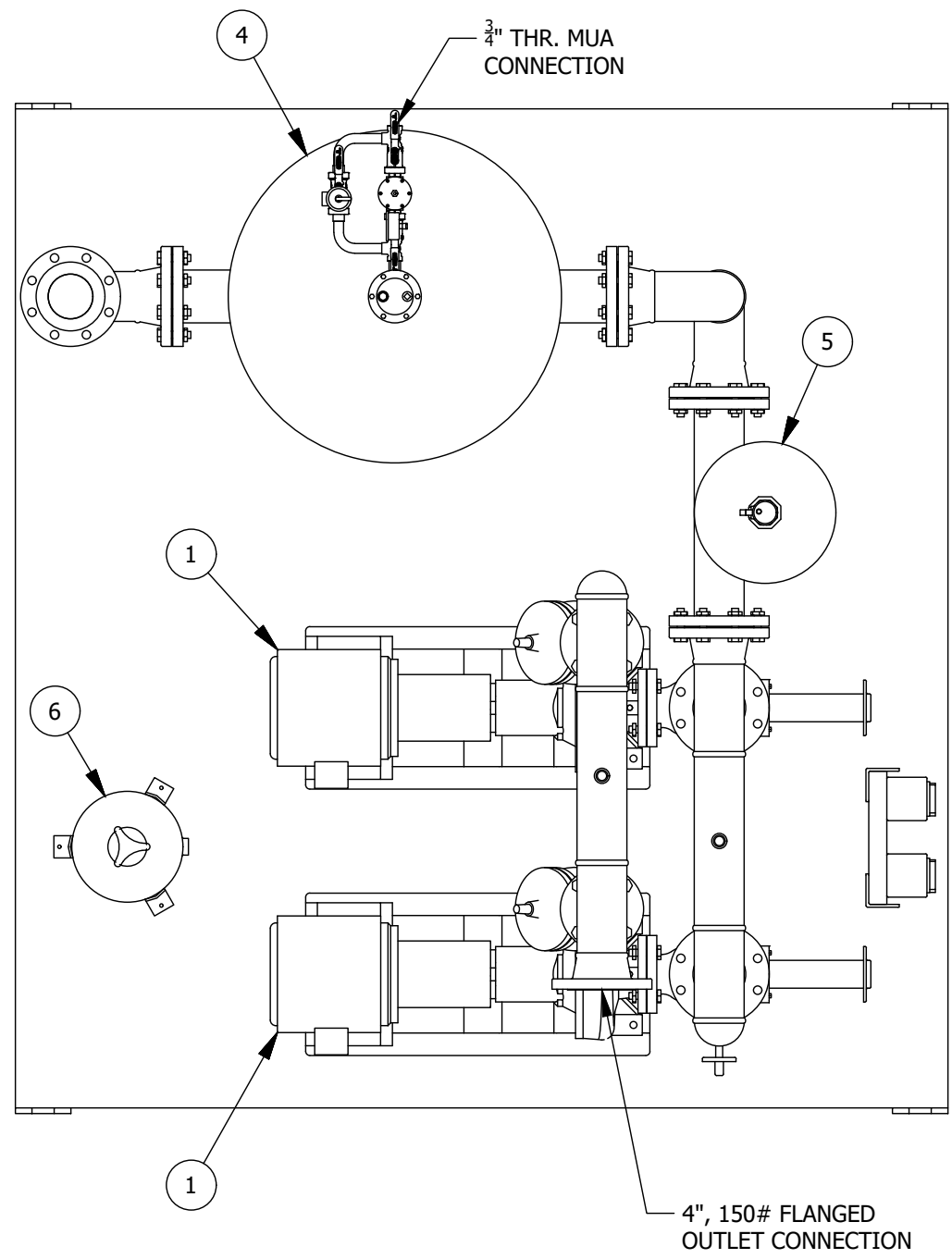
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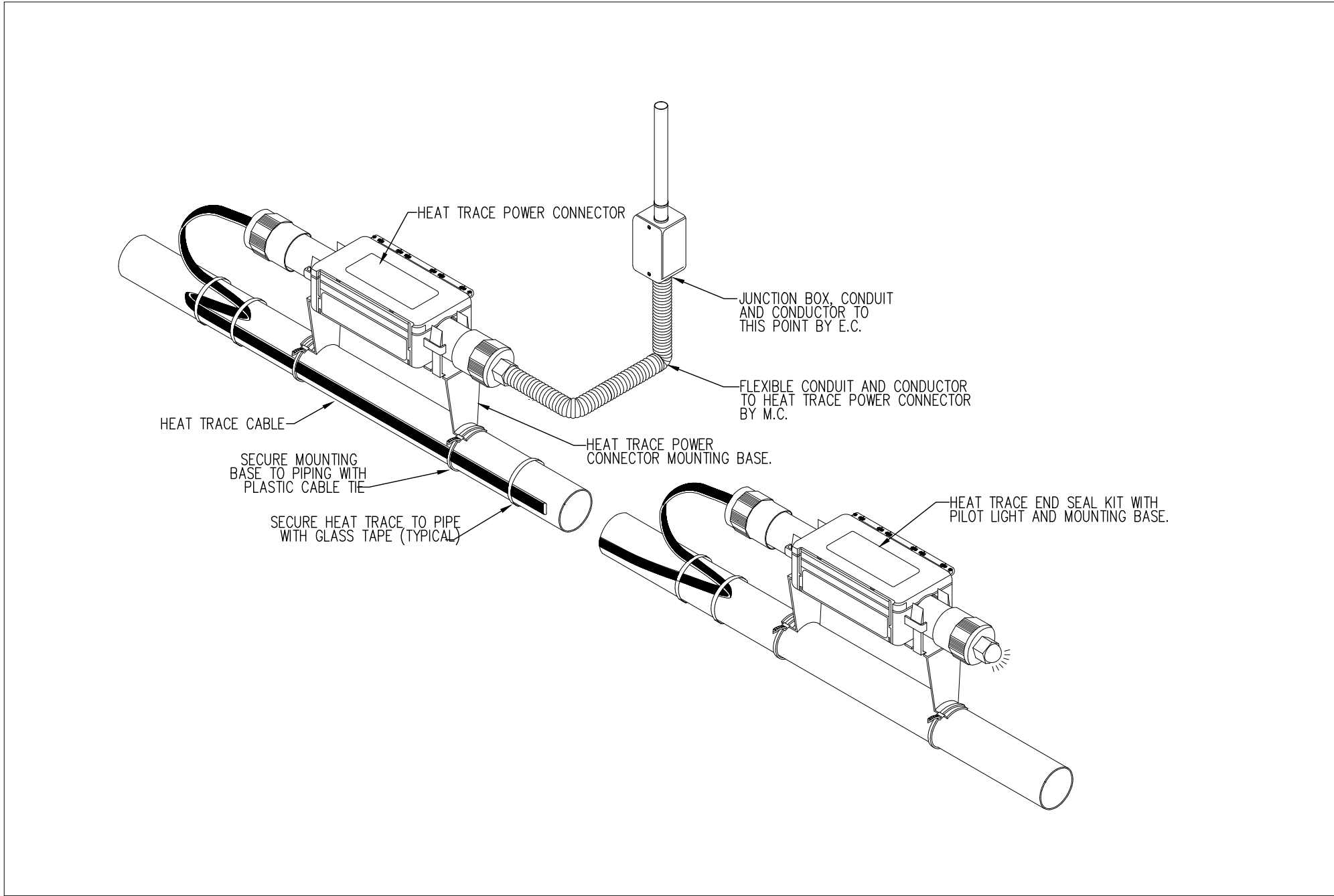
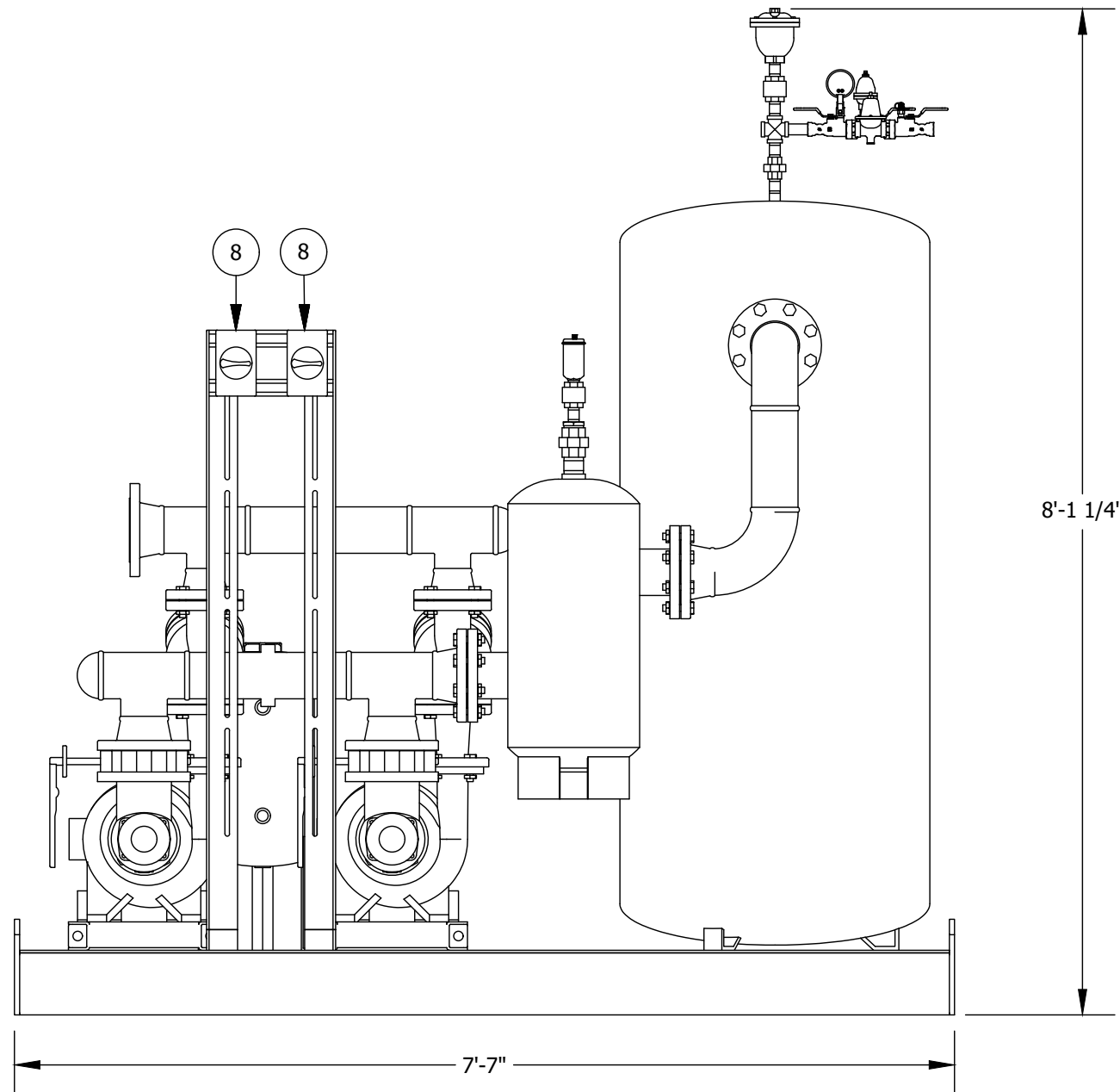
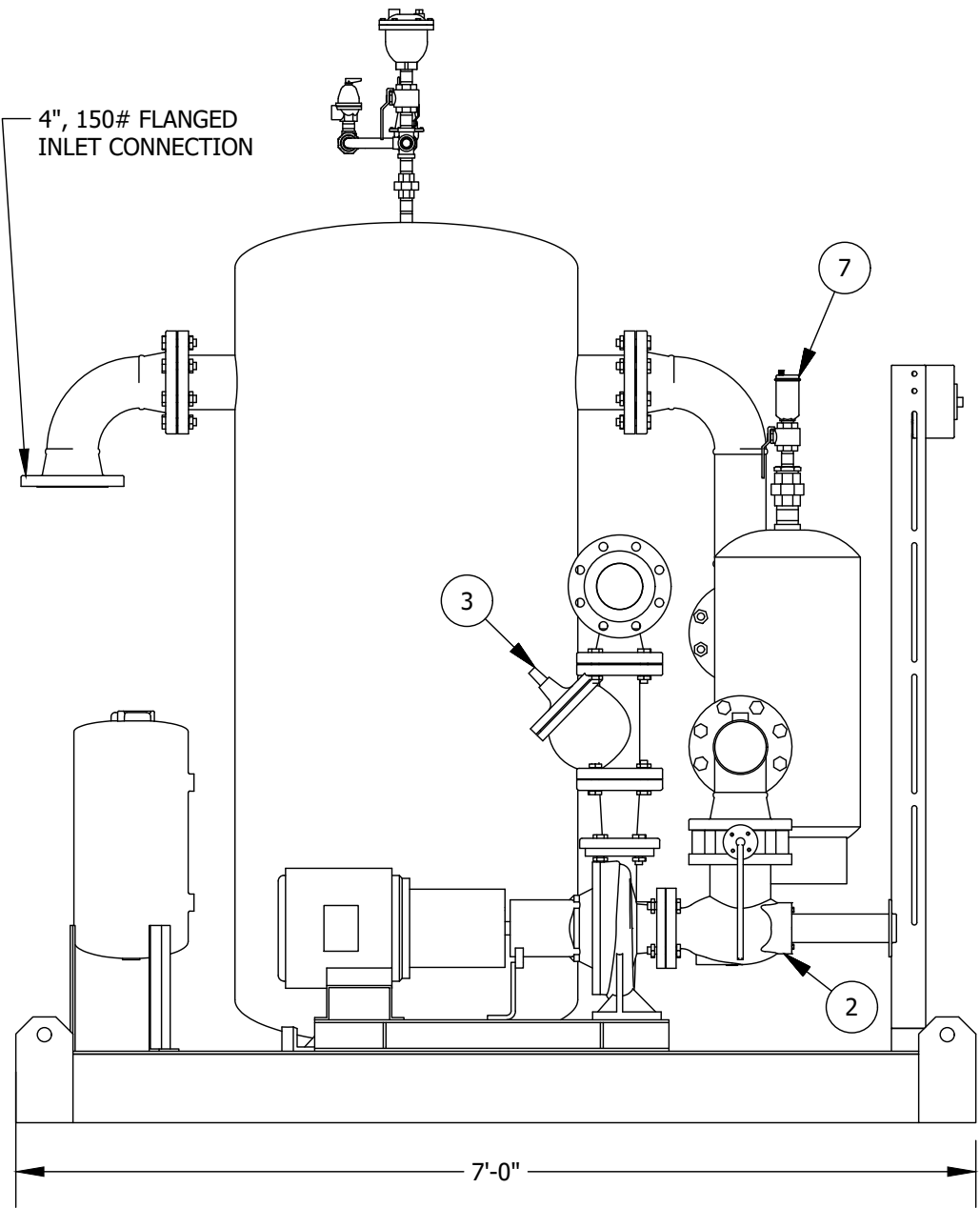
M-201

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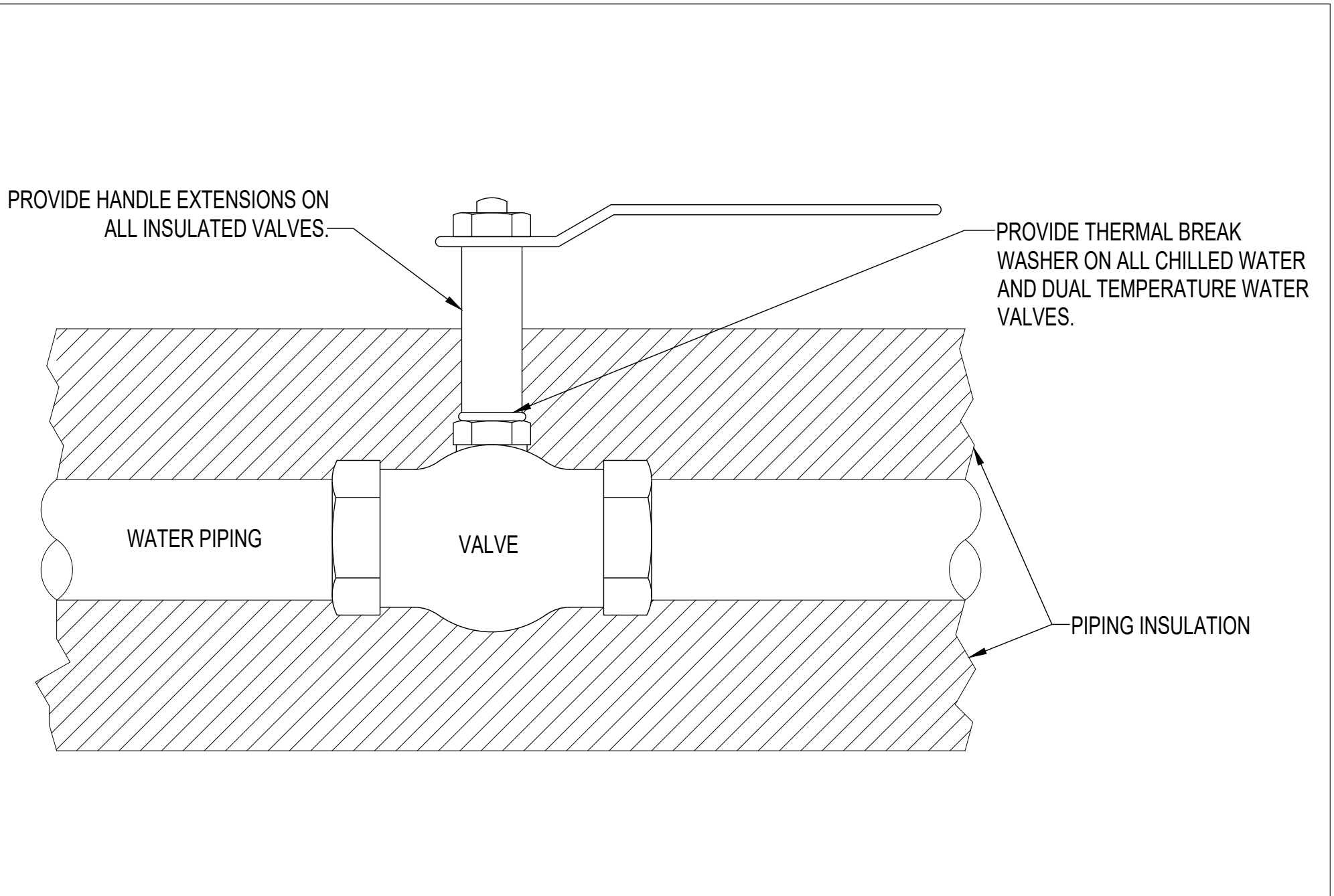


PARTS LIST		
ITEM	QTY	DESCRIPTION
1	2	B&G MODEL E1510 2BD 5.0HP 1800RPM PUMP
2	2	B&G MODEL EC-3X SUCTION DIFFUSER PLUS
3	2	B&G MODEL 3DS-3B TDV
4	1	CEMLINE V200CWB 4IN
5	1	B&G MODEL RL-4F ROLAIRTROL
6	1	NEPTUNE DBF-5HP CHEMICAL FEEDER
7	1	B&G MODEL 87 AIR VENT
8	2	NEMA 3R PUMP DISCONNECTS

NOTES:
1. DIMENSIONS ARE APPROXIMATE
2. MAINTAIN 42" CLEARANCE IN FRONT OF ALL PANELS
3. SERVICE CLEARANCES MAY EXTEND BEYOND SKID BASE
4. VFDS TO BE INSTALLED INDOORS BY OTHERS. PACKAGE TO CONTAIN OUTDOOR RATED DISCONNECTS ONLY



2 PUMP DETAIL
SCALE: NO SCALE

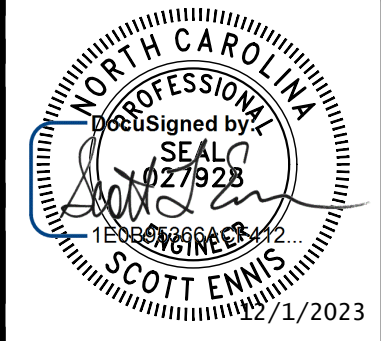


2 VALVE PIPING DETAIL
SCALE: NO SCALE

REV / ADDENDUM / BULLETIN	
REV	XXXX
ADDENDUM	
BULLETIN	

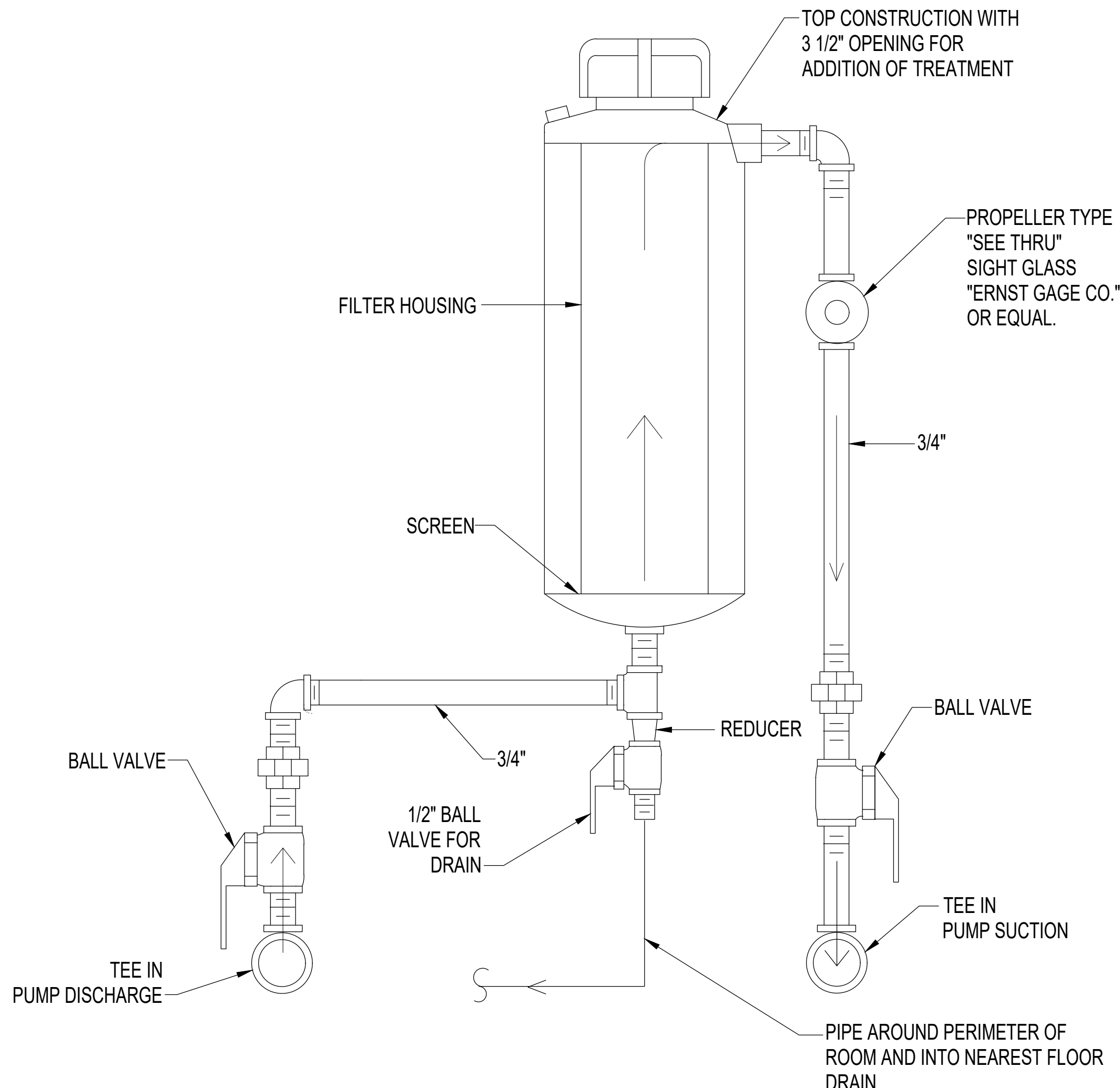
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CUMBERLAND COUNTY NORTH CAROLINA
FAYETTEVILLE EMS CHILLER UPGRADE
MECHANICAL DETAILS SHEET

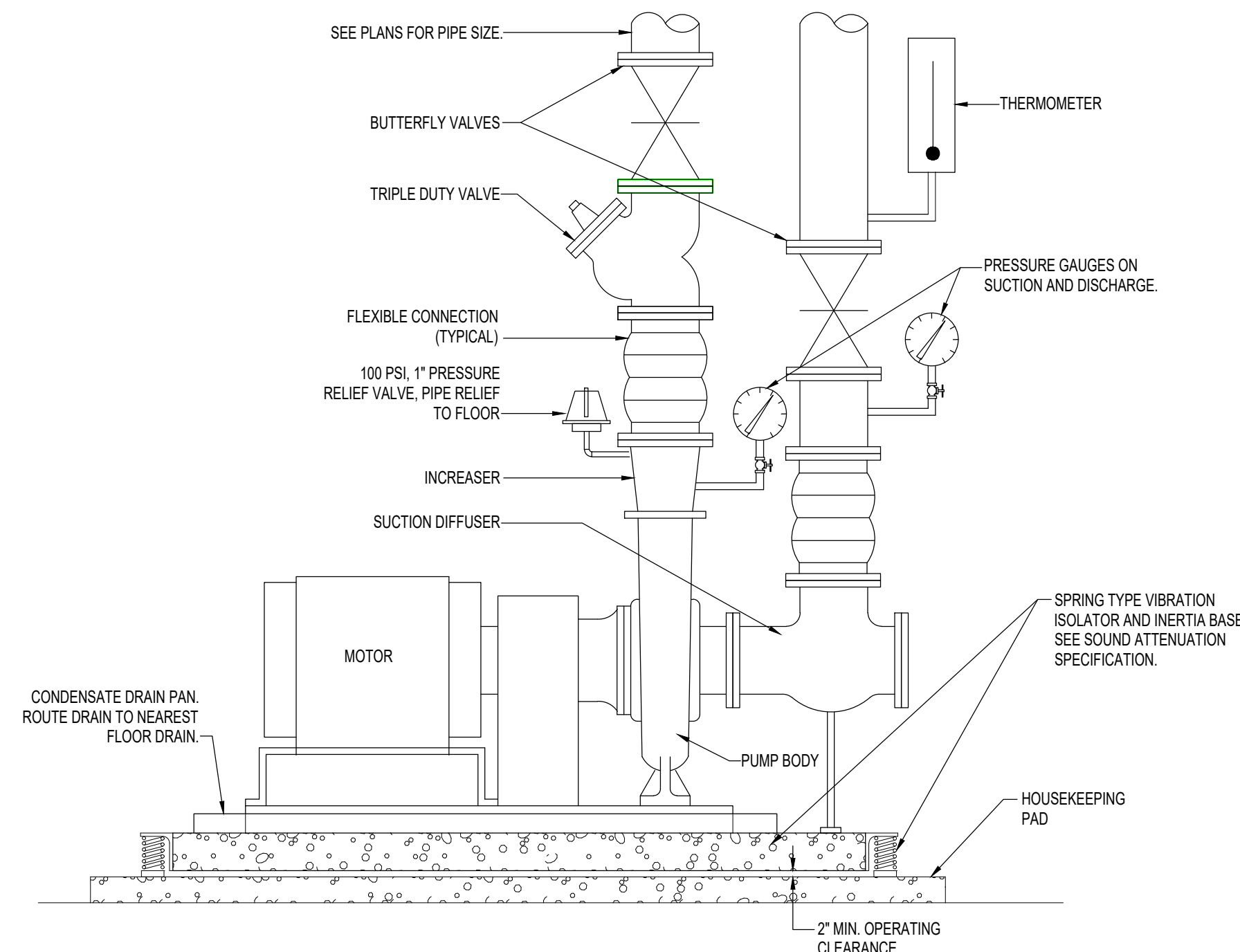


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12/01/2023
DESIGNED BY: SLE
DRAWN BY: JHF
CHECKED BY: SLE
PROJECT NO.: 2877-P

M-300



1 PUMP DETAIL
M-302 SCALE: NO SCALE



2 PUMP DETAIL
M-302 SCALE: NO SCALE

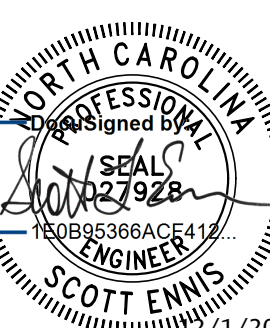
1	REV / ADDENDUM / BULLETIN	x / xx / xxxx

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CUMBERLAND COUNTY
NORTH CAROLINA

FAYETTEVILLE EMS CHILLER UPGRADE

MECHANICAL DETAILS SHEET



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2/01/2023

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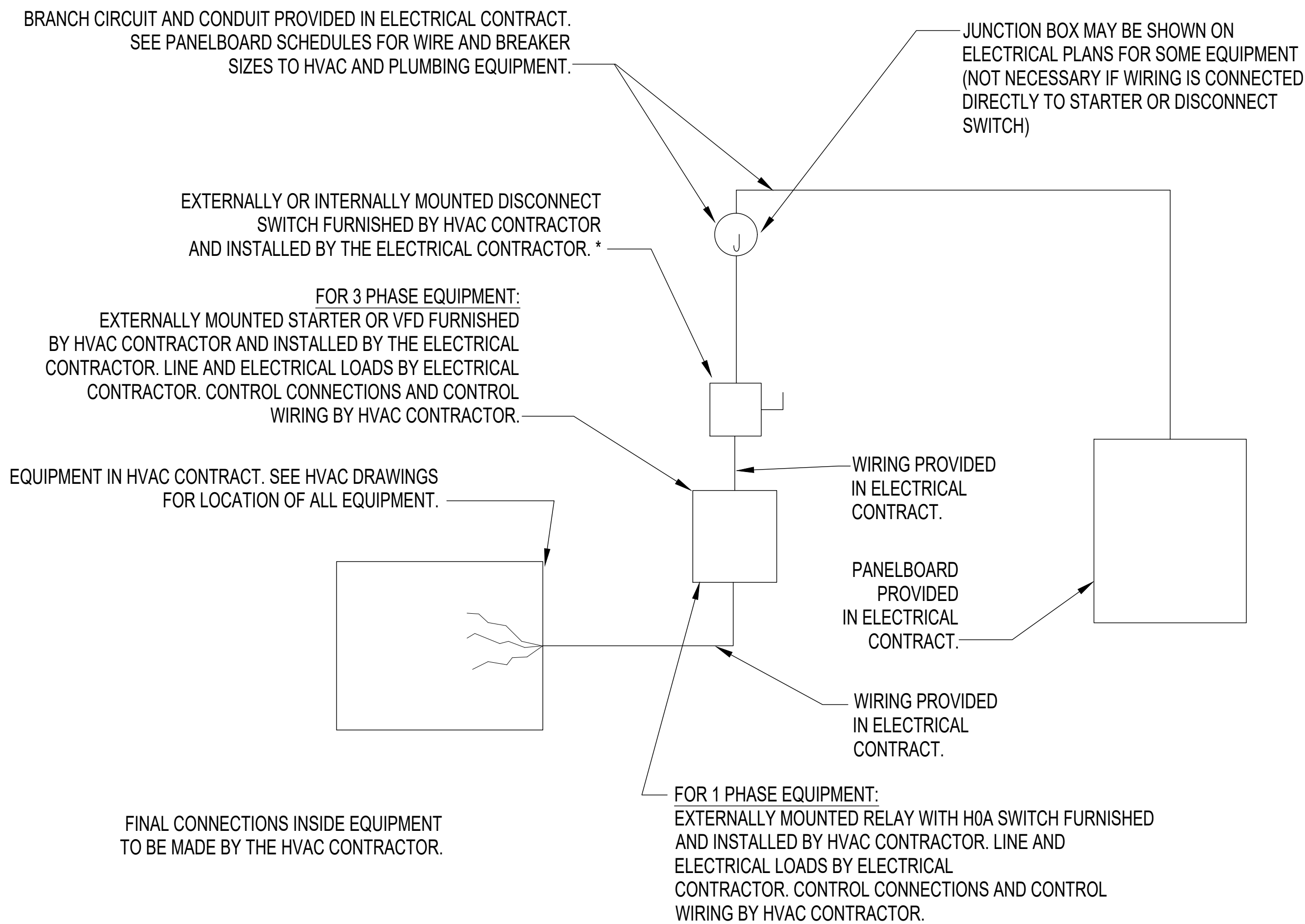
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PROJECT NO.: 2877-1

M-301

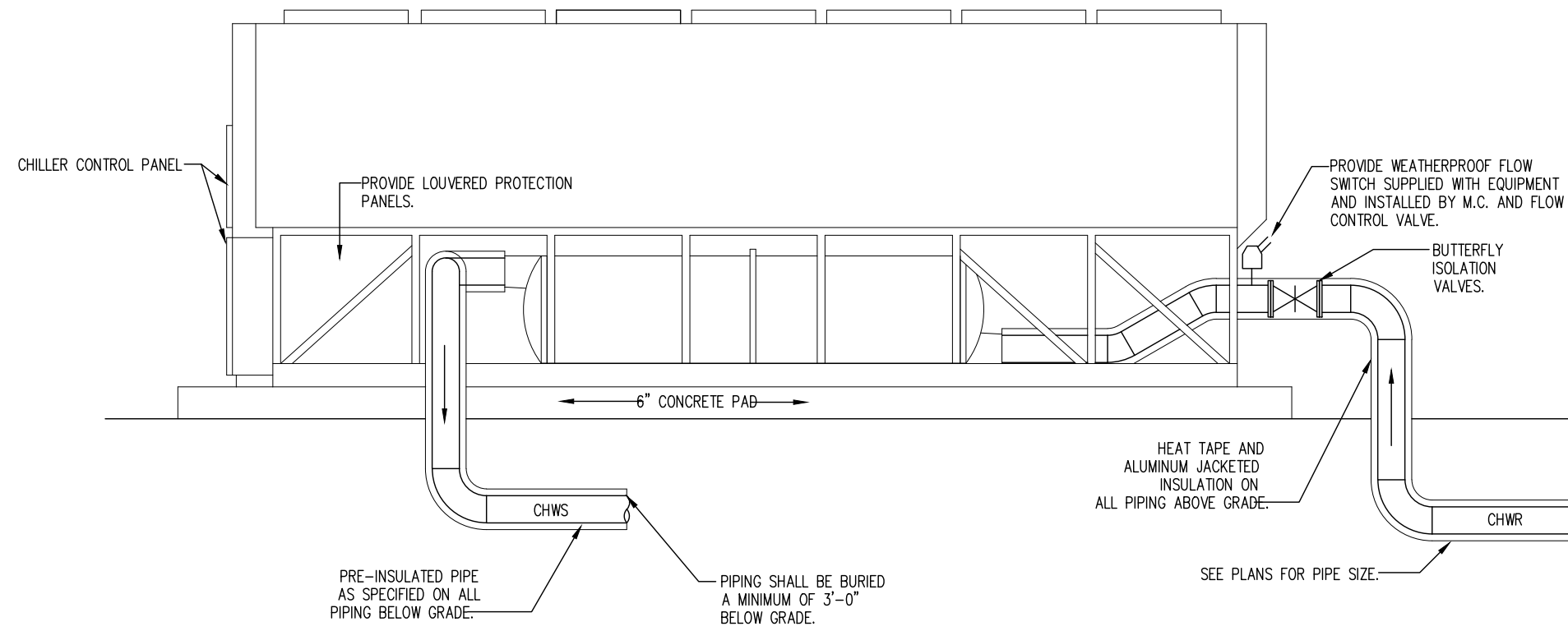
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* A COMBINATION STARTER MAY BE USED IN LIEU OF A SEPARATE DISCONNECT SWITCH AND STARTER.


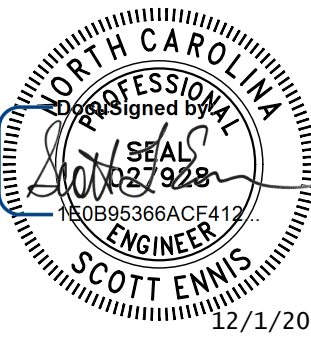
1 ELECTRICAL DETAIL

M-301 SCALE: NO SCALE



2 CHILLER DETAIL

M-301 SCALE: NO SCALE

REVISIONS	REV / ADDENDUM / BULLETIN	X / XX / XXXX
		
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FAYETTEVILLE EMS CHILLER UPGRADE		
MECHANICAL DETAILS SHEET		
		
ISSUED FOR:		
BIDS		
12/01/2023		
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DRAWN BY: JHF		
CHECKED BY: SLE		
PROJECT NO.: 2877-P		
M-302		

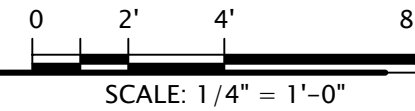


SCALE: 1/4" = 1'-0"

1. EXISTING ELECTRICAL CONDITIONS IN DRAWINGS ARE BASED ON RECORD DRAWINGS BY AECOM, DATED SEPTEMBER 14, 2020 AND LIMITED OBSERVATIONS MADE DURING SITE VISIT AND PHOTOS. ADDITIONAL CONDITIONS MAY EXIST THAT ARE NOT SHOWN IN THIS PLAN. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS PRIOR TO ADVANCING WITH DEMOLITION.

①

1 DISCONNECT AND RELOCATE EXISTING CHILLER DISCONNECT SWITCH TO THE NEW LOCATION SHOWN ON DRAWING E-100. DEMOLISH THE WIRE FROM PANEL 'MP' TO THE CONDUIT STUBOUT; PROTECT THE STUBOUT FOR REUSE. DEMOLISH THE WIRE AND CONDUIT BETWEEN THE DISCONNECT AND THE CHILLER.



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CUMBERLAND COUNTY

FAYETTEVILLE EMS CHILLER UPGRADE

POWER - DEMOLITION PLAN



ISSUED FOR:

BIDS

2/01/2023

DESIGNED BY:

HME

DRAWN BY

CM

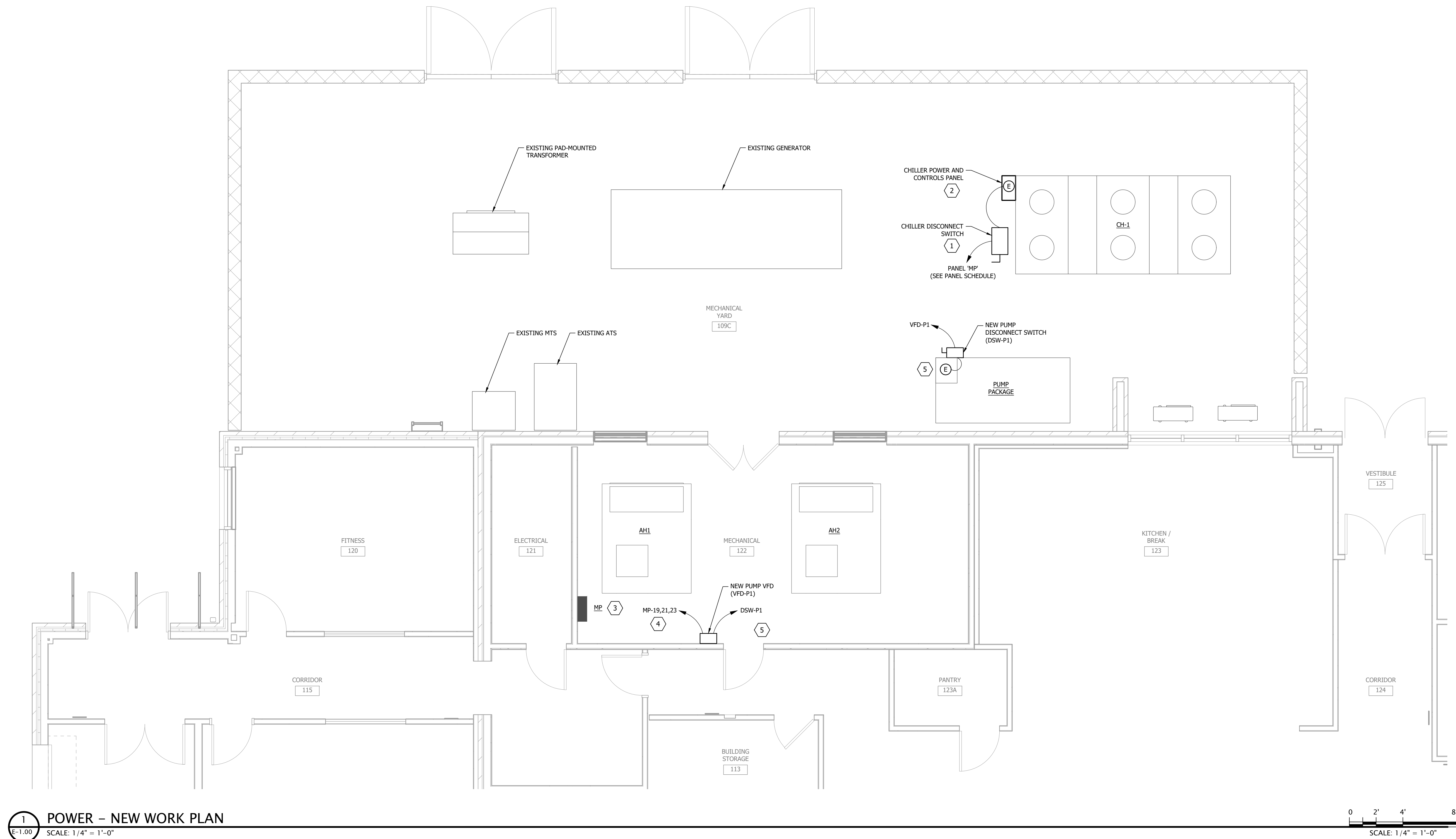
CHECKED BY:

HME

PROJECT NO.:

877-F

ED-100



GENERAL NOTES

1. EXISTING ELECTRICAL CONDITIONS IN DRAWINGS ARE BASED ON RECORD DRAWINGS BY AECOM, DATED SEPTEMBER 14, 2020 AND LIMITED OBSERVATIONS MADE DURING SITE VISIT AND PHOTOS. ADDITIONAL CONDITIONS MAY EXIST THAT ARE NOT SHOWN IN THIS PLAN. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS PRIOR TO ADVANCING WITH DEMOLITION.

KEY NOTES

- 1 RELOCATE EXISTING CHILLER DISCONNECT SWITCH AND PROVIDE NEW WIRING AND CONDUIT TO THIS LOCATION.
- 2 PROVIDE WIRING AND CONDUIT FROM EXISTING RELOCATED CHILLER DISCONNECT SWITCH TO INTEGRAL POWER AND CONTROL PANEL UNIT IN NEW CHILLER.
- 3 REUSE EXISTING 225A CIRCUIT BREAKER FOR NEW CHILLER (SEE PANEL SCHEDULE).
- 4 PROVIDE NEW DISCONNECT SWITCH AND ASSOCIATED WIRING AND CONDUIT FROM NEW PUMP SKID DISCONNECT SWITCH TO EXISTING PANEL 'MP' (SEE PANEL SCHEDULE).
- 5 PROVIDE WIRING AND CONDUIT FROM NEW PUMP SKID DISCONNECT SWITCH TO TO INTEGRAL POWER AND CONTROL PANEL UNIT IN NEW PUMP SKID.

REVISIONS

Wooten

120 North Boylan Avenue • Raleigh, NC 27603-1423
(919) 828-0531 • thewootencompany.com
License Number : F-0115

FAYETTEVILLE EMERGENCY SERVICES
CUMBERLAND COUNTY NORTH CAROLINA

FAYETTEVILLE EMS CHILLER UPGRADE

POWER - NEW WORK PLAN



ISSUED FOR:

BIDS

12/01/2023

DESIGNED BY:

HMB

DRAWN BY:

TCM

CHECKED BY:

HMB

PROJECT NO.:

2877-P

E-100

- 3M COMPANY - FIRE BARRIER PACKING MATERIAL

4. FILL, VOID OR CAVITY MATERIAL - CAULK, SEALANT - APPLIED TO FILL THE ANNULAR SPACE FLUSH WITH TOP SURFACE OF FLOOR. IN WALL ASSEMBLIES, REQUIRED CAULK THICKNESS TO BE INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL, FLUSH WITH WALL SURGE. AT POINT CONTACT LOCATION BETWEEN PENETRANT AND SLEEVE OR BETWEEN PENETRANT AND CONCRETE, A MIN 1/4 INCH (6 MM) DIAMETER BEAD OF CAULK SHALL BE APPLIED AT TOP SURFACE OF FLOOR AND AT BOTH SURFACES OF WALL. THE HOURLY RATINGS AND THE MINIMUM REQUIRED CAULK THICKNESS ARE DEPENDENT UPON A NUMBER OF PARAMETERS, AS SHOWN IN THE FOLLOWING TABLE.

A. MINIMUM 2 INCHES (51 MM) THICKNESS OF MINERAL WOOL BATT INSULATION OR FORMING MATERIAL (ITEM 3A) REQUIRED IN ANNULAR SPACE.

B. MINIMUM 1 INCH (25 MM) THICKNESS OF MINERAL WOOL BATT INSULATION REQUIRED IN ANNULAR SPACE ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. MINIMUM 1 INCH (25 MM) THICKNESS OF CAULK TO BE INSTALLED FLUSH WITH EACH SURFACE OF FLOOR OR WALL ASSEMBLY.

M COMPANY - CP 25WB + OR FB-3000 WT. (NOTE: W RATING APPLIES ONLY WHEN FB-3000 WT SEALANT IS USED.)

SCALE: N.T.S.

277/480 VOLTS 3 PHASE, 4 WIRE				REVISED PANEL MP MAIN CIRCUIT BREAKER 400A 3P				TYPE: NEMA 1 MOUNT: SURFACE							
DESCRIPTION	WIRE	TRIP	POLE	No.	VOLT-AMPERES			VOLT-AMPERES			No.	POLE	TRIP	WIRE	DESCRIPTION
					A	B	C	A	B	C					
CHILLER	3#4/0, #4G, 2 1/2"C	225	3		---			---				3			SPACE ONLY
TMP		125	3	1	---					2	3	20			SPD
				3		---			4						
				5			---		6						
TU-3, TU-6, TU-7		20	1	7	---					8	1	20			TU-8
TU-15		50	1	9			---			10	1	30			TU-17
TU-1		30	1	11				---		12	1	30			TU-21
TU-16		50	1	13	---					14	1	50			TU-14
TU-3, SEE NOTE 3		25	1	15			---			16	1	25			TU-4
TU-5		20	1	17				---		18	1	20			TU-7
PUMP SKID	3#12, #12G, 3/4"C	20	3	19	---					20	1	20			TU-19
				21			---			22	1	20			SPARE
				23				---			24	3	20		(E)AH1
25	---				26										
27			---		28										
SPARE		20	3	29				---		30	3	20			(E)AH2
				31	---				32						
				33			---		34						
CRAC-1		40	3	35				---		36	3	40			CRAC-2
CRAC-3		40	3	37	---				38						
				39			---		40						
				41				---			42	1	20		
SPARE		20	1	43	---					44	1	20			SPARE
TU-6		20	1	45			---			46	1	20			TU-18
TU-9		20	1	47				---		48	1	20			TU-12
SPARE		20	1	49	---					50	1	20			TU-10
SPARE		20	2	51			---			52	1	40			TU-13
				53				---			54	1	20		

NOTES:
1. SQUARE D, NF TYPE.
2. CATALOG NO. 29438592440080001
3. NOTE THAT LOAD WAS SHOWN AS TU-2 IN AS-BUILTS.

TOTAL	0	0	0
PHASE TOTAL			
	0	0	0

0	0	0	TOTAL
TOTAL LOAD			
0			

TOTAL LOAD (AMPS)
0.0
0.0%

USE THE SPARE CIRCUIT BREAKER TO SUPPLY PUMP SKID. REVISE THE CIRCUIT DIRECTORY TO SHOW "PUMP PACKAGE."

The Wooten Company

120 North Boylan Avenue
Raleigh, North Carolina 27603
919-828-0531
919-834-3589



CUMBERLAND COUNTY EMS CENTER CHILLER REPLACEMENT TWC PROJECT # 2877-P

CUMBERLAND COUNTY FAYETTEVILLE, NORTH CAROLINA

SUBJECT: ADDENDUM NO. 01 – RE-BID

02/07/2024

To the Plans and Specifications for:
Cumberland County EMS Center Chiller Replacement
Fayetteville, N.C.


To: PROSPECTIVE BIDDERS AND OTHER CONCERNED PARTIES

This ADDENDUM forms a part of the Contract Documents and modifies the original Bidding Documents as noted below. Bidders shall acknowledge receipt of the ADDENDUM in the space provided on the Bid Form. Failure to do so may subject the Bidder to Disqualification.

- A. Bidding Requirements
 - 1. See attached Advertisement for Bids
- B. Contracting Requirements
 - 1. N A
- C. Technical Specification Requirements
 - 1. N A
- D. Drawing Requirements
 - 1. N A



FOR THE OWNER
THE WOOTEN COMPANY

BY 
Scott L. Ennis, P.E.

END OF DOCUMENT

SECTION 00 11 13
ADVERTIMENT FOR BIDS

INVITATION FOR PROPOSALS

FOR

CUMBERLAND COUNTY ENGINEERING & INFRASTRUCTURE DEPARTMENT

Cumberland County EMS Center - Chiller Replacement, Fayetteville, North Carolina

Cumberland County

~~A pre-bid conference will be held at 3:00 PM on December 19, 2023, at 500 Executive Pl., Fayetteville, NC 28305.~~

Pursuant to Section 143-131 of the General Statutes of North Carolina, informal bids are solicited and will be received in the office of the Cumberland County Engineering & Infrastructure Department, Room 214, in the Historic Courthouse located at 130 Gillespie Street, Fayetteville, North Carolina at any time before 10:00 AM on 02-14-2024, and then publicly opened in the office of the Cumberland County Engineering & Infrastructure Department in the Historic Courthouse and read for construction of the proposed:

Proposals must be enclosed in a sealed envelope addressed to Mr. JERMAINE WALKER, Engineering and Infrastructure Director, 130 Gillespie Street, Room 214, Fayetteville, NC 28301. The outside of the envelope must be marked "PROPOSAL FOR Cumberland County EMS Center - Chiller Replacement" and shall indicate the name, address, telephone number and state license number of the bidder. Proposals must be submitted on the printed form, or exact copies thereof, contained in the Contract Documents.

A bid bond is required for this project.

Minority bidders are strongly encouraged to participate.

Cumberland County MWBE goal is 15%.

Performance and Payment Bonds are required.

All Contractors are notified that North Carolina Statutory provisions as to licensing for Contractors will be observed in receiving, reading and awarding of contracts.

Plans and specifications, including Contract Documents, are open to public inspection and available upon request at the Cumberland County Engineering & Infrastructure Department Office, 130 Gillespie Street, Fayetteville, NC.

The County reserves the right to reject any or all proposals. The bidder to whom the contract may be awarded must comply with the requirements of G.S. Section 143-131, as amended.

No bids may be withdrawn after the scheduled closing time for the receipt of proposals for a period of forty-five (45) days.

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**SECTION 00 00 00
COVER SHEET**



**EMERGENCY SERVICES CENTER
CHILLER REPLACEMENT**

**500 EXECUTIVE PLACE
FAYETTEVILLE, NC 28305**

**RE-BID #2 DOCUMENTS
FEBRUARY 14, 2024**

TWC PROJECT #: 2877-P

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DIVISION 23 - HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)

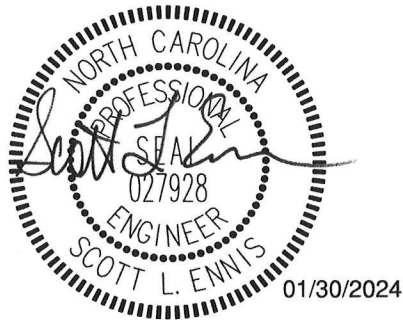
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SECTION 00 01 05
CERTIFICATIONS PAGE

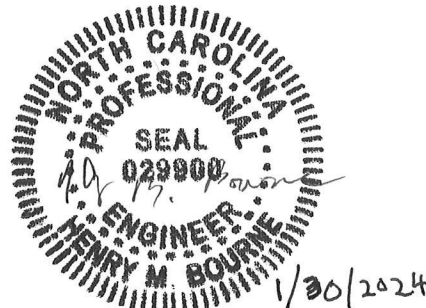
A. Mechanical and Plumbing Specifications

I, Scott L. Ennis, P.E., hereby certify that Division 01 and Division 23 of the, Cumberland County EMS Center - Chiller Replacement Project Manual were prepared by me or under my direct supervision.



B. Electrical Specifications

I, Henry Bourne, P.E., hereby certify that Division 26 of the, Cumberland County EMS Center - Chiller Replacement Project Manual were prepared by me or under my direct supervision.



END OF SECTION

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SECTION 00 11 13
ADVERSTIMENT FOR BIDS

INVITATION FOR PROPOSALS
FOR

CUMBERLAND COUNTY ENGINEERING & INFRASTRUCTURE DEPARTMENT
Cumberland County EMS Center - Chiller Replacement, Fayetteville, North Carolina
Cumberland County

~~A pre-bid conference will be held at 3:00 PM on December 19, 2023, at 500 Executive Pl., Fayetteville, NC 28305.~~

Pursuant to Section 143-131 of the General Statutes of North Carolina, informal bids are solicited and will be received in the office of the Cumberland County Engineering & Infrastructure Department, Room 214, in the Historic Courthouse located at 130 Gillespie Street, Fayetteville, North Carolina at any time before **2:30 PM on 02-26-2024**, and then publicly opened in the office of the Cumberland County Engineering & Infrastructure Department in the Historic Courthouse and read for construction of the proposed:

Proposals must be enclosed in a sealed envelope addressed to Mr. JERMAINE WALKER, Engineering and Infrastructure Director, 130 Gillespie Street, Room 214, Fayetteville, NC 28301. The outside of the envelope must be marked "PROPOSAL FOR Cumberland County EMS Center - Chiller Replacement" and shall indicate the name, address, telephone number and state license number of the bidder. Proposals must be submitted on the printed form, or exact copies thereof, contained in the Contract Documents.

A bid bond is required for this project.

Minority bidders are strongly encouraged to participate.

Cumberland County MWBE goal is 15%.

Performance and Payment Bonds are required.

All Contractors are notified that North Carolina Statutory provisions as to licensing for Contractors will be observed in receiving, reading and awarding of contracts.

Plans and specifications, including Contract Documents, are open to public inspection and available upon request at the Cumberland County Engineering & Infrastructure Department Office, 130 Gillespie Street, Fayetteville, NC.

The County reserves the right to reject any or all proposals. The bidder to whom the contract may be awarded must comply with the requirements of G.S. Section 143-131, as amended. No bids may be withdrawn after the scheduled closing time for the receipt of proposals for a period of forty-five (45) days.

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SECTION 00 42 00
PROPOSAL FORM

The undersigned hereby signifies that it is

(his or her) intention and purpose to enter
into a contract to furnish labor, materials, equipment, apparatus, etc., as required and to do all
the work necessary for the:

Cumberland County EMS Center - Chiller Replacement

as described in the specifications and shown on the plans in accordance with the terms of the Advertisement, Instructions to Bidders, the foregoing Specifications, and the following form of Contract, and this Proposal and the Plans; and pursuant with the requirements of the Advertisement and Instructions to bidders which are as follows:

THAT: The undersigned carefully examined the Instructions to Bidders, the Specifications, Plans, this form of Proposal, and the Contract and Fully understands them.

THAT: The undersigned carefully examined the site or sites of the project or projects and is familiar with the conditions under which the work, or any part of it, is to be done and the conditions which must be fulfilled in furnishing and/or erection or construction of any or all items of the project, and the furnishing only of any materials, equipment, or apparatus specified in connection therewith.

THAT: The undersigned will provide all necessary tools, machinery apparatus, and all means necessary to complete such Contract as may be entered into, and in the manner prescribed in the Contract and Specifications and according to the Plans and requirements under the of the Engineer, in the first class manner.

THAT: The right of Cumberland County and the recommendations of the Engineer are not to be questioned in the award of the Contract.

THAT: It is the intention of Cumberland County, North Carolina, subject to the conditions set forth, to award contracts for the project on the basis of bids received at this letting and in such manner as they may decide as being in the best interests of the County.

THAT: The County reserves the right to reject any of all proposals.

THAT: A proposal made by a corporation must be signed by its proper officers in a legal manner and its official address stated herein.

THAT: A proposal made by a firm shall be signed with the name of each member of said firm and the firm name added, with the official address of said firm.

THAT: The undersigned will complete such contract as is hereby proposed to enter into within the time stated in the notice to proceed and stipulated in the Contract.

THAT: The Bidder acknowledges receipt of the following Addendum (write in addendum #'s):

THAT: The Contractor agrees to furnish all materials, labor and equipment and to install complete in place the work in accordance with the Plans and Specifications for the lump sum of:

BASE BID:

Dollars (\$ _____).
Total Bid (\$ _____).
Submitted, this _____ day of _____, 2024.

CONTRACTOR

By: _____
(Signature of Person, Firm or Corporation making Bid)

Title: _____

Address: _____

Attest: _____

License No. _____

Phone: _____

INSTRUCTIONS ON PROPER SIGNING

If Contractor is an individual, sign on first line only and designate trade name below first line, thus:

_____ John Jones _____ (Seal)

Trading as [Type of Company Name Here]

If Contractor is a partnership, sign partnership name on first line; have at least one general (not limited) partner sign on second line, and put his designation as partner on third line, thus:

_____ JONES PAVING COMPANY _____ (Seal)

By: _____ John Jones _____ (Seal)

Title: _____ General Contractor _____

If Contractor is a corporation, sign corporate name on first line (exactly as such name appears on the corporate seal); have the President or Vice-President sign on second line, put his title on third line, have the Secretary or Assistant Secretary sign on the left "ATTEST" line (adding the word "Assistant before the word "Secretary", if the Assistant Secretary is signing), and imprint corporate seal above the word "Attest", thus:

(Corporate Seal) _____ JONES PAVING COMPANY _____ (Seal)

_____ John Jones _____ (Seal)

Title: _____ President _____

ATTEST:

_____ Thomas Jones _____

Assistant Secretary

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State of North Carolina AFFIDAVIT A – Listing of Good Faith Efforts

County of _____

(Name of Bidder)

Affidavit of _____

I have made a good faith effort to comply under the following areas checked:

Bidders must earn at least 50 points from the good faith efforts listed for their bid to be considered responsive. (1 NC Administrative Code 30 I.0101)

- ☐ **1 – (10 pts)** Contacted minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor, or available on State or local government maintained lists, at least 10 days before the bid date and notified them of the nature and scope of the work to be performed.
- ☐ **2 --(10 pts)** Made the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bids are due.
- ☐ **3 – (15 pts)** Broken down or combined elements of work into economically feasible units to facilitate minority participation.
- ☐ **4 – (10 pts)** Worked with minority trade, community, or contractor organizations identified by the Office of Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
- ☐ **5 – (10 pts)** Attended prebid meetings scheduled by the public owner.
- ☐ **6 – (20 pts)** Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors.
- ☐ **7 – (15 pts)** Negotiated in good faith with interested minority businesses and did not reject them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.
- ☐ **8 – (25 pts)** Provided assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisted minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.
- ☐ **9 – (20 pts)** Negotiated joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.
- ☐ **10 - (20 pts)** Provided quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

The undersigned, if apparent low bidder, will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon scope of contract to be executed with the Owner. Substitution of contractors must be in accordance with GS143-128.2(d) Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of the minority business commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____

Signature: _____

(SEAL)

Title: _____

State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20____

Notary Public _____

My commission expires _____

This page intentionally left blank

State of North Carolina --AFFIDAVIT B-- Intent to Perform Contract with Own Workforce.

County of _____

Affidavit of _____

(Name of Bidder)

I hereby certify that it is our intent to perform 100% of the work required for the _____

_____ contract.

(Name of Project)

In making this certification, the Bidder states that the Bidder does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform all elements of the work on this project with his/her own current work forces; and

The Bidder agrees to provide any additional information or documentation requested by the owner in support of the above statement. The Bidder agrees to make a Good Faith Effort to utilize minority suppliers where possible.

The undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____

(SEAL)

State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20__

Notary Public _____

My commission expires _____

This page intentionally left blank

State of North Carolina - AFFIDAVIT C - Portion of the Work to be Performed by HUB Certified/Minority Businesses

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the portion of the work to be executed by HUB certified/minority businesses as defined in GS143-128.2(g) and 128.4(a),(b),(e) is equal to or greater than 10% of the bidders total contract price, then the bidder must complete this affidavit.

This affidavit shall be provided by the apparent lowest responsible, responsive bidder within **72 hours** after notification of being low bidder.

Affidavit of _____ I do hereby certify that on the _____
(Name of Bidder)

_____(Project Name)
Project ID# _____ Amount of Bid \$ _____

I will expend a minimum of _____ % of the total dollar amount of the contract with minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below.

Attach additional sheets if required

Name and Phone Number	*Minority Category	**HUB Certified Y/N	Work Description	Dollar Value

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____

(SEAL)

State of _____, County of _____
Subscribed and sworn to before me this _____ day of _____ 20____
Notary Public _____
My commission expires _____

This page intentionally left blank

State of North Carolina**AFFIDAVIT D – Good Faith Efforts**

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the goal of 10% participation by HUB Certified/ minority business **is not** achieved, the Bidder shall provide the following documentation to the Owner of his good faith efforts:

Affidavit of _____ I do hereby certify that on the
 _____ (Name of Bidder)

_____ (Project Name)
 Project ID# _____ Amount of Bid \$ _____

I will expend a minimum of _____% of the total dollar amount of the contract with HUB certified/ minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below. (Attach additional sheets if required)

Name and Phone Number	*Minority Category	**HUB Certified Y/N	Work Description	Dollar Value

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

Examples of documentation that may be required to demonstrate the Bidder's good faith efforts to meet the goals set forth in these provisions include, but are not necessarily limited to, the following:

- A. Copies of solicitations for quotes to at least three (3) minority business firms from the source list provided by the State for each subcontract to be let under this contract (if 3 or more firms are shown on the source list). Each solicitation shall contain a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contact, and location, date and time when quotes must be received.
 - B. Copies of quotes or responses received from each firm responding to the solicitation.
 - C. A telephone log of follow-up calls to each firm sent a solicitation.
 - D. For subcontracts where a minority business firm is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.
 - E. Documentation of any contacts or correspondence to minority business, community, or contractor organizations in an attempt to meet the goal.
 - F. Copy of pre-bid roster
 - G. Letter documenting efforts to provide assistance in obtaining required bonding or insurance for minority business.
 - H. Letter detailing reasons for rejection of minority business due to lack of qualification.
 - I. Letter documenting proposed assistance offered to minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.
- Failure to provide the documentation as listed in these provisions may result in rejection of the bid and award to the next lowest responsible and responsive bidder.

Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____

Signature: _____

(SEAL)

Title: _____

State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20____

Notary Public _____

My commission expires _____

SECTION 00 52 00

CONTRACT

THIS CONTRACT, made the ____ day of _____, [2024] between the County of Cumberland, a body politic and a subdivision of the State of North Carolina, hereinafter referred to as COUNTY, and _____, a business located at _____ hereinafter referred to as CONTRACTOR.

WITNESSETH:

THAT WHEREAS, a contract for the Cumberland County EMS Center - Chiller Replacement has recently been awarded to CONTRACTOR by the COUNTY, at and for a sum of:

(\$ _____) as shown in the Proposal attached hereto:

AND WHEREAS, it is provided in said award that a formal contract would be executed by and between CONTRACTOR and the COUNTY, evidencing the terms of said award, and that CONTRACTOR would commence the work to be performed under this agreement on a date to be specified in a written order by the COUNTY, and would fully complete all work within 155 calendar days from the date the Notice to Proceed is issued.

NOW, THEREFORE, CONTRACTOR doth hereby covenant and agree with the COUNTY that it will well and faithfully perform and execute such work and furnish such labor, materials, equipment, apparatus, and supplies, in accordance with each and every one of the conditions, covenants, stipulations, terms, and provisions contained in said Specifications and in accordance with the Plans, at and for a sum named therefore in the Proposal attached hereto, and will well and faithfully comply with and perform each and every obligation imposed upon it by said Plans and Specifications and the terms of said award.

CONTRACTOR shall promptly make payments to all persons supplying materials in the prosecution of the work, and to all laborers and others employed thereon.

CONTRACTOR shall be responsible for all damages to the property of Cumberland County and other utilities that may be consequent upon the normal procedure of its work or that may be caused by or result from the negligence of the CONTRACTOR, its employees or agents, during the progress of or connected with the prosecution of the work, whether within the limits of the work or elsewhere. CONTRACTOR must restore all property so injured to a condition as good as it was when CONTRACTOR entered upon the work.

CONTRACTOR shall furthermore be responsible for and required to make good at its expense any and all damages of whatever nature to persons or property, arising during the period of the Contract, caused by carelessness, neglect, or want of due precaution on the part of the CONTRACTOR, its agents, employees or workmen. CONTRACTOR shall also indemnify and save harmless the COUNTY, and the officers and agents thereof from all claims, suits, and proceedings of every name and description which may be brought against the COUNTY, or the officers and agents thereof, for or on account of any injuries or damages to persons or property received or sustained by any person or persons, firm or corporation, or by or in consequence of any materials used in said work or by or on account of any improper material or workmanship in its construction, or by or on account of any accident, or any other act or omission of CONTRACTOR, its agents, employees, servants, or workmen.

It is agreed and understood that the Advertisement for Bids, Instructions To Bidders, the General Conditions, the Specifications, the accepted Proposal, and the enumerated addenda and drawings are parts and parcels of this Contract, to the same extent as if incorporated herein in full.

It is further mutually agreed that, if at any time after the execution of this agreement and the surety bond hereto attached for its faithful performance, the COUNTY shall deem the surety or sureties upon such bond to be unsatisfactory, or if, for any reason, such bond ceases to be adequate to cover the performance of the work, CONTRACTOR shall at its expense, within five days after the receipt of notice from the COUNTY so to do, furnish an additional bond or bonds in such form and amount, and with such surety or sureties as shall be satisfactory to the COUNTY. In such event no further payment to CONTRACTOR shall be deemed to be due under this agreement until new or additional security for the performance of the work shall be furnished in manner and form satisfactory to the COUNTY.

And the COUNTY doth hereby covenant and agree with CONTRACTOR that it will pay to CONTRACTOR, when due and payable under the terms of said Specifications and said award, the above mentioned sum, and that it will well and faithfully comply with and perform each and every obligation imposed upon it by said Specifications and the terms of said award.

NON-APPROPRIATION CLAUSE: This agreement is subject to and contingent upon appropriation of funds for fiscal years subsequent to FY23.

E-VERIFY. CONTRACTOR shall comply with the requirements of Article 2 of Chapter 64 of the General Statutes. Further, if CONTRACTOR utilizes a subcontractor, CONTRACTOR shall require the subcontractor to comply with the requirements of Article 2 of Chapter 64 of the General Statutes.

Iran Divestment Act Certification. Contractor hereby certifies that Contractor, and all subcontractors, are not on the Iran Final Divestment List ("List") created by the North Carolina State Treasurer pursuant to N.C.G.S. 147-86.55-69. Contractor shall not utilize any subcontractor that is identified on the List.

Whenever used herein, the singular shall include the plural, the plural the singular, and the use of any gender shall be applicable to all genders as the context may require.

IN TESTIMONY WHEREOF, CONTRACTOR and the COUNTY have duly signed and sealed this Contract.

(Imprint corporate seal below this line)

ATTEST:

By: _____

Title: _____

ATTEST:

For the COUNTY OF
CUMBERLAND COUNTY, NC

By: _____

This instrument has been Pre-audited in the manner
Required by the local Government Budget and
Fiscal Control Act.

Marshall Faircloth, Chairman
Approved for Legal Sufficiency
upon formal execution by all parties
COUNTY ATTORNEYS OFFICE

County Finance Office

() Renewable () Nonrenewable
Expiration Date:_____

INSTRUCTIONS ON PROPER SIGNING

If Contractor is an individual, sign on first line only and designate trade name below first line, thus:

_____ John Jones _____ (Seal)
Trading as [Type Company Name Here]

If Contractor is a partnership, sign partnership name on first line; have at least one general (not limited) partner sign on second line, and put his designation as partner on third line, thus:

_____ JONES PAVING COMPANY _____ (Seal)
By: _____ John Jones _____ (Seal)

Title: _____ General Contractor _____

If Contractor is a corporation, sign corporate name on first line (exactly as such name appears on the corporate seal); have the President or Vice-President sign on second line, put his title on third line, have the Secretary or Assistant Secretary sign on the left "ATTEST" line (adding the word "Assistant before the word "Secretary", if the Assistant Secretary is signing), and imprint corporate seal above the word "Attest", thus:

(Corporate Seal) _____ JONES PAVING COMPANY _____ (Seal)
_____ John Jones _____ (Seal)
Title: _____ President _____

ATTEST:

_____ Thomas Jones _____
Assistant Secretary

SECTION 00 61 13
PERFORMANCE BOND

Contractor Name: Address:	Surety Name: Address:
Owner Name: Mailing Address	Contract Description Contract Price: Effective Date of Contract:
Bond Bond Amount: Date of Bond: <small>(date of Bond cannot be earlier than Effective Date of Contract)</small> Modifications to this Bond Form: ___ None ___ See Paragraph 18	
Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:
4. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;
5. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
6. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

7. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;
2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;
3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or
4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:
 - 4.1. After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
 - 4.2. Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.

If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and
3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

Definitions

1. Balance of the Contract Price—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.
2. Construction Contract—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.
3. Contractor Default—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.
4. Owner Default—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
5. Contract Documents—All the documents that comprise the agreement between the Owner and Contractor.

If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

Modifications to this Bond are as follows: [Describe modification or enter "None"]

END OF SECTION

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SECTION 00 61 14

PAYMENT BOND

Contractor Name: Address:	Surety Name: Address:
Owner Name: Mailing Address	Contract Description Contract Price: Effective Date of Contract:
Bond Bond Amount: Date of Bond: <small>(date of Bond cannot be earlier than Effective Date of Contract)</small> Modifications to this Bond Form: ___ None ___ See Paragraph 18	
Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond will arise after the following:
 - 5.1. Claimants who do not have a direct contract with the Contractor
 - 5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was

- done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
- 5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).
- 5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
- 7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
- 7.2. Pay or arrange for payment of any undisputed amounts.
- 7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.
8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.

Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

Definitions

1. Claim—A written statement by the Claimant including at a minimum:
 - 1.1. The name of the Claimant;
 - 1.2. The name of the person for whom the labor was done, or materials or equipment furnished;
 - 1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
 - 1.4. A brief description of the labor, materials, or equipment furnished;
 - 1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
 - 1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
 - 1.7. The total amount of previous payments received by the Claimant; and
 - 1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.
2. Claimant—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.
3. Construction Contract—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.
4. Owner Default—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
5. Contract Documents—All the documents that comprise the agreement between the Owner and Contractor.

If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

Modifications to this Bond are as follows: [Describe modification or enter "None"]
END OF SECTION

SECTION 00 72 00
GENERAL CONDITIONS

- A. The "General Conditions" referred to in this and the following section of the specifications is EJCDC "Standard General Conditions of the Construction Contract", EJCDC No. C-700 (2013 Edition) and SHALL BE considered Section II of this specification by reference.
 - 1. A copy of the "General Conditions" may be examined in the office of the Cumberland County Engineering & Infrastructure Department.
- B. Wherein the Supplementary Conditions are in conflict with the "General Conditions" (EJCDC No. C-700 (2013 Edition), the Provisions of the Supplementary Conditions SHALL govern.
- C. All work is to be performed by Contractors licensed in their respective fields of competence.

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SECTION 00 73 00
SUPPLEMENTARY GENERAL CONDITIONS

GENERAL

The following Supplements modify, change, delete from or add to the "General Conditions of the Contract of Construction". Where any Article of the General Conditions is modified or any Paragraph, Subparagraph or Clause thereof is modified or deleted by these supplements, the unaltered provisions of that Article, Paragraph, Subparagraph or Clause shall remain in effect.

DEFINITIONS:

1. "Owner" or "County" - Cumberland County, North Carolina
2. "Engineer" - Cumberland County Engineering & Infrastructure Department
3. "Drawings" - All drawings, or reproductions of drawings pertaining to the construction under the Contract.
4. "Work" or "Project" - The work shown on the drawings and specified herein.

CONTRACT COMPLETION TIME AND LIQUIDATED DAMAGES:

The time for completion of the work including clean-up, under this contract shall be 155 calendar days from the date specified in a written "Notice to Proceed" to the Contractor(s). Liquidated damages in the amount of \$500.00 per day for each day in excess of the time allowed will be deducted from the contract amount to be paid to the Contractor(s).

See General Conditions of the Contract, Article 12, regarding construction schedules, delays and extensions of time.

NORTH CAROLINA SALES TAX:

The following procedure shall be followed relative to the North Carolina Sales Tax applicable to this project. Contractors shall comply fully with the requirements outlined hereinafter, in order that the County may recover the amount of the tax permitted under the law.

- a. It shall be the Contractor's responsibility to furnish the County documentary evidence showing the materials used and sales tax paid by the Contractor and each of his subcontractors. Such evidence shall be transmitted to the County together with the Contractor's monthly payment request on the form provided by the County.
- b. The documentary evidence shall consist of a certified statement, by the Contractor and each of his subcontractors individually showing total purchases of materials from each separate vendor, total sales taxes paid to each vendor, and the county to which the local sales tax was paid. The certified statement must show the invoice number, or numbers, covered and inclusive dates of such invoices.
- c. Materials used from Contractor's or subcontractor's warehouse stock shall be shown in a certified statement at warehouse stock prices.
- d. The Contractor shall not be required to certify the subcontractor's statements.
- e. The documentary evidence to be furnished to the County eligible for sales tax refunds covers sales taxes paid on building materials, supplies, fixtures and equipment which become a part of or annex to buildings or structures being erected, altered or repaired under contracts with governmental units.
- f. The Contractor to whom award is made on this project will be required to follow the procedure outlined above. Failure to comply with these requirements will result in

delays in payment to the Contractor.

PLANS AND SPECIFICATIONS:

The Engineer will furnish to the Contractor two (2) copies of the Plans and Specifications, and the Contractor shall have available on the site at all times during the prosecution of the work one copy of said Plans and Specifications. This copy shall be accurately marked by the Contractor indicating all approved changes occurring during the construction process and delivered to the Engineer upon completion of the project.

MANUFACTURER'S RECOMMENDATIONS AND CERTIFICATION:

The Contractor shall submit to the Engineer for approval a list of proposed materials, equipment, or products to be incorporated in the work, within (10) days after award of the Contract.

The Contractor shall submit to the Engineer, the manufacturer's recommendations for each material or procedure to be utilized which is required to be in compliance with such recommendations. The Contractor shall have a copy of the manufacturer's instructions available at the construction site at all times and shall follow these instructions unless otherwise directed by the Engineer.

The Contractor shall be responsible at his own expense to provide certification to the Engineer by the manufacturer that all materials used for this project meet project specifications and are in compliance with referenced American Society for Testing Materials (ASTM). Materials or material suppliers shall not be changed after submittal or certifications without written approval by the Engineer. Any changes and re-certification cost shall be at the Contractor's expense and approval.

CONTRACTORS INSURANCE:

The Contractor shall not commence work under this Contract until he has obtained all insurance required below and submitted to the Owner in the form of a Certificate of Liability Insurance naming the County of Cumberland, P.O. Box 1829, Fayetteville, NC 28302 as the certificate holder, and such insurance has been approved by the Owner; nor shall the Contractor allow any subcontractor to commence work until such insurance has been obtained and approved. If a subcontractor does not take-out insurance in his own name and his principle Contractor wishes to provide insurance protection for such subcontractor and such subcontractor's employees, a rider must be attached to the principal policy, the Contractor must take out appropriate policies in the name of the subcontractor.

Minimum acceptable coverages are as follows:

Workers Compensation	Statutory
General Liability	\$1,000,000
Vehicle Bodily Injury	\$300,000 per Occurrence
	\$500,000 Annual Aggregate
Property Damage	\$500,000 Annual Aggregate

The Contractor and/or subcontractors shall furnish and keep in force the insurance requirements for a period of one (1) year after completion and acceptance of the work by the Owner. The certificate is to make reference to the project and the Owner.

FIELD DIRECTIVES FROM THE ENGINEER:

The Contractor shall communicate with and take field directives only from the Engineer or his representative. Any and all changes in the work are to be accomplished only by

written change order or written field orders which can be issued only by the Engineer or his representative. No claims for monetary or other considerations will be allowed that are based on verbal agreements only or that are based on Contractor agreements with any agent other than the Engineer or his representative.

FORCE ACCOUNT WORK:

Should unforeseen circumstances arise which, in the opinion of the Engineer, require work to be done for which no price can be agreed upon, the Engineer may require that the work be done on a force account basis. Work done on this basis shall be paid as follows:

- g. Skilled and common labor at the regular rate of pay for such men. Pay for the foreman may be included provided in the judgment of the Engineer, a foreman is required.
- h. To the foregoing shall be added such social security and old age benefit payments made by the Contractor.
- i. Materials used, to be listed with invoices.
- j. Equipment used shall be paid for at an hourly rate schedule mutually agreed upon, but in no case shall it exceed the hourly rate schedule established for such units by the Associated General Contractors.

To the sum of a, b, c, and d shall be added ten percent (10%) for overhead and profit. When force account work has been authorized, such authority shall be in writing.

LOCAL LAWS AND REGULATIONS:

The Bidder's attention is directed to the fact that all applicable state laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the Contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full. The Contractor will be responsible for notifying proper inspectors at various stages of construction for inspection and approval before continuing his work.

PERMITS AND LICENSES:

The Contractor shall procure and pay all charges and fees for all permits and licenses incidental to the due and lawful prosecution of the work.

CONSTRUCTION TRASH & DEBRIS REMOVAL:

During construction of the Project, the Contractor shall be responsible for the removal of any trash or debris created by his work to an approved disposal site. The site will be maintained in a clean condition at all times. Trash and debris from daily operations are to be stored in appropriate storage containers or trucks until removal to the disposal facility.

PAYMENTS:

Payments shall be made on a basis of 95% of monthly estimated cost of labor and materials, including freight or hauling on receipted bills until the work is 50% complete. Upon completion of 50% of the work, no additional retainage shall be held provided the work is progressing satisfactorily. If the Contractor fails to maintain the work on schedule, the Owner has the right to reinstate retainage such that the total amount withheld does not exceed 2.5% of the total contract amount. The contract payment shall be due and payable within fifteen (15) days after the Contractor's invoice has been certified for payment by the Engineer, the balance to be paid upon completion and acceptance of the job. Final payment shall be made to the Contractor within thirty (30) days after all work

has been finally completed and each and every provision of the specifications and accompanying drawings comply with to the Owner's or Engineer's satisfaction. Acceptance of the completed job shall be made by the Owner or his representative and the Engineer not later than the 25th of the month following in order to receive consideration.

DISPUTE RESOLUTION:

The parties must resolve any claim, dispute or other matter in contention arising out of, or relating to, this Contract which involves \$15,000 or more through the following procedure. The parties shall first negotiate in good faith to reach an equitable settlement to the dispute. If a negotiated settlement cannot be reached within 10 business days, the parties shall submit to mediation. The parties shall select a mediator, licensed by either North Carolina or federal courts and mutually agreeable to all parties in the dispute to conduct the proceedings which shall be held at the Owner's place of business. If the parties cannot agree on the selection of a mediator within 10 business days, then the parties agree that the Cumberland County Attorney shall select the mediator. The mediators cost shall be equally shared by all parties to the dispute. If a mediated settlement cannot be reached, the final recourse to the aggrieved party is legal action instituted and tried in the General Court of Justice of North Carolina under North Carolina Law with venue for trial being Cumberland County. No party shall have a right to resort to litigation until mediation shall first have occurred and not been successful. In accordance with North Carolina General Statute 143-135.26(12) and as a condition to this Contract, the prime CONTRACTOR shall incorporate this dispute resolution clause in any and all contracts with first-tier subcontractors who in turn shall incorporate this clause in any contracts with lower-tier subcontractors.

WARRANTY

The CONTRACTOR shall provide a 12-month warranty on all materials and workmanship beginning on the date of final acceptance.

END OF SECTION

SECTION 01 10 00

SUMMARY

PART 1 GENERAL

1.01 PROJECT

- A. Project Name: Cumberland County EMS Center - Chiller Replacement
- B. Owner's Name: Cumberland County.
- C. Engineer's Name: The Wooten Company.

1.02 CONTRACT DESCRIPTION

- A. Contract Type: A single prime contract based on a Stipulated Price as described in Document 00 52 00 - Agreement Form.

1.03 DESCRIPTION OF ALTERATIONS WORK

- A. Scope of demolition and removal work is indicated on drawings.
- B. HVAC: Alter existing system and add new construction, keeping existing in operation.
- C. Electrical Power and Lighting: Alter existing system and add new construction, keeping existing in operation.

1.04 OWNER OCCUPANCY

- A. Owner intends to continue to occupy adjacent portions of the existing building during the entire construction period.
- B. Owner intends to occupy the Project upon Substantial Completion.
- C. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- D. Schedule the Work to accommodate Owner occupancy.

1.05 CONTRACTOR USE OF SITE AND PREMISES

- A. Construction Operations: Limited to areas noted on Drawings.
 - 1. Locate and conduct construction activities in ways that will limit disturbance to site.
- B. Arrange use of site and premises to allow:
 - 1. Owner occupancy.
- C. Provide access to and from site as required by law and by Owner:
 - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
- D. Utility Outages and Shutdown:
 - 1. Limit disruption of utility services to hours the building is unoccupied.
 - 2. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Owner and authorities having jurisdiction.
 - 3. Prevent accidental disruption of utility services to other facilities.

1.06 WORK SEQUENCE

- A. Coordinate construction schedule and operations with Owner.

B. Coordinate construction schedule and operations with Architect.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 20 00
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Documentation of changes in Contract Sum and Contract Time.
- C. Change procedures.
- D. Procedures for preparation and submittal of application for final payment.

1.02 RELATED REQUIREMENTS

1.03 SCHEDULE OF VALUES

- A. Use Schedule of Values Form: AIA G703, edition stipulated in the Agreement.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Architect for approval.
- C. Forms filled out by hand will not be accepted.
- D. Submit Schedule of Values in duplicate within 20 days after date of Owner-Contractor Agreement.
- E. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification section. Identify site mobilization and bonds and insurance.
- F. Include in each line item, the amount of Allowances specified in this section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.
- G. Revise schedule to list approved Change Orders, with each Application For Payment.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: Submit at intervals stipulated in the General and Supplementary Conditions..
- B. Use Form AIA G702 and Form AIA G703, edition stipulated in the Agreement.
- C. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.
- D. Forms filled out by hand will not be accepted.
- E. Execute certification by signature of authorized officer.
- F. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
- G. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.
- H. Submit one electronic and three hard-copies of each Application for Payment.
- I. Include the following with the application:
 - 1. Transmittal letter as specified for submittals in Section 01 30 00.
 - 2. Construction progress schedule, revised and current as specified in Section 01 30 00.
 - 3. State Tax Form if required.

1.05 MODIFICATION PROCEDURES

- A. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect will issue instructions directly to Contractor.

- B. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
 - 1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
 - 2. Promptly execute the change.
- C. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 7 days.
- D. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
- E. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

1.06 APPLICATION FOR FINAL PAYMENT

- A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- B. Application for Final Payment will not be considered until the following have been accomplished:
 - 1. All closeout procedures specified in Section 01 70 00.

PART 2 PRODUCTS - NOT USED
PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 21 00
ALLOWANCES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Contingency allowance.

1.02 RELATED REQUIREMENTS

- A. Section 01 20 00 - Price and Payment Procedures: Additional payment and modification procedures.

1.03 CONTINGENCY ALLOWANCE

- A. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead and profit will be included in Change Orders authorizing expenditure of funds from this Contingency Allowance.
- B. Funds will be drawn from the Contingency Allowance only by Change Order.
- C. At closeout of Contract, funds remaining in Contingency Allowance will be credited to Owner by Change Order.

1.04 ALLOWANCES SCHEDULE

- A. Contingency Allowance: Include the stipulated sum/price of \$\$15,000 for use upon Owner's instructions.

PART 2 PRODUCTS - NOT USED
PART 3 EXECUTION - NOT USED

END OF SECTION

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SECTION 01 25 00
SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Procedural requirements for proposed substitutions.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- A. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
 - 2. Agrees to provide the same warranty for the substitution as for the specified product.
 - 3. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension that may subsequently become apparent.
- B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
- C. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
 - 1. Forms indicated in the Project Manual are adequate for this purpose, and must be used.
- D. Limit each request to a single proposed substitution item.
 - 1. Submit an electronic document, combining the request form with supporting data into single document.

3.02 SUBSTITUTION PROCEDURES DURING PROCUREMENT

- A. Submittal Time Restrictions:
 - 1. Instructions to Bidders specifies time restrictions and the documents required for submitting substitution requests during the bidding period.
- B. Submittal Form (before award of contract):
 - 1. Submit substitution requests by completing the form attached to this section. See this form for additional information and instructions. Use only this form; other forms of submission are unacceptable.

3.03 RESOLUTION

- A. Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.

3.04 ACCEPTANCE

- A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

END OF SECTION

SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General administrative requirements.
- B. Electronic document submittal service.
- C. Preconstruction meeting.
- D. Site mobilization meeting.
- E. Progress meetings.
- F. Construction progress schedule.
- G. Contractor's daily reports.
- H. Progress photographs.
- I. Coordination drawings.
- J. Submittals for review, information, and project closeout.
- K. Number of copies of submittals.
- L. Requests for Interpretation (RFI) procedures.
- M. Submittal procedures.

1.02 GENERAL ADMINISTRATIVE REQUIREMENTS

- A. Comply with requirements of Section 01 70 00 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.
- B. Make the following types of submittals to Architect:
 - 1. Requests for Interpretation (RFI).
 - 2. Requests for substitution.
 - 3. Shop drawings, product data, and samples.
 - 4. Test and inspection reports.
 - 5. Design data.
 - 6. Manufacturer's instructions and field reports.
 - 7. Applications for payment and change order requests.
 - 8. Progress schedules.
 - 9. Coordination drawings.
 - 10. Correction Punch List and Final Correction Punch List for Substantial Completion.
 - 11. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 ELECTRONIC DOCUMENT SUBMITTAL SERVICE

- A. All documents transmitted for purposes of administration of the contract are to be in electronic (PDF, MS Word, or MS Excel) format, as appropriate to the document, and transmitted via an Internet-based submittal service that receives, logs and stores documents, provides electronic stamping and signatures, and notifies addressees via email.
 - 1. Besides submittals for review, information, and closeout, this procedure applies to Requests for Interpretation (RFIs), progress documentation, contract

modification documents (e.g. supplementary instructions, change proposals, change orders), applications for payment, field reports and meeting minutes, Contractor's correction punchlist, and any other document any participant wishes to make part of the project record.

2. Contractor and Architect are required to use this service.
 3. It is Contractor's responsibility to submit documents in allowable format.
 4. Subcontractors, suppliers, and Architect's consultants will be permitted to use the service at no extra charge.
 5. Users of the service need an email address, internet access, and PDF review software that includes ability to mark up and apply electronic stamps (such as Adobe Acrobat, www.adobe.com, or Bluebeam PDF Revu, www.bluebeam.com), unless such software capability is provided by the service provider.
 6. Paper document transmittals will not be reviewed; emailed electronic documents will not be reviewed.
 7. All other specified submittal and document transmission procedures apply, except that electronic document requirements do not apply to samples or color selection charts.
- B. Submittal Service: The selected service is:
- C. Training: One, one-hour, web-based training session will be arranged for all participants, with representatives of Architect and Contractor participating; further training is the responsibility of the user of the service.
- D. Project Closeout: Architect will determine when to terminate the service for the project and is responsible for obtaining archive copies of files for Owner.

3.02 PRECONSTRUCTION MEETING

- A. Architect will schedule a meeting after Notice of Award.
- B. Attendance Required:
1. Owner.
 2. Architect.
 3. Contractor.
- C. Agenda:
1. Execution of Owner-Contractor Agreement.
 2. Submission of executed bonds and insurance certificates.
 3. Distribution of Contract Documents.
 4. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
 5. Submission of initial Submittal schedule.
 6. Designation of personnel representing the parties to Contract, Owner and Architect.
 7. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 8. Scheduling.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.03 SITE MOBILIZATION MEETING

- A. Attendance Required:

1. Contractor.
 2. Owner.
 3. Architect.
 4. Contractor's superintendent.
 5. Major subcontractors.
- B. Agenda:
1. Use of premises by Owner and Contractor.
 2. Owner's requirements.
 3. Construction facilities and controls provided by Owner.
 4. Temporary utilities provided by Owner.
 5. Survey and building layout.
 6. Security and housekeeping procedures.
 7. Schedules.
 8. Application for payment procedures.
 9. Procedures for testing.
 10. Procedures for maintaining record documents.
 11. Requirements for start-up of equipment.
 12. Inspection and acceptance of equipment put into service during construction period.
- C. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.04 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the work at maximum bi-monthly intervals.
- B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C. Attendance Required:
1. Contractor.
 2. Owner.
 3. Architect.
 4. Contractor's superintendent.
 5. Major subcontractors.
- D. Agenda:
1. Review minutes of previous meetings.
 2. Review of work progress.
 3. Field observations, problems, and decisions.
 4. Identification of problems that impede, or will impede, planned progress.
 5. Review of submittals schedule and status of submittals.
 6. Review of RFIs log and status of responses.
 7. Review of off-site fabrication and delivery schedules.
 8. Maintenance of progress schedule.
 9. Corrective measures to regain projected schedules.
 10. Planned progress during succeeding work period.
 11. Coordination of projected progress.
 12. Maintenance of quality and work standards.
 13. Effect of proposed changes on progress schedule and coordination.
 14. Other business relating to work.

- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.05 CONSTRUCTION PROGRESS SCHEDULE - SEE SECTION 01 32 16

- A. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of work, with a general outline for remainder of work.

3.06 PROGRESS PHOTOGRAPHS

- A. Submit photographs with each application for payment, taken not more than 3 days prior to submission of application for payment.
- B. Maintain one set of all photographs at project site for reference; same copies as submitted, identified as such.
- C. Photography Type: Digital; electronic files.
- D. Provide photographs of site and construction throughout progress of work produced by an experienced photographer, acceptable to Architect.
- E. In addition to periodic, recurring views, take photographs of each of the following events:
- F. Views:
 - 1. Provide non-aerial photographs from four cardinal views at each specified time, until date of Substantial Completion.
 - 2. Consult with Architect for instructions on views required.
 - 3. Provide factual presentation.
 - 4. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.
- G. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
 - 1. Delivery Medium: Via email.
 - 2. File Naming: Include project identification, date and time of view, and view identification.
 - 3. PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.
 - 4. Hard Copy: Printed hardcopy (grayscale) of PDF file and point of view sketch.

3.07 REQUESTS FOR INTERPRETATION (RFI)

- A. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.
- B. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
 - 1. Prepare a separate RFI for each specific item.
 - 2. Prepare using software provided by the Electronic Document Submittal Service.
 - 3. Combine RFI and its attachments into a single electronic file. PDF format is preferred.
- C. Review Time: Architect will respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been

received on the following regular working day.

1. Response period may be shortened or lengthened for specific items, subject to mutual agreement, and recorded in a timely manner in progress meeting minutes.

3.08 SUBMITTAL SCHEDULE

- A. Submit to Architect for review a schedule for submittals in tabular format.
 1. Submit at the same time as the preliminary schedule specified in Section - 01 32 16 - Construction Progress Schedule.
 2. Coordinate with Contractor's construction schedule and schedule of values.
 3. Format schedule to allow tracking of status of submittals throughout duration of construction.

3.09 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
 1. Product data.
 2. Design data.
 3. Shop drawings.
 4. Samples for selection.
 5. Samples for verification.
- B. Submit to Architect for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.
- C. Samples will be reviewed for aesthetic, color, or finish selection.
- D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 78 00 - Closeout Submittals.

3.10 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
 1. Certificates.
 2. Test reports.
 3. Inspection reports.
 4. Manufacturer's instructions.
 5. Manufacturer's field reports.
 6. Other types indicated.
- B. Submit for Architect's knowledge as contract administrator or for Owner.

3.11 SUBMITTALS FOR PROJECT CLOSEOUT

- A. Submit Correction Punch List for Substantial Completion.
- B. Submit Final Correction Punch List for Substantial Completion.
- C. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 78 00 - Closeout Submittals:
 1. Project record documents.
 2. Operation and maintenance data.
 3. Warranties.
 4. Bonds.
 5. Other types as indicated.
- D. Submit for Owner's benefit during and after project completion.

3.12 NUMBER OF COPIES OF SUBMITTALS

- A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
- B. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
 - 1. After review, produce duplicates.
 - 2. Retained samples will not be returned to Contractor unless specifically so stated.

3.13 SUBMITTAL PROCEDURES

- A. General Requirements:
 - 1. Use a single transmittal for related items.
 - 2. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
 - 3. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
 - 4. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
 - a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
 - 5. Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties, and is of the benefit to the project.
 - a. Send submittals in electronic format via email to Architect.
 - 6. Schedule submittals to expedite the Project, and coordinate submission of related items.
 - a. For each submittal for review, allow 10 business days excluding delivery time to and from the Contractor.
 - b. For sequential reviews involving Architect's consultants, Owner, or another affected party, allow an additional 7 days.
 - 7. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
 - 8. Provide space for Contractor and Architect review stamps.
 - 9. When revised for resubmission, identify all changes made since previous submission.
 - 10. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
- B. Shop Drawing Procedures:
 - 1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
 - 2. Do not reproduce Contract Documents to create shop drawings.
 - 3. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.

3.14 SUBMITTAL REVIEW

- A. Submittals for Review: Architect will review each submittal, and approve, or take other appropriate action.

- B. Submittals for Information: Architect will acknowledge receipt, but will take no other action.
- C. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
- D. Architect's and consultants' actions on items submitted for review:
 - 1. Authorizing purchasing, fabrication, delivery, and installation:
 - a. "Approved", or language with same legal meaning.
 - b. "Approved as Noted, Resubmission not required", or language with same legal meaning.
 - 1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
 - c. "Approved as Noted, Resubmit for Record", or language with same legal meaning.
 - 1) Resubmit corrected item, with review notations acknowledged and incorporated. Resubmit separately, or as part of project record documents.
 - 2. Not Authorizing fabrication, delivery, and installation:
 - a. "Rejected".
 - 1) Submit item complying with requirements of Contract Documents.
- E. Architect's and consultants' actions on items submitted for information:
 - 1. Items for which no action was taken:
 - a. "Received" - to notify the Contractor that the submittal has been received for record only.
 - 2. Items for which action was taken:
 - a. "Reviewed" - no further action is required from Contractor.

END OF SECTION

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SECTION 01 31 19
PROJECT MEETINGS

PART 1 GENERAL

1.01 MEETINGS

- A. Pre-construction conference shall be held prior to the beginning of the Work.
- B. Construction progress meetings shall be held monthly.
- C. Project close-out conference shall be held during the final phases of the Work.
- D. Engineer may schedule additional meetings.
- E. Meetings scheduled by the Engineer shall be held at the Add Location.
- F. Contractor's project superintendent shall attend meetings.
- G. Notify suppliers and subcontractors to attend meetings as appropriate or as required by Engineer.
- H. Contractor shall schedule pre-installation conferences as required in the individual specification sections.
- I. Notify Engineer of project meetings scheduled by the Contractor.
- J. Engineer will schedule and administer meetings throughout the progress of the Work, except for meetings held by the Contractor for normal coordination of the Work.
- K. Meeting agenda shall include, but not be limited to, the following: Project Administration, Submittals, Construction Schedules and Methods, Safety and Health Regulations, Project Coordination, Payment Application, Change Orders, and Site Inspections.
- L. Engineer will prepare agenda with copies to participants, preside at meetings, prepare minutes and distribute to participants for meetings scheduled by the Engineer.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOTUSED

END OF SECTION

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SECTION 01 32 16
CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preliminary schedule.
- B. Construction progress schedule, bar chart type.

1.02 SUBMITTALS

- A. Within 10 days after date of Agreement, submit preliminary schedule.
- B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
- D. Submit updated schedule with each Application for Payment.
- E. Submit in PDF format.

1.03 SCHEDULE FORMAT

- A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRELIMINARY SCHEDULE

- A. Prepare preliminary schedule in the form of a horizontal bar chart.

3.02 CONTENT

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- B. Identify each item by specification section number.
- C. Identify work of separate stages and other logically grouped activities.
- D. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
- E. Provide legend for symbols and abbreviations used.

3.03 BAR CHARTS

- A. Include a separate bar for each major portion of Work or operation.
- B. Identify the first work day of each week.

3.04 UPDATING SCHEDULE

- A. Maintain schedules to record actual start and finish dates of completed activities.
- B. Indicate progress of each activity to date of revision, with projected completion date of each activity.
- C. Annotate diagrams to graphically depict current status of Work.
- D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.

- E. Indicate changes required to maintain Date of Substantial Completion.
- F. Submit reports required to support recommended changes.

3.05 DISTRIBUTION OF SCHEDULE

- A. Distribute copies of updated schedules to Contractor's project site file, to subcontractors, suppliers, Architect, Owner, and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

END OF SECTION

SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. References and standards.
- B. Testing and inspection agencies and services.
- C. Control of installation.
- D. Defect Assessment.

1.02 REFERENCES AND STANDARDS

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Obtain copies of standards where required by product specification sections.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.
- F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from Contract Documents by mention or inference otherwise in any reference document.

1.03 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. Owner will employ services of an independent testing agency to perform certain specified testing; payment for cost of services will be derived from allowance specified in Section 01 21 00; see Section 01 21 00 and applicable sections for description of services included in allowance.
- B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have work performed by persons qualified to produce required and specified quality.

- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 TESTING AND INSPECTION

- A. Testing Agency Duties:
 - 1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 - 2. Perform specified sampling and testing of products in accordance with specified standards.
 - 3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 4. Promptly notify Architect and Contractor of observed irregularities or non-compliance of Work or products.
 - 5. Perform additional tests and inspections required by Architect.
 - 6. Submit reports of all tests/inspections specified.
- B. Limits on Testing/Inspection Agency Authority:
 - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency may not approve or accept any portion of the Work.
 - 3. Agency may not assume any duties of Contractor.
 - 4. Agency has no authority to stop the Work.
- C. Contractor Responsibilities:
 - 1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 - 2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
 - 3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - c. To facilitate tests/inspections.
 - d. To provide storage and curing of test samples.
 - 4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
 - 5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
 - 6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- D. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.
- E. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.03 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not complying with specified requirements.

END OF SECTION

SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Transportation, handling, storage and protection.
- B. Product option requirements.
- C. Substitution limitations.
- D. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 REFERENCE STANDARDS

- A. NEMA MG 1 - Motors and Generators; 2021.
- B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.03 SUBMITTALS

- A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.01 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by Contract Documents.
- B. Use of products having any of the following characteristics is not permitted:
 - 1. Containing lead, cadmium, or asbestos.
- C. Motors: Refer to Section 21 05 13 - Common Motor Requirements for Fire Suppression Equipment, NEMA MG 1 Type. Specific motor type is specified in individual specification sections.
- D. Motors: Refer to Section 22 05 13 - Common Motor Requirements for Plumbing Equipment, NEMA MG 1 Type. Specific motor type is specified in individual specification sections.
- E. Motors: Refer to Section 23 05 13 - Common Motor Requirements for HVAC Equipment, NEMA MG 1 Type. Specific motor type is specified in individual specification sections.
- F. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Size terminal lugs to NFPA 70, include

lugs for terminal box.

2.02 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

2.03 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTION LIMITATIONS

- A. See Section 01 25 00 - Substitution Procedures.

3.02 TRANSPORTATION AND HANDLING

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.03 STORAGE AND PROTECTION

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 01 74 19.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.
- D. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.

- G. Comply with manufacturer's warranty conditions, if any.
- H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- I. Prevent contact with material that may cause corrosion, discoloration, or staining.
- J. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

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SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Requirements for alterations work, including selective demolition.
- C. Cutting and patching.
- D. Cleaning and protection.
- E. Starting of systems and equipment.
- F. Demonstration and instruction of Owner personnel.
- G. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.
- H. General requirements for maintenance service.

1.02 REFERENCE STANDARDS

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather exposed or moisture resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of Owner or separate Contractor.
- C. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.04 PROJECT CONDITIONS

- A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- B. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
 - 1. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.

1.05 COORDINATION

- A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Notify affected utility companies and comply with their requirements.
- C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing

indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

- E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- F. Coordinate completion and clean-up of work of separate sections.
- G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 GENERAL INSTALLATION REQUIREMENTS

- A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

- C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.04 ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 - 1. Verify that construction and utility arrangements are as indicated.
 - 2. Report discrepancies to Architect before disturbing existing installation.
 - 3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove items indicated on drawings.
 - 2. Relocate items indicated on drawings.
 - 3. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
 - 4. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- C. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, Telecommunications, and _____): Remove, relocate, and extend existing systems to accommodate new construction.
 - 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
 - 2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
 - 3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 - a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
 - b. Provide temporary connections as required to maintain existing systems in service.
 - 4. Verify that abandoned services serve only abandoned facilities.
 - 5. Remove abandoned pipe, ducts, conduits, and equipment , including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.
- D. Protect existing work to remain.
 - 1. Prevent movement of structure; provide shoring and bracing if necessary.
 - 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 - 3. Repair adjacent construction and finishes damaged during removal work.
- E. Adapt existing work to fit new work: Make as neat and smooth transition as possible.

- F. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- G. Refinish existing surfaces as indicated:
 - 1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
 - 2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
- H. Clean existing systems and equipment.
- I. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
- J. Do not begin new construction in alterations areas before demolition is complete.
- K. Comply with all other applicable requirements of this section.

3.05 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. See Alterations article above for additional requirements.
- C. Perform whatever cutting and patching is necessary to:
 - 1. Complete the work.
 - 2. Fit products together to integrate with other work.
 - 3. Provide openings for penetration of mechanical, electrical, and other services.
 - 4. Match work that has been cut to adjacent work.
 - 5. Repair areas adjacent to cuts to required condition.
 - 6. Repair new work damaged by subsequent work.
 - 7. Remove samples of installed work for testing when requested.
 - 8. Remove and replace defective and non-complying work.
- D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- E. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- G. Restore work with new products in accordance with requirements of Contract Documents.
- H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 84 00, to full thickness of the penetrated element.
- J. Patching:
 - 1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 - 2. Match color, texture, and appearance.
 - 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.06 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.07 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.08 SYSTEM STARTUP

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Architect and Owner seven days prior to start-up of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
- D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
- G. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.09 DEMONSTRATION AND INSTRUCTION

- A. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.
- B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- C. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of Owner's personnel.

3.10 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.11 FINAL CLEANING

- A. Use cleaning materials that are nonhazardous.
- B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- E. Clean filters of operating equipment.
- F. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, drainage systems, and _____.
- G. Clean site; sweep paved areas, rake clean landscaped surfaces.
- H. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.12 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.
 - 1. Provide copies to Architect and Owner.
- B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.
- C. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.
- D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.
- E. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.
- F. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.
- G. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.
- H. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

3.13 MAINTENANCE

- A. Provide service and maintenance of components indicated in specification sections.
- B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.
- C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION

SECTION 01 78 00
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Project record documents.
- B. Operation and maintenance data.
- C. Warranties and bonds.

1.02 SUBMITTALS

- A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
- B. Operation and Maintenance Data:
 - 1. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
 - 2. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
 - 3. Submit two sets of revised final documents in final form within 10 days after final inspection.
- C. Warranties and Bonds:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
 - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:

1. Changes made by Addenda and modifications.
- F. Record Drawings: Legibly mark each item to record actual construction including:
1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 3. Field changes of dimension and detail.
 4. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA

- A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For Each Product, Applied Material, and Finish:
 1. Product data, with catalog number, size, composition, and color and texture designations.
 2. Information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- D. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. For Each Item of Equipment and Each System:
 1. Description of unit or system, and component parts.
 2. Identify function, normal operating characteristics, and limiting conditions.
 3. Include performance curves, with engineering data and tests.
 4. Complete nomenclature and model number of replaceable parts.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
- D. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating

- instructions.
- E. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
 - F. Provide servicing and lubrication schedule, and list of lubricants required.
 - G. Include manufacturer's printed operation and maintenance instructions.
 - H. Include sequence of operation by controls manufacturer.
 - I. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
 - J. Provide control diagrams by controls manufacturer as installed.
 - K. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.
 - L. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
 - M. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
 - N. Include test and balancing reports.

3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

- A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
- B. Where systems involve more than one specification section, provide separate tabbed divider for each system.
- C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.
- F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
- G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
- H. Text: Manufacturer's printed data, or typewritten data on 20 pound paper.
- I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- J. Provide a PDF copy, properly bookmarked as well.

3.06 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.

- D. Retain warranties and bonds until time specified for submittal.
- E. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.

END OF SECTION

SECTION 23 05 00
HVAC GENERAL PROVISIONS

PART 1 GENERAL

1.01 SCOPE

- A. Provide and coordinate all plans, labor, materials, apparatus, services, and equipment required for the installation of a fully operational HVAC system as shown in the contract documents.

1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this and the other sections of Division 23.
- B. Applicable Codes, Regulations and Standards:
 - 1. Latest Edition of the North Carolina State Building Code.
 - 2. Applicable National Fire Protection Association (NFPA) Codes.
 - 3. Applicable Underwriters Laboratory (UL) Standards. All electrical materials and equipment shall be UL listed and labeled in every case where such listing has been established.
 - 4. Latest Edition of the National Electrical Code (NEC, NFPA 70).
 - 5. Latest Edition of the National Electrical Manufacturers' Association (NEMA) Standards.
 - 6. Latest Edition of American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE).

1.03 SUMMARY

- A. This Section includes general administrative and procedural requirements for HVAC installations. The following administrative and procedural requirements are included in this Section to expand the requirements specified in the general conditions.
 - 1. Submittals.
 - 2. Coordination drawings.
 - 3. Record documents.
 - 4. Maintenance manuals.
 - 5. Rough-ins.
 - 6. HVAC installations.
- B. Related Sections:
 - 1. Specification Section 230513 "Electrical Requirements for HVAC Equipment", for factory-installed motors, disconnects, motor starters, controllers, accessories and connections.
 - 2. The drawings accompanying this specification are generally diagrammatic and do not show all details required for the complete system. They should however be followed as closely as possible in the general arrangement and location of equipment. Do not scale the drawings. Check all dimensions at the building and investigate all structural and finish conditions. Arrange all work to meet these conditions and provide such offsets, brackets and other necessary accessories as may be required.
 - 3. Immediately upon discovery of any discrepancy in the drawings or the specifications, or points of conflict therein, notify the Engineer who will clarify

such discrepancy in writing prior to the progress of the work beyond the point concerned.

4. Do not cover up construction until it has been inspected and approved by the Engineer.

1.04 SUBMITTALS

- A. General: Follow the procedures specified in Division 1.
- B. Increase, by the quantity listed below, the number of HVAC related shop drawings, product data, and samples submitted, to allow for required distribution plus one copy of each submittal required, which will be retained by the Engineer. One additional copy of the shop drawings shall be submitted for Wake County Public School System Quality Control Review.
 1. Shop Drawings - 2 additional blue - or black-line prints.
 2. Product Data - 1 additional copy of each item.
- C. Additional copies may be required by individual sections of these specifications. Upon completion of the project, provide the Owner with a complete set of all shop drawings and submittals as outlined in Paragraph D of this Section.
- D. Shop Drawings and Catalog Data: Approval of submittals for any material, apparatus, devices and layouts shall not relieve the Contractor from the responsibility of furnishing same as specified of proper dimensions, size and quantity. If the submittals deviate from the contract documents in these three areas, advise the Engineer of the deviations in writing accompanying the shop drawings, including the reason for deviations. Any items found on the job either installed or not installed which do not meet the above criteria shall be replaced by the Contractor at the discretion of the Engineer. Review and stamp all shop drawings and submittals before submitting them to the Engineer for approval. Any submittals not stamped and signed by the Contractor prior to submittal to the Engineer will be returned to the Contractor for his stamp and resubmittal. A copy of all shop drawings and submittals shall be kept at the job site at all times.
 1. Required Submittals:
 - a. Air Cooled Chillers
 - b. Pumps
 - c. Electrical Equipment (including motor starters and disconnects)
 - d. Piping and Accessories
 - e. Valves
 - f. Pipe Hangers and Supports
 - g. Piping Insulation and Jacketing
 - h. Building Automation System
 - i. Instrumentation
 - j. Pipe Expansion Compensators
 - k. Mechanical Identification
 - l. Vibration Isolation
 - m. Equipment Insulation
 - n. Hydronic Specialties (Balancing Valves, etc.)
 - o. Variable Speed Drives
 - p. Testing & Balancing

1.05 COORDINATION DRAWINGS

- A. Contractor is required to develop and distribute drawings for coordination with other trades. Drawings shall indicate size and elevation of ductwork and piping for HVAC systems. Conflicts between HVAC system components and devices from other

trades shall be brought to the Engineer's attention for resolution.

1.06 RECORD DOCUMENTS

- A. The Contractor shall maintain as-built drawings at the job site and shall submit the drawings to the Engineer at the completion of work. The "As Built" drawings shall indicate the following installed conditions:
 - 1. The location of all equipment.
 - 2. Ductwork mains and branches, size and location, control devices, filters, boxes, and fan coil units.
 - 3. Mains and branches of piping systems, with valves and control devices located and numbered, concealed unions located, and with items requiring maintenance located (i.e., strainers, expansion compensators, tanks, etc.). Valve location diagrams, complete with valve tag chart. Refer to Division 23, Section "Mechanical Identification."
 - 4. Equipment locations (exposed and concealed), dimensioned from prominent building lines.
 - 5. Approved substitutions, Contract Modifications, Alternates and actual equipment and materials installed.
- B. During construction operations the Contractor shall faithfully and accurately record all changes from the contract drawings including dimensions where applicable, including invert elevations for all below-grade outside utilities with reference to permanent above-grade objects.
- C. At project close-out, the Contractor shall neatly record with red ink all construction changes on an unused set of contract drawing prints supplied by the Engineer. This set of prints shall be submitted to the Engineer for review and approval. Should the Engineer find these record documents to be incomplete they will be returned to the Contractor and corrected accordingly by the Contractor with no additional cost to the Owner.

1.07 OPERATING AND MAINTENANCE MANUALS

- A. Two (2) complete sets of operating and maintenance manuals shall be submitted to the Owner through the Architect/Engineer two (2) weeks prior to the pre-final inspection date.
- B. The O. & M. Manuals shall be installed in a 3-ring heavy back note book with the name of the building and the words "Operations and Maintenance Manuals" on the cover and spine. The manuals shall contain the following items as a minimum:
 - 1. Index and page numbers.
 - 2. Certificate of substantial completion.
 - 3. All warranties.
 - 4. List of all subcontractors and suppliers with names, addresses and phone numbers.
 - 5. Certified testing and balancing report.
 - 6. Complete start-up operation, and shut-down procedures for each system including sequence of events, locations of switches, emergency procedures and any other critical items.
 - 7. Lubrication schedules and types of lubricants.
 - 8. Complete set of current shop drawings and equipment description showing all capacities and other operation conditions.
 - 9. Equipment summary showing all capacities and ratings. (HP, Tons, KW, Filter size, etc.)
 - 10. All submittal data and shop drawings.

11. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of replacement parts.
12. Manufacturer's printed operating procedures to include start-up, break-in, and routine and normal operating instructions; regulation, control, stopping, shutdown and emergency instructions; summer and winter operating instructions.
13. Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair and reassembly; aligning and adjusting instructions.
14. Wiring and control diagrams.
15. Manufacturer's cuts, part numbers and serial numbers.
16. A print of the main electrical control diagrams on non-fading paper shall be wall mounted under glass in each mechanical room. Show control sequence on the diagrams.

1.08 FINAL INSPECTIONS

- A. Each project shall have both a pre-final and final inspection made before it is finally accepted by the Owner. A complete thorough training session shall be conducted by this Contractor and all applicable Subcontractors for the Wake County Public School System after the pre-final inspection.
- B. The pre-final inspection shall be held after all systems are in place and in operation. The HVAC Contractor shall demonstrate to the Engineer and Owner that all systems in the building are properly installed, balanced, and performing as designed and specified. All Contractors and Subcontractors shall attend this inspection including HVAC and air and water balance Subcontractor.
- C. The final inspection shall be held with the Owner, Architect/Engineer, all Contractors and Subcontractors to demonstrate to the Owner that all systems in the building are operating as designed and to their satisfaction.

1.09 WARRANTIES

- A. All work shall be fully warranted for one year from the date of substantial completion by the Contractor who shall replace any defective materials and repair any defective workmanship.

1.10 TEST REPORTS

- A. All systems are required to be tested and shall be documented in writing, listing date, item tests, section tested, witnesses to the test (signed), and specification section which requires testing. Reports on testing shall be submitted within seven (7) days of completion of each test. In addition all test reports shall be compiled in a spiral bound 8 1/2" x 11" document and submitted at the same time and in the same quantity as required for Operation and Maintenance manuals.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. Deliver the products to the project properly identified with names, model numbers, types, grades, compliance labels and other information needed for identification. All equipment and materials shall be fully protected and covered with protective materials to prevent any damage.

1.12 PRODUCT SELECTION

- A. Where three or more manufacturers are listed for an item of equipment without an "or approved equivalent" clause, the Contractor may, at his option, provide any one

of those specified. Equipment by manufacturers other than those listed will not be considered.

- B. Where one or more manufacturers and a substitutions clause are listed for an item of equipment the Contractor may, at his option, provide the specified item or propose a substitute item of equal quality and performance. Submit a request for substitution for any manufacturer not named. Refer to Section II below regarding substitutions. The Engineer shall determine whether a substitute item is equivalent to the product specified and reserves the right to reject that substitute item.
- C. All materials and equipment specified and shown on the plans shall be new and free from any defects. Each item of equipment shall bear the manufacturer's name or trade mark.
- D. Dimensions: Insure that all items of equipment furnished fit the space available. Make necessary field measurements to ascertain space requirement.
- E. Subcontractors and materials list: Provide within 5 days after execution of the contract a complete list of proposed Subcontractors and materials including manufacturer's name.

1.13 PRODUCT SUBSTITUTIONS

- A. Engineer will consider requests for Product Substitutions in accordance with Division 1 of this specification.
- B. Product Substitutions may be considered when a product becomes unavailable through no fault of the Contractor.
- C. Document each request with complete data substantiating compliance of proposed Product Substitution with Contract Documents.
- D. A request constitutes a representation that the Contractor:
 - 1. Has investigated proposed product and determined that it meets or exceeds that quality level of the specified product.
 - 2. Will provide the same warranty for the Substitution as for the specified product.
 - 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension which may subsequently become apparent.
- E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- F. Substitutions Submittal Procedure:
 - 1. Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution.
 - 2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence.
 - 3. The Engineer will notify Contractor, in writing, of decision to accept or reject request.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 SUPERVISION

- A. The Contractor shall have a thoroughly competent foreman in charge of the construction work at all times. The foreman shall have extensive experience in the work to be performed.

3.02 ROUGH-IN OF DEVICES

- A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.

3.03 COORDINATION

- A. General: Sequence, coordinate, and integrate the various elements of HVAC systems, materials, and equipment with work of all other Contractors on the project. Comply with the following requirements:
 - 1. Coordinate HVAC systems, equipment, and materials installation with other building components.
 - 2. Verify all dimensions by field measurements.
 - 3. Arrange for chases, slots, and openings in other building components during progress of construction to allow for HVAC installations.
 - 4. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, as they are constructed.
 - 5. Sequence, coordinate, and integrate installations of HVAC materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning prior to closing in the building.
 - 6. Where mounting heights are not detailed or dimensioned, install systems, materials, and equipment to provide the maximum headroom possible.
 - 7. Coordinate connection of HVAC systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service.

3.04 WORKMANSHIP

- A. Install systems, materials, and equipment level and plumb, parallel and perpendicular to other building systems and components, where installed exposed in finished spaces.
- B. Install HVAC equipment to facilitate servicing, maintenance, and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.
- C. Duct and pipe penetrations: Duct and pipe penetrations shall be provided by the Mechanical Contractor. Mechanical shop drawings shall be provided to the Architect/Engineer and General Contractor with ALL duct and pipe penetrations sized and located. These shop drawings shall be submitted during early phases of construction so not to delay the General Construction Schedule. Any additional costs, associated with the construction delays, that result from a failure to coordinate this work will be paid by the Mechanical Contractor.
- D. Install systems, materials, and equipment giving right-of-way priority to systems required to be installed at a specified slope.
- E. Properly support all work and equipment installed under this contract. Study all drawings, shop drawings and catalog data to determine how equipment, accessories, piping, and related items are to be supported, mounted or suspended. Provide all bolts, inserts, pipe stands, brackets, structural supports and accessories for proper support of equipment furnished under this contract.
- F. Provide suitable vibration isolating bases or suspension systems as indicated and/or required for all rotating, reciprocating and vibrating equipment. Design all isolation for maximum absorption efficiency so that no transmission of vibration or structurally borne noise shall occur. The selection of isolators for proper loading to obtain the

desired efficiency shall be the responsibility of the manufacturer of the isolating units and shall be fully guaranteed by the manufacturer.

- G. Pressure vessels and safety devices shall be inspected and approved by the N.C. Bureau of Boiler Inspectors as required by the code. Notify Boiler Inspector two weeks in advance in writing. Wall-mount the inspection certificate under glass in a metal frame.
- H. All mechanical piping systems shall be thoroughly cleaned and flushed prior to their use for temporary cooling or heating. The HVAC Contractor shall contact the Architect/Engineer seven (7) days in advance of cleaning and flushing any mechanical piping systems. As the building is closed in, the HVAC Contractor shall be responsible for providing temporary cooling or heating through the permanent building system as required for general construction activities. This will require utilizing some portions of the mechanical piping systems and isolating others. Isolation of systems shall be accomplished through valves provided in the project. As general construction progresses, closed portions of the mechanical piping systems shall be opened to provide the necessary temporary heating or cooling. Each time a new portion of mechanical piping is opened to clean operating water system, the entire system shall be flushed and cleaned.
- I. The HVAC Contractor shall include in his bid a price to clean and flush the heating hot water and chilled water systems or loop water system three (3) separate times in accordance with Specification Section 232113 and 232500.
- J. All field painting of HVAC work, with exception of touch-up paint on factory finished equipment and exposed double wall spiral duct, shall be by HVAC Contractor in accordance with the "Painting" section of these specifications and Section 23 05 53. Any equipment which has its factory paint coat scratched or otherwise damaged shall be retouched with paint to match the finish coat, and shall be repainted if necessary.

END OF SECTION

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SECTION 23 05 01
DIVISION OF WORK

PART 1 - GENERAL

1.01 DIVISION OF WORK

- A. This section delineates the division of work between Divisions 23 (Mechanical) and Division 26 (Electrical).
- B. This Contractor shall be responsible for the final electrical and the entire control connections and wiring to all equipment installed as part of his contract.
- C. Contractor shall review the electrical plans, where applicable, to establish points of connection and the extent of his electrical work to be provided in his contract.
- D. Unless otherwise noted, this Contractor shall wire from his equipment to disconnect switches, junction boxes, or panelboard circuit breakers as provided by the Electrical Contractor or as required by the existing conditions.
- E. All power and control wiring shall be in conduits. Refer to electrical specifications for conduit and conduit fittings.
- F. All electrical work shall be performed by a licensed electrician.
- G. All electrical work shall be in accordance with the State Building Code and all its supplements, the latest edition of the National Electrical Code and the electrical specifications.
- H. All other work necessary for the operation of Division 23 equipment shall be performed under Divisions 23.

PART 2 - PRODUCT

2.01 GENERAL REQUIREMENTS

- A. All motor starters, disconnects, switches, relays, conduits, conductors, etc. that are required for a complete electrical power and/or control system shall conform to the requirements set forth by NEC.
- B. Refer to the plans for the type, size and electrical characteristics of the starters, disconnects, switches, relays, conductor and conduits.
- C. All conductors and conduits shall be sized as noted on the plans or As required per NEC.
- D. All individual motor starters and drives for mechanical equipment (i.e., fans, pumps, etc.) shall be furnished and installed under Division 23 unless indicated as a part of a motor control center. Motor starters provided in motor control centers and at motor control troughs shall be furnished under Divisions 26.
- E. Under Division 26, power wiring rough-in shall be provided for junction box, trough, starter or disconnect switch, as required by the specific piece of equipment. Equipment final connections shall be provided under Division 23.
- F. Equipment less than 110 volt, all relays, actuators, aquastats, freezestats, line and low voltage thermostats, disconnect switches, beyond termination point, and other appurtenances under Divisions 23 shall be furnished, installed and wired under Divisions 23 in accordance with Division 26.
- G. All wiring required for controls and instrumentation not indicated on the drawings shall be furnished and installed by Division 23.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

- A. All motor starters, disconnects, and switches shall be installed on or as close to the equipment they are serving as possible, or where shown on the plans.
- B. Electrical connection to equipment subject to vibration which develops objectionable noises shall be made from the conduit system with short lengths of flexible "Liquid-Tite" conduit. Connection to other equipment shall be made with rigid conduit.
- C. Conduits shall be run in a concealed space such as wall cavities, ceiling cavities, etc. except in the mechanical rooms where conduit may be run exposed.

END OF SECTION

SECTION 23 05 13
COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General construction and requirements.
- B. Applications.
- C. Single phase electric motors.
- D. Three phase electric motors.
- E. Electronically Commutated Motors (ECM).

1.02 REFERENCE STANDARDS

- A. ABMA STD 9 - Load Ratings and Fatigue Life for Ball Bearings; 2015 (Reaffirmed 2020).
- B. IEEE 112 - IEEE Standard Test Procedure for Polyphase Induction Motors and Generators; 2017.
- C. NEMA MG 1 - Motors and Generators; 2021.
- D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide wiring diagrams with electrical characteristics and connection requirements.
- C. Manufacturer's Installation Instructions: Indicate setting, mechanical connections, lubrication, and wiring instructions.
- D. Maintenance Data: Include assembly drawings, bearing data including replacement sizes, and lubrication instructions.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacture of electric motors for _____ use, and their accessories, with minimum three years documented product development, testing, and manufacturing experience.
- B. Comply with NFPA 70.
- C. Provide certificate of compliance from Authority Having Jurisdiction indicating approval of high efficiency motors.
- D. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Protect motors stored on site from weather and moisture by maintaining factory covers and suitable weather-proof covering. For extended outdoor storage, remove motors from equipment and store separately.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Baldor Electric Company/ABB Group: www.baldor.com/#sle.
- B. Leeson Electric Corporation: www.leeson.com/#sle.
- C. Regal-Beloit Corporation (Century): www.centuryelectricmotor.com/#sle.
- D. General Electric.
- E. Marathon

2.02 GENERAL CONSTRUCTION AND REQUIREMENTS

- A. Electrical Service:
 - 1. Motors 1/2 HP and Smaller: 115 volts, single phase, 60 Hz.
 - 2. Motors Larger than 3/4 Horsepower: 208/480 volts, three phase, 60 Hz as indicated on the drawings.
- B. Nominal Efficiency:
 - 1. All motors shall be premium efficiency and meet or exceed the requirements of ASHRAE Standard 90.1-2013 and the North Carolina Energy Code.
 - 2. All motors shall conform to the efficiency standard for integral horsepower motors known as 10 CFR Part 431 Subpart B published by the US Department of Energy.
- C. Construction:
 - 1. Open drip-proof type except where specifically noted otherwise.
 - 2. Design for continuous operation in 104 degrees F environment.
 - 3. Design for temperature rise in accordance with NEMA MG 1 limits for insulation class, service factor, and motor enclosure type.
- D. Explosion-Proof Motors: UL approved and labelled for hazard classification, with over temperature protection.
- E. Motors driven by variable frequency drives (VFDs) shall be inverter duty and have a shaft grounding ring.
- F. Visible Nameplate: Indicating motor horsepower, voltage, phase, cycles, RPM, full load amps, locked rotor amps, frame size, manufacturer's name and model number, service factor, power factor, efficiency.
- G. Wiring Terminations:
 - 1. Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70, threaded for conduit.
 - 2. For fractional horsepower motors where connection is made directly, provide threaded conduit connection in end frame.

2.03 APPLICATIONS

- A. Exception: Motors less than 250 watts, for intermittent service may be the equipment manufacturer's standard and need not comply with these specifications.
- B. Motors located in exterior locations, wet air streams downstream of sprayed coil dehumidifiers, draw through cooling towers, air cooled condensers, humidifiers, direct drive axial fans, roll filters, explosion proof environments, and dust collection systems: Totally enclosed type.

2.04 SINGLE PHASE POWER - SPLIT PHASE MOTORS

- A. Starting Torque: Less than 150 percent of full load torque.
- B. Starting Current: Up to seven times full load current.
- C. Breakdown Torque: Approximately 200 percent of full load torque.

2.05 THREE PHASE POWER - SQUIRREL CAGE MOTORS

- A. Starting Torque: Between 1 and 1-1/2 times full load torque.
- B. Starting Current: Six times full load current.
- C. Power Output, Locked Rotor Torque, Breakdown or Pull Out Torque: NEMA Design B characteristics.
- D. Insulation System: NEMA Class B or better.
- E. Testing Procedure: In accordance with IEEE 112. Load test motors to determine free from electrical or mechanical defects in compliance with performance data.
- F. Motor Frames: NEMA Standard T-Frames of steel, aluminum, or cast iron with end brackets of cast iron or aluminum with steel inserts.
- G. Bearings: Grease lubricated anti-friction ball bearings with housings equipped with plugged provision for relubrication, rated for minimum ABMA STD 9, L-10 life of 20,000 hours. Calculate bearing load with NEMA minimum V-belt pulley with belt center line at end of NEMA standard shaft extension. Stamp bearing sizes on nameplate.
- H. Weatherproof Epoxy Sealed Motors: Epoxy seal windings using vacuum and pressure with rotor and starter surfaces protected with epoxy enamel; bearings double shielded with waterproof non-washing grease.
- I. Nominal Efficiency: As indicated at full load and rated voltage when tested in accordance with IEEE 112.
- J. Nominal Power Factor: As indicated at full load and rated voltage when tested in accordance with IEEE 112.

2.06 ELECTRONICALLY COMMUTATED MOTORS (ECM)

- A. Applications:
 - 1. Commercial:
 - a. Motors part of other equipment
 - 1) Operating Mode: Constant speed.
 - 2) Input: Motor manufacturer to coordinate control requirements with the control board of the roof top unit and/or specified sequence of operation.
 - 3) Input: Motor manufacturer to coordinate control requirements with the control board of the roof top unit and/or specified sequence of operation.
 - 4) RPM: 600 through 1800.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install securely on firm foundation. Mount ball bearing motors with shaft in any position.
- C. Check line voltage and phase and ensure agreement with nameplate.
- D. Motors with belt drives shall have adjustable motor mountings. Motor mounts shall have adjustable locking device for fixing motor position.
- E. Motor starters shall be installed as close to the motors they are serving as possible.
- F. Motor starters shall be installed at locations and heights to meet all State requirements and National Electric Code.

END OF SECTION

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SECTION 23 05 19
METERS AND GAUGES FOR HVAC PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Pressure gauges and pressure gauge taps.
- B. Thermometers and thermometer wells.

1.02 REFERENCE STANDARDS

- A. ASTM E1 - Standard Specification for ASTM Liquid-in-Glass Thermometers; 2014 (Reapproved 2020).
- B. ASTM E77 - Standard Test Method for Inspection and Verification of Thermometers; 2014 (Reapproved 2021).

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide list that indicates use, operating range, total range and location for manufactured components.
- C. Project Record Documents: Record actual locations of components and instrumentation.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.

1.04 FIELD CONDITIONS

- A. Do not install instrumentation when areas are under construction, except for required rough-in, taps, supports and test plugs.

PART 2 PRODUCTS

2.01 PRESSURE GAUGES

- A. Manufacturers:
 - 1. Dwyer Instruments, Inc: www.dwyer-inst.com/#sle.
 - 2. Moeller Instrument Company, Inc: www.moellerinstrument.com/#sle.
 - 3. Omega Engineering, Inc: www.omega.com/#sle.
 - 4. U.S. Gauge.
- B. Pressure Gauges: Liquid filled, 316L stainless steel case and bezel ring, seamless 316L stainless steel bourdon tube, 304 stainless steel movement, 316L stainless steel process connection, with front recalibration adjustment, white aluminum dial with black lettering.
 - 1. 4" diameter
 - 2. Range: 0-100 psi or to match system pressure
 - 3. Accuracy: +/- 1% of full scale
 - 4. Window: Shatter resistant glass or polycarbonate
 - 5. Pointer: Aluminum, black painted
 - 6. Working Pressure: 125% of full scale
 - 7. Working temperature:

- a. Ambient: -40 - 140 Degrees F
- b. Fluid: -4 - 212 Degrees F
- 8. Weather Protection: NEMA 4X/IP67
- 9. Liquid: Glycerin, Mineral oil, or Silicon oil

C. Gauges used on cooling tower pumps shall be compound gauges.

2.02 PRESSURE GAUGE TAPPINGS

- A. Gauge Cock: Tee or lever handle, brass for maximum 150 psi.
- B. Needle Valve: Brass, 1/4 inch NPT for minimum 150 psi.
- C. Pulsation Damper: Pressure snubber, brass with 1/4 inch connections.

2.03 STEM TYPE THERMOMETERS

- A. Manufacturers:
 - 1. Dwyer Instruments, Inc: www.dwyer-inst.com/#sle.
 - 2. Omega Engineering, Inc; _____: www.omega.com/#sle.
 - 3. Weksler Glass Thermometer Corp: www.wekslerglass.com/#sle.
- B. Thermometers - Adjustable Angle: Red- or blue-appearing non-toxic liquid in glass; ASTM E1; lens front tube, cast aluminum case with enamel finish, cast aluminum adjustable joint with positive locking device; adjustable 360 degrees in horizontal plane, 180 degrees in vertical plane.
 - 1. Size: 9 inch scale.
 - 2. Window: Clear Lexan.
 - 3. Stem: 3/4 inch NPT brass.
 - 4. Accuracy: 2 percent, per ASTM E77.
 - 5. Calibration: Degrees F.
 - 6. Range:
 - a. Chilled Water: 0 - 120 Degrees F
 - b. Hot Water: 30 - 180 Degrees F

2.04 THERMOMETER SUPPORTS

- A. Socket: Brass separable sockets for thermometer stems with or without extensions as required, and with cap and chain.
- B. Flange: 3 inch outside diameter reversible flange, designed to fasten to sheet metal air ducts, with brass perforated stem.

2.05 TEST PLUGS

- A. Test Plug: 1/4 inch or 1/2 inch brass fitting and cap for receiving 1/8 inch outside diameter pressure or temperature probe with Nordel core for temperatures up to 350 degrees F.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide one pressure gauge per pump, installing taps before strainers and on suction and discharge of pump. Pipe to gauge.
- C. Install pressure gauges with pulsation dampers. Provide ball valve to isolate each gauge. Provide siphon on gauges in steam systems. Extend nipples and siphons to allow clearance from insulation.

- D. Install thermometers in piping systems in sockets in short couplings. Enlarge pipes smaller than 2-1/2 inch for installation of thermometer sockets. Ensure sockets allow clearance from insulation.
- E. Install thermometers in air duct systems on flanges.
- F. Install thermometer sockets adjacent to controls system thermostat, transmitter, or sensor sockets. Refer to Section 23 09 43. Where thermometers are provided on local panels, duct or pipe mounted thermometers are not required.
- G. Locate duct mounted thermometers minimum 10 feet downstream of mixing dampers, coils, or other devices causing air turbulence.
- H. Provide instruments with scale ranges selected according to service with largest appropriate scale.
- I. Install gauges and thermometers in locations where they are easily read from normal operating level. Install vertical to 45 degrees off vertical.
- J. Locate test plugs adjacent to pressure gages and pressure gage taps and thermometers and thermometer sockets.

END OF SECTION

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SECTION 23 05 23
GENERAL-DUTY VALVES FOR HVAC PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Ball valves.
- B. Butterfly valves.
- C. Check valves.

1.02 ABBREVIATIONS AND ACRONYMS

- A. CWP: Cold working pressure.
- B. EPDM: Ethylene propylene copolymer rubber.
- C. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.
- D. NRS: Nonrising stem.
- E. OS&Y: Outside screw and yoke.
- F. PTFE: Polytetrafluoroethylene.
- G. RS: Rising stem.
- H. TFE: Tetrafluoroethylene.
- I. WOG: Water, oil, and gas.

1.03 REFERENCE STANDARDS

- A. ASME B1.20.1 - Pipe Threads, General Purpose, Inch; 2013 (Reaffirmed 2018).
- B. ASME B16.1 - Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250; 2020.
- C. ASME B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24 Metric/Inch Standard; 2020.
- D. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2021.
- E. ASME B31.9 - Building Services Piping; 2020.
- F. ASME BPVC-IX - Boiler and Pressure Vessel Code, Section IX - Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators; 2023.
- G. ASTM A126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings; 2004 (Reapproved 2019).
- H. ASTM A395/A395M - Standard Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures; 1999 (Reapproved 2022).
- I. ASTM A536 - Standard Specification for Ductile Iron Castings; 1984, with Editorial Revision (2019).
- J. ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings; 2017.
- K. AWWA C606 - Grooved and Shouldered Joints; 2022.
- L. MSS SP-67 - Butterfly Valves; 2022.
- M. MSS SP-80 - Bronze Gate, Globe, Angle, and Check Valves; 2019.
- N. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends; 2010, with Errata .
- O. MSS SP-125 - Check Valves: Gray Iron and Ductile Iron, In-Line, Spring-Loaded, Center-Guided; 2018.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

- B. Product Data: Provide data on valves including manufacturers catalog information. Submit performance ratings, rough-in details, weights, support requirements, and piping connections.
- C. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- D. Maintenance Materials: Furnish Owner with one wrench for every five plug valves, in each size of square plug valve head.
 - 1. See Section 01 60 00 - Product Requirements for additional provisions.

1.05 QUALITY ASSURANCE

- A. Manufacturer:
 - 1. Obtain valves for each valve type from single manufacturer.
 - 2. Company must specialize in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Welding Materials and Procedures: Comply with ASME BPVC-IX.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Prepare valves for shipping as follows:
 - 1. Minimize exposure of operable surfaces by setting plug and ball valves to open position.
 - 2. Protect valve parts exposed to piped medium against rust and corrosion.
 - 3. Protect valve piping connections such as grooves, weld ends, threads, and flange faces.
 - 4. Adjust globe, gate, and angle valves to the closed position to avoid clattering.
 - 5. Secure check valves in either the closed position or open position.
 - 6. Adjust butterfly valves to closed or partially closed position.
- B. Use the following precautions during storage:
 - 1. Maintain valve end protection and protect flanges and specialties from dirt.
 - a. Provide temporary inlet and outlet caps.
 - b. Maintain caps in place until installation.
 - 2. Store valves in shipping containers and maintain in place until installation.
 - a. Store valves indoors in dry environment.
 - b. Store valves off the ground in watertight enclosures when indoor storage is not an option.
- C. Exercise the following precautions for handling:
 - 1. Handle large valves with sling, modified to avoid damage to exposed parts.
 - 2. Avoid the use of operating handles or stems as rigging or lifting points.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide all valves of each type from a single manufacturer.
- B. Manufacturers:
 - 1. Anvil
 - 2. Apollo
 - 3. Crane
 - 4. Hammond
- C. ITT Grinnell
- D. Milwaukee

- E. Nibco
- F. Powell
- G. Victaulic

2.02 APPLICATIONS

- A. Listed pipe sizes shown using nominal pipe sizes (NPS) and nominal diameter (DN).
- B. Provide the following valves for the applications if not indicated on drawings:
 - 1. Isolation (Shutoff): Butterfly and Ball.
 - 2. Swing Check (Pump Outlet):
 - a. Size 2 inch and Smaller: Bronze with bronze disc.
 - b. Size 2-1/2 inch and Larger: Iron with center-guided with resilient seat.
 - 3. Dead-End: Butterfly, single-flange (lug) type.
- C. Substitutions of valves with higher CWP classes or WSP ratings for same valve types are permitted when specified CWP ratings or WSP classes are not available.
- D. Required Valve End Connections for Non-Wafer Types:
 - 1. Steel Pipe:
 - a. Size 2 inch and Smaller: Threaded ends.
 - b. Size 2-1/2 inch and Larger: Grooved ends.
 - 2. Copper Tube:
 - a. Size 2 inch and Smaller: Threaded ends, except solder-joint valve-ends.
 - b. Size 2-1/2 inch and Larger: Grooved ends.
- E. Chilled Water Valves:
 - 1. Size 2 inch and Smaller, Bronze Valves:
 - a. Threaded ends for steel pipe.
 - b. Soldered ends for copper pipe.
 - c. Ball: Full port, two piece, stainless steel trim.
 - d. Swing Check: Bronze disc, Class 150.
 - 2. Size 2-1/2 inch and Larger, Iron Valves:
 - a. 2-1/2 inch to 4 inch: Flanged ends.
 - b. Single-Flange Butterfly: 2-1/2 inch to 12 inch, aluminum-bronze disc, EPDM seat, 200 CWP.
 - c. Center-Guided Check: Compact-wafer, metal seat, Class 150.

2.03 GENERAL REQUIREMENTS

- A. Valve Pressure and Temperature Ratings: No less than rating indicated; as required for system pressures and temperatures.
- B. Valve Sizes: Match upstream piping unless otherwise indicated.
- C. Valve Actuator Types:
 - 1. Handwheel: Valves other than quarter-turn types.
 - 2. Hand Lever: Quarter-turn valves 6 inch and smaller.
- D. Valves in Insulated Piping: Provide 2 inch stem extensions and the following features:
 - 1. Ball Valves: Extended operating handle of non-thermal-conductive material, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation.
 - 2. Butterfly Valves: Extended neck.
- E. Valve-End Connections:
 - 1. Threaded End Valves: ASME B1.20.1.
 - 2. Flanges on Iron Valves: ASME B16.1 for flanges on iron valves.
 - 3. Pipe Flanges and Flanged Fittings 1/2 inch through 24 inch: ASME B16.5.

4. Solder Joint Connections: ASME B16.18.
 5. Grooved End Connections: AWWA C606.
- F. General ASME Compliance:
1. Building Services Piping Valves: ASME B31.9.
- G. Bronze Valves:
1. Fabricate from dezincification resistant material.
 2. Copper alloys containing more than 15 percent zinc are not permitted.
- H. Source Limitations: Obtain each valve type from a single manufacturer.
- 2.04 BRONZE, BALL VALVES
- A. General:
1. Fabricate from dezincification resistant material.
 2. Copper alloys containing more than 15 percent zinc are not permitted.
- B. Two Piece, Full Port with Stainless Steel Trim:
1. Comply with MSS SP-110.
 2. WSP Rating: 150 psi.
 3. WOG Rating: 400 psi.
 4. Body: Forged bronze or dezincified-brass alloy.
 5. End Connections: Pipe thread or solder.
 6. Seats: PTFE.
 7. Stem: Stainless steel.
 8. Ball: Stainless steel, vented.
 9. Handle: Provide lever handle with 2-1/4" stem extension for insulation. On chilled water valves or other fluids below ambient temperature, use non-conductive handle extensions.
- 2.05 IRON, SINGLE FLANGE BUTTERFLY VALVES
- A. Wafer Style:
1. Comply with MSS SP-67, Type I.
 2. Lug Style, CWP Ratings:
 - a. Vacuum Service: Down to 29.9 in-Hg.
 3. Body Material: ASTM A126 cast iron or ASTM A536 ductile iron.
 4. Stem: One or two-piece stainless steel.
 5. Seat: EPDM.
 6. Disc: Aluminum-bronze.
 7. Operator: Lockable handle over direct-mount actuator base.
- 2.06 BRONZE, SWING CHECK VALVES
- A. Class 150:
1. Pressure and Temperature Rating: MSS SP-80, Type 3.
 2. Design: Y-pattern, horizontal or vertical flow.
 3. CWP Rating: 300 psi.
 4. Body: Bronze, ASTM B62.
 5. End Connections: Threaded or soldered.
 6. Disc: Bronze.
- 2.07 IRON, CENTER-GUIDED CHECK VALVES
- A. Class 150, Compact-Wafer:
1. Comply with MSS SP-125.

2. Sizes 2-1/2 to 12 inch: CWP Rating; 300 psi.
3. Body Material: ASTM A395/A395M or ASTM A536, ductile iron.
4. Resilient Seat: EPDM or NBR.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Discard all packing materials and verify that valve interior, including threads and flanges, are completely clean without signs of damage or degradation that could result in leakage.
- B. Verify valve parts to be fully operational in all positions from closed to fully open.
- C. Confirm gasket material to be suitable for the service, to be of correct size, and without defects that could compromise effectiveness.
- D. Should valve is determined to be defective, replace with new valve.

3.02 INSTALLATION

- A. Provide unions or flanges with valves to facilitate equipment removal and maintenance while maintaining system operation and full accessibility for servicing.
- B. Provide separate valve support as required and locate valve with stem at or above center of piping, maintaining unimpeded stem movement.
- C. Where valve support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc-rich primer to welds.
- D. Install check valves where necessary to maintain direction of flow as follows:
 1. Swing Check: Install horizontal maintaining hinge pin level.
 2. Orient center-guided into horizontal or vertical position, between flanges.
- E. Provide chainwheels on operators for valves 6" and larger where located 96" or more above finished floor, terminating 60" above finished floor.

END OF SECTION

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SECTION 23 05 29
HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Support and attachment components.

1.02 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.
- C. ASTM A181/A181M - Standard Specification for Carbon Steel Forgings, for General-Purpose Piping; 2023.
- D. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.
- E. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings; 1999, with Editorial Revision (2022).
- F. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2018.
- G. ASTM A395/A395M - Standard Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures; 1999 (Reapproved 2022).
- H. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2023.
- I. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023c.
- J. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2018, with Amendment (2019).
- K. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate sizes and arrangement of supports and bases with the actual equipment and components to be installed.
 - 2. Coordinate the work with other trades to provide additional framing and materials required for installation.
 - 3. Coordinate compatibility of support and attachment components with mounting surfaces at the installed locations.
 - 4. Coordinate the arrangement of supports with ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
 - 5. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Sequencing:
 - 1. Do not install products on or provide attachment to concrete surfaces until concrete has fully cured in accordance with Section 03 30 00.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

- B. Shop Drawings: Include details for fabricated hangers and supports where materials or methods other than those indicated are proposed for substitution.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 SUPPORT AND ATTACHMENT COMPONENTS

- A. General Requirements:
 - 1. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of plumbing work.
 - 2. Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable.
 - 3. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported with a minimum safety factor of 2. Include consideration for vibration, equipment operation, and shock loads where applicable.
 - 4. Steel Components: Use corrosion resistant materials suitable for the environment where installed.
 - a. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
 - b. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.
- B. Pipe Supports:
 - 1. Material: ASTM A395/A395M ductile iron, ASTM A36/A36M carbon steel, ASTM A47/A47M malleable iron, ASTM A181/A181M forged steel, or ASTM A283/A283M steel.
 - 2. Liquid Temperatures Up To 122 degrees F:
 - a. Overhead Support: MSS SP-58 Types 1, 3 through 12.
 - b. Support From Below: MSS SP-58 Types 35 through 38.
 - 3. Operating Temperatures from 122 to 446 degrees F:
 - a. Overhead Support: MSS SP-58 Type 1 or 3 through 12, with appropriate saddle of MSS SP-58 Type 40 for insulated pipe.
- C. Pipe Hangers:
 - 1. Clevis Hangers, Adjustable:
 - a. Copper Tube: MSS SP-58 Type 1, epoxy-plated copper.
- D. Dielectric Barriers: Provide between metallic supports and metallic piping and associated items of dissimilar type; acceptable dielectric barriers include rubber or plastic sheets or coatings attached securely to pipe or item.
- E. Pipe Shields for Insulated Piping:
 - 1. General Construction and Requirements:
 - a. Surface Burning Characteristics: Comply with ASTM E84 or UL 723.
 - b. Shields Material: UV-resistant polypropylene with glass fill.
 - c. Maximum Insulated Pipe Outer Diameter: 12-5/8 inch.
 - d. Minimum Service Temperature: Minus 40 degrees F.
 - e. Maximum Service Temperature: 178 degrees F.
 - f. Pipe shields to be provided at hanger, support, and guide locations on pipe requiring insulation or additional support.

F. Anchors and Fasteners:

1. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Provide independent support from building structure. Do not provide support from piping, ductwork, conduit, or other systems.
- C. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.
- D. Unless specifically indicated or approved by Architect, do not provide support from roof deck.
- E. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
- F. Equipment Support and Attachment:
 - 1. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.
 - 2. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
 - 3. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
 - 4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.
- G. Secure fasteners according to manufacturer's recommended torque settings.
- H. Remove temporary supports.

3.02 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Inspect support and attachment components for damage and defects.
- C. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
- D. Correct deficiencies and replace damaged or defective support and attachment components.

END OF SECTION

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SECTION 23 05 33
HEAT TRACING FOR HVAC PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Self-regulating parallel resistance electric heating cable.

1.02 REFERENCE STANDARDS

- A. IEEE 515.1 - IEEE Standard for the Testing, Design, Installation, and Maintenance of Electrical Resistance Trace Heating for Commercial Applications; 2022.
- B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with other trades to provide ground fault protection for electric heat tracing circuits as required by NFPA 70.
- B. Coordinate the work with other trades to provide circuit breaker ratings suitable for installed circuit lengths.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data for electric heat tracing.
- C. Shop Drawings: Indicate electric heat tracing layout, electrical terminations, thermostats, controls, and branch circuit connections.
- D. Sizing table indicating pipe size, insulation thickness, fluid temperature, ambient temperature, and W/ft of cable selected.
- E. Manufacturer's Installation Instructions: Indicate installation instructions and recommendations.
- F. Field Quality Control Submittals: Indicate test reports and inspection reports.
- G. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions of equipment and controls, maintenance and repair data, and parts listings.
- H. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- I. Project Record Documents: Record actual locations of electric heat tracing lines and thermostats.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with at least three years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.06 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide two year manufacturer warranty for cables, connection kits, accessories, and controls.

PART 2 PRODUCTS

2.01 SELF-REGULATING PARALLEL RESISTANCE ELECTRIC HEATING CABLE

- A. Manufacturers:
1. Chromalox, Inc: www.chromalox.com/#sle.
 2. Pentair: www.pentairthermal.com/#sle.
 3. Thermon Manufacturing Company: www.thermon.com/#sle.
 4. Raychem.
- B. Provide products listed, classified, and labeled by UL (DIR) or testing firm acceptable to authorities having jurisdiction (AHJ).
- C. All heat-tracing applications with continuous exposure temperatures from 150 degrees F to 250 degrees F or intermittent exposure temperatures from 185 degrees F to 420 degrees F shall use self-regulating cables.
- D. Self-regulating cable shall vary its power relative to the temperature of the surface of the pipe or the vessel. The cable shall be designed such that it can be crossed over itself and cut to length in the field.
- E. Self-regulating heating cable shall be designed for a useful life of 20 years or more with "power on" continuously, based on the following useful life criteria:
1. Retention of at least 75 percent of nominal rated power after 20 years of operation at the maximum published continuous exposure (maintain) temperature.
 2. Retention of at least 90 percent of nominal rated power after 1000 hours of operation at the maximum published intermittent exposure temperature. The testing shall conform to UL 746B, IEC 216-1 Part 1.
- F. All cables shall be capable of passing a 2.5 kV dielectric test for one minute (ASTM 2633) after undergoing a 0.5 kg-m impact.
- G. Factory Rating and Testing: Comply with IEEE 515.1.
- H. Heating Element:
1. Provide pair of parallel No. 16 nickel coated stranded copper bus wires embedded in cross linked conductive polymer core with varying heat output in response to temperature along its length.
 2. Terminations: Waterproof, factory assembled, non-heating leads with connector at one end and water-tight seal at opposite end.
 3. Capable of crossing over itself without overheating.
- I. Minimum Self-Regulating Indices:
- J. Heating Cable S.R. Index (W/deg F)
- | Heating Cable | S.R. Index (W/deg F) |
|---------------|----------------------|
| 3 W/ft | 0.038 |
| 5 W/ft | 0.060 |
| 8 W/ft | 0.074 |
| 10 W/ft | 0.100 |
- K. The self-regulating index is the rate of change of power output in watts per degree Fahrenheit as measured by the temperatures of 50 degree F and 100 degree F and confirmed by the type of test and published data sheets.
- L. In order to ensure that the self-regulating heating cable does not increase power output when accidentally exposed to high temperatures, resulting in thermal run-away and self-ignition, the cable shall produce less than 0.5 watts per foot when energized and heated to 350 degrees F for 30 minutes. After this test, if the cable is

reenergized, it must not have an increasing power output leading to thermal runaway.

- M. The self-regulating cable shall retain at least 90 percent of its original power output after having been cycled 300 times between 50 degrees F and 210 degrees F, allowing at least six minutes of dwell time at each temperature.
- N. Insulated Jacket: Flame retardant polyolefin.
- O. Cable Cover: Provide tinned copper and polyolefin outer jacket with UV inhibitor.
- P. A integral ground-fault protection device set at 30 mA, with a nominal 100-ms response time, shall be included and used to protect each circuit.
- Q. Maximum Power-On Operating Temperature: 150 degrees F.
- R. Maximum Power-Off Exposure Temperature: 185 degrees F.
- S. Electrical Characteristics:

2.02 OUTER JACKET MARKINGS

- A. Name of manufacturer, trademark, or other recognized symbol of identification.
- B. Catalog number, reference number, or model.
- C. Month and year of manufacture, date coding, applicable serial number, or equivalent.
- D. Agency listing or approval.
- E. Applicable environmental or area use requirements, such as NEMA 4, Type 4, IP ratings, and hazardous (classified) location markings including temperature rating.
- F. Any applicable warning/caution statements such as "WARNING: De-energize circuit before removing cover.

2.03 CONNECTION KITS

- A. Name of manufacturer, trademark, or other recognized symbol of identification.
- B. Provide power connection, splice/tee, and end seal kits compatible with the heating cable and without requiring cutting of the cable core to expose bus wires.
- C. Furnish with NEMA 4X rating for prevention of corrosion and water ingress.
- D. Provide UV stabilized components.

2.04 ACCESSORIES

- A. Provide Accessories As Indicated or As Required for Complete Installation, Including but Not Limited To:
 - 1. High temperature, glass filament tape for attachment of heating cable to metal piping.
 - 2. Aluminum self-adhesive tape for attachment of heating cable to plastic piping.
 - 3. Heat-conductive putty.
 - 4. Cable ties.
 - 5. Silicone end seals and splice kits.
 - 6. Installation clips.
 - 7. Warning labels for attachment to exterior of piping insulation. Refer to Section 23 05 53.
 - 8. Provide integral GFCI protection for all heat trace.

2.05 CONTROLS

- A. Pipe Mounted Thermostats:
 - 1. Remote bulb on capillary, resistance temperature device (RTD) or thermistor for direct sensing of pipe wall temperature.
 - 2. Provide pilot light indicator.
 - 3. Provide a Control Enclosure for each chiller.
 - 4. Control Enclosure: Corrosion resistant and waterproof.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that piping and equipment are ready to receive work.
- B. Verify field measurements are as indicated on shop drawings.
- C. Verify required power is available, in proper location, and ready for use.

3.02 PREPARATION

- A. Clean all surfaces prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's recommendations.
- B. Comply with installation requirements of IEEE 515.1 and NFPA 70, Article 427.
- C. Apply heating cable linearly on pipe with fiberglass tape only after piping has successfully completed any required pressure testing.
- D. Comply with all national and local code requirements.
- E. Identification:
 - 1. After thermal insulation installation, apply external pipeline decals to indicate presence of the thermal insulation cladding at intervals not to exceed 20 ft including cladding over each valve or other equipment that may require maintenance.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Field Testing and Inspections:
 - 1. Commission system in accordance with installation and operation manual.
 - 2. Inspect for sources of water entry and proper sealing.
 - 3. Inspect weather barrier to confirm that no sharp edges are contacting the trace heating.
 - 4. Minimum Acceptable Insulation Resistance: 20 megohms or greater at a test voltage of 2500 VDC for polymer insulated trace heaters.
 - 5. Test heating cable integrity with megohmmeter at the following intervals:
 - a. Before installing the cable.
 - b. Prior to initial start-up (commissioning).
 - 6. Measure voltage and current at each unit.
 - 7. Controls:
 - a. Verify control parameters are set to the application requirements.
 - 8. Submit written test report showing values measured on each test for each cable.

3.05 PROTECTION

- A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION

SECTION 23 05 48
VIBRATION AND SEISMIC CONTROLS FOR HVAC

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Vibration isolation requirements.
- B. Vibration-isolated equipment support bases.
- C. Vibration isolators.

1.02 DEFINITIONS

- A. HVAC Component: Where referenced in this section in regards to seismic controls, applies to any portion of the HVAC system subject to seismic evaluation in accordance with applicable codes, including distributed systems (e.g., ductwork, piping).
- B. Seismic Restraint: Structural members or assemblies of members or manufactured elements specifically designed and applied for transmitting seismic forces between components and the seismic force-resisting system of the structure.

1.03 REFERENCE STANDARDS

- A. ASHRAE (HVACA) - ASHRAE Handbook - HVAC Applications; Most Recent Edition Cited by Referring Code or Reference Standard.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate selection and arrangement of vibration isolation and/or seismic control components with the actual equipment to be installed.
 - 2. Coordinate the work with other trades to provide additional framing and materials required for installation.
 - 3. Coordinate compatibility of support and attachment components with mounting surfaces at the installed locations.
 - 4. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Sequencing:
 - 1. Do not install products on or provide attachment to concrete surfaces until concrete has fully cured in accordance with Section 03 30 00.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for products, including materials, fabrication details, dimensions, and finishes.
 - 1. Vibration Isolators: Include rated load capacities and deflections; include information on color coding or other identification methods for spring element load capacities.
- C. Shop Drawings - Vibration Isolation Systems:
 - 1. Include dimensioned plan views and sections indicating proposed arrangement of vibration isolators; indicate equipment weights and static deflections.

1.06 QUALITY ASSURANCE

- A. Comply with applicable building code.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 VIBRATION ISOLATION REQUIREMENTS

- A. Design and provide vibration isolation systems to reduce vibration transmission to supporting structure from vibration-producing HVAC equipment and/or HVAC connections to vibration-isolated equipment.
- B. Comply with applicable general recommendations of ASHRAE (HVACA), where not in conflict with other specified requirements:
- C. General Requirements:
 - 1. Select vibration isolators to provide required static deflection.
 - 2. Select vibration isolators for uniform deflection based on distributed operating weight of actual installed equipment.
- D. Equipment Isolation: Isolate all motor driven mechanical equipment, unless otherwise noted, from building structure, and from systems which they serve, to prevent equipment vibrations from being transmitted to structure. Unless specifically indicated, follow the latest edition of ASHRAE Application Handbook - Sound and Vibration Control, or manufacturer's recommendations for isolator selection, whichever is more stringent.
 - 1. Select and locate isolators to produce uniform loading and deflection. Use a minimum of 4 isolators to support each piece of equipment.
 - 2. Select vibration isolation devices based on the lowest operating speed of equipment.
- E. Piping Isolation:
 - 1. Provide vibration isolators for piping supports:
 - a. Located in equipment rooms.
 - b. Located within 50 feet of connected vibration-isolated equipment and pressure-regulating valve (PRV) stations.
 - 2. Minimum Static Deflection:
 - a. First Three Supports Closest to Isolated Equipment: Same as static deflection of equipment; maximum of 2 inch deflection required.
 - b. Remainder of Supports: 0.75 inch deflection unless otherwise indicated.
 - 3. Floor-Mounted Piping, Nonseismic Applications: Use open (unhoused) spring isolators.

2.02 VIBRATION ISOLATORS

- A. Manufacturers:
 - 1. Vibration Isolators:
 - a. Kinetics Noise Control, Inc: www.kineticsnoise.com/#sle.
 - b. Mason Industries: www.mason-ind.com/#sle.
 - c. Vibration Eliminator Company, Inc: www.veco-nyc.com/#sle.
 - d. Vibro-Acoustics: www.vibro-acoustics.com/#sle.

- e. The VMC Group/Amber Booth.
 - 2. Source Limitations: Furnish vibration-isolators and associated accessories produced by a single manufacturer and obtained from a single supplier.
- B. General Requirements:
- 1. Resilient Materials for Vibration Isolators: Oil, ozone, and oxidant resistant.
 - 2. Spring Elements for Spring Isolators:
 - a. Color code or otherwise identify springs to indicate load capacity.
 - b. Lateral Stability: Minimum lateral stiffness to vertical stiffness ratio of 0.8.
 - c. Designed to operate in the linear portion of their load versus deflection curve over deflection range of not less than 50 percent above specified deflection.
 - d. Designed to provide additional travel to solid of not less than 50 percent of rated deflection at rated load.
 - e. Selected to provide designed deflection of not less than 75 percent of specified deflection.
 - f. Selected to function without undue stress or overloading.
- C. Vibration Isolators for Nonseismic Applications:
- 1. Resilient Material Isolator Pads:
 - a. Description: Single or multiple layer pads utilizing elastomeric (e.g., neoprene, rubber) or fiberglass isolator material.
 - b. Pad Thickness: As required for specified minimum static deflection; minimum 0.25 inch thickness.
 - c. Multiple Layer Pads: Provide bonded, galvanized sheet metal separation plate between each layer.
 - 2. Resilient Material Isolator Mounts, Nonseismic:
 - a. Description: Mounting assemblies for bolting equipment to supporting structure utilizing elastomeric (e.g., neoprene, rubber) or fiberglass isolator material; fail-safe type.
 - 3. Restrained Spring Isolators, Nonseismic:
 - a. Description: Isolator assembly consisting of single or multiple free-standing, laterally stable steel spring(s) within a metal housing designed to prevent movement of supported equipment above an adjustable vertical limit stop.
 - b. Bottom Load Plate: Steel with nonskid elastomeric isolator pad with provisions for bolting to supporting structure as required.
 - c. Furnished with integral leveling device for positioning and securing supported equipment.
 - d. Provides constant free and operating height.
 - 4. Resilient Material Isolator Hangers, Nonseismic:
 - a. Description: Isolator assembly designed for installation in hanger rod suspension system utilizing elastomeric (e.g., neoprene, rubber) or fiberglass isolator material for the lower hanger rod connection.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as shown on the drawings.
- B. Verify that mounting surfaces are ready to receive vibration isolation and/or seismic control components and associated attachments.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install anchors and fasteners in accordance with ICC Evaluation Services, LLC (ICC-ES) evaluation report conditions of use where applicable.
- C. Secure fasteners according to manufacturer's recommended torque settings.
- D. Install flexible piping connections to provide sufficient slack for vibration isolation and/or seismic relative displacements as indicated or as required.
- E. Vibration Isolation Systems:
 - 1. Spring Isolators:
 - a. Position equipment at operating height; provide temporary blocking as required.
 - b. Lift equipment free of isolators prior to lateral repositioning to avoid damage to isolators.
 - c. Level equipment by adjusting isolators gradually in sequence to raise equipment uniformly such that excessive weight or stress is not placed on any single isolator.
 - 2. Isolator Hangers:
 - a. Use precompressed isolator hangers where required to facilitate installation and prevent damage to equipment utility connection provisions.
 - b. Locate isolator hangers at top of hanger rods in accordance with manufacturer's instructions.
 - 3. Clean debris from beneath vibration-isolated equipment that could cause short-circuiting of isolation.
 - 4. Use elastomeric grommets for attachments where required to prevent short-circuiting of isolation.
 - 5. Adjust isolators to be free of isolation short circuits during normal operation.
 - 6. Do not overtighten fasteners such that resilient material isolator pads are compressed beyond manufacturer's maximum recommended deflection.

3.03 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Inspect vibration isolation and/or seismic control components for damage and defects.
- C. Vibration Isolation Systems:
 - 1. Verify isolator static deflections.
 - 2. Verify vibration isolation performance during normal operation; investigate sources of isolation short circuits.
- D. Correct deficiencies and replace damaged or defective vibration isolation and/or seismic control components.

END OF SECTION

SECTION 23 05 53
IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Nameplates.
- B. Tags.
- C. Stencils.
- D. Pipe markers.

1.02 REFERENCE STANDARDS

- A. ASTM D709 - Standard Specification for Laminated Thermosetting Materials; 2017.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. List: Submit list of wording, symbols, letter size, and color coding for mechanical identification.
- C. Chart and Schedule: Submit valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.
- D. Product Data: Provide manufacturers catalog literature for each product required.
- E. Manufacturer's Installation Instructions: Indicate special procedures, and installation.

PART 2 PRODUCTS

2.01 IDENTIFICATION APPLICATIONS

- A. Automatic Controls: Tags. Key to control schematic.
- B. Control Panels: Nameplates.
- C. Heat Transfer Equipment: Nameplates.
- D. Instrumentation: Tags.
- E. Major Control Components: Nameplates.
- F. Piping: Pipe markers.
- G. Pumps: Nameplates.
- H. Relays: Tags.
- I. Small-sized Equipment: Tags.
- J. Tanks: Nameplates.
- K. Valves: Tags and ceiling tacks where located above lay-in ceiling.
- L. Water Treatment Devices: Nameplates.

2.02 NAMEPLATES

- A. Manufacturers:
 - 1. Advanced Graphic Engraving, LLC: www.advancedgraphicengraving.com.
 - 2. Brimar Industries, Inc: www.pipemarker.com/#sle.
 - 3. Craftmark Pipe Markers: www.craftmarkid.com/#sle.
 - 4. Kolbi Pipe Marker Co: www.kolbipipemarkers.com/#sle.
 - 5. Seton Identification Products, a Tricor Direct Company: www.seton.com/#sle.
- B. Letter Color: Black.

- C. Letter Height: 1/4 inch.
- D. Background Color: White.
- E. Plastic: Comply with ASTM D709.

2.03 TAGS

- A. Manufacturers:
 - 1. Advanced Graphic Engraving: www.advancedgraphicengraving.com/#sle.
 - 2. Brady Corporation: www.bradycorp.com/#sle.
 - 3. Brimar Industries, Inc: www.pipemarker.com/#sle.
 - 4. Craftmark Pipe Markers: www.craftmarkid.com/#sle.
 - 5. Kolbi Pipe Marker Co: www.kolbipipemarkers.com/#sle.
 - 6. Seton Identification Products, a Tricor Company: www.seton.com/#sle.
- B. Plastic Tags: Laminated three-layer plastic with engraved black letters on light contrasting background color. Tag size minimum 1-1/2 inch diameter.
- C. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2 inch diameter with smooth edges.
- D. Valve Tag Chart: Typewritten letter size list in anodized aluminum frame.

2.04 STENCILS

- A. Manufacturers:
 - 1. Brady Corporation: www.bradycorp.com/#sle.
 - 2. Craftmark Pipe Markers: www.craftmarkid.com/#sle.
 - 3. Insite Solutions, LLC: www.stop-painting.com/#sle.
 - 4. Kolbi Pipe Marker Co: www.kolbipipemarkers.com/#sle.
 - 5. Seton Identification Products, a Tricor Company: www.seton.com/#sle.
- B. Stencils: With clean cut symbols and letters of following size:
 - 1. 3/4 to 1-1/4 inch Outside Diameter of Insulation or Pipe: 8 inch long color field, 1/2 inch high letters.
 - 2. 1-1/2 to 2 inch Outside Diameter of Insulation or Pipe: 8 inch long color field, 3/4 inch high letters.
 - 3. 2-1/2 to 6 inch Outside Diameter of Insulation or Pipe: 12 inch long color field, 1-1/4 inch high letters.
 - 4. 8 to 10 inch Outside Diameter of Insulation or Pipe: 24 inch long color field, 2-1/2 inch high letters.
 - 5. Over 10 inch Outside Diameter of Insulation or Pipe: 32 inch long color field, 3-1/2 inch high letters.
 - 6. Ductwork and Equipment: 2-1/2 inch high letters.
- C. Stencil Paint: As specified in Section 09 91 23, semi-gloss enamel, colors complying with ASME A13.1.

2.05 PIPE MARKERS

- A. Manufacturers:
 - 1. Brady Corporation: www.bradycorp.com/#sle.
 - 2. Brimar Industries, Inc: www.pipemarker.com/#sle.
 - 3. Craftmark Pipe Markers: www.craftmarkid.com/#sle.
 - 4. Kolbi Pipe Marker Co: www.kolbipipemarkers.com/#sle.
 - 5. Seton Identification Products, a Tricor Company: www.seton.com/#sle.
- B. Underground Plastic Pipe Markers: Bright-colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil, 0.004 inch thick, manufactured for direct burial service.

PART 3 EXECUTION

3.01 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.

3.02 INSTALLATION

- A. Install nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.
- B. Install tags with corrosion resistant chain.
- C. Apply stencil painting in accordance with Section 09 91 23.
- D. Install plastic pipe markers in accordance with manufacturer's instructions.
- E. Install plastic tape pipe markers complete around pipe in accordance with manufacturer's instructions.
- F. All piping and duct shall be labeled at least once in EVERY room. Piping and ductwork shall be labeled every 15 ft and at every change of direction.
- G. Identify control panels, manual motor starters, combination motor starters, disconnects, variable frequency drives, boiler override switches, boiler emergency switches, and major control components outside panels with plastic nameplates.
- H. Identify valves in main and branch piping with valve labels.
- I. Tag automatic controls, instruments, and relays. Key to control schematic.
- J. Identify Chillers with plastic nameplates indicating chiller number, area served, date of substantial completion and warranty duration and capacity in Tonnage.
- K. Identify pumps with plastic nameplates indicating pump number, system served, GPM, and feet of head.

END OF SECTION

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SECTION 23 05 93
TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Testing, adjustment, and balancing of hydronic systems.

1.02 REFERENCE STANDARDS

- A. AABC (NSTSB) - AABC National Standards for Total System Balance, 7th Edition; 2016.
- B. ASHRAE Std 111 - Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems; 2008, with Errata (2019).

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. TAB Plan: Submit a written plan indicating the testing, adjusting, and balancing standard to be followed and the specific approach for each system and component.
 - 1. Submit to Architect.
 - 2. Submit to the Commissioning Authority and HVAC controls contractor.
 - 3. Include at least the following in the plan:
 - a. Indicate standard to be followed (AABC or NEBB)
 - b. List of all air flow, water flow, sound level, system capacity and efficiency measurements to be performed and a description of specific test procedures, parameters, formulas to be used.
 - c. Copy of field checkout sheets and logs to be used, listing each piece of equipment to be tested, adjusted and balanced with the data cells to be gathered for each.
 - d. Identification and types of measurement instruments to be used and their most recent calibration date.
 - e. Discussion of what notations and markings will be made on the duct and piping drawings during the process.
 - f. Final test report forms to be used.
 - g. Details of how TOTAL flow will be determined; for example:
 - 1) Air: Sum of terminal flows via control system calibrated readings or via hood readings of all terminals, supply (SA) and return air (RA) pitot traverse, SA or RA flow stations.
 - 2) Water: Pump curves, circuit setter, flow station, ultrasonic, etc.
 - h. Specific procedures that will ensure that both air and water side are operating at the lowest possible pressures and methods to verify this.
 - i. Confirmation of understanding of the outside air ventilation criteria under all conditions.
 - j. Method of verifying and setting minimum outside air flow rate will be verified and set and for what level (total building, zone, etc.).
 - k. Method of checking building static and exhaust fan and/or relief damper capacity.
 - l. Time schedule for TAB work to be done in phases (by floor, etc.).
 - m. Description of TAB work for areas to be built out later, if any.
 - n. Time schedule for deferred or seasonal TAB work, if specified.
 - o. False loading of systems to complete TAB work, if specified.

- p. Exhaust fan balancing and capacity verifications, including any required room pressure differentials.
 - q. Interstitial cavity differential pressure measurements and calculations, if specified.
 - r. Procedures for field technician logs of discrepancies, deficient or uncompleted work by others, contract interpretation requests and lists of completed tests (scope and frequency).
 - s. Procedures for formal deficiency reports, including scope, frequency and distribution.
- C. Field Logs: Submit at least twice a week to the Commissioning Authority and Construction Manager.
- D. Control System Coordination Reports: Communicate in writing to the controls installer all setpoint and parameter changes made or problems and discrepancies identified during TAB that affect, or could affect, the control system setup and operation.
- E. Final Report: Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.
 - 1. Revise TAB plan to reflect actual procedures and submit as part of final report.
 - 2. Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for Architect and for inclusion in operating and maintenance manuals.
 - 3. Provide reports in soft cover, letter size, 3-ring binder manuals, complete with index page and indexing tabs, with cover identification at front and side. Include set of reduced drawings with air outlets and equipment identified to correspond with data sheets, and indicating thermostat locations.
 - 4. Include actual instrument list, with manufacturer name, serial number, and date of calibration.
 - 5. Form of Test Reports: Where the TAB standard being followed recommends a report format use that; otherwise, follow ASHRAE Std 111.
 - 6. Units of Measure: Report data in I-P (inch-pound) units only.
 - 7. Include the following on the title page of each report:
 - a. Name of Testing, Adjusting, and Balancing Agency.
 - b. Address of Testing, Adjusting, and Balancing Agency.
 - c. Telephone number of Testing, Adjusting, and Balancing Agency.
 - d. Project name.
 - e. Project location.
 - f. Report date.
- F. Project Record Documents: Record actual locations of flow measuring stations and balancing valves and rough setting.

1.04 QUALITY ASSURANCE

- A. The TAB agency shall be a subcontractor of the General Contractor (or Construction Manager) and shall report directly to and be paid by the General Contractor.
- B. The TAB agency shall be either a certified member of AABC or NEBB to perform TAB service for HVAC, water balancing and vibrations and sound testing of equipment. The certification shall be maintained for the entire duration of duties specified herein.
- C. Any agency that has been the subject of disciplinary action by either the AABC or NEBB within the five years preceding Contract Award shall not be eligible to perform any work related to the TAB. All work performed in this Section and in other related

Sections by the TAB agency shall be considered invalid if the TAB agency loses its certification prior to Contract completion, and the successor agency's review shows unsatisfactory work performed by the predecessor agency.

- D. TAB Specialist: The TAB specialist shall be either a member of AABC or an experienced technician of the Agency certified by NEBB. The certification shall be maintained for the entire duration of duties specified herein. If, for any reason, the Specialist loses subject certification during this period, the General Contractor shall immediately notify the Engineer and submit another TAB Specialist for approval. Any individual that has been the subject of disciplinary action by either the AABC or NEBB within the five years preceding Contract Award shall not be eligible to perform any duties related to the HVAC systems, including TAB. All work specified in this Section and in other related Sections performed by the TAB specialist shall be considered invalid if the TAB Specialist loses its certification prior to Contract completion and must be performed by an approved successor.
- E. TAB Specialist shall be identified by the General Contractor within 60 days after the notice to proceed. The TAB specialist will be coordinating, scheduling and reporting all TAB work and related activities and will provide necessary information as required by the Resident Engineer. The responsibilities would specifically include:
 - 1. Shall directly supervise all TAB work.
 - 2. Shall sign the TAB reports that bear the seal of the TAB standard. The reports shall be accompanied by report forms and schematic drawings required by the TAB standard, AABC, TABB or NEBB.
 - 3. Would follow all TAB work through its satisfactory completion.
 - 4. Shall provide final markings of settings of all HVAC adjustment devices.
 - 5. Permanently mark location of duct test ports.
 - 6. Shall document critical paths from the fan or pump. These critical paths are ones in which are 100% open from the fan or pump to the terminal device. This will show the least amount of restriction is being imposed on the system by the TAB firm.
- F. All TAB technicians performing actual TAB work shall be experienced and must have done satisfactory work on a minimum of 3 projects comparable in size and complexity to this project. Qualifications must be certified by the TAB agency in writing. The lead technician shall be certified by AABC or NEBB

1.05 WARRANTY

- A. National Project Performance Guarantee: Provide a guarantee AABC or NEBB will assist in completing requirements of the Contract Documents if TAB firm fails to comply with the Contract Documents. Guarantee includes the following provisions:
 - 1. The certified TAB firm has tested and balanced systems according to the Contract Documents.
 - 2. Systems are balanced to optimum performance capabilities within design and installation limits.
 - 3. Warranty Period: Five (5) years.

PART 2 PRODUCTS

2.01 PLUGS

- A. Provide plastic plugs to seal holes drilled in ductwork for test purposes.

2.02 INSULATION REPAIR MATERIAL

- A. Refer to individual insulation sections for repair of insulation removed or damaged during TAB work.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- A. Perform total system balance in accordance with one of the following:
 - 1. AABC (NSTSB), AABC National Standards for Total System Balance.
- B. Begin work after completion of systems to be tested, adjusted, or balanced and complete work prior to Substantial Completion of the project.
- C. Where HVAC systems and/or components interface with life safety systems, including fire and smoke detection, alarm, and control, coordinate scheduling and testing and inspection procedures with the authorities having jurisdiction.
- D. TAB Agency Qualifications:
 - 1. Company specializing in the testing, adjusting, and balancing of systems specified in this section.
 - 2. Having minimum of three years documented experience.
 - 3. Certified by one of the following:
 - a. AABC, Associated Air Balance Council: www.aabc.com/#sle; upon completion submit AABC National Performance Guaranty.
 - b. NEBB, National Environmental Balancing Bureau: www.nebb.org/#sle.
- E. TAB Supervisor and Technician Qualifications: Certified by same organization as TAB agency.
- F. For each air handling system, provide a graphical static pressure profile indicating the pressure drop across each component of the air handling unit (filter, coils, dampers, wheel, etc).

3.02 PRE-CONSTRUCTION TAB WORK

- A. Coordinate with General Contractor and Owner on scheduling pre-construction TAB measurements work prior to the start of demolition work.
- B. Inspect each existing System to ensure it is operational, including controls. Provide report of any existing deficiencies to the Engineer.
- C. Measurements shall be made to document the existing systems' performance prior to the start of
- D. The data to be measured and recorded for each piece of equipment, coil, etc., shall be the same as listed below for the "New" work.

3.03 EXAMINATION

- A. Verify that systems are complete and operable before commencing work. Ensure the following conditions:
 - 1. Systems are started and operating in a safe and normal condition.
 - 2. Temperature control systems are installed complete and operable.
 - 3. Proper thermal overload protection is in place for electrical equipment.
 - 4. Air coil fins are cleaned and combed.
 - 5. Hydronic systems are flushed, filled, and vented.
 - 6. Pumps are rotating correctly.
 - 7. Proper strainer baskets are clean and in place.
 - 8. Service and balance valves are open.
 - 9. Clean and set automatic fill valves for required system pressure.

10. Check expansion tanks to determine that they are not air bound and that the system is completely full of water.
 11. Check air vents at high points of systems and determine if all are installed to bleed air completely.
- B. Submit field reports. Report defects and deficiencies that will or could prevent proper system balance.
 - C. Beginning of work means acceptance of existing conditions.

3.04 PREPARATION

- A. Obtain design drawings and specifications and become thoroughly acquainted with the design intent.
- B. Obtain copies of approved shop drawings of all air handling equipment, outlets (supply, return, and exhaust) and temperature control diagrams.
- C. Compare design to installed equipment and field installations.
- D. Walk the system to determine variations of installation from design.
- E. Check filters for cleanliness.
- F. Lubricate all motors and bearings.

3.05 ADJUSTMENT TOLERANCES

A. Water System Tolerances

Systems - Water	Tolerances of Plan Design	Remarks
Coils, Heat Exchangers, Pumps, Evaporators, Condensers	+/- 5%	

3.06 RECORDING AND ADJUSTING

- A. Field Logs: Maintain written logs including:
 1. Running log of events and issues.
 2. Discrepancies, deficient or uncompleted work by others.
 3. Contract interpretation requests.
 4. Lists of completed tests.
- B. Ensure recorded data represents actual measured or observed conditions.
- C. Use only those instruments which have the maximum field measuring accuracy and are best suited to the function being measured.
- D. Apply instrument as recommended by the manufacturer.
- E. When averaging values, take a sufficient quantity of readings that will result in a repeatability error of less than 5 percent. When measuring a single point, repeat readings until 2 consecutive identical values are obtained.
- F. Permanently mark settings of valves, dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.
- G. Mark on drawings the locations where traverse and other critical measurements were taken and cross reference the location in the final report.
- H. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.
- I. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.
- J. Seal ducts and piping, and test for and repair leaks.
- K. Seal insulation to re-establish integrity of vapor barrier.
- L. Retest, adjust, and balance systems subsequent to significant system modifications and resubmit test results.

3.07 WATER SYSTEM PROCEDURE

- A. Adjust water systems to provide required or design quantities.
- B. Use calibrated Venturi tubes, orifices, or other metered fittings and pressure gauges to determine flow rates for system balance. Where flow metering devices are not installed, base flow balance on temperature difference across various heat transfer elements in the system.
- C. Adjust systems to provide specified pressure drops and flows through heat transfer elements prior to thermal testing. Perform balancing by measurement of temperature differential in conjunction with air balancing.
- D. Effect system balance with automatic control valves fully open to heat transfer elements.
- E. Effect adjustment of water distribution systems by means of balancing cocks, valves, and fittings. Do not use service or shut-off valves for balancing unless indexed for balance point.
- F. Where available pump capacity is less than total flow requirements or individual system parts, full flow in one part may be simulated by temporary restriction of flow to other parts.
- G. The TAB report shall indicate the critical circuit, which coils were closed for diversity (if applicable), and how the differential pressure setpoint was established.

3.08 SCOPE

- A. Test, adjust, and balance the following:
 - 1. HVAC Pumps.
 - 2. Air Cooled Water Chillers.
 - 3. Air Handling Units.
- B. This Section does NOT include:
 - 1. Testing boilers and pressure vessels for compliance with safety codes.
 - 2. Specifications for materials for patching mechanical systems.
 - 3. Specifications for materials and installation of adjusting and balancing; refer to the respective system sections for materials and installation requirements.
 - 4. Requirements and procedures for piping systems leakage tests.

3.09 MINIMUM DATA TO BE REPORTED

- A. Electric Motors:
 - 1. Manufacturer.
 - 2. Model/Frame.
 - 3. HP/BHP.
 - 4. Phase, voltage, amperage; nameplate, actual, no load.
 - 5. RPM.
 - 6. Service factor.
 - 7. Starter size, rating, heater elements.
 - 8. Sheave Make/Size/Bore.
- B. V-Belt Drives:
 - 1. Identification/location.
 - 2. Required driven RPM.
 - 3. Driven sheave, diameter and RPM.
 - 4. Belt, size and quantity.
 - 5. Motor sheave diameter and RPM.
 - 6. Center to center distance, maximum, minimum, and actual.

C. Pumps:

1. Identification/number.
2. Manufacturer.
3. Size/model.
4. Impeller.
5. Service.
6. Design flow rate, pressure drop, BHP.
7. Actual flow rate, pressure drop, BHP.
8. Discharge pressure.
9. Suction pressure.
10. Total operating head pressure.
11. Shut off, discharge and suction pressures.
12. Shut off, total head pressure.

D. Chillers:

1. Identification/number.
2. Manufacturer.
3. Capacity.
4. Model number.
5. Serial number.
6. Evaporator entering water temperature, design and actual.
7. Evaporator leaving water temperature, design and actual.
8. Evaporator pressure drop, design and actual.
9. Evaporator water flow rate, design and actual.
10. Condenser entering water temperature, design and actual.
11. Condenser pressure drop, design and actual.
12. Condenser water flow rate, design and actual.

END OF SECTION

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SECTION 23 07 16
HVAC EQUIPMENT INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Equipment insulation.
- B. Jacketing and accessories.

1.02 REFERENCE STANDARDS

- A. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.
- B. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2019, with Editorial Revision (2023).
- C. ASTM C449 - Standard Specification for Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement; 2007 (Reapproved 2019).
- D. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2021.
- E. ASTM C533 - Standard Specification for Calcium Silicate Block and Pipe Thermal Insulation; 2017 (Reapproved 2023).
- F. ASTM C534/C534M - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form; 2023.
- G. ASTM C1423 - Standard Guide for Selecting Jacketing Materials for Thermal Insulation; 2021.
- H. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023c.
- I. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2022a, with Editorial Revision (2023).
- J. SAE AMS3779 - Tape, Adhesive, Pressure-Sensitive Thermal Radiation Resistant, Aluminum Coated Glass Cloth; 2016b.
- K. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for equipment scheduled.
- C. Manufacturer's Instructions: Indicate installation procedures that ensure acceptable workmanship and installation standards will be achieved.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with not less than three years of documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified in this section with minimum 3 years of experience.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.

- B. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.06 FIELD CONDITIONS

- A. Maintain ambient temperatures and conditions required by manufacturers of adhesives, mastics, and insulation cements.
- B. Maintain temperature during and after installation for minimum period of 24 hours.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

- A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

2.02 HYDROUS CALCIUM SILICATE

- A. Insulation: ASTM C533; rigid molded, asbestos free, gold color.
 - 1. K Value: 0.40 at 300 degrees F, when tested in accordance with ASTM C177 or ASTM C518.
 - 2. Maximum Service Temperature: 1,200 degrees F.
 - 3. Density: 15 pcf.
- B. Tie Wire: 0.048 inches stainless steel with twisted ends on maximum 12 inch centers.
- C. Insulating Cement: ASTM C449.

2.03 FLEXIBLE ELASTOMERIC CELLULAR INSULATION

- A. Manufacturer:
 - 1. Aeroflex USA, Inc; AEROFLEX EPDM Sheet/Roll: www.aeroflexusa.com/#sle.
 - 2. Armacell LLC; ArmaFlex Ultra with FlameDefense: www.armacell.us/#sle.
 - 3. K-Flex USA LLC; Insul-Sheet: www.kflexusa.com/#sle.
- B. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534/C534M Grade 1, in sheet form.
 - 1. Minimum Service Temperature: Minus 40 degrees F.
 - 2. Maximum Service Temperature: 220 degrees F.
 - 3. Connection: Waterproof vapor barrier adhesive.
- C. Elastomeric Foam Adhesive: Air dried, contact adhesive, compatible with insulation.

2.04 JACKETING AND ACCESSORIES

- A. Aluminum Jacket:
 - 1. Comply with ASTM B209/B209M, Temper H14, minimum thickness of 0.016 inch with factory-applied polyethylene and kraft paper moisture barrier on the inside surface.
 - 2. Thickness: 0.016 inch sheet.
 - 3. Finish: Embossed.
 - 4. Joining: Longitudinal slip joints and 2 inch laps.
 - 5. Fittings: 0.016 inch thick die-shaped fitting covers with factory-attached protective liner.
 - 6. Metal Jacket Bands: 3/8 inch wide; 0.015 inch thick aluminum.
- B. Reinforced Tape:

1. FSK tape suitable for sealing seams in insulation, insulated pipe bends, and fittings resulting in a tight, smooth surface without wrinkles.
2. Comply with UL 723 or ASTM E84.
3. Moisture Vapor Permeability: 0.00 perm inch, when tested in accordance with ASTM E96/E96M.
4. Finish: Match insulation.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are clean and dry, with foreign material removed.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Factory Insulated Equipment: Do not insulate.
- C. Exposed Equipment: Locate insulation and cover seams in least visible locations.
- D. Apply insulation close to equipment by grooving, scoring, and beveling insulation. Fasten insulation to equipment with studs, pins, clips, adhesive, wires, or bands.
- E. Fill joints, cracks, seams, and depressions with bedding compound to form smooth surface. On cold equipment, use vapor barrier cement.
- F. Insulated equipment containing fluids below ambient temperature; insulate entire system.
- G. Inserts and Shields:
 1. Shields: Galvanized steel between hangers and inserts.
 2. Insert Location: Between support shield and equipment and under the finish jacket.
 3. Insert Configuration: Minimum 6 inches long, of same thickness and contour as adjoining insulation; may be factory fabricated.
 4. Insert Material: Hydrous calcium silicate insulation or other heavy density insulating material suitable for the planned temperature range.
- H. Finish insulation at supports, protrusions, and interruptions.
- I. Exterior Applications:
 1. Provide vapor barrier jacket or finish with glass mesh reinforced vapor barrier cement.
 2. Cover with aluminum.
- J. Cover glass fiber insulation with metal mesh and finish with heavy coat of insulating cement.
- K. Nameplates and ASME Stamps: Bevel and seal insulation around; do not insulate over.
- L. Equipment Requiring Access for Maintenance, Repair, or Cleaning: Install insulation so it can be easily removed and replaced without damage.

3.03 SCHEDULE

- A. Cooling Systems: 1-1/2 inch elastomeric foam insulation. For exterior applications, 2 inch insulation.
 1. Pump Bodies
 2. Air Separators
 3. Expansion Tanks
 4. Chiller Cold Surfaces (Not Factory Insulated)
 5. Equipment Exposed to Freezing with Heat Tracing

END OF SECTION

SECTION 23 07 19
HVAC PIPING INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Piping insulation.
- B. Flexible removable and reusable blanket insulation.
- C. Jacketing and accessories.
- D. Engineered wall outlet seals and refrigerant piping insulation protection.

1.02 REFERENCE STANDARDS

- A. ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus; 2019.
- B. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.
- C. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2019, with Editorial Revision (2023).
- D. ASTM C449 - Standard Specification for Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement; 2007 (Reapproved 2019).
- E. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2021.
- F. ASTM C533 - Standard Specification for Calcium Silicate Block and Pipe Thermal Insulation; 2017 (Reapproved 2023).
- G. ASTM C795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel; 2008 (Reapproved 2023).
- H. ASTM C1126 - Standard Specification for Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation; 2019.
- I. ASTM C1136 - Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation; 2023.
- J. ASTM C1423 - Standard Guide for Selecting Jacketing Materials for Thermal Insulation; 2021.
- K. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016 (Reapproved 2021).
- L. ASTM D610 - Standard Practice for Evaluating Degree of Rusting on Painted Steel Surfaces; 2008 (Reapproved 2019).
- M. ASTM D1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics; 2016 (Reapproved 2023).
- N. ASTM D1623 - Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics; 2017 (Reapproved 2023).
- O. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023c.
- P. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2022a, with Editorial Revision (2023).
- Q. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004 (Reapproved 2012).
- R. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2023).

- S. ASTM E2178 - Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials; 2021a.
- T. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).
- U. ASTM G153 - Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials; 2013 (Reapproved 2021).
- V. SAE AMS3779 - Tape, Adhesive, Pressure-Sensitive Thermal Radiation Resistant, Aluminum Coated Glass Cloth; 2016b.
- W. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.
- C. Manufacturer's Instructions: Indicate installation procedures that ensure acceptable workmanship and installation standards will be achieved.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with not less than three years of documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified in this section with minimum three years of experience.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site, labeled with manufacturer's identification, product density, and thickness.

1.06 FIELD CONDITIONS

- A. Maintain ambient conditions required by manufacturers of each product.
- B. Maintain temperature before, during, and after installation for minimum of 24 hours.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

- A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

2.02 HYDROUS CALCIUM SILICATE

- A. Insulation: ASTM C533 and ASTM C795; rigid molded, asbestos free, gold color.
 - 1. K Value: 0.40 at 300 degrees F, when tested in accordance with ASTM C177 or ASTM C518.
 - 2. Maximum Service Temperature: 1200 degrees F.
 - 3. Density: 15 pcf.
- B. Tie Wire: 0.048 inch stainless steel with twisted ends on maximum 12 inch centers.
- C. Insulating Cement: ASTM C449.

2.03 RIGID, CELLULAR PHENOLIC

- A. Manufacturers:
 - 1. Dyplast Products, LLC: www.dyplastproducts.com/#sle.

2. ITW Insulation Systems: www.itwinsulation.com/#sle.
 3. Polyguard Products: www.polyguardproducts.com.com/#sle.
- B. Insulation: ASTM C1126, Type III, Grade 1.
1. Nominal Density: 3.75 pcf.
 2. Preliminary Initial Minimum K Value: 0.145 at 50 degrees F based on density of 2.5 pcf.
 3. Maximum Service Temperature: 248 degrees F.
 4. Minimum Service Temperature: Minus 292 degrees F.
 5. Minimum compressive strength as determined by ASTM D1621.
 6. Minimum tensile strength as determined by ASTM D1623.

2.04 JACKETING AND ACCESSORIES

- A. Aluminum Jacket:
1. Comply with ASTM B209/B209M, Temper H14, minimum thickness of 0.016 inch with factory-applied polyethylene and kraft paper moisture barrier on the inside surface.
 2. Thickness: 0.016 inch sheet.
 3. Type: Factory-applied, self-adhesive jacketing.
 4. Finish: Embossed.
 5. Joining: Longitudinal slip joints and 2 inch laps.
 6. Fittings: 0.016 inch thick die-shaped fitting covers with factory-attached protective liner.
 7. Metal Jacket Bands: 3/8 inch wide; 0.015 inch thick aluminum.
- B. Reinforced Tape:
1. FSK tape suitable for sealing seams between insulation, insulated pipe bends, and fittings resulting in a tight, smooth surface without wrinkles.
 2. Comply with UL 723, ASTM E84.
 3. Moisture Vapor Permeability: 0.00 perm inch, when tested in accordance with ASTM E96/E96M.
 4. Finish: Match insulation.
- C. Plain Foil Tape:
1. Aluminum foil with pressure-sensitive adhesive on paper release liner.

2.05 ENGINEERED WALL OUTLET SEALS AND REFRIGERANT PIPING INSULATION PROTECTION

- A. Pipe Penetration Wall Seal: Seals HVAC piping wall penetrations with compression gasket wall mounted rigid plastic outlet cover.
1. Wall Outlet Size, Stucco and Masonry Applications: 7-1/2 inch wide by 10 inch high.
 - a. Elastomeric Sleeve Diameter: 1-11/16 inch.
 2. Outlet Cover Color: Gray.
 3. Water Penetration: Comply with ASTM E331.
 4. Air Leakage: Comply with ASTM E283.
 5. Air Permeance: Comply with ASTM E2178.
- B. Insulation Protection System: Refrigerant piping insulation PVC protective cover.
1. PVC Insulation Cover Color: Black with full-length velcro fastener.
 2. Weatherization and Ultraviolet Exposure Protection: Comply with ASTM G153.
 3. Water/Vapor Permeability: Comply with ASTM E96/E96M.
 4. Anti-Fungal and Anti-Microbial Resistance: Comply with ASTM G21.

5. Flame Spread and Smoke Development Rating of 24/450: Comply with ASTM E84 or UL 723.
6. Tensile Strength After UV Exposure and Water Immersion: Comply with ASTM D412.

2.06 ACCESSORIES

- A. General Requirements:
 1. Furnish compatible materials which do not contribute to corrosion, soften, or otherwise attack surfaces to which applied, in either the wet or dry state.
 2. Comply with ASTM C795 requirements for materials to be used on stainless steel surfaces.
 3. Supply materials that are asbestos free.
- B. Corrosion Inhibitors:
 1. Corrosion Control Gel:
 - a. Corrosion Protection: Comply with ASTM B117 and ASTM D610.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Test piping for design pressure, liquid tightness, and continuity prior to applying insulation materials.
- B. Verify that surfaces are clean and dry, with foreign material removed.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in accordance with NAIMA National Insulation Standards.
- C. Where existing piping insulation is either removed or damaged during construction, it shall be reinsulated per these specifications.
- D. Exposed Piping: Locate insulation and cover seams in least visible locations.
- E. Where insulation thickness exceeds 3 inches, the insulation shall be two layers. Secure first layer before installing the next layer and stagger the joints.
- F. Install multiple layers of insulation with longitudinal and end seams staggered.
- G. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.
- H. Install insulation with least number of joints practical.
- I. Insulated Pipes Conveying Fluids Below Ambient Temperature:
 1. Insulate entire system, including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.
 2. Insulation on all pipes or ducts conveying air or liquids below the ambient temperature is required to have a continuous vapor barrier. On all insulation with a vapor barrier, seal the joints, duct wrap seams, vapor retarder (ASJ) film seams and penetrations in insulation at hangers, supports, anchors, and other projections with a vapor-barrier coating/mastic as specified in the individual insulation sections.
 3. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier coating/mastic.

4. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
 5. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.
- J. For hot piping conveying fluids over 120 degrees F, insulate flanges and unions at equipment.
- K. Glass Fiber Insulated Pipes Conveying Fluids Above Ambient Temperature:
1. Provide standard jackets, with or without vapor barrier, factory-applied, or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure-sensitive adhesive. Secure with outward clinch expanding staples.
 2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.
- L. Inserts and Shields:
1. Shields: Galvanized steel between pipe hangers or pipe hanger rolls and inserts.
 2. Insert location: Between support shield and piping and under the finish jacket.
 3. Insert Configuration: Minimum 6 inches long, of same thickness and contour as adjoining insulation; may be factory fabricated.
 4. Insert Material: Hydrous calcium silicate insulation or other heavy density insulating material suitable for the planned temperature range.
- M. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions. At fire separations, see Section 07 84 00.
- N. Pipe Exposed in Mechanical Equipment Rooms or Finished Spaces (less than 10 feet above finished floor): Finish with PVC jacket and fitting covers.
- O. Exterior Applications: Provide vapor barrier jacket. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass mesh reinforced vapor barrier cement. Cover with aluminum jacket with seams located on bottom side of horizontal piping. Provide two coats of UV resistant finish for flexible elastomeric cellular insulation without jacketing.
- P. Buried Piping: Provide factory-fabricated assembly with inner all-purpose service jacket with self-sealing lap, and asphalt impregnated open mesh glass fabric, with 1 mil, 0.001 inch thick aluminum foil sandwiched between three layers of bituminous compound; outer surface faced with polyester film.
- Q. Heat Traced Piping: Insulate fittings, joints, and valves with insulation of like material, thickness, and finish as adjoining pipe. Size large enough to enclose pipe and heat tracer. Cover with aluminum jacket with seams located on bottom side of horizontal piping.
- R. All exposed piping surfaces, insulation, supports, etc., shall be painted with two coats of oil base paint. Color shall be selected by the Owner.
- S. Insulation systems shall be installed per the applicable plate from the MICA manual 8th edition:
1. Pre-formed Pipe Insulation Single Layer Construction: Plate 1-100
 2. Flexible Foam Insulation: Plate 1-200
 3. Field applied Metal Jacketing: Plate 1-400
 4. Non-metallic sealed jacketing systems: PVC, etc: Plate 1-510
 5. Split Ring Hangers: Plate 1-600
 6. Clevis Hanger with High Density Inserts: Plate 1-610
 7. Pre-Insulated Pipe Support, Standoff Clamp: Plate 1-640

8. Vapor Stop (Dam) - Pipe: Plate 1-660
9. Refrigerant and Low Temperature: Plate 1-801
10. Traced Piping: Plate 1-900
11. Pre-formed Elbow Insulation: Plate 2-100
12. Mechanical Fitting Field Fabricated: Plate 2-116
13. Pre-formed or Fabricated Tee Insulation: Plate 2-120
14. Field or Factory-Fabricated Valve Insulation: Plate 2-130
15. In-line Flange Insulation Built-up and Beveled: Plate 2-135
16. Flexible Foam Fittings: 90s and 45s: Plate 2-200
17. Flexible Foam Fittings, Ts: 2-220
18. Flexible Foam Ts: Plate 2-225
19. PVC/Insert Valve Insulation: Plate 2-530
20. PVC/Insert Mechanical Coupling on In-line Flange: Plate 2-535
21. Non-metallic Jackets: Fitting and Valve Insulation Sealed Jacketing Systems: Plate 2-536
22. PVC End Cap Over Insulation: 2-540
23. Vapor Stop (Dam) - Fittings: Plate 2-660
24. Large Diameter Vessels Block and Blanket Insulation: Plate 4-100
25. Small Diameter Vessels: Plate 4-120
26. Large Diameter Horizontal Vessels: Plate 4-140
27. Vessels, Flexible Foam Sheets: 4-200
28. Flexible Foam for Low Temperature Equipment: 4-210
29. Vapor Stop (Dam) - Equipment: 4-660

3.03 SCHEDULE

- A. Chilled Water:
 1. All interior piping 1.5 inches and smaller shall have minimum 1.5 inch thick insulation.
 2. All interior piping 2.0 inches and larger shall have 2.0 inch thick insulation.
 3. Piping installed in Boiler, Chiller, Mechanical Rooms, and outside of the building shall have minimum 2.0 inch thick insulation. Insulation on all mezzanine and platform piping shall have minimum 2.0 inch thick insulation.
 4. Chilled water piping insulation shall be closed-cell rigid phenolic foam type.

END OF SECTION

SECTION 23 09 13.13
BAS ACTUATORS AND OPERATORS

PART 1 PRODUCT

1.01 ACTUATORS

- A. Manufacturers:
 - 1. Belimo
 - 2. Honeywell
 - 3. Johnson
 - 4. Siemens
 - 5. Schneider
 - 6. Or Approved Equal
- B. For dampers, the actuators used shall be provided from a single manufacturer.
- C. For valves, the actuators used shall be provided from a single manufacturer.
- D. Actuators shall be provided from a manufacturer registered under ISO9001:2000.
- E. Electronic Valve Actuators.
 - 1. Size for torque required for valve close off at 150% of total system (head) pressure for 2-way valves; and 100% of pressure differential across the valve or 100% of total system (pump) head differential pressure for 3-way valves.
 - 2. Coupling: Directly couple end mount to stem, shaft, or ISO-style direct-coupled mounting pad.
 - 3. Mounting: Actuators shall be capable of being mechanically and electrically paralleled to increase torque if required.
 - 4. Overload Protection: Electronic overload or digital rotation-sensing circuitry without the use of end switches to deactivate the actuator at the end of rotation.
 - 5. Fail-Safe Operation: Mechanical, spring-return mechanism. Internal chemical storage systems, capacitors, or other internal non-mechanical forms of fail-safe operation are not acceptable.
 - 6. Power Requirements: Maximum 10 VA at 24 VAC or 8 W at 24 VDC.
 - 7. Maximum 1 VA at 24 VAC or 1 W at 24 VDC.
 - 8. Temperature Rating: -22 to +122°F (-30 to +50°C)
 - 9. Housing: Minimum requirement NEMA type 2 / IP54 mounted in any orientation.
 - 10. Agency Listing: ISO 9001, UL, UL(C) and CSA C22.2 No. 24-93.

PART 3 EXECUTION

2.01 ACTUATORS

- A. General: Mount actuators and adapters according to manufacturer's recommendations.
- B. Valve Actuators.
 - 1. Connect actuators to valves with adapters approved by actuator manufacturer.

END OF SECTION

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SECTION 23 09 13.23
BAS SENSORS AND TRANSMITTERS

PART 1 PRODUCT

1.01 SENSORS AND DEVICES

- A. Input/output sensors and devices shall be closely matched to the requirements of the BAS controller for accurate, responsive, noise-free signal input/output. Control input response shall be high sensitivity and matched to the loop gain requirements for precise and responsive control.
- B. Sensors and transmitters shall be manually calibrated on site so that the wiring length does not detract from the sensor accuracy specified.
- C. Provide guards (plastic or wire) for sensors, thermostats, and transmitters that are installed in public areas such as gymnasiums, classrooms, corridors, and vestibules.
- D. Temperature sensors shall have the following characteristics:
 - 1. Sensors shall have +/- 1.0 °F accuracy between 32 °F and 212 °F.
 - 2. Space temperature sensors
 - a. Shall consist of an element within a ventilated cover.
 - b. Space sensors located in mechanical rooms and public shall contain a network jack, but shall have no ability to adjust temperature setpoint (Set Point Adjustment).
 - c. Space sensors shall be provided in accordance with the drawings and specifications with the following options:
 - 1) Sensor complete with Network Jack
 - 2) Sensor complete with Network Jack, and Set Point Adjustment
 - 3) Sensor complete with Network Jack, and illuminated Override switch
 - 4) Sensor complete with Network Jack, Set Point Adjustment, and illuminated Override switch
 - 5) Sensor complete with Network Jack, Set Point Adjustment, illuminated Override switch and Fan Speed Selection.
- E. RTD Transmitter
 - 1. Where reference is made on the drawings for a RTD transmitter, it shall be interpreted as follows:
 - 2. Transmitters shall meet at minimum the following requirements.
 - a. Provide an RTD transmitter in configurations below meeting the following requirements:
 - 1) 100 ohm or 1000 ohm PT RTD
 - 2) 24V ac/dc power supply.
 - 3) 4-20 mA, 0-10Vdc or 0-5Vdc outputs compatible with BMS.
 - 4) Electronics accuracy of +/-0.1% of span.
 - 5) Operating temperature range of 32°F to 158°F. OSA only - operating temperature range of -40°F to 185°F.
 - 6) Optional LCD display
- F. Temperature Sensor – Immersion - Thermo well Mounted
 - 1. Provide thermo well mounted temperature sensors as indicated within the Field termination schedules and/or control diagrams as follows.
 - 2. Temperature sensors shall meet, at minimum, the following requirements:
 - a. Rigid 0.25" stainless steel probe of length, which is, at minimum, 20% of the pipe width.

- b. Thermistor or RTD Compatible with BMS sealed in probe with three-part moisture protection system.
- c. BMS shall report the monitored temperature with an accuracy of 0.5°C (1.0°F).
- d. ABS housing with conduit entrance. (Optional metal or weather proof available)
- e. Provide Brass or Stainless steel thermo well (316 or 304).
- f. Provide with thermal grease to aid temperature sensing.

G. Water Pressure Sensor

- 1. Provide water pressure sensors as indicated within the Field termination schedules and/or control diagrams. Pressure sensors shall meet the following requirements:
 - a. Operating range shall be suitable for the application. Select range such that it covers from zero pressure to twice the amount of pressure desired for control purposes or that could be encountered.
 - b. 4-20 mA output proportional to water pressure.
 - c. % accuracy of range.
 - d. Temperature range of -40°F to 260°F.
 - e. Over pressure input protection of a minimum two times rated input.
 - f. An optional ABS wiring housing is available for an interior application and weatherproof wiring housing is available for an exterior application.
 - g. 17-4PH stainless steel wetted parts.
 - h. Burst pressure of a minimum five times rated input.

H. Current Relay/Switch

- 1. Provide current sensing relays as indicated in the Field termination schedules and/or control diagrams. Current sensing relays shall meet, at minimum, the following specifications:
 - a. Rated for the applicable load.
 - b. The output relay shall have an accessible trip adjustment over its complete operating range. Provide LED indication of relay status.
 - c. Current relay shall have input and output isolation via current transformer.
 - d. Current relay shall be self-powered with no insertion loss.
 - e. Relay shall be in a dustproof housing.
 - f. Accuracy to be <2% of full-scale max.
 - g. Temperature rating of 5°F to 140°F.
 - h. Whenever the status of a single speed motor is monitored it shall be done via a current sensing relay.
 - i. The BMS contractor shall provide current sensing relays at the MCC starters.
 - j. The BMS contractor shall provide the current sensing relays for motors with local starters and no MCC starter.

I. Current Sensor

- 1. Provide monitoring of the current as identified in Field termination sheets and/or control drawings. Current monitoring shall meet, at minimum, the following requirements:
 - a. 4-20 mA, 0-10 or 0-5 Vdc output proportional to current draw.
 - b. Reverse polarity protected and output limited.
 - c. 50/60 Hz operation.
 - d. Accuracy of better than 1%.
 - e. Operating temperature range of -20°F to 120°F.

PART 2 EXECUTION

2.01 INSTALLATION OF SENSORS

- A. Install sensors according to manufacturer's recommendations.
- B. Mount sensors rigidly and adequately for operating environment.
- C. Air seal wires attached to sensors in their raceways or in the wall to prevent sensor readings from being affected by air transmitted from other areas.
- D. Use averaging sensors in mixing plenums and hot and cold decks. Install averaging sensors in a serpentine manner vertically across duct. Support each bend with a capillary clip.
- E. Install pipe-mounted temperature sensors in wells. Install liquid temperature sensors with heat- conducting fluid in thermal wells.

END OF SECTION

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SECTION 23 09 13.33
BAS CONTROL VALVES

PART 1 PRODUCT

1.01 VALVES

- A. Acceptable Manufacturers:
 - 1. Belimo
 - 2. Bell & Gossett
 - 3. Danfoss
 - 4. Griswold
 - 5. Siemens
 - 6. Or Approved Equal
- B. Ball-style body automatic control valves shall adhere to the following:
 - 1. NPS 4 and Smaller: Nickel-plated forged brass body rated at no less than 400 psi, stainless steel ball and blowout proof stem, NPT female end fittings, with a dual EPDM O-ring packing design, fiberglass reinforced Teflon seats, and a Tefzel flow characterizing disc.
 - 2. Sizing:
 - a. Two-Position: Line size or size using a pressure differential of 1 psi.
 - b. 2-way Modulating: 5 psig or twice the load pressure drop, whichever is greater.
 - c. 3-way Modulating: Twice the load pressure drop, but not more than 5 psig.
 - 3. Close-off Pressure Rating: 100 psi. [NPS 3/4" and Smaller for Terminal Units: 200 psi.]
 - 4. The actuator shall be the same manufacturer as the valve, integrally mounted to the valve at the factory with a single screw on a four-way DIN mounting-base.
 - 5. All control ball valves shall feature characterized flow guides when used for modulating applications.

PART 2 EXECUTION

2.01 APPLICATIONS

- A. Hydronic control valves 6" and smaller shall be ball-style.
- B. Hydronic control valves 8" and larger shall be butterfly-style.
- C. Valves 1" and smaller shall be mechanical pressure independent control valves.
- D. Valves 1-1/4" and larger shall be electronic pressure independent control valves.
- E. All VAV and other terminal unit control valve actuators shall be fully modulating and controlled by 0-10V or 4-20mA analog signal. Using floating type actuators with dual digital output for control will NOT be acceptable.

2.02 CO-ORDINATION

- A. Coordinate delivery of control valves to site.
- B. Clearly tag and mark valves for their purpose and location.
- C. Supervise Mechanical Contractor in the installation of the control valves ensuring proper valve(s) are located and installed in proper location(s)

END OF SECTION

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SECTION 23 09 34
VARIABLE-FREQUENCY MOTOR CONTROLLERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Variable-frequency motor controllers for low-voltage (600 V and less) AC motor applications.
- B. Overcurrent protective devices for motor controllers, including overload relays.

1.02 REFERENCE STANDARDS

- A. IEC 60529 - Degrees of Protection Provided by Enclosures (IP Code); 1989 (Corrigendum 2019).
- B. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2020.
- C. NEMA ICS 6 - Industrial Control and Systems: Enclosures; 1993 (Reaffirmed 2016).
- D. NEMA ICS 7 - Industrial Control and Systems: Adjustable-Speed Drives; 2020.
- E. NEMA ICS 7.1 - Safety Standards for Construction and Guide for Selection, Installation, and Operation of Adjustable-Speed Drive Systems; 2022.
- F. NEMA ICS 7.2 - Application Guide for AC Adjustable Speed Drive Systems; 2021.
- G. NEMA ICS 61800-2 - Adjustable Speed Electrical Power Drive Systems, Part 2: General Requirements-Rating Specifications for Low Voltage Adjustable Frequency AC Power Drive Systems; 2005.
- H. NEMA MG 1 - Motors and Generators; 2021.
- I. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems; 2021.
- J. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- K. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures; Current Edition, Including All Revisions.
- L. UL 508A - Industrial Control Panels; Current Edition, Including All Revisions.
- M. UL 61800-5-1 - Standard for Adjustable Speed Electrical Power Drive Systems - Part 5-1: Safety Requirements – Electrical, Thermal, and Energy (Ed. 2); Current Edition, Including All Revisions.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate work to provide motor controllers suitable for use with actual motors to be installed.
 - 2. Coordinate work to provide controllers and associated wiring suitable for interface with control devices to be installed.
 - 3. Coordinate arrangement with dimensions and clearance requirements of actual equipment to be installed.
 - 4. Verify with manufacturer that conductor terminations are suitable for use with conductors to be installed.
 - 5. Notify Architect of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for motor controllers, enclosures, overcurrent protective devices, and other installed components and accessories.
- C. Shop Drawings: Indicate dimensions, voltage, controller sizes, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.
 - 1. Include dimensioned plan and elevation views of controllers and adjacent equipment with required clearances indicated.
 - 2. Include wiring diagrams showing factory and field connections.
- D. Project Record Documents: Record actual installed locations of controllers and final equipment settings.
- E. Maintenance Materials: Furnish following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Air Filters: Two of each different type.

1.05 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store in clean, dry space. Maintain factory wrapping or provide additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- B. Handle carefully in accordance with manufacturer's written instructions to avoid damage to internal components, enclosure, and finish.

1.07 FIELD CONDITIONS

- A. Maintain field conditions within required service conditions during and after installation.

1.08 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide minimum 18 month manufacturer warranty covering repair or replacement due to defective materials or workmanship.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. ABB: www.abb.com/#sle.
- B. Danfoss.
- C. Eaton.
- D. Honeywell
- E. Schneider.
- F. Siemens.
- G. Yaskawa.
- H. Source Limitations: Furnish variable-frequency motor controllers and associated components produced by a single manufacturer and obtained from a single supplier.

2.02 VARIABLE-FREQUENCY MOTOR CONTROLLERS

- A. Provide variable-frequency motor control system consisting of required controller assemblies, operator interfaces, control power transformers, instrumentation and control wiring, sensors, accessories, system programming, etc. as necessary for complete operating system.
- B. Provide products listed, classified, and labeled as suitable for purpose intended.
- C. Variable-Frequency Motor Controller:
 - 1. Configuration: Packaged controller with across-the-line bypass.
 - 2. Rectifier/Converter: Diode-based, 6-pulse type.
 - 3. Control Method: Vector; open-loop, without feedback.
 - 4. Filtering: Provide input/line reactor and output/load reactor.
- D. Controller Assemblies: Comply with NEMA ICS 7, NEMA ICS 7.1, and NEMA ICS 61800-2; list and label as complying with UL 61800-5-1 or UL 508A as applicable.
- E. Provide controllers selected for actual installed motors and coupled mechanical loads in accordance with NEMA ICS 7.2, NEMA MG 1 Part 30, and recommendations of manufacturers of both controller and load, where not in conflict with specified requirements; considerations include, but are not limited to:
 - 1. Motor type (e.g., induction, reluctance, and permanent magnet); consider NEMA MG 1 design letter or inverter duty rating for induction motors.
 - 2. Motor load type (e.g., constant torque, variable torque, and constant horsepower); consider duty cycle, impact loads, and high inertia loads.
 - 3. Motor nameplate data.
 - 4. Requirements for speed control range, speed regulation, and braking.
 - 5. Motor suitability for bypass starting method, where applicable.
- F. Devices on Load Side of Controller: Suitable for application across full controller output frequency range.
- G. Operating Requirements:
 - 1. Input Voltage Tolerance: Plus/minus 10 percent of nominal.
 - 2. Input Frequency Tolerance: Plus/minus 5 percent of nominal.
 - 3. Efficiency: Minimum of 96 percent at full speed and load.
 - 4. Input Displacement Power Factor: Minimum of 0.96 throughout speed and load range.
 - 5. Overload Rating:
 - a. Variable Torque Loads: Minimum of 110 percent of nominal for 60 seconds.
 - b. Constant Torque Loads: Minimum of 150 percent of nominal for 60 seconds.
- H. Power Conversion System: Microprocessor-based, pulse width modulation type consisting of rectifier/converter, DC bus/link, and inverter.
 - 1. Rectifier/Converter: Diode-based, 6-pulse type unless otherwise indicated.
- I. Control System:
 - 1. Provide microprocessor-based control system for automatic control, monitoring, and protection of motors. Include sensors, wiring, and connections necessary for functions and status/alarm indications specified.
 - 2. Provide integral operator interface for controller programming, display of status/alarm indications, fault reset, and local control functions including motor run/stop, motor forward/reverse selection, motor speed increase/decrease, and local/remote control selection.
 - 3. Control Functions:

- a. Control Method: Selectable vector and scalar/volts per hertz unless otherwise indicated.
 - 1) Scalar/Volts per Hertz Control: Provide IR compensation for improved low-speed torque.
 - 2) Vector Control: Provide selectable autotuning function.
 - b. Adjustable acceleration and deceleration time; linear and S-curve ramps; selectable coast to stop.
 - c. Selectable braking control; DC injection or flux braking.
 - d. Adjustable minimum/maximum speed limits.
 - e. Adjustable pulse width modulation switching carrier frequency.
 - f. Adjustable motor slip compensation.
 - g. Selectable autorestart after noncritical fault; programmable number of time delay between restart attempts.
 - h. Selectable frequency-skipping; minimum of three independently adjustable bands.
 - i. Automatic catching of rotating motor.
 - j. Safety Interlock: Provide permissive run safety interlock capability where indicated or required; upon activation of designated input, stop and prevent operation of motor; operational in both drive and bypass modes where applicable.
- 4. Status Indications:
 - a. Motor run/stop status.
 - b. Motor forward/reverse status.
 - c. Local/remote control status.
 - d. Output voltage.
 - e. Output current.
 - f. Output frequency.
 - g. DC bus voltage.
 - h. Motor speed.
 - i. Speed reference.
 - 5. Protective Functions/Alarm Indications:
 - a. Overcurrent.
 - b. Motor overload.
 - c. Undervoltage.
 - d. Overvoltage.
 - e. Controller overtemperature.
 - f. Input/output phase loss.
 - g. Output short circuit protection.
 - h. Output ground fault protection.
 - 6. Inputs:
 - a. Digital Input(s): Three.
 - b. Analog Input(s): Two.
 - 7. Outputs:
 - a. Analog Output(s): One.
 - b. Relay Output(s): Two.
 - 8. Communications: Compatible with connected systems. Provide accessories necessary for proper interface.
 - 9. Features:
 - a. Password-protected security access.
 - b. Event log.

J. Power Conditioning/Filtering:

1. Provide DC link choke or input/line reactor for each controller unless otherwise indicated or required.
 2. Reactor Impedance: 3 percent, unless otherwise indicated or required.
- K. Packaged Controllers: Controllers factory-mounted in separate enclosure with externally operable disconnect and specified accessories.
1. Disconnects: Circuit breaker or disconnect switch type.
 - a. Disconnect Switches: Fusible type or nonfusible type with separate input fuses.
 - b. Provide externally operable handle with means for locking in OFF position. Provide safety interlock to prevent opening cover with disconnect in ON position with capability of overriding interlock for testing purposes.
 - c. Provide auxiliary interlock for disconnection of external control power sources where applicable.
 2. Provide door-mounted remote operator interface.
- L. Service Conditions:
1. Provide controllers and associated components suitable for operation under following service conditions without derating:
 - a. Altitude: Less than 3,300 feet.
 - b. Ambient Temperature: Between 32 degrees F and 104 degrees F.
 2. Provide controllers and associated components suitable for operation at indicated ratings under service conditions at installed location.
- M. Short Circuit Current Rating:
1. Provide controllers with listed short circuit current rating not less than available fault current at installed location as determined by short circuit study performed in accordance with Section 26 05 73.
 2. Provide line/input reactors where specified by manufacturer for required short circuit current rating.
- N. Conductor Terminations: Suitable for use with conductors to be installed.
- O. Enclosures:
1. Comply with NEMA ICS 6.
 2. NEMA 250 Environment Type or Equivalent IEC 60529 Rating: Unless otherwise indicated, as specified for following installation locations:
 - a. Indoor Clean, Dry Locations: Type 1 or Type 12.
 - b. Outdoor Locations: Type 3R or Type 4.
 3. Finish: Manufacturer's standard unless otherwise indicated.
 4. Cooling: Forced air or natural convection as determined by manufacturer.

2.03 OVERCURRENT PROTECTIVE DEVICES

- A. Circuit Breakers:
1. Motor Circuit Protectors:
 - a. Description: Instantaneous-trip circuit breakers furnished with magnetic instantaneous tripping elements for short circuit protection, but not with thermal inverse time tripping elements for overload protection; UL 489 recognized only for use as part of listed combination motor controller with overload protection; ratings, configurations, and features as indicated or as required.
 - b. Provide field-adjustable magnetic instantaneous trip setting.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that ratings of controllers are consistent with indicated requirements.
- C. Verify that mounting surfaces are ready to accept controllers.
- D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install in accordance with NEMA ICS 7.1 and manufacturer's instructions.
- C. Do not exceed manufacturer's recommended maximum cable length between controller and motor.
- D. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- E. Provide required support and attachment in accordance with Section 23 05 29.
- F. Install controllers plumb and level.
- G. Provide grounding and bonding in accordance with Section 26 05 26.
- H. Install field-installed devices, components, and accessories.
- I. Where accessories are not self-powered, provide control power source as indicated or as required to complete installation.
- J. Set field-adjustable settings of controllers and associated components according to installed motor requirements, in accordance with recommendations of manufacturers of controller and load.

3.03 FIELD QUALITY CONTROL

- A. Inspect and test in accordance with NETA ATS, except Section 4.
- B. Perform inspections and tests listed in NETA ATS, Section 7.17. Insulation-resistance test on control wiring listed as optional is not required.
- C. Molded Case Circuit Breakers: Perform inspections and tests listed in NETA ATS, Section 7.6.1.1. Tests listed as optional are not required.
- D. Correct deficiencies and replace damaged or defective controllers or associated components.

3.04 ADJUSTING

- A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

3.05 CLEANING

- A. Clean dirt and debris from controller enclosures and components according to manufacturer's instructions.
- B. Repair scratched or marred exterior surfaces to match original factory finish.

3.06 CLOSEOUT ACTIVITIES

- A. Demonstration: Demonstrate proper operation of controllers to Owner, and correct deficiencies or make adjustments as directed.
- B. Training: Train Owner's personnel on operation, adjustment, and maintenance of controllers and associated devices.
 - 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.

3.07 PROTECTION

- A. Protect installed controllers from subsequent construction operations.
- END OF SECTION

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SECTION 23 21 13
HYDRONIC PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Hydronic system requirements.
- B. Chilled water piping, above grade.
- C. Pipe hangers and supports.
- D. Unions, flanges, mechanical couplings, and dielectric connections.
- E. Grooved fittings
- F. Valves:

1.02 REFERENCE STANDARDS

- A. ASME BPVC-IX - Boiler and Pressure Vessel Code, Section IX - Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators; 2023.
- B. ASME B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300; 2021.
- C. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2021.
- D. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2021.
- E. ASME B31.9 - Building Services Piping; 2020.
- F. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2022.
- G. ASTM A106/A106M - Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service; 2019a.
- H. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service; 2023a.
- I. ASTM A536 - Standard Specification for Ductile Iron Castings; 1984, with Editorial Revision (2019).
- J. ASTM B32 - Standard Specification for Solder Metal; 2020.
- K. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2022.
- L. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric); 2020.
- M. ASTM F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers; 2024.
- N. AWS A5.8M/A5.8 - Specification for Filler Metals for Brazing and Braze Welding; 2019.
- O. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2023).
- P. AWWA C606 - Grooved and Shouldered Joints; 2022.
- Q. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2018, with Amendment (2019).

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

- B. Welders Certificate: Include welders certification of compliance with ASME BPVC-IX.
- C. Product Data:
 - 1. Include data on pipe materials, pipe fittings, valves, and accessories.
 - 2. Provide manufacturers catalog information.
 - 3. Indicate valve data and ratings.
- D. Manufacturer's Installation Instructions: Indicate hanging and support methods, joining procedures.
- E. Maintenance Data: Include installation instructions, spare parts lists, exploded assembly views.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with minimum three years of documented experience.
- B. Welder Qualifications: Certify in accordance with ASME BPVC-IX.
 - 1. Provide certificate of compliance from authority having jurisdiction, indicating approval of welders.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- B. Provide temporary protective coating on cast iron and steel valves.
- C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

1.07 FIELD CONDITIONS

- A. Do not install underground piping when bedding is wet or frozen.

PART 2 PRODUCTS

2.01 HYDRONIC SYSTEM REQUIREMENTS

- A. Comply with ASME B31.9 and applicable federal, state, and local regulations.
- B. Piping: Provide piping, fittings, hangers, and supports as required, as indicated, and as follows:
 - 1. Where more than one piping system material is specified, provide joining fittings that are compatible with piping materials and ensure that the integrity of the system is not jeopardized.
 - 2. Use non-conducting dielectric connections whenever jointing dissimilar metals.
 - 3. Grooved mechanical joints may be used in accessible locations only.
 - a. Accessible locations include those exposed on interior of building, in pipe chases, and in mechanical rooms, aboveground outdoors, and as approved by Architect.
 - b. Grooved mechanical connections and joints comply with AWWA C606.
 - 1) Ductile Iron: Comply with ASTM A536, Grade 65-45-12.
 - 2) Steel: Comply with ASTM A106/A106M, Grade B or ASTM A53/A53M.

- c. Use rigid joints unless otherwise indicated.
 - d. Depending on pipe size, three or four flexible joints may be used in lieu of a flexible connector.
 - e. Use Victaulic Style 107, W77 rigid joints or equivalent by Anvil-Gruvlok unless otherwise indicated.
 - f. Three Victaulic Style 177, 77, W77 flexible couplings or equivalent by Anvil-Gruvlok may be used in lieu of a flexible connector for vibration attenuation and stress relief. Couplings shall be located within close proximity of the source of vibration in accordance with the manufacturer's design guidelines.
 - g. Victaulic Style 177, 77, W77 flexible couplings or Style 155 expansion joint or equivalent by Anvil-Gruvlok may be used to accommodate expansion and contraction on distribution and riser piping with engineer's approval.
 - h. Bolts and Nuts: Hot dipped galvanized or zinc-electroplated steel.
 - i. When piping is field grooved, provide coupling manufacturer's field grooving tools. If grooving in a fabrication shop, the manufacturer's smart tools are recommended.
4. Provide pipe hangers and supports in accordance with ASME B31.9 or MSS SP-58 unless indicated otherwise.
- C. Pipe-to-Valve and Pipe-to-Equipment Connections: Use flanges or unions to allow disconnection of components for servicing; do not use direct welded, soldered, or threaded connections.
- 1. Where grooved joints are used in piping, provide grooved valve/equipment connections if available; if not available, provide flanged ends and grooved flange adapters.
- D. Valves: Provide valves where indicated:
- 1. Provide drain valves where indicated, and if not indicated, provide at least at main shut-off, low points of piping, bases of vertical risers, and at equipment. Use 3/4 inch gate valves with cap; pipe to nearest floor drain.
 - 2. On discharge of condenser water pumps, use spring-loaded check valves.
 - 3. Isolate equipment using butterfly valves with lug end flanges or grooved mechanical couplings.
 - 4. For throttling, bypass, or manual flow control services, use globe, ball, or butterfly valves.
 - 5. For throttling and isolation service in chilled and condenser water systems, use only butterfly valves.
 - 6. For shut-off and to isolate parts of systems or vertical risers, use ball or butterfly valves.

2.02 CHILLED WATER PIPING, ABOVE GRADE

- A. Steel Pipe: ASTM A53/A53M, Schedule 40, black; using one of the following joint types:
- 1. Welded Joints: ASTM A234/A234M, wrought steel welding type fittings; AWS D1.1/D1.1M welded.
 - 2. Threaded Joints: ASME B16.3, malleable iron fittings.
 - 3. Grooved Joints: AWWA C606 grooved pipe, fittings of same material, and mechanical couplings.
- B. Copper Tube: ASTM B88 (ASTM B88M), Type K (A), hard drawn; using one of the following joint types:

1. Solder Joints: ASME B16.18 cast brass/bronze or ASME B16.22, solder wrought copper fittings.
 - a. Solder: ASTM B32 lead-free solder, HB alloy (95-5 tin-antimony) or tin and silver.
 - b. Braze: AWS A5.8M/A5.8 BCuP copper/silver alloy.

2.03 PIPE HANGERS AND SUPPORTS

- A. Manufacturers:
 1. Cooper B-Line
 2. Anvil International
 3. PHD
- B. All hangers, supports, and hardware shall have hot-dip galvanized finish complying with ASTM A123 or ASTM A153. Epoxy plated or coated hardware will NOT be accepted.
- C. Comply with Federal Specification WW-H-171E & A-A-1192A.
- D. Hangers shall be UL Listed and FM Approved.
- E. Refer to the Structural Drawngs and Details for the limitations and applications of each type of hanger and weight when attaching to bar joists, trusses, or other building Structural elements. The Contractor shall be responsible for providing additional miscellaenous steel, unistrut, and other components to span multiple joists as required by the Structural Drawings to distribute concentrated loads.
- F. Provide hangers and supports that comply with MSS SP-58.
 1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
 2. Pipe Hangers for Hot and Chilled Water 6" and smaller: Cooper B3100, Anvil Fig. 260, or equivalent.
 3. Hangers for Hot Pipe 8" and larger: Adjustable steel yoke, cast iron roll, double hanger. Cooper B3110, Anvil Fig. 181, or equivalent.
 4. Riser Clamps: Cooper B3373, Anvil Fig. 40, or equivalent.
 5. Beam Clamps: Cooper B3050, Anvil Fig. 134, or equivalent.
 6. Offset Clamps: Cooper B3148, Anvil Fig. 103, or equivalent.
 7. Ceiling Plate: Cooper B3199, Anvil Fig. 610, or equivalent.
 8. Wall Brackets: Cooper B3067, Anvil Fig. 199, or equivalent.
 9. Rod Ceiling Plate: Cooper, Anvil Fig. 610, or equivalent.
 10. Concrete Inserts: Cooper B2500, Anvil Fig. 95 or equivalent.
 11. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
 12. Hanger Rods: Mild steel threaded both ends, threaded one end, or continuous threaded. Cooper B3205, Anvil Fig. 146, or equivalent.
- G. In grooved installations, use rigid couplings with offsetting angle-pattern bolt pads or with wedge-shaped grooves in header piping to permit support and hanging in accordance with ASME B31.9.
- H. All hangers, rods, and other hardware shall be hot-dip galvanized, except where copper plated for copper piping.
- I. Pipe Saddles:
 1. Manufacturers
 - a. Buckaroos
 - b. GLT Products
 - c. PHD
 2. Length
 - a. 12" for piping up to 4"

- b. 18" for 6"
- c. 24" for piping up to 14"
- 3. Comply with MSS SP-58
- 4. Galvanized G-90 finish

2.04 UNIONS, FLANGES, MECHANICAL COUPLINGS, AND DIELECTRIC CONNECTIONS

- A. Unions for Pipe of 2 Inches and Less:
 - 1. Ferrous Piping: 150 psi brass or malleable iron, threaded.
 - 2. Copper Pipe: Bronze, soldered joints.
- B. Flanges for Pipe 2 Inches and Greater:
 - 1. Ferrous Piping: 150 psig forged steel, slip-on.

PART 3 EXECUTION

3.01 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt on inside and outside before assembly.
- C. Prepare piping connections to equipment using jointing system specified.
- D. Keep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps.
- E. After completion, fill, clean, and treat systems. See Section 23 25 00 for additional requirements.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install heating water, glycol, chilled water, condenser water, and engine exhaust piping to ASME B31.9 requirements.
- C. Route piping in orderly manner, parallel to building structure, and maintain gradient.
- D. Install piping to conserve building space and to avoid interference with use of space.
- E. Group piping whenever practical at common elevations.
- F. Slope piping and arrange to drain at low points.
- G. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment. See Section 23 05 16.
- H. Unless otherwise indicated, horizontal piping may be installed level or with a pitch up at 1" per 40' in direction of flow. Install manual air vents at all high points where air may collect. If vent is not in accessible location, extend air vent to nearest code acceptable drain location with vent valve located at nearest accessible location to pipe. Terminate vent valve within two feet above ceiling in accessible location.
- I. Main branches and runouts to terminal equipment shall be made at top (first choice) or top 45 degree (second choice), with drain valves suitably located for complete system drainage and manual air vents located as per above.
- J. Bottom connections to piping are not allowed under any circumstances, unless specifically approved by the Engineer on a case by case basis. If permitted by the Engineer, a line size Y-strainer with shutoff valve and blowdown valve shall be installed at branch connection.
- K. Mitered elbows, welded branch connections, notched tees, and "orange peel" reducers are not allowed. Unless specifically indicated, reducing flanges and reducing bushing are not allowed. Reducing bushings may be used for air vents and instrumentation connections.

- L. Contractor shall provide all manual air vents and drains (air vents at high points, drains at low points) in order to allow for appropriate air venting and to permit complete drainage of the entire system.
- M. Cut threads so that no more than 3 threads remain exposed after joint is made. Apply thread sealants to cleaned male ends. Assemble joint to appropriate depth and remove any excess pipe joint compound from tightened joint.
- N. Install valves, control valves, and piping specialties, including items furnished by others, as specified and/or detailed.
- O. Make connections to equipment installed by others where said equipment requires piping services indicated in this section.
- P. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified.
- Q. Welded Joints:
 - 1. Use weld material diameter as procedurally required for type and thickness of work being done.
 - 2. Use sufficient argon pre-purge and argon post-purge for GTAW processes.
 - 3. Clean tacks before welding out. Remove slag after each pass by grinding to avoid slag inclusion.
 - 4. Weld reinforcement shall not exceed limits established in ASME B31.1
 - 5. Brush each weld free of rust and paint with rust resistant product that matches surface color.
- R. Grooved Joints:
 - 1. Install in accordance with the manufacturer's latest published installation instructions.
 - 2. Gaskets to be suitable for the intended service, molded, and produced by the coupling manufacturer.
 - 3. Pump drops shall be installed as a single manufactured assembly and should not be disassembled for any reason. Roll grooved ends of spool piece cut to length to connect drops to Victaulic Style 26, Vic-Header.
 - 4. All installed grooved product installations shall be visually verified by confirming pad to pad contact with positive or neutral offset.
 - 5. A factory trained representative shall provide on-site training for contractor's field personnel in the use of grooving tools and installation of grooved end products. The representative shall periodically visit the jobsite and verify contractor is following best recommended practices in grooved product installation.
- S. Inserts:
 - 1. Provide inserts for placement in concrete formwork.
- T. Pipe Hangers and Supports:
 - 1. Install in accordance with ASME B31.9, ASTM F708, or MSS SP-58.
 - 2. Support horizontal piping as scheduled.
 - 3. Install hangers to provide minimum 1/2-inch space between finished covering and adjacent work.
 - 4. Place hangers within 12 inches of each horizontal elbow.
 - 5. Use hangers with 1-1/2 inches minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
 - 6. Support vertical piping at every other floor. Support riser piping independently of connected horizontal piping.
 - 7. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
 - 8. Provide copper plated hangers and supports for copper piping.

- U. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings. See Section 23 07 19.
- V. Provide access where valves and fittings are not exposed. Coordinate size and location of access doors with Section 08 31 00 .
- W. Install valves with stems upright or horizontal, not inverted.

3.03 PRESSURE TESTS

- A. Piping pressure tests shall be required on all new piping.
 - 1. Where connecting to existing systems, segregate new piping from existing system and provide isolation valves as required for testing.
- B. Coordinate pressure tests with the Engineer and Owner at least 72 hours in advance. Engineer, Owner, and CxA may choose to witness the pressure test. If Owner and Engineer decide not to witness a specific test, the Construction Manager/General Contractor shall witness the test and sign off.
- C. Conduct pressure tests prior to flushing and cleaning of piping systems.
- D. Pressure tests may be made of isolated portions of the piping systems to facilitate general progress of the installation. Changes made in the piping system shall require retesting of the affected portions.
- E. No system or part of the system shall be insulated until it has been successfully tested. If required
- F. All hydronic piping shall be hydrostatically tested to 150 psi for a period of four (4) hours minimum.
 - 1. Use ambient temperature water as a testing medium unless there is a risk of damage due to freezing. Another liquid that is safe for workers and compatible with piping may be used if approved by the Engineer.
 - 2. While filling system, use vents installed at high points of system to release air. Use drains installed at low points for complete draining of test liquid.
 - 3. Subject piping system to hydrostatic test pressure. Verify that stress due to pressure at bottom of vertical runs does not exceed 90 percent of specified minimum yield strength or 1.7 times "SE" value in Appendix A in ASME B31.9, "Building Services Piping."
 - 4. After hydrostatic test pressure has been applied for at least 10 minutes, examine piping, joints, and connections for leakage. Eliminate leaks by tightening, repairing, or replacing components, and repeat hydrostatic test until there are no leaks.
 - 5. No pressure drop shall occur during test period.
 - 6. Prepare written report of testing.
- G. Provide pumps, appropriately scaled gauges, calibrated instruments and test equipment, temporary piping, and personnel for tests. Remove all test equipment and drain pipes after completion of testing.
- H. If piping system is drained after testing and left empty or untreated for more than 3 days, add Nalco 2572 or equivalent at recommended dosages for dry system lay-up.

3.04 FLUSHING AND CLEANING OF PIPING SYSTEMS

- A. Notify Engineer and Owner/CxA at least four (4) days in advance. Do not flush any piping system or portion thereof without prior submission and approval of flushing and cleaning plan.
- B. General:

1. All hydronic piping systems shall be tested and flushed. All temporary equipment, utilities, and materials, including water, required to perform the tests and flushing shall be the responsibility of the contractor. Tests and flushes shall be witnessed by the Engineer or Owner's representative. The contractor shall perform pre-testing so that the Engineer may witness the final test and flush only. If more than one test and flush are required, contractor shall schedule these with the Engineer's site observation schedule. Submit contractor's testing and flushing plan, indicating how the system will be divided for flushing, chemical testing and flushing plan, indicating how the system will be divided for flushing, chemical injection points, temporary bypass piping, temporary drains, etc.
 2. Test fluid shall be clean water
 3. Flush fluid shall be clean water with listed cleaning chemicals
 4. Fill fluid shall be clean water
- C. Flushing and Fill:
1. Flush entire piping system until clean. Flush velocity shall be minimum of 5 fps through all sections of the system.
 2. Contractor shall provide portable pumping apparatus. Provide temporary materials, valves, equipment, and infrastructure, required to create bypass(es) for a closed system to perform flush(es). Bypass permanent building pumps during flush. Remove any devices that could be clogged or damaged prior to flushing. Provide a grade 18-8 stainless steel screen with 3/16 inch diameter holes at 18 holes per square inch in system strainers. Install #100 mesh startup liner in system strainer with metal screen. Operate valves as necessary to ensure all sections of the system are flushed for the required time period.
 3. Provide temporary piping to bypass coils, control valves, and other factory cleaned equipment, as wells as equipment subject to damage.
 4. Dissolve the following chemicals in the system (listed in pounds per 1,000 gallons of system water):
 - a. EDTA 40 lbs
 - b. CITRIC ACID 35 LBS
 - c. SURFACTANT 4 ounces product: Tritan DF-16 or equivalent low-foaming surfactant
 5. After initial 12 hours of flushing, screens and strainers shall be pulled, checked, and cleaned. Flushing shall then continue for another 12 hours. At the end of 24 hours, if strainers are still showing debris, continue flushing for 6 additional hours. System shall be flushed for a minimum of 24 hours and up to 30 hours as required.
 6. After completion of cleaning solution flushing, the system shall be completely drained to sanitary sewer. Flush with clean water. If the system cannot be drained completely, put a bleed on system and add clean water until system test at a pH of 6.8 to 7.4.
 7. Remove all temporary materials and bypass piping.
 8. Apply corrosion control chemicals with 2-3 days of flushing and cleaning procedure. Submit reports confirming concentration.
 9. Retesting and flushing
 - a. Any changes made to the piping systems after testing and/or flushing shall require retesting and flushing of the affected portions of the system. If any portion of the piping system is exposed to dirt or debris after the flush, it shall be re-flushed.
 10. Contractor Certification

- a. Provide a letter to the Engineer and Owner certifying the tests and flushes were performed in accordance with the specifications, what the final results were, and what the intermediate results were. The contractor's representative shall sign and date. A copy shall be placed in the O&Ms.
- 11. The Engineer or Owner/CxA shall review the test and flushr results prior to opening a new portion of piping to a previously approved portion or an existing system. If the supporting documentation is not reviewed by the Engineer prior to opening, the entire system shall be flushed again.

3.05 CLOSEOUT

- A. If grooved fittings are used on the project, Contractor shall turn over one (1) set of grooved coupling tools for each pipe size (or group of sizes) to the Owner at Substantial Completion.
- B. If copper Press fittings are used on the project, Contractor shall turnover one (1) set of press tools for each pipe size (or sizes) used on the project.
- C. Provide four (4) hours of Owner training on grooved couplings. Training to be provided by manufacturer's authorized representative.
- D. Provide four (4) hours of Owner training on copper press fittings. Training to be provided by manufacturer's authorized representative.

END OF SECTION

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SECTION 23 21 23.01
HYDRONIC PUMP PACKAGE WITH AIR ELIMINATION

PART 1 GENERAL

1.01 REFERENCE

- A. Material and construction requirements of this section shall supersede other specification sections unless specifically noted otherwise.
- B. Work under this Section is subject to requirements of Contract Documents including General Conditions, Supplementary Conditions, and sections under Division 01 General Requirements.

1.02 SUBMITTALS

- A. Shop Drawings including, but not limited to, the following:
 - 1. Appropriate identification (for the package and each individual item)
 - 2. Overall unit dimensions
 - 3. Shipping and operating weight of unit and/or sections
 - 4. Capacities/ratings
 - 5. Materials of construction
 - 6. Data sheets shall be included for each major component. Data sheets shall include: manufacturer's name, model number and additional physical data.
 - 7. Pressure drop calculations for all equipment and fittings in package
 - 8. Wiring diagrams and terminal points for control panels provided with units
 - 9. UL, ASME and ANSI certifications
 - 10. Manufacturer's installation instructions
 - 11. All other appropriate data
 - 12. Hydronic package manufacturer's local representative and phone number
- B. 3D CAD Drawings shall consist of sections/elevations, and isometric views showing layouts and details of hydronic package base, assembled components, piping and pipe fittings, connection locations, electrical devices and wiring, supports, accessories and component manufacturer's recommended maintenance clearances.
- C. Manufacturer shall provide a copy of the final approved CAD drawings to the Designer for inclusion in the record documents.

1.03 DESIGN CRITERIA

- A. Furnish pump package complete with pumps, motors, pump specialties, piping, valves, piping specialties, variable frequency drives, and single point power connection meeting the configuration shown on drawings, specified and scheduled. All unit components shall meet this specification and requirements of referenced sections.
- B. Contractor shall immediately notify Designer of any change in size of the hydronic package dimensions from that shown on the contract drawings after Contracts are awarded. Additional costs due to these changes shall be responsibility of this Contractor.
- C. Hydronic package shall be constructed as necessary to allow transport through the building. Contractor shall determine transport route and maximum section size with Owner and Construction Manager prior to submitting shop drawings to determine critical dimensions. Contractor shall notify Manufacturer of transport constraints

- which may impact the design and/or construction of the package.
- D. All system components shall have a minimum rating of 125 psig operating at 250°F, unless otherwise specified. All piping shall be subjected to a hydrostatic test (at 10% below relief valve setting) for two hours, after final assembly.
 - E. Hydronic packages shall be field insulated by others. Unit layout and configuration shall take into account insulation requirements for the project.

1.04 QUALITY ASSURANCE

- A. The Manufacturer shall assume "Unit Responsibility" for the complete hydronic package. Unit Responsibility shall be defined as responsibility for the interface and successful operation of all components supplied by the Manufacturer. The Manufacturer shall assemble the package. The Manufacturer must be actively engaged in the design and fabrication of the packaged system being assembled.
- B. The Manufacturer must have dedicated and qualified service/startup division for all components provided as part of the packaged systems.
- C. The Manufacturer of the packaged system must be an authorized manufacturer's representative or reseller for all major components of the packaged system.
- D. The hydronic package shall be Underwriters Laboratories or other nationally recognized testing laboratory listed, certifying compliance with UL QCZJ and UL508A standards as a complete package. This third-party product safety certification shall apply to the complete package, including pumps, motors, controls, wiring, valves and fittings, and safety devices as assembled into a complete package.
- E. The manufacturer shall have 10 years (minimum) documented experience in the design, fabrication, testing and startup/servicing of hydronic package systems.
- F. ASME Section IX certified welders shall perform all welding of the piping.
- G. The manufacturer shall function test the completed packaged assembly at the factory prior to shipment.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Upon receipt of the equipment, the Contractor shall immediately verify that the equipment has not received damage during shipping and that all items listed on the bill of lading and the hydronic package Manufacturer shipping documents are included in the shipment. If damage has occurred or if items are missing, the Contractor must note this on the Manufacturer shipping list before accepting delivery of the equipment.
- B. Storage and Protection: Store equipment and protect it from exposure to harmful weather conditions and at temperature conditions as recommended by Manufacturer. See the Manufacturer equipment storage instructions included in the Operations and Maintenance Manual, and raw material and component manufacturer's instructions and Operations and Maintenance Manuals.
- C. The Manufacturer shall seal fluid and air openings prior to shipment. Blow all piping and equipment free of water. Piping and equipment damaged by freezing shall be replaced, not repaired.
- D. The Manufacturer shall deliver products to site with protective coverings and factory installed lifting lugs.

1.06 WARRANTY AND SERVICE

- A. The entire packaged assembly, inclusive of all components, shall be warranted by the Manufacturer against defects in workmanship and operation for a period of eighteen (18) months from date of shipment from its factory or one (1) year from date of installation, whichever occurs first.

- B. The Manufacturer shall have a service/startup department that is available for technical support, warranty, and/or service questions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design: HYFAB
- B. Acceptable Manufacturers: EAS, Syscon

2.02 UNIT BASE

- A. Unit base shall be fabricated of 6" structural steel channel around unit perimeter and all section splits with additional structural members to support installed equipment.
- B. Weld steel solid at connection points to assure rigidity. Size perimeter steel to allow for rigging and handling.
- C. Locate and size base cross supports to support components, piping, and accessories.
- D. Each section shall be constructed with a minimum of four permanently welded lifting lugs attached to the perimeter base steel. Where permanent lifting lugs are impractical, provisions shall allow installation of removable lifting lugs. Permanent and removable lugs shall incorporate a means of attaching a cable or chain into each lug.
- E. Base shall be split in maximum size pieces to allow for economical shipment to jobsite and placement within building. Provide bolting on splits for field joining.
- F. Unit base shall be primed and finished with high quality alkyl industrial enamel. Color is to be Smoke Gray.

2.03 DISTRIBUTION PUMPS

- A. Subject to compliance with requirements below, provide pumps as scheduled from one of the following manufacturers:
 - 1. Basis of design: Series e1510 Bell & Gossett, Xylem Brand
 - 2. Other pre-approved manufacturer
- B. Motor(s) shall be of size, type, electrical characteristics and efficiency scheduled on the drawings. Motors for use with VFDs shall be "inverter ready." Motors shall be non-overloading across entire curve.
- C. Pump(s) shall be base mounted, flexibly coupled, single stage, end suction design with an integrally cast, foot mounted volute, allowing the impeller and bearing assembly to be removed without disturbing piping connections or moving the motor.
- D. The pump casing shall be of Class 30 cast iron with integrally-cast pedestal support feet, suitable for 175 PSI working pressure. The pump volute shall be supplied with vent, drain, and gauge tapings.
- E. The bearing assembly shall have a solid SAE1144 steel shaft. A stainless-steel shaft sleeve shall be employed to completely cover the wetted area under the seal.
- F. The pump bearings shall be greaseable ball bearing type with provision for purging or flushing through the bearing surface and shall be greased while running by the installer after start-up.
- G. The impeller shall be stainless steel, enclosed, single suction type, dynamically balanced, keyed to the shaft.
- H. The allowable residual unbalance in the impeller rotating assembly shall conform to ANSI Grade G6.3.

- I. The liquid cavity shall be sealed off by an internally flushed mechanical seal with ceramic seat of 99.5% pure alumina oxide and hardness of 68 Rockwell C, or a tensile strength of 300,000 PSI, and carbon seal ring, suitable for continuous operation at 225 degrees F. The seals and bearings shall be capable of being serviced without disconnecting the pump from piping or disturbing the volute or motor in order to maintain original alignment.
- J. A flexible type, spacer design coupler, capable of absorbing torsional vibration, shall be employed between the pump and motor. Packaged pumping modules with optional factory installed Adjustable Frequency Drives (VFDs) shall have couplers designed for variable speed operation. Pump and motor shall be rough aligned by module manufacturer before shipment. Final alignment will be made by contractor after package is set and anchored in place.
- K. Coupler shall be shielded by an ANSI and OSHA approved coupler guard securely fastened to the base.
- L. Pump shall be capable of withstanding a horizontal load of 0.5 G without adversely affecting pump operation.

2.04 PUMP SPECIALTY ACCESSORIES

A. Pump Discharge Valves

- 1. Subject to compliance with requirements below, provide pump discharge valves for each base mounted pump from one of the following manufacturers:
 - a. Basis of design: Bell & Gossett Triple Duty Valve, Xylem Brand
 - b. Other pre-approved manufacturer
- 2. Triple Duty Valve shall be a center-guided, non-slam, lift check valve fitted with a bronze seat, replaceable bronze disc with EPDM seat insert, stainless steel stem and chatter preventing stainless steel spring.
- 3. Valve shall be designed to permit re-packing under full line pressure.
- 4. Valve shall be rated to 175 PSIG and shall be flanged cast iron. Valve shall be rated for 250 degrees F.
- 5. The valve shall be equipped with readout ports to facilitate differential pressure readings across the valve orifice. Pressure drop data for each valve shall be provided for each 10% of valve range
- 6. The valve shall be sized as scheduled on the drawings. The size shall be such that the pressure drop at design flow is 5 feet or less.

B. Suction Diffuser

- 1. Subject to compliance with the requirements below, provide a suction diffuser for each base mounted pump from one of the following manufacturers:
 - a. Basis of design: Bell & Gossett Suction Diffuser Plus, Xylem Brand
 - b. Other pre-approved manufacturer
- 2. The suction diffuser body shall be made of either cast iron or ductile iron.
- 3. The suction diffuser shall include a Flow Cone to eliminate recirculation and direct flow completely out of the body and into the pump suction.
- 4. The suction diffuser shall include a full-length, 4-plane, removable straightening vane made of carbon steel.
- 5. The suction diffuser shall include a full-length removable orifice cylinder with 3/16" perforations and 51% open area made of carbon steel.
- 6. The orifice cylinder shall be covered by a removable full-length start-up strainer made of 16 mesh bronze wire.
- 7. The suction diffuser shall be available with threaded, ANSI 150 flanged or grooved system connections.
- 8. The suction diffuser shall have a maximum temperature rating of 250°F (121°C).

9. The suction diffuser shall be supported with a fabricated foot.

C. Pump Gauges

1. Each pump shall have a single pressure gauge piped across its suction and discharge. Gauges shall be mounted near the pumps and connected to the pump gauge ports with 0.25" O.D. nylon tubing. Tubing shall have a pressure rating of 400 psi. Tubing shall be routed from the pumps to the gauges in a neat and workmanlike manner. Tubing shall be free of joints and fittings, except at connection points. Each sensing line shall be equipped with isolation ball valve (gauge cocks not permitted). Provisions shall be made at the pump connections to allow (field) insulation without impeding access to valves or gauges.

2.05 AIR CONTROL AND ELIMINATION SYSTEM

A. Hydraulic and Air Control System

1. Subject to compliance with requirements below, furnish a hydraulic and air control system with accessories as scheduled from one of the following manufacturers:
 - a. Basis of design: Bell & Gossett, Xylem Brand Rolairtrol and B Series Bladder tank with Bell and Gossett air control specialties..
 - b. Other pre-approved manufacturer

B. The air elimination system with system pressurization, relief, and make-up assembly shall consist of:

1. One centrifugal air separator as scheduled on the drawings.
 - a. The centrifugal air separator shall have flanged inlet and outlet connections tangential to the vessel shell. Vessels without tangential connections are not acceptable.
 - b. Manufacturer shall furnish data sheet specifying air collection efficiency and pressure drop at rated flow.
 - c. The air separator must be designed, constructed, and stamped for 125 psig @ 350°F in accordance with Section VIII, Division I of the ASME Boiler and Pressure Vessel Code, and registered with the National Board of Boiler and Pressure Vessel Inspectors. A Manufacturer's Data Report for Pressure Vessels, Form U-1 as required by the provisions of the ASME Boiler and Pressure Vessel Code shall be furnished for each air separator upon request.
 - d. One High Capacity Automatic Air Elimination Vent shall be mounted on top air connection of the Air Separator.
 - e. One blow-down valve shall be mounted on the bottom drain connection of the tangential air separator.
2. One (1) ASME bladder tank sized as scheduled on drawings.
3. The bladder tank shall be a pre-charged steel expansion tank with replaceable heavy-duty butyl rubber bladder. The tank shall have a 1 in. NPT system connection, 3/4 in. drain, and a .302-32 charging valve connection (standard tire valve) to facilitate the on-site charging of the tank to meet system requirements.
 - a. The tank must be constructed in accordance with Section VIII of the ASME Boiler and Pressure Vessel Code and stamped 125 PSI working pressure. A Manufacturers' Data Report for Pressure Vessels, Form U-1 as required by the provisions of the ASME Boiler and Pressure Vessel Code shall be furnished for each air separator upon request.
4. One (1) factory packaged make-up assembly (MUA) consisting of:

- a. One (1), pressure reducing valve for system pressurization and water make-up.
- b. One (1) line sized bypass, with bypass valve and two isolation valves and unions to permit service of the pressure reducing valve.
- c. One (1) ASME relief valve.
- d. One (1) bladder tank isolation valve to be a lockable valve to prevent inadvertent isolation of bladder tank.
- e. One (1) connection to bladder tank with one Automatic Air Vent

2.06 WATER PIPING, PIPING SPECIALTIES AND VALVES

A. Welded, flanged and threaded

- 1. Pipe, 2" and smaller, ASTM A53, Type E, Grade B, Schedule 40 steel pipe with ASTM A197 class 150, malleable-iron fittings and threaded joints.
- 2. Pipe, 2.5"-12", ASTM A53, Type E, Grade B, Schedule 40 (STD) steel pipe, ASTM A234 wrought-steel fittings, ASTM A105 forged-steel flanges and fittings, welded and flanged joints.
- 3. Pipe, 14" and larger, ASTM A53, Type E, Grade B, standard weight (0.375" thick) steel pipe, ASTM A234 wrought-steel fittings, ASTM A105 forged-steel flanges and fittings, welded and flanged joints.
- 4. Isolation valves, 2" and smaller, bronze choice ball valves.
- 5. Isolation valves, 2.5" and larger, lug pattern, 150 psi or better, butterfly valves for water service. Lever operated to 6", 8" and larger, gear operated.
- 6. Strainers, 2" and smaller, cast iron, threaded, class 250.
- 7. Strainers, 2.5" and larger, cast iron, flanged, class 125 or 250 to match connected equipment.
- 8. Gaskets, compressed fiber.
- 9. Flange bolts and nuts, grade 5.

B. Grooved and threaded

- 1. Pipe, 2" and smaller, ASTM A53, Type E, Grade B, Schedule 40 steel pipe with ASTM A197, class 150 malleable-iron fittings and threaded joints.
- 2. Pipe, 2.5"-12", grooved joint construction, shall have square cut pipe ends rolled or cut grooved in accordance with manufacturer's specifications. Grooving tools shall be Victaulic using roll sets or cut groovers compatible with the pipe material and wall thickness per Victaulic installation instructions.
- 3. Grooved pipe shall be assembled with Victaulic Style 07 or 107 (or approved equal) couplings with ductile-iron housing and EPDM gaskets of central-cavity-pressure-responsive design.
- 4. Gaskets shall be suitable for the intended service and shall be coated on the lips with a thin uniform coat of lubricant in accordance with the manufacturer's instructions.
- 5. The nuts shall be uniformly tightened until the housing pads are firmly together with metal to metal contact allowing visual inspection, or until properly tightened per manufacturer's specifications and instructions.
- 6. Grooved valves, strainers, check valves, suction diffusers and specialties may be utilized on hydronic system grooved piping:
 - a. Victaulic Series 761 or approved equal butterfly valves
 - b. Victaulic Series 726 or approved equal ball valves
 - c. Victaulic Series 732 or approved equal wye strainers
 - d. Victaulic, Series 716 or approved equal check valves
 - e. Victaulic Series 731-D or approved equal suction diffusers, grooved piping

2.07 PUMPING SYSTEM CONTROLS

- A. No differential pressure pumping controls shall be furnished by the package manufacturer. Controls shall be field installed (off the package) by the BAS contractor.

2.08 ELECTRICAL, CONTROL, AND COMMUNICATION

- A. Connection shall be for electrical service as scheduled on the plans. Electrical equipment shall have a short circuit rating equal to or greater than the available fault current at the point of connection. Equipment shall be labeled with short circuit current rating. Where available fault current is not indicated elsewhere, provide 25 kAIC rating.
- B. Wiring from the power distribution panel to each electrical disconnect shall be installed by a factory technician, utilizing liquid-tight metallic conduit and connectors.
- C. Wiring from each electrical disconnect to its pump motor shall be installed by a factory technician, utilizing liquid-tight metallic conduit and connectors.
- D. Low voltage wiring shall be exposed cable neatly routed to avoid mechanical damage.

2.09 PAINTING

- A. Each factory assembled packaged system, including all major components, shall be thoroughly cleaned after fabrication is complete.
- B. The entire package shall be primed after cleaning.
- C. After cleaning and priming, the package shall be painted with high-quality machinery grade enamel. Color shall be Smoke Gray.
- D. Nameplates of the components shall not be painted over.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Unit manufacturer shall provide and install all equipment within unit as specified including pumps, motors, piping, piping specialties, controls, electrical, and all equipment necessary to provide a complete functional hydronic package. Mechanical and electrical connections (i.e., piping and conduit) shall be available at the outside perimeter of the hydronic package so that appropriate Contractor may provide service to the hydronic package. Electrical wiring and control wiring shall terminate in junction boxes/enclosures on accessible side of unit.
- B. The Contractor shall set in place and anchor the package module(s) in accordance with the written recommendations of the Manufacturer of the hydronic package. The package base shall be installed level and without stress.
- C. The Contractor shall make all piping connections to the package's connections provided, all in accordance with the written recommendations of the Manufacturer of the hydronic package. Piping connections shall not allow piping stress to be transferred to the package during installation or operation.
- D. Control wiring for remote mounted differential pressure switches, differential pressure transmitters, flow transmitters, start/stop commands, alarms etc. shall be the responsibility of others. All control wiring shall be performed per the current edition of the NEC (NFPA 70.)

3.02 START-UP

- A. The Manufacturer or manufacturer's representative's factory trained personnel shall provide start-up of the package. This start-up shall include verification of proper

installation, system initiation, adjustment and fine tuning. This jobsite visit shall occur only after all hook-ups, tie-ins, and terminations have been completed and signed-off on the Manufacturer's start-up request form.

- B. Remove Suction Diffuser start-up strainer after system has been running for 48 hours.

3.03 CLEANING

- A. The entire package shall be thoroughly cleaned after installation.

3.04 TRAINING

- A. The Manufacturer or Manufacturer's Representative shall provide on-site training for Owner's personnel. This training shall fully cover maintenance and operation of all system components.

END OF SECTION

SECTION 23 25 00
HVAC WATER TREATMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Materials.
 - 1. System cleaner.
 - 2. Closed system treatment (water).
- B. By-pass (pot) feeder.

1.02 REFERENCE STANDARDS

- A. UL (DIR) - Online Certifications Directory; Current Edition.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide chemical treatment materials, chemicals, and equipment including electrical characteristics and connection requirements.
- C. Shop Drawings: Indicate system schematic, equipment locations, and controls schematics, electrical characteristics and connection requirements.
- D. Manufacturer's Installation Instructions: Indicate placement of equipment in systems, piping configuration, and connection requirements.
- E. Manufacturer's Field Reports: Indicate start-up of treatment systems when completed and operating properly. Indicate analysis of system water after cleaning and after treatment.
- F. Operation and Maintenance Data: Include data on chemical feed pumps, agitators, and other equipment including spare parts lists, procedures, and treatment programs. Include step by step instructions on test procedures including target concentrations.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Sufficient chemicals for treatment and testing during required maintenance period.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience. Company shall have local representatives with water analysis laboratories and full time service personnel.
- B. Installer Qualifications: Company specializing in performing the type of work specified in this section, with minimum 5 years of experience and approved by manufacturer.

1.05 WATER ANALYSIS

- A. Submit complete water analysis and results of performance test of each system signed by manufacturer's service representative.
- B. Water analysis shall include the following:
 - 1. Hot Water and Chilled Water

- a. Hardness
- b. pH
- c. "M" alkalinity
- d. Inhibitor level
- e. Total dissolved solids
- f. Temperature

1.06 WATER QUALITY REQUIREMENTS

- A. Minimum water quality requirements for closed hot and/or chilled water systems shall be as follows:

pH	8.0-9.0
TDS	< 500 ppm
Hardness as CaCO ₃ and Alkalinity	< 120 ppm
Chlorides	< 200 ppm
Suplhates	< 200 ppm
Iron	< 0.5 ppm
Dissolved Oxygen	< 0.1 ppm
Ryznar Index	> 6.0
Suspended solids	< 10 micron
Bacteria Counts	
a. Total aerobic bacteria counts	< 100 cfu per mL
b. Total anaerobic bacteria counts	< 10 cfu per mL

1.07 DESIGN CRITERIA

- A. Chemicals shall be suitable for pipe material, fluid medium, and inteded treatment.
- B. Provide initial chemical treatment and equipment for all systems based on complete system fluid analysis including makeup water prior to installation.
- C. Initial supply of chemicals for treatment of each system shall be sufficient for start up and testing period, for the time the systems are operated by the Contractor for temporary heating and cooling, and for one year after start-up of system.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. AmSolv-Amrep, Inc: www.amsolv.com/#sle.
- B. GE Water & Process Technologies: www.gewater.com/#sle.
- C. Nalco, an Ecolab Company: www.nalco.com/#sle.
- D. Aqua-Chem.
- E. Aqualine.
- F. ChemTreat.
- G. Water Guard.

2.02 REGULATORY REQUIREMENTS

- A. Comply with applicable codes for addition of non-potable chemicals to building mechanical systems and to public sewage systems.
- B. Comply with UL (DIR) requirements.
- C. Perform work in accordance with local health department regulations.
- D. Provide certificate of compliance from Authority Having Jurisdiction indicating approval of installation.

2.03 MATERIALS

- A. System Cleaner:
 - 1. Liquid alkaline compound with emulsifying agents and detergents to remove grease and petroleum products; sodiumtripoly phosphate and sodium molybdate.
 - 2. Biocide chlorine release agents such as sodium hypochlorite or calcium hypochlorite or microbiocides such as quarternary ammonia compounds, tributyltin oxide, methylene bis (thiocyanate).
- B. Closed System Treatment (Water):
 - 1. Sequestering agent to reduce deposits and adjust pH; polyphosphate.
 - 2. Corrosion inhibitors; boron-nitrite, sodium nitrite and borax, sodium totyltriazole, low molecular weight polymers, phosphonates, sodium molybdate, or sulphites.
 - 3. Conductivity enhancers; phosphates or phosphonates.

2.04 BY-PASS (POT) FEEDER

- A. Manufacturers:
 - 1. Griswold Controls: www.griswoldcontrols.com/#sle.
 - 2. J. L. Wingert Company: www.jlwingert.com/#sle.
 - 3. Neptune, a brand of the Dover Company: www.neptune1.com/#sle.
 - 4. Advantage Controls.
- B. 5 gal quick opening cap for working pressure of 175 psi.
- C. Provide cartridge filter.

PART 3 EXECUTION

3.01 PREPARATION

- A. Systems shall be operational, filled, started, and vented prior to cleaning. Use water meter to record capacity in each system.
- B. Place terminal control valves in open position during cleaning.
- C. Verify that electric power is available and of the correct characteristics.

3.02 CLEANING SEQUENCE

- A. Concentration:
 - 1. As recommended by manufacturer.
- B. Chilled Water Systems:
 - 1. Circulate for 48 hours, then drain systems as quickly as possible.
 - 2. Refill with clean water, circulate for 24 hours, then drain.
 - 3. Refill with clean water and repeat until system cleaner is removed.
- C. Use neutralizer agents on recommendation of system cleaner supplier and approval of Engineer and Owner.
- D. Remove, clean, and replace strainer screens.
- E. Inspect, remove sludge, and flush low points with clean water after cleaning process is completed. Include disassembly of components as required.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Contractor shall install a BYPASS pipe wherever needed between the hydronic return & supply lines to recirculate the entire system using the hydronic pumps installed. The diameter of this pipe shall be at least 1/3 of the diameter of the main

hydronic lines. The contractor shall also remove or cap the temporary BYPASS to a permanent configuration when flushing is complete and approved water chemistry is achieved.

- C. Contractor shall remove all strainer screens prior to flushing all systems, including mud from the dirt legs. Contractor shall clean and replace/reinstall all strainer screens after the final cleaning and flushing procedure has passed the final test criteria noted herein.
- D. Complete circulation must be achieved during the cleaning procedure. The Contractor shall develop a plan to achieve a minimum velocity of three feet per second (3 ft/s) in the pipes to ensure the cleaning chemicals will work properly. If necessary, isolate parts of the piping system to attain at least (3 ft/s) in piping being flushed. All electric, pneumatic, and thermostatic operated valves shall be full open. All deadend runs shall be looped together with piping not less than one-third the size of the run.

3.04 CLOSED SYSTEM TREATMENT

- A. Provide one bypass feeder on each system. Install isolating and drain valves and necessary piping. Install around balancing valve downstream of circulating pumps unless indicated otherwise.
- B. Introduce closed system treatment through bypass feeder when required or indicated by test.
- C. Provide 3/4 inch water coupon rack around circulating pumps with space for 4 test specimens.

3.05 CLOSEOUT ACTIVITIES

- A. Training: Train Owner's personnel on operation and maintenance of chemical treatment system.
 - 1. Provide minimum of two hours of instruction for two people.
 - 2. Have operation and maintenance data prepared and available for review during training.
 - 3. Conduct training using actual equipment after treated system has been put into full operation.
- B. Written completeness certification and applicable reports will be forwarded to the project Engineer prior to acceptance.

3.06 MAINTENANCE

- A. Perform maintenance work using competent and qualified personnel under the supervision and in the direct employ of the equipment manufacturer or original installer.
- B. Provide service and maintenance of treatment systems for one year from Date of Substantial Completion.
- C. Provide monthly technical service visits to perform field inspections and make water analysis on-site. Detail findings in writing on proper practices, chemical treating requirements, and corrective actions needed. Submit two copies of field service report after each visit.
- D. Provide laboratory and technical assistance services during this maintenance period.
- E. Provide on-site inspections of equipment during scheduled or emergency shutdown to properly evaluate success of water treatment program, and make recommendations in writing based upon these inspections.

END OF SECTION

SECTION 23 64 33
MODULAR WATER CHILLERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Packaged air-cooled water chiller.

1.02 REFERENCE STANDARDS

- A. AHRI 550/590 (I-P) - Performance Rating of Water-Chilling and Heat Pump Water-Heating Packages Using the Vapor Compression Cycle; 2023.
- B. AHRI 575 - Method of Measuring Machinery Sound Within an Equipment Space; 2017.
- C. ASHRAE Std 15 - Safety Standard for Refrigeration Systems; 2022, with Errata (2023).
- D. ASHRAE Std 90.1 I-P - Energy Standard for Buildings Except Low-Rise Residential Buildings; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- E. ASHRAE Std 135 - A Data Communication Protocol for Building Automation and Control Networks; 2020, with Errata (2023).
- F. ASME BPVC-VIII-1 - Boiler and Pressure Vessel Code, Section VIII, Division 1: Rules for Construction of Pressure Vessels; 2023.
- G. ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus; 2019.
- H. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2020.
- I. UL 1995 - Heating and Cooling Equipment; Current Edition, Including All Revisions.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate physical size, weight and location of major pieces of equipment to be installed. Notify Architect of any major deviations from the equipment originally specified prior to ordering equipment.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide rated capacities, weights, specialties and accessories, electrical requirements and wiring diagrams.
- C. Manufacturer's Performance Data: Indicate energy input versus cooling load output from 0 to 100 percent of full load at specified and minimum condenser water temperature for water-cooled chillers and at specified and minimum outdoor air temperature for air-cooled chillers.
- D. Manufacturer's Instructions: Submit manufacturer's complete installation instructions.
- E. Operation and Maintenance Data: Include start-up instructions, maintenance data, parts lists, controls, and accessories; include trouble-shooting guide.
- F. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Comply with manufacturer's written installation instructions for rigging, unloading, and transporting units.

- B. Deliver units to the job site completely assembled and charged with refrigerant and oil by manufacturer.

1.06 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer's Warranty: Provide minimum five year warranty to include coverage for materials and labor for compressor.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. York.
- B. LG
- C. Carrier
- D. Substitutions: See Section 01 60 00 - Product Requirements.
 - 1. The chilled water system has been designed based on specific capacities and characteristics of equipment specified in this section and other sections.
 - 2. When substitution of a different manufacturer or model number is desired, submit sufficient information to demonstrate to Architect that the substitute will have the same or better performance as that specified AND that the related equipment in the system will perform acceptably with the substitute.
 - 3. If the related equipment must be modified to perform acceptably with the substitute, the entity proposing the substitution is responsible for all additional costs due to re-design and provision of different related equipment.

2.02 AIR-COOLED MODULAR WATER CHILLER CONSTRUCTION REQUIREMENTS

- A. Factory assembled and tested package-module consisting of compressor(s), compressor motor(s), evaporator, condenser, enclosure, refrigeration circuits(s) and specialties, interconnecting piping, water circuit isolation valves, starters, and microprocessor-based controls.
 - 1. Rating: AHRI 550/590 (I-P).
 - 2. Safety: UL 1995 and ASHRAE Std 15.
 - 3. Machinery Sound Testing: AHRI 575.
 - 4. Construction & Testing: ASME BPVC-VIII-1 if applicable for construction type.
 - 5. Energy Efficiency: ASHRAE Std 90.1.
 - 6. Enclosures:
 - a. Frame: Heavy gauge steel with factory painted finish.
 - b. Cabinet: Factory baked on enamel finish.
 - c. Perform 500-hour minimum salt spray test in accordance with ASTM B117 for units exposed to outdoor conditions.
- B. Hermetic Scroll Compressors:
 - 1. Module: Fully hermetic with two, direct drive compressors, adequate valve types and specialties required for operation and servicing in accordance with manufacturer's recommendations.
 - 2. Vibration Control: Factory installed internal rubber-in-shear isolators.
 - 3. Lubrication System: Initial oil charge, oil pump, oil level sight glass, and oil charging valve.
 - 4. Capacity Reduction System: Compressor staging with duty cycling based on run time.

5. Motors: UL 984, 3,600, suction gas-cooled, with overload protection; see Section 23 05 13.
- C. Evaporator Side:
1. Brazed plate made of 316 stainless steel.
 2. Working Pressure Rating, Refrigerant Side: 650 psi minimum.
 3. Working Pressure Rating, Water Side: 285 psi minimum.
 4. End Connections: Provide with flanged end connections.
- D. Cold Surface Insulation:
1. Insulation is factory or field installed on evaporator, connections, and suction piping.
 2. 0.75 inches minimum thick, closed cell, expanded polyvinyl chloride, polyurethane, or Armaflex II insulation with a maximum K factor of 0.28.
- E. Provide factory installed vents and water drain connections on evaporator or piping.
- F. Freeze Protection for Outdoor Locations: Provide thermostatically controlled electric heater to protect from freezing at ambient temperatures down to minus 20 degrees F.
- G. Provide factory-installed manual isolation valves in supply and return piping with modulating valve for variable primary flow operation.
- H. Air-Cooled Finned-Tube Condenser:
1. Mechanically bonded aluminum fins to copper tubing and protect with corrosion resistant materials or coatings.
 2. Clean and leak test at minimum pressure of 650 psi.
 3. Coil Guards: Provide corrosion proof, heavy gauge wire panels, factory installed. Protect condenser coil by enclosing with heavy plastic to prevent damage during shipping or rigging.
 4. Fans and Motors:
 - a. Vertical-Discharge Fans: Dynamically balance propeller, shrouded-axial, or airfoil type fans of reinforced polymer or glass fiber reinforced composite corrosion resistant construction equipped with sealed, permanently lubricated ball bearings.
 - b. Discharge Fan Guards: Corrosion resistant, heavy gauge steel wire.
 - c. Motors: Direct drive, totally enclosed for outdoor use with current overload protection.
- I. Refrigeration Circuits:
1. Provide two independent refrigeration circuits with one compressor per circuit.
 2. Provide liquid line shut-off valve, filter-drier, thermal expansion valve, refrigerant relief device, and compressor discharge check valve for each independent circuit.
- J. Controls Package:
1. Unit Controls: Factory-supplied DDC:
 - a. Control-panel mounted with required input-output expansions, power supply, fused disconnect, hand switches, knobs, and accessories required to control chiller unit to manufacturer required sequences to meet intended use with listed performance.
 - b. Factory configured to interface prewired sensors, switches, and safeties with allowance to add up to four chiller valves and flow sensors.
 - c. Graphic-based touchscreen to include unit operation controls and user filter based interface for faults, alarms, performance, unit diagnostics, and data recording up to 12 months.

- d. BAS, SCADA, or other Integrated Automation Link: ASHRAE Std 135 BACnet MS/TP.
 - e. External Point Mapping: Provide mapping table for each parameter included in the local visual interface with software-toggle flag to allow reduced mapping of available points.
 - f. Isolation Valves: Field-installed, 2-position, butterfly type with position tracking; see Section 25 35 19.
2. Prewire, assemble, factory mount, and test operating and safety control system consisting of a digital display or gauges, on-auto-off switch, motor starting contactors, disconnect switches, power and control wiring. Provide controls, monitoring, programmable setpoints, alarms, and BAS as defined below:
- a. Automatic Adjustable Operating Controls:
 - 1) Temperature of chilled water leaving chiller.
 - 2) Number of compressor circuits required to operate based on setpoints and system load.
 - 3) Compressor short-cycling prevention.
 - 4) Lead/lag operation for compressors. New lead compressor selected every 24 hours to equalize run time.
 - 5) Automatic reset on power source failure.
 - 6) Load limiting.
 - b. Normal Operation Monitoring and Open Coverless Displays:
 - 1) Hours of operation.
 - 2) Suction and discharge refrigerant pressures.
 - 3) Automatic diagnostics.
 - 4) Number of starts.
 - 5) On/off compressor status.
 - 6) Entering and leaving chilled water temperatures.
 - 7) Status of operation.
 - 8) Compressor winding temperature.
 - 9) Suction temperature.
 - 10) Oil pressure.
 - c. Setpoints:
 - 1) Leaving chilled water temperature.
 - 2) Date/time.
 - d. Automatic Chiller Shut-Down Safety Controls and Alarm:
 - 1) Automatic Reset:
 - (a) Chilled water flow interlock.
 - (b) Voltage protection (over/under).
 - (c) Phase reversal protection.
 - 2) Manual Reset:
 - (a) Low suction pressure.
 - (b) High motor winding temperature.
 - (c) Low chilled water temperature.
 - (d) Low chilled water flow.
 - (e) High condenser refrigerant discharge pressure.
 - (f) Motor current overload and phase loss.
 - (g) Low oil flow.
 - 3) Remote Alarm: Activate remote, audible bell upon safety shutdown of chiller.
 - 4) Minimum Data Transmission to BAS:
 - (a) All system operating conditions.
 - (b) Capacity control information.

- (c) Safety shutdown conditions.
- 5) Minimum Operating Commands from BAS:
 - (a) Remote unit start/stop.
 - (b) Remote chilled water reset.
- K. Electrical Characteristics (Single Point Power Connection):
 - 1. Electrical: NEMA 250 or UL 1995 as applicable.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Align chiller package on steel or concrete foundations.
- C. Install units on vibration isolators, see Section 23 05 48.
- D. Connect to electrical service.
- E. Connect to chilled water piping.
- F. Arrange piping for easy dismantling to permit tube cleaning and removal.

3.02 MANUFACTURER'S FIELD SERVICES

- A. Perform factory startup of the chiller by factory trained and authorized servicing technicians confirming equipment has been correctly installed prior to equipment becoming operational and covered under the manufacturer's warranty.
- B. Supply initial charge of refrigerant and oil if not completely factory charged.
- C. Demonstrate system operations and verify specified performance.

3.03 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.

3.04 CLOSEOUT ACTIVITIES

- A. See Section 01 78 00 - Closeout Submittals for closeout submittals.
- B. See Section 01 79 00 - Demonstration and Training for additional requirements.
- C. Training: Train Owner's personnel on operation and maintenance of system.
 - 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
 - 2. Provide minimum of two hours of training.
 - 3. Location: At project site.

3.05 MAINTENANCE

- A. See Section 01 70 00 - Execution and Closeout Requirements for additional requirements.

END OF SECTION

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SECTION 26 05 00.01
GENERAL ELECTRICAL REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General provisions specifically applicable to Division 26 Sections, in addition to Division 1 - General Requirements.
- B. The electrical work includes the furnishing of all labor, materials, accessories, and equipment required to install a complete and fully operational electrical system as shown, specified and/or reasonably implied for a complete project.

1.02 RELATED DOCUMENTS

- A. General provisions specifically applicable to Division 26 Sections, in addition to Division 1 - General Requirements.
- B. ANSI/NFPA 70.

1.03 COORDINATION

- A. The Electrical Contractor shall coordinate his work with the other contractors in accordance with provisions of Division 1.

1.04 QUALITY ASSURANCE

- A. Perform work in accordance with NECA Standard of Installation.

1.05 FEES, PERMITS, AND INSPECTIONS

- A. Electrical Contractor shall obtain permits and arrange all inspections necessary for the installation of his work in accordance with General Conditions and furnish the Architect with certificates of inspection from all authorities having jurisdiction.
- B. Inspections and tests shall be made upon formal written notice to the Architect from the Contractor sufficiently in advance to allow representatives of the Architect and Owner to be present for each test.
- C. No construction shall be covered up or concealed until it has been inspected or approved. The Contractor shall furnish all material, labor, fuel, equipment and apparatus, and bear all expenses of such tests as are hereinafter specified for the work.
- D. Final inspection and tests shall be made in the presence of the Architect and representatives of the Owner. The tests shall be made under conditions simulating as nearly as practicable those which will be obtained in operation and shall show conclusively that the requirements of the specifications have been fulfilled. Prior to receiving final payment, the Contractor shall, in accordance with Division 1, furnish to the Architect a certificate of inspection signed by the Electrical Inspector having jurisdiction.

1.06 REGULATORY REQUIREMENTS

- A. Conform to the North Carolina State Building Code.
- B. Conform to requirements of ANSI/NFPA 70.
- C. Conform to requirements of ANSI/IEEE C2 where applicable.
- D. Furnish products listed and classified by Underwriters Laboratories, Inc. or other North Carolina recognized third party testing agency.

1.07 QUALIFICATIONS

- A. Manufacturer: Furnish products of manufactures listed or, where substitutions are allowed, furnish products of a company specializing in manufacturing products specified with minimum of three years experience.
- B. Installation: Equipment and systems installers shall have a minimum of 5 years experience in installation of systems similar to those on this project unless indicated otherwise.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect, and handle products to site under provisions of Division 1.

1.09 ALLOWANCES

- A. Refer to provisions of Section 012100 - Allowances.

1.10 UNIT PRICES

- A. Refer to provisions of Section 012200– Unit Prices.

1.11 ALTERNATES

- A. Refer to provisions of Section 012300 - Alternates.

1.12 SEQUENCING AND SCHEDULING

- A. Construct work in sequence under provisions of Division 1.

1.13 OPERATION AND MAINTENANCE MANUALS

- A. Three (3) complete sets of operating and maintenance manuals shall be submitted to the Owner through the Architect/Engineer two (2) weeks prior to the pre-final inspection date.
- B. The O&M manuals shall be installed in a 3-ring heavy back note book with the name of the building and the words "Operation and Maintenance Manuals" on the cover and spine. The manuals shall contain the following items as a minimum:
 - 1. Index and page numbers.
 - 2. Certificate of substantial completion.
 - 3. All warranties.
 - 4. List of all subcontractors and suppliers with names, addresses and phone numbers.
 - 5. Certified testing and balancing report.
 - 6. Complete start-up operation, and shut-down procedures for each system including sequence of events, locations of switches, emergency procedures and any other critical items.
 - 7. Complete set of current shop drawings and equipment description showing all capacities and other operation conditions.
 - 8. Equipment summary showing all capacities and ratings. (HP, Tons, KW, Filter size, etc.)
 - 9. All submittal data and shop drawings.
 - 10. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of replacement parts.
 - 11. Manufacturer's printed operating procedures to include start-up, break-in, and routine and normal operating instructions; regulation, control, stopping, shutdown, and emergency instruction.

12. Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly; aligning and adjusting instructions.
13. Wiring and control diagrams.
14. Manufacturer's cuts, part numbers, and serial numbers.

PART 2 PRODUCTS

2.01 EQUIPMENT AND MATERIAL

- A. Equipment and material of the same general type shall be of the same make throughout the work to provide uniform appearance, operation and maintenance.
- B. Equipment and material shall be new and shall bear the manufacturer's name or trade name.

2.02 DIMENSIONS

- A. The Contractor shall be responsible for insuring that items of equipment furnished fit the space available. He shall make necessary field measurements to ascertain space requirements, including those of connections, and shall furnish and install such sizes and shapes of equipment that the final installation shall suit the true intent and meaning of the drawings and specifications.

2.03 MANUFACTURER'S DIRECTIONS

- A. The Contractor shall promptly notify the Architect in writing of any conflict between the requirements of the contract documents and manufacturer's directions and shall obtain the Architect's written instructions before proceeding with the work. Should the Contractor perform any work that does not comply with the manufacturer's directions or such written instructions from the Architect, he shall bear all costs arising in correcting the deficiencies.

2.04 EQUIPMENT ACCESSORIES

- A. The Contractor shall provide all equipment, accessories, connections, and incidental items necessary to fully complete the work, ready for use, occupancy and operation by the Owner.

PART 3 EXECUTION

3.01 MATERIALS AND WORKMANSHIP

- A. All materials and workmanship shall comply with all applicable codes, specifications, state and local ordinances, industry standards, and utility company regulations. At the completion of the work, fixtures, equipment and materials shall be cleaned and polished thoroughly and turned over to the Owner in a condition satisfactory to the Architect. Damage or defects developing before acceptance of the work shall be made good at the Contractor's expense.

3.02 LOCATION OF CONDUIT, FIXTURES, EQUIPMENT AND APPURTENANCES

- A. These locations shall be adjusted to accommodate the work to ductwork and equipment installed by other Contractors in mechanical equipment rooms and similar areas.

3.03 BUILDING AND FINISHES

- A. Building and finishes shall be protected. The Contractor will be held responsible for damage incurred and shall repair all damage done.

3.04 SUPPORTS

- A. The Contractor shall support plumb, rigid, and true to line all work and equipment installed under this contract. The Contractor shall thoroughly study project construction drawings, shop drawings, and catalog data to determine how equipment, accessories, fixtures, and related items are to be supported, mounted, or suspended. He shall provide all bolts, inserts, brackets, structural supports, and accessories for proper support whether or not shown on the drawings.
- B. Sleeves, inserts and supports that may be required for the electrical work shall be furnished by the Electrical Contractor, and they shall be installed, except as otherwise specified, by the trade furnishing and installing the material in which they are to be located. Location of sleeves, inserts, and supports shall be directed by the Electrical Contractor who shall also insure that they are properly installed. Sleeves shall be neatly sawed, sheared, or cut with wheeled cutters. No flame cutting will be permitted.
- C. Slots, chases, openings and recesses through floors, walls, ceilings, and roofs as specified will be provided by the various trades in their respective materials, but the Electrical Contractor shall see that they are properly located and shall do any cutting and patching caused by the neglect to do so.
- D. Where sleeves are omitted or not provided in proper location through a concrete floor, the new holes at the proper location shall be drilled with a diamond core drill after obtaining permission from the Architect. No chiseling or other rough cutting will be permitted. No part of the building may be broken out, cut, burned out, or permanently removed.

3.05 FIRESTOPPING

- A. Firestopping of penetrations for electrical work shall be installed by Electrical Contractor.
- B. The Electrical Contractor shall be responsible for firestopping all partitions, walls and floor penetration resulting from his work. Penetrations shall be firestopped to meet or exceed rating of wall or floor systems as required by code.

3.06 SERVICE DISCONNECT MARKING

- A. Each service disconnecting means shall be marked "SERVICE DISCONNECT" with engraved plastic plates.

3.07 COORDINATION

- A. All power wiring and associated conduit shall be provided to HVAC and Plumbing equipment by the Electrical Contractor. The HVAC and Plumbing Contractor shall furnish all motor starters, disconnect switches, and combination starters for equipment furnished under their contract and turn them over to the Electrical Contractor for installation. All final power wiring connections to equipment shall be made by the Contractor furnishing the equipment from slack wire left by the Electrical Contractor. Refer to detail, Sheet E100, of the Contract Drawings for division responsibility regarding electrical requirements.
- B. HVAC Contractor will provide all control wiring, in conduit, required to satisfactorily control all HVAC equipment; furnish and wire all control devices such as thermostats, switches, relays and any other devices necessary to control the HVAC equipment.

- C. Duct mounted smoke detectors shall be furnished by the Electrical Contractor and installed in duct work by the HVAC Contractor. Wiring to the fire alarm system shall be provided by the Electrical Contractor. Detectors shall be installed in strict accordance with manufacturer's installation instructions and/or NFPA 72 (AHJ adopted version).

3.08 PAINTING

- A. All field painting of electrical work, with exception of touch-up paint on factory finished equipment, shall be by the Electrical Contractor in accordance with the "Painting" section of these specifications. Any equipment which has its factory paint coat scratched or otherwise damaged shall be retouched with paint to match the finish coat by the Electrical Contractor, and shall be repainted if necessary. Cut ends of steel framing channel used for equipment support shall be painted with a compound providing equivalent protection to the factory provided finish.

3.09 TESTING

- A. All test reports shall be typewritten and submitted in triplicate. Reports shall include: Item(s) tested, date of each test, name and signature of person(s) conducting test, and complete test results.
- B. Provide testing on each product or system as hereinafter specified in individual sections, and/or as recommended by product manufacturer.
- C. All test reports shall be submitted, reviewed, and approved prior to substantial completion.

3.10 CLEAN-UP

- A. The Contractor shall clean equipment, fixtures, and wiring device covers with cleaning materials appropriate to the surface and material being cleaned. Bottoms of equipment enclosures shall be cleaned to remove metal filings and other debris. All debris and excess materials shall be removed from the work area. The Contractor shall remove from the site all debris, crating, temporary facilities, waste, tools, construction equipment, machinery, and surplus materials resulting from his work.

3.11 THERMAL SCANNING

- A. The Contractor shall provide infrared scanning on operational switchboard, transformers, and transfer switches, as well as feeder terminations over with ratings over 60 amps. Tests to be conducted after equipment start-up and prior to substantial completion.
- B. A report of the results shall be submitted to the Owner and Commissioning agent as well as included in O&M manual submittals.

END OF SECTION

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SECTION 26 05 19.01
BUILDING WIRE AND CABLE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Building wire and cable.
- B. Wiring connectors and connections.

1.02 RELATED SECTIONS

- A. General provisions specifically applicable to Division 26 Sections, in addition to Division 1 - General Requirements.
- B. Section 260532 - Conduit.
- C. Section 260533 - Boxes.
- D. Section 260553 - Identification.

1.03 REFERENCES

- A. ANSI/NFPA 70

1.04 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. Product Data: Provide for each wire and cable type.
- C. Insulation Resistance Test Report.
- D. Bolted Connections Torque Measurements.

1.05 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Division 1.
- B. Accurately record feeder sizes.

1.06 PROJECT CONDITIONS

- A. Verify that field measurements are as shown on Drawings.
- B. Conductor sizes are based on copper, expressed in American Wire Gage (AWG) and Thousand Circular Mils (kcmil).
- C. Wire and cable routing shown on Drawings is approximate unless dimensioned. Route wire and cable as required to meet Project Conditions.
- D. Where wire and cable routing is not shown, and destination only is indicated, determine exact routing and lengths required.

1.07 COORDINATION

- A. Determine required separation between cable and other work.
- B. Determine routing to avoid interference with other work.

PART 2 PRODUCTS

2.01 BUILDING WIRE AND CABLE

- A. Description: Single conductor insulated wire.
- B. Conductor:
 - 1. Branch circuits: Copper.

- 2. Feeders: Copper or aluminum as indicated on drawings
 - a. Aluminum Conductors: Comply with NEMA WC 70/ICEA S-95-658
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation: ANSI/NFPA 70, Type THHN2/THWN.

2.02 CLASS 2 CONTROL CIRCUIT CONDUCTORS

- A. Description: Solid or stranded, per system manufacturer's recommendations.
- B. Conductor: Copper.
- C. Insulation: Min. 150 volt 60°C.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that mechanical work likely to damage wire and cable has been completed.

3.02 PREPARATION

- A. Completely and thoroughly swab raceway before installing wire.

3.03 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Use solid conductor for feeders and branch circuits 10 AWG and smaller, unless otherwise indicated
- C. Use stranded conductors for control circuits.
- D. Use stranded conductors in liquid tight flex for final connection to motors.
- E. Use conductor not smaller than 12 AWG for power and lighting circuits.
- F. Use conductor not smaller than 22 AWG for control circuits.
- G. Use 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 100 feet.
- H. Use 10 AWG conductors for 20 ampere, 277 volt branch circuits longer than 230 feet.
- I. Pull all conductors into raceway at same time.
- J. Use suitable wire pulling lubricant for building wire 4 AWG and larger.
- K. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- L. Clean conductor surfaces before installing lugs and connectors.
- M. Make splices, taps, and terminations to carry full capacity of conductors with no perceptible temperature rise.
 - 1. Use oxide inhibitor in each splice and tap conductor for aluminum conductors.
 - 2. Verify termination provisions in panels are listed and sized for use with aluminum conductors where applicable.
- N. Use split bolt connectors for copper conductor splices and taps, 8 AWG and larger. Tape uninsulated conductors and connector with electrical tape to 150 percent of insulation rating of conductor.
- O. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.
- P. Home runs may be combined in one conduit when all connections are in accordance with NFPA 70 requirements and the maximum unbalance current in the neutral does not exceed the capacity of the conductor. When circuits serving electronic loads are combined, the neutral shall be sized to accommodate harmonic currents.

- Q. All feeders and subfeeders shall be completely phased out as to sequence and rotation. Phase sequence shall be A-B-C from front to rear, top to bottom, or left to right when facing equipment.

3.04 INTERFACE WITH OTHER PRODUCTS

- A. Identify wire and cable under provisions of Section 260553.
- B. Identify each conductor with its circuit number or other designation indicated on Drawings.

3.05 FIELD QUALITY CONTROL

- A. Perform field inspection and testing under provisions of Division 1.
- B. Inspect wire for physical damage and proper connection.
- C. Measure tightness of bolted connections and compare torque measurements with manufacturer's recommended values. Record torque measurements.
- D. Verify continuity of each branch circuit conductor.
- E. Perform insulation resistance test on wiring No. 6 AWG and larger using instrument which applies voltage of approximately 500 volts to provide direct reading of resistance. Minimum resistance shall be 250,000 ohms. Record test data and include in O&M Manuals.

END OF SECTION

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SECTION 26 05 26.01
GROUNDING AND BONDING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Grounding electrodes and conductors.
- B. Equipment grounding conductors.
- C. Bonding.

1.02 REFERENCES

- A. General provisions specifically applicable to Division 26 Sections, in addition to Division 1 - General Requirements.
- B. ANSI/NFPA 70.

1.03 GROUNDING ELECTRODE SYSTEM

- A. Metal underground water pipe.
- B. Rod electrode.
- C. Metal frame of the building.

1.04 PERFORMANCE REQUIREMENTS

- A. Grounding System Resistance: 5 ohms.

1.05 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. Product Data: Provide data for grounding electrodes and connections.
- C. Test Reports: Indicate overall resistance to ground.
- D. Manufacturer's Instructions: Include instructions for storage, handling, protection, examination, preparation and installation of exothermic connectors.

1.06 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Division 1.
- B. Accurately record actual locations of grounding electrodes and ground rings.

PART 2 PRODUCTS

2.01 ROD ELECTRODE

- A. Manufacturers:
 - 1. Carolina Galvanizing Corp.
 - 2. Blackburn
 - 3. Copperweld
- B. Material: Copper-clad steel.
- C. Diameter: 3/4 inch.
- D. Length: 10 feet.

2.02 MECHANICAL CONNECTORS

- A. Manufacturers:

1. IlSCO
2. O. Z. Gedney
3. Thomas & Betts

B. Material: Bronze.

2.03 WIRE

A. Material: Copper.

1. Wire #10 (AWG) and smaller shall be solid.
2. Wire #8 (AWG) and larger shall be stranded.

B. Grounding Electrode Conductor: Size to meet NFPA 70 requirements.

C. Insulation (Where applicable): Green THWN.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that final backfill and compaction has been completed before driving rod electrodes.

3.02 INSTALLATION

A. Install Products in accordance with manufacturer's instructions.

B. Bond together the metal underground water pipe, metal frame of the building, and rod electrode with an unspliced copper grounding electrode conductor, bare or insulated (as indicated), of the size indicated.

C. Install rod electrodes at locations indicated. Install additional rod electrodes as required to achieve specified resistance to ground.

D. Provide bonding to meet Regulatory Requirements.

E. Equipment Grounding Conductor: Provide separate, insulated conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing.

F. Isolated ground: Provide a separate insulated grounding conductor connected to the grounding terminal of an isolated ground receptacle and insulate from the receptacle mounting means. This grounding conductor may be installed through one or more panelboards without connection to the panelboard grounding terminal so as to terminate in the same building or structure directly at an equipment grounding conductor terminal of the applicable derived system or service.

3.03 EQUIPMENT AND CIRCUITS

A. Conduit Systems:

1. Ground all metallic conduit systems.
2. Conduit provided for mechanical protection and containing only a grounding conductor shall be bonded to that conductor at the entrance and exit from the conduit.

B. Boxes, Cabinets, Enclosures, and Panelboards:

1. Bond the grounding wires to each pullbox, junction box, outlet box, cabinets, and other enclosures through which the ground wires pass.
2. Provide lugs in each box and enclosure for ground wire termination.
3. Provide ground bars in panelboards, bolted to the housing, with sufficient lugs for terminating the ground wires.
4. Isolated ground bars for isolated ground system.

- C. Motors and Starters:
 - 1. Provide lugs in motor terminal box and starter housing for ground wire termination.
 - 2. Make ground wire connections to ground bus in motor starters.
- D. Lighting Fixtures:
 - 1. Shall be grounded.
 - 2. Fixtures connected with flexible conduit shall have a green ground wire included with the power wires from the fixture through the flexible conduit.
- E. Electrical Appliance and Equipment:
 - 1. Fixed electrical appliances and equipment shall have a ground lug installed for termination of the green ground conductor.

3.04 CONDUCTIVE PIPING

- A. Bond all conductive piping systems in the building to the building system ground.

3.05 BUILDING STEEL

- A. Bond structural steel framing system with #3/0 bare copper conductor when structure is not electrically continuous at rate walls and expansion joints.

3.06 FIELD QUALITY CONTROL

- A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.
- B. Use suitable test instrument to measure resistance to ground of system. Perform and document testing in accordance with test instrument manufacturer's recommendations using the fall- of-potential method. Submit report with close out documents.

END OF SECTION

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SECTION 26 05 29.01
SUPPORTING DEVICES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Conduit and equipment supports.
- B. Anchors and fasteners.
- C. Bridle rings.

1.02 REFERENCES

- A. General provisions specifically applicable to Division 26 Sections, in addition to Division 1 - General Requirements.
- B. ANSI/NFPA 70.

PART 2 PRODUCTS

2.01 PRODUCT REQUIREMENTS

- A. Materials and Finishes: Provide adequate corrosion resistance. Steel materials used outside shall be galvanized or cadmium plated. Where materials are cut, welded, or scratched leaving an unprotected area, area shall be painted with cold galvanizing compound. If required, entire item shall be painted to avoid a "touched up" appearance.
- B. Provide materials, sizes, and types of anchors, fasteners and supports to carry the loads of equipment and conduit. Consider weight of wire in conduit when selecting products.
- C. Anchors and Fasteners:
 - 1. Concrete Structural Elements: Use expansion anchors, powder actuated anchors, or preset inserts.
 - 2. Steel Structural Elements: Use beam clamps, spring steel clamps, or steel ramset fasteners.
 - 3. Concrete Surfaces: Use self-drilling anchors or expansion anchors.
 - 4. Hollow Masonry and Gypsum Board Partitions: Use toggle bolts or hollow wall fasteners.
 - 5. Solid Masonry Walls: Use expansion anchors or preset inserts.
 - 6. Sheet Metal: Use sheet metal screws. Do not fasten any materials to sheet metal which the metal does not have the strength to support.
 - 7. Wood: Use wood screws.

2.02 BRIDLE RINGS

- A. 4" steel threaded bridle rings. Caddy #4BRT64 or equal with matching fasteners.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Provide anchors, fasteners, and supports in accordance with NECA "Standard of Installation".

- C. Do not fasten supports to pipes, ducts, mechanical equipment, and conduit.
- D. Obtain permission from Architect/Engineer before using powder-actuated anchors.
- E. Do not drill or cut structural members.
- F. Install surface-mounted cabinets and panelboards with minimum of four anchors.

3.02 BRIDLE RINGS

- A. Provide bridle rings for support of above ceiling voice, intercom, security and television cabling.
- B. Install bridle rings three feet on center mounted approximately 6 inches above finished ceiling in all corridors.
- C. Provide matching support fasteners.

END OF SECTION

SECTION 26 05 33.14

CONDUIT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Metal conduit.
- B. Flexible metal conduit.
- C. Liquidtight flexible metal conduit.
- D. Electrical metallic tubing.
- E. Nonmetal conduit.
- F. Fittings and conduit bodies.

1.02 RELATED SECTIONS

- A. General provisions specifically applicable to Division 26 Sections, in addition to Division 1 - General Requirements.
- B. Section 07841 - Firestopping
- C. Section 260533 - Boxes.
- D. Section 260526 - Grounding and Bonding.
- E. Section 260529- Supporting Devices.
- F. Section 260553 - Electrical Identification.

1.03 REFERENCES

- A. ANSI C80.1
- B. ANSI C80.3
- C. ANSI C80.5
- D. ANSI/NEMA FB 1
- E. ANSI/NFPA 70
- F. NECA "Standard of Installation."
- G. NEMA RN 1
- H. NEMA TC 2
- I. NEMA TC 3

1.04 DESIGN REQUIREMENTS

- A. Conduit Size: ANSI/NFPA 70.

1.05 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. Product Data: Provide for each type conduit.

1.06 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Division 1.
- B. Accurately record actual routing of conduits larger than 2 inches.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect, and handle Products to site under provisions of Division 1.
- B. Accept conduit on site. Inspect for damage.
- C. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

- D. Protect PVC conduit from sunlight.

1.08 PROJECT CONDITIONS

- A. Verify routing and termination locations of conduit prior to rough-in.
- B. Conduit routing is shown on Drawings in approximate locations unless dimensioned. Route as required to complete wiring system.
- C. Conduit shall be concealed in all areas except mechanical rooms.

PART 2 PRODUCTS

2.01 CONDUIT REQUIREMENTS

- A. Minimum Size: 3/4 inch unless otherwise specified.
- B. Underground Installations:
 - 1. Use plastic coated conduit or thickwall nonmetallic conduit.
 - a. Under Slab on Grade: Use plastic coated conduit, or thickwall nonmetallic conduit.
 - b. Minimum Size: 3/4 inch.
 - c. Service lateral and conduit under areas subject to vehicular traffic shall be installed in ductbanks.
 - d. Transition from Underground to Above Grade: Use rigid steel or intermediate metal conduit elbow to turn up to above grade. Coat underground rigid steel or IMC conduit with asphaltum paint.
- C. Wet and Damp Locations: Use rigid steel conduit, intermediate metal conduit, or thickwall nonmetallic conduit.
 - 1. Schedule 80 PVC conduit may be used exposed above 8'-0" in parking deck. Expansion fittings must be used to compensate for thermal expansion to accommodate 100 degree F temperature change.
- D. Dry Locations:
 - 1. Concealed: Use rigid steel conduit, intermediate metal conduit, or electrical metallic tubing.
 - 2. Exposed eight feet or below: Use rigid steel conduit or intermediate metal conduit except that EMT may be used where branch circuits connect to the top of a surface mounted panelboard below eight feet.
 - 3. Exposed above eight feet and not subject to physical damage: Electrical Metallic Tubing.

2.02 METAL CONDUIT

- A. Manufacturers:
 - 1. Allied Tube and Conduit.
 - 2. LTV Corp.
 - 3. Wheatland Tube Co.
- B. Rigid Steel Conduit: ANSI C80.1.
- C. Intermediate Metal Conduit (IMC): Rigid steel.
- D. Fittings and Conduit Bodies: ANSI/NEMA FB 1; threaded type material to match conduit. Split couplings are not acceptable.

2.03 FLEXIBLE METAL CONDUIT

- A. Manufacturers:
 - 1. Alflec Corp.

- 2. Carol Cable Co.
 - 3. Alliance Cable Corp.
 - B. Description: Interlocked steel construction.
 - C. Fittings: ANSI/NEMA FB 1. Connectors; insulated throat type.
- 2.04 LIQUIDTIGHT FLEXIBLE METAL CONDUIT
- A. Manufacturers:
 - 1. Alfex Corp.
 - 2. Carol Cable Co.
 - 3. Alliance Cable Corp.
 - B. Description: Interlocked steel construction with PVC jacket.
 - C. Fittings: ANSI/NEMA FB 1. Connectors; insulated throat type.
- 2.05 ELECTRICAL METALLIC TUBING (EMT)
- A. Manufacturers:
 - 1. Allied Tube and Conduit.
 - 2. LTV Corp.
 - 3. Wheatland Tube Co.
 - B. Description: ANSI C80.3; galvanized tubing.
 - C. Fittings and Conduit Bodies: ANSI/NEMA FB 1; die-cast compression type. Connectors; die-cast insulated throat type.
- 2.06 NONMETALLIC CONDUIT
- A. Manufacturers:
 - 1. Carlon.
 - 2. Cantex Industries
 - 3. LCP Chemicals and Plastics, Inc.
 - B. Description: NEMA TC 2; Schedule 40 PVC.
 - C. Fittings and Conduit Bodies: NEMA TC 3.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install conduit in accordance with NECA "Standard of Installation."
- B. Install nonmetallic conduit in accordance with manufacturer's instructions.
- C. Provide suitable nylon pull string in each empty conduit except sleeves and nipples.
- D. Use suitable plastic slip caps to protect installed conduit against entrance of dirt and moisture.
- E. Ground and bond conduit under provisions of Section 26 05 26.
- F. Identify conduit under provisions of Section 26 05 53.
- G. Tubing shall not be used in concrete or underground.
- H. Utilize liquid tight flexible metal conduit for connection to equipment.
- I. Utilize flexible metal conduit for connection of light fixtures.
- J. Underground conduits shall have routing accurately recorded on as-built drawings with location dimensions indicated from at least two permanent above ground structures. Depth from finished grade shall also be recorded.
- K. Underground conduit larger than 1" shall be encased in 3" of concrete on all sides when not routed directly below building slab.

- L. Light fixtures connections may be made with 1/2" flexible metal conduit.

3.02 CONDUIT SUPPORTS

- A. Arrange supports to prevent misalignment during wiring installation.
- B. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
- C. Group related conduits; support using conduit rack. Construct rack using steel channel.
- D. Fasten conduit supports to building structure and surfaces under provisions of Section 26 05 29.
- E. Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary supports.
- F. Do not attach conduit to ceiling support wires.
- G. Arrange conduit to maintain headroom and present neat appearance.
- H. Conduit Supports:
 - 1. Rigid Steel, IMC, and EMT: Conduit or tubing shall be fastened in place on not more than 6 feet on center for up through one inch and 8 feet on center for sizes larger than one inch and shall be fastened within 3 feet of connection to outlet boxes, junction boxes, cabinets, or fittings.
 - 2. Nonmetallic Conduit: Fasten on not more than 3 feet on center for up through one inch, 5 feet on center for 1 1/4" through 2", and 6 feet on center for sizes larger than 2 inches. Fasten within 2 feet of connection to outlet boxes, junction boxes, cabinets, or fittings.
 - 3. Flexible Conduit: Fasten not more than 4 1/2 feet on center and within 12 inches of connections to outlet boxes, junction boxes, cabinets, or fittings.

3.03 ROUTING

- A. Route exposed conduit parallel and perpendicular to walls.
- B. Route conduit installed above accessible ceilings parallel and perpendicular to walls.
- C. Route conduit under slab on grade from point-to-point.
- D. Maintain adequate clearance between conduit and piping.
- E. Maintain 12 inch clearance between conduit and surfaces with temperatures exceeding 104 degrees F.
- F. Conduit wall penetrations shall be perpendicular to the plane of the wall.
- G. Install conduit to preserve fire resistance rating of partitions, floors, and ceilings.
- H. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket.

3.04 CONDUIT FITTINGS

- A. Cut conduit square using saw or pipecutter; de-burr cut ends.
- B. Bring conduit to shoulder of fittings; fasten securely.
- C. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean with approved product before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum.
- D. Use conduit hubs or sealing locknuts to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.
- E. Install no more than equivalent of four 90-degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use factory elbows for bends in metal conduit larger than 2-inch size.

- F. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.
- G. Provide suitable fittings to accommodate expansion and deflection where conduit crosses, control and expansion joints.

3.05 SURFACE RACEWAY

- A. Mount surface raceway at 36" to center unless otherwise noted on drawings.
- B. Power receptacles shall be installed and circuited as indicated on drawing.
- C. Communications raceway shall be wired as shown, with communication cabling as indicated on drawings.

END OF SECTION

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SECTION 26 05 33.17

BOXES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wall and ceiling outlet boxes.
- B. Pull and junction boxes.

1.02 RELATED SECTIONS

- A. General provisions specifically applicable to Division 26 Sections, in addition to Division 1 - General Requirements.
- B. Section 26 07 26 - Wiring Devices: Mounting heights of wiring device outlets.
- C. Section 26 05 29 - Supporting Devices.

1.03 REFERENCES

- A. ANSI/NEMA FB 1
- B. ANSI/NEMA OS 1
- C. ANSI/NEMA OS 2
- D. ANSI/NFPA 70
- E. NEMA 250

1.04 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. Product Data: Provide for each type of box.
- C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by Product testing agencies. Include instructions for preparation and installation of product.

1.05 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Division 1.
- B. Accurately record actual locations of all boxes and hand holes. Record mounting heights of outlet, pull, and junction boxes.

1.06 PROJECT CONDITIONS

- A. Verify field measurements are as shown on Drawings.
- B. Verify locations of floor boxes and outlets with other Contractors, Architect, and Owner's Representative prior to rough-in.
- C. Electrical boxes are shown on Drawings in approximate locations unless dimensioned. Install at location required for box to serve intended purpose.

PART 2 PRODUCTS

2.01 OUTLET BOXES

- A. Sheet Metal Outlet Boxes: ANSI/NEMA OS 1, galvanized steel.
 - 1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 1/2 inch male fixture studs where required.

- B. Nonmetallic Outlet Boxes: ANSI/NEMA OS 2.
- C. Cast Boxes: NEMA FB 1, Type FD, cast ferrous alloy. Provide threaded hubs.
- D. Minimum outlet box size: 4" square x 1-1/2" deep.

2.02 PULL AND JUNCTION BOXES

- A. Sheet Metal Boxes: NEMA OS 1, galvanized steel.
- B. Surface-Mounted Cast Metal Box: NEMA 250, Type 4; flat-flanged, surface-mounted junction box.
 - 1. Material: Galvanized cast iron.
 - 2. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover screws.
- C. Size: Minimum size as required by NFPA 70 or larger, as indicated.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with the NFPA 70 and other regulatory requirements.
- B. Install electrical boxes to maintain headroom and to present neat mechanical appearance.
- C. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
- D. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire. The Electrical Contractor will furnish panels and install in accordance with Section 08305.
- E. Align adjacent wall-mounted outlet boxes for switches, thermostats, and similar devices with each other, plumb and level.
- F. Use flush mounting outlet boxes in finished areas.
- G. Do not install flush mounting boxes back-to-back in walls; provide minimum 6 inch separation. Provide minimum 24 inches separation in acoustic, fire, and smoke rated walls.
- H. Use adjustable steel channel fasteners for hung ceiling outlet box.
- I. Do not fasten boxes to ceiling support wires.
- J. Support boxes independently of conduit, except cast box that is connected to two rigid metal conduits both supported within 12 inches of box.
- K. Use gang box where more than one device is mounted together. Do not use sectional box.
- L. Use gang box with plaster ring for single flush outlets.
- M. Use cast outlet box where exposed below 8'-0", in exterior locations and wet locations.

3.02 INTERFACE WITH OTHER PRODUCTS

- A. Locate flush mounting box in masonry walls as they are erected and to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening. Finished plate shall cover the entire cut opening.
- B. Coordinate mounting heights and locations of outlets mounted above counters, benches and backsplashes.
- C. Position outlet boxes to locate luminaires as shown on reflected ceiling plan.

3.03 ADJUSTING

- A. Adjust flush-mounting outlets to make front flush with finished wall or floor material.
- B. Install knockout closure in unused box opening.
- C. The Architect shall have the right to make slight changes in the position of outlets if the contractor is notified prior to rough-in of outlet.

END OF SECTION

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SECTION 26 05 53.01
ELECTRICAL IDENTIFICATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Nameplates.
- B. Wire color coding.
- C. Underground warning tape.

1.02 RELATED SECTIONS

- A. General provisions specifically applicable to Division 26 Sections, in addition to Division 1 - General Requirements.
- B. Section 09900 - Painting.

1.03 REFERENCES

- A. ANSI/NFPA 70.

PART 2 PRODUCTS

2.01 NAMEPLATES

- A. Nameplates: Engraved three-layer laminated plastic, white letters on black background. Edges shall be chamfered. Minimum size shall be 1 inch high by 2.5 inches wide.
- B. Locations: Major items of electrical equipment including switchboards, motor control centers, panelboards, individual starters, safety switches, transformers and individual components of switchboards and motor control centers shall be marked with a nameplate to identify the equipment and the location of the supply side overcurrent protection device.
- C. Letter Size:
 - 1. Use 1/4 inch letters for identifying individual loads.
 - 2. Use 1/2 inch letters for identifying equipment and grouped loads.

2.02 WIRE MARKERS

- A. Manufacturers
 - 1. Seton Name Plate Co.
 - 2. Thomas & Betts
 - 3. 3M Electrical Products Div.
- B. Description: Tape type wire markers.
- C. Locations: Each conductor at panelboard gutters, pull boxes, junction boxes and each load connection. Provide markers on each side of bundled conductors within an enclosure.
- D. Legend:
 - 1. Power and Lighting Circuits: Branch circuit or feeder number indicated on drawings.
 - 2. Control Circuits: Control wire number indicated on schematic and interconnection diagrams furnished with equipment.

2.03 UNDERGROUND WARNING TAPE

- A. Manufacturers:
 - 1. Seton Name Plate Co.
 - 2. Thomas & Betts
 - 3. 3M Electrical Products Div.
- B. Description: 4 inch wide plastic tape, magnetic detectable type, colored red with suitable warning legend describing buried electrical lines or orange describing buried telephone lines.

2.04 PLACARDS

- A. Placards: Engraved three-layered laminated plastic, white letter on black background.

2.05 ARC FLASH HAZARD LABELING

- A. All electrical equipment including but not limited to switchboards, panelboards, industrial control panels, meter socket enclosures, and motor control centers, etc, likely to require examination, adjusting, servicing, or maintenance while energized shall be field marked to warn qualified persons of potential arc flash hazards. The label shall be located so as to be clearly visible to qualified persons before examination, adjustment, servicing, or maintenance of the equipment. Labels shall be similar to the following: "WARNING: ARC FLASH HAZARD. APPROPRIATE PPE REQUIRED BEYOND THIS POINT. FAILURE TO COMPLY CAN RESULT IN INJURY OR DEATH. REFER TO NFPA 70."

2.06 IDENTIFICATION LABELS

- A. Manufacturers:
 - 1. W.H. Brady Company (Style A)
 - 2. Thomas & Betts (Style A)
- B. Laminated Tape
 - 1. Non-conductive
 - 2. Waterproof
 - 3. Capable of withstanding continuous temperature of 235°F and intermittent temperatures of 300°F.
 - 4. Overcoating for protection against oil, solvents, chemicals, moisture, abrasion and dirt.
- C. Heavy, thermo-resistant industrial grade adhesive, for adhesion of label to any surface without curling, peeling or falling off.
- D. Machine printed.

PART 3 EXECUTION

3.01 PREPARATION

- A. Degrease and clean surfaces to receive nameplates and labels.

3.02 APPLICATION

- A. Install nameplate parallel to equipment lines.
- B. Secure nameplate to equipment front using screws or rivets.

- C. Secure nameplate to inside surface of door on panelboard that is recessed in finished locations.
- D. Identify underground conduits using underground warning tape. Install one tape per trench at 6 inches below finished grade.

3.03 WIRE COLOR CODING

- A. Color coding is required for all service, feeder, branch, control, and signalling circuit conductors. Color shall be green for grounding conductors. The color of the ungrounded and neutral conductors shall be as follows:

120/240 volt, single phase system	
Line 1	Black
Line 2	Red
Neutral	White
208Y/120 volt, three phase system	
Phase A	Black
Phase B	Red
Phase C	Blue
Neutral	White
480Y/277 volt, three phase system	
Phase A	Brown
Phase B	Orange
Phase C	Yellow
Neutral	Gray

- B. Conductors #8 (AWG) and smaller shall be factory color coded.
- C. Conductors #6 (AWG) and larger may be identified with plastic tape of the proper color.

3.04 BOX IDENTIFICATION

- A. All cover plates of junction boxes for power wiring shall be legibly marked with permanent marker to clearly indicate panelboard origin and circuit number of all phase conductors enclosed.
- B. All cover plates of junction boxes for fire alarm system wiring shall be painted red and shall be legibly marked with permanent marker to clearly indicate zone or signal circuit to which enclosed conductors are connected.

3.05 PAINTING

- A. Painting for identification of products installed under the Electrical Contract shall be provided by the Electrical Contractor under provisions of Section 09900. Touch up painting required on factory finished equipment shall be by Contractor who furnishes the equipment.

3.06 LIGHT SWITCHES AND RECEPTACLE CIRCUIT IDENTIFICATION

- A. Provide identification labels on faceplates to indicate panelboard and circuit number from which they are served. Labels shall have black letters on clear tape.

END OF SECTION

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SECTION 26 28 16.17
ENCLOSED SWITCHES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fusible switches.
- B. Nonfusible switches.
- C. Fuses.

1.02 RELATED SECTIONS

- A. General provisions specifically applicable to Division 26 Sections, in addition to Division 1 - General Requirements.
- B. Section 260553 - Electrical Identification.

1.03 REFERENCES

- A. NEMA KS 1.
- B. NFPA 70.
- C. UL 198E.

1.04 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. Product Data: Provide switch ratings and enclosure dimensions.
- C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of Product.

1.05 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Division 1.
- B. Record actual switch locations; indicate actual ratings.

1.06 EXTRA MATERIALS

- A. Furnish under provisions of Division 1.
- B. Provide three of each size and type fuse installed.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Schneider Electric.
- B. Siemens Energy & Automation Inc.
- C. Cutler-Hammer.
- D. GE/ABB.

2.02 ENCLOSED SWITCHES

- A. Fusible Switch Assemblies: NEMA KS 1, Type HD load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position except by operating a permissive release device. Handle

- lockable in OFF position. Fuse clips: Designed to accommodate Class R fuses.
- B. Nonfusible Switch Assemblies: NEMA KS 1, Type HD load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position except by operating a permissive release device. Handle lockable in OFF position.
 - C. Enclosures: NEMA KS 1.
 - 1. Interior Dry Locations: Type 1.
 - 2. Exterior Locations: Type 3R or 4X, as indicated.

2.03 FUSES

- A. Manufacturers:
 - 1. Bussmann
 - 2. Gould Shawmut
 - 3. Littlefuse
- B. Description: Current limiting, one-time fuse, UL 198E, Class RK 1, 250 volt or 600 volt as applicable. Use time delay fuses for motor loads.
- C. Interrupting Rating: 200,000 rms amperes.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install disconnect switches where indicated.
- B. Install fuses in fusible disconnect switches.
- C. Provide ½" stand-off mounting hardware for all exterior disconnects mounted on concrete or masonry surfaces.
- D. Provide adhesive label on inside door of each switch indicating UL fuse class and size for replacement.
- E. Provide engraved plastic nameplates under provisions of Section 26 05 53.
- F. Mounting Height: 5 ft. to operating handle unless otherwise indicated.

END OF SECTION



ENGINEERING AND INFRASTRUCTURE DEPARTMENT

**MEMORANDUM FOR THE AGENDA OF THE MAY 9, 2024
AGENDA SESSION**

TO: BOARD OF COUNTY COMMISSIONERS

**FROM: JERMAINE WALKER, DIRECTOR OF ENGINEERING AND
INFRASTRUCTURE**

DATE: 5/3/2024

SUBJECT: LS3P CONTRACT FOR DESIGN OF HOMELESS SUPPORT CENTER

Requested by: CLARENCE GRIER, COUNTY MANAGER

**Presenter(s): JERMAINE WALKER, DIRECTOR OF ENGINEERING AND
INFRASTRUCTURE**

BACKGROUND

On July 10, 2023, Cumberland County advertised a Request for Qualifications for Professional Services for Programming, Design Services and Construction Administration for the Cumberland County Homeless Support Center.

On September 18, 2024, the Board of Commissioners approved the selection of LS3P as the preferred choice to provide Professional Services for Programming, Design Services and Construction Administration for the Cumberland County Homeless Support Center.

The Board of Commissioners also granted staff permission to enter contract negotiations for pre-construction services, which Staff was to present to the Board for approval once the contract passes financial audit and legal sufficiency.

The attached base contract covers the architect's responsibilities through all phases of design, material submittals and construction. It also highlights the Phase I programming activities from kickoff through conceptual design.

This contract has undergone finance audit and been deemed legally sufficient.

RECOMMENDATION / PROPOSED ACTION

Staff recommends the Board of Commissioners move the following item forward to the May 20, 2024 Regular Meeting as a Consent Agenda item:

Approval of contract with LS3P to provide Professional Services for Programming, Design Services and Construction Administration for the Cumberland County Homeless Support Center.

ATTACHMENTS:

Description	Type
Architect Contract	Backup Material

AIA® Document B101® – 2017

Standard Form of Agreement Between Owner and Architect

AGREEMENT made as of the day of in the year
(In words, indicate day, month and year.)

BETWEEN the Architect's client identified as the Owner:
(Name, legal status, address and other information)

Cumberland County
Fayetteville, NC

and the Architect:
(Name, legal status, address and other information)

LS3P ASSOCIATES LTD.
101 North Third Street
Suite 500
Wilmington, NC 28401

for the following Project:
(Name, location and detailed description)

Cumberland County Homeless Support Center

LS3P Proj. No.: 7752-231656

The Owner and Architect agree as follows.

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

CONTRACT # 2024505

Init.

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User Notes:

(1397455212)

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13	SCOPE OF THE AGREEMENT

ARTICLE 1 INITIAL INFORMATION

§ 1.1 This Agreement is based on the Initial Information set forth in this Section 1.1.

(For each item in this section, insert the information or a statement such as "not applicable" or "unknown at time of execution.")

§ 1.1.1 The Owner's program for the Project:

(Insert the Owner's program, identify documentation that establishes the Owner's program, or state the manner in which the program will be developed.)

Not applicable.

§ 1.1.2 The Project's physical characteristics:

(Identify or describe pertinent information about the Project's physical characteristics, such as size; location; dimensions; geotechnical reports; site boundaries; topographic surveys; traffic and utility studies; availability of public and private utilities and services; legal description of the site, etc.)

See attached proposal

§ 1.1.3 The Owner's budget for the Cost of the Work, as defined in Section 6.1:

(Provide total and, if known, a line item breakdown.)

To be determined

§ 1.1.4 The Owner's anticipated design and construction milestone dates: See the attached Proposal for all milestone dates.

.1 Design phase milestone dates, if any:

Init.

.2 Construction commencement date:

.3 Substantial Completion date or dates:

.4 Other milestone dates:

§ 1.1.5 The Owner intends the following procurement and delivery method for the Project:
(Identify method such as competitive bid or negotiated contract, as well as any requirements for accelerated or fast-track design and construction, multiple bid packages, or phased construction.)

To be determined

§ 1.1.6 The Owner's anticipated Sustainable Objective for the Project:
(Identify and describe the Owner's Sustainable Objective for the Project, if any.)

To be determined

§ 1.1.6.1 If the Owner identifies a Sustainable Objective, the Owner and Architect shall complete and incorporate AIA Document E204™–2017, Sustainable Projects Exhibit, into this Agreement to define the terms, conditions and services related to the Owner's Sustainable Objective. If E204–2017 is incorporated into this agreement, the Owner and Architect shall incorporate the completed E204–2017 into the agreements with the consultants and contractors performing services or Work in any way associated with the Sustainable Objective.

§ 1.1.6.2 The Architect cannot and does not warrant or guarantee LEED certification.

§ 1.1.7 The Owner identifies the following representative in accordance with Section 5.3. The Owner's Representative is the only person authorized to act on behalf of the Owner and to make changes to the scope of work and Services under this Agreement. Any change to the Owner's Representative shall be made in writing and sent to the Architect:
(List name, address, and other contact information.)

- .1 Name: Jermaine Walker
- .2 Address: Cumberland County Government
- .3 Telephone: (910)321-6602, cell (910)322-0043
- .4 Fax:
- .5 Email: jwalker@cumberlandcountync.gov

§ 1.1.7.1 The Owner identifies the following financial representatives:

Owner's Finance Director

- .1 Name: To be determined
- .2 Address:
- .3 Telephone No.:
- .4 Fax No.:
- .5 Email:

Owner's Accounts Payable Contact

- .6 Name: To be determined
- .7 Address:
- .8 Telephone No.:
- .9 Fax No.:
- .10 Email:

§ 1.1.8 The persons or entities, in addition to the Owner's representative, who are required to review the Architect's submittals to the Owner are as follows:
(List name, address, and other contact information.)

None

§ 1.1.9 The Owner shall retain the following consultants and contractors:
(List name, legal status, address, and other contact information.)

.1 Geotechnical Engineer:

Froehling & Robertson, Inc.
327 E. Jenkins St.
Fayetteville, NC 28306

.2 Civil Engineer:

MKR (Moorman, Kizer & Reitzel, Inc.)
115 Broadfoot Ave.
Unit 1
Fayetteville, NC 28305

.3 Other, if any:

(List any other consultants and contractors retained by the Owner.)

To be determined

§ 1.1.10 The Architect identifies the following representative in accordance with Section 2.3. Any change to the Architect's Representative shall be made in writing and sent to the Owner:
(List name, address, and other contact information.)

- .1 Name: Charles Boney
- .2 Address: 101 N. Third Street, Suite 500, Wilmington, NC 28401
- .3 Telephone: (910)520-1374 (cell)
- .4 Fax:
- .5 Email: charlesboney@ls3p.com

§ 1.1.11 The Architect shall retain the consultants identified in Sections 1.1.11.1 and 1.1.11.2:
(List name, legal status, address, and other contact information.)

§ 1.1.11.1 Consultants retained under Basic Services:

.1 Structural Engineer:

Lynch Mykins

.2 Mechanical Engineer:

Newcomb & Boyd

.3 Electrical Engineer:

Newcomb & Boyd

.4 Fire Protection Engineer:

Hammond & Associates

.5 Cost Estimating:

MBP Cost Estimating

.6 Civil Engineer

McAdams Engineering

§ 1.1.11.2 Consultants retained under Supplemental Services:

Rendering consultant to be determined

§ 1.1.12 Other Initial Information on which the Agreement is based:

None

§ 1.2 The Owner and Architect may rely on the Initial Information. Both parties, however, recognize that the Initial Information may materially change and, in that event, the Owner and the Architect shall appropriately adjust the Architect's services, schedule for the Architect's services, and the Architect's compensation. The Owner shall adjust the Owner's budget for the Cost of the Work and the Owner's anticipated design and construction milestones, as necessary, to accommodate material changes in the Initial Information.

§ 1.3 The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.3.1 Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 ARCHITECT'S RESPONSIBILITIES

§ 2.1 The Architect shall provide professional services as set forth in this Agreement. The Architect represents that it is properly licensed in the jurisdiction where the Project is located to provide the services required by this Agreement, or shall cause such services to be performed by appropriately licensed design professionals.

§ 2.2 The Architect shall perform its services consistent with the professional skill and care ordinarily provided by architects practicing in the same or similar locality under the same or similar circumstances. The Architect shall perform its services as expeditiously as is consistent with such professional skill and care and the orderly progress of the Project.

§ 2.3 The Architect shall identify a representative authorized to act on behalf of the Architect with respect to the Project.

§ 2.4 Except with the Owner's knowledge and consent, the Architect shall not engage in any activity, or accept any employment, interest or contribution that would reasonably appear to compromise the Architect's professional judgment with respect to this Project.

§ 2.5 The Architect shall maintain the following insurance until termination of this Agreement. If any of the requirements set forth below are in addition to the types and limits the Architect normally maintains, the Owner shall pay the Architect as set forth in Section 11.9. See Architect's letter regarding insurance (Exhibit 2)

§ 2.5.1 Commercial General Liability with policy limits of not less than ONE MILLION and NO/100 DOLLARS (\$ 1,000,000.00) for each occurrence / personal & advertising injury, TWO MILLION and NO/100 DOLLARS (\$ 2,000,000.00) general aggregate / products – completed operations aggregate, and TEN THOUSAND and NO/100 DOLLARS (\$10,000.00) medical expenses.

§ 2.5.2 Automobile Liability covering hired and non-owned vehicles used, by the Architect with policy limits of not less than ONE MILLION and NO/100 DOLLARS (\$ 1,000,000.00) combined single limit for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles, along with any other statutorily required automobile coverage.

§ 2.5.3 The Architect may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided such primary and excess or umbrella liability insurance policies result in the same or greater coverage as the coverages required under Sections 2.5.1 and 2.5.2, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ 2.5.4 Workers' Compensation at statutory limits.

§ 2.5.5 Employers' Liability with policy limits not less than ONE MILLION and NO/100 DOLLARS (\$ 1,000,000.00) bodily injury by accident each accident, ONE MILLION and NO/100 DOLLARS (\$ 1,000,000.00) bodily injury by disease each employee, and ONE MILLION and NO/100 DOLLARS (\$ 1,000,000.00) bodily injury by disease policy limit.

§ 2.5.6 Professional Liability covering negligent acts, errors and omissions in the performance of professional services with policy limits of not less than ONE MILLION and NO/100 DOLLARS (\$ 1,000,000.00) per claim and ONE MILLION and NO/100 DOLLARS (\$ 1,000,000.00) in the aggregate.

§ 2.5.7 **Additional Insured Obligations.** To the fullest extent permitted by law, the Architect shall cause the primary and excess or umbrella policies for Commercial General Liability and Automobile Liability to include the Owner as an additional insured for claims caused in whole or in part by the Architect's negligent acts or omissions. The additional insured coverage shall be primary and non-contributory to any of the Owner's insurance policies and shall apply to both ongoing and completed operations.

§ 2.5.8 The Architect shall provide certificates of insurance to the Owner that evidence compliance with the requirements in this Section 2.5.

ARTICLE 3 SCOPE OF ARCHITECT'S BASIC SERVICES

§ 3.1 The Architect's Basic Services consist of those described in this Article 3 and Exhibit A (if any) and include usual and customary structural, mechanical, and electrical engineering services. Services not set forth in this Article 3 are Supplemental or Additional Services.

§ 3.1.1 The Architect shall manage the Architect's services, research applicable design criteria, attend Project meetings, communicate with members of the Project team, and report progress to the Owner.

§ 3.1.2 The Architect shall coordinate its services with those services provided by the Owner and the Owner's consultants. The Architect shall be entitled to rely on, and shall not be responsible for, the accuracy, completeness, and timeliness of, services and information furnished by the Owner and the Owner's consultants. The Architect shall provide prompt written notice to the Owner if the Architect becomes aware of any error, omission, or inconsistency in such services or information.

§ 3.1.3 As soon as practicable after the date of this Agreement, the Architect shall submit for the Owner's approval a schedule for the performance of the Architect's services. The schedule initially shall include anticipated dates for the commencement of construction and for Substantial Completion of the Work as set forth in the Initial Information. The schedule shall include allowances for periods of time required for the Owner's review, for the performance of the Owner's consultants, and for approval of submissions by authorities having jurisdiction over the Project. Once approved by the Owner, time limits established by the schedule shall not, except for reasonable cause, be exceeded by the Architect or Owner. With the Owner's approval, the Architect shall adjust the schedule, if necessary, as the Project proceeds until the commencement of construction. The Owner agrees that the Architect is not in control of the various authorities having jurisdiction ("AHJ's") over the Project or their respective review and approval schedules. The Architect will assist the Owner and the Contractor in applying for the necessary approvals by the AHJ's but ultimate responsibility for obtaining such approvals remains with the Owner.

§ 3.1.4 The Architect shall not be responsible for an Owner's directive or substitution, or for the Owner's acceptance of non-conforming Work, made or given without the Architect's written approval.

§ 3.1.5 The Architect shall contact governmental authorities required to approve the Construction Documents and entities providing utility services to the Project. The Architect shall respond to applicable design requirements imposed by those authorities and entities.

§ 3.1.6 The Architect shall assist the Owner in connection with the Owner's responsibility for filing documents required for the approval of governmental authorities having jurisdiction over the Project.

§ 3.1.7 The Architect will use Newforma Project Center as its project information management software platform. Newforma is cloud-based and the Architect will issue a username and password to allow the Owner and Contractor to view submittals, RFI's and Construction Documents.

§ 3.2 Schematic Design Phase Services

§ 3.2.1 The Architect shall review the program and other information furnished by the Owner, and shall review laws, codes, and regulations applicable to the Architect's services.

§ 3.2.2 The Architect shall prepare a preliminary evaluation of the Owner's program, schedule, budget for the Cost of the Work, Project site, the proposed procurement and delivery method, and other Initial Information, each in terms of the other, to ascertain the requirements of the Project. The Architect shall notify the Owner of (1) any inconsistencies discovered in the information, and (2) other information or consulting services that may be reasonably needed for the Project.

§ 3.2.3 The Architect shall present its preliminary evaluation to the Owner and shall discuss with the Owner alternative approaches to design and construction of the Project. The Architect shall reach an understanding with the Owner regarding the requirements of the Project.

§ 3.2.4 Based on the Project requirements agreed upon with the Owner, the Architect shall prepare and present, for the Owner's approval, a preliminary design illustrating the scale and relationship of the Project components.

§ 3.2.5 Based on the Owner's approval of the preliminary design, the Architect shall prepare Schematic Design Documents for the Owner's approval. The Schematic Design Documents shall consist of drawings and other documents including a site plan, if appropriate, and preliminary building plans, sections and elevations; and may include some combination of study models, perspective sketches, or digital representations. Preliminary selections of major building systems and construction materials shall be noted on the drawings or described in writing.

§ 3.2.5.1 The Architect shall consider sustainable design alternatives, such as material choices and building orientation, together with other considerations based on program and aesthetics, in developing a design that is consistent with the Owner's program, schedule and budget for the Cost of the Work. The Owner may obtain more advanced sustainable design services as a Supplemental Service under Section 4.1.1.

§ 3.2.5.2 The Architect shall consider the value of alternative materials, building systems and equipment, together with other considerations based on program and aesthetics, in developing a design for the Project that is consistent with the Owner's program, schedule, and budget for the Cost of the Work.

§ 3.2.6 The Architect shall submit to the Owner an estimate of the Cost of the Work prepared in accordance with Section 6.3.

§ 3.2.7 The Architect shall submit the Schematic Design Documents to the Owner, and request the Owner's approval.

§ 3.3 Design Development Phase Services

§ 3.3.1 Based on the Owner's approval of the Schematic Design Documents, and on the Owner's authorization of any adjustments in the Project requirements and the budget for the Cost of the Work, the Architect shall prepare Design Development Documents for the Owner's approval. The Design Development Documents shall illustrate and describe the development of the approved Schematic Design Documents and shall consist of drawings and other documents including plans, sections, elevations, typical construction details, and diagrammatic layouts of building systems to fix and describe the size and character of the Project as to architectural, structural, mechanical and electrical systems, and other appropriate elements. The Design Development Documents shall also include outline specifications that identify major materials and systems and establish, in general, their quality levels.

§ 3.3.2 The Architect shall update the estimate of the Cost of the Work prepared in accordance with Section 6.3.

§ 3.3.3 The Architect shall submit the Design Development Documents to the Owner, advise the Owner of any adjustments to the estimate of the Cost of the Work, and request the Owner's approval.

§ 3.4 Construction Documents Phase Services

§ 3.4.1 Based on the Owner's approval of the Design Development Documents, and on the Owner's authorization of any adjustments in the Project requirements and the budget for the Cost of the Work, the Architect shall prepare Construction Documents for the Owner's approval. The Construction Documents shall illustrate and describe the further development of the approved Design Development Documents and shall consist of Drawings and Specifications setting forth in detail the quality levels and performance criteria of materials and systems and other requirements for the construction of the Work. The Owner and Architect acknowledge that, in order to perform the Work, the Contractor will provide additional information, including Shop Drawings, Product Data, Samples and other similar submittals, which the Architect shall review in accordance with Section 3.6.4.

§ 3.4.2 The Architect shall incorporate the design requirements of governmental authorities having jurisdiction over the Project into the Construction Documents.

§ 3.4.3 During the development of the Construction Documents, the Architect shall assist the Owner in the development and preparation of (1) procurement information that describes the time, place, and conditions of bidding, including bidding or proposal forms; (2) the form of agreement between the Owner and Contractor; and (3) the Conditions of the Contract for Construction (General, Supplementary and other Conditions). The Architect shall also

compile a project manual that includes the Conditions of the Contract for Construction and Specifications, and may include bidding requirements and sample forms.

§ 3.4.4 The Architect shall update the estimate for the Cost of the Work prepared in accordance with Section 6.3.

§ 3.4.5 The Architect shall submit the Construction Documents to the Owner, advise the Owner of any adjustments to the estimate of the Cost of the Work, take any action required under Section 6.5, and request the Owner's approval.

§ 3.5 Procurement Phase Services

§ 3.5.1 General

The Architect shall assist the Owner in establishing a list of prospective contractors. Following the Owner's approval of the Construction Documents, the Architect shall assist the Owner in (1) obtaining either competitive bids or negotiated proposals; (2) confirming responsiveness of bids or proposals; (3) determining the successful bid or proposal, if any; and, (4) awarding and preparing contracts for construction.

§ 3.5.2 Competitive Bidding

§ 3.5.2.1 Bidding Documents shall consist of bidding requirements and proposed Contract Documents.

§ 3.5.2.2 The Architect shall assist the Owner in bidding the Project by:

- .1 facilitating the distribution of Bidding Documents to prospective bidders;
- .2 organizing and conducting a pre-bid conference for prospective bidders;
- .3 preparing responses to questions from prospective bidders and providing clarifications and interpretations of the Bidding Documents to the prospective bidders in the form of addenda; and,
- .4 organizing and conducting the opening of the bids, and subsequently documenting and distributing the bidding results, as directed by the Owner.

§ 3.5.2.3 If the Bidding Documents permit substitutions, upon the Owner's written authorization, the Architect shall, as an Additional Service, consider requests for substitutions and prepare and distribute addenda identifying approved substitutions to all prospective bidders.

§ 3.5.3 Negotiated Proposals

§ 3.5.3.1 Proposal Documents shall consist of proposal requirements and proposed Contract Documents.

§ 3.5.3.2 The Architect shall assist the Owner in obtaining proposals by:

- .1 facilitating the distribution of Proposal Documents for distribution to prospective contractors and requesting their return upon completion of the negotiation process;
- .2 organizing and participating in selection interviews with prospective contractors;
- .3 preparing responses to questions from prospective contractors and providing clarifications and interpretations of the Proposal Documents to the prospective contractors in the form of addenda; and,
- .4 participating in negotiations with prospective contractors, and subsequently preparing a summary report of the negotiation results, as directed by the Owner.

§ 3.5.3.3 If the Proposal Documents permit substitutions, upon the Owner's written authorization, the Architect shall, as an Additional Service, consider requests for substitutions and prepare and distribute addenda identifying approved substitutions to all prospective contractors.

§ 3.6 Construction Phase Services

§ 3.6.1 General

§ 3.6.1.1 The Architect shall provide administration of the Contract between the Owner and the Contractor as set forth below (Sections 3.6.1 – 3.6.6, Basic Construction Phase Services) and in AIA Document A201™-2017, General Conditions of the Contract for Construction. If the Owner and Contractor modify AIA Document A201-2017, those modifications shall not affect the Architect's services under this Agreement unless the Owner and the Architect amend this Agreement.

§ 3.6.1.2 The Architect shall advise and consult with the Owner during the Construction Phase Services. The Architect shall have authority to act on behalf of the Owner only to the extent provided in this Agreement. The Architect shall

not have control over, charge of, or responsibility for the construction means, methods, techniques, schedules, sequences or procedures, or for safety precautions and programs in connection with the Work, nor shall the Architect be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect shall be responsible for the Architect's negligent acts or omissions, but shall not have control over or charge of, and shall not be responsible for, acts or omissions of the Contractor or of any other persons or entities performing portions of the Work.

§ 3.6.1.3 Subject to Section 4.2 and except as provided in Section 3.6.6.5, the Architect's responsibility to provide Construction Phase Services commences with the award of the Contract for Construction and terminates on the date the Architect issues the final Certificate for Payment or sixty (60) days following the original date of Substantial Completion, whichever occurs first.

§ 3.6.2 Evaluations of the Work

§ 3.6.2.1 The Architect shall visit the site at intervals appropriate to the stage of construction (for this project that interval shall be two (2) visits per month), or as otherwise required in Section 4.2.3, to become generally familiar with the progress and quality of the portion of the Work completed at the time of the visits, and to determine, in general, if the Work observed during that visit is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect shall not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. On the basis of the site visits, the Architect shall keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work.

§ 3.6.2.2 The Architect has the authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect shall have the authority to require inspection or testing of the Work in accordance with the provisions of the Contract Documents, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 3.6.2.3 The Architect shall interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests shall be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 3.6.2.4 Interpretations and decisions of the Architect shall be consistent with the intent of, and reasonably inferable from, the Contract Documents and shall be in writing or in the form of drawings. When making such interpretations and decisions, the Architect shall endeavor to secure faithful performance by both Owner and Contractor, shall not show partiality to either, and shall not be liable for results of interpretations or decisions rendered in good faith. The Architect's decisions on matters relating to aesthetic effect shall be final if consistent with the intent expressed in the Contract Documents.

§ 3.6.2.5 Unless the Owner and Contractor designate another person to serve as an Initial Decision Maker, as that term is defined in AIA Document A201-2017, the Architect shall render initial decisions on Claims between the Owner and Contractor as provided in the Contract Documents.

§ 3.6.3 Certificates for Payment to Contractor

§ 3.6.3.1 The Architect shall review and certify the amounts due the Contractor and shall issue certificates in such amounts. The Architect's certification for payment shall constitute a representation to the Owner, based on the Architect's evaluation of the Work as provided in Section 3.6.2 and on the data comprising the Contractor's Application for Payment, that, to the best of the Architect's knowledge, information and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to (1) an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, (2) results of subsequent tests and inspections, (3) correction of minor deviations from the Contract Documents prior to completion, and (4) specific qualifications expressed by the Architect.

§ 3.6.3.2 The issuance of a Certificate for Payment shall not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) ascertained how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 3.6.3.3 The Architect shall maintain a record of the Applications and Certificates for Payment.

§ 3.6.4 Submittals

§ 3.6.4.1 The Architect shall review the Contractor's submittal schedule and shall not unreasonably delay or withhold approval of the schedule. The Architect's action in reviewing submittals shall be taken in accordance with the approved submittal schedule or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time, in the Architect's professional judgment, to permit adequate review.

§ 3.6.4.2 The Architect shall review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Review of such submittals is not for the purpose of determining the accuracy and completeness of other information such as dimensions, quantities, and installation or performance of equipment or systems, which are the Contractor's responsibility. The Architect's review shall not constitute approval of safety precautions or construction means, methods, techniques, schedules, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 3.6.4.3 If the Contract Documents specifically require the Contractor to provide professional design services or certifications by a design professional related to systems, materials, or equipment, the Architect shall specify the appropriate performance and design criteria that such services must satisfy. The Architect shall review and take appropriate action on Shop Drawings and other submittals related to the Work designed or certified by the Contractor's design professional, provided the submittals bear such professional's seal and signature when submitted to the Architect. The Architect's review shall be for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect shall be entitled to rely upon, and shall not be responsible for, the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals.

§ 3.6.4.4 Subject to Section 4.2, the Architect shall review and respond to requests for information about the Contract Documents. The Architect shall set forth, in the Contract Documents, the requirements for requests for information. Requests for information shall include, at a minimum, a detailed written statement that indicates the specific Drawings or Specifications in need of clarification and the nature of the clarification requested. The Architect's response to such requests shall be made in writing within any time limits agreed upon, or otherwise with reasonable promptness. If appropriate, the Architect shall prepare and issue supplemental Drawings and Specifications in response to the requests for information.

§ 3.6.4.5 The Architect shall maintain a record of submittals and copies of submittals supplied by the Contractor in accordance with the requirements of the Contract Documents.

§ 3.6.5 Changes in the Work

§ 3.6.5.1 The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. Subject to Section 4.2, the Architect shall prepare Change Orders and Construction Change Directives for the Owner's approval and execution in accordance with the Contract Documents.

§ 3.6.5.2 The Architect shall maintain records relative to changes in the Work.

§ 3.6.6 Project Completion

§ 3.6.6.1 The Architect shall:

- .1 conduct inspections to determine the date or dates of Substantial Completion and the date of final completion;
- .2 issue Certificates of Substantial Completion;
- .3 forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract Documents and received from the Contractor; and,
- .4 issue a final Certificate for Payment based upon a final inspection indicating that, to the best of the Architect's knowledge, information, and belief, the Work complies with the requirements of the Contract Documents.

§ 3.6.6.2 The Architect's inspections shall be conducted with the Owner to check conformance of the Work with the requirements of the Contract Documents and to verify the accuracy and completeness of the list submitted by the Contractor of Work to be completed or corrected.

§ 3.6.6.3 When Substantial Completion has been achieved, the Architect shall inform the Owner about the balance of the Contract Sum remaining to be paid the Contractor, including the amount to be retained from the Contract Sum, if any, for final completion or correction of the Work.

§ 3.6.6.4 The Architect shall forward to the Owner the following information received from the Contractor: (1) consent of surety or sureties, if any, to reduction in or partial release of retainage or the making of final payment; (2) affidavits, receipts, releases and waivers of liens, or bonds indemnifying the Owner against liens; and (3) any other documentation required of the Contractor under the Contract Documents.

§ 3.6.6.5 Upon request of the Owner, and prior to the expiration of one year from the date of Substantial Completion, the Architect shall, without additional compensation, conduct a meeting with the Owner to review the facility operations and performance.

§ 3.6.7 Enhanced Construction Phase Services

§ 3.6.7.1 The Owner agrees that Work will progress during the period between the Architect's site visits that can and will be concealed from view during subsequent site visits, resulting in Work that the Architect is unable to observe. If the Owner desires to reduce the amount of concealed Work that the Architect is unable to observe, the Architect shall provide Enhanced Construction Phase Services as Additional Services as indicated by the Owner:

See the Proposal

- ___ .1 Visit the site one (1) time per week;
- ___ .2 Visit the site two (2) times per week;
- ___ .3 Visit the site every "work day" as outlined in the Contractor's construction schedule; or
- ___ .4 Provide "full time" site representation for the duration of the construction.

§ 3.6.7.2 The Owner agrees that the Architect explained the benefits of Enhanced Construction Phase Services to the Owner. If the Owner voluntarily elected not to engage the Architect to perform such services, then the Owner agrees that without Enhanced Construction Phase Services the Project may experience scheduling, budget, and/or coordination problems which will be more difficult and more costly to remedy than prevent.

ARTICLE 4 SUPPLEMENTAL AND ADDITIONAL SERVICES

§ 4.1 Supplemental Services

§ 4.1.1 The services listed below are not included in Basic Services but may be required for the Project. The Architect shall provide the listed Supplemental Services only if specifically designated in the table below as the Architect's responsibility, and the Owner shall compensate the Architect as provided in Section 11.2. Unless otherwise specifically addressed in this Agreement, if neither the Owner nor the Architect is designated, the parties agree that the listed Supplemental Service is not being provided for the Project.

(Designate the Architect's Supplemental Services and the Owner's Supplemental Services required for the Project by indicating whether the Architect or Owner shall be responsible for providing the identified Supplemental Service. Insert a description of the Supplemental Services in Section 4.1.2 below or attach the description of services as an exhibit to this Agreement.)

Supplemental Services	Responsibility (Architect, Owner, or not provided)
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Supplemental Services	Responsibility (Architect, Owner, or not provided)
§ 4.1.1.1 Programming	Provided Owner and Architect
§ 4.1.1.2 Multiple preliminary designs	Not Provided
§ 4.1.1.3 Measured drawings	Not Provided
§ 4.1.1.4 Existing facilities surveys	Not Provided
§ 4.1.1.5 Site evaluation and planning	Architect
§ 4.1.1.6 Building Information Model management responsibilities	Architect
§ 4.1.1.7 Development of Building Information Models for post construction use	Not Provided
§ 4.1.1.8 Civil engineering	Architect
§ 4.1.1.9 Landscape design	Architect
§ 4.1.1.10 Architectural interior design	Architect
§ 4.1.1.11 Value analysis	Not Provided
§ 4.1.1.12 Detailed cost estimating beyond that required in Section 6.3	Not Provided
§ 4.1.1.13 On-site project representation	Not Provided
§ 4.1.1.14 Conformed documents for construction	Not Provided
§ 4.1.1.15 As-designed record drawings	Not Provided
§ 4.1.1.16 As-constructed record drawings	Not Provided
§ 4.1.1.17 Post-occupancy evaluation	Not Provided
§ 4.1.1.18 Facility support services	Not Provided
§ 4.1.1.19 Tenant-related services	Not Provided
§ 4.1.1.20 Architect's coordination of the Owner's consultants	Not Provided
§ 4.1.1.21 Telecommunications/data design	Architect: data locations only
§ 4.1.1.22 Security evaluation and planning	Architect
§ 4.1.1.23 Commissioning	Owner
§ 4.1.1.24 Sustainable Project Services pursuant to Section 4.1.3	To be determined
§ 4.1.1.25 Fast-track design services	Not Provided
§ 4.1.1.26 Multiple bid packages	Not Provided
§ 4.1.1.27 Historic preservation	Not Provided
§ 4.1.1.28 Furniture, furnishings, and equipment design	Architect
§ 4.1.1.29 Other services provided by specialty Consultants	Not Provided
§ 4.1.1.30 Other Supplemental Services	Not Provided

§ 4.1.2 Description of Supplemental Services

§ 4.1.2.1 A description of each Supplemental Service identified in Section 4.1.1 as the Architect's responsibility is provided below.

(Describe in detail the Architect's Supplemental Services identified in Section 4.1.1 or, if set forth in an exhibit, identify the exhibit. The AIA publishes a number of Standard Form of Architect's Services documents that can be included as an exhibit to describe the Architect's Supplemental Services.)

None to be provided

§ 4.1.2.2 A description of each Supplemental Service identified in Section 4.1.1 as the Owner's responsibility is provided below.

(Describe in detail the Owner's Supplemental Services identified in Section 4.1.1 or, if set forth in an exhibit, identify the exhibit.)

None to be provided

§ 4.1.3 If the Owner identified a Sustainable Objective in Article 1, the Architect shall provide, as a Supplemental Service, the Sustainability Services required in AIA Document E204™-2017, Sustainable Projects Exhibit, attached to this Agreement. The Owner shall compensate the Architect as provided in Section 11.2.

§ 4.2 Architect's Additional Services

The Architect may provide Additional Services after execution of this Agreement without invalidating the Agreement. Except for services required due to the fault of the Architect, any Additional Services provided in accordance with this Section 4.2 shall entitle the Architect to compensation pursuant to Section 11.3 and an appropriate adjustment in the Architect's schedule.

§ 4.2.1 Upon recognizing the need to perform the following Additional Services, the Architect shall notify the Owner with reasonable promptness and explain the facts and circumstances giving rise to the need. The Architect shall not proceed to provide the following Additional Services until the Architect receives the Owner's written authorization:

- .1 Services necessitated by a change in the Initial Information, previous instructions or approvals given by the Owner, or a material change in the Project including size, quality, complexity, the Owner's schedule or budget for Cost of the Work, or procurement or delivery method;
- .2 Services necessitated by the enactment or revision of codes, laws, or regulations, including changing or editing previously prepared Instruments of Service;
- .3 Changing or editing previously prepared Instruments of Service necessitated by official interpretations of applicable codes, laws or regulations that are either (a) contrary to specific interpretations by the applicable authorities having jurisdiction made prior to the issuance of the building permit, or (b) contrary to requirements of the Instruments of Service when those Instruments of Service were prepared in accordance with the applicable standard of care;
- .4 Services necessitated by decisions of the Owner not rendered in a timely manner or any other failure of performance on the part of the Owner or the Owner's consultants or contractors;
- .5 Preparing digital models or other design documentation for transmission to the Owner's consultants and contractors, or to other Owner-authorized recipients;
- .6 Preparation of design and documentation for alternate bid or proposal requests proposed by the Owner;
- .7 Preparation for, and attendance at, a public presentation, meeting or hearing;
- .8 Preparation for, and attendance at, a dispute resolution proceeding or legal proceeding, except where the Architect is party thereto;
- .9 Evaluation of the qualifications of entities providing bids or proposals;
- .10 Consultation concerning replacement of Work resulting from fire or other cause during construction; or,
- .11 Assistance to the Initial Decision Maker, if other than the Architect.

§ 4.2.2 To avoid delay in the Construction Phase, the Architect shall provide the following Additional Services, notify the Owner with reasonable promptness, and explain the facts and circumstances giving rise to the need. If, upon receipt of the Architect's notice, the Owner determines that all or parts of the services are not required, the Owner shall give prompt written notice to the Architect of the Owner's determination. The Owner shall compensate the Architect for the services provided prior to the Architect's receipt of the Owner's notice.

- .1 Reviewing a Contractor's submittal out of sequence from the submittal schedule approved by the Architect;
- .2 Responding to the Contractor's requests for information that are not prepared in accordance with the Contract Documents or where such information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner-provided information, Contractor-prepared coordination drawings, or prior Project correspondence or documentation;
- .3 Preparing Change Orders and Construction Change Directives that require evaluation of Contractor's proposals and supporting data, or the preparation or revision of Instruments of Service;

- .4 Evaluating an extensive number of Claims as the Initial Decision Maker; or,
- .5 Evaluating substitutions proposed by the Owner or Contractor and making subsequent revisions to Instruments of Service resulting therefrom.

§ 4.2.3 The Architect shall provide Construction Phase Services exceeding the limits set forth below as Additional Services. When the limits below are reached, the Architect shall notify the Owner:

- .1 two (2) reviews of each Shop Drawing, Product Data item, sample and similar submittals of the Contractor
- .2 twice per month visits to the site by the Architect or its consultants during construction
- .3 one (1) inspection for any portion of the Work to determine whether such portion of the Work is substantially complete in accordance with the requirements of the Contract Documents
- .4 one (1) inspection for any portion of the Work to determine final completion.

§ 4.2.4 Except for services required under Section 3.6.6.5 and those services that do not exceed the limits set forth in Section 4.2.3, Construction Phase Services provided more than 60 days after (1) the original date of Substantial Completion of the Work listed above or (2) the initial date of Substantial Completion identified in the agreement between the Owner and Contractor, whichever is earlier, shall be compensated as Additional Services to the extent the Architect incurs additional cost in providing those Construction Phase Services.

§ 4.2.5 If the services covered by this Agreement for Phase 1 have not been performed within six (6) months of the date of this Agreement, through no fault of the Architect, extension of the Architect's services beyond that time shall be compensated as Additional Services.

ARTICLE 5 OWNER'S RESPONSIBILITIES

§ 5.1 Unless otherwise provided for under this Agreement, the Owner shall work with the Architect and stakeholders to provide information in a timely manner regarding requirements for and limitations on the Project. They shall jointly develop a written program, which shall set forth the Owner's objectives; schedule; constraints and criteria, including space requirements and relationships; flexibility; expandability; systems; and site requirements.

§ 5.2 Phase 1 of this contract shall establish a budget for the Work, subject to a vote by the Board of Commissioners. This budget shall include (1) the budget for the Cost of the Work as defined in Section 6.1; (2) the Owner's other costs; and, (3) reasonable contingencies related to all of these costs. The Owner shall update the Owner's budget for the Project as necessary throughout the duration of the Project until final completion. If the Owner significantly increases or decreases the Owner's budget for the Cost of the Work, the Owner shall notify the Architect. The Owner and the Architect shall thereafter agree to a corresponding change in the Project's scope and quality.

§ 5.3 The Owner shall identify a representative authorized to act on the Owner's behalf with respect to the Project. The Owner shall render decisions and approve the Architect's submittals in a timely manner in order to avoid unreasonable delay in the orderly and sequential progress of the Architect's services.

§ 5.4 The Owner shall furnish surveys to describe physical characteristics, legal limitations and utility locations for the site of the Project, and a written legal description of the site. The surveys and legal information shall include, as applicable, grades and lines of streets, alleys, pavements and adjoining property and structures; designated wetlands; adjacent drainage; rights-of-way, restrictions, easements, encroachments, zoning, deed restrictions, boundaries and contours of the site; locations, dimensions, and other necessary data with respect to existing buildings, other improvements and trees; and information concerning available utility services and lines, both public and private, above and below grade, including inverts and depths. All the information on the survey shall be referenced to a Project benchmark.

§ 5.5 The Owner shall furnish services of geotechnical engineers, which may include test borings, test pits, determinations of soil bearing values, percolation tests, evaluations of hazardous materials, seismic evaluation, ground corrosion tests and resistivity tests, including necessary operations for anticipating subsoil conditions, with written reports and appropriate recommendations.

§ 5.6 The Owner shall provide the Supplemental Services designated as the Owner's responsibility in Section 4.1.1.

§ 5.7 If the Owner identified a Sustainable Objective in Article 1, the Owner shall fulfill its responsibilities as required in AIA Document E204™–2017, Sustainable Projects Exhibit, attached to this Agreement.

§ 5.8 The Owner shall coordinate the services of its own consultants with those services provided by the Architect. Upon the Architect's request, the Owner shall furnish copies of the scope of services in the contracts between the Owner and the Owner's consultants. The Owner shall furnish the services of consultants other than those designated as the responsibility of the Architect in this Agreement, or authorize the Architect to furnish them as an Additional Service, when the Architect requests such services and demonstrates that they are reasonably required by the scope of the Project. The Owner shall require that its consultants and contractors maintain insurance, including professional liability insurance, as appropriate to the services or work provided.

§ 5.9 The Owner shall furnish tests, inspections and reports required by law or the Contract Documents, such as structural, mechanical, and chemical tests, tests for air and water pollution, and tests for hazardous materials including those required under the International Building Code sections 1703 (Approvals) and 1704 (Special Inspections), as applicable.

§ 5.10 The Owner shall furnish all legal, insurance and accounting services, including auditing services, that may be reasonably necessary at any time for the Project to meet the Owner's needs and interests.

§ 5.11 The Owner shall provide prompt written notice to the Architect if the Owner becomes aware of any fault or defect in the Project, including errors, omissions or inconsistencies in the Architect's Instruments of Service.

§ 5.12 The Owner shall include the Architect in all communications with the Contractor that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect.

§ 5.13 Before executing the Contract for Construction, the Owner shall coordinate the Architect's duties and responsibilities set forth in the Contract for Construction with the Architect's services set forth in this Agreement. The Owner shall provide the Architect a copy of the executed agreement between the Owner and Contractor, including the General Conditions of the Contract for Construction.

§ 5.14 The Owner shall provide the Architect access to the Project site prior to commencement of the Work and shall obligate the Contractor to provide the Architect access to the Work wherever it is in preparation or progress.

§ 5.15 Deleted.

ARTICLE 6 COST OF THE WORK

§ 6.1 For purposes of this Agreement, the Cost of the Work shall be the total cost to the Owner to construct all elements of the Project designed or specified by the Architect and shall include contractors' general conditions costs, overhead and profit. The Cost of the Work also includes the reasonable value of labor, materials, and equipment, donated to, or otherwise furnished by, the Owner. The Cost of the Work does not include the compensation of the Architect; the costs of the land, rights-of-way, financing, or contingencies for changes in the Work; or other costs that are the responsibility of the Owner.

§ 6.2 The Owner's budget for the Cost of the Work is provided in Initial Information, and shall be adjusted throughout the Project as required under Sections 5.2, 6.4 and 6.5. Evaluations of the Owner's budget for the Cost of the Work, and the preliminary estimate of the Cost of the Work and updated estimates of the Cost of the Work, prepared by the Architect, represent the Architect's judgment as a design professional. It is recognized, however, that neither the Architect nor the Owner has control over the cost of labor, materials, or equipment; the Contractor's methods of determining bid prices; or competitive bidding, market, or negotiating conditions. Accordingly, the Architect cannot and does not warrant or represent that bids or negotiated prices will not vary from the Owner's budget for the Cost of the Work, or from any estimate of the Cost of the Work, or evaluation, prepared or agreed to by the Architect.

§ 6.3 In preparing estimates of the Cost of Work, the Architect shall be permitted to include contingencies for design, bidding, and price escalation; to determine what materials, equipment, component systems, and types of construction

are to be included in the Contract Documents; to recommend reasonable adjustments in the program and scope of the Project; and to include design alternates as may be necessary to adjust the estimated Cost of the Work to meet the Owner's budget. The Architect's estimate of the Cost of the Work shall be based on current area, volume or similar conceptual estimating techniques. If the Owner requires a detailed estimate of the Cost of the Work, the Architect shall provide such an estimate, if identified as the Architect's responsibility in Section 4.1.1, as a Supplemental Service.

§ 6.4 If, through no fault of the Architect, the Procurement Phase has not commenced within 90 days after the Architect submits the Construction Documents to the Owner, the Owner's budget for the Cost of the Work shall be adjusted to reflect changes in the general level of prices in the applicable construction market.

§ 6.5 If at any time the Architect's estimate of the Cost of the Work exceeds the Owner's budget for the Cost of the Work, the Architect shall make appropriate recommendations to the Owner to adjust the Project's size, quality, or budget for the Cost of the Work, and the Owner shall cooperate with the Architect in making such adjustments.

§ 6.6 If the Owner's budget for the Cost of the Work at the conclusion of the Construction Documents Phase Services is exceeded by the lowest bona fide bid or negotiated proposal, the Owner shall

- .1 give written approval of an increase in the budget for the Cost of the Work;
- .2 authorize rebidding or renegotiating of the Project within a reasonable time;
- .3 terminate in accordance with Section 9.5;
- .4 in consultation with the Architect, revise the Project program, scope, or quality as required to reduce the Cost of the Work; or,
- .5 implement any other mutually acceptable alternative.

§ 6.7 If the Owner chooses to proceed under Section 6.6.4, the Architect shall modify the Construction Documents as necessary to comply with the Owner's budget for the Cost of the Work at the conclusion of the Construction Documents Phase Services, or the budget as adjusted under Section 6.6.1. If the Owner requires the Architect to modify the Construction Documents because the lowest bona fide bid or negotiated proposal exceeds the Owner's budget for the Cost of the Work due to market conditions the Architect could not reasonably anticipate, the Owner shall compensate the Architect for the modifications as an Additional Service pursuant to Section 11.3; otherwise the Architect's services for modifying the Construction Documents shall be without additional compensation. In any event, the Architect's modification of the Construction Documents shall be the limit of the Architect's responsibility under this Article 6.

ARTICLE 7 COPYRIGHTS AND LICENSES

§ 7.1 The Architect and the Owner warrant that in transmitting Instruments of Service, or any other information, the transmitting party is the copyright owner of such information or has permission from the copyright owner to transmit such information for its use on the Project.

§ 7.2 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and shall retain all common law, statutory and other reserved rights, including copyrights. Submission or distribution of Instruments of Service to meet official regulatory requirements or for similar purposes in connection with the Project is not to be construed as publication in derogation of the reserved rights of the Architect and the Architect's consultants.

§ 7.3 The Architect grants to the Owner a nonexclusive license to use the Architect's Instruments of Service solely and exclusively for purposes of constructing, using, maintaining, altering and adding to the Project, provided that the Owner substantially performs its obligations under this Agreement, including prompt payment of all sums due pursuant to Article 9 and Article 11. The Architect shall obtain similar nonexclusive licenses from the Architect's consultants consistent with this Agreement. The license granted under this section permits the Owner to authorize the Contractor, Subcontractors, Sub-subcontractors, and suppliers, as well as the Owner's consultants and separate contractors, to reproduce applicable portions of the Instruments of Service, subject to any protocols established pursuant to Section 1.3, solely and exclusively for use in performing services or construction for the Project. If the Architect rightfully terminates this Agreement for cause as provided in Section 9.4, the license granted in this Section 7.3 shall terminate. Upon such termination, the Owner shall refrain from making further reproductions of the Architect's and its consultants' Instruments of Service and shall return to the Architect within seven (7) days of termination all such originals and reproductions in the Owner's possession and/or control subject to Section 9.7 below.

§ 7.3.1 Deleted.

§ 7.4 Except for the licenses granted in this Article 7, no other license or right shall be deemed granted or implied under this Agreement. The Owner shall not assign, delegate, sublicense, pledge or otherwise transfer any license granted herein to another party without the prior written agreement of the Architect. Any unauthorized use of the Instruments of Service shall be at the Owner's sole risk and without liability to the Architect and the Architect's consultants.

(Paragraph deleted)

§ 7.5 The Architectural Works and Instruments of Service developed under this Agreement are subject to re-use fees. The re-use of these designs for other projects may be negotiated upon written request from the Owner. Upon receipt of such request, the Architect may prepare a fee proposal for site adaptation and revisions/adjustments including the re-use fees and submit same to the Owner. Should the Architect not be retained to provide site adaptation and revision services, the Owner shall compensate the Architect for such re-use fees negotiated with the Architect and shall execute in favor of the Architect a complete release of liability and indemnity agreement for such proposed re-use.

§ 7.6 Except as otherwise stated in Section 7.3, the provisions of this Article 7 shall survive the termination of this Agreement.

ARTICLE 8 CLAIMS AND DISPUTES

§ 8.1 General

§ 8.1.1 The Owner and Architect shall commence all claims and causes of action against the other and arising out of or related to this Agreement, whether in contract, tort, or otherwise, in accordance with the requirements of the binding dispute resolution method selected in this Agreement and within the period specified by applicable law, but in any case not more than 8 years after the date of Substantial Completion of the Work. The Owner and Architect waive all claims and causes of action not commenced in accordance with this Section 8.1.1.

§ 8.1.2 To the extent damages are covered by property insurance, the Owner and Architect waive all rights against each other and against the contractors, consultants, agents, and employees of the other for damages, except such rights as they may have to the proceeds of such insurance as set forth in AIA Document A201-2017, General Conditions of the Contract for Construction. The Owner or the Architect, as appropriate, shall require of the contractors, consultants, agents, and employees of any of them, similar waivers in favor of the other parties enumerated herein.

§ 8.1.3 The Architect and Owner waive consequential damages for claims, disputes, or other matters in question, arising out of or relating to this Agreement. This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination of this Agreement, except as specifically provided in Section 9.7. Such waiver shall survive the fulfillment or termination of this Agreement and shall benefit and/or burden the heirs, assigns, and/or successors of the parties hereto.

§ 8.2 Mediation

§ 8.2.1 Any claim, dispute or other matter in question arising out of or related to this Agreement shall be subject to mediation as a condition precedent to litigation.

§ 8.2.2 The Owner and Architect shall endeavor to resolve claims, disputes and other matters in question between them by mediation. A request for mediation shall be made in writing, delivered to the other party to this Agreement, and filed with the person or entity administering the mediation.

§ 8.2.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 8.2.4 If the parties do not resolve a dispute through mediation pursuant to this Section 8.2, the method of binding dispute resolution shall be the following:

(Check the appropriate box.)

☐ Arbitration pursuant to Section 8.3 of this Agreement

Init.

[X] Litigation in a court of competent jurisdiction

[] Other: *(Specify)*

If the Owner and Architect do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, the dispute will be resolved in a court of competent jurisdiction.

§ 8.3 Arbitration

§ 8.3.1 If the parties have selected arbitration as the method for binding dispute resolution in this Agreement, any claim, dispute or other matter in question arising out of or related to this Agreement subject to, but not resolved by, mediation shall be subject to arbitration. A demand for arbitration shall be made in writing, delivered to the other party to this Agreement, and filed with the person or entity administering the arbitration.

§ 8.3.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the claim, dispute or other matter in question would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the claim, dispute or other matter in question.

§ 8.3.2 The foregoing agreement to arbitrate, and other agreements to arbitrate with an additional person or entity duly consented to by parties to this Agreement, shall be specifically enforceable in accordance with applicable law in any court having jurisdiction thereof.

§ 8.3.3 The award rendered by the arbitrator(s) shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 8.3.4 Consolidation or Joinder

§ 8.3.4.1 Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation; (2) the arbitrations to be consolidated substantially involve common questions of law or fact; and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 8.3.4.2 Either party, at its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 8.3.4.3 The Owner and Architect grant to any person or entity made a party to an arbitration conducted under this Section 8.3, whether by joinder or consolidation, the same rights of joinder and consolidation as the Owner and Architect under this Agreement.

§ 8.4 The provisions of this Article 8 shall survive the termination of this Agreement.

ARTICLE 9 TERMINATION OR SUSPENSION

§ 9.1 If the Owner fails to make payments to the Architect in accordance with this Agreement, such failure shall be considered substantial nonperformance and cause for termination or, at the Architect's option, cause for suspension of performance of services under this Agreement. If the Architect elects to suspend services, the Architect shall give seven days' written notice to the Owner before suspending services. In the event of a suspension of services, the Architect shall have no liability to the Owner for delay or damage caused the Owner because of such suspension of services. Before resuming services, the Owner shall pay the Architect all sums due prior to suspension and any

expenses incurred in the interruption and resumption of the Architect's services. The Architect's fees for the remaining services and the time schedules shall be equitably adjusted.

§ 9.2 If the Owner suspends the Project, the Architect shall be compensated for services performed prior to notice of such suspension. When the Project is resumed, the Architect shall be compensated for expenses incurred in the interruption and resumption of the Architect's services. The Architect's fees for the remaining services and the time schedules shall be equitably adjusted.

§ 9.3 If the Owner suspends the Project for more than 90 cumulative days for reasons other than the fault of the Architect, the Architect may terminate this Agreement by giving not less than seven days' written notice.

§ 9.4 Either party may terminate this Agreement upon not less than seven days' written notice should the other party fail substantially to perform in accordance with the terms of this Agreement through no fault of the party initiating the termination.

§ 9.5 The Owner may terminate this Agreement upon not less than seven days' written notice to the Architect for the Owner's convenience and without cause.

§ 9.6 If the Owner terminates this Agreement for its convenience pursuant to Section 9.5, or the Architect terminates this Agreement pursuant to Section 9.3, the Owner shall compensate the Architect for services performed prior to termination, Reimbursable Expenses incurred, and costs attributable to termination, including the costs attributable to the Architect's termination of consultant agreements.

§ 9.7 In addition to any amounts paid under Section 9.6, if the Owner terminates this Agreement for its convenience pursuant to Section 9.5, or the Architect terminates this Agreement pursuant to Section 9.3, the Owner shall pay to the Architect the following fees:

(Set forth below the amount of any termination or licensing fee, or the method for determining any termination or licensing fee.)

.1 Termination Fee:

None

.2 Licensing Fee if the Owner intends to continue using the Architect's Instruments of Service:

None

§ 9.8 Except as otherwise expressly provided herein, this Agreement shall terminate one year from the date of Substantial Completion.

§ 9.9 The Owner's rights to use the Architect's Instruments of Service in the event of a termination of this Agreement are set forth in Article 7 and Section 9.7.

ARTICLE 10 MISCELLANEOUS PROVISIONS

§ 10.1 This agreement is made under, and in all respects, shall be interpreted, construed, and governed by, and in accordance with, the laws of the State of North Carolina, without regard to choice of law principles. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 8.3. Choice of law provisions governing this Agreement include the application of statutes of limitation and/or repose. Arbitration (if any) under this Agreement is an action subject to those laws.

§ 10.2 Terms in this Agreement shall have the same meaning as those in AIA Document A201-2017, General Conditions of the Contract for Construction, unmodified.

§ 10.3 The Owner and Architect, respectively, bind themselves, their agents, successors, assigns, and legal representatives to this Agreement. Neither the Owner nor the Architect shall assign this Agreement without the written consent of the other, except that the Owner may assign this Agreement to a lender providing financing for the Project

if the lender agrees to assume the Owner's rights and obligations under this Agreement, including any payments due to the Architect by the Owner prior to the assignment and the Architect may assign this Agreement pursuant to a merger or asset acquisition.

§ 10.4 If the Owner requests the Architect to execute certificates, the proposed language of such certificates shall be submitted to the Architect for review at least 14 days prior to the requested dates of execution. If the Owner requests the Architect to execute consents reasonably required to facilitate assignment to a lender, the Architect may execute all such consents that are consistent with this Agreement, provided the proposed consent is submitted to the Architect for review at least 14 days prior to execution. The Architect shall not be required to execute certificates or consents that would require knowledge, services, or responsibilities beyond the scope of this Agreement.

§ 10.5 Nothing contained in this Agreement shall create a contractual relationship with, or a cause of action in favor of, a third party against either the Owner or Architect.

§ 10.6 The Architect shall have no responsibility for the discovery, presence, handling, removal or disposal of, or exposure of persons to, hazardous materials or toxic substances in any form at the Project site. The Owner agrees to indemnify and hold harmless the Architect and its consultants from and against all third party claims related to hazardous materials and/or toxic substances. In the event that the Architect or any other party encounters asbestos or hazardous or toxic materials at the job site, or should it become known in any way that certain materials may be present at the job site or any adjacent areas that may affect the performance of the Architect's services, the Architect may, at its option and without liability for consequential or any other damages, suspend performance of service on the Project until the Owner retains appropriate specialist consultant's or contractor's to identify, abate and/or remove the asbestos or hazardous or toxic material, and warrant that the job site is in full compliance with applicable laws and regulations.

§ 10.7 The Architect shall have the right to include photographic or artistic representations of the design of the Project among the Architect's promotional and professional materials. The Architect shall be given reasonable access to the completed Project to make such representations. However, the Architect's materials shall not include the Owner's confidential or proprietary information if the Owner has previously advised the Architect in writing of the specific information considered by the Owner to be confidential or proprietary. The Owner shall provide professional credit for the Architect in the Owner's promotional materials for the Project. This Section 10.7 shall survive the termination of this Agreement unless the Owner terminates this Agreement for cause pursuant to Section 9.4. The Owner shall allow the Architect to post a sign at the Project site at the Architect's expense containing the Architect's name, logo, and contact information. Such sign shall remain at the site during the design and construction phases of the Project. The Architect shall coordinate the appearance and location of its sign with those of the other Project participants.

§ 10.8 Deleted.

~~§ 10.8 The receiving party may disclose "confidential" or "business proprietary" information (.1) when required by law, arbitrator's order, or court order, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, (.2) to the extent such information is reasonably necessary for the receiving party to defend itself in, assert a claim in, or administrate any dispute, or (.3) to the extent withholding such information would create the risk of significant harm to the public. The receiving party may also disclose such information to its employees, consultants, attorneys, brokers, carriers, or contractors.~~

CHBj
3/11/24

(Paragraph deleted)

§ 10.9 The invalidity of any provision of the Agreement shall not invalidate the Agreement or its remaining provisions. If it is determined that any provision of the Agreement violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Agreement shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Agreement.

ARTICLE 11 COMPENSATION

§ 11.1 For the Architect's Basic Services described under Article 3, the Owner shall compensate the Architect as follows:

.1 Stipulated Sum (Phase 1 Services)
(Insert amount)

\$132,500

.2 Percentage Basis (Phase 2 Services)
(Insert percentage value)

9 % of the Owner's budget for the Cost of the Work, as calculated in accordance with Section 11.6.

.3 Other
(Describe the method of compensation)

§ 11.2 For the Architect's Supplemental Services designated in Section 4.1.1 and for any Sustainability Services required pursuant to Section 4.1.3, the Owner shall compensate the Architect as follows:
(Insert amount of, or basis for, compensation. If necessary, list specific services to which particular methods of compensation apply.)

See Architect's Proposal and its Exhibit 1

§ 11.3 For Additional Services that may arise during the course of the Project, including those under Section 4.2, the Owner shall compensate the Architect as follows:
(Insert amount of, or basis for, compensation.)

See Architect's Proposal and its Exhibit 1

§ 11.4 Compensation for Supplemental and Additional Services of the Architect's consultants when not included in Section 11.2 or 11.3, shall be the amount invoiced to the Architect plus twenty-five percent (25%), or as follows:
(Insert amount of, or basis for computing, Architect's consultants' compensation for Supplemental or Additional Services.)

§ 11.5 When compensation for Basic Services is based on a stipulated sum or a percentage basis, the proportion of compensation for each phase of services shall be as follows:

Schematic Design Phase	fifteen	percent (15	%)
Design Development Phase	twenty	percent (20	%)
Construction Documents Phase	thirty-five	percent (35	%)
Procurement Phase	five	percent (5	%)
Construction Phase	twenty-four	percent (24	%)
Closeout Phase	one	percent (1	%)
Total Basic Compensation	one hundred	percent (100	%)

§ 11.6 When compensation identified in Section 11.1 is on a percentage basis, progress payments for each phase of Basic Services shall be calculated by multiplying the percentages identified in this Article by the Owner's most recent budget for the Cost of the Work. Compensation paid in previous progress payments shall not be adjusted based on subsequent updates to the Owner's budget for the Cost of the Work.

§ 11.6.1 When compensation is on a percentage basis and any portions of the Project are deleted or otherwise not constructed, compensation for those portions of the Project shall be payable to the extent services are performed on those portions. The Architect shall be entitled to compensation in accordance with this Agreement for all services performed whether or not the Construction Phase is commenced.

§ 11.7 The hourly billing rates for services of the Architect and the Architect's consultants are set forth below. The rates shall be adjusted in accordance with the Architect's and Architect's consultants' normal review practices.

(If applicable, attach an exhibit of hourly billing rates or insert them below.)
(Row deleted)

See Architect's Proposal and its Exhibit 1

§ 11.8 Compensation for Reimbursable Expenses

§ 11.8.1 Reimbursable Expenses are in addition to compensation for Basic, Supplemental, and Additional Services and include expenses incurred by the Architect and the Architect's consultants directly related to the Project, as follows:

- .1 Transportation and authorized out-of-town travel and subsistence;
- .2 Long distance services, dedicated data and communication services, teleconferences, Project web sites, and extranets;
- .3 Permitting and other fees required by authorities having jurisdiction over the Project;
- .4 Printing, reproductions, plots, and standard form documents;
- .5 Postage, handling, and delivery;
- .6 Expense of overtime work requiring higher than regular rates, if authorized in advance by the Owner;
- .7 Renderings, physical models, mock-ups, professional photography, and presentation materials requested by the Owner or required for the Project;
- .8 If required by the Owner, and with the Owner's prior written approval, the Architect's consultants' expenses of professional liability insurance dedicated exclusively to this Project, or the expense of additional insurance coverage or limits in excess of that normally maintained by the Architect's consultants;
- .9 All taxes levied on professional services and on reimbursable expenses;
- .10 Site office expenses;
- .11 Registration fees and any other fees charged by the Certifying Authority or by other entities as necessary to achieve the Sustainable Objective; and,
- .12 Other similar Project-related expenditures.

§ 11.8.2 For Reimbursable Expenses the compensation shall be the expenses incurred by the Architect and the Architect's consultants. See Architect's Proposal and its Exhibit 1 for markup on these items.

§ 11.9 Architect's Insurance. If the types and limits of coverage required in Section 2.5 are in addition to the types and limits the Architect normally maintains, the Owner shall pay the Architect for the additional costs incurred by the Architect for the additional coverages as set forth below:

(Insert the additional coverages the Architect is required to obtain in order to satisfy the requirements set forth in Section 2.5, and for which the Owner shall reimburse the Architect.)

None

§ 11.10 Payments to the Architect

§ 11.10.1 Initial Payments

§ 11.10.1.1 An initial payment of zero (\$ 0) shall be made upon execution of this Agreement and is the minimum payment under this Agreement. It shall be credited to the Owner's account in the final invoice.

§ 11.10.1.2 If a Sustainability Certification is part of the Sustainable Objective, an initial payment to the Architect of (\$) shall be made upon execution of this Agreement for registration fees and other fees payable to the Certifying Authority and necessary to achieve the Sustainability Certification. The Architect's payments to the Certifying Authority shall be credited to the Owner's account at the time the expense is incurred.

§ 11.10.2 Progress Payments

§ 11.10.2.1 Unless otherwise agreed, payments for services shall be made monthly in proportion to services performed. Payments are due and payable upon presentation of the Architect's invoice. Amounts unpaid thirty (30) days after the invoice date shall bear interest at the rate entered below, or in the absence thereof at the legal rate prevailing from time to time at the principal place of business of the Architect.

(Insert rate of monthly or annual interest agreed upon.)

1.5 % per month

§ 11.10.2.2 The Owner shall not withhold amounts from the Architect's compensation to impose a penalty or liquidated damages on the Architect, or to offset sums requested by or paid to contractors for the cost of changes in the Work, unless the Architect agrees or has been found liable for the amounts in a binding dispute resolution proceeding.

§ 11.10.2.3 Records of Reimbursable Expenses, expenses pertaining to Supplemental and Additional Services, and services performed on the basis of hourly rates shall be available to the Owner at mutually convenient times.

ARTICLE 12 SPECIAL TERMS AND CONDITIONS

Special terms and conditions that modify this Agreement are as follows:

As set forth in Architect's Proposal and its Exhibit 1

(Include other terms and conditions applicable to this Agreement.)

§ 12.1 CHANGES TO THE CONTRACT DOCUMENTS / AS-BUILT DOCUMENTS / RECORD DRAWINGS

§ 12.1.1 All Owner directed changes to the Contract Documents shall be in writing and shall specify the change required. The Architect shall not be responsible for the acts and/or omissions of any person performing any of the Work or for instruction given by the Owner to anyone performing any of the Work. During the construction process the Owner may direct the Architect to accept the Contractor's work that does not conform to construction documents or is below standard. Should this occur, the Owner agrees to release, indemnify and hold the Architect and the Architect's officers, partners, agents, employees, and Consultants harmless from any and all claims, liabilities, losses, and costs, including but not limited reasonable attorney's fees and costs of litigation, arising or allegedly arising from deviations from the Architect's recommendations.

§ 12.1.2 "As-Built" documents consist of modifications (redline changes) to the Contract Documents to reflect as-built conditions. Record Drawings consist of the Contract Documents with all written change orders and modifications made during construction incorporated therein. The Contractor is responsible for tracking, obtaining, delivery, and retention of all written change orders and modifications made during construction for the purpose of creating "As-Built" documents. The Contractor is further responsible for recording as-built information to the Contract Documents throughout the construction of the Project. The Architect will provide .pdf versions of its design drawings to the Owner and the Contractor as a basic service. Record drawings will be provided by the Architect to the Owner in electronic format under a separate agreement for an additional fee. The Contractor will provide to the Architect the information necessary for the Architect to perform such service. The Architect may rely on the accuracy of the as-built information provided by the Owner and/or Contractor in preparing the Record Drawings.

§ 12.2 FORCE MAJEURE

Neither party shall be liable for any failure or delay in performance under this Agreement (other than for delay in the payment of money due and payable hereunder) to the extent said failures or delays are caused by forces beyond that party's reasonable control and occurring without its fault or negligence. Dates by which performance obligations are scheduled to be met will be extended for a period of time equal to the time lost due to any delay so caused.

§ 12.3 VALUE ENGINEERING LIABILITY

The Architect shall not be liable for any damages or costs incurred by the Owner and/or the Contractor as a result of cost reduction, scope reduction, or value engineering efforts on the Project.

§ 12.4 BASIS OF OPINION

Projects requiring observation and reporting of existing structures may have conditions concealed from reasonable view that differ from available documentation or other information. The Architect is not responsible for the costs or delays resulting from the later discovery of such actual conditions. This Agreement and any subsequent Representation is a statement of professional opinion based on the information available during the assessment and/or evaluation of the subject property. Such opinion is formed by the judgment of the Architect from the knowledge of available facts and other identified information. This Agreement and any subsequent Representation only reflect the conditions on the day of site observation. The Owner hereby acknowledges that existing conditions can and will change relative to the information contained in this Agreement and/or any Representation.

§ 12.5 The Owner agrees that no set of plans and specifications is entirely free of errors and omissions and that additive Change Orders which arise out of errors or omissions in the plans and specification and which result in an increase in the amount of the contract for the construction of the Project are possible. All costs of architectural errors, omissions or other changes which result in "betterment" or "value added" to the Owner shall be borne by the Owner, not the Architect (to the extent of the betterment or value added), and shall not be the basis of a claim.

§ 12.6 The Architect's design services are intended solely for the design and construction of the Project as set forth in Exhibit A, Architect's Proposal under the ownership and control of a single owner. If the Project is changed to any other purpose or use whatsoever, including, but not limited to, subdivision of the Project into individual units for sale, the Architect shall have no liability and shall be released from all obligations and responsibility for the Project. Further, in such event, any and all of the Owner's rights, license and/or ownership interest in the construction documents shall be void. The Owner shall be expressly prohibited from making any further use of the construction documents for any purpose, including, but not limited to the conversion of this Project to another purpose. The Owner acknowledges the risks inherent in multi-owner projects and that these risks and exposure were not contemplated in the Architect's fee for the Project as originally contemplated. The Owner agrees, to the fullest extent permitted by law, to indemnify and hold harmless the Architect, its officers, directors, employees, consultants and subconsultants (collectively Architect) against all damages, liabilities or costs, including reasonable attorneys' fees and defense costs, arising out of or in any way connected with any change, conversion, or alternative use of the Project. In the event of a conversion to a multi-owner regime, the Owner agrees to allow the Architect to review and comment on regime documents and the maintenance manual. This liability is capped to the amount of total fees paid the Architect for the project.

§ 12.7 The Architect's liability (if any) to the Owner for any and all claims and/or damages shall be limited to a maximum of and shall not exceed, either individually or in the aggregate, the total amount of the Architect's fee received for this Project.

ARTICLE 13 SCOPE OF THE AGREEMENT

§ 13.1 This Agreement represents the entire and integrated agreement between the Owner and the Architect and supersedes all prior negotiations, representations or agreements, either written or oral. This Agreement may be amended only by written instrument signed by both the Owner and Architect.

§ 13.2 This Agreement is comprised of the following documents identified below:

- .1 AIA Document B101™-2017, Standard Form Agreement Between Owner and Architect
- .2 AIA Document E203™-2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:
(Insert the date of the E203-2013 incorporated into this agreement.)

None

- .3 Exhibits:
(Check the appropriate box for any exhibits incorporated into this Agreement.)

☐ AIA Document E204™-2017, Sustainable Projects Exhibit, dated as indicated below:
(Insert the date of the E204-2017 incorporated into this agreement.)

☒ Other Exhibits incorporated into this Agreement:
(Clearly identify any other exhibits incorporated into this Agreement, including any exhibits and scopes of services identified as exhibits in Section 4.1.2.)

Architect's Proposal and its Exhibit 1
Exhibit 2: Architect's letter regarding insurance

- .4 Other documents:

(List other documents, if any, forming part of the Agreement.)

None

This Agreement entered into as of the day and year first written above.

OWNER (Signature)

Glenn Adams
Chairman

(Printed name and title)

ARCHITECT (Signature)

Charles H. Boney, Jr., FAIA
Vice President

(Printed name, title, and license number, if required)

THIS INSTRUMENT HAS BEEN PRE-AUDITED
IN THE MANNER REQUIRED BY THE LOCAL
GOVERNMENT BUDGET AND FISCAL CON-
TROL ACT.

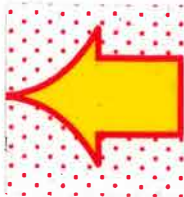
FINANCE DIRECTOR

APPROVED FOR LEGAL SUFFICIENCY
UPON FORMAL EXECUTION BY ALL PARTIES

BY:

Nicky Z Monopfield

County Attorney's Office





CONTRACT #: _____

IRAN DIVESTMENT ACT CERTIFICATION. Contractor hereby certifies that Contractor, and all subcontractors, are not on the Iran Final Divestment List ("List") created by the North Carolina State Treasurer pursuant to N.C.G.S. 147-86.55-69. Contractor shall not utilize any subcontractor that is identified on the List.

E-VERIFY. CONTRACTOR shall comply with the requirements of Article 2 of Chapter 64 of the General Statutes. Further, if CONTRACTOR utilizes a subcontractor, CONTRACTOR shall require the subcontractor to comply with the requirements of Article 2 of Chapter 64 of the General Statutes."

Company Name: LS3P Associates, Ltd.

Charles H. Boney, Jr. Date 3/26/2024

Authorized Signer

Charles H. Boney, Jr., FAIA
Vice President

Fee Proposal

3 October 2013

Mr. Jermaine Walker
Cumberland County
Fayetteville, NC

Cumberland County Homeless Support
Center
LS3P #7752-231656

Dear Mr. Walker:

We are grateful to be a part of Cumberland County's work to help the homeless population and look forward to providing a solution to an a very difficult problem. Our proposal for the work is as follows:

PROJECT DESCRIPTION

The work is described in the Request for Qualifications issued by Cumberland County dated July 10, 2023, and consists of a 50,000 to 60,000 sf building used to provide temporary shelter and support services to homeless individuals, including single adults and families with children. Final building size will be determined in our Feasibility Study and Visioning Sessions.

The site is located on 7.18 acres of land and will require consolidation of 5 parcels. A special use permit will be required for the site. It is not within a Special Food Hazard Area, and municipal water and sewer are available.

SCOPE OF SERVICES:

Our work will proceed in phases as follows:

Phase 1A: Feasibility/Visioning:

We will begin with Feasibility/Visioning Sessions scheduled with the community. The goal of this work is to:

- **Quantify space needs:** this will result in a spreadsheet listing each space, with an area and special equipment associated with the space.
- **Identify Success Factors:** working with the community, we will discuss goals and aspirations for the facility. This will result in a list of "Success Factors" we will use to measure our work together.
- **Create a Vision:** Working with user groups, we will create a design narrative – a vision – and conceptual plans & renderings to inspire public and private support.
-

This material will be used by our cost estimator to provide a conceptual cost estimate for the work.

Deliverables from this phase include a booklet containing spreadsheet, narrative, conceptual plans and renderings of the facility, and cost estimate. The cost estimate will include contingencies and an escalation factor to protect the budget. We anticipate that you will use this document to secure funding for the project.

Phase 1B: Site permits:

Our Civil Engineering Consultant will apply for the Special Use Permit mentioned above and assist the County attorney in consolidating title to the land if necessary. We will assist the County in obtaining a survey and preliminary geotechnical information for the site.

Phase 2:

Our work for Phase 2 will include work necessary to design, bid, and build the facility. This work includes the following sub-phases:

- **Phase 2.A: Schematic Design:** provide site plan, floor plans, and renderings sufficient to describe the functionality and appearance of the facility. Building systems (PPMEF, Structural) will be described in a narrative. A cost estimate will be provided to confirm the budget.
- **Phase 2.B: Design Development:** Engineering consultants will be engaged to begin design of support systems. Drawings to describe materials, building sections, and plans will be further developed. A cost estimate will be provided to confirm the budget.
- **Phase 2.C: Construction Documents:** Architect and consulting engineers will detail the building, materials, and equipment for construction, and review documents with the Inspections Department for permitting.
- **Phase 2.D: Bidding & Negotiating:** solicit and obtain bids for construction.
- **Phase 2.E: Construction Administration:** Review submittals, respond to RFI's, visit site weekly, approve pay applications
- **Phase 2.F: Closeout:** Provide warranty & operations manuals and record drawings to owner

These phases are more specifically described in AIA contract form B101.

SCHEDULE:

We will work with your calendar to establish firm dates, with the following schedule milestones:

Phase 1A:

Kickoff meeting with owner & design team	1 day
Feasibility Study	2 week
Visioning Sessions	4 weeks
Design, plans, renderings, report	6 weeks
Cost estimate	2 weeks

Phase 1.B: (concurrent with 1A)	
Commission topo survey, geotech. Report (paid by owner)	6 weeks
Consolidate land parcels (concurrent)	
Apply for Special Use Permit (concurrent)	12 weeks
Phase 2.A: Schematic Design	12 weeks
Phase 2.B: Design Development	12 weeks
Phase 2.C: Construction Documents	16 weeks
Phase 2.D: Bid/Negotiate	6 weeks
Phase 2.E: Construction Administration	52 to 64 weeks (12-16 months)
Phase 2.F: Closeout	4 weeks
TOTAL	148 weeks

BUDGET:

A budget has not been established for the work at this time. We will work with Cumberland County to establish a budget based upon the approved report prepared in Phase 1.

FEES:

Phase 1:

We propose to provide our work in Phase 1 on an hourly-not-to-exceed basis as follows:

LS3P allowance	\$65,000
Renderings (outsourced 5 @\$1,000)	\$5,000
Reimbursables allowance (printing, travel)	5,000
Cost estimate	7,500
Civil Engineering allowance	30,000
PME Engineering allowance	20,000
TOTAL PHASE 1	\$132,500

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Phase 2:

Upon approval of Phase 1 and authorization to proceed, our work for Phase 2 will be based upon 9% of the agreed-upon cost of the work, including equipment and FF&E. This work will be invoiced using the following percentages:

Phase 2.A: Schematic Design	15%
Phase 2.B: Design Development	20%
Phase 2.C: Construction Documents	35%
Phase 2.D: Bid/Negotiate	5%
Phase 2.E: Construction Administration	24%
Phase 2.F: Closeout	1%

TOTAL

100%

This proposal and the attached Exhibit 1 Standard Terms will become a part of our AIA Contract form B101. I look forward to reviewing this proposal with you so we can establish dates for the Phase 1 work.

Sincerely,

A handwritten signature in blue ink, appearing to read "Charles H. Boney, Jr.", with a stylized flourish at the end.

Charles H. Boney, Jr., FAIA
Vice President | Principal

LS3P

C: Carsyn Jarrel, Project Accountant

Enclosures: Exhibit 1 Standard Terms
Draft copy of B101

EXHIBIT 1

7/1/2023 Modified 1/9/2024

I. STANDARD TERMS

A. Agreement

This Proposal, including this Exhibit 1, is the entire and integrated agreement between Owner and LS3P, supersedes all prior negotiations or agreements, either written or oral, and shall be governed by the laws of the state of North Carolina without regard to principles of conflicts of law. This Proposal may only be amended in a writing signed by both parties. If any provision of this Proposal is invalid or unenforceable, the remainder of this Proposal will still be valid. By signing, The Owner agrees to the terms of this Proposal, including this Exhibit 1, and agrees to pay LS3P in accordance with the terms stated herein.

B. Exclusions

Only those services specifically included in this Proposal are included in the base services.

C. Expiration Time

This Proposal is effective up to 90 days from the Proposal date set forth above. After ninety (90) days, the terms set forth herein shall be subject to renegotiation unless otherwise agreed.

D. Standard of Care

LS3P shall perform its services consistent with the professional skill and care ordinarily provided by architects practicing in the same or similar locality under the same or similar circumstances. LS3P shall perform its services as expeditiously as is consistent with such professional skill and care and the orderly progress of the Project. Owner agrees that LS3P is not in control of the various authorities having jurisdiction ("AHJ's") over the Project or their respective review and approval schedules. LS3P will assist Owner and the Contractor in applying for the necessary approvals by the AHJ's but ultimate responsibility for obtaining such approvals remains with Owner.

LS3P shall not be required to review and shall not be responsible for any deviations from the Contract Documents not clearly noted by the Contractor nor shall LS3P be required to review partial submissions or those for which submissions for correlated items have not been received. Owner agrees that no set of plans and specifications is entirely free of errors and omissions and that additive Change Orders which arise out of errors or omissions in the plans and specification and which result in an increase in the amount of the contract for the construction of the Project are possible. All costs of architectural errors, omissions or other changes which result in "betterment" or "value added" to Owner shall be borne by Owner, not LS3P (to the extent of the betterment or value added), and shall not be the basis of a claim.

E. Owner Information and Services

Owner shall provide full information about the objectives, schedule, constraints, and existing conditions of the Project and shall establish a budget with reasonable contingencies that meet the Project requirements. Owner acknowledges, however, that LS3P has no control over the cost of labor, materials, or equipment, over the Contractor's methods of determining bid prices, or over competitive bidding, market, or negotiating conditions. LS3P shall be entitled to rely upon the accuracy and completeness of the services and information furnished by Owner, consultants, and contractors

including those consultant services required under the International Building Code sections 1703 (Approvals) and 1704 (Special Inspections), as applicable. Owner shall identify a representative authorized to act on Owner's behalf with respect to the Project. Owner shall render decisions and approve LS3P's submittals in a timely manner in order to avoid unreasonable delay in the orderly and sequential progress of LS3P's services. Owner's Representative is the only person authorized to act on behalf of Owner and to make changes to the scope of work and services under this Agreement. Any change to Owner's representative shall be made in writing and sent to LS3P. Such representative is as follows:

- .1 Name: Jermaine Walker
- .2 Address: Cumberland County Government
- .3 Tel No.: 910-321-6602; cell 910-322-0043
- .4 Email: jwalker@cumberlandcountync.gov

Owner identifies the following financial representatives:

Owner's Finance Director

- .1 Name: Brian Haney, Interim Finance Director
- .2 Address: Cumberland County Government
- .3 Tel No.: (910)678-7750
- .4 Email: bhaney@cumberlandcountync.gov

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3/11/24

Owner's Accounts Payable Contact

- .1 Name: Brian Haney, Interim Finance Director
- .2 Address: Cumberland County Government
- .3 Tel No.: (910)678-7750
- .4 Email: bhaney@cumberlandcountync.gov

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3/11/24

LS3P will use Newforma Project Center as its project information management software platform. Any change from or addition to that platform shall be for the benefit of Owner and Contractor and will constitute an Additional Service to be billed as a separate task to Owner.

F. Termination or Suspension

Either party at any time with or without cause may terminate this Proposal by written notice to the other. Termination shall be effective seven (7) days after the date the notice is received. Upon effective termination, all services provided and expenses incurred up to and including the date of termination shall be immediately reimbursable, due, and payable to LS3P. Failure of Owner to make payments to LS3P under this Proposal shall be cause for termination.

In the event of a suspension of services, LS3P shall have no liability for any damages to Owner incurred because of such suspension. Termination or suspension of services by LS3P shall in no way relieve Owner of its obligation to compensate LS3P for services provided and expenses incurred up to and including the date of termination or suspension. If Owner suspends the Project, LS3P shall be compensated for services performed prior to notice of such suspension. When the Project is resumed, LS3P shall be compensated for expenses incurred in the interruption and resumption of LS3P's services. LS3P's fees for the remaining services and the time schedules shall be equitably adjusted.

G. Ownership of Documents

Designs, drawings, specifications, and other documents prepared by LS3P and/or its consultants are Instruments of Service for use solely with respect to this Project. LS3P and its consultants reserve all respective rights in and to those Instruments of Service including, but not limited to, copyrights. The ownership of the Instruments of Service is subject to the provisions of section 7.3 of the Agreement granting a nonexclusive license to the Owner.

H. Photography / Job Sign

LS3P reserves the right to photograph the Project and use said photographs in future promotional material. Photography sessions will be coordinated with Owner to avoid distraction during business hours. Owner shall allow LS3P to post a sign at the Project site at LS3P's expense containing LS3P's name, logo, and contact information. Such sign shall remain at the site during the design and construction phases of the Project. LS3P shall coordinate the appearance and location of its sign with those of the other Project participants.

I. Mutual Waiver of Consequential Damages

Owner and LS3P waive consequential damages against each other for claims, disputes, or other matters in question arising out of or relating to this Project. This waiver is also applicable to damages due to termination and/or value engineering and will survive termination of this Proposal.

J. Limitation of Liability

LS3P'S LIABILITY (IF ANY) TO OWNER FOR ANY AND ALL CLAIMS AND/OR DAMAGES SHALL BE LIMITED TO A MAXIMUM OF AND SHALL NOT EXCEED, EITHER INDIVIDUALLY OR IN THE AGGREGATE, THE TOTAL AMOUNT OF LS3P'S FEE RECEIVED FOR THIS PROJECT.

K. Insurance

Owner and LS3P waive all rights against each other for damages to the extent covered by property insurance applicable to this Work except such rights as they may have to proceeds of such insurance held by Owner as a fiduciary. Owner shall cause the general liability insurance policies issued to the Contractor(s) and its subcontractors providing construction related activities in connection with the Project to list LS3P and its consultants as additional insureds under those policies by way of ISO endorsement CG 20 32 or its equivalent. Owner agrees to maintain general liability coverage in the amount of \$1,000,000.00 per occurrence and in the aggregate for the duration of the Project. Owner agrees to name LS3P and its consultants as additional insureds on its general liability policy providing coverage to this Project.

DELETED

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3/13/24

L. Third Party Claims

This Proposal shall not create any right, remedy, relationship, and/or cause of action in any third party.

M. Means, Methods, Schedule, and Safety

LS3P has no control over, charge of, or responsibility for hazardous materials or the means, methods, schedule, and/or safety in connection with this Project. LS3P and LS3P's consultants shall have no responsibility for the discovery, presence, handling, disposal of, or exposure of persons to hazardous materials or toxic substances in any form at the Project Site. LS3P or its consultants shall not be held

liable for any hazardous materials or toxic substances related claim. Owner will have all hazardous materials or toxic substances removed independently before construction begins. If any additional hazardous material or toxic substances are encountered during the course of the work, Owner shall be responsible for providing industrial hygienist services necessary to carry out abatement, removal, or encapsulation of the material. LS3P or LS3P's consultants shall not be held liable for the discharge or release of contaminants or other pollutants. Owner agrees to indemnify and hold harmless LS3P and its consultants from and against all third-party claims related to hazardous materials and/or toxic substances.

N. Notices

The only valid addresses for receipt of notice are as follows:

LS3P: LS3P ASSOCIATES LTD.
Attn: Charles H. Boney, Jr., Vice Pres.
101 N. Third Street, Ste 500
Wilmington, NC 28401

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3/11/24

Owner: Cumberland County Government
Attn: Clarence Grier, County Manager
Judge E. Maurice Braswell Courthouse
117 Dick Street
Fayetteville, NC 28301

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3/11/24

O. Basis of Opinion

Projects requiring observation and reporting of existing structures may have conditions concealed from view that differ from available documentation or other information. LS3P is not responsible for the costs or delays resulting from the later discovery of such actual conditions. This Proposal and any subsequent representation is a statement of professional opinion based on the information available during the assessment and/or evaluation of the subject property. Such opinion is formed by the judgment of LS3P from the knowledge of available facts and other information. This Proposal and any subsequent representation only reflect the conditions on the day of site observation. Owner hereby acknowledges that existing conditions can and will change relative to the information contained in this Proposal and/or any subsequent representation.

P. Payment

Design Services will be billed monthly in accord with the percentage of work complete and the terms of compensation. Additional Services by LS3P, Additional Services by consultants, and/or reimbursable expenses shall be billed monthly based upon accrued amount including mark-ups. Owner shall pay LS3P the balance due upon receipt of invoice. If unpaid invoices become more than sixty (60) days overdue, LS3P may, upon seven (7) days written notice to Owner, contact Owner directly for payment and/or stop work until payment is received. In the event of non-payment, Owner shall reimburse LS3P for any attorney's fees incurred to collect the unpaid receivables. LS3P will begin work on this Project once the Proposal signed by both parties have been received. Payments on this Project should be sent directly to:

LS3P ASSOCIATES LTD.
PO Box 96327
Charlotte, NC 28296-0327

Q. Dispute Resolution

Dispute resolution shall be by stepped negotiations in the following order: (1) exchange of written statements of position, (2) meeting of representatives with full settlement authority, (3) mediation, and then (4) litigation.

R. Enhanced Construction Phase Services

Owner agrees that Work will progress during the period between LS3P's Basic Construction Phase Services site visits that can and will be concealed from view during subsequent site visits, resulting in Work that LS3P is unable to observe. If Owner desires to reduce the amount of concealed Work that LS3P is unable to observe, LS3P shall provide Enhanced Construction Phase Services as Additional Services as indicated by Owner:

- ☐ Owner has determined not to select any enhanced construction phase services at this time.
- ☐ Visit the site one (1) time per week;
- ☐ Visit the site two (2) times per week;
- ☐ Visit the site every "work day" as outlined in the Contractor's construction schedule; or
- ☐ Provide "full time" site representation for the duration of the construction.

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3/11/24

Owner further agrees that LS3P explained the benefits of Enhanced Construction Phase Services to Owner. If Owner voluntarily elected not to engage LS3P to perform such services, then Owner agrees that without Enhanced Construction Phase Services the Project may experience scheduling, budget, and/or coordination problems which will be more difficult and more costly to remedy than prevent.

II. STANDARD BILLING PROVISIONS

LS3P provides Architecture, Interiors, and Planning Services on a time and materials basis as follows:

1. Compensation for Services provided by LS3P personnel shall be at the following hourly rates:

Senior Officer / Principal	\$275
Officer / Principal	\$250
Senior Project Manager	\$225
Senior Project Designer	\$225
Project Manager	\$200
Senior Architect / Senior Interior Designer	\$190
Architectural Staff III / Interior Design Staff III / Design Staff III	\$170
Architectural Staff II / Interior Design Staff II / Design Staff II	\$150
Architectural Staff I / Interior Design Staff I / Design Staff I	\$135
Designer	\$125
Senior Technician	\$135

Technician	\$125
Administrative	\$100

2. For Services of Professional and Engineering Consultants including and not limited to Structural, Civil, Mechanical, Electrical, Plumbing, and Surveying Services, a multiple of 1.25 times the amount billed to LS3P will apply.
3. Billing will occur monthly or at the completion of the work, whichever comes sooner, with payments due upon receipt.
4. After thirty (30) days from the date of invoice, payments due and unpaid shall bear a late charge of one and one-half percent (1.5%) per month from the date of invoice.
5. Reimbursable Expenses (i.e., Travel, Reproductions, Plots, Postage, Handling and Delivery, Renderings, Models, etc.), incur a multiple of 1.1 times the amount expended by LS3P. Large quantity reproductions, blue-line prints, black-line prints, sepia prints, high resolution scans, and other special graphic media formats will be outsourced at vendor pricing plus customary 10% markup.
6. Digital Reproduction of Documents and Instruments of Service (limited to computer generated drawings and not to be considered Contract Documents as defined by the General Conditions for the Contract for Construction) may be obtained for specific qualified purposes with appropriate authorization and subject to an LS3P Letter of Agreement stating Terms and Conditions for release. Drawing Sheets prepared using Autodesk® Revit®, Autodesk® AutoCAD®, and Bentley® MicroStation® application software shall have the following per sheet billing rates as Digital Documents:

<u>Electronic Files Formats</u>	<u>Per Sheet</u>
DWG (Autodesk® Drawing File)	\$30.00
DGN (Bentley® Design File)	\$30.00
DXF (Autodesk® Data Exchange File)	\$30.00
DWF (Autodesk® Design Web Format)	\$10.00
PDF (Adobe® Portable Document Format)	\$4.00

Autodesk Revit and AutoCAD drawing files represented in the DWG and DXF file formats and Bentley MicroStation design files represented in the DGN file format are viewable, printable and editable using application software. Autodesk Design Web Format or DWF files and Adobe® Portable Document Files or PDF files formats are viewable and printable using Autodesk Design Review and Adobe Acrobat Reader, respectively. These software viewers are available as free downloads. DWF and PDF file formats are not editable and may be scaled, red-lined or otherwise marked up without changing the original files. Additional charges for file format conversion may apply.

7. Minimum billable time for Depositions and Testimony is One-Half Day.
8. This standard schedule is subject to change 6 months from date of issuance.

END OF EXHIBIT



ARCHITECTURE • INTERIORS • PLANNING

EXHIBIT 2

14 February 2024

Mr. Jermain Walker
Cumberland County
Fayetteville, NC

RE: Cumberland County Homeless Shelter Insurance

Dear Jermaine:

The insurance carried by LS3P and mentioned in Item 2.5 (2.5.1 thru 2.5.8) of our proposed contract is the amount normally carried by LS3P. It is not an additional charge to Cumberland County.

Sincerely,

A handwritten signature in black ink, appearing to read 'Charles H. Boney, Jr.'.

Charles H. Boney, Jr., FAIA
Vice President | Principal

LS3P



ENGINEERING AND INFRASTRUCTURE DEPARTMENT

**MEMORANDUM FOR THE AGENDA OF THE MAY 9, 2024
AGENDA SESSION**

TO: BOARD OF COUNTY COMMISSIONERS

**FROM: JERMAINE WALKER, DIRECTOR OF ENGINEERING AND
INFRASTRUCTURE**

DATE: 4/30/2024

**SUBJECT: RATE INCREASE FOR THE KELLY HILLS/SLOCUMB ROAD
SANITARY SEWER SYSTEM**

Requested by: BOARD OF COMMISSIONERS

**Presenter(s): JERMAINE WALKER, DIRECTOR OF ENGINEERING AND
INFRASTRUCTURE**

BACKGROUND

After reviewing the current operational costs for the Kelly Hills/Slocumb Road Sanitary Sewer Collection System, it has been determined that the present rate structure for sewer service is not meeting the operational and maintenance costs incurred by the system, nor generating sufficient revenue for future capital costs.

The attached rate structure includes a proposed increase for FY2025 over FY2024 rates for the Operational and Maintenance Fee from \$6.95 to \$7.99 and for the Flat Rate Usage Charge from \$50.36 to \$57.91. It also includes

a proposed increase for these rates of 5% per year for the next three years. This option was previously exercised by the County and is current practice by many local municipalities. All other rates and fees are proposed to remain the same.

This schedule will provide predictability to the current customers as they will know exactly how much the rates will increase yearly as opposed to an undetermined amount year-over-year.

This proposed rate structure must be mailed to all the system's customers no later than June 1, 2024, and will go into effect on July 1, 2024.

RECOMMENDATION / PROPOSED ACTION

Staff recommends the Board of Commissioners move this item forward to the May 20, 2024, Regular Meeting as Consent Agenda item as well as to the Kelly Hills Water and Sewer District Governing Board Consent Agenda for approval of the rate increase .

ATTACHMENTS:

Description	Type
Proposed Rate Schedule	Backup Material

Kelly Hills/Slocomb Road Sanitary Sewer Rate Schedule

Monthly Rate shall be the sum of the Availability Fee, the Administration Fee and the Operation and Maintenance Fee.

Availability Fee shall be the fee charged to all customers to which a County water or sewer line has been made directly available.

RATES AS OF:	July 1, 2024	July 1, 2025	July 1, 2026	July 1, 2027
Availability/Debt Service Fee	\$10.00	\$10.00	\$10.00	\$10.00
Administration Fee	\$2.00	\$2.00	\$2.00	\$2.00
Operation and Maintenance Fee	\$7.99	\$8.03	\$8.43	\$8.86

Monthly Flat Rate shall be the sum of the Flat Rate Usage Charge, Debt Service Fee, the Administration Fee and the Operation and Maintenance Fee.

RATES AS OF:	July 1, 2024	July 1, 2025	July 1, 2026	July 1, 2027
Flat Rate Usage Charge	\$57.91	\$58.17	\$61.08	\$64.13

Other Fees

RATES AS OF:	July 1, 2024	July 1, 2025	July 1, 2026	July 1, 2027
Deposit	\$100.00	\$100.00	\$100.00	\$100.00
Late Penalty	\$10.00	\$10.00	\$10.00	\$10.00
Processing Fee per Collection Action	\$30.00	\$30.00	\$30.00	\$30.00
Administrative Filing Fee per Collection Action	\$100.00	\$100.00	\$100.00	\$100.00
Disconnect Fee (Administrative charge to discontinue service for non-payment)	\$25.00	\$25.00	\$25.00	\$25.00
Reconnect Fee - Business Hours (Administrative charge to re-establish service after discontinuance for non-payment)	\$25.00	\$25.00	\$25.00	\$25.00
After-Hours Reconnect Fee (Available until 9:00 pm)	\$75.00	\$75.00	\$75.00	\$75.00
Returned Bank Fee (Amount of bank item plus return fee - CASH, MONEY ORDER or CERTIFIED CHECK ONLY)	Per NCGS 25-3-506	Per NCGS 25-3-506	Per NCGS 25-3-506	Per NCGS 25-3-506
Court Costs	Actual	Actual	Actual	Actual
Elder Valve	Actual plus 10%	Actual plus 10%	Actual plus 10%	Actual plus 10%

Kelly Hills/Slocomb Road Sanitary Sewer Rate Schedule

Connection Fees and Charges

1. Sewer Laterals:

An estimate shall be given to the applicant prior to installation and shall be paid by the applicant prior to any installation of laterals to be connected to the sewer system. All charges include labor, equipment and materials required for the installation of the specified pipe size or sizes.

2. Main Extension Charges:

An estimate shall be given to the applicant prior to installation and shall be paid by the applicant prior to extending the main in the sewer district. All charges include labor, equipment and materials required for the installation of the specified pipe size or sizes.



ENGINEERING AND INFRASTRUCTURE DEPARTMENT

**MEMORANDUM FOR THE AGENDA OF THE MAY 9, 2024
AGENDA SESSION**

TO: BOARD OF COUNTY COMMISSIONERS

**FROM: JERMAINE WALKER, DIRECTOR OF ENGINEERING AND
INFRASTRUCTURE**

DATE: 5/9/2024

**SUBJECT: RATE INCREASE FOR THE SOUTHPOINT WATER SYSTEM, GRAYS
CREEK WATER AND SEWER DISTRICT**

Requested by: BOARD OF COMMISSIONERS

**Presenter(s): JERMAINE WALKER, DIRECTOR OF ENGINEERING AND
INFRASTRUCTURE**

BACKGROUND

After reviewing the current operational costs for the Southpoint Water Distribution System located in the Grays Creek Water and Sewer District, it has been determined that the present rate structure for water service is not meeting the operational and maintenance costs incurred by the system, nor generating sufficient revenue for future capital costs.

The attached rate structure includes a proposed increase for FY2025 over FY2024 rates for the Operational and Maintenance Fee from \$2.89 to \$3.32 and for the Water Usage Charge for 0 - 2,000 gallons from \$13.31 minimum to \$15.31 minimum. It also includes a proposed rate increase of 5% per year for the next three years. This option was previously exercised by the County and is current practice by many local municipalities. All other rates and fees are proposed to remain the same.

This schedule will provide predictability to the current customers as they will know exactly how much the rates will increase yearly as opposed to an undetermined amount year-over-year.

This proposed rate structure must be mailed to all the system's customers no later than June 1, 2024, and will go into effect on July 1, 2024.

RECOMMENDATION / PROPOSED ACTION

Staff recommends the Board of Commissioners move this item forward to the May 20, 2024, Regular Meeting as Consent Agenda item as well as to the Grays Creek Water and Sewer District Governing Board as a Consent Agenda item for approval.

ATTACHMENTS:

Description	Type
Proposed Rate Schedule	Backup Material

Southpoint Water Rate Schedule

Monthly Rate shall be the sum of the Availability Fee, the Administration Fee and the Operation and Maintenance Fee.

Availability Fee shall be the fee charged to all customers to which a County water or sewer line has been made directly available.

RATES AS OF:	July 1, 2024	July 1, 2025	July 1, 2026	July 1, 2027
Availability/Debt Service Fee	\$10.00	\$10.00	\$10.00	\$10.00
Administration Fee	\$2.00	\$2.00	\$2.00	\$2.00
Operation & Maintenance Fee	\$3.32	\$3.49	\$3.66	\$3.84

Monthly Water Usage Rate shall be the sum of the Water Usage Charge, Debt Service Fee, Administration Fee and the Operation & Maintenance Fee.

RATES AS OF:	July 1, 2024	July 1, 2025	July 1, 2026	July 1, 2027
Water Usage Charge				
0 - 2,000 Gallons	\$15.31 Minimum	\$16.08 Minimum	\$16.88 Minimum	\$17.72 Minimum
Next 4,000 Gallons	\$11.00 per 1,000 Gallons	\$11.00 per 1,000 Gallons	\$11.00 per 1,000 Gallons	\$11.00 per 1,000 Gallons
Next 2,000 Gallons	\$12.00 per 1,000 Gallons	\$12.00 per 1,000 Gallons	\$12.00 per 1,000 Gallons	\$12.00 per 1,000 Gallons
Next 2,000 Gallons	\$13.00 per 1,000 Gallons	\$13.00 per 1,000 Gallons	\$13.00 per 1,000 Gallons	\$13.00 per 1,000 Gallons
Next 40,000 Gallons	\$14.00 per 1,000 Gallons	\$14.00 per 1,000 Gallons	\$14.00 per 1,000 Gallons	\$14.00 per 1,000 Gallons
Next 50,000 Gallons	\$15.00 per 1,000 Gallons	\$15.00 per 1,000 Gallons	\$15.00 per 1,000 Gallons	\$15.00 per 1,000 Gallons
All Over 100,000 Gallons	\$16.00 per 1,000 Gallons	\$16.00 per 1,000 Gallons	\$16.00 per 1,000 Gallons	\$16.00 per 1,000 Gallons

Other Fees

RATES AS OF:	July 1, 2024	July 1, 2025	July 1, 2026	July 1, 2027
Deposit	\$100.00	\$100.00	\$100.00	\$100.00
Late Penalty	\$10.00	\$10.00	\$10.00	\$10.00
Processing Fee per Collection Action	\$30.00	\$30.00	\$30.00	\$30.00
Administrative Filing Fee per Collection Action	\$100.00	\$100.00	\$100.00	\$100.00
Disconnect Fee (Administrative charge to discontinue service for non-payment)	\$25.00	\$25.00	\$25.00	\$25.00
Reconnect Fee - Business Hours (Administrative charge to re-establish service after discontinuance for non-payment)	\$25.00	\$25.00	\$25.00	\$25.00
After-Hours Reconnect Fee (Available until 9:00 pm)	\$75.00	\$75.00	\$75.00	\$75.00
Returned Bank Fee (Amount of bank item plus return fee - CASH, MONEY ORDER or CERTIFIED CHECK ONLY)	Per NCGS 25-3-506	Per NCGS 25-3-506	Per NCGS 25-3-506	Per NCGS 25-3-506
Court Costs	Actual	Actual	Actual	Actual
Special Meter Reading (Performed at request of customer; no charge if initial reading was over-read)	\$10.00	\$10.00	\$10.00	\$10.00
Meter Verification Fee (Meter removed and taken to testing facility; performed at written request of customer; no charge if meter over-registers by more than 5%)	\$50.00	\$50.00	\$50.00	\$50.00
Flow Test	\$50.00	\$50.00	\$50.00	\$50.00

Southpoint Water Rate Schedule

Connection Fees and Charges

1. Water Laterals:

An estimate shall be given to the applicant prior to installation and shall be paid by the applicant prior to any installation of laterals to be connected to the water system. All charges include labor, equipment and materials required for the installation of the specified pipe size or sizes.

3. Main Extension Charges:

An estimate shall be given to the applicant prior to installation and shall be paid by the applicant prior to extending the main in the water district. All charges include labor, equipment and materials required for the installation of the specified pipe size or sizes.



AMERICAN RESCUE PLAN

MEMORANDUM FOR THE AGENDA OF THE MAY 9, 2024 AGENDA SESSION

TO: BOARD OF COUNTY COMMISSIONERS

FROM: TYE VAUGHT, CHIEF OF STAFF

DATE: 5/3/2024

SUBJECT: ARP COMMITTEE FUNDING RECOMMENDATIONS

Requested by: AMERICAN RESCUE PLAN COMMITTEE

Presenter(s): TYE VAUGHT, CHIEF OF STAFF

BACKGROUND

The American Rescue Plan Committee met on Monday, May 6, 2024 to consider funding recommendations.

The information from the ARP Committee meeting will be provided during the May 20, 2024 Board of Commissioners Agenda Session meeting.

RECOMMENDATION / PROPOSED ACTION

Staff request that these funding recommendations be forwarded to the May 20, 2024 Board of Commissioners meeting as an item of consent.



FINANCE DEPARTMENT

**MEMORANDUM FOR THE AGENDA OF THE MAY 9, 2024
AGENDA SESSION**

TO: BOARD OF COUNTY COMMISSIONERS

FROM: BRIAN HANEY, ASSISTANT COUNTY MANAGER FOR GENERAL
GOVERNMENT & STEWARDSHIP/INTERIM FINANCE DIRECTOR

DATE: 5/2/2024

SUBJECT: FINANCIAL REPORT

Requested by: CLARENCE GRIER, COUNTY MANAGER

Presenter(s): N/A

BACKGROUND

The attached financial report shows results of the General Fund for fiscal year 2024, March year-to-date. Additional detail has been provided on a separate page explaining percentages that may appear inconsistent with year-to-date budget expectations.

RECOMMENDATION / PROPOSED ACTION

No action needed. Report provided for information and discussion purposes only.

ATTACHMENTS:

Description	Type
Monthly Financial Report	Backup Material

**County of Cumberland
General Fund Revenues**

REVENUES	FY22-23 AUDITED	FY23-24 ADOPTED BUDGET	FY23-24 REVISED BUDGET	YTD ACTUAL (unaudited) AS OF March 31, 2024	PERCENT OF BUDGET TO DATE	*
Ad Valorem Taxes						
Current Year	\$ 173,008,171	\$ 174,316,451	\$ 174,316,451	\$ 175,252,101	100.5%	(1)
Prior Years	1,227,090	1,274,781	1,274,781	779,177	61.1%	
Motor Vehicles	25,322,735	27,054,585	27,054,585	17,058,404	63.1%	(2)
Penalties and Interest	903,988	732,162	732,162	671,602	91.7%	
Other	1,040,783	1,150,355	1,150,355	888,135	77.2%	
Total Ad Valorem Taxes	201,502,767	204,528,334	204,528,334	194,649,419	95.2%	
Other Taxes						
Sales	62,946,775	66,330,475	66,330,475	32,248,804	48.6%	(3)
Real Estate Transfer	2,620,117	2,200,000	2,200,000	1,381,213	62.8%	
Other	842,915	832,262	832,262	295,226	35.5%	
Total Other Taxes	66,409,807	69,362,737	69,362,737	33,925,243	48.9%	
Unrestricted & Restricted Intergovernmental Revenues	69,259,446	72,884,504	82,648,357	39,937,212	48.3%	(4)
Charges for Services	14,807,065	13,391,478	14,235,848	10,616,126	74.6%	(5)
Other Sources (includes Transfers In)	27,571,906	10,738,371	6,920,012	11,398,762	164.7%	
Lease Land CFVMC	4,532,728	4,532,728	4,532,728	4,765,496	105.1%	
Total Other	32,104,634	15,271,099	11,452,740	16,164,258	141.1%	
Total Revenue	\$ 384,083,719	\$ 375,438,152	\$ 382,228,016	\$ 295,292,258	77.3%	
Fund Balance Appropriation		6,454,775	58,963,932	-	0.0%	
Total Funding Sources	\$ 384,083,719	\$ 381,892,927	\$ 441,191,948	\$ 295,292,258	66.9%	

County of Cumberland
General Fund Expenditures

DEPARTMENTS	YTD ACTUAL					PERCENT OF BUDGET TO DATE	**
	FY22-23 AUDITED	FY23-24 ADOPTED BUDGET	FY23-24 REVISED BUDGET	(unaudited) AS OF March 31, 2024			
Governing Body	\$ 742,015	\$ 737,485	\$ 748,620	\$ 551,175	73.6%		
Administration	2,407,803	2,981,741	2,981,741	1,609,065	54.0%	(1)	
Public Information	1,313,573	1,789,756	1,829,490	1,061,522	58.0%		
Human Resources	1,105,075	1,350,074	1,350,074	942,256	69.8%		
Court Facilities	135,296	144,720	144,720	95,300	65.9%		
Facilities Maintenance	1,237,443	1,261,435	1,282,549	872,405	68.0%		
Landscaping & Grounds	829,912	789,040	789,040	481,209	61.0%		
Carpentry	218,434	234,055	234,055	169,294	72.3%		
Facilities Management	1,487,165	1,595,264	1,595,264	1,177,084	73.8%		
Public Buildings Janitorial	1,034,473	1,276,630	1,276,630	867,438	67.9%		
Central Maintenance	3,720,304	4,423,015	5,579,743	3,294,619	59.0%		
Innovation & Technology Services	7,302,362	9,229,693	9,430,063	6,458,543	68.5%		
Board of Elections	1,221,913	1,885,321	1,885,321	1,235,854	65.6%		
Financial Services	1,487,150	1,568,394	1,568,394	1,035,604	66.0%		
Legal	1,107,578	1,321,291	1,321,291	924,423	70.0%		
Register of Deeds	2,613,490	2,799,411	3,240,177	1,772,642	54.7%		
Tax	7,139,112	7,325,216	7,365,716	5,197,566	70.6%		
Debt Service	336,850	-	-	-	0.0%		
General Government Other	5,069,712	6,489,381	14,510,587	3,755,280	25.9%	(2)	
Sheriff	55,631,240	59,905,448	62,976,079	37,154,215	59.0%		
Emergency Services	4,644,689	5,076,820	5,278,527	3,230,316	61.2%		
Adult Drug Treatment Court	-	-	962,689	-	0.0%	(3)	
DWI Court	-	-	149,845	44,104	29.4%	(4)	
Justice Services	642,262	742,383	752,241	510,572	67.9%		
Youth Diversion	38,013	37,691	37,691	27,286	72.4%		
Veterans Treatment Court	-	-	948,996	-	0.0%	(5)	
Animal Services	3,921,983	4,493,335	4,527,915	2,802,776	61.9%		
Public Safety Other (Medical Examiners, NC Detention Subsidy)	1,437,673	2,034,642	2,589,442	1,319,251	50.9%	(6)	
Health	26,919,350	33,250,408	36,819,551	23,057,671	62.6%		
Mental Health	5,536,157	5,717,199	5,717,199	5,218,245	91.3%		
Social Services	56,096,221	70,087,126	71,563,457	39,396,228	55.1%		

**County of Cumberland
General Fund Expenditures**

DEPARTMENTS	FY22-23	FY23-24	FY23-24	YTD ACTUAL	PERCENT OF	**
	AUDITED	ADOPTED BUDGET	REVISED BUDGET	(unaudited) AS OF March 31, 2024	BUDGET TO DATE	
Veteran Services	604,817	603,701	603,701	475,868	78.8%	
Child Support	5,525,083	6,227,054	6,227,054	4,368,469	70.2%	
Spring Lake Resource Administration	30,265	61,649	81,649	44,387	54.4%	
Library	11,263,871	11,605,594	12,399,358	7,937,131	64.0%	
Culture Recreation Other (Some of the Community Funding)	260,569	459,923	459,923	17,423	3.8%	(7)
Planning	3,181,344	3,606,363	3,646,789	2,514,335	68.9%	
Engineering	568,037	2,422,932	2,431,021	420,227	17.3%	(8)
Cooperative Extension	758,745	865,386	865,386	530,011	61.2%	
Location Services	241,407	237,473	237,473	184,994	77.9%	
Soil Conservation	1,155,340	590,634	1,726,794	510,534	29.6%	(9)
Public Utilities	103,625	104,723	104,723	81,813	78.1%	
Economic Physical Development Other	113,990	20,000	1,219,600	796,998	65.3%	
Economic Incentive	276,652	468,126	468,126	30,126	6.4%	(10)
Water and Sewer	1,569	100,000	200,843	75,096	37.4%	(11)
Education	100,442,517	104,595,132	104,845,132	78,785,399	75.1%	
Other Uses:						
Transfers Out	43,532,750	21,377,263	56,217,269	450,121	0.8%	(12)
TOTAL	\$ 363,437,829	\$ 381,892,927	\$ 441,191,948	\$ 241,484,875	54.7%	

Expenditures by Category	YTD ACTUAL					PERCENT OF BUDGET TO DATE
	FY22-23 AUDITED	FY23-24 ADOPTED BUDGET	FY23-24 REVISED BUDGET	(unaudited) AS OF March 31, 2024		
Personnel Expenditures	\$ 152,866,615	\$ 174,893,528	\$ 176,928,322	\$ 114,763,516	64.9%	
Operating Expenditures	161,927,032	181,714,774	195,257,187	123,283,994	63.1%	
Capital Outlay	5,111,432	3,907,362	12,789,170	2,987,244	23.4% ⁽¹³⁾	
Transfers To Other Funds	43,532,750	21,377,263	56,217,269	450,121	0.8% ⁽¹²⁾	
TOTAL	\$ 363,437,829	\$ 381,892,927	\$ 441,191,948	\$ 241,484,875	54.7%	

COUNTY OF CUMBERLAND

Fiscal Year 2024 - March Year-to-Date Actuals (Report Run Date: April 25, 2024)

Additional Detail

General Fund Revenues

*

- (1) **Current Year Ad Valorem 100.5%** - The bulk of revenues are typically recorded between November - January.
- (2) **Motor Vehicles 63.1%** - YTD Actual reflects 8 months of collections.
- (3) **Sales Tax 48.6%** - YTD Actual reflects 6 month of collections. Collections for the fiscal year are first recorded in October.
- (4) **Unrestricted/Restricted Intergovernmental 48.3%** - There is typically a one to two month lag in receipt of this funding.
- (5) **Charges for Services 74.6%** - The largest component of charges for services is revenue from the Board of Ed for security at 20% of budget. 45% of that revenue has been billed/collected to date.

General Fund Expenditures

**

- (1) **Administration 54.0%** - Personnel costs are low as a result of vacancies in the department.
- (2) **General Government Other 25.9%** - ARP Freed-Up Capacity funds are budgeted and not yet expended with the majority belonging to upfitting the Employee Daycare and for Non-Profit Assistance contracts.
- (3) **Adult Drug Treatment Court 0.0%** - Expenditures for this DOJ grant began 10/1/23.
- (4) **DWI Court 29.4%** - Expenditures for this DOJ grant began 10/1/23.
- (5) **Veterans Treatment Court 0.0%** - Expenditures for this DOJ grant began 10/1/23.
- (6) **Public Safety Other 50.9%** - Approximately \$681K budgeted for reimbursements for an interlocal agreement with the City of Fayetteville is unexpended.
- (7) **Culture Recreation Other 3.8%** - Community funding contracts and payments are still being processed resulting in very few payments being made so far.
- (8) **Engineering 17.3%** - Approximately \$1.7M budgeted for generators is unexpended.
- (9) **Soil Conservation 29.6%** - Approximately \$1.1M in USDA Grant funds were budgeted and are unexpended.
- (10) **Economic Incentive 6.4%** - Economic incentives are paid when the company complies.
- (11) **Water and Sewer 37.4%** - The need for spending in this fiscal year has been low.
- (12) **Transfers Out 0.8%** - Transfers are often prepared toward the end of the fiscal year.
- (13) **Capital Outlay 23.4%** - These capital outlay items are typically purchased in the second and third quarters of the fiscal year.



AMERICAN RESCUE PLAN

MEMORANDUM FOR THE AGENDA OF THE MAY 9, 2024 AGENDA SESSION

TO: BOARD OF COUNTY COMMISSIONERS

FROM: TYE VAUGHT, CHIEF OF STAFF

DATE: 4/30/2024

SUBJECT: ARPA QUARTERLY PROJECT AND EXPENDITURE REPORT AS OF MARCH 31, 2024

Requested by: AMERICAN RESCUE PLAN COMMITTEE

Presenter(s): N/A

BACKGROUND

Quarterly project and expenditure reporting of American Rescue Plan Act funding is required for metropolitan cities and counties with a population that exceeds 250,000. Cumberland County's quarterly report of projects and expenditures was submitted for the timeframe of January 1, 2024 through March 31, 2024 on April 5, 2024 as shown within the attached report.

RECOMMENDATION / PROPOSED ACTION

No action needed. For information purposes only.

ATTACHMENTS:

Description	Type
ARPA P&E Report for quarter ending March 31, 2024	Backup Material

SLFRF Compliance Report - SLT-1353 - P&E Report - Q1 2024
Report Period : Quarter 1 2024 (January-March)

Recipient Profile

Recipient Information

Recipient UEI	VAUSC2ZZKJ78
Recipient TIN	566000291
Recipient Legal Entity Name	County Of Cumberland, North Carolina
Recipient Type	Metro City or County
FAIN	
CFDA No./Assistance Listing	
Recipient Address	117 Dick Street
Recipient Address 2	
Recipient Address 3	
Recipient City	Fayetteville
Recipient State/Territory	NC
Recipient Zip5	28301
Recipient Zip+4	
Recipient Reporting Tier	Tier 1. States, U.S. territories, metropolitan cities and counties with a population that exceeds 250,000 residents
Base Year Fiscal Year End Date	6/30/2024
Discrepancies Explanation	
Who approves the budget in your jurisdiction?	Other (Specify)
Is your budget considered executed at the point of obligation?	Yes
Is the Recipient Registered in SAM.Gov?	Yes

Project Overview

Project Name: COVID19 Vaccinations

Project Identification Number	AR101
Project Expenditure Category	1-Public Health
Project Expenditure Subcategory	1.1-COVID-19 Vaccination
Status To Completion	Completed
Adopted Budget	\$72,086.00
Program Income Earned	\$0.00
Program Income Expended	\$0.00
Total Cumulative Obligations	\$72,086.00
Total Cumulative Expenditures	\$72,086.00
Current Period Obligations	\$0.00
Current Period Expenditures	\$0.00
Project Description	Cumberland County's self-funded claims costs for vaccinations.
Does this project include a capital expenditure?	No
What Impacted and/or Disproportionally Impacted population does this project primarily serve?	1 Imp General Public
Brief description of structure and objectives of assistance program(s), including public health or negative economic impact experienced	Reimburse Cumberland County for self-funded claims for vaccinations.
Brief description of recipient's approach to ensuring that response is reasonable and proportional to a public health or negative economic impact of Covid-19	Review of claims data from BCBS.

Project Name: COVID Testing

Project Identification Number	AR102
Project Expenditure Category	1-Public Health
Project Expenditure Subcategory	1.2-COVID-19 Testing
Status To Completion	Completed
Adopted Budget	\$166,000.00
Program Income Earned	\$0.00
Program Income Expended	\$0.00
Total Cumulative Obligations	\$166,000.00
Total Cumulative Expenditures	\$166,000.00
Current Period Obligations	\$0.00
Current Period Expenditures	\$0.00
Project Description	Cumberland County's self-funded claims costs for COVID19 testing

Does this project include a capital expenditure?	No
What Impacted and/or Disproportionally Impacted population does this project primarily serve?	1 Imp General Public
Brief description of structure and objectives of assistance program(s), including public health or negative economic impact experienced	Reimburse Cumberland County for self-funded claims for COVID19 testing.
Brief description of recipient's approach to ensuring that response is reasonable and proportional to a public health or negative economic impact of Covid-19	Review of claims data from BCBS.

Project Name: Medical Expense

Project Identification Number	AR106
Project Expenditure Category	1-Public Health
Project Expenditure Subcategory	1.6-Medical Expenses (including Alternative Care Facilities)
Status To Completion	Completed
Adopted Budget	\$961,914.00
Program Income Earned	\$0.00
Program Income Expended	\$0.00
Total Cumulative Obligations	\$961,914.00
Total Cumulative Expenditures	\$961,914.00
Current Period Obligations	\$0.00
Current Period Expenditures	\$0.00
Project Description	Cumberland County's self-funded claims costs for COVID19 treatment
Does this project include a capital expenditure?	No
What Impacted and/or Disproportionally Impacted population does this project primarily serve?	1 Imp General Public
Brief description of structure and objectives of assistance program(s), including public health or negative economic impact experienced	Cumberland County's self-funded claims costs for COVID19 treatment
Brief description of recipient's approach to ensuring that response is reasonable and proportional to a public health or negative economic impact of Covid-19	Review of claims data from BCBS.
Does the project prioritize local hires?	Yes
Does the project have a Community Benefit Agreement, with a description of any such agreement?	No

Project Name: Public Sector Staff Workforce: Rehiring Public Sector Staff

Project Identification Number	AR302
Project Expenditure Category	3-Public Health-Negative Economic Impact: Public Sector Capacity
Project Expenditure Subcategory	3.2-Public Sector Workforce: Rehiring Public Sector Staff
Status To Completion	Completed
Adopted Budget	\$14,435,245.00

Program Income Earned	\$0.00
Program Income Expended	\$0.00
Total Cumulative Obligations	\$14,435,245.00
Total Cumulative Expenditures	\$14,435,245.00
Current Period Obligations	\$0.00
Current Period Expenditures	\$3,000,000.00
Project Description	Salary and benefit cost to restore employment to pre-pandemic levels.
Does this project include a capital expenditure?	No
Brief description of structure and objectives of assistance program(s), including public health or negative economic impact experienced	Salary and benefit cost to restore employment level to pre-pandemic level.
Brief description of recipient's approach to ensuring that response is reasonable and proportional to a public health or negative economic impact of Covid-19	Calculations followed per final rule.
Number of FTEs rehired by governments under this authority	100

Project Name: COVID Small Business Assistance

Project Identification Number	AR108
Project Expenditure Category	1-Public Health
Project Expenditure Subcategory	1.8-COVID-19 Assistance to Small Businesses
Status To Completion	Completed 50% or more
Adopted Budget	\$2,655,886.00
Program Income Earned	\$0.00
Program Income Expended	\$0.00
Total Cumulative Obligations	\$2,319,161.36
Total Cumulative Expenditures	\$1,427,302.68
Current Period Obligations	\$0.00
Current Period Expenditures	\$372,394.81
Project Description	Cumberland County has issued a request for applications, focused on for-profit small businesses located within the County. Eligible small businesses have an opportunity to receive a one-time amount up to \$50,000 to aid in COVID-19 recovery efforts. Higher priority is being given to eligible small businesses who employ one or more individuals of low to moderate income and/or whose business is located within a qualified census tract.
Does this project include a capital expenditure?	No
What Impacted and/or Disproportionally Impacted population does this project primarily serve?	1 Imp General Public
Secondary Impacted and/or Disproportionately Impacted populations	2 Imp Low or moderate income HHs or populations
	Cumberland County issued requests for applications, focused on for-profit small businesses located within the

Brief description of structure and objectives of assistance program(s), including public health or negative economic impact experienced	County. Eligible small businesses had the opportunity to receive a one-time amount up to \$50,000 to aid in COVID-19 recovery efforts. Higher priority is being given to eligible small businesses who employ one or more individuals of low to moderate income.
Brief description of recipient's approach to ensuring that response is reasonable and proportional to a public health or negative economic impact of Covid-19	Applicants certified they had lost revenue. Application process addresses the hiring or keeping low to moderate income workers and reimbursement to cover that cost.
Number of small businesses served (by program if recipient establishes multiple separate small businesses assistance programs)	72

Project Name: Provision of Government Services

Project Identification Number	AR610
Project Expenditure Category	6-Revenue Replacement
Project Expenditure Subcategory	6.1-Provision of Government Services
Status To Completion	Completed
Adopted Budget	\$10,000,000.00
Program Income Earned	\$0.00
Program Income Expended	\$0.00
Total Cumulative Obligations	\$10,000,000.00
Total Cumulative Expenditures	\$10,000,000.00
Current Period Obligations	\$0.00
Current Period Expenditures	\$0.00
Project Description	The funds were utilized to cover staffing/payroll costs of the Sheriff's Office and Detention Center. The funds will cover salaries and corresponding fringe benefit expenses for those employees beginning in April 2022 until available funds are exhausted. Covered salaries are based on Cumberland County's current pay schedule and the fringe benefits are based on the Board of Commissioner adopted benefits ordinance.

Project Name: CCOVID Assistance to Nonprofits

Project Identification Number	AR109
Project Expenditure Category	1-Public Health
Project Expenditure Subcategory	1.9-COVID-19 Assistance to Non-Profits
Status To Completion	Cancelled
Adopted Budget	\$0.00
Program Income Earned	\$0.00
Program Income Expended	\$0.00
Total Cumulative Obligations	\$0.00
Total Cumulative Expenditures	\$0.00
Current Period Obligations	\$0.00
Current Period Expenditures	\$0.00

Project Description	Cumberland County has issued a formal request for proposals seeking the assistance of nonprofit entities to recommend ideas on how to best provide county citizens in need with supports/services to aid in COVID-19 recovery efforts. The highest ranked proposals will be considered for a subaward or contractual agreement. A sub-committee was established and is in the process of reviewing responses. It is anticipated that award recommendations will be made during August 2022.
Does this project include a capital expenditure?	No
What Impacted and/or Disproportionally Impacted population does this project primarily serve?	1 Imp General Public
Brief description of structure and objectives of assistance program(s), including public health or negative economic impact experienced	ARP project cancelled.
Brief description of recipient's approach to ensuring that response is reasonable and proportional to a public health or negative economic impact of Covid-19	ARP project cancelled.
Number of Non-Profits served (by program if recipient establishes multiple separate non-profit assistance programs)	0

Project Name: Board Meeting Room Update

Project Identification Number	AR104
Project Expenditure Category	1-Public Health
Project Expenditure Subcategory	1.4-Prevention in Congregate Settings (Nursing Homes, Prisons/Jails, Dense Work Sites, Schools, Child care facilities, etc.)
Status To Completion	Cancelled
Adopted Budget	\$0.00
Program Income Earned	\$0.00
Program Income Expended	\$0.00
Total Cumulative Obligations	\$0.00
Total Cumulative Expenditures	\$0.00
Current Period Obligations	\$0.00
Current Period Expenditures	\$0.00
Project Description	Board of Commissioner meetings are required to be open to the public. Sufficient space is not available in the current congregate meeting room to allow for social distancing between commissioners or in the employee/public seating area. Funds will be utilized to enhance airflow, provide commissioner and employee/public seating sufficient enough to provide for social distancing in a different meeting room that will allow for safety in this congregate setting.
Does this project include a capital expenditure?	Yes
What is the Total expected capital expenditure, including pre-development costs, if applicable	\$3,000,000.00
Type of capital expenditures, based on the following enumerated uses	Improvements to existing facilities

Please identify the dollar amount of the total project spending that is allocated towards evidence-based interventions	\$0.00
Is a program evaluation of the project being conducted?	No
What Impacted and/or Disproportionally Impacted population does this project primarily serve?	1 Imp General Public
Is a program evaluation of the project being conducted?	No
Brief description of structure and objectives of assistance program(s), including public health or negative economic impact experienced	To provide social distancing within a congregate space.
Brief description of recipient's approach to ensuring that response is reasonable and proportional to a public health or negative economic impact of Covid-19	General aim/requirement to make local government public meetings accessible to the general public.

Project Name: Rental Assistance

Project Identification Number	AR202
Project Expenditure Category	2-Negative Economic Impacts
Project Expenditure Subcategory	2.2-Household Assistance: Rent, Mortgage, and Utility Aid
Status To Completion	Completed
Adopted Budget	\$500,000.00
Program Income Earned	\$0.00
Program Income Expended	\$0.00
Total Cumulative Obligations	\$500,000.00
Total Cumulative Expenditures	\$500,000.00
Current Period Obligations	\$0.00
Current Period Expenditures	\$0.00
Project Description	Cumberland County plans to issue a request for applications tailored to those who had an existing rental lease and utilities, who were negatively affected by the pandemic, and who have been thus rendered unable to maintain their current rental lease and utility payments. Eligibility will be limited to providing rental and utility assistance to those who reside in a QCT, and/or those who qualify as low to moderate income households, without duplicating similar assistance that has already been provided to these households.
Does this project include a capital expenditure?	No
Please identify the dollar amount of the total project spending that is allocated towards evidence-based interventions	\$0.00
Is a program evaluation of the project being conducted?	No
What Impacted and/or Disproportionally Impacted population does this project primarily serve?	2 Imp Low or moderate income HHs or populations
Is a program evaluation of the project being conducted?	No
Brief description of structure and objectives of assistance program(s), including public health or negative economic	Rental assistance to landlords and tenants who have

impact experienced	defaulted in payment of rent in Cumberland County.
Brief description of recipient's approach to ensuring that response is reasonable and proportional to a public health or negative economic impact of Covid-19	Rental assistance was provided to individuals who faced financial hardship due to COVID19.
Number of households served (by program if recipient establishes multiple separate household assistance programs)	110

Project Name: First Time Home Buyers Program

Project Identification Number	AR218
Project Expenditure Category	2-Negative Economic Impacts
Project Expenditure Subcategory	2.18-Housing Support: Other Housing Assistance
Status To Completion	Cancelled
Adopted Budget	\$0.00
Program Income Earned	\$0.00
Program Income Expended	\$0.00
Total Cumulative Obligations	\$0.00
Total Cumulative Expenditures	\$0.00
Current Period Obligations	\$0.00
Current Period Expenditures	\$0.00
Project Description	Cumberland County plans to issue a request for applications, with a focus on first-time home buyers of low to moderate income and/or those who have had an adverse economic impact as a result of COVID-19, and/or residents of a Qualified Census Tract (QCT). Eligible applicants may receive financial assistance in the household per person amounts that do not exceed the payment totals provided by the federal government within the COVID-19 Stimulus & Relief packages.
Does this project include a capital expenditure?	No
Please identify the dollar amount of the total project spending that is allocated towards evidence-based interventions	\$0.00
Is a program evaluation of the project being conducted?	No
What Impacted and/or Disproportionally Impacted population does this project primarily serve?	1 Imp General Public
Is a program evaluation of the project being conducted?	No
Brief description of structure and objectives of assistance program(s), including public health or negative economic impact experienced	ARP project cancelled.
Brief description of recipient's approach to ensuring that response is reasonable and proportional to a public health or negative economic impact of Covid-19	ARP project cancelled.

Project Name: Shaw Heights Affordable Housing

Project Identification Number	AR215
Project Expenditure Category	2-Negative Economic Impacts

Project Expenditure Subcategory	2.15-Long-Term Housing Security: Affordable Housing
Status To Completion	Not Started
Adopted Budget	\$12,700,000.00
Program Income Earned	\$0.00
Program Income Expended	\$0.00
Total Cumulative Obligations	\$0.00
Total Cumulative Expenditures	\$0.00
Current Period Obligations	\$0.00
Current Period Expenditures	\$0.00
Project Description	Cumberland County is in the planning phase of construction of affordable housing to be located within the Shaw Heights community, which is located within a Qualified Census Tract (QCT). This project is being explored in conjunction with the installation of a sanitary sewer system described in the Shaw Heights Sanitary Sewer System ARPA Project (AR505). The number of housing units is to be determined. The affordable housing units will provide for permanent housing options for those citizens who are within the low to moderate income range. Housing units are also planned for the County's Robins Meadow Housing project.
Does this project include a capital expenditure?	Yes
What is the Total expected capital expenditure, including pre-development costs, if applicable	\$10,000,000.00
Type of capital expenditures, based on the following enumerated uses	Affordable housing, supportive housing, or recovery housing
Capital Expenditure Justification	Due to lack of affordable housing in the community, the project will develop additional housing units to support the needs of low to moderate income households.
Does the project prioritize local hires?	Yes
Does the project have a Community Benefit Agreement, with a description of any such agreement?	No

Project Name: Homeless Shelter Property

Project Identification Number	AR216
Project Expenditure Category	2-Negative Economic Impacts
Project Expenditure Subcategory	2.16-Long-Term Housing Security: Services for Unhoused persons
Status To Completion	Cancelled
Adopted Budget	\$0.00
Program Income Earned	\$0.00
Program Income Expended	\$0.00
Total Cumulative Obligations	\$0.00
Total Cumulative Expenditures	\$0.00
Current Period Obligations	\$0.00
Current Period Expenditures	\$0.00

Project Description	Cumberland County is in the process of exploring potential property/building locations for a homeless shelter to be located within a qualified census tract. A previously issued needs assessment survey indicated the County is lacking in available temporary housing solutions and beds available for the homeless population. Although this item is budgeted utilizing a portion of ARPA funds currently, it is expected that this will be removed from consideration as we now understand with the Final Rule this type of project is not allowed.
Does this project include a capital expenditure?	No
What is the Total expected capital expenditure, including pre-development costs, if applicable	\$250,000.00
Type of capital expenditures, based on the following enumerated uses	Improvements to existing facilities
Please identify the dollar amount of the total project spending that is allocated towards evidence-based interventions	\$0.00
Is a program evaluation of the project being conducted?	No
What Impacted and/or Disproportionally Impacted population does this project primarily serve?	1 Imp General Public
Is a program evaluation of the project being conducted?	No
Brief description of structure and objectives of assistance program(s), including public health or negative economic impact experienced	0
Brief description of recipient's approach to ensuring that response is reasonable and proportional to a public health or negative economic impact of Covid-19	0

Project Name: Broadband Expansion

Project Identification Number	AR521
Project Expenditure Category	5-Infrastructure
Project Expenditure Subcategory	5.21-Broadband: Other projects
Status To Completion	Not Started
Adopted Budget	\$283,987.00
Program Income Earned	\$0.00
Program Income Expended	\$0.00
Total Cumulative Obligations	\$0.00
Total Cumulative Expenditures	\$0.00
Current Period Obligations	\$0.00
Current Period Expenditures	\$0.00
Project Description	Cumberland County has partnered with an internet service provider (Connect Holding II LLC) to expand fiber optic internet access into the more remote areas of the County. ARPA funds will provide for a portion of the project cost with the remaining required funds coming from the State of North Carolina and the internet service provider. A state

	grant has been awarded and the combined funds will provide access to approximately 758 locations.
Projected/actual construction start date	6/30/2023
Projected/actual initiation of operations date	6/30/2024

Project Name: Shaw Heights Sanitary Sewer System Project

Project Identification Number	AR505
Project Expenditure Category	5-Infrastructure
Project Expenditure Subcategory	5.5-Clean Water: Other sewer infrastructure
Status To Completion	Not Started
Adopted Budget	\$9,300,000.00
Program Income Earned	\$0.00
Program Income Expended	\$0.00
Total Cumulative Obligations	\$0.00
Total Cumulative Expenditures	\$0.00
Current Period Obligations	\$0.00
Current Period Expenditures	\$0.00
Project Description	Cumberland County is in the process of exploring the addition of a sanitary sewer system located within the Shaw Heights community, which is located within a Qualified Census Tract (QCT). Failing septic systems has been an issue within this community and in order for the Shaw Heights Affordable Housing ARPA Project (AR215) to be the most successful, the installation and construction of new pipes, pump stations, and force mains for sewer systems is required.

Project Name: Grays Creek Water Project

Project Identification Number	AR515
Project Expenditure Category	5-Infrastructure
Project Expenditure Subcategory	5.15-Drinking water: Other water infrastructure
Status To Completion	Not Started
Adopted Budget	\$10,000,000.00
Program Income Earned	\$0.00
Program Income Expended	\$0.00
Total Cumulative Obligations	\$0.00
Total Cumulative Expenditures	\$0.00
Current Period Obligations	\$0.00
Current Period Expenditures	\$0.00
Project Description	The Grays Creek area of Cumberland County has been tested and confirmed to have above normal/unsafe limits of contaminants within its ground water and wells that provide water to the schools, residences, and businesses in the area. Construction is planned to create a community water system

	to address the existing public health problems associated with consuming unsafe drinking water provided by the individual well. ARPA funds will assist in partially funding the initial phases of this water project.
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Project Name: Direct Costs to Administer ARPA Funds

Project Identification Number	AR701
Project Expenditure Category	7-Administrative
Project Expenditure Subcategory	7.1-Administrative Expenses
Status To Completion	Completed less than 50%
Adopted Budget	\$2,093,572.00
Program Income Earned	\$0.00
Program Income Expended	\$0.00
Total Cumulative Obligations	\$2,093,572.00
Total Cumulative Expenditures	\$493,775.10
Current Period Obligations	\$0.00
Current Period Expenditures	\$144,794.30
Project Description	Salary and benefit costs of ARPA program manager, ARPA Finance Accountant, supplies and materials, advertising and other operating costs, and transfer to the general fund for interest income earned.

Project Name: NARCAN

Project Identification Number	AR113
Project Expenditure Category	1-Public Health
Project Expenditure Subcategory	1.13-Substance Use Services
Status To Completion	Cancelled
Adopted Budget	\$0.00
Program Income Earned	\$0.00
Program Income Expended	\$0.00
Total Cumulative Obligations	\$0.00
Total Cumulative Expenditures	\$0.00
Current Period Obligations	\$0.00
Current Period Expenditures	\$0.00
Project Description	A subrecipient agreement is planned with Cape Fear Valley Health Center who will purchase NARCAN for distribution to the Sheriff's Office, Fire Districts, and other first responders.
Does this project include a capital expenditure?	No
Please identify the dollar amount of the total project spending that is allocated towards evidence-based interventions	\$0.00
Is a program evaluation of the project being conducted?	No

What Impacted and/or Disproportionally Impacted population does this project primarily serve?	1 Imp General Public
Is a program evaluation of the project being conducted?	No
Brief description of structure and objectives of assistance program(s), including public health or negative economic impact experienced	ARP project cancelled.
Brief description of recipient's approach to ensuring that response is reasonable and proportional to a public health or negative economic impact of Covid-19	ARP project cancelled.

Project Name: Trade Job Training Program

Project Identification Number	AR210
Project Expenditure Category	2-Negative Economic Impacts
Project Expenditure Subcategory	2.10-Assistance to Unemployed or Underemployed Workers (e.g. job training, subsidized employment, employment supports or incentives)
Status To Completion	Completed less than 50%
Adopted Budget	\$2,000,000.00
Program Income Earned	\$0.00
Program Income Expended	\$0.00
Total Cumulative Obligations	\$2,000,000.00
Total Cumulative Expenditures	\$234,980.31
Current Period Obligations	\$0.00
Current Period Expenditures	\$103,367.39
Project Description	A subrecipient agreement is planned with FTCC. The funds will be used to support the "Hope, Opportunity, Prosperity through Education" or HOPE Program, which seeks to increase the social and economic mobility of participants through accelerated training connected to high-demand employment opportunities in various trades through on-the-job training with local businesses.
Does this project include a capital expenditure?	No
Please identify the dollar amount of the total project spending that is allocated towards evidence-based interventions	\$1,800,072.00
Is a program evaluation of the project being conducted?	Yes
What Impacted and/or Disproportionally Impacted population does this project primarily serve?	2 Imp Low or moderate income HHs or populations
Is a program evaluation of the project being conducted?	Yes
Brief description of structure and objectives of assistance program(s), including public health or negative economic impact experienced	The goal of the H.O.P.E Initiative is to increase social and emotional mobility of disproportionately impacted populations through workforce training programs that lead to high-quality post-secondary credentials or degrees aligned with in-demand employment opportunities that provide living wage employment opportunities. The program will focus primarily on preparing participants for careers in the skilled trades.

Brief description of recipient's approach to ensuring that response is reasonable and proportional to a public health or negative economic impact of Covid-19	The skilled trades shortage began before the pandemic, but COVID-19 exacerbated the problem. According to the US Bureau of Labor Statistics, nearly 9 million skilled labor jobs were lost during the pandemic and only about half been filled.
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Project Name: Community Paramedics Program

Project Identification Number	AR112
Project Expenditure Category	1-Public Health
Project Expenditure Subcategory	1.12-Mental Health Services
Status To Completion	Cancelled
Adopted Budget	\$0.00
Program Income Earned	\$0.00
Program Income Expended	\$0.00
Total Cumulative Obligations	\$0.00
Total Cumulative Expenditures	\$0.00
Current Period Obligations	\$0.00
Current Period Expenditures	\$0.00
Project Description	A subrecipient agreement is planned with Cape Fear Valley Health center who will provide a Community Paramedic Community Response Program. Cumberland County EMS Community Paramedics are uniquely suited to respond in the 911 environment to crisis mental health and substance abuse/overdose calls within the geopolitical boundaries of Cumberland County. The team will work alongside Licensed Clinical Social Workers (LCSW) that are healthcare practitioners trained in mental health, substance abuse counseling, and patient management.
Does this project include a capital expenditure?	No
Please identify the dollar amount of the total project spending that is allocated towards evidence-based interventions	\$0.00
Is a program evaluation of the project being conducted?	No
What Impacted and/or Disproportionally Impacted population does this project primarily serve?	1 Imp General Public
Is a program evaluation of the project being conducted?	No
Brief description of structure and objectives of assistance program(s), including public health or negative economic impact experienced	Project cancelled.
Brief description of recipient's approach to ensuring that response is reasonable and proportional to a public health or negative economic impact of Covid-19	Project cancelled.

Project Name: FSU Assistance to Small Businesses

Project Identification Number	AR230
Project Expenditure Category	2-Negative Economic Impacts

Project Expenditure Subcategory	2.30-Technical Assistance, Counseling, or Business Planning
Status To Completion	Cancelled
Adopted Budget	\$0.00
Program Income Earned	\$0.00
Program Income Expended	\$0.00
Total Cumulative Obligations	\$0.00
Total Cumulative Expenditures	\$0.00
Current Period Obligations	\$0.00
Current Period Expenditures	\$0.00
Project Description	A subrecipient agreement is planned with Fayetteville State University (FSU). The funds will be used to support the Innovation and Entrepreneurship Hub, which seeks to increase access to technical assistance, counseling services to help local business meet their business planning needs. The hub will provide advisory services, education, entrepreneurial summits, and expositions to local businesses.
Does this project include a capital expenditure?	No
Please identify the dollar amount of the total project spending that is allocated towards evidence-based interventions	\$0.00
Is a program evaluation of the project being conducted?	No
What Impacted and/or Disproportionally Impacted population does this project primarily serve?	1 Imp General Public
Is a program evaluation of the project being conducted?	No
Brief description of structure and objectives of assistance program(s), including public health or negative economic impact experienced	ARP project cancelled.
Brief description of recipient's approach to ensuring that response is reasonable and proportional to a public health or negative economic impact of Covid-19	ARP project cancelled.
Number of small businesses served (by program if recipient establishes multiple separate small businesses assistance programs)	0

Subrecipients

Subrecipient Name: Fayetteville Technical Community College

TIN	
Unique Entity Identifier	hu25muvye8m4
POC Email Address	
Address Line 1	PO BOX 35236
Address Line 2	
Address Line 3	
City	Fayetteville
State	NC
Zip	28303
Zip+4	
Entity Type	Subrecipient
Is the Recipient Registered in SAM.Gov?	Yes

Subrecipient Name: County of Cumberland

TIN	566000291
Unique Entity Identifier	vausc2zzkj78
POC Email Address	
Address Line 1	117 Dick Street
Address Line 2	
Address Line 3	
City	Fayetteville
State	NC
Zip	28302
Zip+4	
Entity Type	Subrecipient
Is the Recipient Registered in SAM.Gov?	Yes

Subawards

Subward No: AR101

Subaward Type	Direct Payment
Subaward Obligation	\$72,086.00
Subaward Date	3/3/2021
Place of Performance Address 1	117 Dick Street
Place of Performance Address 2	
Place of Performance Address 3	
Place of Performance City	FAYETTEVILLE
Place of Performance State	NC
Place of Performance Zip	28306
Place of Performance Zip+4	
Description	Reimbursement to Cumberland County for self funded claims for vaccinations.
Subrecipient	County of Cumberland
Period of Performance Start	3/3/2021
Period of Performance End	11/5/2022

Subward No: AR102

Subaward Type	Direct Payment
Subaward Obligation	\$166,000.00
Subaward Date	3/1/2022
Place of Performance Address 1	117 Dick Street
Place of Performance Address 2	
Place of Performance Address 3	
Place of Performance City	Fayetteville
Place of Performance State	NC
Place of Performance Zip	28302
Place of Performance Zip+4	
Description	Cumberland County's self-funded claims costs for COVID19 testing
Subrecipient	County of Cumberland
Period of Performance Start	11/5/2022
Period of Performance End	11/5/2022

Subward No: AR106

Subaward Type	Direct Payment
Subaward Obligation	\$961,914.00

Subaward Date	3/3/2021
Place of Performance Address 1	117 Dick Street
Place of Performance Address 2	
Place of Performance Address 3	
Place of Performance City	Fayetteville
Place of Performance State	NC
Place of Performance Zip	28302
Place of Performance Zip+4	
Description	Cumberland County's self-funded claims costs for COVID19 treatment
Subrecipient	County of Cumberland
Period of Performance Start	3/3/2021
Period of Performance End	11/5/2022

Subward No: AR302

Subaward Type	Direct Payment
Subaward Obligation	\$14,435,245.00
Subaward Date	3/3/2021
Place of Performance Address 1	117 Dick St
Place of Performance Address 2	
Place of Performance Address 3	
Place of Performance City	Fayetteville
Place of Performance State	NC
Place of Performance Zip	28301
Place of Performance Zip+4	
Description	Salary and benefit cost to restore employment to pre-pandemic levels.
Subrecipient	County of Cumberland
Period of Performance Start	3/3/2021
Period of Performance End	12/31/2026

Subward No: DIRECT ADMIN

Subaward Type	Direct Payment
Subaward Obligation	\$2,093,572.00
Subaward Date	1/24/2022
Place of Performance Address 1	117 Dick Street
Place of Performance Address 2	
Place of Performance Address 3	
Place of Performance City	Fayetteville
Place of Performance State	NC

Place of Performance Zip	28302
Place of Performance Zip+4	
Description	Cumberland County's Direct Admin - Per the final rule, up to 10% of allocated funds can be used for direct admin. This period includes costs for salary and benefit costs of ARPA program manager, supplies and materials, advertising and other operating costs.
Subrecipient	County of Cumberland
Period of Performance Start	1/24/2022
Period of Performance End	12/31/2026

Subward No: AR210

Subaward Type	Contract: Purchase Order
Subaward Obligation	\$2,000,000.00
Subaward Date	2/20/2023
Place of Performance Address 1	PO Box 35236
Place of Performance Address 2	
Place of Performance Address 3	
Place of Performance City	Fayetteville
Place of Performance State	NC
Place of Performance Zip	28303
Place of Performance Zip+4	
Description	The goal of the H.O.P.E. initiative is to increase social and economic mobility of disproportionately impacted populations through workforce training programs that lead to high-quality post-secondary credentials or degrees aligned with in-demand employment opportunities that provide living wage employment opportunities. The program will focus on preparing participants for careers in the skilled trades.
Subrecipient	Fayetteville Technical Community College
Period of Performance Start	2/20/2023
Period of Performance End	3/31/2025

Expenditures

Expenditures for Awards more than \$50,000

Expenditure: EN-00841642

Project Name	COVID19 Vaccinations
Subaward ID	SUB-0545367
Subaward No	AR101
Subaward Amount	\$72,086.00
Subaward Type	Direct Payment
Subrecipient Name	County of Cumberland
Expenditure Start	3/3/2021
Expenditure End	11/5/2022
Expenditure Amount	\$72,086.00

Expenditure: EN-00847916

Project Name	COVID Testing
Subaward ID	SUB-0548146
Subaward No	AR102
Subaward Amount	\$166,000.00
Subaward Type	Direct Payment
Subrecipient Name	County of Cumberland
Expenditure Start	3/3/2022
Expenditure End	11/5/2022
Expenditure Amount	\$166,000.00

Expenditure: EN-00848397

Project Name	Medical Expense
Subaward ID	SUB-0548299
Subaward No	AR106
Subaward Amount	\$961,914.00
Subaward Type	Direct Payment
Subrecipient Name	County of Cumberland
Expenditure Start	3/3/2021
Expenditure End	11/5/2022
Expenditure Amount	\$961,914.00

Expenditure: EN-01358210

Project Name	Public Sector Staff Workforce: Rehiring Public Sector Staff
Subaward ID	SUB-0664312
Subaward No	AR302
Subaward Amount	\$14,435,245.00
Subaward Type	Direct Payment
Subrecipient Name	County of Cumberland
Expenditure Start	3/3/2021
Expenditure End	12/31/2026
Expenditure Amount	\$11,435,245.00

Expenditure: EN-02007346

Project Name	Public Sector Staff Workforce: Rehiring Public Sector Staff
Subaward ID	SUB-0664312
Subaward No	AR302
Subaward Amount	\$14,435,245.00
Subaward Type	Direct Payment
Subrecipient Name	County of Cumberland
Expenditure Start	1/1/2024
Expenditure End	3/31/2024
Expenditure Amount	\$3,000,000.00

Expenditure: EN-02007770

Project Name	Direct Costs to Administer ARPA Funds
Subaward ID	SUB-0335972
Subaward No	DIRECT ADMIN
Subaward Amount	\$2,093,572.00
Subaward Type	Direct Payment
Subrecipient Name	County of Cumberland
Expenditure Start	1/1/2024
Expenditure End	3/31/2024
Expenditure Amount	\$144,794.30

Expenditure: EN-00434338

Project Name	Direct Costs to Administer ARPA Funds
Subaward ID	SUB-0335972

Subaward No	DIRECT ADMIN
Subaward Amount	\$2,093,572.00
Subaward Type	Direct Payment
Subrecipient Name	County of Cumberland
Expenditure Start	1/24/2022
Expenditure End	6/30/2022
Expenditure Amount	\$0.00

Expenditure: EN-01676436

Project Name	Trade Job Training Program
Subaward ID	SUB-0758191
Subaward No	AR210
Subaward Amount	\$2,000,000.00
Subaward Type	Contract: Purchase Order
Subrecipient Name	Fayetteville Technical Community College
Expenditure Start	2/20/2023
Expenditure End	6/30/2023
Expenditure Amount	\$131,612.92

Expenditure: EN-02007782

Project Name	Trade Job Training Program
Subaward ID	SUB-0758191
Subaward No	AR210
Subaward Amount	\$2,000,000.00
Subaward Type	Contract: Purchase Order
Subrecipient Name	Fayetteville Technical Community College
Expenditure Start	1/1/2024
Expenditure End	3/31/2024
Expenditure Amount	\$103,367.39

Aggregate Expenditures for Awards less than \$50,000

Expenditure: EN-01248006

Project Name	COVID Small Business Assistance
Subaward Type (Aggregates)	Aggregate of Direct Payments
Total Period Expenditure Amount	\$1,054,907.87
Total Period Obligation Amount	\$2,319,161.36

Expenditure: EN-02007360

Project Name	COVID Small Business Assistance
Subaward Type (Aggregates)	Aggregate of Direct Payments
Total Period Expenditure Amount	\$372,394.81
Total Period Obligation Amount	\$0.00

Expenditure: EN-00662324

Project Name	COVID Small Business Assistance
Subaward Type (Aggregates)	Aggregate of Contracts Awarded
Total Period Expenditure Amount	\$0.00
Total Period Obligation Amount	\$0.00

Expenditure: EN-01247701

Project Name	Rental Assistance
Subaward Type (Aggregates)	Aggregate of Direct Payments
Total Period Expenditure Amount	\$19,324.52
Total Period Obligation Amount	\$19,324.52

Expenditure: EN-00305141

Project Name	Direct Costs to Administer ARPA Funds
Subaward Type (Aggregates)	Aggregate of Direct Payments
Total Period Expenditure Amount	\$0.00
Total Period Obligation Amount	\$0.00

Expenditure: EN-00435006

Project Name	Direct Costs to Administer ARPA Funds
Subaward Type (Aggregates)	Aggregate of Direct Payments
Total Period Expenditure Amount	\$348,980.80
Total Period Obligation Amount	\$0.00

Payments To Individuals

Expenditure: EN-01247708

Project Name	Rental Assistance
Total Period Expenditure Amount	\$480,675.48
Total Period Obligation Amount	\$480,675.48

Report

Revenue Replacement

Is your jurisdiction electing to use the standard allowance of up to \$10 million, not to exceed your total award allocation, for identifying revenue loss?	Yes
Revenue Loss Due to Covid-19 Public Health Emergency	\$10,000,000.00
Were Fiscal Recovery Funds used to make a deposit into a pension fund?	No
Please provide an explanation of how revenue replacement funds were allocated to government services	The funds have been utilized to cover staffing/payroll costs of the Sheriff's Office and Detention Center. The funds covered salaries and corresponding fringe benefit expenses for those employees beginning in April 2022 until available funds are exhausted. Covered salaries are based on Cumberland County's current pay schedule and the fringe benefits are based on the Board of Commissioner adopted benefits ordinance.

Overview

Total Obligations	\$32,547,978.36
Total Expenditures	\$28,291,303.09
Total Adopted Budget	\$65,168,690.00
Total Number of Projects	20
Total Number of Subawards	6
Total Number of Expenditures	16

Have you expended \$750,000 or more in federal award funds during your most recently completed fiscal year?	Yes
Have you submitted a single audit or program specific audit report to the Federal Audit Clearinghouse (FAC)?	Yes

Certification

Authorized Representative Name	Tye Vaught
Authorized Representative Telephone	(910) 678-7776
Authorized Representative Title	ARP Program Manager
Authorized Representative Email	tvaught@cumberlandcountync.gov
Submission Date	4/5/2024 12:45 PM



RISK MANAGEMENT

MEMORANDUM FOR THE AGENDA OF THE MAY 9, 2024 AGENDA SESSION

TO: BOARD OF COUNTY COMMISSIONERS

FROM: JULIE A. CRAWFORD, BENEFITS CONSULTANT

DATE: 4/22/2024

SUBJECT: HEALTH INSURANCE UPDATE

Requested by: CLARENCE GRIER, COUNTY MANAGER

Presenter(s): N/A

BACKGROUND

As of July 1, 2019, retirees who are 65 and older became covered by a County funded fully insured plan through AmWINS. All other covered members remained insured by the County's self-funded plan through BCBS. The information provided below and within the graphs has been updated to include the monthly premium amount paid to fund the fully insured plan and the actual monthly claims amounts for all other covered members. Combining these amounts for FY20 and beyond is necessary to ensure a complete picture when comparing the claims results to prior years.

Total health insurance claims plus the fully insured premium amount for FY24 are up 0.57% for the month of March as compared to the same month in FY23. To provide some perspective, below is the nine-month average for the past five fiscal years. This average represents the average monthly year-to-date claims for each fiscal year and includes the fully insured premium for fiscal years 21, 22, 23 and 24. Additionally, graphs are provided in the attachment to aid in the analysis.

Year to date claims and premium payment through March	\$18,842,070
Less year to date stop loss credits	(\$897,067)
Net year to date claims and premium payment through March	\$17,945,003

Average monthly claims and fully insured premium (before stop loss) per fiscal year through March:

FY20 \$1,566,183

FY21 \$1,633,601

FY22 \$2,159,522

FY23 \$1,929,606

FY24 \$2,093,563

RECOMMENDATION / PROPOSED ACTION

Information only – no action needed.

ATTACHMENTS:

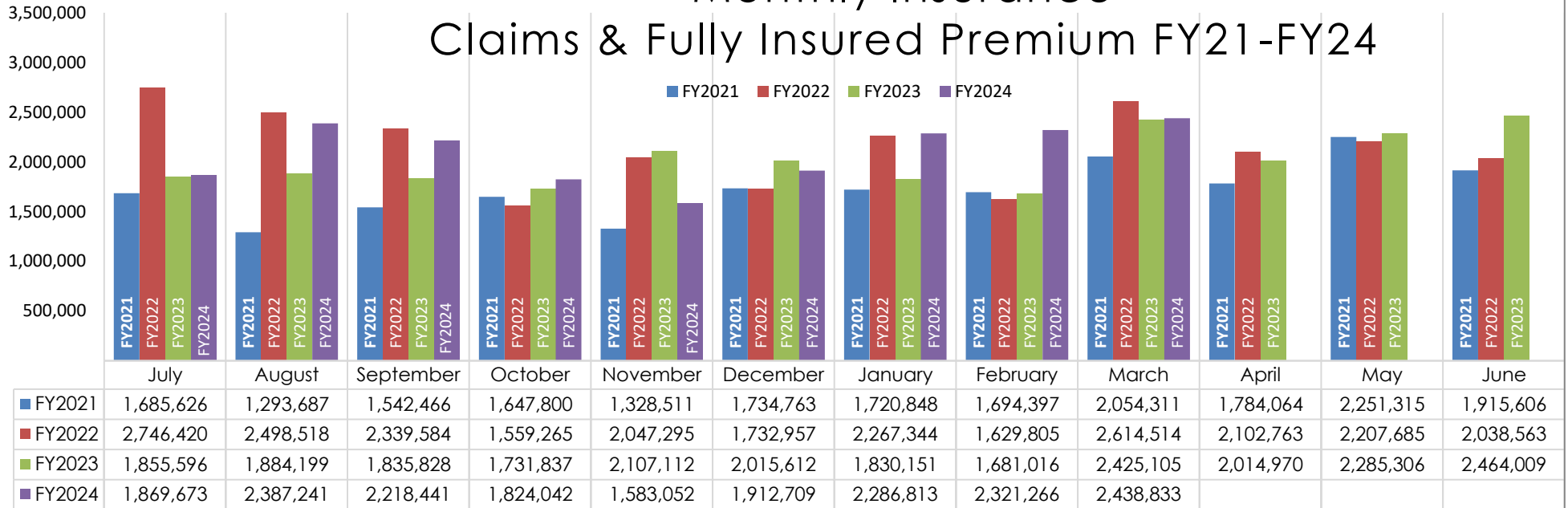
Description

Health Insurance Graphs

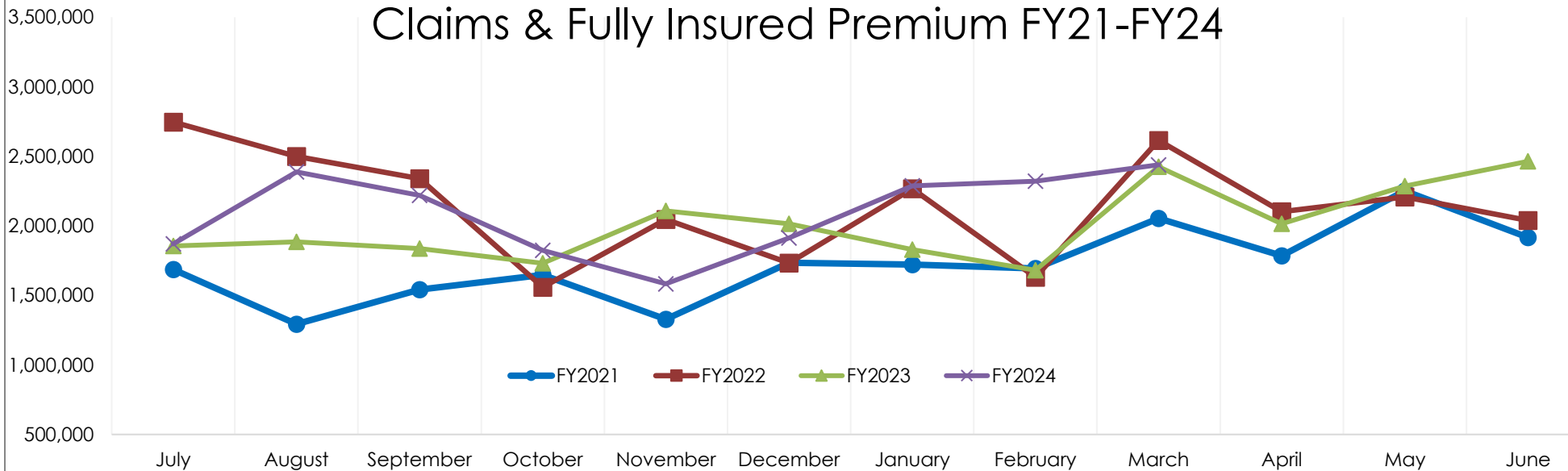
Type

Backup Material

Monthly Insurance Claims & Fully Insured Premium FY21-FY24



Monthly Insurance Claims & Fully Insured Premium FY21-FY24





ENGINEERING AND INFRASTRUCTURE DEPARTMENT

**MEMORANDUM FOR THE AGENDA OF THE MAY 9, 2024
AGENDA SESSION**

TO: BOARD OF COUNTY COMMISSIONERS

**FROM: JERMAINE WALKER, DIRECTOR OF ENGINEERING AND
INFRASTRUCTURE**

DATE: 5/9/2024

SUBJECT: PROJECT UPDATES

Requested by: BOARD OF COMMISSIONERS

**Presenter(s): JERMAINE WALKER, DIRECTOR OF ENGINEERING AND
INFRASTRUCTURE**

BACKGROUND

Please find attached the monthly project report update for your review.

RECOMMENDATION / PROPOSED ACTION

No action is necessary. This is for information only.

ATTACHMENTS:

Description

Project Updates

Type

Backup Material

MONTHLY PROGRESS REPORT

Project Description	Contract Amount	Project Status	Contract Start Date	Contract Duration	Estimated Completion Date
500 Executive Place - Cumberland County Emergency Services Center	\$16.8M	100% complete. Punch list items are 100% complete. Coordinated final warranty walkthrough with Architect and General Contractor for May 17, 2024.	3/8/2021	360 days	May 17, 2024
Judge E. Maurice Braswell Courthouse Bathroom Updates	\$200K	95% complete. Currently completing final paint and punch list of 5th floor public restrooms. Estimated project completion is May 17, 2024.	9/29/2023	240 days	May 17, 2024
Law Enforcement Center Switchgear Replacement	\$350K	Awaiting arrival of equipment. Completed review of shop drawing submittals. Pre-construction conference held on October 12, 2023. New estimated ship date is now September 30, 2024.	6/6/2022	180 days	November 12, 2024
Historic Courthouse Switchgear Replacement	\$350K	Awaiting arrival of equipment. Completed review of shop drawing submittals. Pre-construction conference held on October 12, 2023. New estimated ship date is now February 3, 2025.	6/6/2022	180 days	February 10, 2025
Corporation Drive Sewer Outfall	\$98.5K	80% complete. Contractor has initiated building the manhole inverts and completing sitework.	9/18/2023	180 days	June 15, 2024
Recovery Shelter Generators	\$3M	Westover generator (90 KW) pre-bid held on February 28, 2024. Bids closed on April 11, 2024. Westover project awarded to JL Britt Electric, Incorporated, by informal bid for \$227,700 and is undergoing finance audit and legal review. Generator procurement for remaining shelters being coordinated via GSA vendor. Current market conditions have lead times at 52-56 weeks for 400 KW and higher generators.	8/10/2023	365 days	August 2025
Judge E. Maurice Braswell Courthouse Fire Panel Replacement	\$500K	Submitting final construction documents for review. Will solicit May 15, 2024.	1/3/2023	180 days	TBD
Crown Hospitality – Lobby Renovation	\$1.5M	Bid opening was March 28, 2024. Preparing to bring bid award to Board of Commissioners for approval.	10/25/2022	N/A	September 2024
Crown Elevator Modernization	\$750K	Starting Elevator 1 on June 10, 2024, and Elevator 2 on September 11, 2024. Each elevator will take 93 days to refit.	1/3/2024	270 days	December 13, 2024