attached to the CQC Report prepared for the same day.

D. Testing Plan and Registers:

1. As tests are performed, the QC Manager will record on the "Testing Plan and Register" the date the test was performed and the date the test results were forwarded to Owner. Attach a copy of the updated "Testing Plan and Log" to the last daily QC Report of each month.

E. Rework Items List:

1. The QC Manager must maintain a list of work that does not comply with the Contract, identifying what items need to be reworked, the date the item was originally discovered, the date the item will be corrected by, and the date the item was corrected. There is no requirement to report a rework item that is corrected the same day it is discovered. Attach a copy of the "Rework Items List" to the last daily QC Report of each month. The Contractor is responsible for including those items identified by Owner.

F. Redline and As-Built Drawings:

1. The QC Manager is required to ensure the redline and as-built drawings, required by Section 01700 closeout submittals are kept current on a daily basis and marked to show deviations which have been made from the Contract drawings. Ensure each deviation has been identified with the appropriate modifying documentation (e.g. Change Order, Request for Information (RFI), etc.). The QC Manager or QC Specialist assigned to an area of responsibility must initial each revision. Upon completion of work, the QC Manager will furnish a certificate attesting to the accuracy of redline and as-built drawings prior to submission to Owner.

18.01 NOTIFICATION ON NON-COMPLIANCE

A. Owner will notify the Contractor of any detected non-compliance with the Contract Documents. The Contractor shall take corrective action after receipt of such notice per the Contract requirements. Such notice, when delivered to the Contractor at the work site, is deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, Owner may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders will be made the subject of claim for extension of time for excess costs or damages by the Contractor.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

End of Section

SECTION 01410 - TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 PROCEDURE

A. Contractor's Testing Laboratory:

The Contractor will provide the services of an independent testing laboratory acceptable to the Owner to inspect and test the materials and methods of construction as hereinafter specified for compliance with the requirements of the Contract Documents and to perform such other specialized technical services as may be required by the Contractor or Owner to demonstrate compliance. Inspections or testing performed as part of the Contractor's operations will be included as part of the Work. Employment of a testing laboratory will in no way relieve the Contractor of its obligation to perform the Work in accordance with the Contract Documents.

B. Test Register:

The Contractor shall provide a Test Register identifying all required testing in accordance with the contract documents. Register shall be kept updated and used to track test information including, but not limited to, date, time and location of tests.

1.02 QUALIFICATIONS OF CONTRACTOR'S TESTING LABORATORY

A. The Testing Laboratory:

1. The Testing Laboratory selected will meet the basic requirements of ASTM E329 "Standard of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction." The Testing Laboratory will submit to the Owner a copy of the report of inspection of their facilities made by the Materials Reference Laboratory of the National Bureau of Standards during the most recent tour of such inspections and will submit a memorandum stating steps taken to remedy all deficiencies reported by this inspection.

2. The Testing Laboratory selected will meet "Recommended Requirements for Independent Laboratory Qualification", latest edition, as published by the American Council of Independent Laboratories.

B. Testing Machines:

Must be calibrated at intervals not exceeding 12 months by devices of accuracy traceable to the National Bureau of Standards or accepted values of natural physical constants.

C. Tests and Inspections:

Must be conducted in accordance with specified requirements, and if not specified, in accordance with the applicable standards of the American Society for Testing and Materials or other recognized and accepted authorities in the field.

1.03 AUTHORITIES AND DUTIES OF THE LABORATORY:

A. Attending Preconstruction Conferences:

The Testing Laboratory will obtain and review the Project plans and specifications with the Contractor as soon as possible prior to the start of construction. The Testing Laboratory will attend preconstruction conferences as required to coordinate materials inspection and testing requirements with the planned construction schedule. The Testing Laboratory will participate in such conferences throughout the course of the Project.

B. Outline Testing Program:

The Testing Laboratory will be responsible for outlining a written detailed testing program conforming to the requirements as specified in the Contract Documents and in consultation with the Owner and Design Professional. The testing program will contain an outline of inspections and tests to be performed with reference to applicable sections of the Contract Documents and the design drawings and specifications.

C. Cooperation with Design Team:

The Testing Laboratory will cooperate with the Owner, Design Professional, and Contractor and provide qualified personnel promptly on notice.

D. Inspections, Sampling, Testing, Reports and Certifications:

1. The Testing Laboratory will perform the required inspections, sampling, and testing of materials as specified under each Section of the Contract Documents and observe methods of construction for compliance with the requirements of the Contract Documents.

2. The Testing Laboratory will perform all inspections and submit all reports and certifications as required by all governing authorities.

E. Notification of Deficiencies in the Work:

The Testing Laboratory will notify the Owner and Contractor first by email of observed irregularities and deficiencies in the Work and other conditions not in compliance with the requirements of the Contract Documents.

F. Reports:

1. Information on Reports:

a. The Testing Laboratory will submit copies of all reports of inspections and tests promptly and directly to the parties named below. All reports will contain at least the following information:

(1) Project Name.
(2) Project Number.
(3) Date report issued.
(4) Testing Laboratory name and address.

(5) Name and signature of inspector.
(6) Date of inspection and sampling.
(7) Date of test.
(8) Identification of product and Specification Section.
(9) Location in the Project.
(10) Identification of inspection or test.
(11) Record of weather conditions and temperature (if applicable).
(12) Results of test regarding compliance with Contract Documents.
(13) Deficiency log, including deficiencies from previous reports.

2. Copies:

a. The Testing Laboratory will submit certified copies of all test and inspection reports promptly and directly to the following parties through the Owners Project Management Software Inspections and Tests modules:

(1) Owner.
(2) Contractor
(3) Designer of Record.
(4) supplier of the material tested.

3. Certification by Notary Public:

Upon completion of the job, the Testing Laboratory will furnish to the Owner a statement, under oath and notarized by a Notary Public, that all required tests and inspections were made in accordance with the requirements of the Contract Documents.

4. Accounting:

The Testing Laboratory will be responsible for separating and billing costs attributed to the Owner and costs attributed to the Contractor where appropriate, in accordance with the Contract Documents.

5. Obtaining Product and Material Certifications:

The Testing Laboratory will be responsible for obtaining all product and material certifications from manufacturers and suppliers as specified in the Specifications.

6. Limitations of Authority:

The Testing Laboratory is not authorized to revoke, alter, relax, enlarge upon or release any requirements of the Specifications or to approve or accept any portion of the Work or to perform any duties of the Contractor and its Subcontractors.

1.04 CONTRACTOR'S RESPONSIBILITY

A. Cooperation:

The Contractor will cooperate with laboratory personnel and provide access to the Work and manufacturer's operations.

B. Furnishing Samples:

The Contractor will provide to the laboratory representative samples of materials proposed for use in the Work in quantities sufficient for accurate testing as specified.

C. Furnishing Labor, Equipment and Facilities:

The Contractor will furnish labor, equipment, and facilities as required for sampling and testing by the laboratory and otherwise facilitate all required inspections and tests.

D. Advance Notice:

The Contractor will be responsible for notifying the Testing Laboratory sufficiently in advance of operations to allow for assignment of personnel and scheduling of tests.

E. Payment for Substitution Testing:

The Contractor will arrange with the Testing Laboratory and pay for any additional samples and tests above those required by the Contract Documents as requested by the Contractor for its convenience in performing the Work.

F. Notification of Source Change:

The Contractor will be responsible for notifying the Owner and Testing Laboratory when the source of any material is changed after the original tests or inspections have been made.

G. Tests for Suspected Deficient Work:

If, in the opinion of the Owner, any of the Work of the Contractor is not satisfactory, the Contractor will make all tests that the Owner deems advisable to determine its proper construction. The Owner will pay all costs if the tests prove the questioned work to be satisfactory.

H. Associated Services: The Contractor shall cooperate with the Owner and with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested. The Contractor shall notify the Owner and the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required of the Contractor include but are not limited to the following:

1. Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests.

2. Taking adequate quantities of representative samples of materials that require testing or assisting the agency in taking samples.

3. Providing facilities for storage and curing of test samples, and delivery of samples to testing laboratories.

4. Providing the agency with a preliminary design mix proposed for use for materials mixes that require control by the testing agency.

5. Security and protection of samples and test equipment at the Project site.

1.05 PAYMENT OF TESTING LABORATORY

The Contractor will pay for the initial Testing Laboratory services for testing of materials for compliance with the requirements of the Contract Documents. The Contractor will pay for testing and retesting of materials that do not comply with the requirements of the Contract Documents and all other items as specified in these Specifications.

PART 2 - PRODUCTS

Not Used.

PART 3 – EXECUTION

3.01 SCOPE OF WORK

The work to be performed by the Testing Laboratory will be as specified in this Section and as determined in meetings with the Owner and Contractor. These are the Owner's minimum requirements; more stringent requirements may be required by the technical specifications.

3.02 STRUCTURAL STEEL

A. Contract Obligations:

1. The Contractor will pay for all initial shop and field inspections and tests as required during the fabrication and erection of the structural steel.

2. The Contractor will pay for and arrange with the Testing Laboratory for the certification of all shop and field welders. Each bolting crew and welder will be assigned an identifying symbol or mark and all shop and field connections will be so identified so that the inspector can refer back to the person or crew performing the work. The costs of all retesting of material or workmanship not in conformance with the Contract Documents will be borne by the Contractor. The fabricator and erector will provide the Testing Laboratory inspector with access to all places where work is being done. A minimum of 24 hours notification will be given prior to commencement of work.

3. The Contractor will provide the Testing Laboratory with the following:

a. A complete set of Contractor's and Design Professional's approved shop and erection drawings including all revisions and addenda.

b. Cutting lists, order sheets, material bills, shipping bills and mill test reports.

c. Information as to time and place of all rollings and shipment of material

to shops.

d. Representative sample pieces requested for testing.

e. Full and ample means and assistance for testing all material.

f. Proper facilities, including scaffolding, temporary work platforms, hoisting facilities, etc., for inspection of the work in the mills, shop and field.

B. Testing Laboratory Responsibility:

1. The inspection of shop work by the Testing Laboratory will be performed in the fabricator's shop to the fullest extent possible. Such inspections will be in sequence, timely, and performed in such a manner as to minimize disruptions in operations and to permit the repair of all nonconforming work while the material is in process in the fabricating shop. Inspection of field work will be completed promptly so that corrections can be made without delaying the progress of the work.

2. Inspections will be performed by qualified technicians with a minimum of two years experience in structural steel testing and inspection. All inspection personnel will be certified in accordance with AWS QC-1. The Testing Laboratory will provide tests reports of all shop and field inspections. Shop test reports will include shop welders certifications. All test reports will indicate types and locations of all defects found during inspection, the measures required and performed to correct such defects, and statements of final approval of all welding and bolting of shop and field connections and other fabrication and erection data pertinent to the safe and proper welding and bolting of ship and field connections. In addition to the parties listed in this Specification, the fabricator and erector will receive copies of all test reports.

C. Rejection of Material or Workmanship:

The Owner, Contractor, and Testing Laboratory reserve the right to reject any material or workmanship not in conformance with the Contract Documents at any time during the progress of the Work. However, this provision does not allow waiving the obligation for timely, in sequence inspections.

D. Mill Tests of Structural Steel:

Mill Order Steel: The fabricator will furnish certified mill test reports and an affidavit stating that the structural steel furnished meets the requirements of the grade specified on the structural drawings for all mill order steel. In case of controversy, tests of the material according to ASTM A6 or A568, as applicable, made by the Testing Laboratory with certified test reports paid for by the Contractor will be made to verify conformity with ASTM standards. Tests will be made for each 10 tons of material used, unless approved otherwise by the Owner.

E. Local Stock Steel:

1. Materials taken from stock by a fabricator for use for structural purposes must be of a quality at least equal to that required by the ASTM specifications applicable to the classification covering the intended use. Certified mill test reports will be accepted as sufficient record of the quality of materials carried in stock by the fabricator provided the stock steel can be identified by heat or melt numbers. In case of controversy, tests by the Testing Laboratory with certified reports as specified for mill order steel will be required.

2. If tests are required, test specimens will be taken by the Contractor under the direction of its Testing Laboratory and will be machined by the Testing Laboratory to dimensions as required by the applicable ASTM standards.

F. Shop Inspections and Tests:

1. The Testing Laboratory will provide inspection at the designated fabrication shops for the designated periods of time to perform shop inspection and tests. The designated fabrication shops and time periods of inspection will be determined in consultation with the Owner prior to the start of fabrication in a timely manner so as to not delay the fabrication process. The following tests and inspections will be performed:

a. Review shop drawings and shop procedures with fabricator's supervisory personnel.

b. Request and obtain necessary mill certifications of steel and verify proper material throughout the duration of the Project.

c. Verify welding qualifications either by prequalification or by witnessing qualification tests.

d. Verify welder qualifications either by certification and/or by retesting. Obtain welder certificates.

e. Check layout and dimensions of jigs and fixtures for multiple fabrication, joint preparation, and fit up of members.

f. Verify welding electrodes to be used and other welding consumables as the Project progresses.

g. Check preheating procedures for uniformity and thoroughness through the full thickness of the material. Inspect preheating and interpass temperatures for conformance to AWS D1.1, Table 4.2. Verify procedure for control of distortion and shrinkage stresses.

h. Verify procedures for welding in accordance with applicable portions of Section 4, "Technique", AWS D1.1.

i. Inspect welding equipment for capacity, maintenance, and working condition.

j. Perform random dimensional checks of completed members.

k. Provide inspection of surface preparation for coating and coating operations.

l. Check shipping preparation schedules and obtain copies of shipping lists.

m. Check bolted connections according to inspection procedures outlined in the "Specification for Structural Joints" using ASTM A325 or A490 Bolts.

n. Make visual inspection of welding in progress for size, length, and quality.

o. Perform nondestructive examination services for various weldments of shop fabrication determined in consultation with the Contractor and Owner prior to the start of fabrication. The testing agency will submit recommendations to the Owner for approval as to the type of nondestructive inspection methods best suited to the member being tested. Specifically, the Testing Laboratory will provide a qualified technician with the necessary equipment to perform the following:

(1) Nondestructive examination conduct in accordance with the specific requirements for the item being examined including radiographic, ultrasonic, magnetic particle, or dye penetrate inspection. All nondestructive inspection procedures will conform to Section 6 of AWS D1.1.

(2) Interpret, record, and report all results of the nondestructive tests.

(3) Mark for repair any area not meeting Specifications requirements. Correction of rejected welds will be made in accordance with Paragraph 3.7, "Corrections," AWS D1.1.

(4) Re-examine all repair areas and interpret, record, and report the results of examinations of repair welds.

p. Verify that quality of welds meet the requirements of Paragraph B.15, "Quality of Welds," AWS D1.1.

q. Unless otherwise specified, test all partial and complete penetration welds in connections of beams, girders, columns, trusses, and braces. Test a minimum of 10% of connections with fillet welds. Increase the testing rate for welders having a high rejection rate as required to ensure acceptable welds. Visual inspection is required for all welds. The costs of repairing all defective welds and the costs of retesting by the Testing Laboratory will be borne by the Contractor. If removal of a backing strip is required by the Testing Laboratory to investigate a suspected weld defect, such cost will be borne by the Contractor.

G. Field Inspections and Tests:

1. The Testing Laboratory will provide inspection in the field in a timely manner for

a period of time as determined in consultation with the Owner prior to the start of erection so as to not delay the start of erection. The following tests and inspections will be made:

a. Obtain the planned erection procedure and review with the erector's supervisory personnel.

b. Check the installation of base plates for proper leveling, grout type, and grout application.

c. Verify field welding procedures and obtain welder certificates.

d. Check steel as received in the field for possible shipping damage, workmanship, and piece marking.

e. Check plumbness and frame alignment as erection progresses.

f. Check required camber of floor beams.

g. Check joint preparation and fit up, backing strips, and runout plates for welded moment connections and column splices.

h. Check preheating to assure proper temperature, uniformity, and thoroughness through the full material thickness.

i. Review welding sequence.

j. Visually inspect all field welding for size, length, and quality.

k. Perform nondestructive examination services for various weldments of field erection determined in consultation with the Contractor and Owner prior to the start of erection. The Testing Laboratory will furnish a qualified technician with the necessary equipment to perform radiographic, ultrasonic, magnetic particle, or dye penetrant inspection as required for the item being tested and other duties as outlined for shop inspection in the previous Section. Unless specified otherwise, check all partial and complete penetration welds in connections of beams, girders, columns, and braces. Check 10% of connections with fillet welds. Visual inspection is required for all welds.

l. Check calibration of impact wrenches used in field bolted connections.

m. Check high strength friction field bolted connections according to inspection procedures outlined in the "Specification for Structural Joints Using ASTM A3256 or A490 Bolts". Unless specified otherwise, test 10% of the bolts, but not less than two bolts, selected at random in each connection. If any bolt is found to be improperly tightened, test all bolts in the connection. Visually inspect all bearing type bolts to verify that the bolts are snug tight.

n. Visually inspect the welding of metal deck to the structure.

o. Perform field tests on 10% of completed shear connectors in each beam according to inspection procedures outlined in AWS D1.1.

2. The costs of repairing all defective welds and the costs of retesting by the Testing Laboratory will be borne by the Contractor. If removal of a backing strip is required by the Testing Laboratory to investigate a suspected weld defect, such cost will be borne by the Contractor.

H. Tests and Inspection of Sprayed-On Fireproofing:

1. The Testing Laboratory will confirm that sprayed-on fireproofing conforms to all performance criteria as specified in the Project Specifications by obtaining and reviewing manufacturer's certification or test reports.

2. The Testing Laboratory will sample sprayed-on fireproofing at each floor for each day's operations and verify oven dry density and compression strength as specified on the Drawings.

3. The Testing Laboratory will verify proper installation method, proper material, and proper material thickness for each day's operation.

4. The Testing Laboratory will randomly inspect the thickness of the sprayed-on fireproofing as specified in the UL designation numbers on the Drawings.

3.03 NON-SHRINK GROUT FOR BASE PLATES

A. Compressive Strength Tests (by the Testing Laboratory):

1. Compressive strength of grout will be determined by testing four cubes two inches in dimension according to the requirements of ASTM C109 "Compressive Strength of Hydraulic Cement Mortars." Each strength test will be the average of two 28 day strengths. Test one cube at seven days, two at 28 days, and one at 56 days, only if either 28 day test is low.

2. Frequency of Testing: One set of cubes (four cubes) will be made for every ten base plates and bearing plates or fraction thereof cut not less than one set for each day's operation. One set of cubes will be made for each day's operation of grouting wall panels.

END OF SECTION

SECTION 01505 - TEMPORARY FACILITIES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Specific administration and procedural minimum requirements are specified in this Section as extensions of this Contract as modified and other Contract Documents. Provisions of this Section are applicable to, but not by way of limitation, utility services, construction facilities, security and protection provisions, and support facilities. This Section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, security and protection.

B. The Contractor will furnish, install, maintain, and protect temporary utilities, construction facilities, and controls necessary for construction at locations and in a manner which will be safe, nonhazardous, sanitary, protective of persons and property, and free of deleterious effects.

C. The Contractor will provide and maintain methods, equipment, and temporary construction as necessary to provide controls over environmental conditions at Project site and related areas under Contractor's control.

D. The Contractor will remove physical evidence of temporary facilities upon completion of Work and restore site to original condition to satisfaction of Owner.

E. The Contractor will provide temporary services and facilities ready for use when first needed to avoid delay in the Work. The Contractor will maintain, expand and modify as needed. Do not remove until no longer needed or replaced by authorized use of permanent facilities. Refer to Section 01315 - SCHEDULES, PHASING for additional requirements.

1. Temporary utilities required include, but are not limited to:

a. Water service and distribution.

b. Temporary electric power and light.

c. Telephone service.

d. Storm and sanitary sewer.

e. Building systems.

f. Internet service.

2. Temporary construction and support facilities required include, but are not limited to:

a. Temporary heat.

b. Field offices and storage sheds.

c. Sanitary facilities, including drinking water.

d. Temporary enclosures.

e. Hoists and temporary elevator use.

f. Temporary Project identification signs and bulletin boards.

g. Waste disposal services.

3. Security and protection requirements include, but are not limited to:

a. Temporary fire protection.

b. Barricades, warning signs, lights.

c. Environmental protection.

d. Temporary enclosures.

1.02 GENERAL DEFINITIONS

A. Energy Considerations: Administer the use of temporary facilities in a manner which conserves energy without delaying Work or endangering persons or property. The Contractor will comply with reasonable requests by the Owner.

B. Costs: Except as otherwise indicated, Contractor will pay for all costs associated with the temporary facilities, including use charges. Temporary facilities remain the property and responsibility of the Contractor.

C. Dust Control: Adequate measures will be taken by the Contractor to prevent the transfer of dust to all other areas.

D. Noise Control: Where Work is being conducted in or adjacent to occupied areas, the Contractor will make every effort to keep construction noise to a minimum.

E. Environmental Protection: Contractor will review exposure to possible environmental problems with the Owner and Design Professional. Contractor will establish procedures and discipline among tradesmen and provide needed facilities which will protect against environmental problems (erosion control at all laydown areas and trailer compounds, pollution of air, air quality, water and soil, excessive noise, and similar problems).

1.03 QUALITY ASSURANCE

A. Regulations: The Contractor shall comply with industry standards and applicable laws and regulations of authorities having jurisdiction, including, but not limited to:

1. Building Code requirements.

2. Health and safety regulations.

3. Utility company regulations.

4. Police, Fire Department and Rescue Squad rules.

5. Environmental protection regulations.

B. Standards: Comply with the requirements of NFPA Code 241, "Building Construction and Demolition Operations", ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition", and the NECA Electrical Design Library, "Temporary Electrical Facilities."

1. The Contractor shall refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services," prepared jointly by AGC and ASC, for industry recommendations.

2. The Contractor shall comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with National Electric Code (NFPA 70).

C. Inspections: The Contractor shall inspect and test each service before placing temporary utilities in use. The Contractor shall arrange for authorities having jurisdiction to inspect and test each temporary utility before use. The Contractor shall obtain required certifications and permits.

1.04 SUBMITTALS

A. Reports and Tests:

The Contractor shall submit copies of reports and permits required or necessary for installation and operation, including reports of tests, inspections and meter readings performed on temporary utilities and permits and legal description of easements necessary for installation, use and operation.

B. Implementation and Termination Schedule:

The Contractor shall submit a schedule indicating implementation and termination of each temporary utility within 15 days of the date established for commencement of the Work.

1.05 PROJECT CONDITIONS

A. Temporary Utilities:

At the earliest feasible time, when acceptable to the Owner and Design Professional, change over from use of temporary service to use of permanent service.

B. Conditions of Use:

The Contractor shall keep temporary services and facilities clean and neat in appearance. The Contractor shall operate in a safe and efficient manner. The Contractor shall take necessary fire prevention measures. The Contractor shall not overload facilities or permit them to interfere with progress. The Contractor shall not allow hazardous, dangerous or unsanitary conditions, or public nuisances to develop or persist on the Project site.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General: The Contractor shall use qualified tradesmen for installation of temporary services and facilities, or to disconnect existing services or facilities that must be temporarily removed to complete the Work. The Contractor shall locate temporary services and facilities where they will serve the entire Project adequately and result in minimum interference with performance of the Work and the operation of the Airport.

B. The Contractor shall ensure that the proper permits are secured before starting any utility Work. The Contractor shall require that tradesmen accomplishing this Work be licensed as required by local authority for the Work performed.

C. The Contractor shall relocate, modify, and extend services and facilities, as required, during the course of the Work so as to accommodate the entire Work of the Project. The Contractor shall not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.02 TEMPORARY STAGING AREAS

A. The staging area(s) located within the property defined as Tampa International Airport to be used to house the Contractor's field offices will be coordinated with Owner. The layout of the staging area(s) will be coordinated with the Owner.

B. The Contractor may provide a trailer or portable type field office for its own use. Location of field office will be approved by the Owner. Costs for connections to utilities will be paid for by the Contractor. Water, electric and telephone may be available at that location. The Contractor is responsible for obtaining and paying for all utilities that it requires.

C. The Contractor may erect and maintain throughout the life of the Contract, at Contractor's expense, a six foot high chain link fence around the perimeter of each staging area used within the Economy Garages. Contractor may also install vehicle and pedestrian gates as necessary to provide adequate ingress/egress to its exclusive sites.

The Contractor is solely responsible for its own security. Upon completion of all Work, Contractor shall remove all construction barricades from the Project site.

3.03 TEMPORARY STORAGE AND SPOIL AREAS

A. The Contractor's vehicles, equipment, and materials will be stored in the staging area per the Owner. Upon completion of the Work, the storage areas will be cleaned-up and returned to their original condition to the satisfaction of the Owner. No special payment will be made for clean-up and restoration of the storage area. Personal vehicles will not be permitted beyond the Contractor's staging area. Drivers of personal vehicles being operated beyond the Contractor's staging area will be subject to loss of permission to enter the construction site.

B. Stockpile areas will be used to store all materials needed for the Project and may or may not be fenced at the Owner's option. However, red flashing barricades will be installed where potential conflicts with air or ground vehicular traffic might occur. Stockpiles will not penetrate the FAR Part 77 imaginary surfaces. Stockpile areas will be used to store all materials needed for the Project and must be accommodated within the work area.

C. If storage areas are needed, the Contractor will request them from the Owner. The request will be reviewed on the basis of what is to be stored and the area needed. The Contractor will provide all necessary fencing and/or security.

D. All waste material, including rubble and debris, and environmental hazardous material will be removed from the Airport at the Contractor's expense. No hazardous materials will be stored within the Airport complex. Burning on Airport property is prohibited.

E. Equipment not in use during construction, nights, and/or holidays will be parked in the staging area. Exceptions will only be approved by the Owner when absolutely necessary. Parking of construction worker's private vehicles will also be within the staging area.

3.04 TEMPORARY UTILITY INSTALLATION

A. General:

1. The Contractor will coordinate the requirements for temporary utilities with the Owner and will install at the Contractor's expense all necessary utilities in a safe, acceptable manner. Should leaks, breaks, etc., occur during installation or use, the Contractor will immediately notify the Owner and the appropriate utility personnel and promptly repair the utility so as to keep disruption of service to a minimum.

2. Engage the appropriate local utility company to install temporary service or connect to existing service. Where the company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with the company's recommendations.

a. Arrange with the company and existing users for a time when service can be interrupted, where necessary, to make connections for temporary

service.

b. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.

c. Cost or use charges for temporary facilities are not chargeable to the Owner, with exception of the utilities furnished by the Owner as defined under Section 01505, Item 3.04, Paragraph B.1 and Item 3.04, Paragraph C.1., and will not be accepted as a basis of claims for a Change Order. All utility costs shall be at the Contractor's expense.

B. Water Service:

1. General: The Contractor will provide and pay for all water except within existing building structures where, if possible, the Owner will furnish water at the nearest available potable water outlet. Water connection (without charge) to Owner’s existing potable water system is limited to one 3/4" pipe-size connection, and a maximum flow of 10 gpm to the cold water supply. The Contractor shall install using vacuum breakers or other backflow preventer as required by local authority.

a. The Contractor shall maintain hose connections and outlet valves in leak proof condition. Where finish work below an outlet might be damaged by spillage or leakage, the Contractor shall provide a drip pan of suitable size to minimize the possibility of water damage. The Contractor shall drain water promptly from pans as it accumulates.

2. Temporary Water Service Connection: Contractor may use the Owner’s water as described above in Paragraph 3.04, B.1. for this Project; however, all connections to the Owner’s water system will include backflow protection. Valves will be temperature and pressure rated for operation of the temperatures and pressures encountered. After completion of use, connections and fittings will be removed without damage or alteration to existing water piping and equipment. Leaking or dripping valves will be piped to the nearest drain or located over an existing sink or grade where water will not damage existing finishes or equipment.

3. Water Hoses: The Contractor shall employ heavy-duty abrasion-resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system to provide water into each work area. The Contractor shall provide fittings as required to allow for connection to existing wall hydrants or spouts, as well as temporary water heating equipment, branch piping, showers, shut-off nozzles and equipment.

4. The Contractor shall install water service and distribution piping of sizes and pressures adequate for construction until permanent water service is in use.

5. The Contractor shall sterilize temporary potable water piping prior to use.

6. Non-Potable Water: Where non-potable water is used, the Contractor shall mark each outlet with adequate health-hazard warning signs.

C. Electrical Service:

1. General: The Contractor will provide and pay for all electricity. The Contractor is responsible for obtaining and paying for all required permits and for temporary electric connections, maintenance, installation and removal, and other attributable costs.

a. The Contractor shall provide a weatherproof, grounded temporary electric power service and distribution system of sufficient size, capacity, and power characteristics to accommodate performance of Work during the construction period. The Contractor shall install temporary lighting adequate to provide sufficient illumination for safe work and traffic conditions in every area of Work.

b. The Contractor shall supply temporary electrical service to construction site utilizing a State of Florida Certified Electrician. Contractor will comply with applicable NEMA, NECA and UL standards and governing regulations for materials and layout of temporary electric service.

c. The Contractor shall provide weather tight, grounded, temporary electrical service-entrance and distribution system, with automatic ground-fault circuit interrupters and ground-fault interrupter features of proper types, sizes, electrical ratings and characteristics to fulfill Project requirements during construction period.

d. The Contractor shall provide meters, transformers, and over current protective devices at main distribution panel for power and light circuitry. Provide disconnections for equipment circuits. The Contractor shall coordinate installation of all temporary wiring with the Owner.

e. The Contractor shall connect service to local power company main supply in the manner directed by utility company officials. The Contractor shall pay usage charges for electricity used by entities authorized to perform the Work at the Project site. The Contractor shall exercise control over power usage to conserve energy.

f. Except where overhead service must be used, the Contractor shall install electric power service underground.

g. The Contractor shall provide temporary power, telephone, and system connections, where required by the Owner, to continue operation of existing equipment or systems during construction.

h. The Contractor shall replace all damaged receptacles. The Contractor shall provide temporary extension rings, wiring, boxes, and related hardware to allow power, telephone, and systems to function normally

during the interim period between removal of existing surface treatment(s) and installation of new treatment.

i. All electrical conductors for temporary power and lighting will be placed in conduits if exposed to public view. All temporary wiring for communication, security, fire protection and signal systems will be installed in accordance with all appropriate codes and will also be placed in conduits if exposed to public view.

2. Power Distribution System:

a. All wiring and grounding will meet all safety requirements of the National Electrical Code and all federal, state and local requirements. In addition, all wire will be so sized that it is not overloaded according to the National Electrical Code, and all wire used will be fused to adequately protect that wire according to the National Electric Code referred to.

b. The Contractor shall provide circuits of proper sizes, characteristics, and ratings for each use indicated. The Contractor shall install wiring overhead and risers vertically where least exposed to damage. The Contractor shall provide rigid steel conduit to protect wiring on grade, floors, decks or other areas exposed to possible damage.

c. The Contractor shall provide properly configured NEMA polarized outlets to prevent insertion of 110-120 Volt plugs into higher voltage outlets. The Contractor shall provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light for connection of power tools and equipment.

d. Electric power will be limited to 120-Volts for lighting and hand tools that can be operated on a circuit protected at 15-Amps.

e. The Contractor shall provide grounded extension cords and use “hard service” cords where exposed to abrasion and traffic. The Contractor shall provide weatherproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress.

f. Lockout: In all facilities, wherever possible, the Contractor shall lockout all existing power to or through the Work area as described below. Unless specifically noted otherwise, existing power and lighting circuits to the Work area are not to be used. All power and lighting to the Work area are to be provided from temporary electrical panel described below.

(1) The Contractor shall lockout power to Work area by switching of all breakers serving power or lighting circuits in Work area. The Contractor shall label breakers with tape over breaker with notation “DANGER circuit being worked on.” All panels shall be

locked and all keys shall be under the control of Contractor's Superintendent or the Owner.

(2) The Contractor shall lockout power to circuits running through Work area wherever possible by switching off all breakers serving these circuits. The Contractor shall label breakers with tape over breaker with notation "DANGER Circuit Being Worked On." The Contractor shall sign and date danger tag All panels shall be locked and all keys shall be under the control of Contractor's Superintendent or the Owner. If circuits cannot be shut down for any reason, the Contractor shall label at intervals 4'-0" on center with tags reading, "DANGER Live Electric Circuit Electrocution Hazard."

g. Temporary Electrical Panel: The Contractor shall provide temporary electrical panel sized and equipped to accommodate all electrical equipment and lighting required by the Work. The Contractor shall connect temporary panel to existing facility electrical system. The Contractor shall protect with circuit breaker or fused disconnect. The Contractor shall locate temporary panel as directed by the Owner.

h. Circuit Protection: The Contractor shall protect each circuit with a ground fault circuit interrupter (GFCI) of proper size located in the temporary panel. The Contractor shall not use outlet type GFCI devices.

i. Temporary Wiring: Inside the Work area or above the Work platforms will be type UF non-metallic sheathed cable located overhead and exposed for surveillance. The Contractor shall not wire temporary lighting with plain, exposed (insulated) electrical conductors. The Contractor shall provide liquid tight enclosures or boxes for wiring devices.

j. Number of Branch Circuits: The Contractor shall provide sufficient branch circuits as required by the Work. All branch circuits are to originate at temporary electrical panel.

3. Temporary Lighting:

a. Lockout: In facilities, wherever possible, the Contractor shall lockout all existing power to lighting circuits in Work area. Unless specifically noted otherwise, existing lighting circuits to the Work area are not to be used. All lighting to the Work area is to be provided from temporary electrical panel described above.

b. The Contractor shall provide inside the Work areas or above the Work platforms the following where natural lighting or existing facility lighting does not meet the required light level:

(1) One 200-Watt incandescent lamp per 1,000 square feet of floor

area, uniformly distributed, for general construction lighting or equivalent of a similar nature. In corridors and similar construction traffic areas provide one 100-Watt incandescent lamp every 50 feet. In stairways and at ladder runs in construction areas, provide one lamp minimum per story, located to illuminate each landing and flight. Provide sufficient temporary lighting to ensure proper workmanship everywhere by combined use of daylight, general lighting, and portable plug-in task lighting.

c. The Contractor shall provide lighting in areas where Work is being performed.

d. The Contractor shall provide lighting in any area being subjected to a visual inspection as required to supply a 100 foot candle minimum light level.

e. Wherever overhead floor or roof deck has been installed, the Contractor shall provide temporary lighting with local switching.

f. The Contractor shall install and operate temporary lighting that will fulfill security and protection requirements without operating the entire system, and will provide adequate illumination for construction operations and traffic conditions.

g. The Contractor shall provide general service fluorescent lamps of wattage required for adequate illumination. The Contractor shall protect lamps with guard cages or tempered glass enclosures. The Contractor shall provide exterior type fixtures where exposed to weather or moisture. The Contractor shall provide local switching to allow lights to be turned off in patterns to conserve energy.

h. Number of Lighting Circuits: The Contractor shall provide sufficient lighting circuits as required by the Work. All lighting circuits are to originate at temporary panel.

i. Circuit Protection: The Contractor shall protect each circuit with a ground fault circuit interrupter (GFCI) of proper size located in the temporary panel.

D. Temporary Telephones:

Where existing telephone service is unavailable, the Contractor may install a temporary telephone at the Contractor's own expense. All charges for calls made from such telephone will be paid by the Contractor.

E. Sewers and Drainage:

1. If sanitary sewers are available, the Contractor shall provide temporary

connections to remove effluent that can be lawfully discharged. If sanitary sewers are not available or cannot be used, the Contractor shall provide containers to remove and dispose of effluent off the Project site in a lawful manner.

a. The Contractor shall connect temporary sewers to the municipal system as directed by the City of Tampa Sewer Department Officials.

b. The Contractor shall maintain temporary sanitary sewer facilities in a clean, sanitary condition.

2. If drainage systems are available, the Contractor shall provide temporary connections to remove stormwater that can be lawfully discharged. If drainage systems are not available, the Contractor shall provide drainage ditches, dry wells, stabilization ponds and similar facilities. The Contractor shall provide earthen embankments and similar barriers in and around excavations and subgrade construction sufficient to prevent flooding by runoff of stormwater from heavy rains.

a. The Contractor shall filter out excessive amounts of soil, construction debris, chemicals, oils and similar contaminates that might clog storm sewers or pollute waterways before discharge.

b. The Contractor shall maintain drainage facilities in a clean, sanitary condition. Following heavy use, restore normal conditions promptly.

F. Internet Service:

If available, the Contractor may install internet service at the Contractor's own expense. All charges will be paid by the Contractor.

3.05 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES INSTALLATION

A. General:

1. The Contractor shall locate field offices, storage sheds, sanitary facilities and other temporary construction and support facilities for easy access.

2. The Contractor shall maintain temporary construction and support facilities until no longer necessary for the Work.

3. The Contractor shall provide incombustible construction for offices, shops and sheds located within the construction area, or within 30 feet of building lines. The Contractor shall comply with requirements of NFPA 241.

4. The Contractor will furnish all temporary wiring, piping connection and other apparatus that is needed to operate the utilities and will remove all evidence of same when Work is complete.

5. The Contractor will be responsible for obtaining and paying for utilities that Contractor requests at the Project site, except for the utilities furnished by the Owner as defined under Section 01505, Item 3.04, Paragraph B1 and Item 3.04, Paragraph C1.

6. The Contractor will at all times protect excavations, trenches, buildings, and materials from rain water, ground water, backup and leakage of sewers, drains, other piping, and from water of any other origin, and will remove promptly all accumulation of water. The Contractor will provide and operate all pumps, piping and other equipment necessary to this end.

7. The Contractor shall provide facilities and services as necessary to effectively protect Project from losses and persons from injury during the course of the Work.

8. The existing utilities will not be modified for use by the Contractor.

9. The Contractor shall not interrupt existing services serving occupied or used facilities, except when authorized in writing by the Owner. The Contractor shall provide temporary services during interruptions to existing utilities, as acceptable to the Owner.

10. The Contractor shall provide scaffolds, staging, ladders, stairs, ramps, runways, platforms, railings, hoists, cranes, chutes, other facilities, and equipment required by personnel and required to perform Work and facilitate inspection.

11. The Contractor shall comply with reasonable requests of governing authorities performing inspections.

12. When permanent stairs are available for access during construction, the Contractor shall protect surface by covering to prevent damage and deterioration at time of Substantial Completion.

B. Field Offices:

The Contractor shall provide insulated, weather tight temporary offices of sufficient size to accommodate required office personnel at the Project site. The Contractor shall keep the office clean and orderly for Contractor's use, Owner's use and for progress meetings. The Contractor shall furnish and equip offices with adequate furniture, heat, air conditioning, lights, telephones, water cooler, private toilet complete with water closet, lavatory, mirror, medicine cabinet and janitor services. Location of field office will be approved by the Owner. Costs for connections to utilities (electrical power, water, sanitary sewer, etc.) will be paid for by the Contractor. Contractor is responsible for obtaining and paying for all utilities that Contractor requires, except for the utilities furnished by the Owner under Section 01505, Item 3.04, Paragraph B1 and Item 3.04, Paragraph C1.

C. Storage and Fabrication Sheds:

The Contractor shall install storage and fabrication sheds, sized, furnished and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or fully enclosed spaces within the building or elsewhere on the Project site.

D. Temporary Heat:

1. The Contractor shall provide temporary heat required by construction activities, for curing or drying of completed installations or protection of installed construction from adverse effects of low temperatures or high humidity. The Contractor shall select safe equipment that will not have a harmful effect on completed installations or elements being installed. The Contractor shall coordinate ventilation requirements to produce the ambient condition required and minimize consumption of energy.

2. The Contractor shall provide adequate forced ventilation of enclosed areas for curing of installed materials, to disperse humidity, and to prevent hazardous accumulations of dust, fumes, vapors, or gases.

3. Prior to enclosure, the Contractor shall provide heating as necessary to protect Work, materials, and equipment against damage from dampness and cold.

4. The Contractor shall provide connections to existing facilities and extend and supplement with temporary units as required to comply with requirements.

5. The Contractor shall provide temporary heating units that have been tested and labeled by UL, FM or other recognized trade associations related to the type of fuel being consumed.

6. Heating Facilities:

a. Except where use of the permanent system is authorized, the Contractor shall provide vented self-contained LP gas or fuel oil heaters with individual space thermostatic control.

b. Use of gasoline-burning space heaters, open flame, or salamander type heating units is prohibited.

E. Temporary Paving:

1. The Contractor shall construct and maintain temporary roads and paving to adequately support the indicated loading and to withstand exposure to traffic during the construction period. The Contractor shall locate temporary paving for roads, storage areas and parking where the same permanent facilities will be located. The Contractor shall review proposed modifications to permanent paving with the Owner.

2. Temporary paving will comply with applicable requirements of the Florida Department of Transportation (FDOT) Standard Specifications for Road and

Bridge Construction, latest edition, as amended.

3. The Contractor shall coordinate temporary paving development with subgrade grading, compaction, installation and stabilization of subbase, and installation of base and finish courses of permanent paving.

4. The Contractor shall install temporary paving to minimize the need to rework the installations and to result in permanent roads and paved areas that are without damage or deterioration when occupied by the Owner.

5. The Contractor shall delay installation of the final course of permanent asphalt concrete paving until immediately before Substantial Completion. The Contractor shall coordinate with weather conditions to avoid unsatisfactory results.

6. The Contractor shall extend temporary paving in and around the construction area as necessary to accommodate delivery and storage of materials, equipment usage, administration and supervision.

F. Sanitary Facilities:

1. The Contractor shall include temporary toilets, wash facilities and drinking water fixtures. The Contractor shall comply with regulations and health codes for the type, number, location, operation and maintenance of fixtures and facilities. The Contractor shall install where facilities will best service the Project's needs.

2. The Contractor shall provide toilet tissue, paper towels, paper cups and similar disposable materials for each facility. The Contractor shall provide covered waste containers for used material.

3. Toilets:

a. Use of the Owner's existing toilet facilities will not be permitted.

b. The Contractor shall install single occupant, self-contained toilet units of a chemical type, properly vented and fully enclosed with a shell of glass fiber, reinforced polyester or other similar non-absorbent material. Use of pit-type privies will not be permitted. The Contractor shall provide minimum ratio of one toilet per 25 construction personnel, or a greater number of toilets if required by governing regulations. The Contractor shall provide separate toilet facilities for male and female personnel. The Contractor shall thoroughly disinfect toilet facility a minimum of two times each week. The Contractor shall provide means to lock door from outside and keep locked at all times except during hours that construction personnel are at Project.

G. Wash Facilities:

1. The Contractor shall install wash facilities supplied with potable water at convenient locations for personnel involved in handling materials that require wash-up for a healthy and sanitary condition. The Contractor shall dispose of drainage properly. The Contractor shall supply cleaning compounds appropriate for each condition.

2. The Contractor shall provide safety showers, eye-wash fountains and similar facilities for convenience safety and sanitation of personnel.

H. Drinking Water Fixtures:

The Contractor shall provide drinking water fountains including paper supply.

I. Drinking Water Facilities:

1. The Contractor shall provide containerized tap-dispenser bottled-water type drinking water units, including paper supply.

2. Where power is accessible, the Contractor shall provide electric water coolers to maintain dispensed water temperature at 45° to 55° F (7° to 13° C).

3. Drinking and Water Fixtures: The Contractor shall provide drinking water fountains where and when piped potable water, approved by local authorities, is reasonably accessible from permanent or temporary lines. Otherwise, the Contractor shall provide electric cooled bottled water type drinking water units spaced so that personnel at Project site will travel not more than 300 feet.

4. The Contractor will provide all temporary lines and connection from existing sources of the water as required for the Work. The Contractor shall be responsible for proper drainage of water used.

J. Dewatering Facilities and Drainage:

The Contractor shall maintain construction work free of water accumulation. The Contractor shall not endanger the Work or adjacent properties.

K. Miscellaneous Facilities:

The Contractor shall provide miscellaneous facilities as needed, including ladders, runways, shoring, scaffolding, railing, bracing, barriers, closures, platforms, temporary partitions, and similar items.

L. Temporary Enclosures:

1. The Contractor shall provide temporary enclosure for protection of construction in progress and completed from exposure, foul weather, other construction operations and similar activities.

2. Where heat is needed and the permanent building enclosure is not complete,

the Contractor shall provide temporary enclosures where there is no other provision for containment of heat. The Contractor shall coordinate enclosure with ventilation and material drying or curing requirements to avoid dangerous conditions and effects.

3. The Contractor shall install barricades securely with incombustible wood framing and other materials. The Contractor shall close openings of 25 square feet or less with plywood or similar materials.

4. The Contractor shall close openings through floor or roof decks and horizontal surfaces with load-bearing wood-framed construction.

5. Where temporary wood or plywood enclosure exceeds 100 square feet in area, the Contractor shall use UL-labeled fire-retardant treated material for framing and main sheathing. For job-built temporary offices, shops and sheds within the construction area, the Contractor shall provide UL labeled, fire treated lumber and plywood for framing, sheathing and siding.

M. Temporary Lifts and Hoists:

The Contractor shall provide facilities for hoisting materials and employees. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities. The Contractor shall not permit employees to ride hoists which comply only with requirements for hoisting materials.

N. Temporary Elevator Use:

The Contractor shall use Owner's Service Elevator ONLY, upon Owner's approval.

O. Project Identification and Temporary Signs:

1. The Contractor shall prepare project identification and other signs of the size indicated. The Contractor shall install signs where indicated to inform the public and persons seeking entrance to the Project.

2. Contractor's identification sign located at its staging area:

a. Contractor may provide one 8 foot x 4 foot x 3/4" exterior grade plywood sign, properly supported with bottom 6 foot above grade. The Contractor shall engage professional sign painter to apply graphics and lettering as approved by Owner. NO OTHER SIGNS ARE PERMITTED WITHIN THE AIRPORT COMPLEX.

b. All signs must be pre approved by Owner. Signs must follow the Owner's standards with regards to font, style, color, and size. When appropriate, the temporary sign shall closely resemble the final sign.

P. Stairs:

Until permanent stairs are available, the Contractor shall provide temporary stairs where ladders are not adequate. The Contractor shall cover finished permanent stairs with a protective covering of plywood or similar material so finishes will be undamaged at the time of acceptance.

3.05 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. General:

1. The Contractor shall provide a neat and uniform appearance in security and protection facilities acceptable to the Owner. The Contractor shall maintain site in a safe, lawful and publicly acceptable manner. The Contractor shall take necessary measures to prevent erosion.

2. Temporary Construction Barricades:

a. A barricade plan will be submitted to and approved by the Owner prior to the start of any Work. Following approval and subsequent installation of barricades, a representative from the Owner will inspect the Work to insure compliance with the barricade plan and the following requirements.

b. The Contractor will be fully responsible for the protection of the public and adjacent areas during the construction process. The Contractor shall safely isolate the construction areas while maintaining normal airport operations. The Contractor will use temporary barricades of the following types:

(1) Terminal Public Area Short-Term Construction Barricades:

Barricade shall consist of free-standing, high visibility posts with rubber bases supporting 2” wide, high visibility self-retracting belt. The belt shall be at a height of 36” to 42” above the floor and prevent public from entering active work areas. The barricade shall be capable of being erected and removed within the night work limitation hours stated in Section 01315. Barricades shall not damage existing finishes, and any damage resulting from erecting of barricade shall be repaired by Contractor at no cost to Owner.

- The Contractor will provide walk-offs (4’ x 6’ minimum) inside the barricade area and keep the mats and the area in front of the mats clean.

- Erecting and dismantling of all barricades will be performed between the hours indicated elsewhere in the Contract Documents and with prior approval of and

coordination with the Owner.

(3) Road Barricades:

- Roadway barricades will be in accordance with FDOT Roadway and Design Standards and in accordance with the Contract Documents.

c. If at any time barricades are not maintained to these standards, or if the public areas are not protected from excessive noise, dust, or other interference, the Contractor will be required to cease all Work until the non-conforming situation is corrected.

d. The Contractor shall provide warning signs and lighting where needed, including steady burn red lights where appropriate. The Contractor shall comply with recognized standards and code requirements.

e. Contractor will cooperate and coordinate with Owner for installation of all barricades to allow continuous Airport operations. Access will be maintained into all Building Tenant spaces and existing mechanical and electrical control devices.

B. Temporary Fire Protection:

Until fire protection needs are supplied by permanent facilities, the Contractor shall install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. The Contractor shall comply with NFPA 10 “Standard for Portable Fire Extinguishers,” and NFPA 241 “Standard for Safeguarding Construction, Alterations and Demolition Operations.”

1. The Contractor shall locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.

2. The Contractor shall store combustible materials in containers in fire-safe locations.

3. The Contractor shall maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. The Contractor shall prohibit smoking in hazardous fire exposure areas.

4. The Contractor shall provide and maintain temporary fire protection during construction in accordance with requirements of the local protection code.

5. The Contractor shall provide Type “A” fire extinguishers for temporary offices and similar spaces where there is minimal danger of electrical or grease-oil flammable liquid fires. In other locations, the Contractor shall provide type

"ABC" dry chemical extinguishers, or a combination of several extinguishers of NFPA recommended types for the exposures in each case. Extinguishers will have a minimum UL rating of AZ-10BC.

6. The Contractor shall provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.

C. Permanent Fire Protection:

At the earliest feasible date in each area of the Project, the Contractor shall complete installation of the permanent fire protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.

D. Security Enclosure and Lockup:

1. Storage:

Where materials and equipment must be stored and are of value or attractive for theft, the Contractor shall provide a secure lockup. The Contractor shall enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

2. The Contractor shall erect weatherproof closures for exterior openings.

3. The Contractor shall erect and maintain dustproof partitions composed of gypsum board and wood studs to prevent spread of dust, fumes, and smoke to other parts of the building.

E. Environmental Protection:

1. The Contractor shall provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations and minimize the possibility that air, waterways and subsoil might be contaminated or polluted or that other undesirable effects might result. The Contractor shall avoid use of tools and equipment which produce harmful noise. The Contractor shall restrict use of noise-making tools and equipment to hours that will minimize complaints from persons or firms near the Project site.

2. The Contractor shall install and operate temporary facilities and perform construction activities in a manner which will be reasonably conservative and avoid waste of energy and materials including water.

3. The Contractor shall provide facilities, establish procedures, and conduct construction activities in compliance with regulations controlling construction activities at Project site.

4. The Contractor shall designate one person to enforce strict discipline on activities related to generation of wastes, pollution of air, water, and soil, generation of noise, and similar harmful or deleterious effects which might

violate regulations or reasonably irritate persons at or in vicinity of Project site and inform Owner of designee.

F. Dust Control:

The Contractor shall provide positive methods and apply dust control materials to minimize raising dust from construction operations. The Contractor shall provide positive means to prevent airborne dust from dispersing into atmosphere.

G. Water Control:

1. The Contractor shall provide methods to control surface water to prevent damage to Project site and adjoining properties.

2. The Contractor shall control fill, grading, and ditching to direct surface drainage away from excavations, pits, tunnels, and other construction areas, and to direct drainage to proper runoff.

3. The Contractor shall provide, operate, and maintain hydraulic equipment of adequate capacity to control surface and runoff water.

4. The Contractor shall dispose of drainage water in manner that prevents flooding, erosion, or other damage to any portion of Project site or adjoining areas.

H. Pest and Rodent Control:

1. The Contractor shall provide pest and rodent control as necessary to prevent infestation of construction or storage area.

2. The Contractor shall employ methods and use materials which will not adversely affect conditions at Project site and on adjoining properties.

3. Should use of rodenticides or pesticides be considered necessary, the Contractor shall submit informational copy of proposed program to Owner. Clearly indicate:

   a. Area or areas to be treated.

   b. Materials to be used, with copy of manufacturer's printed instructions.

   c. Pollution preventative measures to be employed.

4. Use of any rodenticide or pesticide will be in full accordance with manufacturer's printed instructions and recommendations.

5. Before foundation Work has been completed, the Contractor shall retain a local exterminator or pest control company to recommend practices to minimize

attraction and harboring of rodents, roaches and other pests. The Contractor shall employ this service to perform extermination and control procedures at regular intervals so that the Project will be relatively free of pests and their residues at Substantial Completion of the whole Work. The Contractor shall perform control operations in a lawful manner using environmentally safe materials.

I. Debris Control:

1. The Contractor shall maintain areas under Contractor's control free of extraneous debris.

2. The Contractor shall initiate and maintain specific program to prevent accumulation of debris at construction site, storage and parking area, or along access roads and haul routes.

   a. The Contractor shall provide containers for deposit of debris as specified.

   b. The Contractor shall prohibit overloading of trucks to prevent spillages on access and haul routes.

   c. The Contractor shall provide periodic inspection of traffic areas to enforce requirements.

3. The Contractor shall schedule daily collection and disposal of debris.

4. The Contractor shall provide additional collections and disposal of debris whenever periodic schedule is inadequate to prevent accumulation.

5. The Contractor shall transport debris and waste material in covered trucks.

J. Pollution Control:

The Contractor shall:

1. Provide methods, means, and facilities required to prevent contamination of soil, water, or atmosphere by discharge of noxious substances from construction operations.

2. Provide equipment and personnel and perform emergency measures required to contain any spillage, and remove contaminated soil or liquids.

3. Excavate and dispose of contaminated earth off site in accordance with local environmental regulations and replace with suitable clean, compacted fill and topsoil.

4. Take special measures to prevent harmful substances from entering public waters.

5. Prevent disposal of wastes, effluents, chemicals, or other such substances adjacent to streams or in sanitary or storm sewers.

6. Provide systems for control of atmospheric pollutants.

7. Prevent toxic concentrations of chemicals.

8. Prevent harmful dispersal of pollutants into atmosphere.

K. Erosion Control:

The Contractor shall:

1. Plan and execute construction and earthwork by the following methods to control surface drainage from cuts and fills and borrow and waste disposal areas and to prevent erosion and sedimentation:

   a. Hold areas of bare soil exposed at one time to minimum.

   b. Provide temporary control measures, such as berms, dikes, and drains.

2. Construct fills and waste areas by selective placement to eliminate surface silts or clays which will erode.

3. Periodically inspect earthwork to detect any evidence of start of erosions. Apply corrective measures as required to control erosion.

4. Maintain all SWPPP (Storm Water Pollution Prevention Plan) protocols during construction and correct any damaged areas due to the failure to maintain such protocols adequately.

L. Collection and Disposal of Waste:

1. The Contractor shall collect waste from construction areas and elsewhere daily. The Contractor shall comply with requirements of NFPA 241 for removal of combustible waste material and debris. The Contractor shall enforce requirements strictly. The Contractor shall not hold materials more than seven days during normal weather or three days when the temperature is expected to rise above 80 deg F (27 deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. The Contractor shall dispose of material in a lawful manner.

2. In case of non-compliance with the above, the Owner, after having given a 24-hour notice, has the right to take any corrective action required at the expense of the Contractor.

3. Burying or burning of waste materials on the Project site or washing waste materials down sewers will not be permitted.

4. The Contractor shall provide rodent proof containers on each floor level to encourage depositing of wastes by construction personnel.

3.06 OPERATION, TERMINATION AND REMOVAL

A. Supervision:

The Contractor shall enforce strict discipline in use of temporary facilities. The Contractor shall limit availability of temporary facilities to essential and intended uses to minimize waste and abuse. The Contractor shall not permit temporary installations to be abused or endangered.

B. Maintenance:

1. The Contractor shall maintain facilities in good operating condition until removal. The Contractor shall protect from damage by freezing temperatures and similar elements.

2. The Contractor shall maintain operation of temporary enclosures, heating, cooling, humidity control ventilation and similar facilities on a 24-hour day basis where required to achieve indicated results and to avoid possibility of damage. The Contractor shall not allow unsanitary conditions, public nuisances or hazardous conditions to develop or persist on the Project site.

C. Protection:

The Contractor shall prevent water filled piping from freezing. The Contractor shall maintain markers for underground lines. The Contractor shall protect from damage during excavation operations.

D. Termination and Removal:

1. The Contractor shall remove each temporary service and facility promptly when need for has ended or when replaced by use of a permanent facility, but no later than Final Acceptance of the whole Work. Complete or if necessary restore permanent Work delayed because of interference with the temporary service or facility. The Contractor shall repair damaged Work, clean exposed surfaces and replace Work which cannot be repaired.

2. At Substantial Completion of the whole Work, the Contractor shall clean and renovate permanent services and facilities that have been used to provide temporary services and facilities during the construction period.

3. At Substantial Completion of the whole Work, the Contractor shall clean and renovate permanent facilities that have been used during the construction period, including but not limited to:

a. Replacing air filters and clean inside of ductwork and housings.

b. Replacing significantly worn parts and parts that have been subject to unusual operating conditions.

c. Replacing lamps that are burned out or noticeably dimmed by substantial hours of use.

END OF SECTION

SECTION 01520 - TEMPORARY SIGNAGE

PART 1 - GENERAL

1.01 DESCRIPTION

Provide all Work including all equipment, appliances, labor, materials, related electrical work, transportation and all operations required to provide temporary signs as specified herein or as instructed by the Owner.

1.02 QUALITY ASSURANCE

A. Qualifications:

1. Contractor will submit evidence of having successfully completed a contract of similar nature and magnitude and will have at least five years of documented experience in the type of Work specified herein.

2. Where special job conditions occur or where there is uncertainty as to interpretation, before execution of the Work, Contractor will request clarification from the Owner in writing.

3. Contractor will visit the Project site to determine specific installation and job conditions.

4. Commencement of work will constitute an unqualified acceptance by the Contractor of the installed Work on which signage work depends and that work as installed is suitable for the satisfactory execution of signage work.

B. Requirements of Regulatory Agencies:

1. Work performed under this Section will be strictly governed by local and state authorities of this expertise.

2. Maintain safety amongst persons employed in accordance with latest standards set by OSHA.

1.03 SUBMITTALS

A. In accordance with Section 01340 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES, submit the following:

1. Shop Drawings

a. Submit Shop Drawings for review prior to fabrication of all items furnished under this Contract.

b. Submit Shop Drawings for approval prior to fabrication of all items furnished under this Contract.

c. Exact identification of all paint formulas and colors.

2. Contractor will not order any materials or perform any construction, demolition or fabrication until all submittals have been reviewed and approved.

3. Any construction, demolition or fabrication performed or materials ordered prior to the approval of the prototypes will be done at the Contractor's own risk and expense.

4. Approval by the Design Professional of the Contractor's submittal relates to the requirements for design and compliance with the Contract Documents only.

5. Approval does not relieve the Contractor from responsibility for errors in dimension or for inadequate or improper use of materials for construction.

1.04 SEQUENCING AND COORDINATION

Integrate and schedule coordination of removal, installation and all work related to signage with other related trades.

1.05 REMOVAL AND STORAGE

A. This portion of the Work will be included in the Contract Sum and not included in the Allowance.

B. Contractor will remove and reuse all existing signage in accordance with the Contract Documents.

C. All signs, extrusions, graphic or signage material will be carefully disassembled, removed from premises and stored by the Contractor prior to refurbishing and reinstallation.

D. All signs, extrusions, graphic or signage material will be carefully protected with wrapping material and will be on palettes, platforms or other support structures and not stored directly on the floor during construction operations.

E. All signs, extrusions, graphic or signage materials will not be exposed to damaging conditions or abrasion during removal, storage, fabrication, delivery or installation.

PART 2 - PRODUCTS

2.01 MATERIALS

A. To establish a standard of quality, design, and function desired, portions of the Contract Documents have been based on the products of manufacturers mentioned hereafter.

B. All materials shown on the Contract Documents will be of the best quality products available.

C. All additional parts necessary to complete fabrication and installation will be furnished by the Contractor.

D. Should conflicts occur in or between the Drawings, sign schedules, Specifications and on-site conditions, Contractor shall notify Owner and Contractor is deemed to have

included under the Contract Sum the more expensive item or method of construction.

E. All message patterns will be die cut.

2.02 VINYL SHEETING (for lettering and Authority Logos)

A. Manufacturer: 3M Traffic Controls Divisions or equal
2860 Bankers Industrial Drive
Atlanta, GA 30360

B. Type: "Scotchlite" Reflective Sheeting Engineer Grade or equal Parkway White 3290 (for lettering) and Blue and Red for logos.

C. Thickness: 3.5 Mils

D. Adhesive Backing: Continuous pressure sensitive backing manufactured by Minnesota Mining and Manufacturing Company or equal.

2.03 POLYURETHANE PAINTS - EXTERIOR

A. Manufacturer: Sherwin Williams

B. Type: Acrylic polyurethane

2.04 PLYWOOD

A. Manufacturer: Simpson or equal

B. Type: MDO

2.05 WOOD

A. All wood will be kiln dried, select furniture of quality A or better, for all exposed surfaces.

B. Interior wood blocking or framing will be kiln dried, Wolmanized “B" grade or better.

PART 3 - EXECUTION

3.01 GENERAL

A. Where adhesive mounting is specified, only adhesives specifically recommended by the manufacturer for compatibility with the base materials and adhesive strength will be used.

B. Sign material lamination will utilize proper adhesives and will be smooth, consistent and free of bubbles, bulging and foreign matter.

C. All message pattern applications will be crisp, sharp, clean and free of nicks, discontinuous curves, line wavers and other imperfections.

D. All finished work will be smooth, free of scratches, gouges and other imperfections. Sign edges will be straight, smooth, free of cutting marks and other defects.

E. Contractor will repair and replace damaged materials or signs caused by installer or any other related trades.

F. Contractor will coordinate with other related trades the removal and installation of signage and components to insure uninterrupted progress of Work.

3.02 FABRICATION

A. All Work will be fabricated to approved Shop Drawings.

B. All cuffing, fabrication, and assembly will be done in the factory and shipped to the Project site as one complete unit, unless otherwise approved by the Owner.

C. All joints, corners, miters, splices, or signage will be accurately machined, filled, fitted and rigidly framed together at joints and contact points and will be painted smooth to produce a monolithic appearance with visually imperceptible joints.

D. All mechanical fasteners will be counter-sunk, filled, ground smooth, and painted as to render them visually imperceptible, unless otherwise specified as exposed.

E. The heads of removable mounting fasteners will match the color and finish of the sign area where they occur.

F. Work will be erected plumb, level, and true, with proper alignment and proper relationship to the work of the trades.

G. All priming, surface preparation and paint application will be in accordance with the manufacturer's written data, description and instruction.

H. All signs will be flat, true, and free from waviness. All exposed surfaces will not deviate from flat by more than 1/16 inch in any 36 inch distance.

3.03 MESSAGE PATTERNS

A. The Contractor will fabricate sign text from master alphabet and master symbols approved by the Owner and Design Professional. Interior signage will be Furtiger 65 Bold at 106% spacing and exterior signage will be Furtiger 55 Roman at 106% spacing.

B. Full size message patterns for each sign will be prepared by the Contractor. These patterns will be used for correction and/or additions prior to fabrication. Changes will be considered as part of the scope of work.

C. All vinyl message patterns used for final sign application will be die cut and not hand cut from vinyl, unless otherwise approved by the Design Professional in writing.

D. Sign text mechanicals are not to be enlarged for position only and are not to be used for photographic reproduction.

E. All panel or background sizes will be full size showing seam placement.

F. Full scale message patterns will be submitted on paper showing proper size of the alphabet, airport logo or any other message legend. Hand drawn patterns are not acceptable.

3.04 LETTER FORMS AND SYMBOLS

A. Letter forms for all signs will match existing airport sign letter forms and symbol standards.

B. All letter forms and symbols will be free of nicks, burns, cuts, bubbles and any other irregularities.

C. All symbols or forms used for final sign application or final finishing will be die cut. Hand cut letters or symbols are not acceptable.

3.05 MATERIALS CLEANING AND INSTALLATION

A. Examine backup surfaces to determine that corners are plumb and straight, surfaces are smooth, uniform, clean and free from foreign matter, nails countersunk, and holes, joints and cracks filled flush and smooth with adjoining surface prior to attaching signage.

B. Do not commence installation until backup materials are in a condition satisfactory to the Contractor to receive surfacing.

C. Applications of adhesives should comply with adhesive manufacturer's application instructions on the container regarding:

1. Method of application

2. Spread rate

3. Drying-time

4. Open time

5. Temperature and relative humidity limitations.

3.06 VINYL SHEETING AND DIE CUTS

A. Text material for finished letter form, symbol or friskets on all signs, unless otherwise noted, will be die-cut pressure sensitive and will be pre-aligned and pre-spaced on carrier tape according to the sign text layouts.

B. Hand cut finished letter forms, symbols or friskets will not be accepted.

C. Vinyl sign text material for all sign types will be die cut and conform to the prescribed letter forms with a tolerance of +.0l5 inches and will be free of irregularities such as nicks, burrs, broken points and discontinuous curves.

D. All letter sizes indicated on the sign text layouts will be determined by the letter height of the capital "B."

E. All letters, symbols and targets will be pre-aligned and pre-spaced on carrier tape in accordance with the spacing guides.

F. The colors will be as specified and will not be limited to manufacturer's standard colors.

G. All vinyl sign text will be installed as per written instructions and recommendations of the manufacturer.

H. All surfaces receiving application of vinyl sign text will first be cleaned of all dirt and/or accumulated foreign matter.

3.07 PAINTS AND INKS

A. All paints and inks will be of type specially formulated and manufactured for application on the surface material upon which it is to be applied and recommended for such use by the manufacturer on the paint or ink.

B. Priming, surface preparation and application of all materials will be in strict accordance with manufacturer's written product data and description and as otherwise necessary to produce data with a finish free of blistering, bleeding, fading and other imperfections.

C. Order or mix paint for each color in quantity to assure consistent application for all signs in a given color.

D. All paint and ink colors and samples will match specified manufacturer's color number, swatches and/or samples supplied by the Owner and will be as selected and approved by the Owner during shop drawing review.

E. All paint colors will be consistent in chroma and value and will maintain proper opacity or translucency.

F. All paint and inks will be of the finest quality of heat, moisture and fade proof pigments and vehicles. For each color specified on sign schedule, paint will be mixed in sufficient quantity to accommodate every sign application of the specified color.

G. The Contractor will allow paint surfaces to air dry 48 hours prior to the application of masking film which will be applied to protect all sign surfaces during shipping and erection.

3.08 PAINTING APPLICATION

All painting and spraying will be performed in well ventilated conditions and all precautions taken as necessary and as recommended by the paint manufacturer.

3.09 TEMPORARY SIGNAGE

A. Temporary signage will conform to all conditions, Specifications and Drawings.

B. All temporary signage will be finished to appear as permanent signage.

C. All cuts and rounded edges will be smooth sanded prior to painting.

D. All edges will be painted to match the front of sign as per painting specifications.

E. Backs of sign will be painted where installation of sign shows exposed back.

F. Refer to Owner's Allowances Section for temporary signage allocation.3.10 CLEANUP

G. The Contractor will be obliged to keep all areas and items clean, neat, and free of waste material, dirt and debris during construction and installation.

H. After installation is complete, remove and dispose of all packing, packaging, waste materials and debris.

I. All areas and items will be left clean and free from marks, scratches, dust, lint and other defects.

END OF SECTION

SECTION 01540 - CONSTRUCTION SAFETY AND SECURITY REQUIREMENTS

PART 1 – GENERAL

1.01 PURPOSE AND OBJECTIVE

A. The purpose of this section is to set forth guidelines concerning safety and security during construction of the Project. The following methods, procedures, rules and authorities must be adhered to during project construction., The Hillsborough County Aviation Authority (HCAA) Construction Safety & Security Guidelines Manual applies to the project, and the Contractor will also comply with all safety requirements described below, unless in direct conflict with the HCAA Construction Safety & Security Guidelines Manual. In such case, the more stringent requirements will govern, as determined by Owner.

B. The following are the general safety objectives that must be achieved in order to maximize safety and to minimize time and economic loss to the aviation community, construction contractors and others directly affected by the Project.

1. Keep the Airport safe for all users.
2. Keep the Airport operational for all users.
3. Maintain safety of Airport operations.
4. Minimize delays to Airport operations.
5. Minimize delays to construction operations.
6. Minimize Airport-operation/construction-activity conflicts.
7. Minimize impacts to tenants and passengers.

1.02 OPERATIONAL SAFETY ON AIRPORT DURING CONSTRUCTION

A. All of Contractor’s operations will be conducted in accordance with this Section. If the operations include work within the AOA or impacts the AOA or aircraft flight surfaces, the operations will be conducted in accordance with the current version of Advisory Circular 150/5370-2. The Contractor will prepare and submit a site specific safety plan (safety plan) that details how it proposes to comply with the requirements when working.

B. The Contractor will implement all necessary measures required by the safety plan prior to commencement of any work activity. The Contractor will conduct routine checks of the safety plan measures to assure compliance with the safety plan.

C. The Contractor is responsible to the Owner for the conduct of all subcontractors it employs on the Project. The Contractor will assure that all subcontractors are made aware of the requirements of the safety plan and that they implement and maintain all necessary measures.

D. No deviation or modifications may be made to the approved safety plan unless approved in writing by the Owner.

E. This Contract is intended to provide for the optimum degree of safety to aircraft, both parked and operating; Airport personnel, passengers and general public, equipment,

and associated facilities; and to the Contractor's operations consistent with minimum interference to the movement of aircraft, vehicles, and/or personnel engaged in the day-to-day operation of the Airport. To this end, the Contractor will observe all Airport rules and regulations and all other operational limitations which may be imposed from time to time. Contractor will provide marking, lighting, barricades, signs, or other measures which are required to properly identify Contractor's construction areas, Work sites, equipment, vehicles, storage areas, and/or conditions which may be hazardous to Airport operations.

F. If the Contractor fails to maintain the marking, lighting barricades, signs, etc., as required, the Owner will cause appropriate safety measures to be installed by others and all costs thereof will be charged to the Contractor and deducted by the Owner from monies due to the Contractor.

G. The Contractor's responsibility for safety and security will begin on the day the Contractor starts Work or on the date of the Notice To Proceed and will continue until Contractor is complete.

H. The Contractor is fully and solely responsible for all project safety as it pertains to the Contractor's Work. This includes complying with the Hillsborough County Aviation Authority Construction Safety & Health Guidelines Manual, if applicable, implementing and enforcing its safety plan and procedures. Owner's acceptance, directives, approval, comments or any such action regarding Contractor's safety plan or Work shall not relieve the Contractor of its obligations.

1.03 SAFETY PROCEDURES

A. In as much as each Work area will be accessible to and used by the public, the Owner, airlines, and other companies doing business at the Airport during the construction period, it is the Contractor's responsibility to maintain each Work area in a safe, hazard free condition at all times. This will include barricades, fencing, taping up sharp corners or any other precautions necessary to protect the public. Should the Owner find an area unsafe at any time, Owner will notify the Contractor and the Contractor will take whatever steps necessary to remedy the unsafe condition. Should the Contractor not be immediately available for corrective action, the Owner will cause appropriate safety measures to be installed by others and all costs thereof will be charged to the Contractor and deducted by the Owner from monies due to the Contractor.

B. Fire Control: Open flame torch cutting or welding is prohibited unless adequate safety precautions have been taken and approved by the Owner via Owner's cutting and welding permit process. Flame cutting will be permitted only on steel parts that cannot be removed in any other manner and only when at least one person is standing by exclusively with a fire extinguisher within ten feet of the Work and within full view of the area. The fire extinguisher will have been inspected, tagged and ready for use. The Contractor will submit a fire protection plan for approval prior to conducting the Work requiring said protection plan.

C. Work Near Fire Alarm: Caution will be exercised as necessary when working near fire alarms so as not to accidentally activate fire alarms, doors or barriers.

D. Protection of Property: Fixed structures, equipment, paving, landscaping, vehicles

(automobiles, trucks, etc.) and aircraft will be protected with drop cloths, shielding and other appropriate measures to assure maximum protection.

E. Use of explosively operated fastening devices within the confines of any Owner facilities or within Tampa International Airport is strictly prohibited, unless Owner provides prior written approval and Design-Builder provides safety plan.

1.04 GENERAL SAFETY REQUIREMENTS

A. An initial construction/safety meeting will be coordinated with the Owner after the award of the Contract, and prior to commencing construction, during which the Contractor will become aware of and assume responsibility for all safety issues. Additional construction/safety meetings may be scheduled as deemed necessary by the Owner throughout the Contract. Representatives from the Owner, Contractor, Design Professional, and any others deemed necessary by the Contractor may attend.

B. The Contractor will inform its supervisors and workers of the Airport activity and operations that are inherent to this Airport, the safety regulations of the Airport, and the prohibition of driving or walking on any area of the AOA without clearance. The Contractor will conduct its construction activities to conform to both routine and emergency requirements. The Contractor will provide initial and continuing instructions to all supervisors, employees, subcontractors, and suppliers to enable them to conduct their Work in a manner that will provide the maximum safety with the least hindrance to air and ground traffic, the general public, Airport employees, and to the workers employed on the Project site.

C. Work may be stopped/suspended by the Owner anytime the Owner considers that the intent of this Section is being violated or that a hazardous condition has been/was created. This decision to suspend the Work will be final and will only be rescinded by the Owner when satisfied that the Contractor has taken action to prevent recurrence. Delays/work stoppage as a result of the suspension of Work will be considered the fault of the Contractor and will not stop the Contract Time for assessing liquidated damages.

D. All Contractor vehicles authorized to operate on the Airport outside of the Construction Area Limits as defined herein and to cross active runways, safety areas, taxiways, aprons, instrument or approach clear zones or any area within the AOA will do so only under the direct control of a trained, qualified flagman who is monitoring (two-way) radio communication with the ground controller of the Air Traffic Control Tower or UNICOM. All aircraft have priority over ground vehicles.

1. When necessary, the Contractor will provide a radio to monitor communications from the Air Traffic Control Tower or UNICOM. This operator will be familiar with aircraft/ground controller communications and will be on duty whenever vehicles are operating in areas referenced above.

2. All vehicles operating in the AOA will be equipped with an operating yellow flashing beacon.

E. All Contractor vehicles and equipment that are authorized to operate on or near the AOA or the Airport outside of the designated Construction Area Limits or haul routes as

defined herein will display 3-foot by 3-foot flags or larger, orange and white checkerboard pattern, each checkerboard color being 1-foot square.

F. The Contractor will preserve and/or protect existing and new pavements plus other facilities from damage due to construction operations. Existing pavements and facilities which are damaged will be replaced or reconstructed to original strength at the Contractor's expense. The Contractor will take immediate action to reconstruct any damaged area which is to remain in service. Unless indicated on the Drawings, existing pavements will not be cut for the installation of any utilities. Jack and bore or directional bore method will be required.

G. Construction Area Limits:

2. The limits of construction, material storage area, plant site, equipment storage area, parking area and other areas defined as required for the Contractor's exclusive use during construction will be marked by the Contractor. The Contractor will erect and maintain around the perimeter of these areas suitable marking and warning devices visible for day/night use. Temporary fencing, barricades, flagging and/or flashing warning lights will be required at critical access points. Type of marking and warning devices will be approved by Owner. Open trenches, excavations and stockpiled materials will be permanently marked with flags and lighted by approved light units during hours of reduced visibility and darkness. No separate pay item is included for this Work and all costs must be included in the Contract Sum.

H. During construction, the Contractor will maintain these areas in a neat condition. Upon completion of the Work, the staging and storage areas will be cleaned-up and returned to their original condition to the satisfaction of the Owner. Remove all construction fencing and barricades from the Project site. No special payment will be made for clean-up and restoration of the storage area. Personal vehicles will not be permitted beyond Contractor's Construction Area. Drivers of personal vehicles being operated beyond this Contractor's Construction Area will be subject to loss of permission to enter the construction site.

I. Intermittent Construction Operations:

1. Construction activity may require closing of certain areas by the Owner, including the AOA. However, some Work may be done on an intermittent basis. The Contractor will maintain constant communication with the Owner when working and immediately obey all instructions from the Owner. Failure to so obey instructions or maintain constant communications with the Owner will be cause to suspend the Contractor's operations in the areas until satisfactory conditions are assured.

2. When directed to cease Work and move from the area, the Contractor will immediately respond and move all material, equipment and personnel outside areas. Operations will not be resumed until directed by the Owner. Every reasonable effort will be made by the Owner to cause minimum disturbance to

the Contractor's operations. However, no guarantee can be made as to the extent to which disturbance can be avoided. Contractor's claim for additional Contract Time or Contract Sum for any such disruption will not be accepted.

3. Disruptive Work will be defined as any activity, including excessive noise, air pollution, dust, and similar events that adversely disrupts, hinders or impacts normal Airport operations. These activities will be conducted so as not to interfere with the normal operation of the Airport. Work which may be considered disruptive will be conducted by the Contractor during the middle of the night hours as designated by the Owner. When directed by the Owner to cease Disruptive Work, the Contractor will immediately suspend and discontinue the Disruptive Work. Work will not be resumed until directed by the Owner. Contractor's claim for additional cost or additional Contract Time for suspending of Disruptive Work will not be accepted.

J. Limitation of Operations:

1. When the Work requires the Contractor to operate on or adjacent to any public area, the operation will be coordinated with the Owner at least 72-hours prior to commencement of the Work. At no time will the Contractor close a public area until authorization to do so is granted by the Owner.

2. The Contractor will be responsible for controlling its operations and those of its subcontractors so as to provide for the free and unobstructed movement of all passengers and private vehicles on the Airport.

3. The Contractor will be responsible for controlling its operations and those of its subcontractors so as to provide for the free and unobstructed movement of aircraft in the apron and taxiway areas of the Airport AOA.

K. Obstructions to Navigation:

1. Penetrations of the imaginary surfaces defined in FAR Part 77 will not be permitted without advance notification of and approval by the Owner and the FAA Tower Chief. It may be necessary to file a Temporary Permit Application with the Owner to obtain approval prior to operation of exceptionally tall equipment. This includes any penetrations whatsoever by the Contractor, including but not limited to vehicles, cranes, other construction equipment, structures, stockpiled materials, excavated earth, etc.

2. When penetrations are unavoidable they will be brought to the attention of the Owner and the FAA as far in advance as is practical to allow Notices to Airmen (NOTAMS) to be prepared and distributed to appropriate FAA divisions for publication and dissemination.

3. Appropriate sketches will be prepared by the Contractor with precise locations shown on the Airport Layout Plan along with elevations depicting the obstruction object's relationship to the imaginary surfaces.

4. The maximum height allowed on the Airport is subject to review by the Owner unless, in special instances, this requirement is waived by the Owner and the FAA. During times when the safety of flight operations could be impaired, particularly during Instrument Flight Rules (IFR) weather, or when the equipment is idle, all booms, towers and other movable appendages will be lowered to the maximum extent.

L. Emergency Procedures:

1. The Contractor will familiarize itself with Airport emergency procedures and will endeavor to conduct its operations so as not to conflict with them. Clear routes for crash/fire/rescue equipment will be maintained in operable condition at all times.

2. Emergency Procedure: In case of an emergency caused by an accident, fire, or personal injury or illness, Airport Police are to be immediately notified by Page Phone found throughout the Terminal buildings or by calling them at 911 or Airport Police Emergency Phone No. (813) 870-3911. The caller must accurately report the location and type of emergency. Airport Police will then coordinate with Owner and/or other outside emergency agencies as necessary.

M. Access to the Construction Site:

1. The Contractor's access to the site will be defined by the Owner. This access route may also be used by Airport employees or others. **No other access routes will be allowed unless approved by the Owner. At Tampa International Airport, the vertical clearance in the Short Term Parking Garage is 6'-8". No vehicle taller than 6'-8" will be allowed to operate in the Short Term Parking Garage structure. The vertical clearance in the Long Term Parking Garage is 7'-10". No vehicle taller than 7'-10" will be allowed to operate in the Long Term Parking Garage structure. No vehicle taller than 13'-6" will be allowed to operate on the first floor of the Economy Parking Garage structure or 8'-0" on all levels above the first floor.** All Contractor traffic authorized to enter the site will be experienced in the route or guided by the Contractor's personnel. The Contractor will be responsible for traffic control to and from the various construction areas on the site. The Contractor will be responsible to verify and coordinate with all vertical clearances for the George J. Bean Parkway, Bessie Coleman Service Road, Red and Blue Side Arrivals, Departure and Crossover Drives, as well as all other ramps, roads, drives and overpasses over and along or otherwise a component of the Contractor's access route.

2. The Contractor will familiarize its employees with the route. Material and equipment delivery trucks will be accompanied by an employee of the Contractor familiar with the route. The Contractor will be responsible for access control through any AOA access gate for the duration of this Contract. This access control will be for all personnel. Any AOA access gate will be manned, whenever unlocked, by a licensed, bonded security agency guard, contracted by the Contractor. Contractor personnel are not acceptable substitutes for the licensed, bonded security agency guard.

3. The Contractor will monitor and coordinate all Contractor traffic with the Owner. The Contractor will not permit any unauthorized construction personnel or traffic on the site, including food and beverage vendors or caterers. If breaches of security occur, the Owner may, at the Owner's option, close the AOA gates until adequate actions have been taken to prevent further breaches of security.

4. The Contractor will provide and operate an escort vehicle to lead other vehicles when operating within the site.

5. The following procedure will be used for access to site by AOA unauthorized persons:

   a. The unauthorized person will inform the gate guard of their reason for entrance to the site and which Contractor they intend to visit.

   b. Guard will notify the Contractor by telephone.

   c. Contractor will go to gate and escort visitor to Contractor facility.

   The Contractor will provide and operate an escort vehicle to lead other vehicles when operating within the AOA.

6. The Contractor is responsible for immediate cleanup of any debris deposited along the access route as a result of Contractor's construction traffic. The entire access route and construction site will be kept free and clean of all debris at all times, will be maintained in good repair by the Contractor or its agents, and will be immediately repaired to the satisfaction of the Owner. Directional signing along the delivery route to the storage area or work site will be as directed by the Owner.

N. Load Restrictions:

1. The Contractor will comply with all legal load restrictions in the hauling of materials on public roads beyond the limits of the Work. A special permit will not relieve the Contractor of liability for damage which may result from the moving of material or equipment.

2. The operation of equipment of such weight or so loaded as to cause damage to structures or to any other type of construction will not be permitted. Hauling of materials over the base course or surface course under construction will be limited as directed. No loads will be permitted on a concrete pavement, base, or structure before the expiration of the curing period. The Contractor will be responsible for all damage done by Contractor's hauling equipment and will correct such damage at Contractor's own expense.

3. It is especially noted that the existing Airport pavements may not be capable of supporting certain types of construction equipment. Prior to submitting the Bid, the Contractor will fully satisfy itself as to the ability of the existing Airport

pavements to satisfactorily sustain the type of equipment Contractor plans to use. Should damage occur as a result of construction operations, the Contractor will repair the damaged areas to an acceptable condition at Contractor's expense.

1.05 Contractor's Security Requirements:

A. General Intent: It is intended that the Contractor will comply with all requirements of the Airport Security Plan and with the Safety Plan specified herein. Also, if applicable, the Contractor will execute the Airport Access Request Form and follow all rules and guidelines stated therein. The Contractor will designate to the Owner, in writing, the name of its Contractor Security Officer (CSO). The CSO will be the Contractor's representative on the "Construction Security Committee" and will be accountable for these security requirements for the Contractor. The Contractor will also comply with all requirements concerning sensitive security information as promulgated by the TSA.

B. Contractor Security Personnel Orientation: The CSO will be responsible for all safety precautions. Prior to the commencement of the Work, the CSO will provide the Owner an outline of a proposed accident and fire protection plan for all Work contemplated under the Contract. The CSO will also conduct safety meetings as directed by the Owner for each shift and require the attendance of all supervisors at such meetings. Copies of the minutes of safety meetings will be kept on file in the Contractor's Office.

C. Identification - Personnel: All employees of the Contractor or subcontractors requiring access to the construction site are required to be supplied with identification badges to be worn at all times while within the area. Badges will be supplied by the Contractor and will state **"TPA/Wayfinding Contractor."** Badges can be plastic wallet size, metal pin or sticker with a minimum of 2-1/2" diameter and worn on outer garments so as to be clearly visible. Badging is to be uniform in appearance and sufficiently distinctive in design or color to clearly distinguish, on sight, employees assigned to this Contract. The badge number will be prominent for easy identification. Badges are to be identified numerically and issued individually to whom it was assigned. Blocks of numbers can be assigned to subcontractors. Responsibility for supply issuance and control of identification badges will be that of the Contractor, through the CSO.

In addition, for all Work within the AOA at Tampa International Airport only, the Contractor's onsite supervisors will be badged with Airport ID badges provided by Authority Operations. Supervisors requiring unescorted access to the Security Identification Display Area (SIDA) will be subjected to a FBI fingerprint-based Criminal History Records Check (CHRC) and a Transportation Security Administration Security Threat Assessment (STA). An ID badge will not be issued to an individual until they successfully pass a CHRC and STA.

New applicants applying for a TPA ID badge will continue to be charged for the CHRC and an additional STA fee based upon the expiration length from date of issue. The new STA fees will also apply to ID badge renewals. Each time an individual renews their ID badge (including lost, stolen, name change, etc.), the authorized issue will be charged the STA fee (depending on expiration date period). Contractor shall inquire as to the current applicable rates for the above fees.

Personnel will wear the badge on outermost garment at all times while on the AOA. All employees of Contractor or subcontractor requiring access to the construction site are required to be supplied with identification badges to be worn at all times while within the area. Blocks of numbers can be assigned to subcontractors. Responsibility for supply issuance and control of identification badges will be that of the Contractor, through the CSO and the Owner. The Contractor will be assessed Three Hundred Dollars ($300.00) in liquidated damages for each security badge that is not returned to the Owner at the time of badge expiration or Project completion. These liquidated damages will be paid promptly by the Contractor by company check, or the amount will be withheld by Owner from payments due to the Contractor. Contractor agrees that liquidated damages described herein are not a penalty and are reasonable considering the impacts that a Breach of Security could have to public safety and welfare and the operations of the Airport.

D. Identification - Vehicles: The Contractor, through the CSO, will establish and maintain a list of Contractor and subcontractor vehicles authorized to operate on the Project site and will issue a TPA validation sticker to each vehicle to be made available upon demand by the Owner or any Airport Security Officer. Vehicle validation sticker will be placed on the front left portion of the vehicle and be assigned in a manner to assure positive identification of the vehicle at all times. In lieu of issuing individual vehicle permits, the CSO can require each vehicle to display a large company sign on both sides of the vehicle and advise the Owner of a current list of companies authorized to enter and conduct Work on the Airport.

E. Identification – Equipment: The Contractor will clearly identify all on-site equipment such as portable motorized or non-motorized equipment, job boxes, material storage containers, port-a-lets, etc., whether owned or rented, with the Contractor’s name. Identification must be physically marked on equipment or attached with a durable removable device such as a wire tie.

F. Employee Parking:

1. Area for parking of the Contractor's employee's vehicles is in the Contractor's Construction Area or Staging Area to be defined by the Owner. Parking will be accomplished in straight equally spaced rows. Contractor will organize traffic flow and parking patterns, and supply traffic control signs and markings subject to approval of the Owner. Maintain the parking surface and pick up trash daily. No storage will be allowed at parking site. The Contractor will restore the shape and grade of this parking area upon Project completion, seed and mulch portions where existing ground cover is damaged and perform all Work required to restore the area to its original condition.
2. When the Contractor's employee parking area is adjacent to another Contractor's parking area performing other construction for the Owner, cooperation is required to avoid any interferences in the performance of each respective construction. Any difficulties experienced will be brought to the attention of the Owner immediately.
3. All vehicles entering any public parking garages will be required to pay the normal parking fee which will be calculated at the exit. Free parking will not be authorized.

G. Materials Delivery to the Site: All Contractor's material orders for delivery to the Work site will use as a delivery address the street name and number assigned to the access point onto the Airport.

H. Breach of Security Fine: Contractor agrees that liquidated damages in the amount of Ten Thousand Dollars ($10,000.00) per occurrence will be assessed against the Contractor if the Contractor violates the requirements of the Airport Security Plan or the Security requirements specified herein. Contractor agrees that actual damages for breach of security are uncertain and the liquidated damages described herein are not a penalty and are reasonable considering the impacts that a Breach of Security could have to public safety and welfare and the operations of the Airport.

Notwithstanding the foregoing, repeated and/or flagrant violations of the Security Plan will be grounds for the suspension of the Work at no cost to the Owner, default of the Contractor and/or termination of the Contract.

I. Amendments to this Safety Plan and Security requirements may be made by the Owner and will be immediately binding on Contractor.

END OF SECTION

SECTION 01545 - UTILITIES

PART 1 - GENERAL

1.01 GENERAL

A. Existing facilities, utilities, and features depicted on the Drawings are not guaranteed to be accurate with respect to location, condition, and characteristics. Also, there may be additional facilities, utilities, and features existing that could affect the construction of the Work which are not depicted or described in the Contract Documents.

B. Prior to Bidding, the Contractor will make a thorough investigation of the Project area to satisfy itself as to the location, condition, and characteristics of any and all facilities, utilities, and features which may affect Contractor's Work. No additional compensation will be made for any extra expense relating to an existing facility, utility, or feature.

C. The Contractor hereby agrees to make no claims against the Owner and/or its representatives relating to the existence, or lack thereof, location, condition, and/or characteristics of any existing facilities, utilities, or features.

D. Contractor will pay for the removal and installation of all utilities required by the Contract Documents.

1.02 PROTECTION OF EXISTING UTILITIES

A. The term "utilities" includes FAA power and control cables, TECO power lines, other power lines, telephone cables, lines and fiber optics, Sheriff's Department lines, elevator control cables, airline communication cables, computer cables, airfield lighting cables, Owner underground electrical and communication lines, cables and fiber optics, water lines, irrigation lines, HVAC equipment, sanitary force mains, sanitary lines, stormwater lines and fuel and gas lines. These utilities may be located in the areas of construction. Disruption of these utilities could seriously disrupt the operation of the airport. Although the Drawings attempt to locate the cables and all utilities including fuel and gas lines, actual locations are uncertain and the Contractor is required to verify all locations.

B. To the extent that such public and private utility services, FAA facilities, or utility services of another government agency are known to exist within the limits of the Work, the approximate locations have been indicated on the Drawings and some, but not all, utility services and FAA facilities are indicated as follows:

Utility Service or Facility Person to Contact Telephone
(To the best of the Owner's knowledge, the below information is correct, but it may change without notice.)

FAA Control Cables	Mr. Charles Hinnant, FAA	(813) 371-7751
HCAA	Mr. Nick D'Jimas	(813) 676-4346
TECO	Mr. Drew Sirianni	(813) 228-1639
Fuel Lines	Mr. Christopher Perea	(813) 396-3626
Irrigation Lines	Mr. Bruce Sather	(813) 870-7883

City of Tampa - Water	Mr. Chad Bailey	(813) 274-3344
City of Tampa – Wastewater	Mr. Ryan Smith	(813) 274-8474

C. Any intentional, temporary interruption of existing utilities for the purpose of carrying out the Work will be carried out so as to minimize the length and scope of the interruption. Before any such interruption, Contractor will give a minimum of 72 hours written notice to the Owner and will also give at least 72 hours' notice to the appropriate "Person to Contact" listed in Paragraph B of this Section.

D. The Owner reserves the right to authorize the construction, reconstruction, or maintenance of any public or private utility service, FAA or National Oceanic and Atmospheric Administration (NOAA) facility, or a utility service of another government agency at any time during the progress of the Work.

E. Contractor will not permit any individual, firm, or corporation to excavate or otherwise disturb such utility services or FAA facilities located within the limits of the Work without the written permission of the Owner.

F. Should the Owner, public or private utility service, FAA, or NOAA facility, or a utility service of another government agency be authorized to construct, reconstruct, or maintain such utility service or FAA facility during the progress of the Work, the Contractor will cooperate with such utility service or FAA facility by arranging and performing the Work in this Contract so as to facilitate such construction, reconstruction, or maintenance by others. In addition, the Contractor will control its operations to prevent the unscheduled interruption of such utility services, FAA facility, and other facilities. It is understood and agreed that the Contractor will not be entitled to make any claim due to such authorized construction by others or for any delay to the Work resulting from such authorized construction. The Contractor will coordinate all Work with all utility services, FAA facility, or other facility.

G. To the extent that such public or private utility services, FAA or NOAA facilities, or utility services of another governmental agency are known to exist within the limits of the Contract Work, the approximate locations can be obtained by the Contractor from the Owner.

H. It is understood and agreed that the Owner does not guarantee the accuracy or the completeness of the location information relating to existing utility services, FAA facilities or structures that may be shown on the Drawings or encountered in the Work. Any inaccuracy or omission in such information will not relieve Contractor of its responsibility to protect such existing features from damage or unscheduled interruption of service.

I. It is further understood and agreed that Contractor will, upon execution of the Contract, notify all utility services, FAA facility, or other facilities of the Contractor's plan of operations. Such notification will be in writing addressed to the Person to Contact as provided herein. A copy of each notification will be given to the Owner.

J. In addition to the general written notification hereinbefore provided, it will be the responsibility of the Contractor to keep such individual utility service or FAA facility

advised of changes in Contractor's plan of operation that would affect such utility service or FAA facility.

K. Prior to commencing the Work in the general vicinity of an existing utility service or FAA facility, the Contractor will (1) Call Sunshine 811, and (2) again notify each such utility service or FAA facility in writing, copying the Owner, of Contractor's plan of operations. If, in the Contractor's opinion, assistance is needed to locate the utility service or FAA facility or the presence of a representative of the utility service or FAA facility is desirable to observe the Work, such advice will be included in the written notification. Such notification will be given by the most expeditious means to reach the utility service or FAA facility Person to Contact no later than two business days prior to the Contractor's commencement of operations in such general vicinity. The Contractor will furnish a written summary of the notification to the Owner.

L. Failure of the Contractor to properly coordinate in advance Work on or near existing utilities will be cause for the Owner to suspend Contractor's operations in the general vicinity of such utilities.

M. Power and control cables leading to and from any FAA facilities will be marked in the field by the local FAA Airway Facilities Sector personnel for the information of the Contractor before any Work in the general vicinity is started. Thereafter, through the entire time of the Work, the Contractor will not allow any construction equipment to cross these cables without first protecting the cable with steel boiler plate or similar structural devices on 3-feet either side of the marked cable route. All excavation within 3-feet of existing cables will be accomplished by hand digging only. No grading will be permitted over FAA cables under any conditions.

N. Approval to work in areas where active utility services or FAA facilities are located is subject to withdrawal at any time because of change in the weather, emergency conditions on the existing airfield areas, anticipation of emergency conditions, or for any other reason determined by the Owner or the designated FAA and/or utility service representative. All instructions by the Owner, the utility service, or the FAA facility (by radio or other means) to the Contractor to clear any given area, at any time, will be immediately executed. Construction Work will be commenced in the cleared area only when additional instructions are issued by the Owner.

O. FAA CABLES AND UTILITIES MUST BE PROTECTED AT ALL TIMES.

P. Where the outside limits of an underground utility service or FAA facility have been located and staked on the ground, the Contractor will be required to use excavated methods acceptable to the Owner within 3-feet of such outside limits at such points as may be required to insure protection from damage due to the Contractor's operations.

Q. If damage occurs to any utilities, the Contractor may be assessed a fee of $2,000 liquidated damages per cut per cable, line or strand, which liquidated damages will only represent the expense incurred by the Owner in coordinating the repair, and which will not prevent the Owner or others from recovering from the Contractor other costs, damages, or expenses of any other nature incurred on account of damages to utilities. Contractor agrees that damages for cut cables are uncertain and these liquidated damages are reasonable and are not a penalty and a reasonable consideration of the

impact that damage to utilities could have to the operation of the Airport. There is no intention to double count damages under this provision.

R. FAA FACILITIES AND CABLE RUNS. The Contractor is hereby advised that the construction limits of the Project include existing facilities and buried cable runs that are owned, operated and maintained by the FAA. The Contractor, during the prosecution of the Project work, will comply with the following:

1. The Contractor will permit FAA maintenance personnel the right of access to the Project work site for purposes of inspecting and maintaining all existing FAA owned facilities.

2. The Contractor will notify the above named FAA Airway Facilities Point-of-Contact seven days prior to commencement of construction activities in order to permit sufficient time to locate and mark existing buried cables and to schedule any required facility outages.

3. If prosecution of the Project work requires a facility outage, the Contractor will contact the above named FAA Person to Contact a minimum of 72 hours prior to the time of the required outage.

4. If prosecution of the Project work results in damages to existing FAA equipment or cables, the Contractor will repair the damaged item in conformance with FAA Airway Facilities' standards to the satisfaction of the above named FAA Point-of-Contact.

5. If the Project work requires the cutting or splicing of FAA owned cables, the above named FAA Point-of-Contact will be contacted a minimum of 72 hours prior to the time the cable work commences. The FAA reserves the right to have an FAA Airway Facilities representative on site to observe the splicing of the cables as a condition of acceptance. All cable splices are to be accomplished in accordance with FAA Airway Facilities' specifications and require approval by the above named FAA Point-of-Contact as a condition of acceptance by the Owner. The Contractor is hereby advised that FAA Airway Facilities restricts the location of where splices may be installed. If a cable splice is required in a location that is not permitted by FAA Airway Facilities, the Contractor will furnish and install a sufficient length of new cable that eliminates the need for any splice.

S. Should the Contractor damage or interrupt the operation of a utility service or FAA facility by accident or otherwise, Contractor will immediately notify the proper utility service or FAA facility and the Owner and will take all reasonable measures to prevent further damage or interruption of service. The Contractor, in such an event, will cooperate with the utility service or FAA facility and the Owner continuously until such damage has been repaired and service restored to the satisfaction of the utility service or FAA facility.

T. The Contractor will immediately repair, at Contractor's own expense, with identical material by skilled workers, all utilities, FAA cables, and other facilities which are damaged by Contractor's workers, equipment, or work. Prior approval of the appropriate utility service and/or FAA facility and Owner will be obtained for the

materials, workers, time of day or night, method of repairs, and for any temporary or permanent repairs the Contractor proposes to make to any FAA cables or utility service damaged by the Contractor.

U. Airport publicly owned facilities and privately owned facilities located on Airport property, including underground cables, pavements, piping, buildings, turfed areas, vehicles and other facilities/improvements, that are damaged by the Contractor will, at the election of the Owner, (1) be replaced/repaired by the Contractor to the satisfaction of the Owner or (2) be replaced/repaired by the Owner at the Contractor's expense.

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

Not used.

END OF SECTION

SECTION 01561 - CONSTRUCTION CLEANING

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Contractor shall execute daily cleaning during progress of Work. Contractor shall execute final cleanup prior to Substantial Completion and again prior to Final Acceptance.

B. Hazards Control:

Contractor shall:

1. Store volatile wastes in covered metal containers.

2. Remove containers from premises daily.

3. Prevent accumulation of wastes which create hazardous conditions.

4. Provide adequate ventilation during use of volatile or noxious substances.

C. Contractor shall conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws:

1. Contractor shall not burn or bury rubbish and waste materials on Project site.

2. Contractor shall not dispose of volatile wastes, such as mineral spirits, oil, or paint thinner, in storm or sanitary drains.

D. Contractor shall transport waste materials and debris across Airport property in covered trucks.

PART 2 - PRODUCTS

2.01 MATERIALS

Contractor shall use cleaning materials recommended by manufacturer of surface to be cleaned which will not create hazards to health or property and which will not damage surfaces.

PART 3 - EXECUTION

3.01 CLEANING DURING CONSTRUCTION

A. Contractor shall execute periodic cleaning to keep building, grounds, and public properties free of accumulation of waste materials, rubbish, and wind-blown debris resulting from construction operations.

B. Contractor shall apply protective covering on newly installed Work where reasonably required to ensure freedom from damage or deterioration at time of Substantial Completion and Final Acceptance. Contractor shall clean and perform maintenance on

other newly installed Work as frequently as necessary through remainder of construction period.

C. Contractor shall adjust and lubricate operable components to ensure operability without damaging effects.

D. Contractor shall furnish on-site containers for collection of waste materials, debris, and rubbish.

E. Contractor shall remove waste material, debris, and rubbish from Project site daily.

F. Contractor shall not drop or throw materials from heights.

G. Contractor shall continue cleaning daily until building is ready for occupancy.

3.02 DUST CONTROL

Contractor shall:

A. Clean interior building areas prior to start of finish painting or special coatings.

B. Wet down materials and rubbish to prevent blowing dust.

C. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly painted surfaces.

3.03 FINAL CLEANING

A. Contractor shall provide final cleaning of the Work, including all adjacent protection areas surface or unit of Work to normal "clean" condition expected for a first-class building cleaning and maintenance program. Contractor shall comply with manufacturer's instructions for cleaning operations. The following are examples, but not by way of limitation, of cleaning levels required:

1. Removal of labels which are not required as permanent labels.

2. Cleaning of transparent materials, including mirror, window, and door glass, to polished condition. Remove substances which are noticeable as vision obscuring materials.

3. Replacing of broken glass and damaged transparent materials.

4. Cleaning of exposed exterior and interior hard-surfaced finishes to dirt-free condition, free of dust, stains, films, and similar noticeable distracting substances.

5. Restoring of reflective surface to original reflective condition.

6. Wiping of surfaces of mechanical and electrical equipment clean, including elevator equipment.

7. Removal of excess lubrication and other substances.

8. Removal of debris and surface dust from limited access spaces including roofs, plenums, shafts, trenches, equipment vaults, manholes, and similar spaces.

9. Broom cleaning of concrete floors in non-occupied spaces.

10. Vacuum cleaning of carpeted surfaces and similar soft surfaces.

11. Cleaning of plumbing fixtures to sanitary condition, free of stains, including those resulting from water exposure.

12. Cleaning of equipment to condition of sanitation ready and acceptable for intended use.

13. Cleaning of light fixtures and lamps to function with full efficiency.

14. Cleaning of Project site, including landscape development areas, of litter and foreign substances.

15. Sweeping of paved areas to broom-clean condition. Remove stains, petro-chemical spills, and other foreign deposits.

16. Raking of grounds which are neither planted nor paved to smooth, even-textured surface.

B. Contractor shall remove waste materials from Project site daily and dispose of in a lawful manner.

C. Protection - Limiting Exposures: Contractor shall supervise construction operations to assure that no part of the construction completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

D. Removal of Protection:

Contractor shall remove temporary protection devices and facilities which were installed during course of the Work to protect previously completed Work during remainder of construction period.

END OF SECTION

SECTION 01600 - MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.01 TRANSPORTATION AND HANDLING

Contractor shall:

A. Deliver, handle, and store products in accordance with manufacturer's recommendations and by methods and means which will prevent damage, deterioration, and loss, including theft.

B. Control delivery schedule to minimize long-term storage of products at Project site from overcrowding of construction spaces. Coordinate delivery and installation to minimize holding of storage times for products recognized to be flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other sources of loss.

C. Deliver products in undamaged conditions, in manufacturer's original containers and prepackaging, with identifying labels intact and legible.

D. Immediately upon delivery, inspect shipments for compliance with requirements of Contract Documents and accepted submittals and to verify that products are properly protected and undamaged.

E. Promptly remove unsatisfactory materials from Project site.

F. Furnish equipment and personnel to handle products by methods to prevent soiling or damage to products or packaging.

G. Provide transportation and delivery F.O.B. Project Site.

1.02 STORAGE

Contractor shall:

A. Store materials subject to damage from exposure to weather in weather tight storage facilities of suitable size with floors raised above ground. Materials not subject to weather damage may be stored on blocks off ground.

B. Store fabricated products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store products subject to damage by elements in weather tight enclosures. Maintain temperature and humidity within range required by manufacturer's instructions.

C. Cover materials which are subject to deterioration with impervious sheet covering providing adequate ventilation to avoid condensation.

D. Store loose granular materials in well-drained area on solid surfaces to prevent mixing with foreign matter and cover during inclement weather. Store cemetitious and clay products clear of earth or concrete floors, away from walls.

E. Arrange storage in manner to permit easy access for inspections.

F. Protect metal from damage, dirt, or dampness. Furnish flat, solid support for sheet products during storage.

G. Make periodic inspections of stored materials to verify that products are maintained under specified conditions and are free from damage or deterioration.

H. Not use materials in Work which have deteriorated, become damaged, or are otherwise unfit for use.

I. Store and mix paints in assigned room or area kept under lock and key.

J. Remove oil, rags, and other combustible materials daily, store in covered metal containers and take precautions to prevent fire hazards.

K. Not load structure during construction by storing materials with load greater than structure can bear safely.

PART 2 - PRODUCTS

2.01 MATERIAL AND EQUIPMENT INCORPORATED INTO WORK

Contractor shall:

A. Comply with applicable Specifications and Standards.

B. Comply with size, make, type, and quality specified or as specifically accepted in writing by Owner.

C. Design, fabricate, and assemble products in accordance with engineering and shop practices normal to trade.

D. To greatest extent possible, for each unit of Work, provide products, materials, or equipment of singular generic kind and from single source.

E. Manufacture like parts of duplicate units to standard interchangeable sizes and gages. Two or more items of same kind may be identical by same manufacturer.

F. Provide products suitable for service conditions.

G. Adhere to equipment capacities, sizes, and dimensions shown or specified unless variations are specifically accepted in writing.

H. Not use material or equipment for any purpose other than that for which it is designed or is specified.

I. Nameplates:

1. Not permanently attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view either in occupied spaces or on exterior of Work, except for Testing Laboratory approval labels and operating data.

2. Locate required labels and stamps on concealed surface or, where required for observation after installation, on accessible surface which in occupied spaces are not conspicuous.

J. Equipment Nameplates:

1. Provide permanent nameplate on each item of service-connected or power-operated equipment.

2. Indicate manufacturer, product name, model number, serial number, capacity, speed, ratings, and similar essential operating data.

3. Locate nameplates on an easily accessed surface which, in occupied spaces, is not conspicuous.

K. Provide products which comply with requirements, which are undamaged and unused at time of installation, and which include accessories, trim, finish, safety guards, and other devices and details needed for installation, intended use, and effect.

L. Standard Products: Where available, provide standard products of types which have been produced and used previously and successfully on other projects and in similar applications.

M. Contractor shall affix Owner property tags to all equipment required to be inventoried by Owner. Contractor shall verify requirement with Owner for each purchased equipment.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

Contractor shall:

A. When Contract Documents require that installation of Work will comply with manufacturer's printed instructions, obtain and distribute copies of instructions to parties in installation, including two copies to the Owner, prior to commencing Work.

B. Maintain one set of complete instructions at Project site during installation and until completion.

C. Maintain copies for Project Record Documents.

D. Handle, install, connect, clean, condition, and adjust products in strict accord with manufacturer's instructions and in conformity with specified requirements.

E. Inspect substrate to receive Work and conditions under which Work is to be performed.

F. Notify the Owner in writing for further instructions, should job conditions or specified requirements conflict with manufacturer's instructions and not proceed with Work without clear written instructions.

G. Perform Work in accordance with manufacturer's instructions and not omit preparatory steps or installation procedures.

H. Install Work during conditions of temperature, humidity, exposure, forecasted weather, and status of Project completion which will ensure best possible results for each item of material or equipment.

I. Isolate non-compatible materials to prevent deterioration.

J. Mount individual units of Work at industry recognized standard mounting heights for applications indicated and refer questionable mounting height choices to Owner for final decision.

3.02 PROTECTION

Contractor shall:

A. Furnish protection against weather. Cover building openings to protect interior of building from weather.

B. Maintain Work, materials, apparatus, and fixtures free from damage.

C. Protect items having factory finish to prevent damage to finish and equipment.

D. At end of day's Work, cover new Work likely to be damaged or otherwise protect as necessary.

E. After installation, secure substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations.

F. Remove protection when no longer needed and upon completion of Work, remove storage facilities from Project site.

G. Install and maintain barricades, stanchions, or other means of protection to keep traffic off of installed product as necessary.

END OF SECTION

SECTION 01605 - PRODUCTS AND SUBSTITUTIONS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Definitions: Definitions used in this paragraph are not intended to negate the meaning of other terms used in the Contract Documents, including such terms as, "specialties", "systems", "structure", "finishes", "accessories", "furnishings", "special construction" and similar terms. Such terms are self-explanatory and have recognized meanings in the construction industry.

1. "Products" are defined to include purchased items for incorporation into the Work, regardless of whether specifically purchased for Project or taken from Contractor's stock of previously purchased products.

2. "Named Products" are products identified by use of the Manufacturer's name for a product, including such items as a make or model designation, as recorded in published product literature, of the latest issue as of the date of the Contract Documents.

3. "Materials" are defined as products which must be substantially cut, shaped, worked, mixed, finished, refined, or otherwise fabricated, processed, installed or applied to form units of Work.

4. "Equipment" is defined as products with operational parts, regardless of whether motorized or manually operated, and particularly including products with service connections (wiring, piping, etc).

B. Substitutions: The Contractor's requests for changes in the products, materials, equipment and methods of construction required by the Contract Documents are considered requests for "substitutions" and are subject to the requirements specified herein.

1. The requirements for substitutions do not apply to specified Contractor options on products and construction methods. Revisions to Contract Documents, where requested by the Owner or Design Professional, are "changes" not "substitutions".

2. Requested substitutions during subcontractor bidding period, which have been accepted prior to Receipt of Bids, are included in Contract Documents and are not subject to requirements for substitutions as specified herein.

3. Contractor's determination of and compliance with governing regulations and orders issued by governing authorities does not constitute "substitutions", and does not constitute a basis for Change Orders, except as provided for in the Contract Documents. Otherwise, Contractor's requests for changes in products, materials and methods of construction required by Contract Documents are considered requests for "substitutions" and are subject to the requirements

hereof.

C. Standards:

Refer to Specification Section 01095 - DEFINITIONS AND STANDARDS for acceptability of industry standards to products of Project and for acronyms used in text of Specification sections.

1.02 REQUIREMENTS INCLUDED

A. Materials specified are to define standard of quality or performance and to establish basis for evaluation of selections.

B. Size of each item of material and equipment shown on the Drawings is based on dimensions of individual manufacturers. While other manufacturers may be acceptable, it will be responsibility of the Contractor to determine whether or not material and equipment proposed will fit into available space.

C. Compliance requirements for individual products as indicated in Contract Documents are multiple in nature and may include generic, descriptive, proprietary, performance, prescriptive, compliance with standards, compliance with codes, conformance with graphic details, and other similar forms and methods of indicating requirements, all of which must be complied with. Allowances, alternatives, and similar provisions of the Contract Documents will have bearing on selection process.

D. Where materials or equipment are specified by trade or brand name, it is not intended to discriminate against an equivalent product of another manufacturer, except where specifically noted NO SUBSTITUTION.

E. Contractor's options for selecting products are limited by Contract Document requirements and governing regulations and are not controlled by industry traditions or procedures experienced by Contractor on previous construction projects.

F. Revisions to Contract Documents, where requested by Owner or Design Professional, are changes not substitutions.

G. When specified products do not comply with requirements or are not a feasible selection, advise Owner in writing before proceeding.

1.03 QUALITY ASSURANCE

A. Source Limitations:

1. To the greatest extent possible for each unit of Work, provide products, materials, or equipment of a singular generic kind from a single source.

2. When it is discovered that specified products are available only from sources that do not or cannot produce a quality adequate to complete Project requirements in a timely manner, consult with the Design Professional for a

determination of the most important product qualities before proceeding. Qualities may include attributes relating to visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources that produce products that possess these qualities to the fullest extent possible.

B. Compatibility of Options:

When the Contractor is given the option of selecting between two or more products for use on the Project, the product selected will be compatible with products previously selected, even if previously selected products were also options. Complete compatibility between the various choices available to the Contractor is not assured by the various requirements of the Contract Documents but will be provided by the Contractor.

1.04 SUBSTITUTIONS

A. Procedures:

1. During Bidding:

a. Refer to requirements specified under Section 00100 - INSTRUCTIONS TO BIDDERS for substitutions during Bidding.

2. After Contract is Awarded:

a. Contractor's request for substitutions will be received and considered when extensive revisions to Contract Documents are not required and changes are in keeping with general intent of Contract Documents, when timely, fully documented and properly submitted, and when one or more of the following conditions are satisfied, all as judged by the Owner. Otherwise requests will be returned without action except to record non-compliance with these requirements.

(1) Where request is directly related to an "or equal" clause or other language of same effect in Contract Documents.

(2) Where required product, material or method cannot be provided within Contract Time, but not as a result of Contractor's failure to pursue the Work promptly or to coordinate various activities properly.

(3) Where required product, material or method cannot be provided in a manner which is compatible with other materials of the Work, or cannot be properly coordinated therewith, or cannot be warranted as required, or cannot be used without adversely affecting Owner's insurance coverage on completed Work, or will encounter other substantial non-compliances which are not possible to otherwise overcome except by making

requested substitution, which Contractor thereby certifies to overcome such non-compatibility, non-coordination, non-warranty, non-insurability or other non-compliance as claimed.

(4) Where required product, material or method cannot receive required approval by a governing authority and requested substitution can be so approved.

b. Noncomplying requests will be returned without action except to record noncompliance with requirements.

c. Properties of proposed substitution, including but not limited to the following, as applicable, will be considered:

(1) Physical dimension requirements to satisfy space limitations.
(2) Static and dynamic weight limitations, structural properties.
(3) Audible noise levels.
(4) Vibration generation.
(5) Interchangeability of parts or components.
(6) Accessibility for maintenance, possible removal or replacement.
(7) Colors, textures, and compatibility with other materials, products, assemblies, and components.
(8) Equipment capacities and performance characteristics.
(9) Electromagnetic interference.

d. Substitutions will not be considered if:

(1) They are indicated or implied on Shop Drawing, Project Data submittals, or mock-ups without formal request.
(2) Acceptance will require substantial revision of Contract Documents as determined by Owner.
(3) Additional cost to Owner is involved.
(4) Requests for substitutions are not submitted in a timely fashion.

e. Contractor will bear all costs for additional compensation to Owner's Design Professional for redesign and evaluation services, increased costs of other work by Owner or separate contractors, and other incurred costs or similar considerations due to acceptance of substitution.

f. Should substitution be accepted under provisions of above clauses, and substitution subsequently proves defective or otherwise unsatisfactory for service for which it was intended within warranty period, the Contractor will replace defective material with material specified at no additional cost to Owner.

g. Submittal of, and Contractor's acceptance of, shop drawings, product data, or samples which relate to work not complying with requirements of Contract Documents does not constitute an acceptable and valid request for substitution, nor approval thereof.

h. If proposed substitution is not accepted or all requirements are not entirely complied with, provide specified product or material. Costs for delays will be borne by Contractor.

B. Form of Requests:

1. Submit three copies, fully identified for product or method being replaced by substitution, including related Specifications section and drawing number(s), and fully documented to show compliance with requirements for substitutions.

2. Proposed substitutions will state:

a. Product Data, Drawings.

b. Changes required in other elements of Work because of substitution.

c. Availability of maintenance service and source of replacement parts as applicable.

d. When requested, test data from independent testing laboratory to show compliance with performance characteristics specified.

e. Related Specifications sections and drawing numbers, fully documented to show compliance with requirements for substitutions.

f. Description of methods.

g. Samples where applicable.

h. Detailed comparison of significant qualities between specified item and proposed substitution.

i. Statement of effect on construction time and coordination with other affected work.

j. Statement to the effect that proposed substitution will result in Work equal to or better than Work originally indicated.

k. Cost information or proposal.

C. Shop Drawings, Product Data and Sample Submittals:

Contractor's submittal of (and Owner’s acceptance of) Shop Drawings, mock-ups, Product Data or samples which relate to Work not complying with requirements of Contract Documents does not constitute an acceptable or valid request for a substitution, nor approval thereof.

1.05 CONTRACTOR'S REPRESENTATIONS

A. Request for substitution constitutes representation that Contractor:

1. Has investigated proposed product and determined that it is equal to or superior in all respects to that specified.

2. Will furnish same warranties or bonds for substitution as for product specified.

3. Will coordinate installation of accepted substitution into Work and make such other changes as may be required to make Work complete in all respects.

4. Waives all claims for additional costs which may subsequently become apparent.

1.06 OWNER'S DUTIES

A. Owner will determine acceptability of proposed substitutions.

B. Owner will review requests for substitutions with reasonable promptness and notify Contractor, in writing, of decision to accept or reject requested substitution. Owners judgment and decision is final.

C. Review of Owner's acceptance or failure to take exceptions to substitutions or other review documents will not relieve Contractor of its responsibility for item actually meeting performance or other requirements of Contract Documents.

1.07 SUBMITTALS

A. Product List Schedule:

1. Prepare a schedule showing products specified in a tabular form acceptable to the Owner. Include generic names of products required. Include the manufacturer's name and proprietary product names for each item listed.

2. Coordinate the product listing with the Contractor's Construction Schedule and the Schedule of Submittals.

3. Form:

a. Prepare the product listing schedule with information on each item tabulated under the following column headings:

(1) Related Specification heading number.
(2) Generic name used in Contract Documents.
(3) Proprietary name, model number and similar designations.
(4) Manufacturer's name and address.
(5) Supplier's name and address.
(6) Installer's name and address.

4. Initial Submittal:

Within 14 days after date of commencement of the Work, submit initial product list schedule. Provide a written explanation for omissions of data and for known variations from Contract requirements.

5. Owner's Action:

a. The Owner will respond in writing to the Contractor. The Owner's response will include the following:

(1) A list of unacceptable product selections, containing a brief explanation of reasons for this action.

(2) A request for additional data necessary for the review and possible acceptance of the products and manufacturers listed.

PART 2 - PRODUCTS

2.01 GENERAL PRODUCT REQUIREMENTS

A. General:

1. Provide products which comply with requirements, which are undamaged and unused at time of installation, and which are complete with accessories, trim, finish, safety guards, and other devices and details needed for complete installation and for intended use and effect.

2. Compliance with codes, graphic details, allowances, and similar provisions of the Contract Documents also have a bearing on the selection process.

3. Refer to Section 01600 - MATERIALS AND EQUIPMENT.

B. Standard Products:

Where available, provide standard products of types which have been produced and used previously and successfully on other projects and in similar applications.

C. Continued Availability:

Where additional amounts of a product, by nature of its application, are likely to be needed by Owner at a later date for maintenance and repair or replacement work, provide a standard, domestically produced product which is likely to be available to Owner at such later date.

2.02 PRODUCT SELECTION LIMITATIONS

A. Product Selection Procedures: Contractor’s options in product selection are governed

by the Contract Documents and governing regulations, not by previous industry tradition or project experience. Procedures governing product selection include, but are not limited to, the following:

1. Proprietary Specification Requirements:

    a. Where a single product or manufacturer is named, provide the product indicated. Other products may be considered by the Owner in compliance with provisions concerning substitutions. Where the term NO SUBSTITUTION is indicated, provide only product indicated.

    b. Advise the Owner before proceeding when it is discovered that the named product is not a feasible solution.

2. Semi-proprietary Specification Requirements:

    a. Where two or more products or manufacturers are named, provide one of the products indicated. No substitutions will be permitted, unless the Specifications indicate possible consideration of other products.

    b. Acceptable Manufacturers: When products are specified by one or more manufacturers' model or performance criteria with reference to other acceptable manufacturers, products manufactured by acceptable manufacturers listed must meet minimum performance criteria specified or meet quality of models specified.

    c. Advise the Owner before proceeding when it is discovered that the named product is not a feasible solution.

    d. Where products or manufacturers are specified by name accompanied by the term "or equal" or "or approved equal," comply with Item 1.04 SUBSTITUTIONS of this Section for procedural requirements governing substitutions to obtain approval for use of an unnamed product.

3. Non-Proprietary Specifications:

    When the Contract Documents list products or manufacturers that are available and may be incorporated in the Work but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract Document requirements. Comply with Item 1.04 SUBSTITUTIONS of this Section for procedural requirements to obtain approval for use of an unnamed product.

4. Descriptive Specification Requirements:

    Where Contract Documents describe a product or assembly listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides those characteristics and otherwise complies with the Contract Documents.

5. Prescriptive Requirements:

   Provide products which have been produced in accordance with prescriptive requirements, using specified ingredients and components and complying with specified requirements for mixing, fabricating, curing, finishing, testing, and similar operations in manufacturing process.

6. Performance Specification Requirements:

   a. Where Contract Documents require compliance with performance requirements, provide products that comply with these requirements and are recommended by the manufacturer for the application indicated. General overall performance of a product is implied where the product is specified for a specific application.

   b. Manufacturer's recommendations may be contained in published product literature or by the manufacturer's certification of performance.

7. Compliance with Standards, Codes and Regulations:

   Where the Contract Documents only require compliance with an imposed code, standard or regulation, select a product that complies with the standards, codes or regulations specified.

8. Visual Matching:

   a. Where Contract Documents require matching an established sample, the Owner’s decision will be final on whether a proposed product matches satisfactorily.

   b. Where no product available within the specified category matches satisfactorily and also complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another category, or for noncompliance with specified requirements.

9. Visual Selection:

   a. Where specified product requirements include the phrase "…..as selected from manufacturer's standard colors, patterns, textures..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Owner will select the color, pattern and texture from the product line selected.

   b. Where specified product requirements include "..as selected from standard colors, patterns, textures available within the industry..", or words to that effect, selection of product complying with requirements and within established cost category is Owner’s and Design Professional's

selection, including designation of manufacturer where necessary to obtain desired color, pattern, or texture.

10. Compatibility of Products:

a. Where more than one choice is available as an option for Contractor's selection of product or material, select the option which is compatible with other products and materials already selected which may have been from among options for other products and materials.

b. Total compatibility among options is not assured by limitations within Contract Documents, but must be provided by Contractor.

c. Compatibility is basic general requirement of product and material selections.

2.03 NAMEPLATES

A. Except as otherwise indicated for required approval labels and operating data, do not permanently attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view either in occupied spaces or on exterior of the Work.

1. Labels: Locate required labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface which, in occupied spaces, is not conspicuous.

2. Equipment Nameplates: Provide permanent nameplate on each item of service-connected or power-operated equipment. Locate nameplates on an easily accessed surface which, in occupied spaces, is not conspicuous. The nameplate will contain the following information and other essential operating data:

a. Name of product and manufacturer.

b. Model and serial number.

c. Capacity.

d. Speed.

e. Ratings.

PART 3 - EXECUTION

3.01 INSTALLATION OF PRODUCTS

A. Except as otherwise indicated in individual sections of the Contract Documents, comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located

and aligned with other Work.

B. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion of the whole Work.

END OF SECTION

SECTION 01640 - PRODUCT HANDLING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:

Contractor shall protect products scheduled for use in the Work by means including, but not necessarily limited to, those described in this Section.

B. Related Work:

Additional procedures also may be prescribed in other Sections of these Contract Documents.

See Section 014000 – Quality Control, 1.14 Material Receipt and Storage Inspections.

1.02 QUALITY ASSURANCE

Contractor shall:

A. Include within the Contractor's quality assurance program such procedures as are required to assure full protection of Work and materials and:

B. Submit a material receipt, offloading, and storage plan to the Owner for approval that addresses the following at a minimum:

1. Delivery, handling, and storage of products in accordance with manufacturer's recommendations and by methods and means which will prevent damage, deterioration, and loss, including theft.

2. Control delivery schedules to minimize long-term storage of products at Project site and overcrowding of construction spaces.

3. In particular, provide delivery/installation coordination to ensure minimum holding or storage times for products recognized to be flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other sources of loss.

4. Delivery of products to the Project site in the manufacturer's sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.

5. Inspection of products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected. Submission of a material receipt inspection report including checklists, pictures, etc. along with the daily production report.

6. Storage of products at the Project site in a manner that will facilitate inspection and measurement of quantity or counting of units.

7. Storage of heavy materials away from the Project structure in a manner that will not endanger the supporting construction.

8. Store products subject to damage by the elements above ground, under cover in a weather tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

9. Compliance with laws and regulations regarding storage of material and equipment such as quantity restrictions, stacking, compatibility with adjacent material, fire protection, containment, etc.

10. Provision of drawings indicating delivery routes, off-loading and lay-down areas, and storage areas.

C. Revise and resubmit the material receipt, offloading, and storage plan to the Owner for approval as onsite conditions change and/or project phasing progresses.

1.03 MANUFACTURER'S RECOMMENDATIONS

Except as otherwise approved by the Owner, Contractor shall determine and comply with manufacturer's recommendations on product handling, storage, and protection.

1.04 PACKAGING

A. Contractor shall deliver products to the Project site in their manufacturer's original containers, with labels intact and legible.

Contractor shall:

1. Maintain packaged materials with seals unbroken and labels intact until time of use.

2. At the time of delivery, inspect and remove damaged material and unsuitable items from the Project site, and promptly replace with material(s) meeting the specified requirements, at no additional cost to the Owner.

B. The Owner may reject as non-complying such material and products that do not bear identification satisfactory to the Owner as to manufacturer, grade, quality, and other pertinent information.

1.05 PROTECTION

Contractor shall:

A. Protect finished surfaces, including jambs and soffits of openings used as passageways, through which equipment and materials are handled.

B. Provide protection for finished floor surfaces in traffic areas prior to allowing equipment or materials to be moved over such surfaces.

C. Maintain finished surfaces clean, unmarred, and suitably protected until accepted by the Owner.

D. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.

E. Restore storage areas to their previous condition regarding cleanliness. Remove all trash, debris, and clean up any spills.

1.06 REPAIRS AND REPLACEMENTS

Contractor shall:

A. In event of damage, promptly make replacements and repairs to the approval of the Owner and at no additional cost to the Owner.

B. Additional time required to secure replacements and to make repairs will not be considered by the Owner to justify an extension in the Contract Time.

1.07 REMOVAL OF NON-COMPLIANT MATERIAL AND EQUIPMENT

A. Material or equipment that is determined to be non-compliant with contract requirements shall not be off-loaded or stored onsite. The Contractor shall make prompt arrangements to have the material or equipment removed from the site. In the event the Contractor cannot or refuses to remove the material or equipment, the Owner reserves the right to have the non-compliant material or equipment removed from the site and stored at an appropriate location at the Contractor's expense.

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

Not used.

END OF SECTION

SECTION 01700 - PROJECT CLOSEOUT

PART 1 - GENERAL

1.01 DESCRIPTION

Closeout is hereby defined as the performance of activities and the preparation and submittal of documents following Substantial Completion as specified in the Contract Documents as necessary to Final Acceptance and Contract closure. Specific requirements for individual units of Work are specified in other Sections. Should phased Substantial Completion be requested by the Owner, the Contractor and Owner will establish the extent of the area and scope that reached Substantial Completion. For each phased Substantial Completion area, the Contractor shall comply with this section.

1.02 PREREQUISITES TO SUBSTANTIAL COMPLETION

A. Prior to requesting Owner's and Design Professional inspection for Certificate of Substantial Completion, for either the whole Work or designated portions thereof, complete the following and list known exceptions in request:

1. In progress payment request, coinciding with, or first following date claimed, show 100% completion for portion of Work claimed as substantially completed, or list incomplete items, value of incompletion, and reasons for being incomplete.

2. Include supporting documentation for completion as indicated in the Contract Documents.

3. Submit statement showing accounting of changes to the Contract sum.

4. Advise Owner of pending insurance change-over requirements.

5. Obtain and submit releases enabling Owner's full and unrestricted use of the Work and access to services and utilities, including, where required, occupancy permits, operating certificates, and similar releases.

6. Deliver tools, spare parts, extra stocks of materials, and similar physical items to Owner.

7. Make final change-over of locks and transmit keys to Owner, and advise Owner's personnel of change-over in security provisions.

8. Complete start-up testing of systems and instructions of Owner's operating-maintenance personnel. Discontinue, or change over, and remove from Project site temporary facilities and services, along with construction tools and facilities, mock-ups, and similar elements.

In Owner's sole discretion, it may waive the above requirements in writing and provide a deadline after Substantial Completion, but before final completion for compliance.

B. Cleaning and Repairs:

Immediately prior to the Owner's and Design Professional's inspection for Substantial Completion of the whole Work or designated portions thereof, the Contractor will completely clean the premises. Concrete and ceramic surfaces will be cleaned and washed. Resilient coverings will be cleaned, waxed and buffed. Woodwork will be dusted and cleaned. Sash, fixtures, and equipment will be thoroughly cleaned. Stains, spots, dust, marks, and smears will be removed from all surfaces. Hardware and all metal surfaces will be cleaned and polished. Glass and plastic surfaces will be thoroughly cleaned by professional window cleaners. All damaged, broken or scratched glass or plastic will be replaced by the Contractor at the Contractor's expense. Refer to Section 01561 - CONSTRUCTION CLEANING. In the event the Contractor does not strictly comply with these cleaning requirements, Owner may have the Work cleaned and backcharge the Contractor.

C. Inspection Procedures:

1. Incomplete Items Prior to Substantial Completion:

a. One week prior to anticipated date of Substantial Completion, the Contractor will furnish the Owner a list of items which Contractor expects will be incomplete at date of Substantial Completion.

b. The Owner will review the list and confirm its acceptability, or itemize objections and transmit such to the Contractor for action. Approval of this list by Owner will be a precondition for conducting the Substantial Completion inspection.

2. Upon receipt of Contractor's request for inspection, the Owner will either proceed with inspection or advise Contractor of prerequisites that are not fulfilled. Following initial inspection, the Owner will either prepare the Certificate of Substantial Completion or advise Contractor of work which must be performed prior to issuance of certificate. The Owner will repeat inspection when requested and when assured that the work has been substantially completed. A listing of work to be completed or corrected and the submission of closeout documents specified in Paragraph 1.03.A.1 will constitute the Final Acceptance punch list.

a. For projects under $10 million, the Final Acceptance punch list will be developed within 30 days after Substantial Completion and will be provided to the Contractor within five days after its completion.

b. For projects over $10 million, the Final Acceptance punch list will be

developed within 60 days after Substantial Completion and will be provided to the Contractor within five days after its completion.

3. Following Substantial Completion, the Contractor will correct or complete all Final Acceptance punch list items, excluding closeout documents, to the satisfaction of the Owner within 30 days after delivering the Final Acceptance punch list for projects under $10 million and 60 days for projects above $10 million If subsequent inspections are necessary after the prescribed time in order to eliminate all deficiencies, the cost of all subsequent inspections with respect to Owner's time will be paid by the Contractor. When ready, the Contractor will request in writing a final inspection of the Work. Upon completion of re-inspection, the Owner will either prepare a Certificate of Final Acceptance or advise Contractor of Work that is not completed or obligations that are not fulfilled as required for Final Acceptance. If necessary, procedures will be repeated. In the event of unacceptable Work discovered on the final inspection or if the submission of the closeout document is incomplete, the issuance of the Certificate of Final Acceptance will be withheld until all Final Acceptance punch list items and closeout documents are corrected or submitted to the Owner's satisfaction.

1.03 PREREQUISITES FOR FINAL COMPLETION AND ACCEPTANCE

A. Prior to requesting Owner's final inspection for Certification of Final Acceptance as required by this Part 2 Contract, complete the following and list known exceptions in requests:

1. Submit certified copy of Final Acceptance punch list with a statement that each item has been completed, submitted or otherwise resolved for acceptance, and has been endorsed and dated by Owner. The Final Acceptance punch list will contain the requirement that the following named items will be submitted as closeout documents on Owner or statutory forms:

a. Consent of Surety to Payment
b. Contractor's Final Affidavit of Payment of Debts and Claims
c. Contractor's Affidavit of Releases of Lien waivers
d. Waiver of Right to Claim Against Payment Bond upon Final Payment
e. List of Contractor's first tier and second tier subcontractors and suppliers, including addresses, phone numbers and a summary of the scope of work.
f. Final release of lien from each subcontractor and supplier listed in d. above
g. Statement of compliance with labor standards and payment of all applicable taxes
h. Statement of Contractor's one-year general warranty
i. Specific warranties as specified in Contract Documents and include the subcontractor or supplier with its contact information when applicable.
j. Accounting of final Contract amount

k. Accounting of actual DBE (W/MBE) participation
l. As-Built drawings sufficient for the production of record drawings
m. O&M manuals, Record Project Manual and record documents (see paragraph 1.06)
n. Evidence of continuing insurance complying with specified requirements
o. Contractor's final pay application
p. Final amendment – when applicable

2. Submit final meter readings for utilities, measured record of stored fuel, and similar data either as of time of Substantial Completion or when Owner took possession of and responsibility for corresponding elements of the Work.

3. Complete final cleaning requirements, including touch-up of marred surfaces. Refer to Section 01561 - CONSTRUCTION CLEANING, Paragraph 3.03 FINAL CLEANING.

4. Touch-up and otherwise repair and restore marred exposed finishes.

1.04 PREREQUISITES TO FINAL PAYMENT

A. Final Payment: Final Payment will be made after Final Acceptance of the whole Work by the Owner upon request by the Contractor and on condition that the Contractor:

1. Acceptance and final payment: The Owner will check the final estimate submitted by the Contractor of the items of Work actually performed. The Contractor will approve the Owner's final estimate or advise the Owner of Contractor's objections to the final estimate which are based on disputes in measurements or computations of the final quantities.

The Contractor and the Owner will resolve all disputes in the measurement and computation of final quantities to be paid within 30 days of the Contractor's submission of the final estimates. If, after such 30 day period, a dispute still exists, the Contractor may approve the Owner's estimate under protest of the portions of Work in dispute, and such disputed quantities will be considered by the Owner as a claim in accordance with the Contract Documents.

a. After the Contractor has approved, or approved under protest, the Owner's final estimate, final payment will be processed based on the entire sum, or the undisputed sum in case of approval under protest, determined to be due the Contractor less all previous payments and all amounts to be deducted under the provisions of the Contract. All prior progress payments will be subject to correction in the final estimate and payment.

b. If the Contractor has filed a claim for additional compensation under the provisions of the Contract, such claims will be considered by the Owner. Upon final resolution of such claims, any additional payment

determined to be due the Contractor, if any, will be paid.

1.05 COMPLIANCES

A. Comply with safety standards and governing regulations for cleaning operations. Do not burn waste materials at Project site, bury debris or excess materials on Owner's property, or discharge volatile or other harmful or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of in a lawful manner.

B. Where extra materials of value remain after Work has been completed and become Owner's property, they will be relocated and stored as directed by Owner.

1.06 RECORD DOCUMENT SUBMITTALS

A. Specific requirements for record documents are shown in this Section. Other requirements are indicated in the General Conditions. General submittal requirements are indicated in submittals sections. Contractor should not use record documents for construction purposes, should protect record documents from deterioration and loss in a secure, fire-resistant location and should provide access to record documents for Owner's reference during normal working hours.

1. Definition: Record documents are defined to include those documents relating directly to performance of the Work which Contractor is required to prepare or maintain for Owner's records and which record the Work as actually performed. In particular, record documents show changes in the Work in relation to way in which shown and specified by original Contract Documents and show additional information of value to Owner's records but not indicated by original Contract Documents. Record documents include newly-prepared drawings (if any are specified), marked-up copies of Contract Documents, specifications, addenda and change orders, field records for variable and concealed conditions such as excavations and foundations, and miscellaneous record information on Work which is otherwise recorded only schematically or not at all.

2. Record Drawings: Upon receipt of acceptable as-built drawings, Designer of Record will produce the official record drawings in the manner prescribed by the Contract Documents. The Contractor will submit the as-built drawings to the Owner for coordination. Record Drawings shall be sent electronically through the Owner’s Management Software.

3. Record Project Manual: Upon completion of mark-up, submit to Owner for Owner's records. Record Project Manual shall be sent electronically through the Owner’s Management Software.

4. Maintenance Manuals: Contractor will complete, place in order, properly identify and submit to Owner for Owner's records. Maintenance Manuals shall be sent electronically through the Owner’s Management Software (close-out module) prior to required training and before substantial completion when

applicable.

5. Miscellaneous Record Submittals: As defined in F, 1, a-g of this Section: Provide Reports from Owner's Management Software for each of the areas of Miscellaneous Records with Bookmarks for each section. Complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to Owner for Owner's records through the Owner's Management Software Close-out Module after Substantial Completion.

B. Contractor's as-built drawings:

1. As-built drawings: The Contractor will maintain one conformed set of as-built drawings at the Project site. These will be kept legible and current and will be available for inspection at all times by the Owner. Changes or work added on these drawings will be shown in a contrasting color. Should as-built drawings be maintained electronically, the Owner shall have access to them at all times.

a. Mark-up Procedure: During progress of the Work, maintain a white-set (blue-line or black-line) of contract drawings and shop drawings, with mark-up of actual installations which vary substantially from the Work as originally shown. Mark fully and accurately whatever drawing is most capable of showing actual physical condition. Where shop drawings are marked-up, mark cross-reference on contract drawings at corresponding location. Mark with erasable colored pencil, using separate colors where feasible, or editable in electronic format, to distinguish between changes for different categories of Work at same general location. Mark-up important additional information which was either shown schematically or omitted from original drawings. Give particular attention to information on Work concealed which would be difficult to identify or measure and record at a later date. Note alternate numbers, change order numbers and similar identification. Require each person preparing mark-up to initial and date mark-up and indicate name of firm. Label each sheet "AS-BUILT" in 1/2 inch high letters. Contractor will provide in BIM format if BIM specification submittals are required

b. Show actual position of all underground and otherwise concealed civil, mechanical and electrical lines, conduit, pipes, ducts, etc. Items in areas with accessible ceilings or other ready access will not be considered as being concealed.

c. In showing changes in the Work, use the same legends as used on the original drawings. Indicate exact locations by dimensions and exact elevations by job datum. Give dimensions from a permanent point.

d. When manholes, boxes, underground conduits, plumbing hot or chilled water lines, inverts, etc., are involved as part of the Work, the

Contractor will furnish true elevations and locations, all properly referenced by using the original bench mark used for this Project.

e. The Contractor will submit completed as-built drawings to the Owner for coordination. The Contractor will transmit original ½ size hard copy to the Owner and the Contractor will submit a consolidated electronic copy via Owner's Management Software and organized by design packages inclusive of all ASIs/ESIs.

f. As-built drawings will contain the names, addresses and phone numbers of the Contractor and the major subcontractors.

g. As-built drawings will be reviewed monthly for compliance and acceptability.

h. The Owner will be the sole judge of the acceptability of the as-built drawings. Receipt and acceptance of the as-built drawings is a pre-requisite for Final Payment.

C. Record Project Manual:

1. During progress of the work, maintain one copy of the record project manual, including addenda, change orders and similar modifications issued in printed form during construction. Mark-up variations in actual Work in comparison with text of specification and modification as issued. Give particular attention to substitutions, selection of options, and similar information on Work where it is concealed or cannot otherwise by readily discerned at a later date by direct observation. Note related record drawing information and product data, where applicable.

2. Where record project manual is printed on one side of page only, mark variation on blank left-hand pages of record project manual, facing printed right-hand pages containing original text affected by variation.

3. Upon completion of the Work, the document information maintained during construction such as addenda, alternates, construction change directives, change orders, work orders, etc. will be recorded as follows:

a. Neatly cross out the non-conforming portion of the record project manual and add by writing in the revised portion of the record project manual. Do not revise the record project manual by cutting and pasting the actual addenda, alternates, construction change directive, change orders, work orders, etc., as actually issued by the Owner. The revisions have to be actually written by the Contractor.

b. The volume(s) of record project manual will be clearly marked "PROJECT RECORD" in 1/2 inch high letters and bear the name of the Contractor

and where applicable, the name of the subcontractor.

c. The Contractor will review the completed record project manual and ascertain that all data furnished in the record project manual is accurate and truly represents the Work as actually installed.

d. Any deviations from the method of executing the record project manual as described above will be considered just cause for disapproval by the Owner and the Design-Builder will be required to conform and resubmit.

e. Submit the record project manual to the Owner for compliance review and approval through the Owner's Management Software Close-out Module

f. Upon Owner's approval, the Contractor will submit the completed record project manual to the Owner through the Owner's Management Software Close-out Module

4. Information maintained during construction such as addenda, alternates, construction change directives, change orders, work orders, etc. will also be electronically recorded in original word processed documents converted to PDF format prior to submittal using strike-throughs for deletions, bold and italic for revisions and additions, and/or other acceptable method(s) where feasible to distinguish between changes. All of this information is to be submitted through the Owner's Management Software in individual records for each document.

D. Record Product Data:

During progress of the Work, maintain electronic copies of each product data submittal and mark-up significant variations in the actual Work in comparison with submitted information. Include both variations in product as delivered to Project site and variations from manufacturer's instructions and recommendations for installation. Give particular attention to concealed products and portions of the Work which cannot otherwise be readily discerned at a later date by direct observation. Note related change orders and mark-up of record drawings and specifications. Product Data should be submitted through the Owner's Management Software Close-out Module by Specification Division with each Specification Subdivision requirement bookmarked. Submit prior to Final Completion.

E. Record Sample Submittal:

After Substantial Completion, and prior to Final Completion, Owner's personnel will meet with Contractor at Project site and will determine if any of submitted samples maintained by Contractor during progress of the Work are to be transmitted to Owner for record purposes. Comply with Owner's instruction for packaging, identification marking, and delivery to Owner's sample storage space. Dispose of other samples in manner specified

for disposal of surplus and waste materials, unless otherwise indicated by Owner.

F. Miscellaneous Record Submittals:

1. Refer to other Sections of these Contract Documents for requirements of miscellaneous record keeping and submittals in connection with actual performance of the Work. Immediately prior to date(s) of Substantial Completion, complete miscellaneous records should be properly entered in to the Owner's Management Software in the appropriate modules for the types of records, and ready for continued use and reference. For Close-Out submission, provide reports as described in section 1.06.A.5 above. Categories of requirements resulting in miscellaneous work records are recognized to include, but, the following:

a. Required field records on excavations, foundations underground construction, wells and similar Work.

b. Accurate survey showing locations and elevations of underground lines, including invert elevations of drainage piping, valves, tanks and manholes.

c. Surveys establishing lines and levels of building.

d. Soil treatment certification.

e. Inspection and Test Reports, where not processed as shop drawings or product data.

f. Concrete mix design record.

g. Concrete Block Certification.

G. Digital Electronic Format:

1. The Contractor will submit Record Documents, after review and approval by the Owner, in digital electronic format as follows:

a. All textual data will be provided in PDF with Optical Character Recognition (OCR) and a report quality of 300 dpi or higher format. All formatting and tabular data will be preserved. Tabular data will be embedded in the document in Excel for Windows format.

b. All Drawings will be provided in AutoCAD 2000 (or higher) format, as well as a PDF document of each drawing.

c. After the documents are in correct digital electronic format, they will be submitted to the Owner on a solid state hard drive containing all

documents in an organized document library.

1.07 GUARANTEES AND WARRANTIES

A. After Substantial Completion and prior to Final Acceptance, all guarantees and warranties, as specified under various sections of the Contract Documents, will be obtained by the Contractor, addressed to and in favor of the Owner.

B. Delivery of said guarantees and/or warranties will not relieve the Contractor from any obligations assumed under any other provision of the Contract.

C. If, within any guarantee and/or warranty period, repairs or changes are required in connection with the guaranteed and/or warrantied work, which in the opinion of the Owner is rendered necessary as the result of the use of materials, equipment or workmanship which are defective, inferior or not in accordance with the terms of the Contract, the Contractor will, upon receipt of notice from the Owner, and without expense to the Owner, proceed within seven calendar days to:

1. Place all guaranteed and/or warrantied work in satisfactory conditions correct all defects therein, and make good all damages to the structure or site.

2. Make good all work or materials, or the equipment and contents of structures or site, disturbed in fulfilling any such guarantee and/or warranty.

D. If the Contractor, after notice, fails to comply with the terms of the guarantee and/or warranty, the Owner may have the defects corrected and the Contractor and Contractor’s surety will be liable for all expenses incurred, including Owner's fees.

E. All Guarantees and Warranties will be submitted to the Owner through the Owner’s Management Software Close-Out Module and via original hard copy, giving a summary of the guarantees and warranties attached and stating the following with respect to each:

1. Description of work included

2. Name of subcontractors

3. Period of guarantee/warranty

4. Conditions of guarantee/warranty

1.08 OPERATING INSTRUCTIONS AND MAINTENANCE MANUALS

A. Prior to any required training, and prior to Final Acceptance, complete operating instructions and maintenance manuals will be obtained by the Contractor for each piece of equipment or system furnished under the Contract. Organize operating and maintenance data into suitable sets of manageable size. Each manual will be uploaded to the Owner’s Management Software Close-out Module in a separate record and the

documents will be properly bookmarked for ease of use.

1. In addition to the electronic version submitted through Owner's Management Software , the Contractor will submit one copy of each completed manual on equipment and systems, in final form, to the Owner for review and distribution. There should be an individual manual that is organized and indexed for each unit of equipment, each operating system, and each electric and electronic system.

2. Refer to Specification Sections for individual requirements on operating and maintenance of the various pieces of equipment and operating systems.

B. Equipment and Systems:

1. Provide the following information for each piece of equipment, each building operating system, and each electric or electronic system.

a. Description: Provide a complete description of each unit and related component parts, including the following:

(1) Equipment or system function.
(2) Operating characteristics.
(3) Limiting conditions.
(4) Performance curves.
(5) Engineering data and tests.
(6) Complete nomenclature and number of replacement parts.

b. Manufacturer's Information: For each manufacturer of a component part of a piece of equipment provide the following:

(1) Printed operating and maintenance instructions.
(2) Assembly drawings and diagrams required for maintenance.
(3) List of items recommended to be stocked as spare parts.

c. Maintenance Procedures: Provide information detailing essential maintenance procedures, including the following:

(1) Routine operations.
(2) Trouble-shooting guide.
(3) Disassembly, repair and reassembly.
(4) Alignment, adjusting and checking.

d. Operating Procedures: Provide information on equipment and system operating procedures, including the following:

(1) Start-up procedures.
(2) Equipment or system break-in.
(3) Routine and normal operating instructions.

(4) Regulation and control procedures.
(5) Instructions on stopping.
(6) Shut-down and emergency instructions.
(7) Summer and winter operating instructions.
(8) Required sequences for electric or electronic systems.
(9) Special operating instructions.

e. Servicing Schedule: Provide a schedule of routine servicing and lubrication requirements, including a list of required lubricants for equipment with moving parts.

f. Controls: Provide a description of the sequence of operation and as-installed control diagrams by the control manufacturer for systems requiring controls.

g. Coordination Drawings will be submitted through the BIM Model submittal requirement.

h. Valve Tags: Provide charts of valve tag numbers with the location and function of each valve.

i. Circuit Directories: For electric and electronic systems, provide complete circuit directors of panel-boards, including the following:

(1) Electric service.
(2) Controls.
(3) Communication.

1.09 REPLACEMENT MATERIALS

Prior to Final Acceptance, Contractor will transmit and turn over, at the Project site, in a location directed by Owner, all replacement materials which may be required by other sections of these Contract Documents.

PART 2 - PRODUCTS

"Not Used"

PART 3 - EXECUTION

3.01 EQUIPMENT OPERATIONAL DEMONSTRATIONS

A. Prior to Substantial Completion of the whole Work or designated portions thereof, and prior to Final Acceptance, the Contractor will provide a competent and experienced person thoroughly familiar with the Work to demonstrate and instruct the Owner's personnel in operation, adjustment and maintenance of products, equipment and systems. This instruction will include normal start-up, run, stop, and emergency

operations, location and operation of all controls, alarms and alarm systems, etc. The instruction will include tracing the system in the field and on the diagrams in the instruction booklets so that the Owner's operating personnel will be thoroughly familiar with both the system and the data supplied. Provide instruction at mutually agreed upon times.

1. Use operation and maintenance manuals for each piece of equipment or system as the basis of instruction. Review contents in detail to explain all aspects of operation and maintenance.

2. For equipment that requires seasonal operation, provide similar instruction during other seasons.

B. If installers and/or Contractor's personnel are not experienced in procedures, provide instruction by manufacturer's representatives. Include a detailed review of the following items:

1. Maintenance manuals.
2. Record documents.
3. Spare parts and materials.
4. Tools.
5. Lubricants.
6. Fuels.
7. Identification systems.
8. Control sequences.
9. Hazards.
10. Cleaning.
11. Warranties and bonds.
12. Maintenance agreements and similar continuing commitments.
13. Similar procedures and facilities.
14. Any other appropriate item.

C. As part of instruction for operating equipment, demonstrate the following procedures:

1. Start-up.
2. Shut down.
3. Emergency operations.
4. Noise and vibration adjustments.
5. Safety procedures.
6. Economy and efficiency adjustments.
7. Effective energy utilization.
8. Similar operations.
9. Any other appropriate procedure.

D. Review maintenance and operations in relation to applicable warranties, agreements to maintain bonds, and similar continuing commitments.

E. Owner will be notified in writing of scheduling and completion of all equipment operational instructions and demonstrations.

END OF SECTION

SECTION 01740 - WARRANTIES

PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies general administrative and procedural requirements for warranties required by the Contact Documents, including manufacturer's standard warranties on products and special warranties.

1. Refer to Section 00700, GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, as modified, for terms of the Contractor's special warranty of workmanship and materials.

2. General closeout requirements are included in Section 01700 - PROJECT CLOSEOUT.

3. Specific requirements for warranties for the Work and products and installation that are specified to be warranted are included in the individual Sections of the Specifications.

4. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.

B. Disclaimers and Limitations:

. Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor of Contractual warranty requirements.

1.02 DESCRIPTION OF REQUIREMENTS/DEFINITIONS

A. Categories of Specific Warranties:

1. It is recognized that warranties on the Work are in several categories, including those of the conditions of the Contract and including (but not necessarily limited to) the following specific categories related to the individual units of Work specified in the sections of the Specifications:

a. Special Warranty (Guarantee): A warranty specifically written and signed by the Contractor for a defined portion of the Work; and, where required, countersigned by subcontractor, installer, manufacturer or other entity engaged by Contractor. Formerly generally recognized as (and sometimes specified in Contract Documents as) a "guarantee".

b. Specified Product Warranty: A warranty which is required by Contract Documents to be provided for a manufactured product which is incorporated into the Work, regardless of whether the manufacturer has published the warranty without consideration for specific

incorporation of product into the Work, or has written and executed the warranty as a direct result of Contact Documents requirements.

c. Coincidental Product Warranty: A warranty which is not specifically required by Contract Documents (other than as specified in this Section) but which is available on a product incorporated into the Work by virtue of the fact that the manufacturer of the product has published the warranty in connection with purchases and uses of product without regard for specific applications, except as otherwise limited by terms of the warranty.

B. Definition: Manufactured Product:

A physical item for incorporation into the Work which has been produced from raw or natural materials by a manufacturing process and which is purchased from a manufacturer either specifically for the Work or for Contractor's/subcontractor's/ fabricator's/installer's stock from which it is drawn for incorporation into the Work.

C. General Limitations:

1. It is recognized that specific warranties are intended primarily to protect Owner against failure of Work to perform as required and against deficient, defective and faulty materials and workmanship, regardless of sources. Except as otherwise indicated, specific warranties do not cover failures in Work which result from:

a. Damage or defect caused by abuse

b. Modifications not executed by the Contractor

c. Improper or insufficient maintenance

d. Improper operations, or normal wear and tear under normal usage

2. Although manufacturer's commitments in product warranties on products used in the Work are generally written to exclude product failures which result from failure of other Work (such as failure of substrate supporting product), such limitations in product warranties do not relieve Contractor of the more general warranties on Work which incorporates use of such products. Except as otherwise indicated, this same relationship applies to units of Work performed by other entities (other than manufacturers), such as fabricators, installers and subcontractors, who are required to countersign special Project warranties with Contractor for such units of Work.

3. Owner’s signature on any manufacturer’s or other warranties does not excuse the Contractor from its common law warranty obligations or its contractual warranty obligations.

1.03 WARRANTY REQUIREMENTS

A. Related Damages and Losses:

When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.

B. Reinstatement of Warranty:

When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty will be equal to the original warranty from the date of correction or rebuilding.

C. Replacement Cost:

Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

D. Owner's Recourse:

1. Written warranties made to the Owner are in addition to contractual and implied warranties and will not limit the duties, obligations, rights and remedies otherwise available under the law, nor will warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.

    a. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.

2. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work until evidence is presented that entities required to countersign such commitments are willing to do so.

3. Written warranties shall not require the signature of the Owner for compliance.

1.04 SUBMITTALS

A. Submit written warranties to the Owner prior to the date certified for Final Payment.

1. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties.

    Submit a draft to the Owner for approval prior to final execution.

a. Refer to individual sections of Division 2 through 28 for specific content requirements and particular requirements for submittal of special warranties.

2. Submit specific warranties for beginning of the warranty periods. Date(s) will be inserted to correspond with certification or acceptance dates, as established and accepted by the Owner.

B. Form of Submittal:

1. Provide one Electronic Copy and one Hard copy of each required warranty properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Record Project Manual. All Warranties should be submitted through the owners Project Management Software.

2. Bind warranties in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, with thickness as necessary to accommodate contents, and sized to receive 8-1/2" by 11" paper.

a. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address and telephone number of the installer.

b. Identify each binder on the front and the spine with the typed or printed title 'WARRANTIES AND BONDS," the Project title or name, and the name of the Contractor.

3. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

Tampa International Airport

HCAA Project No. 8700 14, 8100 14, & 1105 14

Hillsborough County Aviation Authority

Board Members

Gary W. Harrod - Chairman

Robert I. Watkins - Vice Chairman

Brig. General Chip Diehl - Treasurer

City of Tampa Mayor Jane Castor - Secretary

Hillsborough County Commissioner Stacy White - Asst. Secretary/ Asst. Treasurer

Chief Executive Officer

Joseph W. Lopano - Chief Executive Officer

CONSTRUCTION DATA

PRIME CONTRACTOR

MAJOR SUBCONTRACTORS AND/OR SUPPLIERS

WORK: COMMENCED_____ , COMPLETED _____

COST: BID $_____ FINAL $_____

PROJECT ENGINEER/INSPECTIORS:

ALL CONSTRUCTION PERFORMED UNDER THIS CONTRACT WAS COMPLETED IN SUBSTANTIAL CONFORMITY WITH THE DRAWINGS, NOTES AND SPECIFICATIONS CONTAINED IN THESE PLANS. ALL CHANGES FROM THE PLANS AS BID, HAVE BEEN NOTED TO THE BEST OF OUR KNOWLEDGE.

(CERTIFIED) _____ PROJECT ENGINEER _____ DATE

FEDERAL AVIATION ADMINISTRATION

APPROVED _____ DATE _____

FLORIDA DEPT. OF TRANSPORTATION

APPROVED _____ DATE _____

Hillsborough County Aviation Authority

APPROVED _____

DATE _____

Gresham Smith

Gresham Smith No: 43342.03

APPROVED _____ A.R. No: _____

DATE _____

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10/7/2021 11:40:03 AM

Gresham Smith

Genuine Ingenuity

Tampa International Airport

BID SET - NOT FOR CONSTRUCTION

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION

TAMPA, FLORIDA

Note:
Do not scale prints. Reproduction may cause distortion. Scales labeled on all sheets will only be accurate if sheets are printed full size at 30" x 42"

10/07/2021

PROJECT INFORMATION SHEET

Drawn By: Author
Checked By: Checker
Approved By: Approver

PLAN REVIEW DATA

BUILDING CLASSIFICATION:

OCCUPANCY TYPE
CLASSIFICATION: NON-SEPARATED, MIXED USE (GROUP 'A-3' PRIMARY OCCUPANCY):
PER FLORIDA BUILDING CODE 2020, GROUP 'A-3'
PER FLORIDA BUILDING CODE 2020, GROUP 'B'.
PER FLORIDA BUILDING CODE 2020, GROUP 'F-3'.
PER FLORIDA BUILDING CODE 2020, GROUP 'M'.
PER FLORIDA BUILDING CODE 2020, GROUP 'S-2' (ABOVE).

NON-SEPARATED, MIXED USE:
SEPARATION BETWEEN OCCUPANCIES IS NOT REQUIRED. UTILIZING FBC 2020, 508.3.3 AND FPPC 101-6.1.14.3, NON-SEPARATED MIXED USE IS PERMITTED, BUT REQUIRES THAT THE MOST RESTRICTIVE PROVISIONS FOR HEIGHT, AREA AND FIRE PROTECTION (REFERENCE FBC TABLE 503).

CONSTRUCTION TYPE
FBC TABLE 601: CONSTRUCTION TYPE I-B (FULLY SPRINKLERED)
HEIGHT: MAXIMUM 11 STORIES ALLOWED
AREA: UNLIMITED

FBC 602.2: TYPE I

BUILDING FIRE PROTECTION:
FULLY SPRINKLERED
FBC TABLE 601 FIRE RESISTANCE ASSEMBLY RATING REQUIREMENTS FOR CONSTRUCTION TYPE 1 B:

STRUCTURAL FRAMES	2-HOUR
EXTERIOR BEARING WALLS	3-HOUR
INTERIOR BEARING WALLS	3-HOUR
FLOOR CONSTRUCTION (INCLUDING BEAMS AND JOISTS)	2-HOUR
ROOF CONSTRUCTION (INCLUDING BEAMS AND JOISTS)	1-HOUR

INTERIOR FINISHES: AT MINIMUM, ALL FINISHES SHALL COMPLY WITH FBC CHAPTER 8 (INTERIOR FINISHES CLASS B OR C PER TABLE 803.11), OR AS INDICATED BY AUTHORITY HAVING JURISDICTION OR AS INDICATED BY THE DRAWINGS AND SPECIFICATIONS.

PROJECT SCOPE
PROJECT SCOPE INCLUDES ADDITIONS AND MODIFICATIONS TO WAYFINDING SIGNAGE IN AND AROUND THE AIRPORT BUILDINGS. THE PROJECT DOES NOT INCLUDE RENOVATION TO ANY EXISTING BUILDING ELEMENTS OR ADDITION OF ANY BUILDING AREA. ELECTRICAL MODIFICATIONS ARE INCLUDED INSOFAR AS THEY ARE IMPACTED BY THE WAYFINDING SIGNAGE. STRUCTURAL MODIFICATIONS ARE LIMITED TO ELEMENTS THAT DIRECTLY SUPPORT THE WAYFINDING SIGNAGE.

GOVERNING CODES AND REGULATIONS:

2020 FLORIDA BUILDING CODE - BUILDING, SEVENTH EDITION
2020 FLORIDA BUILDING CODE - EXISTING BUILDING, SEVENTH EDITION
2020 FLORIDA FIRE PREVENTION CODE, SEVENTH EDITION
2020 FLORIDA BUILDING CODE - ENERGY CONSERVATION, SEVENTH EDITION
2020 FLORIDA BUILDING CODE - PLUMBING, SEVENTH EDITION
2020 FLORIDA BUILDING CODE - MECHANICAL, SEVENTH EDITION
2020 FLORIDA BUILDING CODE - ACCESSIBILITY, SEVENTH EDITION

NFPA 1: FIRE CODE (2018 EDITION)
NFPA 10: STANDARD FOR PORTABLE FIRE EXTINGUISHERS (2016 EDITION)
NFPA 13: STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS (2016 EDITION)
NFPA 70: NATIONAL ELECTRICAL CODE (2017 EDITION)
NFPA 72: NATIONAL FIRE ALARM AND SIGNALING CODE (2016 EDITION)
NFPA 101: LIFE SAFETY CODE (2018 EDITION)

FLORIDA ADMINISTRATIVE CODES (INCLUDING LIFE SAFETY CODE):
Chapter 69A-3.012: Standards of the National Fire Protection Association and Other Standards Adopted
Florida Fire Prevention Code (2020) which includes:
- Florida Statutes, Chapter 633: Fire Prevention and Control
- Florida Administrative Code, Chapter 69A
- Florida Administrative Code, Chapter 69A-60: Florida Fire Prevention Code

ASME A17.1: Florida Building Code Accessibility (2020 Edition) enforces the ASME A17.1 for Elevators and Escalators
- Florida Building Code (FBC) (2020 Edition) enforces both the:
  - ASME A17.1 – Safety Code for Elevators and Escalators
  - ASME A17.1S – Supplement to Safety Code for Elevators and Escalators

FEDERAL CODES AND REGULATIONS:
The Americans with Disabilities Act (ADA) 2010 ADA Standards for Accessible Design

GENERAL NOTES FOR PROJECT

1. ALL WORK HAS BEEN DESIGNED TO BE IN FULL CONFORMANCE WITH THE TPA WAYFINDING STANDARDS MANUAL. REFERENCE PROJECT MANUAL FOR PROPER DISPOSAL OF MATERIAL. OWNER SHALL BE AFFORDED THE FIRST RIGHT OF REFUSAL TO TAKE OWNERSHIP OF ANY ITEMS THAT ARE DEMOLISHED. ANY ITEMS THE OWNER WISHES TO RETAIN WILL BE IDENTIFIED PRIOR TO DEMOLITION ACTIVITIES.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR CONDUCTING ON-SITE INSPECTION TO FIELD VERIFY ALL EXISTING CONDITIONS AFFECTING THE FABRICATION AND INSTALLATION OF SIGNS AND SIGN PANELS, INCLUDING SIGN PANEL SIZES, MATERIALS AND METHODS OF FABRICATION, AND SITE CONDITIONS AFFECTING ACCESS TO AND INSTALLATION OF SIGNS. LOCATION OF NEW SIGNS SHALL BE FIELD VERIFIED BY THE DESIGN CONSULTANT PRIOR TO INSTALLATION.
3. DRAWINGS REPRESENT DESIGN INTENT, AND CONTRACTOR SHALL BE RESPONSIBLE FOR ALL STRUCTURAL DESIGN, ENGINEERING DETAILS AND SEALED SHOP DRAWINGS, AND INSTALLATION OF SIGN FRAMING, SUPPORT MEMBERS, COMPONENTS, CONNECTIONS, BRACING, EXPANSION JOINTS (AND THEIR FINISHING) ETC. FOR ALL SIGNS. SIGN CONTACTOR SHALL BE RESPONSIBLE FOR THE STRUCTURAL INTEGRITY OF THE SIGN AND MOUNTING. ALL MOUNTING HARDWARE MUST BE CONCEALED FROM VIEW AND NON-CORROSIVE. ALL SIGN SUPPORT ELEMENTS AND CONNECTIONS SHALL BE DESIGNED AND STAMPED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF FLORIDA. FIELD VERIFY MOUNTING CONDITIONS, INCLUDING BLOCKING AS REQUIRED FOR ALL SIGN LOCATIONS PRIOR TO FABRICATION.
4. ALL SIGNAGE REQUIRING ADDITIONAL SUPPORT SHALL BE ATTACHED TO WALL/CEILING SURFACES WITH NON-CORROSIVE CONCEALED ANCHORS INTO SCHEDULED WALL/CEILING SURFACES. CONTRACTOR SHALL ENSURE ADEQUATE BLOCKING IS IN PLACE OR INSTALLED AS NEEDED FOR INTERNAL WALL STRUCTURE OR ABOVE CEILING CONDIIONS TO SUPPORT SIGNAGE. ALL PENETRATION OF THE BUILDING SURFACES MUST BE COMPLETELY SEALED AND MOISTURE-PROOF.
5. SIGN SUPPORT POSTS AND STRUCTURES NOT DETAILED BY STRUCTURAL ENGINEER OF RECORD SHALL BE DESIGNED AND ENGINEERED BY CONTACTOR TO MEET THESE DESIGN INTENT DRAWINGS.
6. ALL HEADS ON MECHANICAL FASTENERS TO BE PRE-PAINTED/FINISHED TO MATCH ADJACENT SIGN BACKGROUND COLOR, WITH FIELD TOUCH-UP PAINT TO MATCH.
7. SIGN FACE LAYOUTS ARE FOR POSITION ONLY. FINAL LETTER SPACING TO BE VERIFIED BY SIGNAGE CONTRACTOR.
8. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS FOR PROPER FIT OF SIGNS PRIOR TO FABRICATION.
9. CONTRACTOR TO COORDINATE WITH ALL TRADES FOR ELECTRICAL POWER REQUIREMENTS, AVAILABILITY AND HOOKUP.
10. NOMINAL DIMENSIONS ARE PROVIDED FOR REFERENCE. UNLESS OTHERWISE NOTED, OVERHEAD SIGNS AND PROJECTED SIGNS ARE TO BE MOUNTED AS SHOWN ON THE DRAWINGS AND CONFIRMED IN THE FIELD BY THE CONTRACTOR PRIOR TO FABRICATION.
11. WHENEVER DISSIMILAR METALS ARE ADJACENT OR MECHANICALLY CONNECTED, FABRICATOR IS TO PROVIDE GASKETS AS NEEDED TO ENSURE THAT METALS ARE SEPARATED AND THAT NO CORROSION OCCURS.
12. REFER TO SECTION 10 1400 IN PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS FOR SIGNAGE.
13. HCAA HAS A SEPARATE PROJECT CALLED THE MAIN TERMINAL CURBSIDE EXPANSION (MTCE). THIS PLAN SET REFERENCES WORK TO BE PERFORMED BY MTCE PROJECT WHICH WILL BE COMPLETE IN ADVANCE OF WORK UNDER THIS CONTRACT BEING EXECUTED. WHERE THESE DRAWINGS REFERENCE WORK TO BE PERFORMED BY MTCE, CONTRACTOR SHALL NOT INCLUDE MTCE WORK IN BIDS.
14. ANY TIME CONTRACTOR DISTURBS EXISTING INFRASTRUCTURE (CEILINGS, WALLS, FLOORS, ETC.) IN ORDER TO PERFORM THE NEW WORK, THE CONTRACTOR IS RESPONSIBLE FOR RETURNING THE EXISTING INFRASTRUCTURE TO MATCH ITS EXISTING CONDITION AND SHALL REPAIR AND FURNISH NEW MATERIALS AS NECESSARY TO ACHIEVE THAT. REFER TO SPEC SECTION 01045 FOR ADDITIONAL CUTTING AND PATCHING REQUIREMENTS.
15. REFER TO SHEET AG2.1.3 FOR WORK SHOWN AS 'PHASE 1 (PRIORITY) SIGNS'. THESE SIGNS HAVE A DIRECT RELATIONSHIP TO THE MTCE PROJECT SCOPE AND SHALL BE INSTALLED FIRST, ON A PRIORITY BASIS. REFER TO SPECIFICATION SECTION 01315 EXHIBIT B - CONSTRUCTION PHASE BAR CHART FOR ADDITIONAL INFORMATION.
16. PHASE 2a WORK SHOWN ON SHEET AG2.1.3 MUST BE COORDINATED WITH OWNER FURNISHED EQUIPMENT (OFE) DYNAMIC DISPLAY INSTALLATION BY INTEGRATOR AVI-SPL UNDER SEPARATE CONTRACT. REFER TO SPECIFICATION SECTION 01315 EXHIBIT B - CONSTRUCTION PHASE BAR CHART FOR ADDITIONAL INFORMATION.
17. ALL TESTING AND INSPECTIONS SHALL BE BY CONTRACTOR UNLESS OTHERWISE REQUIRED OR NOTED.
18. CONTRACTOR SHALL PROVIDE TEMPORARY SIGNAGE AS NEEDED IN ORDER TO MAINTAIN AIRPORT OPERATIONS AND UNINTERRUPTED SERVICE WITH NO GAPS IN INFORMATION.
19. CONTRACTOR SHALL ENSURE ALL EQUIPMENT USED TO INSTALL ELEMENTS OF THIS PROJECT DOES NOT EXCEED THE STRUCTURAL FLOOR CAPACITY OF THE LANDSIDE TERMINAL BUILDING OR AIRSIDES. REFERENCE THE REPORT 'TAMPA INTERNATIONAL AIRPORT STRUCTURAL & PAVEMENT INSPECTION FY-12 - FLOOR CAPACITY ANALYSIS' DATED AUGUST 24, 2012 AND PREPARED BY WALKER PARKING CONSULTANTS. REPORT IS UNDER SEPARATE COVER AND CAN BE PROVIDED BY HCAA BY CONTRACTOR REQUEST.

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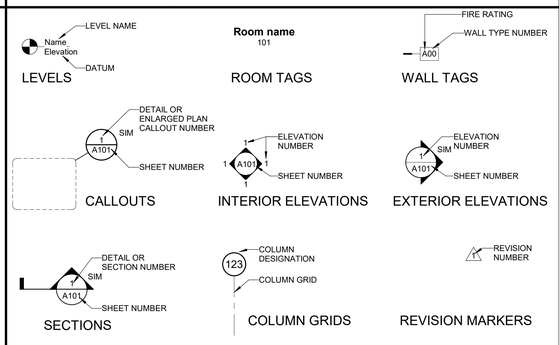

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E6.03	PANEL SCHEDULES - ELECTRICAL
TECHNOLOGY	
T0.0.0	LEGEND - TECHNOLOGY
T2.1.3	LEVEL 3 - TRANSFER - TECHNOLOGY
T2.1.4	APM 1 - LEVEL 4 - PLATFORM - TECHNOLOGY

PROJECT NARRATIVE

The Project will modify the wayfinding signage program at Tampa International Airport (TPA). It will address signs identified as needing to be added or renovated in order to comply with TPA's new Wayfinding Standards Manual and that are not already included in the scope of a different concurrent project.

The scope of this project includes interior signage in the following locations on the TPA campus: Bag Claim, Ticketing, and Transfer Levels of the Main Terminal; Shuttle lobbies of Airsides A, C, E, & F; within the SkyConnect APM stations at the Main Terminal, Economy Parking, and Rental Car Center; within the Economy Parking Garages; and on all levels of the Rental Car Center. The scope also includes roadway signs in the Rental Car Garage.

DESIGN TEAM

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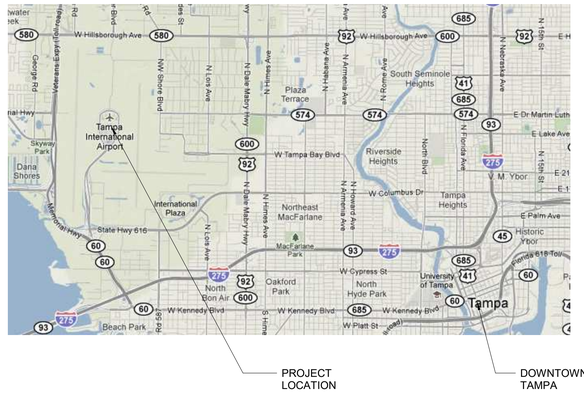
Tech EOR: Gerald Crnkovich

AUTHORITY HAVING JURISDICTION

City of Tampa
Construction Services Division
1400 N. Boulevard, Tampa, Florida 33607
Phone: 813.274.3100

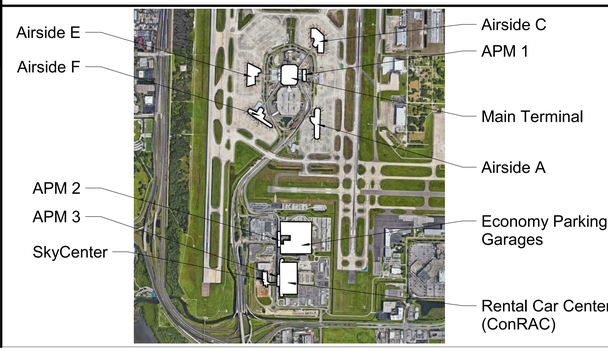
PROJECT LOCATION MAP



AIRPORT / AUTHORITY ADDRESS

Hillsborough County Aviation Authority
4100 George J Bean Parkway
Tampa, FL 33607

PROJECT PLAN



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Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

PROJECT INFORMATION

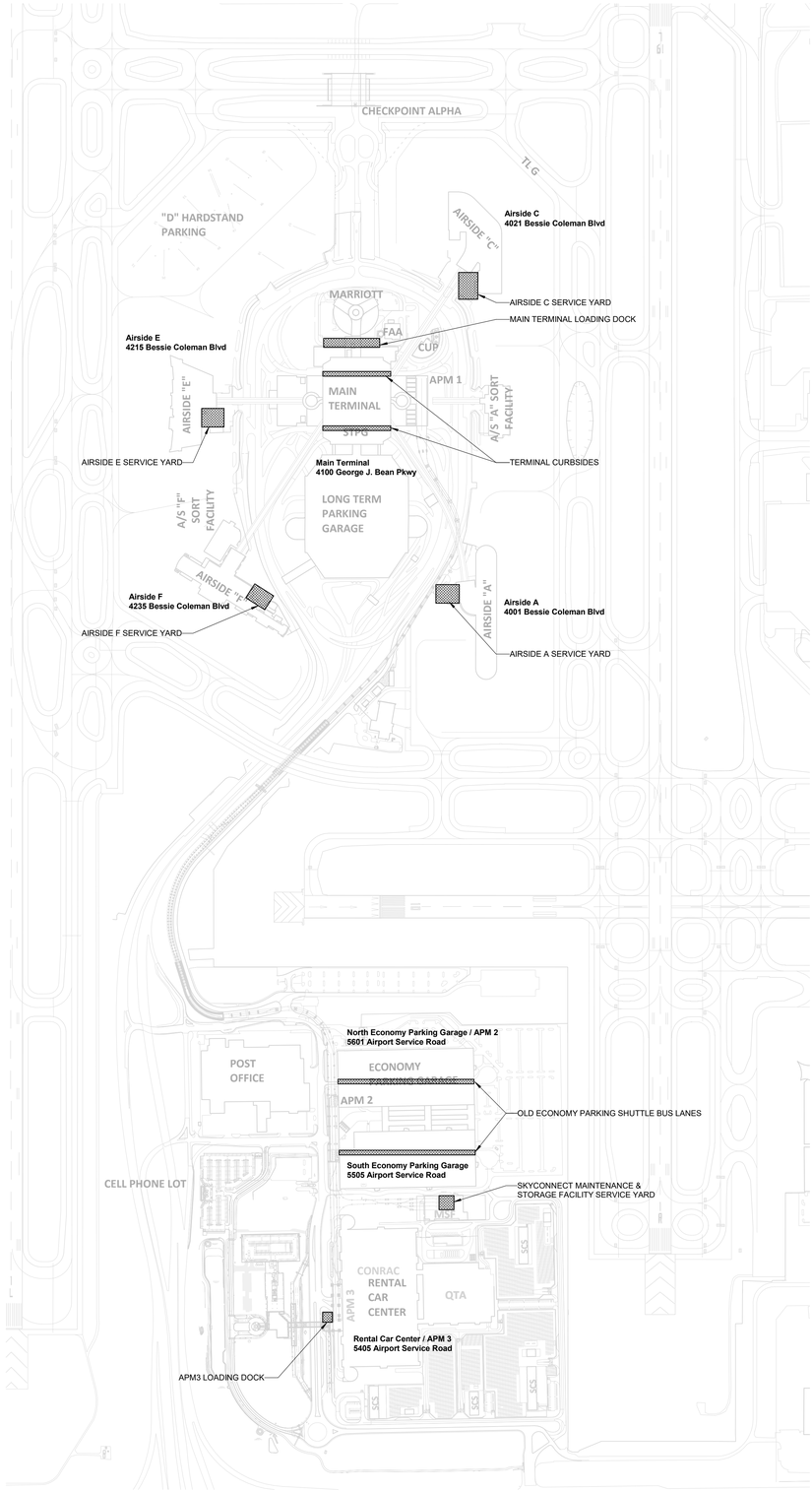
G0.11

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

10/7/2021 11:40:04 AM
BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt

Drawn By: Author
Checked By: Checker
Approved By: Approver



1 SITE DELIVERY LOCATION PLAN
1" = 400'-0"

NOTE: REFER TO SPECIFICATION SECTION 01315: EXHIBIT A (TPA SIGNAGE WORK HOURS) FOR LIST OF DELIVERY LOCATIONS FOR VARIOUS SCOPES OF WORK

Gresham Smith

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WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SITE DELIVERY LOCATION PLAN

G0.12

43342.03
10/07/2021

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10/7/2021 11:40:10 AM BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt

STRUCTURAL GENERAL NOTES

GENERAL

1. CODES
   - A. GOVERNING BUILDING CODE FOR DESIGN OF BUILDING STRUCTURE IS 2020 FLORIDA BUILDING CODE, 7TH EDITION.
   - B. REFERENCES TO NATIONAL STANDARDS/CODES SHALL BE TO EDITION ADOPTED BY GOVERNING BUILDING CODE REFERENCED HEREIN. WHERE BUILDING CODE DOES NOT REFERENCE STANDARDS, LATEST EDITION OF STANDARD PUBLISHED PRIOR TO DATE OF BUILDING CODE ADOPTION.
   - C. REVIEW(ED) INDICATES REVIEW(ED) AND COMMENTED BY ARCHITECT/ENGINEER IN WRITING.
2. CONTRACT DOCUMENTS
   - A. FOLLOWING NOTES ARE APPLICABLE TO CONTRACT DOCUMENTS. IN INSTANCE OF A DISCREPANCY, MOST STRINGENT REQUIREMENT SHALL APPLY, EXCEPT WHERE CLARIFIED BY ARCHITECT/ENGINEER.
   - B. USE STRUCTURAL DRAWINGS IN CONJUNCTION WITH COMPLETED CONTRACT DOCUMENTS, INCLUDING SPECIFICATIONS. COORDINATE REQUIREMENTS OF TRADES INTO SHOP DRAWINGS AND CONSTRUCTION.
   - C. CONSTRUCT WORK NOT FULLY INDICATED OR SPECIFIED IN CONTRACT DOCUMENTS IN SAME MANNER AS INDICATED OR SPECIFIED IN SIMILAR CONDITIONS.
   - D. REPORT ANY DISCREPANCY BETWEEN DISCIPLINE DRAWINGS TO ARCHITECT/ENGINEER PRIOR TO FABRICATIONS/ERECTION OF ANY MEMBERS.
   - E. USE ONLY DIMENSIONS INDICATED ON DRAWINGS. DO NOT SCALE DRAWINGS OR USE ANY DIMENSIONS TAKEN FROM ELECTRONIC DRAWING FILES.
   - F. ATTACHMENTS OF ITEMS SUPPORTED BY STRUCTURE NOT SPECIFICALLY AND COMPLETELY DETAILED IN CONTRACT DOCUMENTS ARE RESPONSIBILITY OF CONTRACTOR. SOME SPECIALTY ITEMS MAY HAVE POINTS OF ATTACHMENT IDENTIFIED ON DOCUMENTS.
   - G. CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS AND METHODS, SITE SAFETY, AND PERMITS. COMPLY WITH LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY BEARING UPON PERFORMANCE OF WORK.
   - H. ARCHITECT/ENGINEER IS NOT RESPONSIBLE FOR CONTRACTOR'S FAILURE TO PERFORM WORK AND SERVICES REQUIRED ON PROJECT.
   - I. STRUCTURE HAS BEEN DESIGNED IN ITS COMPLETED FORM FOR IMPOSED LOADS AS REQUIRED BY CODE AND AS INDICATED. NO PROVISIONS HAVE BEEN MADE NOR IS ARCHITECT/ENGINEER RESPONSIBLE FOR ANY TEMPORARY CONSTRUCTION STAGING AND LOADINGS ON STRUCTURE, INCLUDING SLAB ON GRADE.
   - J. WHERE NOT INDICATED ON STRUCTURAL DOCUMENTS, COORDINATE ITEMS BELOW WITH OTHER DISCIPLINE DRAWINGS AND RESPECTIVE SUB CONTRACTORS INCLUDING, BUT NOT LIMITED TO FOLLOWING:
     - a. ELEVATIONS
     - b. ATTACHMENTS OF NON-STRUCTURAL ITEMS AND ELEMENTS TO STRUCTURE, WHETHER SPECIFICALLY, DETAILED OR NOT
     - c. REQUIRE FIRE RATINGS AND FIRE PROOFING
   - K. WHERE INDICATED, OPENING SIZES AND LOCATIONS FOR PIPES, DUCTS, ETC. ARE FOR GENERAL INFORMATION ONLY. VERIFY WITH OTHER DISCIPLINE DRAWING AND RESPECTIVE SUBCONTRACTORS. REPORT ANY DISCREPANCIES TO ARCHITECT/ENGINEER IN WRITING PRIOR TO IMPLEMENTING WORK. REFER TO DETAILS FOR RESTRICTIONS AND PARAMETERS.
   - L. DETAILS, SECTIONS AND NOTES DESIGNATED AS "TYPICAL" ARE INTENDED TO SHOW INTENT AND ALSO APPLY TO SIMILAR CONDITIONS, UNO.
   - M. SUBSTITUTION REQUESTS - APPROVAL OF ANY MATERIAL OR PRODUCT SUBMITTED THAT DIFFERS FROM MATERIAL INDICATED OR SPECIFIED IN CONTRACT DOCUMENTS MUST MEET FOLLOWING CRITERIA:
     - a. A COST SAVINGS TO OWNER IS DOCUMENTED AND SUBMITTED WITH REQUEST, AND...
     - b. MATERIAL OR PRODUCT HAS BEEN APPROVED BY INTERNATIONAL CODE COUNCIL (ICC) AND CURRENT AND VALID ICC REPORT IS SUBMITTED WITH REQUEST.
     - c. SUBMIT DOCUMENTATION THAT SHOWS FINAL ASSEMBLY RESULTING FROM SUBSTITUTED PRODUCT COMPLIES WITH APPLICABLE NOA AND/OR FLORIDA PRODUCT APPROVAL.
3. OWNER
   - A. STRUCTURES REQUIRE PERIODIC MAINTENANCE FROM EXPOSURE TO ENVIRONMENT. A PLANNED MAINTENANCE PROGRAM IS THE RESPONSIBILITY OF OWNER.
   - B. RECOMMENDED MAINTENANCE SHALL INCLUDE BUT IS NOT LIMITED TO THE FOLLOWING ITEMS:
     - a. PAINTING OF EXPOSED STRUCTURAL MEMBERS
     - b. PROTECTIVE COATINGS FOR CONCRETE SURFACES
     - c. MAINTAINING SEALANTS, CAULKED JOINTS, EXPANSION JOINTS, AND CONTROL JOINTS
     - d. REPAIRING SPALLS AND CRACKS IN CONCRETE

STRUCTURAL TESTS, SPECIAL INSPECTIONS AND STRUCTURAL OBSERVATIONS

1. PROVIDE SPECIAL INSPECTION ACCORDING TO PROJECT SPECIFICATIONS AND REFERENCED BUILDING CODE BY AN APPROVED INDEPENDENT TESTING AGENCY, HIRED BY OWNER OR OWNER'S REPRESENTATIVE AND INDEPENDENT FROM GENERAL CONTRACTOR.
2. SEE SPECIFICATIONS FOR TESTING/SPECIAL INSPECTION REQUIREMENTS.
   - A. COORDINATE TESTING AND INSPECTIONS AND NOTIFY ARCHITECT/ENGINEER AND SPECIAL INSPECTOR OF WORK READY FOR INSPECTION.
   - B. PROVIDE ACCESS TO AND MEANS FOR PROPER INSPECTION OF SUCH WORK.
   - C. FAILURE TO NOTIFY SPECIAL INSPECTOR MAY RESULT IN CONTRACTOR HAVING TO REMOVE WORK FOR PURPOSE OF INSPECTION AT CONTRACTOR'S EXPENSE.
   - D. PREMATURE NOTIFICATION FOR INSPECTIONS WILL RESULT IN AN ADDITIONAL INSPECTION WITH ALL EXPENSES AND FEES PAID BY CONTRACTOR.
3. SPECIAL INSPECTOR REQUIREMENTS
   - A. A QUALIFIED PERSON, EMPLOYED BY APPROVED INDEPENDENT TESTING AGENCY WITH DEMONSTRATED COMPETENCE FOR INSPECTION OF PARTICULAR TYPE OF CONSTRUCTION RELEVANT TO PROJECT.
   - B. PROVIDE SPECIAL INSPECTIONS FOR MATERIALS, INSTALLATION, FABRICATION, ERECTION OR PLACEMENT OF COMPONENTS AND CONNECTIONS FOR COMPLIANCE WITH PROJECT DOCUMENTS AND REFERENCED STANDARDS.
   - C. VERIFY DESIGNATED WORK HAS BEEN PERFORMED IN COMPLIANCE WITH PROJECT DOCUMENTS AND REFERENCE STANDARDS. INSPECTOR MAY NOT ALTER, MODIFY OR WAIVE ANY REQUIREMENTS OF PROJECT DOCUMENTS.
   - D. BRING NONCOMPLIANT ITEMS TO IMMEDIATE ATTENTION OF GENERAL CONTRACTOR AND ARCHITECT/ENGINEER.
   - E. SUBMIT A WEEKLY FIELD REPORT ADDRESSING OUTSTANDING DISCREPANCIES TO OWNER, BUILDING OFFICIAL, GENERAL CONTRACTOR AND ARCHITECT/ENGINEER UNTIL CORRECTIONS HAVE BEEN COMPLETED.
   - F. SUBMIT A CERTIFICATE OF COMPLIANCE FROM APPROVED, INDEPENDENT TESTING AGENCY, SIGNED BY SPECIAL INSPECTOR, TO OWNER, BUILDING OFFICIAL, ARCHITECT/ENGINEER AND GENERAL CONTRACTOR STATING WORK REQUIRING SPECIAL INSPECTION WAS, TO BEST OF INSPECTOR'S KNOWLEDGE, PERFORMED IN CONFORMANCE WITH PROJECT DOCUMENTS AND PROVISIONS OF APPLICABLE BUILDING CODE.
4. PROVIDE SPECIAL INSPECTIONS DURING CONSTRUCTION FOR FOLLOWING:

TYPES OF WORK	CODE SECTION
STRUCTURAL STEEL	1705
POST INSTALLED ANCHORS	1705

5. STRUCTURAL OBSERVATION IS AN OCCASIONAL, VISUAL OBSERVATION OF STRUCTURAL SYSTEM BY AN ARCHITECT/ENGINEER FOR SOLE PURPOSE OF DETERMINING IF WORK IS PROCEEDING IN GENERAL ACCORDANCE WITH CONSTRUCTION DOCUMENTS AND IS NOT INTENDED TO BE A COMPREHENSIVE REVIEW OF QUALITY AND/OR QUANTITY OF WORK.
6. THRESHOLD INSPECTIONS: THIS PROJECT IS DESIGNATED AS A THRESHOLD BUILDING REQUIRING SPECIAL INSPECTIONS BY A CERTIFIED THRESHOLD INSPECTOR. SEE PROJECT SPECIFICATIONS FOR THRESHOLD INSPECTION PLAN. CONTRACTOR HAS SPECIFIC RESPONSIBILITIES RELATED TO COOPERATION WITH AND ASSISTANCE TO THRESHOLD INSPECTOR, AS OUTLINED IN THRESHOLD INSPECTION PLAN.

EXISTING CONSTRUCTION

1. REFERENCE DOCUMENTS
   - A. EXISTING CONSTRUCTION INDICATED ON DRAWINGS IS FOR REFERENCE ONLY. VERIFY EXISTING DIMENSIONS AND CONDITIONS PRIOR TO ORDERING MATERIAL AND STARTING WORK. BRING DISCREPANCIES BETWEEN EXISTING CONDITIONS AND ASSUMED EXISTING CONDITIONS INDICATED ON CONTRACT DOCUMENTS TO IMMEDIATE ATTENTION OF ARCHITECT/ENGINEER.
   - B. EXISTING CONSTRUCTION HAS NOT BEEN VERIFIED FOR CONFORMANCE WITH REQUIREMENTS OF APPLICABLE BUILDING CODE EXCEPT FOR AREAS DIRECTLY AFFECTED BY MODIFICATIONS INDICATED HEREIN.
   - C. REPRESENTATION OF EXISTING STRUCTURAL FRAMING IS BASED UPON EXISTING DRAWINGS PREPARED BY WALTER P MOORE, DATED NOVEMBER 7, 2008.
   - D. DESIGN IS BASED ON FOLLOWING EXISTING STRUCTURE MATERIAL PROPERTY SUMMARY:
     - a. STEEL YIELD STRENGTH (FY): 36 KSI
     - b. CONCRETE SLAB and BEAM COMP. STRENGTH (F'C): 4000 PSI
     - c. CONCRETE COLUMN COMPRESSIVE STRENGTH (F'C): 4000 PSI
     - d. STEEL REINFORCEMENT YIELD STRENGTH (FY): 60 KSI
   - E. ENSURE STRUCTURAL INTEGRITY OF EXISTING CONSTRUCTION IS NOT COMPROMISED DURING CONSTRUCTION PROCESS. MONITOR AND SURVEY EXISTING STRUCTURE FOR MOVEMENT. MAINTAIN EXISTING CONDITION. DAMAGE TO EXISTING STRUCTURE AS A RESULT OF CONTRACTOR'S WORK SHALL BE REPAIRED TO AS GOOD OR BETTER CONDITION THAN PRIOR TO BEGINNING OF CONTRACTOR'S WORK;
   - F. NOTIFY ARCHITECT/ENGINEER IF ANY EXISTING CONSTRUCTION NOT DESIGNATED FOR REMOVAL INTERFERES WITH INSTALLATION OF NEW WORK AND OBTAIN DIRECTION FROM ARCHITECT/ENGINEER PRIOR TO REMOVAL OF INTERFERING CONSTRUCTION
   - G. HIRE SPECIALTY ENGINEER RESPONSIBLE FOR DESIGN OF ANY SHORING AND TEMPORARY BRACING, TEMPORARY LOADS IMPOSED ON WORK AND FOR REMEDIAL REPAIR DETAILS OF DAMAGE TO EXISTING CONSTRUCTION THAT OCCURRED DURING CONSTRUCTION.
2. EXISTING CONCRETE
   - A. PROVIDE ADEQUATE MEANS NOT TO DAMAGE EXISTING REINFORCEMNT IN EXISTING MEMBERS INCLUDING BUT NOT LIMITED TO POST-TENSIONING AND REBAR.

STRUCTURAL STEEL

1. GENERAL
   - A. DESIGN IS BASED ON LOAD FACTOR RESISTANCE DESIGN AND IN CONFORMANCE WITH AISC "SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS."
   - B. STRUCTURAL STEEL WORK SHALL CONFORM TO AISC "CODE OF STANDARD PRACTICE."
   - C. MATERIALS:

MISC. PLATES, ANGLES, CHANNELS:	ASTM A36, Fy = 36 KSI
HIGH STRENGTH BOLTS:	ASTM A325

   - D. PAINT STRUCTURAL STEEL NOT RECEIVING FIREPROOFING IN ACCORDANCE WITH SPECIFICATIONS.
   - E. TOUCH UP CHIPPED AREAS AS WELL AS FIELD WELDS AND CONNECTIONS OF PAINTED STRUCTURAL STEEL WITH PAINT AS USED IN SHOP.
   - F. GALVANIZE STRUCTURAL STEEL MEMBERS AS INDICATED ON DETAILS
   - G. TOUCH UP FIELD WELDS ON GALVANIZED ITEMS WITH SPECIFIED GALVANIZED REPAIR PAINT.
   - H. CLEAN STRUCTURAL STEEL OF RUST, LOOSE MILL SCALE AND OTHER FOREIGN MATERIALS AFTER FABRICATION AND JUST PRIOR TO SITE APPLICATION OF SPRAY-ON FIREPROOFING.
   - I. FIELD CUTTING OF STRUCTURAL STEEL MEMBERS FOR WORK OF OTHER TRADES IS NOT PERMITTED WITHOUT PRIOR REVIEW AND COMMENT BY ARCHITECT/ENGINEER.
   - J. COORDINATE INSPECTION OF STRUCTURAL STEEL WITH TESTING AGENCY.

STRUCTURAL ALUMINUM

1. GENERAL
   - A. DRAWINGS AND THE GENERAL REQUIREMENTS OF THE SUBCONTRACT APPLY TO THIS SECTION.
   - B. REVIEW THESE DOCUMENTS FOR COORDINATION WITH ADDITIONAL REQUIREMENTS AND INFORMATION THAT APPLY TO WORK.
   - C. SCOPE INCLUDES: ALUMINUM FRAMING MEMBERS, SUPPORT MEMBERS, BRACING MEMBERS AND CONNECTIONS.
2. REFERENCES
   - A. WHERE DIFFERENCES EXIST BETWEEN CODES AND STANDARDS, THE ONE AFFORDING THE GREATEST PROTECTION SHALL APPLY.
   - B. UNLESS OTHERWISE NOTED, THE REFERENCED STANDARD EDITION IS THE CURRENT ONE AT THE TIME OF COMMENCEMENT OF THE WORK.
   - C. ALUMINUM ASSOCIATION: ALUMINUM DESIGN MANUAL
   - D. ASTM INTERNATIONAL MATERIALS:
     - a. ASTM B308 / B308M - STANDARD SPECIFICATION FOR ALUMINUM-ALLOY 6061-T6 STANDARD STRUCTURAL PROFILES
     - b. ASTM B221 - STANDARD SPECIFICATION FOR ALUMINUM AND ALUMINUM-ALLOY EXTRUDED BARS, RODS, WIRE, PROFILES, AND TUBES
     - c. ASTM B429 STANDARD SPECIFICATION FOR ALUMINUM-ALLOY EXTRUDED STRUCTURAL PIPE AND TUBE
   - E. AMERICAN WELDING SOCIETY: AWS D1.2 - STRUCTURAL WELDING CODE, ALUMINUM.
3. SUBMITTALS
   - A. SUBMIT UNDER PROVISIONS OF DIVISION 01 SECTION "GENERAL REQUIREMENTS."
   - B. SHOP DRAWINGS: FOR ALUMINUM FABRICATIONS AS FOLLOWS:
     - a. COMPLETE FABRICATION AND ERECTION PLANS AND PROCEDURES GIVING FULL INFORMATION ON ALL ASPECTS OF THE ERECTION THAT WILL AFFECT ALIGNMENT, PLUMB AND DIMENSIONAL ACCURACY OF THE STRUCTURE.
     - b. CONNECTIONS, INCLUDING SIZE AND SPACING OF BOLTS AND WELDS.
     - c. INDICATE PROFILES, SIZES, SPACING, AND LOCATIONS OF STRUCTURAL MEMBERS, OPENINGS, CAMBER AND ATTACHMENTS.
     - d. INDICATE WELDED CONNECTIONS WITH AWS WELDING SYMBOLS. INDICATE NET WELD LENGTHS. INCLUDE DETAILS OF WELDING MATERIALS, EQUIPMENT, SEQUENCE AND TECHNIQUE TO BE USED.
   - C. MANUFACTURER'S CERTIFICATE: SUBMIT CERTIFICATION THAT MANUFACTURED PRODUCTS (INCLUDING BOLTS, NUTS AND WASHERS) MEET OR EXCEED SPECIFIED REQUIREMENTS.
   - D. DELIVER MANUFACTURED PRODUCTS TO THE SITE IN UNOPENED CONTAINERS. CERTIFICATION NUMBERS MUST APPEAR ON PRODUCT CONTAINERS FOR BOLTS, NUTS AND WASHERS AND THE NUMBERS SHALL CORRESPOND TO THE IDENTIFICATION NUMBERS ON THE MANUFACTURER'S CERTIFICATE. THE MANUFACTURER'S SYMBOL AND GRADE MARKINGS MUST APPEAR ON BOLTS, NUTS AND WASHERS.
   - E. MILL TEST REPORTS: SUBMIT MILL TEST REPORTS INDICATING STRUCTURAL STRENGTH, DESTRUCTIVE AND NONDESTRUCTIVE TEST ANALYSIS AND CHEMICAL ANALYSES FROM THE ALUMINUM USED IN THE WORK.
   - F. WELDERS' CERTIFICATES: DOCUMENTATION CERTIFYING WELDERS EMPLOYED BY THE SUBCONTRACTOR MEET AWS QUALIFICATIONS.
4. QUALITY ASSURANCE
   - A. FABRICATE ALUMINUM MEMBERS IN ACCORDANCE WITH CBC AND ALUMINUM DESIGN MANUAL "SPECIFICATION FOR ALUMINUM STRUCTURES - BUILDING LOAD AND RESISTANCE FACTOR DESIGN".
   - B. WELDERS SHALL BE QUALIFIED IN ACCORDANCE WITH AWS D1.2 FOR EACH PROCESS, POSITION AND JOINT CONFIGURATION.
   - C. MAINTAIN ONE COPY OF EACH REFERENCED DOCUMENT ON SITE.
   - D. PROJECT CONDITIONS - VERIFY DIMENSIONS ON SHOP DRAWINGS IN THE FIELD.
5. MATERIALS
   - A. ROLLED AND EXTRUDED MEMBERS: ALLOY AND TEMPER 6016-T6.
   - B. ALUMINUM TUBING: ALLOY AND TEMPER 6016-T6.
   - C. BOLTS, NUTS, AND WASHERS: BOLTS AND NUTS IN STRUCTURAL CONNECTIONS: GLAVINAIED A325 STEEL BOLTS, SEE STRUCUTRAL STEEL
   - D. WELDING MATERIALS: FILLER METALS: AWS D1.2, ELECTRODES AND EQUIPMENT SETTINGS: AS RECOMMENDED BY THE FILLER METAL MANUFACTURER FOR THE POSITION, THICKNESS AND CONDITIONS OF USE.
6. FABRICATION
   - A. FABRICATE ALUMINUM MEMBERS IN ACCORDANCE WITH THE APPROVED SHOP DRAWINGS. WHERE PRACTICAL FABRICATE AND ASSEMBLE IN THE SHOP.
   - B. OBTAIN FIELD MEASUREMENTS NECESSARY FOR FABRICATION.
   - C. DIMENSIONAL TOLERANCES: OVERALL LENGTH OF MEMBERS WITH BOTH ENDS MILLED SHALL VARY BY NOT MORE THAN 1/8"
   - D. WHERE STRUCTURAL JOINTS ARE WELDED, THE DETAIL OF THE JOINTS, WELDING TECHNIQUE, WELD QUALITY AND APPEARANCE, AND METHODS FOR CORRECTING DEFECTIVE WELDS SHALL CONFORM TO THE AWS D1.2.
   - E. WELDING PROCESS: INERT SHIELDED GAS OR RESISTANCE WELDING PROCESS.
   - F. STRUCTURAL MEMBERS ARE SELECTED FROM GENERALLY AVAILABLE ROLLED SECTIONS; HOWEVER, IF THE SPECIFIED SECTIONS ARE NOT AVAILABLE, PROVIDE SECTIONS WITH EQUIVALENT PHYSICAL PROPERTIES AT NO ADDITIONAL COST AFTER APPROVAL BY THE UNIVERSITY.
7. WHERE ALUMINUM WILL CONTACT DISSIMILAR METALS, PROTECT AGAINST GALVANIC ACTION BY PAINTING CONTACT SURFACES WHERE ALUMINUM MEMBERS ARE IN CONTACT WITH STEEL, PRIME BOTH ALUMINUM AND STEEL MEMBERS WITH ONE COAT OF PAINT MEETING FEDERAL SPECIFICATION TT-P-645 OR G90 GALVINIZE STEEL SURFACE

POST-INSTALLED ANCHORAGE SYSTEMS

1. GENERAL
   - A. PROVIDE ANCHORAGE SYSTEMS OF DIAMETER AND EMBEDMENT WHERE INDICATED ON DOCUMENTS.
   - B. ANCHORAGE SYSTEMS NOT INDICATED ON DOCUMENTS MAY ONLY BE PROVIDED WHERE SPECIFICALLY REQUESTED IN WRITING BY SUBCONTRACTOR AND ONLY AFTER REVIEW AND COMMENT BY ARCHITECT/ENGINEER.
   - C. DESIGN OF ANCHORAGE SYSTEMS IS BASED ON HILTI, INC (USA).
   - D. PROPOSED SUBSTITUTIONS OF ANCHORAGE SYSTEMS SHALL BE EQUIVALENT. PROVIDE MANUFACTURER'S PUBLISHED LITERATURE AND ANCHORAGE DESIGN PROGRAM FOR REVIEW AND COMMENT BY ARCHITECT/ENGINEER.
   - E. PROVIDE ANCHORAGE SYSTEMS AS A COMPLETE SYSTEM AS SUPPLIED BY DESIGNATED MANUFACTURER. COMPLETE SYSTEM INCLUDES.
   - F. PROVIDE ANCHORAGE SYSTEM IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS
   - G. DO NOT MIX ANCHORAGE SYSTEM COMPONENTS FROM DIFFERENT MANUFACTURERS.
   - H. PERSONNEL CERTIFIED BY ACI/CRSI ADHESIVE ANCHOR INSTALLER PROGRAM ARE REQUIRED TO PERFORM INSTALLATION OF ANCHORAGE SYSTEM IN A HORIZONTAL OR UPWARDLY INCLINED ORIENTATION AND WHERE SUPPORTING SUSTAINED TENSION LOADS.
   - I. DO NOT DAMAGE OR DISTURB EXISTING CONCRETE REINFORCEMENT. DRILL PILOT HOLE OR UTILIZE NON-DESTRUCTIVE METHODS TO LOCATE AND AVOID EXISTING REINFORCEMENT PRIOR TO DRILLING.
2. CRITERIA
   - A. PROVIDE ICC EVALUATED ANCHORAGE SYSTEMS. SUBMIT CURRENT AND VALID EVALUATION REPORT INDICATING CONFORMANCE WITH CURRENT APPLICABLE ICC EVALUATION SERVICES ACCEPTANCE CRITERIA SHOWING ANCHOR RELIABILITY CATEGORY AND LOAD CAPACITIES IN ACCORDANCE WITH ACI 318, CHAPTER 17 (PREVIOUSLY APPENDIX D), AND SUITABILITY FOR PROPOSED INSTALLATION. ARCHITECT/ENGINEER RESERVES RIGHT TO REJECT ANY ANCHORAGE SYSTEM WITHOUT SUITABLE DOCUMENTATION. INSTALL PER MANUFACTURER'S WRITTEN INSTRUCTIONS AND ANY MODIFICATIONS/RESTRICTIONS NOTED IN EVALUATION REPORT.
   - B. ANCHORAGE SYSTEM CAPACITIES ARE BASED ON CRACKED CONCRETE USING DESIGN PROCEDURES IN ACI 318 CHAPTER 17 (PREVIOUSLY APPENDIX D) UNLESS IT CAN BE SHOWN THAT CONCRETE WILL NOT CRACK AT LOCATION OF INSTALLATION. ATTACHMENT TO WALLS AND COLUMNS MAY BE ASSUMED TO BE UNCRACKED CONCRETE.
   - C. PROVIDE ANCHORS MEETING DUCTILITY REQUIREMENTS OF ACI 318.
3. ADHESIVE ANCHORAGE SYSTEMS
   - A. IN NORMAL WEIGHT REINFORCED CONCRETE, USE HILTI PRODUCT SHOWN IN DETAILS.
   - B. PROVIDE HILTI HIT-Z ANCHOR RODS OR CARBON STEEL CONTINUOUSLY THREADED ANCHOR RODS CONFORMING TO ASTM A 193 GRADE B7, ULESS NOTED OTHERWISE ON DOCUMENTS. WHEN INDICATED ON DOCUMENTS, CONTINUOUSLY THREADED ANCHOR RODS SHALL CONFORM TO ASTM F 593.
     - a. PROVIDE HEX NUTS CONFORMING TO ASTM A194 GRADE DH FOR CARBON STEEL ANCHOR RODS AND ASTM F594 FOR STAINLESS STEEL ANCHOR RODS.
     - b. PROVIDE WASHERS CONFORMING TO ASTM F436 FOR CARBON STEEL ANCHOR RODS AND ASTM A240 FOR STAINLESS STEEL ANCHOR RODS.
   - C. INSTALL ADHESIVE ONLY WHEN BASE MATERIAL TEMPERATURES ARE WITHIN MANUFACTURER'S DESIGNATED RANGE.
   - D. DO NOT DISTURB OR LOAD ANCHORS, ANCHOR RODS OR DEFORMED REINFORCING BARS UNTIL DESIGNATED ADHESIVE CURE TIME HAS ELAPSED OR UNLESS OTHERWISE SPECIFIED BY MANUFACTURER.
   - E. BULK MIXING OF ADHESIVE COMPONENTS IS NOT ALLOWED.

SPECIAL INSPECTION PLAN

ROLES & RESPONSIBILITIES

1. SPECIAL INSPECTOR
   - A. SPECIAL INSPECTOR IS RESPONSIBLE TO ENFORCING AGENCY HAVING JURISDICTION FOR THIS PROJECT.
   - B. PRIOR TO COMMENCEMENT OF FIELD WORK, THE SPECIAL INSPECTOR AND AUTHORIZED REPRESENTATIVE SHALL BECOME FAMILIAR WITH SPECIFIC STRUCTURAL COMPONENTS AND SYSTEMS WHICH SPECIAL INSPECTOR WILL BE RESPONSIBLE FOR INSPECTING. THEY ARE RESPONSIBLE FOR A THOROUGH KNOWLEDGE OF INTENT AND CONTENT OF CONTRACT DOCUMENTS AND ACCEPTED SUBMITTALS RELATING TO THEIR INSPECTION RESPONSIBILITIES, APPROPRIATE PORTIONS OF GOVERNING CODES, AND EXERCISE OF GOOD JUDGEMENT.
   - C. SPECIAL INSPECTOR MUST DEDICATE THEIR TIME ON-SITE TO INSPECTION REQUIREMENTS OF THIS INSPECTION PLAN. THEY SHALL COORDINATE WITH CONTRACTOR TO ALLOW ADEQUATE TIME TO PERFORM INSPECTIONS AS OUTLINED IN THE PLAN.
   - D. SPECIAL INSPECTOR SHALL NOT BE RESPONSIBLE FOR INSPECTION OF ITEMS NOT LISTED WIHIN THE PLAN.
   - E. SPECIAL INSPECTOR SHALL NOT PERFORM CONSTRUCTION RELATED WORK ON THE PROJECT, INCLUDING MATERIALS TESTING SERVICES.
   - F. SPECIAL INSPECTOR SHALL NOT INTERPRET OR MAKE DESIGN DECISIONS BASED ON THE CONTRACT DOCUMENTS.
   - G. SPECIAL INSPECTOR SHALL COOPERATE WITH CONTRACTOR AND SHALL REFRAIN FROM DIRECTING WORK OR RECOMMENDING MEANS AND METHODS OF WORK.
   - H. SPECIAL INSPECTOR IS OBLIGATED TO IMMEDIATELY NOTIFY CONTRACTOR OF ANY NON-CONFORMANCE ITEMS DISCOVERED DURING EACH DAY'S INSPECTION.
   - I. SPECIAL INSPECTOR SHALL MAINTAIN A RECORD OF INSPECTIONS AND SUBMIT REPORTS PER 'REPORTING' SECTION OF THIS PLAN.
2. CONTRACTOR
   - A. CONTRACTOR SHALL BE FAMILIAR WITH SCOPE OF THE PLAN AND REQUIREMENTS OF CONTRACTOR AS DESCRIBED HEREIN.
   - B. CONTRACTOR SHALL COOPERATE WITH AND ASSIST SPECIAL INSPECTOR IN PERFORMING INSPECTION DUTIES. SPECIAL INSPECTOR SHALL HAVE FREE AND SAFE ACCESS TO PROJECT AT ALL TIMES.
   - C. CONTRACTOR SHALL ADVISE THE SPECIAL INSPECTOR OF CONSTRUCTION SCHEDULES AND PLANNED OPERATIONS IN ORDER TO ENSURE TIMELY AND APPROPRIATE INSPECTION OF ITEMS SPECIFIED ON THE PLAN. MINIMUM NOTICE GIVEN SPECIAL INSPECTOR SHALL BE MINIMUM OF 24 HOURS PRIOR TO TIME OF INSPECTION. FURTHER, SCHEDULED INSPECTION TIME FOR REINFORCING STEEL SHALL BE NOT LESS THAN ONE HOUR PRIOR TO SCHEDULED CONCRETE PLACEMENT.
   - D. CONTRACTOR SHALL FURNISH IN A TIMELY MANNER TO SPECIAL INSPECTOR, COPIES OF REVIEWED AND ACCEPTED SUBMITTALS (EXCLUDING CALCULATIONS) AND TESTING REPORTS FOR STRUCTURAL ELEMENTS OF PROJECT. SEE 'SUBMITTALS' SECTION FOR LIST OF REQUIRED SUBMITTALS.
   - E. CONTRACTOR SHALL PROVIDE SPECIAL INSPECTOR WITH OFFICE FACILITIES AT CONSTRUCTION SITE TO ACCOMMODATE THE NEEDS OF THE SPECIAL INSPECTOR. AS A MINIMUM FACILITIES SHALL BE EQUIPPED WITH FOLLOWING ITEMS: DESK, CHAIR, PLAN TABLE, LOGBOOK STORAGE, AIR CONDITIONING, AND JANITORIAL SERVICES.
   - F. CONTRACTOR SHALL NOTIFY AND INCLUDE SPECIAL INSPECTOR OF PRECONSTRUCTION MEETINGS.
3. REQUIREMENTS OF THE OWNER
   - A. OWNER SHALL RETAIN A SPECIAL INSPECTOR TO PERFORM INSPECTION SERVICES AS DESCRIBED HEREIN.
   - B. OWNER SHALL PAY ALL COSTS OF EMPLOYING THE SPECIAL INSPECTOR AND AUTHORIZED REPRESENTATIVES.
   - C. OWNER SHALL ENSURE THAT SPECIAL INSPECTOR HAS ACCESS TO NECESSARY CONSTRUCTION RECORDS DURING PROGRESS OF WORK.
   - D. OWNER SHALL ENSURE THAT A QUALIFIED TESTING AGENCY IS RETAINED.
   - E. OWNER SHALL ENSURE THAT A GEOTECHNICAL CONSULTANT IS RETAINED DURING CONSTRUCTION TO CONFIRM THAT FOUNDATION PREPARATION AND FOUNDATION CONSTRUCTION ARE IN CONFORMANCE WITH THE REQUIREMENTS OF THE CONSTRUCTION DOCUMENTS AND THE REQUIREMENTS OF THE GEOTECHNICAL ENGINEER.

SUBMITTALS

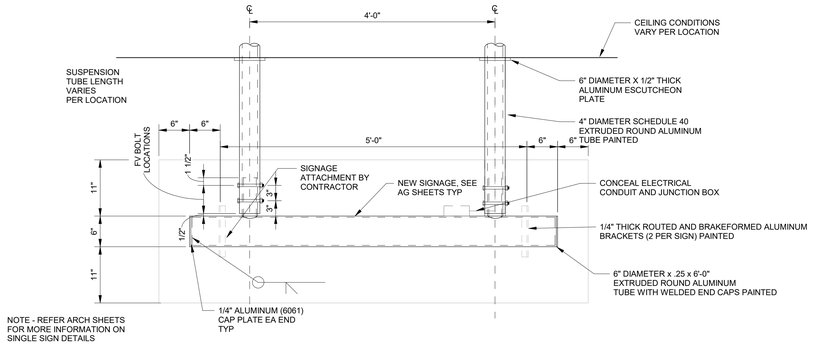
AS A MINIMUM THE FOLLOWING SHALL BE PROVIDED TO SPECIAL INSPECTOR:

1. SHORING AND RE-SHORING:
   SHORING AND RE-SHORING DRAWINGS AND FIELD REPORTS, SIGNED AND SEALED BY THE DELEGATED ENGINEER, SHALL BE FURNISHED TO SPECIAL INSPECTOR PRIOR TO PLACEMENT OF ANY CONCRETE OR STRUCTURAL ELEMENT WHICH IS DEPENDENT ON SUCH SHORING/RESHORING.
2. REINFORCING STEEL:
   FABRICATION AND PLACEMENT DRAWINGS AND BAR LISTS.
3. CONCRETE MIX DESIGNS:
   RESULTS OF APPROVED CONCRETE MIX DESIGNS.
4. PRECAST/PRESTRESSED CONCRETE:
   SUBMITTALS OTHER THAN CALCULATIONS.
5. LOAD BEARING MASONRY:
   TEST REPORTS SHOWING APPLICABLE DATA, INCLUDING UNIT GRADES, FOR MASONRY UNITS AND DESIGN MIXES FOR MORTAR AND GROUT.
6. STRUCTURAL STEEL:
   FABRICATION AND ERECTION DRAWINGS FOR STRUCTURAL STEEL COMPONENTS. MILL REPORTS FOR STEEL, WELDER CERTIFICATES.
7. OPEN WEB STEEL JOISTS:
   FABRICATION AND ERECTION DRAWINGS FOR STEEL JOISTS.
8. STEEL DECK:
   PIECE AND ERECTION DRAWINGS FOR STEEL DECK, INCLUDING SHEAR CONNECTOR PLACEMENT.
9. MISCELLANEOUS METALS:
   FABRICATION AND ERECTION DRAWINGS FOR STRUCTURAL METALS, SUCH AS EMBEDDED ANCHORS, CONNECTION PLATES, HANGERS, PRE-FABRICATED STEEL STAIRS, CATWALKS, ETC.
10. LIGHTGAGE FRAMING:
    LIGHTGAGE FRAMING SHOP AND ERECTION DRAWINGS.

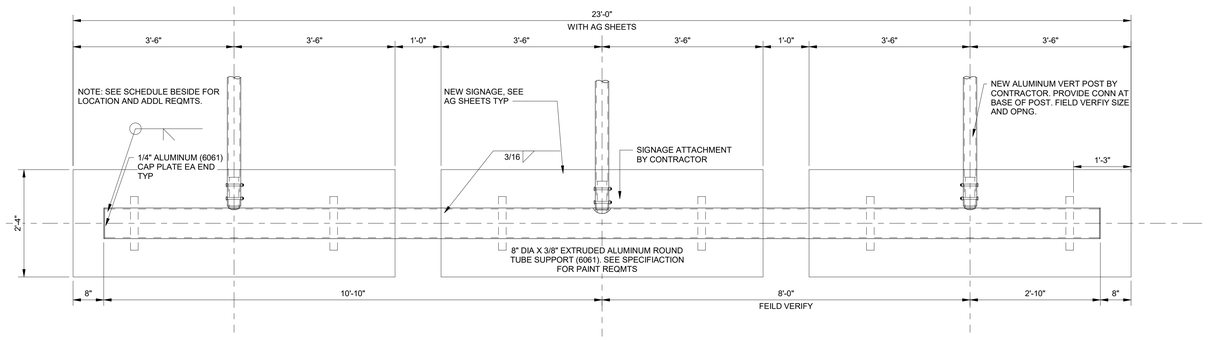
REPORTING

1. A WRITTEN DAILY FIELD REPORT SHALL BE CREATED FOLLOWING EACH SITE VISIT. REPORTS SHALL INCLUDE, AT MINIMUM, THE FOLLOWING:
   - A. NAME AND LOCATION OF PROJECT
   - B. NAME OF SPECIAL INSPECTOR AND SPECIAL INSPECTOR REPRESENTATIVE
   - C. PERMIT NUMBER AND AGENCY
   - D. DATE
   - E. KEY PEOPLE PRESENT AT SITE
   - F. REPORT NUMBER
   - G. WORKING CONDITIONS INCLUDING WEATHER AND TEMPERATURE
   - H. TYPE AND LOCATION OF INSPECTED ELEMENTS
   - I. NON-CONFORMANCE ITEMS
   - J. IDENTIFY CORRECTIONS TO PREVIOUS NON-CONFORMANCE ITEMS
   - K. PRESENCE AND ACTIVITY OF TESTING AGENCY
2. SPECIAL INSPECTOR SHALL SUBMIT WRITTEN WEEKLY SUMMARY REPORTS TO OWNER, ENFORCING AGENCY HAVING JURISDICTION, REGISTERED DESIGN PROFESSIONAL, AND CONTRACTOR. SUMMARY REPORTS SHALL BEAR SIGNATURE AND SEAL OF SPECIAL INSPECTOR AND SHALL INCLUDE THE FOLLOWING:
   - A. A DESCRIPTION OF WORK PERFORMED FOR WEEK
   - B. A SUMMARY OF INSPECTIONS PERFORMED
   - C. A COPY OF NON-CONFORMANCE LOG
3. AN INSPECTION LOGBOOK SUMMARIZING INSPECTIONS AND NON-CONFORMANCE ITEMS SHALL BE POSTED AT JOB SITE AND FILLED OUT EACH DAY AN INSPECTION IS PERFORMED. IT SHALL INCLUDE, AS A MINIMUM: PROJECT NAME, LOCATION,

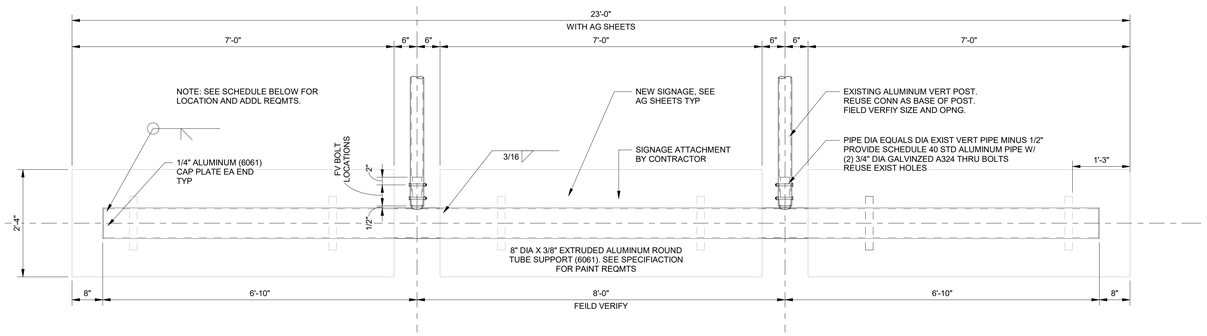
Drawn By: Author
Checked By: Checker
Approved By: Approver



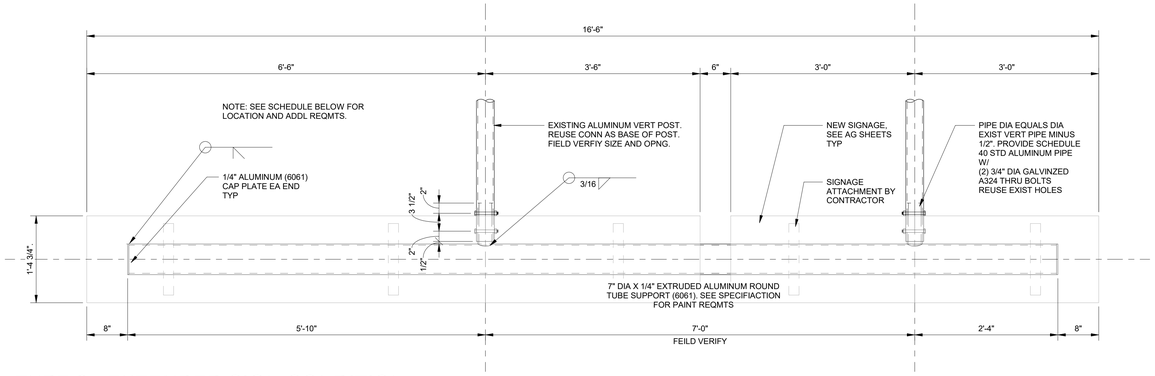
1 TYPE 5 - SINGLE SIGN CONDITION



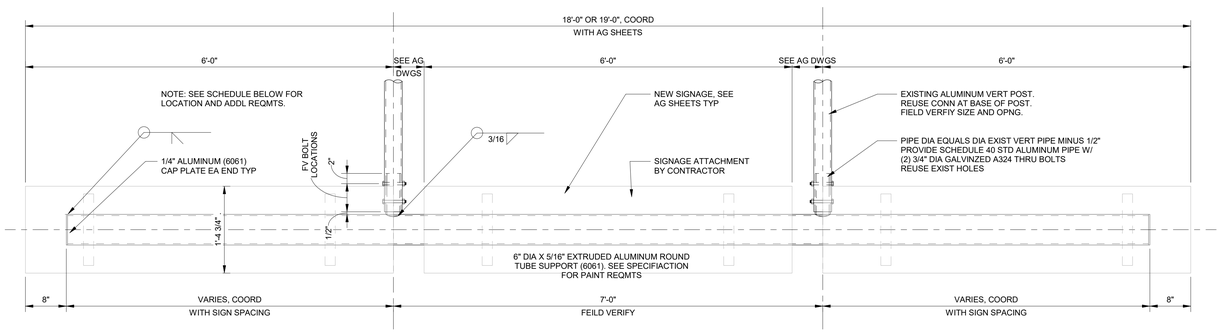
2 TYPE 4 - THREE SIGN CONDITION #3



3 TYPE 3 - THREE SIGN CONDITION #2



4 TYPE 2 - EXTENDED SIGN CONDITION



5 TYPE 1 - THREE SIGN CONDITION #1

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Revision

No.	Date	Description

STRUCTURAL SECTIONS

S1.1

43342.03
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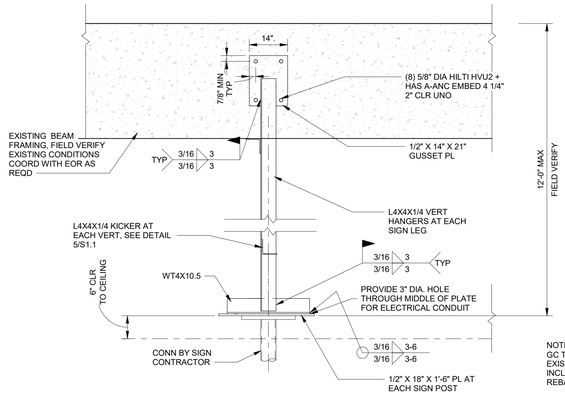
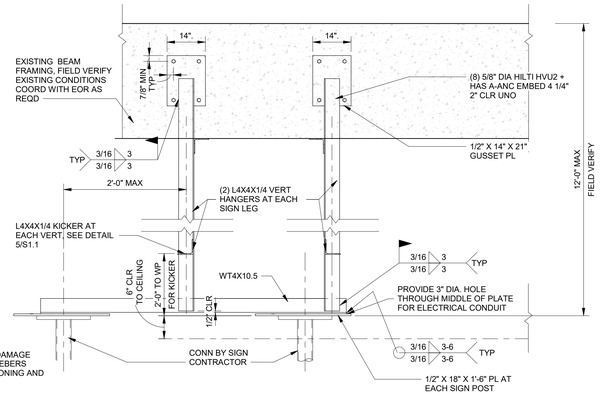
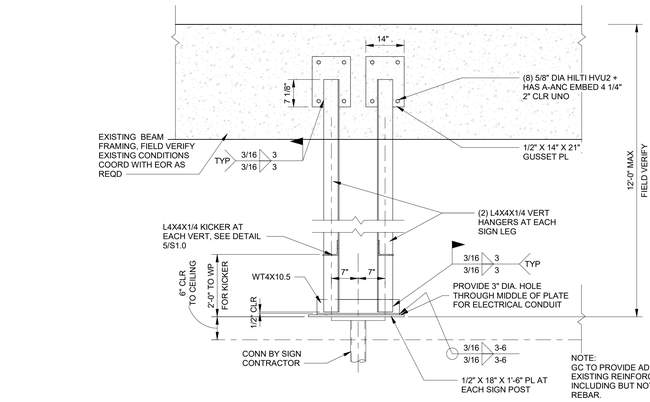




NOTE:
GC TO PROVIDE ADEQUATE MEANS NOT TO DAMAGE EXISTING REINFORCEMENT IN EXISTING MEMEBERS INCLUDING BUT NOT LIMITED TO POST-TENSIONING AND REBAR.

1 TYPICAL SINGLE SIGN CONNECTIONS TO BEAM

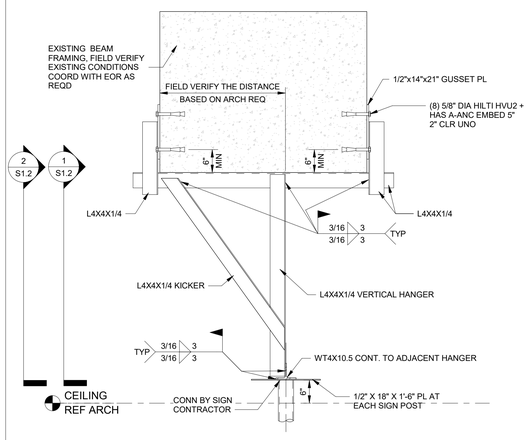
3/4" = 1'-0"



NOTE:
GC TO PROVIDE ADEQUATE MEANS NOT TO DAMAGE EXISTING REINFORCEMENT IN EXISTING MEMEBERS INCLUDING BUT NOT LIMITED TO POST-TENSIONING AND REBAR.

2 TYPICAL TWO AND THREE SIGN CONNECTIONS TO BEAM

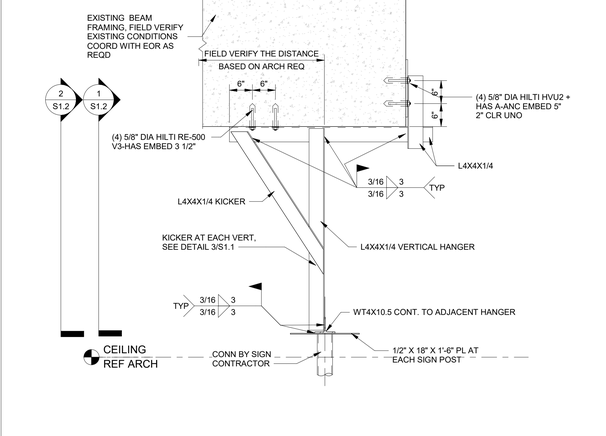
3/4" = 1'-0"



NOTE :
1. PROVIDE ADEQUATE MEANS FOR CONSTRUCTION PROCESS WITHOUT DRILLING INTO EXISTING REINFORCEMENT.

3 TYPICAL HANGER TO EXISTING CONCRETE BEAM

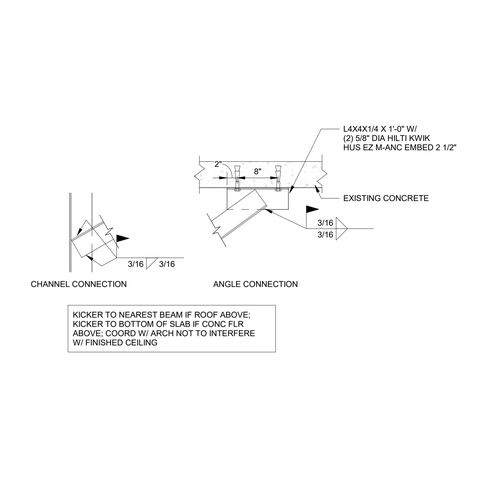
3/4" = 1'-0"



NOTE :
1. PROVIDE ADEQUATE MEANS FOR CONSTRUCTION PROCESS WITHOUT DRILLING INTO EXISTING REINFORCEMENT.

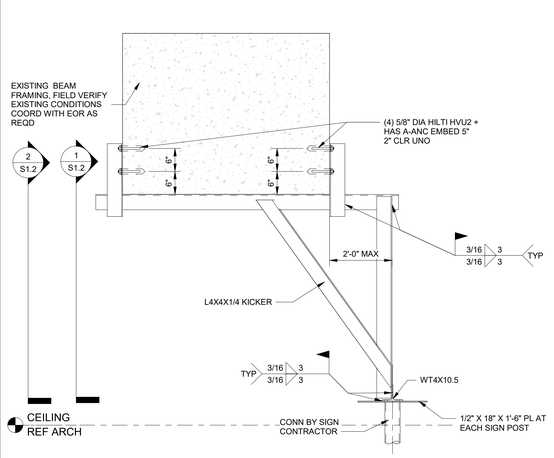
4 ALTERNATE HANGER TO EXISTING CONCRETE BEAM

3/4" = 1'-0"



5 TYPICAL BEAM KICKER CONNECTION

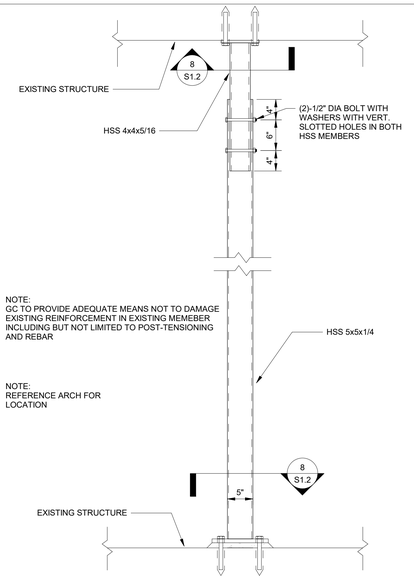
1" = 1'-0"



NOTE :
1. PROVIDE ADEQUATE MEANS FOR CONSTRUCTION PROCESS WITHOUT DRILLING INTO EXISTING REINFORCEMENT.

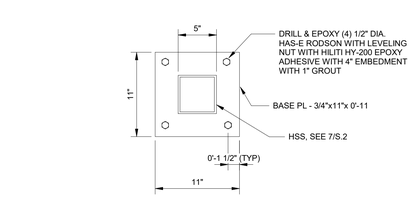
6 TYPICAL CANTILEVER CONNECTIONS TO BEAM

3/4" = 1'-0"



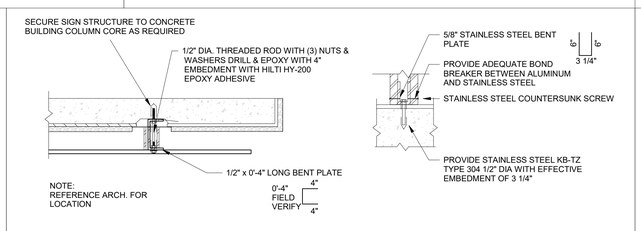
7 SIGN TYPE - DR.P.2 (RCA DIRECTIONAL)

1" = 1'-0"



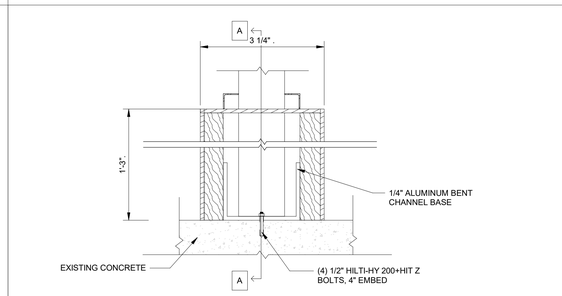
8 BASE PLATE

1 1/2" = 1'-0"



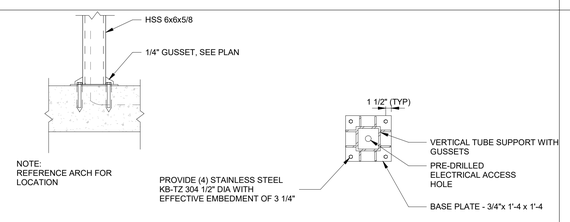
9 FLOOR ATTACHMENT DETAIL- SIGN TYPE - DR.T.P4 (GROUND TRANSPORTATION DIRECTORY PYLON)

3/4" = 1'-0"



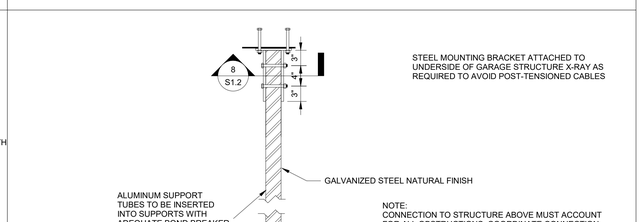
13 SIGN TYPE-DR.U.14 AT ESCALATOR SIGNS

3/4" = 1'-0"



10 SIGN TYPE - ID.T.P1 (INFORMATION PYLON) & DR.T.P3 (DIRECTIONAL PYLON)

3/4" = 1'-0"



11 SIGN TYPE - DR.T.2 (2-LINE OVERHEAD DIRECTIONAL) & DR.T.3 (3-LINE OVERHEAD DIRECTIONAL)

1" = 1'-0"

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No.	Date	Description

STRUCTURAL TYPICAL DETAILS

S1.2

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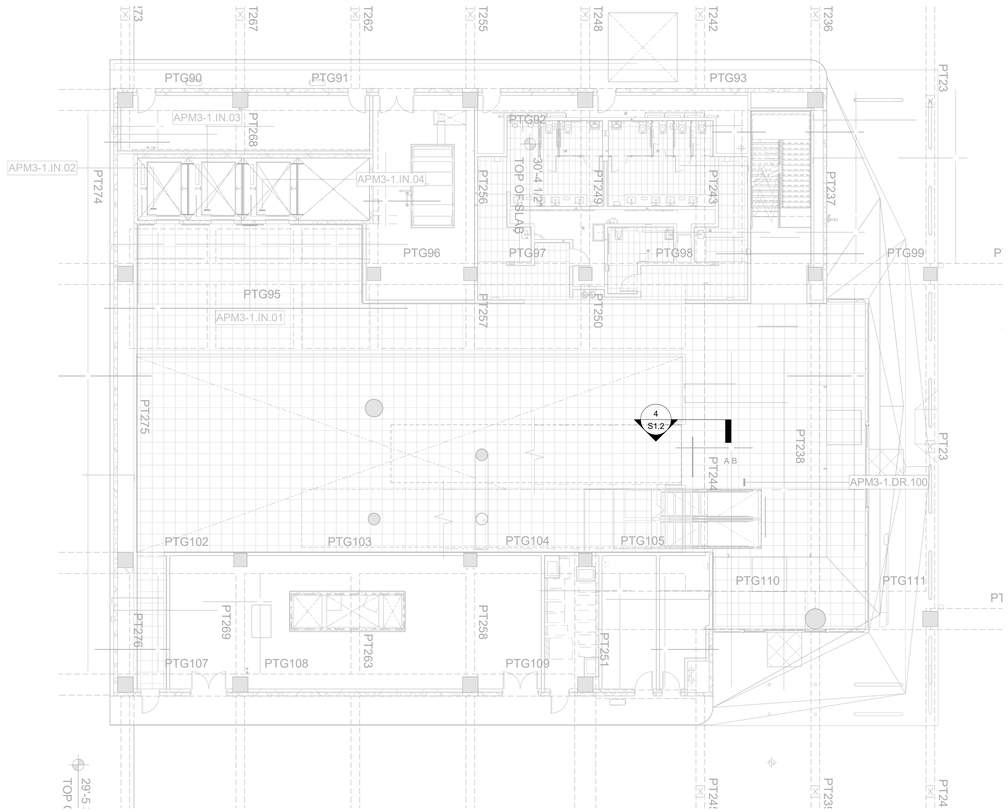
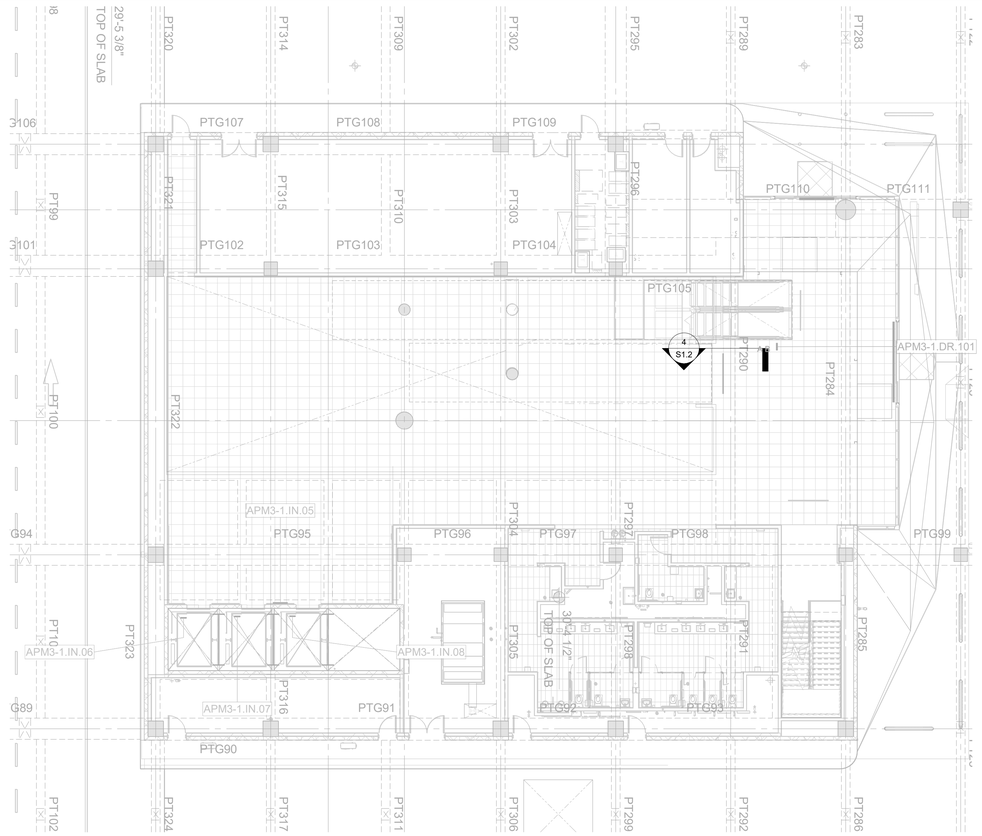
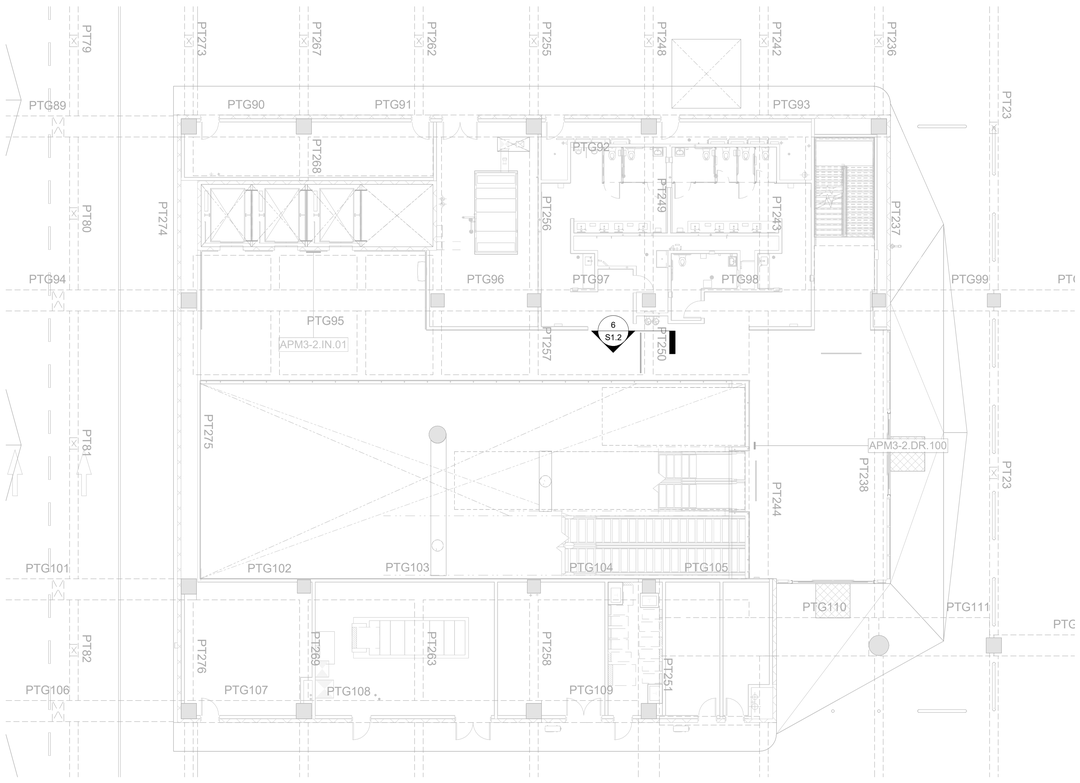


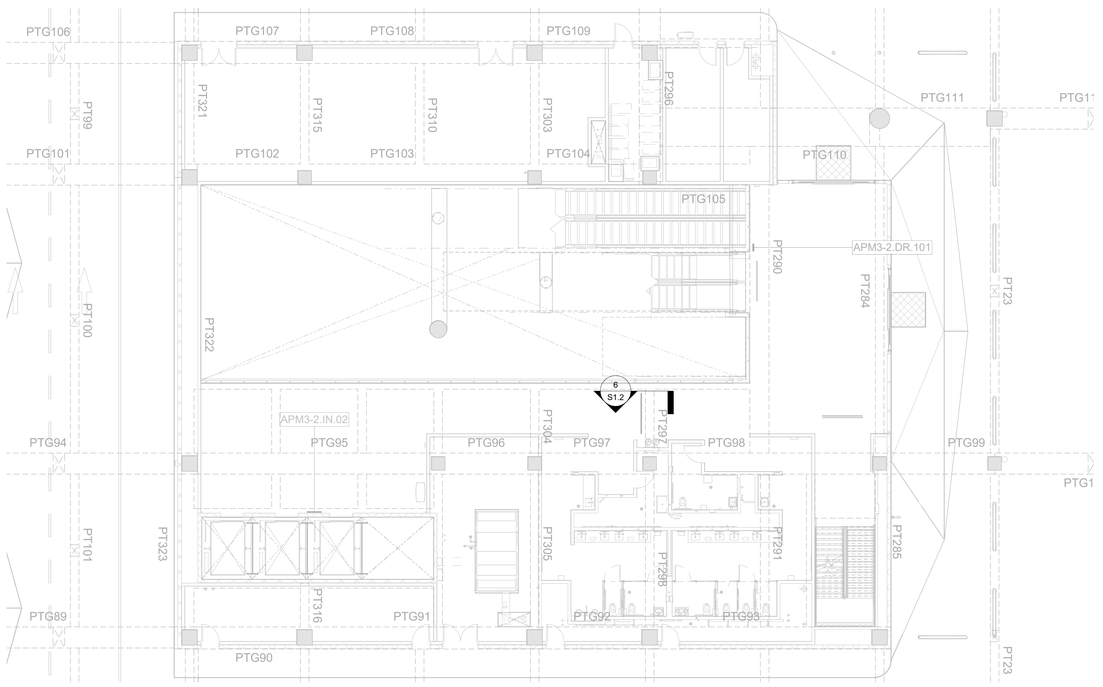
1 CONRAC - LEVEL 2 FRAMING PLAN ZONE 1 (LEVEL 1 OVERHEAD)
3/32" = 1'-0"



2 CONRAC - LEVEL 2 FRAMING PLAN ZONE 3 (LEVEL 1 OVERHEAD)
3/32" = 1'-0"



3 CONRAC - LEVEL 3 FRAMING PLAN ZONE 1 (LEVEL 2 OVERHEAD)
3/32" = 1'-0"



4 CONRAC - LEVEL 3 FRAMING PLAN ZONE 3 (LEVEL 2 OVERHEAD)
3/32" = 1'-0"

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No.	Date	Description

CONRAC LEVEL 2, LEVEL 3 STRUCTURAL PLANS

S1.3

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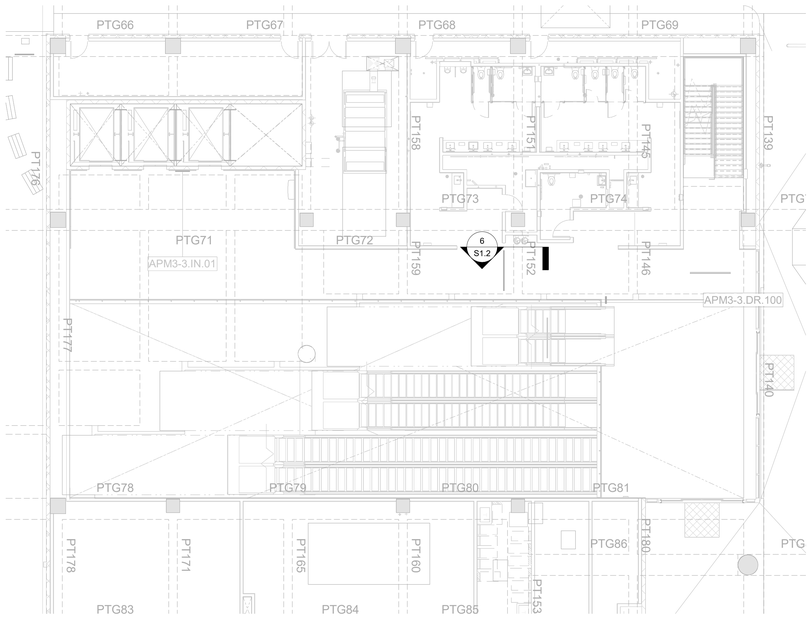
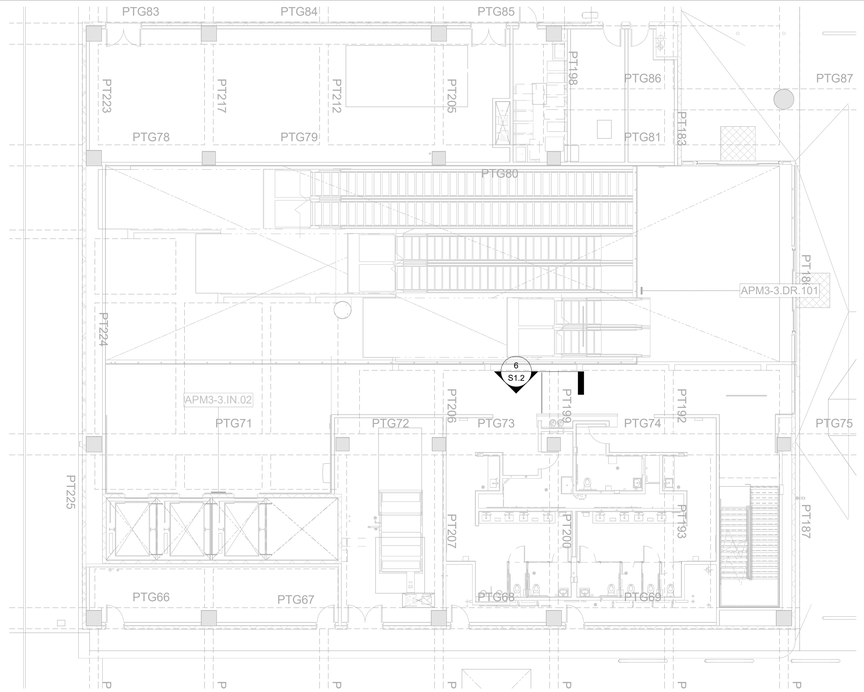
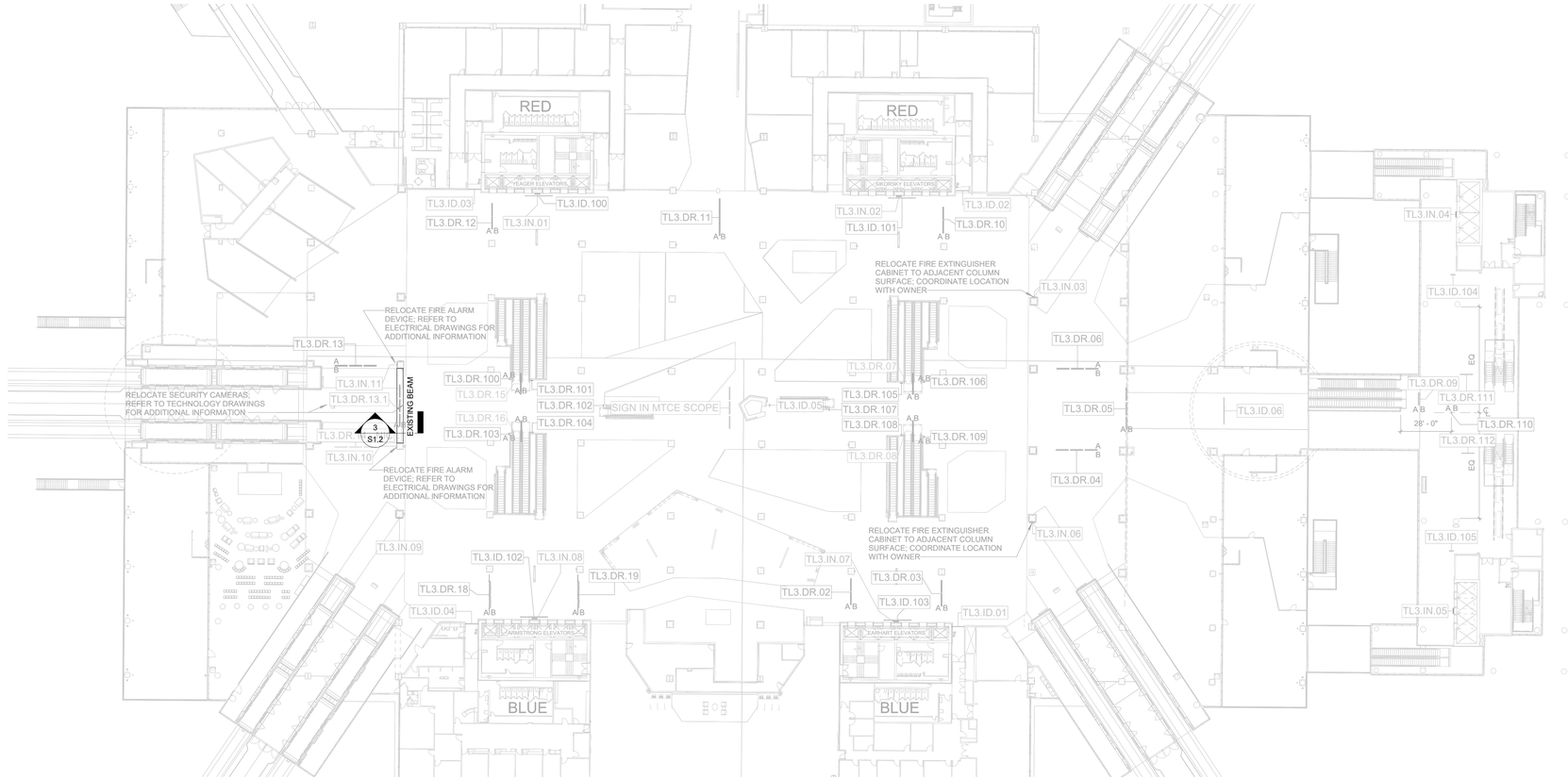


1 CONRAC - LEVEL 4 FRAMING PLAN ZONE 1 (LEVEL 3 OVERHEAD)
3/32" = 1'-0" 0' 4' 8' 16' 24'



2 CONRAC - LEVEL 4 FRAMING PLAN ZONE 3 (LEVEL 3 OVERHEAD)
3/32" = 1'-0" 0' 4' 8' 16' 24'



3 MAIN TERMINAL
1/32" = 1'-0" 0' 4' 8' 16' 24'

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CONRAC LEVEL 4 AND MAIN TERMINAL STRUCTURAL PLANS

S1.4

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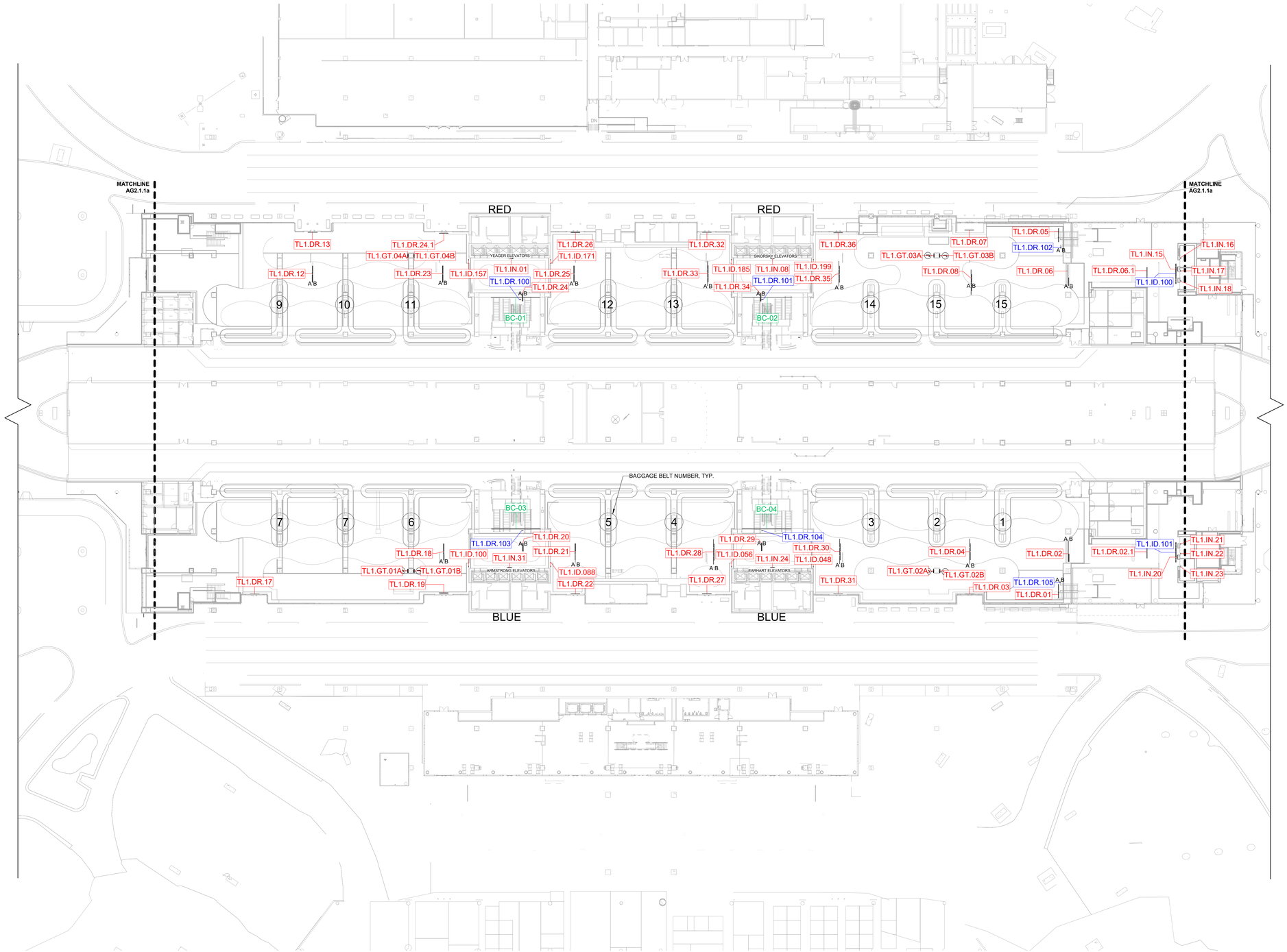

1 LEVEL 1 - BAGGAGE CLAIM - SIGN LOCATION PLAN

1/32" = 1'-0"

0' 16' 32' 64' 96'

SIGN PHASE LEGEND

PHASE 1 (PRIORITY) SIGNS	TLX.XX.XX
PHASE 2 (STANDARD) SIGNS	TLX.XX.XX
PHASE 2a SIGNS	TLX.XX.XX

REFER TO SPECIFICATION SECTION 01315 EXHIBIT B - CONSTRUCTION PHASE BAR CHART FOR MORE INFORMATION ON SIGN PHASING

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BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

TERMINAL - LEVEL 1 - BAGGAGE CLAIM - SIGN LOCATION PLAN

AG2.1.1

43342.03
10/07/2021

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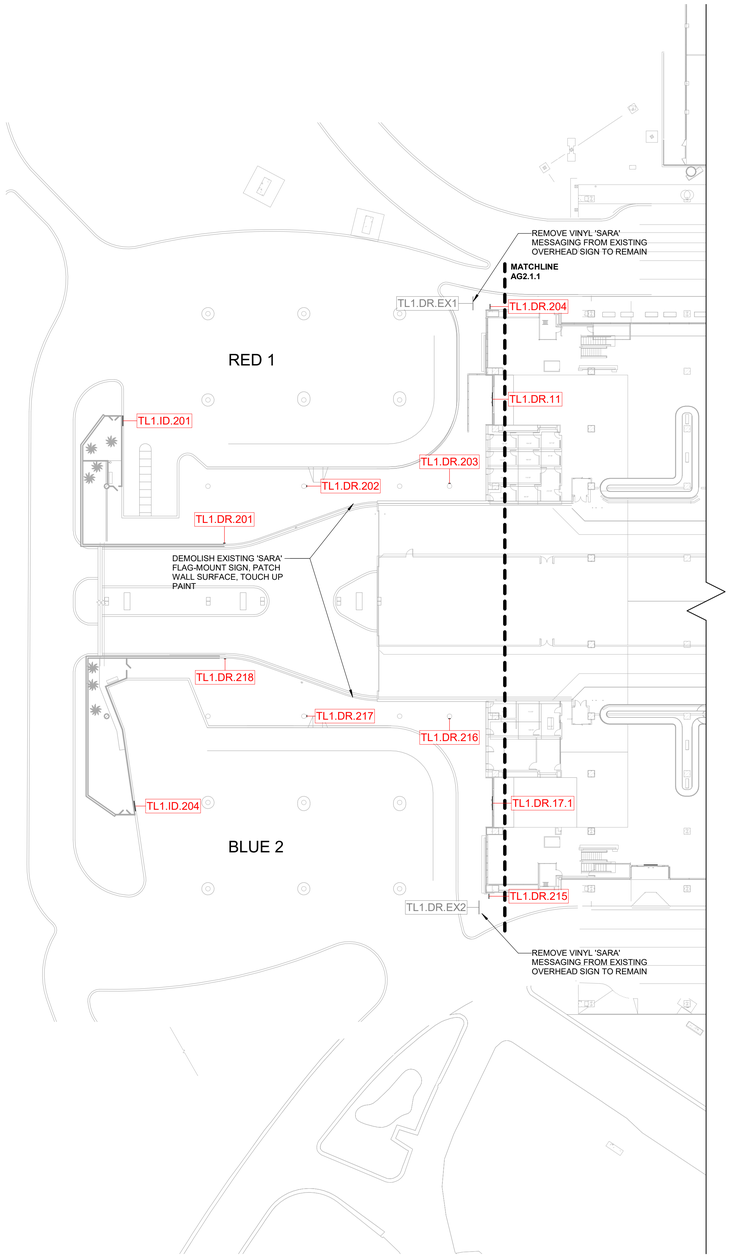

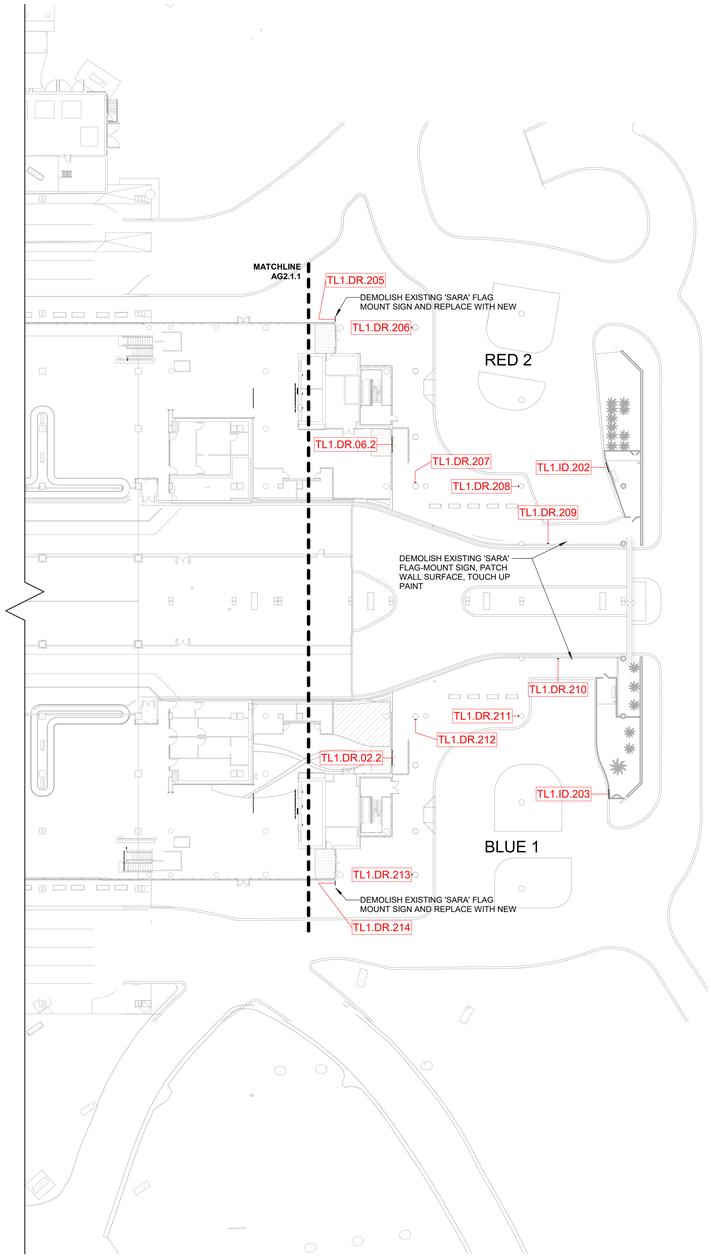

1 LEVEL 1 - QUAD LOTS - SIGN LOCATION PLAN
1/32" = 1'-0"

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BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

TERMINAL - LEVEL 1 - QUAD LOTS - SIGN LOCATION PLAN

AG2.1.1a

43342.03
10/07/2021

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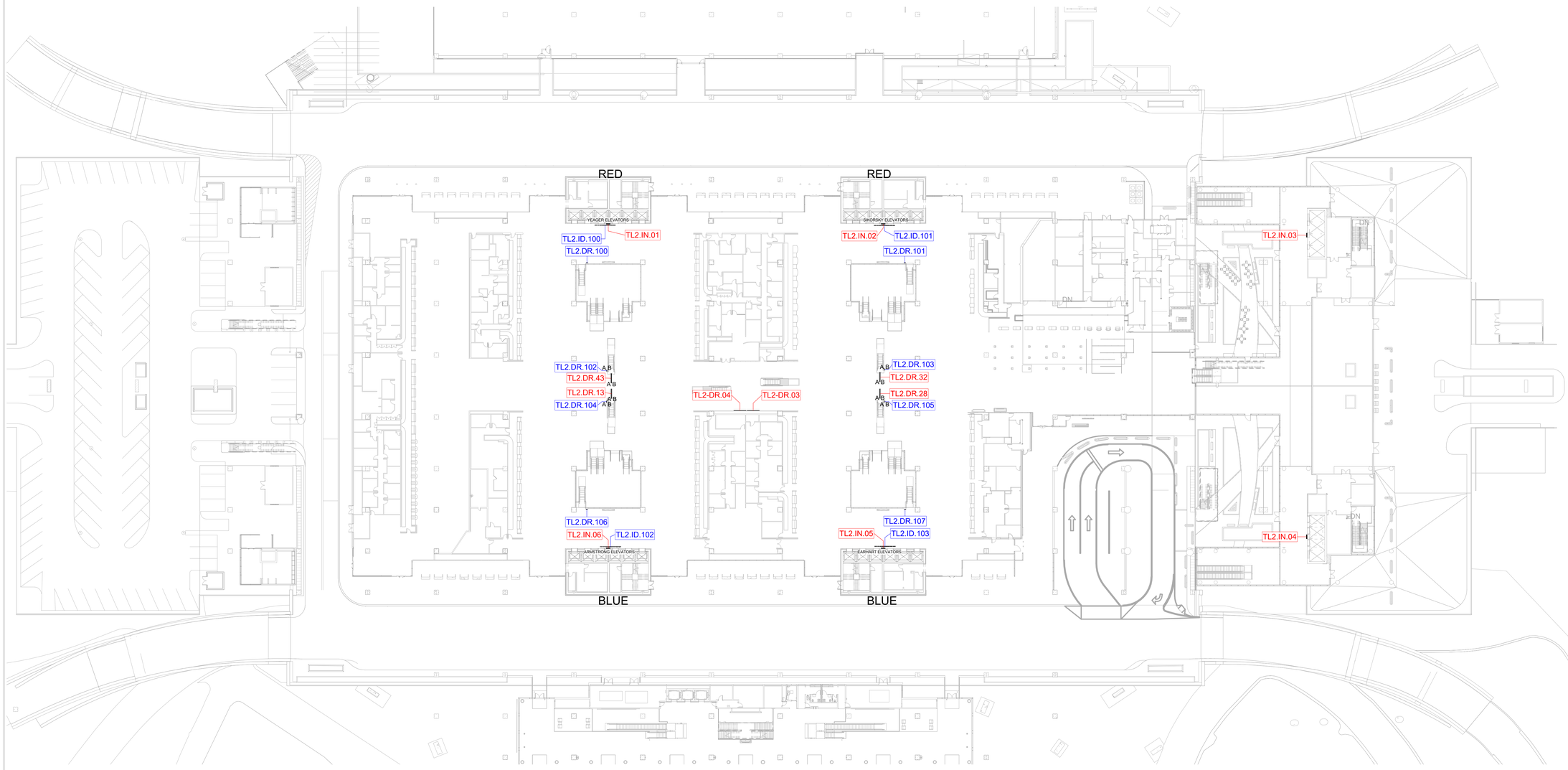

1 LEVEL 2 - TICKETING -SIGN LOCATION PLAN
1/32" = 1'-0"
0' 16' 32' 64' 96'

SIGN PHASE LEGEND

PHASE 1 (PRIORITY) SIGNS TLX.XX.XX

PHASE 2 (STANDARD) SIGNS TLX.XX.XX

PHASE 2a SIGNS TLX.XX.XX

REFER TO SPECIFICATION SECTION 01315 EXHIBIT B - CONSTRUCTION PHASE BAR CHART FOR MORE INFORMATION ON SIGN PHASING

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Revision

No.	Date	Description

TERMINAL - LEVEL 2 - TICKETING - SIGN LOCATION PLAN

AG2.1.2

43342.03
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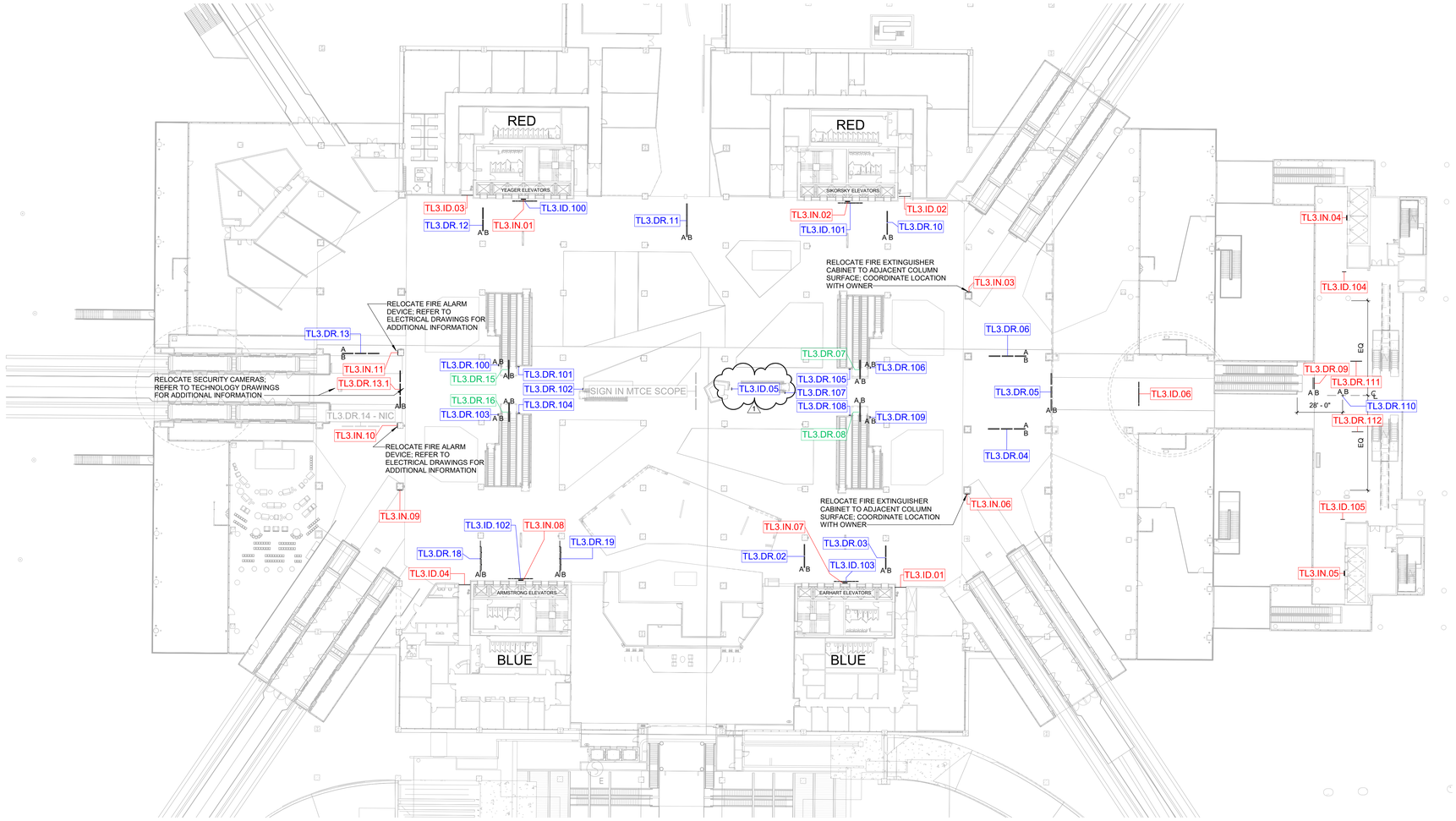

1 LEVEL 3 - TRANSFER - SIGN LOCATION PLAN
1/32" = 1'-0"
0' 16' 32' 64' 96'

SIGN PHASE LEGEND

PHASE 1 (PRIORITY) SIGNS	TLX.XX.XX
PHASE 2 (STANDARD) SIGNS	TLX.XX.XX
PHASE 2a SIGNS	TLX.XX.XX

REFER TO SPECIFICATION SECTION 01315 EXHIBIT B - CONSTRUCTION PHASE BAR CHART FOR MORE INFORMATION ON SIGN PHASING

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Revision

No.	Date	Description
1	11/19/21	Addendum 01

TERMINAL - LEVEL 3 - TRANSFER - SIGN LOCATION PLAN

AG2.1.3

43342.03
10/07/2021

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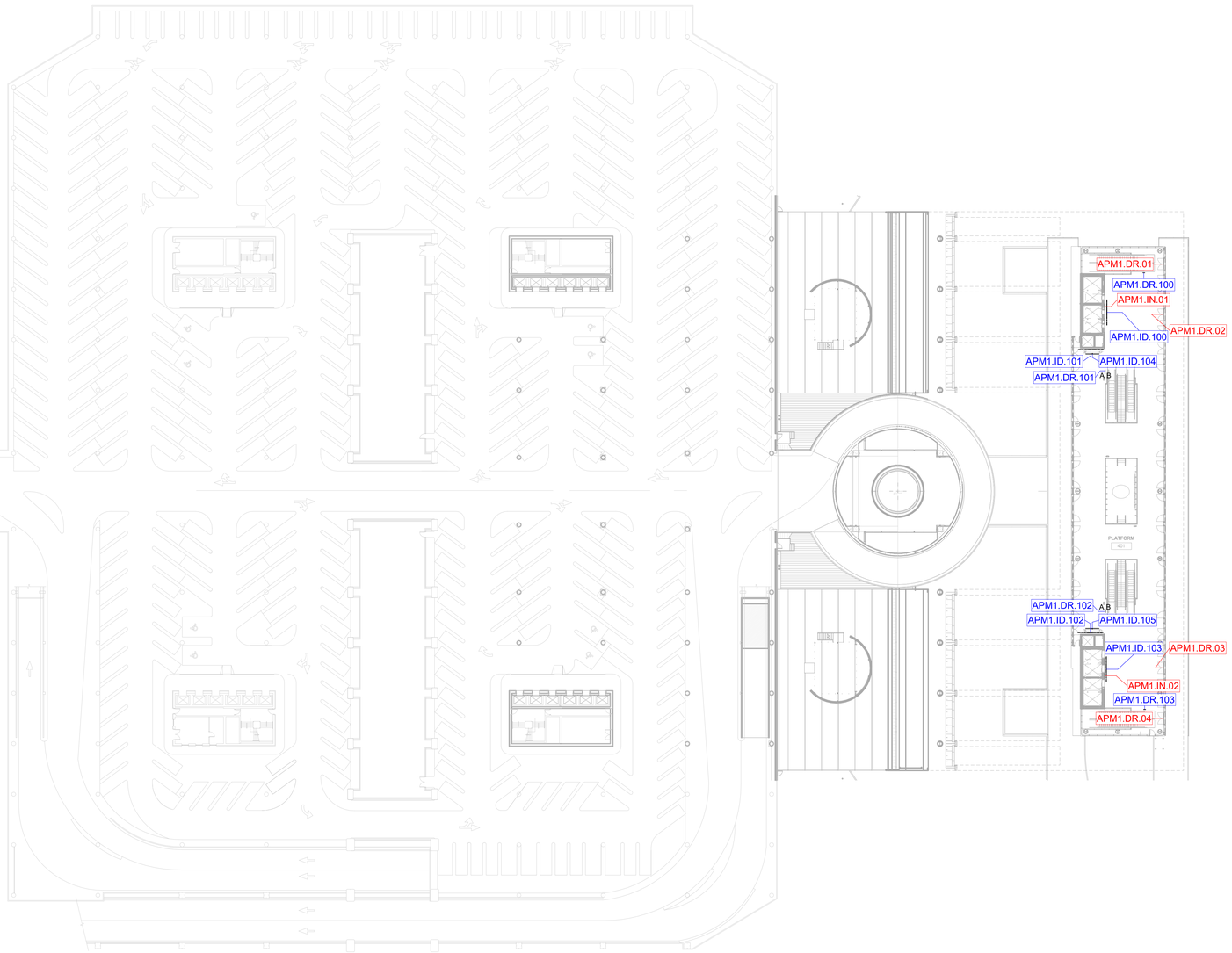

1 APM 1 - LEVEL 4 - PLATFORM - SIGN LOCATION PLAN
1/32" = 1'-0"
0' 16' 32' 64' 96'

SIGN PHASE LEGEND

PHASE 1 (PRIORITY) SIGNS TLX.XX.XX
PHASE 2 (STANDARD) SIGNS TLX.XX.XX
PHASE 2a SIGNS TLX.XX.XX

REFER TO SPECIFICATION SECTION 01315 EXHIBIT B - CONSTRUCTION PHASE BAR CHART FOR MORE INFORMATION ON SIGN PHASING

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No.	Date	Description

APM 1 - LEVEL 4 - PLATFORM - SIGN LOCATION PLAN

AG2.1.4

43342.03
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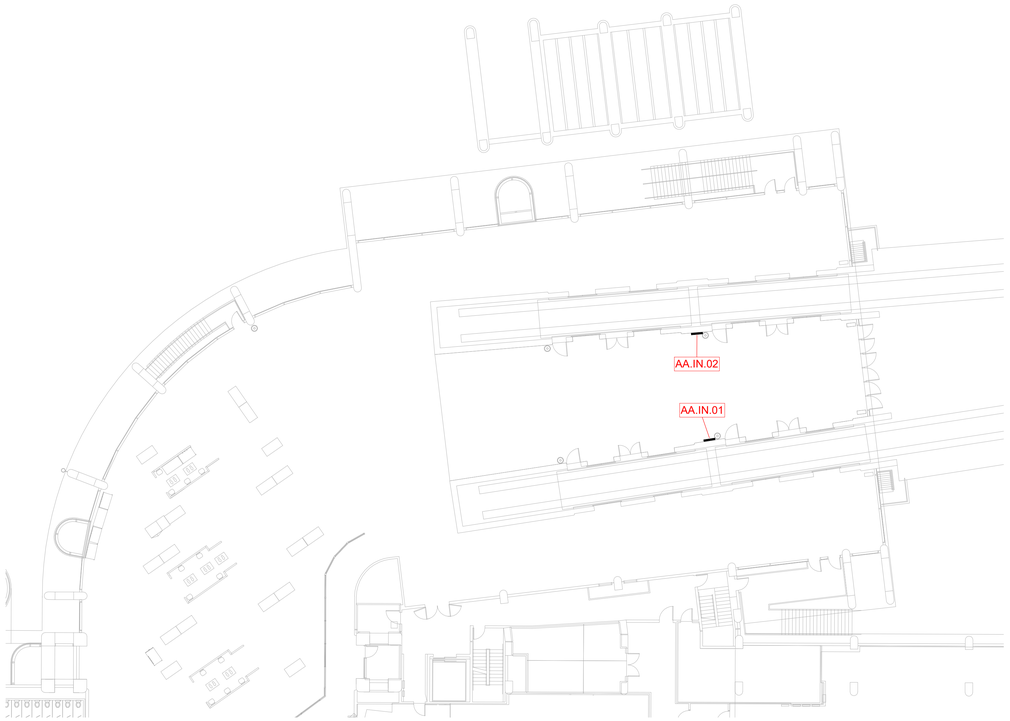
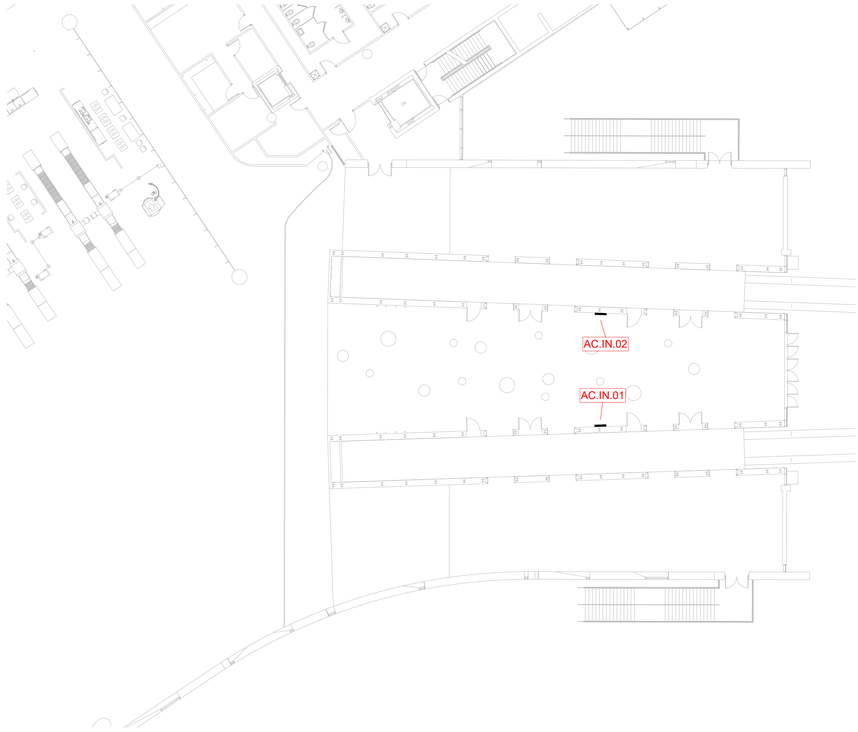
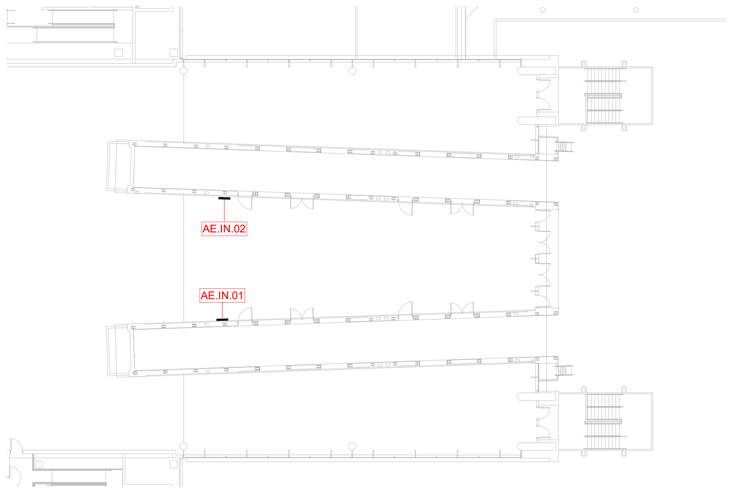


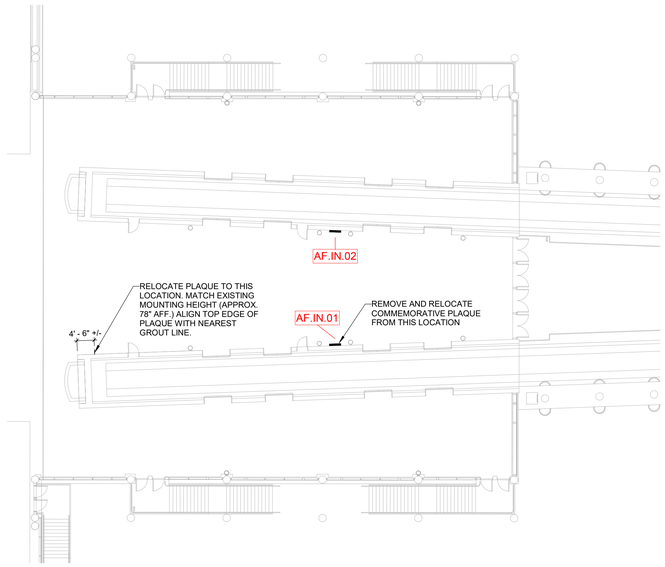
1 BOARDING - AIRSIDE A - SIGN LOCATION PLAN
1/16" = 1'-0"



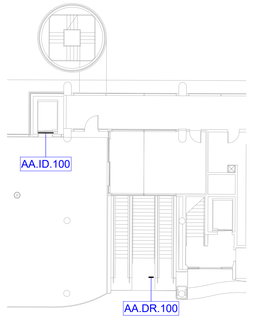
2 BOARDING - AIRSIDE C - SIGN LOCATION PLAN
1/16" = 1'-0"



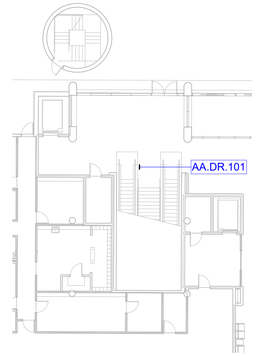
3 BOARDING - AIRSIDE E - SIGN LOCATION PLAN
1/16" = 1'-0"



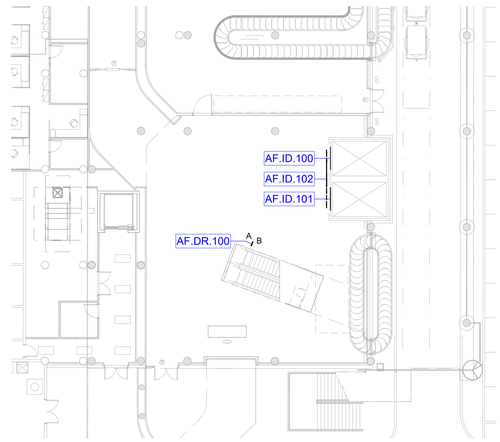
4 BOARDING - AIRSIDE F - SIGN LOCATION PLAN
1/16" = 1'-0"



5 AIRSIDE A - LEVEL 2 SIGN LOCATION PLAN
1/16" = 1'-0"



6 AIRSIDE A - LEVEL 1 SIGN LOCATION PLAN
1/16" = 1'-0"



8 AIRSIDE F - LEVEL 1 - SIGN LOCATION PLAN
1/16" = 1'-0"

SIGN PHASE LEGEND

PHASE 1 (PRIORITY) SIGNS	TLX.XX.XX
PHASE 2 (STANDARD) SIGNS	TLX.XX.XX
PHASE 2a SIGNS	TLX.XX.XX

REFER TO SPECIFICATION SECTION 01315 EXHIBIT B - CONSTRUCTION PHASE BAR CHART FOR MORE INFORMATION ON SIGN PHASING

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AR 98754

Revision

No.	Date	Description

AIRSIDES - SHUTTLE LOBBIES & ESCALATORS - SIGN LOCATION PLANS

AG2.1.6

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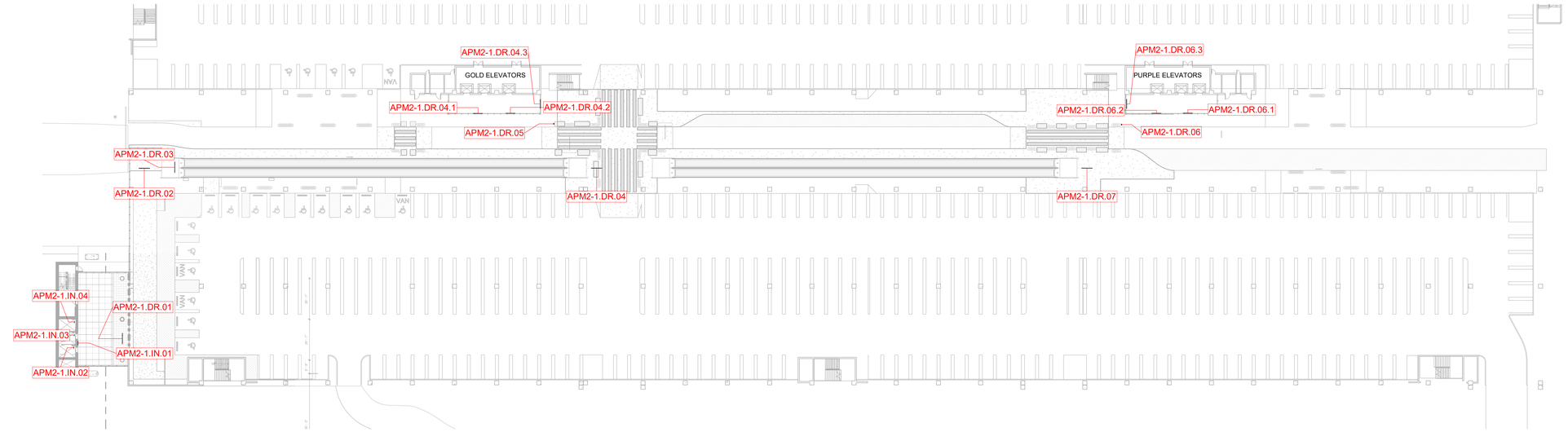
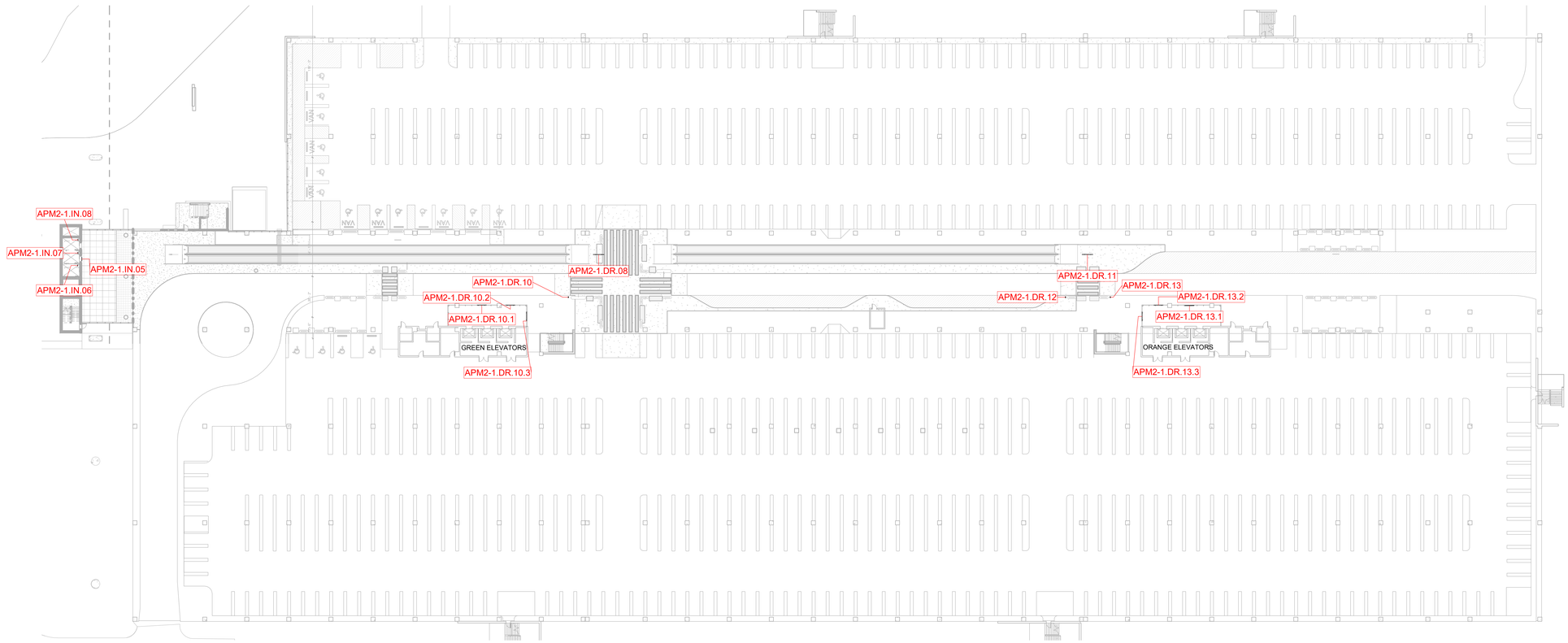


2 ECONOMY GARAGE - LEVEL 1 - SIGN LOCATION PLAN - NORTH

1/32" = 1'-0" 0' 16' 32' 64' 96'



1 ECONOMY GARAGE - LEVEL 1 - SIGN LOCATION PLAN - SOUTH

1/32" = 1'-0" 0' 16' 32' 64' 96'

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Revision

No.	Date	Description

ECONOMY GARAGE - LEVEL 1 - SIGN LOCATION PLANS

AG2.2.1

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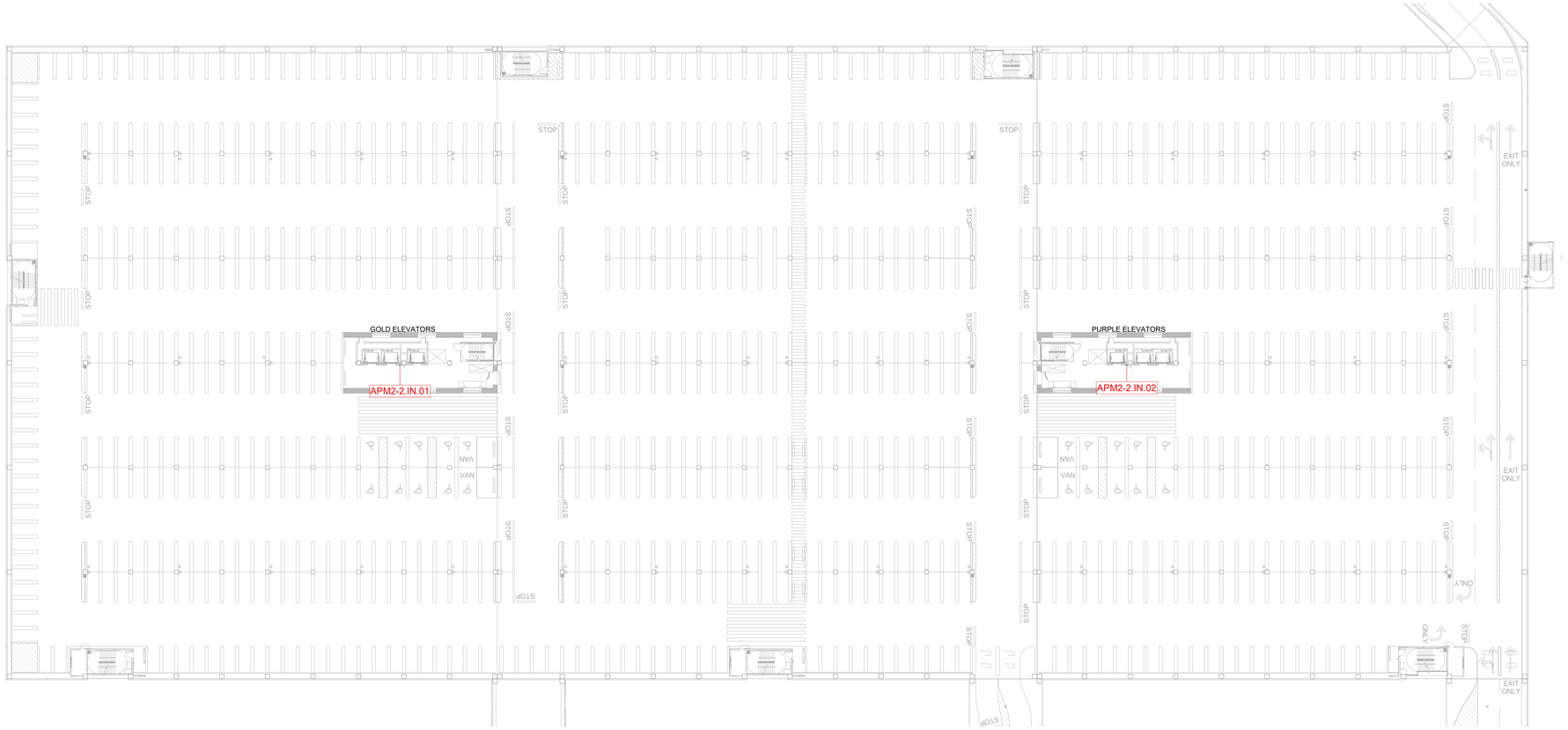
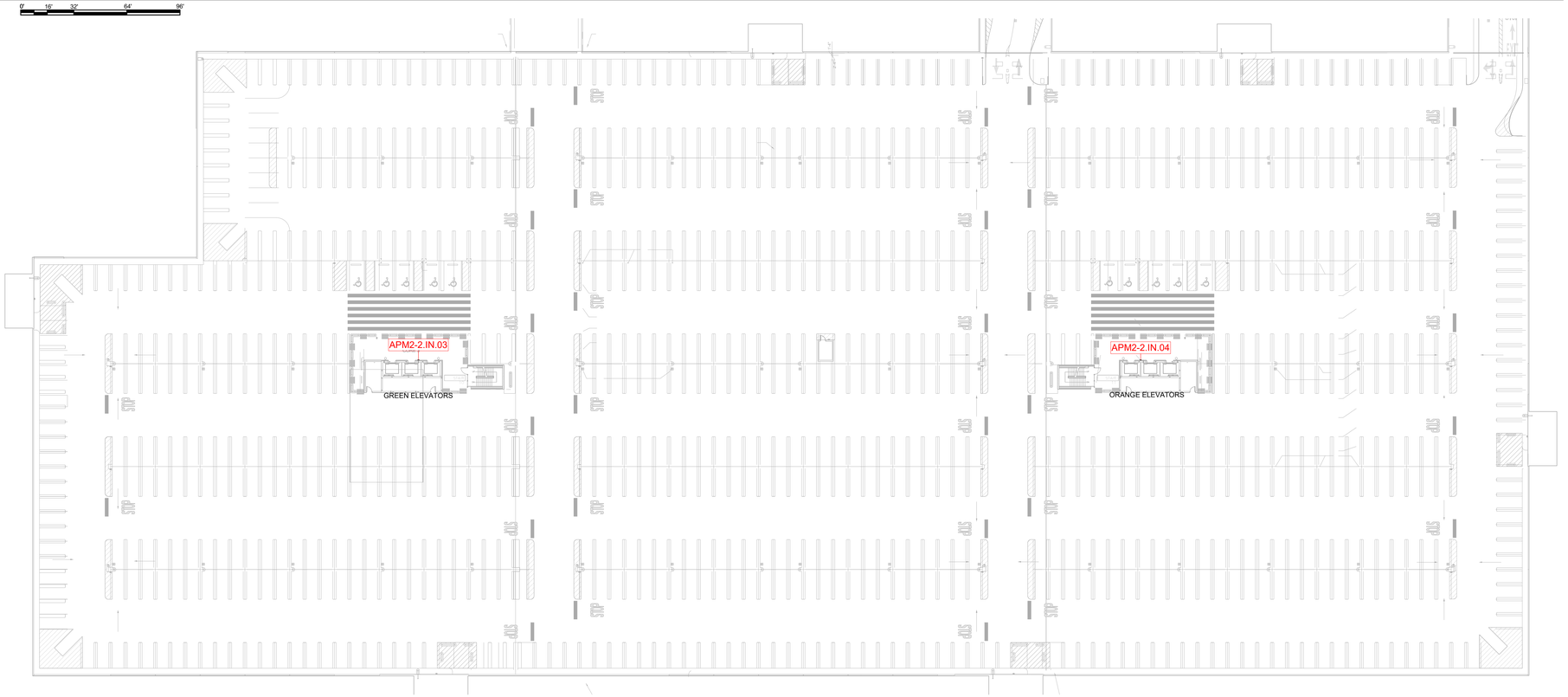


2 ECONOMY GARAGE - LEVEL 2 - SIGN LOCATION PLAN - NORTH

1/32" = 1'-0"



1 ECONOMY GARAGE - LEVEL 2 - SIGN LOCATION PLAN - SOUTH

1/32" = 1'-0"

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Revision

No.	Date	Description

ECONOMY GARAGE - LEVEL 2 - SIGN LOCATION PLANS

AG2.2.2

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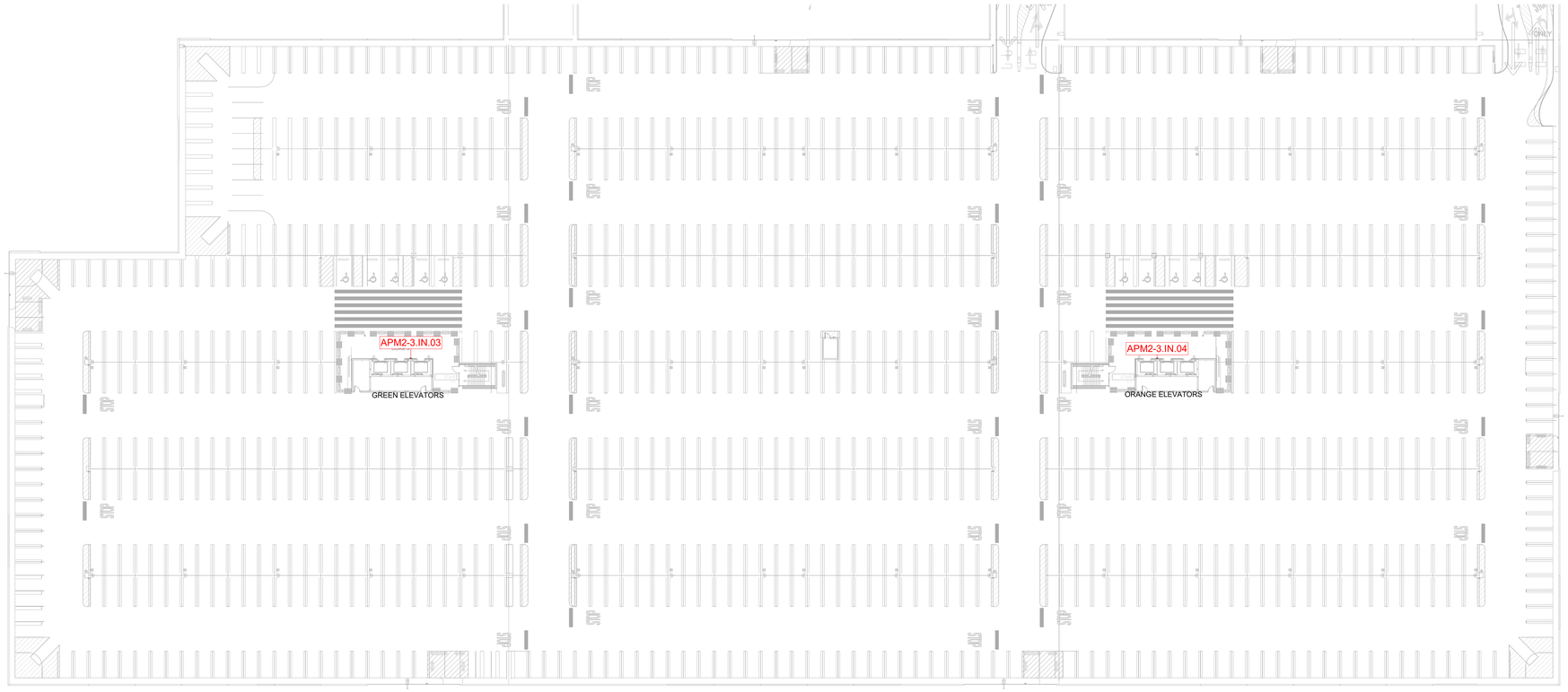
2 ECONOMY GARAGE - LEVEL 3 - SIGN LOCATION PLAN - NORTH

1/32" = 1'-0" 0' 16' 32' 64' 96'



1 ECONOMY GARAGE - LEVEL 3 - SIGN LOCATION PLAN - SOUTH

1/32" = 1'-0" 0' 16' 32' 64' 96'

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Revision

No.	Date	Description

ECONOMY GARAGE - LEVEL 3 - SIGN LOCATION PLANS

AG2.2.3

43342.03
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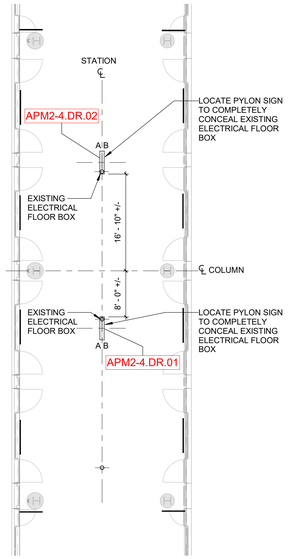
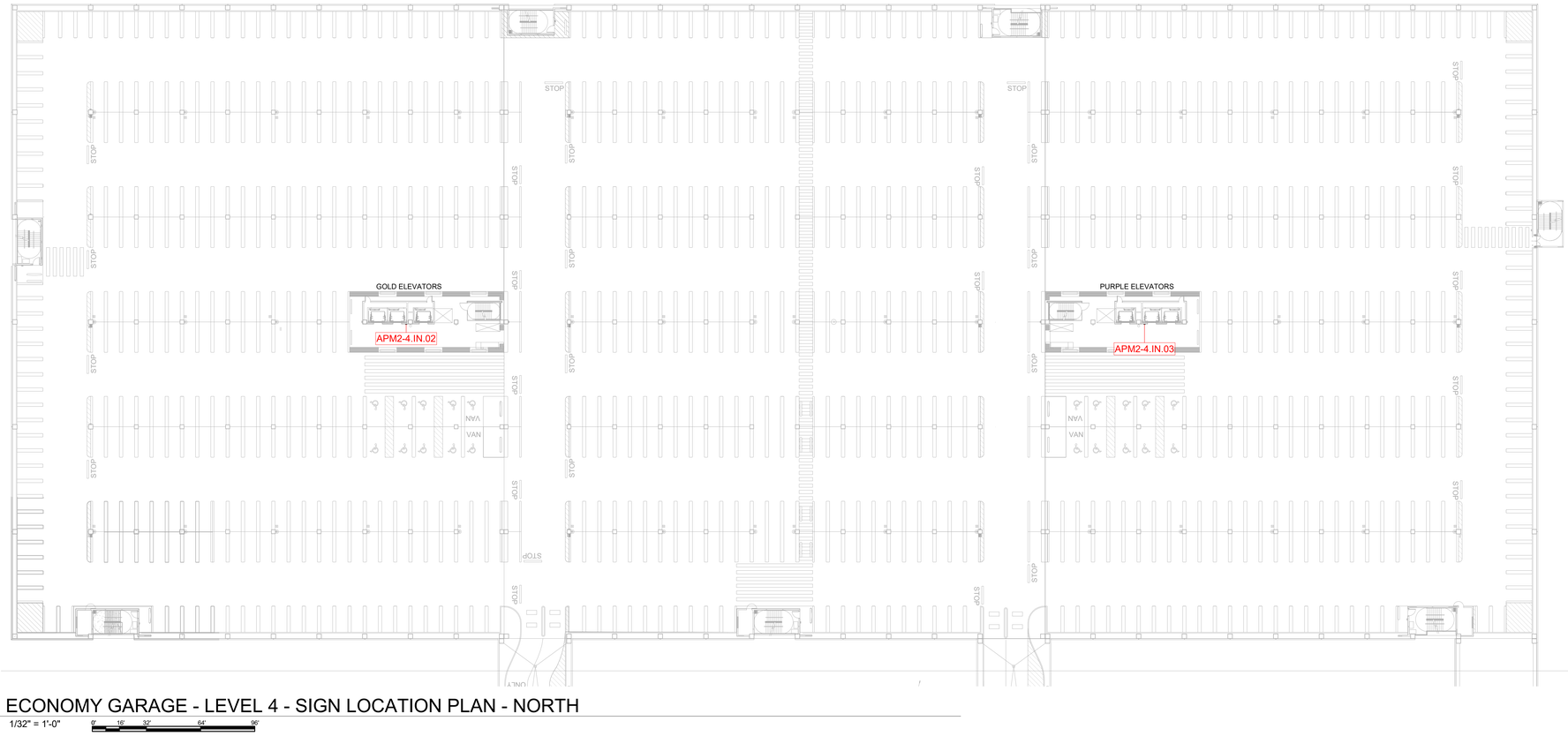
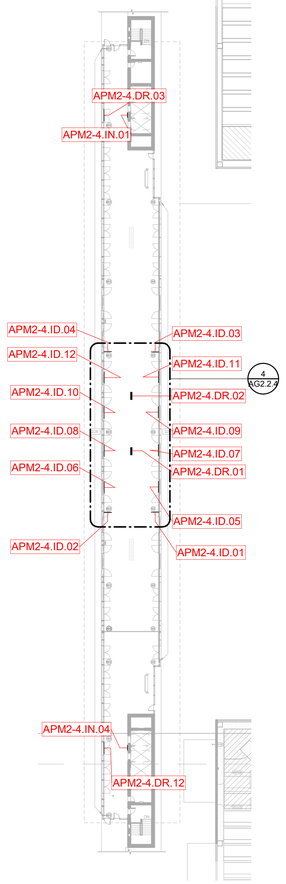
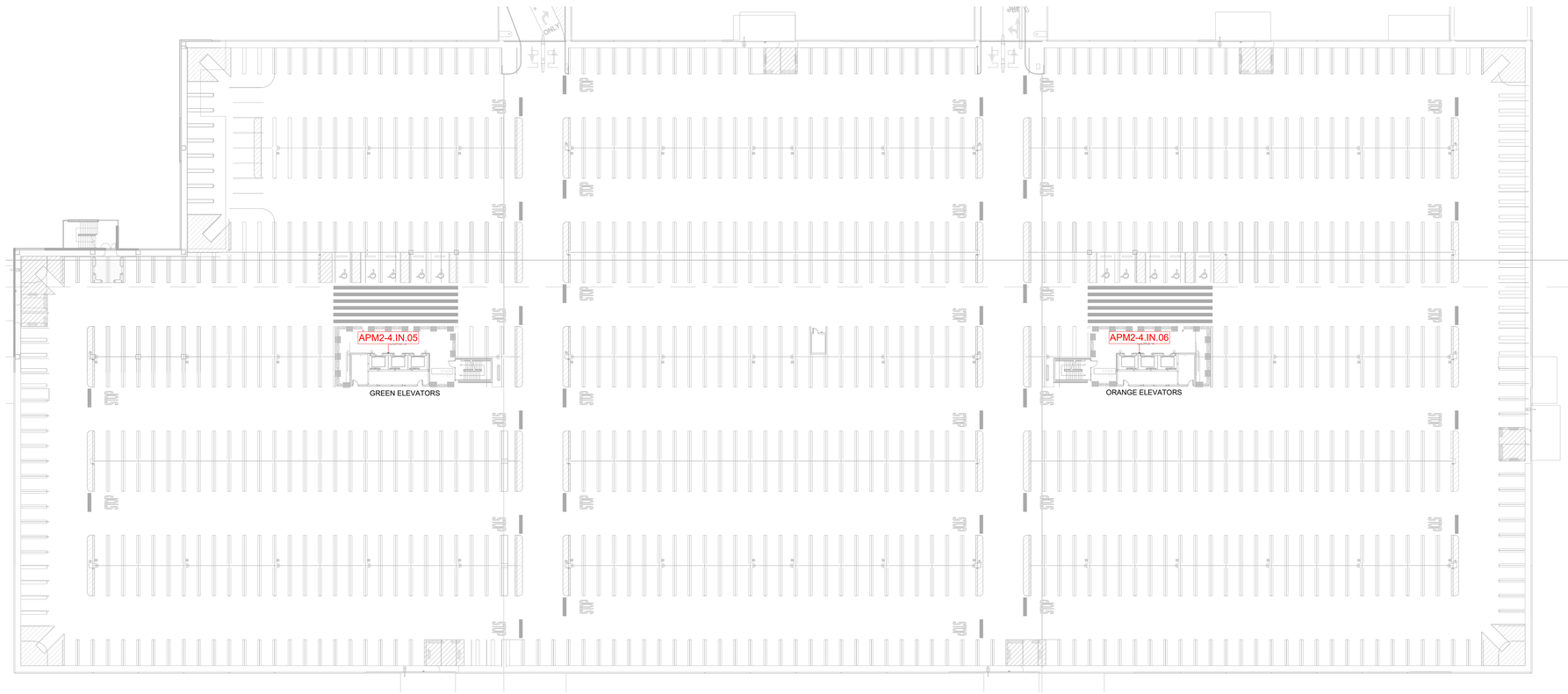


4 ENLARGED PLAN APM 2 - LEVEL 4
3/32" = 1'-0"



2 ECONOMY GARAGE - LEVEL 4 - SIGN LOCATION PLAN - NORTH
1/32" = 1'-0"





3 APM 2 - LEVEL 4 -SIGN LOCATION PLAN
1/32" = 1'-0"

1 ECONOMY GARAGE - LEVEL 4 - SIGN LOCATION PLAN - SOUTH
1/32" = 1'-0"

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AR 98754

Revision

No.	Date	Description

ECONOMY GARAGE - LEVEL 4 - SIGN LOCATION PLANS

AG2.2.4

43342.03
10/07/2021

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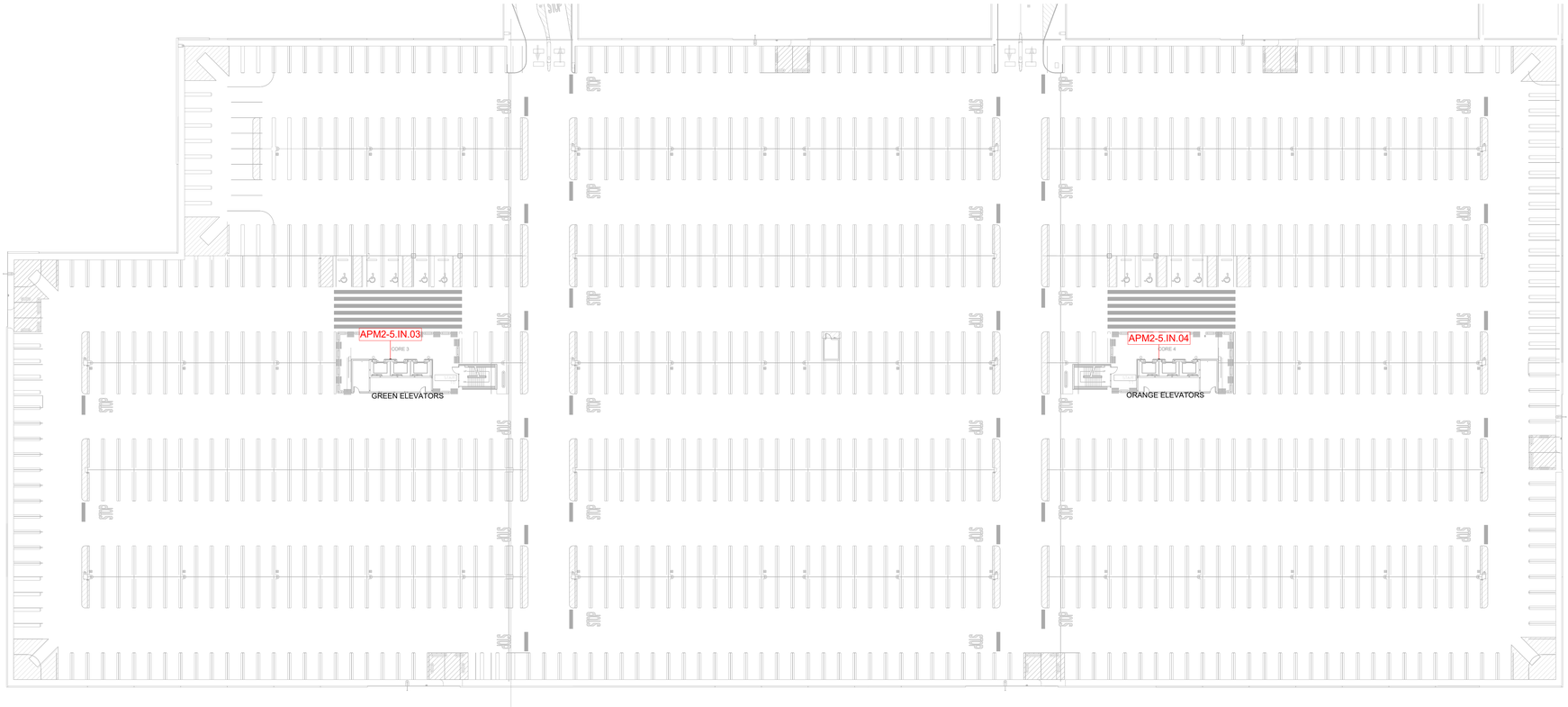
2 ECONOMY GARAGE - LEVEL 5 - SIGN LOCATION PLAN - NORTH
1/32" = 1'-0"
0' 16' 32' 64' 96'



1 ECONOMY GARAGE - LEVEL 5 - SIGN LOCATION PLAN - SOUTH
1/32" = 1'-0"
0' 16' 32' 64' 96'

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WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION

TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
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BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

ECONOMY GARAGE - LEVEL 5 - SIGN LOCATION PLANS

AG2.2.5

43342.03
10/07/2021

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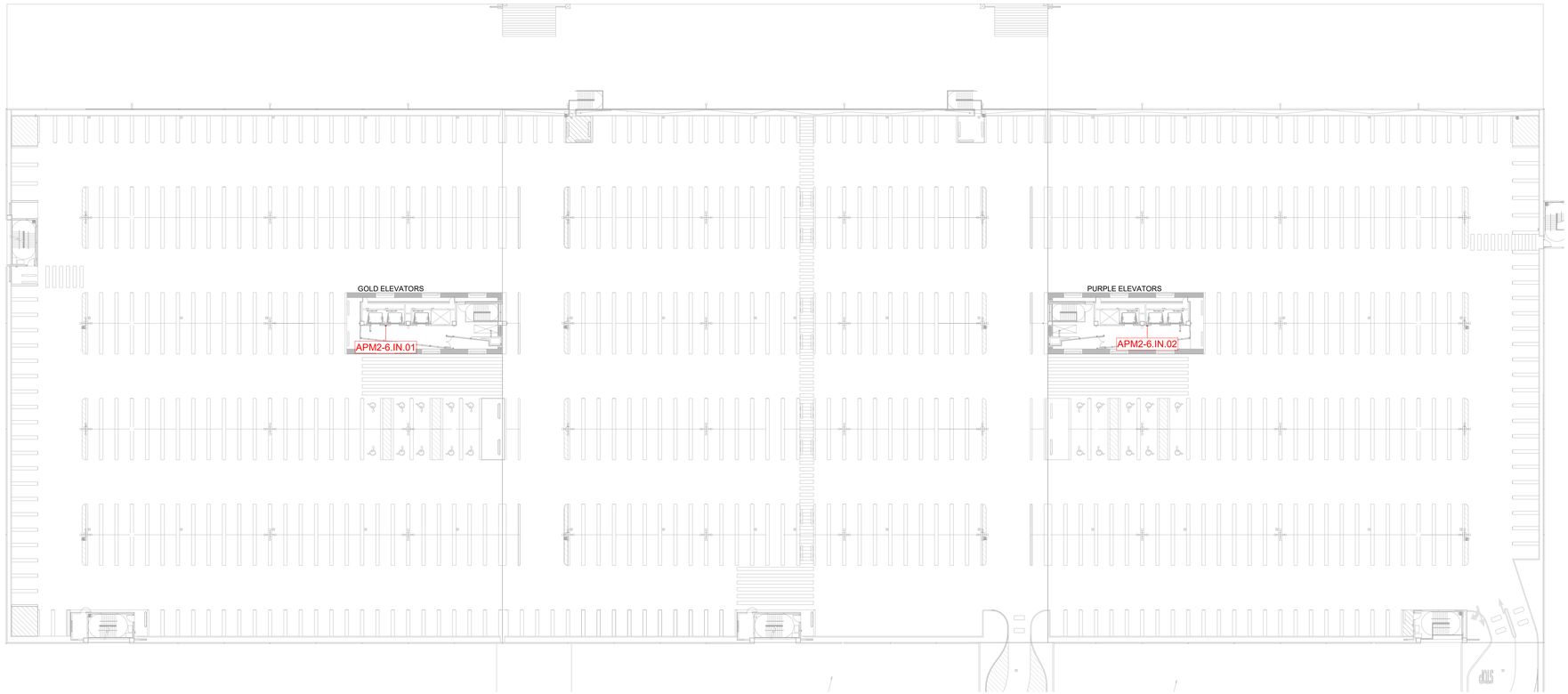
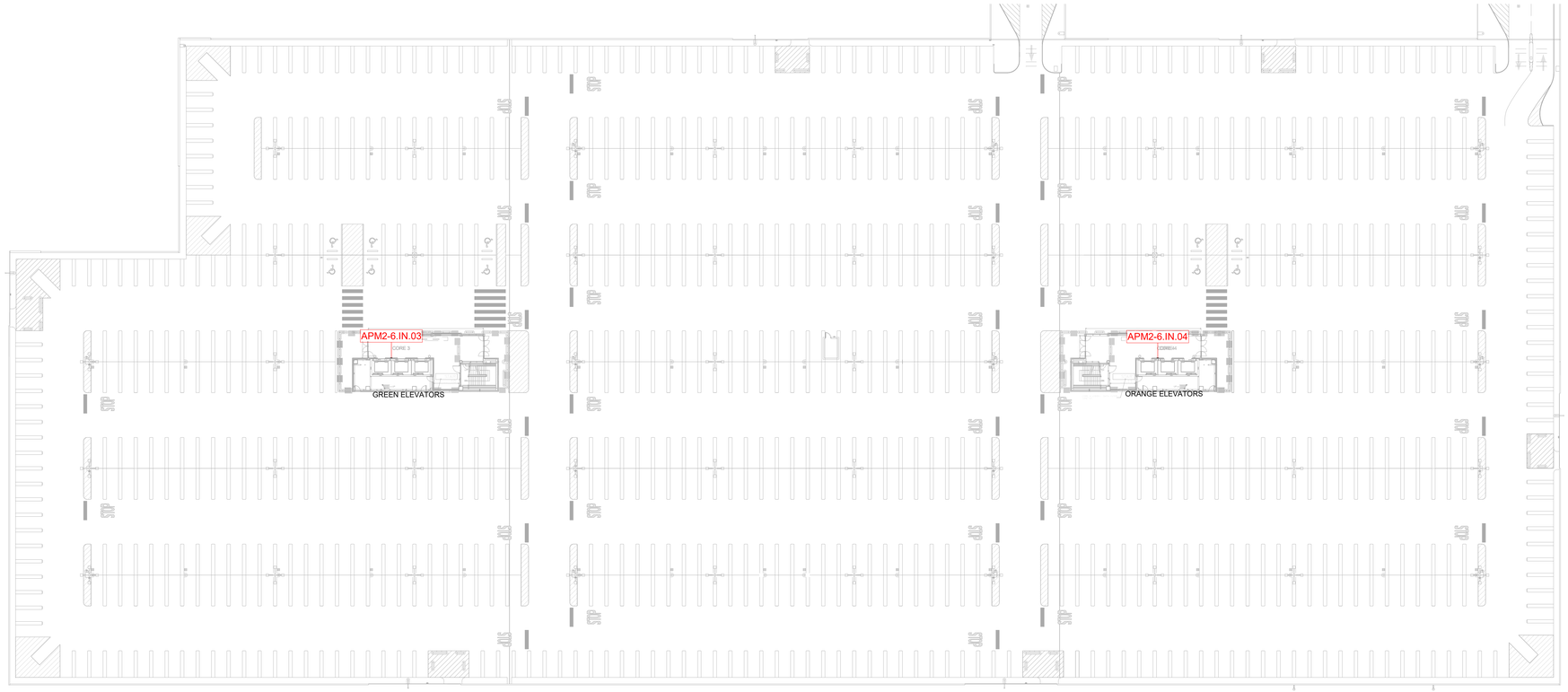


2 ECONOMY GARAGE - LEVEL 6 - SIGN LOCATION PLAN - NORTH
1/32" = 1'-0"



1 ECONOMY GARAGE - LEVEL 6 - SIGN LOCATION PLAN - SOUTH
1/32" = 1'-0"

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WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
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BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

ECONOMY GARAGE - LEVEL 6 - SIGN LOCATION PLANS

AG2.2.6

43342.03
10/07/2021

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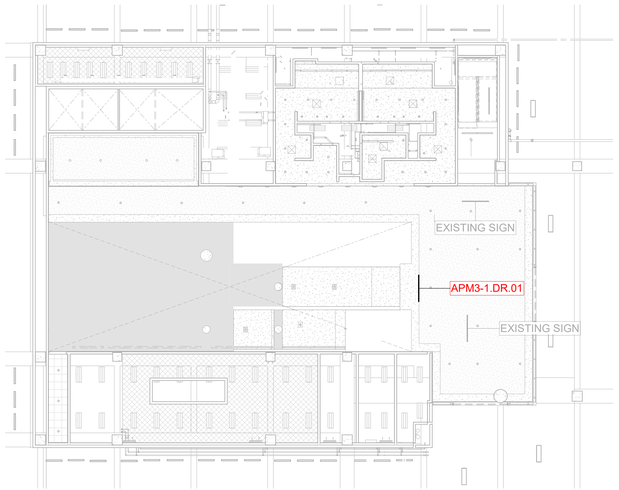
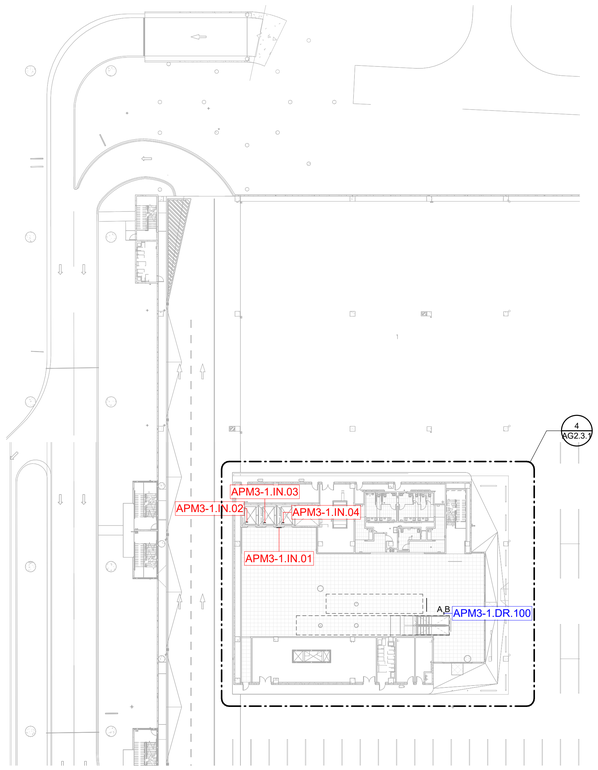
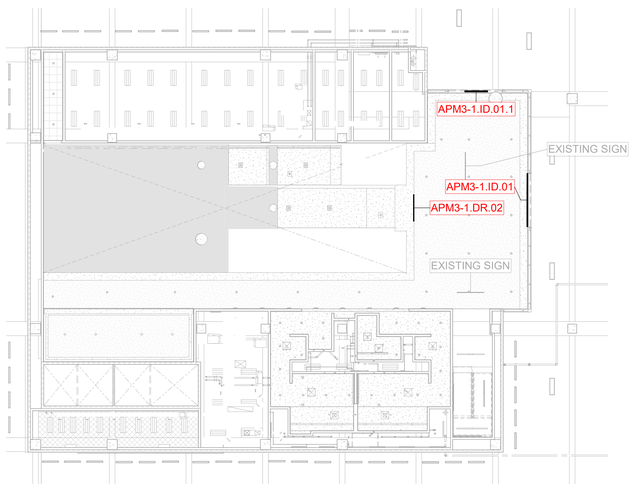


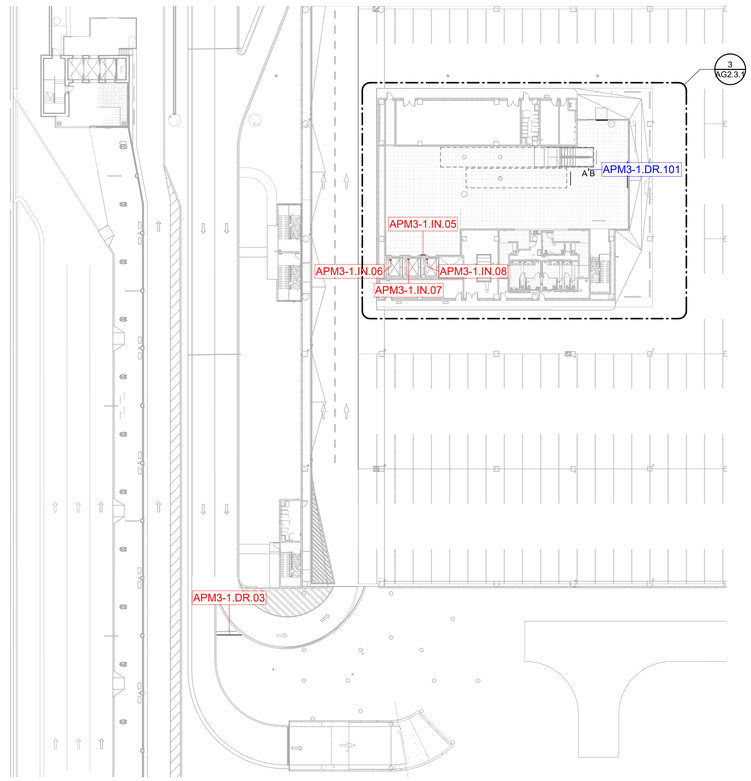
4 CONRAC - LEVEL 1 - ENLARGED RCP SIGN LOCATION PLAN - ZONE 1
1/16" = 1'-0"



2 CONRAC - LEVEL 1 - SIGN LOCATION PLAN - ZONE 1
1/32" = 1'-0"



3 CONRAC - LEVEL 1 - ENLARGED RCP SIGN LOCATION PLAN - ZONE 3
1/16" = 1'-0"



1 CONRAC - LEVEL 1 - SIGN LOCATION PLAN - ZONE 3
1/32" = 1'-0"

SIGN PHASE LEGEND

PHASE 1 (PRIORITY) SIGNS	TLX.XX.XX
PHASE 2 (STANDARD) SIGNS	TLX.XX.XX
PHASE 2a SIGNS	TLX.XX.XX

REFER TO SPECIFICATION SECTION 01315 EXHIBIT B - CONSTRUCTION PHASE BAR CHART FOR MORE INFORMATION ON SIGN PHASING

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AR 98754

Revision

No.	Date	Description

CONRAC - LEVEL 1 - SIGN LOCATION PLANS

AG2.3.1

43342.03
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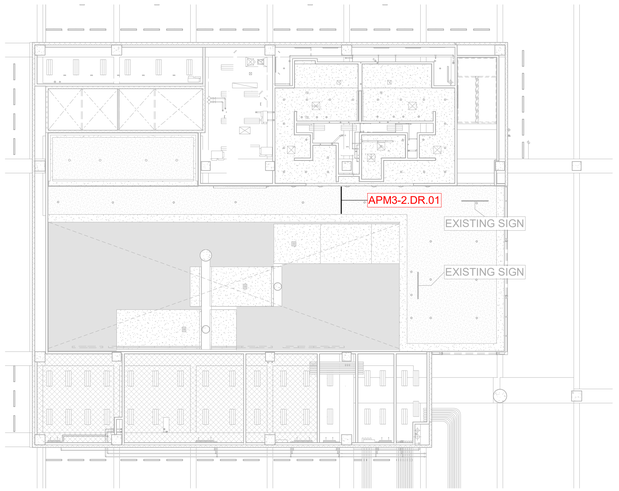

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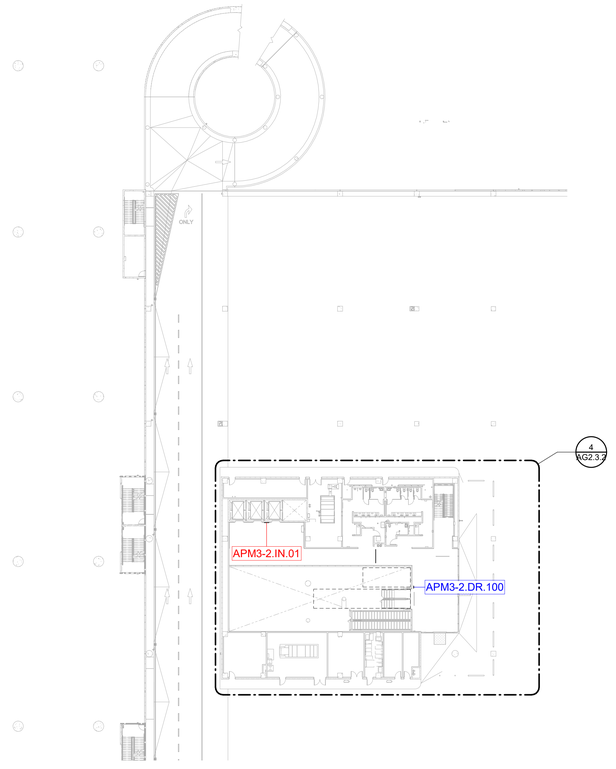
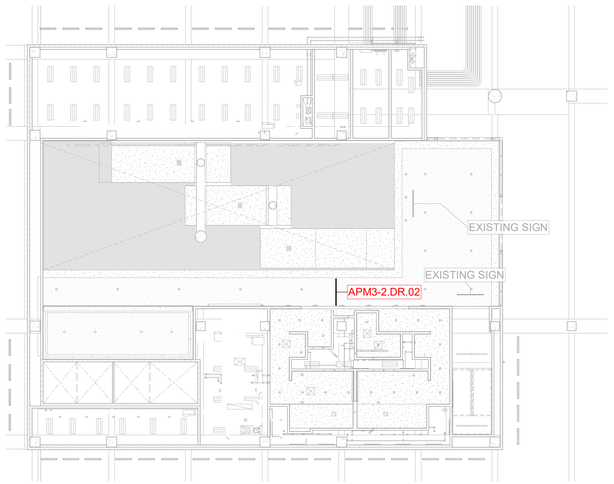
1/16" = 1'-0"



2 CONRAC - LEVEL 2 - SIGN LOCATION PLAN - ZONE 1
1/32" = 1'-0"



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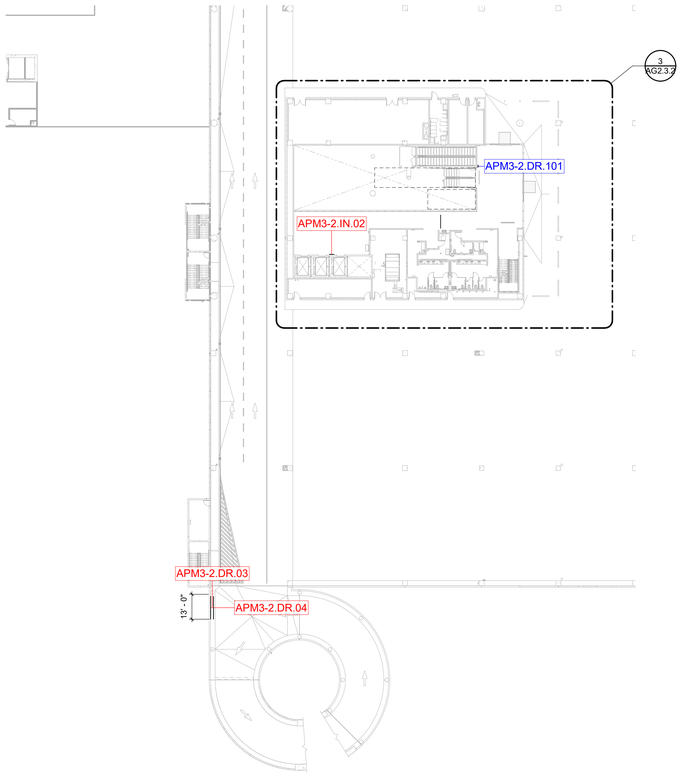
1/16" = 1'-0"



1 CONRAC - LEVEL 2 - SIGN LOCATION PLAN - ZONE 3
1/32" = 1'-0"

SIGN PHASE LEGEND

PHASE 1 (PRIORITY) SIGNS — TLX.XX.XX

PHASE 2 (STANDARD) SIGNS — TLX.XX.XX

PHASE 2a SIGNS — TLX.XX.XX

REFER TO SPECIFICATION SECTION 01315 EXHIBIT B - CONSTRUCTION PHASE BAR CHART FOR MORE INFORMATION ON SIGN PHASING

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BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

CONRAC - LEVEL 2 - SIGN LOCATION PLANS

AG2.3.2

43342.03
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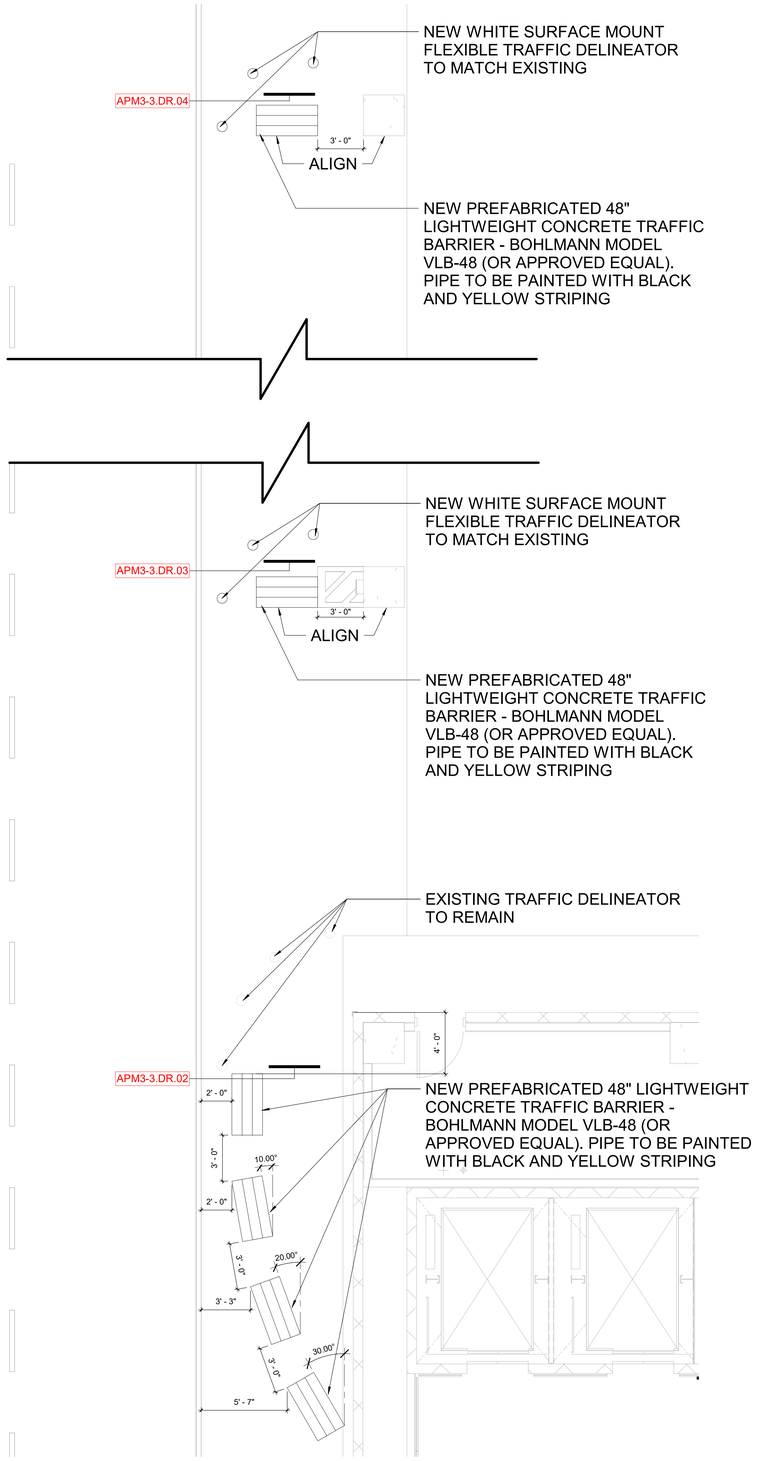
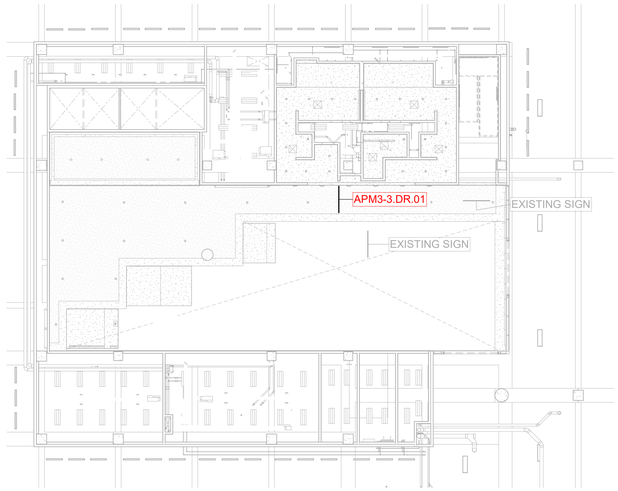


5 ENLARGED PLAN APM 3 - LEVEL 3 - SIGN LOCATION PLAN - ZONE 1
1/4" = 1'-0"

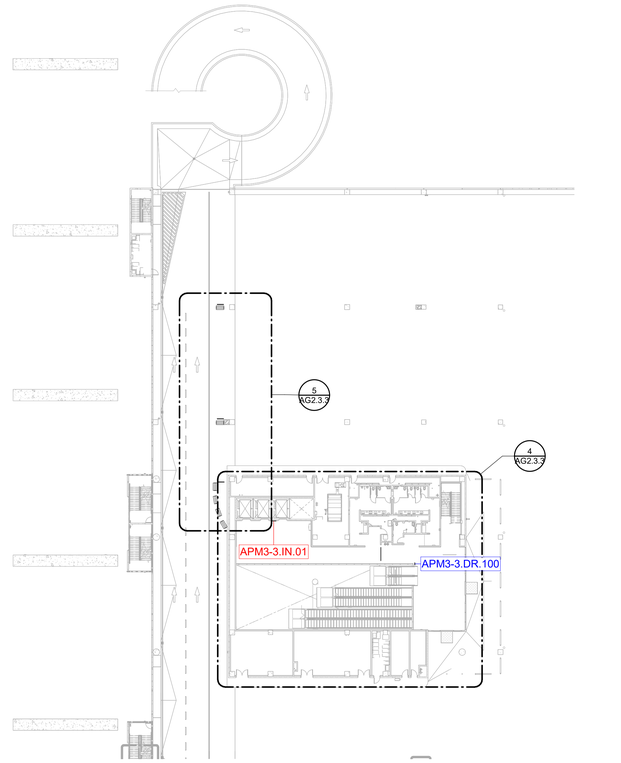
SIGN PHASE LEGEND

PHASE 1 (PRIORITY) SIGNS	TLX.XX.XX
PHASE 2 (STANDARD) SIGNS	TLX.XX.XX
PHASE 2a SIGNS	TLX.XX.XX

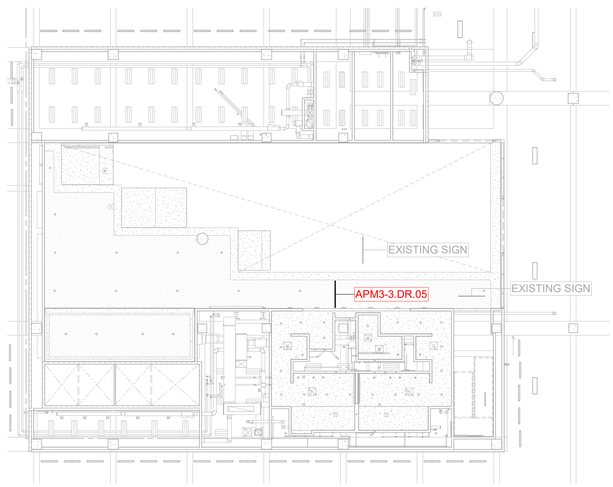
REFER TO SPECIFICATION SECTION 01315 EXHIBIT B - CONSTRUCTION PHASE BAR CHART FOR MORE INFORMATION ON SIGN PHASING



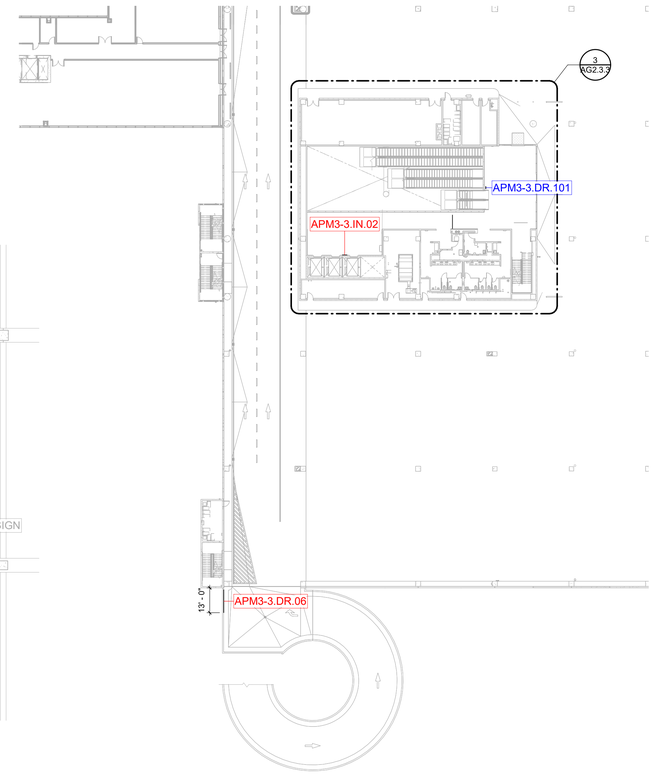
4 CONRAC - LEVEL 3 - ENLARGED RCP SIGN LOCATION PLAN - ZONE 1
1/16" = 1'-0"



2 CONRAC - LEVEL 3 - SIGN LOCATION PLAN - ZONE 1
1/32" = 1'-0"



3 CONRAC - LEVEL 3 - ENLARGED RCP SIGN LOCATION PLAN - ZONE 3
1/16" = 1'-0"



1 CONRAC - LEVEL 3 - SIGN LOCATION PLAN - ZONE 3
1/32" = 1'-0"

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AR 98754

Revision

No.	Date	Description

CONRAC - LEVEL 3 - SIGN LOCATION PLANS

AG2.3.3

43342.03
10/07/2021

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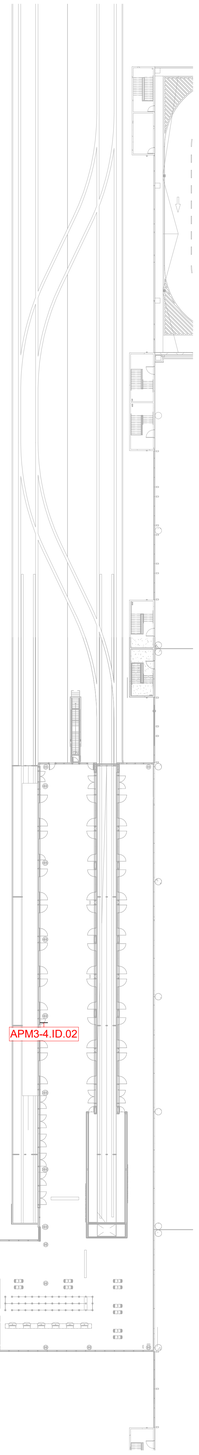
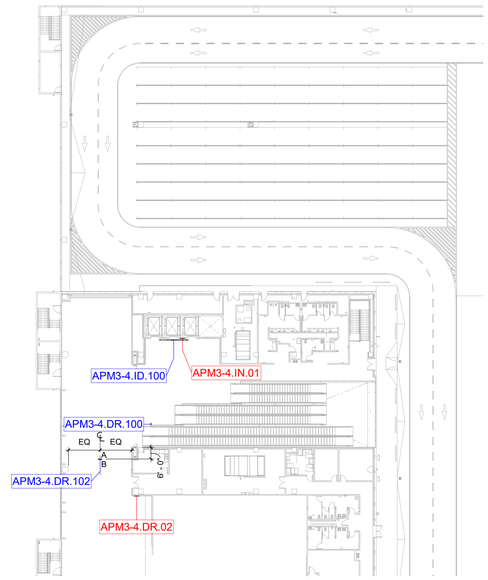
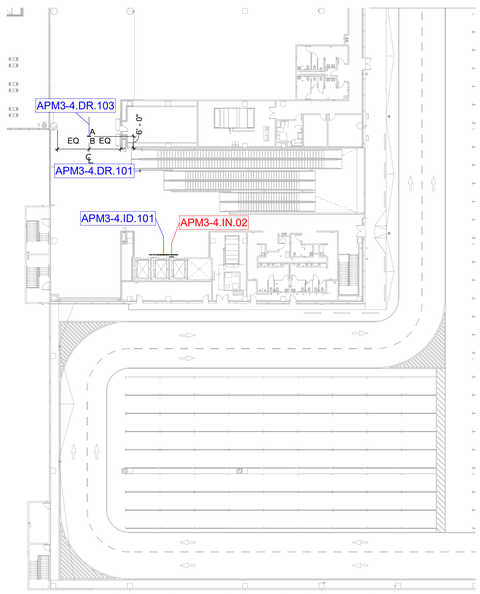




2 CONRAC - LEVEL 4 - SIGN LOCATION PLAN - ZONE 1
1/32" = 1'-0"



1 CONRAC - LEVEL 4 - SIGN LOCATION PLAN - ZONE 3
1/32" = 1'-0"

SIGN PHASE LEGEND

PHASE 1 (PRIORITY) SIGNS	TLX.XX.XX
PHASE 2 (STANDARD) SIGNS	TLX.XX.XX
PHASE 2a SIGNS	TLX.XX.XX

REFER TO SPECIFICATION SECTION 01315 EXHIBIT B - CONSTRUCTION PHASE BAR CHART FOR MORE INFORMATION ON SIGN PHASING

3 APM 3 - LEVEL 4 -SIGN LOCATION PLAN
1/32" = 1'-0"

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BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

CONRAC - LEVEL 4 - SIGN LOCATION PLANS

AG2.3.4

43342.03
10/07/2021

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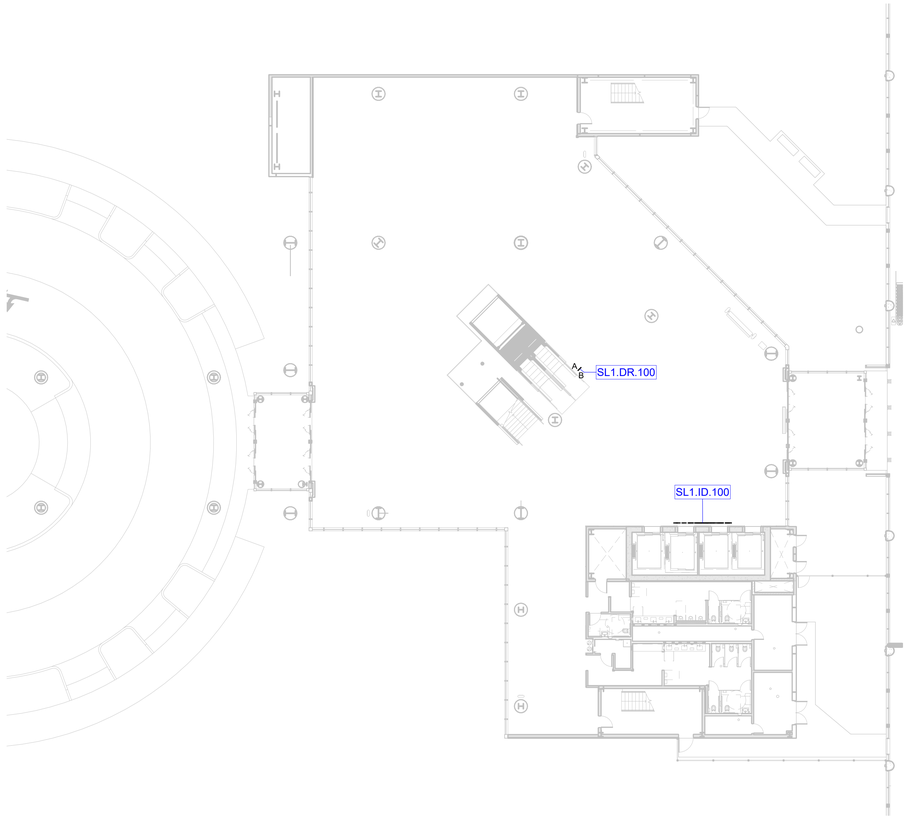
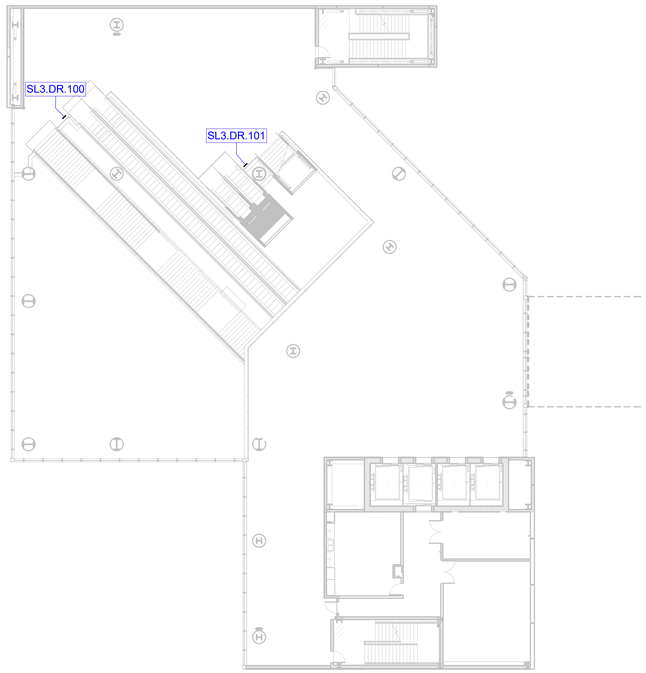
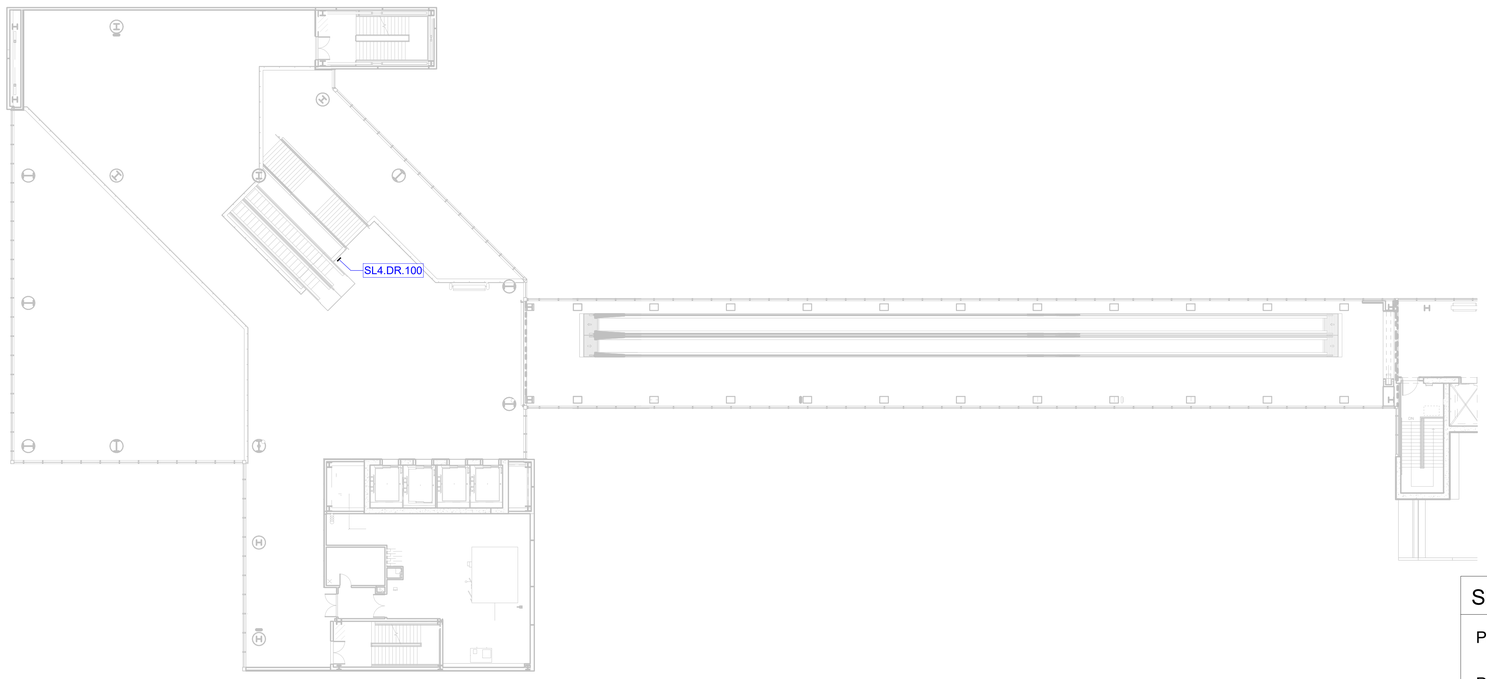


2 SKYCENTER - LEVEL 1 - SIGN LOCATION PLAN
1/16" = 1'-0"



3 SKYCENTER - LEVEL 3 - SIGN LOCATION PLAN
1/16" = 1'-0"



1 SKYCENTER - LEVEL 4 - SIGN LOCATION PLAN
1/16" = 1'-0"

SIGN PHASE LEGEND

PHASE 1 (PRIORITY) SIGNS	TLX.XX.XX
PHASE 2 (STANDARD) SIGNS	TLX.XX.XX
PHASE 2a SIGNS	TLX.XX.XX

REFER TO SPECIFICATION SECTION 01315 EXHIBIT B - CONSTRUCTION PHASE BAR CHART FOR MORE INFORMATION ON SIGN PHASING

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AR 98754

Revision

No.	Date	Description

SKYCENTER - SIGN LOCATION PLANS

AG2.4.1

43342.03
10/07/2021

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SPECIFICATIONS SECTION 10 14 00 IS PROVIDED AS PART OF THESE DESIGN INTENT CONSTRUCTION DOCUMENTS ON DETACHED 8 1/2" X 11" SHEETS AND SHALL BE UTILIZED IN CONJUNCTION WITH OTHER EXISTING SPECIFICATIONS PROVIDED FOR THIS PROJECT. REQUIREMENTS FOR ALL SIGN TYPES IN THIS PROJECT HAVE BEEN CONSOLIDATED INTO THIS ONE STATIC SIGNAGE SPECIFIC SPECIFICATIONS SECTION. THE PRODUCT AND PERFORMANCE REQUIREMENTS IN THESE SPECIFICATIONS PROVIDE ADDITIONAL DETAILED INFORMATION AND REQUIREMENTS REGARDING PRODUCTS, SUBMITTALS, PROCESSES AND OTHER INFORMATION THAT SUPPLEMENTS THE INFORMATION INCLUDED ON THE DESIGN INTENT DRAWINGS.

SPECIAL SUBMITTAL REQUIREMENTS INCLUDE PROTOTYPES, FIELD-MOCK UPS AND SAMPLES.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ALL REQUIREMENTS LISTED IN THESE SPECIFICATIONS, THE PERFORMANCE OF THE COMPLETED WORK AND ENSURE THAT ALL SIGNS FUNCTION ACCORDING TO THE PROJECT REQUIREMENTS. IN THE EVENT OF CONFLICT, REFER TO THE INFORMATION PROVIDED ON THE DESIGN INTENT DRAWINGS.

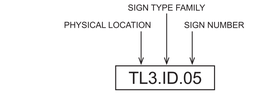
FOR ADDITIONAL INFORMATION REGARDING MATERIAL SPECIFICATIONS OF FINISHES AND APPROVED MANUFACTURES OF ADHESIVES, GRAPHIC FILMS, METALS, PAINT, PLASTICS, LED LIGHTING, SPECIAL PROCESSES, ETC. REFER TO SECTION 10 1400.

1 SPECIFICATION SECTION 10 1400
NOT TO SCALE

THE LOCATION OF EACH SIGN IS INDICATED ON THE SIGN LOCATION PLANS PROVIDED.THESE LOCATION PLANS ARE FOR INFORMATIONAL PURPOSES AND COORDINATION WITH OTHER DISCIPLINES. THESE PLANS ARE INTENDED TO DEMONSTRATE THE PROPOSED LOCATION IN RELATION TO OTHER CONSTRUCTED ELEMENTS.

THE CONTRACTOR SHALL VERIFY EACH LOCATION AND NOTIFY THE ARCHITECT OF ANY CONFLICTS THAT MAY IMPACT THE EXACT LOCATION OF EACH SIGN. MODIFICATIONS TO SOME LOCATIONS MAY BE REQUIRED AS A RESULT OF CHANGES DURING THE CONSTRUCTION PROCESS AND ANY REVISIONS REQUIRED WILL BE DOCUMENTED BY ISSUING THE APPROPRIATE ADDENDUMS AND/OR BULLETINS.

SIGN LOCATION TAG KEY



LEGEND

BC -	BAGGAGE CLAIM
AA -	AIRSIDE A
AC -	AIRSIDE C
AE -	AIRSIDE E
AF -	AIRSIDE F
APM1 -	TERMINAL SKYCONNECT STATION
APM2 -	ECONOMY PARKING SKYCONNECT STATION AND GARAGE
APM3 -	RENTAL AR CENTER SKYCONNECT STATION
TL1 -	TERMINAL LEVEL 1
TL2 -	TERMINAL LEVEL 2
TL3 -	TERMINAL LEVEL 3
DR -	DIRECTIONAL
ES -	ELECTRONIC SIGNAGE
GT -	GROUND TRANSPORT DIRECTORY
ID -	IDENTIFICATION
IN -	INFORMATIONAL

2 SIGN LOCATION PLANS
NOT TO SCALE

FRUTIGER 55 ROMAN

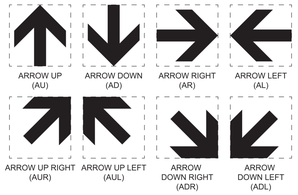
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
0123456789

FRUTIGER 65 BOLD

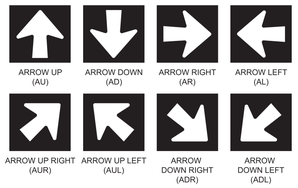
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
0123456789

3 PROJECT TYPE STYLES
NOT TO SCALE

INTERIOR WAYFINDING ARROWS



ROADWAY ARROWS



SYMBOLOGY



4 PROJECT ARROWS AND SYMBOLS
NOT TO SCALE

PAINT COLORS		PMS	MATTHEWS PAINT
P1	CHALK WHITE	WHITE	MP05317
P2	SIGNAL JET BLACK	BLACK	MP31631
P3	SUNSET RED	RED199 C	MP74162*
P4	DEEP SEA BLUE	DARK BLUE 293 C	MP78891*
P5	HORIZON ORANGE	RED 158 C	MP70119*
P6	COASTAL BLUE	PROCESS BLUE	MP67627*
P7	TOMATO RED	1795 C	MP218
P8	INTENSE BLUE	301 C	MP367
P9	GREEN	3425 CP	MP450
P10	PURPLE	3535 CP	MP 95887 PMS PLUS SERIES
P11	GOLD		MP 2548
P12	MOLOKAI BLUE		MP23464/23552
P13	BRUSHED ALUMINUM		MP41342SP
P14	SLATE	428 C	MP543
P15	DARK SLATE		MP10269

VINYL	3M DG³/ 3M ELECTROCUT OVERLAY	3M SCOTCHAL OPAQUE FILM		3M TRANSLUCENT FILM	
V1A	4090	V1B	WHITE 7725-10	V1C	
V2A	1178	V2B	7725-22 MATTE BLACK	V2C	
V3A	1172	V3B	DIGITAL PRINT ON 3M FILM TO MATCH PMS 199C RED	V3C	
V4A	1175	V4B	DIGITAL PRINT ON 3M FILM TO MATCH PMS 293C DARK BLUE	V4C	
V5A		V5B	DIGITAL PRINT ON 3M FILM TO MATCH PMS 158C ORANGE	V5C	DIGITAL PRINT ON 3M FILM TO MATCH PMS 158C ORANGE
V6A		V6B	DIGITAL PRINT ON 3M FILM TO MATCH PMS PROCESS BLUE	V6C	
V7A		V7B	7725-13 TOMATO RED (PMS 1759C)	V7C	3630-43 LT. TOMATO RED
V8A		V8B	7725-47 INTENSE BLUE	V8C	3630-127 INTENSE BLUE
V9A		V9B	DIGITAL PRINT ON 3M FILM TO MATCH MP450	V9C	DIGITAL PRINT ON 3M FILM TO MATCH MP450
V10A		V10B	DIGITAL PRINT ON 3M FILM TO MATCH MP95887	V10C	DIGITAL PRINT ON 3M FILM TO MATCH MP95887
V11A		V11B	DIGITAL PRINT ON 3M FILM TO MATCH MP2548 DAHLIA YELLOW	V11C	DIGITAL PRINT ON 3M FILM TO MATCH MP2548 DAHLIA YELLOW
V12A		V12B		V12C	
V13A		V13B		V13C	
V14A		V14B	7725 -31 MEDIUM GRAY	V14C	
V15A		V15B	7725-41 DARK GRAY	V15C	

	WILSONART DECORATIVE METAL
DM1	WILSONART #L6441 BRIGHT BRUSHED STERLING

COLORS ARE FOR REPRESENTATION PURPOSES ONLY. ACTUAL MANUFACTURER MATERIALS WITH ACCURATE COLORS SHOULD BE SUBMITTED AND APPROVED FOR ALL PROJECTS.

*MATTHEWS PAINT COLORS WERE DEVELOPED SPECIFICALLY FOR THE AIRPORT TO MATCH THE TPA BRAND STANDARD PANTONE SWATCHES.

MATERIALS & COLOR PALETTE

P: MATTHEWS ACRYLIC POLYURETHANE PAINT

V: 3M VINYL
- A: 3M DG³ WITH ELECTROCUT OVERLAY
- B: 3M SCOTCHCAL OPAQUE FILM
- C: 3M TRANSLUCENT FILM

DM: WILSONART DECORATIVE METALS

5 PROJECT COLORS & VINYLS
NOT TO SCALE

ACRYLIC	
A-1	WHITE TRANSLUCENT NON-GLARE ACRYLIC - 3/16" THICKNESS
A-2	ROUTED AND PUSHED THROUGH WHITE TRANSLUCENT ACRYLIC – 1/2" THICKNESS
A-3	WHITE TRANSLUCENT POLYCARBONATE 1/4" THICKNESS
A-4	WHITE TRANSLUCENT ACRYLIC 1/8" THICKNESS
A-5	CLEAR ACRYLIC 3/16" THICKNESS
A-6	ARCYLITE GLOSS AR-1 (ABRASION RESISTANT ACRYLIC) ON 1ST SURFACE; GRAPHIC DIGITALLY PRINTED ON SECOND SURFACE (NO AR COATING ON 2ND SURFACE) – 6MM THICKNESS
A-7	ACRYLITE NON-GLARE AR-1 P-99 (ABRASION RESISTANT ACRYLIC) ON 1ST SURFACE; GRAPHIC DIGITALLY PRINTED ON SECOND SURFACE (NO AR COATING ON 2ND SURFACE) – 3MM THICKNESS
A-8	NON-GLARE AR-1 P-99 (ABRASION RESISTANT ACRYLIC) ON 1ST SURFACE; GRAPHIC DIGITALLY PRINTED ON SECOND SURFACE (NO AR COATING ON 2ND SURFACE) – 6MM THICKNESS
A-9	CLEAR NON-GLARE ACRYLIC – .060" THICKNESS
A-10	ROUTED CLEAR ACRYLIC; DIGITALLY PRINTED SECOND SURFACE – 1/2" THICKNESS
A-11	CLEAR ACRYLIC 1/4" THICKNESS

6 PROJECT MATERIALS - ACRYLIC
NOT TO SCALE

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN STANDARDS

AG8.0

43342.03
10/07/2021

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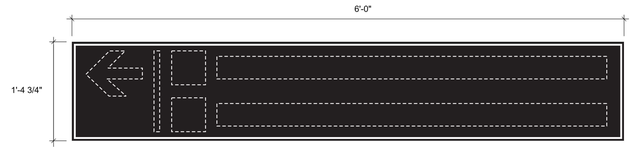
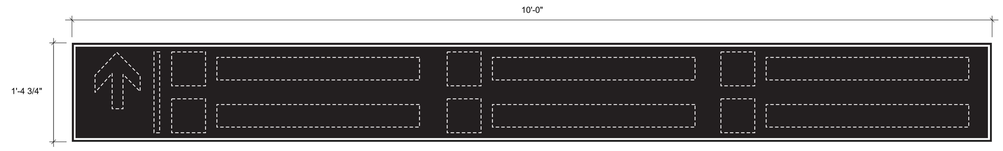
BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:37:01 AM

Drawn By: Author
Checked By: Checker
Approved By: Approver

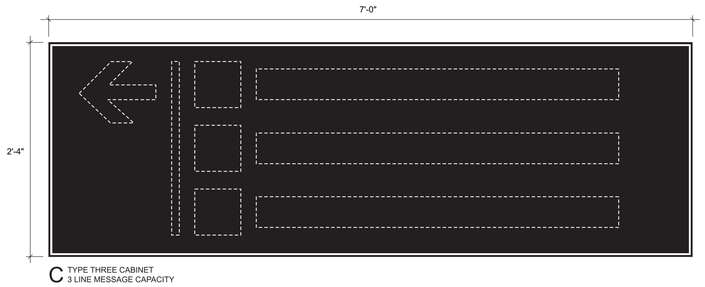


A TYPE TWO CABINET
2 LINE MESSAGE CAPACITY

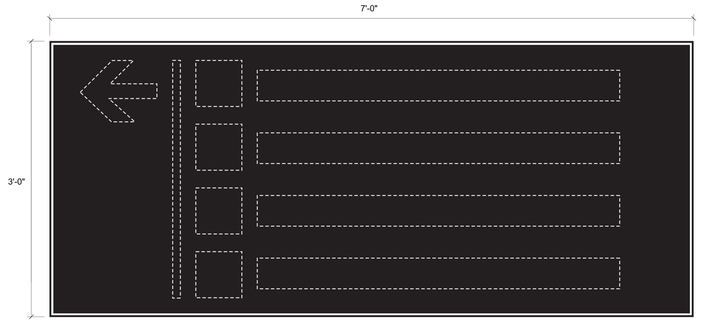


B TYPE TWO CABINET EXTRA WIDE
2 LINE MESSAGE CAPACITY

NOTE:
THE DETAILS SHOWN ON SHEET AG8.01 APPLY TO THE FOLLOWING SIGN TYPES:
- DR.T.17
- DR.T.3
- DR.T.4
- DR.T.43



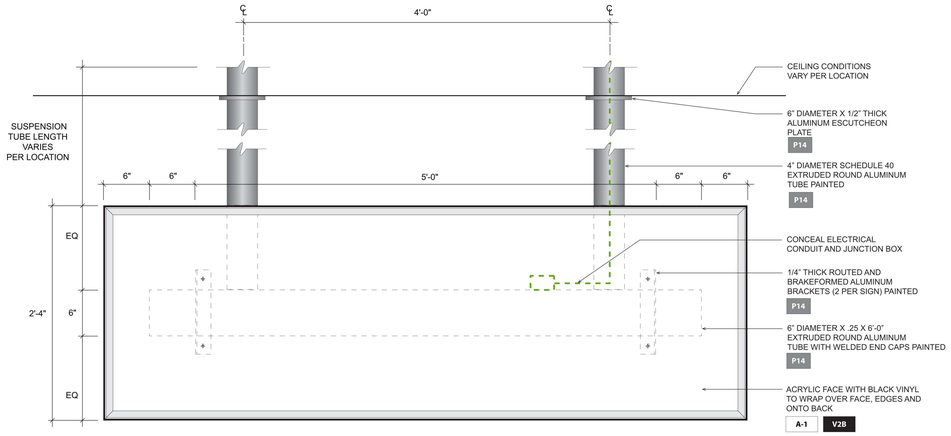
C TYPE THREE CABINET
3 LINE MESSAGE CAPACITY



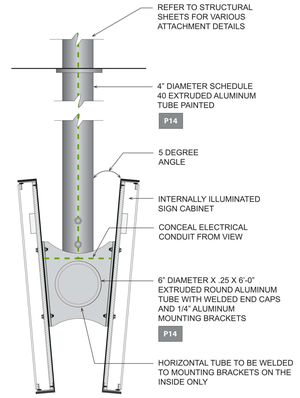
D TYPE FOUR CABINET
4 LINE MESSAGE CAPACITY

1 PRIMARY DIRECTIONAL - NEW SIGN PANEL CABINET SIZES

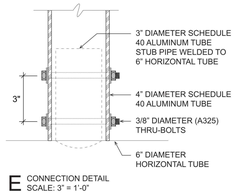
1 1/2" = 1'-0"



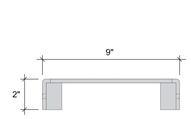
A 3 LINE MESSAGE CABINET
STRUCTURAL SUPPORT DETAILS



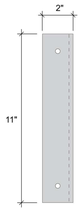
C 3 LINE MESSAGE CABINET
STRUCTURAL SUPPORT DETAILS



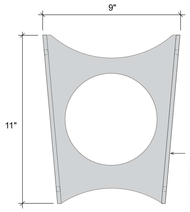
E CONNECTION DETAIL
SCALE: 3" = 1'-0"



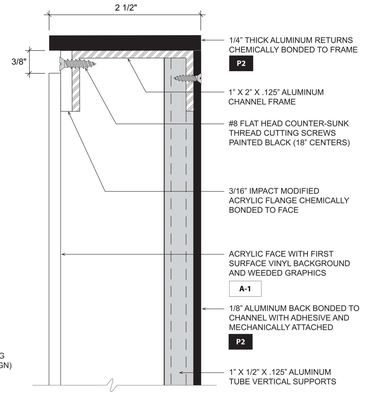
F BRACKET TOP VIEW
SCALE: 3" = 1'-0"



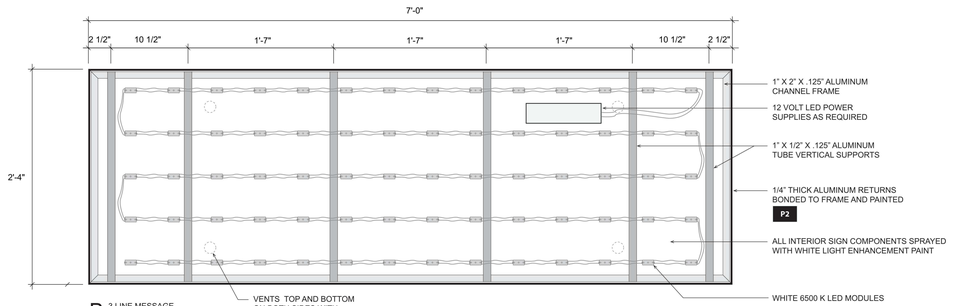
G BRACKET SIDE
SCALE: 3" = 1'-0"



H BRACKET FRONT
SCALE: 3" = 1'-0"

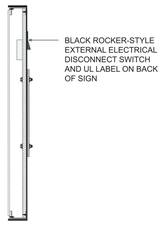


J CABINET FRAME SECTION DETAIL
SCALE: 3" = 1'-0"

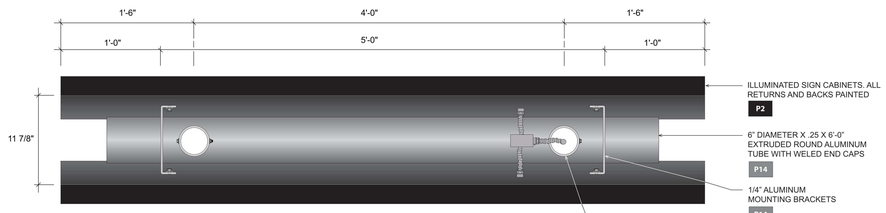


B 3 LINE MESSAGE
CABINET DETAILS

NOTE:
LED LAYOUTS SHOWN ARE FOR ILLUSTRATION PURPOSED ONLY. ACTUAL LIGHTING CONFIGURATIONS TO BE DESIGNED BY THE FABRICATOR AND BE CAPABLE OF PROVIDING EVEN ILLUMINATION WITH NO HOT SPOTS OR DARK AREAS. OTHER SIGN CABINET SIZES ARE SIMILAR.



D TYPICAL CABINET
SECTION DETAILS



K TYPICAL PLAN
VIEW

2 PRIMARY DIRECTIONAL - NEW SIGN CABINET FABRICATION DETAILS

1 1/2" = 1'-0"

Gresham Smith

GreshamSmith.com

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302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838

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Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION

TAMPA, FLORIDA

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BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

DIRECTIONAL SIGN DETAILS

AG8.0.1

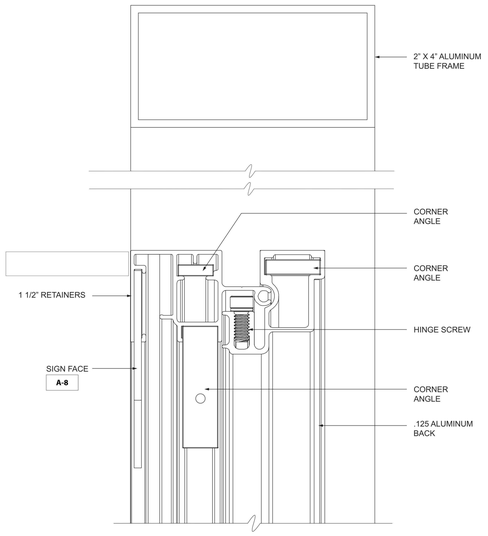
43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

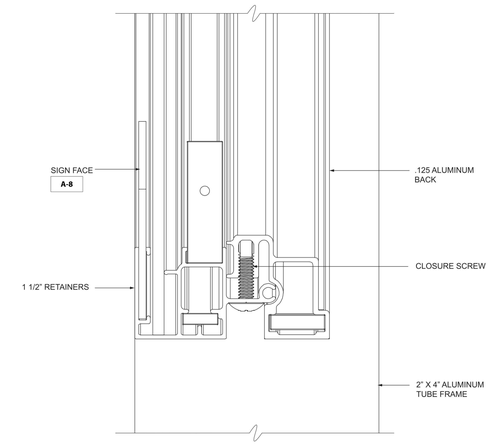
BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt

10/7/2021 11:37:03 AM

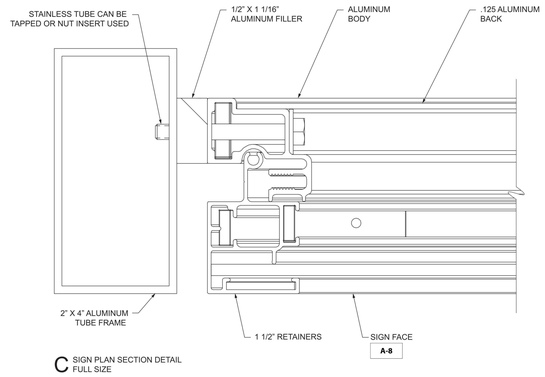
Drawn By: Author
Checked By: Checker
Approved By: Approver



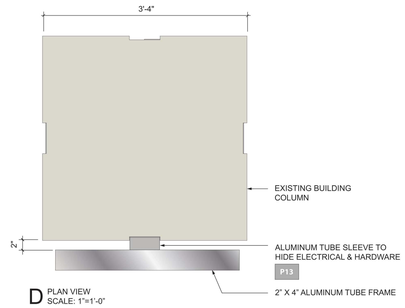
A SIGN CABINET TOP SECTION
FULL SIZE



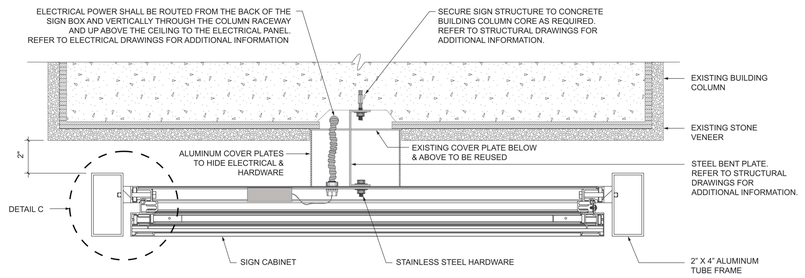
B SIGN CABINET BOTTOM SECTION
FULL SIZE



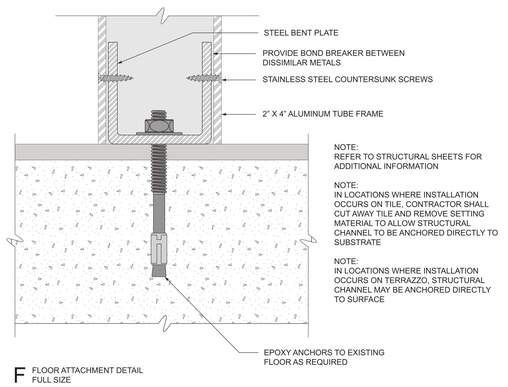
C SIGN PLAN SECTION DETAIL
FULL SIZE



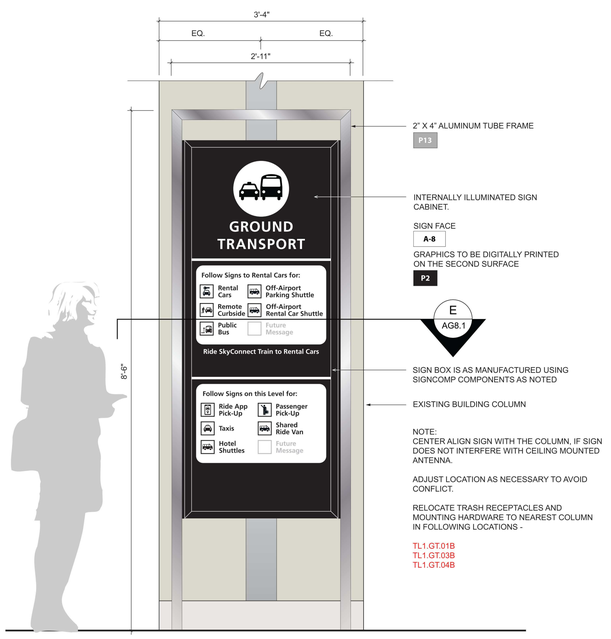
D PLAN VIEW
SCALE: 1"=1'-0"



E SIGN PLAN SECTION
SCALE: 3"=1'-0"

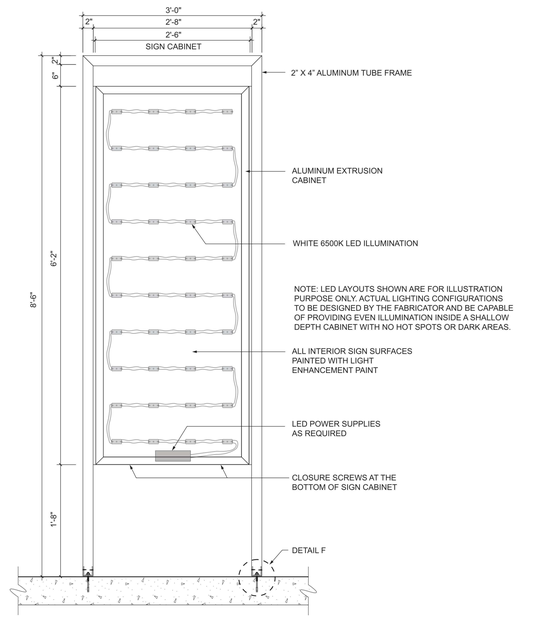


F FLOOR ATTACHMENT DETAIL
FULL SIZE

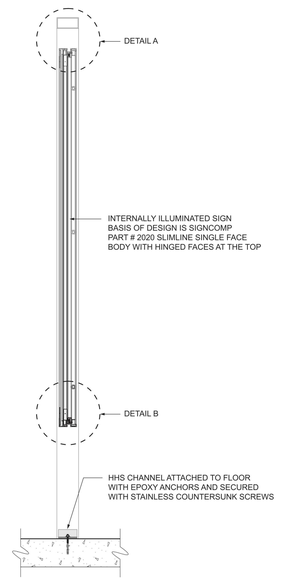


G FRONT ELEVATION
SCALE: 1"=1'-0"

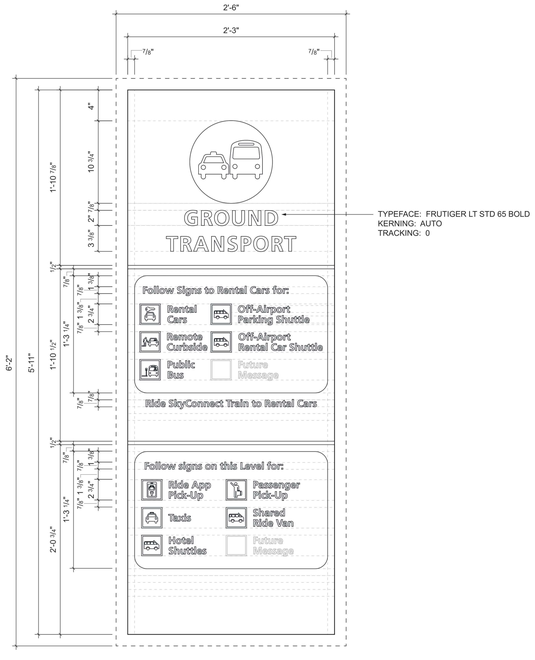
SIGN LOCATIONS:
TL1.GT.02A TL1.GT.03A
TL1.GT.02B TL1.GT.03B
TL1.GT.01A TL1.GT.04A
TL1.GT.01B TL1.GT.04B



H FABRICATION DETAILS
SCALE: 1"=1'-0"



J SIDE SECTION
SCALE: 1"=1'-0"



K FACE LAYOUT
SCALE: 1 1/2"=1'-0"

1 SIGN TYPE - DR.T.P4 (DIRECTIONAL PYLON/ GROUND TRANSPORT DIRECTORY)
SCALE: AS NOTED

10/7/2021 11:37:05 AM
BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt

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BID SET NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

AG8.1

43342.03
10/07/2021

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Drawn By: Author
Checked By: Checker
Approved By: Approver

EXISTING SIGN BOX & NEW SIGN FACE



EXISTING SIGN BOX & NEW SIGN FACE

NOTE:
REMOVE AND DISPOSE EXISTING SIGN FACES -
REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION.
EXISTING SIGN BOXES TO REMAIN.

NEW ACRYLIC FACE **A-1**

ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE.

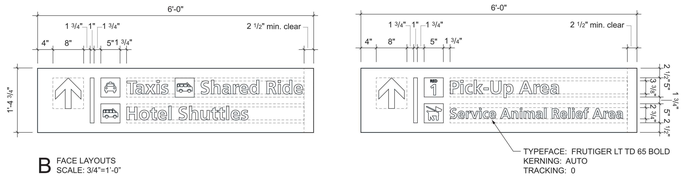
V2B

PICK-UP AREA SYMBOL

V7C

SIGN LOCATION:
TL1.DR.11

A REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"



B FACE LAYOUTS
SCALE: 3/4"=1'-0"

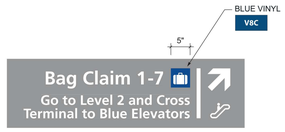


SIGN LOCATION:
TL1.DR.11

NOTE:
EXISTING SIGN FACES TO BE REPLACED.

1 SIGN TYPE - DR.T.17 (2-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

BLUE VINYL
V8C



SIGN LOCATION:
TL1.DR.24 (SIDE A)
TL1.DR.34 (SIDE A)

A REPLACEMENT BAG CLAIM SYMBOL - FRONT ELEVATION
SCALE: 3/4"=1'-0"

BLUE VINYL
V8C



NOTE:
FABRICATOR TO PEEL OFF BLACK VINYL BAG SYMBOL AND FILL IN WHITE SQUARE WITH A BLUE (V8C) REVERSE CUT BAG SYMBOL (5" X 5").

FABRICATOR TO FIELD VERIFY SYMBOL SIZE AND INCREASE NEW SYMBOL BY 1/16" OVERALL TO ENSURE NO WHITE LIGHT LEAKS AROUND THE PERIMETER OF THE SYMBOL.

SIGN LOCATION:
TL1.DR.24 (SIDE B)
TL1.DR.34 (SIDE B)

B REPLACEMENT BAG CLAIM SYMBOL - FRONT ELEVATION
SCALE: 3/4"=1'-0"



SIGN LOCATION:
TL1.DR.24 (SIDE A)
TL1.DR.34 (SIDE A)

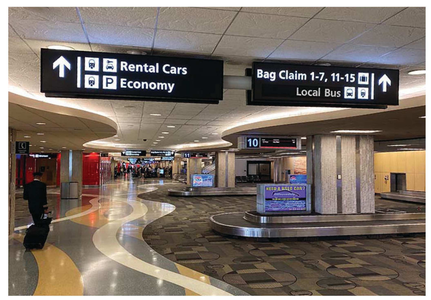
NOTE:
ONLY THE BAG CLAIM SYMBOL TO BE REPLACED.



SIGN LOCATION:
TL1.DR.24 (SIDE B)
TL1.DR.34 (SIDE B)

NOTE:
ONLY THE BAG CLAIM SYMBOL TO BE REPLACED.

2 SIGN TYPE - DR.T.18 (3-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED



SIGN LOCATION:
TL1.DR.12 (SIDE A)

NOTE:
EXISTING SIGN FACES TO BE REPLACED.

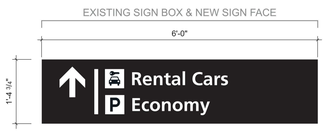
NOTE:
REMOVE AND DISPOSE EXISTING SIGN FACES -
REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION.
EXISTING SIGN BOXES TO REMAIN.

NEW ACRYLIC FACE **A-1**

ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE

V2B

EXISTING SIGN BOX & NEW SIGN FACE

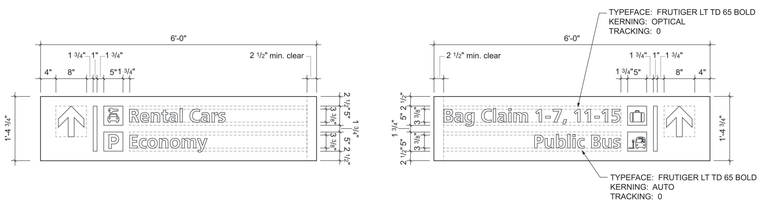


EXISTING SIGN BOX & NEW SIGN FACE

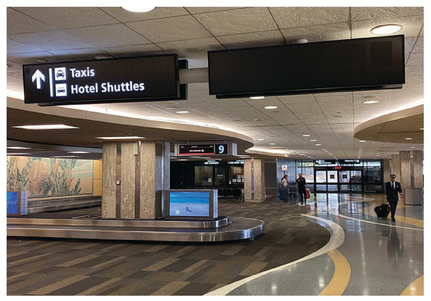


SIGN LOCATION:
TL1.DR.12 (SIDE A)

A REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"



B FACE LAYOUTS
SCALE: 3/4"=1'-0"



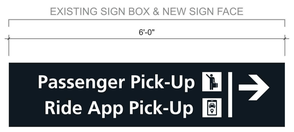
SIGN LOCATION:
TL1.DR.12 (SIDE B)

NOTE:
EXISTING SIGN FACES TO BE REPLACED.

EXISTING SIGN BOX & NEW SIGN FACE

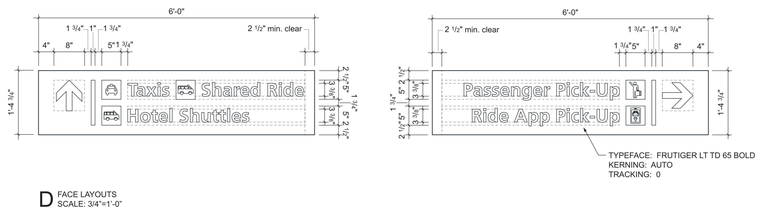


EXISTING SIGN BOX & NEW SIGN FACE



SIGN LOCATION:
TL1.DR.12 (SIDE B)

C REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"



D FACE LAYOUTS
SCALE: 3/4"=1'-0"

3 SIGN TYPE - DR.T.17 (2-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

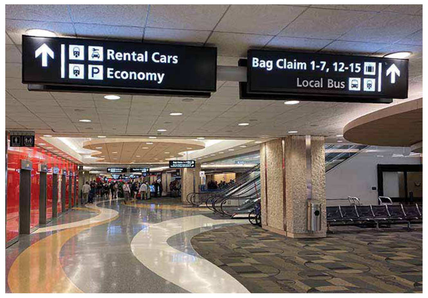
AG8.2

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:37:07 AM

Drawn By: Author
Checked By: Checker
Approved By: Approver



SIGN LOCATION:
TL1.DR.23 (SIDE A)

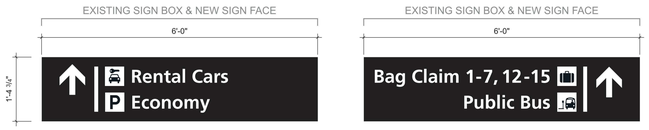
NOTE:
EXISTING SIGN FACE TO BE REPLACED.

NOTE:
REMOVE AND DISPOSE EXISTING SIGN FACES -
REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION.
EXISTING SIGN BOXES TO REMAIN.

NEW ACRYLIC FACE A-1

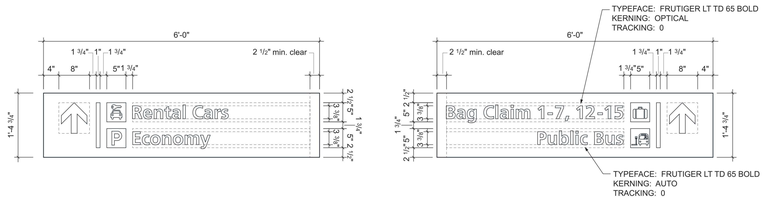
ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL
FIRST SURFACE
V2B

RED VINYL V7C

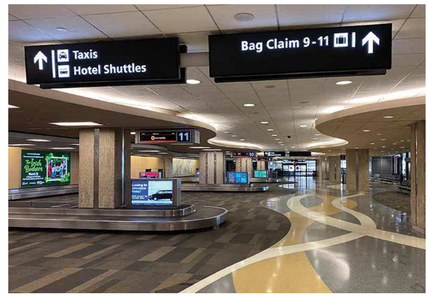


SIGN LOCATION:
TL1.DR.23 (SIDE A)

A REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"



B FACE LAYOUTS
SCALE: 3/4"=1'-0"



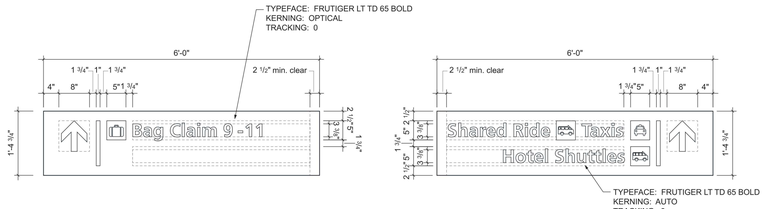
SIGN LOCATION:
TL1.DR.23 (SIDE B)

NOTE:
EXISTING SIGN FACES TO BE REPLACED.



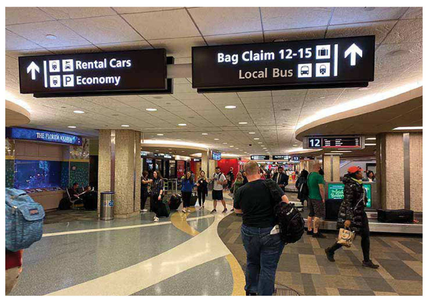
SIGN LOCATION:
TL1.DR.23 (SIDE B)

C REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"



D FACE LAYOUTS
SCALE: 3/4"=1'-0"

1 SIGN TYPE - DR.T.17 (2-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED



SIGN LOCATION:
TL1.DR.25 (SIDE A)

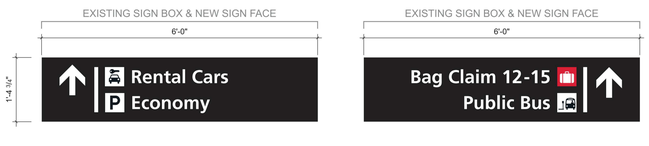
NOTE:
EXISTING SIGN FACE TO BE REPLACED.

NOTE:
REMOVE AND DISPOSE EXISTING SIGN FACES -
REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION.
EXISTING SIGN BOXES TO REMAIN.

NEW ACRYLIC FACE A-1

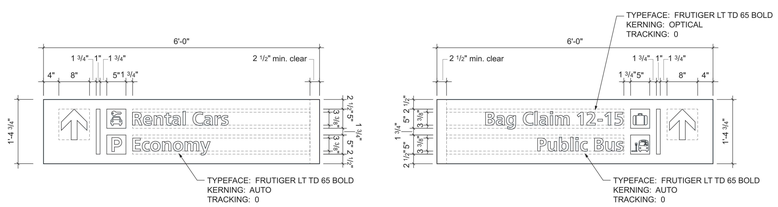
ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL
FIRST SURFACE
V2B

RED VINYL V7C

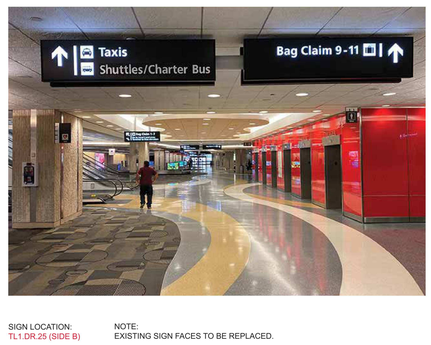


SIGN LOCATION:
TL1.DR.25 (SIDE A)

A REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"

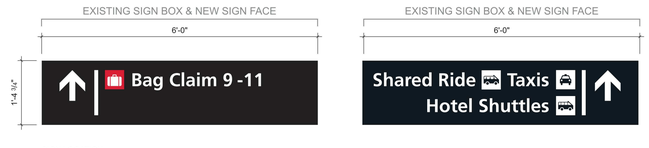


B FACE LAYOUTS
SCALE: 3/4"=1'-0"



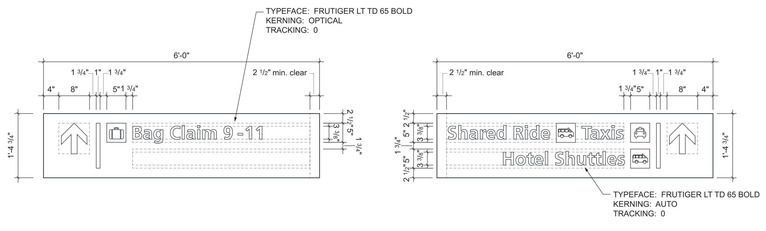
SIGN LOCATION:
TL1.DR.25 (SIDE B)

NOTE:
EXISTING SIGN FACES TO BE REPLACED.



SIGN LOCATION:
TL1.DR.25 (SIDE B)

C REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"



D FACE LAYOUTS
SCALE: 3/4"=1'-0"

2 SIGN TYPE - DR.T.17 (2-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:37:13 AM

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

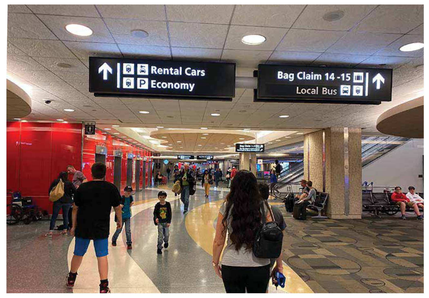
SIGN DETAILS

AG8.3

43342.03
10/07/2021

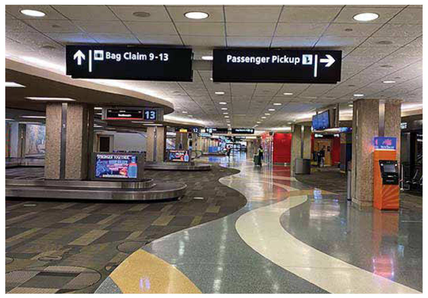
This Line is 3 Inches When Printed Full Size

Drawn By: Author
Checked By: Checker
Approved By: Approver



SIGN LOCATION:
T1L.DR.33 (SIDE A)

NOTE:
EXISTING SIGN FACE TO BE REPLACED.
EXISTING STRUCTURE TO BE RETROFIT TO ACCOMMODATE NEW SIGN TYPE.



SIGN LOCATION:
TL1.DR.33B (SIDE B)

CONTRACTOR SHALL:
1) FIELD VERIFY ALL DIMENSIONS, INCLUDING CEILING CLEARANCES
2) CAREFULLY DETACH (QTY. 4) EXISTING SIGN BOXES TO BE REUSED FROM SIGN STRUCTURE
3) REMOVE HORIZONTAL SIGN STRUCTURE (VERTICAL SUPPORTS TO REMAIN)
4) REPLACE SIGN FACES ON EXISTING BOXES AS INDICATED
5) INSTALL NEW HORIZONTAL SIGN STRUCTURE - COORDINATE CONNECTION POINTS WITH EXISTING VERTICAL SUPPORTS
6) INSTALL NEW AND REINSTALL REUSED SIGN BOXES ON NEW HORIZONTAL SIGN STRUCTURE
7) COORDINATE BRACKET LOCATIONS ON NEW HORIZONTAL STRUCTURE WITH MOUNTING HOLES ON EXISTING SIGN BOXES AND/OR MODIFY MOUNTING HOLE LOCATIONS ON SIGN BOXES
8) PROPERLY DISPOSE OF ANY DEMOLISHED MATERIALS NOT BEING REUSED
8) DISCONNECT AND RECONNECT ALL SIGNS TO ELECTRICAL SUPPLY
9) REFER TO STRUCTURAL AND ELECTRICAL SHEETS AND PROJECT MANUAL FOR ADDITIONAL INFORMATION

NOTE:
NEW SIGN BOXES ARE TRANSLUCENT WHITE ACRYLIC MECHANICALLY ATTACHED TO SUPPORT FRAME. A-1
REFER TO SHEET AG08.0.1 FOR SIGN BOX DETAILS.

NEW SIGN FACE - ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE. V2B

RED VINYL V7C



SIGN LOCATION:
TL1.DR.33 (SIDE A)

A NEW SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"

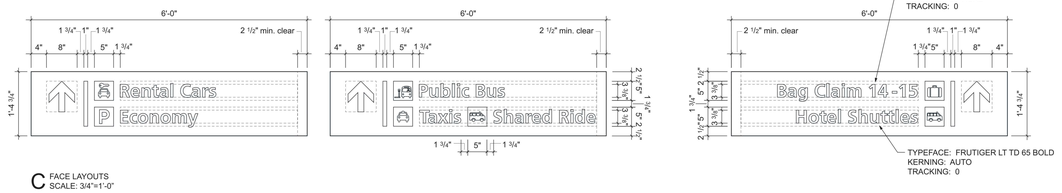


NOTE:
FABRICATOR TO PEEL OFF BLACK VINYL BAG SYMBOL AND FILL IN WHITE SQUARE WITH A RED (V7C) REVERSE CUT BAG SYMBOL (5" X 5").

FABRICATOR TO FIELD VERIFY SYMBOL SIZE AND INCREASE NEW SYMBOL BY 1/16" OVERALL TO ENSURE NO WHITE LIGHT LEAKS AROUND THE PERIMETER OF THE SYMBOL.

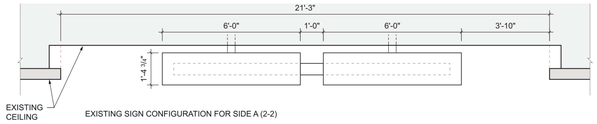
SIGN LOCATION:
TL1.DR.33 (SIDE B)

B EXISTING SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"



C FACE LAYOUTS
SCALE: 3/4"=1'-0"

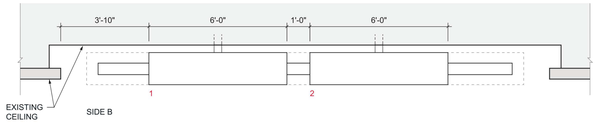
AVAILABLE CEILING AREA:
+/- 21'-3"



EXISTING SIGN CONFIGURATION FOR SIDE A (2-2)

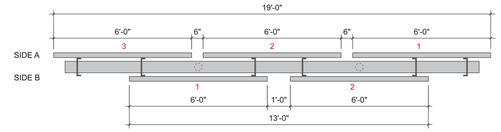


SIDE A



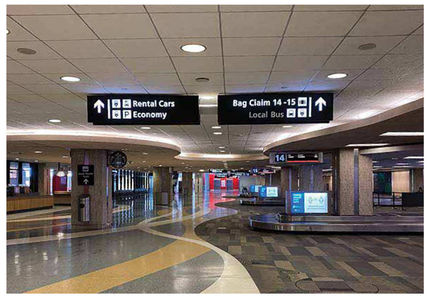
SIDE B

D SIGN CONFIGURATION IN ELEVATION (3-2)
SCALE: 3/8"=1'-0"



E SIGN CONFIGURATION IN PLAN (3-2)
SCALE: 3/8"=1'-0"

1 SIGN TYPE - DR.T.17 (2-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED



SIGN LOCATION:
TL1.DR.35 (SIDE A)

NOTE:
EXISTING SIGN FACE TO BE REPLACED.
EXISTING STRUCTURE TO BE RETROFIT TO ACCOMMODATE NEW SIGN TYPE.



SIGN LOCATION:
TL1.DR.35 (SIDE B)

CONTRACTOR SHALL:
1) FIELD VERIFY ALL DIMENSIONS, INCLUDING CEILING CLEARANCES
2) CAREFULLY DETACH (QTY. 4) EXISTING SIGN BOXES TO BE REUSED FROM SIGN STRUCTURE
3) REMOVE HORIZONTAL SIGN STRUCTURE (VERTICAL SUPPORTS TO REMAIN)
4) REPLACE SIGN FACES ON EXISTING BOXES AS INDICATED
5) INSTALL NEW HORIZONTAL SIGN STRUCTURE - COORDINATE CONNECTION POINTS WITH EXISTING VERTICAL SUPPORTS
6) INSTALL NEW AND REINSTALL REUSED SIGN BOXES ON NEW HORIZONTAL SIGN STRUCTURE
7) COORDINATE BRACKET LOCATIONS ON NEW HORIZONTAL STRUCTURE WITH MOUNTING HOLES ON EXISTING SIGN BOXES AND/OR MODIFY MOUNTING HOLE LOCATIONS ON SIGN BOXES
8) PROPERLY DISPOSE OF ANY DEMOLISHED MATERIALS NOT BEING REUSED
8) DISCONNECT AND RECONNECT ALL SIGNS TO ELECTRICAL SUPPLY
9) REFER TO STRUCTURAL AND ELECTRICAL SHEETS AND PROJECT MANUAL FOR ADDITIONAL INFORMATION

NOTE:
NEW SIGN BOXES ARE TRANSLUCENT WHITE ACRYLIC MECHANICALLY ATTACHED TO SUPPORT FRAME. A-1
REFER TO SHEET AG08.0.1 FOR SIGN BOX DETAILS.

NEW SIGN FACE - ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE. V2B

RED VINYL V7C BLUE VINYL V8C



SIGN LOCATION:
TL1.DR.35 (SIDE A)

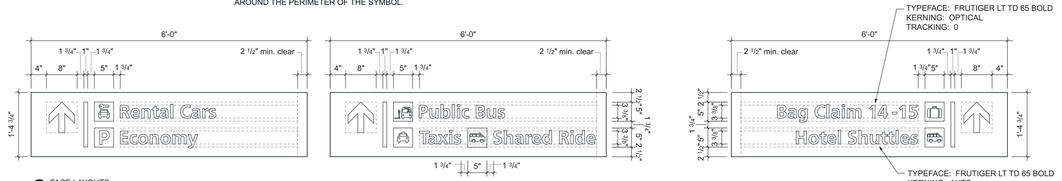
A NEW SIGN FACE - FRONT ELEVATION
SCALE: 3/4"=1'-0"



SIGN LOCATION:
TL1.DR.35 (SIDE B)

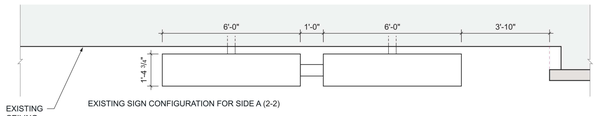
NOTE:
FABRICATOR TO PEEL OFF BLACK VINYL BAG SYMBOL AND FILL IN WHITE SQUARE WITH A RED (V7C) REVERSE CUT BAG SYMBOL (5" X 5").
FABRICATOR TO FIELD VERIFY SYMBOL SIZE AND INCREASE NEW SYMBOL BY 1/16" OVERALL TO ENSURE NO WHITE LIGHT LEAKS AROUND THE PERIMETER OF THE SYMBOL.

B EXISTING SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"

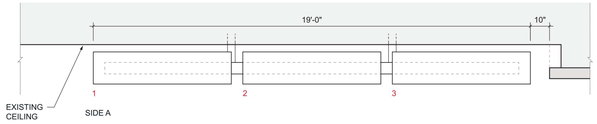


C FACE LAYOUTS
SCALE: 3/4"=1'-0"

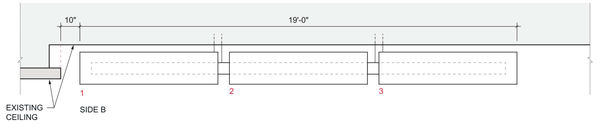
AVAILABLE CEILING AREA:
+/- 43'-2"



EXISTING SIGN CONFIGURATION FOR SIDE A (2-2)

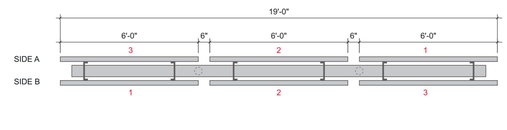


SIDE A



SIDE B

D SIGN CONFIGURATION IN ELEVATION (3-3)
SCALE: 3/8"=1'-0"



E SIGN CONFIGURATION IN PLAN (3-3)
SCALE: 3/8"=1'-0"

2 SIGN TYPE - DR.T.17 (2-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

10/7/2021 11:37:18 AM
BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt

Gresham Smith

GreshamSmith.com

Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838

Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION

TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

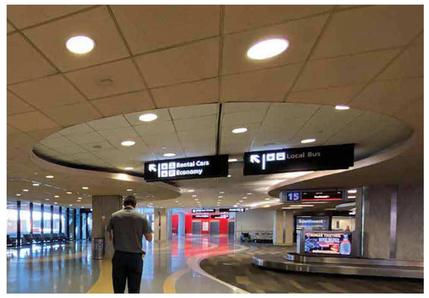
SIGN DETAILS

AG8.4

43342.03
10/07/2021

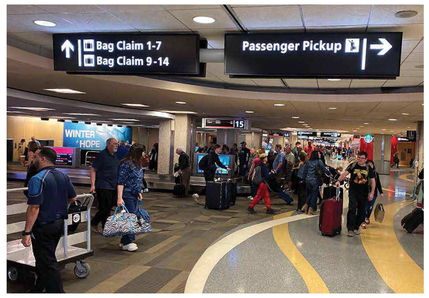
This Line is 3 Inches When Printed Full Size

Drawn By: Author
Checked By: Checker
Approved By: Approver



SIGN LOCATION:
TL1.DR.08 (SIDE A)

NOTE:
EXISTING SIGN FACES TO BE REPLACED.
EXISTING STRUCTURE TO BE RETROFIT TO ACCOMMODATE NEW SIGN TYPE.



SIGN LOCATION:
TL1.DR.08 (SIDE B)

CONTRACTOR SHALL:
1) FIELD VERIFY ALL DIMENSIONS, INCLUDING CEILING CLEARANCES
2) CAREFULLY DETACH (QTY. 4) EXISTING SIGN BOXES TO BE REUSED FROM SIGN STRUCTURE
3) REMOVE HORIZONTAL SIGN STRUCTURE (VERTICAL SUPPORTS TO REMAIN)
4) REPLACE SIGN FACES ON EXISTING BOXES AS INDICATED
5) INSTALL NEW HORIZONTAL SIGN STRUCTURE - COORDINATE CONNECTION POINTS WITH EXISTING VERTICAL SUPPORTS
6) INSTALL NEW AND REINSTALL REUSED SIGN BOXES ON NEW HORIZONTAL SIGN STRUCTURE
7) COORDINATE BRACKET LOCATIONS ON NEW HORIZONTAL STRUCTURE WITH MOUNTING HOLES ON EXISTING SIGN BOXES AND/OR MODIFY MOUNTING HOLE LOCATIONS ON SIGN BOXES
8) PROPERLY DISPOSE OF ANY DEMOLISHED MATERIALS NOT BEING REUSED
8) DISCONNECT AND RECONNECT ALL SIGNS TO ELECTRICAL SUPPLY
9) REFER TO STRUCTURAL AND ELECTRICAL SHEETS AND PROJECT MANUAL FOR ADDITIONAL INFORMATION

NOTE:
NEW SIGN BOXES ARE TRANSLUCENT WHITE ACRYLIC MECHANICALLY ATTACHED TO SUPPORT FRAME. **A-1**
REFER TO SHEET AG08.0.1 FOR SIGN BOX DETAILS.

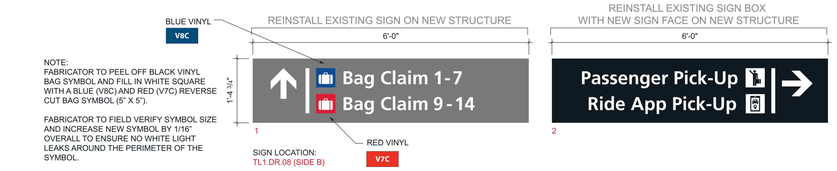
NEW SIGN FACE - ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE. **V2B**

RED VINYL **V7C** BLUE VINYL **V8C**



SIGN LOCATION:
TL1.DR.08 (SIDE A)

A NEW SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"

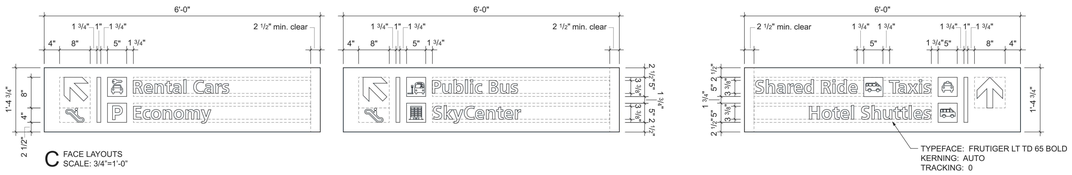


NOTE:
FABRICATOR TO PEEL OFF BLACK VINYL BAG SYMBOL AND FILL IN WHITE SQUARE WITH A BLUE (V8C) AND RED (V7C) REVERSE CUT BAG SYMBOL (5" X 5").

FABRICATOR TO FIELD VERIFY SYMBOL SIZE AND INCREASE NEW SYMBOL BY 1/16" OVERALL TO ENSURE NO WHITE LIGHT LEAKS AROUND THE PERIMETER OF THE SYMBOL.

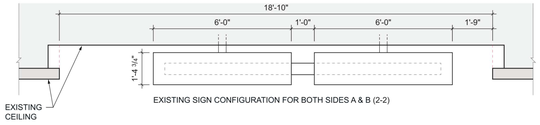
SIGN LOCATION:
TL1.DR.08 (SIDE B)

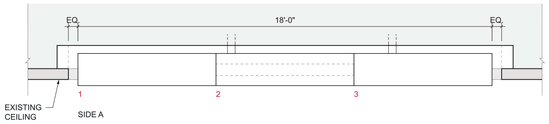
B EXISTING SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"

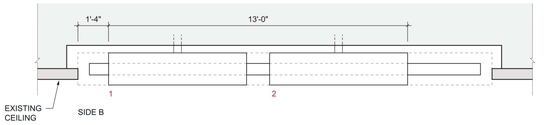


C FACE LAYOUTS
SCALE: 3/4"=1'-0"

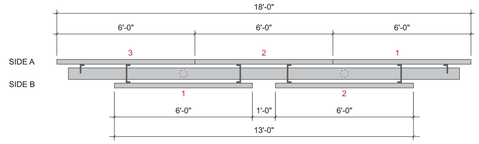
AVAILABLE CEILING AREA:
+/- 18'-10" (ON WEST SIDE OF SIGN) AND +/- 18'-0" (ON EAST SIDE OF SIGN). VARIATION IS DUE TO CURVE OF CEILING.





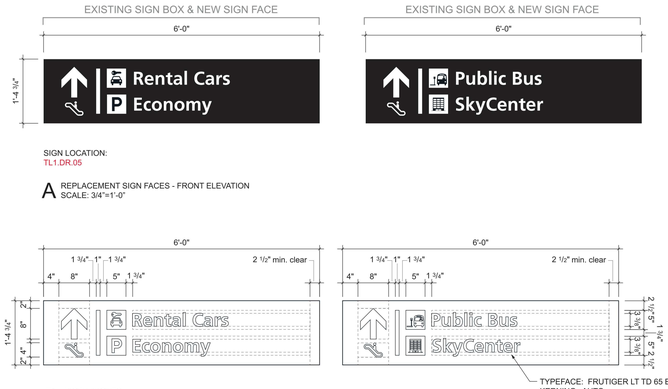


D SIGN CONFIGURATION IN ELEVATION (3-2)
SCALE: 3/8"=1'-0"



E SIGN CONFIGURATION IN PLAN (3-2)
SCALE: 3/8"=1'-0"

1 SIGN TYPE - DR.T.17 (2-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED



NOTE:
REMOVE AND DISPOSE EXISTING SIGN FACES - REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION. EXISTING SIGN BOXES TO REMAIN.

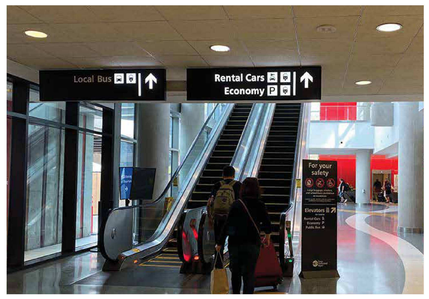
NEW ACRYLIC FACE **A-1**

ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE
V2B

SIGN LOCATION:
TL1.DR.05

A REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"

B FACE LAYOUTS
SCALE: 3/4"=1'-0"



SIGN LOCATION:
TL1.DR.05

NOTE:
EXISTING SIGN FACES TO BE REPLACED.

2 SIGN TYPE - DR.T.17 (2-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

BLANK

Gresham Smith

GreshamSmith.com

Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838

Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

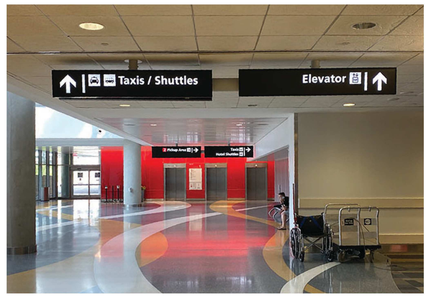
AG8.5

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:37:26 AM

Drawn By: Author
Checked By: Checker
Approved By: Approver



SIGN LOCATION:
TL1.DR.06 (SIDE A)

NOTE:
EXISTING STRUCTURE TO BE RETROFIT TO ACCOMMODATE NEW SIGN TYPE.



SIGN LOCATION:
TL1.DR.06 (SIDE B)

NOTE:
EXISTING STRUCTURE TO BE RETROFIT TO ACCOMMODATE NEW SIGN TYPE.

CONTRACTOR SHALL:
1) FIELD VERIFY ALL DIMENSIONS, INCLUDING CEILING CLEARANCES
2) CAREFULLY DETACH (QTY. 4) EXISTING SIGN BOXES TO BE REUSED FROM SIGN STRUCTURE
3) REMOVE HORIZONTAL SIGN STRUCTURE (VERTICAL SUPPORTS TO REMAIN)
4) REPLACE SIGN FACES ON EXISTING BOXES AS INDICATED
5) INSTALL NEW HORIZONTAL SIGN STRUCTURE - COORDINATE CONNECTION POINTS WITH EXISTING VERTICAL SUPPORTS
6) INSTALL NEW AND REINSTALL REUSED SIGN BOXES ON NEW HORIZONTAL SIGN STRUCTURE
7) COORDINATE BRACKET LOCATIONS ON NEW HORIZONTAL STRUCTURE WITH MOUNTING HOLES ON EXISTING SIGN BOXES AND/OR MODIFY MOUNTING HOLE LOCATIONS ON SIGN BOXES
8) PROPERLY DISPOSE OF ANY DEMOLISHED MATERIALS NOT BEING REUSED
8) DISCONNECT AND RECONNECT ALL SIGNS TO ELECTRICAL SUPPLY
9) REFER TO STRUCTURAL AND ELECTRICAL SHEETS AND PROJECT MANUAL FOR ADDITIONAL INFORMATION

NOTE:
NEW SIGN BOXES ARE TRANSLUCENT WHITE ACRYLIC MECHANICALLY ATTACHED TO SUPPORT FRAME. **A-1**
REFER TO SHEET AG08.0.1 FOR SIGN BOX DETAILS.

NEW SIGN FACE - ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE. **V2B**

RED BAG CLAIM SYMBOL **V7C**

INSTALL NEW SIGN BOX ON NEW STRUCTURE



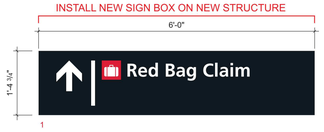
INSTALL NEW SIGN BOX ON NEW STRUCTURE



SIGN LOCATION:
TL1.DR.06 (SIDE A)

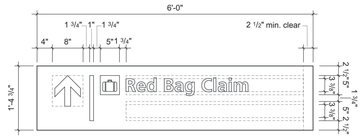
A NEW SIGN FACE - FRONT ELEVATION
SCALE: 3/4"=1'-0"

INSTALL NEW SIGN BOX ON NEW STRUCTURE



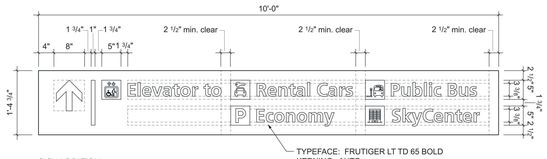
SIGN LOCATION:
TL1.DR.06 (SIDE B)

B NEW SIGN FACE - FRONT ELEVATION
SCALE: 3/4"=1'-0"



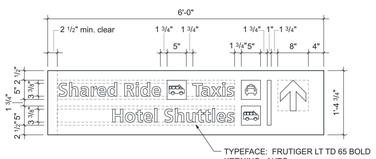
SIGN LOCATION:
TL1.DR.06 (SIDE B)

C FACE LAYOUT
SCALE: 3/4"=1'-0"

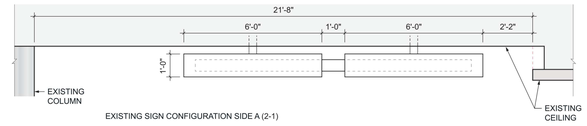


SIGN LOCATION:
TL1.DR.06 (SIDE A)

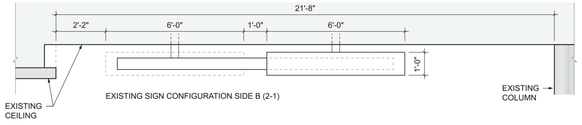
D FACE LAYOUTS
SCALE: 3/4"=1'-0"



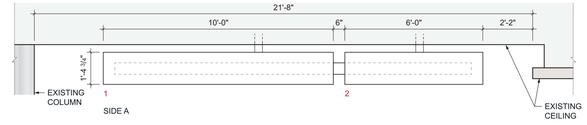
AVAILABLE CEILING AREA:
+/- 21'-8"

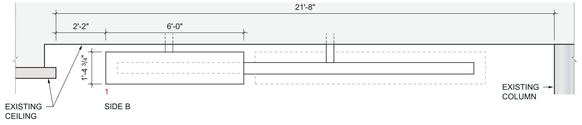


EXISTING SIGN CONFIGURATION SIDE A (2-1)

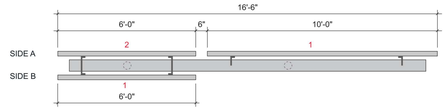


EXISTING SIGN CONFIGURATION SIDE B (2-1)





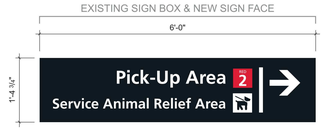
D SIGN CONFIGURATION IN ELEVATION (2-1)
SCALE: 3/8"=1'-0"



E SIGN CONFIGURATION IN PLAN (2-1)
SCALE: 3/8"=1'-0"

1 SIGN TYPE - DR.T.17 (2-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

EXISTING SIGN BOX & NEW SIGN FACE



EXISTING SIGN BOX & NEW SIGN FACE



SIGN LOCATION:
TL1.DR.06.1

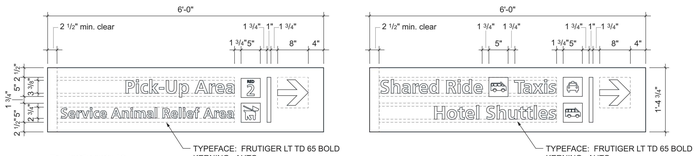
A REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"

NOTE:
REMOVE AND DISPOSE EXISTING SIGN FACES -
REFERENCE PROJECT MANUAL FOR MORE INFORMATION.
EXISTING SIGN BOXES TO REMAIN.

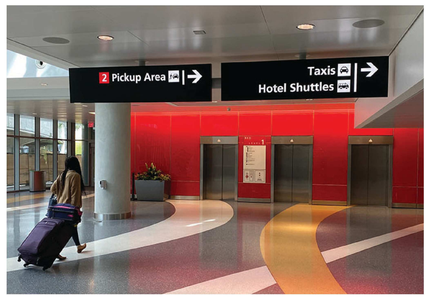
NEW ACRYLIC FACE **A-1**

ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE.
V2B

PICK-UP AREA SYMBOL
V7C



B FACE LAYOUTS
SCALE: 3/4"=1'-0"

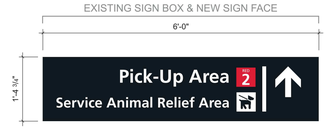


SIGN LOCATION:
TL1.DR.06.1

NOTE:
EXISTING SIGN FACES TO BE REPLACED.

2 SIGN TYPE - DR.T.17 (2-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

EXISTING SIGN BOX & NEW SIGN FACE



EXISTING SIGN BOX & NEW SIGN FACE



SIGN LOCATION:
TL1.DR.06.2

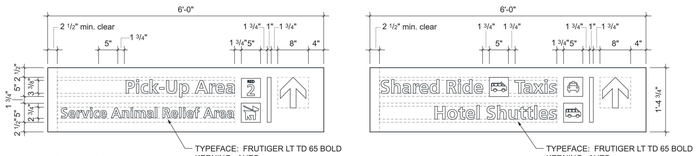
A REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"

NOTE:
REMOVE AND DISPOSE EXISTING SIGN FACES -
REFERENCE PROJECT MANUAL FOR MORE INFORMATION.
EXISTING SIGN BOXES TO REMAIN.

NEW ACRYLIC FACE **A-1**

ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE.
V2B

PICK-UP AREA SYMBOL
V7C



B FACE LAYOUTS
SCALE: 3/4"=1'-0"



SIGN LOCATION:
TL1.DR.06.2

NOTE:
EXISTING SIGN FACES TO BE REPLACED.

3 SIGN TYPE - DR.T.17 (2-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

AG8.6

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:37:28 AM

Drawn By: Author
Checked By: Checker
Approved By: Approver



NOTE:
REMOVE AND DISPOSE EXISTING SIGN FACES -
REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION.
EXISTING SIGN BOXES TO REMAIN.

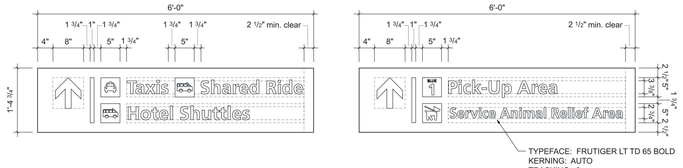
NEW ACRYLIC FACE A-1

ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE.
V2B

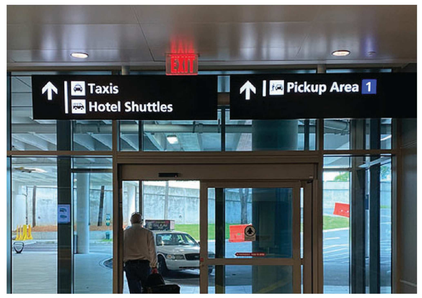
PICK-UP AREA SYMBOL
V8C

SIGN LOCATION:
TL1.DR.02.2

A REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"



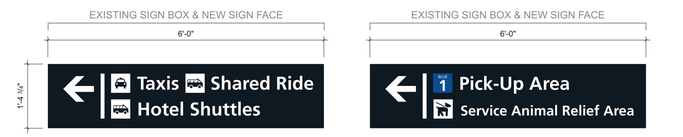
B FACE LAYOUTS
SCALE: 3/4"=1'-0"



SIGN LOCATION:
TL1.DR.02.2

NOTE:
EXISTING SIGN FACES TO BE REPLACED.

1 SIGN TYPE - DR.T.17 (2-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED



NOTE:
REMOVE AND DISPOSE EXISTING SIGN FACES -
REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION.
EXISTING SIGN BOXES TO REMAIN.

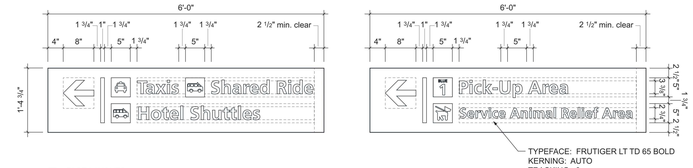
NEW ACRYLIC FACE A-1

ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE.
V2B

PICK-UP AREA SYMBOL
V8C

SIGN LOCATION:
TL1.DR.02.1

A REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"



B FACE LAYOUTS
SCALE: 3/4"=1'-0"



SIGN LOCATION:
TL1.DR.02.1

NOTE:
EXISTING SIGN FACES TO BE REPLACED.

2 SIGN TYPE - DR.T.17 (2-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED



SIGN LOCATION:
TL1.DR.02 (SIDE A)

NOTE:
EXISTING STRUCTURE TO BE RETROFIT TO ACCOMMODATE NEW SIGN TYPE.



SIGN LOCATION:
TL1.DR.02 (SIDE B)

NOTE:
EXISTING STRUCTURE TO BE RETROFIT TO ACCOMMODATE NEW SIGN TYPE.

3 SIGN TYPE - DR.T.17 (2-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

CONTRACTOR SHALL:
1) FIELD VERIFY ALL DIMENSIONS, INCLUDING CEILING CLEARANCES
2) CAREFULLY DETACH (QTY. 4) EXISTING SIGN BOXES TO BE REUSED FROM SIGN STRUCTURE
3) REMOVE HORIZONTAL SIGN STRUCTURE (VERTICAL SUPPORTS TO REMAIN)
4) REPLACE SIGN FACES ON EXISTING BOXES AS INDICATED
5) INSTALL NEW HORIZONTAL SIGN STRUCTURE - COORDINATE CONNECTION POINTS WITH EXISTING VERTICAL SUPPORTS
6) INSTALL NEW AND REINSTALL REUSED SIGN BOXES ON NEW HORIZONTAL SIGN STRUCTURE
7) COORDINATE BRACKET LOCATIONS ON NEW HORIZONTAL STRUCTURE WITH MOUNTING HOLES ON EXISTING SIGN BOXES AND/OR MODIFY MOUNTING HOLE LOCATIONS ON SIGN BOXES
8) PROPERLY DISPOSE OF ANY DEMOLISHED MATERIALS NOT BEING REUSED
8) DISCONNECT AND RECONNECT ALL SIGNS TO ELECTRICAL SUPPLY
9) REFER TO STRUCTURAL AND ELECTRICAL SHEETS AND PROJECT MANUAL FOR ADDITIONAL INFORMATION

NOTE:
NEW SIGN BOXES ARE TRANSLUCENT WHITE ACRYLIC MECHANICALLY ATTACHED TO SUPPORT FRAME. A-1
REFER TO SHEET AG08.0.1 FOR SIGN BOX DETAILS.

NEW SIGN FACE - ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE. V2B

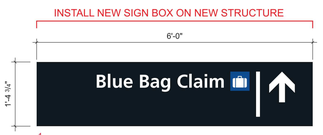
BLUE BAG CLAIM SYMBOL V8C





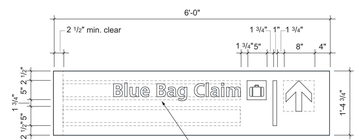
SIGN LOCATION:
TL1.DR.02 (SIDE A)

A NEW SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"



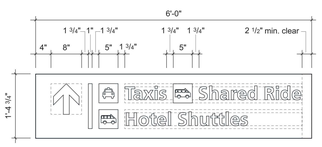
SIGN LOCATION:
TL1.DR.02 (SIDE B)

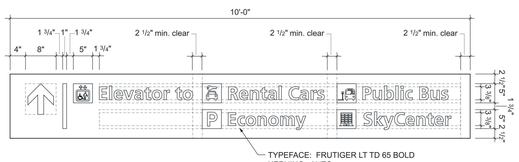
B NEW SIGN FACE - FRONT ELEVATION
SCALE: 3/4"=1'-0"



SIGN LOCATION:
TL1.DR.02 (SIDE B)

C FACE LAYOUT
SCALE: 3/4"=1'-0"

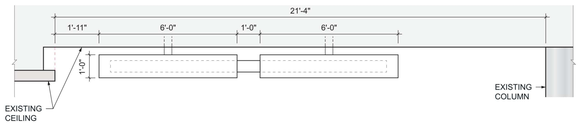




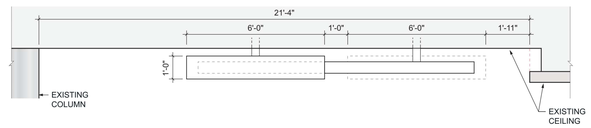
SIGN LOCATION:
TL1.DR.02 (SIDE A)

D FACE LAYOUTS
SCALE: 3/4"=1'-0"

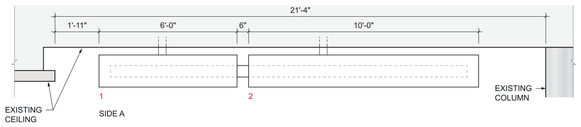
AVAILABLE CEILING AREA:
+/- 21'-4"

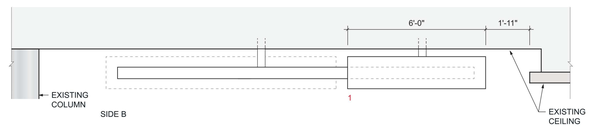


EXISTING SIGN CONFIGURATION SIDE A (2-1)

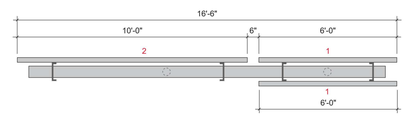


EXISTING SIGN CONFIGURATION SIDE B (2-1)





D SIGN CONFIGURATION IN ELEVATION (2-1)
SCALE: 3/8"=1'-0"



E SIGN CONFIGURATION IN PLAN (2-1)
SCALE: 3/8"=1'-0"

Gresham Smith

GreshamSmith.com

Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838

Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

AG8.7

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt

10/7/2021 11:37:30 AM

Drawn By: Author
Checked By: Checker
Approved By: Approver

EXISTING SIGN BOX & NEW SIGN FACE



EXISTING SIGN BOX & NEW SIGN FACE



NOTE:
REMOVE AND DISPOSE EXISTING SIGN FACES - REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION. EXISTING SIGN BOXES TO REMAIN.

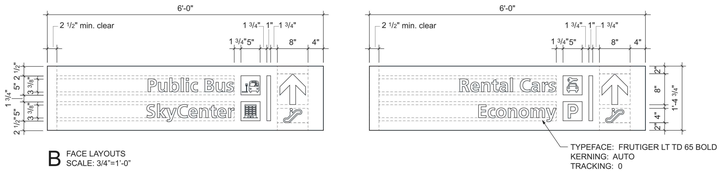
NEW ACRYLIC FACE **A-1**

ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE

V2B

SIGN LOCATION:
TL1.DR.01

A REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"



B FACE LAYOUTS
SCALE: 3/4"=1'-0"



SIGN LOCATION:
TL1.DR.01

NOTE:
EXISTING SIGN FACES TO BE REPLACED.

1 SIGN TYPE - DR.T.17 (2-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

RED VINYL
V7C



SIGN LOCATION:
TL1.DR.20 (SIDE A)
TL1.DR.29 (SIDE A)

A REPLACEMENT BAG CLAIM SYMBOL - FRONT ELEVATION
SCALE: 3/4"=1'-0"



SIGN LOCATION:
TL1.DR.20 (SIDE A)
TL1.DR.29 (SIDE A)

NOTE:
ONLY THE BAG CLAIM SYMBOL TO BE REPLACED.

RED VINYL
V7C

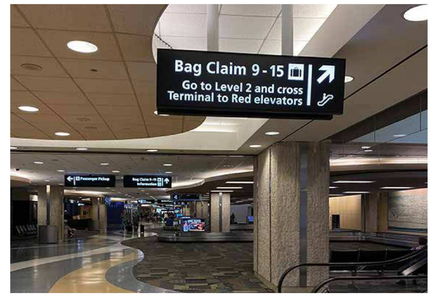


NOTE:
FABRICATOR TO PEEL OFF BLACK VINYL BAG SYMBOL AND FILL IN WHITE SQUARE WITH A RED (V7C) REVERSE CUT BAG SYMBOL (5" X 5").

FABRICATOR TO FIELD VERIFY SYMBOL SIZE AND INCREASE NEW SYMBOL BY 1/16" OVERALL TO ENSURE NO WHITE LIGHT LEAKS AROUND THE PERIMETER OF THE SYMBOL.

SIGN LOCATION:
TL1.DR.20 (SIDE B)
TL1.DR.29 (SIDE B)

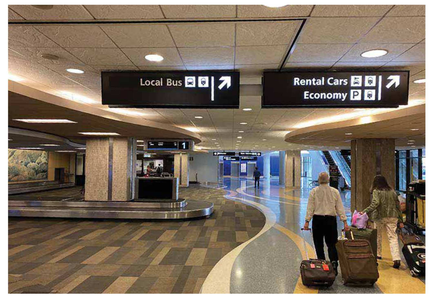
B REPLACEMENT BAG CLAIM SYMBOL - FRONT ELEVATION
SCALE: 3/4"=1'-0"



SIGN LOCATION:
TL1.DR.20 (SIDE B)
TL1.DR.29 (SIDE B)

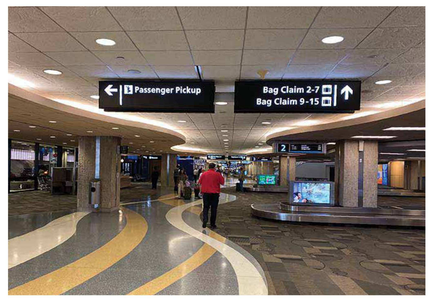
NOTE:
ONLY THE BAG CLAIM SYMBOL TO BE REPLACED.

2 SIGN TYPE - DR.T.18 (3-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED



SIGN LOCATION:
TL1.DR.04 (SIDE A)

NOTE:
EXISTING SIGN FACE TO BE REPLACED.
EXISTING STRUCTURE TO BE RETROFIT TO ACCOMMODATE NEW SIGN TYPE.



SIGN LOCATION:
TL1.DR.04 (SIDE B)

NOTE:
EXISTING STRUCTURE TO BE RETROFIT TO ACCOMMODATE NEW SIGN TYPE.

3 SIGN TYPE - DR.T.17 (2-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

CONTRACTOR SHALL:
1) FIELD VERIFY ALL DIMENSIONS, INCLUDING CEILING CLEARANCES
2) CAREFULLY DETACH (QTY. 4) EXISTING SIGN BOXES TO BE REUSED FROM SIGN STRUCTURE
3) REMOVE HORIZONTAL SIGN STRUCTURE (VERTICAL SUPPORTS TO REMAIN)
4) REPLACE SIGN FACES ON EXISTING BOXES AS INDICATED
5) INSTALL NEW HORIZONTAL SIGN STRUCTURE - COORDINATE CONNECTION POINTS WITH EXISTING VERTICAL SUPPORTS
6) INSTALL NEW AND REINSTALL REUSED SIGN BOXES ON NEW HORIZONTAL SIGN STRUCTURE
7) COORDINATE BRACKET LOCATIONS ON NEW HORIZONTAL STRUCTURE WITH MOUNTING HOLES ON EXISTING SIGN BOXES AND/OR MODIFY MOUNTING HOLE LOCATIONS ON SIGN BOXES
8) PROPERLY DISPOSE OF ANY DEMOLISHED MATERIALS NOT BEING REUSED
8) DISCONNECT AND RECONNECT ALL SIGNS TO ELECTRICAL SUPPLY
9) REFER TO STRUCTURAL AND ELECTRICAL SHEETS AND PROJECT MANUAL FOR ADDITIONAL INFORMATION

NOTE:
NEW SIGN BOXES ARE TRANSLUCENT WHITE ACRYLIC MECHANICALLY ATTACHED TO SUPPORT FRAME. **A-1**
REFER TO SHEET AG08.0.1 FOR SIGN BOX DETAILS.

NEW SIGN FACE - ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE. **V2B**

RED VINYL **V7C** BLUE VINYL **V8C**

INSTALL NEW SIGN BOX ON NEW STRUCTURE



REINSTALL EXISTING SIGN BOX WITH NEW SIGN FACE ON NEW STRUCTURE



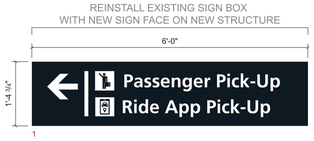
REINSTALL EXISTING SIGN BOX WITH NEW SIGN FACE ON NEW STRUCTURE



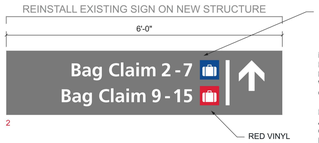
SIGN LOCATION:
TL1.DR.04 (SIDE A)

A NEW SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"

REINSTALL EXISTING SIGN BOX WITH NEW SIGN FACE ON NEW STRUCTURE



REINSTALL EXISTING SIGN ON NEW STRUCTURE



BLUE VINYL
V8C

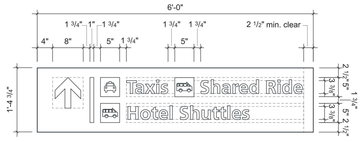
NOTE:
FABRICATOR TO PEEL OFF BLACK VINYL BAG SYMBOL AND FILL IN WHITE SQUARE WITH A BLUE (V8C) AND RED (V7C) REVERSE CUT BAG SYMBOL (5" X 5").

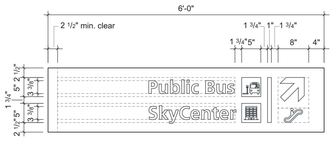
FABRICATOR TO FIELD VERIFY SYMBOL SIZE AND INCREASE NEW SYMBOL BY 1/16" OVERALL TO ENSURE NO WHITE LIGHT LEAKS AROUND THE PERIMETER OF THE SYMBOL.

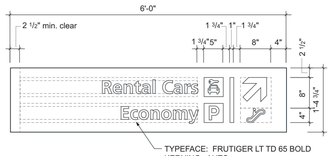
RED VINYL
V7C

SIGN LOCATION:
TL1.DR.04 (SIDE B)

B EXISTING SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"

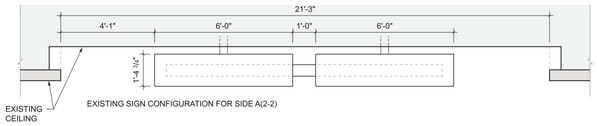


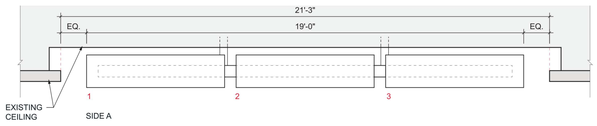


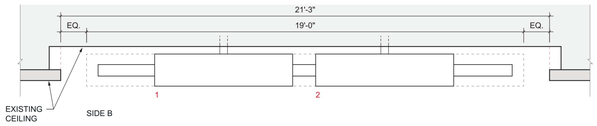


C FACE LAYOUTS
SCALE: 3/4"=1'-0"

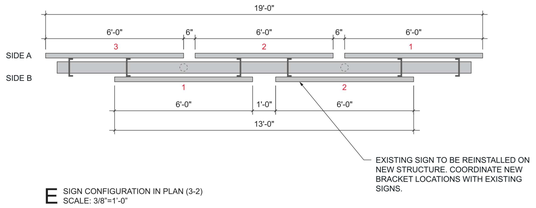
AVAILABLE CEILING AREA:
+/- 21'-3"







D SIGN CONFIGURATION IN ELEVATION (3-2)
SCALE: 3/8"=1'-0"



E SIGN CONFIGURATION IN PLAN (3-2)
SCALE: 3/8"=1'-0"

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

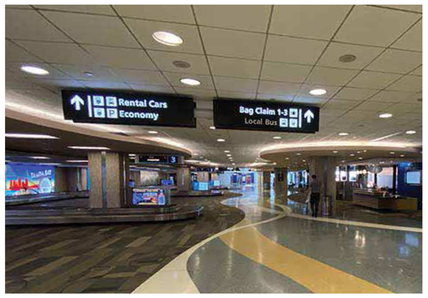
AG8.8

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

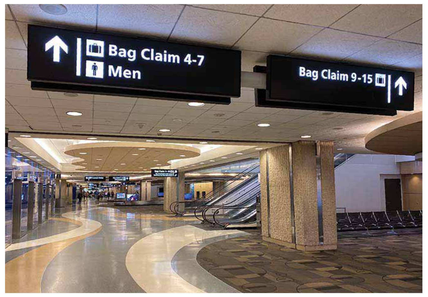
BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:37:38 AM

Drawn By: Author
Checked By: Checker
Approved By: Approver



SIGN LOCATION:
TL1.DR.30 (SIDE A)

NOTE:
EXISTING SIGN FACE TO BE REPLACED.
EXISTING STRUCTURE TO BE RETROFIT TO ACCOMMODATE NEW SIGN TYPE.



SIGN LOCATION:
TL1.DR.30 (SIDE B)

CONTRACTOR SHALL:
1) FIELD VERIFY ALL DIMENSIONS, INCLUDING CEILING CLEARANCES
2) CAREFULLY DETACH (QTY. 4) EXISTING SIGN BOXES TO BE REUSED FROM SIGN STRUCTURE
3) REMOVE HORIZONTAL SIGN STRUCTURE (VERTICAL SUPPORTS TO REMAIN)
4) REPLACE SIGN FACES ON EXISTING BOXES AS INDICATED
5) INSTALL NEW HORIZONTAL SIGN STRUCTURE - COORDINATE CONNECTION POINTS WITH EXISTING VERTICAL SUPPORTS
6) INSTALL NEW AND REINSTALL REUSED SIGN BOXES ON NEW HORIZONTAL SIGN STRUCTURE
7) COORDINATE BRACKET LOCATIONS ON NEW HORIZONTAL STRUCTURE WITH MOUNTING HOLES ON EXISTING SIGN BOXES AND/OR MODIFY MOUNTING HOLE LOCATIONS ON SIGN BOXES
8) PROPERLY DISPOSE OF ANY DEMOLISHED MATERIALS NOT BEING REUSED
8) DISCONNECT AND RECONNECT ALL SIGNS TO ELECTRICAL SUPPLY
9) REFER TO STRUCTURAL AND ELECTRICAL SHEETS AND PROJECT MANUAL FOR ADDITIONAL INFORMATION

NOTE:
NEW SIGN BOXES ARE TRANSLUCENT WHITE ACRYLIC MECHANICALLY ATTACHED TO SUPPORT FRAME. A-1
REFER TO SHEET AG08.0.1 FOR SIGN BOX DETAILS.

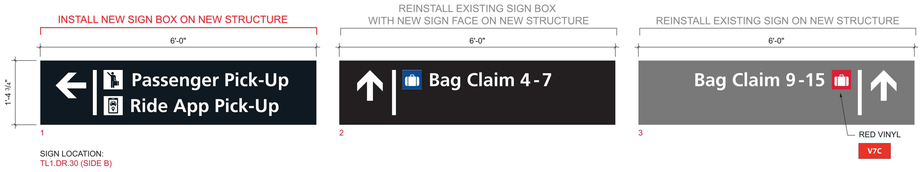
NEW SIGN FACE - ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE. V2B

RED VINYL V7C BLUE VINYL V8C



SIGN LOCATION:
TL1.DR.30 (SIDE A)

A NEW SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"

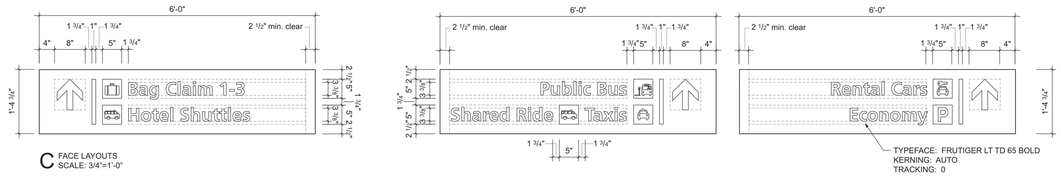


NOTE:
FABRICATOR TO PEEL OFF BLACK VINYL BAG SYMBOL AND FILL IN WHITE SQUARE WITH RED (V7C) REVERSE CUT BAG SYMBOL (5" X 5").

FABRICATOR TO FIELD VERIFY SYMBOL SIZE AND INCREASE NEW SYMBOL BY 1/16" OVERALL TO ENSURE NO WHITE LIGHT LEAKS AROUND THE PERIMETER OF THE SYMBOL.

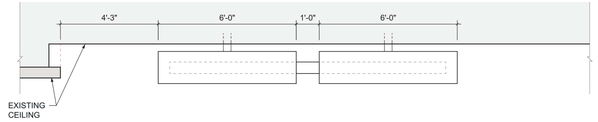
SIGN LOCATION:
TL1.DR.30 (SIDE B)

B NEW SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"

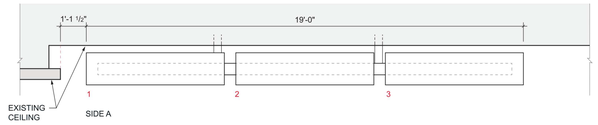


C FACE LAYOUTS
SCALE: 3/4"=1'-0"

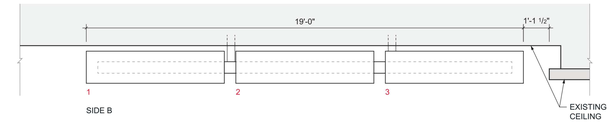
AVAILABLE CEILING AREA:
+/- 4'3"-1"



EXISTING SIGN CONFIGURATION FOR SIDE A (2-2)

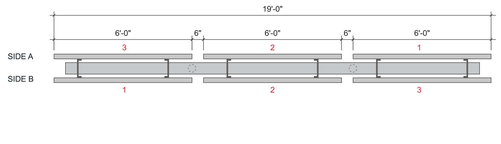


SIDE A



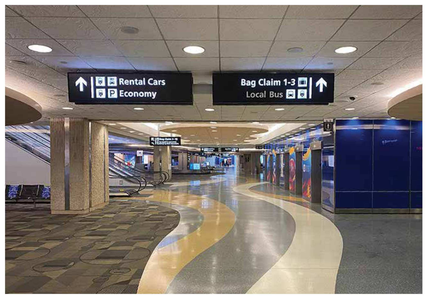
SIDE B

D SIGN CONFIGURATION IN ELEVATION (3-3)
SCALE: 3/8"=1'-0"



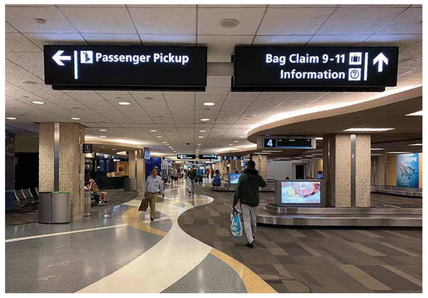
E SIGN CONFIGURATION IN PLAN (3-2)
SCALE: 3/8"=1'-0"

1 SIGN TYPE - DR.T.17 (2-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED



SIGN LOCATION:
TL1.DR.28 (SIDE A)

NOTE:
EXISTING SIGN FACE TO BE REPLACED.
EXISTING STRUCTURE TO BE RETROFIT TO ACCOMMODATE NEW SIGN TYPE.



SIGN LOCATION:
TL1.DR.28 (SIDE B)

CONTRACTOR SHALL:
1) FIELD VERIFY ALL DIMENSIONS, INCLUDING CEILING CLEARANCES
2) CAREFULLY DETACH (QTY. 4) EXISTING SIGN BOXES TO BE REUSED FROM SIGN STRUCTURE
3) REMOVE HORIZONTAL SIGN STRUCTURE (VERTICAL SUPPORTS TO REMAIN)
4) REPLACE SIGN FACES ON EXISTING BOXES AS INDICATED
5) INSTALL NEW HORIZONTAL SIGN STRUCTURE - COORDINATE CONNECTION POINTS WITH EXISTING VERTICAL SUPPORTS
6) INSTALL NEW AND REINSTALL REUSED SIGN BOXES ON NEW HORIZONTAL SIGN STRUCTURE
7) COORDINATE BRACKET LOCATIONS ON NEW HORIZONTAL STRUCTURE WITH MOUNTING HOLES ON EXISTING SIGN BOXES AND/OR MODIFY MOUNTING HOLE LOCATIONS ON SIGN BOXES
8) PROPERLY DISPOSE OF ANY DEMOLISHED MATERIALS NOT BEING REUSED
8) DISCONNECT AND RECONNECT ALL SIGNS TO ELECTRICAL SUPPLY
9) REFER TO STRUCTURAL AND ELECTRICAL SHEETS AND PROJECT MANUAL FOR ADDITIONAL INFORMATION

NOTE:
NEW SIGN BOXES ARE TRANSLUCENT WHITE ACRYLIC MECHANICALLY ATTACHED TO SUPPORT FRAME. A-1
REFER TO SHEET AG08.0.1 FOR SIGN BOX DETAILS.

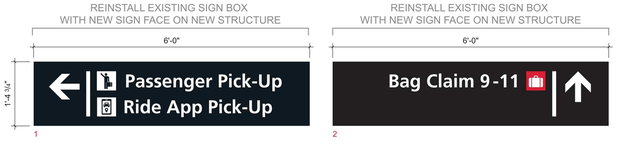
NEW SIGN FACE - ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE. V2B

RED VINYL V7C BLUE VINYL V8C



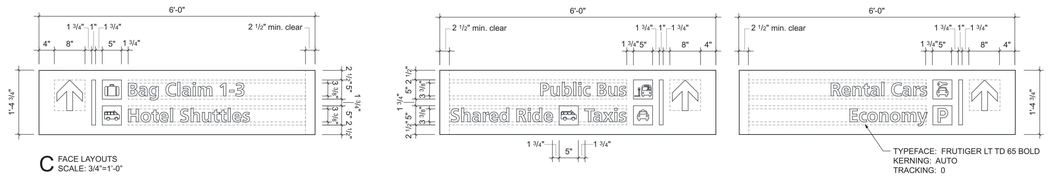
SIGN LOCATION:
TL1.DR.28 (SIDE A)

A NEW SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"



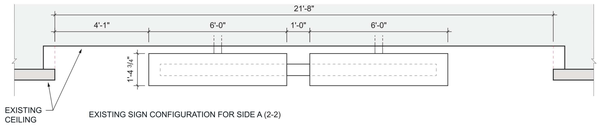
SIGN LOCATION:
TL1.DR.28 (SIDE B)

B NEW SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"

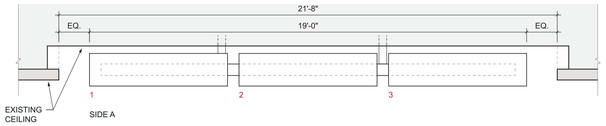


C FACE LAYOUTS
SCALE: 3/4"=1'-0"

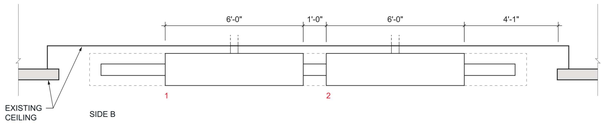
AVAILABLE CEILING AREA:
+/- 21'-8"



EXISTING SIGN CONFIGURATION FOR SIDE A (2-2)

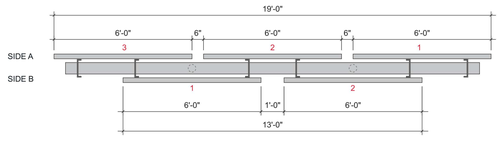


SIDE A



SIDE B

D SIGN CONFIGURATION IN ELEVATION (3-2)
SCALE: 3/8"=1'-0"



E SIGN CONFIGURATION IN PLAN (3-2)
SCALE: 3/8"=1'-0"

2 SIGN TYPE - DR.T.17 (2-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

10/7/2021 11:37:46 AM
BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
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PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

AG8.9

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

Drawn By: Author
Checked By: Checker
Approved By: Approver



SIGN LOCATION:
TL1.DR.21 (SIDE A)

NOTE:
EXISTING SIGN FACES TO BE REPLACED.

NOTE:
REMOVE AND DISPOSE EXISTING SIGN FACES -
REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION.
EXISTING SIGN BOXES TO REMAIN.

NEW ACRYLIC FACE A-1

ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL
FIRST SURFACE
V2B

BLUE VINYL V8C



SIGN LOCATION:
TL1.DR.21 (SIDE A)

A REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"



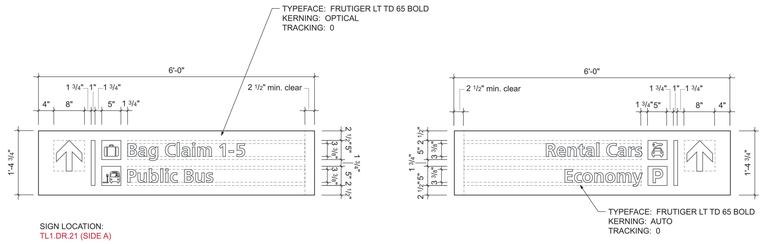
SIGN LOCATION:
TL1.DR.21 (SIDE B)

NOTE:
EXISTING SIGN FACES TO BE REPLACED.



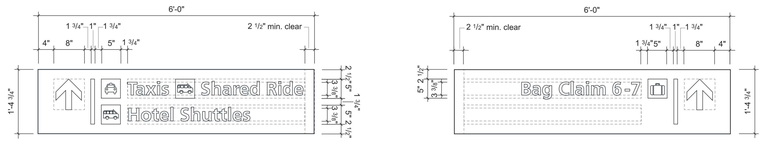
SIGN LOCATION:
TL1.DR.21 (SIDE B)

C REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"



SIGN LOCATION:
TL1.DR.21 (SIDE A)

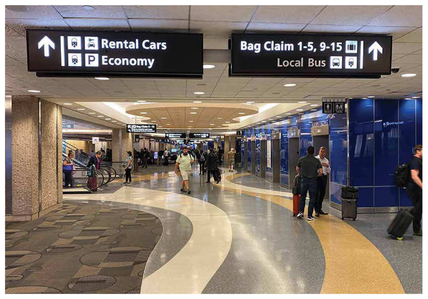
B FACE LAYOUTS
SCALE: 3/4"=1'-0"



SIGN LOCATION:
TL1.DR.21 (SIDE B)

D FACE LAYOUT
SCALE: 3/4"=1'-0"

1 SIGN TYPE - DR.T.17 (2-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED



SIGN LOCATION:
TL1.DR.18 (SIDE A)

NOTE:
EXISTING SIGN FACES TO BE REPLACED.

NOTE:
REMOVE AND DISPOSE EXISTING SIGN FACES -
REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION.
EXISTING SIGN BOXES TO REMAIN.

NEW ACRYLIC FACE A-1

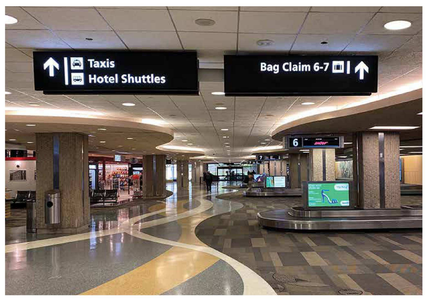
ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL
FIRST SURFACE
V2B

BLUE VINYL V8C



SIGN LOCATION:
TL1.DR.18 (SIDE A)

A REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"



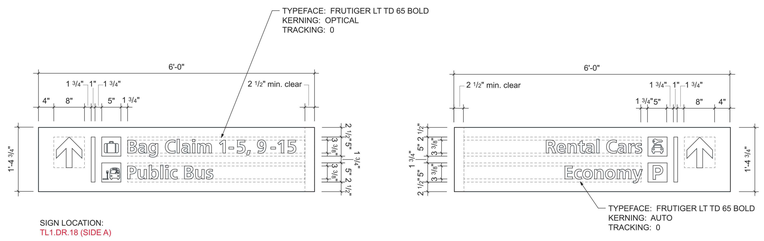
SIGN LOCATION:
TL1.DR.18 (SIDE B)

NOTE:
EXISTING SIGN FACES TO BE REPLACED.



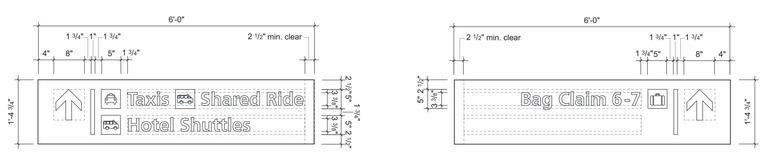
SIGN LOCATION:
TL1.DR.18 (SIDE B)

C REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"



SIGN LOCATION:
TL1.DR.18 (SIDE A)

B FACE LAYOUTS
SCALE: 3/4"=1'-0"



SIGN LOCATION:
TL1.DR.18 (SIDE B)

D FACE LAYOUT
SCALE: 3/4"=1'-0"

2 SIGN TYPE - DR.T.17 (2-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

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TAMPA, FLORIDA

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BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

AG8.10

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:37:48 AM

Drawn By: Author
Checked By: Checker
Approved By: Approver



SIGN LOCATION:
TL1.DR.17.1

A REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"

B FACE LAYOUTS
SCALE: 3/4"=1'-0"

NOTE:
REMOVE AND DISPOSE EXISTING SIGN FACES - REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION. EXISTING SIGN BOXES TO REMAIN.

NEW ACRYLIC FACE **A-1**

ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE.
V2B

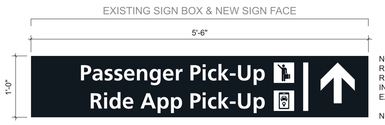
PICK-UP AREA SYMBOL
V8C



SIGN LOCATION:
TL1.DR.17.1

NOTE:
EXISTING SIGN FACES TO BE REPLACED.

1 SIGN TYPE - DR.T.17 (2-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED



SIGN LOCATIONS RED BAG CLAIM:
TL1.DR.07 - DOOR 6
TL1.DR.36 - DOOR 5
TL1.DR.32 - DOOR 4
TL1.DR.26 - DOOR 3
TL1.DR.24.1 - DOOR 2
TL1.DR.13 - DOOR 1

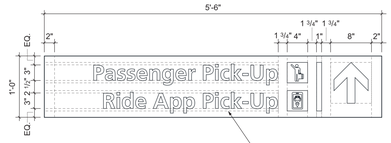
SIGN LOCATIONS BLUE BAG CLAIM:
TL1.DR.03 - DOOR 1
TL1.DR.31 - DOOR 2
TL1.DR.27 - DOOR 3
TL1.DR.22 - DOOR 4
TL1.DR.19 - DOOR 5
TL1.DR.17 - DOOR 6

A REPLACEMENT SIGN FACE - FRONT ELEVATION
SCALE: 1"=1'-0"

NOTE:
REMOVE AND DISPOSE EXISTING SIGN FACES - REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION.
EXISTING SIGN BOXES TO REMAIN.

NEW ACRYLIC FACE **A-1**

ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE
V2B



B FACE LAYOUT
SCALE: 1"=1'-0"



SIGN LOCATION:
(SEE ABOVE)

NOTE:
EXISTING SIGN FACES TO BE REPLACED.

2 SIGN TYPE - DR.T.1 (1-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

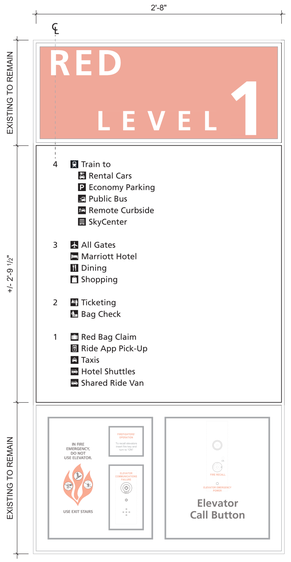
NOTE:
REMOVE AND DISPOSE OF EXISTING DIRECTORY PANELS - REFERENCE SPECIFICATIONS SECTION 10 1400 1.4.F AND DIVISION 2.

NOTE:
SIZE OF THE EXISTING PANELS VARY. FABRICATOR TO FIELD VERIFY EACH LOCATION BEFORE INSTALLATION.

STANDARD ELEVATOR DIRECTORY LAYOUT WITH LAYOUT FOR CALL BUTTON PANEL ON BOTTOM LANDING.

ELEVATOR DIRECTORY PANEL TO BE FORMS+SURFACES VIVICHROME CHROMIS ARCHITECTURAL GLASS.

NOTE:
2ND SURFACE DIGITALLY PRINTED GRAPHICS. DIGITALLY PRINTED WHITE OPAQUE BACK-GROUND WITH BLACK TEXT AND COLOR GRAPHIC.



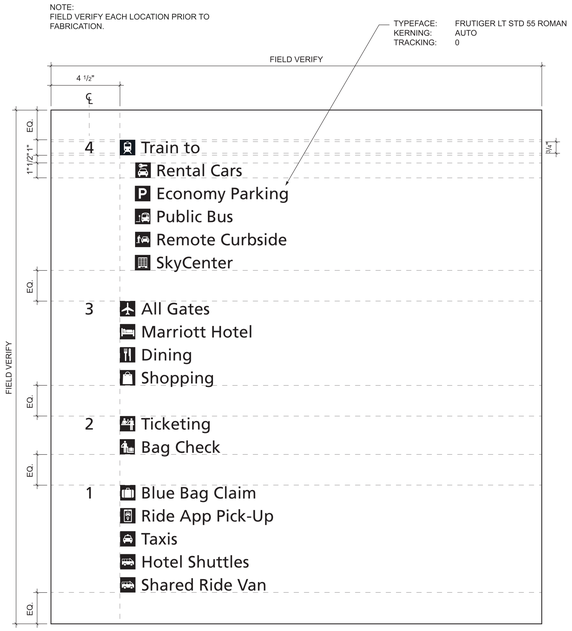
A REPLACEMENT SIGN - FRONT ELEVATION
SCALE: 1 1/2"=1'-0"

SIGN LOCATIONS:
TL1.IN.20
TL2.IN.04
TL3.IN.05
APM1.IN.02

B REPLACEMENT SIGN - FRONT ELEVATION
SCALE: 1 1/2"=1'-0"

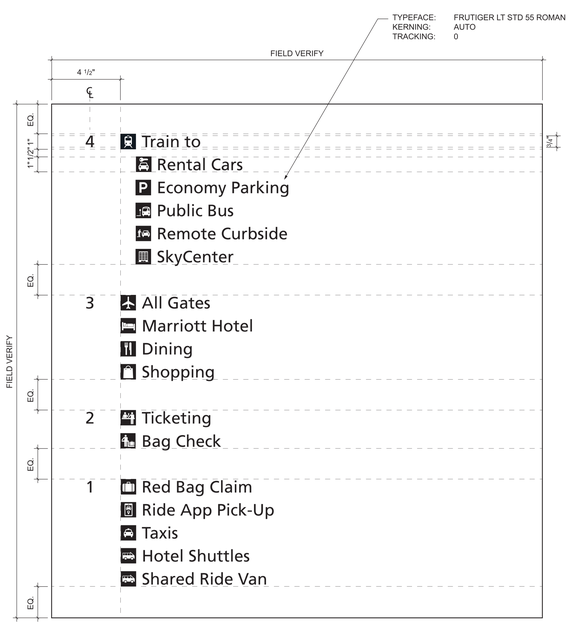
SIGN LOCATIONS:
TL1.IN.15
TL2.IN.03
TL3.IN.04
APM1.IN.01

NOTE:
FIELD VERIFY EACH LOCATION PRIOR TO FABRICATION.



C FACE LAYOUT DETAILS
SCALE: 3"=1'-0"

SIGN LOCATIONS:
TL1.IN.20
TL2.IN.04
TL3.IN.05
APM1.IN.02



D FACE LAYOUT DETAILS
SCALE: 3"=1'-0"

SIGN LOCATIONS:
TL1.IN.15
TL2.IN.03
TL3.IN.04
APM1.IN.01

3 SIGN TYPE - IN.T.DIR (ELEVATOR DIRECTORY)
SCALE: AS NOTED

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WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

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BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description
1	11/19/21	Addendum 01

SIGN DETAILS

AG8.11

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
11/16/2021 2:28:24 PM

Drawn By: Author
Checked By: Checker
Approved By: Approver



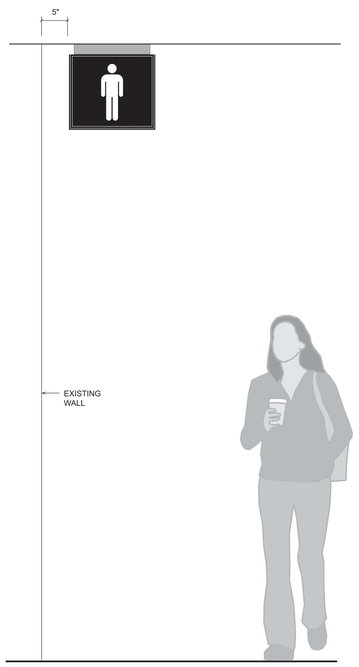
SIGN LOCATION:
TL1.ID.171 (YEAGER ELEVATORS)
TL1.ID.185(SIKORSKY ELEVATORS)

TL1.ID.100 (ARMSTRONG ELEVATORS)
TL1.ID.056 (EARHART ELEVATORS)

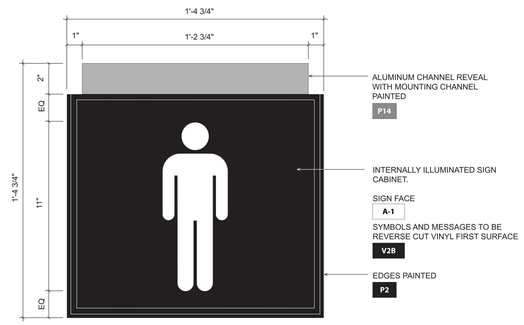
1 SIGN TYPE - ID.U.07 (OVERHEAD RESTROOM ID)
SCALE: AS NOTED

NOTE:
REMOVE AND DISPOSE EXISTING SIGNS - REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION.

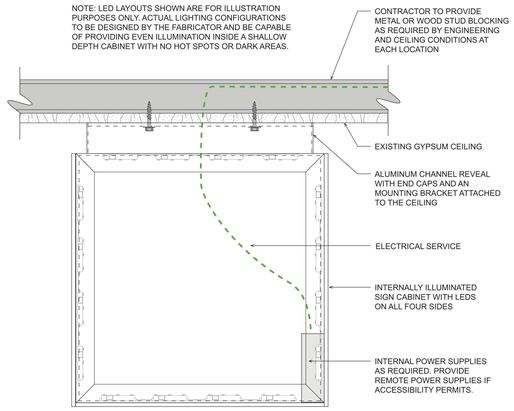
PROVIDE NEW SIGNS, ELECTRICAL SERVICE AND BLOCKING AT EACH LOCATION.



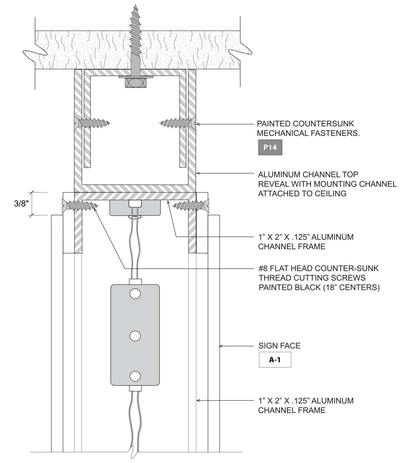
A APM 2 STATION CONTEXTUAL ELEVATION
SCALE: 1"=1'-0"



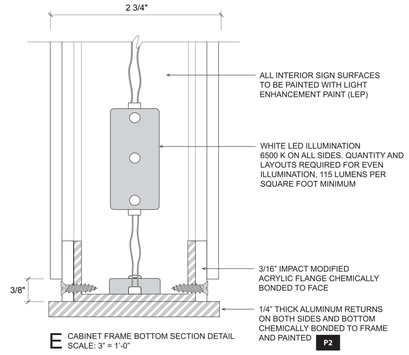
B LAYOUT DETAILS
SCALE: 3" = 1'-0"



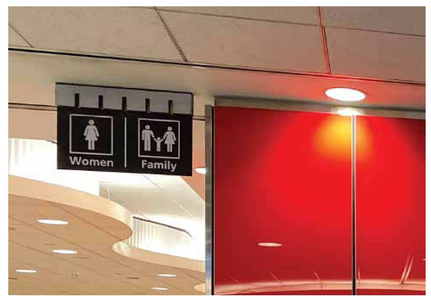
C FABRICATION DETAILS
SCALE: 3" = 1'-0"



D CABINET FRAME TOP SECTION DETAIL
SCALE: 3" = 1'-0"



E CABINET FRAME BOTTOM SECTION DETAIL
SCALE: 3" = 1'-0"



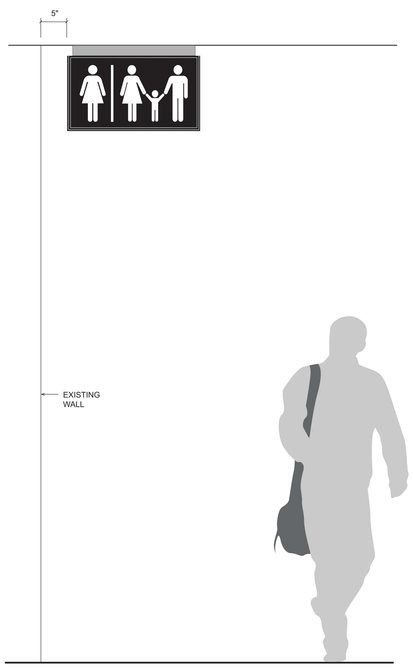
SIGN LOCATION:
TL1.ID.157 (YEAGER ELEVATORS)
TL1.ID.199 (SIKORSKY ELEVATORS)

TL1.ID.088 (ARMSTRONG ELEVATORS)
TL1.ID.048 (EARHART ELEVATORS)

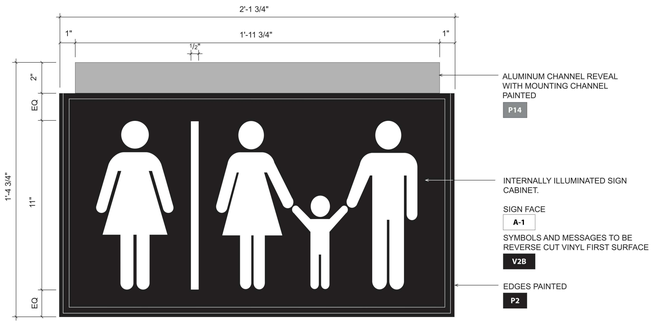
2 SIGN TYPE - ID.U.08 (OVERHEAD RESTROOM ID)
SCALE: AS NOTED

NOTE:
REMOVE AND DISPOSE EXISTING SIGNS - REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION.

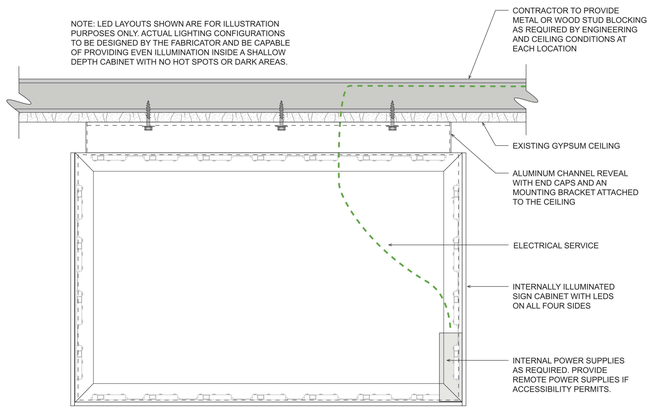
PROVIDE NEW SIGNS, ELECTRICAL SERVICE AND BLOCKING AT EACH LOCATION.



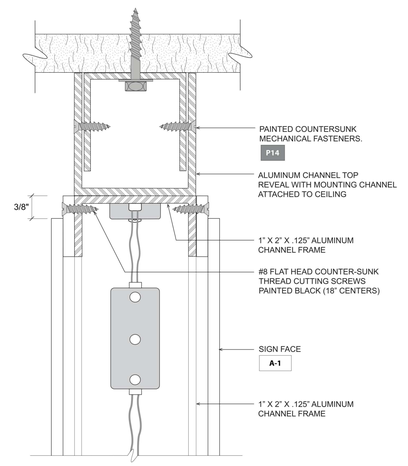
A APM 2 STATION CONTEXTUAL ELEVATION
SCALE: 1"=1'-0"



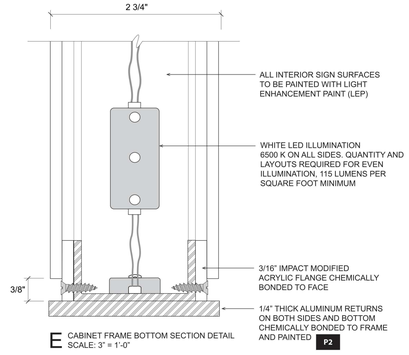
B LAYOUT DETAILS
SCALE: 3" = 1'-0"



C FABRICATION DETAILS
SCALE: 3" = 1'-0"



D CABINET FRAME TOP SECTION DETAIL
SCALE: 3" = 1'-0"



E CABINET FRAME BOTTOM SECTION DETAIL
SCALE: 3" = 1'-0"

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BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

AG8.11.1

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

10/7/2021 11:37:52 AM
BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt

Drawn By: Author
Checked By: Checker
Approved By: Approver

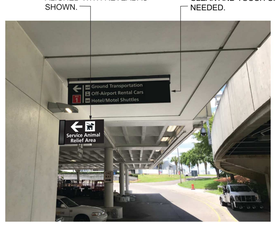
TL1.DR.EX1
EXISTING SIGN TO REMAIN - MODIFY AS NOTED.



RED 1 EXISTING -
SIGN LOCATION TL1.DR.EX1

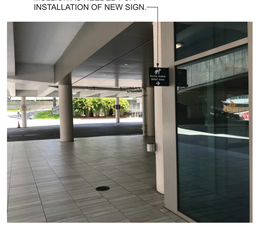
TL1.DR.204
INSTALL NEW PROJECTING SIGN BELOW EXISTING SIGN, ALIGNED WITH REVEAL AS SHOWN.

TL1.DR.EX1
REMOVE EXISTING SARA MESSAGING, GRAPHIC AND RULE (BOTH SIDES) - CLEAN AND TOUCH UP AS NEEDED.



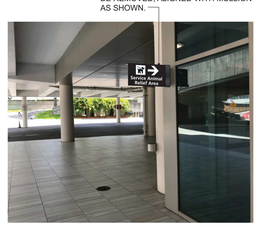
RED 1 NEW -
SIGN LOCATION TL1.DR.204

REMOVE EXISTING FLAG SIGN AND REPAIR CURTAIN WALL MULLION AS NEEDED FOR INSTALLATION OF NEW SIGN.



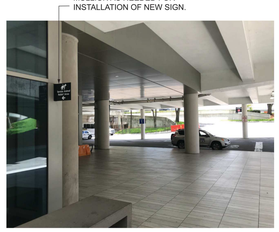
RED 2 EXISTING

TL1.DR.205
INSTALL NEW PROJECTING SIGN IN SAME LOCATION AS EXISTING SIGN TO BE REMOVED, ALIGNED WITH MULLION AS SHOWN.



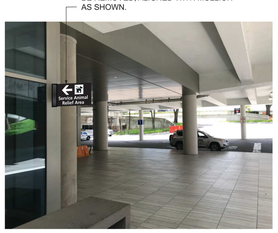
RED 2 NEW -
SIGN LOCATION TL1.DR.205

REMOVE EXISTING FLAG SIGN AND REPAIR CURTAIN WALL MULLION AS NEEDED FOR INSTALLATION OF NEW SIGN.



BLUE 1 EXISTING

TL1.DR.214
INSTALL NEW PROJECTING SIGN IN SAME LOCATION AS EXISTING SIGN TO BE REMOVED, ALIGNED WITH MULLION AS SHOWN.



BLUE 1 NEW -
SIGN LOCATION TL1.DR.214

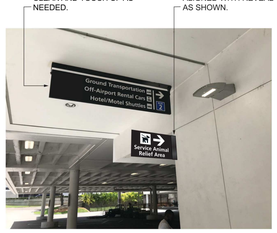
TL1.DR.EX2
EXISTING SIGN TO REMAIN - MODIFY AS NOTED.



BLUE 2 EXISTING -
SIGN LOCATION TL1.DR.EX2

TL1.DR.EX2
REMOVE EXISTING SARA MESSAGING, GRAPHIC AND RULE (BOTH SIDES) - CLEAN AND TOUCH UP AS NEEDED.

TL1.DR.215
INSTALL NEW PROJECTING SIGN BELOW EXISTING SIGN, ALIGNED WITH REVEAL AS SHOWN.



BLUE 2 NEW -
SIGN LOCATION TL1.DR.215

A TYPICAL MOUNTING LOCATIONS
NO SCALE



B PLAN VIEW
SCALE: 1-1/2"=1'-0"



LEFT ARROW

SIGN LOCATIONS:
TL1.DR.204
TL1.DR.214



RIGHT ARROW

SIGN LOCATIONS:
TL1.DR.205
TL1.DR.215

SIGN TYPE DR.K.01
SIGN FACE PANEL IS .125" ALUMINUM SHEET PAINTED P2 BLACK ON ALL EXPOSED SURFACES.

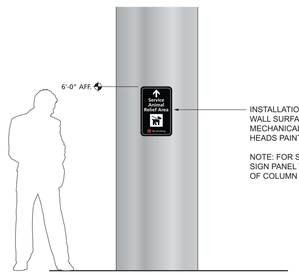
GRAPHICS PRINTED TO MATCH P1 WHITE. NOTE: GRAPHICS APPEAR ON FRONT OF SIGN ONLY - BACK LEFT BLANK.

INSTALLATION:
MOUNTING BRACKET IS EXTRUDED ALUMINUM T-BRACKET AS SHOWN. T-BRACKET FLUSH-MOUNTED TO EXTERIOR WALL SURFACE WITH HIGH-STRENGTH EXPANSION BOLTS AND PERMANENT BONDING ADHESIVE FOR SECURE ATTACHMENT.

SIGN FACE PANEL SECURED IN T-BRACKET WITH MECHANICAL THROUGH-FASTENERS.

C SIGN FACE ELEVATION - LAYOUT OPTIONS
SCALE: 1-1/2"=1'-0"

1 SIGN TYPE - DR.K.01 (NON-ILLUMINATED DIRECTIONAL)
SCALE: AS NOTED



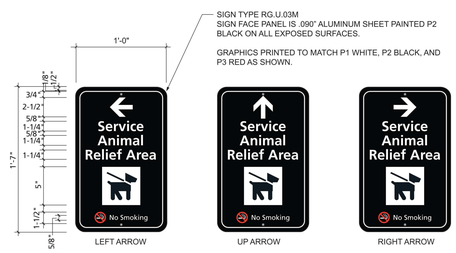
INSTALLATION: ATTACH TO SCHEDULED COLUMN OR WALL SURFACE AS INDICATED ON PLAN WITH MECHANICAL FASTENERS. EXPOSED FASTENER HEADS PAINTED TO MATCH ADJACENT FACE COLOR.

NOTE: FOR SIGNS MOUNTED ON ROUND COLUMNS, SIGN PANEL TO BE ROLLED TO CONFORM TO RADIUS OF COLUMN SURFACE.

A MOUNTING ELEVATION AT COLUMN - TYPICAL
SCALE: 1/2"=1'-0"

SIGN TYPE RG.U.03M
SIGN FACE PANEL IS .090" ALUMINUM SHEET PAINTED P2 BLACK ON ALL EXPOSED SURFACES.

GRAPHICS PRINTED TO MATCH P1 WHITE, P2 BLACK, AND P3 RED AS SHOWN.



LEFT ARROW

SIGN LOCATIONS:
TL1.DR.207
TL1.DR.209
TL1.DR.213
TL1.DR.216
TL1.DR.218

UP ARROW

SIGN LOCATIONS:
TL1.DR.202
TL1.DR.208
TL1.DR.211
TL1.DR.217

RIGHT ARROW

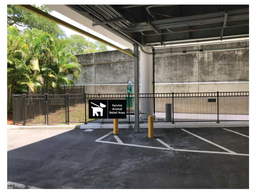
SIGN LOCATIONS:
TL1.DR.201
TL1.DR.203
TL1.DR.206
TL1.DR.210
TL1.DR.212

B SIGN FACE ELEVATION - LAYOUT OPTIONS
SCALE: 1-1/2"=1'-0"

2 SIGN TYPE - RG.U.03M (SARA TRAILBLAZER)
SCALE: AS NOTED



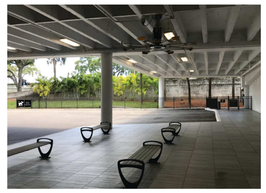
RED 1 -
SIGN LOCATION TL1.ID.201



RED 2 -
SIGN LOCATION TL1.ID.202



BLUE 1 -
SIGN LOCATION TL1.ID.203



BLUE 2 -
SIGN LOCATION TL1.ID.204

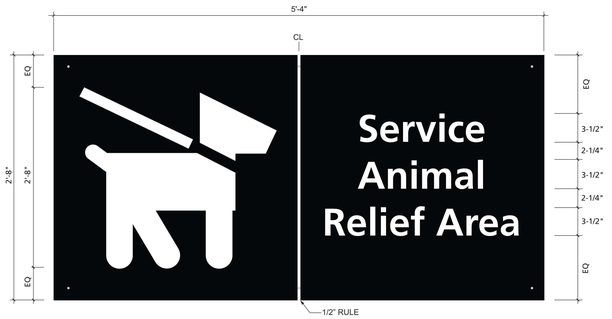
A TYPICAL MOUNTING LOCATIONS
NO SCALE

SIGN TYPE ID.K.09
SIGN FACE PANEL IS .125" ALUMINUM SHEET PAINTED P2 BLACK ON ALL EXPOSED SURFACES.

GRAPHICS PRINTED TO MATCH P1 WHITE AS SHOWN.

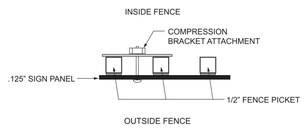
INSTALLATION: SECURE TO METAL FENCE AT LOCATIONS INDICATED ON PLAN. SECURE TO FENCE SURFACE WITH THROUGH-BOLTS CONNECTED TO METAL COMPRESSION BRACKETS AT REAR WHICH ATTACH TO VERTICAL FENCE PICKETS. PROVIDE SPACERS AND GASKETS AS REQUIRED. ATTACHMENT ASSEMBLY TO BE NON-CORROSIVE.

NOTE: SIGN CONTRACTOR TO FIELD VERIFY ALL MEASUREMENTS ABD SIGN LOCATIONS WITH THE ARCHITECT PRIOR TO CREATING SHOP DRAWINGS.

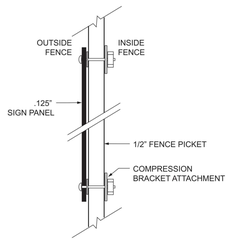


B SIGN FACE ELEVATION
SCALE: 1-1/2"=1'-0"

C SECTION MOUNTING
SCALE: 1-1/2"=1'-0"



D PLAN MOUNTING DETAIL
NO SCALE



E SECTION MOUNTING DETAIL
NO SCALE

3 SIGN TYPE - ID.K.09 (SARA IDENTIFICATION)
SCALE: AS NOTED

1. SEE ALSO: GENERAL NOTES FOR PROJECT / GO.11.
2. SIGN CONTRACTOR TO FIELD VERIFY ALL MEASUREMENTS AND SIGN LOCATIONS WITH THE ARCHITECT PRIOR TO CREATING SHOP DRAWINGS.
3. ALUMINUM SIGN PANEL THICKNESSES FOR EACH LOCATION SHALL BE A MINIMUM OF .125" UNLESS OTHERWISE NOTED, AND IN ADDITION SHALL BE AS REQUIRED TO ENSURE THAT ALL INSTALLED SIGN SURFACES SHALL BE FREE OF DISTORTION, OIL CANNING AND OTHER DEFECTS IN APPEARANCE.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR DEMOLITION AND REMOVAL OF ALL EXISTING SIGN PANELS BEING REPLACED, AS WELL AS EXISTING SIGN STRUCTURES AT LOCATIONS WHERE SIGNS ARE SCHEDULED FOR REMOVAL.

4 GENERAL NOTES
NO SCALE

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

AG8.11.2

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:37:55 AM

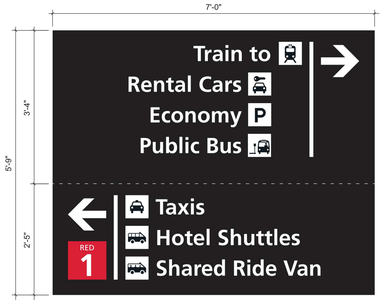
Drawn By: Author
Checked By: Checker
Approved By: Approver

NOTE:
REMOVE AND DISPOSE EXISTING SIGN FACES - REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION. EXISTING SIGN BOXES TO REMAIN. FABRICATOR TO FIELD VERIFY EACH LOCATION PRIOR TO FABRICATION.

NEW SIGN FACE **A-3**

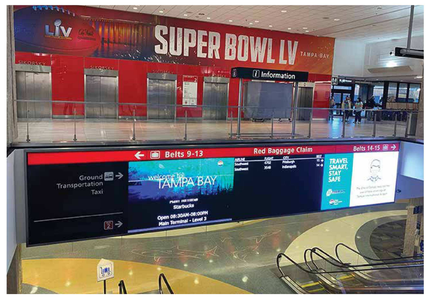
ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE **V2B**

RED VINYL **V7C** BLUE VINYL **V8C**



SIGN LOCATION:
BC-01

A REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"



SIGN LOCATION:
BC-01
BC-02

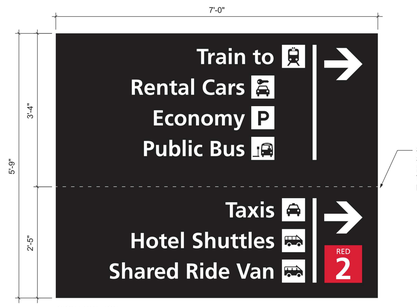
NOTE:
EXISTING STATIC SIGN PANELS TO BE REPLACED.

NOTE:
CONTRACTOR SHALL SHUT DOWN THE OPERATION OF AND TAKE THE NECESSARY PROCAUTIONS TO FULLY PROTECT ALL ESCALATORS FROM CONSTRUCTION DEBRIS EACH NIGHT DURING THE SIGN REMOVAL AND INSTALLATION PROCESS.

CONTRACTOR SHALL PROVIDE A PROTECTIVE BARRICADE AT BOTH THE TOP AND BOTTOM OF THE ESCALATORS ALONG WITH SUPPLEMENTAL DETOUR WAYFINDING TO GUIDE TRAVELERS TO THE NEXT SET OF ESCALATORS ON THE TRANSFER AND BAG CLAIM LEVELS.

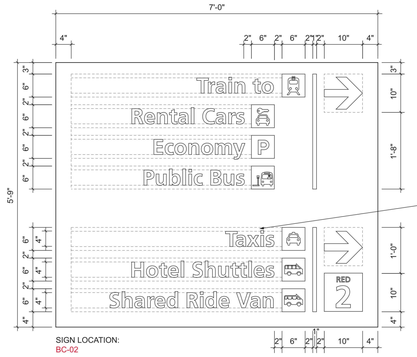
CONTRACTOR SHALL REMOVE PROTECTION AND RETURN ESCALATORS TO SERVICE EACH DAY.

SIGNS SHOWN ARE PHASED AS DEFINED BY 'PHASE 2A' ON SPECIFICATION SECTION 01315 EXHIBIT B - CONSTRUCTION PHASE BAR CHART.



SUGGESTED HEAT WELDED SEAM LINE IF NEEDED. FACE TO BE FABRICATED TO ENSURE NO LIGHT LEAKS.

SIGN LOCATION:
BC-02

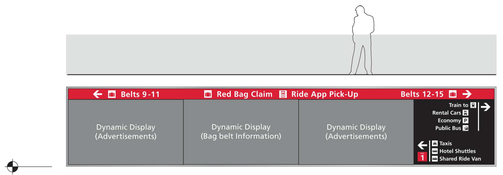


NOTE:
MESSAGE LAYOUTS CAN BE EITHER LEFT OR RIGHT-JUSTIFIED, AS CONDITIONS WARRANT. FOR THE LEFT JUSTIFIED EXAMPLE SHOWN, THE SAME LAYOUT COULD BE FLIPPED, WITH ARROW ON THE RIGHT. THE DIMENSIONS REMAIN THE SAME BUT MIRRORED.

TYPEFACE: FRUTIGER LT TD 65 BOLD
KERNING: AUTO
TRACKING: 0

SIGN LOCATION:
BC-02

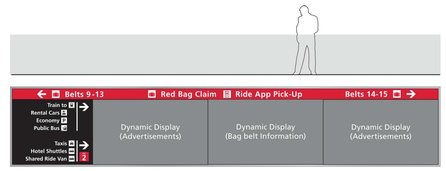
C FACE LAYOUT
SCALE: 3/4"=1'-0"



ALIGNED WITH THE BOTTOM OF BULKHEAD



SIGN LOCATION:
BC-01

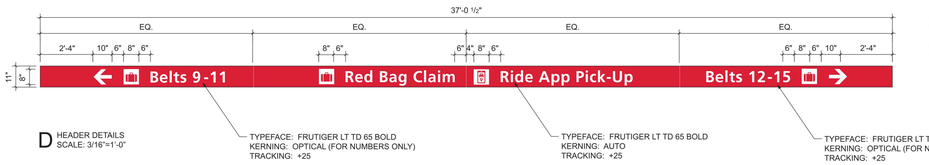


ALIGNED WITH THE BOTTOM OF BULKHEAD



SIGN LOCATION:
BC-02

B CONTEXTUAL ELEVATIONS
SCALE: 3/16"=1'-0"



NOTE:
FABRICATOR TO FIELD VERIFY EACH LOCATION.

HEADER IS FABRICATED WITH FOUR EQUAL SIGN FACE REPLACEMENT PARTS TO RETROFIT EXISTING SIGN BOX.

TYPEFACE: FRUTIGER LT TD 65 BOLD
KERNING: OPTICAL (FOR NUMBERS ONLY)
TRACKING: +25

TYPEFACE: FRUTIGER LT TD 65 BOLD
KERNING: AUTO
TRACKING: +25

TYPEFACE: FRUTIGER LT TD 65 BOLD
KERNING: OPTICAL (FOR NUMBERS ONLY)
TRACKING: +25

D HEADER DETAILS
SCALE: 3/16"=1'-0"

1 SIGN TYPE - DY.T.01 (DYNAMIC BAG CLAIM INFORMATION SIGN OVER ESCALATORS)

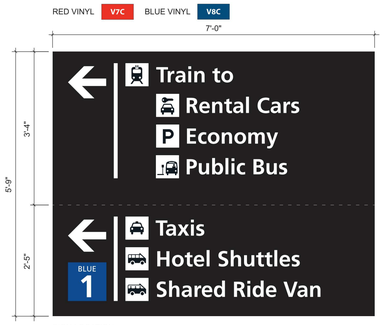
SCALE: AS NOTED

NOTE:
REMOVE AND DISPOSE EXISTING SIGN FACES - REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION. EXISTING SIGN BOXES TO REMAIN. FABRICATOR TO FIELD VERIFY EACH LOCATION PRIOR TO FABRICATION.

NEW SIGN FACE **A-3**

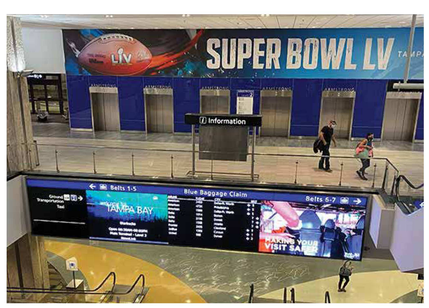
ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE **V2B**

RED VINYL **V7C** BLUE VINYL **V8C**



SIGN LOCATION:
BC-04

A REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"



SIGN LOCATION:
BC-03
BC-04

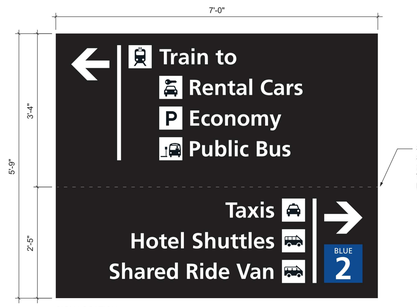
NOTE:
EXISTING STATIC SIGN PANELS TO BE REPLACED.

NOTE:
CONTRACTOR SHALL SHUT DOWN THE OPERATION OF AND TAKE THE NECESSARY PROCAUTIONS TO FULLY PROTECT ALL ESCALATORS FROM CONSTRUCTION DEBRIS EACH NIGHT DURING THE SIGN REMOVAL AND INSTALLATION PROCESS.

CONTRACTOR SHALL PROVIDE A PROTECTIVE BARRICADE AT BOTH THE TOP AND BOTTOM OF THE ESCALATORS ALONG WITH SUPPLEMENTAL DETOUR WAYFINDING TO GUIDE TRAVELERS TO THE NEXT SET OF ESCALATORS ON THE TRANSFER AND BAG CLAIM LEVELS.

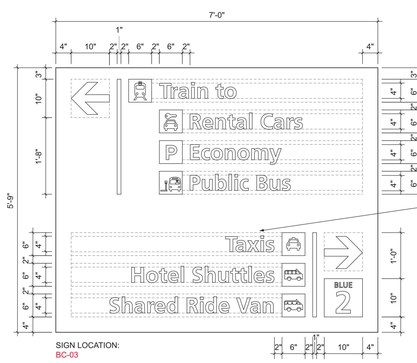
CONTRACTOR SHALL REMOVE PROTECTION AND RETURN ESCALATORS TO SERVICE EACH DAY.

SIGNS SHOWN ARE PHASED AS DEFINED BY 'PHASE 2A' ON SPECIFICATION SECTION 01315 EXHIBIT B - CONSTRUCTION PHASE BAR CHART.



SUGGESTED HEAT WELDED SEAM LINE IF NEEDED. FACE TO BE FABRICATED TO ENSURE NO LIGHT LEAKS.

SIGN LOCATION:
BC-03

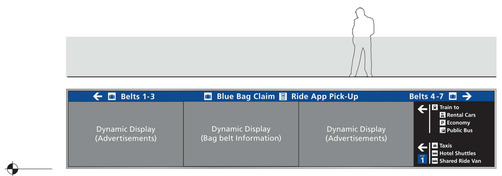


NOTE:
MESSAGE LAYOUTS CAN BE EITHER LEFT OR RIGHT-JUSTIFIED, AS CONDITIONS WARRANT. FOR THE LEFT JUSTIFIED EXAMPLE SHOWN, THE SAME LAYOUT COULD BE FLIPPED, WITH ARROW ON THE RIGHT. THE DIMENSIONS REMAIN THE SAME BUT MIRRORED.

TYPEFACE: FRUTIGER LT TD 65 BOLD
KERNING: AUTO
TRACKING: 0

SIGN LOCATION:
BC-03

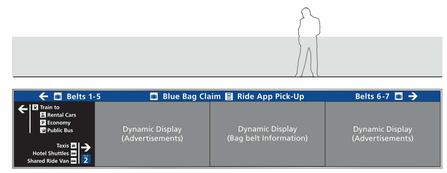
C FACE LAYOUT
SCALE: 3/4"=1'-0"



ALIGNED WITH THE BOTTOM OF BULKHEAD



SIGN LOCATION:
BC-04

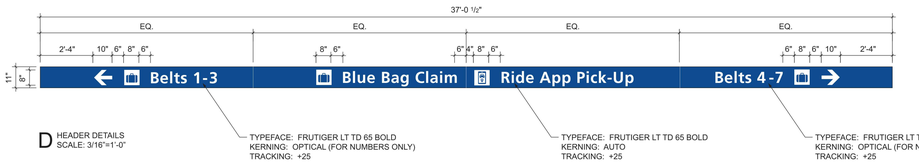


ALIGNED WITH THE BOTTOM OF BULKHEAD



SIGN LOCATION:
BC-03

B CONTEXTUAL ELEVATIONS
SCALE: 3/16"=1'-0"



NOTE:
FABRICATOR TO FIELD VERIFY EACH LOCATION.

HEADER IS FABRICATED WITH FOUR EQUAL SIGN FACE REPLACEMENT PARTS TO RETROFIT EXISTING SIGN BOX.

TYPEFACE: FRUTIGER LT TD 65 BOLD
KERNING: OPTICAL (FOR NUMBERS ONLY)
TRACKING: +25

TYPEFACE: FRUTIGER LT TD 65 BOLD
KERNING: AUTO
TRACKING: +25

TYPEFACE: FRUTIGER LT TD 65 BOLD
KERNING: OPTICAL (FOR NUMBERS ONLY)
TRACKING: +25

D HEADER DETAILS
SCALE: 3/16"=1'-0"

2 SIGN TYPE - DY.T.01 (DYNAMIC BAG CLAIM INFORMATION SIGN OVER ESCALATORS)

SCALE: AS NOTED

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

AG8.12

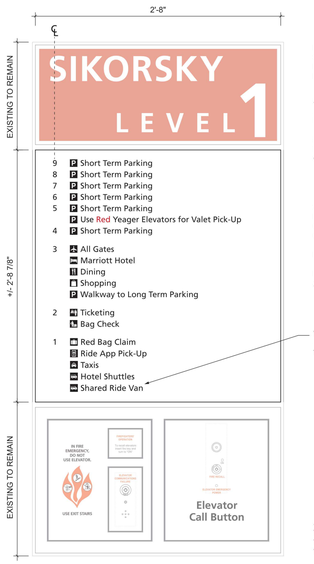
43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

10/7/2021 11:37:57 AM
BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt

Drawn By: Author
Checked By: Checker
Approved By: Approver

NOTE:
REMOVE AND DISPOSE OF EXISTING DIRECTORY PANELS - REFERENCE SPECIFICATIONS SECTION 10 1400 1.4.F AND DIVISION 2.



NOTE:
SIZE OF THE EXISTING PANELS VARY. FABRICATOR TO FIELD VERIFY EACH LOCATION BEFORE INSTALLATION.

STANDARD ELEVATOR DIRECTORY LAYOUT WITH LAYOUT FOR CALL BUTTON PANEL ON BOTTOM LANDING.

ELEVATOR DIRECTORY PANEL TO BE FORMS+SURFACES VIVICHROME CHROMIS ARCHITECTURAL GLASS.

2ND SURFACE DIGITALLY PRINTED GRAPHICS. DIGITALLY PRINTED WHITE OPAQUE BACK-GROUND WITH BLACK TEXT AND COLOR GRAPHIC.

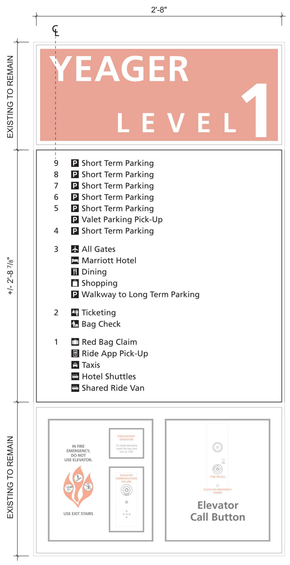
RED COLOR TO MATCH P3

FOR FACE LAYOUT DETAILS REFER TO SHEET AG8.11.

TYPEFACE: FRUTIGER LT STD 55 ROMAN
KERNING: AUTO
TRACKING: 0

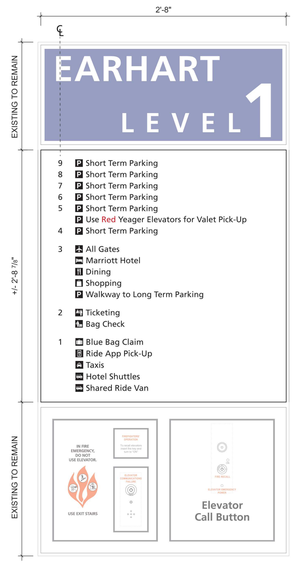
SIGN LOCATIONS:
TL1.IN.08
TL2.IN.02
TL3.IN.02

A DIRECTORY LAYOUT - FRONT ELEVATION
SCALE: 1 1/2"=1'-0"



SIGN LOCATIONS:
TL1.IN.01
TL2.IN.01
TL3.IN.01

B ALTERNATE LAYOUT FOR YEAGER ELEVATORS
SCALE: 3/4"=1'-0"



SIGN LOCATIONS:
TL1.IN.24
TL1.IN.31

TL2.IN.05
TL2.IN.06

TL3.IN.07
TL3.IN.08

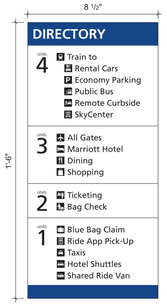
C ALTERNATE LAYOUT FOR BLUE ELEVATORS
SCALE: 3/4"=1'-0"



D CONTEXTUAL ELEVATION
SCALE: 3/4"=1'-0"

1 SIGN TYPE - IN.T.DIR (ELEVATOR DIRECTORY)
SCALE: AS NOTED

SIGN QUANTITY:
3 CABS X 2 LOCATIONS = QUANTITY 6



NOTE:
REMOVE AND DISPOSE OF EXISTING DIRECTORY PANELS - REFERENCE SPECIFICATIONS SECTION 10 1400 1.4.F AND DIVISION 2.

SIGN LOCATION: BLUE SIDE
TL1.IN.21
TL1.IN.22
TL1.IN.23

A DIRECTORY LAYOUT - FRONT ELEVATION
SCALE: 3"=1'-0"



NOTE:
IN-CAB ELEVATOR DIRECTORY PANEL A-7

2ND SURFACE DIGITALLY PRINTED GRAPHICS.

RED COLOR TO MATCH P3

BLUE COLOR TO MATCH P4

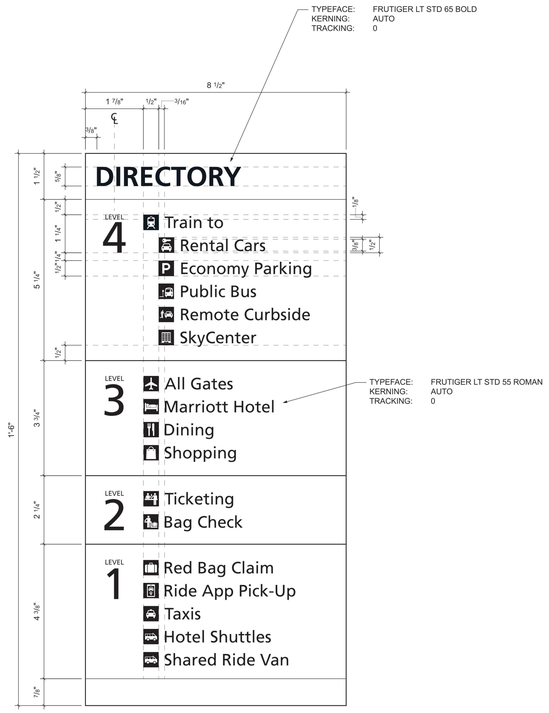
ATTACH PANEL TO ELEVATOR WALL WITH SILICONE AND VHB TAPE. EDGES OF ACRYLIC PANEL TO BE EASED FOR SAFETY.

EXISTING DIRECTORY PANEL TO BE REMOVED PRIOR TO INSTALLATION OF NEW PANEL.

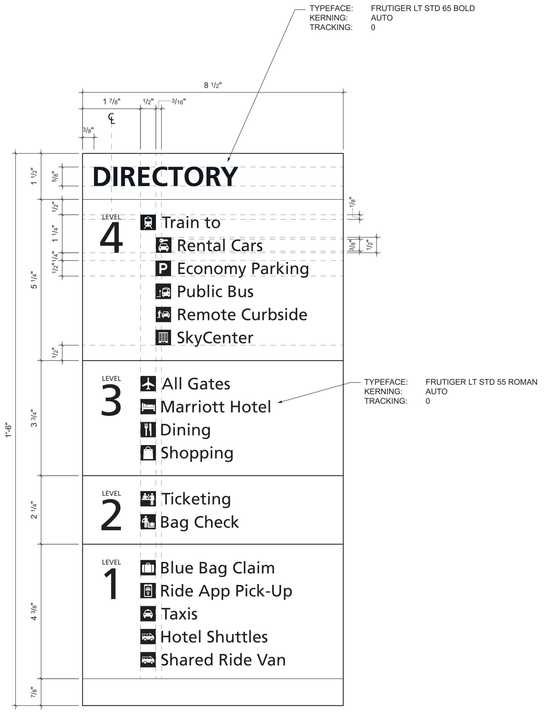
NOTE:
REMOVE AND DISPOSE OF EXISTING DIRECTORY PANELS - REFERENCE SPECIFICATIONS SECTION 10 1400 1.4.F AND DIVISION 2.

SIGN LOCATION: RED SIDE
TL1.IN.16
TL1.IN.17
TL1.IN.18

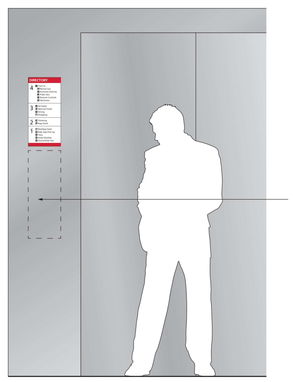
B ALTERNATE LAYOUT FOR RED ELEVATORS
SCALE: 3"=1'-0"



C FACE LAYOUT FOR RED ELEVATORS
SCALE: HALF



D FACE LAYOUT FOR BLUE ELEVATORS
SCALE: HALF



E CONTEXTUAL ELEVATION
SCALE: 3/4"=1'-0"

2 SIGN TYPE - IN.T.DIR1 (ELEVATOR CAB DIRECTORY)
SCALE: AS NOTED

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

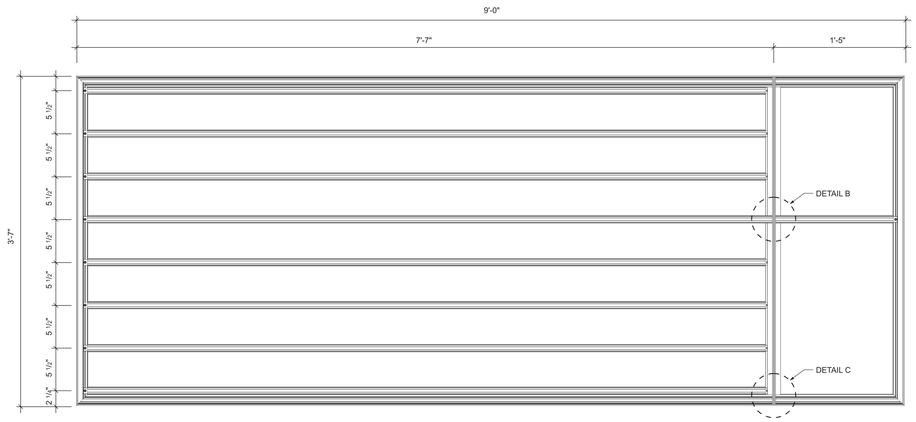
AG8.13

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:37:59 AM

Drawn By: Author
Checked By: Checker
Approved By: Approver

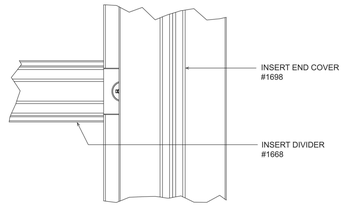


A FACE FRAME FABRICATION DETAILS
SCALE: 1 1/2" = 1'-0"

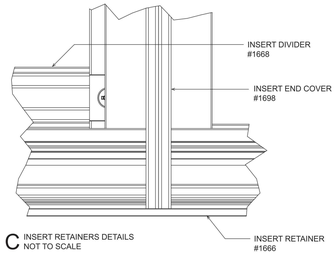
NOTE: LED LAYOUTS SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY. ACTUAL LIGHTING CONFIGURATIONS TO BE DESIGNED BY THE FABRICATOR AND BE CAPABLE OF PROVIDING EVEN ILLUMINATION WITH NO HOT SPOTS OR DARK AREAS.



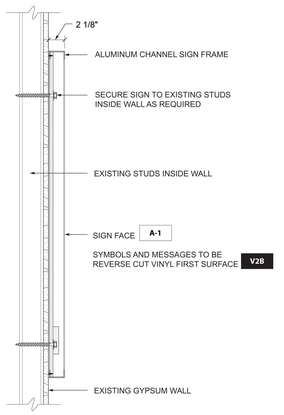
E SIGN CABINET FABRICATION DETAILS
SCALE: 1 1/2" = 1'-0"



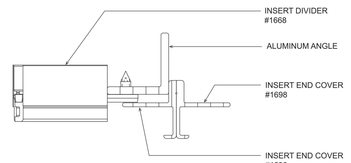
B INSERT RETAINERS DETAILS
NOT TO SCALE



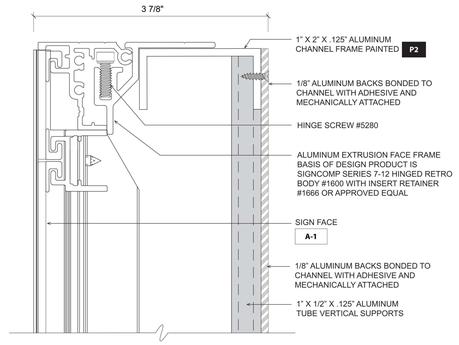
C INSERT RETAINERS DETAILS
NOT TO SCALE



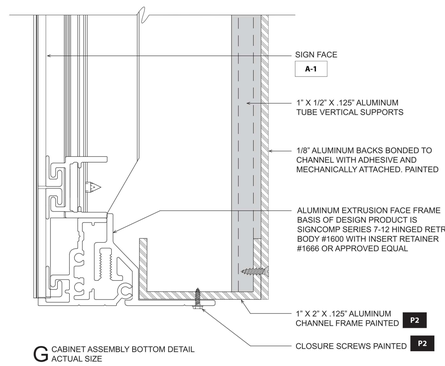
F CABINET SECTION & INSTALL DETAILS
SCALE: 1 1/2" = 1'-0"



B.1 INSERT RETAINERS PLAN DETAIL
NOT TO SCALE

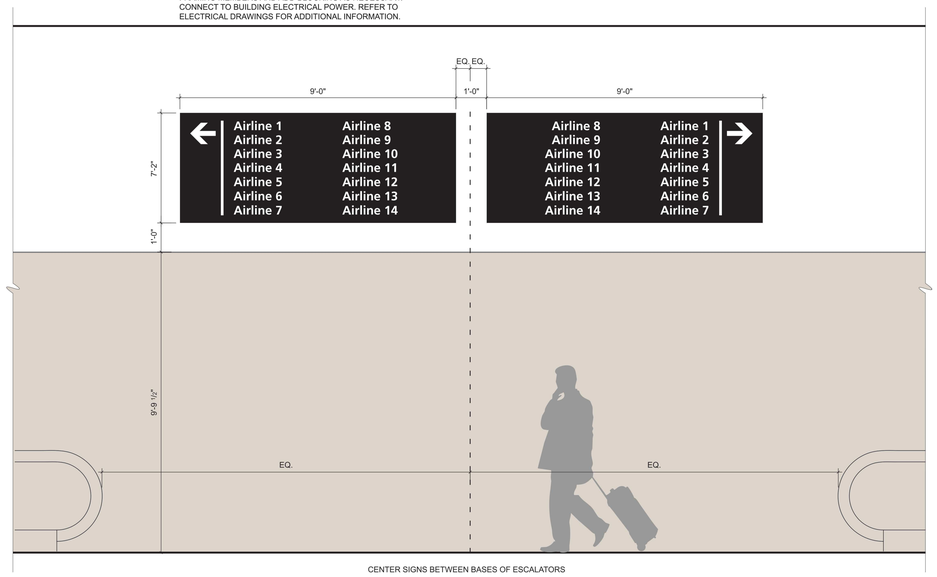


D CABINET ASSEMBLY TOP DETAIL
ACTUAL SIZE



G CABINET ASSEMBLY BOTTOM DETAIL
ACTUAL SIZE

NOTE:
COORDINATE MOUNTING WITH EXISTING WALL STUD FRAMING MEMBERS AND ADD BLOCKING AS NECESSARY. CONNECT TO BUILDING ELECTRICAL POWER. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.



CENTER SIGNS BETWEEN BASES OF ESCALATORS

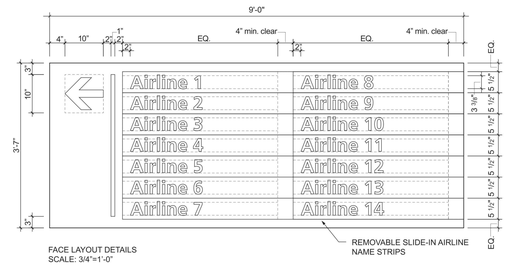
H CONTEXTUAL ELEVATION
SCALE: 1/2"=1'-0"

NOTE:
ALL CHANGABLE SLIDERS SHALL BE OF SAME SIZE AND SHALL NOT HAVE ANY LIGHT LEAKS.

FABRICATOR TO CONFIRM AIRLINE NAMES WITH OWNER PRIOR TO FABRICATION.

ALUMINUM SIGN CABINET AND STRUCTURE AND ACRYLIC SIGN FACE.
A-1
REFER TO DETAIL A-F FOR SIGN BOX AND INSTALLATION DETAILS.

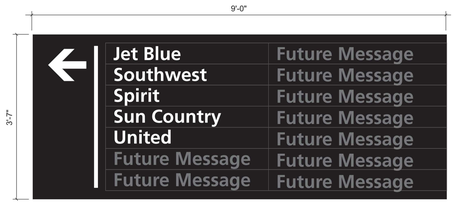
ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE
V2B



FACE LAYOUT DETAILS
SCALE: 3/4"=1'-0"

REMOVABLE SLIDE-IN AIRLINE NAME STRIPS

NOTE:
MESSAGE LAYOUTS CAN BE EITHER LEFT OR RIGHT-JUSTIFIED, AS CONDITIONS WARRANT. FOR THE LEFT JUSTIFIED EXAMPLE SHOWN, THE SAME LAYOUT COULD BE FLIPPED, WITH ARROW ON THE RIGHT, THE DIMENSIONS REMAIN THE SAME BUT MIRRORED.



SIGN LOCATION:
TL2.DR.03

J MESSAGE LAYOUT DETAILS
SCALE: 3/4"=1'-0"



SIGN LOCATION:
TL2.DR.04

1 SIGN TYPE - DR.T.43 (WALL-MOUNTED DIRECTIONAL - AIRLINE LISTINGS TICKET LEVEL)
SCALE: AS NOTED

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

AG8.14

43342.03
10/07/2021

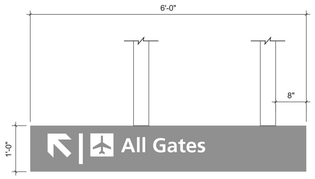
This Line is 3 Inches When Printed Full Size

BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:38:02 AM

Drawn By: Author
Checked By: Checker
Approved By: Approver

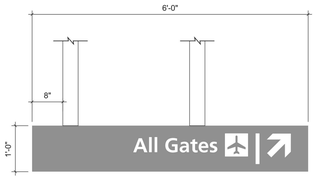
NOTE:
EXISTING SIGN TO BE REINSTALLED ON NEW HORIZONTAL STRUCTURE THAT ALLOWS OFFSET MOUNTING AS SHOWN.
DISCONNECT AND RECONNECT ELECTRICAL SERVICE.

FABRICATOR TO FIELD VERIFY EXISTING CONDITIONS AND MATCH NEW SUPPORTS WITH EXISTING.



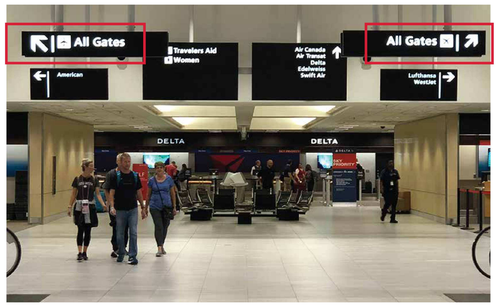
SIGN LOCATIONS:
TL2.DR.13 (SIDE B)
TL2.DR.28 (SIDE B)
TL2.DR.32 (SIDE A)
TL2.DR.43 (SIDE A)

A FRONT ELEVATION
SCALE: 3/4"=1'-0"

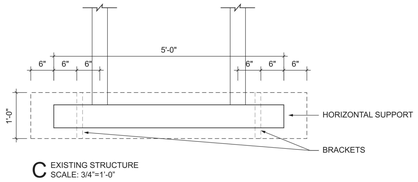


SIGN LOCATIONS:
TL2.DR.13 (SIDE A)
TL2.DR.28 (SIDE A)
TL2.DR.32 (SIDE B)
TL2.DR.43 (SIDE B)

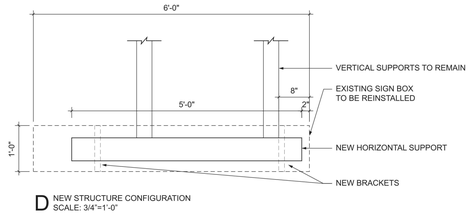
B NEW SIGN - FRONT ELEVATION
SCALE: 3/4"=1'-0"



SIGN LOCATION:
TL2.DR.13 (SIDE B)
TL2.DR.43 (SIDE B)



C EXISTING STRUCTURE
SCALE: 3/4"=1'-0"



D NEW STRUCTURE CONFIGURATION
SCALE: 3/4"=1'-0"

1 SIGN TYPE - DR.T.1 (1-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

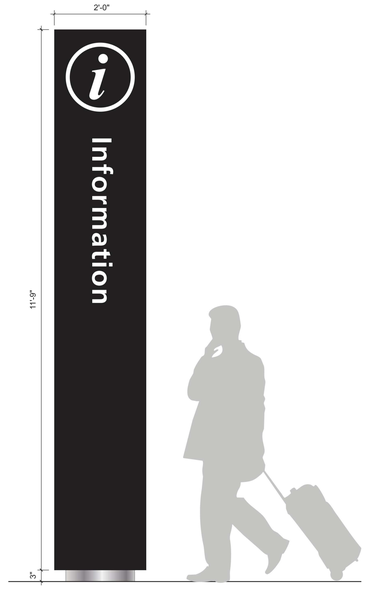
NOTE:
REMOVE AND DISPOSE EXISTING PYLON SIGN - REFERENCE PROJECT MANUAL
FOR ADDITIONAL INFORMATION.



A AXONOMETRIC VIEW
NOT IN SCALE



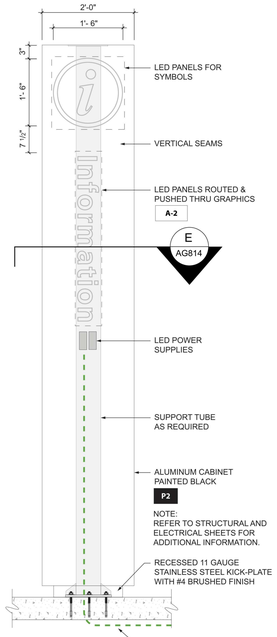
SIGN LOCATION:
TL3.ID.05



C FRONT ELEVATION
SCALE: 3/4"=1'-0"

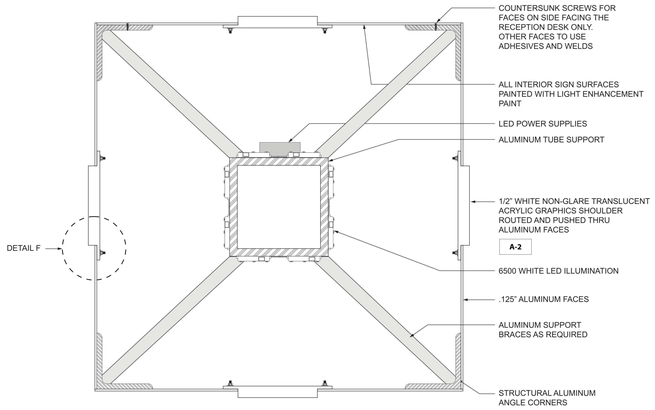


B PLAN VIEW
SCALE: 3/4"=1'-0"

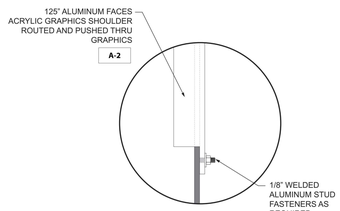


D FRAMING DETAILS
SCALE: 3/4"=1'-0"

NOTE:
LED LAYOUTS SHOWN ARE FOR ILLUSTRATION
PURPOSES ONLY. ACTUAL LIGHTING CONFIGURATIONS
TO BE DESIGNED BY THE FABRICATOR AND BE CAPABLE
OF PROVIDING EVEN ILLUMINATION WITH NO HOT SPOTS
OR DARK AREAS.

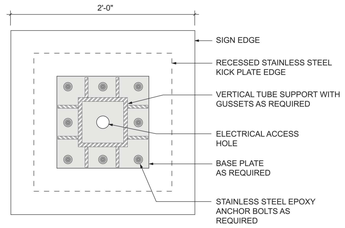


E SECTION DETAILS
SCALE: 3"=1'-0"



F PUSHED THRU LETTER DETAIL
NOT TO SCALE

NOTE:
REFER TO STRUCTURAL AND
ELECTRICAL SHEETS FOR
ADDITIONAL INFORMATION.



G BASE DETAILS
SCALE: 1 1/2"=1'-0"

2 SIGN TYPE - ID.T.P1 (INFORMATION PYLON)
SCALE: AS NOTED

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

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BID SET
NOT FOR
CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

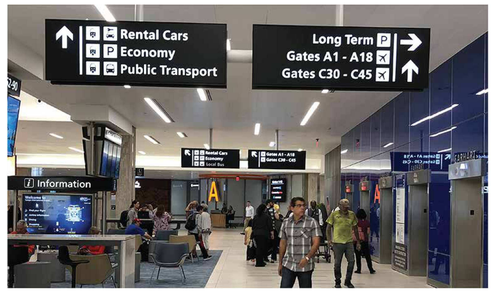
AG8.14.1

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:38:04 AM

Drawn By: Author
Checked By: Checker
Approved By: Approver



SIGN LOCATION:
TL3.DR.02 (SIDE A)

NOTE:
EXISTING SIGN FACES TO BE REPLACED.

NOTE:
THIS IS A PHASE 1 PRIORITY SIGN. REFER TO SPECIFICATION SECTION 01315 EXHIBIT B FOR MORE INFORMATION.

REMOVE AND DISPOSE EXISTING SIGN FACES - REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION. EXISTING SIGN BOXES TO REMAIN.

NEW ACRYLIC FACE A-1

NEW SIGN FACE - ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE.

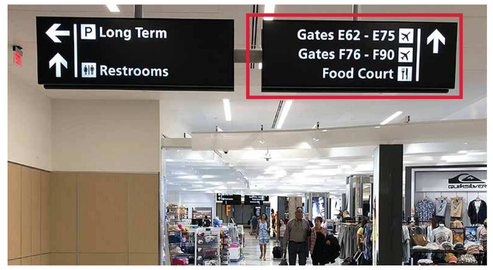
V2B



SIGN LOCATION:
TL3.DR.02 (SIDE A)

A REPLACEMENT SIGN FACES- FRONT ELEVATION
SCALE: 3/4"=1'-0"





SIGN LOCATION:
TL3.DR.02 (SIDE B)

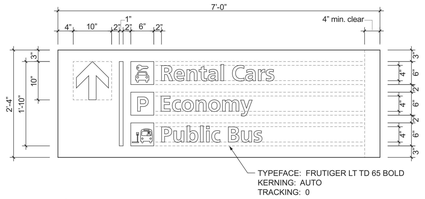
NOTE:
EXISTING SIGN FACES TO BE REPLACED.



SIGN LOCATION:
TL3.DR.02 (SIDE B)

B REPLACEMENT SIGN FACES- FRONT ELEVATION
SCALE: 3/4"=1'-0"

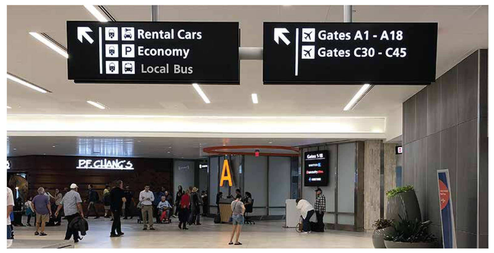




C FACE LAYOUT DETAILS
SCALE: 3/4"=1'-0"

1 SIGN TYPE - DR.T.3 (3-LINE OVERHEAD DIRECTIONAL)

SCALE: AS NOTED



SIGN LOCATION:
TL3.DR.03 (SIDE A)

NOTE:
EXISTING SIGN PANELS TO BE REPLACED.

NOTE:
THIS IS A PHASE 1 PRIORITY SIGN. REFER TO SPECIFICATION SECTION 01315 EXHIBIT B FOR MORE INFORMATION.

REMOVE AND DISPOSE EXISTING SIGN FACES - REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION. EXISTING SIGN BOXES TO REMAIN.

NEW ACRYLIC FACE A-1

NEW SIGN FACE - ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE.

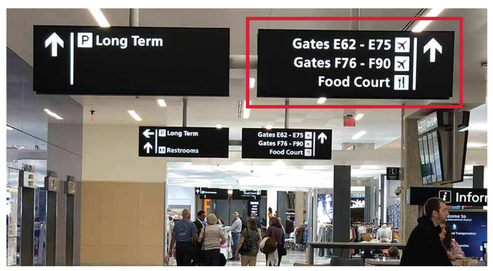
V2B



SIGN LOCATION:
TL3.DR.03 (SIDE A)

A REPLACEMENT SIGN FACES- FRONT ELEVATION
SCALE: 3/4"=1'-0"





SIGN LOCATION:
TL3.DR.03 (SIDE B)

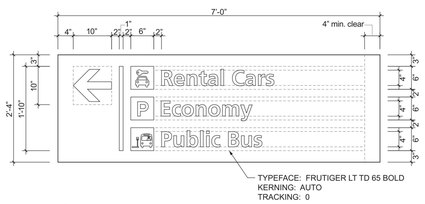
NOTE:
EXISTING SIGN PANELS TO BE REPLACED.



SIGN LOCATION:
TL3.DR.03 (SIDE B)

B REPLACEMENT SIGN FACES- FRONT ELEVATION
SCALE: 3/4"=1'-0"





C FACE LAYOUT DETAILS
SCALE: 3/4"=1'-0"

2 SIGN TYPE - DR.T.3 (3-LINE OVERHEAD DIRECTIONAL)

SCALE: AS NOTED

Gresham Smith

GreshamSmith.com

Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838

Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION

TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

AG8.15

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:38:12 AM

Drawn By: Author
Checked By: Checker
Approved By: Approver



SIGN LOCATION:
TL3.DR.04 (SIDE A)

NOTE:
EXISTING SIGN PANELS TO BE REPLACED.

NOTE:
THIS IS A PHASE 1 PRIORITY SIGN. REFER TO SPECIFICATION SECTION 01315 EXHIBIT B FOR MORE INFORMATION.

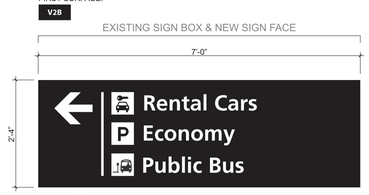
REMOVE AND DISPOSE EXISTING SIGN FACES - REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION. EXISTING SIGN BOXES TO REMAIN.

NEW ACRYLIC FACE **A-1**

ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE.

V2B

EXISTING SIGN BOX & NEW SIGN FACE



EXISTING SIGN BOX & NEW SIGN FACE

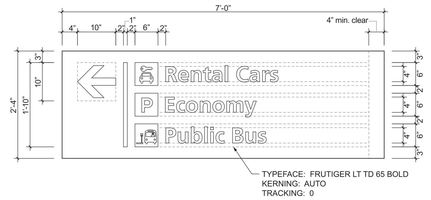


SIGN IN MTCE BLUE SIDE SCOPE.



SIGN LOCATION:
TL3.DR.04 (SIDE A)

A REPLACEMENT SIGN FACE- FRONT ELEVATION
SCALE: 3/4"=1'-0"



B FACE LAYOUT DETAILS
SCALE: 3/4"=1'-0"



SIGN LOCATION:
TL3.DR.04 (SIDE B)

NOTE:
EXISTING SIGN PANELS TO BE REPLACED.

EXISTING SIGN BOX & NEW SIGN FACE



EXISTING SIGN BOX & NEW SIGN FACE

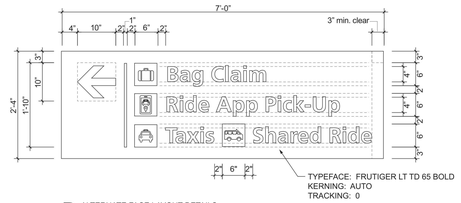


EXISTING SIGN BOX & NEW SIGN FACE



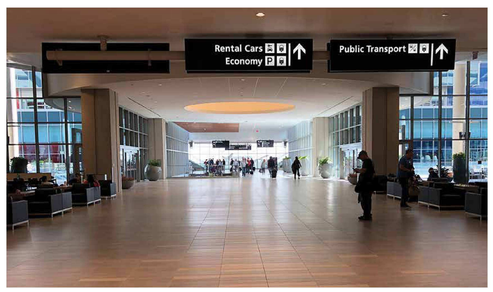
SIGN LOCATION:
TL3.DR.04 (SIDE B)

C REPLACEMENT SIGN FACE- FRONT ELEVATION
SCALE: 3/4"=1'-0"



D ALTERNATE FACE LAYOUT DETAILS
SCALE: 3/4"=1'-0"

1 SIGN TYPE - DR.T.3 (3-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED



SIGN LOCATION:
TL3.DR.05 (SIDE A)

NOTE:
EXISTING STRUCTURE TO BE RETROFIT TO ACCOMMODATE NEW SIGN TYPE.

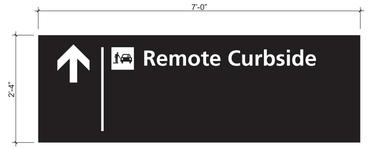
CONTRACTOR SHALL:
1) FIELD VERIFY ALL DIMENSIONS, INCLUDING CEILING CLEARANCES
2) CAREFULLY DETACH (QTY. 6) EXISTING SIGN BOXES
3) INSTALL NEW SIGN BOXES ON EXISTING SIGN STRUCTURE
4) COORDINATE BRACKET LOCATIONS ON EXISTING HORIZONTAL STRUCTURE AND/OR MODIFY MOUNTING HOLE LOCATIONS ON SIGN BOXES
5) PROPERLY DISPOSE OF ANY DEMOLISHED MATERIALS NOT BEING REUSED
6) DISCONNECT AND RECONNECT ALL SIGNS TO ELECTRICAL SUPPLY
7) REFER TO STRUCTURAL AND ELECTRICAL SHEETS AND PROJECT MANUAL FOR ADDITIONAL INFORMATION

NOTE:
THIS IS A PHASE 1 PRIORITY SIGN. REFER TO SPECIFICATION SECTION 01315 EXHIBIT B FOR MORE INFORMATION.

NEW SIGN BOXES ARE TRANSLUCENT WHITE ACRYLIC MECHANICALLY ATTACHED TO SUPPORT FRAME. **A-1**
REFER TO SHEET AG08.0.1 FOR SIGN BOX DETAILS.

NEW SIGN FACE - ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE. **V2B**

INSTALL NEW SIGN BOX ON EXISTING STRUCTURE



INSTALL NEW SIGN BOX ON EXISTING STRUCTURE

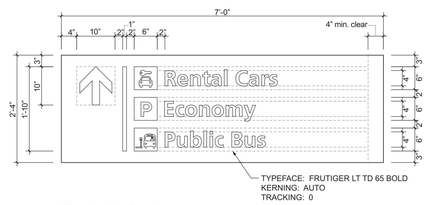


INSTALL NEW SIGN BOX ON EXISTING STRUCTURE



SIGN LOCATION:
TL3.DR.05 (SIDE A)

A NEW SIGN - FRONT ELEVATION
SCALE: 3/4"=1'-0"



B FACE LAYOUT DETAILS
SCALE: 3/4"=1'-0"



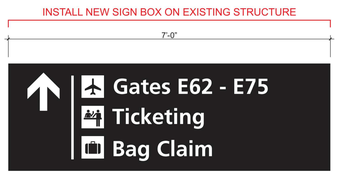
SIGN LOCATION:
TL3.DR.05 (SIDE B)

NOTE:
EXISTING STRUCTURE TO BE RETROFIT TO ACCOMMODATE NEW SIGN TYPE.

INSTALL NEW SIGN BOX ON EXISTING STRUCTURE



INSTALL NEW SIGN BOX ON EXISTING STRUCTURE

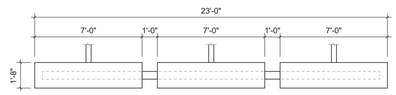


INSTALL NEW SIGN BOX ON EXISTING STRUCTURE

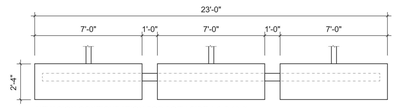


SIGN LOCATION:
TL3.DR.05 (SIDE B)

C NEW SIGN - FRONT ELEVATION
SCALE: 3/4"=1'-0"



EXISTING SIGN CONFIGURATION FOR BOTH SIDE A & B (3-3)



NEW SIGN CONFIGURATION FOR BOTH SIDE A & B (3-3)

D SIGN CONFIGURATION IN ELEVATION (3-3)
SCALE: 3/8"=1'-0"

2 SIGN TYPE - DR.T.3 (3-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:38:19 AM

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

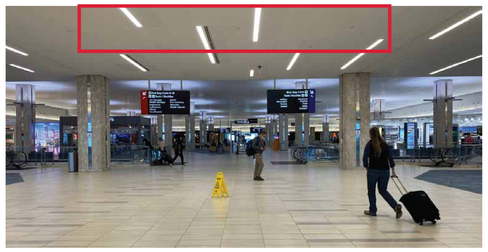
SIGN DETAILS

AG8.16

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

Drawn By: Author
Checked By: Checker
Approved By: Approver



SIGN LOCATION:
TL3.DR.13.1 (SIDE A)

NOTE:
NEW SIGN LOCATION. REQUIRES NEW SIGN STRUCTURE AND SIGNS, POWER AND ELECTRICAL CONNECTION.

NOTE:
NEW SIGN BOXES ARE TRANSLUCENT WHITE ACRYLIC MECHANICALLY ATTACHED TO SUPPORT FRAME. A-1
REFER TO SHEET AG08.0.1 FOR SIGN BOX DETAILS.

NEW SIGN FACE - ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE. V2B

BLUE VINYL V8C

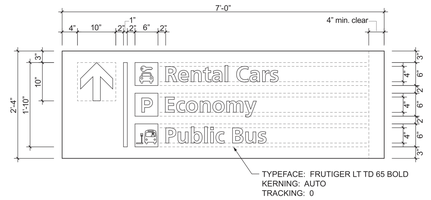
REFER TO STRUCTURAL AND ELECTRICAL SHEETS AND PROJECT MANUAL FOR ADDITIONAL INFORMATION.

CONTRACTOR SHALL EXERCISE CARE WHILE PERFORMING WORK ABOVE CEILING AND WHEN MODIFYYING CEILING TILES TO INSTALL NEW SIGNAGE STRUCTURE. AN ESCUTCHEON PAINTED TO MATCH SHALL BE INSTALLED AT NEW PENETRATIONS IN THE CEILING.

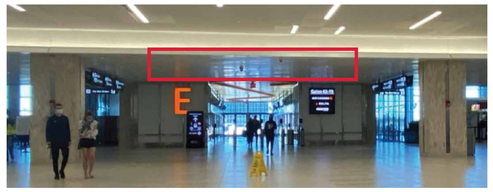


SIGN LOCATION:
TL3.DR.13.1 (SIDE A)

A NEW SIGN FACE- FRONT ELEVATION
SCALE: 3/4"=1'-0"



B FACE LAYOUT DETAILS
SCALE: 3/4"=1'-0"



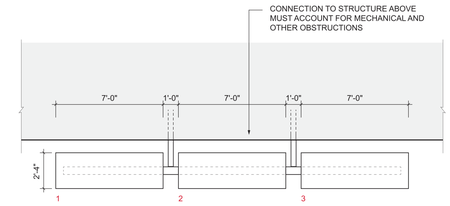
SIGN LOCATION:
TL3.DR.13.1 (SIDE B)

NOTE:
NEW SIGN LOCATION. REQUIRES NEW SIGN STRUCTURE AND SIGNS, POWER AND ELECTRICAL CONNECTION.



SIGN LOCATION:
TL3.DR.13.1 (SIDE B)

C NEW SIGN FACE- FRONT ELEVATION
SCALE: 3/4"=1'-0"



NEW SIGN CONFIGURATION FOR BOTH SIDES A & B (3-3)

D SIGN CONFIGURATION IN ELEVATION (3-3)
SCALE: 3/8"=1'-0"

1 SIGN TYPE - DR.T.3 (3-LINE OVERHEAD DIRECTIONAL)

SCALE: AS NOTED

SIGNS NOT IN PROJECT SCOPE (SHOWN FOR REFERENCE ONLY)



SIGN LOCATION:
TL3.DR.14 (SIDE A)

NOTE:
EXISTING STRUCTURE TO BE RETROFIT TO ACCOMMODATE NEW SIGN TYPE.



SIGN LOCATION:
TL3.DR.14 (SIDE A)

A NEW SIGN - FRONT ELEVATION
SCALE: 3/4"=1'-0"



SIGN LOCATION:
TL3.DR.14 (SIDE B)

NOTE:
EXISTING STRUCTURE TO BE RETROFIT TO ACCOMMODATE NEW SIGN TYPE.



SIGN LOCATION:
TL3.DR.14 (SIDE B)

B NEW SIGN - FRONT ELEVATION
SCALE: 3/4"=1'-0"

2 SIGN TYPE - DR.T.3 (3-LINE OVERHEAD DIRECTIONAL)

SCALE: AS NOTED

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
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AA0013420 /
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Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION

TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

AG8.16.1

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:38:26 AM

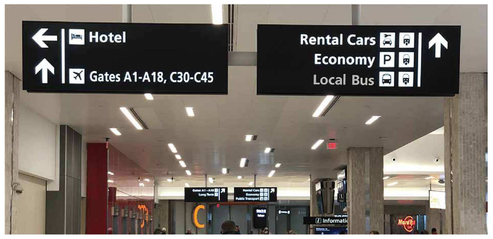
Drawn By: Author
Checked By: Checker
Approved By: Approver

CONTRACTOR SHALL:
1) FIELD VERIFY ALL DIMENSIONS, INCLUDING CEILING CLEARANCES
2) CAREFULLY DETACH (QTY. 4) EXISTING SIGN BOXES TO BE REUSED FROM SIGN STRUCTURE
3) REMOVE HORIZONTAL SIGN STRUCTURE (VERTICAL SUPPORTS TO REMAIN)
4) REPLACE SIGN FACES ON EXISTING BOXES AS INDICATED
5) INSTALL NEW HORIZONTAL SIGN STRUCTURE - COORDINATE CONNECTION POINTS WITH EXISTING VERTICAL SUPPORTS
6) INSTALL NEW AND REINSTALL REUSED SIGN BOXES ON NEW HORIZONTAL SIGN STRUCTURE
7) COORDINATE BRACKET LOCATIONS ON NEW HORIZONTAL STRUCTURE WITH MOUNTING HOLES ON EXISTING SIGN BOXES AND/OR MODIFY MOUNTING HOLE LOCATIONS ON SIGN BOXES
8) PROPERLY DISPOSE OF ANY DEMOLISHED MATERIALS NOT BEING REUSED
8) DISCONNECT AND RECONNECT ALL SIGNS TO ELECTRICAL SUPPLY
9) REFER TO STRUCTURAL AND ELECTRICAL SHEETS AND PROJECT MANUAL FOR ADDITIONAL INFORMATION

NOTE:
THIS IS A PHASE 1 PRIORITY SIGN. REFER TO SPECIFICATION SECTION 01315 EXHIBIT B FOR MORE INFORMATION.

NEW SIGN BOXES ARE TRANSLUCENT WHITE ACRYLIC MECHANICALLY ATTACHED TO SUPPORT FRAME. **A-1**
REFER TO SHEET AG08.0.1 FOR SIGN BOX DETAILS.

NEW SIGN FACE - ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE. **V2B**



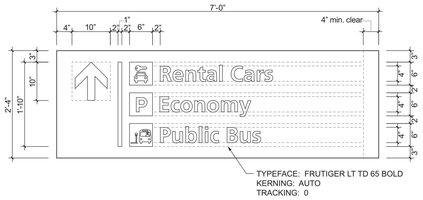
SIGN LOCATION:
TL3.DR.11 (SIDE A)

NOTE:
EXISTING SIGN FACES TO BE REPLACED IN THIS PROJECT.
EXISTING STRUCTURE TO BE MODIFIED TO ACCOMMODATE ADDITIONAL SIGN PANELS IN MTCE BLUE SIDE SCOPE OF WORK.

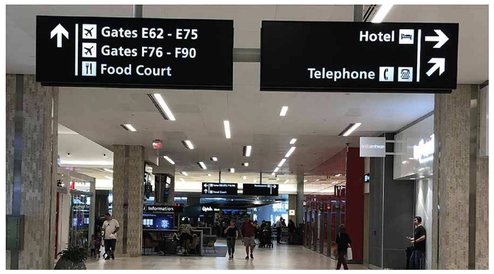


SIGN LOCATION:
TL3.DR.11 (SIDE A)

A REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"



B FACE LAYOUT DETAILS
SCALE: 3/4"=1'-0"



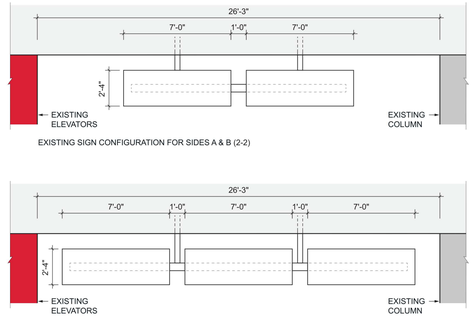
SIGN LOCATION:
TL3.DR.11 (SIDE B)

NOTE:
EXISTING SIGN FACES TO BE REPLACED IN THIS PROJECT.
EXISTING STRUCTURE TO BE MODIFIED TO ACCOMMODATE ADDITIONAL SIGN PANELS IN MTCE BLUE SIDE SCOPE OF WORK.



SIGN LOCATION:
TL3.DR.11 (SIDE B)

C REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"



EXISTING SIGN CONFIGURATION FOR SIDES A & B (2-2)

NEW SIGN CONFIGURATION FOR SIDES A & B (3-3)

D SIGN CONFIGURATION IN ELEVATION (3-3)
SCALE: 3/8"=1'-0"

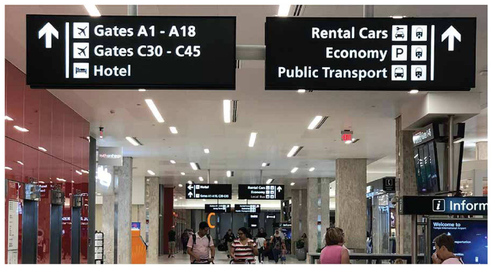
1 SIGN TYPE - DR.T.3 (3-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

NOTE:
THIS IS A PHASE 1 PRIORITY SIGN. REFER TO SPECIFICATION SECTION 01315 EXHIBIT B FOR MORE INFORMATION.

REMOVE AND DISPOSE EXISTING SIGN FACES -
REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION.
EXISTING SIGN BOXES TO REMAIN.

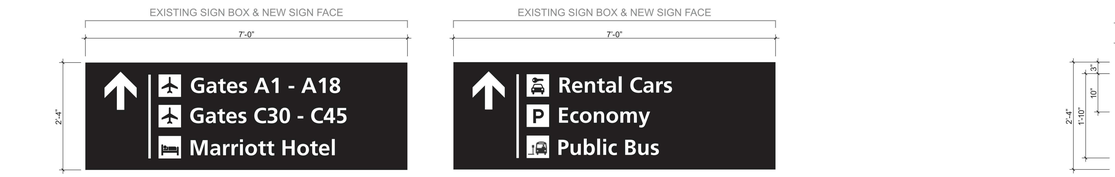
NEW SIGN FACE **A-1**

ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE
V2B



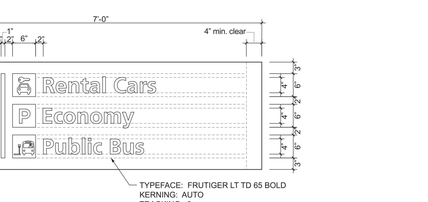
SIGN LOCATION:
TL3.DR.12 (SIDE A)

NOTE:
EXISTING SIGN FACES TO BE REPLACED.



SIGN LOCATION:
TL3.DR.12 (SIDE A)

A REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"

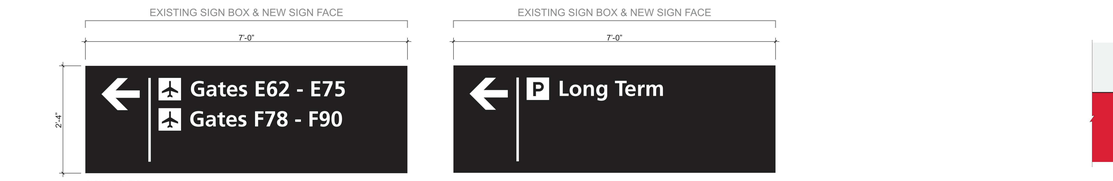


B FACE LAYOUT DETAILS
SCALE: 3/4"=1'-0"



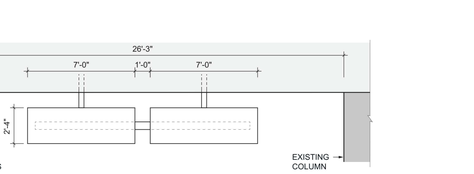
SIGN LOCATION:
TL3.DR.12 (SIDE B)

NOTE:
EXISTING SIGN FACES TO BE REPLACED.



SIGN LOCATION:
TL3.DR.12 (SIDE B)

C REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"



EXISTING SIGN CONFIGURATION FOR SIDES A & B (2-2)

D SIGN CONFIGURATION IN ELEVATION (2-2)
SCALE: 3/8"=1'-0"

2 SIGN TYPE - DR.T.3 (3-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
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BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

AG8.17

43342.03
10/07/2021

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BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt

Drawn By: Author
Checked By: Checker
Approved By: Approver



SIGN LOCATION:
TL3.DR.06 (SIDE A)

NOTE:
EXISTING SIGN FACES TO BE REPLACED.

NOTE:
THIS IS A PHASE 1 PRIORITY SIGN. REFER TO SPECIFICATION SECTION 01315 EXHIBIT B FOR MORE INFORMATION.

REMOVE AND DISPOSE EXISTING SIGN FACES - REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION. EXISTING SIGN BOXES TO REMAIN.

NEW ACRYLIC FACE A-1

ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE

V2B

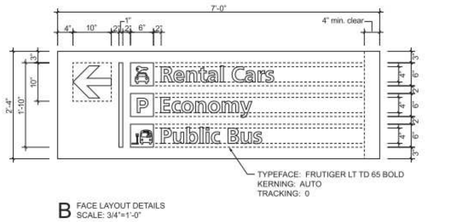


SIGN LOCATION:
TL3.DR.06 (SIDE A)

A REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"







B FACE LAYOUT DETAILS
SCALE: 3/4"=1'-0"



SIGN LOCATION:
TL3.DR.06 (SIDE B)

NOTE:
EXISTING SIGN FACES TO BE REPLACED.

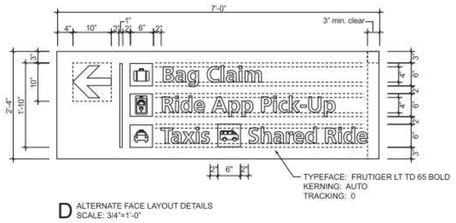


SIGN LOCATION:
TL3.DR.06 (SIDE B)

C REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"







D ALTERNATE FACE LAYOUT DETAILS
SCALE: 3/4"=1'-0"

1 SIGN TYPE - DR.T.3 (3-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED



SIGN LOCATION:
TL3.DR.10 (SIDE A)

NOTE:
EXISTING SIGN FACES TO BE REPLACED.

NOTE:
THIS IS A PHASE 1 PRIORITY SIGN. REFER TO SPECIFICATION SECTION 01315 EXHIBIT B FOR MORE INFORMATION.

REMOVE AND DISPOSE EXISTING SIGN FACES - REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION. EXISTING SIGN BOXES TO REMAIN.

NEW ACRYLIC FACE A-1

ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE

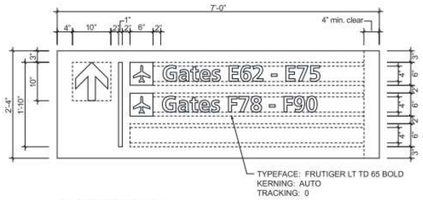
V2B



SIGN LOCATION:
TL3.DR.10 (SIDE A)

A REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"





B FACE LAYOUT DETAILS
SCALE: 3/4"=1'-0"



SIGN LOCATION:
TL3.DR.10 (SIDE B)

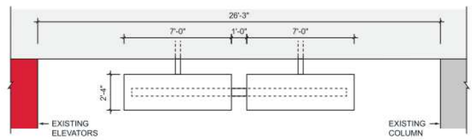
NOTE:
EXISTING SIGN FACES TO BE REPLACED.



SIGN LOCATION:
TL3.DR.10 (SIDE B)

C REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 3/4"=1'-0"





EXISTING SIGN CONFIGURATION FOR SIDES A & B (2-2)

D SIGN CONFIGURATION IN ELEVATION (2-2)
SCALE: 3/8"=1'-0"

2 SIGN TYPE - DR.T.3 (3-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

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BENJAMIN RAPOSA
AR 98754

Revision

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43342.03
10/07/2021

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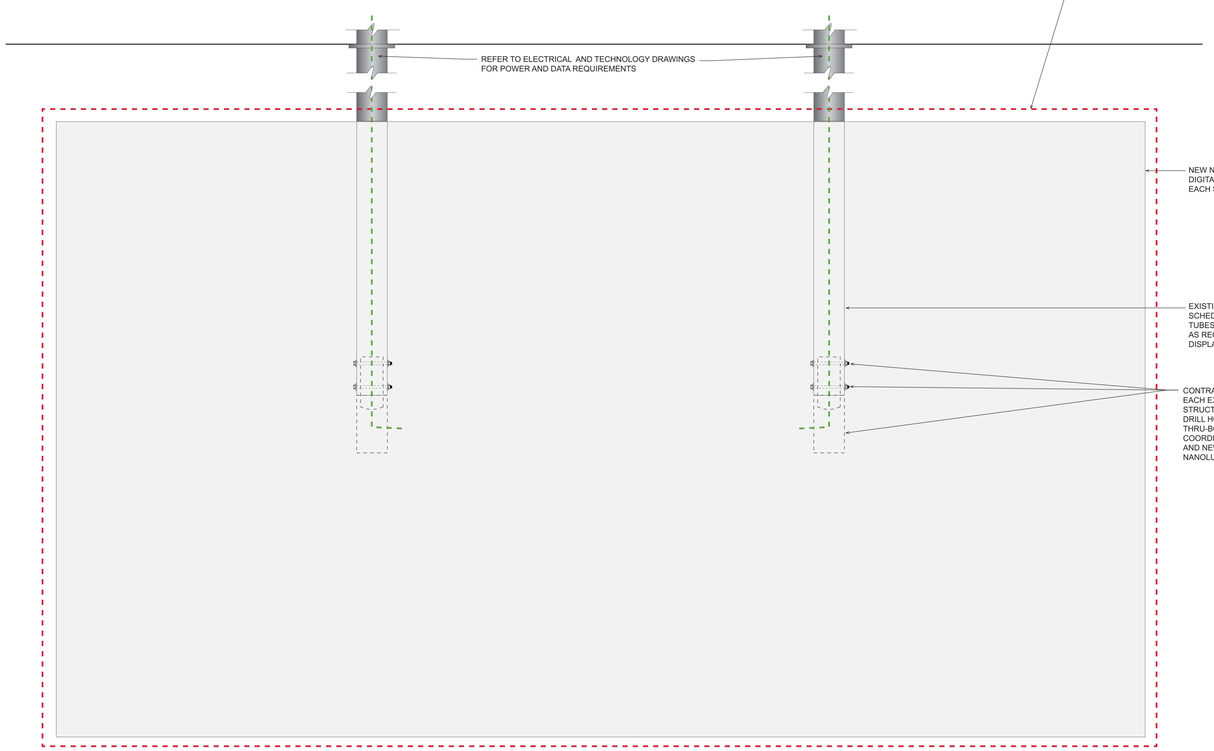
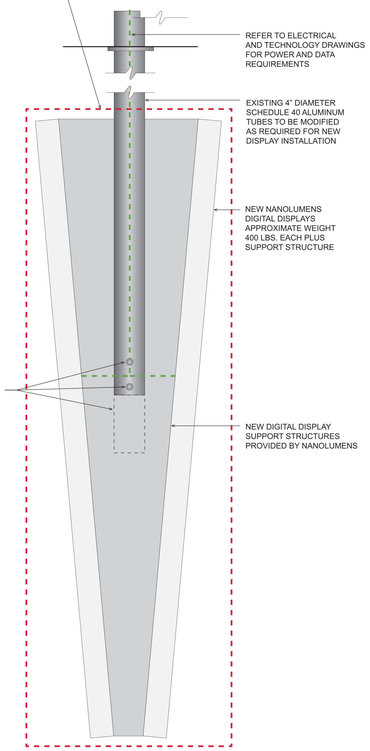
Drawn By: Author
Checked By: Checker
Approved By: Approver



A NEW DYNAMIC SIGN - FRONT ELEVATION
SCALE: 1 1/2"=1'-0"



B NEW DYNAMIC SIGN - SIDE ELEVATION
SCALE: 1 1/2"=1'-0"

NOTE:
DIGITAL DISPLAY INSTALLATION SHALL BE COORDINATED WITH OWNER FURNISHED EQUIPMENT (OFE) INTEGRATOR AVI-SPL UNDER SEPARATE CONTRACT.

CONTRACTOR SHALL SHUT DOWN THE OPERATION OF AND TAKE THE NECESSARY PROCAUTIONS TO FULLY PROTECT ALL ESCALATORS FROM CONSTRUCTION DEBRIS EACH NIGHT DURING THE SIGN REMOVAL AND INSTALLATION PROCESS.

CONTRACTOR SHALL PROVIDE A PROTECTIVE BARRICADE DURING REMOVAL AND INSTALLATION AT BOTH THE TOP AND BOTTOM OF THE ESCALATORS ALONG WITH SUPPLEMENTAL DETOUR WAYFINDING TO GUIDE TRAVELERS TO THE NEXT SET OF ESCALATORS ON THE TRANSFER AND BAG CLAIM LEVELS. SEE EXAMPLE FIGURES 1 AND 2.

CONTRACTOR SHALL REMOVE PROTECTION AND RETURN ESCALATORS TO SERVICE EACH DAY.

CONTRACTOR SHALL PROVIDE FULL SIZE TEMPORARY SIGNAGE THAT IS A FLAT, STABLE, RIGID LIGHT WEIGHT MATERIAL. TEMPORARY SIGN SHALL BE IN PLACE PRIOR TO REMOVAL OF EXISTING SIGN AND SHALL REMAIN IN PLACE UNTIL THE NEW LED SIGN IS FULLY OPERATIONAL.

SIGNS SHOWN ARE PHASED AS DEFINED BY 'PHASE 2A' ON SPECIFICATION SECTION 01315 EXHIBIT B - CONSTRUCTION PHASE BAR CHART

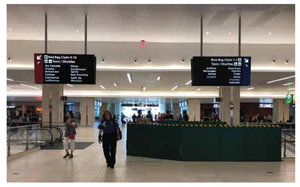


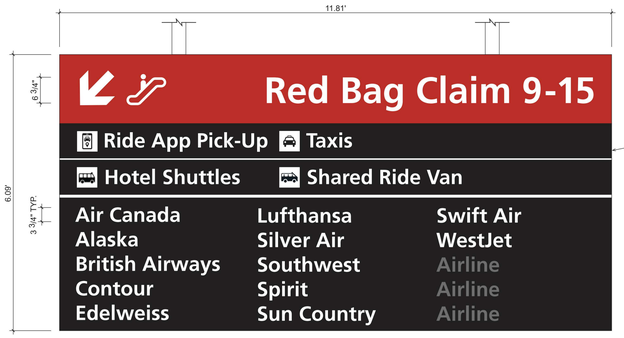
FIGURE 1



FIGURE 2

TPA Wayfinding Implementation - 'Bag Claim' dynamic displays on Transfer Level		
Scope Item	Responsible Party	Additional Notes
Manufacture of display	Nanolumens	
Design & Fabrication of display support structure and enclosure, to be connected to existing vertical tube supports	Nanolumens	AVI-SPL has taken field measurements for Nanolumens to use in support structure/enclosure design; structure will be signed/sealed by Florida registered P.E.
Escalator shut down & protection	Bidding Contractor	To be coordinated with AVI-SPL
Demolish existing static sign	Bidding Contractor	To be coordinated with AVI-SPL
Cut existing vertical structural support tubes and drill bolt holes	Bidding Contractor	Dimensions and locations specified by Nanolumens
Temporary signage	Bidding Contractor	To be coordinated with AVI-SPL
New dynamic display installation	AVI-SPL	To be coordinated with Bidding Contractor; anticipate 2-week rolling clock to coincide with static sign panel replacement lower down same escalator cores
New digital data switch installation in Level 4 IDF rooms	AVI-SPL	To be coordinated with Bidding Contractor
CAT-6 Data connections from data switch in Level 4 IDF rooms located in all four elevator cores to new dynamic displays	Bidding Contractor	To be coordinated with AVI-SPL
Electrical connection of dynamic displays to building power	Bidding Contractor	To be coordinated with AVI-SPL
Development of dynamic content	Gresham Smith	To be coordinated with HCAA

NEW DYNAMIC SIGN SCOPE MATRIX



NANOLUMENS NIXEL SERIES DIGITAL DISPLAY WITH P1.56 RIG PIXEL PITCH. DISPLAY SIZE: 6.09' (H) X 11.81' (W).

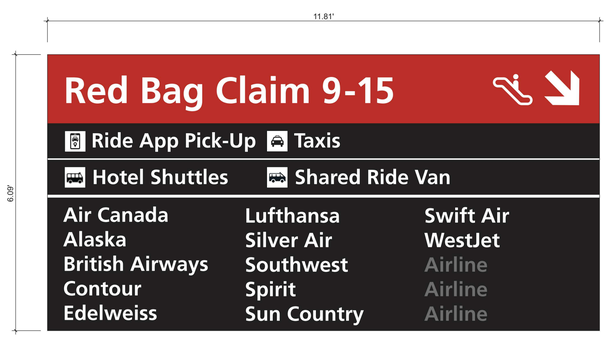
COST SHALL INCLUDE CONDUIT FOR POWER AND DATA TO NEAREST IDF ROOM.

GRAPHICS SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY. AIRLINE NAMES TO BE CONFIRMED.

SIGN LOCATION:
TL3-DR.07 (SIDE A)
TL3-DR.15 (SIDE A)

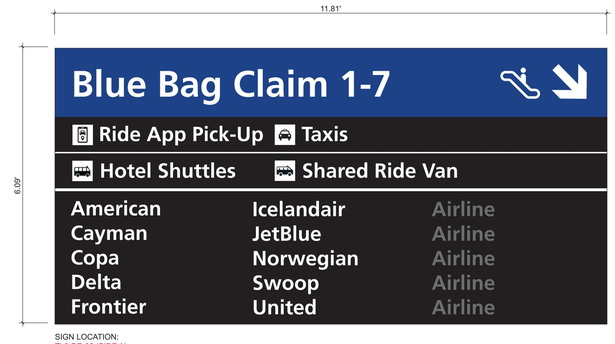
NOTE:
REMOVE AND DISPOSE EXISTING SIGNS. STRUCTURE TO REMAIN.
NEW DISPLAYS TO BE PROVIDED AND INSTALLED UNDER SEPARATE CONTRACT.

C NEW DYNAMIC SIGN - FRONT ELEVATION
SCALE: 3/4"=1'-0"



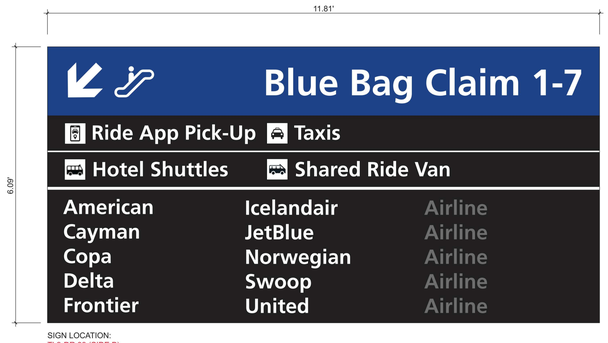
SIGN LOCATION:
TL3-DR.07 (SIDE B)
TL3-DR.15 (SIDE B)

D NEW DYNAMIC SIGN - ALTERNATE LAYOUT
SCALE: 3/4"=1'-0"



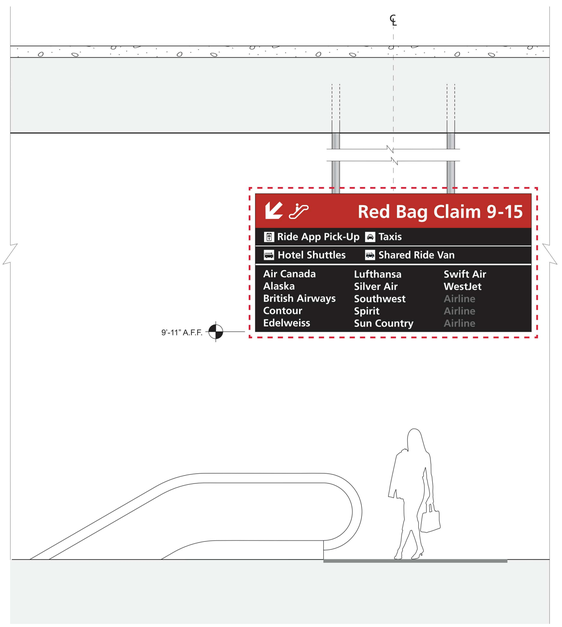
SIGN LOCATION:
TL3-DR.08 (SIDE A)
TL3-DR.16 (SIDE A)

E NEW DYNAMIC SIGN - ALTERNATE LAYOUT
SCALE: 3/4"=1'-0"



SIGN LOCATION:
TL3-DR.08 (SIDE B)
TL3-DR.16 (SIDE B)

F NEW DYNAMIC SIGN - ALTERNATE LAYOUT
SCALE: 3/4"=1'-0"



G CONTEXTUAL ELEVATION
SCALE: 3/8"=1'-0"

1 SIGN TYPE - DY.T.2 (DIGITAL DISPLAY - NANOLUMENS)
SCALE: AS NOTED

Gresham Smith
GreshamSmith.com
Two Harbour Place
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BENJAMIN RAPOSA
AR 98754

Revision

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Drawn By: Author
Checked By: Checker
Approved By: Approver

CONTRACTOR SHALL:
1) FIELD VERIFY ALL DIMENSIONS, INCLUDING CEILING CLEARANCES
2) CAREFULLY DETACH (QTY. 6) EXISTING SIGN BOXES
3) INSTALL NEW SIGN BOXES ON EXISTING SIGN STRUCTURE
4) COORDINATE BRACKET LOCATIONS ON EXISTING HORIZONTAL STRUCTURE AND/OR MODIFY MOUNTING HOLE LOCATIONS ON SIGN BOXES
5) PROPERLY DISPOSE OF ANY DEMOLISHED MATERIALS NOT BEING REUSED
6) DISCONNECT AND RECONNECT ALL SIGNS TO ELECTRICAL SUPPLY
7) REFER TO STRUCTURAL AND ELECTRICAL SHEETS AND PROJECT MANUAL FOR ADDITIONAL INFORMATION

NOTE:
THIS IS A PHASE 1 PRIORITY SIGN. REFER TO SPECIFICATION SECTION 01315 EXHIBIT B FOR MORE INFORMATION.

NEW SIGN BOXES ARE TRANSLUCENT WHITE ACRYLIC MECHANICALLY ATTACHED TO SUPPORT FRAME. **A-1**
REFER TO SHEET AG08.0.1 FOR SIGN BOX DETAILS.

NEW SIGN FACE - ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE: **V2B**



SIGN LOCATION:
TL3.DR.13 (SIDE A)

NOTE:
EXISTING STRUCTURE TO BE RETROFIT TO ACCOMMODATE NEW SIGN TYPE.

INSTALL NEW SIGN BOX ON EXISTING STRUCTURE



SIGN LOCATION:
TL3.DR.13 (SIDE A)

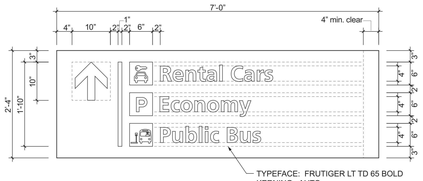
A NEW SIGN - FRONT ELEVATION
SCALE: 3/4"=1'-0"

INSTALL NEW SIGN BOX ON EXISTING STRUCTURE



INSTALL NEW SIGN BOX ON EXISTING STRUCTURE





C FACE LAYOUT DETAILS
SCALE: 3/4"=1'-0"



SIGN LOCATION:
TL3.DR.13 (SIDE B)

NOTE:
EXISTING STRUCTURE TO BE RETROFIT TO ACCOMMODATE NEW SIGN TYPE.

INSTALL NEW SIGN BOX ON EXISTING STRUCTURE



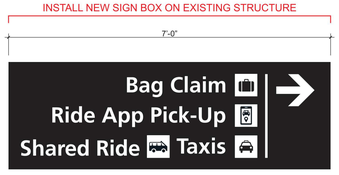
SIGN LOCATION:
TL3.DR.13 (SIDE B)

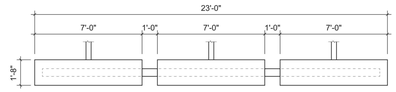
B NEW SIGN - FRONT ELEVATION
SCALE: 3/4"=1'-0"

INSTALL NEW SIGN BOX ON EXISTING STRUCTURE

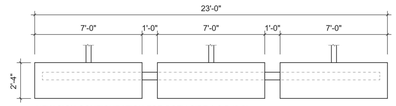


INSTALL NEW SIGN BOX ON EXISTING STRUCTURE





EXISTING SIGN CONFIGURATION FOR BOTH SIDE A & B (3-3)



NEW SIGN CONFIGURATION FOR BOTH SIDE A & B (3-3)

D SIGN CONFIGURATION IN ELEVATION (3-3)
SCALE: 3/8"=1'-0"

1 SIGN TYPE - DR.T.3 (3-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

NOTE:
REMOVE AND DISPOSE EXISTING SIGN FACES -
REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION.
EXISTING SIGN BOXES TO REMAIN.

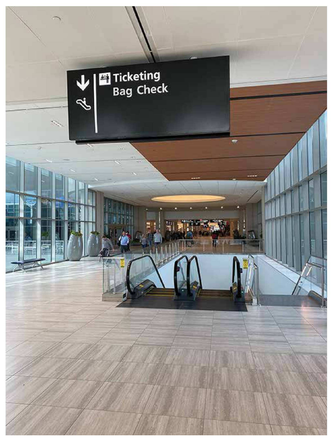
NEW ACRYLIC FACE **A-1**

ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL
FIRST SURFACE
V2B

EXISTING SIGN BOX & NEW SIGN FACE

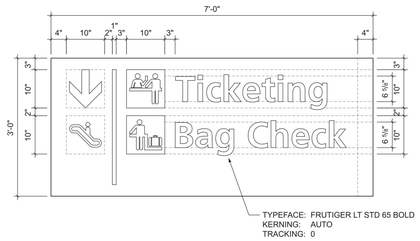


A REPLACEMENT SIGN - FRONT ELEVATION
SCALE: 3/4"=1'-0"



SIGN LOCATION:
TL3.DR.09

NOTE:
SIGN FACE TO BE REPLACED.



B FACE LAYOUT DETAILS
SCALE: 3/4"=1'-0"

2 SIGN TYPE - DR.T.4 (4-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

BLANK

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10/7/2021 11:38:48 AM

Drawn By: Author
Checked By: Checker
Approved By: Approver



SIGN LOCATION:
TL3.DR.18 (SIDE A)

NOTE:
EXISTING SIGN FACES TO BE REPLACED IN THIS PROJECT.
EXISTING STRUCTURE TO BE MODIFIED TO ACCOMMODATE ADDITIONAL SIGN PANELS IN MTCE BLUE SIDE SCOPE OF WORK.

NOTE:
THIS IS A PHASE 1 PRIORITY SIGN. REFER TO SPECIFICATION SECTION 01315 EXHIBIT B FOR MORE INFORMATION.

REMOVE AND DISPOSE EXISTING SIGN FACES -
REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION.
EXISTING SIGN BOXES TO REMAIN.

NEW ACRYLIC FACE **A-1**

ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL
FIRST SURFACE

V2B

EXISTING SIGN BOX & NEW SIGN FACE



SIGN LOCATION:
TL3.DR.18 (SIDE A)

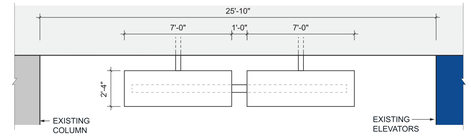
A REPLACEMENT SIGN FACES FRONT ELEVATION
SCALE: 3/4"=1'-0"

EXISTING SIGN BOX & NEW SIGN FACE

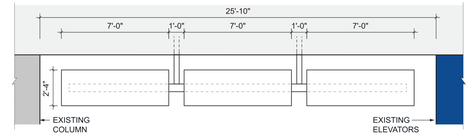


SIGN IN MTCE BLUE SIDE SCOPE.





EXISTING SIGN CONFIGURATION FOR SIDE A (2-2)



NEW SIGN CONFIGURATION FOR SIDE A



SIGN LOCATION:
TL3.DR.18 (SIDE B)

NOTE:
EXISTING SIGN FACES TO BE REPLACED IN THIS PROJECT.
EXISTING STRUCTURE TO BE MODIFIED TO ACCOMMODATE ADDITIONAL SIGN PANELS IN MTCE BLUE SIDE SCOPE OF WORK.

EXISTING SIGN BOX & NEW SIGN FACE

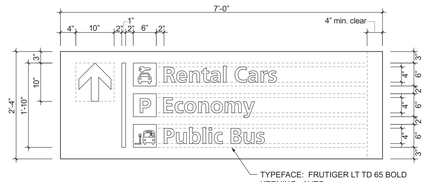


SIGN LOCATION:
TL3.DR.18 (SIDE B)

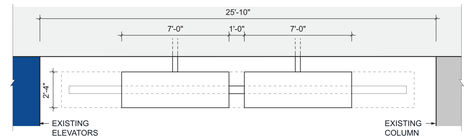
B REPLACEMENT SIGN FACES FRONT ELEVATION
SCALE: 3/4"=1'-0"

EXISTING SIGN BOX & NEW SIGN FACE





C FACE LAYOUT DETAILS
SCALE: 3/4"=1'-0"



NEW SIGN CONFIGURATION FOR SIDE B

D SIGN CONFIGURATION IN ELEVATION (3-2)
SCALE: 3/8"=1'-0"

1 SIGN TYPE - DR.T.3 (3-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

BLANK

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

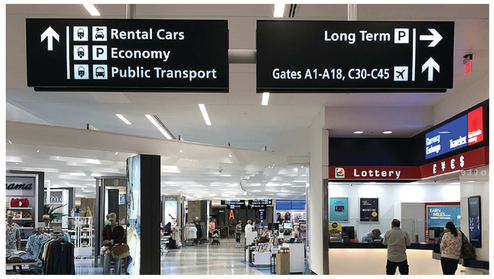
AG8.19

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

10/7/2021 11:38:53 AM BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt

Drawn By: Author
Checked By: Checker
Approved By: Approver



SIGN LOCATION:
TL3.DR.19 (SIDE A)

NOTE:
EXISTING SIGN FACES TO BE REPLACED IN THIS PROJECT.
EXISTING STRUCTURE TO BE MODIFIED TO ACCOMMODATE ADDITIONAL SIGN PANELS IN MICE BLUE SIDE SCOPE OF WORK.

NOTE:
THIS IS A PHASE 1 PRIORITY SIGN. REFER TO SPECIFICATION SECTION 01315 EXHIBIT B FOR MORE INFORMATION.

REMOVE AND DISPOSE EXISTING SIGN FACES - REFERENCE PROJECT MANUAL FOR ADDITIONAL INFORMATION. EXISTING SIGN BOXES TO REMAIN.

NEW ACRYLIC FACE A-1

ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE

V2B

EXISTING SIGN BOX & NEW SIGN FACE



SIGN LOCATION:
TL3.DR.19 (SIDE A)

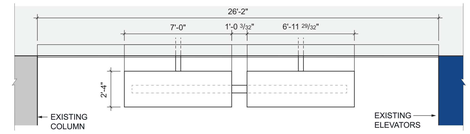
A REPLACEMENT SIGN FACES- FRONT ELEVATION
SCALE: 3/4"=1'-0"

EXISTING SIGN BOX & NEW SIGN FACE

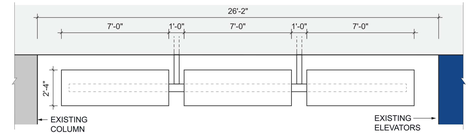


SIGN IN MTCE BLUE SIDE SCOPE.





EXISTING SIGN CONFIGURATION FOR SIDE A (2-2)



NEW SIGN CONFIGURATION FOR SIDE A



SIGN LOCATION:
TL3.DR.19 (SIDE B)

NOTE:
EXISTING SIGN FACES TO BE REPLACED IN THIS PROJECT.
EXISTING STRUCTURE TO BE MODIFIED TO ACCOMMODATE ADDITIONAL SIGN PANELS IN MTCE BLUE SIDE SCOPE OF WORK.

EXISTING SIGN BOX & NEW SIGN FACE

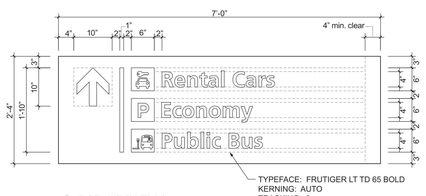


SIGN LOCATION:
TL3.DR.19 (SIDE B)

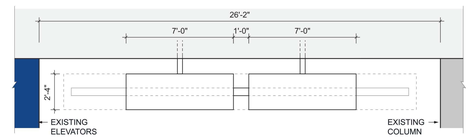
B REPLACEMENT SIGN FACES- FRONT ELEVATION
SCALE: 3/4"=1'-0"

EXISTING SIGN BOX & NEW SIGN FACE





C FACE LAYOUT DETAILS
SCALE: 3/4"=1'-0"



NEW SIGN CONFIGURATION FOR SIDE B

D SIGN CONFIGURATION IN ELEVATION (3-2)
SCALE: 3/8"=1'-0"

1 SIGN TYPE - DR.T.3 (3-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

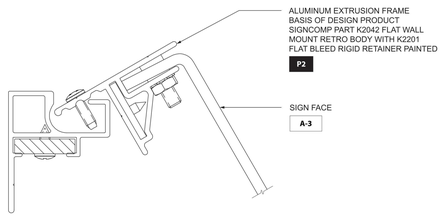
NOTE:
FABRICATOR TO FIELD VERIFY EACH LOCATION PRIOR TO FABRICATION. EACH SIGN SHALL COMPLETELY FILL AVAILABLE WALL SURFACE.



SUGGESTED HEAT WELDED SEAM LINE IF NEEDED. FACE TO BE FABRICATED TO ENSURE NO LIGHT LEAKS.

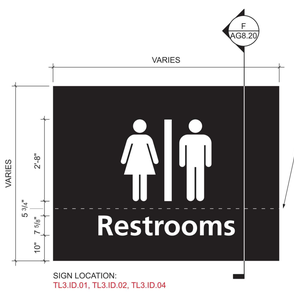
SIGN LOCATION:
TL3.ID.03

A NEW SIGN FACE- FRONT ELEVATION
SCALE: 1/2"=1'-0"



B FRAME EXTRUSION DETAIL
SCALE: NTS

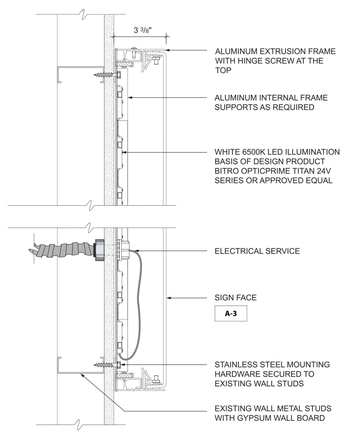
NOTE:
LED LAYOUTS SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY. ACTUAL LIGHTING CONFIGURATIONS TO BE DESIGNED BY THE FABRICATOR AND BE CAPABLE OF PROVIDING EVEN ILLUMINATION INSIDE A SHALLOW DEPTH CABINET WITH NO HOT SPOTS OR DARK AREAS.



SUGGESTED HEAT WELDED SEAM LINE IF NEEDED. FACE TO BE FABRICATED TO ENSURE NO LIGHT LEAKS.

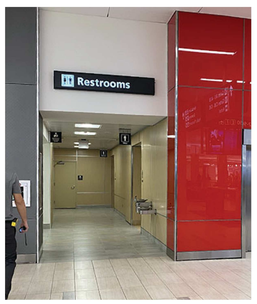
SIGN LOCATION:
TL3.ID.01, TL3.ID.02, TL3.ID.04

E NEW SIGN FACE- FRONT ELEVATION
SCALE: 1/2"=1'-0"

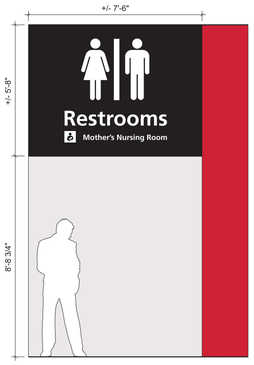


F SIGN INSTALLATION SECTION
SCALE: 3" = 1'-0"

NOTE:
REMOVE AND DISPOSE EXISTING SIGNS.



SIGN LOCATION:
TL3.ID.03

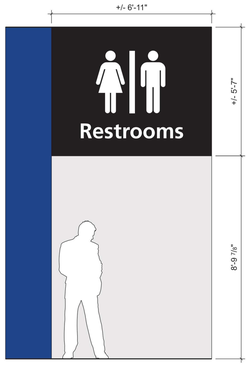


SIGN LOCATION:
TL3.ID.03

C CONTEXTUAL ELEVATION
SCALE: 3/8"=1'-0"

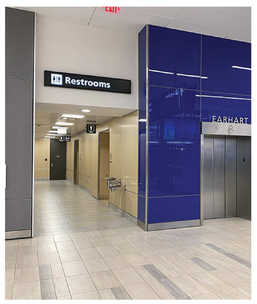


SIGN LOCATION:
TL3.ID.04

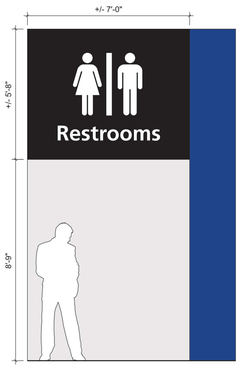


SIGN LOCATION:
TL3.ID.04

D CONTEXTUAL ELEVATION
SCALE: 3/8"=1'-0"

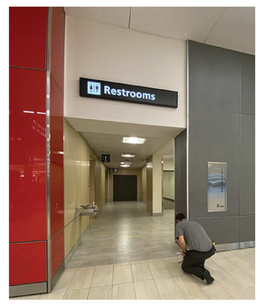


SIGN LOCATION:
TL3.ID.01



SIGN LOCATION:
TL3.ID.01

G CONTEXTUAL ELEVATION
SCALE: 3/8"=1'-0"



SIGN LOCATION:
TL3.ID.02



SIGN LOCATION:
TL3.ID.02

H CONTEXTUAL ELEVATION
SCALE: 3/8"=1'-0"

2 SIGN TYPE - ID.T.2 (WALL-MOUNTED RESTROOM ID - ILLUMINATED)
SCALE: AS NOTED

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

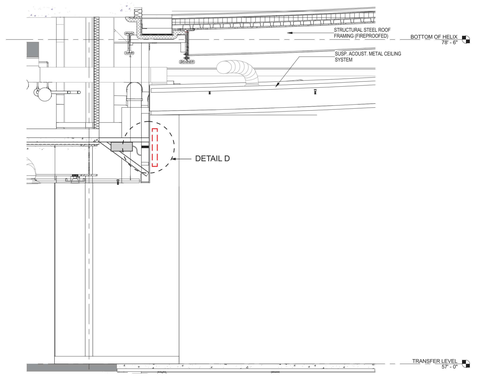
AG8.20

43342.03
10/07/2021

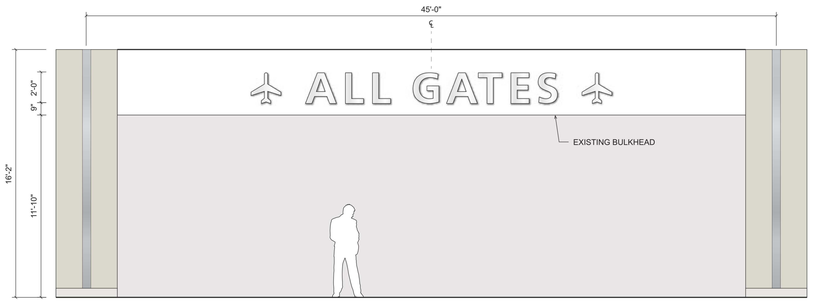
This Line is 3 Inches When Printed Full Size

BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:38:56 AM

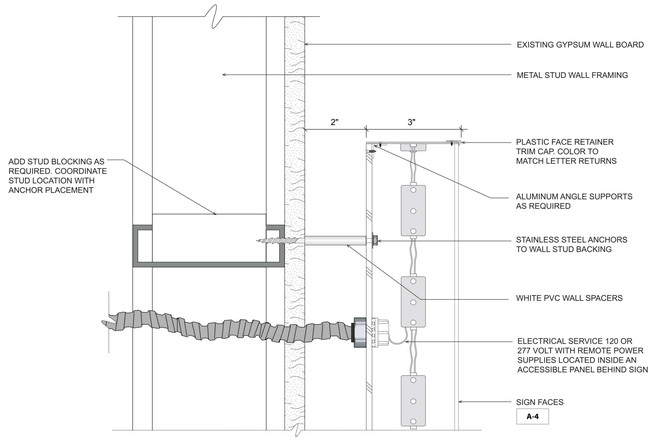
Drawn By: Author
Checked By: Checker
Approved By: Approver



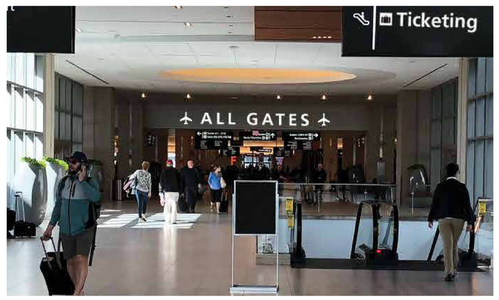
A BUILDING SECTION
SCALE: 1/4"=1'-0"



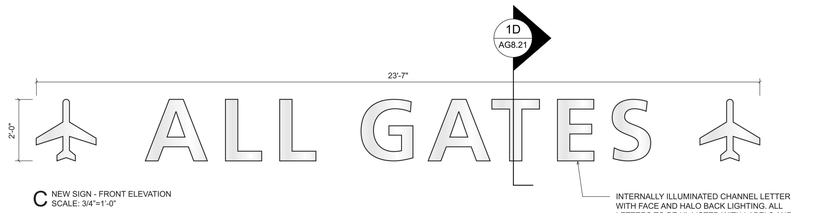
B CONTEXTUAL ELEVATION
SCALE: 1/4"=1'-0"



D LETTER INSTALLATION - SECTION DETAIL
SCALE: 1:2

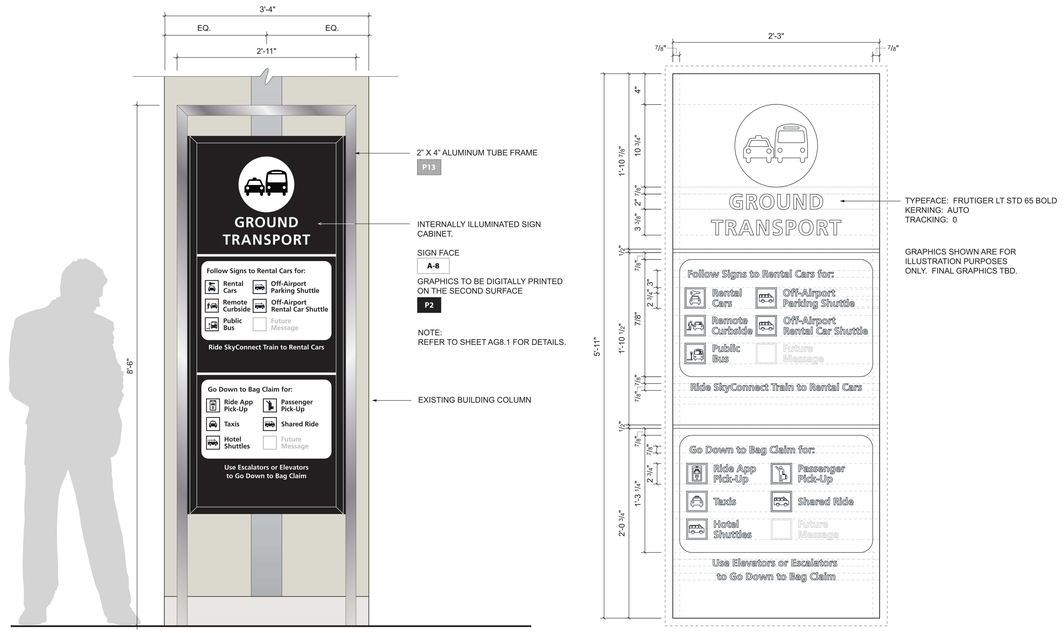


SIGN LOCATION:
TL3.ID.06



C NEW SIGN - FRONT ELEVATION
SCALE: 3/4"=1'-0"

1 SIGN TYPE - ID.T.DL2.1 (DIMENSIONAL LETTERS - ILLUMINATED)
SCALE: AS NOTED



A FRONT ELEVATION
SCALE: 1"=1'-0"

SIGN LOCATIONS:
TL3.IN.03
TL3.IN.06
TL3.IN.09
TL3.IN.10
TL3.IN.11

B FACE LAYOUT
SCALE: 1 1/2"=1'-0"

2 SIGN TYPE - DR.T.P4 (DIRECTIONAL PYLON/ GROUND TRANSPORT DIRECTORY)
SCALE: AS NOTED

BLANK

Gresham Smith
GreshamSmith.com
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WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

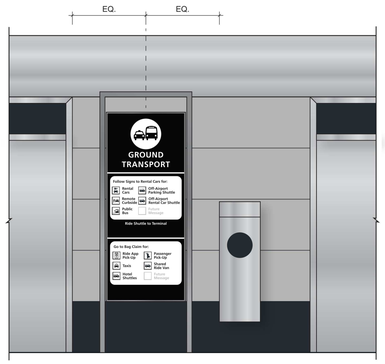
AG8.21

43342.03
10/07/2021

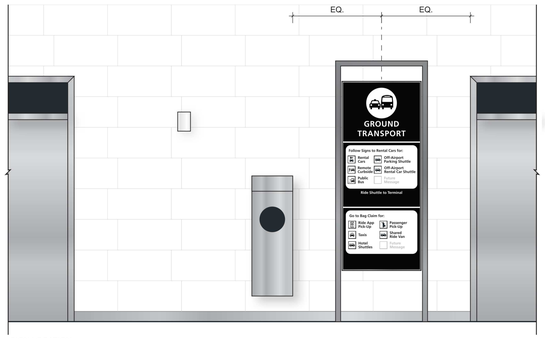
This Line is 3 Inches When Printed Full Size

10/7/2021 11:39:02 AM
BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA_WAYFINDING_GRAPHICS_CENTRAL_R21.rvt

Drawn By: Author
Checked By: Checker
Approved By: Approver



SIGN LOCATION:
AA.IN.01



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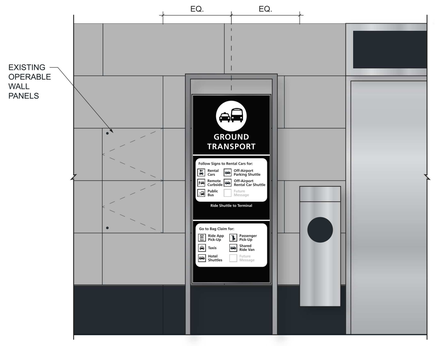
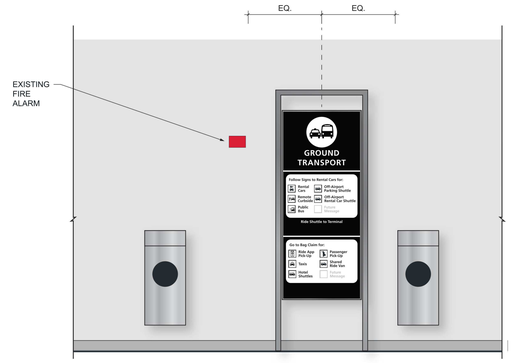
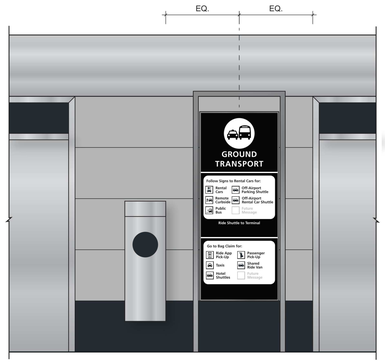
AC.IN.01



SIGN LOCATION:
AE.IN.01

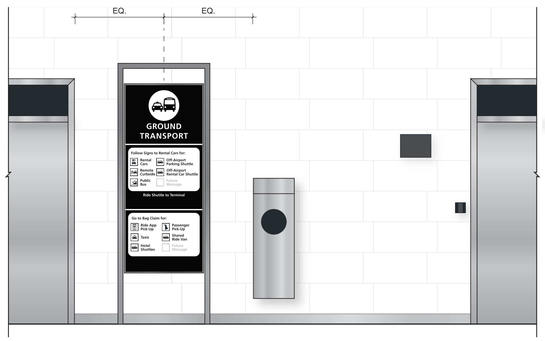


SIGN LOCATION:
AF.IN.01



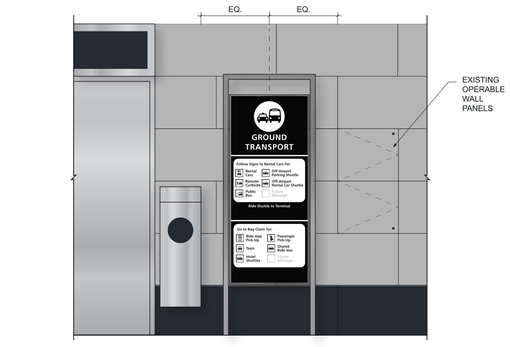
SIGN LOCATION:
AA.IN.02

A CONTEXTUAL ELEVATIONS - AIRSIDE A
SCALE: 1/2"=1'-0"



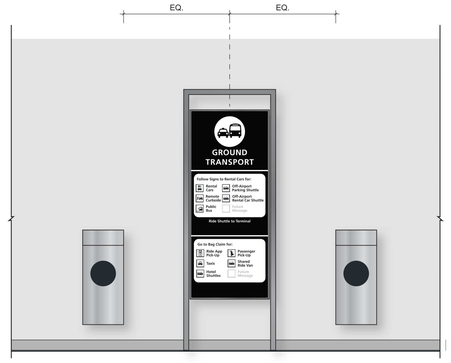
SIGN LOCATION:
AC.IN.02

B CONTEXTUAL ELEVATIONS - AIRSIDE C
SCALE: 1/2"=1'-0"



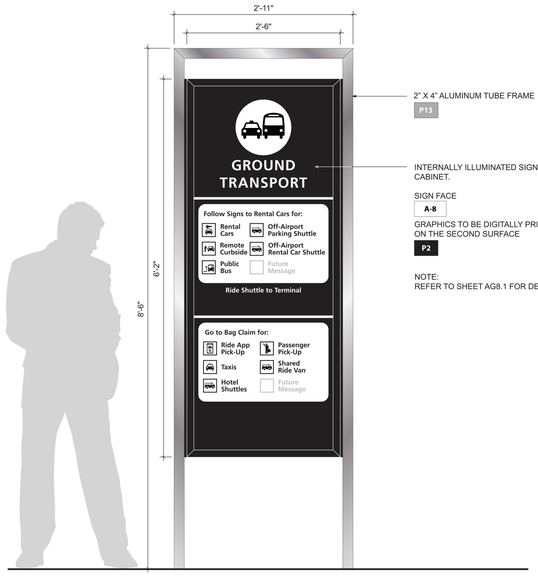
SIGN LOCATION:
AE.IN.02

C CONTEXTUAL ELEVATIONS - AIRSIDE E
SCALE: 1/2"=1'-0"



SIGN LOCATION:
AF.IN.02

D CONTEXTUAL ELEVATIONS - AIRSIDE F
SCALE: 1/2"=1'-0"



2" X 4" ALUMINUM TUBE FRAME
P13

INTERNALLY ILLUMINATED SIGN CABINET.

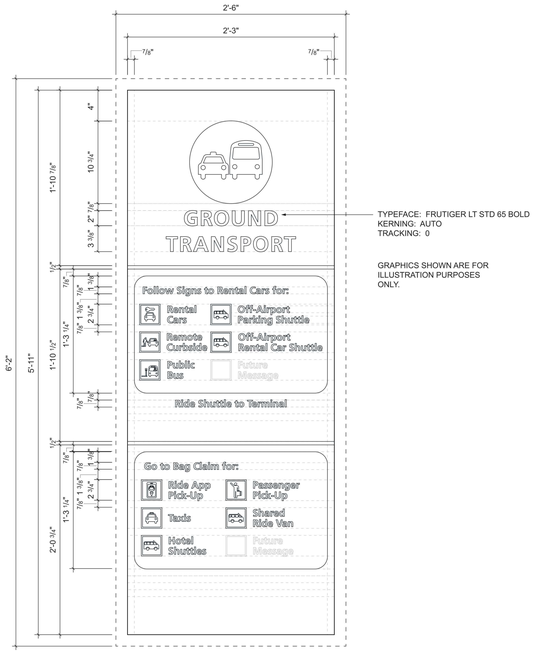
SIGN FACE
A-8

GRAPHICS TO BE DIGITALLY PRINTED ON THE SECOND SURFACE
P2

NOTE:
REFER TO SHEET AG8.1 FOR DETAILS.

E FRONT ELEVATION
SCALE: 1"=1'-0"

SIGN LOCATIONS:
AA.IN.01
AA.IN.02
AC.IN.01
AC.IN.02
AE.IN.01
AE.IN.02
AF.IN.01
AF.IN.02



TYPEFACE: FRUTIGER LT STD 65 BOLD
KERNING: AUTO
TRACKING: 0

GRAPHICS SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY.

F FACE LAYOUT
SCALE: 1 1/2"=1'-0"

1 SIGN TYPE - DR.T.P4 (DIRECTIONAL PYLON/ GROUND TRANSPORT DIRECTORY)
SCALE: AS NOTED

Gresham Smith
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AA0013420 /
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Tampa International Airport

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BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

AG8.22

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

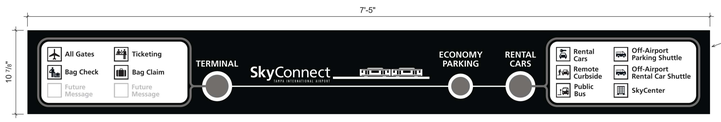
10/7/2021 11:39:07 AM
BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt

Drawn By: Author
Checked By: Checker
Approved By: Approver



FUTURE CONTEXTUAL VIEW

SIGN MOUNTING LOCATION:
32 LOCATIONS (INSIDE TRAIN)



A SKYCONNECT MAP LAYOUT
SCALE: 1 1/2"=1'-0"

NOTE:
PANEL TO BE INSERTED INTO EXISTING TRACK. FABRICATOR TO FIELD VERIFY SIZE OF EXISTING INSERT PRIOR TO FABRICATION.

SIGN PANEL SHALL HAVE A DIGITALLY PRINTED GRAPHIC ON OPAQUE VINYL APPLIED TO THE SECOND SURFACE

A-9

BLACK BACKGROUND TO MATCH P2

WHITE COLOR TO MATCH P1

GREY COLOR TO MATCH P14

NOTE:
FABRICATOR TO INSTALL ONE SIGN ON EACH SIDE OF EACH TRAIN CAR .

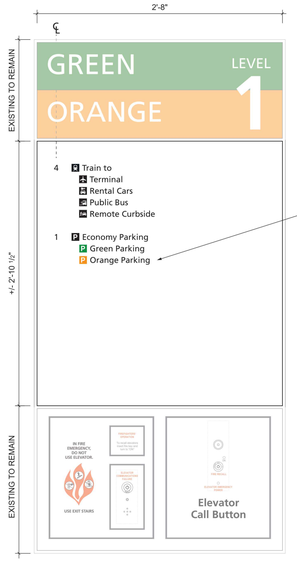
1 SIGN TYPE - IN.U.01 (SKYCONNECT TRAIN MAP)
SCALE: AS NOTED

NOTE:
REMOVE AND DISPOSE OF EXISTING DIRECTORY PANELS - REFERENCE SPECIFICATIONS SECTION 10 1400 1.4.F AND DIVISION 2.

NOTE:
SIZE OF THE EXISTING PANELS VARY. FABRICATOR TO FIELD VERIFY EACH LOCATION BEFORE INSTALLATION.

STANDARD ELEVATOR DIRECTORY LAYOUT WITH LAYOUT FOR CALL BUTTON PANEL ON BOTTOM LANDING.

ELEVATOR DIRECTORY PANEL TO BE FORMS+SURFACES VIVICHROME CHROMIS ARCHITECTURAL GLASS.



2ND SURFACE DIGITALLY PRINTED GRAPHICS. DIGITALLY PRINTED WHITE OPAQUE BACK-GROUND WITH BLACK TEXT AND COLOR GRAPHIC.

GREEN COLOR TO MATCH P9

ORANGE COLOR TO MATCH P5

FOR FACE LAYOUT DETAILS REFER TO SHEET AG8.11.

TYPEFACE: FRUTIGER LT STD 55 ROMAN
KERNING: AUTO
TRACKING: 0

SIGN LOCATION:
APM2-1.IN.05
APM2-4.IN.04

A DIRECTORY LAYOUT - FRONT ELEVATION
SCALE: 1 1/2"=1'-0"



2ND SURFACE DIGITALLY PRINTED GRAPHICS. DIGITALLY PRINTED WHITE OPAQUE BACK-GROUND WITH BLACK TEXT AND COLOR GRAPHIC.

PURPLE COLOR TO MATCH P10

GOLD COLOR TO MATCH P11

FOR FACE LAYOUT DETAILS REFER TO SHEET AG8.11.

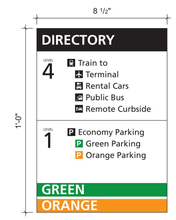
SIGN LOCATION:
APM2-1.IN.01
APM2-4.IN.01

B ALTERNATE LAYOUT
SCALE: 1 1/2"=1'-0"

2 SIGN TYPE - IN.T.DIR (ELEVATOR DIRECTORY)
SCALE: AS NOTED

NOTE:
REMOVE AND DISPOSE OF EXISTING DIRECTORY PANELS - REFERENCE SPECIFICATIONS SECTION 10 1400 1.4.F AND DIVISION 2.

SIGN QUANTITY:
3 CABS X 2 LOCATIONS = QUANTITY 6



NOTE:
IN-CAB ELEVATOR DIRECTORY PANEL A-7

2ND SURFACE DIGITALLY PRINTED GRAPHICS.

WHITE COLOR TO MATCH P1

BLACK COLOR TO MATCH P2

GREEN COLOR TO MATCH P9

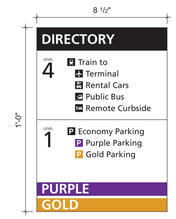
ORANGE COLOR TO MATCH P5

ATTACH PANEL TO ELEVATOR WALL WITH SILICONE AND VHB TAPE. EDGES OF ACRYLIC PANEL TO BE EASED FOR SAFETY.

EXISTING DIRECTORY PANEL TO BE REMOVED PRIOR TO INSTALLATION OF NEW PANEL.

SIGN LOCATION
APM2-1.IN.06
APM2-1.IN.07
APM2-1.IN.08

A DIRECTORY LAYOUT
SCALE: 3"=1'-0"



NOTE:
IN-CAB ELEVATOR DIRECTORY PANEL A-7

2ND SURFACE DIGITALLY PRINTED GRAPHICS.

WHITE COLOR TO MATCH P1

BLACK COLOR TO MATCH P2

PURPLE COLOR TO MATCH P10

GOLD COLOR TO MATCH P11

ATTACH PANEL TO ELEVATOR WALL WITH SILICONE AND VHB TAPE. EDGES OF ACRYLIC PANEL TO BE EASED FOR SAFETY.

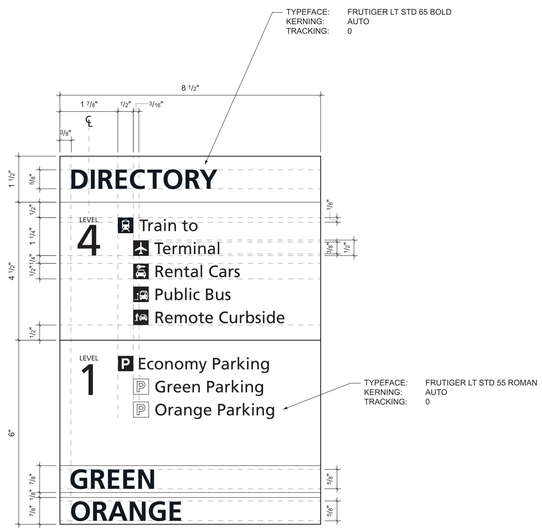
EXISTING DIRECTORY PANEL TO BE REMOVED PRIOR TO INSTALLATION OF NEW PANEL.

NOTE:
REMOVE AND DISPOSE OF EXISTING DIRECTORY PANELS - REFERENCE SPECIFICATIONS SECTION 10 1400 1.4.F AND DIVISION 2.

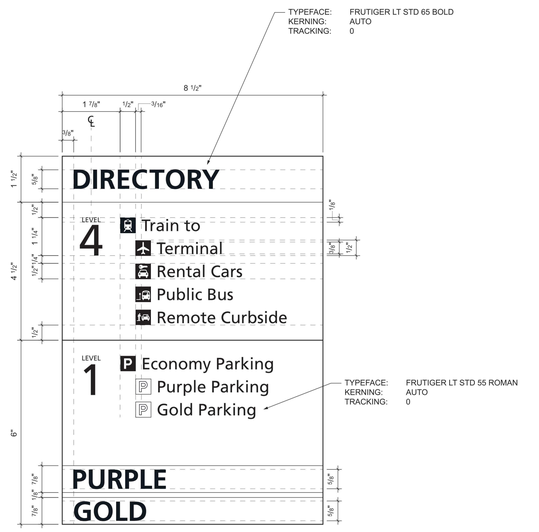
SIGN LOCATION
APM2-1.IN.02
APM2-1.IN.03
APM2-1.IN.04

B ALTERNATE LAYOUT
SCALE: 3"=1'-0"

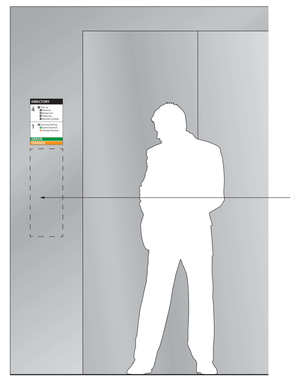
3 SIGN TYPE - IN.T.DIR1 (ELEVATOR CAB DIRECTORY)
SCALE: AS NOTED



C FACE LAYOUT FOR GREEN & ORNAGE ELEVATORS
SCALE: HALF



D FACE LAYOUT FOR PURPLE & GOLD ELEVATORS
SCALE: HALF



E CONTEXTUAL ELEVATION
SCALE: 3/4"=1'-0"

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

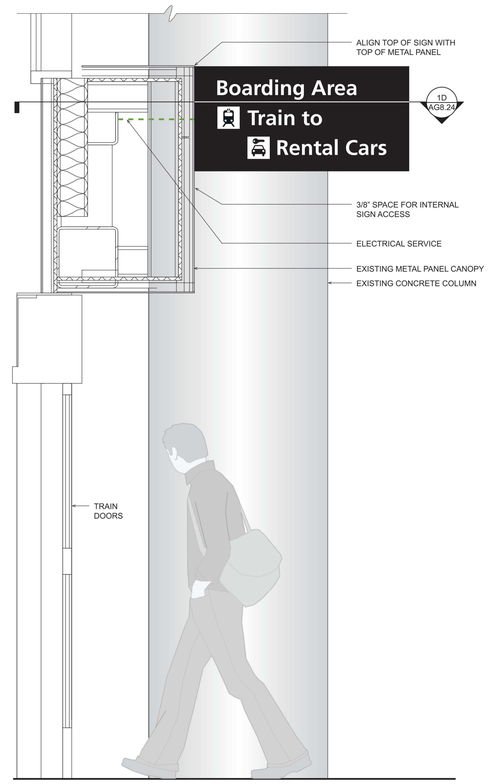
AG8.23

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:39:09 AM

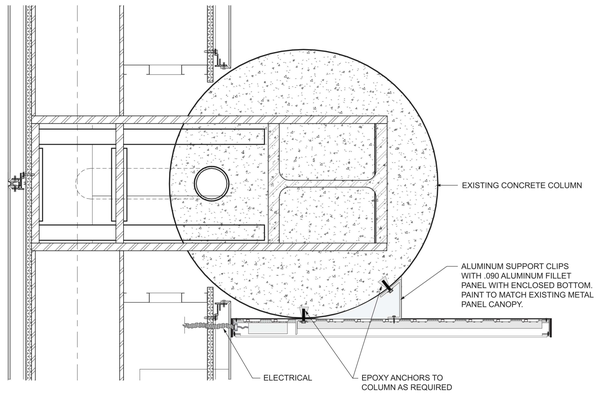
Drawn By: Author
Checked By: Checker
Approved By: Approver



A APM 2 STATION CONTEXTUAL ELEVATION
SCALE: 1"=1'-0"



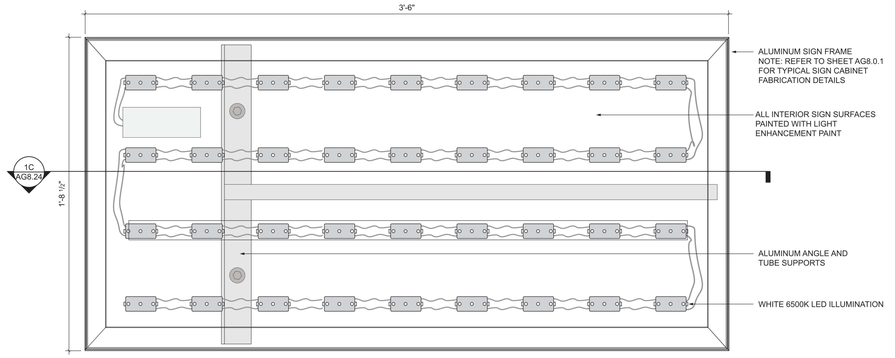
B FACE LAYOUT DETAILS
SCALE: 1" = 1'-0"



C BUILDING COLUMN SECTION
SCALE: 1 1/2"=1'-0"



D SIGN SECTION DETAIL
SCALE: 3" = 1'-0"

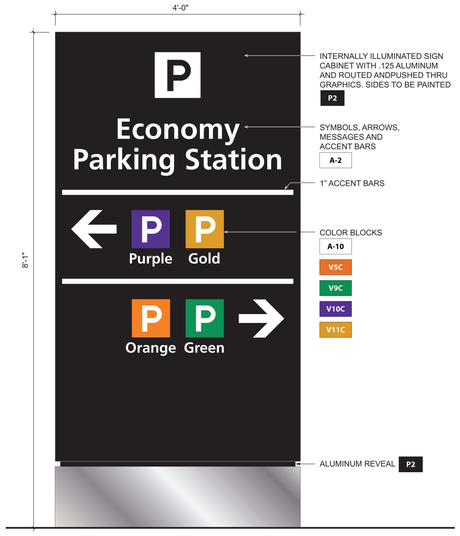


E FABRICATION DETAILS
SCALE: 3" = 1'-0"

1 SIGN TYPE - ID.U.06 (FLAG ID - ILLUMINATED)
SCALE: AS NOTED



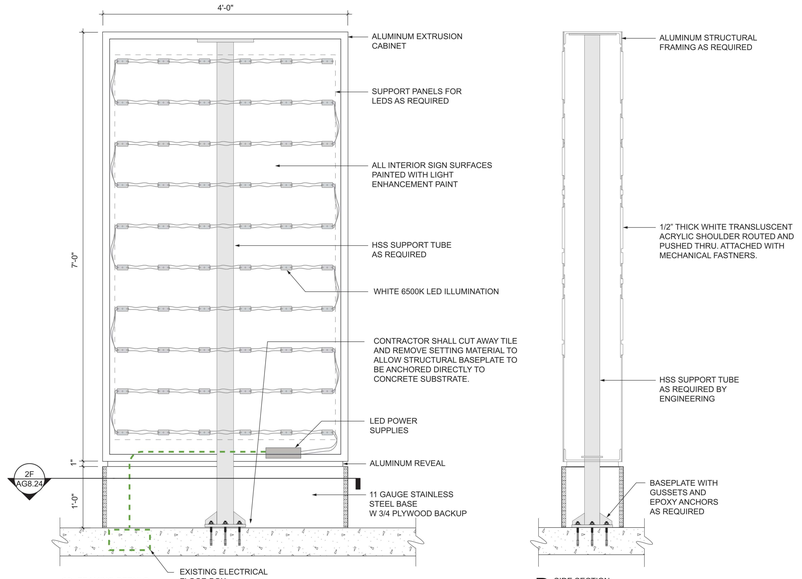
A PLAN VIEW
SCALE: 1"=1'-0"



B FRONT ELEVATION
SCALE: 1"=1'-0"

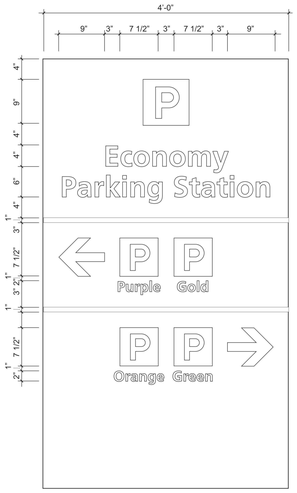
SIGN LOCATIONS
APM2-4.DR.01
APM2-4.DR.02

NOTE: LED LAYOUTS SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY. ACTUAL LIGHTING CONFIGURATIONS TO BE DESIGNED BY THE FABRICATOR AND BE CAPABLE OF PROVIDING EVEN ILLUMINATION INSIDE A SHALLOW DEPTH CABINET WITH NO HOT SPOTS OR DARK AREAS.

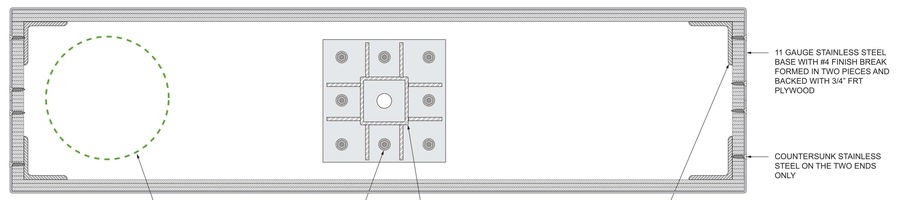


C FRAMING DETAILS
SCALE: 1"=1'-0"

D SIDE SECTION
SCALE: 1"=1'-0"



E GRAPHIC LAYOUT DETAILS
SCALE: 1"=1'-0"



F BASE SECTION DETAILS
SCALE: 3"=1'-0"

2 SIGN TYPE - DR.T.P3 (DIRECTIONAL PYLON)
SCALE: AS NOTED

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

AG8.24

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:39:11 AM

Drawn By: Author
Checked By: Checker
Approved By: Approver

NOTE:
FABRICATOR TO FIELD VERIFY ALL LOCATIONS PRIOR TO FABRICATION.

REMOVE ALL TEMPORARY SIGNS AROUND CALL BUTTON PLATE AND CLEAN SURFACE BEFORE INSTALLING NEW SIGN.

1/8" ETCHED ZINC SIGN PANEL WITH RAISED BORDER AND GRAPHICS, PAINTED. SIGN TO BE STUD-MOUNTED TO WALL SILICONE ADHESIVE.



TYPEFACE: FRUTIGER LT STD 65 BOLD
KERNING: AUTO
TRACKING: 0

SIGN LOCATIONS:
APM2-2.IN.04
APM2-3.IN.04
APM2-4.IN.06
APM2-5.IN.04
APM2-6.IN.04

A FRONT ELEVATION
SCALE: 3"=1'-0"

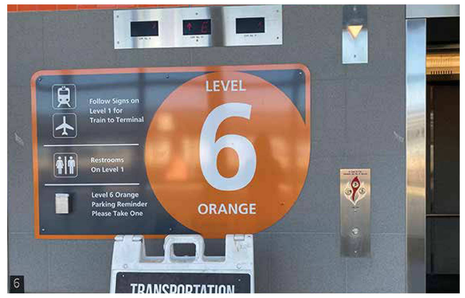
1 SIGN TYPE - IN.P.DIR (CALL BUTTON-PLATE INFO)
SCALE: AS NOTED



SIGN LOCATION:
APM2-2.IN.04



SIGN LOCATION:
APM2-4.IN.06

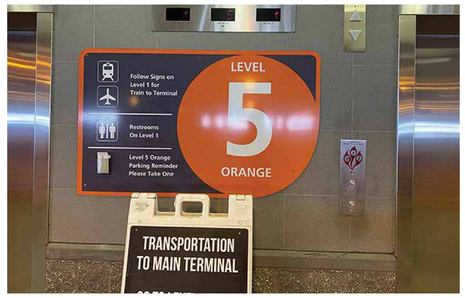


SIGN LOCATION:
APM2-6.IN.04

REMOVE TEMP SIGN AND CLEAN SURFACE BEFORE INSTALLING NEW SIGN



SIGN LOCATION:
APM2-3.IN.04

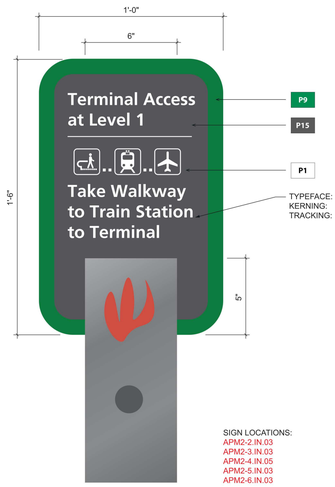


SIGN LOCATION:
APM2-5.IN.04

NOTE:
FABRICATOR TO FIELD VERIFY ALL LOCATIONS PRIOR TO FABRICATION.

REMOVE ALL TEMPORARY SIGNS AROUND CALL BUTTON PLATE AND CLEAN SURFACE BEFORE INSTALLING NEW SIGN.

1/8" ETCHED ZINC SIGN PANEL WITH RAISED BORDER AND GRAPHICS, PAINTED. SIGN TO BE STUD-MOUNTED TO WALL SILICONE ADHESIVE.



TYPEFACE: FRUTIGER LT STD 65 BOLD
KERNING: AUTO
TRACKING: 0

SIGN LOCATIONS:
APM2-2.IN.03
APM2-3.IN.03
APM2-4.IN.05
APM2-5.IN.03
APM2-6.IN.03

A FRONT ELEVATION
SCALE: 3"=1'-0"

2 SIGN TYPE - IN.P.DIR (CALL BUTTON-PLATE INFO)
SCALE: AS NOTED



SIGN LOCATION:
APM2-2.IN.03



SIGN LOCATION:
APM2-4.IN.05



SIGN LOCATION:
APM2-6.IN.03

REMOVE TEMP SIGNS AND CLEAN SURFACE BEFORE INSTALLING NEW SIGN



SIGN LOCATION:
APM2-3.IN.03



SIGN LOCATION:
APM2-5.IN.03

2 SIGN TYPE - IN.P.DIR (CALL BUTTON-PLATE INFO)
SCALE: AS NOTED

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Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

AG8.25

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

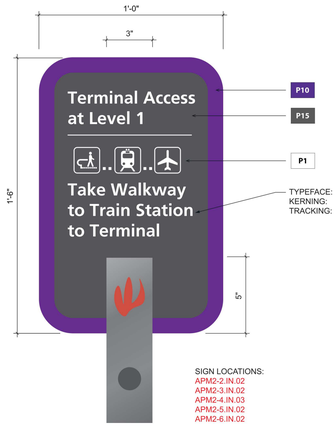
BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:39:18 AM

Drawn By: Author
Checked By: Checker
Approved By: Approver

NOTE:
FABRICATOR TO FIELD VERIFY ALL LOCATIONS PRIOR TO FABRICATION.

REMOVE ALL TEMPORARY SIGNS AROUND CALL BUTTON PLATE AND CLEAN SURFACE BEFORE INSTALLING NEW SIGN.

1/8" ETCHED ZINC SIGN PANEL WITH RAISED BORDER AND GRAPHICS, PAINTED. SIGN TO BE STUD-MOUNTED TO WALL SILICONE ADHESIVE.



TYPEFACE: FRUTIGER LT STD 65 BOLD
KERNING: AUTO
TRACKING: 0

SIGN LOCATIONS:
APM2-2.IN.02
APM2-3.IN.02
APM2-4.IN.03
APM2-5.IN.02
APM2-6.IN.02

A FRONT ELEVATION
SCALE: 3"=1'-0"



SIGN LOCATION:
APM2-2.IN.02



SIGN LOCATION:
APM2-4.IN.03



SIGN LOCATION:
APM2-6.IN.02



SIGN LOCATION:
APM2-3.IN.02



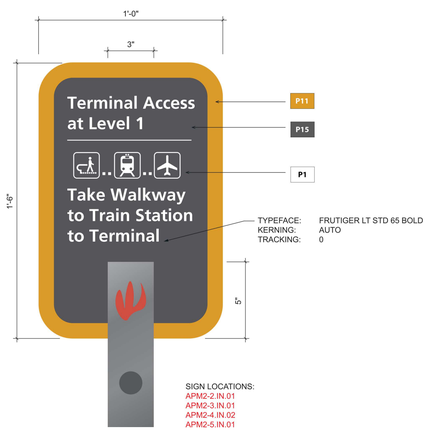
SIGN LOCATION:
APM2-5.IN.02

1 SIGN TYPE - IN.P.DIR (CALL BUTTON-PLATE INFO)
SCALE: AS NOTED

NOTE:
FABRICATOR TO FIELD VERIFY ALL LOCATIONS PRIOR TO FABRICATION.

REMOVE ALL TEMPORARY SIGNS AROUND CALL BUTTON PLATE AND CLEAN SURFACE BEFORE INSTALLING NEW SIGN.

1/8" ETCHED ZINC SIGN PANEL WITH RAISED BORDER AND GRAPHICS, PAINTED. SIGN TO BE STUD-MOUNTED TO WALL SILICONE ADHESIVE.



TYPEFACE: FRUTIGER LT STD 65 BOLD
KERNING: AUTO
TRACKING: 0

SIGN LOCATIONS:
APM2-2.IN.01
APM2-3.IN.01
APM2-4.IN.02
APM2-5.IN.01

A FRONT ELEVATION
SCALE: 3"=1'-0"



ADD A #4 BRUSHED FINISH STAINLESS STEEL BACK PLATE (VERTICAL GRAIN) TO COVER THE ABANDONED OUTLET COVER.

NOTE:
FIELD VERIFY LOCATION OF OUTLET TO ENSURE THE PLATE COVERS IT.

SIGN LOCATION:
APM2-6.IN.01

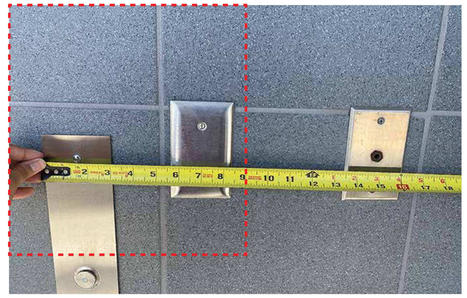
B FRONT ELEVATION
SCALE: 3"=1'-0"



SIGN LOCATION:
APM2-2.IN.01



SIGN LOCATION:
APM2-4.IN.02

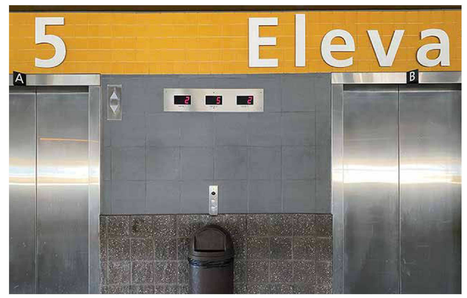


SIGN LOCATION:
APM2-6.IN.01

NOTE:
ABANDONED OUTLET BESIDE THE CALL BUTTON PLATE MUST BE COVERED WITH BACK PLATE.



SIGN LOCATION:
APM2-3.IN.01



SIGN LOCATION:
APM2-5.IN.01

2 SIGN TYPE - IN.P.DIR (CALL BUTTON-PLATE INFO)
SCALE: AS NOTED

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
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Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

AG8.26

43342.03
10/07/2021

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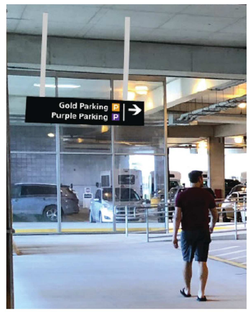
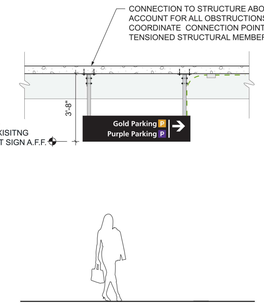
BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:39:24 AM

Drawn By: Author
Checked By: Checker
Approved By: Approver

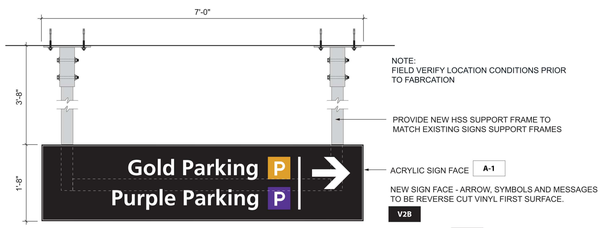


SIGN LOCATION:
APM2-1.DR.02



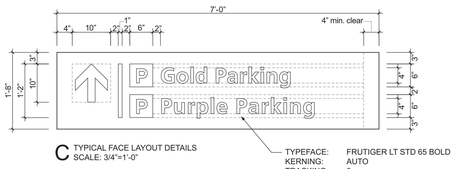
SIGN LOCATION:
APM2-1.DR.02

A CONTEXTUAL ELEVATION
SCALE: 1/4"=1'-0"

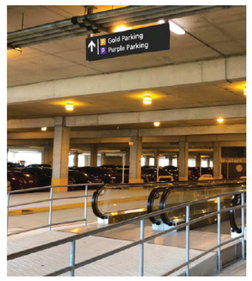


SIGN LOCATION:
APM2-1.DR.02

B FRONT ELEVATION
SCALE: 3/4"=1'-0"

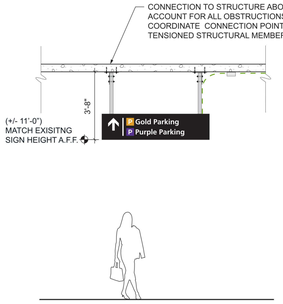


C TYPICAL FACE LAYOUT DETAILS
SCALE: 3/4"=1'-0"



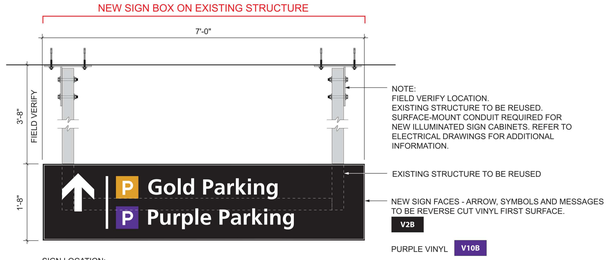
SIGN LOCATION:
APM2-1.DR.03

NOTE:
REMOVE AND DISPOSE EXISTING SIGN FACES
REFERENCE 10 1400 SPECIFICATIONS



SIGN LOCATION:
APM2-1.DR.03

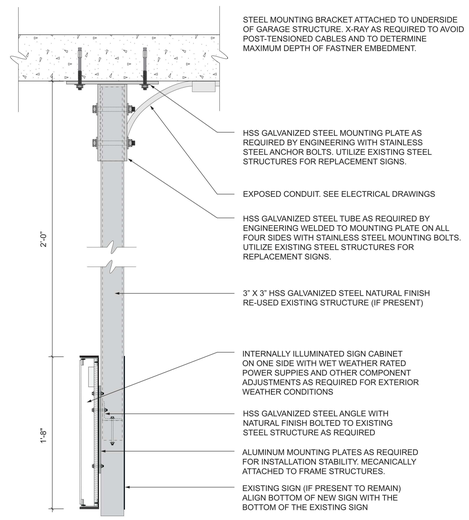
D CONTEXTUAL ELEVATION
SCALE: 1/4"=1'-0"



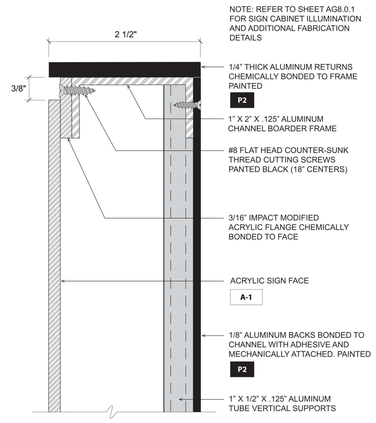
SIGN LOCATION:
APM2-1.DR.03

E FRONT ELEVATION
SCALE: 3/4"=1'-0"

1 SIGN TYPE - DR.T.2 (2-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED



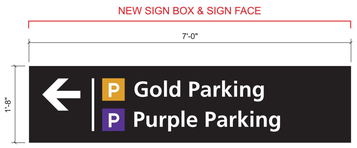
A TYPICAL INSTALLATION DETAILS
SCALE = 1 1/2" = 1'-0"



B SIGN CABINET FRAME SECTION DETAIL
SCALE: 3" = 1'-0"

2 SIGN TYPE - DR.T.2 & DR.T.3 FABRICATION AND INSTALLATION DETAILS
SCALE: AS NOTED

NEW SIGN BOX & SIGN FACE



SIGN LOCATION:
APM2-1.DR.01

A FRONT ELEVATION
SCALE: 3/4"=1'-0"

NOTE:
NEW HORIZONTAL STRUCTURAL TUBE TO BE ATTACHED TO EXISTING VERTICAL STRUCTURAL TUBES. EXISTING SIGN TO BE REINSTALLED ON NEW STRUCTURE. COORDINATE NEW BRACKET LOCATIONS WITH EXISTING SIGN.

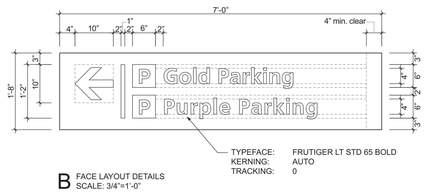
NEW SIGN BOX IS MECHANICALLY ATTACHED TO SUPPORT FRAME.
A-1

REFER TO SHEET AG08.0.1 FOR SIGN BOX DETAILS.

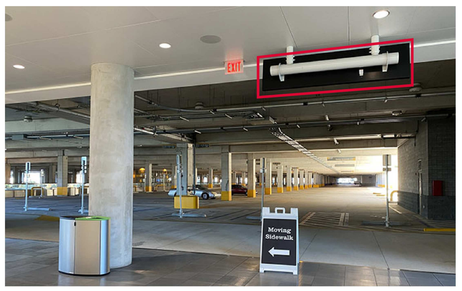
NEW SIGN FACE - ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE.
V2B

PURPLE VINYL V10B

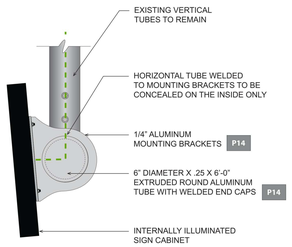
GOLD VINYL V11B



B FACE LAYOUT DETAILS
SCALE: 3/4"=1'-0"



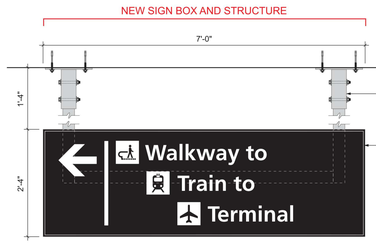
SIGN LOCATION:
APM2-1.DR.01



C SINGLE SIGN PANEL
SIDE VIEW DETAILS

3 SIGN TYPE - DR.T.2 (2-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

NEW SIGN BOX AND STRUCTURE



A NEW SIGN - FRONT ELEVATION
SCALE: 3/4"=1'-0"

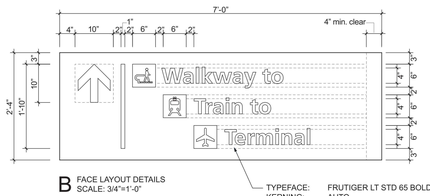
NOTE:
FIELD VERIFY ALL LOCATION CONDITIONS PRIOR TO FABRCATION

PROVIDE NEW HSS SUPPORT FRAME TO MATCH EXISTING SIGNS SUPPORT FRAMES

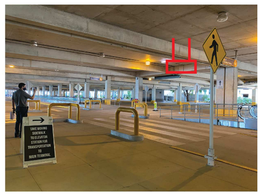
ACRYLIC SIGN FACE A-1

NEW SIGN FACE - ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE.
V2B

NOTE:
NEW STRUCTURE TO MATCH ADJACENT EXISTING SURFACE-MOUNT CONDUIT REQUIRED FOR ILLUMINATED SIGN BOX. REFER TO STRUCTURAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.



B FACE LAYOUT DETAILS
SCALE: 3/4"=1'-0"



SIGN LOCATION:
APM2-1.DR.04



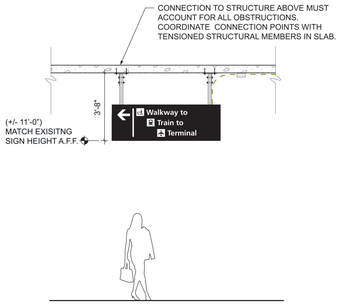
SIGN LOCATION:
APM2-1.DR.07



SIGN LOCATION:
APM2-1.DR.08



SIGN LOCATION:
APM2-1.DR.11



C CONTEXTUAL ELEVATION
SCALE: 3/4"=1'-0"

4 SIGN TYPE - DR.T.3 (3-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

Gresham Smith

GreshamSmith.com

Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838

Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

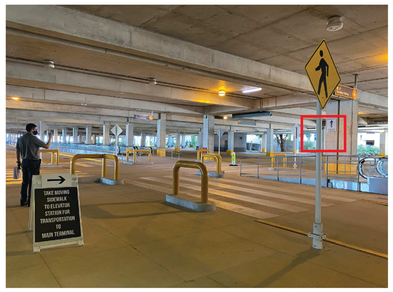
AG8.27

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

10/7/2021 11:39:30 AM BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt

Drawn By: Author
Checked By: Checker
Approved By: Approver

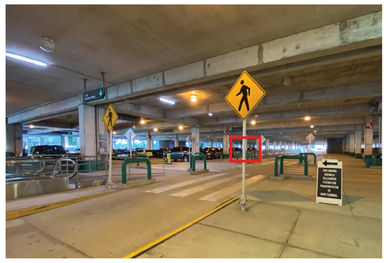


SIGN LOCATION:
APM2-1.DR.05



SIGN LOCATION:
APM2-1.DR.06

NOTE:
THIS LOCATION REQUIRES A WALKWAY SIGN POST.



SIGN LOCATION:
APM2-1.DR.10

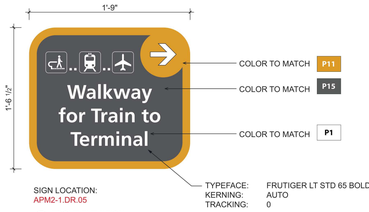


SIGN LOCATION:
APM2-1.DR.12
APM2-1.DR.13

GRAPHICS TO BE DIGITALLY PRINTED DIRECT TO 1/8" ALUMINUM AND COVERED WITH A CLEAR UV-PROTECTIVE OVERLAMINATE. BACK SIDE OF SIGN TO BE PAINTED WHITE TO MATCH POLE.

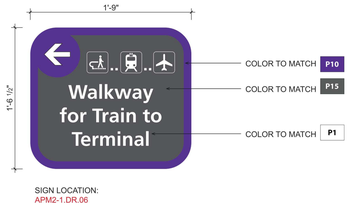
SIGN TO BE MOUNTED TO EXISTING POLES WITH NON-CORROSIVE FASTENERS, PAINTED TO MATCH THE SIGN FACE.

NOTE:
REFER TO AG.28-2 FOR MOUNTING DETAILS.



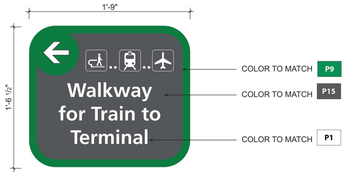
SIGN LOCATION:
APM2-1.DR.05

C FRONT ELEVATION
SCALE: 1 1/2"=1'-0"

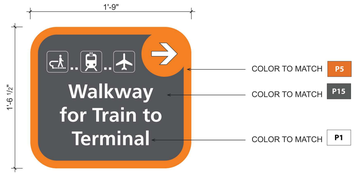


SIGN LOCATION:
APM2-1.DR.06

D FRONT ELEVATION
SCALE: 1 1/2"=1'-0"



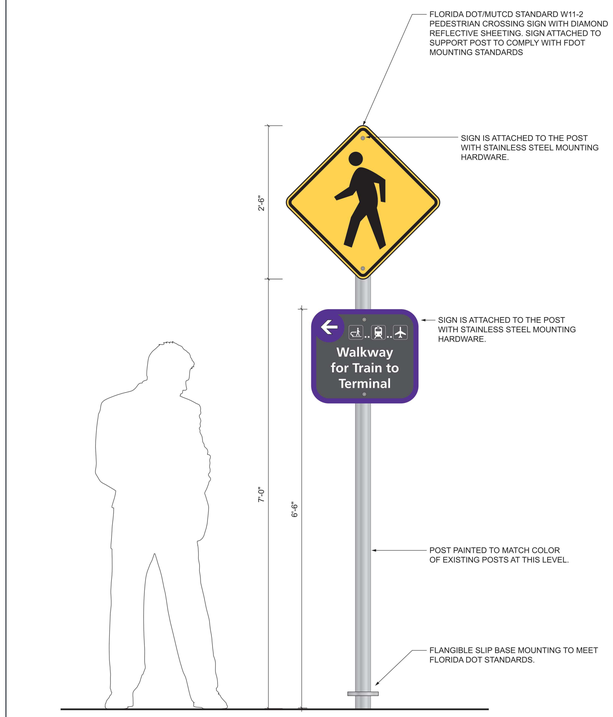
SIGN LOCATION:
APM2-1.DR.10



SIGN LOCATION:
APM2-1.DR.12
APM2-1.DR.13

A FRONT ELEVATION - ALL LAYOUTS
SCALE: 1 1/2"=1'-0"

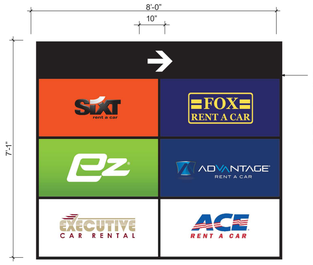
1 SIGN TYPE - DR.P.1 (POST MOUNTED DIRECTIONAL)
SCALE: AS NOTED



A PEDESTRIAN CROSSING - FRONT ELEVATION
SCALE: 1"=1'-0"

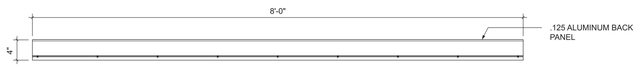
SIGN QUANTITY: 01

2 SIGN TYPE - W11-2 (REGULATORY)
SCALE: AS NOTED

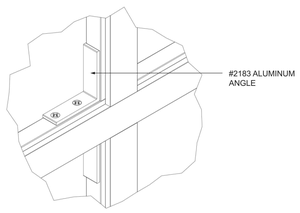


NOTE:
VECTOR ARTWORK MUST BE OBTAINED FROM HCAA FOR RENTAL CAR COMPANY LOGOS TO PRODUCE FINAL SHOP DRAWINGS

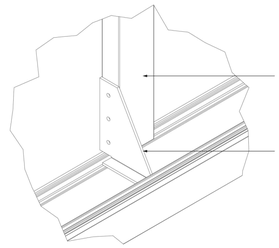
A FRONT ELEVATION
SCALE: 1/2"=1'-0"



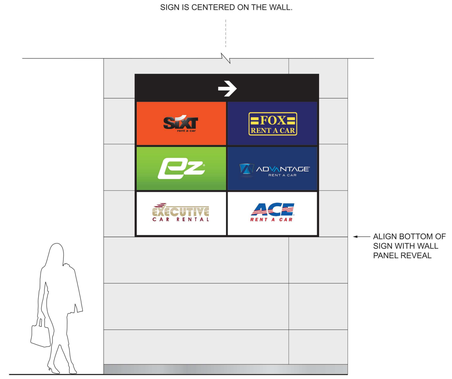
C SIGN STRUCTURE FRAME PLAN DETAILS
SCALE: 1"=1'-0"



E FRAME DETAILS
NOT TO SCALE



F FRAME DETAILS
NOT TO SCALE

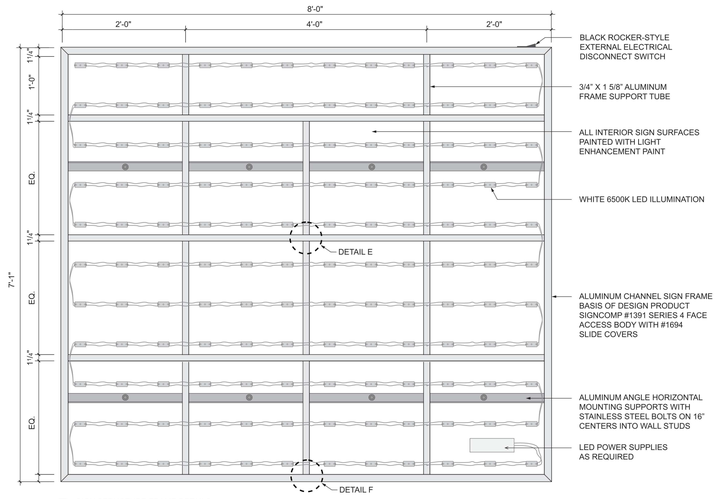


B CONTEXTUAL ELEVATION
SCALE: 3/8"=1'-0"

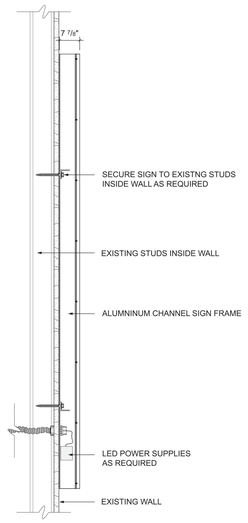
SIGN LOCATION:
APM3-4.DR.02

NOTE:
REPLACE TEMP SIGN

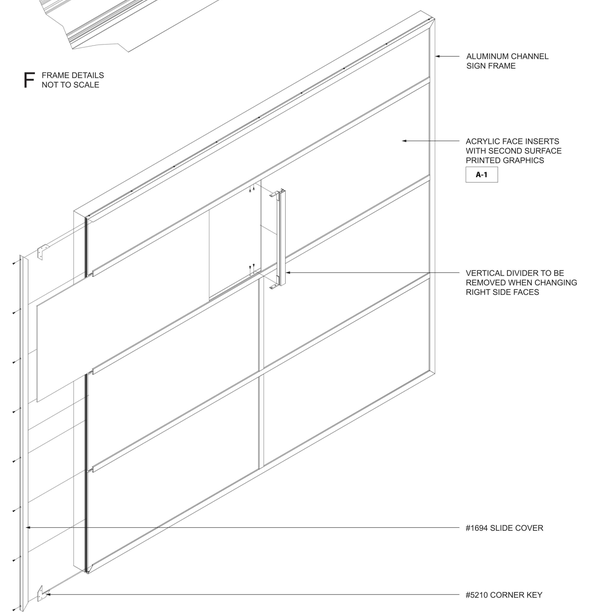
NOTE:
LED LAYOUTS SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY. ACTUAL LIGHTING CONFIGURATIONS TO BE DESIGNED BY THE FABRICATOR AND BE CAPABLE OF PROVIDING EVEN ILLUMINATION WITH NO HOT SPOTS OR DARK AREAS.



D SIGN STRUCTURE FRAME DETAILS
SCALE: 1"=1'-0"



G CABINET SECTION & INSTALL DETAILS
SCALE: 1 1/2" = 1'-0"



H FACE FRAME EXPLODED ISOMETRIC DETAILS
SCALE: 1 1/2" = 1'-0"

2 SIGN TYPE - DR.T.5 (WALL-MOUNTED DIRECTIONAL)
SCALE: AS NOTED

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
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Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

AG8.28

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA_WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:39:32 AM

Drawn By: Author
Checked By: Checker
Approved By: Approver

NOTE:
REMOVE AND DISPOSE OF EXISTING HEADER AND MIDDLE DIRECTORY PANELS - REFERENCE SPECIFICATIONS SECTION 10 1400 1.4.F AND DIVISION 2.



A NORTH CORE DIRECTORY LAYOUT
SCALE: 1 1/2"=1'-0"

NOTE:
SIZE OF THE EXISTING PANELS VARY. FABRICATOR TO FIELD VERIFY EACH LOCATION BEFORE INSTALLATION.

STANDARD ELEVATOR DIRECTORY LAYOUT WITH LAYOUT FOR CALL BUTTON PANEL ON BOTTOM LANDING.

ELEVATOR DIRECTORY PANEL TO BE FORMS+SURFACES VIVICHROME CHROMIS ARCHITECTURAL GLASS.

2ND SURFACE DIGITALLY PRINTED GRAPHICS. DIGITALLY PRINTED WHITE OPAQUE BACK-GROUND WITH BLACK TEXT AND COLOR GRAPHIC.

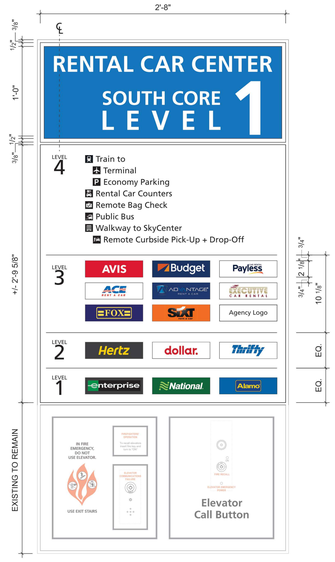
FOR FACE LAYOUT DETAILS REFER TO SHEET AG8.11.

GRAPHICS SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY. VECTOR ARTWORK MUST BE OBTAINED FROM HCAA FOR RENTAL CAR COMPANY LOGOS TO PRODUCE FINAL SHOP DRAWINGS.

TYPEFACE: FRUTIGER LT STD 55 ROMAN
KERNING: AUTO
TRACKING: 0



B HEADER LAYOUT DETAILS
SCALE: 1 1/2"=1'-0"



C SOUTH CORE DIRECTORY LAYOUT
SCALE: 1 1/2"=1'-0"



D NORTH CORE DIRECTORY LAYOUTS
SCALE: 1 1/2"=1'-0"

APM3-1.IN.01 APM3-2.IN.01 APM3-3.IN.01 APM3-4.IN.01

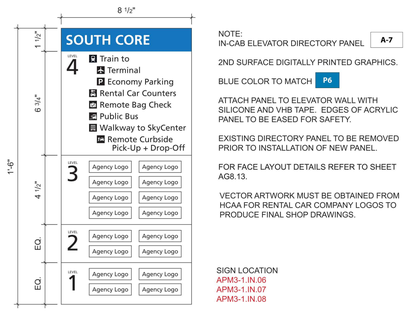


E SOUTH CORE DIRECTORY LAYOUTS
SCALE: 1 1/2"=1'-0"

APM3-1.IN.05 APM3-2.IN.02 APM3-3.IN.02 APM3-4.IN.02

1 SIGN TYPE - IN.T.DIR (ELEVATOR DIRECTORY)
SCALE: AS NOTED

NOTE:
REMOVE AND DISPOSE OF EXISTING HEADER AND MIDDLE DIRECTORY PANELS - REFERENCE SPECIFICATIONS SECTION 10 1400 1.4.F AND DIVISION 2.



A ALTERNATE LAYOUT - FRONT ELEVATION
SCALE: 3"=1'-0"

NOTE:
IN-CAB ELEVATOR DIRECTORY PANEL A-7

2ND SURFACE DIGITALLY PRINTED GRAPHICS.

BLUE COLOR TO MATCH P6

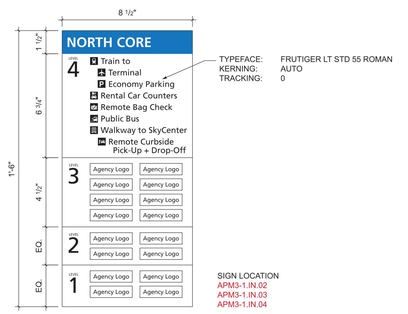
ATTACH PANEL TO ELEVATOR WALL WITH SILICONE AND VHB TAPE. EDGES OF ACRYLIC PANEL TO BE EASED FOR SAFETY.

EXISTING DIRECTORY PANEL TO BE REMOVED PRIOR TO INSTALLATION OF NEW PANEL.

FOR FACE LAYOUT DETAILS REFER TO SHEET AG8.13.

VECTOR ARTWORK MUST BE OBTAINED FROM HCAA FOR RENTAL CAR COMPANY LOGOS TO PRODUCE FINAL SHOP DRAWINGS.

SIGN LOCATION
APM3-1.IN.06
APM3-1.IN.07
APM3-1.IN.08

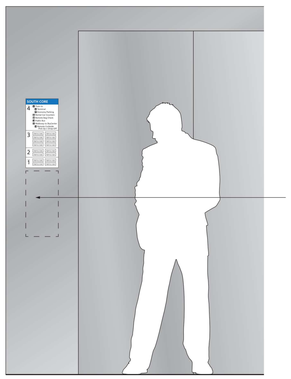


TYPEFACE: FRUTIGER LT STD 55 ROMAN
KERNING: AUTO
TRACKING: 0

B FRONT ELEVATION
SCALE: 3"=1'-0"

SIGN LOCATION
APM3-1.IN.02
APM3-1.IN.03
APM3-1.IN.04

NOTE:
REPLACE EXISTING SIGN (1'-0" X 8 1/2")



C CONTEXTUAL ELEVATION
SCALE: 3/4"=1'-0"

2 SIGN TYPE - IN.T.DIR1 (ELEVATOR CAB DIRECTORY)
SCALE: AS NOTED

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Tampa, FL 33602
Suite 900
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Firm's Florida Qualifier No.
AA0013420 /
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Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

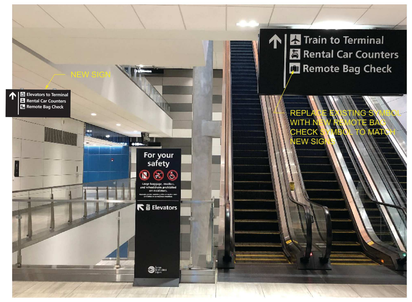
AG8.29

43342.03
10/07/2021

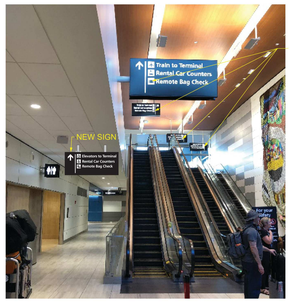
This Line is 3 Inches When Printed Full Size

10/7/2021 11:39:34 AM
BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt

Drawn By: Author
Checked By: Checker
Approved By: Approver

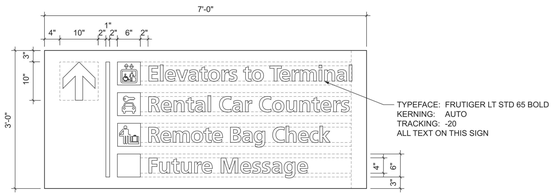


SIGN LOCATION:
APM3-2.DR.02



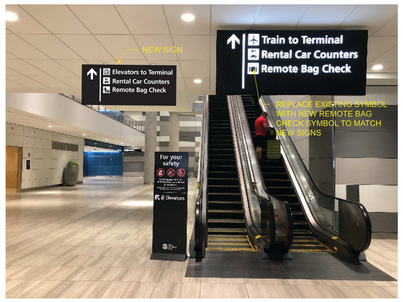
SIGN LOCATION:
APM3-3.DR.05

REPLACE EXISTING SYMBOLS ON ALL EXISTING SIGNS FOR BOTH NORTH AND SOUTH CORES WITH NEW REMOTE BAG CHECK SYMBOLS TO MATCH NEW SIGNS

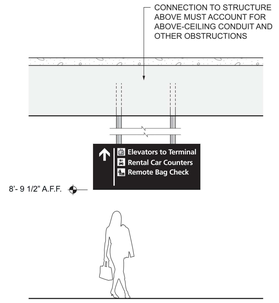


TYPEFACE: FRUTIGER LT STD 65 BOLD
KERNING: AUTO
TRACKING: -20
ALL TEXT ON THIS SIGN

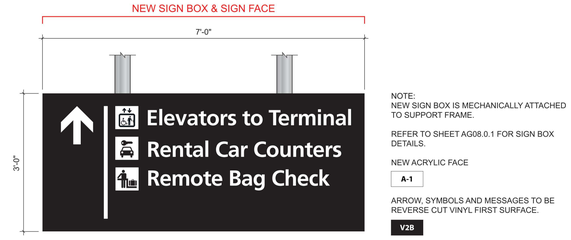
A FACE LAYOUT DETAILS
SCALE: 3/4"=1'-0"



SIGN LOCATION:
APM3-1.DR.02



C CONTEXTUAL ELEVATION
SCALE: 1/4"=1'-0"



B NEW SIGN - FRONT ELEVATION
SCALE: 3/4"=1'-0"

NOTE:
NEW SIGN BOX IS MECHANICALLY ATTACHED TO SUPPORT FRAME.

REFER TO SHEET AG08.0.1 FOR SIGN BOX DETAILS.

NEW ACRYLIC FACE
A-1

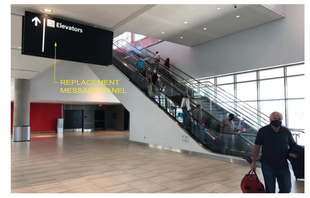
ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE.
V2B

REFER TO STRUCTURAL AND ELECTRICAL SHEETS FOR ADDITIONAL INFORMATION.

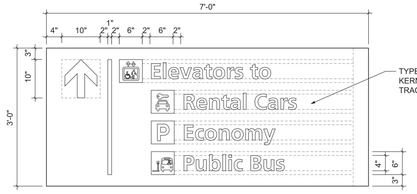
FIELD VERIFY EXISTING CEILING CONDITIONS TO CONFIRM POWER AND ELECTRICAL CONNECTIONS.

SIGN LOCATION:
NORTH CORE: APM3-1.DR.01, APM3-2.DR.01, APM3-3.DR.01
SOUTH CORE: APM3-1.DR.02, APM3-2.DR.02, APM3-3.DR.05

1 SIGN TYPE - DR.T.4 (4-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

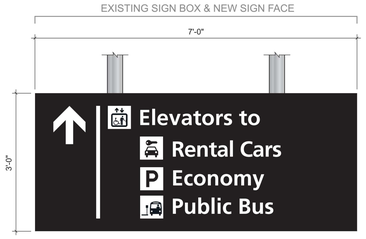


SIGN LOCATION:
TL3.DR.111



TYPEFACE: FRUTIGER LT STD 65 BOLD
KERNING: AUTO
TRACKING: 0

A FACE LAYOUT DETAILS
SCALE: 3/4"=1'-0"



B NEW SIGN MESSAGE - FRONT ELEVATION
SCALE: 3/4"=1'-0"

NOTE:
REMOVE AND DISPOSE EXISTING SIGN FACES - REFERENCE PROJECT MANUAL FOR MORE INFORMATION. EXISTING SIGN BOXES TO REMAIN.

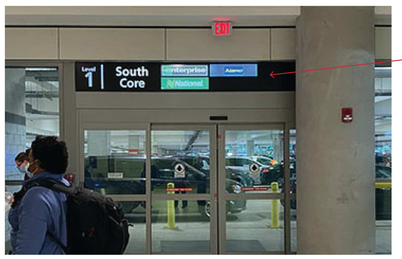
NEW ACRYLIC FACE
A-1

ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE.
V2B

SIGN LOCATIONS:
TL3.DR.111
TL3.DR.112

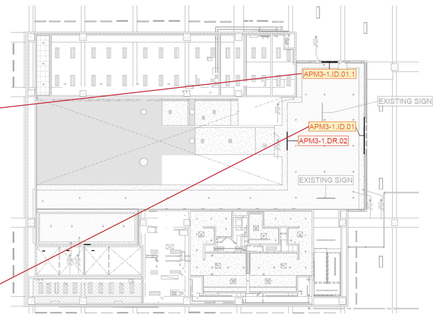
3 SIGN TYPE - DR.T.4 (4-LINE OVERHEAD DIRECTIONAL)
SCALE: AS NOTED

NOTE:
REMOVE AND DISPOSE EXISTING SIGN FACES - REFERENCE SPEC SECTION.

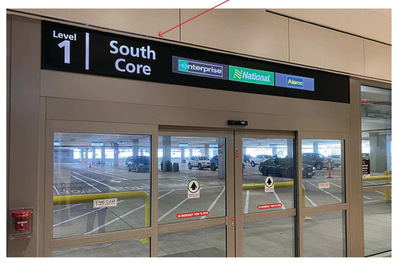


SIGN LOCATION:
APM3-1.ID.01.1

NOTE:
FIELD VERIFY EXISTING SIGN SIZE.

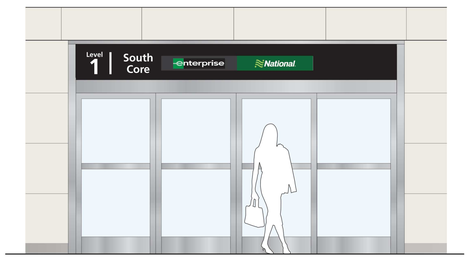


A LOCATION PLAN :CONRAC - LEVEL 1 (ENLARGED RCP - ZONE 3)
SCALE: NTS



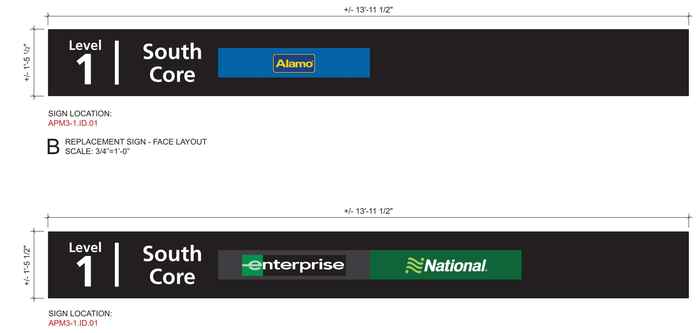
SIGN LOCATION:
APM3-1.ID.01

NOTE:
FIELD VERIFY EXISTING SIGN SIZE.



SIGN LOCATION:
APM3-1.ID.01

D CONTEXTUAL ELEVATION
SCALE: 3/8"=1'-0"



SIGN LOCATION:
APM3-1.ID.01

B REPLACEMENT SIGN - FACE LAYOUT
SCALE: 3/4"=1'-0"

NEW SIGN FACE A-1

ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE.
V2B

RENTAL LOGOS SHALL BE DIGITALLY PRINTED ON TRANSLUCENT VINYL.

NOTE:
VECTOR ARTWORK MUST BE OBTAINED FROM HCAA FOR RENTAL CAR COMPANY LOGOS TO PRODUCE FINAL SHOP DRAWINGS.

SIGN LOCATION:
APM3-1.ID.01

C REPLACEMENT SIGN - FACE LAYOUT
SCALE: 3/4"=1'-0"

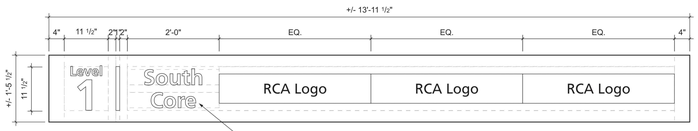
NEW SIGN FACE A-1

ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE.
V2B

RENTAL LOGOS SHALL BE DIGITALLY PRINTED ON TRANSLUCENT VINYL.

NOTE:
VECTOR ARTWORK MUST BE OBTAINED FROM HCAA FOR RENTAL CAR COMPANY LOGOS TO PRODUCE FINAL SHOP DRAWINGS.

NOTE:
FIELD VERIFY EXISTING SIGN SIZE.



E FACE LAYOUT DETAILS
SCALE: 3/4"=1'-0"

TYPEFACE: FRUTIGER LT STD 65 BOLD
KERNING: AUTO
TRACKING: 0

2 SIGN TYPE - DR.T.18 (RCA DIRECTIONAL)
SCALE: AS NOTED

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

AG8.30

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:39:37 AM

Drawn By: Author
Checked By: Checker
Approved By: Approver

NOTE:
CONTRACTOR SHALL PROVIDE MOT (MANAGEMENT OF TRAFFIC) DURING REMOVAL AND INSTALLATION OF SIGNAGE IN THE RENTAL CAR CENTER THAT PROVIDES FOR THE SAFETY OF MOTORISTS AND DOES NOT IMPEDE ACCESS AND CIRCULATION.

NOTE:
REMOVE AND DISPOSE OF EXISTING SIGN PANEL. REINSTALL EXISTING SIGN STRUCTURE WITH NEW SIGN PANEL IN NEW LOCATION. REFER TO PROJECT MANUAL FOR ADDITIONAL INFORMATION.



SIGN LOCATION:
APM3-2.DR.04

1 SIGN TYPE - DR.T.18 (RCA DIRECTIONAL)
SCALE: AS NOTED

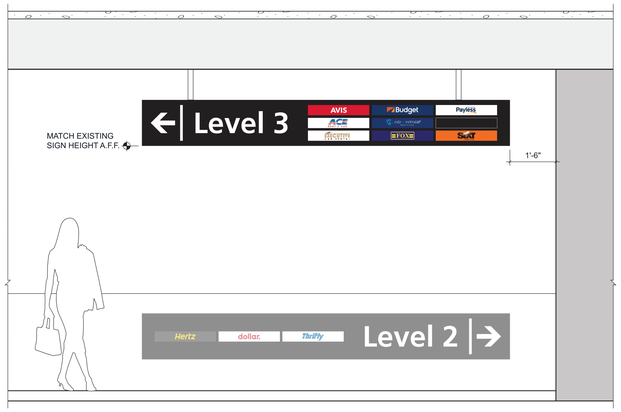


1/8" ALUMINUM SIGN PANEL PAINTED TO MATCH
P2
LOGOS DIGITALLY PRINTED ON WHITE 3M DG3 SHEETING.

NOTE:
VECTOR ARTWORK MUST BE OBTAINED FROM HCAA FOR RENTAL CAR COMPANY LOGOS TO PRODUCE FINAL SHOP DRAWINGS

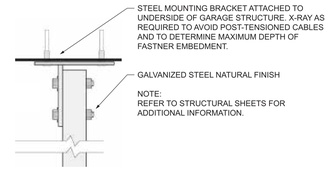
SIGN LOCATION:
APM3-2.DR.04

A FRONT ELEVATION
SCALE: 1/2"=1'-0"

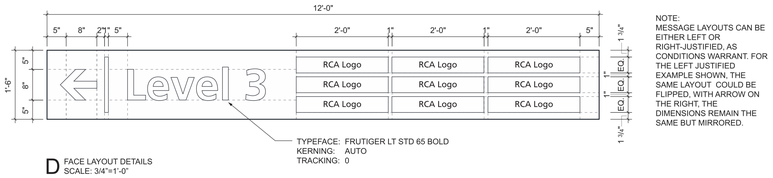


C CONTEXTUAL ELEVATION
SCALE: 1/2"=1'-0"

SIGN LOCATION:
APM3-2.DR.04



B CEILING MOUNT DETAILS
SCALE: NTS



NOTE:
MESSAGE LAYOUTS CAN BE EITHER LEFT OR RIGHT-JUSTIFIED, AS CONDITIONS WARRANT. FOR THE LEFT JUSTIFIED EXAMPLE SHOWN, THE SAME LAYOUT COULD BE FLIPPED, WITH ARROW ON THE RIGHT, THE DIMENSIONS REMAIN THE SAME BUT MIRRORED.

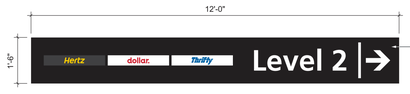
D FACE LAYOUT DETAILS
SCALE: 3/4"=1'-0"

NOTE:
CONTRACTOR SHALL PROVIDE MOT (MANAGEMENT OF TRAFFIC) DURING REMOVAL AND INSTALLATION OF SIGNAGE IN THE RENTAL CAR CENTER THAT PROVIDES FOR THE SAFETY OF MOTORISTS AND DOES NOT IMPEDE ACCESS AND CIRCULATION.



SIGN LOCATION:
APM3-2.DR.03

2 SIGN TYPE - DR.T.18 (RCA DIRECTIONAL)
SCALE: AS NOTED



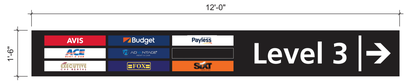
1/8" ALUMINUM SIGN PANEL PAINTED TO MATCH
P2
LOGOS DIGITALLY PRINTED ON WHITE 3M DG3 SHEETING.

REFER TO SHEET AG8.31 (DRAWING 1-D) FOR FACE LAYOUT DETAILS.

NOTE:
VECTOR ARTWORK MUST BE OBTAINED FROM HCAA FOR RENTAL CAR COMPANY LOGOS TO PRODUCE FINAL SHOP DRAWINGS

SIGN LOCATION:
APM3-2.DR.03

A FRONT ELEVATION
SCALE: 1/2"=1'-0"



SIGN LOCATION:
APM3-3.DR.06

B FRONT ELEVATION
SCALE: 1/2"=1'-0"

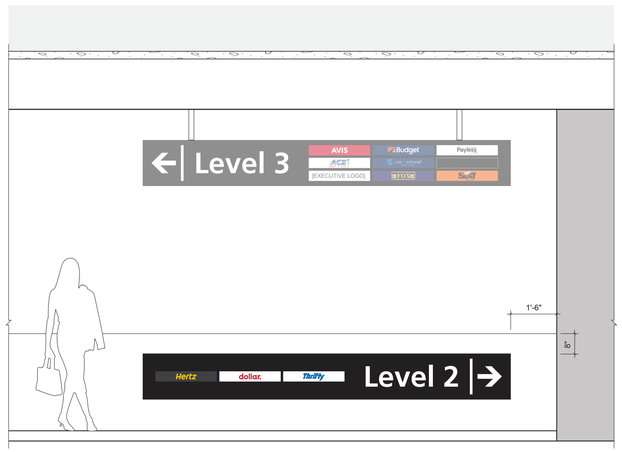


SIGN LOCATION:
APM3-3.DR.06



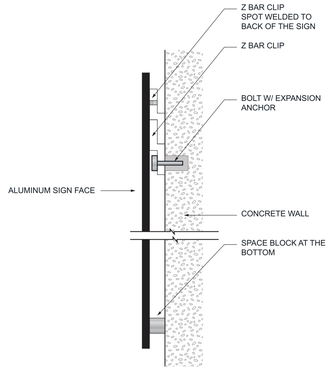
C CONTEXTUAL ELEVATION
SCALE: 1/2"=1'-0"

SIGN LOCATION:
APM3-3.DR.06



D CONTEXTUAL ELEVATION
SCALE: 1/2"=1'-0"

SIGN LOCATION:
APM3-2.DR.03



E WALL MOUNT DETAILS
SCALE: NTS

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

AG8.31

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:39:44 AM

Drawn By: Author
Checked By: Checker
Approved By: Approver

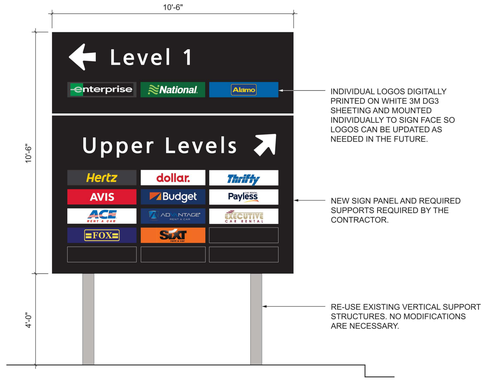
NOTE:
REMOVE AND DISPOSE EXISTING SIGN FACE.
REFERENCE SPECIFICATIONS SECTION 10 1400.



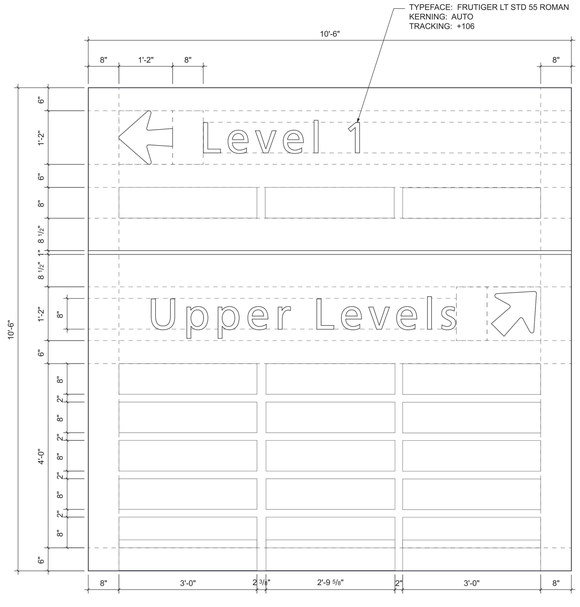
SIGN LOCATION:
APM3-1.DR.03

NOTE:
CONTRACTOR SHALL PROVIDE MOT (MANAGEMENT OF TRAFFIC) DURING REMOVAL AND INSTALLATION OF SIGNAGE IN THE RENTAL CAR CENTER THAT PROVIDES FOR THE SAFETY OF MOTORISTS AND DOES NOT IMPEDE ACCESS AND CIRCULATION.

NOTE:
GRAPHICS SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY. VECTOR ARTWORK MUST BE OBTAINED FROM HCAA FOR RENTAL CAR COMPANY LOGOS TO PRODUCE FINAL SHOP DRAWINGS



A GROUND MOUNTED DIRECTIONAL - FRONT ELEVATION
SCALE: 3/8"=1'-0"



B FACE LAYOUT DETAILS
SCALE: 3/8"=1'-0"

GENERAL NOTES - ROADWAY SIGNS

1. CONTRACTOR SHALL BE RESPONSIBLE FOR CONDUCTING ON-SITE INSPECTIONS TO FIELD VERIFY ALL EXISTING CONDITIONS AFFECTING THE FABRICATION AND INSTALLATION OF NEW AND REPLACEMENT SIGNS AND SIGN PANELS, INCLUDING SIGN PANEL SIZES, MATERIALS AND METHODS OF FABRICATION, AND SITE CONDITIONS AFFECTING ACCESS TO AND INSTALLATION OF SIGNS. LOCATION OF ALL SIGNS SHALL BE FIELD VERIFIED BY THE DESIGN CONSULTANT PRIOR TO INSTALLATION. COORDINATE ALL FOUNDATION EXCAVATION WITH THE DESIGN CONSULTANT AND GENERAL CONTRACTOR TO ENSURE NO UTILITIES ARE DISTURBED.
2. DRAWINGS REPRESENT DESIGN INTENT. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL STRUCTURAL DESIGN AND INSTALLATION OF SIGN FRAMING, SUPPORT MEMBERS, COMPONENTS, CONNECTIONS, BRACING, EXPANSION JOINTS (AND THEIR FINISHING) ETC. FOR ALL SIGNS. SIGN CONTRACTOR SHALL BE RESPONSIBLE FOR THE STRUCTURAL INTEGRITY OF THE SIGN AND MOUNTING, AND SHALL PROVIDE SEALED ENGINEERING DETAILS AND SHOP DRAWINGS. ALL MOUNTING HARDWARE MUST BE CONCEALED FROM VIEW AND NON-CORROSIVE. ALL SIGN SUPPORT ELEMENTS AND CONNECTIONS SHALL BE DESIGNED AND STAMPED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF FLORIDA. REFER TO STRUCTURAL DRAWINGS FOR WIND LOAD DESIGN REQUIREMENTS FOR ALL ELEMENTS, INCLUDING SIGN PANELS AND FASTENERS.
3. ALL SIGN SUPPORT ELEMENTS AND CONNECTIONS, INCLUDING ELECTRICAL, SHALL BE DESIGNED TO CONFORM TO TAMPA INTERNATIONAL AIRPORT ROADWAY SIGNAGE STANDARDS. REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL DETAILS REGARDING SIGN STRUCTURE AND FOOTINGS, SIGN PANEL FABRICATION (NOT INCLUDING LEGEND), ATTACHMENTS, AND SIGN LIGHTING FIXTURES.
4. ALUMINUM SIGN PANEL THICKNESSES FOR EACH LOCATION SHALL BE A MINIMUM OF .125" AND IN ADDITION SHALL BE AS REQUIRED TO ENSURE THAT ALL INSTALLED SIGN SURFACES SHALL BE FREE OF DISTORTION, OIL CANNING AND OTHER DEFECTS IN APPEARANCE, AND AS REQUIRED TO MEET 3M MANUFACTURER WARRANTY REQUIREMENTS FOR SHEETING APPLICATIONS.
5. ALL ATTACHMENT OF SIGN PANELS THROUGH THE FACES OF THE PANELS SHALL BE MADE WITH COUNTERSUNK FLAT HEAD MACHINE SCREWS FLUSH TO PANEL FACE. SIGN PANEL THICKNESS SHALL ALLOW FOR THIS. ALL SCREW HEADS TO BE COVERED WITH MATCHING SIZE CIRCULAR FILM OVERLAYS TO MATCH THE COLOR OF THE SURROUNDING SIGN FACE SUCH THAT FASTENERS ARE NOT VISIBLE ON FINAL PRODUCT.
6. WHENEVER DISSIMILAR METALS ARE ADJACENT OR MECHANICALLY CONNECTED (E.G. STAINLESS STEEL FASTENERS AND ALUMINUM MEMBERS), PROVIDE GASKETS AS REQUIRED TO ENSURE THAT METALS ARE SEPARATED AND THAT NO CORROSION OCCURS.
7. SIGN PANELS SHALL BE DEGREASED, ETCHED, NEUTRALIZED AND TREATED ON ALL EXPOSED SURFACES ALODINE 1200, IRDINE 14-2, BONDERITE 721, OR EQUAL.
8. THE LEGENDS FOR ALL GUIDE SIGNS ARE TO BE FABRICATED USING THE FOLLOWING METHOD:

   REFLECTIVE WHITE BASE SHEETING TO BE APPLIED TO PREPPED ALUMINUM PANEL, WITH ELECTRONIC CUTTABLE (EC) BLACK FILM OVERLAY. EC FILM TO BE PLOTTER CUT AND LEGEND TO BE WEEDED TO REVEAL REFLECTIVE SHEETING.

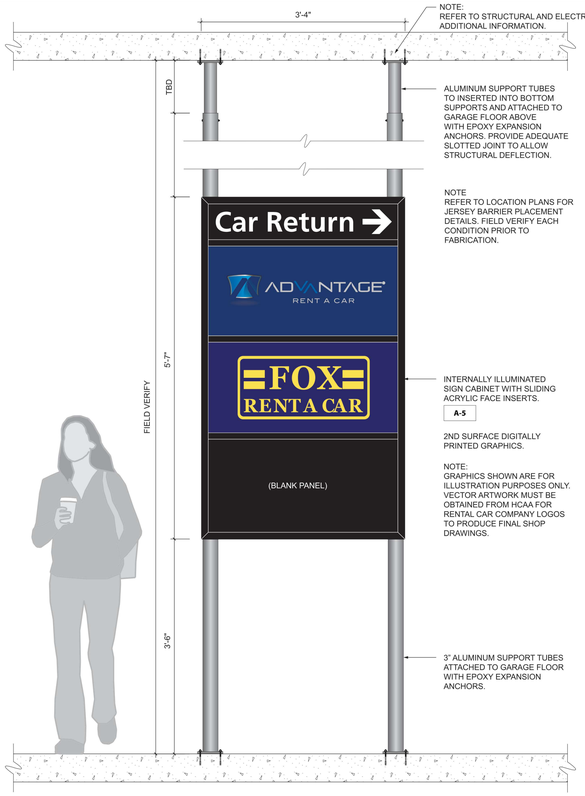
   REFLECTIVE WHITE BASE SHEETING IS SERIES 4000 3M DIAMOND GRADE DG³ REFLECTIVE SHEETING (WHITE IS 4080). SHEETING AND OVERLAY FILMS ARE TO BE APPLIED IN COMPLIANCE WITH 3M MANUFACTURER'S INSTRUCTIONS USING ROLL-TYPE HIGH PRESSURE DRY LAMINATION (REFER TO 3M PRODUCT BULLETIN 4000 – DG³ REFLECTIVE SHEETING, 3M INFORMATION FOLDER 1.7 – SIGN BASE SURFACE PREPARATION FOR 3M REFLECTIVE SHEETING APPLICATION, AND 3M FOLDERS 1.4 AND 1.6 – ROLL APPLICATORS FOR ADDITIONAL INFORMATION). FOR 3M PRODUCT INFORMATION CONTACT 3M TRAFFIC SAFETY SYSTEMS / GRIER KIRKPATRICK AT 850-321-9925.

   PANEL OVERLAY 3M SERIES 1178 BLACK EC FILM TO BE REVERSE CUT. ALL REFLECTIVE SIGN SHEETINGS AND OVERLAY FILMS MUST BE 3M TSSD MATCHED COMPONENT SYSTEM PRODUCTS.

   OTHER SERIES 1170 COLOR CODES: RED-1172, BLUE-1175.

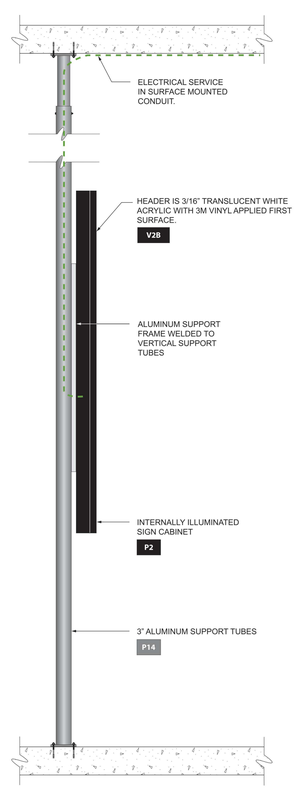
   DIGITALLY PRINTED RENTAL LOGOS SHALL USE PROCESS INKS AS SPECIFIED ON THE FLORIDA DOT QUALIFIED PRODUCTS LIST(QPL) WITH CLEAR 3M UV OVERLAMINATE TO MINIMIZE FADING.
9. MAINTENANCE OF TRAFFIC DURING INSTALLATION SHALL BE COMPLETED IN ACCORDANCE WITH FDOT STANDARD INDEXES 600 AND 601.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SIGN PERMITTING AND ANY REQUIRED REVIEW/APPROVAL SUBMITTALS TO AGENCIES HAVING JURISDICTION OVER PROJECT ROADWAYS.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR DEMOLITION AND REMOVAL OF ALL EXISTING SIGN PANELS BEING REPLACED, AS WELL AS EXISTING SIGN STRUCTURES AT LOCATIONS WHERE SIGNS ARE SCHEDULED FOR REMOVAL.
12. INSTALLATION AND STAGING: PERMANENT CHANGES TO EXISTING SIGNS SHALL BE COMPLETED PER THE OWNER'S SCHEDULE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING SIGN REMOVAL AND REPLACEMENT AT THE TIME OF THE MOVE, INCLUDING USE OF TEMPORARY SIGN COVERS AS REQUIRED, IN ORDER TO DIRECT MOTORISTS IN A MANNER CONSISTENT WITH THE NEW OPERATIONS.
13. REFER TO SECTION 10 1400 SIGNAGE IN PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS FOR SIGNAGE.

1 SIGN TYPE - DR.RSG.1 (ROADSIDE GUIDE SIGN)
SCALE: AS NOTED



A FRONT ELEVATION
SCALE: 1"=1'-0"

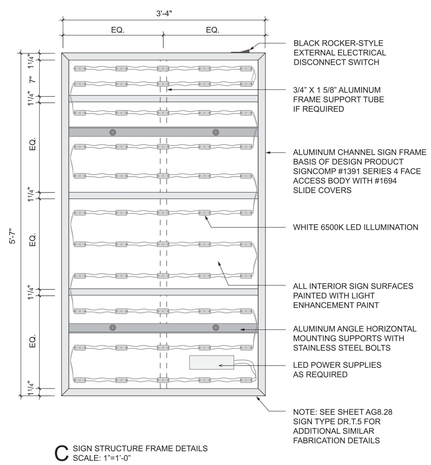
SIGN LOCATIONS:
APM3-3.DR.02
APM3-3.DR.03
APM3-3.DR.04



B SIDE ELEVATION
SCALE: 1"=1'-0"

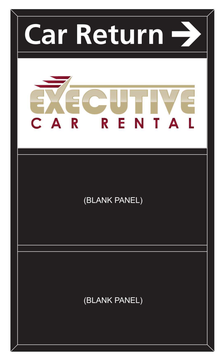
NOTE:
CONTRACTOR SHALL PROVIDE MOT (MANAGEMENT OF TRAFFIC) DURING REMOVAL AND INSTALLATION OF SIGNAGE IN THE RENTAL CAR CENTER THAT PROVIDES FOR THE SAFETY OF MOTORISTS AND DOES NOT IMPEDE ACCESS AND CIRCULATION.

NOTE:
LED LAYOUTS SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY. ACTUAL LIGHTING CONFIGURATIONS TO BE DESIGNED BY THE FABRICATOR AND BE CAPABLE OF PROVIDING EVEN ILLUMINATION WITH NO HOT SPOTS OR DARK AREAS.



C SIGN STRUCTURE FRAME DETAILS
SCALE: 1"=1'-0"

NOTE:
GRAPHICS SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY. VECTOR ARTWORK MUST BE OBTAINED FROM HCAA FOR RENTAL CAR COMPANY LOGOS TO PRODUCE FINAL SHOP DRAWINGS.



D MESSAGE CONTENT
SCALE: 1"=1'-0"



E MESSAGE CONTENT
SCALE: 1"=1'-0"

2 SIGN TYPE - DR.P.2 (RCA DIRECTIONAL - FLOOR TO CEILING DIRECTIONAL ILLUMINATED)
SCALE: AS NOTED

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

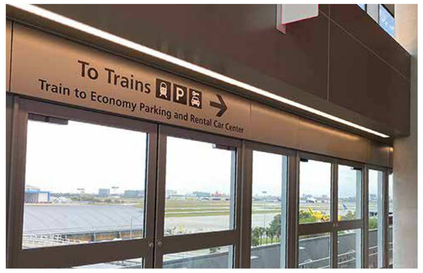
AG8.32

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:39:46 AM

Drawn By: Author
Checked By: Checker
Approved By: Approver



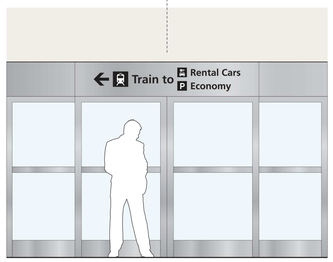
SIGN LOCATION
APM1.DR.01
APM1.DR.02

NOTE:
EXISTING VINYL SHOULD BE REMOVED
AND SURFACE MUST BE CLEANED
BEFORE APPLYING NEW VINYL.



SIGN LOCATION
APM1.DR.03
APM1.DR.04

CENTER ALIGN SIGN OVER DOOR

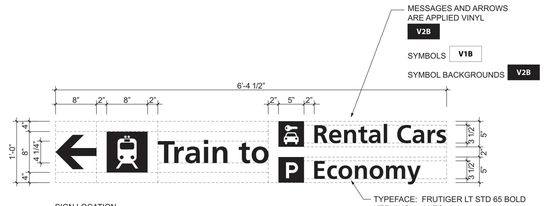


A CONTEXTUAL ELEVATION
SCALE: 3/8"=1'-0"



SIGN LOCATION
APM1.DR.01
APM1.DR.02

B ALTERNATE FACE LAYOUT
SCALE: 1"=1'-0"



SIGN LOCATION
APM1.DR.03
APM1.DR.04

C FACE LAYOUT
SCALE: 1"=1'-0"

1 SIGN TYPE - DR.T.V1 (DIRECTIONAL VINYL)
SCALE: AS NOTED



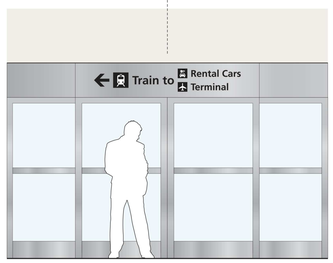
SIGN LOCATION
APM2-4.DR.12

NOTE:
EXISTING VINYL SHOULD BE REMOVED
AND SURFACE MUST BE CLEANED
BEFORE APPLYING NEW VINYL.



SIGN LOCATION
APM2-4.DR.03

CENTER ALIGN SIGN OVER DOOR

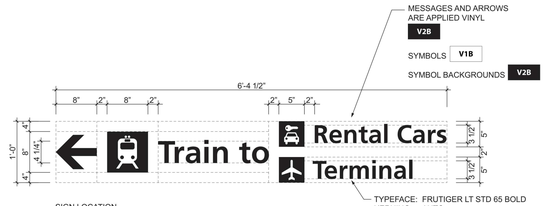


A CONTEXTUAL ELEVATION
SCALE: 3/8"=1'-0"



SIGN LOCATION
APM2-4.DR.12

B ALTERNATE FACE LAYOUT
SCALE: 1"=1'-0"



SIGN LOCATION
APM2-4.DR.03

C FACE LAYOUT
SCALE: 1"=1'-0"

2 SIGN TYPE - DR.T.V1 (DIRECTIONAL VINYL)
SCALE: AS NOTED



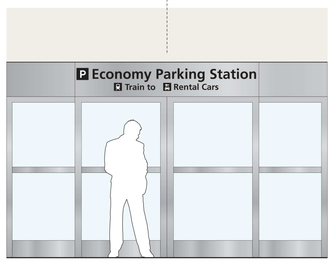
SIGN LOCATION
APM2-4.ID.06
APM2-4.ID.08
APM2-4.ID.10
APM2-4.ID.12

NOTE:
EXISTING VINYL SHOULD BE REMOVED
AND SURFACE MUST BE CLEANED
BEFORE APPLYING NEW VINYL.



SIGN LOCATION
APM2-4.ID.05
APM2-4.ID.07
APM2-4.ID.09
APM2-4.ID.11

CENTER ALIGN SIGN OVER DOOR

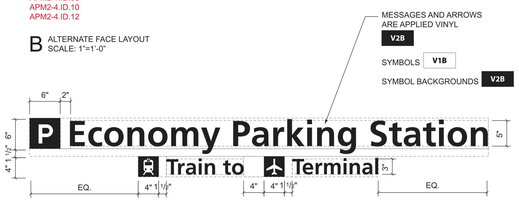


A CONTEXTUAL ELEVATION
SCALE: 3/8"=1'-0"



SIGN LOCATION
APM2-4.ID.06
APM2-4.ID.08
APM2-4.ID.10
APM2-4.ID.12

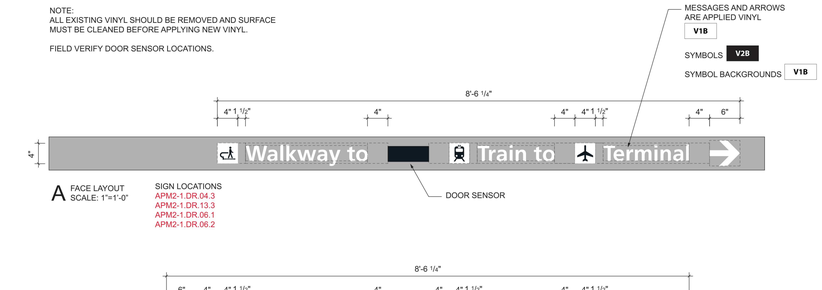
B ALTERNATE FACE LAYOUT
SCALE: 1"=1'-0"



SIGN LOCATION
APM2-4.ID.05
APM2-4.ID.07
APM2-4.ID.09
APM2-4.ID.11

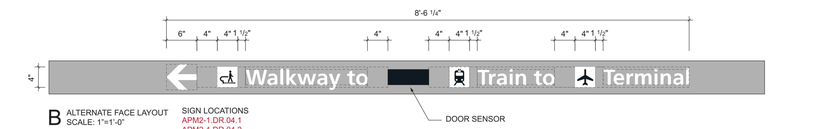
C FACE LAYOUT
SCALE: 1"=1'-0"

3 SIGN TYPE - ID.T.V1 (IDENTIFICATION VINYL)
SCALE: AS NOTED



A FACE LAYOUT
SCALE: 1"=1'-0"

SIGN LOCATIONS
APM2-1.DR.04.3
APM2-1.DR.13.3
APM2-1.DR.06.1
APM2-1.DR.06.2



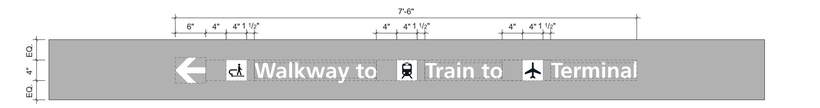
B ALTERNATE FACE LAYOUT
SCALE: 1"=1'-0"

SIGN LOCATIONS
APM2-1.DR.04.1
APM2-1.DR.04.2
APM2-1.DR.10.3
APM2-1.DR.06.3



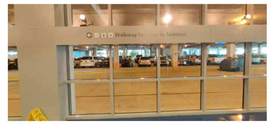
C ALTERNATE FACE LAYOUT
SCALE: 1"=1'-0"

SIGN LOCATIONS
APM2-1.DR.10.1
APM2-1.DR.10.2



D ALTERNATE FACE LAYOUT
SCALE: 1"=1'-0"

SIGN LOCATIONS
APM2-1.DR.13.1
APM2-1.DR.13.2





NOTE:
FIELD VERIFY EACH LOCATION PRIOR TO FABRICATION

4 SIGN TYPE - DR.T.V2 (DIRECTIONAL VINYL)
SCALE: AS NOTED

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

AG8.33

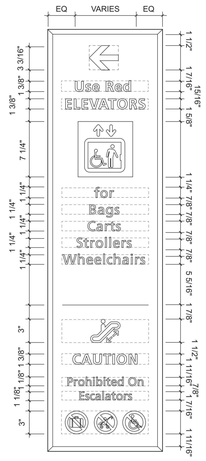
43342.03
10/07/2021

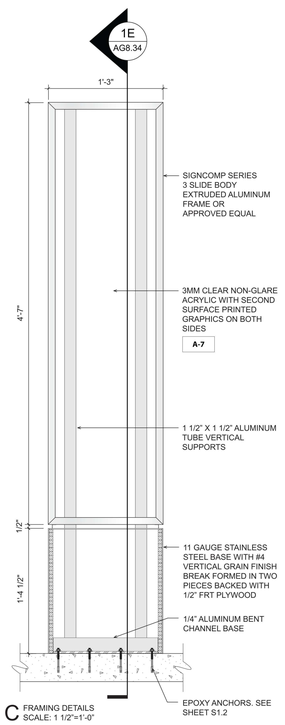
This Line is 3 Inches When Printed Full Size

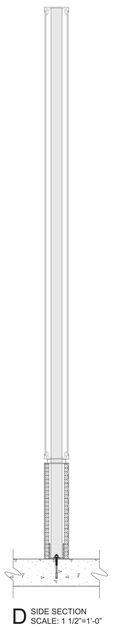
BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:39:49 AM

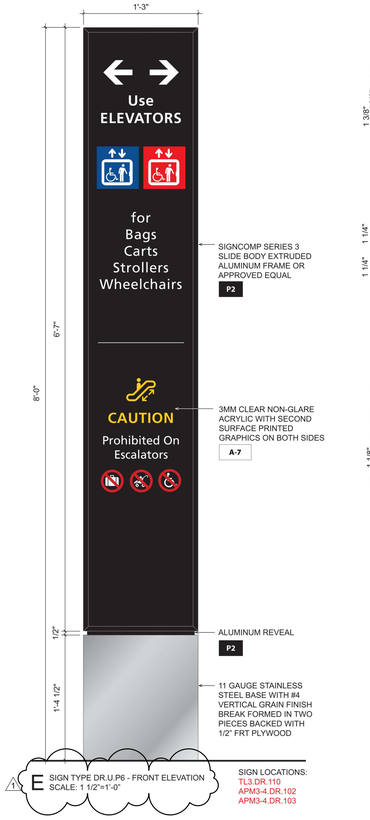
Drawn By: Author
Checked By: Checker
Approved By: Approver

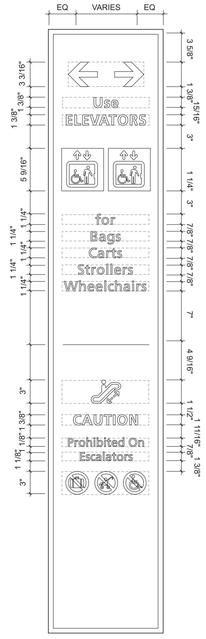


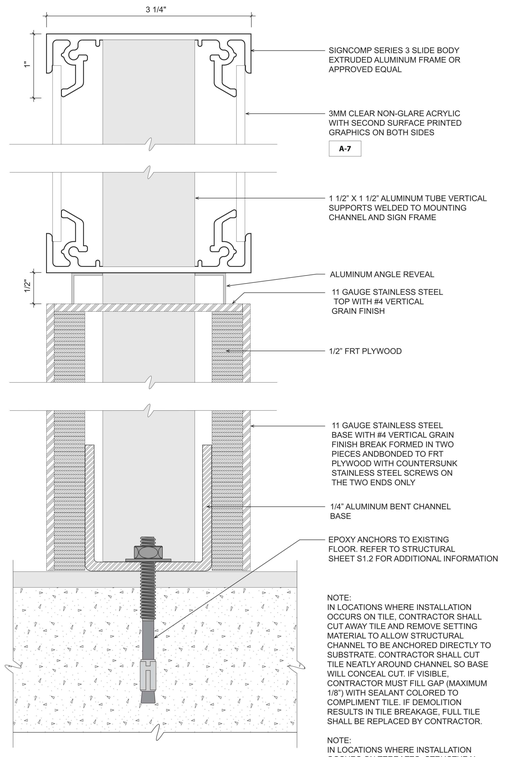












1 SIGN TYPE - DR.U.P5 & DR.U.P6 (ESCALATOR DIRECTIONAL & REGULATORY PYLONS)
SCALE: AS NOTED

























TERMINAL LEVEL 1 BAG CLAIM
REFERENCE SHEET AG2.1.1 FOR LOCATIONS

TERMINAL LEVEL 2 TICKETING
REFERENCE SHEET AG2.1.2 FOR LOCATIONS

TERMINAL LEVEL 3 TRANSFER
REFERENCE SHEET AG2.1.3 FOR LOCATIONS

APM LEVEL 4
REFERENCE SHEET AG2.142 FOR LOCATIONS

AIRSIDE A AND F
REFERENCE SHEET AG2.1.6 FOR LOCATIONS

CONRAC LEVEL1
REFERENCE SHEET AG2.3.1 FOR LOCATIONS







CONRAC LEVEL 2
REFERENCE SHEET AG2.3.2 FOR LOCATIONS

CONRAC LEVEL 3
REFERENCE SHEET AG2.3.3 FOR LOCATIONS

CONRAC LEVEL 4
REFERENCE SHEET AG2.3.4 FOR LOCATIONS

NOTE:
ART FILES WILL BE PROVIDED BY THE ARCHITECT TO THE CONTRACTOR FOR USE IN SHOP DRAWINGS AND FABRICATION. PROPER SCALING AND SIZING IS THE RESPONSIBILITY OF THE CONTRACTOR.



SKY CENTER
REFERENCE SHEET AG2.4.1 FOR LOCATIONS

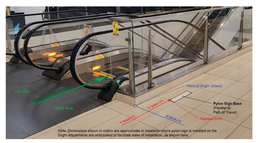
2 SIGN TYPE - DR.U.P5 & DR.U.P6 (LOCATIONS AND LAYOUTS)
SCALE: NTS

Sign Number	Side [Left (L) / Right (R)]	Orientation [Parallel (PARA) / Perpendicular (PERP)]	Origin Point [Escalator (ESC) / Glass Guardrail (GG)]	Dimension from Origin [Perpendicular (X) / Parallel (Y)] Dim X	Dim Y	Notes:
TL1.DR.100	R	PERP	ES	6"	1'-0"	
TL1.DR.101	L	PERP	ES	6"	1'-0"	
TL1.DR.102	R	PERP	ES	10"	1'-0"	
TL1.DR.103	L	PERP	ES	6"	1'-0"	
TL1.DR.104	R	PERP	ES	10"	1'-0"	
TL1.DR.105	L	PERP	ES	6"	1'-0"	
TL2.DR.100	L	PERP	GL	1'-3"	-7"	Align w/ corner of tile
TL2.DR.101	R	PERP	GL	1'-6-1/2"	-5-1/2"	Align w/ corner of tile
TL2.DR.102	L	PARA	ES	7"	1'-4"	Align w/ corner of tile
TL2.DR.103	R	PARA	ES	8-1/2"	1'-8"	Align w/ corner of tile
TL2.DR.104	L	PARA	ES	7"	1'-4"	Align w/ corner of tile
TL2.DR.105	L	PARA	ES	9-1/2"	1'-7"	Align w/ corner of tile
TL2.DR.106	R	PERP	GL	1'-1-1/2"	-6"	Align w/ corner of tile
TL2.DR.107	L	PERP	GL	1'-4-1/2"	-6"	Align w/ corner of tile
TL3.DR.100	L	PARA	GL	10"	1'-7-1/2"	Align w/ corner of tile
TL3.DR.101	R	PERP	GL	1'-8-1/2"	-6"	Align w/ corner of tile
TL3.DR.102	L	PERP	ES	1'-0"	-2'-6-1/2"	Align w/ edge of tile; center in front of sign post
TL3.DR.103	R	PARA	GL	9-1/2"	1'-3"	Align w/ corner of tile
TL3.DR.104	L	PARA	GL	1'-7"	-8"	Align w/ corner of tile
TL3.DR.105	L	PERP	GL	1'-3-1/2"	-7"	Align w/ corner of tile
TL3.DR.106	R	PARA	GL	7"	1'-5"	Align w/ corner of tile
TL3.DR.107	L	PERP	ES	1'-0"	-2'-7"	Align w/ edge of tile; center in front of sign post
TL3.DR.108	R	PERP	GL	1'-5"	-6-1/2"	Align w/ corner of tile
TL3.DR.109	L	PARA	GL	4"	1'-6"	Align w/ corner of tile
TL3.DR.110	N/A	N/A	N/A	N/A	N/A	Refer to Sign Location Plan
APM1.DR.100	L	PARA	ES	3-1/2"	1'-3"	Align w/ corner of tile
APM1.DR.101	R	PARA	ES	3-1/2"	1'-3"	Align w/ edge of tile
APM1.DR.102	L	PARA	ES	1'-4"	1'-11-1/2"	Align w/ corner of tile
APM1.DR.103	R	PARA	ES	2-1/2"	1'-4-1/2"	Align w/ corner of tile
AA.DR.100	L	PERP	ES	4"	-8"	Solid balustrade
AA.DR.101	L	PARA	ES	4"	-8"	Solid balustrade; T-dim is to leading edge
AF.DR.100	L	PERP	ES	4"	1'-3"	
APM3-1.DR.100	L	PERP	ES	1'-1-1/2"	3"	Align w/ corner of tile
APM3-1.DR.101	R	PERP	ES	1'-1-1/2"	2"	Align w/ corner of tile
APM3-2.DR.100	R	PERP	GL	1'-10-1/2"	-6"	Align w/ edge of tile
APM3-2.DR.101	L	PERP	GL	1'-1-1/2"	-6"	Align w/ edge of tile
APM3-3.DR.100	R	PERP	GL	9-1/2"	-10"	Align w/ corner of tile
APM3-3.DR.101	L	PERP	GL	1'-3"	-6"	Align w/ corner of tile
APM3-4.DR.100	L	PERP	ES	1'-1-1/2"	-6-1/2"	Adj. to escalator to Level 1; Align w/ corner of tile
APM3-4.DR.101	R	PERP	GL	1'-0"	-6-1/2"	Adj. to escalator to Level 1; Align w/ corner of tile
APM3-4.DR.102	N/A	N/A	N/A	N/A	N/A	Refer to Sign Location Plan
APM3-4.DR.103	N/A	N/A	N/A	N/A	N/A	Refer to Sign Location Plan
SL1.DR.100	R	PERP	ES	9"	5"	
SL3.DR.100	L	PERP	ES	6"	4"	
SL3.DR.101	L	PERP	ES	1'-6"	1'-4"	
SL4.DR.100	R	PERP	ES	1'-6"	1'-4"	

ESCALATOR PYLON LOCATION MATRIX

LEGEND		
Side	Left/Right	Refers to Left or Right side of escalator as it relates to the path of escalator travel
Orientation	Parallel	Refers to an orientation that is parallel to the path of escalator travel
	Perpendicular	Refers to an orientation that is perpendicular to the path of escalator travel
Origin Point	Escalator	Dimensions listed are from the outside corner of the deck cover
	Glass Guardrail	Dimensions listed are from the outside corner of the glass guardrail base
Dimensions from Origin	Perpendicular (X Axis)	Dimension from the Origin Point that is perpendicular to the path of escalator travel to the nearest corner of the pylon base
	Parallel (Y Axis)	Dimension from the Origin Point that is parallel to the path of escalator travel to the nearest corner of the pylon base *Note: Positive (+) X dimensions refer to pylons that are beyond the Origin Point. Negative (-) X dimensions refer to pylons in advance of the Origin Point as it relates to the path of escalator travel.* *Note: Locations that indicate alignment with tile are approximate and are intended to limit cutting activities to one tile and simplify those cuts. Slight dimensional adjustments are anticipated to facilitate the ease of installation.*





SITE LOCATION DETAILS

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description
1	11/19/21	Addendum 01

SIGN DETAILS

AG8.34

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

BIM 360:/43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
11/19/2021 11:34:20 AM

Drawn By: Author
Checked By: Checker
Approved By: Approver

NOTE: DECAL GRAPHICS TO BE DIGITALLY PRINTED VINYL FILM WITH PROTECTIVE OVERLAMINATE (TYPICAL)



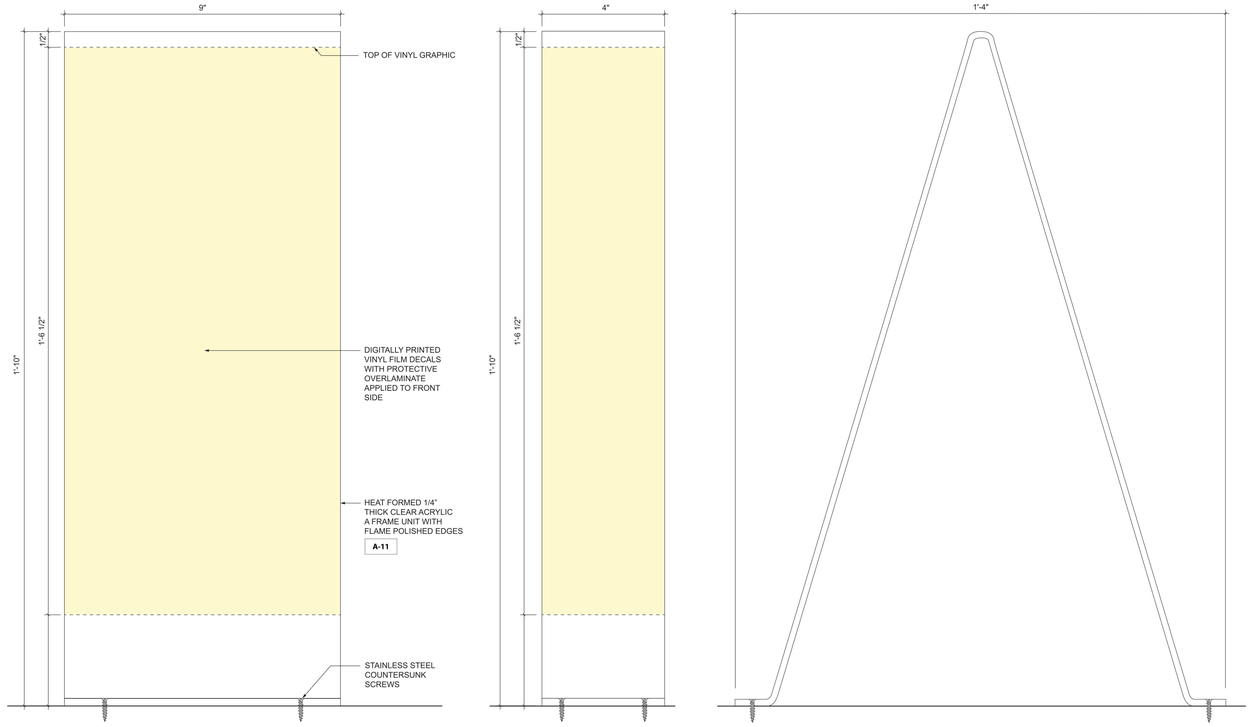
A 9C - 9" WIDE CAUTION MESSAGE SCALE: 1/2"=1"

B 6C - 6" WIDE CAUTION MESSAGE SCALE: 1/2"=1"

C 4C - 4" WIDE CAUTION MESSAGE SCALE: 1/2"=1"

D 4X - 4" WIDE EXCLUSION LIST SCALE: 1/2"=1"

1 ESCALATOR CAUTION DECALS
SCALE: AS NOTED



A FRONT ELEVATION - NINE INCH CLIMB BARRIER FOR 9C DECALS SCALE: 1/2"=1"

B FRONT ELEVATION - FOUR INCH FOR 4C & 4X DECALS

C SIDE ELEVATION - TYPICAL CLIMB BARRIER FABRICATION SCALE: 1/2"=1"

NOTE: SAME CONSTRUCTION MATERIALS AS THE NINE INCH WIDE VERSION

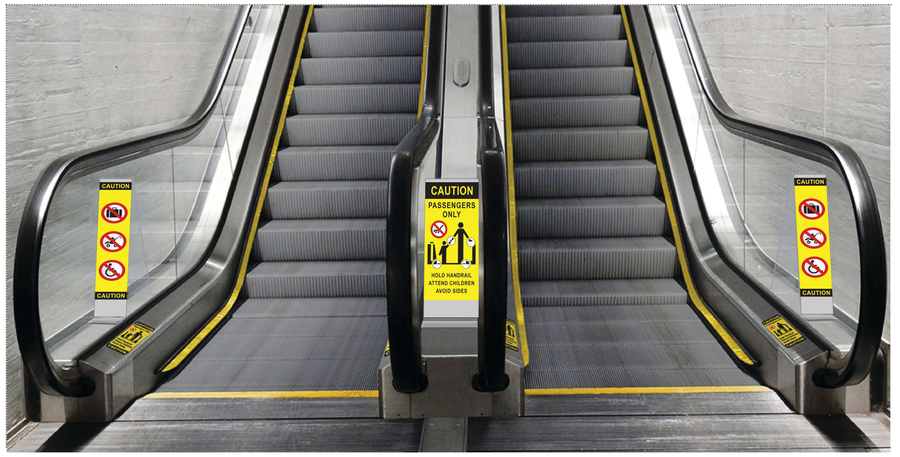
2 ACRYLIC CLIMB BARRIERS
SCALE: AS NOTED

		Decal Location																				
		Left						Center						Right								
		Mounting			Type			Mounting			Type			Mounting			Type					
Escalator Location		CB	G	O	9C	4X	4C	6C	CB	G	O	9C	4X	4C	6C	CB	G	O	9C	4X	4C	6C	Remove Qty.	Notes:
TL1.RG.100		1				1										1					1			
TL1.RG.101		1					1									1				1				
TL1.RG.102		1				1			1			1				1				1				
TL1.RG.103		1					1		1							1				1				
TL1.RG.104		1				1										1					1			
TL1.RG.105		1				1			1			1				1				1				
TL2.RG.100			1		1												1			1				
TL2.RG.101			1			1											1		1					
TL2.RG.102		1				1										1					1			
TL2.RG.103		1				1										1					1			
TL2.RG.104		1				1										1					1			
TL2.RG.105		1				1										1					1			
TL2.RG.106			1			1											1		1					
TL2.RG.107			1		1												1			1				
TL3.RG.101			1			1			1			1					1			1				
TL3.RG.102			1			1											1		1					
TL3.RG.104			1			1			1			1					1			1				
TL3.RG.105			1			1			1			1					1			1				
TL3.RG.107			1			1											1		1					
TL3.RG.108			1			1			1			1					1			1				
TL3.RG.110A			1			1			1			1					1			1				Escalators down from Transfer to Ticketing
TL3.RG.110B			1					1								1				1				North escalator up to Platform
TL3.RG.110C		1				1											1					1		South escalator up to Platform
APM1.RG.100		1				1			1			1				1				1				
APM1.RG.101			1				1										1			1				
APM1.RG.102			1			1											1					1		
APM1.RG.103		1				1			1			1				1				1				
AA.RG.100				1		1	1																	Mounted to stainless steel newel
AA.RG.101				1		1	1																	Mounted to stainless steel newel
AF.RG.100		1				1			1			1				1				1				
APM3-1.RG.100		1							1			1								1				
APM3-1.RG.101									1			1				1				1				
APM3-2.RG.100			1			1			1			1					1			1				
APM3-2.RG.101			1			1			1			1					1			1				
APM3-3.RG.100			1			1			1			1					1			1				
APM3-3.RG.101			1			1			1			1					1			1				
APM3-4.RG.100A			1			1			1			1													Escalator to Level 1
APM3-4.RG.100B			1			1			1			1				1				1					Escalator to Level 2
APM3-4.RG.100C			1			1			1			1				1				1					Escalator to Level 3
APM3-4.RG.101A									1			1					1			1					Escalator to Level 1
APM3-4.RG.101B		1				1			1			1					1			1					Escalator to Level 2
APM3-4.RG.101C		1				1			1			1					1			1					Escalator to Level 3
SL1.RG.100		1				1			1			1				1				1					
SL3.RG.100		1				1			1			1				1				1					
SL3.RG.101		1				1			1			1				1				1					
SL4.RG.100		1				1			1			1				1				1					
Total		21	21	2	2	38	4	2	26	0	0	26	0	0	0	21	21	0	4	30	6	2	0	

A ESCALATOR CAUTION DECALS INSTALLATION MATRIX NOT TO SCALE

LEGEND			
			Qty.
Mounting	CB	Acrylic A-Frame Climb Barrier	68
	G	Glass Handrail	42
	O	Other (See notes)	2
Decal Type	9C	9" Wide Code-Required Caution Message	32
	4X	4" Wide Exclusion List	68
	4C	4" Wide Code-Required Caution Message	10
	6C	6" Wide Code-Required Caution Message	4

NOTE: ESCALATOR SIGNS LISTED HERE ARE NOT SHOWN ON SIGN LOCATION PLANS. SIGN LOCATION PLANS REFERENCE ESCALATOR PYLON SIGNS THAT ARE ASSOCIATED WITH THE ESCALATOR LOCATIONS LISTED HERE.
EXAMPLE: TL1.**RG**.100 SHOWN ON THIS MATRIX SHALL BE INSTALLED AT THE SAME LOCATION AS TL1.**DR**.100 SHOWN ON SIGN LOCATION PLANS.



B ESCALATOR CAUTION DECALS TYPICAL INSTALLATION DETAILS NOT TO SCALE

3 ESCALATOR CAUTION DECALS INSTALLATION DETAILS
NOT TO SCALE

Gresham Smith

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Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

AG8.35

43342.03
10/07/2021

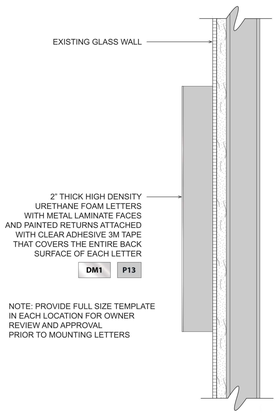
This Line is 3 Inches When Printed Full Size

BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:39:55 AM

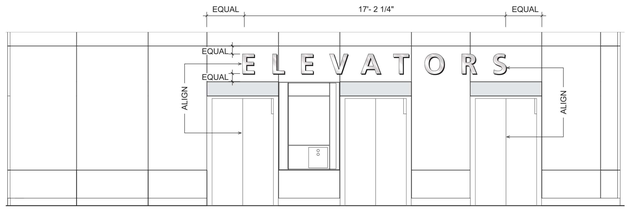
Drawn By: Author
Checked By: Checker
Approved By: Approver



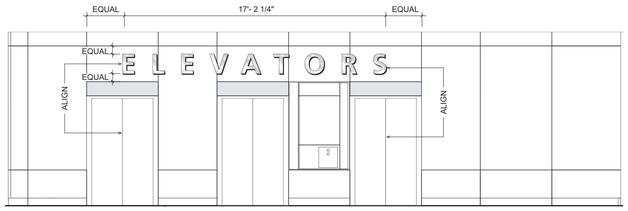
C ELEVATORS
SCALE: 1"=1'-0"



D SIDE SECTION DETAIL
SCALE 3" = 1'-0"



A ELEVATORS ELEVATION - TL1.ID.100
SCALE: 1/4"=1'-0"



B ELEVATORS ELEVATION - TL1.ID.101
SCALE: 1/4"=1'-0"

1 SIGN TYPE ID.T.DL9 DIMENSIONAL LETTERS - TERMINAL LEVEL ONE ELEVATORS
SCALE: AS NOTED

NOTE: FIELD VERIFY DIMENSIONS PRIOR TO FABRICATION AND VERIFY SPLIT IN THE ELEVATOR DOOR.

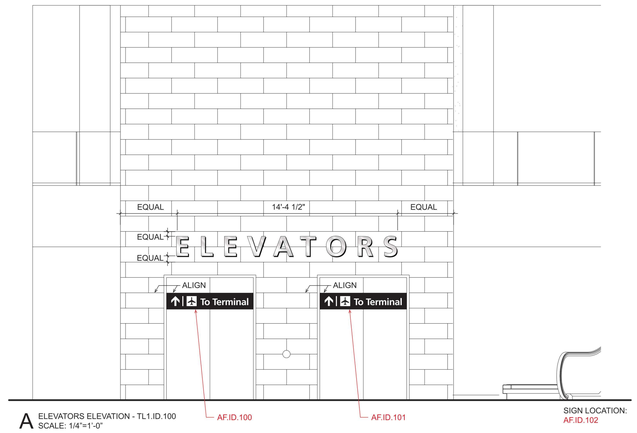


B ELEVATOR DOOR GRAPHICS
SCALE: 1"=1'-0"

DIGITALLY PRINTED GRAPHICS ON WHITE VINYL WITH PROTECTIVE OVERLAMINATE
V2B

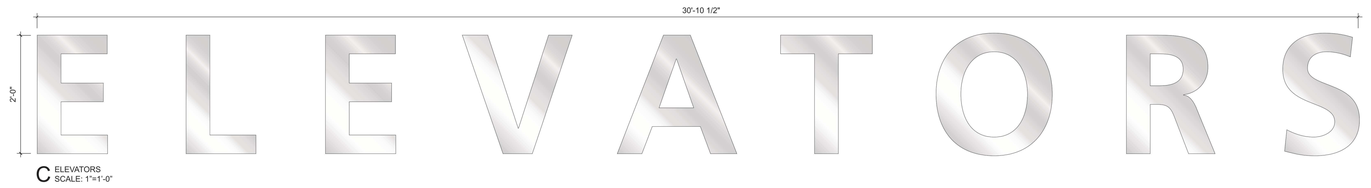
SIGN LOCATIONS:
AF.ID.100
AF.ID.101

2 SIGN TYPE ID.T.V2 VINYL FILM - AIRSIDE F LEVEL ONE
SCALE: AS NOTED



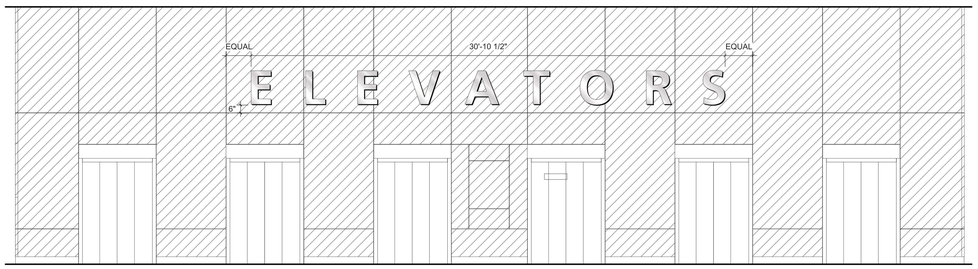
A ELEVATORS ELEVATION - TL1.ID.100
SCALE: 1/4"=1'-0"

3 SIGN TYPE ID.T.DL9 LETTERS - AIRSIDE F LEVEL ONE
SCALE: AS NOTED

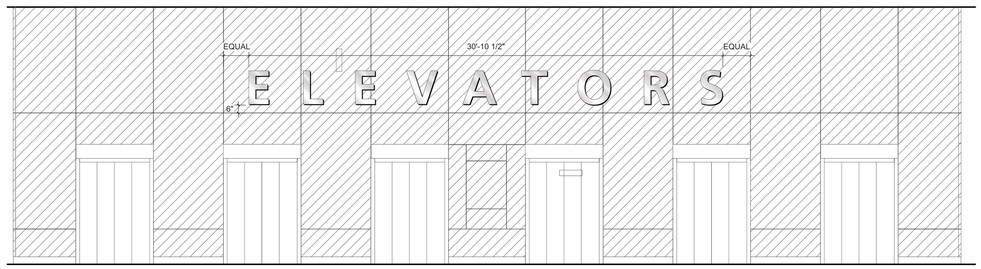


C ELEVATORS
SCALE: 1"=1'-0"

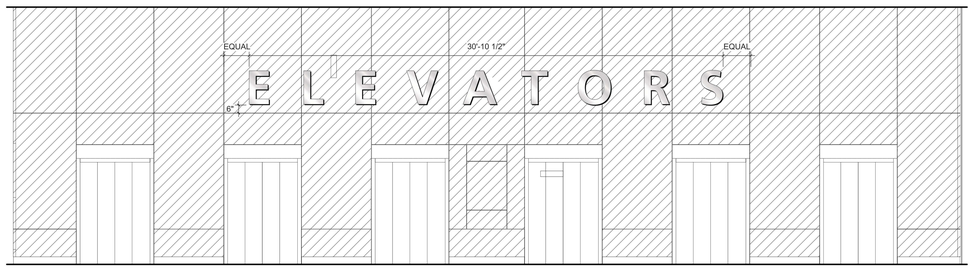
NOTE: REFER TO SHEET AG8.36 DRAWING 1D FOR SIDE SECTION AND FABRICATION DETAILS



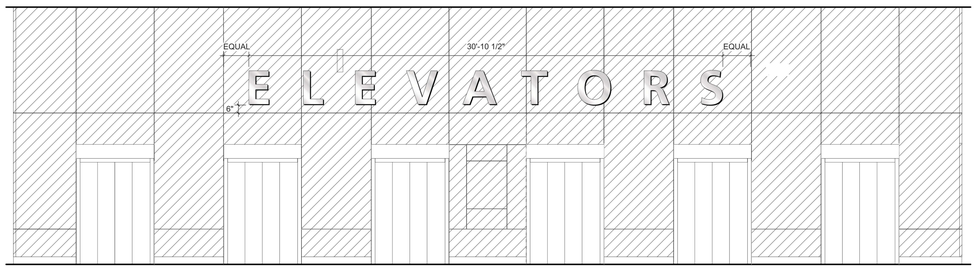
C EARHART ELEVATORS ELEVATION - TL2.ID.103 & TL3.ID.103
SCALE: 1/4"=1'-0"



D ARMSTRONG ELEVATORS ELEVATION - TL2.ID.102 & TL3.ID.102
SCALE: 1/4"=1'-0"



A YEAGER ELEVATORS ELEVATION - TL2.ID.100 & TL3.ID.100
SCALE: 1/4"=1'-0"



B SIKORSKY ELEVATORS ELEVATION - TL2.ID.101 & TL3.ID.101
SCALE: 1/4"=1'-0"

4 SIGN TYPE ID.T.DL9 DIMENSIONAL LETTERS - TERMINAL LEVELS TWO AND THREE ELEVATOR IDENTIFICATION LETTERS
SCALE: AS NOTED

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Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

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BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

AG8.36

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

10/7/2021 11:39:57 AM
BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt

Drawn By: Author
Checked By: Checker
Approved By: Approver



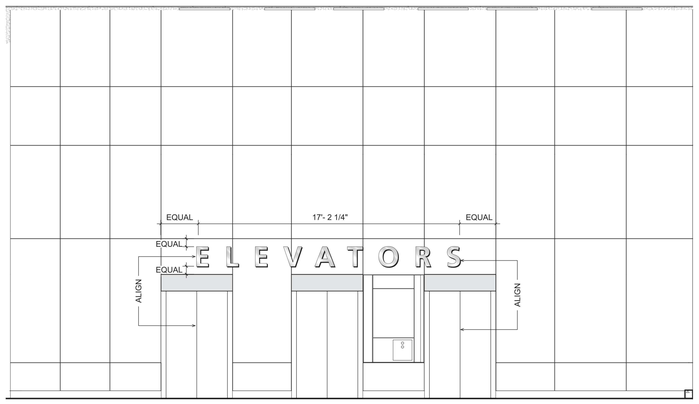
E ELEVATORS
SCALE: 1"=1'-0"

NOTE: REFER TO SHEET AG8.36
DRAWING 1D FOR SIDE SECTION
AND FABRICATION DETAILS

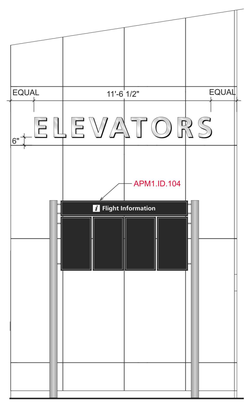


F ALTENATE SPACING
SCALE: 1"=1'-0"

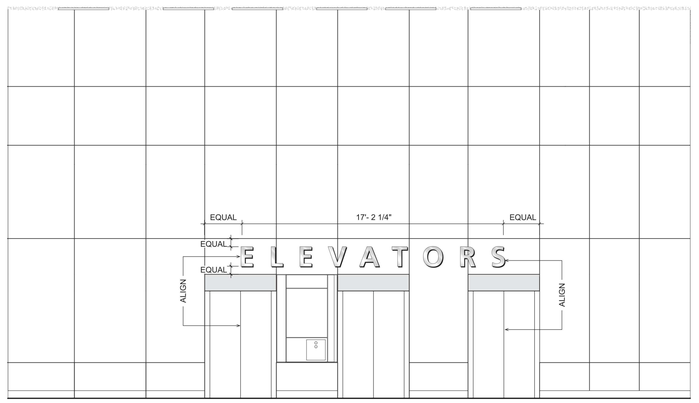
NOTE: REFER TO SHEET AG8.36
DRAWING 1D FOR SIDE SECTION
AND FABRICATION DETAILS



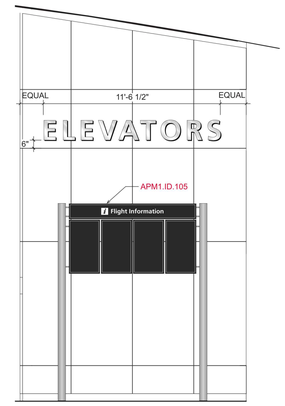
A NORTH ELEVATORS FACADE W - APM1.ID.100
SCALE: 1/4"=1'-0"



B NORTH ELEVATORS FACADE N - APM1.ID.101
SCALE: 1/4"=1'-0"

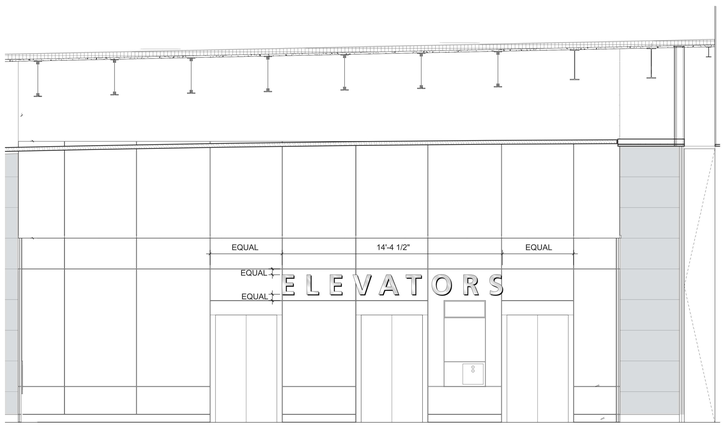


C SOUTH ELEVATORS FACADE W - APM1.ID.103
SCALE: 1/4"=1'-0"



D SOUTH ELEVATORS FACADE N - APM1.ID.102
SCALE: 1/4"=1'-0"

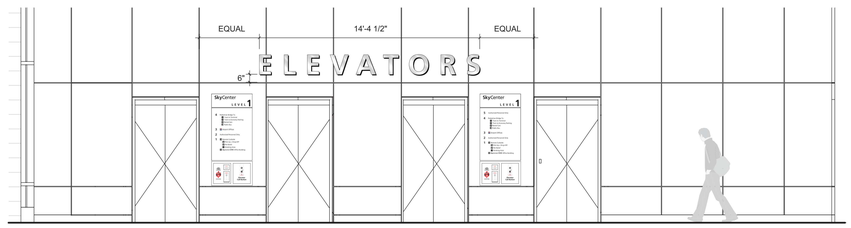
1 SIGN TYPE ID.T.DL9 DIMENSIONAL LETTERS - APM 1 LEVEL FOUR ELEVATORS
SCALE: AS NOTED



A CONRAC LEVEL 4 ELEVATORS FACADE - APM3-4.ID.100 & APM3-4.ID.101
SCALE: 1/4"=1'-0"

NOTE: REFER TO SHEET AG8.36
DRAWING 1D FOR SIDE SECTION
AND FABRICATION DETAILS

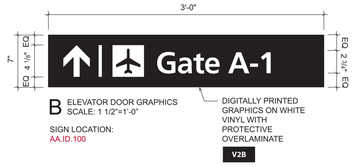
2 SIGN TYPE ID.T.DL9 DIMENSIONAL LETTERS - CONRAC LEVEL FOUR
SCALE: AS NOTED



A SKYCENT LEVEL 1 ELEVATORS FACADE - SL1.ID.100
SCALE: 1/4"=1'-0"

NOTE: REFER TO SHEET AG8.36
DRAWING 1D FOR SIDE SECTION
AND FABRICATION DETAILS

3 SIGN TYPE ID.T.DL9 DIMENSIONAL LETTERS - SKYCENTER LEVEL ONE
SCALE: AS NOTED



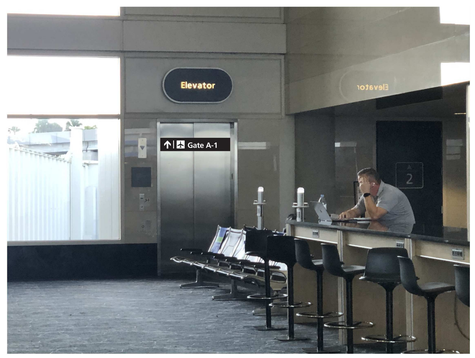
B ELEVATOR DOOR GRAPHICS
SCALE: 1 1/2"=1'-0"

SIGN LOCATION:
AA.ID.100

DIGITALLY PRINTED GRAPHICS ON WHITE VINYL WITH PROTECTIVE OVERLAMINATE

V28

NOTE: FIELD VERIFY DIMENSIONS PRIOR
TO FABRICATION AND VERIFY SPLIT IN
THE ELEVATOR DOOR.



A SIGN TYPE ID.T.V3 AIRSIDE A LEVEL TWO
ELEVATOR DOOR GRAPHICS

4 SIGN TYPE ID.T.V3 VINYL FILM - AIRSIDE A
SCALE: AS NOTED

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Tampa International Airport

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BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

AG8.37

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

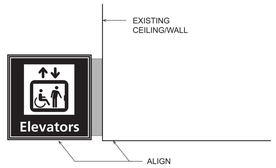
BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt
10/7/2021 11:40:00 AM

Drawn By: Author
Checked By: Checker
Approved By: Approver



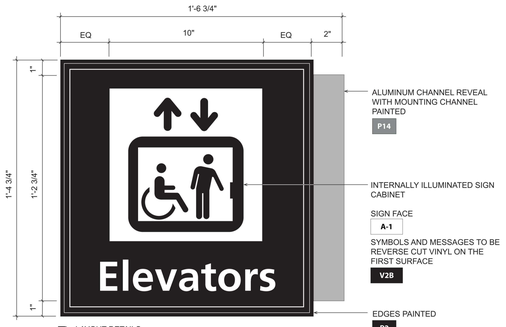
SIGN LOCATIONS:
TL3.ID.104
TL3.ID.105

NOTE:
PROVIDE NEW SIGNS, ELECTRICAL SERVICE AND BLOCKING AT EACH LOCATION.

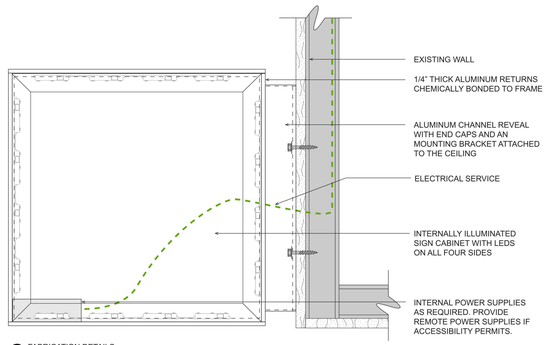




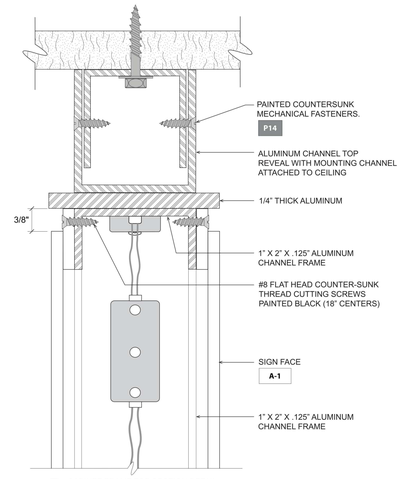
A TERMINAL TRANSFER LEVEL CONTEXTUAL ELEVATION
SCALE: 1"=1'-0"



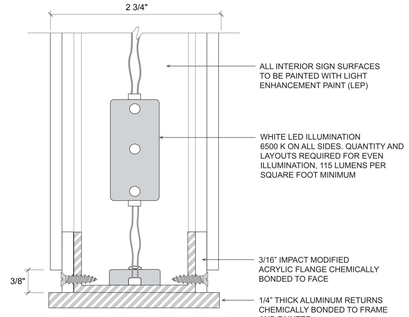
B LAYOUT DETAILS
SCALE: 3" = 1'-0"



C FABRICATION DETAILS
SCALE: 3" = 1'-0"



D CABINET FRAME TOP SECTION DETAIL
SCALE: 3" = 1'-0"



E CABINET FRAME BOTTOM SECTION DETAIL
SCALE: 3" = 1'-0"

1 SIGN TYPE - ID.U.08 (FLAG MOUNTED ELEVATOR ID)
SCALE: AS NOTED



SIGN LOCATIONS:
APM1.ID.104
APM1.ID.105

NOTE:
EXISTING SIGN FACES TO BE REPLACED.



C LAYOUT DETAILS
SCALE: 1 1/2"=1'-0"

NOTE:
REMOVE AND DISPOSE EXISTING SIGN FACES - EXISTING SIGN BOXES TO REMAIN.

NEW ACRYLIC FACE A-1

ARROW, SYMBOLS AND MESSAGES TO BE REVERSE CUT VINYL FIRST SURFACE

V2B



B FACE LAYOUTS
SCALE: 1"=1'-0"



A REPLACEMENT SIGN FACES - FRONT ELEVATION
SCALE: 1"=1'-0"

2 APM 1 LEVEL FIDS HEADER REPLACEMENT FACES
SCALE: AS NOTED

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

BENJAMIN RAPOSA
AR 98754

Revision

No.	Date	Description

SIGN DETAILS

AG8.38

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

10/7/2021 11:40:02 AM
BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/43342.03_TPA WAYFINDING_GRAPHICS_CENTRAL_R21.rvt

Drawn By: B.Y.
Checked By: R.F.W.
Approved By: G.C.

DEMOLITION NOTES

1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE AND LEGALLY DISPOSE OF DEMOLISHED MATERIALS.
2. THE OWNER RESERVES THE RIGHT TO INSPECT THE MATERIAL SCHEDULED FOR REMOVAL AND SALVAGE ANY ITEMS DEEMED USEABLE AS SPARE PARTS.
3. EXISTING CONDITIONS INDICATED ON THIS DRAWING ARE TAKEN FROM EXISTING DOCUMENTS AND FIELD INVESTIGATION. IT IS RECOMMENDED FOR CONTRACTOR TO VISIT SITE AND VERIFY EXISTING CONDITIONS PRIOR TO BID.
4. THE CONTRACTOR SHALL INSURE THAT CONDUITS REMAINING WITHIN THE PROJECT AREA ARE SUPPORTED IN ACCORDANCE WITH THE SPECIFICATIONS. CONDUITS THAT ARE ATTACHED TO ITEMS BEING REMOVED DURING DEMOLITION SHALL BE SUPPORTED FROM THE STRUCTURE PRIOR TO REMOVING ITEM.
5. EXISTING PANEL DIRECTORIES SHALL BE UPDATED TO REFLECT CURRENT CONDITIONS.
6. CONTRACTOR SHALL PATCH, PAINT AND MATCH FINISH WITH EXISTING SURFACES TO REMAIN WHERE ELECTRICAL DEVICES ARE BEING REMOVED.
7. CONTRACTOR SHALL REVIEW NEW FLOOR PLANS FOR DEVICES TO REMAIN PRIOR TO DEMOLITION. EXISTING DEVICES TO REMAIN ARE SHOWN LIGHT IN COLOR.
8. CONTRACTOR SHALL REVIEW NEW FLOOR PLANS FOR CIRCUITS TO REMAIN AND BE REUSED FOR NEW DEVICES PRIOR TO DEMOLITION.

FIELD VERIFY ALL LOCATION

1. DESIGN DRAWINGS ARE SCHEMATIC. THIS CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING OR AWARD OF CONTRACT TO INSPECT EXISTING FIELD CONDITIONS. THIS CONTRACT SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY FOR FIELD MODIFICATIONS DUE TO EXISTING CONDITIONS.
2. THE CONTRACTOR SHALL CONTACT THE ARCHITECT, ENGINEER OR OWNER PRIOR TO BIDDING FOR INTERPRETATIONS AND CLARIFICATIONS OF THE DESIGN AND INCLUDE IN HIS BID ALL COSTS TO MEET THE DESIGN INTENT. CLARIFICATIONS MADE BY THE ARCHITECT, ENGINEER OR OWNER AFTER BIDDING WILL BE FINAL AND SHALL BE IMPLEMENTED AT CONTRACTORS COST.
3. BIDDING CONTRACTORS SHALL HAVE A WORKING KNOWLEDGE OF LOCAL CODES AND ORDINANCES AND SHALL INCLUDE IN THEIR BIDS THE COST FOR ALL WORK INSTALLED IN STRICT ACCORDANCE WITH GOVERNING CODES, THE PLANS AND SPECIFICATIONS NOT WITHSTANDING. THE CONTRACTOR SHALL ALERT ARCHITECT, ENGINEER OR OWNER OF ANY APPARENT DISCREPANCIES BETWEEN GOVERNING CODES AND DESIGN INTENT.

MISCELLANEOUS

SYMBOL	DESCRIPTION
3P/60A 3R NF	DISCONNECT SWITCH, NON-FUSIBLE 3 POLE, 60 AMP, NF: NON-FUSED, 3R: NEMA 3R ENCLOSURE
3P/60A 3R F-50A	DISCONNECT SWITCH, FUSIBLE 3 POLE, 60 AMP, FUSED AT 50 AMPS, 3R: NEMA 3R ENCLOSURE
3P/60A 3R Nx	COMBINATION STARTER / DISCONNECT SWITCH, FUSIBLE 3 POLE, 60 AMP, NEMA x SIZE, 3R: NEMA 3R ENCLOSURE
	MAGNETIC MOTOR STARTER
	ENCLOSED CIRCUIT BREAKER, AS INDICATED
VFD	VFD-RATED, REMOTE DISCONNECT SWITCH WITH EARLY-BREAK, AUXILIARY CONTACTS FOR VFD DECELERATE-TO-STOP SIGNAL, CONNECT CONTROL WIRING TO ASSOCIATED VFD (AS REQUIRED).
	PANELBOARD, 480 / 277V
	PANELBOARD, 208 /120V
MH	MANHOLE
HH	HANDHOLE
SPD	SURGE PROTECTION DEVICE
	ELECTRICAL METER
TX	TRANSFORMER
HP	MOTOR CONNECTION, HP: DENOTES HORSEPOWER RATING
	GROUND BUS BAR
	PUSHBUTTON
	3/4" PLYWOOD TELEPHONE BACKBOARD
	CONCRETE ENCASED DUCTBANK
	HOMERUN TO PANEL INDICATED NUMBER OF ARROWS INDICATE NUMBER OF CIRCUITS
	WIRE IN CONDUIT CONCEALED, #12 AWG SIZE WIRE IN 1/2" CONDUIT MINIMUM UNLESS OTHERWISE NOTED
	WIRE IN CONDUIT CONCEALED BELOW SLAB OR GRADE
	CONDUIT EXPOSED
	FLEXIBLE CONDUIT
	CONDUIT TURNING UP
	CONDUIT TURNING DOWN
	CONDUIT STUB

RECEPTACLE(S)

SYMBOL	DESCRIPTION
	DUPLEX RECEPTACLE, 20 AMP, 120V U.O.N.
	DUPLEX RECEPTACLE, 20 AMP, 120V U.O.N. MOUNTED AT 48" UNLESS NOTED OTHERWISE
	DUPLEX RECEPTACLE, 20 AMP, 120V U.O.N. AUTOMATIC SWITCHED RECEPTACLE
	QUADRUPLEX RECEPTACLE, 20 AMP, 120V U.O.N. HALF-AUTOMATIC SWITCHED RECEPTACLE
	QUADRAPLEX RECEPTACLE, 20 AMP, 120V U.O.N.
	QUADRAPLEX RECEPTACLE, 20 AMP, 120V U.O.N. MOUNTED AT 48" UNLESS NOTED OTHERWISE
	SINGLE RECEPTACLE, 20 AMP, 120V U.O.N.
	GFI - TYPE DUPLEX RECEPTACLE (WP: DENOTES WEATHERPROOF COVER)
	GFI - TYPE DOUBLE DUPLEX RECEPTACLE
	GFI - DUPLEX RECEPTACLE MOUNTED AT 48" UNLESS OTHERWISE NOTED
	GFI - DOUBLE DUPLEX RECEPTACLE MOUNTED AT 48" UNLESS OTHERWISE NOTED
	SPECIAL PURPOSE RECEPTACLE (NEMA RATING AS INDICATED)
	QUADRAPLEX RECEPTACLE, TICK MARKS DENOTE EMERGENCY (TYPICAL ALL RECEPTACLES)
	DUPLEX RECEPTACLE - HALF SWITCHED
	DUPLEX RECEPTACLE - CEILING MOUNTED
IG	DUPLEX RECEPTACLE WITH ISOLATED GROUND
	DUPLEX RECEPTACLE - FLOOR MOUNTED
PP	POWER POLE
J	JUNCTION BOX - CEILING MOUNTED
J	JUNCTION BOX - WALL MOUNTED
J	JUNCTION BOX - FLOOR / GROUND MOUNTED

LIGHTING

SYMBOL	DESCRIPTION
	CEILING MOUNTED 2'x2' / 2'x4' LUMINAIRE - RECESSED NORMAL POWER
	CEILING MOUNTED 2'x2' / 2'x4' LUMINAIRE - RECESSED EMERGENCY POWER
	CEILING MOUNTED 1'x4' LUMINAIRE RECESSED OR SURFACE MOUNTED - NORMAL POWER
	CEILING MOUNTED 1'x4' LUMINAIRE RECESSED OR SURFACE MOUNTED - EMERGENCY POWER
	CEILING MOUNTED 1'x4' LUMINAIRE PENDANT MOUNTED - NORMAL POWER
	CEILING MOUNTED 1'x4' LUMINAIRE PENDANT MOUNTED - EMERGENCY POWER
	STRIP LUMINAIRE - NORMAL POWER
	STRIP LUMINAIRE - EMERGENCY POWER
	DOWNLIGHT LUMINAIRE - NORMAL POWER
	DOWNLIGHT LUMINAIRE - EMERGENCY POWER
	WALL MOUNTED LUMINAIRE - NORMAL POWER
	WALL MOUNTED LUMINAIRE - EMERGENCY POWER
	CEILING FAN
	TRACK LIGHTING WITH LUMINAIRE
	UNDERCUNTER LUMINAIRE
	FLOOD LIGHT LUMINAIRE
	POLE LIGHT LUMINAIRE
	BOLLARD LUMINAIRE
	STEP LIGHT LUMINAIRE
	EMERGENCY BATTERY LIGHT UNIT
	EXIT LIGHT - SINGLE FACE WITH DIRECTIONAL ARROW
	EXIT LIGHT - DOUBLE FACE
	EXIT LIGHT - WALL MOUNTED

GENERAL NOTES

1. THE ELECTRICAL CONTRACT DOCUMENTS ARE SCHEMATIC IN NATURE AND INDICATE THE GENERAL CONFIGURATION OF SYSTEMS AND WORK. EXAMINE ARCHITECTURAL, INTERIOR DESIGN, CIVIL, LANDSCAPE, STRUCTURAL, MECHANICAL, PLUMBING, FIRE PROTECTION, TECHNOLOGY, AND FOOD SERVICE DRAWINGS AND SPECIFICATIONS FOR LOCATIONS AND REQUIREMENTS OF DEVICES, EQUIPMENT, LUMINAIRES, AND SYSTEMS. CONTENT INDICATED ON THE SPECIFICATIONS BUT NOT THE DRAWINGS, OR CONTENT INDICATED ON THE DRAWINGS BUT NOT THE SPECIFICATIONS, SHALL BE INTERPRETED AS BEING PRESENT ON BOTH.
2. PROVIDE ALL DEVICES, EQUIPMENT, ACCESSORIES, MATERIALS, AND LABOR REQUIRED FOR A COMPLETE, FUNCTIONAL, AND CODE-COMPLIANT ELECTRICAL SYSTEM. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE CODES AND STANDARDS INDICATED ON THIS SHEET.
3. ALL DEVICES, EQUIPMENT, ACCESSORIES, AND MATERIALS SHALL BE NEW, AND, WHERE APPLICABLE, SHALL BE LISTED BY U.L. OR ANOTHER APPROVED ELECTRICAL TESTING AGENCY.
4. COORDINATE LOCATIONS AND REQUIREMENTS OF EQUIPMENT REQUIRING ELECTRICAL SERVICE (I.E. PRINTERS, APPLIANCES, MOTORIZED PROJECTION SCREENS, MOTORIZED SHADES, ELEVATORS, TOOLS, ETC.) WITH APPROVED SHOP DRAWINGS, SPECIFICATION SHEETS, MANUFACTURER'S INSTALLATION LITERATURE, AND EQUIPMENT NAMEPLATE DATA, PRIOR TO ROUGH-IN AND INSTALLATION. PROVIDE ELECTRICAL CONNECTIONS (AS REQUIRED).
5. BID SHALL INCLUDE COSTS ASSOCIATED WITH BACKFILLING, CORE DRILLING, DIRECTIONAL BORING, EXCAVATING, AND REPAIRING OF SURFACES.
6. PAY ALL FEES, TAXES, AND OTHER COSTS ASSOCIATED WITH THE WORK ENCOMPASSED BY THE ELECTRICAL CONTRACT DOCUMENTS. PROVIDE ALL REQUIRED NOTICES AND OBTAIN ALL REQUIRED PERMITS.
7. PROVIDE COOPERATION WITH OTHER TRADES AND PROVIDE ANY INFORMATION REQUIRED TO FACILITATE THE COMPLETION OF THEIR WORK. COORDINATE DEVICE AND EQUIPMENT LOCATIONS AND MOUNTING HEIGHTS WITH OTHER TRADES PRIOR TO ROUGH-IN AND INSTALLATION. COORDINATE CONDUIT ROUTING WITH OTHER TRADES PRIOR TO ROUGH-IN AND INSTALLATION.
8. COORDINATE ALL REQUIREMENTS WITH THE LOCAL UTILITY PRIOR TO ROUGH-IN AND INSTALLATION. COORDINATE LOCATIONS OF UTILITY HANDHOLES, AERIAL UTILITY TRANSFORMERS, AND/OR PAD-MOUNTED UTILITY TRANSFORMERS.
9. PROVIDE TEMPORARY ELECTRICAL SERVICE(S) FOR USE BY OTHER TRADES DURING PROJECT CONSTRUCTION. UPON COMPLETION OF THE PROJECT, THE TEMPORARY ELECTRICAL SERVICE(S) SHALL BE REMOVED.
10. WITHIN THIRTY (30) DAYS OF SYSTEM ACCEPTANCE, PROVIDE RECORD DRAWINGS TO THE OWNER. DRAWINGS SHALL BE COMPRISED OF SINGLE-LINE DIAGRAMS AND FLOOR PLANS INDICATING THE LOCATIONS AND AREAS SERVED FOR ALL DISTRIBUTION.
11. WITHIN THIRTY (30) DAYS OF SYSTEM ACCEPTANCE, PROVIDE AN OPERATING MANUAL AND MAINTENANCE MANUAL TO THE OWNER. THE MANUALS SHALL INCLUDE THE FOLLOWING INFORMATION: SUBMITTAL DATA WITH EQUIPMENT RATINGS AND SELECTED OPTIONS, OPERATION AND MAINTENANCE MANUALS FOR EQUIPMENT REQUIRING MAINTENANCE, NAMES AND ADDRESSES OF A MINIMUM OF ONE (1) QUALIFIED SERVICE AGENCY.
12. COORDINATE LOCATIONS AND MOUNTING HEIGHTS OF ALL WALL-MOUNTED ELECTRICAL DEVICES AND EQUIPMENT WITH THE ARCHITECTURAL DRAWINGS, GENERAL CONTRACTOR, CASEWORK/MILLWORK, AND OTHER TRADES PRIOR TO ROUGH-IN AND INSTALLATION.
13. EQUIPMENT LOCATIONS SHALL SATISFY THE WORKING CLEARANCE REQUIREMENTS AND DEDICATED SPACE REQUIREMENTS OF NEC ARTICLE 110. PROVIDE SHOP DRAWINGS, DEMONSTRATING COMPLIANCE AND INTER-DISCIPLINARY COORDINATION, FOR ENGINEERING REVIEW.
14. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS, SECTIONS, AND ELEVATIONS FOR LOCATIONS AND/OR MOUNTING HEIGHTS OF LUMINARIES LOCATED AT CEILINGS AND/OR WALLS. VERIFY THAT CEILING-MOUNTED LUMINARIES ARE SUITABLE FOR THE FINISHED CEILING SYSTEM INDICATED AND PROVIDE ACCORDINGLY. COORDINATE LOCATIONS AND MOUNTING HEIGHTS OF WALL-MOUNTED LUMINARIES WITH CASEWORK, FURNITURE, AND ARCHITECTURAL ELEMENTS. WHERE ARCHITECTURAL REFLECTED CEILING PLANS INDICATE FIRE-RATED CEILING SYSTEMS, PROVIDE UL-LISTED LUMINAIRE ENCLOSURES (AS REQUIRED).
15. PROVIDE A COMPLETE GROUNDING SYSTEM IN ACCORDANCE WITH APPLICABLE SECTIONS OF THE NEC AND SPECIFICATIONS. BOND SERVICE ENTRANCE ELECTRICAL EQUIPMENT TO BUILDING STEEL, GROUND RODS, METAL WATER MAINS, LIGHTNING PROTECTION SYSTEM GROUNDING ELECTRODES (WHERE PRESENT), AND TELECOMMUNICATIONS SYSTEM GROUNDING ELECTRODES (AS REQUIRED). EQUIPMENT GROUNDING SHALL BE OF THE WIRE TYPE.
16. MINIMUM CONDUIT SIZE SHALL BE 3/4".
17. MINIMUM CONDUCTOR SIZE SHALL BE #12 AWG. ALL FEEDER AND BRANCH CIRCUIT CONDUCTORS SHALL BE INSTALLED WITHIN CONDUIT, UNLESS OTHERWISE INDICATED. ALL CONDUCTORS SHALL BE COPPER, UNLESS OTHERWISE INDICATED.
18. PROVIDE A DEDICATED NEUTRAL CONDUCTOR FOR EACH CIRCUIT. MULTI-WIRE BRANCH CIRCUITS SHALL BE PROHIBITED.
19. CONNECTIONS TO TRANSFORMERS AND MECHANICAL EQUIPMENT SHALL BE MADE WITH FMC OR LFMC, UNLESS OTHERWISE INDICATED.
20. WHERE PRACTICABLE, CONDUITS SHALL BE CONCEALED BELOW SLABS, WITHIN WALLS, AND ABOVE FINISHED CEILING SYSTEMS. WHERE CONDUITS ARE EMBEDDED WITHIN CONCRETE SLABS, COORDINATE CONDUIT SIZE LIMITATIONS AND SPACING REQUIREMENTS WITH THE STRUCTURAL DRAWINGS/ENGINEER PRIOR TO INSTALLATION.
21. SEAL ALL CONDUIT PENETRATIONS AT FIRE-RATED PARTITIONS. REFER TO DETAILS FOR FURTHER INFORMATION.
22. COORDINATE ALL CONDUIT PENETRATIONS WITH ARCHITECTURAL DRAWINGS, STRUCTURAL DRAWINGS, FIELD CONDITIONS, AND OTHER TRADES. PROVIDE SEALING FITTINGS TO PROHIBIT CONDENSATION AND/OR THE PASSAGE OF GASES OR VAPORS (AS REQUIRED).
23. INCREASE FEEDER AND BRANCH CIRCUIT CONDUCTOR SIZES AS REQUIRED IN ORDER TO MAINTAIN A MAXIMUM, CUMULATIVE VOLTAGE DROP OF 5% AT THE END LOAD. MAXIMUM VOLTAGE DROP SHALL BE DISTRIBUTED AS FOLLOWS: 3% FOR FEEDERS, 2% FOR BRANCH CIRCUITS. WHERE THE VOLTAGE DROP REQUIREMENTS OF THE LOCAL ENERGY CODE ARE MORE STRINGENT, THE REQUIREMENTS OF THE LOCAL ENERGY CODE SHALL TAKE PRECEDENCE. WHERE PHASE AND NEUTRAL CONDUCTOR SIZES ARE INCREASED FOR VOLTAGE DROP, THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE INCREASED PROPORTIONATELY.
24. PROVIDE ALL REQUIRED DISCONNECT SWITCHES, STARTERS, AND COMBINATION STARTER/DISCONNECT SWITCHES. MAKE CONNECTIONS TO ALL ELECTRICALLY-DRIVEN DEVICES AND EQUIPMENT PROVIDED BY THE MECHANICAL, PLUMBING, AND FIRE PROTECTION CONTRACTORS. EXAMINE EQUIPMENT NAMEPLATE RATINGS PRIOR TO ROUGH-IN AND INSTALLATION. PROVIDE OVERCURRENT PROTECTION IN ACCORDANCE WITH EQUIPMENT NAMEPLATE RATINGS. PROVIDE ALL POWER SUPPLIES, CONTROL TRANSFORMERS, RELAYS, AND OTHER ACCESSORIES REQUIRED TO FACILITATE THE PROPER OPERATION OF MECHANICAL EQUIPMENT AS DESCRIBED WITHIN THE MECHANICAL ENGINEER'S SEQUENCE OF OPERATIONS.
25. ALL INTERIOR ELECTRICAL EQUIPMENT SHALL BE OF NEMA 1 CONSTRUCTION, UNLESS OTHERWISE INDICATED. ALL EXTERIOR ELECTRICAL EQUIPMENT SHALL BE OF NEMA 3R CONSTRUCTION, UNLESS OTHERWISE INDICATED. EQUIPMENT RATINGS SHALL CORRESPOND TO THEIR INSTALLED ENVIRONMENTS.
26. ALL NEW AND/OR EXISTING PANELBOARDS AND SWITCHBOARDS WITHIN THE SCOPE OF THIS PROJECT SHALL BE PROVIDED WITH NEW, TYPEWRITTEN DIRECTORIES. CIRCUIT DESCRIPTIONS SHALL CONTAIN ROOM NAMES AND ROOM NUMBERS BASED UPON INSTALLED ROOM SIGNAGE.
27. PROVIDE PHENOLIC, ENGRAVED IDENTIFICATION PLACARDS AT ALL SWITCHBOARDS, SWITCHGEAR, PANELBOARDS, TRANSFORMERS, DISCONNECT SWITCHES, ENCLOSED CIRCUIT BREAKERS, CABINETS, AND AUTOMATIC TRANSFER SWITCHES. REFER TO DETAILS FOR FURTHER INFORMATION.
28. PROVIDE PHENOLIC, ENGRAVED IDENTIFICATION PLACARDS AT EACH CIRCUIT BREAKER WITHIN A DISTRIBUTION PANEL, SWITCHBOARD, OR SWITCHGEAR.
29. PROVIDE TYPEWRITTEN OR ENGRAVED PANEL AND CIRCUIT IDENTIFICATION AT DEVICE COVER PLATES.
30. PROVIDE HANDWRITTEN PANEL AND CIRCUIT IDENTIFICATION ON THE EXTERIORS OF ALL JUNCTION BOXES, PULL BOXES, AND WIREWAYS.

ELECTRICAL ABBREVIATIONS

A	AMPERES	IMC	INTERMEDIATE METAL CONDUIT
AC	ALTERNATING CURRENT	KCMIL	THOUSAND CIRCULAR MILS
A/C	AIR CONDITIONING	KVA	KILOVOLT - AMPERES
AFCI	ARC FAULT CIRCUIT INTERRUPTER	LFMC	LIQUID TIGHT FLEXIBLE METAL CONDUIT
AHU	AIR HANDLING UNIT	LTG	LIGHTING
AIC	AMPERE INTERRUPTING CAPACITY	LRA	LOCK ROTOR AMPS
AL	ALUMINUM	MC	METAL CLAD CABLE
ATS	AUTOMATIC TRANSFER SWITCH	MCB	MAIN CIRCUIT BREAKER
AWG	AMERICAN WIRE GAUGE	MCC	MOTOR CONTROL CENTER
C	CONDUIT	MCP	MOTOR CIRCUIT PROTECTION
CATV	CABLE TELEVISION	MLO	MAIN LUGS ONLY
CB	CRITICAL BRANCH	MTD	MOUNTED
CIB	CIRCUIT BREAKER	NC	NORMALLY CLOSED
CCTV	CLOSED CIRCUIT TELEVISION	NEC	NATIONAL ELECTRICAL CODE
CIR	CIRCUIT	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
CKT	CIRCUIT	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
CU	COPPER	NL	NIGHT LIGHT
DC	DIRECT CURRENT	NO	NORMALLY OPEN OR NUMBER
DIA	DIAMETER	P	POLE
EB	EQUIPMENT BRANCH	PB	PUSH BUTTON, PANIC BUTTON OR PULLBOX
EC	ELECTRICAL CONTRACTOR	PNL	PANEL
EF	EXHAUST FAN	PWR	POWER
ELEV	ELEVATOR	QTY	QUANTITY
EM	EMERGENCY	REQ	REQUIRED
EMT	ELECTRICAL METALLIC TUBING	RMC	RIGID METAL CONDUIT
EP	EMERGENCY POWER	RNC	RIGID NON-METALLIC CONDUIT
EPO	EMERGENCY POWER OFF (BUTTON OR SWITCH)	RTS	REMOTE TEST STATION
ER	EXISTING TO BE REMOVED	RTU	ROOF TOP UNIT
ETR	EXISTING TO BE RELOCATED	SP	SPARE
EWC	ELECTRIC WATER COOLER	ST	SHUNT-TRIP
EX	EXISTING TO REMAIN	SW	SWITCH
F	FUSE	SYM	SYMMETRICAL
FA	FIRE ALARM	TEL	TELEPHONE
FAA	FIRE ALARM ANNUNCIATOR PANEL	TGB	TELECOMMUNICATIONS GROUNDING BUSBAR
FLA	FULL LOAD AMPERES	TMCB	THERMAL MAGNETIC CIRCUIT BREAKER
FMC	FLEXIBLE METAL CONDUIT	TYP	TYPICAL
G, GND	GROUND	UG	UNDERGROUND
GFCI, GFI	GROUND FAULT CIRCUIT INTERRUPTER	UL	UNDERWRITERS LABORATORY
GND	GROUND	V	VOLT
GRC	GALVANIZED RIGID METAL CONDUIT	VA	VOLT - AMPERE
HOA	HAND-OFF-AUTOMATIC SWITCH	VFD	VARIABLE FREQUENCY DRIVE
HVAC	HEATING, VENTILATION, AIR CONDITIONING	W	WATT OR WIRE
HZ	HERTZ	WH	WATER HEATER
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS	WP	WEATHERPROOF
IG	ISOLATED GROUND	XFMR	TRANSFORMER

SWITCHES

SYMBOL	DESCRIPTION
$	SINGLE POWER TOGGLE SWITCH (LETTER DENOTES FIXTURE CONTROLLED)
$3	THREE-WAY TOGGLE SWITCH
$4	FOUR-WAY TOGGLE SWITCH
$M	MOTOR SWITCH
$F	FAN SWITCH
$3P	THREE POSITION SELECTOR SWITCH
$T	TIMER SWITCH (60 MINUTES)
$LV	LOW VOLTAGE SWITCH
$HOA	HAND-OFF-AUTOMATIC SWITCH
$K	KEY SWITCH
$WP	SWITCH - WEATHERPROOF
$OS	DUAL TECH WALL SWITCH OCCUPANCY SENSOR
$DOS	DUAL TECH, DUAL-LEVEL OCCUPANCY SENSOR SWITCH
$D	DIMMING SWITCH
OS	DUAL TECH OCCUPANCY SENSOR - CEILING MOUNTED
OS	DUAL TECH OCCUPANCY SENSOR - WALL MOUNTED
DH	DAYLIGHT HARVESTING SENSOR - CEILING MOUNTED
PC	PHOTOCELL
LC	LIGHTING CONTACTOR
TC	TIME CLOCK
PL	RELAY MODULE WITH 0-10V DIMMING OUTPUT
PR	PLUG LOAD RELAY PACK

CODES AND STANDARDS

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING:

NFPA 70	NATIONAL ELECTRICAL CODE (2017)
NFPA 72	NATIONAL FIRE ALARM AND SIGNALING CODE (2016)
NFPA 75	STANDARD FOR THE PROTECTION OF ELECTRONIC COMPUTER / DATA PROCESSING EQUIPMENT (2017)
NFPA 90A	STANDARD FOR THE INSTALLATION OF AIR CONDITIONING AND VENTILATING SYSTEMS (2018)
NFPA 90B	STANDARD FOR THE INSTALLATION OF WARM AIR HEATING AND AIR CONDITIONING SYSTEMS (2018)
NFPA 92	RECOMMENDED PRACTICE FOR SMOKE CONTROL SYSTEMS (2015)
NFPA 101	LIFE SAFETY CODE (2018)
NFPA 110	STANDARD FOR EMERGENCY AND STAND-BY POWER SYSTEMS (2016)
NFPA 780	STANDARD FOR THE INSTALLATION OF LIGHTNING PROTECTION SYSTEMS (2017)
2020 FBC.	FLORIDA BUILDING CODE (2020)
2020 FFPC	FLORIDA FIRE PREVENTION CODE (2020)
	LOCAL JURISDICTION CODES AND / OR OWNER DESIGN GUIDELINES

COMMISSIONING

1. PRIOR TO FINAL INSPECTION, THE CONTRACTOR SHALL SUBMIT EVIDENCE TO THE REGISTERED DESIGN PROFESSIONAL (ELECTRICAL ENGINEER-OF-RECORD) OR REGISTERED DESIGN PROFESSIONAL'S REPRESENTATIVE THAT THE LIGHTING CONTROL SYSTEMS HAVE BEEN TESTED TO ENSURE THAT THEY ARE CALIBRATED, ADJUSTED, PROGRAMMED, AND SATISFY THE INTENT OF THESE CONTRACT DOCUMENTS AND THE MANUFACTURERS' WRITTEN INSTRUCTIONS. FUNCTIONAL TESTING SHALL BE PERFORMED IN ACCORDANCE WITH FBC C408.3.1.1 (VACANCY / OCCUPANCY SENSOR CONTROLS), FBC C408.3.1.2 (TIME-SWITCH CONTROLS), AND/OR FBC C408.3.1.3 (DAYLIGHT RESPONSIVE CONTROLS) (AS REQUIRED).

SHEET INDEX

NUMBER	NAME
E0.0.0	LEGEND - ELECTRICAL
E2.1.1	LEVEL 1 - BAGGAGE CLAIM - ELECTRICAL
E2.1.2	LEVEL 2 - TICKETING - ELECTRICAL
E2.1.3	LEVEL 3 - TRANSFER - ELECTRICAL
E2.1.5	AIRSIDES - LEVEL 2 - BOARDING - ELECTRICAL
E2.2.1	ECONOMY GARAGE - LEVEL 1 - ELECTRICAL
E2.2.4	ECONOMY GARAGE - LEVEL 4 - ELECTRICAL
E2.3.1	CONRAC - LEVEL 1 - ELECTRICAL
E2.3.2	CONRAC - LEVEL 2 - ELECTRICAL
E2.3.3	CONRAC - LEVEL 3 - ELECTRICAL
E2.3.4	CONRAC - LEVEL 4 - ELECTRICAL
E4.01	ENLARGED FLOOR PLANS
E6.01	PANEL SCHEDULES - ELECTRICAL
E6.02	PANEL SCHEDULES - ELECTRICAL
E6.03	PANEL SCHEDULES - ELECTRICAL

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Project #01.21008

Engineer of Record:
GERALD A. CRNKOVICH, P.E. #42527

TO THE BEST OF THE ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION

TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

GERALD A. CRNKOVICH
P.E. #42427

Revision

No.	Date	Description

LEGEND - ELECTRICAL

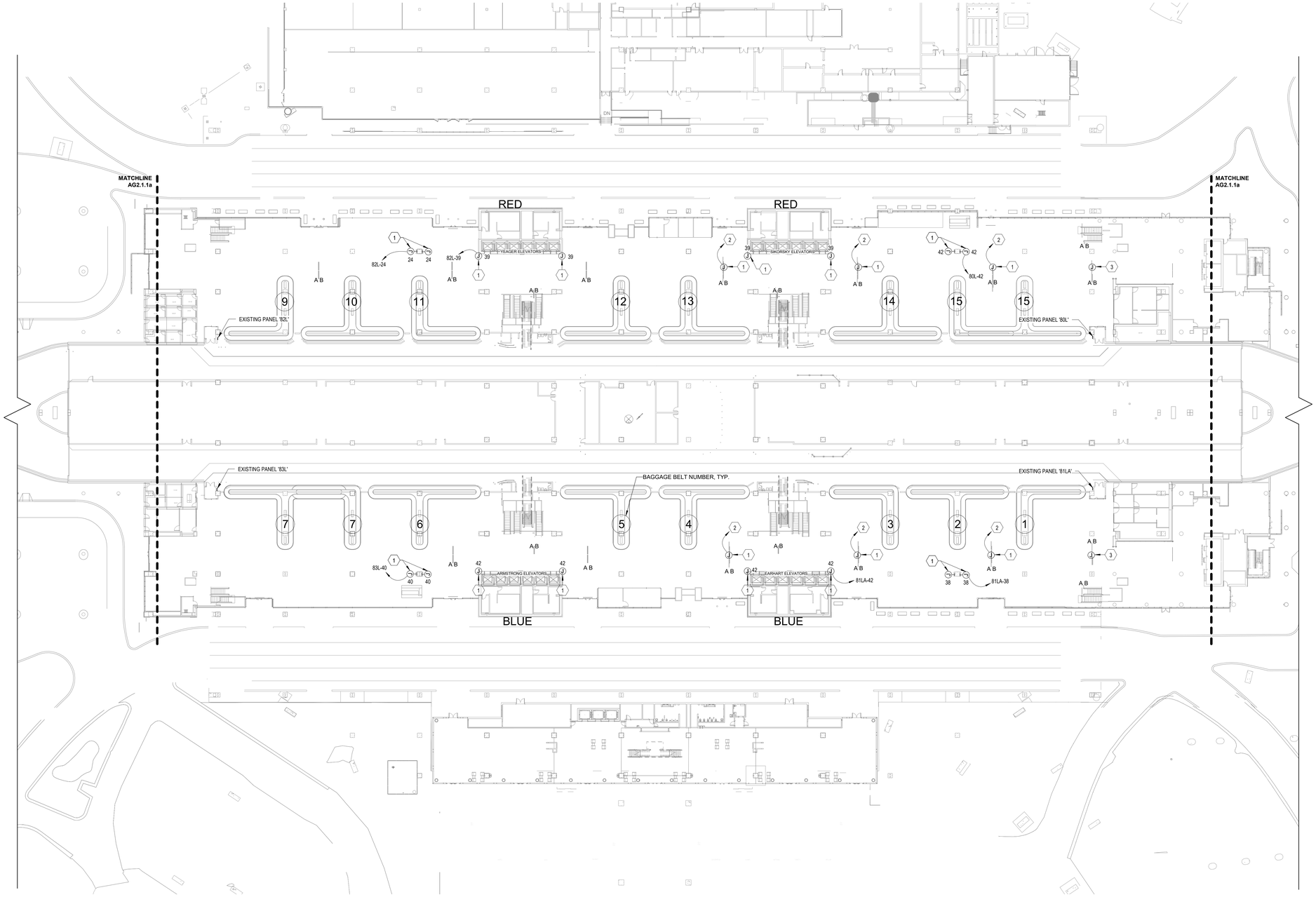
E0.0.0

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

10/5/2021 7:51:57 AM
BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/21008_TPA Wayfinding_Electrical_BIM360-GSP_R21.rvt

Drawn By: B.Y.
Checked By: R.F.W.
Approved By: G.C.



1 LEVEL 1 - BAGGAGE CLAIM - ELECTRICAL
1/32" = 1'-0"
0' 16' 32' 64' 96'

KEY NOTES

NUMBER	NOTES
1	J-BOX CONNECTION FOR NEW ILLUMINATED SIGNAGE. COORDINATE LOCATION AND MOUNTING HEIGHT WITH ARCHITECTURAL DRAWINGS AND EQUIPMENT PROVIDED PRIOR TO ROUGH-IN AND INSTALLATION. COORDINATE ELECTRICAL REQUIREMENTS WITH EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN AND INSTALLATION.
2	TIE NEW SIGNAGE INTO LOCAL, EXISTING SIGNAGE CIRCUIT.
3	REPLACE EXISTING SIGN WITH NEW, RECONNECT WITH EXISTING ELECTRICAL. EXTEND BRANCH BRANCH CIRCUIT CONDUCTORS (AS REQUIRED).

GENERAL NOTES

A. ELECTRICAL CONTRACTOR SHALL REFER TO THE ELECTRICAL SPECIFICATIONS FOR ADDITIONAL DESIGN STANDARDS. THE ELECTRICAL SPECIFICATIONS ARE A BINDING PART OF THE CONSTRUCTION DOCUMENTS.
B. ALL RECEPTACLES SHALL BE 20A HOSPITAL GRADE. ALL SWITCHES SHALL BE 20A QUIET TYPE.
C. ALL WIRE SHALL BE COPPER STRANDED.
D. ALL COVER PLATES SHALL BE STAINLESS STEEL WITH LASER ENGRAVED CIRCUIT DESIGNATION.
E. CEILING OUTLETS SHALL BE TWISTLOCK.
F. REFER TO ELECTRICAL MECHANICAL EQUIPMENT SCHEDULES FOR ELECTRICAL INFORMATION PERTAINING TO MECHANICAL, PLUMBING, FIRE PROTECTION AND / OR VERTICAL TRANSPORTATION EQUIPMENT.
G. COORDINATE ELECTRICAL REQUIREMENTS OF ALL EQUIPMENT WITH MANUFACTURER PRIOR TO ROUGH-IN AND INSTALLATION. ADJUST DEVICE TYPES, SIZES, LOCATIONS AND BRANCH CIRCUITRY (AS REQUIRED).
H. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL FIRE PROTECTION EQUIPMENT WITH THE DIVISION 21 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
I. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL PLUMBING EQUIPMENT WITH THE DIVISION 22 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
J. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH THE DIVISION 23 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
K. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL TECHNOLOGY EQUIPMENT WITH THE DIVISION 27 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
L. COORDINATE MOUNTING HEIGHTS AND LOCATIONS OF ALL DEVICES WITH ARCHITECTURAL ELEVATIONS, CASEWORK, FIELD CONDITIONS AND OTHER TRADES, ADJUST (AS REQUIRED).
M. COORDINATE LOCATIONS OF ALL SMOKE AND / OR FIRE / SMOKE DAMPERS WITH THE MECHANICAL DRAWINGS AND THE DIVISION 23 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION. REFER TO DETAIL FOR FURTHER INFORMATION.

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COA #27158
Project #01.21008

Engineer of Record:
GERALD A. CRNKOVICH, P.E. #42527

TO THE BEST OF THE ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

GERALD A. CRNKOVICH
P.E. #42427

Revision

No.	Date	Description

LEVEL 1 - BAGGAGE CLAIM - ELECTRICAL

E2.1.1

43342.03
10/07/2021

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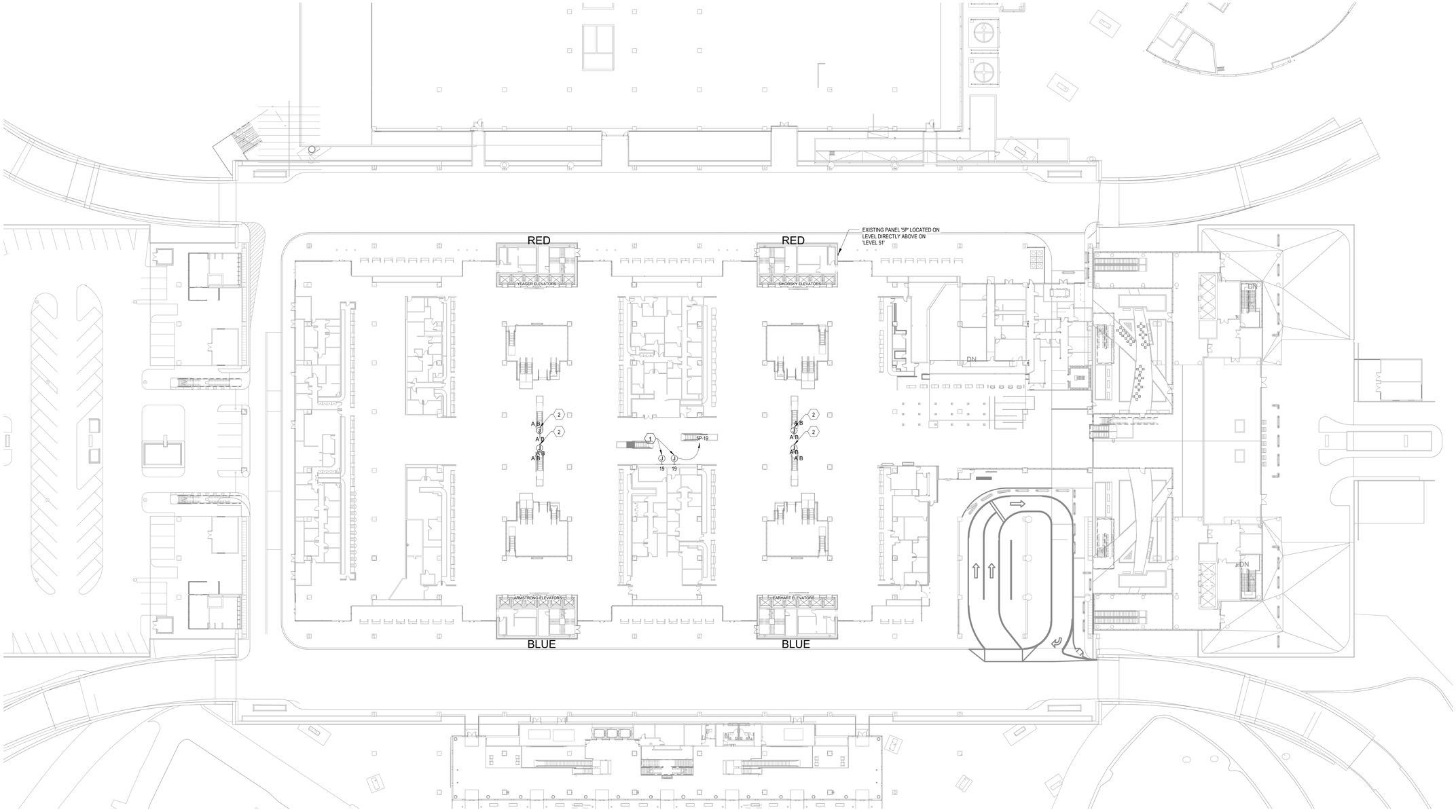
10/5/2021 7:52:01 AM BIM 360://43342.03 TPA Wayfinding Signage Improvements R21\21008_TPA Wayfinding_Electrical_BIM360-GSP_R21.rvt

Drawn By: B.Y.
Checked By: R.F.W.
Approved By: G.C.



1 LEVEL 2 - TICKETING - ELECTRICAL
1/32" = 1'-0"
0' 16' 32' 64' 96'

KEY NOTES

NUMBER	NOTES
1	J-BOX CONNECTION FOR NEW ILLUMINATED SIGNAGE. COORDINATE LOCATION AND MOUNTING HEIGHT WITH ARCHITECTURAL DRAWINGS AND EQUIPMENT PROVIDED PRIOR TO ROUGH-IN AND INSTALLATION. COORDINATE ELECTRICAL REQUIREMENTS WITH EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN AND INSTALLATION.
2	REPLACE EXISTING SIGN WITH NEW, RECONNECT WITH EXISTING ELECTRICAL. EXTEND BRANCH BRANCH CIRCUIT CONDUCTORS (AS REQUIRED).

GENERAL NOTES

A. ELECTRICAL CONTRACTOR SHALL REFER TO THE ELECTRICAL SPECIFICATIONS FOR ADDITIONAL DESIGN STANDARDS. THE ELECTRICAL SPECIFICATIONS ARE A BINDING PART OF THE CONSTRUCTION DOCUMENTS.
B. ALL RECEPTACLES SHALL BE 20A HOSPITAL GRADE. ALL SWITCHES SHALL BE 20A QUIET TYPE.
C. ALL WIRE SHALL BE COPPER STRANDED.
D. ALL COVER PLATES SHALL BE STAINLESS STEEL WITH LASER ENGRAVED CIRCUIT DESIGNATION.
E. CEILING OUTLETS SHALL BE TWISTLOCK.
F. REFER TO ELECTRICAL MECHANICAL EQUIPMENT SCHEDULES FOR ELECTRICAL INFORMATION PERTAINING TO MECHANICAL, PLUMBING, FIRE PROTECTION AND / OR VERTICAL TRANSPORTATION EQUIPMENT.
G. COORDINATE ELECTRICAL REQUIREMENTS OF ALL EQUIPMENT WITH MANUFACTURER PRIOR TO ROUGH-IN AND INSTALLATION. ADJUST DEVICE TYPES, SIZES, LOCATIONS AND BRANCH CIRCUITRY (AS REQUIRED).
H. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL FIRE PROTECTION EQUIPMENT WITH THE DIVISION 21 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
I. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL PLUMBING EQUIPMENT WITH THE DIVISION 22 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
J. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH THE DIVISION 23 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
K. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL TECHNOLOGY EQUIPMENT WITH THE DIVISION 27 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
L. COORDINATE MOUNTING HEIGHTS AND LOCATIONS OF ALL DEVICES WITH ARCHITECTURAL ELEVATIONS, CASEWORK, FIELD CONDITIONS AND OTHER TRADES, ADJUST (AS REQUIRED).
M. COORDINATE LOCATIONS OF ALL SMOKE AND / OR FIRE / SMOKE DAMPERS WITH THE MECHANICAL DRAWINGS AND THE DIVISION 23 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION. REFER TO DETAIL FOR FURTHER INFORMATION.

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Engineer of Record:
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TO THE BEST OF THE ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION

TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

GERALD A. CRNKOVICH
P.E. #42427

Revision

No.	Date	Description

LEVEL 2 - TICKETING - ELECTRICAL

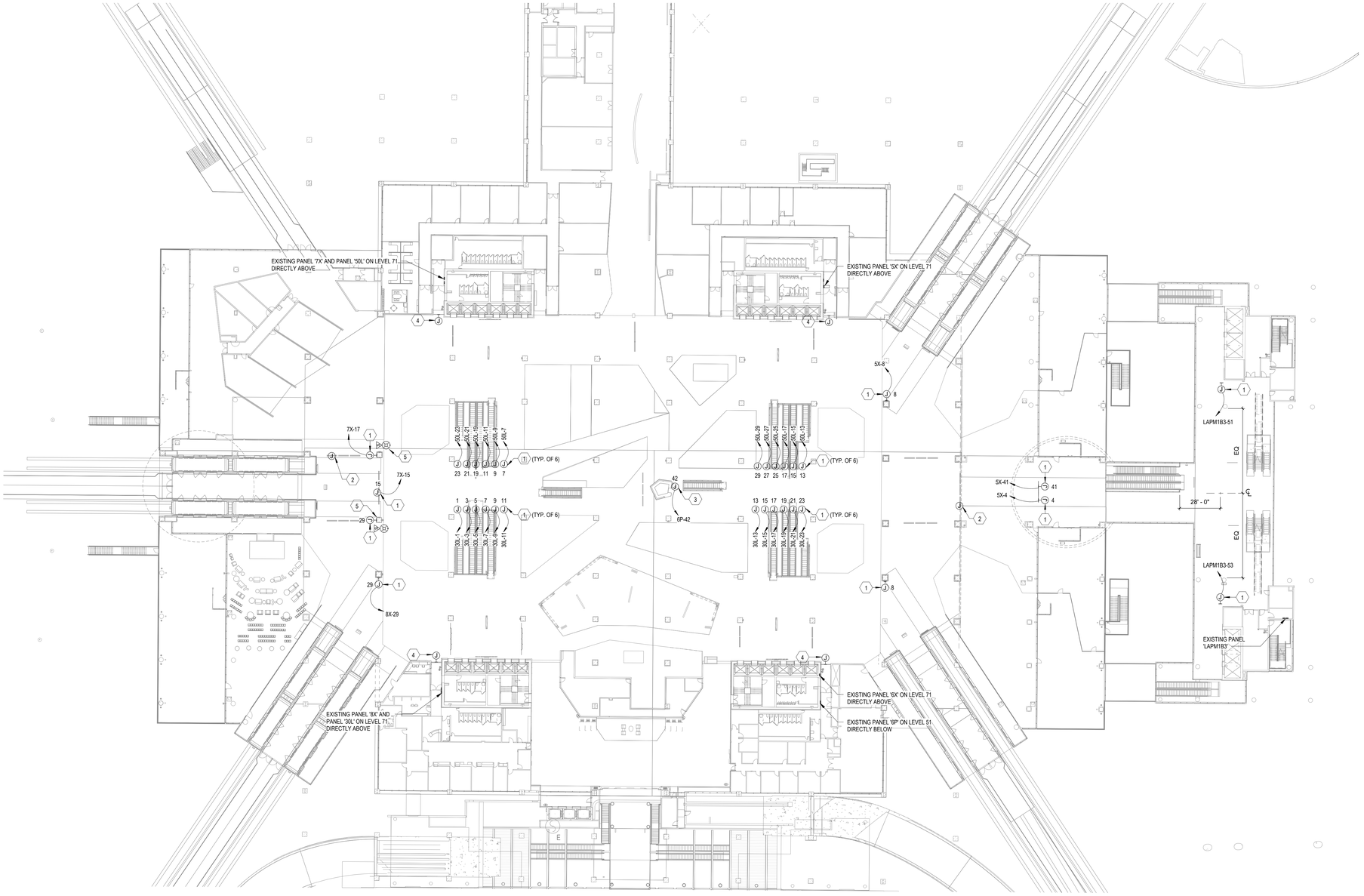
E2.1.2

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

10/5/2021 7:52:04 AM BIM 360://43342.03 TPA Wayfinding Signage Improvements R21\21008_TPA Wayfinding_Electrical_BIM360-GSP_R21.rvt

Drawn By: B.Y.
Checked By: R.F.W.
Approved By: G.C.



1 LEVEL 3 - TRANSFER - ELECTRICAL
1/32" = 1'-0"
0' 16' 32' 64' 96'

KEY NOTES

NUMBER	NOTES
1	J-BOX CONNECTION FOR NEW ILLUMINATED SIGNAGE. COORDINATE LOCATION AND MOUNTING HEIGHT WITH ARCHITECTURAL DRAWINGS AND EQUIPMENT PROVIDED PRIOR TO ROUGH-IN AND INSTALLATION. COORDINATE ELECTRICAL REQUIREMENTS WITH EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN AND INSTALLATION.
2	TIE NEW SIGNAGE INTO LOCAL, EXISTING SIGNAGE CIRCUIT.
3	J-BOX CONNECTION FOR NEW ILLUMINATED SIGNAGE/PYLON. COORDINATE LOCATION AND MOUNTING HEIGHT WITH ARCHITECTURAL DRAWINGS AND EQUIPMENT PROVIDED PRIOR TO ROUGH-IN AND INSTALLATION.
4	J-BOX FOR NEW RESTROOM SIGNAGE. REUSE EXISTING ELECTRICAL CONNECTIONS. COORDINATE LOCATION AND MOUNTING HEIGHT WITH ARCHITECTURAL DRAWINGS AND EQUIPMENT PROVIDED PRIOR TO ROUGH-IN AND INSTALLATION.
5	DISCONNECT EXISTING FIRE ALARM DEVICE AT THIS LOCATION AND EXTEND NOTIFICATION APPLIANCE CIRCUIT (AS REQUIRED) TO NEW CEILING MOUNTED, WHITE BODY, FIRE ALARM DEVICE SHOWN ON PLAN. MATCH EXISTING CLASS AND SURVIVABILITY RATINGS.

GENERAL NOTES

A. ELECTRICAL CONTRACTOR SHALL REFER TO THE ELECTRICAL SPECIFICATIONS FOR ADDITIONAL DESIGN STANDARDS. THE ELECTRICAL SPECIFICATIONS ARE A BINDING PART OF THE CONSTRUCTION DOCUMENTS.
B. ALL RECEPTACLES SHALL BE 20A HOSPITAL GRADE. ALL SWITCHES SHALL BE 20A QUIET TYPE.
C. ALL WIRE SHALL BE COPPER STRANDED.
D. ALL COVER PLATES SHALL BE STAINLESS STEEL WITH LASER ENGRAVED CIRCUIT DESIGNATION.
E. CEILING OUTLETS SHALL BE TWISTLOCK.
F. REFER TO ELECTRICAL MECHANICAL EQUIPMENT SCHEDULES FOR ELECTRICAL INFORMATION PERTAINING TO MECHANICAL, PLUMBING, FIRE PROTECTION AND / OR VERTICAL TRANSPORTATION EQUIPMENT.
G. COORDINATE ELECTRICAL REQUIREMENTS OF ALL EQUIPMENT WITH MANUFACTURER PRIOR TO ROUGH-IN AND INSTALLATION. ADJUST DEVICE TYPES, SIZES, LOCATIONS AND BRANCH CIRCUITRY (AS REQUIRED).
H. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL FIRE PROTECTION EQUIPMENT WITH THE DIVISION 21 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
I. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL PLUMBING EQUIPMENT WITH THE DIVISION 22 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
J. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH THE DIVISION 23 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
K. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL TECHNOLOGY EQUIPMENT WITH THE DIVISION 27 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
L. COORDINATE MOUNTING HEIGHTS AND LOCATIONS OF ALL DEVICES WITH ARCHITECTURAL ELEVATIONS, CASEWORK, FIELD CONDITIONS AND OTHER TRADES, ADJUST (AS REQUIRED).
M. COORDINATE LOCATIONS OF ALL SMOKE AND / OR FIRE / SMOKE DAMPERS WITH THE MECHANICAL DRAWINGS AND THE DIVISION 23 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION. REFER TO DETAIL FOR FURTHER INFORMATION.

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Project #01.21008

Engineer of Record:
GERALD A. CRNKOVICH, P.E. #42527

TO THE BEST OF THE ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE STANDARDS OF NFPA 101 AS ADOPTED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES

BID SET
NOT FOR CONSTRUCTION

GERALD A. CRNKOVICH
P.E. #42427

Revision

No.	Date	Description
	.	.

LEVEL 3 - TRANSFER - ELECTRICAL

E2.1.3

43342.03
10/07/2021

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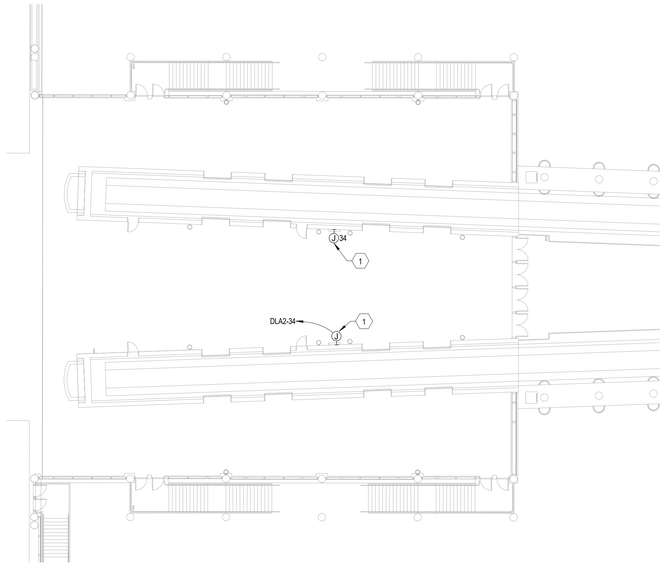
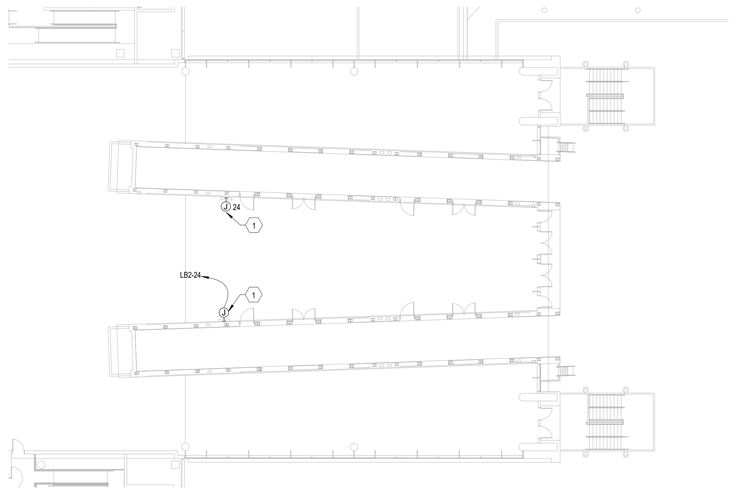
10/5/2021 7:52:09 AM BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/21008_TPA Wayfinding_Electrical_BIM360-GSP_R21.rvt

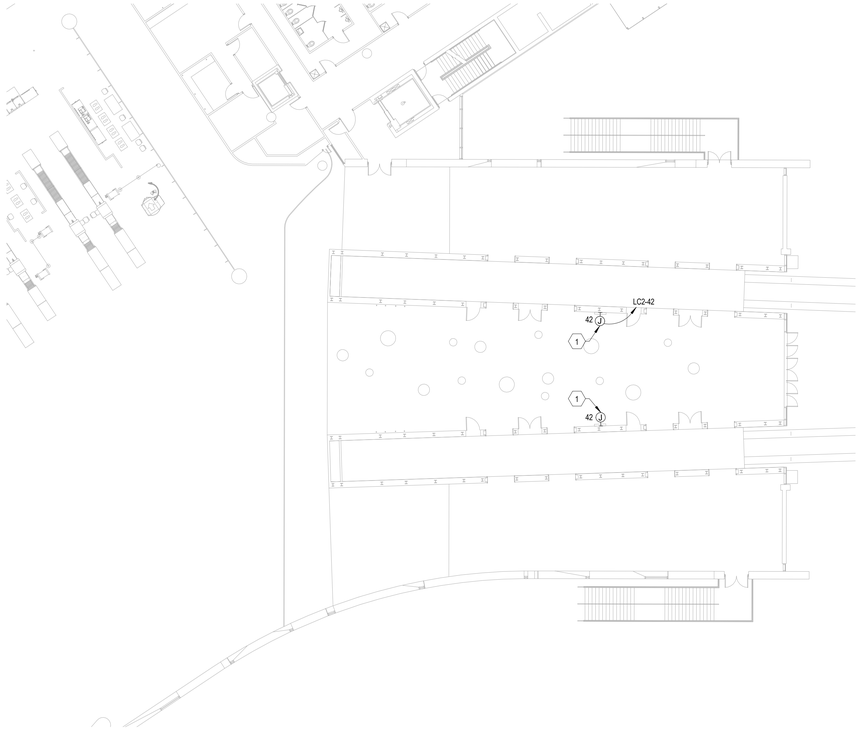
Drawn By: B.Y.
Checked By: R.F.W.
Approved By: G.C.



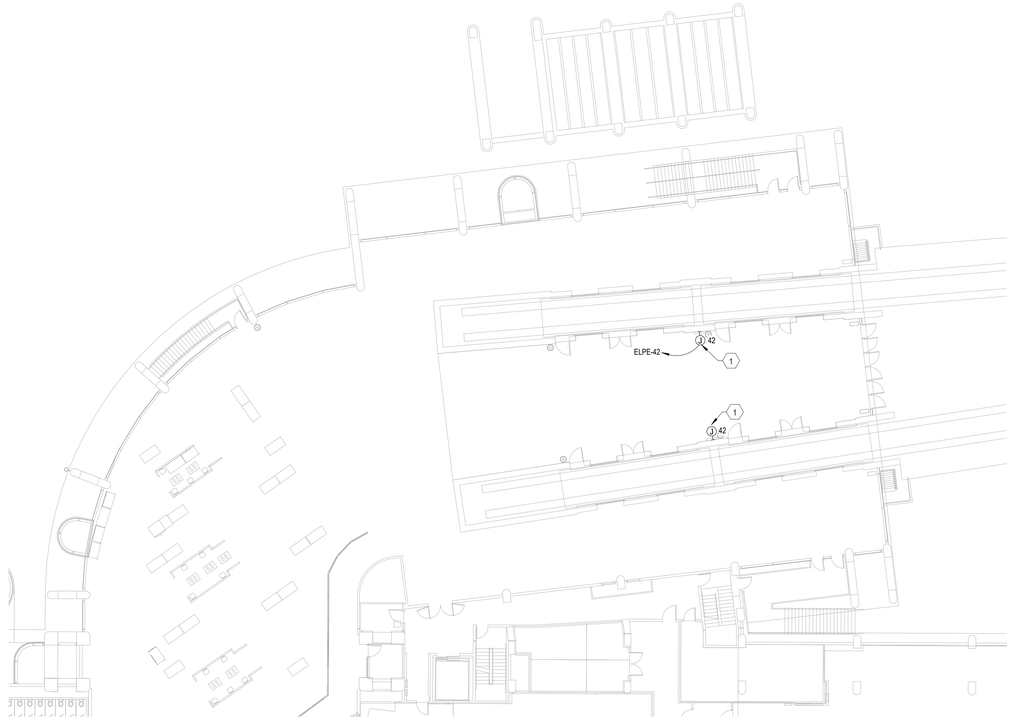
1 BOARDING - AIRSIDE F - ELECTRICAL
1/16" = 1'-0"
0' 8' 16' 32' 48'



2 BOARDING - AIRSIDE E - ELECTRICAL
1/16" = 1'-0"
0' 8' 16' 32' 48'



3 BOARDING - AIRSIDE C - ELECTRICAL
1/16" = 1'-0"
0' 8' 16' 32' 48'



4 BOARDING - AIRSIDE A - ELECTRICAL
1/16" = 1'-0"
0' 8' 16' 32' 48'

GENERAL NOTES

A. ELECTRICAL CONTRACTOR SHALL REFER TO THE ELECTRICAL SPECIFICATIONS FOR ADDITIONAL DESIGN STANDARDS. THE ELECTRICAL SPECIFICATIONS ARE A BINDING PART OF THE CONSTRUCTION DOCUMENTS.
B. ALL RECEPTACLES SHALL BE 20A HOSPITAL GRADE. ALL SWITCHES SHALL BE 20A QUIET TYPE.
C. ALL WIRE SHALL BE COPPER STRANDED.
D. ALL COVER PLATES SHALL BE STAINLESS STEEL WITH LASER ENGRAVED CIRCUIT DESIGNATION.
E. CEILING OUTLETS SHALL BE TWISTLOCK.
F. REFER TO ELECTRICAL MECHANICAL EQUIPMENT SCHEDULES FOR ELECTRICAL INFORMATION PERTAINING TO MECHANICAL, PLUMBING, FIRE PROTECTION AND / OR VERTICAL TRANSPORTATION EQUIPMENT.
G. COORDINATE ELECTRICAL REQUIREMENTS OF ALL EQUIPMENT WITH MANUFACTURER PRIOR TO ROUGH-IN AND INSTALLATION. ADJUST DEVICE TYPES, SIZES, LOCATIONS AND BRANCH CIRCUITRY (AS REQUIRED).
H. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL FIRE PROTECTION EQUIPMENT WITH THE DIVISION 21 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
I. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL PLUMBING EQUIPMENT WITH THE DIVISION 22 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
J. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH THE DIVISION 23 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
K. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL TECHNOLOGY EQUIPMENT WITH THE DIVISION 27 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
L. COORDINATE MOUNTING HEIGHTS AND LOCATIONS OF ALL DEVICES WITH ARCHITECTURAL ELEVATIONS, CASEWORK, FIELD CONDITIONS AND OTHER TRADES, ADJUST (AS REQUIRED).
M. COORDINATE LOCATIONS OF ALL SMOKE AND / OR FIRE / SMOKE DAMPERS WITH THE MECHANICAL DRAWINGS AND THE DIVISION 23 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION. REFER TO DETAIL FOR FURTHER INFORMATION.

KEY NOTES

NUMBER	NOTES
1	J-BOX CONNECTION FOR NEW ILLUMINATED SIGNAGE. COORDINATE LOCATION AND MOUNTING HEIGHT WITH ARCHITECTURAL DRAWINGS AND EQUIPMENT PROVIDED PRIOR TO ROUGH-IN AND INSTALLATION. COORDINATE ELECTRICAL REQUIREMENTS WITH EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN AND INSTALLATION.

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Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

GERALD A. CRNKOVICH
P.E. #42427

Revision

No.	Date	Description

AIRSIDES - LEVEL 2 - BOARDING - ELECTRICAL

E2.1.5

43342.03
10/07/2021

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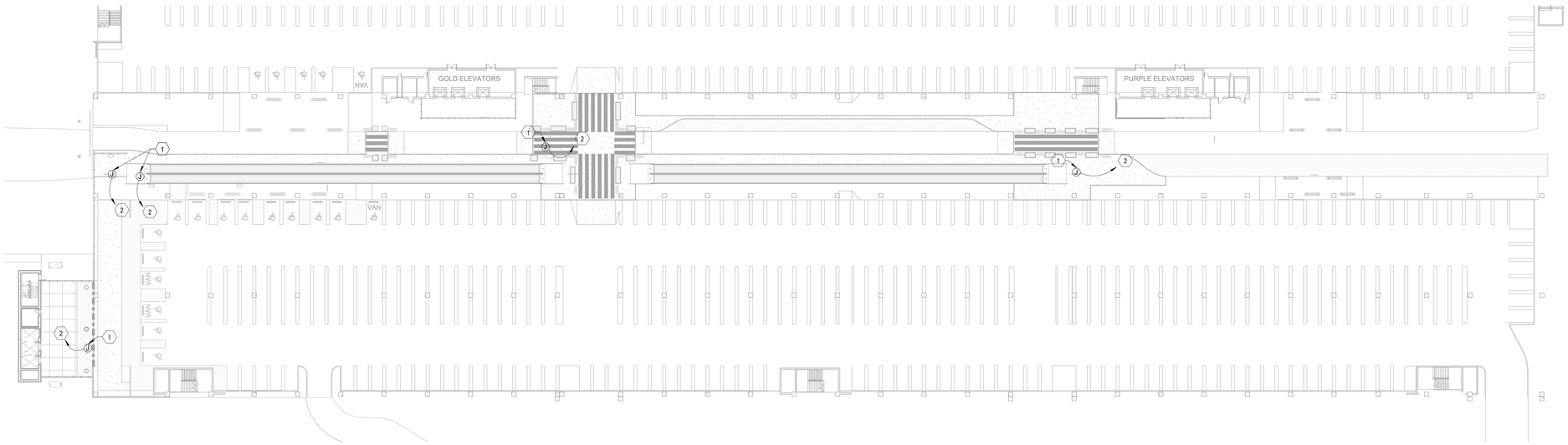
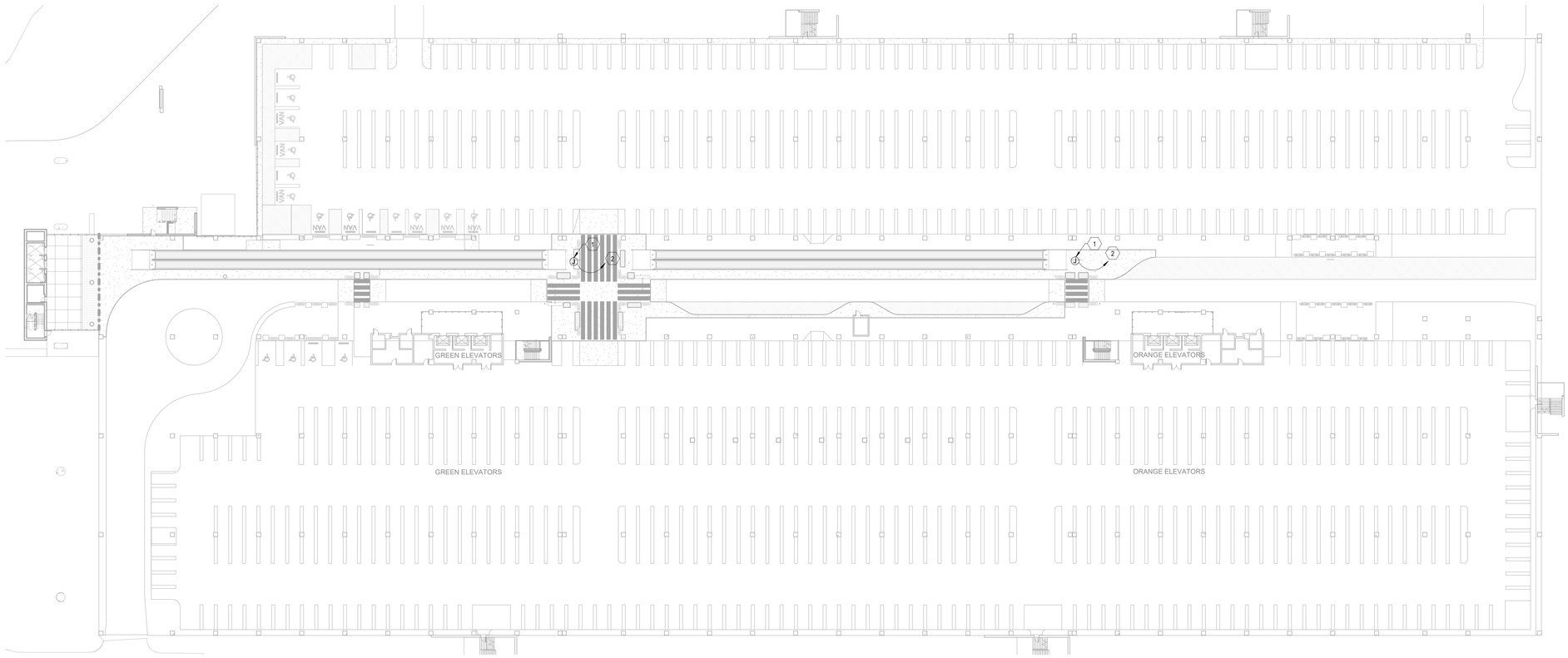
10/5/2021 7:52:14 AM BIM 360://43342.03 TPA Wayfinding Signage Improvements R21\21008_TPA Wayfinding_Electrical_BIM360-GSP_R21.rvt

Drawn By: B.Y.
Checked By: R.F.W.
Approved By: G.C.



2 ECONOMY GARAGE - LEVEL 1 - NORTH - ELECTRICAL

1/32" = 1'-0" 0' 16' 32' 64' 96'



1 ECONOMY GARAGE - LEVEL 1 - SOUTH - ELECTRICAL

1/32" = 1'-0" 0' 16' 32' 64' 96'

GENERAL NOTES

A. ELECTRICAL CONTRACTOR SHALL REFER TO THE ELECTRICAL SPECIFICATIONS FOR ADDITIONAL DESIGN STANDARDS. THE ELECTRICAL SPECIFICATIONS ARE A BINDING PART OF THE CONSTRUCTION DOCUMENTS.
B. ALL RECEPTACLES SHALL BE 20A HOSPITAL GRADE. ALL SWITCHES SHALL BE 20A QUIET TYPE.
C. ALL WIRE SHALL BE COPPER STRANDED.
D. ALL COVER PLATES SHALL BE STAINLESS STEEL WITH LASER ENGRAVED CIRCUIT DESIGNATION.
E. CEILING OUTLETS SHALL BE TWISTLOCK.
F. REFER TO ELECTRICAL MECHANICAL EQUIPMENT SCHEDULES FOR ELECTRICAL INFORMATION PERTAINING TO MECHANICAL, PLUMBING, FIRE PROTECTION AND / OR VERTICAL TRANSPORTATION EQUIPMENT.
G. COORDINATE ELECTRICAL REQUIREMENTS OF ALL EQUIPMENT WITH MANUFACTURER PRIOR TO ROUGH-IN AND INSTALLATION. ADJUST DEVICE TYPES, SIZES, LOCATIONS AND BRANCH CIRCUITRY (AS REQUIRED).
H. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL FIRE PROTECTION EQUIPMENT WITH THE DIVISION 21 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
I. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL PLUMBING EQUIPMENT WITH THE DIVISION 22 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
J. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH THE DIVISION 23 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
K. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL TECHNOLOGY EQUIPMENT WITH THE DIVISION 27 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
L. COORDINATE MOUNTING HEIGHTS AND LOCATIONS OF ALL DEVICES WITH ARCHITECTURAL ELEVATIONS, CASEWORK, FIELD CONDITIONS AND OTHER TRADES, ADJUST (AS REQUIRED).
M. COORDINATE LOCATIONS OF ALL SMOKE AND / OR FIRE / SMOKE DAMPERS WITH THE MECHANICAL DRAWINGS AND THE DIVISION 23 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION. REFER TO DETAIL FOR FURTHER INFORMATION.

KEY NOTES

NUMBER	NOTES
1	J-BOX CONNECTION FOR NEW ILLUMINATED SIGNAGE. COORDINATE LOCATION AND MOUNTING HEIGHT WITH ARCHITECTURAL DRAWINGS AND EQUIPMENT PROVIDED PRIOR TO ROUGH-IN AND INSTALLATION. COORDINATE ELECTRICAL REQUIREMENTS WITH EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN AND INSTALLATION.
2	CONNECT NEW SIGNAGE TO NEAREST LOCAL LIGHTING CIRCUIT. EXTEND BRANCH CIRCUIT CONDUCTORS AND CONDUIT (AS REQUIRED).

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Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION

TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

GERALD A. CRNKOVICH
P.E. #42427

Revision

No.	Date	Description

ECONOMY GARAGE - LEVEL 1 - ELECTRICAL

E2.2.1

43342.03
10/07/2021

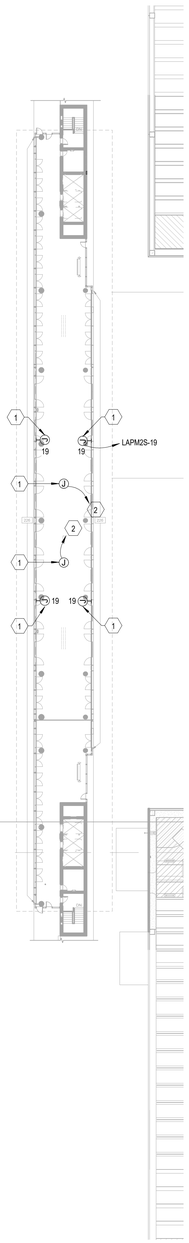
This Line is 3 Inches When Printed Full Size

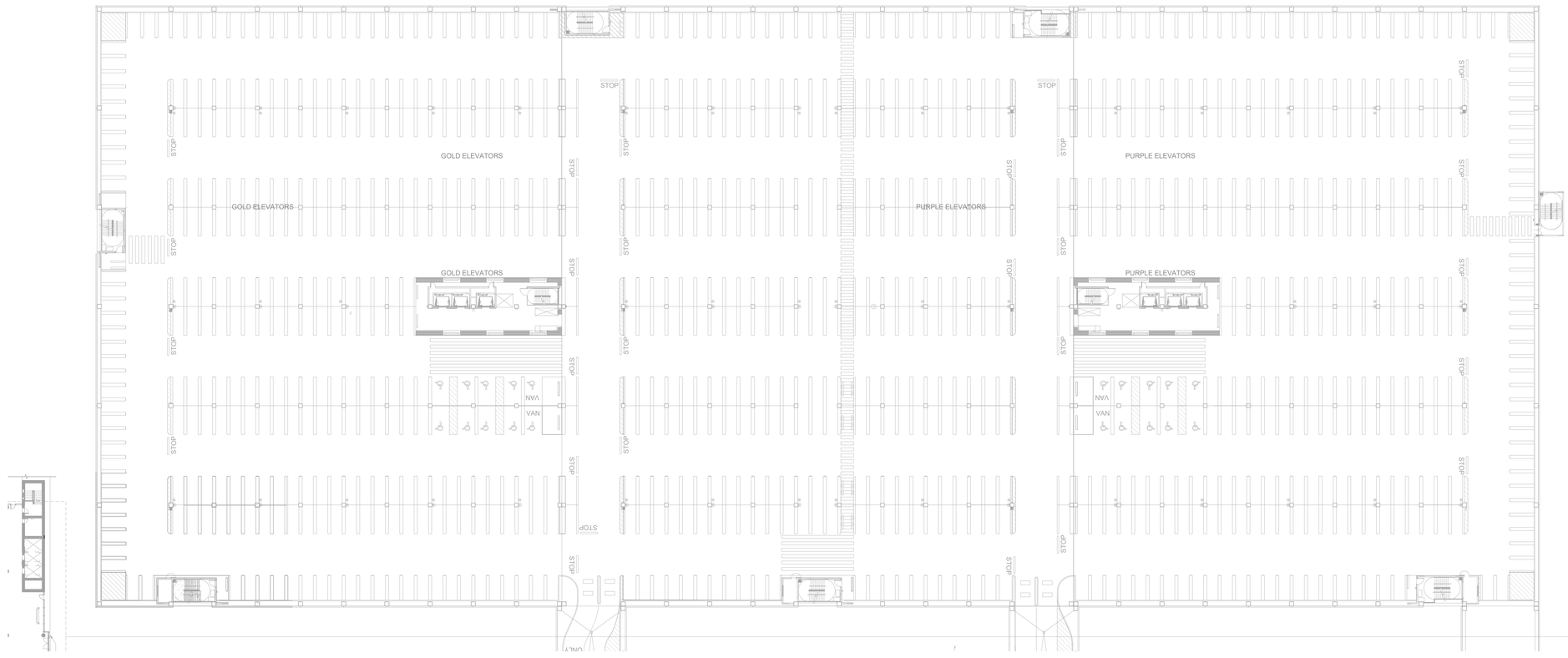
BIM 360://43342.03 TPA Wayfinding Signage Improvements R21\21008_TPA Wayfinding_Electrical_BIM360-GSP_R21.rvt
10/5/2021 7:52:16 AM

Drawn By: B.Y.
Checked By: R.F.W.
Approved By: G.C.

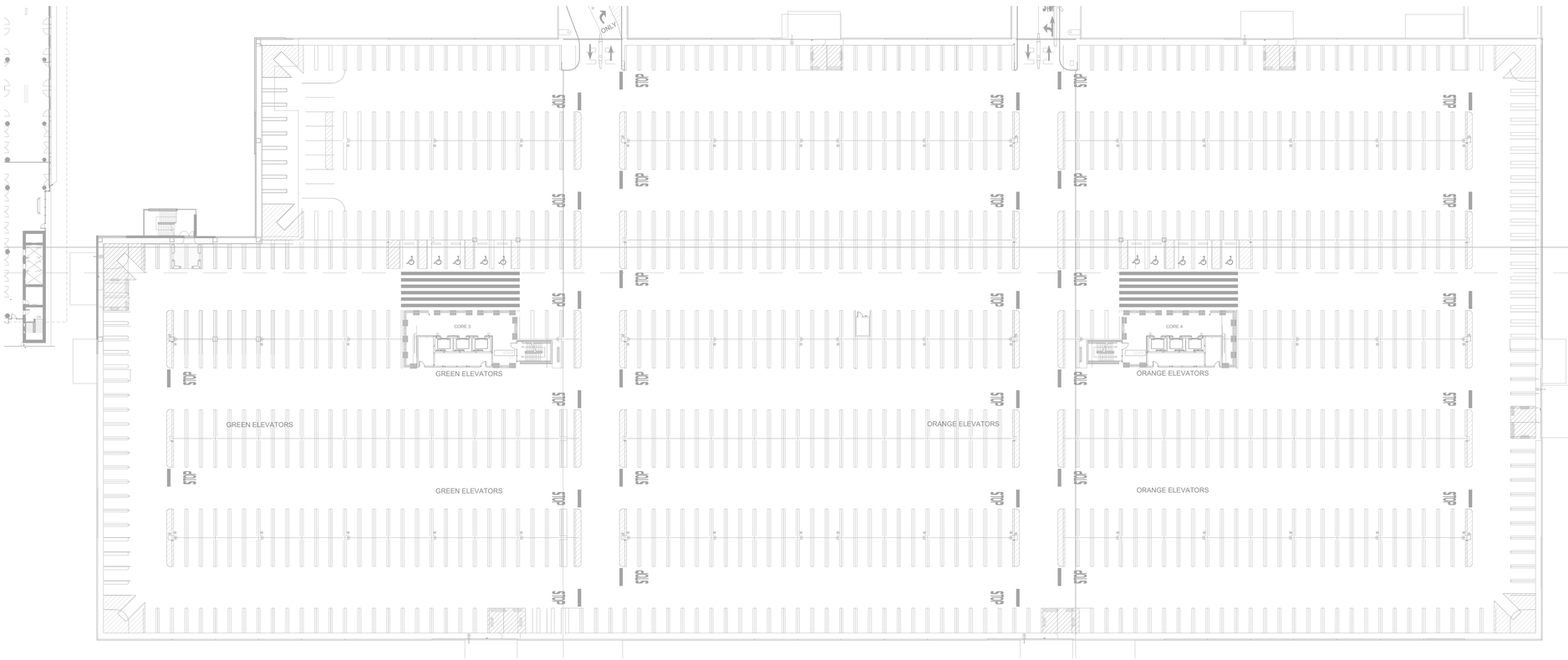
KEY NOTES

NUMBER	NOTES
1	J-BOX CONNECTION FOR NEW ILLUMINATED SIGNAGE. COORDINATE LOCATION AND MOUNTING HEIGHT WITH ARCHITECTURAL DRAWINGS AND EQUIPMENT PROVIDED PRIOR TO ROUGH-IN AND INSTALLATION. COORDINATE ELECTRICAL REQUIREMENTS WITH EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN AND INSTALLATION.
2	CONNECT NEW PYLON SIGNAGE TO EXISTING FLOORBOX. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND FIELD CONDITIONS PRIOR TO ROUGH-IN AND INSTALLATION.





2 ECONOMY GARAGE - LEVEL 4 - NORTH - ELECTRICAL
1/32" = 1'-0"



3 APM 2 - LEVEL 4 - BOARDING - ELECTRICAL
1/32" = 1'-0"

1 ECONOMY GARAGE - LEVEL 4 - SOUTH - ELECTRICAL
1/32" = 1'-0"

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COA #27158
Project #01.21008

Engineer of Record:
GERALD A. CRNKOVICH, P.E. #42527

TO THE BEST OF THE ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

GERALD A. CRNKOVICH
P.E. #42427

Revision

No.	Date	Description

ECONOMY GARAGE - LEVEL 4 - ELECTRICAL

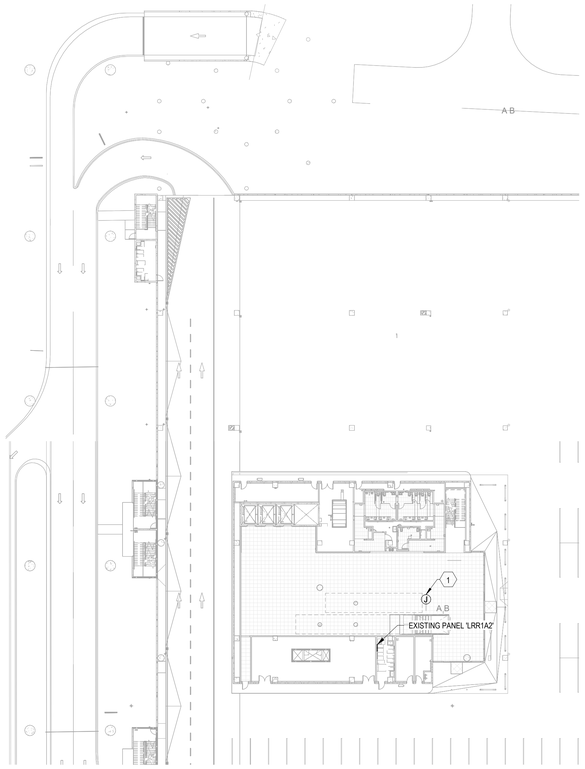
E2.2.4

43342.03
10/07/2021

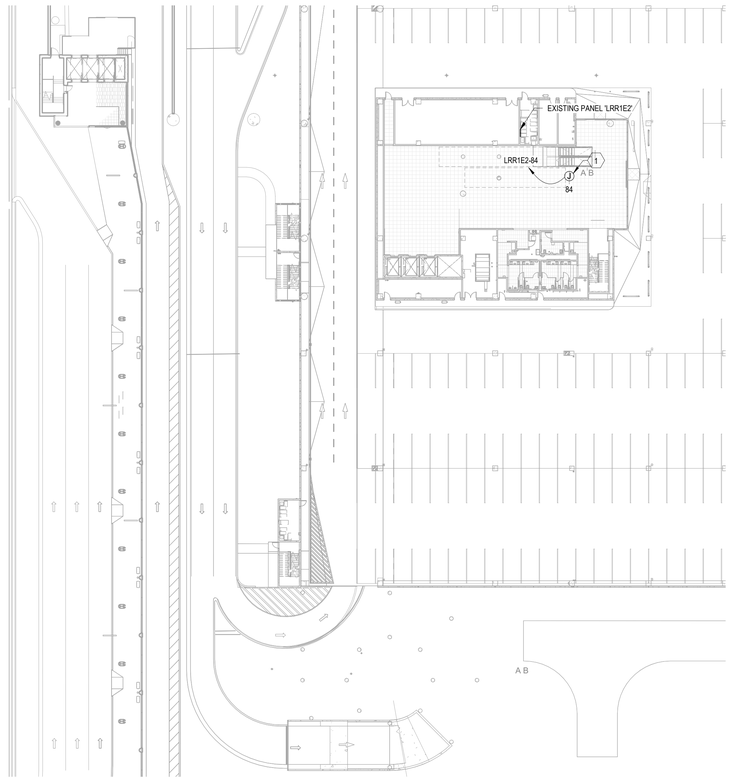
This Line is 3 Inches When Printed Full Size

BIM 360://43342.03 TPA Wayfinding Signage Improvements R21\21008_TPA Wayfinding_Electrical_BIM360-GSP_R21.rvt
10/5/2021 7:52:19 AM

Drawn By: B.Y.
Checked By: R.F.W.
Approved By: G.C.



2 CONRAC - LEVEL 1 - ZONE 1 - ELECTRICAL
1/32" = 1'-0"
0' 16' 32' 64' 96'



1 CONRAC - LEVEL 1 - ZONE 3 - ELECTRICAL
1/32" = 1'-0"
0' 16' 32' 64' 96'

GENERAL NOTES

A. ELECTRICAL CONTRACTOR SHALL REFER TO THE ELECTRICAL SPECIFICATIONS FOR ADDITIONAL DESIGN STANDARDS. THE ELECTRICAL SPECIFICATIONS ARE A BINDING PART OF THE CONSTRUCTION DOCUMENTS.
B. ALL RECEPTACLES SHALL BE 20A HOSPITAL GRADE. ALL SWITCHES SHALL BE 20A QUIET TYPE.
C. ALL WIRE SHALL BE COPPER STRANDED.
D. ALL COVER PLATES SHALL BE STAINLESS STEEL WITH LASER ENGRAVED CIRCUIT DESIGNATION.
E. CEILING OUTLETS SHALL BE TWISTLOCK.
F. REFER TO ELECTRICAL MECHANICAL EQUIPMENT SCHEDULES FOR ELECTRICAL INFORMATION PERTAINING TO MECHANICAL, PLUMBING, FIRE PROTECTION AND / OR VERTICAL TRANSPORTATION EQUIPMENT.
G. COORDINATE ELECTRICAL REQUIREMENTS OF ALL EQUIPMENT WITH MANUFACTURER PRIOR TO ROUGH-IN AND INSTALLATION. ADJUST DEVICE TYPES, SIZES, LOCATIONS AND BRANCH CIRCUITRY (AS REQUIRED).
H. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL FIRE PROTECTION EQUIPMENT WITH THE DIVISION 21 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
I. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL PLUMBING EQUIPMENT WITH THE DIVISION 22 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
J. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH THE DIVISION 23 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
K. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL TECHNOLOGY EQUIPMENT WITH THE DIVISION 27 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
L. COORDINATE MOUNTING HEIGHTS AND LOCATIONS OF ALL DEVICES WITH ARCHITECTURAL ELEVATIONS, CASEWORK, FIELD CONDITIONS AND OTHER TRADES, ADJUST (AS REQUIRED).
M. COORDINATE LOCATIONS OF ALL SMOKE AND / OR FIRE / SMOKE DAMPERS WITH THE MECHANICAL DRAWINGS AND THE DIVISION 23 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION. REFER TO DETAIL FOR FURTHER INFORMATION.

KEY NOTES

NUMBER	NOTES
1	J-BOX CONNECTION FOR NEW ILLUMINATED SIGNAGE. COORDINATE LOCATION AND MOUNTING HEIGHT WITH ARCHITECTURAL DRAWINGS AND EQUIPMENT PROVIDED PRIOR TO ROUGH-IN AND INSTALLATION. COORDINATE ELECTRICAL REQUIREMENTS WITH EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN AND INSTALLATION.

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TO THE BEST OF THE ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION

TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

GERALD A. CRNKOVICH
P.E. #42427

Revision

No.	Date	Description

CONRAC - LEVEL 1 - ELECTRICAL

E2.3.1

43342.03
10/07/2021

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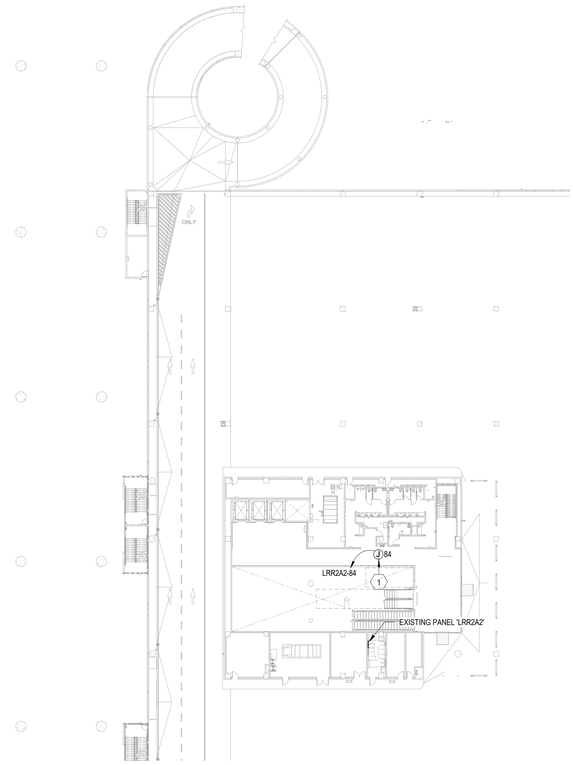
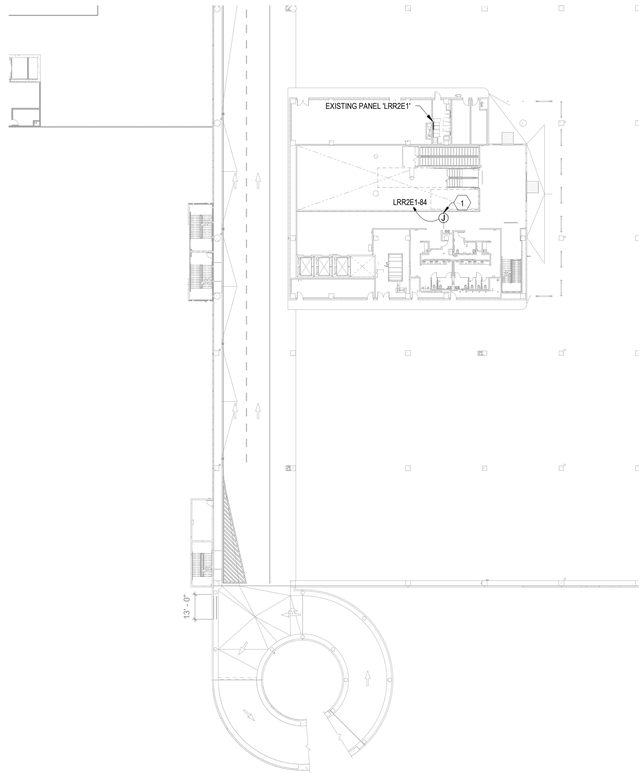
10/5/2021 7:52:22 AM BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/21008_TPA Wayfinding_Electrical_BIM360-GSP_R21.rvt

Drawn By: B.Y.
Checked By: R.F.W.
Approved By: G.C.



2 CONRAC - LEVEL 2 - ZONE 1 - ELECTRICAL
1/32" = 1'-0"



1 CONRAC - LEVEL 2 - ZONE 3 - ELECTRICAL
1/32" = 1'-0"

GENERAL NOTES

A. ELECTRICAL CONTRACTOR SHALL REFER TO THE ELECTRICAL SPECIFICATIONS FOR ADDITIONAL DESIGN STANDARDS. THE ELECTRICAL SPECIFICATIONS ARE A BINDING PART OF THE CONSTRUCTION DOCUMENTS.
B. ALL RECEPTACLES SHALL BE 20A HOSPITAL GRADE. ALL SWITCHES SHALL BE 20A QUIET TYPE.
C. ALL WIRE SHALL BE COPPER STRANDED.
D. ALL COVER PLATES SHALL BE STAINLESS STEEL WITH LASER ENGRAVED CIRCUIT DESIGNATION.
E. CEILING OUTLETS SHALL BE TWISTLOCK.
F. REFER TO ELECTRICAL MECHANICAL EQUIPMENT SCHEDULES FOR ELECTRICAL INFORMATION PERTAINING TO MECHANICAL, PLUMBING, FIRE PROTECTION AND / OR VERTICAL TRANSPORTATION EQUIPMENT.
G. COORDINATE ELECTRICAL REQUIREMENTS OF ALL EQUIPMENT WITH MANUFACTURER PRIOR TO ROUGH-IN AND INSTALLATION. ADJUST DEVICE TYPES, SIZES, LOCATIONS AND BRANCH CIRCUITRY (AS REQUIRED).
H. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL FIRE PROTECTION EQUIPMENT WITH THE DIVISION 21 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
I. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL PLUMBING EQUIPMENT WITH THE DIVISION 22 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
J. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH THE DIVISION 23 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
K. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL TECHNOLOGY EQUIPMENT WITH THE DIVISION 27 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
L. COORDINATE MOUNTING HEIGHTS AND LOCATIONS OF ALL DEVICES WITH ARCHITECTURAL ELEVATIONS, CASEWORK, FIELD CONDITIONS AND OTHER TRADES, ADJUST (AS REQUIRED).
M. COORDINATE LOCATIONS OF ALL SMOKE AND / OR FIRE / SMOKE DAMPERS WITH THE MECHANICAL DRAWINGS AND THE DIVISION 23 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION. REFER TO DETAIL FOR FURTHER INFORMATION.

KEY NOTES

NUMBER	NOTES
1	J-BOX CONNECTION FOR NEW ILLUMINATED SIGNAGE. COORDINATE LOCATION AND MOUNTING HEIGHT WITH ARCHITECTURAL DRAWINGS AND EQUIPMENT PROVIDED PRIOR TO ROUGH-IN AND INSTALLATION. COORDINATE ELECTRICAL REQUIREMENTS WITH EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN AND INSTALLATION.

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Project #01.21008

Engineer of Record:
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TO THE BEST OF THE ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
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GERALD A. CRNKOVICH
P.E. #42427

Revision

No.	Date	Description

CONRAC - LEVEL 2 - ELECTRICAL

E2.3.2

43342.03
10/07/2021

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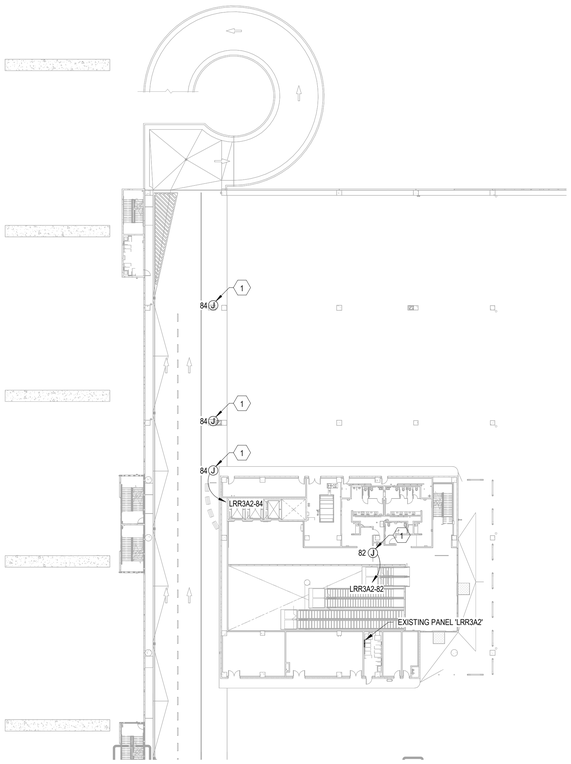
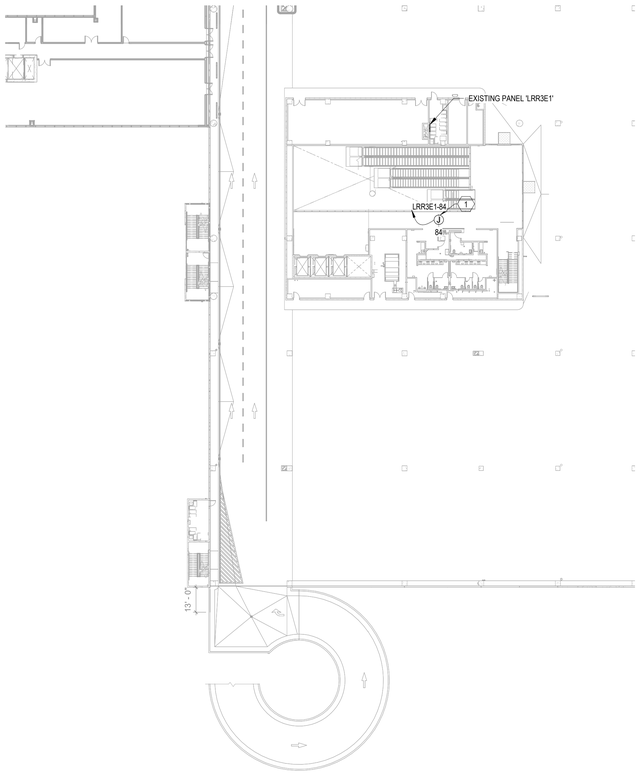
10/5/2021 7:52:24 AM BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/21008_TPA Wayfinding_Electrical_BIM360-GSP_R21.rvt

Drawn By: B.Y.
Checked By: R.F.W.
Approved By: G.C.



2 CONRAC - LEVEL 3 - ZONE 1 - ELECTRICAL
1/32" = 1'-0"



1 CONRAC - LEVEL 3 - ZONE 3 - ELECTRICAL
1/32" = 1'-0"

GENERAL NOTES

A. ELECTRICAL CONTRACTOR SHALL REFER TO THE ELECTRICAL SPECIFICATIONS FOR ADDITIONAL DESIGN STANDARDS. THE ELECTRICAL SPECIFICATIONS ARE A BINDING PART OF THE CONSTRUCTION DOCUMENTS.
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C. ALL WIRE SHALL BE COPPER STRANDED.
D. ALL COVER PLATES SHALL BE STAINLESS STEEL WITH LASER ENGRAVED CIRCUIT DESIGNATION.
E. CEILING OUTLETS SHALL BE TWISTLOCK.
F. REFER TO ELECTRICAL MECHANICAL EQUIPMENT SCHEDULES FOR ELECTRICAL INFORMATION PERTAINING TO MECHANICAL, PLUMBING, FIRE PROTECTION AND / OR VERTICAL TRANSPORTATION EQUIPMENT.
G. COORDINATE ELECTRICAL REQUIREMENTS OF ALL EQUIPMENT WITH MANUFACTURER PRIOR TO ROUGH-IN AND INSTALLATION. ADJUST DEVICE TYPES, SIZES, LOCATIONS AND BRANCH CIRCUITRY (AS REQUIRED).
H. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL FIRE PROTECTION EQUIPMENT WITH THE DIVISION 21 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
I. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL PLUMBING EQUIPMENT WITH THE DIVISION 22 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
J. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH THE DIVISION 23 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
K. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL TECHNOLOGY EQUIPMENT WITH THE DIVISION 27 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
L. COORDINATE MOUNTING HEIGHTS AND LOCATIONS OF ALL DEVICES WITH ARCHITECTURAL ELEVATIONS, CASEWORK, FIELD CONDITIONS AND OTHER TRADES, ADJUST (AS REQUIRED).
M. COORDINATE LOCATIONS OF ALL SMOKE AND / OR FIRE / SMOKE DAMPERS WITH THE MECHANICAL DRAWINGS AND THE DIVISION 23 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION. REFER TO DETAIL FOR FURTHER INFORMATION.

KEY NOTES

NUMBER	NOTES
1	J-BOX CONNECTION FOR NEW ILLUMINATED SIGNAGE. COORDINATE LOCATION AND MOUNTING HEIGHT WITH ARCHITECTURAL DRAWINGS AND EQUIPMENT PROVIDED PRIOR TO ROUGH-IN AND INSTALLATION. COORDINATE ELECTRICAL REQUIREMENTS WITH EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN AND INSTALLATION.

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Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION
TAMPA, FLORIDA

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BID SET
NOT FOR CONSTRUCTION

GERALD A. CRNKOVICH
P.E. #42427

Revision

No.	Date	Description

CONRAC - LEVEL 3 - ELECTRICAL

E2.3.3

43342.03
10/07/2021

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10/5/2021 7:52:27 AM
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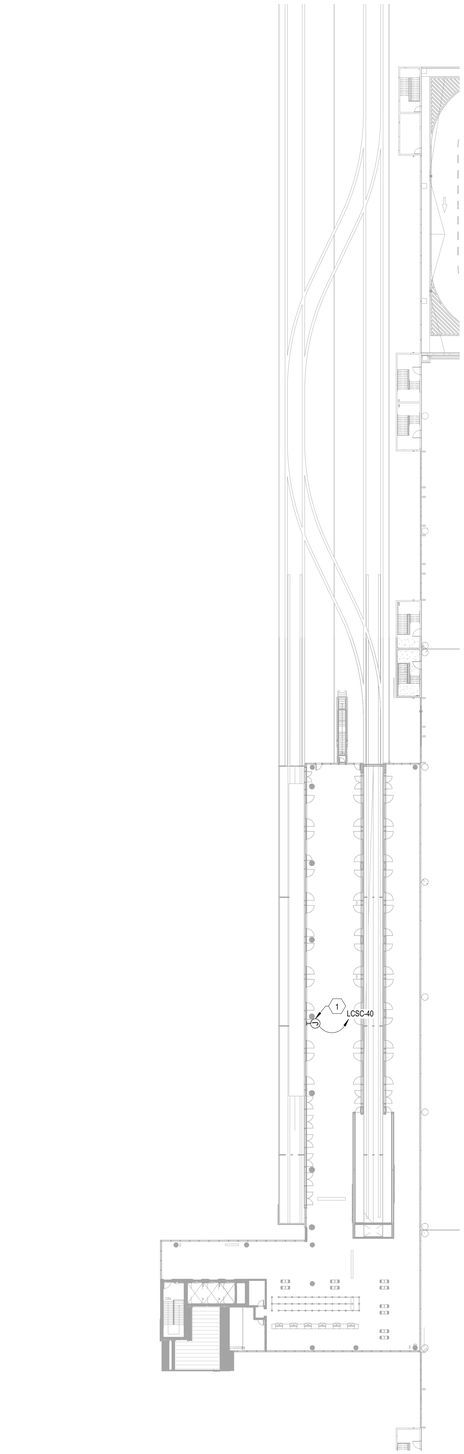
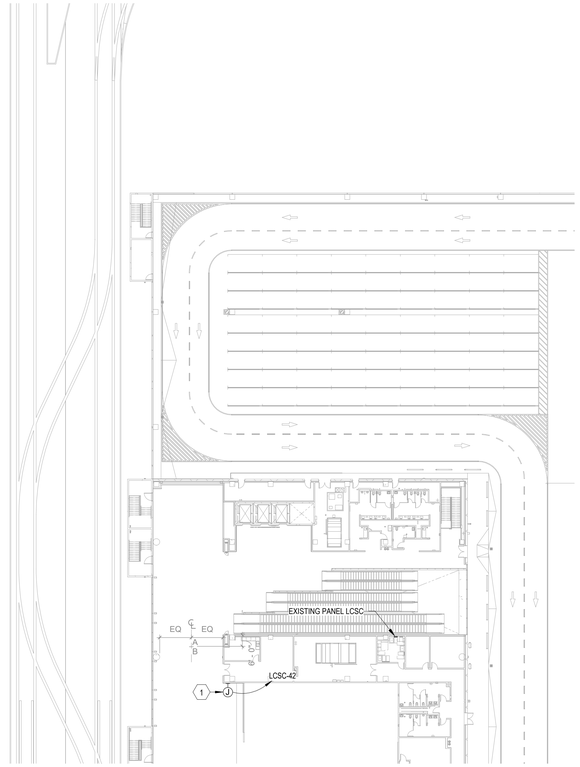
Drawn By: B.Y.
Checked By: R.F.W.
Approved By: G.C.



2 APM 3 - LEVEL 4 - ELECTRICAL
1/32" = 1'-0"
0' 16' 32' 64' 96'



1 CONRAC - LEVEL 4 - ZONE 1 - ELECTRICAL
1/32" = 1'-0"
0' 16' 32' 64' 96'

GENERAL NOTES

A. ELECTRICAL CONTRACTOR SHALL REFER TO THE ELECTRICAL SPECIFICATIONS FOR ADDITIONAL DESIGN STANDARDS. THE ELECTRICAL SPECIFICATIONS ARE A BINDING PART OF THE CONSTRUCTION DOCUMENTS.
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C. ALL WIRE SHALL BE COPPER STRANDED.
D. ALL COVER PLATES SHALL BE STAINLESS STEEL WITH LASER ENGRAVED CIRCUIT DESIGNATION.
E. CEILING OUTLETS SHALL BE TWISTLOCK.
F. REFER TO ELECTRICAL MECHANICAL EQUIPMENT SCHEDULES FOR ELECTRICAL INFORMATION PERTAINING TO MECHANICAL, PLUMBING, FIRE PROTECTION AND / OR VERTICAL TRANSPORTATION EQUIPMENT.
G. COORDINATE ELECTRICAL REQUIREMENTS OF ALL EQUIPMENT WITH MANUFACTURER PRIOR TO ROUGH-IN AND INSTALLATION. ADJUST DEVICE TYPES, SIZES, LOCATIONS AND BRANCH CIRCUITRY (AS REQUIRED).
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I. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL PLUMBING EQUIPMENT WITH THE DIVISION 22 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
J. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH THE DIVISION 23 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
K. COORDINATE LOCATIONS AND REQUIREMENTS OF ALL TECHNOLOGY EQUIPMENT WITH THE DIVISION 27 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION.
L. COORDINATE MOUNTING HEIGHTS AND LOCATIONS OF ALL DEVICES WITH ARCHITECTURAL ELEVATIONS, CASEWORK, FIELD CONDITIONS AND OTHER TRADES, ADJUST (AS REQUIRED).
M. COORDINATE LOCATIONS OF ALL SMOKE AND / OR FIRE / SMOKE DAMPERS WITH THE MECHANICAL DRAWINGS AND THE DIVISION 23 CONTRACTOR PRIOR TO ROUGH-IN AND INSTALLATION. REFER TO DETAIL FOR FURTHER INFORMATION.

KEY NOTES

NUMBER	NOTES
1	J-BOX CONNECTION FOR NEW ILLUMINATED SIGNAGE. COORDINATE LOCATION AND MOUNTING HEIGHT WITH ARCHITECTURAL DRAWINGS AND EQUIPMENT PROVIDED PRIOR TO ROUGH-IN AND INSTALLATION. COORDINATE ELECTRICAL REQUIREMENTS WITH EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN AND INSTALLATION.

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Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION

TAMPA, FLORIDA

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BID SET
NOT FOR CONSTRUCTION

GERALD A. CRNKOVICH
P.E. #42427

Revision

No.	Date	Description

CONRAC - LEVEL 4 - ELECTRICAL

E2.3.4

43342.03
10/07/2021

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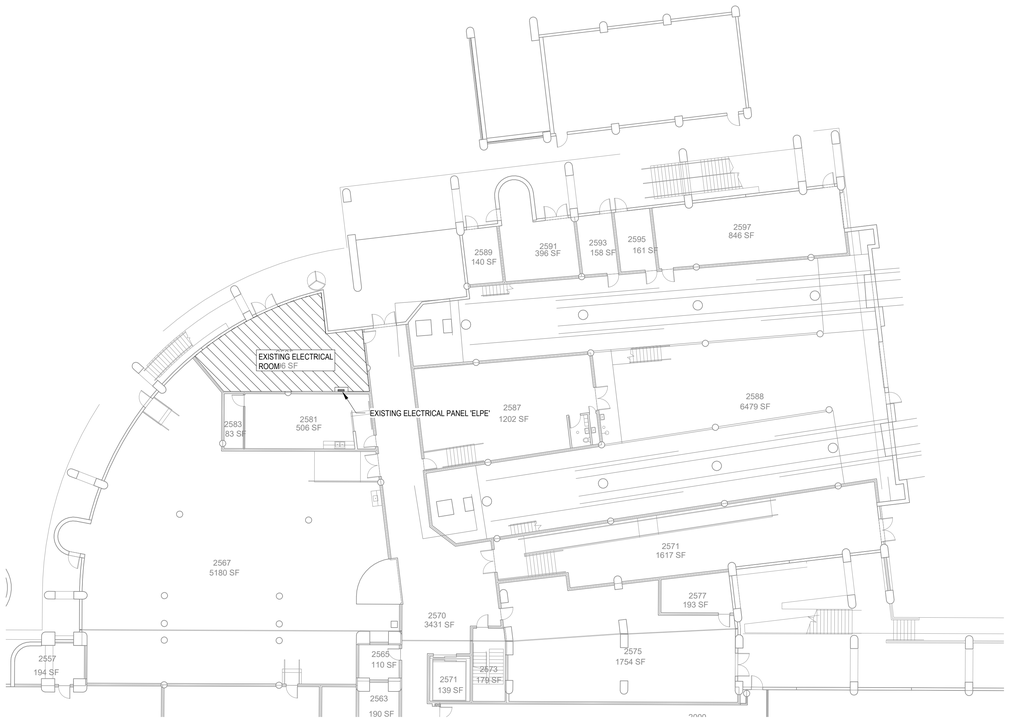
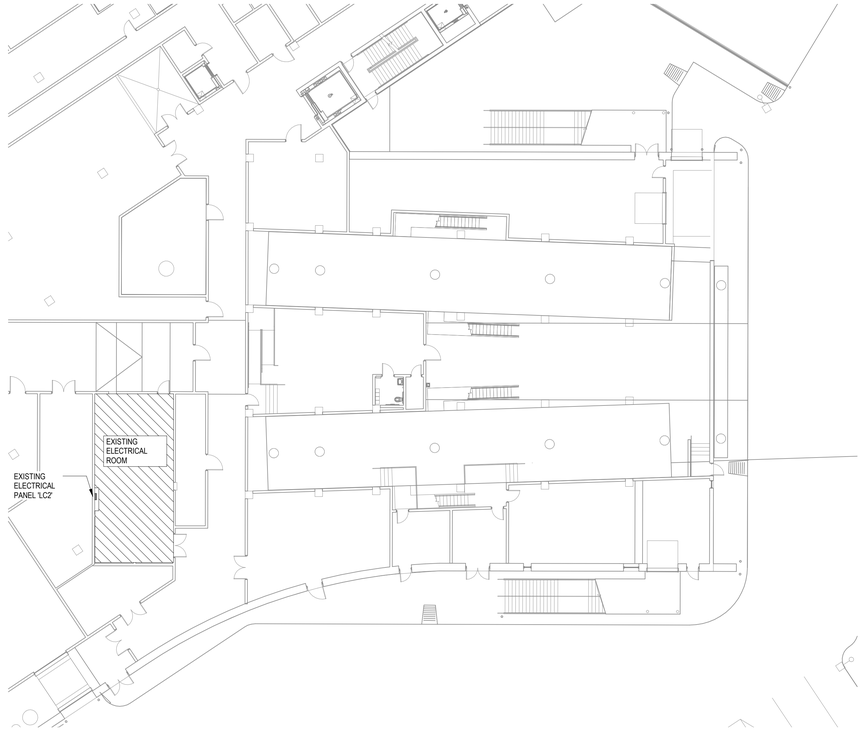
10/5/2021 7:52:29 AM BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/21008_TPA Wayfinding_Electrical_BIM360.GSP_R21.rvt

Drawn By: B.Y.
Checked By: R.F.W.
Approved By: G.C.



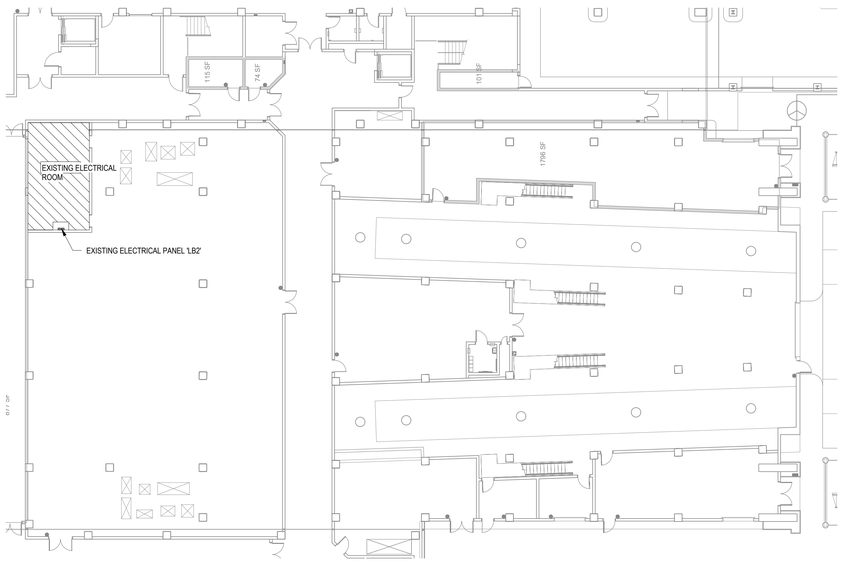
1 RAMP - ELECTRICAL ROOM - AIRSIDE A

1/16" = 1'-0"



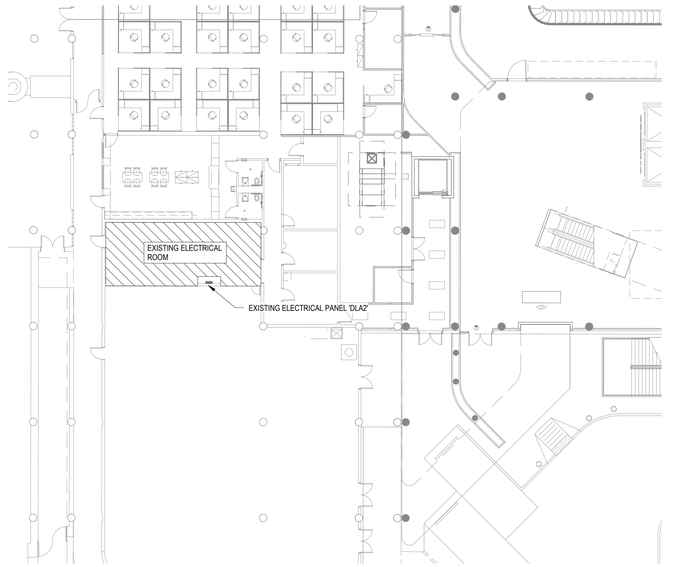
2 RAMP - ELECTRICAL ROOM - AIRSIDE C

1/16" = 1'-0"



3 RAMP - ELECTRICAL ROOM - AIRSIDE E

1/16" = 1'-0"



4 RAMP - ELECTRICAL ROOM - AIRSIDE F

1/16" = 1'-0"

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TO THE BEST OF THE ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION

TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE 8TH EDITION (2017) FLORIDA BUILDING CODE AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES

BID SET
NOT FOR CONSTRUCTION

GERALD A. CRNKOVICH
P.E. #42427

Revision

No.	Date	Description

ENLARGED FLOOR PLANS

E4.01

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

10/5/2021 7:52:32 AM BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/21000_TPA Wayfinding_Electrical_BIM360-GSP_R21.rvt

Drawn By: B.Y.
Checked By: R.F.W.
Approved By: G.C.

PANEL 81LA

MAIN BREAKER 150A | MAIN LUGS | BUS RATING 225 A | AIC RATING 42K

PHASE	CIRCUIT	MOUNT	NEMA	VOLTAGE
3	42	SURFACE		120/208 Wye

NOTES	CKT #	CIRCUIT DESCRIPTION	TRIP AMPS	BRKR. POLES	A PHASE LOAD kVA	B PHASE LOAD kVA	C PHASE LOAD kVA	BRKR. POLES	TRIP AMPS	CIRCUIT DESCRIPTION	CKT #	NOTES
	1	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	2	
	3	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	4	
	5	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	6	
	7	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	8	
	9	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	10	
	11	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	12	
	13	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	14	
	15	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	16	
	17	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	18	
	19	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	20	
	21	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	22	
	23	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	24	
	25	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	26	
	27	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	28	
	29	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	30	
	31	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	32	
	33	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	34	
	35	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	36	
	37	EXISTING	20 A	1	0 VA	**1000 VA**		1	**20 A**	**LIGHTING SIGNAGE**	**38**	**1**
	39	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	40	
	41	EXISTING	20 A	1			0 VA	**1000 VA**		**LIGHTING - SIGNAGE**	**42**	**1**
		PHASE kVA			1000 VA	0 VA	1000 VA					
		TOTAL kVA			2000 VA		TOTAL AMPS	6 A				
		TOTAL DEMAND kVA			2500 VA		DEM LOAD AMPS	7 A				

Lighting 2000 VA 125.00% 2500 VA

PANEL NOTES:
1. UTILIZE EXISTING SPARE CIRCUIT BREAKER

PANEL 7X

MAIN BREAKER ---- | MAIN LUGS | BUS RATING 250 A | AIC RATING

PHASE	CIRCUIT	MOUNT	NEMA	VOLTAGE
3	42	SURFACE		480/277 Wye

NOTES	CKT #	CIRCUIT DESCRIPTION	TRIP AMPS	BRKR. POLES	A PHASE LOAD kVA	B PHASE LOAD kVA	C PHASE LOAD kVA	BRKR. POLES	TRIP AMPS	CIRCUIT DESCRIPTION	CKT #	NOTES
	1	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	2	
	3	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	4	
	5	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	6	
	7	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	8	
	9	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	10	
	11	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	12	
	13					**0 VA**		1	20 A	EXISTING	14	
1	**15**	**LIGHTING - SIGNAGE**	**20 A**	**1**		**200 VA**	**0 VA**	1	20 A	EXISTING	16	
1	**17**	**LIGHTING - SIGNAGE**	**20 A**	**1**			**500 VA**	0 VA	1	20 A	EXISTING	18
	19	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	20	
	21	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	22	
	23	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	24	
	25	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	26	
	27	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	28	
	29	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	30	
	31	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	32	
	33	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	34	
	35	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	36	
	37	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	38	
	39	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	40	
	41	EXISTING	20 A	1			0 VA	0 VA	1	20 A	EXISTING	42
		PHASE kVA			0 VA	200 VA	500 VA					
		TOTAL kVA			700 VA		TOTAL AMPS	1 A				
		TOTAL DEMAND kVA			875 VA		DEM LOAD AMPS	1 A				

Lighting 700 VA 125.00% 875 VA

PANEL NOTES:
1. UTILIZE EXISTING SPARE CIRCUIT BREAKER

PANEL 5P

MAIN BREAKER 225A | MAIN LUGS | BUS RATING 225 A | AIC RATING

PHASE	CIRCUIT	MOUNT	NEMA	VOLTAGE
3	42	SURFACE		120/208 Wye

NOTES	CKT #	CIRCUIT DESCRIPTION	TRIP AMPS	BRKR. POLES	A PHASE LOAD kVA	B PHASE LOAD kVA	C PHASE LOAD kVA	BRKR. POLES	TRIP AMPS	CIRCUIT DESCRIPTION	CKT #	NOTES
	1	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	2	
	3	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	4	
	5	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	6	
	7	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	8	
	9	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	10	
	11	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	12	
	13	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	14	
	15	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	16	
	17	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	18	
	19	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	20	
	21	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	22	
	23	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	24	
	25	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	26	
	27	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	28	
	29	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	30	
	31	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	32	
	33	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	34	
	35	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	36	
	37	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	38	
	39	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	40	
	41	EXISTING	20 A	1			0 VA	0 VA	1	20 A	EXISTING	42
		PHASE kVA			1000 VA	0 VA	0 VA					
		TOTAL kVA			1000 VA		TOTAL AMPS	3 A				
		TOTAL DEMAND kVA			1250 VA		DEM LOAD AMPS	3 A				

Lighting 1000 VA 125.00% 1250 VA

PANEL NOTES:
1. NEW LOAD. UTILIZE EXISTING 1P CIRCUIT BREAKER

PANEL 82L

MAIN BREAKER 150A | MAIN LUGS | BUS RATING 225 A | AIC RATING 42K

PHASE	CIRCUIT	MOUNT	NEMA	VOLTAGE
3	42	SURFACE		120/208 Wye

NOTES	CKT #	CIRCUIT DESCRIPTION	TRIP AMPS	BRKR. POLES	A PHASE LOAD kVA	B PHASE LOAD kVA	C PHASE LOAD kVA	BRKR. POLES	TRIP AMPS	CIRCUIT DESCRIPTION	CKT #	NOTES
	1	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	2	
	3	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	4	
	5	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	6	
	7	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	8	
	9	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	10	
	11	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	12	
	13	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	14	
	15	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	16	
	17	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	18	
	19	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	20	
	21	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	22	
	23	EXISTING	20 A	1			0 VA	**1**	**20 A**	**LIGHTING SIGNAGE**	**24**	**1**
	25	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	26	
	27	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	28	
	29	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	30	
	31	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	32	
	33	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	34	
	35	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	36	
	37	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	38	
	39	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	40	
	41	EXISTING	20 A	1			0 VA	0 VA	1	20 A	EXISTING	42
		PHASE kVA			0 VA	1000 VA	0 VA					
		TOTAL kVA			1000 VA		TOTAL AMPS	3 A				
		TOTAL DEMAND kVA			1250 VA		DEM LOAD AMPS	3 A				

Lighting 1000 VA 125.00% 1250 VA

PANEL NOTES:
1. UTILIZE EXISTING SPARE CIRCUIT BREAKER

PANEL 8X

MAIN BREAKER ---- | MAIN LUGS | BUS RATING 250 A | AIC RATING

PHASE	CIRCUIT	MOUNT	NEMA	VOLTAGE
3	42	SURFACE		480/277 Wye

NOTES	CKT #	CIRCUIT DESCRIPTION	TRIP AMPS	BRKR. POLES	A PHASE LOAD kVA	B PHASE LOAD kVA	C PHASE LOAD kVA	BRKR. POLES	TRIP AMPS	CIRCUIT DESCRIPTION	CKT #	NOTES
	1	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	2	
	3	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	4	
	5	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	6	
	7					0 VA		1	20 A	EXISTING	8	
	9	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	10	
	11	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	12	
	13	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	14	
	15	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	16	
	17	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	18	
	19	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	20	
	21	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	22	
	23	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	24	
	25	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	26	
	27	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	28	
1	**29**	**LIGHTING - SIGNAGE**	**20 A**	**1**			**1000 VA**	0 VA	1	20 A	EXISTING	30
	31	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	32	
	33	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	34	
	35	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	36	
	37	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	38	
	39	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	40	
	41	EXISTING	20 A	1			0 VA	0 VA	1	20 A	EXISTING	42
		PHASE kVA			0 VA	0 VA	1000 VA					
		TOTAL kVA			1000 VA		TOTAL AMPS	2 A				
		TOTAL DEMAND kVA			1250 VA		DEM LOAD AMPS	2 A				

Lighting 1000 VA 125.00% 1250 VA

PANEL NOTES:
1. UTILIZE EXISTING SPARE CIRCUIT BREAKER

PANEL 5X

MAIN BREAKER ---- | MAIN LUGS | BUS RATING 250 A | AIC RATING

PHASE	CIRCUIT	MOUNT	NEMA	VOLTAGE
3	42	SURFACE		480/277 Wye

NOTES	CKT #	CIRCUIT DESCRIPTION	TRIP AMPS	BRKR. POLES	A PHASE LOAD kVA	B PHASE LOAD kVA	C PHASE LOAD kVA	BRKR. POLES	TRIP AMPS	CIRCUIT DESCRIPTION	CKT #	NOTES
	1	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	2	
	3	EXISTING	20 A	1		0 VA	**500 VA**	1	**20 A**	**LIGHTING - SIGNAGE**	**4**	**1**
	5	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	6	
	7	EXISTING	20 A	1	0 VA	**1000 VA**		1	**20 A**	**LIGHTING - SIGNAGE**	**8**	**1**
	9	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	10	
	11	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	12	
	13	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	14	
	15	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	16	
	17	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	18	
	19	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	20	
	21	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	22	
	23	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	24	
	25	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	26	
	27	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	28	
	29	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	30	
	31	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	32	
	33	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	34	
	35	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	36	
	37	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	38	
	39						0 VA	1	20 A	EXISTING	40	
1	**41**	**LIGHTING - SIGNAGE**	**20 A**	**1**			**500 VA**	0 VA	1	20 A	EXISTING	42
		PHASE kVA			1000 VA	500 VA	0 VA					
		TOTAL kVA			2000 VA		TOTAL AMPS	2 A				
		TOTAL DEMAND kVA			2500 VA		DEM LOAD AMPS	3 A				

Lighting 2000 VA 125.00% 2500 VA

PANEL NOTES:
1. UTILIZE EXISTING SPARE CIRCUIT BREAKER

PANEL 83L

MAIN BREAKER 150A | MAIN LUGS | BUS RATING 225 A | AIC RATING 42K

PHASE	CIRCUIT	MOUNT	NEMA	VOLTAGE
3	42	SURFACE		120/208 Wye

NOTES	CKT #	CIRCUIT DESCRIPTION	TRIP AMPS	BRKR. POLES	A PHASE LOAD kVA	B PHASE LOAD kVA	C PHASE LOAD kVA	BRKR. POLES	TRIP AMPS	CIRCUIT DESCRIPTION	CKT #	NOTES
	1	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	2	
	3	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	4	
	5	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	6	
	7	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	8	
	9	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	10	
	11	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	12	
	13	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	14	
	15	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	16	
	17	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	18	
	19	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	20	
	21	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	22	
	23	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	24	
	25	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	26	
	27	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	28	
	29	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	30	
	31	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	32	
	33	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	34	
	35	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	36	
	37	EXISTING	20 A	1	0 VA	1000 VA		2	20 A	EXISTING	38	
	39	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	40	
	41	EXISTING	20 A	1			0 VA	0 VA	1	20 A	EXISTING	42
		PHASE kVA			0 VA	1000 VA	0 VA					
		TOTAL kVA			1000 VA		TOTAL AMPS	3 A				
		TOTAL DEMAND kVA			1250 VA		DEM LOAD AMPS	3 A				

Lighting 1000 VA 125.00% 1250 VA

PANEL NOTES:
1. UTILIZE EXISTING SPARE CIRCUIT BREAKER

PANEL 80L

MAIN BREAKER 150A | MAIN LUGS | BUS RATING 225 A | AIC RATING 42K

PHASE	CIRCUIT	MOUNT	NEMA	VOLTAGE
3	42	SURFACE		120/208 Wye

NOTES	CKT #	CIRCUIT DESCRIPTION	TRIP AMPS	BRKR. POLES	A PHASE LOAD kVA	B PHASE LOAD kVA	C PHASE LOAD kVA	BRKR. POLES	TRIP AMPS	CIRCUIT DESCRIPTION	CKT #	NOTES
	1	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	2	
	3	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	4	
	5	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	6	
	7	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	8	
	9	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	10	
	11	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	12	
	13	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	14	
	15	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	16	
	17	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	18	
	19	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	20	
	21	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	22	
	23	EXISTING	20 A	1			0 VA	2	20 A	EXISTING	24	
	25				0 VA	0 VA					26	
	27	EXISTING	20 A	3		0 VA	0 VA	1	20 A	EXISTING	28	
	29						0 VA	1	20 A	EXISTING	30	
	31	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	32	
	33	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	34	
	35	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	36	
	37				0 VA	0 VA		1	20 A	EXISTING	38	
	39	EXISTING	20 A	3		0 VA	0 VA	1	20 A	EXISTING	40	
	41						**1000 VA**	**1**	**20 A**	**LIGHTING SIGNAGE**	**42**	**1**
		PHASE kVA			0 VA	0 VA	1000 VA					
		TOTAL kVA			1000 VA		TOTAL AMPS	3 A				
		TOTAL DEMAND kVA			1250 VA		DEM LOAD AMPS	3 A				

Lighting 1000 VA 125.00% 1250 VA

PANEL NOTES:
1. UTILIZE EXISTING SPARE CIRCUIT BREAKER

PANEL 6X

MAIN BREAKER ---- | MAIN LUGS | BUS RATING 250 A | AIC RATING

PHASE	CIRCUIT	MOUNT	NEMA	VOLTAGE
3	42	SURFACE		480/277 Wye

NOTES	CKT #	CIRCUIT DESCRIPTION	TRIP AMPS	BRKR. POLES	A PHASE LOAD kVA	B PHASE LOAD kVA	C PHASE LOAD kVA	BRKR. POLES	TRIP AMPS	CIRCUIT DESCRIPTION	CKT #	NOTES
	1	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	2	
	3	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	4	
	5	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	6	
	7	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	8	
	9	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	10	
	11	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	12	
	13	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	14	
	15	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	16	
	17	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	18	
	19	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	20	
	21	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	22	
	23	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	24	
	25	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	26	
	27						0 VA	1	20 A	EXISTING	28	
	29	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	30	
	31	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	32	
	33	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	34	
	35	EXISTING	20 A	1			0 VA	1	20 A	EXISTING	36	
	37	EXISTING	20 A	1	0 VA	0 VA		1	20 A	EXISTING	38	
	39	EXISTING	20 A	1		0 VA	0 VA	1	20 A	EXISTING	40	
	41	EXISTING	20 A	1			0 VA	0 VA	1	20 A	EXISTING	42
		PHASE kVA			0 VA	0 VA	0 VA					
		TOTAL kVA			0 VA		TOTAL AMPS	0 A				
		TOTAL DEMAND kVA			0 VA		DEM LOAD AMPS	0 A				

PANEL NOTES:
1. UTILIZE EXISTING SPARE CIRCUIT BREAKER

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26000381

VOLT AIR
6005 Benjamin Road, Suite A
Tampa, Florida 33634
Tel: 888.891.9713
www.VoltAirInc.com
COA #27158
Project #01.21008
Engineer of Record:
GERALD A. CRNKOVICH, P.E. #42527

TO THE BEST OF THE ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION

TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

GERALD A. CRNKOVICH
P.E. #42427

Revision

No.	Date	Description

PANEL SCHEDULES - ELECTRICAL

E6.01

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

10/5/2021 7:52:37 AM BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/21008_TPA Wayfinding_Electrical_BIM360-GSP_R21.rvt

Drawn By: B.Y.
Checked By: R.F.W.
Approved By: G.C.

PANEL LRR1E2

MAIN BREAKER 225 A | MAIN LUGS | PHASE 3 | CIRCUIT 84 | MOUNT SURFACE | NEMA | VOLTAGE 120/208 Wye | BUS RATING 225 A | AIC RATING

NOTES	CKT #	CIRCUIT DESCRIPTION	TRIP AMPS	BRKR. POLES	A PHASE LOAD kVA		B PHASE LOAD kVA		C PHASE LOAD kVA		BRKR. POLES	TRIP AMPS	CIRCUIT DESCRIPTION	CKT #	NOTES
	1	SPARE	20 A	1	0 VA						1	20 A	SPARE	2	
	3	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	4	
	5	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	6	
	7	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	8	
	9	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	10	
	11	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	12	
	13	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	14	
	15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16	
	17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18	
	19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20	
	21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22	
	23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24	
	25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26	
	27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28	
	29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30	
	31	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	32	
	33	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	34	
	35	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	36	
	37	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	38	
	39	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	40	
	41	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	42	
	43	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	44	
	45	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	46	
	47	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	48	
	49	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	50	
	51	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	52	
	53	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	54	
	55	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	56	
	57	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	58	
	59	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	60	
	61	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	62	
	63	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	64	
	65	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	66	
	67	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	68	
	69	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	70	
	71	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	72	
	73	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	74	
	75	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	76	
	77	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	78	
	79	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	80	
	81	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	82	
	83	SPARE	20 A	1					0 VA	**600 VA**	**1**	**20 A**	**LIGHTING SIGNAGE**	**84**	**1**
			PHASE kVA		0 VA		0 VA		600 VA						
			TOTAL kVA		600 VA				TOTAL AMPS		2 A				
			TOTAL DEMAND kVA		750 VA				DEM LOAD AMPS		2 A				

Lighting 600 VA 125.00% 750 VA

PANEL NOTES:
1. UTILIZE EXISTING SPARE CIRCUIT BREAKER

PANEL LRR2A2

MAIN BREAKER 225 A | MAIN LUGS | PHASE 3 | CIRCUIT 84 | MOUNT SURFACE | NEMA | VOLTAGE 120/208 Wye | BUS RATING 225 A | AIC RATING

NOTES	CKT #	CIRCUIT DESCRIPTION	TRIP AMPS	BRKR. POLES	A PHASE LOAD kVA		B PHASE LOAD kVA		C PHASE LOAD kVA		BRKR. POLES	TRIP AMPS	CIRCUIT DESCRIPTION	CKT #	NOTES
	1	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	2	
	3	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	4	
	5	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	6	
	7	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	8	
	9	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	10	
	11	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	12	
	13	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	14	
	15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16	
	17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18	
	19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20	
	21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22	
	23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24	
	25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26	
	27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28	
	29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30	
	31	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	32	
	33	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	34	
	35	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	36	
	37	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	38	
	39	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	40	
	41	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	42	
	43	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	44	
	45	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	46	
	47	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	48	
	49	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	50	
	51	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	52	
	53	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	54	
	55	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	56	
	57	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	58	
	59	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	60	
	61	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	62	
	63	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	64	
	65	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	66	
	67	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	68	
	69	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	70	
	71	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	72	
	73	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	74	
	75	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	76	
	77	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	78	
	79	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	80	
	81	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	82	
	83	SPARE	20 A	1					0 VA	**600 VA**	**1**	**20 A**	**LIGHTING SIGNAGE**	**84**	**1**
			PHASE kVA		0 VA		0 VA		600 VA						
			TOTAL kVA		600 VA				TOTAL AMPS		2 A				
			TOTAL DEMAND kVA		750 VA				DEM LOAD AMPS		2 A				

Lighting 600 VA 125.00% 750 VA

PANEL NOTES:
1. UTILIZE EXISTING SPARE CIRCUIT BREAKER

PANEL LB2

MAIN BREAKER 225A | MAIN LUGS | PHASE 3 | CIRCUIT 42 | MOUNT SURFACE | NEMA | VOLTAGE 120/208 Wye | BUS RATING 225 A | AIC RATING

NOTES	CKT #	CIRCUIT DESCRIPTION	TRIP AMPS	BRKR. POLES	A PHASE LOAD kVA		B PHASE LOAD kVA		C PHASE LOAD kVA		BRKR. POLES	TRIP AMPS	CIRCUIT DESCRIPTION	CKT #	NOTES
	1	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	2	
	3	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	4	
	5	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	6	
	7	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	8	
	9	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	10	
	11	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	12	
	13	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	14	
	15	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	16	
	17	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	18	
	19	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	20	
	21	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	22	
	23	EXISTING	20 A	1					**0 VA**	**1000 VA**	**1**	**20 A**	**LIGHTING - SHUTTLE SIGNAGE**	**24**	**1**
	25	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	26	
	27	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	28	
	29	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	30	
	31	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	32	
	33	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	34	
	35	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	36	
	37	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	38	
	39	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	40	
	41	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	42	
			PHASE kVA		0 VA		0 VA		1000 VA						
			TOTAL kVA		1000 VA				TOTAL AMPS		3 A				
			TOTAL DEMAND kVA		1250 VA				DEM LOAD AMPS		3 A				

Lighting 1000 VA 125.00% 1250 VA

PANEL NOTES:
1. UTILIZE EXISTING SPARE CIRCUIT BREAKER

PANEL LC2

MAIN BREAKER 225A | MAIN LUGS | PHASE 3 | CIRCUIT 126 | MOUNT SURFACE | NEMA | VOLTAGE 120/208 Wye | BUS RATING 225 A | AIC RATING

NOTES	CKT #	CIRCUIT DESCRIPTION	TRIP AMPS	BRKR. POLES	A PHASE LOAD kVA		B PHASE LOAD kVA		C PHASE LOAD kVA		BRKR. POLES	TRIP AMPS	CIRCUIT DESCRIPTION	CKT #	NOTES
	1	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	2	
	3	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	4	
	5	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	6	
	7	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	8	
	9	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	10	
	11	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	12	
	13	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	14	
	15	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	16	
	17	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	18	
	19	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	20	
	21	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	22	
	23	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	24	
	25	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	26	
	27	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	28	
	29	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	30	
	31	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	32	
	33	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	34	
	35	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	36	
	37	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	38	
	39	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	40	
	41	EXISTING	20 A	1					0 VA	**1000 VA**	**1**	**20 A**	**LIGHTING SIGNAGE**	**42**	**1**
			PHASE kVA		0 VA		0 VA		1000 VA						
			TOTAL kVA		1000 VA				TOTAL AMPS		3 A				
			TOTAL DEMAND kVA		1250 VA				DEM LOAD AMPS		3 A				

Lighting 1000 VA 125.00% 1250 VA

PANEL NOTES:
1. UTILIZE EXISTING SPARE CIRCUIT BREAKER

PANEL LCSC

MAIN BREAKER 225A | MAIN LUGS | PHASE 3 | CIRCUIT 42 | MOUNT SURFACE | NEMA | VOLTAGE 120/208 Wye | BUS RATING 225 A | AIC RATING

NOTES	CKT #	CIRCUIT DESCRIPTION	TRIP AMPS	BRKR. POLES	A PHASE LOAD kVA		B PHASE LOAD kVA		C PHASE LOAD kVA		BRKR. POLES	TRIP AMPS	CIRCUIT DESCRIPTION	CKT #	NOTES
	1	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	2	
	3	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	4	
	5	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	6	
	7	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	8	
	9	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	10	
	11	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	12	
	13	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	14	
	15	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	16	
	17	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	18	
	19	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	20	
	21	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	22	
	23	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	24	
	25	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	26	
	27	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	28	
	29	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	30	
	31	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	32	
	33	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	34	
	35	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	36	
	37	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	38	
	39	EXISTING	20 A	1			0 VA	**500 VA**			1	**20 A**	**LIGHTING SIGNAGE**	**40**	**1**
	41	EXISTING	20 A	1					0 VA	**500 VA**	1	**20 A**	**LIGHTING SIGNAGE**	**42**	**1**
			PHASE kVA		0 VA		500 VA		500 VA						
			TOTAL kVA		1000 VA				TOTAL AMPS		3 A				
			TOTAL DEMAND kVA		1250 VA				DEM LOAD AMPS		3 A				

Lighting 1000 VA 125.00% 1250 VA

PANEL NOTES:
1. UTILIZE EXISTING SPARE CIRCUIT BREAKER

PANEL DLA2

MAIN BREAKER 225A | MAIN LUGS | PHASE 3 | CIRCUIT 42 | MOUNT SURFACE | NEMA | VOLTAGE 120/208 Wye | BUS RATING 225 A | AIC RATING

NOTES	CKT #	CIRCUIT DESCRIPTION	TRIP AMPS	BRKR. POLES	A PHASE LOAD kVA		B PHASE LOAD kVA		C PHASE LOAD kVA		BRKR. POLES	TRIP AMPS	CIRCUIT DESCRIPTION	CKT #	NOTES
	1	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	2	
	3	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	4	
	5	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	6	
	7	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	8	
	9	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	10	
	11	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	12	
	13	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	14	
	15	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	16	
	17	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	18	
	19	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	20	
	21	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	22	
	23	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	24	
	25	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	26	
	27	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	28	
	29	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	30	
	31	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	32	
	33	EXISTING	20 A	1			0 VA	**1000 VA**			1	**20 A**	**LIGHTING - SIGNAGE**	**34**	**1**
	35	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	36	
	37	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	38	
	39	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	40	
	41	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	42	
			PHASE kVA		0 VA		1000 VA		0 VA						
			TOTAL kVA		1000 VA				TOTAL AMPS		3 A				
			TOTAL DEMAND kVA		1250 VA				DEM LOAD AMPS		3 A				

Lighting 1000 VA 125.00% 1250 VA

PANEL NOTES:
1. UTILIZE EXISTING SPARE CIRCUIT BREAKER

PANEL ELPE

MAIN BREAKER 225A | MAIN LUGS | PHASE 3 | CIRCUIT 126 | MOUNT SURFACE | NEMA | VOLTAGE 120/208 Wye | BUS RATING 225 A | AIC RATING

NOTES	CKT #	CIRCUIT DESCRIPTION	TRIP AMPS	BRKR. POLES	A PHASE LOAD kVA		B PHASE LOAD kVA		C PHASE LOAD kVA		BRKR. POLES	TRIP AMPS	CIRCUIT DESCRIPTION	CKT #	NOTES
	1	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	2	
	3	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	4	
	5	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	6	
	7	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	8	
	9	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	10	
	11	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	12	
	13	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	14	
	15	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	16	
	17	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	18	
	19	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	20	
	21	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	22	
	23	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	24	
	25	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	26	
	27	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	28	
	29	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	30	
	31	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	32	
	33	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	34	
	35	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	36	
	37	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	38	
	39	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	40	
	41	EXISTING	20 A	1					0 VA	**1000 VA**	**1**	**20 A**	**LIGHTING - SHUTTLE SIGNAGE**	**42**	**1**
			PHASE kVA		0 VA		0 VA		1000 VA						
			TOTAL kVA		1000 VA				TOTAL AMPS		3 A				
			TOTAL DEMAND kVA		1250 VA				DEM LOAD AMPS		3 A				

Lighting 1000 VA 125.00% 1250 VA

PANEL NOTES:
1. UTILIZE EXISTING SPARE CIRCUIT BREAKER

PANEL LAPM2S

MAIN BREAKER 150 A | MAIN LUGS | PHASE 3 | CIRCUIT 42 | MOUNT SURFACE | NEMA | VOLTAGE 120/208 Wye | BUS RATING 225 A | AIC RATING

NOTES	CKT #	CIRCUIT DESCRIPTION	TRIP AMPS	BRKR. POLES	A PHASE LOAD kVA		B PHASE LOAD kVA		C PHASE LOAD kVA		BRKR. POLES	TRIP AMPS	CIRCUIT DESCRIPTION	CKT #	NOTES
	1	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	2	
	3	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	4	
	5	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	6	
	7	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	8	
	9	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	10	
	11	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	12	
	13	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	14	
	15	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	16	
	17	EXISTING	20 A	2					0 VA	0 VA	1	20 A	EXISTING	18	
1	19	**LIGHTING - SIGNAGE**	**20 A**	**1**	**2000 VA**	0 VA					2	20 A	EXISTING	20	
	21	SPARE	20 A	1			0 VA	0 VA							
	23	EXISTING	20 A	2					0 VA	0 VA	1	20 A	EXISTING	24	
	25				0 VA	0 VA					1	20 A	EXISTING	26	
	27	EXISTING	20 A	2			0 VA	0 VA			1	20 A	EXISTING	28	
	29								0 VA	0 VA	1	20 A	SPARE	30	
	31	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	32	
	33	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	34	
	35	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	36	
	37	EXISTING	20 A	1	0 VA	0 VA					1	20 A	SPARE	38	
	39	EXISTING	20 A	2			0 VA	0 VA			1	20 A	SPARE	40	
	41								0 VA	0 VA	1	20 A	EXISTING	42	
			PHASE kVA		2000 VA		0 VA		0 VA						
			TOTAL kVA		2000 VA				TOTAL AMPS		6 A				
			TOTAL DEMAND kVA		2500 VA				DEM LOAD AMPS		7 A				

Lighting 2000 VA 125.00% 2500 VA

PANEL NOTES:
1. UTILIZE EXISTING SPARE CIRCUIT BREAKER

Gresham Smith
GreshamSmith.com
Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838
Firm's Florida Qualifier No.
AA0013420 /
PE37588 / LC26

Drawn By: B.Y.
Checked By: R.F.W.
Approved By: G.C.

PANEL 50L

MAIN BREAKER 225A
MAIN LUGS
BUS RATING 225 A
AIC RATING

PHASE	CIRCUIT	MOUNT	NEMA	VOLTAGE
3	42	SURFACE		120/208 Wye

NOTES	CKT #	CIRCUIT DESCRIPTION	TRIP AMPS	BRKR. POLES	A PHASE LOAD kVA		B PHASE LOAD kVA		C PHASE LOAD kVA		BRKR. POLES	TRIP AMPS	CIRCUIT DESCRIPTION	CKT #	NOTES
	1	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	2	
	3	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	4	
	5	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	6	
1	7	LIGHTING - SIGNAGE	20 A	1	500 VA	0 VA					1	20 A	EXISTING	8	
1	9	LIGHTING - SIGNAGE	20 A	1			500 VA	0 VA			1	20 A	EXISTING	10	
1	11	LIGHTING - SIGNAGE	20 A	1					500 VA	0 VA	1	20 A	EXISTING	12	
1	13	LIGHTING - SIGNAGE	20 A	1	500 VA	0 VA					1	20 A	EXISTING	14	
1	15	LIGHTING - SIGNAGE	20 A	1			500 VA	0 VA			1	20 A	EXISTING	16	
1	17	LIGHTING - SIGNAGE	20 A	1					500 VA	0 VA	1	20 A	EXISTING	18	
1	19	LIGHTING - SIGNAGE	20 A	1	500 VA	0 VA					1	20 A	EXISTING	20	
1	21	LIGHTING - SIGNAGE	20 A	1			500 VA	0 VA			1	20 A	EXISTING	22	
1	23	LIGHTING - SIGNAGE	20 A	1					500 VA	0 VA	1	20 A	EXISTING	24	
1	25	LIGHTING - SIGNAGE	20 A	1	500 VA	0 VA					1	20 A	EXISTING	26	
1	27	LIGHTING - SIGNAGE	20 A	1			500 VA	0 VA			1	20 A	EXISTING	28	
1	29	LIGHTING - SIGNAGE	20 A	1					500 VA	0 VA	1	20 A	EXISTING	30	
	31	SPACE	--	1	--	0 VA					1	20 A	EXISTING	32	
	33	SPACE	--	1			--	0 VA			1	20 A	EXISTING	34	
	35	SPACE	--	1					--	0 VA	1	20 A	EXISTING	36	
	37				0 VA	0 VA					1	20 A	EXISTING	38	
	39	EXISTING	20 A	3			0 VA	0 VA			1	20 A	EXISTING	40	
	41								0 VA	0 VA	1	20 A	EXISTING	42	
			PHASE kVA		2000 VA		2000 VA		2000 VA						
			TOTAL kVA		6000 VA				TOTAL AMPS		17 A				
			TOTAL DEMAND kVA		7500 VA				DEM LOAD AMPS		21 A				

Lighting 6000 VA 125.00% 7500 VA

PANEL NOTES:
1. PROVIDE NEW 20A, 1P CIRCUIT BREAKER AS INDICATED.

PANEL LRR3E1

MAIN BREAKER 225 A
MAIN LUGS
BUS RATING 225 A
AIC RATING

PHASE	CIRCUIT	MOUNT	NEMA	VOLTAGE
3	84	SURFACE		120/208 Wye

NOTES	CKT #	CIRCUIT DESCRIPTION	TRIP AMPS	BRKR. POLES	A PHASE LOAD kVA		B PHASE LOAD kVA		C PHASE LOAD kVA		BRKR. POLES	TRIP AMPS	CIRCUIT DESCRIPTION	CKT #	NOTES
	1	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	2	
	3	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	4	
	5	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	6	
	7	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	8	
	9	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	10	
	11	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	12	
	13	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	14	
	15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16	
	17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18	
	19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20	
	21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22	
	23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24	
	25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26	
	27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28	
	29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30	
	31	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	32	
	33	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	34	
	35	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	36	
	37	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	38	
	39	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	40	
	41	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	42	
	43	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	44	
	45	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	46	
	47	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	48	
	49	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	50	
	51	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	52	
	53	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	54	
	55	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	56	
	57	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	58	
	59	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	60	
	61	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	62	
	63	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	64	
	65	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	66	
	67	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	68	
	69	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	70	
	71	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	72	
	73	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	74	
	75	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	76	
	77	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	78	
	79	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	80	
	81	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	82	
	83	SPARE	20 A	1					0 VA	**600 VA**	**1**	**20 A**	**LIGHTING SIGNAGE**	**84**	**1**
			PHASE kVA		0 VA		0 VA		600 VA						
			TOTAL kVA		600 VA				TOTAL AMPS		2 A				
			TOTAL DEMAND kVA		750 VA				DEM LOAD AMPS		2 A				

Lighting 600 VA 125.00% 750 VA

PANEL NOTES:
1. UTILIZE EXISTING SPARE CIRCUIT BREAKER

PANEL LRR2E1

MAIN BREAKER 225 A
MAIN LUGS
BUS RATING 225 A
AIC RATING

PHASE	CIRCUIT	MOUNT	NEMA	VOLTAGE
3	84	SURFACE		120/208 Wye

NOTES	CKT #	CIRCUIT DESCRIPTION	TRIP AMPS	BRKR. POLES	A PHASE LOAD kVA		B PHASE LOAD kVA		C PHASE LOAD kVA		BRKR. POLES	TRIP AMPS	CIRCUIT DESCRIPTION	CKT #	NOTES
	1	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	2	
	3	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	4	
	5	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	6	
	7	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	8	
	9	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	10	
	11	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	12	
	13	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	14	
	15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16	
	17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18	
	19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20	
	21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22	
	23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24	
	25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26	
	27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28	
	29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30	
	31	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	32	
	33	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	34	
	35	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	36	
	37	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	38	
	39	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	40	
	41	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	42	
	43	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	44	
	45	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	46	
	47	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	48	
	49	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	50	
	51	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	52	
	53	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	54	
	55	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	56	
	57	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	58	
	59	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	60	
	61	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	62	
	63	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	64	
	65	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	66	
	67	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	68	
	69	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	70	
	71	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	72	
	73	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	74	
	75	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	76	
	77	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	78	
	79	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	80	
	81	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	82	
	83	SPARE	20 A	1					0 VA	**600 VA**	**1**	**20 A**	**LIGHTING SIGNAGE**	**84**	**1**
			PHASE kVA		0 VA		0 VA		600 VA						
			TOTAL kVA		600 VA				TOTAL AMPS		2 A				
			TOTAL DEMAND kVA		750 VA				DEM LOAD AMPS		2 A				

Lighting 600 VA 125.00% 750 VA

PANEL NOTES:
1. UTILIZE EXISTING SPARE CIRCUIT BREAKER

PANEL 30L

MAIN BREAKER 225A
MAIN LUGS
BUS RATING 225 A
AIC RATING

PHASE	CIRCUIT	MOUNT	NEMA	VOLTAGE
3	42	SURFACE		120/208 Wye

NOTES	CKT #	CIRCUIT DESCRIPTION	TRIP AMPS	BRKR. POLES	A PHASE LOAD kVA		B PHASE LOAD kVA		C PHASE LOAD kVA		BRKR. POLES	TRIP AMPS	CIRCUIT DESCRIPTION	CKT #	NOTES
1	1	LIGHTING - SIGNAGE	20 A	1	500 VA	0 VA					2	20 A	EXISTING	2	
1	3	LIGHTING - SIGNAGE	20 A	1			500 VA	0 VA			1	20 A	SPARE	4	
1	5	LIGHTING - SIGNAGE	20 A	1					500 VA	0 VA	1	20 A	SPARE	6	
1	7	LIGHTING - SIGNAGE	20 A	1	500 VA	0 VA					1	20 A	SPARE	8	
1	9	LIGHTING - SIGNAGE	20 A	1			500 VA	0 VA			1	20 A	SPARE	10	
1	11	LIGHTING - SIGNAGE	20 A	1					500 VA	0 VA	1	20 A	SPARE	12	
1	13	LIGHTING - SIGNAGE	20 A	1	500 VA	0 VA					1	20 A	SPARE	14	
1	15	LIGHTING - SIGNAGE	20 A	1			500 VA	0 VA			1	20 A	SPARE	16	
1	17	LIGHTING - SIGNAGE	20 A	1					500 VA	0 VA	1	20 A	SPARE	18	
1	19	LIGHTING - SIGNAGE	20 A	1	500 VA	0 VA					1	20 A	SPARE	20	
1	21	LIGHTING - SIGNAGE	20 A	1			500 VA	0 VA			1	20 A	SPARE	22	
1	23	LIGHTING - SIGNAGE	20 A	1					500 VA	0 VA	1	20 A	SPARE	24	
	25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26	
	27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28	
	29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30	
	31	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	32	
	33	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	34	
	35	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	36	
	37	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	38	
	39	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	40	
	41	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	42	
			PHASE kVA		2000 VA		2000 VA		2000 VA						
			TOTAL kVA		6000 VA				TOTAL AMPS		17 A				
			TOTAL DEMAND kVA		7500 VA				DEM LOAD AMPS		21 A				

Lighting 6000 VA 125.00% 7500 VA

PANEL NOTES:
1. UTILIZE EXISTING SPARE CIRCUIT BREAKER

PANEL 6P

MAIN BREAKER ----
MAIN LUGS
BUS RATING 100 A
AIC RATING

PHASE	CIRCUIT	MOUNT	NEMA	VOLTAGE
3	42	SURFACE		480/277 Wye

NOTES	CKT #	CIRCUIT DESCRIPTION	TRIP AMPS	BRKR. POLES	A PHASE LOAD kVA		B PHASE LOAD kVA		C PHASE LOAD kVA		BRKR. POLES	TRIP AMPS	CIRCUIT DESCRIPTION	CKT #	NOTES
	1	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	2	
	3	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	4	
	5	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	6	
	7	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	8	
	9	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	10	
	11	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	12	
	13	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	14	
	15	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	16	
	17	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	18	
	19	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	20	
	21	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	22	
	23	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	24	
	25	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	26	
	27	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	28	
	29	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	30	
	31	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	32	
	33	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	34	
	35	EXISTING	20 A	1					0 VA	0 VA	1	20 A	EXISTING	36	
	37	EXISTING	20 A	1	0 VA	0 VA					1	20 A	EXISTING	38	
	39	EXISTING	20 A	1			0 VA	0 VA			1	20 A	EXISTING	40	
	41	EXISTING	20 A	1					0 VA	**200 VA**	**1**	**20 A**	**LIGHTING - SIGNAGE**	**42**	**1**
			PHASE kVA		0 VA		0 VA		200 VA						
			TOTAL kVA		200 VA				TOTAL AMPS		0 A				
			TOTAL DEMAND kVA		250 VA				DEM LOAD AMPS		0 A				

Lighting 200 VA 125.00% 250 VA

PANEL NOTES:
1. UTILIZE EXISTING SPARE CIRCUIT BREAKER

PANEL LRR3A2

MAIN BREAKER 225 A
MAIN LUGS
BUS RATING 225 A
AIC RATING

PHASE	CIRCUIT	MOUNT	NEMA	VOLTAGE
3	84	SURFACE		120/208 Wye

NOTES	CKT #	CIRCUIT DESCRIPTION	TRIP AMPS	BRKR. POLES	A PHASE LOAD kVA		B PHASE LOAD kVA		C PHASE LOAD kVA		BRKR. POLES	TRIP AMPS	CIRCUIT DESCRIPTION	CKT #	NOTES
	1	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	2	
	3	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	4	
	5	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	6	
	7	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	8	
	9	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	10	
	11	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	12	
	13	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	14	
	15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16	
	17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18	
	19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20	
	21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22	
	23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24	
	25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26	
	27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28	
	29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30	
	31	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	32	
	33	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	34	
	35	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	36	
	37	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	38	
	39	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	40	
	41	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	42	
	43	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	44	
	45	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	46	
	47	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	48	
	49	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	50	
	51	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	52	
	53	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	54	
	55	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	56	
	57	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	58	
	59	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	60	
	61	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	62	
	63	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	64	
	65	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	66	
	67	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	68	
	69	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	70	
	71	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	72	
	73	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	74	
	75	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	76	
	77	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	78	
	79	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	80	
	81	SPARE	20 A	1			0 VA	**600 VA**			**1**	**20 A**	**LIGHTING SIGNAGE**	**82**	**1**
	83	SPARE	20 A	1					0 VA	**1800 VA**	**1**	**20 A**	**LIGHTING SIGNAGE**	**84**	**1**
			PHASE kVA		0 VA		600 VA		1800 VA						
			TOTAL kVA		2400 VA				TOTAL AMPS		7 A				
			TOTAL DEMAND kVA		3000 VA				DEM LOAD AMPS		8 A				

Lighting 2400 VA 125.00% 3000 VA

PANEL NOTES:
1. UTILIZE EXISTING SPARE CIRCUIT BREAKER

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TO THE BEST OF THE ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION

TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
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GERALD A. CRNKOVICH
P.E. #42427

Revision

No.	Date	Description

PANEL SCHEDULES - ELECTRICAL

E6.03

43342.03
10/07/2021

This Line is 3 Inches When Printed Full Size

10/5/2021 7:52:54 AM BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/2100ß_TPA Wayfinding_Electrical_BIM360-GSP_R21.rvt

TPA Wayfinding Implementation - 'Bag Claim' dynamic displays on Transfer Level		
Scope Item	Responsible Party	Additional Notes
Manufacture of display	Nanolumens	
Design & Fabrication of display support structure and enclosure, to be connected to existing vertical tube supports	Nanolumens	AVI-SPL has taken field measurements for Nanolumens to use in support structure/enclosure design; structure will be signed/sealed by Florida registered P.E.
Escalator shut down & protection	Bidding Contractor	To be coordinated with AVI-SPL
Demolish existing static sign	Bidding Contractor	To be coordinated with AVI-SPL
Cut existing vertical structural support tubes and drill bolt holes	Bidding Contractor	Dimensions and locations specified by Nanolumens
Temporary signage	Bidding Contractor	To be coordinated with AVI-SPL
New dynamic display installation	AVI-SPL	To be coordinated with GS Contractor; anticipate 2-week rolling clock to coincide with static sign panel replacement lower down same escalator cores
New digital data switch installation in Level 4 IDF rooms	AVI-SPL	To be coordinated with GS Contractor
CAT-6 Data connections from data switch in Level 4 IDF rooms located in all four elevator cores to new dynamic displays	Bidding Contractor	To be coordinated with AVI-SPL
Electrical connection of dynamic displays to building power	Bidding Contractor	To be coordinated with AVI-SPL
Development of dynamic content	Gresham Smith	To be coordinated with HCAA

FIRE ALARM

SYMBOL	DESCRIPTION
	FACP: FIRE ALARM CONTROL PANEL FATC: FIRE ALARM TERMINAL CABINET FAAP: FIRE ALARM ANNUNCIATOR PANEL EVAC: FIRE ALARM VOICE / EVAC. UNIT
P	FIRE ALARM MANUAL PULL STATION
	FIRE ALARM STROBE ONLY DEVICE MINIMUM 75cd RATING
	FIRE ALARM HORN / STROBE ONLY DEVICE MINIMUM 75cd RATING
	FIRE ALARM SPEAKER / STROBE ONLY DEVICE MINIMUM 75cd RATING
	FIRE ALARM SPEAKER DEVICE
	FIRE ALARM HORN DEVICE MINIMUM 75cd RATING
	FIRE ALARM STROBE ONLY DEVICE MINIMUM 75cd RATING - CEILING MOUNTED
	FIRE ALARM HORN / STROBE ONLY DEVICE MINIMUM 75cd RATING - CEILING MOUNTED
	FIRE ALARM SPEAKER / STROBE ONLY DEVICE MINIMUM 75cd RATING - CEILING MOUNTED
	FIRE ALARM SPEAKER DEVICE - CEILING MOUNTED
	FIRE ALARM HORN DEVICE MINIMUM 75cd RATING - CEILING MOUNTED
	FIRE ALARM HEATER DETECTOR - CEILING MOUNTED
	FIRE ALARM SMOKE DETECTOR - CEILING MOUNTED SB: SOUNDER BASE I: IONIC CO: CARBON MONOXIDE
	FIRE ALARM SMOKE DETECTOR - WALL MOUNTED SB: SOUNDER BASE CO: CARBON MONOXIDE UF: UNDERFLOOR
S/R	FIRE ALARM DUCT SMOKE DETECTOR S: SUPPLY.....R: RETURN
	TAMPER SWITCH
	FLOW SWITCH
R	FIRE ALARM RELAY
DC	ELECTROMAGNETIC DOOR CONTACT
DH	DOOR HOLDER
RA	FIRE ALARM REMOTE ALARM INDICATOR WITH TEST SWITCH. FLUSH CEILING MOUNTED. WALL MTD. CENTER LINE 48" A.F.F. IN MECHANICAL ROOMS
MM	MONITORING MODULE
K	FIRE ALARM KNOX BOX

SECURITY SYSTEM

SYMBOL	DESCRIPTION
KP	KEYPAD
CR	CARD READER
CK	CARD READER / KEYPAD
BR	BIOMETRIC READER
MD	DIRECTIONAL MOTION DETECTOR
MD	360 DEGREE MOTION DETECTOR
ML	ELECTRO MAGNETIC LOCK
ES	ELECTRIC STRIKE FRAME
EM	ELECTRIC MORTISE LOCK
DE	DELAYED EGRESS LOCK
DC	DOOR / WINDOW CONTACT
	FIXED CCTV CAMERA x = 1,2,3....CAMERA TYPE
	PAN / TILT / ZOOM CCTV CAMERA x = 1,2,3....CAMERA TYPE
S	ALARM SIREN WP: WEATHERPROOF
	SECURITY PANEL
KS	KEY SWITCH
RR	REMOTE DOOR RELEASE BUTTON
D X	DURESS BUTTON X = TYPE
IM X	INTERCOM MASTER STATION X = 1,2,3....TYPE
IS X	INTERCOM SUB-STATION
RS	REQUEST TO EXIT MOTION SENSOR
RB	REQUEST TO EXIT PUSH-BUTTON
PC	PERSONAL COMPUTER WORKSTATION
TP	SECURITY CAMERA POLE. POLE TO MATCH UTILITY PACKAGE SPECIFICATIONS FOR LIGHTING POLES IN THE SAME AREA
SD	SECURITY SOUND DETECTOR

AUDIO / VIDEO / PAGING SYSTEMS

SYMBOL	DESCRIPTION
X,Y,Z	FLAT PANEL DISPLAY 'X' DENOTES SCREEN SIZE 'Y' DENOTES DISPLAY PROGRAM 'A' = AUDIO / VISUAL SYSTEM 'C' = CATV SYSTEM 'F' = AIRPORT INFORMATION SYSTEM 'Z' DENOTES HEIGHT TO BOTTOM OF UNIT
	OVERHEAD PROJECTOR - CEILING MOUNTED
X	MOTORIZED PROJECTION SCREEN, SIZE SPECIFIED ON PLANS
AV X	AUDIO - VISUAL OUTLET; WALL MOUNTED WITH ADJACENT DEDICATED DUPLEX RECEPTACLE BY DIVISION 26
TS	WALL MOUNTED TOUCH SCREEN AUDIO / VIDEO CONTROL
SX X W	CEILING MOUNTED SPEAKER 'X' DENOTES TYPE 'Y' DENOTES ZONE 'W' DENOTES WATTAGE
SX X W	WALL MOUNTED SPEAKER 'X' DENOTES TYPE 'Y' DENOTES ZONE 'W' DENOTES WATTAGE
M X	MICROPHONE 'X' DENOTES TYPE
SM	SENSE MICROPHONE
MC X	MASTER CLOCK 'X' DENOTES TYPE 'A' DENOTES ANALOG 'D' DENOTES DIGITAL
VR	INTERCOM VOICE ACTIVATED RELAY
S	INTERCOM WALL MOUNTED SPEAKER
PP	INTERCOM ADMINISTRATIVE PHONE
PS	INTERCOM CALL-IN SWITCH
IR	AUDIO INFRARED WIRELESS RECEIVER
AV	AUDIO VISUAL OUTLET

GENERAL SYSTEM NOTES

1. ALL CONDUIT ABOVE GRADE SHALL BE NMC OR EMT, ALL CONDUIT BELOW GRADE SHALL BE PVC UNLESS OTHERWISE NOTED ON DRAWINGS.
2. PRODUCTS SHALL BE RATED FOR THE ENVIRONMENT IN WHICH THEY ARE TO BE INSTALLED.
3. WORKING CLEARANCES AROUND ELECTRICAL EQUIPMENT SHALL BE MAINTAINED IN COMPLIANCE WITH THE NATIONAL ELECTRICAL CODE ARTICLE 110, COORDINATE EQUIPMENT INSTALLATION TO MAINTAIN REQUIRED CLEARANCES.
4. IF AN OUTLET BOX IS REQUIRED TO BE LOCATED IN AN ASSEMBLY OR PARTITION RATED AS 'FIRE / SMOKE' OR IDENTIFIED AS EITHER 'FIRE / SMOKE' OR 'SMOKE' THEN ALL THE FOLLOWING CONDITIONS SHALL BE MET.
   - 4.1 THE OUTLET BOX SHALL BE METALLIC.
   - 4.2 THE OUTLET BOX OPENINGS SHALL OCCUR ONLY ON ONE SIDE OF THE FRAMING SPACE.
   - 4.3 THE OUTLET BOX OPENINGS SHALL NOT EXCEED 16 SQUARE INCHES.
   - 4.4 ALL CLEARANCES BETWEEN THE OUTLET BOX AND THE WALL BOARD MATERIAL SHALL BE COMPLETELY SEALED WITH APPROVED MATERIALS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS FOR THE PROJECT.
   - 4.5 PROVIDE A SUPPLEMENTAL BARRIER AROUND OUTLETS LARGER THAN 16 INCHES SO THAT THE ORIGINAL RATING OF THE PENETRATION IS MAINTAINED.
   - 4.6 THE TOTAL AGGREGATE SURFACE AREA OF ALL PENETRATIONS SHALL NOT EXCEED 100 SQUARE INCHES PER 100 SQUARE FEET.
   - 4.7 THE OUTLET BOX SHALL BE SEPARATED FROM OPENINGS ON THE OPPOSITE SIDE OF THE RATED PARTITION BY A MINIMUM HORIZONTAL DISTANCE OF 24 INCHES.
   - 4.8 THE ANNULAR SPACE SHALL NOT EXCEED 1/8" INCH BETWEEN THE EDGES OF THE OUTLET BOX AND THE EDGES OF THE OPENING.
5. THE OUTLET BOX SHALL BE SECURELY FASTENED TO A PARTITION FRAMING MEMBER BY MEANS OF AN APPROVED ATTACHMENT METHOD.
6. LOCATIONS OF EQUIPMENT SHOWN ON THE DRAWINGS ARE APPROXIMATE. COORDINATE EXACT EQUIPMENT LOCATION AND CONNECTION REQUIREMENTS IN THE FIELD PRIOR TO INSTALLATION.
7. FOR EXACT LOCATION OF CEILING MOUNTED EQUIPMENT REFER TO THE ARCHITECTURAL REFLECTED CEILING PLAN. LOCATIONS OF EQUIPMENT NOT INCLUDED ON THE REFLECTED CEILING PLAN SHALL BE COORDINATED WITH THOSE ITEMS SHOWN. COORDINATION OF CEILING MOUNTED EQUIPMENT SHALL BE DONE PRIOR TO ANY ROUGH-IN. NOTIFY ENGINEER OF ANY DISCREPANCY.
8. PROVIDE FINAL CONNECTIONS TO OWNER PROVIDED EQUIPMENT WHERE INDICATED ON THE DRAWINGS AND SPECIFICATIONS.
9. PRIOR TO ROUGH-IN AND INSTALLATION OF ANY FLOOR MOUNTED DEVICE, VERIFY LOCATION WITH THE OWNER AND ARCHITECT.
10. VERIFY AND COORDINATE THE LOCATION OF REQUIRED DIVISION 28 OUTLETS WITH OTHER TRADE DRAWINGS AND OWNER PROVIDED EQUIPMENT.
11. EACH TELEVISION OUTLET LOCATION SHOWN, SHALL HAVE A DOUBLE GANG OUTLET BOX WITH A SINGLE GANG PLASTER RING AND (1) ONE INCH CONDUIT STUBBED UP TO AN ACCESSIBLE LOCATION ABOVE THE FINISHED CEILING OF TO AN ACCESSIBLE CABLE TRAY WHERE PROVIDED.
12. THE DESIGNATION 'N.I.C.' SHALL DENOTE ITEMS WHICH ARE 'NOT IN CONTRACT'.
13. THE DESIGNATION 'U.S.C.' SHALL DENOTE ITEMS WHICH ARE 'UNDER SEPARATE CONTRACT'.
14. THE DESIGNATION 'F.B.O.' SHALL DENOTE ITEMS WHICH ARE 'FURNISHED BY OTHERS'.
15. THE DESIGNATION 'O.F.E.' SHALL DENOTE ITEMS WHICH ARE 'OWNER FURNISHED EQUIPMENT'.
16. ALL RACEWAY SYSTEMS SHOWN TO SUPPORT THE INSTALLATION OF THE DIVISION 27 AND 28 EQUIPMENT SHALL BE PROVIDED UNDER THIS CONTRACT. PROVIDE COORDINATION FOR THE INSTALLATION OF THIS RACEWAY WITH THE ELECTRICAL CONTRACTOR.
17. THE SYMBOL LEGEND SHOWN ON THIS SHEET ARE ALL INCLUSIVE, SYMBOLS INCLUDED IN THE LEGEND MAY OR MAY NOT BE USED FOR THIS PROJECT.
18. THE FLOOR MOUNTED VOICE / DATA OUTLET SHALL HAVE A SINGLE GANG SPACE WITHIN THE FLOOR BOX AND A (1) 1" CONDUIT CONCEALED IN SLAB THAT IS STUBBED UP TO AN ACCESSIBLE LOCATION ABOVE THE FINISHED CEILING OR TO AN ACCESSIBLE CABLE TRAY WHERE PROVIDED. RACEWAY INSTALLATION BY ELECTRICAL CONTRACTOR.
19. ALL BONDING AND GROUNDING ELEMENTS UTILIZED FOR THE TECHNOLOGY SYSTEM CABLING SYSTEM SHALL BE IN COMPLIANCE WITH SPECIFICATIONS.
20. PROVIDE ALL SLEEVES AS REQUIRED FOR ALL LOW VOLTAGE CABLE PATHWAYS. RESTORE THE FIRE RATING OF THE SURFACE, ONCE SLEEVES ARE INSTALLED. SLEEVE ASSEMBLIES SHALL BE LISTED FOR THE MEDIUM BEING PENETRATED.
21. CABLE UNDER SLAB SHALL USE INDOOR / OUTDOOR JACKET.
22. ALL REQUIRED JUNCTION BOXES ARE NOT SHOWN ON FLOOR PLANS. PROVIDE JUNCTION BOXES AS REQUIRED PER SPECIFICATIONS.
23. ALL RACEWAYS SHOWN ON THESE DRAWINGS ARE ONLY FOR TECHNOLOGY SYSTEMS. FOR ELECTRICAL RACEWAYS, SEE ELECTRICAL DRAWINGS.

SECURITY SYSTEM NOTES

1. ALL DOUBLE DOORS ARE TO RECEIVE (1) DOOR POSITION SWITCH ON EACH DOOR LEAF AND SHALL REPORT AS ONE ALARM POINT.
2. ALL 120V POWER WIRING SHALL BE INSTALLED IN A SEPARATE CONDUIT.
3. ALL CONDUIT ABOVE GRADE SHALL BE METALLIC, ALL CONDUIT BELOW GRADE SHALL BE PVC UNLESS OTHERWISE NOTED ON DRAWINGS.
4. ALL CARD READERS AND KEYPADS DEDICATED FOR ELEVATOR FLOOR CONTROL ARE SHOWN INSIDE THE ELEVATOR CAB ON THE LOWEST LEVEL FLOOR PLAN TO WHICH THE ELEVATOR TRAVELS.
5. ALL CONDUIT, WIRING AND ASSOCIATED BACK BOXES SHALL BE FULLY CONCEALED WITHIN WALLS, FLOORS AND CEILINGS.
6. INSTALLATION OF BALANCE TWISTED PAIR CABLE SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 271000 GUIDELINES, CABLE INSTALLATION AND TERMINATIONS THAT DO NOT COMPLY SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST.
   - 6.1 THE MAXIMUM PULLING TENSION SHALL NOT EXCEED 25 POUNDS TO AVOID STRETCHING THE CONDUCTORS.
   - 6.2 THE MINIMUM BEND RADIUS OF THE CABLE SHALL NOT BE LESS THAN FOUR TIMES THE OUTSIDE DIAMETER OF THE CABLE.
   - 6.3 THE CABLE SHALL BE INSTALLED WITHOUT KINKS OR TWISTS. THE APPLICATION OF CABLE TIES SHALL NOT DEFORM THE CABLE BUNDLE.
   - 6.4 STRIP BACK ONLY AS MUCH CABLE JACKET AS REQUIRED TO TERMINATE THE CABLE. CABLE PAIRS SHALL NOT BE UNTWISTED MORE THE 1/2".
7. INSTALLATION OF FIBER OPTIC CABLES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 271000. CABLE INSTALLATION AND TERMINATIONS THAT DO NOT COMPLY SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST.
   - 7.1 THE BEND RADIUS FOR HORIZONTAL FIBER OPTIC CABLE SHALL NOT BE LESS THAN 1 INCH UNDER NO-LOAD CONDITIONS. WHEN UNDER A MAXIMUM TENSILE LOAD OF 50 LBF, THE BEND RADIUS SHALL NOT BE LESS THAN 2 INCHES.
   - 7.2 THE BEND RADIUS FOR INTRABUILDING OPTICAL FIBER BACKBONE SHALL NOT BE LESS THAN THAT RECOMMENDED BY THE MANUFACTURER IF NO RECOMMENDATION IF KNOWN, THEN THE APPLIED BEND RADIUS SHALL NOT BE LESS THAN 10 TIMES THE CABLE OUTSIDE DIAMETER UNDER NO- LOAD CONDITIONS AND NOT LESS THAN 15 TIMES THE CABLE OUTSIDE DIAMETER WHEN THE CABLE IS UNDER TENSILE LOAD.
8. COORDINATE LOCATION OF ALL FIRE RATED PENETRATIONS PRIOR TO PROCEEDING WITH INSTALLATION. ALL PENETRATIONS THROUGH FIRE RATED BARRIERS SHALL BE COMPLETELY SEALED WITH A LISTED FIRE STOP SYSTEM IN ACCORDANCE WITH NFPA AND THE AUTHORITY HAVING JURISDICTION.
9. THE DESIGNATION 'D.H.C.' SHALL DENOTE ITEMS WHICH ARE 'DOOR HARDWARE CONTRACTOR'.

BROADBAND TELEVISION SYSTEM

SYMBOL	DESCRIPTION
	2-WAY SPLITTER
	3-WAY SPLITTER
	4-WAY SPLITTER
T	AMPLIFIER
	DIRECTIONAL COUPLER
TV	TELEVISION OUTLET - WALL MOUNTED AT STANDARD OUTLET HEIGHT UNLESS OTHERWISE NOTED. ADJACENT DUPLEX RECEPTACLE BY ELECTRICAL CONTRACTOR

BASIC MATERIALS

SYMBOL	DESCRIPTION
J X,Y,Z	JUNCTION BOX (LABEL COVER WITH PERMANENT MARKER BOX WITH NO NUMBER IS NOT REFERENCED FROM OTHER SHEETS) 'X' DENOTES USE (P-PAGING OR S-SECURITY) 'Y' DENOTES FLOOR 'Z' DENOTES NUMBER
J	JUNCTION BOX - FLOOR MOUNTED
J	JUNCTION BOX - PEDESTAL MOUNTED
PB	IN-GROUND PULLBOX
	CONDUIT CONCEALED ABOVE CEILING OR WALL ALL CONDUITS ARE 1" UNLESS OTHERWISE NOTED
	CONDUIT CONCEALED IN SLAB, UNDERGROUND OR UNDER FLOOR. ALL CONDUITS ARE 1" UNLESS OTHERWISE NOTED
	CONDUIT EXPOSED
	CONDUIT TURNING UP
	CONDUIT TURNING DOWN
	CONDUIT STUB
	CONDUIT CONTINUED
	SLEEVE TURNING UP
	SLEEVE TURNING DOWN
	CABLE TRAY
	LADDER TRAY
	WALL PENETRATION CONDUIT SLEEVE

STRUCTURED CABLING SYSTEMS LEGEND

SYMBOL	DESCRIPTION
X,N	COMMUNICATIONS OUTLET, MOUNTED AT RECEPTACLE HEIGHT UNLESS OTHERWISE NOTED. MODULE AND FACEPLATE DESCRIPTIONS AS INDICATED IN THE SPECIFICATIONS 'N' = NUMBER OF 8P8C OUTLETS 'X' = MOUNTING (F)LUSH, (S)URFACE, (M)ODULAR FURNITURE ADAPTER, (P)OLE, (R)ACEWAY, (D)OUBLE GANG FLUSH, (PD) PEDESTAL, (L)FLOOR
W	WALL TELEPHONE OUTLET FOR WALL PHONE. MOUNTED AT 48" ABOVE FINISHED FLOOR TO CENTER
WAP	CEILING MOUNTED WIRELESS ACCESS POINT OUTLET. 'X' - MOUNTING (F)LUSH, (S)URFACE, (C)EILING 'N' - NUMBER OF 8P8C JACKS
S2.SYS	TELEPHONE OUTLET IN ELEVATOR MACHINE ROOM. (S)URFACE MOUNTED
X,Y,Z	COMBINED VOICE / DATA, AUDIO / VIDEO AND POWER OUTLETS IN FLOOR BOX. POWER RECEPTACLE IS SHOWN FOR REFERENCE ONLY. CONDUIT, BOX AND POWER RECEPTACLE PROVIDED BY DIV. 26. REFER TO DETAILS FOR FLOOR BOX CONFIGURATION. 'Z' = TYPE 'Y' = NUMBER OF 8P8C JACKS 'X' = MOUNTING (F)LUSH, (S)URFACE, (M)ODULAR FURNITURE ADAPTER, (P)OLE, (R)ACEWAY, (D)OUBLE GANG FLUSH, (PD) PEDESTAL, (L)FLOOR

SHEET INDEX

SHEET NUMBER	SHEET NAME
T0.0.0	LEGEND - TECHNOLOGY
T2.1.3	LEVEL 3 - TRANSFER - TECHNOLOGY
T2.1.4	APM 1 - LEVEL 4 - PLATFORM - TECHNOLOGY

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Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION

TAMPA, FLORIDA

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GERALD A. CRNKOVICH
P.E. #42427

Revision

No.	Date	Description

LEGEND - TECHNOLOGY

T0.0.0

43342.03
10/07/2021

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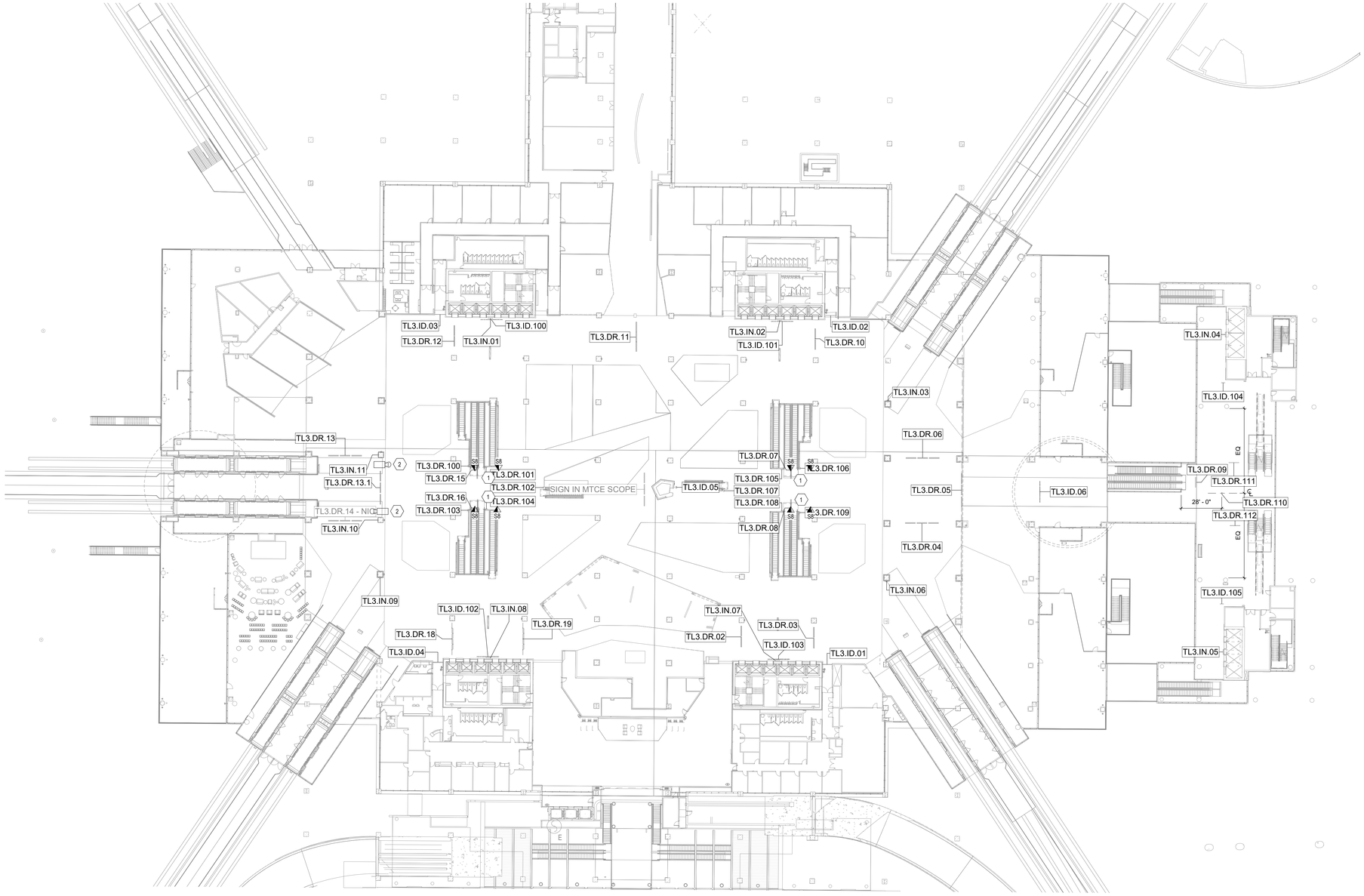
Drawn By: S.J.
Checked By: R.F.W.
Approved By: G.C.

10/5/2021 7:54:15 AM BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/21008_TPA Wayfinding_Electrical_BIM360-GSP_R21.rvt

Drawn By: S.J.
Checked By: R.F.W.
Approved By: G.C.



1 LEVEL 3 - TRANSFER - TECHNOLOGY
1/32" = 1'-0"
0' 16' 32' 64' 96'

KEY NOTES

NUMBER	NOTES
1.	ROUTE CAT6 CABLING THROUGH SUPPORT LEG DOWN TO DYNAMIC SIGN LOCATION. TERMINATE CABLING IN SURFACE MOUNT OUTLET BOX. CABLE SHALL BE ROUTED TO THE 4TH FLOOR TELECOMMUNICATION ROOMS FOR TERMINATION ON A NEW 48 PORT PATCH PANEL.
2.	EXISTING FIXED AND PTZ CAMERA FIELDS OF VIEW ARE IN CONFLICT WITH THE NEW SIGNAGE. RELOCATE THE EXISTING CAMERAS AND CEILING TILE TO THE LOCATION INDICATED (PTZ ON NORTH SIDE OF SIGN / FIXED ON SOUTH SIDE). PROVIDE NEW 1" CONDUIT AND RED CAT6 CABLING TO THE 4TH FLOOR IDF.

GENERAL NOTES

A. ALL CABLE SHALL BE IN CONDUIT, 1-1/4" MINIMUM SIZE. WHERE MULTIPLE CABLES ARE RAN IN ONE CONDUIT, THE SIZE SHALL BE INCREASED BASED ON FILL RATIO.

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Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION

TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 633, FLORIDA STATUTES.

BID SET
NOT FOR CONSTRUCTION

GERALD A. CRNKOVICH
P.E. #42427

Revision

No.	Date	Description

LEVEL 3 - TRANSFER - TECHNOLOGY

T2.1.3

43342.03
10/07/2021

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10/5/2021 7:54:19 AM BIM 360://43342.03 TPA Wayfinding Signage Improvements R21/21008_TPA Wayfinding_Electrical_BIM360-GSP_R21.rvt

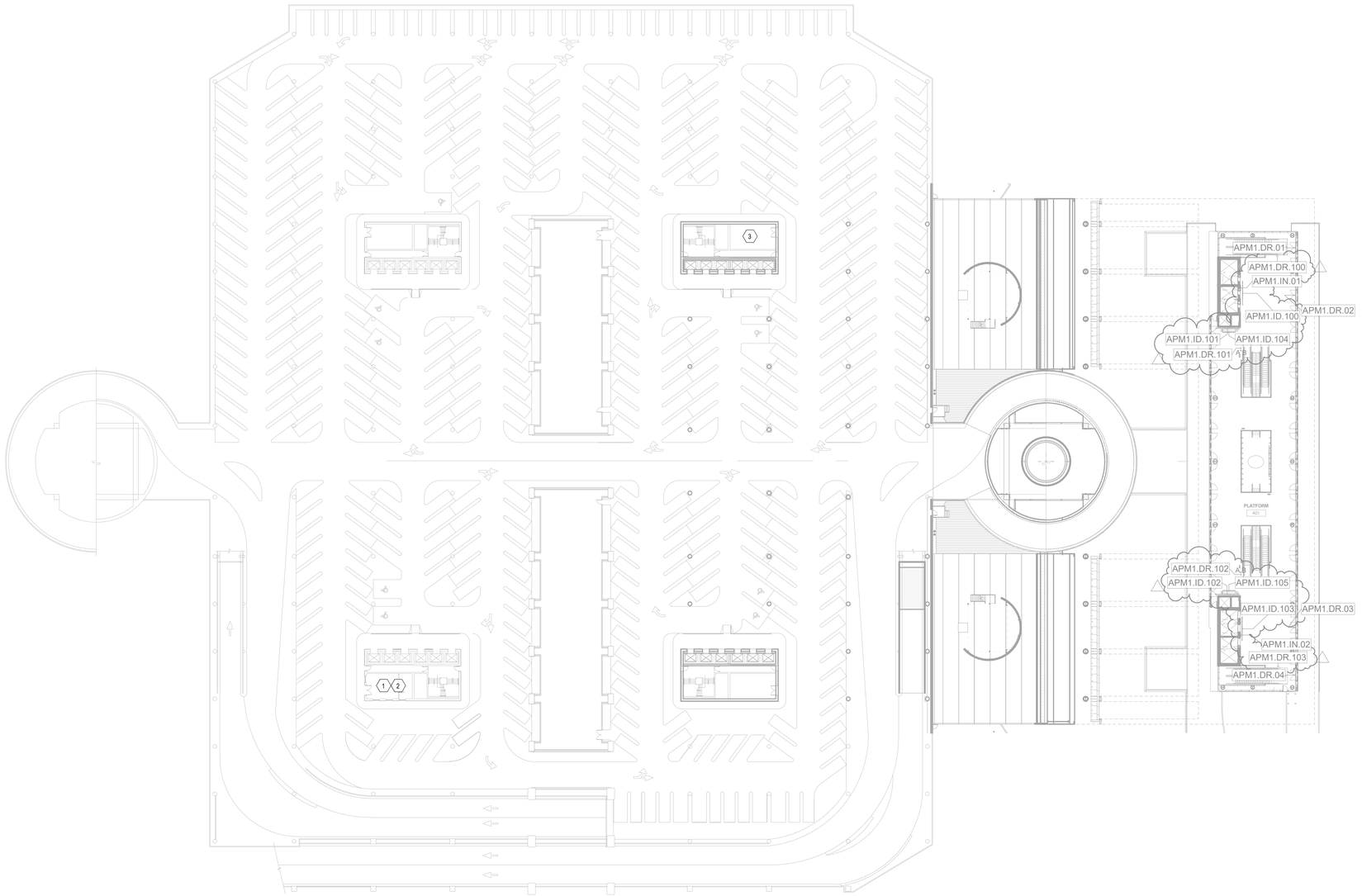
Drawn By: S.J.
Checked By: R.F.W.
Approved By: G.C.

KEY NOTES

NUMBER	NOTES
1.	TERMINATE NEW RED CAT6 CAMERA FROM TRANSFER LEVEL CAMERAS IN A PATCH PANEL IN THIS TELECOMMUNICATIONS ROOM.
2.	TERMINATE CAT6 CABLE FOR DYNAMIC SIGNS TL3.DR.15 AND TL3.DR.16 IN A NEW PATCH PANEL IN THIS IDF.
3.	TERMINATE CAT6 CABLE FOR DYNAMIC SIGNS TL3.DR.07 AND TL3.DR.08 IN A NEW PATCH PANEL IN THIS IDF.

GENERAL NOTES

A. ALL CABLE SHALL BE IN CONDUIT, 1-1/4" MINIMUM SIZE. WHERE MULTIPLE CABLES ARE RAN IN ONE CONDUIT, THE SIZE SHALL BE INCREASED BASED ON FILL RATIO.



1 APM 1 - LEVEL 4 - PLATFORM - TECHNOLOGY
1/32" = 1'-0"
0' 16' 32' 64' 96'

Gresham Smith
GreshamSmith.com

Two Harbour Place
302 Knights Run Avenue
Tampa, FL 33602
Suite 900
813-251-6838

Firm's Florida Qualifier No.
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VOLT AIR
6005 Benjamin Road, Suite A
Tampa, Florida 33634
Tel. 888.891.9713
www.VoltAirInc.com
COA #27158
Project #01.21008

Engineer of Record:
GERALD A. CRNKOVICH, P.E. #42527

TO THE BEST OF THE ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES

Tampa International Airport

WAYFINDING SIGNAGE IMPROVEMENTS IMPLEMENTATION

TAMPA, FLORIDA

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE ELECTRICAL APPLICABLE MINIMUM BUILDING CODES AND THE ACCESSIBILITY REQUIREMENTS ENFORCEABLE BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553.79 AND CHAPTER 663, FLORIDA STATUTES

BID SET
NOT FOR CONSTRUCTION

GERALD A. CRNKOVICH
P.E. #42427

Revision

No.	Date	Description

APM 1 - LEVEL 4 - PLATFORM - TECHNOLOGY

T2.1.4

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10/07/2021

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SECTION 02 4119
SELECTIVE DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Demolition and removal of selected portions of building or structure.
   2. Salvage of existing items to be reused or recycled.

B. Related Requirements:
   1. Refer to related Division 1 sections and construction drawings for: Restrictions on use of the premises, Owner-occupancy requirements, and phasing requirements.
   2. Refer to related Division 1 sections and construction drawings for: Cutting and patching procedures.
   3. Refer to related Division 1 sections and construction drawings for: General protection and work procedures for alteration projects.
   4. Division 26: Disconnection of existing power and communication wiring, temporary provisions for areas to remain occupied. Cutting non-structural concrete floors and masonry walls for underground piping and ducts, and for above-grade piping, ducts, and conduit is included with work of respective mechanical and electrical Divisions 23 and 26 Specifications sections.

1.2 DEFINITIONS

A. Remove : Detach items from existing construction and dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Carefully detach from existing construction in manner to prevent damage, and deliver to Owner[ready for reuse].

C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated. Provide new fasteners and anchorage devices needed for reinstallation.

D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

E. Dismantle : To remove by disassembling or detaching item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

1.3 MATERIALS OWNERSHIP

A. The Owner shall be afforded first right of refusal to take ownership of any items that are demolished. Any items the Owner wishes to retain will be identified prior to demolition activities.

B. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.4 INFORMATIONAL SUBMITTALS

A. Prepare submittals per requirements of related Division 1 sections.

B. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property[, for environmental protection] [, for dust control] [and] [, for noise control]. Indicate proposed locations and construction of barriers.

C. Schedule of Selective Demolition Activities: Indicate the following:
   1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's [building manager's] [and] [other tenants'] on-site operations are uninterrupted.
   2. Interruption of utility services. Indicate how long utility services will be interrupted.
   3. Coordination for shutoff, capping, and continuation of utility services.
   4. Use of elevator and stairs.

5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

D. Predemolition Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces that might be misconstrued as damage caused by demolition operations. Comply with Section 01 3233. Submit before Work begins.

E. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

1.5 CLOSEOUT SUBMITTALS

A. List salvaged items.

1.6 FIELD CONDITIONS

A. Disclaimer: Drawings are based on information supplied by the Owner that has not been verified by the Architect or its consultants. The Architect therefore disclaims any warranty of correctness or completeness and Contractor is cautioned to carefully examine existing conditions before starting demolition operations.
   1. Locations and sizes of existing construction elements may vary from those depicted on the Drawings.
   2. The locations of utilities concealed in or by existing construction are unknown, and Contractor is cautioned to exercise care when removing construction elements to accommodate new construction.

B. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

C. Occupancy: Portions of the building will remain in normal use by Owner and lease tenants. Request permission at least [5] working days before operations that would affect occupants' normal use including work within individual tenant spaces, temporary blocking of corridors or access, and loud, malodorous, or dusty procedures. Owner reserves right to require such work to be performed outside normal hours of occupancy or to be rescheduled without changes to Contract Sum or Time.

D. Exits: Maintain existing required means of egress for occupied spaces in lawful condition at all times.

E. Existing Elevators: Use of existing elevators is subject to authorization by the Owner and provision of suitable protections for elevator finishes.

F. Removal Routes: Confine removal of demolished materials to designated routes through building.

G. Contractor is responsible for cleaning and repair of soiling and damage resulting from demolition operations inside or outside the building, and on other properties.

H. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
   1. The Owner may remove certain items of equipment before start of demolition Work.

I. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

J. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
   1. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

K. Storage or sale of removed items or materials on-site is not permitted.

L. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
   1. Maintain fire-protection facilities in service during selective demolition operations.

M. Traffic: Conduct demolition operations and removal of debris for minimal interference with streets, sidewalks, and other nearby properties and facilities.
   1. Do not close or obstruct streets, sidewalks, or other nearby properties without permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic paths if required by governing authorities.

N. Keep site and other areas clean and free from accumulation of debris and waste from demolition operations.

O. Utility Services: Maintain existing utilities indicated to remain in service and protect them against damage during demolition operations. Do not interrupt utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities as acceptable to governing authorities. Maintain fire protection services during selective demolition operations.

1.7 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties. Notify warrantor before proceeding. Existing warranties include the following:

   1. Ceiling systems

B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

1.8 PART 2 PRODUCTS

A. PERFORMANCE REQUIREMENTS
   1. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
   2. Standards: Comply with ASSE A10.6 and NFPA 241.

1.9 PART 3 EXECUTION

A. EXAMINATION
   1. Verify that utilities have been disconnected and capped before starting selective demolition operations.
   2. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner and Architect specifically disclaim any warranty that existing conditions are same as those indicated in Project Record Documents.
   3. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or video.
      a. Comply with requirements specified in related Division 1 section.
      b. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.
      c. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

B. UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS
   1. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
   2. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
      a. Owner will arrange to shut off indicated services/systems when requested by Contractor.

b. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.

C. PROTECTION
1. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
   a. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
   b. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
   c. Cover and protect furniture, supplies, and equipment that have not been removed.
2. Remove temporary barricades and protections where hazards no longer exist.

D. SELECTIVE DEMOLITION, GENERAL
1. Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
2. Demolish and remove existing construction only to the extent required by new construction and as indicated.
3. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
4. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
5. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
   a. Maintain fire watch during and for at least 2 hours after flame-cutting operations.
   b. Maintain adequate ventilation when using cutting torches.
6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
7. Lower demolished materials to ground level in controlled manner. Materials may not be dropped from above unless they are confined by a chute that opens into an enclosed waste container.
8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
9. Transport demolished materials through building to exterior in containers with solid sides and bottoms. Transport dusty, liquid, and hazardous demolished materials in fully enclosed containers.
10. Remove tile and other modular materials to joint with next unit unless otherwise indicated.
11. Remove existing sealants and caulking as needed for installation of new work, and where they would be exposed to view in the finished work.
12. Removed and Salvaged Items:
    a. Store items in a secure area until delivery to Owner.
    b. Transport items to Owner's storage area designated by Owner.
13. Removed and Reinstalled Items:
    a. Clean and repair items to functional condition adequate for intended reuse.
    b. Protect items from damage during transport and storage.
    c. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
14. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition[and cleaned] and reinstalled in their original locations after selective demolition operations are complete.

E. SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS
1. Electrical Items: Do not remove functioning electrical wiring and devices that serve occupied tenant spaces until corresponding new electrical systems are in use.

F. DISPOSAL OF DEMOLISHED MATERIALS

1. Remove demolition waste materials from Project site [and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.] [and recycle or dispose of them per Section 01 7419 "Construction Waste Management and Disposal"].
   a. Do not allow demolished materials to accumulate on-site.
   b. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
   c. Comply with requirements specified in related Division 1 section.
2. Do not burn demolished materials on site.

G. REPAIRS
1. Repair demolition performed in excess of that required. Return structures and surfaces to remain to not less than original condition. Repair existing construction or surfaces soiled or damaged by selective demolition operations.
2. Promptly repair damages caused by demolition operations to existing construction indicated to remain, including areas of facility outside Project limits.
3. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
4. Restore exposed finishes of patched areas and extend finish restoration into adjoining construction to remain in manner that eliminates evidence of patching and refinishing.
5. Patch, repair, or rehang existing ceilings to provide even, plane surface of uniform appearance.

H. CLEANING
1. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.
2. Change filters on air handling equipment on completion of selective demolition operations.
3. Remove protections, and temporary partitions and closures when no longer needed or when directed by Architect.

ISSUED	DATE
Bid Documents	10/7/2021

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A. END OF SECTION 02 4119

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SECTION 05 1200
STRUCTURAL STEEL FRAMING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Structural steel framing members.

B. Grouting under base plates.

1.2 REFERENCE STANDARDS

A. AISC (MAN) - Steel Construction Manual 2017.

B. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges 2016.

C. ASTM A1 - Standard Specification for Carbon Steel Tee Rails 2000 (Reapproved 2018).

D. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2014.

E. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless 2018.

F. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold Finished 2018.

G. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.

H. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.

I. ASTM A242/A242M - Standard Specification for High-Strength Low-Alloy Structural Steel 2013 (Reapproved 2018).

J. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength 2014, with Editorial Revision (2017).

K. ASTM A514/A514M - Standard Specification for High-Yield-Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding 2018.

L. ASTM A529/A529M - Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality 2014.

M. ASTM A572/A572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel 2018.

N. ASTM A759 - Standard Specification for Carbon Steel Crane Rails 2010 (Reapproved 2016).

O. ASTM A992/A992M - Standard Specification for Structural Steel Shapes 2011 (Reapproved 2015).

P. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable 2020.

Q. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength 2018a.

R. ASTM E94/E94M - Standard Guide for Radiographic Examination Using Industrial Radiographic Film 2017.

S. ASTM E164 - Standard Practice for Contact Ultrasonic Testing of Weldments 2019.

T. ASTM E165/E165M - Standard Test Method for Liquid Penetrant Examination for General Industry 2018.

U. ASTM E709 - Standard Guide for Magnetic Particle Testing 2015.

V. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength 2019, with Editorial Revision (2020).

W. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination 2012.

X. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel 2018.

Y. RCSC (HSBOLT) - Specification for Structural Joints Using High-Strength Bolts; Research Council on Structural Connections 2014, with Errata (2015).

Z. SSPC-SP 3 - Power Tool Cleaning 2018.

1.3 SUBMITTALS

A. See Division 01 Specifications, for submittal procedures.

B. Shop Drawings:
1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.
2. Connections not detailed.
3. Indicate cambers and loads.
4. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.

C. Manufacturer's Mill Certificate: Certify that products meet or exceed specified requirements.

D. Mill Test Reports: Indicate structural strength, destructive test analysis and non-destructive test analysis.

E. Fabricator Test Reports: Comply with ASTM A1011/A1011M.

F. Designer's Qualification Statement.

G. Fabricator's Qualification Statement.

H. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is accredited under IAS AC172.

1.4 QUALITY ASSURANCE

A. Fabricate structural steel members in accordance with AISC (MAN) "Steel Construction Manual."

PART 2 PRODUCTS

2.1 MATERIALS

A. Steel Angles and Plates: ASTM A36/A36M.

B. Steel W Shapes and Tees: ASTM A992/A992M.

C. Rolled Steel Structural Shapes: ASTM A992/A992M.

D. Steel Shapes, Plates, and Bars: ASTM A242/A242M high-strength, corrosion-resistant structural steel.

E. Steel Shapes, Plates, and Bars: ASTM A529/A529M high-strength, carbon-manganese structural steel, Grade 50.

F. Steel Plates and Bars: ASTM A572/A572M, Grade 50 (345) high-strength, columbium-vanadium steel.

G. Steel Plate: ASTM A514/A514M.

H. Steel Sheet: ASTM A1011/A1011M, Designation SS, Grade 30 hot-rolled, or ASTM A1008/A1008M, Designation SS, Grade 30 cold-rolled.

I. Structural Bolts and Nuts: Carbon steel, ASTM A307, Grade A and galvanized in compliance with ASTM A153/A153M Class C.

J. Tension Control Bolts: Twist-off type; ASTM F3125/F3125M.

2.2 FABRICATION

A. Shop fabricate to greatest extent possible.

B. Continuously seal joined members by continuous welds. Grind exposed welds smooth.

C. Fabricate connections for bolt, nut, and washer connectors.

2.3 FINISH

A. Prepare structural component surfaces in accordance with SSPC-SP 3.

B. Shop prime structural steel members. Do not prime surfaces that will be fireproofed, field welded, in contact with concrete, or high strength bolted.

C. Galvanize structural steel members to comply with ASTM A123/A123M. Provide minimum 1.7 oz/sq ft galvanized coating.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that conditions are appropriate for erection of structural steel and that the work may properly proceed.

3.2 ERECTION

A. Erect structural steel in compliance with AISC 303.

B. Field weld components and shear studs indicated on shop drawings.

C. Use carbon steel bolts only for temporary bracing during construction, unless otherwise specifically permitted on drawings. Install high-strength bolts in accordance with RCSC (HSBOLT) "Specification for Structural Joints Using High-Strength Bolts".

D. Do not field cut or alter structural members without approval of Architect.

E. Grout solidly between column plates and bearing surfaces, complying with manufacturer's instructions for nonshrink grout. Trowel grouted surfaces smooth, splaying neatly to 45 degrees.

3.3 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

3.4 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.

B. Welded Connections: Visually inspect all field-welded connections and test at least ten (10) percent of welds using one of the following:
   1. Radiographic testing performed in accordance with ASTM E94/E94M.
   2. Ultrasonic testing performed in accordance with ASTM E164.
   3. Liquid penetrant inspection performed in accordance with ASTM E165/E165M.
   4. Magnetic particle inspection performed in accordance with ASTM E709.

ISSUED	DATE
Bid Documents	10/7/2021

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A. END OF SECTION 05 1200

SECTION 10 1400
SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

A. The Project scope of work addressed in this section includes the following signage and graphic elements :
   1. Interior Static Signage
      a. Directional Signs
      b. Identification Signs
      c. Informational Signs
      d. Temporary Signs
   2. Interior Static Graphic Displays
      a. Building Directories

B. Provide Sign Types of the sizes, materials, images and arrangements consisting of special and standard components and construction as shown on the Design Intent Drawings and specified in this Section. Refer to Design Intent Drawings for general sign configurations, typography, graphic layouts, and sign placement for all sign types used in the Project. These 10 1400 specifications provide detailed information regarding products, processes and other information that supplements the information included on the Design Intent Drawings for each sign type. In the event of any discrepancies between the specifications and design drawings, submit an RFI to request clarification. All signage provided shall be of the design, detail, sizes, types, and message content shown on the design drawings and shall conform to the requirements specified. Signs shall be provided and installed as specified complete with lettering, framing as detailed and all related components for a complete installation

C. Detailed message content for each sign location is indicated in the individual sign layouts included in the sign detail drawings. Sign message content may require modifications as a result of changes during the construction process or at the Owner's direction. The Contractor shall verify the accuracy of all sign messages with the Architect/Engineer prior to fabrication. Notify the Architect/Engineer regarding any discrepancies between the message information indicated on the documentation provided on the design or sign location drawings.

D. Ownership and Copyrights: All designs, drawings, graphics, specifications and artwork provided in the contract documents as instruments of service for the sole use of the Hillsborough County Aviation Authority projects only. The Architect shall own the exclusive rights to all designs, drawings, logos, artwork, digital files or other documents created in association with work for all projects. All rights of ownership, use and reproduction of these digital files are at the sole discretion of the Owner and the Architect/Engineer. Any reuse of these items without the expressed written consent of the Architect/Engineer is prohibited.

E. Use of Electronic Files: The electronic files created by the Architect/Engineer that comprise the Design Intent Drawings included in this package may be provided to the selected Contractor to facilitate the production of shop drawings and fabrication.
   1. Design intent drawings created by the Architect/Engineer shall not be considered shop drawings and shall not be submitted as such or used for construction. The use of any parts of these drawings are at the sole discretion of the Architect/Engineer.
   2. The electronic files created by the Architect/Engineer will be provided to the Contractor after the Contractor has received a contract and notice to proceed. These electronic files will only be provided after the Contractor has submitted and received a fully executed and signed Digital Data Release/Waiver.

3. The electronic files created by the Architect/Engineer will be provided to the Contractor in the file format of the software used to create them. Any translation required will be the responsibility of the Contractor. These electronic files constitute the extent of the production artwork to be provided by the Architect/Engineer and all additional work required shall be provided by the Contractor.
4. The Architect/Engineer assumes no liability for the accuracy of the digital files provided and the re-use of these files is at the Contractor's discretion. The Contractor is responsible for the verification of all information provided in these files for their use and convenience.
5. The use of any portions of the Design Intent Drawings by the Contractor is for this project only.

F. Fonts and Typestyles: The fonts and typestyles listed on the general information sheets of the design intent drawings are to be utilized as indicated on the appropriate sign types. If the Contractor does not already own these fonts, they shall be purchased by the Contractor at his expense as required. The Architect/Engineer is not legally allowed to provide the Contractor with any fonts or typestyles. Note: If Braille is required for the project, the sign Contractor shall provide. All Braille shall be in compliance with current ADA and ADAAG (SAD) requirements regarding content, size, and placement.

G. Related Work: As employed herein, includes any material, equipment, construction, labor, installation, service or maintenance and warranties required to complete the fabrication and installation prescribed in these contract documents. This shall include, but is not limited to, all of the sign types listed in the sign drawings.

1.2 RELATED DOCUMENTS AND SECTIONS

A. The purpose of all "Related Documents" (also referred to as Contract Documents) is to serve as a reference which identifies materials, construction specifications, and quality controls, as well as the signage fabricator/contractor's responsibilities and obligations. The Contractor(s) shall furnish and install signs and/or graphics as detailed on drawings and/or described in these specifications.

B. Signs shall carry messages and images as specified in the sign layout drawings.

C. Quantities shall be as called for in the Schedule of Values and completed and submitted to HCAA by the successful bidder once the project has been awarded. Reference Exhibit A in section 01150.

D. Related Documents: Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section. "Related Documents" refers to the drawings, specifications, sign message schedule, including all addendum and modifications incorporated therein before their execution. When applicable, additional appendages provided by Owner, Owner's Representative, Architect/Engineer or General Contractor shall also become part of the contract documents.

E. Related Sections:
1. Division 00 – Procurement Requirements
2. Division 01 – General Requirements
3. Division 02 – Existing Conditions
4. Division 05 – Metals
5. Division 26 – Electrical
6. Division 27 – Communications

F. Addenda: Supplemental information regarding changes, corrections, and special interpretations of the drawings and specifications, shall become a part of the Contract Documents.

1.3 DEFINITIONS

A. Owner: Hillsborough County Aviation Authority

B. Project: Wayfinding Signage Improvements and Implementation, Tampa International Airport

C. Contractor: The term indicates the company, firm or business entity that has a contract with the Owner to provide signs and other services specified in this section. Since there are typically multiple contractors involved with the execution of the work required in these specifications and contractor documents, the term "Contractor" is used consistently throughout these specifications to refer to any contractor involved in this work. These specifications do not attempt to indicate which contractor (general, signage, electrical or other types of sub-contractors that may be involved in the project) is responsible for various tasks. The Contractor that is contracted by the owner for this work shall assume sole source responsibility for the successful execution of all work specified in these contract documents by all other contractors unless otherwise specified.

D. Installer: The qualified contractor used to install signs, sign structures and support systems.

E. Project Team (PT): The Project Team refers to all stakeholders involved with a specific project. PT members may include the Owner, Architect, Engineer, Graphic Designer, Construction Manager, Consultants or others involved with the project design and construction.

F. Architect/Engineer: Gresham Smith is a multi-discipline firm that provides architectural, engineering, graphic and interior design and many other design services. The term Architect/Engineer is consistently used in these specifications to refer to Gresham Smith as an organization. Specific references to the Architect or Engineer may refer to other firms involved in the project that may or may not be contracted by Gresham Smith.

G. Contract Documents (CD): The Contract Documents include all design intent drawings, location plans, specifications and all other information provided to the Contractor in association with this project.

H. Electronic Message Displays (EMD): Referred to as the "EMD" throughout these specifications and on the design intent drawings.

1.4 DESIGN AND PERFORMANCE REQUIREMENTS

A. Final Design Liability: The Contractor shall assume the sole responsibility for the final design liability, engineering and construction of all signs and other finished products. The Contractor shall be responsible for engineering all foundations and anchorages and shall submit shop drawings with appropriate engineer's seals including calculations indicating all applicable fabrication and installation details for review by the Owner and Architect/Engineer prior to fabrication. The Contractor shall be responsible for determining the sizes of structural members and required metal thicknesses to ensure compliance with all engineering design loads and constructability requirements. The Contractor shall be responsible for complying with all local, state and federal codes, ordinances, regulations and laws pertaining to the Project.

B. Field Measurements: The Contractor shall verify existing conditions and locations of all signs, anchorage devices and electrical service embedded in permanent construction by other installers, including the sizes and other details of any existing foundations or other signage components specified to be re-used. Contractor shall verify all sign location conditions by field measurements prior to preparation and submittal of shop drawings as well as fabrication of signs and notify the Architect/Engineer of all conditions affecting fabrication or installation of signs.

C. Design Intent Drawings: The drawings provided in the contract documents bid package are for design intent only. All signage and other products provided shall be of the design, detail, sizes, types, materials and message content shown on the design intent drawings and described in these specifications and shall conform to the requirements specified.

1. These design intent drawings shall **not** be considered as shop drawings and shall **not** be re-submitted to the Architect/Engineer as such.
2. The re-use of any portions of the design intent drawings provided to the Contractor is at the sole discretion of the Architect/Engineer.
3. Connections, angles, shapes, and details shown are a graphic indication of requirements and may not necessarily be the correct size or indicate best method of attachment or support.

4. Details, anchors, and devices, not shown, are to be submitted to Architect/Engineer for review prior to fabrication.

D. Specifications: The product and performance requirements in these specifications and related referenced sections provide detailed information regarding products, processes and other information that supplements the information included on the design intent drawings. The Contractor shall be responsible for the performance of the completed work and ensure that all signs function according the project requirements.

E. Signage Location Plans have been provided by the Architect/Engineer as part of the bid documents to help determine quantities and provide logistical information for the Contractor during the bid process. Modifications and revisions to these messages and/or locations should be expected as construction progresses, and new information is discovered.

1. Required modification to sign location and individual messages will be provided to the Contractor through Bulletins or other supplemental documentation as required.
2. The Contractor shall notify the Architect/Engineer immediately upon receipt of each Bulletin if there are potential cost or scheduling impacts that may require Owner approval.
3. The Contractor shall verify the accuracy of all sign message and location plans with the PT prior to fabrication.
4. All final message content and location specific installation details shall be included on the final shop drawings submitted for use in fabrication.
5. Notify the Architect/Engineer as necessary regarding any discrepancies between the information indicated on the messages schedules and the documentation provided on the design or sign location drawings.

F. Signage Removal and or Demolition: Notations for demolition and or removal for existing signage has been provided in the contract documents. The Contractor shall coordinate the scheduling of all demolition work with the PT.

G. Stamped Engineering Drawings and Calculations: The Contractor shall provide signed and sealed drawings and calculations by a qualified, professional Engineer licensed in the State of Florida where the project is located. This required engineering information shall be provided with shop drawings and shall include structural analysis calculations for all signs and structures to comply with design loads. Structural analysis calculations shall be included on the shop drawings or submitted as supplemental information along with the shop drawings.

H. Structural Requirements and Design Loads: All signs and support structures shall be engineered by the Contractor or their Engineer sub-contracted by them for this project to resist wind loads required by local jurisdiction or more according to special situation requirements. Design load requirements shall also include thermal movement resulting from 140-degrees F temperature change, without distortions, excessive deflections or failure of supports to backup construction. The Contractor is responsible for the structural integrity of all sign components, structures and foundations required.

I. Structural Supports and Foundations: All structural supports and foundations for the signs, reinforcements and any other services needed for the completion of all required signage shall be provided by the Contractor unless otherwise noted in the contract drawings as “to be provided by others.”.

J. Weight Limitations: It is the Contractor’s responsibility to ensure that all signs provided comply with the maximum weight limitation for each sign location. Refer to the structural drawings and specifications and coordinate with the PT to ensure all final designs comply with all weight limitations.

K. Permits and Certifications: The Contractor shall be responsible for obtaining, at his expense, all permits, certifications, UL listings and all other such costs required for the execution of this work.

L. Union Labor: If the use of union labor is a requirement for all activities on the job site, the Contractor shall be required to comply with all requirements regarding the approved use of union labor for the installation of signs and all other union labor regulations and criteria.

M. Work Hours: Reference related division section 01315.

N. Work Plans: The Contractor is responsible for coordinating with the Owner and all other contractors regarding detailed work plans and prior approvals. These include, but are not limited to the following:

1. Work plans for occupied spaces during regular business hours.
2. Work plans for off-hours work at night.
3. Lane closures and traffic maintenance plans required to execute the work.

O. Temporary Signage: The Contractor shall provide and install temporary signage as needed to support continued operation of the Project public areas during the work on the Project.

1. The Contractor shall coordinate with the Architect and Owner to identify the requirements for content, placement and phasing for all temporary signage. The Contractor shall provide and install and remove all temporary signage as needed with no additional cost to the project.
2. The Contractor shall provide temporary signs to replace existing signs when they must be removed to allow for renovation work in active public areas. Temporary signs must be installed at the same time as the permanent signs are removed to facilitate continued operations of the facility with no delays and to minimize inconvenience to the public.
3. Regardless of the type of temporary sign being considered it is important the design and layout of the content follow the standards set forth in the TPA Wayfinding Manual in order to maintain a consistent voice in how TPA communicates information to guests. The design elements of color, typography, symbology, terminology, etc. shall be consistent with the manual. Materials and methods of temporary signage shall be of a quality that is suitable for the intended use and reflects positively on the Authority.
4. Temporary signs shall be removed by the Contractor only when they are replaced with the permanent signs at the same time.

P. Removal of Existing Signs: The Contractor shall remove and dispose of all existing signs at his expense as required for the Project. The Contractor shall confirm the scope of signs to be removed with the Architect and Owner prior to removal. Sign removal shall be conducted in a safe and lawful manner; all existing sign materials shall be recycled as much as possible or otherwise disposed of in an environmentally responsible manner as required by code requirement of authorities having jurisdiction. Patch and replace any damaged surfaces from removed signs. Notify Architect and Owner of any questions regarding removal of existing signage.

1.5 REGULATORY AND CODE REQUIREMENTS

A. Code Compliance Responsibility: The Contractor is fully responsible for compliance with applicable requirements of the laws, codes, ordinances and regulations of federal, state and municipal authorities having jurisdiction in order to protect the Owner from liability. The Contractor shall endorse the design direction and work toward a goal to exceed code requirements where practicality and aesthetics allow. Request clarification from the Architect/Engineer regarding any questions regarding the code requirements for this project.

B. Accessibility Guidelines (ADA-ABA): Signage and all other work for each project must comply with the U.S. Architectural & Transportation Barriers Compliance Board's Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines.

C. Florida Accessibility Codes: Comply with the latest version of the Florida Accessibility Code for Building Construction.

D. Florida Building Codes: Comply with the latest version of the Florida Code for Building Construction.

E. Electrical Components, Devices and Accessories: All electrical signs shall be Underwriters Laboratory (UL) listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction and marked for intended use.

1. The Contractor is responsible for coordinating with the local electrical inspector having jurisdiction regarding any specialized requirements during construction to protect the Owner from liability.

F. **Hillsborough County, Florida** Signage Codes or Requirements: Comply with all requirements of the local authorities having jurisdiction.

1.6 QUALITY ASSURANCE

A. Single Source Accountability: Provide all signs required for each project under a single contract. Signs and related materials shall be fabricated by a Contractor regularly engaged in the manufacturing of such products. Signage shall be obtained from a single manufacturer with specific components (such as custom aluminum extrusions or other raw materials) outsourced as needed to subcontractors and manufacturers of specialty products as specified. Submit product data sheets regarding any outsourced components utilized.

B. Fabricator Qualifications: The Contractor shall be responsible for the quality of all materials and workmanship required for the execution of each contract including any firm or individual who may serve as the Contractor's sub-contractor. The Contractor is reminded that a high-quality level of professionalism, workmanship and materials is expected in all aspects of this project. The Contractor shall be responsible for providing all up-to-date drawings, schedules and any other required information to all sub-contractors and the PT. The manufacturer's logo or information may not be located on any sign surface visible to the public, except for the information required on the UL labels.

C. Installer Qualifications: Engage an experienced installer who is an authorized representative of the Contractor and has completed installations of signs similar in material, design, and extent to those indicated for the project.

D. Experience and References: The signage contractor and installer should have experience in the fabrication and implementation of signage programs of comparable size and complexity to the current project. The signage contractor and installer should provide references as stipulated in specification Section 00420.

E. Graphic Content and Style: Provide sign message content to comply with requirements indicated for sizes, styles, spacing, content, positions, materials, finishes and colors of letters, numbers, symbols and other graphic devices, including Braille. Verify sign and copy length for proper fit. Notify the Architect/Engineer in writing of discrepancies prior to fabrication.

F. Correction of Defective Work: Work determined to be defective by the Architect/Engineer, the Owner, the Owner's representatives, inspection agency or authorities having jurisdiction, regardless of all previous inspections, shall be corrected to the satisfaction of the entities involved at no additional cost to the Owner.

1.7 BID SUBMITTALS

A. Refer to Division 00 Specifications for all Bid Submittal requirements.

1.8 ACTION SUBMITTALS

A. Initial Submittals: Within ten (10) business days from the issuance of contract award the Contractor shall supply the following for approval:

1. A Submittal Schedule indicating the timetable for all required submittals, including milestone dates for submittal reviews and approvals. **Note: No submittals will be reviewed until the initial submittal schedule is received and approved.**
2. An installation sequencing schedule indicating the order in which signs will be installed.
3. A Gantt chart showing the timetable for the work outlining the time periods required for the execution of each phase of the work. The tasks and milestones to be addressed shall include, but are not limited to, the following:
    a. Time periods required to provide product data submittals.
    b. Time periods required to provide to produce shop drawings.

c. Time periods required to secure permits.
d. Lead times for specialty items and outsources materials
e. Time periods required manufacturing, shipping and installation itemized separately.
f. Any other specific details requested by the Owner and Architect/Engineer.

4. As the construction schedule advances, revise and resubmit the chart to show rescheduled work and milestones achieved.

B. Preliminary Submittals: Within twenty (20) business days of issuance of contract award, and before beginning work, the Contractor shall supply the following for approval:

1. A complete list of products to be supplied accompanied by manufacturers' data sheets and samples for each product.
2. Actual samples of all proposed materials and colors, labeled with corresponding project identification codes and manufacturer's identification names/numbers.
3. Preliminary shop drawings detailing all proposed materials, finishes, and colors for all exposed surfaces and custom items for approval.

C. Product Data Submittals: Provide manufacturer's product details relative to materials, dimensions of individual components, profiles and finishes.

1. Include manufacturer's data substantiating that materials comply with requirements indicated and document the product life expectancy of a minimum five years in continuous field use.
2. Provide documentation for any products like lighting elements, electronic or electrical items that may have a manufacturer's warranty of less than five years.
3. No substitutions of any materials or finish system will be allowed without prior written approval by the Architect/Engineer (see Substitutions section below for additional information).
4. Include manufacturer's cleaning and maintenance procedures documentation.

D. Substitutions: Substitutions shall be limited to those items that contain in their description the qualifying phase "or approved equal".

1. Substitutions for materials and/or methods of construction/fabrication that have been specified herein and in the design intent drawings must be accompanied by the following documentation to be provided to the Architect/Engineer:
   a. Product data including drawings, specifications, fabrication and installation procedures.
   b. Samples of the new product in a similar configuration and/or with similar finishes.
   c. A written comparison of the important qualities of the two products such as size, weight, durability, and visual appearance.
   d. A written list of any changes that would be required to other components due to the substitution.
   e. A statement indicating the substitutions effect on schedule.
   f. A cost comparison between the two products.
   g. Certification by the contractor that the proposed substitution is equal to or better in every respect to the product specified (including product warranties) in the contract documents.
2. The Contractor's request for a substitution will be considered by the Architect/Engineer when the following conditions are satisfied:
   a. Extensive revisions to the contract drawings are not required.
   b. Proposed changes are in keeping with the design intent of the contract drawings.
   c. The request is timely.

d. The material or product specified in the contract drawings cannot be obtained within the contract time or the material does not conform to necessary regulations, codes, or requirements. Note: scheduling conflicts resulting from the Contractor's failure to order materials with sufficient lead time does not constitute a basis for substitution.

e. The specified material cannot provide a warranty required by the contract documents.

E. Preliminary Shop Drawings: After receiving approval of product data sheets for products and materials to be utilized, submit preliminary shop drawings for fabrication and installation of all required sign prototypes **prior to the initiation of production for prototypes and all other manufacturing**.

1. Include details all proposed materials, finishes, and colors for all exposed surfaces and custom items for approval
2. Include all applicable fabrication and installation details for all prototype signs.

F. Engineering: All signs, foundations and connections shall be engineered by the Sign Engineer employed by or sub-contracted to the Contractor. All signs and structures shall be engineered to meet local codes and to resist wind loads and thermal movement resulting from severe temperature changes consistent with the local climate requirements without distortions, or excessive deflections, or failure of supports to backup construction. The internal structural framing system required shall be designed and engineered by the Contractor to withstand all design loads and maximum weight limitations. Fabrication details and shop drawings shall be provided by the Contractor and shall include design calculations and the signed seal of a registered structural engineer licensed in the state of Florida to ensure compliance with all design and load requirements. These shop drawings shall illustrate all means of mounting and attachment in elevation, plan and side views, and sections for proper coordination for connections with building structures.

G. Final Shop Drawings: After the approval of all product data submittals and prototypes required, submit final shop drawings for fabrication and installation of all signs. The Contractor is to verify all sign location conditions by field measurements prior to fabrication of signs and notify the Architect/Engineer of all conditions affecting fabrication, fit, or installation of signs. By the submission of shop drawings and samples, the Contractor thereby represents that he has determined and verified all field measurements, field construction criteria, materials, catalogue numbers and similar data, and that he has checked and coordinated each shop drawing and sample with the requirements of the work and the contract documents. Include all comments made by the PT during prototype and/or mockup reviews and approvals. Provide detailing of all proposed materials, finishes, fabrication methods and colors for all exposed surfaces and custom items. Include all applicable fabrication and installation details for all signs.

1. Submittal Format: All shop drawings must be produced at an appropriate scale and submitted in electronic format with a sheet size no smaller than A1. The Contractor shall not proceed with the fabrication of any final products until final shop drawings have been submitted and reviewed by the Architect/Engineer. Note: shop drawing submittals shall not consist of multiple volumes requiring individual approval.
2. The electronic files of the design intent drawings created by the Architect/Engineer are **not** to be considered shop drawings and shall not be re-submitted as such back to the Architect/Engineer. The electronic files provided are intended to facilitate the shop drawing process by providing a base line on information such as elevations, building sections and other useful information that may help the Contractor created complete drawings with accurate information. Shop drawings must show details as provided in the design intent drawings, and must include complete information about all aspects of the design, including fabrication, graphics, illumination and power, and mounting attachments. Any drawings submitted that do not include important information provided on the design intent drawings will be rejected and not reviewed.
3. Shop drawings submitted by the Contractor shall **not** contain any notes or language claiming that the Contractor owns the copyrights for the designs created by the Architect/Engineer and provided to the contractor for their use on this project.

4. Provide only field verified dimensions and other details about existing conditions. No “field verify” or “to be determined” notes will be accepted. Any shop drawings submitted that do not include required information will be rejected and not reviewed.
5. Shop drawings shall illustrate sign message layouts,
6. Shop drawings shall show all internal structures, service access, mounting and attachment details, locations, anchorage types, accessories, and locations of supplementary supports to be provided by others. Indicate gravity loads on supports for all signs that have mechanical attachment.
7. Shop drawings shall indicate details for waterproofing, ventilation, and protection from theft and vandalism.
8. Shop drawings shall identify all materials, including part numbers, product numbers and color references. The exact identification of all paints and coatings shall be noted for each material of component.
9. All shop drawings must be to scale with the correct scale identified. Include plans, elevations, fabrication details, typical message layouts and dimensions referenced to permanent project features.
10. Stamped engineering drawings and structural analysis calculations as required shall be included on the shop drawings or submitted as supplement information.
11. Include details of all electrical and communications connections. Include wiring diagrams for all electronic and electrical systems that show all required details regarding power, signal and controls. The design intent of the wiring is to inter-connect the equipment to utilize its capabilities to the fullest extent. Include UL listing information.
12. Indicate acknowledgement of all addenda issued by the Architect/Engineer on the final shop drawings to ensure the most current information is reflected in the drawings approved for fabrication.

H. Message Content Layout Drawings: In addition to shop drawings that provide sign fabrication details, the Contractor shall furnish scaled face layout drawings for each unique sign type and sign location for review by Architect and Owner prior to fabrication of signs. Message content face layout drawings shall show type style, type size, type alignment and spacing, spelling, punctuation, word placement on sign face referenced to outline of sign face, line spacing, logos and other composition requirements. All required dimensions shall be provided and accurately detailed.

I. Samples for Verification: Submit a minimum of four (4) complete sets of all required samples for approval. One set each will be retained by the Architect/Engineer, the Owner, GC or CM and one reviewed set will be returned to the contractor for their records and use. Samples retained by the PT members will be used to compare the finished work provided with the approved samples. Any finished products that do not match the approved samples will be rejected and replacement products will be required.
    1. Provide four (4) 4” x 4” samples for each material (include all required color variations) and specialty products specified.
    2. Provide four (4) 4” x 4” samples for each paint specified. Include separate samples for each material to be painted, since they may require separate paints for aluminum, plastic, steel, zinc, concrete, etc. Note: Painted material samples to be as thin as possible while providing stability.
    3. Provide four (4) 4” x 4” samples of required finishes, surface textures and other qualities of each material specified.
    4. Provide four (4) 4” x 4” samples of each printed color specified on the exact substrate specified.
    5. Provide four (4) 4” long samples each for all aluminum extrusions specified.
    6. Provide four (4) 1’-0” samples for the LED lighting to be used.
    7. Provide four (4) 1’-0” x 1’-0” samples for all printed sign face panels.
    8. Include a printed label on each sample indicating the sign fabricator name and contact information, project name, material manufacturer’s product number, product designation in signage drawings,

and other details to clearly identify the nature and use of each sample. All paint samples shall be identified with Pantone Matching System (PMS) number or equivalent.

J. Prototypes: Provide full-size, fully functional prototypes of the sign types listed below. Working prototypes shall be delivered on-site in an area designated by the Owner and if internally illuminated shall be operational 24 hours a day for a period of two weeks (minimum). Approved prototypes in a condition suitable to the Owner may be incorporated into the final quantities required unless otherwise specified. Obtain Architect/Engineer approval before fabricating signs for the Work. The required prototypes for the project include the following sign types:

1. DR.T.P4 – Ground transportation directory
2. DR.T.17 – Overhead directional sign cabinet and sign face
3. IN.T.DIR – Elevator directory insert installed in place for owner/architect review
4. DR.T.43 – Multiple airline listing – sample section with minimum of four removable inserts (two over two)
5. DR.U.P5 – Escalator directory pylon
6. ID.T.DL8 – Illuminated channel letters – one sample letter “G”
7. ID.T.DL9 – Dimensional letters – one sample letter “S”
8. IN.U.XX – SkyConnect train insert
9. ID.U.06 – Flag mounted sign
10. IN.P.DIR – Call button plate sign
11. Escalator caution decals – Size A and D mounted to acrylic climb barriers

K. Resubmission Requirements:

1. Make any requested corrections or changes in submittals, and prototypes at no additional cost to the Owner.
2. Resubmit for review until no exceptions are taken.
3. Indicate any changes that have been made other than those requested.

L. Artwork Creation: Any required artwork that is not clearly noted on the design intent drawings to be provided by the Architect/Engineer, shall be provided by the Contractor. This includes any modifications required in digital map artwork files for orientation, information or egress maps that may be provided by the Architect/Engineer. These Contractor required modifications may include changes in orientation, scale, egress routes, you are here indicators and other similar location specified changed required.

1. The Contractor shall submit the all proposed original or modified artwork required to the Architect/Engineer for review and approval.
2. All map artwork shall be customized for each separate sign location so that it is correctly oriented for the user when it is installed.

1.9 ELECTRICAL SIGNS

A. Listing Requirements: All internally illuminated signs shall be Underwriters Laboratories (UL) listed and labeled compliant with all UL and National Electric Code (NEC) requirements.

1. All signs shall be inspected, and each sign shall display the UL label according to their requirements.
2. All electrical signs shall have external disconnect switches for maintenance and grounding precautions according to UL requirements.

B. Electrical Loads for Signs: The Contractor is responsible for providing electrical load requirements for each sign type and location requiring power to the Architect/Engineer as early as possible during the submittal process.

Details to be provided on shop drawing submittals include information about the voltages, amps, circuits and other electrical requirements. Coordinate with the PT and other trades as required.

C. Electrical Components: The Contractor to provide all remote transformers, power supplies, ballasts, junction boxes, secondary conduit runs, electrical wiring, installation hardware, disconnect switches, insulators, boots and any other miscellaneous components required for a complete installation. All electrical components utilized shall be selected for energy efficiency and long-term performance.

D. Identification of Equipment: Legible and complete wiring and circuitry diagrams, lamp sizes and wattage and any special operating or replacement instructions are to be provided on waterproof paper and firmly affixed to the interior of signage access panels. Identify all applicable circuits in branch circuit panel boards with a typewritten directory mounted behind clear plastic and fastened to inside of the panel door.

E. Accessibility and Aesthetics: All junction boxes, power supplies, transformers, conduits, lamps, LEDs and electrical components are to be concealed, but accessible. Lamps, ballasts, LEDs and power supplies are to be easily accessible and replaceable.

F. Illumination: The Contractor is responsible for the proper illumination and electrical function of all sign units requiring power.

1. The Contractor's bid price shall be inclusive of all electrical components required for even illumination of all internally or externally lighted signs, directories, and header panels. Illumination shall be evenly bright on all portions of each sign with no "hot spots" or "dark areas".
2. Adequate sign brightness should be provided but should not be overdone. For internally illuminated signs, high contrast shall be provided between the sign message and background panels according the Illuminating Engineering Society (IES) recommendations. Provide sign luminance's according the LED or lamp manufacturer's recommendations based upon the unique location of each sign type, such as indoor verses outdoor installations, unless customizations are required for even illumination.
3. Alterations of internal sign components may be required to achieve even illumination of all portions of each sign. Some areas of signs may require more lamps or LEDs at tighter spacing than the manufacturer's standard recommendations.
4. All inside surfaces of illuminated signs shall be painted white with high-reflective light enhancement paint (LEP) or similar applied coating for optimum illumination output.
5. No light leaks will be acceptable through joints or gaps. All joints external joints shall be continuously sealed to avoid undesired light spillages and accumulation of dust and dirt.

G. Ventilation: Provisions for air circulation and ventilation of all electrical systems and components are critical to the long-term performance and durability of the sign program. The Contractor shall provide adequate ventilation systems for all sign components adequate for the local climate, including motorized ventilation systems where forced ventilation is required. Include ventilation system details on all shop drawing submittals and documentation as required to assure these systems will provide adequate ventilation according to the site conditions.

H. Weather Proofing: Exterior signs shall be tightly sealed, and weather proofed to eliminate the incursion of water, moisture, fine sand particles and insect infestation. All external joints shall be continuously sealed to avoid electrical failure due to condensation or an accumulation of dust and dirt, while still allowing for adequate ventilation and moisture drainage as required. Provide preventive measures to prevent the accumulation of insects around nighttime light sources.

I. Electrical Service by Others: Primary electrical service shall be provided to each general sign location by others. The Contractor is responsible for verifying the voltage, circuits and other electrical details to be provided by others and coordinate accordingly with the appropriate project stakeholders. Refer to the electrical drawings for specifications, power requirements, connection details and other information provided in association with each project. If stepdown transformers are required, they shall be provided by the Contractor unless otherwise specified. Incorporate all pertinent information on shop drawings.

J. Electrical Work Provided by the Sign Contractor: Secondary wiring required shall be provided by the Sign Contractor utilizing a licensed electrician.

1. All secondary wiring shall be installed in conduit. Use corrosion resistant rigid steel with PVC coating or heavy wall PVC in earth or in slabs where slabs are in contact with earth. Provide rigid steel cells coated with PVC where PVC raceways are used.
2. For conduit runs 2” in diameter and larger in earth or in slabs in contact with earth, PVC raceways with 4” concrete envelopes may be used. Provide rigid PVC coated steel elbows and conduits for stub-ups above grade.
3. Direct burial runs may be installed where located outside the building, under asphalt paving, and under grass or bare earth where noted. Enclose conductors in rigid galvanized PVC, coated, or PVC conduit where runs enter outlet boxes, concrete pole bases, under concrete walks, or embedded in concrete slabs or masonry walls.
4. Conduit shall be of the size required by and installed according to the NEC. Bends shall be made with approved hickey or conduit bending machine. Provide supports in accordance with NEC requirements.
5. Maximum size conduit allowed in floor slabs above grade shall be 1” unless written permission is obtained from the Structural Engineer.
6. All secondary conductors to be buried a minimum of 30” below finished grade. Provide 2” sand fill above and below conductors and install treated or redwood board.
7. Exposed conduit shall not be installed in finished areas. Exposed conduit may be installed at surface mounted equipment and at other locations approved by the Owner. All exposed conduit shall be run parallel to or at right angles to building lines.
8. In locations where, mechanical damage may be incurred, or on roofs, corrosion resistant rigid steel or intermediate metal conduit shall be used except heavy wall aluminum may be used in dry locations where exposed. No aluminum conduit shall be used in walls or concrete. Electric metallic tubing or intermediate metal conduit may be used in all other applications.
9. Use approved type couplings and connectors in all conduit runs and make all joints tight. Provide insulated bushings for all terminations in pipe sizes 1-1/4” and larger. Provide a premium quality metal casting type of compression gland coupling for all other concealed or exposed conduits. Set-secure type couplings will be permitted for exposed EMT conduits only.
10. Provide expansion fittings and bonding conductors for all runs which cross building expansion joints.
11. Provide waterproof fittings for all runs in wet locations, such as exposed to weather, buried in slabs, etc.
12. Provide seal-off fittings where conduits enter or leave a hazardous area, or areas of widely different temperature and/or humidity.
13. No wire shall be installed until work which might cause damage to the conductors has been completed. Prior to pulling of the conductors, conduits shall be swabbed clean of all foreign matter, or replaced where such accumulation cannot be removed by approved methods.
14. The Sign Contractor is responsible for coordination with PT and all other trades regarding architectural/structural drawings, electrical plans, special system wiring diagrams and the work of other contractors where wiring shares conduit.

K. Final Electrical Connections: Unless otherwise specified, all final electrical connections shall be provided by the Contractor utilizing a licensed electrician at the time of installation.

L. Installation and Mounting: The Contractor shall coordinate with the PT for all installation locations requiring building penetrations. Contractor shall install full size rigid templates (not paper) for approval. Coordinate all electrical penetrations and the installation of all secondary conduit runs during construction. This may require multiple site visits prior to final installation of the signs to install all secondary electrical penetrations and have these penetrations sealed prior to completion of the building wall panels. Installations shall utilize liquid-tight, flexible metal conduit to transformers. All building penetrations shall be sealed and weatherproofed in

accordance with building wall and roof weatherproofing systems so that no building materials are compromised and no weatherproofing system warranties voided.

M. Inspections, Tests and Guarantees: All work shall be subject to inspection by the Owner, the Owner's Representative and the Architect/Engineer always and in the event of questionable work. Their decision will be final.

1. After the electrical installation is completed and at such times as the Owner may direct, the Contractor shall conduct an operating test for approval.
2. The installation shall be demonstrated to be in accordance with the requirements of these specifications.
3. Any defects revealed shall be corrected promptly and the test re-conducted, at no additional cost to the Owner.
4. All electrical work, equipment and materials shall be guaranteed for a period of five years from the date of the final inspection and acceptance of the work.
5. The Contractor shall be notified in writing of any defective items and shall repair or replace such items promptly without cost to the Owner.

1.10 WARRANTY

A. Warranty Period: five years from date of substantial completion. The beginning date for the warranty period shall be from final approval date of substantial completion. During the warranty period, the Contractor shall restore defective work to the standards set forth in this sign guide without any cost to the Owner.

B. Contractor Responsibilities: By commencing the work of the project, the Contractor assumes overall responsibility, as a part of his warranty of the work, to assure that all assembled components and parts shown or required within the work of this project comply with the contract documents. The Contractor shall further warrant:

1. That all components specified, or required, to satisfactorily complete the installation, are compatible with each other and with the conditions of installation and expected use;
2. The overall effective integration and correctness of individual parts and the whole of the system;
3. Compatibility with adjoining substrate, materials and work by other trades;
4. There shall be no premature material failure due to improper design or fabrication of the system. All materials are to fully perform to their normal life expectancy.

C. Failures: Failures in materials and workmanship include operational failures, performance below required minimums, excessive deterioration or aging, abnormal wear considering intensity of use, unsafe conditions, excessive noise or vibration and similar unusual, unexpected, and unsatisfactory conditions. Failures also include, but are not limited to, the following:

1. Deterioration of finishes beyond normal weathering.
2. Deterioration of embedded graphic images or colors.
3. Separation or delamination of sheet materials and components.
4. Failure of lighting and electrical components.
5. Fading, cracking, warping, peeling, delaminating, rusting, corroding and structural failure, including distortion.
6. Failures do not include defects caused by acts of God, abusive use, vandalism, failure of the structure or power supply and similar causes beyond control of the Contractor.

D. LED Modules and Power Supplies: These electrical components shall be warranted for five years. If a unit becomes non-functional or defective within warranty period, it shall be replaced without cost to the Owner.

E. Correction of Defective Work: Work determined to be defective by the Owner, Project Team or the inspection agency, regardless of all previous inspections, shall be corrected to the satisfaction of and at no extra cost to the Owner.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. General: Provide materials selected for exceptional high qualities of surface flatness, smoothness and freedom from surface blemishes wherever exposed to view in the finished units.

1. Use only materials which are new, free of defects impairing strength and durability, and exposed materials which are free of surface blemishes, including pitting, roughness, seam marks, roller marks, trade names, stains, discolorations, scratches and similar damage which is visible in the complete work.
2. Unless the surfaces are to be painted, do not use materials that have stains and discolorations. For exposed items of work that include plain flat surfaces in width of more than 50 times the panel thickness, provide sheet stock from the mill that has been stretcher leveled to the highest standard of flatness commercially available.
3. Flatness of Panels: Panels shall show no visual distortion when viewed in installed position. All panel faces shall be of such flatness that when measured, the maximum slope of the surface at point, measured from the nominal plane of the surface, shall not exceed 1.0%. Any panel not meeting these requirements is subject to rejection by the Architect/Engineer.
4. All light-transmitting plastics (acrylics, polycarbonates, etc.) used for signage shall comply with all flame spread/smoke development code requirements for the Project.
5. Testing: Use highest testing standard for all materials unless otherwise noted for project.

B. Acrylic Sheet: Provide clear cast and or white translucent (not extruded or continuous cast) methacrylate plastic sheet with a minimum flexural strength of 16,000 psi, ASTM D 790, minimum allowable continuous service temperature of 180-degrees F (82-degrees C); in sizes and thicknesses indicated on the drawings.

1. Acceptable manufacturers include the following:
   a. Plexiglas, subsidiary of Arkema.
   b. Acrylite by Cyro Industries.
   c. Plaskolite
   d. Approved equal.

C. Acrylic Sheet (for Digital Printing): Provide clear gloss and non-glare “digital acrylic” specifically designed for direct digital printing to provide optimal adhesion of UV curing inks without adhesion promoters. Physical properties to include a total light transmittance of 92% with no more than 2% haze in accordance with ASTM D-1003. Sizes and thickness as indicated on the drawings. Print only on the side designated by the manufacturer to receive direct digital printing.

1. Acceptable manufacturers include the following:
   a. Acrylite AR abrasion resistant acrylic
   b. Optix-DA #7328 as manufactured by Plaskolite, Inc.
   c. Approved equal.

D. Adhesive (Epoxy): Two component thermosetting epoxy adhesive with 100% solids content, one of the following:

1. Miracle Adhesives: No. NP-428.
2. Hughson Chemicals: Chemlok #304.

E. Adhesive (Film Tape): Provide 4-mil (0.1 mm) thick, double faced pressure sensitive film tape.
   1. Acceptable manufacturers include the following:
      a. Minnesota Mining and Manufacturing (3M) Co.
      b. Approved equal.

F. Adhesive (Foam Tape): Provide 4 mil (0.1 mm) thick, double-faced pressure sensitive film tape.
   1. Acceptable manufacturers include the following or approved equal:
      a. Minnesota Mining and Manufacturing (3M) Co.

G. Adhesive (Silicone): Provide ready to use, high performance adhesive sealant such as General Electric GE 1200 sealant, translucent SCS 1201 (or approved equal) as recommended by manufacturer for bonding condition where required.

H. Aluminum Sheet and Plate: Provide aluminum sheets and plates for sign panels that meet the minimum strength and durability properties as specified in ASTM B 209, Aluminum Association Alloy 6061-T6, 5154-H38 or 5052-H38. Aluminum used for concealed framing of signage shall be 6063 T-5 alloy with mill finish.
   1. Prior to the application of retroreflective sheeting, de-grease and etch the aluminum sign blanks utilizing an approved method specified by Florida DOT.

I. Aluminum Extrusions: Provide aluminum extrusions of alloy and temper with adequate structural characteristics and suitable for finishing as recommended by the aluminum producer or finisher for the type of use and finish indicated. Minimum strength and durability properties shall be as specified in ASTM B 221 for 6063-T5. Utilize shapes and thicknesses as shown in the drawings and as required to fulfill requirements, but not less than 1/8" (3.2 mm) thick unless otherwise specified.
   1. Acceptable manufacturers include the following:
      a. SignComp
      b. Approved equal.

J. Gatorboard: Provide flame retardant panel with the following minimum performance requirements:
   1. Standard Size: 48" x 96"
   2. Thickness: H" and I"
   3. Density: (H") 23-24 PCF and (I") 19-21 PCF
   4. Typical Physical Properties (Based on H" Thickness):
      a. Internal Bond: 12-14 psi (typical value for the core).
      b. Modulus or Elasticity: 280,000 psi approximately.
      c. Modulus of Rupture: 1,900 psi approximately.
      d. Compressive Strength: 60 psi at 10% deformation.
      e. Hardness Combustibility: Flamespread @ less than 25 (class A), Fuat Contributed @ 15, and Smoke Density @ less than 50.
      f. Machinability: May be used with most types of woodworking equipment. However, special care must be taken when sawing as chip-out may occur.
      g. Thickness: # 1/16".
      h. Squareness: # 3/16".
      i. Straightness: Within J" when comparing the two diagonal measurements between opposite corners or the panel.
   5. Wrap: No manufacturing set. Wrap or curl greater than H".

K. Graphic Films / Vinyl Sheeting (General): Specific types and colors of graphic films and vinyl sheeting have been called out in the design drawings as the basis of design components for multiple sign types. All graphic

films and sheeting required shall be 3M brand as manufactured by the Minnesota Mining and Manufacturing Company (3M) or approved equal. Provide the exact colors and 3M product numbers provided on the drawings unless otherwise specified. All graphic films and sheeting shall be handled and applied in strict accordance with the manufacturer's product specifications and instructions.

L. Graphic Film (non-reflective): Provide "Scotchcal" brand as manufactured by the Minnesota Mining and Manufacturing Company (3M) or approved equal. Provide the exact colors and 3M product numbers provided on the drawings unless otherwise specified.

1. Thickness shall be 0.003 inch minimum and 0.006 inch maximum, or as specified.
2. The pigmented material shall be sufficiently opaque when applied to completely hide a contrasting black printed legend on a white surface.
3. Properly processed and applied material shall withstand 5 years vertical, south facing, unprotected, exterior exposure at the work site with no appreciable deterioration such as cracking, checking, blistering, delamination, or loss of adhesion. The material will show no appreciable discoloration after cleaning.
4. If material will come into contact with gasoline, provide "Scotchcal" brand Gasoline Resistant Clear Coat 3980. Apply to material according to manufacturer's directions to complete installation.
5. Shrinkage shall not exceed 1/64 inch (0.4mm) in any direction.
6. Screen inks shall be "Scotchcal" brand opaque screen printing inks Series 3900, or as approved.
7. Press ink shall be "Scotchcal" brand letterpress inks Series 850, or as approved.
8. For durability of screen and press inks on vinyl film in exterior application a clear coat shall be added. This clear coat shall be "Scotchcal" brand Clear Coat No. 3920 glass.
9. Vinyl legends shall be steel rule or die-cut in such a manner that edges and corners are true, clear and photographically precise. Legends with rounded positive or negative corners, cut or ragged edges or edge build-up will not be accepted.
10. Letterforms supplied that are specified to be installed by the Owner shall be pre-spaced on a carrier sheet with a cover sheet. The carrier sheet shall be capable of being removed intact by stripping without the use of water or other solvents at the time of use.

M. Graphic Sheeting (Diamond Grade Retroreflective): Provide 3M Diamond Grade reflective sheeting with pressure-sensitive adhesive backing as manufactured by Minnesota Mining and Manufacturing Company or approved equal. Retroreflective sheeting material shall be in accordance with Florida DOT standards and meet the requirements of ASTM D4956. Overlay materials include colored and colorless transparent overlays and vinyl.

1. All sheeting, process inks and overlay materials shall be provided as a system as specified on the Florida DOT Qualified Products List (QPL).
2. Fabricated sign panels must be free of wrinkles, bubbles, foreign matter, scratches, free of patches, or other visually identifiable defects.
3. Use Type XI sheeting for all regulatory, warning and overhead signs. Provide 3M Diamond Grade DG3 Series 4000 or approved equal.
4. Approved manufacturer: Minnesota Mining and Manufacturing Company
   Traffic Safety Systems Division
   3M Center, Building 0235-03-A-09 P.O.
   St. Paul, MN 55144-1000
   1-800-553-1380
   www.3M.com/tss

N. Graphic Sheeting (High Intensity Prismatic Retroreflective): Provide 3M High Intensity Prismatic reflective sheeting with pressure-sensitive adhesive backing as manufactured by Minnesota Mining and Manufacturing Company or approved equal. Retroreflective sheeting material shall be in accordance with Florida DOT

standards and meet the requirements of ASTM D4956. The sheeting shall be flexible, wide-angle prismatic retro-reflective sheeting and related processing materials designed to enhance the day/night visibility of traffic control signs and objects. Overlay materials include colored and colorless transparent overlays and film.

1. All sheeting, process inks and overlay materials shall be provided as a system as specified on the Florida DOT Qualified Products List (QPL).
2. Fabricated sign panels must be free of wrinkles, bubbles, foreign matter, scratches, free of patches, or other visually identifiable defects.
3. Use Type XI sheeting for all regulatory, warning and overhead signs. Provide 3M High Intensity Grade Prismatic Sheet Series 3900 or approved equal.

O. Graphic Sheeting (Engineering Grade Retroreflective): Provide 3M ScotchLite™ reflective sheeting, series 680, 580 or 480, or others, with pressure-sensitive adhesive backing as manufactured by Minnesota Mining and Manufacturing Company or approved equal. The Contractor shall verify all City and State traffic codes for grade of reflective vinyl and shall use high intensity vinyl when required by code. If the codes do not specify, then engineering grade vinyl is acceptable.

P. Graphic Film (Digital Output on Vinyl): Utilize 3M IJ180mC-10 Controltac cast adhesive backed vinyl film or approved equal for all graphics to be digitally printed on vinyl. This product is a 2-mil white, opaque vinyl film with a glossy finish. Follow the most current version of the 3M product bulletins and instructions for this product in their entirety. Any technical questions relating to the 3M products referred to in the specification should be directed to 3M Commercial Graphics Technical Service at 800-328-3908.

1. Digital printing to be provided on a large format flat-bed high-quality, professional, compatible ink jet printer utilizing a minimum of six (6) separate print colors. Inks used shall be latex compatible with the 3M materials and specifications required. The printing products and process used must be calibrated as required to match the required colors and be capable of consistently reproducing matching printed output, color density and accurate graphic quality. All printed vinyl graphic components must have an even visual appearance of all colors when both illuminated and not illuminated. No visible inconsistencies will be acceptable and all vinyl graphics shall include a protective overcoat that does not impact the color quality or appearance. Vinyl message panels may require a double strike of printing ink in order to achieve the desired color saturation; provide as needed.
2. Provide 8520 matte 3M Scotchcal overlaminate protection or approved equal on all vinyl graphics.
3. Surface preparation and application of vinyl graphics must use the materials, methods and tools described in the appropriate manufactures Product and Instruction Bulletins.

Q. Lighting (Light-Emitting Diodes) (LEDs): LEDs shall meet the highest industry standards available at the time of the project. Provide white LEDs with a wavelength/color temperature of 6500 kelvin (K) unless otherwise specified. Each white LED module shall have a minimum light output of 24 lumens per module. Light output shall be a minimum of 190 lumens per square meter. Nominal light output shall be a minimum of 115 lumens per square foot. All LEDs for the project shall be single-sourced from the same manufacturer and batch.

1. Acceptable manufacturers include the following:
    a. General Electric
    b. AgiLight (A division of General LED, Inc.)
    c. Cree
    d. Approved equal.

R. Lighting (LED Power Supplies): Provide power supplies with constant current DC voltage output and a wide input AC voltage range 100-277 50/60Hz. Locate power supplies remotely where possible so that they are protected from the weather and easy to access for maintenance.

S. Light Enhancement Paint (LEP): Provide LEP as specified for interior surfaces of internally illuminated signs for optimum and even illumination distribution.

1. Acceptable manufacturers include the following:

a. Matthews 281 500SP High Reflective White spray-applied paint coating
b. Spraylat Corporation.
c. Approved equal.

T. Paint (Signage): Paint used for signage applications shall be acrylic polyurethane enamel paint manufactured specifically for signs, unless otherwise indicated on drawings. Paint shall contain ultra violet inhibitors which are lightfast, weather, abrasion and wear resistant. Provide colors formulated to match the specific paint colors from various manufacturers and each Pantone Matching System (PMS) color as specified on the design drawings. Contractor shall apply paint system strictly observing manufacturer's recommendations regarding application and mixing. Apply so as to achieve 100% coverage at a rate of 150 square feet per gallon or as manufacturer recommends. All paint finishes shall be satin or eggshell unless otherwise specified. Paint shall be warrantied in writing against premature fading; provide clear coat UV inhibiter as required to prevent fading, chalking or other failure of paint finish or color.

1. Acceptable manufacturers include the following:
   a. Matthews Paint
   b. Akzo Wyandotte
   c. PPG Pittsburg Paints
   d. Approved equal.

U. Polycarbonate Sheet (Light-Transmitting): Provide polycarbonate sheet manufactured by extrusion process, coated on both surfaces with abrasion-resistant coating to provide non-glare finish and UV protection with a 10 year warranty against yellowing, loss of light transmission and breakage. Colors to be as indicated on the drawings. Thicknesses shall be as required to meet the design loads and required fabrication details. Product shall meet all flame spread and smoke requirements per local and national codes.

1. Impact Resistance: 16 ft-lbf/in. (854 J/m) per ASTM D 256, Method A.
2. Tensile Strength: 9000 lbf/sq. in. (62 MPa) per ASTM D 638.
3. Flexural Modulus of Elasticity: 340,000 lbf/sq. in. (2345 MPa) per ASTM D 790.
4. Heat Deflection: 265 deg F (129 deg C) at 264 lbf/sq. in. (1.82 MPa) per ASTM D 648.
5. Abrasion Resistance: 1.5 percent maximum haze increase for 100 revolutions of a Taber abraser with a load of 500 g per ASTM D 1044.
6. Approved manufacturers include:
   a. Makrolon.
   b. Acrylite
   c. Plaskolite
   d. Approved equal.

V. PVC Board (Sintra): Provide thermoplastic (PVC) sheet shall be of thickness and sizes shown, formed to profiles and shapes indicated on the drawings. All exposed edges shall be filed smooth and finished with proper grit and painted to match the finish of the photopolymer and other materials on the same sign type. Where thermoplastic (PVC) sheet is to be bonded to itself or other substrates solvents or solvent-dispersed adhesives such as THF (Tetra Hydro Furan), Cyclohexanone, or MEK (Methyl Ethyl Ketone) based types shall be used. Prior to adhesive applications both surfaces to be joined must be clean, degreased and dry. The pretreatment procedure shall consist of wiping surfaces with isopropyl alcohol with non-colored cloth and allowing surfaces to properly dry. All surfaces shall be prepared to receive coatings or surface finishes according to manufacturer's latest for surface preparation and application but in no case less than one (1) applicable primer coat and two (2) final full coats. All finished surfaces shall be uniform.

W. Steel Materials (use highest testing standard unless otherwise noted for project):

1. Structural Steel Shapes and Plates: ASTM A 36.

2. Sheet for Cold Forming: ASTM A 1011/A 1011M, hot rolled sheet steel of commercial quality, pickled and oiled, free of defects which would impair the work.
3. Steel Plate for Cold Forming: ASTM A 283, Grade C.
4. Hot-Rolled, Structural-Steel Shapes: ASTM A36/A 36M or ASTM A 529/A 529M.
5. Hot Rolled Steel Bars: ASTM A 108, Grade as selected by fabricator.
6. Steel Members Fabricated from Plate or Bar Stock: ASTM A 529/A 529M or ASTM A 572/A 572M, 42,000-psi minimum yield strength.
7. Steel Tubing or Pipe: ASTM A 500, Grade B.
8. Cold-Drawn Steel Tubing: ASTM A 512, sunk drawn, butt welded, cold finished and stress relieved.
9. Bolts for Steel Framing: ASTM A 307 or ASTM F3125 as necessary for design loads and connection details.
10. For steel exposed to view on completion, provide materials having flat, smooth surfaces without blemishes. Do not use materials whose surfaces exhibit pitting, seam marks, roller marks, rolled trade names, or roughness.
11. Galvanized Steel Sheet: Galvanized Steel Sheet: ASTM A 653/A653M, Commercial Quality Stainless-Steel Sheet: Provide alloys 302 or 304 established by American Iron and Steel Institute (AI SI) unless shown otherwise. In addition, comply with the following requirements (use highest testing standard unless otherwise noted for project): Extrusions: ASTM A 167; Bar Stock: ASTM A 267; Plate: ASTM A 167; Tubing: ASTM A 269; Castings: ASTM A 743/A 743M, iron-chromium-nickel alloy ASTM A 240/A 240M or ASTM A 666, Type 304 stretcher-leveled standard of flatness.
12. Steel Pipe: ASTM A 53, Type E, F or S, at fabricator's option, Grade A, black finished unless shown as galvanized, standard weight (Schedule 40) unless otherwise shown or specified.

X. Steel Primer: Provide one of the following, unless steel indicated to receive galvanized finish:
1. Dimetcote No. 4, Amercote Corporation
2. Tnemec Zinc 92, Tnemec Company
3. Carbo Zinc II, Carboline Company
4. Baked Enamel Finish: Provide manufacturer's standard baked acrylic enamel finish, in colors specified by the Architect.

Y. Zinc Signs with Photoengraving: Provide 1/8" thick engraver's quality, chemically deep-etched zinc alloy #Z450 for all signs as specified for behavioral health areas. Note: magnesium is not an acceptable substitute.
1. Zinc castings: ASTM B 240; zinc sheet: ASTM B 69.
2. Zinc signs shall be mechanically photo-etched to produce raised tactile character and Grade 2 Braille.
3. Text and Braille to be integral with the zinc background. Individually applied and hand-spaced graphics are not acceptable.
4. Tactile characters and Braille painted to match colors as shown on drawings.
5. Comply with all ADA/ADAAG requirements for tactile and Braille signs.
6. All edges to be smooth and free of sharp edges. The outside edges of signs shall have continuous bull nose edges.
7. Zinc signs shall be mounted with mechanical fasteners.

2.2 SPARE PARTS

A. Provide the owner with a quantity of twelve (12) replaceable insert strips for sign type DR.T.43 for future use in the original boxes and/or packages.

2.3 ACCESSORIES

A. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work. Note: All anchors and inserts for roadway signs shall comply with Florida DOT standards.

B. Anchoring Materials:

1. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.
2. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.
3. Water-Resistant Product: At exterior locations, provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

C. Fasteners: Unless otherwise indicated, use concealed fasteners fabricated from metals that are non-corrosive to either the sign material or mounting surface. All bolts, washers and nuts shall be stainless steel of T-316 alloy.

D. Exposed Metal Fasteners: Fabricated from same basic metal and finish of fastened metal unless otherwise indicated.

2.4 GENERAL FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved samples and are assembled or installed to minimize contrast.

D. Corrosion Protection: Coat concealed metal surfaces which will be in direct contact with concrete, masonry, wood or dissimilar metals, in exterior work, and work to be built into exterior and below grade walls and decks, with a heavy coat of bituminous paint. Do not extend coating onto exposed surfaces.

2.5 ALUMINUM FINISHES

A. Clear Anodic Finish: Manufacturer's standard Class 1 clear anodic coating, 0.018 mm or thicker, over a satin mechanical finish, complying with AAMA 611.

B. Color Anodic Finish: Manufacturer's standard Class 1 integrally colored or electrolytically deposited color anodic coating, 0.018 mm or thicker, in the color specified on the drawings applied over a satin mechanical finish, complying with AAMA 611.

C. Urethane Paint (On Aluminum): Paint shall be Matthews acrylic polyurethane (MAP), an ultraviolet inhibited aliphatic isocyanate/acrylic system. Applied in accordance with manufacturer's recommendations. The paint finish shall be eggshell or satin unless otherwise specified.

D. Powder-Coat Finishes: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

E. Aluminum Finishing: Aluminum finishes shall be acrylic polyurethane two-part catalyzed coating system. All coating applications shall be prepared and spray applied in the factory by skilled mechanics. All surfaces shall be mechanically sanded removing all grain lines, striations, and surface blemishes, cleaned with non-abrasive scouring pads, rinsed, and air-dried prior to receiving coatings.

1. Coatings shall be prepared as designated by manufacturer's latest literature for surface preparation and application but in no case less than one (1) applicable primer coat and two (2) final full coats. All finished surfaces shall be uniform.
2. Colors shall match color designations as indicated on the drawings.

F. Anodizing: Exterior Applications - For a clear anodized (natural) finish use AA-M21C22A41 with a minimum 0.7 mil (0.02 mm). For a color anodized finish use AA-M21C22A42 with a minimum 0.7 mil (0.02mm) to match samples provided by Architect. Interior Applications - For a clear anodized (natural) finish use AAAA-M21C22A31 with a minimum 0.4 mil (0.01 mm). For a color anodized finish use AA-M21C22A32 with a minimum 0.4 mil (0.01 mm) to match samples provided by Architect/Engineer.

2.6 POLYCARBONATE SHEET FINISHES

A. Colored Coatings for Polycarbonate Sheet: For copy and background and frame colors, provide colored coatings, including inks, dyes, and paints, that are recommended by acrylic manufacturers for optimum adherence to polycarbonate surface and that are UV and water resistant for five years for application intended.

2.7 STEEL FINISHES

A. Surface Preparation: Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or SSPC-SP 8, "Pickling."

B. Factory Priming for Painted Finish: Apply shop primer specified below immediately after surface preparation and pretreatment.

1. Shop Primer: Manufacturer's or fabricator's standard, fast-curing, lead- and chromate-free, universal primer, selected for resistance to normal atmospheric corrosion, for compatibility with substrate and field-applied finish paint system indicated, and for capability to provide a sound foundation for field-applied topcoats despite prolonged exposure.

C. Stainless Steel: Provide a #4 brushed finish, direction as noted, unless otherwise noted on the drawings.

2.8 SPECIAL PROCESSES

A. Retroreflective Sheeting (Reverse-Cut Overlay Process): Provide retroreflective sheeting and reverse-cut overlay as manufactured by Minnesota Mining and Manufacturing Company or approved equal. Retroreflective sheeting material shall be in accordance with Florida DOT standards and meet the requirements of ASTM D4956. Overlay materials include colored and colorless transparent overlays and film.

1. All sheeting, process inks and overlay materials shall be provided as a system as specified on the Florida DOT Qualified Products List (QPL).
2. Fabricated sign panels must be free of wrinkles, bubbles, foreign matter, scratches, free of patches, or other visually identifiable defects.
3. Reflective white base sheeting shall be Series 4000 3M Diamond Grade DG3 Reflective Sheeting as manufactured by Minnesota Mining and Manufacturing Company (3M). Sheeting and overlay films are to be applied in compliance with 3M Manufacturer's instructions. For 3M product information contact 3M Traffic Safety Systems at 850-321-9925.

a. Application to be roll-type high pressure dry lamination (refer to 3m Product Bulletin 4000 – DG3 Reflective Sheeting, 3M Information Folder 1.7 – Sign Base Surface Preparation for 3m Reflective Sheeting Application, and 3M Folders 1.4 and 1.6 – Roll Applicators for additional information).

b. The material shall be sufficiently flexible to show no cracking when bent around a 3/4 inch mandrel at 72 degrees Fahrenheit and 50 percent R.H.

c. Follow manufacturer's directions for proper preparation and application of all vinyl films. Properly processed and applied material shall withstand accelerated weathering for 10 years, south facing, unprotected at 45 degree in South Florida. The material shall remain weather resistant and following cleaning, shall show no appreciable discoloration, cracking, crazing, blistering, or dimensional change and not less than 80 percent of the specified wet and dry minimum brightness values when exposed to above conditions.

d. If material will come into contact with gasoline, provide 3M brand Clear Coat 3920 applied to material according to manufacturer's directions.

4. Overlay film shall be 3M Series 1178 black Electronic Cuttable (EC) as manufactured by the Minnesota Mining and Manufacturing Company (3M).

   a. Overlay film to be reverse cut to create graphics.

   b. The pigmented material shall be sufficiently opaque when applied to completely hide a contrasting black printed legend on a white surface.

   c. Follow manufacturer's directions for proper preparation and application of all vinyl films. Properly processed and applied material shall withstand10 years vertical, south facing, unprotected, exterior exposure at the work site with no appreciable deterioration such as cracking, checking, blistering, delamination, or loss of adhesion. The material will show no appreciable discoloration after cleaning.

   d. If material will come into contact with gasoline, provide 3M brand Gasoline Resistant Clear Coat 3980. Apply to material according to manufacturer's directions to complete installation.

5. Non-reflective vinyl film shall be "Scotchcal" brand as manufactured by the Minnesota Mining and Manufacturing Company (3M).

   a. Thickness shall be 0.003 inch minimum and 0.006 inch maximum, or as specified.

   b. The pigmented material shall be sufficiently opaque when applied to completely hide a contrasting black printed legend on a white surface.

   c. Properly processed and applied material shall withstand 5 years vertical, south facing, unprotected, exterior exposure at the work site with no appreciable deterioration such as cracking, checking, blistering, delamination, or loss of adhesion. The material will show no appreciable discoloration after cleaning.

   d. If material will come into contact with gasoline, provide "Scotchcal" brand Gasoline Resistant Clear Coat 3980. Apply to material according to manufacturer's directions to complete installation.

6. Shrinkage shall not exceed 1/64 inch (0.4mm) in any direction.

7. Screen inks shall be "Scotchcal" brand opaque screen printing inks Series 3900.

8. Press ink shall be "Scotchcal" brand letterpress inks Series 850.

9. For durability of screen and press inks on vinyl film in exterior application a clear coat shall be added. This clear coat shall be "Scotchcal" brand Clear Coat No. 3920 glass or "Scotchcal" brand gasoline resistant clear coat No. 3980 where emblems or legend are subject to contact with gasoline.

10. Graphics shall be cut in such a manner that edges and corners are true, clear and photographically precise. Graphics with rounded positive or negative corners, cut or ragged edges or edge build-up will not be accepted.

B. Printed Sign Message Panels: Printing of all sign message panels shall be provided by a professional printer utilizing a high-quality printer and inks capable of reproducing the specified colors of the project requirements. The printing products and process used must be calibrated as required and capable of consistently reproducing

matching printed output, color density, saturation and accurate graphic quality. All printed signage components shall have an even visual appearance of all colors when both illuminated and not illuminated. No visible inconsistencies will be acceptable, and if needed sign panels shall include a protective overcoat that does not impact the color quality or appearance to deliver acceptable finished and installed panels. Sign message panels may require a double strike of printing ink in order to achieve the desired color saturation; provide as needed.

PART 3 - EXECUTION

3.1 SITE VISITS AND MEETINGS

A. Site Visits: The Contractor shall conduct site visits as required during all stages of the project. The Contractor is reminded that all personnel must coordinate all site visits with the Owner, General Contractor and/or Project Team. Contractor shall verify with the Owner any requirements for on-site visits, security access and escorts, and obtain any necessary badges, passes or safety training required in advance. Request clarifications and specific instructions from the PT as needed. Contractor shall always obtain a camera pass or other permission/authorization required before taking any pictures on site.

B. Pre-Construction Meetings: The Contractor shall meet with representatives from the PT at the beginning of a project to establish procedures for communication and coordination with PT.

C. Pre-Installation Meetings on Site: The Contractor shall conduct meetings and walk-throughs at the project site with the sign installers and PT as required to identify any unanticipated site conditions and confirm the status of the construction.

D. Contractor Orientation and Safety Training: All workers on site shall complete contractor orientation and safety training as required prior to beginning on-site work. Contractor badges for on-site workers will be required at all times. The Contractor shall include the time needed to comply with these requirements as part of their base bid.

E. Special Considerations: The Contractor is reminded that all personnel conducting on-site visits or work shall be required to comply with all facility or governmental rules and requirements.

3.2 PROJECT CONDITIONS AND COORDINATION

A. Field Conditions: The Contractor shall inspect the existing field conditions and incorporate all necessary information on the shop drawings.

1. Examine substrates, areas, and conditions, with the Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
2. Examine supporting members to ensure that surfaces are at elevations indicated or required to comply with authorities having jurisdiction and are free from dirt and other deleterious matter.

B. Field Measurements: Verify existing conditions and locations of all signs, anchorage devices and electrical service embedded in permanent construction by other installers. Verify all sign location conditions by field measurements prior to fabrication of signs and notify the Architect/Engineer of all conditions affecting fabrication or installation of signs. Indicate all measurements on shop drawings. Verify the sizes and other details of any existing foundations or other signage components specified to be re-used.

C. Coordination: The Contractor shall coordinate on-site work, access to site, and final sign placement with the Project Team for each installation.

1. All foundations and structural supports for signs shall be provided by the Contractor, unless otherwise indicated.

2. Where additional structural supports for signage or modifications to existing conditions surrounding building elements are required, it shall be provided by the Contractor in close coordination with the Project Team unless otherwise specified.
3. Coordinate placement of anchorage devices with templates for installing signs.

3.3 CONTRACTOR RESPONSIBILITIES

A. The Contractor shall be responsible for all work done under his or her contract, including but not limited to:
1. Faulty or improper work of subcontractor(s) and others under him/her by contract or otherwise;
2. Diligent execution of work and providing personal supervision to same until completed;
3. All delays caused by neglect on the Contractor's part or of those under him/her by contract or otherwise;
4. Compliance with all laws, ordinances and regulations bearing on the conduct of the work as drawn and specified.
5. Obtaining, at his/her own cost, inspection certificates which may be required of the project by local authorities, or any other governing body. The Contractor shall procure and pay for all permits, licenses and approvals necessary for the execution of the work.

3.4 FABRICATION

A. General: Shop fabrication and tolerances shall conform to the standards of the industry. All items shall be shop fabricated so far as practicable:
1. Signs shall have smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles. Edges and corners of finished letterforms and graphics shall be true and clean.
2. Mill joints to tight, hairline fit. Form joints exposed to weather to exclude water penetration. Accurately machine, file, fit and rigidly frame together sign joints, corners, miters, etc., at joint and contact points.
3. Attach materials with sufficient strength, number and spacing not to fail until materials joined are broken or permanently deformed.
4. Preassemble signs in the shop to greatest extent possible. Disassemble signs only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation, in location not exposed to view after final assembly.
5. Fabricate all work to be truly straight, plumb, level and square and to sizes, shapes and profiles indicated on the approved shop drawings.
6. Conceal fasteners if possible; otherwise, locate fasteners where they will be inconspicuous. All exposed mechanical fasteners to be pre-painted and/or finished to match adjacent finish of sign color or sign component, with field touch-up paint to match.
7. Isolate dissimilar metals.
8. Fabricate to profile indicated using structural angles, channels, plates, and similar shapes as required. Provide welded construction using mitered joints. Cut, drill, and tap units to receive hardware, bolts, and similar items.

B. Workmanship: Form materials to shapes with straight lines, sharp angles and smooth curves, and hairline joints. Close forming, cutting and joining will be necessary.
1. Secure members, components and elements by mechanical fasteners of proper size and spacing as detailed, or otherwise required to rigidly hold members in place without distortion or deflection.
2. Perform welding of the correct type to prevent distortions of flat surfaces and insure a sufficiently strong and safe installation. Isolate dissimilar metals.
3. Provide finished signs with properly aligned clean cut and sharp messages and borders. Fabricated signs must be free of wrinkles, bubbles, foreign matter, scratches, free of patches, or other visually identifiable defects. Ensure that finished background panels are essentially a plane surface.

4. Signs shall be provided and installed complete with lettering, framing as detailed and all related components for a complete installation.
5. Provide complete letter and sign fabrication systems including stiffeners, fasteners, welding, sealants, jointing, miscellaneous pieces, and material thickness required to provide high quality workmanship.
6. Provide members, fasteners, and supports of size, reinforced, and detailed as required to meet design/performance criteria.

C. Text and Graphics: All text and graphics must be reproduced accurately and free from distortion. Round positive or negative corners, nicked or ragged edges are not acceptable.
1. Arrows and symbols shall be reproduced exactly by photographic process and be submitted for approval prior to fabrication.
2. All applied letterforms shall be of the computer-generated type, free of any distortion. Hand cut letterforms are subject to rejection.
3. The Contractor is responsible for submitting and receiving approvals for any message layouts which must be altered from specifications because of size constraints.

D. Application of Retroreflective Sheeting: Apply retroreflective sheeting to the base panels with mechanical equipment in a manner specified for the manufacture of traffic control signs by the sheeting manufacturer.
1. For sheeting that has been identified as rotationally sensitive, apply white sheeting for cut-out legends, symbols, borders and route marker attachments within the parent sign face at the optimum rotation angle according to the identification markings. Apply all background sheeting at a uniform rotational angle.
2. The retroreflective sheeting for each sign will be from the same roll or lot number.
3. Apply consecutively alternate successive width sections of either sheeting or panels to ensure that corresponding edges of sheeting lie adjacent on the finished sign. If the sign cannot be constructed from retroreflective sheeting from the same roll or lot number, the fabricator may color match from a different lot; the color between the rolls cannot exceed three ΔE's using test method ASTM D 2244. The Engineer will not accept nonconformance that may result in non-uniform shading and an undesirable contrast between adjacent widths of applied sheeting or non-optimum retro reflectivity in the finished sign and installation.
4. Sheeting is to be trimmed at 45 degree angle from the edge of each panel.
5. Finish signs by sealing sheeting splices and sign edges according to sign manufacturer recommendations.

E. Support Steel:
1. Fabrication shall comply with requirements of the AISC specifications, unless otherwise specified.
2. Provide all connections necessary for complete erection. Unless otherwise indicated, shop connections shall be welded.
3. Welding shall be in accordance with the approved welding procedures and AWS Structural Welding Code.
4. Furnish loose leveling plates for column erection.
5. Furnish anchor bolts as indicated to be embedded in concrete, including nuts, lock washers and washers. Detail anchor bolts such that the projection above the nut after column is in place is equal to the diameter of the anchor bolt.
6. Notify Contractors for other trades so that holes in structural steel can be provided for attachment of their work where required. Provide necessary holes if information is received prior to fabrication.
7. Unless otherwise shown, holes for attachment of wood blocking shall be 1/2 inch diameter at 34 inch spacing.

F. Base Plates: Provide ground mount pylon signs and post and panel signs with integral base consisting of structural channels, angles, plates, or other fittings of sizes recommended by manufacturer. Provide pre-drill slotted holes in members as required for anchor bolt connection.

G. Painting:
   1. In general, paint application shall be by airless spray.
   2. Apply paint only when the relative humidity is below 85 percent and ambient temperature is above 55 degrees Fahrenheit.
   3. Paint shall not be applied until the preceding coat has dried.
   4. Clean and prepare surfaces according to the manufacturer's printed instructions.
   5. Primer all surfaces according to the paint manufactures specifications.
   6. Ferrous Metals:
      a. Prepare surface by removing loose mill scale, rust, accessible slag or flux deposit, dirt or any foreign matter by power brushing. Remove oil and grease deposits by solvent.
      b. After cleaning, give surface 1 shop coat of prime paint. Apply thoroughly and evenly to a dry surface. Surfaces inaccessible after assembly or erection shall be given an additional shop coat of a different color then the first coat. Each coat shall have a minimum dry film thickness of 2.5 mils.
   7. Aluminum shall be pre-treated as recommended by the paint manufacturer, including:
      a. Degreasing process and rinse.
      b. Chemical etching process and rinse.
      c. Deoxidizing process and rinse.
      d. Chromate process ASTM B499, rinse and dry.
      e. Prime surfaces with manufacturer's recommended primer.
      f. Apply paint at the rate of 2.5 mils per coat by air or airless spray, brush or roller. Coating shall be even and free from any marks or streaks.
   8. Before application of the finish paint, touch up all chipped or abraded areas within boundaries of graphic painting. Touch up paint shall be of same formulation and color as original paint.
   9. Coatings applied by the approved method shall be thinned only to provide the required workability. Apply coats uniformly, free from runs and brush marks or streaking.
   10. Comply with manufacturer's written instructions for cleaning, conversion coating, and application.

H. Welded Connections: Comply with AWS standards for recommended practices in shop welding. Provide welds behind finished surfaces without distortion or discoloration of exposed side. Clean exposed welded surfaces of welding flux and dress exposed and contact surfaces.

3.5 DELIVERY AND HANDLING

A. Delivery: Provide protective covering or crating as recommended by the manufacturer to protect sign components and surfaces against damage during transportation and delivery.

B. Inspection: Inspect sign components for damage upon delivery and notify PT of any damage. Do not install damaged sign components. Repair minor damage to signs, provided the finished repair is equal in all respects to the original work and is acceptable to the Owner; otherwise remove and replace damaged sign components.

C. Coordination: Coordinate setting drawings, diagrams, templates, instructions and directions for the installation of items having integral anchors which are to be embedded in concrete or masonry construction with the PT. Coordinate delivery of such items to applicable trades for installation. Coordinate time of delivery with the PT so that signs can be installed within a timely manner once delivered to the project site.

D. Handling: Handle signs carefully to prevent breakage, surface abrasion, denting, soiling, and other defects. Comply with the manufacturer s handling instructions for unloading components subject to damage.

3.6 EXAMINATION

A. Examine substrates, areas, and conditions, with installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work. Confirm that substrate finishes have been completed and cured sufficiently to receive sign materials. Confirm that substrates to receive signs are clean, free of deleterious substances that would detract from the neat appearance of high quality sign work, or that would interfere with the durable installation of sign work.

B. Verify that concealed elements for support and anchorage for signs, including anchor inserts, are correctly located.

C. Identify electrical power locations provided by others prior to beginning installation. Verify that electrical service provided under other sections of Work is correctly sized and located to accommodate signs.

D. Verify that substrates to receive signs are clean, free of deleterious substances that would detract from the neat appearance of high quality sign work, or that would interfere with the durable installation of sign work. Confirm that substrate finishes have been completed and cured sufficiently to receive sign materials.

3.7 REMOVAL OF EXISTING SIGNS

A. General: The Contractor shall remove any existing signs that may be required in order to install new signs.
   1. Repair any visible damage to wall surfaces not covered by the replacement signs.
   2. Re-use of existing anchors or supports shall be the sole liability of the Contractor. Provide new anchors and supports as required.

B. Disposal of Existing Signs: The Contractor shall dispose of all existing signs. All costs for signage removal and disposal shall be included in the Contractor’s bid price.

C. Refer to Specification Section 02 4419 Selective Demolition for additional direction and requirements for sign removal.

3.8 INSTALLATION

A. General: Field verify existing conditions prior to beginning installation activities. Notify the Project Team immediately to resolve potential conflicts or non-typical conditions.
   1. Locate signs and accessories where indicated, using mounting methods of types described and in compliance with manufacturer's written instructions.
   2. Lay out and install the work sign units level, plumb and at height and margins indicated, with sign surfaces free from distortion or other defects of appearance.
   3. Install signs level, plumb, and at heights indicated, with sign surfaces free from distortion and other defects in appearance.
   4. The installation of fixed material shall be under the general direction of the Architect/Engineer in accordance with applicable specifications and layout drawings.
   5. Patch existing surfaces damaged by installation.

B. Signs shall be installed in sequence as noted in the installation sequence plan. The Contractor shall notify the PT in advance whenever installation of signs will result in the display of incorrect or misleading information due to installation sequence or changes in project physical conditions.

C. Proceed with installation only after unsatisfactory conditions have been corrected. Do not proceed with installation of sign work until unacceptable conditions, such as unpainted walls, door and other similar issues have been corrected and substrates are ready to receive sign work.

D. The Contractor must coordinate on-site work, access to site, and final sign placement with the PT for each installation. Where structural supports for signage, or modifications to existing conditions surrounding building elements are required, it shall be provided by the Contractor.

E. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit installation of signs in exterior locations. All site work to be performed according to manufacturers' written instructions and warranty requirements.

F. Anchors and Inserts: Furnish inserts and anchoring devices which must be set in concrete or built into masonry for installation of this work. Provide setting drawings, templates, instructions and directions for installation of anchorage devices. Provide toothed steel or lead shield expansion bolt devices for drilled-in-place anchors and inserts for exterior installation. Provide units with exposed surfaces matching the texture and finish of metal item anchored. NOTE: All exterior mounting hardware shall be non-corrosive.

G. Erection: All surfaces shall be covered with protective cover non-deleterious to finish for protection until final installation or erection. Complete all connections in proper alignment and tighten bolts securely. Leveling is to be done only by instruments; measuring equal distances from existing building surfaces will not be acceptable as a basis of level and/or plumb. After erection, all surfaces marred during erection and exposed bolts, bolt heads, etc., shall be retouched with the same paint used previously.

1. Stake all sign locations for approval by the Owner, Architect/Engineer and local authorities prior to beginning any installation activities to ensure the exact location of each sign element is approved.
2. The Contractor is responsible for verification of all existing utilities and confirm all planned excavation and digging required is permitted.

H. Packaging and Labeling: Label the back of all signs with the date of fabrication, sign sheeting system manufacturer, Type, and the fabricator’s initials.

1. Make the labels unobtrusive, but legible enough to be easily read by an observer on the ground when the sign is in its final position.
2. Apply the label in a manner that is at least as durable as the sign face.
3. Properly package signs to protect them during storage, shipment and handling to prevent damage to the sign face and panel.
4. Mechanical Fasteners: Use non-removable mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended in writing by sign manufacturer.

I. Wall-Mounted Signs: Comply with sign manufacturer's written instructions except where more stringent requirements apply.

1. Standard Installation: Utilize two-faced adhesive tape and clear silicone adhesive to install wall mounted signs unless their size or weigh requires the use of mechanical fasteners. Do not use this method for vinyl-covered or rough surfaces.
2. Shim Plate Mounting: If required, provide concealed aluminum shim plates with predrilled and countersunk holes, at locations indicated, and where other mounting methods are not practicable. Attach plate with fasteners and anchors suitable for secure attachment to substrate. Attach panel signs to plate using method specified above.
3. Mechanical Fasteners: Use non-removable mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended in writing by sign manufacturer.

J. Ground-Mounted Signs: Provide ground mount pylon signs and post and panel signs with integral base consisting of structural channels, angles, plates, or other fittings of sizes recommended by manufacturer. Provide pre-drill slotted holes in members as required for anchor bolt connection.

K. Bracket-Mounted Signs: Provide manufacturer's standard brackets, fittings, and hardware for mounting signs that project at right angles from walls and ceilings. Attach brackets and fittings securely to walls and ceilings with concealed fasteners and anchoring devices to comply with manufacturer's written instructions.

L. Dimensional Characters: Mount characters using standard fastening methods to comply with manufacturer's written instructions for character form, type of mounting, wall construction, and condition of exposure indicated. Provide heavy paper template to establish character spacing and to locate holes for fasteners. Characters shall be shaded as a solid for easy legibility of Owner approval prior to installation.

1. Projected Mounting: Mount characters at projection distance from wall surface as indicated on the drawings.

M. Special Instructions: Halt all work when notified of a proposed change, or if unsatisfactory results are anticipated. Notify the PT immediately and proceed only after receiving additional instructions from the Architect/Engineer. Do not proceed with installation of sign work until unacceptable conditions have been corrected and substrates are ready to receive sign work.

N. Building Penetrations: Coordinate placement of anchorage devices with templates for installing signs. Seal all building penetrations as required by Architect/Engineer.

3.9 CLEANING AND PROTECTION

A. Cleaning of Signs: After installation, clean soiled sign surfaces according to manufacturer’s written instructions.

1. Clean rods, fittings, and accessories thoroughly using synthetic scotch type pads and hot soapy water (or denatured alcohol or acetone) to remove residual coatings; rinse thoroughly with clear water and wipe dry.

B. Cleaning of Premises: The Contractor shall use special care in the disposition of excess materials and rubbish.

1. Rubbish shall not be allowed to accumulate but shall be consistently collected and removed at the completion of this work, on a daily basis.
2. Storage for paint materials, preparation and mixing, shall be in well-lit and ventilated central location but shall not be allowed on finished or carpeted flooring.
3. Adequate safeguards shall be provided against fire by placing oils, rags and waste in self-closing metal receptacles and shall be removed from the work and storage area at the end of each work shift. Under no circumstances will they be allowed to accumulate.

C. Protective Coverings: Provide protective coverings, barriers, devices, and other procedures to protect finished work. If, despite such protection, finished work becomes damaged, engage other trades as needed to restore damaged work so no evidence remains of correction work.

1. Ample protection by means of drop cloths or layers of paper must be provided for existing apparatus or parts of the building.
2. Restore protective coverings which have been damaged during shipment or installation of the work. Remove protection when requested for inspection of finishes and replace. Retain protective coverings intact and remove simultaneously from similar finished items to preclude non-uniform oxidation and discoloration.
3. Remove protective coverings only when there is no possibility of damage from other work yet to be performed at the same location.
4. Protect signs from damage until acceptance by the Owner.

D. Repairs: Return items that cannot be refinished in the field to the shop, make required repairs and refinish entire unit, or provide new units as required.

3.10 CLOSEOUT SUBMITTALS

A. As Built Drawings: The Contractor shall submit “as built” drawings in digital PDF format.

B. Maintenance Manuals and Instructions: Include written instructions for removal of signs attached to wall surfaces including recommended methods for removal of residual adhesives. Prior to final acceptance date, submit digital PDF files of operating and maintenance manuals with operating and maintenance instructions, parts listing, recommended parts inventory listing, purchase source listing, diagnostic and repair information available to manufacturer’s and installer’s maintenance personnel, emergency instructions and similar information organized behind labeled tabs.

C. Product Certifications: Certify in writing that all products and materials for which data information was submitted and approved was utilized throughout contract as specified on the approved submittals and shop drawings.

D. Warranty: Provide a manufacturer's standard form in which manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

E. Wiring Diagrams: The Contractor shall provide as-built wiring diagrams from the manufacturer for all illuminated signs and EVIDS components.

END OF SECTION

ISSUED	DATE
Bid Documents	10/7/2021

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SECTION 26 0010
BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 GENERAL

A. Basic Requirements: The Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

B. General Provisions: Provide all labor, materials, equipment, and incidentals required to make ready for use complete electrical systems as specified herein and shown on the drawings.

C. Provide and Install: The word "provide" where used on the Drawings or in the Specifications shall mean "furnish, install, mount, connect, test, complete, and make ready for operation". The word "install" where used on the Drawings or in the Specifications shall mean "mount, connect, test, complete, and make ready for operation". Perform work required by, and in accordance with, the Contract Documents.

D. Installation: Provide and place in satisfactory condition, ready for proper operation, raceways, wires, cables, and other material needed for all complete electrical systems required by the Contract Documents. Additional raceways and wiring shall be provided to complete the installation of the specific equipment provided. Include auxiliaries and accessories for complete and properly operating systems. Provide electrical systems and accessories to comply with the NEC, state and local codes and ordinances. It is the intent of these Specifications that the electrical systems be suitable in every way for the use intended. Material and work which is incidental to the work of this Contract shall be provided at no additional cost to the Contract.

E. Field Connections: Provide field connections to remote equipment and control panels provided under other Divisions of these Specifications. Provide raceway, wire, and interconnections between equipment, transmitters, local indicators, and receivers. Provide 120V and low voltage surge protection equipment in accordance with Section 26 43 13 at equipment as required. Install field connections to "packaged" equipment provided under other Divisions of these Specifications.

1.2 SCOPE OF WORK

A. General: Provide labor, materials, permits, inspections and re-inspection fees, tools, equipment, transportation, insurance, temporary protection, temporary power and lighting, supervision and incidental items essential for proper installation and operation of the Electrical systems indicated in the Contract Documents. Provide materials not specifically mentioned or indicated but which are usually provided or are essential for proper installation and operation of the Electrical systems indicated in the contract documents.

B. Notices: Give notices, file Plans, pay fees, and obtain permits and approvals from authorities having jurisdiction. Include all fees in the Bid Price.

1.3 INTERPRETATION OF DRAWINGS

A. General: The Drawings are diagrammatic and are not intended to show exact locations of Raceway runs, outlet boxes, junction boxes, pull boxes, etc. The locations of equipment, appliances, fixtures, Raceways, outlets, boxes and similar devices shown on the Drawings are approximate only. Exact locations shall be determined and coordinated in the field. The right is reserved to change, without additional cost, the location of any outlet within the same room or general area before it is permanently installed. Obtain all information relevant to the placing of electrical work and in case of interference with other work, proceed as directed by the Engineer.

B. Discrepancies: Notify the Architect of any discrepancies found during construction of the project. The Engineer will provide written instructions as to how to proceed with that portion of work. If a conflict exists between the Contract Documents and an applicable code or standard, the most stringent requirement shall apply.

C. Wiring: Each three-phase circuit shall be run in a separate Raceway unless otherwise shown on the Drawings. Unless otherwise accepted by the Engineer, Raceway shall not be installed exposed. Where circuits are shown as "home-runs" all necessary fittings, supports, and boxes shall be provided for a complete raceway installation.

D. Layout: Circuit layouts are not intended to show the number of fittings, or other installation details. Connections to equipment shall be made as required, and in accordance with the accepted shop and manufacturer's setting drawings.

E. Coordination: Coordinate final equipment locations with drawings or other disciplines. Layout before installation so that all trades may install equipment in available space. Provide coordination as required for installation in a neat and workmanlike manner.

1.4 EQUIPMENT SIZE AND HANDLING

A. Coordination: Investigate each space in the structure through which equipment must pass to reach its final location. If necessary, ship the equipment in sections of specific sizes to permit the passing through the necessary areas within the structure.

B. Handling: Equipment shall be kept upright at all times. When equipment has to be tilted for ease of passage through restricted areas during transportation, the manufacturer shall be required to brace the equipment suitably, to insure that the tilting does not impair the functional integrity of the equipment.

1.5 RECORD DRAWINGS

A. Production: The Architect shall provide one set of redlined drawing to maintain and submit record "As-Built Documents". Label each sheet of the Record Document set with “Project Record Documents” with company name of the installing Architect in stamped or printed letters. One set shall be maintained at the site and at all times be accurate, clear, and complete. These drawings shall be available at all times to the Architect's field representatives.

B. Recording: Record information concurrent with construction progress. Make entries within 24 hours upon receipt of information. The "As-Built" drawings shall accurately reflect installed electrical work specified or shown on the Contract Documents.

C. Completion: At the completion of the Work, make copy of second set and submit to the Engineer. The "As-Built" drawings shall be made available to the Engineer to make the substantial completion punch list.

D. Final: Upon Architect’s completion of the Engineer’s final punch list, transfer all “As-Built” conditions and all requirements by the Engineer per requirements in 013500 and 017000

1.6 ABBREVIATIONS

A. Abbreviations: The following abbreviations or initials may be used:
A/C ..... Air Conditioning
AC ..... Alternating Current
ABV CLG..... Above Ceiling
ADA..... Americans with Disabilities Act
AF..... Ampere Frame
AFF ..... Above Finished Floor
AFG..... Above Finished Grade
AHU..... Air Handler Unit
AIC ..... Amps Interrupting Capacity

AL..... Aluminum
AMP ..... Ampere
ANSI..... American National Standards Institute
ASA..... American Standards Association
AT..... Ampere Trip
ATS ..... Automatic Transfer Switch
AUX..... Auxiliary
AWG..... American Wire Gauge
BC ..... Bare Copper
BIL..... Basic Impulse Level
BMS ..... Building Management System
BRKR or BKR..... Breaker
CAB..... Cabinet
C..... Conduit or Raceway
CB ..... Circuit Breaker
CBM ..... Certified Ballast Manufacturers
CCTV ..... Closed Circuit Television
CKT ..... Circuit
CLEC..... Clock Equipment Cabinet
CLG..... Ceiling
CO..... Conduit or Raceway Only
COAX ..... Coaxial Cable
COND..... Conductor
CONN..... Connection
CPU..... Central Processing Unit
CRT..... Cathode Ray Terminal (Video display terminal)
CT ..... Current Transformer
CU..... Copper
CW ..... Cold Water
DC..... Direct Current
DDC ..... Direct Digital Control
DEG ..... Degree
DISC..... Disconnect
DO..... Draw Out
DN..... Down
DPST..... Double Pole Single Throw
EMT..... Electrical Metallic Tubing
EO..... Electrically Operated
EOL..... End of Line Resistor
EWC..... Electric Water Cooler
FAAP..... Fire Alarm Annunciator Panel
FACP..... Fire Alarm Control Panel
FCU..... Fan Coil Unit
FLA..... Full Load Amperes
FM..... Factory Mutual
GF ..... Ground Fault
GFCI..... Ground Fault Circuits Interrupter
GND ..... Ground
HOA ..... Hand-Off-Automatic
HORIZ..... Horizontal
HP ..... Horsepower
IC..... Intercom
ICU..... Intensive Care Unit
IEEE..... Institute of Electrical and Electronic Engineers
IES ..... Illuminating Engineering Society
IMC..... Intermediate Metallic Raceway
IN..... Inches
IT..... Instantaneous Trip
IPCEA ..... Insulated Power Cable Engineers Association
JB..... Junction Box

KCMIL ..... Thousand Circular Mills
KV ..... Kilovolt
KVA ..... Kilo-Volt-Amps
KW ..... Kilowatts
LBS ..... Pounds
LED ..... Light Emitting Diode
LT ..... Light
LTD ..... Long Time Delay
LTT ..... Long Time Trip
LTG ..... Lighting
MAX ..... Maximum
MCB ..... Main Circuit Breaker
MCC ..... Motor Control Center
MCP ..... Motor Circuit Protector
MIC ..... Microphone
MIN ..... Minimum
MLO ..... Main Lugs Only
MTD ..... Mounted
MTG ..... Mounting
MUX ..... Multiplex (Transponder) Panel
MVA ..... Mega Volt Amps
N ..... Neutral
NC ..... Normally Closed
NEC ..... National Electrical Code
NECA ..... National Electrical Architects Association
NEMA ..... National Electrical Manufacturers Association
NFPA ..... National Fire Protection Association
NIC ..... Not in Contract
NF ..... Non Fused
NL ..... Non Linear
NO ..... Number or Normally Open
..... Number
Ø ..... Phase
OL ..... Overload
OSHA ..... Occupational Safety and Health Administration
P ..... Pole
PB ..... Pullbox
PIV ..... Post Indicator Valve
PNL ..... Panel
PR ..... Pair
PWR ..... Power
PF ..... Power Factor
PRI ..... Primary
PT ..... Potential Transformer
PVC ..... Polyvinylchloride
REF ..... Refrigerator
RGC or GRC ..... Rigid Galvanized Raceway
RMS ..... Root-Mean-Square
RPM ..... Revolutions Per Minute
RECPT ..... Receptacle
SCA ..... Short Circuit Amps
SD ..... Smoke Detector
SEC ..... Secondary
S/N ..... Solid Neutral
SPKR ..... Speaker
SPST ..... Single Pole Single Throw
SST ..... Solid State Trip
ST ..... Short Time Trip
STD ..... Short Time Delay
SW ..... Switch

SWGR ..... Switchgear
SWBD ..... Switchboard
TEL..... Telephone
TTB ..... Telephone Terminal Board
TTC ..... Telephone Terminal Cabinet
TVEC..... Television Equipment Cabinet
TYP ..... Typical
UL..... Underwriters Laboratories
UON ..... Unless Otherwise Noted
V..... Volt
VFD..... Variable Frequency Drive
VSD..... Variable Speed Drive
W..... Wire
WP ..... Weatherproof
XFMR ..... Transformer

1.7 CODES, FEES, AND STANDARDS

A. Application: The codes, standards and practices listed herein generally apply to the entire project and specification sections. Other codes, standards or practices that are more specific will be referenced within a particular specification.

B. Requirements: All materials and types of construction covered in the specifications will be required to meet or exceed applicable standards of manufacturer, testing, performance, and installation according to the requirements of UL, ANSI, NEMA, IEEE, and NEC referenced documents where indicated and the manufacturer's recommended practices. Requirements indicated on the contract documents that exceed but are not contrary to governing codes shall be followed.

C. Compliance and Certification: The installation shall comply with the governing state and local codes or ordinances. The completed electrical installation shall be inspected and certified by applicable agencies that it is in compliance with codes.

D. Applicability: The codes and standards and practices listed herein, and their respective dates are furnished as the minimum latest requirements.
1. State of Florida
2. Hillsborough County
3. City of Tampa
4. HCAA Design Criteria Manual
5. HCAA tenant work permit general construction standards

E. Utility Company: Comply with latest utility company regulations.

F. State Code: Florida Administrative Code

G. Building Code: Florida Building Code (2020).

H. Standards: American Society of Mechanical Engineers
1. ASME-A17.1 Elevator Code, plus Interpretations to Date.

I. Manuals: Accessibility requirements manual Florida Department of Community Affairs.

J. Labels: Materials and equipment shall be new and free of defects, and shall be U.L. listed, bear the U.L. label or be labeled or listed with an approved, nationally recognized Electrical Testing Agency. Where no labeling or listing service is available or desired for certain types of equipment, test data shall be submitted to validate that equipment meets or exceeds available standards.

K. NFPA: National Fire Protection Association (NFPA) Standards

NFPA-13 ..... Standard for the Installation of Sprinkler Systems
NFPA-20 ..... Standard for the Installation of Stationary Pumps for Fire Protection
NFPA-54 ..... National Fuel Gas Code
NFPA-70 ..... National Electrical Code
NFPA-72 ..... National Fire Alarm Code
NFPA-75 ..... Standard for the Protection of Electronic Computer/Data Processing Equipment
NFPA-90A ..... Standard for the Installation of Air Conditioning and Ventilating Systems
NFPA-101 ..... Life Safety Code
NFPA-110 ..... Emergency and Standby Power Systems
NFPA-780 ..... Installation of Lightning Protection Systems

1.8 INVESTIGATION OF SITE

A. General: Before commencing work, verify existing conditions at the premises and examine adjoining work on which work is in anyway dependent.

B. Responsibility: No waiver of responsibility for defective and inadequate work or additional cost as a result of existing conditions which should have been verified shall be considered unless notice of same has been filed by the Architect and agreed to in writing by the Engineer before the bid date.

C. Site Renovation: Verify and coordinate existing site raceways and pipes at any excavation on site. Provide hand-digging and required rerouting in areas of existing Raceways and pipes within bid price.

D. All existing wiring that is to remain in renovated areas shall be made code compliant.

1.9 SUPERVISION OF THE WORK

A. Supervision: Provide one field superintendent who has had a minimum of four (4) years previous successful experience on projects of comparable sizes, type and complexity. The Superintendent shall be present at all times when work is being performed. At least one member of the Electrical Contracting Firm shall hold a State Master Certificate of Competency.

1.10 COORDINATION

A. General: Compare drawings and specifications with those of other trades and report any discrepancies between them to the Engineer. Obtain from the Engineer written instructions to make the necessary changes in any of the affected work. Work shall be installed in cooperation with other Trades installing interrelated work. Before installation, Trades shall make proper provisions to avoid interferences in a manner approved by the Engineer.

B. Provide all required coordination and supervision where work connects to or is affected by work of others, and comply with all requirements affecting this Division. Work required under other divisions, specifications or drawings to be performed by this Division shall be coordinated with the Architect and such work performed at no additional cost to Owner including but not limited to electrical work required for:

1. Door hardware
2. Roll-up doors
3. Roll-up grilles
4. Signage
5. Fire shutters
6. Elevators
7. Sliding or automatic doors
8. Mechanical Division of the Specifications
9. Landscape Architect drawings
10. Lifts
11. Interior design drawings
12. Fountains
13. Millwork design drawings and shop drawings

C. Obtain set of Contract Documents from Architect for all areas of work noted above and include all electrical work in bid whether included in Division 26 Contract Documents or not.

D. Secure approved shop drawings from all required disciplines and verify final electrical characteristics before roughing power feeds to any equipment. When electrical data on approved shop drawings differs from that shown or called for in Construction Documents, make adjustments to the wiring, disconnects, and branch circuit protection to match that required for the equipment installed.

E. Damage from interference caused by inadequate coordination shall be corrected at no additional cost.

F. Adjustments: Locations of raceway and equipment shall be adjusted to accommodate the work with interferences anticipated and encountered. Determine the exact routing and location of systems prior to fabrication or installation.

G. Priorities: Lines which pitch shall have the right of way over those which do not pitch. For example, plumbing drains shall normally have the right of way. Lines whose elevations cannot be changed shall have the right of way over lines whose elevations can be changed.

H. Modifications: Offsets and changes of direction in raceway systems shall be made to maintain proper headroom and pitch of sloping lines whether or not indicated on the drawings. Provide elbows, boxes, etc., as required to allow offsets and changes to suit job conditions.

I. Replacement: Work shall be installed in a way to permit removal (without damage to other parts) of other system components provided under this Contract requiring periodic replacement or maintenance. Raceway shall be arranged in a manner to clear the openings of swinging overhead access doors as well as ceiling tiles.

J. Layout: The Contract Drawings are diagrammatic only intending to show general runs and locations of raceway and equipment, and not necessarily showing required offsets, details and accessories and equipment to be connected. Work shall be accurately laid out with other Trades to avoid conflicts and to obtain a neat and workmanlike installation, which will afford maximum accessibility for operation, maintenance and headroom.

K. Contract Conflicts: Where discrepancies exist in the Scope of Work as to what Trade provides items such as starters, disconnects, flow switches, etc. such conflicts shall be coordinated between the divisions involved. It is the intent of the Contract Documents that all work shall be provided complete as one bid price.

L. Drawing Conflicts: Where drawing details, plans or specification requirements are in conflict and where sizes of the same item run are shown to be different within the contract documents, the most stringent requirement shall be included in the Contract. Systems and equipment called for in the specification or as shown on the drawings shall be provided as if it was required by both the drawings and specifications. Prior to ordering or installation of any portion of work, which appears to be in conflict, such work shall be brought to Engineer's attention for direction as to what is to be provided.

M. It is the responsibility of this Architect to coordinate the exact required location of floor outlets, floor ducts, floor stub-ups, etc. with Owner's Authorized Representative and Designer (and receive their approval) prior to rough-in. Locations indicated in Contract Documents are only approximate locations.

N. The Contract Documents describe specific sizes of switches, breakers, fuses, Raceways, conductors, motor starters and other items of wiring equipment. These sizes are based on specific items of power consuming equipment (heaters, lights, motors for fans, compressors, pumps, etc.). Coordinate the requirements of each load with each load's respective circuitry shown and with each load's requirements as noted on its nameplate data and manufacturer's published electrical criteria. Adjust circuit breaker, fuse, Raceway, and conductor sizes to meet the actual requirements of the equipment being provided and installed and change from single point to multiple points of connection (or vice versa) to meet equipment requirements. Changes shall be made at no additional cost.

O. Working Clearances: Minimum working clearances about electrical equipment shall be as referenced in the applicable edition NEC Article 110, and shall include equipment installed in ceiling spaces.

1.11 DEMOLITION

A. General: Relocate existing equipment and reroute existing raceways in areas being renovated as required to facilitate the installation of the new systems. The Owner shall require continuous operation of the existing systems, while demolition, relocation work or new tie-ins are performed.

B. Coordination: Prior to any deactivation, relocation or demolition work, arrange a conference with the Engineer and the Owner's representative in the field to inspect each of the items to be deactivated, removed or relocated. Care shall be taken to protect equipment designated as being relocated and reused or equipment remaining in operation and integrated with the new systems.

C. Provisions: Deactivation, relocation, and temporary tie-ins shall be provided by the Architect. Demolition, removal and the legal disposal of demolished materials shall be provided by the Architect.

D. Owner’s Salvage: The Owner reserves the right to inspect the material scheduled for removal and salvage any items he deems usable as spare parts.

E. Phasing: The Architect shall perform work in phases as directed by the Architect to suit the project progress schedule, as well as the completion date of the project.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Specified Method: Where several brand names, make or manufacturers are listed as acceptable each shall be regarded as equally acceptable, based on the design selection but each must meet all specification requirements. Where a manufacturer's model number is listed, this model shall set the standard of quality and performance required. Where no brand name is specified, the source and quality shall be subject to Engineer's review and acceptance. Where manufacturers are listed, one of the listed manufacturers shall be submitted for acceptance. No substitutions are permitted.

B. Certification: When a product is specified to be in accordance with a trade association or government standard requested by the Engineer, Architect shall provide a certificate that the product complies with the referenced standard. Upon request of Engineer, Architect shall submit supporting test data to substantiate compliance.

C. Basis of Bid: Each bidder represents that his bid is based upon the manufacturer's, materials, and equipment described in the Contract Documents.

D. Space Requirements: Equipment or optional equipment shall conform to established space requirements within the project. Equipment which does not meet space requirements, shall be replaced at no additional expense to the Contract. Modifications of related systems shall be made at no additional expense to the Contract. Submit modifications to the Engineer for acceptance.

E. Samples: Samples are to be submitted for items requested within Specification Sections to determine that the item meets specifications and requirements before being accepted for use on Project. Samples shall be submitted within 30 days after the award of the contract. Each sample shall be tagged, labeled, or marked, "Sample of ..... for (Project). Accompany samples with copy, in duplicate of manufacturer's instructions regarding installation, and maintenance.

F. All screws, bolts, washers, and other fasteners used in supporting fixtures, conduit, outlets will be fabricated from rust-resistant metal and will be of a common replacement design type. No rivets or other non-replaceable type fastener will be permitted. The use of tie wire outside of slab work is not acceptable. Gun power set anchors are not permitted.

2.2 SHOP DRAWINGS

A. General: Shop drawings shall be submitted for every item listed within the Submittals section each individual specification section. One copy shall be submitted to the engineer prior to ordering equipment.

B. Responsibility: It is the Architects responsibility to provide material in accordance with the plans and specifications. Material not provided in accordance with the plans and specifications shall be removed and replaced at the Architects expense.

C. Official Record: The shop drawing submittal shall become the official record of the materials to be installed. If materials are installed which do not correspond to the record submittal they shall be removed from the project without any additional cost or delays in construction completion.

D. Information: The shop drawing record submittal shall include the following information to the extent applicable to the particular item;

1. Manufacturer's name and product designation or catalog number.
2. Standards or specifications of ANSI, ASTM, ICEA, IEEE, ISA, NEMA, NFPA, OSHA, UL, or other organizations, including the type, size, or other designation.
3. Dimensioned plan, sections, and elevations showing means for mounting, raceway connections, and grounding, and showing layout of components.
4. Materials and finish specifications, including paints.
5. List of components including manufacturer's names and catalog numbers.
6. Internal wiring diagram indicating connections to components and the terminals for external connections.
7. Manufacturer's instructions and recommendations for installation, operation, and maintenance.
8. Manufacturer's recommended list of spare parts.
9. Provide 1/4” = 1’-0” enlarged electrical room layout drawings for all electrical rooms. All equipment shall be indicated at actual size of equipment being provided. All dimensions and required working clearances shall be shown.

E. Preparation: Prior to submittal, shop drawings shall be checked for accuracy and contract requirements. Shop drawings shall bear the date checked and shall be accompanied by a statement that the shop drawings have been examined for conformity to Specifications and Drawings. This statement shall also list discrepancies with the Specifications and Drawings. Shop drawings not so checked and noted shall be returned to Architect unreviewed.

F. Basis of Review: Approval is only for general conformance with the design concept of the project and general compliance with the information given in the contract documents. Architect is responsible for quantities, dimensions, fabrication processes, and construction techniques.

G. Responsibility: The responsibility that dimensions are confirmed and correlated with proper coordination of other trades shall be included as part of the Contract Documents. The responsibility and the necessity of providing materials and workmanship required by the Specifications and Drawings which may not be indicated on the shop drawings shall be included as part of the Contract Documents. The Architect is responsible for any delays in job progress occurring directly or indirectly from late submissions or re-submissions of shop drawings, product data, or samples.

H. Ordering Equipment: No material shall be ordered or shop work started until the Engineer has officially received the shop drawings record submittal and has formally released the Architect for submittal requirements.

I. Architect's Review: Review the brochures before submitting to the Engineer. No request for payment shall be considered until the brochure has been reviewed, stamped and submitted for review.

J. Title Drawings: Title drawings to include identification of project and names of Architect, Engineer, Architects, and/or supplier, data, number sequentially and indicate in general;

1. Fabrication and Erection dimensions.

2. Arrangements and sectional views.
3. Necessary details, including complete information for making connections with other work.
4. Kinds of materials and finishes.
5. Descriptive names of equipment.
6. Modifications and options to standard equipment required by the contract.
7. Leave blank area, size approximately 4 by 2-1/2 inches, near title block (for Engineer's stamp imprint).
8. In order to facilitate review of shop drawings, they shall be noted, indicating by cross-reference the contract drawings, notes, and specification paragraph numbers where items occur in the contract documents.
9. See specific sections of specifications for further requirements.

K. Technical Data: Submit technical data verifying that the item submitted complies with the requirements of the specifications. Technical data shall include manufacturer's name and model number, dimensions, weights, electrical characteristics, and clearances required. Indicate optional equipment and changes from the standard item as called for in the specifications. Provide drawings, or diagrams, dimensioned and in correct scale, covering equipment, showing arrangement of components and overall coordination.

L. Same Manufacturer: In general, relays, contactors, starters, motor control centers, switchboards, panelboards, dry type transformers, disconnect switches, circuit breakers, manual motor starter switches, etc., shall be supplied and manufactured by the same manufacturer. This requirement shall apply to same type of electrical components specified in other Divisions. Panelboards, switchboards, breakers, etc will match the existing building standard equipment.

2.3 EQUIPMENT, MATERIALS, AND SUPPORTS

A. General: Each item of equipment or material shall be manufactured by a company regularly engaged in the manufacturer of the type and size of equipment, shall be suitable for the environment in which it is to be installed, shall be approved for its purpose, environment, and application, and shall bear the UL label.

B. Installation Requirements: Each item of equipment or material shall be installed in accordance with instructions and recommendations of the manufacturer, however, the methods shall not be less stringent than specified herein.

C. Required Accessories: Provide all devices and materials, such as expansion bolts, foundation bolts, screws, channels, angles, and other attaching means, required to fasten enclosures, raceways, and other electrical equipment and materials to be mounted on structures which are existing or new.

D. Protection: Electrical equipment shall at all times during construction be adequately protected against mechanical injury or damage by the elements. Equipment shall be stored in dry permanent shelters. If apparatus has been damaged, such damage shall be repaired at no additional cost or time extension to the Contract. If apparatus has been subject to possible injury, it shall be thoroughly cleaned, dried out and put through tests as directed by the Manufacturer and Engineer, or shall be replaced, if directed by the Engineer, at no additional cost to the Contract.

2.4 IDENTIFICATION OF EQUIPMENT

A. General: Electrical items shall be identified as specified in the Contract Documents. Such identification shall be in addition to the manufacturer's nameplates and shall serve to identify the item's function and the equipment or system, which it serves or controls. Refer to Identification Section of the specifications for additional information.

2.5 CONCRETE PADS

A. General: Provide reinforced concrete pads for floor mounted electrical equipment. Unless otherwise noted, pads shall be nominal four (4) inches high and shall exceed dimensions of equipment being set on them, including future sections, by six (6) inches on all sides, except when equipment is flush against a

wall, then the side or sides against the wall shall be flush with the equipment. Chamfer top edges 1/2". Trowel surfaces smooth. Reinforce pads with #5 reinforcing bars at 24" centers each way, unless specifically detailed on drawings.

2.6 SURFACE MOUNTED EQUIPMENT

A. General: Surface mounted fixtures, outlets, cabinets, panels, etc. shall have a factory-applied finish or shall be painted as accepted by Engineer. Raceways and fittings, where allowed to be installed surface mounted, shall be painted to match the finish on which it was installed. Paint shall be in accordance with other applicable sections of these specifications.

2.7 CUTTING AND PATCHING

A. Core Drilling: The Architect shall be responsible for core drilling as required for work under this section, but in no case shall the Architect cut into or weld onto any structural element of the project without the written approval of the Architect.

B. Cutting and Patching: Cutting, rough patching and finish patching shall be provided as specified in the contract documents. Cutting and patching shall be performed in a neat and workmanlike manner. Upon completion, the patched area shall match adjacent surfaces.

C. Openings and Sleeves: Locate openings required for work performed under this section. Provide sleeves, guards or other accepted methods to allow passage of items installed under this section.

D. Roof Penetration: Provide roofer with pitch pans, fittings, etc., required for electrical items which penetrate the roof. Roof penetrations are to be waterproofed in such a manner that roofing guarantees are fully in force. Roof penetrations shall be coordinated with other Trades to ensure that roof warranty is not invalidated.

2.8 SLEEVES AND FORMS FOR OPENINGS

A. Sleeves: Provide sleeves for Raceways penetrating floors, walls, partitions, etc. Locate necessary slots for electrical work and form before concrete is poured. Watertight sleeves shall be line seal type WS. Fire rated partition sleeves shall be mild steel. Size shall be one standard diameter larger than pipe being installed or of a larger diameter to below 1/4" minimum clearance.

B. Forms: Provide boxed out forms for Raceway penetrations only where allowed by the Architect. Fill opening after Raceway installation, with equivalent material.

2.9 TEMPORARY LIGHT AND POWER

A. Lighting: Temporary light shall be based on one 200-watt lamp covering each 1,000 square foot of floor area in the building. Each room 100 square foot and over shall have a minimum of one 100-watt lamp with guards. Provide power for motors up to 3/4 horsepower only. Provisions are to be made for electric welders, if required.

B. Outlets: Provide outlets located at convenient points so that extension cords of not over fifty (50) feet will reach work requiring artificial light or power.

C. Other Connections: Architects of other trades shall furnish their own cords and sockets, as may be required for their work and shall also pay for cost of temporary wiring of construction offices and shanties used by them.

D. New Fixtures: Permanently installed lighting fixtures may be used for temporary lighting at the Architect's option with the provision that cool white lamps for fluorescent, clear lamps for incandescent and marked temporary for other types shall be installed. At job completion, lamps shall be replaced with permanent lamps specified.

E. Wiring: Temporary electrical work shall be furnished and installed in conformity with the National Electrical Code and in accordance with the requirements of the local ordinances and shall be maintained in a workmanlike manner throughout their entire construction period and shall be removed after installation of the permanent electrical systems. Extension cords shall be GFCI protected or shall be fed from GFCI circuit breakers.

PART 3 - EXECUTION

3.1 WORKMANSHIP

A. General: The installation of materials and equipment shall be performed in a neat, workmanlike and timely manner by an adequate number of craftsmen knowledgeable of the requirements of the Contract Documents. They shall be skilled in the methods and craftsmanship needed to produce a quality level of workmanship. Personnel who install materials and equipment shall be qualified by training and experience to perform their assigned tasks.

B. Acceptable Workmanship: Acceptable workmanship is characterized by first-quality appearance and function, conforming to applicable standards of building system construction, and exhibiting a high degree of quality and proficiency which is judged by the Architect as equivalent as or better than that ordinarily produced by qualified industry tradesmen.

C. Performance: Personnel shall not be used in the performance of the installation of material and equipment that, in the opinion of the Engineer, are deemed to be careless or unqualified to perform the assigned tasks. Material and equipment installations not in compliance with the Contract Documents, or installed with substandard workmanship and not acceptable to the Architect, shall be removed and reinstalled by qualified craftsmen, at no change in the contract price.

3.2 FINAL OBSERVATION

A. General: Work shall be completed, and forms and other information shall be submitted for acceptance one week prior to the request for final observation of the installation.

3.3 SPECIAL CONSIDERATIONS

A. Comply with special requirements imposed at site by Owner. This may include badging of employees, prohibition of smoking, special working hours, or special working conditions.

END OF SECTION

SECTION 26 0519
LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. General: Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work specified of this section.

1.2 WIRES AND CABLES

A. Description: Provide a complete and continuous system of conductors as specified herein. All conductors shall be in accordance with the latest edition of the NEC.

1.3 QUALITY ASSURANCE

A. Qualifications: Manufacturers shall be regularly engaged in the manufacture of wire systems and fittings of types and sizes required, and whose products have been in satisfactory use in similar service for not less than 5 years in the USA.

B. Compliance: Materials shall comply with the following codes and standards, as they apply to the different wire types specified herein.

1. UL:

   a. 44 – Rubber insulated wire and cables.
   b. 83 – Thermoplastic-Insulated Wires and Cables
   c. 486A – 80 - Wire Connectors and Soldering Lugs for Use with Copper Conductors
   d. 486B – Splicing Wire Connections
   e. 493 – Thermoplastic-Insulated Underground Feeder and Branch Circuit Cables

2. NFPA:

   a. 70 NEC

3. Insulated Cable Engineers Association (ICEA)

1.4 SUBMITTALS

A. General: Submit product data on all different types of conductors specified.

PART 2 - PRODUCTS

2.1 GENERAL

A. Conductors: Branch circuit and feeder conductors for electric power shall be copper type. Utilize THHN/THWN insulation for branch circuits and THWN/THHN insulation for feeders, unless specifically noted otherwise. Conductors #10 AWG and smaller shall be solid #8 AWG and larger shall be stranded. No aluminum wiring shall be permitted. All wire shall be sized as shown on the drawings. If no size is shown, wire shall be #12 AWG, except that branch “homeruns” over 50 ft. in length shall be #10 AWG for 120/208V circuits. Wire in vicinity of heat-producing equipment shall be type XHHW insulation. All wiring shall be manufactured in the USA and of 98 percent resistivity. #14 AWG minimum size conductors shall be used for fire alarm system.

B. Taps and Splices: All copper taps and splices in #8 AWG or smaller wire shall be fastened together by means of "wirenut" connectors (Ideal or accepted substitution). All taps and splices in wire larger than #8 AWG shall be made with compression type connectors and taped to provide insulation equal to wire. All taps and splices in manholes or in ground pull box shall be made with compression type connectors and covered with Raychem heavywall cable sleeves (type CTE or WCS) with type "S" sealant cooling. Provide sleeve kits as per manufacturer's installation instructions. All electrical feeders will be run in continuous pieces without joints or splices.

C. Color Coding, General: All power feeders, grounding conductors and branch circuits #6 AWG and smaller shall be installed with color-coded wire with the same color used for a system throughout the building. Conductors above #6 AWG shall either be fully color-coded or shall have black insulation and be similarly color-coded with tape in all junction boxes and panels in accordance with NEC 310-12. Tape shall cover the conductor insulation within the box or panel in such a manner so as to allow standard markings to be readily observed.

D. Colors: Unless otherwise accepted, color-code shall be indicated in the Identification section of the specifications. All switchlegs, other voltage system wiring, control and interlock wiring shall be color-coded other than those listed in the Identification Section of these specifications.

E. Submittals: Submit cut sheet on all major types of wires and cables including splicing tape and terminating/splicing lugs or connectors and cable sleeves.

2.2 MANUFACTURERS

A. General: Branch circuit and feeder conductors shall be as manufactured by one of the following: General Cable Co., Anaconda, Pirelli, Rome Cable Corporation, , or American Insulated Wire Corporation.

2.3 FIREPROOFING OF CABLES IN MANHOLES

A. General: All wire and cables in manholes shall be fireproofed. Strips of fireproofing tape approximately 1/16 inch thick by 3 inches wide shall be wrapped tightly around each cable spirally in one-half lapped wrapping, or in two butt-jointed wrappings with the second wrapping covering the joints in the first. The tape shall be applied with the coated side toward the cable, and shall extend one inch into the ducts. To prevent unraveling, the fireproofing (Arc-proofing) tape shall be random wrapped with tape conforming to type FGT of specification MIL-I-15126. The fireproofing (Arc-proofing) tape shall consist of a flexible, conformable fabric having one side coated with a flame-retardant, flexible, polymeric coating and/or a chlorinated elastomer. The tape shall not be less than 0.050 inch thick, and shall weigh not less than 2.5 pounds per square yard. The tape shall be non-corrosive to cable sheath, shall be self-extinguishing and shall not support combustion. The tape shall have a tensile strength of not less than40 pounds per inch width and when tested under USA Standard L14.184 cut strip method, the tape shall retain 65% of its original tensile strength for the following tests for 168 hours for each requirement;

1. Immersion in distilled water,
2. Immersion of 3% salt water,
3. Exposure to ultra-violet light (30-watt germicidal lamp),
4. Exposure to sunlight (Type S-1 sun lamp) and
5. Exposure to concentrated sewage.

B. Testing: The completed installation of fireproofing shall be capable of withstanding s 200 ampere arc for 30 seconds and shall be determined by tests made of a sample assembly consisting of a 30 inch diameter lead tube fireproofed (Arc-proofed) as specified above. The lead tube shall have a wall thickness of 1/8 inch. The sample assembly shall be exposed to an arc current from 7/8-inch electrodes located one inch from the assembly at three different points. At each point, the arc current of not less than 195 and not more than 210 amperes at 40 volts D.C. shall be blown magnetically against the assembly until the lead tube melts at the arc contact point. For each of the three tests, the fireproofing (Arc-proofing) shall prevent the arc current from melting the lead tube for at least 25 seconds at any one point and for an average of 30 seconds for the three points.

PART 3 - EXECUTION

3.1 EXECUTION

A. General: All wiring shall be installed in raceways (power, low voltage and control wiring), unless otherwise indicated or specified under other Sections of this specification. Al wiring shall be installed per the latest edition of the NEC.

B. Connections: Conductors #10 and #12 AWG shall be connected with pre-insulated spring connectors encased in a steel shell and rated at not less than 105 degrees C. A minimum of 3/8-inch skirt shall cover the bare wires. The connector shall meet with UL approval for fixture and pressure work, and shall be "Scotch Lok" Type Y, R and B electrical spring connectors as manufactured by Ideal or approved equal.

C. Connector Manufacturers: Lugs and wire connectors shall be one of the following: Burndy Corporation, Thomas & Betts, Co., Appleton or ILSCO.

D. Equipment Installations: Neatly form, train and tie the cables in panelboards, cabinets, wireways, switches and equipment assemblies.

END OF SECTION

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SECTION 26 0533
RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. General: Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.2 DESCRIPTION

A. General: Provide all supports, hangers and inserts required to mount raceways, pullboxes and other equipment provided under this Division.

B. Support: All items shall be supported from the structural portion of the building. Supports and hangers shall be of a type approved by Underwriters' Laboratories. Wire shall not be used as a support. Boxes and raceways shall not be supported or fastened to ceiling suspension wires or to ceiling channels. Do not install any devices supported by ceiling tiles.

C. Installation: The Design - Builder shall lay out and provide his work in advance of the laying of floors or walls, and shall provide all sleeve that may be required for openings through floors, walls, etc. Where plans call for raceway to be run exposed, provide all inserts and clamps for the supporting of conduit.

D. Systems: Provide raceway system of empty raceways including terminal cabinets, backboards and outlets as described and specified herein.

E. Conduit: All raceways will be installed as close as possible to the structure and at the highest elevation possible.

1.3 QUALITY ASSURANCE

A. Qualifications: Manufacturers shall be regularly engaged in the manufacture of raceway systems and fittings of types and sizes required, and whose products have been in satisfactory use in similar service for not less than 5 years in the USA.

B. Aluminum Raceways: Aluminum raceways shall not be used unless specifically called for. Install with aluminum fittings only, when specified.

C. Compliance: Materials shall comply with the latest edition of the following standards as they apply to the different raceway types specified herein;

1. ANSI:

   a. ANSI C80.1: Rigid Steel Conduit (RSC)
   b. ANSI C80.3: Electrical Metallic Tubing (EMT)

2. UL:

   a. UL 1: Flexible Metal Conduit
   b. UL 6: Rigid Steel Conduit (RSC)
   c. UL 360: Liquid-Tight Flexible Metal Conduit

UL 514: Fittings for Metal Conduit

   d. UL 651: Nonmetallic Conduit (PVC)
   e. UL 797: Electrical Metallic Tubing (EMT)

f. UL 886: Fittings for Hazardous Locations
g. UL 1242: Intermediate Metal Conduit (IMC)

3. NEMA:

a. NEMA TC2: Rigid Nonmetallic Conduit (PVC)
b. NEMA TC3: Fittings for Rigid Nonmetallic Conduit (RNMC)
c. NEMA TC8: Utility Duct Type EB-35
d. NEMA RN1: Plastic Coated Metal Conduit
e. NEMA VE-1: Ladder Cable Tray
f. NEMA 8A, 8B, 8C, & 12A: Spine Cable Tray

4. Federal Specifications:

a. WW-C-581: Rigid Steel Conduit (RSC)
b. WW-C-563: Electrical Metallic Conduit (EMT)
c. WW-C-566: Flexible Steel Conduit
d. WW-C-581E: Intermediate Metallic Conduit (IMC)
e. WC-1094A: Nonmetallic Rigid Conduit (PVC)
f. WC-582A Conduit, Raceway, Metal and Fittings; surface

5. ASTM:

a. ASTM-F-512: Utility duct type EB-35
b. ASTM-A525 & ASTM-386: Tray manufacturers

1.4 SUBMITTALS

A. Products: Submit manufacturer's product data, including technical information on each type of raceway system;

B. Compliance: Product data shall show compliance with this section of the specifications, including U.L. label, manufacturer and manufacturer's written installation instructions.

1.5 RACEWAYS

A. General: Provide a complete and continuous system of raceways to maintain a protected path for wires and cables to distribute electric power, throughout the project, utilizing U.L. listed, labeled materials, and made in the USA.

B. Accessories: Provide raceway accessories of types, sizes, and materials, as specified herein complying with manufacturers published product information, which match and mate conduit and tubing.

C. Interior Minimum Size: Minimum conduit size for all systems (fire alarm, sound, controls, etc) shall be 3/4 inch raceway minimum. All conduits will be UL listed and labeled. The minimum size conduit for power and lighting systems will be ‘3/4 inch conduit for all circuitry homerun from the panelboard. Conduits branching off of the homerun may be ‘1/2 inch conduit if it contains no more then 4 conductors (excluding the insulated grounding conductor) and phase conductors no larger then no. 12 AWG.

D. Site Underground Raceway: Unless otherwise noted, minimum underground raceways shall be 1 inch conduit. Homeruns from the branch circuit overcurrent device, through any control devices to the first exterior junction box or consumption device shall be 1 inch minimum.

E. System Raceway: Provide end bushings on all conduits.

F. Pull Strings: Provide pull strings in all empty raceways. Pull strings shall be nylon and shall be impervious to moisture. Pull strings installed in one inch and smaller conduits shall have a tensile strength of not less than 30 lbs. Pull strings installed in conduits larger than 1 inch shall a tensile strength not less than 200 lbs.

G. Conduit Bends: The use of NEC Table 344.24 Exception is not allowed.

1.6 LOCATIONS

A. Materials Above Grade: The following conduit types are to be installed above grade where specifically noted herein;

1. Electrical metallic tubing (thin wall)
2. Intermediate metallic conduit
3. Flexible metal conduit
4. Liquid-tight flexible metal conduit
5. Galvanized rigid steel conduit

B. Materials Below Grade: The following conduit types are to be installed below grade where specifically noted herein;

1. Rigid galvanized conduit (heavy wall)
2. Heavy wall schedule 40 PVC

C. Materials on Roofs: The following conduit types are to be installed on roofs where specifically noted herein;

1. Rigid steel conduit (PVC) coated
2. Rigid steel conduit

PART 2 - PRODUCTS

2.1 ELECTRICAL METALLIC TUBING

A. Fittings: Provide steel compression type fittings. Steel fittings shall be fitted with non-removable insulated throats, and male threaded ends provided with a locknut.

B. Locknuts: Provide locknuts for securing conduit to enclosures with sharp edges for digging into metal, and ridged outside circumference for proper fastening.

2.2 BUSHINGS

A. Bushings: Bushings shall be provided on all terminations, mounted on the ends of all EMT connectors 1-1/4 inches and larger and within all equipment.

B. Construction: Bushings shall have a flared bottom and ribbed sides, with smooth insides to prevent damage to cable insulation.

C. Insulating Ring: Mold a phenolic insulating ring into sizes 1-1/4 inches and larger.

D. Grounding: Provide a screw type grounding terminal on all sizes.

2.3 RIGID METAL CONDUIT

A. Conduit: Conduit ends shall have precision cut hi-torque threads. One end of the conduit shall have a coupling and the other shall be covered with a color-coded plastic thread protector. Conduit shall be manufactured in 10 foot lengths.

B. Fittings: Fittings shall be cut groove steel. Cast fittings are not acceptable.

2.4 FLEXIBLE STEEL CONDUIT

A. Conduit and Standards: A continuous length, spirally wound steel strip, zinc-coated, each convolution interlocked with following convolution into a helix form. Product shall meet Federal Specification WW-C-566 and UL 1242.

B. Fittings: Provide conduit fittings for use with flexible steel conduit of the threadless hinged clamp type, and a male threaded end provided with a locknut.
1. Straight terminal connectors shall be one piece body, female end with clamp and deep slotted machine screw for securing conduit.
2. 45 and 90 degree terminal angle connectors shall be 2 piece body, with removable upper section, female end with clamp and deep slotted machine screw for securing conduit.

2.5 LIQUID-TIGHT FLEXIBLE STEEL CONDUIT

A. Conduit: Plastic jacketed (PVC) liquid-tight flexible steel conduit with copper bonding conductor, and steel material galvanized inside and outside.

B. Fittings: Provide cadmium plated, malleable iron fittings with compression type steel ferrule and neoprene gasket sealing rings with insulated throat.

2.6 HEAVY WALL PVC CONDUIT (SCHEDULE 40)

A. Conduit: Schedule 40, 90 degrees C. UL rated, PVC conduit shall be composed of High Impact PVC (polyvinyl chloride C-2000 Compound), and shall conform to industry standards, and be UL listed in accordance with Article 347 of National Electrical Code for underground and exposed use. Materials must have tensile strength of 55 PSI, at 70 degrees F., flexural strength of 11,000 psi, compression strength of 8600 psi. Manufacturer shall have five years extruding PVC experience.

2.7 INTERMEDIATE METAL CONDUIT

A. Type: Intermediate metal conduit (IMC) shall be high frequency electro-welded into tube form to produce a high ductile conduit that can be easily bent with standard tools approved for IMC.

B. General: Conduit ends shall have precision cut hi-torque threads. One end of the conduit shall have a coupling and the other shall be covered with a color-coded plastic thread protector. Conduit shall be manufactured in 10 foot lengths.

C. Finish: The electro-galvanized zinc finish shall be corrosion resistant and shall not crack or flake. A chromate conversion coating shall be applied over the entire tube as an additional corrosive preventative. The interior shall be protected and lubricated with a special silicone hard finish enamel.

2.8 MALLEABLE IRON EXPANSION FITTINGS

A. Type: Conduit expansion fittings shall be malleable iron (hot dipped galvanized inside and outside).

B. Fittings: These fittings shall have a 4 inch expansion chamber to allow approximately 2 inch movement parallel to conduit run in either direction from normal.

C. Internal Bonding: Fittings shall have factory-installed packing and internal tinned copper braid packing to serve as a bonding jumper.

D. External Bonding: Unless the fitting used is listed by Underwriters Laboratories for use "without external bonding jumpers", an external copper bonding jumper shall be installed with each metal expansion fitting. One end of the fitting shall be clamped on each conduit entering fitting.

2.9 SUPPORTING DEVICES

A. Hangers: Hangers shall be made of durable materials suitable for the application involved. Where excessive corrosive conditions are encountered, hanger assemblies shall be protected after fabrication by galvanizing, or approved suitable preservative methods.

B. Materials: Insert anchors shall be installed on concrete or brick construction, with hex head machine screws. Recessed head screws shall be used in wood construction. An electric or hand drill shall be used for drilling holes for all inserts in concrete or similar construction. Installed inserts, brick, shall be near center of brick, not near edge or in joint. Drilled and tapped, and round head machine screws shall be used where steel members occur. All screws, bolts, washers, etc., used for supporting raceways or outlets shall be fabricated from rust-resisting metal, or accepted substitution. Gunpowder set anchors are not permitted.

C. Exterior: Supporting devices for exterior use shall be 316 stainless steel unless otherwise noted on drawings.

D. PVC Coated Conduit: Supporting devices for PVC coated conduit shall be as manufactured by the PVC coated conduit manufacturer and shall match in color and appearance.

2.10 TELEPHONE TERMINAL BOARDS

A. Terminal Boards: Telephone Boards shall be 8 foot high and of the width shown unless otherwise noted. Terminal boards shall be 3/4 inch A/C grade exterior plywood painted light gray with fire resistant paint.

B. Grounding: Each terminal board shall be provided with a #3/0 AWG bare copper conductor installed in 3/4 inch PVC conduit to the building service ground. Service ground attachment shall be made with an approved lug. Provide 6 foot excess ground conductor length at terminal board for connection to equipment.

2.11 MANHOLES

A. Concrete strength: The design of concrete mixture shall be responsibility of the Design - Builder as set forth under ASTM Standard C-94 for ready-mixed concrete. The concrete produced shall have a concrete strength at 28 days that shall be not less than 2500 PSI.

B. Concrete slump: The slump when tested in accordance with ASTM Standard C-143, shall not be more than 3 inches for vibrated concrete and 4 inches for non-vibrated concrete. Ready –mixed concrete shall be mixed and delivered to the project in accordance with ASTM Standard C-94, using Alternative No. 2 for the mix design. With each load of concrete delivered, the producer shall provide in duplicate before unloading at the site, delivery tickets of certification as required by ASTM C-94.

C. Mixing Option: At Design - Builder ’s option, concrete may be mixed by volume at the project site in an accepted type bath mixer in the manner specified for stationary mixers in ASTM Standard C-94. The portions of cement, aggregate and water shall be selected to provide the characteristics indicted below for the compressive strength specified. Conformance with the strength requirements shall be as determined in accordance with ASTM Standard C-39.

D. Precast Option: Manholes may be of the precast type if accepted, submit drawings, calculations, and necessary detail to determine acceptability.

E. Brick: Brick used where indicated shall be sewer and manhole brick conforming to ASM C-32, Grade MS.

F. Mixture: Mortar shall be mixed in proportions of 1-part Portland Cement, ¼ part hydrated lime and between 2 ¼ and 3 parts and by volume. (At Design - Builder 's option, mortar may be mixed in the proportions of 1 part Portland Cement and between 4 ½ and 6 parts of sand by volume.)

G. Structural: Reinforcing bars shall be deformed and comply with either of the following ASTM Standards: Billet Steel Bars A-615 or Rail Steel Bars A-616.

H. Forming: Material for concrete forms shall be smooth boards exterior grade plywood or metal.

I. Drainage: Drainage Pipe and Fittings shall be cast-iron, extra strength. Drains shall be plain pattern in accordance with Specification W M-P-541.

J. Covers: Metal Frames, Covers, and Gratings, except as indicated or specified otherwise shall conform to Specification RR-F-621 and shall be of cast iron. Frames and covers of steel shall be welded by qualified welders in accordance with standard commercial practice. Steel covers shall be rolled steel floor plate having an accepted anti-slip surface. Steel gratings shall be welded construction and conform to the applicable requirements of Specification RR-G-66, Type 1.

K. Accessories: Pulling-in irons shall be steel bars bent in the form indicated, and case in the walls and floors. In the floor, they shall be centered above or below, and opposite the conduits entering the manhole. Pulling-in irons shall be projected into the manhole approximately 4 inches. Irons shall be zinc-coated after fabrications in accordance with

L. Specifications MiL-Z-17871. Cable Racks, including hooks and insulators, shall be installed in manhole and shall be sufficient to accommodate the present and future cables and shall be spaced not more than 18 inches apart horizontally. The wall bracket shall be Channel or T-Section steel. The hooks shall be of steel or malleable iron and shall be of the removable type. Insulators shall be dry-process glazed porcelain. The metal portion of racks shall be zinc-coated after fabrication in accordance with Specification MIL-Z-17871.

PART 3 - EXECUTION

3.1 CONDUITS

A. Unless noted otherwise, provide as a minimum 1 inch raceway from each of the following device locations to cable tray, j-hooks, or corridor ceiling cavity when cable tray. Provide insulated bushings at ends of all raceways.

1. Telephone
2. Cable TV
3. Call Box
4. CCTV
5. DDC
6. Data
7. Elevator Location Panel
8. Security

B. All fire alarm wiring shall be run in conduit.

C. Provide plenum-rated cable for all systems conductors.

D. All wiring above non-accessible ceilings shall be installed in raceways.

3.2 TELEPHONE COMPANY COORDINATION

A. Telephone Company: The Design - Builder shall notify the Telephone Company when the conduit system is being installed. The Design - Builder shall coordinate the work with the Telephone Company as required.

3.3 CABLE TV COMPANY COORDINATION

A. Cable Television Company: The Design - Builder shall notify the Cable Television Company when the conduit system is being installed. The Design - Builder shall coordinate the work with the Cable Television Company as required.

3.4 IDENTIFICATION OF BOXES

A. Tags: During installation of pull strings all pull strings shall be marked with vinyl tags indicating where the opposite end may be found.

3.5 BLANK PLATES

A. Plates: Unless otherwise noted all outlet boxes shall receive blank plates matching the finish of plates on electrical devices in the same room.

3.6 RACEWAY INSTALLATION

A. Support: All raceways shall be run in a neat and workmanlike manner and shall be properly supported and in accordance with the latest edition of the NEC. Supporting conduit and boxes with wire is not acceptable. Any exposed conduit viewable by the public must be approved by an owner's representative prior to installation. Exposed raceways, where allowed, shall be supported with clamp fasteners with toggle bolt on hollow walls, and with lead expansion shields on masonry. All conduits shall be securely fastened in place with at least one support per eight foot section. Support within one foot of changes in direction. All required hangers, supports and fastenings shall be provided at each elbow and at no more than one foot from the end of each straight run terminating at a box or cabinet. The use of perforated iron for supporting conduits shall not be permitted. The required strength of the supporting equipment and size and type of anchors shall be based on the combined weight of conduit, hanger and cables. Horizontal and vertical conduit runs may be supported by one-hole malleable straps, clamp-backs, or other accepted devices with suitable bolts, expansion shields (where needed) or beam-clamps for mounting to building structure or special brackets. Multiple runs of raceways will be routed together. Raceways will not be located within six inches of other system components (HVAC ducts, chilled water lines, sprinkler pipes, domestic water lines, etc)

B. Hanger Installation: Where 2 or more raceways 1 inch or larger run parallel trapeze hangers may be used consisting of concrete inserts, threaded solid rods, washers, nuts and galvanized "L" angle iron, or Unistrut cross members. These raceways shall be individually fastened to the cross member of every other trapeze hanger with galvanized cast one hole straps, clamp backs, bolted with proper size cadmium machine bolts, washers and nuts. If adjustable trapeze hangers are used to support groups of parallel conduits, U-bolt type clamps shall be used at the end of a raceway run and at each elbow. J-bolts, or approved clamps, shall be installed on each third intermediate trapeze hanger to fasten each raceway.

C. Sealant: Provide a closed cell silicone foam sealant rated to provide a rating equal to the wall, ceiling, or floor assembly rating. Provide seals for the exterior of conduit penetrations consisting of a cast-in-place sleeve with a compressible rubber gasket between the conduit and the sleeve. Provide seals for the interior of the conduit penetrations consisting of gland type sealing bushing or closed cell silicone foam. Provide duct seal inside an appropriate seal-off fitting to seal the interior of the conduit system from water seepage or hazardous gases.

D. Routing: Raceways shall be run parallel to building walls wherever possible, exposed or concealed as specified, and shall be grouped in workmanlike fashion. Crisscrossing of conduits shall be minimized.

E. Location: All raceways except those from surface-mounted switches, outlet boxes or panels shall be run concealed from view. Surface mounted devices and equipment shall be specifically noted on the contract drawings. It is the intent that all raceways shall be run concealed unless specifically noted.

F. Protection: All raceway runs, whether terminated in boxes or not, shall be capped during the course of construction until wires are pulled in and covers are in place. No conductors shall be pulled into raceways until the raceway system is complete.

G. Coordination: All raceways shall be kept clear of mechanical equipment and plumbing fixtures to facilitate future repair or replacement of said fixtures without disturbing wiring. Except where it is necessary for control purposes, all raceways shall be kept away from items producing heat.

H. Masonry Installation: All raceway runs in masonry shall be installed at the same time as the masonry so that no face cutting is required, except to accommodate boxes.

I. Arrangement: All raceways shall be run connecting outlet to circuits generally as shown on the drawings. Provide circuit connection arrangement shown. Actual final arrangement shall be in accordance with the record drawings section as specified herein.

J. Grounding: All branch circuit and feeder raceways shall have a copper system ground conductor within the conduit throughout the entire length of the circuit. All conduits shall be electrically continuous to establish redundant grounding.
   1. Branch circuit raceways shall have an insulated equipment grounding conductor installed within the conduit raceway system.
   2. Grounding conductor shall be included in total conduit fill determining conduit sizes, even though not shown on drawings.
   3. Grounding conductors run with feeders may be bare.

K. Empty Raceways: Raceways which do not have conductors provided under this Division of the specifications shall be left with an acceptable nylon pullcord in raceway.

L. Manufacturer: Rigid Metallic Conduit, Electrical Metallic Tubing, Flexible Steel Conduit, Liquid-Tight Flexible Conduit, and PVC Conduit shall be manufactured within the United States, and each shall be as manufactured by one manufacturer.

M. Roof Installation: Raceway installations on roofs shall be kept to a bare minimum. Raceway shall be supported above roof at least 6 inches using approved raceway supporting devices. Supports shall be fastened to roof using roofing adhesive as specified in other sections of this specification.

N. Firewall Installation: Provide pullboxes, junction boxes, fire barrier at fire rated walls etc., as required by NEC Article 300 where required.

O. Dissimilar Metals: Avoid the use of dissimilar metals to reduce the possibility of electrolysis. Where dissimilar metals are in contact, coat all surfaces with corrosion inhibiting compound before assembling.

P. Sealoff Fittings: Provide raceway sealoffs wherever the raceway system enters a hazardous or wet area or areas of drastic temperature change such as coolers, freezers, etc. as required.

Q. Identification: Provide appropriate identification as required by codes and as indicated on the drawings and in accordance with the methods specified herein.

R. Anchors: Raceways shall be anchored down to prevent floating while pouring in concrete.

3.7 SITE UNDERGROUND CONDUIT INSTALLATION

A. General: All underground raceways (with exception of raceways installed under floor slab) shall be installed in accordance with Section 300-5 of the NEC except that the minimum cover for any raceway or duct bank shall be two feet, unless otherwise indicated.

B. Stubs: Spare raceway stubs shall be capped and accurately dimensioned on as-built drawings.

C. Separation: All raceways run underground, or stubbed above floor shall be separated with plastic interlocking spacers manufactured specifically for this purpose, or shall be strapped to Kindorf channel supported by raceway driven into ground or tied to steel.

D. Coating: Rigid metallic conduit installed underground shall be coated with waterproofing black mastic before installation, and all joints shall be recoated after installation.

3.8 RIGID METALLIC CONDUIT

A. Locknuts: Rigid steel box connections shall be made with double locknuts and bushings. Turn down on threads to solidly connect raceway to box or enclosure.

B. Bushings: Grounded insulated bushings shall be used on all rigid steel conduits terminating in panels, wire gutters, or cabinets. Bushing shall be impact resistant plastic molded in an irregular shape at the top to provide smooth insulating surface at top and inner edge. Material in these bushings must not melt or support flame.

C. Location: Install Rigid Metallic Conduit from floor to 4’ above finished floor inside Central Utility Plant (CUP).

3.9 PVC RACEWAYS

A. Floor Penetrations Exposed: Where PVC penetrates a floor in an exposed location from underground or in slab, a black mastic coated steel conduit elbow shall be used.

B. Location: No PVC shall be allowed anywhere except underground or in slab.

C. Ground Conductor Installation: All individual bare copper ground conductors (i.e. service, transformer, or lightning protection grounds) shall be installed in PVC raceway.

D. Joints: PVC joints shall be solvent welded. Threads shall not be permitted on PVC raceway and fittings, except for rigid steel to PVC couplings. Installation of PVC raceway shall be in accordance with manufacturer's recommendations.

E. Restrict Support: PVC raceway shall not be used to support fixture or equipment.

F. Bends: Field bends shall be made with an approved hotbox. Heating with flame and hand held dryers are prohibited.

3.10 FLEXIBLE CONNECTIONS

A. Vibrating Equipment Connection: All connections to motors or other vibrating equipment (except dry type transformers) or at other locations where required shall be made with not less than 12 inches of flexible liquid-tight steel conduit, using special type of connectors with strain relief fittings at both terminations of conduit, Kellems Type 074-09 Series or accepted substitution.

B. Normal Type: Flex connectors shall have insulated throat and shall be T & B 3100 Series or accepted substitution.

C. Angle Type: Use angle connectors wherever necessary to relieve angle strain on flex conduit.

D. Transformer Connection: Connections to dry type transformers shall be made with flexible conduit.

3.11 EXPANSION FITTINGS

A. Installation: Provide expansion fittings in each conduit run wherever it crosses an expansion joint. Install the fitting on one side of the joint with its sliding sleeve end flush with joint, and with a length of bonding jumper in expansion equal to at least three times the normal width of joints.

B. Location: Provide expansion fittings in each conduit run which is mechanically attached to separate structures to relieve strain caused by shift on one structure in relation to the other.

3.12 ELECTRICAL METALLIC TUBING

A. Location: Install Electrical Metallic Tubing (thin wall) inside buildings, above the ground floor where not subject to mechanical injury.

B. Handling: All cut ends shall be reamed to remove rough edges.

END OF SECTION

SECTION 26 2726
WIRING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. General: Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to this section.

1.2 DESCRIPTION

A. General: Provide factory fabricated wiring devices in type, color and electrical rating for the service indicated to provide convenient access to the electrical system for portable and permanent connections, and control of fixed outlets.

B. Ratings: Voltage and ampere rating of switches and receptacles shall be marked on the device, and shall conform to Voltage and Ampacity of system to which applied.

C. Hardware: Devices consist of all the necessary hardware to complete an installation and provide a margin of safety by inaccessibility of live electrical components.

D. Dimming Controls Quality Assurance:

1. Manufacturers: Firms regularly engaged in manufacture of wiring devices, of types and ratings required, whose products have been in satisfactory use in similar service for not less than 5 years. Fully test all dimmers for proper operation prior to shipment from the factory.
2. Installer: A firm with at least 5 years of successful installation experience on projects with electrical installation work similar to that required for the project.
3. Warranty: Provide a minimum one-year warranty from time of installation acceptance.

E. All dimming controls shall be compatible with the building control system unless specifically noted on plans.

1.3 RECEPTACLES AND SWITCHES QUALITY ASSURANCE

A. Manufacturers: Manufacturers shall be companies regularly engaged in manufacture of wiring devices, of types and ratings required, whose products have been in satisfactory use in similar service for not less than 5 years.

B. Installer: A firm with at least 5 years of successful installation experience on projects with electrical installation work similar to that required for the project.

C. Compliance: Comply with the latest edition of the following standards;

1. NEMA WD1, WD3 and WD5
2. UL 5, 20 and 231
3. ANSI/IEEE Standard C62.41-1980 (Formerly IEEE 587)

    a. Test withstand voltage surges of up to 6000 volts and current surges of up to 200 amperes without damage.

D. Warranty: Provide a minimum one-year warranty from time of final acceptance.

1.4 SUBMITTALS

A. Wiring Devices: Submit manufacturer's product data on all wiring devices listed on the drawings including;

1. Colors
2. Dimensions
3. U.L. Label
4. Finish
5. Voltage
6. Wiring diagrams
7. Application information

B. Coverplates and Identification: Submit type of identification used for coverplates to comply with the Identification Section as specified herein. Screws to match coverplate color.

1.5 SEQUENCING AND SCHEDULING

A. Coordination: Coordinate with other work including wires/cables, electrical boxes and fittings, and raceways, to properly interface installation of all wiring devices.

PART 2 - PRODUCTS

2.1 CONVENIENCE RECEPTACLES

A. Twenty Ampere Receptacles - Public: Provide hospital grade single or duplex receptacles, 2-pole, 3-wire grounding, with green hexagonal equipment ground screw, ground terminals and poles internally connected to mounting yoke, 20 ampere, 120 volts, with metal plaster ears, side wiring, NEMA configuration 5-20R unless otherwise indicated. Maximum spacing shall be 25’ in public areas. (Housekeeping areas, corridors, public areas, etc)

B. Twenty Ampere Receptacles – Back of House: Provide premium specification grade single or duplex receptacles, 2-pole, 3-wire grounding, with green hexagonal equipment ground screw, ground terminals and poles internally connected to mounting yoke, 20 ampere, 120 volts, with metal plaster ears, side wiring, NEMA configuration 5-20R unless otherwise indicated. (Storage rooms, mechanical rooms, electrical rooms, etc)

C. Color: Devices connected to the normal system shall be grey in color, unless otherwise noted.

D. Device Connection: All devices, switches and receptacles, will be terminated with side-wired screw terminals only. Stab-in wire connections held by spring tension are not permitted.

E. Construction: Heavy duty nylon face and wraparound mounting strap, locked into and on the body, utilizing heavy-gauge brass ground contacts riveted to strap. Include automatic self-grounding spring to assure ground continuity between mounting strap and metal wall box. T-slot one piece copper alloy contact wipes which interface with plug blades inserted at 3 points. Line terminals shall be screw terminals and accept #14 to #10 AWG copper conductors.

F. Ground Fault Circuit Interrupter: Provide hospital grade, duplex, ground fault circuit interrupter receptacles, grounding type, UL rated Class A, Group 1, 20 ampere ratings, 125 volts, 60 Hz; with solid state ground fault sensing and signaling; with 5 milliampere ground fault trip level; equipped with 20 ampere receptacle configuration, NEMA 5-20R. Device shall contain test and reset pushbuttons, with a visual display of the tripped position. All outside receptacles (weatherproof) shall be duplex G.F.C.I. type. Interrupter shall resist tripping from the effects of radio frequency (RF) signals from 10 to 450 MHz.

2.2 SWITCHES

A. Toggle Switches: Provide specification grade, fast-make positive-break, flush single-pole, three and four way, silent operation toggle switches, 20 ampere, 120 volt AC or 277 volt AC as required, with mounting yoke insulated from mechanism, equipped with plaster ears, and side-wired screw terminals.

B. Two Pole Switches: Provide two pole switches where drawings indicate the switching of 208 volt systems consisting of two phase conductors.

C. Security Key Switches: Provide key switches where drawings indicate, where a degree of security requires limited access to control of the lighting system.

D. Pilot Light Handle: Handle glows when switch is on. Handle color shall be clear, unless otherwise indicated.

E. Thermal Switch: Provide fractional horsepower switch with melting alloy type overload relay, with number of poles to coordinate with the equipment being controlled. Surface or flush mounted cover, as required, equipped with padlocking device and pilot light. Provide overload relay heaters for each pole of the switch, sized per the manufacturer's instruction, and adjust heater size to permit normal operation of the motor.

F. Color: Provide red switches for emergency circuits. Match receptacle devices for normal circuits.

G. Manufacturer: Manufacturer shall be Pass & Seymour, Leviton or Hubbell

2.3 PLUGS AND CONNECTORS

A. Standard: Comply with NEMA Standards Pub. No. WD1.

2.4 WIRING DEVICE ACCESSORIES

A. Multigang: Provide all necessary hardware and frames to properly mount various devices in combinations.

B. Weatherproof Device Covers: For all receptacles installed outdoors and/or in wet locations, provide a weatherproof enclosure in full compliance with NEC Article 406.8B. Enclosure shall be weatherproof, whether or not the attachment plug cap is inserted. The use of “flapper-type” covers is not permitted.

C. Color: Unless otherwise noted, provide colored faceplates to match devices listed elsewhere in these specifications.

D. Faceplates: Shall be stainless steel.

2.5 OCCUPANCY SENSORS

A. Wall-Switch Sensors:
1. Products: Subject to compliance with requirements, provide one of the following:
   a. Cooper; 6111 for 120 V, 6117 for 277 V.
   b. Hubbell; WS1277.
   c. Leviton; ODS 10-ID.
   d. Pass & Seymour; WS3000.
   e. Watt Stopper (The); WS-200.
2. Description: Passive-infrared type, 120/277 V, adjustable time delay up to 30 minutes, 180-degree field of view, with a minimum coverage area of 900 sq. ft..

B. Wall-Switch Sensors:

1. Products: Subject to compliance with requirements, provide one of the following:
   a. Hubbell; AT120 for 120 V, AT277 for 277 V.
   b. Leviton; ODS 15-ID.
2. Description: Adaptive-technology type, 120/277 V, adjustable time delay up to 20 minutes, 180-degree field of view, with a minimum coverage area of 900 sq. ft.

C. Long-Range Wall-Switch Sensors:
1. Products: Subject to compliance with requirements, provide one of the following:
   a. Hubbell; ATP1600WRP.
   b. Leviton; ODWWV-IRW.
   c. Pass & Seymour; WA1001.
   d. Watt Stopper (The); CX-100.
2. Description: Passive-infrared type, 120/277 V, adjustable time delay up to 30 minutes, 110-degree field of view, with a minimum coverage area of 1200 sq. ft..

D. Long-Range Wall-Switch Sensors:
1. Products: Subject to compliance with requirements, provide one of the following:
   a. Hubbell; ATD1600WRP.
   b. Leviton; ODW12-MRW.
   c. Watt Stopper (The); DT-200.
2. Description: Dual technology, with both passive-infrared- and ultrasonic-type sensing, 120/277 V, adjustable time delay up to 30 minutes, 110-degree field of view, and a minimum coverage area of 1200 sq. ft..

E. Wide-Range Wall-Switch Sensors:
1. Products: Subject to compliance with requirements, provide one of the following:
   a. Hubbell; ATP120HBRP.
   b. Leviton; ODWHB-IRW.
   c. Pass & Seymour; HS1001.
   d. Watt Stopper (The); CX-100-3.
2. Description: Passive-infrared type, 120/277 V, adjustable time delay up to 30 minutes, 150-degree field of view, with a minimum coverage area of 1200 sq. ft.

F. Exterior Occupancy Sensors:
1. Products: Subject to compliance with requirements, provide one of the following:
   a. Leviton; PS200-10.
   b. Watt Stopper (The); EW-100-120.
2. Description: Passive-infrared type, 120/277 V, weatherproof, adjustable time delay up to 15 minutes, 180-degree field of view, and 110-foot detection range. Minimum switch rating: 1000-W incandescent, 500-VA fluorescent.

2.6 FLOOR SERVICE FITTINGS

A. Type: Modular, flush-type, dual-service units suitable for wiring method used. Devices with a recessed face or recessed inserts will not be accepted.

B. Compartments: Barrier separates power from voice and data communication cabling.

C. Service Plate: Rectangular or round with satin finish.

D. Power Receptacle: NEMA WD 6 configuration 5-20R, gray finish, hospital grade, unless otherwise indicated.

E. Voice and Data Communication Outlet: refer to technology specifications.

2.6 POKE-THROUGH ASSEMBLIES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Hubbell Incorporated; Wiring Device-Kellems.
2. Pass & Seymour/Legrand; Wiring Devices & Accessories.
3. Square D/ Schneider Electric.
4. Thomas & Betts Corporation.
5. Wiremold Company (The).

B. Description: Factory-fabricated and -wired assembly of below-floor junction box with multichanneled, through-floor raceway/firestop unit and detachable matching floor service outlet assembly.
1. Service Outlet Assembly: Flush type with two simplex receptacles and space for two RJ-45 jacks.
2. Size: Selected to fit nominal 3-inch (75-mm) cored holes in floor and matched to floor thickness.
3. Fire Rating: Unit is listed and labeled for fire rating of floor-ceiling assembly.
4. Closure Plug: Arranged to close unused 3-inch (75-mm) cored openings and reestablish fire rating of floor.
5. Wiring Raceways and Compartments: For a minimum of four No. 12 AWG conductors and a minimum of two, 4-pair, voice and data communication cables.

PART 3 - EXECUTION

3.1 INSTALLATION OF WIRING DEVICES

A. General: Provide wiring devices, in accordance with manufacturer's written instructions, applicable requirements of NEC and National Electrical Contractors Associations "Standard of Installation", and in accordance with recognized industry practices to ensure that products serve intended function.

B. Completion: Delay installation of devices until wiring and wall finish is completed.

C. Support: Devices shall be securely supported to box, not supported to device plate. Device shall trim out flush with front of plate. Do not support the device by loosening device mounting screws and attaching the coverplate for leveling.

D. Adjustment: Provide receptacles and switches only in electrical boxes which are clean, free from excess building materials, debris, etc. Adjust devices to plumb when tightened, and in position to receive faceplate.

Devices shall not be leveled by using the mounting screws, outlet boxes shall be flush to wall finish prevent leveling problems. Tighten devices and provide securely, so that there shall be no movement during usage.

E. Position: Position ground pin at the top of the device in vertical application, unless otherwise noted.

F. Wiring: Provide screw terminal connections using a single conductor only. Do not "back-stab" devices. Provide single whips for all multiple conductor connections within each box.

3.2 APPLICATION OF COVER PLATES

A. Mounting: Provide coverplates in true vertical or horizontal alignment as applicable. Plates shall be properly secured by means of screws which have heads with finish matching the plate. Secure plates so as to maintain a snug fit against wall surfaces with no gaps.

B. Replacement: Replace all coverplates which are warped, cracked, chipped, or whose color does not match the balance of the installation. Replace screws whose threads do not allow the drawing up tight of the coverplate to the device.

3.3 CLEANING

A. Soiled Devices: Clean devices soiled prior to acceptance inspection, to remove all debris and foreign materials, such as paint, varnish, drywall compound, etc.

B. Solutions: Do not use liquid cleaning solutions, etc. on the face of the devices without written direction from the Design - Builder.

3.4 TESTING

A. Ground testing: Provide ground testing procedures as specified herein. Prior to energizing circuitry, test wiring devices for electrical continuity, and for short circuits.

B. Polarity: Subsequent to energization, test wiring devices for proper polarity, and to demonstrate operations as required in this and other sections of this Specification.

C. Recording: Record all tests as required in other sections of this specification.

END OF SECTION

SECTION 27 0010
TECHNOLOGY GENERAL PROVISIONS

PART 1 - GENERAL

1.1 GENERAL CONDITIONS AND DEFINITIONS

A. Scope: This specification section applies to all Division 27 specification sections and all Division 28 specification sections. All systems under the specification sections indicated above are also referenced in these contract documents as “technology systems”.

B. Drawings and specifications: The words “drawings” and “specifications” used in this section refers to all contract drawings and specifications that describe the scope of work for the technology systems. These items combined create the Construction Documents.

C. Installer and Contractor: The word “installer”, where used on the drawings or specifications without any further description, shall reference the installer of the referenced systems. The word “contractor”, where used on the drawings or specifications without any further description, shall reference the General Contractor / Construction Manager that holds the prime agreement with the Owner for the construction of this project.

D. Provide and Install: The word "provide", where used on the drawings or specifications, shall mean: furnish, install, mount, connect, test, document, and make ready for operation. The word "install", where used on the drawings or specifications, shall mean: mount, connect, test, complete, and make ready for operation.

E. Engineer: The word “Engineer or A&E”, where used on the drawings or specifications, refers to the design engineer that is working for the project Architect or the Owner. It does not refer to an engineer employed by the General Contractor / Construction Manager or any trades contractors working on the project.

F. Complete system: All technology systems are intended to be complete including all materials, labor and programming required to make the system fully operational.

1.2 INTERPRETATION OF DRAWINGS AND SPECIFICATIONS

A. Objective: The intent of the design drawings and specifications are to provide the installer of the technology systems the necessary information to create a scope of work for bidding and construction purposes. The drawings and specifications are not intended to show every single element of the project to produce a buyout list for the installer. Unless indicated otherwise, all primary components are specifically indicated. However small components and cabling assemblies are generally not indicated in the documents.

B. Accuracy: The drawings are diagrammatic and are not intended to show exact locations of conduit runs, outlet boxes, junction boxes, pull boxes, etc. Exact locations shall be coordinated with all trades in the field and as accepted by the Architect or Engineer during construction. Obtain all information relevant to the placing of technology systems work in the field. In cases where there is a conflict with other trades that cannot be easily resolved through coordination, proceed as directed by the Architect or Engineer.

C. Distances: Although most drawings have a scale referenced on each sheet, the drawings are a two dimensional representation of the system. The design drawings do not indicate changes in elevation that may cause additional lengths and/or material quantity. It is the responsibility of the installer of each technology system to field verify all distances and elevation changes prior to bidding.

D. Discrepancies: Notify the A&E of any discrepancies found during the construction of the project. Do not proceed with this portion of the project until a written resolution to the discrepancy is received. If a conflict exists between the contract documents and any applicable code or standard, the most stringent requirement shall be considered the minimum requirement for this project.

E. Existing Conditions: All existing conditions might not be indicated in the contract documents. The installer of each system shall review the site and all existing conditions thoroughly before bidding. The installer shall advise the Engineer of any issues prior to bidding.

F. Coordination: The technology systems drawings are intended to be coordinated with other design disciplines. However, the installer for other systems might have changes to their design and/or shop drawings which are not properly coordinated. The Contractor is required to produce coordination documents for specific rooms to facilitate space planning and coordination for all trades.

1.3 ABBREVIATIONS

A. Abbreviations: The following abbreviations or initials may be used:

1. ABV CLG - Above Ceiling
2. AC - Alternating Current
3. ADA - American Disabilities Act
4. AFF - Above Finished Floor
5. AFG - Above Finished Grade
6. AMP - Ampere
7. ANSI - American National Standards Institute
8. AWG - American Wire Gauge
9. BC - Bare Copper
10. CCTV - Closed Circuit Television
11. CATV - Community antenna television
12. CLG - Ceiling
13. COAX - Coaxial Cable
14. CPU - Central Processing Unit
15. DC - Direct Current
16. DEG - Degree
17. EMT - Communication Metallic Tubing
18. GND - Ground
19. IDF - Intermediate Distribution Frame (Telecom Room)
20. IMC - Intermediate Metallic Conduit
21. IN - Inches
22. IP - Internet Protocol
23. JB - Junction Box
24. KVA - Kilo-Volt-Amps
25. KW - Kilowatts
26. LBS - Pounds
27. LED - Light Emitting Diode
28. MAX - Maximum
29. MDF - Main Distribution Frame (Main Telecom Room)
30. MIC - Microphone
31. MIN - Minimum
32. MTD - Mounted
33. MTG - Mounting
34. NEC - National Communication Code
35. NECA - National Communication Contractors Association
36. NEMA - National Communication Manufacturers Association
37. NFPA - National Fire Protection Association
38. NIC - Not in Contract
39. OFE - Owner furnished equipment

40. OSHA - Occupational Safety and Health Administration
41. PB - Pullbox
42. PWR - Power
43. PVC - Polyvinylchloride
44. EF - Telecommunications Entrance Facility
45. TR - Telecommunications Room
46. TTB - Telephone Terminal Board
47. V - Volt
48. WP - Weatherproof

1.4 CODES AND STANDARDS

A. Application: The codes, standards, and practices listed in this section generally apply to all technology systems. Other codes, standards, or practices that are more specific will be referenced within the applicable specification section.

B. Requirements: All articles, products, materials, fixtures, forms, or types of construction covered in the technology system specifications are required to meet or exceed all applicable standards and requirements of the manufacturer. The technology systems installation shall be done in accordance with the requirements of ANSI, NEMA, IEEE, NEC, BICSI, and TIA documents where indicated and the manufacturer recommended best practices. Requirements indicated on the contract documents which exceed but are not contrary to governing codes or practices shall be followed.

C. Compliance and Certification: The installation shall comply with the governing state and local codes and ordinances. The complete technology system installation shall be inspected and certified by all applicable agencies to indicate the systems are in compliance with their requirements.

D. Applicability: The State of Florida codes, standards, and practices listed herein (revision date to be latest adopted) are provided as the minimum requirements. The list for all technology systems is as follows:
   1. Florida Administrative Code
   2. Florida Building Code
   3. Accessibility Requirements Manual - Florida Department of Community Affairs.

E. UL Labels: All equipment assemblies shall be new, free of defects, and shall be U.L. listed. As an alternative to UL, the equipment can be tested and listed with an approved, nationally recognized Communication Testing Agency. No equipment shall be installed without this testing and subsequent listing.

1.5 MATERIALS ALTERNATES AND SUBSTITUTIONS

A. Definitions:
   1. Basis of design: A product or group of products from an identified manufacturer that was used as the basis of system layouts and installation details as part of the Construction Documents.

   2. Prototype: A product or group of products that are not yet ready for commercial and are in the testing phase (Beta testing) of product development.

   3. Alternates: Products or manufacturers listed in the Construction Documents as comparable to the basis of design. Alternates shall follow the same system architecture and design philosophy as the basis of design.

   4. Obsolete: A product that has been discontinued by the manufacturer or reached the end of life and is no longer being manufactured.

5. Substitution: A product not listed in the Construction Documents but capable of the same characteristics as the basis of design. Substitutions shall function as a direct replacement of the referenced product. The installer can propose a substitution only if all requirements of the specification are met and substitutions are approved by the Architect and /or Owner.

B. Use of prototypes. Prototypes are not allowed in any technology system.

C. Use of alternates. Alternates are allowed and the installer shall adhere to the following requirements:
1. Where several models or manufacturers are listed as acceptable alternates each shall be regarded as equally acceptable to the basis of design. Where a manufacturer's model number is listed, this model shall set the standard of quality and performance required. Where no model is specified, the source and quality shall be based on the specified equipment criteria and subject to the Engineer's review and acceptance. Where three or more manufacturers are listed, one of the listed manufacturers shall be submitted for acceptance.

2. The use of alternates does not allow for the change of the system architecture.

D. Use of substitutions. Substitutions are only allowed when they meet all the requirements below:
1. Substitutions are only allowed when a particular specification section for a technology system allows the use of substitutions for that particular system.

2. The performance of all substitution components must meet or exceed those of the basis of design. Should an installer wish to submit a substitution product, and substitutions are listed in the construction documents as acceptable, it shall be the responsibility of the installer to submit to the Engineer an item-for-item CROSS REFERENCE for all specifications of the product versus the basis of design. Substitution requests shall be submitted with a completed substitution request form indicated in Addendum 1 of this specification.

3. The Engineer has the authority to reject a substitute request without cause and the installer shall provide the basis of design (or listed alternate) at no additional cost.

4. Substitutions of unnamed manufacturers will not be accepted.

5. Certification of substitutions: When a basis of design is specified to be in accordance with a trade association or government standard requested by the Engineer, the installer shall provide a certificate that the substitute complies with the referenced standard. Upon the request of Engineer, the installer shall submit supporting test data to substantiate said compliance.
6. Substitutions that create a change in system architecture are not allowed

1.6 SHOP DRAWINGS AND SUBMITTALS

A. General: Shop drawings shall be submitted as required in the specification sections for each system.

B. Shop drawings submittal quantity: Follow the Division 1 specification requirements for quantity of shop drawings and any additional submittal requirements. If the project does not have a Division 1 specification, shop drawings shall be submitted in quantity of one (1) for electronic format submittal and four (4) for hardcopies.

C. Electronic submittals: .pdf format is the only acceptable file type for electronic submittals.

D. When product data sheets of products are submitted, and the manufacturer’s cut sheets indicate several model numbers or variations of the same product, the product data sheet shall have the model number of the submitted equipment highlighted by the installer. Submittals received with product data sheets indicating multiple model numbers without being highlighted will be rejected and not reviewed.

E. Equipment and material quantities are not reviewed by the Engineer as part of the submittal process. Equipment quantities are to be provided by the installer to meet the requirements of the construction documents. Approved shop drawings with equipment quantities or overall scope of work that is different from the construction documents does not constitute approval by the Engineer of these changes. The construction documents, along with any changes issued formally by the A&E during the construction process, are to always be followed for equipment quantities and scope of work.

F. All electronic equipment prone to obsolescence and with lead times of less than 3 months shall be submitted for approval no sooner than 12 months before the scheduled date of substantial completion of the project. Electronic equipment prone to obsolescence includes: flat panel displays, transceivers, servers, players, workstation, and routers

G. Equipment and materials that are not installed in accordance with the construction drawings and approved shop drawings shall be replaced at the installer's expense.

H. Multiple submissions may be required as indicated in each specification section. For final completion and testing, the Installer shall provide a submittal with the following information:
   1. Detailed course syllabus for each type of training required in the specification section.
   2. A proposed schedule of training sessions in compliance with the specification section and indicating where the training will take place.
   3. A copy of all training material to be used during each session.
   4. Test result sheets for all testing performed by the Installer as required in the specification section prior to the final system acceptance test.

PART 2 - PRODUCTS

2.1 IDENTIFICATION AND LABELING TAGS

A. All conduit, cabinets, cables, individual conductors, wiring forms, terminal blocks, and terminals shall be clearly identified with pre-printed labels or tags.

B. The only approved types of labels for technology systems installed indoors are:
   1. Non-laminated thermal transfer labels, printed with a high quality thermal transfer printer.
   2. Laminated thermal transfer labels printed with a high quality thermal transfer printer.
   3. Thermal transfer polyolefin tape printed with a high quality thermal transfer printer.
   4. Self laminated dot-matrix labels, printed with a high quality dot matrix printer.
   5. Non-laminated dot-matrix labels, printed with a high quality dot matrix printer.

C. For labeling of cables or equipment in outdoor or wet environments use only marker plates attached to cable with cable ties. Marker plates attached to equipment shall be with an adhesive designed for the material being bonded in that environmental condition. Do not use any labels with adhesive materials, unless the adhesive is rated for the application. Use different color plates for different cable types. Use only waterproof ink for writing on cable marker plates. Marker plates on equipment shall be engraved or machine lettered.

D. Hand written labels (except for outdoor marker plates), including writing on cable jackets or directly on equipment, are not acceptable and shall be corrected with approved labeling methods at no additional cost to the owner.

E. Approved manufacturers:
1. Rhino,
2. Brady,
3. Panduit or
4. approved equal

2.2 TECHNOLOGY EQUIPMENT AND MATERIALS

A. General: Each item of equipment or material shall be manufactured by a company regularly engaged in the manufacturer of the type and size of equipment specified. The equipment shall be suitable for the environment in which it is to be installed and shall be approved for the intended purpose, environment, and application. Equipment shall bare the label of the independent testing agency as indicated in paragraph 1.4.E. of this section.

B. Installation Requirements: Each item of equipment or material shall be installed in accordance with the instructions and recommendations of the manufacturer as it relates to the construction documents.

C. Required Accessories: The equipment specified in the technology systems specifications shall be provided with all required accessories for proper operation and mounting. Such accessories include items such as power supplies, power cords, rack ears, rack rails, bolts, lugs, faceplates, etc.

PART 3 - EXECUTION

3.1 INSTALLATION PRACTICES

A. WORKMANSHIP: The installation of all material and equipment shall be performed in a neat, workmanlike, and professional manner by an adequate number of craftsmen who are knowledgeable of the requirements of the Construction Documents. They shall be skilled in the methodology and craftsmanship required to produce a high level of workmanship. Personnel who install materials and equipment shall be qualified through training and experience in order to perform their assigned tasks.

B. STANDARD OF QUALITY: To define a high level workmanship, all installation best practices described by the manufacturer, BICSI, ASIS, and infoComm standards publications shall be followed.

C. PROTECTION OF EQUIPMENT: Equipment for technology systems shall be adequately protected against any damage which may occur due to the elements or work performed by other trades at all times during construction. Equipment shall be stored in dry permanent shelters or weatherproof storage trailers. If any equipment or materials have been damaged during this time, such equipment shall be replaced at no additional cost or time extension. Damaged equipment and materials include the following conditions:
1. Equipment that has visible scratches, cracks, or other surface coating damage.
2. Equipment with visible indication of rust or water intrusion.
3. Equipment that has dents that are clearly visible.
4. Equipment that has been sprayed with paint, fire proofing materials, or any other type of chemical that was not intended to have these materials applied to it, per the construction documents.
5. Equipment that has been damaged by fire, power surges, power sags, or lightning.

6. Equipment that has known damage to any parts, electronic boards, or components and the damage is not overtly visible.

7. Cables that have visible damage to the jackets; even if the cables are not broken, still provide electrical continuity, and allow for system functionality.

8. Cables sprayed with paints that affect the warranty of the cable as defined by the cable manufacturer.

9. Equipment with screws that have stripped heads or threads.

D. CLEAN EQUIPMENT: All installed equipment like racks, cabinets, wall mounted panels, credenzas, etc. shall be free of dust at the time that space or area of the project gets the final Certificate of Occupancy and at the time of the acceptance test by the A&E.

E. IDENTIFICATION AND TAGGING: All technology system items shall be labeled and identified as specified in the Construction Documents. Such identification shall be in addition to the manufacturer's nameplates and shall serve to provide a unique identifier of the equipment and systems which it serves or controls. Refer to the identification part of each specification section for additional information. All labels of equipment and wiring shall match the labeling used in the shop drawings for the system or as approved by the Owner.

3.2 COORDINATION

A. General: The installer shall coordinate their shop drawings with those of other trades and report any conflicts to the A&E. The installer shall obtain from the A&E written instructions required to make the necessary changes for the affected scope of work. All work shall be installed in coordination with other trades.

B. Adjustments: Locations of conduit and equipment shall be adjusted as required to accommodate the work of all trades with the understanding all interferences have been anticipated and encountered through coordination. The installer shall determine the exact routing and location of all contracted technology systems prior to fabrication or installation.

C. Replacement: All work shall be installed in a way that permits removal (without damage to other parts) of all system components provided under the construction documents requiring periodic replacement or maintenance. All conduits shall be arranged in a manner that clears the openings of swinging access doors and ceiling tiles.

3.3 REQUEST FOR IP ADDRESSES

A. General: When the construction documents require the installer of the technology systems to use IP addresses for configuration inside the Owner’s controlled IP network, the installer shall request the Owner provide the necessary IP addresses. The installer shall request this information no less than one (1) month prior to the installer needing the addresses to program the system..

B. Completing the form. The Network Connections Programming Plan shall be completed separately for each specification section with equipment that requires IP addresses. This form has two parts. The first part indicates all the system device types (i.e. cameras, workstation, servers, controllers, VoIP phones, etc). The second part is a list of all system devices classified by their type and indicating the location where the device will be located.

C. Requests that do not follow this process, or have incomplete information, will be ignored and will not be processed.

D. Reprogramming costs for any technology systems due to the use un-approved IP addresses by the installer shall be at the installer's expense.

3.4 TELECOM ROOM/EQUIPMENT ROOM READINESS

A. In any projects where the technology systems require the use of network equipment (switches, routers, firewalls, etc) provided by the Owner, the Contractor shall complete all telecom rooms to a point where they are suitable for the Owner to deploy such equipment. At a minimum the following conditions shall be met in the rooms for the Owner to install the equipment:

1. All power outlets in the telecom rooms shall be fed from the permanent source of power. Temporary power shall not be provided.
2. Backup power (generator and/or UPS) if provided shall be in full operation and tested.
3. The mechanical equipment providing the cooling for the telecommunications rooms shall be fully operational with permanent filtration. Temporary cooling and filtration shall not be provided.
4. Fire suppression systems (wet sprinkler, dry sprinkler, or clean agent) protecting the telecommunications rooms shall be fully operational and tested.
5. All light fixtures in the telecommunications rooms shall be fully operational.
6. All walls to the telecom rooms shall be complete, including the last coat of paint. No sanding of the wall surface will be allowed once the Owner's equipment is installed.
7. The ceiling and flooring of the telecommunications rooms shall be finished.
8. All horizontal and backbone cabling systems of the structured cabling system (SCS) shall be installed, terminated, and tested.
9. The final and permanent doors to the telecommunications rooms shall be installed with a key core different from all other construction cores in the site. If an electronic access control system is provided, the door shall be programmed to limit the number of people with access privileges. The approved personnel shall be: Contractor, Owner, and Installer. All other persons requiring access shall be approved by the Owner.
10. Telecommunications rooms shall be cleared of all stored materials inside the room.
11. Telecommunications rooms shall be fully cleaned by the Contractor's finish cleaning personnel. Clean is defined as not having any debris left in the room and not having dust in any rack, cabinet, or wall mounted panel. If wiping a finger on the surfaces of such equipment leaves visible dust residue on the finger, the room will not be considered clean.
12. Hallways and rooms leading into the telecommunications rooms shall require no more sanding to be done on the walls. The floor finish shall be completed to avoid dust from these spaces moving into the telecom rooms.
13. Prior to the Owner deploying their equipment in these rooms, the Contractor shall provide disposable sticky mats at the entrance of each room to capture dust and/or dirt from shoes or boots. The sticky mats shall sized to cover the full width of the door opening plus three (3) inches on each side. The sticky mats shall contain no less than 60 sheets per unit. The sheets shall be replaced no less than once a day and will be replaced as required if worn out during the day. Sticky mats shall be provided until the project receives the final Certificate of Occupancy for the entire area served by the telecommunications room.

B. In projects where the network equipment is part of the construction documents, the Installer is required to provide all equipment fully functional and clean at the end of the project. The Contractor and Installer are responsible for determining at what point this delicate equipment can be installed in the telecommunications room. The Installer shall make sure the manufacturer's recommended guidelines are applied to the installation of the equipment when it comes to cleanliness. It is highly recommended that all steps indicated in 3.4.A are followed even when the network equipment is provided by the Installer.

3.5 SYSTEMS WARRANTY AND SERVICE

A. General: At a minimum all technology systems shall include a warranty from the manufacturer and installer of the system for no less than one (1) year with the following exceptions:
   1. Structured Cabling systems shall have a warranty longer than one year as indicated in the structured cabling specification section.

   2. When specific equipment or software manufacturers include a warranty longer than one year, the manufacturer's warranty shall be transferred to the Owner in the same terms indicated by the manufacturer to the Installer.

B. Warranty coverage. The warranty for the technology systems shall cover the following elements:
   1. All equipment, cabling, and materials.

   2. Any software updates/patches issued during the warranty period by the manufacturer.

   3. The labor to replace malfunctioning parts and the programming time required to re-configure the equipment.

   4. Shipping and freight charges to send equipment back and forth from the manufacturer and/or site.

   5. Any manufacturer RMA (return material authorization) charges.

   6. Tool rentals such as scaffold or lifts required to access equipment.

   7. The troubleshooting time to detect faults in the system.

   8. All travel time and expenses associated with the warranty service.

C. Start of warranty. For new construction projects, the warranty period for the technology systems starts the day the project receives the Certificate of Occupancy (CO). For retrofit projects for a particular system, the warranty starts when the project is accepted by A&E. For most equipment/software manufacturers the warranty period starts when the equipment is shipped from the factory, it is the responsibility of the installer of each system to provide additional warranty coverage from the manufacturer to cover the additional time of warranty up to the CO date plus one year as required.

D. Service calls. During the warranty period the Installer shall support the technology systems when called by Owner/Contractor for service. All equipment/software service shall be done by personnel trained and qualified by the manufacturer for the system and as indicated in each technology system specification section. Service calls shall be performed during normal business hours (same time zone as the project) for normal service and twenty four (24) hours a day for three hundred and sixty five (365) days in the year for emergency service. Emergency service shall be defined as the loss or failure of any critical component necessary to maintain the overall integrity and proper operation of the system. Normal service shall be defined as the loss or failure of a system component that does not compromise the full operation of the system and allows the Owner to operate the system at a minimum of 90% of intended capacity.

E. Response time for service. The maximum allowed on site response time for emergency service shall be four (4) hours and normal service shall be twenty four (24) hours.

F. Equipment registration. All equipment/software that is part of the technology systems shall be registered to the Owner with the manufacturer of the equipment/software for warranty and support. Equipment/software registered with the manufacturer that names the Contractor or Installer shall be removed from the project and replaced with equal equipment registered to the Owner at no additional cost to the Owner.

G. Periodic preventive maintenance visits. During the warranty period the installer of the system shall provide no less than two (2) preventive maintenance service visits. These services shall be provided six (6) months after the start of the warranty period and a maximum of two weeks before the end of the warranty period. The Installer of the system shall coordinate with the Owner the precise dates for service. During the preventative maintenance visit the following tasks shall be performed:

1. Cleaning of active equipment that shows visible accumulation of dirt, dust, or debris of any kind.

2. Replacement of any consumable parts in the systems that require replacement per manufacturer's instructions or Code during the warranty period, such as filters.

3. Lubrication of any mechanical parts that require period maintenance per manufacturer's instructions during the warranty period.

4. Run manufacturer's recommended tests for each piece of equipment installed. The Installer shall provide test reports at the end of the test.

5. Visual observation of all devices in the system to spot any anomalies.

6. Review of error logs from all system components that maintain a history buffer and analysis of such logs with an explanation to Owner on the cause of those errors.

H. Extended service agreement. Prior to final acceptance testing, and within thirty 30-days of CO, the installer of each technology system shall submit to the Owner an option to purchase extended service coverage. This proposal shall provide for the purchase option of 1, 3, or 5 years of extended coverage. Coverage shall include, at a minimum, the same provisions as during the warranty period or as required by the Owner.

3.6 COMISSIONING

A. This project will be commissioned by the A&E or by a third party company designated by the Owner. The commissioning process will consist of functional testing by the commissioning agent of a percentage of the installed infrastructure.

B. The Installer of each technology system shall notify the Owner when the system is ready for commissioning. The installation is ready for commissioning once the Installer is complete with the testing of the system and the identification process has been completed.

C. The Installer shall be available on site to resolve any discrepancies indicated by the test results provided by the Installer of the system or comments made by the commissioning agent.

3.7 ENGINEER'S FINAL ACCEPTANCE TEST

A. The technology systems shall be tested during the installation by the Installer as frequently as required to solve any installation issues and non-compliance with the system specifications. The technology systems will not be considered delivered to the Owner until the final acceptance test has been passed. The final acceptance test shall be done in the presence of the A&E and/or the Owner. The Installer shall request in writing, with 2 weeks advance notice, the presence of the A&E and/or Owner for the final acceptance test.

B. In order for the Installer to request final acceptance, the following tasks shall be completed:

1. All components shall be inspected to ensure they have been properly installed by the Installer, securely attached to structure, and remain clean and unmarred.

2. All equipment shall be properly adjusted, clearly labeled, and fully operational.

3. The Installer shall have tested the system previously to ensure the final acceptance test will be successful. Detailed proof of this test shall be sent to the A&E with the request for final acceptance.

4. All permanent and final labelling as requested in the identification and tagging section of the technology specifications are completed.

5. No temporary conditions shall be present in the system.

6. All batteries on all system components shall be connected.

7. All system programming shall be completed as indicated in the specifications for each technology system.

C. All test equipment required for the final acceptance shall be provided by the Installer of the system, unless specifically indicated by the A&E.

D. The A&E shall define the scope of the testing but the installer shall be prepared for testing every single component of the system. During the day of the test the A&E will indicate the testing processes and procedures for each system. Testing could include the operation of the system during power outages. The Installer of the system shall be available during the complete testing process to answer questions from the Engineer and to demonstrate specific parts of the system. If personnel form the Installer or test equipment required to be provided by the Installer is not available, the test will be considered and marked as a failure.

E. A punch list of the items to be corrected will be prepared by the A&E during the final acceptance test. The Installer shall correct all items and request a second site visit for verification of all punch-list items by the A&E and Owner. During the second test, no additional punch list items shall be expected, and only the items in the punch list will be reviewed and tested.

F. If during the testing process the A&E and/or Owner consider that the rate of failure of the test is too high (more than 5 failures or non-compliance with specifications), the test will be cancelled unilaterally by the A&E and/or Owner. The Installer shall correct all items and re-schedule the final acceptance test again. The new test will start over from the beginning and nothing previously tested will be accepted. The Installer shall not be entitled to additional compensation for the additional effort to test the system during this condition.

G. Upon successful completion of the final acceptance test the Installer of the system will receive a written notice by the A&E and/or Owner acknowledging the acceptance of the test

H. See the individual specification sections for system specific requirements for testing.

3.8 TRAINING AND INSTRUCTION

A. Training for each technology system shall be provided as indicated in this specification section and in the individual specification sections for each system.

B. The following training guidelines shall be followed for all technology systems:
1. Training shall be scheduled in a way that no attendee or presenter shall be required to attend more than 6 hours of training per day.

2. Prior to starting all training, the training submittal shall be approved. See Part 1 of this specification section for details on the training submittal requirements.

3. No training shall be scheduled prior to the system being completed and accepted by the A&E.

4. Training shall be conducted during the normal business hours of the Owner, at a date and time of mutual convenience to the Owner and the Installer. All training sessions need to be scheduled by the Installer at least two weeks in advance.
5. All training shall be video recorded and delivered to the Owner as part of the close out information in digital format. All video shall be recorded in hi-quality MPEG2 or HD format. The media turned over to the Owner shall be in electronic format viewable through QuickTime or Windows Media Player.

6. The installer is responsible for completing a list of attendees for each training session. All attendee sheets shall be submitted as part of the close out information

3.9 AS BUILT DOCUMENTS

A. Production: During the course of the project the Installer shall maintain a record as-built drawing set. The set shall be maintained at the site at all times and shall be accurate, clear, and complete. The set shall show the actual location of all equipment in the installed location. The as-built drawings shall show all technology systems work completed and installed to the current stage of construction. These drawings shall be available for review by the A&E's field representatives at all times.

B. Completion: At the completion of the work, the Installer shall transfer the record as-built drawing set information onto a second set of clean drawings with all changes marked in colored ink. This copy shall be submitted to the A&E.

C. Final: Submit full size drawings and one (1) copy of the Installer's CAD/Autodesk Revit© files for review and acceptance.

D. Additional documents. At project completion, the Installer of the technology system shall provide updated tables, equipment schedules, configuration worksheets and labeling systems used on the project. See individual system specification sections for more detailed information on these document requirements.

3.10 CLOSE OUT DOCUMENTS

A. Closeout information shall be provided to the Owner in electronic format at the end of the project. The file shall be organized by each system and shall follow the following structure:
   1. PART 1 – OPERATION AND MAINTENANCE MANUALS. Operation and Maintenance manuals as issued by the manufacturer of each system component. Such manuals shall include all maintenance procedures required to be done by the Owner. When required by an individual specification section, a short form operation guide prepared by Installer shall be provided.

   2. PART 2 – INVENTORY OF EQUIPMENT INSTALLED. A detailed list of all relevant active equipment (equipment with electronic components with a market value over $200) installed on the project with the following information presented in electronic format (Microsoft Excel):
      a. Make
      b. Model
      c. Serial number
      d. Room location
      e. Warranty period, including manufacturer's extended warranties.

   3. PART 3 – PROOF OF OWNERSHIP, DELIVERY AND ACCEPTANCE. The following letters/documents shall be attached:

a. Acceptance letter signed by A&E for each of the technology systems installed.
b. Proof of training by submitting sign in sheets for each training session done
c. Signed transmittal for all training videos and training material.
d. Signed transmittal for all spare parts and consumables delivered to the Owner.
e. A list of all the user names and passwords for all the different software programs used by the technology systems and any equipment with password codes. All levels of passwords used by the Installer shall be provided, from the lowest hierarchy to the highest.
f. At least four (4) copies of all physical keys to the different devices of the technology systems. Each key shall be individually tagged in a key ring. All keys shall be included and organized inside a key ring management enclosure installed at a location designated by the Owner.
g. A list of all software modules and licenses delivered to the Owner. The list shall include part numbers, serial numbers, license certificates of authenticity, hardware key (dongles) numbers and software versions. This list shall have a clear signature, name, and date of the person that received this software by the Owner.
h. A copy of all official equipment and software registrations with manufacturer.

4. PART 4 – AS BUILT DOCUMENTS. All as-built documents as indicated in this specification section and other applicable technology systems specification sections.

END OF SECTION

ATTACHMENT 1 – SUBSTITUTION REQUEST FORM

Substitution Request Number: _____

PROJECT: _____ DATE: _____

SPECIFICATION SECTION: _____ ITEM(S): _____

SPECIFIED MANUFACTURER: _____

SPECIFIED MODEL NO: _____

PROPOSED MANUFACTURER: _____

PROPOSED MODEL NO: _____

REASON(S) FOR NOT PROVIDING SPECIFIED ITEM: _____

_____

Attach product description, drawings, photographs, performance and test data, samples and other information necessary for side-by-side evaluation. Fill in all blanks.

A. Provide substantiated reason for requested substitution.

B. Does the requested substitution affect dimensions, locations or configurations?
No: _____ Yes: _____
Explain (attach drawings if necessary): ___
_____
_____

C. What are the differences between the specified item and the requested item:
_____
_____

D. Will the Contractor pay for any changes to the building design, including engineering and detailing costs caused by the approval?
No: _____ Yes: _____
Explain (if no, and describe modifications required to install or accommodate the requested change): _____
_____
_____

E. Will approval affect the work of other trades, including the Construction schedule?
No: _____ Yes: _____
Explain (if yes): _____
_____
_____

F. Manufacturer's guarantees of the proposed and specified items are:
Same: _____ Different: _____
Explain (if different):
_____
_____

G. Does the proposed item meet all applicable codes, ordinances and regulations for this specific application?

No:_____ Yes:_____
Explain (if no):_____

H. Has proposed item been used locally in similar applications?
No:_____ Yes:_____
Explain (give nearest location):_____

I. Will maintenance and service parts be locally available for the requested item?
No:_____ Yes:_____
Explain (if no, give nearest location):_____

J. Will the requested item require waiving of any qualifications or other requirements?
No:_____ Yes:_____
Explain (if yes):_____

K. Are there any license fees or royalties associated with the requested substitution?
No:_____ Yes:_____
Explain (if yes):_____

L. If approved, will the Owner receive a credit for the proposed alternate material?
No:_____ Yes:_____
Explain (if no):_____

M. Does the proposed alternate material meet the same applicable standards (ASTM, ANSI, UL, FS) as the specified item?
No:_____ Yes:_____
Explain (if no, attach drawings if necessary):_____

N. Identify the recycled materials or components or features that lead to the claims to being “Green”: _____

O. Has the required line-by-line comparison been included?
No:_____ Yes:_____
Explain (if no):_____

The undersigned agrees to pay for the Designer’s review time and for changes to the building design, including re-view, re-design, engineering, drawings and other costs caused by the requested substitution.

_____

Signature

Print

The following Purchase Order or billing number is to be used for billing the Contractor for costs incurred in evaluating and if applicable accommodating the requested substitution.

The Engineer will not be required to approve any product that is not equal or suitable for the specific application and functionality of this project.

SECTION 27 0526
GROUNDING AND BONDING FOR TELECOMMUNICATIONS SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. General: Drawings and general provisions of the Contract, including the General and Supplementary Conditions and Division 1 Specification sections, apply to work specified in this section.

B. General: Refer to specification section 260526 for the grounding electrode system and the equipment grounding system for telecommunications. In all cases the applicable electrical codes for grounding and bonding for telecommunications shall be met.

C. Supplemental: Refer to the specification sections identified below for additional requirements, which are supplemented by this section.
1. 260526 Grounding and Bonding for Electrical Systems
2. 270010 Technology General Provisions
3. 270528 Raceways for Technology
4. 271000 Structured Cabling System

D. General. Refer to the technology system drawings for the telecommunications bonding diagram.

E. General. The bonding approach required herein is intended to work in concert with the cabling topology as specified in Specification section 271000 and pathways installed in accordance with specification section 270528.

F. Reference Standards:
1. TIA-607-B
2. TIA-568-C
3. TIA-606
4. UL 1863 Communication Circuit Accessories
5. UL-50 & UL-514
6. NFPA 70 – NATIONAL ELECTRIC CODE
7. IEEE Std. 1100-1992, Powering and Grounding Sensitive Electronic Equipment.
8. BICSI TDMM, Telecommunications Distribution Method Manual.
9. UL 1449
10. NFPA 780
11. R56 “Standard and Guidelines for Communications Sites” Motorola Inc. 2005.

G. Standard compliance: This project requires compliance with the R56 grounding standards. The requirements of the R56 grounding standards are more stringent and supersede the requirements indicated in this specification section.

1.2 MATERIALS ALTERNATES AND SUBSTITUTIONS

A. General: Substitutions are allowed for all components of the systems under this specification sections as long as all requirements for substitutions indicated in specification section 270010 are followed.

1.3 SHOP DRAWINGS AND SUBMITTALS

A. See additional requirements for the submittals in specification section 270010.

B. The Installer of the telecommunications grounding systems shall provide the following information for the initial submittal for the project:
   1. Provide manufacturer's product data sheets for all equipment indicated in Part 2 of this specification section and any additional equipment indicated on the technology drawings. Product data sheets shall bear the printed logo or trademark of the manufacturer for each type of product being provided. The product data sheets for this submittal will match the chronological order of the equipment indicated in Part 2 (product data sheets for equipment shown on the drawings will submitted in order based be based on the sheet). Failure to properly sequence the product data sheets will result in the submittal being rejected not reviewed.
   2. Provide a spreadsheet indicating the telecommunications ground bar product selection for each telecommunications room indicated in the technology drawings. The spreadsheet will include the following information:
      a. Room Name or number
      b. Quantity of ground bars
      c. Ground bar dimensions
      d. Number of holes and placement in each ground bar
      e. Labelling for each ground bar
   3. Provide a drawing indicating the following information:
      a. The location of all telecommunications ground bars and routing of all telecommunications grounding backbone conductors.
      b. Wire size charts for all telecommunications grounding backbone conductors on the project.
      c. All labels being used on the telecommunications backbone conductors, bonding conductors, and telecommunications ground bars.

1.4 ABBREVIATONS

A. General: The following abbreviations are used in this specification section:
   1. TBB - Telecommunications Bonding Backbone
   2. BC - Bonding Conductor
   3. EMT - Electrical Metallic Tubing
   4. RMC - Rigid Metal Conduit
   5. MCBN – Mesh Common Bonding Network

PART 2 - PRODUCTS

2.1 FLEX CONDUCTOR TERMINAL, TWO HOLE, LONG BARREL, INSPECTION WINDOW LUG

A. Flex conductor terminal lugs shall be used with the TBB and BC to provide a good bond between the conductor, equipment, and the TGB. All lugs shall be selected to match the size of the conductor being used. Other types of terminations are not accepted.

B. The flex conductor terminal lugs shall have the following specification:
   1. Finish: Thin platted
   2. Cable types: Designed to work with Flexible, Extra-Flexible, and Code Stranded Copper Conductors.
   3. Stud hole size: ¼"
   4. Hole spacing: to match spacing of pre-drilled holes on the ground bar or equipment.
   5. Barrel length: > 1"

6. Termination type: crimp type
7. Angle: straight is preferred or angled if installation space is limited.
8. Listing: UL listed and tested to 35 KV and 90ºC

C. Flex conductors terminal lugs shall be used with the BC in the following conditions:
1. Bonding two sections of pathways such as sections of tubular runways or cable trays.
2. Bonding a BC or a TBB to a TGB or TMGB
3. Bonding to equipment for bonding.

D. Approved manufacturers: Panduit, Erico, Chatsworth, or approved equal.

2.2 C TYPE COMPRESSION CONNECTOR

A. When a BC is required to be bonded to another BC of the same or different size the only approved method of bonding shall be with a C type compression connectors. Screw type connectors, wire nuts or any other method are not acceptable. The specifications of the C type compression connectors are:
1. Cable types: designed to work with Flexible, Extra-Flexible, and Code Stranded Copper Conductors.
2. Tap grooves: installer to select connector based on size of BCs and quantity of BCs to be bonded.
3. Termination type: crimp type
4. Listing: UL listed and tested to 600V

B. Approved manufacturers: Panduit, Erico, Chatsworth, or approved equal.

2.3 TELECOMMUNICATIONS BONDING BACKBONE (TBB)

A. Telecommunications bonding backbone conductors shall be provided as indicated in the Construction Documents. TBBs shall be insulated stranded copper conductors with a wire gauge dictated by the length of the cable. The TBB shall be sized at 2 kcmil per linear foot of conductor length up to a maximum of 3/0 AWG. The following table shall be used to estimate the size of the TBBs:

TBB LENGTH LINEAR M (FT)	TBB SIZE (AWG)
Less than 4 (13)	6
5- 6 (14 – 20)	4
6 – 8 (21 – 26)	3
8– 10 (27 – 33)	2
10– 13 (34 – 41)	1
13 – 16 (42 – 52)	1/0
16 – 20 (53 – 66)	2/0
Greater than 20 (66)	3/0

B. Extension of an installed TBB shall not be done with a wire gauge smaller than the original conductor regardless of distance.

2.4 BONDING CONDUCTOR (BC)

A. Bonding conductors shall be used to bond equipment and raceways to the telecommunications grounding infrastructure. The specifications of the BC are:
   1. Conductor Size: use the chart in 2.6 to estimate the size of the bonding conductor. The BC shall be no smaller than an AWG-6. For projects with R56 grounding compliance, the BC shall be no smaller than AWG-2.
   2. Material: stranded copper conductor.
   3. Insulation: Insulation color shall be green with a yellow stripe. Use non-insulated conductors only under raised access floor spaces.

B. Pre-fabricated BC or field made BC are acceptable.

C. Both ends of a BC shall be terminated with two hole long barrel lugs.

2.5 LABELS FOR TELECOMMUNICATIONS GROUNDING INFRASTRUCTURE

A. The Installer shall follow the labeling materials and methodology indicated in specification section 270010.

PART 3 - EXECUTION

3.1 INSTALLATION PRACTICES.

A. General: Specification section 260526 applies to the work of this section. Specific installation requirements called for in this section take precedence over specification section 260526.

B. General: All installation requirements indicated in specification section 270010 shall be followed.

C. PROTECTION. All TBB and BC shall be installed and protected from physical and mechanical damage.

D. GALVANIC CONTINUITY. The TBB and BC shall be continuous and routed in the shortest possible straight line path.

E. CRIMPING. All lugs shall be crimped with the proper die for the size of lug being used.

F. PAINT REMOVAL. Paint shall be removed before attaching any BC to equipment with a painted surface, such as ladder trays and racks, if no factory installed ground lug is available.

G. SPLICING. The TBB and BC shall be installed without splices. Where splices are necessary, the number of splices should be kept to a minimum and shall be accessibly located within the telecommunications spaces. Joined segments of a TBB or BC shall be connected using exothermic welding, irreversible compression-type connectors, or equivalent. All joints shall be adequately supported and protected from damage.

H. BONDING TO ELECTRICAL PANELS. The TGB or TMGB shall be as close to the electrical power panel as is practicable and shall be installed to maintain clearances required by applicable electrical codes. The electrical power panel bus or the panel enclosure feeding telecommunications equipment racks/cabinets shall be bonded to the TGB or TMGB.

I. BONDING TO BUILDING STEEL. All connectors used for bonding to the metal frame of a building shall be listed for their intended purpose.

J. LUG SCREWS. All connections from lugs to ground bars or grounding equipment shall be done with metal screws secured with nuts and compression washers. Connections made with metal self tapping screws will not be allowed.

K. BONDING PROTECTOR BLOCKS. All primary or secondary building entrance protector blocks for outside plant cabling shall be bonded to the nearest TMGB or TGB with a BC. A minimum of 1' separation shall be maintained between the BC and any DC power cables, switchboard cable, or high frequency cables (even when the BC is routed in RMC, IMC, or EMT).

L. BONDING OUTSIDE PLANT CABLES. When the outside plant cables in the Telecommunications Entrance Facility room incorporate a metallic cable shield (armored) isolation gap, the metallic cable shield on the building side of the gap shall be bonded to the TMGB or TGB as it enters the building.

M. BONDING BACKBONE CABLES. Where backbone cables (fiber or copper) incorporate a shield (armor) or metallic member, it shall be bonded to the TMGB or TGB as it enters the building.

N. BONDING HORIZONTAL CABLES. When shielded horizontal cables are used and terminated in patch panels, each patch panel shall be bonded to the telecommunications grounding systems. A BC shall be used between each patch panel and the rack rails of the rack/cabinet or the rack's vertical ground bar (if available).

O. INTENDED USE OF TBB / BC. The TBB / BC is not intended to serve as the only conductor providing a ground fault current return path. The intended function of the TBB / BC is to equalize potential ground reference differences within the telecommunications system infrastructure.

P. INSTALLATION OF TBB INSIDE TELECOMMUNICATIONS SPACES. When the TBB is installed inside the telecommunications spaces they shall be protected from damage by installing inside conduit. Conduit to protect TBBs inside telecommunications spaces shall be made of PVC and shall be sized and supported as required by NEC. If metal conduit is used, the conduit shall be EMT or RMC. To avoid an electromagnetic choke effect in this conductor, each end of the conduit used to protect the TBB shall be bonded to the TMGB or TGB at each end. Conduit used for protection of TBBs shall be sized and supported as required by NEC.

Q. INSTALLATION OF TBB OUTSIDE TELECOMMUNICATIONS SPACES. When the TBB is installed outside of the telecommunications spaces they shall be protected from damage installing inside conduit. Conduit to protect the TBB outside of the telecommunications spaces shall be EMT or RMC. To avoid an electromagnetic choke effect in this conductor, each end of the conduit used to protect the TBB shall be bonded to the TMGB or TGB at each end. Conduit used for protection of TBBs shall be sized and supported as required by NEC.

R. RACK/CABINET BONDING. All racks/cabinets on the project shall be bonded to the nearest TMGB or TGB inside the telecommunications room. All rows of rack/cabinets shall be bonded together by a single AWG-2 conductor coming from the nearest TMGB or TGB inside the room. This bonding conductor shall be insulated and installed above the racks along the side of the cable tray system and supported by a hanger external to the cable tray. At each rack a bonding jumper (AWG-6) shall be provided and terminated to the rack/cabinet manufacturer's recommended bonding lug. The bonding jumper shall be connected to the AWG-2 conductor by means of a C type compression connector that is protected with heat shrink material. When the project requires R56 grounding compliance, the bonding jumper size shall be increased to AWG-2 and a vertical ground bar shall be provided for each rack/cabinet from the top to the bottom. This ground bar shall be the termination point for the bonding jumper for each rack and shall also bond the manufacturer approved grounding lug in the rack/cabinet to the ground bar.

S. BONDING RACK/CABINET OUTSIDE OF TELECOM ROOMS. Racks/cabinets installed outside of the telecommunications rooms shall be bonded to the nearest electrical ground with a BC.

T. LABELING: All labeling systems for telecommunications grounding infrastructure shall be in compliance with the ANSI/TIA/EIA-606 standard. At a minimum, the following elements shall be labeled in the telecommunications grounding system:
   1. All TMGB or TGB shall be labeled with a unique identifier located on the wall near the unit, not on the ground bar.
   2. All TBB on the project shall be labeled with a unique identifier at each termination point of each TBB. The label on each end of the cable shall indicate the termination location at the other end of the cable.
   3. BC for rows of racks shall be labeled with a unique identifier at both ends of the cable.
   4. BC for surge protectors shall be labeled with a unique identifier at both ends of the cable.

U. ADDITIONAL LABELING. All BC that are used in bonding rows of racks/cabinets and TBB shall have an additional identification marker using a yellow printed wrap around tag installed close to the bonding point. Strap the label to the cable jacket with a flame retardant cable tie. This tag shall have the following wording in green letters: “IF THIS CONNECTOR OR CABLE IS LOOSE OR MUST BE REMOVED, PLEASE CALL THE BUILDING TELECOMMUNICATIONS MANAGER".

3.2 AS BUILT DOCUMENTS AND CLOSE OUT INFORMATION

A. See specification section 270010 for requirements.

END OF SECTION

SECTION 27 0528
RACEWAYS FOR TECHNOLOGY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. General: The drawings and general provisions of the Contract, including General and Supplementary Conditions and the Division 1 specification sections, apply to the work of this section.

B. Section 260533 - Raceway Systems applies to the work of this Section. Specifications requirements described herein take precedence over Section 260533.

C. Supplemental: Refer to the specification sections identified below for additional requirements, which are supplemented by this section.
   1. 270010 Technology General Provisions
   2. 270526 Grounding and Bonding for Telecommunications Systems

1.2 DESCRIPTION

A. General: Furnish and install, complete with all accessories, a TIA 569 Telecommunications Pathways and Spaces compliant infrastructure for support of the Structured Cabling System (SCS) and routing of other technology systems. The goal of the project is to provide a reliable raceway architecture within the building that shall serve as a support for transport of data, voice telephony, security, and audio/visual cabling throughout the building. The raceway shall be routed from designated demarcation points to various wall, floor, ceiling, column, room, and other locations as indicated on the contract drawings and described herein. The cabling that shall be supported includes, but is not limited to:
   1. Copper: Balanced twisted four pair category plenum or non-plenum cable, multipair balanced twisted pair plenum and Non-plenum.
   2. Fiber Optic: Air blown fiber optic cables and conventional fiber optic cables plenum or non-plenum.
   3. Other: Hybrid and composite cables plenum or non-plenum.

B. General: The pathway system shall utilize a combination of conduit, cable tray, and supports for vertical and horizontal cable routing. Pathways shall be provided and located as shown in the quantities indicated on the drawings. Pathways shall terminate in rooms or closets using approved fasteners and termination hardware. All bushings and shall be reamed to eliminate sharp edges. All Pathways shall be identified at all locations.

C. The Installer should anticipate that all products and installation procedures shall comply with ANSI/TIA/EIA-569-A (CSA T530) requirements at a minimum.

D. General: Installation of the raceways for communications shall be a complete system including all supports and hangers as required per contract documents and manufacturer's installation guidelines.

E. Support: All devices and raceway shall be supported from the structural portion of the building. Supports and hangers shall be of a type approved by Underwriters' Laboratories. Ceiling grid support wire can be used for support as long as the support wire is used for this sole purpose and not to support the ceiling or other devices. Boxes and conduit shall not be supported or fastened to ceiling suspension wire. Devices installed in an acoustical ceiling shall be supported from the ceiling grid and not the ceiling tile with approved fastening devices.

F. Installation: The Installer shall lay out and provide their work in advance of the installation of the floors or walls, and shall provide all sleeves that may be required for openings through floors, walls, etc. Where plans call for conduit to be run exposed, provide all inserts and clamps required for the supporting of conduit.

G. Pull Strings: Provide pull strings in all raceways. Pull strings shall be nylon and shall be impervious to moisture. Pull strings installed in 1 inch and smaller conduit shall have a tensile strength no less than 30 lbs. Pull strings installed in conduit larger than 1 inch shall have a tensile strength no less than 200 lbs.

H. Directional boring might be required on the drawings or the installer might choose this method as the best way to install underground conduit on this project. In either case, the installer shall comply with the requirements indicated here for directional boring.

I. If at the time of bid an underground locate survey is not available, the Installer shall include the cost of this survey. No digging or directional boring will be allowed without this survey being completed.

1.3 INSTALLER QUALIFICATIONS

A. General: The Installer selected for the Project must be a BICSI certified installer and certified by the manufacturer for the products being provided. The Installer must adhere to the engineering, installation, and testing procedures recommended by the manufacturer and will utilize the manufacturer's authorized components.

B. General: The Installer directly responsible for this work shall be a Pathways and Spaces for Structured Cabling System Installer (PS-SCS) who has been regularly engaged in providing and installing commercial and industrial pathways and spaces for telecommunications wiring systems of this type and size for the past five years at a minimum. Any subcontractor to the Installer who will assist the PS-SCS installer in the performance of this work, shall have the same training and certification as the PS-SCS installer.

C. Certification: The installer's Project Manager shall possess a current BICSI Registered Communications Distribution Designer (RCDD) certificate. All shop drawings submitted by the installer shall bear the RCDD's seal.

D. Experience: The Installer shall be experienced in all aspects of this work and shall be required to demonstrate this experience on recent systems of similar complexity and size. The Installer shall own and maintain the tools and equipment necessary for successful installation for their systems and shall have personnel who are adequately trained in the use of such tools and equipment.

1.4 MATERIALS ALTERNATES AND SUBSTITUTIONS

A. General: Substitutions are allowed for all components of the systems under this specification section as long as all requirements for substitutions that are indicated in specification section 270010 are followed.

1.5 SHOP DRAWINGS AND SUBMITTALS

A. See additional requirements for shop drawings and submittals in specification section 270010.

B. General: The Installer shall provide the following information no later than 30 days after contract award:
   1. Provide proof of Installer's qualifications per 1.3.
   2. Provide manufacturer's product data sheets for all equipment indicated in Part 2 of this specification section and any additional equipment indicated on the technology drawings. Product data sheets shall bear the printed logo or trademark of the manufacturer for each type of product being provided. The product data sheets for this submittal will match the chronological order of the equipment indicated in Part 2 (product data sheets for equipment shown on the drawings will submitted in order based be

based on the sheet). Failure to properly sequence the product data sheets will result in the submittal being rejected not reviewed. At a minimum the following shall be submitted as part of this specification section:

a. Supporting devices (j-hooks) if allowed on the project. See part 3 of this specification.
b. Cable tray system with all required accessories.
c. Runway cable tray system with accessories.
d. Plywood for the telecommunications back board.
e. All wall and floor firestop systems for all penetrations.
f. Innerduct.
g. Detectable tape.
h. Communications vaults.
i. Conduit waterfalls.

3. Provide shop drawings that indicate the precise location and type of support for cable tray or ladder tray systems in all areas where they will be used.
4. Provide shop drawings for all communications vaults indicating conduit penetrations on each side of each vault. Vaults shall be labeled to indicate their correct location in the site plan.
5. Provide load calculations signed and sealed by a professional engineer for pre-cast concrete communications vaults.
6. Technology Pole and Support Component Certificates: Signed by manufacturers of poles, certifying that products are designed for indicated load requirements in AASHTO LTS-4-M and that load imposed by security device(s) and attachments has been included in design. The certification shall be based on design calculations by a professional engineer.
7. The Installer shall provide shop drawings indicating all underground locate surveys and the proposed routing of the conduit as well as proposed depth for all directional bores.

1.6 WORK EXTERNAL TO THE BUILDING

A. General: Any work external to the confines of the building shown on the Construction Documents shall be governed by the provisions of this specification.

PART 2 - PRODUCTS

2.1 CONDUIT

A. All conduit shall be as indicated in Specification Division 26

B. Acceptable manufacturers: Carlon Type EB, Queen City Plastics, or accepted substitution.

2.2 HIGH DENSITY POLYETHYLENE (HDPE) PIPE

A. HDPE pipe shall be used for all directional boring and open trench applications. HDPE pipe shall comply with the following manufacturing standards:
1. ASTM D 3035 Polyethylene (PE) Plastic Pipe (SDR) Based on Controlled Outside Diameter.
2. ASTM D 2239 Polyethylene (PE) Plastic Pipe (SIDR) Based on Controlled Inside Diameter.
3. ASTM F 2160 Solid wall High Density Polyethylene (HDPE) Conduit based on Controlled Outside Diameter (O.D.)
4. NEMA TC-7 Smooth Wall Coilable Polyethylene Electrical Plastic Conduit.

B. HDPE pipe shall be manufactured from a suitable thermoplastic polymer that conforms to the minimum standard PE334420E/C of ASTM D3350. The resin properties shall meet or exceed the values listed below for HDPE pipe:

ASTM Test	Description	Values HDPE
D-1505	Density g/CM 3	0.941 - 0.955
D-1238	Melt Index, g/10 min Condition E	0.05 - 0.50
D- 638	Tensile strength at yield (psi)	3000 min.
D-1693	Environmental Stress Crack Resistance Condition B,F 20	96 min.
D-790	Flexural Modulus, MPa (PSI)	80,000 min.
D-746	Brittleness Temperature	-75°C

C. Design selection: The HDPE pipe used on this project shall be rib/smooth (ribbed interior and smooth exterior) wall. The pipe shall be available in multiple colors, non-lubricated, and shall include a factory installed 1,800 lbs tensile strength polyester pull tape. The pipe walls shall be in compliance with SDR 7 of ASTM D3035 and shall have footage markings.

D. Approved manufacturers: Carlon Industries or approved equal.

2.3 GUTTER TROUGH

A. General: The gutter trough shall be NEMA 1 rated lay-in type and sized as shown on. The sides and bottom shall contain no electrical conduit knock-outs unless shown otherwise on the drawings. The Installer shall punch holes required for conduit penetrations. The cover shall be hinged with quarter turn fasteners to hold the cover shut. Covers and bodies shall be 16 gauge steel.

B. Approved manufacturers: Hoffman Engineering Company, Square "D", or Steel City.

2.4 SUPPORTING DEVICES

A. Hangers: The hangers shall be made of durable materials suitable for the application involved. Where excessive corrosive conditions are encountered, hanger assemblies shall be protected after fabrication by galvanizing or other approved preservative methods for the condition.

B. Non-continuous cable supports (j-hooks): The j-hooks shall provide a bearing surface of sufficient width to comply with the required bend radius of high-performance cables and shall be UL Listed.
1. Non-continuous cable supports shall have flared edges to prevent damage while installing cables.
2. Non-continuous cable supports that are 1-5/16” and larger shall have a cable retainer strap to provide containment of cables within the hanger. The cable retainer strap shall be removable and reusable and suitable for use in air handling (plenum) spaces.
3. Non-continuous cable supports shall have an electro-galvanized or G60 finish and shall be rated for indoor use in non-corrosive environments.
4. Stainless Steel non-continuous cable supports are intended for indoor and outdoor use in non-corrosive environments or where only mildly corrosive conditions apply.

C. Accessories: Non-continuous support systems shall be provided with the required mounting accessories depending on the location where the support will be installed (i.e. beam clips, flange clips, C and Z purlin clips).

D. Accepted manufactures; Erico or Panduit.

2.5 CABLE TRAY AND FITTINGS (RUNWAY)

A. General: Provide metal runway cable tray with splice plates, bolts, nuts, and washers for connecting sections together. The sections shall be constructed with rounded edges and smooth surfaces.

B. Materials: ASIM A36 steel bar.

C. Finish: Baked powder coated painted surface treatment using a polyester coating.

D. Finish color: Color to match equipment cabinet finish color. See specification section 271000.

E. Width: as shown on the drawings.

F. Fittings: Provide cable management fittings and hardware as recommended by manufacturer. Provide drop-outs, 90° changes, and tees as required for the equipment served and to support the cable. Provide at least one long radius drop-out for each rack/cabinet on the project.

G. Installation: The runway cable tray system shall be installed using the support components recommended by the manufacturer.

H. Loading: The runway cable tray system shall be installed per the manufacturer's suggested span load criteria.

I. Approved manufacturers: B-line, GS Metals, or Chatsworth.

2.6 PLYWOOD TELECOMMUNCIATIONS BACKBOARD

A. Plywood telecommunications backboard: The plywood telecommunications backboards shall be installed on the walls of each telecommunications room. The backboards shall measure 8 feet x 4 feet and installed 8 inches AFF to minimize the risk of damage to the backboard. The telecommunications rooms shall have the walls covered with the backboard as indicated on the drawings. The backboard shall be 3/4 inch AC Grade with the best side out. All imperfections and voids shall be filled, sealed and sanded prior to being primed and painted with two (2) coats of UL Classified, fire retardant intumescent paint on the front, back and all four sides of the plywood. Fire retardant coating shall be tested to UL723, "Test for surface burning characteristics of building materials." Color to be grey, white or blue. Coordinate color selection with the Owner/Architect. The backboards shall be clearly labeled with the name of the Backboard Manufacturer, UL Classification of the Fire Retardant Coating, NFPA 255 Coating Flame Spread Index Class and the APA Grade of the plywood. One section of the backboard that shows has this stamped information shall be left unfinished for verification purposes.

B. Approved manufacturers: Series Pathways & Spaces, Inc. ReadySpec Series or equal, field fabricate backboards to all of the specifications listed above for TBB.

2.7 THROUGH WALL / FLOOR FITTING FIRE STOP SYSTEM

A. General. The systems covered under this specification are for firestop systems used in through penetrations of a wall or floor. These systems are used to maintain the fire rating of the wall or floor, as well as to route and protect power and/or communications conduit and cable distribution for commercial facilities.

B. Classification and use: The firestop system to be used in through penetration shall have previously been examined and tested by Underwriters Laboratories Inc. to UL1479 (ASTM E 814) and bear the U.S. and Canadian UL Classification Mark. The system shall be classified for use in one, two, three, and four hour rated walls and provide a maximum L (air leakage) rating of 3.3 cfm. The system shall be classified for use in one, two, and three hour rated concrete floors having a minimum 4 ½ inch thick reinforced lightweight or normal weight (100-150 psf) concrete. The devices shall also have been tested by Underwriters Laboratories Inc. to

UL2043 and determined to be suitable for use in air distribution plenum spaces. The entire fire stop systems shall be listed. Components from other systems or that have not been listed with the system being installed shall not be used.

C. Materials:
   1. Box: The fire stop device box shall be constructed of 16 gauge G90 steel.
   2. Intumescent block: The fire stop device's intumescent block shall be constructed of a graphite base material with an unrestrained expansion of 6 to 12 times normal size starting at 375º F. The intumescent block shall be securely mounted to the box in order to prevent tampering and damage during installation.
   3. Adjustable doors: the fire stop device shall have doors or other closing systems which can be adjusted to prevent unnecessary gaps between cabling and the fire stop device if the device is empty, partially full, or completely full. The doors shall be constructed of 16 gage G90 steel with no. 10-32 screws use to adjust opening size.
   4. Heat shield: For retrofit applications where an existing in-wall conduit extends out from the wall more than 7/8" [22mm], a UL listed Heat Shield must be used in order to maintain UL Fire Classification. The firestop device is then installed onto the heat shield

D. Sleeve system: For retrofit applications where no conduit is installed in the wall to protect existing cabling, a split conduit assembly should be used to provide fire rating. After installing the split conduit within the wall, a wall plate should be installed to cover any gaps between the sleeve and the wall.

E. Sizes: the fire stop device shall be available for two (2) inch to four (4) inch trade size EMT conduit.

F. Finish: the fire stop device shall be available in safety yellow, orange, custom colors, and an unpainted galvanized finish.

G. Approved manufacturers: Wiremold FlameStopper, STI EZpath, or approved equal

2.8 FIRE STOP SYSTEMS FOR SMALL PENETRATIONS

A. General: Fire stop systems shall be selected by the Installer as to comply with the following requirements:
   1. The selected system shall be UL listed for the conditions in which it will be installed. These conditions include: wall/slab type (masonry, drywall, etc), hour rating, and accessibility.

B. Acceptable manufacturers: caulk based products or firestop grommets by STI or equal.

2.9 INNERDUCT (REGULAR)

A. Flexible raceway systems are referenced in the Construction Documents as regular innerduct. Innerduct shall be provided in locations indicated on Construction Drawings. The innerduct type shall be selected according to the environment where it will be installed. Use HDPE innerduct only outdoors and use plenum or riser rated innerduct indoors. The Installer is responsible for determining the proper selection of the innerduct when used in air handling spaces. If at the time of bidding the Installer is not sure what kind of environment is present in the project, the Installer shall price plenum rated materials.

B. For plenum rated applications, the specifications of the innerduct shall be:
   1. Material: White or orange Kynar PVDF resin, a fluoropolymer compound.
   2. Listing: Innerduct shall be listed to UL 2024 with this listing printed on the product.
   3. Marking: Footage shall be sequentially marked.
   4. Configuration: Corrugated type.
   5. Pull line: Built in 900 lb rated pull tape.
   6. Size: Shall be available in 3/4 inch through 2 inch diameter.

C. For riser rated applications, the specifications of the innerduct shall be:

1. Material: Orange polyvinyl chloride (PVC).
2. Listing: Innerduct shall be listed to UL 2024 with this listing printed on the product.
3. Marking: Footage shall be sequentially marked.
4. Configuration: Corrugated type.
5. Pull line: Built in 900 lb rated pull tape.
6. Size: Shall be available in 3/4 inch through 2 inch diameter.

D. For outdoor applications, the specifications of the innerduct shall be:
1. Material: High Density Polyethylene (HDPE).
2. Listing: None.
3. Marking: Footage shall be sequentially marked.
4. Configuration: Corrugated type.
5. Pull line: Built in 1,800 lb rated pull tape.
6. Size: Shall be available in 3/4 inch through 2 inch diameter.

E. All inner ducts shall be provided with couplings and accessories suitable for the environment where they will be installed.

F. Approved manufacturers: Carlon or approved equal.

2.10 DETECTABLE WARNING TAPE

A. A detectable warning tape shall be installed above all underground conduits and installed at a minimum depth of 18 inches or as shown on the drawings. The detectable warning tape shall be constructed with a solid aluminum foil core with a minimum thickness of 5 mils and width of 3 inches. The detectable warning tape shall have printed diagonal warning stripes conforming to APWA color recommendations and with bold, black letters identifying what type of utility line is buried below. All detectable warning tape used for this shall be labeled “Caution Buried Fiber Optic Line Below”.

B. Approved manufacturers: Carlon, Stranco, Ind., Terra Tape or approved equal.

2.11 ACS ENCLOSURE

A. Where a junction box is indicated on the drawings with data outlets, provide an ACS Enclosure to house the outlets. The ACS Enclosure shall have the following specifications:
1. Minimum dimensions: 12”W X 12”H X 6”D
2. Door shall have a continuous hinge
3. Door shall be secured with fast operating clamps
4. Door shall have a locking hasp and staple for padlock
5. 14 gauge powder coated or stainless steel.

B. Each enclosure shall have a padlock, with all padlocks keyed alike. Locking cylinder shall be keyed per HCAA requirements.

C. Provide power coated steel for all indoor locations and provide stainless steel with gasketed door for all outdoor locations.

D. Basis of design: Hoffman

2.12 IN GROUND COMMUNICATIONS VAULT (POLYMER CONCRETE)

A. In ground communication vaults shall have the following specifications:
1. Construction material: Precast Polymer Concrete.

2. Listing: UL listed enclosure, tested to ANSI/SCTE 77
3. Box vertical design load: 22,500 lbs.
4. Box vertical test load: 33,750 lbs.
5. Box lateral design load: 800 lbs/sq. ft.
6. Box lateral test load: 1,200 lbs/sq. ft.
7. Box dimensions: as indicated on the drawings.
8. Box bottom: open bottom
9. Holes for conduit: holes for conduit shall be cut at the factory and shall not cover more than 25% of the side of the enclosure. All sides of the box shall have holes for conduits, even though conduits might not be shown for all sides on the drawings. No less than two holes for standard 4" conduit shall be provided on all four sides. All unused holes shall be plugged with plastic caps.
10. Cover ANSI TIER: 22
11. Cover logo: "Communications"
12. Cover screws: two (2) tamper resistant penta head screws
13. Cover accessories: two (2) 7" long cover hooks made of electroplated steel.

B. Approved manufacturers: Hubell Quazite PG style box with HH series cover and accessories or approved equal. Approved equals shall comply with all specifications listed above including construction material.

2.13 TECHNOLOGY POLE TYPE 1 – HINGED

A. The Type 1 technology pole shall have the following structural requirements for mounting and support:
1. Dead Load: Weight of security device(s) and its horizontal and vertical supports, lowering devices, and supporting structure, applied as stated in AASHTO LTS-4-M.
2. Live Load: Single load of 500 lbf (2224 N), distributed as stated in AASHTO LTS-4-M
3. Wind Load: Pressure of wind on pole and security devices(s), calculated and applied as stated in AASHTO LTS-4-M.

B. Structural Characteristics: Comply with AASHTO LTS-4-M.

C. Attachment Provisions: Comply with security device manufacturers' mounting requirements. Use stainless-steel fasteners and mounting bolts unless otherwise indicated.

D. Mountings, Fasteners, and Appurtenances: Corrosion-resistant items compatible with support components.

1. Materials: Shall not cause galvanic action at contact points.
2. Anchor Bolts, Leveling Nuts, Bolt Caps, and Washers: Hot-dip galvanized after fabrication unless otherwise indicated.
3. Anchor-Bolt Template: Plywood or steel.

E. Handhole: Oval-shaped, with minimum clear opening of 2-1/2 by 5 inches (65 by 130 mm), with cover secured by stainless-steel captive screws.

F. Power-Installed Screw Foundations: Factory fabricated by pole manufacturer, with structural steel complying with ASTM A 36/A 36M and hot-dip galvanized according to ASTM A 123/A 123M; and with top-plate and mounting bolts to match pole base flange and strength required to support pole, security device(s), and accessories.

G. Poles: Seamless, extruded structural tube complying with ASTM B 429/B 429M, Alloy 6063-T6 with access handhole in pole wall.

H. Basis of design: United Lighting Standards SSHA-481 Titling 8' square straight pole with hinged base.

2.14 CONDUIT WATERFALLS

A. All 4 inch EMT stub outs with communications cable entering/exiting the conduit from a cable tray system shall be fitted with a device to control the bend radius of the communication cable to a minimum of a 4 inch radius. The device that controls the bend radius shall be called a conduit waterfall and must comply with all National Electrical Code and TIA/EIA standards. The product must be RoHS compliant to meet environmental requirements, UL 94V-0 approved to reduce the spread of flame, and approved by UL for use in air handling plenum spaces. The conduit waterfall must support a static load of 40 lbs. and have a fastening device that allows for incremental adjustments necessary to conform to variances in conduit diameter.

B. Approved manufacturers: Panduit CWF 400 or approved equal.

2.15 EXPANSION FITTINGS

A. Installation: Provide expansion fittings in each conduit run wherever the conduit crosses an expansion joint. Install the fitting on one side of the joint with its sliding sleeve end flush with joint, and with a length of bonding jumper in the expansion equal to at least three times the normal width of expansion joint.

PART 3 - EXECUTION

3.1 INSTALLATION PRACTICES

A. See additional requirements indicated in Part 3 of specification section 270010.

3.2 INDOOR INSTALLED CONDUITS BELOW GRADE AND ABOVE GRADE

A. Bend radius: Conduits shall utilize long radius sweeps for all 90 degree bends. The inside radius of a conduit bend shall be at least six (6) times the internal diameter. When the conduit size is greater than 2 inches, the inside radius shall be at least ten (10) times the internal diameter of the conduit. For fiber optic cable, the inside radius of a bend shall always be at least ten (10) times the internal diameter of the conduit

B. Maximum distance between pull boxes: For indoor installation no section of conduit shall be longer than 100 feet or contain more than two (2) 90 degree bends between pull points without the installation of a pull box. For outdoor installations no section of conduit shall be longer than 500 feet or contain more than two (2) 90 degree bends between pull points without the installation of a pull box.

C. Labeling: All indoor conduits 2 inches or larger shall be labeled at both ends when these conduit runs are continuous between two rooms and going through multiple walls or slabs. Labeling materials shall be as indicated in specification section 270010. Conduit sleeves 2” or larger penetrating just one wall are not required to be labeled.

D. Pull strings: All conduits for technology systems shall be installed with pull strings.

3.3 UNDERGROUND TELECOMMUNICATIONS DUCT BANK

A. Description: Underground duct banks shall be composed of individual conduits installed adjacent to each other. Conduits shall be encased in concrete where indicated on the drawings. The conduits shall be constructed from sunlight resistant PVC Schedule 40 that meets the requirements of UL 651 and NEMA TC 6, unless indicated or specified otherwise. The use and installation of the duct bank shall be in accordance with the National Electrical Code requirements for the installation of non-metallic rigid conduit. The conduit used shall not be smaller than 4 inches in diameter unless otherwise noted on the drawings.

B. Sloping: The duct banks leaving a building shall have a continuous slope downward toward the communication vaults with a pitch of not less than 0.125 inches per foot. Manufactured bends shall have a minimum radius of 48 inches.

C. Conduits termination: Conduits shall terminate in end-bells where duct banks enter communications vaults. Provide reducers as required. When multiple conduits are installed adjacent to each other, each end shall be a painted a different color where the conduit enters a communications vault or building. Conduit separators within a duct bank shall be constructed of pre-cast concrete, high impact polystyrene, steel or any combination of these. The joints of the conduits shall be staggered to provide the duct bank with the maximum strength possible. During construction all open duct banks shall be protected from the entrance of debris by means of suitable conduit plugs. After the duct bank is completed, a testing mandrel with stiff bristles that is not less than 13 inches long and with a diameter 1/4 inch less than the size of the conduit shall be drawn through from both sides until the conduit is clear of all debris. After this is complete provide a conduit plug on the conduit for those conduits that are stubbed out underground and buried.

D. Conduit storage: All PVC conduit, fittings, and joints shall not be stored in the sun or weather, in an excessively heated space, or unevenly supported during storage.

E. Trenching: Trenches for duct banks shall be completely dry before installing conduits or pouring concrete. Well point as required to keep the trench dry.

F. Excavation: Backfilling shall be in layers not more than 8 inches deep, and shall be thoroughly tamped after is layer is placed. The first layer shall be earth or sand, free from particles that would be retained in a 1/4 inch sieve. The succeeding layers shall be excavated material having stones no larger than would pass through a 4 inch ring. The backfill shall be level with adjacent surface, except in sodded or paved areas. At these locations a space equal to the thickness of the sod or paving shall be left.

G. Plugging: All unused conduit openings shall be plugged or capped with a suitable device designed for the intended purpose. Caulking compound shall not be used for plugging unused conduit openings.

H. Stubs: Spare conduit stubs shall be capped and marked in the field and accurately dimensioned on the as-built drawings.

I. Spacers: All conduit installed underground or stubbed above floor from underground shall be separated with plastic interlocking spacers manufactured specifically for this purpose. Another option shall be to strap the conduit to a Kindorf channel supported by conduit or steel rods driven into the ground.

J. Minimum burial depth: All underground duct bank (with the exception of single conduit raceways installed under floor slab) shall be installed in accordance with Section 300 5 of the NEC. The minimum cover for any conduit or duct bank shall be two (2) feet, unless otherwise indicated.

K. Directional boring. For all applications requiring directional boring the following installation practices shall be followed.
   1. The Installer shall select the directional boring equipment based on the length of the pull, soil conditions, conduit size, and conduit quantity.
   2. When multiple conduits are installed adjacent to each other, each end shall be a painted a different color where the conduit enters a communications vault or building.
   3. Any conduit with a directional bore distance less than 500 feet shall be a continuous bore without splices.
   4. Any splices to HDPE conduit shall be done using the manufacturer’s approved methods.

3.4 INSTALLATION OF COMMUNICATIONS VAULTS

A. Excavation and backfilling for vaults: Perform all earthwork as per the requirements of Division 2 of the specifications. Provide a 6 inch minimum thickness of 3/4 inch crushed rock over the full width of the vault base and extend 12 inches beyond the edges of the vault. After repairing the waterproofing of the vault as

necessary, backfill and compact around the vault with structural backfill material. Excavated material may be used for structural backfill provided it conforms to the standard specifications for structural backfill material.

B. Installing vaults and risers: Set each concrete vault section plumb and level on a double layer bed of sealant at least 1/2-inch thick to make a watertight joint with the preceding unit.

C. Waterproofing. Waterproofing shall be factory applied to all exterior surfaces of vaults and risers. This includes the bottom of the vault which is to be coated as an exterior surface. Apply two coats at a rate of 65 square feet per gallon per coat. Prior to backfilling, field apply waterproofing material on joints and damaged surfaces as required. Protect coating from damage during backfilling and compacting.

3.5 CUTTING AND PATCHING

A. Core Drilling: The Installer shall be responsible for all core drilling as required for work under this section, but in no case shall the Installer cut into or weld onto any structural element of the project without the written approval of the A&E and the structural engineer. All concrete slabs above ground level shall be X-rayed prior to coring by the Installer.

B. Cutting and Patching: All cutting, rough patching, and finish patching shall be provided as specified in the contract documents. All cutting and patching shall be performed in a neat and workmanlike manner.

C. Openings and Sleeves: Locate all openings required for work performed under this section. Provide sleeves, guards, or other accepted methods to allow passage of items installed under this section. All sleeves that pass through a wall shall be securely fastened to the wall support structure (studs) or grouted in place.

D. Roof Penetrations: All roof penetrations for raceways that are part of technology systems shall be approved by A&E prior to executing this work. All roof penetrations shall be as accepted and approved by the roof membrane manufacturer.

3.6 IDENTIFICATION OF BOXES

A. Tags: During installation of the pull strings all pull strings shall be marked with waterproof vinyl tags indicating where the opposite end may be found. Tagging is not required where the conduit is stubbed out to the ceiling for one outlet box.

3.7 BLANK PLATES

A. Plates: Unless otherwise noted all unused outlet boxes shall receive blank plates matching the finish of the plates for electrical devices in the same room.

3.8 RACEWAY INSTALLATION

A. Support: All raceways shall be run in a neat and workmanlike manner and shall be properly supported in accordance with the latest edition of the NEC and BICSI guidelines. Exposed raceways where allowed, shall be supported with one hole straps (fasteners based on structure construction). All conduits shall be securely fastened in place with at least one support per eight foot section. The required hangers, supports and fasteners shall be provided at each elbow and no more than 1 foot from termination. The use of perforated iron for supporting conduits shall not be permitted. The required strength of the supporting equipment and size and type of anchors shall be based on the combined weight of the conduit, hanger, and cabling. Horizontal and vertical conduit runs may be supported by one-hole straps, clamp-backs, or other accepted devices with suitable bolts, expansion shields (where needed), or beam-clamps for mounting to building structure or special brackets.

B. Hanger installation: Where two or more 1 inch conduits or larger are run parallel to each other, trapeze hangers may be used. Trapeze hangars shall consist of anchors, threaded rods, spring nuts, and unistrut cross members. These conduits shall be individually fastened to the cross member of every trapeze hanger with galvanized pipe straps.

C. Fire stopping: For 4" sleeves, the Installer shall provide a through wall/floor firestop system. For smaller sleeves or wall penetrations through fire rated partitions the Installer can use the same type of firestop system or a fire stop system for small penetrations in compliance with the products described in Part 2 of this specification.

D. Membrane penetrations in fire rated partitions: Installation of electrical boxes or equipment backboxes in fire rated walls and smoke barriers shall follow the following requirements:
   1. Electrical boxes and / or technology system backboxes can be installed in 1 or 2 hour rated walls as long as all requirements indicated in the proper Building Code, National Electrical Code, and nationally recognized testing laboratories are met for this type of installation. In Florida, see Section 713 of the Florida Building Code 2010, article 300.21 of the NEC 2010 and UL database website for acceptable product to be used.
   2. As a summary, some of the requirements indicated by the codes listed above are:
      a. Boxes shall be metallic or listed for that purpose
      b. The overall wall area of the boxes shall not exceed 16 square inches, provided the total aggregate area of the openings through the membrane does not exceed 100 square inches in any 100 square feet of wall area.
      c. The gap between the wall membrane and the box shall not exceed 1/8 of an inch.
      d. Boxes on opposite sides of the walls shall be separated by no less than 24 inches, or boxes shall be covered by listed fire rated putty pads.
   3. Electrical boxes or technology system backboxes shall not be installed in a 3 or 4 hour fire rated wall. Boxes installed on these walls shall be surface mounted.

E. Routing: Conduits shall be run parallel to building walls wherever possible and shall be exposed or concealed as specified. Conduits shall be grouped in workmanlike fashion. Crisscrossing of conduits shall be minimized.

F. Protection during construction: All raceways, whether terminated in boxes or not, shall be capped during the course of construction until wires are pulled in them and junction box covers are in place. No conductors shall be pulled into raceways until the raceway system is clean and complete.

G. Protective bushings: All un-terminated conduits (stub out) shall have an insulated protective bushing to avoid cable damage at the edge of the conduit.

H. Avoiding EMI: To avoid EMI for technology systems cabling and/or conduit containing cabling, all raceways shall provide clearances of at least 4 feet from motors or transformers; 1 foot from conduit and cables used for electrical-power distribution; and 5 inches from fluorescent lighting. Raceways shall cross perpendicular to fluorescent lighting and electrical-power cables and conduits. The Installer shall not place any raceway adjacent to power distribution lines.

I. Coordination: All raceways shall be kept clear of mechanical, electrical, and plumbing equipment to facilitate future repair or replacement of said equipment without disturbing the technology systems cabling. Except where it is necessary for control purposes, all raceways shall be kept away from items producing heat.

J. Masonry Installation: All raceways installed inside masonry walls shall be installed at the same time as the masonry so that no face cutting is required, except to accommodate boxes.

K. Use of conduit in different areas: When technology systems cables have to be run above ground in a space with no type of accessible ceiling (interior or exterior), all cable runs shall be in conduit completely. Conduit shall be installed to the nearest accessible ceiling (in the direction of the telecommunications room). Conduits can be grouped into a single larger diameter conduit with the same or larger cross sectional area than the sum of all the conduits coming into it. The use of j-hooks to support technology systems cables in areas with no

ceiling or hard ceiling shall not be allowed. This is usually not indicated in the drawings because design drawings don't show conduits smaller than 2", nevertheless it shall be provided as indicated herein.

L. Use of conduit for different systems: The following paragraphs indicate the design intent for raceways for all technology systems.
   1. For all systems under division 27: Provide a conduit stub up from the outlet to the nearest accessible ceiling. Conduit from the outlet to the nearest cable tray or telecommunications room
   2. For all systems under division 28: Provide a conduit stub up from the outlet to the nearest accessible ceiling. Conduit from the outlet to the nearest cable tray or telecommunications room

3.9 RUNWAY CABLE TRAY SYSTEM INSTALLATION

A. General: Runway cable tray system installation shall follow the manufacturer's recommendations for installation.

B. Support locations: Supports shall be provided as recommended by the manufacturer. At a minimum, supports shall be located at the following locations:
   1. Each side of a 90 degree turn.
   2. Straight sections every 3 feet.
   3. Each rack or cabinet.
   4. Each change in elevation.

C. Support type: When runway cable tray is to be installed against the wall, the only support type to be used shall be a wall bracket that is mounted to the bottom of the tray. For sections of runway cable tray installed over racks or cabinets, the preferred support system is mounted to the rack or cabinet. Trapeze style support brackets shall only be used when no other method of support is available. Center hung support systems shall never be used.

D. Vertical runways: Runway cable tray shall be installed vertically in all telecommunications rooms from sleeves penetrating the floor to the sleeves going to the floor above or the horizontal ladder tray, whether or not indicated in the drawings. The runway installed shall have the same width as the total width of the sleeves coming into the telecommunications room (multiple sections installed together is acceptable). If the sleeves from the floor below to the floor above do not line up vertically, two vertical sections that both terminate at the horizontal ladder tray are acceptable. . Runway cable trays installed vertically shall be supported to the floor, wall, and slab above.

E. Cable dropout: A cable dropout shall be installed on the ladder tray at each rack and cabinet to protect the bend radius of the cable. The dropout shall have a bend radius not less than 4".

F. Bonding: Each section of runway cable tray shall be bonded together with a #1 AWG bonding jumper (600A) 15 inches long. All bonding jumpers shall be made of steel with yellow, zinc-dichromate finish. All fasteners shall be made of steel with a zinc-plated finish

G. Protective end caps: All end sections of runway cable tray shall be provided with plastic protective end caps.

3.10 INSTALLATION OF INNERDUCT

A. Protect the innerduct from the effects of moisture, UV exposure, corrosion, and physical damage during construction.

B. When innerduct is installed in cable tray it shall be strapped to the tray with nylon ty-wraps every 4 feet at a minimum.

C. When multiple innerducts are installed in the same conduit they shall be different colors or have different color electrical taped wrapped on the ends to identify them.

3.11 AS BUILT DOCUMENTS AND CLOSE OUT INFORMATION

A. See specification section 270010 for as built and close out information.

END OF SECTION

SECTION 27 1000
STRUCTURED CABLING SYSTEM

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. General: The overall and detailed Structured Cabling System (SCS) design shown on the technology drawings apply to the work indicated in this specification section.

B. General: Furnish, install, test, and certify (complete with all required accessories) an ANSI/TIA 568C SCS with a minimum 25 year performance warranty for the entire system from the manufacturer and a minimum of 3 years warranty for materials and labor from the Installer for all components not covered under the manufacturer's 25 year warranty. The goal of the SCS design is to provide an enhanced system that shall serve as a vehicle for the transport of voice telephony, data, audio, video, security, and other low voltage systems throughout the buildings to outlets located at various desk, workstation, and other locations as indicated in the contract drawings.

C. Coordination with other trades: It is the responsibility of the SCS Installer to verify and advise the Installer of the raceway infrastructure (conduit, boxes, cable tray, in ground boxes, etc) on raceway routing to minimize the wiring distances to the telecommunication rooms. When J-hooks are acceptable for use in structured cabling system, all J-hooks and supports for these devices shall be in the scope of work of the SCS Installer.

D. All patching and cross connects to Owner provided equipment shall be included under this scope of work for the project unless otherwise noted.

E. During the execution of the work all required relocation, demolition, temporary connectivity, and rerouting of the existing cabling, equipment, and systems in the existing building areas shall be performed by the SCS Installer as indicated on the drawings or as required by job conditions and as determined by the Architect in the field to facilitate new construction and the installation of the new systems. The Owner shall require continuous operation of all existing systems while demolition, relocation, or new connections are performed.

1.2 RELATED DOCUMENTS

A. General: The drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 shall apply to the work of this section

B. Supplemental: Refer to the specification sections identified below for additional requirements, which are supplemented by this section:
1. 270010 Technology General Provisions
2. 270526 Grounding and Bonding for Telecommunications Systems
3. 270528 Raceways for Technology

C. Standards: All work related to the SCS shall be in compliance with the following industry codes and standards, latest edition:
1. ANSI/TIA-568-C.0 "Generic Telecommunications Cabling for Customer Premises" with addendums and errata.
2. ANSI/TIA-568-C.1, "Commercial Building Telecommunications Cabling Standard" with addendums and errata.
3. TIA-568-C.2, "Commercial Building Telecommunications Cabling Standard Part 2: Balanced Twisted- Pair Cabling Components" with addendums and errata.
4. ANSI/TIA-568-C.3, "Optical Fiber Cabling Component Standard" \with addendums and errata.
5. TIA-569-C, "Telecommunications Pathways and Spaces" with addendums and errata.

6. ANSI/NECA/BICSI 568-2006, “Standard for Installing Commercial Building Telecommunications Cabling”.
7. TIA-606-B, “Administration Standard for Telecommunications Infrastructure” with addendum and errata.
8. TIA-607-B “Commercial Building Grounding (Earthing) and Bonding requirements for Telecommunications” with addendum and errata.
9. NECA/BICSI 607-2011, Standard for Telecommunications Bonding and Grounding Planning and Installation Methods for Commercial Buildings.
10. TIA-526-7 “Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant”. December 2008
11. TIA-526-14B “Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant”. October 2010.
12. TIA-598-C. Optical Fiber Cable color coding. .
13. IEC/TR3 61000-5-2 - Ed. 1.0 and amendments. “Electromagnetic compatibility (EMC) - Part 5: Installation and mitigation guidelines - Section 2: Earthing and cabling”
14. ANSI/TIA-942-A , “Telecommunications Infrastructure Standard for Data Centers” with addendum and errata
15. ANSI/BICSI 002-2011, Data Center Design and Implementation Best Practices
16. ANSI/NFPA 70 “National Electrical Code”, CSA C22.1.
17. BICSI Telecommunications Distribution Methods Manual (TDMM)
18. BICSI Telecommunications Cabling Installation Manual (TCIM)
19. BICSI Customer Owned Outside Plant Manual (COOPM)
20. Local County/City Codes, Ordinances and Regulations.
21. Underwriters Laboratories (UL)
22. FCC -Federal Communications Commission
23. ADA Requirements
24. Occupational Safety and Health Regulations (OSHA)
25. National Fire Protection Association (NFPA)
26. ANSI/TIA-1179, Healthcare Facility Telecommunications Infrastructure Standards
27. Florida Statutes and Administrative Rules
28. Manufacturers Product Cabling Catalogs
29. Manufacturers Training Manuals (Design and Installation).

D. General: The installation practices for the SCS as describe herein shall take precedence over any other part of the construction documents.

1.3 STRUCTURED CABLING SYSTEM INSTALLER QUALIFICATIONS

A. The Installer for the project must be certified by the manufacturer of the products being installed. The installation shall adhere to the manufacturer’s engineering, installation, and testing procedures. Only utilize the authorized manufacturer’s components and distribution channels for each type of installation required.

B. The installer directly responsible for this work shall be a SCS Installer who has been regularly engaged in the installation of commercial and industrial systems matching the type, size, and complexity of this project for at least the last five years. Any other company working for the SCS Installer of this system shall have the same training and certifications as the SCS Installer.

C. Certification: The SCS Installer’s project manager shall possess a current BICSI Registered Communications Distribution Designer (RCDD®) certificate. The project manager shall be directly employed by the Installer and not employed by a third party. All shop drawings submitted by the SCS Installer shall bear them project manager’s RCDD's stamp. The Installer’s on site supervisor assigned to the project shall be a certified BICSI Level II installer or have proven and qualified experience that is equal to this certification.

D. Experience: The SCS Installer shall be experienced in all aspects of this work and shall be required to demonstrate direct experience on recent systems of similar type, size, and complexity. The SCS Installer shall own and maintain the tools and equipment necessary for successful installation and testing of SCS and have personnel who are adequately trained in the use of such tools and equipment. The Owner or

Engineer may elect to request the submission of additional financial, operational, and administrative information for the SCS Installer in order to demonstrate the required experience.

E. The SCS Installer shall possess a State of Florida Low Voltage Electrical License.

F. The SCS Installer shall maintain a permanent office within 150 miles of the project site.

1.4 MATERIALS ALTERNATES AND SUBSTITUTIONS

A. The SCS Installer shall follow all requirements for material alternates and substitutions indicated in specification section 270010.

B. Substitutions are only allowed for the SCS when the substitutions do not change the manufacturer's warranty of the SCS as indicated in this specification section

1.5 SHOP DRAWINGS AND SUBMITTALS

A. See additional requirements for shop drawings and submittals in specification section 270010.

B. Initial Submittal: The SCS Installer shall submit the following information upon receiving approval to execute the work:
   1. A list of five recently completed projects of similar type, size, and complexity with the contact names and telephone numbers for each.
   2. A list of test equipment proposed to verify the integrity of the installed SCS. The test equipment list shall include the manufacturer's part number, serial numbers, and a copy of the last calibration report (with the date of calibration indicated). The equipment calibration shall not be older than one year. Test equipment includes but is not limited to: cable certifiers, OTDRs, fiber splicers.
   3. A technical resume of experience for the Installer's engineer/RCDD and on-site foreman who will be assigned to the project, including the RCDD license number (copy of the RCDD certificate is preferred).
   4. Similar documentation for any company working for the SCS Installer who will assist in the performance of this work.
   5. A copy of a current and valid Low voltage License for the State of Florida.
   6. Location of the office from which installation and warranty work will be performed.

C. Drawing and product data submittals: Once the initial submittal has been reviewed and approved by the Architect and Engineer (A&E) of the project, the SCS Installer shall provide all drawing and product data submittals. The drawing and product data submittal is composed of the following items:
   1. Provide manufacturer's product data sheets for all equipment indicated in Part 2 of this specification section and any additional equipment indicated on the technology drawings. Product data sheets shall bear the printed logo or trademark of the manufacturer for each type of product being provided. The product data sheets for this submittal will match the chronological order of the equipment indicated in Part 2 (product data sheets for equipment shown on the drawings will submitted in order based be based on the sheet). Failure to properly sequence the product data sheets will result in the submittal being rejected not reviewed.
   2. Faceplate color selection.
   3. A detailed explanation of the labeling scheme to be used for all components of the system. This explanation shall include examples of all label types to be used such as labels for cables, patch panels, outlet jacks, etc. This labelling scheme shall match the standard scheme used by the Owner.
   4. Autocad® or Revit shop drawings matching the size of the design documents with the following information:
      a. Floor plans indicating all outlets on the project. All outlets shall be tagged with the label to be used during the identification and tagging process described in this specification section.

b. Enlarged telecommunication rooms with all equipment components and rack layouts for each room. All racks shall be indicated with the label to be used during the identification and tagging process described in this specification section.
c. Drawings indicating the elevation for all cabinets or racks on the project. The elevations shall identify the precise quantity of patch panels, fiber distribution center,s and wire managers with accurate RU heights based on the equipment selection. All equipment shall be tagged with the label to be used during the identification and tagging process described in this specification section.
d. A spreadsheet indicating all patch cords (fiber and copper) to be provided in the project. The spreadsheet shall indicate the quantity, color of the jacket, cable type, length, and connector termination on each side.

D. Drawing and product data submittals received before the initial submittal is approved will be rejected.

1.6 ABBREVIATIONS

A. General: The following abbreviations are used in this specification section:
1. A&E - Architect and Engineer. The Architect is the legal entity that holds a contract for the design the project. The Engineer is the consulting engineer firm or engineer of record for the project who prepared this specification.
2. APC - Angle physical contact connector. Reference to the polish style of the ferrule in fiber optic connectors.
3. Array connector - a multi-strand fiber connector user for high density applications, such as the MPO connector
4. BICSI - Building Industry Consultant Services International
5. CCTV - Close circuit television system (surveillance video system)
6. FCC - Federal Communications Commission.
7. FTP - Foiled Twisted pair. One foiled screen around each cable pair.
8. IDC - Insulation Displacement Connector
9. NEC - National Electrical Code.®
10. NEMA - National Electrical Manufacturers Association.
11. OM1 - ISO 11801 designation for multimode 62.5/125µm glass fiber optics.
12. OM2 - ISO 11801 designation for multimode 50/125µm glass fiber optics.
13. OM3 - ISO 11801 designation for multimode laser optimized 50/125µm glass fiber optics.
14. OM4 - TIA designation for multimode laser optimized 50/125µm glass fiber optics in compliance with TIA-492-AAAD.
15. OS1 - ISO 11801 designation for single mode 9/125µm glass fiber optics.
16. OS2 - ISO 11801 designation for single mode 9/125µm glass fiber optic with performance criteria identical to ITU-T G652.
17. OTDR - Optical Time Domain Reflectometer.
18. RU - Rack units. Height dimension for rack mounted equipment. 1 RU equivalent to 1.75”.
19. SCS - Structured Cabling System
20. ScTP - Screened twisted pair. One foiled screen around all cable pairs
21. TIA - Telecommunications Industry Association.
22. TR - Telecommunications Room.
23. UPC - Ultra physical contact connector. Reference to the polish style of the ferrule in fiber optic connectors.
24. UTP - Unshielded twisted Pair
25. UV - Ultra violet
26. VAC - Volts alternating current.

PART 2 - PRODUCTS

2.1 TWO POST RACKS

A. Provide two post racks where indicated on the Construction Drawings. The two post racks shall be constructed from aluminum or welded steel frames and shall have a powder coat painted finish. The two post racks shall have the following specifications:
   1. Height: The two post rack shall provide a usable height of between 44 and 45 RU.
   2. Channel depth: 6” ± 1”
   3. Rack rails type: standards EIA 19” located in the front and back of each rack post. The rack rails shall have the RU marked and labeled.
   4. Rack screw type: #12-24 threaded rack rails. Screws shall be provided for all openings in the rack rails and shall be made of steel.
   5. Weight capacity: UL listed for 1,000 lbs. or more.

B. Two post racks shall be provided with the following accessories:
   1. Runway cable tray mounting brackets to support the runway installed above the racks.
   2. Isolation pads.
   3. Grounding kit.
   4. Ground bar: All cabinets shall be provided with a copper vertical ground bar covering the complete height of the rack rails. The ground bar shall be 1/8" thick and 1" wide with threated holes mounted to the cabinet using nylon insulation washers.
   5. End panels to support vertical cable managers at both ends of each rack row.

C. Front vertical cable managers shall be provided in between all racks and at both ends of the rack rows. The height of the vertical cable managers shall cover from the top to the bottom of each rack. The specifications for the vertical cable managers shall be:
   1. Style: Metal cage with dual hinged cover door
   2. Sides: Single sided wire manager (front only).
   3. Capacity: Usable cross sectional area shall be a minimum of: 130 sq-in
   4. Accessories: Whenever the vertical cable manager supports the use of spools inside the unit, spools shall be provided at all locations in the vertical cable manager.

D. Rear vertical cable managers shall be provided in between all racks and at both ends of rack rows covering from top to bottom of each rack. The specifications of these cable managers shall be:
   1. Style: Metal cage with dual hinged cover door
   2. Sides: single sided wire manager (rear only).
   3. Capacity: Usable cross sectional area shall be a minimum of: 130 sq-in
   4. Accessories: Whenever the vertical cable manager supports the use of spools inside the unit, spools shall be provided at all locations in the vertical cable manager.

E. Approved manufacturer: Match selection for Equipment Cabinets Panduit, Ortronics, Belden, Middle Atlantic Products, Chatsworth Products Inc., or approved equal.

2.2 WALL MOUNTED CABINETS

A. Provide wall mounted cabinets where indicated on the Construction Drawings. The wall mounted cabinets shall be constructed from aluminum or welded steel frames and shall have a powder coat painted finish. The wall mounted cabinets shall have the following specifications:
   1. Style: Swing out reversible cabinet front
   2. Height: As indicated on the Construction Drawings.
   3. Depth: It is the responsibility of the SCS Installer to select a cabinet that will fit all equipment to be installed inside that is provided either by the Installer or by the Owner. Approval of submittals by the A&E does not relieve the SCS Installer from the responsibility of verifying this requirement. Cabinets that will not fit the equipment shall be replaced by the Installer at no additional cost.

4. Rack rail type: Standards EIA 19” square holes with cage nut rail located in the front and back of cabinet. Rack rails shall be adjustable for depth and shall have RUs marked and labeled.
5. Rack screw type: #12-24 threaded rack rails. Screws shall be provided for all openings in the rack rails and shall be made of steel.
6. Weight capacity: UL listed for 200 lbs. or more.

B. Wall mounted racks shall be provided with the following accessories:
1. Front perforated panel door with lock. Door shall be hinged and shall be reversible.
2. Grounding kit.
3. Ground bar: all cabinets shall be provided with a vertical copper ground bar covering the complete height of the rack rails. The ground bar shall be 1/8" thick and 1" wide with threated holes mounted to the cabinet using nylon insulation washers.
4. Locking system: Locks for the front and rear doors shall be two point latching locks and shall be keyed identically for front and rear lock. All locks for each user’s cabinets shall be keyed alike and different keys provided between user groups. Coordinate with Owner keying requirements for each cabinet.

C. Approved manufacturers: Match selection for Equipment Cabinets Panduit, Ortronics, Belden, Middle Atlantic Products, Chatsworth Products Inc. or approved equal.

2.3 PATCH PANELS FOR 4 PAIR BALANCED TWISTED PAIR HORIZONTAL CABLING

A. All 4-pair balanced twisted pair horizontal cables shall be terminated in a rack mounted patch panel located in the telecommunication room racks. These patch panels shall have the following specifications.
1. Connector type: 8P8C modular plug
2. Cable termination: T568B.
3. Performance requirement: CAT6
4. Maximum connectors per path panel allowed: 48
5. Patch panel type: Factory preloaded panels
6. Patch panel shape: Straight (flat) Permanent marking: All connectors shall be labeled in sequential number
7. Field labels: Patch panels shall have a space for field labels covered with transparent protectors.

B. Approved manufacturers. Panduit.

2.4 HORIZONTAL CABLE MANAGERS

A. Horizontal cable managers shall be mounted on the racks to route cabling from the patch panels to the vertical cable managers and to rack installed equipment. Horizontal cable managers shall have the following specifications:
1. Style: Finger duct style with hinged cover
2. Sides: Front of rack front
3. Minimum height: Two RU

B. Approved manufacturers. Match selection for patch panels.

2.5 FIBER OPTIC DISTRIBUTION CENTERS

A. All strands of the fiber optic cabling shall be terminated in fiber optic distribution centers (FODC). Inside premise horizontal fiber optic cabling shall be terminated inside the telecommunications room in a rack or wall mounted FODC. Backbone cabling shall be terminated at both ends in a rack or wall mounted FODC. The FODC is composed of an enclosure and snap on adapter plates / cassettes. The FODC shall have the following specifications:

1. Mounting: Use rack mounted FODCs in all rooms where racks or any type of rack rails are available. Use wall mounted FODCs only when racks are not available such as in an outdoor enclosures or other interior spaces that do not serve as a telecommunications room.
2. Size: The SCS Installer shall size the FODC based on the amount of fiber strands to be terminated and spliced in the FODC plus 20% spare capacity.
3. Front locking doors are required.
4. The front locking door shall be transparent with labeling cards.
5. When fiber splices are indicated on the Construction Drawings at an FODC, the enclosures shall be selected by the SCS Installer as to accommodate the fiber splice trays.

B. The specifications for the snap on adapters for the FODC are as follows:
1. Style: Plate style
2. Connector type: LC to match the type of fiber cabling.
3. Maximum fiber strands allowed per adapter: 12
4. Security level: Non-keyed connector
5. Pairing style: duplex

C. Approved manufacturers. Ortronics,

2.6 POWER STRIPS

A. All equipment cabinets and racks on the project shall be provided with at least one power strip. The power strip selection shall be as indicated on the Construction Drawings. If the Construction Drawings do not indicate a specific model number to be used, then the following specifications shall be meet:

B. For equipment cabinets:
1. Power strip capacity: 125V 15A
2. Quantity of power outlets: No less than 14
3. Power outlet configuration: NEMA 5-15R
4. Strip power cord plug: NEMA L5-15P
5. Breaker: Built in thermal breaker with guard protection. The breaker capacity shall match the power strip capacity.
6. Monitoring: Built in digital display with readings for amperage and voltage.
7. Surge suppression: Included and built-in.
8. Listing: UL listed
9. Mounting: Vertically mounted, not occupying any rack space, with mounting accessories. The installation of the power strip shall not prevent the removal or installation of any equipment inside the rack.

C. For quad post racks, two post racks, or wall mounted cabinets:
1. Power strip capacity: 125V 15A
2. Quantity of power outlets: No less than 10
3. Power outlet configuration: NEMA 5-15R
4. Strip power cord plug: NEMA L5-15P
5. Breaker: Built in thermal breaker with guard protection. The breaker capacity shall match the power strip capacity.
6. Monitoring: Built in digital display with readings for amperage and voltage.
7. Surge suppression: Included and built-in.
8. Listing: UL listed
9. Mounting: Horizontally and occupying 1 RU of rack space. The installation of the power strip shall not prevent the removal or installation of any equipment inside the rack.

D. Approved manufacturer: Geist Manufacturing, Leviton, APC, Panduit, or approved equal.

2.7 TERMINATION OF MUTIPAIR BACKBONE CABLING

A. Multipair backbone cables for inside premise or outside plant shall be terminated in termination blocks or patch panels. Refer to the Construction Drawings for the specific type in each case.

B. Where the Construction Drawings call for multipair backbone cabling to be terminated in patch panels, the patch panels shall have the following specifications:
   1. Connector type: 8P8C
   2. Connector wiring map: One pair per connector pins 4 and 5 (blue pair).
   3. Cable termination type: IDC type connector
   4. Performance requirement: CAT3
   5. Maximum connectors per patch panel allowed: 96
   6. Permanent marking: All connectors shall be labeled in sequential number
   7. Field labels: Patch panels shall have a space for field labelling that is covered with a transparent protector.
   8. Shielding: Unshielded.

C. Where the Construction Drawings call for multipair backbone cabling to be terminated in rack mounted termination blocks, the termination blocks shall have the following specifications:
   1. Connector type: 110 style
   2. Cable termination type: IDC type connector
   3. Performance requirement: CAT3
   4. Rack frame: Standard 19” rack.
   5. Pair counts: Use 100 pair blocks for backbone cables under 100 pairs. Use 200 pair blocks in quantities as required for backbone cables with over 200 pairs.
   6. Wire managers: All 200 pair termination blocks shall have a 2 RU wire manager built-in.
   7. Clip types: Use 110C4 clips or 110C5 clips.
   8. Field labels: Termination blocks shall have a space for field labelling that is covered with a transparent protector.
   9. Mounting: Termination block shall be mounted without legs in the rack plate.

D. Where the Construction Drawings call for multipair backbone cabling to be terminated in wall mounted termination blocks, the termination blocks shall have the following specifications:
   1. Connector type: 110 style connector
   2. Cable termination type: IDC type connector
   3. Performance requirement: CAT3
   4. Pair counts: Use only 300 pair blocks in quantities as required for backbone cables.
   5. Wire managers: All termination blocks shall have a wire manager installed both sides and between the blocks.
   6. Clip types: Use 110C4 clips or 110C5 clips for 110 style block.
   7. Field labels: Termination blocks shall have a space for field labelling that is covered with a transparent protector.
   8. Mounting: Termination block shall be mounted with legs on the wall.

E. Approved manufacturers: Match selection for balanced twisted pair patch panels.

2.8 SITE COPPER PROTECTORS

A. General: Where required by NEC or indicated on the Construction Drawings, backbone cable copper conductors shall be provided with protection with an entrance cable protector chassis. All exterior backbone cable entering a building shall be routed through these protectors. The protectors shall be connected with a #6 AWG copper bonding conductor between the protector ground lug and the telecommunications room ground bar.

B. General: The primary protection unit shall be composed of a cabinet that supports 5-pin protection modules and termination blocks. The cabinet for the protection modules shall have the following specifications:

1. Capacity: 100 pairs
2. Socket type: 5-pin modules
3. Input mode: 110 style IDC connector
4. Output mode: 110 style IDC connector
5. Grounding lug capacity: AWG 6 to AWG 14
6. Other: Stand-off bracket required

C. The protection module for all digital circuits shall have the following specifications:
1. Mounting type: 5-pin module.
2. Protection type: Solid state MOV
3. Pairs per unit: One
4. Protection type: Heat coil and sneak current protection
5. DC Breakdown Voltage @ 2kV/sec: 60-90 V
6. Surge Breakdown Voltage @100 V/sec: 220-300 V
7. Insulation Resistance (PE-80): > 100 M Ω
8. DC Holdover Current: 260 mA/52 V
9. On-State Voltage @ 75 A: < 10 V
10. Response Time: < 100 nsec
11. Rated Impulse Discharge: 100 A
12. Capacitance(VDC=50 V, f=1 kHz, V AC=1 Vrms): < 100pF
13. Line Series Resistance: < 4 Ω
14. Sneak Current Operation (heat coils): 540 mA <210 sec, 1 A <15 sec
15. Listing: UL 497

D. The protection module for all analog circuits shall have the following specifications:
1. Mounting type: 5-pin module.
2. Protection type: Solid state MOV
3. Pairs per unit: One
4. Protection type: Heat coil and sneak current protection balanced
5. DC Breakdown 240 V

E. Approved manufacturers: Commscope, Tii, Circa, and Emerson

F. All primary protection blocks shall be used with a secondary protection block. The secondary protection block shall be connected with a #6 AWG copper bonding conductor between the ground lug and the telecommunications room ground bar. The secondary protection shall have the following specifications:
1. Style: Mounted on a 66-type block.
2. Protection type: Solid state and fuse protection
3. Pairs per unit: One
4. Breakdown voltage: Selected by SCS installer according to signals protected.
5. Maximum number of protectors per block: 25
6. Listing: UL 497A

G. Approved manufacturers: Commscope, Emerson, and Siemon

2.9 MODULAR SCS JACKS

A. The structured cabling system outlets indicated in Construction Drawings are composed of modular SCS jacks that are mounted in a faceplate secured to an electrical box. The modular SCS jacks shall be 8P8C connectors that meet or exceed the following electrical and mechanical specifications:
1. Electrical Specifications:
   a. Insulation resistance: 500 MΩ minimum.
   b. Dielectric voltage rating: 1,000 VAC RMS, 60 Hz minimum, contact-to-contact and 1,500 VAC RMS, 60 Hz minimum from any contact to exposed conductive surface.
   c. Contact resistance: 20 M Ω maximum.
   d. Current rating: 1.5 A at 68 º F (20 º C) per IEC publication 512-3, Test 5b
   e. ISO 9001 Certified Manufacturer

f. UL verified for EIA/TIA electrical performance
g. Comply with FCC Part 68
h. Cable termination: IDC type universal T568A or T568B.

2. Mechanical Performance:
   a. Plug Insertion Life: 750 insertions
   b. Contact Force: 3.5 oz (99.2 g) minimum using FCC-Approved modular plug.
   c. Plug Retention Force: 30 lb (133 N) minimum between modular plug and jack.
   d. Temperature Range: -40º to 150ºF (-40 º to 66 º C)

B. Design selection: modular SCS jacks shall be selected according to the following criteria:
1. Performance requirement: CAT6
2. Style: Rear loading
3. Mounting orientation: straight mounting
4. Color: To match faceplate
5. Dust cover required: No

C. Approved manufacturers: Match selection for balanced twisted pair patch panels.

2.10 SINGLE STRAND FIBER OPTIC CONNECTORS

A. All fiber optic cabling (horizontal or backbone) shall be terminated with fiber optic connectors at both ends of the cable with either single strand fiber optic connectors or array connectors. Single strand fiber optic connector shall be compliant with industry standard ANSI/TIA-568-C.3 and the applicable TIA/EIA Fiber Optic Connector Intermatability Standard (FOCIS) document, TIA/EIA 604 series. Single strand fiber optic connectors shall have the following specification:
1. Physical contact type: Provide UPC type connector for all applications with the exception of Broadband TV distribution and DAS systems. For those applications use APC type connectors.
2. Connector type: LC unless otherwise indicated on the drawings
3. Security level: Non-keyed connector
4. Pairing style: duplex
5. Acceptable attachment type: Epoxy-less type
6. Fiber type: The Installer shall select the connector according to the fiber type the connector will be terminated on. As an example, use OM1 connectors with OM1 fiber optic cable.
7. Ferrule construction: Use ceramic ferrule connectors only. Plastic ferrules are not acceptable.
8. Polish type: Factory pre-polished
9. The maximum insertion loss shall be 0.75 dB (maximum) when installed in accordance with the manufacturer's recommended procedures and tested in accordance with FOTP-171.
10. The connector reflectance shall be less than or equal to -26 dB for multimode fiber and -40 dB for singlemode fiber when installed in accordance with the manufacturer's recommended procedures.
11. The connectors shall sustain a minimum of 500 mating cycles without violating specifications.
12. The connectors shall have an optical axial pull strength of 2.2 N (0.5lbf) at a 90º angle, with a maximum 0.5dB increase in attenuation when tested in accordance with ANSI/EIA/TIA-455-6B.
13. Connectors shall meet the following performance criteria:

Test	Procedure	Maximum Attenuation Change (dB)
Cable Retention	FOTP-6	0.2 dB
Durability	FOTP-21	0.2 dB
Impact	FOTP-2	0.2 dB
Thermal Shock	FOTP-3	0.2 dB
Humidity	FOTP-5	0.2 dB

B. All single strand fiber optic connectors shall be provided with boots to protect the fiber optic strand. The Installer shall select the boot according to the fiber optic type selected. As an example use 900µm boots for 900µm coated fiber, use 250µm boots for 250µm coated fiber. All boots shall be color coded to identify the type of fiber connector used. Boots shall be beige for OM1 fiber, black for OM2, aqua for OM3, green for OM4, and yellow for OS1/OS2.

C. Approved manufacturers: Match selection for fiber optic distribution centers.

2.11 FIBER OPTIC ARRAY CONNECTORS

A. Fiber optic array connectors used on this project shall have the following specification:
   1. Only factory terminated connectors shall be used.
   2. The connector shall be in compliance with intermateablility standard TIA-604-5-C.
   3. The connector shall be factory tested to Telcordia GR-1435-CORE standard.

B. Approved manufacturers: Match selection for single strand fiber optic distribution centers.

2.12 FIBER OPTIC SPLICES

A. Only fusion splicing is acceptable when spicing of fiber optic cable is required on the project because of the use of pigtails or field splicing. Mechanical splices will not be used unless specifically indicated.

B. All fiber optic splices shall be terminated with heat shrink sleeves and organized in splice trays. Splice trays sizes shall be selected to match the quantity of fiber strands in the cable bundle. Splice trays shall be organized in wall or rack mounted fiber optic distribution centers when indoors or in an outdoor rated splice enclosure when performed outdoors.

C. Fusion splicing equipment to be used on this project shall have the following specifications:
   1. Alignment system: Automatic Core Detection system (ACD). V-groove splicers are not allowed.
   2. Typical splice loss for single mode fibers: 0.02 dB
   3. Splice loss result: Estimated (ACD)
   4. Unit shall have a fast heat shrink oven, maintenance free electrodes, built in cleaver and graphical user interface to display alignment condition.
   5. Cleaver blade type: Diamond.

2.13 FACEPLATES

A. Faceplates shall be used for all flush mounted telecommunications outlets used to house modular jacks. The faceplates shall have the following specifications:
   1. Construction material: High impact thermo Plastic
   2. Size: Use single gang faceplates unless otherwise noted on the Construction drawings.
   3. Jack capacity per faceplate: The faceplate shall be selected to accommodate the amount of modular jacks at each location. There shall be no more than one unused opening on each faceplate.
   4. Color: Submit color to A&E for approval.
   5. Labels: The faceplate shall have two recesses for labels, top and bottom, and shall have transparent snap-on label covers.
   6. Faceplate style: Direct modular plug rear loading style

B. Approved manufacturer: Match selection for balanced twisted pair patch panels or fiber optic distribution centers depending on cable.

2.14 SURFACE MOUNTED BOXES

A. Telecommunication outlets indicated in the design drawings to be surface mounted shall be composed of modular jacks installed inside a surface mounted box. Surface mounted boxes shall have the following specifications:
   1. Construction material: High impact thermo Plastic.
   2. Jack capacity per surface mounted box: The size of he surface mounted box shall be selected to accommodate the amount of modular jacks at each location. There shall be no more than one unused opening per surface mount box.
   3. Color: White.

4. Labels: The surface mounted boxes shall have at least one (1) recessed location for labels with transparent snap-on label covers.

B. Approved manufacturer: Match the selection for balanced twisted pair patch panels or fiber optic distribution centers depending on cable.

2.15 MOUNTING FRAMES

A. All telecommunication outlets shall be properly mounted to the electrical raceway system installed for the outlet. The SCS Installer shall select the proper mounting frame and/or bezel to mount the modular jacks. Raceway systems include: furniture systems, floor boxes, poke-thru devices, power poles, and surface raceways system.

B. Where the Construction Drawings indicate a telecommunication outlet is to be mounted in a furniture system, the SCS Installer shall select the proper mounting frame to hold the modular jacks based on the furniture system. The color of the mounting frames shall match the color of the furniture system.

C. If the Owner provided furniture system does not have a raceway system for telecommunications and the Construction Drawings indicate an is outlet to be mounted in the furniture system, then the SCS Installer shall provide a surface mounted box that allows for the mounting of the modular jacks in a standard faceplate.

D. The SCS Installer shall provide all mounting frames and bezels required to properly install the modular jacks inside the floor boxes or poke-thru devices.

E. All ports in the mounting frames that are not being used shall be covered with blank inserts.

F. Approved manufacturer: Match the selection for balanced twisted pair patch panels or fiber optic distribution centers depending on cable.

2.16 HORIZONTAL BALANCED TWISTED PAIR CABLE

A. General: Horizontal balanced 4-pair twisted cables shall be used to connect the telecommunications outlet location to the associated equipment inside the telecommunications room. The cable shall consist of 4 pair balanced twisted pair cable with solid copper conductors and certified to the specified performance standard. All horizontal balanced 4-pair twisted cables shall be terminated in modular jacks at the outlet location and patch panels with IDC type connectors in the telecommunications room. The cable shall have the following specifications:
   1. Cable Gauge: minimum 23 AWG solid copper conductor
   2. Performance standard: TIA/EIA CAT6
   3. Cable type: UTP
   4. Performance characterized to: 600 MHz
   5. Time delay skew: Maximum 45 ns/100m
   6. Input impedance (1-100MHz): 100Ω
   7. Cable diameter: ≤ 0.295 inch

B. Cable jacket color shall be selected according to the following criteria:
   1. Security Systems Structured Cabling: Red

C. Performance verification: The performance of the horizontal balanced 4-pair twisted cable shall be verified by a Nationally Recognized Testing Laboratory (NRTL) for EIA/TIA electrical performance and shall comply with FCC Part 68.

D. Jacket: The cable jacket for inside premise cabling installations shall comply with NEC Article 800 for the correct use in the environment it will be used. If the SCS Installer does not know the environment the cable

will be installed, the SCS Installer shall assume plenum rated cable is required. All cable shall have a riser rated flame retardant PVC jacket at a minimum.

E. OSP Jackets: All cable installed in conduit run underground below the floor slab shall have a water resistant fill compound and a jacket made of UV resistant polyethylene. Cable with a PVC jacket is not acceptable for this application.

F. Jacket marking: All cable shall have at least two types of markings imprinted on the jacket: transmission performance and the NEC rating for the installed environment.

G. Approved manufacturers: Superior Essex, Panduit, General Cable. The cable manufacturer and type must be approved by the patch panel and modular jack manufacturer in order to maintain the manufacturer's 25 year warranty.

2.17 FOUR PAIR BALANCED TWISTED PAIR PATCH CORDS

A. Four pair balanced twisted pair patch cords are required at the work area side and at the patch panel side to complete the channel pathway to the equipment. All patch cords shall be factory tested and shall have molded boots to the cable jacket. Field made patch cords are not acceptable. Four pair patch cords shall have the following specifications:
   1. Connectors: 8P8C plugs at both ends
   2. Conductors: 4-pair stranded copper conductors.
   3. Wiring map: See section 3 of this specification
   4. Performance requirement: To match horizontal 4-pair cable performance
   5. Cable type: UTP

B. Approved manufacturers. Match the selection for balanced twisted pair patch panels.

2.18 PATCH CORDS FOR MULTIPAIR BACKBONE CABLES

A. The patch cords shall be used to connect horizontal cabling to the termination blocks for multipair backbone cable. The patch cord shall be selected based on the type of termination for the backbone cable.

B. When multipair backbone cable is terminated in a patch panel, the patch cords shall have the same specifications as the 4-pair balanced twisted pair patch cords.

C. When multipair backbone cable is terminated in wall mounted or rack mounted termination blocks, the patch cords shall have a patch plug connector on one end and an 8P8C modular plug on the other. The SCS Installer shall coordinate with the phone system installer and determine if one pair or two pairs are required for each phone. The patch cord shall have one or two pairs terminated based on the equipment selection. Patch plugs shall terminate one or two pairs accordingly. The patch plug selection shall match the manufacturer and family of the termination blocks.

2.19 INSIDE PREMISE HORIZONTAL FIBER OPTIC CABLE

A. Where the Construction Drawings require fiber optic terminations for inside premise fiber optic horizontal cable the following specifications shall be met:
   1. Strand Count: Two (2) strands or as indicated in design drawings
   2. Fiber type: OS1/OS2 as indicated in design drawings
   3. Fiber coating: 900µm coating color coded
   4. Fiber protection: Aramid yarn
   5. Jacket type: Flame-retardant zip cord PVC jacket.
   6. Color jacket: The jacket shall be orange for OM1 or OM2 fiber, aqua for OM3 or OM4 fiber, and yellow for OS1 or OS2 fiber.

B. Jacket: Cable jackets for fiber optic cables shall comply with NEC Article 770 for the correct use within the environment it will be used. If the SCS Installer does not know the environment the cable will be installed, the SCS Installer shall assume plenum rated cable is required. All cable shall have a riser rated flame retardant PVC jacket at a minimum.

C. OSP Jackets: All cable installed in conduit run underground below the floor slab shall have a water resistant fill compound and a jacket made of UV resistant polyethylene. Cable with a PVC jacket is not acceptable for this application.

D. Jacket marking: All cable shall have at least two types of markings imprinted on the jacket: transmission performance and the NEC rating for the installed environment.

E. Approved manufacturers. Corning, Superior Essex, Belden, TE Connectivity, Panduit, Siemon, CommScope General Cable, or Berk-Tek. The cable manufacturer and type must be approved by the patch panel and modular jack manufacturer in order to maintain the manufacturer's 25 year warranty.

2.20 INSIDE PREMISE BACKBONE FIBER OPTIC CABLE

A. Where the Construction Drawings require the fiber optic backbone cable to be run inside, the following specification shall be followed:
1. Strand Count: As indicated on the Construction Drawings
2. Fiber type: As indicated on the Construction Drawings
3. Fiber coating: 900µm coating color coded. 250µm coating is acceptable for loose buffer cables but they shall be protected with break-out kits with color coded 900µm buffers at both ends of the cable.
4. Fiber protection: Aramid yarn around all strands for cables under 24 strands, and aramid yarn and jacket around each subunit (6 or 12 strands) for cables above 24 strands.
5. Interlock requirement: Interlock aluminum armor is required when run in cable tray
6. Jacket type: Flame-retardant PVC jacket.
7. Color jacket: jacket shall be orange for OM1 or OM2 fiber, aqua for OM3 or OM4 fiber, and yellow for OS1 or OS2 fiber.
8. Fiber termination: fibers shall be field terminated
9. Buffer type: tight buffer required
10. Center strength member material: dielectric material

B. Jacket: The cable jacket for inside premise backbone cabling installations shall comply with NEC Article 770 for the correct use in the environment it will be used. If the SCS Installer does not know the environment the cable will be installed, the SCS Installer shall assume plenum rated cable is required. All cable shall have a riser rated flame retardant PVC jacket at a minimum.

C. Jacket marking: All cable shall have at least two types of markings imprinted on the jacket: transmission performance and the NEC rating for the installed environment.

D. Approved manufacturers: Corning, Superior Essex, Belden, TE Connectivity, Panduit, Siemon, CommScope General Cable, or Berk-Tek. The cable manufacturer and type must be approved by the patch panel and modular jack manufacturer in order to maintain the manufacturer's 25 year warranty.

2.21 OUTSIDE PLANT BACKBONE FIBER OPTIC CABLE

A. Where the Construction Drawings indicate fiber optic backbone cable be installed outdoors, the following specifications shall be followed:
1. Strand Count: As indicated on the Construction Drawings
2. Fiber type: As indicated on the Construction Drawings
3. Fiber coating: 250µm coating protected with break-out kits with color coded 900µm buffers at both ends of the cable where cables are terminated in conditioned spaces. When fibers are terminated in

outdoor non-conditioned spaces break out kits shall be used with 3 mm tubes with aramid yarn for each fiber. Unprotected 900µm fibers in non-conditioned spaces are not allowed.
4. Rodent protection requirement: not required
5. Buffer type: Loose tube.
6. Center strength member material: dielectric material

B. Jacket: All outside plant fiber optic backbone cable shall have UV resistant sheathing and a water blocking material to prevent water intrusion. All outside plant fiber optic backbone cable shall be tested for compliance with following standards:
1. ANSI/TIA-568-C
2. Telcordia GR-20
3. ANSI/ICEA S-87-640

C. Jacket marking: All cable shall have at least two types of markings imprinted on the jacket: transmission performance and the NEC rating for the installed environment.

D. Approved manufacturers. Corning, Superior Essex, Belden, TE Connectivity, Panduit, Siemon, CommScope General Cable, or Berk-Tek. The cable manufacturer and type must be approved by the patch panel and modular jack manufacturer in order to maintain the manufacturer's 25 year warranty.

2.22 INDOOR/OUTDOOR BACKBONE FIBER OPTIC CABLE

A. Where the Construction Drawings indicate indoor/outdoor backbone fiber optic cable to be run between buildings or outside premises, the following specifications shall be followed:
1. Strand Count: As indicated on the Construction Drawings
2. Fiber type: As indicated on the Construction Drawings
3. Fiber coating: 900µm coating color coded. 250µm coating is acceptable for loose buffer cables but they shall be protected with break-out kits with color coded 900µm buffers at both ends of the cable. When fibers are terminated in outdoor non-conditioned spaces, break out kits shall be used with 3 mm tubes with aramid yarn for each fiber. Unprotected 900µm fibers in non-conditioned spaces are not allowed.
4. Rodent protection requirement: not required
5. Buffer type: tight buffer required loose buffer acceptable.
6. Center strength member material: dielectric material

B. Jacket: All indoor/outdoor backbone fiber optic cable shall have UV resistant sheathing and a water blocking material to prevent water intrusion. All indoor/outdoor backbone fiber optic cable shall be tested and in compliance with following standards:
1. ANSI/TIA-568-C
2. Telcordia GR-409
3. ANSI/ICEA S-104-696

C. Jacket: The cable jackets for indoor/outdoor backbone fiber optic cable shall also comply with NEC Article 770 for correct use in the environment in which they will be used. If the SCS Installer does not know the environment the cable will be installed, the SCS Installer shall assume plenum rated cable is required. All cable shall have a riser rated flame retardant PVC jacket at a minimum.

D. Jacket marking: All cable shall have at least two types of markings imprinted on the jacket: transmission performance and the NEC rating for the installed environment.

E. Approved manufacturers. Corning, Superior Essex, Belden, TE Connectivity, Panduit, Siemon, CommScope General Cable, or Berk-Tek. The cable manufacturer and type must be approved by the patch panel and modular jack manufacturer in order to maintain the manufacturer's 25 year warranty.

2.23 FIBER OPTIC PATCH CORD

A. The fiber optic patch cord shall be provided for connectivity from the telecommunications room active equipment to the FODC and from the work area telecommunication outlet to the active equipment. The fiber optic patch cord shall be required at both ends of the backbone and horizontal fiber optic cables. The direct connection of backbone or horizontal fiber optic cables to active equipment shall not be allowed.

B. The fiber optic patch cord shall be factory tested. Field made fiber optic patch cords are not acceptable. The specifications of the fiber optic patch cord shall be:
   1. Strand Count: 2 strands
   2. Fiber type: Match fiber type of patched cable.
   3. Fiber connector in FODC or outlet side: Match the connector for each adapter plate.
   4. Fiber connector on the active equipment side: The SCS Installer shall coordinate with the supplier of the equipment for the type of connector required at this side.
   5. Fiber protection: aramid yarn
   6. Jacket type: 2.9mm flame-retardant PVC jacket zip-cord type.
   7. Color jacket: jacket shall be orange for OM1 or OM2 fiber, aqua for OM3 or OM4 fiber, and yellow for OS1 or OS2 fiber.

C. Approved manufacturers: Match the selection of the fiber optic distribution center.

2.24 CABLE LACING DEVICES

A. Cable lacing devices shall be used at different locations on the project with the goal of producing a neat and organized installation. Cable lacing devices shall be used to support cables to j-hooks (when j-hooks are allowed on the project). Cable lacing devices shall be used to organize cabling routed in ladder trays, D-rings, cable trays, and wire managers. Cable lacing devices shall be used to bundle cables and organize patch cords.

B. To support and organize all inside premise backbone and all horizontal cabling, only the following types of cable lacing devices shall be used:
   1. Re-useable hook and loop style with Velcro width no smaller than 0.5”.
   2. Pre-perforated rolls of re-usable lacing devices with Velcro width no smaller than 0.5”.
   3. Straps of other soft materials with cinch rings typically used in the telecommunications industry that allow for re-use of the cable lacing device with a width no smaller than 0.85”.

C. Nylon based cable lacing devices (re-usable or not) shall only be used to support and organize the following types of cable:
   1. Outside plant backbone fiber and copper cables.
   2. Inside premise backbone fiber optic cable with interlocking armor.
   3. Bonding conductors.

D. Nylon based cable lacing devices shall never be used to support or organize any type of horizontal cable or inside premise backbone fiber optic cable without armor.

E. All cable lacing devices used in outdoor environments shall be made of weather resistant Acetal. Outdoor cable lacing devices used for aerial cable lacing shall be in compliance with the Telcordia TR-TSY-000789 standard.

F. All cable lacing devices shall be selected in the lengths required to properly secure the bundle of cables being supported.

G. All cable lacing devices used in plenum spaces, such as above ceiling and under raised access flooring, shall be UL listed for use in those environments.

H. Approved manufactures: Ortronics, Panduit, or approved equal

2.25 IDENTIFICATION AND LABELING TAGS

A. The SCS Installer shall follow labeling materials indicated in specification section 270010.

PART 3 - EXECUTION

3.1 INSTALLATION PRACTICES

A. General: All installation requirements indicated in specification section 270010 shall be followed.

B. Workmanship: All work shall be completed by the SCS Installer in a neat and workmanlike manner. The use of all BICSI standards and recommendations for installation shall be used as the basis for good workmanship.

C. Cable lengths: It is the SCS Installer's responsibility to plan the cable routing through all raceways to minimize cable runs in order to stay below the 90 meter (295 feet) length limitation for horizontal cabling. Horizontal cable used for outlets to Wireless Access Points shall have a maximum distance limitation of 80 meters (262 feet). All Horizontal cable shall be installed without diagonal runs (must be parallel and perpendicular to structure) unless otherwise specifically indicated on the drawings.

D. Wire mapping: All terminations of 4-pair balanced twisted pair horizontal cabling and patch cords on this project shall be per the T568B standard.

E. Fiber optic cable termination polarity: All fiber optic cable (horizontal or backbone) terminated in duplex style adapter panels shall be connected in a cross-over polarity configuration. As an example, if fibers 1 and 2 are terminated at one end in positions A and B respectively, the same strands shall be terminated in positions B and A on the other side.

F. Polarity for fiber optics array connectors: Array connectors and cassettes for this project shall use the Method C polarity system as outline in TIA-568.B.1.

G. Location of horizontal cable terminations: In a multi-story facility with telecommunications rooms on every floor, all horizontal cabling shall be terminated in the telecommunications room on the same floor as the outlet (unless indicated otherwise). The correct floor for a floor box or poke thru device shall be defined as the level these boxes provide service to.

H. Cable bundles: If cable trays or conduits are shown in suspended ceiling or raised access floor areas on the contract drawings, the SCS Installer shall bundle (40 cable or less) horizontal cabling of the same type with cable lacing devices wrapped snug, but not deforming the cable geometry. The SCS Installer shall adhere to the manufacturers' requirements for cable bend radius and pulling tension.

I. Fire stop protection: The sealing of openings between floors and through rated fire and smoke walls created by the SCS Installer for cable pass through shall be the responsibility of the SCS Installer. Sealing material and the application of this material shall be accomplished in a manner that is acceptable to the local authorities having jurisdiction over this work. The creation of these openings for cable passage as shown on the Construction Drawings shall be the responsibility of the SCS Installer. Any sleeve or pass through devices installed by or for the SCS Installer and left unused shall be sealed as part of this work. Penetration rating shall equal the rating of the wall or floor being penetrated.

J. New materials: All components, wiring, and materials to be used for the installation of the SCS shall be new and free of any defects. Used components, wiring, and materials shall only be used when specifically indicated on the Construction Drawings.

Work external to the building: Any work external to the confines of the building as shown on the Construction Drawings shall be governed by the provisions of this specification.

K. Demolition: Any tasks required as part of the installation of the SCS that call for relocation, rerouting, or demolition shall be done according to the following requirements:
   1. Coordination: Prior to commencing any deactivation, relocation, or demolition work arrange a conference with the A&E, Contractor, and the Owner's representative to inspect each of the items to be deactivated, relocated, or removed. Care shall be taken to protect all equipment designated to be returned to Owner, relocated and reused, or to remain in operational and integrated with the new systems.
   2. Provisions: All deactivation, relocation, and temporary connectivity shall be provided by the SCS Installer. All demolition, removal, and legal disposal of demolished shall be provided by the SCS Installer.
   3. All existing SCS cable and connecting hardware within the areas where work is required as part of this project and not used after the new installation is complete shall be removed by the SCS Installer. All existing cable indicated to be left for future use shall be tagged for that purpose.
   4. Owner Salvage: The Owner reserves the right to inspect the material scheduled for removal and salvage any items. The SCS Installer shall provide this material to the Owner.
   5. Phasing: The SCS installer shall phase all work as directed by the Architect, Owner, or Contractor in order to accommodate the project schedule and the completion date(s) of the project.

L. Icons: Provide icons for all faceplates, modular jacks, and patch panels when the unit is capable of accepting icons. Icons at the work area (outlet) shall match the color of the faceplate. Icons at the telecommunications rooms shall match the color of the horizontal cabling.

M. Blank inserts: All faceplates and mounting frames with unused modular outlet spaces shall have a blank insert installed. The blank inserts shall match the color of the faceplate or mounting frame. No more than one blank insert shall be required for each faceplate. If more than one is required, provide a faceplate with a smaller quantity of outlet spaces. All unused adapter panels in a FODC shall be covered with blank panels.

N. Patch panel and FODC separation: All horizontal cabling (copper and fiber) shall be terminated in separate patch panels based on the use for the cabling. Patch panels for the same use shall be installed together in the equipment cabinets or racks. The following segregation of cabling based on use shall be provided:
   1. Wireless Access Points (WAPS) shall be separated from cabling used for other purposes.
   2. Cabling for CCTV cameras shall be separated from cabling used for other purposes.
   3. Voice cabling shall be separated from data cabling.
   4. Cabling for specialty systems (security systems, audio, paging, etc.) shall all be terminated in separate patch panels from any other cables.
   5. Horizontal fiber optic cabling shall be terminated in separate FODCs from backbone cabling.

O. Patch panel rear support: All horizontal cable patch panels shall be provided with a rear support bar to properly lace the cabling and to provide strain relief. At a minimum one rear support bar shall be provided for every 24 cables.

P. Horizontal wire managers: Horizontal cable managers shall be provided based on the following this criteria:
   1. Provide one above and below each patch panel.
   2. Provide one above and below each data network switch.
   3. Provide one below each rack mounted termination block.

Q. Cross over wire managers: Cross over cable managers shall be provided when angled or curved patch panels are installed. Provide one cross over wire manager at the same height in the middle of each rack.

R. Patch cord quantity, color and lengths: Copper and fiber optic patch cords shall be provided based on the following chart at the field location and the telecommunications room (all percentage calculations shall be rounded off to the largest whole number):

TYPE / USE	QUANTITY	JACKET COLOR	LENGTH
4 pair balanced twisted pair for work area outlet	One for 90% of all work area outlets on the project	Match horizontal cable color	60% 8', 30% 10' and 10% 14'
4 pair balanced twisted pair for WAP	One for 100% of all WAP outlets on the project plus 10% spare	Match horizontal cable color	The SCS Installer shall field verify all lengths to match the WAP locations selected to be used by the Owner.
4 pair balanced twisted pair for CCTV camera	One for 100% of all CCTV cameras on the project plus 10% spare	Match horizontal cable color	The SCS Installer shall field verify all lengths to match camera locations.
Fiber optic for work area outlet, WAP, and CCTV cameras	One for 100% of all work area outlets on the project plus 10% spare	Per fiber type	50% 8' and 50% 10'
One or two pair copper backbone cross connect	One for 90% of all backbone copper pairs installed in the project.	Gray	For pricing purposes use: 80% 8', 20% 10'. SCS Installer shall field verify.

S. Cable slack: Cable slack shall be provided for all cables installed on the project based on the following guideline:
   1. Work area outlets shall have 12 inches at the outlet.
   2. All horizontal cabling in the telecommunications room shall have at least 6 feet neatly organized on the wall using a figure eight or loop configuration arrangement with Velcro straps.
   3. Backbone cabling shall have at least 15 feet of slack at each termination point neatly organized on the wall using a loop configuration with Velcro straps.
   4. Outside plant backbone cabling pulled through in-ground boxes greater than 24 inches X24 inches shall include one loop inside each box.

T. Fiber optic cable bend radius: The installation of fiber optic cable shall be in accordance with ANSI/TIA-568C guidelines and the cable manufacturer's specifications. The bend radius parameters shall be followed for both load and no load conditions. Cable installation and terminations that do not comply with these parameters shall be replaced by the SCS Installer at no additional charge. If no parameters are specified by the cable manufacturer, then the following criteria shall be meet:
   1. The bend radius for intrabuilding two and four strand horizontal fiber optic cable shall be no less than 1 inch under no load conditions. When under a maximum tensile load of 50 ftlbs, the bend radius shall be no less than 2 inches.
   2. The bend radius for intrabuilding fiber optic backbone cable with more than four strands shall be no less than 10 times the cable's outside diameter under no load conditions and no less than 15 times the cable's outside diameter when the cable is under tensile load.
   3. The bend radius for interbuilding fiber optic backbone cable shall be no less than 10 times the cable's outside diameter under no load conditions and no less than 20 times the cable's outside diameter when the cable is under a tensile load up to the rating of the cable, 600 ftlbs.

U. Innerduct: Innerduct shall be provided from beginning to end of a raceway system under the following conditions:
   1. Inside underground conduits as indicated in design drawings.
   2. For horizontal and inside premise backbone fiber optic cables without interlocking armor when routed through cable trays, ladder trays, or vertical risers. This requirement is not indicated on the drawings but must be followed under this specification.

V. SCS protection during construction: The SCS Installer shall protect all SCS materials from damage during construction. Racks shall be covered with fabric or plastic after installation to prevent dust, debris, and other foreign materials from having contact with installed SCS equipment. The SCS Installer shall protect all fiber optic and copper cable from damage during installation. All cable shall maintain the manufacturer's constructed physical integrity for testing and delivery to the Owner. All damaged cable shall be replaced at no additional cost to the Owner.

W. Cable bonding: Shielded cable and cable with metal strength / protection members (i.e. interlocking armor) shall be bonded to the telecommunications grounding system per specification section 270526.

X. Rack installation: All racks shall be installed level and plumb. Four post racks and two post racks shall be anchored to the floor and installed with isolation pads. Equipment cabinets shall be leveled using the cabinet's leveling feet unless specifically indicated to provide the cabinets with casters.

Y. Rack bonding: All equipment cabinets and racks shall be bonded to the telecommunication grounding system as required in specification section 270526

3.2 IDENTIFICATION AND TAGGING

A. General: Identification and tagging of all SCS components shall be executed by the SCS Installer. At a minimum, identification and tagging shall be provided for the following system components:
1. All horizontal and backbone cable at both ends. Labels on each side shall be indicate the location of the other side of the cable.
2. All faceplates indicating all modular jacks terminated in the faceplate.
3. All patch panels.
4. All racks.
5. All termination blocks.
6. All telecommunications rooms and enclosures.
7. All interbuilding backbone cable routed inside in ground pull boxes shall have a visible label in each box they pass through.

B. The SCS Installer shall follow the Owner provided identification system. If the Owner does not have a preference or standard, the SCS Installer shall provide a system for approval by the A&E and the Owner as required in the submittal paragraph of this specification. The identification system shall follow TIA/EIA 606-B standard.

3.3 TESTING OF BALANCED TWISTED PAIR COPPER CABLING

A. General: All horizontal and backbone cable shall be tested in accordance with ANSI/TIA/EIA-568-C, Cabling Transmission Performance and Test Requirements.

B. The test method selected for all 4-pair balanced twisted pair cable is the permanent link style test. A permanent link test is defined as a test that does not include the patch cords.

C. General: If the A&E elects to be present during testing, provide notification a minimum of two weeks prior to testing.

D. General: The Installer's RCDD shall sign off on all copper and fiber optic cable test results to indicate they were are responsible for all cable testing procedures and that all cables were tested in compliance with the Construction Documents and met or exceeded the requirements stated herein.

E. Testing Equipment: The tester shall be manufactured by Agilent, Fluke, IDEAL, or Wavetek. The tester shall be 100% Level III compliant with ANSI/EIA/TIA 568C specifications for testing of the CAT6 cabling. No tester will be approved without meeting these requirements.

F. Each modular jack in each faceplate shall be tested to the minimum manufacturer's performance of the cable to verify the integrity of all conductors and the correct termination sequence. Testing shall be performed between the work area and the rack patch panel. The tester shall be calibrated per the manufacturer's guidelines prior to any cable testing. The correct cable nominal velocity of propagation shall be entered into the tester to ensure proper length and attenuation readings.

G. Documentation of the cable testing shall be provided in the format provided by the testing equipment manufacturer. The SCS Installer shall provide the results of all cable tests in electronic format (final results in PDF format). There shall be one test results page provided per cable. The test results shall indicate: sweep tests, continuity, polarity, wire map, attenuation, NEXT, PSNEXT, FEXT, PSFEXT, ELFEXT,

PSELFEXT, ACR, Return Loss, Delay Skew, and the cable length. Cables that do not comply with the EIA/TIA 568C tests results shall be indicated to the A&E for tracking of the corrective action. The corrective action may include replacement of the cable at no additional expense to the Owner. All identification nomenclature used for each cable in the test shall match the labeling system approved for the project.

H. Any Fail, Fail*, Pass* or WARNING test result shall be considered a fail for the cable test. In order to achieve an overall pass condition, the results for each cable test parameter must be passed.

I. Test results shall comply with the margins provided by the cable manufacturer for CAT6 on all transmission parameters across the entire frequency range provided by the manufacturer for that cable type.

J. General: Copper multipair backbone cabling shall be tested for length, continuity, polarity, and wire map. The SCS Installer shall provide the results of all multipair backbone cable tests in electronic format. The use of pigtails or special harness could be required to properly test these cables.

K. Only manufacturer certified and trained technicians shall execute the tests.

L. All 4-pair balanced twisted pair patch cords shall be factory manufactured and tested.

3.4 TESTING OF FIBER OPTIC CABLING

A. General: Horizontal and backbone fiber optic cabling shall be tested in accordance with ANSI/TIA/EIA-568-C.

B. General: If the A&E elects to be present during testing, provide notification a minimum of two weeks prior to testing.

C. Cleanliness of connectors: All fiber optic connectors shall be cleaned properly before and after testing. Proof of cleanliness shall be required during the acceptance test for the SCS by the A&E. The SCS Installer shall have a 200X microscope or a video probe available during the test to demonstrate the cleanliness of randomly selected connectors by the A&E.

D. End to End Attenuation Test: The SCS Installer shall perform an end-to-end attenuation test for each multimode fiber at 850 nm and 1300 nm from both directions for each terminated fiber strand in accordance with EIA/TIA-526-14A (OFSTP 14). This test shall be performed at 1310 nm and 1550 nm for singlemode fiber from both directions for each terminated fiber strand in accordance with TIA/EIA-526-7 (OFSTP 7). A one jumper reference shall be used for all testing. For lengths greater than 295 feet, each tested strand must test to a value less than or equal to the total link loss budget. For horizontal lengths less than or equal to 295 feet, each tested strand must be < 2.0 dB attenuation. When calculating the link loss budget for strands greater than 295 feet use the values listed below. End to end attenuation shall be done with a Level II meter using meter and light source equipment (also known as main and remote unit)

ATTENUATION DUE TO	FIBER TYPE	MAX. ATTENUATION
Terminating connectors (field terminated option)	All fiber types	0.75 dB per connector
Terminating connectors (manufacturer pre-terminated option)	All fiber types	No more than 0.2 dB additional to the total dB loss measured by the manufacturer
Splices	All fiber types	0.3 dB per splice
Distance	OM1 (850nm/1300)	3.4 dB /1.0 dB per Km.
Distance	OM2, OM3, and OM4 (850nm/1300)	3.0 dB /1.0 dB per Km.
Distance	OS1 and OS2 (1310 nm/1550 nm)	0.65 dB / 0.5 dB per Km.

E. OTDR Test: All fiber optic cable strands shall be tested with a Level III OTDR meter for the following conditions:
   1. Each known connector/splice insertion loss for each fiber type (850/1300 nm for multimode and 1310/1550 nm for single mode). All connections and splices shall pass the maximum allowed insertion loss as indicated in table above.
   2. Overall insertion loss of the cable at both sides (sum of all connectors, splices, and total cable length).
   3. Estimated cable distance.
   4. Cable signature that provides readings along the complete length of the cable. Any unexplained cable reflections shown in the OTDR shall require the Installer to submit a letter explaining the reason for the reflection and pictures of the cable's condition at the location where the unexplained reflection is located to demonstrate the cable has not been kinked or damaged during installation.

F. OTDR Test conditions: All OTDR testing shall be performed with the following requirements:
   1. Use a launch cable and a tail cable in accordance with the type of fiber being tested and the requirements of the OTDR manufacturer.
   2. The launch and tail cables shall be products that are sold by the testing equipment manufacturer and not field constructed cables.
   3. The launch and tail cables shall be selected according to the type of connector being tested, such as APC or UPC types.
   4. Use the launch compensation mode during the test to subtract the effects of the launch and tail cables.
   5. Test from one direction only, unless the presence of "gainers" are spotted during the test. In these instances the Installer shall test in both directions and adjust the test equipment to average the measurements from both directions.
   6. The SCS Installer shall verify the backscatter coefficient used in the test to make sure it matches the manufacturer's coefficient for the cable being tested.

G. OTDR Testing Equipment used on this project shall have the following specifications indicated:

	MULTIMODE	SINGLEMODE
Wavelengths	850 nm ±10 nm 1300 nm +35 / -15 nm.	1310 nm ±25 nm. 1550 nm ±30 nm.
Event Dead Zone. Measured at 1.5 dB below non-saturating reflection peak with the shortest pulse width. Reflection peak < -40 dB for mm and < -50 dB for sm.	850 nm: 0.5 [3.7] m typical 1300 nm: 0.7 [3.5] m typical	1310 nm: 0.6 [3.5] m typical 1550 nm: 0.6 [3.5] m typical
Attenuation Dead Zone. Measured at ± 0.5 dB deviation from backscatter with the shortest pulse width. Reflection peak < -40 dB for mm. and < -50 dB for sm.	850 nm: 2.2 [10] m typical 1300 nm: 4.5 [13] m typical	1310 nm: 3.6 [10] m typical 1550 nm: 3.7 [12] m typical
Pulse Widths (nominal)	850 nm: 3, 5, 20, 40, 200 ns. 1300 nm: 3, 5, 20, 40, 200, 1000 ns.	3, 10, 30, 100, 300, 1000, 3000, 10000, 20000 ns
Loss Threshold Setting	0.01 dB to 1.5 dB Adjustable in 0.01 dB increments	0.01 dB to 1.5 dB Adjustable in 0.01 dB increments

H. The fiber strand test report shall include the following information:
   1. Calculated Loss Budget for each optical fiber link (see attenuation table above).
   2. Cable/strand ID that matches the approved labeling system.
   3. Name of the technicians who performed the test.

4. Date and time the test was performed.
5. Measurement direction.
6. Jumper reference set up date/time and attenuation value.
7. Equipment model and serial number of the testing device used and calibration date.
8. End to end attenuation loss data for each fiber strand.
9. OTDR Traces, one page per strand. Expand the chart to cover most of the page
10. Each event loss data and the test limits used, including the test limit file date used.

I. For fiber optic cable with factory terminated connectors or pre-terminated pig-tails, the SCS Installer shall provide the test results performed at the factory for the factory terminated connectors to compare with the field testing performed by the SCS Installer. There shall be no significant variations between the factory test results and the field test results.

3.5 SYSTEM WARRANTY AND SERVICE

A. The SCS Installer shall follow all warranty and service requirements indicated in specification section 270010.

B. Warranty: The SCS shall be under the manufacturer's warranty program for a complete channel configuration. Manufacturers shall provide the worst-case performance warranty data for the installed cabling system.

C. A manufacturers twenty five (25) year warranty for the SCS cabling installation shall be provided for an end-to-end channel model which covers cable, terminations, connecting hardware, and the labor cost for the repair or replacement thereof.

D. Additional features of the warranty shall include:
1. The SCS complies with the margins claimed by the manufacturer for the category 6 channel for all transmission parameters across the entire frequency range of 1-600 MHz.

3.6 COMISSIONING

A. The SCS Installer shall follow all warranty and service requirements indicated in specification section 270010.

3.7 ENGINEER'S FINAL ACCEPTANCE TEST

A. The SCS Installer shall follow all requirements for final acceptance testing as indicated in specification section 270010.

B. The Engineer's final acceptance test will not include testing of the structured cabling components (unless otherwise indicated), but could include verification of the cleanliness of the fiber optic connectors.

3.8 AS BUILT DOCUMENTS AND PROJECT CLOSE OUT

A. The SCS shall follow all requirements for as-built and close out documentation as indicated in specification section 270010 17010

B. The following are additional requirements above and beyond the requirements in specification section 270010:
1. Provide the Warranty certificate issued by the manufacturer of the SCS infrastructure.

2. The Installer's RCDD shall stamp the as-built drawings, indicating they have reviewed and approved the drawings as being complete, accurate, and representative of the system installed.
3. As built drawings provided inside each telecommunications room for the layout of that room and the areas that room serves. Each drawing shall be mounted in a frame and installed on a wall in the telecommunications room.
4. The SCS Installer shall provide an Excel spreadsheet that provides each telecommunications outlet identifier, location, number of voice/data/special jacks, and patch panel port.
5. Electronic copies of all test results (copper and fiber). Electronic copies shall include raw data files and PDF files with the test results. PDF files shall be organized based on:
    a. All copper cable terminating in each telecommunications room in a single consolidated PDF file. The file name shall match the label used in the shop drawings for the telecommunications room.
    b. All attenuation and OTDR test results for all strands of a single cable shall be in one PDF file. The file name shall match the cable identifier.

END OF SECTION