**Mission Consolidated Independent School District**

- 1201 Bryce Drive, Mission, Texas 78572
- Telephone: (956) 323 5505 Fax: (956) 323 5634
- Website: www.mcisd.net

# *Notice and Agenda*

The Board of Trustees of the Mission Consolidated Independent School District will hold a **Regular Meeting** on **Wednesday, January 25, 2023, at 6:30 PM** in the **Mission CISD Annex, 925 E. Business HWY. 83, Mission, Tx 78572**. At this meeting, the Board may deliberate or act on any of the subjects listed on the following agenda. The President may change the order of items listed below for the convenience of the Board.

## A G E N D A

**I. Call Meeting to Order and Establish Quorum**
**II. Pledge of Allegiance and Moment of Silence**
**1. U. S. Flag -**
**2. Mission Vision Statement -**
**III. Comments from the Public**
**IV. Public Comment(s) on Specific Agenda Item(s)**
**V. Superintendent's Update and Recognitions**
The Superintendent may provide information to update the Board of Trustees on the following subjects: Student Extracurricular and Co-Curricular Achievement; District Awards and Recognitions; Recent and Upcoming Professional Staff and Leadership Development; Progress Reports on Student and Staff Initiatives Previously Approved by the Board of Trustees; and Communications Received from Other Governmental Entities Not Requiring Action by the Board of Trustees. This will be for informational purposes only. Board consideration of any subject included in the Superintendent's Report will not take place until the subject is placed on the agenda of a future board meeting for consideration and possible action. The Board's consideration of any subject at the present meeting will be limited to those subjects appearing elsewhere on the meeting agenda.
**VI. Presentation(s) to the Board of Trustees**
**1. Self-Funded Health Insurance** **4**
**2. South Texas ISD Financial Equity and Elimination of Local Tax for South Texas ISD** **10**
**VII. Discussion and Possible Action**
**1. Consideration of Resolution Regarding Approval of Administrative Efforts to Withdraw from STISD to Avoid Duplication of Taxation** **15**
**2. Functional Budget Amendment** **18**

**3. Consideration and Approval of Allowance Expenditure Authorization (AEA) #1 for the Replacement of the Synthetic Turf for the Tom Landry Stadium and the Veterans Memorial High School Stadium – Javier Hinojosa Engineering** 20
**4. Consideration and Approval of Substantial Completion for the Replacement of the Synthetic Turf for the Tom Landry Stadium and the Veterans Memorial High School Stadium - Javier Hinojosa Engineering** 27
**5. Consideration and Approval of Allowance Expenditure Authorization (AEA) #1 for the Scoreboards at R. Cantu Jr. High & K. White Jr. High – Chanin Structural Engineering** 32
**6. Consideration and Approval of Substantial Completion for the Scoreboards at R. Cantu Jr. High & K. White Jr. High – Chanin Structural Engineering** 36
**7. Consideration and Approval of Change Order #2 for Delay Days for the Child Nutrition Program (CNP) Freezer Installation at Elementary Campuses - Chanin Engineering** 39
**8. Consideration and Approval of Change Order #2 for Delay Days for the Child Nutrition Program (CNP) Freezer – DBR Engineering** 43
**9. Consideration and Approval of the Final Design for the Indoor Air Quality Projects for Cavazos, Midkiff, and Salinas Elementary - DBR Engineering** 49
**10. Consideration and Approval of Final Completion, Less Betterment Fund Allowance, Less Liquidated Damages, and Final Payment for the Culinary Arts at Veterans Memorial High School – PBK Architects** 126
**11. Consideration and Approval of Job Order Contracting (JOC) Various Projects**
**a. Award Contract for the Farmers Parking Lot** 133
**VIII. Recommendation(s)**
**1. Approval of the Selection for:**
**a. Child Nutrition Program Coordinator for Operations**
**b. Mission Collegiate High School Assistant Principal/Dean of Instruction**
**IX. Items to Consider: The Board will consider and may act on the following items under a CONSENT AGENDA. Any Trustee may request the removal of an item from the CONSENT AGENDA for individual consideration and action.**
**1. Approval of New Employment Position(s)**
**a. ESSER Learning Loss Academic Tutors** 136
**2. Bids, Proposals, and Purchases of $50,000 and Over**
**a. Professional Auctioneer Services** 140
**b. Renewal Contract for Emergent and Non-Emergent Medical Transportation Services** 143
**3. Approval of Donation** 150
**4. Approval of Minutes**
**a. December 7, 2022, Regular Board of Trustees Meeting** 156
**b. December 19, 2022, Special Board of Trustees Meeting** 167
**X. Executive Session**
**1. Private Consultation with Board Attorney (Texas Gov't Code §551.071)**
**2. Deliberate the Appointment, Employment, Evaluation, Reassignment, Duties, Discipline, or Dismissal of a Public Officer or Employee or to Hear a Complaint or Charge Against an Officer or Employee (Texas Gov't Code §551.074)**
**XI. Action, if Necessary, on Matters Discussed in Executive Session**
**XII. Board of Trustees Information Items**
**1. Personnel Employments, Resignations, Transfers, and Compensation Change** 169
**2. Financial Reports for:**

**a. General Fund and Debt Service 170**
**b. Tax Levy Adjustments 173**
**c. Cash Disbursements 201**

**XIII. Important Dates to Remember**

**1. February 1, 2023, Board of Trustees Workshop at 6:30 p.m.**
**2. February 15, 2023, Regular Board of Trustees Meeting at 6:30 p.m.**

**XIV. Adjournment**

**In accordance with the Texas Open Meetings Act, the Board may enter into a closed meeting to deliberate any item that is listed above that fits within an exception listed in Subchapter D. Any final action, decision, or vote on a subject deliberated in closed meeting will be taken in an open meeting held in compliance with the Texas Open Meetings Act.**

**This Notice was posted by 5:00 p.m., on January 20, 2023.**

Carol G. Perez, Ed. d.

**Dr. Carol G. Perez, Superintendent of Schools**
**Mission Consolidated Independent School District**

**SUBJECT:** Financial Report for the Month of December 2022 – Self-Funded Health Insurance Fund

**PRESENTER**: Joel Garcia, Assistant Superintendent for Finance JG

**BACKGROUND INFORMATION**

Mission CISD offers a self-funded group health insurance plan to its employees administered by Blue Cross Blue Shield of Texas. District employees have the option to elect health insurance coverages from three plans (High Deductible, Base, and High Plan).

As a self-funded group health insurance plan, Mission CISD assumes the financial risk for providing health care benefits to its employees and their dependents. In practical terms, Mission CISD pays for each out of pocket claim as they are incurred instead of paying a fixed premium to an insurance carrier. Mission CISD has set up the Health Insurance Fund to account for premiums funded by the District and its employees and to pay incurred claims and administrative costs.

**ADMINISTRATIVE CONSIDERATIONS**

Actual revenues for December 2022 totaled $1,359,369.09 and actual expenditures totaled $1,690,254.60 The excess revenues over expenditures was $(330,885.51). The total net position as of December totaled $(571,521.17)

The Self-Funded Group Health Insurance Financial Report is also attached. There were four large claims for December: $61,077.16, $59,468.90, $66,317.84, and $82,684.00

**FUNDING SOURCE AND AMOUNT**

Not applicable.

**RECOMMENDATION**

Information item only.

**CONTACT PERSON(S)**

Joel Garcia, Assistant Superintendent for Finance
Sylvia Cruz, Director for Payroll, Employee Benefits & Risk Management



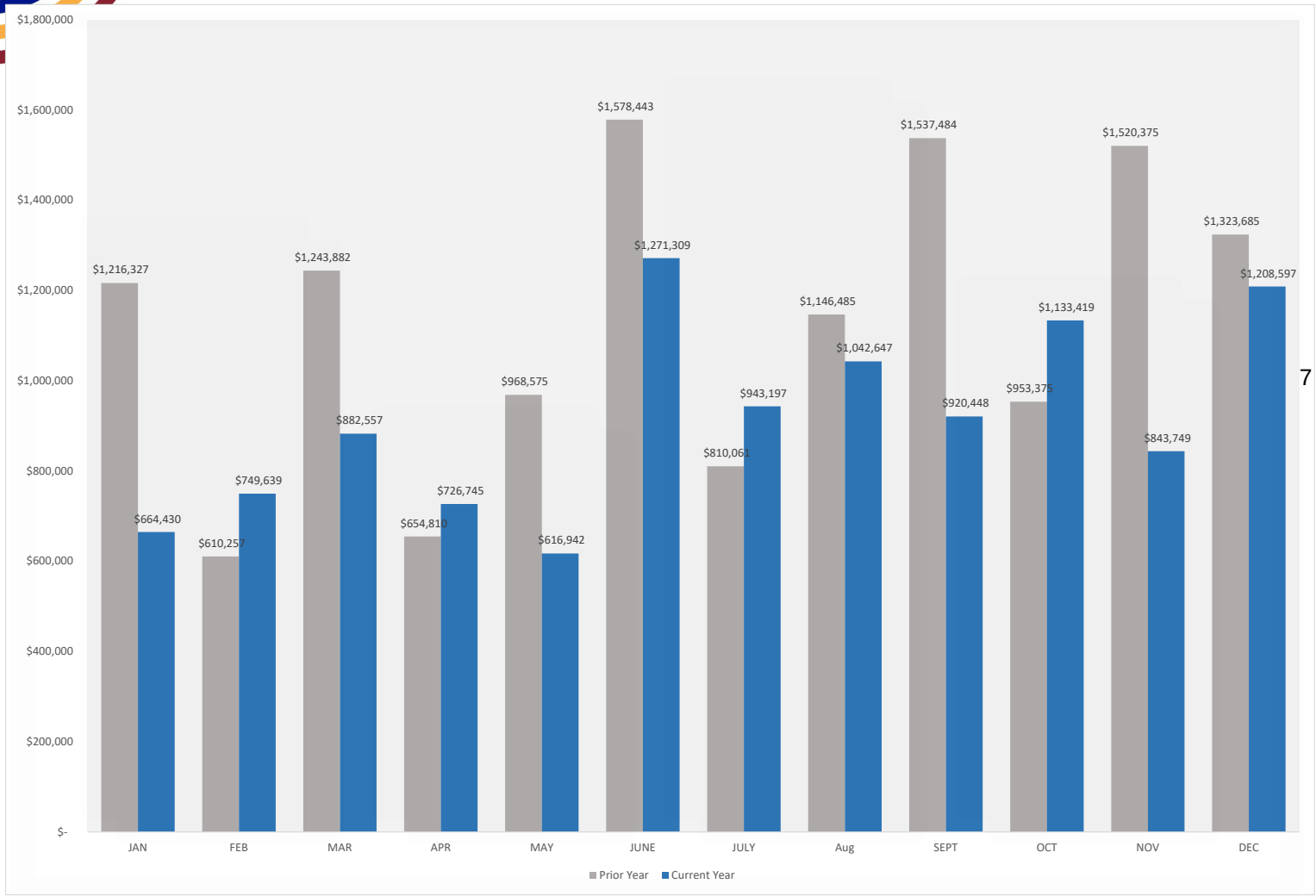

5

# Self Funded Health Insurance Fund
# Statement of Revenues, Expenditures and Changes in Net Position for 6 months ending December 2022

| Operating Revenues | Actual | % |
|---|---|---|
| *Premiums:* | | |
| Medical - Employee | $ 1,491,875.29 | 18.20% |
| Medical - Employer | $ 6,614,418.37 | 80.70% |
| Administrative Fees-Refunds | $ - | 0.00% |
| Claim Credits | | 0.00% |
| Pharmacy Credits/Rebates | | 0.00% |
| Stop Loss Insurance | $ 90,248.01 | 1.10% |
| Cobra | | 0.00% |
| **Non - Operating Revenues** | | |
| Interest Revenue | $ 69.24 | 0.00% |
| **Total Revenues** | **$ 8,196,610.91** | **100%** |
| **Operating Expenses** | | |
| *Claims:* | | |
| Medical | $ 6,092,056.87 | 69.48% |
| Pharmacy - RX | $ 2,149,077.84 | 24.51% |
| *Administrative Fees:* | | |
| Medical | $ 26,060.07 | 0.30% |
| Aggregate Stop Loss | $ 28,236.15 | 0.32% |
| Specific Stop Loss | $ 461,967.15 | 5.27% |
| Independent External Review Fees | $ 700.00 | 0.01% |
| Vendor Fees | $ - | 0.00% |
| PCORI Fees | | 0.00% |
| Consulting Fees | $ 4,500.00 | 0.05% |
| **Non-Operating Expenses** | | |
| Other Expenses | $ 5,534.00 | 0.06% |
| **Total Expenses** | **$ 8,768,132.08** | 100.00% |
| | | |
| **Operating Income (Loss)** | **$ (571,521.17)** | |
| **Income (Loss) Before Contributions & Transfers** | **$ (571,521.17)** | |
| **Contributions & Transfers** | | |
| Transfers In | $ - | |
| **Change in Net Position** | $ (571,521.17) | |
| **Total Net Position - Beginning Audited** | $ - | |
| **Total Net Position - Ending Unaudited** | **$ (571,521.17)** | |

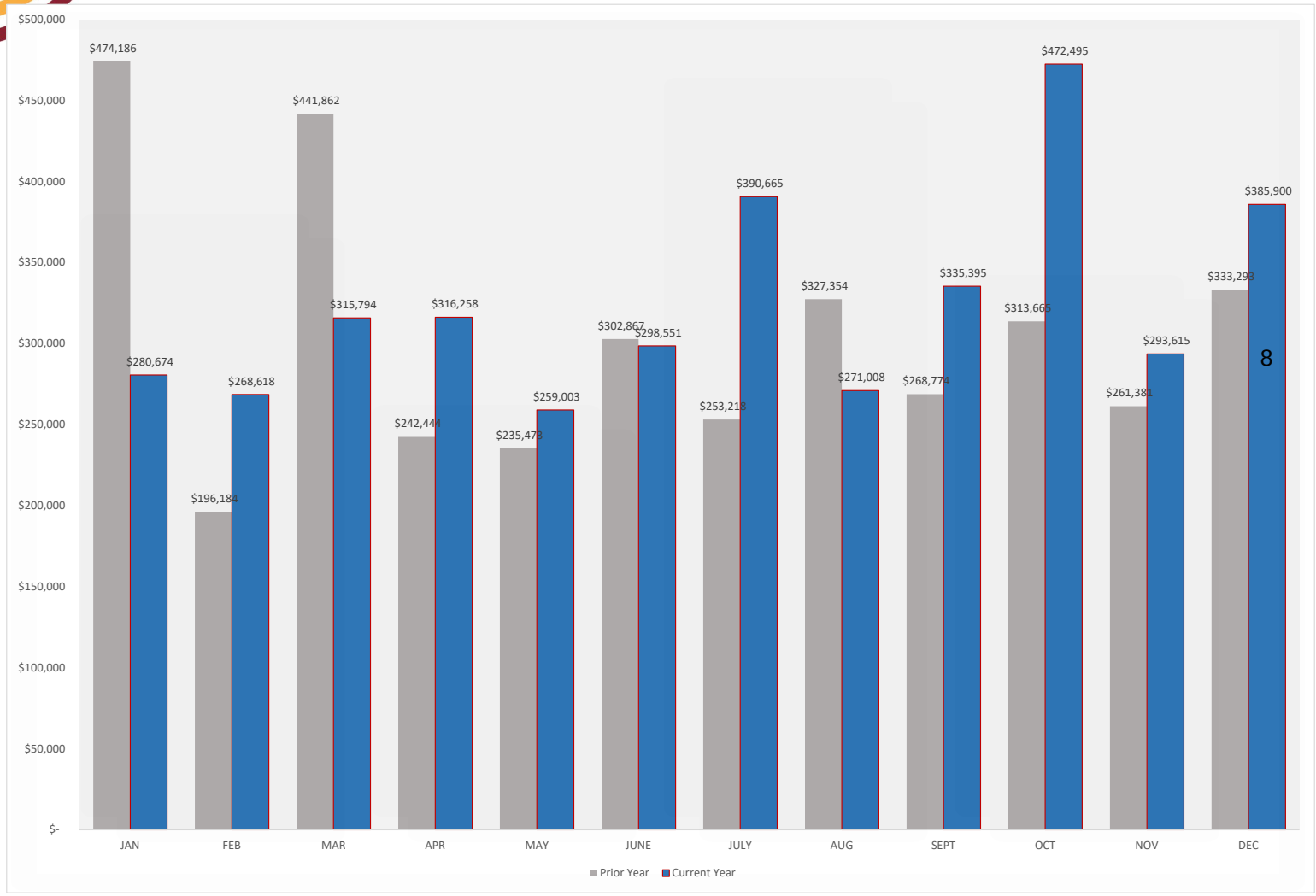
6

# Medical Claims Expenditures Overview
# 12 Month Trend – December 2022

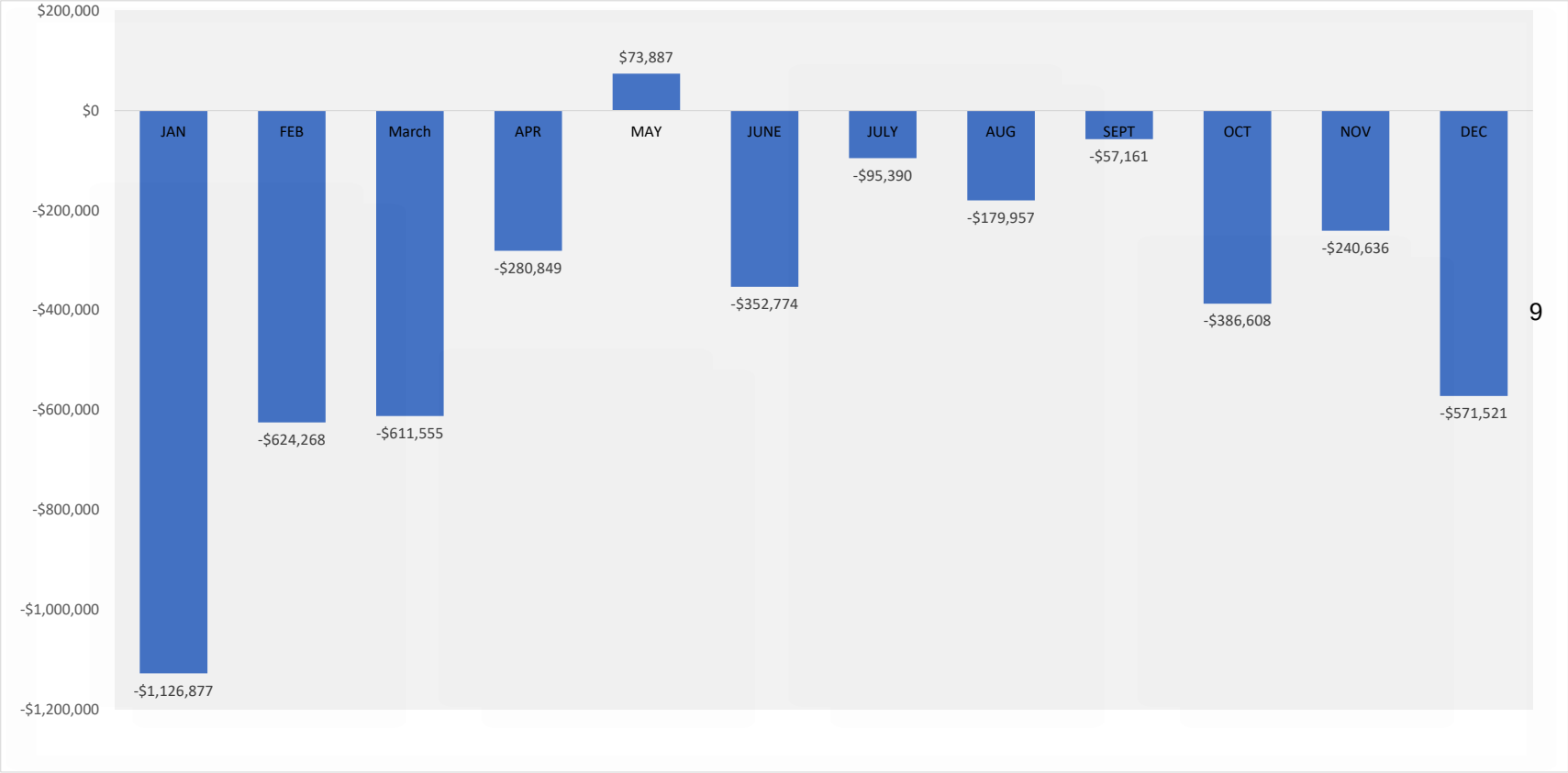



7

# Pharmacy Claims Expenditures Overview
# 12 Month Trend – December 2022



# Net Position Overview
# 12 month Trend – December 2022




9

# South Texas ISD Financial Equity and Elimination of Local Tax for South Texas



**January 25, 2023**

# Background

- South Texas ISD (STISD) was created in the 1960s to provide special education services to students in Cameron, Hidalgo, and Willacy counties. However, with the coming of the "least restrictive environment," almost all students returned to their home districts. Home districts, since then, have provided special education to their students, while STISD changed their focus to magnet school programs, including medical professions, STEM, teacher education, and CTE. Recently, STISD expanded into comprehensive high school and middle school programs.



- South Texas ISD is funded by the state and by collecting taxes. The district can tax a maximum of $0.05 in the three-county service area. South Texas ISD receives approximately $42,231,547 from the state and collects another $30,921,700 from local taxes. With 5714 students, the district is funded at $12,612 per weighted average daily attendance (WADA), over $5,000+ above other districts in Region 1.

# Several Support Statements

- South Texas ISD should be funded like other districts in Region 1. The state should only support South Texas ISD with formula funding, bringing the district back to equitable funding.

- Residents in Cameron, Hidalgo, and Willacy counties are double taxed ($0.0492 by STISD and home district tax rate) for educational services. Home districts often do not get the STISD tax benefit back since few of their students attend STISD.

- Having $5,000+ above other districts allows South Texas ISD to pay higher salaries, particularly to teachers. In addition, the additional dollars allow STISD to enrich its student services above what other districts in Region 1 can do.

- South Texas ISD has transitioned from services for special education students to an academic-based magnet and is now turning to a comprehensive school model that includes UIL athletics.

# Resolution

- Read resolution.

- Administration will bring a recommendation to approve the Resolution Regarding Approval of Administrative Efforts to Withdraw from STISD to Avoid Duplication of Taxation.




# Thank you

14

**Contact Information:**

Joel Garcia, CPM
Assistant Superintendent for Finance
Finance Division
(956) 323-5337

**SUBJECT:** Resolution Regarding Approval of Administrative Efforts to Withdraw from STISD to Avoid Duplication of Taxation

**PRESENTER:** Joel Garcia, Assistant Superintendent for Finance



## BACKGROUND INFORMATION:

South Texas ISD was created in the 1960s to provide special education services to students in Cameron, Hidalgo, and Willacy counties. However, with the coming of the "least restrictive environment," almost all students returned to their home districts. Home districts, since then, have provided special education to their students, while South Texas ISD changed their focus to magnet school programs, including medical professions, STEM, teacher education, and CTE. Recently, South Texas ISD expanded into comprehensive high school and middle school programs.

## ADMINISTRATIVE CONSIDERATIONS:

South Texas ISD is funded by the state and by collecting taxes. South Texas ISD is spending $12,612 per WADA, while Region 1 districts range from $7,029-7,468. It is inequitable to have a $5,000+ advantage in expenditure per student.

Residents in Cameron, Hidalgo, and Willacy counties are double taxed ($0.0492 by South Texas ISD and the home district) for education services. Home districts often do not get the South Texas ISD tax benefit since few of their students attend South Texas ISD.

## FUNDING SOURCE AND AMOUNT:

N/A

## RECOMMENDATION:

Administration recommends approving the Resolution Regarding Approval of Administrative Efforts to Withdraw from STISD to Avoid Duplication of Taxation.

## CONTACT PERSON (S):

Joel Garcia, Assistant Superintendent for Finance

**A RESOLUTION REGARDING APPROVAL OF ADMINISTRATIVE EFFORTS TO WITHDRAW FROM STISD TO AVOID DUPLICATION OF TAXATION**

**WHEREAS**, the Mission Consolidated Independent School District (MCISD) Board of Trustees (Board) recognizes that the State of Texas, through its legislative authority, controls the taxing abilities of school districts;

**WHEREAS**, the Board recognizes that the State of Texas, through its legislative authority, authorized South Texas ISD to tax MCISD taxpayers to provide rehabilitation services to special education students;

**WHEREAS**, the Board recognizes South Texas ISD currently enrolls less than 4% special education students;

**WHEREAS**, the Board recognizes South Texas ISD currently provides educational services to only _____students who reside within the Mission CISD district boundaries;

**WHEREAS**, the Board recognizes South Texas ISD has transitioned from their original purpose of rehabilitation services to special education students to a magnet school and now offers comprehensive services such as athletics in their middle and high school;

**WHEREAS**, the Board recognizes South Texas ISD receives approximately $5,000 more WADA per student than MCISD;

**WHEREAS,** the Board recognizes that the Equity Center has recommended legislative efforts to modify funding sources to South Texas ISD to avoid duplication of taxation and to achieve equity for students and taxpayers;

**IT IS, THEREFORE, HEREBY RESOLVED THAT** there is a substantial public purpose in MCISD approving legislative efforts to modify funding sources for South Texas ISD to avoid duplication of taxation and achieve equity.

**BE IT FURTHER RESOLVED THAT** the Board of Trustees finds a substantial public purpose in MCISD supporting legislation that updates current laws that currently permit South Texas ISD to be funded at a higher than the average WADA per student compared to Region 1 and 2 School Districts.

**BE IT FURTHER RESOLVED THAT** the Board of Trustees finds a substantial public purpose would be served by MCISD joining South Texas Association of Schools (Region 1 and 2 school districts) in seeking a legislative change to the funding of South Texas ISD and elimination of the duplication of taxes for MCISD taxpayers.

**BE IT FURTHER RESOLVED THAT** in connection with the foregoing Resolution, the Board authorizes the MCISD administration to pursue legislative efforts to carry out MCISD's intent to withdraw from the South Texas ISD taxing district, including authorizing the administration to work with the South Texas Association of Schools and the Equity Center in pursuit of those efforts.

**The above Resolution is passed and adopted this 25th day of January by the Board of Trustees.**

| **APPROVED:** | **ATTEST:** |
| --- | --- |
| _____ | _____ |
| President, Board of Trustees | Secretary, Board of Trustees |

**SUBJECT**: Functional Budget Amendments

**PRESENTER**: Joel Garcia, Assistant Superintendent for Finance

## BACKGROUND INFORMATION

In accordance with TEA budget and accounting procedures guidelines, the District's official budget includes the General Fund and Debt Service. The adoption of the budgets associated with these funds, and subsequent amendments, should be approved by the Board of Trustees. The authority to approve a budget or a budget amendment for a grant program, however, lies with the granting agency and not with the District's Board.

The budget amendments are broken down into the following two categories:

1. Programmatic or policy changes – amendments that are necessary because of policy changes or program revisions that increase/decrease the budget.

2. Adjustment of original estimates – amendments that are necessary because the original amounts required adjustments but do not increase/decrease the budget.

## ADMINISTRATIVE CONSIDERATIONS

All requests for budget amendments have been reviewed and are justified for the programmatic or policy changes and adjustments of original estimates.

## FUNDING SOURCE AND AMOUNT

There is no increase or decrease in the Total General Fund budget.

The amendment is for reallocating budgets that are changing functions to support Campus and Department Operations.

## RECOMMENDATION:

Administration recommends approving the Functional Budget Amendments.

## CONTACT PERSONS

Joel Garcia, Assistant Superintendent for Finance
Dora Garcia, Director for Budget and Finance

**Mission Consolidated Independent School District**
**GENERAL FUND**
**Budget Amendment for the Month of January 2023**
**Fiscal Year 2022 - 2023**

| Description | Amended Budget Nov 9, 2022 | January Amendments | Amended Budget Jan 25, 2023 |
|---|---|---|---|
| **Audited Beginning Fund Balance** | **$ 107,685,067** | | **$ 107,685,067** |
| Revenues: | | | |
| 5700 - Local | $ 28,786,444 | | $ 28,786,444 |
| 5800 - State | 117,988,061 | | 117,988,061 |
| 5900 - Federal | 19,381,608 | | 19,381,608 |
| **Total Revenues** | **$ 166,156,113** | **$ -** | **$ 166,156,113** |
| Expenditures: | | | |
| 11 Instruction | $ 69,834,025 | $ 7,036,935 | $ 76,870,960 |
| 12 Inst. Res. & Media Services | 2,563,714 | 6,976 | 2,570,690 |
| 13 Curriculum Dev. & Inst. Staff Dev. | 1,919,003 | 176 | 1,919,179 |
| 21 Inst. Leadership | 2,581,407 | 1,000 | 2,582,407 |
| 23 School Leadership | 9,915,030 | (64,292) | 9,850,738 |
| 31 Guide., Counseling & Eval. Ser. | 6,395,686 | (26,659) | 6,369,027 |
| 32 Social Work Services | 583,397 | - | 583,397 |
| 33 Health Services | 1,750,067 | (3,081) | 1,746,986 |
| 34 Student (Pupil) Trans. | 5,025,001 | (26,195) | 4,998,806 |
| 35 Food Services | 14,100,666 | - | 14,100,666 |
| 36 Curricular/Extracurricular Act. | 7,372,412 | 218,407 | 7,590,819 |
| 41 General Administration | 6,504,408 | 132,000 | 6,636,408 |
| 51 Plant Maint. & Operations | 24,889,339 | (1,175,335) | 23,714,004 |
| 52 Security and Monitoring Serv. | 6,925,817 | (30,468) | 6,895,349 |
| 53 Data Processing Services | 3,329,866 | - | 3,329,866 |
| 61 Community Services | 323,077 | (22,000) | 301,077 |
| 71 Debt Service | 1,350,320 | 8,420 | 1,358,740 |
| 81 Fac. Acquisition & Const. | 13,391,645 | (6,055,884) | 7,335,761 |
| 95 Pmt. to Juv. Justice Alt. Ed. Prg. | 20,000 | - | 20,000 |
| 99 Other Intergovernmental Charges | 298,185 | - | 298,185 |
| **Total Expenditures** | **$ 179,073,065** | **$ -** | **$ 179,073,065** |
| 7900 - Other Sources | $ 19,559,082 | | $ 19,559,082 |
| 8900 - Other Uses | (19,559,082) | | (19,559,082) |
| **Total Other Financing Sources & (Uses)** | **$ -** | **$ -** | **$ -** |
| | | | |
| **Un-Audited Ending Fund Balance** | **$ 94,768,115** | **$ -** | **$ 94,768,115** |

**SUBJECT**: Consideration and Approval of Allowance Expenditure Authorization (AEA) #1 for the Replacement of the Synthetic Turf for the Tom Landry Stadium and the Veterans Memorial High School Stadium – Javier Hinojosa Engineering

**PRESENTER**: Rick Rivera, Assistant Superintendent for Operations

**BACKGROUND INFORMATION**

The installation of synthetic turf and resurfacing of existing tracks at Tom Landry Stadium and VMHS Stadium were approved by the Board of Trustees on Wednesday, March 19, 2014. At the meeting, the Board approved the best and final offer (BAFO) with Hellas Construction at a total construction cost of $2,712,000.00. Notice to Proceed (NTP) was issued on April 11, 2014, and the projects were substantially completed in early August and the final completion was in early September 2014. Javier Hinojosa Civil Engineering was the design firm for this project.

As per initial planning and design meetings with firms, the synthetic field turf longevity is from eight to ten years. Eight years was the consensus discussed due to the extreme heat conditions in our area and the damage caused due to this.

The fields are currently eight years old and the extreme heat conditions have left the synthetic turf fibers to become excessively brittle as was discussed at the initial planning stages in 2014. Conducting preventative maintenance field brushing has shown that the fibers are breaking and thus thinning of the turf. The thinning of the turf and the loss of fibers causes the turf to lose its required cushion and only makes the playing surface hard and solid which may lead to a higher probability of injuries for our students and athletes. G-Max testing is a test method for shock-absorbing properties of playing surface systems and materials and was conducted at both fields in February of this year by Tait-Pitkin Sports Engineers, PLLC. Reports indicate that the playing surfaces have lost much of its cushion properties and are in need of replacement.

In the past eight years, there have been new technology and advancements in synthetic turf concerning the cooling factor and safety padding and there is a huge difference between synthetic turf and products while improving the quality of playing fields. With these new advancements, the safety factor has also improved.

If approved, the preliminary project timeline is to begin the administrative and design process with all approvals and advertise for CSP's in November 2022, after the football season is over. The primary goal is to have this project completed by April of 2023. The additional construction time has to be considered due to the continuing delays and uncertainty of available materials. Coaches at both campuses are in agreement with the proposed schedule and agree to make alternative arrangements for any other sports that use the fields during this time.

At the Regular Board of Trustees meeting held on June 08, 2022, the Board approved Project and Proposed Budget for the Replacement of Synthetic Turf at Tom Landry Stadium and the Veterans Memorial High School Stadium.

Administration will use Competitive Sealed Proposals (CSPs) as the procurement method as approved by the Board of Trustees in the February 2021 Board of Trustees meeting. This method was approved as the primary default method for projects.
Request for Qualifications (RFQs) will be advertised for professional design services and Administration will schedule presentations to the Board for selection.

The Board of Trustees must take the necessary action in accordance with Texas Education Code 44.035 which consisted of the selection/designation of an architect and/or engineer to prepare construction documents for this project. The engineer and/or architect selected or designated will have full responsibility for complying with the Texas Engineering Practice Act (Article 3271a, Vernon's Texas Civil Statues) or Chapter 478, Acts of the 45th Legislature, Regular Session, 1937 (Article 249a, Vernon's Texas Civil Statues) as applicable.

If the engineer or architect is not a full-time employee of the District, the Board must select the engineer or architect based on demonstrated competence and qualifications as provided by Section 2254.004, Government Code. The selected architect/engineer along with preparing construction documents will be required to provide MCISD with an estimated project budget.

The preliminary timeline is to advertise for RFQs on or about June 14, 2022, with presentations to the Board of Trustees for evaluation and ranking at the next scheduled meeting. Possible selection and approval to enter into a design contract in August. All designs and approvals are tentatively scheduled for November.

Advertisements in the local newspapers were posted on June 14, 2022, and June 21, 2022. The process is for the submittals to be reviewed by the Purchasing Department Staff and the Administration Ranking Team to assure that firms meet the criteria based on demonstrated expertise, competence, and qualifications. The submission of RFQs was on June 30, 2022, and six (6) proposals were received. The Administration ranking team reviewed and pre-ranked the RFQs on July 13, 2022.

Both Millennium Engineers Group (MEG) and Terracon Consultants, Inc. are geotechnical testing firms and are not design professionals for this project, their submission was a possible miscommunication.

At the Special Board Meeting held on Wednesday, August 03, 2022, Administration presented the Administrations's pre-ranking evaluation, and the top three firms presented to the Board of Trustees their expertise, competence, and qualifications. The firms had time for presentations and time for questions and answers. Once the presentations had concluded the Board of Trustees officially ranked the firms with Javier Hinojosa Engineering being ranked first, PBK Architects second, and ADM Group third.

<u>FIRMS</u>

| | |
|---|---|
| ADM Group INC. | PBK, |
| Javier Hinojosa Engineering | Millennium Engineers Group (MEG) |
| Sam Garcia Architect LLC | Terracon Consultants INC |

At the same meeting, the Board approved entering into negotiations in the order of ranking for the professional design services for the Synthetic Turf for the Tom Landry Stadium and the Veterans Memorial High School Stadium with Javier Hinojosa Engineering.

Initial project negotiations were held on August 08, 2022, with Mr. Javier Hinojosa Engineering, Mr. Adrian Hernandez, and Mr. Adan Rivera. During the negotiations, Mr. Javier Hinojosa Engineering presented as their Best and Final Offer (BAFO) of $70,000.00.

At the Regular Board Meeting held on Wednesday, August 10, 2022, the Board approved the Best and Final Offer (BAFO) from Mr. Javier Hinojosa Engineering of $70,000.00.

At the Regular Board Meeting held on Wednesday, September 21, 2022, the Board approved Schematic/Final Designs for the Replacement of the Synthetic Turf for the Tom Landry Stadium and the Veterans Memorial High School Stadium. Designs have been reviewed and approved by staff. If approved Administration will begin the advertisement for competitive sealed proposals.

As presented at the Board Workshop a decision will need to be made on the center logo to be used at Tom Landry Stadium before the final design can be completed and advertisements can be made. At the Board, meeting Administration presented that Mission CISD has permission from the Hall of Fame to continue using the current midfield logo.

Schematic Design:
Rough sketches that develop a feasible conceptual design of the project.

Construction Documents:
Communicating the design intent through further refinement of the written and graphic representation of all building materials, components, and equipment that can be quantified and useful to contractors.

Advertisements in the local newspapers were posted on October 12, 2022, and October 24, 2022. The process is for the submittals to be reviewed by the Purchasing Department Staff and the Administration Ranking Team to assure that firms meet the criteria based on demonstrated expertise, competence, and qualifications. Proposal(s) Bid Opening was Thursday, October 27, 2022. After the review Administration will then recommend those firms to be reviewed and ranked in order of selection. The recommendations will be presented for review at the Wednesday, November 02, 2022, Board Work Shop. The Administrative review was conducted by Mr. Adrian Hernandez, Mr. Adan Rivera, Coach Leticia Ibarra Athletic Director, Coach Daniel Longoria MHS Athletic Coordinator, Mr. Jose Mejia MHS Principal and Mr. Fidel Garza VMHS Principal, Coach David Gilpin VMHS Athletic Coordinator was unable to attend. Hellas Construction was the lone proposal.

| Company Name | Base Bid for MHS | Base Bid for VMHS | Days |
|---|---|---|---|
| Hellas Construction | $761,520.00 | $856,968.00 | 40 total |

Note: Each project has a $50,000.00 betterment fund allowance included in the base proposal

At the Special Board of Trustees meeting held on November 02, 2022, the Board approved the rankings and to enter into negotiations in the order of ranking for the Synthetic Turf for the Tom Landry Stadium and the Veterans Memorial High School Stadium.

A virtual project negotiations meeting was held on November 03, 2022, with Mr. Saulo Hernandez and Mr. Ben Millet from Hellas Construction, Mr. Adrian Hernandez, and Mr. Ricardo Rivera from MCISD.

Hellas Construction had Tuesday, November 08, 2022, 12:00 p.m. deadline to submit its best and final offer (BAFO).

The Board of Trustees had the option to accept this BAFO or decline the offer, direct Administration to continue negotiations with the contractor, or to reject all offers, and re-advertise the project using the same specifications and design or direct the engineer to re-design the project.

If approved, Administration will work with our legal counsel to write and execute the contract so that the contractor can begin as soon as possible.

At the Regular Board of Trustees meeting held on November 09, 2022, the Board approved the Best and Final Offer (BAFO)

Tom Landry Stadium - $736,520.00 with 50 Construction Days
Contingency Amount $50,000.00

Veterans Memorial High School Stadium - $1,568,488.00 with 50 Construction Days
Contingency Amount $50,000.00

Notice to Proceed (NTP) was issued on December 05, 2022
Substantial Completion is due on January 24, 2023
Final Completion due on February 23, 2023

**ADMINISTRATIVE CONSIDERATIONS**

As per Athletics and the VMHS campus, there is a request to install agility ladders and circles at the Veterans Memorial High School Stadium for practicing and conditioning exercises, thus, Javier Hinojosa Engineering and Hellas Construction present the Consideration and Approval of Allowance Expenditure Authorization (AEA) #1 for the Replacement of the Synthetic Turf for the Tom Landry Stadium and the Veterans Memorial High School Stadium.

Note: Tom Landry Stadium does not have the field space area for this addition.

| | |
|---|---|
| Contingency Amount for VMHS: | $50,000.00 |
| (AEA) #1 Agility ladders & circles: | $ 9,000.00 |
| Balance: | $41,000.00 |

**FUNDING SOURCE**

General Funds

Estimated Project Cost: $1,472,000.00

Tom Landry Field w/logos: $590,000.00
VMHS Field w/logos: $690,000.00 (larger sq. ft.)
Project Contingency 15%: $192,000.00

**RECOMMENDATION**

This agenda item was presented at the Board of Trustees Workshop on Wednesday, January 18, 2023.

Administration presents Consideration and Approval of Allowance Expenditure Authorization (AEA) #1 for the Replacement of the Synthetic Turf for the Tom Landry Stadium and the Veterans Memorial High School Stadium – Javier Hinojosa Engineering

**EXHIBIT**

AEA #1
Rendering

**CONTACT PERSONS**

Ricardo Rivera, Assistant Superintendent for Operations
Adrian Hernandez, Coordinator for Project & Energy Management

# ALLOWANCE EXPENDITURE AUTHORIZATION

ENGINEER: JAVIER HINOJOSA ENGINEERING

**Project:** Mission C.I.S.D. Synthetic Turf Replacments at Tom Landry Stadium and Veterans Memorial High School

**Authorization No.** 1

**Project Number:** CSP #500-23-2

**Date:** 12-13-2022

To: Hellas Construction, Inc.
Attn: Aldo Ferrino, Turf Project Manager
12000 West Parmer Lane
Cedar Park, Texas 78613



You are authorized to perform the following item(s) of work and to adjust the allowance sum accordingly, as indicated below. This is not a **change** order and does not increase nor decrease the contract amount.

**Description of Work - Construction Cost Request #1**

This Allowance Expenditure Authorization is for the labor and materials necessary for the installation of Agility latters and circles at Veterans Memorial High School. Price Includes materials, labor, per diem and equipment as follows:

| | | |
|---|---|---|
| 1. Agility latters and circles at Veterans Memorial High School (10 agility latters and 5 circles) | $ | 9,000.00 |
| **Total:** | $ | 9,000.00 |

**Owner's Contingency Allowance:**

| | | |
|---|---|---|
| 1. Original Owner's Contingency Allowance Budget | $ | 100,000.00 |
| 2. Prior Owner's Contingency Allowance Expenditures | | 0.00 |
| 3. Owner's Contingency Allowance Balance Prior To This Authorization | $ | 100,000.00 |
| 4. Owner's Contingency Allowance Will be **Decreased** By this Authorization | $ | 9,000.00 |
| 5. New Project Contingency Balance As Of This Authorization | $ | 91,000.00 |

| | | |
|---|---|---|
| **Signature** | Javier Hinojosa, P.E.<br>**Javier Hinojosa Engineering** | 12/13/22<br>**Date** |
| **Signature** | Aldo Ferrino, Turf Project Manager<br>**Hellas Construction, Inc.** | 12/13/22<br>**Date** |
| Carol G. Perez<br>Carol G. Perez (Dec 14, 2022 12:03 CST)<br>**Owner Signature** | By: Carolina "Carol" G. Perez, Ed. D., Superintendent of Schools<br>**Mission C.I.S.D.** | **Date** |

Reviewed and Approved by Mission CISD

Ricardo Rivera (Dec 14, 2022 08:53 CST)

Ricardo Rivera
Assistant Superintendent for Operations

Joel Garcia (Dec 14, 2022 09:15 CST)

Joel Garcia, CPM
Assistant Superintendent for Finance

12/13/2022

| MEASUREMENTS & QUANTITIES | |
|---|---|
| FEATURES/MATERIALS | DETAILS |
| AREA OF TURF | 111,475 SQ. FT. |
| TURF PERIMETER | 1,302 LF |




1 COLOR RENDERING
Scale: 1:40

Hellas Construction, Inc.
12000 West Parmer Lane
Austin, TX 78613
(P) (512) 250-2910
(F) (512) 250-1960
hellasconstruction.com

OWNER:
Veterans Memorial High School - Mission CISD
700 E. 2 Mile Road
Mission,Texas 78574
(956) 323-3000

PROJECT:
SYNTHETIC TURF FOOTBALL FIELD

PROJECT LOCATION:
MISSION,TEXAS

matrix H TURF



COLOR RENDERINGS WITHIN THIS TURF SUBMITTAL REPRESENT TURF SCOPE ONLY. IF SHOWN, TRACK LAYOUT, TRACK COLORS AND AERIAL IMAGE ARE DEPICTED FOR GENERAL OVERVIEW.

COMMENTS:
Drawing scale accurate ONLY when printed on 11x17 paper.

DRAWN BY: BMR

All drawings and written material appearing herein constitute original unpublished work, and may not be duplicated, used or disclosed without the written consent of Hellas Construction, Inc.

DATE:
NOVEMBER 22, 2022

REVISION:
1.2

SHEET TITLE:
COLOR RENDERING

SHEET NUMBER:
6 OF 6

SCALE: 1:40
0 20 40 60

**SUBJECT**: Consideration and Approval of Substantial Completion for the Replacement of the Synthetic Turf for the Tom Landry Stadium and the Veterans Memorial High School Stadium – Javier Hinojosa Engineering

**PRESENTER**: Rick Rivera, Assistant Superintendent for Operations

**BACKGROUND INFORMATION**

The installation of synthetic turf and resurfacing of existing tracks at Tom Landry Stadium and VMHS Stadium were approved by the Board of Trustees on Wednesday, March 19, 2014. At the meeting, the Board approved the best and final offer (BAFO) with Hellas Construction at a total construction cost of $2,712,000.00. Notice to Proceed (NTP) was issued on April 11, 2014, and the projects were substantially completed in early August and the final completion was in early September 2014. Javier Hinojosa Civil Engineering was the design firm for this project.

As per initial planning and design meetings with firms, the synthetic field turf longevity is from eight to ten years. Eight years was the consensus discussed due to the extreme heat conditions in our area and the damage caused due to this.

The fields are currently eight years old and the extreme heat conditions have left the synthetic turf fibers to become excessively brittle as was discussed at the initial planning stages in 2014. Conducting preventative maintenance field brushing has shown that the fibers are breaking and thus thinning of the turf. The thinning of the turf and the loss of fibers causes the turf to lose its required cushion and only makes the playing surface hard and solid which may lead to a higher probability of injuries for our students and athletes. G-Max testing is a test method for shock-absorbing properties of playing surface systems and materials and was conducted at both fields in February of this year by Tait-Pitkin Sports Engineers, PLLC. Reports indicate that the playing surfaces have lost much of its cushion properties and are in need of replacement.

In the past eight years, there have been new technology and advancements in synthetic turf concerning the cooling factor and safety padding and there is a huge difference between synthetic turf and products while improving the quality of playing fields. With these new advancements, the safety factor has also improved.

If approved, the preliminary project timeline is to begin the administrative and design process with all approvals and advertise for CSP's in November 2022, after the football season is over. The primary goal is to have this project completed by April of 2023. The additional construction time has to be considered due to the continuing delays and uncertainty of available materials. Coaches at both campuses are in agreement with the proposed schedule and agree to make alternative arrangements for any other sports that use the fields during this time.

At the Regular Board of Trustees meeting held on June 08, 2022, the Board approved Project and Proposed Budget for the Replacement of Synthetic Turf at Tom Landry Stadium and the Veterans Memorial High School Stadium.

Administration will use Competitive Sealed Proposals (CSPs) as the procurement method as approved by the Board of Trustees in the February 2021 Board of Trustees meeting. This method was approved as the primary default method for projects.
Request for Qualifications (RFQs) will be advertised for professional design services and Administration will schedule presentations to the Board for selection.

The Board of Trustees must take the necessary action in accordance with Texas Education Code 44.035 which consisted of the selection/designation of an architect and/or engineer to prepare construction documents for this project. The engineer and/or architect selected or designated will have full responsibility for complying with the Texas Engineering Practice Act (Article 3271a, Vernon's Texas Civil Statues) or Chapter 478, Acts of the 45th Legislature, Regular Session, 1937 (Article 249a, Vernon's Texas Civil Statues) as applicable.

If the engineer or architect is not a full-time employee of the District, the Board must select the engineer or architect based on demonstrated competence and qualifications as provided by Section 2254.004, Government Code. The selected architect/engineer along with preparing construction documents will be required to provide MCISD with an estimated project budget.

The preliminary timeline is to advertise for RFQs on or about June 14, 2022, with presentations to the Board of Trustees for evaluation and ranking at the next scheduled meeting. Possible selection and approval to enter into a design contract in August. All designs and approvals are tentatively scheduled for November.

Advertisements in the local newspapers were posted on June 14, 2022, and June 21, 2022. The process is for the submittals to be reviewed by the Purchasing Department Staff and the Administration Ranking Team to assure that firms meet the criteria based on demonstrated expertise, competence, and qualifications. The submission of RFQs was on June 30, 2022, and six (6) proposals were received. The Administration ranking team reviewed and pre-ranked the RFQs on July 13, 2022.

Both Millennium Engineers Group (MEG) and Terracon Consultants, Inc. are geotechnical testing firms and are not design professionals for this project, their submission was a possible miscommunication.

At the Special Board Meeting held on Wednesday, August 03, 2022, Administration presented the Administrations's pre-ranking evaluation, and the top three firms presented to the Board of Trustees their expertise, competence, and qualifications. The firms had time for presentations and time for questions and answers. Once the presentations had concluded the Board of Trustees officially ranked the firms with Javier Hinojosa Engineering being ranked first, PBK Architects second, and ADM Group third.

<u>FIRMS</u>

| | |
|---|---|
| ADM Group INC. | PBK, |
| Javier Hinojosa Engineering | Millennium Engineers Group (MEG) |
| Sam Garcia Architect LLC | Terracon Consultants INC |

At the same meeting, the Board approved entering into negotiations in the order of ranking for the professional design services for the Synthetic Turf for the Tom Landry Stadium and the Veterans Memorial High School Stadium with Javier Hinojosa Engineering.

Initial project negotiations were held on August 08, 2022, with Mr. Javier Hinojosa Engineering, Mr. Adrian Hernandez, and Mr. Adan Rivera. During the negotiations, Mr. Javier Hinojosa Engineering presented as their Best and Final Offer (BAFO) of $70,000.00.

At the Regular Board Meeting held on Wednesday, August 10, 2022, the Board approved the Best and Final Offer (BAFO) from Mr. Javier Hinojosa Engineering of $70,000.00.

At the Regular Board Meeting held on Wednesday, September 21, 2022, the Board approved Schematic/Final Designs for the Replacement of the Synthetic Turf for the Tom Landry Stadium and the Veterans Memorial High School Stadium. Designs have been reviewed and approved by staff. If approved Administration will begin the advertisement for competitive sealed proposals.

As presented at the Board Workshop a decision will need to be made on the center logo to be used at Tom Landry Stadium before the final design can be completed and advertisements can be made. At the Board, meeting Administration presented that Mission CISD has permission from the Hall of Fame to continue using the current midfield logo.

Schematic Design:
Rough sketches that develop a feasible conceptual design of the project.

Construction Documents:
Communicating the design intent through further refinement of the written and graphic representation of all building materials, components, and equipment that can be quantified and useful to contractors.

Advertisements in the local newspapers were posted on October 12, 2022, and October 24, 2022. The process is for the submittals to be reviewed by the Purchasing Department Staff and the Administration Ranking Team to assure that firms meet the criteria based on demonstrated expertise, competence, and qualifications. Proposal(s) Bid Opening was Thursday, October 27, 2022. After the review Administration will then recommend those firms to be reviewed and ranked in order of selection. The recommendations will be presented for review at the Wednesday, November 02, 2022, Board Work Shop. The Administrative review was conducted by Mr. Adrian Hernandez, Mr. Adan Rivera, Coach Leticia Ibarra Athletic Director, Coach Daniel Longoria MHS Athletic Coordinator, Mr. Jose Mejia MHS Principal and Mr. Fidel Garza VMHS Principal, Coach David Gilpin VMHS Athletic Coordinator was unable to attend. Hellas Construction was the lone proposal.

| Company Name | Base Bid for MHS | Base Bid for VMHS | Days |
|---|---|---|---|
| Hellas Construction | $761,520.00 | $856,968.00 | 40 total |

Note: Each project has a $50,000.00 betterment fund allowance included in the base proposal

At the Special Board of Trustees meeting held on November 02, 2022, the Board approved the rankings and to enter into negotiations in the order of ranking for the Synthetic Turf for the Tom Landry Stadium and the Veterans Memorial High School Stadium.

A virtual project negotiations meeting was held on November 03, 2022, with Mr. Saulo Hernandez and Mr. Ben Millet from Hellas Construction, Mr. Adrian Hernandez, and Mr. Ricardo Rivera from MCISD.

Hellas Construction had Tuesday, November 08, 2022, 12:00 p.m. deadline to submit its best and final offer (BAFO).

The Board of Trustees had the option to accept this BAFO or decline the offer, direct Administration to continue negotiations with the contractor, or to reject all offers, and re-advertise the project using the same specifications and design or direct the engineer to re-design the project.

If approved, Administration will work with our legal counsel to write and execute the contract so that the contractor can begin as soon as possible.

At the Regular Board of Trustees meeting held on November 09, 2022, the Board approved the Best and Final Offer (BAFO)

Tom Landry Stadium - $736,520.00 with 50 Construction Days
Contingency Amount $50,000.00

Veterans Memorial High School Stadium - $1,568,488.00 with 50 Construction Days
Contingency Amount $50,000.00

Notice to Proceed (NTP) was issued on December 05, 2022
Substantial Completion is due on January 24, 2023
Final Completion due on February 23, 2023

**Pending:**
Allowance Expenditure Authorization (AEA) #1 for the Replacement of the Synthetic Turf for the Tom Landry Stadium and the Veterans Memorial High School Stadium.

| | |
|---|---|
| Contingency Amount for VMHS: | $50,000.00 |
| (AEA) #1 Agility ladders & circles: | $ 9,000.00 |
| Balance: | $41,000.00 |

**ADMINISTRATIVE CONSIDERATIONS – IF APPLICABLE AT THIS TIME**
As per the project site review with Administration, Javier Hinojosa Engineering, and Hellas Construction the replacement of the synthetic turf at both stadiums was reviewed, inspected, and determined to be substantially completed as per contract documents and specifications. Thus, they present Consideration and Approval of Substantial Completion of the Replacement of the Synthetic Turf for the Tom Landry Stadium and the Veterans Memorial High School Stadium.

**Note:** Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

**FUNDING SOURCE**
General Funds

Estimated Project Cost: $1,472,000.00

Tom Landry Field w/logos: $590,000.00
VMHS Field w/logos: $690,000.00 (larger sq. ft.)

Project Contingency 15%: $192,000.00

**RECOMMENDATION – IF APPLICABLE**

his agenda item was presented at the Board of Trustees Workshop on Wednesday, January 18, 2023.

Administration presents Substantial Completion for the Replacement of the Synthetic Turf for the Tom Landry Stadium and the Veterans Memorial High School Stadium – Javier Hinojosa Engineering

**EXHIBIT**

Substantial Completion Form - pending

**CONTACT PERSONS**

Ricardo Rivera, Assistant Superintendent for Operations
Adrian Hernandez, Coordinator for Project & Energy Management

**SUBJECT**: Consideration and Approval of Allowance Expenditure Authorization (AEA) #1 for the Scoreboards at R. Cantu Jr. High & K. White Jr. High – Chanin Structural Engineering

**PRESENTER**: Ricardo Rivera, Assistant Superintendent for Operations

**BACKGROUND INFORMATION**

The Athletics Department, R. Cantu Jr. High, and K. White Jr. High are to purchase a scoreboard at the football/soccer fields. Electrical and technology circuits are not required as per Ms. Ibarra, Athletic Director. On-site is electrical power available and uses wireless wi-fi. The Purchasing department is assisting with the procurement. Due to the type of installation and concerns about wind-load structural engineering is required.

Administration will use competitive sealed proposals (CSP's) as the procurement method as approved by the Board of Trustees in the February 2021 Board of Trustees meeting. This method was approved as the primary default method for projects. However, at the November 10, 2021, Board of Trustees meeting, the Board approved Job Order Contracting (JOC) and this method may be used for this smaller project.

Administration will use the on-call professional services agreement for project administration. It will be the responsibility of the design/engineer professional to provide an estimated project budget. When provided, Administration will advise the Board of Trustees as an informational update.

At the Regular Board of Trustees Meeting held on September 8, 2021, the Board approved the project, and proposed budget, and utilized the on-call professional services for the scoreboard installation at K. White Jr. High and R. Cantu Jr. High project. - Chanin Structural Engineering estimated project cost is $30,000.00 for each campus.

At the Regular Board of Trustees Meeting held on December 15, 2021, the Board approved Schematic Design for the K. White Jr. High and R. Cantu Jr. High Scoreboard Project – Chanin Engineering

Schematic Design:
Rough sketches that develop a feasible conceptual design of the project.

Construction Documents:
Communicating the design intent through further refinement of the written and graphic representation of all building materials, components, and equipment that can be quantified and useful to contractors.

At the Regular Board of Trustees Meeting held on January 19, 2022, the Board approved Final Design for the K. White Jr. High and R. Cantu Jr. High Scoreboard Project – Chanin Engineering. Designs have been reviewed and approved by staff.

At the Regular Board of Trustees Meeting held on June 08, 2022, the Board approved a change of procurement method for the various projects to utilize JOC.

At the Board Workshop of September 07, 2022, the Board has been informed of the Best and Final Offer (BAFO) for the Job Ordering Contracting on Various Projects.

| Project | Vendor Name | Cost |
|---|---|---|
| Scoreboard installation at RCJH & KWJH | 8/A Builders, LLC | $86,100.00 |

(K. White Jr. High $40,950.00 R. Cantu Jr. High $45,150.00)

Notice to Proceed was effective October 14, 2022, with 98 contract days. Substantial Completion will be on January 20, 2023.

**ADMINISTRATIVE CONSIDERATIONS**

As per Chanin Engineering, and 8/A Builders, LLC, the scoreboard at KWJH needed to be rewired with an electrical cable due to a faulty junction box. Thus, they present Consideration and Approval of Allowance Expenditure Authorization (AEA) #1 for the Scoreboards at R. Cantu Jr. High & K. White Jr. High – Chanin Structural Engineering

| | |
|---|---|
| Contingency amount for KWJH: | $2,500.00 |
| AEA#1 rewire electrical: | $2,149.26 (pending) |
| Balance: | $350.74 |

**FUNDING SOURCE**

Local Funds

| | |
|---|---|
| Est. Project Budget per School: | $30,000.00 |
| Project Contingency 20%: | $ 6,000.00 |
| Est. Professional Service 15%: | $ 4,500.00 |
| Est. Total Project Cost: | $40,500.00 per school |

**RECOMMENDATION**

This agenda item was presented at the Board of Trustees Workshop on Wednesday, January 18, 2023.

Administration presents Consideration and Approval of Allowance Expenditure Authorization (AEA) #1 for the Scoreboards at R. Cantu Jr. High & K. White Jr. High – Chanin Structural Engineering

**EXHIBIT:**

AEA#1

**CONTACT PERSONS**

Ricardo Rivera, Assistant Superintendent for Operations
Adrian Hernandez, Coordinator for Project & Energy Management

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT

DATE: 01/11/23

## SCOREBOARD INSTALLATIONS AT K.WHITE JHS AND R. CANTU JHS
## ALLOWANCE EXPENDITURE AUTHORIZATION #1

Description:

Furnish the necessary materials for the Electrical Cable current - rewiring due to the faulty electrical Junction Box located at K. White JHS.

**K. WHITE JHS CONTINGENCY:**

The contract has changed as follows: $2,149.26

Scope of work (Refer to attached CR-1) shall be funded

through the Owner's K. White Contingency allowance of $2,500.00 Upon approval, the remaining

Total K. White Contingency Allowance amount shall be $350.74

TOTAL: $2,149.26

**R. CANTU JHS CONTINGENCY: N/A**

The contract has changed as follows: $0.00

Scope of work (Refer to attached CR-1) shall be funded

through the Owner's R. Cantu Contingency allowance of $2,500.00 Upon approval, the remaining

Total R. Cantu Contingency Allowance amount shall be $2,500.00

TOTAL: $0.00

***NOT VALID UNTIL SIGNED BY THE ENGINEER, CONTRACTOR AND OWNER.***

| | | |
|---|---|---|
| Chanin Engineering, LLC<br>ENGINEER (Firm name) | 8/A Builders, LLC<br>CONTRACTOR (Firm name) | **Mission CISD**<br>OWNER (Firm name) |
| 400 Nolana Suite H2<br>McAllen, TX 78504<br>ADDRESS | 7706 W. Expressway 83<br>Mission, TX 78572<br>ADDRESS | 1201 Bryce Drive<br>Mission, Texas 78572<br>ADDRESS |
| BY (Signature) | BY (Signature) | BY (Signature) |
| Miguel Chanin,PE, Principal-in-Charge<br>(Typed name) | Arnoldo Ochoa, President<br>(Typed name) | (Typed name) |
| 01/12/2023<br>DATE | 01/12/2023<br>DATE | DATE |

dealers electrical supply

DEALERS BR 38MA MCALLEN
1401 EAST UPAS AVE.
MCALLEN, TX 78501-5546
Phone 956-630-2233
Fax

| EXPIRATION DATE | |
|---|---|
| 02/06/2023 | S100472155 |
| DEALERS BR 38MA MCALLEN<br>1401 EAST UPAS AVE.<br>MCALLEN, TX 78501-5546<br>Phone 956-630-2233<br>Fax | PAGE NO.<br>1 of 1 |

SHIP TO:

JAIMES ELECTRIC
3009 N MOOREFIELD RD
MISSION, TX 78574

JAIMES ELECTRIC
3009 N MOOREFIELD RD
MISSION, TX 78574

| CUSTOMER NUMBER | CUSTOMER PO NUMBER | JOB NAME / RELEASE NUMBER | SALESPERSON |
|---|---|---|---|
| 19985 | K WHITE | | HOUSE ACCOUNT |

| WRITER | SHIP VIA | TERMS | SHIP DATE | FREIGHT ALLOWED |
|---|---|---|---|---|
| 38MA | | VENDOR 10TH PROX | 01/06/2023 | No |

| ORDER QTY | DESCRIPTION | UNIT PRICE | EXT PRICE |
|---|---|---|---|
| 1440ft | THHN-4-BLACK-STRANDED<br>Cuts: 1 @ 1440 ft | 1462.530/m | 2106.04 |
| 6ea | SUPERFLEX 125 1.25 IN SUPERFLX | 241.107/e | 12.66 |
| 2ea | SUPERFLX 125STGN 1.25N STRGHTC | 1097.740/e | 21.95 |
| 2ea | PVC 1-1/4 FEMALE ADPT | 113.100/e | 2.26 |
| 1ea | SQD PK7GTA GRNDG BAR KIT | 6.947/ea | 6.95 |

| | |
|---|---|
| Subtotal | 2149.26 |
| S&H Charges | 0.00 |
| Amount Due | 2149.26 |

Printed By: JBARBO on 1/6/2023 4:38:31 PM CST

**SUBJECT**: Consideration and Approval of Substantial Completion for the Scoreboards at R. Cantu Jr. High & K. White Jr. High – Chanin Structural Engineering

**PRESENTER**: Ricardo Rivera, Assistant Superintendent for Operations

**BACKGROUND INFORMATION**

The Athletics Department, R. Cantu Jr. High, and K. White Jr. High are to purchase a scoreboard at the football/soccer fields. Electrical and technology circuits are not required as per Ms. Ibarra, Athletic Director. On-site is electrical power available and uses wireless wi-fi. The Purchasing department is assisting with the procurement. Due to the type of installation and concerns about wind-load structural engineering is required.

Administration will use competitive sealed proposals (CSP's) as the procurement method as approved by the Board of Trustees in the February 2021 Board of Trustees meeting. This method was approved as the primary default method for projects. However, at the November 10, 2021, Board of Trustees meeting, the Board approved Job Order Contracting (JOC) and this method may be used for this smaller project.

Administration will use the on-call professional services agreement for project administration. It will be the responsibility of the design/engineer professional to provide an estimated project budget. When provided, Administration will advise the Board of Trustees as an informational update.

At the Regular Board of Trustees Meeting held on September 8, 2021, the Board approved the project, and proposed budget, and utilized the on-call professional services for the scoreboard installation at K. White Jr. High and R. Cantu Jr. High project. - Chanin Structural Engineering estimated project cost is $30,000.00 for each campus.

At the Regular Board of Trustees Meeting held on December 15, 2021, the Board approved Schematic Design for the K. White Jr. High and R. Cantu Jr. High Scoreboard Project – Chanin Engineering

Schematic Design:
Rough sketches that develop a feasible conceptual design of the project.

Construction Documents:
Communicating the design intent through further refinement of the written and graphic representation of all building materials, components, and equipment that can be quantified and useful to contractors.

At the Regular Board of Trustees Meeting held on January 19, 2022, the Board approved Final Design for the K. White Jr. High and R. Cantu Jr. High Scoreboard Project – Chanin Engineering. Designs have been reviewed and approved by staff.

At the Regular Board of Trustees Meeting held on June 08, 2022, the Board approved a change of procurement method for the various projects to utilize JOC.

At the Board Workshop of September 07, 2022, the Board has been informed of the Best and Final Offer (BAFO) for the Job Ordering Contracting on Various Projects.

| Project | Vendor Name | Cost |
|---|---|---|
| Scoreboard installation at RCJH & KWJH | 8/A Builders, LLC | $86,100.00 |

(K. White Jr. High $40,950.00 R. Cantu Jr. High $45,150.00)

Notice to Proceed was effective October 14, 2022, with 98 contract days. Substantial Completion will be on January 20, 2023.

**Pending:**

Allowance Expenditure Authorization (AEA) #1 for the Scoreboards at R. Cantu Jr. High & K. White Jr. High – Chanin Structural Engineering

| | |
|---|---|
| Contingency amount for KWJH: | $2,500.00 |
| AEA#1 rewire electrical: | $2,149.26 (pending) |
| Balance: | $350.74 |

**ADMINISTRATIVE CONSIDERATIONS**

As per the project site review with Administration, Chanin Engineering, and 8/A Builders, LLC, the scoreboards at RCJH and KWJH were reviewed, inspected, and determined to be substantially completed as per contract documents and specifications. Thus, they present Consideration and Approval of substantial completion for the Scoreboards at R. Cantu Jr. High & K. White Jr. High.

**Note:** Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. Review and training were conducted with Athletic Director Ibarra and campus coaches and controllers were issued to each.

**FUNDING SOURCE**

Local Funds

| | |
|---|---|
| Est. Project Budget per School: | $30,000.00 |
| Project Contingency 20%: | $ 6,000.00 |
| Est. Professional Service 15%: | $ 4,500.00 |
| Est. Total Project Cost: | $40,500.00 per school |

**RECOMMENDATION**

This agenda item was presented at the Board of Trustees Workshop on Wednesday, January 18, 2023.

Administration presents Consideration and Approval of Substantial Completion for the Scoreboards at R. Cantu Jr. High & K. White Jr. High – Chanin Structural Engineering

**EXHIBIT:**

Substantial Completion Form

**CONTACT PERSONS**

Ricardo Rivera, Assistant Superintendent for Operations
Adrian Hernandez, Coordinator for Project & Energy Management

CHANIN
ENGINEERING, LLC

# CERTIFICATE OF SUBSTANTIAL COMPLETION

| | | | |
|---|---|---|---|
| Owner: | Mission CISD | Owner's Contract No.: | 8A-005 |
| Contractor: | 8/A Builders, LLC | Contractor's Project No.: | 44-22 |
| Engineer: | Chanin Engineering, LLC | Engineer's Project No.: | 21-187 & 21-188 |
| Project: | Scoreboard Installations at K. White JHS and R. Cantu JHS | Contract Name: | |

This final Certificate of Substantial Completion applies to:

☒ All Work ☐ The following specified portions of the Work:

January 20, 2023
Date of Substantial Completion



The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work shall be as provided in the Contract, except as amended as follows: *[Note: Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.]*

Amendments to Owner's responsibilities:
☒ None
☐ As follows:

Amendments to Contractor's responsibilities:
☒ None
☐ As follows:

The following documents are attached to and made a part of this Certificate: Punchlist Report

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract.

| EXECUTED BY ENGINEER: | | RECEIVED: | | RECEIVED: | |
|---|---|---|---|---|---|
| By: | (Authorized signature) | By: | Owner (Authorized Signature) | By: | Contractor (Authorized Signature) |
| Title: | Miguel Chanin / President | Title: | | Title: | Arnoldo Ochoa, President |
| Date: | 01/18/2023 | Date: | | Date: | 01/18/2023 |

**SUBJECT**: Consideration and Approval of Change Order #2 for Delay Days for the Child Nutrition Program (CNP) Freezer Installation at Elementary Campuses - Chanin Engineering

**PRESENTER**: Ricardo Rivera, Assistant Superintendent for Operations

**BACKGROUND INFORMATION**

The Child Nutrition Program (CNP) is in needs to add three stand-alone walk-in freezers at Bryan Elementary, Marcell Elementary, and Salinas Elementary near the campus cafeteria area. The three walk-in freezers are required to be placed/installed on concrete slabs and electrical work is required for the connection.

An on-call structural engineer will be the prime engineer and may require an electrical, mechanical, and plumbing engineer (MEP) as a consultant. Professional services are needed to oversee the project due to design weight and electrical connection requirements.

Administration will use competitive sealed proposals (CSP's) as the procurement method as approved by the Board of Trustees in the February 2021 Board of Trustees meeting. This method was approved as the primary default method for projects. However, at the November 10, 2021, Board of Trustees meeting, the Board approved Job Order Contracting (JOC) and this method may be used for this smaller project.

Administration used the on-call professional services agreement for the project assessment. Chanin Structural Engineering's estimated project cost is $90,000.00.

At the Regular Board of Trustees, Meeting held on August 11, 2021, the Board approved of Utilizing the On-call Professional Services for the Child Nutrition Program Walk-in Freezer at Bryan, Salinas & Marcell Elementary Project – Chanin Structural Engineering.

At the Regular Board of Trustees Meeting held on December 15, 2021, the Board approved Schematic Design for the Child Nutrition Program Walk-in Freezers for Bryan, Marcell, and Salinas Elementary Project – Chanin Engineering.

At the Regular Board of Trustees Meeting held on January 19, 2022, the Board approved Final Design for the Child Nutrition Program Walk-in Freezers for Bryan, Marcell, and Salinas Elementary Project – Chanin Engineering. Designs have been reviewed and approved by staff.

At the Regular Board of Trustees Meeting held on June 08, 2022, the Board approved a change of procurement method for the various projects to utilize JOC.

At the Board Workshop of September 07, 2022, the Board was informed of the Best and Final Offer (BAFO) for the Job Ordering Contracting on Various Projects.
56 days for completion.

| Project | Vendor Name | Cost |
|---|---|---|
| CNP Freezer Installation at Elem. | 8/A Builders, LLC | $100,485.00 |

Notice to Proceed (NTP) was issued on October 19, 2022
Substantial Completion is due on December 14, 2022
Final Completion due on January 14, 2023

At the Regular Board of Trustees Meeting held on November 30, 2022, the Board approved Change Order #1 for forty-nine (49) additional delay days for the Child Nutrition Program (CNP) Freezer Installation at Elementary Campuses. If approved the new substantial completion date will be February 01, 2023.

**ADMINISTRATIVE CONSIDERATIONS**
Chanin Engineering and 8/A Builders state that there are delays in shipment for the three (3) stand-alone freezers, thus, they will be submitting Consideration and Approval of Change Order #2 for eighty-nine (89) additional delay days for the Child Nutrition Program (CNP) Freezer Installation at Elementary Campuses. If approved, the new substantial completion date will be May 01, 2023.

**FUNDING SOURCE**
Federal Funds/Local Funds

| | |
|---|---|
| Est. Project Budget: | $90,000.00 |
| Project Contingency 20%: | $18,000.00 |
| Est. Professional Services 12%: | $10,800.00 |
| Est. Total Project Cost: | $118,800.00 |

**RECOMMENDATION**
This agenda item was presented at the Board of Trustees Workshop on Wednesday, January 18, 2023.

Administration presents Consideration and Approval of Change Order #2 for Delay Days for the Child Nutrition Program (CNP) Freezer Installation at Elementary Campuses - Chanin Engineering

**EXHIBIT:**
Change Order #2

**CONTACT PERSONS**
Ricardo Rivera, Assistant Superintendent for Operations
Adrian Hernandez, Coordinator for Project & Energy Management

**CONSTRUCTION CHANGE ORDER**

| | | | | |
|---|---|---|---|---|
| **PROJECT:** | Bryan, Marcell, and Salinas<br>New Stand Alone Freezers | CHANGE ORDER NUMBER:<br>DATE:<br>ENGINEER'S PROJECT NO.: | 2<br>1/10/23<br>21-184 | OWNER ■<br>ENGINEER ■<br>CONTRACTOR ■ |
| **TO CONTRACTOR:**<br>8/A Builders, LLC<br>7706 W. Exp. 83, Mission, TX 78572 | | CONTRACT DATED:<br>CONTRACT FOR:<br>SUBSTANTIAL COMPLETION | 9/21/22<br>8A-004<br>2/1/23 | FIELD □<br>PROJECT MANAGER ■ |

You are hereby directed to make the following change(s) in this Contract:

*(Describe briefly any proposed changes or list any attached information in the alternative)*

***PROPOSED ADJUSTMENTS***

1. The proposed basis of adjustment to the Contract Sum is as follows:

**A. Request for extension of time in construction.**

(89) additional calendar days will be added to the contract for the pending shipment of (3) three stand-alone freezers that are to be provided by the Owner and installation by the Contractor.

41

| | |
|---|---|
| Total amount to be deducted from contingency | |
| Owner's Contingency Allowance | $ 5,000.00 |
| Remaining Contingency Amount | $ 5,000.00 |
| The original Contract Sum was | $ 100,485.00 |
| The net change by previously authorized Change Orders | |
| The Contract Sum prior to this Change Order was | $ 100,485.00 |
| The Contract Sum will be increased by this Change Order in the amount of | $ - |
| The new Contract Sum including this Change Order, will be | $ 100,485.00 |
| The Contract Time will be changed by an additional | 89 days |
| New substantial completion date | May 1, 2023 |

*When signed by the Owner and Engineer and received by the Contractor, this document becomes effective IMMEDIATELY as a Construction Change Order (CCO), and the Contractor shall proceed with the change(s) described above.*

*Contractor signature indicates agreement with the proposed adjustments in Contract Sum and Contractor Time set forth in this CCO.*

| | | |
|---|---|---|
| **Chanin Engineering, LLC** | 8/A Builders, LLC | Mission CISD |
| ENGINEER *(Firm name)* | CONTRACTOR *(Firm name)* | OWNER *(Firm name)* |
| 400 Nolana Ste H2, McAllen, TX 78504 | 7706 W. Exp. 83, Mission, TX 78572 | |
| Address | Address | Address |
| BY *(Signature)* | BY *(Signature)* | BY *(Signature)* |
| Miguel Chanin,PE-Principal in Charge | Arnoldo Ochoa, President | |
| *Typed name* | *Typed name* | *Typed name* |
| 01/12/2023 | 01/12/2023 | |
| DATE | DATE | DATE |

**Amanda Pena <amanda@chaninengineering.com>**

# MCISD-Stand Alone Freezers

**Elizabeth Barron** <ElizabethB@missionrs.com> Thu, Jan 5, 2023 at 1:56 PM
To: "Hernandez, Adrian" <adrian.hernandez@mcisd.org>
Cc: Larry Cantu <LarryC@missionrs.com>, "Woodrum, Maria D" <rwoodrum@mcisd.org>, "Garcia, Joel" <joel.garcia@mcisd.org>, "Ortiz, Linda C" <Lcorte30@mcisd.org>, "Rivera, Ricardo" <rriver49@mcisd.org>, "Gandaria, Nelda" <Ngandari@mcisd.org>, Amanda Pena <amanda@chaninengineering.com>, Cristian Guajardo <cristian@chaninengineering.com>

Good afternoon,

We have received confirmation that these units will ship out 3/10/23. Thank you.

**Liz Barron | Project Manager**
Mission Restaurant Supply
3422 N. 10th St., McAllen, TX 78501
**Phone:** 956-467-1295 | **Fax:** 956-467-1294
**Mobile:** 210-859-5122 www.MissionRS.com | **Email:**elizabethb@missionrs.com

> On Jan 5, 2023, at 1:04 PM, Hernandez, Adrian <adrian.hernandez@mcisd.org> wrote:
>
> **[EXTERNAL EMAIL] Please note that this email is from an external source. Exercise caution regarding links and attachments.**
> [Quoted text hidden]

**SUBJECT**: Consideration and Approval of Change Order #02 for Delay Days for the Child Nutrition Program (CNP) Freezer – DBR Engineering

**PRESENTER**: Ricardo Rivera, Assistant Superintendent for Operations

**BACKGROUND INFORMATION**

Child Nutrition Program is needing to repair the existing refrigeration system that feeds the bulk storage freezer with a newer system that can add additional capacity. An assessment was done back on December 18, 2019, by DBR Engineering. DBR Engineering assessed that the refrigeration circuits are separate, they are connected to a single condensing unit. The current unit has a circuit that is not operational. It is the desire of the Child Nutrition Program (CNP) to replace the system with a new system that utilizes one refrigeration condensing unit with a matching evaporator, this allows for greater reliability to the system and an increased capacity for the system for future growth.

The administration will use competitive sealed proposals (CSPs) as the procurement method as approved by the Board of Trustees in the February 2021 Board of Trustees meeting. This method was approved as the primary default method for projects.

At the Regular Board meeting held on August 11, 2021, the board approved Utilizing the On-call Professional Services for the Child Nutrition Program Freezer Project – DBR MEP Engineering with an estimated project cost is $100,000.00.

At the Regular Board meeting held on November 10, 2021, the Board approved the Schematic Design for the Child Nutrition Program (CNP) Freezer Project. Designs have been reviewed, approved, and signed off by CNP Director Ms. Rosie Woodrum and CNP Staff.

The first advertisements in the local newspapers were posted on December 08, 2021, and December 15, 2021. The proposal bid opening was January 04, 2022, no bidders submitted a proposal. Advertisements were extended for two more weeks, and one bid was submitted but was placed on hold by Administration due to more information being needed from the professional design team at DBR Engineering on this project. On Feb. 11, 2022, Administration then posted on Buy Board to see if any vendors wanted to submit a bid. After posting on Buy Board for several weeks on Feb. 25, 2022, no bidders were received from Buy Board.

The process is for the submittals to be reviewed by the Purchasing Department Staff and the Administration Ranking Team to assure that firms meet the criteria based on demonstrated expertise, competence, and qualifications. Pre-ranking was done on the sole proposal earlier submitted and after the review Administration will then present the recommended firm to be reviewed and ranked in order of selection. The recommendation will then be presented for approval at the next sequential Board of Trustees meeting and the Administration will then enter into negotiations in the order of selection.

Administrations pre-ranking was conducted on Friday, April 29, 2022, by Ms. Dora Garcia, Ms. Daisy Cuevas, Mr. Adan Rivera, Mr. Adrian Hernandez, and Mr. Martin Castaneda.

At the Regular Board of Trustees Meeting held on May 11, 2022, the Board approved the Rankings and to Enter Into Negotiations in the Order of Ranking for the Child Nutrition Program (CNP) Freezer Replacement Project.

| Company Name | Base Bid | Days |
|---|---|---|
| Aircool Tech. - ACT Corp. | $254,870.00 | 120 |

Since the approval of May 11, 2022, to enter into negotiations with Aircool Tech., we have requested Aircool Tech. to provide us a date and time so that we could enter into negotiations for the best and final offer so that we may be able to request approval.

On Wednesday, May 25, 2022, a virtual meeting was held with Ms. Maria Woodrum and Mr. Robert Meave from CNP, Mr. Joel Garcia, Mr. Adan Rivera, Mr. Adrian Hernandez from MCISD, and Mr. Samuel Cantu from Aircool Tech. Mr. Cantu expressed that he was continuing to work with his subcontractors on his proposal.

On May 27, 2022, Air Cool Tech submitted two BAFO offers:

Option #1: Original proposal of $254,870.00 excluding the Johnson Controls (JCI) BAC System for system monitoring and advanced temperature controls and required concrete slabs – these were on the original bidding package.

Option #2: The proposal of $289,860.00 will not include JCI Controls but include InteleGen Refrigeration Controller. This technique will give us alerts and monitor equipment such as temps, sensors, pressures, and many other functions that you're able to control/view online (all we would need on your end would be an IP Address) and with no concrete slabs.

Option #3: Submitted on June 02, 2022 – Proposal of $340,185.00 as per original plans and specifications to include JCI controls and concrete slabs.

Difference of $85,315.00
Concrete Slabs: $8,750.00
JCI Controls: $76,565.00

As per consultation with DBR MEP Engineering, Ms. Rosie Woodrum, and Mr. Joel Garcia, Administration recommends Option #1.

At the Regular Board of Trustees Meeting held on June 08, 2022, the Board approved the Best and Final Offer (BAFO) from Aircool Tech. of $254,870.00 within 120 days. Notice to Proceed was issued on August 02, 2022, with a Substantial Completion date of November 30, 2022.

At the Regular Board of Trustees Meeting held on October 12, 2022, the Board approved Change Order #1 for Seventy-nine (79) additional delay days. The new substantial completion date will be February 17, 2023.

**ADMINISTRATIVE CONSIDERATIONS**

As per DBR Engineer and Aircool Tech. there are delays from the supplier for the new electrical gear, thus, they will be submitting Consideration and Approval of Change Order #2 for Twenty-six (26) additional delay days. If approved the new substantial completion date will be March 15, 2023.

**FUNDING SOURCE**

General Fund

| | |
|---|---|
| Est. Project Budget: | $100,000.00 |
| Project Contingency 20%: | $ 20,000.00 |
| Est. Professional Services 12%: | $ 12,000.00 |
| Est. Total Project Cost: | $132,000.00 |

**RECOMMENDATION**

This agenda item was presented at the Board of Trustees Workshop on Wednesday, January 18, 2023.

Administration presents Consideration and Approval of Change Order #02 for Delay Days for the Child Nutrition Program (CNP) Freezer Replacement Project – DBR Engineering

**EXHIBIT:**

Change Order #02

**CONTACT PERSONS**

Ricardo Rivera, Assistant Superintendent for Operations
Adrian Hernandez, Coordinator for Project & Energy Management

# AIA® Document G701™ – 2017

## Change Order

**PROJECT:** *(Name and address)*
Mission CISD - Child Nutrition Program - Freezer Replacement
Mission, Texas

**OWNER:** *(Name and address)*
Mission Consolidated Independent School District
1201 Bryce Dr.
Mission, Texas 78572

**CONTRACT INFORMATION:**
Contract For: General Construction

Date: August 2, 2022

**ARCHITECT:** *(Name and address)*
DBR Enginering, Inc.
200 S. 10th St
McAllen, Texas 78501

**CHANGE ORDER INFORMATION:**
Change Order Number: 002

Date: January 5, 2023

**CONTRACTOR:** *(Name and address)*
Aircool Tech
1432 N. Alamo Rd
Alamo, Tx 8516

**THE CONTRACT IS CHANGED AS FOLLOWS:**
*(Insert a detailed description of the change and, if applicable, attach or reference specific exhibits. Also include agreed upon adjustments attributable to executed Construction Change Directives.)*
Due to extended delivery of electrical gear, the contractor is asking for an additional 26 days from the previous time extention. This allows the contractor to receive, install and train the District on the new electrical gear. Refer to attached request and supplier information on estimated delivery date.

| | | |
|---|---|---|
| The original Contract Sum was | $ | 254,870.00 |
| The net change by previously authorized Change Orders | $ | 0.00 |
| The Contract Sum prior to this Change Order was | $ | 254,870.00 |
| The Contract Sum will be increased by this Change Order in the amount of | $ | 0.00 |
| The new Contract Sum including this Change Order will be | $ | 254,870.00 |

The Contract Time will be increased by Seventy Nine (26) days.
The new date of Substantial Completion will be 3/15/2023

**NOTE:** This Change Order does not include adjustments to the Contract Sum or Guaranteed Maximum Price, or the Contract Time, that have been authorized by Construction Change Directive until the cost and time have been agreed upon by both the Owner and Contractor, in which case a Change Order is executed to supersede the Construction Change Directive.

**NOT VALID UNTIL SIGNED BY THE ARCHITECT, CONTRACTOR AND OWNER.**

| | | |
|---|---|---|
| DBR Engineering Consultants | Aircool Tech | Mission Consolidated Independent School District |
| **ARCHITECT** *(Firm name)* | **CONTRACTOR** *(Firm name)* | **OWNER** *(Firm name)* |
| **SIGNATURE** | **SIGNATURE** | **SIGNATURE** |
| Hugo H. Avila | Samuel Cantu | |
| **PRINTED NAME AND TITLE** | **PRINTED NAME AND TITLE** | **PRINTED NAME AND TITLE** |
| January 5, 2023 | January 5, 2023 | |
| **DATE** | **DATE** | **DATE** |

**AIA Document G701™ – 2017.** Copyright © 1979, 1987, 2000 , 2001 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 11:35:03 CT on 01/05/2023 under Order No.2114392940 which expires on 01/07/2024, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
**User Notes:**
(3B9ADA3C)

**Change Order# 002**




# ***Change Order Form***

**Lic.#TACLA26381C**
1432 N. Rudy Villarreal Rd
Alamo, TX 78516
Off Ph:(956)702-8700
Alt Ph:(956)827-1731
Fax:(956)702-8704
**email: service@aircooltechcorp.com**
Regulated by The Texas Department of Licensing and Regulation
P.O. Box 12157 • Austin, Texas 78711 • 1-800-803-9202

**Date: January 5, 2023**

**Owner: Mission CISD**
**Attn:**
**1201 Bryce Dr.**
**Mission, TX 78572**

**Original Contract Date: June 9, 2022**

**Project Name / Number: MCISD Child Nutrition Program Freezer Replacement – Re-Extension of Substantial Completion**

**Change the work to be performed under the original contract as follows:** To Re-Extend Substantial Completion date from 02/17/2023 to 3/15/2023, Re-Extending it an additional of 26 days prior to CO#1 substantial date. Re-Extension is due to the fact that we will be receiving the Electrical guts that go inside the Electrical Panel on 01/18/2023 (date given by Supplier). We are needing the extension time to be sure we will receive all Electrical parts on time, we would not like to rely on date given from supplier/vendor as Factories have been giving us potential Shipping Delays.

**Acceptance of Change Order:** Signature_____

**Date of Acceptance:** _____

**Change Order Respectfully Submitted by:** Samuel Cantu

# SE Order Ref No.44711316

| | | | |
|---|---|---|---|
| **Line #** | 002 | **PO Number** | p000029404 |
| **Catalogue #** | I-Line ML Panel (INTERIOR) | **SE Order Ref No.** | 44711316 |
| **Product #** | | | |

| Actual Ship Date | Shipment # | Qty Shipped/Canc Qty/Unfilled Qty | Shipping Location | Carrier | Routing | Estimated Delivery Date | Estimated Delivery Date | Not Before Date | Status/Link to Tracking Site | P |
|---|---|---|---|---|---|---|---|---|---|---|
| | 01 | Qty Shipped 0 Cancelled Qty 0 Unfilled Qty 1 | EL PASO PLANT | STANDARD | STANDARD | Jan 18, 2023 | | Jan 1, 1901 | | |

Drawings ○ Engineering ○ Assembly ○ Ready To Ship ○ Shipped

mySchneider Terms of Use Site Map (https://www.se.com/us/en/sitemap/) Privacy and Cookies Policy Change your cookie settings

**SUBJECT**: Consideration and Approval of the Final Design for the Indoor Air Quality Projects for Cavazos, Midkiff, and Salinas Elementary – DBR MEP Engineering

**PRESENTER**: Ricardo Rivera, Assistant Superintendent for Operations

## BACKGROUND INFORMATION

Mission CISD prioritizes the safety and health of its students, staff, and community and ensures that all safety and health measures are addressed as a priority including air quality. School indoor air quality is particularly important as it may affect the health, performance, and comfort of school staff and students. The MCISD Five (5) Year Improvement Plan consists of facilities improvements district-wide that include improvements for drainage, roof replacements, lighting improvements, and replacement of HVAC systems. The plan shows that due to the campuses' age, certain items need to be assessed such as air handlers, blowers, and control systems.

Due to laws and requirements that regulate such equipment and the cost, this project is being considered a construction project, and as such the Texas Education Code 44.031 (a) requires the board of a school district considering a construction project to comply with bidding requirements.

Administration will use competitive sealed proposals (CSP's) as the procurement method as approved by the Board of Trustees in the February 2021 Board of Trustees meeting. This method was approved as the primary default method for projects.

At the Regular Board of Trustees, Meeting held on September 8, 2021, the Board approved the project, and proposed budget, and utilized the on-call professional services. The administration approved the on-call professional services agreement for the project assessment. DBR MEP Engineering estimated project cost is $33,000,000.00 for all district projects.

Administration will use the on-call professional services agreement for project administration. It will be the responsibility of the design/engineer professional to provide an estimated project budget. When provided, Administration will advise the Board of Trustees as an informational update.

## ADMINISTRATIVE CONSIDERATIONS

DBR Engineering has continued to meet with MCISD Staff on the designs. DBR Engineering presents Consideration and Approval of the Final Design for the Indoor Air Quality Projects for Cavazos, Midkiff, and Salinas Elementary – DBR MEP Engineering

Note: Most campuses are scheduled for air quality projects with some more complicated and intensive than others. These three can be worked on quicker than others and we will begin. We continue to be in the design phase and those will be presented as completed by DBR MEP Engineering.

**Salinas Elementary School (Est. Cost $2,775,000.00)**

The project scope consists of replacing the aging 27-year-old HVAC systems. This work includes air handlers, VAV boxes, air-cooled chillers, and associated pumps. The design increased air quality by providing air handlers with higher MERV filter rating capabilities and replacing the existing HVAC control system. In addition, the

project includes converting the heating from hot water to electric heat to reduce maintenance upkeep.

**Hurla M. Midkiff Elementary School (Est. Cost $2,325,000.00)**
The project scope consists of replacing the aging 21-year-old HVAC systems. This work includes outside air units, VAV boxes, and air handlers. The design increased air quality by replacing the nonfunctioning outside air units, providing air handlers with higher MERV filter rating capabilities, and replacing the existing HVAC control system.

**Raquel Cavazos Elementary (Est. Cost $2,325,000.00)**
The project scope consists of replacing the aging 21-year-old HVAC systems. This work includes outside air units, VAV boxes, and air handlers. The design increased air quality by replacing the nonfunctioning outside air units, providing air handlers with higher MERV filter rating capabilities, and replacing the existing HVAC control system.

Schematic Design:
Rough sketches that develop a feasible conceptual design of the project.

Construction Documents:
Communicating the design intent through further refinement of the written and graphic representation of all building materials, components, and equipment that can be quantified and useful to contractors.

## FUNDING SOURCE – ESSER FUNDS

Local Fund

| | |
|---|---|
| Est. Project Budget: | $29,000,000.00 |
| Project Contingency 20%: | $ 5,800,000.00 |
| Est. Professional Services 12%: | $ 3,480,000.00 |
| Est. Total Project Cost: | $38,280,000.00 |

## RECOMMENDATION

This agenda was presented at the Board of Trustees Workshop on Wednesday, January 18, 2023.

Administration is presenting Consideration and Approval of the Final Design for the Indoor Air Quality Projects for Cavazos, Midkiff, and Salinas Elementary – DBR MEP Engineering

## EXHIBIT

Final Designs

## CONTACT PERSONS

Ricardo Rivera, Assistant Superintendent for Operations
Adrian Hernandez, Coordinator for Project & Energy Management

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - CAVAZOS ELEMENTARY SCHOOL - INDOOR AIR QUALITY IMPROVEMENTS

| | |
|---|---|
| Veronica R. Mendoza | President |
| Roy Vela | Vice President |
| Iris Iglesias | Secretary |
| Petra B. Ramirez | Member |
| Minnie R. Rodgers | Member |
| Jerry Zamora | Member |
| Juan M. Gonzalez | Member |

## PROJECT TEAM


DBR Inc.
200 S. 10th St.
Suite 901
McAllen, Texas 782501
956-683-1640
MEP Engineer
Robert H. Tijerina, P.E
rtijerina@dbrinc.com

1201 Bryce Drive
Mission, TX 78572

Mission Project Manager
Adrian Hernandez
adrian.hernandez@mcisd.org
P: 956.323.8960


## LOCATION




**4563 N Minnesota Rd, Mission, TX 78574**

## SHEET LIST TABLE


| SHEET NUMBER | SHEET TITLE |
|---|---|
| G0.01 | COVER SHEET |
| M0.01 | MECHANICAL SYMBOL |
| MD2.11 | DEMO COMPOSITE MECHANICAL DEMO PLAN |
| MD2.12 | DEMO MECHANICAL PLAN - AREA A |
| MD2.13 | DEMO MECHANICAL PLAN - AREA B |
| MD2.14 | DEMO MECHANICAL PLAN - AREA C |
| MD3.01 | DEMO MECHANICAL ENLARGED PLANS |
| M2.11 | COMPOSITE MECHANICAL PLANS |
| M2.12 | MECHANICAL PLAN - AREA A |
| M2.13 | MECHANICAL PLAN - AREA B |
| M2.14 | MECHANICAL PLAN - AREA C |
| M3.01 | MECHANICAL ENLARGED PLAN |
| M4.01 | MECHANICAL FLOW DIAGRAMS |
| M5.01 | MECHANICAL SCHEDULES |
| M6.01 | MECHANICAL DETAILS |
| E0.01 | ELECTRICAL SYMBOL LEGEND |
| ED2.11 | DEMO COMPOSITE ELECTRICAL PLAN |
| ED2.12 | DEMO ELECTRICAL PLAN - AREA A |
| ED2.13 | DEMO ELECTRICAL PLAN - AREA B |
| ED2.14 | DEMO ELECTRICAL PLAN - AREA C |
| E2.11 | COMPOSITE ELECTRICAL PLAN |
| E2.12 | ELECTRICAL PLAN A |
| E2.13 | ELECTRICAL PLAN B |
| E2.14 | ELECTRICAL PLAN C |
| E5.01 | ELECTRICAL SCHEDULES |
| E6.01 | ELECTRICAL DETIALS |



DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234


DBR Project Number 218033.005

| HA | RT | JR | | |
|---|---|---|---|---|


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


REVISION:

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

SEAL:

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

DATE: 01/05/2023

DRAWN BY: DBR

CHECKED BY: DBR

PROJECT NUMBER 218033.005

SHEET TITLE: COVER SHEET

SHEET NUMBER: G0.01


1/5/2023 5:27:52 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

# ABBREVIATIONS

## A

| | |
|---|---|
| A | AIR (COMPRESSED) |
| ABV | ABOVE |
| AC | AIR CONDITIONING |
| AC | ALTERNATING CURRENT, AIR COMPRESSOR |
| ACCH | AIR COOLED CHILLER |
| ACCU | AIR COOLED CONDENSING UNIT |
| AD | ACCESS DOOR, AREA DRAIN |
| ADJ | ADJUSTABLE |
| AF | AIR FILTER |
| AFC | ABOVE FINISHED CEILING |
| AFF | ABOVE FINISHED FLOOR |
| AFG | ABOVE FINISHED GRADE |
| AHRI | AIR-CONDITIONING, HEATING, AND REFRIGERATION INSTITUTE |
| AHU | AIR HANDLING UNIT |
| AL | ALUMINUM |
| AMB | AMBIENT |
| AP | ACCESS PANEL |
| APD | AIR PRESSURE DROP |
| ARCH | ARCHITECT, ARCHITECTURAL |
| AS | AIR SEPARATOR |
| ASHRAE | AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS |
| ASME | AMERICAN SOCIETY OF MECHANICAL ENGINEERS |
| ASTM | AMERICAN SOCIETY OF TESTING AND MATERIALS |
| AV | ACID VENT, AIR VENT |
| AVG | AVERAGE |
| AW | ACID WASTE |
| AWS | AMERICAN WELDING SOCIETY |
| AUX | AUXILIARY |

## B

| | |
|---|---|
| B | BOILER |
| BC | BELOW COUNTER |
| B/C | BACK OF CURB |
| BFF | BELOW FINISHED FLOOR |
| BFV | BUTTERFLY VALVE |
| BH | BOX HYDRANT |
| BLDG | BUILDING |
| BM | BENCHMARK |
| BOF | BOTTOM OF FOOTING |
| BOS | BOTTOM OF STRUCTURE |
| BP | BACKFLOW PREVENTER |
| BTU | BRITISH THERMAL UNIT |
| BV | BALL VALVE |
| BWV | BACK WATER VALVE |

## C

| | |
|---|---|
| C | CELSIUS |
| CAB | CABINET |
| CB | CATCH BASIN |
| CD | CONDENSATE DRAIN LINE |
| CFM | CUBIC FEET PER MINUTE |
| CFS | CUBIC FEET PER SECOND |
| CH | CHILLER |
| CHR | CHILLED WATER RETURN |
| CHS | CHILLED WATER SUPPLY |
| CHW | CHILLED WATER |
| CHWP | CHILLED WATER PUMP |
| CI | CAST IRON |
| CIRC | CIRCULATING |
| CL | CENTERLINE |
| CLG | CEILING |
| CLR | CLEAR |
| CMU | CONCRETE MASONRY UNIT |
| COL | COLUMN |
| COMB | COMBINATION |
| COMP | COMPRESSOR |
| CONC | CONCRETE, CONCENTRIC |
| COND | CONDENSER, CONDENSATE |
| CONN | CONNECTION |
| CONT | CONTINUOUS,CONTINUATION |
| CTR | CENTER |
| CU | COPPER |

## D

| | |
|---|---|
| D | DEPTH, DRAIN, DRYER |
| DB | DRY BULB |
| DC | DIRECT CURRENT |
| DDC | DIRECT DIGITAL CONTROL |
| DDMB | DUAL DUCT MIXING BOX |
| DESIG | DESIGNATION |
| DTL | DETAIL |
| DIA | DIAMETER |
| DIFF | DIFFUSER |
| DIM | DIMENSION |
| DISC | DISCONNECT |
| DN | DOWN |
| DPR | DAMPER |
| DW | DISHWASHER |
| DWG | DRAWING |
| DWH | DOMESTIC WATER HEATER |
| DWP | DOMESTIC WATER PUMP |
| DX | DIRECT EXPANSION |

## E

| | |
|---|---|
| EA | EACH |
| EAT | ENTERING AIR TEMPERATURE |
| EC | ELECTRICAL CONTRACTOR |
| ECC | ECCENTRIC |
| EDB | ENTERING DRY BULB |
| EDH | ELECTRIC DUCT HEATER |
| EF | EXHAUST FAN |
| EFF | EFFICIENCY |
| EJ | EXPANSION JOINT |
| EL | ELEVATION |
| ELEC | ELECTRICAL |
| EMERG | EMERGENCY |
| ENCL | ENCLOSURE |
| ENGR | ENGINEER |
| EQ | EQUAL |
| EQUIP | EQUIPMENT |
| ESP | EXTERNAL STATIC PRESSURE |
| ET | EXPANSION TANK |
| ETR | EXISTING TO REMAIN |
| EVAP | EVAPORATOR |
| EWB | ENTERING WET BULB |
| EWT | ENTERING WATER TEMPERATURE |
| EX | EXPLOSION PROOF |
| EXT | EXTERNAL |
| EXTG | EXISTING |

## F

| | |
|---|---|
| F | FAHRENHEIT, FIRE |
| FBO | FURNISHED BY OTHERS |
| FCO | FLOOR CLEAN OUT |
| FCS | FLOOR CONTROL STATION |
| FCU | FAN COIL UNIT |
| FD | FLOOR DRAIN, FIRE DAMPER |
| FDC | FIRE DEPARTMENT SIAMESE CONNECTION |
| FDV | FIRE DEPARTMENT VALVE |
| FH | FIRE HYDRANT |
| FHC | FIRE HOSE CABINET |
| FHR | FIRE HOSE RACK |
| FLA | FULL LOAD AMPS |
| FLEX | FLEXIBLE |
| FLR | FLOOR |
| FPTU | FAN POWERED TERMINAL UNIT |
| FT | FOOT, FEET |
| FUT | FUTURE |

## G

| | |
|---|---|
| G | GAS |
| GA | GAUGE |
| GAL | GALLON |
| GALV | GALVANIZED |
| GC | GENERAL CONTRACTOR |
| GLV | GLOBE VALVE |
| GND | GROUND |
| GPM | GALLONS PER MINUTE |
| GV | GATE VALVE |

## H

| | |
|---|---|
| HORIZ | HORIZONTAL |
| HP | HORSEPOWER |
| HSTAT | HUMIDISTAT |
| HT | HEIGHT |
| HTG | HEATING |
| HTR | HEATER |
| HW | HOT WATER |
| HWP | HEATING WATER PUMP |
| HWR | HOT WATER RETURN |
| HWS | HOT WATER SUPPLY |
| HX | HEAT EXCHANGER |
| HZ | HERTZ |

## I

| | |
|---|---|
| ID | INSIDE DIAMETER |
| IE | INVERT ELEVATION |
| IH | INFRARED HEATER |
| IN | INCH |
| INSUL | INSULATION |
| INT | INTERNAL, INTERIOR |
| INV | INVERT |
| IW | INDIRECT WASTE |

## J

| | |
|---|---|
| JB | JUNCTION BOX |
| JP | JOCKEY PUMP |

## K

| | |
|---|---|
| KEC | KITCHEN EQUIPMENT CONTRACTOR |
| KO | KNOCKOUT |
| KVA | KILOVOLT- AMPS |
| KW | KILOWATT |

## L

| | |
|---|---|
| L | LENGTH |
| LAT | LEAVING AIR TEMPERATURE |
| LAV | LAVATORY |
| LF | LINEAR FEET |
| LP | LOW PRESSURE |
| LRA | LOCKED ROTOR AMPS |
| LVL | LEVEL |
| LWB | LEAVING WET BULB |
| LWCO | LOW WATER CUT OFF |
| LWT | LEAVING WATER TEMPERATURE |

## M

| | |
|---|---|
| MAT | MIXED AIR TEMPERATURE |
| MAX | MAXIMUM |
| MBTUH | THOUSAND OF BTU'S |
| MC | MECHANICAL CONTRACTOR |
| MECH | MECHANICAL |
| MFR | MANUFACTURER |
| MH | MANHOLE |
| MI | MALLEABLE IRON |
| MIN | MINIMUM |
| MP | MEDIUM PRESSURE |
| MS | MOP SINK |
| MTD | MOUNTED |
| MU | MAKE-UP |
| MVD | MANUAL VOLUME DAMPER |
| MSAH | MINI-SPLIT AIR HANDLER |
| MSCU | MINI-SPLIT CONDENSING UNIT |

## N

| | |
|---|---|
| N.C. | NORMALLY CLOSED |
| NFPA | NATIONAL FIRE PROTECTION ASSOCIATION |
| NIC | NOT IN CONTRACT |
| N.O. | NORMALLY OPEN |
| NO. | NUMBER |
| NTS | NOT TO SCALE |

## O

| | |
|---|---|
| OA | OUTSIDE AIR |
| OAF | OUTSIDE AIR FAN |
| OAHU | OUTSIDE AIR HANDLING UNIT |
| OBD | OPPOSED BLADE DAMPER |
| OC | ON CENTER |
| OD | OUTSIDE DIAMETER, OVERFLOW DRAIN |
| OFCU | OUTSIDE AIR FAN COIL UNIT |
| OPG | OPENING |
| OS&Y | OPEN STEM AND YOLK |

## P

| | |
|---|---|
| PG | PRESSURE GAUGE |
| PP | POLYPROPYLENE |
| PPM | PART PER MILLION |
| PRI | PRIMARY |
| PRS | PRESSURE REDUCING STATION |
| PRV | PRESSURE REDUCING VALVE |
| PSF | POUNDS PER SQUARE FOOT |
| PSI | POUNDS PER SQUARE INCH |
| PSIG | POUNDS PER SQUARE INCH GAUGE |
| PV | PLUG VALVE |
| PVC | POLYVINYL CHLORIDE |

## Q

| | |
|---|---|
| QTY | QUANTITY |

## R

| | |
|---|---|
| RA | RETURN AIR |
| RAD | REFRIGERATED AIR DRYER |
| RAF | RETURN AIR FAN |
| RAG | RETURN AIR GRILLE |
| RAT | RETURN AIR TEMPERATURE |
| RCP | REFLECTED CEILING PLAN |
| RD | ROOF DRAIN |
| RE | REFERENCE, REFER |
| RED | REDUCER |
| REFR | REFRIGERATOR |
| REG | REGISTER |
| REINF | REINFORCING |
| REQD | REQUIRED |
| REV | REVISION, REVISE |
| RH | RELATIVE HUMIDITY |
| RHG | REFRIGERANT HOT GAS |
| RL | REFRIGERANT LIQUID |
| RLA | RUNNING LOAD AMPS |
| RM | ROOM |
| RPM | REVOLUTIONS PER MINUTE |
| RS | REFRIGERANT SUCTION |
| RTU | ROOFTOP UNIT |
| RV | RELIEF VALVE |

## S

| | |
|---|---|
| SA | SUPPLY AIR |
| SAF | SUPPLY AIR FAN |
| SAG | SUPPLY AIR GRILLE |
| SAN | SANITARY SEWER |
| SAR | SUPPLY AIR REGISTER |
| SC | STEAM CONDENSATE |
| SCHED | SCHEDULED |
| SD | STORM DRAIN |
| SEC | SECONDARY |
| SECT | SECTION |
| SENS | SENSIBLE |
| SF | SQUARE FEET |
| SFCS | SPRINKLER FLOOR CONTROL STATION |
| SH | SHOWER |
| SHT | SHEET |
| SIM | SIMILAR |
| SK | SINK |
| SM | SHEETMETAL |
| SP | STATIC PRESSURE, SUMP PUMP |
| SPEC | SPECIFICATION |
| SPR | SPRINKLER |
| SQ | SQUARE |
| SS | SERVICE SINK |
| SSSC | SOLID STATE SPEED CONTROL |
| STD | STANDARD |
| STL | STEEL |
| STR | STRAINER |
| SURF | SURFACE |
| SUSP | SUSPEND |
| SV | SANITARY VENT |
| SW | SOFT WATER |

## T

| | |
|---|---|
| TC | TEMPERATURE CONTROL |
| TCC | TEMPERATURE CORNEAL COMPRESSOR |
| TD | TRENCH DRAIN |
| TDH | TOTAL DYNAMIC HEAD |
| TF | TRANSFER FAN |
| TH BLK | THRUST BLOCK |
| THERM | THERMOMETER |
| TMV | THERMOSTATIC MIXING VALVE |
| TP | TRAP PRIMER |
| TPD | TRAP PRIMER DEVICE |
| TSP | TOTAL STATIC PRESSURE |
| TSTAT | THERMOSTAT |
| TW | TEMPERED HOT WATER |
| TYP | TYPICAL |

## U

| | |
|---|---|
| U | URINAL |
| UCD | UNDER CUT DOOR |
| UG | UNDERGROUND |
| UH | UNIT HEATER |
| UL | UNDERWRITERS LABORATORIES, INC |
| UNO | UNLESS NOTED OTHERWISE |
| U/F | UNDERFLOOR |
| U/S | UNDERSLAB |

## V

| | |
|---|---|
| V | VOLT |
| VA | VOLT- AMPERE |
| VAC | VACUUM |
| VAV | VARIABLE AIR VOLUME |
| VB | VALVE BOX, VACUUM BREAKER |
| VD | VOLUME DAMPER |
| VEL | VELOCITY |
| VERT | VERTICAL |
| VFD | VARIABLE FREQUENCY DRIVE |
| VIB | VALVE IN BOX |
| VOV | VALVE ON VERTICAL |
| VP | VACUUM PUMP |
| VR | VARIABLE AIR VOLUME REHEAT |
| VTR | VENT THRU ROOF |

## W

| | |
|---|---|
| W | WATT, WIDTH |
| W/ | WITH |
| W/O | WITHOUT |
| WB | WET BULB |
| WC | WATER CLOSET |
| WCO | WALL CLEAN OUT |
| WH | WALL HYDRANT |
| WM | WATER METER |
| WP | WEATHERPROOF |
| WPD | WATER PRESSURE DROP |
| WWF | WELDED WIRE FABRIC |

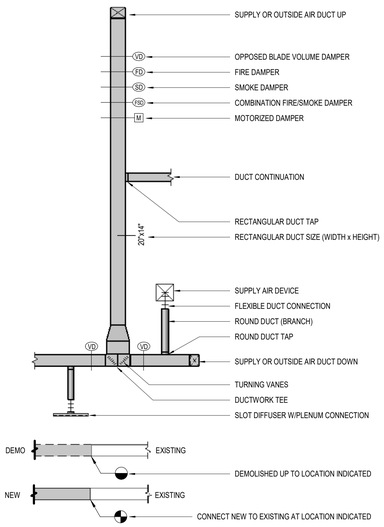
## Y

| | |
|---|---|
| Y | YARD HYDRANT |

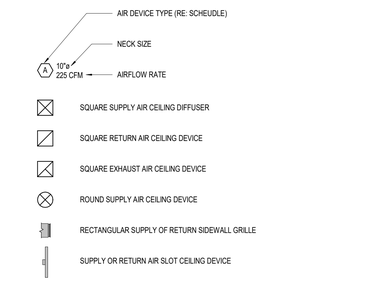
## Z

| | |
|---|---|
| Z | ZONE |

# DUCTWORK




# AIR DEVICE TYPES



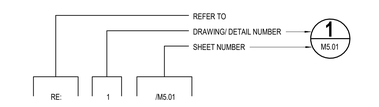

# WALL MOUNTED SENSOR TYPES

| | |
|---|---|
| T | THERMOSTAT |
| H | HUMIDISTAT |
| C | CARBON DIOXIDE SENSOR |
| CO | CARBON MONOXIDE SENSOR |
| N | NITROGEN DIOXIDE SENSOR |
| S | ON/OFF SWITCH |

# PIPING TYPES

| | |
|---|---|
| CD | CONDENSATE DRAIN LINE |
| CHS | CHILLED WATER SUPPLY |
| CHR | CHILLED WATER RETURN |
| HWS | HOT WATER SUPPLY |
| HWR | HOT WATER RETURN |
| CWS | CONDENSER WATER SUPPLY |
| CWR | CONDENSER WATER RETURN |
| REF | REFRIGERANT PIPING SIZED BY MFR. |

# DRAWING/DETAIL REFERENCE KEY




# MECHANICAL GENERAL NOTES

1. PIPING AND DUCTWORK SHOWN ON PLANS ARE SCHEMATIC ONLY. COORDINATE WITH OTHER TRADES FOR PIPING AND DUCTWORK ROUTING. OFFSET AND RUN PIPING DUCTWORK INSIDE THE STRUCTURE IF REQUIRED. PROVIDE ALL NECESSARY PIPING, DUCTWORK, FITTING, INSULATION, AND OTHER ACCESSORIES IN ORDER TO COMPLETE THE INSTALLATIONS.
2. EXACT LOCATIONS OF EQUIPMENT, GRILLES, AND DAMPERS SHALL BE FIELD COORDINATED WITH OTHER TRADES TO AVOID CONFLICTS AND ALLOW ADEQUATE CLEARANCES.
3. EQUIPMENT SIZES, DIMENSIONS, AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE MANUFACTURER DRAWINGS AND CUTSHEETS BEFORE FABRICATING OF DUCTWORK, PIPING, OR POURING OF CONCRETE HOUSEKEEPING PADS.
4. SHEET METAL INLET DUCTS TO VAV TERMINAL UNITS SHALL BE SAME SIZE AS THE BOX INLET SIZE. PROVIDE RIGID ROUND DUCT THAT IS ONE SIZE LARGER THAN THE INLET BOX SIZE IF THE DISTANCE BETWEEN THE MAIN DUCT AND THE VAV BOX IS MORE THAN 6'-0".
5. PROVIDE CONICAL SPIN-IN CONNECTOR FOR ALL ROUND DUCT CONNECTIONS TO VAV TERMINAL UNITS.
6. INSTALL EQUIPMENT TO ENSURE ACCESS PANELS ARE NOT BLOCKED. ACCESS FOR SERVICE MUST BE PROVIDED.
7. MECHANICAL CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR FOR ALL ELECTRICAL POWER REQUIREMENTS.
8. DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE DIMENSIONS.
9. PROVIDE RECTANGULAR BRANCH DUCT TAP FOR ALL RECTANGULAR DUCT CONNECTIONS TO RECTANGULAR DUCT TRUNKS.
10. ALL DUCTWORK AND ASSOCIATED ACCESSORIES SHALL BE CONSTRUCTED TO MEET THE LATEST SMACNA STANDARDS FOR HVAC DUCT CONSTRUCTION.
11. ALL OUTSIDE AIR, SUPPLY AIR, AND RETURN AIR DUCTWORK AND PLENUMS SHALL BE INSULATED WITH A MINIMUM OF R-6 INSULATION WHERE LOCATED IN UNCONDITIONED SPACES AND SHALL BE INSULATED WITH A MINIMUM OF R-8 INSULATION WHERE LOCATED OUTSIDE THE BUILDING. REFER TO SPECIFICATION 23 07 13 DUCT INSULATION FOR FURTHER INFORMATION AND ADDITIONAL REQUIREMENTS.
12. ALL DUCTWORK SHALL BE CONSTRUCTED TO SEAL CLASS 'A' AS REFERENCED IN SMACNA STANDARDS. ALL NON-WELDED JOINTS AND SEAMS SHALL BE SEALED. THIS INCLUDES BUT IS NOT LIMITED TO TRANSVERSE JOINTS, LONGITUDINAL SEAMS, DUCT WALL PENETRATIONS, SPIN-INS, TAPS, AND OTHER BRANCH CONNECTIONS, ACCESS DOORS, ACCESS PANELS, AND DUCT CONNECTIONS TO EQUIPMENT. OPENINGS FOR ROTATING SHAFTS SHALL ALSO BE SEALED WITH BUSHINGS. REFER TO SPECIFICATION 23 31 13 METAL DUCTWORK FOR FURTHER INFORMATION.
13. ALL EXPOSED DUCTWORK AND PIPING WITH ASSOCIATED ACCESSORIES IN AREAS WITH NO CEILING OR PARTIAL CEILING SHALL BE PAINTED. REFER TO ARCHITECT FOR COLOR.
14. MECHANICAL CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR PRIOR TO ACTUAL INSTALLATION OF TEMPERATURE SENSORS AND HUMIDITY SENSORS.
15. PROVIDE REMOTE SPIN-IN DAMPER OPERATOR FOR SPIN-IN CONNECTIONS AND VOLUME DAMPERS LOCATED OVER GYPSUM CEILINGS.
16. PROVIDE AIRFOIL TYPE TURNING VANES IN ALL 90 DEGREE ELBOWS.
17. PROVIDE INSULATED ACCESS DOORS FOR DUCTWORK DOWNSTREAM OF AIR HANDLING UNITS AT EVERY 20'-0" TO FACILITATE DUCT CLEANING. PROVIDE ACCESS DOORS WITHIN 5'-0" OF EACH ELBOW.
18. COORDINATE LOCATIONS OF FLOOR AND WALL OPENINGS WITH ARCHITECT AND STRUCTURAL ENGINEER.
19. ALL CEILING MOUNTED AND WALL MOUNTED AIR DEVICE FINISHES SHALL MATCH ADJACENT ARCHITECTURAL SURFACE. CONTRACTOR SHALL COORDINATE COLOR WITH ARCHITECT.
20. NO PIPE HANGERS SHALL BE SPACED MORE THAN 10'-0" O.C. COMPLY WITH PIPE SPACING AS SPECIFIED IN THE PIPING SUPPORT SPECIFICATIONS.
21. ALL PIPING LOCATED INSIDE BUILDING SHALL BE SUPPORTED FROM THE STRUCTURE WITH SADDLE OR TRAPEZE HANGERS WITH ADJUSTABLE CLEVIS OR THREADED RODS.
22. MECHANICAL CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF ALL OUTSIDE AIR INTAKES TO MAINTAIN 15 FEET DISTANCE BETWEEN OUTSIDE AIR INTAKES AND ANY EXHAUST AIR OUTLET, FLUES OR PLUMBING VENTS.
23. MECHANICAL CONTRACTOR SHALL COORDINATE WITH PLUMBING CONTRACTOR FOR ALL CONDENSATE DRAIN PIPES CONNECTING TO A SINK DRAIN TAIL PIECE.
24. ALL KITCHEN GREASE EXHAUST DUCTWORK SHALL BE CONTINUOUSLY WELDED 16 GA. CARBON STEEL. ALL GREASE EXHAUST DUCTS SHALL BE WRAPPED WITH 3M 2 HR. FIRE RATED WRAP OR INSTALLED WITHIN A FIRE RATED ENCLOSURE.

# CONTROLS SCHEMATIC SYMBOLS LEGEND

| | |
|---|---|
| AI | ANALOG INPUT |
| AO | ANALOG OUTPUT |
| DI/BI | DIGITAL/BINARY INPUT |
| DO/BO | DIGITAL/BINARY OUTPUT |
| MD | ON-OFF MOTORIZED DAMPER |
| MMD | MODULATING TYPE MOTORIZED DAMPER |
| AFMS | AIR FLOW MEASURING STATION |
| MCV | CONTROL VALVE MODULATING TYPE |
| VFD | VARIABLE FREQUENCY DRIVE |
| CSR | CURRENT SENSING RELAY |
| FRZ | FREEZESTAT |
| HSL | HIGH STATIC LIMIT |
| SPT | STATIC PRESSURE TRANSMITTER |
| DPT | DIFFERENTIAL PRESSURE TRANSDUCER |
| FM | FLOW METER |
| FS | FLOW SWITCH |
| DAT | DISCHARGE AIR TEMPERATURE SENSOR |
| S | WALL SENSOR |
| T | THERMOSTAT |
| CO2 | CARBON DIOXIDE SENSOR |
| SP | SET POINT |
| S/A | SUPPLY AIR |
| R/A | RETURN AIR |
| O/A | OUTSIDE AIR |
| HC | HEATING COIL |
| CC | COOLING COIL |
| DX | DIRECT EXPANSION COOLING COIL |
| PICCV | PRESSURE INDEPENDENT CHARACTERIZED CONTROL VALVE |
| AFC | AIRFLOW CROSS |
| DPS | DIFFERENTIAL PRESSURE SWITCH |


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


52

REVISION:

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

SEAL:




MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

DATE: 01/05/2023

DRAWN BY: DBR

CHECKED BY: DBR

PROJECT NUMBER 218033.005

SHEET TITLE: MECHANICAL SYMBOL LEGEND

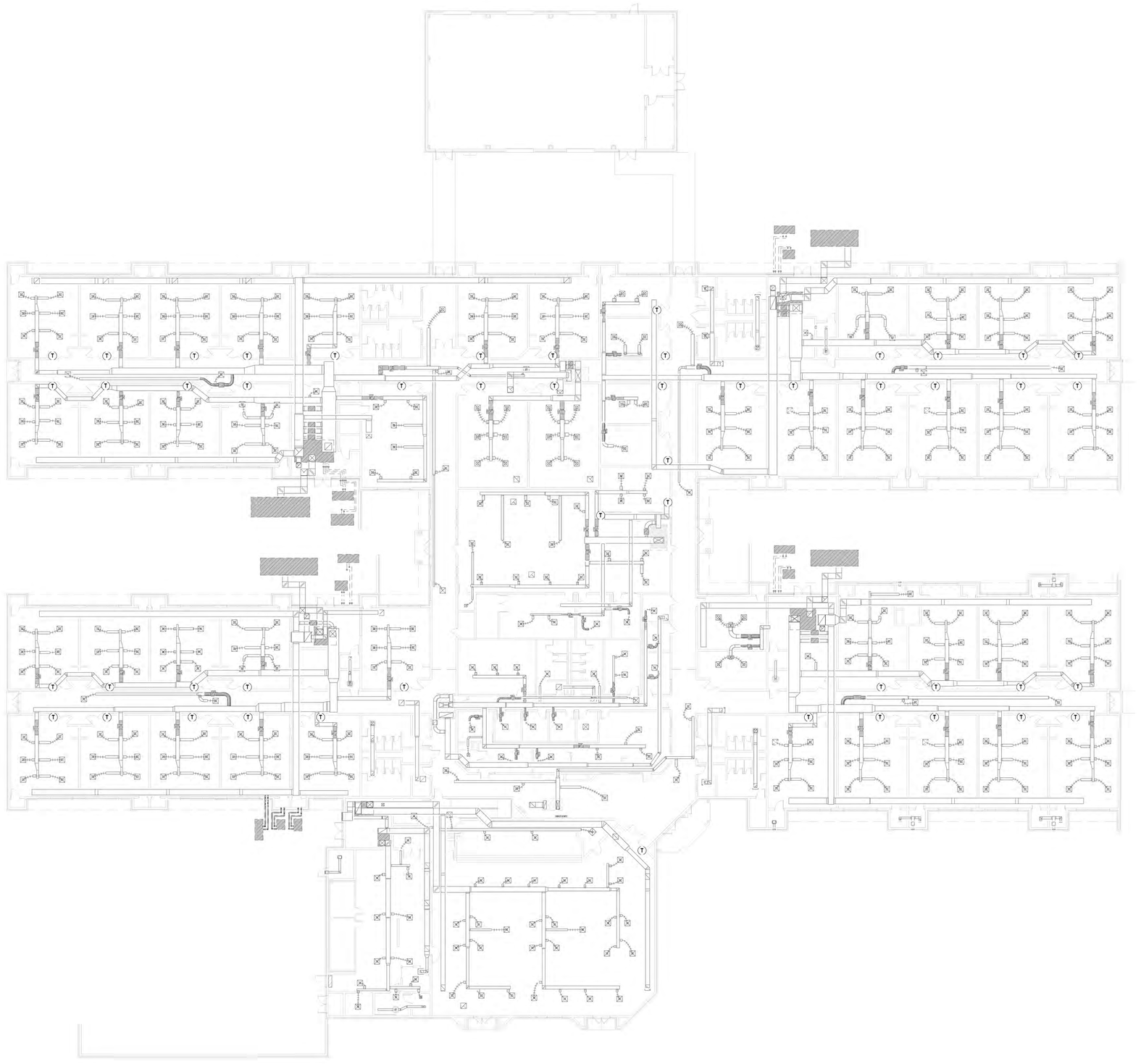
SHEET NUMBER: M0.01


DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234


DBR Project Number 218033.005

| HA | RT | JR | | |
|---|---|---|---|---|


1/5/2023 5:27:53 PM
Autodesk Docs://218033.009-Mission CISD-Mckiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt



## 1 DEMO COMPOSITE MECHANICAL PLAN
MD2.11 1/16" = 1'-0"

## MECHANICAL GENERAL DEMO NOTES

A. COORDINATE DEMOLITION WORK WITH ELECTRICAL AND OTHER DISCIPLINES AS REQUIRED.

B. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE VERIFIED EXISTING JOBSITE CONDITIONS DURING THE BIDDING PERIOD, SO THEY WILL HAVE DISCOVERED THE FULL SCOPE OF WORK INVOLVED WITH THE MODIFICATION OF THIS EXISTING SPACE. THE SCOPE OF THE WORK SHALL INCLUDE ALL MATERIALS FOR A COMPLETE INSTALLATION INCLUDING DEVICES, EQUIPMENT, OR APPARATUS WHICH MUST BE REROUTED, RELOCATED, OR REMOVED EITHER TEMPORARILY OR PERMANENTLY, OR WHICH MUST BE PROVIDED TO ACCOMMODATE THE INDICATED REMODELING. NOT ALL EXISTING CONDITIONS ARE NECESSARILY INDICATED ON THE DRAWINGS. ALL HVAC SHOWN ARE TAKEN FROM AS-BUILT HARDCOPY AND MUST BE FIELD VERIFIED.

C. WHEN AN EQUIPMENT IS IDENTIFIED TO BE REMOVED, THE OWNER HAS FIRST RIGHT OF REFUSAL BEFORE DISPOSING OF THAT EQUIPMENT. PROVIDE OWNER ONE WEEK NOTICE PRIOR TO DEMOLITION.

D. PROVIDE ALL NECESSARY CLEAR PATH TO MOVE DEMOLISHED EQUIPMENT OUT OF THE FACILITY AS WELL TO BRING NEW EQUIPMENT INTO THE BUILDING. MODIFY EXISTING PIPING, DUCTWORK CONDUITS, AS REQUIRED TO COMPLETE THE DEMOLITION.

## # MECHANICAL DEMO KEYED NOTES

1 DEMOLISH EXISTING THERMOSTAT AND CONDUCTORS. EXISTING J-BOX AND CONDUIT TO REMAIN FOR RE-USE.

2 DEMOLISH EXISTING SINGLE DUCT BOX IN ITS ENTIRETY. DEMOLISH ASSOCIATED EXISTING TEMPERATURE SENSOR. EXISTING ELECTRICAL DISCONNECT TO REMAIN FOR NEW SINGLE DUCT TERMINAL UNIT. DEMOLISH EXISTING DUCTWORK UP TO LOCATION INDICATED ON PLAN. ALL DOWNSTREAM SUPPLY DUCTWORK AND AIR DEVICES SHALL REMAIN. CONTRACTORSHALL FIELD VERIFY EXACT LOCATION OF TEMPERATURE SENSOR.

3 REFER TO ENLARGED MECHANICAL ROOM PLANS FOR MECHANICAL ROOM VIEWS CONTINUATION.

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

53

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

# MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.005

**SHEET TITLE:** DEMO COMPOSITE MECHANICAL PLAN

**SHEET NUMBER:** MD2.11

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.005

| HA | RT | JR | | |
|---|---|---|---|---|

TN PN

1/5/2023 5:28:56 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

## MECHANICAL GENERAL DEMO NOTES

A. COORDINATE DEMOLITION WORK WITH ELECTRICAL AND OTHER DISCIPLINES AS REQUIRED.

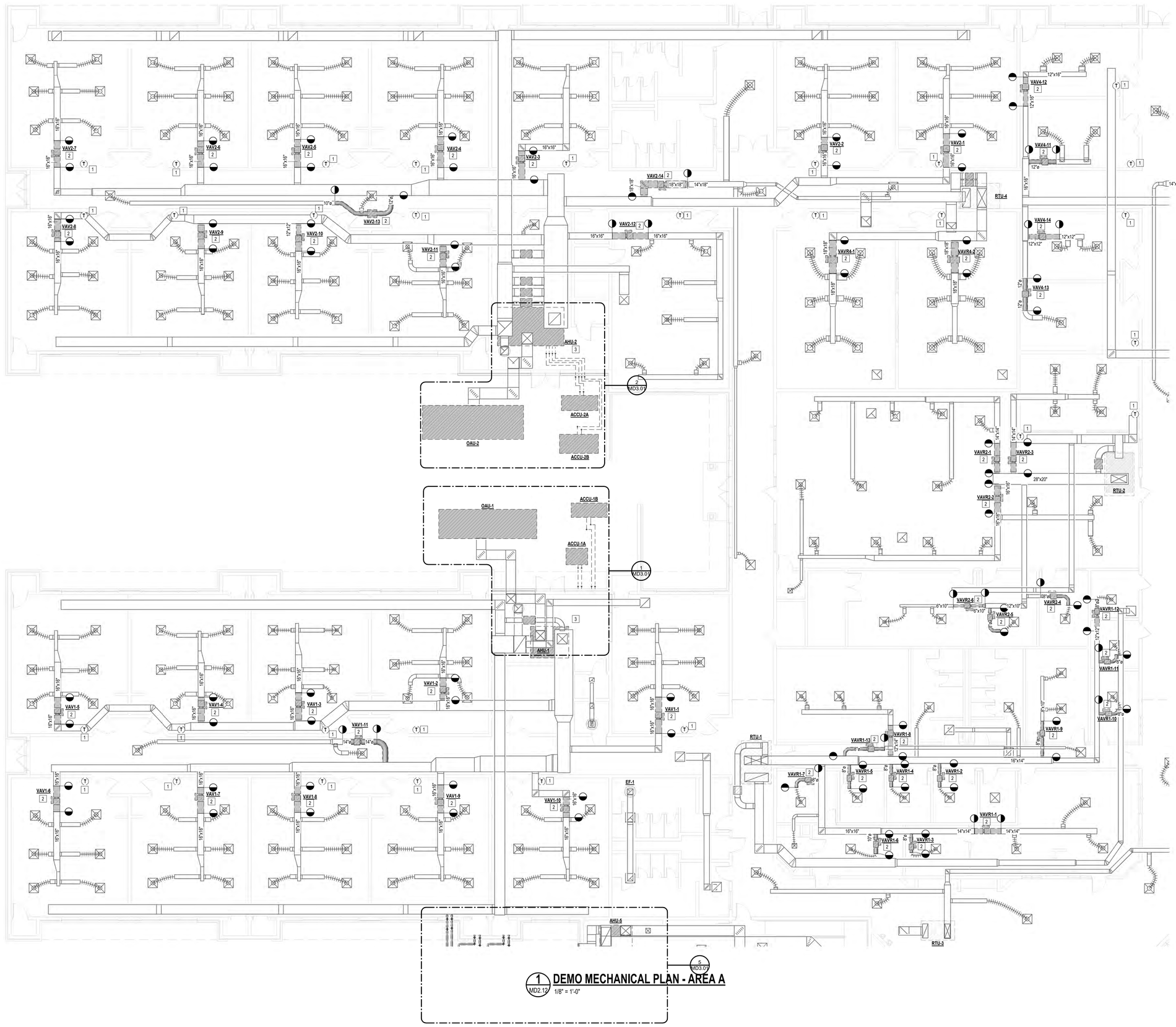
B. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE VERIFIED EXISTING JOBSITE CONDITIONS DURING THE BIDDING PERIOD, SO THEY WILL HAVE DISCOVERED THE FULL SCOPE OF WORK INVOLVED WITH THE MODIFICATION OF THIS EXISTING SPACE. THE SCOPE OF THE WORK SHALL INCLUDE ALL MATERIALS FOR A COMPLETE INSTALLATION INCLUDING DEVICES, EQUIPMENT, OR APPARATUS WHICH MUST BE REROUTED, RELOCATED, OR REMOVED EITHER TEMPORARILY OR PERMANENTLY, OR WHICH MUST BE PROVIDED TO ACCOMMODATE THE INDICATED REMODELING. NOT ALL EXISTING CONDITIONS ARE NECESSARILY INDICATED ON THE DRAWINGS. ALL HVAC SHOWN ARE TAKEN FROM AS-BUILT HARDCOPY AND MUST BE FIELD VERIFIED.

C. WHEN AN EQUIPMENT IS IDENTIFIED TO BE REMOVED, THE OWNER HAS FIRST RIGHT OF REFUSAL BEFORE DISPOSING OF THAT EQUIPMENT. PROVIDE OWNER ONE WEEK NOTICE PRIOR TO DEMOLITION.

D. PROVIDE ALL NECESSARY CLEAR PATH TO MOVE DEMOLISHED EQUIPMENT OUT OF THE FACILITY AS WELL TO BRING NEW EQUIPMENT INTO THE BUILDING. MODIFY EXISTING PIPING, DUCTWORK CONDUITS, AS REQUIRED TO COMPLETE THE DEMOLITION.

## # MECHANICAL DEMO KEYED NOTES

1. DEMOLISH EXISTING THERMOSTAT AND CONDUCTORS. EXISTING J-BOX AND CONDUIT TO REMAIN FOR RE-USE.
2. DEMOLISH EXISTING SINGLE DUCT BOX IN ITS ENTIRETY. DEMOLISH ASSOCIATED EXISTING TEMPERATURE SENSOR. EXISTING ELECTRICAL DISCONNECT TO REMAIN FOR NEW SINGLE DUCT TERMINAL UNIT. DEMOLISH EXISTING DUCTWORK UP TO LOCATION INDICATED ON PLAN. ALL DOWNSTREAM SUPPLY DUCTWORK AND AIR DEVICES SHALL REMAIN. CONTRACTORSHALL FIELD VERIFY EXACT LOCATION OF TEMPERATURE SENSOR.
3. REFER TO ENLARGED MECHANICAL ROOM PLANS FOR MECHANICAL ROOM VIEWS CONTINUATION.




1 MD2.12 **DEMO MECHANICAL PLAN - AREA A**
1/8" = 1'-0"


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


54

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

# MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.005

**SHEET TITLE:** DEMO MECHANICAL PLAN - AREA A

**SHEET NUMBER:** MD2.12


DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

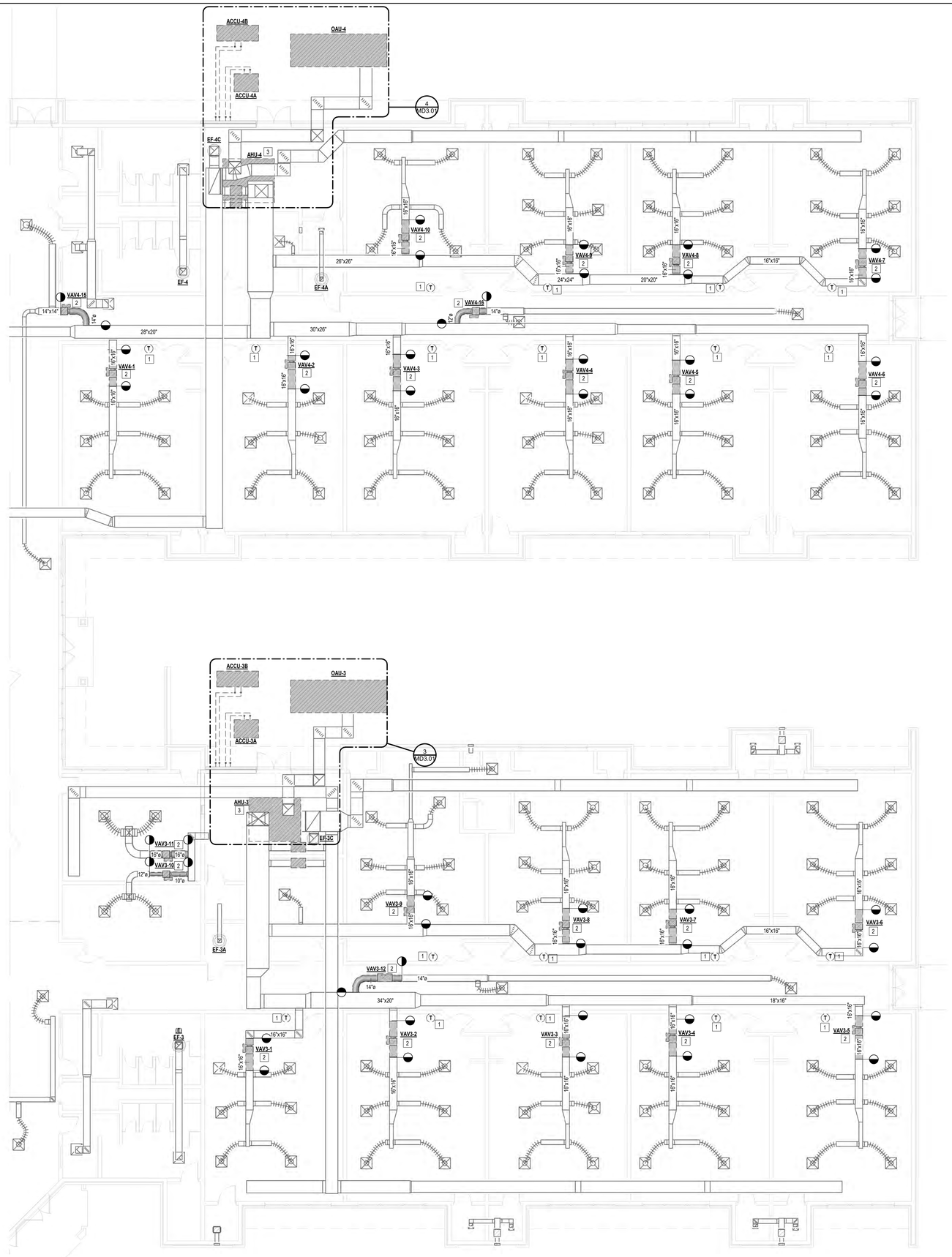

TBPE Firm Registration No. 2234

DBR Project Number 218033.005

| HA | RT | JR | | |
|---|---|---|---|---|

TN PN


1/5/2023 5:29:10 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt




1 MD2.13 **DEMO MECHANICAL PLAN - AREA B**
1/8" = 1'-0"

## MECHANICAL GENERAL DEMO NOTES

A. COORDINATE DEMOLITION WORK WITH ELECTRICAL AND OTHER DISCIPLINES AS REQUIRED.

B. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE VERIFIED EXISTING JOBSITE CONDITIONS DURING THE BIDDING PERIOD, SO THEY WILL HAVE DISCOVERED THE FULL SCOPE OF WORK INVOLVED WITH THE MODIFICATION OF THIS EXISTING SPACE. THE SCOPE OF THE WORK SHALL INCLUDE ALL MATERIALS FOR A COMPLETE INSTALLATION INCLUDING DEVICES, EQUIPMENT, OR APPARATUS WHICH MUST BE REROUTED, RELOCATED, OR REMOVED EITHER TEMPORARILY OR PERMANENTLY, OR WHICH MUST BE PROVIDED TO ACCOMMODATE THE INDICATED REMODELING. NOT ALL EXISTING CONDITIONS ARE NECESSARILY INDICATED ON THE DRAWINGS. ALL HVAC SHOWN ARE TAKEN FROM AS-BUILT HARDCOPY AND MUST BE FIELD VERIFIED.

C. WHEN AN EQUIPMENT IS IDENTIFIED TO BE REMOVED, THE OWNER HAS FIRST RIGHT OF REFUSAL BEFORE DISPOSING OF THAT EQUIPMENT. PROVIDE OWNER ONE WEEK NOTICE PRIOR TO DEMOLITION.

D. PROVIDE ALL NECESSARY CLEAR PATH TO MOVE DEMOLISHED EQUIPMENT OUT OF THE FACILITY AS WELL TO BRING NEW EQUIPMENT INTO THE BUILDING. MODIFY EXISTING PIPING, DUCTWORK CONDUITS, AS REQUIRED TO COMPLETE THE DEMOLITION.

## # MECHANICAL DEMO KEYED NOTES

1 DEMOLISH EXISTING THERMOSTAT AND CONDUCTORS. EXISTING J-BOX AND CONDUIT TO REMAIN FOR RE-USE.

2 DEMOLISH EXISTING SINGLE DUCT BOX IN ITS ENTIRETY. DEMOLISH ASSOCIATED EXISTING TEMPERATURE SENSOR. EXISTING ELECTRICAL DISCONNECT TO REMAIN FOR NEW SINGLE DUCT TERMINAL UNIT. DEMOLISH EXISTING DUCTWORK UP TO LOCATION INDICATED ON PLAN. ALL DOWNSTREAM SUPPLY DUCTWORK AND AIR DEVICES SHALL REMAIN. CONTRACTORSHALL FIELD VERIFY EXACT LOCATION OF TEMPERATURE SENSOR.

3 REFER TO ENLARGED MECHANICAL ROOM PLANS FOR MECHANICAL ROOM VIEWS CONTINUATION.

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

55

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

# MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.005

**SHEET TITLE:** DEMO MECHANICAL PLAN - AREA B

**SHEET NUMBER:** MD2.13

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

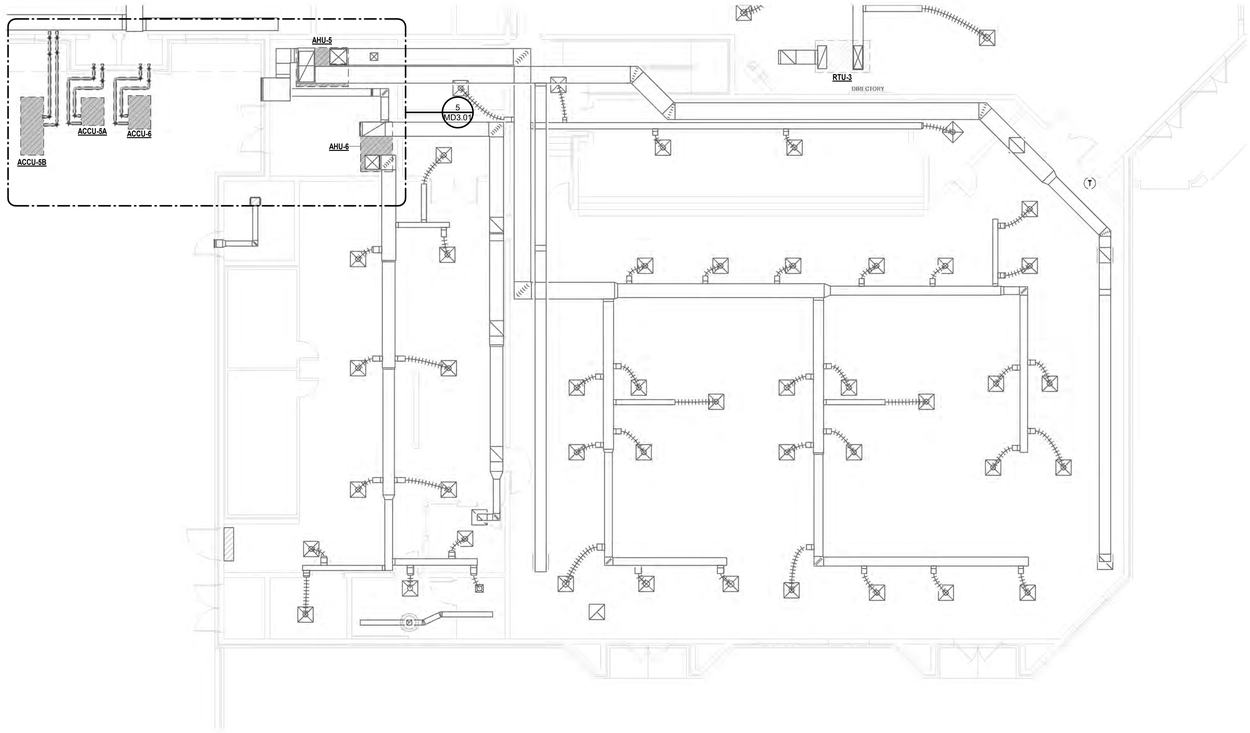
DBR Project Number 218033.005

| HA | RT | JR | | |
|---|---|---|---|---|

TN PN

1/5/2023 5:29:22 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

MECHANICAL KEYED NOTES




1 MD2.14 **DEMO MECHANICAL PLAN - AREA C**
1/8" = 1'-0"

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

# MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.005

**SHEET TITLE:** DEMO MECHANICAL PLAN - AREA C

**SHEET NUMBER:** MD2.14

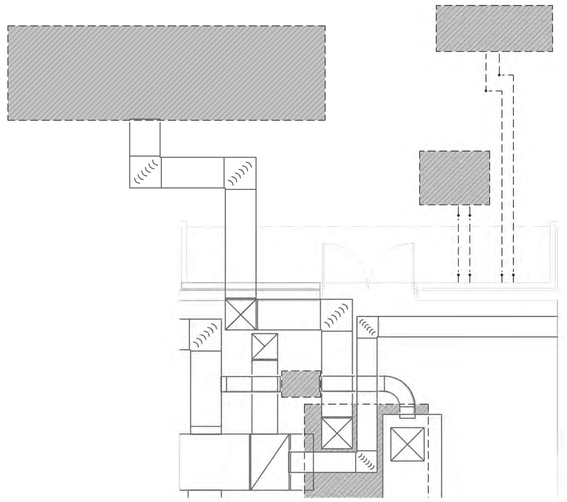
DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.005

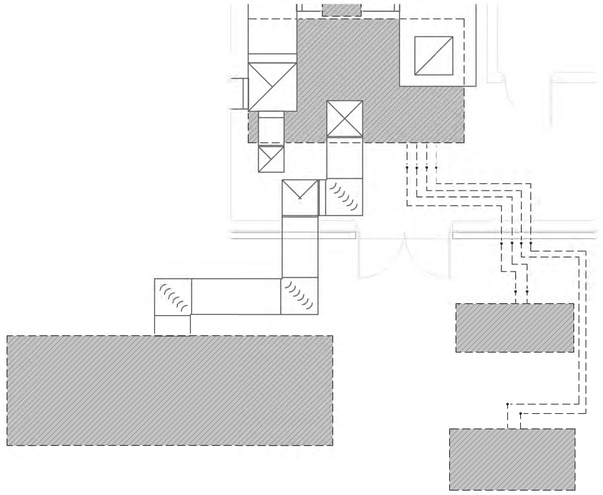
| HA | RT | JR | | |
|---|---|---|---|---|

TN PN

1/5/2023 5:29:28 PM
Autodesk Docs://218033.009-Mission CISD-Mirkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt



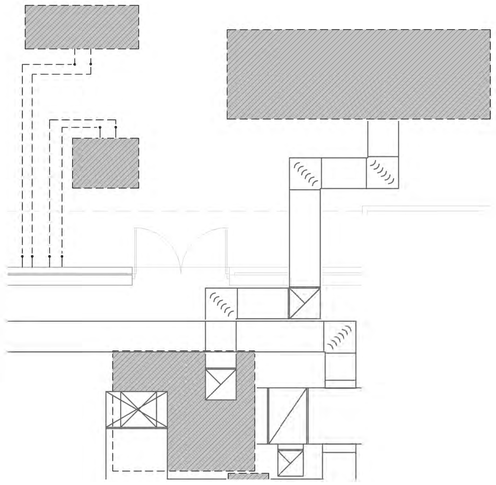
1 MD3.01 **DEMO MECHANICAL PLAN - AHU-1**
1/4" = 1'-0"



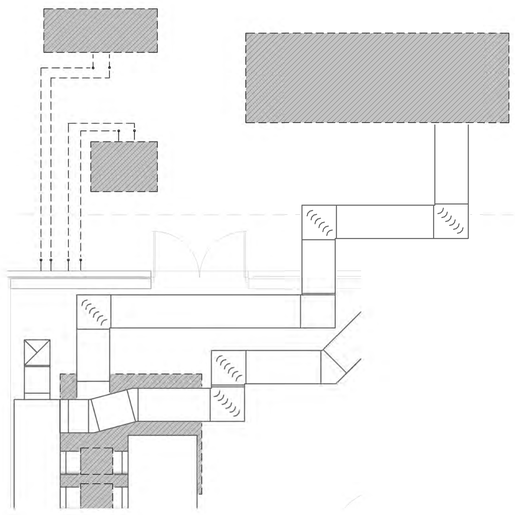
2 MD3.01 **DEMO MECHANICAL PLAN - AHU-2**
1/4" = 1'-0"

## MECHANICAL GENERAL NOTES

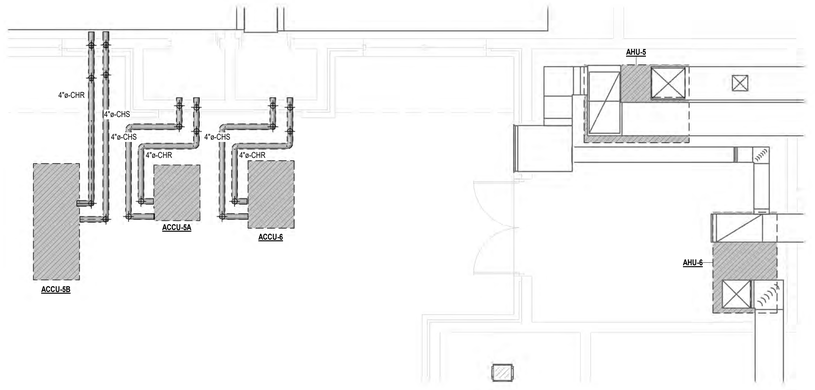
A. REFER TO SHEET M0.01 FOR GENERAL MECHANICAL NOTES.



3 MD3.01 **DEMO MECHANICAL PLAN - AHU-3**
1/4" = 1'-0"



4 MD3.01 **DEMO MECHANICAL PLAN - AHU-4**
1/4" = 1'-0"




5 MD3.01 **DEMO MECHANICAL PLAN - AHU-5-6**
1/4" = 1'-0"

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

REVISION:

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

SEAL:

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

# MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

DATE: 01/05/2023

DRAWN BY: DBR

CHECKED BY: DBR

PROJECT NUMBER: 218033.005

SHEET TITLE: DEMO MECHANICAL ENLARGE PLAN

SHEET NUMBER: MD3.01

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

TBPE Firm Registration No. 2234

DBR Project Number 218033.005

| HA | RT | JR | | |
|---|---|---|---|---|

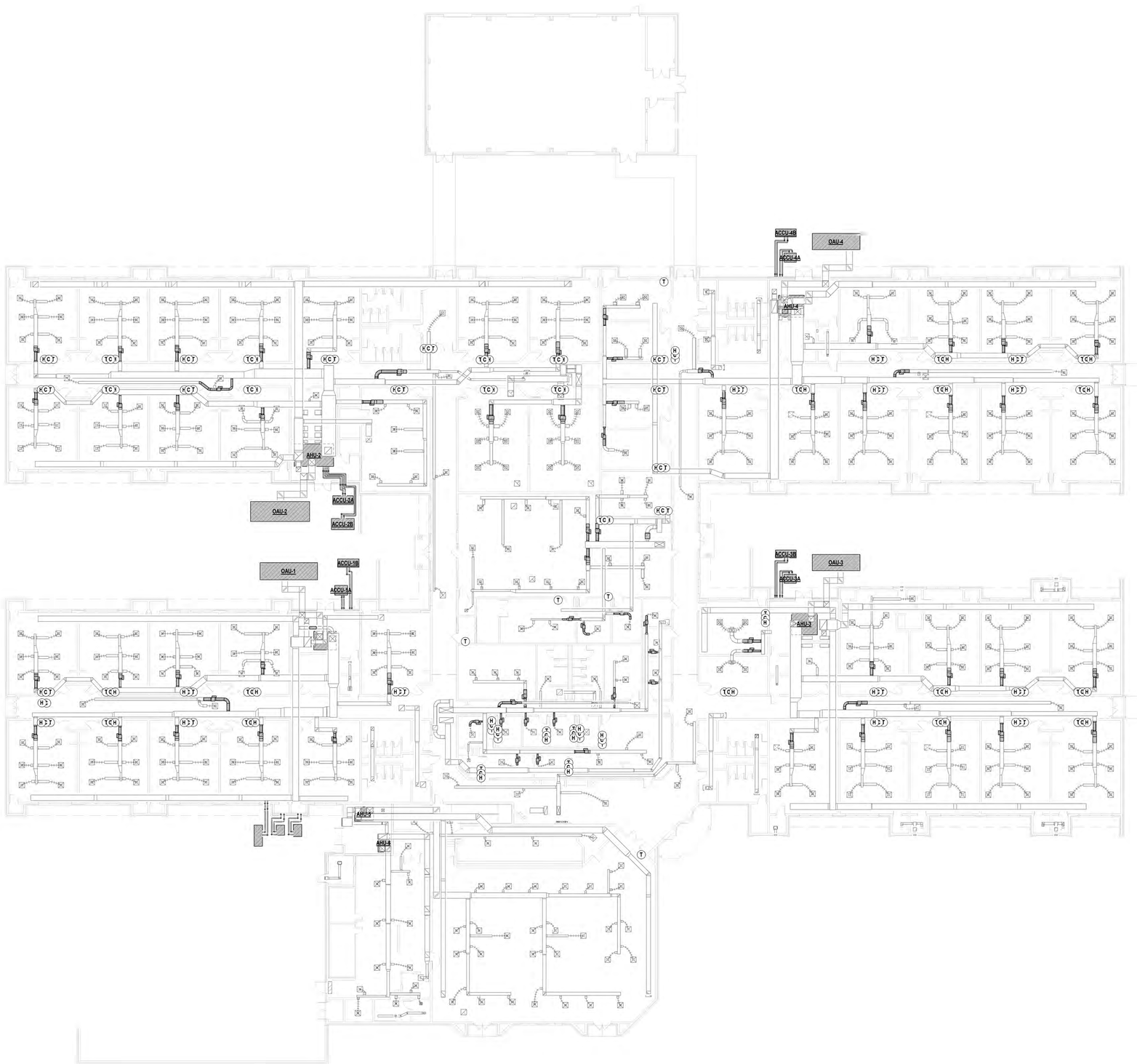
1/5/2023 5:29:38 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

## MECHANICAL GENERAL NOTES

A. REFER TO SHEET M0.01 FOR GENERAL MECHANICAL NOTES.

## MECHANICAL GENERAL NOTES

1. APPROXIMMATE LOCATION OF NEW SINGLE DUCT BOX. THE CONTRACTOR SHALL INSTALL A NEW SINGLE DUCT BOX IN THE EXISTING DUCTWORK. THE CONTSCTOR SHALL REMOVE AND PATCH EXISTING DUCTWORK AS NECESSARY. TYP.
2. NEW DDC TEMPERATURE, RELATIVE HUMITY, AND CO2 SENSORS.
3. REFER TO ENLARGED MECHANICAL ROOM PLANS FOR THE MECHANICAL ROOM VIEW CONTINUATION.




1 M2.11 **COMPOSITE MECHANICAL PLAN**
1/16" = 1'-0"


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


58

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

# MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.005

**SHEET TITLE:** COMPOSITE MECHANICAL PLAN

**SHEET NUMBER:** M2.11


DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


TBPE Firm Registration No. 2234

DBR Project Number 218033.005

| HA | RT | JR | | |
|---|---|---|---|---|

TN PN


1/5/2023 5:28:03 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

## MECHANICAL GENERAL NOTES

A. REFER TO SHEET M0.01 FOR GENERAL MECHANICAL NOTES.

## MECHANICAL GENERAL NOTES

1. APPROXIMMATE LOCATION OF NEW SINGLE DUCT BOX. THE CONTRACTOR SHALL INSTALL A NEW SINGLE DUCT BOX IN THE EXISTING DUCTWORK. THE CONTSCTOR SHALL REMOVE AND PATCH EXISTING DUCTWORK AS NECESSARY. TYP.
2. NEW DDC TEMPERATURE, RELATIVE HUMITY, AND CO2 SENSORS.
3. REFER TO ENLARGED MECHANICAL ROOM PLANS FOR THE MECHANICAL ROOM VIEW CONTINUATION.

1 M2.12 **MECHANICAL PLAN - AREA A**
1/8" = 1'-0"


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


59

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

# MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.005

**SHEET TITLE:** MECHANICAL PLAN - AREA A

**SHEET NUMBER:** M2.12


DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

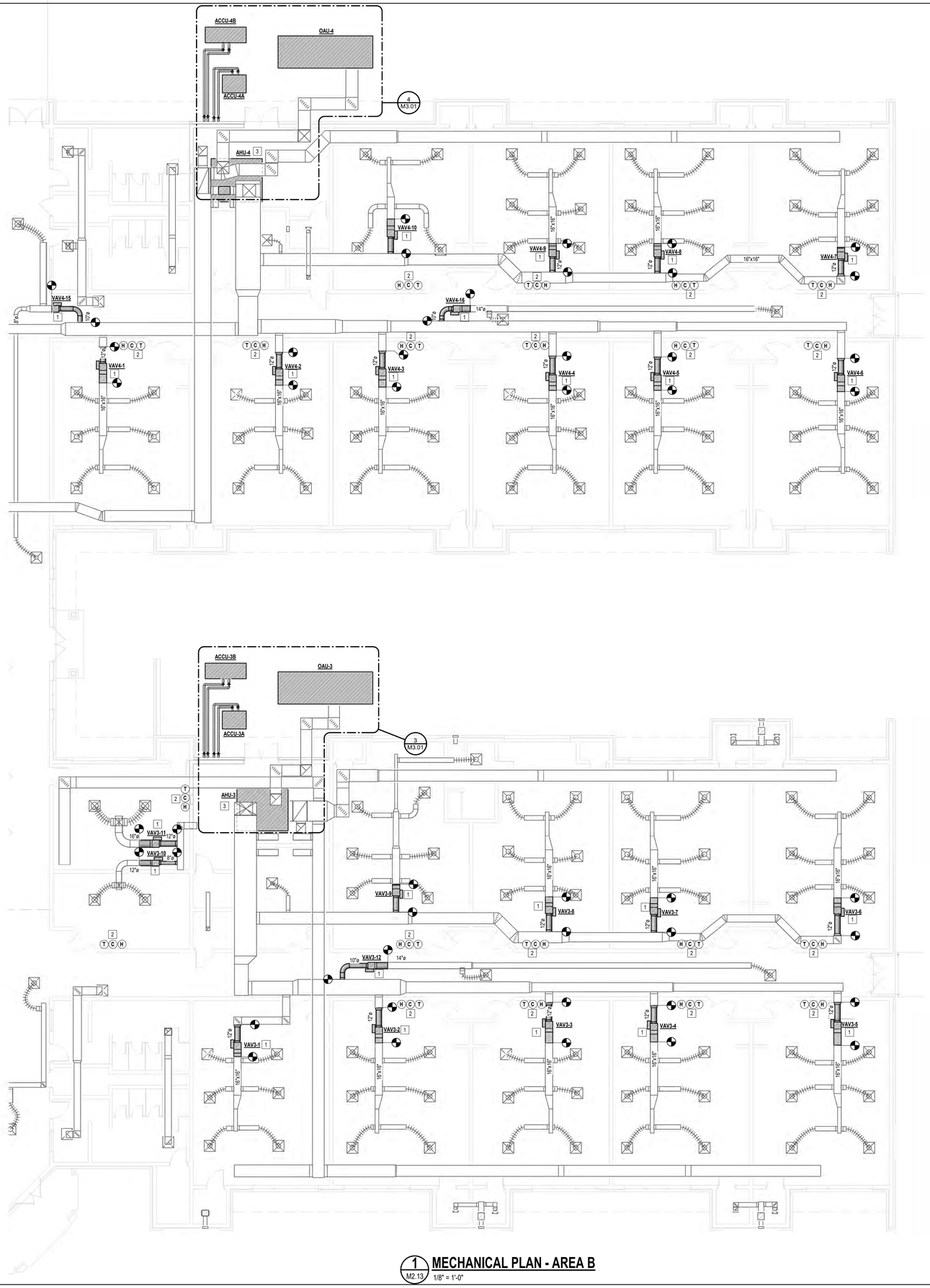

TBPE Firm Registration No. 2234

DBR Project Number 218033.005

| HA | RT | JR | | |
|---|---|---|---|---|

TN PN


1/5/2023 5:28:14 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt




## MECHANICAL GENERAL NOTES

A. REFER TO SHEET M0.01 FOR GENERAL MECHANICAL NOTES.

## #MECHANICAL KEYED NOTES

1. APPROXIMMATE LOCATION OF NEW SINGLE DUCT BOX. THE CONTRACTOR SHALL INSTALL A NEW SINGLE DUCT BOX IN THE EXISTING DUCTWORK. THE CONTSCTOR SHALL REMOVE AND PATCH EXISTING DUCTWORK AS NECESSARY. TYP.
2. NEW DDC TEMPERATURE, RELATIVE HUMITY, AND CO2 SENSORS.
3. REFER TO ENLARGED MECHANICAL ROOM PLANS FOR THE MECHANICAL ROOM VIEW CONTINUATION.

1 M2.13 **MECHANICAL PLAN - AREA B**
1/8" = 1'-0"

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

# MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.005

**SHEET TITLE:** MECHANICAL PLAN - AREA B

**SHEET NUMBER:** M2.13

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.005

| HA | RT | JR | | |
|---|---|---|---|---|

TN PN

1/5/2023 5:28:24 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

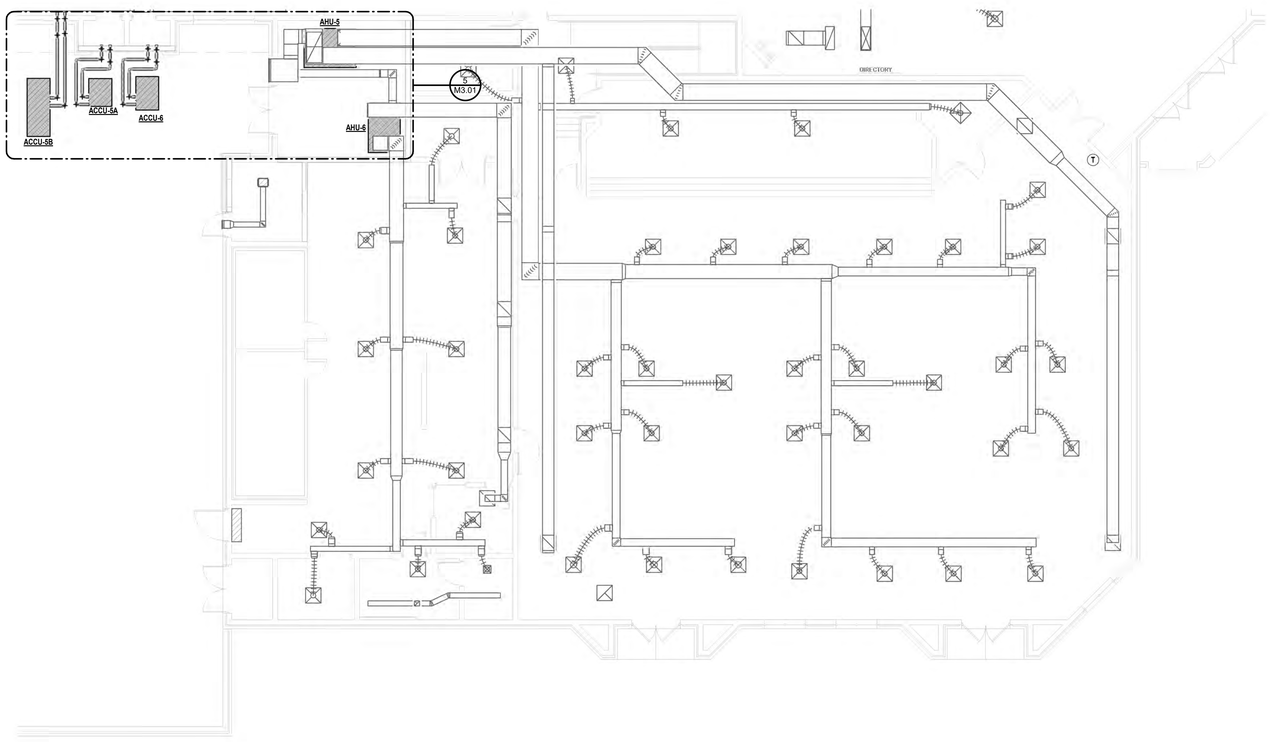
## MECHANICAL GENERAL NOTES

A. REFER TO SHEET M0.01 FOR GENERAL MECHANICAL NOTES.

## #MECHANICAL KEYED NOTES

1 NEW DDC TEMPERATURE, RELATIVE HUMITY, AND CO2 SENSORS.

2 REFER TO ENLARGED MECHANICAL ROOM PLANS FOR THE MECHANICAL ROOM VIEW CONTINUATION.




1 M2.14 **MECHANICAL PLAN - AREA C**
1/8" = 1'-0"

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

61

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

# MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.005

**SHEET TITLE:** MECHANICAL PLAN - AREA C

**SHEET NUMBER:** M2.14

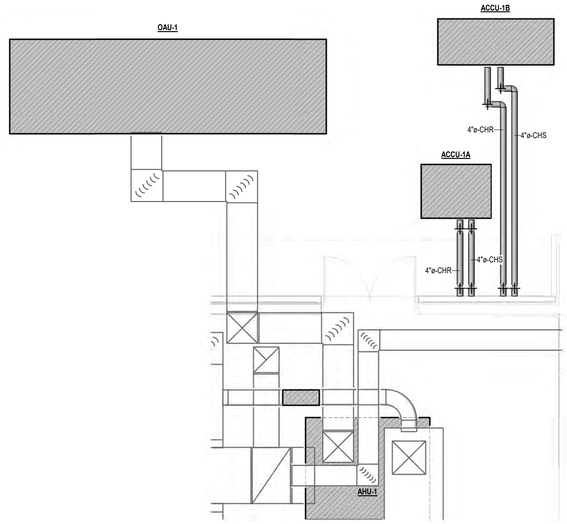
DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.005

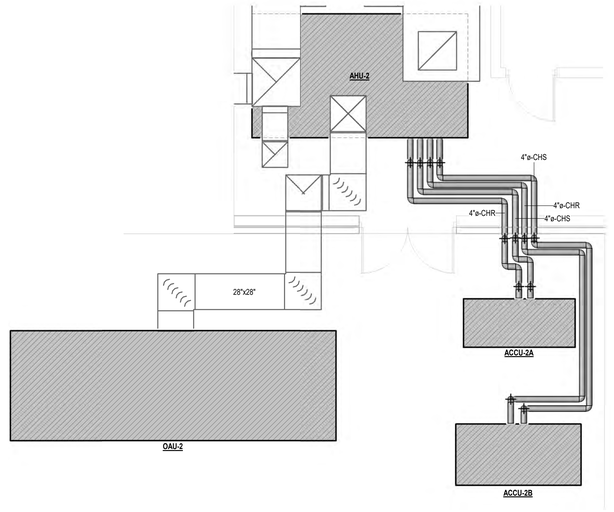
| HA | RT | JR | | |
|---|---|---|---|---|

TN PN

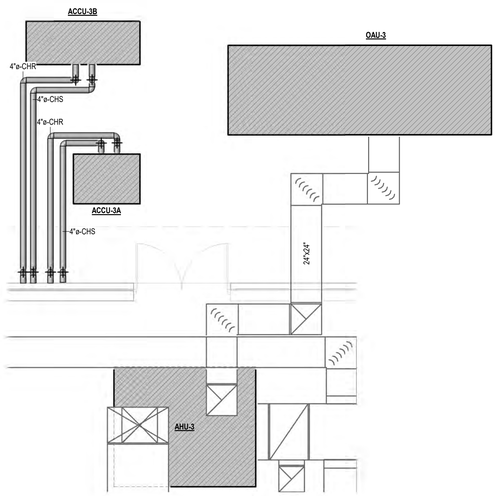
1/5/2023 5:28:29 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt



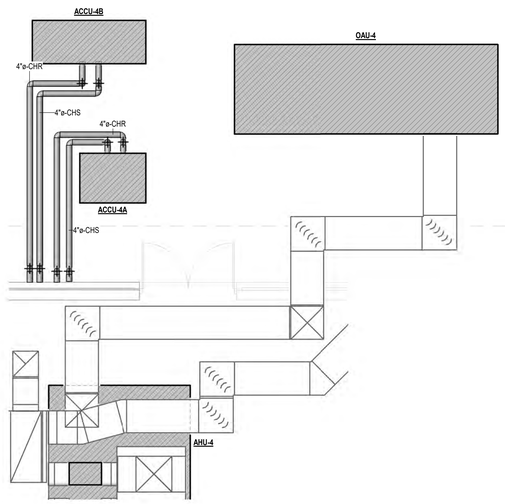

1 M3.01 **MECHANICAL PLAN - AHU-1**
1/4" = 1'-0"



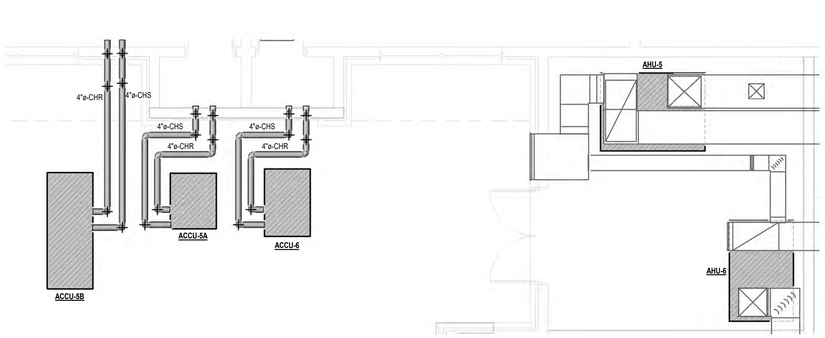

2 M3.01 **MECHANICAL PLAN - AHU-2**
1/4" = 1'-0"




3 M3.01 **MECHANICAL PLAN - AHU-3**
1/4" = 1'-0"




4 M3.01 **MECHANICAL PLAN - AHU-4**
1/4" = 1'-0"




5 M3.01 **MECHANICAL PLAN - AHU-5-6**
1/4" = 1'-0"

## MECHANICAL GENERAL NOTES

A. REFER TO SHEET M0.01 FOR GENERAL MECHANICAL NOTES.


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


62

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

# MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.005

**SHEET TITLE:** MECHANICAL ENLARGE PLAN

**SHEET NUMBER:** M3.01


DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

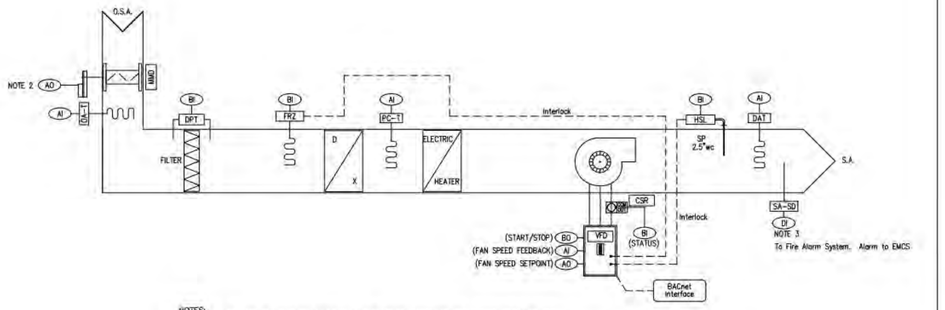

TBPE Firm Registration No. 2234

DBR Project Number 218033.005

| HA | RT | JR | | |
|---|---|---|---|---|

TN PN


1/5/2023 5:28:41 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt




NOTES:
1. Provide coil control valve as indicated in mechanical schedules and control specifications.
2. Damper provided and installed by mechanical contractor, wired by mechanical contractor, and controlled thru EMCS.
3. Wire to fire alarm system. Alarm to EMCS. Duct smoke detectors provided by fire alarm contractor and installed be mechanical contractor. Existing duct smoke detectors may be re-used where possible.

System Off - When the system is off:
The outside air damper shall be closed.
The supply air fan shall be off.
The chilled water coil valve shall be closed.
The hot water coil valve(s) shall be closed.
The control loops shall be disabled.

System Start-up - System start-up shall be initiated:
By an operator entered manual command at the EMCS.
Automatically by the EMCS based on Pre-Start Mode or Night-Setback Mode.

Pre-Start Mode:
The system shall be enabled by an operator entered manual command at the EMCS or automatically by the EMCS based on the Optimal Start/Stop algorithm. Once enabled, the system shall operate per the System Operation section as detailed below. Operation of the system during Pre-Start Mode shall not include ventilation air.

Night-Setback Mode:
The system shall be enabled automatically by the EMCS when the space temperature drifts outside the active Unoccupied Cooling or Heating Setpoint. Once enabled, the system shall operate per the System Operation section as detailed below. Operation of the system during Night-Setback Mode shall not include ventilation air.

System Operation - When system start-up has been initiated:
The variable speed supply air fan shall start. Following a confirmation of fan start status, the supply fan shall initially be indexed to its maximum scheduled flow. The speed of the fan shall remain constant.

OUTSIDE AIR CFM AND DAMPER CONTROL: When the system is commanded to start, the EMCS shall index the outside air damper to the scheduled maximum outside airflow rate as measured and balanced by TAB Contractor.

The outside air temperature shall determine whether the unit is in HEATING, COOLING, OR DEHUMIDIFICATION.

A. When outside air is 72°F or above, unit shall enter COOLING mode. In this mode, supply fan shall be running, the EMCS shall modulate the compressor e as required to provide a 55°F coil discharge air temperature. The hot water coil control valve shall then modulate to provide a supply air temperature of 65°F.

B. When outside air temperature is greater than 55°F and less than 72°F, unit shall operate in DEHUMIDIFICATION mode. In this mode, supply fan shall be running, the EMCS shall modulate the compressor as required to provide 55°F coil discharge air temperature. The heating coil shall then modulate to provide a supply air temperature of 65°F.

C. When outside air temperature is below 55°F, unit shall operate in HEATING mode. In this mode, supply fan shall be running, cooling shall be disabled, and heating coil shall modulate to provide a 65°F supply air temperature.

System Setpoints - The setpoints for the system shall be determined as follows:
The maximum speed reference value shall be the VFD speed required to obtain the design supply airflow value from the unit schedule on the Mechanical Drawings.

The heating coil discharge air temperature setpoint shall be set at 55°F (adj) with a low-limit alarm of 48°F (adj).
The re-heat coil discharge air temperature setpoint shall be set at 65°F (adj) with a high-limit alarm of 80°F (adj).
The minimum outside air flowrate setpoint shall be set at the scheduled minimum flowrate from the unit schedule on the mechanical drawings.
The maximum outside air flowrate setpoint shall be set at the scheduled maximum flowrate from the unit schedule on the mechanical drawings.
The supply duct static pressure high-limit setpoint shall be set at 2.0 in. wc. (adj).
The air filter pressure differential high-limit setpoint shall be set at 1.0 in. wc. (adj).
The freeze-stat low-limit trip setpoint shall be set at 37°F(adj).

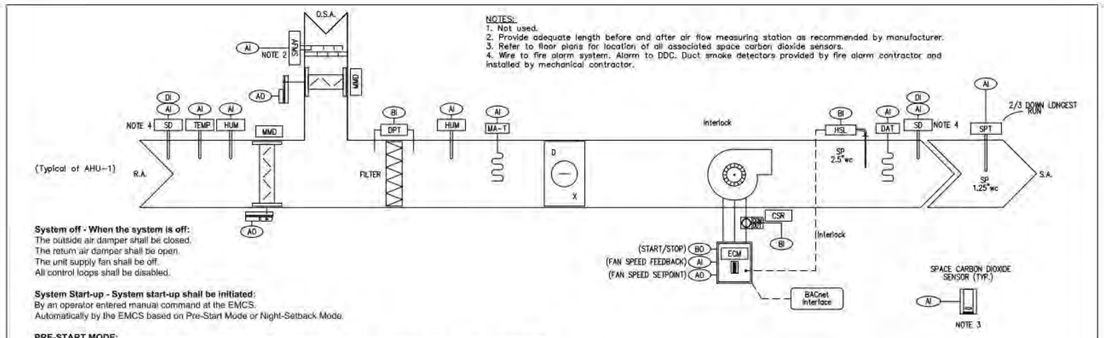
System Shutdown - System shutdown shall be initiated:
By operator entered manual command at the EMCS.
Automatically by the EMCS based on Night-Setback or Time of Day schedule.
Automatically by the high-static pressure shut down.
Automatically by the unit freeze-stat shut down.
Automatically by a supply fan current sensor status failure.

System Alarms - The EMCS shall generate an alarm condition for each of the following:
If the supply air temperature drops below the chilled water coil discharge air temperature low-limit for 5 minutes (adj).
If the supply air temperature rises above the heating coil discharge air temperature high-limit for 5 minutes (adj).
If the supply duct static pressure exceeds the high-limit setpoint.
If the filter differential pressure exceeds the trip point.
If the unit freeze-stat trips.
If the current sensor relay indicates a supply fan failure status.
All alarms shall be inhibited when the supply fan is not operating except the space temperature alarms. The alarms, except the fan failure and the space temperature alarms, shall remain inhibited following startup of the unit for 2 minutes.

## 1 Outside Air AHU - Control Schematic and Sequence of Operations
NOT TO SCALE

- AI — ANALOG INPUT
- AO — ANALOG OUTPUT
- DI/M — DIGITAL/BINARY INPUT
- DO/MC — DIGITAL/BINARY OUTPUT
- MD — ON-OFF MOTORIZED DAMPER
- MMD — MODULATING TYPE MOTORIZED DAMPER
- AFMS — AIR FLOW MEASURING STATION
- MCV — CONTROL VALVE MODULATING TYPE
- VFD — VARIABLE FREQUENCY DRIVE
- CSR — CURRENT SENSING RELAY
- FRZ — FREEZESTAT
- HSL — HIGH STATIC LIMIT
- SPT — STATIC PRESSURE TRANSMITTER
- DPT — DIFFERENTIAL PRESSURE TRANSDUCER
- FM — FLOW METER
- FS — FLOW SWITCH
- DAT — DISCHARGE AIR TEMPERATURE SENSOR
- S T — WALL SENSOR/THERMOSTAT
- CO2 — CARBON DIOXIDE SENSOR
- SP — SET POINT
- S/A — SUPPLY AIR
- R/A — RETURN AIR
- O/A — OUTSIDE AIR
- HC — HEATING COIL
- CC — COOLING COIL
- DX — DIRECT EXPANSION COOLING COIL
- PICV — PRESSURE INDEPENDENT CHARACTERIZED CONTROL VALVE
- AFC — AIRFLOW CROSS
- DPS — DIFFERENTIAL PRESSURE SWITCH

## 2 CONTROL SCHEMATIC LEGEND
NOT TO SCALE




NOTES:
1. Not used.
2. Provide adequate length before and after air flow measuring station as recommended by manufacturer.
3. Refer to floor plans for location of all associated space carbon dioxide sensors.
4. Wire to fire alarm system. Alarm to DDC. Duct smoke detectors provided by fire alarm contractor and installed by mechanical contractor.

**System off - When the system is off:**
The outside air damper shall be closed.
The return air damper shall be open.
The unit supply fan shall be off.
All control loops shall be disabled.

**System Start-up - System start-up shall be initiated:**
By an operator entered manual command at the EMCS.
Automatically by the EMCS based on Pre-Start Mode or Night-Setback Mode.

**PRE-START MODE:**
The system shall be enabled by an operator entered manual command at the EMCS or automatically by the EMCS based on the Optimal Start/Stop algorithm. Once enabled, the system shall operate per the **System Operation** section, as detailed below. Operation of the system during Pre-Start Mode shall not include ventilation air.

**NIGHT-SETBACK MODE:**
The system shall be enabled automatically by the EMCS based on the cooling demand of 5 (adjustable) or more associated terminal units whose space temperature has exceeded the terminal units Unoccupied Cooling Setpoint. Once enabled, the system shall operate per the **System Operation** section, as detailed below. Operation of the system during Night-Setback Mode shall not include ventilation air.

**OCCUPIED MODE:**
The system shall be enabled automatically by the EMCS based on the actual space occupancy. When the Time of Day schedule (TOD) is active, the system shall operate per the **System Operation** section, as detailed below, and the Demand Control Ventilation sequence shall be active.

Demand Control Ventilation - The outside air intake damper shall be modulated to maintain the scheduled minimum outside air flowrate setpoint. If the space carbon dioxide concentration for any zone served by the associated AHU is above the defined high-limit, then the OSA damper shall be modulated to maintain the scheduled maximum outside air flowrate setpoint. If the OSA damper is above 95% open and the maximum outside air flowrate setpoint cannot be met, then modulate the return air damper closed until the flowrate is achieved. Do not modulate the return air damper to less than 60% open. Once the space carbon dioxide concentration for all associated zones has been below the defined high limit for 5 minutes (adj.), the OSA damper shall be modulated to maintain the scheduled minimum outside air flowrate setpoint.

**System Operation - When system start-up has been initiated:**
The variable speed supply fans shall start at its minimum speed. Following a confirmation of fan start status, the supply fans speed shall be modulated in parallel to maintain the supply air static pressure at setpoint. The speed of the fans shall not be adjusted by more than 20% in any one-minute period. The static pressure setpoint shall be reset via the control algorithm below to optimize the energy usage.

Supply Air Static Pressure Reset - The static pressure setpoint shall be reset up in defined increments at defined intervals until the primary air damper position to all of the associated terminal units have been below the defined value for more than the defined interval. The static pressure setpoint shall be reset down in defined increments at defined intervals until the primary air damper position to at least one (critical zone) of the associated terminal units has been above the defined value for more than the defined interval. The setpoints are detailed in the **System Setpoint** section below.

Temperature Control - The VRF coil shall be modulated to maintain the active supply air temperature setpoint. The supply air temperature setpoint shall be reset via the control algorithm below to optimize the energy usage.

Supply Air Temperature Reset - The supply air temperature setpoint shall be reset based on the actual return air temperature, according to the defined reset schedule detailed in the **System Setpoint** section below. If the Demand Control Ventilation sequence is in maximum flow mode, then the supply air temperature reset shall be disabled and the setpoint shall be set to the initial value.

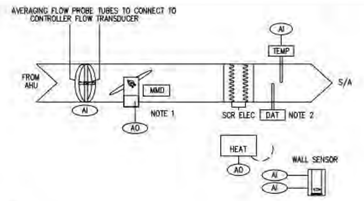
Humidity Control - A return air, duct mounted, humidity sensor shall monitor the R/A relative humidity to 50% (ADJ.). When return air relative humidity is above setpoint by 5% (not to exceed 60%), the VRF coil shall modulate to provide 50°F cooling coil discharge temperature and signal the terminal units to go into humidity control. When relative humidity attains set point, the system will return to normal operation.

**System Setpoints - The setpoints for the system shall be determined as follows:**
The maximum speed reference value shall be the ECM speed required to obtain the design supply airflow value from the unit schedule on the Mechanical Drawings.
The minimum speed reference value shall be ECM speed required to obtain 50% of the design supply airflow value from the unit schedule on the mechanical drawings but not less than the active outside air flow rate setpoint.
The supply air static pressure setpoint shall be set initially at 1.25 inches w.c. (adj) and shall have reset limits of 0.20 to 2.00 inches w.c. (adj)
The time interval for static pressure reset shall be set at 10 minutes (adj).
The static pressure reset increment shall be set at 0.05 inches w.c. (adj)
The terminal unit primary damper position setpoint shall be 90% open. (adj)
The time interval for terminal unit primary damper position shall be set at 15 minutes. (adj)
The supply air temperature setpoint shall be set initially at 54 °F. (adj)
The supply air temperature setpoint shall be reset to 54 °F (adj) when the return air temperature is at 78 °F. (adj)
The supply air temperature setpoint shall be reset to 58 °F (adj) when the return air temperature is at 72 °F. (adj)
The minimum outside air flowrate setpoint shall be set at the scheduled minimum flowrate from the unit schedule on the mechanical drawings.
The maximum outside air flowrate setpoint shall be set at the scheduled maximum flowrate from the unit schedule on the mechanical drawings.
The space carbon dioxide high-limit setpoint shall be set at 1000 ppm (adj).
The supply duct static pressure high-limit setpoint shall be set at 2.0 in. wc. (adj).
The air filter pressure differential high-limit setpoint shall be set at 1.0 in. wc. (adj).

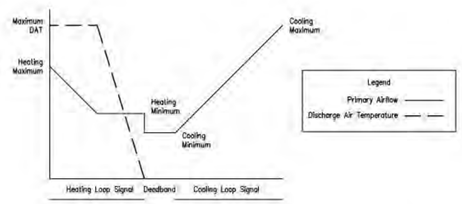
**System Shutdown - System shutdown shall be initiated:**
By operator entered manual command at the EMCS.
Automatically by the EMCS based on Night-Setback or Time of Day schedule.
Automatically by the high-static pressure shut down.
Automatically by a supply fan current sensor status failure.

**System Alarms - The EMCS shall generate an alarm if:**
If the supply air temperature is outside the limits, which shall be set at +/- 5 °F around setpoint.
If any associated space carbon dioxide level exceeds its high-limit for more than 20 minutes (adj) or exceeds the high-limit by 10% or more.
If the supply duct static pressure exceeds the high-limit setpoint.
If the filter differential pressure exceeds the trip point.
If the current sensor relay indicates a supply fan failure status.
If return air RH is 60% or above.
All alarms shall be inhibited when the supply fan is not operating.

## 3 MULTIZONE VAV Air Handling Unit - Control Schematic and Sequence of Operations
NOT TO SCALE




NOTES:
1. TERMINAL UNIT CONTROLLER AND DAMPER ACTUATOR SHALL BE SHIPPED TO THE TERMINAL UNIT MANUFACTURER FOR MOUNTING AND WIRING.
2. DAT SENSOR SUPPLIED BY UNIT VENDOR AND MOUNTED BY EMCS CONTRACTOR.




**System Off - When the system is off:**
The primary air damper shall be closed.
The heating coil shall be disabled.
The control loops shall be disabled.

**System Startup - Startup shall be initiated automatically by the EMCS:**
In Unoccupied when the corresponding AHU is in UNOCCUPIED MODE.
In Occupied when the corresponding AHU is in PRE-START MODE.
In Unoccupied when the corresponding AHU is in NIGHT-SETBACK MODE.
In Occupied when the corresponding AHU is in OCCUPIED MODE.

**System Operation - When system start-up has been initiated, the following sequences shall be implemented:**
The primary air damper shall be modulated between the cooling minimum and maximum flow values to maintain the space temperature within +/- 0.5 °F of the active Cooling Setpoint. When the space temperature falls below the deadband, the primary air damper shall modulate to maintain the heating minimum flow value and the SCR electric heat shall be modulated to maintain the space temperature within +/- 0.5 °F of the active Heating Setpoint.
If the space temperature drops below the active Heating Setpoint and the discharge air temperature is at its active setpoint, the primary air damper shall be modulated between the heating minimum and maximum heating flow values to maintain the space temperature within +/- 0.5°F of the active Heating Setpoint and the SCR electric heat shall be modulated to maintain the discharge air temperature setpoint. The SCR electric heat controller shall be set to maintain a maximum discharge air temperature of 85 °F (adjustable). When relative humidity, as determined by either space or AHU return air relative humidity sensor is above setpoint by 5% (not to exceed 60%) in any conditioning mode, terminal unit damper shall modulate to 50% of scheduled cooling CFM and electric heater shall modulate to maintain programmed or override temperature. Unit shall operate in this mode until return air relative humidity attains setpoint.

**System Setpoints - The setpoints for the system shall be set as follows:**
The Occupied Heating Setpoint shall be set initially at 70 °F (adjustable).
The Occupied Cooling Setpoint shall be set initially at 74 °F (adjustable).
The Unoccupied Heating Setpoint shall be set initially at 55 °F (adjustable).
The Unoccupied Cooling Setpoint shall be set initially at 85 °F (adjustable).
The maximum heating mode discharge air temperature shall be set at 85 °F (adjustable).
The minimum and maximum primary air flowrates shall set at the values given in the Mechanical Drawings.

**System Alarms - The EMCS shall generate an alarm as follows:**
If the space temperature during the Occupied Mode is 5 °F above the cooling setpoint or 5 °F below the heating setpoint respectively.

## 4 VAV Terminal Unit with Electric Reheat - Control Schematic and Sequence of Operations
NOT TO SCALE

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

63

REVISION:

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

SEAL:

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

# MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

DATE: 01/05/2023

DRAWN BY: DBR

CHECKED BY: DBR

PROJECT NUMBER: 218033.005

SHEET TITLE: MECHANICAL FLOW DIAGRAMS

SHEET NUMBER: M4.01

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.005

| HA | RT | JR | | |
|---|---|---|---|---|

1/5/2023 5:28:42 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

## SINGLE INLET VAV BOX WITH REHEAT SCHEDULE

| MARK | COOLING CFM | | HEATING CFM | | REHEAT | INLET SIZE | VOLTS/PHASE/HZ | MANUFACTURER | MODEL |
|---|---|---|---|---|---|---|---|---|---|
| | MAX. | MIN. | MAX. | MIN. | KW | | | | |
| VAV1-1 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV1-2 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV1-3 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV1-4 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV1-5 | 1,380 | 415 | 690 | 415 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV1-6 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV1-7 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV1-8 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV1-9 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV1-10 | 870 | 265 | 435 | 265 | 5 | 10"Ø | 480/3/60 | ETI | SDR |
| VAV1-11 | 1,110 | 335 | 555 | 335 | 3 | 12"Ø | 480/3/60 | ETI | SDR |
| | | | | | | | | | |
| VAV2-1 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV2-2 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV2-3 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV2-4 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV2-5 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV2-6 | 1,380 | 415 | 690 | 415 | 6 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV2-7 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV2-8 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV2-9 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV2-10 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV2-11 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV2-12 | 1,470 | 445 | 735 | 445 | 7 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV2-13 | 600 | 180 | 300 | 180 | 4 | 8"Ø | 480/3/60 | ETI | SDR |
| VAV2-14 | 1,795 | 540 | 900 | 540 | 8 | 14"Ø | 480/3/60 | ETI | SDR |
| | | | | | | | | | |
| VAV3-1 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV3-2 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV3-3 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV3-4 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV3-5 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV3-6 | 1,410 | 425 | 705 | 425 | 7 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV3-7 | 1,320 | 400 | 660 | 400 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV3-8 | 1,320 | 400 | 660 | 400 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV3-9 | 1,320 | 400 | 660 | 400 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV3-10 | 490 | 150 | 245 | 150 | 2 | 8"Ø | 480/3/60 | ETI | SDR |
| VAV3-11 | 1,160 | 350 | 580 | 350 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV3-12 | 870 | 265 | 435 | 265 | 3 | 10"Ø | 480/3/60 | ETI | SDR |
| | | | | | | | | | |
| VAV4-1 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV4-2 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV4-3 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV4-4 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV4-5 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV4-6 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV4-7 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV4-8 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV4-9 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV4-10 | 960 | 290 | 480 | 290 | 4 | 10"Ø | 480/3/60 | ETI | SDR |
| VAV4-11 | 450 | 135 | 225 | 135 | 2 | 8"Ø | 480/3/60 | ETI | SDR |
| VAV4-12 | 890 | 270 | 445 | 270 | 4 | 10"Ø | 480/3/60 | ETI | SDR |
| VAV4-13 | 390 | 120 | 195 | 120 | 2 | 6"Ø | 480/3/60 | ETI | SDR |
| VAV4-14 | 750 | 225 | 375 | 225 | 3 | 10"Ø | 480/3/60 | ETI | SDR |
| VAV4-15 | 830 | 250 | 415 | 250 | 3 | 10"Ø | 480/3/60 | ETI | SDR |
| VAV4-16 | 720 | 220 | 360 | 220 | 3 | 10"Ø | 480/3/60 | ETI | SDR |
| | | | | | | | | | |
| VAVR1-1 | 885 | 270 | 445 | 270 | 5 | 10"Ø | 480/3/60 | ETI | SDR |
| VAVR1-2 | 145 | 45 | 75 | 45 | 1 | 6"Ø | 480/3/60 | ETI | SDR |
| VAVR1-3 | 145 | 45 | 75 | 45 | 1 | 6"Ø | 480/3/60 | ETI | SDR |
| VAVR1-4 | 145 | 45 | 75 | 45 | 1 | 6"Ø | 480/3/60 | ETI | SDR |
| VAVR1-5 | 145 | 45 | 75 | 45 | 1 | 6"Ø | 480/3/60 | ETI | SDR |
| VAVR1-6 | 225 | 70 | 115 | 70 | 2 | 6"Ø | 480/3/60 | ETI | SDR |
| VAVR1-7 | 175 | 55 | 90 | 55 | 1 | 6"Ø | 480/3/60 | ETI | SDR |
| VAVR1-8 | 840 | 255 | 420 | 255 | 5 | 10"Ø | 480/3/60 | ETI | SDR |
| VAVR1-9 | 310 | 95 | 155 | 95 | 3 | 6"Ø | 480/3/60 | ETI | SDR |
| VAVR1-10 | 200 | 60 | 100 | 60 | 1 | 6"Ø | 480/3/60 | ETI | SDR |
| VAVR1-11 | 155 | 50 | 80 | 50 | 1 | 6"Ø | 480/3/60 | ETI | SDR |
| VAVR1-12 | 115 | 35 | 60 | 35 | 1 | 6"Ø | 480/3/60 | ETI | SDR |
| VAVR1-13 | 885 | 270 | 445 | 270 | 4 | 10"Ø | 480/3/60 | ETI | SDR |
| | | | | | | | | | |
| VAVR2-1 | 1,050 | 315 | 525 | 315 | 8 | 10"Ø | 480/3/60 | ETI | SDR |
| VAVR2-2 | 1,140 | 345 | 570 | 345 | 10 | 12"Ø | 480/3/60 | ETI | SDR |
| VAVR2-3 | 1,140 | 345 | 570 | 345 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAVR2-4 | 155 | 50 | 80 | 50 | 1 | 6"Ø | 480/3/60 | ETI | SDR |
| VAVR2-5 | 275 | 85 | 140 | 85 | 2 | 6"Ø | 480/3/60 | ETI | SDR |
| VAVR2-6 | 230 | 70 | 115 | 70 | 2 | 6"Ø | 480/3/60 | ETI | SDR |
| | | | | | | | | | |
| VAVR4-1 | 2,280 | 685 | 1140 | 685 | 5 | 16"Ø | 480/3/60 | ETI | SDR |
| VAVR4-2 | 2,280 | 685 | 1140 | 685 | 5 | 16"Ø | 480/3/60 | ETI | SDR |

NOTES:
1. PROVIDE AEROCROSS MULTI-POINT CENTER AVERAGING VELOCITY SENSOR IN AIR INLET.
2. PROVIDE TERMINAL UNIT CASING WITH 1/2" INTERNALLY LINED FIBERGLASS FREE INSULATION.
3. PROVIDE TERMINAL UNIT WITH INTEGRAL DISCONNECT SWITCH.
4. PROVIDE ELECTRIC REHEAT COIL WITH 0-10V SCR MODULATING CAPACITY CONTROL.

## PACKAGED DX ROOF TOP UNIT SCHEDULE

| MARK | OAU-1 | OAU-2 | OAU-3 | OAU-4 |
|---|---|---|---|---|
| SERVES | MIDKIFF ES | MIDKIFF ES | MIDKIFF ES | MIDKIFF ES |
| DUCT CONFIGURATION | SIDE DISCHARGE | SIDE DISCHARGE | SIDE DISCHARGE | SIDE DISCHARGE |
| DESIGN OUTDOOR AIR (CFM) | 3,840 | 5,120 | 3,920 | 4,550 |
| MINIMUM OUTDOOR AIR (CFM) | 1,152 | 1,536 | 1,176 | 1,365 |
| E.E.R. / I.E.E.R. (AT AHRI CONDITIONS) | 11.1 / 18 | 9.6 / 15.5 | 11.1 / 18 | 10.2 / 21.4 |
| EXT. S.P. (IN. W.G.) | 1.00 | 1.00 | 1.00 | 1.00 |
| FAN MOTOR HORSEPOWER | 2.0 | QTY(2) 2.2 | 2.0 | 3.0 |
| FAN TYPE | VFD PLENUM | (2) ECM PLENUM | VFD PLENUM | VFD PLENUM |
| FAN DRIVE | DIRECT | DIRECT | DIRECT | DIRECT |
| **COOLING DATA** | | | | |
| AMBIENT AIR (°F) | 100.0 | 100.0 | 100.0 | 100.0 |
| TOTAL COOLING CAPACITY (MBH) | 296.7 | 384.9 | 295.5 | 331.8 |
| TOTAL SENSIBLE CAPACITY (MBH) | 195.1 | 257.5 | 197.4 | 224.6 |
| EAT DB (°F) | 100.0/76.0 | 100.0/76.0 | 100.0/76.0 | 100.0/76.0 |
| LAT DB/WB (°F) | 53.5/53.5 | 54.0/54.0 | 53.9/53.9 | 54.9/54.8 |
| **HEATING DATA** | | | | |
| HEATING CAPACITY (KW) / STAGES | 45KW / SCR | 55KW / SCR | 45KW / SCR | 45KW / SCR |
| EAT DB/WB (°F) | 36.0 | 36.0 | 36.0 | 36.0 |
| LAT DB (°F) | 72.9 | 69.8 | 72.1 | 67.1 |
| **ELECTRICAL DATA** | | | | |
| VOLTS/PHASE/HERTZ | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 |
| MCA | 74.1 | 80.4 | 74.1 | 75.9 |
| MOCP | 80.0 | 100.0 | 80.0 | 80.0 |
| MANUFACTURER | DAIKIN | DAIKIN | DAIKIN | DAIKIN |
| MODEL NO. | DPS025 | DPSA034 | DPS025 | DPS028 |
| OPERATING WEIGHT (LBS) | 3,705 | 5,816 | 3,705 | 3,859 |
| NOTES | ALL | ALL | ALL | ALL |

NOTES:
1. EXTERNAL STATIC PRESSURE DOES NOT ACCOUNT FOR LOSSES DUE TO COIL(S), FILTERS, HOUSING, NOR ACCESSORIES.
2. PROVIDE UNIT WITH OUTDOOR AIR INTAKE HOOD WITH MODULATING MOTORIZED DAMPER.
3. PROVIDE UNIT WITH SINGLE POINT ELECTRICAL CONNECTION AND PHASE FAILURE MONITOR.
4. PROVIDE FLOAT SWITCH IN PRIMARY DRAIN PAN TO DE-ENERGIZE THE UNIT WHEN PRIMARY DRAIN LINE BECOMES RESTRICTED.
5. PROVIDE COMBO 2" / 4" FILTER RACK WITH MERV 8 AND 13 FILTERS.
6. PROVIDE UNIT CONTROLLER BY MANUFACTURER. PROVIDE CONTROLLER WITH BACNET INTERFACE CARD FOR INTEGRATION WITH EMCS.
7. PROVIDE UNIT WITH MODULATING HOT GAS REHEAT WITH DUAL TEMPERATURE SENSORS FOR HUMIDITY CONTROL.
8. PROVIDE UNIT WITH CONDENSER HAIL GUARD AND 14" PREFABRICATED TDI RATED ROOF CURB WITH TEXAS PE STAMP.
9. PROVIDE UNIT WITH CONSTANT VOLUME FAN AND 100% OA DAMPER.
10. PROVIDE UNIT WITH INTEGRAL DISCONNECT SWITCH AND POWERED CONVENIENCE OUTLET.
11. PROVIDE UNIT WITH DUCT MOUNTED SMOKE DETECTORS IN SUPPLY DUCTWORK FOR ALL UNITS DISCHARGING IN EXCESS OF 2,200 CFM.
12. PROVIDE DOUBLE WALL CONSTRUCTION WITH MINIMUM 1" R-7 FOAM INSULATION (UP TO 15 TONS) OR 2" R-13 FOAM INSULATION (OVER 15 TONS).
13. FACTORY APPLIED CONDENSER COIL COATING WITH MINIMUM 10,000 HOUR SALT SPRAY RATING PER ASTM B 117 AND UV TOPCOAT.
14. PROVIDE STAINLESS STEEL DRAIN PAN AND STAINLESS STEEL COIL CASINGS.

## AIR COOLED CONDENSING UNIT SCHEDULE

| MARK | ACCU-1A | ACCU-1B | ACCU-2A | ACCU-2B | ACCU-3A | ACCU-3B | ACCU-4A | ACCU-4B | ACCU-5A | ACCU-5B | ACCU-6 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SERVES | AHU-1 | AHU-1 | AHU-2 | AHU-2 | AHU-3 | AHU-3 | AHU-4 | AHU-4 | AHU-5 | AHU-5 | AHU-6 |
| TOTAL COOLING CAPACITY (MBH) | 184.2 | 184.2 | 250.7 | 250.7 | 184.2 | 184.2 | 184.2 | 184.2 | 175.7 | 175.7 | 131.25 |
| AMBIENT TEMP. (°F) | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| STEPS OF CAPACITY | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| EER (SEER) | 11.0 | 11.0 | 10.0 | 10.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 |
| VOLTS/PHASE/HERTZ | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 |
| MCA | 37.0 | 37.0 | 48.0 | 48.0 | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | 23.0 |
| MOCP | 50 | 50 | 70 | 70 | 50 | 50 | 50 | 50 | 50 | 50 | 30 |
| MANUFACTURER | DAIKIN | DAIKIN | DAIKIN | DAIKIN | DAIKIN | DAIKIN | DAIKIN | DAIKIN | DAIKIN | DAIKIN | LENNOX |
| MODEL NUMBER | RCH15H180D | RCH15H180D | RCH20H240D | RCH20H240D | RCH15H180D | RCH15H180D | RCH15H180D | RCH15H180D | RCH15H180D | RCH15H180D | EL150XCSDT |
| OPERATING WEIGHT (LBS.) | 832 | 832 | 832 | 832 | 832 | 832 | 832 | 832 | 832 | 832 | 535 |
| NOTES | ALL | ALL | ALL | ALL | ALL | ALL | ALL | ALL | ALL | ALL | ALL |

NOTES:
1. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
2. REFRIGERANT LINES TO BE SIZED BY MANUFACTURER.
3. PROVIDE 5 YEAR COMPRESSOR PARTS WARRANTY.
4. PROVIDE WITH CONDENSER COIL HAIL GUARD.
5. PROVIDE WITH LOW AMBIENT HEAD PRESSURE CONTROL.
6. PROVIDE CONDENSER COIL COATING WITH MINIMUM 6000 HR ASTM B117 SALT SPRAY RATING.
7. PROVIDE SINGLE CIRCUIT, DUAL STAGE CONDENSING UNITS, EXCEPT ACCU-6 IS DUAL CIRCUIT.

## PACKAGED DX ROOF TOP UNIT SCHEDULE

| MARK | RTU-1 | RTU-2 | RTU-3 | RTU-4 |
|---|---|---|---|---|
| SERVES | MIDKIFF ES | MIDKIFF ES | MIDKIFF ES | MIDKIFF ES |
| UNIT TYPE | HORIZONTAL | HORIZONTAL | HORIZONTAL | HORIZONTAL |
| DUCT CONFIGURATION | BOTTOM | BOTTOM | BOTTOM | BOTTOM |
| DESIGN SUPPLY AIR (CFM) | 4,150 | 4,290 | 1,340 | 4,560 |
| MINIMUM SUPPLY AIR (CFM) | 1,245 | 1,287 | 402 | 1,368 |
| DESIGN OUTDOOR AIR (CFM) | 1,240 | 1,205 | 100 | 750 |
| MINIMUM OUTDOOR AIR (CFM) | 372 | 362 | 30 | 225 |
| E.E.R. (AT AHRI CONDITIONS) | 12.0 | 12.0 | 13.5 | 12.0 |
| IEER/SEER (AT AHRI CONDITIONS) | 15.0 | 15.0 | / 17.0 | 15.7 |
| EXT. S.P. (IN. W.G.) | 2.00 | 2.00 | 1.80 | 2.00 |
| FAN MOTOR HORSEPOWER | 5.0 | 5.0 | 1.5 | 5.0 |
| FAN TYPE | ECM | ECM | ECM | ECM |
| FAN DRIVE | BELT | BELT | DIRECT | BELT |
| **COOLING DATA** | | | | |
| AMBIENT AIR (°F) | 100.0 | 100.0 | 100.0 | 100.0 |
| TOTAL COOLING CAPACITY (MBH) | 167.0 | 171.0 | 35.0 | 146.0 |
| TOTAL SENSIBLE CAPACITY (MBH) | 98.0 | 113.0 | 25.0 | 101.0 |
| EAT DB/WB (°F) | 78.0/68.0 | 82.0/69 | 74/64 | 76.0/65.0 |
| LAT DB/WB (°F) | 55.1/54.6 | 56.4/55.9 | 55.9/54.9 | 54.8/54.0 |
| **HEATING DATA** | | | | |
| HEATING AIRFLOW (CFM) | -- | -- | -- | -- |
| HEATING CAPACITY (KW) | -- | -- | -- | -- |
| EAT DB/WB (°F) | -- | -- | -- | -- |
| LAT DB/WB (°F) | -- | -- | -- | -- |
| **ELECTRICAL DATA** | | | | |
| VOLTS/PHASE/HERTZ | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 |
| MCA | 36.0 | 36.0 | 9.0 | 35.0 |
| MOCP | 40.0 | 40.0 | 15.0 | 40.0 |
| MANUFACTURER | LENNOX | LENNOX | LENNOX | LENNOX |
| MODEL NO. | LCT180 | LCT180 | LCT036 | LCT156 |
| OPERATING WEIGHT (LBS) | 2,605 | 2,605 | 892 | 2,605 |
| NOTES | | | | |

NOTES:
1. EXTERNAL STATIC PRESSURE DOES NOT ACCOUNT FOR LOSSES DUE TO COIL(S), FILTERS, HOUSING, NOR ACCESSORIES.
2. PROVIDE UNIT WITH OUTDOOR AIR INTAKE HOOD WITH MODULATING MOTORIZED DAMPER.
3. PROVIDE UNIT WITH SINGLE POINT ELECTRICAL CONNECTION.
4. PROVIDE FLOAT SWITCH IN PRIMARY DRAIN PAN TO DE-ENERGIZE THE UNIT WHEN PRIMARY DRAIN LINE BECOMES RESTRICTED.
5. PROVIDE UNITS WITH MINIMUM 2" MERV 8 + 4" MERV 13 FILTERS.
6. PROVIDE UNIT CONTROLLER BY MANUFACTURER. PROVIDE CONTROLLER WITH BACNET INTERFACE CARD FOR INTEGRATION WITH EMCS.
7. PROVIDE UNIT WITH ON/OFF HOT GAS REHEAT FOR HUMIDITY CONTROL.
8. PROVIDE UNIT WITH CONDENSER HAIL GUARD AND 14" PREFABRICATED ROOF CURB.
9. PROVIDE UNIT WITH COMPARATIVE ENTHALPY ECONOMIZER AND BAROMETRIC RELIEF.
10. PROVIDE MINIMUM 2-STAGE COOLING UNITS
11. PROVIDE UNIT WITH INTEGRAL FUSED DISCONNECT SWITCH AND POWERED CONVENIENCE OUTLET. PROVIDE PHASE FAILURE MONITOR.
12. PROVIDE UNIT WITH DUCT MOUNTED SMOKE DETECTORS IN SUPPLY DUCTWORK FOR ALL UNITS DISCHARGING IN EXCESS OF 2,000 CFM.
13. PROVIDE FACTORY E-COATED CONDENSER COIL COATINGS WITH MINIMUM 6000 HR ASTM B117 SALT SPRAY RATING.
14. CONTROLS, THERMOSTATS, AND SENSORS (T, RH, CO2) TO BE PROVIDED BY THE CONTROLS CONTRACTOR

## SPLIT AIR HANDLING UNIT SCHEDULE

| MARK | AHU-1 | AHU-2 | AHU-3 | AHU-4 | AHU-5 | AHU-6 |
|---|---|---|---|---|---|---|
| SERVES | MIDKIFF ES | MIDKIFF ES | MIDKIFF ES | MIDKIFF ES | MIDKIFF ES | MIDKIFF ES |
| UNIT CONFIGURATION | HORIZONTAL | HORIZONTAL | HORIZONTAL | HORIZONTAL | HORIZONTAL | HORIZONTAL |
| DISCHARGE | TOP | TOP | TOP | TOP | TOP | TOP |
| SUPPLY AIR (CFM) | 13,560 | 18,455 | 14,605 | 16,625 | 5,250 | 3,475 |
| OUTSIDE AIR (CFM) | 3,840 | 5,120 | 3,920 | 4,550 | 3,150 | 650 |
| EXT. S.P. (IN. W.G.) | 2.8 | 3.0 | 3.0 | 2.9 | 3.3 | 2.0 |
| FAN MOTOR (QTY) HORSEPOWER | (4)4.42 | (6)4.42 | (5)4.42 | (5)4.42 | (2)4.42 | (1)4.42 |
| FAN MOTOR CONTROL (VFD, ECM 0-10VDC) | ECM 0-10VDC | ECM 0-10VDC | ECM 0-10VDC | ECM 0-10VDC | ECM 0-10VDC | ECM 0-10VDC |
| FAN RPM | 3194 | 3096 | 3038 | 3181 | 3064 | 3041 |
| MAX COIL VELOCITY (FPM) | 500 | 500 | 500 | 500 | 500 | 500 |
| MINIMUM COIL ROWS | 4 | 4 | 4 | 4 | 6 | 6 |
| MAX. FINS PER INCH | 10 | 10 | 10 | 10 | 10 | 10 |
| COOLING EAT DB/WB (°F) | 74.4/61.0 | 74.7/61.1 | 74.5/61.0 | 74.6/61.0 | 86.4/73.6 | 79.0/66.0 |
| COOLING LAT DB/WB (°F) | 55.3/52.9 | 56/53.2 | 56/53.3 | 56.1/53.3 | 54.3/53.5 | 55.1/53.6 |
| TOTAL COOLING CAPACITY (MBH) | 311.4 | 412.1 | 321.4 | 364.4 | 350.3 | 130.9 |
| SENSIBLE COOLING CAPACITY (MBH) | 283.4 | 377.2 | 295.0 | 336.4 | 184.0 | 90.9 |
| QTY REFRIGERANT CIRCUITS / TYPE | 2 / INTERLACED | 4 / INTERLACED | 2 / INTERLACED | 2 / INTERLACED | 2 / INTERLACED | 2 / INTERLACED |
| HEATING CAPACITY (KW) | - | - | - | - | - | - |
| NO. OF HEATING STAGES | - | - | - | - | - | - |
| VOLTS/PHASE/HERTZ | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 |
| MANUFACTURER | DAIKIN | DAIKIN | DAIKIN | DAIKIN | DAIKIN | DAIKIN |
| MODEL NO. | CAH029GDCM | CAH040GDCM | CAH032GDCM | CAH036GDCM | CAH013GDCM | CAH008GDCM |
| OPERATING WEIGHT (LBS.) | 2522 | 3213 | 2684 | 2886 | 1362 | 1035 |
| UNIT CABINET DIMENSIONS, W x L x H (IN.) | 86 x 108 x 66 | 96 x 116 x 78 | 92 x 106 x 66 | 102 x 108 x 66 | 60 x 80 x 46 | 48 x 80 x 40 |
| NOTES | ALL | ALL | ALL | ALL | ALL | ALL |

NOTES:
1. PROVIDE 2" DOUBLE WALL R-13 CHILLED WATER AHU WITH 2" MERV 13 FILTERS.
2. PROVIDE DX COIL WITH STAINLESS STEEL COIL CASING AND STAINLESS STEEL DRAIN PAN FOR R-410A.
3. PROVIDE 12" ACCESS DOOR BETWEEN COIL AND FAN SECTION.
4. EXTERNAL STATIC PRESSURE DOES NOT INCLUDE LOSSES DUE TO COILS, FILTERS, AND CASING.
5. PROVIDE ECM FAN ARRAY WITH HAND/OFF/AUTO SWITCH, 0-10 VDC SIGNAL INPUT, FAN FAULT TERMINAL, FUSED DISCONNECT, MOTOR CONTROL PANEL, LINE AND LOW VOLTAGE WIRING, INDIVIDUAL FAN MOTOR OVERCURRENT PROTECTION/ISOLATION SWITCH, AND POTENTIOMETER FOR MANUAL CONTROL OVERRIDE.
6. HOA PANELS TO BE FACTORY INSTALLED EXCEPT AHU-5 AND 6 ARE FIELD INSTALLED AND FIELD WIRED BY ELECTRICAL CONTRACTOR.
7. PROVIDE 6" BASE RAIL.
8. HEADER AHU-2 STACKED COILS FOR EACH CIRCUIT WITH SEPARATE TXVs PER COIL CONNECTION, ONE SOLENOID PER ACCU.

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.005

| HA | RT | JR | | |
|---|---|---|---|---|

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f



**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**




# MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

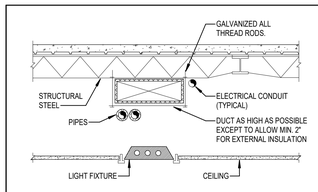
**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.005

**SHEET TITLE:** MECHANICAL SCHEDULES

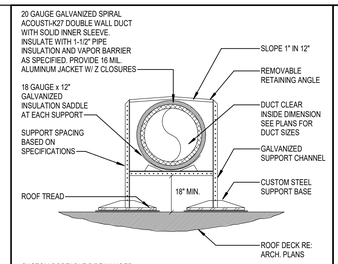
**SHEET NUMBER:** M5.01

1/5/2023 5:28:42 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt



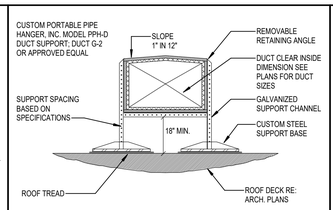

NOTES:
1. PIPES (INCLUDING SPRINKLER PIPING) AND ELECTRICAL CONDUIT CAN BE ROUTED BETWEEN JOISTS OR THROUGH JOIST WEB SPACE AS REQUIRED. DUCT SHALL BE LOCATED AS HIGH AS POSSIBLE.
2. U.L. DESIGN ASSEMBLY NUMBERS ARE SHOWN ON ARCHITECTURAL PLANS WHEN REQUIRED.
3. INSTALLATION OF ALL SERVICES MUST BE COORDINATED BY THE CONTRACTOR.

## 1 TYP. MEP INSTALLATION DETAIL
NOT TO SCALE M40-01



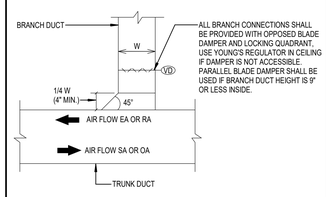

CUSTOM PORTABLE PIPE HANGER, INC. MODEL PPH-D DUCT SUPPORT; DUCT G-2 OR APPROVED EQUAL

## 2 DUCT SUPPORT ON ROOF
NOT TO SCALE M40-02



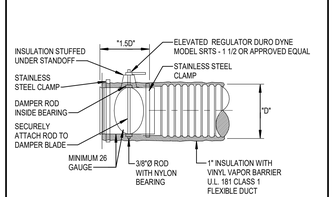

NOTES:
1. ANGLE STEEL FRAME TO BE WELDED AT ALL CORNERS AND BASE PLATE.
2. PROVIDE 12" WIDE 18 GAUGE GALVANIZED STEEL INSULATION SADDLE, FULL WIDTH AND HEIGHT OF DUCT.

## 3 EXPOSED RECT. DUCT ON ROOF
NOT TO SCALE M40-03



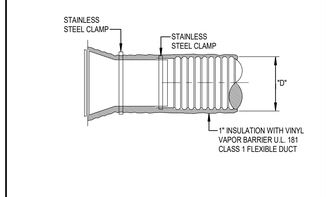

NOTES:
THIS CONNECTION SHALL BE TYPICAL FOR ALL RECTANGULAR BRANCH DUCT CONNECTIONS TO RECTANGULAR TRUNK DUCTS, INCLUDING SUPPLY, RETURN, OUTSIDE AIR AND EXHAUST DUCTS.

## 4 RECTANGULAR BRANCH DUCT TAP
NOT TO SCALE M40-04



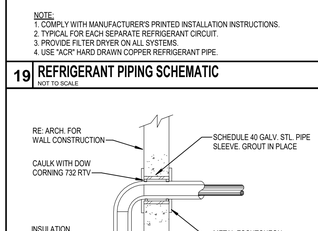

NOTES:
1. ALL FLEXIBLE DUCT OFFSETS AND BENDS SHALL MAINTAIN A RADIUS OF 1.5 X ("D") MINIMUM 3'-0" AND MAXIMUM 6'-0"
2. TYPICAL OF ROUND DUCT CONNECTIONS TO RECTANGULAR DUCTS
3. ALL JOINTS SHALL BE SEALED WITH MASTIC AND FIBER CLOTH PER SPECIFICATIONS.

## 5 SPIN-IN DETAIL
NOT TO SCALE M40-05



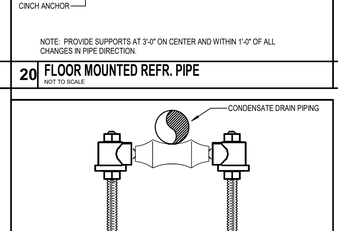

NOTES:
1. ALL FLEXIBLE DUCT OFFSETS AND BENDS SHALL MAINTAIN A RADIUS OF 1.5 X ("D") MINIMUM 3'-0" AND MAXIMUM 6'-0".
2. TYPICAL OF ROUND DUCT CONNECTIONS TO VAV BOXES FROM RECTANGULAR MAIN DUCTS.
3. ALL JOINTS SHALL BE SEALED WITH MASTIC AND FIBER CLOTH PER SPECIFICATIONS.

## 6 CONICAL SPIN-IN DETAIL
NOT TO SCALE M40-10



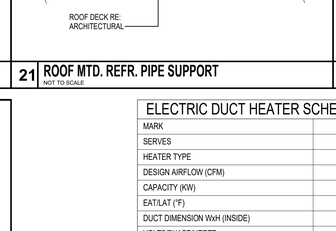

NOTE:
1. PROVIDE CLEARANCE AROUND UNIT FOR AIRFLOW AND SERVICE PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

## 7 CONDENSING UNIT ROOF MOUNTED
NOT TO SCALE



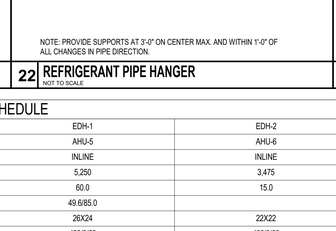

NOTE:
ALL CONDENSATE DRAIN PIPING SHALL BE SCHEDULE 40 GALVANIZED STEEL WITH MALLEABLE IRON SCREWED FITTINGS.

## 8 ROOF TOP UNIT MOUNTING DETAIL
NOT TO SCALE

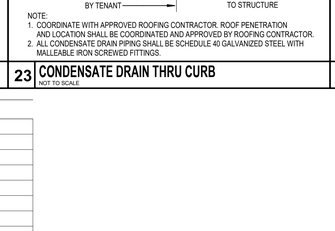



NOTE:
CONDENSATE DRAIN PIPING SHALL BE SCHEDULE 40 GALVANIZED STEEL WITH MALLEABLE IRON SCREWED FITTINGS.

## 9 COOLING COIL CONDENSATE PUMP
NOT TO SCALE

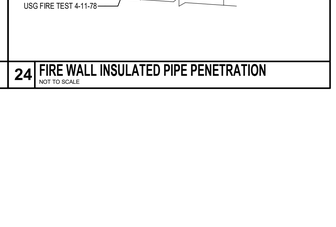



## 10 INTERIOR VAV TERMINAL UNIT
NOT TO SCALE M5-0




NOTES:
1. INSTALL 2-WAY CONTROL VALVE ORIENTATION PER MFGR. INSTALLATION INSTRUCTIONS.
2. PROVIDE STRAIGHT PIPE LENGTH 5 TIMES NOMINAL PIPE DIA. UPSTREAM OF CTRL. VALVE.

## 11 2-WAY CONTROL VALVE AND COIL PIPING
NOT TO SCALE




NOTE:
CONTRACTOR SHALL SECURE STRUCT. ENGR. APPROVAL FOR ANY AND ALL PIPE MOUNTING DETAILS TO CONCRETE OR STEEL STRUCTURE. CONTRACTOR SHALL CONFORM TO ALL MAXIMUM SPAN DISTANCES PER SPECIFICATIONS FOR HANGER SPACING. RE: 230529

## 12 PIPE HANGER DETAIL (1-PIPE)
NOT TO SCALE




NOTE: CONTRACTOR SHALL SECURE STRUCT. ENGR. APPROVAL FOR ANY AND ALL PIPE MOUNTING DETAILS TO CONCRETE OR STEEL STRUCTURE.

## 13 PIPE HANGER DETAIL
NOT TO SCALE




NOTE: CONTRACTOR SHALL SECURE STRUCT. ENG. APPROVAL FOR ANY AND ALL PIPE MOUNTING DETAILS AT CONCRETE OR STEEL STRUCTURE.

## 14 PIPE HANGER DETAIL (4-PIPE)
NOT TO SCALE




NOTE: FILLET WELD ALL SEAMS. HOT DIP GALVANIZE AFTER FABRICATION.

## 15 PIPE SUPPORT DETAIL
NOT TO SCALE




NOTE:
FILLET WELD ALL SEAMS. HOT DIP GALVANIZE AFTER FABRICATION.

## 16 PIPE SUPPORT DETAIL AT SLAB
NOT TO SCALE




NOTES:
1. REFER TO ARCHITECTURAL DRAWINGS FOR FLASHING & ROOF DETAILS.
2. WHERE PIPE IS INSULATED STOP & POINT INSULATION AT SLEEVE.
3. COORDINATE WITH OWNER'S BONDED ROOFER FOR FLASHING & MOPPING IN DETAIL.

## 17 EXISTING ROOF PIPE PENETRATION
NOT TO SCALE




## 18 FIRE WALL PIPE PENETRATION
NOT TO SCALE




NOTE:
1. COMPLY WITH MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS.
2. TYPICAL FOR EACH SEPARATE REFRIGERANT CIRCUIT.
3. PROVIDE FILTER DRYER ON ALL SYSTEMS.
4. USE "ACR" HARD DRAWN COPPER REFRIGERANT PIPE.

## 19 REFRIGERANT PIPING SCHEMATIC
NOT TO SCALE




NOTE: PROVIDE SUPPORTS AT 3'-0" ON CENTER AND WITHIN 1'-0" OF ALL CHANGES IN PIPE DIRECTION.

## 20 FLOOR MOUNTED REFR. PIPE
NOT TO SCALE




## 21 ROOF MTD. REFR. PIPE SUPPORT
NOT TO SCALE




NOTE: PROVIDE SUPPORTS AT 3'-0" ON CENTER MAX. AND WITHIN 1'-0" OF ALL CHANGES IN PIPE DIRECTION.

## 22 REFRIGERANT PIPE HANGER
NOT TO SCALE




NOTE:
1. COORDINATE WITH APPROVED ROOFING CONTRACTOR. ROOF PENETRATION AND LOCATION SHALL BE COORDINATED AND APPROVED BY ROOFING CONTRACTOR.
2. ALL CONDENSATE DRAIN PIPING SHALL BE SCHEDULE 40 GALVANIZED STEEL WITH MALLEABLE IRON SCREWED FITTINGS.

## 23 CONDENSATE DRAIN THRU CURB
NOT TO SCALE




## 24 FIRE WALL INSULATED PIPE PENETRATION
NOT TO SCALE




## 25 PIPE ENTRY THRU EXTERIOR WALL
NOT TO SCALE




NOTE:
1. PROVIDE PORTABLE PIPE HANGER MODEL SSS-R OR APPROVED EQUAL.
2. SPACE PIPE SUPPORTS AT MAXIMUM INTERVALS OF 10'-0" ON CENTER.
3. INSTALL PER MANUFACTURER'S SPECIFICATIONS AND INSTALLATION REQUIREMENTS.

## 26 DRAIN LINE SUPPORT ON ROOF
NOT TO SCALE

### ELECTRIC DUCT HEATER SCHEDULE

| MARK | EDH-1 | EDH-2 |
|---|---|---|
| SERVES | AHU-5 | AHU-6 |
| HEATER TYPE | INLINE | INLINE |
| DESIGN AIRFLOW (CFM) | 5,250 | 3,475 |
| CAPACITY (KW) | 60.0 | 15.0 |
| EAT/LAT (°F) | 49.6/85.0 | |
| DUCT DIMENSION WxH (INSIDE) | 26X24 | 22X22 |
| VOLTS/PHASE/HERTZ | 480/3/60 | 480/3/60 |
| CONTROL TYPE | SCR | SCR |
| MANUFACTURER | REDD-I | REDD-I |
| MODEL | HF | HF |
| NOTES | ALL | ALL |

NOTES:
1. PROVIDE WITH AIRFLOW PROVING SWITCH AND DIGITAL DUCT MOUNTED DISCHARGE AIR TEMPERATURE SENSOR.
2. PROVIDE GALVANIZED FLANGE MOUNTED DUCT HEATER.
3. INSTALL DUCT HEATER PER MANUFACTURER'S RECOMMENDATIONS.
4. DUCT HEATER SHALL BE CONTROLLED BY DDC SYSTEM.
5. PROVIDE DISCONNECT SWITCH.

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.005

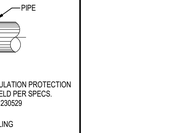
| HA | RT | JR | | |
|---|---|---|---|---|

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

REVISION:

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

SEAL:




# MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

DATE: 01/05/2023

DRAWN BY: DBR

CHECKED BY: DBR

PROJECT NUMBER 218033.005

SHEET TITLE: MECHANICAL DETAILS

SHEET NUMBER: M6.01

1/5/2023 5:28:43 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

# ABBREVIATIONS

## A

| | |
|---|---|
| A | AMPERES |
| ABV | ABOVE |
| AIC | AIR CONDITIONING |
| AC | ALTERNATING CURRENT, AIR COMPRESSOR, ABOVE COUNTER |
| ACC | AIR COOLED CHILLER |
| ACCU | AIR COOLED CONDENSING UNIT |
| AD | ACCESS DOOR |
| ADA | AMERICANS WITH DISABILITIES ACT |
| AF | AMPERE FUSE, AMPERE FRAME |
| AFC | ABOVE FINISHED CEILING |
| AFF | ABOVE FINISHED FLOOR |
| AFG | ABOVE FINISHED GRADE |
| AHU | AIR HANDLING UNIT |
| AIC | AMPERE INTERRUPT CAPACITY |
| AL | ALUMINUM |
| AM | AMMETER |
| AMP | AMPLIFIER |
| ANN | ANNUNICATOR |
| AP | ACCESS PANEL, ALARM PANEL |
| ARCH | ARCHITECT, ARCHITECTURAL |
| ASC | AMPERES SHORT CIRCUIT |
| AT | AMPERE TRIP RATING |
| ATS | AUTOMATIC TRANSFER SWITCH |
| AVG. | AVERAGE |
| AUX. | AUXILIARY |
| AWG. | AMERICAN WIRE GAUGE |

## B

| | |
|---|---|
| BAS | BUILDING AUTOMATION SYSTEM |
| BC | BELOW COUNTER |
| BKR | BREAKER |
| BLDG. | BUILDING |

## C

| | |
|---|---|
| C | CONDUIT, CELSIUS |
| CATV | CABLE TELEVISION SYSTEM |
| CCTV | CLOSED CIRCUIT TELEVISION |
| CWP | CONDENSER WATER PUMP |
| CH | CHILLER |
| CHP | CHILLED WATER PUMP |
| CIRC | CIRCULATING |
| CKT | CIRCUIT |
| CL | CENTERLINE |
| CLG. | CEILING |
| CMU | CONCRETE MASONRY UNIT |
| COL. | COLUMN |
| CONC | CONCRETE |
| CONN | CONNECTION |
| CONT. | CONTINUOUS,CONTINUATION |
| CONTR. | CONTROLLER, CONTRACTOR |
| CP. | CIRCULATING PUMP |
| CPUC | CPU CHILLER |
| CR | CARD READER, CORD REEL |
| CRU | CONDENSATE RETURN UNIT |
| CT | CURRENT TRANSFORMER, COOLING TOWER |
| CTR | CENTER |
| CU | COPPER |

## D

| | |
|---|---|
| dB | DECIBEL |
| DC | DIRECT CURRENT |
| DDC | DIRECT DIGITAL CONTROL |
| DTL | DETAIL |
| DIA | DIAMETER |
| DIM | DIMENSION |
| DISC | DISCONNECT |
| DN | DOWN |
| DP | DISTRIBUTION PANEL |
| DPDT | DOUBLE-POLE, DOUBLE-THROW |
| DPST | DOUBLE-POLE, SINGLE-THROW |
| DR | DROPPED RECEPTACLE |
| DS | DAYLIGHT SENSOR |
| DW | DISHWASHER |
| DWG | DRAWING |
| DWH | DOMESTIC WATER HEATER |
| DWP | DOMESTIC WATER PUMP |
| DXFC | DX FAN COIL UNIT |
| DZ | DAYLIGHT ZONE |

## E

| | |
|---|---|
| (E) | EXISTING |
| EA | EACH |
| EC | ELECTRICAL CONTRACTOR |
| E.C. | EMPTY CONDUIT |
| EDF | ELECTRIC DRINKING FOUNTAIN |
| EF | EXHAUST FAN |
| EFF | EFFICIENCY |
| EHC | ELECTRIC HEATING COIL |
| EJ | EXPANSION JOINT |
| EL | ELEVATION |
| ELEC. | ELECTRICAL |
| ELEV. | ELEVATOR |
| EMCS | ENERGY MANAGEMENT AND CONTROLS SYSTEM |
| EMERG | EMERGENCY |
| EMS | ENERGY MANAGEMENT SYSTEM |
| ENCL. | ENCLOSURE |
| ENGR. | ENGINEER |
| EPO | EMERGENCY POWER OFF |
| EQUIP | EQUIPMENT |
| (ER) | EXISTING TO REMAIN |
| EUH | ELECTRIC UNIT HEATER |
| EWH | ELECTRIC WATER HEATER |
| EXH | EXHAUST |

## F

| | |
|---|---|
| F | FAHRENHEIT, FAN, FIRE |
| FA | FIRE ALARM |
| FACP | FIRE ALARM CONTROL PANEL |
| FCU | FAN COIL UNIT |
| FF | FURNITURE FEED |
| FIXT | FIXTURE |
| FLA | FULL LOAD AMPS |
| FLEX | FLEXIBLE |
| FLR | FLOOR |
| FLUOR | FLUORESCENT |
| FP | FIRE PUMP, FAN POWERED |
| FPTB | FAN POWERED TERMINAL BOX |
| FRZR | FREEZER |
| FS | FUSED SWITCH, FLOW SWITCH |
| FSD | MOTORIZED FIRE SMOKE DAMPER |
| FT | FOOT, FEET |
| FTL | FEED-THRU LUGS |
| FUT | FUTURE |
| FVNR | FULL-VOLTAGE, NON-REVERSING |

## G

| | |
|---|---|
| GA | GAUGE |
| GAL | GALLON |
| GALV | GALVANIZED |
| GC | GENERAL CONTRACTOR |
| GEN | GENERATOR |
| GFCI | GROUND FAULT CIRCUIT INTERRUPTER |
| GND | GROUND |
| GTD | GENERATOR TRANSFER DEVICE |
| GUH | GAS UNIT HEATER |

## H

| | |
|---|---|
| HACR | HEATING, AIR CONDITIONING RATED CIRCUIT BREAKER |
| HD | ELECTRIC HAND DRYER |
| HID | HIGH INTENSITY DISCHARGE |
| HOA | HAND-OFF-AUTOMATIC |
| HORIZ | HORIZONTAL |
| HP | HORSEPOWER |
| HPS | HIGH PRESSURE SODIUM |
| HS | HAND SET |
| HSC | HAND SCANNER |
| HTG | HEATING |
| HTR | HEATER |
| HVAC | HEATING, VENTILATING, AND AIR CONDITIONING |
| HVU | HEATING/ VENTILATING UNIT |
| HWB | HOT WATER BOILER |
| HWC | HOT WATER CIRCULATOR |
| HWP | HEATING WATER PUMP |
| HZ | HERTZ |

## I

| | |
|---|---|
| ID | INSIDE DIAMETER |
| IG | ISOLATED GROUND |
| IN | INCH |
| INCAND | INCANDESCENT |
| INT | INTERNAL, INTERIOR |

## J

| | |
|---|---|
| JB | JUNCTION BOX |
| JP | JOCKEY PUMP |

## K

| | |
|---|---|
| KEC | KITCHEN EQUIPMENT CONTRACTOR |
| KO | KNOCKOUT |
| kVA | KILOVOLT-AMPS |
| kW | KILOWATT |
| kWH | KILOWATT-HOUR |

## L

| | |
|---|---|
| LED | LIGHT EMITTING DIODE |
| LF | LINEAR FEET |
| LRA | LOCKED ROTOR AMPS |
| LTG | LIGHTING |
| LV | LOW VOLTAGE TRANSFORMER |
| LVL | LEVEL |

## M

| | |
|---|---|
| M | METER |
| MAP | MASTER ALARM PANEL |
| MATV | MASTER ANTENNA TELEVISION SYSTEM |
| MAX. | MAXIMUM |
| MC | METAL CLAD CABLE |
| MCA | MINIMUM CIRCUIT AMPS |
| MCB | MAIN CIRCUIT BREAKER |
| MCC | MOTOR CONTROL CENTER |
| MD | MOTORIZED DAMPER |
| MDP | MAIN DISTRIBUTION PANEL |
| MECH. | MECHANICAL |
| MFR | MANUFACTURER |
| MH | METAL HALIDE |
| MIC | MICROPHONE |
| MIN. | MINIMUM |
| MLO | MAIN LUGS ONLY |
| MOCP | MAXIMUM OVER-CURRENT PROTECTION |
| MSB | MAIN SWITCHBOARD |
| MTD | MOUNTED |
| MV | MERCURY VAPOR |

## N

| | |
|---|---|
| N3R | NEMA 3R ENCLOSURE |
| N4X | NEMA 4X ENCLOSURE |
| N.C. | NORMALLY CLOSED |
| NEC | NATIONAL ELECTRICAL CODE |
| NEMA | NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION |
| NF | NON-FUSED |
| NFPA | NATIONAL FIRE PROTECTION ASSOCIATION |
| NFS | NON-FUSED SWITCH |
| NIC | NOT IN CONTRACT |
| NL | NIGHT LIGHT |
| N.O. | NORMALLY OPEN |
| NO. | NUMBER |
| NTS | NOT TO SCALE |

## O

| | |
|---|---|
| OAF | OUTSIDE AIR FAN |
| OAHU | OUTSIDE AIR HANDLING UNIT |
| OC | ON CENTER |
| OD | OUTSIDE DIAMETER |
| OHE | OVERHEAD ELECTRICAL |
| OPG | OPENING |

## P

| | |
|---|---|
| P | POLE, PUMP |
| PB | PUSHBUTTON |
| PC | PHOTOCELL |
| PH | PHASE |
| PL | PILOT LIGHT |
| PLBG | PLUMBING |
| PNEU | PNEUMATIC |
| PNL | PANEL |
| POS | POINT OF SALE |
| PP | POWER POLE |
| PR | PAIR |
| PRI | PRIMARY |
| PS | PHOTOSENSOR |
| PVC | POLYVINYL CHLORIDE |
| PWR | POWER |

## Q

| | |
|---|---|
| QTY | QUANTITY |

## R

| | |
|---|---|
| R | EXISTING TO BE REMOVED |
| RA | RETURN AIR |
| RAD | REFRIGERATED AIR DRYER |
| RAF | RETURN AIR FAN |
| RC | RECONNECT EXISTING DEVICE TO CIRCUIT INDICATED |
| RCP | REFLECTED CEILING PLAN |
| RCPT | RECEPTACLE |
| RE | REFERENCE, REFER |
| REC | RECEPTACLE |
| REFR | REFRIGERATOR |
| REINF | REINFORCING |
| REL | EXISTING TO BE RELOCATED |
| RELEX | NEW LOCATION OF RELOCATED EQUIPMENT |
| REQD | REQUIRED |
| REV | REVISION, REVISE |
| RGS | RIGID GALVANIZED STEEL |
| RLA | RUNNING LOAD AMPS |
| RPM | REVOLUTIONS PER MINUTE |
| RR | REMOVE AND REPLACE |
| RTU | ROOFTOP UNIT |

## S

| | |
|---|---|
| SA | SUPPLY AIR |
| SAF | SUPPLY AIR FAN |
| SCHED | SCHEDULE |
| SE | SEWAGE EJECTOR |
| SEC | SECONDARY |
| SECT | SECTION |
| SF | SQUARE FEET |
| SHT | SHEET |
| SIM | SIMILAR |
| SKVA | STARTING KILOVOLT-AMPS |
| SKW | STARTING KILOWATTS |
| SP | SUMP PUMP |
| SPEC | SPECIFICATION |
| SPF | STAIR PRESSURIZATION FAN |
| SPKR | SPEAKER |
| SPD | SURGE PROTECTION DEVICE |
| SPDT | SINGLE-POLE, DOUBLE-THROW |
| SPST | SINGLE-POLE, SINGLE-THROW |
| SQ. | SQUARE |
| SRF | SMOKE REMOVAL FAN |
| SS | START-STOP PUSH BUTTON |
| SSSC | SOLID STATE SPEED CONTROL |
| ST | SHUNT TRIP |
| STB | STEAM BOILER |
| STD | STANDARD |
| STL | STEEL |
| SURF | SURFACE |
| SW | SWITCH |
| SWBD | SWITCHBOARD |

## T

| | |
|---|---|
| TC | TEMPERATURE CONTROL |
| TEL | TELEPHONE |
| TF | TRANSFER FAN |
| TL | TWIST-LOCK |
| TOC | TOP OF CURB |
| TOS | TOP OF STEEL |
| TP | CHILD TAMPER PROOF DEVICE |
| TSTAT | THERMOSTAT |
| TTB | TELEPHONE TERMINAL BOARD |
| TTC | TELEPHONE TERMINAL CABINET |
| TU | TERMINAL UNIT |
| TV | TELEVISION |
| TVSS | TRANSIENT VOLTAGE SURGE SUPPRESSOR |
| TYP | TYPICAL |

## U

| | |
|---|---|
| UG | UNDERGROUND |
| UH | UNIT HEATER |
| UL | UNDERWRITERS LABORATORIES, INC. |
| UNO | UNLESS NOTED OTHERWISE |
| UPS | UNINTERRUPTABLE POWER SYSTEM |

## V

| | |
|---|---|
| V | VOLT |
| VA | VOLT-AMPERE |
| VAV | VARIABLE AIR VOLUME |
| VC | VOLUME CONTROL |
| VERT | VERTICAL |
| VFD | VARIABLE FREQUENCY DRIVE |
| VP | VACUUM PUMP |
| VM | VOLT METER |

## W

| | |
|---|---|
| W | WATT, WIRE, WIDTH |
| WG | WIREGUARD |
| W/ | WITH |
| W/O | WITHOUT |
| WP | WEATHERPROOF |
| WS | WATER SOFTENER |
| WT | WATERTIGHT, WEIGHT |
| WWF | WELDED WIRE FABRIC |
| W/FT$^2$ | WATTS PER SQUARE FOOT |

## X

| | |
|---|---|
| XFMR | TRANSFORMER |

## Z

| | |
|---|---|
| Z | ZONE |

# ELECTRICAL SYMBOLS

## MOTORS AND CONTROLS

- MOTOR RATED SWITCH WITH THERMAL OVERLOADS
- SINGLE OR THREE PHASE MOTOR NUMBER INDICATES HORSE POWER
- ELECTRIC DUCT HEATER
- DISCONNECT (SAFETY) SWITCH "200/3/150" DENOTES AMPERES/POLE/FUSE. "NF" DENOTES NON-FUSED "N3R" DENOTES NEMA 3R
- ENCLOSED CIRCUIT BREAKER- "200/3/150" DENOTES AMPERES/POLE/TRIP.
- MOTOR STARTER FURNISHED BY DIVISION 23 AND INSTALLED BY DIVISION 26.
- COMBINATION DISCONNECT (SAFETY) SWITCH AND MOTOR STARTER. "30/3/15/80" DENOTES AMPERES/POLES/FUSE/ STARTER SIZE. "NF" DENOTES NON-FUSED. FURNISHED BY DIVISION 23 AND INSTALLED BY DIVISION 26.
- VFD — VARIABLE FREQUENCY DRIVE PROVIDED BY DIVISION 23 AND INSTALLED BY DIVISION 26.
- EPO — EMERGENCY POWER OFF BUTTON.

## RECEPTACLES AND OUTLETS

ALL RECEPTACLES SHALL BE MOUNTED 18" ABOVE FINISHED FLOOR TO CENTER OF DEVICE UNLESS NOTED OTHERWISE.

- SIMPLEX WALL RECEPTACLE, NEMA 5-20R, 20A, 125V.
- DUPLEX WALL RECEPTACLE, NEMA 5-20R, 20A, 125V.
  - "GFCI" DENOTES GROUND FAULT INTERRUPTER,
  - "WP" DENOTES WEATHERPROOF,
  - "IG" DENOTES ISOLATED GROUND,
  - "TP" DENOTES SAFETY TYPE, (TAMPER PROOF)
  - "DR" DENOTES DROPPED RECEPTACLE,
  - "USB" DENOTES RECEPTACLE WITH UNIVERSAL SERIAL BUS,
  - "AC" DENOTES ABOVE COUNTER MOUNTING, SEE
  - "UC" DENOTES UNDER COUNTER MOUNTING, SEE
  - "H" DENOTES HORIZONTALLY ORIENTED RECEPTACLE, SEE ARCHITECTURAL PLANS FOR EXACT MOUNTING HEIGHT.
- DUPLEX WALL RECEPTACLE ON EMERGENCY CIRCUIT, RED COLOR.
- DUPLEX WALL RECEPTACLE ON A CIRCUIT DEDICATED TO DATA PROCESSING, GRAY COLOR. PROVIDE ISOLATED GROUND TYPE RECEPTACLES WHERE NOTED.
- SPLIT WIRED RECEPTACLE, TOP RECEPTACLE SHALL BE SWITCHED ACCORDING TO PLANS, AND BOTTOM SHALL REMAIN UNSWITCHED.
- SP — CONTROLLED DUPLEX WALL RECEPTACLE, NEMA 5-20R, 20A, 125V. "SP" DENOTES SPLIT WIRED
- FOURPLEX (DOUBLE DUPLEX) WALL RECEPTACLE. NEMA 5-20R, 20A, 125V.
- FOURPLEX WALL RECEPTACLE ON EMERGENCY CIRCUIT, RED COLOR.
- CONTROLLED FOURPLEX (DOUBLE DUPLEX) WALL RECEPTACLE. NEMA 5-20R, 20A, 125V.
- SPECIAL RECEPTACLE, NEMA CONFIGURATION AS NOTED.
- TWO-GANG FLOOR OUTLET
- THREE-GANG FLOOR OUTLET
- MULTI-OUTLET SURFACE RACEWAY. SEE ARCHITECTURAL DRAWINGS FOR EXACT MOUNTING HEIGHTS.
- JUNCTION BOX.
  - "MD" DENOTES MOTOR DAMPER,
  - "CR" DENOTES CORD REEL,
  - "D" DENOTES DROP CORD RECEPTACLE,
- DUPLEX RECEPTACLE WITH HOMERUN
- DUPLEX RECEPTACLE (PEDESTAL MOUNTED)
- TWO-GANG CEILING OUTLET
- D R / P — FLUSH ELECTRICAL FLOOR OUTLET, "P" DENOTES POKE-THRU. "D" INDICATES DUPLEX RECEPTACLE, "R" INDICATES RED RECEPTACLE ON EMERGENCY POWER. REFER TO FLOOR BOX SCHEDULE, FIRE RATED POKE-THROUGH SCHEDULE AND KEYED NOTES.
- PP — POWER POLE
- DIRECT CONNECTION TO EQUIPMENT
- P — PULL BOX (OVER 4" SQUARE)
- C (2) — CLOCK RECEPTACLE SHALL BE MOUNTED 12" BELOW FINISHED CEILING. (2) DENOTES DOUBLE SIDED CLOCK.

## LIGHTING

LETTER(S) DENOTE TYPE- SEE LIGHTING FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION.

- 2' X 4' LIGHTING FIXTURE.
- 2' X 2' LIGHTING FIXTURE.
- 1' X 4' LIGHTING FIXTURE.
- 1' X 2' LIGHTING FIXTURE.
- 1' X 1' LIGHTING FIXTURE.
- STRIP LIGHTING FIXTURES.
- STAGGERED STRIP LIGHTING FIXTURE.
- ROUND DOWNLIGHT FIXTURE.
- SQUARE DOWNLIGHT FIXTURE.
- WALL MOUNTED LIGHTING FIXTURE.
- TRACK LIGHTING FIXTURE. MOUNTED AS SHOWN ON LIGHTING FIXTURE SCHEDULE.
- CEILING MOUNTED EXIT SIGN; ARROWS AS INDICATED. SHADED AREA DENOTES FACE.
- WALL MOUNTED EXIT SIGN; ARROWS AS INDICATED. SHADED AREA DENOTES FACE.
- EMERGENCY WALL MOUNTED LIGHTING FIXTURE. BATTERY OPERATED UNLESS NOTED OTHERWISE.
- SECURITY WALL PACK
- SITE LIGHTING FIXTURE.
- POST-TOP FIXTURE/ACORN FIXTURE BRACKET ARM INDICATES WALL MOUNT WITH ARM
- EMERGENCY LIGHT FIXTURE WITH BATTERY PACK. PROVIDE WITH UNSWITCHED HOT FOR LOSS OF VOLTAGE AND CHARGING (SAME CIRCUIT AS NORMAL POWER LIGHTING). FIXTURES SHALL BE WIRED IN A MANNER AS TO ALLOW SWITCHING OF FIXTURES WITHOUT DISCHARGING THE EMERGENCY BATTERY. BATTERY PACK IS TO ONLY OPERATE IN THE EVENT OF A POWER OUTAGE.
- EM CIRCUIT — LIGHT FIXTURE ON EMERGENCY BRANCH CIRCUIT, CIRCUIT NUMBER ADJACENT TO FIXTURE INDICATES EMERGENCY CIRCUIT CONNECTED TO FIXTURE. PROVIDE UNSWITCHED HOT, NEUTRAL AND GROUND FOR ALL EMERGENCY LIGHTING ORIGINATING FROM THE EMERGENCY CIRCUIT SHOWN.
- NL — EMERGENCY "NIGHT LIGHT" LIGHT FIXTURE. LIGHT FIXTURE IS UNSWITCHED AND INTENDED FOR 24 HOUR OPERATION. FEED VIA UNSWITCHED HOT.
- DAYLIGHT ZONE/PRIMARY DAYLIGHT ZONE
- SECONDARY DAYLIGHT ZONE

## RACEWAYS AND WIRING

- CAP AND STAKE
- CONDUIT CONCEALED IN WALL OR CEILING
- CONDUIT UNDERSLAB OR UNDERGROUND
- EM — EMERGENCY CONDUIT
- EXPOSED CONDUIT
- DB — UNDERGROUND CONDUIT, "DB" DENOTES DUCTBANK ENCASED IN CONCRETE
- OHE — OVERHEAD ELECTRIC PRIMARY UTILITY POWER LINE
- CONDUIT TURNED UP
- CONDUIT TURNED DOWN
- HASH MARKS INDICATE NUMBER OF CONDUCTORS. LEFT TO RIGHT:PHASE/NEUTRAL/SWITCH LEG/GROUND/ISOLATED GROUND. NO HASH MARKS INDICATES 2# 12, PLUS GROUND, UNLESS NOTED OTHERWISE.
- 1LA-2,4 — HOMERUN TO PANEL WITH CIRCUIT NUMBER(S) AS INDICATED.
- (ON)1LA-6 — PARTIAL CIRCUIT HOMERUN TO PANEL.
- T — COMMUNICATIONS CONDUIT OR CABLE:
  - "C" DENOTES MASTER CLOCK,
  - "CA" DENOTES MASTER CLOCK,
  - "CR" DENOTES CASH REGISTER
  - "D" DENOTES DATA,
  - "FA" DENOTES FIRE ALARM,
  - "I" DENOTES INTERCOM,
  - "OHE" DENOTES OVERHEAD ELECTRICAL LINE.
  - "PA" DENOTES PAGING,
  - "S" DENOTES SECURITY,
  - "T" DENOTES TELEPHONE,
  - "V" DENOTES VIDEO,
- TELECOMMUNICATIONS CABLE TRAY TO BE CONCEALED ABOVE ACCESSABLE CEILING.

## ELECTRICAL EQUIPMENT

- DISTRIBUTION PANEL
- MSB — SWITCHBOARD, MAIN DISTRIBUTION PANEL OR MOTOR CONTROL CENTER
- PANELBOARD (FLUSH/SURFACE MOUNT)
- FLOOR MOUNTED DRY-TYPE TRANSFORMER
- SUSPENDED OR WALL MOUNTED TRANSFORMER
- ATS — AUTOMATIC TRANSFER SWITCH
- FIRE RATED PLYWOOD TERMINAL BOARD, TYPE AS NOTED, 4' X 8' X 3/4" UNLESS NOTED OTHERWISE
- TERMINAL CABINET (FLUSH/SURFACE MOUNT), TYPE AS NOTED, 24" X 48" X 3-1/2" UNLESS NOTED OTHERWISE.
- BAT — BATTERY/INVERTER UNIT
- LV — LOW VOLTAGE TRANSFORMER.

## COMMUNICATIONS

ALL OUTLET BOXES SHALL BE MOUNTED 18" ABOVE FINISHED FLOOR TO CENTER OF DEVICE UNLESS NOTED OTHERWISE.

THE FOLLOWING NOTATIONS REFER TO ALL COMMUNICATIONS OUTLETS:
- "FAX" DENOTES OUTLET DEDICATED FOR A FAX,
- "W" DENOTES WALL PHONE SHALL BE MOUNTED AT 42" A.F.F.
- "PAY" DENOTES PAY PHONE SHALL BE MOUNTED 42" A.F.F.

- HS — SCHOOL INTERCOMMUNICATION SYSTEM HANDSET.
- TV — TV ROUGH-IN: 3-GANG RECESSED TV BOX, CONTAINING 1 DUPLEX RECEPTACLE, 1 GANG FOR AV, 1 GANG FOR DELTA.
- INDICATES THE LOCATION OF A NEW TECHNOLOGY WALL OUTLET, PROVIDE DUAL GANG BACK BOX. REFERENCE TECHNOLOGY SHEET FOR CONTENT.
- M W — MICROPHONE FLOOR OUTLET, "W" INDICATES WALL MOUNTED "F" INDICATES FLOOR MOUNTED "H" INDICATES HANGING MOUNTED
- S VC — CEILING MOUNTED SPEAKER. "VC" INDICATES VOLUME CONTROL ON SPEAKER.
- S L — WALL MOUNTED SPEAKER. "L" INDICATED LOCAL SOUND REINFORCEMENT.
- CB — SCHOOL INTERCOMMUNICATION SYSTEM CALL-IN. PUSH BUTTON
- BELL, BUZZER OR CHIME AT 80+ A.F.F.
- VC — VOLUME CONTROL - WALL MOUNTED
- AX W — AUXILIARY INPUT JACK. "W" INDICATES WALL MOUNTED "F" INDICATES FLOOR MOUNTED "H" INDICATES HANGING MOUNTED
- AVO — "HIGH" PORTION OF "HIGH/LOW" OUTLETS, REFER TO OUTLET DETAIL.
- AVI — "LOW" PORTION OF "HIGH/LOW" OUTLETS, REFER TO OUTLET DETAIL.
- C (2) LV — LOW VOLTAGE CLOCK SHALL BE MOUNTED 12" BELOW FINISHED CEILING. (2) DENOTES DOUBLE SIDED CLOCK.

REFERENCE TECHNOLOGY/SECURITY SHEET FOR ADDITIONAL INFORMATION.

## ONE LINE AND RISER DIAGRAMS

- TRANSFORMER, TYPE AND RATINGS AS NOTED
- 800A/3P — SWITCH, RATING AS SHOWN
- 400A — FUSE, RATING AS SHOWN
- CL — CIRCUIT BREAKER, RATING AS SHOWN, 3 POLE UNLESS NOTED OTHERWISE. "CL" DENOTES CURRENT LIMITING
- DRAWOUT CIRCUIT BREAKER, RATINGS AS SHOWN, 3 POLE UNLESS NOTED OTHERWISE
- ST — SHUNT TRIP
- GF — GROUND FAULT RELAY
- K — KIRK-KEY INTERLOCK
- M — DIGITAL METER
- A 0-2000 — AMMETER, RANGE AS SHOWN
- AS — AMMETER SWITCH
- V 0-600 — VOLTMETER, RANGE AS SHOWN
- VS — VOLTMETER SWITCH
- WH D-15 — WATT-HOUR METER, "D" DENOTES DEMAND REGISTER "15" DENOTES MINUTES OF DEMAND INTERVAL
- 1200/5 — CURRENT TRANSFORMER, RATED AS SHOWN
- 2.47KV/120V — POTENTIAL TRANSFORMER, RATING AS SHOWN
- GROUND CONNECTION
- LIGHTING ARRESTOR
- G — GENERATOR SET
- AUTOMATIC TRANSFER SWITCH
- BUS DUCT PLUG
- TVSS — TRANSIENT VOLTAGE SURGE SUPPRESSOR
- M — ELECTRICAL METER
- SPD — SURGE PROTECTION DEVICE

## MISCELLANEOUS

- F — SHADED SYMBOLS INDICATE EXISTING DEVICES TO REMAIN, UNLESS OTHERWISE NOTED.
- INDICATES WALL-MOUNTED WHEN ATTACHED TO ANY SYMBOL
- EX.X — DRAWING NOTE REFERENCE
- 1 — STARTER/DISCONNECT SCHEDULE REFERENCE
- 1 — FEEDER SCHEDULE REFERENCE
- LC — LIGHTING CONTACTOR
- TS — TIME SWITCH
- PC — PHOTOCELL
- PUSH BUTTON/DOOR BELL
- TC — TIMECLOCK
- R — RELAY
- SOS — AREA OF RESCUE ASSISTANCE
- B — BELL

## FIRE ALARM

- W — WATER FLOW SWITCH
- SP — SUPERVISORY SWITCH
- S — SMOKE DETECTOR - MULTI CRITERIA DETECTOR
- S # — SMOKE DETECTOR - "SB" INDICATES IN INTEGRAL SOUNDER BASE "D" INDICATES DUCT TYPE "R" INDICATES 120 VOLT RESIDENTIAL TYPE
- H — HEAT DETECTOR
- S BT — BEAM DETECTOR TRANSMITTER, HIGH IN CEILING WALL DIRECT LINE OF SIGHT.
- S BR — BEAM DETECTOR RECEIVER, HIGH IN CEILING WALL DIRECT LINE OF SIGHT.
- S — FIRE ALARM SPEAKER STROBE / CEILING MOUNTED
- S — FIRE ALARM SPEAKER STROBE / WALL MOUNTED
- S — FIRE ALARM SPEAKER / CEILING MOUNT.
- S — FIRE ALARM SPEAKER / WALL MOUNTED
- DH — MAGNETIC DOOR HOLDER
- R — AUXILIARY CONTROL RELAY
- FH — FIRE FIGHTER HANDSET
- F — FIRE ALARM PULL STATION +42" AFF
- F — FIREMAN'S TELEPHONE JACK +42" AFF
- AUDIO VISUAL FIRE ALARM HORN STROBE +80" AFF- 15/75cd U.N.O.
- VISUAL FIRE ALARM (STROBE) CEILING MOUNT - 15/75cd U.N.O.
- VISUAL FIRE ALARM (STROBE) WALL MOUNT +80" AFF- 15/75cd U.N.O.
- AUDIO FIRE ALARM HORN +80" AFF
- FACP — FIRE ALARM CONTROL PANEL
- ANN — REMOTE FIRE ALARM ANNUNCIATOR PANEL
- RPS — REMOTE POWER SUPPLY FOR AUDIO/VISUAL FIRE ALARM DEVICES.
- FSD — FIRE SMOKE DAMPER
- REMOTE LED INDICATOR LIGHT

## SECURITY

- KP — KEYPAD
- GB — GLASS BREAK SENSOR
- H — HOLD UP BUTTON
- DS — INTERCOM DOOR STATION
- MS — INTERCOM MASTER STATION
- LONG RANGE MOTION DETECTOR
- WALL MOUNTED MOTION DETECTOR
- CEILING MOUNTED MOTION DETECTOR
- IDP — INTRUSION DETECTION PANEL
- DC — DOOR CONTACT
- PB — ADA AUTO DOOR OPEN BUTTON
- DR — DOOR RELEASE BUTTON
- CR — CARD READER
- CR — WALL MOUNTED CARD READER

REFERENCE TECHNOLOGY/SECURITY SHEET FOR ADDITIONAL INFORMATION.

## SWITCHES & LIGHTING CONTROL DEVICES

ALL SWITCH TYPES AND SENSORS TYPES FOUND ON 'LIGHTING CONTROL DEVICE SCHEDULE' LOCATED ON ELECTRICAL SCHEDULES SHEETS

SWITCH ANNOTATION AS FOLLOWS:

S a,b,c — TYPE, PER SCHEDULE
NO TYPE INDICATES SINGLE POLE TOGGLE SWITCH
SWITCH LEGS, PER PLAN, SHOWN HERE AS 3 (a,b,c)

OCCUPANCY SENSOR ANNOTATION, AS FOLLOWS:

OCx — OCCUPANCY / VACANCE SENSOR
'x' INDICATES TYPE, PER SCHEDULE
CEILING SENSOR
WITH BRACKET INDICATES WALL / CORNER MOUNT

LIGHT SENSOR ANNOTATION, AS FOLLOWS:

- PC — DIGITAL PHOTOSENSOR
- DS — DAYLIGHT HARVESTING SENSOR

## DRAWING/DETAIL REFERENCE KEY

RE: 1 /E3-2 — REFER TO DRAWING/DETAIL NUMBER; 1 E3-2 — SHEET NUMBER

## GENERAL NOTES

A. NOT ALL SYMBOLS SHOWN ON THIS SYMBOL LIST ARE USED IN THE CONTRACT DOCUMENTS.


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


66

REVISION:

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

SEAL:




# MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

DATE: 01/05/2023

DRAWN BY: DBR

CHECKED BY: DBR

PROJECT NUMBER 218033.005

SHEET TITLE: ELECTRICAL SYMBOL LEGEND

SHEET NUMBER: E0.01

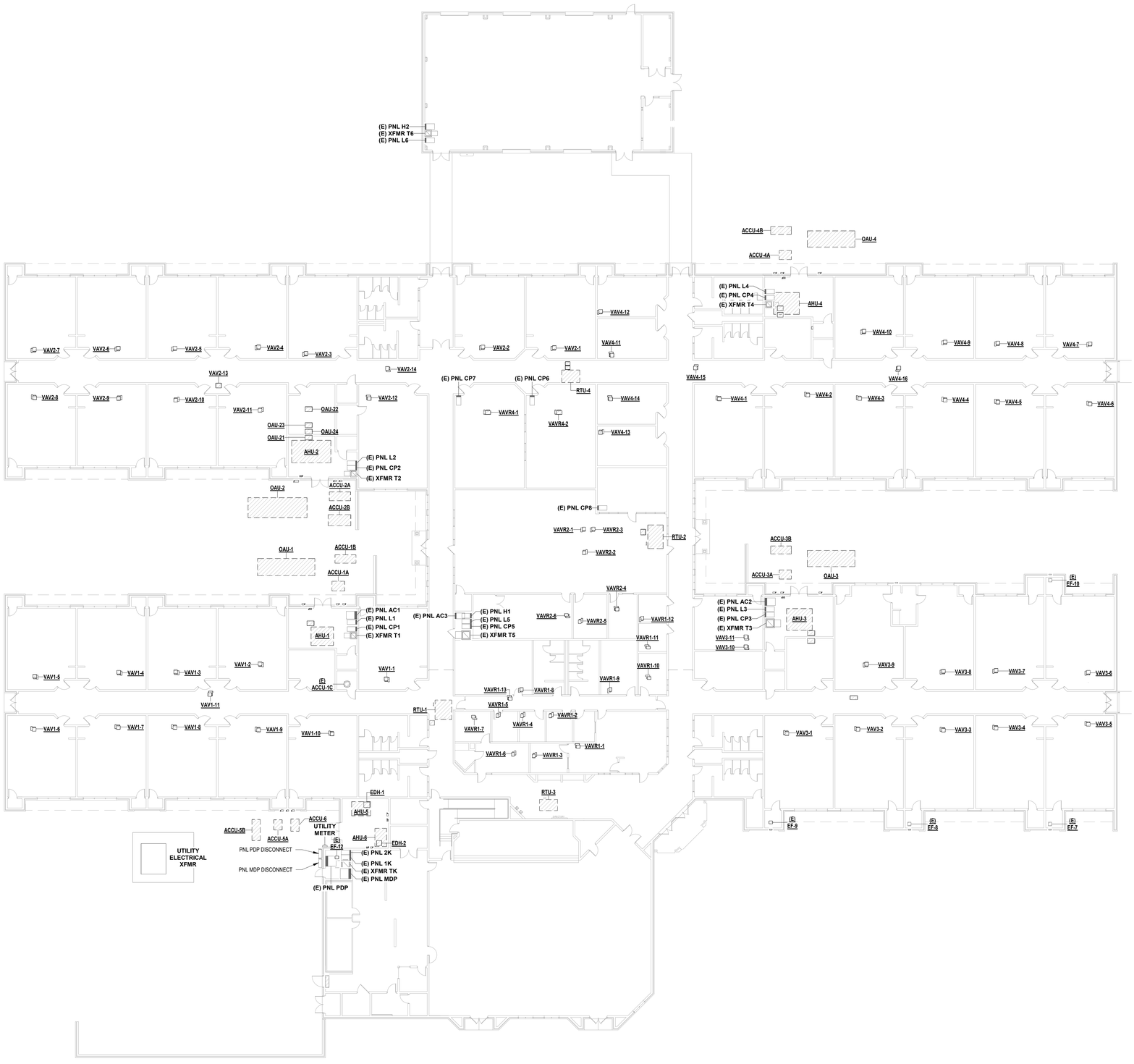

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


TBPE Firm Registration No. 2234

DBR Project Number 218033.005

| HA | RT | JR | | |
|---|---|---|---|---|


1/5/2023 5:27:38 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt




## 1 DEMO COMPOSITE ELECTRICAL PLAN

ED2.11 1/16" = 1'-0"

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

67

REVISION:

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

SEAL:

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

# MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

DATE: 01/05/2023

DRAWN BY: DBR

CHECKED BY: DBR

PROJECT NUMBER: 218033.005

SHEET TITLE: DEMO COMPOSITE ELECTRICAL PLAN

SHEET NUMBER: ED2.11

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.005

| HA | RT | JR | | |
|---|---|---|---|---|

TN PN

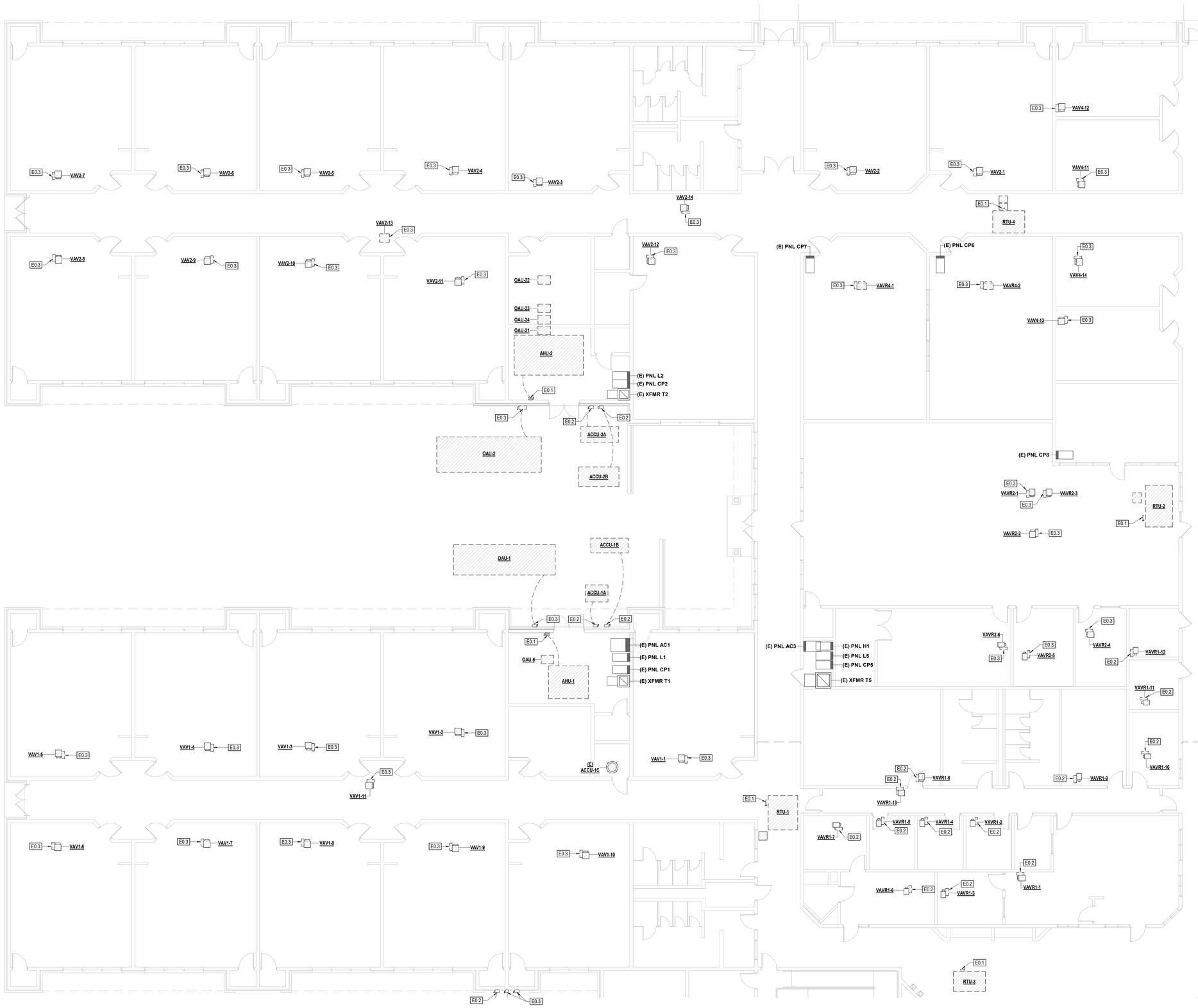
1/5/2023 5:27:48 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

## ELECTRICAL KEYED NOTES

E0.1 DEMOLISH DISCONNECT AND ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT SCHEDULED FOR DEMOLITION BY DIV 23. EXISTING CONDUCTORS AND CONDUIT BACK TO ASSOCIATED PANEL, INCLUDING BREAKER SERVING LOAD TO REMAIN. EXISTING CONTROL PANEL CIRCUIT AND BYPASS DAMPER CIRCUIT TO REMAIN.

E0.2 DEMOLISH DISCONNECT AND ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT SCHEDULED FOR DEMOLITION BY DIV 23. DEMOLISH EXISTING CONDUCTORS AND CONDUIT BACK TO ASSOCIATED PANEL, INCLUDING BREAKER SERVING LOAD.

E0.3 DEMOLISH DISCONNECT AND ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT SCHEDULED FOR DEMOLITION BY DIV 23. EXISTING CONDUCTORS AND CONDUIT BACK TO ASSOCIATED PANEL, INCLUDING BREAKER SERVING LOAD TO REMAIN.




1 ED2.12 **DEMO ELECTRICAL PLAN - AREA A**
1/8" = 1'-0"


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


68

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

# MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.005

**SHEET TITLE:** DEMO ELECTRICAL PLAN - AREA A

**SHEET NUMBER:** ED2.12


DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

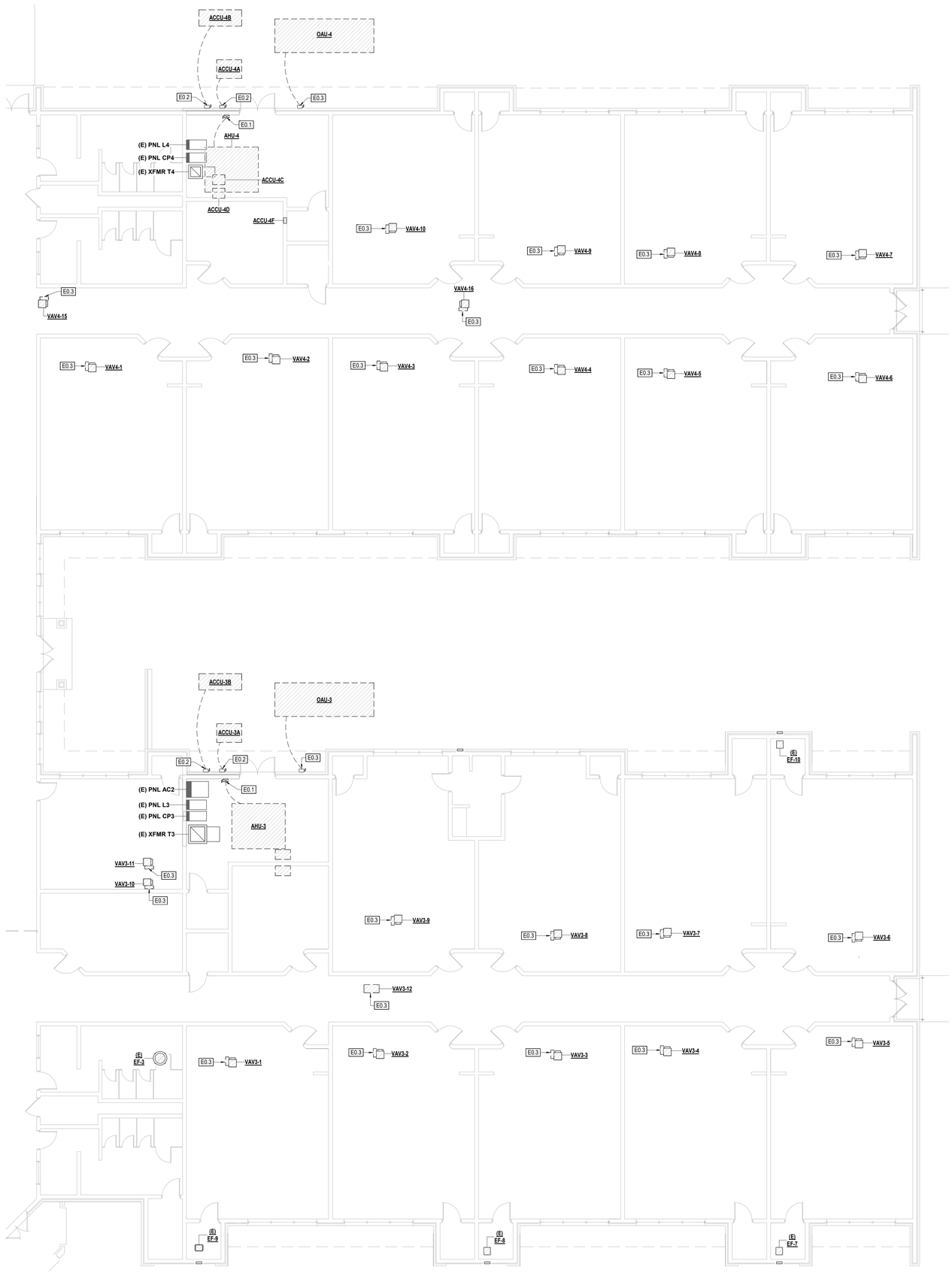

TBPE Firm Registration No. 2234

DBR Project Number 218033.005

| HA | RT | JR | | |
|---|---|---|---|---|

TN PN


1/5/2023 5:27:50 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt




1 ED2.13 **DEMO ELECTRICAL PLAN - AREA B**
1/8" = 1'-0"

## ELECTRICAL KEYED NOTES

E0.1 DEMOLISH DISCONNECT AND ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT SCHEDULED FOR DEMOLITION BY DIV 23. EXISTING CONDUCTORS AND CONDUIT BACK TO ASSOCIATED PANEL, INCLUDING BREAKER SERVING LOAD TO REMAIN. EXISTING CONTROL PANEL CIRCUIT AND BYPASS DAMPER CIRCUIT TO REMAIN.

E0.2 DEMOLISH DISCONNECT AND ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT SCHEDULED FOR DEMOLITION BY DIV 23. DEMOLISH EXISTING CONDUCTORS AND CONDUIT BACK TO ASSOCIATED PANEL, INCLUDING BREAKER SERVING LOAD.

E0.3 DEMOLISH DISCONNECT AND ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT SCHEDULED FOR DEMOLITION BY DIV 23. EXISTING CONDUCTORS AND CONDUIT BACK TO ASSOCIATED PANEL, INCLUDING BREAKER SERVING LOAD TO REMAIN.

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

69

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

# MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.005

**SHEET TITLE:** DEMO ELECTRICAL PLAN - AREA B

**SHEET NUMBER:** ED2.13

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.005

| HA | RT | JR | | |
|---|---|---|---|---|

TN PN

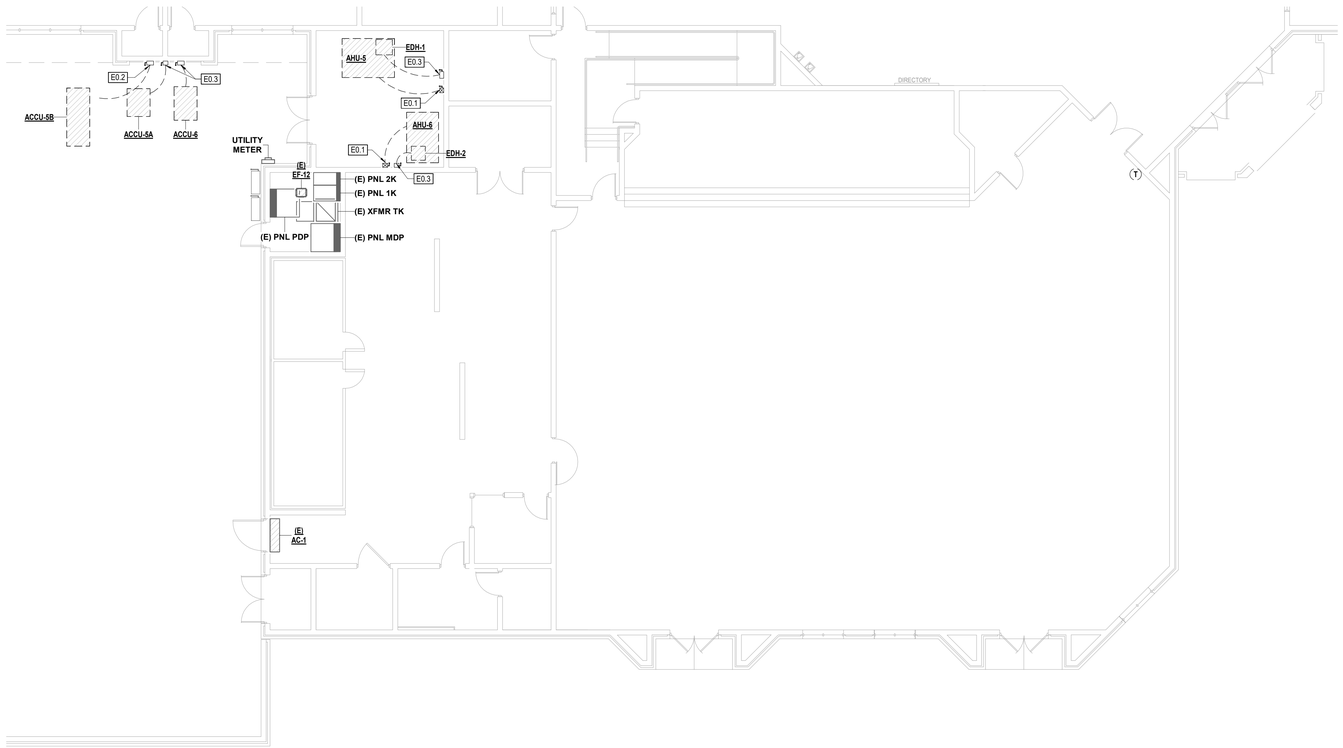
1/5/2023 5:27:51 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

## ELECTRICAL KEYED NOTES

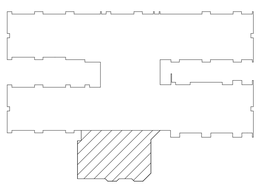
E0.1 DEMOLISH DISCONNECT AND ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT SCHEDULED FOR DEMOLITION BY DIV 23. EXISTING CONDUCTORS AND CONDUIT BACK TO ASSOCIATED PANEL, INCLUDING BREAKER SERVING LOAD TO REMAIN. EXISTING CONTROL PANEL CIRCUIT AND BYPASS DAMPER CIRCUIT TO REMAIN.

E0.2 DEMOLISH DISCONNECT AND ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT SCHEDULED FOR DEMOLITION BY DIV 23. DEMOLISH EXISTING CONDUCTORS AND CONDUIT BACK TO ASSOCIATED PANEL, INCLUDING BREAKER SERVING LOAD.

E0.3 DEMOLISH DISCONNECT AND ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT SCHEDULED FOR DEMOLITION BY DIV 23. EXISTING CONDUCTORS AND CONDUIT BACK TO ASSOCIATED PANEL, INCLUDING BREAKER SERVING LOAD TO REMAIN.




1 ED2.14 **DEMO ELECTRICAL PLAN - AREA C**
1/8" = 1'-0"




DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


70

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

# MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.005

**SHEET TITLE:** DEMO ELECTRICAL PLAN - AREA C

**SHEET NUMBER:** ED2.14


DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

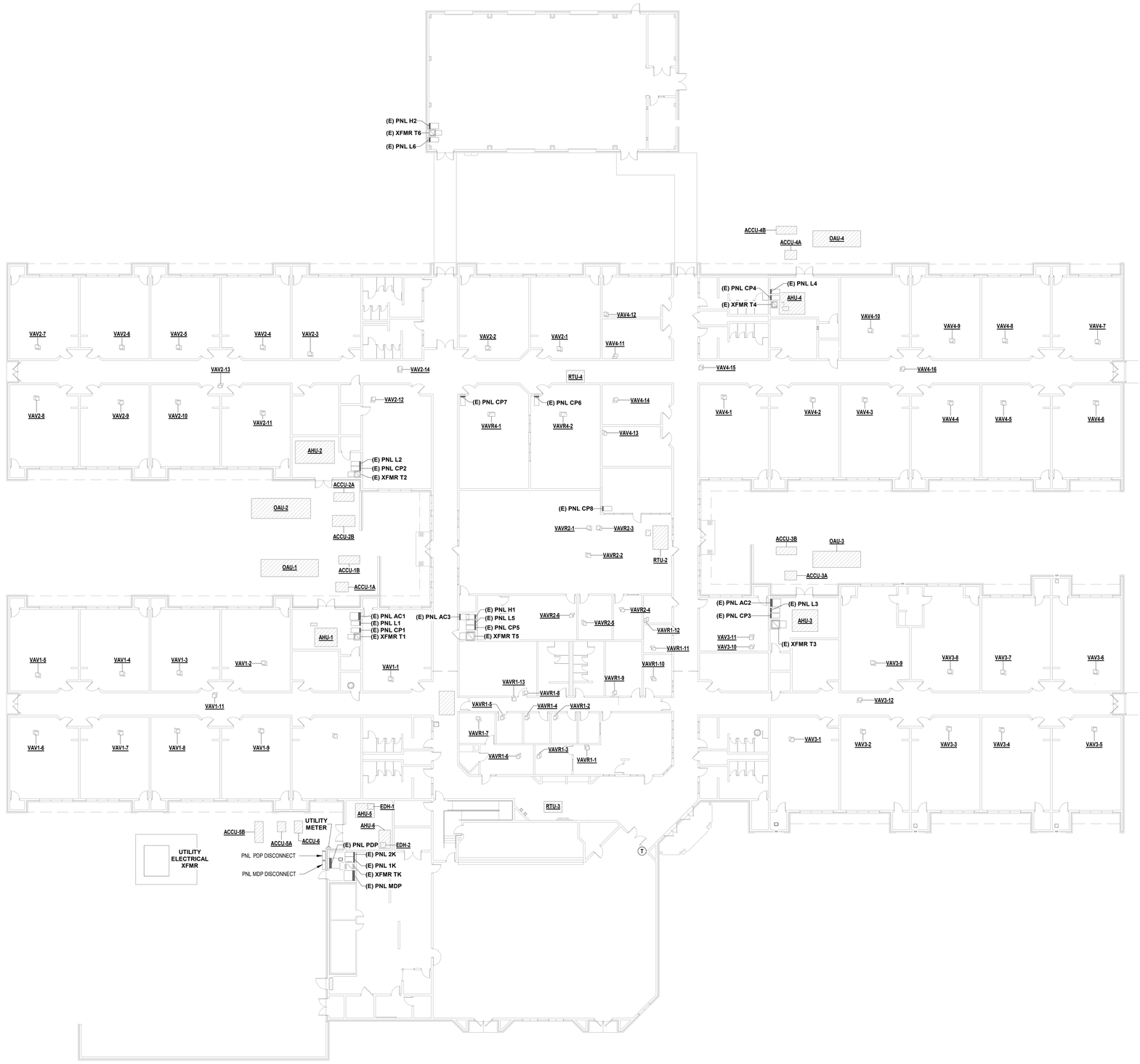

TBPE Firm Registration No. 2234

| DBR Project Number | 218033.005 |
|---|---|

| HA | RT | JR | | |
|---|---|---|---|---|

TN PN


1/5/2023 5:27:52 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt




## 1 COMPOSITE ELECTRICAL PLAN
E2.11 1/16" = 1'-0"


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


71

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

# MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.005

**SHEET TITLE:** COMPOSITE ELECTRICAL PLAN

**SHEET NUMBER:** E2.11


DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

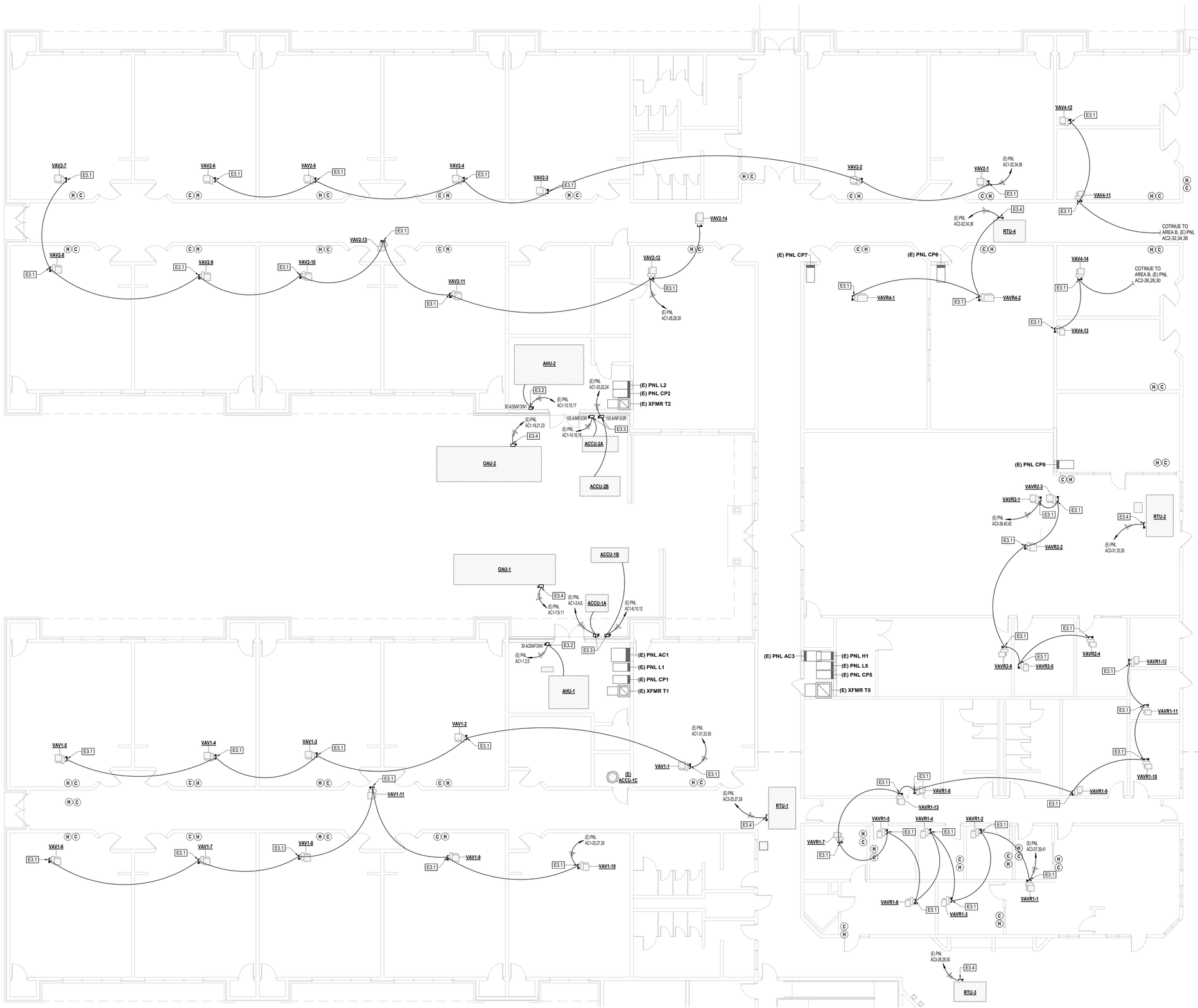

TBPE Firm Registration No. 2234

DBR Project Number 218033.005

| HA | RT | JR | | |
|---|---|---|---|---|

TN PN


1/5/2023 5:27:39 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt




1 E2.12 **ELECTRICAL PLAN - AREA A**
1/8" = 1'-0"

## ELECTRICAL KEYED NOTES

E3.1 CONNECT NEW VAV BOX TO EXISTING CIRCUIT. PROVIDE ALL LABOR AND MATERIAL REQUIRED TO RECONNECT NEW UNIT. REFER TO FEEDER SCHEDULES FOR CONDUCTOR AND CONDUIT SIZES. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH MECHANICAL CONTRACTOR. DISCONNECT SHOWN FOR REFERENCE ONLY, NEW EQUIPMENT IS PROVIDED WITH INTEGRAL FUSED DISCONNECT.

E3.2 CONNECT NEW HVAC EQUIPMENT. PROVIDE NEW ELECTRICAL CONNECTION AND DISCONNECT AS INDICATED. REFER TO FEEDER SCHEDULES FOR CONDUCTOR AND CONDUIT SIZES. RECONNECT TO EXISTING CIRCUIT BACK TO EXISTING BREAKER AT PANEL.

E3.3 CONNECT NEW HVAC EQUIPMENT, PROVIDE NEW ELECTRICAL CONNECTION AND DISCONNECT AS INDICATED WITH NEW FEEDER BACK TO NEW BREAKER AT EXISTING PANEL. REFER TO FEEDER SCHEDULES FOR CONDUCTOR AND CONDUIT SIZES.

E3.4 CONNECT NEW HVAC EQUIPMENT, PROVIDE NEW ELECTRICAL CONNECTION AS INDICATED. REFER TO FEEDER SCHEDULES FOR CONDUCTOR AND CONDUIT SIZES. RECONNECT TO EXISTING CIRCUIT BACK TO EXISTING BREAKER AT PANEL. DISCONNECT SHOWN FOR REFERENCE ONLY, NEW EQUIPMENT IS PROVIDED WITH INTEGRAL FUSED DISCONNECT.

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

72

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

# MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.005

**SHEET TITLE:** ELECTRICAL PLAN - AREA

**SHEET NUMBER:** E2.12

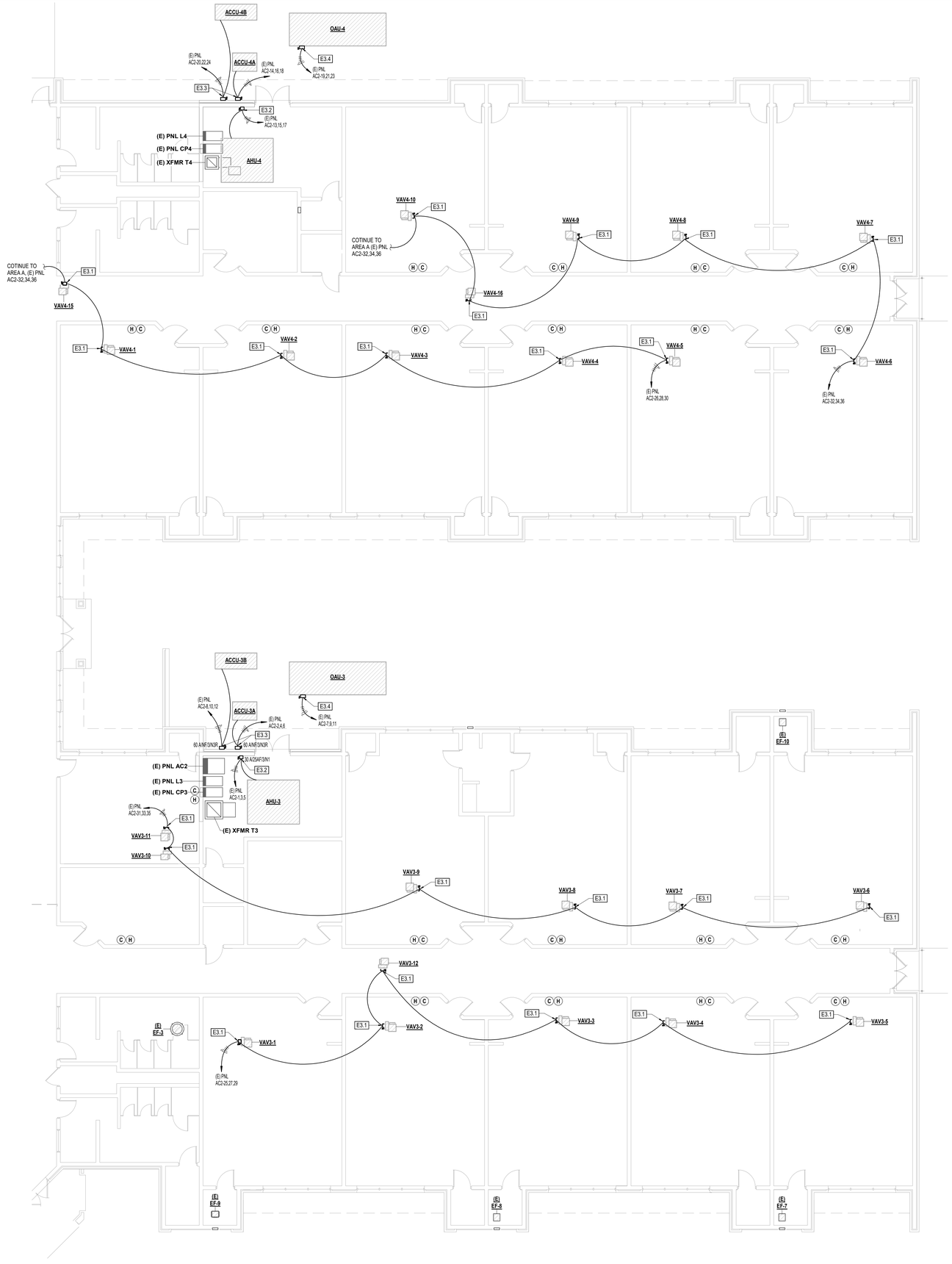
DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.005

| HA | RT | JR | | |
|---|---|---|---|---|

TN PN

1/5/2023 5:27:42 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt




1 E2.13 **ELECTRICAL PLAN - AREA B**
1/8" = 1'-0"

## ELECTRICAL KEYED NOTES

E3.1 CONNECT NEW VAV BOX TO EXISTING CIRCUIT. PROVIDE ALL LABOR AND MATERIAL REQUIRED TO RECONNECT NEW UNIT. REFER TO FEEDER SCHEDULES FOR CONDUCTOR AND CONDUIT SIZES. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH MECHANICAL CONTRACTOR. DISCONNECT SHOWN FOR REFERENCE ONLY, NEW EQUIPMENT IS PROVIDED WITH INTEGRAL FUSED DISCONNECT.

E3.2 CONNECT NEW HVAC EQUIPMENT, PROVIDE NEW ELECTRICAL CONNECTION AND DISCONNECT AS INDICATED. REFER TO FEEDER SCHEDULES FOR CONDUCTOR AND CONDUIT SIZES. RECONNECT TO EXISTING CIRCUIT BACK TO EXISTING BREAKER AT PANEL.

E3.3 CONNECT NEW HVAC EQUIPMENT, PROVIDE NEW ELECTRICAL CONNECTION AND DISCONNECT AS INDICATED WITH NEW FEEDER BACK TO NEW BREAKER AT EXISTING PANEL. REFER TO FEEDER SCHEDULES FOR CONDUCTOR AND CONDUIT SIZES.

E3.4 CONNECT NEW HVAC EQUIPMENT, PROVIDE NEW ELECTRICAL CONNECTION AS INDICATED. REFER TO FEEDER SCHEDULES FOR CONDUCTOR AND CONDUIT SIZES. RECONNECT TO EXISTING CIRCUIT BACK TO EXISTING BREAKER AT PANEL. DISCONNECT SHOWN FOR REFERENCE ONLY, NEW EQUIPMENT IS PROVIDED WITH INTEGRAL FUSED DISCONNECT.

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f



**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

# MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.005

**SHEET TITLE:** ELECTRICAL PLAN - AREA B

**SHEET NUMBER:** E2.13

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.005

| HA | RT | JR | | |
|---|---|---|---|---|

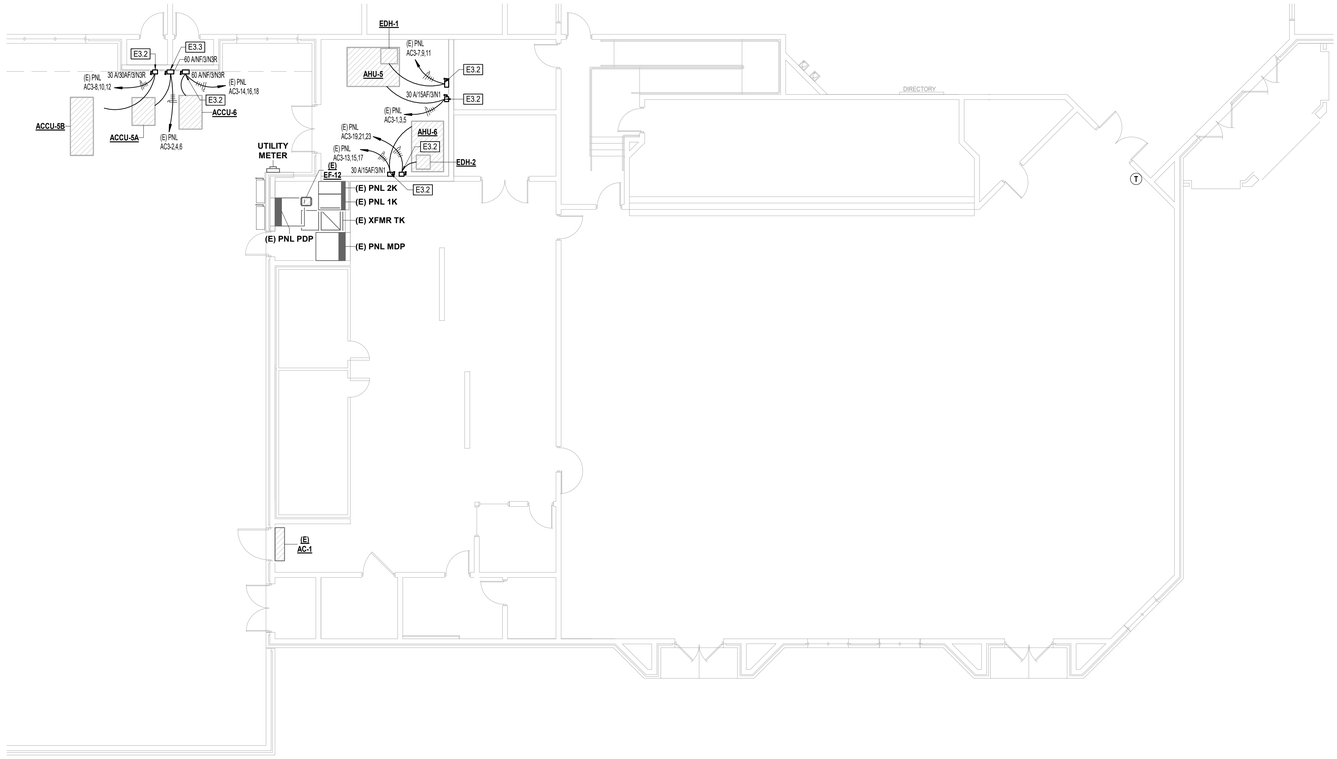
TN PN

1/5/2023 5:27:44 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

## ELECTRICAL KEYED NOTES

E3.2 CONNECT NEW HVAC EQUIPMENT. PROVIDE NEW ELECTRICAL CONNECTION AND DISCONNECT AS INDICATED. REFER TO FEEDER SCHEDULES FOR CONDUCTOR AND CONDUIT SIZES. RECONNECT TO EXISTING CIRCUIT BACK TO EXISTING BREAKER AT PANEL.

E3.3 CONNECT NEW HVAC EQUIPMENT. PROVIDE NEW ELECTRICAL CONNECTION AND DISCONNECT AS INDICATED WITH NEW FEEDER BACK TO NEW BREAKER AT EXISTING PANEL. REFER TO FEEDER SCHEDULES FOR CONDUCTOR AND CONDUIT SIZES.




1 E2.14 **ELECTRICAL PLAN - AREA C**
1/8" = 1'-0"


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


74

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

# MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

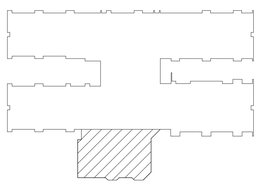
**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.005

**SHEET TITLE:** ELECTRICAL PLAN - AREA C

**SHEET NUMBER:** E2.14



TN PN


DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234


| DBR Project Number | 218033.005 | | | |
|---|---|---|---|---|
| HA | RT | JR | | |


1/5/2023 5:27:45 PM
Autodesk Docs://218033.009-Mission CISD-Mirkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

## FEEDER SCHEDULE
### COPPER ONLY

| RATING | SETS | CONDUCTOR SIZE | CONDUIT |
|---|---|---|---|
| 30A | 1 | 4#10, 1#10 G. | 3/4" |
| 40A | 1 | 4#8, 1#10 G. | 1" |
| 50A | 1 | 4#6, 1#10 G. | 1" |
| 60A | 1 | 4#6, 1#10 G. | 1" |
| 70A | 1 | 4#4, 1#8 G. | 1 1/4" |
| 80A | 1 | 4#4, 1#8 G. | 1 1/4" |
| 90A | 1 | 4#3, 1#8 G. | 1 1/4" |
| 100A | 1 | 4#3, 1#8 G. | 1 1/4" |
| 125A | 1 | 4#1, 1#6 G. | 1 1/2" |
| 150A | 1 | 4#1/0, 1#6 G. | 1 1/2" |
| 175A | 1 | 4#2/0, 1#6 G. | 2" |
| 200A | 1 | 4#3/0, 1#6 G. | 2" |
| 225A | 1 | 4#4/0, 1#4 G. | 2 1/2" |
| 250A | 1 | 4#250, 1#4 G. | 2 1/2" |
| 300A | 1 | 4#350, 1#4 G. | 3" |
| 350A | 1 | 4#500, 1#3 G. | 3 1/2" |
| 400A | 1 | 4#600, 1#3 G. | 4" |
| 450A | 2 | 4#4/0, 1#2 G. | 2 1/2" |
| 500A | 2 | 4#250, 1#2G. | 2 1/2" |
| 600A | 2 | 4#350, 1#1G. | 3" |
| 700A | 2 | 4#500, 1#1/0G. | 4" |
| 800A | 2 | 4#600, 1#1/0G. | 4" |
| 1000A | 3 | 4#500, 1#2/0G. | 4" |
| 1200A | 4 | 4#350, 1#3/0G. | 3" |
| 1600A | 4 | 4#600, 1#4/0G. | 4" |
| | 5 | 4#500, 1#4/0G. | 4" |
| 2000A | 5 | 4#600, 1#250 G. | 4" |
| | 6 | 4#500, 1#250 G. | 4" |
| 2500A | 6 | 4#600, 1#350 G. | 4" |
| | 7 | 4#500, 1#350 G. | 4" |
| 3000A | 8 | 4#500, 1#400 G. | 4" |
| 3500A | 9 | 4#600, 1#500 G. | 4" |
| | 10 | 4#500, 1#500 G. | 4" |
| 4000A | 10 | 4#600, 1#500 G. | 4" |
| | 11 | 4#500, 1#500 G. | 4" |
| 5000A | 12 | 4#600, 1#750 G. | 4" |
| | 14 | 4#500, 1#750 G. | 4" |

1. ELECTRICAL CONTRACTOR SHALL PROVIDE THE NUMBER OF LUGS AND PROPER LUG SIZES TO ACCEPT CONDUCTOR SIZES SHOWN.
2. GROUND NOT REQUIRED AT SERVICE LATERAL.

## Panelboard (E) PNL AC1

AIC Rating: New / X Existing

480/277 Wye Volt, 3 Phase, 4 Wire; 1 Section; Type 1 -Nema Rating | Mains Type: MLO | 0 A MCB; 600 A BUS (Copper); ISO. GRND. BUS | X Single, Double, Feed - Thru | Mounting: X Surface, Flush

| NOTE | LOAD (VA) | TYPE | DESCRIPTION | WIRE | CB | CKT | CB | WIRE | DESCRIPTION | TYPE | LOAD (VA) | NOTE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 1 2 | | | | | | |
| | 12720 VA | M | AHU-1 | 6 | 60 A | 3 4 | 50 A | 8 | ACCU-1A | M | 24610 VA | 1 |
| | | | | | | 5 6 | | | | | | |
| | 59300 VA | M | OAU-1 | 4 | 80 A | 7 8 | 50 A | 8 | ACCU-1B | M | 24610 VA | 1 |
| | | | | | | 9 10 | | | | | | |
| | | | | | | 11 12 | | | | | | |
| | 18710 VA | M | AHU-2 | 4 | 80 A | 13 14 | 70 A | 4 | ACCU-2A | M | 31925 VA | 1 |
| | | | | | | 15 16 | | | | | | |
| | | | | | | 17 18 | | | | | | |
| | 53475 VA | M | OAU-2 | 1 | 110 A | 19 20 | 70 A | 4 | ACCU-2B | M | 31925 VA | 1 |
| | | | | | | 21 22 | | | | | | |
| | | | | | | 23 24 | | | | | | |
| | 28000 VA | M | VAV BOXES (28 KW) | 8 | 45 A | 25 26 | 60 A | 6 | VAV BOXES (36 KW) | M | 44000 VA | |
| | | | | | | 27 28 | | | | | | |
| | | | | | | 29 30 | | | | | | |
| | 25000 VA | M | VAV BOXES (25 KW) | 8 | 40 A | 31 32 | 60 A | 6 | VAV BOXES (39 KW) | M | 31000 VA | |
| | | | | | | 33 34 | | | | | | |
| | | | | | | 35 36 | | | | | | |
| | 0 VA | -- | Space | 12 | -- | 37 38 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 39 40 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 41 42 | -- | 12 | Space | -- | 0 VA | |

| N.E.C. (2020) | Load Type | Conn. | Fct. | Diversity | N.E.C.(2020) | Load Type | Conn. | Fct. | Diversity |
|---|---|---|---|---|---|---|---|---|---|
| 220.44 | (R)Receptacle | | | | 210.20(a) | (L)Lighting | | | |
| 220.56 | (K)Kitchen | | | | | (EL)Ext. Ltg. | | | |
| 220.60 | (C)Cooling | | | 0 VA | 620.14 | (E)Elevators | | | |
| 220.60 | (H)Heating | | | 0 VA | | (WH)Wat. Htr. | | | |
| 220.60 | (F)Fans | | | | 220.5 | (MT)Lrg. Motor | | | |
| | (M)Misc. | 385275 VA | 100.00% | 385275 VA | | (SP)Sub Pnl. | | | |
| Total Connected Load: | | 385275 VA | VA = | 463 A | Location of Panel: | | | | |
| Total Load (Diversified): | | 385275 VA | VA = | 463 A | | | | | |

NOTES:
1. PROVIDE NEW CIRCUIT BREAKER AS SHOWN, AIC RATING TO MATCH EXISITNG PANEL RATING.

## Panelboard (E) PNL AC2

AIC Rating: New / X Existing

480/277 Wye Volt, 3 Phase, 4 Wire; 1 Section; Type 1 -Nema Rating | Mains Type: MLO | 0 A MCB; 600 A BUS (Copper); ISO. GRND. BUS | X Single, Double, Feed - Thru | Mounting: X Surface, Flush

| NOTE | LOAD (VA) | TYPE | DESCRIPTION | WIRE | CB | CKT | CB | WIRE | DESCRIPTION | TYPE | LOAD (VA) | NOTE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 1 2 | | | | | | |
| | 15715 VA | M | AHU-3 | 4 | 80 A | 3 4 | 50 A | 8 | ACCU-3A | M | 31925 VA | 1 |
| | | | | | | 5 6 | | | | | | |
| | 49300 VA | M | OAU-3 | 4 | 80 A | 7 8 | 50 A | 8 | ACCU-3B | M | 31925 VA | 1 |
| | | | | | | 9 10 | | | | | | |
| | | | | | | 11 12 | | | | | | |
| | 15715 VA | M | AHU-4 | 4 | 80 A | 13 14 | 50 A | 8 | ACCU-4A | M | 31925 VA | 1 |
| | | | | | | 15 16 | | | | | | |
| | | | | | | 17 18 | | | | | | |
| | 50465 VA | M | OAU-4 | 3 | 100 A | 19 20 | 50 A | 8 | ACCU-4B | M | 31925 VA | 1 |
| | | | | | | 21 22 | | | | | | |
| | | | | | | 23 24 | | | | | | |
| | 28000 VA | M | VAV BOXES (28 KW) | 8 | 45 A | 25 26 | 50 A | 8 | VAV BOXES (33 KW) | M | 33000 VA | |
| | | | | | | 27 28 | | | | | | |
| | | | | | | 29 30 | | | | | | |
| | 29000 VA | M | VAV BOXES (29 KW) | 8 | 45 A | 31 32 | 50 A | 8 | VAV BOXES (33 KW) | M | 33000 VA | |
| | | | | | | 33 34 | | | | | | |
| | | | | | | 35 36 | | | | | | |
| | 0 VA | -- | Spare | 8 | 40 A | 37 38 | 40 A | 8 | Spare | -- | 0 VA | |
| | | | | | | 39 40 | | | | | | |
| | | | | | | 41 42 | | | | | | |

| N.E.C. (2020) | Load Type | Conn. | Fct. | Diversity | N.E.C.(2020) | Load Type | Conn. | Fct. | Diversity |
|---|---|---|---|---|---|---|---|---|---|
| 220.44 | (R)Receptacle | | | | 210.20(a) | (L)Lighting | | | |
| 220.56 | (K)Kitchen | | | | | (EL)Ext. Ltg. | | | |
| 220.60 | (C)Cooling | | | 0 VA | 620.14 | (E)Elevators | | | |
| 220.60 | (H)Heating | | | 0 VA | | (WH)Wat. Htr. | | | |
| 220.60 | (F)Fans | | | | 220.5 | (MT)Lrg. Motor | | | |
| | (M)Misc. | 381895 VA | 100.00% | 381895 VA | | (SP)Sub Pnl. | | | |
| Total Connected Load: | | 381895 VA | VA = | 459 A | Location of Panel: | | | | |
| Total Load (Diversified): | | 381895 VA | VA = | 459 A | | | | | |

NOTES:
1. PROVIDE NEW CIRCUIT BREAKER AS SHOWN, AIC RATING TO MATCH EXISITNG PANEL RATING.

## Panelboard (E) PNL AC3

AIC Rating: New / X Existing

480/277 Wye Volt, 3 Phase, 4 Wire; 1 Section; Type 1 -Nema Rating | Mains Type: MLO | 0 A MCB; 400 A BUS (Copper); ISO. GRND. BUS | X Single, Double, Feed - Thru | Mounting: X Surface, Flush

| NOTE | LOAD (VA) | TYPE | DESCRIPTION | WIRE | CB | CKT | CB | WIRE | DESCRIPTION | TYPE | LOAD (VA) | NOTE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 1 2 | | | | | | |
| | 6720 VA | M | AHU-5 | 10 | 30 A | 3 4 | 50 A | 8 | ACCU-5A | M | 31925 VA | 1 |
| | | | | | | 5 6 | | | | | | |
| | 60000 VA | M | EDH-1 (AHU-5 HEATER, 60 KW) | 3 | 90 A | 7 8 | 50 A | 8 | ACCU-5B | M | 15300 VA | |
| | | | | | | 9 10 | | | | | | |
| | | | | | | 11 12 | | | | | | |
| | 3725 VA | M | AHU-6 | 12 | 20 A | 13 14 | 35 A | 8 | ACCU-6 | M | 31925 VA | |
| | | | | | | 15 16 | | | | | | |
| | | | | | | 17 18 | | | | | | |
| | 15000 VA | M | EDH-2 (AHU-6 HEATER, 15 KW) | 10 | 30 A | 19 20 | 50 A | 8 | Spare | -- | 0 VA | |
| | | | | | | 21 22 | | | | | | |
| | | | | | | 23 24 | | | | | | |
| | 23950 VA | M | RTU-1 | 8 | 45 A | 25 26 | 15 A | 12 | RTU-3 | M | 5990 VA | |
| | | | | | | 27 28 | | | | | | |
| | | | | | | 29 30 | | | | | | |
| | 23950 VA | M | RTU-2 | 8 | 45 A | 31 32 | 60 A | 6 | RTU-4 & VAV BOXES | M | 33280 VA | |
| | | | | | | 33 34 | | | | | | |
| | | | | | | 35 36 | | | | | | |
| | 27000 VA | M | VAV BOXES (RTU-1, 27KW) | 8 | 40 A | 37 38 | 40 A | 8 | VAV BOXES (RTU-2, 28KW) | M | 28000 VA | |
| | | | | | | 39 40 | | | | | | |
| | | | | | | 41 42 | | | | | | |

| N.E.C. (2020) | Load Type | Conn. | Fct. | Diversity | N.E.C.(2020) | Load Type | Conn. | Fct. | Diversity |
|---|---|---|---|---|---|---|---|---|---|
| 220.44 | (R)Receptacle | | | | 210.20(a) | (L)Lighting | | | |
| 220.56 | (K)Kitchen | | | | | (EL)Ext. Ltg. | | | |
| 220.60 | (C)Cooling | | | 0 VA | 620.14 | (E)Elevators | | | |
| 220.60 | (H)Heating | | | 0 VA | | (WH)Wat. Htr. | | | |
| 220.60 | (F)Fans | | | | 220.5 | (MT)Lrg. Motor | | | |
| | (M)Misc. | 306765 VA | 100.00% | 306765 VA | | (SP)Sub Pnl. | | | |
| Total Connected Load: | | 306765 VA | VA = | 369 A | Location of Panel: | | | | |
| Total Load (Diversified): | | 306765 VA | VA = | 369 A | | | | | |

NOTES:
1. PROVIDE NEW CIRCUIT BREAKER AS SHOWN, AIC RATING TO MATCH EXISITNG PANEL RATING.


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


75

REVISION:

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

SEAL:

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01/05/2023

# MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

DATE: 01/05/2023

DRAWN BY: DBR

CHECKED BY: DBR

PROJECT NUMBER: 218033.005

SHEET TITLE: ELECTRICAL SCHEDULES

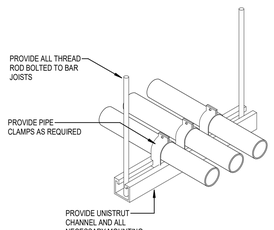
SHEET NUMBER: E5.01


DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

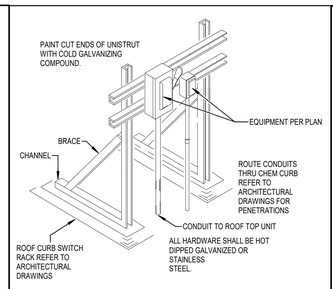

DBR Project Number 218033.005

| HA | RT | JR | | |
|---|---|---|---|---|

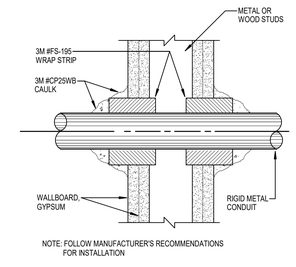

1/5/2023 5:27:46 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt



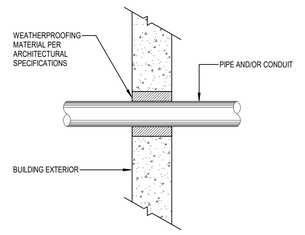

**1 UNISTRUT CONDUIT DETAIL**
NOT TO SCALE
E10003



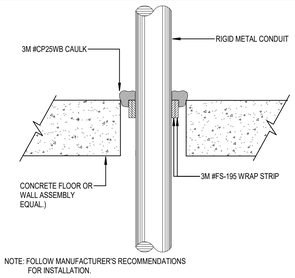

**2 ROOF UNISTRUT RACK DETAIL**
NOT TO SCALE
E10015



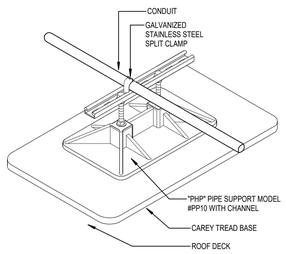

**3 2 HR. GYPSUM WALLBOARD PIPE PENETRATION**
NOT TO SCALE
E10017



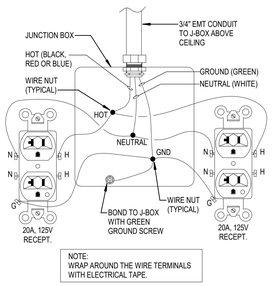

**4 PIPE AND/OR CONDUIT PENETRATION**
NOT TO SCALE
E10018



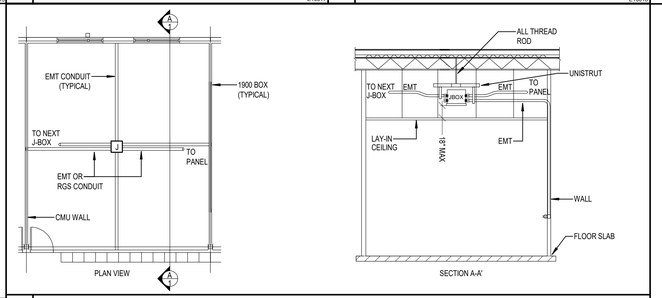

**5 2, 3 AND 4 HR. PENETRATIONS FOR CONCRETE**
NOT TO SCALE
E10019



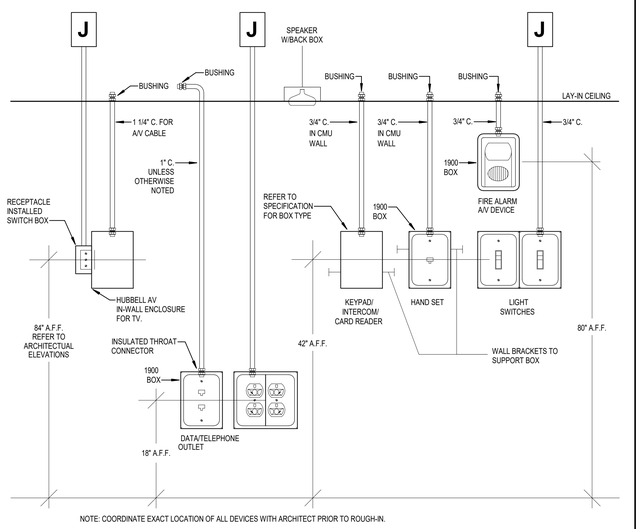

**6 ROOF CONDUIT SUPPORT DETAIL**
NOT TO SCALE




**7 20A,125V. RECEPTACLE WIRING DETAIL**
NOT TO SCALE
E13029




**8 TYPICAL RACEWAY CONFIGURATION**
NOT TO SCALE
E18002




**9 TYPICAL DEVICE ELEVATIONS**
NOT TO SCALE
E11001

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f



**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

**SEAL:**




# MISSION CISD - CAVAZOS ES 114 - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.005

**SHEET TITLE:** ELECTRICAL DETAILS

**SHEET NUMBER:** E6.01

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.005

| HA | RT | JR | | |
|---|---|---|---|---|

1/5/2023 5:27:46 PM
Autodesk Docs://218033.009-Mission CISD-Mckiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - HURLA M. MIDKIFF ELEMENTARY SCHOOL - INDOOR AIR QUALITY IMPROVEMENTS

| | |
|---|---|
| Veronica R. Mendoza | President |
| Roy Vela | Vice President |
| Iris Iglesias | Secretary |
| Petra B. Ramirez | Member |
| Minnie R. Rodgers | Member |
| Jerry Zamora | Member |
| Juan M. Gonzalez | Member |

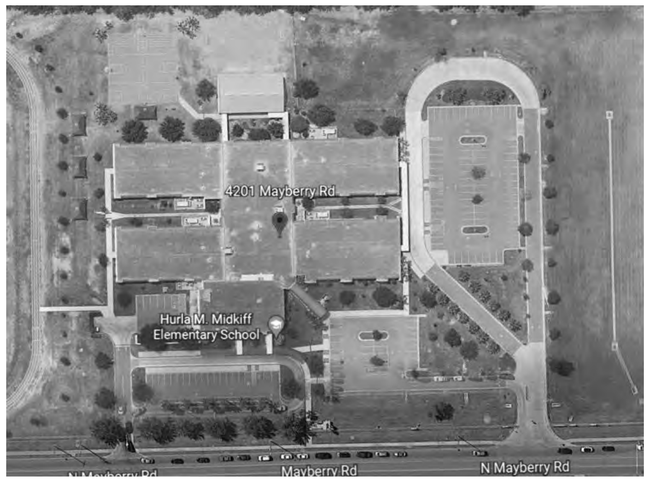
## PROJECT TEAM


DBR Inc.
200 S. 10th St.
Suite 901
McAllen, Texas 782501
956-683-1640
MEP Engineer
Robert H. Tijerina, P.E
rtijerina@dbrinc.com

1201 Bryce Drive
Mission, TX 78572

Mission Project Manager
Adrian Hernandez
adrian.hernandez@mcisd.org
P: 956.323.8960


## LOCATION




**4201 Mayberry Rd, Mission, TX 78574**

## SHEET LIST TABLE

| SHEET NUMBER | SHEET TITLE |
|---|---|
| G0.01 | COVER SHEET |
| M0.01 | MECHANICAL SYMBOL |
| MD2.11 | DEMO COMPOSITE MECHANICAL DEMO PLAN |
| MD2.12 | DEMO MECHANICAL PLAN - AREA A |
| MD2.13 | DEMO MECHANICAL PLAN - AREA B |
| MD2.14 | DEMO MECHANICAL PLAN - AREA C |
| MD3.01 | DEMO MECHANICAL ENLARGED PLANS |
| M2.11 | COMPOSITE MECHANICAL PLANS |
| M2.12 | MECHANICAL PLAN - AREA A |
| M2.13 | MECHANICAL PLAN - AREA B |
| M2.14 | MECHANICAL PLAN - AREA C |
| M3.01 | MECHANICAL ENLARGED PLAN |
| M4.01 | MECHANICAL FLOW DIAGRAMS |
| M5.01 | MECHANICAL SCHEDULES |
| M6.01 | MECHANICAL DETAILS |
| E0.01 | ELECTRICAL SYMBOL LEGEND |
| ED2.11 | DEMO COMPOSITE ELECTRICAL PLAN |
| ED2.12 | DEMO ELECTRICAL PLAN - AREA A |
| ED2.13 | DEMO ELECTRICAL PLAN - AREA B |
| ED2.14 | DEMO ELECTRICAL PLAN - AREA C |
| E2.11 | COMPOSITE ELECTRICAL PLAN |
| E2.12 | ELECTRICAL PLAN A |
| E2.13 | ELECTRICAL PLAN B |
| E2.14 | ELECTRICAL PLAN C |
| E5.01 | ELECTRICAL SCHEDULES |
| E6.01 | ELECTRICAL DETIALS |


DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234


DBR Project Number 218033.009

| HA | RT | JR | | |
|---|---|---|---|---|


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


77

REVISION:

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

SEAL:

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

DATE: 01/05/2023

DRAWN BY: DBR

CHECKED BY: DBR

PROJECT NUMBER 218033.009

SHEET TITLE: COVER SHEET

SHEET NUMBER: G0.01


1/5/2023 5:16:39 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

# ABBREVIATIONS

## A

| | |
|---|---|
| A | AIR (COMPRESSED) |
| ABV | ABOVE |
| AC | AIR CONDITIONING |
| AC | ALTERNATING CURRENT, AIR COMPRESSOR |
| ACCH | AIR COOLED CHILLER |
| ACCU | AIR COOLED CONDENSING UNIT |
| AD | ACCESS DOOR, AREA DRAIN |
| ADJ | ADJUSTABLE |
| AF | AIR FILTER |
| AFC | ABOVE FINISHED CEILING |
| AFF | ABOVE FINISHED FLOOR |
| AFG | ABOVE FINISHED GRADE |
| AHRI | AIR-CONDITIONING, HEATING, AND REFRIGERATION INSTITUTE |
| AHU | AIR HANDLING UNIT |
| AL | ALUMINUM |
| AMB | AMBIENT |
| AP | ACCESS PANEL |
| APD | AIR PRESSURE DROP |
| ARCH | ARCHITECT, ARCHITECTURAL |
| AS | AIR SEPARATOR |
| ASHRAE | AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS |
| ASME | AMERICAN SOCIETY OF MECHANICAL ENGINEERS |
| ASTM | AMERICAN SOCIETY OF TESTING AND MATERIALS |
| AV | ACID VENT, AIR VENT |
| AVG | AVERAGE |
| AW | ACID WASTE |
| AWS | AMERICAN WELDING SOCIETY |
| AUX | AUXILIARY |

## B

| | |
|---|---|
| B | BOILER |
| BC | BELOW COUNTER |
| B/C | BACK OF CURB |
| BFF | BELOW FINISHED FLOOR |
| BFV | BUTTERFLY VALVE |
| BH | BOX HYDRANT |
| BLDG | BUILDING |
| BM | BENCHMARK |
| BOF | BOTTOM OF FOOTING |
| BOS | BOTTOM OF STRUCTURE |
| BP | BACKFLOW PREVENTER |
| BTU | BRITISH THERMAL UNIT |
| BV | BALL VALVE |
| BWV | BACK WATER VALVE |

## C

| | |
|---|---|
| C | CELSIUS |
| CAB | CABINET |
| CB | CATCH BASIN |
| CD | CONDENSATE DRAIN LINE |
| CFM | CUBIC FEET PER MINUTE |
| CFS | CUBIC FEET PER SECOND |
| CH | CHILLER |
| CHR | CHILLED WATER RETURN |
| CHS | CHILLED WATER SUPPLY |
| CHW | CHILLED WATER |
| CHWP | CHILLED WATER PUMP |
| CI | CAST IRON |
| CIRC | CIRCULATING |
| CL | CENTERLINE |
| CLG | CEILING |
| CLR | CLEAR |
| CMU | CONCRETE MASONRY UNIT |
| COL | COLUMN |
| COMB | COMBINATION |
| COMP | COMPRESSOR |
| CONC | CONCRETE, CONCENTRIC |
| COND | CONDENSER, CONDENSATE |
| CONN | CONNECTION |
| CONT | CONTINUOUS,CONTINUATION |
| CTR | CENTER |
| CU | COPPER |

## D

| | |
|---|---|
| D | DEPTH, DRAIN, DRYER |
| DB | DRY BULB |
| DC | DIRECT CURRENT |
| DDC | DIRECT DIGITAL CONTROL |
| DDMB | DUAL DUCT MIXING BOX |
| DESIG | DESIGNATION |
| DTL | DETAIL |
| DIA | DIAMETER |
| DIFF | DIFFUSER |
| DIM | DIMENSION |
| DISC | DISCONNECT |
| DN | DOWN |
| DPR | DAMPER |
| DW | DISHWASHER |
| DWG | DRAWING |
| DWH | DOMESTIC WATER HEATER |
| DWP | DOMESTIC WATER PUMP |
| DX | DIRECT EXPANSION |

## E

| | |
|---|---|
| EA | EACH |
| EAT | ENTERING AIR TEMPERATURE |
| EC | ELECTRICAL CONTRACTOR |
| ECC | ECCENTRIC |
| EDB | ENTERING DRY BULB |
| EDH | ELECTRIC DUCT HEATER |
| EF | EXHAUST FAN |
| EFF | EFFICIENCY |
| EJ | EXPANSION JOINT |
| EL | ELEVATION |
| ELEC | ELECTRICAL |
| EMERG | EMERGENCY |
| ENCL | ENCLOSURE |
| ENGR | ENGINEER |
| EQ | EQUAL |
| EQUIP | EQUIPMENT |
| ESP | EXTERNAL STATIC PRESSURE |
| ET | EXPANSION TANK |
| ETR | EXISTING TO REMAIN |
| EVAP | EVAPORATOR |
| EWB | ENTERING WET BULB |
| EWT | ENTERING WATER TEMPERATURE |
| EX | EXPLOSION PROOF |
| EXT | EXTERNAL |
| EXTG | EXISTING |

## F

| | |
|---|---|
| F | FAHRENHEIT, FIRE |
| FBO | FURNISHED BY OTHERS |
| FCO | FLOOR CLEAN OUT |
| FCS | FLOOR CONTROL STATION |
| FCU | FAN COIL UNIT |
| FD | FLOOR DRAIN, FIRE DAMPER |
| FDC | FIRE DEPARTMENT SIAMESE CONNECTION |
| FDV | FIRE DEPARTMENT VALVE |
| FH | FIRE HYDRANT |
| FHC | FIRE HOSE CABINET |
| FHR | FIRE HOSE RACK |
| FLA | FULL LOAD AMPS |
| FLEX | FLEXIBLE |
| FLR | FLOOR |
| FPTU | FAN POWERED TERMINAL UNIT |
| FT | FOOT, FEET |
| FUT | FUTURE |

## G

| | |
|---|---|
| G | GAS |
| GA | GAUGE |
| GAL | GALLON |
| GALV | GALVANIZED |
| GC | GENERAL CONTRACTOR |
| GLV | GLOBE VALVE |
| GND | GROUND |
| GPM | GALLONS PER MINUTE |
| GV | GATE VALVE |

## H

| | |
|---|---|
| HORIZ | HORIZONTAL |
| HP | HORSEPOWER |
| HSTAT | HUMIDISTAT |
| HT | HEIGHT |
| HTG | HEATING |
| HTR | HEATER |
| HW | HOT WATER |
| HWP | HEATING WATER PUMP |
| HWR | HOT WATER RETURN |
| HWS | HOT WATER SUPPLY |
| HX | HEAT EXCHANGER |
| HZ | HERTZ |

## I

| | |
|---|---|
| ID | INSIDE DIAMETER |
| IE | INVERT ELEVATION |
| IH | INFRARED HEATER |
| IN | INCH |
| INSUL | INSULATION |
| INT | INTERNAL, INTERIOR |
| INV | INVERT |
| IW | INDIRECT WASTE |

## J

| | |
|---|---|
| JB | JUNCTION BOX |
| JP | JOCKEY PUMP |

## K

| | |
|---|---|
| KEC | KITCHEN EQUIPMENT CONTRACTOR |
| KO | KNOCKOUT |
| KVA | KILOVOLT- AMPS |
| KW | KILOWATT |

## L

| | |
|---|---|
| L | LENGTH |
| LAT | LEAVING AIR TEMPERATURE |
| LAV | LAVATORY |
| LF | LINEAR FEET |
| LP | LOW PRESSURE |
| LRA | LOCKED ROTOR AMPS |
| LVL | LEVEL |
| LWB | LEAVING WET BULB |
| LWCO | LOW WATER CUT OFF |
| LWT | LEAVING WATER TEMPERATURE |

## M

| | |
|---|---|
| MAT | MIXED AIR TEMPERATURE |
| MAX | MAXIMUM |
| MBTUH | THOUSAND OF BTU'S |
| MC | MECHANICAL CONTRACTOR |
| MECH | MECHANICAL |
| MFR | MANUFACTURER |
| MH | MANHOLE |
| MI | MALLEABLE IRON |
| MIN | MINIMUM |
| MP | MEDIUM PRESSURE |
| MS | MOP SINK |
| MTD | MOUNTED |
| MU | MAKE-UP |
| MVD | MANUAL VOLUME DAMPER |
| MSAH | MINI-SPLIT AIR HANDLER |
| MSCU | MINI-SPLIT CONDENSING UNIT |

## N

| | |
|---|---|
| N.C. | NORMALLY CLOSED |
| NFPA | NATIONAL FIRE PROTECTION ASSOCIATION |
| NIC | NOT IN CONTRACT |
| N.O. | NORMALLY OPEN |
| NO. | NUMBER |
| NTS | NOT TO SCALE |

## O

| | |
|---|---|
| OA | OUTSIDE AIR |
| OAF | OUTSIDE AIR FAN |
| OAHU | OUTSIDE AIR HANDLING UNIT |
| OBD | OPPOSED BLADE DAMPER |
| OC | ON CENTER |
| OD | OUTSIDE DIAMETER, OVERFLOW DRAIN |
| OFCU | OUTSIDE AIR FAN COIL UNIT |
| OPG | OPENING |
| OS&Y | OPEN STEM AND YOLK |

## P

| | |
|---|---|
| PG | PRESSURE GAUGE |
| PP | POLYPROPYLENE |
| PPM | PART PER MILLION |
| PRI | PRIMARY |
| PRS | PRESSURE REDUCING STATION |
| PRV | PRESSURE REDUCING VALVE |
| PSF | POUNDS PER SQUARE FOOT |
| PSI | POUNDS PER SQUARE INCH |
| PSIG | POUNDS PER SQUARE INCH GAUGE |
| PV | PLUG VALVE |
| PVC | POLYVINYL CHLORIDE |

## Q

| | |
|---|---|
| QTY | QUANTITY |

## R

| | |
|---|---|
| RA | RETURN AIR |
| RAD | REFRIGERATED AIR DRYER |
| RAF | RETURN AIR FAN |
| RAG | RETURN AIR GRILLE |
| RAT | RETURN AIR TEMPERATURE |
| RCP | REFLECTED CEILING PLAN |
| RD | ROOF DRAIN |
| RE | REFERENCE, REFER |
| RED | REDUCER |
| REFR | REFRIGERATOR |
| REG | REGISTER |
| REINF | REINFORCING |
| REQD | REQUIRED |
| REV | REVISION, REVISE |
| RH | RELATIVE HUMIDITY |
| RHG | REFRIGERANT HOT GAS |
| RL | REFRIGERANT LIQUID |
| RLA | RUNNING LOAD AMPS |
| RM | ROOM |
| RPM | REVOLUTIONS PER MINUTE |
| RS | REFRIGERANT SUCTION |
| RTU | ROOFTOP UNIT |
| RV | RELIEF VALVE |

## S

| | |
|---|---|
| SA | SUPPLY AIR |
| SAF | SUPPLY AIR FAN |
| SAG | SUPPLY AIR GRILLE |
| SAN | SANITARY SEWER |
| SAR | SUPPLY AIR REGISTER |
| SC | STEAM CONDENSATE |
| SCHED | SCHEDULED |
| SD | STORM DRAIN |
| SEC | SECONDARY |
| SECT | SECTION |
| SENS | SENSIBLE |
| SF | SQUARE FEET |
| SFCS | SPRINKLER FLOOR CONTROL STATION |
| SH | SHOWER |
| SHT | SHEET |
| SIM | SIMILAR |
| SK | SINK |
| SM | SHEETMETAL |
| SP | STATIC PRESSURE, SUMP PUMP |
| SPEC | SPECIFICATION |
| SPR | SPRINKLER |
| SQ | SQUARE |
| SS | SERVICE SINK |
| SSSC | SOLID STATE SPEED CONTROL |
| STD | STANDARD |
| STL | STEEL |
| STR | STRAINER |
| SURF | SURFACE |
| SUSP | SUSPEND |
| SV | SANITARY VENT |
| SW | SOFT WATER |

## T

| | |
|---|---|
| TC | TEMPERATURE CONTROL |
| TCC | TEMPERATURE CORNEAL COMPRESSOR |
| TD | TRENCH DRAIN |
| TDH | TOTAL DYNAMIC HEAD |
| TF | TRANSFER FAN |
| TH BLK | THRUST BLOCK |
| THERM | THERMOMETER |
| TMV | THERMOSTATIC MIXING VALVE |
| TP | TRAP PRIMER |
| TPD | TRAP PRIMER DEVICE |
| TSP | TOTAL STATIC PRESSURE |
| TSTAT | THERMOSTAT |
| TW | TEMPERED HOT WATER |
| TYP | TYPICAL |

## U

| | |
|---|---|
| U | URINAL |
| UCD | UNDER CUT DOOR |
| UG | UNDERGROUND |
| UH | UNIT HEATER |
| UL | UNDERWRITERS LABORATORIES, INC |
| UNO | UNLESS NOTED OTHERWISE |
| U/F | UNDERFLOOR |
| U/S | UNDERSLAB |

## V

| | |
|---|---|
| V | VOLT |
| VA | VOLT- AMPERE |
| VAC | VACUUM |
| VAV | VARIABLE AIR VOLUME |
| VB | VALVE BOX, VACUUM BREAKER |
| VD | VOLUME DAMPER |
| VEL | VELOCITY |
| VERT | VERTICAL |
| VFD | VARIABLE FREQUENCY DRIVE |
| VIB | VALVE IN BOX |
| VOV | VALVE ON VERTICAL |
| VP | VACUUM PUMP |
| VR | VARIABLE AIR VOLUME REHEAT |
| VTR | VENT THRU ROOF |

## W

| | |
|---|---|
| W | WATT, WIDTH |
| W/ | WITH |
| W/O | WITHOUT |
| WB | WET BULB |
| WC | WATER CLOSET |
| WCO | WALL CLEAN OUT |
| WH | WALL HYDRANT |
| WM | WATER METER |
| WP | WEATHERPROOF |
| WPD | WATER PRESSURE DROP |
| WWF | WELDED WIRE FABRIC |

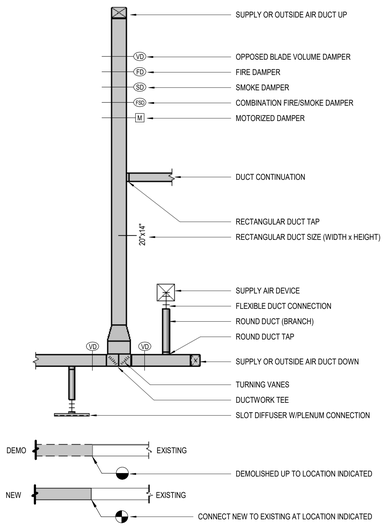
## Y

| | |
|---|---|
| Y | YARD HYDRANT |

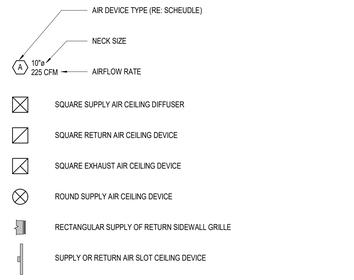
## Z

| | |
|---|---|
| Z | ZONE |

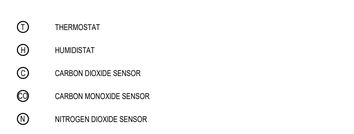
# DUCTWORK



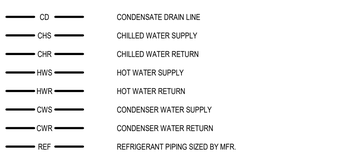

# AIR DEVICE TYPES



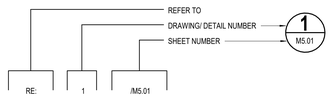

# WALL MOUNTED SENSOR TYPES




# PIPING TYPES




# DRAWING/DETAIL REFERENCE KEY




# MECHANICAL GENERAL NOTES

1. PIPING AND DUCTWORK SHOWN ON PLANS ARE SCHEMATIC ONLY. COORDINATE WITH OTHER TRADES FOR PIPING AND DUCTWORK ROUTING. OFFSET AND RUN PIPING DUCTWORK INSIDE THE STRUCTURE IF REQUIRED. PROVIDE ALL NECESSARY PIPING, DUCTWORK, FITTING, INSULATION, AND OTHER ACCESSORIES IN ORDER TO COMPLETE THE INSTALLATIONS.
2. EXACT LOCATIONS OF EQUIPMENT, GRILLES, AND DAMPERS SHALL BE FIELD COORDINATED WITH OTHER TRADES TO AVOID CONFLICTS AND ALLOW ADEQUATE CLEARANCES.
3. EQUIPMENT SIZES, DIMENSIONS, AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE MANUFACTURER DRAWINGS AND CUTSHEETS BEFORE FABRICATING OF DUCTWORK, PIPING, OR POURING OF CONCRETE HOUSEKEEPING PADS.
4. SHEET METAL INLET DUCTS TO VAV TERMINAL UNITS SHALL BE SAME SIZE AS THE BOX INLET SIZE. PROVIDE RIGID ROUND DUCT THAT IS ONE SIZE LARGER THAN THE INLET BOX SIZE IF THE DISTANCE BETWEEN THE MAIN DUCT AND THE VAV BOX IS MORE THAN 6'-0".
5. PROVIDE CONICAL SPIN-IN CONNECTOR FOR ALL ROUND DUCT CONNECTIONS TO VAV TERMINAL UNITS.
6. INSTALL EQUIPMENT TO ENSURE ACCESS PANELS ARE NOT BLOCKED. ACCESS FOR SERVICE MUST BE PROVIDED.
7. MECHANICAL CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR FOR ALL ELECTRICAL POWER REQUIREMENTS.
8. DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE DIMENSIONS.
9. PROVIDE RECTANGULAR BRANCH DUCT TAP FOR ALL RECTANGULAR DUCT CONNECTIONS TO RECTANGULAR DUCT TRUNKS.
10. ALL DUCTWORK AND ASSOCIATED ACCESSORIES SHALL BE CONSTRUCTED TO MEET THE LATEST SMACNA STANDARDS FOR HVAC DUCT CONSTRUCTION.
11. ALL OUTSIDE AIR, SUPPLY AIR, AND RETURN AIR DUCTWORK AND PLENUMS SHALL BE INSULATED WITH A MINIMUM OF R-6 INSULATION WHERE LOCATED IN UNCONDITIONED SPACES AND SHALL BE INSULATED WITH A MINIMUM OF R-8 INSULATION WHERE LOCATED OUTSIDE THE BUILDING. REFER TO SPECIFICATION 23 07 13 DUCT INSULATION FOR FURTHER INFORMATION AND ADDITIONAL REQUIREMENTS.
12. ALL DUCTWORK SHALL BE CONSTRUCTED TO SEAL CLASS 'A' AS REFERENCED IN SMACNA STANDARDS. ALL NON-WELDED JOINTS AND SEAMS SHALL BE SEALED. THIS INCLUDES BUT IS NOT LIMITED TO TRANSVERSE JOINTS, LONGITUDINAL SEAMS, DUCT WALL PENETRATIONS, SPIN-INS, TAPS, AND OTHER BRANCH CONNECTIONS, ACCESS DOORS, ACCESS PANELS, AND DUCT CONNECTIONS TO EQUIPMENT. OPENINGS FOR ROTATING SHAFTS SHALL ALSO BE SEALED WITH BUSHINGS. REFER TO SPECIFICATION 23 31 13 METAL DUCTWORK FOR FURTHER INFORMATION.
13. ALL EXPOSED DUCTWORK AND PIPING WITH ASSOCIATED ACCESSORIES IN AREAS WITH NO CEILING OR PARTIAL CEILING SHALL BE PAINTED. REFER TO ARCHITECT FOR COLOR.
14. MECHANICAL CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR PRIOR TO ACTUAL INSTALLATION OF TEMPERATURE SENSORS AND HUMIDITY SENSORS.
15. PROVIDE REMOTE SPIN-IN DAMPER OPERATOR FOR SPIN-IN CONNECTIONS AND VOLUME DAMPERS LOCATED OVER GYPSUM CEILINGS.
16. PROVIDE AIRFOIL TYPE TURNING VANES IN ALL 90 DEGREE ELBOWS.
17. PROVIDE INSULATED ACCESS DOORS FOR DUCTWORK DOWNSTREAM OF AIR HANDLING UNITS AT EVERY 20'-0" TO FACILITATE DUCT CLEANING. PROVIDE ACCESS DOORS WITHIN 5'-0" OF EACH ELBOW.
18. COORDINATE LOCATIONS OF FLOOR AND WALL OPENINGS WITH ARCHITECT AND STRUCTURAL ENGINEER.
19. ALL CEILING MOUNTED AND WALL MOUNTED AIR DEVICE FINISHES SHALL MATCH ADJACENT ARCHITECTURAL SURFACE. CONTRACTOR SHALL COORDINATE COLOR WITH ARCHITECT.
20. NO PIPE HANGERS SHALL BE SPACED MORE THAN 10'-0" O.C. COMPLY WITH PIPE SPACING AS SPECIFIED IN THE PIPING SUPPORT SPECIFICATIONS.
21. ALL PIPING LOCATED INSIDE BUILDING SHALL BE SUPPORTED FROM THE STRUCTURE WITH SADDLE OR TRAPEZE HANGERS WITH ADJUSTABLE CLEVIS OR THREADED RODS.
22. MECHANICAL CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF ALL OUTSIDE AIR INTAKES TO MAINTAIN 15 FEET DISTANCE BETWEEN OUTSIDE AIR INTAKES AND ANY EXHAUST AIR OUTLET, FLUES OR PLUMBING VENTS.
23. MECHANICAL CONTRACTOR SHALL COORDINATE WITH PLUMBING CONTRACTOR FOR ALL CONDENSATE DRAIN PIPES CONNECTING TO A SINK DRAIN TAIL PIECE.
24. ALL KITCHEN GREASE EXHAUST DUCTWORK SHALL BE CONTINUOUSLY WELDED 16 GA. CARBON STEEL. ALL GREASE EXHAUST DUCTS SHALL BE WRAPPED WITH 3M 2 HR. FIRE RATED WRAP OR INSTALLED WITHIN A FIRE RATED ENCLOSURE.

# CONTROLS SCHEMATIC SYMBOLS LEGEND

| | |
|---|---|
| AI | ANALOG INPUT |
| AO | ANALOG OUTPUT |
| DI/BI | DIGITAL/BINARY INPUT |
| DO/BO | DIGITAL/BINARY OUTPUT |
| MD | ON-OFF MOTORIZED DAMPER |
| MMD | MODULATING TYPE MOTORIZED DAMPER |
| AFMS | AIR FLOW MEASURING STATION |
| MCV | CONTROL VALVE MODULATING TYPE |
| VFD | VARIABLE FREQUENCY DRIVE |
| CSR | CURRENT SENSING RELAY |
| FRZ | FREEZESTAT |
| HSL | HIGH STATIC LIMIT |
| SPT | STATIC PRESSURE TRANSMITTER |
| DPT | DIFFERENTIAL PRESSURE TRANSDUCER |
| FM | FLOW METER |
| FS | FLOW SWITCH |
| DAT | DISCHARGE AIR TEMPERATURE SENSOR |
| S | WALL SENSOR |
| T | THERMOSTAT |
| CO2 | CARBON DIOXIDE SENSOR |
| SP | SET POINT |
| S/A | SUPPLY AIR |
| R/A | RETURN AIR |
| O/A | OUTSIDE AIR |
| HC | HEATING COIL |
| CC | COOLING COIL |
| DX | DIRECT EXPANSION COOLING COIL |
| PICCV | PRESSURE INDEPENDENT CHARACTERIZED CONTROL VALVE |
| AFC | AIRFLOW CROSS |
| DPS | DIFFERENTIAL PRESSURE SWITCH |


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


78

REVISION:

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

SEAL:




MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

DATE: 01/05/2023

DRAWN BY: DBR

CHECKED BY: DBR

PROJECT NUMBER 218033.009

SHEET TITLE: MECHANICAL SYMBOL LEGEND

SHEET NUMBER: M0.01


DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

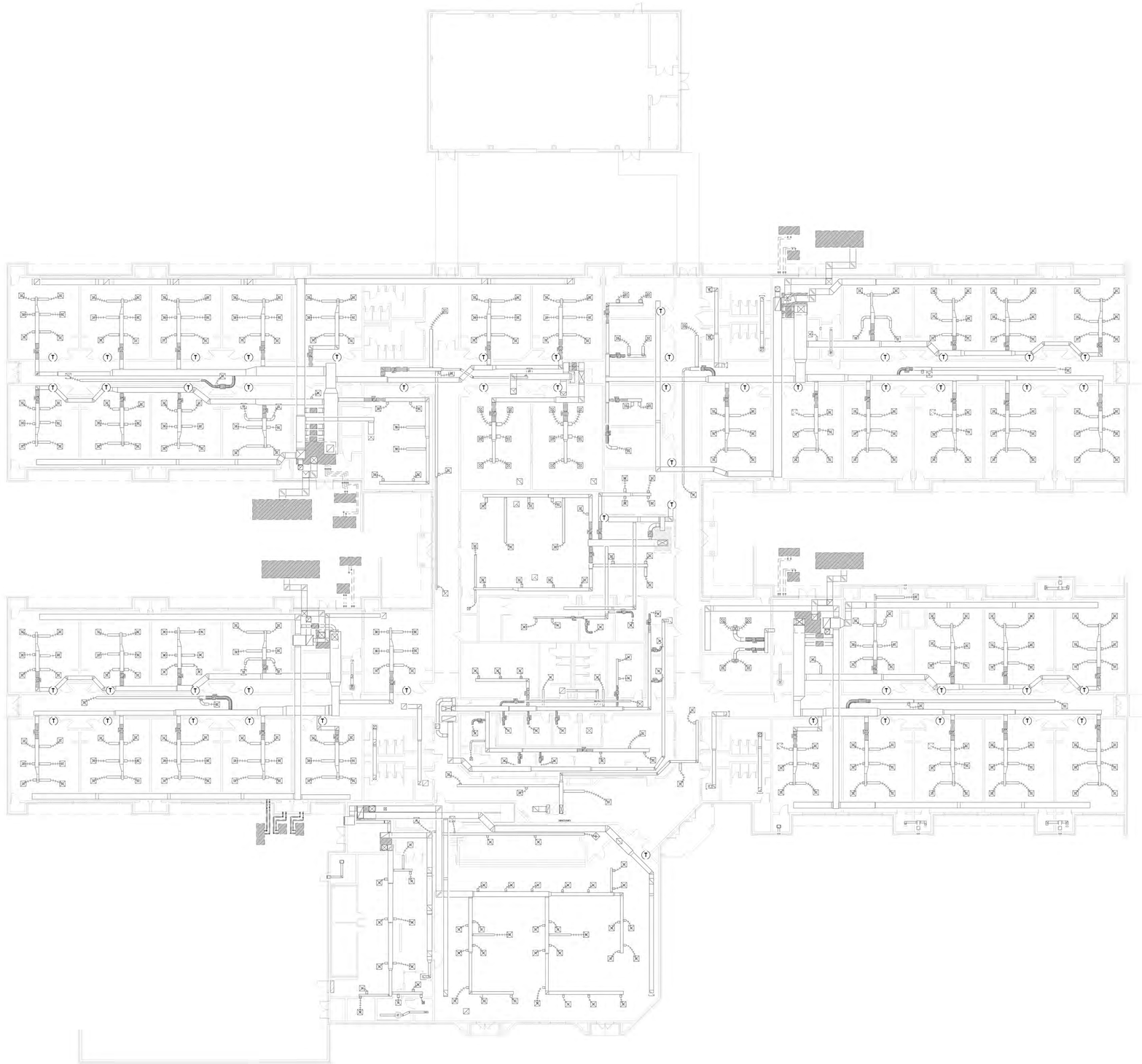

TBPE Firm Registration No. 2234

DBR Project Number 218033.009

| HA | RT | JR | | |
|---|---|---|---|---|

TN PN

1/5/2023 5:16:40 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt



1 MD2.11 **DEMO COMPOSITE MECHANICAL PLAN**
1/16" = 1'-0"

## MECHANICAL GENERAL DEMO NOTES

A. COORDINATE DEMOLITION WORK WITH ELECTRICAL AND OTHER DISCIPLINES AS REQUIRED.

B. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE VERIFIED EXISTING JOBSITE CONDITIONS DURING THE BIDDING PERIOD, SO THEY WILL HAVE DISCOVERED THE FULL SCOPE OF WORK INVOLVED WITH THE MODIFICATION OF THIS EXISTING SPACE. THE SCOPE OF THE WORK SHALL INCLUDE ALL MATERIALS FOR A COMPLETE INSTALLATION INCLUDING DEVICES, EQUIPMENT, OR APPARATUS WHICH MUST BE REROUTED, RELOCATED, OR REMOVED EITHER TEMPORARILY OR PERMANENTLY, OR WHICH MUST BE PROVIDED TO ACCOMMODATE THE INDICATED REMODELING. NOT ALL EXISTING CONDITIONS ARE NECESSARILY INDICATED ON THE DRAWINGS. ALL HVAC SHOWN ARE TAKEN FROM AS-BUILT HARDCOPY AND MUST BE FIELD VERIFIED.

C. WHEN AN EQUIPMENT IS IDENTIFIED TO BE REMOVED, THE OWNER HAS FIRST RIGHT OF REFUSAL BEFORE DISPOSING OF THAT EQUIPMENT. PROVIDE OWNER ONE WEEK NOTICE PRIOR TO DEMOLITION.

D. PROVIDE ALL NECESSARY CLEAR PATH TO MOVE DEMOLISHED EQUIPMENT OUT OF THE FACILITY AS WELL TO BRING NEW EQUIPMENT INTO THE BUILDING. MODIFY EXISTING PIPING, DUCTWORK CONDUITS, AS REQUIRED TO COMPLETE THE DEMOLITION.

## # MECHANICAL DEMO KEYED NOTES

1 DEMOLISH EXISTING THERMOSTAT AND CONDUCTORS. EXISTING J-BOX AND CONDUIT TO REMAIN FOR RE-USE.

2 DEMOLISH EXISTING SINGLE DUCT BOX IN ITS ENTIRETY. DEMOLISH ASSOCIATED EXISTING TEMPERATURE SENSOR. EXISTING ELECTRICAL DISCONNECT TO REMAIN FOR NEW SINGLE DUCT TERMINAL UNIT. DEMOLISH EXISTING DUCTWORK UP TO LOCATION INDICATED ON PLAN. ALL DOWNSTREAM SUPPLY DUCTWORK AND AIR DEVICES SHALL REMAIN. CONTRACTORSHALL FIELD VERIFY EXACT LOCATION OF TEMPERATURE SENSOR.

3 REFER TO ENLARGED MECHANICAL ROOM PLANS FOR MECHANICAL ROOM VIEWS CONTINUATION.

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f



**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.009

**SHEET TITLE:** DEMO COMPOSITE MECHANICAL PLAN

**SHEET NUMBER:** MD2.11

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

| DBR Project Number | 218033.009 |
|---|---|
| HA RT JR | |

TN PN

1/5/2023 5:17:42 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

## MECHANICAL GENERAL DEMO NOTES

A. COORDINATE DEMOLITION WORK WITH ELECTRICAL AND OTHER DISCIPLINES AS REQUIRED.

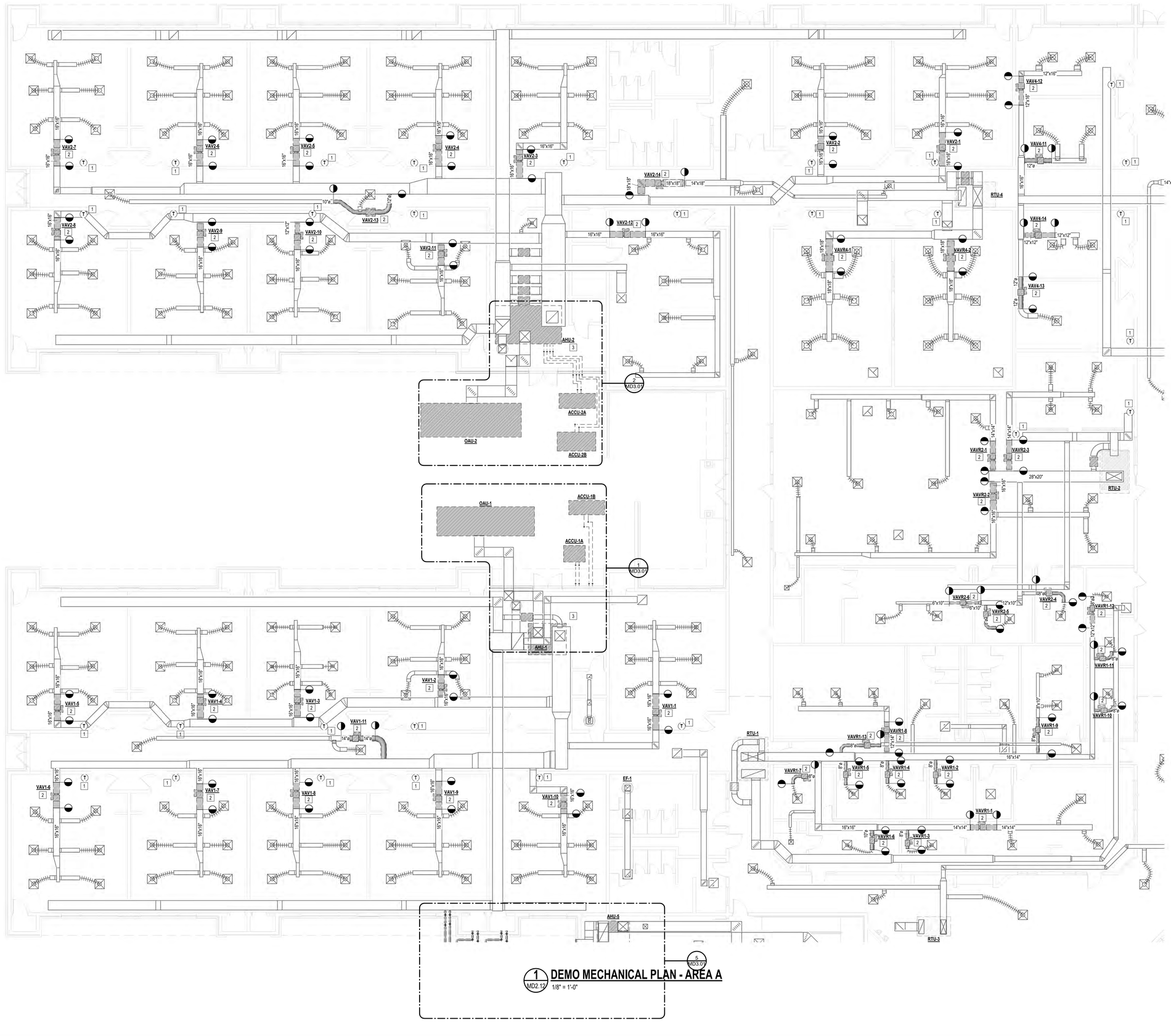
B. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE VERIFIED EXISTING JOBSITE CONDITIONS DURING THE BIDDING PERIOD, SO THEY WILL HAVE DISCOVERED THE FULL SCOPE OF WORK INVOLVED WITH THE MODIFICATION OF THIS EXISTING SPACE. THE SCOPE OF THE WORK SHALL INCLUDE ALL MATERIALS FOR A COMPLETE INSTALLATION INCLUDING DEVICES, EQUIPMENT, OR APPARATUS WHICH MUST BE REROUTED, RELOCATED, OR REMOVED EITHER TEMPORARILY OR PERMANENTLY, OR WHICH MUST BE PROVIDED TO ACCOMMODATE THE INDICATED REMODELING. NOT ALL EXISTING CONDITIONS ARE NECESSARILY INDICATED ON THE DRAWINGS. ALL HVAC SHOWN ARE TAKEN FROM AS-BUILT HARDCOPY AND MUST BE FIELD VERIFIED.

C. WHEN AN EQUIPMENT IS IDENTIFIED TO BE REMOVED, THE OWNER HAS FIRST RIGHT OF REFUSAL BEFORE DISPOSING OF THAT EQUIPMENT. PROVIDE OWNER ONE WEEK NOTICE PRIOR TO DEMOLITION.

D. PROVIDE ALL NECESSARY CLEAR PATH TO MOVE DEMOLISHED EQUIPMENT OUT OF THE FACILITY AS WELL TO BRING NEW EQUIPMENT INTO THE BUILDING. MODIFY EXISTING PIPING, DUCTWORK CONDUITS, AS REQUIRED TO COMPLETE THE DEMOLITION.

## # MECHANICAL DEMO KEYED NOTES

1. DEMOLISH EXISTING THERMOSTAT AND CONDUCTORS. EXISTING J-BOX AND CONDUIT TO REMAIN FOR RE-USE.
2. DEMOLISH EXISTING SINGLE DUCT BOX IN ITS ENTIRETY. DEMOLISH ASSOCIATED EXISTING TEMPERATURE SENSOR. EXISTING ELECTRICAL DISCONNECT TO REMAIN FOR NEW SINGLE DUCT TERMINAL UNIT. DEMOLISH EXISTING DUCTWORK UP TO LOCATION INDICATED ON PLAN. ALL DOWNSTREAM SUPPLY DUCTWORK AND AIR DEVICES SHALL REMAIN. CONTRACTORSHALL FIELD VERIFY EXACT LOCATION OF TEMPERATURE SENSOR.
3. REFER TO ENLARGED MECHANICAL ROOM PLANS FOR MECHANICAL ROOM VIEWS CONTINUATION.




1 MD2.12 **DEMO MECHANICAL PLAN - AREA A**
1/8" = 1'-0"


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.009

**SHEET TITLE:**
DEMO MECHANICAL PLAN - AREA A

**SHEET NUMBER:**
MD2.12

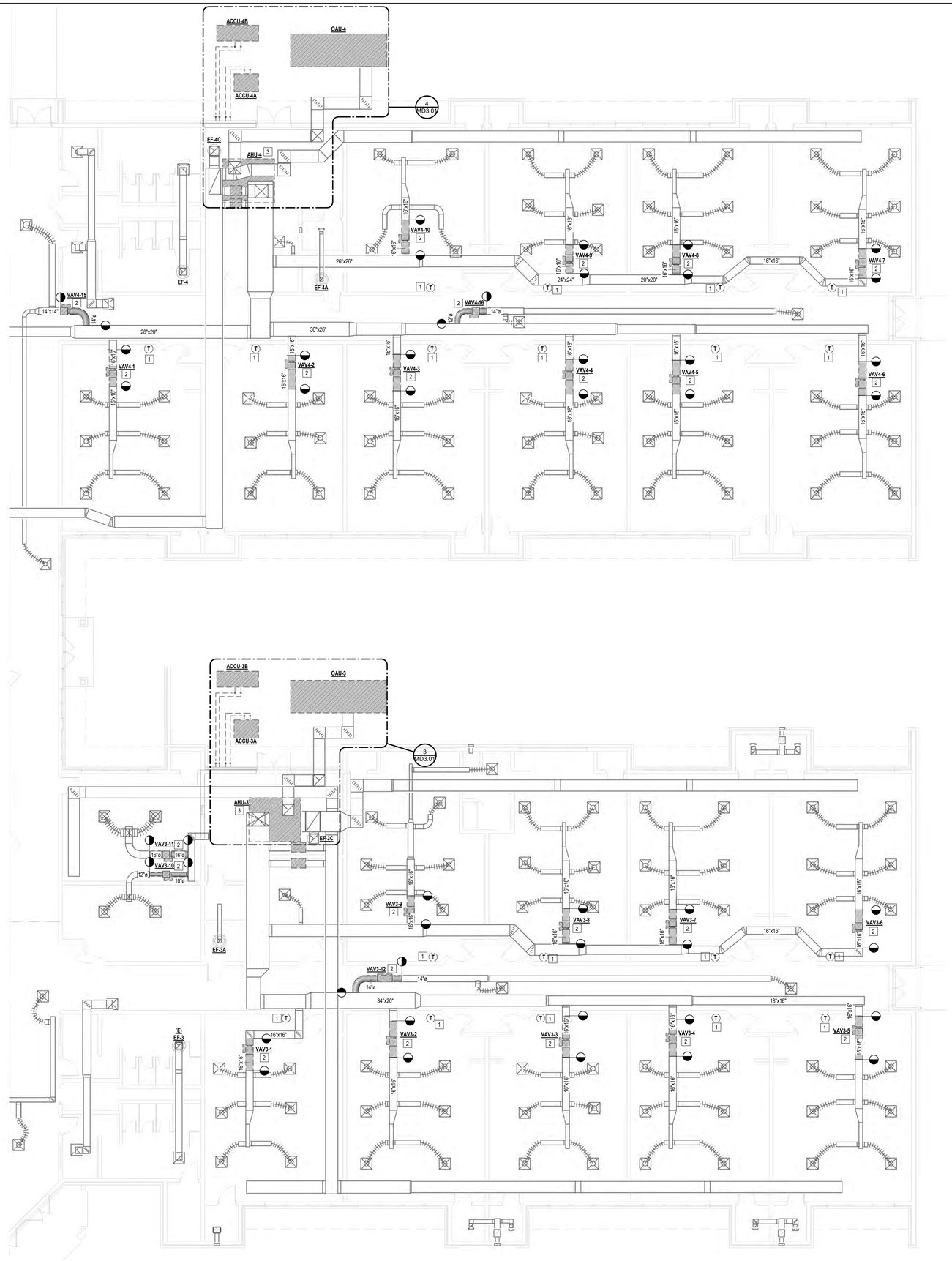

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234


DBR Project Number 218033.009

| HA | RT | JR | | |
|---|---|---|---|---|

TN PN


1/5/2023 5:17:55 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt




1 MD2.13 **DEMO MECHANICAL PLAN - AREA B**
1/8" = 1'-0"

## MECHANICAL GENERAL DEMO NOTES

A. COORDINATE DEMOLITION WORK WITH ELECTRICAL AND OTHER DISCIPLINES AS REQUIRED.

B. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE VERIFIED EXISTING JOBSITE CONDITIONS DURING THE BIDDING PERIOD, SO THEY WILL HAVE DISCOVERED THE FULL SCOPE OF WORK INVOLVED WITH THE MODIFICATION OF THIS EXISTING SPACE. THE SCOPE OF THE WORK SHALL INCLUDE ALL MATERIALS FOR A COMPLETE INSTALLATION INCLUDING DEVICES, EQUIPMENT, OR APPARATUS WHICH MUST BE REROUTED, RELOCATED, OR REMOVED EITHER TEMPORARILY OR PERMANENTLY, OR WHICH MUST BE PROVIDED TO ACCOMMODATE THE INDICATED REMODELING. NOT ALL EXISTING CONDITIONS ARE NECESSARILY INDICATED ON THE DRAWINGS. ALL HVAC SHOWN ARE TAKEN FROM AS-BUILT HARDCOPY AND MUST BE FIELD VERIFIED.

C. WHEN AN EQUIPMENT IS IDENTIFIED TO BE REMOVED, THE OWNER HAS FIRST RIGHT OF REFUSAL BEFORE DISPOSING OF THAT EQUIPMENT. PROVIDE OWNER ONE WEEK NOTICE PRIOR TO DEMOLITION.

D. PROVIDE ALL NECESSARY CLEAR PATH TO MOVE DEMOLISHED EQUIPMENT OUT OF THE FACILITY AS WELL TO BRING NEW EQUIPMENT INTO THE BUILDING. MODIFY EXISTING PIPING, DUCTWORK CONDUITS, AS REQUIRED TO COMPLETE THE DEMOLITION.

## # MECHANICAL DEMO KEYED NOTES

1 DEMOLISH EXISTING THERMOSTAT AND CONDUCTORS. EXISTING J-BOX AND CONDUIT TO REMAIN FOR RE-USE.

2 DEMOLISH EXISTING SINGLE DUCT BOX IN ITS ENTIRETY. DEMOLISH ASSOCIATED EXISTING TEMPERATURE SENSOR. EXISTING ELECTRICAL DISCONNECT TO REMAIN FOR NEW SINGLE DUCT TERMINAL UNIT. DEMOLISH EXISTING DUCTWORK UP TO LOCATION INDICATED ON PLAN. ALL DOWNSTREAM SUPPLY DUCTWORK AND AIR DEVICES SHALL REMAIN. CONTRACTORSHALL FIELD VERIFY EXACT LOCATION OF TEMPERATURE SENSOR.

3 REFER TO ENLARGED MECHANICAL ROOM PLANS FOR MECHANICAL ROOM VIEWS CONTINUATION.

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

B1

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.009

**SHEET TITLE:**

DEMO MECHANICAL PLAN - AREA B

**SHEET NUMBER:**

MD2.13

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

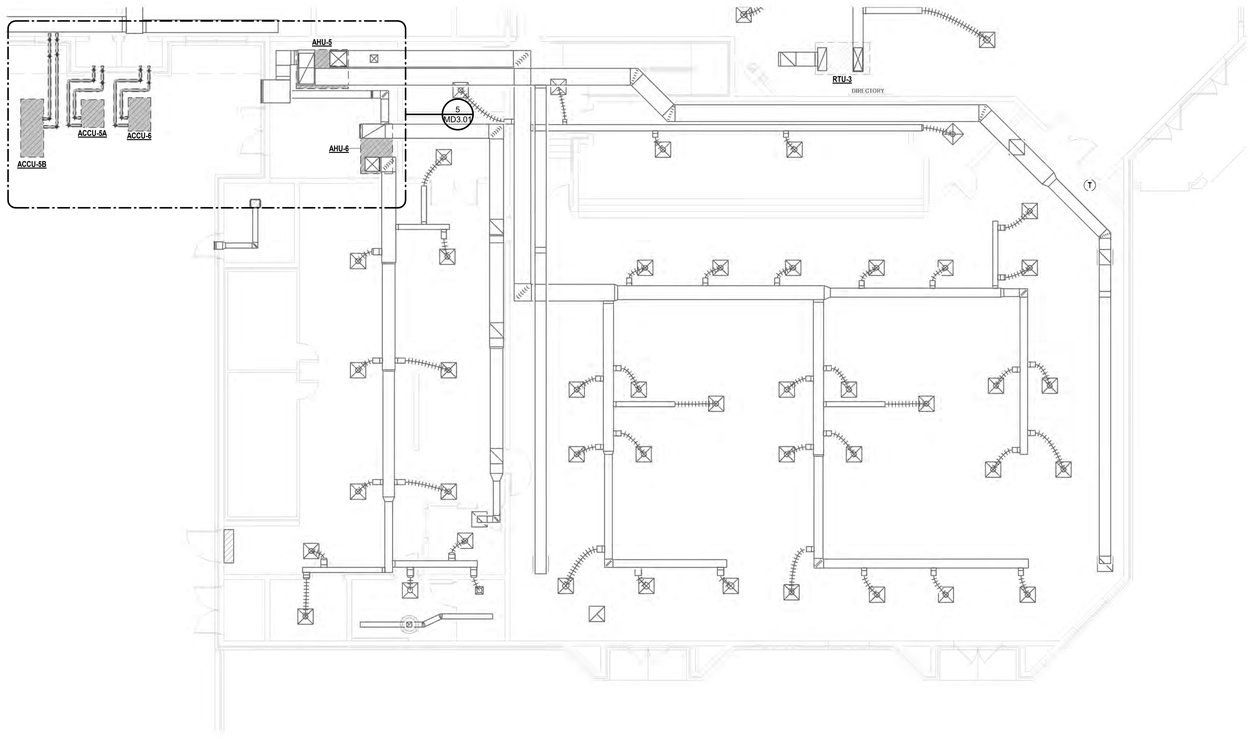
DBR Project Number 218033.009

| HA | RT | JR | | |
|---|---|---|---|---|

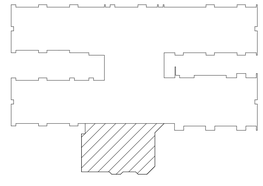
TN PN

1/5/2023 5:18:04 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

MECHANICAL KEYED NOTES




1 MD2.14 **DEMO MECHANICAL PLAN - AREA C**
1/8" = 1'-0"



TN PN

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
82

REVISION:

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

SEAL:

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.009

**SHEET TITLE:** DEMO MECHANICAL PLAN - AREA C

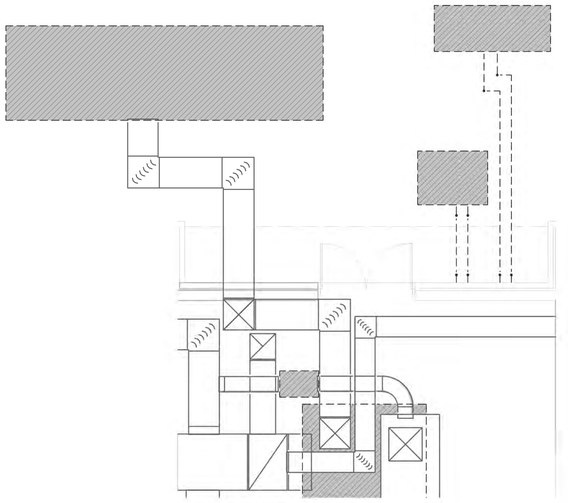
**SHEET NUMBER:** MD2.14

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

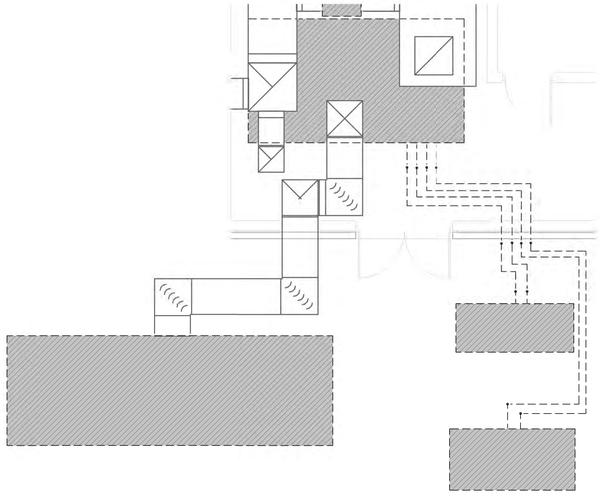
DBR Project Number 218033.009

| HA | RT | JR | | |
|---|---|---|---|---|

1/5/2023 5:18:10 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt



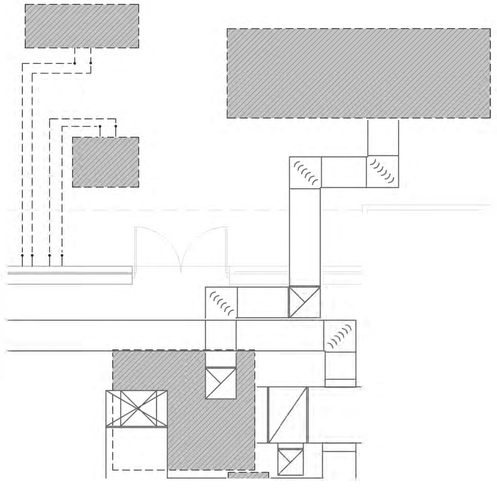
1 MD3.01 **DEMO MECHANICAL PLAN - AHU-1**
1/4" = 1'-0"



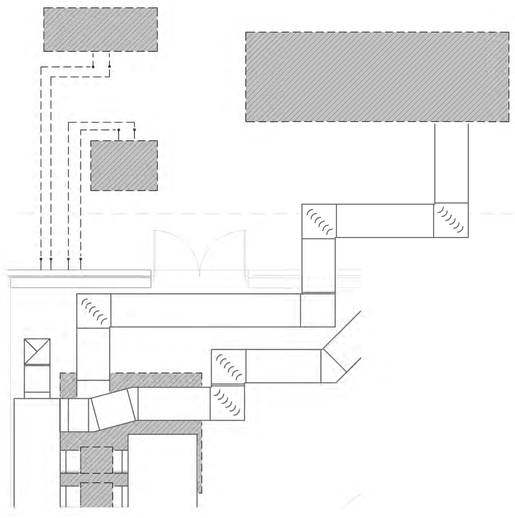
2 MD3.01 **DEMO MECHANICAL PLAN - AHU-2**
1/4" = 1'-0"

## MECHANICAL GENERAL NOTES

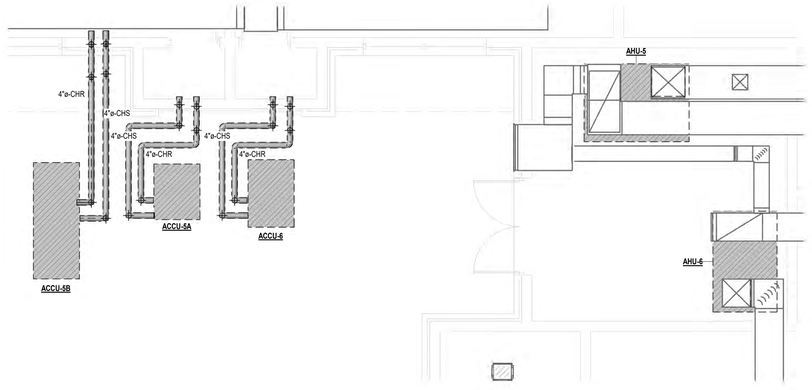
A. REFER TO SHEET M0.01 FOR GENERAL MECHANICAL NOTES.



3 MD3.01 **DEMO MECHANICAL PLAN - AHU-3**
1/4" = 1'-0"



4 MD3.01 **DEMO MECHANICAL PLAN - AHU-4**
1/4" = 1'-0"




5 MD3.01 **DEMO MECHANICAL PLAN - AHU-5-6**
1/4" = 1'-0"

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

83

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.009

**SHEET TITLE:**

DEMO MECHANICAL ENLARGE PLAN

**SHEET NUMBER:**

MD3.01

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.009

| HA | RT | JR | | |
|---|---|---|---|---|

TN PN

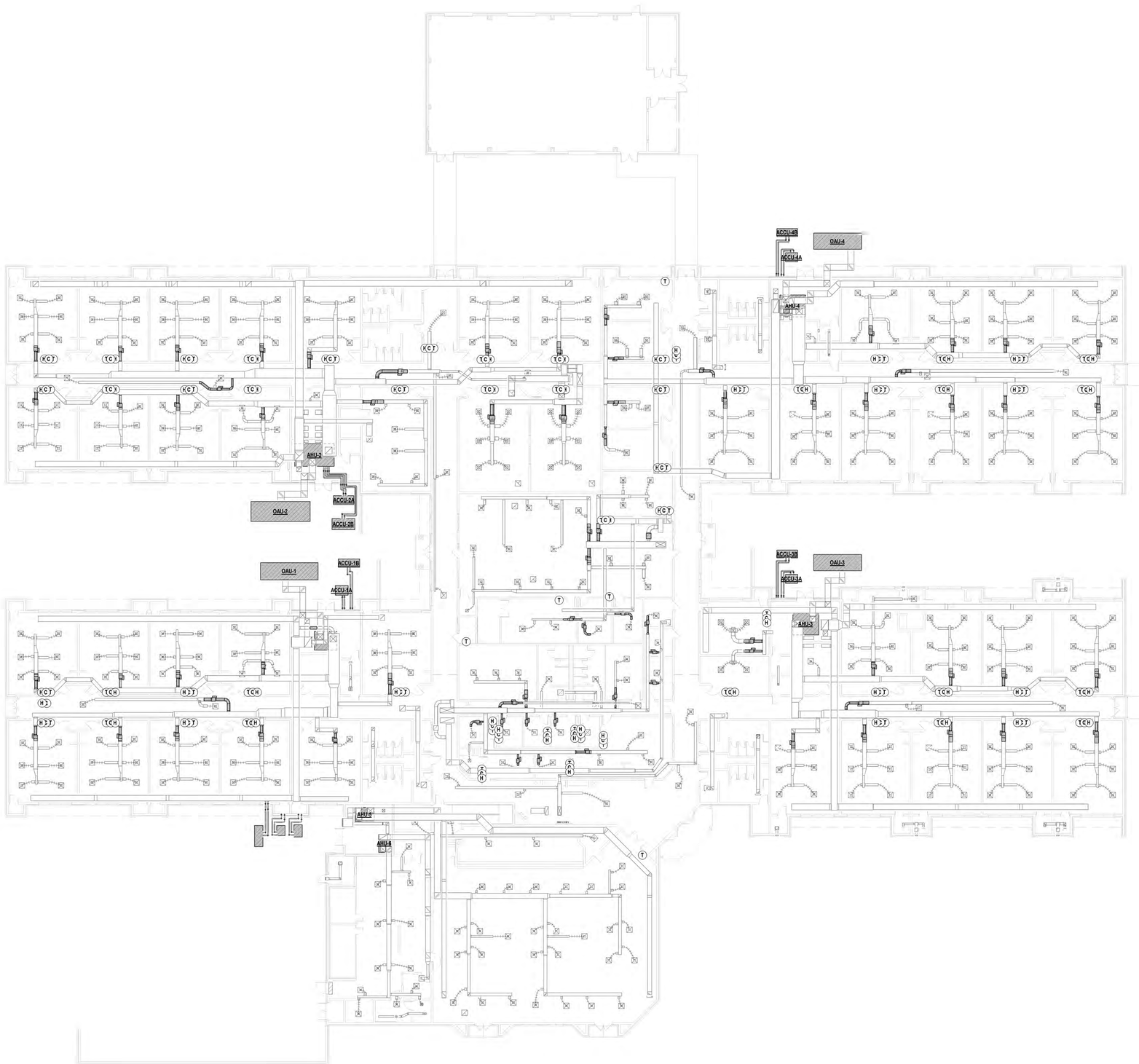
1/5/2023 5:18:20 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

## MECHANICAL GENERAL NOTES

A. REFER TO SHEET M0.01 FOR GENERAL MECHANICAL NOTES.

## MECHANICAL GENERAL NOTES

1. APPROXIMMATE LOCATION OF NEW SINGLE DUCT BOX. THE CONTRACTOR SHALL INSTALL A NEW SINGLE DUCT BOX IN THE EXISTING DUCTWORK. THE CONTSCTOR SHALL REMOVE AND PATCH EXISTING DUCTWORK AS NECESSARY. TYP.
2. NEW DDC TEMPERATURE, RELATIVE HUMITY, AND CO2 SENSORS.
3. REFER TO ENLARGED MECHANICAL ROOM PLANS FOR THE MECHANICAL ROOM VIEW CONTINUATION.




1 M2.11 **COMPOSITE MECHANICAL PLAN**
1/16" = 1'-0"


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


84

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.009

**SHEET TITLE:** COMPOSITE MECHANICAL PLAN

**SHEET NUMBER:** M2.11


DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


TBPE Firm Registration No. 2234

| DBR Project Number | 218033.009 |
|---|---|
| HA RT JR | |

TN PN


1/5/2023 5:16:51 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

## MECHANICAL GENERAL NOTES

A. REFER TO SHEET M0.01 FOR GENERAL MECHANICAL NOTES.

## MECHANICAL GENERAL NOTES

1. APPROXIMMATE LOCATION OF NEW SINGLE DUCT BOX. THE CONTRACTOR SHALL INSTALL A NEW SINGLE DUCT BOX IN THE EXISTING DUCTWORK. THE CONTSCTOR SHALL REMOVE AND PATCH EXISTING DUCTWORK AS NECESSARY. TYP.
2. NEW DDC TEMPERATURE, RELATIVE HUMITY, AND CO2 SENSORS.
3. REFER TO ENLARGED MECHANICAL ROOM PLANS FOR THE MECHANICAL ROOM VIEW CONTINUATION.

1 M2.12 **MECHANICAL PLAN - AREA A**
1/8" = 1'-0"

TN PN


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


85

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.009

**SHEET TITLE:** MECHANICAL PLAN - AREA A

**SHEET NUMBER:** M2.12

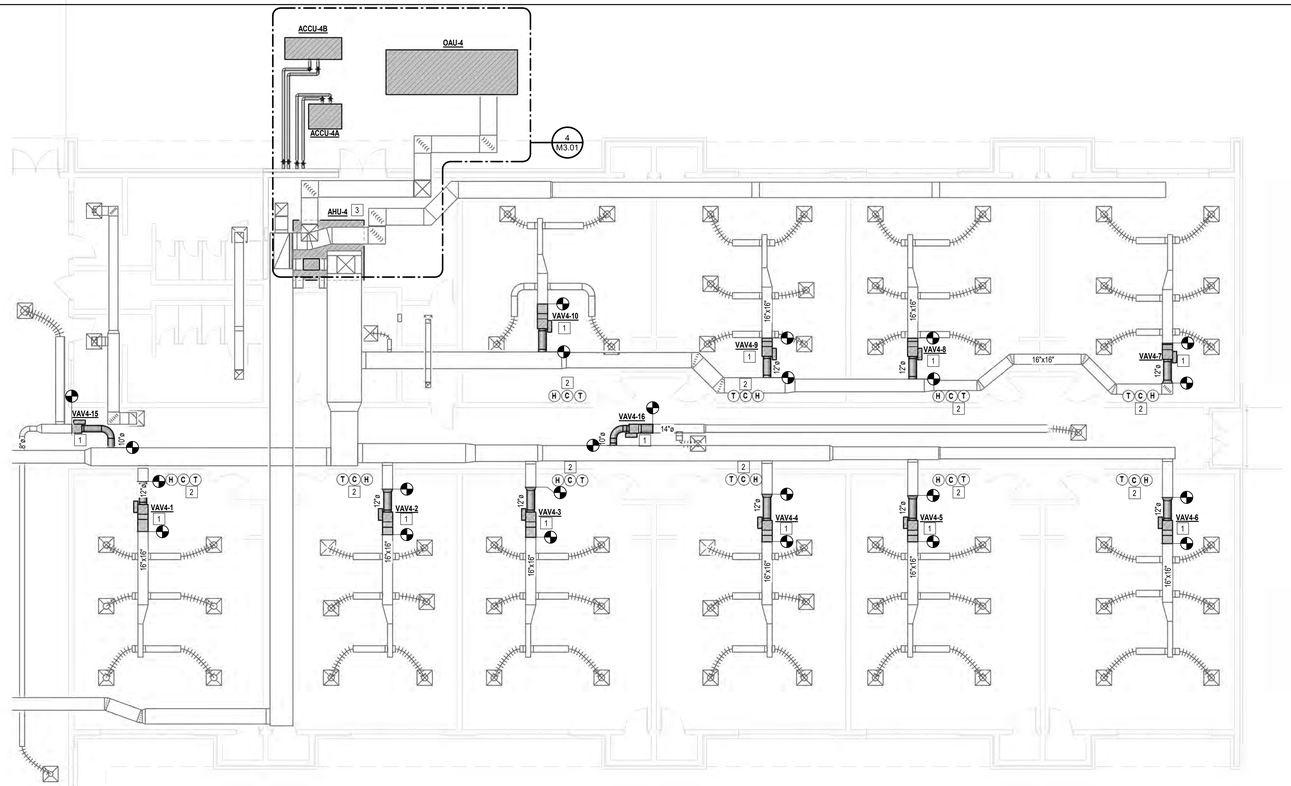

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

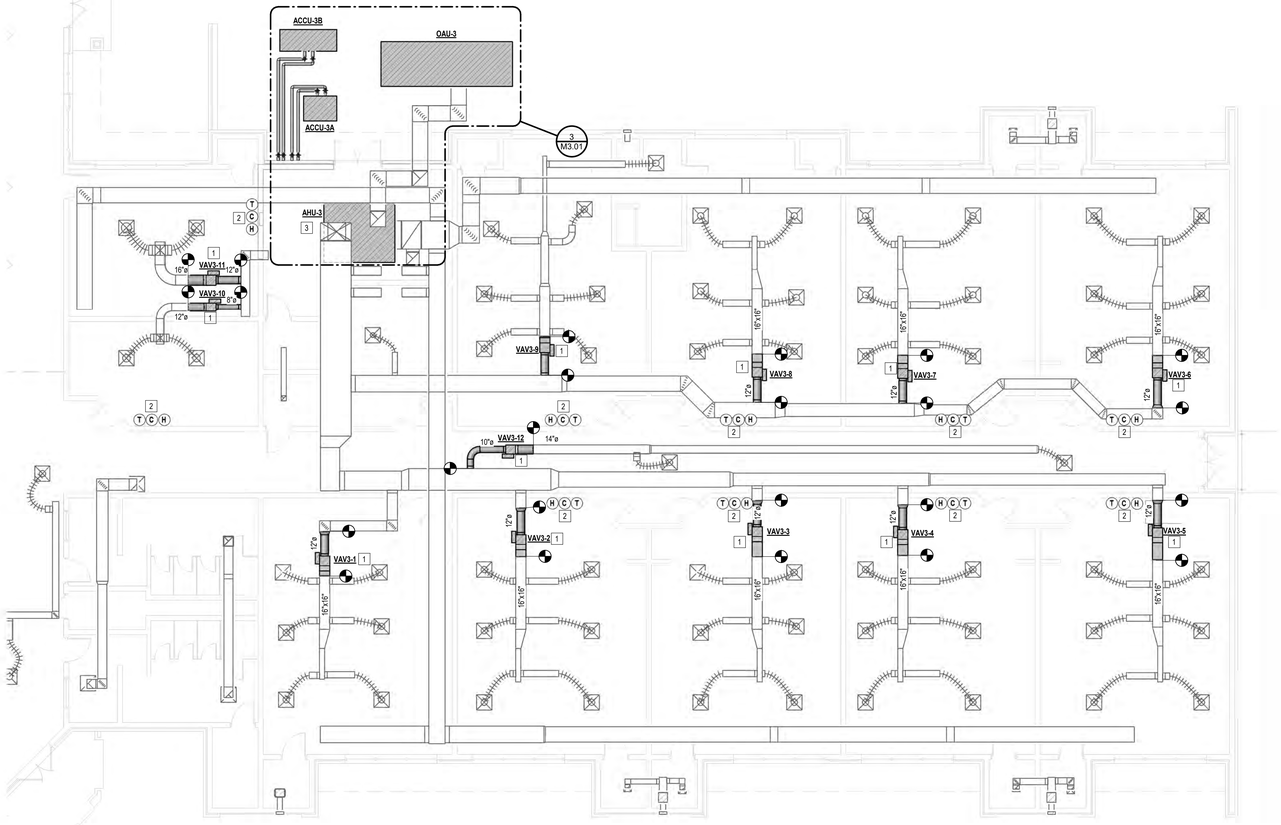

TBPE Firm Registration No. 2234

DBR Project Number 218033.009

HA | RT | JR


1/5/2023 5:17:01 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt




## MECHANICAL GENERAL NOTES

A. REFER TO SHEET M0.01 FOR GENERAL MECHANICAL NOTES.

## #MECHANICAL KEYED NOTES

1. APPROXIMMATE LOCATION OF NEW SINGLE DUCT BOX. THE CONTRACTOR SHALL INSTALL A NEW SINGLE DUCT BOX IN THE EXISTING DUCTWORK. THE CONTSCTOR SHALL REMOVE AND PATCH EXISTING DUCTWORK AS NECESSARY. TYP.
2. NEW DDC TEMPERATURE, RELATIVE HUMITY, AND CO2 SENSORS.
3. REFER TO ENLARGED MECHANICAL ROOM PLANS FOR THE MECHANICAL ROOM VIEW CONTINUATION.

1 M2.13 **MECHANICAL PLAN - AREA B**
1/8" = 1'-0"


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f




**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.009

**SHEET TITLE:** MECHANICAL PLAN - AREA B

**SHEET NUMBER:** M2.13


DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


TBPE Firm Registration No. 2234

DBR Project Number 218033.009

| HA | RT | JR | | |
|---|---|---|---|---|

TN PN

1/5/2023 5:17:10 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

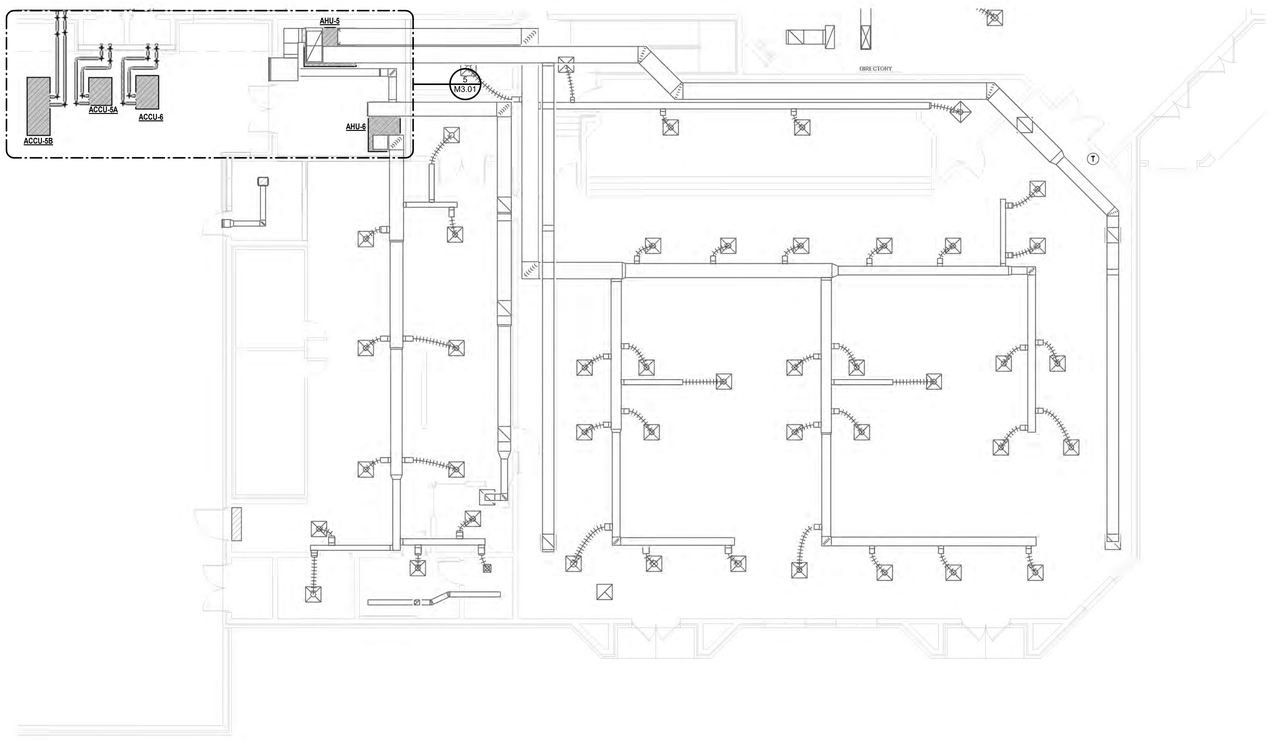
## MECHANICAL GENERAL NOTES

A. REFER TO SHEET M0.01 FOR GENERAL MECHANICAL NOTES.

## #MECHANICAL KEYED NOTES

1 NEW DDC TEMPERATURE, RELATIVE HUMITY, AND CO2 SENSORS.

2 REFER TO ENLARGED MECHANICAL ROOM PLANS FOR THE MECHANICAL ROOM VIEW CONTINUATION.




1 M2.14 **MECHANICAL PLAN - AREA C**
1/8" = 1'-0"

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

87

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.009

**SHEET TITLE:** MECHANICAL PLAN - AREA C

**SHEET NUMBER:** M2.14

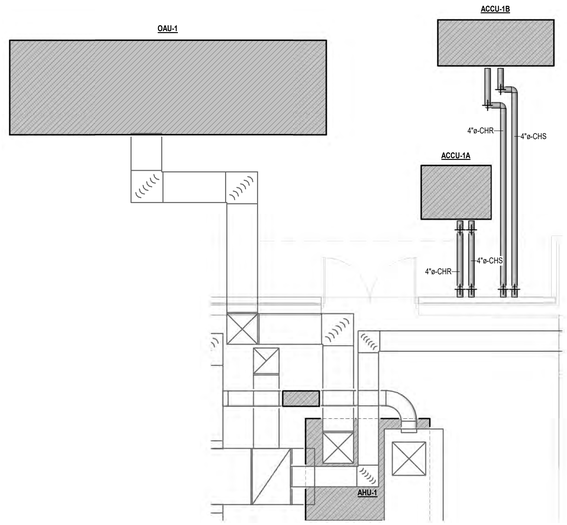
DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.009

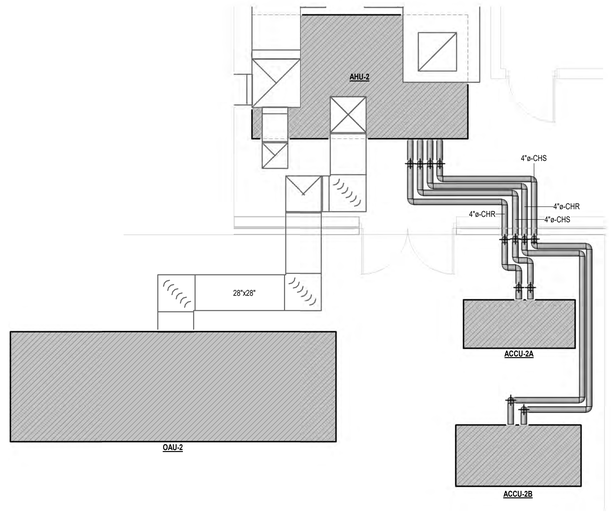
HA | RT | JR

TN PN

1/5/2023 5:17:16 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt



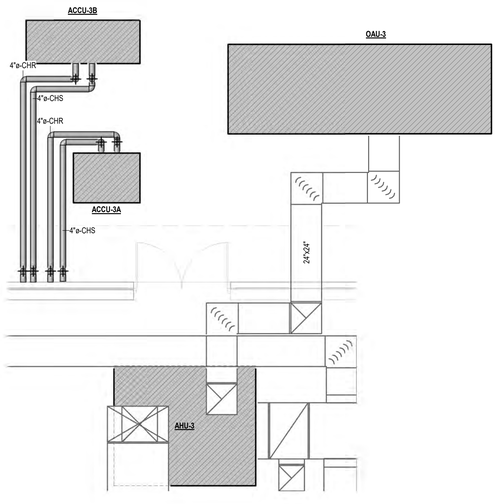

1 M3.01 **MECHANICAL PLAN - AHU-1**
1/4" = 1'-0"



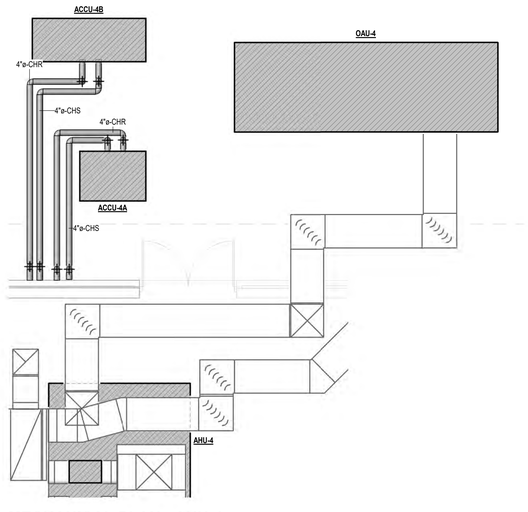

2 M3.01 **MECHANICAL PLAN - AHU-2**
1/4" = 1'-0"

## MECHANICAL GENERAL NOTES

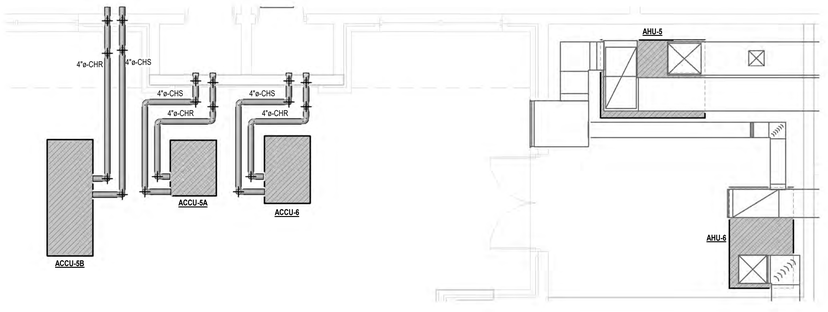
A. REFER TO SHEET M0.01 FOR GENERAL MECHANICAL NOTES.




3 M3.01 **MECHANICAL PLAN - AHU-3**
1/4" = 1'-0"




4 M3.01 **MECHANICAL PLAN - AHU-4**
1/4" = 1'-0"




5 M3.01 **MECHANICAL PLAN - AHU-5-6**
1/4" = 1'-0"

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.009

**SHEET TITLE:** MECHANICAL ENLARGE PLAN

**SHEET NUMBER:** M3.01

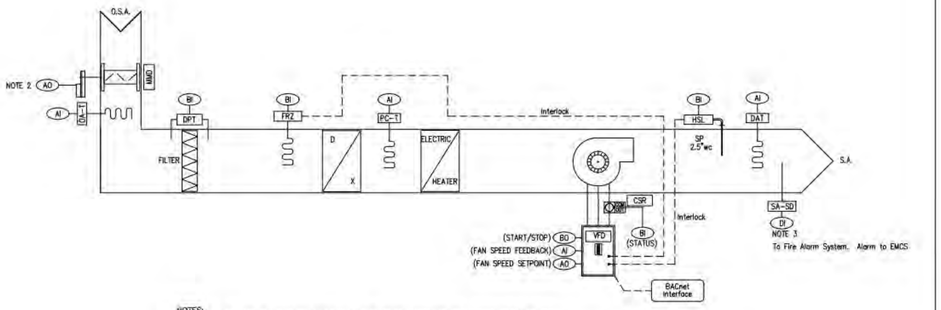
DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.009

| HA | RT | JR | | |
|---|---|---|---|---|

TN PN

1/5/2023 5:17:26 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt




NOTES:
1. Provide coil control valve as indicated in mechanical schedules and control specifications.
2. Damper provided and installed by mechanical contractor, wired by mechanical contractor, and controlled thru EMCS.
3. Wire to fire alarm system. Alarm to EMCS. Duct smoke detectors provided by fire alarm contractor and installed be mechanical contractor. Existing duct smoke detectors may be re-used where possible.

System Off - When the system is off:
The outside air damper shall be closed.
The supply air fan shall be off.
The chilled water coil valve shall be closed.
The hot water coil valve(s) shall be closed.
The control loops shall be disabled.

System Start-up - System start-up shall be initiated:
By an operator entered manual command at the EMCS.
Automatically by the EMCS based on Pre-Start Mode or Night-Setback Mode.

Pre-Start Mode:
The system shall be enabled by an operator entered manual command at the EMCS or automatically by the EMCS based on the Optimal Start/Stop algorithm. Once enabled, the system shall operate per the System Operation section as detailed below. Operation of the system during Pre-Start Mode shall not include ventilation air.

Night-Setback Mode:
The system shall be enabled automatically by the EMCS when the space temperature drifts outside the active Unoccupied Cooling or Heating Setpoint. Once enabled, the system shall operate per the System Operation section as detailed below. Operation of the system during Night-Setback Mode shall not include ventilation air.

System Operation - When system start-up has been initiated:
The variable speed supply air fan shall start. Following a confirmation of fan start status, the supply fan shall initially be indexed to its maximum scheduled flow. The speed of the fan shall remain constant.

OUTSIDE AIR CFM AND DAMPER CONTROL: When the system is commanded to start, the EMCS shall index the outside air damper to the scheduled maximum outside airflow rate as measured and balanced by TAB Contractor.

The outside air temperature shall determine whether the unit is in HEATING, COOLING, OR DEHUMIDIFICATION.

A. When outside air is 72°F or above, unit shall enter COOLING mode. In this mode, supply fan shall be running, the EMCS shall modulate the compressor e as required to provide a 55°F coil discharge air temperature. The hot water coil control valve shall then modulate to provide a supply air temperature of 65°F.

B. When outside air temperature is greater than 55°F and less than 72°F, unit shall operate in DEHUMIDIFICATION mode. In this mode, supply fan shall be running, the EMCS shall modulate the compressor as required to provide 55°F coil discharge air temperature. The heating coil shall then modulate to provide a supply air temperature of 65°F.

C. When outside air temperature is below 55°F, unit shall operate in HEATING mode. In this mode, supply fan shall be running, cooling shall be disabled, and heating coil shall modulate to provide a 65°F supply air temperature.

System Setpoints - The setpoints for the system shall be determined as follows:
The maximum speed reference value shall be the VFD speed required to obtain the design supply airflow value from the unit schedule on the Mechanical Drawings.

The heating coil discharge air temperature setpoint shall be set at 55°F (adj) with a low-limit alarm of 48°F (adj).
The re-heat coil discharge air temperature setpoint shall be set at 65°F (adj) with a high-limit alarm of 80°F (adj).
The minimum outside air flowrate setpoint shall be set at the scheduled minimum flowrate from the unit schedule on the mechanical drawings.
The maximum outside air flowrate setpoint shall be set at the scheduled maximum flowrate from the unit schedule on the mechanical drawings.
The supply duct static pressure high-limit setpoint shall be set at 2.0 in. wc. (adj).
The air filter pressure differential high-limit setpoint shall be set at 1.0 in. wc. (adj).
The freeze-stat low-limit trip setpoint shall be set at 37°F(adj).

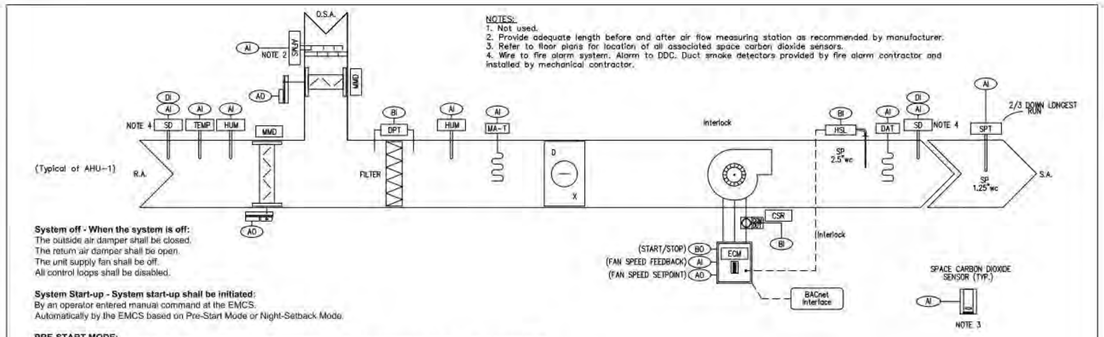
System Shutdown - System shutdown shall be initiated:
By operator entered manual command at the EMCS.
Automatically by the EMCS based on Night-Setback or Time of Day schedule.
Automatically by the high-static pressure shut down.
Automatically by the unit freeze-stat shut down.
Automatically by a supply fan current sensor status failure.

System Alarms - The EMCS shall generate an alarm condition for each of the following:
If the supply air temperature drops below the chilled water coil discharge air temperature low-limit for 5 minutes (adj).
If the supply air temperature rises above the heating coil discharge air temperature high-limit for 5 minutes (adj).
If the supply duct static pressure exceeds the high-limit setpoint.
If the filter differential pressure exceeds the trip point.
If the unit freeze-stat trips.
If the current sensor relay indicates a supply fan failure status.
All alarms shall be inhibited when the supply fan is not operating except the space temperature alarms. The alarms, except the fan failure and the space temperature alarms, shall remain inhibited following startup of the unit for 2 minutes.

**1 Outside Air AHU - Control Schematic and Sequence of Operations**
NOT TO SCALE

- AI — ANALOG INPUT
- AO — ANALOG OUTPUT
- DI/BI — DIGITAL/BINARY INPUT
- DO/BO — DIGITAL/BINARY OUTPUT
- MD — ON-OFF MOTORIZED DAMPER
- MMD — MODULATING TYPE MOTORIZED DAMPER
- AFMS — AIR FLOW MEASURING STATION
- MCV — CONTROL VALVE MODULATING TYPE
- VFD — VARIABLE FREQUENCY DRIVE
- CSR — CURRENT SENSING RELAY
- FRZ — FREEZESTAT
- HSL — HIGH STATIC LIMIT
- SPT — STATIC PRESSURE TRANSMITTER
- DPT — DIFFERENTIAL PRESSURE TRANSDUCER
- FM — FLOW METER
- FS — FLOW SWITCH
- DAT — DISCHARGE AIR TEMPERATURE SENSOR
- S T — WALL SENSOR/THERMOSTAT
- CO2 — CARBON DIOXIDE SENSOR
- SP — SET POINT
- S/A — SUPPLY AIR
- R/A — RETURN AIR
- O/A — OUTSIDE AIR
- HC — HEATING COIL
- CC — COOLING COIL
- DX — DIRECT EXPANSION COOLING COIL
- PICCV — PRESSURE INDEPENDENT CHARACTERIZED CONTROL VALVE
- AFC — AIRFLOW CROSS
- DPS — DIFFERENTIAL PRESSURE SWITCH

**2 CONTROL SCHEMATIC LEGEND**
NOT TO SCALE




NOTES:
1. Not used.
2. Provide adequate length before and after air flow measuring station as recommended by manufacturer.
3. Refer to floor plans for location of all associated space carbon dioxide sensors.
4. Wire to fire alarm system. Alarm to DDC. Duct smoke detectors provided by fire alarm contractor and installed by mechanical contractor.

**System off - When the system is off:**
The outside air damper shall be closed.
The return air damper shall be open.
The unit supply fan shall be off.
All control loops shall be disabled.

**System Start-up - System start-up shall be initiated:**
By an operator entered manual command at the EMCS.
Automatically by the EMCS based on Pre-Start Mode or Night-Setback Mode.

**PRE-START MODE:**
The system shall be enabled by an operator entered manual command at the EMCS or automatically by the EMCS based on the Optimal Start/Stop algorithm. Once enabled, the system shall operate per the **System Operation** section, as detailed below. Operation of the system during Pre-Start Mode shall not include ventilation air.

**NIGHT-SETBACK MODE:**
The system shall be enabled automatically by the EMCS based on the cooling demand of 5 (adjustable) or more associated terminal units whose space temperature has exceeded the terminal units Unoccupied Cooling Setpoint. Once enabled, the system shall operate per the **System Operation** section, as detailed below. Operation of the system during Night-Setback Mode shall not include ventilation air.

**OCCUPIED MODE:**
The system shall be enabled automatically by the EMCS based on the actual space occupancy. When the Time of Day schedule (TOD) is active, the system shall operate per the **System Operation** section, as detailed below, and the Demand Control Ventilation sequence shall be active.

Demand Control Ventilation - The outside air intake damper shall be modulated to maintain the scheduled minimum outside air flowrate setpoint. If the space carbon dioxide concentration for any zone served by the associated AHU is above the defined high-limit, then the OSA damper shall be modulated to maintain the scheduled maximum outside air flowrate setpoint. If the OSA damper is above 95% open and the maximum outside air flowrate setpoint cannot be met, then modulate the return air damper closed until the flowrate is achieved. Do not modulate the return air damper to less than 60% open. Once the space carbon dioxide concentration for all associated zones has been below the defined high limit for 5 minutes (adj.), the OSA damper shall be modulated to maintain the scheduled minimum outside air flowrate setpoint.

**System Operation - When system start-up has been initiated:**
The variable speed supply fans shall start at its minimum speed. Following a confirmation of fan start status, the supply fans speed shall be modulated in parallel to maintain the supply air static pressure at setpoint. The speed of the fans shall not be adjusted by more than 20% in any one-minute period. The static pressure setpoint shall be reset via the control algorithm below to optimize the energy usage.

Supply Air Static Pressure Reset - The static pressure setpoint shall be reset up in defined increments at defined intervals until the primary air damper position to all of the associated terminal units have been below the defined value for more than the defined interval. The static pressure setpoint shall be reset down in defined increments at defined intervals until the primary air damper position to at least one (critical zone) of the associated terminal units has been above the defined value for more than the defined interval. The setpoints are detailed in the **System Setpoint** section below.

Temperature Control - The VRF coil shall be modulated to maintain the active supply air temperature setpoint. The supply air temperature setpoint shall be reset via the control algorithm below to optimize the energy usage.

Supply Air Temperature Reset - The supply air temperature setpoint shall be reset based on the actual return air temperature, according to the defined reset schedule detailed in the **System Setpoint** section below. If the Demand Control Ventilation sequence is in maximum flow mode, then the supply air temperature reset shall be disabled and the setpoint shall be set to the initial value.

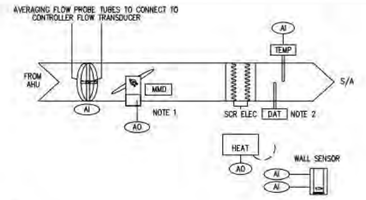
Humidity Control - A return air, duct mounted, humidity sensor shall monitor the R/A relative humidity to 50% (ADJ.). When return air relative humidity is above setpoint by 5% (not to exceed 60%), the VRF coil shall modulate to provide 50°F cooling coil discharge temperature and signal the terminal units to go into humidity control. When relative humidity attains set point, the system will return to normal operation.

**System Setpoints - The setpoints for the system shall be determined as follows:**
The maximum speed reference value shall be the ECM speed required to obtain the design supply airflow value from the unit schedule on the Mechanical Drawings.
The minimum speed reference value shall be ECM speed required to obtain 50% of the design supply airflow value from the unit schedule on the mechanical drawings but not less than the active outside air flow rate setpoint.
The supply air static pressure setpoint shall be set initially at 1.25 inches w.c. (adj) and shall have reset limits of 0.20 to 2.00 inches w.c. (adj).
The time interval for static pressure reset shall be set at 10 minutes (adj).
The static pressure reset increment shall be set at 0.05 inches w.c. (adj)
The terminal unit primary damper position setpoint shall be 90% open. (adj)
The time interval for terminal unit primary damper position shall be set at 15 minutes. (adj)
The supply air temperature setpoint shall be set initially at 54 °F. (adj)
The supply air temperature setpoint shall be reset to 54 °F (adj) when the return air temperature is at 78 °F. (adj)
The supply air temperature setpoint shall be reset to 58 °F (adj) when the return air temperature is at 72 °F. (adj)
The minimum outside air flowrate setpoint shall be set at the scheduled minimum flowrate from the unit schedule on the mechanical drawings.
The maximum outside air flowrate setpoint shall be set at the scheduled maximum flowrate from the unit schedule on the mechanical drawings.
The space carbon dioxide high-limit setpoint shall be set at 1000 ppm (adj).
The supply duct static pressure high-limit setpoint shall be set at 2.0 in. wc. (adj).
The air filter pressure differential high-limit setpoint shall be set at 1.0 in. wc. (adj).

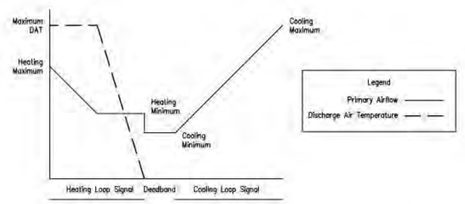
**System Shutdown - System shutdown shall be initiated:**
By operator entered manual command at the EMCS.
Automatically by the EMCS based on Night-Setback or Time of Day schedule.
Automatically by the high-static pressure shut down.
Automatically by a supply fan current sensor status failure.

**System Alarms - The EMCS shall generate an alarm if:**
If the supply air temperature is outside the limits, which shall be set at +/- 5 °F around setpoint.
If any associated space carbon dioxide level exceeds its high-limit for more than 20 minutes (adj) or exceeds the high-limit by 10% or more.
If the supply duct static pressure exceeds the high-limit setpoint.
If the filter differential pressure exceeds the trip point.
If the current sensor relay indicates a supply fan failure status.
If return air RH is 60% or above.
All alarms shall be inhibited when the supply fan is not operating.

**3 MULTIZONE VAV Air Handling Unit - Control Schematic and Sequence of Operations**
NOT TO SCALE




NOTES:
1. TERMINAL UNIT CONTROLLER AND DAMPER ACTUATOR SHALL BE SHIPPED TO THE TERMINAL UNIT MANUFACTURER FOR MOUNTING AND WIRING.
2. DAT SENSOR SUPPLIED BY UNIT VENDOR AND MOUNTED BY EMCS CONTRACTOR.




**System Off - When the system is off:**
The primary air damper shall be closed.
The heating coil shall be disabled.
The control loops shall be disabled.

**System Startup - Startup shall be initiated automatically by the EMCS:**
In Unoccupied when the corresponding AHU is in UNOCCUPIED MODE.
In Occupied when the corresponding AHU is in PRE-START MODE.
In Unoccupied when the corresponding AHU is in NIGHT-SETBACK MODE
In Occupied when the corresponding AHU is in OCCUPIED MODE.

**System Operation - When system start-up has been initiated, the following sequences shall be implemented:**
The primary air damper shall be modulated between the cooling minimum and maximum flow values to maintain the space temperature within +/- 0.5 °F of the active Cooling Setpoint. When the space temperature falls below the deadband, the primary air damper shall modulate to maintain the heating minimum flow value and the SCR electric heat shall be modulated to maintain the space temperature within +/- 0.5 °F of the active Heating Setpoint.
If the space temperature drops below the active Heating Setpoint and the discharge air temperature is at its active setpoint, the primary air damper shall be modulated between the heating minimum and maximum heating flow values to maintain the space temperature within +/- 0.5°F of the active Heating Setpoint and the SCR electric heat shall be modulated to maintain the discharge air temperature setpoint. The SCR electric heat controller shall be set to maintain a maximum discharge air temperature of 85 °F (adjustable). When relative humidity, as determined by either space or AHU return air relative humidity sensor is above setpoint by 5% (not to exceed 60%) in any conditioning mode, terminal unit damper shall modulate to 50% of scheduled cooling CFM and electric heater shall modulate to maintain programmed or override temperature. Unit shall operate in this mode until return air relative humidity attains setpoint.

**System Setpoints - The setpoints for the system shall be set as follows:**
The Occupied Heating Setpoint shall be set initially at 70 °F (adjustable).
The Occupied Cooling Setpoint shall be set initially at 74 °F (adjustable).
The Unoccupied Heating Setpoint shall be set initially at 55 °F (adjustable).
The Unoccupied Cooling Setpoint shall be set initially at 85 °F (adjustable).
The maximum heating mode discharge air temperature shall be set at 85 °F (adjustable).
The minimum and maximum primary air flowrates shall set at the values given in the Mechanical Drawings.

**System Alarms - The EMCS shall generate an alarm as follows:**
If the space temperature during the Occupied Mode is 5 °F above the cooling setpoint or 5 °F below the heating setpoint respectively.

**4 VAV Terminal Unit with Electric Reheat - Control Schematic and Sequence of Operations**
NOT TO SCALE

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

89

REVISION:

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

SEAL:

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

DATE: 01/05/2023

DRAWN BY: DBR

CHECKED BY: DBR

PROJECT NUMBER 218033.009

SHEET TITLE: MECHANICAL FLOW DIAGRAMS

SHEET NUMBER: M4.01

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.009

| HA | RT | JR | | |
|---|---|---|---|---|

TN PN

1/5/2023 5:17:27 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

## SINGLE INLET VAV BOX WITH REHEAT SCHEDULE

| MARK | COOLING CFM | | HEATING CFM | | REHEAT | INLET SIZE | VOLTS/PHASE/HZ | MANUFACTURER | MODEL |
|---|---|---|---|---|---|---|---|---|---|
| | MAX. | MIN. | MAX. | MIN. | KW | | | | |
| VAV1-1 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV1-2 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV1-3 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV1-4 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV1-5 | 1,380 | 415 | 690 | 415 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV1-6 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV1-7 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV1-8 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV1-9 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV1-10 | 870 | 265 | 435 | 265 | 5 | 10"Ø | 480/3/60 | ETI | SDR |
| VAV1-11 | 1,110 | 335 | 555 | 335 | 3 | 12"Ø | 480/3/60 | ETI | SDR |
| | | | | | | | | | |
| VAV2-1 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV2-2 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV2-3 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV2-4 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV2-5 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV2-6 | 1,380 | 415 | 690 | 415 | 6 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV2-7 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV2-8 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV2-9 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV2-10 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV2-11 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV2-12 | 1,470 | 445 | 735 | 445 | 7 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV2-13 | 600 | 180 | 300 | 180 | 4 | 8"Ø | 480/3/60 | ETI | SDR |
| VAV2-14 | 1,795 | 540 | 900 | 540 | 8 | 14"Ø | 480/3/60 | ETI | SDR |
| | | | | | | | | | |
| VAV3-1 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV3-2 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV3-3 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV3-4 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV3-5 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV3-6 | 1,410 | 425 | 705 | 425 | 7 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV3-7 | 1,320 | 400 | 660 | 400 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV3-8 | 1,320 | 400 | 660 | 400 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV3-9 | 1,320 | 400 | 660 | 400 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV3-10 | 490 | 150 | 245 | 150 | 2 | 8"Ø | 480/3/60 | ETI | SDR |
| VAV3-11 | 1,160 | 350 | 580 | 350 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV3-12 | 870 | 265 | 435 | 265 | 3 | 10"Ø | 480/3/60 | ETI | SDR |
| | | | | | | | | | |
| VAV4-1 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV4-2 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV4-3 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV4-4 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV4-5 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV4-6 | 1,260 | 380 | 630 | 380 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV4-7 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV4-8 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV4-9 | 1,290 | 390 | 645 | 390 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAV4-10 | 960 | 290 | 480 | 290 | 4 | 10"Ø | 480/3/60 | ETI | SDR |
| VAV4-11 | 450 | 135 | 225 | 135 | 2 | 8"Ø | 480/3/60 | ETI | SDR |
| VAV4-12 | 890 | 270 | 445 | 270 | 4 | 10"Ø | 480/3/60 | ETI | SDR |
| VAV4-13 | 390 | 120 | 195 | 120 | 2 | 6"Ø | 480/3/60 | ETI | SDR |
| VAV4-14 | 750 | 225 | 375 | 225 | 3 | 10"Ø | 480/3/60 | ETI | SDR |
| VAV4-15 | 830 | 250 | 415 | 250 | 3 | 10"Ø | 480/3/60 | ETI | SDR |
| VAV4-16 | 720 | 220 | 360 | 220 | 3 | 10"Ø | 480/3/60 | ETI | SDR |
| | | | | | | | | | |
| VAVR1-1 | 885 | 270 | 445 | 270 | 5 | 10"Ø | 480/3/60 | ETI | SDR |
| VAVR1-2 | 145 | 45 | 75 | 45 | 1 | 6"Ø | 480/3/60 | ETI | SDR |
| VAVR1-3 | 145 | 45 | 75 | 45 | 1 | 6"Ø | 480/3/60 | ETI | SDR |
| VAVR1-4 | 145 | 45 | 75 | 45 | 1 | 6"Ø | 480/3/60 | ETI | SDR |
| VAVR1-5 | 145 | 45 | 75 | 45 | 1 | 6"Ø | 480/3/60 | ETI | SDR |
| VAVR1-6 | 225 | 70 | 115 | 70 | 2 | 6"Ø | 480/3/60 | ETI | SDR |
| VAVR1-7 | 175 | 55 | 90 | 55 | 1 | 6"Ø | 480/3/60 | ETI | SDR |
| VAVR1-8 | 840 | 255 | 420 | 255 | 5 | 10"Ø | 480/3/60 | ETI | SDR |
| VAVR1-9 | 310 | 95 | 155 | 95 | 3 | 6"Ø | 480/3/60 | ETI | SDR |
| VAVR1-10 | 200 | 60 | 100 | 60 | 1 | 6"Ø | 480/3/60 | ETI | SDR |
| VAVR1-11 | 155 | 50 | 80 | 50 | 1 | 6"Ø | 480/3/60 | ETI | SDR |
| VAVR1-12 | 115 | 35 | 60 | 35 | 1 | 6"Ø | 480/3/60 | ETI | SDR |
| VAVR1-13 | 885 | 270 | 445 | 270 | 4 | 10"Ø | 480/3/60 | ETI | SDR |
| | | | | | | | | | |
| VAVR2-1 | 1,050 | 315 | 525 | 315 | 8 | 10"Ø | 480/3/60 | ETI | SDR |
| VAVR2-2 | 1,140 | 345 | 570 | 345 | 10 | 12"Ø | 480/3/60 | ETI | SDR |
| VAVR2-3 | 1,140 | 345 | 570 | 345 | 5 | 12"Ø | 480/3/60 | ETI | SDR |
| VAVR2-4 | 155 | 50 | 80 | 50 | 1 | 6"Ø | 480/3/60 | ETI | SDR |
| VAVR2-5 | 275 | 85 | 140 | 85 | 2 | 6"Ø | 480/3/60 | ETI | SDR |
| VAVR2-6 | 230 | 70 | 115 | 70 | 2 | 6"Ø | 480/3/60 | ETI | SDR |
| | | | | | | | | | |
| VAVR4-1 | 2,280 | 685 | 1140 | 685 | 5 | 16"Ø | 480/3/60 | ETI | SDR |
| VAVR4-2 | 2,280 | 685 | 1140 | 685 | 5 | 16"Ø | 480/3/60 | ETI | SDR |

NOTES:
1. PROVIDE AEROCROSS MULTI-POINT CENTER AVERAGING VELOCITY SENSOR IN AIR INLET.
2. PROVIDE TERMINAL UNIT CASING WITH 1/2" INTERNALLY LINED FIBERGLASS FREE INSULATION.
3. PROVIDE TERMINAL UNIT WITH INTEGRAL DISCONNECT SWITCH.
4. PROVIDE ELECTRIC REHEAT COIL WITH 0-10V SCR MODULATING CAPACITY CONTROL.

## PACKAGED DX ROOF TOP UNIT SCHEDULE

| MARK | OAU-1 | OAU-2 | OAU-3 | OAU-4 |
|---|---|---|---|---|
| SERVES | MIDKIFF ES | MIDKIFF ES | MIDKIFF ES | MIDKIFF ES |
| DUCT CONFIGURATION | SIDE DISCHARGE | SIDE DISCHARGE | SIDE DISCHARGE | SIDE DISCHARGE |
| DESIGN OUTDOOR AIR (CFM) | 3,840 | 5,120 | 3,920 | 4,550 |
| MINIMUM OUTDOOR AIR (CFM) | 1,152 | 1,536 | 1,176 | 1,365 |
| E.E.R. / I.E.E.R. (AT AHRI CONDITIONS) | 11.1 / 18 | 9.6 / 15.5 | 11.1 / 18 | 10.2 / 21.4 |
| EXT. S.P. (IN. W.G.) | 1.00 | 1.00 | 1.00 | 1.00 |
| FAN MOTOR HORSEPOWER | 2.0 | QTY(2) 2.2 | 2.0 | 3.0 |
| FAN TYPE | VFD PLENUM | (2) ECM PLENUM | VFD PLENUM | VFD PLENUM |
| FAN DRIVE | DIRECT | DIRECT | DIRECT | DIRECT |
| **COOLING DATA** | | | | |
| AMBIENT AIR (°F) | 100.0 | 100.0 | 100.0 | 100.0 |
| TOTAL COOLING CAPACITY (MBH) | 296.7 | 384.9 | 295.5 | 331.8 |
| TOTAL SENSIBLE CAPACITY (MBH) | 195.1 | 257.5 | 197.4 | 224.6 |
| EAT DB (°F) | 100.0/76.0 | 100.0/76.0 | 100.0/76.0 | 100.0/76.0 |
| LAT DB/WB (°F) | 53.5/53.5 | 54.0/54.0 | 53.9/53.9 | 54.9/54.8 |
| **HEATING DATA** | | | | |
| HEATING CAPACITY (KW) / STAGES | 45KW / SCR | 55KW / SCR | 45KW / SCR | 45KW / SCR |
| EAT DB/WB (°F) | 36.0 | 36.0 | 36.0 | 36.0 |
| LAT DB (°F) | 72.9 | 69.8 | 72.1 | 67.1 |
| **ELECTRICAL DATA** | | | | |
| VOLTS/PHASE/HERTZ | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 |
| MCA | 74.1 | 80.4 | 74.1 | 75.9 |
| MOCP | 80.0 | 100.0 | 80.0 | 80.0 |
| MANUFACTURER | DAIKIN | DAIKIN | DAIKIN | DAIKIN |
| MODEL NO. | DPS025 | DPSA034 | DPS025 | DPS028 |
| OPERATING WEIGHT (LBS) | 3,705 | 5,816 | 3,705 | 3,859 |
| NOTES | ALL | ALL | ALL | ALL |

NOTES:
1. EXTERNAL STATIC PRESSURE DOES NOT ACCOUNT FOR LOSSES DUE TO COIL(S), FILTERS, HOUSING, NOR ACCESSORIES.
2. PROVIDE UNIT WITH OUTDOOR AIR INTAKE HOOD WITH MODULATING MOTORIZED DAMPER.
3. PROVIDE UNIT WITH SINGLE POINT ELECTRICAL CONNECTION AND PHASE FAILURE MONITOR.
4. PROVIDE FLOAT SWITCH IN PRIMARY DRAIN PAN TO DE-ENERGIZE THE UNIT WHEN PRIMARY DRAIN LINE BECOMES RESTRICTED.
5. PROVIDE COMBO 2" / 4" FILTER RACK WITH MERV 8 AND 13 FILTERS.
6. PROVIDE UNIT CONTROLLER BY MANUFACTURER. PROVIDE CONTROLLER WITH BACNET INTERFACE CARD FOR INTEGRATION WITH EMCS.
7. PROVIDE UNIT WITH MODULATING HOT GAS REHEAT WITH DUAL TEMPERATURE SENSORS FOR HUMIDITY CONTROL.
8. PROVIDE UNIT WITH CONDENSER HAIL GUARD AND 14" PREFABRICATED TDI RATED ROOF CURB WITH TEXAS PE STAMP.
9. PROVIDE UNIT WITH CONSTANT VOLUME FAN AND 100% OA DAMPER.
10. PROVIDE UNIT WITH INTEGRAL DISCONNECT SWITCH AND POWERED CONVENIENCE OUTLET.
11. PROVIDE UNIT WITH DUCT MOUNTED SMOKE DETECTORS IN SUPPLY DUCTWORK FOR ALL UNITS DISCHARGING IN EXCESS OF 2,200 CFM.
12. PROVIDE DOUBLE WALL CONSTRUCTION WITH MINIMUM 1" R-7 FOAM INSULATION (UP TO 15 TONS) OR 2" R-13 FOAM INSULATION (OVER 15 TONS).
13. FACTORY APPLIED CONDENSER COIL COATING WITH MINIMUM 10,000 HOUR SALT SPRAY RATING PER ASTM B 117 AND UV TOPCOAT.
14. PROVIDE STAINLESS STEEL DRAIN PAN AND STAINLESS STEEL COIL CASINGS.

## AIR COOLED CONDENSING UNIT SCHEDULE

| MARK | ACCU-1A | ACCU-1B | ACCU-2A | ACCU-2B | ACCU-3A | ACCU-3B | ACCU-4A | ACCU-4B | ACCU-5A | ACCU-5B | ACCU-6 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SERVES | AHU-1 | AHU-1 | AHU-2 | AHU-2 | AHU-3 | AHU-3 | AHU-4 | AHU-4 | AHU-5 | AHU-5 | AHU-6 |
| TOTAL COOLING CAPACITY (MBH) | 184.2 | 184.2 | 250.7 | 250.7 | 184.2 | 184.2 | 184.2 | 184.2 | 175.7 | 175.7 | 131.25 |
| AMBIENT TEMP. (°F) | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| STEPS OF CAPACITY | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| EER (SEER) | 11.0 | 11.0 | 10.0 | 10.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 |
| VOLTS/PHASE/HERTZ | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 |
| MCA | 37.0 | 37.0 | 48.0 | 48.0 | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | 23.0 |
| MOCP | 50 | 50 | 70 | 70 | 50 | 50 | 50 | 50 | 50 | 50 | 30 |
| MANUFACTURER | DAIKIN | DAIKIN | DAIKIN | DAIKIN | DAIKIN | DAIKIN | DAIKIN | DAIKIN | DAIKIN | DAIKIN | LENNOX |
| MODEL NUMBER | RCH15H180D | RCH15H180D | RCH20H240D | RCH20H240D | RCH15H180D | RCH15H180D | RCH15H180D | RCH15H180D | RCH15H180D | RCH15H180D | EL150XCSDT |
| OPERATING WEIGHT (LBS.) | 832 | 832 | 832 | 832 | 832 | 832 | 832 | 832 | 832 | 832 | 535 |
| NOTES | ALL | ALL | ALL | ALL | ALL | ALL | ALL | ALL | ALL | ALL | ALL |

NOTES:
1. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
2. REFRIGERANT LINES TO BE SIZED BY MANUFACTURER.
3. PROVIDE 5 YEAR COMPRESSOR PARTS WARRANTY.
4. PROVIDE WITH CONDENSER COIL HAIL GUARD.
5. PROVIDE WITH LOW AMBIENT HEAD PRESSURE CONTROL.
6. PROVIDE CONDENSER COIL COATING WITH MINIMUM 6000 HR ASTM B117 SALT SPRAY RATING.
7. PROVIDE SINGLE CIRCUIT, DUAL STAGE CONDENSING UNITS, EXCEPT ACCU-6 IS DUAL CIRCUIT.

## PACKAGED DX ROOF TOP UNIT SCHEDULE

| MARK | RTU-1 | RTU-2 | RTU-3 | RTU-4 |
|---|---|---|---|---|
| SERVES | MIDKIFF ES | MIDKIFF ES | MIDKIFF ES | MIDKIFF ES |
| UNIT TYPE | HORIZONTAL | HORIZONTAL | HORIZONTAL | HORIZONTAL |
| DUCT CONFIGURATION | BOTTOM | BOTTOM | BOTTOM | BOTTOM |
| DESIGN SUPPLY AIR (CFM) | 4,150 | 4,290 | 1,340 | 4,560 |
| MINIMUM SUPPLY AIR (CFM) | 1,245 | 1,287 | 402 | 1,368 |
| DESIGN OUTDOOR AIR (CFM) | 1,240 | 1,205 | 100 | 750 |
| MINIMUM OUTDOOR AIR (CFM) | 372 | 362 | 30 | 225 |
| E.E.R. (AT AHRI CONDITIONS) | 12.0 | 12.0 | 13.5 | 12.0 |
| IEER/SEER (AT AHRI CONDITIONS) | 15.0 | 15.0 | / 17.0 | 15.7 |
| EXT. S.P. (IN. W.G.) | 2.00 | 2.00 | 1.80 | 2.00 |
| FAN MOTOR HORSEPOWER | 5.0 | 5.0 | 1.5 | 5.0 |
| FAN TYPE | ECM | ECM | ECM | ECM |
| FAN DRIVE | BELT | BELT | DIRECT | BELT |
| **COOLING DATA** | | | | |
| AMBIENT AIR (°F) | 100.0 | 100.0 | 100.0 | 100.0 |
| TOTAL COOLING CAPACITY (MBH) | 167.0 | 171.0 | 35.0 | 146.0 |
| TOTAL SENSIBLE CAPACITY (MBH) | 98.0 | 113.0 | 25.0 | 101.0 |
| EAT DB/WB (°F) | 78.0/68.0 | 82.0/69 | 74/64 | 76.0/65.0 |
| LAT DB/WB (°F) | 55.1/54.6 | 56.4/55.9 | 55.9/54.9 | 54.8/54.0 |
| **HEATING DATA** | | | | |
| HEATING AIRFLOW (CFM) | -- | -- | -- | -- |
| HEATING CAPACITY (KW) | -- | -- | -- | -- |
| EAT DB/WB (°F) | -- | -- | -- | -- |
| LAT DB/WB (°F) | -- | -- | -- | -- |
| **ELECTRICAL DATA** | | | | |
| VOLTS/PHASE/HERTZ | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 |
| MCA | 36.0 | 36.0 | 9.0 | 35.0 |
| MOCP | 40.0 | 40.0 | 15.0 | 40.0 |
| MANUFACTURER | LENNOX | LENNOX | LENNOX | LENNOX |
| MODEL NO. | LCT180 | LCT180 | LCT036 | LCT156 |
| OPERATING WEIGHT (LBS) | 2,605 | 2,605 | 892 | 2,605 |
| NOTES | | | | |

NOTES:
1. EXTERNAL STATIC PRESSURE DOES NOT ACCOUNT FOR LOSSES DUE TO COIL(S), FILTERS, HOUSING, NOR ACCESSORIES.
2. PROVIDE UNIT WITH OUTDOOR AIR INTAKE HOOD WITH MODULATING MOTORIZED DAMPER.
3. PROVIDE UNIT WITH SINGLE POINT ELECTRICAL CONNECTION.
4. PROVIDE FLOAT SWITCH IN PRIMARY DRAIN PAN TO DE-ENERGIZE THE UNIT WHEN PRIMARY DRAIN LINE BECOMES RESTRICTED.
5. PROVIDE UNITS WITH MINIMUM 2" MERV 8 + 4" MERV 13 FILTERS.
6. PROVIDE UNIT CONTROLLER BY MANUFACTURER. PROVIDE CONTROLLER WITH BACNET INTERFACE CARD FOR INTEGRATION WITH EMCS.
7. PROVIDE UNIT WITH ON/OFF HOT GAS REHEAT FOR HUMIDITY CONTROL.
8. PROVIDE UNIT WITH CONDENSER HAIL GUARD AND 14" PREFABRICATED ROOF CURB.
9. PROVIDE UNIT WITH COMPARATIVE ENTHALPY ECONOMIZER AND BAROMETRIC RELIEF.
10. PROVIDE MINIMUM 2-STAGE COOLING UNITS
11. PROVIDE UNIT WITH INTEGRAL FUSED DISCONNECT SWITCH AND POWERED CONVENIENCE OUTLET. PROVIDE PHASE FAILURE MONITOR.
12. PROVIDE UNIT WITH DUCT MOUNTED SMOKE DETECTORS IN SUPPLY DUCTWORK FOR ALL UNITS DISCHARGING IN EXCESS OF 2,000 CFM.
13. PROVIDE FACTORY E-COATED CONDENSER COIL COATINGS WITH MINIMUM 6000 HR ASTM B117 SALT SPRAY RATING.
14. CONTROLS, THERMOSTATS, AND SENSORS (T, RH, CO2) TO BE PROVIDED BY THE CONTROLS CONTRACTOR

## SPLIT AIR HANDLING UNIT SCHEDULE

| MARK | AHU-1 | AHU-2 | AHU-3 | AHU-4 | AHU-5 | AHU-6 |
|---|---|---|---|---|---|---|
| SERVES | MIDKIFF ES | MIDKIFF ES | MIDKIFF ES | MIDKIFF ES | MIDKIFF ES | MIDKIFF ES |
| UNIT CONFIGURATION | HORIZONTAL | HORIZONTAL | HORIZONTAL | HORIZONTAL | HORIZONTAL | HORIZONTAL |
| DISCHARGE | TOP | TOP | TOP | TOP | TOP | TOP |
| SUPPLY AIR (CFM) | 13,560 | 18,455 | 14,605 | 16,625 | 5,250 | 3,475 |
| OUTSIDE AIR (CFM) | 3,840 | 5,120 | 3,920 | 4,550 | 3,150 | 650 |
| EXT. S.P. (IN. W.G.) | 2.8 | 3.0 | 3.0 | 2.9 | 3.3 | 2.0 |
| FAN MOTOR (QTY) HORSEPOWER | (4)4.42 | (6)4.42 | (5)4.42 | (5)4.42 | (2)4.42 | (1)4.42 |
| FAN MOTOR CONTROL (VFD, ECM 0-10VDC) | ECM 0-10VDC | ECM 0-10VDC | ECM 0-10VDC | ECM 0-10VDC | ECM 0-10VDC | ECM 0-10VDC |
| FAN RPM | 3194 | 3096 | 3038 | 3181 | 3064 | 3041 |
| MAX COIL VELOCITY (FPM) | 500 | 500 | 500 | 500 | 500 | 500 |
| MINIMUM COIL ROWS | 4 | 4 | 4 | 4 | 6 | 6 |
| MAX. FINS PER INCH | 10 | 10 | 10 | 10 | 10 | 10 |
| COOLING EAT DB/WB (°F) | 74.4/61.0 | 74.7/61.1 | 74.5/61.0 | 74.6/61.0 | 86.4/73.6 | 79.0/66.0 |
| COOLING LAT DB/WB (°F) | 55.3/52.9 | 56/53.2 | 56/53.3 | 56.1/53.3 | 54.3/53.5 | 55.1/53.6 |
| TOTAL COOLING CAPACITY (MBH) | 311.4 | 412.1 | 321.4 | 364.4 | 350.3 | 130.9 |
| SENSIBLE COOLING CAPACITY (MBH) | 283.4 | 377.2 | 295.0 | 336.4 | 184.0 | 90.9 |
| QTY REFRIGERANT CIRCUITS / TYPE | 2 / INTERLACED | 4 / INTERLACED | 2 / INTERLACED | 2 / INTERLACED | 2 / INTERLACED | 2 / INTERLACED |
| HEATING CAPACITY (KW) | - | - | - | - | - | - |
| NO. OF HEATING STAGES | - | - | - | - | - | - |
| VOLTS/PHASE/HERTZ | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 |
| MANUFACTURER | DAIKIN | DAIKIN | DAIKIN | DAIKIN | DAIKIN | DAIKIN |
| MODEL NO. | CAH029GDCM | CAH040GDCM | CAH032GDCM | CAH036GDCM | CAH013GDCM | CAH008GDCM |
| OPERATING WEIGHT (LBS.) | 2522 | 3213 | 2684 | 2886 | 1362 | 1035 |
| UNIT CABINET DIMENSIONS, W x L x H (IN.) | 86 x 108 x 66 | 96 x 116 x 78 | 92 x 106 x 66 | 102 x 108 x 66 | 60 x 80 x 46 | 48 x 80 x 40 |
| NOTES | ALL | ALL | ALL | ALL | ALL | ALL |

NOTES:
1. PROVIDE 2" DOUBLE WALL R-13 CHILLED WATER AHU WITH 2" MERV 13 FILTERS.
2. PROVIDE DX COIL WITH STAINLESS STEEL COIL CASING AND STAINLESS STEEL DRAIN PAN FOR R-410A.
3. PROVIDE 12" ACCESS DOOR BETWEEN COIL AND FAN SECTION.
4. EXTERNAL STATIC PRESSURE DOES NOT INCLUDE LOSSES DUE TO COILS, FILTERS, AND CASING.
5. PROVIDE ECM FAN ARRAY WITH HAND/OFF/AUTO SWITCH, 0-10 VDC SIGNAL INPUT, FAN FAULT TERMINAL, FUSED DISCONNECT, MOTOR CONTROL PANEL, LINE AND LOW VOLTAGE WIRING, INDIVIDUAL FAN MOTOR OVERCURRENT PROTECTION/ISOLATION SWITCH, AND POTENTIOMETER FOR MANUAL CONTROL OVERRIDE.
6. HOA PANELS TO BE FACTORY INSTALLED EXCEPT AHU-5 AND 6 ARE FIELD INSTALLED AND FIELD WIRED BY ELECTRICAL CONTRACTOR.
7. PROVIDE 6" BASE RAIL.
8. HEADER AHU-2 STACKED COILS FOR EACH CIRCUIT WITH SEPARATE TXVs PER COIL CONNECTION, ONE SOLENOID PER ACCU.


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f




**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.009

**SHEET TITLE:** MECHANICAL SCHEDULES

**SHEET NUMBER:** M5.01

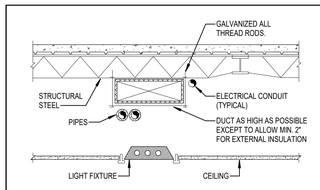

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234


DBR Project Number 218033.009

| HA | RT | JR | | |
|---|---|---|---|---|

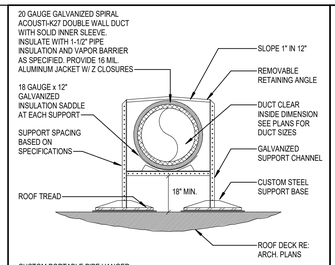
TN PN

1/5/2023 5:17:29 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt



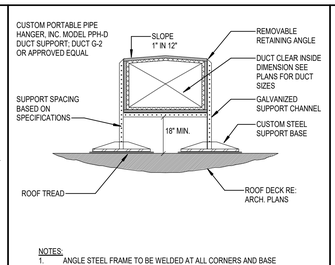

NOTES:
1. PIPES (INCLUDING SPRINKLER PIPING) AND ELECTRICAL CONDUIT CAN BE ROUTED BETWEEN JOISTS OR THROUGH JOIST WEB SPACE AS REQUIRED. DUCT SHALL BE LOCATED AS HIGH AS POSSIBLE.
2. U.L. DESIGN ASSEMBLY NUMBERS ARE SHOWN ON ARCHITECTURAL PLANS WHEN REQUIRED.
3. INSTALLATION OF ALL SERVICES MUST BE COORDINATED BY THE CONTRACTOR.

## 1 TYP. MEP INSTALLATION DETAIL
NOT TO SCALE M40-01



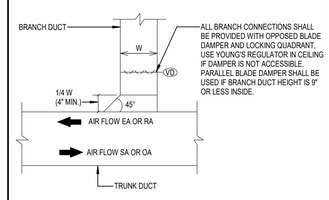

CUSTOM PORTABLE PIPE HANGER, INC. MODEL PPH-D DUCT SUPPORT; DUCT G-2 OR APPROVED EQUAL

## 2 DUCT SUPPORT ON ROOF
NOT TO SCALE M40-02



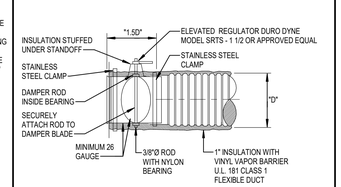

NOTES:
1. ANGLE STEEL FRAME TO BE WELDED AT ALL CORNERS AND BASE PLATE.
2. PROVIDE 12" WIDE 18 GAUGE GALVANIZED STEEL INSULATION SADDLE, FULL WIDTH AND HEIGHT OF DUCT.

## 3 EXPOSED RECT. DUCT ON ROOF
NOT TO SCALE M40-03



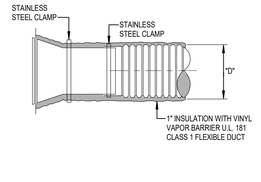

NOTES:
THIS CONNECTION SHALL BE TYPICAL FOR ALL RECTANGULAR BRANCH DUCT CONNECTIONS TO RECTANGULAR TRUNK DUCTS, INCLUDING SUPPLY, RETURN, OUTSIDE AIR AND EXHAUST DUCTS.

## 4 RECTANGULAR BRANCH DUCT TAP
NOT TO SCALE M40-04



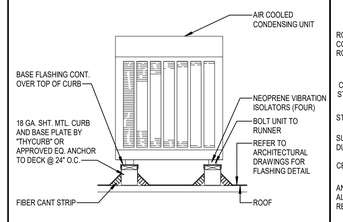

NOTES:
1. ALL FLEXIBLE DUCT OFFSETS AND BENDS SHALL MAINTAIN A RADIUS OF 1.5 X ("D") MINIMUM 3'-0" AND MAXIMUM 6'-0"
2. TYPICAL OF ROUND DUCT CONNECTIONS TO RECTANGULAR DUCTS
3 ALL JOINTS SHALL BE SEALED WITH MASTIC AND FIBER CLOTH PER SPECIFICATIONS.

## 5 SPIN-IN DETAIL
NOT TO SCALE M40-05



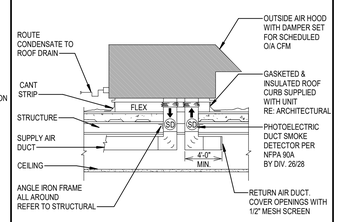

NOTES:
1. ALL FLEXIBLE DUCT OFFSETS AND BENDS SHALL MAINTAIN A RADIUS OF 1.5 X ("D") MINIMUM 3'-0" AND MAXIMUM 6'-0".
2. TYPICAL OF ROUND DUCT CONNECTIONS TO VAV BOXES FROM RECTANGULAR MAIN DUCTS.
3. ALL JOINTS SHALL BE SEALED WITH MASTIC AND FIBER CLOTH PER SPECIFICATIONS.

## 6 CONICAL SPIN-IN DETAIL
NOT TO SCALE M40-10



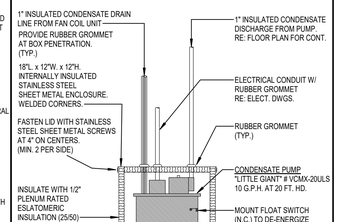

NOTE:
1. PROVIDE CLEARANCE AROUND UNIT FOR AIRFLOW AND SERVICE PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

## 7 CONDENSING UNIT ROOF MOUNTED
NOT TO SCALE

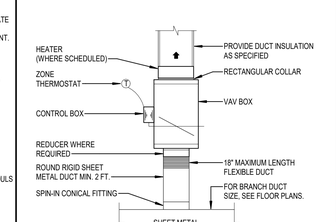



NOTE:
ALL CONDENSATE DRAIN PIPING SHALL BE SCHEDULE 40 GALVANIZED STEEL WITH MALLEABLE IRON SCREWED FITTINGS.

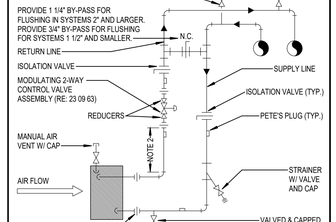
## 8 ROOF TOP UNIT MOUNTING DETAIL
NOT TO SCALE




## 9 COOLING COIL CONDENSATE PUMP
NOT TO SCALE

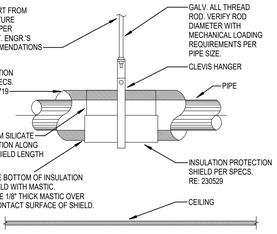



## 10 INTERIOR VAV TERMINAL UNIT
NOT TO SCALE M5-0



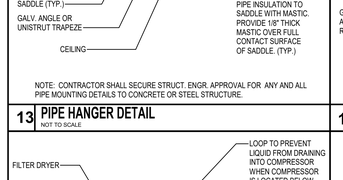

NOTES:
1. INSTALL 2-WAY CONTROL VALVE ORIENTATION PER MFGR. INSTALLATION INSTRUCTIONS.
2. PROVIDE STRAIGHT PIPE LENGTH 5 TIMES NOMINAL PIPE DIA. UPSTREAM OF CTRL. VALVE.

## 11 2-WAY CONTROL VALVE AND COIL PIPING
NOT TO SCALE



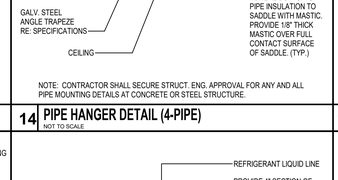

NOTE:
CONTRACTOR SHALL SECURE STRUCT. ENGR. APPROVAL FOR ANY AND ALL PIPE MOUNTING DETAILS TO CONCRETE OR STEEL STRUCTURE. CONTRACTOR SHALL CONFORM TO ALL MAXIMUM SPAN DISTANCES PER SPECIFICATIONS FOR HANGER SPACING. RE: 230529

## 12 PIPE HANGER DETAIL (1-PIPE)
NOT TO SCALE



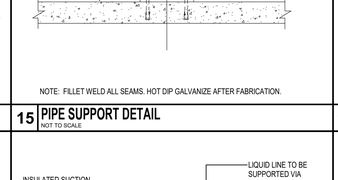

NOTE: CONTRACTOR SHALL SECURE STRUCT. ENGR. APPROVAL FOR ANY AND ALL PIPE MOUNTING DETAILS AT CONCRETE OR STEEL STRUCTURE.

## 13 PIPE HANGER DETAIL
NOT TO SCALE



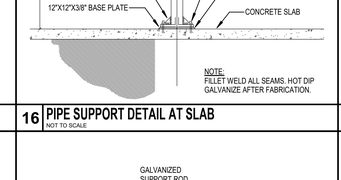

NOTE: CONTRACTOR SHALL SECURE STRUCT. ENG. APPROVAL FOR ANY AND ALL PIPE MOUNTING DETAILS AT CONCRETE OR STEEL STRUCTURE.

## 14 PIPE HANGER DETAIL (4-PIPE)
NOT TO SCALE



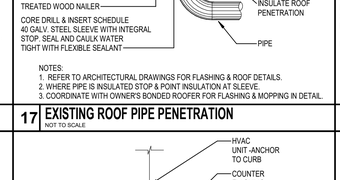

NOTE: FILLET WELD ALL SEAMS. HOT DIP GALVANIZE AFTER FABRICATION.

## 15 PIPE SUPPORT DETAIL
NOT TO SCALE



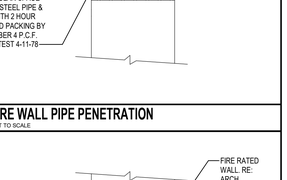

NOTE:
FILLET WELD ALL SEAMS. HOT DIP GALVANIZE AFTER FABRICATION.

## 16 PIPE SUPPORT DETAIL AT SLAB
NOT TO SCALE

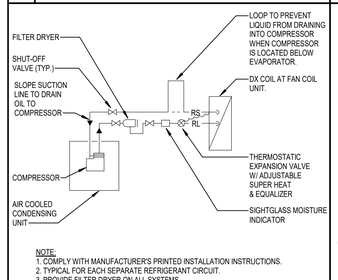



NOTES:
1. REFER TO ARCHITECTURAL DRAWINGS FOR FLASHING & ROOF DETAILS.
2. WHERE PIPE IS INSULATED STOP & POINT INSULATION AT SLEEVE.
3. COORDINATE WITH OWNER'S BONDED ROOFER FOR FLASHING & MOPPING IN DETAIL.

## 17 EXISTING ROOF PIPE PENETRATION
NOT TO SCALE

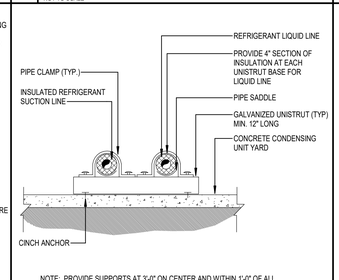



## 18 FIRE WALL PIPE PENETRATION
NOT TO SCALE



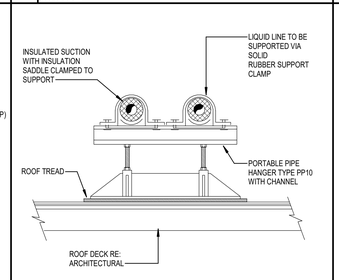

NOTE:
1. COMPLY WITH MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS.
2. TYPICAL FOR EACH SEPARATE REFRIGERANT CIRCUIT.
3. PROVIDE FILTER DRYER ON ALL SYSTEMS.
4. USE "ACR" HARD DRAWN COPPER REFRIGERANT PIPE.

## 19 REFRIGERANT PIPING SCHEMATIC
NOT TO SCALE

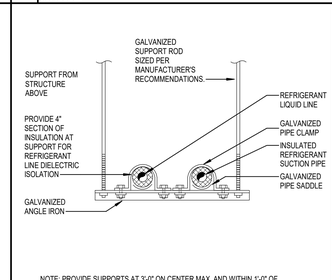



NOTE: PROVIDE SUPPORTS AT 3'-0" ON CENTER AND WITHIN 1'-0" OF ALL CHANGES IN PIPE DIRECTION.

## 20 FLOOR MOUNTED REFR. PIPE
NOT TO SCALE

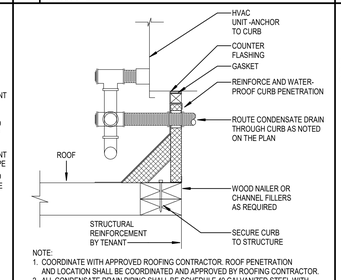



## 21 ROOF MTD. REFR. PIPE SUPPORT
NOT TO SCALE



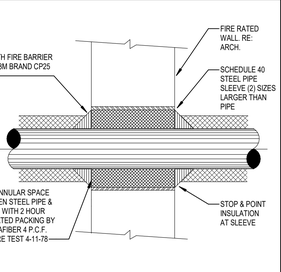

NOTE: PROVIDE SUPPORTS AT 3'-0" ON CENTER MAX. AND WITHIN 1'-0" OF ALL CHANGES IN PIPE DIRECTION.

## 22 REFRIGERANT PIPE HANGER
NOT TO SCALE

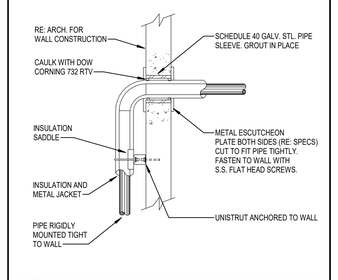



NOTE:
1. COORDINATE WITH APPROVED ROOFING CONTRACTOR. ROOF PENETRATION AND LOCATION SHALL BE COORDINATED AND APPROVED BY ROOFING CONTRACTOR.
2. ALL CONDENSATE DRAIN PIPING SHALL BE SCHEDULE 40 GALVANIZED STEEL WITH MALLEABLE IRON SCREWED FITTINGS.

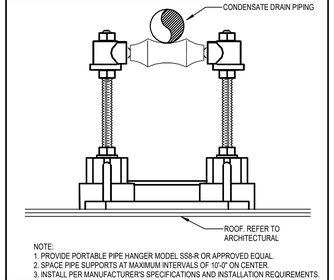
## 23 CONDENSATE DRAIN THRU CURB
NOT TO SCALE




## 24 FIRE WALL INSULATED PIPE PENETRATION
NOT TO SCALE




## 25 PIPE ENTRY THRU EXTERIOR WALL
NOT TO SCALE




NOTE:
1. PROVIDE PORTABLE PIPE HANGER MODEL SS8-R OR APPROVED EQUAL.
2. SPACE PIPE SUPPORTS AT MAXIMUM INTERVALS OF 10'-0" ON CENTER.
3. INSTALL PER MANUFACTURER'S SPECIFICATIONS AND INSTALLATION REQUIREMENTS.

## 26 DRAIN LINE SUPPORT ON ROOF
NOT TO SCALE

### ELECTRIC DUCT HEATER SCHEDULE

| MARK | EDH-1 | EDH-2 |
|---|---|---|
| SERVES | AHU-5 | AHU-6 |
| HEATER TYPE | INLINE | INLINE |
| DESIGN AIRFLOW (CFM) | 5,250 | 3,475 |
| CAPACITY (KW) | 60.0 | 15.0 |
| EAT/LAT (°F) | 49.6/85.0 | |
| DUCT DIMENSION WxH (INSIDE) | 26X24 | 22X22 |
| VOLTS/PHASE/HERTZ | 480/3/60 | 480/3/60 |
| CONTROL TYPE | SCR | SCR |
| MANUFACTURER | REDD-I | REDD-I |
| MODEL | HF | HF |
| NOTES | ALL | ALL |

NOTES:
1. PROVIDE WITH AIRFLOW PROVING SWITCH AND DIGITAL DUCT MOUNTED DISCHARGE AIR TEMPERATURE SENSOR.
2. PROVIDE GALVANIZED FLANGE MOUNTED DUCT HEATER.
3. INSTALL DUCT HEATER PER MANUFACTURER'S RECOMMENDATIONS.
4. DUCT HEATER SHALL BE CONTROLLED BY DDC SYSTEM.
5. PROVIDE DISCONNECT SWITCH.

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

91

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

**SEAL:**

STATE OF TEXAS — ROBERTO H. TIJERINA — 121946 — LICENSED PROFESSIONAL ENGINEER — 01-05-2023

# MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.009

**SHEET TITLE:** MECHANICAL DETAILS

**SHEET NUMBER:** M6.01

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

TBPE Firm Registration No. 2234

DBR Project Number 218033.009

TN PN | HA | RT | JR

1/5/2023 5:17:32 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

# ABBREVIATIONS

## A

| | |
|---|---|
| A | AMPERES |
| ABV | ABOVE |
| AIC | AIR CONDITIONING |
| AC | ALTERNATING CURRENT, AIR COMPRESSOR, ABOVE COUNTER |
| ACC | AIR COOLED CHILLER |
| ACCU | AIR COOLED CONDENSING UNIT |
| AD | ACCESS DOOR |
| ADA | AMERICANS WITH DISABILITIES ACT |
| AF | AMPERE FUSE, AMPERE FRAME |
| AFC | ABOVE FINISHED CEILING |
| AFF | ABOVE FINISHED FLOOR |
| AFG | ABOVE FINISHED GRADE |
| AHU | AIR HANDLING UNIT |
| AIC | AMPERE INTERRUPT CAPACITY |
| AL | ALUMINUM |
| AM | AMMETER |
| AMP | AMPLIFIER |
| ANN | ANNUNICATOR |
| AP | ACCESS PANEL, ALARM PANEL |
| ARCH | ARCHITECT, ARCHITECTURAL |
| ASC | AMPERES SHORT CIRCUIT |
| AT | AMPERE TRIP RATING |
| ATS | AUTOMATIC TRANSFER SWITCH |
| AVG. | AVERAGE |
| AUX. | AUXILIARY |
| AWG. | AMERICAN WIRE GAUGE |

## B

| | |
|---|---|
| BAS | BUILDING AUTOMATION SYSTEM |
| BC | BELOW COUNTER |
| BKR | BREAKER |
| BLDG. | BUILDING |

## C

| | |
|---|---|
| C | CONDUIT, CELSIUS |
| CATV | CABLE TELEVISION SYSTEM |
| CCTV | CLOSED CIRCUIT TELEVISION |
| CWP | CONDENSER WATER PUMP |
| CH | CHILLER |
| CHP | CHILLED WATER PUMP |
| CIRC | CIRCULATING |
| CKT | CIRCUIT |
| CL | CENTERLINE |
| CLG. | CEILING |
| CMU | CONCRETE MASONRY UNIT |
| COL. | COLUMN |
| CONC | CONCRETE |
| CONN | CONNECTION |
| CONT. | CONTINUOUS,CONTINUATION |
| CONTR. | CONTROLLER, CONTRACTOR |
| CP. | CIRCULATING PUMP |
| CPUC | CPU CHILLER |
| CR | CARD READER, CORD REEL |
| CRU | CONDENSATE RETURN UNIT |
| CT | CURRENT TRANSFORMER, COOLING TOWER |
| CTR | CENTER |
| CU | COPPER |

## D

| | |
|---|---|
| dB | DECIBEL |
| DC | DIRECT CURRENT |
| DDC | DIRECT DIGITAL CONTROL |
| DTL | DETAIL |
| DIA | DIAMETER |
| DIM | DIMENSION |
| DISC | DISCONNECT |
| DN | DOWN |
| DP | DISTRIBUTION PANEL |
| DPDT | DOUBLE-POLE, DOUBLE-THROW |
| DPST | DOUBLE-POLE, SINGLE-THROW |
| DR | DROPPED RECEPTACLE |
| DS | DAYLIGHT SENSOR |
| DW | DISHWASHER |
| DWG | DRAWING |
| DWH | DOMESTIC WATER HEATER |
| DWP | DOMESTIC WATER PUMP |
| DXFC | DX FAN COIL UNIT |
| DZ | DAYLIGHT ZONE |

## E

| | |
|---|---|
| (E) | EXISTING |
| EA | EACH |
| EC | ELECTRICAL CONTRACTOR |
| E.C. | EMPTY CONDUIT |
| EDF | ELECTRIC DRINKING FOUNTAIN |
| EF | EXHAUST FAN |
| EFF | EFFICIENCY |
| EHC | ELECTRIC HEATING COIL |
| EJ | EXPANSION JOINT |
| EL | ELEVATION |
| ELEC. | ELECTRICAL |
| ELEV. | ELEVATOR |
| EMCS | ENERGY MANAGEMENT AND CONTROLS SYSTEM |
| EMERG | EMERGENCY |
| EMS | ENERGY MANAGEMENT SYSTEM |
| ENCL. | ENCLOSURE |
| ENGR. | ENGINEER |
| EPO | EMERGENCY POWER OFF |
| EQUIP | EQUIPMENT |
| (ER) | EXISTING TO REMAIN |
| EUH | ELECTRIC UNIT HEATER |
| EWH | ELECTRIC WATER HEATER |
| EXH | EXHAUST |

## F

| | |
|---|---|
| F | FAHRENHEIT, FAN, FIRE |
| FA | FIRE ALARM |
| FACP | FIRE ALARM CONTROL PANEL |
| FCU | FAN COIL UNIT |
| FF | FURNITURE FEED |
| FIXT | FIXTURE |
| FLA | FULL LOAD AMPS |
| FLEX. | FLEXIBLE |
| FLR | FLOOR |
| FLUOR | FLUORESCENT |
| FP | FIRE PUMP, FAN POWERED |
| FPTB | FAN POWERED TERMINAL BOX |
| FRZR | FREEZER |
| FS | FUSED SWITCH, FLOW SWITCH |
| FSD | MOTORIZED FIRE SMOKE DAMPER |
| FT | FOOT, FEET |
| FTL | FEED-THRU LUGS |
| FUT | FUTURE |
| FVNR | FULL-VOLTAGE, NON-REVERSING |

## G

| | |
|---|---|
| GA | GAUGE |
| GAL | GALLON |
| GALV | GALVANIZED |
| GC | GENERAL CONTRACTOR |
| GEN | GENERATOR |
| GFCI | GROUND FAULT CIRCUIT INTERRUPTER |
| GND | GROUND |
| GTD | GENERATOR TRANSFER DEVICE |
| GUH | GAS UNIT HEATER |

## H

| | |
|---|---|
| HACR | HEATING, AIR CONDITIONING RATED CIRCUIT BREAKER |
| HD | ELECTRIC HAND DRYER |
| HID | HIGH INTENSITY DISCHARGE |
| HOA | HAND-OFF-AUTOMATIC |
| HORIZ | HORIZONTAL |
| HP | HORSEPOWER |
| HPS | HIGH PRESSURE SODIUM |
| HS | HAND SET |
| HSC | HAND SCANNER |
| HTG | HEATING |
| HTR | HEATER |
| HVAC | HEATING, VENTILATING, AND AIR CONDITIONING |
| HVU | HEATING/ VENTILATING UNIT |
| HWB | HOT WATER BOILER |
| HWC | HOT WATER CIRCULATOR |
| HWP | HEATING WATER PUMP |
| HZ | HERTZ |

## I

| | |
|---|---|
| ID | INSIDE DIAMETER |
| IG | ISOLATED GROUND |
| IN | INCH |
| INCAND | INCANDESCENT |
| INT | INTERNAL, INTERIOR |

## J

| | |
|---|---|
| JB | JUNCTION BOX |
| JP | JOCKEY PUMP |

## K

| | |
|---|---|
| KEC | KITCHEN EQUIPMENT CONTRACTOR |
| KO | KNOCKOUT |
| kVA | KILOVOLT-AMPS |
| kW | KILOWATT |
| kWH | KILOWATT-HOUR |

## L

| | |
|---|---|
| LED | LIGHT EMITTING DIODE |
| LF | LINEAR FEET |
| LRA | LOCKED ROTOR AMPS |
| LTG | LIGHTING |
| LV | LOW VOLTAGE TRANSFORMER |
| LVL | LEVEL |

## M

| | |
|---|---|
| M | METER |
| MAP | MASTER ALARM PANEL |
| MATV | MASTER ANTENNA TELEVISION SYSTEM |
| MAX. | MAXIMUM |
| MC | METAL CLAD CABLE |
| MCA | MINIMUM CIRCUIT AMPS |
| MCB | MAIN CIRCUIT BREAKER |
| MCC | MOTOR CONTROL CENTER |
| MD | MOTORIZED DAMPER |
| MDP | MAIN DISTRIBUTION PANEL |
| MECH. | MECHANICAL |
| MFR | MANUFACTURER |
| MH | METAL HALIDE |
| MIC | MICROPHONE |
| MIN. | MINIMUM |
| MLO | MAIN LUGS ONLY |
| MOCP | MAXIMUM OVER-CURRENT PROTECTION |
| MSB | MAIN SWITCHBOARD |
| MTD | MOUNTED |
| MV | MERCURY VAPOR |

## N

| | |
|---|---|
| N3R | NEMA 3R ENCLOSURE |
| N4X | NEMA 4X ENCLOSURE |
| N.C. | NORMALLY CLOSED |
| NEC | NATIONAL ELECTRICAL CODE |
| NEMA | NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION |
| NF | NON-FUSED |
| NFPA | NATIONAL FIRE PROTECTION ASSOCIATION |
| NFS | NON-FUSED SWITCH |
| NIC | NOT IN CONTRACT |
| NL | NIGHT LIGHT |
| N.O. | NORMALLY OPEN |
| NO. | NUMBER |
| NTS | NOT TO SCALE |

## O

| | |
|---|---|
| OAF | OUTSIDE AIR FAN |
| OAHU | OUTSIDE AIR HANDLING UNIT |
| OC | ON CENTER |
| OD | OUTSIDE DIAMETER |
| OHE | OVERHEAD ELECTRICAL |
| OPG | OPENING |

## P

| | |
|---|---|
| P | POLE, PUMP |
| PB | PUSHBUTTON |
| PC | PHOTOCELL |
| PH | PHASE |
| PL | PILOT LIGHT |
| PLBG | PLUMBING |
| PNEU | PNEUMATIC |
| PNL | PANEL |
| POS | POINT OF SALE |
| PP | POWER POLE |
| PR | PAIR |
| PRI | PRIMARY |
| PS | PHOTOSENSOR |
| PVC | POLYVINYL CHLORIDE |
| PWR | POWER |

## Q

| | |
|---|---|
| QTY | QUANTITY |

## R

| | |
|---|---|
| R | EXISTING TO BE REMOVED |
| RA | RETURN AIR |
| RAD | REFRIGERATED AIR DRYER |
| RAF | RETURN AIR FAN |
| RC | RECONNECT EXISTING DEVICE TO CIRCUIT INDICATED |
| RCP | REFLECTED CEILING PLAN |
| RCPT | RECEPTACLE |
| RE | REFERENCE, REFER |
| REC | RECEPTACLE |
| REFR | REFRIGERATOR |
| REINF | REINFORCING |
| REL | EXISTING TO BE RELOCATED |
| RELEX | NEW LOCATION OF RELOCATED EQUIPMENT |
| REQD | REQUIRED |
| REV | REVISION, REVISE |
| RGS | RIGID GALVANIZED STEEL |
| RLA | RUNNING LOAD AMPS |
| RPM | REVOLUTIONS PER MINUTE |
| RR | REMOVE AND REPLACE |
| RTU | ROOFTOP UNIT |

## S

| | |
|---|---|
| SA | SUPPLY AIR |
| SAF | SUPPLY AIR FAN |
| SCHED | SCHEDULE |
| SE | SEWAGE EJECTOR |
| SEC | SECONDARY |
| SECT | SECTION |
| SF | SQUARE FEET |
| SHT | SHEET |
| SIM | SIMILAR |
| SKVA | STARTING KILOVOLT-AMPS |
| SKW | STARTING KILOWATTS |
| SP | SUMP PUMP |
| SPEC | SPECIFICATION |
| SPF | STAIR PRESSURIZATION FAN |
| SPKR | SPEAKER |
| SPD | SURGE PROTECTION DEVICE |
| SPDT | SINGLE-POLE, DOUBLE-THROW |
| SPST | SINGLE-POLE, SINGLE-THROW |
| SQ. | SQUARE |
| SRF | SMOKE REMOVAL FAN |
| SS | START-STOP PUSH BUTTON |
| SSSC | SOLID STATE SPEED CONTROL |
| ST | SHUNT TRIP |
| STB | STEAM BOILER |
| STD | STANDARD |
| STL | STEEL |
| SURF | SURFACE |
| SW | SWITCH |
| SWBD | SWITCHBOARD |

## T

| | |
|---|---|
| TC | TEMPERATURE CONTROL |
| TEL | TELEPHONE |
| TF | TRANSFER FAN |
| TL | TWIST-LOCK |
| TOC | TOP OF CURB |
| TOS | TOP OF STEEL |
| TP | CHILD TAMPER PROOF DEVICE |
| TSTAT | THERMOSTAT |
| TTB | TELEPHONE TERMINAL BOARD |
| TTC | TELEPHONE TERMINAL CABINET |
| TU | TERMINAL UNIT |
| TV | TELEVISION |
| TVSS | TRANSIENT VOLTAGE SURGE SUPPRESSOR |
| TYP | TYPICAL |

## U

| | |
|---|---|
| UG | UNDERGROUND |
| UH | UNIT HEATER |
| UL | UNDERWRITERS LABORATORIES, INC. |
| UNO | UNLESS NOTED OTHERWISE |
| UPS | UNINTERRUPTABLE POWER SYSTEM |

## V

| | |
|---|---|
| V | VOLT |
| VA | VOLT-AMPERE |
| VAV | VARIABLE AIR VOLUME |
| VC | VOLUME CONTROL |
| VERT | VERTICAL |
| VFD | VARIABLE FREQUENCY DRIVE |
| VP | VACUUM PUMP |
| VM | VOLT METER |

## W

| | |
|---|---|
| W | WATT, WIRE, WIDTH |
| WG | WIREGUARD |
| W/ | WITH |
| W/O | WITHOUT |
| WP | WEATHERPROOF |
| WS | WATER SOFTENER |
| WT. | WATERTIGHT, WEIGHT |
| $WWF_2$ | WELDED WIRE FABRIC |
| $W/FT^2$ | WATTS PER SQUARE FOOT |

## X

| | |
|---|---|
| XFMR | TRANSFORMER |

## Z

| | |
|---|---|
| Z | ZONE |

# ELECTRICAL SYMBOLS

## MOTORS AND CONTROLS

- MOTOR RATED SWITCH WITH THERMAL OVERLOADS
- SINGLE OR THREE PHASE MOTOR NUMBER INDICATES HORSE POWER
- ELECTRIC DUCT HEATER
- DISCONNECT (SAFETY) SWITCH "200/3/150" DENOTES AMPERES/POLE/FUSE. "NF" DENOTES NON-FUSED "N3R" DENOTES NEMA 3R
- ENCLOSED CIRCUIT BREAKER- "200/3/150" DENOTES AMPERES/POLE/TRIP.
- MOTOR STARTER FURNISHED BY DIVISION 23 AND INSTALLED BY DIVISION 26.
- COMBINATION DISCONNECT (SAFETY) SWITCH AND MOTOR STARTER. "30/3/15/80" DENOTES AMPERES/POLES/FUSE/ STARTER SIZE. "NF" DENOTES NON-FUSED. FURNISHED BY DIVISION 23 AND INSTALLED BY DIVISION 26.
- VFD — VARIABLE FREQUENCY DRIVE PROVIDED BY DIVISION 23 AND INSTALLED BY DIVISION 26.
- EPO — EMERGENCY POWER OFF BUTTON.

## RECEPTACLES AND OUTLETS

ALL RECEPTACLES SHALL BE MOUNTED 18" ABOVE FINISHED FLOOR TO CENTER OF DEVICE UNLESS NOTED OTHERWISE.

- SIMPLEX WALL RECEPTACLE, NEMA 5-20R, 20A, 125V.
- DUPLEX WALL RECEPTACLE, NEMA 5-20R, 20A, 125V.
  - "GFCI" DENOTES GROUND FAULT INTERRUPTER,
  - "WP" DENOTES WEATHERPROOF,
  - "IG" DENOTES ISOLATED GROUND,
  - "TP" DENOTES SAFETY TYPE. (TAMPER PROOF)
  - "DR" DENOTES DROPPED RECEPTACLE,
  - "USB" DENOTES RECEPTACLE WITH UNIVERSAL SERIAL BUS,
  - "AC" DENOTES ABOVE COUNTER MOUNTING, SEE
  - "UC" DENOTES UNDER COUNTER MOUNTING, SEE
  - "H" DENOTES HORIZONTALLY ORIENTED RECEPTACLE. SEE ARCHITECTURAL PLANS FOR EXACT MOUNTING HEIGHT.
- R — DUPLEX WALL RECEPTACLE ON EMERGENCY CIRCUIT, RED COLOR.
- DUPLEX WALL RECEPTACLE ON A CIRCUIT DEDICATED TO DATA PROCESSING, GRAY COLOR. PROVIDE ISOLATED GROUND TYPE RECEPTACLES WHERE NOTED.
- SPLIT WIRED RECEPTACLE, TOP RECEPTACLE SHALL BE SWITCHED ACCORDING TO PLANS, AND BOTTOM SHALL REMAIN UNSWITCHED.
- SP — CONTROLLED DUPLEX WALL RECEPTACLE, NEMA 5-20R, 20A, 125V. "SP" DENOTES SPLIT WIRED
- FOURPLEX (DOUBLE DUPLEX) WALL RECEPTACLE. NEMA 5-20R, 20A, 125V.
- R — FOURPLEX WALL RECEPTACLE ON EMERGENCY CIRCUIT, RED COLOR.
- CONTROLLED FOURPLEX (DOUBLE DUPLEX) WALL RECEPTACLE. NEMA 5-20R, 20A, 125V.
- SPECIAL RECEPTACLE, NEMA CONFIGURATION AS NOTED.
- TWO-GANG FLOOR OUTLET
- THREE-GANG FLOOR OUTLET
- MULTI-OUTLET SURFACE RACEWAY. SEE ARCHITECTURAL DRAWINGS FOR EXACT MOUNTING HEIGHTS.
- J — JUNCTION BOX.
  - "MD" DENOTES MOTOR DAMPER,
  - "CR" DENOTES CORD REEL,
  - "D" DENOTES DROP CORD RECEPTACLE,
- DUPLEX RECEPTACLE WITH HOMERUN
- DUPLEX RECEPTACLE (PEDESTAL MOUNTED)
- TWO-GANG CEILING OUTLET
- D / R / P — FLUSH ELECTRICAL FLOOR OUTLET, "P" DENOTES POKE-THRU. "D" INDICATES DUPLEX RECEPTACLE, "R" INDICATES RED RECEPTACLE ON EMERGENCY POWER. REFER TO FLOOR BOX SCHEDULE, FIRE RATED POKE-THROUGH SCHEDULE AND KEYED NOTES.
- PP — POWER POLE
- DIRECT CONNECTION TO EQUIPMENT
- P — PULL BOX (OVER 4" SQUARE)
- C (2) — CLOCK RECEPTACLE SHALL BE MOUNTED 12" BELOW FINISHED CEILING. (2) DENOTES DOUBLE SIDED CLOCK.

## LIGHTING

LETTER(S) DENOTE TYPE- SEE LIGHTING FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION.

- 2' X 4' LIGHTING FIXTURE.
- 2' X 2' LIGHTING FIXTURE.
- 1' X 4' LIGHTING FIXTURE.
- 1' X 2' LIGHTING FIXTURE.
- 1' X 1' LIGHTING FIXTURE.
- STRIP LIGHTING FIXTURES.
- STAGGERED STRIP LIGHTING FIXTURE.
- ROUND DOWNLIGHT FIXTURE.
- SQUARE DOWNLIGHT FIXTURE.
- WALL MOUNTED LIGHTING FIXTURE.
- TRACK LIGHTING FIXTURE. MOUNTED AS SHOWN ON LIGHTING FIXTURE SCHEDULE.
- CEILING MOUNTED EXIT SIGN; ARROWS AS INDICATED. SHADED AREA DENOTES FACE.
- WALL MOUNTED EXIT SIGN; ARROWS AS INDICATED. SHADED AREA DENOTES FACE.
- EMERGENCY WALL MOUNTED LIGHTING FIXTURE. BATTERY OPERATED UNLESS NOTED OTHERWISE.
- SECURITY WALL PACK
- SITE LIGHTING FIXTURE.
- POST-TOP FIXTURE/ACORN FIXTURE BRACKET ARM INDICATES WALL MOUNT WITH ARM
- EMERGENCY LIGHT FIXTURE WITH BATTERY PACK. PROVIDE WITH UNSWITCHED HOT FOR LOSS OF VOLTAGE AND CHARGING (SAME CIRCUIT AS NORMAL POWER LIGHTING). FIXTURES SHALL BE WIRED IN A MANNER AS TO ALLOW SWITCHING OF FIXTURES WITHOUT DISCHARGING THE EMERGENCY BATTERY. BATTERY PACK IS TO ONLY OPERATE IN THE EVENT OF A POWER OUTAGE.
- EM CIRCUIT — LIGHT FIXTURE ON EMERGENCY BRANCH CIRCUIT, CIRCUIT NUMBER ADJACENT TO FIXTURE INDICATES EMERGENCY CIRCUIT CONNECTED TO FIXTURE. PROVIDE UNSWITCHED HOT, NEUTRAL AND GROUND FOR ALL EMERGENCY LIGHTING ORIGINATING FROM THE EMERGENCY CIRCUIT SHOWN.
- NL — EMERGENCY "NIGHT LIGHT" LIGHT FIXTURE. LIGHT FIXTURE IS UNSWITCHED AND INTENDED FOR 24 HOUR OPERATION. FEED VIA UNSWITCHED HOT.
- DAYLIGHT ZONE/PRIMARY DAYLIGHT ZONE
- SECONDARY DAYLIGHT ZONE

## RACEWAYS AND WIRING

- CAP AND STAKE
- CONDUIT CONCEALED IN WALL OR CEILING
- CONDUIT UNDERSLAB OR UNDERGROUND
- EM — EMERGENCY CONDUIT
- EM — EXPOSED CONDUIT
- DB — UNDERGROUND CONDUIT, "DB" DENOTES DUCTBANK ENCASED IN CONCRETE
- OHE — OVERHEAD ELECTRIC PRIMARY UTILITY POWER LINE
- CONDUIT TURNED UP
- CONDUIT TURNED DOWN
- HASH MARKS INDICATE NUMBER OF CONDUCTORS. LEFT TO RIGHT:PHASE/NEUTRAL/SWITCH LEG/GROUND/ISOLATED GROUND. NO HASH MARKS INDICATES 2# 12, PLUS GROUND, UNLESS NOTED OTHERWISE.
- 1LA-2,4 — HOMERUN TO PANEL WITH CIRCUIT NUMBER(S) AS INDICATED.
- (ON):LA-6 — PARTIAL CIRCUIT HOMERUN TO PANEL.
- T — COMMUNICATIONS CONDUIT OR CABLE:
  - "C" DENOTES MASTER CLOCK,
  - "CA" DENOTES MASTER CLOCK,
  - "CR" DENOTES CASH REGISTER
  - "D" DENOTES DATA,
  - "FA" DENOTES FIRE ALARM,
  - "I" DENOTES INTERCOM,
  - "OHE" DENOTES OVERHEAD ELECTRICAL LINE.
  - "PA" DENOTES PAGING,
  - "S" DENOTES SECURITY,
  - "T" DENOTES TELEPHONE,
  - "V" DENOTES VIDEO,
- TELECOMMUNICATIONS CABLE TRAY TO BE CONCEALED ABOVE ACCESSABLE CEILING.

## ELECTRICAL EQUIPMENT

- DISTRIBUTION PANEL
- MSB — SWITCHBOARD, MAIN DISTRIBUTION PANEL OR MOTOR CONTROL CENTER
- PANELBOARD (FLUSH/SURFACE MOUNT)
- FLOOR MOUNTED DRY-TYPE TRANSFORMER
- SUSPENDED OR WALL MOUNTED TRANSFORMER
- ATS — AUTOMATIC TRANSFER SWITCH
- FIRE RATED PLYWOOD TERMINAL BOARD, TYPE AS NOTED, 4' X 8' X 3/4" UNLESS NOTED OTHERWISE
- TERMINAL CABINET (FLUSH/SURFACE MOUNT), TYPE AS NOTED, 24" X 48" X 3-1/2" UNLESS NOTED OTHERWISE.
- BAT — BATTERY/INVERTER UNIT
- LV — LOW VOLTAGE TRANSFORMER.

## COMMUNICATIONS

ALL OUTLET BOXES SHALL BE MOUNTED 18" ABOVE FINISHED FLOOR TO CENTER OF DEVICE UNLESS NOTED OTHERWISE.

THE FOLLOWING NOTATIONS REFER TO ALL COMMUNICATIONS OUTLETS:
- "FAX" DENOTES OUTLET DEDICATED FOR A FAX,
- "W" DENOTES WALL PHONE SHALL BE MOUNTED AT 42" A.F.F.
- "PAY" DENOTES PAY PHONE SHALL BE MOUNTED 42" A.F.F.

- HS — SCHOOL INTERCOMMUNICATION SYSTEM HANDSET.
- TV — TV ROUGH-IN: 3-GANG RECESSED TV BOX. CONTAINING 1 DUPLEX RECEPTACLE, 1 GANG FOR AV, 1 GANG FOR DELTA.
- INDICATES THE LOCATION OF A NEW TECHNOLOGY WALL OUTLET, PROVIDE DUAL GANG BACK BOX. REFERENCE TECHNOLOGY SHEET FOR CONTENT.
- M W — MICROPHONE FLOOR OUTLET, "W" INDICATES WALL MOUNTED, "F" INDICATES FLOOR MOUNTED, "H" INDICATES HANGING MOUNTED
- S VC — CEILING MOUNTED SPEAKER. "VC" INDICATES VOLUME CONTROL ON SPEAKER.
- S L — WALL MOUNTED SPEAKER. "L" INDICATED LOCAL SOUND REINFORCEMENT
- CB — SCHOOL INTERCOMMUNICATION SYSTEM CALL-IN. PUSH BUTTON
- BELL, BUZZER OR CHIME AT 80+ A.F.F.
- VC — VOLUME CONTROL - WALL MOUNTED
- AX W — AUXILIARY INPUT JACK. "W" INDICATES WALL MOUNTED, "F" INDICATES FLOOR MOUNTED, "H" INDICATES HANGING MOUNTED
- AVO — "HIGH" PORTION OF "HIGH/LOW" OUTLETS, REFER TO OUTLET DETAIL.
- AVI — "LOW" PORTION OF "HIGH/LOW" OUTLETS, REFER TO OUTLET DETAIL.
- C (2) LV — LOW VOLTAGE CLOCK SHALL BE MOUNTED 12" BELOW FINISHED CEILING. (2) DENOTES DOUBLE SIDED CLOCK.

REFERENCE TECHNOLOGY/SECURITY SHEET FOR ADDITIONAL INFORMATION.

## ONE LINE AND RISER DIAGRAMS

- TRANSFORMER, TYPE AND RATINGS AS NOTED
- 800A/3P — SWITCH, RATING AS SHOWN
- 400A — FUSE, RATING AS SHOWN
- CL — CIRCUIT BREAKER, RATING AS SHOWN, 3 POLE UNLESS NOTED OTHERWISE. "CL" DENOTES CURRENT LIMITING
- DRAWOUT CIRCUIT BREAKER. RATINGS AS SHOWN, 3 POLE UNLESS NOTED OTHERWISE
- ST — SHUNT TRIP
- GF — GROUND FAULT RELAY
- K — KIRK-KEY INTERLOCK
- M — DIGITAL METER
- A 0-2000 — AMMETER, RANGE AS SHOWN
- AS — AMMETER SWITCH
- V 0-600 — VOLTMETER, RANGE AS SHOWN
- VS — VOLTMETER SWITCH
- Wh D-15 — WATT-HOUR METER. "D" DENOTES DEMAND REGISTER "15" DENOTES MINUTES OF DEMAND INTERVAL
- 1200/5 — CURRENT TRANSFORMER, RATED AS SHOWN
- 12.47KV/120V — POTENTIAL TRANSFORMER, RATING AS SHOWN
- GROUND CONNECTION
- LIGHTING ARRESTOR
- G — GENERATOR SET
- AUTOMATIC TRANSFER SWITCH
- BUS DUCT PLUG
- TVSS — TRANSIENT VOLTAGE SURGE SUPPRESSOR
- M — ELECTRICAL METER
- SPD — SURGE PROTECTION DEVICE

## MISCELLANEOUS

- F — SHADED SYMBOLS INDICATE EXISTING DEVICES TO REMAIN, UNLESS OTHERWISE NOTED.
- INDICATES WALL-MOUNTED WHEN ATTACHED TO ANY SYMBOL
- EX.X — DRAWING NOTE REFERENCE
- 1 — STARTER/DISCONNECT SCHEDULE REFERENCE
- 1 — FEEDER SCHEDULE REFERENCE
- LC — LIGHTING CONTACTOR
- TS — TIME SWITCH
- PC — PHOTOCELL
- PUSH BUTTON/DOOR BELL
- TC — TIMECLOCK
- R — RELAY
- SOS — AREA OF RESCUE ASSISTANCE
- B — BELL

## FIRE ALARM

- W — WATER FLOW SWITCH
- SP — SUPERVISORY SWITCH
- S — SMOKE DETECTOR - MULTI CRITERIA DETECTOR
- S # — SMOKE DETECTOR - "SB" INDICATES IN INTEGRAL SOUNDER BASE, "D" INDICATES DUCT TYPE, "R" INDICATES 120 VOLT RESIDENTIAL TYPE
- H — HEAT DETECTOR
- S BT — BEAM DETECTOR TRANSMITTER, HIGH IN CEILING WALL DIRECT LINE OF SIGHT.
- S BR — BEAM DETECTOR RECEIVER, HIGH IN CEILING WALL DIRECT LINE OF SIGHT.
- S — FIRE ALARM SPEAKER STROBE / CEILING MOUNTED
- S — FIRE ALARM SPEAKER STROBE / WALL MOUNTED
- S — FIRE ALARM SPEAKER / CEILING MOUNT.
- S — FIRE ALARM SPEAKER / WALL MOUNTED
- DH — MAGNETIC DOOR HOLDER
- R — AUXILIARY CONTROL RELAY
- FH — FIRE FIGHTER HANDSET
- F — FIRE ALARM PULL STATION +42" AFF
- F — FIREMAN'S TELEPHONE JACK +42" AFF
- AUDIO VISUAL FIRE ALARM HORN STROBE +80" AFF- 15/75cd U.N.O.
- VISUAL FIRE ALARM (STROBE) CEILING MOUNT - 15/75cd U.N.O.
- VISUAL FIRE ALARM (STROBE) WALL MOUNT +80" AFF- 15/75cd U.N.O.
- AUDIO FIRE ALARM HORN +80" AFF
- FACP — FIRE ALARM CONTROL PANEL
- ANN — REMOTE FIRE ALARM ANNUNCIATOR PANEL
- RPS — REMOTE POWER SUPPLY FOR AUDIO/VISUAL FIRE ALARM DEVICES.
- FSD — FIRE SMOKE DAMPER
- REMOTE LED INDICATOR LIGHT

## SECURITY

- KP — KEYPAD
- GB — GLASS BREAK SENSOR
- H — HOLD UP BUTTON
- DS — INTERCOM DOOR STATION
- MS — INTERCOM MASTER STATION
- M — LONG RANGE MOTION DETECTOR
- M — WALL MOUNTED MOTION DETECTOR
- M — CEILING MOUNTED MOTION DETECTOR
- IDP — INTRUSION DETECTION PANEL
- DC — DOOR CONTACT
- PB — ADA AUTO DOOR OPEN BUTTON
- DR — DOOR RELEASE BUTTON
- CR — CARD READER
- CR — WALL MOUNTED CARD READER

REFERENCE TECHNOLOGY/SECURITY SHEET FOR ADDITIONAL INFORMATION.

## SWITCHES & LIGHTING CONTROL DEVICES

ALL SWITCH TYPES AND SENSORS TYPES FOUND ON 'LIGHTING CONTROL DEVICE SCHEDULE' LOCATED ON ELECTRICAL SCHEDULES SHEETS

SWITCH ANNOTATION AS FOLLOWS:

- S a,b,c — TYPE, PER SCHEDULE; NO TYPE INDICATES SINGLE POLE TOGGLE SWITCH
- SWITCH LEGS, PER PLAN, SHOWN HERE AS 3 (a,b,c)

OCCUPANCY SENSOR ANNOTATION, AS FOLLOWS:

- OCx — OCCUPANCY / VACANCE SENSOR 'x' INDICATES TYPE, PER SCHEDULE
- CEILING SENSOR
- WITH BRACKET INDICATES WALL / CORNER MOUNT

LIGHT SENSOR ANNOTATION, AS FOLLOWS:

- PC — DIGITAL PHOTOSENSOR
- DS — DAYLIGHT HARVESTING SENSOR

## DRAWING/DETAIL REFERENCE KEY

REFER TO DRAWING/DETAIL NUMBER — 1 / E3-2; RE: 1 /E3-2 SHEET NUMBER

## GENERAL NOTES

A. NOT ALL SYMBOLS SHOWN ON THIS SYMBOL LIST ARE USED IN THE CONTRACT DOCUMENTS.


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f




REVISION:

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

SEAL:

STATE OF TEXAS — ROBERTO H. TIJERINA — 121946 — LICENSED PROFESSIONAL ENGINEER — 01-05-2023

# MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

DATE: 01/05/2023

DRAWN BY: DBR

CHECKED BY: DBR

PROJECT NUMBER 218033.009

SHEET TITLE: ELECTRICAL SYMBOL LEGEND

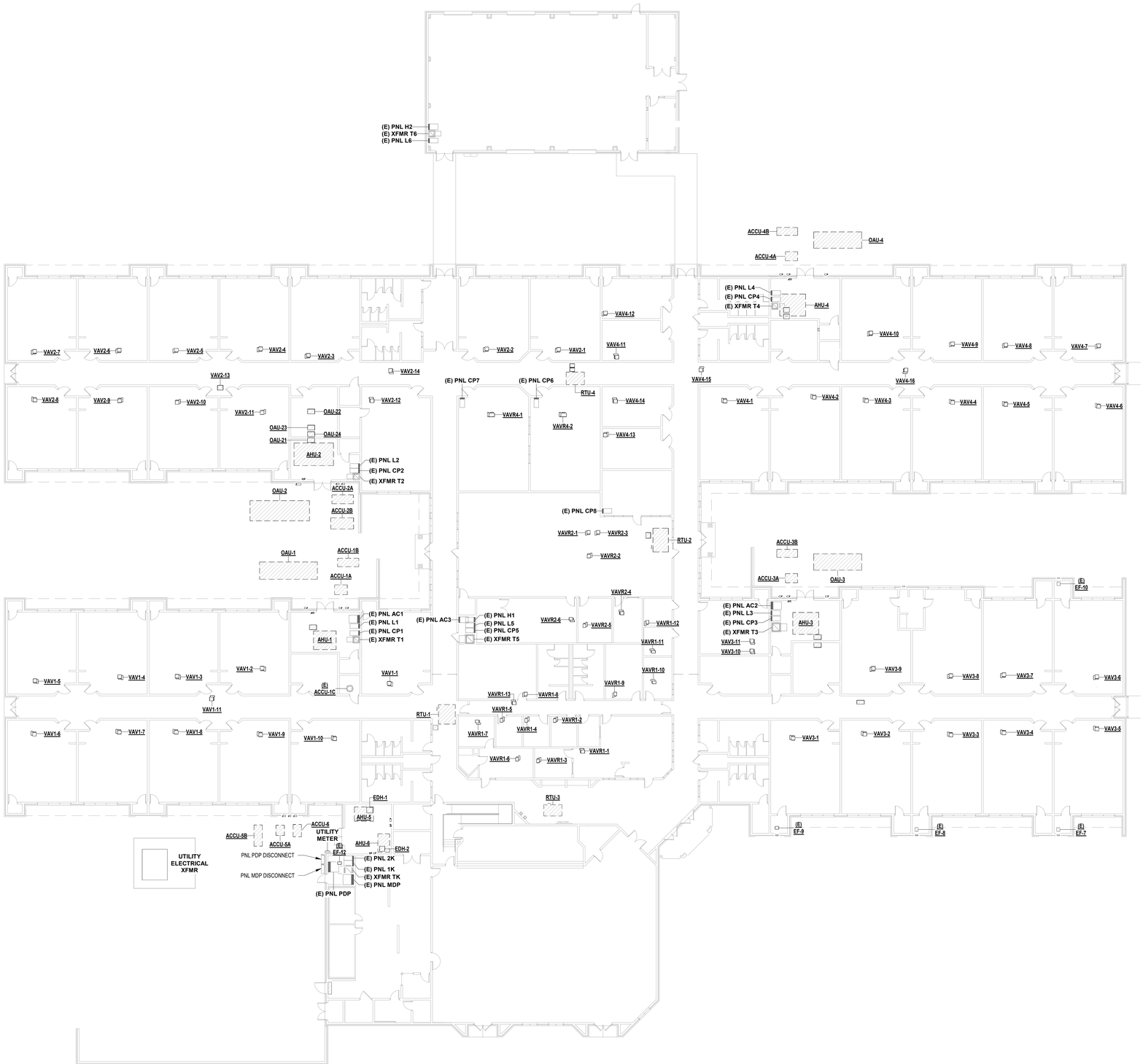
SHEET NUMBER: E0.01


DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234


DBR Project Number 218033.009

| HA | RT | JR | | |
|---|---|---|---|---|


1/5/2023 5:16:24 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt




## 1 DEMO COMPOSITE ELECTRICAL PLAN

ED2.11 1/16" = 1'-0"


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


93

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.009

**SHEET TITLE:** DEMO COMPOSITE ELECTRICAL PLAN

**SHEET NUMBER:** ED2.11


DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


TBPE Firm Registration No. 2234

DBR Project Number 218033.009

| HA | RT | JR | | |
|---|---|---|---|---|

TN PN

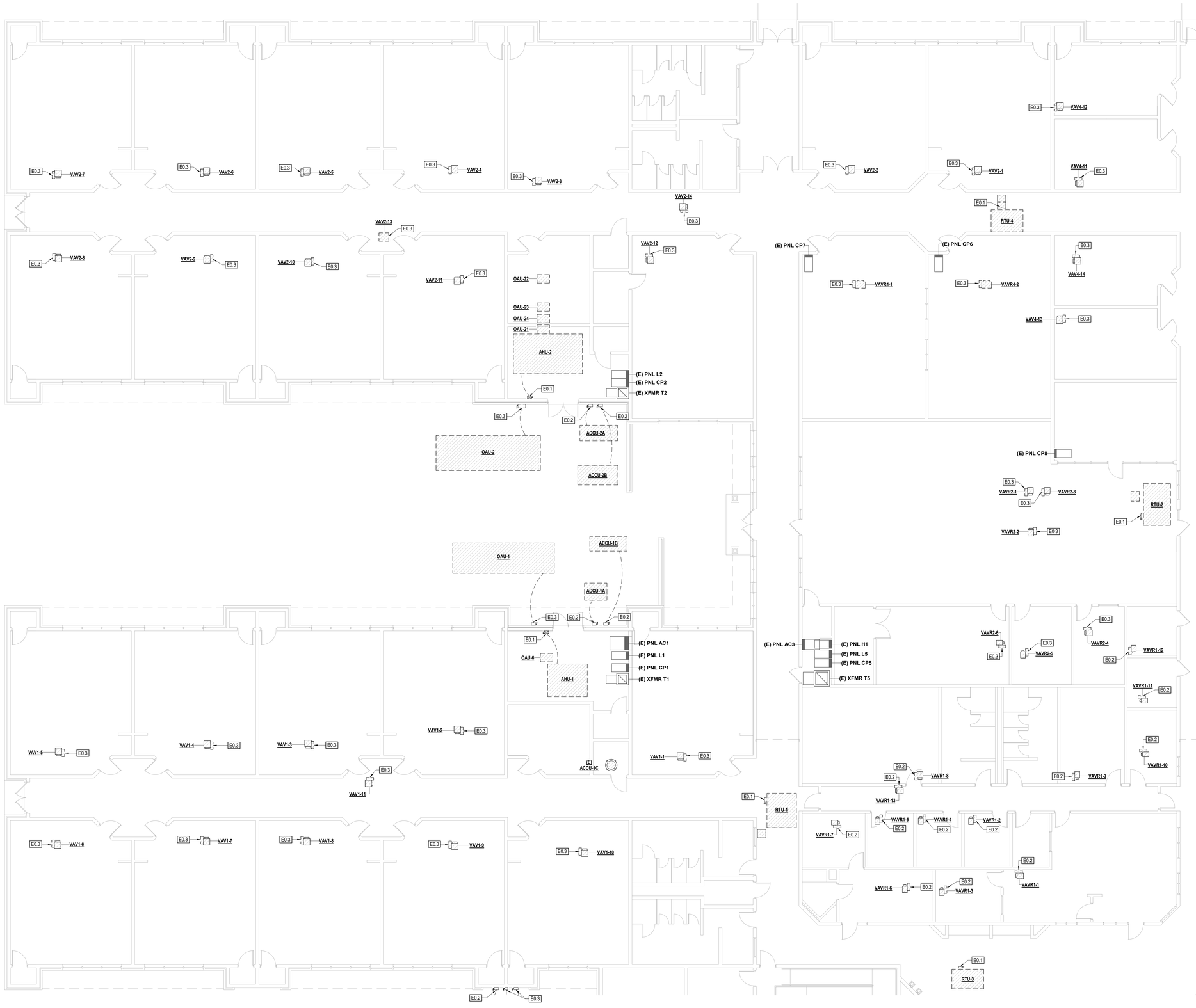

1/5/2023 5:16:35 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

## ELECTRICAL KEYED NOTES

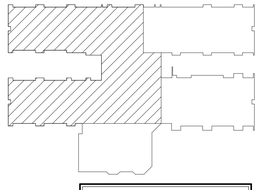
E0.1 DEMOLISH DISCONNECT AND ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT SCHEDULED FOR DEMOLITION BY DIV 23. EXISTING CONDUCTORS AND CONDUIT BACK TO ASSOCIATED PANEL, INCLUDING BREAKER SERVING LOAD TO REMAIN. EXISTING CONTROL PANEL CIRCUIT AND BYPASS DAMPER CIRCUIT TO REMAIN.

E0.2 DEMOLISH DISCONNECT AND ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT SCHEDULED FOR DEMOLITION BY DIV 23. DEMOLISH EXISTING CONDUCTORS AND CONDUIT BACK TO ASSOCIATED PANEL, INCLUDING BREAKER SERVING LOAD.

E0.3 DEMOLISH DISCONNECT AND ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT SCHEDULED FOR DEMOLITION BY DIV 23. EXISTING CONDUCTORS AND CONDUIT BACK TO ASSOCIATED PANEL, INCLUDING BREAKER SERVING LOAD TO REMAIN.




1 ED2.12 **DEMO ELECTRICAL PLAN - AREA A**
1/8" = 1'-0"



TN PN


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


94

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.009

**SHEET TITLE:** DEMO ELECTRICAL PLAN - AREA A

**SHEET NUMBER:** ED2.12

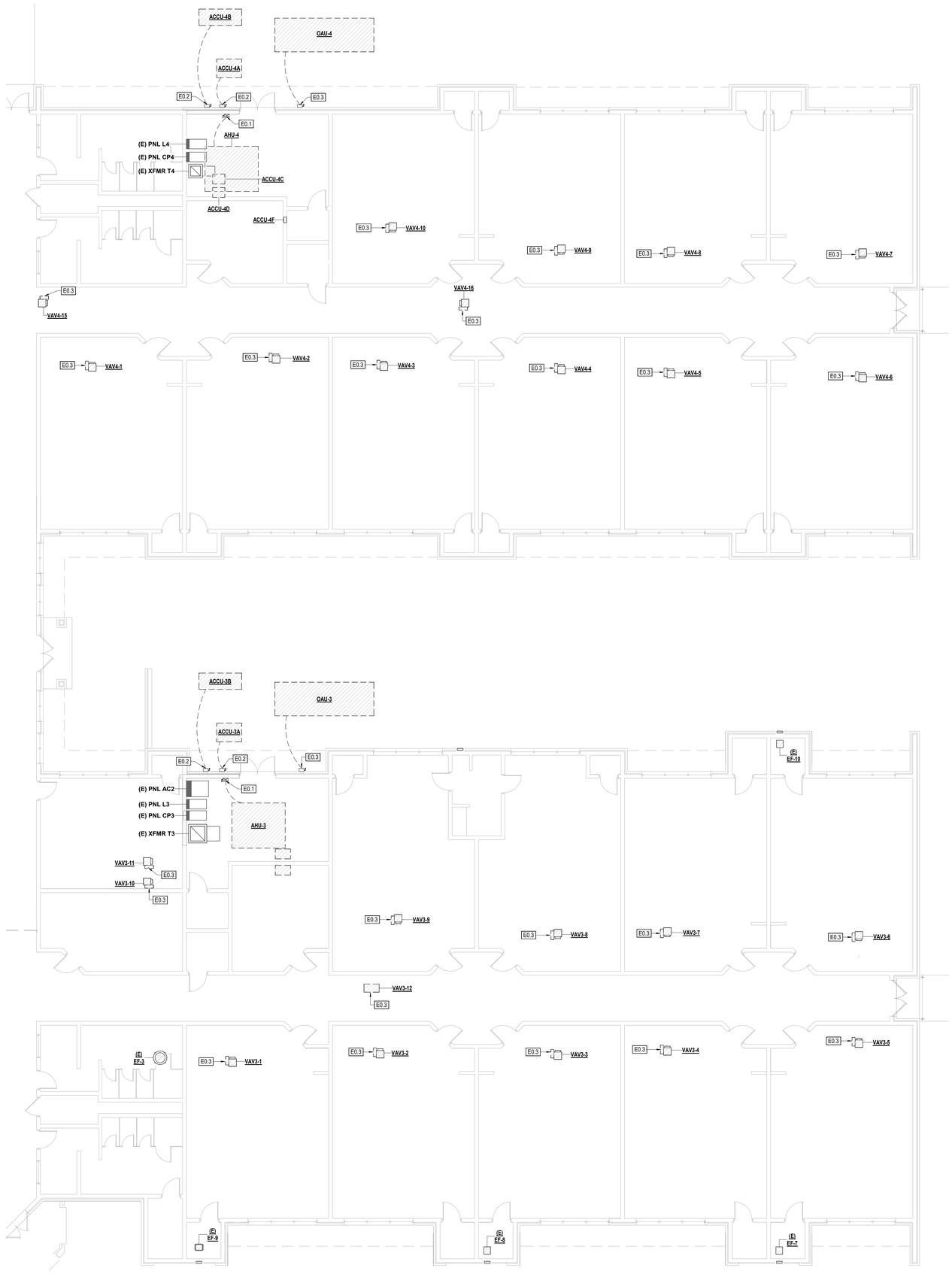

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


TBPE Firm Registration No. 2234

DBR Project Number 218033.009

| HA | RT | JR | | |
|---|---|---|---|---|


1/5/2023 5:16:36 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt




1 ED2.13 **DEMO ELECTRICAL PLAN - AREA B**
1/8" = 1'-0"

## ELECTRICAL KEYED NOTES

E0.1 DEMOLISH DISCONNECT AND ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT SCHEDULED FOR DEMOLITION BY DIV 23. EXISTING CONDUCTORS AND CONDUIT BACK TO ASSOCIATED PANEL, INCLUDING BREAKER SERVING LOAD TO REMAIN. EXISTING CONTROL PANEL CIRCUIT AND BYPASS DAMPER CIRCUIT TO REMAIN.

E0.2 DEMOLISH DISCONNECT AND ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT SCHEDULED FOR DEMOLITION BY DIV 23. DEMOLISH EXISTING CONDUCTORS AND CONDUIT BACK TO ASSOCIATED PANEL, INCLUDING BREAKER SERVING LOAD.

E0.3 DEMOLISH DISCONNECT AND ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT SCHEDULED FOR DEMOLITION BY DIV 23. EXISTING CONDUCTORS AND CONDUIT BACK TO ASSOCIATED PANEL, INCLUDING BREAKER SERVING LOAD TO REMAIN.

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

95

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.009

**SHEET TITLE:** DEMO ELECTRICAL PLAN - AREA B

**SHEET NUMBER:** ED2.13

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.009

| HA | RT | JR | | |
|---|---|---|---|---|

TN PN

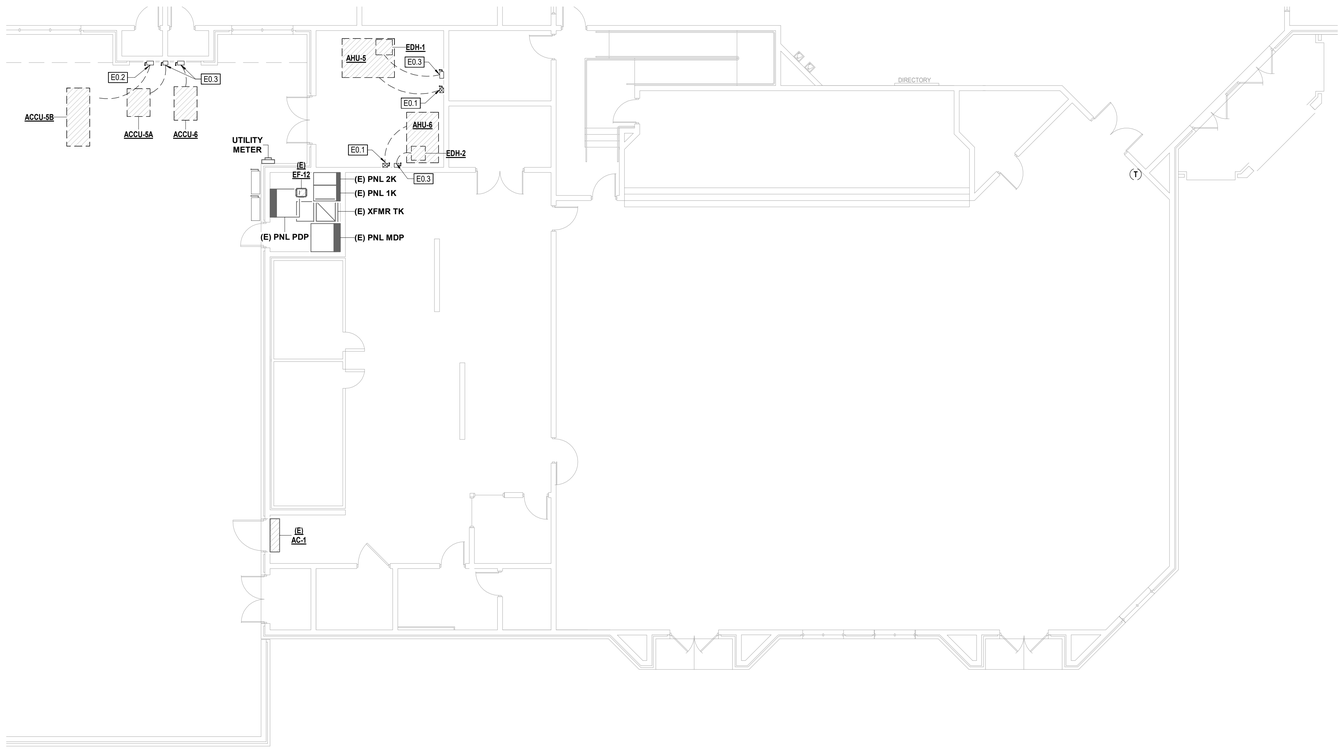
1/5/2023 5:16:38 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

## ELECTRICAL KEYED NOTES

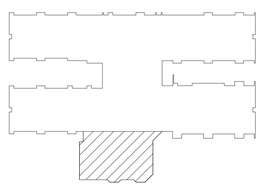
E0.1 DEMOLISH DISCONNECT AND ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT SCHEDULED FOR DEMOLITION BY DIV 23. EXISTING CONDUCTORS AND CONDUIT BACK TO ASSOCIATED PANEL, INCLUDING BREAKER SERVING LOAD TO REMAIN. EXISTING CONTROL PANEL CIRCUIT AND BYPASS DAMPER CIRCUIT TO REMAIN.

E0.2 DEMOLISH DISCONNECT AND ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT SCHEDULED FOR DEMOLITION BY DIV 23. DEMOLISH EXISTING CONDUCTORS AND CONDUIT BACK TO ASSOCIATED PANEL, INCLUDING BREAKER SERVING LOAD.

E0.3 DEMOLISH DISCONNECT AND ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT SCHEDULED FOR DEMOLITION BY DIV 23. EXISTING CONDUCTORS AND CONDUIT BACK TO ASSOCIATED PANEL, INCLUDING BREAKER SERVING LOAD TO REMAIN.




1 ED2.14 **DEMO ELECTRICAL PLAN - AREA C**
1/8" = 1'-0"



TN PN


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


96

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.009

**SHEET TITLE:** DEMO ELECTRICAL PLAN - AREA C

**SHEET NUMBER:** ED2.14

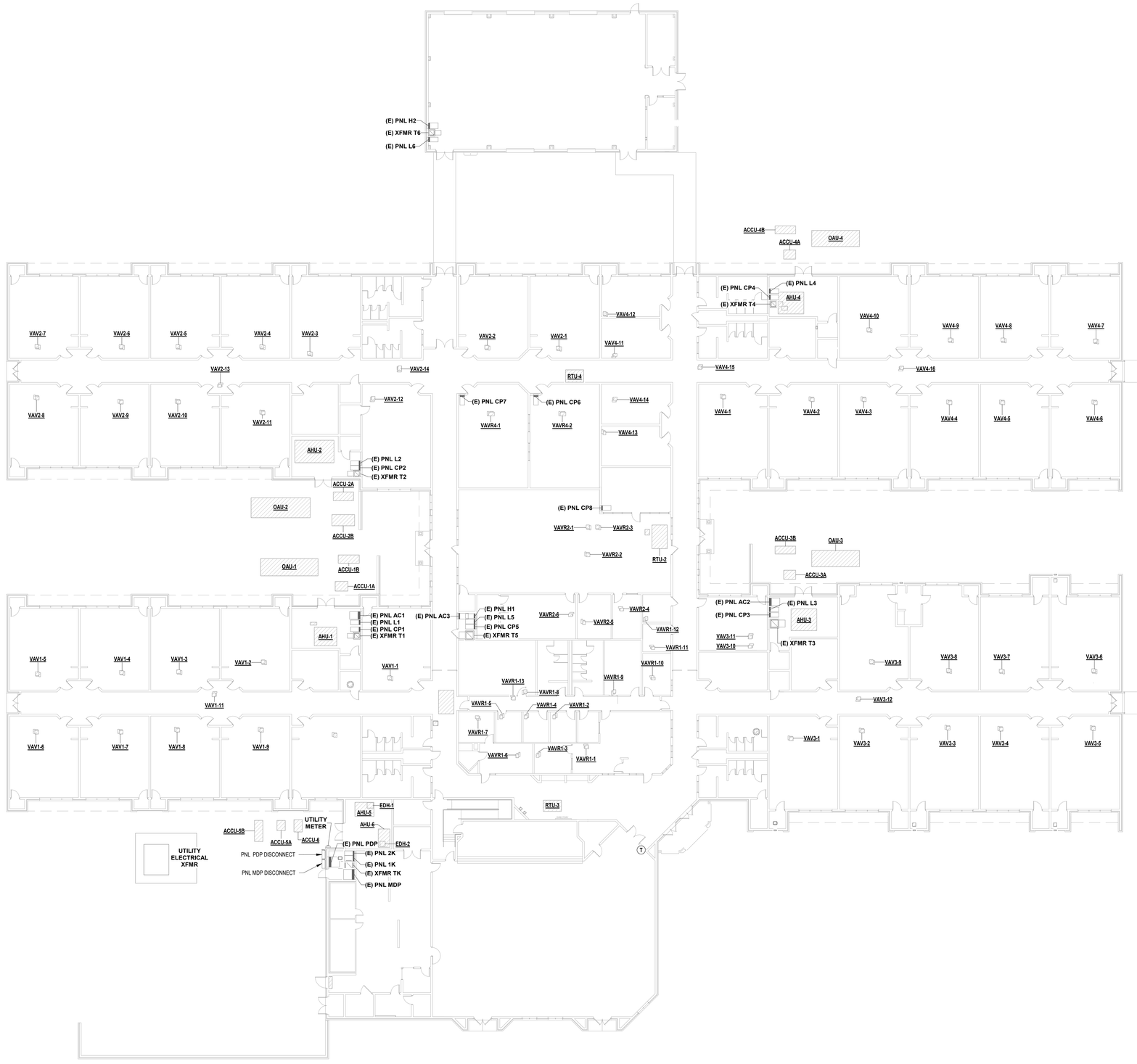

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


TBPE Firm Registration No. 2234

DBR Project Number 218033.009

| HA | RT | JR | | |
|---|---|---|---|---|


1/5/2023 5:16:39 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt




## 1 COMPOSITE ELECTRICAL PLAN
E2.11 — 1/16" = 1'-0"


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


97

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**




# MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.009

**SHEET TITLE:** COMPOSITE ELECTRICAL PLAN

**SHEET NUMBER:** E2.11


DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

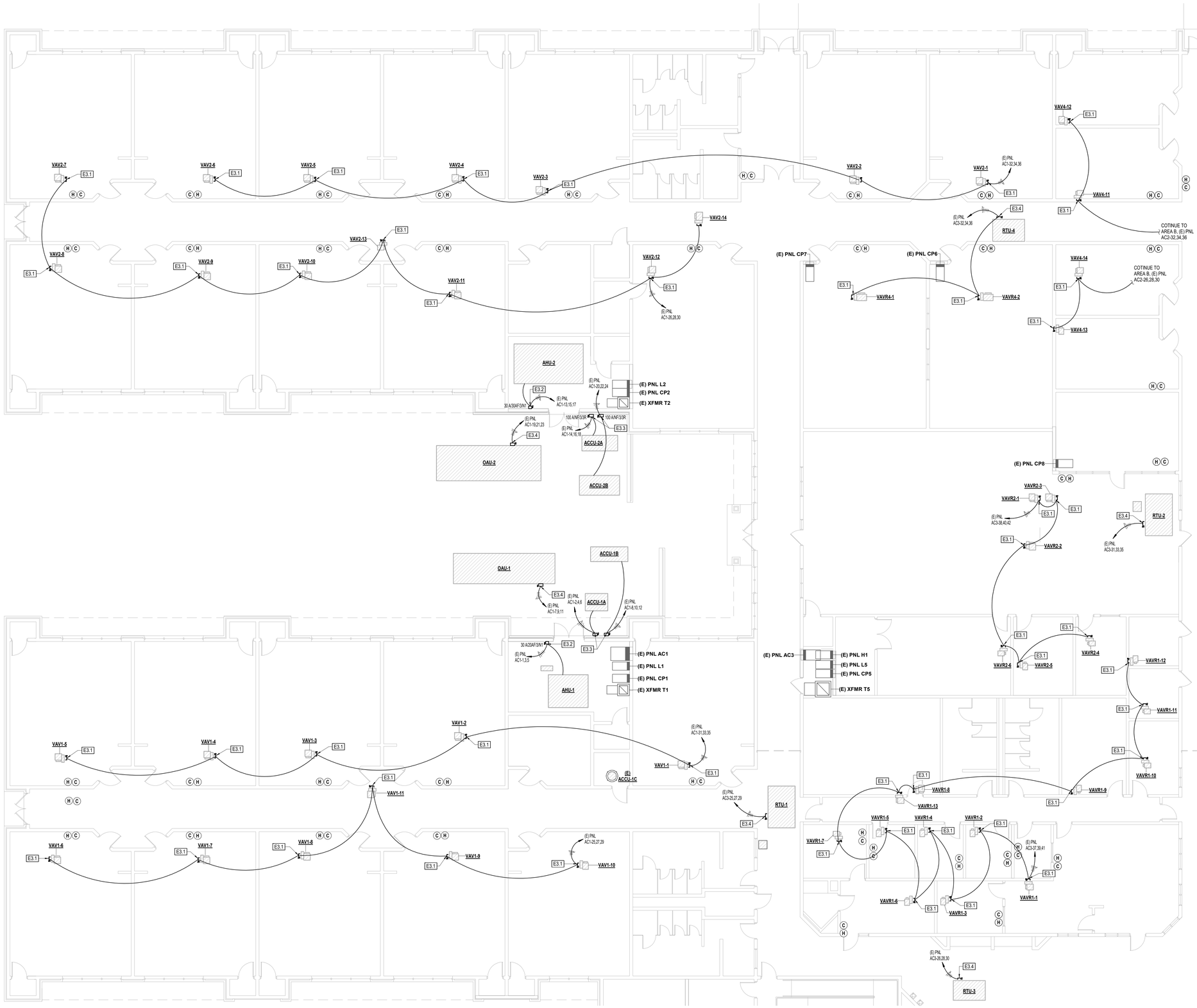

TBPE Firm Registration No. 2234

DBR Project Number 218033.009

| HA | RT | JR | | |
|---|---|---|---|---|

TN PN


1/5/2023 5:16:25 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt




1 E2.12 **ELECTRICAL PLAN - AREA A**

1/8" = 1'-0"

## ELECTRICAL KEYED NOTES

E3.1 CONNECT NEW VAV BOX TO EXISTING CIRCUIT. PROVIDE ALL LABOR AND MATERIAL REQUIRED TO RECONNECT NEW UNIT. REFER TO FEEDER SCHEDULES FOR CONDUCTOR AND CONDUIT SIZES. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH MECHANICAL CONTRACTOR. DISCONNECT SHOWN FOR REFERENCE ONLY, NEW EQUIPMENT IS PROVIDED WITH INTEGRAL FUSED DISCONNECT.

E3.2 CONNECT NEW HVAC EQUIPMENT. PROVIDE NEW ELECTRICAL CONNECTION AND DISCONNECT AS INDICATED. REFER TO FEEDER SCHEDULES FOR CONDUCTOR AND CONDUIT SIZES. RECONNECT TO EXISTING CIRCUIT BACK TO EXISTING BREAKER AT PANEL.

E3.3 CONNECT NEW HVAC EQUIPMENT, PROVIDE NEW ELECTRICAL CONNECTION AND DISCONNECT AS INDICATED WITH NEW FEEDER BACK TO NEW BREAKER AT EXISTING PANEL. REFER TO FEEDER SCHEDULES FOR CONDUCTOR AND CONDUIT SIZES.

E3.4 CONNECT NEW HVAC EQUIPMENT, PROVIDE NEW ELECTRICAL CONNECTION AS INDICATED. REFER TO FEEDER SCHEDULES FOR CONDUCTOR AND CONDUIT SIZES. RECONNECT TO EXISTING CIRCUIT BACK TO EXISTING BREAKER AT PANEL. DISCONNECT SHOWN FOR REFERENCE ONLY, NEW EQUIPMENT IS PROVIDED WITH INTEGRAL FUSED DISCONNECT.

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

98

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.009

**SHEET TITLE:** ELECTRICAL PLAN - AREA

**SHEET NUMBER:** E2.12

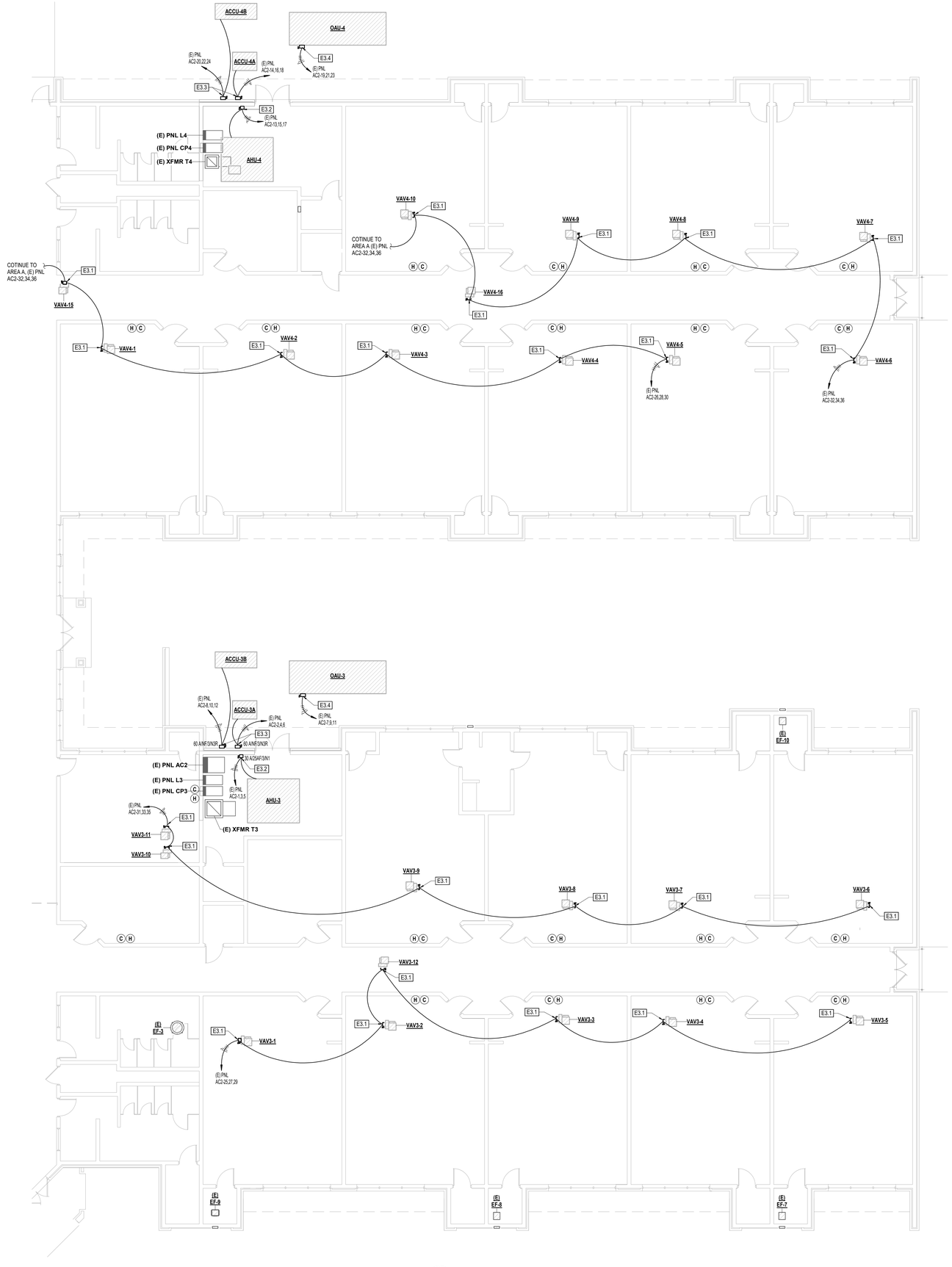
TN PN

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.009

| HA | RT | JR | | |
|---|---|---|---|---|

1/5/2023 5:16:28 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt




1 E2.13 **ELECTRICAL PLAN - AREA B**
1/8" = 1'-0"

## ELECTRICAL KEYED NOTES

E3.1 CONNECT NEW VAV BOX TO EXISTING CIRCUIT. PROVIDE ALL LABOR AND MATERIAL REQUIRED TO RECONNECT NEW UNIT. REFER TO FEEDER SCHEDULES FOR CONDUCTOR AND CONDUIT SIZES. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH MECHANICAL CONTRACTOR. DISCONNECT SHOWN FOR REFERENCE ONLY, NEW EQUIPMENT IS PROVIDED WITH INTEGRAL FUSED DISCONNECT.

E3.2 CONNECT NEW HVAC EQUIPMENT, PROVIDE NEW ELECTRICAL CONNECTION AND DISCONNECT AS INDICATED. REFER TO FEEDER SCHEDULES FOR CONDUCTOR AND CONDUIT SIZES. RECONNECT TO EXISTING CIRCUIT BACK TO EXISTING BREAKER AT PANEL.

E3.3 CONNECT NEW HVAC EQUIPMENT, PROVIDE NEW ELECTRICAL CONNECTION AND DISCONNECT AS INDICATED WITH NEW FEEDER BACK TO NEW BREAKER AT EXISTING PANEL. REFER TO FEEDER SCHEDULES FOR CONDUCTOR AND CONDUIT SIZES.

E3.4 CONNECT NEW HVAC EQUIPMENT, PROVIDE NEW ELECTRICAL CONNECTION AS INDICATED. REFER TO FEEDER SCHEDULES FOR CONDUCTOR AND CONDUIT SIZES. RECONNECT TO EXISTING CIRCUIT BACK TO EXISTING BREAKER AT PANEL. DISCONNECT SHOWN FOR REFERENCE ONLY, NEW EQUIPMENT IS PROVIDED WITH INTEGRAL FUSED DISCONNECT.

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f



**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMNTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.009

**SHEET TITLE:** ELECTRICAL PLAN - AREA B

**SHEET NUMBER:** E2.13

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.009

HA | RT | JR

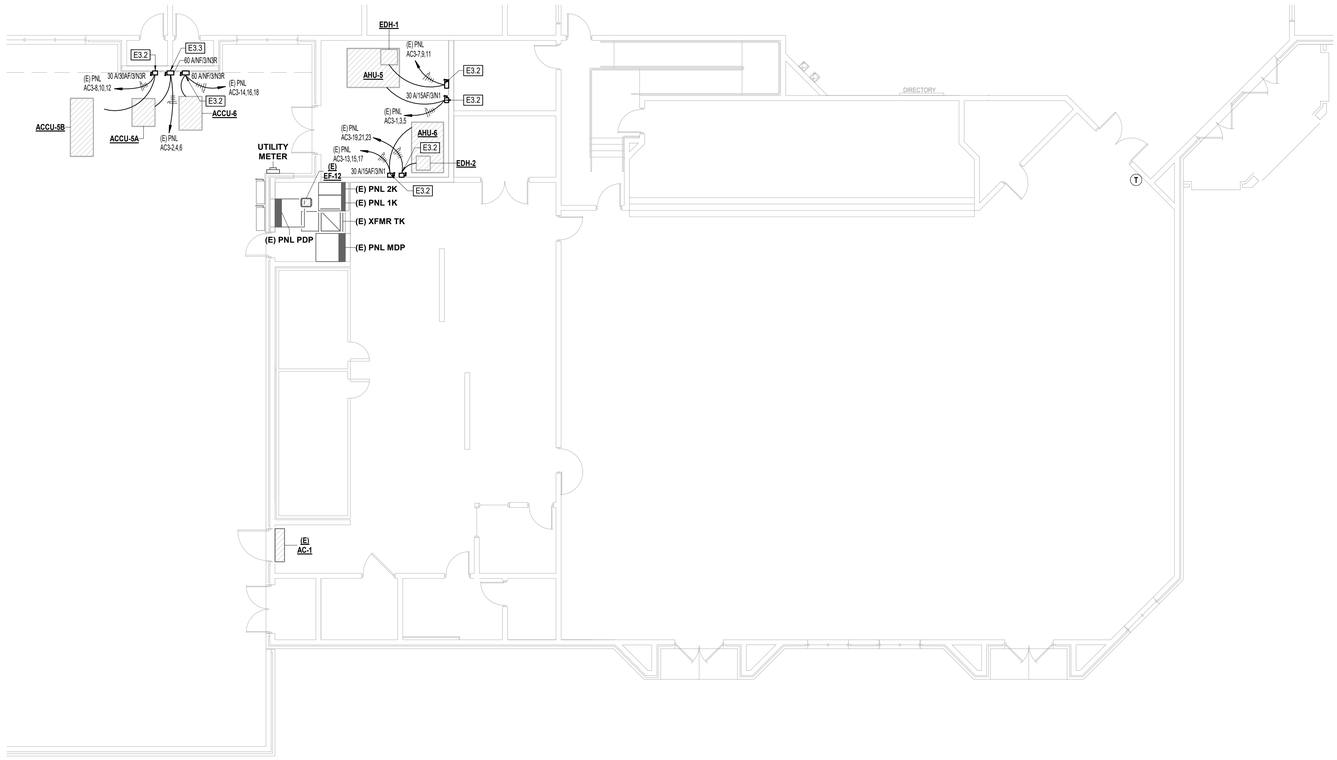
TN PN

1/5/2023 5:16:30 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

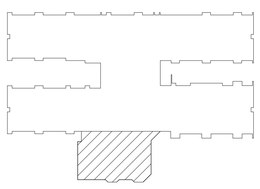
## ELECTRICAL KEYED NOTES

E3.2 CONNECT NEW HVAC EQUIPMENT. PROVIDE NEW ELECTRICAL CONNECTION AND DISCONNECT AS INDICATED. REFER TO FEEDER SCHEDULES FOR CONDUCTOR AND CONDUIT SIZES. RECONNECT TO EXISTING CIRCUIT BACK TO EXISTING BREAKER AT PANEL.

E3.3 CONNECT NEW HVAC EQUIPMENT. PROVIDE NEW ELECTRICAL CONNECTION AND DISCONNECT AS INDICATED WITH NEW FEEDER BACK TO NEW BREAKER AT EXISTING PANEL. REFER TO FEEDER SCHEDULES FOR CONDUCTOR AND CONDUIT SIZES.




1 E2.14 **ELECTRICAL PLAN - AREA C**
1/8" = 1'-0"




DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


100

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.009

**SHEET TITLE:** ELECTRICAL PLAN - AREA C

**SHEET NUMBER:** E2.14


DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


TBPE Firm Registration No. 2234

DBR Project Number 218033.009

| HA | RT | JR | | |
|---|---|---|---|---|

TN PN


1/5/2023 5:16:31 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

## FEEDER SCHEDULE
### COPPER ONLY

| RATING | SETS | CONDUCTOR SIZE | CONDUIT |
|---|---|---|---|
| 30A | 1 | 4#10, 1#10 G. | 3/4" |
| 40A | 1 | 4#8, 1#10 G. | 1" |
| 50A | 1 | 4#6, 1#10 G. | 1" |
| 60A | 1 | 4#6, 1#10 G. | 1" |
| 70A | 1 | 4#4, 1#8 G. | 1 1/4" |
| 80A | 1 | 4#4, 1#8 G. | 1 1/4" |
| 90A | 1 | 4#3, 1#8 G. | 1 1/4" |
| 100A | 1 | 4#3, 1#8 G. | 1 1/4" |
| 125A | 1 | 4#1, 1#6 G. | 1 1/2" |
| 150A | 1 | 4#1/0, 1#6 G. | 1 1/2" |
| 175A | 1 | 4#2/0, 1#6 G. | 2" |
| 200A | 1 | 4#3/0, 1#6 G. | 2" |
| 225A | 1 | 4#4/0, 1#4 G. | 2 1/2" |
| 250A | 1 | 4#250, 1#4 G. | 2 1/2" |
| 300A | 1 | 4#350, 1#4 G. | 3" |
| 350A | 1 | 4#500, 1#3 G. | 3 1/2" |
| 400A | 1 | 4#600, 1#3 G. | 4" |
| 450A | 2 | 4#4/0, 1#2 G. | 2 1/2" |
| 500A | 2 | 4#250, 1#2G. | 2 1/2" |
| 600A | 2 | 4#350, 1#1G. | 3" |
| 700A | 2 | 4#500, 1#1/0G. | 4" |
| 800A | 2 | 4#600, 1#1/0G. | 4" |
| 1000A | 3 | 4#500, 1#2/0G. | 4" |
| 1200A | 4 | 4#350, 1#3/0G. | 3" |
| 1600A | 4 | 4#600, 1#4/0G. | 4" |
| | 5 | 4#500, 1#4/0G. | 4" |
| 2000A | 5 | 4#600, 1#250 G. | 4" |
| | 6 | 4#500, 1#250 G. | 4" |
| 2500A | 6 | 4#600, 1#350 G. | 4" |
| | 7 | 4#500, 1#350 G. | 4" |
| 3000A | 8 | 4#500, 1#400 G. | 4" |
| 3500A | 9 | 4#600, 1#500 G. | 4" |
| | 10 | 4#500, 1#500 G. | 4" |
| 4000A | 10 | 4#600, 1#500 G. | 4" |
| | 11 | 4#500, 1#500 G. | 4" |
| 5000A | 12 | 4#600, 1#750 G. | 4" |
| | 14 | 4#500, 1#750 G. | 4" |

1. ELECTRICAL CONTRACTOR SHALL PROVIDE THE NUMBER OF LUGS AND PROPER LUG SIZES TO ACCEPT CONDUCTOR SIZES SHOWN.
2. GROUND NOT REQUIRED AT SERVICE LATERAL.

## Panelboard (E) PNL AC1

AIC Rating: New / X Existing

480/277 Wye Volt, 3 Phase, 4 Wire; 1 Section; Type 1 -Nema Rating | Mains Type: MLO | 0 A MCB; 600 A BUS (Copper); ISO. GRND. BUS | X Single, Double, Feed - Thru | Mounting: X Surface, Flush

| NOTE | LOAD (VA) | TYPE | DESCRIPTION | WIRE | CB | CKT | CKT | CB | WIRE | DESCRIPTION | TYPE | LOAD (VA) | NOTE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 1 | 2 | | | | | | |
| | 12720 VA | M | AHU-1 | 6 | 60 A | 3 | 4 | 50 A | 8 | ACCU-1A | M | 24610 VA | 1 |
| | | | | | | 5 | 6 | | | | | | |
| | 59300 VA | M | OAU-1 | 4 | 80 A | 7 | 8 | 50 A | 8 | ACCU-1B | M | 24610 VA | 1 |
| | | | | | | 9 | 10 | | | | | | |
| | | | | | | 11 | 12 | | | | | | |
| | 18710 VA | M | AHU-2 | 4 | 80 A | 13 | 14 | 70 A | 4 | ACCU-2A | M | 31925 VA | 1 |
| | | | | | | 15 | 16 | | | | | | |
| | | | | | | 17 | 18 | | | | | | |
| | 53475 VA | M | OAU-2 | 1 | 110 A | 19 | 20 | 70 A | 4 | ACCU-2B | M | 31925 VA | 1 |
| | | | | | | 21 | 22 | | | | | | |
| | | | | | | 23 | 24 | | | | | | |
| | 28000 VA | M | VAV BOXES (28 KW) | 8 | 45 A | 25 | 26 | 60 A | 6 | VAV BOXES (36 KW) | M | 44000 VA | |
| | | | | | | 27 | 28 | | | | | | |
| | | | | | | 29 | 30 | | | | | | |
| | 25000 VA | M | VAV BOXES (25 KW) | 8 | 40 A | 31 | 32 | 60 A | 6 | VAV BOXES (39 KW) | M | 31000 VA | |
| | | | | | | 33 | 34 | | | | | | |
| | | | | | | 35 | 36 | | | | | | |
| | 0 VA | -- | Space | 12 | -- | 37 | 38 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 39 | 40 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 41 | 42 | -- | 12 | Space | -- | 0 VA | |

| N.E.C. (2020) | Load Type | Conn. | Fct. | Diversity | N.E.C.(2020) | Load Type | Conn. | Fct. | Diversity |
|---|---|---|---|---|---|---|---|---|---|
| 220.44 | (R)Receptacle | | | | 210.20(a) | (L)Lighting | | | |
| 220.56 | (K)Kitchen | | | | | (EL)Ext. Ltg. | | | |
| 220.60 | (C)Cooling | | | 0 VA | 620.14 | (E)Elevators | | | |
| 220.60 | (H)Heating | | | 0 VA | | (WH)Wat. Htr. | | | |
| 220.60 | (F)Fans | | | | 220.5 | (MT)Lrg. Motor | | | |
| | (M)Misc. | 385275 VA | 100.00% | 385275 VA | | (SP)Sub Pnl. | | | |
| Total Connected Load: | | 385275 VA | VA = | 463 A | Location of Panel: | | | | |
| Total Load (Diversified): | | 385275 VA | VA = | 463 A | | | | | |

NOTES:
1. PROVIDE NEW CIRCUIT BREAKER AS SHOWN, AIC RATING TO MATCH EXISITNG PANEL RATING.

## Panelboard (E) PNL AC2

AIC Rating: New / X Existing

480/277 Wye Volt, 3 Phase, 4 Wire; 1 Section; Type 1 -Nema Rating | Mains Type: MLO | 0 A MCB; 600 A BUS (Copper); ISO. GRND. BUS | X Single, Double, Feed - Thru | Mounting: X Surface, Flush

| NOTE | LOAD (VA) | TYPE | DESCRIPTION | WIRE | CB | CKT | CKT | CB | WIRE | DESCRIPTION | TYPE | LOAD (VA) | NOTE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 1 | 2 | | | | | | |
| | 15715 VA | M | AHU-3 | 4 | 80 A | 3 | 4 | 50 A | 8 | ACCU-3A | M | 31925 VA | 1 |
| | | | | | | 5 | 6 | | | | | | |
| | 49300 VA | M | OAU-3 | 4 | 80 A | 7 | 8 | 50 A | 8 | ACCU-3B | M | 31925 VA | 1 |
| | | | | | | 9 | 10 | | | | | | |
| | | | | | | 11 | 12 | | | | | | |
| | 15715 VA | M | AHU-4 | 4 | 80 A | 13 | 14 | 50 A | 8 | ACCU-4A | M | 31925 VA | 1 |
| | | | | | | 15 | 16 | | | | | | |
| | | | | | | 17 | 18 | | | | | | |
| | 50465 VA | M | OAU-4 | 3 | 100 A | 19 | 20 | 50 A | 8 | ACCU-4B | M | 31925 VA | 1 |
| | | | | | | 21 | 22 | | | | | | |
| | | | | | | 23 | 24 | | | | | | |
| | 28000 VA | M | VAV BOXES (28 KW) | 8 | 45 A | 25 | 26 | 50 A | 8 | VAV BOXES (33 KW) | M | 33000 VA | |
| | | | | | | 27 | 28 | | | | | | |
| | | | | | | 29 | 30 | | | | | | |
| | 29000 VA | M | VAV BOXES (29 KW) | 8 | 45 A | 31 | 32 | 50 A | 8 | VAV BOXES (33 KW) | M | 33000 VA | |
| | | | | | | 33 | 34 | | | | | | |
| | | | | | | 35 | 36 | | | | | | |
| | 0 VA | -- | Spare | 8 | 40 A | 37 | 38 | 40 A | 8 | Spare | -- | 0 VA | |
| | | | | | | 39 | 40 | | | | | | |
| | | | | | | 41 | 42 | | | | | | |

| N.E.C. (2020) | Load Type | Conn. | Fct. | Diversity | N.E.C.(2020) | Load Type | Conn. | Fct. | Diversity |
|---|---|---|---|---|---|---|---|---|---|
| 220.44 | (R)Receptacle | | | | 210.20(a) | (L)Lighting | | | |
| 220.56 | (K)Kitchen | | | | | (EL)Ext. Ltg. | | | |
| 220.60 | (C)Cooling | | | 0 VA | 620.14 | (E)Elevators | | | |
| 220.60 | (H)Heating | | | 0 VA | | (WH)Wat. Htr. | | | |
| 220.60 | (F)Fans | | | | 220.5 | (MT)Lrg. Motor | | | |
| | (M)Misc. | 381895 VA | 100.00% | 381895 VA | | (SP)Sub Pnl. | | | |
| Total Connected Load: | | 381895 VA | VA = | 459 A | Location of Panel: | | | | |
| Total Load (Diversified): | | 381895 VA | VA = | 459 A | | | | | |

NOTES:
1. PROVIDE NEW CIRCUIT BREAKER AS SHOWN, AIC RATING TO MATCH EXISITNG PANEL RATING.

## Panelboard (E) PNL AC3

AIC Rating: New / X Existing

480/277 Wye Volt, 3 Phase, 4 Wire; 1 Section; Type 1 -Nema Rating | Mains Type: MLO | 0 A MCB; 400 A BUS (Copper); ISO. GRND. BUS | X Single, Double, Feed - Thru | Mounting: X Surface, Flush

| NOTE | LOAD (VA) | TYPE | DESCRIPTION | WIRE | CB | CKT | CKT | CB | WIRE | DESCRIPTION | TYPE | LOAD (VA) | NOTE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 1 | 2 | | | | | | |
| | 6720 VA | M | AHU-5 | 10 | 30 A | 3 | 4 | 50 A | 8 | ACCU-5A | M | 31925 VA | 1 |
| | | | | | | 5 | 6 | | | | | | |
| | 60000 VA | M | EDH-1 (AHU-5 HEATER, 60 KW) | 3 | 90 A | 7 | 8 | 50 A | 8 | ACCU-5B | M | 15300 VA | |
| | | | | | | 9 | 10 | | | | | | |
| | | | | | | 11 | 12 | | | | | | |
| | 3725 VA | M | AHU-6 | 12 | 20 A | 13 | 14 | 35 A | 8 | ACCU-6 | M | 31925 VA | |
| | | | | | | 15 | 16 | | | | | | |
| | | | | | | 17 | 18 | | | | | | |
| | 15000 VA | M | EDH-2 (AHU-6 HEATER, 15 KW) | 10 | 30 A | 19 | 20 | 50 A | 8 | Spare | -- | 0 VA | |
| | | | | | | 21 | 22 | | | | | | |
| | | | | | | 23 | 24 | | | | | | |
| | 23950 VA | M | RTU-1 | 8 | 45 A | 25 | 26 | 15 A | 12 | RTU-3 | M | 5990 VA | |
| | | | | | | 27 | 28 | | | | | | |
| | | | | | | 29 | 30 | | | | | | |
| | 23950 VA | M | RTU-2 | 8 | 45 A | 31 | 32 | 60 A | 6 | RTU-4 & VAV BOXES | M | 33280 VA | |
| | | | | | | 33 | 34 | | | | | | |
| | | | | | | 35 | 36 | | | | | | |
| | 27000 VA | M | VAV BOXES (RTU-1, 27KW) | 8 | 40 A | 37 | 38 | 40 A | 8 | VAV BOXES (RTU-2, 28KW) | M | 28000 VA | |
| | | | | | | 39 | 40 | | | | | | |
| | | | | | | 41 | 42 | | | | | | |

| N.E.C. (2020) | Load Type | Conn. | Fct. | Diversity | N.E.C.(2020) | Load Type | Conn. | Fct. | Diversity |
|---|---|---|---|---|---|---|---|---|---|
| 220.44 | (R)Receptacle | | | | 210.20(a) | (L)Lighting | | | |
| 220.56 | (K)Kitchen | | | | | (EL)Ext. Ltg. | | | |
| 220.60 | (C)Cooling | | | 0 VA | 620.14 | (E)Elevators | | | |
| 220.60 | (H)Heating | | | 0 VA | | (WH)Wat. Htr. | | | |
| 220.60 | (F)Fans | | | | 220.5 | (MT)Lrg. Motor | | | |
| | (M)Misc. | 306765 VA | 100.00% | 306765 VA | | (SP)Sub Pnl. | | | |
| Total Connected Load: | | 306765 VA | VA = | 369 A | Location of Panel: | | | | |
| Total Load (Diversified): | | 306765 VA | VA = | 369 A | | | | | |

NOTES:
1. PROVIDE NEW CIRCUIT BREAKER AS SHOWN, AIC RATING TO MATCH EXISITNG PANEL RATING.


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


101

REVISION:

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

SEAL:

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

DATE: 01/05/2023

DRAWN BY: DBR

CHECKED BY: DBR

PROJECT NUMBER: 218033.009

SHEET TITLE: ELECTRICAL SCHEDULES

SHEET NUMBER: E5.01

TN PN

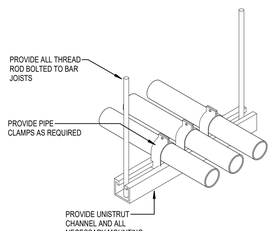

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


TBPE Firm Registration No. 2234

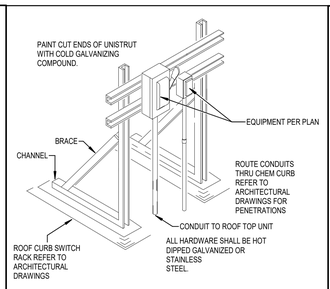
DBR Project Number 218033.009

| HA | RT | JR | | |
|---|---|---|---|---|

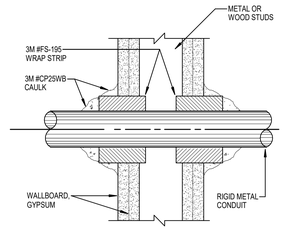

1/5/2023 5:16:32 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt



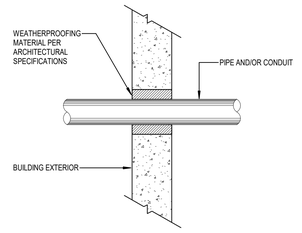

**1 UNISTRUT CONDUIT DETAIL**
NOT TO SCALE E10003



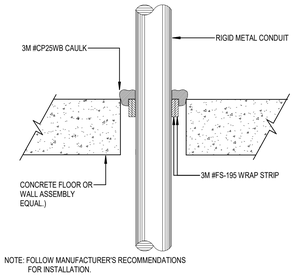

**2 ROOF UNISTRUT RACK DETAIL**
NOT TO SCALE E10015



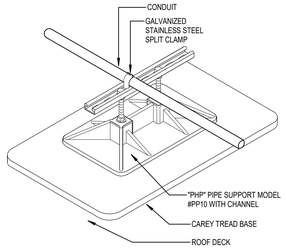

**3 2 HR. GYPSUM WALLBOARD PIPE PENETRATION**
NOT TO SCALE E10017



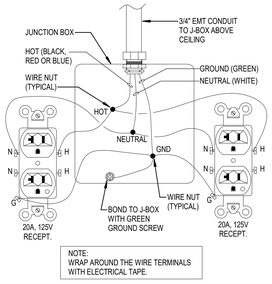

**4 PIPE AND/OR CONDUIT PENETRATION**
NOT TO SCALE E10018



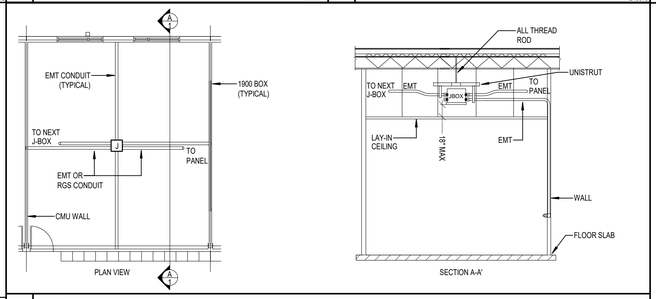

**5 2, 3 AND 4 HR. PENETRATIONS FOR CONCRETE**
NOT TO SCALE E10019



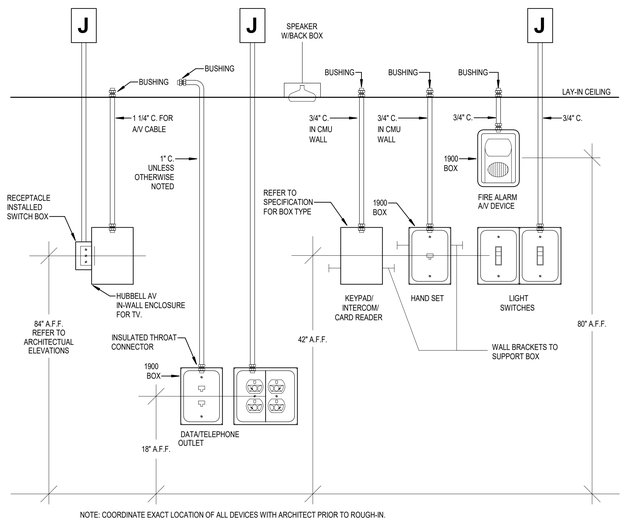

**6 ROOF CONDUIT SUPPORT DETAIL**
NOT TO SCALE




**7 20A,125V. RECEPTACLE WIRING DETAIL**
NOT TO SCALE E13029




**8 TYPICAL RACEWAY CONFIGURATION**
NOT TO SCALE E18002




**9 TYPICAL DEVICE ELEVATIONS**
NOT TO SCALE E11001

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

102

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CISD - MIDKIFF ES 115 - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.009

**SHEET TITLE:** ELECTRICAL DETAILS

**SHEET NUMBER:** E6.01

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

TBPE Firm Registration No. 2234

DBR Project Number 218033.009

| HA | RT | JR | | |
|---|---|---|---|---|

TN PN

1/5/2023 5:16:33 PM
Autodesk Docs://218033.009-Mission CISD-Midkiff ES 115-Indoor Air Quality Improvements/218033.009_MIDKIFF_MEP22.rvt

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - SALINAS ELEMENTARY SCHOOL - INDOOR AIR QUALITY IMPROVEMENTS

| | |
|---|---|
| Veronica R. Mendoza | President |
| Roy Vela | Vice President |
| Iris Iglesias | Secretary |
| Petra B. Ramirez | Member |
| Minnie R. Rodgers | Member |
| Jerry Zamora | Member |
| Juan M. Gonzalez | Member |

## PROJECT TEAM


DBR Inc.
200 S. 10th St.
Suite 901
McAllen, Texas 782501
956-683-1640
MEP Engineer
Robert H. Tijerina, P.E
rtijerina@dbrinc.com

1201 Bryce Drive
Mission, TX 78572

Mission Project Manager
Adrian Hernandez
adrian.hernandez@mcisd.org
P: 956.323.8960


## LOCATION




**10820 N Conway Ave, Mission, TX 78574**

## SHEET LIST TABLE


| SHEET NUMBER | SHEET TITLE |
|---|---|
| G0.01 | COVER SHEET |
| M0.01 | MECHANICAL SYMBOL |
| MD1.11 | COMPOSITE LEVEL 1 MECHANICAL DEMO PLAN |
| MD2.11 | MECHANICAL DEMO PLAN SECTION A |
| MD2.12 | MECHANICAL DEMO PLAN SECTION B |
| MD2.13 | MECHANICAL DEMO PLAN SECTION C |
| MD2.14 | MECHANICAL DEMO PLAN SECTION D |
| MD3.01 | DEMO ENLARGED MECHANICAL PLANS |
| M1.11 | COMPOSITE LEVEL 1 MECHANICAL PLANS |
| M2.11 | MECHANICAL PLAN SECTION A |
| M2.12 | MECHANICAL PLAN SECTION B |
| M2.13 | MECHANICAL PLAN SECTION C |
| M2.14 | MECHANICAL PLAN SECTION D |
| M3.01 | ENLARGED MECHANICAL PLAN |
| M4.01 | MECHANICAL DIAGRAM PLAN |
| M5.01 | MECHANICAL SCHEDULES |
| M6.01 | MECHANICAL DETAILS |
| E0.01 | ELECTRICAL SYMBOL LEGEND |
| EPD1.11 | DEMO COMPOSITE LEVEL 1 ELECTRICAL COMPOSITE PLAN |
| EPD2.11 | ELECTRICAL DEMO POWER PLAN A |
| EPD2.12 | ELECTRICAL DEMO POWER PLAN B |
| EPD2.13 | ELECTRICAL DEMO POWER PLAN C |
| EPD2.14 | ELECTRICAL DEMO POWER PLAN D |
| EP1.11 | COMPOSITE LEVEL 1 POWER PLAN |
| EP2.11 | ELECTRICAL POWER PLAN A |
| EP2.12 | ELECTRICAL POWER PLAN B |
| EP2.13 | ELECTRICAL POWER PLAN C |
| EP2.14 | ELECTRICAL POWER PLAN D |
| E4.01 | ONE-LINE DIAGRAM |
| E5.01 | ELECTRICAL SCHEDULES |
| E6.01 | ELECTRICAL DETIALS |



DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234


DBR Project Number 218033.013

HA | RT/MG | JR


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


103

REVISION:

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

SEAL:

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - SALINAS ES - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

DATE: 01/05/2023

DRAWN BY: DBR

CHECKED BY: DBR

PROJECT NUMBER 218033.013

SHEET TITLE: COVER SHEET

SHEET NUMBER: G0.01


1/5/2023 5:39:06 PM
Autodesk Docs://218033.013-MCISD-Salinas ES 113-IAC Improvements/218033.013 - SALINAS - MEP22.rvt

# ABBREVIATIONS

## A

| | |
|---|---|
| A | AIR (COMPRESSED) |
| ABV | ABOVE |
| A/C | AIR CONDITIONING |
| AC | ALTERNATING CURRENT, AIR COMPRESSOR |
| ACCH | AIR COOLED CHILLER |
| ACCU | AIR COOLED CONDENSING UNIT |
| AD | ACCESS DOOR, AREA DRAIN |
| ADJ | ADJUSTABLE |
| AF | AIR FILTER |
| AFC | ABOVE FINISHED CEILING |
| AFF | ABOVE FINISHED FLOOR |
| AFG | ABOVE FINISHED GRADE |
| AHRI | AIR-CONDITIONING, HEATING, AND REFRIGERATION INSTITUTE |
| AHU | AIR HANDLING UNIT |
| AL | ALUMINUM |
| AMB | AMBIENT |
| AP | ACCESS PANEL |
| APD | AIR PRESSURE DROP |
| ARCH | ARCHITECT, ARCHITECTURAL |
| AS | AIR SEPARATOR |
| ASHRAE | AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS |
| ASME | AMERICAN SOCIETY OF MECHANICAL ENGINEERS |
| ASTM | AMERICAN SOCIETY OF TESTING AND MATERIALS |
| AV | ACID VENT, AIR VENT |
| AVG | AVERAGE |
| AW | ACID WASTE |
| AWS | AMERICAN WELDING SOCIETY |
| AUX | AUXILIARY |

## B

| | |
|---|---|
| B | BOILER |
| BC | BELOW COUNTER |
| B/C | BACK OF CURB |
| BFF | BELOW FINISHED FLOOR |
| BFV | BUTTERFLY VALVE |
| BH | BOX HYDRANT |
| BLDG | BUILDING |
| BM | BENCHMARK |
| BOF | BOTTOM OF FOOTING |
| BOS | BOTTOM OF STRUCTURE |
| BP | BACKFLOW PREVENTER |
| BTU | BRITISH THERMAL UNIT |
| BV | BALL VALVE |
| BWV | BACK WATER VALVE |

## C

| | |
|---|---|
| C | CELSIUS |
| CAB | CABINET |
| CB | CATCH BASIN |
| CD | CONDENSATE DRAIN LINE |
| CFM | CUBIC FEET PER MINUTE |
| CFS | CUBIC FEET PER SECOND |
| CH | CHILLER |
| CHR | CHILLED WATER RETURN |
| CHS | CHILLED WATER SUPPLY |
| CHW | CHILLED WATER |
| CHWP | CHILLED WATER PUMP |
| CI | CAST IRON |
| CIRC | CIRCULATING |
| CL | CENTERLINE |
| CLG | CEILING |
| CLR | CLEAR |
| CMU | CONCRETE MASONRY UNIT |
| COL | COLUMN |
| COMB | COMBINATION |
| COMP | COMPRESSOR |
| CONC | CONCRETE, CONCENTRIC |
| COND | CONDENSER, CONDENSATE |
| CONN | CONNECTION |
| CONT | CONTINUOUS,CONTINUATION |
| CTR | CENTER |
| CU | COPPER |

## D

| | |
|---|---|
| D | DEPTH, DRAIN, DRYER |
| DB | DRY BULB |
| DC | DIRECT CURRENT |
| DDC | DIRECT DIGITAL CONTROL |
| DDMB | DUAL DUCT MIXING BOX |
| DESIG | DESIGNATION |
| DTL | DETAIL |
| DIA | DIAMETER |
| DIFF | DIFFUSER |
| DIM | DIMENSION |
| DISC | DISCONNECT |
| DN | DOWN |
| DPR | DAMPER |
| DW | DISHWASHER |
| DWG | DRAWING |
| DWH | DOMESTIC WATER HEATER |
| DWP | DOMESTIC WATER PUMP |
| DX | DIRECT EXPANSION |

## E

| | |
|---|---|
| EA | EACH |
| EAT | ENTERING AIR TEMPERATURE |
| EC | ELECTRICAL CONTRACTOR |
| ECC | ECCENTRIC |
| EDB | ENTERING DRY BULB |
| EDH | ELECTRIC DUCT HEATER |
| EF | EXHAUST FAN |
| EFF | EFFICIENCY |
| EJ | EXPANSION JOINT |
| EL | ELEVATION |
| ELEC | ELECTRICAL |
| EMERG | EMERGENCY |
| ENCL | ENCLOSURE |
| ENGR | ENGINEER |
| EQ | EQUAL |
| EQUIP | EQUIPMENT |
| ESP | EXTERNAL STATIC PRESSURE |
| ET | EXPANSION TANK |
| ETR | EXISTING TO REMAIN |
| EVAP | EVAPORATOR |
| EWB | ENTERING WET BULB |
| EWT | ENTERING WATER TEMPERATURE |
| EX | EXPLOSION PROOF |
| EXT | EXTERNAL |
| EXTG | EXISTING |

## F

| | |
|---|---|
| F | FAHRENHEIT, FIRE |
| FBO | FURNISHED BY OTHERS |
| FCO | FLOOR CLEAN OUT |
| FCS | FLOOR CONTROL STATION |
| FCU | FAN COIL UNIT |
| FD | FLOOR DRAIN, FIRE DAMPER |
| FDC | FIRE DEPARTMENT SIAMESE CONNECTION |
| FDV | FIRE DEPARTMENT VALVE |
| FH | FIRE HYDRANT |
| FHC | FIRE HOSE CABINET |
| FHR | FIRE HOSE RACK |
| FLA | FULL LOAD AMPS |
| FLEX | FLEXIBLE |
| FLR | FLOOR |
| FPTU | FAN POWERED TERMINAL UNIT |
| FT | FOOT, FEET |
| FUT | FUTURE |

## G

| | |
|---|---|
| G | GAS |
| GA | GAUGE |
| GAL | GALLON |
| GALV | GALVANIZED |
| GC | GENERAL CONTRACTOR |
| GLV | GLOBE VALVE |
| GND | GROUND |
| GPM | GALLONS PER MINUTE |
| GV | GATE VALVE |

## H

| | |
|---|---|
| HORIZ | HORIZONTAL |
| HP | HORSEPOWER |
| HSTAT | HUMIDISTAT |
| HT | HEIGHT |
| HTG | HEATING |
| HTR | HEATER |
| HW | HOT WATER |
| HWP | HEATING WATER PUMP |
| HWR | HOT WATER RETURN |
| HWS | HOT WATER SUPPLY |
| HX | HEAT EXCHANGER |
| HZ | HERTZ |

## I

| | |
|---|---|
| ID | INSIDE DIAMETER |
| IE | INVERT ELEVATION |
| IH | INFRARED HEATER |
| IN | INCH |
| INSUL | INSULATION |
| INT | INTERNAL, INTERIOR |
| INV | INVERT |
| IW | INDIRECT WASTE |

## J

| | |
|---|---|
| JB | JUNCTION BOX |
| JP | JOCKEY PUMP |

## K

| | |
|---|---|
| KEC | KITCHEN EQUIPMENT CONTRACTOR |
| KO | KNOCKOUT |
| KVA | KILOVOLT- AMPS |
| KW | KILOWATT |

## L

| | |
|---|---|
| L | LENGTH |
| LAT | LEAVING AIR TEMPERATURE |
| LAV | LAVATORY |
| LF | LINEAR FEET |
| LP | LOW PRESSURE |
| LRA | LOCKED ROTOR AMPS |
| LVL | LEVEL |
| LWB | LEAVING WET BULB |
| LWCO | LOW WATER CUT OFF |
| LWT | LEAVING WATER TEMPERATURE |

## M

| | |
|---|---|
| MAT | MIXED AIR TEMPERATURE |
| MAX | MAXIMUM |
| MBTUH | THOUSAND OF BTU'S |
| MC | MECHANICAL CONTRACTOR |
| MECH | MECHANICAL |
| MFR | MANUFACTURER |
| MH | MANHOLE |
| MI | MALLEABLE IRON |
| MIN | MINIMUM |
| MP | MEDIUM PRESSURE |
| MS | MOP SINK |
| MTD | MOUNTED |
| MU | MAKE-UP |
| MVD | MANUAL VOLUME DAMPER |
| MSAH | MINI-SPLIT AIR HANDLER |
| MSCU | MINI-SPLIT CONDENSING UNIT |

## N

| | |
|---|---|
| N.C. | NORMALLY CLOSED |
| NFPA | NATIONAL FIRE PROTECTION ASSOCIATION |
| NIC | NOT IN CONTRACT |
| N.O. | NORMALLY OPEN |
| NO. | NUMBER |
| NTS | NOT TO SCALE |

## O

| | |
|---|---|
| OA | OUTSIDE AIR |
| OAF | OUTSIDE AIR FAN |
| OAHU | OUTSIDE AIR HANDLING UNIT |
| OBD | OPPOSED BLADE DAMPER |
| OC | ON CENTER |
| OD | OUTSIDE DIAMETER, OVERFLOW DRAIN |
| OFCU | OUTSIDE AIR FAN COIL UNIT |
| OPG | OPENING |
| OS&Y | OPEN STEM AND YOLK |

## P

| | |
|---|---|
| PG | PRESSURE GAUGE |
| PP | POLYPROPYLENE |
| PPM | PART PER MILLION |
| PRI | PRIMARY |
| PRS | PRESSURE REDUCING STATION |
| PRV | PRESSURE REDUCING VALVE |
| PSF | POUNDS PER SQUARE FOOT |
| PSI | POUNDS PER SQUARE INCH |
| PSIG | POUNDS PER SQUARE INCH GAUGE |
| PV | PLUG VALVE |
| PVC | POLYVINYL CHLORIDE |

## Q

| | |
|---|---|
| QTY | QUANTITY |

## R

| | |
|---|---|
| RA | RETURN AIR |
| RAD | REFRIGERATED AIR DRYER |
| RAF | RETURN AIR FAN |
| RAG | RETURN AIR GRILLE |
| RAT | RETURN AIR TEMPERATURE |
| RCP | REFLECTED CEILING PLAN |
| RD | ROOF DRAIN |
| RE | REFERENCE, REFER |
| RED | REDUCER |
| REFR | REFRIGERATOR |
| REG | REGISTER |
| REINF | REINFORCING |
| REQD | REQUIRED |
| REV | REVISION, REVISE |
| RH | RELATIVE HUMIDITY |
| RHG | REFRIGERANT HOT GAS |
| RL | REFRIGERANT LIQUID |
| RLA | RUNNING LOAD AMPS |
| RM | ROOM |
| RPM | REVOLUTIONS PER MINUTE |
| RS | REFRIGERANT SUCTION |
| RTU | ROOFTOP UNIT |
| RV | RELIEF VALVE |

## S

| | |
|---|---|
| SA | SUPPLY AIR |
| SAF | SUPPLY AIR FAN |
| SAG | SUPPLY AIR GRILLE |
| SAN | SANITARY SEWER |
| SAR | SUPPLY AIR REGISTER |
| SC | STEAM CONDENSATE |
| SCHED | SCHEDULED |
| SD | STORM DRAIN |
| SEC | SECONDARY |
| SECT | SECTION |
| SENS | SENSIBLE |
| SF | SQUARE FEET |
| SFCS | SPRINKLER FLOOR CONTROL STATION |
| SH | SHOWER |
| SHT | SHEET |
| SIM | SIMILAR |
| SK | SINK |
| SM | SHEETMETAL |
| SP | STATIC PRESSURE, SUMP PUMP |
| SPEC | SPECIFICATION |
| SPR | SPRINKLER |
| SQ | SQUARE |
| SS | SERVICE SINK |
| SSSC | SOLID STATE SPEED CONTROL |
| STD | STANDARD |
| STL | STEEL |
| STR | STRAINER |
| SURF | SURFACE |
| SUSP | SUSPEND |
| SV | SANITARY VENT |
| SW | SOFT WATER |

## T

| | |
|---|---|
| TC | TEMPERATURE CONTROL |
| TCC | TEMPERATURE CORNEAL COMPRESSOR |
| TD | TRENCH DRAIN |
| TDH | TOTAL DYNAMIC HEAD |
| TF | TRANSFER FAN |
| TH BLK | THRUST BLOCK |
| THERM | THERMOMETER |
| TMV | THERMOSTATIC MIXING VALVE |
| TP | TRAP PRIMER |
| TPD | TRAP PRIMER DEVICE |
| TSP | TOTAL STATIC PRESSURE |
| TSTAT | THERMOSTAT |
| TW | TEMPERED HOT WATER |
| TYP | TYPICAL |

## U

| | |
|---|---|
| U | URINAL |
| UCD | UNDER CUT DOOR |
| UG | UNDERGROUND |
| UH | UNIT HEATER |
| UL | UNDERWRITERS LABORATORIES, INC |
| UNO | UNLESS NOTED OTHERWISE |
| U/F | UNDERFLOOR |
| U/S | UNDERSLAB |

## V

| | |
|---|---|
| V | VOLT |
| VA | VOLT- AMPERE |
| VAC | VACUUM |
| VAV | VARIABLE AIR VOLUME |
| VB | VALVE BOX, VACUUM BREAKER |
| VD | VOLUME DAMPER |
| VEL | VELOCITY |
| VERT | VERTICAL |
| VFD | VARIABLE FREQUENCY DRIVE |
| VIB | VALVE IN BOX |
| VOV | VALVE ON VERTICAL |
| VP | VACUUM PUMP |
| VR | VARIABLE AIR VOLUME REHEAT |
| VTR | VENT THRU ROOF |

## W

| | |
|---|---|
| W | WATT, WIDTH |
| W/ | WITH |
| W/O | WITHOUT |
| WB | WET BULB |
| WC | WATER CLOSET |
| WCO | WALL CLEAN OUT |
| WH | WALL HYDRANT |
| WM | WATER METER |
| WP | WEATHERPROOF |
| WPD | WATER PRESSURE DROP |
| WWF | WELDED WIRE FABRIC |

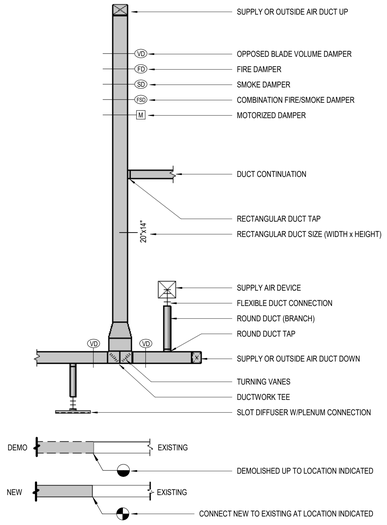
## Y

| | |
|---|---|
| Y | YARD HYDRANT |

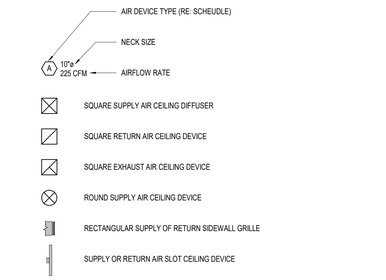
## Z

| | |
|---|---|
| Z | ZONE |

# DUCTWORK




# AIR DEVICE TYPES



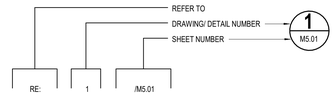

# WALL MOUNTED SENSOR TYPES

| | |
|---|---|
| T | THERMOSTAT |
| H | HUMIDISTAT |
| C | CARBON DIOXIDE SENSOR |
| CM | CARBON MONOXIDE SENSOR |
| N | NITROGEN DIOXIDE SENSOR |
| S | ON/OFF SWITCH |

# PIPING TYPES

| | |
|---|---|
| CD | CONDENSATE DRAIN LINE |
| CHS | CHILLED WATER SUPPLY |
| CHR | CHILLED WATER RETURN |
| HWS | HOT WATER SUPPLY |
| HWR | HOT WATER RETURN |
| CWS | CONDENSER WATER SUPPLY |
| CWR | CONDENSER WATER RETURN |
| REF | REFRIGERANT PIPING SIZED BY MFR. |

# DRAWING/DETAIL REFERENCE KEY




# MECHANICAL GENERAL NOTES

1. PIPING AND DUCTWORK SHOWN ON PLANS ARE SCHEMATIC ONLY. COORDINATE WITH OTHER TRADES FOR PIPING AND DUCTWORK ROUTING. OFFSET AND RUN PIPING DUCTWORK INSIDE THE STRUCTURE IF REQUIRED. PROVIDE ALL NECESSARY PIPING, DUCTWORK, FITTING, INSULATION, AND OTHER ACCESSORIES IN ORDER TO COMPLETE THE INSTALLATIONS.
2. EXACT LOCATIONS OF VAV TERMINAL UNITS, GRILLES, AND DAMPERS SHALL BE FIELD COORDINATED WITH OTHER TRADES TO AVOID CONFLICTS AND ALLOW ADEQUATE CLEARANCES.
3. EQUIPMENT SIZES, DIMENSIONS, AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE MANUFACTURER DRAWINGS AND CUTSHEETS BEFORE FABRICATING OF DUCTWORK, PIPING, OR POURING OF CONCRETE HOUSEKEEPING PADS.
4. SHEET METAL INLET DUCTS TO VAV TERMINAL UNITS SHALL BE SAME SIZE AS THE BOX INLET SIZE. PROVIDE RIGID ROUND DUCT THAT IS ONE SIZE LARGER THAN THE INLET BOX SIZE IF THE DISTANCE BETWEEN THE MAIN DUCT AND THE VAV BOX IS MORE THAN 6'-0".
5. PROVIDE CONICAL SPIN-IN CONNECTOR FOR ALL ROUND DUCT CONNECTIONS TO VAV TERMINAL UNITS.
6. INSTALL VAV TERMINAL UNITS TO ENSURE ACCESS PANELS ARE NOT BLOCKED. ACCESS FOR SERVICE MUST BE PROVIDED.
7. CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR FOR ALL ELECTRICAL POWER REQUIREMENTS.
8. DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE DIMENSIONS.
9. PROVIDE RECTANGULAR BRANCH DUCT TAP FOR ALL RECTANGULAR DUCT CONNECTIONS TO RECTANGULAR DUCT TRUNKS.
10. ALL MEDIUM AND LOW PRESSURE DUCTWORK AND ASSOCIATED ACCESSORIES SHALL BE CONSTRUCTED TO MEET THE LATEST SMACNA STANDARDS FOR MEDIUM AND LOW PRESSURE DUCTWORK.
11. ALL OUTSIDE AIR, SUPPLY AIR, AND RETURN AIR DUCTWORK AND PLENUMS SHALL BE INSULATED WITH A MINIMUM OF R-6 INSULATION WHERE LOCATED IN UNCONDITIONED SPACES AND SHALL BE INSULATED WITH A MINIMUM OF R-8 INSULATION WHERE LOCATED OUTSIDE THE BUILDING. REFER TO SPECIFICATION 23 07 13 DUCT INSULATION FOR FURTHER INFORMATION AND ADDITIONAL REQUIREMENTS.
12. ALL DUCTWORK SHALL BE CONSTRUCTED TO SEAL CLASS 'A' AS REFERENCED IN SMACNA STANDARDS. ALL NON-WELDED JOINTS AND SEAMS SHALL BE SEALED. THIS INCLUDES BUT IS NOT LIMITED TO TRANSVERSE JOINTS, LONGITUDINAL SEAMS, DUCT WALL PENETRATIONS, SPIN-INS, TAPS, AND OTHER BRANCH CONNECTIONS, ACCESS DOORS, ACCESS PANELS, AND DUCT CONNECTIONS TO EQUIPMENT. OPENINGS FOR ROTATING SHAFTS SHALL ALSO BE SEALED WITH BUSHINGS. REFER TO SPECIFICATION 23 31 13 METAL DUCTWORK FOR FURTHER INFORMATION.
13. ALL EXPOSED DUCTWORK AND PIPING WITH ASSOCIATED ACCESSORIES IN AREAS WITH NO CEILING OR PARTIAL CEILING SHALL BE PAINTED. REFER TO ARCHITECT FOR COLOR.
14. DIVISION 23 MECHANICAL CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR PRIOR TO ACTUAL INSTALLATION OF TEMPERATURE SENSORS AND HUMIDITY SENSORS.
15. PROVIDE REMOTE SPIN-IN DAMPER OPERATOR FOR SPIN-IN CONNECTIONS AND VOLUME DAMPERS LOCATED OVER GYPSUM CEILINGS.
16. PROVIDE AIRFOIL TYPE TURNING VANES IN ALL 90 DEGREE ELBOWS.
17. PROVIDE INSULATED ACCESS DOORS FOR DUCTWORK DOWNSTREAM OF AIR HANDLING UNITS AT EVERY 20'-0" TO FACILITATE DUCT CLEANING. PROVIDE ACCESS DOORS WITHIN 5'-0" OF EACH ELBOW.
18. COORDINATE LOCATIONS OF FLOOR AND WALL OPENINGS WITH ARCHITECT AND STRUCTURAL ENGINEER.
19. ALL CEILING MOUNTED AND WALL MOUNTED AIR DEVICE FINISHES SHALL MATCH ADJACENT ARCHITECTURAL SURFACE. CONTRACTOR SHALL COORDINATE COLOR WITH ARCHITECT.
20. NO PIPE HANGERS SHALL BE SPACED MORE THAN 10'-0" O.C. COMPLY WITH PIPE SPACING AS SPECIFIED IN THE PIPING SUPPORT SPECIFICATIONS.
21. ALL CHILLED WATER AND HOT WATER PIPING LOCATED INSIDE BUILDING SHALL BE SUPPORTED FROM THE STRUCTURE WITH SADDLE OR TRAPEZE HANGERS WITH ADJUSTABLE CLEVIS OR THREADED RODS.
22. MECHANICAL CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF ALL OUTSIDE AIR INTAKES TO MAINTAIN 15 FEET DISTANCE BETWEEN OUTSIDE AIR INTAKES AND ANY EXHAUST AIR OUTLET, FLUES OR PLUMBING VENTS.
23. MECHANICAL CONTRACTOR SHALL COORDINATE WITH PLUMBING CONTRACTOR FOR ALL CONDENSATE DRAIN PIPES CONNECTING TO A SINK DRAIN TAIL PIECE.
24. ALL KITCHEN GREASE EXHAUST DUCTWORK SHALL BE CONTINUOUSLY WELDED 16 GA. CARBON STEEL. ALL GREASE EXHAUST DUCTS SHALL BE WRAPPED WITH 3M 2 HR. FIRE RATED WRAP OR INSTALLED WITHIN A FIRE RATED ENCLOSURE.

# CONTROLS SCHEMATIC SYMBOLS LEGEND

| | |
|---|---|
| AI | ANALOG INPUT |
| AO | ANALOG OUTPUT |
| DI/BI | DIGITAL/BINARY INPUT |
| DO/BO | DIGITAL/BINARY OUTPUT |
| MD | ON-OFF MOTORIZED DAMPER |
| MMD | MODULATING TYPE MOTORIZED DAMPER |
| AFMS | AIR FLOW MEASURING STATION |
| MCV | CONTROL VALVE MODULATING TYPE |
| VFD | VARIABLE FREQUENCY DRIVE |
| CSR | CURRENT SENSING RELAY |
| FRZ | FREEZESTAT |
| HSL | HIGH STATIC LIMIT |
| SPT | STATIC PRESSURE TRANSMITTER |
| DPT | DIFFERENTIAL PRESSURE TRANSDUCER |
| FM | FLOW METER |
| FS | FLOW SWITCH |
| DAT | DISCHARGE AIR TEMPERATURE SENSOR |
| S | WALL SENSOR |
| T | THERMOSTAT |
| CO2 | CARBON DIOXIDE SENSOR |
| SP | SET POINT |
| S/A | SUPPLY AIR |
| R/A | RETURN AIR |
| O/A | OUTSIDE AIR |
| HC | HEATING COIL |
| CC | COOLING COIL |
| DX | DIRECT EXPANSION COOLING COIL |
| PICCV | PRESSURE INDEPENDENT CHARACTERIZED CONTROL VALVE |
| AFC | AIRFLOW CROSS |
| DPS | DIFFERENTIAL PRESSURE SWITCH |


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


104

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - SALINAS ES - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.013

**SHEET TITLE:** MECHANICAL SYMBOL LEGEND

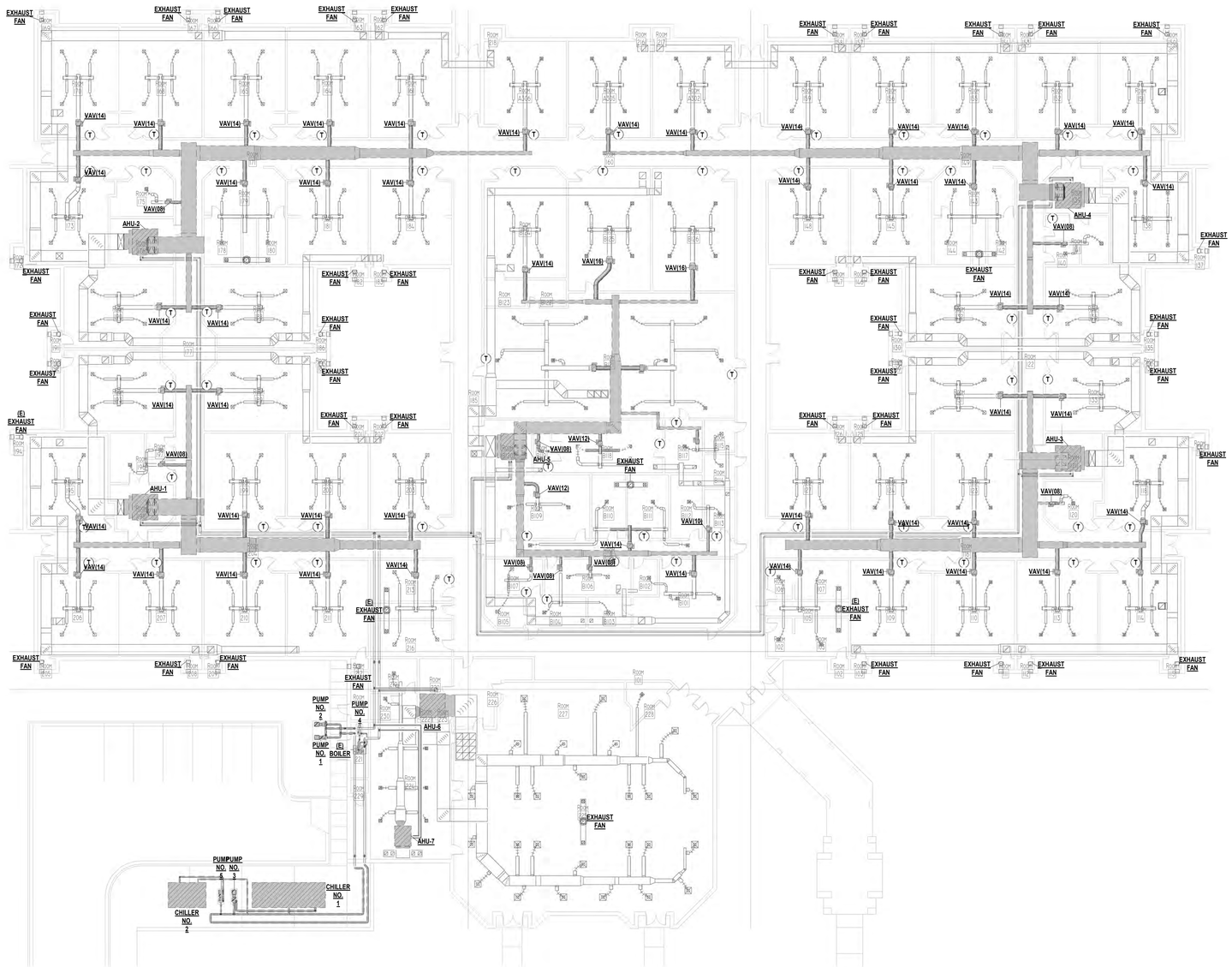
**SHEET NUMBER:** M0.01


DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234


DBR Project Number 218033.013

HA | RT/MG | JR


1/5/2023 5:39:07 PM
Autodesk Docs://218033.013-MCISD-Salinas ES 113-IAC Improvements/218033.013 - SALINAS - MEP22.rvt




## 1 DEMO COMPOSITE LEVEL 1 MECHANICAL PLAN

MD1.11 — 1/16" = 1'-0"

## MECHANICAL GENERAL DEMO NOTES

A. COORDINATE DEMOLITION WORK WITH ELECTRICAL AND OTHER DISCIPLINES AS REQUIRED.

B. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE VERIFIED EXISTING JOBSITE CONDITIONS DURING THE BIDDING PERIOD, SO THEY WILL HAVE DISCOVERED THE FULL SCOPE OF WORK INVOLVED WITH THE MODIFICATION OF THIS EXISTING SPACE. THE SCOPE OF THE WORK SHALL INCLUDE ALL MATERIALS FOR A COMPLETE INSTALLATION INCLUDING DEVICES, EQUIPMENT, OR APPARATUS WHICH MUST BE REROUTED, RELOCATED, OR REMOVED EITHER TEMPORARILY OR PERMANENTLY, OR WHICH MUST BE PROVIDED TO ACCOMMODATE THE INDICATED REMODELING. NOT ALL EXISTING CONDITIONS ARE NECESSARILY INDICATED ON THE DRAWINGS. ALL HVAC SHOWN ARE TAKEN FROM AS-BUILT HARDCOPY AND MUST BE FIELD VERIFIED.

C. WHEN AN EQUIPMENT IS IDENTIFIED TO BE REMOVED, THE OWNER HAS FIRST RIGHT OF REFUSAL BEFORE DISPOSING OF THAT EQUIPMENT. PROVIDE OWNER ONE WEEK NOTICE PRIOR TO DEMOLITION.

D. PROVIDE ALL NECESSARY CLEAR PATH TO MOVE DEMOLISHED EQUIPMENT OUT OF THE FACILITY AS WELL TO BRING NEW EQUIPMENT INTO THE BUILDING. MODIFY EXISTING PIPING, DUCTWORK CONDUITS, AS REQUIRED TO COMPLETE THE DEMOLITION.

## # MECHANICAL KEYED DEMO NOTES

1 DEMOLISH EXISTING THERMOSTAT AND CONDUCTORS. EXISTING J-BOX AND CONDUIT TO REMAIN FOR RE-USE.

2 DEMOLISH EXISTING SINGLE DUCT BOX IN ITS ENTIRETY. DEMOLISH ASSOCIATED EXISTING TEMPERATURE SENSOR. EXISTING ELECTRICAL DISCONNECT TO REMAIN FOR NEW SINGLE DUCT TERMINAL UNIT. DEMOLISH EXISTING DUCTWORK UP TO LOCATION INDICATED ON PLAN. ALL DOWNSTREAM SUPPLY DUCTWORK AND AIR DEVICES SHALL REMAIN. CONTRACTORSHALL FIELD VERIFY EXACT LOCATION OF TEMPERATURE SENSOR.

3 REFER TO ENLARGED MECHANICAL ROOM PLANS FOR MECHANICAL ROOM VIEWS CONTINUATION.

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f



**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - SALINAS ES - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.013

**SHEET TITLE:** COMPOSITE LEVEL 1 MECHANICAL DEMO PLAN

**SHEET NUMBER:** MD1.11

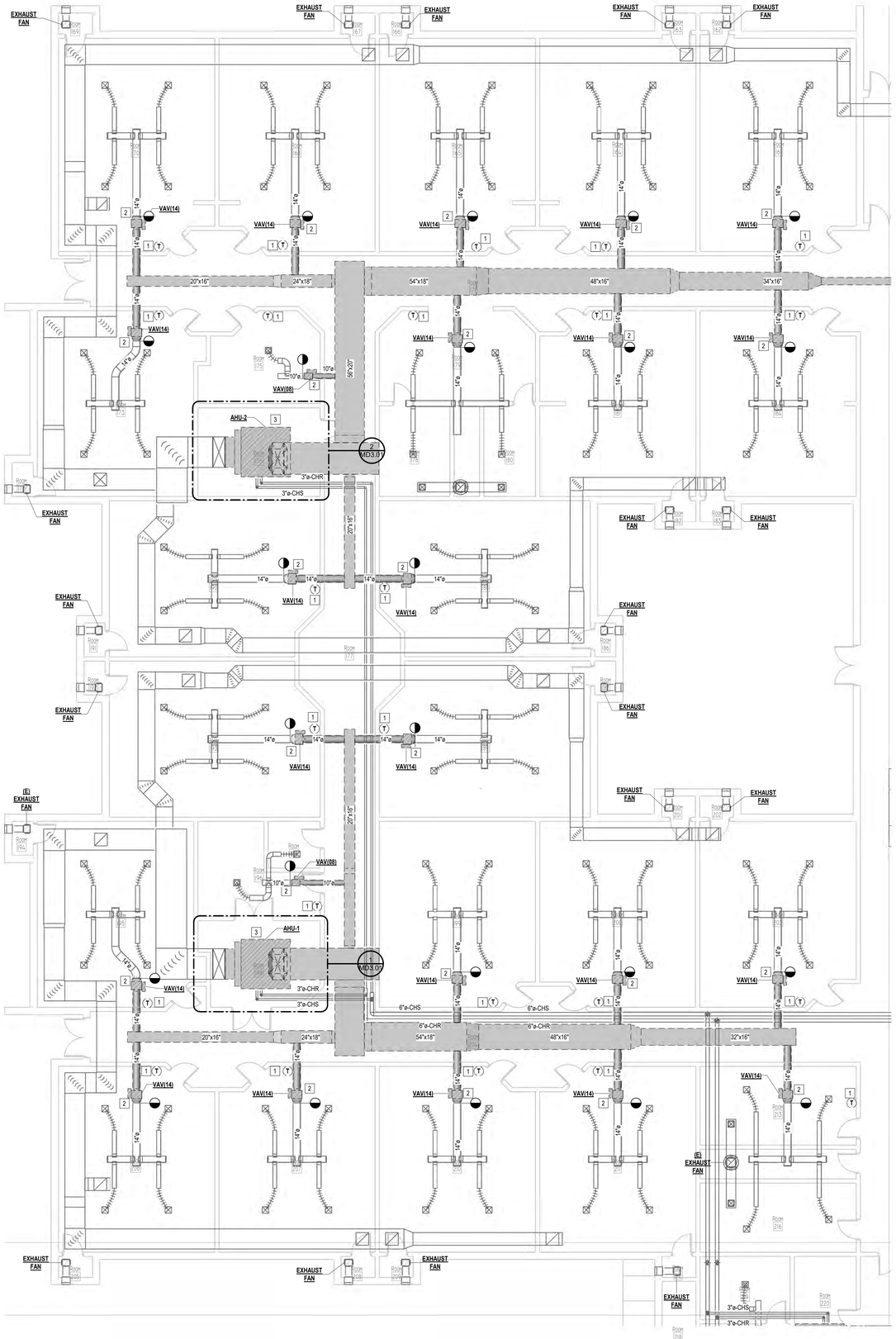
DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.013

HA | RT/MG | JR

TN PN

1/5/2023 5:40:03 PM
Autodesk Docs://218033.013-MCISD-Salinas ES 113-IAC Improvements/218033.013 - SALINAS - MEP22.rvt




1 MD2.11 **DEMO MECHANICAL PLAN - AREA A**
1/8" = 1'-0"

## MECHANICAL GENERAL DEMO NOTES

A. COORDINATE DEMOLITION WORK WITH ELECTRICAL AND OTHER DISCIPLINES AS REQUIRED.

B. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE VERIFIED EXISTING JOBSITE CONDITIONS DURING THE BIDDING PERIOD, SO THEY WILL HAVE DISCOVERED THE FULL SCOPE OF WORK INVOLVED WITH THE MODIFICATION OF THIS EXISTING SPACE. THE SCOPE OF THE WORK SHALL INCLUDE ALL MATERIALS FOR A COMPLETE INSTALLATION INCLUDING DEVICES, EQUIPMENT, OR APPARATUS WHICH MUST BE REROUTED, RELOCATED, OR REMOVED EITHER TEMPORARILY OR PERMANENTLY, OR WHICH MUST BE PROVIDED TO ACCOMMODATE THE INDICATED REMODELING. NOT ALL EXISTING CONDITIONS ARE NECESSARILY INDICATED ON THE DRAWINGS. ALL HVAC SHOWN ARE TAKEN FROM AS-BUILT HARDCOPY AND MUST BE FIELD VERIFIED.

C. WHEN AN EQUIPMENT IS IDENTIFIED TO BE REMOVED, THE OWNER HAS FIRST RIGHT OF REFUSAL BEFORE DISPOSING OF THAT EQUIPMENT. PROVIDE OWNER ONE WEEK NOTICE PRIOR TO DEMOLITION.

D. PROVIDE ALL NECESSARY CLEAR PATH TO MOVE DEMOLISHED EQUIPMENT OUT OF THE FACILITY AS WELL TO BRING NEW EQUIPMENT INTO THE BUILDING. MODIFY EXISTING PIPING, DUCTWORK CONDUITS, AS REQUIRED TO COMPLETE THE DEMOLITION.

## # MECHANICAL KEYED DEMO NOTES

1 DEMOLISH EXISTING THERMOSTAT AND CONDUCTORS. EXISTING J-BOX AND CONDUIT TO REMAIN FOR RE-USE.

2 DEMOLISH EXISTING SINGLE DUCT BOX IN ITS ENTIRETY. DEMOLISH ASSOCIATED EXISTING TEMPERATURE SENSOR. EXISTING ELECTRICAL DISCONNECT TO REMAIN FOR NEW SINGLE DUCT TERMINAL UNIT. DEMOLISH EXISTING DUCTWORK UP TO LOCATION INDICATED ON PLAN. ALL DOWNSTREAM SUPPLY DUCTWORK AND AIR DEVICES SHALL REMAIN. CONTRACTORSHALL FIELD VERIFY EXACT LOCATION OF TEMPERATURE SENSOR.

3 REFER TO ENLARGED MECHANICAL ROOM PLANS FOR MECHANICAL ROOM VIEWS CONTINUATION.

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

106

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - SALINAS ES - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.013

**SHEET TITLE:** MECHANICAL DEMO PLAN SECTION A

**SHEET NUMBER:** MD2.11

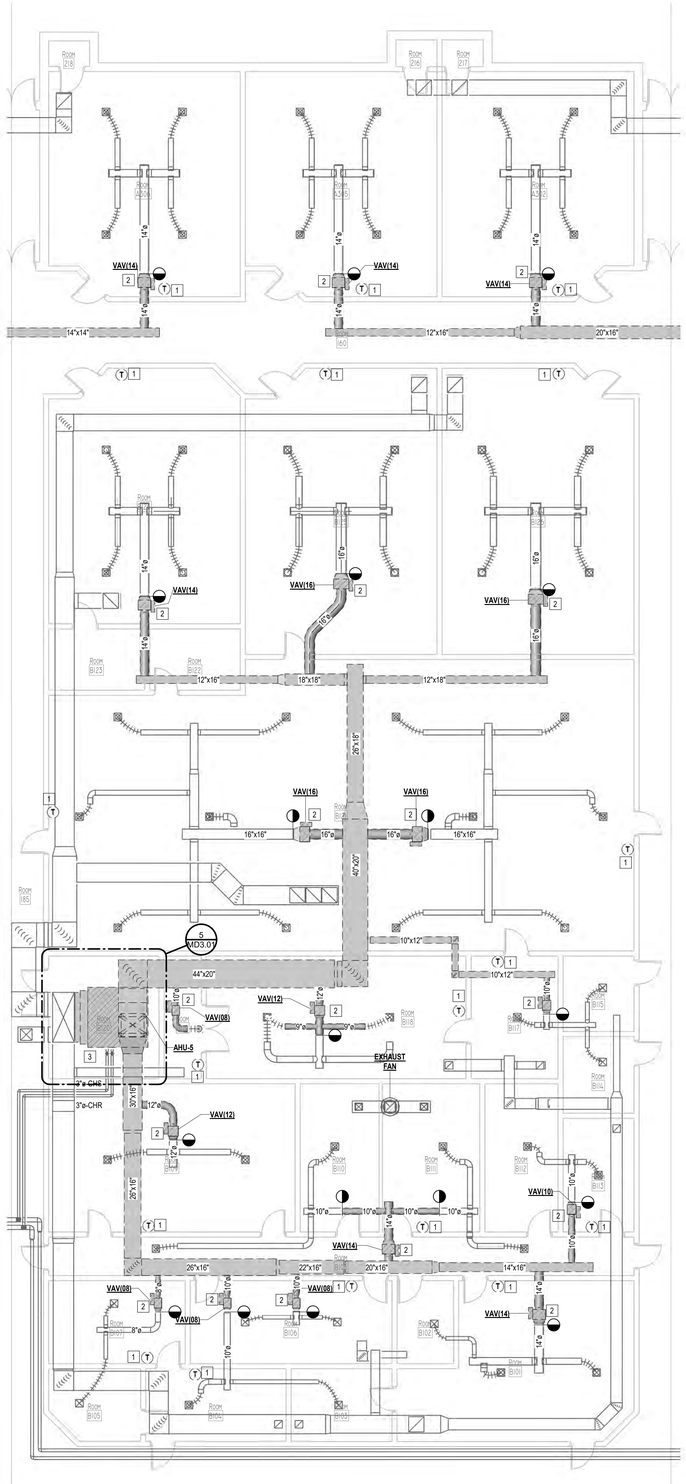
DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.013

HA | RT/MG | JR

TN PN

1/5/2023 5:40:10 PM
Autodesk Docs://218033.013-MCISD-Salinas ES 113-IAC Improvements/218033.013 - SALINAS - MEP22.rvt




1 MD2.12 **DEMO MECHANICAL PLAN - AREA B**
1/8" = 1'-0"

## MECHANICAL GENERAL DEMO NOTES

A. COORDINATE DEMOLITION WORK WITH ELECTRICAL AND OTHER DISCIPLINES AS REQUIRED.

B. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE VERIFIED EXISTING JOBSITE CONDITIONS DURING THE BIDDING PERIOD. SO THEY WILL HAVE DISCOVERED THE FULL SCOPE OF WORK INVOLVED WITH THE MODIFICATION OF THIS EXISTING SPACE. THE SCOPE OF THE WORK SHALL INCLUDE ALL MATERIALS FOR A COMPLETE INSTALLATION INCLUDING DEVICES, EQUIPMENT, OR APPARATUS WHICH MUST BE REROUTED, RELOCATED, OR REMOVED EITHER TEMPORARILY OR PERMANENTLY, OR WHICH MUST BE PROVIDED TO ACCOMMODATE THE INDICATED REMODELING. NOT ALL EXISTING CONDITIONS ARE NECESSARILY INDICATED ON THE DRAWINGS. ALL HVAC SHOWN ARE TAKEN FROM AS-BUILT HARDCOPY AND MUST BE FIELD VERIFIED.

C. WHEN AN EQUIPMENT IS IDENTIFIED TO BE REMOVED, THE OWNER HAS FIRST RIGHT OF REFUSAL BEFORE DISPOSING OF THAT EQUIPMENT. PROVIDE OWNER ONE WEEK NOTICE PRIOR TO DEMOLITION.

D. PROVIDE ALL NECESSARY CLEAR PATH TO MOVE DEMOLISHED EQUIPMENT OUT OF THE FACILITY AS WELL TO BRING NEW EQUIPMENT INTO THE BUILDING. MODIFY EXISTING PIPING, DUCTWORK CONDUITS, AS REQUIRED TO COMPLETE THE DEMOLITION.

## # MECHANICAL KEYED DEMO NOTES

1 DEMOLISH EXISTING THERMOSTAT AND CONDUCTORS. EXISTING J-BOX AND CONDUIT TO REMAIN FOR RE-USE.

2 DEMOLISH EXISTING SINGLE DUCT BOX IN ITS ENTIRETY. DEMOLISH ASSOCIATED EXISTING TEMPERATURE SENSOR. EXISTING ELECTRICAL DISCONNECT TO REMAIN FOR NEW SINGLE DUCT TERMINAL UNIT. DEMOLISH EXISTING DUCTWORK UP TO LOCATION INDICATED ON PLAN. ALL DOWNSTREAM SUPPLY DUCTWORK AND AIR DEVICES SHALL REMAIN. CONTRACTORSHALL FIELD VERIFY EXACT LOCATION OF TEMPERATURE SENSOR.

3 REFER TO ENLARGED MECHANICAL ROOM PLANS FOR MECHANICAL ROOM VIEWS CONTINUATION.

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

107

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - SALINAS ES - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.013

**SHEET TITLE:** MECHANICAL DEMO PLAN SECTION B

**SHEET NUMBER:** MD2.12

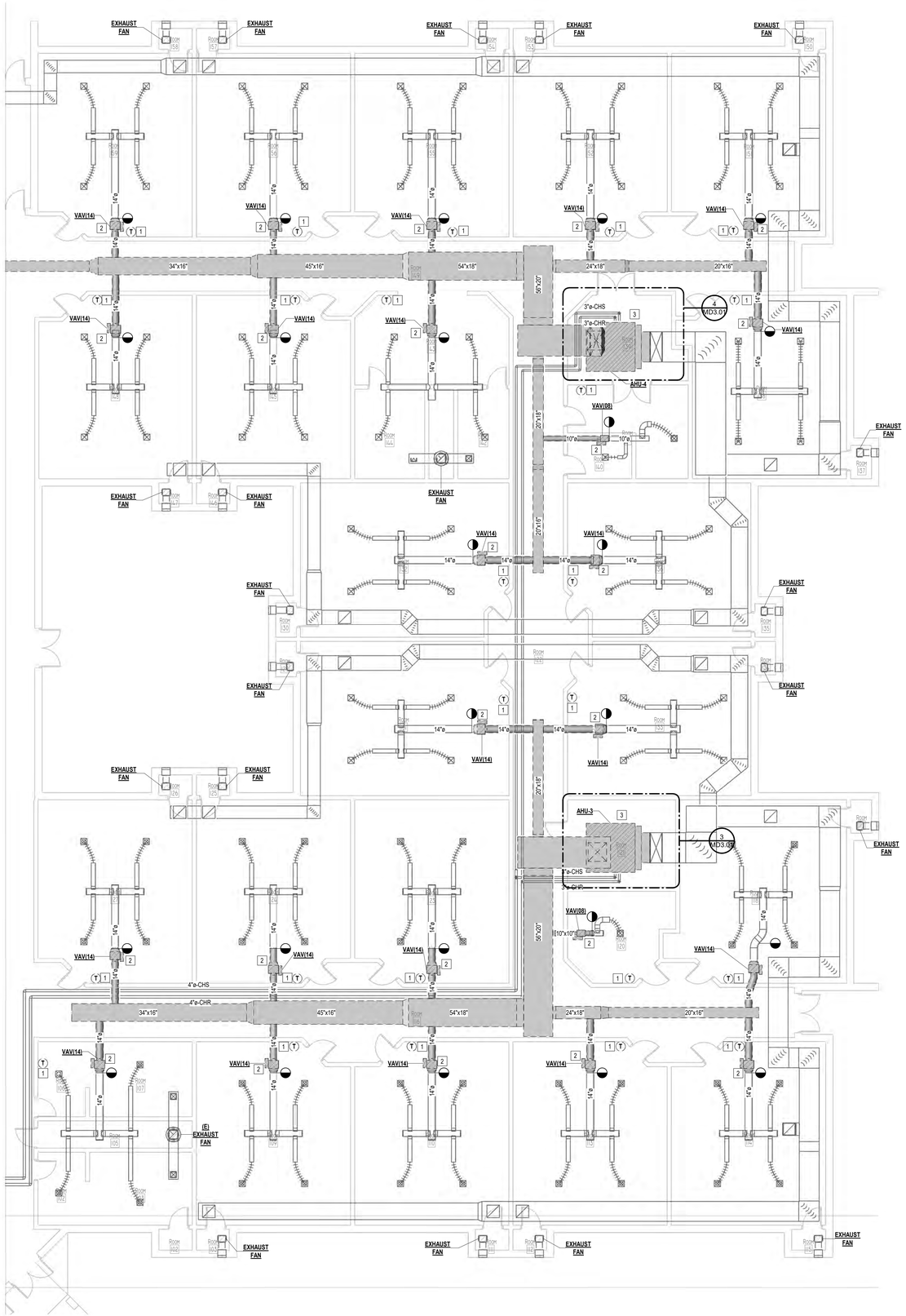
DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.013

HA | RT/MG | JR

TN PN

1/5/2023 5:40:17 PM
Autodesk Docs://218033.013-MCISD-Salinas ES 113-IAC Improvements/218033.013 - SALINAS - MEP22.rvt




1 MD2.13 **DEMO MECHANICAL PLAN - AREA C**

1/8" = 1'-0"

## MECHANICAL GENERAL DEMO NOTES

A. COORDINATE DEMOLITION WORK WITH ELECTRICAL AND OTHER DISCIPLINES AS REQUIRED.

B. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE VERIFIED EXISTING JOBSITE CONDITIONS DURING THE BIDDING PERIOD, SO THEY WILL HAVE DISCOVERED THE FULL SCOPE OF WORK INVOLVED WITH THE MODIFICATION OF THIS EXISTING SPACE. THE SCOPE OF THE WORK SHALL INCLUDE ALL MATERIALS FOR A COMPLETE INSTALLATION INCLUDING DEVICES, EQUIPMENT, OR APPARATUS WHICH MUST BE REROUTED, RELOCATED, OR REMOVED EITHER TEMPORARILY OR PERMANENTLY, OR WHICH MUST BE PROVIDED TO ACCOMMODATE THE INDICATED REMODELING. NOT ALL EXISTING CONDITIONS ARE NECESSARILY INDICATED ON THE DRAWINGS. ALL HVAC SHOWN ARE TAKEN FROM AS-BUILT HARDCOPY AND MUST BE FIELD VERIFIED.

C. WHEN AN EQUIPMENT IS IDENTIFIED TO BE REMOVED, THE OWNER HAS FIRST RIGHT OF REFUSAL BEFORE DISPOSING OF THAT EQUIPMENT. PROVIDE OWNER ONE WEEK NOTICE PRIOR TO DEMOLITION.

D. PROVIDE ALL NECESSARY CLEAR PATH TO MOVE DEMOLISHED EQUIPMENT OUT OF THE FACILITY AS WELL TO BRING NEW EQUIPMENT INTO THE BUILDING. MODIFY EXISTING PIPING, DUCTWORK CONDUITS, AS REQUIRED TO COMPLETE THE DEMOLITION.

## # MECHANICAL KEYED DEMO NOTES

1 DEMOLISH EXISTING THERMOSTAT AND CONDUCTORS. EXISTING J-BOX AND CONDUIT TO REMAIN FOR RE-USE.

2 DEMOLISH EXISTING SINGLE DUCT BOX IN ITS ENTIRETY. DEMOLISH ASSOCIATED EXISTING TEMPERATURE SENSOR. EXISTING ELECTRICAL DISCONNECT TO REMAIN FOR NEW SINGLE DUCT TERMINAL UNIT. DEMOLISH EXISTING DUCTWORK UP TO LOCATION INDICATED ON PLAN. ALL DOWNSTREAM SUPPLY DUCTWORK AND AIR DEVICES SHALL REMAIN. CONTRACTORSHALL FIELD VERIFY EXACT LOCATION OF TEMPERATURE SENSOR.

3 REFER TO ENLARGED MECHANICAL ROOM PLANS FOR MECHANICAL ROOM VIEWS CONTINUATION.

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f



**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - SALINAS ES - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.013

**SHEET TITLE:** MECHANICAL DEMO PLAN SECTION C

**SHEET NUMBER:** MD2.13

TN PN

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.013

HA | RT/MG | JR

1/5/2023 5:40:24 PM
Autodesk Docs://218033.013-MCISD-Salinas ES 113-IAC Improvements/218033.013 - SALINAS - MEP22.rvt

## MECHANICAL GENERAL DEMO NOTES

A. COORDINATE DEMOLITION WORK WITH ELECTRICAL AND OTHER DISCIPLINES AS REQUIRED.

B. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE VERIFIED EXISTING JOBSITE CONDITIONS DURING THE BIDDING PERIOD, SO THEY WILL HAVE DISCOVERED THE FULL SCOPE OF WORK INVOLVED WITH THE MODIFICATION OF THIS EXISTING SPACE. THE SCOPE OF THE WORK SHALL INCLUDE ALL MATERIALS FOR A COMPLETE INSTALLATION INCLUDING DEVICES, EQUIPMENT, OR APPARATUS WHICH MUST BE REROUTED, RELOCATED, OR REMOVED EITHER TEMPORARILY OR PERMANENTLY, OR WHICH MUST BE PROVIDED TO ACCOMMODATE THE INDICATED REMODELING. NOT ALL EXISTING CONDITIONS ARE NECESSARILY INDICATED ON THE DRAWINGS. ALL HVAC SHOWN ARE TAKEN FROM AS-BUILT HARDCOPY AND MUST BE FIELD VERIFIED.

C. WHEN AN EQUIPMENT IS IDENTIFIED TO BE REMOVED, THE OWNER HAS FIRST RIGHT OF REFUSAL BEFORE DISPOSING OF THAT EQUIPMENT. PROVIDE OWNER ONE WEEK NOTICE PRIOR TO DEMOLITION.

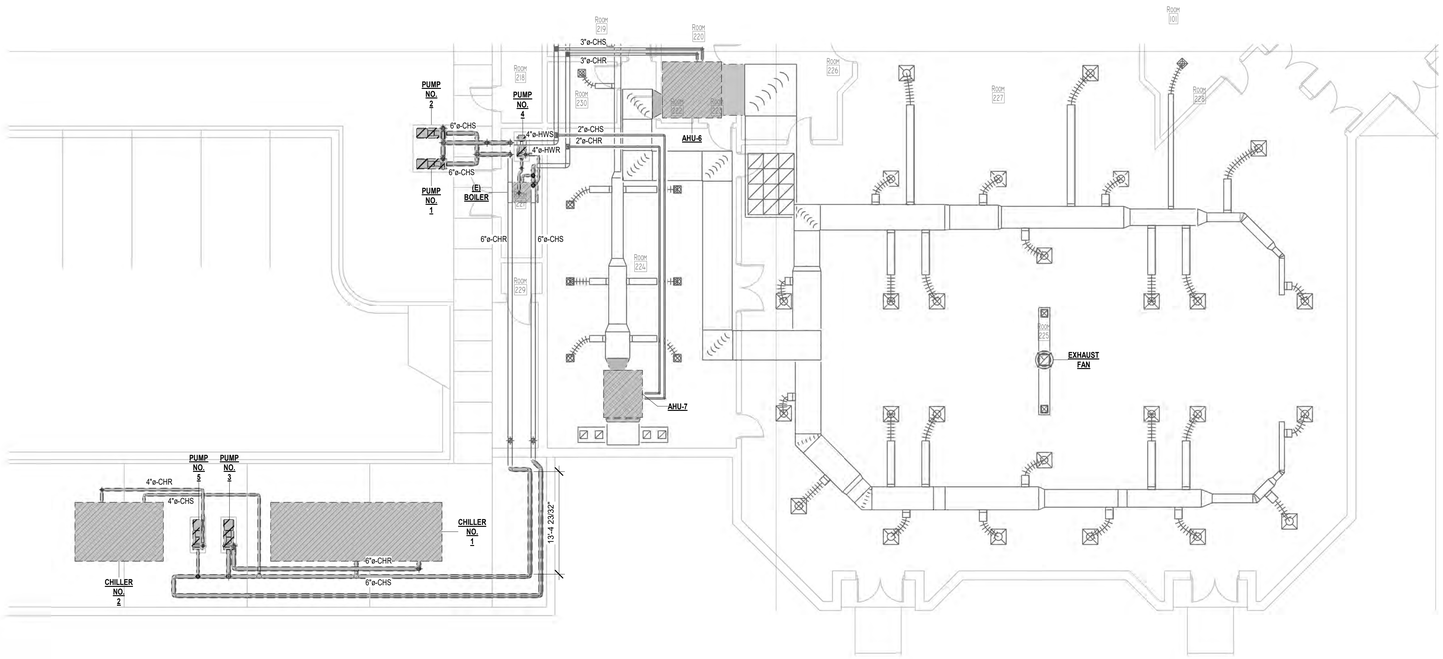
D. PROVIDE ALL NECESSARY CLEAR PATH TO MOVE DEMOLISHED EQUIPMENT OUT OF THE FACILITY AS WELL TO BRING NEW EQUIPMENT INTO THE BUILDING. MODIFY EXISTING PIPING, DUCTWORK CONDUITS, AS REQUIRED TO COMPLETE THE DEMOLITION.

## # MECHANICAL KEYED DEMO NOTES

1 DEMOLISH EXISTING THERMOSTAT AND CONDUCTORS. EXISTING J-BOX AND CONDUIT TO REMAIN FOR RE-USE.

2 DEMOLISH EXISTING SINGLE DUCT BOX IN ITS ENTIRETY. DEMOLISH ASSOCIATED EXISTING TEMPERATURE SENSOR. EXISTING ELECTRICAL DISCONNECT TO REMAIN FOR NEW SINGLE DUCT TERMINAL UNIT. DEMOLISH EXISTING DUCTWORK UP TO LOCATION INDICATED ON PLAN. ALL DOWNSTREAM SUPPLY DUCTWORK AND AIR DEVICES SHALL REMAIN. CONTRACTORSHALL FIELD VERIFY EXACT LOCATION OF TEMPERATURE SENSOR.

3 REFER TO ENLARGED MECHANICAL ROOM PLANS FOR MECHANICAL ROOM VIEWS CONTINUATION.




1 MD2.14 **DEMO MECHANICAL PLAN - AREA D**
1/8" = 1'-0"


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f




**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - SALINAS ES - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.013

**SHEET TITLE:** MECHANICAL DEMO PLAN SECTION D

**SHEET NUMBER:** MD2.14

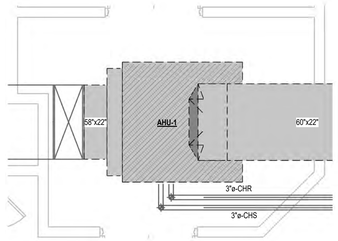

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234


DBR Project Number 218033.013

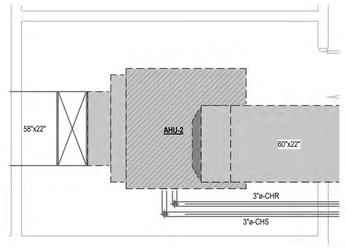
HA | RT/MG | JR

TN PN

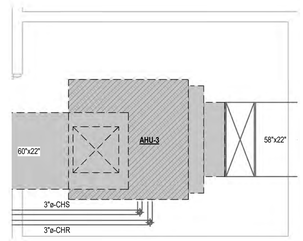

1/5/2023 5:40:28 PM
Autodesk Docs://218033.013-MCISD-Salinas ES 113-IAC Improvements/218033.013 - SALINAS - MEP22.rvt



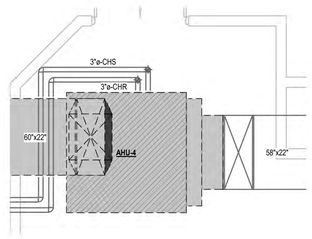

1 MD3.01 **DEMO MECHANICAL PLAN - AHU-1**
1/4" = 1'-0"



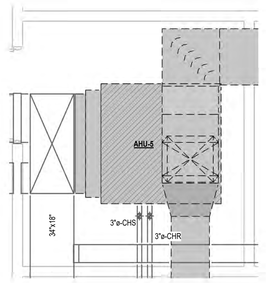

2 MD3.01 **DEMO MECHANICAL PLAN - AHU-2**
1/4" = 1'-0"




3 MD3.01 **DEMO MECHANICAL PLAN - AHU-3**
1/4" = 1'-0"




4 MD3.01 **DEMO MECHANICAL PLAN - AHU-4**
1/4" = 1'-0"




5 MD3.01 **DEMO MECHANICAL PLAN - AHU-5**
1/4" = 1'-0"

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

110

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - SALINAS ES - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.013

**SHEET TITLE:** DEMO ENLARGED MECHANICAL PLANS

**SHEET NUMBER:** MD3.01

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.013

HA | RT/MG | JR

1/5/2023 5:40:32 PM
Autodesk Docs://218033.013-MCISD-Salinas ES 113-IAC Improvements/218033.013 - SALINAS - MEP22.rvt

## MECHANICAL GENERAL NOTES

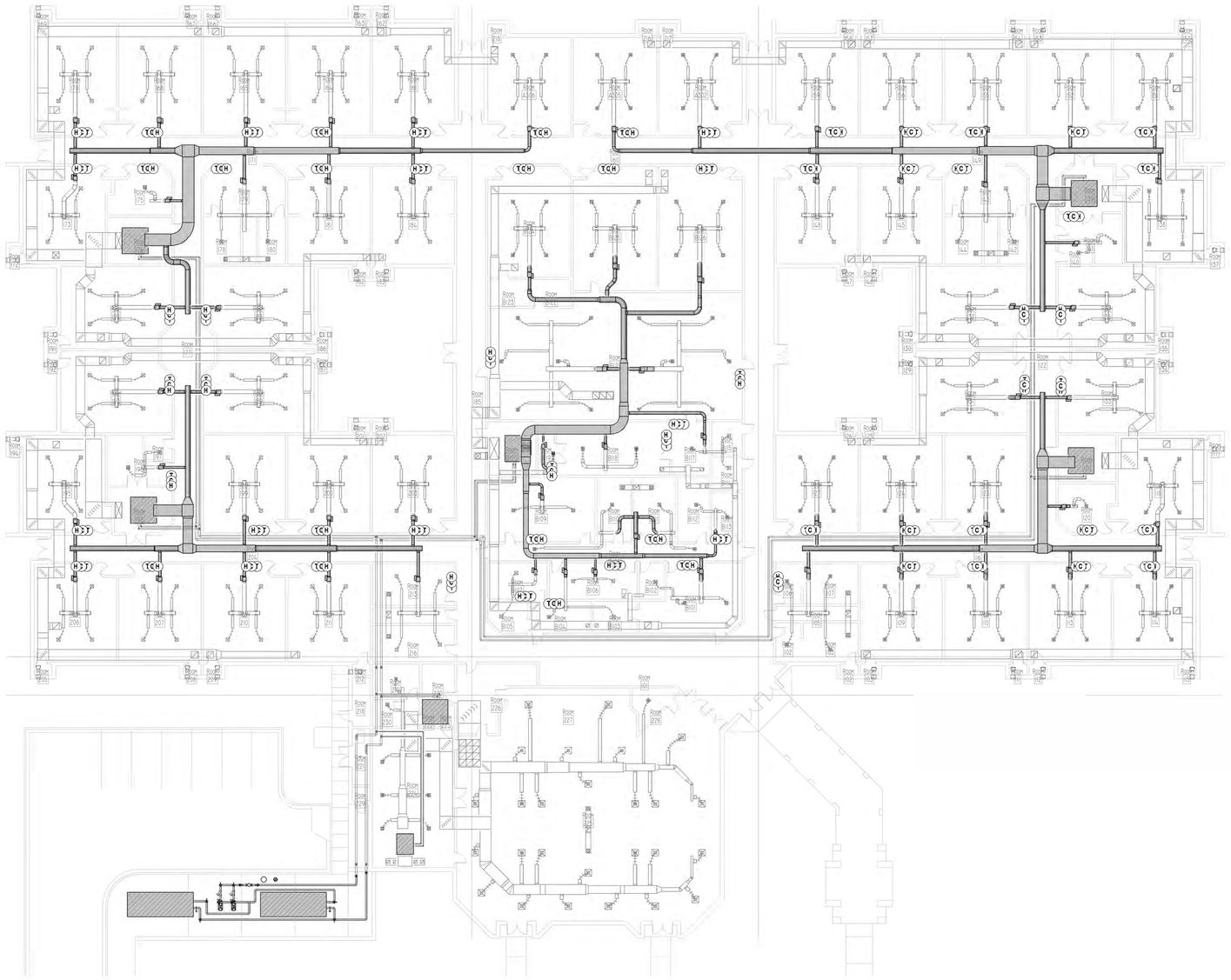
A. REFER TO SHEET M0.01 FOR GENERAL MECHANICAL NOTES.

## # MECHANICAL KEYED NOTES

1 APPROXIMMATE LOCATION OF NEW SINGLE DUCT BOX. THE CONTRACTOR SHALL INSTALL A NEW SINGLE DUCT BOX IN THE EXISTING DUCTWORK. THE CONTSCTOR SHALL REMOVE AND PATCH EXISTING DUCTWORK AS NECESSARY. TYP.

2 NEW DDC TEMPERATURE, RELATIVE HUMITY, AND CO2 SENSORS.

3 REFER TO ENLARGED MECHANICAL ROOM PLANS FOR THE MECHANICAL ROOM VIEW CONTINUATION.



1 M1.11 **COMPOSITE LEVEL 1 MECHANICAL PLAN**
1/16" = 1'-0"


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f




**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - SALINAS ES - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.013

**SHEET TITLE:** COMPOSITE LEVEL 1 MECHANICAL PLAN

**SHEET NUMBER:** M1.11

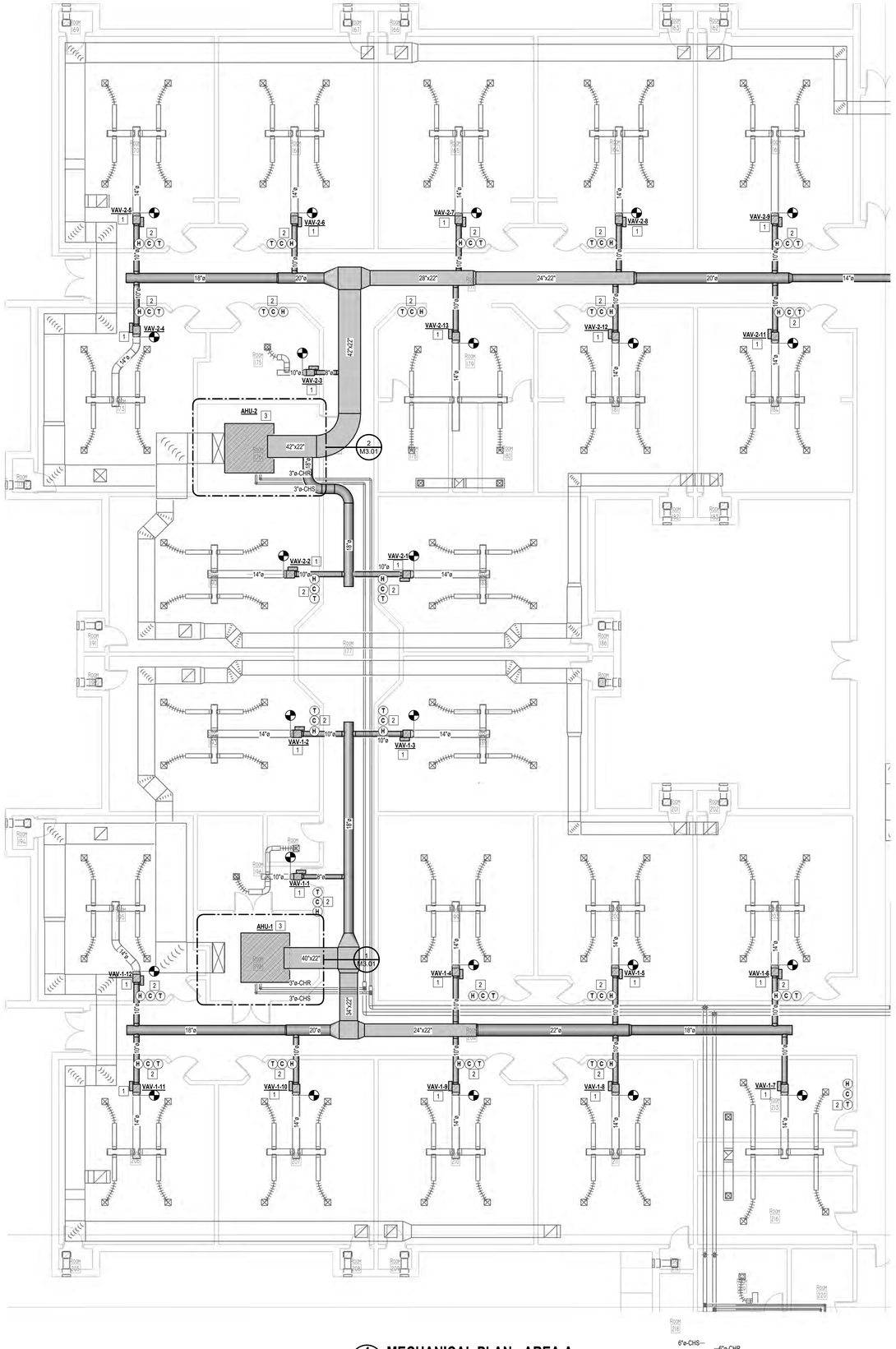

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234


DBR Project Number 218033.013

HA | RT/MG | JR

TN PN

1/5/2023 5:39:19 PM
Autodesk Docs://218033.013-MCISD-Salinas ES 113-IAC Improvements/218033.013 - SALINAS - MEP22.rvt




1 M2.11 **MECHANICAL PLAN - AREA A**
1/8" = 1'-0"

## MECHANICAL GENERAL NOTES

A. REFER TO SHEET M0.01 FOR GENERAL MECHANICAL NOTES.

## # MECHANICAL KEYED NOTES

1 APPROXIMMATE LOCATION OF NEW SINGLE DUCT BOX. THE CONTRACTOR SHALL INSTALL A NEW SINGLE DUCT BOX IN THE EXISTING DUCTWORK. THE CONTRSCTOR SHALL REMOVE AND PATCH EXISTING DUCTWORK AS NECESSARY. TYP.

2 NEW DDC TEMPERATURE, RELATIVE HUMITY, AND CO2 SENSORS.

3 REFER TO ENLARGED MECHANICAL ROOM PLANS FOR THE MECHANICAL ROOM VIEW CONTINUATION.

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f



**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - SALINAS ES - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.013

**SHEET TITLE:** MECHANICAL PLAN SECTION A

**SHEET NUMBER:** M2.11

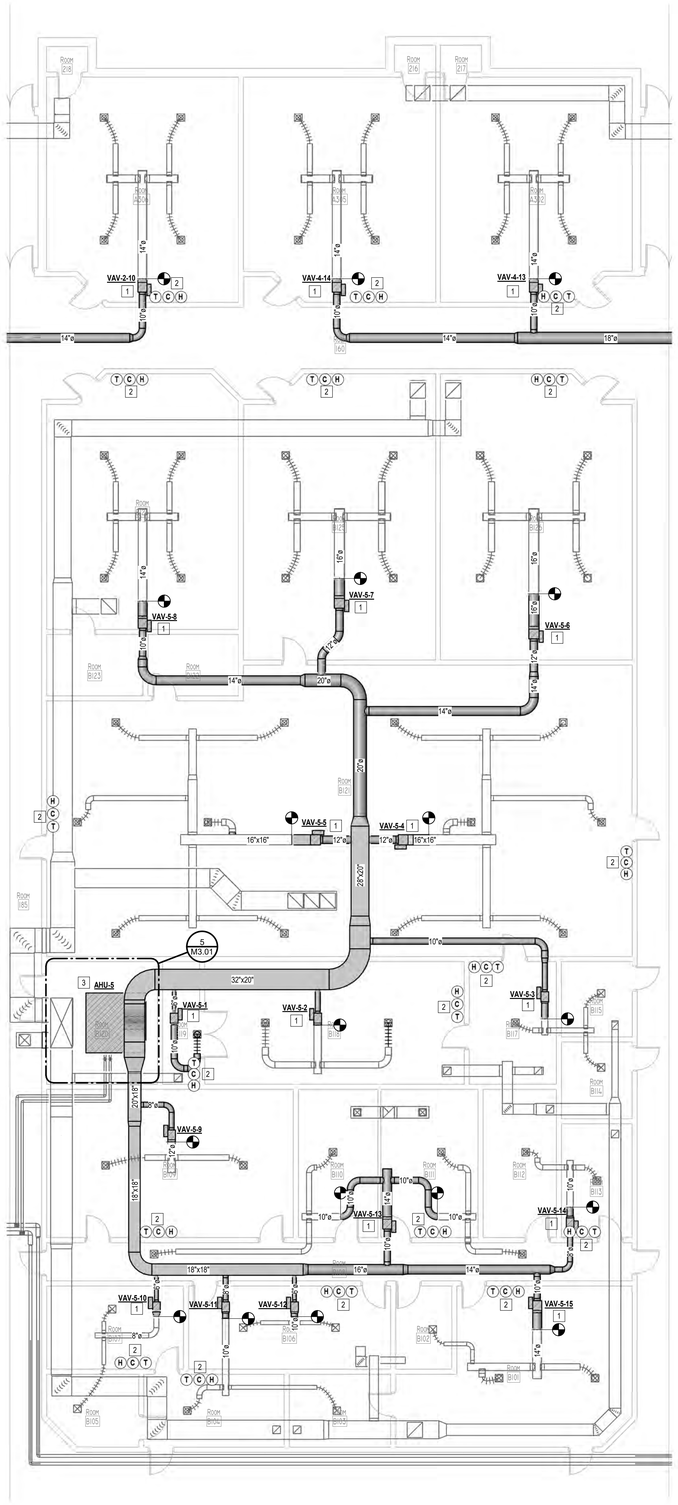
DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.013

HA | RT/MG | JR

TN PN

1/5/2023 5:39:26 PM
Autodesk Docs://218033.013-MCISD-Salinas ES 113-IAC Improvements/218033.013 - SALINAS - MEP22.rvt




1 M2.12 **MECHANICAL PLAN - AREA B**
1/8" = 1'-0"

## MECHANICAL GENERAL NOTES

A. REFER TO SHEET M0.01 FOR GENERAL MECHANICAL NOTES.

## # MECHANICAL KEYED NOTES

1 APPROXIMIMATE LOCATION OF NEW SINGLE DUCT BOX. THE CONTRACTOR SHALL INSTALL A NEW SINGLE DUCT BOX IN THE EXISTING DUCTWORK. THE CONTSCTOR SHALL REMOVE AND PATCH EXISTING DUCTWORK AS NECESSARY. TYP.

2 NEW DDC TEMPERATURE, RELATIVE HUMITY, AND CO2 SENSORS.

3 REFER TO ENLARGED MECHANICAL ROOM PLANS FOR THE MECHANICAL ROOM VIEW CONTINUATION.

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f



**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - SALINAS ES - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.013

**SHEET TITLE:** MECHANICAL PLAN SECTION B

**SHEET NUMBER:** M2.12

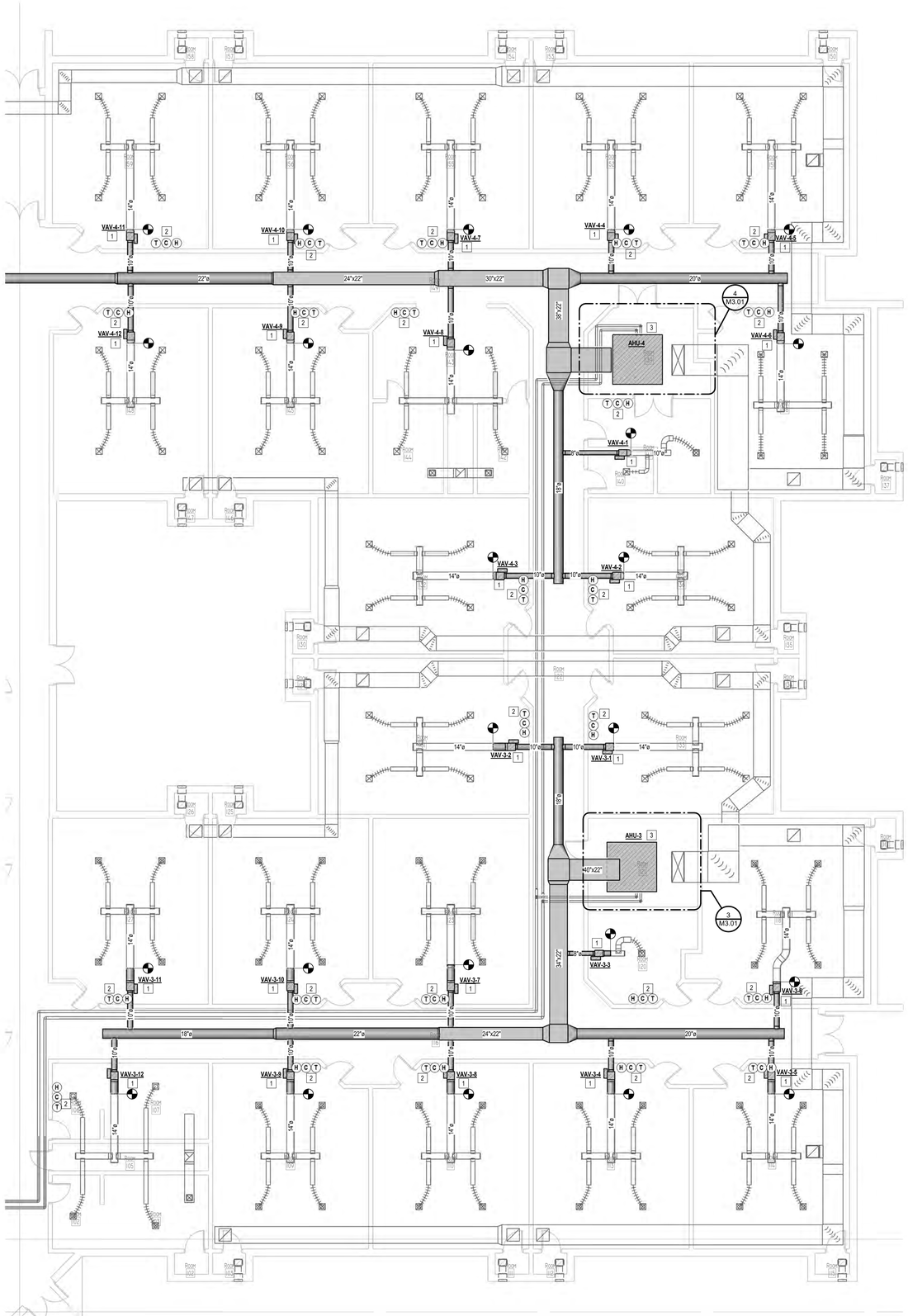
DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.013

HA | RT/MG | JR

TN PN

1/5/2023 5:39:32 PM
Autodesk Docs://218033.013-MCISD-Salinas ES 113-IAC Improvements/218033.013 - SALINAS - MEP22.rvt




## MECHANICAL PLAN - AREA C

1/8" = 1'-0"

## MECHANICAL GENERAL NOTES

A. REFER TO SHEET M0.01 FOR GENERAL MECHANICAL NOTES.

## # MECHANICAL KEYED NOTES

1 APPROXIMMATE LOCATION OF NEW SINGLE DUCT BOX. THE CONTRACTOR SHALL INSTALL A NEW SINGLE DUCT BOX IN THE EXISTING DUCTWORK. THE CONTSCTOR SHALL REMOVE AND PATCH EXISTING DUCTWORK AS NECESSARY. TYP.

2 NEW DDC TEMPERATURE, RELATIVE HUMITY, AND CO2 SENSORS.

3 REFER TO ENLARGED MECHANICAL ROOM PLANS FOR THE MECHANICAL ROOM VIEW CONTINUATION.

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f



REVISION:

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

SEAL:

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - SALINAS ES - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

DATE: 01/05/2023

DRAWN BY: DBR

CHECKED BY: DBR

PROJECT NUMBER 218033.013

SHEET TITLE: MECHANICAL PLAN SECTION C

SHEET NUMBER: M2.13

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.013

HA RT/MG JR

TN PN

1/5/2023 5:39:40 PM
Autodesk Docs://218033.013-MCISD-Salinas ES 113-IAC Improvements/218033.013 - SALINAS - MEP22.rvt

## MECHANICAL GENERAL NOTES

A. REFER TO SHEET M0.01 FOR GENERAL MECHANICAL NOTES.

B. CONTRACTOR SHALL PROVIDE HOT-DIPPED GALVANIZED PIPE SUPPORTS. PIPE SHALL BE MOUNTED AT AN ELEVATION OF 7'-0" ABOVE FINISHED FLOOR.

C. SCOPE OF WORK REQUIRES CONTRACTOR TO CONNECT EXISTING CHILLED WATER DISTRIBUTION PIPING. CONTRACTOR SHALL USE ALL MEANS NECESSARY TO VERIFY THE FUNCTION (SUPPLY AND RETURN) OF THE CHILLED WATER PIPE PRIOR TO COMMENCEMENT OF WORK. ANY REWORK REQUIRED DUE TO REVERSE CONNECTION OF PIPE SHALL BE PERFORMED AT THE CONTRACTOR'S EXPENSE.

## # MECHANICAL KEYED NOTES

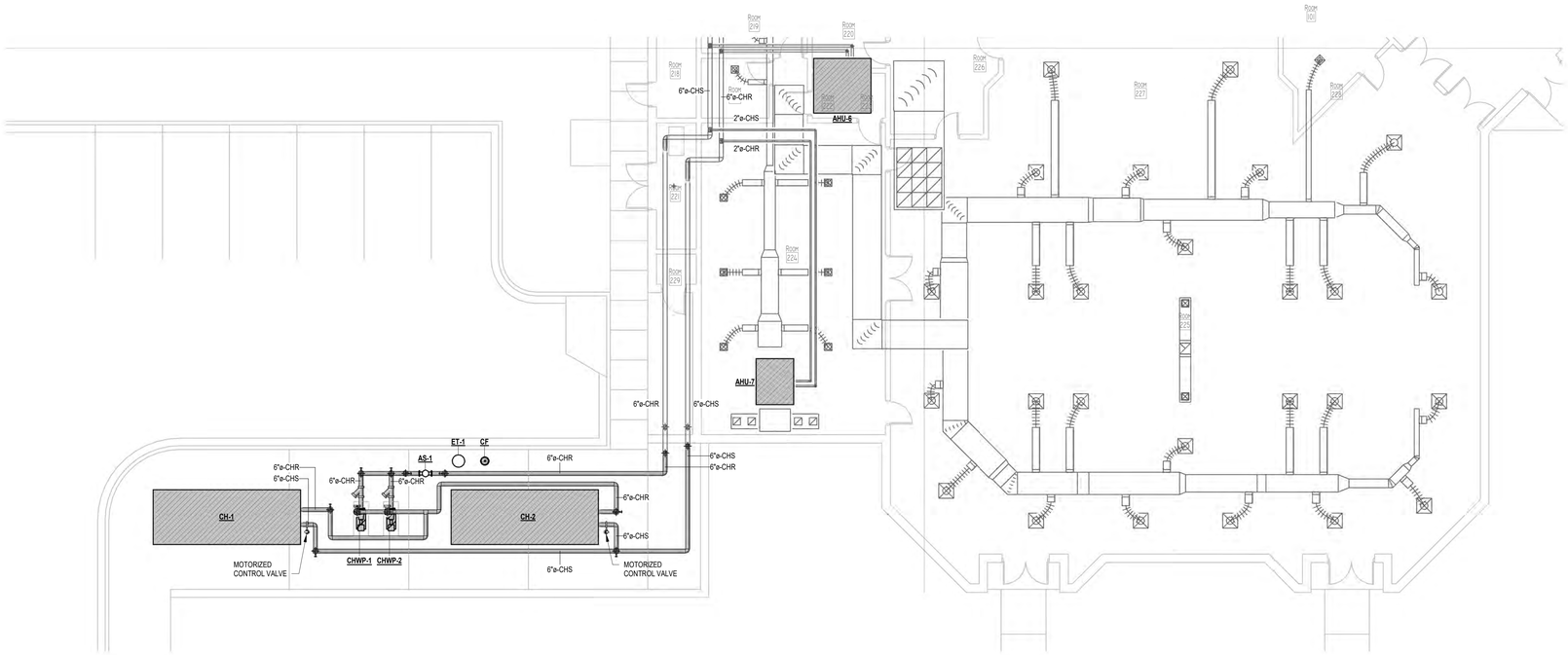
1 APPROXIMMATE LOCATION OF NEW SINGLE DUCT BOX. THE CONTRACTOR SHALL INSTALL A NEW SINGLE DUCT BOX IN THE EXISTING DUCTWORK. THE CONTSCTOR SHALL REMOVE AND PATCH EXISTING DUCTWORK AS NECESSARY. TYP.

2 NEW DDC TEMPERATURE, RELATIVE HUMITY, AND CO2 SENSORS.

3 REFER TO ENLARGED MECHANICAL ROOM PLANS FOR THE MECHANICAL ROOM VIEW CONTINUATION.

EXPANSION TANK, ET-1, SHALL BE FLOOR MOUNTED ON A 4 INCH HIGH CONCRETE HOUSE KEEPING PAD. PAD SHALL EXTEND 6 INCHES BEYOND TANK EDGES.

THREE-SOCK CHEMICAL FILTER FEEDER MOUNTED ON 4 INCH HOUSE KEEPING PAD.




1 M2.14 **MECHANICAL PLAN - AREA D**
1/8" = 1'-0"


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


115

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - SALINAS ES - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.013

**SHEET TITLE:** MECHANICAL PLAN SECTION D

**SHEET NUMBER:** M2.14


DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

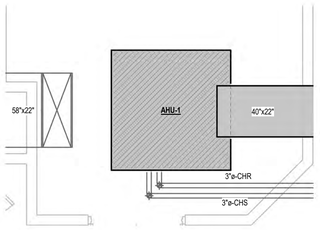

TBPE Firm Registration No. 2234

DBR Project Number 218033.013

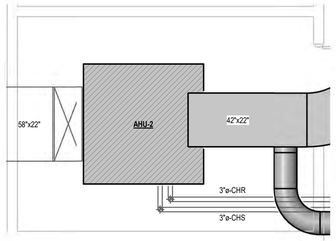
HA | RT/MG | JR

TN PN

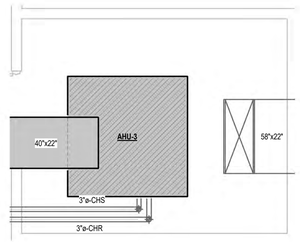

1/5/2023 5:39:45 PM
Autodesk Docs://218033.013-MCISD-Salinas ES 113-IAC Improvements/218033.013 - SALINAS - MEP22.rvt




1 M3.01 **MECHANICAL PLAN - AHU-1**
1/4" = 1'-0"




2 M3.01 **MECHANICAL PLAN - AHU-2**
1/4" = 1'-0"




3 M3.01 **MECHANICAL PLAN - AHU-3**
1/4" = 1'-0"




4 M3.01 **MECHANICAL PLAN - AHU-4**
1/4" = 1'-0"




5 M3.01 **MECHANICAL PLAN - AHU-5**
1/4" = 1'-0"

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f



**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - SALINAS ES - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.013

**SHEET TITLE:** ENLARGED MECHANICAL PLANS

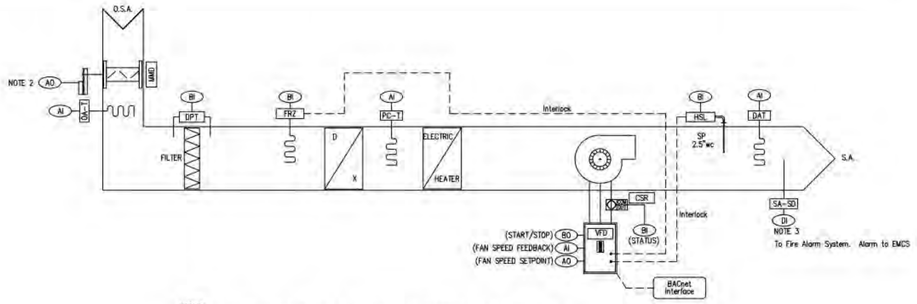
**SHEET NUMBER:** M3.01

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.013

HA | RT/MG | JR

1/5/2023 5:39:47 PM
Autodesk Docs://218033.013-MCISD-Salinas ES 113-IAC Improvements/218033.013 - SALINAS - MEP22.rvt




NOTES:
1. Provide coil control valve as indicated in mechanical schedules and control specifications.
2. Damper provided and installed by mechanical contractor, wired by mechanical contractor, and controlled thru EMCS.
3. Wire to fire alarm system. Alarm to EMCS. Duct smoke detectors provided by fire alarm contractor and installed be mechanical contractor. Existing duct smoke detectors may be re-used where possible.

System Off - When the system is off:
The outside air damper shall be closed.
The supply air fan shall be off.
The chilled water coil valve shall be closed.
The hot water coil valve(s) shall be closed.
The control loops shall be disabled.

System Start-up - System start-up shall be initiated:
By an operator entered manual command at the EMCS.
Automatically by the EMCS based on Pre-Start Mode or Night-Setback Mode.

Pre-Start Mode:
The system shall be enabled by an operator entered manual command at the EMCS or automatically by the EMCS based on the Optimal Start/Stop algorithm. Once enabled, the system shall operate per the System Operation section as detailed below. Operation of the system during Pre-Start Mode shall not include ventilation air.

Night-Setback Mode:
The system shall be enabled automatically by the EMCS when the space temperature drifts outside the active Unoccupied Cooling or Heating Setpoint. Once enabled, the system shall operate per the System Operation section as detailed below. Operation of the system during Night-Setback Mode shall not include ventilation air.

System Operation - When system start-up has been initiated:
The variable speed supply air fan shall start. Following a confirmation of fan start status, the supply fan shall initially be indexed to its maximum scheduled flow. The speed of the fan shall remain constant.

OUTSIDE AIR CFM AND DAMPER CONTROL: When the system is commanded to start, the EMCS shall index the outside air damper to the scheduled maximum outside airflow rate as measured and balanced by TAB Contractor.

The outside air temperature shall determine whether the unit is in HEATING, COOLING, OR DEHUMIDIFICATION.

A. When outside air is 72°F or above, unit shall enter COOLING mode. In this mode, supply fan shall be running, the EMCS shall modulate the compressor e as required to provide a 55°F coil discharge air temperature. The hot water coil control valve shall then modulate to provide a supply air temperature of 65°F.

B. When outside air temperature is greater than 55°F and less than 72°F, unit shall operate in DEHUMIDIFICATION mode. In this mode, supply fan shall be running, the EMCS shall modulate the compressor as required to provide 55°F coil discharge air temperature. The heating coil shall then modulate to provide a supply air temperature of 65°F.

C. When outside air temperature is below 55°F, unit shall operate in HEATING mode. In this mode, supply fan shall be running, cooling shall be disabled, and heating coil shall modulate to provide a 65°F supply air temperature.

System Setpoints - The setpoints for the system shall be determined as follows:
The maximum speed reference value shall be the VFD speed required to obtain the design supply airflow value from the unit schedule on the Mechanical Drawings.

The heating coil discharge air temperature setpoint shall be set at 55°F (adj) with a low-limit alarm of 48°F (adj).
The re-heat coil discharge air temperature setpoint shall be set at 65°F (adj) with a high-limit alarm of 80°F (adj)
The minimum outside air flowrate setpoint shall be set at the scheduled minimum flowrate from the unit schedule on the mechanical drawings.
The maximum outside air flowrate setpoint shall be set at the scheduled maximum flowrate from the unit schedule on the mechanical drawings.
The supply duct static pressure high-limit setpoint shall be set at 2.0 in. wc. (adj)
The air filter pressure differential high-limit setpoint shall be set at 1.0 in. wc. (adj).
The freeze-stat low-limit trip setpoint shall be set at 37°F(adj).

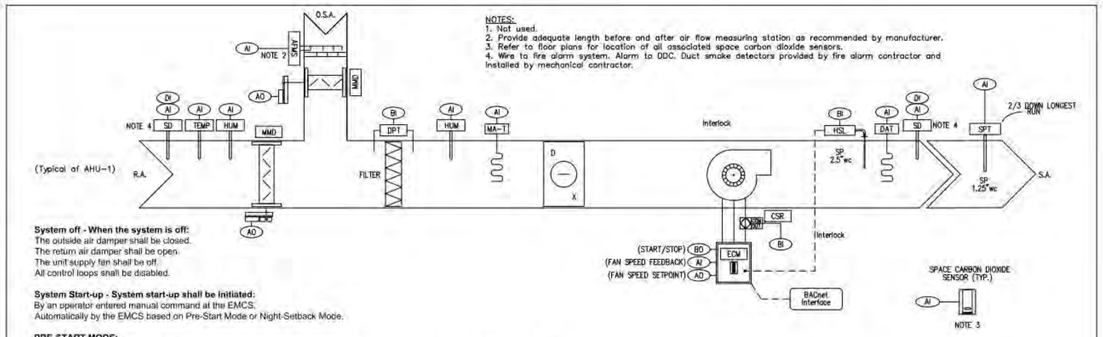
System Shutdown - System shutdown shall be initiated:
By operator entered manual command at the EMCS.
Automatically by the EMCS based on Night-Setback or Time of Day schedule.
Automatically by the high-static pressure shut down.
Automatically by the unit freeze-stat shut down.
Automatically by a supply fan current sensor status failure.

System Alarms - The EMCS shall generate an alarm condition for each of the following:
If the supply air temperature drops below the chilled water coil discharge air temperature low-limit for 5 minutes (adj).
If the supply air temperature rises above the heating coil discharge air temperature high-limit for 5 minutes (adj).
If the supply duct static pressure exceeds the high-limit setpoint.
If the filter differential pressure exceeds the trip point.
If the unit freeze-stat trips.
If the current sensor relay indicates a supply fan failure status.
All alarms shall be inhibited when the supply fan is not operating except the space temperature alarms. The alarms, except the fan failure and the space temperature alarms, shall remain inhibited following startup of the unit for 2 minutes.

## 1 Outside Air AHU - Control Schematic and Sequence of Operations
NOT TO SCALE

- AI — ANALOG INPUT
- AO — ANALOG OUTPUT
- DI/BI — DIGITAL/BINARY INPUT
- DO/BO — DIGITAL/BINARY OUTPUT
- MD — ON-OFF MOTORIZED DAMPER
- MMD — MODULATING TYPE MOTORIZED DAMPER
- AFMS — AIR FLOW MEASURING STATION
- MCV — CONTROL VALVE MODULATING TYPE
- VFD — VARIABLE FREQUENCY DRIVE
- CSR — CURRENT SENSING RELAY
- FRZ — FREEZESTAT
- HSL — HIGH STATIC LIMIT
- SPT — STATIC PRESSURE TRANSMITTER
- DPT — DIFFERENTIAL PRESSURE TRANSDUCER
- FM — FLOW METER
- FS — FLOW SWITCH
- DAT — DISCHARGE AIR TEMPERATURE SENSOR
- T / (T) — WALL SENSOR/THERMOSTAT
- CO2 — CARBON DIOXIDE SENSOR
- SP — SET POINT
- S/A — SUPPLY AIR
- R/A — RETURN AIR
- O/A — OUTSIDE AIR
- HC — HEATING COIL
- CC — COOLING COIL
- DX — DIRECT EXPANSION COOLING COIL
- PICCV — PRESSURE INDEPENDENT CHARACTERIZED CONTROL VALVE
- AFC — AIRFLOW CROSS
- DPS — DIFFERENTIAL PRESSURE SWITCH

## 2 CONTROL SCHEMATIC LEGEND
NOT TO SCALE




NOTES:
1. Not used.
2. Provide adequate length before and after air flow measuring station as recommended by manufacturer.
3. Refer to floor plans for location of all associated space carbon dioxide sensors.
4. Wire to fire alarm system. Alarm to DDC. Duct smoke detectors provided by fire alarm contractor and installed by mechanical contractor.

**System off - When the system is off:**
The outside air damper shall be closed.
The return air damper shall be open.
The unit supply fan shall be off.
All control loops shall be disabled.

**System Start-up - System start-up shall be initiated:**
By an operator entered manual command at the EMCS.
Automatically by the EMCS based on Pre-Start Mode or Night-Setback Mode.

**PRE-START MODE:**
The system shall be enabled by an operator entered manual command at the EMCS or automatically by the EMCS based on the Optimal Start/Stop algorithm. Once enabled, the system shall operate per the **System Operation** section, as detailed below. Operation of the system during Pre-Start Mode shall not include ventilation air.

**NIGHT-SETBACK MODE:**
The system shall be enabled automatically by the EMCS based on the cooling demand of 5 (adjustable) or more associated terminal units whose space temperature has exceeded the terminal units Unoccupied Cooling Setpoint. Once enabled, the system shall operate per the **System Operation** section, as detailed below. Operation of the system during Night-Setback Mode shall not include ventilation air.

**OCCUPIED MODE:**
The system shall be enabled automatically by the EMCS based on the actual space occupancy. When the Time of Day schedule (TOD) is active, the system shall operate per the **System Operation** section, as detailed below, and the Demand Control Ventilation sequence shall be active.

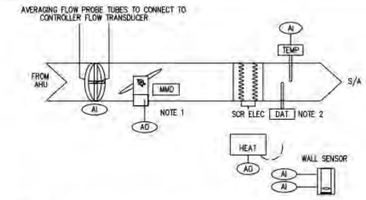
Demand Control Ventilation - The outside air intake damper shall be modulated to maintain the scheduled minimum outside air flowrate setpoint. If the space carbon dioxide concentration for any zone served by the associated AHU is above the defined high-limit, then the OSA damper shall be modulated to maintain the scheduled maximum outside air flowrate setpoint. If the OSA damper is above 95% open and the maximum outside air flowrate setpoint cannot be met, then modulate the return air damper closed until the flowrate is achieved. Do not modulate the return air damper to less than 60% open. Once the space carbon dioxide concentration for all associated zones has been below the defined high limit for 5 minutes (adj.), the OSA damper shall be modulated to maintain the scheduled minimum outside air flowrate setpoint.
**System Operation - When system start-up has been initiated:**
The variable speed supply fans shall start at its minimum speed. Following a confirmation of fan start status, the supply fans speed shall be modulated in parallel to maintain the supply air static pressure at setpoint. The speed of the fans shall not be adjusted by more than 20% in any one-minute period. The static pressure setpoint shall be reset via the control algorithm below to optimize the energy usage.
Supply Air Static Pressure Reset - The static pressure setpoint shall be reset up in defined increments at defined intervals until the primary air damper position to all of the associated terminal units have been below the defined value for more than the defined interval. The static pressure setpoint shall be reset down in defined increments at defined intervals until the primary air damper position to at least one (critical zone) of the associated terminal units has been above the defined value for more than the defined interval. The setpoints are detailed in the **System Setpoint** section below.
Temperature Control - The VRF coil shall be modulated to maintain the active supply air temperature setpoint. The supply air temperature setpoint shall be reset via the control algorithm below to optimize the energy usage.
Supply Air Temperature Reset - The supply air temperature setpoint shall be reset based on the actual return air temperature, according to the defined reset schedule detailed in the **System Setpoint** section below. If the Demand Control Ventilation sequence is in maximum flow mode, then the supply air temperature reset shall be disabled and the setpoint shall be set to the initial value.
Humidity Control - A return air, duct mounted, humidity sensor shall monitor the R/A relative humidity to 50% (ADJ.). When return air relative humidity is above setpoint by 5% (not to exceed 60%), the VRF coil shall modulate to provide 50°F cooling coil discharge temperature and signal the terminal units to go into humidity control. When relative humidity attains set point, the system will return to normal operation.

**System Setpoints - The setpoints for the system shall be determined as follows:**
The maximum speed reference value shall be the ECM speed required to obtain the design supply airflow value from the unit schedule on the Mechanical Drawings.
The minimum speed reference value shall be ECM speed required to obtain 50% of the design supply airflow value from the unit schedule on the mechanical drawings but not less than the active outside air flow rate setpoint.
The supply air static pressure setpoint shall be set initially at 1.25 inches w.c. (adj) and shall have reset limits of 0.20 to 2.00 inches w.c. (adj)
The time interval for static pressure reset shall be set at 10 minutes (adj).
The static pressure reset increment shall be set at 0.05 inches w.c. (adj)
The terminal unit primary damper position setpoint shall be 90% open. (adj)
The time interval for terminal unit primary damper position shall be set at 15 minutes. (adj)
The supply air temperature setpoint shall be set initially at 54 °F. (adj)
The supply air temperature setpoint shall be reset to 54 °F (adj) when the return air temperature is at 78 °F. (adj)
The supply air temperature setpoint shall be reset to 58 °F (adj) when the return air temperature is at 72 °F. (adj)
The minimum outside air flowrate setpoint shall be set at the scheduled minimum flowrate from the unit schedule on the mechanical drawings.
The maximum outside air flowrate setpoint shall be set at the scheduled maximum flowrate from the unit schedule on the mechanical drawings.
The space carbon dioxide high-limit setpoint shall be set at 1000 ppm (adj).
The supply duct static pressure high-limit setpoint shall be set at 2.0 in. wc. (adj).
The air filter pressure differential high-limit setpoint shall be set at 1.0 in. wc. (adj).

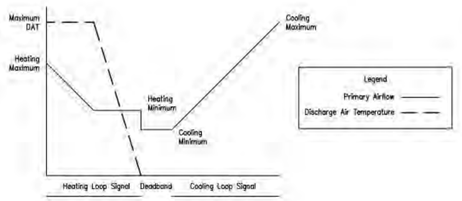
**System Shutdown - System shutdown shall be initiated:**
By operator entered manual command at the EMCS.
Automatically by the EMCS based on Night-Setback or Time of Day schedule.
Automatically by the high-static pressure shut down.
Automatically by a supply fan current sensor status failure.

**System Alarms - The EMCS shall generate an alarm if:**
If the supply air temperature is outside the limits, which shall be set at +/- 5 °F around setpoint.
If any associated space carbon dioxide level exceeds its high-limit for more than 20 minutes (adj) or exceeds the high-limit by 10% or more.
If the supply duct static pressure exceeds the high-limit setpoint.
If the filter differential pressure exceeds the trip point.
If the current sensor relay indicates a supply fan failure status.
If return air RH is 60% or above.
All alarms shall be inhibited when the supply fan is not operating.

## 3 MULTIZONE VAV Air Handling Unit - Control Schematic and Sequence of Operations
NOT TO SCALE




NOTES:
1. TERMINAL UNIT CONTROLLER AND DAMPER ACTUATOR SHALL BE SHIPPED TO THE TERMINAL UNIT MANUFACTURER FOR MOUNTING AND WIRING.
2. DAT SENSOR SUPPLIED BY UNIT VENDOR AND MOUNTED BY EMCS CONTRACTOR.




**System Off - When the system is off:**
The primary air damper shall be closed.
The heating coil shall be disabled.
The control loops shall be disabled.

**System Startup - Startup shall be initiated automatically by the EMCS:**
In Unoccupied when the corresponding AHU is in UNOCCUPIED MODE.
In Occupied when the corresponding AHU is in PRE-START MODE.
In Unoccupied when the corresponding AHU is in NIGHT-SETBACK MODE.
In Occupied when the corresponding AHU is in OCCUPIED MODE.

**System Operation - When system start-up has been initiated, the following sequences shall be implemented:**
The primary air damper shall be modulated between the cooling minimum and maximum flow values to maintain the space temperature within +/- 0.5 °F of the active Cooling Setpoint.
When the space temperature falls below the deadband, the primary air damper shall modulate to maintain the heating minimum flow value and the SCR electric heat shall be modulated to maintain the space temperature within +/- 0.5 °F of the active Heating Setpoint.
If the space temperature drops below the active Heating Setpoint and the discharge air temperature is at its active setpoint, the primary air damper shall be modulated between the heating minimum and maximum heating flow values to maintain the space temperature within +/- 0.5°F of the active Heating Setpoint and the SCR electric heat shall be modulated to maintain the discharge air temperature setpoint. The SCR electric heat controller shall be set to maintain a maximum discharge air temperature of 85 °F (adjustable). When relative humidity, as determined by either space or AHU return air relative humidity sensor is above setpoint by 5% (not to exceed 60%) in any conditioning mode, terminal unit damper shall modulate to 50% of scheduled cooling CFM and electric heater shall modulate to maintain programmed or override temperature. Unit shall operate in this mode until return air relative humidity attains setpoint.

**System Setpoints - The setpoints for the system shall be set as follows:**
The Occupied Heating Setpoint shall be set initially at 70 °F (adjustable).
The Occupied Cooling Setpoint shall be set initially at 74 °F (adjustable).
The Unoccupied Heating Setpoint shall be set initially at 55 °F (adjustable).
The Unoccupied Cooling Setpoint shall be set initially at 85 °F (adjustable).
The maximum heating mode discharge air temperature shall be set at 85 °F (adjustable).
The minimum and maximum primary air flowrates shall set at the values given in the Mechanical Drawings.

**System Alarms - The EMCS shall generate an alarm as follows:**
If the space temperature during the Occupied Mode is 5 °F above the cooling setpoint or 5 °F below the heating setpoint respectively.

## 4 VAV Terminal Unit with Electric Reheat - Control Schematic and Sequence of Operations
NOT TO SCALE


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


117

REVISION:

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

SEAL:

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - SALINAS ES - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

DATE: 01/05/2023

DRAWN BY: DBR

CHECKED BY: DBR

PROJECT NUMBER: 218033.013

SHEET TITLE: MECHANICAL FLOW DIAGRAMS

SHEET NUMBER: M4.01


DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234


DBR Project Number 218033.013

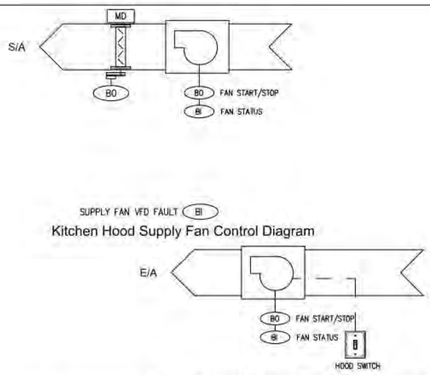
HA | RT/MG | JR


1/5/2023 5:39:48 PM
Autodesk Docs://218033.013-MCISD-Salinas ES 113-IAC Improvements/218033.013 - SALINAS - MEP22.rvt

## SINGLE INLET VAV BOX WITH ELECTRIC HEAT SCHEDULE

| MARK | COOLING CFM | | HEATING CFM | | ELEC. HEATING | | INLET SIZE | VOLTS/ PHASE/ HZ | MFR | MODEL NO. |
|---|---|---|---|---|---|---|---|---|---|---|
| | MAX. | MIN. | MAX. | MIN. | KW | NO. OF STEPS | | | | |
| VAV-1-1 | 575 | 175 | 405 | 275 | 3.8 | SCR | 8"Ø | 277/1/60 | TITUS | DESV-8 |
| VAV-1-2 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-1-3 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-1-4 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-1-5 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-1-6 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-1-7 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-1-8 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-1-9 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-1-10 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-1-11 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-1-12 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-2-1 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-2-2 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-2-3 | 400 | 120 | 280 | 190 | 2.7 | SCR | 8"Ø | 277/1/60 | TITUS | DESV-8 |
| VAV-2-4 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-2-5 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-2-6 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-2-7 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-2-8 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-2-9 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-2-10 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-2-11 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-2-12 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-2-13 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-3-1 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-3-2 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-3-3 | 400 | 120 | 280 | 190 | 2.7 | SCR | 8"Ø | 277/1/60 | TITUS | DESV-8 |
| VAV-3-4 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-3-5 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-3-6 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-3-7 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-3-8 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-3-9 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-3-10 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-3-11 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-3-12 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-4-1 | 400 | 120 | 280 | 190 | 2.7 | SCR | 8"Ø | 277/1/60 | TITUS | DESV-8 |
| VAV-4-2 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-4-3 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-4-4 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-4-5 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-4-6 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-4-7 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-4-8 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-4-9 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-4-10 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-4-11 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-4-12 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-4-13 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-4-14 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-5-1 | 300 | 90 | 210 | 145 | 2.0 | SCR | 6"Ø | 277/1/60 | TITUS | DESV-6 |
| VAV-5-2 | 550 | 165 | 385 | 260 | 3.7 | SCR | 8"Ø | 277/1/60 | TITUS | DESV-8 |
| VAV-5-3 | 400 | 120 | 280 | 190 | 2.7 | SCR | 8"Ø | 277/1/60 | TITUS | DESV-8 |
| VAV-5-4 | 1500 | 450 | 1050 | 705 | 10.0 | SCR | 12"Ø | 460/3/60 | TITUS | DESV-12 |
| VAV-5-5 | 1500 | 450 | 1050 | 705 | 10.0 | SCR | 12"Ø | 460/3/60 | TITUS | DESV-12 |
| VAV-5-6 | 1200 | 360 | 840 | 565 | 8.0 | SCR | 12"Ø | 460/3/60 | TITUS | DESV-12 |
| VAV-5-7 | 1200 | 360 | 840 | 565 | 8.0 | SCR | 12"Ø | 460/3/60 | TITUS | DESV-12 |
| VAV-5-8 | 1000 | 300 | 700 | 470 | 6.6 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-5-9 | 550 | 165 | 385 | 260 | 3.7 | SCR | 8"Ø | 277/1/60 | TITUS | DESV-8 |
| VAV-5-10 | 250 | 75 | 175 | 120 | 1.7 | SCR | 6"Ø | 277/1/60 | TITUS | DESV-6 |
| VAV-5-11 | 350 | 105 | 245 | 165 | 2.3 | SCR | 8"Ø | 277/1/60 | TITUS | DESV-8 |
| VAV-5-12 | 300 | 90 | 210 | 145 | 2.0 | SCR | 6"Ø | 277/1/60 | TITUS | DESV-6 |
| VAV-5-13 | 800 | 240 | 560 | 375 | 5.3 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |
| VAV-5-14 | 400 | 120 | 280 | 190 | 2.7 | SCR | 8"Ø | 277/1/60 | TITUS | DESV-8 |
| VAV-5-15 | 800 | 240 | 560 | 375 | 5.3 | SCR | 10"Ø | 460/3/60 | TITUS | DESV-10 |

NOTES:
1. PROVIDE AEROCROSS MULTI-POINT CENTER AVERAGING VELOCITY SENSOR IN PRIMARY AIR INLET.
2. PROVIDE TERMINAL UNIT CASING WITH 1" INTERNALLY LINED FIBERGLASS FREE INSULATION.
3. PROVIDE TERMINAL UNIT WITH INTEGRAL DISCONNECT SWITCH.
4. PROVIDE ELECTRIC REHEAT COIL WITH 0-10V SCR MODULATING CAPACITY CONTROL.




**2 Kitchen Hood Fans Schematic and Sequence of Operation**
NOT TO SCALE

Run Conditions - Interlocked:
The kitchen hood supply and exhaust fans shall be interlocked to operate together. The hood fans shall be enabled to run by the EMCS based on an operator assigned schedule. When the fans are enabled to run they will be controlled via a local HOA switch mounted at the hood.

Supply Fan Damper:
The outside air damper shall open anytime the unit runs and shall close anytime the unit stops. The supply fan shall start only after the damper status has proven the damper is open.

Hand Mode:
The supply air and exhaust air fan shall start. Following a conformation of fan start status, the supply and exhaust fan speed shall be balanced to the design speed reference values. The speed reference values shall be determined during Testing and Balancing and coordinated by the contractors.

Off Mode:
Exhaust fan and supply fan shall be off. The outside air damper shall close 4sec (adj.) after the supply fan stops.

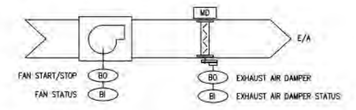
Auto Mode:
Following a conformation of fan start status, the supply and exhaust fan speed shall be balanced to the design speed reference values. The speed reference values shall be determined during Testing and Balancing and coordinated by the contractors.

Fan Status:
The controller shall monitor the fan status.
Alarms shall be provided as follows:
- Fan Failure: Commanded on, but the status is off.
- Fan in Hand: Commanded off, but the status is on.
- Fan Runtime Exceeded: Fan status runtime exceeds a user definable limit (adj.).

## AIR HANDLING UNIT SCHEDULE

| MARK | | AHU-1 | AHU-2 | AHU-3 | AHU-4 | AHU-5 | AHU-6 | AHU-7 |
|---|---|---|---|---|---|---|---|---|
| SERVES | | CLASSROOMS | CLASSROOMS | CLASSROOMS | CLASSROOMS | ADMINISTRATION | CAFETERIA | KITCHEN |
| TYPE | | MULTIZONE | MULTIZONE | MULTIZONE | MULTIZONE | MULTIZONE | SINGLE ZONE | SINGLE ZONE |
| SUPPLY AIR (CFM) | | 11575 | 12400 | 11300 | 13400 | 11100 | 14150 | 2,800 |
| OUTSIDE AIR (CFM) | | 3675 | 3675 | 3675 | 3675 | 2000 | 1890 | 340 |
| EXT. S.P. (IN. W.G.) | | 2 | 2 | 2 | 2 | 0.75 | 1.25 | 0.5 |
| VOLTS/PHASE/HERTZ | | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 |
| FAN MOTOR HORSEPOWER | | 2 x 6.63 | 2 x 6.63 | 2 x 6.63 | 2 x 7.01 | 2 x 6.63 | 2 x 7.01 | 2 x 2.55 |
| FAN MOTOR CONTROL (BY CONTRACTOR) | | EC MOTOR | EC MOTOR | EC MOTOR | EC MOTOR | EC MOTOR | EC MOTOR | EC MOTOR |
| MAX. FAN RPM | | 2600 | 2600 | 2600 | 1690 | 2600 | 1690 | 2,815 |
| COOLING COIL | MAX. COIL FACE VELOCITY (FPM) | 500 | 500 | 500 | 500 | 500 | 500 | 500 |
| | COOLING COIL CFM | 11575 | 12400 | 11300 | 13400 | 11100 | 14150 | 2,800 |
| | MIN. ROWS/MAX. FINS PER INCH | 6/10 | 6/10 | 6/10 | 5/10 | 6/10 | 6/10 | 6/10 |
| | EAT DB/WB (°F) | 83.1/66.8 | 82.5/66.5 | 83.3/66.9 | 82.0/66.2 | 79.6/64.9 | 78.4/64.3 | 78.1/64.1 |
| | LAT DB/WB (°F) | 55.0/54.0 | 55.0/54.0 | 55.0/54.0 | 55.0/54.0 | 55.0/54.0 | 55.0/54.0 | 55.0/540 |
| | TOTAL COOLING CAPACITY (MBH) | 468.6 | 488.5 | 462 | 512.5 | 370.5 | 438.1 | 84.9 |
| | SENSIBLE COOLING CAPACITY (MBH) | 350.8 | 368.7 | 344.9 | 390.3 | 294.6 | 357.5 | 69.8 |
| | EWT/LWT (°F) | 43/59 | 43/59 | 43/59 | 43/59 | 43/59 | 43/59 | 43/59 |
| | COIL WATER FLOW (GPM) | 58.6 | 61.1 | 57.8 | 64.1 | 46.3 | 54.8 | 10.6 |
| | MAX. WATER P.D. (FT. HD.) | 15.1 | 16.5 | 14.2 | 16.7 | 9.5 | 14.8 | 2 |
| | CONTROL VALVE (2-WAY/3-WAY) | 2-WAY | 2-WAY | 2-WAY | 2-WAY | 2-WAY | 2-WAY | 2-WAY |
| REHEAT COIL | HEATING COIL CFM | -- | -- | -- | -- | -- | -- | -- |
| | EAT (°F) | -- | -- | -- | -- | -- | -- | -- |
| | LAT (°F) | -- | -- | -- | -- | -- | -- | -- |
| | HEATING CAPACITY (KW) | -- | -- | -- | -- | -- | -- | -- |
| | NUMBER OF STAGES | -- | -- | -- | -- | -- | -- | -- |
| | VOLTS/PHASE/HERTZ | -- | -- | -- | -- | -- | -- | -- |
| MANUFACTURER | | DAIKIN | DAIKIN | DAIKIN | DAIKIN | DAIKIN | DAIKIN | DAIKIN |
| MODEL NUMBER | | CAH | CAH | CAH | CAH | CAH | CAH | CAH |
| NOTES | | ALL | ALL | ALL | ALL | ALL | ALL | ALL |

NOTES:
1. EXTERNAL STATIC PRESSURE DOES NOT ACCOUNT FOR LOSSES DUE TO COIL(S), FILTERS, HOUSING, NOR ACCESSORIES.
2. PROVIDE UNIT WITH VERTICAL TOP DISCHARGE FOR AHU-1 THROUGH 5, FRONT DISCHARGE FOR AHU-6,7.
3. PROVIDE 2" DOUBLE WALL CONSTRUCTION WITH INJECTED FOAM MINIMUM R-13 INSULATION IN ALL SECTIONS INCLUDING UNDER THE DRAIN PAN.
4. PROVIDE UNIT WITH FLAT FILTER, CHILLED WATER COIL, AND ECM FAN ARRAY.
5. PROVIDE WITH STAINLESS STEEL DRAIN PAN, COIL CASING AND COIL SUPPORTS. PROVIDE STAINLESS STEEL INNER CABINET LINER IN COOLING COIL SECTION.
6. PROVIDE ECM FAN ARRAY WITH MANUAL BLANKOFF PLATE.
7. PROVIDE FAN ARRAY WITH HAND/OFF/AUTO SWITCH, 0-10 VDC SIGNAL INPUT, FAN FAULT TERMINAL, FUSED DISCONNECT, MOTOR CONTROL PANEL, LINE AND LOW VOLTAGE WIRING, INDIVIDUAL FAN MOTOR OVERCURRENT PROTECTION/ISOLATION SWITCH, AND POTENTIOMETER FOR MANUAL CONTROL OVERRIDE.




(TYPICAL OF EF-1 THRU EF-50)
**System Operation - When system start-up has been initiated, the following sequences shall be implemented:**
The ventilation exhaust fan shall be integrated with the EMCS to monitor fan status and to schedule run times. The exhaust air damper shall open anytime the unit runs and shall close anytime the unit stops. The exhaust fan shall start only after the damper status has proven the damper is open. The exhaust air damper shall close 30 sec.(adj.) after the fan stops.

**System Setpoints - The setpoints for the system shall be set as follows:**
The design airflow rates shall be set at the values given in the Mechanical Drawings.

Fan Status:
The controller shall monitor the fan status.
Alarms shall be provided as follows:
- Fan Failure: Commanded on, but the status is off.
- Fan in Hand: Commanded off, but the status is on.
- Fan Runtime Exceeded: Fan status runtime exceeds a user definable limit (adj.).

**3 Ventilation Exhaust Fan - Control Schematic and Sequence of Operations**
NOT TO SCALE




**2 CONTROL SCHEMATIC LEGEND**
NOT TO SCALE


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
t 956.683.1640 p 956.683.1903 f


REVISION:

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

SEAL:

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - SALINAS ES - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

DATE: 01/05/2023

DRAWN BY: DBR

CHECKED BY: DBR

PROJECT NUMBER: 218033.013

SHEET TITLE: MECHANICAL SCHEDULES

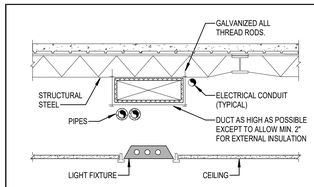
SHEET NUMBER: M5.01


DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234


DBR Project Number 218033.013

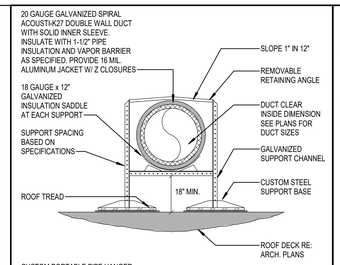
HA | RT/MG | JR


1/5/2023 5:39:48 PM
Autodesk Docs://218033.013-MCISD-Salinas ES 113-IAC Improvements/218033.013 - SALINAS - MEP22.rvt

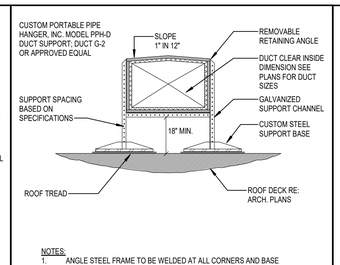



NOTES:
1. PIPES (INCLUDING SPRINKLER PIPING) AND ELECTRICAL CONDUIT CAN BE ROUTED BETWEEN JOISTS OR THROUGH JOIST WEB SPACE AS REQUIRED. DUCT SHALL BE LOCATED AS HIGH AS POSSIBLE.
2. U.L. DESIGN ASSEMBLY NUMBERS ARE SHOWN ON ARCHITECTURAL PLANS WHEN REQUIRED.
3. INSTALLATION OF ALL SERVICES MUST BE COORDINATED BY THE CONTRACTOR.

## 1 TYP. MEP INSTALLATION DETAIL
NOT TO SCALE

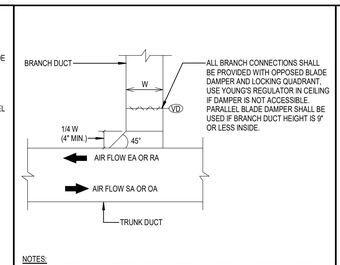



## 2 DUCT SUPPORT ON ROOF
NOT TO SCALE



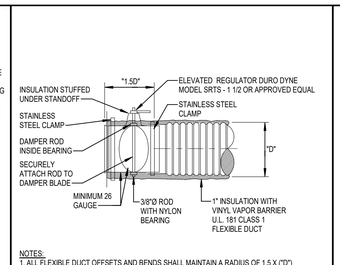

NOTES:
1. ANGLE STEEL FRAME TO BE WELDED AT ALL CORNERS AND BASE PLATE.
2. PROVIDE 12" WIDE 18 GAUGE GALVANIZED STEEL INSULATION SADDLE, FULL WIDTH AND HEIGHT OF DUCT.

## 3 EXPOSED RECT. DUCT ON ROOF
NOT TO SCALE



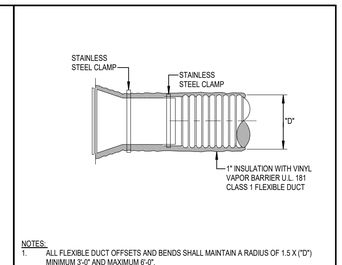

NOTES:
THIS CONNECTION SHALL BE TYPICAL FOR ALL RECTANGULAR BRANCH DUCT CONNECTIONS TO RECTANGULAR TRUNK DUCTS, INCLUDING SUPPLY, RETURN, OUTSIDE AIR AND EXHAUST DUCTS.

## 4 RECTANGULAR BRANCH DUCT TAP
NOT TO SCALE



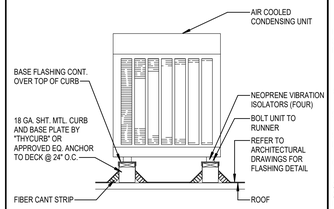

NOTES:
1. ALL FLEXIBLE DUCT OFFSETS AND BENDS SHALL MAINTAIN A RADIUS OF 1.5 X ("D") MINIMUM 3'-0" AND MAXIMUM 6'-0".
2. TYPICAL OF ROUND DUCT CONNECTIONS TO RECTANGULAR DUCTS
3. ALL JOINTS SHALL BE SEALED WITH MASTIC AND FIBER CLOTH PER SPECIFICATIONS.

## 5 SPIN-IN DETAIL
NOT TO SCALE



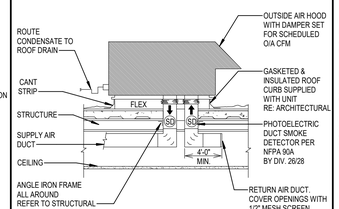

NOTES:
1. ALL FLEXIBLE DUCT OFFSETS AND BENDS SHALL MAINTAIN A RADIUS OF 1.5 X ("D") MINIMUM 3'-0" AND MAXIMUM 6'-0".
2. TYPICAL OF ROUND DUCT CONNECTIONS TO VAV BOXES FROM RECTANGULAR MAIN DUCTS.
3. ALL JOINTS SHALL BE SEALED WITH MASTIC AND FIBER CLOTH PER SPECIFICATIONS.

## 6 CONICAL SPIN-IN DETAIL
NOT TO SCALE

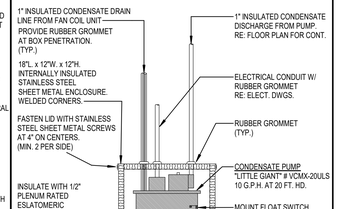



NOTE:
1. PROVIDE CLEARANCE AROUND UNIT FOR AIRFLOW AND SERVICE PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

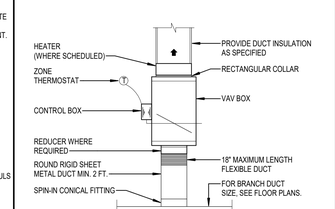
## 7 CONDENSING UNIT ROOF MOUNTED
NOT TO SCALE



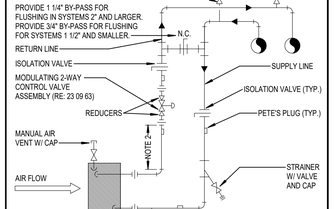

## 8 ROOF TOP UNIT MOUNTING DETAIL
NOT TO SCALE, CONDENSATE DRAIN PIPING SHALL BE SCHEDULE 40 GALVANIZED STEEL WITH MALLEABLE IRON SCREWED FITTINGS.




## 9 COOLING COIL CONDENSATE PUMP
NOT TO SCALE

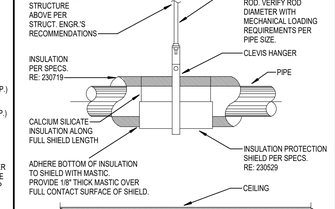



## 10 INTERIOR VAV TERMINAL UNIT
NOT TO SCALE



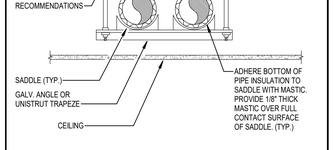

NOTES:
1. INSTALL PER MFGR. CONTROL VALVE ORIENTATION PER MFGR. INSTALLATION INSTRUCTIONS.
2. PROVIDE STRAIGHT PIPE LENGTH 5 TIMES NOMINAL PIPE DIA. UPSTREAM OF CTRL. VALVE.

## 11 2-WAY CONTROL VALVE AND COIL PIPING
NOT TO SCALE



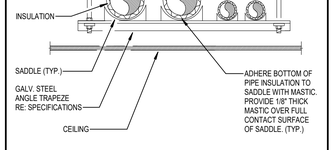

NOTE:
CONTRACTOR SHALL SECURE STRUCT. ENGR. APPROVAL FOR ANY AND ALL PIPE MOUNTING DETAILS TO CONCRETE OR STEEL STRUCTURE. CONTRACTOR SHALL CONFORM TO ALL MAXIMUM SPAN DISTANCES PER SPECIFICATIONS FOR HANGER SPACING. RE: 230529

## 12 PIPE HANGER DETAIL (1-PIPE)
NOT TO SCALE



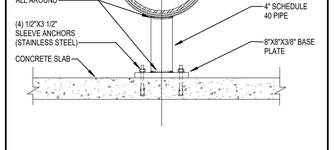

NOTE: CONTRACTOR SHALL SECURE STRUCT. ENGR. APPROVAL FOR ANY AND ALL PIPE MOUNTING DETAILS TO CONCRETE OR STEEL STRUCTURE.

## 13 PIPE HANGER DETAIL
NOT TO SCALE



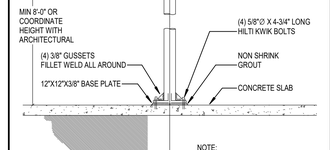

NOTE: CONTRACTOR SHALL SECURE STRUCT. ENG. APPROVAL FOR ANY AND ALL PIPE MOUNTING DETAILS AT CONCRETE OR STEEL STRUCTURE.

## 14 PIPE HANGER DETAIL (4-PIPE)
NOT TO SCALE



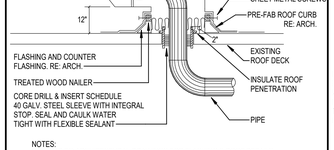

NOTE: FILLET WELD ALL SEAMS. HOT DIP GALVANIZE AFTER FABRICATION.

## 15 PIPE SUPPORT DETAIL
NOT TO SCALE



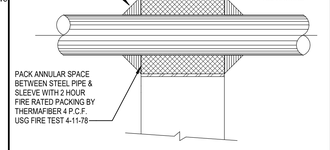

NOTE:
FILLET WELD ALL SEAMS. HOT DIP GALVANIZE AFTER FABRICATION.

## 16 PIPE SUPPORT DETAIL AT SLAB
NOT TO SCALE

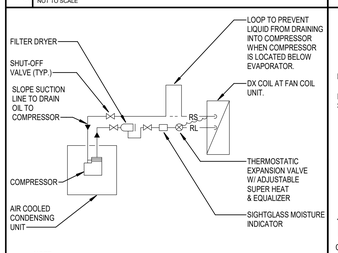



NOTES:
1. REFER TO ARCHITECTURAL DRAWINGS FOR FLASHING & ROOF DETAILS.
2. WHERE PIPE IS INSULATED STOP & POINT INSULATION AT SLEEVE.
3. COORDINATE WITH OWNER'S BONDED ROOFER FOR FLASHING & MOPPING IN DETAIL.

## 17 EXISTING ROOF PIPE PENETRATION
NOT TO SCALE

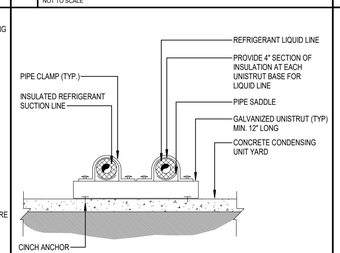



## 18 FIRE WALL PIPE PENETRATION
NOT TO SCALE



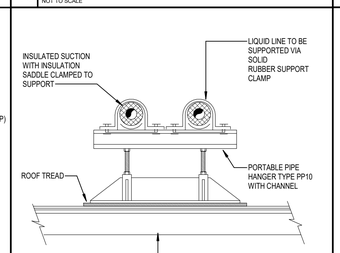

NOTE:
1. COMPLY WITH MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS.
2. TYPICAL FOR EACH SEPARATE REFRIGERANT CIRCUIT.
3. PROVIDE FILTER DRYER ON ALL SYSTEMS.
4. USE "ACR" HARD DRAWN COPPER REFRIGERANT PIPE.

## 19 REFRIGERANT PIPING SCHEMATIC
NOT TO SCALE

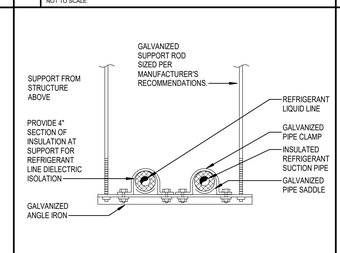



NOTE: PROVIDE SUPPORTS AT 3'-0" ON CENTER AND WITHIN 1'-0" OF ALL CHANGES IN PIPE DIRECTION.

## 20 FLOOR MOUNTED REFR. PIPE
NOT TO SCALE

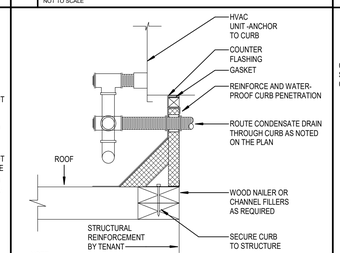



## 21 ROOF MTD. REFR. PIPE SUPPORT
NOT TO SCALE



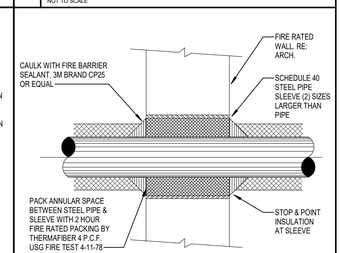

NOTE: PROVIDE SUPPORTS AT 3'-0" ON CENTER MAX. AND WITHIN 1'-0" OF ALL CHANGES IN PIPE DIRECTION.

## 22 REFRIGERANT PIPE HANGER
NOT TO SCALE

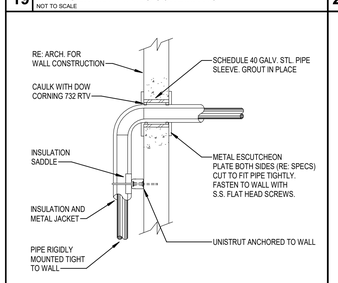



NOTE:
1. COORDINATE WITH APPROVED ROOFING CONTRACTOR. ROOF PENETRATION AND LOCATION SHALL BE COORDINATED AND APPROVED BY ROOFING CONTRACTOR.
2. ALL CONDENSATE DRAIN PIPING SHALL BE SCHEDULE 40 GALVANIZED STEEL WITH MALLEABLE IRON SCREWED FITTINGS.

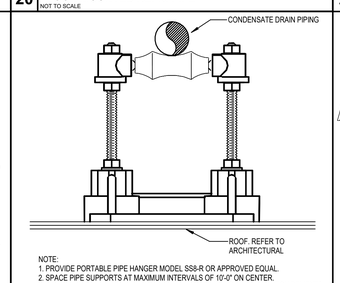
## 23 CONDENSATE DRAIN THRU CURB
NOT TO SCALE




## 24 FIRE WALL INSULATED PIPE PENETRATION
NOT TO SCALE

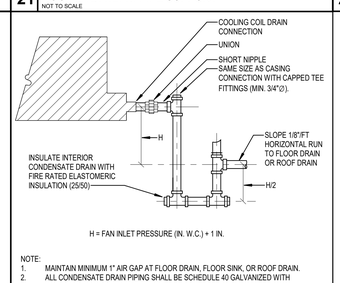



## 25 PIPE ENTRY THRU EXTERIOR WALL
NOT TO SCALE




NOTE:
1. PROVIDE PORTABLE PIPE HANGER MODEL SSR-R OR APPROVED EQUAL.
2. SPACE PIPE SUPPORTS AT MAXIMUM INTERVALS OF 10'-0" ON CENTER.
3. INSTALL PER MANUFACTURER'S SPECIFICATIONS AND INSTALLATION REQUIREMENTS.

## 26 DRAIN LINE SUPPORT ON ROOF
NOT TO SCALE




H = FAN INLET PRESSURE (IN. W.C.) + 1 IN.

NOTE:
1. MAINTAIN MINIMUM 1" AIR GAP AT FLOOR DRAIN, FLOOR SINK, OR ROOF DRAIN.
2. ALL CONDENSATE DRAIN PIPING SHALL BE SCHEDULE 40 GALVANIZED WITH MALLABLE IRON SCREWED FITTINGS.

## 27 COOLING COIL CONDENSATE DRAIN
NOT TO SCALE

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f



**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - SALINAS ES - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.013

**SHEET TITLE:** MECHANICAL DETAILS

**SHEET NUMBER:** M6.01

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.013

HA | RT/MG | JR

1/5/2023 5:39:52 PM
Autodesk Docs://218033.013-MCISD-Salinas ES 113-IAC Improvements/218033.013 - SALINAS - MEP22.rvt

# ABBREVIATIONS

## A

| | |
|---|---|
| A | AMPERES |
| ABV | ABOVE |
| A/C | AIR CONDITIONING |
| AC | ALTERNATING CURRENT, AIR COMPRESSOR, ABOVE COUNTER |
| ACC | AIR COOLED CHILLER |
| ACCU | AIR COOLED CONDENSING UNIT |
| AD | ACCESS DOOR |
| ADA | AMERICANS WITH DISABILITIES ACT |
| AF | AMPERE FUSE, AMPERE FRAME |
| AFC | ABOVE FINISHED CEILING |
| AFF | ABOVE FINISHED FLOOR |
| AFG | ABOVE FINISHED GRADE |
| AHU | AIR HANDLING UNIT |
| AIC | AMPERE INTERRUPT CAPACITY |
| AL | ALUMINUM |
| AM | AMMETER |
| AMP | AMPLIFIER |
| ANN | ANNUNCIATOR |
| AP | ACCESS PANEL, ALARM PANEL |
| ARCH | ARCHITECT, ARCHITECTURAL |
| ASC | AMPERES SHORT CIRCUIT |
| AT | AMPERE TRIP RATING |
| ATS | AUTOMATIC TRANSFER SWITCH |
| AVG. | AVERAGE. |
| AUX. | AUXILIARY |
| AWG. | AMERICAN WIRE GAUGE |

## B

| | |
|---|---|
| BAS | BUILDING AUTOMATION SYSTEM |
| BC | BELOW COUNTER |
| BKR | BREAKER |
| BLDG. | BUILDING |

## C

| | |
|---|---|
| C | CONDUIT, CELSIUS |
| CATV | CABLE TELEVISION SYSTEM |
| CCTV | CLOSED CIRCUIT TELEVISION |
| CWP | CONDENSER WATER PUMP |
| CH | CHILLER |
| CHP | CHILLED WATER PUMP |
| CIRC | CIRCULATING |
| CKT | CIRCUIT |
| CL | CENTERLINE |
| CLG. | CEILING |
| CMU | CONCRETE MASONRY UNIT |
| COL. | COLUMN |
| CONC | CONCRETE |
| CONN | CONNECTION |
| CONT. | CONTINUOUS,CONTINUATION |
| CONTR. | CONTROLLER, CONTRACTOR |
| CP. | CIRCULATING PUMP |
| CPUC | CPU CHILLER |
| CR | CARD READER, CORD REEL |
| CRU | CONDENSATE RETURN UNIT |
| CT | CURRENT TRANSFORMER, COOLING TOWER |
| CTR | CENTER |
| CU | COPPER |

## D

| | |
|---|---|
| dB | DECIBEL |
| DC | DIRECT CURRENT |
| DDC | DIRECT DIGITAL CONTROL |
| DTL | DETAIL |
| DIA | DIAMETER |
| DIM | DIMENSION |
| DISC | DISCONNECT |
| DN | DOWN |
| DP | DISTRIBUTION PANEL |
| DPDT | DOUBLE-POLE, DOUBLE-THROW |
| DPST | DOUBLE-POLE, SINGLE-THROW |
| DR | DROPPED RECEPTACLE |
| DS | DAYLIGHT SENSOR |
| DW | DISHWASHER |
| DWG | DRAWING |
| DWH | DOMESTIC WATER HEATER |
| DWP | DOMESTIC WATER PUMP |
| DXFC | DX FAN COIL UNIT |
| DZ | DAYLIGHT ZONE |

## E

| | |
|---|---|
| (E) | EXISTING |
| EA | EACH |
| EC | ELECTRICAL CONTRACTOR |
| E.C. | EMPTY CONDUIT |
| EDF | ELECTRIC DRINKING FOUNTAIN |
| EF | EXHAUST FAN |
| EFF | EFFICIENCY |
| EHC | ELECTRIC HEATING COIL |
| EJ | EXPANSION JOINT |
| EL | ELEVATION |
| ELEC. | ELECTRICAL |
| ELEV. | ELEVATOR |
| EMCS | ENERGY MANAGEMENT AND CONTROLS SYSTEM |
| EMERG | EMERGENCY |
| EMS | ENERGY MANAGEMENT SYSTEM |
| ENCL. | ENCLOSURE |
| ENGR. | ENGINEER |
| EPO | EMERGENCY POWER OFF |
| EQUIP | EQUIPMENT |
| (ER) | EXISTING TO REMAIN |
| EUH | ELECTRIC UNIT HEATER |
| EWH | ELECTRIC WATER HEATER |
| EXH | EXHAUST |

## F

| | |
|---|---|
| F | FAHRENHEIT, FAN, FIRE |
| FA | FIRE ALARM |
| FACP | FIRE ALARM CONTROL PANEL |
| FCU | FAN COIL UNIT |
| FF | FURNITURE FEED |
| FIXT | FIXTURE |
| FLA | FULL LOAD AMPS |
| FLEX | FLEXIBLE |
| FLR | FLOOR |
| FLUOR | FLUORESCENT |
| FP | FIRE PUMP, FAN POWERED |
| FPTB | FAN POWERED TERMINAL BOX |
| FRZR | FREEZER |
| FS | FUSED SWITCH, FLOW SWITCH |
| FSD | MOTORIZED FIRE SMOKE DAMPER |
| FT | FOOT, FEET |
| FTL | FEED-THRU LUGS |
| FUT | FUTURE |
| FVNR | FULL-VOLTAGE, NON-REVERSING |

## G

| | |
|---|---|
| GA | GAUGE |
| GAL | GALLON |
| GALV | GALVANIZED |
| GC | GENERAL CONTRACTOR |
| GEN | GENERATOR |
| GFCI | GROUND FAULT CIRCUIT INTERRUPTER |
| GND | GROUND |
| GTD | GENERATOR TRANSFER DEVICE |
| GUH | GAS UNIT HEATER |

## H

| | |
|---|---|
| HACR | HEATING, AIR CONDITIONING RATED CIRCUIT BREAKER |
| HD | ELECTRIC HAND DRYER |
| HID | HIGH INTENSITY DISCHARGE |
| HOA | HAND-OFF-AUTOMATIC |
| HORIZ | HORIZONTAL |
| HP | HORSEPOWER |
| HPS | HIGH PRESSURE SODIUM |
| HS | HAND SET |
| HSC | HAND SCANNER |
| HTG | HEATING |
| HTR | HEATER |
| HVAC | HEATING, VENTILATING, AND AIR CONDITIONING |
| HVU | HEATING/ VENTILATING UNIT |
| HWB | HOT WATER BOILER |
| HWC | HOT WATER CIRCULATOR |
| HWP | HEATING WATER PUMP |
| HZ | HERTZ. |

## I

| | |
|---|---|
| ID | INSIDE DIAMETER |
| IG | ISOLATED GROUND |
| IN | INCH |
| INCAND | INCANDESCENT |
| INT | INTERNAL, INTERIOR |

## J

| | |
|---|---|
| JB | JUNCTION BOX |
| JP | JOCKEY PUMP |

## K

| | |
|---|---|
| KEC | KITCHEN EQUIPMENT CONTRACTOR |
| KO | KNOCKOUT |
| kVA | KILOVOLT- AMPS |
| kW | KILOWATT |
| kWH | KILOWATT-HOUR |

## L

| | |
|---|---|
| LED | LIGHT EMITTING DIODE |
| LF | LINEAR FEET |
| LRA | LOCKED ROTOR AMPS |
| LTG | LIGHTING |
| LV | LOW VOLTAGE TRANSFORMER |
| LVL | LEVEL |

## M

| | |
|---|---|
| M | METER |
| MAP | MASTER ALARM PANEL |
| MATV | MASTER ANTENNA TELEVISION SYSTEM |
| MAX. | MAXIMUM |
| MC | METAL CLAD CABLE |
| MCA | MINIMUM CIRCUIT AMPS |
| MCB | MAIN CIRCUIT BREAKER |
| MCC | MOTOR CONTROL CENTER |
| MD | MOTORIZED DAMPER |
| MDP | MAIN DISTRIBUTION PANEL |
| MECH. | MECHANICAL |
| MFR. | MANUFACTURER |
| MH | METAL HALIDE |
| MIC | MICROPHONE |
| MIN. | MINIMUM |
| MLO | MAIN LUGS ONLY |
| MOCP | MAXIMUM OVER-CURRENT PROTECTION |
| MSB | MAIN SWITCHBOARD |
| MTD | MOUNTED |
| MV | MERCURY VAPOR |

## N

| | |
|---|---|
| N3R | NEMA 3R ENCLOSURE |
| N4X | NEMA 4X ENCLOSURE |
| N.C. | NORMALLY CLOSED |
| NEC | NATIONAL ELECTRICAL CODE |
| NEMA | NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION |
| NF | NON-FUSED |
| NFPA | NATIONAL FIRE PROTECTION ASSOCIATION |
| NFS | NON-FUSED SWITCH |
| NIC | NOT IN CONTRACT |
| NL | NIGHT LIGHT |
| N.O. | NORMALLY OPEN |
| NO. | NUMBER |
| NTS | NOT TO SCALE |
| (N) | NEW |

## O

| | |
|---|---|
| OAF | OUTSIDE AIR FAN |
| OAHU | OUTSIDE AIR HANDLING UNIT |
| OC | ON CENTER |
| OD | OUTSIDE DIAMETER |
| OHE | OVERHEAD ELECTRICAL |
| OPG | OPENING |

## P

| | |
|---|---|
| P | POLE, PUMP |
| PB | PUSHBUTTON |
| PC | PHOTOCELL |
| PH | PHASE |
| PL | PILOT LIGHT |
| PLBG | PLUMBING |
| PNEU | PNEUMATIC |
| PNL | PANEL |
| POS | POINT OF SALE |
| PP | POWER POLE |
| PR | PAIR |
| PRI | PRIMARY |
| PS | PHOTOSENSOR |
| PVC | POLYVINYL CHLORIDE |
| PWR | POWER |

## Q

| | |
|---|---|
| QTY | QUANTITY |

## R

| | |
|---|---|
| R | EXISTING TO BE REMOVED |
| RA | RETURN AIR |
| RAD | REFRIGERATED AIR DRYER |
| RAF | RETURN AIR FAN |
| RC | RECONNECT EXISTING DEVICE TO CIRCUIT INDICATED |
| RCP | REFLECTED CEILING PLAN |
| RCPT | RECEPTACLE |
| RE | REFERENCE, REFER |
| REC | RECEPTACLE |
| REFR | REFRIGERATOR |
| REINF | REINFORCING |
| REL | EXISTING TO BE RELOCATED |
| REL/EX | NEW LOCATION OF RELOCATED EQUIPMENT |
| REQD | REQUIRED |
| REV | REVISION, REVISE |
| RGS | RIGID GALVANIZED STEEL |
| RLA | RUNNING LOAD AMPS |
| RPM | REVOLUTIONS PER MINUTE |
| RR | REMOVE AND REPLACE |
| RTU | ROOFTOP UNIT |

## S

| | |
|---|---|
| SA | SUPPLY AIR |
| SAF | SUPPLY AIR FAN |
| SCHED | SCHEDULE |
| SE | SEWAGE EJECTOR |
| SEC | SECONDARY |
| SECT | SECTION |
| SF | SQUARE FEET |
| SHT | SHEET |
| SIM | SIMILAR |
| SKVA | STARTING KILOVOLT-AMPS |
| SKW | STARTING KILOWATTS |
| SP | SUMP PUMP |
| SPEC | SPECIFICATION |
| SPF | STAIR PRESSURIZATION FAN |
| SPKR | SPEAKER |
| SPD | SURGE PROTECTION DEVICE |
| SPDT | SINGLE-POLE, DOUBLE-THROW |
| SPST | SINGLE-POLE, SINGLE-THROW |
| SQ. | SQUARE |
| SRF | SMOKE REMOVAL FAN |
| SS | START-STOP PUSH BUTTON |
| SSSC | SOLID STATE SPEED CONTROL |
| ST | SHUNT TRIP |
| STB | STEAM BOILER |
| STD | STANDARD |
| STL | STEEL |
| SURF | SURFACE |
| SW | SWITCH |
| SWBD | SWITCHBOARD |

## T

| | |
|---|---|
| TC | TEMPERATURE CONTROL |
| TEL | TELEPHONE |
| TF | TRANSFER FAN |
| TL | TWIST-LOCK |
| TOC | TOP OF CURB |
| TOS | TOP OF STEEL |
| TP | CHILD TAMPER PROOF DEVICE |
| TSTAT | THERMOSTAT |
| TTB | TELEPHONE TERMINAL BOARD |
| TTC | TELEPHONE TERMINAL CABINET |
| TU | TERMINAL UNIT |
| TV | TELEVISION |
| TVSS | TRANSIENT VOLTAGE SURGE SUPPRESSOR |
| TYP | TYPICAL |

## U

| | |
|---|---|
| UG | UNDERGROUND |
| UH | UNIT HEATER |
| UL | UNDERWRITERS LABORATORIES, INC. |
| UNO | UNLESS NOTED OTHERWISE |
| UPS | UNINTERRUPTABLE POWER SYSTEM |

## V

| | |
|---|---|
| V | VOLT |
| VA | VOLT-AMPERE |
| VAV | VARIABLE AIR VOLUME |
| VC | VOLUME CONTROL |
| VERT | VERTICAL |
| VFD | VARIABLE FREQUENCY DRIVE |
| VP | VACUUM PUMP |
| VM | VOLT METER |

## W

| | |
|---|---|
| W | WATT, WIRE, WIDTH |
| WG | WIREGUARD |
| W/ | WITH |
| W/O | WITHOUT |
| WP | WEATHERPROOF |
| WS | WATER SOFTENER |
| WT | WATERTIGHT, WEIGHT |
| WWF | WELDED WIRE FABRIC |
| W/FT$^2$ | WATTS PER SQUARE FOOT |

## X

| | |
|---|---|
| XFMR | TRANSFORMER |

## Z

| | |
|---|---|
| Z | ZONE |

# ELECTRICAL SYMBOLS

## MOTORS AND CONTROLS

- MOTOR RATED SWITCH WITH THERMAL OVERLOADS
- SINGLE OR THREE PHASE MOTOR NUMBER INDICATES HORSE POWER
- ELECTRIC DUCT HEATER
- DISCONNECT (SAFETY) SWITCH "200/3/150" DENOTES AMPERES/POLE/FUSE, "NF" DENOTES NON-FUSED "N3R" DENOTES NEMA 3R
- ENCLOSED CIRCUIT BREAKER- "200/3/150" DENOTES AMPERES/POLE/TRIP
- MOTOR STARTER FURNISHED BY DIVISION 23 AND INSTALLED BY DIVISION 26.
- COMBINATION DISCONNECT (SAFETY) SWITCH AND MOTOR STARTER. "300/3/15MO" DENOTES AMPERES/POLES/FUSE/ STARTER SIZE. "NF" DENOTES NON-FUSED. FURNISHED BY DIVISION 23 AND INSTALLED BY DIVISION 26.
- VFD — VARIABLE FREQUENCY DRIVE PROVIDED BY DIVISION 23 AND INSTALLED BY DIVISION 26.
- EPO — EMERGENCY POWER OFF BUTTON.

## RECEPTACLES AND OUTLETS

ALL RECEPTACLES SHALL BE MOUNTED 18" ABOVE FINISHED FLOOR TO CENTER OF DEVICE UNLESS NOTED OTHERWISE.

- SIMPLEX WALL RECEPTACLE, NEMA 5-20R, 20A, 125V.
- DUPLEX WALL RECEPTACLE, NEMA 5-20R, 20A, 125V.
  - "GFCI" DENOTES GROUND FAULT INTERRUPTER,
  - "WP" DENOTES WEATHERPROOF,
  - "IG" DENOTES ISOLATED GROUND,
  - "TP" DENOTES SAFETY TYPE. (TAMPER PROOF)
  - "DR" DENOTES DROPPED RECEPTACLE,
  - "USB" DENOTES RECEPTACLE WITH UNIVERSAL SERIAL BUS,
  - "AC" DENOTES ABOVE COUNTER MOUNTING. SEE
  - "UC" DENOTES UNDER COUNTER MOUNTING. SEE
  - "H" DENOTES HORIZONTALLY ORIENTED RECEPTACLE. SEE ARCHITECTURAL PLANS FOR EXACT MOUNTING HEIGHT.
- DUPLEX WALL RECEPTACLE ON EMERGENCY CIRCUIT, RED COLOR.
- DUPLEX WALL RECEPTACLE ON A CIRCUIT DEDICATED TO DATA PROCESSING, GRAY COLOR. PROVIDE ISOLATED GROUND TYPE RECEPTACLES WHERE NOTED.
- SPLIT WIRED RECEPTACLE. TOP RECEPTACLE SHALL BE SWITCHED ACCORDING TO PLANS, AND BOTTOM SHALL REMAIN UNSWITCHED.
- SP — CONTROLLED DUPLEX WALL RECEPTACLE, NEMA 5-20R, 20A, 125V. "SP" DENOTES SPLIT WIRED
- FOURPLEX (DOUBLE DUPLEX) WALL RECEPTACLE. NEMA 5-20R, 20A, 125V.
- FOURPLEX WALL RECEPTACLE ON EMERGENCY CIRCUIT, RED COLOR.
- CONTROLLED FOURPLEX (DOUBLE DUPLEX) WALL RECEPTACLE. NEMA 5-20R, 20A, 125V.
- SPECIAL RECEPTACLE, NEMA CONFIGURATION AS NOTED.
- TWO-GANG FLOOR OUTLET
- THREE-GANG FLOOR OUTLET
- MULTI-OUTLET SURFACE RACEWAY. SEE ARCHITECTURAL DRAWINGS FOR EXACT MOUNTING HEIGHTS.
- JUNCTION BOX
  - "MD" DENOTES MOTOR DAMPER,
  - "CR" DENOTES CORD REEL
  - "D" DENOTES DROP CORD RECEPTACLE,
- DUPLEX RECEPTACLE WITH HOMERUN
- DUPLEX RECEPTACLE (PEDESTAL MOUNTED)
- TWO-GANG CEILING OUTLET
- D R P — FLUSH ELECTRICAL FLOOR OUTLET, "P" DENOTES POKE-THRU "D" INDICATES DUPLEX RECEPTACLE, "R" INDICATES RED RECEPTACLE ON EMERGENCY POWER. REFER TO FLOOR BOX SCHEDULE. FIRE RATED POKE-THROUGH SCHEDULE AND KEYED NOTES.
- PP — POWER POLE
- DIRECT CONNECTION TO EQUIPMENT
- P — PULL BOX (OVER 4" SQUARE)
- (2) — CLOCK RECEPTACLE SHALL BE MOUNTED 12" BELOW FINISHED CEILING. (2) DENOTES DOUBLE SIDED CLOCK.

## LIGHTING

LETTER(S) DENOTE TYPE- SEE LIGHTING FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION.

- 2' X 4' LIGHTING FIXTURE.
- 2' X 2' LIGHTING FIXTURE.
- 1' X 4' LIGHTING FIXTURE.
- 1' X 2' LIGHTING FIXTURE.
- 1' X 1' LIGHTING FIXTURE.
- STRIP LIGHTING FIXTURES.
- STAGGERED STRIP LIGHTING FIXTURE.
- ROUND DOWNLIGHT FIXTURE.
- SQUARE DOWNLIGHT FIXTURE.
- WALL MOUNTED LIGHTING FIXTURE.
- TRACK LIGHTING FIXTURE. MOUNTED AS SHOWN ON LIGHTING FIXTURE SCHEDULE.
- CEILING MOUNTED EXIT SIGN; ARROWS AS INDICATED. SHADED AREA DENOTES FACE.
- WALL MOUNTED EXIT SIGN; ARROWS AS INDICATED. SHADED AREA DENOTES FACE.
- EMERGENCY WALL MOUNTED LIGHTING FIXTURE. BATTERY OPERATED UNLESS NOTED OTHERWISE.
- SECURITY WALL PACK
- SITE LIGHTING FIXTURE.
- POST-TOP FIXTURE/ACORN FIXTURE BRACKET ARM INDICATES WALL MOUNT WITH ARM
- EMERGENCY LIGHT FIXTURE WITH BATTERY PACK. PROVIDE WITH UNSWITCHED HOT FOR LOSS OF VOLTAGE AND CHARGING (SAME CIRCUIT AS NORMAL POWER LIGHTING). FIXTURES SHALL BE WIRED IN A MANNER AS TO ALLOW SWITCHING OF FIXTURES WITHOUT DISCHARGING THE EMERGENCY BATTERY. BATTERY PACK IS TO ONLY OPERATE IN THE EVENT OF A POWER OUTAGE.
- EM CIRCUIT — LIGHT FIXTURE ON EMERGENCY BRANCH CIRCUIT, CIRCUIT NUMBER ADJACENT TO FIXTURE INDICATES EMERGENCY CIRCUIT CONNECTED TO FIXTURE. PROVIDE UNSWITCHED HOT, NEUTRAL AND GROUND FOR ALL EMERGENCY LIGHTING ORIGINATING FROM THE EMERGENCY CIRCUIT SHOWN.
- NL — EMERGENCY "NIGHT LIGHT" LIGHT FIXTURE. LIGHT FIXTURE IS UNSWITCHED AND INTENDED FOR 24 HOUR OPERATION. FEED VIA UNSWITCHED HOT.
- DAYLIGHT ZONE/PRIMARY DAYLIGHT ZONE
- SECONDARY DAYLIGHT ZONE

## RACEWAYS AND WIRING

- CAP AND STAKE
- CONDUIT CONCEALED IN WALL OR CEILING
- CONDUIT UNDERSLAB OR UNDERGROUND
- EM — EMERGENCY CONDUIT
- EXPOSED CONDUIT
- DB — UNDERGROUND CONDUIT, "DB" DENOTES DUCTBANK ENCASED IN CONCRETE
- OHE — OVERHEAD ELECTRIC PRIMARY UTILITY POWER LINE
- CONDUIT TURNED UP
- CONDUIT TURNED DOWN
- HASH MARKS INDICATE NUMBER OF CONDUCTORS. LEFT TO RIGHT-PHASE/NEUTRAL/SWITCH LEG/GROUND/ISOLATED GROUND. NO HASH MARKS INDICATES 2# 12, PLUS GROUND, UNLESS NOTED OTHERWISE.
- 1LA-2,4 — HOMERUN TO PANEL WITH CIRCUIT NUMBER(S) AS INDICATED.
- (ON)1LA-6 — PARTIAL CIRCUIT HOMERUN TO PANEL.
- T — COMMUNICATIONS CONDUIT OR CABLE:
  - "C" DENOTES MASTER CLOCK,
  - "CA" DENOTES MASTER CLOCK,
  - "CR" DENOTES CASH REGISTER
  - "D" DENOTES DATA,
  - "FA" DENOTES FIRE ALARM,
  - "I" DENOTES INTERCOM,
  - "OHE" DENOTES OVERHEAD ELECTRICAL LINE.
  - "PA" DENOTES PAGING,
  - "S" DENOTES SECURITY,
  - "T" DENOTES TELEPHONE,
  - "V" DENOTES VIDEO,
- TELECOMMUNICATIONS CABLE TRAY TO BE CONCEALED ABOVE ACCESSABLE CEILING.

## ELECTRICAL EQUIPMENT

- DISTRIBUTION PANEL
- MSB — SWITCHBOARD, MAIN DISTRIBUTION PANEL OR MOTOR CONTROL CENTER
- PANELBOARD (FLUSH/SURFACE MOUNT)
- FLOOR MOUNTED DRY-TYPE TRANSFORMER
- SUSPENDED OR WALL MOUNTED TRANSFORMER
- ATS — AUTOMATIC TRANSFER SWITCH
- FIRE RATED PLYWOOD TERMINAL BOARD, TYPE AS NOTED, 4' X 8' X 3/4" UNLESS NOTED OTHERWISE
- TERMINAL CABINET (FLUSH/SURFACE MOUNT), TYPE AS NOTED, 24" X 48" X 3-1/2" UNLESS NOTED OTHERWISE.
- BAT — BATTERY/INVERTER UNIT
- LV — LOW VOLTAGE TRANSFORMER.

## COMMUNICATIONS

ALL OUTLET BOXES SHALL BE MOUNTED 18" ABOVE FINISHED FLOOR TO CENTER OF DEVICE UNLESS NOTED OTHERWISE.

THE FOLLOWING NOTATIONS REFER TO ALL COMMUNICATIONS OUTLETS:
- "FAX" DENOTES OUTLET DEDICATED FOR A FAX,
- "W" DENOTES WALL PHONE SHALL BE MOUNTED AT 42" A.F.F.
- "PAY" DENOTES PAY PHONE SHALL BE MOUNTED 42" A.F.F.

- HS — SCHOOL INTERCOMMUNICATION SYSTEM HANDSET.
- TV — TV ROUGH-IN: 3-GANG RECESSED TV BOX, CONTAINING 1 DUPLEX RECEPTACLE, 1 GANG FOR AV, 1 GANG FOR DELTA.
- INDICATES THE LOCATION OF A NEW TECHNOLOGY WALL OUTLET, PROVIDE DUAL GANG BACK BOX. REFERENCE TECHNOLOGY SHEET FOR CONTENT.
- M — MICROPHONE FLOOR OUTLET, "W" INDICATES WALL MOUNTED "F" INDICATES FLOOR MOUNTED "H" INDICATES HANGING MOUNTED
- S — CEILING MOUNTED SPEAKER. "VC" INDICATES VOLUME CONTROL ON SPEAKER.
- S — WALL MOUNTED SPEAKER. "L" INDICATED LOCAL SOUND REINFORCEMENT
- CB — SCHOOL INTERCOMMUNICATION SYSTEM CALL-IN. PUSH BUTTON
- BELL, BUZZER OR CHIME AT 80+ A.F.F.
- VC — VOLUME CONTROL - WALL MOUNTED
- AX — AUXILIARY INPUT JACK, "W" INDICATES WALL MOUNTED "F" INDICATES FLOOR MOUNTED "H" INDICATES HANGING MOUNTED
- AVO — "HIGH" PORTION OF "HIGH/LOW" OUTLETS, REFER TO OUTLET DETAIL.
- AVI — "LOW" PORTION OF "HIGH/LOW" OUTLETS, REFER TO OUTLET DETAIL.
- (2) LV — LOW VOLTAGE CLOCK SHALL BE MOUNTED 12" BELOW FINISHED CEILING. (2) DENOTES DOUBLE SIDED CLOCK.

REFERENCE TECHNOLOGY/SECURITY SHEET FOR ADDITIONAL INFORMATION.

## ONE LINE AND RISER DIAGRAMS

- TRANSFORMER, TYPE AND RATINGS AS NOTED
- 800A/3P — SWITCH, RATING AS SHOWN
- 400A — FUSE, RATING AS SHOWN
- CL — CIRCUIT BREAKER, RATING AS SHOWN, 3 POLE UNLESS NOTED OTHERWISE. "CL" DENOTES CURRENT LIMITING
- DRAWOUT CIRCUIT BREAKER, RATINGS AS SHOWN, 3 POLE UNLESS NOTED OTHERWISE
- ST — SHUNT TRIP
- GF — GROUND FAULT RELAY
- K — KIRK-KEY INTERLOCK
- M — DIGITAL METER
- A 0-2000 — AMMETER, RANGE AS SHOWN
- AS — AMMETER SWITCH
- V 0-600 — VOLTMETER, RANGE AS SHOWN
- VS — VOLTMETER SWITCH
- WH 0-15 — WATT-HOUR METER. "D" DENOTES DEMAND REGISTER "15" DENOTES MINUTES OF DEMAND INTERVAL
- 1200/5 — CURRENT TRANSFORMER, RATED AS SHOWN
- 12.47KV/120V — POTENTIAL TRANSFORMER, RATING AS SHOWN
- GROUND CONNECTION
- LIGHTING ARRESTOR
- G — GENERATOR SET
- AUTOMATIC TRANSFER SWITCH
- BUS DUCT PLUG
- TVSS — TRANSIENT VOLTAGE SURGE SUPPRESSOR
- M — ELECTRICAL METER
- SPD — SURGE PROTECTION DEVICE

## MISCELLANEOUS

- F — SHADED SYMBOLS INDICATE EXISTING DEVICES TO REMAIN, UNLESS OTHERWISE NOTED.
- INDICATES WALL-MOUNTED WHEN ATTACHED TO ANY SYMBOL
- EXX — DRAWING NOTE REFERENCE
- 1 — STARTER/DISCONNECT SCHEDULE REFERENCE
- 1 — FEEDER SCHEDULE REFERENCE
- LC — LIGHTING CONTACTOR
- TS — TIME SWITCH
- PC — PHOTOCELL
- PUSH BUTTON/DOOR BELL
- TC — TIMECLOCK
- R — RELAY
- SOS — AREA OF RESCUE ASSISTANCE
- B — BELL

## FIRE ALARM

- W — WATER FLOW SWITCH
- SP — SUPERVISORY SWITCH
- S — SMOKE DETECTOR - MULTI CRITERIA DETECTOR
- S# — SMOKE DETECTOR - "SB" INDICATES IN INTEGRAL SOUNDER BASE "D" INDICATES DUCT TYPE "R" INDICATES 120 VOLT RESIDENTIAL TYPE
- H — HEAT DETECTOR
- S BT — BEAM DETECTOR TRANSMITTER, HIGH IN CEILING WALL DIRECT LINE OF SIGHT.
- S BR — BEAM DETECTOR RECEIVER, HIGH IN CEILING WALL DIRECT LINE OF SIGHT.
- S — FIRE ALARM SPEAKER STROBE / CEILING MOUNTED
- S — FIRE ALARM SPEAKER STROBE / WALL MOUNTED
- S — FIRE ALARM SPEAKER / CEILING MOUNT.
- S — FIRE ALARM SPEAKER / WALL MOUNTED
- DH — MAGNETIC DOOR HOLDER
- R — AUXILIARY CONTROL RELAY
- FH — FIRE FIGHTER HANDSET
- F — FIRE ALARM PULL STATION +42" AFF
- F — FIREMAN'S TELEPHONE JACK +42" AFF
- AUDIO VISUAL FIRE ALARM HORN STROBE +80" AFF- 15/75cd U.N.O.
- VISUAL FIRE ALARM (STROBE) CEILING MOUNT - 15/75cd U.N.O.
- VISUAL FIRE ALARM (STROBE) WALL MOUNT +80" AFF- 15/75cd U.N.O.
- AUDIO FIRE ALARM HORN +80" AFF
- FACP — FIRE ALARM CONTROL PANEL
- ANN — REMOTE FIRE ALARM ANNUNCIATOR PANEL
- RPS — REMOTE POWER SUPPLY FOR AUDIO/VISUAL FIRE ALARM DEVICES.
- FSD — FIRE SMOKE DAMPER
- REMOTE LED INDICATOR LIGHT

## SECURITY

- KP — KEYPAD
- GB — GLASS BREAK SENSOR
- H — HOLD UP BUTTON
- DS — INTERCOM DOOR STATION
- MS — INTERCOM MASTER STATION
- LONG RANGE MOTION DETECTOR
- WALL MOUNTED MOTION DETECTOR
- CEILING MOUNTED MOTION DETECTOR
- IDP — INTRUSION DETECTION PANEL
- DC — DOOR CONTACT
- PB — ADA AUTO DOOR OPEN BUTTON
- DR — DOOR RELEASE BUTTON
- CR — CARD READER
- CR — WALL MOUNTED CARD READER

REFERENCE TECHNOLOGY/SECURITY SHEET FOR ADDITIONAL INFORMATION.

## SWITCHES & LIGHTING CONTROL DEVICES

ALL SWITCH TYPES AND SENSORS TYPES FOUND ON "LIGHTING CONTROL DEVICE SCHEDULE" LOCATED ON ELECTRICAL SCHEDULES SHEETS

SWITCH ANNOTATION AS FOLLOWS:

- a,b,c — TYPE, PER SCHEDULE
  - NO TYPE INDICATES SINGLE POLE TOGGLE SWITCH
  - SWITCH LEGS, PER PLAN, SHOWN HERE AS 3 (a,b,c)

OCCUPANCY SENSOR ANNOTATION, AS FOLLOWS:

- OCx — OCCUPANCY / VACANCE SENSOR
  - 'x' INDICATES TYPE, PER SCHEDULE
  - CEILING SENSOR
  - WITH BRACKET INDICATES WALL / CORNER MOUNT

LIGHT SENSOR ANNOTATION, AS FOLLOWS:

- PC — DIGITAL PHOTOSENSOR
- DS — DAYLIGHT HARVESTING SENSOR

## DRAWING/DETAIL REFERENCE KEY

REFER TO DRAWING/DETAIL NUMBER — 1 / E3-2 — SHEET NUMBER

RE: 1 /E3-2

## GENERAL NOTES

A. NOT ALL SYMBOLS SHOWN ON THIS SYMBOL LIST ARE USED IN THE CONTRACT DOCUMENTS.


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


120

REVISION:

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

SEAL:

STATE OF TEXAS — ROBERTO H. TIJERINA — 121946 — LICENSED PROFESSIONAL ENGINEER — 01-05-2023

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - SALINAS ES - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

DATE: 01/05/2023

DRAWN BY: DBR

CHECKED BY: DBR

PROJECT NUMBER 218033.013

SHEET TITLE: ELECTRICAL SYMBOL LEGEND

SHEET NUMBER: E0.01


DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

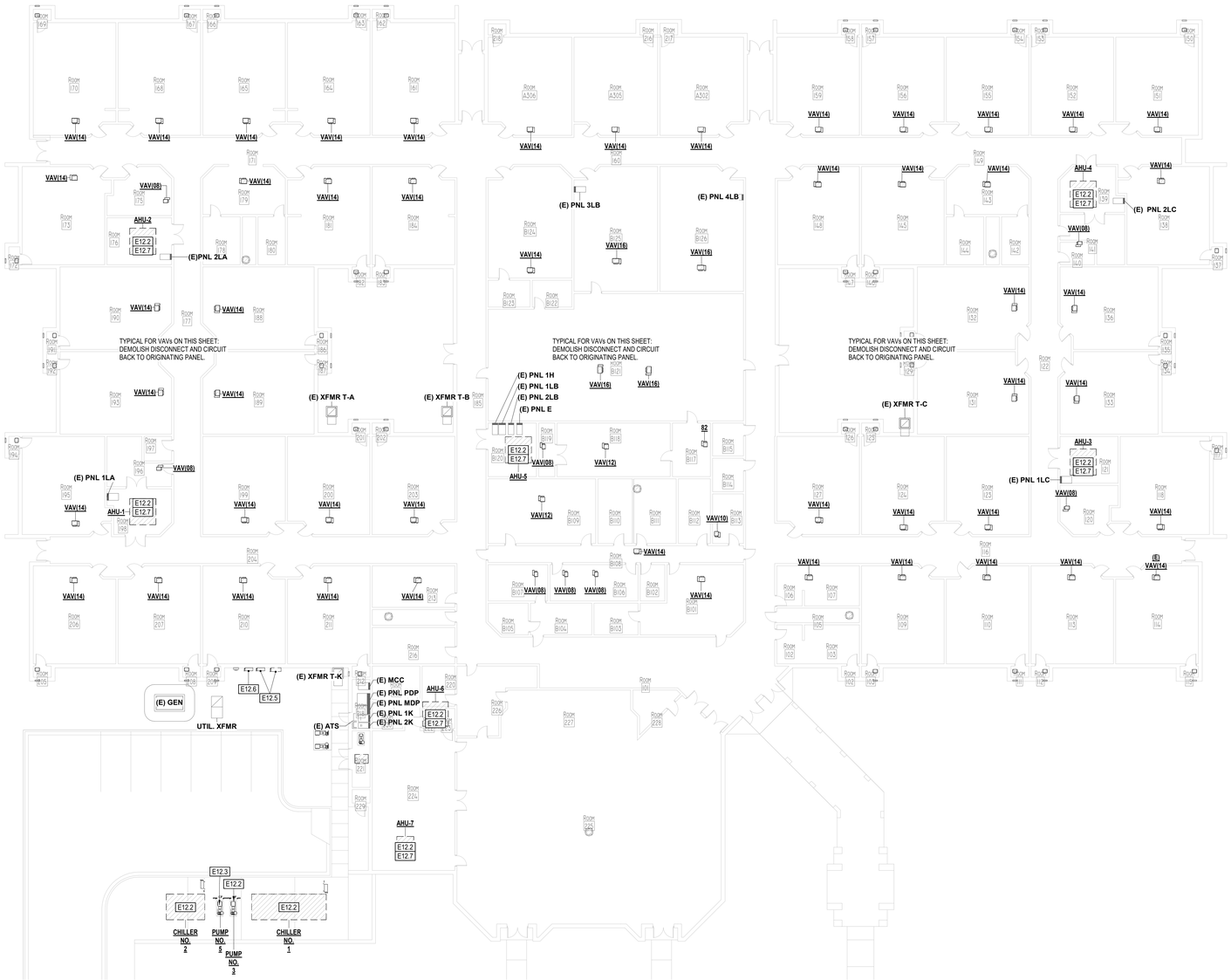

TBPE Firm Registration No. 2234

DBR Project Number 218033.013

HA | RT/MG | JR

TN PN

1/5/2023 3:03:30 PM
Autodesk Docs://218033.013-MCISD-Salinas ES 113-IAC Improvements/218033.013 - SALINAS - MEP22.rvt




1 EPD1.11 **DEMO LEVEL 1 POWER PLAN COMPOSITE**
1/16" = 1'-0"

## GENERAL DEMOLITION SCOPE NOTES:

A. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRESENT ON SITE PRIOR TO BIDDING, AND SHALL BE EXPECTED TO PERFORM DEMOLITION AND INSTALL NEW AS SHOWN ON THE DOCUMENTS, INCLUDING SCOPE THAT MAY NOT FEASIBLY BE INDICATED ON PLAN.

B. CONTRACTOR SHALL VERIFY AND DOCUMENT EXISTING CONDITIONS OF ALL OUTLETS (AS DEFINED BY NEC) THAT ARE INDICATED OR REQUIRED TO BE REMOVED AND REINSTALLED TO FACILITATE THE WORK REQUIRED BY ALL TRADES. WHERE OUTLETS ARE REINSTALLED IN NON-OPERABLE CONDITION, THE CONTRACTOR SHALL REPLACE AT NO COST TO THE OWNER. DOCUMENT OUTLETS IN NON-WORKING CONDITION PRIOR TO REMOVE AND NOTIFY THE OWNER.

C. OWNER SHALL HAVE FIRST RIGHT OF REFUSAL TO ALL REMOVED MATERIALS. CONTRACTOR SHALL COORDINATE WITH OWNER FOR LOCATION TO RETURN ANY AND ALL MATERIAL FOR OWNER STORAGE. FAILURE TO TURN OVER REMOVED MATERIAL TO OWNER MAY REQUIRE CONTRACTOR TO REPLACE EQUIPMENT REMOVED WITH NEW.

D. REMOVE ALL ELECTRICAL DEVICES WITHIN DEMOLISHED WALLS INCLUDING RECEPTACLES, SWITCHES, DATA/TELEPHONE DROPS, FIRE ALARM DEVICES, P/A DEVICES, CONDUIT, AND WIRING. REMOVE CONDUIT AND WIRING BACK TO PANEL OR LAST ACTIVE JUNCTION BOX. REFER TO ARCHITECTURAL DEMO PLAN. THIS SCOPE MAY NOT BE DIRECTLY IMPLIED BY NOTES ON DEMO PLANS AS IT IS ASSUMED THIS SCOPE EXISTS BASED ON ARCHITECTURAL DEMOLITION PLANS.

E. ALL ABANDONED CONDUIT AND BOXES FOUND IN CRAWLSPACES, CEILINGS SPACES, CHASES, OR UTILITY SPACES SHALL BE REMOVED. ANY EXISTING CONDUIT THAT IS UNDERGROUND MAY BE ABANDONED.

F. CONTRACTOR SHALL REVIEW DEMO AND NEW WORK PLANS SIMULTANEOUSLY TO IDENTIFY SCOPE THAT IS TO BE MODIFIED FOR REUSE WITH NEW SCOPE.

## GENERAL POWER DEMOLITION NOTES:

A. GENERAL DEMOLITION NOTES APPLY TO ALL DEMO/REMODELING SCOPE.

B. WHEN OUTLETS ARE ABANDONED, WIRE MUST BE PULLED OUT OF THE CONDUIT BACK TO THE NEAREST REMAINING BOX OR CABINET. EXPOSED CONDUIT THAT HAS BEEN ABANDONED MUST BE REMOVED.

C. RE-ESTABLISH SERVICE TO ALL OUTLETS THAT MAY BE INTERRUPTED DUE TO REMODELING WORK.

D. PROVIDE ALL APPURTENANCES REQUIRED TO REROUTE, RELOCATE, REMOVE OR REINSTALL ALL ITEMS DESCRIBED IN THESE NOTES.

E. EXISTING CIRCUITS MODIFIED IN FIELD SHALL NOT EXCEED 80% CAPACITY BASED ON AMP-RATING OF CIRCUIT.

F. DO NOT LEAVE ABANDONED CONDUIT, BOXES, EQUIPMENT, OR ENCLOSURES AFTER DEMOLITION. ALL ABANDONED MATIERAL MUST BE REMOVED.

G. IDENTIFICATION AND LABELING SHALL BE PROVIDED IN ACCORDANCE WITH SPECIFICATIONS AND/OR NEW-WORK GENERAL ELECTRICAL NOTES.

H. CIRCUIT NUMBERS ARE FOR PLAN REFERENCE ONLY. CONTRACTOR SHALL RELABEL ALL CIRCUIT DIRECTORIES WITH LOAD NAMES FOR ALL EXISTING AND NEW PANELS THAT WERE MODIFIED WITHIN THIS PROJECT.

I. EXISTING CIRCUIT BREAKERS VACATED DUE TO REMODELING WORK SHALL REMAIN AS SPARE BREAKERS AND TURNED TO THE 'OFF' POSITION.

J. WHERE INDICATED OR REQUIRED BY OTHER TRADES, CONTRACTOR SHALL REMOVE ALL ELECTRICAL CONNECTIONS TO EXISTING PREWIRED FURNITURE. REMOVE CONDUIT AND WIRING BACK TO LAST ACTIVE JUNCTION. ALL DATA CABLING SHALL BE REMOVED BACK TO LAST ACTIVE JUNCTION AND SALVAGED FOR REINSTALLATION.

## # ELECTRICAL KEYED NOTES

E12.2 CONTRACTOR SHALL REUSE EXISTING CIRCUIT. FOR MECHANICAL EQUIPMENT SCHEDULED TO BE REMOVED.

E12.3 CONTRACTOR SHALL DEMOLISH EXISTING CIRCUIT. FOR MECHANICAL EQUIPMENT SCHEDULED TO BE REMOVED. CONDUIT MAY REMAIN WHERE FEASIBLE AND SIZED CORRECTLY PER NEC.

E12.5 EXISTING SERVICE DISCONNECT SWITCH SHALL BE DEMOLISHED. CONDUITS AND CONDUCTORS SHALL BE ROUTED TO A PULL BOX. SEE ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.

E12.6 EXISTING DISCONNECT SWITCH SHALL BE DEMOLISHED. CONDUITS AND CONDUCTORS SHALL BE DEMOLISHED. SEE ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.

E12.7 EXISTING ELECTRICAL CIRCUITS FOR HVAC DCC PANEL, AHU AFMS CONTROL DAMPER, AND DUCT SMOKE DETECTOR SHALL REMAIN FOR REUSE. COORDINATE EXACT DEVICE LOCATIONS AND PREPARE FOR NEW WORK.

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

121

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - SALINAS ES - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.013

**SHEET TITLE:** DEMO COMPOSITE LEVEL 1 ELECTRICAL COMPOSITE PLAN

**SHEET NUMBER:** EPD1.11

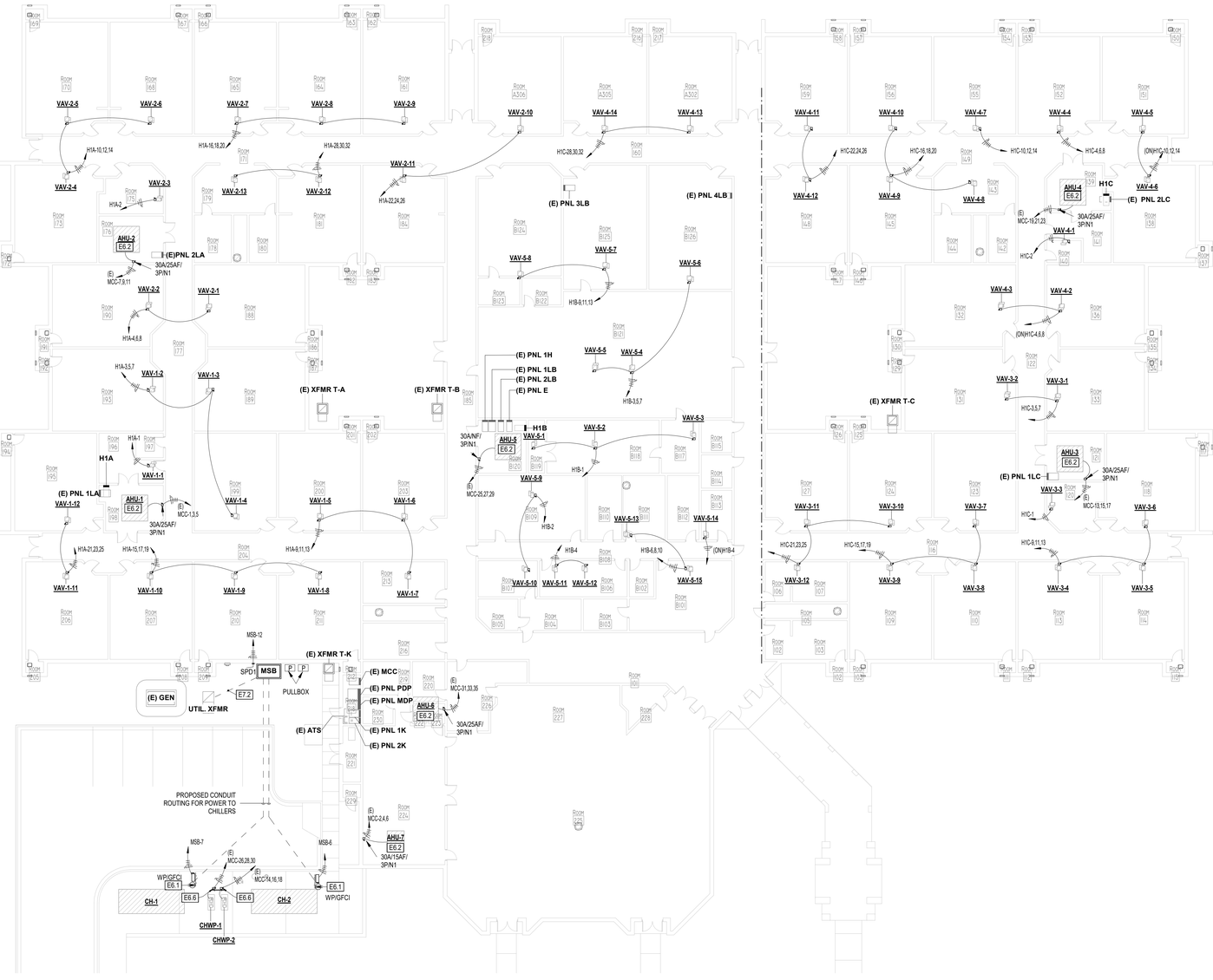
DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.013

HA | RT/MG | JR

TN PN

1/5/2023 3:03:33 PM
Autodesk Docs://218033.013-MCISD-Salinas ES 113-IAC Improvements/218033.013 - SALINAS - MEP22.rvt




## 1 COMPOSITE LEVEL 1 POWER PLAN
EP1.11 — 1/16" = 1'-0"

## GENERAL ELECTRICAL NOTES:

A. ELECTRICAL DEVICES SHOWN ARE NOT EXACT. ALL DEVICE LOCATIONS SHALL BE VERIFIED WITH ARCHITECTURAL MILLWORK, CASEWORK, AND GENERAL ELEVATION VIEWS.

B. HVAC AND PLUMBING EQUIPMENT LOCATIONS ARE NOT EXACT, AND THE EXACT POINT OF CONNECTION TO EQUIPMENT MAY VARY. COORDINATE EXACT ROUGH-IN REQUIREMENTS IN FIELD AND WITH FINAL SUBMITTALS FOR ALL DIV. 21/22/23 EQUIPMENT.

C. PROVIDE LABELING OF ALL DEVICES, CONDUIT, PANELS, AND JUNCTION BOXES IN ACCORDANCE WITH ELECTRICAL SPECIFICATIONS.

D. MINIMIZE ROOF PENETRATIONS. WHERE ABLE, ROUTE ALL CONDUIT FOR ROOF MOUNTED EQUIPMENT THROUGH ROOF CURB. CONTRACTOR WILL BE RESPONSIBLE FOR COORDINATING NECESSARY WATER PROOFING AROUND ROOF PENETRATIONS WITH ROOFING INSTALLER.

E. ALL RECEPTACLES LOCATED IN RESTROOMS, JANITOR CLOSETS, MECHANICAL ROOMS, ELEVATOR PITS OR SHAFTS, ELEVATOR EQUIPMENT ROOMS, SERVING ELECTRIC DRINKING FOUNTAINS OR VENDING MACHINES, LOCATED WITHIN 6' OF A SINK, LOCATED ABOVE A WET COUNTERTOP OR IN A KITCHEN OR COFFEE BAR SHALL BE GFCI. FEED-THRU GFCI/GFI IS PROHIBITED, ALL GFCI/GFI DEVICES SHALL BE PROVIDED WITH INDIVIDUAL TEST/RESET FEATURES.

F. MULTI-WIRE HOME RUNS SHALL NOT BE ALLOWED. PROVIDE DEDICATED NEUTRALS FOR ALL CIRCUITS. SHARING CONDUIT IS PERMISSIBLE WHERE TOTAL CONDUCTOR AMPACITY DERATING HAS BEEN PERFORMED BY ELECTRICAL CONTRACTOR. THE NEUTRAL IS CONSIDERED CURRENT-CARRYING.

G. ALL RECEPTACLES SHALL BE TAMPER RESISTANT TYPE. CONTRACTOR MAY PROVIDE NON-TAMPER-RESISTANT RECEPTACLES WHERE NOT REQUIRED PER CURRENT NEC ARTICLE 406

H. LABEL ALL CIRCUITS AT ALL JUNCTION BOXES AND OUTLETS (AS DEFINED BY NEC) WITH TYPE-WRITTEN LABEL IDENTIFYING CIRCUIT ON THE BACK OF DEVICE COVER PLATES OR ON COVER OF JUNCTION BOX. IF A BOX HAS MULTIPLE CIRCUITS WITHIN, LABEL ALL CIRCUITS.

I. ALL VAV BRANCH CIRCUITS WITH MULTIPLE TAPS, SHALL BE SIZED 100% ACROSS THE ENTIRE CIRCUIT. DO NOT REDUCE WIRE SIZE AFTER EACH TAP AT EACH DISCONNECT.

## # ELECTRICAL KEYED NOTES

E6.1 PROVIDE UNISTRUT MOUNTED RECEPTACLE, PROVIDE 20A/1P BREAKER WITH 1#12 LINE, 1#12 NEU, AND 1#12 GND IN A 3/4"C IN EXISTING PANEL '2K' . LOCATED IN ROOM 218.

E6.2 RECONNECT EXISTING PREPARED CIRCUITS TO NEW HVAC DDC PANEL, AHU AFMS CONTROL DAMPER, AND DUCT SMOKE DETECTOR. COORDINATE WITH MECHANICAL EXACT DEVICE LOCATIONS.

E6.6 PUMP VFDS ARE PROVIDED BY MECHANICAL CONTRACTOR. COORDINATE WITH MECHANICAL.

E7.2 PROPOSED ROUTING OF NEW UNDERGROUND SECONDARY FROM UTILITY XFMR.

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f



REVISION:

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

SEAL:

STATE OF TEXAS — ROBERTO H. TIJERINA — 121946 — LICENSED — PROFESSIONAL ENGINEER — 01-05-2023

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - SALINAS ES - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

DATE: 01/05/2023

DRAWN BY: DBR

CHECKED BY: DBR

PROJECT NUMBER 218033.013

SHEET TITLE: COMPOSITE LEVEL 1 POWER PLAN

SHEET NUMBER: EP1.11

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.013

HA | RT/MG | JR

TN PN

1/5/2023 3:03:32 PM
Autodesk Docs://218033.013-MCISD-Salinas ES 113-IAC Improvements/218033.013 - SALINAS - MEP22.rvt

## Load Analysis - Salinas Elementary School

480 / 277 , 3 -PHASE, 4 -WIRE — Date: 1/5/2023

| DESCRIPTION | | | | | NEC | KVA |
|---|---|---|---|---|---|---|
| **EXISTING BUILDING LOAD** | | | | | | |
| KWs | | 485 | KW | | | |
| | | 539 | KVA | X 125% | | 674.0 |
| **LOADS REMOVED:** | | | | | | |
| COOLING (CHILLERS)= | | -196,116 | VA | | | -196.1 |
| PUMPS CWP= | | -7,800 | VA | | | -7.8 |
| AHU: | | -56,400 | VA | | | -56.4 |
| VAVs: | | -2,640 | VA | | | -2.6 |
| **LOADS ADDED:** | | | | | | |
| COOLING (CHILLERS)= | | 479,986 | VA | | | 480.0 |
| VAV= | | 397,900 | VA | | | 0.0 |
| PUMPS CWP= | | 18,282 | VA | | | 18.3 |
| AHUs= | | 78,114 | VA | | | 78.1 |
| 25% LARGEST MOTOR = | | 36,398 | VA | | | 36.4 |
| | | | | | TOTAL KVA: | 1023.8 |
| | | | | | TOTAL AMPS: | 1231.4 |
| | | | | | SERVICE SIZE: | 1600.0 |
| NOTE: EXISTING BUILIDING LOAD TAKEN FROM PEAK DEMAND DATED ON 09/16/2020 | | | | | SPARE AMPACITY: | 368.6 |

## ONE-LINE DIAGRAM GENERAL NOTES:

A. MANUFACTURER OF ELECTRICAL GEAR SHALL PROVIDE A COORDINATION STUDY FOR THE ENTIRE ELECTRICAL SYSTEM IN ORDER TO SET BREAKERS. REFER TO SPECIFICATIONS. MANUFACTURER SHALL ALSO PROVIDE A FAULT CIRCUIT STUDY FOR THE ENTIRE ELECTRICAL SYSTEM IN ORDER TO SELECT INTERRUPTING RATINGS OF ALL CIRCUIT BREAKERS, DISTRIBUTION PANELBOARDS, PANELBOARDS, ETC. A SERIES RATED SYSTEM SHALL BE USED. SUBMIT INTERRUPTING RATING FOR ALL ELECTRICAL GEAR IN SUBMITTALS. CONTRACTOR SHALL SUPPLY WITH THEIR SUBMITTALS ON ALL NEW EQUIPMENT THE MANUFACTURERS UL DATA LISTING THE SERIES RATING OF ALL EQUIPMENT. THIS SWITCHBOARD AND ALL NEW EQUIPMENT CONNECTED DOWNSTREAM SHALL BEAR LABELS INDICATING "SERIES RATED EQUIPMENT" ON THEIR EXTERIOR AS SPECIFIED IN THE SPECIFICATIONS. CONTRACTOR SHALL INSTRUCT MANUFACTURER TO INCLUDE IN THEIR SUBMITTALS ALL TRIP CURVES AND ALL LITERATURE INDICATING THE INTERRUPTING RATING CHARACTERISTICS OF EQUIPMENT BEING SUPPLIED.

B. METERING EQUIPMENT ENCLOSURE PROVIDED BY POWER CO., INSTALLED BY ELECTRICAL CONTRACTOR PER POWER COMPANY SPECIFICATIONS. METERS INSTALLED BY POWER COMPANY.

C. ALL CONDUCTORS SHALL BE COPPER.

D. CONTRACTOR SHALL INSTALL FEEDERS BASED ON THE OVERCURRENT DEVICE RATING UNLESS OTHERWISE NOTED. CONTRACTOR SHALL REFER TO THE FEEDER SCHEDULE TO OBTAIN AND INSTALL THE FEEDERS REQUIRED.

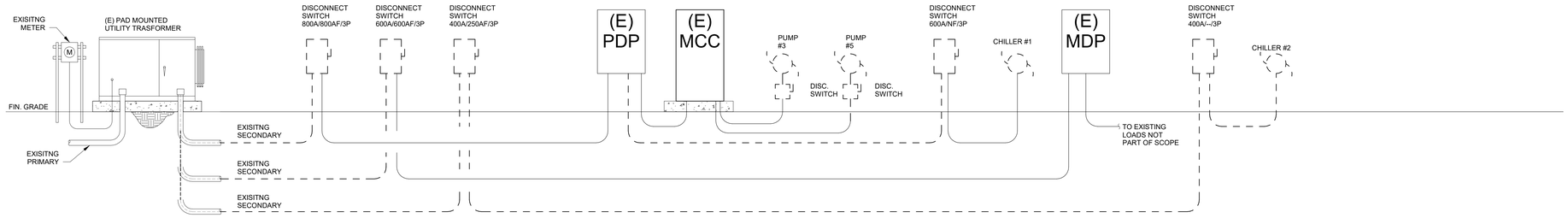
E. SERVICE EQUIPMENT IN OTHER THAN DWELLING UNITS SHALL BE LEGIBLY MARKED IN THE FIELD WITH THE MAXIMUM AVAILABLE FAULT CURRENT AT THE TIME OF INSTALLATION AND CALCULATION. THE LABEL SHALL BE 2" X 3" IN SIZE AND SHALL BE BLUE LETTERING ON A CONTRASTING BACKGROUND. THIS LABEL SHALL ALSO INCLUDE THE DATE OF THE CALCULATION.

F. PRIOR TO INSTALLATION OF UNDERGROUND FEEDERS, THE ELECTRICAL CONTRACTOR SHALL SUBMIT AN UNDERGROUND ROUTING PLAN TO THE ENGINEER OF RECORD., INDICATING THE EXACT ROUTING PATH FOR ALL UNDERGROUND CONDUIT. INDICATE STUB-UP LOCATIONS, SIZE AND QUANTITY OF CONDUIT. ALL ELECTRICAL PANELS AND EQUIPMENT SHALL BE SHOWN ON THIS PLAN FOR REFERENCE OF CONDUIT TERMINATION.

G. DIVISION 26 INSTALLER SHALL COORDINATE NEW ELECTRICAL SERVICE WITH UTILITY COMPANY. PROVIDE CONDUIT, TRANSFORMER PAD, AND TAP BOX, WHERE REQUIRED. ALL NEW UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY SPECIFICATIONS.

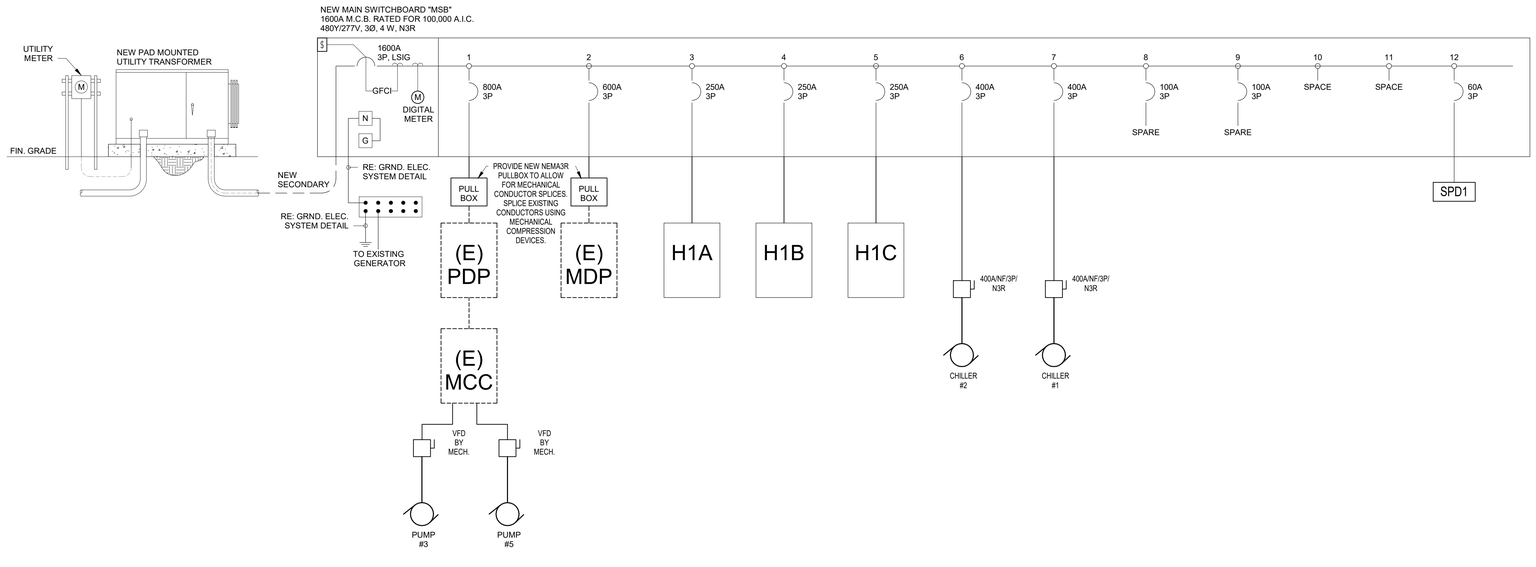
H. A PERMANENTLY AFFIXED LABEL SHALL BE APPLIED WITH THE AVAILABLE FAULT CURRENT AT THE TIME OF INSTALLATION AND CALCULATION. THE LABEL SHALL BE 2 X 3 IN SIZE AND SHALL BE BLUE LETTERING ON A CONTRASTING BACKGROUND. THIS LABEL SHALL ALSO INCLUDE THE DATE OF THE CALCULATION.

LEGEND:
TO BE DEMOLISHED
TO REMAIN




3 E4.01 **EXISTING ELECTRICAL ONE-LINE DIAGRAM SALINAS**
NOT TO SCALE

LEGEND:
EXISTING :
NEW :




1 E4.01 **REVISED ELECTRICAL ONE-LINE DIAGRAM SALINAS**
NOT TO SCALE


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f


123

REVISION:

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |

SEAL:




# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - SALINAS ES - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.013

**SHEET TITLE:** ONE-LINE DIAGRAM

**SHEET NUMBER:** E4.01


DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234


DBR Project Number 218033.013

HA | RT/MG | JR

TN PN


1/5/2023 3:03:31 PM
Autodesk Docs://218033.013-MCISD-Salinas ES 113-IAC Improvements/218033.013 - SALINAS - MEP22.rvt

## FEEDER SCHEDULE
**COPPER ONLY**

| RATING | SETS | CONDUCTOR SIZE | CONDUIT |
|---|---|---|---|
| 30A | 1 | 4#10, 1#10 G. | 3/4" |
| 40A | 1 | 4#8, 1#10 G. | 1" |
| 50A | 1 | 4#8, 1#10 G. | 1" |
| 60A | 1 | 4#6, 1#10 G. | 1" |
| 70A | 1 | 4#4, 1#8 G. | 1 1/4" |
| 80A | 1 | 4#4, 1#8 G. | 1 1/4" |
| 90A | 1 | 4#3, 1#8 G. | 1 1/4" |
| 100A | 1 | 4#3, 1#8 G. | 1 1/4" |
| 125A | 1 | 4#1, 1#6 G. | 1 1/2" |
| 150A | 1 | 4#1/0, 1#6 G. | 1 1/2" |
| 175A | 1 | 4#2/0, 1#6 G. | 2" |
| 200A | 1 | 4#3/0, 1#6 G. | 2" |
| 225A | 1 | 4#4/0, 1#4 G. | 2 1/2" |
| 250A | 1 | 4#250, 1#4 G. | 2 1/2" |
| 300A | 1 | 4#350, 1#4 G. | 3" |
| 350A | 1 | 4#500, 1#3 G. | 3 1/2" |
| 400A | 1 | 4#600, 1#3 G. | 4" |
| 450A | 2 | 4#4/0, 1#2 G. | 2 1/2" |
| 500A | 2 | 4#250, 1#2G. | 2 1/2" |
| 600A | 2 | 4#350, 1#1G. | 3" |
| 700A | 2 | 4#500, 1#1/0G. | 4" |
| 800A | 2 | 4#600, 1#1/0G. | 4" |
| 1000A | 3 | 4#500, 1#2/0G. | 4" |
| 1200A | 4 | 4#350, 1#3/0G. | 3" |
| 1600A | 4 | 4#600, 1#4/0G. | 4" |
| | 5 | 4#500, 1#4/0G. | 4" |
| 2000A | 5 | 4#600, 1#250 G. | 4" |
| | 6 | 4#500, 1#250 G. | 4" |
| 2500A | 6 | 4#600, 1#350 G. | 4" |
| | 7 | 4#500, 1#350 G. | 4" |
| 3000A | 7 | 4#600, 1#400 G. | 4" |
| | 8 | 4#500, 1#400 G. | 4" |
| 3500A | 9 | 4#600, 1#500 G. | 4" |
| | 10 | 4#500, 1#500 G. | 4" |
| 4000A | 10 | 4#600, 1#500 G. | 4" |
| | 11 | 4#500, 1#500 G. | 4" |
| 5000A | 12 | 4#600, 1#750 G. | 4" |
| | 14 | 4#500, 1#750 G. | 4" |

1. ELECTRICAL CONTRACTOR SHALL PROVIDE THE NUMBER OF LUGS AND PROPER LUG SIZES TO ACCEPT CONDUCTOR SIZES SHOWN.
2. GROUND NOT REQUIRED AT SERVICE LATERAL.

## Panelboard (E) MCC

AIC Rating: New / X Existing

480/277 Wye Volt, 3 Phase, 4 Wire; 1 Section; Type 1 -Nema Rating; Mains Type: MLO; 0 A MCB; 400 A BUS (Copper); ISO. GRND. BUS; X Single / Double / Feed - Thru; Mounting: X Surface / Flush

| NOTE | LOAD (VA) | TYPE | DESCRIPTION | WIRE | CB | CKT | CKT | CB | WIRE | DESCRIPTION | TYPE | LOAD (VA) | NOTE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 1 | 2 | | | | | | |
| 1 | 12631 VA | F | AHU-1 | 6 | 60 A | 3 | 4 | 40 A | 8 | AHU-7 | F | 4188 VA | 1 |
| | | | | | | 5 | 6 | | | | | | |
| | | | | | | 7 | 8 | | | | | | |
| 1 | 12631 VA | F | AHU-2 | 6 | 60 A | 9 | 10 | 60 A | 6 | EXIST. PUMP #1, 2 | MT | 22500 VA | |
| | | | | | | 11 | 12 | | | | | | |
| | | | | | | 13 | 14 | | | | | | |
| 1 | 12631 VA | F | AHU-3 | 6 | 60 A | 15 | 16 | 30 A | 10 | CHWP-2 | MT | 9141 VA | 1 |
| | | | | | | 17 | 18 | | | | | | |
| | | | | | | 19 | 20 | | | | | | |
| 1 | 11700 VA | F | AHU-4 | 6 | 60 A | 21 | 22 | 15 A | 12 | EXIST. PUMP #4 | MT | 3000 VA | |
| | | | | | | 23 | 24 | | | | | | |
| | | | | | | 25 | 26 | | | | | | |
| 2 | 12631 VA | F | AHU-5 | 10 | 25 A | 27 | 28 | 25 A | 10 | CHWP-1 | MT | 9141 VA | 2 |
| | | | | | | 29 | 30 | | | | | | |
| | | | | | | 31 | 32 | 60 A | 6 | EXIST. SPARE | -- | 0 VA | |
| 1 | 11700 VA | F | AHU-6 | 8 | 40 A | 33 | 34 | 60 A | 6 | EXIST. SPARE | -- | 0 VA | |
| | | | | | | 35 | 36 | 60 A | 6 | EXIST. SPARE | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 37 | 38 | | | | | | |
| | 0 VA | -- | Space | 12 | -- | 39 | 40 | 20 A | 12 | TVSS | SP | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 41 | 42 | | | | | | |

| N.E.C. (2020) | Load Type | Conn. | Fct. | Diversity | N.E.C.(2020) | Load Type | Conn. | Fct. | Diversity |
|---|---|---|---|---|---|---|---|---|---|
| 220.44 | (R)Receptacle | | | | 210.20(a) | (L)Lighting | | | |
| 220.56 | (K)Kitchen | | | | | (EL)Ext. Ltg. | | | |
| 220.60 | (C)Cooling | | | 0 VA | 620.14 | (E)Elevators | | | |
| 220.60 | (H)Heating | | | 0 VA | | (WH)Wat. Htr. | | | |
| 220.60 | (F)Fans | 78112 VA | 100.00% | 78112 VA | 220.5 | (MT)Lrg. Motor | 43782 VA | 112.85% | 49407 VA |
| | (M)Misc. | | | | | (SP)Sub Pnl. | 0 VA | Not Computed | 0 VA |

Total Connected Load: 121894 VA VA = 147 A
Total Load (Diversified): 127519 VA VA = 153 A
Location of Panel: Space 202

NOTES:
1. REUSE EXISTING BREAKER AND CIRCUIT AS INDICATED.
2. PROVIDE NEW BREAKER AND CIRCUIT AS INDICATED.

## Panelboard (E) PNL PDP

AIC Rating: New / X Existing

480/277 Wye Volt, 3 Phase, 4 Wire; 1 Section; Type 1 -Nema Rating; Mains Type: MLO; 0 A MCB; 800 A BUS (Copper); ISO. GRND. BUS; X Single / Double / Feed - Thru; Mounting: X Surface / Flush

| NOTE | LOAD (VA) | TYPE | DESCRIPTION | WIRE | CB | CKT | CKT | CB | WIRE | DESCRIPTION | TYPE | LOAD (VA) | NOTE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 VA | -- | EXIST. 3P SPARE | 8 | 50 A | 1 | 2 | 600 A | (2) 4/0 | EXIST. 3P SPARE | -- | 0 VA | |
| | 0 VA | -- | -- | 8 | 50 A | 3 | 4 | 600 A | (2) 4/0 | -- | -- | 0 VA | |
| | 0 VA | -- | -- | 8 | 50 A | 5 | 6 | 600 A | (2) 4/0 | -- | -- | 0 VA | |
| | | | | | | 7 | 8 | | | | | | |
| | 121894 VA | Spare ; SP; F; MT | (E) MCC | 350 | 300 A | 9 | 10 | 600 A | (2) 4/0 | EXIST. BOILER | H | 400000 VA | |
| | | | | | | 11 | 12 | | | | | | |

| N.E.C. (2020) | Load Type | Conn. | Fct. | Diversity | N.E.C.(2020) | Load Type | Conn. | Fct. | Diversity |
|---|---|---|---|---|---|---|---|---|---|
| 220.44 | (R)Receptacle | | | | 210.20(a) | (L)Lighting | | | |
| 220.56 | (K)Kitchen | | | | | (EL)Ext. Ltg. | | | |
| 220.60 | (C)Cooling | | | 0 VA | 620.14 | (E)Elevators | | | |
| 220.60 | (H)Heating | 400000 VA | 100.00% | 400000 VA | | (WH)Wat. Htr. | | | |
| 220.60 | (F)Fans | 78112 VA | 100.00% | 78112 VA | 220.5 | (MT)Lrg. Motor | 43782 VA | 112.85% | 49407 VA |
| | (M)Misc. | | | | | (SP)Sub Pnl. | 0 VA | Not Computed | 0 VA |

Total Connected Load: 521894 VA VA = 628 A
Total Load (Diversified): 527519 VA VA = 635 A
Location of Panel: Space 202

## Panelboard H1A

22,000 AIC Rating: X New / Existing

480/277 Wye Volt, 3 Phase, 4 Wire; 1 Section; Type 1 -Nema Rating; Mains Type: MLO; 0 A MCB; 250 A BUS (Copper); ISO. GRND. BUS; X Single / Double / Feed - Thru; Mounting: X Surface / Flush

| NOTE | LOAD (VA) | TYPE | DESCRIPTION | WIRE | CB | CKT | CKT | CB | WIRE | DESCRIPTION | TYPE | LOAD (VA) | NOTE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3800 VA | H | VAV-1-1 | 12 | 20 A | 1 | 2 | 15 A | 12 | VAV-2-3 | H | 2700 VA | |
| | | | | | | 3 | 4 | | | | | | |
| | 19800 VA | H | VAV-1-2,3,4 | 10 | 30 A | 5 | 6 | 20 A | 12 | VAV-2-1,2 | H | 13200 VA | |
| | | | | | | 7 | 8 | | | | | | |
| | 19800 VA | H | VAV-1-5,6,7 | 10 | 30 A | 9 | 10 | 30 A | 10 | VAV-2-4,5,6 | H | 19800 VA | |
| | | | | | | 11 | 12 | | | | | | |
| | 19800 VA | H | VAV-1-8,9,10 | 10 | 30 A | 13 | 14 | 30 A | 10 | VAV-2-7,8,9 | H | 19800 VA | |
| | | | | | | 15 | 16 | | | | | | |
| | 13200 VA | H | VAV-1-11,12 | 12 | 20 A | 17 | 18 | 20 A | 12 | VAV-2-10,11 | H | 13200 VA | |
| | | | | | | 19 | 20 | | | | | | |
| | | | | | | 21 | 22 | | | | | | |
| | 0 VA | -- | Spare | 12 | 20 A | 23 | 24 | 20 A | 12 | VAV-2-12,13 | H | 13200 VA | |
| | 0 VA | -- | Spare | 12 | 20 A | 25 | 26 | | | | | | |
| | 0 VA | -- | Spare | 12 | 20 A | 27 | 28 | | | | | | |
| | 0 VA | -- | Spare | 12 | 20 A | 29 | 30 | | | | | | |
| | 0 VA | -- | Spare | 12 | 20 A | 31 | 32 | | | | | | |
| | 0 VA | -- | Spare | 12 | 20 A | 33 | 34 | 20 A | 12 | Spare | -- | 0 VA | |
| | 0 VA | -- | Spare | 12 | 20 A | 35 | 36 | 20 A | 12 | Spare | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 37 | 38 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 39 | 40 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 41 | 42 | -- | 12 | Space | -- | 0 VA | |

| N.E.C. (2020) | Load Type | Conn. | Fct. | Diversity | N.E.C.(2020) | Load Type | Conn. | Fct. | Diversity |
|---|---|---|---|---|---|---|---|---|---|
| 220.44 | (R)Receptacle | | | | 210.20(a) | (L)Lighting | | | |
| 220.56 | (K)Kitchen | | | | | (EL)Ext. Ltg. | | | |
| 220.60 | (C)Cooling | | | 0 VA | 620.14 | (E)Elevators | | | |
| 220.60 | (H)Heating | 158300 VA | 100.00% | 158300 VA | | (WH)Wat. Htr. | | | |
| 220.60 | (F)Fans | | | | 220.5 | (MT)Lrg. Motor | | | |
| | (M)Misc. | | | | | (SP)Sub Pnl. | | | |

Total Connected Load: 158300 VA VA = 190 A
Total Load (Diversified): 158300 VA VA = 190 A
Location of Panel: Space 270

## Panelboard H1B

22,000 AIC Rating: X New / Existing

480/277 Wye Volt, 3 Phase, 4 Wire; 1 Section; Type 1 -Nema Rating; Mains Type: MCB; 150 A MCB; 250 A BUS (Copper); ISO. GRND. BUS; X Single / Double / Feed - Thru; Mounting: X Surface / Flush

| NOTE | LOAD (VA) | TYPE | DESCRIPTION | WIRE | CB | CKT | CKT | CB | WIRE | DESCRIPTION | TYPE | LOAD (VA) | NOTE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 8400 VA | H | VAV-5-1,2,3 | 8 | 35 A | 1 | 2 | 25 A | 10 | VAV-5-9,10 | H | 5400 VA | |
| | | | | | | 3 | 4 | 30 A | 10 | VAV-5-11,12 | H | 6300 VA | |
| | 28000 VA | H | VAV-5-4,5,6 | 8 | 45 A | 5 | 6 | | | | | | |
| | | | | | | 7 | 8 | 20 A | 12 | VAV-5-13,15 | H | 10600 VA | |
| | 14600 VA | H | VAV-5-7,8 | 10 | 25 A | 9 | 10 | | | | | | |
| | | | | | | 11 | 12 | 20 A | 12 | Spare | -- | 0 VA | |
| | 0 VA | -- | Spare | 12 | 20 A | 13 | 14 | 20 A | 12 | Spare | -- | 0 VA | |
| | 0 VA | -- | Spare | 12 | 20 A | 15 | 16 | 20 A | 12 | Spare | -- | 0 VA | |
| | 0 VA | -- | Spare | 12 | 20 A | 17 | 18 | 20 A | 12 | Spare | -- | 0 VA | |
| | 0 VA | -- | Spare | 12 | 20 A | 19 | 20 | 20 A | 12 | Spare | -- | 0 VA | |
| | 0 VA | -- | Spare | 12 | 20 A | 21 | 22 | 20 A | 12 | Spare | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 23 | 24 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 25 | 26 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 27 | 28 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 29 | 30 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 31 | 32 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 33 | 34 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 35 | 36 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 37 | 38 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 39 | 40 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 41 | 42 | -- | 12 | Space | -- | 0 VA | |

| N.E.C. (2020) | Load Type | Conn. | Fct. | Diversity | N.E.C.(2020) | Load Type | Conn. | Fct. | Diversity |
|---|---|---|---|---|---|---|---|---|---|
| 220.44 | (R)Receptacle | | | | 210.20(a) | (L)Lighting | | | |
| 220.56 | (K)Kitchen | | | | | (EL)Ext. Ltg. | | | |
| 220.60 | (C)Cooling | | | 0 VA | 620.14 | (E)Elevators | | | |
| 220.60 | (H)Heating | 73300 VA | 100.00% | 73300 VA | | (WH)Wat. Htr. | | | |
| 220.60 | (F)Fans | | | | 220.5 | (MT)Lrg. Motor | | | |
| | (M)Misc. | | | | | (SP)Sub Pnl. | | | |

Total Connected Load: 73300 VA VA = 88 A
Total Load (Diversified): 73300 VA VA = 88 A
Location of Panel: Space 161

## Panelboard H1C

10,000 AIC Rating: X New / Existing

480/277 Wye Volt, 3 Phase, 4 Wire; 1 Section; Type 1 -Nema Rating; Mains Type: MLO; 0 A MCB; 250 A BUS (Copper); ISO. GRND. BUS; X Single / Double / Feed - Thru; Mounting: X Surface / Flush

| NOTE | LOAD (VA) | TYPE | DESCRIPTION | WIRE | CB | CKT | CKT | CB | WIRE | DESCRIPTION | TYPE | LOAD (VA) | NOTE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2700 VA | H | VAV-3-3 | 12 | 20 A | 1 | 2 | 20 A | 12 | VAV-4-1 | H | 2700 VA | |
| | | | | | | 3 | 4 | | | | | | |
| | 13200 VA | H | VAV-3-1,2 | 12 | 20 A | 5 | 6 | 30 A | 10 | VAV-4-2,3,4 | H | 19800 VA | |
| | | | | | | 7 | 8 | | | | | | |
| | 19800 VA | H | VAV-3-4,5,6 | 10 | 30 A | 9 | 10 | 30 A | 10 | VAV-4-5,6,7 | H | 19800 VA | |
| | | | | | | 11 | 12 | | | | | | |
| | | | | | | 13 | 14 | | | | | | |
| | 19800 VA | H | VAV-3-7,8,9 | 10 | 30 A | 15 | 16 | 30 A | 10 | VAV-4-8,9,10 | H | 19800 VA | |
| | | | | | | 17 | 18 | | | | | | |
| | | | | | | 19 | 20 | | | | | | |
| | 19800 VA | H | VAV-3-10,11,12 | 10 | 30 A | 21 | 22 | 20 A | 12 | VAV-4-11,12 | H | 13200 VA | |
| | | | | | | 23 | 24 | | | | | | |
| | | | | | | 25 | 26 | | | | | | |
| | 0 VA | -- | Spare | 12 | 20 A | 27 | 28 | | | | | | |
| | 0 VA | -- | Spare | 12 | 20 A | 29 | 30 | 20 A | 12 | VAV-4-13,14 | H | 13200 VA | |
| | 0 VA | -- | Spare | 12 | 20 A | 31 | 32 | | | | | | |
| | 0 VA | -- | Spare | 12 | 20 A | 33 | 34 | 20 A | 12 | Spare | -- | 0 VA | |
| | 0 VA | -- | Spare | 12 | 20 A | 35 | 36 | 20 A | 12 | Spare | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 37 | 38 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 39 | 40 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 41 | 42 | -- | 12 | Space | -- | 0 VA | |

| N.E.C. (2020) | Load Type | Conn. | Fct. | Diversity | N.E.C.(2020) | Load Type | Conn. | Fct. | Diversity |
|---|---|---|---|---|---|---|---|---|---|
| 220.44 | (R)Receptacle | | | | 210.20(a) | (L)Lighting | | | |
| 220.56 | (K)Kitchen | | | | | (EL)Ext. Ltg. | | | |
| 220.60 | (C)Cooling | | | 0 VA | 620.14 | (E)Elevators | | | |
| 220.60 | (H)Heating | 163800 VA | 100.00% | 163800 VA | | (WH)Wat. Htr. | | | |
| 220.60 | (F)Fans | | | | 220.5 | (MT)Lrg. Motor | | | |
| | (M)Misc. | | | | | (SP)Sub Pnl. | | | |

Total Connected Load: 163800 VA VA = 197 A
Total Load (Diversified): 163800 VA VA = 197 A
Location of Panel: Space 265


DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f




REVISION:

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

SEAL:

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - SALINAS ES - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

DATE: 01/05/2023

DRAWN BY: DBR

CHECKED BY: DBR

PROJECT NUMBER: 218033.013

SHEET TITLE: ELECTRICAL SCHEDULES

SHEET NUMBER: E5.01

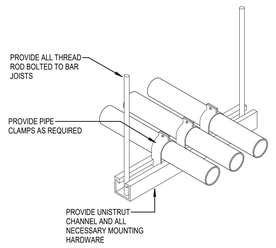

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234


DBR Project Number 218033.013

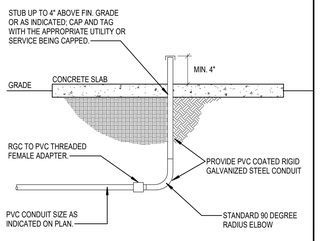
HA | RT/MG | JR

TN PN

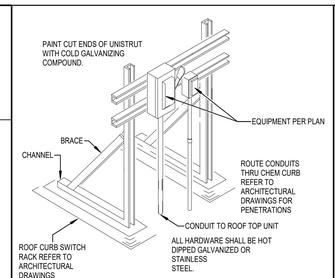
1/5/2023 3:03:31 PM
Autodesk Docs://218033.013-MCISD-Salinas ES 113-IAC Improvements/218033.013 - SALINAS - MEP22.rvt



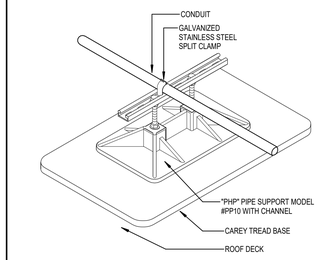

**1 UNISTRUT CONDUIT DETAIL**
NOT TO SCALE E10003



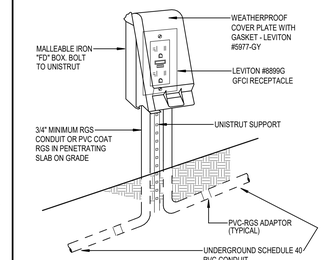

**2 CONDUIT STUB-UP DETAIL**
NOT TO SCALE E10010



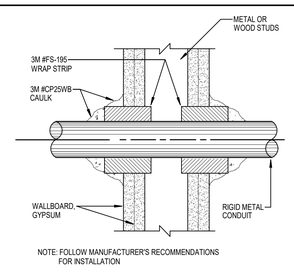

**3 UNISTRUT RACK DETAIL**
NOT TO SCALE E10015



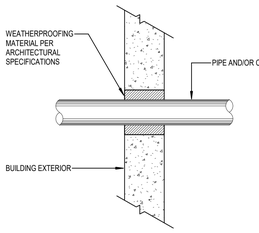

**4 CONDUIT SUPPORT DETAIL**
NOT TO SCALE



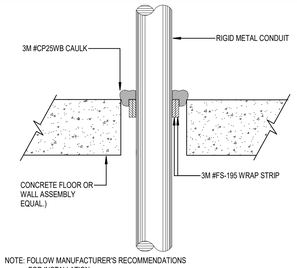

**5 RECEPTACLE MOUNTING DETAIL**
NOT TO SCALE E13027



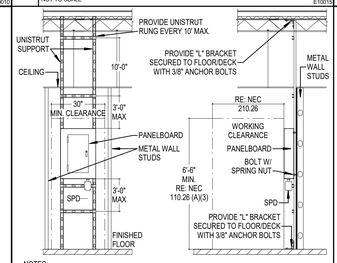

**6 2 HR. GYPSUM WALLBOARD PIPE PENETRATION**
NOT TO SCALE E10017



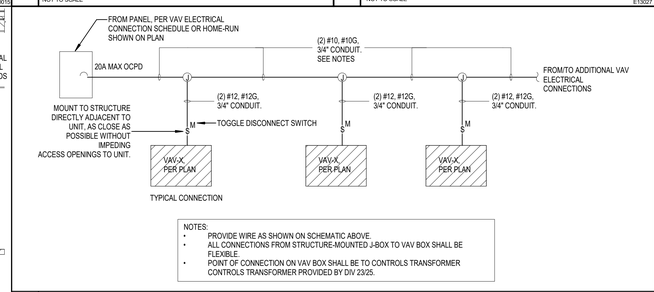

**7 PIPE AND/OR CONDUIT PENETRATION**
NOT TO SCALE E10018



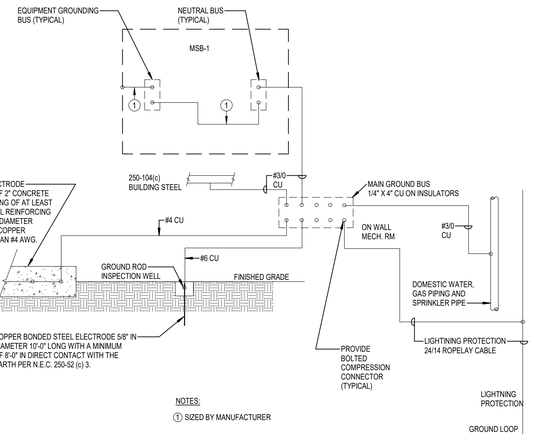

**8 2, 3 AND 4 HR. PENETRATIONS FOR CONCRETE**
NOT TO SCALE E10019



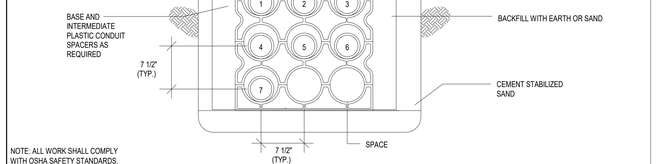

**9 PANELBOARD MOUNTING DETAIL**
NOT TO SCALE E22000




**10 TYPICAL VAV BOX ELECTRICAL CONNECTION DETAIL**
NOT TO SCALE E13010




**11 GROUNDING ELECTRODE SYSTEM DETAIL**
NOT TO SCALE 17015




**12 SECONDARY SERVICE TRENCH DETAIL**
NOT TO SCALE E23010

DBR
SERVICE | QUALITY | INTEGRITY | SUSTAINABILITY
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f

125

**REVISION:**

| No. | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**SEAL:**

STATE OF TEXAS
ROBERTO H. TIJERINA
121946
LICENSED
PROFESSIONAL ENGINEER
01-05-2023

# MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT - SALINAS ES - INDOOR AIR QUALITY IMPROVEMENTS

TBPE Firm Registration No. 2234

**DATE:** 01/05/2023

**DRAWN BY:** DBR

**CHECKED BY:** DBR

**PROJECT NUMBER** 218033.013

**SHEET TITLE:** ELECTRICAL DETAILS

**SHEET NUMBER:** E6.01

DBR
200 South 10th Street, Suite 901
McAllen, Texas 78501
956.683.1640 p 956.683.1903 f
TBPE Firm Registration No. 2234

DBR Project Number 218033.013

HA | RT/MG | JR

TN PN

1/5/2023 3:03:31 PM
Autodesk Docs://218033.013-MCISD-Salinas ES 113-IAC Improvements/218033.013 - SALINAS - MEP22.rvt

**SUBJECT**: Consideration and Approval of Final Completion, Less Betterment Fund Allowance, Less Liquidated Damages, and Final Payment for the Culinary Arts at Veterans Memorial High School – PBK Architects

**PRESENTER**: Ricardo Rivera, Assistant Superintendent for Operations

## BACKGROUND INFORMATION

The CTE program and Veterans Memorial High School currently have a culinary arts lab. As per a field inspection at VMHS, the culinary lab is requiring possible renovations to be in code compliance. Areas of note are the current vent/hood suppression systems.

Administration will use competitive sealed proposals (CSP's) as the procurement method as approved by the Board of Trustees in the February 2021 Board of Trustees meeting. This method was approved as the primary default method for projects.

At the Regular Board of Trustees meeting held on August 11, 2021, the Board approved the project, proposed the budget, and utilized the on-call professional services for the Culinary Arts Laboratory at Veterans Memorial High School Project – PBK Architects. PBK Architects estimated project cost is $10,000.00.

At the Regular Board of Trustees held on February 09, 2022, the Board approved Schematic Design for the Culinary Arts Laboratory at Veterans Memorial High School Project – PBK Architects.

Schematic Design:
Rough sketches that develop a feasible conceptual design of the project.

Construction Documents:
Communicating the design intent through further refinement of the written and graphic representation of all building materials, components, and equipment that can be quantified and useful to contractors.

At the Regular Board meeting held on April 13, 2022, the Board approved Final Design for the Culinary Arts Laboratory at Veterans Memorial High School Project. Designs were reviewed and approved by staff.

Note: After further evaluation of the project during the design process PBK Architects stated that their estimated cost may need to be increased.

Advertisements in the local newspapers were posted on May 11, 2022, and May 23, 2022. The process is for the submittals to be reviewed by the Purchasing Department Staff and the Administration Ranking Team to assure that firms meet the criteria based on demonstrated expertise, competence, and qualifications. The bid opening was June 9, 2022, and we received one (1) proposal which was not within the estimated budget. Administration is currently exploring other options for this project or may re-advertise.

| Firm | Proposal | Pts. |
|---|---|---|
| G&G Contractors | $155,700.00 | 94.0 |

At the Regular Board meeting held on August 10, 2022, the Board approved to reject of all proposals for the Culinary Arts for Veterans Memorial High School – PBK Architects.

First Advertisements in the local newspapers were posted on May 11, 2022, and May 23, 2022. The process is for the submittals to be reviewed by the Purchasing Department Staff and the Administration Ranking Team to assure that firms meet the criteria based on demonstrated expertise, competence, and qualifications. The bid opening was June 9, 2022, and we received one (1) proposal which was not within the estimated budget. Administration is currently re-advertising for additional five days to extend through the Associated General Contractors of America (AGC) to see if any vendors submit a proposal.

The process is for the submittals to be reviewed by the Purchasing Department Staff and the Administration Ranking Team to assure that firms meet the criteria based on demonstrated expertise, competence, and qualifications. Pre-ranking will be done and after the review, Administration will then present the recommended firm to be reviewed and ranked in order of selection. The recommendations will then be presented for approval at the next sequential Board of Trustees meeting and the Administration will then enter into negotiations in the order of selection.

Note: Administration did not receive any new Competitive Sealed Proposals (CSP's) for this project. Should no proposals be received Administration will request the Board to approve using Job Order Contracting (JOC) as the procurement method of delivery.

At the Regular Board of Trustees meeting held on September 21, 2022, the Board approved using Job Order Contracting (JOC) as the procurement method of delivery.

At the Board Workshop meeting held on November 02, 2022, the Board has been informed of the Best and Final Offer (BAFO) for the Job Ordering Contracting at the Culinary Arts Veterans Memorial High School of $45,960.73 with 30 days of construction time. Notice to Proceed is on November 07, 2022, with Substantial Completion on December 07, 2022.

| Project | Vendor Name | Cost |
|---|---|---|
| Culinary Arts VMHS | Rio United Builders | $45,960.73 |

At the Regular Board of Trustees meeting held on December 07, 2022, the Board approved substantial completion for the Culinary Arts at Veterans Memorial High School. The substantial completion is scheduled to be the day of the Board Meeting and if completed Administration will be presenting Consideration and Approval of Substantial Completion for the Culinary Arts at Veterans Memorial High School – PBK Architects

Note: Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

**ADMINISTRATIVE CONSIDERATIONS**

PBK Architects and Rio United Builders are presenting Consideration and Approval of Final Completion, Less Betterment Fund Allowance, Less Liquidated Damages, and Final Payment for the Culinary Arts at Veterans Memorial High School. The project was completed on time with all punch list items completed. This project has no liquated damages and a contingency balance credit for the amount of $5,000.00.

**FUNDING SOURCE**
Local Fund

| | |
|---|---|
| Est. Project Budget: | $10,000.00 |
| Project Contingency 20%: | $ 2,000.00 |
| Est. Professional Services 12%: | $ 1,200.00 |
| Est. Total Project Cost: | $13,200.00 |

**RECOMMENDATION**
This agenda item was presented at the Board of Trustees Workshop on Wednesday, January 18, 2023.

Administration is presenting Consideration and Approval of Final Completion, Less Betterment Fund Allowance, Less Liquidated Damages, and Final Payment for the Culinary Arts at Veterans Memorial High School.

**EXHIBIT:**
Final Completion Letter

**CONTACT PERSONS**
Ricardo Rivera, Assistant Superintendent for Operations
Adrian Hernandez, Coordinator for Project & Energy Management

6316 N 10th Street, Bldg A, Suite 1
McAllen, Texas 78504
Phone: 956-687-1330
PBK.com

January 06, 2023 **VIA: E-mail**

Mr. Ricardo Rivera
Assistant Superintendent for Operations
520 Holland Ave.
Mission TX 78572

**Re: Veterans Memorial HS- Culinary Arts**
**Final Completion**

Mr. Rivera,

As of January 6, 2023 the punch list items have been completed and the closeout documents have been submitted in accordance with the contract documents. Also included is the final Payment Applications. With this information, we recommend Final Completion of this project.

Please do not hesitate to call me should you have any questions.

Respectfully submitted,



David I. Iglesias
Associate Principal, PBK

CC: File

# APPLICATION AND CERTIFICATION FOR PAYMENT

*AIA DOCUMENT G702*



TO OWNER:
Mission CISD
1201 Bryce Road
Mission, Texas 78573

PROJECT: Mission CISD Veterans HS
Culinary Arts Classroom

APPLICATION NO: 1

PERIOD TO: 6-Jan-23

Distribution to:
X OWNER
X ARCHITECT
X CONTRACTOR

FROM CONTRACTOR:
Rio United Builders
219 N Missouri St
Alton, Texas 78573

NOTICE TO PROCEED: Nov. 7. 2022
CONTRACT DATE:

## CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract.
Continuation Sheet, AIA Document G703, is attached.

| | | |
|---|---|---|
| 1. ORIGINAL CONTRACT SUM | | $ 45,903.73 |
| 2. Net change by Change Orders | | $ 0.00 |
| 3. CONTRACT SUM TO DATE (Line 1 ± 2) | | $ 45,903.73 |
| 4. TOTAL COMPLETED & STORED TO DATE (Column G on G703) | | $ 45,903.73 |
| 5. RETAINAGE: | | |
| a. 0 % of Completed Work | $ 0.00 | |
| b. ____ % of Stored Material | $ | |
| Total Retainage (Lines 5a + 5b or Total in Column I of G703) | | $ 0.00 |
| 6. TOTAL EARNED LESS RETAINAGE (Line 4 Less Line 5 Total) | | $ 45,903.73 |
| 7. LESS PREVIOUS CERTIFICATES FOR PAYMENT (Line 6 from prior Certificate) | | $ 0.00 |
| 8. CURRENT PAYMENT DUE | | $ 45,903.73 |
| 9. BALANCE TO FINISH, INCLUDING RETAINAGE (Line 3 less Line 6) | | $ 0.00 |

| CHANGE ORDER SUMMARY | ADDITIONS | DEDUCTIONS |
|---|---|---|
| Total changes approved in previous months by Owner | | |
| Total approved this Month | | |
| TOTALS | | |
| NET CHANGES by Change Order | | |

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR:

By: [signature] Date: 1/6/2023

State of: Texas County of: Hidalgo
Subscribed and sworn to before me this 6 day of January 2023
Notary Public: [signature]
My Commission expires: 01/05/2025

## ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising the application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED . . . . . $ 45,903.73

*(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and onthe Continuation Sheet that are changed to conform with the amount certified.)*

ARCHITECT: PBK Architects, Inc.

By: [signature] Date: 1/6/2023

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

AIA DOCUMENT G702 · APPLICATION AND CERTIFICATION FOR PAYMENT · 1992 EDITION · AIA® · © 1992 THE AMERICAN INSTITUTE OF ARCHITECTS, 1735 NEW YORK AVE., N.W., WASHINGTON, DC 20006-5292
**Users may obtain validation of this document by requesting a completed AIA Document D401 - Certification of Document's Authenticity from the Licensee.**

**CONTINUATION SHEET -Mission CISD Veterans Memorial HS Culinary Art Classroom Remodel** *AIA DOCUMENT G703* 

AIA Document G702, APPLICATION AND CERTIFICATION FOR PAYMENT, containing
Contractor's signed certification is attached.
In tabulations below, amounts are stated to the nearest dollar.
Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO: 1
APPLICATION DATE: 6-Jan-23
PERIOD TO: 6-Jan-23

| A | B | C | D | E | F | G | | H | I |
|---|---|---|---|---|---|---|---|---|---|
| ITEM NO | DESCRIPTION OF WORK | SCHEDULED VALUE | WORK COMPLETED FROM PREVIOUS APPLICATION (D + E) | WORK COMPLETED THIS PERIOD | MATERIALS PRESENTLY STORED (NOT IN D OR E) | TOTAL COMPLETED AND STORED TO DATE (D+E+F) | % (G ÷ C) | BALANCE TO FINISH (C - G) | RETAINAGE (IF VARIABLE RATE) |
| 1 | Supervision | $3,000.00 | | $3,000.00 | | $3,000.00 | 100.00% | $0.00 | $0.00 |
| 2 | Permit | $500.00 | | $500.00 | | $500.00 | 100.00% | $0.00 | $0.00 |
| 3 | Cabinets | $1,300.00 | | $1,300.00 | | $1,300.00 | 100.00% | $0.00 | $0.00 |
| 4 | Stain Work | $1,100.00 | | $1,100.00 | | $1,100.00 | 100.00% | $0.00 | $0.00 |
| 5 | Exhaust Fans | $1,500.00 | | $1,500.00 | | $1,500.00 | 100.00% | $0.00 | $0.00 |
| 6 | Lecture Exhaust Fan | $1,700.00 | | $1,700.00 | | $1,700.00 | 100.00% | $0.00 | $0.00 |
| 7 | Electrical & Fire Alarm | $6,500.00 | | $6,500.00 | | $6,500.00 | 100.00% | $0.00 | $0.00 |
| 8 | Guardian System | $18,500.00 | | $18,500.00 | | $18,500.00 | 100.00% | $0.00 | $0.00 |
| 9 | General Labor | $5,000.00 | | $5,000.00 | | $5,000.00 | 100.00% | $0.00 | $0.00 |
| 10 | Bonding & Insurance | $2,000.00 | | $2,000.00 | | $2,000.00 | 100.00% | $0.00 | $0.00 |
| 11 | Overhead & Profit | $4,803.73 | | $4,803.73 | | $4,803.73 | 100.00% | $0.00 | $0.00 |
| | **GRAND TOTALS** | $45,903.73 | $0.00 | $45,903.73 | $0.00 | $45,903.73 | 100.00% | $0.00 | $0.00 |

# AIA® Document G701™ – 2017

## Change Order

**PROJECT:** *(Name and address)*
Veterans Memorial High School
Culinary Arts

**OWNER:** *(Name and address)*
Mission Consolidated Independent School District
1201 Bryce Dr.
Mission, TX 78572

**CONTRACT INFORMATION:**
Contract For: General Construction
Date: October 22, 2022

**ARCHITECT:** *(Name and address)*
PBK Architects, Inc.
6316 N. 10th Street, Bldg A, Ste 1
McAllen, TX 78504

**CHANGE ORDER INFORMATION:**
Change Order Number: 001
Date: 1/06/2023

**CONTRACTOR:** *(Name and address)*
Rio United Builders
219 N. Missouri Street
Alton, TX 78573

**THE CONTRACT IS CHANGED AS FOLLOWS:**
*(Insert a detailed description of the change and, if applicable, attach or reference specific exhibits. Also include agreed upon adjustments attributable to executed Construction Change Directives.)*
Credit for the remaining balance of the Owner Contigency of Five-Thousand dollars ($5,000.00).

| | | |
|---|---|---|
| The original Contract Sum was | $ | 45,903.73 |
| The net change by previously authorized Change Orders | $ | 0.00 |
| The Contract Sum prior to this Change Order was | $ | 45,903.73 |
| The Contract Sum will be decreased by this Change Order in the amount of | $ | 5,000.00 |
| The new Contract Sum including this Change Order will be | $ | 40,903.73 |

The Contract Time will be unchanged by zero (0) days.
The new date of Substantial Completion will be as indicated in the Notice to Proceed.

**NOTE:** This Change Order does not include adjustments to the Contract Sum or Guaranteed Maximum Price, or the Contract Time, that have been authorized by Construction Change Directive until the cost and time have been agreed upon by both the Owner and Contractor, in which case a Change Order is executed to supersede the Construction Change Directive.

**NOT VALID UNTIL SIGNED BY THE ARCHITECT, CONTRACTOR AND OWNER.**

| ARCHITECT *(Firm name)* | CONTRACTOR *(Firm name)* | OWNER *(Firm name)* |
|---|---|---|
| PBK Architects, Inc | Rio United Builders | Mission Consolidated Independent School District |
| SIGNATURE | SIGNATURE | SIGNATURE |
| David I. Iglesias,Associate Principal | Dagoberto Perez Jr., Owner | Dr. Carol G. Perez, Superintendent of Schools |
| PRINTED NAME AND TITLE | PRINTED NAME AND TITLE | PRINTED NAME AND TITLE |
| 1/06/2023 | 1/06/2023 | |
| DATE | DATE | DATE |

**AIA Document G701™ – 2017.** Copyright © 1979, 1987, 2000 , 2001 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 11:24:29 CT on 01/09/2023 under Order No.3104237651 which expires on 11/27/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
**User Notes:** (3B9ADA43)

**SUBJECT**: Consideration and Approval of Job Order Contracting (JOC) Various Projects
a. Award Contract for the Farmers Parking Lot

**PRESENTER**: Ricardo Rivera, Assistant Superintendent for Operations

## BACKGROUND INFORMATION

The Mission CISD CTE program is establishing a citrus horticulture laboratory program at the 18 acres of citrus grove, immediate plans are to demo an area of groves to bring in portable building classrooms. Utilities including streets, water, fire protection, drainage, electrical, and sewer need to be engineered.

A civil engineer is recommended to be the prime design engineer for this project.

Administration will use competitive sealed proposals (CSP's) as the procurement method as approved by the Board of Trustees in the February 2021 Board of Trustees meeting. This method was approved as the primary default method for projects.

At the Regular Board of Trustees, Meeting held on September 8, 2021, the Board approved the project, and proposed budget, and utilized the on-call professional services. Administration approved the on-call professional services agreement for the project assessment. Javier Hinojosa Civil Engineering's estimated project cost is $536,101.00.

Administration will use the on-call professional services agreement for project administration. It will be the responsibility of the design/engineer professional to provide an estimated project budget. When provided, Administration will advise the Board of Trustees as an informational update.

However, at the November 10, 2021, Board of Trustees meeting, the Board approved Job Order Contracting (JOC) and this method may be used for this smaller project.

Portable classrooms and restroom facilities have already been set up at the property. Water lines and a water meter have already been installed at our property. The power company has just recently connected electrical power to the property. Maintenance will soon make the final connections to the portable buildings. The City of Mission is continuing with a drainage/sewer line project to provide those utilities to the property. At this time we have no definite timeline for completion.

## ADMINISTRATIVE CONSIDERATIONS

Consideration and Approval of Job Order Contracting (JOC) Various Projects
a. Award Contract for the Farmers Parking Lot

| Project | Vendor Name | Cost |
|---|---|---|
| FARMERS Parking Lot | 8/A Builders LLC | $64,242.15 |

## FUNDING SOURCE

Local Fund

| | |
|---|---|
| Est. Project Budget: | $536,101.00 |
| Project Contingency 20%: | $107,220.20 |
| Est. Professional Services 12%: | $ 64,332.12 |
| Est. Total Project Cost: | $707,653.32 |

**RECOMMENDATION**

This agenda item was presented at the Board of Trustees Workshop on Wednesday, January 18, 2023.

Consideration and Approval of Job Order Contracting (JOC) Various Projects

b. Award Contract for the Farmers Parking Lot

**EXHIBIT:**

Quote Tabulation Sheet

**CONTACT PERSONS**

Ricardo Rivera, Assistant Superintendent for Operations
Adrian Hernandez, Coordinator for Project & Energy Management
Adan Rivera, Assistant Coordinator for Maintenance

**MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT**
**QUOTE TABULATION FORM**

**DATE:** 12/6/2022 **REQ NO.**

**DEPARTMENT/CAMPUS:** Maintenance/Farmers Project

| **VENDOR NAME:** | | 8A Builders LLC | | | | | Rio United Builders | | | | | Basic IDIQ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Contact Name:** | | | **Phone #** | | **Contact Name:** | | | **Phone #** | | **Contact Name:** | | | **Phone #** | |
| | | Arnold Ochoa | | | 956-627-1327 | | Dago Perez | | | 956-222-6624 | | Kevin Crowley | | | 512-960-9486 | |
| **Qty** | **Detailed Desc. - color, size, etc.** | **Page No.** | **Quoted Price** | **Sub-total** | **Disc. %** | **Total** | **Page No.** | **Quoted Price** | **Sub-total** | **Disc. %** | **Total** | **Page No.** | **Quoted Price** | **Sub-total** | **Disc. %** | **Total** |
| 1 | Parking lot area & entrance, per plan | | 61,183.00 | 61,183.00 | | $61,183.00 | | 73,000.00 | 73,000.00 | | 73,000.00 | | 117,595.12 | 117,595.12 | | 117,595.12 |
| 1 | Payment & performance Bond | | 3,059.15 | 3,059.15 | | 3,059.15 | | 1,900.00 | 1,900.00 | | 1,900.00 | | 2,939.88 | 2,939.88 | | 2,939.88 |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| **GRAND TOTAL** | | | | | | 64,242.15 | | | | | 74,900.00 | | | | | 120,535.00 |

**If not using lowest vendor, please explain why:**

Principal or Administrator Signature: _____ Date: _____

Purchasing Department Signature (20K<): _____ Date: _____

**SUBJECT:** Recommendation and Approval of Temporary ESSER Funded Positions: ESSER Learning Loss Academic Tutors

**PRESENTER:** Lorena Garcia, Deputy Superintendent for Support Services

## BACKGROUND INFORMATION

To address evidence of student learning loss attributed to a variety of factors including COVID-19, previous school closure, virtual learning, and loss of instruction, students would benefit from intentional, small group instruction during the instructional day. To address the need, the district would like to propose temporary tutorial positions at each campus that would specifically address learning loss and closing the instructional gaps. The tutors would work with campus administration and teachers to address and target instructional needs by student. Due to the high need, the recommended rate of pay is as follows:

| Daily Rate – 8 hour day | |
|---|---|
| Certified | $200 |
| Degreed/Non-Certified | $135 |
| 48 hours or greater | $110 |

## ADMINISTRATIVE CONSIDERATIONS

The administration is recommending consideration and possible approval of the above referenced positions and Pay Rate

## RECOMMENDATION:

That the Board of Trustees discuss, consider and approve the Temporary ESSER Funded Positions: ESSER Learning Loss Academic Tutors

## FUNDING SOURCE / AMOUNT

ESSER III

## CONTACT PERSON(S)

Lorena Garcia, Deputy Superintendent for Support Services
Sharon Roberts, Deputy Superintendent for Curriculum & Instruction

# Office of Human Resources

# JOB DESCRIPTION

| | | | |
|---|---|---|---|
| **Job Title:** | Temporary Position - ESSER Learning Loss Academic Tutor | **Wage/Hour Status:** | Exempt |
| **Reports to:** | Principal | **Pay Grade:** | Temporary Learning Loss Tutor Pay (See below) |
| **Dept./School:** | Campus Assigned | **Length of Work Year:** | September - May |
| **Funding:** | 282-11-6112-0LL-XXX-11-0-00-2022 | **Date Revised:** | 1/17/2023 |

**PRIMARY PURPOSE:**
The Temporary Position of ESSER Learning Loss Academic Tutor will assist district campuses by providing academic support to students who have significant learning loss due to the absence of in-person instruction during school closure and/or learning gaps due to COVID-19. Duration of temporary position will be determined by the district and based upon the availability of funding.

**QUALIFICATIONS:**
**Education/Certification:**

1. Certified Teacher (specialized in content area); or
2. Degree/Not Certified; or
3. 48 College Hours or greater

**MAJOR RESPONSIBILITIES AND DUTIES:**

1. Provide well-structured, carefully planned tutoring sessions.
2. Cultivate positive, caring relationships among students and staff.
3. Motivate learning.
4. Maintain weekly communication with teachers on student progress.
5. Serve as a role model/mentor.
6. Perform all duties in a safe manner to avoid injury to oneself and/or others.
7. Perform other related duties as assigned.

RATE OF PAY: 8 hour day

| | |
|---|---|
| Certified | $200.00 |
| Degree/Not Certified | $135.00 |
| 48 hours are greater | $110.00 |

Time:
Monday - Friday
8:00 am - 4:00 pm (Flexible dependent on instructional day of campus)
Maximum of 40 hours per week
September - May (as applicable)

**SUPERVISORY RESPONSIBILITIES:**
None

**WORKING CONDITIONS:**
Moderate standing, stooping, bending, and lifting

The foregoing statements describe the general purpose and responsibilities assigned to this job and are not an exhaustive list of all responsibilities and duties that may be assigned or skills that may be required. I acknowledge I received a copy of this job description.

Employee's Signature: Date

Supervisor's Signature: Date

The Mission Consolidated Independent School District does not discriminate against any employee or applicant for employment because of race, color, gender, age, national origin, disability, military status, or on any other basis prohibited by law.

**SUBJECT**: Award Contract for Professional Auctioneer Services #109-23-0

**PRESENTER**: Joel Garcia, Assistant Superintendent for Finance JG

## BACKGROUND INFORMATION

This contract intends to provide a method to procure Professional Auctioneer Services to meet the District's needs.

## ADMINISTRATIVE CONSIDERATIONS

The District solicited Requests for Proposals in compliance with TEC Sec 44.031(a), requiring an approved procurement method for expenditures of similar categories valued at an annual aggregate of $50,000 or greater.

A summary of the response review and evaluation process is as follows:

1. Number of responses received: 3
2. Number of vendors awarded: 3

## FUNDING SOURCE AND AMOUNT

Respective campus and departmental budgets

Estimated $50,000

## RECOMMENDATION

Administration recommends awarding the contract to all vendors listed on the tabulation form with no specific ranking.

## CONTACT PERSON(S)

Joel Garcia, Assistant Superintendent for Finance
Ana Vely Uresti-Munoz, Coordinator for Fixed Assets, Warehouse, Textbooks, and Records
Anabel Garza, Coordinator for Purchasing

| | |
|---|---|
| FY2023 Term Contract: | Professional Auctioneer Services #109-23-0 |
| | |
| Awarded To: | 1. AMT Auction Marketing<br>2. Galindo Auctions, LLC<br>3. Liquidity Services Operations LLC (GovDeals) |
| | |
| Term: | One Year/Two-year (one-year terms) option to renew |
| | |
| Term Period : | January 2023 – December 2023 |

Mission Consolidated Independent School District
Tabulation Form
Professional Auctioneer Services 109-23-0

| | VENDOR NAME: | AMT Auction Marketing | | Galindo Auctions, LLC | | Liquidity Services Operations LLC (GovDeals) | |
|---|---|---|---|---|---|---|---|
| | | Contact Name: | Felix Barreras | Contact Name: | Ismael Galindo | Contact Name: | Heidi Feiden |
| | | Phone # | 210-376-9267 | Phone # | 956-609-9109 | Phone # | 903-752-4951 |
| | | Email | fmbarreras@yahoo.com | Email | galindoauctions@gmail.com | Email | hfeiden@govdeals.com |
| Qty | Detailed Desc | Note | Commission | Note | Commission | Note | Commission |
| 1 | Fee to Mission CISD | | 3.50% | | 9.75% | | 5.00% |
| 1 | Buyers Premium | | 15.00% | | 13.50% | | 12.50% |
| 1 | Transportation Fee | | | | lowest price from 3 towing companies | | towing fees will be charged to the winning bidders at cost |
| 1 | Advertising Fee | | | | $100 taken from Auction Proceeds | | |
| | | | | | | | |
| | | | | | | | |
| | Total | | | | | | |

| Note: | |
|---|---|
| | Award all vendors equally in rank |
| | |
| | |

**SUBJECT**: Renewal Contract for Emergent and Non-Emergent Medical Transportation Services #420-23-0

**PRESENTER**: Joel Garcia, Assistant Superintendent for Finance JG

## BACKGROUND INFORMATION

Under the current medical plans offered by the District to its employees, ground and air ambulance are not covered at 100%. Ground and air ambulances are covered only for medical emergencies in the following manner:

| | |
|---|---|
| High Deductible Plan | 70% after deductible ($1,750) is met |
| Base Plan | 80% after deductible ($1,500) is met |
| High Plan | 80% after deductible ($500) is met |

Ground and air ambulance services are not covered for non-emergencies. If the District employee chooses to purchase this insurance product, the insurance would cover the costs not covered by the District's current medical plans.

To reduce the out-of-pocket expenses for our employees with in and out-of-network emergent and non-emergent medical transportation services, employees will be offered an option to cover these out-of-pocket expenses.

MASA Global transportation services include:

- Emergent Air Transportation
- Emergent Group Transportation
- Non-Emergent Inter Facility Transportation
- Repatriation and Recuperation

The pricing for MASA Global services is listed below on a monthly and annual basis. MASA Global services can be elected by Mission CISD employees voluntarily without additional expenses to the District.

**Emergent Plus:**

| | |
|---|---|
| $14 per month | $168 per year |

## ADMINISTRATIVE CONSIDERATIONS

On January 20, 2021, the Board of Trustees awarded Bid No. 420-21-0, for Emergent and Non-Emergent Medical Transportation for one year, with the option to renew for two additional one-year terms. This is the last renewal option.

## FUNDING SOURCE AND AMOUNT

Not applicable. This is not a District expense but rather an expense to the employee's voluntary participation.

## RECOMMENDATION

Administration recommends renewing the contract with MASA Global.

## CONTACT PERSON(S)

Joel Garcia, Assistant Superintendent for Finance
Sylvia Cruz, Director of Payroll, Employee Benefits & Risk Management
Anabel Garza, Coordinator for Purchasing

| | |
|---|---|
| FY2023 Term Contract: | Emergent and Non-Emergent Medical Transportation Services #420-23-0 |
| | |
| Awarded To: | 1. MASA Global |
| | |
| Term: | One Year |
| | |
| Term Period : | March 2023 – February 2024 |

MASA Medical Transport Solutions®

**$14/MONTH**

## DID YOU KNOW?

# 25 MILLION PEOPLE

**are sent to the emergency room through ground or air ambulance every year*.**

**Insurance companies may not cover all air and ground ambulance expenses which can result in max in-network out-of-pocket** costs of:**

**$8,700 Individual**
**$17,400 Family**

**Ground ambulance out-of-network transportation costs may be even higher than in-network since the No Surprises Act does not apply to ground ambulance at this time.**



# EMERGENT PLUS MEMBERSHIP BENEFITS

A MASA MTS Membership provides the ultimate peace of mind at an affordable rate for emergency ground and air transportation assistance expenses within the continental United States, Alaska, Hawaii, and while traveling in Canada, regardless of whether the provider is in or out of your group healthcare benefits network. After the group health plan pays its portion, MASA works with providers to make certain our Members have no out-of-pocket expenses~ for emergency ambulance transportation assistance and other related services.

### Emergency Air Ambulance Coverage[1]

MASA MTS covers out-of-pocket expenses associated with emergency air transportation to a medical facility for serious medical emergencies deemed medically necessary for you or your dependent family member.

### Emergency Ground Ambulance Coverage[1]

MASA MTS covers out-of-pocket expenses associated with emergency ground transportation to a medical facility for serious medical emergencies deemed medically necessary for you or your dependent family member.

### Hospital to Hospital Ambulance Coverage[1]

MASA MTS covers out-of-pocket expenses that you or a dependent family member may incur for hospital transfers, due to a serious emergency, to the nearest and most appropriate medical facility when the current medical facility cannot provide the required level of specialized care by air ambulance to include medically equipped helicopter or fixed-wing aircraft.

### Repatriation to Hospital Near Home Coverage[1]

MASA MTS provides services and covers out-of-pocket expenses for the coordination of a Member's non-emergency transportation by a medically equipped, air or ground ambulance in the event of hospitalization more than one hundred (100) miles from the Member's home if the treating physician and MASA MTS' Medical Director says it's medically appropriate and possible to transfer the Member to a hospital nearer to home for continued care and recuperation.

## Contact Your MASA MTS Representative to learn more about membership plan options.


**Brice Calahan**
956.252.6818
BCalahan@masamts.com

**Jaran Floyd**
830.377.8637
JFloyd@masamts.com


146

The information provided in this product information sheet is for informational purposes only. The benefits listed and the descriptions thereof do not represent the full terms and conditions applicable for usage and may only be offered in some memberships. Premiums and benefits vary depending on the benefits selected. Commercial air and Worldwide coverage are not available in all territories. For a complete list of benefits, premiums, and full terms, conditions, and restrictions, please refer to the applicable member services agreement for your territory. MASA MTS products and services are not available in AK, NY, WA, ND, and NJ. MASA MTS utilizes third-party transportation service providers for all transportation services. MASA Global, MASA MTS and MASA TRS are registered service marks of MASA Holdings, Inc., a Delaware corporation. Void where prohibited by law.

~If a member has a high deductible health plan that is compatible with a health savings account, benefits will become available under the MASA membership for expenses incurred for medical care (as defined under Internal Revenue Code ("IRC") section 213 (d)) once a member satisfies the applicable statutory minimum deductible under IRC section 223(c) for high-deductible health plan coverage that is compatible with a health savings account.

COVERAGE TERRITORIES:

1. All coverage provided by this membership is limited to the continental United States, Alaska, Hawaii, and Canada, and must originate and conclude therein.

SOURCES:
**ACEP NOW 2014*
*** Patient Protection and Affordable Care Act; HHS Notice of Benefit and Payment Parameters for 2022 and Pharmacy Benefit Manager Standards. May 5, 2021.*

MASA Medical Transport Solutions®

1250 S. Pine Island Rd., Suite 500,
Plantation, FL 33324

800-643-9023 I www.masamts.com

MASA Medical Transport Solutions®

**Contact:** Jaran Floyd or Brice Calahan

@ bcalahan@masamts. ☎ 830-377-8637

# WOULD YOUR **GROUP BENEFITS** COVER THIS?

You can protect you and your family from unexpected ambulance transportation out-of-pocket costs.**



## Modern Health Insurance is Leaving You Exposed

Most people assume that their health insurance policy will cover them for ambulance rides and other emergency transportation. Unfortunately, this is not always the case. During the last ten years, gaps have opened in most insurance plans, which can leave you and your family exposed to unexpected out of pocket expenses for ground and air ambulance, **particularly when emergency ground ambulance transportation is involved.**

**62%** think employee benefits are more important than ever due to pandemic *MetLife, 2021*

**2 out of 3** Americans worry about impact of unexpected high-cost medical bills *Kaiser Family Foundation, 2018*

**72%** of employees say safety and protection are more important than ever before *MetLife, 2021*

## An Industry Pioneer in Protection

As the medical transport solutions industry pioneer for almost 50 years, MASA MTS works hand-in-hand with the benefits health plan administrators and transport companies to ensure you and your family have **no out-of-pocket costs** no matter which provider completes the ambulance transport** within the continental United States, Alaska, Hawaii, and while traveling in Canada based on benefi t coverage area.

## MASA MTS - Now More Than Ever

You may have heard of "The No Surprises Act" and believe you'll no longer need to bridge the potential gap in your Group Benefits plan.

Before mistakenly giving into a false sense of security, it's important to note that "The No Surprises Act" **does NOT include ground ambulance services**.

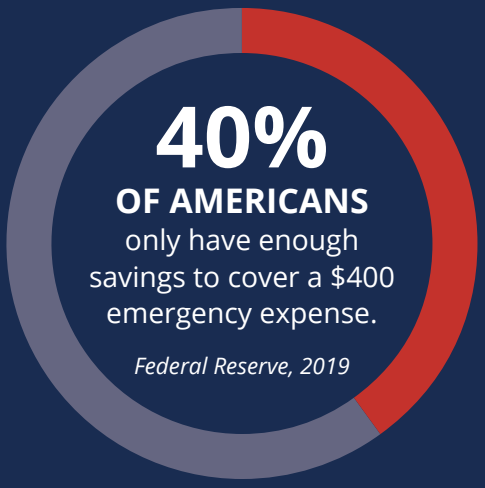
Unfortunately, ground ambulance services are among the most common sources of out-of-network bills and can cost consumers thousands of dollars. According to Consumer Reports, **79% of ground ambulance providers are out-of-network***, which means two things; 1) their charges do **NOT** count toward the MAX out-of-pocket, and 2) this most likely could result in out-of-pocket costs.

**Contact your Group Benefits Manager** today to learn how MASA MTS can protect you and your family from out-of-pocket costs** associated with ground and air ambulance transportation.

## WHY MASA MTS

**Unexpected medical bills rank as the #1 concern for Americans**

*KFF - Kaiser Family Foundation, 2020*




## WHY NOW

1. Nearly 4 in 10 Americans would borrow money to cover a $1,000 Emergency.
   *Bankrate, 2020*
2. Over 200 Million medical claims are denied every year.
   *AARP, 2009*
3. Medical bills are the #1 cause of bankruptcy in America.
   *Metlife, 2021*

The data provided here is for informational purposes only. Any benefits listed and the descriptions thereof do not represent the full terms and conditions applicable for usage and may only be offered in some memberships. Premiums and benefits vary depending on the benefits selected. Commercial air and Worldwide coverage are not available in all territories. For a complete list of benefits, premiums, and full terms, conditions, and restrictions, please refer to the applicable member services agreement for your territory. MASA MTS products and services are not available in AK, NY, WA, ND, and NJ. MASA MTS utilizes third-party transportation service providers for all transportation services. MASA Global, MASA MTS and MASA TRS are registered service marks of MASA Holdings, Inc., a Delaware corporation.Void where prohibited by law.

**If a member has a high deductible health plan that is compatible with a health savings account, benefits will become available under the MASA membership for expenses incurred for medical care (as defined under Internal Revenue Code ("IRC") section 213 (d)) once a member satisfies the applicable statutory minimum deductible under IRC section 223(c) for high-deductible health plan coverage that is compatible with a health savings account.

SOURCES:

* Your Ambulance Ride Could Still Leave You With a Surprise Medical Bill, ***Consumer Reports, 2021***

MASA Medical® Transport Solutions

1250 S. Pine Island Rd., Suite 500,
Plantation, FL 33324

800-643-9023 I www.masamts.com

**SUBJECT**: Approval of Donations

**PRESENTER**: Joel Garcia, Assistant Superintendent for Finance JG

## BACKGROUND INFORMATION

In accordance with Board Policy CDC (Legal), all bequest of property for the benefit of the public schools shall, when not otherwise directed by the grantor, vest the property in the Board. Funds or other property donated, or the income therefrom, may be expended:

1. For any purpose designated by the donor that is in keeping with the lawful purposes of the schools that are to benefit from the donation; or
2. For any legal purpose if the donor designated no specific purpose.

The district receives donations from various sources throughout the school year. The majority of donations are given to the student activity funds to be used for student travel and awards. Some donations are in cash and some are non-cash, such as equipment, food, and services.

## ADMINISTRATION CONSIDERATION

For the period reported, total donations were $2,094.74. The largest cash donation received was $1,894.74 and the largest non-cash donation received was $100. These donations benefit our students.

## FUNDING SOURCE AND AMOUNT

N/A

## RECOMMENDATION:

Approval of donations.

## CONTACT PERSON (S)

Joel Garcia, Assistant Superintendent for Finance
Dora Garcia, Director for Budget and Finance
Alyssa Gonzales, Accountant

Mission Consolidated Independent School District
Donations
December 2022

| Date | Campus / Scholarship | Cash | Non-Cash | Donor | Purpose |
|---|---|---|---|---|---|
| 12/13/22 | Alton Memorial Jr. High | 100.00 | | Charities Aid Foundation America | $100 cash to support programs at the school |
| 12/14/22 | Cantu Elementary | 1,894.74 | | Canto PTO (Rocio Salinas) | 50% was granted for staff & 50% for student |
| 11/14/22 | Veterans Memorial High School (Special Ed) | | 100.00 | Alberto Vela | Gift card to be purchased for food/supplies for holiday celebrations |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | Total donations | $ 1,994.74 | $ 100.00 | | |

# MISSION CISD
# CASH and INKIND/NONCASH DONATION FORM

Cantu Elementary
CAMPUS NAME

12/12/2022
Date

Cantu PTO
NAME OF DONOR

920 W Main Ave
Address

Alton Tx 78573
City, State, Zip

956-323-7400
Telephone Number

$1,894.74
DONATION AMOUNT

[X] Check [ ] Cash [ ] Inkind/Noncash donation

461-00-5749-000-108-00-0-00
461-00-5749-001-108-00-0-00
Revenue Account Number

58600040
Check #

**Description of Noncash donation-(Include an estimated value).**

**List below any restrictions for this donation: (Attach letter from donor if one is provided)**

**No restrictions. Except that the money will be divided between Student Activity Account (50%) and Staff Account (50%)**

PRINCIPAL'S SIGNATURE

12-15-22
Date

**Instructions:**

**This form is to be used whenever a campus receives a donation. Send completed form to the Chief Financial Officer. The account number should be included and any restrictions stated by the donor. If funds are restricted, call the Business Office for account number. Some grants or donations will be classified as special revenues and require a new grant budget to be set up.**

# MISSION CISD
# CASH and INKIND/NONCASH DONATION FORM

VMHS — Laura Duran, Sepcial Ed department
CAMPUS NAME

11/14/22
Date

Alberto Vela
NAME OF DONOR

1302 Claborne St. Mission, TX 78572
Address

Mission, TX 78572
City, State, Zip

956-249-2807
Telephone Number

100.00
DONATION AMOUNT

| | | gift card |
|---|---|---|
| Check | Cash | Inkind/Noncash donation |

Revenue Account Number

Check #

**Description of Noncash donation-(Include an estimated value).**

A giftcard from Wal-Mart with a credit for 100.00 dollars to be used for the purchase of food/ supplies for holiday celebrations.

**List below any restrictions for this donation: (Attach letter from donor if one is provided)**

There are no restrictions.

PRINCIPAL'S SIGNATURE

11/16/22
Date

**Instructions:**

**MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT**
ACTIVITY FUND RECEIPT

No:500043

CAMPUS: AMJH

12/13/2022
Date

Received from: Charities Aid Foundation America CyberGrants L.
$ Amount: one hunared dollars Dollars
In payment of: Donation

Cash $ ~~0~~
Checks $ 100.00
Total $ ~~0~~ 100.00

By PMB

154

*For vendor refunds: Code deposit to the expense account from the corresponding PO: Do NOT code to revenue*

| Student Group | $ Amount | Student Group | $ Amount |
|---|---|---|---|
| **461-00-57XX-XXX-XXX** | | **865-00-2191-XXX-** | |
| 5744. Donation | | .058 Drill Team | |
| 5744.002 Donation for Charity | 100.00 | .06A Team 6-1 | |
| 5749.000 Misc. Revenue | | .06B Team 6-2 | |
| 5749.001 Staff Misc Revenue | | .06C Team 6-3 | |
| 5749.031 Lost Textbooks | | .07A Team 7-1 | |
| 5749.036 Lost Library Books | | .07B Team 7-2 | |
| 5749.037 Library Fines | | .07C Team 7-3 | |
| 5755.000 Student Sales | | .08A Team 8-1 | |
| 5755.001 Staff Sales | | .08B Team 8.2 | |
| 5755.037 Library Sales | | .08C Team 8-3 | |
| 5755.054 Publications | | .0GU Gear Up | |
| 5749.068 UIL Fees | | .0RB Robotics | |
| 5755.068 UIL Sales | | | |
| **865-00-2191-XXX-XXX-XXXXX** | | | |
| .005 Special Ed. | | | |
| .006 Student Council | | | |
| .013 Nat'l Honor Society | | | |
| .022 Girl's Athletics | | | |
| .027 Cheerleaders | | | |
| .033 Criminal Justice | | | |
| .034 Orchestra | | | |
| .039 Industrial Technology | | | |
| .048 Boy's Athletics | | 2181.000 Taxes due from Sales | |
| .051 Band | | | |
| .052 Choir | | | |
| .055 Math | | | |
| .057 Drama | | | |

Supporting Documentation:
Receipt #s _____ thru _____ Depositor's Signature Check by mail Date _____

White: Depositor Yellow: Business Office Pink : Book

Donation

CAF AMERICA

Charities Aid Foundation America
C/O CyberGrants LLC
300 Brickstone Square, Suite 601
Andover, MA 01810

September 07, 2022

>003905 4432815 0001 092574 10Z
ALTON MEMORIAL J H
1201 BRYCE DR
MISSION TX 78572

CHECK DATE: 09/07/2022
CHECK NUMBER: 0001270431
CHECK AMOUNT: $100.00

155

PAGE: 1 OF 1

The attached check represents funds being disbursed by CyberGrants, LLC on behalf of Charities Aid Foundation of America (CAF America). This donation was recommended by our client - The Wonderful Company - in the amount of $100.00 to support one or more of your programs. To view the details of this donation - including any information released by the participating donor(s) - please sign into the following web portal:

www.cybergrants.com/npo/3834

If you are a first time visitor to the portal, please utilize this unique Access Code to create credentials and access the site:

LOSMKKEIWGHSOZCDKHUS

If you have any difficulty accessing the site or questions regarding this payment, please use the "Need Support" link that is located on the web portal. Make sure you reference the check number of this payment in your correspondence.

CyberGrants LLC will distribute electronic donation receipts to participating donors as appropriate.

Thank you,
The CAF America & CyberGrants Team
Client ID: 3834
Check Number: 1270431

**CyberGrants is becoming Bonterra™ - visit www.bonterratech.com for more information**

303R6 (08/16)

CAF AMERICA

Charities Aid Foundation America
C/O CyberGrants LLC
300 Brickstone Square, Suite 601
Andover, MA 01810

0001270431
September 07, 2022

55 - 277 / 312

VOID AFTER 180 DAYS

**********$100.00***

Pay To The Order Of: ALTON MEMORIAL J H
1201 BRYCE DR
MISSION, TX 78572

Amount: ONE HUNDRED DOLLARS AND 00/100

Authorized Signature

Authorized Signature

PNC Bank, N.A. 060

DOCUMENT CONTAINS COLORED BACKGROUND ON WHITE PAPER, "VOID" FEATURE, SIMULATED WATERMARK (REVERSE SIDE,) MICRO-PRINT BORDER.

⑈0001270431⑈ ⑆031202770⑆ 80263770561/25/2023 Regular Board Meeting

**Mission Consolidated Independent School District**
1201 Bryce Drive● Mission, Texas 78572
● Telephone (956) 323-5505 ● Fax (956) 323-5634
● Website: www.mcisd.net

# *Board of Trustees Minutes*

The Board of Trustees of the Mission Consolidated Independent School District held a **Regular Meeting** on **Wednesday, December 7, 2022, at 6:30 PM** in the **Mission CISD Annex, 925 E. Business HWY. 83, Mission, Tx 78572**.

## I. Call Meeting to Order and Establish Quorum

President Veronica R. Mendoza called the meeting to order at 6:34 p.m. The meeting was properly posted; a quorum was present. Board Members present besides Veronica R. Mendoza were Petra B. Ramirez, Iris Iglesias, Juan M. Gonzalez, Roy Vela, Minnie Rodgers, Jerry Zamora, and Dr. Carol G. Perez, Superintendent of Schools.

## II. Pledge of Allegiance and Moment of Silence

1. **U. S. Flag and Texas Flag –**
2. **Mission Vision Statement -**

Mrs. Veronica R. Mendoza led in the Pledge of Allegiance and she also asked for a Moment of Silence.

## III. Comments from the Public

None

## IV. Public Comment(s) on a Specific Agenda Item(s)

None

## V. Superintendent's Updates and Recognitions

Dr. Carol G. Perez, the Superintendent, informed the Board of the following: She stated we're starting with the Fine Arts Department, 44, High School Band Students have earned a spot in the 2022-2023 Texas Music Education Association Region Band. Congratulations to 20 Band Students from our Junior High Bands for also earning a chair in the TMEA Region Band as well. Congratulations to them.

Instructional Technology Hour of Code, Ms. Mejia's Class from Escobar-Rios kick off the Computer Science Education Week using Code Monkey on Learning.com.

Also, with Instructional Technology, we have Marcell Elementary Students learning to create and print 3D objects using MakerBot and ssketch3D Printer and just about six years ago, this was never seen in Elementary. This was only happening at the High School level. We're very excited to bring this technology and this type of Coding and Learning to our Elementary Students as well. Congratulations.

Last Saturday, we had a first-grade make-and-take for our teachers in English Language Arts and Reading and it was very well attended. Our Coordinators, Literacy Coaches were able to facilitate. This is what Teachers like that they're able to come and

receive Professional Development, immediately, and develop the activities. They cut them, laminate them and they're ready to go for Monday to start implementing. It was a huge success.

Fueling Brains also had professional development for the fourth-grade period this week. If you will recall Board during the Thanksgiving Holidays, their staff were getting ready with everything that they needed, so they would be able to present the information to our Staff. The Staff would be able to pinpoint and do their lesson planning to provide interventions for our children.

Social Studies Department, had its 6th Annual History Expo in the Elementary Division on December 1, 2022, at Kenneth White Jr. High. As you can see, the students not only develop their boards but also dress the part to be able to talk about either historical figures or historical events.

Our Bilingual/ESL and Foreign Languages TELPAS Student Camps were led by the Bilingual/ESL Team at K. White Jr. High. Students were developing Language Skills in Listening, Speaking, Reading, and Writing.

The Health and PE Department continues to work with Rhythmic Activities here we are featuring Mims Elementary. Coach Nathan Salazar does a great job of getting all of the students involved and motivated.

The Health and PE Department also, attended the Texas Association for Health, Physical Education, Recreation and Dance Convention, it was held on November 30th, through December 3rd, 2022 at Corpus Christi Texas, and the theme was Promoting Healthy Lifestyles. As you can see, we had a lot of our staff attending.

Another news, Congratulations to our Mission High School Divers for bringing back the gold in both the girls and boys divisions! Hannah Garcia and Edgar Hurtado came in first and Angel Pulido came in fourth place at the PSJA Invitational Competition at the UTRGV Natatorium. Congratulations to them.

Also, Congratulations to the Mission High School Boy Basketball Team. Mission Eagles Boys Basketball placed 3rd in the Platinum Bracket at the 11th Annual Hidalgo Pirate Basketball Tournament. They finished with a 5-1 record. Congratulations to them!

Congratulations to the Mission High School Boys Cross Country Runners, Josue Cisneros, and Dario Nava who were recently recognized on December 5th at the Rio Grande Valley Cross Country Coaches Association all Valley Award Banquet. Congratulation to them!

Congratulations to Mission High School Wrestlers, Rogelio Cerda, and Tanya Vasquez, who attended the McAllen Memorial Mustangs Invitational. Both Eagles brought home metals and came out in 2nd place.

Congratulations to the Patriots Boys Basketball Team. The team finished Gold Bracket Champions defeating Brownsville Porter 66-36 in the Brownsville Boys Basketball Tournament. Congratulations!

Also, congratulations to the VMHS Boys Cross Country runner Manny Flores who was honored on December 5, 2022, at the Rio Grande Valley Cross country Coaches Association All Valley Awards Banquet. Congratulations to Manny Flores.

Congratulations to the All-Star Nominees they will play at the RGVCA All-Star Football Game at Flores Stadium in Edinburg on January 7, 2023. We have from Veterans Memorial High School, Oscar Valdez, and Joe Padilla, and from Mission High School Adalberto Del Angel and Joshia Guzman. Congratulations!

## VI. Presentation(s) to the Board of Trustees

### 1. MVEC Check Presentation

Business Development Representative from Magic Valley Electric Mr. Jonathan Sloss, presented the 2022 Capital Project check in the amount of $6,316.61. He stated Magic Valley is a non-profit and so anytime we have an excess of funds past our operating expense, we reinvest it into our system and once we get more funds, we retire certain years and that's what we give back to our members and we do that based on a kilowatt-hour usage for that member themselves. For this year, the total was $6,316.61.

### 2. 2021-2022 Workers' Compensation Annual Review

Mr. Walker Trudeau on behalf of Edward Risk Management the program administrator of the Workers' Compensation Solutions program gave a presentation on the 2021-2022 Workers' Compensation Annual Review on Loss Prevention, Safely Delivering Trainings, Safe Employee Recognition Campaign, Slip-Resisting Shoe & Boot Distribution, Wellness Campaign Goals and Objectives, Wellness Support, StayALERT Mission, Resources to Promote, Responsive Reporting, 5 Year Loss History valued as of 8/31/2022, Detail of Large Losses, Claims by Cause Action, Cost Savings, and Preserving Mission CISD Dollars Commitment to Control Cost Working together to redirect dollars back to the classroom.

### 3. Internal Auditor's Quarterly Report for July 1, 2022 through September 30, 2022

Ms. Becky Magee, Internal Auditor presented the Internal Audit Quarterly Report for July 1, 2022 through September 30, 2022. Ms. Magee stated the District's Internal Audit Charter requires that a written report be provided to the Board on a quarterly basis. My written report, which has been included in the agenda for your review, covers the period, from July 1st, through September 30, 2022.

## VII. Discussion and Possible Action

### 1. Consideration and Approval of Final Completion, Less Betterment Fund Allowance, Less Liquidated Damages, and Final Payment for the Waitz Elementary School Sidewalks –Javier Hinojosa Engineering)

Ricardo Rivera, Assistant Superintendent for Operations stated the first Agenda Item I have is Consideration and Approval of Final Completion, Less Betterment Fund Allowance, Less Liquidated Damages, and Final Payment for the Waitz Elementary School Sidewalks Project. This Agenda Item was presented at the Board of Trustees Workshop on Wednesday, November 30, 2022. The Administration seeks Approval.

A motion was made by Ms. Minnie Rodgers for approval. Motion second by Mr. Jerry Zamora. The motion passed unanimously. Vote 7-0

### 2. Consideration and Approval of Change Order #1 for Re-wiring Electrical Work for the Roosevelt Auditorium Demolition Project - Chanin Engineering

Ricardo Rivera stated Consideration and Approval of Change Order #1 for Re-wiring Electrical Work for the Roosevelt Auditorium Demolition Project. This Agenda Item was presented at the Board of Trustees Workshop on Wednesday, November 30, 2022. The Administration seeks Approval.

A motion was made by Mr. Roy Vela for approval. Motion second by Mrs. Petra Ramirez. The motion passed unanimously. Vote 7-0

### 3. Consideration and Approval of Change Order #1 for Delay Days for the Child Nutrition Program (CNP) Freezer Installation at Elementary Campuses - Chanin Engineering

Mr. Ricardo Rivera stated Consideration and Approval of Change Order #1 for Delay Days for the Child Nutrition Program (CNP) Freezer Installation at Elementary Campuses. This Agenda Item was presented at the Board of Trustees Workshop on Wednesday, November 30, 2022. The Administration seeks Approval.

A motion was made by Mr. Juan Gonzalez for approval. Motion second by Mr. Jerry Zamora. The motion passed unanimously. Vote 7-0

### 4. Consideration and Approval of Schematic Design for the Remaining Security Vestibules Project - PBK Architects

Mr. Ricardo Rivera stated Consideration and Approval of the Schematic Design for the Remaining Security Vestibules Project. This Agenda Item was presented at the Board of Trustees Workshop on Wednesday, November 30, 2022. The Administration seeks Approval.

A motion was made by Mr. Roy Vela for approval. Motion second by Mr. Jerry Zamora. Motion passed unanimously. Vote 6-0, 1 abstained by Mrs. Iris Iglesias

## 5. Consideration and Approval of Substantial Completion for the Culinary Arts at Veterans Memorial High School - PBK Architects

Mr. Ricardo Rivera Consideration and Approval of Substantial Completion for the Culinary Arts at Veterans Memorial High School. This was a pending Item because as of this afternoon the City of Mission Inspectors were still on site and they did issue a green tag approving it as of approximately 45 minutes ago the City of Mission Fire Marshal was on site and they also did approve the project. The Administration is presenting the Consideration and Approval of Substantial Completion for the Culinary Arts at Veterans Memorial High School.

A motion was made by Mrs. Minnie Rodgers for approval. Motion second by Mr. Roy Vela. Motion passed unanimously.
Vote 6-0, 1 abstained by Mrs. Iris Iglesias

## 6. Approval of Amendment to Interlocal Agreement and Memorandum of Understanding with the City of Alton for Police Services

Mr. Joel Garcia, Assistant Superintendent for Finance stated the next Item is the Approval of Amendment to the Interlocal Agreement and Memorandum of Understanding with the City of Alton for Police Services. On June 8, 2022, the Mission CISD Board of Trustees approved the Interlocal Agreement with the City of Alton for Police Services for the 2022-2023 School Year. The original agreement was for two police officers at $95,099.65 or 62% of their total annual salary. On August 24, 2022, the Mission CISD Board of Trustees approved the Amendment Interlocal Agreement with the City of Alton for Police Services for the 2022-2023 School Year. The updated agreement was for four additional police officers. On October 12, the Mission CISD Board of Trustees approved the Memorandum of Understanding with the City of Alton for the COPS Hiring Program. The program would help the District with the cost of four Texas Certified Police officers. The original terms of the MOU stated that the COPS Hiring Program would pay 75% of the cost for four officers, and the District would pay 25%. On December 1, the City of Alton informed Mission CISD that they received approval for a waiver that would pay for the District's portion. Therefore, the COPS Hiring Program will pay 100% of the salary of four Texas Certified Police officers. The City of Alton is kindly requesting that Mission CISD pay 100% of the salary for the original two officers. The annual savings with the four officers is $309,179.00 per year and if we pay for the two police officers 100% the difference would be $59,490.00 overall the District will save approximately $249,689.00 annually or $749,068.08 over three years. The Administration recommends the approval of the Amendment to the Interlocal Agreement and Memorandum of Understanding with the City of Alton for Police Services.

A motion was made by Mr. Roy Vela for approval. Motion second by Mrs. Iris Iglesias. Motion passed unanimously.
Vote 7-0

## 7. Bids, Proposals and Purchases of $50,000 and Over

### a. Employer Direct Clinical Services

Mr. Joel Garcia stated The District currently has 2,200 covered employees and their covered dependents through our self-funded health insurance program. To provide additional benefits to our employees and increase our wellness program, the District wishes to contract with a primary care provider conveniently accessible within or near the City of Mission to provide quality preventive care and other related services. The services shall include but are not limited to routine office visits, immunizations, injections, minor office surgery, office labs, and radiology. The selected provider must be willing to enter into negotiations with the District for additional discounts to medical services to be provided to District insureds. Mission CISD plans to offer a reduced copay for office visits to the selected provider.

Ms. Valeria Ybarra from Carlisle Insurance presented and stated tonight we will review the responses from RSQ #427-32-0 for Direct Clinical Services. The purpose of a request for service qualifications is to determine the best fit for specific objectives. We did outline the objectives and RSQ. I just want to remind you guys of those six objectives that we outline so that we can keep that in mind whenever we're running through this presentation first and foremost, the first objective was to provide Mission Employees with Quality Health Care while maintaining (inaudible) Administration and cost-effectiveness utilize plain design incentives to increase cost-effective and productive medical plan utilization. Three ways to improve the overall population's health or Innovative wellness and clinical programs were to leverage the employee population and increase patient volume to create complete financial transparency and cost-effective medical billing for both the district and its employees. To provide employees with a better understanding of their current medical condition and provide continued clinical coaching, and counseling. Number six was to coordinate with the current plan administrator, network, EAP program, wellness program, disease management programs, pharmacy, benefits manager, and other appropriate vendors of Mission, CISD to improve employee health while

eliminating gaps in care. The purpose of this is just to make sure that employees have very convenient, access to care, close at a very affordable cost that is one of the main concerns I know that Sylvia Cruz expressed whenever you initially, went out to an RSQ back in 2019 and placed a direct contract with DL Stinson. I would also like to point out that the RSQ isn't necessarily issued to receive bids to imply a large financial impact. The purpose is to ensure the quality of care to complement your current goals at a reasonable cost. The RSQ was published on October 26th and November 2nd with a due date of November 10th Mission received two responses one was from the Physician that holds the current contract and another from Mission Doctor's Group. The Center for Primary Care and Wellness describes its business history as a wellness facility located in Mission Texas that has been providing the employees' District Direct Services since June 2019. Most of you are very well familiar with Dr. Stinson, he has been practicing medicine for 30 years, specializing in Family Medicine, along with Wellness Education. Dr. Stinson is also a co-owner of an Industrial Clinic where his injury prevention measures have made an impact on the overall health and employee/employer relationships. Mission Doctors Group described its business history as follows Mission Doctors group was founded in 1996 the group under the Texas Medical Practice Act generally referred to as Foundation Model. This gave Mission Regional Medical Center the ability to recruit Physicians into a direct employment model. Many new positions coming out of medical school were looking for employment and benefits rather than the prior independent practice physician model after Prime Healthcare Foundation's acquisition of Mission Regional Center. The focus of Mission Doctors Group has been to develop a multi-specialty practice with primary care providers as a key component of its practice. Before we get into the details, I would like to go ahead and kind of get to it and position my recommendation, which is to implement direct Clinical Services with (inaudible) respondents. After this presentation, I would like to ask for your approval, to move forward, with negotiations, with DL Stinson, which is also known as the Center for Primary Care and Wellness at Mission Doctors Group. I'm going to go ahead and jump into some of the details to review it with you, to explain to you why it's my recommendation. You'll see on the first page, the general clinical information illustration, there's quite a bit of information on here, but the things that I do want to point out here is that DL Stinson's information and Mission Doctors Group, complement each other. The number of locations that DL Stinson has is one. Whereas Mission Doctors Group has three, so that provide your employees with more access to care. Both are located in Mission the business hours you'll see that DL Stinson has quite a bit more availability, which does align with his ring of also acting as an urgent care. In an Urgent Care setting, they're going to be available during times when a general clinic would not be. Mission Doctors Group shows the availability, which is your general 8 to 5 Monday through Friday. This is in line with the clinic where you're going to get your general care. They're usually Monday through Friday. They did make it very clear in their response that they would be willing to open up additional hours if it was needed and they saw the need for it. DL Stinson has been in practice for 12 years, and Mission Doctors Group has been in practice for 26 years. So again, longevity for both of them is the quality of care that we're looking at, and that kind of proves it. Both of them have quite a bit of history in the community. If you look at the three-year medical utilization some of the most important pieces that you'll want to pay attention to or what is paid per service and they're both a line with each other within about five dollars. The average services per visit are about the same, so about one-and-a-half services per visit. Prior to 2019, I do want to point out that utilization for DL Stinson was also low, but this direct contracting initiative through plan design (inaudible) has been successful. This does prove the success of the plan design and lowering that copay, steering employees to lower cost services where you guys have the direct contract implemented with the district very close ties with the community and all of that comes together and that is the primary purpose of sending out an RSQ for these types of services. We'll go ahead and move forward with this general question I am not going to read to you line by line, you can read through those. If you've got questions at the end, I encourage you to ask me at the end, but there are a few things that I'd like to point out that I found to be extremely important whenever you're considering both direct contracts. Question number two, asks to provide a detailed explanation of all of the services being offered at the facilities, you'll see that DL Stinson provides Primary Care, Urgent Care, Wellness, and Radiology Services, and then if you look over at Mission Doctors Group, they are providing Primary Care, Chronic Condition Management, Cardiology Intervention, Orthopedic Management Surgery, Abstracts and Gynecology Services, and Pediatric Medicine. You'll see that there is quite a bit of an edition of services that they will gain by adding additional direct contracts and I think that this is very beneficial to employees. Question number three is if they're both willing to set a not-to-exceed office wait time facilities are willing to allow that. They both answered yes, to that question again. Again, these will complement each other Mission Doctors Group agreed to a 30-minute wait time, but if you look a little bit further down, the reason for this is that there are only allowing about six visits per day. So, they can allow for a little bit of a lesser weight time whereas DL Stinson has an unlimited slot availability for employees. Another thing that complemented one another was question number 14 your facility offers services for mental health, DL Stinson does and then the other one states that they do not. Those are some of the important factors that I found that your attention should be focused on whenever we're looking through this questionnaire, some of the differentiations between the two facilities. But again, it does show that they complement each other, and by allowing both direct contracts to be in force you are going to have a lot more access to care for your District Employees. Moving on, to the next page some of the important factors here is a clinical staff questionnaire. Again, I'm not going to read through everything, but for some of the most important things on this page, you're going to see that the Physicians with DL Stinson is one, and with Mission Doctors Group they have four Physicians. More Physicians for your employees are always a positive thing, especially in a direct

clinical contract. At the very bottom DL Stinson's provider, the average years of experience is 16 years. That is taken into consideration all of the staff that they have whereas Mission Doctors Groups simply provided the average years of experience for their Doctors only, so it did kind of (inaudible) the numbers but overall, they do have an 18-year average for positions so that is a positive. Moving down to the bottom of the provider questionnaire, which was continued. How many patients are your providers expected to see in an hour? Very important information because that does attain the quality of care. Three to four patients per hour is pretty much the general norm, and both of them are within that range, so it's pretty good numbers there. Moving down to the next page. What we're looking at here is a professional service utilization with primary care and a specialist indicator where Clinical Services specific to this RSQ was rendered in an office or outpatient setting. This accounts for about 8% of total claims spend for the year, which right now you're at about 13.9 million. If you look at the bottom right-hand column 1.22 (inaudible) million is about what you're spending on these services that we went out to RSQ for and we are looking to potentially have savings by implementing this direct contract. The office visit specialist visit. and Primary Care. All of those are going to be within an office setting or you're going to see some of the ultrasound CT scans and MRIs done within an outpatient setting. An outpatient setting usually costs a little bit more. With the implementation of Mission Doctors Group. I believe we can see some cost savings there, but we'll go ahead and move on to the next page. This is where the numbers get really small. I'm not going to spare you guys. I'm not going to run through all of these numbers because it gets really convoluted and we'll be here all night. But the primary basis of these pages is very detailed information that dives into claims information from the last three years categorized by medical claims filed, under the service category, Professional Services obtained in an office setting only with the primary care physician indicator. So, whenever I filter through all of the data and try to cut out all of the noise and make sure that what we're looking at is relative to the services that were received within this direct contract. Each page analyzes three different co-pays structures with different savings percentages, the district, or I will use this information to enter into negotiations with the providers upon your approval. The data is scaled down to remove services that are not included in the RSQ and then identified an estimated percentage of utilization for clinical-specific services which we've scaled down to about 36% usage out of that small 8%, so we're looking at a very tiny part of the claim. Keep this in mind when you're looking at these numbers again, I'm not going to review them line by line but the general basis of this information is to provide you with an overview to show the success of the objectives of this RSQ and I'm just going to remind you that is to enter into a contract with the vendor to provide employees with convenient, access to Health Care, at a lower cost to the employee and a cost-effective to the district. The district is currently in a contract with the Center for Primary Care and Wellness, which all of you are very well familiar with Dr. Stinson with an implied 9% discount deviation and a $10.00 copay for all services. To restate my recommendation, I do believe that it would be in the best interest of the district and its employees to enter into negotiations with both respondents to ensure adequate access to healthcare and to offer a larger variety of services. Please let me know if you have any questions.

Mrs. Iris Iglesias Board Secretary stated can I ask Mrs. Sylvia Cruz a question? It sounds like a pretty good deal here. It seems I love the recommendations, but are our employees satisfied with all this the (inaudible) record and everything else?

Mrs. Sylvia Cruz Director for Payroll, Employee Benefits & Risk Management responded Yes, our employees are accessing Dr. Stinson and a lot of them have built their relationships with Dr. Stinson. So, there's (inaudible) which is great. That means that they're actually seeking medical care and that was one of the objectives initially when we met the first time. As Valeria was saying the Administration also is recommending that the Board gives the authority to contract with the two vendors that submitted solicitations.

Dr. Carol G. Perez asked will the co-pays be similar

Mrs. Sylvia Cruz responded what we will do once the Board gives the Approval, we will sit with the hospital and Dr. Stinson and we're going to look at co-pays. Currently, just so you will know we have a high deductible base and a high plan more than 1,000 employees are at the high deductible and they're paying a $40.00 co-pay. So, it will be bringing it from $40.00 to $10.00.

Dr. Perez responded they will be paying a $10.00 co-pay with Dr. Stinson and with any other Doctor they will pay $40.00.

Mrs. Cruz responded yes, what we are going to do when we approach the Doctor we are going to recommend that they give us a $10.00 co-pay.

Dr. Perez responded and also because when people go to Dr. Stinson for $10.00, they get the doctor's visit, if he orders blood work, it's still the same $10.00. If he orders an x-ray, it's still the same $10.00. Is that correct? So, we need to make sure that we get something similar.

Mrs. Cruz responded we're going to get the same as Dr. Stinson and possibly more because of the Specialists we're going to be very assertive as far as doing what's best for the employee.

Mr. Roy Vela, Board Vice President asked I noticed that there are three locations, where are they located?

Mrs. Cruz responded they're all on the west side of Mission Hospital is called the Doctors Plaza West. The first floor will have the (inaudible) Clinic which has two doctors one if Family Practice and the other one is Obstetrics and then we have the Mammogram Center right in front and on the second floor is Orthopedics and right across it is going to be your Heart and Cardiovascular. There are a lot of Specialties. They also have Bariatric that we can look later into. They also have full Radiology, CAT Scan, MRI, Ultrasound, and X-rays. So, it's a win-win situation for our employees.

Mr. Roy Vela asked does that include the MRI

Mrs. Cruz, responded yes, they also have the Cat Saver that's what we also going to negotiate. I just want to let you know that once we entered into negotiations it's going to take some time because we have to get with Blue Cross Blue Shield to make sure that all that is aligned it might take a month or two, but we're going to get it done.

Mr. David Hansen responded madam president before you make the motion, I have a small bit of legal advice that I need to give you in closed session just regarding the procurement procedure for this particular item.

Item was taken into Executive Session to discuss.

### 8. Consider Sale of Real Property

Mr. Joel Garcia stated we will be taking this item into Executive Session to discuss.

## VIII. Recommendation(s)

**1. Approval of the Selection for:**

**a. Child Nutrition Program Coordinator for Operations**

Ms. Lorena Garcia, Deputy Superintendent for Support Services stated on recommendations we have the approval of the selection for the Child Nutrition Program Coordinator for Operations and we do have the recommendation for Executive Session to review.

## IX. Items to Consider: The Board will consider and may act on the following items under a CONSENT AGENDA. Any Trustee may request the removal of an item from the CONSENT AGENDA for individual consideration and action.

Dr. Perez stated on the Consent Agenda Items for Approval we have Agenda Items #1 through #4c. Dr. Perez asked do we have any items that need to be moved for discussion.

Motion made by Mr. Jerry Zamora for approval to Accept the Consent Agenda Items #1 through #4c. Motion second by Ms. Minnie Rodgers. Motion passed unanimously. Vote 7-0

**1. Approval of Additional Fueling Brains Supplies for Additional Classrooms**

**2. Bids, Proposals and Purchases of $50,000 and Over**

- **a. District Smart Boards**
- **b. Special Education Evaluation Services**
- **c. Renewal of Athletic Equipment and Supplies**
- **d. Renewal of Arts and Crafts**
- **e. Renewal of Theater Equipment and Supplies**
- **f. Renewal of Professional Audio, Photo, Video Equipment, and Supplies**
- **g. Renewal of Awards, Trophies, Promotional and Apparel Items**
- **h. Renewal of School and Office Furniture**

**3. Donations**

**4. Approval of Minutes**

**a. November 2, 2022, Special Board of Trustees Meeting**
**b. November 9, 2022, Regular Board of Trustees Meeting**
**c. November 16, 2022, Special Board of Trustees Meeting**

## X. Executive Session

Dr. Carol G. Perez stated we do need to go into Executive Session because we do need to provide a report to the School Board regarding the Intruder Detection Audits for three of our Schools.

President Mendoza called the Board into Executive Session at 7:45 p.m. and back into Open Session at 8:44 p.m.

**1. Private Consultation with Board Attorney (Texas Gov't Code §551.071)**
**2. Deliberate the purchase, exchange, lease, or value of real property § 551.072 Deliberations about Real Property**
**3. Deliberate the Appointment, Employment, Evaluation, Reassignment, Duties, Discipline, or Dismissal of a Public Officer or Employee or to Hear a Complaint or Charge Against an Officer or Employee (Texas Gov't Code §551.074)**

## XI. Action, if Necessary, on Matters Discussed in Executive Session

**Item VIII. Discussion and Possible Action**

**1. Recommendation and Approval for the Selection for:**

**a. Child Nutrition Program Coordinator for Operations**

**Dr. Perez stated that Administration recommended Roberto Meave for the position of Child Nutrition Program Coordinator for Operations. Motion made by Ms. Minnie Rodgers to approve. Motion second by Mr. Juan Gonzalez. Motion passed unanimously. Vote 7-0**

**Item VII. Discussion and Possible Action**

**7. Bids, Proposals and Purchases of $50,000 and Over**
**a. Employer Direct Clinical Services**

**Mr. Joel Garcia stated the Administration recommends Entering Into Negotiations for the Employer Direct Clinical Services based on qualifications and competence with the providers that we discussed earlier today.**

**Motion made by Mr. Juan Gonzalez to approve. Motion second by Mr. Roy Vela. Motion passed unanimously. Vote 7-0**

**8. Consider Sale of Real Property**
**Mr. Joel Garcia stated the Administration recommends Accepting the completed proposed submittal.**

**Motion made by Mrs. Petra Ramirez to approve. Motion second by Mrs. Iris Iglesias. Motion passed unanimously. Vote 7-0**

## XII. Board of Trustees Information Items

**1. Mission High School Chiller – Update**

Mr. Ricardo Rivera stated as was presented at last week's Board Workshop we had the Chillers at Mission High School go down and it was a breaker issue since then they're still working they have not gone down again and we did have DBR Engineering Mr. Hugo Avila go and look at the situation. We also had GE Representatives attend the meeting and also MEP Solutions who were the Engineers of Record for the original project. Mr. Avila and our staff and all the other gentlemen were there on Monday and they did provide a report. So, I will read the report instead of me trying to interpret what he's saying.

"Mr. Castaneda, Thank you for meeting with us today at Mission High School with the school electricians. A recap of the items that were discussed at the site is as follows. Present were representatives from MCISD, DBR, GE, and MEP Solutions which were the Engineer of Record. We learned from the District that the breaker that feeds panel MSD1 has held and not tripped during the last week. When the GE representative navigated through the breaker he did note that there had been issues with one of the electrical phases. It was this phase that was causing the breaker to trip. There might be one of many issues that might cause a surge in amperage on one of the phases. One might be an unbalanced load on panel MSD1. During the last renovation, this panel was minimally modified, as was confirmed by the Engineer of Record. So, if there are an unbalanced load further studies would be required such as electrical metering. Another item that can cause similar results is a loose connection on the wires between the main panel MSD1 and MSD2. These are the simplest items to rectify, but in order to do this the electrical panel will need to be de-energized so that electricians can tighten all wire connections. This task can be done over a weekend. The last item that was discussed was the recommissioning of the breaker settings as described in an electrical coordination study that was done during the renovation. The breaker can be programmed to trip on amperages that are lower than its rating. This function should have been completed during construction, but there is not enough information or evidence that this was done. This is why we recommend a recommission of the trip settings by General Electric. Moving forward we recommend the following to happen and the order. The District electricians can de-energize the main panel and tighten all wiring connections. This will happen this weekend 12/10/22 or 12/11/22. We also recommend the district contract with General Electric for properly setting the trip settings on the breaker. I have requested this from General Electric so that the District can review this. If these two functions do not clear the nuisance tripping then a detailed amperage/scan may reveal the possible unbalance load so that it might get corrected. The last resort if the tripping continues would be to replace the breaker as it may have internally failed. In talking with the GE representative, the breakers only have a one-year warranty after installation which I believe has already passed".

Mr. Rivera stated again, he's giving us different options and the one that we're going to do first tightens the wires the simplest and that's something our staff can do, but we would need to shut down the systems and we're coordinating that with the campus to ensure that there are no activities and we won't turn them off. Once we do that, we'll see what happens. And then we'll come back with another report.

## 2. Personnel Employments, Resignations, Transfers, and Compensation Change

Dr. Perez stated we will be discussing an Employment that we are bringing before the Board.

## 3. Recruitment Efforts and Options to Maintain Class Sizes for Pre-K-4th Grade

Dr. Perez stated during the Board Workshop we did talk about recruitment efforts and options to maintain class sizes, for pre-k through fourth grade, and even this week, we started working with some of the Strategies that we talked about last week as a matter of fact, in one of the campuses, they already had a class with, a waiver and then they received an additional student and the classroom now has twenty-six. We work with the Campus Principal and immediately mobilized before the end of the day because the parents purchased their home in that Community, and they wanted their children in that Community. In some instances, we have room for certain grade levels, and not for one. Then we mobilized and we work with the Campus Principal and so what we did, we placed a Paraprofessional in that classroom to assist the Classroom Teacher. In addition, the Teacher will receive a stipend. Also, we are working on a teaming approach because the other two dual language classrooms have 14 and 15 students in the classroom. We're working with the Campus Principal, is that we're going to do some Team Teaching because even in the Dual Language Classroom, the children do receive Language Arts in English and in Spanish, and certain subjects are also taught in English. While teachers are teaching English, in the Dual Language Program, and in the Bilingual Program then the 26 students plus the 14 and 15 can be regrouped to make the classes smaller. We're working on that strategy. However, when the other teachers are teaching in Spanish, which by fourth grade is much less Spanish, then the regular English classroom will have 26 students but with an Administrative Assistant with a Paraprofessional Instructional Aide because we want to make sure that students are receiving instruction and they're being monitored. We don't know that all of the students will stay because every day we see so many come and so many leave today, we had like seven withdrawals, it happens every day we do have a certain population that is trainset. However, we're working on maximizing our strategies to make sure that our teaching staff is not overburdened and the children still receive quality instruction and so we're taking advantage of the Dual Language Classrooms were still offering the

parents, some limited slots that will be offered to all of the children that are receiving English Instruction. Meanwhile, the information is disseminated to the parents. We will do some Team Teaching to reduce the number of students while they're teaching the core subjects, which are really Reading and Math. We will continue to be supportive.

Mrs. Betty Mendoza, Board President asked the parents have been notified.

Dr. Carol G. Perez responded yes, absolutely, and then they're also making phone calls to explain to the parents, the benefits. We're starting with our GT population because Dual Language is something that is being promoted everywhere, and the research shows GT as well. We're starting with the GT students, and then moving on to the students that we know can handle the second language but then again in fourth grade are only a couple of subjects and it would be to the children's level. We're working on lots of strategies to make sure that we keep the numbers as down as possible and not turn any child away.

4. **2023 – 2024 Budget Calendar**
5. **Financial Reports for:**
   a. **General Fund and Debt Service**
   b. **Self-Funded Health Insurance Fund**

Mr. Joel Garcia stated presented an update on the Self-Funded Health Insurance he stated the total Revenues for the month ending November 2022 is $6,837,241.00. The total expenses were $7,077,877.00. The 12 Month Trend can be compared this November to last November. You can see that the claims are a lot lower, last year at this time, it was about $1.5 million, and right now it was at $843,749.00 for the month of November and then on the Pharmacy Claim, compared to last year it did go up a little but overall, it's trending lower. The current status of the Net Position of the plan it's a little less than it was last month. It's a negative of -$240,636.00 the reason for that is we have received some Stop-Loss Reimbursements and some claims that are coming. I know in speaking with Ms. Sylvia she mentioned that we may be getting credit for a $129,000.00 next month reducing that deficit a little bit.

   c. **Tax Levy Adjustments**
   d. **Cash Disbursements**
6. **First Quarterly Investment Report for Fiscal Year 2022-2023**
7. **UTRGV Upward Bound Memorandum of Understanding**

## XIII. Important Dates to Remember

1. **December 22-30, 2022 thru January 2-4, 2023 Winter Break**
2. **Staff returns January 5, 2023 - Staff Development, and January 6, 2023 - Workday**
3. **Students return, Monday, January 9, 2023**
4. **January 18, 2023, Board of Trustees Workshop at 6:30 p.m.**
5. **January 25, 2023, Regular Board of Trustees Meeting at 6:30 p.m.**

## XIV. Adjournment

Motion made by Mrs. Petra Ramirez that the meeting is adjourned. Motion seconded by Mr. Roy Vela. Motion passed unanimously. Vote 7-0

President Mendoza adjourned the meeting at 8:46 p.m.

_____

Veronica “Betty” R. Mendoza, President
Mission CISD Board of Trustees

**ATTEST:**

_____

Iris Iglesias, Secretary
Mission CISD Board of Trustees

**Mission Consolidated Independent School District**
● 1201 Bryce Drive ● Mission, Texas 78572
● Telephone (956) 323-5505 ● Fax (956) 323-5634
● Website: www.mcisd.net

# *Board of Trustees Minutes*

The Board of Trustees of the Mission Consolidated Independent School District held a **Special Meeting** on **Monday, December 19, 2022, scheduled to begin at 6:30 PM** in the **Mission CISD Annex, 925 E. Business HWY. 83, Mission, Tx 78572**.

## I. Call Meeting to Order and Establish Quorum

President Veronica "Betty" R. Mendoza called the meeting to order at 6:35 p.m. The meeting was properly posted; a quorum was present. Board Members present besides Veronica "Betty" R. Mendoza were Juan M. Gonzalez, Roy Vela, Iris Iglesias, Minnie Rodgers, and Petra Ramirez. Jerry Zamora joined the meeting remotely.

## II. Pledge of Allegiance and Moment of Silence

**1. U. S. Flag and Texas Flag**

## III. Public Comment(s) on Specific Agenda Item(s)

**None**

## IV. Executive Session

President Mendoza called the Board into Executive Session at 6:37 p.m., President called the Board back into Open Session at 7:36 p.m.

1. **Deliberation Regarding the Duties of a Public Officer (Texas Gov't Code §551.074)**
2. **Private Consultation with Board Attorney if necessary (Texas Gov't Code §551.071)**

## V. Action, if Necessary, on Matters Discussed in Executive Session

## VI. Important Dates to Remember

**1. January 18, 2023, Board of Trustees Workshop**
**2. January 25, 2023, Regular Board of Trustees Meeting**

## VII. Adjournment

Motion made by Mr. Juan Gonzalez that the meeting is adjourned. Motion seconded by Mrs. Iris Iglesias. Motion passed. Vote 7-0.

Vice President, Mendoza adjourned the meeting at 7:36 p.m.

_____

Veronica “Betty” R. Mendoza, President
Mission CISD Board of Trustees

**ATTEST:**

_____

Iris Iglesias, Secretary
Mission CISD Board of Trustees

**SUBJECT**: Personnel Employments, Resignations, Transfers and Compensation Changes

**PRESENTER**: Dr. Carol G. Perez, Superintendent

## BACKGROUND INFORMATION

Professional employees and support staff members have been employed by the Mission Consolidated Independent School District. Employees requested and were granted transfers that affected their campus, position title and/or pay grade, or were reassigned, which affected their campus, position title and/or pay grade.

Letters of resignation and letters of retirement were received from Mission CISD employees.

Changes in compensation to employees after performance on the contract or duties for the job assignment have begun (subsequent to the December 7, 2022, report to the Board) are also included for staff members.

## FUNDING SOURCE:

See Attachments

## RECOMMENDATION:

No recommendation or action required. For Information Only.

## CONTACT PERSON(S):

Lorena Garcia, Deputy Superintendent for Support Services
Elisa Pacheco, Director for Human Resources

**SUBJECT:** Financial Report for November 2022

**PRESENTER**: Joel Garcia, Assistant Superintendent for Finance JG

## BACKGROUND INFORMATION

As per Board Policy CFA (LEGAL), The Board shall prepare an annual financial statement that shows the following for each fund subject to its authority during the fiscal year:

1. The total receipts of the fund, itemized by the source of revenue, including taxes, assessments, service charges, grants of state money, gifts, or other general sources from which funds are derived.

2. The total disbursements of the fund, itemized by the nature of the expenditure.

3. The balance in the fund at the close of the fiscal year.

Monthly financial reports are prepared throughout the year by Administration for information purposes only.

## ADMINISTRATIVE CONSIDERATIONS

The General Fund Financial reports compare the budgeted revenues and expenditures.

Actual revenues through November 2022 totaled $60,359,118 and actual expenditures totaled $55,690,065. The excess total revenues and other uses over expenditures is $4,669,053.

These numbers do not include outstanding encumbrances for payroll and supplies. Budget by function is sufficient to meet expenditures.

The Debt Fund financial report is also attached.

## FUNDING SOURCE AND AMOUNT

Not applicable.

## RECOMMENDATION

Information item only.

## CONTACT PERSON(S)

Joel Garcia, Assistant Superintendent for Finance
Dora Garcia, Director for Budget and Finance

**Mission Consolidated Independent School District**
**General Fund**
**November 30, 2022**

| | | Budget | Actual | Difference | % |
|---|---|---|---|---|---|
| **Revenues** | | | | | |
| 5700 | Local and Intermediate Sources | $ 28,786,444 | $3,967,193 | $ 24,819,251 | 13.78% |
| 5800 | State Program Revenues | 117,988,061 | 49,882,710 | $ 68,105,351 | 42.28% |
| 5900 | Federal Program Revenues | 19,381,608 | 6,509,216 | $ 12,872,392 | 33.58% |
| | **Total Revenues** | **$ 166,156,113** | **$ 60,359,118** | **$ 105,796,995** | |
| **Expenditures** | | | | | |
| 11 | Instruction | $ 69,834,025 | $20,310,748 | $ 49,523,277 | 29.08% |
| 12 | Instrucional Resources & Media Services | 2,563,714 | 648,468 | 1,915,246 | 25.29% |
| 13 | Curriculum and Personnel Development | 1,919,003 | 976,028 | 942,975 | 50.86% |
| 21 | Instructional Administration | 2,581,407 | 1,012,563 | 1,568,844 | 39.23% |
| 23 | School Administration | 9,915,030 | 3,362,307 | 6,552,723 | 33.91% |
| 31 | Guidance and Counseling Services | 6,395,686 | 1,804,160 | 4,591,526 | 28.21% |
| 32 | Attendance and Social Work Services | 583,397 | 145,263 | 438,134 | 24.90% |
| 33 | Health Services | 1,750,067 | 489,577 | 1,260,490 | 27.97% |
| 34 | Pupil Transportation | 5,025,001 | 2,748,671 | 2,276,330 | 54.70% |
| 35 | Food Services | 14,100,666 | 5,648,351 | 8,452,315 | 40.06% |
| 36 | Co-Curricular Activities | 7,372,412 | 2,383,217 | 4,989,195 | 32.33% |
| 41 | General Administration | 6,504,408 | 2,649,892 | 3,854,516 | 40.74% |
| 51 | Plant Maintenance and Operations | 24,889,339 | 8,403,846 | 16,485,494 | 33.76% |
| 52 | Security and Monitoring | 6,925,817 | 769,971 | 6,155,846 | 11.12% |
| 53 | Data Processing Services | 3,329,866 | 1,439,099 | 1,890,767 | 43.22% |
| 61 | Community Services | 323,077 | 170,755 | 152,322 | 52.85% |
| 71 | Debt Service | 1,350,320 | 294,736 | 1,055,584 | 21.83% |
| 81 | Facilities Acquisition and Construction | 13,391,645 | 2,358,971 | 11,032,674 | 17.62% |
| 95 | Juvenile Justice Alt. Education | 20,000 | - | 20,000 | 0.00% |
| 99 | Other Intergovernmental Charges | 298,185 | 73,445 | 224,741 | 24.63% |
| | **Total Expenditures** | **$ 179,073,065** | **$55,690,065** | **$ 123,383,000** | |
| **1100** | **Excess (Deficiency)** | **$ (12,916,952)** | **$4,669,053** | **$ (17,586,006)** | |
| **Non-Operating Revenue** | | | | | |
| 7915 | Operating Transfers In | 19,559,082 | $ - | 19,559,082 | 0.00% |
| | **Total Non-Operating Revenue** | **$ 19,559,082** | **$ -** | **$ 19,559,082** | |
| **Non-Operating Expenses** | | | | | |
| 8911 | Other Uses | $ (19,559,082) | $ - | $ (19,559,082) | 0.00% |
| | **Total Non-Operating Expenses** | **$ (19,559,082)** | **$ -** | **$ (19,559,082)** | |
| **1200** | **Excess (Deficiency)** | **$ (12,916,952)** | **$ 4,669,053** | **$ (17,586,006)** | |
| **0100** | **Fund Balance - Beginning Audited** | **$ 107,685,067** | **$ 107,685,067** | **$ -** | |
| **3000** | **Fund Balance - Ending Un-Audited** | **$ 94,768,115** | **$ 112,354,120** | **$ (17,586,006)** | |

**Mission Consolidated Independent School District**
**Debt Service Fund**
**November, 2022**

| | | Budget | Actual | Difference | % |
|---|---|---|---|---|---|
| **Revenues** | | | | | |
| 5700 | Local and Intermediate Sources | $ 4,815,916 | $ 525,714 | $ 4,290,202 | 10.92% |
| 5800 | State Program Revenues | 3,661,581 | - | 3,661,581 | 0.00% |
| | **Total Revenues** | **$ 8,477,497** | **$ 525,714** | **$ 7,951,783** | |
| **Expenditures** | | | | | |
| 7100 | Debt Services | $ 8,477,497 | $ 1,691,699 | $ 6,785,799 | 19.96% |
| | **Total Expenditures** | **$ 8,477,497** | **$ 1,691,699** | **$ 6,785,799** | |
| **1100** | **Excess (Deficiency)** | **$ -** | **$ (1,165,985)** | **$ 1,165,985** | |
| **Non-Operating Revenue** | | | | | |
| 7900 | Operating Transfers In | $0 | $0 | $0 | 0.00% |
| **Non-Operating Expenses** | | | | | |
| 8900 | Operating Transfers Out | $ - | $ - | $ - | 0.00% |
| **1200** | **Excess (Deficiency)** | **$ -** | **$ (1,165,985)** | **$ 1,165,985** | |
| **0100** | **Fund Balance - Beginning Audited** | **$ 4,463,810** | **$ 4,463,810** | **$ -** | |
| **3000** | **Fund Balance - Ending Un-Audited** | **$ 4,463,810** | **$ 3,297,825** | **$ 1,165,985** | |

Fund Balance - Beginning Audited 107685067

**SUBJECT**: Tax Levy Adjustments for the Month of November 2022

**PRESENTER**: Joel Garcia, Assistant Superintendent for Finance JG

## BACKGROUND INFORMATION

The Hidalgo County Assessor & Collector has been collecting the District's taxes since December 1999. Both current and delinquent taxes are collected by Hidalgo County on our behalf.

## ADMINISTRATIVE CONSIDERATIONS

Tax roll adjustments due to corrections, rollbacks, homesteads, dropped years, etc., resulted in a net decrease of $53,650.82. Adjustments are reviewed and posted to the general ledger on a monthly basis. These modifications are included as part of the monthly tax report.

Collections totaled $2,255,198.64 The monthly fee for this service is $6,584.00.

Attached is the November 2022 Tax Collection Report

## FUNDING SOURCE AND AMOUNT

Local Maintenance Levy Modification ($45,650.24)
Debt Service Levy Modification ($8,000.58)
Rollbacks $0

## RECOMMENDATION:

Information item only; no recommendation is required.

## CONTACT PERSON (S)

Joel Garcia, Assistant Superintendent for Finance
Dora Garcia, Director for Budget and Finance
Alyssa Gonzales, Accountant

PREPARED BY: M.A.M Mark Martinez

PABLO "PAUL" VILLARREAL JR., ASSESSOR & COLLECTOR
MISSION C.I.S.D. TAXES COLLECTED FOR:
NOVEMBER 2022

COMPARATIVE RATE OF COLLECTIONS

| MISSION C.I.S.D. SMS - 48 | ORIGINAL TAX LEVY | COLLECTED TO DATE | DROPPED YRS AFTER PURGE | MODIF. TO DATE | TAXES OUTSTANDING | PERCENT 2022/2023 | COLLECTED 2021/2022 |
|---|---|---|---|---|---|---|---|
| 2022 TAX ROLL | 31,332,080.80 | 2,369,402.89 | - | 155,003.09 | 29,117,681.00 | 7.52% | 9.39% |
| 2021 & PRIOR YRS | 4,331,743.31 | 710,420.35 | (26,461.75) | (136,599.13) | 3,458,262.08 | 17.04% | 17.93% |
| ROLLBACK | 30,298.57 | 31,013.40 | - | 5,732.88 | 5,018.05 | 86.07% | 38.04% |
| TOTALS | 35,694,122.68 | 3,110,836.64 | (26,461.75) | 24,136.84 | 32,580,961.13 | | |

BREAKDOWN OF TAX COLLECTIONS AND FEES FOR THE MONTH OF NOVEMBER 2022

| | MISSION C.I.S.D. | MONTHLY MODIFICATIONS | |
|---|---|---|---|
| CURRENT YEAR-BASE TAX | 2,093,362.36 | (34,598.62) | CURRENT |
| CURRENT YEAR-P&I | - | | |
| PRIOR YEARS-BASE TAX | 97,034.64 | (19,052.20) | PRIOR |
| PRIOR YEARS-P&I | 43,238.58 | | |
| ROLLBACK | - | - | ROLLBACK |
| ROLLBACK P&I | - | | |
| ATTORNEY FEES | 21,563.06 | - | PURGED |
| TOTAL COLLECTIONS | 2,255,198.64 | (53,650.82) | |
| LESS TRANSFERRED | 1,421,986.09 | | |
| LESS IN TRANSIT | 826,534.84 | | |
| LESS DUE TO HCAD COMM FEES | 93.71 | | |
| LESS DUE TO CO TREASURER | 6,584.00 | | |
| | - | | |
| BALANCE | 0.00 | | |

**********AFFIDAVIT**********

I, PABLO "PAUL" VILLARREAL JR., ASSESSOR-COLLECTOR OF TAXES FOR THE MISSION C.I.S.D., DO SOLEMNLY SWEAR THAT THE ABOVE STATEMENT OF TAXES COLLECTED BY ME FOR THE MONTH OF NOVEMBER IS CORRECT.

Pablo Paul Villarreal Jr.

ASSESSOR-COLLECTOR OF TAXES FOR MISSION C.I.S.D., TEXAS

ASSESSOR & COLL OF TEXAS HIDALGO COUNTY

SWORN AND SUBSCRIBED BEFORE ME THIS 12TH DAY OF DECEMBER 2022 A.D.

Flor E Zarate

NOTARY PUBLIC, HIDALGO COUNTY, TEXAS

NOTARY PUBLIC STATE OF TEXAS Flor E. Zarate Notary ID# 126146268 My Comm. Exp. 04-18-2026

1/3/2023

**PABLO "PAUL" VILLARREAL JR., ASSESSOR & COLLECTOR**
**MISSION CONSOLIDATED INDEPENDENT SCHOOL DISTRICT**
**TAX COLLECTION REPORT**
**FOR THE MONTH OF NOVEMBER 2022**

| AD VALOREM - MISSION CISD | 2022-2023 | 2021-2022 | DIFFERENCE |
|---|---|---|---|
| **2022 CURRENT** | | | |
| ORIGINAL LEVY | 31,332,080.80 | 28,363,668.26 | 2,968,412.54 |
| MODIFICATIONS | 155,003.09 | 744,575.39 | (589,572.30) |
| CURRENT LEVY | 31,487,083.89 | 29,108,243.65 | 2,378,840.24 |
| CURRENT COLLECTIONS THIS MONTH | 2,093,362.36 | 2,449,832.75 | (356,470.39) |
| **CURRENT COLLECTIONS TO DATE** | 2,369,402.89 | 2,732,124.66 | (362,721.77) |
| OUTSTANDING TO DATE | 29,117,681.00 | 26,376,118.99 | 2,741,562.01 |
| PERCENT COLLECTED/ORIGINAL | 7.56% | 9.63% | -2.07% |
| PERCENT COLLECTED/MODIFIED | 7.52% | 9.39% | -1.87% |
| **TOTAL COLLECTIONS FISCAL YEAR** | **2,369,402.89** | **2,732,124.66** | |
| **DELINQUENT** | | | |
| ORIGINAL LEVY | 4,331,743.31 | 4,597,051.27 | (265,307.96) |
| MODIFICATIONS | (163,060.88) | (87,131.04) | (75,929.84) |
| DELINQUENT LEVY | 4,168,682.43 | 4,509,920.23 | (341,237.80) |
| DELINQUENT COLLECTIONS THIS MONTI | 97,034.64 | 86,395.80 | 10,638.84 |
| **DELINQUENT COLLECTIONS TO DATE** | 710,420.35 | 808,572.05 | (98,151.70) |
| OUTSTANDING TO DATE | 3,458,262.08 | 3,701,348.18 | (243,086.10) |
| PERCENT COLLECTED/ORIGINAL | 16.40% | 17.59% | -1.19% |
| PERCENT COLLECTED/MODIFIED | 17.04% | 17.93% | -0.89% |
| **TOTAL COLLECTIONS FISCAL YEAR** | **710,420.35** | **808,572.05** | |
| **ROLLBACK** | | | |
| ORIGINAL LEVY | 30,298.57 | 8,099.31 | 22,199.26 |
| MODIFICATIONS | 5,732.88 | 0.00 | 5,732.88 |
| ROLLBACK LEVY | 36,031.45 | 8,099.31 | 27,932.14 |
| ROLLBACK COLLECTIONS THIS MONTH | 26,800.60 | 0.00 | 26,800.60 |
| **ROLLBACK COLLECTIONS TO DATE** | 31,013.40 | 3,081.26 | 27,932.14 |
| OUTSTANDING TO DATE | 5,018.05 | 5,018.05 | 0.00 |
| PERCENT COLLECTED/ORIGINAL | 102.36% | 38.04% | 64.32% |
| PERCENT COLLECTED/MODIFIED | 86.07% | 38.04% | 48.03% |
| **TOTAL COLLECTIONS FISCAL YEAR** | **31,013.40** | **3,081.26** | |

**PABLO (PAUL) VILLARREAL, JR. ASSR/COLL**
**MISSION CISD**
**TAX COLLECTION FOR: NOVEMBER 2022**

48

| REPORT DATE | CURR BASE | CURR P&I | CURR RB | CURR RB P/I | DEL BASE | DEL P&I | DEL RB | RB P&I | ATTY FEES | RB ATTY FEES | TOTAL | TOTAL M/O TRANSF. | TOTAL I/S TRANSF. | DIFF. | DATE TRANSF. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | - | | | - | |
| 1-Nov | 93,944.61 | - | | | 5,670.65 | 2,267.20 | | | 1,190.68 | | 103,073.14 | | | 103,073.14 | |
| 2-Nov | 89,084.13 | - | | | 1,855.18 | 875.19 | | | 393.27 | | 92,207.77 | | | 92,207.77 | |
| 3-Nov | 127,994.13 | - | | | 3,389.66 | 954.17 | | | 625.78 | | 132,963.74 | | | 132,963.74 | |
| 4-Nov | 56,247.13 | - | | | 17,674.22 | 14,947.55 | | | 4,886.46 | | 93,755.36 | | | 93,755.36 | |
| 7-Nov | 118,330.01 | - | | | 6,816.61 | 2,783.85 | | | 1,438.67 | | 129,369.14 | | | 129,369.14 | |
| 8-Nov | 124,521.04 | - | | | 2,422.46 | 686.08 | | | 366.86 | | 127,996.44 | 571,765.47 | 101,016.12 | (544,785.15) | 17-Nov |
| 9-Nov | 44,036.58 | - | | | 3,557.51 | 859.75 | | | 662.58 | | 49,116.42 | | | 49,116.42 | |
| 10-Nov | 147,733.21 | - | | | 4,349.67 | 1,166.52 | | | 827.41 | | 154,076.81 | 172,471.54 | 30,721.69 | (49,116.42) | 18-Nov |
| 12-Nov | (1,921.79) | - | | | (18,523.62) | (109.39) | | | (49.41) | | (20,604.21) | | | (20,604.21) | |
| 14-Oct | 85,251.13 | - | | | 5,924.14 | 1,541.76 | | | 1,117.95 | | 93,834.98 | | | 93,834.98 | |
| 15-Nov | 109,840.13 | - | | | 10,327.78 | 2,697.06 | | | 1,912.37 | | 124,777.34 | 168,226.70 | 29,781.41 | (73,230.77) | 22-Nov |
| 16-Nov | 70,279.60 | - | | | 7,051.79 | 1,806.84 | | | 1,319.33 | | 80,457.56 | 68,458.13 | 11,999.43 | - | 23-Nov |
| 17-Nov | 136,277.01 | - | | | 1,407.37 | 352.60 | | | 211.74 | | 138,248.72 | 117,175.63 | 21,073.09 | - | 25-Nov |
| 18-Nov | 58,865.08 | - | | | 8,333.20 | 2,139.27 | | | 1,556.52 | | 70,894.07 | 60,409.09 | 10,484.98 | - | 29-Nov |
| 21-Nov | 56,074.80 | - | | | 1,756.38 | 349.34 | | | 222.29 | | 58,402.81 | 49,536.61 | 8,866.20 | - | 30-Nov |
| 22-Nov | 69,897.85 | - | | | 919.05 | 332.53 | | | 177.74 | | 71,327.17 | 60,473.43 | 10,853.74 | - | 1-Dec |
| 23-Nov | 107,639.78 | - | | | 7,436.09 | 1,752.99 | | | 493.14 | | 117,322.00 | 99,580.15 | 17,741.85 | - | 2-Dec |
| 28-Nov | 120,559.93 | - | | | 10,375.16 | 2,646.08 | | | 1,583.09 | | 135,164.26 | 114,911.79 | 20,252.47 | - | 5-Dec |
| 29-Nov | 271,632.25 | - | | | 10,685.11 | 2,567.20 | | | 1,418.61 | | 286,303.17 | 242,949.90 | 43,353.27 | - | 6-Dec |
| 30-Nov | 207,075.75 | - | | | 5,606.23 | 2,621.99 | | | 1,207.98 | | 216,511.95 | 183,635.28 | 32,782.96 | 93.71 | 12-Dec |
| | | | | | | | | | | | - | | | - | |
| | | | | | | | | | | | - | | | - | |
| | | | | | | | | | | | - | | | - | |
| | | | | | | | | | | | - | | | - | |
| | | | | | | | | | | | - | | | - | |
| | | | | | | | | | | | - | | | - | |
| | | | | | | | | | | | - | | | - | |
| | | | | | | | | | | | - | | | - | |
| | | | | | | | | | | | - | | | - | |
| TOTAL | 2,093,362.36 | 0.00 | 0.00 | 0.00 | 97,034.64 | 43,238.58 | 0.00 | 0.00 | 21,563.06 | 0.00 | 2,255,198.64 | 1,909,593.72 | 338,927.21 | 6,677.71 | |

| | |
|---|---|
| TOTAL COLLECTED | 2,255,198.64 |
| LESS REFFUNDS | 0.00 |
| LESS RENDITION PENALTY | 93.71 |
| LESS COMMISSION | 6,584.00 |
| BALANCE | 2,248,520.93 |
| LESS M&O TRANSFERRED | 1,208,043.17 |
| LESS I&S TRANSFERRED | 213,942.92 |
| LESS M&O TRANSFERS IN TRANSIT | 701,550.55 |
| LESS I&S TRANSFERS IN TRANSIT | 124,984.29 |
| BALANCE PENDING | (0.00) |

# HIDALGO COUNTY TAX OFFICE
# MISSION CISD

## MODIFICATIONS FOR THE MONTH OF NOVEMBER 2022

| YR | RATE | M&O | % | ADJ | M&O | I&S | % | I&S |
|---|---|---|---|---|---|---|---|---|
| 2022 | 1.113 | 0.9429 | 84.72% | (34,598.62) | (29,310.91) | 0.1701 | 15.28% | (5,287.71) |
| 2021 | 1.1332 | 0.9719 | 85.77% | (17,076.15) | (14,645.53) | 0.1613 | 14.23% | (2,430.62) |
| 2020 | 1.19930 | 1.02800 | 85.72% | (1,976.05) | (1,693.80) | 0.1713 | 14.28% | (282.25) |
| 2019 | 1.23955 | 1.06835 | 86.19% | - | 0.00 | 0.1712 | 13.81% | 0.00 |
| 2018 | 1.3398 | 1.1700 | 87.33% | - | 0.00 | 0.1698 | 12.67% | 0.00 |
| 2017 | 1.3502 | 1.1700 | 86.65% | - | 0.00 | 0.1802 | 13.35% | 0.00 |
| 2016 | 1.3582 | 1.1700 | 86.14% | - | 0.00 | 0.1882 | 13.86% | 0.00 |
| 2015 | 1.3672 | 1.1700 | 85.58% | - | 0.00 | 0.1972 | 14.42% | 0.00 |
| 2014 | 1.3300 | 1.1700 | 87.97% | - | 0.00 | 0.1600 | 12.03% | 0.00 |
| 2013 | 1.3000 | 1.1700 | 90.00% | - | 0.00 | 0.1300 | 10.00% | 0.00 |
| 2012 | 1.3000 | 1.1700 | 90.00% | - | 0.00 | 0.1300 | 10.00% | 0.00 |
| 2011 | 1.3000 | 1.1700 | 90.00% | - | 0.00 | 0.1300 | 10.00% | 0.00 |
| 2010 | 1.3000 | 1.0400 | 80.00% | - | 0.00 | 0.2600 | 20.00% | 0.00 |
| 2009 | 1.2800 | 1.0400 | 81.25% | - | 0.00 | 0.2400 | 18.75% | 0.00 |
| 2008 | 1.2400 | 1.0400 | 83.87% | - | 0.00 | 0.2000 | 16.13% | 0.00 |
| 2007 | 1.1800 | 1.0400 | 88.14% | - | 0.00 | 0.1400 | 11.86% | 0.00 |
| 2006 | 1.4574 | 1.3374 | 91.77% | - | 0.00 | 0.1200 | 8.23% | 0.00 |
| 2005 | 1.5632 | 1.4632 | 93.60% | - | 0.00 | 0.1000 | 6.40% | 0.00 |
| 2004 | 1.5691 | 1.4632 | 93.25% | - | 0.00 | 0.1059 | 6.75% | 0.00 |
| 2003 | 1.5841 | 1.4632 | 92.37% | - | 0.00 | 0.1209 | 7.63% | 0.00 |
| 2002 | 1.5841 | 1.4500 | 91.53% | - | 0.00 | 0.1341 | 8.47% | 0.00 |
| 2001 | 1.5341 | 1.4394 | 93.83% | - | 0.00 | 0.0947 | 6.17% | 0.00 |
| | | | **TOTAL** | **(53,650.82)** | **(45,650.24)** | | | **(8,000.58)** |

| | | M&O | I&S |
|---|---|---|---|
| **CURRENT** | **(34,598.62)** | **(29,310.91)** | **(5,287.71)** |
| **DELINQUENT** | **(19,052.20)** | **(16,339.33)** | **(2,712.87)** |
| **TOTAL** | **(53,650.82)** | **(45,650.24)** | **(8,000.58)** |

## ROLLBACK MODIFICATIONS FOR THE MONTH OF NOVEMBER 2022

| YR | RATE | M&O | % | ADJ | M&O | I&S | % | I&S |
|---|---|---|---|---|---|---|---|---|
| 2022 | 1.113 | 0.9429 | 84.72% | - | 0.00 | 0.1701 | 15.28% | 0.00 |
| 2021 | 1.1332 | 0.9719 | 85.77% | - | 0.00 | 0.1613 | 14.23% | 0.00 |
| 2020 | 1.1993 | 1.0280 | 85.72% | - | 0.00 | 0.1713 | 14.28% | 0.00 |
| 2019 | 1.2396 | 1.0684 | 86.19% | - | 0.00 | 0.1712 | 13.81% | 0.00 |
| 2018 | 1.3398 | 1.1700 | 87.33% | - | 0.00 | 0.1698 | 12.67% | 0.00 |
| 2017 | 1.3502 | 1.1700 | 86.65% | - | 0.00 | 0.1802 | 13.35% | 0.00 |
| | | | **TOTAL** | **0.00** | **0.00** | | | **0.00** |

| | | M&O | I&S |
|---|---|---|---|
| **CURRENT** | - | - | - |
| **DELINQUENT** | - | - | - |
| **TOTAL** | - | - | - |

| YEAR | FUND | TAX RATE | LEVY PAID | DISCOUNT GIVEN | PENALTY INTEREST | TIF AMOUNT | DISBURSE TOTAL | ATTORNEY | OTHER FEES | REFUND AMOUNT | PAYMENT AMOUNT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2022 | M & O | .942900 | 1,773,433.22 | .00 | .00 | .00 | 1,773,433.22 | .00 | .00 | .00 | 1,773,433.22 |
| | I & S | .170100 | 319,929.14 | .00 | .00 | .00 | 319,929.14 | .00 | .00 | .00 | 319,929.14 |
| | TOTAL | 1.113000 | 2,093,362.36 | .00 | .00 | .00 | 2,093,362.36 | .00 | .00 | .00 | 2,093,362.36 |
| 2021 | M & O | .971900 | 37,754.55 | .00 | 10,856.85 | .00 | 48,611.40 | 10,316.35 | .00 | .00 | 58,927.75 |
| | I & S | .161300 | 6,265.99 | .00 | 1,801.83 | .00 | 8,067.82 | .00 | .00 | .00 | 8,067.82 |
| | TOTAL | 1.133200 | 44,020.54 | .00 | 12,658.68 | .00 | 56,679.22 | 10,316.35 | .00 | .00 | 66,995.57 |
| 2020 | M & O | 1.028000 | 14,992.23 | .00 | 5,179.07 | .00 | 20,171.30 | 3,477.60 | .00 | .00 | 23,648.90 |
| | I & S | .171300 | 2,498.21 | .00 | 863.03 | .00 | 3,361.24 | .00 | .00 | .00 | 3,361.24 |
| | TOTAL | 1.199300 | 17,490.44 | .00 | 6,042.10 | .00 | 23,532.54 | 3,477.60 | .00 | .00 | 27,010.14 |
| 2019 | M & O | 1.068350 | 10,685.32 | .00 | 4,434.29 | .00 | 15,119.61 | 2,350.71 | .00 | .00 | 17,470.32 |
| | I & S | .171200 | 1,712.31 | .00 | 710.59 | .00 | 2,422.90 | .00 | .00 | .00 | 2,422.90 |
| | TOTAL | 1.239550 | 12,397.63 | .00 | 5,144.88 | .00 | 17,542.51 | 2,350.71 | .00 | .00 | 19,893.22 |
| 2018 | M & O | 1.170000 | 6,225.50 | .00 | 3,080.92 | .00 | 9,306.42 | 1,406.28 | .00 | .00 | 10,712.70 |
| | I & S | .169800 | 903.47 | .00 | 447.13 | .00 | 1,350.60 | .00 | .00 | .00 | 1,350.60 |
| | TOTAL | 1.339800 | 7,128.97 | .00 | 3,528.05 | .00 | 10,657.02 | 1,406.28 | .00 | .00 | 12,063.30 |
| 2017 | M & O | 1.170000 | 3,182.12 | .00 | 1,689.16 | .00 | 4,871.28 | 614.54 | .00 | .00 | 5,485.82 |
| | I & S | .180200 | 490.10 | .00 | 260.13 | .00 | 750.23 | .00 | .00 | .00 | 750.23 |
| | TOTAL | 1.350200 | 3,672.22 | .00 | 1,949.29 | .00 | 5,621.51 | 614.54 | .00 | .00 | 6,236.05 |
| 2016 | M & O | 1.170000 | 2,084.91 | .00 | 1,303.87 | .00 | 3,388.78 | 403.98 | .00 | .00 | 3,792.76 |
| | I & S | .188200 | 335.36 | .00 | 209.72 | .00 | 545.08 | .00 | .00 | .00 | 545.08 |
| | TOTAL | 1.358200 | 2,420.27 | .00 | 1,513.59 | .00 | 3,933.86 | 403.98 | .00 | .00 | 4,337.84 |
| 2015 | M & O | 1.170000 | 2,000.33 | .00 | 1,438.19 | .00 | 3,438.52 | 405.32 | .00 | .00 | 3,843.84 |
| | I & S | .197200 | 337.15 | .00 | 242.41 | .00 | 579.56 | .00 | .00 | .00 | 579.56 |
| | TOTAL | 1.367200 | 2,337.48 | .00 | 1,680.60 | .00 | 4,018.08 | 405.32 | .00 | .00 | 4,423.40 |
| 2014 | M & O | 1.170000 | 1,831.08 | .00 | 1,694.50 | .00 | 3,525.58 | 483.44 | .00 | .00 | 4,009.02 |
| | I & S | .160000 | 250.41 | .00 | 231.72 | .00 | 482.13 | .00 | .00 | .00 | 482.13 |
| | TOTAL | 1.330000 | 2,081.49 | .00 | 1,926.22 | .00 | 4,007.71 | 483.44 | .00 | .00 | 4,491.15 |
| 2013 | M & O | 1.170000 | 1,151.67 | .00 | 1,358.09 | .00 | 2,509.76 | 418.29 | .00 | .00 | 2,928.05 |
| | I & S | .130000 | 127.97 | .00 | 150.90 | .00 | 278.87 | .00 | .00 | .00 | 278.87 |
| | TOTAL | 1.300000 | 1,279.64 | .00 | 1,508.99 | .00 | 2,788.63 | 418.29 | .00 | .00 | 3,206.92 |
| 2012 | M & O | 1.170000 | 824.43 | .00 | 1,053.00 | .00 | 1,877.43 | 305.15 | .00 | .00 | 2,182.58 |
| | I & S | .130000 | 91.60 | .00 | 117.00 | .00 | 208.60 | .00 | .00 | .00 | 208.60 |
| | TOTAL | 1.300000 | 916.03 | .00 | 1,170.00 | .00 | 2,086.03 | 305.15 | .00 | .00 | 2,391.18 |
| 2011 | M & O | 1.170000 | 594.25 | .00 | 829.45 | .00 | 1,423.70 | 231.46 | .00 | .00 | 1,655.16 |
| | I & S | .130000 | 66.02 | .00 | 92.17 | .00 | 158.19 | .00 | .00 | .00 | 158.19 |
| | TOTAL | 1.300000 | 660.27 | .00 | 921.62 | .00 | 1,581.89 | 231.46 | .00 | .00 | 1,813.35 |

| YEAR | FUND | TAX RATE | LEVY PAID | DISCOUNT GIVEN | PENALTY INTEREST | TIF AMOUNT | DISBURSE TOTAL | ATTORNEY | OTHER FEES | REFUND AMOUNT | PAYMENT AMOUNT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2010 | M & O | 1.040000 | 98.65 | .00 | 151.81 | .00 | 250.46 | 46.97 | .00 | .00 | 297.43 |
| | I & S | .260000 | 24.67 | .00 | 37.95 | .00 | 62.62 | .00 | .00 | .00 | 62.62 |
| | TOTAL | 1.300000 | 123.32 | .00 | 189.76 | .00 | 313.08 | 46.97 | .00 | .00 | 360.05 |
| 2009 | M & O | 1.040000 | 43.37 | .00 | 67.66 | .00 | 111.03 | 18.57 | .00 | .00 | 129.60 |
| | I & S | .240000 | 10.00 | .00 | 15.61 | .00 | 25.61 | .00 | .00 | .00 | 25.61 |
| | TOTAL | 1.280000 | 53.37 | .00 | 83.27 | .00 | 136.64 | 18.57 | .00 | .00 | 155.21 |
| 2008 | M & O | 1.040000 | 494.91 | .00 | 880.95 | .00 | 1,375.86 | 246.07 | .00 | .00 | 1,621.93 |
| | I & S | .200000 | 95.18 | .00 | 169.41 | .00 | 264.59 | .00 | .00 | .00 | 264.59 |
| | TOTAL | 1.240000 | 590.09 | .00 | 1,050.36 | .00 | 1,640.45 | 246.07 | .00 | .00 | 1,886.52 |
| 2006 | M & O | 1.337400 | 665.28 | .00 | 1,343.86 | .00 | 2,009.14 | 328.41 | .00 | .00 | 2,337.55 |
| | I & S | .120000 | 59.69 | .00 | 120.58 | .00 | 180.27 | .00 | .00 | .00 | 180.27 |
| | TOTAL | 1.457400 | 724.97 | .00 | 1,464.44 | .00 | 2,189.41 | 328.41 | .00 | .00 | 2,517.82 |
| 2005 | M & O | 1.463200 | 830.52 | .00 | 1,760.48 | .00 | 2,591.00 | 411.36 | .00 | .00 | 3,002.36 |
| | I & S | .100000 | 56.76 | .00 | 120.31 | .00 | 177.07 | .00 | .00 | .00 | 177.07 |
| | TOTAL | 1.563200 | 887.28 | .00 | 1,880.79 | .00 | 2,768.07 | 411.36 | .00 | .00 | 3,179.43 |
| 2004 | M & O | 1.463200 | 17.23 | .00 | 31.75 | .00 | 48.98 | 6.18 | .00 | .00 | 55.16 |
| | I & S | .105900 | 1.25 | .00 | 2.30 | .00 | 3.55 | .00 | .00 | .00 | 3.55 |
| | TOTAL | 1.569100 | 18.48 | .00 | 34.05 | .00 | 52.53 | 6.18 | .00 | .00 | 58.71 |
| 2003 | M & O | 1.463200 | 138.75 | .00 | 273.22 | .00 | 411.97 | 58.36 | .00 | .00 | 470.33 |
| | I & S | .120900 | 11.46 | .00 | 22.57 | .00 | 34.03 | .00 | .00 | .00 | 34.03 |
| | TOTAL | 1.584100 | 150.21 | .00 | 295.79 | .00 | 446.00 | 58.36 | .00 | .00 | 504.36 |
| 2002 | M & O | 1.450000 | 14.83 | .00 | 36.93 | .00 | 51.76 | 8.48 | .00 | .00 | 60.24 |
| | I & S | .134100 | 1.37 | .00 | 3.41 | .00 | 4.78 | .00 | .00 | .00 | 4.78 |
| | TOTAL | 1.584100 | 16.20 | .00 | 40.34 | .00 | 56.54 | 8.48 | .00 | .00 | 65.02 |
| 1998 | M & O | 1.231000 | 53.77 | .00 | 127.40 | .00 | 181.17 | 25.54 | .00 | .00 | 206.71 |
| | I & S | .274000 | 11.97 | .00 | 28.36 | .00 | 40.33 | .00 | .00 | .00 | 40.33 |
| | TOTAL | 1.505000 | 65.74 | .00 | 155.76 | .00 | 221.50 | 25.54 | .00 | .00 | 247.04 |
| ALL | M & O | | 1,857,116.92 | .00 | 37,591.45 | .00 | 1,894,708.37 | 21,563.06 | .00 | .00 | 1,916,271.43 |
| ALL | I & S | | 333,280.08 | .00 | 5,647.13 | .00 | 338,927.21 | .00 | .00 | .00 | 338,927.21 |
| ALL | TOTAL | | 2,190,397.00 | .00 | 43,238.58 | .00 | 2,233,635.58 | 21,563.06 | .00 | .00 | 2,255,198.64 |
| DLQ | M & O | | 83,683.70 | .00 | 37,591.45 | .00 | 121,275.15 | 21,563.06 | .00 | .00 | 142,838.21 |
| DLQ | I & S | | 13,350.94 | .00 | 5,647.13 | .00 | 18,998.07 | .00 | .00 | .00 | 18,998.07 |
| DLQ | TOTAL | | 97,034.64 | .00 | 43,238.58 | .00 | 140,273.22 | 21,563.06 | .00 | .00 | 161,836.28 |

| YEAR | FUND | TAX RATE | LEVY PAID | DISCOUNT GIVEN | PENALTY INTEREST | TIF AMOUNT | DISBURSE TOTAL | ATTORNEY | OTHER FEES | REFUND AMOUNT | PAYMENT AMOUNT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CURR | M & O | | 1,773,433.22 | .00 | .00 | .00 | 1,773,433.22 | .00 | .00 | .00 | 1,773,433.22 |
| CURR | I & S | | 319,929.14 | .00 | .00 | .00 | 319,929.14 | .00 | .00 | .00 | 319,929.14 |
| CURR | TOTAL | | 2,093,362.36 | .00 | .00 | .00 | 2,093,362.36 | .00 | .00 | .00 | 2,093,362.36 |

| YEAR | FUND | TAX RATE | LEVY PAID | DISCOUNT GIVEN | PENALTY INTEREST | TIF AMOUNT | DISBURSE TOTAL | ATTORNEY | OTHER FEES | REFUND AMOUNT | PAYMENT AMOUNT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2022 | M & O | .942900 | 1,773,433.22 | .00 | .00 | .00 | 1,773,433.22 | .00 | .00 | .00 | 1,773,433.22 |
| | I & S | .170100 | 319,929.14 | .00 | .00 | .00 | 319,929.14 | .00 | .00 | .00 | 319,929.14 |
| | TOTAL | 1.113000 | 2,093,362.36 | .00 | .00 | .00 | 2,093,362.36 | .00 | .00 | .00 | 2,093,362.36 |
| 2021 | M & O | .971900 | 37,754.55 | .00 | 10,856.85 | .00 | 48,611.40 | 10,316.35 | .00 | .00 | 58,927.75 |
| | I & S | .161300 | 6,265.99 | .00 | 1,801.83 | .00 | 8,067.82 | .00 | .00 | .00 | 8,067.82 |
| | TOTAL | 1.133200 | 44,020.54 | .00 | 12,658.68 | .00 | 56,679.22 | 10,316.35 | .00 | .00 | 66,995.57 |
| 2020 | M & O | 1.028000 | 14,992.23 | .00 | 5,179.07 | .00 | 20,171.30 | 3,477.60 | .00 | .00 | 23,648.90 |
| | I & S | .171300 | 2,498.21 | .00 | 863.03 | .00 | 3,361.24 | .00 | .00 | .00 | 3,361.24 |
| | TOTAL | 1.199300 | 17,490.44 | .00 | 6,042.10 | .00 | 23,532.54 | 3,477.60 | .00 | .00 | 27,010.14 |
| 2019 | M & O | 1.068350 | 10,685.32 | .00 | 4,434.29 | .00 | 15,119.61 | 2,350.71 | .00 | .00 | 17,470.32 |
| | I & S | .171200 | 1,712.31 | .00 | 710.59 | .00 | 2,422.90 | .00 | .00 | .00 | 2,422.90 |
| | TOTAL | 1.239550 | 12,397.63 | .00 | 5,144.88 | .00 | 17,542.51 | 2,350.71 | .00 | .00 | 19,893.22 |
| 2018 | M & O | 1.170000 | 6,225.50 | .00 | 3,080.92 | .00 | 9,306.42 | 1,406.28 | .00 | .00 | 10,712.70 |
| | I & S | .169800 | 903.47 | .00 | 447.13 | .00 | 1,350.60 | .00 | .00 | .00 | 1,350.60 |
| | TOTAL | 1.339800 | 7,128.97 | .00 | 3,528.05 | .00 | 10,657.02 | 1,406.28 | .00 | .00 | 12,063.30 |
| 2017 | M & O | 1.170000 | 3,182.12 | .00 | 1,689.16 | .00 | 4,871.28 | 614.54 | .00 | .00 | 5,485.82 |
| | I & S | .180200 | 490.10 | .00 | 260.13 | .00 | 750.23 | .00 | .00 | .00 | 750.23 |
| | TOTAL | 1.350200 | 3,672.22 | .00 | 1,949.29 | .00 | 5,621.51 | 614.54 | .00 | .00 | 6,236.05 |
| 2016 | M & O | 1.170000 | 2,084.91 | .00 | 1,303.87 | .00 | 3,388.78 | 403.98 | .00 | .00 | 3,792.76 |
| | I & S | .188200 | 335.36 | .00 | 209.72 | .00 | 545.08 | .00 | .00 | .00 | 545.08 |
| | TOTAL | 1.358200 | 2,420.27 | .00 | 1,513.59 | .00 | 3,933.86 | 403.98 | .00 | .00 | 4,337.84 |
| 2015 | M & O | 1.170000 | 2,000.33 | .00 | 1,438.19 | .00 | 3,438.52 | 405.32 | .00 | .00 | 3,843.84 |
| | I & S | .197200 | 337.15 | .00 | 242.41 | .00 | 579.56 | .00 | .00 | .00 | 579.56 |
| | TOTAL | 1.367200 | 2,337.48 | .00 | 1,680.60 | .00 | 4,018.08 | 405.32 | .00 | .00 | 4,423.40 |
| 2014 | M & O | 1.170000 | 1,831.08 | .00 | 1,694.50 | .00 | 3,525.58 | 483.44 | .00 | .00 | 4,009.02 |
| | I & S | .160000 | 250.41 | .00 | 231.72 | .00 | 482.13 | .00 | .00 | .00 | 482.13 |
| | TOTAL | 1.330000 | 2,081.49 | .00 | 1,926.22 | .00 | 4,007.71 | 483.44 | .00 | .00 | 4,491.15 |
| 2013 | M & O | 1.170000 | 1,151.67 | .00 | 1,358.09 | .00 | 2,509.76 | 418.29 | .00 | .00 | 2,928.05 |
| | I & S | .130000 | 127.97 | .00 | 150.90 | .00 | 278.87 | .00 | .00 | .00 | 278.87 |
| | TOTAL | 1.300000 | 1,279.64 | .00 | 1,508.99 | .00 | 2,788.63 | 418.29 | .00 | .00 | 3,206.92 |
| 2012 | M & O | 1.170000 | 824.43 | .00 | 1,053.00 | .00 | 1,877.43 | 305.15 | .00 | .00 | 2,182.58 |
| | I & S | .130000 | 91.60 | .00 | 117.00 | .00 | 208.60 | .00 | .00 | .00 | 208.60 |
| | TOTAL | 1.300000 | 916.03 | .00 | 1,170.00 | .00 | 2,086.03 | 305.15 | .00 | .00 | 2,391.18 |
| 2011 | M & O | 1.170000 | 594.25 | .00 | 829.45 | .00 | 1,423.70 | 231.46 | .00 | .00 | 1,655.16 |
| | I & S | .130000 | 66.02 | .00 | 92.17 | .00 | 158.19 | .00 | .00 | .00 | 158.19 |
| | TOTAL | 1.300000 | 660.27 | .00 | 921.62 | .00 | 1,581.89 | 231.46 | .00 | .00 | 1,813.35 |

| YEAR | FUND | TAX RATE | LEVY PAID | DISCOUNT GIVEN | PENALTY INTEREST | TIF AMOUNT | DISBURSE TOTAL | ATTORNEY | OTHER FEES | REFUND AMOUNT | PAYMENT AMOUNT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2010 | M & O | 1.040000 | 98.65 | .00 | 151.81 | .00 | 250.46 | 46.97 | .00 | .00 | 297.43 |
| | I & S | .260000 | 24.67 | .00 | 37.95 | .00 | 62.62 | .00 | .00 | .00 | 62.62 |
| | TOTAL | 1.300000 | 123.32 | .00 | 189.76 | .00 | 313.08 | 46.97 | .00 | .00 | 360.05 |
| 2009 | M & O | 1.040000 | 43.37 | .00 | 67.66 | .00 | 111.03 | 18.57 | .00 | .00 | 129.60 |
| | I & S | .240000 | 10.00 | .00 | 15.61 | .00 | 25.61 | .00 | .00 | .00 | 25.61 |
| | TOTAL | 1.280000 | 53.37 | .00 | 83.27 | .00 | 136.64 | 18.57 | .00 | .00 | 155.21 |
| 2008 | M & O | 1.040000 | 494.91 | .00 | 880.95 | .00 | 1,375.86 | 246.07 | .00 | .00 | 1,621.93 |
| | I & S | .200000 | 95.18 | .00 | 169.41 | .00 | 264.59 | .00 | .00 | .00 | 264.59 |
| | TOTAL | 1.240000 | 590.09 | .00 | 1,050.36 | .00 | 1,640.45 | 246.07 | .00 | .00 | 1,886.52 |
| 2006 | M & O | 1.337400 | 665.28 | .00 | 1,343.86 | .00 | 2,009.14 | 328.41 | .00 | .00 | 2,337.55 |
| | I & S | .120000 | 59.69 | .00 | 120.58 | .00 | 180.27 | .00 | .00 | .00 | 180.27 |
| | TOTAL | 1.457400 | 724.97 | .00 | 1,464.44 | .00 | 2,189.41 | 328.41 | .00 | .00 | 2,517.82 |
| 2005 | M & O | 1.463200 | 830.52 | .00 | 1,760.48 | .00 | 2,591.00 | 411.36 | .00 | .00 | 3,002.36 |
| | I & S | .100000 | 56.76 | .00 | 120.31 | .00 | 177.07 | .00 | .00 | .00 | 177.07 |
| | TOTAL | 1.563200 | 887.28 | .00 | 1,880.79 | .00 | 2,768.07 | 411.36 | .00 | .00 | 3,179.43 |
| 2004 | M & O | 1.463200 | 17.23 | .00 | 31.75 | .00 | 48.98 | 6.18 | .00 | .00 | 55.16 |
| | I & S | .105900 | 1.25 | .00 | 2.30 | .00 | 3.55 | .00 | .00 | .00 | 3.55 |
| | TOTAL | 1.569100 | 18.48 | .00 | 34.05 | .00 | 52.53 | 6.18 | .00 | .00 | 58.71 |
| 2003 | M & O | 1.463200 | 138.75 | .00 | 273.22 | .00 | 411.97 | 58.36 | .00 | .00 | 470.33 |
| | I & S | .120900 | 11.46 | .00 | 22.57 | .00 | 34.03 | .00 | .00 | .00 | 34.03 |
| | TOTAL | 1.584100 | 150.21 | .00 | 295.79 | .00 | 446.00 | 58.36 | .00 | .00 | 504.36 |
| 2002 | M & O | 1.450000 | 14.83 | .00 | 36.93 | .00 | 51.76 | 8.48 | .00 | .00 | 60.24 |
| | I & S | .134100 | 1.37 | .00 | 3.41 | .00 | 4.78 | .00 | .00 | .00 | 4.78 |
| | TOTAL | 1.584100 | 16.20 | .00 | 40.34 | .00 | 56.54 | 8.48 | .00 | .00 | 65.02 |
| 1998 | M & O | 1.231000 | 53.77 | .00 | 127.40 | .00 | 181.17 | 25.54 | .00 | .00 | 206.71 |
| | I & S | .274000 | 11.97 | .00 | 28.36 | .00 | 40.33 | .00 | .00 | .00 | 40.33 |
| | TOTAL | 1.505000 | 65.74 | .00 | 155.76 | .00 | 221.50 | 25.54 | .00 | .00 | 247.04 |
| ALL | M & O | | 1,857,116.92 | .00 | 37,591.45 | .00 | 1,894,708.37 | 21,563.06 | .00 | .00 | 1,916,271.43 |
| ALL | I & S | | 333,280.08 | .00 | 5,647.13 | .00 | 338,927.21 | .00 | .00 | .00 | 338,927.21 |
| ALL | TOTAL | | 2,190,397.00 | .00 | 43,238.58 | .00 | 2,233,635.58 | 21,563.06 | .00 | .00 | 2,255,198.64 |
| DLQ | M & O | | 83,683.70 | .00 | 37,591.45 | .00 | 121,275.15 | 21,563.06 | .00 | .00 | 142,838.21 |
| DLQ | I & S | | 13,350.94 | .00 | 5,647.13 | .00 | 18,998.07 | .00 | .00 | .00 | 18,998.07 |
| DLQ | TOTAL | | 97,034.64 | .00 | 43,238.58 | .00 | 140,273.22 | 21,563.06 | .00 | .00 | 161,836.28 |

| YEAR | FUND | TAX RATE | LEVY PAID | DISCOUNT GIVEN | PENALTY INTEREST | TIF AMOUNT | DISBURSE TOTAL | ATTORNEY | OTHER FEES | REFUND AMOUNT | PAYMENT AMOUNT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CURR | M & O | | 1,773,433.22 | .00 | .00 | .00 | 1,773,433.22 | .00 | .00 | .00 | 1,773,433.22 |
| CURR | I & S | | 319,929.14 | .00 | .00 | .00 | 319,929.14 | .00 | .00 | .00 | 319,929.14 |
| CURR | TOTAL | | 2,093,362.36 | .00 | .00 | .00 | 2,093,362.36 | .00 | .00 | .00 | 2,093,362.36 |

FISCAL START: 07/01/2022 END: 06/30/2023 JURISDICTION: 0048 MISSION CISD

| | CERT TAXABLE VALUE | ADJUSTMENTS | ADJ TAX VALUE | | TAX RATE | TAX LEVY | PAID ACCTS |
|---|---|---|---|---|---|---|---|
| CURRENT YEAR | 2,869,114,178 | 16,929,252 | 2,886,043,430 | 0 | 01.113000 | 31,487,083.89 | 4,975 |

| YEAR | TAXES DUE | MONTH ADJ | ADJUSTMENT YTD | LEVY PAID | PAID YTD | BALANCE | COLL % | YTD UNCOLL |
|---|---|---|---|---|---|---|---|---|
| 2022 | 31,332,080.80 | 34,598.62- | 155,003.09 | 2,093,362.36 | 2,369,402.89 | 29,117,681.00 | 7.52 | 0.00 |
| 2021 | 1,488,893.45 | 17,076.15- | 87,647.08- | 44,020.54 | 461,209.14 | 940,037.23 | 32.91 | 0.00 |
| 2020 | 556,262.58 | 1,976.05- | 36,269.12- | 17,490.44 | 94,962.80 | 425,030.66 | 18.26 | 0.00 |
| 2019 | 368,583.48 | .00 | 4,830.43- | 12,397.63 | 61,787.83 | 301,965.22 | 16.99 | 0.00 |
| 2018 | 250,722.27 | .00 | 7,852.50- | 7,128.97 | 32,341.68 | 210,528.09 | 13.32 | 0.00 |
| 2017 | 197,106.98 | .00 | 17,637.44- | 3,672.22 | 18,270.76 | 161,198.78 | 10.18 | 0.00 |
| 2016 | 157,749.31 | .00 | 2,459.53- | 2,420.27 | 13,350.90 | 141,938.88 | 8.60 | 0.00 |
| 2015 | 132,716.63 | .00 | 374.15- | 2,337.48 | 7,161.84 | 125,180.64 | 5.41 | 0.00 |
| 2014 | 116,629.45 | .00 | 196.07- | 2,081.49 | 4,741.25 | 111,692.13 | 4.07 | 0.00 |
| 2013 | 102,397.49 | .00 | 114.13- | 1,279.64 | 3,841.96 | 98,441.40 | 3.76 | 0.00 |
| 2012 | 98,527.46 | .00 | 121.55- | 916.03 | 2,329.77 | 96,076.14 | 2.37 | 0.00 |
| 2011 | 91,176.06 | .00 | 126.57- | 660.27 | 1,369.51 | 89,679.98 | 1.50 | 0.00 |
| 2010 | 84,961.54 | .00 | 0.00 | 123.32 | 1,151.70 | 83,809.84 | 1.36 | 0.00 |
| 2009 | 88,676.21 | .00 | 0.00 | 53.37 | 1,120.50 | 87,555.71 | 1.26 | 0.00 |
| 2008 | 86,440.93 | .00 | 0.00 | 590.09 | 1,500.00 | 84,940.93 | 1.74 | 0.00 |
| 2007 | 72,286.80 | .00 | 0.00 | 0.00 | 1,250.77 | 71,036.03 | 1.73 | 0.00 |
| 2006 | 71,093.88 | .00 | 0.00 | 724.97 | 910.24 | 70,183.64 | 1.28 | 0.00 |
| 2005 | 65,685.76 | .00 | 0.00 | 887.28 | 1,789.44 | 63,896.32 | 2.72 | 0.00 |
| 2004 | 59,922.84 | .00 | 0.00 | 18.48 | 595.58 | 59,327.26 | .99 | 0.00 |
| 2003 | 41,945.93 | .00 | 0.00 | 150.21 | 313.64 | 41,632.29 | .75 | 0.00 |
| 2002 | 41,419.81 | .00 | 0.00 | 16.20 | 83.87 | 41,335.94 | .20 | 0.00 |
| 2001 | 158,544.45 | .00 | 5,432.31- | 65.74 | 337.17 | 152,774.97 | .22 | 0.00 |
| **** | 35,663,824.11 | 53,650.82- | 8,057.79- | 2,190,397.00 | 3,079,823.24 | 32,575,943.08 | | 0.00 |
| CURR | 31,332,080.80 | 34,598.62- | 155,003.09 | 2,093,362.36 | 2,369,402.89 | 29,117,681.00 | | 0.00 |
| DELQ | 4,331,743.31 | 19,052.20- | 163,060.88- | 97,034.64 | 710,420.35 | 3,458,262.08 | | 0.00 |

FISCAL START: 07/01/2022 END: 06/30/2023 JURISDICTION: 0048 MISSION CISD

| | CERT TAXABLE VALUE | ADJUSTMENTS | ADJ TAX VALUE | | TAX RATE | TAX LEVY | PAID ACCTS |
|---|---|---|---|---|---|---|---|
| CURRENT YEAR | 0 | 0 | 0 | 0 | 00.000000 | 0.00 | 0 |

| YEAR | TAXES DUE | MONTH ADJ | ADJUSTMENT YTD | LEVY PAID | PAID YTD | BALANCE | COLL % | YTD UNCOLL |
|---|---|---|---|---|---|---|---|---|
| 2021 | 0.00 | .00 | 2,236.22 | 0.00 | 2,236.22 | 0.00 | | 0.00 |
| 2020 | 9,010.29 | .00 | 1,720.86 | 0.00 | 10,731.15 | 0.00 | | 0.00 |
| 2019 | 10,966.81 | .00 | 1,775.80 | 0.00 | 11,084.43 | 1,658.18 | 86.99 | 0.00 |
| 2018 | 8,598.90 | .00 | 0.00 | 0.00 | 6,961.60 | 1,637.30 | 80.96 | 0.00 |
| 2017 | 1,722.57 | .00 | 0.00 | 0.00 | 0.00 | 1,722.57 | | 0.00 |
| **** | 30,298.57 | .00 | 5,732.88 | 0.00 | 31,013.40 | 5,018.05 | | 0.00 |
| CURR | 0.00 | .00 | 0.00 | 0.00 | 0.00 | 0.00 | | 0.00 |
| DELQ | 30,298.57 | .00 | 5,732.88 | 0.00 | 31,013.40 | 5,018.05 | | 0.00 |

FISCAL START: 07/01/2022 END: 06/30/2023 JURISDICTION: 0048 MISSION CISD

| | CERT TAXABLE VALUE | ADJUSTMENTS | ADJ TAX VALUE | | TAX RATE | TAX LEVY | PAID ACCTS |
|---|---|---|---|---|---|---|---|
| CURRENT YEAR | 2,869,114,178 | 16,929,252 | 2,886,043,430 | 0 | 01.113000 | 31,487,083.89 | 4,975 |

| YEAR | TAXES DUE | MONTH ADJ | ADJUSTMENT YTD | LEVY PAID | PAID YTD | BALANCE | COLL % | YTD UNCOLL |
|---|---|---|---|---|---|---|---|---|
| 2022 | 31,332,080.80 | 34,598.62- | 155,003.09 | 2,093,362.36 | 2,369,402.89 | 29,117,681.00 | 7.52 | 0.00 |
| 2021 | 1,488,893.45 | 17,076.15- | 85,410.86- | 44,020.54 | 463,445.36 | 940,037.23 | 33.02 | 0.00 |
| 2020 | 565,272.87 | 1,976.05- | 34,548.26- | 17,490.44 | 105,693.95 | 425,030.66 | 19.92 | 0.00 |
| 2019 | 379,550.29 | .00 | 3,054.63- | 12,397.63 | 72,872.26 | 303,623.40 | 19.36 | 0.00 |
| 2018 | 259,321.17 | .00 | 7,852.50- | 7,128.97 | 39,303.28 | 212,165.39 | 15.63 | 0.00 |
| 2017 | 198,829.55 | .00 | 17,637.44- | 3,672.22 | 18,270.76 | 162,921.35 | 10.08 | 0.00 |
| 2016 | 157,749.31 | .00 | 2,459.53- | 2,420.27 | 13,350.90 | 141,938.88 | 8.60 | 0.00 |
| 2015 | 132,716.63 | .00 | 374.15- | 2,337.48 | 7,161.84 | 125,180.64 | 5.41 | 0.00 |
| 2014 | 116,629.45 | .00 | 196.07- | 2,081.49 | 4,741.25 | 111,692.13 | 4.07 | 0.00 |
| 2013 | 102,397.49 | .00 | 114.13- | 1,279.64 | 3,841.96 | 98,441.40 | 3.76 | 0.00 |
| 2012 | 98,527.46 | .00 | 121.55- | 916.03 | 2,329.77 | 96,076.14 | 2.37 | 0.00 |
| 2011 | 91,176.06 | .00 | 126.57- | 660.27 | 1,369.51 | 89,679.98 | 1.50 | 0.00 |
| 2010 | 84,961.54 | .00 | 0.00 | 123.32 | 1,151.70 | 83,809.84 | 1.36 | 0.00 |
| 2009 | 88,676.21 | .00 | 0.00 | 53.37 | 1,120.50 | 87,555.71 | 1.26 | 0.00 |
| 2008 | 86,440.93 | .00 | 0.00 | 590.09 | 1,500.00 | 84,940.93 | 1.74 | 0.00 |
| 2007 | 72,286.80 | .00 | 0.00 | 0.00 | 1,250.77 | 71,036.03 | 1.73 | 0.00 |
| 2006 | 71,093.88 | .00 | 0.00 | 724.97 | 910.24 | 70,183.64 | 1.28 | 0.00 |
| 2005 | 65,685.76 | .00 | 0.00 | 887.28 | 1,789.44 | 63,896.32 | 2.72 | 0.00 |
| 2004 | 59,922.84 | .00 | 0.00 | 18.48 | 595.58 | 59,327.26 | .99 | 0.00 |
| 2003 | 41,945.93 | .00 | 0.00 | 150.21 | 313.64 | 41,632.29 | .75 | 0.00 |
| 2002 | 41,419.81 | .00 | 0.00 | 16.20 | 83.87 | 41,335.94 | .20 | 0.00 |
| 2001 | 158,544.45 | .00 | 5,432.31- | 65.74 | 337.17 | 152,774.97 | .22 | 0.00 |
| **** | 35,694,122.68 | 53,650.82- | 2,324.91- | 2,190,397.00 | 3,110,836.64 | 32,580,961.13 | | 0.00 |
| CURR | 31,332,080.80 | 34,598.62- | 155,003.09 | 2,093,362.36 | 2,369,402.89 | 29,117,681.00 | | 0.00 |
| DELQ | 4,362,041.88 | 19,052.20- | 157,328.00- | 97,034.64 | 741,433.75 | 3,463,280.13 | | 0.00 |

JURISDICTION: 0048 MISSION CISD

| | CERT TAXABLE VALUE | ADJUSTMENTS | ADJ TAX VALUE | TAX RATE | TAX LEVY | PAID ACCTS |
|---|---|---|---|---|---|---|
| CURRENT YEAR | 2,869,114,178 | 16,929,252 | 2,886,043,430 | 1.113000 | 31,487,083.89 | 4,975 |

| YEAR | TAXES DUE | MONTH ADJ | ADJUSTMENT YTD | LEVY PAID | PAID YTD | BALANCE | COLL % | YTD UNCOLL |
|---|---|---|---|---|---|---|---|---|
| 2022 | 31,332,080.80 | 34,598.62- | 155,003.09 | 2,093,362.36 | 2,369,402.89 | 29,117,681.00 | 7.52 | 0.00 |
| ADJUSTMENT REFUNDS | | 1,921.79- | 1,921.79- | | | | | |
| 2021 | 1,488,893.45 | 17,076.15- | 87,647.08- | 44,020.54 | 461,209.14 | 940,037.23 | 32.91 | 0.00 |
| ADJUSTMENT REFUNDS | | 16,904.59- | 78,643.55- | | | | | |
| 2020 | 556,262.58 | 1,976.05- | 36,269.12- | 17,490.44 | 94,962.80 | 425,030.66 | 18.26 | 0.00 |
| ADJUSTMENT REFUNDS | | 1,619.03- | 31,166.54- | | | | | |
| 2019 | 368,583.48 | .00 | 4,830.43- | 12,397.63 | 61,787.83 | 301,965.22 | 16.99 | 0.00 |
| ADJUSTMENT REFUNDS | | .00 | 210.72- | | | | | |
| 2018 | 250,722.27 | .00 | 7,852.50- | 7,128.97 | 32,341.68 | 210,528.09 | 13.32 | 0.00 |
| ADJUSTMENT REFUNDS | | .00 | 3,320.02- | | | | | |
| 2017 | 197,106.98 | .00 | 17,637.44- | 3,672.22 | 18,270.76 | 161,198.78 | 10.18 | 0.00 |
| 2016 | 157,749.31 | .00 | 2,459.53- | 2,420.27 | 13,350.90 | 141,938.88 | 8.60 | 0.00 |
| 2015 | 132,716.63 | .00 | 374.15- | 2,337.48 | 7,161.84 | 125,180.64 | 5.41 | 0.00 |
| 2014 | 116,629.45 | .00 | 196.07- | 2,081.49 | 4,741.25 | 111,692.13 | 4.07 | 0.00 |
| 2013 | 102,397.49 | .00 | 114.13- | 1,279.64 | 3,841.96 | 98,441.40 | 3.76 | 0.00 |
| 2012 | 98,527.46 | .00 | 121.55- | 916.03 | 2,329.77 | 96,076.14 | 2.37 | 0.00 |
| 2011 | 91,176.06 | .00 | 126.57- | 660.27 | 1,369.51 | 89,679.98 | 1.50 | 0.00 |
| 2010 | 84,961.54 | .00 | 0.00 | 123.32 | 1,151.70 | 83,809.84 | 1.36 | 0.00 |
| 2009 | 88,676.21 | .00 | 0.00 | 53.37 | 1,120.50 | 87,555.71 | 1.26 | 0.00 |
| 2008 | 86,440.93 | .00 | 0.00 | 590.09 | 1,500.00 | 84,940.93 | 1.74 | 0.00 |
| 2007 | 72,286.80 | .00 | 0.00 | 0.00 | 1,250.77 | 71,036.03 | 1.73 | 0.00 |
| 2006 | 71,093.88 | .00 | 0.00 | 724.97 | 910.24 | 70,183.64 | 1.28 | 0.00 |
| 2005 | 65,685.76 | .00 | 0.00 | 887.28 | 1,789.44 | 63,896.32 | 2.72 | 0.00 |
| 2004 | 59,922.84 | .00 | 0.00 | 18.48 | 595.58 | 59,327.26 | .99 | 0.00 |
| 2003 | 41,945.93 | .00 | 0.00 | 150.21 | 313.64 | 41,632.29 | .75 | 0.00 |
| 2002 | 41,419.81 | .00 | 0.00 | 16.20 | 83.87 | 41,335.94 | .20 | 0.00 |
| 2001 | 158,544.45 | .00 | 5,432.31- | 65.74 | 337.17 | 152,774.97 | .22 | 0.00 |
| **** | 35,663,824.11 | 53,650.82- | 8,057.79- | 2,190,397.00 | 3,079,823.24 | 32,575,943.08 | | 0.00 |
| ADJUSTMENT REFUNDS | | 20,445.41- | 115,262.62- | | | | | |

JURISDICTION: 0048 MISSION CISD

| | CERT TAXABLE VALUE | ADJUSTMENTS | ADJ TAX VALUE | TAX RATE | TAX LEVY | PAID ACCTS |
|---|---|---|---|---|---|---|
| CURRENT YEAR | 0 | 0 | 0 | 1.133200 | 2,236.22 | 1 |

| YEAR | TAXES DUE | MONTH ADJ | ADJUSTMENT YTD | LEVY PAID | PAID YTD | BALANCE | COLL % | YTD UNCOLL |
|---|---|---|---|---|---|---|---|---|
| 2021 | 0.00 | .00 | 2,236.22 | 0.00 | 2,236.22 | 0.00 | | 0.00 |
| ADJUSTMENT REFUNDS | | 16,904.59- | 78,643.55- | | | | | |
| 2020 | 9,010.29 | .00 | 1,720.86 | 0.00 | 10,731.15 | 0.00 | | 0.00 |
| ADJUSTMENT REFUNDS | | 1,619.03- | 31,166.54- | | | | | |
| 2019 | 10,966.81 | .00 | 1,775.80 | 0.00 | 11,084.43 | 1,658.18 | 86.99 | 0.00 |
| ADJUSTMENT REFUNDS | | .00 | 210.72- | | | | | |
| 2018 | 8,598.90 | .00 | 0.00 | 0.00 | 6,961.60 | 1,637.30 | 80.96 | 0.00 |
| ADJUSTMENT REFUNDS | | .00 | 3,320.02- | | | | | |
| 2017 | 1,722.57 | .00 | 0.00 | 0.00 | 0.00 | 1,722.57 | | 0.00 |
| **** | 30,298.57 | .00 | 5,732.88 | 0.00 | 31,013.40 | 5,018.05 | | 0.00 |
| ADJUSTMENT REFUNDS | | 18,523.62- | 113,340.83- | | | | | |

JURISDICTION: 0048 MISSION CISD

| | CERT TAXABLE VALUE | ADJUSTMENTS | ADJ TAX VALUE | TAX RATE | TAX LEVY | PAID ACCTS |
|---|---|---|---|---|---|---|
| CURRENT YEAR | 2,869,114,178 | 16,929,252 | 2,886,043,430 | 1.113000 | 31,487,083.89 | 4,975 |

| YEAR | TAXES DUE | MONTH ADJ | ADJUSTMENT YTD | LEVY PAID | PAID YTD | BALANCE | COLL % | YTD UNCOLL |
|---|---|---|---|---|---|---|---|---|
| 2022 | 31,332,080.80 | 34,598.62- | 155,003.09 | 2,093,362.36 | 2,369,402.89 | 29,117,681.00 | 7.52 | 0.00 |
| ADJUSTMENT REFUNDS | | 1,921.79- | 1,921.79- | | | | | |
| 2021 | 1,488,893.45 | 17,076.15- | 85,410.86- | 44,020.54 | 463,445.36 | 940,037.23 | 33.02 | 0.00 |
| ADJUSTMENT REFUNDS | | 16,904.59- | 78,643.55- | | | | | |
| 2020 | 565,272.87 | 1,976.05- | 34,548.26- | 17,490.44 | 105,693.95 | 425,030.66 | 19.92 | 0.00 |
| ADJUSTMENT REFUNDS | | 1,619.03- | 31,166.54- | | | | | |
| 2019 | 379,550.29 | .00 | 3,054.63- | 12,397.63 | 72,872.26 | 303,623.40 | 19.36 | 0.00 |
| ADJUSTMENT REFUNDS | | .00 | 210.72- | | | | | |
| 2018 | 259,321.17 | .00 | 7,852.50- | 7,128.97 | 39,303.28 | 212,165.39 | 15.63 | 0.00 |
| ADJUSTMENT REFUNDS | | .00 | 3,320.02- | | | | | |
| 2017 | 198,829.55 | .00 | 17,637.44- | 3,672.22 | 18,270.76 | 162,921.35 | 10.08 | 0.00 |
| 2016 | 157,749.31 | .00 | 2,459.53- | 2,420.27 | 13,350.90 | 141,938.88 | 8.60 | 0.00 |
| 2015 | 132,716.63 | .00 | 374.15- | 2,337.48 | 7,161.84 | 125,180.64 | 5.41 | 0.00 |
| 2014 | 116,629.45 | .00 | 196.07- | 2,081.49 | 4,741.25 | 111,692.13 | 4.07 | 0.00 |
| 2013 | 102,397.49 | .00 | 114.13- | 1,279.64 | 3,841.96 | 98,441.40 | 3.76 | 0.00 |
| 2012 | 98,527.46 | .00 | 121.55- | 916.03 | 2,329.77 | 96,076.14 | 2.37 | 0.00 |
| 2011 | 91,176.06 | .00 | 126.57- | 660.27 | 1,369.51 | 89,679.98 | 1.50 | 0.00 |
| 2010 | 84,961.54 | .00 | 0.00 | 123.32 | 1,151.70 | 83,809.84 | 1.36 | 0.00 |
| 2009 | 88,676.21 | .00 | 0.00 | 53.37 | 1,120.50 | 87,555.71 | 1.26 | 0.00 |
| 2008 | 86,440.93 | .00 | 0.00 | 590.09 | 1,500.00 | 84,940.93 | 1.74 | 0.00 |
| 2007 | 72,286.80 | .00 | 0.00 | 0.00 | 1,250.77 | 71,036.03 | 1.73 | 0.00 |
| 2006 | 71,093.88 | .00 | 0.00 | 724.97 | 910.24 | 70,183.64 | 1.28 | 0.00 |
| 2005 | 65,685.76 | .00 | 0.00 | 887.28 | 1,789.44 | 63,896.32 | 2.72 | 0.00 |
| 2004 | 59,922.84 | .00 | 0.00 | 18.48 | 595.58 | 59,327.26 | .99 | 0.00 |
| 2003 | 41,945.93 | .00 | 0.00 | 150.21 | 313.64 | 41,632.29 | .75 | 0.00 |
| 2002 | 41,419.81 | .00 | 0.00 | 16.20 | 83.87 | 41,335.94 | .20 | 0.00 |
| 2001 | 158,544.45 | .00 | 5,432.31- | 65.74 | 337.17 | 152,774.97 | .22 | 0.00 |
| **** | 35,694,122.68 | 53,650.82- | 2,324.91- | 2,190,397.00 | 3,110,836.64 | 32,580,961.13 | | 0.00 |
| ADJUSTMENT REFUNDS | | 20,445.41- | 115,262.62- | | | | | |

TAX COLLECTION SYSTEM
DEPOSIT DISTRIBUTION
FROM: 07/01/2022 THRU 11/30/2022
JURISDICTION: 0048 MISSION CISD


EXCLUDES AG ROLLBACK

| YEAR | FUND | TAX RATE | LEVY PAID | DISCOUNT GIVEN | PENALTY INTEREST | TIF AMOUNT | DISBURSE TOTAL | ATTORNEY | OTHER FEES | REFUND AMOUNT | PAYMENT AMOUNT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2022 | M & O | .942900 | 2,007,286.34 | .00 | .00 | .00 | 2,007,286.34 | .00 | .00 | .00 | 2,007,286.34 |
| | I & S | .170100 | 362,116.55 | .00 | .00 | .00 | 362,116.55 | .00 | .00 | .00 | 362,116.55 |
| | TOTAL | 1.113000 | 2,369,402.89 | .00 | .00 | .00 | 2,369,402.89 | .00 | .00 | .00 | 2,369,402.89 |
| 2021 | M & O | .971900 | 395,559.88 | .00 | 80,898.95 | .00 | 476,458.83 | 81,420.96 | .00 | .00 | 557,879.79 |
| | I & S | .161300 | 65,649.26 | .00 | 13,426.28 | .00 | 79,075.54 | .00 | .00 | .00 | 79,075.54 |
| | TOTAL | 1.133200 | 461,209.14 | .00 | 94,325.23 | .00 | 555,534.37 | 81,420.96 | .00 | .00 | 636,955.33 |
| 2020 | M & O | 1.028000 | 81,399.03 | .00 | 31,819.96 | .00 | 113,218.99 | 22,761.50 | .00 | .00 | 135,980.49 |
| | I & S | .171300 | 13,563.77 | .00 | 5,302.20 | .00 | 18,865.97 | .00 | .00 | .00 | 18,865.97 |
| | TOTAL | 1.199300 | 94,962.80 | .00 | 37,122.16 | .00 | 132,084.96 | 22,761.50 | .00 | .00 | 154,846.46 |
| 2019 | M & O | 1.068350 | 53,254.06 | .00 | 22,183.42 | .00 | 75,437.48 | 12,335.87 | .00 | .00 | 87,773.35 |
| | I & S | .171200 | 8,533.77 | .00 | 3,554.71 | .00 | 12,088.48 | .00 | .00 | .00 | 12,088.48 |
| | TOTAL | 1.239550 | 61,787.83 | .00 | 25,738.13 | .00 | 87,525.96 | 12,335.87 | .00 | .00 | 99,861.83 |
| 2018 | M & O | 1.170000 | 28,242.83 | .00 | 16,144.70 | .00 | 44,387.53 | 7,526.04 | .00 | .00 | 51,913.57 |
| | I & S | .169800 | 4,098.85 | .00 | 2,343.05 | .00 | 6,441.90 | .00 | .00 | .00 | 6,441.90 |
| | TOTAL | 1.339800 | 32,341.68 | .00 | 18,487.75 | .00 | 50,829.43 | 7,526.04 | .00 | .00 | 58,355.47 |
| 2017 | M & O | 1.170000 | 15,832.28 | .00 | 9,849.78 | .00 | 25,682.06 | 4,028.67 | .00 | .00 | 29,710.73 |
| | I & S | .180200 | 2,438.48 | .00 | 1,517.02 | .00 | 3,955.50 | .00 | .00 | .00 | 3,955.50 |
| | TOTAL | 1.350200 | 18,270.76 | .00 | 11,366.80 | .00 | 29,637.56 | 4,028.67 | .00 | .00 | 33,666.23 |
| 2016 | M & O | 1.170000 | 11,500.99 | .00 | 8,696.32 | .00 | 20,197.31 | 3,314.16 | .00 | .00 | 23,511.47 |
| | I & S | .188200 | 1,849.91 | .00 | 1,398.79 | .00 | 3,248.70 | .00 | .00 | .00 | 3,248.70 |
| | TOTAL | 1.358200 | 13,350.90 | .00 | 10,095.11 | .00 | 23,446.01 | 3,314.16 | .00 | .00 | 26,760.17 |
| 2015 | M & O | 1.170000 | 6,128.84 | .00 | 5,188.04 | .00 | 11,316.88 | 1,785.34 | .00 | .00 | 13,102.22 |
| | I & S | .197200 | 1,033.00 | .00 | 874.45 | .00 | 1,907.45 | .00 | .00 | .00 | 1,907.45 |
| | TOTAL | 1.367200 | 7,161.84 | .00 | 6,062.49 | .00 | 13,224.33 | 1,785.34 | .00 | .00 | 15,009.67 |
| 2014 | M & O | 1.170000 | 4,170.87 | .00 | 3,926.31 | .00 | 8,097.18 | 1,175.50 | .00 | .00 | 9,272.68 |
| | I & S | .160000 | 570.38 | .00 | 536.93 | .00 | 1,107.31 | .00 | .00 | .00 | 1,107.31 |
| | TOTAL | 1.330000 | 4,741.25 | .00 | 4,463.24 | .00 | 9,204.49 | 1,175.50 | .00 | .00 | 10,379.99 |
| 2013 | M & O | 1.170000 | 3,457.77 | .00 | 3,301.28 | .00 | 6,759.05 | 868.79 | .00 | .00 | 7,627.84 |
| | I & S | .130000 | 384.19 | .00 | 366.84 | .00 | 751.03 | .00 | .00 | .00 | 751.03 |
| | TOTAL | 1.300000 | 3,841.96 | .00 | 3,668.12 | .00 | 7,510.08 | 868.79 | .00 | .00 | 8,378.87 |
| 2012 | M & O | 1.170000 | 2,096.80 | .00 | 2,301.82 | .00 | 4,398.62 | 584.06 | .00 | .00 | 4,982.68 |
| | I & S | .130000 | 232.97 | .00 | 255.77 | .00 | 488.74 | .00 | .00 | .00 | 488.74 |
| | TOTAL | 1.300000 | 2,329.77 | .00 | 2,557.59 | .00 | 4,887.36 | 584.06 | .00 | .00 | 5,471.42 |
| 2011 | M & O | 1.170000 | 1,232.57 | .00 | 1,448.05 | .00 | 2,680.62 | 382.51 | .00 | .00 | 3,063.13 |
| | I & S | .130000 | 136.94 | .00 | 160.90 | .00 | 297.84 | .00 | .00 | .00 | 297.84 |
| | TOTAL | 1.300000 | 1,369.51 | .00 | 1,608.95 | .00 | 2,978.46 | 382.51 | .00 | .00 | 3,360.97 |

| YEAR | FUND | TAX RATE | LEVY PAID | DISCOUNT GIVEN | PENALTY INTEREST | TIF AMOUNT | DISBURSE TOTAL | ATTORNEY | OTHER FEES | REFUND AMOUNT | PAYMENT AMOUNT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2010 | M & O | 1.040000 | 921.35 | .00 | 991.50 | .00 | 1,912.85 | 259.17 | .00 | .00 | 2,172.02 |
| | I & S | .260000 | 230.35 | .00 | 247.88 | .00 | 478.23 | .00 | .00 | .00 | 478.23 |
| | TOTAL | 1.300000 | 1,151.70 | .00 | 1,239.38 | .00 | 2,391.08 | 259.17 | .00 | .00 | 2,650.25 |
| 2009 | M & O | 1.040000 | 910.41 | .00 | 1,081.09 | .00 | 1,991.50 | 271.49 | .00 | .00 | 2,262.99 |
| | I & S | .240000 | 210.09 | .00 | 249.48 | .00 | 459.57 | .00 | .00 | .00 | 459.57 |
| | TOTAL | 1.280000 | 1,120.50 | .00 | 1,330.57 | .00 | 2,451.07 | 271.49 | .00 | .00 | 2,722.56 |
| 2008 | M & O | 1.040000 | 1,258.06 | .00 | 1,833.16 | .00 | 3,091.22 | 473.44 | .00 | .00 | 3,564.66 |
| | I & S | .200000 | 241.94 | .00 | 352.53 | .00 | 594.47 | .00 | .00 | .00 | 594.47 |
| | TOTAL | 1.240000 | 1,500.00 | .00 | 2,185.69 | .00 | 3,685.69 | 473.44 | .00 | .00 | 4,159.13 |
| 2007 | M & O | 1.040000 | 1,102.37 | .00 | 1,692.38 | .00 | 2,794.75 | 386.23 | .00 | .00 | 3,180.98 |
| | I & S | .140000 | 148.40 | .00 | 227.82 | .00 | 376.22 | .00 | .00 | .00 | 376.22 |
| | TOTAL | 1.180000 | 1,250.77 | .00 | 1,920.20 | .00 | 3,170.97 | 386.23 | .00 | .00 | 3,557.20 |
| 2006 | M & O | 1.337400 | 835.30 | .00 | 1,680.49 | .00 | 2,515.79 | 411.23 | .00 | .00 | 2,927.02 |
| | I & S | .120000 | 74.94 | .00 | 150.78 | .00 | 225.72 | .00 | .00 | .00 | 225.72 |
| | TOTAL | 1.457400 | 910.24 | .00 | 1,831.27 | .00 | 2,741.51 | 411.23 | .00 | .00 | 3,152.74 |
| 2005 | M & O | 1.463200 | 1,674.97 | .00 | 3,491.02 | .00 | 5,165.99 | 811.44 | .00 | .00 | 5,977.43 |
| | I & S | .100000 | 114.47 | .00 | 238.58 | .00 | 353.05 | .00 | .00 | .00 | 353.05 |
| | TOTAL | 1.563200 | 1,789.44 | .00 | 3,729.60 | .00 | 5,519.04 | 811.44 | .00 | .00 | 6,330.48 |
| 2004 | M & O | 1.463200 | 555.39 | .00 | 1,054.88 | .00 | 1,610.27 | 215.92 | .00 | .00 | 1,826.19 |
| | I & S | .105900 | 40.19 | .00 | 76.35 | .00 | 116.54 | .00 | .00 | .00 | 116.54 |
| | TOTAL | 1.569100 | 595.58 | .00 | 1,131.23 | .00 | 1,726.81 | 215.92 | .00 | .00 | 1,942.73 |
| 2003 | M & O | 1.463200 | 289.70 | .00 | 594.86 | .00 | 884.56 | 130.23 | .00 | .00 | 1,014.79 |
| | I & S | .120900 | 23.94 | .00 | 49.14 | .00 | 73.08 | .00 | .00 | .00 | 73.08 |
| | TOTAL | 1.584100 | 313.64 | .00 | 644.00 | .00 | 957.64 | 130.23 | .00 | .00 | 1,087.87 |
| 2002 | M & O | 1.450000 | 76.77 | .00 | 189.31 | .00 | 266.08 | 43.60 | .00 | .00 | 309.68 |
| | I & S | .134100 | 7.10 | .00 | 17.50 | .00 | 24.60 | .00 | .00 | .00 | 24.60 |
| | TOTAL | 1.584100 | 83.87 | .00 | 206.81 | .00 | 290.68 | 43.60 | .00 | .00 | 334.28 |
| 2001 | M & O | 1.439400 | 61.49 | .00 | 158.65 | .00 | 220.14 | 35.19 | .00 | .00 | 255.33 |
| | I & S | .094700 | 4.05 | .00 | 10.44 | .00 | 14.49 | .00 | .00 | .00 | 14.49 |
| | TOTAL | 1.534100 | 65.54 | .00 | 169.09 | .00 | 234.63 | 35.19 | .00 | .00 | 269.82 |
| 2000 | M & O | 1.400000 | 59.81 | .00 | 161.49 | .00 | 221.30 | 36.38 | .00 | .00 | 257.68 |
| | I & S | .134100 | 5.73 | .00 | 15.47 | .00 | 21.20 | .00 | .00 | .00 | 21.20 |
| | TOTAL | 1.534100 | 65.54 | .00 | 176.96 | .00 | 242.50 | 36.38 | .00 | .00 | 278.88 |
| 1999 | M & O | 1.420800 | 26.28 | .00 | 74.12 | .00 | 100.40 | 15.95 | .00 | .00 | 116.35 |
| | I & S | .084200 | 1.56 | .00 | 4.39 | .00 | 5.95 | .00 | .00 | .00 | 5.95 |
| | TOTAL | 1.505000 | 27.84 | .00 | 78.51 | .00 | 106.35 | 15.95 | .00 | .00 | 122.30 |

| YEAR | FUND | TAX RATE | LEVY PAID | DISCOUNT GIVEN | PENALTY INTEREST | TIF AMOUNT | DISBURSE TOTAL | ATTORNEY | OTHER FEES | REFUND AMOUNT | PAYMENT AMOUNT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1998 | M & O | 1.231000 | 112.46 | .00 | 279.17 | .00 | 391.63 | 59.06 | .00 | .00 | 450.69 |
| | I & S | .274000 | 25.04 | .00 | 62.14 | .00 | 87.18 | .00 | .00 | .00 | 87.18 |
| | TOTAL | 1.505000 | 137.50 | .00 | 341.31 | .00 | 478.81 | 59.06 | .00 | .00 | 537.87 |
| 1996 | M & O | 1.248600 | 16.68 | .00 | 43.63 | .00 | 60.31 | 8.45 | .00 | .00 | 68.76 |
| | I & S | .206400 | 2.76 | .00 | 7.21 | .00 | 9.97 | .00 | .00 | .00 | 9.97 |
| | TOTAL | 1.455000 | 19.44 | .00 | 50.84 | .00 | 70.28 | 8.45 | .00 | .00 | 78.73 |
| 1995 | M & O | 1.184200 | 18.09 | .00 | 49.49 | .00 | 67.58 | 9.65 | .00 | .00 | 77.23 |
| | I & S | .210800 | 3.22 | .00 | 8.81 | .00 | 12.03 | .00 | .00 | .00 | 12.03 |
| | TOTAL | 1.395000 | 21.31 | .00 | 58.30 | .00 | 79.61 | 9.65 | .00 | .00 | 89.26 |
| ALL | M & O | | 2,618,081.39 | .00 | 199,133.87 | .00 | 2,817,215.26 | 139,350.83 | .00 | .00 | 2,956,566.09 |
| ALL | I & S | | 461,741.85 | .00 | 31,455.46 | .00 | 493,197.31 | .00 | .00 | .00 | 493,197.31 |
| ALL | TOTAL | | 3,079,823.24 | .00 | 230,589.33 | .00 | 3,310,412.57 | 139,350.83 | .00 | .00 | 3,449,763.40 |
| DLQ | M & O | | 610,795.05 | .00 | 199,133.87 | .00 | 809,928.92 | 139,350.83 | .00 | .00 | 949,279.75 |
| DLQ | I & S | | 99,625.30 | .00 | 31,455.46 | .00 | 131,080.76 | .00 | .00 | .00 | 131,080.76 |
| DLQ | TOTAL | | 710,420.35 | .00 | 230,589.33 | .00 | 941,009.68 | 139,350.83 | .00 | .00 | 1,080,360.51 |
| CURR | M & O | | 2,007,286.34 | .00 | .00 | .00 | 2,007,286.34 | .00 | .00 | .00 | 2,007,286.34 |
| CURR | I & S | | 362,116.55 | .00 | .00 | .00 | 362,116.55 | .00 | .00 | .00 | 362,116.55 |
| CURR | TOTAL | | 2,369,402.89 | .00 | .00 | .00 | 2,369,402.89 | .00 | .00 | .00 | 2,369,402.89 |

| YEAR | FUND | TAX RATE | LEVY PAID | DISCOUNT GIVEN | PENALTY INTEREST | TIF AMOUNT | DISBURSE TOTAL | ATTORNEY | OTHER FEES | REFUND AMOUNT | PAYMENT AMOUNT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2021 | M & O | .971900 | 1,917.92 | .00 | .00 | .00 | 1,917.92 | .00 | .00 | .00 | 1,917.92 |
| | I & S | .161300 | 318.30 | .00 | .00 | .00 | 318.30 | .00 | .00 | .00 | 318.30 |
| | TOTAL | 1.133200 | 2,236.22 | .00 | .00 | .00 | 2,236.22 | .00 | .00 | .00 | 2,236.22 |
| 2020 | M & O | 1.028000 | 9,198.38 | .00 | .00 | .00 | 9,198.38 | .00 | .00 | .00 | 9,198.38 |
| | I & S | .171300 | 1,532.77 | .00 | .00 | .00 | 1,532.77 | .00 | .00 | .00 | 1,532.77 |
| | TOTAL | 1.199300 | 10,731.15 | .00 | .00 | .00 | 10,731.15 | .00 | .00 | .00 | 10,731.15 |
| 2019 | M & O | 1.068350 | 9,553.51 | .00 | .00 | .00 | 9,553.51 | .00 | .00 | .00 | 9,553.51 |
| | I & S | .171200 | 1,530.92 | .00 | .00 | .00 | 1,530.92 | .00 | .00 | .00 | 1,530.92 |
| | TOTAL | 1.239550 | 11,084.43 | .00 | .00 | .00 | 11,084.43 | .00 | .00 | .00 | 11,084.43 |
| 2018 | M & O | 1.170000 | 6,079.32 | .00 | .00 | .00 | 6,079.32 | .00 | .00 | .00 | 6,079.32 |
| | I & S | .169800 | 882.28 | .00 | .00 | .00 | 882.28 | .00 | .00 | .00 | 882.28 |
| | TOTAL | 1.339800 | 6,961.60 | .00 | .00 | .00 | 6,961.60 | .00 | .00 | .00 | 6,961.60 |
| ALL | M & O | | 26,749.13 | .00 | .00 | .00 | 26,749.13 | .00 | .00 | .00 | 26,749.13 |
| ALL | I & S | | 4,264.27 | .00 | .00 | .00 | 4,264.27 | .00 | .00 | .00 | 4,264.27 |
| ALL | TOTAL | | 31,013.40 | .00 | .00 | .00 | 31,013.40 | .00 | .00 | .00 | 31,013.40 |
| DLQ | M & O | | 26,749.13 | .00 | .00 | .00 | 26,749.13 | .00 | .00 | .00 | 26,749.13 |
| DLQ | I & S | | 4,264.27 | .00 | .00 | .00 | 4,264.27 | .00 | .00 | .00 | 4,264.27 |
| DLQ | TOTAL | | 31,013.40 | .00 | .00 | .00 | 31,013.40 | .00 | .00 | .00 | 31,013.40 |
| CURR | M & O | | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| CURR | I & S | | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| CURR | TOTAL | | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |

| YEAR | FUND | TAX RATE | LEVY PAID | DISCOUNT GIVEN | PENALTY INTEREST | TIF AMOUNT | DISBURSE TOTAL | ATTORNEY | OTHER FEES | REFUND AMOUNT | PAYMENT AMOUNT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2022 | M & O | .942900 | 2,007,286.34 | .00 | .00 | .00 | 2,007,286.34 | .00 | .00 | .00 | 2,007,286.34 |
| | I & S | .170100 | 362,116.55 | .00 | .00 | .00 | 362,116.55 | .00 | .00 | .00 | 362,116.55 |
| | TOTAL | 1.113000 | 2,369,402.89 | .00 | .00 | .00 | 2,369,402.89 | .00 | .00 | .00 | 2,369,402.89 |
| 2021 | M & O | .971900 | 397,477.80 | .00 | 80,898.95 | .00 | 478,376.75 | 81,420.96 | .00 | .00 | 559,797.71 |
| | I & S | .161300 | 65,967.56 | .00 | 13,426.28 | .00 | 79,393.84 | .00 | .00 | .00 | 79,393.84 |
| | TOTAL | 1.133200 | 463,445.36 | .00 | 94,325.23 | .00 | 557,770.59 | 81,420.96 | .00 | .00 | 639,191.55 |
| 2020 | M & O | 1.028000 | 90,597.41 | .00 | 31,819.96 | .00 | 122,417.37 | 22,761.50 | .00 | .00 | 145,178.87 |
| | I & S | .171300 | 15,096.54 | .00 | 5,302.20 | .00 | 20,398.74 | .00 | .00 | .00 | 20,398.74 |
| | TOTAL | 1.199300 | 105,693.95 | .00 | 37,122.16 | .00 | 142,816.11 | 22,761.50 | .00 | .00 | 165,577.61 |
| 2019 | M & O | 1.068350 | 62,807.57 | .00 | 22,183.42 | .00 | 84,990.99 | 12,335.87 | .00 | .00 | 97,326.86 |
| | I & S | .171200 | 10,064.69 | .00 | 3,554.71 | .00 | 13,619.40 | .00 | .00 | .00 | 13,619.40 |
| | TOTAL | 1.239550 | 72,872.26 | .00 | 25,738.13 | .00 | 98,610.39 | 12,335.87 | .00 | .00 | 110,946.26 |
| 2018 | M & O | 1.170000 | 34,322.15 | .00 | 16,144.70 | .00 | 50,466.85 | 7,526.04 | .00 | .00 | 57,992.89 |
| | I & S | .169800 | 4,981.13 | .00 | 2,343.05 | .00 | 7,324.18 | .00 | .00 | .00 | 7,324.18 |
| | TOTAL | 1.339800 | 39,303.28 | .00 | 18,487.75 | .00 | 57,791.03 | 7,526.04 | .00 | .00 | 65,317.07 |
| 2017 | M & O | 1.170000 | 15,832.28 | .00 | 9,849.78 | .00 | 25,682.06 | 4,028.67 | .00 | .00 | 29,710.73 |
| | I & S | .180200 | 2,438.48 | .00 | 1,517.02 | .00 | 3,955.50 | .00 | .00 | .00 | 3,955.50 |
| | TOTAL | 1.350200 | 18,270.76 | .00 | 11,366.80 | .00 | 29,637.56 | 4,028.67 | .00 | .00 | 33,666.23 |
| 2016 | M & O | 1.170000 | 11,500.99 | .00 | 8,696.32 | .00 | 20,197.31 | 3,314.16 | .00 | .00 | 23,511.47 |
| | I & S | .188200 | 1,849.91 | .00 | 1,398.79 | .00 | 3,248.70 | .00 | .00 | .00 | 3,248.70 |
| | TOTAL | 1.358200 | 13,350.90 | .00 | 10,095.11 | .00 | 23,446.01 | 3,314.16 | .00 | .00 | 26,760.17 |
| 2015 | M & O | 1.170000 | 6,128.84 | .00 | 5,188.04 | .00 | 11,316.88 | 1,785.34 | .00 | .00 | 13,102.22 |
| | I & S | .197200 | 1,033.00 | .00 | 874.45 | .00 | 1,907.45 | .00 | .00 | .00 | 1,907.45 |
| | TOTAL | 1.367200 | 7,161.84 | .00 | 6,062.49 | .00 | 13,224.33 | 1,785.34 | .00 | .00 | 15,009.67 |
| 2014 | M & O | 1.170000 | 4,170.87 | .00 | 3,926.31 | .00 | 8,097.18 | 1,175.50 | .00 | .00 | 9,272.68 |
| | I & S | .160000 | 570.38 | .00 | 536.93 | .00 | 1,107.31 | .00 | .00 | .00 | 1,107.31 |
| | TOTAL | 1.330000 | 4,741.25 | .00 | 4,463.24 | .00 | 9,204.49 | 1,175.50 | .00 | .00 | 10,379.99 |
| 2013 | M & O | 1.170000 | 3,457.77 | .00 | 3,301.28 | .00 | 6,759.05 | 868.79 | .00 | .00 | 7,627.84 |
| | I & S | .130000 | 384.19 | .00 | 366.84 | .00 | 751.03 | .00 | .00 | .00 | 751.03 |
| | TOTAL | 1.300000 | 3,841.96 | .00 | 3,668.12 | .00 | 7,510.08 | 868.79 | .00 | .00 | 8,378.87 |
| 2012 | M & O | 1.170000 | 2,096.80 | .00 | 2,301.82 | .00 | 4,398.62 | 584.06 | .00 | .00 | 4,982.68 |
| | I & S | .130000 | 232.97 | .00 | 255.77 | .00 | 488.74 | .00 | .00 | .00 | 488.74 |
| | TOTAL | 1.300000 | 2,329.77 | .00 | 2,557.59 | .00 | 4,887.36 | 584.06 | .00 | .00 | 5,471.42 |
| 2011 | M & O | 1.170000 | 1,232.57 | .00 | 1,448.05 | .00 | 2,680.62 | 382.51 | .00 | .00 | 3,063.13 |
| | I & S | .130000 | 136.94 | .00 | 160.90 | .00 | 297.84 | .00 | .00 | .00 | 297.84 |
| | TOTAL | 1.300000 | 1,369.51 | .00 | 1,608.95 | .00 | 2,978.46 | 382.51 | .00 | .00 | 3,360.97 |

| YEAR | FUND | TAX RATE | LEVY PAID | DISCOUNT GIVEN | PENALTY INTEREST | TIF AMOUNT | DISBURSE TOTAL | ATTORNEY | OTHER FEES | REFUND AMOUNT | PAYMENT AMOUNT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2010 | M & O | 1.040000 | 921.35 | .00 | 991.50 | .00 | 1,912.85 | 259.17 | .00 | .00 | 2,172.02 |
| | I & S | .260000 | 230.35 | .00 | 247.88 | .00 | 478.23 | .00 | .00 | .00 | 478.23 |
| | TOTAL | 1.300000 | 1,151.70 | .00 | 1,239.38 | .00 | 2,391.08 | 259.17 | .00 | .00 | 2,650.25 |
| 2009 | M & O | 1.040000 | 910.41 | .00 | 1,081.09 | .00 | 1,991.50 | 271.49 | .00 | .00 | 2,262.99 |
| | I & S | .240000 | 210.09 | .00 | 249.48 | .00 | 459.57 | .00 | .00 | .00 | 459.57 |
| | TOTAL | 1.280000 | 1,120.50 | .00 | 1,330.57 | .00 | 2,451.07 | 271.49 | .00 | .00 | 2,722.56 |
| 2008 | M & O | 1.040000 | 1,258.06 | .00 | 1,833.16 | .00 | 3,091.22 | 473.44 | .00 | .00 | 3,564.66 |
| | I & S | .200000 | 241.94 | .00 | 352.53 | .00 | 594.47 | .00 | .00 | .00 | 594.47 |
| | TOTAL | 1.240000 | 1,500.00 | .00 | 2,185.69 | .00 | 3,685.69 | 473.44 | .00 | .00 | 4,159.13 |
| 2007 | M & O | 1.040000 | 1,102.37 | .00 | 1,692.38 | .00 | 2,794.75 | 386.23 | .00 | .00 | 3,180.98 |
| | I & S | .140000 | 148.40 | .00 | 227.82 | .00 | 376.22 | .00 | .00 | .00 | 376.22 |
| | TOTAL | 1.180000 | 1,250.77 | .00 | 1,920.20 | .00 | 3,170.97 | 386.23 | .00 | .00 | 3,557.20 |
| 2006 | M & O | 1.337400 | 835.30 | .00 | 1,680.49 | .00 | 2,515.79 | 411.23 | .00 | .00 | 2,927.02 |
| | I & S | .120000 | 74.94 | .00 | 150.78 | .00 | 225.72 | .00 | .00 | .00 | 225.72 |
| | TOTAL | 1.457400 | 910.24 | .00 | 1,831.27 | .00 | 2,741.51 | 411.23 | .00 | .00 | 3,152.74 |
| 2005 | M & O | 1.463200 | 1,674.97 | .00 | 3,491.02 | .00 | 5,165.99 | 811.44 | .00 | .00 | 5,977.43 |
| | I & S | .100000 | 114.47 | .00 | 238.58 | .00 | 353.05 | .00 | .00 | .00 | 353.05 |
| | TOTAL | 1.563200 | 1,789.44 | .00 | 3,729.60 | .00 | 5,519.04 | 811.44 | .00 | .00 | 6,330.48 |
| 2004 | M & O | 1.463200 | 555.39 | .00 | 1,054.88 | .00 | 1,610.27 | 215.92 | .00 | .00 | 1,826.19 |
| | I & S | .105900 | 40.19 | .00 | 76.35 | .00 | 116.54 | .00 | .00 | .00 | 116.54 |
| | TOTAL | 1.569100 | 595.58 | .00 | 1,131.23 | .00 | 1,726.81 | 215.92 | .00 | .00 | 1,942.73 |
| 2003 | M & O | 1.463200 | 289.70 | .00 | 594.86 | .00 | 884.56 | 130.23 | .00 | .00 | 1,014.79 |
| | I & S | .120900 | 23.94 | .00 | 49.14 | .00 | 73.08 | .00 | .00 | .00 | 73.08 |
| | TOTAL | 1.584100 | 313.64 | .00 | 644.00 | .00 | 957.64 | 130.23 | .00 | .00 | 1,087.87 |
| 2002 | M & O | 1.450000 | 76.77 | .00 | 189.31 | .00 | 266.08 | 43.60 | .00 | .00 | 309.68 |
| | I & S | .134100 | 7.10 | .00 | 17.50 | .00 | 24.60 | .00 | .00 | .00 | 24.60 |
| | TOTAL | 1.584100 | 83.87 | .00 | 206.81 | .00 | 290.68 | 43.60 | .00 | .00 | 334.28 |
| 2001 | M & O | 1.439400 | 61.49 | .00 | 158.65 | .00 | 220.14 | 35.19 | .00 | .00 | 255.33 |
| | I & S | .094700 | 4.05 | .00 | 10.44 | .00 | 14.49 | .00 | .00 | .00 | 14.49 |
| | TOTAL | 1.534100 | 65.54 | .00 | 169.09 | .00 | 234.63 | 35.19 | .00 | .00 | 269.82 |
| 2000 | M & O | 1.400000 | 59.81 | .00 | 161.49 | .00 | 221.30 | 36.38 | .00 | .00 | 257.68 |
| | I & S | .134100 | 5.73 | .00 | 15.47 | .00 | 21.20 | .00 | .00 | .00 | 21.20 |
| | TOTAL | 1.534100 | 65.54 | .00 | 176.96 | .00 | 242.50 | 36.38 | .00 | .00 | 278.88 |
| 1999 | M & O | 1.420800 | 26.28 | .00 | 74.12 | .00 | 100.40 | 15.95 | .00 | .00 | 116.35 |
| | I & S | .084200 | 1.56 | .00 | 4.39 | .00 | 5.95 | .00 | .00 | .00 | 5.95 |
| | TOTAL | 1.505000 | 27.84 | .00 | 78.51 | .00 | 106.35 | 15.95 | .00 | .00 | 122.30 |

| YEAR | FUND | TAX RATE | LEVY PAID | DISCOUNT GIVEN | PENALTY INTEREST | TIF AMOUNT | DISBURSE TOTAL | ATTORNEY | OTHER FEES | REFUND AMOUNT | PAYMENT AMOUNT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1998 | M & O | 1.231000 | 112.46 | .00 | 279.17 | .00 | 391.63 | 59.06 | .00 | .00 | 450.69 |
| | I & S | .274000 | 25.04 | .00 | 62.14 | .00 | 87.18 | .00 | .00 | .00 | 87.18 |
| | TOTAL | 1.505000 | 137.50 | .00 | 341.31 | .00 | 478.81 | 59.06 | .00 | .00 | 537.87 |
| 1996 | M & O | 1.248600 | 16.68 | .00 | 43.63 | .00 | 60.31 | 8.45 | .00 | .00 | 68.76 |
| | I & S | .206400 | 2.76 | .00 | 7.21 | .00 | 9.97 | .00 | .00 | .00 | 9.97 |
| | TOTAL | 1.455000 | 19.44 | .00 | 50.84 | .00 | 70.28 | 8.45 | .00 | .00 | 78.73 |
| 1995 | M & O | 1.184200 | 18.09 | .00 | 49.49 | .00 | 67.58 | 9.65 | .00 | .00 | 77.23 |
| | I & S | .210800 | 3.22 | .00 | 8.81 | .00 | 12.03 | .00 | .00 | .00 | 12.03 |
| | TOTAL | 1.395000 | 21.31 | .00 | 58.30 | .00 | 79.61 | 9.65 | .00 | .00 | 89.26 |
| ALL | M & O | | 2,644,830.52 | .00 | 199,133.87 | .00 | 2,843,964.39 | 139,350.83 | .00 | .00 | 2,983,315.22 |
| ALL | I & S | | 466,006.12 | .00 | 31,455.46 | .00 | 497,461.58 | .00 | .00 | .00 | 497,461.58 |
| ALL | TOTAL | | 3,110,836.64 | .00 | 230,589.33 | .00 | 3,341,425.97 | 139,350.83 | .00 | .00 | 3,480,776.80 |
| DLQ | M & O | | 637,544.18 | .00 | 199,133.87 | .00 | 836,678.05 | 139,350.83 | .00 | .00 | 976,028.88 |
| DLQ | I & S | | 103,889.57 | .00 | 31,455.46 | .00 | 135,345.03 | .00 | .00 | .00 | 135,345.03 |
| DLQ | TOTAL | | 741,433.75 | .00 | 230,589.33 | .00 | 972,023.08 | 139,350.83 | .00 | .00 | 1,111,373.91 |
| CURR | M & O | | 2,007,286.34 | .00 | .00 | .00 | 2,007,286.34 | .00 | .00 | .00 | 2,007,286.34 |
| CURR | I & S | | 362,116.55 | .00 | .00 | .00 | 362,116.55 | .00 | .00 | .00 | 362,116.55 |
| CURR | TOTAL | | 2,369,402.89 | .00 | .00 | .00 | 2,369,402.89 | .00 | .00 | .00 | 2,369,402.89 |

FISCAL START: 07/01/2022 END: 06/30/2023 JURISDICTION: 0048 MISSION CISD

| | CERT TAXABLE VALUE | ADJUSTMENTS | ADJ TAX VALUE | | TAX RATE | TAX LEVY | PAID ACCTS |
|---|---|---|---|---|---|---|---|
| CURRENT YEAR | 2,869,114,178 | 16,929,252 | 2,886,043,430 | 0 | 01.113000 | 31,487,083.89 | 4,975 |

| YEAR | TAXES DUE | MONTH ADJ | ADJUSTMENT YTD | LEVY PAID | PAID YTD | BALANCE | COLL % | YTD UNCOLL |
|---|---|---|---|---|---|---|---|---|
| 2022 | 31,332,080.80 | 155,003.09 | 155,003.09 | 2,369,402.89 | 2,369,402.89 | 29,117,681.00 | 7.52 | 0.00 |
| 2021 | 1,488,893.45 | 87,647.08- | 87,647.08- | 461,209.14 | 461,209.14 | 940,037.23 | 32.91 | 0.00 |
| 2020 | 556,262.58 | 36,269.12- | 36,269.12- | 94,962.80 | 94,962.80 | 425,030.66 | 18.26 | 0.00 |
| 2019 | 368,583.48 | 4,830.43- | 4,830.43- | 61,787.83 | 61,787.83 | 301,965.22 | 16.99 | 0.00 |
| 2018 | 250,722.27 | 7,852.50- | 7,852.50- | 32,341.68 | 32,341.68 | 210,528.09 | 13.32 | 0.00 |
| 2017 | 197,106.98 | 17,637.44- | 17,637.44- | 18,270.76 | 18,270.76 | 161,198.78 | 10.18 | 0.00 |
| 2016 | 157,749.31 | 2,459.53- | 2,459.53- | 13,350.90 | 13,350.90 | 141,938.88 | 8.60 | 0.00 |
| 2015 | 132,716.63 | 374.15- | 374.15- | 7,161.84 | 7,161.84 | 125,180.64 | 5.41 | 0.00 |
| 2014 | 116,629.45 | 196.07- | 196.07- | 4,741.25 | 4,741.25 | 111,692.13 | 4.07 | 0.00 |
| 2013 | 102,397.49 | 114.13- | 114.13- | 3,841.96 | 3,841.96 | 98,441.40 | 3.76 | 0.00 |
| 2012 | 98,527.46 | 121.55- | 121.55- | 2,329.77 | 2,329.77 | 96,076.14 | 2.37 | 0.00 |
| 2011 | 91,176.06 | 126.57- | 126.57- | 1,369.51 | 1,369.51 | 89,679.98 | 1.50 | 0.00 |
| 2010 | 84,961.54 | .00 | 0.00 | 1,151.70 | 1,151.70 | 83,809.84 | 1.36 | 0.00 |
| 2009 | 88,676.21 | .00 | 0.00 | 1,120.50 | 1,120.50 | 87,555.71 | 1.26 | 0.00 |
| 2008 | 86,440.93 | .00 | 0.00 | 1,500.00 | 1,500.00 | 84,940.93 | 1.74 | 0.00 |
| 2007 | 72,286.80 | .00 | 0.00 | 1,250.77 | 1,250.77 | 71,036.03 | 1.73 | 0.00 |
| 2006 | 71,093.88 | .00 | 0.00 | 910.24 | 910.24 | 70,183.64 | 1.28 | 0.00 |
| 2005 | 65,685.76 | .00 | 0.00 | 1,789.44 | 1,789.44 | 63,896.32 | 2.72 | 0.00 |
| 2004 | 59,922.84 | .00 | 0.00 | 595.58 | 595.58 | 59,327.26 | .99 | 0.00 |
| 2003 | 41,945.93 | .00 | 0.00 | 313.64 | 313.64 | 41,632.29 | .75 | 0.00 |
| 2002 | 41,419.81 | .00 | 0.00 | 83.87 | 83.87 | 41,335.94 | .20 | 0.00 |
| 2001 | 158,544.45 | 5,432.31- | 5,432.31- | 337.17 | 337.17 | 152,774.97 | .22 | 0.00 |
| **** | 35,663,824.11 | 8,057.79- | 8,057.79- | 3,079,823.24 | 3,079,823.24 | 32,575,943.08 | | 0.00 |
| CURR | 31,332,080.80 | 155,003.09 | 155,003.09 | 2,369,402.89 | 2,369,402.89 | 29,117,681.00 | | 0.00 |
| DELQ | 4,331,743.31 | 163,060.88- | 163,060.88- | 710,420.35 | 710,420.35 | 3,458,262.08 | | 0.00 |

FISCAL START: 07/01/2022 END: 06/30/2023 JURISDICTION: 0048 MISSION CISD

| | CERT TAXABLE VALUE | ADJUSTMENTS | ADJ TAX VALUE | TAX RATE | TAX LEVY | PAID ACCTS |
|---|---|---|---|---|---|---|
| CURRENT YEAR | 0 | 0 | 0 0 | 00.000000 | 0.00 | 0 |

| YEAR | TAXES DUE | MONTH ADJ | ADJUSTMENT YTD | LEVY PAID | PAID YTD | BALANCE | COLL % | YTD UNCOLL |
|---|---|---|---|---|---|---|---|---|
| 2021 | 0.00 | 2,236.22 | 2,236.22 | 2,236.22 | 2,236.22 | 0.00 | | 0.00 |
| 2020 | 9,010.29 | 1,720.86 | 1,720.86 | 10,731.15 | 10,731.15 | 0.00 | | 0.00 |
| 2019 | 10,966.81 | 1,775.80 | 1,775.80 | 11,084.43 | 11,084.43 | 1,658.18 | 86.99 | 0.00 |
| 2018 | 8,598.90 | .00 | 0.00 | 6,961.60 | 6,961.60 | 1,637.30 | 80.96 | 0.00 |
| 2017 | 1,722.57 | .00 | 0.00 | 0.00 | 0.00 | 1,722.57 | | 0.00 |
| **** | 30,298.57 | 5,732.88 | 5,732.88 | 31,013.40 | 31,013.40 | 5,018.05 | | 0.00 |
| CURR | 0.00 | .00 | 0.00 | 0.00 | 0.00 | 0.00 | | 0.00 |
| DELQ | 30,298.57 | 5,732.88 | 5,732.88 | 31,013.40 | 31,013.40 | 5,018.05 | | 0.00 |

FISCAL START: 07/01/2022 END: 06/30/2023 JURISDICTION: 0048 MISSION CISD

| | CERT TAXABLE VALUE | ADJUSTMENTS | ADJ TAX VALUE | | TAX RATE | TAX LEVY | PAID ACCTS |
|---|---|---|---|---|---|---|---|
| CURRENT YEAR | 2,869,114,178 | 16,929,252 | 2,886,043,430 | 0 | 01.113000 | 31,487,083.89 | 4,975 |

| YEAR | TAXES DUE | MONTH ADJ | ADJUSTMENT YTD | LEVY PAID | PAID YTD | BALANCE | COLL % | YTD UNCOLL |
|---|---|---|---|---|---|---|---|---|
| 2022 | 31,332,080.80 | 155,003.09 | 155,003.09 | 2,369,402.89 | 2,369,402.89 | 29,117,681.00 | 7.52 | 0.00 |
| 2021 | 1,488,893.45 | 85,410.86- | 85,410.86- | 463,445.36 | 463,445.36 | 940,037.23 | 33.02 | 0.00 |
| 2020 | 565,272.87 | 34,548.26- | 34,548.26- | 105,693.95 | 105,693.95 | 425,030.66 | 19.92 | 0.00 |
| 2019 | 379,550.29 | 3,054.63- | 3,054.63- | 72,872.26 | 72,872.26 | 303,623.40 | 19.36 | 0.00 |
| 2018 | 259,321.17 | 7,852.50- | 7,852.50- | 39,303.28 | 39,303.28 | 212,165.39 | 15.63 | 0.00 |
| 2017 | 198,829.55 | 17,637.44- | 17,637.44- | 18,270.76 | 18,270.76 | 162,921.35 | 10.08 | 0.00 |
| 2016 | 157,749.31 | 2,459.53- | 2,459.53- | 13,350.90 | 13,350.90 | 141,938.88 | 8.60 | 0.00 |
| 2015 | 132,716.63 | 374.15- | 374.15- | 7,161.84 | 7,161.84 | 125,180.64 | 5.41 | 0.00 |
| 2014 | 116,629.45 | 196.07- | 196.07- | 4,741.25 | 4,741.25 | 111,692.13 | 4.07 | 0.00 |
| 2013 | 102,397.49 | 114.13- | 114.13- | 3,841.96 | 3,841.96 | 98,441.40 | 3.76 | 0.00 |
| 2012 | 98,527.46 | 121.55- | 121.55- | 2,329.77 | 2,329.77 | 96,076.14 | 2.37 | 0.00 |
| 2011 | 91,176.06 | 126.57- | 126.57- | 1,369.51 | 1,369.51 | 89,679.98 | 1.50 | 0.00 |
| 2010 | 84,961.54 | .00 | 0.00 | 1,151.70 | 1,151.70 | 83,809.84 | 1.36 | 0.00 |
| 2009 | 88,676.21 | .00 | 0.00 | 1,120.50 | 1,120.50 | 87,555.71 | 1.26 | 0.00 |
| 2008 | 86,440.93 | .00 | 0.00 | 1,500.00 | 1,500.00 | 84,940.93 | 1.74 | 0.00 |
| 2007 | 72,286.80 | .00 | 0.00 | 1,250.77 | 1,250.77 | 71,036.03 | 1.73 | 0.00 |
| 2006 | 71,093.88 | .00 | 0.00 | 910.24 | 910.24 | 70,183.64 | 1.28 | 0.00 |
| 2005 | 65,685.76 | .00 | 0.00 | 1,789.44 | 1,789.44 | 63,896.32 | 2.72 | 0.00 |
| 2004 | 59,922.84 | .00 | 0.00 | 595.58 | 595.58 | 59,327.26 | .99 | 0.00 |
| 2003 | 41,945.93 | .00 | 0.00 | 313.64 | 313.64 | 41,632.29 | .75 | 0.00 |
| 2002 | 41,419.81 | .00 | 0.00 | 83.87 | 83.87 | 41,335.94 | .20 | 0.00 |
| 2001 | 158,544.45 | 5,432.31- | 5,432.31- | 337.17 | 337.17 | 152,774.97 | .22 | 0.00 |
| **** | 35,694,122.68 | 2,324.91- | 2,324.91- | 3,110,836.64 | 3,110,836.64 | 32,580,961.13 | | 0.00 |
| CURR | 31,332,080.80 | 155,003.09 | 155,003.09 | 2,369,402.89 | 2,369,402.89 | 29,117,681.00 | | 0.00 |
| DELQ | 4,362,041.88 | 157,328.00- | 157,328.00- | 741,433.75 | 741,433.75 | 3,463,280.13 | | 0.00 |

| ACCOUNT | YEAR | DEPOSIT | LEVY COLLECTED | RENDITION PENALTY | P & I COLLECTED | RENDITION P & I | RENDITION DISCOUNT | APPRAISAL COMMISSION | DISBURSEMENT AMOUNT |
|---|---|---|---|---|---|---|---|---|---|
| CURR FOR 0047 MCALLEN ISD | | | 112,976.52 | 10,683.79 | 0.00 | 0.00 | 0.00 | 534.27 | 112,442.25 |
| BY COUNTY 108 | | | 112,976.52 | 10,683.79 | 0.00 | 0.00 | 0.00 | 534.27 | 112,442.25 |
| DELQ FOR 0047 MCALLEN ISD | | | 5,981.39 | 549.13 | 1,335.21 | 156.00 | 0.00 | 35.29 | 7,281.31 |
| BY COUNTY 108 | | | 5,981.39 | 549.13 | 1,335.21 | 156.00 | 0.00 | 35.29 | 7,281.31 |
| TOTAL FOR 0047 MCALLEN ISD | | | 118,957.91 | 11,232.92 | 1,335.21 | 156.00 | 0.00 | 569.56 | 119,723.56 |
| BY COUNTY 108 | | | 118,957.91 | 11,232.92 | 1,335.21 | 156.00 | 0.00 | 569.56 | 119,723.56 |
| CURR FOR 0048 MISSION CISD | | | 18,498.03 | 1,686.31 | 0.00 | 0.00 | 0.00 | 84.34 | 18,413.69 |
| BY COUNTY 108 | | | 18,498.03 | 1,686.31 | 0.00 | 0.00 | 0.00 | 84.34 | 18,413.69 |
| DELQ FOR 0048 MISSION CISD | | | 884.68 | 147.31 | 267.24 | 40.05 | 0.00 | 9.37 | 1,142.55 |
| BY COUNTY 108 | | | 884.68 | 147.31 | 267.24 | 40.05 | 0.00 | 9.37 | 1,142.55 |
| TOTAL FOR 0048 MISSION CISD | | | 19,382.71 | 1,833.62 | 267.24 | 40.05 | 0.00 | 93.71 | 19,556.24 |
| BY COUNTY 108 | | | 19,382.71 | 1,833.62 | 267.24 | 40.05 | 0.00 | 93.71 | 19,556.24 |
| CURR FOR 0049 LA JOYA ISD | | | 30,010.01 | 3,159.87 | 0.00 | 0.00 | 0.00 | 158.00 | 29,852.01 |
| BY COUNTY 108 | | | 30,010.01 | 3,159.87 | 0.00 | 0.00 | 0.00 | 158.00 | 29,852.01 |
| DELQ FOR 0049 LA JOYA ISD | | | 1,071.97 | 97.90 | 414.58 | 40.87 | 0.00 | 6.93 | 1,479.62 |
| BY COUNTY 108 | | | 1,071.97 | 97.90 | 414.58 | 40.87 | 0.00 | 6.93 | 1,479.62 |
| TOTAL FOR 0049 LA JOYA ISD | | | 31,081.98 | 3,257.77 | 414.58 | 40.87 | 0.00 | 164.93 | 31,331.63 |
| BY COUNTY 108 | | | 31,081.98 | 3,257.77 | 414.58 | 40.87 | 0.00 | 164.93 | 31,331.63 |
| CURR FOR 0050 PROGRESO ISD | | | 7,215.20 | 734.73 | 0.00 | 0.00 | 0.00 | 36.74 | 7,178.46 |
| BY COUNTY 108 | | | 7,215.20 | 734.73 | 0.00 | 0.00 | 0.00 | 36.74 | 7,178.46 |
| DELQ FOR 0050 PROGRESO ISD | | | 684.12 | 118.70 | 182.91 | 29.05 | 0.00 | 7.40 | 859.63 |
| BY COUNTY 108 | | | 684.12 | 118.70 | 182.91 | 29.05 | 0.00 | 7.40 | 859.63 |
| TOTAL FOR 0050 PROGRESO ISD | | | 7,899.32 | 853.43 | 182.91 | 29.05 | 0.00 | 44.14 | 8,038.09 |
| BY COUNTY 108 | | | 7,899.32 | 853.43 | 182.91 | 29.05 | 0.00 | 44.14 | 8,038.09 |
| CURR FOR 0051 SHARYLAND ISD | | | 12,728.17 | 1,157.11 | 0.00 | 0.00 | 0.00 | 57.83 | 12,670.34 |
| BY COUNTY 108 | | | 12,728.17 | 1,157.11 | 0.00 | 0.00 | 0.00 | 57.83 | 12,670.34 |
| DELQ FOR 0051 SHARYLAND ISD | | | 653.38 | 203.76 | 143.74 | 44.83 | 0.00 | 12.44 | 784.68 |
| BY COUNTY 108 | | | 653.38 | 203.76 | 143.74 | 44.83 | 0.00 | 12.44 | 784.68 |
| TOTAL FOR 0051 SHARYLAND ISD | | | 13,381.55 | 1,360.87 | 143.74 | 44.83 | 0.00 | 70.27 | 13,455.02 |
| BY COUNTY 108 | | | 13,381.55 | 1,360.87 | 143.74 | 44.83 | 0.00 | 70.27 | 13,455.02 |
| CURR FOR 0052 VALLEY VIEW ISD | | | 8,358.14 | 759.82 | 0.00 | 0.00 | 0.00 | 37.96 | 8,320.18 |
| BY COUNTY 108 | | | 8,358.14 | 759.82 | 0.00 | 0.00 | 0.00 | 37.96 | 8,320.18 |
| DELQ FOR 0052 VALLEY VIEW ISD | | | 165.80 | 33.09 | 39.23 | 7.53 | 0.00 | 2.02 | 203.01 |
| BY COUNTY 108 | | | 165.80 | 33.09 | 39.23 | 7.53 | 0.00 | 2.02 | 203.01 |
| TOTAL FOR 0052 VALLEY VIEW ISD | | | 8,523.94 | 792.91 | 39.23 | 7.53 | 0.00 | 39.98 | 8,523.19 |
| BY COUNTY 108 | | | 8,523.94 | 792.91 | 39.23 | 7.53 | 0.00 | 39.98 | 8,523.19 |

**SUBJECT:** Disbursements for the Month of November 2022

**PRESENTER:** Joel Garcia, Assistant Superintendent for Finance JG

## BACKGROUND INFORMATION:

The District's disbursements list all of the checks and other payments made during the reporting month. The check registers, wire transfers, and automated clearing house (ACH) transactions are available for inspection at the office of the Assistant Superintendent for Finance.

Monthly disbursement reports are prepared throughout the year by administration for information purposes only.

## ADMINISTRATIVE CONSIDERATIONS:

The District's total disbursements for the Month of October totaled $15,671,092.70 as follows:

| Disbursement Type | Amount |
|---|---|
| Accounts Payable Vendor Checks | $ 3,035,900.55 |
| District Purchasing Cards | $ 353,557.70 |
| ACH | $ 3,515,653.56 |
| Wire Transfers | $ 447,559.68 |
| Payroll | $ 8,318,421.21 |
| | |
| **TOTAL** | **$ 15,671,092.70** |

## FUNDING SOURCE AND AMOUNT:

N/A

## RECOMMENDATION:

Information item only; no recommendation is required.

## CONTACT PERSON (S):

Joel Garcia, Assistant Superintendent for Finance
Dora Garcia, Director for Budget and Finance
Alyssa Gonzales, Accountant