TOMBALL INDEPENDENT SCHOOL DISTRICT

RFQ #956-23 Issued: October 16, 2023

REQUEST FOR PROPOSALS FOR DESIGN BUILD SERVICES FOR THE RENOVATION OF AN EXISTING PRE-ENGINEERED BUILDING MODIFYING EXISTING SPACES FOR EDUCATIONAL USE AND SYSTEMS TO SUPPORT THEIR USE.

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I. INTRODUCTION

A. Pursuant to the provisions of the Texas Government Code § 2269, Subchapter G, it is the intent of the Tomball Independent School District (hereinafter known as Owner, or District) to solicit qualifications and proposals from qualified vendors to provide Design Build Services in a One-Step Process as described

B. Project Team: The selected Respondent will join a Project Team which will include Owner Administration, and Program Manager, all of whom will be engaged in a cooperative effort to provide the Owner with successful and cost-effective solutions for the project. The selected Respondent will assist the District, and Program Manager with pre-construction services and to build the project thereafter as design-builder.

C. The form of agreement will be for actual cost of the work, not to exceed, with fixed fee as a percentage of the actual Cost of the Work. Refer to the exhibits to this RFQ for additional details.

D. The respondent shall provide the firm name of the Architect being proposed along with qualifications for review and acceptance by the Owner. Refer to Tab A -

E. Project Information: The District plans to renovate office space within an existing Pre-Engineered Metal Building (PEMB). The Design Criteria Package describes the requested spaces, standards for construction, contract forms, schedule requirements, and other information known at the time of this RFQ.

Work on the project shall begin immediately upon receipt of written notice to proceed. The notice to proceed and a contract for execution of performance is anticipated to be issued for execution within (48) hours of Board Approval of the Design Builder.
Purchase of materials and equipment shall not begin until an accepted GMP has been provided by the Design Builder.
The substantial completion date is **July 8, 2023.**
The estimated cost of the work is **$3,500,000.**

The PEMB is located on the Tomball Innovation Center Campus and is currently partially shared by the Transportation Department.

Contact Information:

PROGRAM MANAGER: (Owner's Representative)
Robert Wilbanks, AIA
Lockwood, Andrews & Newnam, Inc.
1110 Baker Dr.
Tomball, Texas
Cell: 832.570.7078
Email: rwwilbanks@lan-inc.com

F. General Scope:

The general scope of work includes Architectural, Mechanical, Electrical, Plumbing and Technology trades with a limited amount of Structural work required for saw cutting repair and new masonry walls. The building is an existing PEMB with metal siding and roofing. It is completely paved at the entire perimeter. There may be building panel patching or replacement in some instances. The existing building is 52,604 gsf with 27,760 gsf currently being utilized for district vehicle maintenance at the south end. A new wall is to be constructed to provide for the necessary code required area separation from uses. The major work area will be done within the confines of the existing office area of approximately 12,532 gsf and lesser shop area totaling 12,312 gsf for a total work area in scope of +/- 24,844 gsf .

The Area of Work is single story occupancy with an existing mechanical mezzanine over a portion of the office area supporting the mechanical equipment, (WH, Air Handlers, Primary Ductwork). This mezzanine is planned to be removed pending final code analysis by your A/E team. A determination regarding this will be made as soon as the successful proposer's A/E team can verify that requirement. The built work will include removal and rearrangement of some walls, replacing some doors, installing some new doors, removal of finishes and reinstallation of preferred finishes, electrical modifications to power and lighting, some plumbing relocation, new mechanical equipment, technology infrastructure and installation of Owner Furnished Contractor Installed technology equipment such as cameras, access points, patch panels and racks and other items identified within the bid documents. As a Design Build Contractor, you will be responsible for all work and design of the facilities based upon Owner standards and direction. All permits associated with this project including all impact fees if any are required by the City of Tomball.

G. Intent: It is preferred that the Project be bid as a single project but due to potential scheduling and material availability, some smaller GMP packages could be required. Because of this, the Owner requires focus on the Pre-construction Services for this Project to ensure substantial completion may be achieved while concurrently performing all necessary design work. Sufficient analysis of Pre-construction Services needs to be considered by the Contractor prior to the submission of Costs for these Services. The Owner will enforce compliance with the requirements for pre-construction services and additional funds will not be provided should the Design Builder miscalculate quantities, sizes or other critical information. All Guaranteed Maximum Pricing provided may show allowances for areas of concern but no allowance or contingency by be considered without owner approval and though an agreed contingency will be included in all GMP costs when applicable, the planned use of such contingency shall not be considered or approved without the Owner's approval. The Owner desires to maximize the scope and quality of the project while remaining at or below the contracted not to exceed price between the parties. Therefore, the Owner expects full cooperation of the Contractor to complete the following Pre-Construction services and as stated in the contract documents.

H. Pre-Construction Services:

General

a. Key project personnel shall attend regular meetings with the District, and Program Manager to review the project status and update the construction cost estimates.
b. Consult with the District, and Program Manager regarding site/facility use and improvements and any phasing that needs to be considered for early work and site prep.
c. The Contractor shall recommend, to the District, a schedule for procurement of long lead-time items that will constitute part of the Work required to meet the project schedule.

Constructability Reviews

d. After reviewing all design documents for completeness and coordination, the Contractor shall make recommendations and provide information and cost comparisons regarding construction materials, methods, systems, and phasing, to ensure efficient construction. The Contractor shall furnish a written report after completing a check cross of references and complimentary drawings with the specifications, and in general evaluate whether:

    (1) The drawings and specifications are sufficiently clear and detailed to minimize ambiguity and to reduce scope interpretation discrepancies.
    (2) Named materials and equipment are commercially available and are performing well in similar installations.
    (3) Specifications include alternatives in the even that a requirement cannot be met in the field.

e. Constructability Review shall be conducted as a part of each of the following submittals:

    (4) Schematic Design
    (5) 100% Design Development documents.
    (6) 75% Construction Documents

Cost Control Management: The Contractor will identify a list of probable GMP Packages and a schedule for when these packages will be submitted for approval after their own internal team review to ensure the design team can keep provided necessary documents. Nevertheless, Contractor shall prepare, based upon Design Documents prepared by the Architect or Engineer and identified by the Owner, estimates of the total construction cost of the Project at several times, as specified below. Contractor shall prepare a design whose Cost of the Work estimates are less than or equal to the Owner's budget for the Cost of the Work. Contractor shall recommend, if necessary, appropriate modifications of the Design Documents to lower the Contractor's estimates to amounts equal to or lower than the Construction Budget. Contractor's cost estimates shall be provided according to Uniformat standards and as specified below, and arranged in Uniformat format. Contractor shall

include all costs to construct the building including items such as, general conditions, bonds, insurance, A/E fees, permit fees, wage rates and other costs; collectively constituting the Cost of the Work. A description of the cost assumptions shall be furnished by the Contractor. Construction cost estimates shall be developed/updated and submitted as a part of each of the following submittals:

f. Schematic Design 95% Design Development; Uniformat format elemental categories and detailed to Level 3;
g. Construction Documents; 75% milestone; Uniformat format elemental categories and detailed to Level 4 and additionally in CSI format.
h. Each cost estimate shall:

(7) Reflect the best professional estimate of actual costs anticipated to construct the project

(8) Establish and disclose internal estimating allowances, consistent with good professional practice, appropriate to the phase of development. Larger allowances are assumed held at early phases gradually diminishing to zero at completion of final cost estimate.

Approvals: Contractor shall monitor all regulatory approvals required during the Working Drawing Phase. Contractor shall meet and confer with the Authorities Having Jurisdiction to advance the project through the approval process. The contractor shall furnish any comments received or summary of discussions to the Owner and Program Manager for evaluation.

I. Contractor Services. The contract will govern but, in general, the Owner considers Contractor Services to consist as:

Pre-Construction Services (Critical for Early Involvement)
Constructability Reviews of Design and Drawings for Coordination
Ascertain completeness of Drawings and Specifications
Review of Building Systems for availability and make Recommendations
Recommend any needed Phasing and Construction efficiencies
Cost estimating during Phases of Design
Cost Control Methods
Assist in Development of Schedules
Monitor Regulatory Approvals
Recommend possible Cost Savings
Advertise Project for Subcontractor Bids
Procure Competitive Bids
Develop and Submit a Schedule of Values Project
Comply with audits of the Cost of the Work
Construct Project

J. List of General Conditions. Refer to EXHIBIT T for the list of General Conditions. The Contractor shall be compensated for Project General Conditions as a set percentage of the Actual Cost of Work as defined.

K. Insurance Requirements: Refer to Exhibit A for insurance requirements

II. RFQ ADVERTISEMENT, AVAILABILITY, AND DELIVERY

A. Proposal/Contract Documents, and Addenda are available for download from the Tomball ISD website.

B. Responses are due in one submission: Qualifications statement and required forms including fees both General Conditions and Profit as a percent of the actual cost of work. Responses are due as described in RFQ section III PROBABLE SCHEDULE OF EVENTS.

A. The Owner will accept qualifications and submissions via mailed response, courier or hand delivered. Electronic submissions are not going to be accepted for this project. Bidders must ensure that all required content for each Part of the submission is included. Missing portions of the required submission may be viewed as non-responsive. The District will not be responsible for any delay of delivery or submission, including delays related to system programs, servers, or acts of nature.

B. Proposal/Contract Documents, including Drawings, Technical Specifications, and Addenda are available for download from:

https://www.tomballisd.net/about-tisd/departments/finance/purchasing/bids-and-proposals

C. Questions concerning this RFQ shall be directed to the Owner's Program Manager, in writing, to the email address below. Verbal questions and explanations are not permitted other than as described by this section, if any. All questions are due as described in RFQ section III PROBABLE SCHEDULE OF EVENTS. Answers to questions will be issued in an Addendum for the Project and will be posted on the electronic bid portal as described in RFQ section III PROBABLE SCHEDULE OF EVENTS.

Owner's Program Manager Contact Person is:

Robert Wilbanks, AIA
Lockwood, Andrews & Newnam, Inc.
1110 Baker Dr.
Tomball, Texas
Cell: 832.570.7078
Email: rwwilbanks@lan-inc.com

III. PROBABLE SCHEDULE OF EVENTS

	Date	Time	Event
A.	October 13, 2023 October 20, 2023 October 16, 2023	N/A N/A 10:00 A.M.	1st Advertisement Posted for this CSP 2nd Advertisement Posted for this CSP RFP Posted on TISD Website
B.	October 25, 2023	11:00 A.M.	Pre-Proposal Conference. Site Visit to follow if Requested. Site Visit will begin at 1:00. The building will be open for 1 hour for review by proposing teams.
C.	October 26, 2023	2:00 P.M.	References submitted in Excel File provided with RFP.
D.	October 27, 2023	2:00 P.M.	Deadline for questions
E.	October 30, 2023	12:00 P.M.	Final Addendum Posted
F.	November 2, 2023	1:30 P.M.	Qualifications and Fees due Attn: Mr. Jim Ross, Director of Projects, and Development 1110 Baker Drive Tomball, Texas 77375
H.	November 2, 2023	2:10 P.M.	Public Opening of Bids
I.	November 2, 2003	N/A	Final Evaluations Complete – Recommendation to the BOT is written.
J.	November 14, 2023	5:30 P.M.	Regular BOT meeting – Presented for Approval
K.	November 16, 2023	12:00 P.M.	Final Contract Agreement and General Conditions sent to Successful Bidder for Execution.
M.	November 20, 2023	12:00 P.M.	Anticipated Notice to Proceed. P.O. to be issued upon receipt of bonds and insurance.
N.	June 30, 2024	12:00 A.M.	Substantial Completion Deadline

IV. SUBMISSION FORMAT & CONTENT REQUIREMENTS

A. The contents of the respondent Qualifications must be complete in description, concise in volume, and austere in form.

B. The qualifications should be in the format of a written report and should be prepared on 8-1/2" x 11" sheets (single-sided) unless noted below, and bound with coil binding.

C. One original of the Complete RFQ Submission are required.

D. Respondents may provide supplemental materials further describing their capabilities and experience.

E. Owner is a governmental body subject to the Texas Public Information Act. Statements of Qualifications submitted to Owner as a result of this procurement solicitation may be subject to release as public information after contracts are executed or the procurement is terminated. If a Respondent believes that its statements of qualifications, or parts thereof, may be exempted from disclosure under Texas law, the Respondent must specify page-by-page and line-by-line the parts of the statement of qualifications which it believes are exempt. In addition, the Respondent must specify which exception(s) to the Texas Public Information Act are applicable and provide detailed reasons to substantiate the exception(s). Vague or general claims to confidentiality will not be accepted. Owner assumes no obligation or responsibility relating to the disclosure or nondisclosure of information submitted by Respondents.

The Owner strictly complies with all statutes, court decisions, and opinions of the Texas Attorney General with respect to disclosure of Respondent's information. Any respondent wishing to maintain confidentiality of financial information must include a written request for same with the submission of the proposal.

V. DEFINITIONS

A. Respondent: A team from the General Contractor to join the Owner representatives and Program Manager to ensure optimal Cost Control, Scheduling, Phasing of Packages and Construction of facilities.

B. Program Manager: The entity contracted by the Owner to provide overall fiduciary responsibilities and direct oversight of the contractor and A/E Team to ensure performance of actions contributing to the success of the owner's objective.

C. RFQ: Request for Qualifications

D. Owner: Tomball Independent School District

VI. TERM OF CONTRACT

A. A contract awarded in response to this RFQ will be for Contractor Services for a New Stadium Complex. The Owner has defined project completion dates for the anticipated work.

VII. SUBMISSION REQUIREMENTS

A. Letter of Interest

B. Executive Summary

Each respondent must include an executive summary briefly highlighting the respondent's qualifications and shall include how the respondent is most qualified to meet the evaluation criteria.

C. Submission Questionnaire

Please provide the following information in the sequence and format prescribed by this questionnaire. Supplemental materials providing additional information may be provided in a separate format, but the information requested below is to be provided in this format. Failure to provide clear, transparent, non-elusive answers will be deemed non-responsive and scored accordingly.

Firm Information

i. Name of Firm
j. Address of Principal Office
k. Phone and Fax Number
l. Primary Individual (Point of Contact) for this RFQ; name and email

Firm Organization

m. Form of Business Organization (corporation, partnership, individual, joint venture, other?)
n. How many years has your organization been in business in its current capacity?
o. How many years has your organization been in business under its present name? Under what other or former names has your organization operated?
p. If your organization is a corporation, answer the following: Date of incorporation, State of incorporation, President's name, Vice-President's name(s), Secretary's name, and Treasurer's name.
q. If your organization is a partnership, answer the following: Date of organization, Type of partnership (if applicable), and Name(s) of general partner(s).
r. If your organization is individually owned, answer the following: Date of organization, Name of owner.
s. If the form of your organization is other than those listed above, describe it and name the principals.

Experience

t. Construction value

(1) What is the construction dollar value, year by year, of all work under contract in all locations by your company for the period of 2017-2022?
(2) What is the construction dollar value, year by year, of all work under contract in Texas by your company for the period of 2017-2022?
(3) What is the construction dollar value, year by year, of all work under contract in Harris County, Liberty, Brazoria County and Montgomery County by your company for the period of 2017-2022?
(4) What percentage of your company total construction dollar value, year by year, does all work under contract in Harris County, Liberty, Brazoria County and Montgomery County by your company for the period of 2017-2022 represent?
(5) What percentage of all work under contract in Harris County, Liberty, Brazoria County and Montgomery County by your company for the period of 2017-2022 has been K-12 school construction?
(6) What is the full time equivalent (FTE) employee count in all Texas locations by your company for the period of 2017-2022?
(7) What is the largest single executed contract value, year by year, by your company for the period of 2017-2022?
(8) What is the number of design-build projects completed year by year, by your company for the period of 2017-2022?

Section	2017	2018	2019	2020	2021	2022
VII.C(1)						
VII.C(2)						
VII.C(3)						
VII.C(4)						
VII.C(5)						
VII.C(6)						
VII.C(7)						
VII.C(8)						

u. Completed Work (through substantial completion) within the last thirty-six months: List K-12 school projects constructed by your organization in Texas. The Respondent is obligated to provide accurate contact information for contacting the persons named below during a survey process that will be used during the evaluation scoring. An oversized (11x17) table format concisely depicting all projects is required. Respondents must use the Microsoft Excel file available with this RFQ. For each project, provide:

(9) The Owner Entity
(10) Name of the Project
(11) State if the project was new construction, renovation, addition or combination
(12) Type of construction contract (A101, A133, Owner Unique, etc.)
(13) Nature of the project/function of the building (Eg. New High School with Career Tech programs, athletic complex and natatorium)
(14) Size (SF)
(15) Construction delivery method (Design-build, CMAR, CSP, Hard Bid, Etc.)
(16) Original contract (or GMP) cost
(17) Final contract (or GMP) cost
(18) Number of Change Orders(if any), either cost or time, (not change proposals, contingency expenditures or similar) with brief 150 word explanation, if desired
(19) Bid date
(20) Contractual original completion date
(21) Actual completion date

(22) Number of claims filed by contractor with brief explanation
(23) Number of RFI's
(24) Name of major subcontractors
(25) Owner (Primary contact) contact information:

(a) Name,
(b) title,
(c) email address,
(d) phone number

(26) Architect contact information:

(a) Name,
(b) title,
(c) email address,
(d) phone number

v. Current Work: List up to five (5) projects of similar size and scope currently under construction by your organization. The Respondent is obligated to provide accurate contact information for contacting the persons named below during a survey process that will be used during the evaluation scoring. An oversized (11x17) table format concisely depicting all projects is required. Respondents must use the Microsoft Excel file available with this RFQ. For each project, provide:

(27) The Owner Entity
(28) Name of the Project
(29) State if the project is new construction, renovation, addition or combination
(30) Type of construction contract (A101, A133, Owner Unique, etc.)
(31) Nature of the project/function of the building (Eg. New High School with Career Tech programs, athletic complex and natatorium)
(32) Size (SF)
(33) Construction delivery method (Design-build, CMAR, CSP, Hard Bid, Etc.)
(34) Original contract (or GMP) cost
(35) Number of Change Orders (if any) through current period, either cost or time, (not change proposals, contingency expenditures or similar) with brief 150-word explanation, if desired
(36) Bid date
(37) Contractual completion date
(38) Number of claims filed by contractor with brief explanation
(39) Number of RFI's (To date)
(40) Name of major subcontractors
(41) Owner (Primary contact) contact information:

(a) Name,
(b) title,
(c) email address,
(d) phone number

(42) Architect contact information:

(a) Name,
(b) title,
(c) email address,
(d) phone number

w. Contracting and Subcontracting:

(43) List the List the categories of work that your organization normally performs with its own forces. Would you propose to do any work with your own forces?
(44) List any subcontractors in which your organization has some ownership and list the categories of work those subcontractors normally perform.

x. Claims, Suits and Failure to Perform: (If the answer to any of the questions below is yes, please provide details). Note: Do not fail to respond to this question or furnish vague responses. Point totals available under this category of evaluation will be affected if you choose not to fully respond.

(45) Has your organization ever failed to complete any work awarded?
(46) Are there any judgments, claims, arbitration proceedings or suits, pending or outstanding against your organization or its officers?
(47) Has your organization filed or been involved in any lawsuits or requested arbitration with regard to construction contracts within the last sixty months?
(48) Within the last sixty months, has any officer or principal of your organization ever been an officer or principal of another organization when it failed to complete a construction contract?

y. Safety

(49) State the Experience Modification Factor for each of the past 5-years
(50) List any safety awards your company has received within the past 5-years.

D. Personnel

Provide an organizational chart outlining all companies and planned personnel that will be assigned to the project and their responsibilities.
Provide a firm overview for A/E consultants
Given the scope and schedule of the project, identify the personnel proposed, specifically the Architect (and key staff), Construction Project Manager, Job Superintendent or Superintendent(s), and Field Operations personnel proposed to work on the project. Prior to contracting, the Owner may interview the Architect, Project Manager/Job Superintendent that will be assigned to the project. Please reference these personnel to projects listed in items 1.u and 1.v where possible.

z. Provide a resume and references for each individual stating

(1) Proposed role on this project
(2) Description of responsibilities for this proposed role (what will this person do?)
(3) Relevant past project experience list with role that makes this individual the best choice for this project (Client, cost, seasonal construction schedule, repairs, renovations, new construction, HVAC, etc.)
(4) General background information; education, years of experience, registrations, affiliations,
(5) Years of service with your company
(6) Prior two (2) employers and years of service with each
(7) Last three (3) completed or ongoing project assignments
(8) Contact information (Name, title, email address, phone number) for Owner's representative or Architect that could address questions regarding this individual for the last three (3) completed or ongoing projects

E. Additional Information

Letters of Recommendation: Furnish five (5) letters of recommendation from past or current K-12 Texas school district customers of the respondent, preferably from those projects listed in section 1.uand 1.v.

F. Optional Information

Furnish any additional content not requested by other sections of this RFQ that demonstrates the qualifications of your company

G. Financial Information

Attach an audited financial statement, including your organization's latest balance sheet and income statement showing the following items:

aa. Current assets (e.g., cash, joint venture accounts, accounts receivable, notes receivable, accrued income, deposits, materials inventory, and prepaid expenses).

bb. Non-current assets (e.g., net fixed assets, other assets).
cc. Current liabilities (e.g., accounts payable, notes payable, accrued expenses, provision for income taxes, advances, accrued salaries and accrued payroll taxes).
dd. Non-current liabilities (e.g., notes payable).
ee. Capital accounts and retained earnings (e.g., capital, capital stock, authorized and outstanding shares par value, earned surplus, and retained earnings).
ff. Name and address of firm preparing attached financial statement and date thereof.
gg. Is the attached financial statement for the identical organization named under item 0 above? If not, explain the relationship and financial responsibility of the organization whose financial statement is provided (e.g., parent subsidiary).
hh. Will the organization whose financial statement is attached act as guarantor of the contract for construction?
ii. Provide name, address and phone number of your financial institution.

Bonding

jj. Provide Name of bonding company and name and address of agent.
kk. Provide letter from bonding company stating the currently available bonding capacity of your company (Bonding limit minus current obligations)?

VIII. AMENDMENTS TO THE RFQ

A. Changes, amendments, or written responses to questions received regarding this RFQ will be posted on the bidding portal. It is Respondent's responsibility to review this site and ascertain whether any amendments have been made prior to submission. No oral statement of any person shall modify or otherwise change or affect the terms, conditions or specifications stated in the RFQ, and changes to the RFQ – if any – shall be made in writing only.

IX. RESTRICTIONS ON COMMUNICATION

A. The Respondent's, or any agent or representative of Respondent shall not undertake any activities or actions to promote or advertise their qualifications or submission to any member of the Owner's Board of Trustees, the Owner's Administration or their respective staff persons, except as specifically requested in writing by to the named point of contact in section II.A at any time between the date of release of the RFQ and the date of award of a contract by the Owner's Board of Trustees. This restriction extends to "thank you" letters, phone calls, emails and any contact that results in the direct or indirect discussion of the RFQ and/or submission submitted by Respondent's. Violation of this provision by Respondent or his/her/its agent may lead to disqualification of his submission from consideration.

B. The Owner reserves the right to contact any Respondent for clarification after responses are opened and/or to further negotiate with any Respondent if such is deemed desirable by Owner.

X. EVALUATION

A. The Owner will conduct a comprehensive evaluation of all submissions received in response to this RFQ. The Owner may appoint a selection committee to perform the evaluation.

B. Each submission will be analyzed to determine overall responsiveness, qualifications under the RFQ and Respondent's proposal. Respondents will be scored based upon these criteria listed in this RFQ. The Owner may request additional information from Respondent's at any time prior to final approval of a selected Respondent. Final approval of a selected Respondent(s) is subject to the action of the Board of Trustees of the Owner.

C. The Owner reserves the right to conduct all research it deems necessary as part of its evaluation of Respondent's including their previous clients.

D. The Owner will utilize the following criteria in the evaluation of responses:

Step One			
Points Value	**Category**	**Evaluation Method**	**Reference Section**
20	General Information	Respondent demonstrates clear organization of the company, stability in operations and clear roles and responsibilities for self-performance and subcontracting. Respondent demonstrates consistent year by year contracted values and with contracted values derived from local market. Respondent demonstrates consistent year by year balance of work on hand to staff size.	VII.B, 0, 0, VII.G
50	Project Experience	Respondent demonstrates relevant past and ongoing experience with projects of similar scope and complexity, special examples of creative construction solutions that show added value and a clear record of safely performing projects. Respondent shows history of Design-build performance. Respondent demonstrates low experiences with claims, suits or failure to perform. Respondent demonstrates positive past experiences through reference checks and letters of recommendation.	1.u, 1.v, 1.x, 1.y, 0
30	Project management	Respondent demonstrates a thorough understanding of the needs that require fulfillment to complete a Capital program like the Owner's and thereby demonstrates the range of services available to meet a variety of needs, providing a clear org chart, line of command and qualified personnel to perform the work. Respondent demonstrates a history of providing cost-effective projects by illustrating cost savings, additional value and proactive cost leadership throughout all phases of the Design-build delivery method. Respondent demonstrates a thorough understanding of dispute resolution methods and claims management. Respondent demonstrates a history of working in partnership with the overall team as demonstrated by low change order costs, low claims history and minimal RFI.	VII.C(22), VII.C(23), 1.v, 1.x, VII.D

Table of Awarded Points

Percentage Above Low	Percentage of Available Points Allocated
0% to 0.0125%	100.00%
0.0126% to 0.25%	99.50%
0.26% to 0.51%	98.50%
0.52% to 0.77%	97.50%
0.78% to 1.03%	96.50%
1.04% to 1.29%	95.50%
1.3% to 1.55%	94.00%
1.56% to 1.81%	92.50%
1.82% to 2.07%	91.00%
2.08% to 2.33%	89.50%
2.34% to 2.59%	88.00%
2.6% to 2.85%	86.25%
2.86% to 3.11%	84.50%
3.12% to 3.37%	82.75%
3.38% to 3.63%	81.00%
3.64% to 3.89%	79.25%
3.9% to 4.15%	77.50%
4.16% to 4.41%	75.50%
4.42% to 4.67%	73.50%
4.68% to 4.93%	71.50%
4.94% to 5.19%	69.50%
5.2% to 5.45%	67.50%
5.46% to 5.71%	65.50%
5.72% to 5.97%	63.25%
5.98% to 6.23%	61.00%
6.24% to 6.49%	58.75%
6.5% to 6.75%	56.50%
6.76% to 7.01%	54.25%
7.02% to 7.27%	52.00%
7.28% to 7.53%	49.50%
7.54% to 7.79%	47.00%
7.8% to 8.05%	44.50%
8.06% to 8.31%	42.00%
8.32% to 8.57%	39.50%
8.58% to 8.83%	37.00%
8.84% to 9.09%	34.50%
9.1% to 9.35%	32.00%
9.36% to 9.61%	29.25%
9.62% to 9.87%	26.50%
9.88% to 10.13%	23.75%
10.14% to 10.24%	21.00%
10.25% to 11%	18.25%
11.01% to 12%	15.50%
12.01% to 13%	12.75%
13.01% to 14%	9.75%
15.01% to 17%	6.75%

17.01% to 19% 3.75%

XI. AWARD OF CONTRACT AND RESERVATION OF RIGHTS

A. The Form of Contract will be AIA Document (To be issued by Addendum), attached in Section XXIX, including incorporated reference files.

B. The Contract, if awarded, will be awarded to the Respondent whose Submission is deemed most advantageous to the Owner, upon approval of the Owner's Board of Trustees.

C. The Owner may accept any Submission in whole or in part. If subsequent negotiations are conducted, they shall not constitute a rejection or alternate RFQ on the part of the Owner; however, final selection of a Respondent is subject to approval by the Owner's Board of Trustees.

D. The Owner reserves the right to accept one or more Submissions, or reject any or all Submissions received in response to this RFQ, and to waive informalities and irregularities in the Submissions received. The Owner also reserves the right to terminate this RFQ, and reissue a subsequent Solicitation, and/or remedy technical errors in the RFQ Process.

E. This RFQ does not commit the Owner to enter into a Contract, award any services related to this RFQ, nor does it obligate the Owner to pay any costs incurred in preparation for submitting of the Submission for this RFQ, or in anticipation of a Contract.

F. Access and Audit Rights: The Owner, or its authorized representative, shall be afforded unrestricted access to and permitted to inspect and copy all the respondent's records, which shall include but not be limited to accounting records (hard copy as well as computer readable data), correspondence, instructions, drawings, receipts, vouchers, memoranda and similar data relating to this Contract. The respondent shall preserve all such records for a period of five (5) years, or for such longer period as may be required by law, after final payment under this Contract. If this Contract is funded from contract/grant funds provided by the U.S. Government or the State of Texas, the Contract, books, and records shall be available for review and audit by the Comptroller General of the U.S. and/or the Inspector general of the federal sponsoring agency, or the State of Texas and its duly authorized representatives.

G. Criminal Background Checks: Respondent agrees to provide assurance that all employees and subcontractors of the Respondent who have contact with students have passed a criminal history background check current within the last year.

XII. PROPOSAL MODIFICATIONS AND WITHDRAWAL PRIOR TO PROPOSAL OPENING

A. A Respondent may modify a Proposal by letter at any time prior to the submission deadline for receipt of Proposals. Modification requests must be received prior to the submission deadline. Modifications made before opening time must be initialed by Respondent guaranteeing authenticity. Proposals may not be amended or altered after the official opening with the single exception that any product literature and/or supporting data required by the

actual specifications, if any, will be accepted at any time prior to the Owner's Board of Trustees consideration of same.

B. Likewise, any Respondent may modify a proposal by submitting a supplemental proposal in person prior to the scheduled closing time for receipt of proposals. Such supplemental proposal should mention only additions or subtractions to the original proposal so as to not reveal the final prices or terms to the Owner until the sealed proposal is open.

C. The Respondent or his duly authorized representative may withdraw a proposal by request, provided such request is received by Owner at the place designated for receipt of proposals and prior to the time fixed for the opening of proposals. The Proposal Bond will be returned with the proposals if withdrawn in accordance with the above. The withdrawal of a proposal does not prejudice the right of the Respondent to file a new proposal at the time and place stated.

XIII. EXHIBIT A - FELONY CONVICTION NOTIFICATION

State of Texas Legislative Senate Bill No.1, Section 44.034, Notification of Criminal History, Subsection (a) states "a person or business entity that enters into a contract with a school Owner must give advance notice to the Owner if the person or an owner or operator of the business entity has been convicted of a felony. The notice must include a general description of the conduct resulting in the conviction of a felony."

Subsection (b) states "a school Owner may terminate a contract with a person or business entity if the Owner determines that the person or business entity failed to give notice as required by Subsection (a) or misrepresented the conduct resulting in the conviction. The Owner must compensate the person or business entity for services performed before the termination of the contract."

This notice is not required of a Publicly-held Corporation.

I, the undersigned agent for the company named below, certify that the information concerning notification of felony convictions has been reviewed by me and the following information furnished is true to the best of my knowledge.

Vendor's Name_____

Authorized Company Official's Name (Printed)_____

My company is a publicly held corporation; therefore, this reporting requirement is not applicable: Signature of Company Official

_____

b. My company is not owned nor operated by anyone who has been convicted of a felony.
Signature of Company Official

_____

c. My company is owned or operated by the following individual(s) who has/have been convicted of a felony:

Name of Felon(s)_____

Details of Conviction(s)_____

Signature of Company Official_____

XIV. EXHIBIT B - ACKNOWLEDGMENT FORM - NON-COLLUSION STATEMENT

The undersigned affirms that they are duly authorized to execute this contract, that this company, corporation, firm, partnership or individual has not prepared this submission in collusion with any other Respondent, and that the contents of this submission as to prices, terms or conditions of said submission have not been communicated by the undersigned nor by any employee or agent to any other person engaged in this type of business prior to the official opening of this submission.

Vendor:_____

Address: _____

Phone: _____

Respondent (Signature):_____

Respondent (Print Name):_____

Position with Company:_____

Signature of CompanyOfficial_____

Authorizing Submission:_____

Company Official (Print Name):_____

Official Position: _____

XV.EXHIBIT C – PROOF OF INSURABILITY

Furnish proof of insurability from your insurance provider meeting the requirements set forth in the Contract, attached to this RFQ. This can be in the form of a letter or other sample certificates attesting to the ability to comply with the insurance requirements.

XVI. EXHIBIT D – PROOF OF BONDING CAPACITY

Furnish proof of bonding capacity from your bonding agent stating the bonding limits, current obligations and free bonding capacity meeting the requirements set forth in the Contract Documents, attached to this RFQ. This can be in the form of a letter.

XVII. EXHIBIT E - SIGNATURE PAGE AND DECLARATION OF COMPLIANCE

Circle below to indicate the business structure of Respondent

Individual/Sole Proprietorship	Partnership or Joint Venture
Corporation	Other Entity (State Type)

The undersigned certifies that (s) he is _____(title) of the Respondent entity named below; that (s)he is authorized to sign this Submission Form (if a Corporation then by resolution with Certified Copy of resolution attached) for and on behalf of the entity, if any, named below, and that (s)he is authorized to execute same for and on behalf of and bind said entity to the terms and conditions provided for in the Submission as required by this RFQ, and has the requisite authority to execute an Agreement on behalf of Respondent, if awarded, and that the 11-digit Comptroller's Taxpayer Number for the entity, if any, is:

11-digit Comptroller's Taxpayer Number Employer Identification Number: _____

Respondent Organization Name_____

By: _____

Printed Name: _____

Title: _____

By: _____

(If Respondent is a Joint Venture, an authorized signature from a representative of each party is required)

Printed Name: _____

Title: _____

By signing this Signature Page and Declaration of Compliance, I do hereby declare that I have read the Request for Proposal on which our Submission is submitted with full knowledge of the requirements, and do hereby agree to furnish all services in full accordance with the requirements outlined in the Request for Proposal.

By signing and executing this submission, I further certify on behalf of my organization and represent to the Owner that Respondent has not offered, conferred or agreed to confer any pecuniary benefit, as defined by TEXAS PENAL CODE ANN.§ 218, or any other thing of value, as consideration for the receipt of information or any special treatment or advantage relating to this submission; the Respondent also certifies and represents that Respondent has not offered, conferred or agreed to confer a pecuniary benefit or other things of value as consideration for the recipients decision, opinion, recommendation, vote or other exercise of discretion concerning this submission; the Respondent certifies and represents that Respondent has neither coerced nor attempted to influence the exercise of discretion by any officer, trustee, agent or employee of the Owner concerning this submission on the basis of any consideration not authorized by law; the Respondent also certifies and represents that Respondent has not received any information not available to other Respondent so as to give the undersigned a preferential advantage with respect to this submission; the Respondent further certifies and represents that Respondent has not violated any state, federal or local law, regulation or ordinance relating to bribery, improper influence, collusion or the like and that Respondent will not in the future offer, confer, or agree to confer a pecuniary benefit or other thing of value to any officer, trustee, agent or employee of the Owner in return for the person having exercised the person=s official discretion, power or duty with respect to this submission; the Respondent certifies and represents that it has not nor and will not in the future offer, confer, or agree to confer a pecuniary benefit or other thing of value to any officer, trustee, agent or employee of the Owner in connection with information regarding this submission, the submission of this submission, the award of this submission or the performance, delivery or sale pursuant to this submission.

XVIII. EXHIBIT F - DEVIATION AND EXCEPTIONS FORM

All respondents are expected to fully comply with all Terms and Conditions of this RFQ, including all dates noted, the AIA A101-2017 Standard Form of Agreement and the AIA A201-2017 General Conditions of the Contract for Construction as amended by the Owner. Any proposed deviations or exceptions to the Terms and Conditions of this RFQ MUST be noted on this sheet. In the absence of any entry on this Deviation Form, the respondent assures the Owner of their full compliance with the Terms and Conditions of this RFQ.

Note that this deviation and exceptions form is NOT intended to note any deviations from the Construction Documents or Specifications and other information contained within the Project Manual. Any questions regarding those must be submitted in writing, per the terms of this RFQ, and will be addressed accordingly in an Addenda.

The Owner will, at is sole discretion, determine whether the deviations listed below are acceptable. Furnish a description of the requested deviation, noting the impact that the proposed deviation will have on the cost and time of the project, if any, if accepted by the Owner. THIS DEVIATION FORM MUST BE SIGNED BY EACH RESPONDENT WHETHER THERE ARE DEVIATIONS LISTED OR NOT AND SUBMITTED WITH THIS PROPOSAL. THE PROPOSAL FURNISHED SHALL NOT BE QUALIFIED OR CONDITIONED IN ANY WAY ON ACCEPTANCE OF THE DEVIATIONS AND EXCEPTIONS LISTED BELOW.

DEVIATION: Cost (+-) Time (+-)

Respondent Organization Name_____

Authorized Signature_____

XIX. EXHIBIT G – CERTIFICATE OF RESIDENCY

The State of Texas has passed a law concerning non-resident contractors. This law can be found in the Texas Government Code under Chapter 2252, Subchapter A. This law makes it necessary for the Owner to determine the residency of its bidders. In part, this law reads follows:

"Section: 2252.001
(3) 'Non-resident bidder' refers to a person who is not a resident.
(4) 'Resident bidder' refers to a person whose principal place of business in this state, including a

Contractor whose ultimate parent company or majority owner has its principal place of business in this state.

Section 2252.002

"A governmental entity may not award a governmental contract to a nonresident bidder unless the nonresident underbids the lowest bid submitted by a responsible resident bidder by an amount that is not less than the greater of the following:

(1) the amount by which a resident bidder would be required to underbid the nonresident bidder to obtain a comparable contract in the state in which the nonresident's principal place of business is located; or

(2) the amount by which a resident bidder would be required to underbid the nonresident bidder to obtain a comparable contract in the state in which a majority of the manufacturing relating to the contract will be performed."

I certify that_____
(Name of Company Bidding) is, under Section: 2252.001 (3) and (4),

_____Resident Bidder _____Non-resident Bidder

My or our principal place of business under Section: 2252.001 (3) and (4), is in the city of

_____ in the state of _____

_____
Signature of authorized Company Representative

_____
Print Name

_____ ___/___/___

Title Date

XX.EXHIBIT H - VENDOR STATEMENT OF DEBARMENT/SUSPENSION

I have read the conditions and specifications provided in the Request for Proposal document attached. I affirm, to the best of my knowledge, the company I represent has not been debarred or suspended from conducting business with school Owners in the State of Texas or from receiving a federally funded contract under the Federal OMB, A-102, common rules. This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 7 CFR Part 3017, Section 3017.510, Participants responsibilities. The regulations were published as Part IV of the January 30, 1989, Federal Register (pages 4722-4733). Copies of the regulation may be obtained by contacting the Department of Agriculture Agency from which this transaction originated.

Name of Company/Firm: _____

Mailing Address: _____

City/State/Zip: _____

Email Address: _____

Prepare By: _____

Company Official's Name: _____
Printed

Company Official's Authorized Signature: _____

TITLE _____

TELEPHONE NUMBER_____ FAX NUMBER DATE _____

PLEASE RETURN COMPLETED&SIGNED FORMWITH YOUR STATEMENT

XXI. EXHIBIT I – REQUEST FOR TAXPAYER IDENTIFICATION NUMBER

Complete and submit Internal Revenue Service for "W-9"

XXII. EXHIBIT J – FORM 1295-CERTIFICATE OF INTERESTED PARTIES

Complete and submit Texas Ethics Commission Form 1295 at the Texas Ethics Commission web site at https://ethics.state.tx.us/forms/1295.pdf.

XXIII. EXHIBIT K – CERTIFICATION REGARDING TERRORIST ORGANIZATIONS AND BOYCOTT OF ISRAEL

Respondent hereby certifies that it is not a company identified on the Texas Comptroller's list of companies known to have contracts with, or provide supplies or services to, a foreign organization designated as a Foreign Terrorist Organization by the U.S. Secretary of State under federal law. (Tex. Gov't Code §§ 2252.151-.154)

Respondent hereby certifies and verifies that neither Respondent, nor any affiliate, subsidiary, or parent company of Respondent, if any (the "Respondent Companies"), boycotts Israel, and contractor agrees that Respondent and Respondent Companies will not boycott Israel during the term of this Agreement. For purposes of this Agreement, the term "boycott" shall mean and include terminating business activities or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations with Israel, or with a person or entity doing business in Israel or in an Israeli-controlled territory. (Tex. Gov't Code §§ 2270.001-.002, 808.001-.006,.051-.057, .101-.102)

Name of Company/Firm: _____

Mailing Address: _____

City/State/Zip: _____

Email Address: _____

Prepare By: _____

Company Official's Name: _____
Printed

Company Official's Authorized Signature: _____

TITLE _____

TELEPHONE NUMBER_____ DATE _____

XXIV. EXHIBIT L – CERTIFICATION REGARDING BOYCOTTING CERTAIN ENERGY COMPANIES

If (a) Vendor is not a sole proprietorship; (b) Vendor has ten (10) or more full-time employees; and (c) this Agreement has a value of $100,000 or more that is to be paid wholly or partly from public funds, the following certification shall apply; otherwise, this certification is not required. Pursuant to TEX. GOV'T CODE Ch. 2274 of SB 13 (87th session), Vendor hereby certifies and verifies that Vendor, or any wholly owned subsidiary, majority-owned subsidiary, parent company, or affiliate of these entities or business associations, if any, does not boycott energy companies and will not boycott energy companies during the term of the Agreement. For purposes of this Agreement, the term "company" shall mean an organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, or limited liability company, that exists to make a profit. The term "boycott energy company" shall mean "without an ordinary business purpose, refusing to deal with, terminating business activities with, or otherwise taking any action intended to penalize, inflict economic harm on, or limit commercial relations with a company because the company (a) engages in the exploration, production, utilization, transportation, sale, or manufacturing of fossil fuel-based energy and does not commit or pledge to meet environmental standards beyond applicable federal and state law, or (b) does business with a company described by paragraph (a)." See TEX. GOV'T CODE § 809.001(1).

Name of Company/Firm: _____

Mailing Address: _____

City/State/Zip: _____

Email Address: _____

Prepare By: _____

Company Official's Name: _____
Printed

Company Official's Authorized Signature: _____

TITLE _____

TELEPHONE NUMBER_____ DATE _____

XXV. EXHIBIT M – CERTIFICATION PROHIBITING DISCRIMINATION AGAINST FIREARM AND AMMUNITION INDUSTRIES

If (a) Vendor is not a sole proprietorship; (b) Vendor has at least ten (10) full-time employees; (c) this Agreement has a value of at least $100,000 that is paid wholly or partly from public funds; (d) the Agreement is not excepted under TEX. GOV'T CODE § 2274.003 of SB 19 (87th leg.); and (e) Owner has determined that Vendor is not a sole-source provider or Owner has not received any bids from a company that is able to provide this written verification, the following certification shall apply; otherwise, this certification is not required. Pursuant to TEX. GOV'T CODE Ch. 2274 of SB 19 (87th session), Vendor hereby certifies and verifies that Vendor, or association, corporation, partnership, joint venture, limited partnership, limited liability partnership, or limited liability company, including a wholly owned subsidiary, majority-owned subsidiary parent company, or affiliate of these entities or associations, that exists to make a profit, does not have a practice, policy, guidance, or directive that discriminates against a firearm entity or firearm trade association and will not discriminate during the term of this contract against a firearm entity or firearm trade association. For purposes of this Agreement, "discriminate against a firearm entity or firearm trade association" shall mean, with respect to the entity or association, to: "(1) refuse to engage in the trade of any goods or services with the entity or association based solely on its status as a firearm entity or firearm trade association; (2) refrain from continuing an existing business relationship with the entity or association based solely on its status as a firearm entity or firearm trade association; or (3) terminate an existing business relationship with the entity or association based solely on its status as a firearm entity or firearm trade association." See TEX. GOV'T CODE § 2274.001(3) of SB 19. "Discrimination against a firearm entity or firearm trade association" does not include: "(1) the established policies of a merchant, retail seller, or platform that restrict or prohibit the listing or selling of ammunition, firearms, or firearm accessories; and (2) a company's refusal to engage in the trade of any goods or services, decision to refrain from continuing an existing business relationship, or decision to terminate an existing business relationship to comply with federal, state, or local law, policy, or regulations or a directive by a regulatory agency, or for any traditional business reason that is specific to the customer or potential customer and not based solely on an entity's or association's status as a firearm entity or firearm trade association." See TEX. GOV'T CODE § 2274.001(3) of SB 19.

Name of Company/Firm: _____

Mailing Address: _____

City/State/Zip: _____

Email Address: _____

Prepare By: _____

Company Official's Name: _____
Printed

Company Official's Authorized Signature: _____

TITLE _____

TELEPHONE NUMBER_____ DATE _____

XXVI. EXHIBIT N – CERTIFICATION REGARDING CERTAIN FOREIGN-OWNED COMPANIES IN CONNECTION WITH CRITICAL INFRASTRUCTURE

Owner is prohibited from entering into a contract or other agreement relating to critical infrastructure that would grant to Vendor direct or remote access to or control of critical infrastructure in this state, excluding access specifically allowed by Owner for product warranty and support purposes. Vendor certifies that neither it nor its parent company nor any affiliate of Vendor or its parent company, is (1) owned by or the majority of stock or other ownership interest of the company is held or controlled by individuals who are citizens of China, Iran, North Korea, Russia, or a designated country; (2) a company or other entity, including governmental entity, that is owned or controlled by citizens of or is directly controlled by the government of China, Iran, North Korea, Russia, or a designated country; or (3) headquartered in China, Iran, North Korea, Russia, or a designated country. For purposes of this Agreement, "critical infrastructure" means "a communication infrastructure system, cybersecurity system, electric grid, hazardous waste treatment system, or water treatment facility." See TEX. GOV'T CODE § 2274.0101(2) of SB 1226 (87th leg.). Vendor verifies and certifies that Vendor will not grant direct or remote access to or control of critical infrastructure, except for product warranty and support purposes, to prohibited individuals, companies, or entities, including governmental entities, owned, controlled, or headquartered in China, Iran, North Korea, Russia, or a designated country, as determined by the Governor.

Name of Company/Firm: _____

Mailing Address: _____

City/State/Zip: _____

Email Address: _____

Prepare By: _____

Company Official's Name: _____
Printed

Company Official's Authorized Signature: _____

TITLE _____

TELEPHONE NUMBER_____ DATE _____

XXVII. EXHIBIT O –PROPOSAL FORM(S)

Having examined the Request for Proposal prepared by the district, the undersigned agrees to the following:

1. To hold the proposal open for acceptance by the Owner for 60 days.
2. To hold alternate proposals open for acceptance by the Owner for 120 days
3. To execute Contract Documents within ten (10) days after the prescribed forms are presented for signature and give bond with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such contract.
4. The Owner maintains the right to reject any or all proposals, to waive informalities or minor irregularities in the proposal process and to accept the proposal which the Owner considers most advantageous. The Owner reserves the right to verify the accuracy and completeness of all responses by utilizing any information available to the Owner without regard to whether such information appears in the submission.
5. That this Proposal has been arrived at independently and is submitted without collusion with anyone to obtain information or gain any favoritism that would in any way limit competition or give an unfair advantage over respondents in the award of this proposal.
6. The Owner reserves the right to negotiate with any Respondent in a manner permitted by law.
7. The undersigned has reviewed the Contract and exhibits as modified by Owner and agrees to execute a final version of these contacts in accordance with the attached terms, subject to final approval by Owner.
8. By providing a response, each Respondent agrees to waive any claim it has or may have against the Owner, its Trustees, agents and employees, and any reference sources, arising out of or in connection with the administration, evaluation, or recommendation of any response; waiver of any requirements in the Request for Proposals; acceptance or rejection of any response and award of the Contract.
9. The cost of developing a response is the sole responsibility of the Respondent. The Owner will not provide reimbursement of such cost and will not be liable for any preparation cost for any reason whatsoever.
10. Respondent has visited the site of the proposed work and fully acquaint themselves with the existing conditions there and should fully inform themselves as to the facilities involved, the difficulties and restrictions attending the performance of the contract. The Respondent should thoroughly examine and familiarize themselves with the Design Criteria Package, the requested spaces, standards for construction, contract forms, schedule requirements, and other information known at the time of this RFQ. The contractor by the execution of the contract shall in no way be relieved of any obligation under it due to his failure to receive or examine any form or legal document or to visit the site or acquaint themselves with the conditions there existing. The Owner will be justified in rejecting any claim based on lack of inspection of the site prior to the proposal.
11. The contractor has assessed the risk of the project and will include mitigation measures in the scope of work and pricing assumptions to address the assessed risk, while fully meeting the Owner's project requirements.
12. The unit price, if requested, for each of the several items in the proposal shall include its pro rata share of overhead so that the sum of the products obtained by multiplying the quantity shown for each item by the unit price proposal represents the total proposal. Any proposal not conforming to this requirement may be rejected as informal. Special attention is drawn to this

condition, as the unit prices will be used to determine the amount of any change orders resulting from an increase or decrease in quantities.

13. Respondent has evaluated the EXHIBIT V - Design Criteria Package, EXHIBIT U - Design Standards, EXHIBIT T – General Conditions, and any other contract documents included with this RFQ or by Addendum, and attests that the Owner's budget for the Cost of the Work is adequate to complete the Project.

1. The Proposer has acknowledged and provided written explanation of all exceptions or potential deviations they feel are necessary on Exhibit F. Further, the proposer understands and acknowledges full understanding and acceptance that if a deviation or exception is not noted on Exhibit F, that the Owner may not consider or accept any request for relief after contract award.
2. **General Conditions –** General Conditions shall only include the items listed in Exhibit T: as a percentage of the actual cost of work but before Profit.
3. **Professional Fees** – shall be for the design all drawings necessary to establish a GMP to the Owner's acceptance and gain all government agency approvals for permits and inspections. Professional Fees may only be marked up with Profit which shall not exceed the percentage submitted as Profit in this proposal.
4. **Profit –** The Profit shall be the proposed percentage of the actual cost of work plus General Conditions plus Professional Fees.

14. Upon establishment and acceptance of GMP(s), the undersigned agrees to perform the work and provide the materials defined in the Design Documents and the complete Work of this Project, the lump sum price of (The Base Proposal includes all allowances listed if any.)

EXHIBIT O - PROPOSAL

1. **Contract Time:** The undersigned agrees that, if the proposal is accepted, the Date of Commencement shall be established as the receipt of a "Notice to Proceed" from the Owner and to obtain Substantial Completion of all work not later than **July 5, 2023**, subject to extensions of time as described in the Contract Documents.

2. **Addenda:** The undersigned acknowledges receipt of:

Addenda 1 .....dated ..... _ _ /_ _/_ _ _ _

Addenda 2 .....dated ..... _ _ /_ _/_ _ _ _

Addenda 3 .....dated ..... _ _ /_ _/_ _ _ _

Addenda 4 .....dated ..... _ _ /_ _/_ _ _ _

Addenda 5 ……dated …….._ _/_ _/_ _ _

_

3. **Costing Methodology:** For all General Conditions, list your fees for A/E Professional Fees, General Conditions and Profit as a percentage of Cost of the Work.

PROFESSIONAL FEES	_____% (For all disciplines)
GENERAL CONDITIONS	_____%
PROFIT	_____%

Company:_____

Address:_____

City ST Zip

Telephone:_____ Fax:_____ Email:_____

Printed Name/Title:_____ Signature:_____

State whether firm is a: ❒ Corporation ❒ Partnership ❒ Individual

XXVIII. EXHIBIT P – BID BOND

Furnish bid bond as set forth in the Contract Documents.

Not Required to Submit

XXIX. EXHIBIT Q - AIA DOCUMENT (TO BE ISSUED BY ADDENDUM.)

Not Required to Submit

XXX. EXHIBIT R - AIA DOCUMENT A201-2017 (TO BE ISSUED BY ADDENDUM.)

Not Required to Submit

XXXI. EXHIBIT S – PREVAILING WAGE RATES

Prevailing Wage Rates - School Construction Trades
Effective March 1, 2016
Texas Gulf Coast Area

CLASSIFICATION	HOURLY RATE
Asbestos Worker	$15.42
Bricklayers; Masons	$18.34
Carpenters/Caseworker	$21.50
Carpet Layers/Floor Installers	$20.03
Concrete Finishers	$16.13
Data Comm / Telecom Installer	$23.50
Drywall Installers; Ceiling Installers	$16.69
Electricians	$22.44
Elevator Mechanics	$30.00
Fire Proofing Installer	$19.13
Glaziers	$19.87
Heavy Equipment Operators	$18.18
Insulators	$16.16
Ironworkers	$18.14
Laborers	$11.81
Lather / Plasterer	$18.03
Light Equipment Operators	$15.21
Metal Building Assemblers	$17.53
Millwrights	$20.69
Painters/Wall Covering Installers	$15.75
Pipefitters	$25.70
Plumbers	$26.50
Roofers	$18.80
Sheet Metal Workers	$20.46
Sprinkler Fitters	$25.10
Steel Erector	$19.33
Terrazzo Workers	$19.67
Tile Setters	$19.83
Waterproofers/Caulkers	$19.00

This document was developed by PBK Architects, Inc. in strict accordance with the Texas Government Code Chapter 2258.

Not Required to Submit

Prevailing Wage Rates
Worker Classification Definition Sheet

Asbestos Worker	Worker who removes & disposes of asbestos materials.
Bricklayers/Masons	Craftsman who works with masonry products, stone, brick, block or any material substituting for those materials & accessories.
Carpenter / Caseworker	Worker who builds wood structures or structures of any material which has replaced wood. Includes rough & finish carpentry, hardware and trim.
Carpet Layer / Floor Installer	Worker who installs carpets and/or floor coverings-vinyl tile.
Concrete Finisher	Worker who floats, trowels and finishes concrete.
Data Comm / Telecom Installer	Worker who installs data/telephone & television cable and associated equipment and accessories.
Drywall / Ceiling Installer	Worker who installs metal framed walls & ceilings, drywall coverings, ceiling grids & ceilings.
Electrician	Skilled craftsman who installs or repairs electrical wiring & devices. Includes fire alarm systems &HVAC electrical controls.
Elevator Mechanic	Craftsman skilled in the installation & maintenance of elevators.
Fire Proofing Installer	Worker who sprays or applies fire proofing materials.
Glazier	Worker who installs glass, glazing and glass framing.
Heavy Equipment Operator	Includes, but not limited to, all Cat tractors, all derrick-powered, all power operated cranes, back-hoe, back-filler, power operated shovel, winch truck, all trenching machines.
Insulator	Worker who applies, sprays or installs insulation.
Iron Worker	Skilled craftsman who erects structural steel framing & installs structural concrete Rebar.
Laborer / Helper	Worker qualified for only unskilled or semi-skilled work. Lifting, carrying materials & tools, hauling, digging, clean-up.
Lather / Plasterer	Worker who installs metal framing & lath. Worker who applies plaster to lathing and installs associated accessories.
Light Equipment Operator	Includes, but not limited to, air compressors, truck crane driver, flex plane, building elevator, form grader, concrete mixer (less than 14cf), conveyer.
Metal Building Assembler	Worker who assembles pre-made metal buildings.
Millwright	Mechanic specializing in the installation of heavy machinery, conveyance, wrenches, dock levelers, hydraulic lifts & align pumps.
Painter / Wall Covering Installer	Worker who prepares wall surfaces & applies paint and/or wall coverings, tape and bedding.
Pipefitter	Trained worker who installs piping systems, chilled water piping & hot water (boiler) piping, pneumatic tubing controls, chillers, boilers & associated mechanical equipment.
Plumber	Skilled craftsman who installs domestic hot & cold water piping, waste piping, storm system piping, water closets, sinks, urinals, and related work.
Roofer	Worker who installs roofing materials, Bitumen (asphalt & coal tar) felts, flashings, all types roofing membranes & associated products.
Sheet Metal Worker	Worker who installs sheet metal products. Roof metal, flashings & curbs, ductwork, mechanical equipment and associated metals.
Sprinkler Fitter	Worker who installs fire sprinkler systems & fire protection equipment.
Steel Erector	Worker who erects and dismantles structural steel frames of buildings and other structures
Terrazzo Worker	Craftsman who places & finishes Terrazzo.
Tile Setter	Worker who prepares wall and/or floor surfaces & applies ceramic tiles to these surfaces.
Waterproofer / Caulker	Worker who applies water proofing material to buildings. Products include sealant, caulk, sheet membrane, liquid membranes, sprayed, rolled or brushed.

END OF DOCUMENT

This document was developed by PBK Architects, Inc. in strict accordance with the Texas Government Code Chapter 2258.

XXXII. EXHIBIT T - GENERAL CONDITIONS

The following list includes items that the Contractor shall be compensated as Project General Conditions as a set percentage of the Actual Cost of Work as defined. The General Conditions are the only place this work shall be billed. The following list of General Conditions does not supersede requirements of AIA A201-2017, as modified by the Owner for the Project.

2. Contractor Personnel as proposed for the Project, to the extent time is directly attributable to the furtherance of the Work. Positions may include:

    a. Wages or salaries of the Contractor's supervisory and administrative personnel when stationed at the site and performing Work
    b. Wages and salaries of the Contractor's supervisory or administrative personnel engaged at factories, workshops or while traveling, in expediting the production or transportation of materials or equipment required for the Work
    c. Senior Project Manager/Project Executive
    d. Project Manager including vehicle and/or allowance/mileage
    e. General Superintendent
    f. Superintendent including vehicle and/or allowance/mileage
    g. Assistant Superintendent
    h. Project/Cost Engineer
    i. Project Expediter / Asst. Project Manager
    j. Field Office Personnel
    k. Office/Technology Engineer
    l. Quality Control Manager
    m. Safety Coordinator
    n. Building Information Modeling staff

3. Temporary Services and Support:

    a. Costs of transportation, storage, installation, dismantling, maintenance, and removal of materials, supplies, temporary facilities, machinery, equipment and hand tools not customarily owned by construction workers that are provided by the Contractor at the site and fully consumed in the performance of the Work
    b. Rental charges for temporary facilities, machinery, equipment, and hand tools not customarily owned by construction workers that are provided by the Contractor at the site, and the costs of transportation, installation, dismantling, minor repairs, and removal of such temporary facilities, machinery, equipment, and hand tools
    c. Temporary Utilities for CM's Trailer
    d. All utilities required through Substantial Completion
    e. Construction entrance(s)
    f. Telephone, Fax, Computer, Copier Costs (monthly rental costs)
    g. Internet service
    h. Temporary Plumbing
    i. Subsistence/Per Diem
    j. Dumpsters

Not Required to Submit

k. Job Signage/Advertising
l. Fire Protection/Fire Extinguishers
m. Temporary Weather Protection
n. Barricades, temporary fencing, fall protection
o. Building and Site dewatering
p. Job Safety Training
q. Traffic control rental and barricades rental
r. Traffic Direction (Police Oversight)
s. Temporary chemical toilets
t. Temporary utilities for construction

u. Field Offices and Construction Supplies:

i. Drinking water, ice cups
ii. Delivery Service / Postage
iii. Mobilization and Demobilization of Field Office
iv. Monthly office furnishings and equipment
v. Computers and software
vi. Monthly Office rental costs
vii. Project Office cleaning costs
viii. Stationary and Supplies
ix. Costs of document reproductions and delivery charges

v. Storage
w. Progress Photography (Photos/Video)
x. Project Shop Drawings
y. Small Tools
z. Cell phones
aa. Vehicles and mileage
bb. CPM Schedule
cc. Project management software
dd. Project documentation and document reproductions
ee. Field Communications System / Radios
ff. Field Engineering Equipment and supplies
gg. Generators – portable
hh. Temporary Heating - portable
ii. Project As-Builts / Record Drawings
jj. First Aid Supplies
kk. Safety Equipment
ll. Security System
mm. Badging / Identification
nn. Criminal background checks

4. Construction:

a. Mobilization / Demobilization

Not Required to Submit

b. Transportation
c. Field Engineering / Layout
d. General Purpose Labor / Labor Burden
e. All-weather construction mats
f. Construction site cleaning and trash haul-off
g. Clean Streets
h. Equipment Rental, Maintenance & Insurance
i. Fuel, Oil & Grease for Construction Equipment
j. Final Cleaning of Project

Not Required to Submit

XXXIII. EXHIBIT U – FACILITY DESIGN STANDARDS

Not Required to Submit

XXXIV. EXHIBIT V – DESIGN CRITERIA PACKAGE

EXHIBIT U

Tomball ISD – Construction and Design Standards

The Owner's Statement of Intent

This notice shall be incorporated into the specifications to pass liability on to the Contractor if they make or incorporate deviations from Owner Standards without written approval further described below. This document shall be considered living and is subject to change with appropriate notice.

The following specifications are provided as a guideline for design professionals and contractors working on Tomball ISD projects. The OWNER has many years of operational experience with hundreds of products, services and designs. The OWNER desires to have a competitive specification and does not intentionally exclude products, services or designs without good reason. Unless otherwise approved in writing or by email, it is the assumption of the OWNER that these specifications have been followed precisely by all design professionals and that only products listed or approved by Tomball ISD have been used.

A design professional may be held responsible for specifying products, services or designs that conflict with these specifications unless prior written or email approval is obtained from Tomball ISD.

The OWNER is very serious about the use of the term "approved equivalent". Approved equivalent is defined as prior written or email approval by Tomball ISD or the designated Representative for Construction to use equivalent products, services or designs. Design professionals **are not allowed** to approve product substitutions during the design, bidding, or submittal process without the OWNER'S written or email approval.

MISCELLANEOUS PROVISIONS

General Design Criteria

A. Separate custodial rooms shall be provided. Design of buildings shall allow for regular operational debris removal from building to dumpsters outside of the mechanical rooms or kitchens by staff requiring no special equipment. Provide for proper amount of on-site storage of custodial equipment and supplies.
B. Verify with the District normal delivery operations and types of delivery vehicles
C. TISD does not incorporate loading docks by standard though they may be necessary based on a given project. Verify this decision with the district prior to moving forward with a design concept
D. All mechanical yards shall be gated and lockable
E. All mechanical yards shall be fully paved and be traffic rated
F. For custodial laundry rooms and athletic laundry rooms, provide commercial laundry machines. Ensure the room has adequate staging space.
G. Maximum occupancy signage shall be posted on all assembly areas as determined by the AHJ.
H. For Specialty Plaques, signage and street addresses to be installed on front of building in manner clearly visible from street. Verify with TISD prior to mounting for an approved location.
I. All restroom walls shall extend to deck, including walls between adjacent restrooms.
J. All restrooms, locker rooms and shower rooms ceilings above Elementary Grade Level shall be hard ceilings. Where hard ceilings are not installed clips or similar methods of controlling access shall be provided. Provide access panels in all hard ceilings centered on the access point. Coordinate panels and functionality with ceiling design features.
K. Natural lighting shall be provided whenever practical to reduce lighting demands and enhance the environment. Particular attention shall be paid to common areas and meeting areas.
L. Southern exposure windows shall be covered with an overhang or tinted to prevent direct sunlight from entering the building space.
M. Exterior doors shall be protected from rain to prevent water intrusion and be insulated with tamper proof hinges.

N. All overhangs shall be designed to accommodate school buses, delivery trucks and emergency vehicles
O. Site design and calculations must allow for future portable building locations and these locations and provide a pathway for utilities shown on the final approved drawings marked as future.
P. At all wet locations other than shower/locker/public toilet/single user toilets front of house, provide a 4' FRP wainscot over water resistant backer board.
Q. Vents at boilers and similar shall have covers.
R. All flashing for penetrations and connections shall meet or exceed manuf requirements.
S. All in ground utility boxes shall be min. 6" above finish grade. If this is done then provide 12" mow strip at perimeter below top of rim.
T. Irrigation boxes shall be flush
U. Do not put gas regulators on the roof.
V. Provide freeze protection at Fire Pumps and freeze protection kits at Emergency Generators.
W. Provide surge protection at all IDF/MDF equipment, all major electrical equipment with phase monitoring to be included.
X. Provide 2 admin phones which work with the PA system
Y. Provide POTS lines (2) ea. at any monitoring location and any elevator.
Z. When designing for access controls, request meeting with the Owner.
AA. Where clerestory windows are a part of the design, the windows shall face the North as the preferred orientation but in no case the south or west without district approval.
BB. Typical Dedication Plaque Example for Instructional Touch Panel – Exhibit A
CC. Typical JHS and HS classroom layouts and mounting hts for Instructional Touch Panel – Exhibit B
DD. A typical classroom layout has been developed and will be reviewed with the designers during the planning phase.

DOCUMENT STANDARDS

Section No.	*Title*
DIVISION 0	
00 00 01	Insurance and Bonds 1. All design professionals must provide evidence of errors and omissions insurance and must maintain insurance coverage for the duration of all work with Tomball ISD. 2. **WORKER'S COMPENSATION** minimum insurance limits: a. State: Texas – Statutory b. Federal: Applicable Statutory c. Employer's Liability minimum limits: i. $100,000 per accident ii. $100,000 per disease; each employee iii. $1,000,000 per disease; policy limit d. Professional Errors and Omissions Liability Insurance: i. $ 1,000,000 Per claim and per occurrence ii. $ 1,000,000 Annual Aggregate e. Umbrella or Excess Liability insurance: i. $ 3,000,000 Each occurrence ii. $ 3,000,000 Aggregate f. Comprehensive (Commercial) General Liability: i. $ 1,000,000 Occurrence ii. $ 2,000,000 Aggregate iii. $ 1,000,000 Personal and Advertising Injury iv. $ 500,000 Fire damage v. $10,000 Medical payments vi. Per project aggregate.

3. OWNER must be named as an additional insured by endorsement on the Commercial General Liability and Excess policies. Use the following District address for all insurance policies:

   Tomball I.S.D. – Ancillary Services
   310 S. Cherry
   Tomball, TX 77375

4. General contractors must provide evidence of CONTRACTOR'S Commercial General Liability and Contractual Liability insurance. Latest version of the ACORD Certificate of Liability Insurance is preferred.
5. **COMMERCIAL GENERAL LIABILITY** minimum insurance limits:
   a. General Liability
      i. Bodily Injury & Property Damage Combined
         a. $1,000,000 each occurrence
         b. $2,000,000 aggregate
      ii. Damage to Rented Premises
         a. $100,000 each occurrence
      iii. Medical Expenses
         a. $10,000 any one person
      iv. Personal and Adv. Injury
         1. $1,000,000 each occurrence
         2. $2,000,000 aggregate
      v. General Aggregate
         1. $2,000,000 aggregate
      vi. Products & Completed Operations
         1. $1,000,000 each occurrence
         2. $2,000,000 aggregate
         3. Shall be maintained for at least one year after Substantial Completion and certificates shall be filed with the OWNER during this period.
         4. Property Damage Liability Insurance shall provide X, C and U coverage.
         5. Broad Form Property Damage Coverage shall include Completed Operations.
   b. Commercial Auto Liability (covering all owned, non-owned and hired vehicles)
      i. $1,000,000 combined single limit each accident
   c. Excess/Umbrella Liability
      i. $5,000,000 limit required over Commercial General Liability, Automobile Liability and Worker's Compensation
   d. Builder's Risk or Installation Floater:
      i. C212 written in the name of the OWNER (or additional insured endorsement if blanket policy)
      ii. Coverage for full insurable value of the work
      iii. Endorsed allowing OWNER occupancy prior to completion
      iv. Waiver of subrogation as to the CONTRACTOR, SUB-CONTRACTORS, OWNER and employees and representatives
      v. Receipt of the original policy
6. OWNER'S and CONTRACTOR'S Protective Liability Insurance (OPLI):
   a. Naming the OWNER as the insured
      i. $1,000,000 each occurrence
      ii. $2,000,000 aggregate
   b. Endorse to include officers and employees of OWNER, ARCHITECT and ENGINEER
   c. Written by the same insurance company as the Commercial General Liability policy
   d. If this requirement is redundant, insurance broker must provide a letter stating that the General Liability policy will cover the same items that the OWNER Protective Liability

	Insurance would cover. A copy of the letter must be maintained with the contract documents. 7. Insurance Company Values and Size a. Best rating of A or better required 8. Cancellation Notice: 30-day cancellation notice required on all policies 9. Bonds: a. Bid Bond (10% of maximum amount bid) b. Payment Bond (100% of Contract amount for contracts $25,000 or over) c. Performance Bond (100% of Contract amount for contracts $100,000 or over)
00 00 02	General Requirements – Further details are provided in some areas in the specific applicable section. 1. Contractor shall include mark-up for overhead and profit for all allowances in their Base Proposal. No additional mark up, including labor burden, will be allowed on individual items provided under the allowances. This includes labor and material supplied by the Contractor and any Sub-Contractors. 2. For change orders outside allowances noted in the document, the Contractor will be allowed to add mark up for overhead and profit as stipulated in the Contract Documents. 3. As-built underground utility drawing must be provided showing specific locations of all underground utilities. 4. Upon completion and close out of all projects, the Architect shall provide the Owner with a USB containing electronic files of all construction documents including, but not limited to, original plans and specs, construction contract, CPR, AEA, as-built drawings, meeting minutes and any other documents related to the project as stipulated in the Contract Documents. 5. The Architect and their consultants shall not approve substitution of products that deviate from those specified in this document without prior written approval from the Owner. 6. Prior to Bidding, the Architect will note any items in the Contract Documents which the Owner has identified for this project that will be disposed of by the Owner per the TISD “Fixed Asset Reconciliation”. The General Contractor will include a copy of the Owner’s completed form and include in the Close out documents. 7. Provide SDS sheets on all materials used as part of close-out documents. 8. Attic stock to be on pallets, shrink-wrapped and identified with the name of the school on each pallet. Delivery of attic stock to the District’s warehouse to be coordinated with District. Provide a transmittal for Owner’s signature; include in close-out documents. 9. Architects/Engineers shall use the **TISD Contractor Selection Criteria** Approved by the School Board. 10. Include current **PREVAILING WAGE RATE SCHEDULE** in all construction proposal and contract documents
00 00 03	Project Manual 1. On all projects the Prime Consultant shall provide a Project Manual Cover indicating at least: a. The Project b. The Address (if known) c. The Jurisdiction d. Date of Publication (must be updated with revisions and at closeout) e. The Firm Name f. The Firm Address 2. The order of these items is subjective but they must all be provided in a font style/size which is clearly legible from a reasonable reading distance. No decorative font styles shall be used. 3. The Cover should be of card stock sufficient to protect the contents for the duration of the project. A back shall also be provide of the same weight material and formatting. No verbiage is required on the back. 4. The Project Manual shall be bound using screw posts only. Exceptions must be approved.

	5. The Project Manual shall provide the following: a. A full Table of Contents listed using CSI formatting b. A Seals Page with all relevant seals and signatures of those who are represented in the Specification c. Geotechnical Data d. Prevailing Wage Rates (The Owner will Provide this for your use)
DIVISION 1	**GENERAL REQUIREMENTS**
01 10 00	Summary 1. Provide an Executive summary of the project in narrative describing at least the following: a. The facility's intended use b. Describe its physical location, local and adjacent site features which could impact the process of construction (Ex. A stream crossing the site, existing easements impacting the site, significant change in grade, existence of a flood zone(s) etc.) c. List the size in gross square feet (GSF), divisions in the facilities, attached or adjacent included out facilities, number of parking spaces provided, pedestrian accessible, and the number of stories d. Explain the general construction type (Ex. Masonry, Conventional Framing, etc.) e. Where applicable note the interconnectivity both physical and aesthetically to other nearby campus's facilities f. The requirement to adhere to Tomball ISD standards including aesthetics, built materials as well as configurable elements. g. Other which the Prime may feel is pertinent for a quick overview h. This is intended to be an Executive Summary of the overall project program to be included in the scope of this manual.
01 21 00	Allowances 1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. Where allowances are provided for, the allowances may only be applied when proper documentation and approval is given. b. Allowances are not to be used for anything other than what they are listed for. c. When an allowance is no longer needed or when there is an unused balance, a CPR shall be issued to move the allowance into the Project Contingency.
01 22 00	Unit Prices 1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. Unit Pricing shall be reviewed and approved prior to issuance for bid purposes. b. Where unit pricing provided for a clear delineation of what is included in the unit cost. c. At a minimum any unit cost shall include the full purchase, delivery and installation per unit unless defined otherwise.
01 23 00	Alternates 1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. Where alternates are requested they shall have been fully vetted and approved by the Owner

	b. Alternates shall be a complete turnkey scope of work requiring no further adjustment in cost, work or schedule. c. When pricing is provided it shall include identification of cost and schedule impact.
01 25 13	Product Substitution Procedures 3. To the Architect: b. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 4. TISD Standard: c. Where a substitution is proposed both the General Contractor and the Prime Design Consultant shall consult the provided standards before accepting. Where there is a variance from the standard, the Entity proposing the change shall request approval in writing. d. A substitution may include materials, products, software or other listed item. e. The request shall contain at a minimum f. A description of the item g. Where in the standards the deviation is occurring h. What the benefit to Tomball ISD will be if approved including cost savings, improved performance, schedule improvement, improved warrant/service/availability of parts, etc. i. Other descriptions as needed 5. Until the approval is made in writing from TISD, the use of this product, material, software or vendor shall not be incorporated or represented in any cost estimating or schedules. 6. If any substitution is provided without authorization, the entity which employed it without approval shall be liable for the complete replacement cost and for any schedule damages which may result from that change. The entity shall hold the district harmless for any resulting damages resulting from the unauthorized change. 7. Remedies for correcting an unauthorized material or vendor may be: a. Change at no cost to the district including in ancillary costs associated with delays b. The district may choose to keep the material or vendor but the entity making the change will be required to pay the district for any difference in cost of what should have been provided. By choosing to retain the unauthorized alternate, the entity making the change is liable for any performance failures, replacement costs, warranty costs or failed equipment up to and including after a failure replacement of the material with what was originally specified.
01 26 00	Contract Modification Procedures
01 29 00	Payment Procedures 1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. Pay Applications shall be submitted concurrently in draft form to all parties, the Architect and the Program Management Team. b. The Architect is responsible for certifying the final approval therefore the Architect shall ensure that all numbers are correct, no change in costs are indicated from previous applications for payment, where stored materials are being requested for approval, all required items are included but a minimum, there is proof of specific insurance noting serial numbers, photographs, physical address, a statement that there is no additional charge or schedule impact from this process, and proof of approval is attached to the final approved application.
01 29 73	Schedule of Values 1. To the Architect:

	a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. A schedule of values (SOV) shall be presented within 45 days of Notice to Proceed. The SOV will be reviewed by both the Architect and Program Management team until approved. b. No applications for payment will be allowed until the SOV is approved.
01 31 00	Project Management and Coordination 1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. The District has engaged the services of a Program Manager. b. The Program Manager shall act as the Owner's representative and all communication with the district shall flow through the Program Management team. c. In some instances, there may be need to communicate directly with the district for efficiency or technical clarity. In this case you will be directed to do so. d. You may be contacted directly by a TISD employee. Should this happen a protocol for how and what is required of you post conversation will be established. e. With very few exceptions should you ever proceed based on what you were told until the Program Manager is made aware. f. No one at the district has authority to authorize a change in work, design, aesthetic selection, material change, physical change, or any other conceptual change except for Mr. Jim Ross or the Superintendent of Schools. g. Any meeting between the A/E and the General Contractor where cost, schedule, process or alternative solutions are discussed, the entity facilitating the meeting shall invite the Program Manager. At the Program Manager's option, a written meeting report shall suffice.
01 33 00	Submittal Procedures 1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. School district in submittal reviews is limited to case-by-case situations except that Food Service, Door Hardware, Technology will participate. Other areas may be included on cases by case basis. (To the Architect – Please ask as these items are submitted and note timelines may vary for Owner review.) b. Some items which may be considered: i. Any Food Service Equipment ii. Technology items such as Camera placement layouts, wiring diagrams, most equipment, security and other items which may arise.
01 40 00	Quality Requirements 1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. The Architect and Contractor are responsible for managing and maintaining quality for the duration of the project at all phases. During Design the Architect shall manage their own quality over their work and provide by design and specification a level of quality meeting or exceeding industry standard. The Architect shall be responsible for notifying of any variances.

	b. In all cases manufacturer's installation and handling of their product shall be adhered to. c. The district shall be involved in establishing installation qualifications during design. d. The district shall be provided with qualifications of all subcontractors within 45 days of Notice to Proceed. The contractor shall only utilize subcontractors/installers who are qualified by the manufacturer of the equipment. Where this is not the case the district may elect to deny those subcontractors from performing the work. e. The district shall be notified at least 48 hours in advance of when they make the following walk through events to be effected by TISD subject matter experts, i.e.. Electrical, Plumbing, Mechanical Systems etc. i. Below grade rough-in 1. Electrical mains, all under slab distribution 2. Plumbing mains and in ground valves ii. Above grade rough-in 1. Main distribution of all utilities 2. In wall piping and wiring of all utilities 3. Built rack supports 4. Prior to wall close up 5. Prior to ceiling close up 6. Prior to any remaining concealed space cover up f. Pre-installation conference with Sub-Contractors i. All major disciplines 1. Mechanical 2. Electrical 3. Plumbing 4. Technology 5. Instructional Technology g. Mockup: i. The district will be involved in approvals of all aesthetic mockups ii. Provide for district approval one classroom and one wet lab mockup full rough-in of all wall devices and blocking for review prior to proceeding with the remainder of the work.
01 45 23	Testing and Inspection Services 1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. There are no written standards from the district on this section. The Consultants shall follow industry best practices when establishing criteria and manage the Contractor by monitoring reports and physical presence when necessary during the work. b. When establishing concrete testing the Architect shall be involved with the Program Manager in setting this criteria with the Owner's Consultant performing this work. (To the Architect: The issue is preventing over testing in areas which have no structural or minimal structural performance and alternatives for back filling and compaction. The district seeks the best solution which performs but is also cost effective.)
01 50 00	Temporary Facilities and Controls 1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard:

	a. When establishing locations of Temporary Facilities, the owner shall have the opportunity to review and assist in final placement of trailers and traffic entry. The Contractor shall provide a layout of what is intended and gain approval before setting any fixed elements or traffic entries.
01 77 00	Closeout Procedures 1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. Ensure all final test results have been provided with all final reports b. The Owner shall be notified 48 hours prior to the Architect/Contractor starting the Punch List walk. The Owner will participate, and their comments shall be incorporated. Where there is a conflict of opinion, the item shall still be recorded, and the Program Manager will work to a resolution. c. The Punch List walk shall be scheduled to occur at least 3 weeks prior the scheduled Substantial Completion date. d. The Architect's Punch List shall be returned to the Contractor and Owner within 5 business days of the final day of walking. e. The punch list shall be created in such a way to provide the location in a method that easily discovered. The format shall be provided for review prior to the walk. Any reasonable adjustments to the format shall be incorporated. f. Final Cleaning- Ensure mechanical, storage and janitorial rooms are clean and free of all trash debris prior as part of the punch list. No stored materials are allowed in these rooms. g. Closeout Documents i. TISD only requests (1) set of hard copy as-built drawings, specifications and warranty/guarantee documents or similar which have an original signature on the. All remaining documents shall provide in Personal Document Format (PDF) and are to be uploaded into Project Mates including providing (2) separate duplicate thumb drives containing all documents including those provided in hard copy. As-Built drawings shall also be provided in DWG format with the same naming format. ii. The pdf files shall be cataloged in a logical format following CSI whenever possible with a index included. DO NOT simply copy all the files over. File naming shall be logical and consistent between groupings. iii. Drawings and Specifications only shall be provided at all contractual phase completion in the same way, 1 set of hard copy full size, 1 set of hard copy half size and 1 pdf of all documents. All phase drawings shall be uploaded into Project Mates as part of completion of that phase and the electronic thumb drives provided concurrently. During Phase completion only one thumb drive is required. iv. The contractor shall provide the following drawings full size laminated showing valves, disconnects, pull boxes, cleanouts, damper locations, duct detectors, smoke detectors, FCP and all related maintenance and control elements. Submit a paper copy and pdf prior to lamination for acceptance by the Owner: 1. The Mechanical plan of the whole building (2) copies 2. The Electrical plan of the whole building (2) copies 3. The Plumbing drawing of the whole building (2) copies 4. Fire Detection plan of the whole building (2) copies 5. Network/Data/Security/Camara plan of the whole building (2) copies

	6. An enlarged plan at ¾"=1' for the Fire Riser Room, Each Mechanical Room, Each Electrical Room, and the Chiller yard or similar outdoor equipment areas if separate h. Attic Stock and Extra Materials i. All stored materials or attic stock shall be delivered to 1110 Baker Drive, Tomball, Texas. Prior to any delivery the contractor must contact the pre-determined person and arrange a time to drop off materials. ii. Provide 48 hours notice prior to delivery. iii. Dropped materials shall contain a detailed list of what is being delivered. A transmittal stating attic stock is not acceptable. A copy of this list is considered part of the delivery and acceptance without this list will not be made. iv. One set of all filters per location for all Mechanical Units minimum v. For Water Softener – Provide 400# of Salt in addition to the full system at turn over. vi. Rebuild Kit for all backflow preventers. (1) kit per type vii. Building Main Water Filters – A/E shall verify these have been changed during the punch list walk post Substantial Completion viii. All other filters – A/E shall verify these have been changed during the punch list walk post Substantial Completion. ix. All filters shall be changed no sooner than 1 week prior to Substantial Completion or they will have to be changed again. x. Keys – Building keys- Refer to Keying but no keys are to be provided to any staff. All key transfers shall be to Facilities Director in person. Any key that is provided to staff other than the Facilities Director will be considered free and not a part of the official count.
01 78 39	Project Record Documents 1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. Record drawings shall include but not be limited to correct As-Built or As-Constructed documents showing any deviation from the design, actual locations for valves, dampers, detectors, alarms, wall devices, registers, cameras, WAPS, underground piping, underground wiring for site and building interior, overhead duct runs, piping wiring, junction boxes, pull boxes, cut-off valves, switches, resets of any type, and any built element which is different from the design including doors, windows, openings, column wraps, columns, millwork, equipment, etc. b. Record documents include specifications for any material, equipment or conveyance system. c. Record documents include SDS sheets for everything which is in the facility whether built, installed or applied. ALL items brought onsite and incorporated within the project must include SDS sheets. d. SDS and asbestos exclusion letter shall be submitted to TISD together. Asbestos exclusion letter shall be signed by Architect
01 79 00	Demonstration and Training 1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard:

	a. The owner will participate in training for at least the following. In all cases provide 48 hours notice. (To the Architect – Include these and any others you feel are necessary or industry standard and the district can review and elect to participate or not. Provide a list of all training you propose prior to final specifications for the district to approve.) xi. Technology systems xii. Doors and Hardware xiii. Generators xiv. Chillers xv. Boilers xvi. Elevators xvii. Fire pumps if present xviii. Water Plants if present xix. Sound Systems xx. Public Announcement systems xxi. Fire Control Panel operations xxii. Water Softeners xxiii. All other major MEP equipment xxiv. Include the district in a Building Automation System walk prior to the Fire Marshall walk. Provide 48 hours notice. 3. The Owner has determined that for the MEP disciplines they do not require a video. The contractor shall provide a video for all other areas.
DIVISION 2	EXISTING CONDITIONS
02 00 01	Existing Conditions 1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. Renovations i. TISD has many drawings documenting past construction which the A/E is welcome to review and use for the purposes of developing their project scope of work. Any documents borrowed must be returned within 30 days. The A/E may make copies or electronic copies for their use to retain during the project. Any borrowed drawing shall not be assumed to be correct until field verified. ii. Where no existing drawings exist, it is the A/E's responsibility to create the needed background drawings. iii. The A/E shall field verify dimensions of built elements, review surveys to ensure accuracy, look above ceilings, check existing equipment, document all built improvements requiring maintenance, replacement due to damage, equipment beyond its rated life, overall review of the entire area being affected. iv. Upon completion the A/E shall provide reports or drawings indicating what was found with recommendations for improvements, noting variances from the scope of work that need to be addressed and gain approval to increase or modify scope prior to making those changes. v. The A/E remains the sole responsible party for ensuring accuracy of existing conditions which can be verify using non-destructive methods. If it can be viewed it is the A/E's responsibility to ascertain what is needed. vi. In some cases, the full scope may not be achievable. In these cases, the A/E shall make a recommendation for a calculated allowance to be applied for this work. Contingency funds shall not be considered for work which was known but not fully scalable to determine the full scope. That is for an allowance.

02 00 02	Site Work 1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. Parking areas, driveways and sidewalks shall be concrete construction. Asphalt construction is not acceptable. Concrete sidewalks should extend around the perimeter of the building. All expansion joints and cracks are to be filled with Will Seal product or equivalent. Thickened slab shall be provided at garbage dumpsters. With Owner approval, in lieu of a perimeter sidewalk, a 12"-18" concrete mow strip can be used to prevent water intrusion due to landscaping. b. Interior courtyards and courtyards within the building foundation are not acceptable. Exterior courtyards and landscaping shall be designed to keep vegetation at least 18 inches away from building at mature growth. c. Trees shall be planted at a distance so as not to damage or have overhang closer than 6' from the building at mature growth. d. Gutter downspouts shall be designed to discharge into underground storm drainage system. Vandal resistant covers and cast-iron boots shall be installed on all downspouts. Internal or concealed gutters or downspouts are not acceptable on the building. e. Exterior bleacher style seating shall be constructed of aluminum installed on full size concrete pad. Pad to be sized to include 48" ADA circulation space. f. Exterior chain link fencing shall be commercial grade, painted black, 9-gauge fabric, 2 ½" galvanized schedule 40 pipe posts, 3" galvanized schedule 40 pipe terminal posts, 1 5/8" galvanized schedule 40 top rail for 6 foot or shorter fencing. All campus fields and playgrounds are to be fenced for student security. Fence fabric to be secured by black steel ties and not aluminum ties. g. Exterior ornamental iron fencing shall be black powder-coated steel, 14 gauge or better rails, posts and bars. Bar spacing to be no more than 4" on center and designed with full length top rail to prevent injury. h. Playground fencing shall meet all CPSC requirements. i. All site dewatering shall be included in the base bid. j. Design main storm system per code, with sediment control. Can be high density polyethylene (HDPE) by Advanced Drainage Systems, Inc. if acceptable to the Owner in lieu of reinforced concrete. k. Maintain a green barrier or buffer around the perimeter of the property. Designate areas where underbrush is to be removed. Generally, trees with a diameter of 4" or larger are to be saved. Consult with Owner. l. Prior to construction, use physical barriers to protect green areas from construction activities and debris. The General Contractor is responsible for monitoring the Sub-Contractor's activities to preserve and protect the identified green spaces. m. Contractor shall use line locator services before beginning trenching or digging. Contractor is responsible for on-site utility damage for utilities marked on plans or marked by locator services. n. All Schools: Provide a minimum 48" wide clear opening walk gate/opening for all fenced areas and 12' wide clear opening drive gate access to all fenced areas. o. All educational facilities: Minimum 12' wide clear opening drive gate/opening for access to all athletic field fenced areas. Provision must be made for entrance of an ambulance and/or other emergency vehicle into all outdoor athletic areas. p. All mechanical yard fencing to have a 14' minimum gate width (clear opening). Gate to be designed to be secured by OFOI building padlock. q. Ensure grade around building is minimum 8" below weep holes in brick. r. Provide a separate irrigation water meter to avoid sanitary sewer charges on water

	used for irrigation. s. At new construction sites, install 4" diameter schedule 40 PVC irrigation sleeves under paving, sidewalks, etc. to connect all green areas, including islands, for future system installation or expansion of irrigation system. All sleeves shall be identified with a brass bolt imbedded in the concrete on both ends. t. Indicate on the site plan, concrete pads for 8-yard front-load dumpsters at the kitchen (2 at Elementary/Intermediate, 2 at JH and 3 at the HS). Also, indicate concrete pads/locations for recycle bins (2 at Elementary/Intermediate, 3 at secondary level). Final locations to be coordinated with Owner. u. Soil Treatment is Not Required v. Where ground junction boxes are used for any infrastructure, the top of lid shall be 6" above the adjacent grade and a 12" mow strip poured on all sides and perimeter where round. w. Where ground junction boxes are used for any infrastructure do not place within a 25' radius of any entry and never along the main pathway to the entrance. Where a box is integral with the paving it shall be square to the paving and fit within a panel, never crossing a panel. Where this is not followed removal or replacement of whatever is necessary shall be at the cost of the contractor and without any impact to schedule. Never place a box in any textured paving or specialty finish.
02 00 03	Irrigation 1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. Hunter is preferred; discuss with Owner if Rainbird IQ wireless system is acceptable. b. Provide a well for the irrigation system, if possible. Coordinate with Owner. c. Radio controlled irrigation systems are not allowed, no exceptions. d. A conventional system is preferred over a two wired system. e. Coordinate design of irrigation system closely with Owner for control valve locations (outside fields), equipment and materials. f. Irrigation controllers must be located inside the school building, preferably in a mechanical or custodial room adjacent to an exterior wall. Final location to be coordinated with Owner. g. Schedule 40 PVC pipe is required for all irrigation main line piping. Schedule 200 pipe is not permitted. h. Irrigation system drawings must be reviewed by Owner prior to starting the installation. i. Install a metallic strip, tape or tracer wire on all PVC or non-metallic underground main irrigation line piping to aid in locating pipe in future. j. Christy's Red-Hot Blue Glue is required in conjunction with primer. k. Rain sensors must be incorporated into the system to preclude the system activating during periods of rainfall and to avoid inadvertent over-watering. l. System to be installed with swing joints at all head locations. m. Heads must be selected (type: i.e., bubblier, 360, 180, etc.) and adjusted so that no water is sprayed directly onto a structure, fence or sidewalk, in a no-wind condition. n. DBRY connections are needed for ever connection. o. Use Rain Bird or Hunter sprinkler heads. p. Provide bubblers at all trees. q. Irrigation Controllers will be Hunter AD or Owner approved equivalent. r. Backflow preventers must be installed in the irrigation system and certification documents provided to the Owner. Preferred manufacturer is Wilkens.

	s. All backflow preventer piping and above ground system piping must be Type “K” copper piping. t. Provide separate meter to avoid paying sewer costs on irrigation water. u. Provide meter with in-ground shut off before backflow preventer. v. A complete set of irrigation system “as built drawings” must be given to Owner at Substantial Completion of the project. These drawings are to be included and reviewed during Owner training.
02 00 04	Landscaping 1. To the Architect: a. The following information shall be incorporated into the Architect’s Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. Incorporate shade trees in play areas, gathering areas and in parking lot islands. b. Incorporate trees and shrubs that lend themselves to providing a safe school environment. In general, apply the 3' and 7' rule: plant shrubs which can be trimmed no higher than 3' above the ground and trees which can be elevated by trimming to a minimum of 7' above the ground. c. Use plants and landscaping material that are appropriate for a school setting (e.g., no berry producing plants, no toxic plants, no use of cobblestone or pebbles). d. Use plants and trees that perform well in this climate and are considered drought tolerant. e. Use Bermuda grass hydro mulch or sod only. St. Augustine is not permitted. f. Provide adequate drainage throughout design, limit slopes in playground areas to prevent erosion and unsafe play. g. Design all landscape beds to be at least 8” below weep holes. h. Solid sod apron skirts around all drains. i. Provide a one-foot-wide section of solid sod along sidewalks, driveways, and parking lots. Large, open areas should be hydro mulched with a mixture of grass seed, fertilizer, and mulch unless designated to be solid sod. j. Use combination of landscape and wood fencing to screen dumpster and mechanical equipment from public view if not behind a masonry wall. k. All debris larger than three-quarter of an inch size shall be removed from planting/hydroseed areas prior to installation of any hydro mulch, grass or landscaped plant installations. l. Landscape beds and tree locations shall have the proper amended soil mix added to permit and encourage plant growth. m. Installer is responsible for regular required maintenance, mowing and watering until the District accepts the project. n. All root balls of trees shall be carefully scarified to allow roots to grow outside of burlap. o. Refer to Appendix A – Shrubs and Trees
DIVISION 3	CONCRETE
03 00 00	Concrete 3. To the Architect: a. The following information shall be incorporated into the Architect’s Specification. Where there is a conflict the district standard shall rule unless approved in writing. 4. TISD Standard: a. TISD does not control structural design. Adherence to ACI and similar industry standards is required and the Architect should always implement best industry practices when establishing overall performance criteria b. Clean floors prior to installation of sealer.

	c. Provide control joints according to the engineer d. Provide curb cuts to facilitate drainage e. In interior spaces where an exposed surface is called for, the Contractor shall not allow any machine work, chemical or paint mixing or other similar activities to be performed in these areas. The contractor shall monitor concrete finishing crews to prevent "over application of curing compounds which will cause an uneven coloring. The surfaces shall be clean and divot free at substantial completion. Sealed concrete in these areas is not standard seal and the Architect shall require a higher performance and finish control over these areas. Where valves and cleanouts are located in these areas the contractor shall ensure they are flush. Where repairs are required, the patching shall be square and smooth cut with a matching finish to be accepted. Apply a light grit for areas needing slip resistance. f. Exterior walkways shall be sloped to drain. Where Clean Outs and Valves are located in exterior walkways the contractor shall ensure they are smooth/flush with the walk surface. Where repairs at closeout are required at walkways entering the building, the entire square of walk or "joint to joint" removal is required. Patching at these areas is not allowed.
DIVISION 4	MASONRY
05 00 00	Masonry 1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. TISD does not control structural design. Adherence to industry standards is required and the Architect should always implement best industry practices when establishing overall performance criteria b. The district standard required for masonry is aesthetic in nature. Masonry should be flush and plumb. Masonry shall be clean of excess mortar and dirt. c. Weep holes shall be clear with protective inserts at all locations. d. Masonry Cement is not permitted e. Screw on adjustable anchors that do not crush the back-up material (e.g. Hohmann & Bernard DW-10X) are to be specified. f. Screws for adjustable anchors shall be hex nut self-drilling, self-tapping composite zinc and polymer coated. g. Full mortar joints are required throughout installation of any masonry surface. h. Any metal work, glass or other finished surface is to be protected from damage during the masonry installation process, including lintels. i. Full lintel support of masonry is required, and all lintels shall be fully galvanized prior to installation. Do not paint lintels.
DIVISION 5	METALS -
	Metals 1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. TISD does not control structural design. Adherence to industry standards is required and the Architect should always implement best industry practices when establishing overall performance criteria

	b. The district standard is that all exposed metal in public areas have a finished paint surface free of sharp edges c. In private areas such as mechanical rooms all steel must be painted but this can be the fabrication paint. Where scratches are present, they should be repainted to protect against corrosion. d. Wall-mounted galvanized roof access ladders are to be provided at each elevation change. e. Roof hatches to be painted steel and be of commercial grade. f. Roof access is preferred to be from stair and man door, directly onto roof, with curb at doorway to prevent water intrusion. If roof hatch is necessary, discuss with Owner. All roof hatches and access ladders are to comply with all OSHA requirements. g. If roof access is by a stair with a man-door, provide hardware and keying for a typical exterior door. h. If roof access is through a roof hatch, provide a hasp for an OFOI padlock. i. Exterior louvres and vents to have an anodized aluminum finish or Kynar finish; coordinate with Owner. j. Interior railings to utilize with aluminum top rails and handrails for ease of maintenance. Remainder can be painted steel.
DIVISION 6	FINISHED CARPENTARY AND MILLWORK
06 00 00	Finished Carpentry and Millwork 1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. Adherence to industry standards is required and the Architect should always implement best industry practices when establishing overall performance criteria. b. All casework must have full pressure-treated wood 2"x4" frame base. Particleboard, wafer board or legs are not acceptable. Treated wood must be used in all wet or VCT areas. c. Millwork to be of all plywood construction. No particleboard. d. Refer to Division 12 for additional information on casework. e. Provide fire-treated wood blocking; coordinate with local AHJ. Ensure stamp is visible after installation. f. Provide PVC edges g. No Sharp corners of any material shall be designed into the project. Corners at wainscot and similar built work shall have smoothed edges preferably eased or chamfered. This is not including desks however care should be taken when designing desks and counters to ensure no sharp corners are called for. h. Where they end up constructed the A/E shall work to mitigate this by no cost change wherever possible. i. All in wall blocking and supports shall be fire treated wood with labeling visible to inspection. j. On all millwork/casework built cabinetry provide C415A locks. Do NOT leave ANY keys in the cabinets. Do not give any keys to staff. All keys are to be delivered to the Director of Facilities.
DIVISION 7	Thermal & Moisture Protection
07 00 01	General Requirements 1. To the Architect:

	a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. Thermal Insulation i. Insulate ALL exterior piping and jacket where appropriate. ii. Provide removeable lockable backflow preventer enclosure insulated at water mains, irrigation and any exterior water connections. b. Roofing Requirements: i. The preferred Roof System is to be a minimum 2 ply SBS Modified Bituminous membrane. The Architect may consider a Cool Roof TPO with Owner approval. ii. Unless approved otherwise, the roof system shall be 2 ply Hot-mopped SBS Modified Bituminous membrane or Owner-approved equivalent. iii. All sloped roofs (metal roof panels, asphalt shingles, slate, etc.) shall have "Ice and Water Shield" as an underlayment; bituminous saturated felt is not acceptable. iv. Roof guttering shall be properly screened to prevent debris buildup. v. Gutter downspouts shall be designed to discharge into underground storm drainage system. Vandal resistant covers and cast-iron boots shall be installed on all downspouts. Internal or concealed gutters or downspouts are not acceptable on buildings. vi. All exterior building materials and components shall be installed in a manner to prevent any gaps, cracks or penetrations greater than ¼ inch. vii. Default color for roof flashing is dark bronze unless otherwise specified by the Architect and approved by the Owner. viii. Through-wall flashing and receivers to be constructed with 24-gauge stainless steel. Waterproof membrane shall be self-adhered modified membrane ("Ice and Water Shield" or Owner-approved equivalent). ix. At all SBS or Cool Roof single ply roofing systems, provide for wear pads on all sides of equipment at least 5' as measured form the face of the equipment outward and at the perimeter where work is required. Provide for wear pads at all points of roof entry either from a hatch or a doorway with at least 5'x5' centered on the entry point. These are minimums and additional wear pads may be required. x. At expansion joint locations either vertical or horizontal other than floors provide a membrane covering.
DIVISION 8	Doors, Hardware & Glazing
08 00 01	Doors, Hardware 1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. All interior door frames are to be 7'-0" tall unless otherwise approved by Owner. When adding to an existing campus with frames taller than 7'-0", review with Owner to ensure best design solution. b. Provide 4'-0" wide doors with level threshold landings in places where large equipment is installed such as in kitchens, industrial tech locations, mechanical rooms, laundry rooms, storage rooms off of cafeteria, fine arts rooms, etc. c. The Architect shall verify largest piece of unassembled equipment and provide doorways which are passable when moving this equipment in and out. No "Built Around" equipment shall be installed without Owner approval in writing.

	d. Knock-down frames are not allowed e. All exterior HM doors from a conditioned space shall be insulated. f. All exterior HM doors shall have tamper proof hinges. g. Exterior door thresholds shall have minimum 3/8-inch weather-strip for door to seal. Ensure threshold is fully embedded in sealant and fully caulked to and prevent water from entering under the door. Thresholds to be ADA compliant. h. Use of bronze colored or clear anodized aluminum exterior window and door frames is preferred. Hollow metal frames are acceptable if approved by Owner. Provide hollow metal frames and steel doors at all mechanical, fine arts and other locations where there is the potential of high abuse. i. Provide high-efficiency window tinting where applicable. j. Where coiling doors are called for the following standard applies: i. If outside use closed, slat doors ii. If outside with conditioned space use insulated closed slat doors iii. At concession stands inside a building use open grill. Verify with Owner during planning. iv. At concession stands outside a building use closed slate doors. k. All motorized coiling doors and gates must have the motor and gear mechanism mounted above the ceiling, no exceptions. All serviceable components shall be located to be easily accessible for service. Coordinate with other sections – Access Panels for maintenance of the motors shall be no further than 12” from the edge of the equipment, valves, fire dampers, and shall be no smaller than 24”x24”. All motorized coiling doors and gates shall be wired into fire alarm system for automatic activation if alarm is activated. Motorized doors shall also be wired into emergency generator power source to allow for operation/security during an outage. Door controller shall be Liftmaster with momentary switch. l. All rollup doors and keyed switches must have a standard keyed lock and box that is keyed to the building master key system (Schlage Primus for exterior and Schlage for interior). m. No exterior windows shall be constructed using “glass block” products. n. Windowsill pans shall have fully welded joints and end damming, caulked and installed in a manner that provides positive slope to the exterior of the building. A window mockup shall be provided and approved by Owner prior to installation of remaining window systems. o. For casework hardware, refer to Division 12. p. The Architect shall verify with the local attending AHJ, how to key and where they will require a Knox Box to be installed. At a minimum provide (1) Recessed Knox box to be provided at all primary entries and the front entrance to facility and at any gate locations that restrict access to a fire lane. Final locations to be determined by AHJ with Owner coordination. Note if your facility is in Harris County and not within the City of Tomball, the Architect is responsible for coordination with the local AHJ. While HCFM may control plan review and the Certificate of Occupancy process, the Local attending FM shall determine the keying anywhere it is required. q. Provide Knox Caps on all Fire Department Connections; coordinate with AHJ.
	Door Hardware Specifications 1. To the Architect: a. The following information shall be incorporated into the Architect’s Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard:

a. Upon completion of your Door Hardware Specification the A/E will submit it to TISD for review and comment with follow-up meetings as required. The A/E shall incorporate any changes noted by TISD prior to issuing for Bidding.

Part 1 Manufacturers and Materials

The below listed manufacturers are considered acceptable provided written authorization from Tomball ISD has been secured and is presented with submittal for validation.

ITEM:	MANUFACTURER:	ACCEPTABLE SUBSTITUTION:
Hinges	(IVE) Ives	Hager, McKinney
Continuous Hinges	(HAG) Hager	Zero, Select
Pivots	(RIX) Rixson	No Substitution
Key System	(SCH) Schlage	No Substitution
Locks	(SCH) Schlage	No Substitution
Exit Devices	(VON) Von Duprin	None
Closers	(LCN) LCN	No Substitution
Auto Flush Bolts	(IVE) Ives	DCI, Rockwood
Coordinators	(IVE) Ives	Hager, Rockwood
Silencers	(IVE) Ives	Hager, Rockwood
Push & Pull Plates	(IVE) Ives	Hager, Rockwood
Vandal Resistant Trim	(IVE) Ives	Owner's Standard
Kickplates	(IVE) Ives	Hager, Rockwood
Stops & Holders	(IVE) Ives	Hager, Rockwood
Overhead Stops	(GLY) Glynn-Johnson	ABH
Thresholds	(NGP) National Guard	Pemko, Reese
Seals & Bottoms	(NGP) National Guard	Pemko, Reese
Key Cabinets	(LUN) Lund	TelKee

Part 2 Hinge Methods

A. Note: drawings typically depict doors at 90 degrees, but doors will actually swing to maximum allowable. Use wide-throw conventional or continuous hinges as needed up to 8 inches in width to allow door to stand parallel to wall for true 180-degree opening. Advise architect if 8-inch width is insufficient.

B. Conventional Hinges: Steel or stainless-steel pins and concealed bearings. Hinge open widths minimum, but of sufficient throw to permit maximum door swing.
   1. Three hinges per leaf to 7-foot, 6-inch height. Add one for each additional 30 inches in height, or any fraction thereof.
   2. Extra heavy weight hinges on doors over 3 feet, 5 inches in width.
   3. Extra-heavy weight hinges on doors with panic hardware or fire exit devices.
   4. Out-swinging exterior doors: non-ferrous with non-removable (NRP) pins.
   5. Non-ferrous material at exterior doors and at doors subject to corrosive atmospheric conditions.
   6. Provide shims and shimming instructions for proper door adjustment.
   7. All hinges to be ball bearing type. Plain Bearing hinges are not acceptable for any project.
   8. All hinges at exterior doors or at high-security rooms to be tamper-proof.

C. Continuous Hinges:
   1. Geared-type aluminum at exterior doors.
   2. Heavy-duty, extra-bearing units for doors over 3 foot, 5 inches in width.
   3. Heavy-duty, extra-bearing units for doors with panic hardware or fire exit devices.
   4. Use wide-throw units where needed for maximum degree of swing, advise architect if commonly available hinges are insufficient.

Part 3 Locksets, Latch sets, Deadbolts

A. Extra-Heavy-Duty Cylindrical Locks and Latches: Schlage ND Sparta 626

1. Chassis: cylindrical design, corrosion-resistant plated cold-rolled steel, through-bolted.
2. Locking Spindle: stainless steel, interlocking design.
3. Latch Retractors: forged steel. Balance of inner parts: corrosion-resistant plated steel, or stainless steel.
4. Backset: 2-3/4" typically, more or less as needed to accommodate frame, door or other hardware.
5. Lever Trim: accessible design, independent operation, spring-cage supported, minimum 2” clearance from lever mid-point to door face.
6. Electric operation: Manufacturer-installed continuous duty solenoid.
7. Strikes: 16 gage curved steel, bronze or brass with 1” deep box construction, lips of sufficient length to clear trim and protect clothing.
8. Certifications:
   a. ANSI A156.2, 1994, Series 4000, Grade 1.
   b. UL listed for A label and lesser class single doors up to 4ft x 8ft.
9. Specific room functions:
   a. Teacher, Staff and Adult restrooms - ND40
   b. Classroom doors – ND70
   c. Multiple person Teacher, Staff, Adult and Student restrooms – ND70
   d. Single user student restrooms off classrooms (e.g. Kindergarten and Pre-K), Adult unisex restroom ahead of security vestibule at entrance only, clinic student restrooms, staff restroom inside kitchen area, staff restroom inside custodial restroom – ND40
   e. Electronic locks on owner specified doors
10. Accepted substitutions: None

Part 4 Keying Requirements

A. Key System: Schlage Primus XP utility-patented keyway, interchangeable conventional core cylinders for all exterior exit devices, including exterior doors, perimeter fence gates and exterior and interior coiling gates. Utility patent protection to extend at least until 2039. Key blanks available only from factory-direct sources, not available from after-market key blank manufacturers. For estimate, use factory GMK charge. For interior exit devices, use Schlage (non-Primus) interchangeable conventional core cylinders. Cylinders to be conventional 6-pin brass construction by same manufacturer. New construction shall be IC removable core format for all interior locksets.

1. Existing factory registered master key system.
2. Stamp all keys with keyset symbol per keying structure determined in keying meeting(s).
3. Provide concealed internal stamp on all cylinders with keyset symbol per keying structure determined in keying meeting(s).
4. Supply (2) cut keys per cylinder.
5. Provide (2) of each cut - Grand Master keys, Bldg. Master and each Area Master at each facility other than High Schools.
6. Provide (4) of each cut - Grand Master keys, Bldg. Master and each Area Master at each High School.
7. Supply 100 key blanks at all facilities except High Schools or as determined by Owner.
8. Supply 300 key blanks at all High Schools or as determined by Owner.
9. Supply 500 pre-programmed electronic key fobs at all facilities except High Schools unless directed otherwise by Owner.

10. Supply 1,000 pre-programmed electronic key fobs at all High Schools unless directed otherwise by Owner.
11. Non-I.C. construction keying: furnish Split-key. Furnish 10 construction keys.
12. Furnish 4 construction insert extractor tool 35-057.
13. Furnish 2 construction control keys.
14. At all facilities except High Schools, furnish (2) key cabinets and (2) tag filing systems; size of cabinets and location(s) to be determined by Owner during the Keying Meeting.
15. At all High Schools, furnish (4) key cabinets and (4) tag filing systems; size of cabinets and location(s) to be determined by Owner during the Keying Meeting.
16. Furnish 2 Grand Master Primus XP control keys
17. Furnish 20 P&S locking keys for light switches

B. Initiate and conduct keying meeting(s) with Owner and I-R Security & Safety Consultants representatives to determine system keyway(s) and structure. Furnish Owner's written approval of the system.

C. All locks and cylinders to be secure shipment directly from the factory where permanent records are maintained to Owner's Director of Maintenance. Construction cores will be given to the General Contractor by the District Locksmith with a transmittal sheet. All permanent keys to be secure shipment directly from point of origination to Owner's Director of Maintenance.

D. Removable mullions on exterior doors to have Schlage Primus XP interchangeable core cylinder, keyed to exterior building master. Removable mullions on interior doors to have Schlage interchangeable core cylinder, keyed to interior building master.

E. Bitting List: furnish secured shipment direct from point of origination to Owner's Director of Maintenance upon completion. Locksmith will set up key box; Contractor to hang key box in location(s) determined by Owner.

F. At Substantial Completion, Contractor to remove inserts in Owner's presence and demonstrate consequent non-operability of construction key. Contractor to give all removed inserts and all construction keys to Owner. Owner's District Locksmith will install permanent cylinders.

G. Provide XXXX for secure lockdown of rooms.

Part 5 Exit Devices/ Panic Hardware

A. General features:

1. Independent lab-tested 1,000,000 cycles.
2. Push-through push-pad design. No exposed push-pad fasteners, no exposed cavities when operated. Return stroke fluid dampeners and rubber bottoming dampeners, plus anti-rattle devices.
3. End caps: impact-resistant, flush-mounted. No raised edges or lips to catch carts or other equipment.
4. No exposed screws to show through glass doors.
5. Non-handed basic device design with center case interchangeable with all functions, no extra parts required to effect change of function.
6. Releasable in normal operation with maximum operating force, and maximum pressure under 250-lb. load to the door per ADA/TAS requirements.
7. Flush end cap design as opposed to typical "bottle-cap" design end cap.
8. No Dog Down panic bars at the exterior. At main entry and at vestibule locations where there are multiple doors, provide for one set aligned at entry and vestibule passage.
9. Entry doors shall have at least one keyed mullion keyed to building master. Keyed mullion shall share the same pathway as the electronic door access and where the doors can be locked open or Dog Down locations.
10. Provide holding bracket locally at locations where mullions are removeable.
11. During the Keying Meeting, the Owner will finalize all keyed mullion locations.

B. Specific features:

1. No Vertical Rod Devices. Supply rim devices with key removable mullion.
2. Non-Fire Rated Devices: hex-key dogging.
3. No dogging on all Electronic Openings or any exterior openings except as noted above.
4. Cylinders: Exit devices and mullions are to be supplied with interchangeable core cylinders.
5. All exterior doors will be equipped with IVES vandal resistant trim. Provide NL type trim at one opening per bank of doors. The balance shall have DT type trim.
6. Provide latch guards at all exterior HM doors and all doors without center posts.
7. Lever Trim: Breakaway type, forged brass or bronze escutcheon min .130" thickness, compression spring drive, match lockset lever design.
8. Exterior Trim: Stainless steel vandal-resistant trim thru-bolted to device with plastisol coated grip. Night latch function retracts latch with use of key.
9. Fire-Labeled Devices: UL label indicating "Fire Exit Hardware".
10. Delayed Egress Devices: Function achieved within single exit device component, including latch, delayed locking device, request-to-exit switch, nuisance alarm, remote alarm, key switch, indicator lamp, relay, internal horn, door position input, external inhibit input plus fire alarm input. NFPA 101 "Special Locking Arrangement" compliant.
11. Electrically Operated Devices: Single manufacturer source for electric latch retraction devices, electrically controlled trim, power transfers, power supplies, monitoring switches and controls.
12. Removable Mullions: Removable with single turn of building key. Securely reinstalled without need for key. Furnish storage brackets for securely stowing the mullion away from the door when removed. Provide only one keyed removable mullion per bank of doors or room with multiple entrances. At rooms with single entrances or entrances with a single pair of doors provide a keyed removable mullion. Removable mullions on exterior doors to have exterior

master cylinder and removable mullions on interior doors to have interior master cylinder.

13. Ensure size of panic device is coordinated with door stile and rails so that panic device is not visible from opposite side of door.
14. Exit Device Series: Von Duprin 99
15. Accepted substitutions: None

Part 6 Closers

A. Surface Closers: LCN 4041

1. Full rack-and-pinion type cylinder with molded plastic cover and cast-iron body.
2. Non-sized, non-handed, and adjustable. Place closer inside building, stairs, and rooms.
3. Plates, brackets and special templating when needed for interface with particular header, door and wall conditions and neighboring hardware.
4. Opening pressure: Per ADA/TAS requirements.
5. Separate adjusting valves for closing speed, latching speed and backcheck
6. Heavy Duty arms (EDA) at exterior doors scheduled with parallel arm units.
7. Exterior doors do not require seasonal adjustments in temperatures from 120 degrees F to –30 degrees F, furnish data on request.
8. All closers to be through-bolted
9. All closers to be supplied with Cush Arms
10. Non-flaming fluid; will not fuel door or floor covering fires.
11. Ensure size and drop of closer is coordinated with door stile and rails so that closer device is not visible from opposite side of door.
12. Pressure Relief Valves (PRV): unsafe, not acceptable!
13. Accepted substitutions: None

Part 7 Other Hardware

A. Automatic Flush Bolts: Low operating force design, “LBR” type where scheduled.

B. Surface Bolts: Shall be used at pairs of doors from non-fire rated Mechanical rooms for the inactive leaf. Coordinate frame prep with frame supplier.

C. Overhead Stops: Stainless steel (100 series). Non-plastic mechanisms and finished metal end caps. Field-changeable hold-open, friction and stop-only functions.

D. Kick Plates: Four beveled edges, .050 inches minimum thickness, height and width as scheduled. Sheet-metal screws of bronze or stainless steel to match other hardware.

E. Door Stops: Provide stops to protect walls, casework or other hardware.

1. Unless otherwise noted in Hardware Sets, provide wall type Ives WS401 with appropriate fasteners. Where wall type cannot be used, provide floor type; do not use floor stops at exterior doors unless Owner approved (Ives FS18S exterior and FS448 Interior). If neither can be used, provide overhead type.
2. Locate overhead stops for maximum possible opening. Consult with Owner to coordinate these with furniture locations. Minimum: 130 deg stop if not in an alcove/90 deg stop if in alcove with additional 5 deg for dead stop. Note degree of opening in submittal.

F. Seals: Finished to match adjacent frame color. Resilient seal material: polypropylene, nylon brush, or solid high-grade neoprene. UL label applied to seals on rated doors. Substitute products: certify that the products are equal to or exceed specified material’s thickness and durability. Proposed substitutions: submit for Owner approval.

1. Solid neoprene: MIL Spec. R6855-CL III, Grade 40.
2. Non-corroding fasteners at in-swinging exterior doors.
3. Exterior pairs of mechanical room doors: Doors shall be equipped with appropriate seals, astragal, threshold, drip cap and sweeps to prevent the

intrusion of rain water. Provide astragals at all interior pairs of doors to mechanical rooms.

4. Sound control openings: Use components tested as a system using nationally accepted standards by independent laboratories. Ensure that the door has the necessary sealed-in-place STC ratings. Adhesive mounted components not acceptable. Fasten applied seals over bead of sealant.
5. Fire-rated Doors, Resilient Seals: UL10C / UBC Standard 7-2 compliant. Coordinate with selected door manufacturers' and selected frame manufacturers' requirements. Where rigid housed resilient seals are scheduled in this section and the selected door manufacturer only requires an adhesive-mounted resilient seal, furnish rigid housed seal at minimum, or both the rigid housed seal plus the adhesive applied seal. Adhesive applied seals alone are deemed insufficient for this project where rigid housed seals are scheduled.
6. Fire-rated Doors, Intumescent Seals: Furnished by selected door manufacturer. Furnish fire-labeled opening assembly complete and in full compliance with UL10C / UBC Standard 7-2. Where required, Intumescent seals vary in requirement by door type and door manufacturer -- careful coordination required. Adhesive-applied Intumescent strips are not acceptable, use concealed-in-door-edge type or kerfed-in-frame type.

G. Automatic door bottoms: low operating force units. Doors with automatic door bottoms plus head and jamb seals cannot require more than two pounds operating force to open when closer is disconnected. Ensure compliance with ADA/TAS requirements.

H. Thresholds: As scheduled and per details. Substitute products: certify that the products equal or exceed specified material's thickness. Proposed substitutions: submit for Owner's approval.

1. Exteriors: Seal perimeter to exclude water and vermin. Use butyl-rubber or polyisobutylene sealant complying with requirements in Division 7 "Thermal and Moisture Protection". Non-ferrous 1/4-inch fasteners and lead expansion shield anchors, or Red-Head #SFS-1420 (or approved equivalent) Flat Head Sleeve Anchors (SS/FHSL).
2. Acoustic openings: Set units in full bed of Division-7-compliant butyl-rubber or polyisobutylene sealant; leave no air space between threshold and substrate.
3. Plastic plugs with wood or sheet metal screws are not an acceptable substitute for specified fastening methods.

I. Fasteners: Generally, exposed screws to be Phillips or Robertson drive. Pinned TORX drive at high security areas. Flat head sleeve anchors (FHSL) may be slotted drive. Sheet metal and wood screws: full-thread. Sleeve nuts: full length to prevent door compression.

J. Silencers: Interior hollow metal frames, 3 for single doors, 4 for pairs of doors. Omit where adhesive mounted seal occurs. Do not leave any unfilled/uncovered pre-punched silencer holes.

K. Wall- & Floor-mounted electromagnetic door holders: LCN's SEM series or approved equivalent. Incorporate into U.L.-listed fire & life-safety system, doors release to allow closure and latching when door's zone is in alarm state. Use minimum projection required to allow door to open as widely as allowed by wall conditions and projection of door hardware.

	Part 8 Finish A. Generally, BHMA 626 Satin Chromium 1. Areas using BHMA 626 to have push-plates, pulls and protection plates of BHMA 630, Satin Stainless Steel, unless otherwise noted. B. Door closers: factory powder coated to match other hardware, unless otherwise noted. C. Aluminum items: match predominant adjacent material. Seals to coordinate with frame color
08 31 13	Access Doors, Coiling doors and gates 1. To the Architect: b. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. Access doors shall be coordinated between trades for placement, alignment, and use. b. Locks on access doors shall be flush twist open mechanism operable with a tool or screwdriver c. Coiling doors shall be powered with manual override. At corridors they shall be interlocked with the Fire Alarm system and the security system for campus lock down. d. Coiling gates shall be closed slate and manual unless directed otherwise. Verify during design.
DIVISION 9	Finishes
09 00 01	Elementary/Intermediate Schools 1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. **Terrazzo**: front entry, vestibules, cafeteria and student commons area, if budget allows. No integral cove base; provide coordinating terrazzo strip base. b. **LVT:** multi-purpose areas, clinic, wet areas in classrooms, bookroom, teacher's workrooms and lounge. For collaboration spaces, some combination of LVT and carpet may be desired; coordinate with Owner during design. **c. Carpet**: classrooms, secondary hallways in academic areas, offices, computer labs, music room, learning resource center and library. d. **Ceramic tile**: restrooms, all walls full-height if budget allows. Minimum wet walls. e. **Quarry non-skid tile**: all kitchen and food prep areas including CATE spaces. f. **Sealed concrete:** mechanical rooms, electrical, MDF/IDF, custodial closets, furniture storage rooms, and all other areas with no floor finish specified; review with Owner. g. **Stage**: if budget allows, provide entire stage with wood floor finish. If not, use wood front step and stage to center of curtain; LVT at rear half. h. **Gym Flooring:** poured rubber, or LVT. No puzzle piece flooring or other flooring that allows debris to settle within the cracks. Discuss with Owner to provide integral play area layout. i. **Base:** Use color-coordinated rubber base. Use roll, not strips. (Do not use ceramic faced CMU base blocks). j. **Painted gypsum/concrete block:** All interior walls. No vinyl wallcovering. k. **Walk-off mat**: at all exterior entrances (minimum 10 feet x width of corridor) and in front of all drinking fountains (ensure that enough tile is provided to avoid wet areas on the carpet in front of water fountains or sinks).
09 00 02	Junior and High School 1. To the Architect:

	a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. **Terrazzo**: front entry, vestibules, all main and secondary corridors, cafeteria and student commons area, if budget allows. No integral cove base; provide coordinating terrazzo strip base. b. **LVT**: elevator cabs, clinic, teacher's workrooms and lounge, bookrooms c. **Carpet:** classrooms, offices, learning resource center, choir, orchestra and band. d. **Ceramic tile**: restrooms, all walls full-height if budget allows. Minimum wet walls. e. **Quarry tile**: kitchen and all food prep areas including CATE classrooms, especially those with food prep areas. f. **Sealed concrete**: classrooms such as art, science, some career tech areas, storage rooms, theatre scene shop, black box (black color) and all other areas with no floor finish specified. Provide a light grit finish in areas where slip-resistance is important. g. **Commercial grade epoxy paint flooring**: dressing rooms, locker rooms, some career tech rooms, auto shops, agriculture shops, and woodworking. Provide a light grit finish in areas where slip-resistance is important. h. Weight rooms: rubber roll flooring, with welded seams. i. **Stage:** provide wood stage floor. During design, discuss possible use of wood floor on steps and on front of stage to centerline of main curtain with remainder of stage to be Masonite on bonded plywood subfloor system. or a lesser quality wood. Stain to be selected by Owner. j. **Dance rooms**: impact-resistant wood flooring system similar to a competition gymnasium; discuss with Owner during design. k. **Concrete block**: all corridors and all interior walls except for demising wall between classrooms can be gypsum. For science and CATE spaces and athletics spaces, provide all block walls, except for offices. In administration/clinic area, review type of wall with Owner during design; generally, gypsum board walls will be used unless on a main corridor, which would then be CMU. Do not use folding or operable partition walls unless approved by Owner. l. **Gym Floor**: Robbins Bio cushion Maple wood floors or equal. m. **Base:** Use color-coordinated rubber base. Use roll, not strips. (Do not use ceramic faced CMU base blocks). n. No vinyl wallcovering. o. **Walk-off mat**: at all exterior entrances (minimum 10 feet x width of corridor) and in front of all drinking fountains (ensure that enough tile is provided to avoid wet areas on the carpet in front of water fountains or sinks).
09 00 03	Materials for use at all facilities 1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 3. TISD Standard: a. All attic stock to be placed on pallets, shrink-wrapped, and clearly marked with campus. Attic stock to be delivered to TISD Warehouse, with transmittal, and verified with Owner upon delivery. Owner-signed transmittal to be included in close-out documents. b. Carpet: Tandus Centiva Powerbond Cushion only, no substitutions. 2% attic stock to be turned over to Owner at Substantial Completion. Roll only; must get Owner approval to use carpet tiles. c. Resilient Floor Tile: Armstrong Excelon, Tarkett, Azrock. 1% attic stock of each style/color used to be turned over to Owner at Substantial Completion. Owner prefers LVT over VCT; must get Owner approval to use Resilient Floor Tile.

d. Luxury Vinyl Tile: Mannington commercial only. Must be 30 mil Luxury Vinyl Tile by Mannington. Must get Owner approval for substitutions. 2% attic stock to be turned over to Owner at Substantial Completion. Coordinate with FFE package to ensure that selected furniture does not damage flooring or void warranty.
e. Quarry tile: Flooring in kitchen shall be Daltile non-skid quarry tile with black or dark color matching epoxy grout, no substitutions. Raised X non-skid design in the wet areas. 1% attic stock of each style/color used to be turned over to Owner at Substantial Completion
f. Flooring in Restrooms shall be ceramic tile. 1% attic stock of each style/color used to be turned over to Owner at Substantial Completion. Size of floor tile to be less than 8"x 8" to allow for sloping to drain with minimal or no cut tiles.
g. Concrete slab shall be protected at all times from any contaminants, welding slag, or pipe cutting debris. In rooms where sealed concrete is specified, ensure level of finish of concrete is specified appropriately.
h. Rubber 4" Cove base shall be Armstrong, Flexco, and Roppe. Roll goods only.
i. For floors under ice machines, drinking fountains and other areas subject to water, discuss with Owner to provide appropriate finish.
j. Vinyl wall covering is not allowed.
k. Walls in restrooms and kitchens and other wet areas to be 6" x 6" or 8" x 8" ceramic tile from floor to 6" above ceiling grid. Other tile sizes will be permitted with Owner approval.
l. Use non-porous epoxy grout. All grout lines shall be as narrow as possible. Color of grout shall be medium gray or darker to ensure stains are not visible.
m. Gypsum ceiling surfaces are not permitted except in student restrooms. Provide 2'x 2' minimum access panels at all equipment needing service above ceiling.
n. Acoustical ceiling tile: Shall be same manufacturer for grid and tile. Provide humidity and sag resistant tiles and red rust-inhibitive grid with manufacturer's warranties. No tiles larger than 2' x 2'. Grid pattern shall be laid out to prevent any tile less than 2 inches in width. Use of pop rivets to secure ceiling grid work is not permitted.
o. In wet areas, use vinyl-wrapped or similar washable and water-resistant tile.
p. Acoustical wall panels to be fabric covered 1" thick fiberglass core with resin-hardened edges. In areas subject to impact, provide impact-resistant panels.
q. Expansion joints shall utilize the correct joint strip for the application and not rely on caulk or grout to fill joint.
r. Interior gypsum board walls: gypsum board should not extend to finished floor. Board to sit 5/8" to ¾" off finish floor material (not slab elevation).
s. Traditional lathe and Portland cement plaster system with acrylic-based top coat, integral color (not painted). Minimize use.
t. Paint Specifications: All **Benjamin Moore** products or approved equivalent by **Sherwin Williams** or **ICI**. Samples for approval must be given to prior to approval.

4. Finishes

<u>Painter's Interior Caulk</u>

- Moorlastic Elastomeric Patching Compound No. 051

<u>Type A Finished – Exterior Work</u>

PA – 1: Exterior Gloss Oil Base Enamel – all piping, metal and trim, including doors and frames

- Impervo Alkyd High Gloss Metal and Wood Enamel No. C133

PA – 2: Traffic Marking Paint

- Safety and Zone Marking Alkyd No. M56

<u>Type B Finished – Interior Work</u>

PB – 1: Interior Latex Gloss Enamel – interior metal and wood trim

	– Impervex Latex High Gloss Metal and Wood Enamel No. 309 PB – 2: Interior Alkyd Semi-Gloss Finish Enamel – on interior CMU walls and gypsum board ceilings – Moorcraft Super Spec® Alkyd Semi-Gloss Enamel No. C271 PB – 3: Interior Alkyd Eggshell finish – interior gypsum partitions – Moorcraft Super Craft® Latex Eggshell Enamel No. 251
DIVISION 10	Specialties
10 00 01	Specialties 1. To the Architect: b. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. Marker boards shall be white porcelain-coated steel with bottom tray rail and top 2" map rail. Each board shall have minimum 4 spring clip hangers, 2 flag holders and 2 roller brackets per classroom Boards shall come with 50-year guaranty from manufacturer. b. Provide cork tackboard with metal frame. c. Provide DaLite projection screen in large group areas with projectors. In collaboration spaces, provide a 10 foot wide viewing surface, electric operation. d. Restroom partitions shall be Color-thru Solid Phenolic Core Panels with full length continuous stainless-steel hinges and continuously overhead braced system; top braced back to walls and ceiling. All partition panels including doors, pilasters, side panels and urinal screens must be minimum ¾" thick material. Urinal screens must be braced with a continuous ceiling to floor stainless steel brace at front face of screen. e. All restroom partition hardware shall be heavy-duty brushed solid stainless steel. f. Provide hook on interior of women's stalls and as needed per ADA/TAS. g. Provide heavy-duty brushed solid stainless-steel slide-type locks on all restroom partitions. Provide pulls on opposite side of latch. h. Provide continuous heavy-duty stainless-steel spring return hinges on all restroom partitions. i. Use hinged flagpole only where required based on design. Typical flagpole to be 35' tapered aluminum, clear anodized satin finish, one-piece construction preferred. Provide 2 aluminum swivel snaps per flags. j. Provide a minimum of six (6) double tier lockers (total 12 lockers) in custodial room and kitchen locker rooms for staff to secure personal belongings. Lockers to be ventilated type with hasp for OFOI padlock. k. Student lockers: 2-tier, regular construction. Lockers to have combination locks. l. Athletic lockers. ventilated, heavy-duty, with hasp. Size to be discussed with Owner for each sport. m. Use heavy-duty, impact-resistant corner guards - 4' high minimum - in high traffic areas. Narrow clear plastic corner guards are not acceptable. PETG molded plastic corner guards such as Acrovyn (by Construction Specialties, Inc.) or Korogard (by Koroseal) are preferred. Stainless steel corner guards are to be used in the kitchen. n. Provide fire extinguishers on hooks in all Mechanical or Electrical Rooms. All other fire extinguishers are to be in a semi-recessed wall-mounted cabinet. o. Provide K-type fire extinguishers on a hook in kitchens. p. Contractor shall provide and install all fire extinguishers specified for a project and inspections are to be current at Substantial Completion.

q. Provide installation for Owner Furnished AED cabinets, recessed. Provide for 3 cabinets at ES, 5 cabinets at Intermediate School, 6 cabinets at JHS and 12 at HS. Coordinate locations with Owner during planning to ensure recessed locations work.
r. Provide address on front of school in minimum 6" numbers on front of school; coordinate location with Owner and AHJ. Numbers to be cast aluminum; finish and font to be selected by Owner.
s. Provide address in 6" vinyl letters on glass above front entrance door. Coordinate with Owner and AHJ.
t. Provide engraved plate with a sequential number (beginning with 1) for each exterior door, located on door frame. Provide a laminated map of these door numbers next to main FACP panel. Coordinate with AHJ.
u. Building name to be cast aluminum letters; finish and font to be selected by Owner. Size must be sufficient to be seen from street.
v. Electric ADA lift manufacturer shall be Horcher model #PC2.
w. Site play equipment shall be provided in the design and installed as part of the owner supplied items.
x. Entrance marquee to be two-sided and recessed internally lit signage area for lettering with vandal-resistant clear lockable cover. With Owner approval, provide an electronic ribbon strip at top of marquee. Basis of design to be Daktronics. Acceptable manufacturers are Nevco and Daktronics.
y. Gym or field score boards shall have wireless controllers. Basis of design to be Nevco. Acceptable manufacturers are Nevco and Daktronics.
z. Marquees, gymnasium scoreboards and field scoreboards to be same manufacturer on each campus.
aa. All vending machine locations shall have a 3 ½ inch deep standoff installed to prevent crushing of electrical supply.
bb. All athletic restrooms to have electric hand driers, Saniflow Speedflow or equivalent, white enamel finish. Adult and student restrooms shall have paper towel dispensers.
cc. Roll Towel Dispensers, Soap Dispensers, Tissue Dispensers are Owner- Furnished. Contractor is responsible for installation in the correct specified locations. Coordinate with Architect for ADA/TAS compliance.
dd. All access panels mounted into walls shall be operated by straight blade or coin unless noted otherwise. A/E shall verify sensitive areas with the district on a case by case basis.
ee. All exterior signage to be exterior-grade material and must utilize exterior grade glue.
ff. Provide post and panel site wayfinding signage.
gg. Provide exterior and interior directional wayfinding signage throughout campus.
hh. Provide plastic laminate room signage.
ii. Provide signage on main exterior doors including the required 30.06 and 30.07 signage regarding Alcohol/Drugs/Weapons, as well as signage on all exterior doors noting that visitors should report to front office. All signage to be in English and Spanish.
jj. Provide dedication plaque. Plaque to be aluminum with black background. Coordinate with Owner
kk. All Toilet Compartments shall be constructed with Solid Phenolic Panels with vandal resistant top rail.
ll. Provide for Super Graphics at all educational facilities by Allowance. A/E shall provide graphic design as part of basic services
mm. Benches in locker rooms are by Owner. Design shall consider furniture and coordinate with Owner vendor.
nn. Ground set flag poles shall have external halyards with lock.

DIVISION 11	Equipment
11 00 01	Kitchen Equipment 1. To the Architect: c. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. Pass thru warmers shall have either full door stainless or full door glass (verify with Owner during design). b. Mixers shall be Hobart model HL200-1STDDEL with attachments EDDough-HL20, VS9-12, VS9HOLD, VS9PLT-Grater, VS9-3/32SHVS9PLT-5/16SHTABLHW-HL2012 mixer table with legs c. Convection oven shall be on casters with Dormont gas hose with swivels, quick connects and safety cable d. 2-burner range shall have ¾" rear gas option, 10" flue riser and casters, Dormont gas hose with swivels, quick connects and safety cable e. Steam wells shall be Hatco f. Merchandisers shall be Counter Craft Hot Frost in kitchens, Hatco HZMS in snack bars g. Brazing pan shall be Cleveland model SGL30TR h. Combi oven shall have floor drain at least 12 inches to the side of the unit and 12 inches to the side of any adjacent equipment i. Filters shall be Everpure model EV9293-01 j. For steamers, provide drain 12 inches to the side of the unit k. All kitchen equipment panels must have minimum of 24 inches of unobstructed access l. Kirby is not an acceptable manufacturer. m. Can wash or hot and cold-water mixing faucet with hose connections. n. Provide connections for Owner-provided digital menu monitor system. Boards are by NEC; software by PrimeroEdge. o. Walk-in Cooler/Freezer Doors: Door hardware shall have provisions for locking (Owner-provided padlock) and interior safety release. Freezer/cooler will be connected to BAS alarm notification system. Transition from tile floor to interior of cooler/freezer must be flush. p. Kitchen garbage disposal shall be Salvajor model 200. q. Kitchen dish machine shall have drain must be at least 12 inches away from side of unit for accessibility. r. Booster heater drain may be shared with dishwasher; however, it must be at least 12 inches to the side of the unit for accessibility. s. Transition from tile floor to interior of cooler and freezer must be flush; no more than ⅜" offset is acceptable. t. All pass-thru equipment must be installed with adequate space for employees to stand and place trays in racks without injury or bending. u. Refer to Appendices B and C – Kitchen Equipment manufacturer/model lists for all equipment. Each kitchen design will vary by grade level and/or enrollment; verify exact design/quantity of each piece of equipment with Owner during design Marker
11 00 02	Science A. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. B. TISD Standard: a. Junior High Laboratory equipment: i. Acid storage and flammable storage cabinets

ii. Plastic laminate casework with epoxy tops and sinks
iii. Wood lab tables with epoxy top
iv. Provide wall-mounted eye wash and emergency shower, with eye was drain connected to building sanitary (piping installed inside wall). Include a local alarm to indicate eye wash or emergency shower activation, with relay and alarm light in corridor. Ensure slab is sloped to floor drain. See Appendices D and E – Eye Wash/Shower Unit and Local Alarm.

b. High School Laboratory equipment:
   i. Acid storage and flammable storage cabinets
   ii. Wood casework with epoxy tops and sinks
   iii. Wood lab tables with epoxy top
   iv. Provide wall-mounted eye wash and emergency shower, with eye was drain connected to building sanitary (piping installed inside wall). Include a local alarm to indicate eye wash or emergency shower activation, with relay and alarm light in corridor. Ensure slab is sloped to floor drain. See Appendices D and E – Eye Wash/Shower Unit and Local Alarm.
c. Fine Arts
   i. Provide Wenger or approved equal musical equipment storage at Int/JH/HS. Discuss any alternate manufacturer(s) with Owner during design for prior approval.
   ii. Stage curtain to be IFR heavy velour material; Color selected by Owner.
   iii. Provide solids interceptor at all art room sinks
d. Library ES, IS, JHS
   i. Plastic laminate library shelving and circulation desk with PVC edging
e. Library HS
   i. TBD
f. Athletics/PE Equipment
   i. ES – Crushed Granit walking track – ¼ mile preferred: 1/8 mile minimum. Verify during design
   ii. Intermediate – TBD
   iii. JHS – Provide minimum walk path at Gym when bleachers fully extended and at walls. TBD. Provide 8 lockers for coaches each women's and men. Weight room size TBD.
   iv. HS – All TBD
g. Additional Equipment
   i. Acceptable manufacturers of non-commercial washing machines and dryers are Whirlpool, Roper and GE. Electric.
   ii. Acceptable manufacturers of non-commercial refrigerators are GE and Whirlpool. Provide ice maker in clinic refrigerator.
   iii. Acceptable manufacturer of 208 voltage commercial washing machine is Dexter model WCVD50HCB-125Z
   iv. Acceptable manufacturer of gas fire commercial dryer is Dexter model DCW55HCW-10
   v. Separate commercial washers and dryers shall be provided for custodial and athletic laundry services. They can be located within the same space along with adequate space for staging of laundry carts and equipment. Ensure access to front and rear of machines for maintenance.
   vi. Ice machines shall be Hoshizarki or Manitowoc brand with inline filter and RPZ supplied at installation. Ensure a drain is provided under each ice machine. Provide ice machine in teacher's lounge and in other areas designated by Owner.
   vii. Discuss with Owner during design where Owner-supplied vending equipment will be located to ensure adequate space and utilities are provided.

	viii. At all Life skills areas, provide severe profound equipment at all grades TBD ix. Ice Machines – TBD during design x. Appliances intent is OFCI – TBD during design xi. Wall mounted monitors – information and conference rooms. Brackets to be OFCI xii. Wall mounted monitors – educational/instructional – Brackets to be OFCI
DIVISION 12	Furnishings
12 00 01	1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. Casework to be of all plywood construction with 2x4 wood base. b. Casework drawer bodies to be minimum 3/8" thick Baltic birch, transparent sealed finish. c. File drawers must accept both legal and letter size hanging folders, compatible with the Penda flex Hanging File System, without adding a wire frame, plastic frame or other type hanging rack. Top of drawer sides shall be fitted with a full-length molded plastic or metal rail to fit hanging folders. d. Typical dimensions for fitting Pendaflex folders are as follows: i. Inside width = 12" ±⅛" ii. Inside depth = 9-¼" minimum to top of folder rail e. Upper wall cabinets and bookshelves must accommodate typical 3-ring binders. Doors must be able to close fully with an 11-½" binder in the shelf. Upper cabinets to be 14" clear inside dimension minimum. f. All millwork doors, drawers, shelves and counter tops must be edged with 3mm PVC applied with hot melt adhesive and radiuses with automatic trimmers. Hand applied or field applied and trimmed is not acceptable. Provide PVC edge on front edge of fixed shelves and all 4 edges of adjustable shelves. g. Drawers to have ball-bearing track drawer slides. h. No melamine is allowed. i. No cabinet or shelving unit to be more than 42" in width; 36" is preferred to avoid sagging of loaded shelves. j. All shelving to be full depth of cabinet; all drawers to be full depth of cabinet, with all four sides full-height. k. Architect shall specify a mock-up of selected casework; General Contractor to supply mock-up for approval by the Architect and Owner. l. Casework is not allowed on the site until the building is completely dried in and climate-controlled, with the humidity less than 60% and the temperature controlled between 65 and 80 °F. The HVAC system must be operational before casework is allowed on the site. m. Cabinet Hardware: Hinges; Institutional Hinge, 100742, Dull Chrome (Cabinetmakers Hardware, 2002, Volume 6B), or approved equivalent. Hinge count, spacing and layout to be determined as required. n. Use a standard casework-quality lock and key on all millwork; do not use the classroom door key. o. Key all cabinets in entire building with same TISD standard casework key. p. Medication cabinet in Clinic must have Schlage security lock. q. Intermediate and JH to have wood laboratory casework. r. HS to have wood laboratory casework. s. Display cases to be field-fabricated, with interior lighting, glass shelves.

	t. Window blinds to be recess-mounted inside of window frame. Provide blinds for all exterior windows and for any interior windows as directed by Owner. u. Cafeteria windows shall be provided with motorized black-out shades controlled by single switch with momentary control. v. Telescopic bleachers to be all wood or combination wood/plastic seats; consult with Owner during design w. Bicycle racks – Count TBD
DIVISION 13	SPECIAL CONSTRUCTION
	1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. No specific TISD requirement at this time.
DIVISION 21	FIRE SUPPRESSION
	1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: b. At all Cooking Hoods where Fire Suppression Systems are required shall, the contractor shall only use Stainless Steel Materials.
DIVISION 22	PLUMBING
	1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. Provide drawings as noted in Closeout Documents b. For all water treatment needs including hot/cold closed loops and cooling towers, TISD prefers as basis of design and that Worth Hydrochem be used unless approved prior to acceptance. c. Provide cleanouts in all bathrooms. d. Do not put cleanouts in main hallway floors or public areas unless there is no other option and only when the Owner has approved the location. When this is required, hallways are preferred over Classrooms. e. At Acid waste, provide unions so the entire unit can be removed for maintenance at traps. f. Storm Drainage – Align and square up all boxes. Refer to pervious notes on top of box elevations and notes in Concrete section. Where set into gridded pavement, align boxes with joint orientation and center. The Architect shall note this on site plans and ensure their consultants have coordinated this. g. Connect all R.D.'s to storm system h. Provide C.O. at horizontal to vertical connection at ground level outside building but within 5' of building. i. GAS PIPING – Mount all regulators at equipment. j. Paint all gas piping in accessible areas and where visible safety yellow. k. The district preferred W.H. is AO Smith. Second would be Rheem. l. For Porcelein Products the district preference is American Standard the Kohler m. For Valves the district preference is Sloan then Zurn, then Chicago. n. Toilets/Water Closets shall be rated for 1000#.

o. Provide Trap Primers from Flush Valves
p. At wet labs safety devices, provide a drain border to prevent flooding. Coordinate with TAS/ADA requirements for height.
q. Install analog water meter at backflow prevention to each campus
r. On a campus, each main facility shall have its own separate backflow prevention device and analog water meter at main supply line. Confirm location with district during design.
s. Within each facility with a food service/kitchen, install sub-meter on water supply to kitchens. Coordinate location with the Owner.
t. Install backflow prevention device on fire supply line if supplied by domestic water at campus. Provide separate water meter on each fire main prior to entering the facility. Coordinate location with the Owner.

Part 1 Domestic Water and Sanitary Piping

A. Water meters shall be full line sized and housed in approved vault. Valves shall be installed immediately behind meter and immediately inside entrance into building. Water service to enter at main mechanical room where possible. A full line sized backflow preventer with strainer shall be installed immediately within the mechanical room in a horizontal position at a height not to exceed 4 feet and isolated with valves and unions for easy servicing. Provide separate set of unions 24 inches apart for future installation of consumption meter. Bleed off shall be piped to nearest floor drain.

B. All piping shall be buried a minimum of 30 inches below finish grade outside of building slab. Flanged fittings shall utilize stainless steel bolts at all locations.

C. All in-ground valves shall be installed in access boxes sized at minimum 24”x24”.

D. Back flow devices shall be installed horizontally at branch runs from domestic water supply to mechanical equipment and isolated with valves for servicing. Minimize backflow devices; provide on large icemakers. Backflow devices are not needed on custodial mop sinks as chemicals are currently hand fed.

E. Water lines under drives and walks shall be sleeved with schedule 40 PVC at least twice the size of the supply line and extend at least 18 inches beyond the curb or walk where possible. Water lines in kitchen to be continuous

F. run, no joints below slab. For labs located on ground floor, provide utility trench for pipe routing. Service entry point to be through an exterior wall.

G. All connections in dissimilar metals piping shall be made using dielectric unions. All nipples that supply water to toilets, urinals, sinks and any other water supply to be brass or copper.

H. All valves shall be ball type NIBCO brand up to 4” or Owner approved alternate.

I. Valves shall be installed at each branch run of hot and cold water to enable servicing of areas without shutting down building. Valve locations shall be properly marked on plan and location tag installed on finished ceiling grid visible to building occupants. Review locations with Owner during design.

J. Isolation valves above ceiling at each water fountain location shall be installed and marked.

K. Provide hose bib in service yard and around exterior of the building, minimum 100' apart, in locations approved by Owner. Each location shall have a shut off valve located above ceiling to isolate/secure when not in use. K. All gas piping shall be properly painted and labeled.

L. Provide thermal pipe insulation on all piping carrying domestic hot, or roof drainage which occurs above the finish floor line. Cold water piping shall be insulated within five feet of building exterior wall and above kitchen to comply with health code.

M. Do not run water piping in or over rooms dedicated for communications, fire alarm systems, computer equipment, MDF, IDF and similar rooms.

N. Require pressure-reducing valves ahead of all connected equipment subject to be damaged by excessive water pressure. All pressure reducing valves to be isolated with valves and unions for servicing. O. At science, art rooms and kitchen, provide 20 psi maximum to fixtures.

O. Provide circulating return, pumped and controlled by aqua stat, on hot water runs of 50 lineal feet or more of pipe length.

P. Each restroom or other rooms capable of wash down shall have a hose key handle hose bib with vacuum breaker installed under a lavatory at the cold-water supply.

Q. Provide a cut-off valve above the ceiling in the hallway for each restroom or battery of fixtures, and exterior hose bibs.

R. Provide cold water and tempered water to student restrooms as needed to comply with health code.

S. Provide hot and cold water to exterior can wash.

T. Provide tempered and cold water to faculty and adult restrooms, work rooms, student or faculty showers, art and science classrooms, special education/life skills classrooms and restrooms, lounges and kitchen.

U. Specify shock absorbers sized according to fixture units served in piping at appropriate locations to eliminate water hammer.

V. Prior to cover up of wall construction at plumbing installations verify that all piping is securely anchored and stationary, independent of wall construction.

W. Arrange sanitary drainage to minimize the amount of piping under the slab. Provide ample number of cleanouts. Do not locate cleanouts in rooms dedicated for communications, fire alarm systems, computer equipment, MDF, IDF or similar rooms.

X. Locate clean-outs in areas that are not high traffic. Locate in areas that are not highly visible as much as possible.

Y. Do not route grease trap drain back under building slab. Review routing with Owner during design.

Z. Grease traps shall be cleaned and pumped prior to Substantial Completion. Interior joints shall be properly sealed.

AA. Provide electronic trap primers at all floor drains/sinks including locations in mechanical rooms, kitchen and central plant. All trap primers to be installed per manufacturer's instructions. Flush tube trap primers to be used in all restrooms. Trap seals are not permitted.

BB. Internal lift stations shall not be used. If no alternate and if approved in writing by TISD during design phase, lift stations serving storm or sanitary systems inside the building will be allowed. If provided, these shall be on generator stand-by power.

CC. Site lift stations to have alarm.

DD. Provide clean outs for all sinks and at end of each battery of toilet fixtures.

EE. Victaulic grooved fittings are allowed on copper pipe 2 inches in diameter or larger.

FF. Pressed fittings are allowed on copper pipe in 1/2 inch to 4-inch diameter in size (Viega only).

GG. No spring check valves allowed, only NIBCO soft seated swing check valves.

HH. Leonard, Symons or Bradley mixing valves shall be used where mixing valves are required.

II. All eye wash emergency shower stations shall be provided with a floor drain capable of handling full discharge of system. Emergency showers and eye wash to be piped internally to wall. Ensure coordination with architectural so that there is a waterproofing barrier located behind each emergency shower preventing any water from seeping into adjacent spaces. Slope all flooring to drain. Provide a local audible alarm and notification to BAS system when shower is activated.

JJ. Do not provide building-wide water softener system. Provide water softener only on areas with sensitive equipment such as the kitchen, domestic boiler and domestic water heaters. Water softener system to be an add alternate and will be incorporated into project depending on results of on-site water test. Generally, water hardness of more than 5 grains per gallon shall utilize water softener; coordinate with Owner.

KK. Kitchen equipment shall utilize a descaler by Fluid Dynamics at point of use.

LL. Water main into the building shall be fed through a whole building filter. Filter to be located in a serviceable location and of a design approved by Owner. Remove filters after installation. Reinstall prior to connecting fixtures.

MM. All sanitary drains shall be flushed and/or jetted and inspected via camera prior to Substantial Completion. Owner representative shall witness testing.

NN. Domestic supply and irrigation to be on separate public meters. Make-up water for cooling tower is to be submetered from irrigation meter. Kitchen to be sub-metered from domestic supply meter.

OO. Provide point of use deionized water system in science main prep rooms.

PP. All domestic water lines to be sterilized and thoroughly flushed prior to connecting to fixtures.

QQ. No 'insta-hot' devices.

RR. No tankless water heaters.

Part 2 Materials

A. Toilets and urinals shall be low flow design manufactured by Sloan or American Standard.

B. Acceptable manufacturers for toilet / urinal flush valves are Sloan Flush or American Standard.

C. No sensor-operated flush valve water closets or urinals.

D. Provide Biems anti-slam seats for toilets.

A. ADA protective covering on all exposed sink drains.

B. Provide Chicago push button faucet #857-665 in student restrooms. Provide 4" center-set, blade handle faucet at faculty restrooms and kitchen hand sinks. Provide high-neck, wide-spread, blade handle faucet at - clinic, lounge and library workroom sinks.

C. Water fountains- acceptable manufacturers are Halsey Taylor or Elkay. Provide bottler fillers on some drinking fountains; coordinate locations with Owner during design.

D. Floor drains, roof drains and chair carriers, acceptable manufacturers are Smith, Wade, Josam, Mifab, or Zurn.

E. Backflow preventers- Provide Watts 909 series for the RPZ, or Febco for PVB, and Watts 007 for DC or Apollo.

F. Water conditioning- Provide Watts One Flow or equivalent or Mueller water softener.

G. Ball valves to be manufactured by NIBCO only.

H. No student wash fountains allowed.

Part 3 Gas Piping

A. All gas piping and fittings shall be polyethylene where buried for all sizes.

B. Connections to appliances shall be hard piped or approved UL connector.

C. Gas piping run inside building shall be exposed above ceilings, welded fittings and properly labeled.

D. Gas meter shall be located in service yard away from any fresh air intakes or doors and protected with bollards.

	E. Gas piping on roof to be supported to prevent sagging and not be allowed to rest directly on roof. Require expansion loops where runs or piping cross expansion joints in building. Wood block supports are not acceptable. F. Pressure regulators shall be installed where required at the exterior of the building. At each regulator require a test tee with nipple and cap downstream and unions and gas cocks on each side of regulator. Ensure each gas regulator is secured, but easily accessible for maintenance without use of a ladder. G. All exterior piping and all exposed interior piping shall be painted yellow. G. Domestic gas-fired water heaters acceptable manufacturers are Ray-Pak or AO Smith. H. Ensure solenoids have enough space to operate effectively. Ensure placement does not interfere with sound-sensitive areas. Provide normally closed to reduce humming when not in use.
DIVISION 23	MECHANICAL
	1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. Provide for design and installation of full-service equipment that this will be reviewed by the Owner during design b. Preferred HVAC manufacturer is Carrier. Variance must be approved by the Owner in writing. c. Variable Frequency Drives – District preference is ABB the Toshiba, then Danfoss. d. Identification i. for all equipment and valves use Adhesive backed tags. For exterior locations provide metal tags. ii. Piping Color Coding 1. Green - HVAC 2. Hot Red - Domestic 3. Blue - Cold Domestic 4. Yellow – Natural Gas iii. Backflow Preventers are to be Blue where visible. Where covered do not paint. iv. All Fire Line Risers is Red e. Provide method to drain lines at cooling towers or other exterior pipes. Submit to the Owner for approval. f. Insulate all Mechanical rooms at exterior walls. g. Ensure louvers work as part of Startup Process h. Provide electric room heater in all mechanical rooms to maintain minimum 50 deg. Consider this being on Emergency Generator. Verify during design and confirm decision with the Owner prior to bidding. i. During Commissioning – provide for Owner attendance at Kickoff and as requested. j. Direct Digital Controls – Basis of Design is Unify. Note all software shall be non-proprietary web based and available to Owner at Substantial Completion to monitor progress if work is not complete. k. Hydronic Pumps – Use only horizontal pumps unless approved otherwise. l. Provide eye wash at mechanical rooms. Verify locations during design. m. Flushing and Cleaning of Hydronic Piping - Provide filter chemical pot feeders.

n. HVAC Fans – District preference is direct drive over belt drive on larger fans. Verify during design.
o. Condensing Boiler – District preference is Two condensing boilers over hybrid. Preferred manufacturer is Camus.
p. Rotary Screw Water Chillers Air-Cooled – Provide Sound treatment for all Air-Cooled Chillers.
q. Modular indoor Central-Station Air Handling Units – District preference is Carrier then Trane.
r. Fan Coil Units – Provide filters with mounting brackets.
s. Ceiling Mounted Registers, louvers, vents, returns, access panels and similar. All shall be installed square with the room, square with the grid and centered. In hard ceilings provide the same alignment with reveals, grid or similar. In specialty ceilings, the finish shall match by application of the ceiling material. Paint to match is not acceptable unless approved prior to installation.

Part 1 - Mechanical

A. Controls to be DDC. Unify is basis of design. Automated Logic is acceptable.
B. All equipment installed shall have proper and complete air sealant through any openings cut into equipment or ductwork.
C. Cabling shall be independently supported above ceiling and not shared with any other trade or rest on any mechanical equipment or ductwork.
D. HVAC systems that shall be monitored and controlled:
1. Boiler pumps
2. Chilled water pumps
3. Cooling tower fans
4. Air handlers
5. Fresh air fans
6. Flow switches on chillers, boilers, and cooling towers
7. Kitchen exhaust fans interlocked with HVAC
8. High efficiency chillers
9. High efficiency hot water heaters
10. High efficiency hot water booster heaters
11. High efficiency boilers
E. HVAC humidity control system should be designed specifically for this region.
F. All ventilation to meet ASHRAE requirements.
G. All rooms to be under positive pressure when HVAC units are running. Temperature sensors are to be located at 84” AFF (to prevent teachers from putting lamps on them). Consider adjusting overall BAS to compensate for the warmer air being sensed at higher elevation.
H. Master shutdown button to be located next to lighting and HVAC override switches in administration area near principal’s office. Provide proper signage on operation of button. Button shall shut down all mechanical equipment with fans except for science lab purge exhaust or emergency kitchen hood exhaust. Emergency personnel shall have the ability to activate purge fan or exhaust portion of kitchen hoods if needed during a master shut down period.

Part 2 Exterior Lighting

A. Exterior parking lot pole lighting to be on separate zones with different contactors so that it can be controlled by areas. Entire system to remain 100% programmable and controllable by BAS, with an interior override button; provide signage at button.

B. Provide a dedicated pole light zone for custodian/food service personnel parking location, service area, and access to trash dumpsters. Provide a dedicated pole light zone for building principal and front office staff parking location. Coordinate with Owner during design.

C. All other pole lights shall be zoned to individual parking lots and adjacent drives and avoid light trespass to adjoining residential areas.

D. Drop Off and Loading Area Canopy Lights and Main Entry Canopy shall be on separate control points.

E. Building soffit and building-mounted service yard lighting shall be on separate control points.

F. Lighting control to be scheduled as directed by Owner. G. School marquee will be 'always on'.

Part 3 Interior Lighting

A. No BAS control of cafeteria or gym lighting at elementary level.

B. Provide BAS control of cafeteria, gym and commons lighting at secondary level.

C. No control over security/emergency lighting.

D. Do not tie lights to AC.

E. Provide remote troubleshooting network connection.

Part 4 HVAC and Lighting Overrides (TLO's)

A. In front administration area, in corridor outside principal's office, install two separate single gang boxes. One box for front parking lot pole lighting zone override, the second box for administration area HVAC override. All overrides shall be push button type and provide 2-hour override. Each to be labeled with nameplate below button to indicate the system it controls.

B. All TLO contactors to be electrical maintaining contactors.

Part 5 Building Automation System (BAS) Controls and Graphics

A. Building Automation System shall be native BACN, in conformance with ASHRAE's latest standard for control systems.

B. BAS shall be tied to District's WAN and must be accessible from any PC, laptop, I-pad or smart phone.

C. BAS to be full DDC. No pneumatic controls allowed on any new installation.

D. BAS basis of design shall be Unify. Automated Logic is also acceptable. Any deviations from specified control system must be Owner-approved during design and/or bidding phase.

E. BAS to provide energy reporting software, MPower, from Automated Logic or equivalent.

F. Control vendor shall provide a graphical user interface for every project that represents the latest version of software available from the manufacturer of each project completed.

G. All "thermo graphic" groupings shall be reviewed by the Owner before program installation. Ensure that all graphics are visible and controllable on Owner's system prior to Substantial Completion or initiation of Testing and balancing services, whichever is first.

H. All projects to contain "as built" drawings within the energy management program.

I. Graphical user interface must provide the capability to pick a room number (or closest zone control) and allow the operator to navigate to the cooling or heating source serving that room and continue to navigate all the way to central plant.

	J. Description of rooms or areas on GEO tree determined by Customer utilizing numbering shown on as-built drawings. K. Visual monitoring that exterior lighting is activated. L. Visual monitoring of time remaining on all HVAC and lighting overrides. M. Visual monitoring of cooling set points. N. Visual monitoring of building kW on summary page. O. Ability to read CO2 concentrations and associated outside air damper movement where applicable. P. Humidity sensors (read-only) in libraries, fine arts equipment storage areas and computer labs. Q. Humidity control devices in large hard floor areas like gymnasiums, dance rooms, etc. R. Temperature sensor and visual alarm on zone level page for MDF rooms. S. High temperature alarm paging for walk in coolers and freezers. T. Temperature sensors capable of being field calibrated. U. Outside air temperature lock-out software on chillers and boilers. V. BAS program must provide ability to bring on outside air damper/pre-treat units only when scheduled occupancy starts. W. Discharge air temperature shall be monitored at all boxes along with actual CFM being discharged from unit and provide min/max information for box when reviewing graphic floor plan. X. Provide blank plate sensors only. Y. Controls contractor to provide read-only access to design engineer and project mechanical contractor to allow remote monitoring of system for one year after Substantial Completion. Z. Kitchen hood control: kitchen hood and exhaust shall be interlocked thru BAS. Provide local override control of exhaust hood. Override switch shall be located at ADA height next to hood. Each hood shall have separate override control. Provide a separate emergency kitchen hood exhaust override switch on hood that will activate exhaust only, no supply. This shall be used during emergency conditions by emergency personnel only. One switch shall control exhaust of all hoods in kitchen. Provide cover on each switch and signage indicating operation of override switch. AA. Kiln exhaust control: Vent per type of kiln. Vent thru exterior wall if possible. Do not vent through wall lower than 84 inches. All kilns shall have wall mounted temperature sensor tied to overall room exhaust. Provide ceiling mounted heat detector to deactivate kiln at adjustable temperature. BB. Controls warranty shall be five-year parts and one-year labor. Warranty shall begin at Substantial Completion.
DIVISION 26	ELECTRICAL
	1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. Flex cabling or exposed cabling is not allowed in any concealed space, in walls, above hard ceilings, chases, etc. b. No branch circuiting shall be under slab c. No floor boxes are allowed at Slab on grade without prior approval. Where they have to be installed at Slab on grade, use a trough to provide wireway access.

	d. All outdoor conduit shall be sealed PVC. e. All electrical shall be hard piped to electrical boxes or devices.. f. Wall feed low voltage, data, audio connections etc shall be piped from wall device to 12" above wall with grommet wire protector at exit point. g. Watt Stopper h. Provide Phase Monitoring i. At Stages all locations provide only LED spot lights. j. At all monitors, touch screens and technology devices, attention to installation location shall be coordinated with the equipment.
DIVISION 27	TECHNOLOGY
27 10 00	**PART 1 - GENERAL** **1.1 RELATED WORK** A. 26 05 00 – Grounding and Bonding B. 26 05 29 – Electrical Hangers and Supports C. 26 05 33 – Raceway and Boxes **1.2 DESCRIPTION** A. Summary of Work: 1. Provide a complete and tested cable distribution system for data interconnections (Local Area Network). The data distribution system shall include fully terminated unshielded twisted pair cables, raceways, conduit, UTP termination devices, data communications outlets, patch panels, patch cables, network racks, and other incidental and miscellaneous premises wiring system hardware as required for a complete and usable system. The installation shall comply with all applicable codes and standards in effect at the job site and as indicated in the Drawings and Specifications. 2. Provide and install 12-strands single mode fiber from the MDF to each IDF and a 25-pair category 3 copper tie cable to connect each IDF on the entire project to the building's MDF. **1.3 QUALITY ASSURANCE** A. Acceptable manufacturers: 1. The equipment/products described herein, and furnished per these specifications shall be the product of one manufacturer. All references to model numbers and other detailed descriptive data is intended to establish standards of design performance, and quality, as required 2. The approved installer shall provide a 25-year extended product warranty and application assurance. 3. Acceptable product connectivity and cable shall be Uniprise by CommScope. Only the manufacturers listed in this paragraph will be accepted. B. Installer Qualifications: 1. The Data Cable System Installer shall be licensed and shall meet all applicable regulations of the State of Texas and Department of Labor insofar as they apply to this type of system. The proposer shall be a firm normally employed in the low voltage and data cabling industry and shall provide a reference list of ten (10) similar size, Category 6 and/or 6A, projects and contact names confirming

successful premises wiring system installations.

2. The SCS Installer shall be a certified CommScope Uniprise and in good standing in the Partner Program, local area, integrator and must be able to provide the manufacturer's maximum available warranty on the entire SCS. The contractor's certification must have been obtained and held within 75 miles of the project's location.
3. The installing contractor must have a full-time employed RCDD (Registered Communications Distribution Designer) on staff. Current RCDD certification shall be provided in the product submittals.
4. All individuals installing the SCS must be employees of the certified installer and at least 25% of the installing staff shall have undergone a training class given by the manufacturer. Current certification indicating the successful completion of the training course shall be available upon request at the project and submitted in the contractor's product submittals.
5. The proposing contractor and the installing contractor must be the same company. No subcontractor to the proposing SCS contractor will be allowed for any portion of the SCS scope of work.

C. Pre-Construction Meeting:

1. The successful Contractor shall attend a mandatory pre-construction meeting with the project's consultant and individuals deemed necessary by the Owner's representative prior to the start of the work. No SCS work shall begin prior to this meeting.

D. Acceptance:

1. The Owner's representative reserves the right to reject all or a portion of the work performed, either on technical or aesthetic grounds.

E. Warranty:

1. The selected system installer shall be an CommScope Uniprise certified contractor and hold current certification. Contractor shall provide an end-to-end performance warranty of not less than twenty (25) years on all products installed. The proposer shall provide current certification documentation. The performance warranty shall be issued by the manufacturer and shall warrant that ALL Category 6 and Category 6A cable links have been tested bi-directionally (end to end) using a Level 2 tester, per TSB-67, and that all test results conform to the most current TIA/EIA-568-C and/or TSB-67 Link values.
2. The warranty will also cover multimode fiber optic cabling. Performance testing shall be conducted in accordance with ANSI/EIA/TIA-526-14 Standard, method B.
3. The warranty will stipulate that all products used in this installation meet the prescribed mechanical and transmission specifications for such products as described in ISO/IEC 11801, ANSI/TIA/EIA-568-A, or EN 50173. Quality and workmanship evaluation shall be solely by the Owner/Designer and designated representatives.

1.4 REGULATORY REQUIREMENTS

A. Standards: All work shall be performed in accordance with the latest revisions of the following standards and codes:

1. Latest Local Codes and Amendments
2. 2005 National Electrical Code

B. Other References:
1. TIA/EIA-568-C Commercial Building Telecommunications Wiring Standard
2. EIA/TIA-569 Commercial Building Standard for Telecommunication Pathways and Spaces.
3. TIA/EIA-606 The Administration Standard for the Telecommunications Infrastructure of Commercial Buildings.
4. TIA/EIA-607 Commercial Building Grounding and Bonding Requirements for Telecommunications.
5. EIA/TIA 455-A Standard Test Procedure for Fiber Optic Fibers, Cables, Transducers, Sensors, Connecting and Terminating Devices and Other Fiber Optic Components.
6. TIA/EIA TSB 67 Transmission Performance Specification for Field Testing of Unshielded Twisted-Pair Cabling Systems.
7. TIA/EIA TSB 72 Centralized Optical Fiber Cabling Guidelines
8. ISO/IEC 11801 Generic Cabling Standard
9. EN 50173 Generic Cabling Standards for Customer Premises
10. ANSI/EIA/TIA 526-14 Optical Power Loss Measurements of Installed Multimode Fiber Cable Plan.

C. Governing Codes and Conflicts: If the requirements of these specifications or the Project Drawings exceed those of the governing codes and regulations, then the requirements of these specifications and the Drawings shall govern. However, nothing in the Drawings or Specifications shall be construed to permit work not conforming to all governing codes, regulations, and manufacturer installation requirements.

1.5 ABBREVIATIONS

A. The following abbreviations are used in this document:

DC	Direct Current
IDF	Intermediate Distribution Frame
MDF	Main Distribution Frame
PBX	Private Branch Exchange
UTP	Unshielded Twisted Pair

1.1 SUBMITTALS

A. Project Initiation:
1. Within fourteen (14) days of Notice to Proceed, the data network system installer shall furnish the following in a single consolidated submittal:
   a. Permits: The Contractor shall obtain all required permits and provide copies to the Owner/Architect/Engineer.
   b. Product Literature: Complete manufacturer's product literature for all cable, patch panels, cross-connect blocks, cable supports, cable labels, outlet devices, and other products to be used in the installation. In addition, whenever substitutions for recommended products are made, samples (when requested by the Owner/Designer) and the manufacturer's supporting documentation demonstrating compatibility with other related products shall be included. The submittal shall have some type of distinguishing marker or pointer to indicated what specific product is to be provided
   c. Construction Schedule: A time-scaled Construction Schedule, using PERT/CPM, indicating general project deadlines and specific dates relating to the installation of the cable distribution system.

d. Testing: Proposed Contractor Category 6 and 6A UTP cable test result forms, fiber optic cable test result forms and a list of instrumentation to be used for systems testing.

e. Specification Compliance: A letter shall be provided stating, by section and subsection, that the SCS installer complies with the ENTIRE specification section. If the installer intends to deviate from any portion of the specifications, a detailed explanation of reason in which the installer would like to deviate shall be provided in addition to the specification compliance letter. NO DEVIATIONS SHALL BE ACCEPTABLE UNTIL THEY HAVE BEEN ACCEPTED BY THE PROJECT'S TECHNOLOGY CONSULTANT.

f. Certifications: The contractor shall submit all of the following certifications and the certifications must contain dates which are valid from the date of proposal and not expire any sooner than 12 months after substantial completion of the project.

1) BICSI RCDD Certification: This certification must be held by an on-staff, full-time employee of the SCS installer. The holder must be staffed out of the office that is located within 75 miles of the projected.

2) Proposed Manufacturer's Strategic Partner Certification: This certification has been obtained by the SCS installers office that is located within 75 miles of the project and shall be a company certification, not and individual certification.

3) Proposed Manufacturer's Installer Certification: This certification must be held by at least 25% of the, on-site, staff and be made available at the site if requested by the owner, architect, and/or project's technology consultant.

4) Fiber Optic Technician Certification: This certification must be held by the on-staff/on-site individual that is supervising the fiber optic installation and performing the fiber optic terminations and testing.

B. Shop Drawings:

1. Submit the following items, for Owner review and approval, within twenty-eight (28) days of notice to proceed:

a. Proposed circuit routing and circuit grouping plan prepared by a BICSI certified RCDD (Registered Communications Distribution Designer). The RCDD certification must be current. Identifiable, separate routing shall be shown for both the station cabling and the MDF-to-IDF tie cabling.

b. In addition to the cable routing, the submitted drawings shall indicate the following, even if the following is expected to be provided by the project's electrical or general contractor:

1) Location of wall penetrations (all penetrations shall be sleeved and contain protective bushings at both ends)

2) Location of sleeved wall pass-thru

3) Size of sleeve at each location installed

4) Quantity of cable passing through each sleeve

5) Location of drops in each room (quantity or labeling of drops are not required in the submittal plans. Labeling shall be provided in the closeout plans and quantities shall be as per the contract documents, addendums, and issued changes. Each drop shall be labeled for the type of outlet that it is)

6) Conduit routing, size, quantity, and stub-up locations for all floor

mounted outlets.

c. Drawing Compliance: A letter shall be provided stating that the SCS installer complies with the ENTIRE project drawing, including all general, keyed, and notes to contractor. If the installer intends to deviate from any portion of the specifications, a detailed explanation of reason in which the installer would like to deviate shall be provided in addition to the specification compliance letter. NO DEVIATIONS SHALL BE ACCEPTABLE UNTIL THEY HAVE BEEN ACCEPTED BY THE PROJECT'S TECHNOLOGY CONSULTANT.

C. Close-out Procedures:

1. Two (2) copies of the following documents shall be delivered to the building owner's representative at the time of system acceptance. The close out submittals shall include:
   a. Inspection and Test Reports: During the course of the Project, the Contractor shall maintain an adequate inspection system to ensure that the materials supplied, and the work performed, conform to contract requirements. The Contractor shall provide written documentation that indicates that materials acceptance testing was conducted as specified. The Contractor shall also provide documentation, which indicates that all cable termination testing was completed and that all irregularities were corrected prior to job completion.
   b. Provide complete test reports for all cabling and devices that comprise system as outlined in this document.
   c. Include the Name, address, and telephone of the authorized factory representative with a 24-hour emergency service number.
   d. The manual shall also include Manufacturer's data sheets and installation manuals/instructions for all equipment installed, a list of recommended spare parts.
   e. Generic or typical owner's instruction and operation manual shall not be acceptable to fulfill this requirement.
   f. An up-to-date record ("as-built") set of approved shop drawing prints that have been revised to show each and every change made to the structure cabling system from the original approved shop drawings. Drawings shall consist of a scaled plan of each building showing the placement of each individual item of the technical cabling system equipment as well as raceway size and routing, junction boxes, and conductor size, quantity, and color in each raceway.
   g. As-built Drawings shall include cable pathways, camera locations with correct labeling and MDF/IDF locations. The as-built drawings shall be prepared using AutoCad 2002 or later. Provide the Owner with electronic versions of the as-builts on CD media.
   h. All drawings must reflect point to point wiring, device address and programmed characteristics as verified in the presence of the engineer and/or the end user unless device addressing is electronically generated, and automatically graphically self-documented by the system.
   i. A copy of the manufacturer's warranty on the installed system.
   j. Any keys to cabinets and/or equipment and special maintenance tools required to repair, maintain, or service the system.
   k. Operating and Maintenance Instructions for all devices within the system. These instructions shall reflect any changes made during the course of construction, and shall be provided to the Owner, for their use, in a three-ring binder labeled with the project name and description. (4 copies)

l. Upon completion of the work and at a time designated by the Architect or owner, provide formal training sessions for the Owner's operating personnel to include location, operation, and maintenance of all included systems and equipment. Minimum amount of training time shall be at least 4 hours.

m. One (1) 30" x 42" laminated floor plan sheets illustrating technology drops and cable designation. Contractor shall provide one complete floor plan sheet for each telecommunications room (MDF or IDF)

PART 2 - PRODUCTS

2.1 GENERAL

A. Installation: The cabling shall be installed per requirements of the manufacturer and the Project Documents utilizing materials meeting all applicable TIA/EIA standards. The Contractor is responsible for providing all incidental and/or miscellaneous hardware not explicitly specified below as required for a complete and operational system.

B. Materials: Materials shall be as listed or shall be approved equivalent products of other manufacturers meeting the intent and quality level of the TIA/EIA specifications. All approved equivalent products will be published by addendum ten days prior to proposal for Architect/Engineer to review.

C. Testing: All installed cabling shall be tested 100% good after installation by the Contractor. All final test results shall be delivered to owner at completion of project. Refer to closeout requirements listed under section 1.5.

D. Ratings: All products shall be new and brought to the job site in the original manufacturer's packaging. Electrical components (including innerduct) shall bear the Underwriter's Laboratories label. All communications cable shall bear flammability testing ratings as follows:

CM Communications Cable
CMP Plenum Rated Communications Cable
CMR Riser-Rated Communications Cable

E. Initial Cable Inspection: The Contractor shall inspect all cable prior to installation to verify that it is identified properly on the reel identification label, that it is of the proper gauge, containing the correct number of pairs, etc. Note any buckling of the jacket that would indicate possible problems. Damaged cable or any other components failing to meet specifications shall not be used in the installation.

F. Cable Lubricants: Lubricants specifically designed for installing communications cable may be used to reduce pulling tension as necessary when pulling cable into conduit.

1. Approved Products
   a. Twisted-pair cable: Dyna-Blue
      American Polywater

G. Fire Wall Sealant: Any penetration through firewalls (including those in sleeves) will be resealed with an Underwriter Laboratories (UL) approved sealant.

1. Approved Products
   a. 3M or
   b. Pre-approved equal

2.2 DATA CLOSET (MDF/IDF) CATEGORY 6 TERMINATION HARDWARE

A. Equipment Racks/Cabinets:

Provide and install equipment racks and/or cabinets in locations indicated on the attached drawings for the following areas.

For all IDF and MDF locations:

Contractor shall provide and install new Hoffman floor mounted rack systems. Refer to floor plan and enlarged MDF/IDF room layouts for number or racks to provide at each location.

1. Approved Products
   a. Floor mounted racks – Chatsworth 55053-703

For IDF rooms that are not dedicated spaces or have public access, provide
1. Wall mounted cabinet – Chatsworth part number 13492-772

B. Distribution Rack/Cabinet Grounding

All Racks and/or Cabinets shall be grounded using stranded #6 AWG insulated copper conductor. Connect to service entrance grounding electrode. Provide all required bonding materials and hardware and bond to building grounding electrode subsystem at building electrical service entrance.
1. Approved Products –Grounding Compression Lugs
   NSi #L6N-14
2. Approved Products – Wall Mount Bus Bar (one per MDF/IDF location) Hoffman #DGTB412

C. Fiber Optic Patch Panels

The enclosures used shall provide termination panels for LC type connectors and be of sufficient size and capacity to terminate 110% of the fiber count of the inside of outside fiber optic cables. Patch panels must be 19" rack mountable. Provide all termination accessories, fiber patch cords, enclosures and test for a complete fiber optic distribution system.

1. Approved Products (for MDF/IDF locations):

   CommScope 2U Fiber Shelf 760231480 | SD-2U-FX
   CommScope 4U Fiber Shelf 760231464 | SD-4U
   CommScope 12 Fiber Inserts LC Single-Mode 760067165 | PNL-BK-012-SFA-LC02-BL-Shuttered
   CommScope Wall Mounted Single Sided Single Door Fiber Enclosure 769248905 | WB2-EMT-BK-2P-PNL
   a. provide cable grommets AMP #559496-2

D. Category 6 Patch Panels: The Category 6 data station cable shall be terminated on Category 6 RJ45 patch panels with circuit board construction, T568B terminations. Patch panels shall be 19-inch rack mountable. Workstation patch panels shall terminate all workstation communications outlets. Furnish units that adhere to the performance requirements TIA/EIA-568A standards.

1. Approved Products:
   a. CommScope Category 6 Patch Panels 24 Port 760180042 | UNP-6-DM-1U-24
   b. CommScope Category 6 Patch Panels 48 Port 760180059 | UNP-6-DM-2U-48
   c. Provide cable support bars at the back of all patch panels to provide additional support at rear of rack and panels

E. Category 6A Patch Panels: The Category 6A Wireless Access Point (WAP) station cable shall be terminated on Category 6A RJ45 patch panels with circuit board construction, T568B terminations. Patch panels shall be 19-inch rack mountable. Workstation patch panels shall terminate all workstation communications outlets. Furnish units that adhere to the performance requirements TIA/EIA-568A standards.

1. Approved Products:
   a. CommScope Category 6A Patch Panels 24 Port 760162800 | UNP-6A-DM-1U-24
   b. CommScope Category 6A Patch Panels 48 Port 760162818 | UNP-6A-DM-2U-48
   c. Provide cable support bars at the back of all patch panels to provide additional support at rear of rack and panels.

F. Cable Management Panels

Provide cable management panels as required for horizontal and vertical cable management. Provide vertical wire management on ends and in between all racks on entire project. All vertical cable managers on the entire project shall be 10” wide management.

1. Approved Products

   Horizontal – CommScope, Front and Rear, 2RU, 760128850 | HTK-19-DS-2Uwith covers on front and back.

   Vertical – CommScope, Front and Rear, # 760244781 | VCM-DS-84-10B with covers on front and back.

   Provide Velcro straps for cable dressing in MDF/IDF rooms.

G. Rack/Cabinet Electrical:

1. A power distribution strip shall be installed vertically at the back of each data rack and/or cabinet.
   Approved Products
   a. Chatsworth P-11D0A5 120V 20A
   b. Provide a PDU offset bracket for each PDU installed.

   Provide the following electrical UPS equipment at each location indicated.

At MDF room: (Provide quantity of two (2) each of the following at the MDF)

   Smart-UPS 3000VA USB & Serial RM 2U 120V
   APC Product Number: DUA3000RM2U(black chasis)

   UPS Network Management Card 2 with Environmental Monitoring
   APC Product Number: AP9631

3 year extended warranty
APC Product Number: WBEXTWAR3YR-SP-04

At IDF Room: (Provide quantity of one (1) each of the following at each IDF)

Smart-UPS 3000VA USB & Serial RM 2U 120V
APC Product Number: DUA3000RM2U(black chasis)

UPS Network Management Card 2 with Environmental Monitoring
APC Product Number: AP9631

3 year extended warranty
APC Product Number: WBEXTWAR3YR-SP-04

H. Network Rack Patch Cables: Cabling Contractor shall provide district with (1) – 6' Category 6 patch cable for each data drop and (1) – 6' Category 6A for each WAP drop on entire project. These cables will provide connectivity from the front of the network patch panels to the network equipment provided by district upon move-in. The patch cables are to be terminated properly with RJ-45 connections on each end with the proper pin-out assignments per project configuration.

1. Approved Products: CommScope 6' Category 6 Patch Cable
    a. Blue in color for all Data drops on the entire project UC1BBB2-0ZF006
    b. White in color for all Voice drops on the entire project UC1BBB2-08F006
    c. Green in color for all IP Cameras drops on the entire project UC1BBB2-0MF006
    d. Violet in color for all Card Reader drops on the entire project UC1BBB2-0LF006
2. Approved Products: CommScope 6' Category 6A Patch Cable
    a. Yellow in color for all Access Point drops on the entire project UC1AAA2-09F006

2.3 CABLE ROUTING/PATHWAY

A. Cable Tray: Metal cable tray shall be provided to affix to the top of all floor mount racks. Cable tray shall be used to brace racks to walls and to route cable from walls to racks in communication closets.

1. Approved Products:
    a. CommScope760085647 | CR-SLR-10L12W (black)
    b. And all applicable installation accessories and those listed below:
        1. Cable Runway Elevation Kit (CPI) - #10506-706 (black) –one per rack
        2. 3" Channel Rack-to-Runway Mounting Plate (CommScope) - #760084053 | CRR2RRMK (black) one per rack
        3. Cable Runway Radius Drop: CommScope 760083956 | CRDK-12W (black.
        4. Ladder Rack 90° Horizontal E-Bend Section: CommScope #760085530 | CR90FCB-12W (black). Provide as required.
        5. Wall Angle Support Kit: CommScope 760084160 | CR12-C24WRSK (black). Provide as required per ladder tray and wall junction.
        6. End Cap Kit: CommScope #760084012 | CRPECK - (black). Provide as required per exposed end of ladder tray
        7. Junction Splice Kit: CommScope 760084046 | CRTJSK (black).

Provide as required per junction.

8. And all applicable installation accessories.

B. Cable Support System: All low voltage cabling shall be installed and supported using a modular cable support system at 48" intervals unless installed in conduit. Do not exceed manufacture recommendation for the quantity of cables supported in an individual support.

C. All cable bundles shall be grouped together using plenum rated Velcro for the entire run above and below the ceilings.

2.4 FIBER OPTIC PRODUCTS

A. Fiber Optic Cable shall be UL listed type OFNP (unless noted otherwise):

1. Single mode:
   a. Singlemode fibers, each with a color-coded PVC tight buffer shall have a maximum attenuation of 1.0 dB/km at 1310 nm and 1.0 dB/km at 1550 nm.
   b. Approved Products:
      i. 6-strand Singlemode, with plenum rated armored jacket shall connect each IDF with the MDF as specified on Technology Riser Plans.
      CommScope Product #760127803 | P-012-DZ-8W-FSUYL
      ii. 6-strand Singlemode, with an indoor/outdoor plenum rated jacket, with no metallic elements, shall connect each IDF (that is not connected to the main buildings) with the MDF as specified on Technology Riser Plans.
      CommScope Product #76036384 | P-006-OD-8W-FSUBK
2. Provide (4) CommScope 3-meter patch cords for each backbone fiber installed on the entire project. Coordinate the required connector type, on the equipment end, with the owner prior to procuring the products.
3. No fusion or mechanical splices will be allowed at any point in the fiber optic runs.

B. Connectors

Optical Fiber Connectors shall be Single mode LC type connectors.

1. Approved Products:

CommScope LC Single-Mode #760117895 | SFC-LCF-09-8X Qwik II LC

2.5 STATION WIRING

A. Wireless Access Points shall be cabled with Category 6A unshielded twisted pair, four-pair, 24 AWG solid copper conductor, meeting the intent and quality level of the TIA/EIA-568-A Commercial Building Wiring Standard. Refer to floor plan and data outlet legend for WAP Locations.
1. Approved Products: For all WAPs:
   a. Plenum-Rated CommScope Category 6A (Yellow color for all Access points drops on entire project)
      1) CommScope Part # CS44P-YEL

B. Wire: The data and voice wire provided for all outlets shall be (Category 6) unshielded

twisted pair, four-pair, 24 AWG solid copper conductor, meeting the intent and quality level of the TIA/EIA-568-A Commercial Building Wiring Standard. Refer to floor plan and data outlet legend for number of active data ports to specified faceplates.

1. Approved Products: For all voice and data connections:
   a. Plenum-Rated CommScope Category 6 (blue color for all voice/data drops on entire project)
      2) CommScope Part #CS37P BLU
   b. Plenum-Rated CommScope Category 6 (green color for all IP Cameras drops on entire project)
      3) CommScope Part # CS37P GRN
   c. Plenum-Rated CommScope Category 6 (Violet color for all IP Card Reader drops on entire project)
      4) CommScope Part # CS37P VLT

C. Indoor/ Outdoor Plenum Copper cable- For those locations where we will need to run short runs of copper cable from building to building or within a "wet environment" (in slab) provide the following cables:

1. Approved Products: For all voice and data connections:
   a. CS34P-IO Indoor/Outdoor Category 6 U/UTP, Plenum, Outdoor Rated, Black Jacket, 4 Pair Count
   b. CS44P-IO Indoor/Outdoor Category 6A U/UTP, Plenum, Outdoor Rated, Black Jacket, 4 Pair Count

D. Testing: The Category 6 four-pair UTP cable must be UL Performance Level tested. Each 1000 foot spool must be individually tested with test results affixed to the spool. All cable must be provided on new 1000 foot spools. NO "SHORTS" WILL BE ALLOWED. IF SHORTS ARE DISCOVERED, THE CONTRACTOR WILL BE REQUIRED TO UNINSTALL ALL CABLE ON THE ENTIRE PROJECT AND INSTALL NEW CABLE AT NO ADDITIONAL COST TO THE OWNER.

E. Rating: Cable installed in conduit shall be non-plenum rated. Cable not installed in conduit shall be plenum rated if installed in plenum ceiling space, non plenum rated otherwise.

F. Provide 10 feet service loop at all headend locations properly supported above ceiling. Provide 3' service loop at each workstation outlet properly supported above ceiling. All workstation service loops shall be made in figure eight configurations, no exceptions.

G. All cable shall be bundled with Velcro from patch panel to outlet. Velcro shall be rated for plenum space.

2.6 STATION HARDWARE

A. Flush Mount Jacks: Flush mount jacks for all Wireless Access Points shall be high quality Category 6A RJ45 modular jacks with circuit board construction and IDC style or 110-style wire, T568B terminations. Jacks shall meet EIA/TIA TSB40 recommendations for Category 6 connecting hardware.

1. Approved Products – WAP Jacks:
   a. Data/Voice: CommScope SL Series#760241143 USL10G- YEL (Yellow in color for all Access Point drops on the entire project)

B. Flush Mount Jacks: Flush mount jacks shall be high quality Category 6 RJ45 modular jacks with circuit board construction and IDC style or 110-style wire, T568B terminations. Jacks shall meet EIA/TIA TSB40 recommendations for Category 6 connecting hardware.

1. Approved Products – Data and Voice Jacks:
   a. Data/Voice: CommScope SL Series #760237628 USL 600 - Blue (blue in color for all Data drops on the entire project)
   b. Data/Voice: CommScope SL Series #760237629 USL 600 - A.WHT (White in color for all Voice drops on the entire project)
   c. Data/Voice: CommScope SL Series #760237630 USL 600 - GRN (Green in color for all IP Cameras drops on the entire project)
   d. Data/Voice: CommScope SL Series #760237637 USL 600 – VIO (Violet in color for all Card Reader drops on the entire project)
2. All blank inserts shall be Gray.

C. Faceplates: Faceplates shall be a 4-port, flush mounted, stainless steel, Semtron solution, for RJ45 outlets at all locations.
Approved Products:
1. 4-Port Single Gang, Product Code 1FM-(4)0E-AMP
2. Provide wall mounted handset faceplates where applicable for wall mounted phone. Refer to floor plan for locations. Part #1FM-0E-AMP-PHONE
3. Provide Mounting Straps (where applicable)

D. Workstation Patch Cables: Cabling Contractor shall provide district with (1) – 10' Category 6 patch cable for each data drop on entire project. One 10' Category 6A patch cable for each WAP drop on entire project. Each cable will be terminated properly with RJ45 connections on each end with appropriate pin-out assignments per project configuration.

E. Approved Products: CommScope Uniprise 10' Cat 6 and Cat 6A Patch Cable
1. Blue in color for all Access Point drops on the entire project UC1BBB2-0ZF010
2. White in color for all Voice drops on the entire project UC1BBB2-08F010
3. Green in color for all IP Cameras drops on the entire project UC1BBB2-0MF010
4. Violet in color for all Card Reader drops on the entire project UC1BBB2-0LF010
5. Yellow in color for all Access Point drops on the entire project UC1AAA2-09F010

PART 3 - EXECUTION

3.1 GENERAL

A. Fire Wall Penetrations: The contractor shall avoid penetration of fire-rated walls and floors wherever possible. Where penetrations are necessary, they shall be sleeved with metallic conduit and resealed with an Underwriter Laboratories (UL) approved sealant. Contractor shall also seal all floor, ceiling and wall penetrations in fire or smoke barriers and in the wiring closet.

B. Allowable Cable Bend Radius and Pull Tension: In general, communications cable cannot tolerate sharp bends or excessive pull tension during installation. Refer to the cable manufacturers allowable bend radius and pull tension data for the maximum allowable limits.

C. Cable Lubricants: After installation, exposed cable and other surfaces must be cleaned free of lubricant residue.

D. Pull Strings: Provide pull strings in all new conduits, including all conduits with cable installed as part of this contract. Pull test is not to exceed 200 pounds. Data and video cables can be pulled together with pull strings.

E. Conduit Fill: Conduit fill shall not exceed 40%.

F. Damage:

1. The Contractor shall replace or rework cables showing evidence of improper handling including stretches, kinks, short radius bends, over-tightened bindings, loosely twisted and over-twisted pairs at terminals and cable sheath removed too far (over 1-1/2 inches).
2. The Contractor shall replace any damaged ceiling tiles that are broken during cable installation.

G. Clean Up:

All clean up activity related to work performed will be the responsibility of the Contractor and must be completed daily before leaving the facility.

3.2 DOCUMENTATION

A. Labels

The Contractor will label all outlets using permanent/legible typed or machine engraved labels approved by the Owner (no handwritten labels permitted). Label patch panels in the wiring closet to match those on the corresponding data outlets. The font shall be at least on-eighth inch (1/8") in height, block. All labels shall correspond to as-builts and to final test reports.

The following nomenclature should be used when labeling data/voice jacks:

All cables being served by MDF closet shall begin with 'M' all IDF served cables shall begin with I# (# designated IDF closet number).

Next identification letter shall refer to patch panel that is serving outlet (A,B,C…)

Next identification shall note what # data port on patch panel (1 thru 48).

Example:

Outlet from 23rd port of the third patch panel from top of rack located at IDF-2

I2-C23

Outlet from the 5th port of the second patch panel from the top of rack located at MDF

M-B5

B. Floor Plan

A floor plan clearly labeled with all outlet jack numbers shall be included in the as-built plans.

C. Contractor shall label wiring on both ends of cable at workstation and headend locations with machine labels, no exceptions.

3.3 EQUIPMENT RACK CONFIGURATION

A. Equipment Racks: Equipment racks shall be assembled and mounted in locations shown on the Drawings and as detailed. Each rack shall be securely mounted to the floor and braced to the wall with cable tray in accordance with the manufacturer's instructions and recommendations. Racks shall be mounted such that the side rails are plumb with vertical cable management panels. Racks to be located such that future expansion can occur without relocating existing racks. Racks shall be grounded in accordance with NEC requirements. Placement of racks must be approved prior to installation. Racks installed without the Owner's acceptance of location shall be relocated including all related work at no cost to the Owner.

B. Wire Management Components: Horizontal cable management panels shall be installed directly above and below each patch panel, also 1 per patch panel should be left at site to accommodate the switch gear when they are installed. Vertical cable management panels shall be installed on each side of the rack. In instances where more than one rack is installed in a single location, vertical cable management shall be installed between the racks and on either side.

C. Cable Placement: Cable installation in the Wiring Closet must conform to the Project Drawings. All cabling shall be routed so as to avoid interference with any other service or system, operation, or maintenance location. Avoid crossing area horizontally just above or below any riser conduit. Lay and dress cables to allow other cables to enter the conduit/riser without difficulty at a later time by maintaining a working distance from these openings.

D. Cable Routing: Cable shall be routed as close as possible to the ceiling, floor or corners to ensure that adequate wall or backboard space is available for current and future equipment. All cable runs within the Wiring Closet shall be horizontal or vertical within the constraints of minimum cable bending radii. Minimum bend radius shall be observed. Cables shall not be tie-wrapped to electrical conduit or other equipment.

E. Installation: All incoming cables shall be routed on the cable tray and neatly dressed down to the patch panels.

F. Hardware: Provide rack and jack panel hardware as required for all data station wiring.

3.4 STATION WIRING INSTALLATION

A. General:

1. Cabling between wiring closet and workstation locations shall be made as individual home runs. No intermediate punch down blocks or splices may be installed or utilized between the wiring closet and the communications outlet at the workstation location.
2. All cable must be handled with care during installation so as not to change performance specifications. Factory twists of each individual pair must be maintained up to the connection points at both ends of the cable. There shall never be more than one and one-half inches of unsheathed enhanced Category 6 UTP cable at either the wiring closet or the workstation termination locations.

B. Exposed Cable:

1. All cabling shall be installed inside walls or ceiling spaces whenever possible. Exposed station cable will only be run where indicated on the Drawings.
2. Additional exposed cable runs will require Owner approval, and will only be allowed when no other

options exist.

C. Placement: All cabling and associated hardware shall be placed so as to make efficient use of available space. All cabling and associated hardware shall be placed so as not to impair the Owner's efficient use of their full capacity.

D. Cable Routes:

1. All cabling placed in ceiling areas must be in conduit, cable tray or J-Hooks. Cable supports shall be permanently anchored to building structure or substrates. Provide attachment hardware and anchors designed for the structure to which attached and that are suitably sized to carry the weight of the cables to be supported. Do not route cable through webbing of structural steel. Cabling must be supported in dedicated supports intended to support cabling as described in this section.
2. Attaching cable to pipes or other mechanical items is not permitted. Use J-Hooks for up to 15 cables (Chatsworth hooks with appropriate brackets). All runs of sixteen (16) or more cables, provide cable rings on 36-inch maximum centers to hang cable. Communications cable shall be rerouted so as to provide a minimum of 18 inches spacing from light fixtures, sources of heat, power feeder conduits and EMI sources. Cabling shall not be attached to ceiling. Grid support wires. Cable runs shall be parallel or perpendicular to building structure. Multiple cables to be bundled together every 6 feet.

3.5 STATION HARDWARE

A. Flush Mount Jacks: Flush mount jacks shall be mounted in a faceplate with backbox.

B. Placement: Where possible, the communications outlet shall be located so that its centerline is 18 inches above floor level or 12 inches above permanent bench surfaces. Outlets shall not be mounted on temporary, movable, or removable surfaces, doors, or access hatches.

C. RJ-45 Jack Pin Assignments:
   1. Pin connections for data station cable outlets and patch panels shall match EIA/TIA 568 modular jack wiring recommendation T568B.
   2. Pin connections at data jack panels shall match pin connections at outlets (straight through wiring).

3.6 CABLE TESTING REQUIREMENTS

A. Notification: The Owner and Engineer shall be notified one week prior to any testing so that the testing may be witnessed.

B. Inspection: Before requesting a final inspection, the Contractor shall perform a series of end-to-end installation performance tests. The Contractor shall submit for approval a proposal describing the test procedures, test result forms and timetable for all copper and fiber optic cabling.

C. Procedures: Trained personnel shall perform all testing. Acceptance of the test procedures discussed below is predicated on the Contractor's use of the recommended products and adherence to the inspection requirements and practices set forth. Acceptance of the completed installation will be evaluated in the context of each of these factors.

D. Errors: When errors are found, the source of each shall be determined, corrected and the cable retested. All defective components shall be replaced and retested. Re-test results

must be provided on Owner approved forms and witnessed by Owner.

E. Twisted Pair Cable Testing:

1. At a minimum, the Contractor shall test all station drop cable pairs from Data Closet termination patch panels to outlet device RJ45 jacks. Category 6 products shall be tested for compliance to ANSI/TIA/EIA 568A and ISO/IES 11801 for a Category 6 rated installation. Test equipment used shall meet TIA/EIA TSB-67, Level II accuracy. Further, the contractor shall have a copy of TSB-67 in their possession and be familiar with its contents.
2. Each wire/pair shall be tested at both ends for the following:
   a. Wire map (pin to pin connectivity)
   b. Length (in feet)
   c. Attenuation
   d. Near end cross talk (NEXT)
   e. Power Sum
3. Test equipment shall provide an electronic and printed record of these tests.
4. Test results for each Category 6 four-pair UTP cable must be submitted with identification to match labels on all patch panel ports and RJ45 jacks and must match as-builts associated with that cable.

F. Fiber Optic Cable Testing

1. Optical fiber cabling shall be tested and certified after installation as described below and as required for cable manufacturer's warranty. Fiber testing shall be performed on all fibers in completed end to end system. Testing shall consist of a bi-directional end to end test in accordance with applicable standards in 27 02 20.20, or a bi-directional end to end test performed by TIA-455-53A and all other applicable standards in 27 02 20.20. The system loss measurements shall be provided at 850 and 1300 nanometers for multimode type glass and 1310 and 1550 nanometers for single-mode type glass. These tests shall also include continuity checking of each fiber. For spans greater than 90 meters, each tested span must test to a value less than or equal to value determined by calculating a link loss budget. For horizontal spans less than or equal to 90 meters, each tested span must be less than or equal to 2.0 decibels. The insertion loss for each mated optical fiber connector pair shall not exceed 0.40 decibels.
2. Pre-installation testing: Test all optical fiber cable for all fibers prior to installation of cable.
3. Performance testing: Where links are combined to complete a circuit between devices, Contractor shall test each link from end to end to ensure performance of system. Only a basic link test is required. Contractor can optionally install patch cords to complete circuit and then test entire channel. The test method shall be same used for test described above. The values for calculating loss shall be those defined in applicable TIA standards in Appendix 1: Codes, Standards, and Informative References.
4. Attenuation testing: Attenuation testing shall be performed with a stable launch condition using two-meter jumpers to attach test equipment to cable plant. The light source shall be left in place after calibration and power meter moved to far end to take measurements.
5. Loss budget: All fiber cabling shall be tested at both wavelengths 850 nm and 1310 nm for multimode and 1300 nm and 1550 nm for single mode.
   a. The link attenuation shall be calculated using:
      1. The CommScope Fiber Performance Calculator for CommScope installations
      2. The following calculation for other installations:

Link Attenuation Allowance (dB) = Cable Attenuation (dB) + Connector Loss (dB) + Splice Insertion Loss (dB)
Where:
Cable Attenuation (dB) + Cable attenuation (dB/km) X Length (km)
Connector loss (dB) = Number of Connector pairs X Allowable connector loss (dB)
Splice Insertion Loss (dB) = Number of Splices X Allowable Splice Loss (dB)

6. Link Loss: A mated connector to connector interface shall be considered a single connector. Loss numbers for installed link shall be calculated by taking sum of bi-directional measurements and dividing that sum by two. All links not meeting requirements of standard shall be brought into compliance by Contractor, at no additional cost to Owner.
7. Documentation: Following final documentation shall be submitted to the owner's representative prior to commissioning data system and final contract payment according to Submittals in this section.
8. Test results: Test results shall be automatically evaluated by equipment, using most up-to-date criteria from all applicable standards specified in 27 02 20.20 and result shown as pass/fail. Test results shall be printed directly from test unit or from a download file using an application from test equipment manufacturer. The printed test results shall include all tests performed, expected test result and actual test result achieved.
9. End to End Loss Data: final documentation shall be submitted to the owner's representative.
10. As Installed/ As Built Diagrams: Final documentation shall be submitted to the owner's representative.
11. Test Documentation shall be submitted in electronic format. Certification Test Reports shall be submitted in electronic format using the appropriate software supplied by the test equipment manufacturer. The data format should be that of the test report software (i.e. *.flw files for Fluke). The contractor shall provide any necessary software to view and evaluate the test data.

3.7 INSPECTION

A. Conformance to the installation practices covered above are to be verified when completed. In some cases, the Owner/Designer may inspect before acceptance.
   1. Written Test Report:
      a. Complete test results, including actual values associated with tests.
      b. Show all certifications for telecommunications wiring systems.
      c. Include cable maps showing each cable route and keyed to cable labels. Provide owner with complete floor plans identifying outlet location and cable routing drawing in AutoCad format. Provide electronic copy of drawings to owner in AutoCad version 14 or greater.
      d. Documentation of outlet, cable and rack labeling system.

B. After performing all tests, tabulate results and bind together in format acceptable to Owner. Installer shall provide written certification in the test report that telecommunications cable is properly installed and test results certify system to all specified standards.

	END OF SECTION
DIVISION 28	ELECTRONIC SAFETY AND SECURITY
28 00 01	1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. Fire Detection and Notification System i. EST (4) Panels required. At each panel provide surge protection, ground each to earth, provide dedicated power supply with labeled circuit breaker. b. As part of closeout, the contractor shall provide spare parts: i. (10) Standard Smoke Detectors for each Facility or Addition ii. (10) Heat Detectors for Each Facility or Addition
28 13 00	ACCESS CONTROL SYSTEM
	1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. See specifications herein <u>Part 1 Manufacturers and Materials</u> The below listed manufactures are considered acceptable provided written authorization from Tomball ISD has been secured and is presented with submittal for validation.

ITEM:	MANUFACTURER:	ACCEPTABLE SUB:
Card Readers	Schlage	No Substitution
Power Supplies	Schlage	No Substitution
Electronic Locks	Schlage	No Substitution
Software	Open Options	No Substitution
Credentials	Schlage	No Substitution
Lock Down Button	STI	No Substitution

Part 2 Card Readers – Schlage (SCH) aptiQ — Model

A. Mullion mount installation - Schlage MT11
B. Wall mount installation - Schlage MT15
C. Credentials - Schlage 7610T (FOB)
D. Acceptable Substitutions – NONE

Part 3 Power Supplies – Schlage (SCH) PS Series — Model

A. Schlage PS-902, PS-904, PS906
B. Power Supplies to come with Battery Back-up – 900-BBK
C. Power supplies to include 8 Fuse protected outputs – D. 900-8f
Acceptable Substitutions – NONE

Part 4 Electronic Locks – Schlage (SCH) AD Series — Model

A. New Installation - AD-300-MT-SPA-626
B. Renovation - AD-400-MT-SPA-626
C. Acceptable Substitutions – NONE

Part 5

Access
Control
Software
A. Open
Options
DNA
Fusion
B. Acceptable Substitutions – NONE

Part 6 Other Hardware

A. Door Position Sensors to be installed on all Access Control Doors. Recommend having double pole, double throw type.
B. Door Position Sensors on Pairs of Doors, with AD Style locks, to be mounted in top of door. Shall be mounted within 3” of the door jamb.
C. Request to Exit switches to be installed on all Access Control Doors
D. When Electrifying Exit Devices, Von Duprin (VON) QEL (Quiet Electric Latch Retraction) is to be used
E. Access Control with Remote Release to be added to all interior reception doors from reception to interior main hallway of school. Doors should at minimum have an intercom device to communicate with those outside the secure entry.

F. Add Aiphone intercom system with surface-mount video intercom door station at one exterior main entry door with video monitor and adjustable desk stand master station located at main reception desk, JO Series, Model JO-DA surface mount door station.
G. All buildings to be supplied with STI (Safety Technology International) Lock Down Button SS2242LD-EN
H. All buildings to be supplied with 500 Schlage 7610T fobs. Refer to Division 8.

Part 7 Installation

A. All hardware and software to be installed by Schlage / Open Options Factory certified technicians
B. All hardware and software to be installed per Schlage / Open Options installation instructions
C. Installer to demonstrate, after installation, proper operation of all components to TISD
D. Hard-wire access control devices are preferred. If wireless, ensure consistent signal quality by testing in the field for signal. Provide an allowance for any adjustments that may be needed in the field to ensure consistent signal.

Fire Alarm/Sprinkler System Specifications

Part 1 Fire Alarm

A. Basis of design to be Edwards EST 3 with voice evacuation system with two communication pathways (TISD VOIP phone / land line POTS phone, and 4G LTE cellular) for monitoring service only. Notifier is also an acceptable manufacturer. No Simplex systems.
B. RF Antenna shall be located outside MDF/IDF room, above ceiling. Ensure consistent signal quality by testing in the field for signal. Provide an allowance for any adjustments that may be needed in the field to ensure consistent signal.
C. Utilize photoelectric or multi-criteria style smoke detectors except in non-conditioned areas where heat detectors shall be used. Use photoelectric duct detectors for air handling units and ionization type detectors for outside air handling units.
D. Smoke detectors shall be properly protected during construction and prior to system start up and testing.
E. Copy of system operating instructions to be provided in close-out with an additional copy provided at panel in each room.
F. Provide 8 sets of keys for each panel. Transmit to Director of Maintenance.
G. System to be connected to emergency generator
H. All emergency systems shall be a dedicated circuit to panel.
I. Cabling to be installed per TISD Structured Cabling Standards utilizing cable management system and independently supported above ceiling and not allowed to rest on any mechanical equipment or ductwork.
J. Provide for an extra 15’ loop of wire at device end in each run to allow for renovation/maintenance relocation.
K. Locate all smoke detectors a minimum of 6’ from a supply vent.
L. Copy of data file programing for the fire alarm panel shall be turned over to the owner as part of close-out and an additional copy framed under plastic at the FACP and Annunciator panels.
M. Ensure all devices are cleaned prior to Substantial Completion and are accessible for maintenance.
N. Provide pull stations only at all exterior exit doors. Provide tamper-proof cover with Tamper Dye. Ensure adequate access is provided to be able to reset device.

O. Provide web-based system; if proprietary software and hardware is required for system operation, maintenance or programming, this must also be provided to Owner. Provide data connection at each main FACP panel. P. Schedule a walk-through with Owner prior to cover-up, after termination and during testing of system.

Q. Label each device with ¼" tall black letters (vinyl tape or vinyl letters).

R. Prior to Substantial Completion, subcontractor to provide report verifying operation of entire system; include in close-out documents.

S. Each device shall be tested and location verified; ensure panel location matches device label and location.

T. As part of close-out, provide as-built of fire alarm device locations.

Part 2 Sprinkler System

A. System to be wet type and include all necessary flow switches, supply mains, risers, valves, drains and connections. For non-conditioned spaces or buildings, verify type of system with Owner.

B. Gate valves 2" and less to be bronze OS&Y with threaded connections. Gate valves larger than 2" shall be iron body OS&Y bolted bonnet, bronze seats and flanged ends

C. Supervised valves shall have tamper switches. Supervised switches shall be double pole, single throw, with cast aluminum housing and tamper proof cover.

D. Fire Department Siamese connection shall be Potter-Roemer #5780 chrome plated with cap and chain with Knox cap.

E. Retarding chamber, valves, sprinkler heads, alarms, and similar items for entire project shall be furnished by one manufacturer. Acceptable manufacturers are Reliable, Viking, and Grinnell

F. Sprinkler heads shall be upright in areas without ceilings and fully concealed type in areas with ceilings. Provide cover plate to match adjacent ceiling color.

G. Sprinkler piping to be schedule 40 black steel welded or cut groove with style 77 heavy duty clamps H. No pressed piping is allowed

I. Underground entrance and stub up into building shall be ductile iron through oversized sleeve properly sealed after installation.

J. All water (domestic and fire water supply) to enter through a side-wall, not underground. MOVE

K. Prefer location of fire riser room off of service yard. Exterior access only. Size room to allow for future second riser and provide sleeves for future riser installation. L. Locate all inspector test valves in fire riser room.

M. Furnish 3 extra heads of each type as part of attic stock. A metal cabinet is to be provided to store extra heads and head wrenches. Cabinet is to be installed near controls.

N. Label all major components of fire sprinkler system. Provide graphic plaque at each fire riser indicating service area, pressure and other relevant information. Coordinate requirements with local AHJ. Provide coverage map as part of close-out documents and additional laminated copy in fire riser room. O. ADD Knox caps on FDC.

Electronics Specifications

Part 1 - Phone, P/A, Intercom systems

A. Phone system shall be SHORETEL/MITEL VoIP and terminated with parts shown in TISD Structured Cabling Standards specification. Phone system if CFCI; actual handsets are OFOI. B. Each classroom to have a VoIP desktop phone.

C. Provide administrative handset phones and wiring for each principal's office, assistant principals office, nurses office and front office; coordinate locations with Owner.
D. P/A intercom system: Provide Carehawk. System to be integrated with the district network and include software for programming from remote locations. Termination points shall be labeled at the P/A panel.
E. Classroom speakers: Preferred manufacturer is Atlas. Provide Atlas Sound model number #AT-SD72WV. All high ceiling speakers shall be set at maximum volume. Quam also acceptable. F. Provide wall-mounted volume controllers in each space.

Part 2 – Scoreboards

A. Scoreboards: Provide Nevco or Daktronics with LED lighting and wireless controllers.

Part 3 - Cameras

A. Refer to Exhibit A for a standard classroom layout for JH and HS classrooms. Coordinate with Owner during design.
B. Video Insight compatible IP cameras: Indoor cameras = Panasonic WV-S2231L Outdoor cameras = Panasonic WV-S1531LN.TISD uses Video Insight with centralized servers housed in the NOC.
C. CCTV cameras shall be installed with a 10-foot minimum service loop left coiled above the ceiling.

Part 4 - Data

A. Fiber and data cabling: Provide minimum one separate 2" conduit from closest IDF/MDF rooms to side and rear entrances, both originating and ending points to be dead-ended above ceiling for future portable building use. All fiber and data cabling shall be in separate above-ceiling pathways.
B. Amp products are preferred for fiber/data wall plates and CAT5E/CAT6 inserts. All patch panels in data racks should be unloaded AMP patch panels.
C. For part numbers and color of cables, refer to TISD Structured Cabling Standards specification.
D. For racks and cable management, refer to TISD Structured Cabling Standards specification.
E. For MDF and IDF wall mounted enclosures, refer to TISD Structured Cabling Standards specification. Wall mounted enclosures shall have a fan and filter kit included. Building CCTV to be wired, at minimum, for coverage of all exterior entrances, front office and main corridors, and hallways adjacent to student restrooms. Final locations to be approved by Owner. F. Projector and Display Standards:
    1. Overhead projectors to be located at large group spaces such as collaboration rooms, cafeteria, etc. Coordinate with Owner during design.
    2. Provide flat panel interactive displays in classrooms and other spaces as directed by Owner during design.
       Basis of design is SMART MX275 with iQ specs_sbid-mx275v; discuss with Owner.
    3. See Exhibit B for typical mounting heights of flat panel interactive displays.
    4. Mounting brackets for overhead projectors and flat panel displays are OFCI.
    5. Projectors shall at a minimum have WXGA resolution and have a HDMI and USB run from the teacher's desk to the smart panel.
G. Each classroom to receive a Lightspeed Topcat.
H. Labs, fine arts and other large group instructional areas to receive a Lightspeed Topcat Plus.
I. All hanging microphones shall have a 12" loop and supported with grid clips so as not to pull on jacks and or jack plates.

WIRING APPLICATION COLOR

120/208 VAC	Black, Red, Blue, White, and Green
480/277 VAC	Brown, Purple, Yellow, Gray and Green
Data	Blue
Voice	Violet
Public Address	White
Fire Alarm Systems	Red
Burglar Alarm	Purple
CCTV	Green
Sound System	Gray
CATV Coax	White
BAS Controls Communication	Yellow
BAS Controls Sensors	Yellow or Green
Fiber	Aqua or Yellow.
Outlets on standard circuits	Ivory (if renovation, match existing color)
Outlets on Emergency circuits	Red
Light Switches	Ivory
Data outlets, Color coded inserts	Ivory
Data Insert AMP 1116603-3 RJ11	Blue
Voice Insert AMP 1116603-3 RJ11	White

All to have Stainless steel, satin finish covers

For technology, refer to Division 27 Structured Cabling Standards specification.

Standard Classroom Data / Power Floor Plan Layout
Exhibit A – Pre-K
Exhibit B – Elementary School K-4
Exhibit C – Intermediate School 5 – 6
Exhibit D – Junior High School 7-8
Exhibit E – High School 9-12

Standard Interactive Display -Mounting Height
Exhibit A1 – Standard Classroom Pre-K
Exhibit B1 – Standard Classroom Elementary School K-4
Exhibit C1 – Standard Classroom Intermediate School 5 – 6
Exhibit D1 – Standard Classroom Junior High School 7-8
Exhibit E1 – Standard Classroom High School 9-12

28 20 00	VIDEO SECURITY CAMERA AND SURVEILLANCE MANAGEMENT SYSTEM STANDARDS

3. To the Architect:
    a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing.
4. TISD Standard:
    a. See specifications herein

b. Unless otherwise stated, all exterior cameras shall be provided with grounding either locally to the device to as a home run as directed by the equipment manufacturer.
c. All POE extenders shall be verified to provide adequate power. For larger PTZ cameras over 30 watts, the appropriate extender shall be included.
d. Beyond needed power requirements for all MDF/IDF spaces, provide a minimum of (2) 30 amp clean circuits to all IDF/MDF where cameras are energized from. Coordinate with the Owner.

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Video Management Systems:
1. Server application.
2. Desktop application.

B. IP security cameras.

C. Network video recorders.

D. Accessory products.

1.2 RELATED SECTIONS

A. Division 23 – Heating, Ventilating, and Air Conditioning

B. Division 26 – Electrical

C. Division 27 – Communications

1.3 REFERENCES

A. Code of Federal Regulations (CFR).

B. Institute of Electrical and Electronics Engineers (IEEE):
1. 802.3 Ethernet Standards.

C. International Electrotechnical Commission (IEC).

D. International Organization for Standardization (ISO):
1. ISO / IEC 10918 - Information technology - Digital compression and coding of continuous-tone still images: Requirements and guidelines; JPEG.
2. ISO / IEC 14496-10 - Information Technology - Coding Of Audio-Visual Objects - Part 10: Advanced Video Coding; MPEG-4 Part 10 (ITU H.264).
3. ISO / IEC 23008-2 - High Efficiency Coding And Media Delivery In Heterogeneous Environments - Part 2: High Efficiency Video Coding; MPEG-H Part 2 (ITU H.265, HEVC).

E. European Standard (EN):
1. EN 50121 - Railway Applications. Electromagnetic Compatibility.
2. EN 50155 - Railway applications - Rolling stock - Electronic equipment.
3. EN 50130-4 - Alarm Systems. Electromagnetic Compatibility. Product Family Standard: Immunity Requirements For Components Of Fire, Intruder, Hold Up, CCTV, Access Control And Social Alarm Systems.

4. CE EN 50581 - Technical Documentation For The Assessment Of Electrical And Electronic Products With Respect To The Restriction Of Hazardous Substances.
5. EN 55022 Class A - Information Technology Equipment - Radio Disturbance Characteristics - Limits And Methods Of Measurement.
6. EN 61000-3-2-A2 - Electromagnetic Compatibility (EMC) - Part 3-2: Limits - Limits For Harmonic Current Emissions (Equipment Input Current: 16 A Per Phase).
7. EN 61000-3-3 - Electromagnetic Compatibility (EMC) - Part 3-3: Limits - Limitation Of Voltage Changes, Voltage Fluctuations And Flicker In Public Low-Voltage Supply Systems, For Equipment With Rated Current less than or equal to 16 A Per Phase And Not Subject To Conditional Connection.

F. European Union Safety Standards (CE).

G. Federal Communications Commission (FCC):
1. FCC Rules and Regulation of Title 47 of CFR Part 15 Subpart B Class A.

H. Open Network Video Interface Forum (ONVIF):
1. ONVIF - Profiles G, S, T Specification.

I. Underwriters Laboratories (UL):
1. UL listed.

J. United States Military Standard (MIL-STD):
1. MIL-STD-810F - Environmental Engineering Considerations and Laboratory Tests.

1.4 SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

B. Solution Proposal: System Integrator shall submit the Solution Proposal.

C. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Manufacturer's printed or electronic data sheets.
2. Manufacturer's installation and operation manuals.
3. Warranty documentation.

D. Shop Drawings: Include details of construction, interface of equipment, and relationship with adjacent construction.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum 5-year experience manufacturing similar products.

B. System Integrator shall provide the following as part of the System Solution:
1. Complete product and technical data specification sheets that include all material and equipment and shall be available freely online.
2. List of all equipment with part numbers, manufacturer, firmware, and assigned IP addresses.
3. Locations and details for all components to be installed under this scope of work.
4. Placement Diagram showing the proposed location of all system hardware devices.
5. System Calculation of all network bandwidth and storage requirements for System Servers to ensure proper planning of computing and networking infrastructure.

C. Installer Qualifications: Minimum 2-year experience installing similar products. Installers shall be trained and authorized by the Manufacturer to install, integrate, test, and

commission the system.

1.6 PRE-INSTALLATION MEETINGS

A. Convene minimum two weeks prior to starting work of this section.
1. End User provides specific details, A/E by specification shall ensure coordination by contractors to establish and schedule meetings for pre-installation.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.

B. Handling: Handle materials to avoid damage.

1.8 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.9 SEQUENCING

A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.10 WARRANTY

A. Manufacturer shall provide a limited 3-year warranty for the product to be free of defects in material and workmanship.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Hanwha Techwin, which is located at: 500 Frank W. Burr Blvd.; Teaneck, NJ 07666; 877-213-1222; www.HanwhaSecurity.com

2.2 IP SECURITY CAMERAS

A. Camera Model Selection Guidelines
1. Brand Selection - All cameras provided to Tomball ISD shall be Hanwha Techwin Wisenet cameras. If a dealer chooses to install another brand of camera at any Tomball ISD facility, the camera(s) shall be replaced, at no cost to the Tomball ISD, by the installing dealer with the following approved Hanwha Techwin Wisenet cameras models.
a. Substitution Request – Dealer may request to submit alternate Hanwha cameras models to Tomball ISD for review and acceptance (or not) by Security Management. If so, specific model acceptance must be approved by Tomball Security Management prior submitting any quotes.

2. Indoor Camera Guidance (presumes wide angle lens FoV & 40PPF)
a. Single Sensor
1) QNV-8080R – 5MP for viewing areas up to 35’ away, larger rooms.
2) XNV-6011W – 2MP For viewing smaller areas

a) Viewing area up to 15’
3) XND-C6083RV – 2MP Viewing Entrance / Exit Doors
a) Viewing area up to 20’
4) XND-C8083RV – 6MP Camera, Lobbies, Waiting areas, larger rooms
a) Viewing area up to 40’
5) XND-C9083RV – 4K Large Lobby’s, long Hallways, large rooms, warehouses, or situations requiring highest resolution details.
a) Viewing area up to 55’
6) PND-A9081RV – 4K AI camera for high level awareness of object (person/vehicle) detection and alerting
a) AI for high level awareness object detection (people / vehicle) classification and attributes.

b. 360° Fisheye Camera
1) XNF-9010RV – 12MP 360° View
a) larger rooms (30’x30’)
b) or areas requiring greater resolution detail such as cash handling, people identification, etc.

c. Multi-Sensor Camera
1) PNM-9000VD – Dual 2x 5MP Camera for Hallways (2 views)
a) Viewing area up to 40’ each camera direction
2) PNM-8082VT – Triple 3x 2MP Camera for T-Hallways (3 views)
a) Viewing area up to 20’ each camera direction
3) PNM-9084QZ – Quad 4x 2MP Camera for 4 Hallways (4 views) / rooms
a) Viewing area up to 20’ each camera direction
4) PNM-9085RQZ – Quad 4x 5MP Camera for 4 Hallways (4 views) / rooms
a) Viewing area up to 40’ each camera direction

3. Outdoor Camera Guidance (presumes wide angle lens FoV & 40PPF)

a. Single Sensor Camera
1) XNV-C6083R – 2MP Camera Viewing Entrance / Exit Doors
a) Viewing area up to 20’
2) XNV-C8083R – 6MP Camera Area View
a) Viewing areas up to 40’
3) XNV-C9083R – 4K Camera larger area views
a) Viewing areas up to 55’
4) PNV-A9081R – 4K Camera AI high level alerts / notifications
a) AI for high level awareness object detection (people / vehicle) classification and attributes.

b. Panoramic Camera - 180° View, Parking Lots & Cameras Mounted on Building for Wide Area Views, Pedestrian Drop Off Areas, etc.
1) PNM-9022V – 4x2MP Panoramic 180° View Camera,
a) Viewing distances up to 30’ radius
2) PNM-9031RV – 4x5MP Panoramic 192° View Camera
a) Viewing distances 50’+ radius
3) PNM-9085RQZ – Quad 4x 5MP Camera Parking Lot Camera, 360° Viewing, Under Canopy, etc.

c. 360° Fisheye Camera
1) XNF-9010RV – 12MP 360° View
a) larger rooms (30’x30’)
b) or areas requiring greater resolution detail such as cash handling, people identification, etc.

d. Multi-Sensor Camera
1) PNM-9000VD – Dual 2x 5MP Camera for 2 views

a) Viewing area up to 40’ each camera direction
2) PNM-8082VT – Triple 3x 2MP Camera for 3 views, 180°~270°
a) Viewing area up to 20’ each camera direction
3) PNM-9084QZ – Quad 4x 2MP Camera for 4 views, 360° coverage
a) Viewing area up to 20’ each camera direction
4) PNM-9085RQZ – Quad 4x 5MP Camera for 4 views, 360° coverage
a) Viewing area up to 40’+ each camera direction

4. Elevator Camera
a. XNV-6012 – Small form factor surface mount in elevator
b. Include Optional Power Over Wire as needed:
1) Hanwha Model TEU-F01 for powering (POE) camera over Unshielded Twisted Pair (UTP / CAT wire) elevator cab traveler wire
2) Hanwha Model TEC-C01 for powering (POE) camera over Coax elevator cab traveler wire (use with legacy (existing) Coax camera upgrades).

B. Minimum Camera Performance Requirements
1. Video Compression and Transmission: Cameras shall have the following properties relating to video signals they produce.
a. Compression: H.265, H.264 and MJPEG. Each derived from a dedicated encoder and capable of being streamed independently and simultaneously.
1) H.265 and H.264: Maximum of 30 fps at all resolutions
2) MJPEG: Maximum of 30 fps
b. Video Stream Profiles: Able to configure 6~10 independent profiles with differing encoding, quality, frame rate, resolution, and bit rate settings.
c. Video Streams: 10 independent stream types using unicast protocol.
1) Multicast and unicast video streaming.
d. DDNS Configurable: At no additional cost by manufacturer.
e. Smart Codec: Dynamic GOV, and Dynamic FPS to efficiently manage bitrate of video stream.
2. Camera Physical and Performance Properties:
a. Impact Protection: IK08~IK10 vandal resistance for indoor cameras
b. IP66 rating minimum for Outdoor Cameras
c. Resolution and FPS
1) 2MP camera imager sensors shall transmit full 1080P resolution (1920x1080) at a 30FPS using all Codecs (H.265/H.264/MJPEG) with no FPS reduction with the implementation of WDR and / or analytics in the camera.
2) 5MP camera imager sensors shall transmit full 2560x1920 resolution at a 30FPS using all Codecs (H.265/H.264/MJPEG) with no FPS reduction with the implementation of WDR and / or analytics in the camera.
3) 6MP camera imager sensors shall transmit full 3328x1872 resolution at a 30FPS using all Codecs (H.265/H.264/MJPEG) with no FPS reduction with the implementation of WDR and / or analytics in the camera.
4) 4K camera imager sensors shall transmit full 3840x2160 resolution at a 30FPS using all Codecs (H.265/H.264/MJPEG) with no FPS reduction with the implementation of WDR and / or analytics in the camera
d. Configurable privacy masking regions utilizing a 4 point polygon
e. Camera Models with IR Illumination True day and night operation with removable IR cut filter.
f. Digital Noise Reduction: 2D and 3D technology.
g. Cameras for viewing in darkness shall include Integral IR illumination, providing effective visibility of 65.62 ft (20 m) at 0 Lux when activated in black and White mode.

3. Intelligence and Analytics: A suite of integral intelligent operations and analytic functions to include:
   a. Motion Detection: Eight definable detection areas with 8 point polygonal zones, minimum and maximum object size.
   b. Logical Events Detection from Camera Video Input:
      1) Tampering (scene change).
      2) Defocus detection.
      3) Motion detection with metadata.
      4) Virtual Area Based Event:
         a) Enter or exit.
      5) Virtual Line Based Event:
         a) Directional detection.
         b) Crossing.
4. Interoperability: ONVIF Profile S, G and T compliant and SUNAPI API
5. Camera Characteristics:
   a. Built-in web server, accessed via standard browsers including MS Internet Explorer, Firefox, Chrome and Safari.
   b. Dual edge recording slot like Micro SD/SDHC/SDXC memory card with configurable pre-alarm and post-alarm recording intervals.
   c. Bi-directional audio.
   d. Alarms and Notifications supported:
   e. PoE capable.
6. Multi-Sensor Camera Additional Requirements
   a. In addition, all multi-sensor cameras (including Duo (2) Imager Sensors and Quad (4) Imager Sensors) shall also include the following Model: PNM-7002VD/PNM-9000VD, PNM-9084QZ, PNM-9084RQZ, PNM-9085RQZ, PNM-9002VQ, PNM-9022V and PNM-9030V, PNM-9031RV, PNM-9322VQP as manufactured by Hanwha Techwin America.
   b. Each Video Channel shall utilize a dedicated SOC to that Video Channel to process and deliver full frame rate video at 30 FPS using all Compression Codecs (H.265, H.264 and MJPEG), with no degradation or reduction to any individual Video Channel or Collectives Channels when enabling WDR or advanced video analytics.
   c. Each Video Channel shall support individual enablement of intelligent analytics, WDR, and codec selection independent of the remaining video channels.
   d. Each Channel supports SD card.
   e. One single power supply for all multi-channels

C. UPS & ELECTRICAL SURGE PROTECTION
1. All Network Camera to NVR Connections Shall incorporate an appropriate in line network Surge Protection Device when the Network Camera is located on the exterior of a building and connecting network switch / Network Recorder on interior of building.
2. All Critical Operation Network Cameras shall be on a POE Switch attached to a Pure Sine Wave Power Conditioning UPS or UPS circuit that is sized for the specified required operational time. It is recommended that all UPS systems are sized to provide back-up power for a minimum of 20 minutes or owner stated guidance, with 20% growth capacity, to maintain Video System Operation during brief outages or generator activation and power cut over.

2.3 VIDEO MANAGEMENT SYSTEMS (VMS)

A. Video Management System (VMS)

1. Software: Wisenet Wave v4.2 as manufactured by Hanwha Techwin America.
2. System Requirements:
   a. Open video platform designed for use in any video application.
   b. Specified Software: To include, free of charge, any API or SDKs necessary to integrate third party devices and systems.
   c. Specified Video Management Solution's Architecture: To include Desktop, Media Server, Mobile, and Cloud applications.
3. Software Components Characteristics: Four applications working seamlessly together.
   a. Cloud Application: Enables simple remote connectivity, viewing, and management of an unlimited number of systems and users.
   b. Media Server Application: Responsible for discovering, connecting to, and managing system users, devices, and associated data.
   c. Desktop Application: Capable of acting as a stand-alone media player or as a client application for connecting to and managing systems.
   d. Mobile Application: For iOS and Android devices that allows users to connect to, view, search, and control IP cameras over Wi-Fi or Data networks.
4. Built-In Developer and Integration Tools: Accessible from System Server's Web Admin Interface (compatible with all major browsers).
   a. Server API: SUNAPI implementation giving developers the ability to access every system feature available.
   b. API Change Log: List of breaking changes in API from version to version.
   c. Video Source Integration SDK: Integrate virtually any live or recorded video source (IP Cameras, NVRs, DVRs, etc.) into the VMS with methods for discovering, displaying, analyzing and recording video, as well as integrating device I/O ports and related motion detection information.
5. System Architecture:
   a. Server Hive Architecture:
      1) System servers are equal synchronizing system databases in real-time.
      2) Users can connect to any system server to see and manage entire system.
      3) Servers support automatic camera failover ensuring limited loss of video recording in event of hardware or network failure.
   b. One-click System Wide Updates:
      1) System Administrators Capabilities:
         a) Upgrade entire system via single button in Desktop Application.
         b) Upgrade on demand to latest release or specific builds with specific functionality or bug fixes.
   c. Use secure technologies for inter-application communication and security.
      1) Email Server: Client (Mobile, Desktop, Web) Communications - HTTPS Email - TLS / SSL - TLS; default option.
      2) Salted/Hashed Passwords: Local credentials protected using a salted MD5 hash, cloud credentials should use a complex multi-level hash.
   d. The VMS will not require any licenses to increase the number of supported devices, users, or servers.

B. VMS Server Application:
1. Runs on the Following Operating Systems:
   a. Microsoft:
      1) Windows 10 Professional, Windows 10 IOT Enterprise
      2) Windows Server 2019.
2. Minimum Compatible Computing Hardware:
   a. Any hardware able to run a compatible operating system.
   b. Capable of recording 128 dual-streaming IP cameras (256 streams) on a

single core of an Intel Core i5 processor.

3. Performance:
   a. Automatically discover, stream, and record any ONVIF Profile S IP camera located on same subnet as server application.
   b. Manually discover, stream, and record RTSP, HTTP, or UDP (multicast, unicast) streams.
   c. Automatic camera failover without any additional licenses.
   d. Unlimited number of users and custom user roles.
   e. User Login Credential Management: LDAP / Active Directory / Open LDAP integration.
   f. Record and Stream
      1) Video: H.264, H.265, and MJPEG.
      2) Audio: AAC, PCM (Mu-Law, A-law), g726, and MP3.
   g. Transcode Streams on Demand: For delivery to 3rd party system devices.
      1) Codecs: H.265, H.264, MJPEG or WebM.
   h. Pass-through high-res or low-res HLS streams from connected devices.
   i. Support Addressing: IPv4 or IPv6.
   j. Operator ability to change size of reserved disk space for storage drives.
   k. Concurrent recording of all connected cameras / streams to two servers in real-time.
   l. Server-side, CPU-based motion analysis for all connected IP cameras with no perceptible increase, less than 3 percent, in CPU usage.

C. VMS Desktop Application:
1. Runs on the Following Operating Systems:
   a. Microsoft:
      1) Windows 10
      2) Windows 10 IOT Enterprise Solutions.
      3) Windows Server 2019
   b. Apple / Mac.
      1) OSX 10.12: Sierra.
      2) OSX 10.13: High Sierra.
      3) OSX 10.14: Mojave.
2. Minimum Compatible Computing Hardware:
      1) Any hardware able to run a compatible operating system with a CPU that supports OpenGL 2.1 and Intel HD Graphics 3000 (or higher).
   b. Will not require any dedicated graphics drive to work at full capacity; 64 streams on a 64 bit OS, 24 streams on a 32 bit OS, and use the CPU for all video decoding and rendering.
3. Performance and Basis Structure:
   a. Navigation Panel: Main menu button, an interactive cloud-login icon, tabbed layouts, minimize and maximize icons, a contextual help icon, and a close application icon.
   b. Resource Panel (Left): Contains all system resources (Servers, Devices, Users, Layouts, Offline files, etc.) with collapsible structure and a keyword search mechanism to allow operators to quickly search for a display live streams / cameras, offline video and image files, or any combination thereof.
   c. Notifications Panel (Right): Shows all system or rules-engine generated notifications which can be clicked on to display relevant resource in the viewing grid.
   d. Timeline Panel (Bottom): Allows for navigation and search of recorded video files.
   e. Viewing Grid (Main Viewing Area): A flexible adaptive grid interface which allows operators to create and share customized layouts of system resources.

4. Operation: Allow operators to do the following.
   a. Scroll to and zoom in on any zone of viewing grid.
   b. Drag and drop to reassign cameras from one server to another server.
   c. Via a flexible timeline, view dates of any and all archived video in the System for a specific camera, or groups of cameras.
   d. Manually Create Bookmarks: With start time, end time, name, description, and tags, for later search. Bookmarks must also be able to be created using the Rules engine.
   e. Execute a Smart Motion Search: By selecting a subset of a live camera stream with results shown in red on the flexible timeline. Smart Motion search should be able to search a year (12 months, 365 days) of archived video in less than one second.
   f. Search video archives by date and time with a responsive, adaptive timeline.
   g. View, Search and Export All system events, System bookmarks, System logs and Audit trail of operator actions and replay related video.
   h. Create and share lockable layouts.
   i. Modify and save a shared layout to affect an instantaneous change to that layout on the VMS Desktop application of any user connected to the system viewing that layout (when the system administrator saves the layout the layout will update in real time for any user viewing that layout).
   j. Support two-way audio between operators and supported devices.
   k. Support audio alerts as an action that can be played on users' computers or connected system devices.
   l. Force open an alarm layout triggered by any system or 3rd party event with one or many associated cameras or resources.
   m. Force users to set the camera's initial password upon enrollment for best cyber security practices.

2.4 VMS SOFTWARE LICENSES

A. All new systems shall provide, at minimum, one WAVE VMS license per camera. Additionally, if additional cameras are being added to existing system, dealer shall include one new WAVE license per camera. Following are the acceptable WAVE VMS camera license references.

B. Model: WAVE-PRO-01,-04,-08,-16,-24,-48 as manufactured by Hanwha Techwin America
   1. Description: WAVE camera license, Enables one IP stream recording per “-0x” license(s) purchased.
      a. Purchase sufficient quantity of WAVE licenses as needed to record the number of camera streams being added to a WAVE System
      b. Note: Cameras that used only for Live Patient Room Monitoring and will NOT be recorded, then WAVE licenses for these specific cameras are not necessary. However, proper sizing of the Recording Server is still required to support the cameras.

C. Model: WAVE-VW-02 as manufactured by Hanwha Techwin America.
   1. Description: WAVE, Video Wall License, Enables displaying video on up to two (2) additional monitors with remote control of video displayed on those monitors.

D. Model: WAVE-ENC-04 as manufactured by Hanwha Techwin America
   1. Description: WAVE, 4 Channel Encoder License

E. Model: WAVE-IO-01 as manufactured by Hanwha Techwin America
   1. Description: WAVE, I/O module license, Enables one (1) I/O module

2.5 CLIENT WAVE WORKSTATION

A. Model: WWT-P-7401 WAVE Client Workstation supporting up to Four (4) attached monitors
1. The Workstation shall have a dedicated operating system drive to facilitate accelerated boot and application load times
   a. OS Drive – 1x 256GBSSD internally mounted with Operating System - Microsoft Windows 10 Pro
2. Video Storage - support to add additional 3.5” drive with capacity options for 1TB, 2TB, 4TB, 8TB, 10TB, 12TB, or 14TB per drive at Speed of 7200 rpm
3. Processor: Qty 1 Intel® 9th Generation Core™ Processor, Intel® Core™ i7-9700, 3.0Ghz to 4.7Ghz (8 Cores, 8 Threads, 12MB) and 16 GB DDR4 RAM memory
4. Graphics Cards - NVIDIA® Quadro® P620 with 4x HDMI adapters
5. Network Controller 1. Ports: 1 x 1GbE RJ45
6. Additional Ports - Video output: Varies with GPU, (1) HDMI 2.0b, (1) DisplayPort 1.4 on motherboard, up to (4) DisplayPort 1.4 , USB: Front: (2) USB 3.1, (2) USB 2.0, Rear: (2) USB 3, (2) USB 2.0
7. Electrical - Power: 100–240 V AC, auto-ranging, Power Supplies: 200W 80 Plus Bronze
8. Mechanical - Dimensions (w x d x h): 3.7" (97mm) x 11.5" (292mm) x 11.4" (290mm)
9. Weight: 11.42 pounds (5.14 kg)
10. Environmental - Operating temperature: 50°F - 95° F (10°C - 35°C)

B. UPS & ELECTRICAL SURGE PROTECTION
1. All Client Workstations shall be connected to a properly sized Pure Sine Wave Power Conditioning UPS or circuit to prevent voltage fluctuations (increase or decrease) that can affect operation and cause damage to the equipment.
2. All Client Workstations shall be installed on an electrical circuit that incudes protection against transient voltage surges.
3. It is recommended that all UPS systems are sized to provide back-up power for a minimum of 20 minutes or owner stated guidance, with 20% growth capacity, to maintain Video System Operation during brief outages or generator activation and power cut over.

2.6 ACCESSORIES

A. Accessory Products: Provide the following accessories to properly install and mount all cameras as required by the specific camera installation locations, as applicable to the system selected and as scheduled on the Drawings.
1. Pendant Caps
2. Corner Mount Brackets
3. Wall Mount Brackets
4. Recess Mount Kits
5. Pole Mount Brackets
6. Back box mounts
7. 2x2 Ceiling Mounts
8. Sun Shields
9. Work Boxes
10. Smoked dome covers.
11. PTZ/Dome housings.
12. PTZ/Dome mounts.
13. HD CCTV accessories.
14. Network camera POE injectors & accessories.
15. UTP video devices.

16. Monitor stands.
17. Surge Protection
18. UPS Battery Back Up
19. UPS Circuits

PART 3 EXECUTION

3.1 PREPARATION

A. System Integrator: Confirm the solution proposal planning and design with the installing contractor (if different company from integrator), to be in compliance with Ochsner standards as described in this document, with any exception approved in writing by Ochsner Security Administration.

B. The network design and configuration to be verified for compatibility and performance with the input/output devices.

C. Network Configuration: Tested and qualified by Systems Integrator prior to remote device installation.

D. Equipment to be tested and configured in accordance with instructions provided by the System Integrator prior to installation.

E. All firmware found in products to be the latest and most up-to-date provided by the manufacturer, or of a version as specified by the provider of the Video Management Application (VMA).

F. All equipment requiring users to log on using a password shall be configured with user/site-specific password/passwords. No system/product default passwords shall be allowed.

G. Confirm hardware will be stored in an environment where temperature and humidity are in the range specified by the Manufacturer.

3.2 INSTALLATION

A. Install products per manufacturer's recommendations and approved submittals.
   1. Comply with manufacturer’s installation and configuration documentation available to the System Integrator to ensure all steps have been taken to provide a reliable, easy-to-operate system.
      a. System Integrator shall be a Hanwha Techwin (Silver or higher) STEP Partner in good standing with manufacturer.
      b. System Integrator shall provide Technicians that have completed, at minimum, Hanwha WAVE Online Technician Training program.
      c. STEP Partner shall be able to offer extended warranty were applicable.
   2. Program and configure all products per the requirements of Tomball ISD Standards and specific site requirements which shall include, at minimum, the following: (additional requirements may applicable, refer to Tomball ISD Security Administration for details).
      a. All cameras and Network Recorders shall be programmed with Tomball ISD provided IP addresses and password requirements, along with naming guidance as instructed by Tomball ISD Security Administration.
         1) Please contact (*Example Contact Person*) for assistance.
      b. All Network Camera Recorders shall use the Tomball ISD NTP (Network Time Protocol) designated server.
      c. All IP Cameras shall have the primary Video Stream programmed to send 15

	FPS at 2MP, 5MP, 6MP, 4K (depending on camera model), using the H.265 Codec to stream to the Network Recorder for recording. d. All IP Cameras shall have the secondary Video Stream programmed to send 7FPS using H.265 codec to the Network Recorder for client display and non-motion detection recording if motion based alarm recording is implemented. e. All IP Cameras shall have a third Video Stream programmed to send 7 FPS at VGA (640x480) using H.264 to the Network Video Recorder for remote access via mobile device as needed. f. All indoor cameras shall have video motion detection zones configured and active and walk tested for sensitivity functionality for use during facility closed hours (if applicable to the facility). g. All outdoor cameras, if using motion detection, shall have objects such as trees or bushes that can move from the wind, to have motion detection masked off. Outdoor motion detection shall be used carefully for viewing areas considered stable (not plants) such as sidewalks, roads, buildings, doors, and the cameras shall have adequate artificial lighting provided or utilize camera IR light. h. All VMS Client Workstations shall be configured to automatically connect to the designated Network Recorders upon launch of the VMS Client application. i. Training – User Training may be required and is to be included as needed. Contact Tomball ISD Security Administration for guidance, (*Example Contact Person*) B. System Integrator personnel must comply with all applicable state and local licensing requirements. C. Prior to acceptance of installed system, the System Integrator will test the system in conditions simulating the final installed environment, which shall be witnessed by the Owner or Owner's Representative, and shall adjust the complete system as required until proper operation is achieved. 1. System Integrator shall email a copy of the final approved Wisenet Device Manager Site Configuration File and Wisenet Device Manager Report to *Example Contact Person* as part of the job completion process. END OF SECTION
DIVISION 31	EARTHWORK
	5. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 6. TISD Standard: a. No specific TISD requirement at this time.
DIVISION 32	EXTERIOR IMPROVEMENTS
	1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. No specific TISD requirement at this time.

DIVISION 33	UTILITIES
	1. To the Architect: a. The following information shall be incorporated into the Architect's Specification. Where there is a conflict the district standard shall rule unless approved in writing. 2. TISD Standard: a. Use only Copper feeders

END OF STANDARD

Door Schedule

Mark	Size			Frame	Door	Finish	Stop	Closer	Kickplate	Threshold	Vision Pnl	Rating	Hdw	Remarks
E1	Pr 36	x	7'	Alum	Alum/Glass	N/A	Integral	Yes	N/A	Yes	-		8	
E2	Pr 36	x	7'	Alum	Alum/Glass	N/A	Integral	Yes	N/A	Yes	-		8	
E3	36	x	7'	Alum	Alum/Glass	N/A	Integral	Yes	N/A	Yes	-		8	
E4	36	x	7'	Alum	Alum/Glass	N/A	Integral	Yes	N/A	No	-		8	
E5	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		1	
E6	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		1	
E7	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		1	
E8	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		7	
E9	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		5	
E10	36	x	7'	HM	HM	Ptd	Wall	N/A	N/A	No	-		5	
E11a	36	x	7'	HM	HM	Ptd	Wall	N/A	N/A	No	-		5	
E11b	Pr 36	x	7'	HM	HM	Ptd	Wall	N/A	N/A	No	-		8	FLUSH BOLT
E12	36	x	7'	HM	HM	Ptd	Wall	N/A	N/A	No	-		1	
E13	36	x	7'	HM	HM	Ptd	Chain	N/A	Yes	Yes	-	C Label	1	PROVIDE PANIC BAR
E14	36	x	7'	HM	HM	Ptd	Wall	N/A	N/A	No	-		1	
E15	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		1	
E16	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		4	
E17	Not Used	x												
E18	36	x	7'	HM	HM	Ptd	Chain	N/A	Yes	Yes	-	C Label	1	
E19	Not Used	x												
E20	Not Used	x												
E21	Not Used	x												
E22	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		4	
E23	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		1	
E24	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		1	
E25	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		1	
E26	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		5	
E27	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		5	
E28	36	x	7'	HM	HM	Ptd	Wall	N/A	Yes	Yes	-		1	PROVIDE PANIC BAR
E29	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		1	
E30	36	x	7'	HM	HM	Ptd	Wall	N/A	Yes	Yes	-		5	
E31	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		2	
E32	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		2	
E33	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		1	
E34	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		1	
E35	36	x	7'	HM	HM	Ptd	Wall	N/A	Yes	Yes	-	C Label	1	
E36	36	x	7'	HM	HM	Ptd	Wall	N/A	Yes	Yes	-	C Label	1	
E37	Pr 48	x	8'	HM	HM	Ptd	Chain	N/A	Yes	Yes	-		8	PROVIDE FLUSH BOLT/STILE
E38	36	x	7'	HM	HM	Ptd	Chain	N/A	Yes	Yes	-		1	PROVIDE PANIC BAR
E39	12'	x	12'	Steel	Steel/Glass	Ptd	N/A	N/A	N/A	N/A	-		N/A	Upward Acting
E40	12'	x	12'	Steel	Steel/Glass	Ptd	N/A	N/A	N/A	N/A	-		N/A	Upward Acting
E41	12'	x	12'	Steel	Steel/Glass	Ptd	N/A	N/A	N/A	N/A	-		N/A	Upward Acting
E42	12'	x	12'	Steel	Steel/Glass	Ptd	N/A	N/A	N/A	N/A	-		N/A	Upward Acting
E43	12'	x	12'	Steel	Steel/Glass	Ptd	N/A	N/A	N/A	N/A	-		N/A	Upward Acting
E44	12'	x	12'	Steel	Steel/Glass	Ptd	N/A	N/A	N/A	N/A	-		N/A	Upward Acting
E45	12'	x	12'	Steel	Steel/Glass	Ptd	N/A	N/A	N/A	N/A	-		N/A	Upward Acting
E46	12'	x	12'	Steel	Steel/Glass	Ptd	N/A	N/A	N/A	N/A	-		N/A	Upward Acting
E47	Pr 48	x	8'	HM	HM	Ptd	Chain	N/A	Yes	Yes	-		8	PROVIDE FLUSH BOLT/STILE
E48	36	x	7'	HM	HM	Ptd	Chain	N/A	Yes	Yes	-		8	PROVIDE PANIC BAR
E49	Not Used	x												
N1	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		1	
N2	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		1	
N3	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		1	
N4a	36	x	7'	Alum	Alum/Glass	N/A	Integral	Yes	N/A	No	-		9	
N4b	36	x	7'	Alum	Alum/Glass	N/A	Integral	Yes	N/A	No	-		9	
N5	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		1	
N6	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		1	
N7	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		1	VERIFY SECURE FOB
N8	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		1	VERIFY SECURE FOB
N9	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		2	
N10	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		4	
N11	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		2	
N12	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		1	
N13	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		1	
N14	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	N/A	No	-		4	
N15	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	Yes	No	-		1	36"x36" Kickplate ea. Side
N16	36	x	7'	Alum	Wd/Plam	N/A	Wall	N/A	Yes	No	-		1	36"x36" Kickplate ea. Side
N17	8'	x	10'	Steel	Steel	N/A	N/A	N/A	N/A	No	-	C Label	N/A	Coiling
N18	36	x	7'	HM	HM	Ptd	Chain	N/A	Yes	Yes	-		1	PROVIDE PANIC BAR
N19	36	x	7'	HM	HM	Ptd	Chain	N/A	Yes	Yes	-		1	PROVIDE PANIC BAR
N20	PR 36	x	7'	HM	HM	Ptd	Wall	N/A	Yes	No	-		5	PROVIDE FLUSH BOLT/STILE

HARDWARE SCHEDULE

MARK	SPACE	LOCKSET	DEADBOLT	HANDLE	PANIC BAR	FOB/SECURE	CLOSER	THRESHOLD	STOP	KICKPLATE	COMMENTS
1	Office/Stor'ge	KEYED	NO	PUSH/PULL	NO	NO	INTEGRAL	SADDLE	INTEGRAL	NO	EXISTING PART OF SYSTEM
2	Gang RR	PUSH/PULL	THUMB/PULL	PUSH/PULL	THUMB/PULL	NO	INTEGRAL	SADDLE	INTEGRAL	NO	NEW TO MATCH
3	Toilet Rooms	PRIVACY	NO	YES	NO	NO	NO	NO	WALL	YES	
4	Common Spa.	NONE	NO	YES	NO	NO	NO	NO	WALL	YES	
5	MEP/Utility	KEYED	NO	YES	NO	NO	NO	NO	CHAIN	YES	ALWAYS LOCKED
6	Exterior Single	KEYED	NO	YES	YES	YES	INTEGRAL	SADDLE	INTEGRAL	NO	
7	MDF	KEYED	NO	YES	NO	YES	NO	NO	WALL	NO	
8	Exterior Pair	KEYED	NO	YES	YES	YES	INTEGRAL	SADDLE	INTEGRAL	NO	
9	Int. Stor/Front	KEYED	NO	PUSH/PULL	NO	YES	INTEGRAL	SADDLE	INTEGRAL	NO	

FINISH SCHEDULE (Verify all finishes in design phase.)

Area	Floor	Base	Wainscot	Wainscot Ht.	Wall	Ceiling	Comments
FDC	SC	4" RUB	NO	N/A	PTD	ACT	
Corridor 01	LVT	4" RUB	NO	N/A	PTD	ACT	
Storage 01	VCT	4" RUB	NO	N/A	PTD	ACT	
Storage 02	VCT	4" RUB	NO	N/A	PTD	ACT	
Sim Lab 01	LVT	4" RUB	NO	N/A	PTD	ACT	
Sim Lab 02	LVT	4" RUB	NO	N/A	PTD	ACT	
Conference Rm	CPT	4" RUB	NO	N/A	PTD	ACT	
Corridor 02	LVT	4" RUB	NO	N/A	PTD	ACT	
Vestibule	LVT	4" RUB	NO	N/A	PTD	ACT	
Receptionist	LVT	4" RUB	NO	N/A	PTD	ACT	
Office 01	CPT	4" RUB	NO	N/A	PTD	ACT	
Office 02	CPT	4" RUB	NO	N/A	PTD	ACT	
Office 03	CPT	4" RUB	NO	N/A	PTD	ACT	
Office 04	CPT	4" RUB	NO	N/A	PTD	ACT	
Office 05	CPT	4" RUB	NO	N/A	PTD	ACT	
Office 06	CPT	4" RUB	NO	N/A	PTD	ACT	
MDF	VCT	4" RUB	NO	N/A	PTD	ACT	
Mech'l Rm	VCT	4" RUB	NO	N/A	PTD	ACT	
Corridor 03	LVT	4" RUB	NO	N/A	PTD	ACT	
Elect Pnls	VCT	4" RUB	NO	N/A	PTD	ACT	
Elect Main	SC	4" RUB	NO	N/A	PTD	NO	
Storage 03	VCT	4" RUB	NO	N/A	PTD	ACT	
CTE-Shipping	VCT	4" RUB	NO	N/A	PTD	ACT	
CTE-Receiving	VCT	4" RUB	NO	N/A	PTD	ACT	
Storage 04	VCT	4" RUB	NO	N/A	PTD	ACT	
Men's RR	CT	CT	CT	CT	PTD	GYP BD	
Women's RR	CT	CT	CT	CT	PTD	GYP BD	
Corridor 04	LVT	4" RUB	NO	N/A	PTD	ACT	
CTE Records	LVT	4" RUB	NO	N/A	PTD	ACT	
Corridor 05	LVT	4" RUB	NO	N/A	PTD	ACT	
Custodian	SC	4" RUB	NO	N/A	PTD	ACT	
Boys RR	CT	CT	CT	CT	PTD	GYP BD	
Corridor 06	LVT	4" RUB	NO	N/A	PTD	ACT	
Graphic Design	CPT	4" RUB	NO	N/A	PTD	ACT	
Girls RR	CT	CT	CT	CT	PTD	GYP BD	
Utility Closet	SC	4" RUB	NO	N/A	PTD	ACT	
Storage 05	VCT	4" RUB	NO	N/A	PTD	ACT	
Graphic Design Lab	CPT	4" RUB	NO	N/A	PTD	ACT	
Equip Stor. 01	SC	4" RUB	NO	N/A	PTD	ACT	
Equip. Stor 02	SC	4" RUB	NO	N/A	PTD	ACT	
Raw Mat'ls Storage	SC	4" RUB	NO	N/A	PTD	ACT	
General Lab	CPT	4" RUB	NO	N/A	PTD	ACT	
Shop	SC	NO	NO	N/A	PTD	ACT	VERIFY IN DESIGN

FINISH ABBREVIATION

SC	SEALED CONCRETE
VCT	VINYL COMPOSITION TILE
LVT	LUXURY VINYL TILE
CPT	CARPET
PTD	PAINT
CT	CERAMIC TILE
ACT	ACOUSTICAL TILE

N

1 OVERALL SITE PLAN

NOT TO SCALE

EXHIBIT V

#	ISSUE-DATE	DESCRIPTION
1	10/16/2023	REQUEST FOR PROPOSAL
2		
3		
4		
5		

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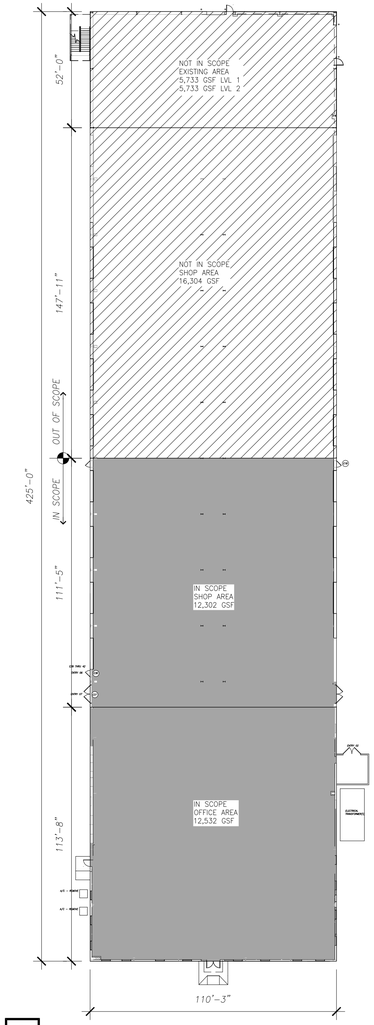
TOMBALL INDEPENDENT SCHOOL DISTRICT
RFQ #956-23 RENOVATION
11211 FARM to MARKET 2920, BLDG 6
TOMBALL, TEXAS 77375

TOMBALL ISD

A0.1

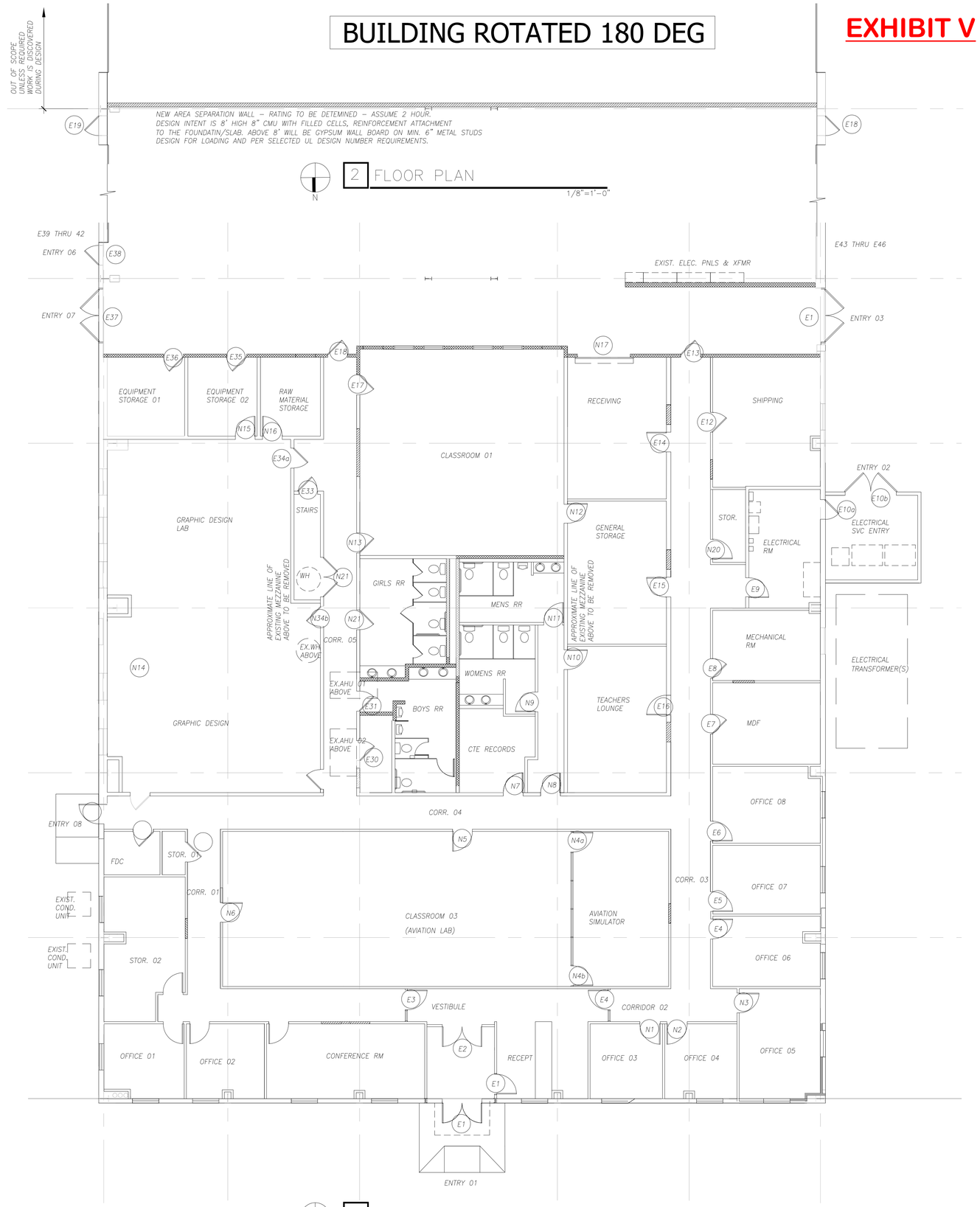
BUILDING ROTATED 180 DEG

EXHIBIT V



2 BUILDING PLAN

1/8"=1'-0"



1 FLOOR PLAN

1/8"=1'-0"

#	ISSUE-DATE	DESCRIPTION
1	10/16/2023	REQUEST FOR PROPOSAL
2		
3		
4		
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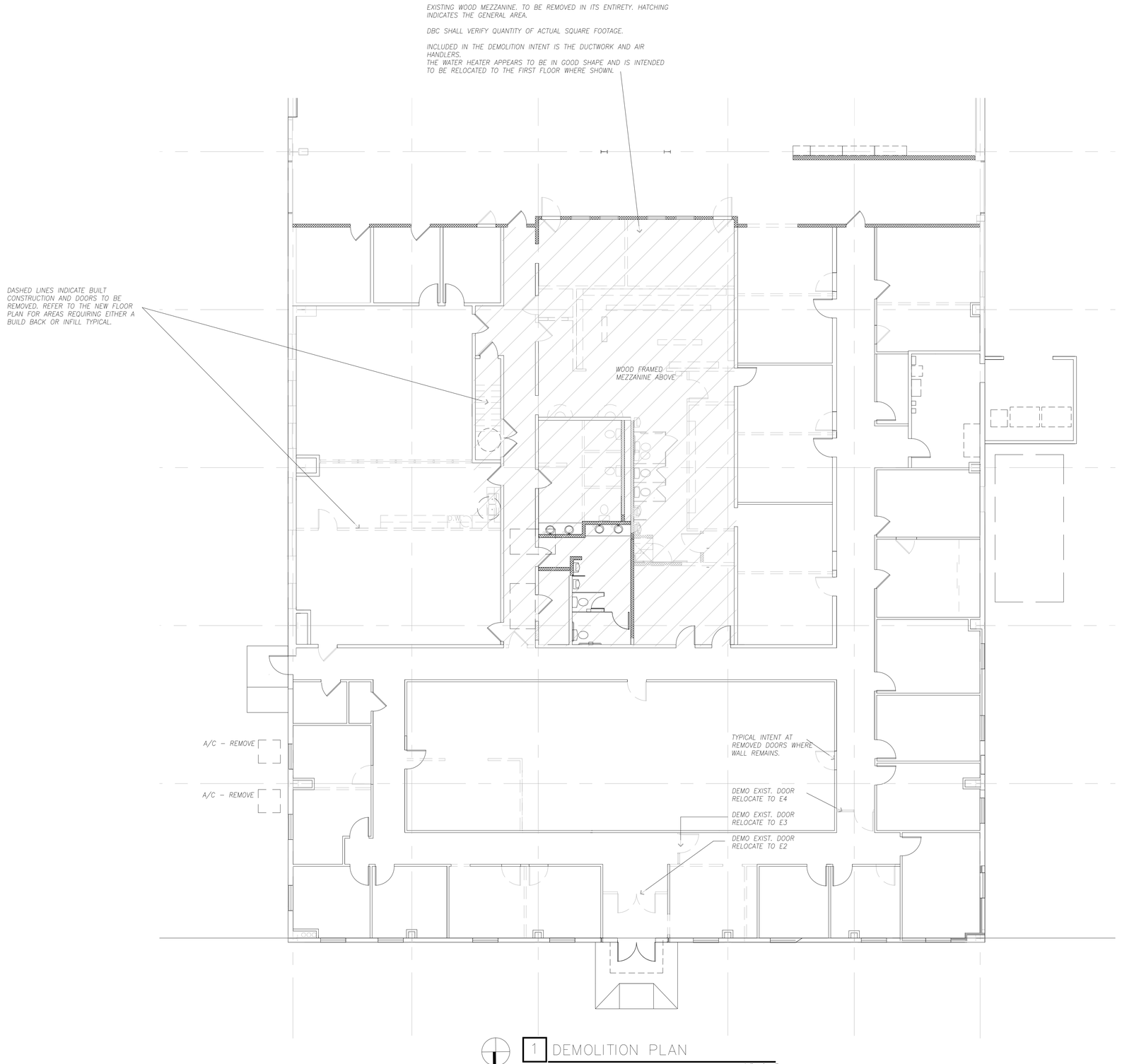
EXHIBIT V

BUILDING ROTATED 180 DEG



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