SHINTECH INC.

REQUISITION

FOR

CA4 BUILDING WORK

S/T JOB NO. : EA-503

SPP-4 Plaquemine CA Plant PROJECT

Issued for Bid (CA)
Job#: EA-503
Shintech Louisiana, LLC
Sep 30th, 2026
Confidential

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1. Description and Scope of Work

Shintech Incorporated, the Purchaser, desires to enter into a contract with a Design/Builder who will provide both professional design and general construction services for the Project. The attached drawings and specifications should be intended to depict the Purchaser's minimal general requirements, standards, and level of quality.

1.1 The Contractor is to furnish all supervision, labor, materials, tools and equipment to design and construct one (1) Switch Gear Room (4BLDG-A901) and one (1) Cell Maintenance Building (4BLDG-A902) for Shintech at SPP-4 Plaquemine CA Plant, Plaquemine, Louisiana, USA as shown and noted on the drawings listed in Attachment-2 and as specified in this job specification.

1.2 The Contractor is to furnish this one (1)Switch Gear Room (4BLDG-A901) and one (1) Cell Maintenance Building (4BLDG-A902) on a TURN-KEY base for the scope of the contractor. Drawings, specification, other documents, and electronic data furnished by the Design/Builder are instruments of his service. The Purchaser shall retain ownerships of these instruments of service.

1.3 The Contractor's supply, design, construction and commissioning work shall, in general, include but not be limited to the following so that the building be adequately functional and operative;

1) Detailed design work in accordance with the drawings as listed in Attachment-2.

2) To prepare and submit Plan Review and obtain Building Permit from State Fire Marshal.

3) Dress up existing building pad to designed elevated level.

4) Concrete foundation of the building including;
   - Transformer bay/ transformer oil pits
   - Foundation for transformers, capacitors and generators including dike wall
   - Access road (or walk path) with RCP for drainage and slotted drainage pipe
   - Pit for free access floor
   - All embedded material such as conduit, etc.
   - Stairways
   - Paving
   - Foundation for supports of cable tray.

5) Structural framing and erection.

6) Roofing and siding including;
   - Concrete block wall (internal and external)
   - Windows
   - External doors with vestibule or canopies
   - Roll up door
   - Gutters and down spouts
   - Building insulation
   - Temporary metal cover for opening parts

7) Flooring materials including free access floors

8) Internal partition including;
   - Suspended ceilings
   - Fire wall
   - Doors
   - Flooring materials

- Windows

9) Cable tray support (Outdoor, South and West side) and Bus duct support beams in Switchgear room.

10) Water-drainage and plumbing, for emergency eye wash/ shower fixtures.

11) Air-conditioning, including equipment, motors, all controls, piping, ducts and building insulation.

12) Electrical Heater for 4BLDG-902 (50kW x 4)

13) Electrical work, including all lighting fixtures, receptacles, power distribution system, grounding.

14) Conduit installation for telecommunication and PC network.

15) Painting and protective coating.

16) Fire alarm system in accordance with NFPA 101:9-6 and NFPA 101:28-3.4

17) Smoke detection system in accordance with NFPA

18) Provide portable fire extinguishers in accordance with NFPA 10. See Annex E "Distribution" of NFPA 10 for distribution of extinguishers.

19) Limestone covers w/fabric for slope around building.

20) To file documents required to obtain necessary approvals of state fire marshal and other governmental authorities having jurisdiction over the project.

Note: Drawings for the above services shall be submitted to the Purchaser for comment and approval.

1.4 All equipment and materials furnished by the Contractor shall be new and free of defects.

1.5 The contractor, in both design and construction, shall comply with all applicable provisions of relevant codes of Federal and State and also Occupation Safety Standards (OSHA) requirements.

1.6 General Design/Builder Services

1) The Design/Builder shall designate a representative authorized to act on the Design/Builder's behalf with respect to the Project.

2) The Design/Builder shall submit Construction Documents for review and approval by the Purchaser. Construction Documents may include drawings, specifications, and other documents and electronic data setting forth in detail the requirements for construction of the Work, and shall:
   - 2-1) Be consistent with the intent of the design/Builder's Proposal;
   - 2-2) Provide information for the use of those in the building trades; and
   - 2-3) Include documents customarily required for all regulatory agency approvals.

3) The Design/Builder, with the assistance of the Purchaser, shall prepare drawings and documents with PE stamp which required to obtain necessary approvals of governmental authorities having jurisdiction over the Project.

4) Unless otherwise provided in the Contract Documents, the Design/Builder shall provide or cause to provide and shall pay for design services, labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation and other facilities and services necessary for the proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

5) The Design/Builder shall be responsible for all construction means, methods, techniques, sequences and procedures, and for coordinating all portions of the Work.

6) The Design/Builder shall keep the Purchaser informed of the progress and quality of the Work.

7) The Design/Builder shall be responsible for correcting work which does not conform to the Contract Documents.

8) The Design/Builder shall be responsible for no leakage from roofing/siding. The Design/Builder shall be repaired promptly if find the leakage or owner's request.

9) The Design/Builder warrants to the Purchaser that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the construction will be free from faults and defects, and the construction will conform with the requirements of the Contract Documents.
Construction not conforming to these requirements, including substitutions not properly by the Purchaser, shall be corrected.

10) The Design/Builder shall be responsible to the Purchaser for acts and omissions of the Design/Builder's employees, subcontractors and their agents and employees, and other persons, including the Architect and other design professionals, performing any portion of Design/Builder's obligations.

11) The Design/Builder shall comply with and give notices required by laws, ordinances, rules, regulations and lawful orders of public authorities relating to the Project.

12) The Design/Builder shall pay royalties and license fees for patented designs, processes or products. The Design/Builder shall defend suits or claims for infringement of patent rights and shall hold the Purchaser harmless from loss on account thereof, but shall not be responsible for such defense of loss when a particular design, process or product of a particular manufacturer is required by the Purchaser. However, if the Design/Builder has a reason to believe the use of a required design, process or product is an infringement of a patent, the Design/Builder shall be responsible for such loss unless such information is promptly furnished to the Purchaser.

13) The Design/Builder shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations. At completion of the Work, the Design/Builder shall remove from the site waste materials, rubbish, the Design/Builder's tools, construction equipment, machinery, and surplus materials.

14) The Design/Builder shall notify the Purchaser when Design/Builder believes that the Work or an agreed upon portion thereof is substantially complete. If the Purchaser concurs, the Design/Builder shall issue a Certificate of Substantial Completion which shall establish the Date of Substantial Completion, shall state the responsibility of each party for security, maintenance, heat, utilities, damage to the Work and insurance, shall include a list of items to be completed or corrected and shall fix the time within which the design/Builder shall complete items listed therein.

15) The Design/Builder shall maintain at the site for the Purchaser one record copy of the drawings, specifications, product data, samples, shop drawings, Charge Orders and other modifications, in good order and regularly updated to record the completed construction. These shall be delivered to the Purchaser upon completion of construction and prior to final payment.

2. Supply and Work by Others

1) Building pad specified on the drawing LPA4-50001-02
2) Furniture and equipment except as required in this job specification.
3) Cable tray and bus duct
4) Transformers, Switchgears and other equipment than the Contractor's scope of supply.
5) Piling as noted on the drawing LPA4-53003-02

3. Building Design Requirement

3.1 Codes and design loads

1) Foundation and building design, construction materials and workmanship shall be in accordance with American Society of Civil Engineers (ASCE7-16), International Building Code(IBC), 2021 and Process Industry Practices PIP ARS 13120 Pre-Engineered Metal Buildings Specification,2014 and PIP STC01015 STRUCTURAL DESIGN CRITERIA, 2017 except as specified otherwise in these specifications.

2) Depending on materials used, the latest issues of the following codes shall supersede the ASCE in all areas not covered in 1).

2-1) Aluminum and Fenestration

- Aluminum Association (AA)
- - AA ADM-2020, Aluminum Design Manual.
-
- Fenestration and Glazing Industry Alliance (FGIA)
- - AAMA 701/702-23, Performance Specification for Pile Weatherstrips (AAMA 701) and Polymer Weatherseals (AAMA 702), where pile weatherstrips or replaceable polymer weatherseals are included in the Work.

2-2) Concrete Design: American Concrete Institute (ACI)

- ACI 301-20, Specifications for Concrete Construction.
- ACI 318-19, Building Code Requirements for Structural Concrete and Commentary.
- ACI 302.1R-15, Guide to Concrete Floor and Slab Construction.
- ACI 117-10, Specification for Tolerances for Concrete Construction and Materials and Commentary, Reapproved 2015.
- ACI 360R-10, Guide to Design of Slabs-on-Ground.
- ASTM C94/C94M, Standard Specification for Ready-Mixed Concrete,
- edition referenced by ACI 301-20 or otherwise approved for the Project.
- ACI 305.1-14, Specification for Hot Weather Concreting, Reapproved 2020.
- ACI 305R-20, Guide to Hot Weather Concreting.
- ACI 306R-16, Guide to Cold Weather Concreting.

Unless otherwise specified in the Contract Documents, the governing codes and standards shall be the editions referenced by the 2021 International Building Code and the applicable locally adopted code, including applicable state and local amendments. Where a supplementary standard is not referenced by the governing building code, the edition listed herein shall apply.

Sand shall not be placed directly beneath foundations, pile caps, or other load-bearing foundation elements unless specifically recommended in the Project Geotechnical Report. Where permitted, the material type, gradation, lift thickness, compaction, drainage requirements, and acceptance criteria

shall comply with the Project Geotechnical Report and shall be approved by the Geotechnical Engineer of Record.

2-3) Steel

American Institute of Steel Construction (AISC)

- ANSI/AISC 360-16, Specification for Structural Steel Buildings.
- ANSI/AISC 341-16, Seismic Provisions for Structural Steel Buildings, where applicable to the seismic force-resisting system.
- ANSI/AISC 303-16, Code of Standard Practice for Steel Buildings and Bridges.
- AISC 325-17, Steel Construction Manual, 15th Edition.

Research Council on Structural Connections (RCSC)

- RCSC Specification for Structural Joints Using High-Strength Bolts, June 11, 2020, except where the Authority Having Jurisdiction requires the edition referenced directly by ANSI/AISC 360-16 or the 2021 IBC.

American Welding Society (AWS)

- AWS D1.1/D1.1M, Structural Welding Code - Steel, edition referenced by the 2021 IBC or approved for the Project.
- AWS D1.4/D1.4M, Structural Welding Code - Steel Reinforcing Bars, edition referenced by the 2021 IBC or approved for the Project.

Cold-Formed Steel

- AISI S100-16 (2020) with Supplement 2-20, North American Specification for the Design of Cold-Formed Steel Structural Members.
- AISI S202-20, Code of Standard Practice for Cold-Formed Steel Structural Framing, where applicable.
- AISI S240-20, North American Standard for Cold-Formed Steel Structural Framing, where applicable.

Metal Building Manufacturers Association (MBMA)

- MBMA Metal Building Systems Manual, 2018 Edition, where metal building systems are included in the Work.

Steel Joist Institute (SJI)

- SJI 100-2020, Standard Specification for K-Series, LH-Series, and DLH-Series Open Web Steel Joists and for Joist Girders.
- SJI 200-2015, Standard Specification for CJ-Series Composite Steel Joists, where composite steel joists are included in the Work.
- Applicable SJI Code of Standard Practice, load tables, and weight tables corresponding to the specified SJI standard.

3) Minimum design loads

3-1) Live loads for roof shall be 20 PSF plus load of suspended equipment and materials from the roof including the cable tray systems and bus ducts noted on the drawings (Attachment-2) Obstruction (such as brace etc.) in the openings for cable tray penetration is not accepted.

3-2) Live loads for floors shall be the following

Switch Gear Room (4BLDG-A901)

250 psf. Access floor PIT (EL 18'-0"), Switchgear room,

120 psf. Tate (Or equal) access floor.

Cell Maintenance Building (4BLDG-902)

500 psf. Cell Maintenance Building (4BLDG-902)

3-3) Wind loads
Wind factor & Velocity pressure 'qz' shall be in compliance with Engineering Specification 'E31-312' (Attachment 1)
a) SWGR (4BLDG-A901) Building shall designed for Basic Wind speed of 195mph.
b) Cell maintenance (4BLDG-A902) Building including Roll up doors shall be designed for Basic Wind speed of 140 mph.

3-4) Seismic loads
Seismic factor shall be in compliance with Engineering Specification 'E31-313' (Attachment 1)

4) Applicable Building Codes (latest edition), but not limited to the following:
4-1) National Fire codes published by the National Fire Protection Association (NFPA)
- NFPA 10 Standard for Portable for Fire Extinguishers.
- NFPA 13 Standard for the Installation of Sprinkler Systems.
- NFPA 30 Flammable and Combustible liquids Code.
- NFPA 45 Standard for Fire Protection for Laboratories Using Chemicals.
- NFPA70 National Electrical Code.
- NFPA 72 National Fire Alarm Code.
- NFPA 80 Standard for Fire Doors and Fire Windows.
- NFPA 101 Life Safety Code.
- NFPA 221 Standard for Fire Walls and Fire Barrier Walls.
- NFPA 2001 Standard on Clean Agent Fire Extinguishers System.
- All associated and referenced NFPA sections and chapters of National Fire Code

4-2) Southern Building Code Congress International
- Standard Building Code
- Standard Fire Prevention
- All associated standard series codes.

4-3) Americans with Disabilities Act (ADA)
- ADA-AG (accessibility guidelines)

4-4) Louisiana Energy Code

5) Where conflicts occur among code requirement, the stricter code requirement shall govern.

6) The Design/Builder shall identify all regulatory agencies requiring review and approval. The Design/Builder shall prepare and submit applicable application, documents, notifications and fees as indicated in Paragraph 1.7.

7) The Design/Builder shall submit to the Purchaser complete copies of all correspondence to regulatory agencies.

3.2 Foundation
1) All foundations shall be designed in accordance with Geo-technical Investigation Report Attachment 3-7).
2) Top of slab elevation shall be EL. 20'-0" for Switchgear room-(4BLDG-A901) and EL.17'-6" for Cell Maintenance building-(4BLDG-A902).Building Pad shall be dress up by site development contractor as indicated elevation on the Dwg. LPA4-50001-02.

3) Average existing grade elevation EL. 15'-0" for building area.
4) Excavation
   4-1) The site shall be adequately drained.
   4-2) Excavation work shall be performed in a safe and proper manner.
   Note: Special precaution shall be taken by the Contractor for the existing underground PVC and carbon steel piping.
   4-3) Surface where the concrete slab is placed shall be clean and free of any wood, grass, roots, trash or debris of any kind.
   4-4) Excavated excess dirt shall be hauled by the Contractor to the designated area in Shintech plant site and then leveled in a satisfactory manner. All other rubble, etc, must be hauled from Shintech plant site.
   4-5) The Contractor shall prepare enough pumps to drain out storm water from excavation for keep a project schedule.
   4-6) Temporary construction excavations up to five feet deep should have side slopes no steeper than 1V:1H.For temporary excavation depths of 5 to 10 feet deep, the side slopes should be flattened to 1V:1.5H. For temporary excavations left open for an extended period (30 days or more), the slopes should be reduced to 1V:2H or flatter.
   4-7) All soil cavities under concrete which occurred by excavation shall be filled with free flow concrete.

5) Seal Slab
   Seal Slab shall be applied on excavated ground to designed elevation.

6) Pile Cutting
   6-1) Piling work done by others. The piling have already filled concrete by others. The piling diameter is 14" and thickness is 0.25.
   6-2) Pipe piles shall be cut at the specified elevation on each detail. Existent piles were cut off at 2 - 3 feet above grade.
   6-3) Pile shall be cut by adequate equipment/machine which shall not damage the pile head.
   6-4) Cut piles shall be moved to the designated area in Shintech site by the Contractor.

7) Form work
   7-1) The Contractor shall have full responsibility for the design suitability and strength and support of all forms and false work.
   7-2) Formwork shall conform to ACI-347 and shall be properly aligned and plumbed to conform to the size, lines, dimensions and elevations required. Form shall be substantially water tight to prevent leakage of water, cement and fine aggregate particles.
   7-3) Wood (with treatment to prevent absorbing moisture from the concrete) or steel forms shall have sufficient strength and rigidity to hold shapes and position without appreciable deflection or distortion.
   7-4) Form joint shall not leak.
   7-5) Internal ties, when used, shall be break back type and the holes shall be patched.
   7-6) Form surfaces shall be treated to assure ease of form removal.
   7-7) All projecting corners shall be beveled by using ¾" chamfer strips with the forms.

8) Materials
   8-1) Cement shall be conformed to ASTM C150 type 1.
   8-2) Water shall be portable.
   8-3) Aggregates shall be conformed to ASTM C33.
   8-4) Reinforcement
      8-4-1) Pile anchor material shall be conformed with ASTM A706
      8-4-2) Reinforcing steel shall be conformed to ASTM A-615 Grade 60 unless otherwise shown on the drawings.

8-4-3) Welded wire fabric shall be conformed to ASTM A-185 with steel wire in accordance with ASTM A82. Fabric shall be furnished in flat sheets.

8-5) Miscellaneous Steel such as handrail and stair

8-5-1) Miscellaneous steel: Steel Standard (Att.-2)

8-5-2) Hot dip galvanizing shall be in accordance with ASTM A-123, A-153 and A-385.

8-6) Anchor bolt

8-6-1) Anchor bolt shall be conformed to ASTM F-1554 Grade 36, unless otherwise shown on the drawings. (Some of anchor bolts with cooling tower to be 304SS)

8-6-2) Nut shall be conformed to ASTM A563 Grade A heavy hex.

8-6-3) Washer shall be STMF436 (ASTMF-436M) hardened carbon steel.

8-6-4) Anchor bolt and nut shall be hot-dip galvanized in accordance with the requirement of class C of ASTM specification A153.

8-7) Concrete pipe culverts

Generally, all pipe 12 inches in diameter and larger shall be Class III, Wall B Reinforced Concrete Sewer Pipe in conformance with Standard Specification for Reinforced Concrete Culverts, Storm Drain and Sewer Pipe, ASTM C76. All RCP pipe joints shall be BELL & SPICOT type with a rubber gasket conforming to ASTM C-443.

9) Inspection

The Contractor shall assign resident QC inspector at site. The Contractor needs to submit inspection record before pouring concrete and approval of owner representative.

10) Concrete specification, placing and curing

10-1) The Contractor is responsible for completing the mix design according to the requirements of this specification.

10-2) Concrete shall have a minimum compressive strength of 4000 psi at 28 days,

10-3) The water-cement ratio shall not exceed 0.5 absolute ratio by weight.

10-4) Maximum aggregate size shall be 1 inch for 4000 psi.

10-5) Fly ash will be permitted as a partial replacement for portland cement in accordance with Louisiana Department of Transportation and Development Standard Specification Part IX Subsection 901.08.

The Contractor may use up to 15 percent fly ash by weight of cement. The conbination of slag and fly ash will not be allowed as a partial substitution for cement.

10-6) Weight of cement and fly ash shall not be less than 564 pound per cubic yard.

10-7) Air content shall be between 4% and 6%.

10-8) The concrete shall be proportioned and produceed to have a slump of 4 inches or less, maintaining the maximum water/ cement ratio. The Contractor shall measure slump at site per every truck. Excess slump will be rejected to pour by owner inspector.

10-9) Concrete shall be ready mixed. Discharge of concrete shall be completed within 90 minutes from the start of mixing unkess otherwise approved.

10-10) Earth on which concrete is placed shall be smooth, compact and moist.

10-11) Generally, no construction joints will be allowed except concrete paving,unless otherwise shown on the drawings.

10-12) Concrete surfaces between the foundation (first pour) and columns or pedestals (second pour) shall be thoroughly cleaned. All laitance, loose particles, debris, prior to placing the concrete (second pour), The method used to provide the thorough cleaning can be by use of wire brushes, chipping hammers and brooms, or by high-pressure water blasting.

10-13) The Contractor shall pumped up the water for the foundation work (wet cure, water blasting etc.) from the designated water pond in Shintech site. The Contractor shall furnish pump, hose etc. for pumping up the water.

10-14) All concrete shall be cured. Curing shall be treated by followings

1. By wet mat

2. Curing compound applied strictly in accordance with manufacturer's instructions can be used for equipment fondation, structure footing, beam, pedestal.

3.Especially , slab-on grade shall be cured using moisture retaining meterials consisting of waterproof sheet (ASTM C171). Curing shall be continued at least 7days with water proof sheet to be kept wet.

11) Backfill and compaction and cleaning up

11-1) Lift of one layer shall be below. The Contractor shall compact fill dirt using compactor roller.

a) Structural fill shall be placed in lifts of 8 inches maximum in loose depth.
b) General fill shall be placed in lifts of 12 inches maximum in loose depth.
c) Fills beneath the equipment foundations designated in the drawings shall be compacted as instructed.

11-2) Backfill shall be placed at the construction joint between the paving and the curb.

11-3) Backfill shall be compacted in accordance with below.

a) Structural fill shall be compacted to at least 90% of maximum Modified Proctor density in accordance with ASTM D1557, or 95% of maximum Standard Proctor density in accordance with ASTM D698.
b) General fill shall be compacted to at least 85% of maximum Modified Proctor density in accordance with ASTM D1557, or 90% of the maximum Standard Proctor density in accordance with ASTM D698.

11-4) The Contractor shall include compaction test for 205 locations where are specified by owner in Att.-1-3 Compaction Test Map. Each compaction test shall be done separately soon after each location is backfilled.

11-5) All scraps and debris, resulting from the contractor's operation shall be disposed by the Contractor, Any scraps and debris not satisfactorily cleaned and disposed of shall be cleaned by someone else such costs shall be deducted from retention money.

11-6) The Contractor shall pile the excavated dirt with shaping crown and compaction to keep dry dirt in case of stock dirt in area (Att. 3-10). The Contractor shall provide temporary mat and culvert if necessary.

12) Saw cut

Saw cut shall be applied within 4 to 12 hours after the slab has been finished in as area. 4 hours in hot weather (Average Daily Ambient temperature of 80F or higher) to 12 hours in cold weather (Average Daily Ambient temperature of 40F or below).

13) Flat work

14) Concrete testing

Testing shall be done in accordance with ACI 301 by the Contractor.

15) Caulking, Sealant

The Contractor shall use right material shown on the drawing and perform the caulking and sealant work in appropriate timing.

Surfaces must be clean, dry, structurally sound & free of foreign material.

16) V-ditch

V-ditch shall be made up newly after complete of concrete work as shown on relative drawing. Original ditch for construction shall be back fill with proper compaction work.

17) Temporary sheet pile
Temporary sheet pile shall be installed in accordance with OSHA standards and Contractor's safety standards by the Contractor.

18) Temporary access way
18.1) Temporary access way to construction area to be provided by the Contractor. Temporary culvert shall have proper diameter and be in proper elevation not to obstruct ditch flow. And after completion of work, remove the temporary access.
18.2) All damaged and filled V-ditches shall be restored according to the drawings.

3.3 Building shell

1) Main structure shall be an independent frame system with no load bearing walls. Structure end frame may be load bearing frames, unless otherwise noted on the drawing.

2) Wood is not an acceptable material for use in the building frame or exterior shell or internal partitions.

3) The building shells shall be designed and installed weather tight and have finished appearances.

4) Roofing, Gutters and downspouts sized for maximum roof drainage for 7inches per hour of rainfall intensity shall be provided.
The Gauge of Roofing and wall are 24. Roofing shall be standing double-lock seam system which assures consistent weather-tight performance.. Skylight also shall be designed to avoid from rain leak.

5) Insulation for exterior walls and roof shall be minimum 3-1/2 inches thick and shall provide a maximum U-factor of 0.08 Btu/(hr·ft²·°F), or the lower, more stringent U-factor required by the current applicable Louisiana building and energy codes, whichever is more stringent.

Insulation and insulation assemblies shall meet the requirements of Section 708, Standard Building Code.

- Concealed insulation shall have a flame spread of 0-75 and a smoke developed of 0-450.
- Exposed insulation shall have a flame spread of 0-25 and a smoke developed of 0-450.

6) Exterior doors: 1-3/4" thick FRP, flush or panel style conforming to the Steel Door Institute. Locks on doors shall be installed all doors.

7) Locks on doors in means of egress shall not require the use of a key, special device or special knowledge, or effort for operation from the egress side of the door.
Fire doors shall be steel.

8) The design/builder shall install robust keys on the doors. The purchaser does not accept fragile keys such as broken by person's power.

9) Roll up doors

9-1) Numbers and size of roll up doors are the following.

4BLDG-A901	10 ft Wide x 10.5ft H	1set
4BLDG-A902	14 ft Wide x 14ft H	2sets

9-2) The roll-up doors shall be galvanized coiling overhead doors (inside mechanism drum) and be furnished with locking devices manual hoist chain operation.

10) Building structural framing shall be hot dip galvanized in accordance with ASTM A-123, A153 and A-385.

11) The contractor shall furnish rooms in accordance with the ROOM FINISH SCHEDULEs on the drawing LPA4-33000-05, LPA4-33000-23

3.4 Materials

1） Glass/Glazing

1. 1） Minimum glass thickness shall not be less than ¼ inch.
1. 2） Glass shall be temperd glass. Heat treated float glass shall be conformed with ASTM C1048, Type I, Quality Q3.
1. 3） Wired glass shall be conformed with ASTM C1036, Type II, Class 1, Quality Q6.
1. 4） Window frame shall be PVC.

2） Doors

2. 1) Door material shall be of smooth-surfaced hollow core type.
2. 2) Door thickness shall be 1-3/4 inches.
2. 3) Door glass, when it is specified, shall be ¼ inch tempered and visible.
2. 4) Kicker plate, where it is specified, shall be 1/8 inch 304 stainless steel.
2. 5) Door performance shall be heavy duty.
2. 6) Fire rating shall be conformed with the requirement of Louisiana State Fire Marshal.
2. 7) Door finish color shall be a subject of the owner's approval.
2. 8) Door stopper and door closer shall be attached for each door.

3） Lock set and Latch set

3. 1) Lock sets of swinging doors shall be a cylinderical lock of stainless steel knobs, and shall be robust sufficient for industrial use.

3. 2) All doors shall be have lock set All lock sets shall be comply with Approved Key System consisiting of;
- Master key system.

3. 3) Following number of keys shall be furnished;
- Three (3) keys for each locks
- Two (2) number of masterkey

4） Floor

4. 1) Floor tile, where it is specified, shall be vinyl composite tile (VCT). Color shall be a subject of owner's approval.
4. 2) VCT shall be conformed with ASTM F1066, Class-2 for monolithic vinyl tile. Thickness shall be 1/8 inch and size shall be 12 inch by 12 inch.

5） Suspended Ceiling

5. 1) Suspended ceiling shall be exposed T-Bar Grid suspension sysytem
5. 2) Exposed T-Bar grid suspension system shall consist of a light-duty, exposed T-Bar grid conforming to ASTM C636.
5. 3) Hanger for suspending T-Bar grids from an exisiting structure shall be of steel rod, formed steel, steel wire in accordance with manufacture's standard.
5. 4) Panel shall be conformed with ASTM E 1264, Type and Form XX.
5. 5) Ceiling panel shall consist of following requirements;
- Sag and humidity resistance up to 90% humidity
- Performance shall be, LR not less than 0.80, NRC not less than 0.55, CAC not less than 40.
- Antimicrobial treatment: Broad spectrum fungicide and bactercide or fungicide based

- Minimum thickness shall be 5/8 inch and modular size shall be 24 by 24 inches
- Class A fire performance

3.5 General Information

1) The Design/Builder's design professional of record shall be responsible for all code compliance and interpretations. In all cases where conflicts occur among the code requirements the stricter requirement shall govern unless approved by the Purchaser and the regulatory authority having jurisdiction for this Project.

2) Occupancy Classification
   2-1) NFPA 101 :Industrial (4BLDG-A901&A902)
   2-2) SBCCI: Industrial (4BLDG-A901)
   Business (4BLDG-A902)
   2-3) Type of Operation and General Description of 4BLDG-A902
   The buildings are used for electrolyzer cell maintenance and change the gasket of cell flame etc;.

3) Purchaser will provide to the Design /Builder a Fire Marshal waiver of the ADA-AG or LSC requirements for the Design/Builder construction documents are submitted to the Fire Marshal for the final plan review.

4) Exterior stairs shall comply with NFPA 101:5-2.2.1 including requirements for handrails at stairs and ramps. Hand rail shall meet to OSHA Code. (Guard Rail and Hand Rail)

5) Fire Wall shall be constructed as minimum 2-hour rated wall, and constructed to the underside of the metal roof panels. More details are specified in NFPA 221 and in the SBCCI Building Code.

4. Heating, Ventilation and Air Conditioning (HVAC)

4.1 Design Criteria

1) General information for Building design.
   1-1) Ambient temperature (Outdoor temperature)
   - Summer 105°F dry bulb, 82°F wet bulb
   - Winter 20°F dry bulb
   1-2) Relative humidity
   - Summer 50.0%RH
   1-3) Elevation: above mean Sea level

2) Design indoor Condition, Heating, Air conditioning humidity, ventilation, occupants and heat load from equipment.

HVAC LOAD TABLE

Room	Temperature (°F)		Humidity (% RH)		Minimum Ventilation Air	Exhaust cfm/ft^2.	Lights Watts/ ft^2	Occupant (person)	Heat load from Equipment(BTU/H)	
	Summer	Winter	Summer	Winter					Sensible	Latent
Switchgear rm.	75	75	max. 50	max. 50	*	*	1.5	-	615,000	-

Note: * By Vendor's design.

3) Special Design Considerations
   3-1) No heart source is in building except lighting (4BLDG-A902)
   3-2) Internal heat gain shall be based on "HVAC Load Table".
   3-3) Internal heat gain from lighting is 1.5W/Ft2
   3-4) Heat input from wall, roof, ground and exhaust fans shall be considered.
   3-5) The fresh air intake duct shall be sized for approximately one air change per hour of fresh air or sufficient fresh air to satisfy the exhaust requirements,

whichever larger. A manual damper shall be provided to control the amount of fresh air.

3-6) Insulation of exterior walls and roof shall be of 3-1/2" thick and shall provide for a U factor of 0.08 [Btu/(hr F ft2)].

3-7) Smoke detection shall be installed at outside air inlet duct.

3-8) The available electrical capacity is 100 A × 6. The vendor shall determine the HVAC capacity and number of units based on the available installation space and electrical capacity.

3-9) The HVAC shall be packaged unit type.

3-10) Refrigerant shall be R410A or R407C; (R22 prohibited.)

4) Codes and Standards

4-1) The latest edition of the ASHRAE Guide shall be followed as the basic reference for design. For more specific detail on recommended engineering practice, the latest edition of the following codes and standards may be used.

- Sheet Metal and Air Conditioning Contractor's National Association, Inc.,
- "A Code of Trade Practice for Ventilating and Air Conditioning Work"
- National Warm air Heating and Air Conditioning Association, "Technical Code".
- National Association of Fan Manufacturers," Standard Methods Adopted for Centrifugal Fans and Blowers".
- American Society of refrigeration Engineers Standards.
- Air Conditioning and Refrigerating Machinery Association Standards.
- National Board of Fire Underwriters National Building code.

4-2) HVAC system shall be constructed in accordance with NFPA 90A&90B

4.2 Required heating, ventilation and air conditioning units.

1) 4BLDG-A901 (Switch Gear Room)

1-1) Airducts and air grilles shall be so designed that they will not interfere with the Purchaser's cable tray shown on the drawings LPA4-79014-01,02.

1-2) The minimum distance between intake air and exhaust air shall be in accordance with latest ASHRAE standard

1-3) Airducts shall be located also outside buildings to keep space inside building.

2) 4BLDG-A902 (Cell maintenance building)

2-1) The vendor shall design and specify the number and capacity of heater unit and ventilation system for the building based on the given design criteria described in the above section and Dwg. LPA4-79001-63.

4BLDG-A902 shall be provided with the following louvers for ventilation,

- 12(twelve) wall louvers (galvanized), 6 'W X 2'H, Heavy duty adjustable blade type.
- 3(three) roof ventilations for natural ventilation.
- 4(four) electrical heater (50kW)
- 2(two) exhaust fan (2000CFM wall mounted)

5. Electrical

5.1 The electrical scope of work shall include design with load calculation & load calculation, material supply, installation of all building interior/exterior lightings, convenience/welding receptacles, air conditioning, ventilation fan, fire alarm system and grounding system and acceptance test as shown on followings, but not limited to.

1) Interior and exterior lighting.

2) DC emergency lightings with battery and "EXIT" lights.

3) Lightning protection and grounding.

4) Power distribution system, panels and wirings not only for the Contractor furnished equipment but also for the Owner's use.

5) Smoke Detection System including Building Fire Alarm Panel. Two fire alarm output dry contact (Normally open) for Owner use shall be provided by the Contractor

5.2 The electrical installation and materials shall conform to applicable sections of the National Electric Code and all applicable local and state codes and engineering specification for subcontractor as minimum.

5.3 The Purchaser will provide the Contractor with the following power supply for the Contractor's electrical system of the building.

120V DC	One feeder	For DC emergency lighting in 4BLDG-A901
240/120V, 1-ph, 3W, 60-Hz from no-break UPS system	Two feeders	For AC emergency lighting in 4BLDG-A901 & 4BLDG-A902
208/120V, 3-ph, 4W, 60-Hz	Two feeders	For normal lighting, receptacles and other 208V/120V loads in 4BLDG-A901 & 4BLDG-A902
480V, 3-ph, 3W, 60-Hz	Nine feeders	For heating & ventilation, air conditioning units, electric duct heater etc

The Purchaser will supply wiring for the above up-to the incoming terminals of switch boards furnished by the Contractor.

5.4 Power Distribution System

1) One (1) 480V, three-phase, three-wire, wall-mounted distribution panels, DPB-4A902A shall be provided in 4BLDG-A902 for control of all 480V loads. Panels shall be indoor, industrial type. Main circuit breaker shall be 200-ampere rating for top connection of power supply. Panels shall be installed approximately 5'- 0" above the floor. Short circuit rating for the circuit breakers shall be;

Main breakers:	30,000 ampere or greater
Branch breakers:	20,000 ampere or greater

2) A 208/120V, three-phase, four-wire, wall-mounted lighting panel LPB-4A901x shall be provided in 4BLDG-A901 for control of all general lighting circuit, and receptacle circuit. Panel shall be indoor, industrial type. Panel shall be installed approximately 5'-0" above the floor. Branch circuit breakers shall be maximum 20-ampere rating, one or two-pole as required, plug-in type, 5,000-ampere short circuit rating. Main breaker shall be 100-ampere rating, 10,000-ampere or greater short circuit rating for top connection of power supply.

3) A 208/120 V, three-phase, four-wire wall mounted lighting panel LPB-4A902A shall be provide in 4BLDG-A902 for control of all general lighting circuit, and receptacle circuit. Panel shall be indoor, industrial type. Panel shall be installed approximately 5'-0" above the floor. Branch circuit breakers shall be maximum 20-ampere rating, one or two-pole as required, plug-in type, 5,000-ampere short circuit rating. Main breaker shall be 60-ampere rating, 10,000-ampere or greater short circuit rating for top connection of power supply.

4) A 240/120 V, one-phase, three-wire, wall-mounted lighting panel ELP-4A901A(AC) shall be provided in 4BLDG-A901 for control of AC emergency lighting circuit. Panel shall be indoor, industrial type. Panel shall be installed approximately 5'– 0" above the floor. Branch circuit breakers shall be maximum 20-ampere rating, one or two-pole as required, plug-in type, 5,000-ampere short circuit rating. Main breaker shall be 60-ampere rating for top connection of power supply.

5) A 240/120 V, one-phase, three-wire, wall-mounted lighting panel ELP-4A902A(AC) shall be provided in 4BLDG-A902 for control of AC emergency lighting circuit. Panel shall be indoor, industrial type. Panel shall be installed approximately 5'– 0" above the floor. Branch circuit breakers shall be maximum 20-ampere rating, one or two-pole as

required, plug-in type, 5,000-ampere short circuit rating. Main breaker shall be 60-ampere rating for top connection of power supply

6) A 120VDC, wall-mounted lighting panel ELP-4A901B(DC) shall be provided in 4BLDG-A901 for control of DC emergency lighting circuit. Panel shall be indoor, industrial type. Panel shall be installed approximately 5'-0" above the floor. Branch circuit breakers shall be maximum 15-ampere rating, two-pole as required, plug-in type. Main breaker shall be 40-ampere rating for top connection of power supp

5.5 Lighting

1) Minimum lighting level shall be,
   1-1) 50 foot-candles for 4BLDG-A901.
   1-2) 100 foot-candles for 4BLDG-A902.

2) All indoor lighting fixtures for 4BLDG-A01 shall be LED linear shop light, cool white, chain mounted type with guard, 208-volt, 1-phase, 60-Hertz. Elevation of lighting fixture shall be approx. 10ft above from floor unless otherwise noted.

3) Indoor general lighting fixture in 4BLDG-A902 shall be LED high bay light, 208-volt, 1-phase, 60-Hertz.

4) Emergency lighting shall be provided in accordance with NFPA 101:5-9. EXIT signs complying with NFPA 101:5-10 shall define exits and access to exits where the exit is not immediately apparent.

5) Exterior lighting shall be LED lighting fixture with photocell for outdoor used.

6) Emergency light circuits shall not be connected to the same circuit breaker as normal lighting/receptacles.

7) Installation of lighting fixtures and wiring for 4BLDG-A901 shall be done after other contractor installed electrical cable tray system.

8) Manufacture and model numbers of each lighting fixtures shall be shown on approval/construction drawings.

5.6 Power Devices

1) Provide motor starters with thermal overload for control and protection of heating/air conditioning motors. Starters shall be completed with switch and thermal overload heater. Starters shall be near the motor loads.

2) All circuits shall be checked for continuity and identification and shall pass operational test to see that the circuits perform all functions for which they are designed. Megger test for all of electrical cable and equipment shall be performed by the contractor. The megger test report shall be submitted to the Owner.

5.7 Grounding

1) The contractor shall furnish and install adequate grounding wiring.
2) All motors shall be grounded. Ground wire shall be a AWG #4, TW or THW, copper wire. Ground lugs shall be copper compression type.
3) All panels shall be grounded.
4) Grounding wiring installation including underground grounding system including grounding rod, pig tail installation shall be done by the building Contractor.

5.8 Underground conduits and hand holes for the Contractor's electrical system of the building shall be installed by the Contractor. Metal caps for conduits shall be installed by the Contractor.

5.9 The Contractor shall furnish the drawing for Owner's approval prior to purchase of material. The drawing shall show the proposed layout of lighting fixtures, HVAC, heating units, panels, manual starters and those connection wiring. Also, include proposed panel circuit schedules and detailed information including load data (volt, amps, VA) and wire/conduit size on all electrical being furnished.

5.10 Perform acceptance tests, inspections, system function and calibration of certain electrical systems, equipment and material installed under the scope of this project. Submit test report documentation the result of each test not more than 10 days after test is completed. The contractor shall provide generators for all required tests.

6. Fire protection System

6.1 Fire extinguisher shall be provided to all ooms.

6.2 Computer Room(FCS Room)

1) All wall for Computer Room shall be 2hr fire resistance wall and ceiling.
2) A FM-200 (Heptafluoro Propane), NOVEC or equivalent fire protectionsystem shall be provided to protect the computer room only.
3) Contractor shall do suitable test (e.g. door fan test etc) for fire protecting system.
4) This system is to be designed and installed by a fire protection engineering consultant with experience in the design and installation of this type of fire protection.
5) The system shall be designed in compliance with the provisions of NFPA 12A , latest edition, for total flooding of the computer room.
   4-1) The actuation of the system shall be by a product of combustion detection system suitable to detect burning polyvinyl chloride wire insulation. A heat detection system shall also be included.
   4-2) 4 sets of prints and electronic data of design drawing and test reports, each bearing the seal of the underwriter shall be furnished by the Contractor

7. Smoke Detection/ Fire Alarm System

7.1 Smoke detectors, Strobe unit, Strobe & Horn Unit, manual station shall be provided in 4BLDG-A901 & 4BLDG-A902 (If required by regulation).

7.2 Two(2) Control/Alarm panel shall be provided and installed in 4BLDG-A901 and 4BLDG-A902 (If required by regulations) by the contractor. Two(2) set of three(3) normally close dry contacts, "FIRE ALARM", "SUPERVISON" and "TROUBLE" for the Owner use shall be equipped in the panel.

7.3 This system is to be design and installed by a professional engineering consultant for smoke detection / alarm system with experience in the design and installation of this type of protection.

7.4 The system shall be designed in compliance with NFPA latest edition.

8. Painting

8.1 Building exterior

1) Metal siding and roofing shall be coated with Vendor's standard finish as approved by the Purchaser.
2) Door frames, window frames, exterior doors and all other building parts shall be coated with the Vendor's standard finish as approved by the Purchaser.
3) The finished color shall be white for the roof gutters and downspouts and colony green for the walls, as approved by Purchaser.
4) Fire wall (CMU wall) coating shall be by Vendor. Both internal and external surface shall be painted.

8.2 Building interior

Finish colors shall be as specified by the Purchaser's representative.

8.3 Dust proof paint shall be provided for certain concrete surface of 4BLDG-A901 floor.

9. Concrete work

9.1 Concrete work

1） The standards and/or specifications referenced in this section of the specification shall be the current edition in effect as of the date of the order.

2） Material, mixing, forms and details of construction shall be in accordance with ACI 301,ACI 302.1R and as specified herein.

3） Paving concrete shall be considered and covered by the provisions of ACI 302.1R. This is an exception to paragraph 1.1.2 of ACI 302.1R.

4） Concrete for encasing electrical conduit shall be made using 3-1/2 sacks of cement per yard of concrete and 4 ozs. of cement dispersing agent (Pozzolith 300N) per sack of cement. Concrete shall be colored red using Kroma red iron oxide dye (Phizer minerals, pigments & metals div.) at the rate of 5 lbs. per cubic yard of concrete. Concrete shall be mixed to provide a uniform red color.

5） Contractor must supply concrete design mix to owner's representative prior to starting construction. Concrete shall be maintained in a moist condition for at least 7 days for normal concrete. Hot and cold weather protection shall be in accordance with ASTM C-94.

6） The Contractor shall restore ground surface flat, if the Contractor make that area rough as a result of their field work.

7） Lightweight structural concrete shall have a minimum compressive strength of 3750 PSI at 28 days and a maximum air dry unit weight of 115 pounds per cubic foot.

9.2 Reinforcement

1） The minumum coverage for reinforcement in concrete subject to weather exposure shall be followed drawings, if drawings does not show it, it is is to be 3"

2） All rebar splices shall be class B tension splices.

3） Provide suitable support of all reinforcing to prevent displacement during concreting.

9.3 Joints and embedded items

1) Premolded expansion joint material shall conform to ASTM D994, shall be 1/2 inch thick and shall extend full depth of concrete.

2) Waterstops shall be polyvinylchloride (PVC) with the configuration as per the Contractor.

9.4 Finishing of formed surfaces

1) Concrete finish for formed surfaces exposed to view shall be smooth form finish. Finish for formed surfaces not exposed to view may be rough form finish.

2) Exposed corners shall be formed with 3/4 inch chamfers except where otherwise noted on the drawings or where tooled edges are specified. Corners of surfaces to receive grout shall not be chamfered.

9.5 Landings

1) Provide landings outside exterior doors level with floor.

2) Provide level change at overhead door thresholds per NFPA 101:5-1.6 and 5-2.1.13.

9.6 Testing

1) Testing shall be done in accordance with ACI301 by the Contractor. The contractor shall submit the test report to the Owner.

2) The concrete supplier or his representative shall take a set of 3 cylinders for each

50yd3of concrete poured, or a minimum of one set per any pour. The cylinders will be marked with the location of where they were taken, the number of the truck that hauled the concrete and the date and time the cylinder forms.

3) The contractor shall be responsible for storing the cylinders and maintaining them in good condition.

4) The contractor shall have one cylinder for each set broke at 7 days and a second, third cylinder of each set broke at 28 days by an approved testing company. The owner or owner's rep shall receive written copies of the testing company's report in a timely manner, and provide them to the manufacture at their request.

5) All testing result shall be submitted to Owner, too.

10. Site Working Conditions

10.1 The Contractor and subcontractor personnel at site shall be familiar with and shall rigidly comply with the rules and procedures in the "CONTRACTOR SAFETY MANUAL FOR GREEN FIELD CONSTRUCTION". All Contractors and subcontractors working at Shintech must receive indoctrination from Contractor Safety Council at an Associated Builders and Contractor chapter including the four-hour OSHA basic plus course and Shintech one-hour site specific prior to starting to work. Reservations can be made by calling (225) 766-0955. Any contractor found working without indoctrination will be subject to permanent expulsion.

10.2 The Contractor and subcontractor personnel at site shall understand and comply with Shintech above documents. "Contractor Safety Sheet" shall be signed by the Representatives of both Contractor and Shintech before starting site work.

10.3 The Contractor is required to provide job specific training to all employees which is beyond OHSA requirements for the safe operation of tools and equipment.

10.4 The work site will generally be in non-hazardous area. However, the followings must be considered;

1) Where any welding is to be performed, the welding machine shall be grounded directly to and in close proximity to the welding work. Welding leads are never to be grounded to anything other than the grounded structure or the specific equipment on which welding is being performed. And fire extinguisher is to be attached to machine by owned company.
2) Contractor must furnish own fire extinguishers on job site.
3) Smoking will be allowed only at the designated area of the work site.

10.5 Fire lanes and access roads shall not be blocked by the Contractor's equipment after working hours. During working hours Contractor shall be able to clear fire lanes and access roads at any time.

10.6 All comfort heaters required during construction shall be furnished by the Contractor. Heating units shall be approved by the Owner's Representative.

10.7 The Contractor shall provide the proper medical care at site in compliance with the law and/or regulations.

10.8 All handling, loading, hauling and unloading shall be done by the Contractor.

10.9 Should the Contractor, as a result of his operation, disturb any area not included in his scope of work, he shall restore them to their original state insofar as is practical.

10.10 The Contractor shall furnish necessary protection and/or soil improvement if necessary.

10.11 The site shall be adequately drained all the time throughout the construction for safety. The Contractor shall pay special attention not only the drain but also run-off, mud and dust. The Contractor is responsible for drain, run-off control, mud control and dust control in the construction areas, lay-down areas and to and from between the construction areas and lay-down areas.

10.12 The Contractor shall register ISNETWorld for Safety/ Insurance qualification. The Contractor shall provide the qualification from www.isnetworld.com.

10.13 Site Security

1) Owner will provide security guards at the entrances of the owner's property (plant site). The Contractor shall be responsible for safeguarding the plant and the work site assigned to it.
2) Wandering of contractor's personnel through plant area other than the immediate work area will not be permitted.
3) The Contractor shall ascertain that his employees are familiar with the designated Contractor's work area and shall be responsible for the control of his employees.
4) Shintech will assign the work site for contractor's site office and lay-down/ storage of equipment and material including those supplied by Owner. The Contractor shall construct or arrange for, at his own cost and expense, necessary site office, warehouse, work shop and such other temporary facilities as maybe required for the completion of the work.
5) The Contractor shall provide at his own cost and expense adequate security measures, including fencing, guards and watching where necessary to secure the equipment, material and the work site.
6) The contractor's employee or its subcontractors who are working at site shall carry ID card or similar certificate, which shall be acceptable to Owner. Owner may request Contractor's employees to show it at the property entrance or at site for the security purpose.
7) Any photographing or videotaping at site will not be allowed unless it is approved in writing by the owner's representative in advance.

10.14 Sanitation and Waste Disposal

1) The Contractor shall furnish his own drinking water, sanitary facilities and utilities. Sanitary facilities shall be portable chemical type.
2) The Contractor shall maintain a clean work site and be responsible for the handling and containment of all Contractor generated trash (*1) related to the work performed hereunder. All Contractor generated waste materials removed by the Contractor from Owner's plant area shall be disposed of in compliance with all applicable laws and regulations relating to the work. No waste materials may be dumped or disposed of on the ground unless specifically authorized by Owner. Any accidental waste material, spills, leaks, etc. will immediately be brought to the attention of Owner.

   *1 "Trash" includes all Owner/Vendor supplied templates, saddles for vessels/columns, crates and boxes.

3) All trash and debris, resulting from the contractor's operation, shall be disposed to the dumpsters, which Shintech will prepare, by the contractor on a daily basis. Burning of material at site is prohibited.
4) All scraps and debris, resulting from the Contractor's operation, shall be disposed by the Contractor on a daily basis.

10.15 Temporary Power Supply

1) No electrical source will be provided by the Owner.
2) Regarding the location of site-office trailer and power supply to its trailer, the followings should be noted:

   2-1) Location of trailer(s) and route of contractor's power supply wiring must be approved by Owner representative prior to contractor connecting to the Shintech supplied power distribution panel board. This will prevent contractor inadvertently extending Entergy's 300-foot rule rights.

   2-2) The Contractor must acknowledge that Shintech is not obligated in any way to provide electric power to contractor and Shintech at its sole discretion may disconnect, or request contractor to disconnect, contractor's trailer's/equipment for any reason whatsoever.

   2-3) The Contractor must not extend electric power service outside of trailer area.

10.16 Traffic Control

1) A limited parking area for the Contractor is available at the plant site. The Contractor may

be required to bus-transport majority of its work force to the construction site to avoid traffic congestion at the access road to the plant site. The Contractor will be required to discuss with Owner about the parking space available at the plant site.

2) The Contractor is also advised that the Contractor may be required to work in a differential work time to avoid traffic congestion at the access road to the construction site

10.17 The Contractor is advised that other Contractors may work at or adjacent to the work site from time to time.

10.18 The Contractor shall visit Shintech New SPP-4 project area at Plaquemine, Louisiana and shall familiar himself with site configuration and conditions, before his bid is submitted.

10.19 The contractor is advised that the contractor may be required to work in a differential work time to avoid traffic congestion at the access road to the construction site. The contractor may be required to bus-transport majority of its work force to the construction site.

10.20 The Contractor shall be responsible throughout the construction to maintain the designated lay-dawn area reasonable well for safe use. The Contractor shall restore the designated lay-down area to it is original condition when the Contractor demobilize. The Contractor is requested to give a unit price for bidding.

10.21 If required to have a license issued by Louisiana Law, the Contractor shall provide a copy of the license issued by the Louisiana State Licensing Board for Contractors for itself and for all subcontractors performed any part of the work.

10.22 Any fee and expenses to have the Orientations at the Contractor Safety Council shall be paid by the Contractor.

10.23 The Contractor and subcontractor shall comply with Att.3-3 Shintech Lightning Policy during the construction work.

10.24 The Contractor shall provide spotters. Never back any mobile equipment without a spotter when there is a blind spot. The contractor shall have a responsibility of spotter for safety or traffic control.

11. Drawing and Construction Schedule

11.1 Drawing schedule

1) The Contractor shall submit 4sets copies of the following drawings for each building by printed document and electronic data for Purchaser's approval within 4 weeks from the date of the Contract.

Drawings

1-1) Site preparation drawings
1-2) Foundation drawings
1-3) Plan view including detailed partitions
1-4) Elevation view
1-5) Structural framing
1-6) Specification of air conditioning equipment
1-7) Calculation sheet, piping, instrumentation and control diagram of the HVAC system
1-8) Electrical wiring diagram & one line diagram showing equipment rating (volt & amp), wiring route, wire & conduit size, panel schedule, etc.
1-9) Layout and wiring diagram of lighting fixtures
1-10) Others as described in the job-description

Note: Purchaser will return one marked-up copy of the above drawings, within 2 weeks after those drawings are received. The list of drawing is minimal, Design/Builder should provide any and construction drawings required to fully describe the project.

2) Contractor shall submit electronic data of the final drawings for Purchaser's record, 3 weeks before the site erection and installation work will be started. Design calculations shall also be submitted for the Purchaser's record.

3) All drawings and document applied for Fire Marshal's review shall be completed within 8weeks.

11.2 Construction schedule

1) The contract for successful bidder is to be awarded by the middel of Dec. 2026.
2) The site development work of CA plant area will be completed by the end of Oct. 2026.
3) The site work of this contract shall be commenced at the begining of Mar. 2026 and target date of completion is the end of Sep. 2026.
   - Foundation for Transformer and concrete work of around area with sump pump wiring target date of completion is the end of May 2027.
   - Switchgear room(4BLDG-A901) target date of completion is the end of Sep. 2027.
   - Cell maintenance building (4BLDG-A902) target date of completion is the end of Sep. 2027.

Note: Bidder shall propose the practical schedule without over time work, and specify the expected date of each mile stone in the proposal.

12 Bid Information

12.1 Bid shall be lum -sum proposal to furnish the completed building, as specified and required in this job specification and shall be stated for the following cost breakdown of each building for 4BLDG-A901(Switchgear room)with indicated in LPA4-33000-01 Area and 4BLDG -A902 (Cell Maintenance Warehouse) with indicated in LPA4-33000-20 for information purpose only.

		Material Cost [$]	Labor/Equip. Cost [$]	Total Cost [$]
1	Administration/Mobilizing			
2	Concrete work			
3	Building erection			
4	HVAC			
5	Electrical			
6	All taxes			
7	Total			

Note: The working hours should be 50 hours a week and no per diem shall be paid by Shintech. If the contractor could not meet his proposed duration after award of contract , all costs such as over time and/or per diem required to meet the duration shall be paid by the contractor.

12.2 Bidder shall also state the following information in his bid:

1) Earliest possible week to complete the foundation work
2) Number of weeks to get the steel columns, frame, and roofing.

12.3 Attached "Construction Contract" and " Contractor's Secrecy Agreement "shall be used in connection with this invitation to Bid.

12.4 It is intended that bidders base their proposal on bidder's standard type structure and equipment as much as is possible within the requirements of this specification and drawings. Bidders are to include with their proposals sufficient details of equipment and materials and type of structure to enable Owner to fully evaluate the proposal

12.5 Any deviations from this job specification shall be clearly stated in the Bid, in understanding that this job specification will form an integral part of the purchase order.

12.6 The Contractors shall visit Shintech plant site and shall make familiar himself with site configuration and condition, before his bid is submitted.

12.7 The Bidder is requested to propose alternative(s) plan and price for external appearance of shell of the Building. Catalogues of the manufacturer or drawings and/or pictures of the Contractor's reverenced items will facilitate the Owner's selection.

12.8 The Contractor shall pay all sales, consumer, use and similar taxes which have been legally enacted at the time of his proposal and shall secure and pay for building and other permits and governmental fees, licenses and inspections necessary for the proper execution and completion of the work which are either customarily secured after execution of a contract for construction or are legally required at the time of his proposal.

12.9 Any fee and expense to have the orientation at the Contractor Safety Council shall be inlcuded in the bid price and paid by the Contractor. T.W.I.C cards shall not be required fro this construction site.

12.10 The unsuccessful bidders and those not bidding shall return all drawings and specification to

Shintech Louisiana, LLC. Plaquemine Plant
26270 Hwy 405 (River Road South)
Plaquemine, LA 70764-6816

Attachment-1 ENGINEERING SPECIFICATION

1) E31-312 Wind factor for Louisiana Plant
2) E31-313 Seismic Factor for Louisiana Plant

Attachment-2 Building Drawings

1) Building Drawings

1-1. Switch Gear Room (4BLDG-A901)

Drawing No.	Description	Rev.
LPA4-33000-01	General Plan	0C
LPA4-33000-02	Roof Plan	0C
LPA4-33000-03	North & South Elevation	0C
LPA4-33000-04	East & West Elevation	0C
LPA4-33000-05	Section	0C
LPA4-53000-01	300/800Area Foundation Arrangement Plan (1)	0E
LPA4-53000-05	300/800Area Foundation Arrangement Plan (5)	0D
LPA4-53000-06	300/800Area Foundation Arrangement Plan (6)	0F
LPA4-53000-07	300/800Area Foundation Arrangement Plan (7)	0E
LPA4-53010-50	300/800Area Concrete Paving / Joint Details (1)	0B
LPA4-53010-51	300/800Area Concrete Paving / Joint Details (2)	0B
LPA4-53010-56	300/800Area beside 4BLDG-A901 Joint Arrangement	0C
LPA4-53010-60	300/800Area beside 4BLDG-A901 Earthwork and Concrete Details with Rebar Arrangement Plan (1)	0B
LPA4-53010-61	300/800Area beside 4BLDG-A901 Earthwork and Concrete Details with Rebar Arrangement Plan (2)	0B
LPA4-53010-62	300/800Area beside 4BLDG-A901 Earthwork and Concrete Details with Rebar Arrangement Plan (3)	0C
LPA4-53010-63	300/800Area beside 4BLDG-A901 Earthwork and Concrete Details with Rebar Arrangement Plan (4)	1C
LPA4-53010-64	300/800Area beside 4BLDG-A901 Earthwork and Concrete Details with Rebar Arrangement Plan (5)	0B
LPA4-79004-X02	4BLDG-A901/300Area Grounding System Layout (Foundation Work)	0
LPA4-79009-05	4BLDG-A901 Bus Duct Arrangement	0
LPA4-79009-06	4BLDG-A901 Bus Duct Arrangement (Detail & Section View -1)	0
LPA4-79009-07	4BLDG-A901 Bus Duct Arrangement (Detail & Section View -2)	0
LPA4-79009-08	4BLDG-A901 Bus Duct Arrangement (Detail & Section View -3)	0
LPA4-79009-13	Civil Information for 4BLDG-A901 North Side	0
LPA4-79009-14	Civil Information for 4BLDG-A901 North Side (Detail and Section View-1)	0
LPA4-79009-15	Civil Information for 4BLDG-A901 North Side (Detail and Section View-2)	0
LPA4-79009-16	Civil Information for 4BLDG-A901 North Side (Detail and Section View-3)	0
LPA4-79009-17	Civil Information for 4BLDG-A901 South and West Side	0
LPA4-79009-18	Civil Information for 4BLDG-A901 South and West Side (Detail and Section View-1)	0
LPA4-79014-02	4BLDG-A901 Cable Tray Layout (Upper)	0
LPA4-79014-03	4BLDG-A901 Cable Tray Layout (Middle)	0
LPA4-79014-04	4BLDG-A901 Cable Tray Layout (Lower)	0
LPA4-79014-05	4BLDG-A901 Cable Tray Layout (Section View-1)	0
LPA4-79014-06	4BLDG-A901 Cable Tray Layout (Section View-2)	0
LPA4-79001-60	4BLDG-A901 Power Distribution Diagram (1)	0
LPA4-79001-62	4BLDG-A901 Lighting Panelboard Schedule	0

1-2. Cell Maintenance Building (4BLDG-A902)

Drawing No.	Description	Rev.
LPA4-33000-20	General Plan	0B
LPA4-33000-21	Roof Plan	0B
LPA4-33000-22	North & South Elevation	0B
LPA4-33000-23	East & West Elevation	0B
LPA4-53000-07	300/800Area Foundation Arrangement Plan (7)	0E
LPA4-53000-08	300/800Area Foundation Arrangement Plan (8)	0B
LPA4-78004-X01	4BLDG-A902/800Area Grounding System Layout (Foundation Work)	0
LPA4-79009-19	Civil Information for 4BLDG-A902	0
LPA4-79001-63	4BLDG-A902 Lighting Panelboard Schedule	0

2) Reference Drawings

Drawing No.	**Description**	**Rev.**
LPA4-00001-01	CA Plant, General Lay-Out	10
LPA4-50001-02	Site Development BLD'G Pad Fill Detail	0
LPA4-50003-02	300/800Area Pile Arrangement Plan (2)	0D
LPA4-80002-01	Fire Fighting Underground Piping Plan	1
LPA4-80002-02	CW, RCW Underground Piping Plan	3
LPG4-50001-120	Site Development Plan SHT 17 of 42	4
LPG4-50001-121	Site Development Plan SHT 18 of 42	4
LPG4-50001-128	Site Development Plan SHT 25 of 43	3
LPG4-50001-129	Site Development Plan SHT 26 of 43	3

3) Standard Drawings

Drawing No.	**Description**	**Rev.**
LPG4-40000-01	Structural Typical / Steel General Note (1/2)	0
LPG4-40000-02	Structural Typical / Steel General Note (2/2)	0
LPG4-40000-24	Structural Typical / Steel Typical Guardrail detail	0
LPG4-50000-01	Structural Typical / Concrete General Note (1/2)	0
LPG4-50000-02	Structural Typical / Concrete General Note (2/2)	0
LPG4-50000-05	Structural Typical / Concrete Spread Foundation (1/2)	0
LPG4-50000-06	Structural Typical / Concrete Spread Foundation (2/2)	0
LPG4-50000-08	Structural Typical / Concrete Anchor Rod	0
LPG4-50000-10	Structural Typical / Concrete Miscellaneous Detail (1/2)	0
LPG4-50000-11	Structural Typical / Concrete Miscellaneous Detail (2/2)	0
LPG4-50000-12	Civil & Drainage Plan Detail (1)	0
LPG4-50000-15	Civil & Drainage Plan Detail (4)	0
LPG4-50000-52	Structural Typical / Concrete Ditch, Trench & Bedding	0

4) Typical Drawings for Electrical

Drawing No.	**Description**	**Rev.**
LPA4-70008-31	Typical Detail for Grounding System Installation (1)	0
LPA4-70008-32	Typical Detail for Grounding System Installation (2)	0
LPA4-70008-33	Typical Detail for Grounding System Installation (3)	0

5) Typical Drawings for Instrument

Drawing No.	**Description**	**Rev.**
LPA4-69019-01 (2 sht)	Installation Layout of Panel, Racks and Computer and CA4 SWGR Computer Room Outline (FCS Room)	0a
LPA4-69019-02	Equipment List of Panel, Racks and Computer	0a
LPA4-69019-03	Base Frame Layout of Panel, Racks and Computer	0a
LPA4-69019-04	Manufacturing Drawing of Cable Tray Support	0a
LPA4-69019-05	Manufacturing Drawing of Panels and Racks Base Frame 4BLDG A901 SWGR Area (1/3)	0a
LPA4-69019-06	Manufacturing Drawing of Panels and Racks Base Frame 4BLDG A901 SWGR Area (2/3)	0a
LPA4-69019-07	Manufacturing Drawing of Panels and Racks Base Frame 4BLDG A901 SWGR Area (3/3)	0a

Attachment-3 Other Documents

Attachment 3-1 Shintech Construction Contract(Fixed Price)
Attachment 3-2 SLA-SAF-006.02-R01 Contractor Safety Manual Green Field
Attachment 3-3 Lightning Policy
Attachment 3-4 Shintech ISNetworld Process Flow Chart
Attachment 3-5 Shintech Facility Security Program
Attachment 3-6 Vehicle Drive-In Pass Request (guidelines)
Attachment 3-7 Geotechnical Investigation Report of SPP-4
Attachment 3-8 STORM WATER POLLUTION PREVENTION PLAN FOR CONSTTUCTION ACTIVITIES GREATER THAN FIVE ACRES Geotechnical Investigation Report
Attachment 3-9 Bench Mark Survey Drawings
Attachment 3-10 Stock Pile and Laydown Map
Attachment 3-11 HVAC Duct Layout Image
Attachment 3-12 Tentative Schedule