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| **Revision History** |
| **Revision Date** | **Section/Nature of Revision** |
| **3/1/17** | **Document Issued** |
| **8/21/23** | 1.06 A: added electronic copies and removed three (3) copies1.07 E: added five (5) year parts/one (1) year labor and removed two (2) years2.01: added software to be SignCommand and removed acceptable manufacturers: A Daktronics, Inc. – Galaxy RBG 3550 Series, B Daystar – TEC Star Series, C Hyoco Distribution, Inc. – PCB Series and D Watchfire – Medium or High Resolution 2.02 A 2) a) e) and g): added a) all PCB and LED boards shall have Conformal Coating to protect against moisture, (e LED message center to be open and weatherproof for better viewing and heat control. Unless specified otherwise and removed g) modules will be protected by a specially designed cover of GE Lexan202 B 8) a): added in all cases pre-approved Lifetime Cellular plan unless otherwise specified and removed telephone modem shall not be utilized |

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

The Pinellas County School Board Bidding and Contractual Requirements and General Requirements of Section 00 00 00 Procurement and Contracting Requirements shall apply to all work hereunder.

1.02 SCOPE AND INTENT

Work under this Section consists of providing all necessary services, tools, equipment, material, labor and supervision required to furnish an Electronic Marquee Sign as described herein and required by the drawings and schedules. The intent of this specification is to provide signage that promotes a uniform appearance countywide and establishes component standards for maintenance that will be assumed by the school district after warranty periods have expired.

1.03 REQUIREMENTS OF REGULATORY AGENCIES

1. All work under This Section shall comply with requirements of Department of Education (DOE) of the State of Florida, State Requirements for Educational Facilities (SREF), and to other pertinent codes made a part of such code by reference.

1. Code Compliance:

1) NEMA

2) UL – Latest Edition.

The entire LED display must be manufactured under a single UL or comparable procedure and labeled with an authorized and current UL or comparable label. UL components assembled into an LED display will not satisfy this requirement.

3) ANSI/NFPA 70—National Electrical Code - Latest Edition

4) ASTM D1972- Plastics

5) Florida Building Code - Latest Edition

6) State Requirements for Educational Facilities (SREF) - Latest Edition

7) FDEP/NPDES – Erosion Protection Mechanisms for construction disturbed areas.

1.04 QUALITY ASSURANCE

1. Quality Standards: Provide electronic marquee sign complying with the following standards:

1) Signage and work under this section shall be manufactured by vendors dealing extensively in this type of work and capable of producing first quality work. Vendors shall have at least ten (10) years of experience providing similar LED products and services for other organizations.

2) All work and installation shall be in accordance with the requirements of these Specifications and manufacturer’s recommendations. In the event of disagreement between these specifications and the manufacturer’s recommendations, these Specifications shall govern. All changes from specification requirements shall be approved in writing by the Pinellas County School Board.

3) Contractor will retain Geotechnical Services to determine soil classification and soil bearing capacity and observe performance of work in connection with excavation, trenching, filling, backfilling and grading, and to perform compaction tests. The contractor will select Material Testing Laboratory and Inspection Agency thoroughly experienced in testing of concrete materials and mixes, inspection of high strength bolt connections and visual inspection of field welded connections.

4) Contractor or Subcontractors performing work under this Section shall be regularly engaged in the type of work to be furnished under this Section and shall be licensed under the Florida Construction Industries Licensing Boards for such specialty trades, and such firms shall employ properly qualified foremen, journeymen and apprentices as appropriate and in keeping with best trade practices. Provide, upon request, a list of similar jobs completed.

5) Compliance with Chapter 6 of American Society of Civil Engineers “Minimum Design Loads for Buildings and Other Structures”, ASCE 7-10.

6) Compliance with CRSI “Manual of Standard Practice” and ACI Codes. Comply with standards set forth in NMCA “Manual on Concrete Masonry Workmanship”.

7) Compliance with AISC Specifications and AISC Code. Comply with standards set forth in AISC “Manual of Steel Construction “, Latest Edition.

8) Specify that all welding will be done in accordance with American Welding Society’s AWS D1.0, Latest Edition. Welders shall submit current and valid certificates for review and approval prior to commencement of field or shop welding and certificates shall be valid for the type of joints being made.

9) Compliance with AAMA 2604 “Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.

10) Compliance with Pinellas County School Board Electrical Specifications and Guidelines. Latest edition.

11) All Electrical work, including low voltage, shall be installed by a Licensed Electrical Contractor (EC or ER). Low voltage portion of installation shall be permitted to be installed by a Low Voltage Specialty Contractor (ES or ET).

12) Signs shall be constructed entirely of corrosion resistant/protected metal and noncombustible construction.

1.05 PRODUCT DELIVERY – STORAGE

A. Sign shall be protected during transit, storage, and handling to prevent damage, soiling, and deterioration. Each sign shall be packaged at the factory in polybag wrapping/wood crating, to protect sign from potential damage. I.D. sign and EMC to arrive as one component ready to mount to structure.

B. Upon delivery, Contractor shall inspect shipments to assure compliance with the requirements of the Contract Documents and approved submittal, and that products are undamaged and properly protected. In the event the sign is damaged during shipping the Contractor is to notify the Owner immediately so that the Owner can refuse delivery causing the sign to be returned to the manufacturer for replacement without penalty.

C. On-site material will be properly stored in such a manner that it will not be bent, twisted or otherwise damaged. Material will be stored above the ground on platforms, skids or other means of support furnished by this contractor. Material will be kept free from dirt, water, grease, etc. and will be protected from corrosion. All materials stored on site is the responsibility of the installing Contractor. The Pinellas County School Board is not responsible for lost, stolen or damaged equipment or materials.

1.06 SUBMITTALS

1. Manufacturer's Data

The Contractor shall submit an electronic copy of manufacturer's specifications, technical information and installation instructions to the Pinellas County School Board Project Manager.

1. Shop Drawings

1) Provide current legal survey and title search of proposed location, showing the location and dimensions of all property lines, rights-of-way, easements, and site improvements within and adjacent to a 50’ radius of the location on the property. The location of all existing and proposed freestanding signs must be indicated. Survey should indicate existing trees, proposed trees and landscaping and sight obstructions.

2) Scale drawings showing the dimensions and construction of all existing and proposed sign structures. Drawings including plans, sections, detail connections and associated calculations for new signs, or existing signs being altered, shall be signed and sealed by a Florida Registered Professional Engineer. Drawings of the sign and structure submitted shall include:

* + - 1. Details of the support structure showing the depth and diameter of the foundation and type of the fill material size and wall thickness of pipe, tubing beam, pole or post.

* + - 1. Quantity, size, and spacing of vertical bars and ties of the foundation; quantity, type, length and size of anchors. If J-bolts are utilized, include size, length and type of J bolts.

* + - 1. The sign cabinet showing the type of material and details of the method of attachment to support structure.

* + - 1. If the sign is electrical, the electrical and voltage load in KVA shall be shown.

3) Elevation drawings showing the location and dimensions of all existing and proposed signs with respect to the natural ground elevation. Elevations to indicate finishes and colors for sign components.

4) Signage must be designed by a State of Florida Registered Professional Engineer to withstand hurricane force winds in accordance with Florida Building Code Chapter 16 - Structural Design, with the applicable coefficients, exposure category and factors as outlined in the “Minimum Design Loads for Buildings and Other Structures (ASCE-7)”. Design Professional to provide signed, sealed and dated submittals with appropriate calculations. Submittals shall contain the following design information:

* + - 1. Show configuration, height and size of pole at base and at the tip.

* + - 1. Design should be based on wind load requirements of latest approved issue of Florida Building Code/ASCE 7.

* + - 1. Provide wind load calculation and show all coefficients, exposure category, and factors used.

* + - 1. Show how wind gust factor is obtained.

* + - 1. Indicate safety factor used against overturning.

* + - 1. Calculations made by computer programs shall be provided with the program description.

* + - 1. Computer printouts must be accompanied by sufficient design assumptions and identified input and output information to allow proper evaluation.

* + - 1. Provide deflection calculation and compare result to an allowable deflection.

* + - 1. Provide foundation design calculations.

* + - 1. Indicate allowable bearing pressure used.

* + - 1. Indicate calculated actual lateral bearing pressure based on design loads.

* + - 1. Indicate any soil and/or foundation preparation requirement.

5) Copy of any signage restrictions implemented by the Pinellas County Schools to promote a uniform appearance within the school district. Prior to approving a sign permit application, Pinellas County Schools Building Official or an authorized representative of the building official must authorize the design and placement of each sign, which must be in compliance with these standards.

6) All electrical equipment to be installed.

1.07 SPECIFIED PRODUCT WARRANTY

1. Sign Structure and Sign: Under Normal use and service should the sign structure or sign malfunction during the life of the sign due to defects in workmanship or materials, the Manufacturer will repair or replace any of the defective materials, (with exception of LED lamps and drivers), at the Manufacturer’s expense. Faulty drivers will be exchanged for new drivers for a period of three years from the date of completion of installation.

1. Signs showing any signs of cracking or breakage, as a result of normal wear, not vandalism, shall be replaced under this warranty.

1. The warranty shall also include refinishing and reinstallation which may be required due to repair or replacement of defective sign where a defect was not apparent prior to installation.

1. Manufacturer shall issue a lifetime warranty on polycarbonate sign face. Warranty to cover faces against breakage due to vandalism for the life of the sign. Warranty protection does not extend to these surfaces if damaged by gunshots, or when damaged coincident with the destruction of the sign cabinet.

1. LED Electronic Display- Manufacturer to warrant the LED electronic display to be free from defects in workmanship or materials for a period of five (5) years for parts and one (1) year for labor from the date of Substantial Completion. Damage caused by abuse, misuse, misapplication or accidental damage outside the control of the Manufacturer (including lightning), and any consequential or contingent liability is excluded from the warranty. Manufacturer will repair or replace malfunctioning or defective parts at no cost to the Owner.

1. Contractor shall be responsible for replacement or refinishing of sign where Contractor's, or subcontractor’s work, contributed to rejection or to voiding of manufacturer's warranty.

PART 2 PRODUCTS

2.01 Software

1. To be SignCommand cloud-based software only.

2.02 MATERIALS AND CONSTRUCTION

A. Sign Face/I.D. Panel

 1) Header/I.D. Logo Panel

I.D. Logo Panels contained with the Header Panel are to be fabricated in translucent solar grade .118” G.E. Lexan, polycarbonate SGC-100 with UV inhibitors and a lifetime warranty. Panels are to be decorated internally with “3M” high performance vinyl. Draft of panels to pan-formed into the Lexan to create a distinctive raised perimeter.

2) LED Message Center

Single- or Double-Sided Display.

* 1. All PCB and LED boards shall have Conformal Coating to protect against moisture.
	2. Each display shall consist of a full color matrix configuration where each pixel will incorporate red, green, and blue light emitting diodes.
	3. Pixels shall produce a minimum of 9,000 NITs with field adjustable brightness control.
	4. Standard pixel pitch configurations shall be 10mm. Matrix will utilize modular construction and each module will conform to an 8-pixel high by 16-pixel wide configuration. Note: message center matrix varies according to design detail selected for each project.
	5. LED message center to be open and weatherproof for better viewing and heat control. Unless specified otherwise.
	6. The rest of the sign is to be covered in specially designed GE Lexan.
	7. E.M.C. to be constructed of 100% solid state electronic operating circuitry.
	8. The minimum off center viewing angle shall be 45 degrees.
	9. Message capability shall consist of text, graphics, logos, basic animation and multiple font styles and sizes.
	10. Display dimming shall be automatic, schedules, or manual control.
	11. The estimated LED lifetime shall be 100,000+ hours.

B. LED Sign Cabinet

1) Cabinet

Lightweight, Heavy Gauge #6063T5 extruded aluminum cabinets, double sided (2) each (NEMA Class 4x cabinets) back-to-back. Weatherproof design using level standards NEMA 4x construction. Matching aluminum closure panel provided to join the two cabinets aesthetically together. All corners to be welded with reinforced mitered corners. Cabinet finish is to be baked-on powder coat finish (black). All climate control cabinets with side ventilation/water diverters. Cabinet and equipment enclosure to be waterproof on all sides, at penetration points and locations. Cabinets shall be forced air ventilated design with an air exchange rate of four (4) complete air changes per minute.

2) Vandal Resistant Polycarbonate Face:

Front serviceable, hinged LED sign face made of G.E. Lexan polycarbonate SGC-100 or equal with a lifetime warranty.

3) Hydraulic Lift Hinges:

Gas cylinder assist shocks, one each side of each cabinet face.

4) Controller (CPU) Central Processing Unit

* + - 1. The central processing unit provided in each display shall be a microprocessor-based circuit board assembly. The CPU shall provide 32-shade photo realistic capability.
			2. The input/output shall be USB or equivalent interface.
			3. The CPU assembly also provides automatic memory and program testing at power up, diagnostics, and full talk back.
			4. Unit shall be IP addressable with a network device server.

5) Minimum System Software Requirements.

* + - 1. Scheduling will be made in 12 or 24-hour formats.
			2. Online help will provide excerpts from the Owner’s Manual.

* + - 1. The OS shall be MS Windows and will allow other display software.
			2. Menu guided control.
			3. Support input devices such as a mouse.

* + - 1. Simultaneous display and editing capability.

* + - 1. Automatic rebooting of system disk after power outage: system clock and calendar shall continue to function during power failure.
			2. Shall have password protection capability.

* + - 1. Flexibility shall be achieved through system software and program sequence and schedules which can be stored on cloud-based software.

* + - 1. All operating software will be provided to Owner along with required usage licenses and software updates.

6) Minimum Software Display Functions:

* + - 1. Various Text Modules with Scalable Fonts

* + - 1. Traveling Text
			2. Remote or on-site programming

* + - 1. User friendly menu and icon-based software

* + - 1. Utilize Windows Software based graphics
			2. Scheduling can be pre-programmed years in advance

* + - 1. Menu guided control of all software features
			2. Interfaces with scanners, modems, etc.

* + - 1. Message display holds memory for up to 60 days without power

7) Power Supply and Surge Protective Device (SPD):

* + - 1. The LED display shall be powered by multiple solid-state electronic switching power supplies. A separate power supply for the CPU shall be used to isolate the processor power from the LED driver power.
			2. The electronic switching power supplies shall be short circuit protected by DC “crowbar” cut-off. The electronic switching power supplies shall also be protected by an overload allowance ranging from 105% up to 150%.
			3. The electronic switching power supplies shall have an efficiency rating of a minimum of 78% at full load.
			4. Provide SPD protection online and load voltage side of power supply. SPD shall conform to the following:
				1. UL 1449 Revision 3 Listed
				2. Shall suppress transients up to 60 KA per mode (L-N, L-G, N-G)
				3. Unit shall be non-modular.
				4. Shall carry a five (5) year, unlimited replacement warranty.

e) Technical data sheet for the power supply will be provided.

8) Information Transmission Method Options

* + - 1. In all cases pre-approved Lifetime Cellular plan unless otherwise specified.
			2. Fiber Optic Cable – Run a 1” conduit with pull string, per Division 26 specifications, from the closest data communications closet or patch panel location to the sign location. Maximum distance shall be 1500 feet. Install a four (4) fiber, multimode, direct burial (wet location) cable as per manufacturer’s requirements. Terminate cable on vacant patch panel port in nearest MDF/IDF, if available.
			3. Wireless Ethernet (Wi-Fi):
				1. Maximum distance shall be 1500 feet.
				2. Shall be direct line-of-sight.
				3. Contractor shall install transmitter and connect to LAN.
				4. Contractor shall install receiver at sign.
				5. Contractor shall verify connectivity between computer and sign.
				6. Antennas are to be set to a District address as provided by District TIS Department.

 9) Temperature

Temperature shall be controlled by cloud-based software using local weather reporting offices nearest to the facility.

10) Heating System

At or below 4° C (40° F), internal heater strip(s) will automatically turn on. Air warmed by the heater strip will be blown by circulation fans throughout the enclosure. If the temperature rises to or above 16° C (60° F), then the internal heaters will turn off.

11) Heat Protection

* + - 1. At or above 29° C (85° F), a cooling fan will automatically turn on. If the temperature drops to 19° C (67° F), then the cooling fans will turn off.

* + - 1. At or above 70° C (158° F), over-temperature dimming will occur. The LED output of the sign will automatically be reduced to 50% of its maximum output. If the temperature falls to 60° C (140° F), then the over-temperature dimming will stop.

* + - 1. At or above 80° C (176° F), the sign will automatically shut down to protect against damage. If the temperature falls to 78° C (172° F) or less, the sign will resume.

12) LED Lighting System:

* + - 1. Drivers as specified in Division 26.

* + - 1. Sockets: utilize double contact snap-in lamp holders

C. Support Structure: Fabricate items of structural steel in accordance with AISC specifications.

* + 1. Cowling: pre-finished aluminum cover panels to encase column and yoke covering material and color

* + 1. Yoke: cold-formed steel tubing, ASTM A-500, Grade B. Structural steel tubes to support sign cabinet, shall prevent twisting of sign in high winds.

* + 1. Column: cold-formed steel tubing, ASTM A-500, Grade B. Column to support yoke of sign cabinet.

* + 1. Base Plates: cold-rolled plate, ASTM A-36. Steel base plates welded to columns and fastened to footer with anchor bolts. Base plates to contain welded steel gusset plates as required.

* + 1. Lock Washers and Washers: hardened stainless steel, ASTM A-325

* + 1. Unfinished Treaded Fasteners: Grade A, regular low carbon stainless steel bolts and nuts, ASTM A-307. Provide hexagonal bolts and nuts.

* + 1. Non-shrink Grout: non-metallic pre-mixed grout.

* + 1. Shop prime and painted structural steel paint galvanized metal exposed to view. Refer to Pinellas County Schools Paint/Coatings Specification Section 09 90 00 and paint as follows:

* + - 1. Surface Preparation: SSPC-SP-6 solvent cleaning removal of all detrimental foreign matter such as oil, grease, dirt, soil, salts, drawing and cutting compounds, and other contaminants from steel surfaces by the use of solvents, emulsions, cleaning compounds or other similar materials and methods which involve a solvent or cleaning action.

* + - 1. First Coat: shop prime with two-part surface tolerant epoxy rust-inhibitive primer (SBP-07). Primer to be applied to achieve 5.0 to 10.0 mils minimum DFT per coat.

* + - 1. Field Shop Primer Touch Up: touch up all film breaches after proper surface preparation (SBP-07) with surface tolerant epoxy rust-inhibitive primer (SPB-07) so that all surfaces have the proper mils minimum DFT per coat.

* + - 1. Second Coat: coat with acrylic rust inhibitive primer (SBP-08) applied to achieve 2.0-4.0 mils minimum DFT per coat.

* + - 1. Third Coat: coat with two-part water based polyurethane gloss (SBP-02) applied to achieve 2.0-4.0 mils minimum DFT per coat.
			2. Fourth Coat: coat with two-part water based polyurethane gloss (SBP-02) to full opacity applied to achieve 2.0-4.0 mils minimum DFT per coat.

D. Footing/Foundation: entire sign and footing to be engineered to withstand hurricane wind force taking into account any eccentric loading in accordance with Florida Building Code Chapter 16 – Structural Design and ASCE-7 – “Minimum Design Loads for Buildings and Other Structures”.

* + 1. Anchor Bolts: threaded galvanized steel j-bolts, ASTM A-307.

* + 1. Reinforcement Bars, Ties and Stirrups: Grade 60, ASTM A-615. Attach to anchor bolts to create unitized anchoring system.

* + 1. Bolsters, Chairs, Spacers and other support devices: use wire bar type supports complying with PS 7-66. Wood, plastic, brick and other devices are not acceptable.

* + 1. Form Material: new materials to be used. Sheeting shall be 5-ply plywood, Douglas Fir boards or planks secured to wood or steel stakes, substantially constructed to shape indicated and to support required load. Construct forms complying with ACI 347.

* + 1. Cast-in Place Concrete: engineered footing of adequate size and depth for sign support/wind loads. Mix Design is to be 3000 p.s.i. (minimum at 28 days, 5 sacks of cement per cu. yard of concrete (min.), and 6.5 gallons of water per sack (94 lbs.) of cement (maximum). Use CRSI “Manual of Standard Practice”.

* + - 1. Portland Cement: Type I or IA, ASTM C-150.

* + - 1. Sand: clean, sharp natural sand free of loam, clay, lumps, organics or other deleterious materials. ASTM C-33.

* + - 1. Aggregate: Coarse Aggregate size #57 for regular aggregate, size #8 for small aggregate. ASTM C-33.

* + - 1. Water: potable water, ASTM C-270.

E. Electrical

1) Electrical Conduit Stub-in per Division 26 specifications. Electrical source to be completely contained within sign footer. Utilize conduit runs from sign to panelboard as follows:

a) Exterior Underground Conduit: minimum 1” PVC underground conduit.

b) Exterior Exposed Conduit: minimum 1” rigid galvanized conduit or aluminum rigid conduit.

c) Interior Conduit: Minimum 1” EMT. Conduit. No PVC inside the building.

d) Conceal conduits wherever possible when exiting building to feed sign.

e) Directional boring is the preferred method of underground conduit installation.

2) Grounding:

* + - 1. Grounding Rods: two (2) 5/8” x 10”-0” copper ground rods coupled together to form a 20’-0” length. Ground rods shall be exothermically welded together.
			2. Conductors: #4 solid copper conductors from ground rod to sign support column rebar. Continue #4 tail to splice to branch circuit equipment grounding conductor.

3) Contractor shall verify all underground utilities prior to starting any underground work. Contractor is responsible to provide a Ground Penetrating Radar (GPR) Survey to detect any possible underground utilities or obstructions. In addition to performing a GPR survey, Contractor shall contact “Sunshine State One-Call of Florida” @811 for locates as required by law. Contractor shall walk job prior to any underground work with necessary hand digging as required to ensure safety. Hand dig first 3’0” of all auger drills.

4) All work shall be coordinated with Owner. Contractor shall maintain necessary safeguards, barricades, etc. warning against hazards with minimum interference and no obstructions causing endangerment to the facility’s occupant’s ability to enter and exit facility. All trenching shall be covered daily with no unattended exposed sections.

5) All existing paving, curbing, fencing, playing field, and walks effected by construction shall be restored to their pre-existing condition.

6) All trenches shall be compacted as they are backfilled with grass areas neatly raked adjacent to trench. The grass area shall be restored to its original condition with sod only, no seed allowed. All disturbed areas in the playing field shall be filled in, neatly compacted, leveled and restored to their original conditions with sod.

7) All underground conduits shall be minimum 2’ – 0” below finish grade. Service entrance raceways shall be minimum 3’ – 0” below finish grade. Coilable high-density polyethylene duct (type HDPE) utilized for conduit runs shall be U.L. listed and colored gray. No reduction in conduit size per run shall be allowed.

8) All existing underground systems, i.e., irrigation, etc., shall remain functional and operational during the course of construction. Any damage to systems due to construction shall be the sole responsibility of the contractor to replace or repair to previous or better condition.

9) All exposed conduits shall be rigid aluminum conduit or galvanized rigid steel and fittings.

10) Contractor shall properly dispose of all excavated spoils as required.

11) Provide required bonding between steel pole and ballast’s enclosure, grounding lugs, ground rods, cross arms, fixtures, grounding electrode conductor, etc.

12) All enclosures shall be of the locking type.

13) Prior to work starting, Contractor shall submit routing of conduits for power and controls for Owner’s approval.

14) Contractor shall update all panelboard schedules.

2.03 LOGO HEADER PANEL ARTWORK DESIGN

1. Provide two (2) face panels of solar grade G.E. Lexan polycarbonate SGC-100 with UV inhibitors, school artwork is to be printed on high performance vinyl and shop applied to the inside of each translucent sign face with. The artwork is to be provided by the school and submitted to the School Board Architect for review and approval. Artwork shall contain:

* + - 1. Name of the School
			2. Type of Facility (ex. Elementary, Middle or High School)

In addition to this the logo panel may also include:

1. Graphic of School Mascot
2. School Slogan (ex. Home of the Vikings)

Letter size on the logo panel will primarily be a function of its distance from the road. Letter size selection will be calculated assuming a 1” letter to be readable at 50 feet. Therefore each 1” increase results in an additional 50 feet of readability. Readability of letter size is also predicated on the duration of time a vehicular driver may have to read the contents of the sign message. This time duration begins when the letters first become readable and ends when one passes the sign. A recommended minimum reading time has been determined at 5 seconds. The chart below translates duration of readability (time in seconds) based on factors of Letter Size compared to M.P.H.

DURATION OF TIME (TIME IN SECONDS)

LETTER SIZE

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| MPH |  | 4” | 6” | 8” | 10” |
|  |  |  |  |  |  |
| 25 |  | 5.5 | 8.2 | 9 | 13.6 |
| 35 |  | 3.9 | 5.8 | 7.8 | 9.7 |
| 45 (3.0) |  | 4.5 | 6.1 | 7.6 | 2.5 |
| 45 (3.7) |  | 5.0 | 6.2 |  |  |

The letter size on the sign will be graduated with the largest letter size utilized for the Name of School, followed by the Type of Facility and lastly the School Slogan.

Mascot Graphics will be restricted to a maximum of 25% of the logo panel.

1. The size of the logo panel shall be a function of the above referenced Header Panel approximately 30” x 76”. Height and width shall accommodate artwork design and text requirements.

1. Artwork colors shall be as per the particular school colors or those that closely match manufacturer’s standard colors.

1. Pan-formed draft edge condition shall be rounded edge.

1. Translucent face background shall be either:

* + - 1. Custom color as selected by School Board Architect or PA/E.
			2. Selected from manufacturers standard colors.

1. Unless otherwise prescribed by the school, lettering style shall be either:

* + - 1. Helvetica
			2. Tahoma
			3. Century School Book

1. The Logo panel thickness shall be sufficient to soundly accommodate all requirements of the design and in no case shall be less than .118” in thickness.

1. The Logo panel fastening shall be concealed mounting within the retaining frame of the Header Panel.

2.04 SIGN IDENTIFICATION

Every outdoor sign, for which a permit is required, shall be plainly marked with the name of the company manufacturing and installing the sign and shall have affixed on the front thereof the permit number issued for said sign by the Building Official.

PART 3 EXECUTION

3.01 INSPECTION

1. The Installer shall examine the areas and conditions under which a sign is to be installed and notify the Project Manager in writing of conditions detrimental to the proper and timely completion of this phase of the work. Do not proceed with this phase until the unsatisfactory conditions have been corrected. Commencement of work shall be construed as acceptance of the conditions.
2. The Pinellas County School Board shall reserve the right to inspect the sign and installation for compliance with all code and workmanship requirements. The installing Contractor must notify the Pinellas County School Board Project Manager to coordinate a required inspection.

3.02 SAFETY BARRICADES

1. Comply with all Department of Education requirements pertaining to barricading and site safety precautions as well as other regulatory authorities and agencies.

1. The types of barricades to be specified shall be Safety or Protective Barricades. Safety barricades shall be used to warn or guard vehicles and humans against injury or damage against dangerous conditions such as excavations, overhead items subject to falling, ongoing construction or other dangerous situations.
2. Protective barricades shall be used to protect from damage by vehicle or all other device all trees, shrubs, bushes, manholes, drainage structures or other items which are scheduled or intended to remain permanently in place and are subject to damage. Such protective barriers shall guard such items by six (6) feet of clearance on all sides.

1. All barricades remain in-place until work is substantially complete.

3.03 EXCAVATION AND BACKFILLING

1. Each Subcontractor shall do trench and pit excavating and backfilling inside and outside the building, as required by his work, including shoring and bracing, pumping and protection for the safety of persons and property. Trench excavations performed under this Contract whether by the Contractor or any Subcontractor shall be done in strict compliance with Florida Statute Chapter 553 Part III "The Trench Safety Act" (See Section 553.60-553.64). A contractor performing trench safety shall:

* + 1. As a minimum comply with trench safety standards which are applicable for the project.

* + 1. Adhere to any special shoring requirements, of the state or other political subdivisions which may be applicable to such project.

* + 1. If any geotechnical information is available from the owner, the contractor or otherwise, the contractor performing trench excavations shall consider this information in the contractor’s design of the trench safety system which it will employ on the project.

1. Coordinate timing of excavations in advance with other trades.

1. Excavation shall be open cut from the surface.

1. Hold trench width to a minimum. Hold trench depth to 24”, to top of conduit.
2. Do not excavate utility trenches parallel to building footings closer than four feet (4') from the footings except by approval of the Project Architect/Engineer.

1. Mechanical excavation shall be held to four inches (4") above final grade of the bottom of trench. The remainder shall be shaped by manual excavation, so that piping is fully supported on undisturbed soil. Shoring of piping in trench will not be allowed. Piping must be suspended from above.

1. Wherever trenching or excavating, assume utilities may exist in area without such being shown on the Drawings. Contractor is responsible to provide a Ground Penetrating Radar (GPR) Survey to detect any possible underground utilities or obstructions prior to any excavation activities. In addition to performing a GPR survey, Contractor shall contact “Sunshine State One-Call of Florida” @811 for locates as required by law. Should existing facilities be damaged, repair such to Project Manager/Engineer's satisfaction at no additional cost to the School Board.
2. Remove non-usable excavated material from the site.
3. Provide and maintain bracing, shoring, sheet piling, or sheathing as required to safely support sides of excavations. The Contractor doing the excavation and the Contractor using the excavation are responsible for safety in excavations.
4. This Contractor shall, if necessary, provide and operate pumping equipment to keep excavations free of water. Water from excavations shall be disposed of in such a manner as not to cause injury to public health, property or street surfaces.

1. This Contractor is responsible for repairing and restoring paving, streets, curbs, walks, and other work in the area where excavations are made. Any existing underground piping, conduit, etc. damaged during construction, shall be returned to its original condition suitable to, and at no additional cost, to the Owner. In-ground junction boxes are prohibited.

1. Provide additional excavation and backfill where required to resolve conflicts in buried lines. Provide eight (8") inches (minimum) concrete on all sides of piping that may pass under existing footing.

1. Backfill shall be compacted in layers not exceeding six inches (6") in depth and accomplished by heavy equipment compaction. Completed backfill shall conform to surrounding ground and finished grade and with compaction density requirements. In unpaved areas provide top six (6”) inches of subgrade and subsequent lifts at 98% density. In paved areas provide top eight (8”) inches of subgrade and subsequent lifts at 98% density. During compaction, control moisture of subgrades and subsequent lifts to within tolerances from optimum moisture content as recommended by the Testing Laboratory.

3.04 CONCRETE PLACEMENT

1. General: place concrete in compliance with the recommendations of ACI 614 and as specified herein. Contractor must possess Sign Manufacturer’s Installation Instructions and associated templates, materials and hardware prior to commencement of footing work.

1. Deposit concrete continuously or in layers of such thickness that no concrete will be placed on the concrete which has hardened sufficiently to cause the formations of seams or planes of weakness within the section. Construction joints are not allowable in this application. Perform concrete placement at such a rate that concrete which is being integrated with fresh concrete is still plastic. Deposit concrete as nearly as practical to its final location to avoid segregation due to re-handling or flowing. Do not subject concrete to any procedure which will cause segregation.

1. Screed concrete which is to receive other construction to the proper level to avoid excessive skimming or grouting.

1. Do not use concrete which becomes non-plastic and unworkable, or does not meet the required quality control limits, or which has been contaminated by foreign materials.

1. Pre-placement observation: prior to placing concrete, Contractor shall inspect and complete formwork installation, manufacturer’s template placement, reinforcing steel, and items to be embedded or cast in. Call for Architect/Engineer and Owner review 48 hours prior to scheduled pour: all items listed above shall be in place prior to requesting review.

1. Concrete Conveying: handle concrete from point of delivery and transfer to the concrete conveying equipment and to the location of final deposit as rapidly as practical by methods that will prevent segregation and loss of concrete mix materials.

1. Placing Concrete in Forms:

* + 1. Thoroughly wet down all reinforcing and wash out all forms ½ hour prior to placing concrete.

* + 1. Deposit concrete in forms in horizontal layers not deeper than eighteen (18”) inches and in a manner to avoid inclined construction joints.

* + 1. Remove temporary spreaders in forms where concrete placing has reached the elevation of such spreaders.

* + 1. Consolidate all concert placed in forms by mechanical vibrating equipment supplemented by hand-spading, rodding or tamping. Use vibrators designed to operate with vibratory equipment submerged in concrete, maintaining a speed of not less than 8000 impulses per minute when submerged in concrete.

* + 1. Vibration of forms and reinforcing will not be permitted.

* + 1. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations.

* + 1. Concrete drop into forms limited to forty-eight (48”) inches.

3.05 SIGN STRUCTURE INSTALLATION

1. Install signs in accordance with the manufacturer's written instructions.

1. Installer to provide all labor, materials and equipment necessary to assemble the outdoor marquee.

1. Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads. Provide temporary guy lines to achieve proper alignment of the structure as erection proceeds. Remove temporary connections and members when permanent members are in place and final connections are made.

1. Contractor to notify the School Board Construction Inspector at least forty-eight (48) hours in advance of the time which is proposed to start erection in order that proper observation can be provided.

1. Lift and mount display onto foundation system. Stabilize structure as required. Align and adjust members forming part of the complete structure before fastening permanently. Level and plumb members of the structure within AISC tolerances. Once the structure is square, plumb and level, and anchor bolts tightened, the entire area under the bearing plate will be grouted solidly with non-shrink grout.

1. Connect the sign system to electrical run which is to be provided and installed by Licensed Electrical Contract (EC or ER) which is a sub-contractor to the Sign Contractor, unless otherwise agreed to.

1. Connect sign system to communication run if applicable. Communication feed to be provided and installed by Licensed Electrical Contract (EC or ER) or Low Voltage Specialty license holder.

1. Bond luminaries, metal accessories and metal structure to grounding conductor. Provide supplementary grounding electrode.

1. Provide and install an underground conduit from the closest electrical panel board that has the correct number of spare breakers or spaces and capacity available.

1. Underground pull/splice boxes shall not be permitted.

1. It shall not be permitted to connect to existing pole lighting, branch circuits (pole lights only on at night).

1. Provide and install a properly sized (voltage drop compensated) equipment grounding conductor with branch-circuit conductors and terminate to grounding electrode conductor at sign. If an equipment ground bar is not installed in upstream panelboard, one is to be installed.

1. Provide and install a NEMA 3R, heavy duty, appropriately rated disconnect with label. Label to be located as per NEC. Install phenolic label on disconnect with the following information:

Example:

SIGN DISCONNECT FED FROM

PANELBOARD L11

120/208, 3 PHASE – 4 – W

CIRCUITS #21, 23, 25

1. Sign circuit to be labeled on typewritten panelboard schedule. Circuit added to existing panelboard shall cause relabeling of typewritten panelboard schedule.

3.06 TESTING AND TRAINING

A. On-Site Training and Testing

Vendor will provide factory trained technician to be on site one day to train the school staff in programming the sign. This technician must be completely familiar with the system construction, assembly and testing of equipment. Technician will perform a visual inspection on exterior or newly installed Marquee to ensure proper installation. Technician will set-up the operating computer, test and make operational the control system as well as the display system while on-site. Technician will distribute and review OEM manuals with staff. Technician will provide staff with Vendors contact information for warranty work.

1. Before Initial Power-on, Technician to verify:

* 1. Specified line voltage, wiring convention and circuit breakers are properly supplied.
	2. Fast-acting line surge suppressor installed at supply breaker box.
	3. Properly grounded structure.
	4. All ventilations openings are unobstructed.
	5. Seal all unsealed cabinet perforations.
	6. All display modules are properly mounted and secure.
	7. The temperature sensor is located outside the cabinet and protected from direct sunlight.

1. Post-power-on, Technician to perform the following:

* 1. Transmit a simple text message and verify communication.
	2. Power on/off the sign and ensure that the most recent message is retained in memory. Warning: Do not turn off power until the unit has finished its initial power-on diagnostics (approximately 50 seconds.)
	3. Transmit a full screen test pattern to verify all pixels turn on. For RGB displays use a frame for red, green and blue.
	4. Keep the sign on for a full 24 hours.
	5. Ensure the control PC has the correct time and date.
	6. Program the dimming schedule.
	7. Documentation of successful testing and acceptance shall be provided by the installing Contractor.

3.07 SUBSTANTIAL COMPLETION AND PROJECT CLOSEOUT

A. Project Closeout:

Subsequent to Substantial Completion, Contractor is to submit to the Owner one (1) printed copy plus one (1) electronic original of the ‘As Built’ site plan as field modified from the original shop drawing submittal. Employ skilled draftsmen to document modifications that reflect all changes, corrections and entries made during installation of this scope of work to include: sign, conduit runs and panelboard locations. Label document as “PROJECT RECORD”.

3.08 PROTECTION AND FINAL CLEANING

A. The Contractor shall provide the proper procedures required for protection of installed sign from damage or deterioration until Substantial Completion.

B. The Contractor shall at all times keep the premises free from accumulation of waste material or rubbish caused by his employees or his work.

Normal construction cleaning: for new schools or facilities and new additions, or portions there of not yet certified Substantially Complete and thereafter during holidays as defined above, only normal construction cleaning need be maintained by the Contractor. Such shall include complete removal of debris from the immediate construction areas and adjacent areas to one or more Contractor provided on-site refuse containers. The contractor provided refuse containers shall be emptied no less than once a week.

Special Cleaning: at all other times (except holidays) the Contractor, in addition to normal construction cleaning, shall keep the areas needed by faculty, staff and students free of all debris, materials, storage materials, and trash periodically during the school day hours. Contractor shall clean such areas to “broom clean” status.

Upon completion of the Contract or portions thereof and prior to or shortly thereafter the Date of Substantial Completion, Contractor shall thoroughly clean all exposed surfaces, make such surfaces clean and free of stain or discoloration and restore all damage material to its original condition or replaced with new material. All surfaces shall be left by the Contractor in a first class finished condition as determined appropriate by the Project Manager.

1. Any required cleanup and disposal of waste materials from the site shall be done by and at the expense of the Contractor on the project.

**END OF SECTION**