

SECTION 26 05 00

COMMON WORK RESULTS FOR ELECTRICAL GENERAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section. Where conflicts occur between divisions, the more stringent requirement shall apply.
- B. Related Sections: Consult all other Sections, determine the extent and character of related work and properly coordinate work specified herein with that specified elsewhere to produce a complete and operable installation.
 - 1. All sections within Division 26 – Electrical.
 - 2. All sections within Division 01 – General Requirements: General and supplementary conditions and provisions of Contract and Division 01 of the Specifications, apply to all Division 26 Sections.
 - 3. General requirements for anchorage and support:
 - a. Provide certified report including seismic calculations for anchorage or support of all electrical system equipment (as indicated in appropriate specification section), signed by a structural engineer registered in Texas.

1.2 SUMMARY

- A. The requirements of this section apply to all the Work of Division 26.
- B. This Section includes general administrative and procedural requirements for Division 26 that supplements the requirements specified in Division 01.
- C. Reference to Manufacturer or Contractor in this section is to be considered the manufacturer of the equipment in sections 26 12 16, 26 13 16, and 26 24 13.
- D. This section supplements all Sections of this Division and shall apply to all phases of Work specified, indicated in the Contract Documents, and as required to provide for a complete installation of electrical systems for the Project. Review all sections of the Specifications for related work and coordinate the work of this Section with all other Sections.
- E. Should there be any direct conflict in the specifications and drawings the most stringent requirement shall govern.
- F. The scope of work shall include but not be limited to the following:
 - 1. Perform all incidental work required to provide a complete properly operating system. Provide the type and quantity of electrical materials and equipment necessary to complete Work and all systems in operation, tested and ready for use.

2. Provide all incidental items that belong to the Work described and which are required for complete systems.
3. Documents may not show or list every item required. When an item not shown or listed is necessary for the proper operation of equipment which is shown or listed, provide an item which will allow the system to function properly at no increase in Contract Sum.
4. Provide testing described in individual sections.
5. Provide assistance to commissioning team in collection of data for Pre-Functional and Functional tests.

G. Construction Documents Drawings and Data

1. Should conditions necessitate any rearrangements, the Contractor shall prepare and submit drawings showing the changes before proceeding with the work. If such changes are approved, they shall become a part of this contract after their approval.
2. The drawings are diagrammatic and are a graphic representation of the Contract Requirements, produced according to the best available standards to an optimum scale. Dimensions of work as indicated on plans are not guaranteed to be as-built dimensions. No measurements shall be scaled from the Drawings for use as a definite dimension for layout or fitting work in place. The Contractor is solely responsible for dimensional control and coordination of the work to be installed.
3. The layout of equipment, as shown on the plans, shall be checked and exact location determined by dimensions of equipment accepted for installation. Consult the Architectural and Structural Drawings for all dimensions, locations of partitions, sizes of structural members, foundations, etc.

H. Minor Deviation from Construction Documents

1. Where the equipment furnished requires redesign of systems, connections, or configuration, and such substitution is acceptable to the Owner's Representative, the contractor shall bear all costs associated with design engineering and shall pay the time and materials cost of the Owner's Representative's review of this documentation. In addition, it is the contractor's responsibility to obtain approval from the authority.

1.3 REFERENCES

- A. Reference to codes, standards, specifications and recommendations of technical societies, trade organizations and governmental agencies shall mean that latest edition of such publications adopted and in effect at the time of proposal or the bid. Such codes or standards shall be considered part of this Specification as though fully repeated herein.
- B. When codes, standards, regulations, etc. allow work of lesser quality or extent than is specified under this Division, nothing in said codes shall be construed or inferred authority for reducing the quality, requirements or extent of the Drawings and Specifications. The contract documents address the minimum requirements for construction.
- C. Before bidding, be familiar with rulings of the building and inspection departments and comply with such requirement. Rulings and interpretations of authorities shall be considered as part of the regulations.
- D. It is not the intent of Drawings and Specifications to repeat requirements of codes except where necessary for completeness or clarity. Nothing in the Drawings or Specifications is to be construed to permit work not conforming to the applicable codes and regulations. Should there

be any direct conflict between Contract Documents and applicable codes and regulations the codes and regulations shall govern.

- E. Work shall be performed in accordance with all applicable requirements of the listed edition of all governing codes, rules and regulations including but not limited to the following minimum standards, whether statutory or not:
 - 1. National Fire Protection Association (NFPA), all applicable sections.
 - 2. Safety Orders of the Division of Industrial Industry.
 - 3. Americans with Disabilities Act (ADA).
 - 4. South Coast Air Quality Management District (SCAQMD) Regulations.

- F. Standards: Equipment and materials specified under this Division shall conform to the following standards where applicable:
 - 1. ACI - American Concrete Institute.
 - 2. AEIC- Association of Edison Illuminating Companies.
 - 3. AISI - American Iron and Steel Institute.
 - 4. ANSI - American National Standards Institute.
 - 5. ASTM - American Society for Testing Materials.
 - 6. CBM - Certified Ballast Manufacturers.
 - 7. ETL - Electrical Testing Laboratories.
 - 8. FAA - Federal Aviation Administration.
 - 9. FCC - Federal Communications Commission.
 - 10. FM - Factory Mutual.
 - 11. FS - Federal Specification.
 - 12. ICEA - Insulated Cable Engineers Association.
 - 13. IEEE - Institute of Electrical and Electronics Engineers, Inc.
 - 14. IESNA - Illuminating Engineering Society of North America.
 - 15. ISO - International Standardization Organization.
 - 16. NEMA - National Electrical Manufacturer's Association.
 - 17. NETA - InterNational Electrical Testing Association.
 - 18. NFPA - National Fire Protection Association.
 - 19. OSHA - Occupational Safety and Health Act.
 - 20. UL - Underwriters Laboratories

1.4 SUBMITTALS

- A. Submittals for each section shall conform to the general guidelines and procedures of Division 01 and this section.

- B. Submittal Schedule:
 - 1. Provide all submittals specified in the section and for which approval is necessary for commencing equipment design and fabrication within two days of request by the Owner's representative.
 - 2. Submittals requiring "Revise and Resubmit" that impact equipment fabrication will be called immediately to the attention of the Owner's representative by the Manufacture. Intent is that no delay be incurred to equipment to address submittal revisions.

- C. General Organization of Submittals:
 - 1. Submittals shall be neatly bound in an 8-1/2" x 11" folder or binder for each Specification Section with a table of contents listing materials by Section and paragraph number.

2. Submittals shall consist of detailed shop drawings, specifications, block wiring diagrams, "catalog cuts" and data sheets containing physical and dimensional information, performance data, electrical characteristics, materials used in fabrication, and material finish. Clearly indicate by arrows or brackets precisely what is being submitted on and those optional accessories which are included and those which are excluded.
3. Organize submittals in the same sequence as they appear in specification sections, articles or paragraphs.
4. Each submission shall be made under the Specification Section Number it has been specified under. Submittals including equipment specified under a different specification section will be rejected and returned without review. Each section is required to be tracked separately for status designation, even if multiple sections are physically collated into a single binder.
5. Identify each item with each submittal by reference to Specification Section paragraph in which the item is specified, or Drawing and Detail number. Annotate the submittal sheets with the equipment identification numbers appearing on the equipment schedule.
6. Include all information requested by the Specification Section in a single submittal. With the exception of shop drawings, incomplete submittals or phased submittals under the same specification section are not acceptable and will be returned without review.
7. Submit pertinent catalog and performance data sheets only. Annotate pages to clearly identify which specific product is submitted and for what tag number or application. Contractors shall not submit entire catalogs.
8. Submission shall be made in the form of a tab-indexed brochure. Index sheets shall be required for all material and equipment.
9. Each submittal shall be accompanied by a cover letter or shall bear a stamp stating that the submittal has been thoroughly reviewed by the Contractor and is in full compliance with the requirements of the Contract Documents. Cover letters shall list in full the items and data submitted. Failure to comply with this requirement shall constitute grounds for rejection of data.

D. Equipment Submittals:

1. Identify each item by manufacturer, brand, trade name, number, size, rating, or whatever other data is necessary to properly identify and check materials and equipment. Words "as specified" are not sufficient identification.
2. Mark the exact equipment item and data on each sheet. Where multiple product model types are listed on a single sheet, the contractor shall clearly indicate which specific item is submitted. If different model numbers of a single product line are submitted for different uses, this should be clearly annotated, identifying each individual use cross-referenced by the requirement it intends to fulfill. Submittals without annotation will be rejected and returned without review.
3. Submittal literature, drawings and wiring diagrams shall be specifically applicable to this project and shall not contain extraneous material or optional choices. Clearly mark literature to indicate the proposed item and its relevant features or options. Submittals shall include all those items listed in each individual Section.
4. As part of the equipment submittals, the manufacturer shall submit documentation to indicate that the entire assembly is suitable and certified to meet all applicable seismic requirements. In addition, the manufacturer shall recommend the method of anchoring the equipment to the mounting surface, including the assembly dimensions, weights and approximate centers of gravity.

E. Shop Drawings:

1. Prepare reproducible CAD drawings in AutoCAD.

2. Provide shop drawings for all systems as required per individual Division 26 specification sections, drawings or Construction Documents.
 3. All equipment shall be shown to scale and shall match the required dimensions from the equipment submittals. All equipment access clearances shall be marked explicitly on the Shop Drawings with manufacturer and code required distances dimensioned and annotated as such.
 4. Independent structural support and structural pad drawings shall be submitted for review by Structural Engineer.
 5. All equipment shall be labeled to match the drawings.
 6. The Contractor shall assure that each trade has coordinated work with other trades, prior to submittal. Division 26 shop drawings shall be issued after the coordination drawings are signed off by all other trades. Any conflicts that occur with other trades shall be brought to the attention of the Owner's Representative prior to issuance of the shop drawings.
 7. Provide detailed drawings of all electrical equipment rooms, yards and utility areas. Revised electrical equipment layouts must be reviewed and approved prior to release of order for equipment and prior to installation.
- F. Anchorage and seismic calculations:
1. Provide structural calculations and shop drawings for electrical equipment support. All Calculations shall be prepared, stamped and signed by a professional Structural Engineer registered in the state.
 2. Submit detailed information regarding the forces exerted by the restraints, anchorages, and other points of attachment to structure to the Owner's Representative for review and approval.
- G. Substitutions:
1. All requests for substitutions shall conform to the general requirements and procedure outlined in Division 01.
 2. Where items are noted as "or equal," a product of equal design, construction and performance will be considered. Contractor must submit all pertinent test data, catalog cuts and product information required substantiating that the product is in fact equal to that specified. Only one substitution will be considered for each product specified.
 3. Manufacturers' names and model numbers used in conjunction with materials, processes or equipment included in the Contract Documents are used to establish standards of quality, utility and appearance. Materials, processes or equipment, which, in the opinion of the Owner's Representative, is equal in quality, utility and appearance, will be approved as substitutions to that specified.
 4. Whenever any material, process or equipment is specified in accordance with a Federal specification, ASTM standard, ANSI specification, UL listing or other association standard, the Contractor shall present an affidavit from the manufacturer certifying that the product complies with the particular standard specification. When requested by the Owner's Representative, support test data to substantiate compliance shall be submitted by the Contractor at no additional cost.
 5. Substitutions shall be equal, in the opinion of the Owner's Representative, to the specified product. The burden of proof of such shall rest with the Contractor. When the Owner's Representative, in writing, accepts a substitution, it is with the understanding that the Contractor guaranteed the substituted article or material to be equal to the one specified and dimensioned to fit within the construction. Approved substitutions shall not relieve the Contractor of responsibilities for the proper execution of the work, or from any provisions of the Specifications.

6. The Contractor shall be responsible for all expenses in connection with the substitution materials, processes and equipment, including the effect of his substitution on him, his subcontractor's or other Contractor's work. No substitution of material, processes or equipment shall be permitted without written authorization of the Owner's Representative. Any assumptions on the acceptability of a proposed substitution prior to acceptance by the Owner's Representative are at the sole risk of the Contractor.

H. Resubmittals:

1. All re-submittals shall include a cover letter that lists the action taken and revisions made to every drawing and equipment data sheet in response to Submittal Review Comments. Re-submittal packages will not be reviewed unless accompanied by this cover letter. Failure to include this cover letter will constitute rejection of the re-submittal package.
2. Resubmittals shall be complete and shall be explicitly annotated to note all changes. Contractor shall not just include specific responses to review comments, but shall show how the resubmittal data has been corrected and how all consequences of the change have been accommodated.
3. Changes made in the resubmittal which are not directly a response to an earlier review comment shall be clearly identified on the letter of transmittal provided with the re-submittal and annotated within the body of the submittal. The reason for the change shall be included.
4. Non-compliant items which were not noticed in an earlier submittal but are noticed in a resubmittal shall be noted as non-compliant and the resubmittal tagged for corrective action. The fact that the Owner's Representative may have overlooked the defect shall not constitute total or partial acceptance of it. The contractor remains responsible for delivering an installation that meets the design intent. All corrective action shall be performed at no additional cost or delay to the project.
5. One resubmittal will be reviewed. Review time for all second and higher resubmittals will be charged on a time and materials basis to the contractor regardless of the cause of the resubmittal. This will include all submittals to change manufacturer or equipment type after an original submittal was returned with no exceptions taken, unless the change is directly related to a Bulletin.

1.5 QUALITY ASSURANCE

- A. Nothing in these plans or specifications is to be construed to permit work not conforming to the prevailing codes and regulations. Should there be any direct conflict between any referenced standard and the governing code, the mandatory code language shall govern to set only the minimum requirements and the most stringent requirement shall govern. A letter or Request for Information (RFI) shall be generated to highlight the discrepancy.
- B. Factory and Field Testing
 1. See each Section for the required testing and procedures.
 2. Test reports shall include:
 - a. Description of equipment tested.
 - b. Description of test procedures.
 - c. Test results.
 - d. Names and signatures of witnesses of tests.
 3. All testing personnel shall be NETA certified
 4. Notify the Owner's Representative 14 days in advance of when tests will be performed.

1.6 PROJECT RECORD DOCUMENTS

- A. Shall conform to the Closeout Procedures of Division 01 and this section.
- B. Keep up-to-date during the progress of the job through, one set of drawings indicating the Record installation. In addition to changes made during course of Work,
- C. This set of drawings shall be kept on the project site at all times and shall be available for inspection by Owner's Representative or Construction Manager weekly.
- D. Submit completed Drawings to Owner's Representative for approval prior to authorization for final payment. Record drawings shall be certified as to their correctness by the signature of the Contractor and shall be stamped or otherwise identified as record drawings.
- E. At the completion of the project the Contractor shall submit record as-built drawings as specified in Division 01 and their electronic CAD files. Drawings shall incorporate all the Owner's and Architect's comments and represent completed as-built conditions.

1.7 CLOSEOUT SUBMITTALS

- A. Operating and Maintenance Instructions and Manuals: In accordance with requirements of Division 01 and as follows:
 - 1. Prior to project closeout, furnish to the Owner's Representative hard back 3-ring binders containing all bulletins, operation and maintenance instructions, parts' lists, service telephone numbers and other pertinent information as noted in each Section for equipment furnished under Division 26. Binders shall be indexed into Division Sections and labeled for easy reference. Bulletins containing more information than the equipment concerned shall be properly stripped and assembled.
 - 2. O&M manuals shall be in both hard copy format and electronic format. Electronic files must have searchable text for ease in locating specific information, i.e. no scanning of paper documents.
 - 3. O&M's shall include the copy of approved submittal information so that the specific details and applications of each device for this project are available.
 - 4. One month prior to request for final inspection, submit Operating and Maintenance manuals or as stated in Division 01.
 - 5. Manuals shall be prepared to include the following:
 - a. Section 1: A comprehensive table of contents and guide to the manuals contents and layout. This section shall enable the reader to comprehend the scope and purpose of the document and to identify readily where specific information can be obtained.
 - b. Section 2: Contractual and Legal records including:
 - 1) Name and Address of the installation.
 - 2) Details of City and State approvals.
 - 3) Name and Contact details of the Design Team and Installing Contractors and associated sub-contractors.
 - 4) Dates for Start of Installation, Substantial Completion, and Expiry of Warrantee period.
 - 5) Copies of maintenance service contracts and contact details for local service company.
 - 6) Copies of warrantees and bonds.
 - c. Subsequent Sections:

- 1) Startup and Shutdown Procedures: Provide a step-by-step write-up of all major equipment. When manufacturer's printed start-up, troubleshooting and shut-down procedures are available, they shall be incorporated into the operating manual for reference.
- 2) Operating Instructions: Written operating instructions shall be included for the efficient and safe operation of all equipment.
- 3) Service Instructions: Provide the following information for all pieces of equipment:
 - a) Recommended spare parts, including catalog number and the name, manufacturer's name and contact information, address and telephone number of local suppliers of factory representative.
 - b) Maintenance instructions and recommended service maintenance schedule for all equipment. Provide sample maintenance record forms for each equipment type.
 - c) Data sheets to show complete internal wiring, mechanical and electrical ratings and characteristics, catalog data on component parts whether furnished by equipment manufacturer or others, names, addresses and telephone numbers of source of supply for parts subject to wear or electrical failure, and description of operating, test, adjustment, and maintenance procedures.
 - d) Where data sheets included in manual cover equipment, options, or other features not part of equipment actually furnished, line out these references or otherwise clearly mark so remaining text, diagrams, drawings, schedules, and similar information shall apply specifically to equipment furnished.
 - e) Final submittals for equipment shall have final corrections included in the prints used for the manual.

1.8 REGULATIONS, CODES, PERMITS AND FEES

- A. Conform to all rules, regulations, laws, and ordinances governing the area in which this construction occurs.
- B. Obtain the required permits from the local authorities for this work and pay for all fees required by the City, County, State and Federal authorities for permits, inspections and review, including special agency construction and operating permits. Make corrections in the work as required by the Owner's Representative or Inspector to pass local regulations.
- C. Provide local authorities with all notices relating to this Division.
- D. Provide Owner, Owner's Representative and local Inspectors access to work at all times.
- E. Contractor shall be responsible for all law violations caused by the work under this Division. Notify the Owner's Representative in writing when a discrepancy occurs between code requirements and work shown on drawings and resolve matter before proceeding with work.
- F. Make application and pay for all certificates of inspection, taxes and permits required by Local, State or Federal agencies, public utilities, or other authorities having lawful jurisdiction. Deliver to the Owner's Representative any and all certificates of inspections, permits, and approvals that may be required by such authorities.

1.9 COORDINATION

- A. Shall conform to the Administrative Requirements of Division 01 and this section.
- B. Coordinate any needed new or revised raceway spaces, chases, slots, and openings in building structure during progress of construction, to allow for electrical installations.
- C. Coordinate installation of required supporting devices in form work and set sleeves in poured-in-place concrete and other structural components as they are constructed.

1.10 LOCATION AND ROUTING

- A. The Drawings are for reference only and indicate diagrammatically the desired location or arrangement of equipment, devices, raceways, outlets, pullboxes, vaults/manholes, etc., and are to be followed as closely as possible. Judgment must be exercised in executing the Work so as to secure the best possible installation in the available space and to overcome local difficulties due to space limitations or interference with structural and existing conditions. Exact locations necessary to secure proper conditions and results shall be determined at Project Site and shall be approved by the Owner's Representative.
- B. Verify dimensions, correct location and electrical requirements of all equipment specified in other Divisions before proceeding with the roughing-in of connection.
- C. Locations shown on architectural ceiling drawings or on wall elevations shall take precedence over electrical drawing locations.
- D. Lighting fixtures in mechanical spaces and utility rooms are shown in their approximate locations only. Do not install light outlets or fixtures until all raceways, piping and ductwork are installed; then lighting fixtures shall be installed in locations best suited for equipment arrangement and as approved by the Owner's Representative.
- E. Access to Equipment: Locate starters, disconnects, switches, receptacles, and pullboxes to provide easy access for operation, repair, and maintenance. All code required clearances shall be maintained for accessing the equipment and its disconnecting means.
- F. Locations of Openings: Locate all chases, shafts and openings required for the installation of the electrical Work during framing of the structure. Do any cutting and patching required due to improperly located or omitted openings with the approval of the Owner's Representative, who must also approve any additional changes resulting from relocation or omission of openings. Cutting or drilling in any structural member is prohibited without prior written approval of the Owner's Representative.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver equipment, fixtures, devices and conduits with factory-fabricated containers and protective means. Maintain containers and protective means through shipping, storage, and handling to prevent damage and to prevent exposure to dirt, debris, and moisture.
 - 1. Do not deliver materials to the job before they are ready for installation, unless adequate security and safe storage area is provided.

2. Perform all handling and shipping in accordance with manufacturer's instructions.
- B. Storage: Store in a clean, dry, ventilated space free from temperature extremes. Maintain factory wrapping or provide a heavy canvas/plastic cover to protect equipment from dirt, water, construction debris, and traffic.
- C. Handling: Handle in accordance with manufacturer's written instructions. Be careful to prevent internal component damage, breakage, denting and scoring. Damaged units shall not be installed and shall be replaced with new units.

1.12 DEFINITIONS

- A. "Approved Equal" means any equipment or material which in the opinion of the architect, is equal in quality, durability, appearance, strength, design and performance to the equipment or material specified and will function adequately in accordance with the general design.
- B. "Authority Having Jurisdiction" or "AHJ" shall mean the building department, fire department, inspectors or other authority having legal jurisdiction relevant to the specific work being described in the City or State where the project is located.
- C. "Connect": Shall mean make final electrical connections for a complete operating piece of equipment.
- D. "Contract Documents" or "Documents" shall mean the latest version of all drawings and specifications prepared by the Architect, Engineers and Consultants.
- E. "Concealed, Interior Installations" Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in wall conduits.
- F. "Concealed, Exterior Installations" Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.
- G. "Exposed, Interior Installations" Exposed to view indoors. Examples include finished occupied spaces and electrical equipment rooms.
- H. "Exposed, Exterior Installations" Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include equipment yards or rooftop locations.
- I. "Finished Spaces" Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.
- J. "Furnish" means purchase, store and deliver the specified material, equipment or other items to project site or the person and party indicated.
- K. "Install": means to physically install the equipment or other items in-place and in readiness for regular operation.

- L. "Provide" means to supply, erect, install and connect up completely, in readiness for regular operation, the particular work referred to.

1.13 TRAINING

- A. Furnish a period of sixteen (16) hours for the necessary training programs and instructions to Owner's personnel, unless indicated otherwise in individual specification sections.

1.14 WARRANTY

- A. Conform to the requirements of "Warranties" as stated in Division 01 specifications.
- B. Unless otherwise noted within a particular section, under special warranty each complete system shall be warranted by the Contractor for the period referenced in Division 01. Each system shall be free of defects of materials and workmanship, and shall perform satisfactory under all conditions of load or service.
 - 1. The warranties shall provide that all additional controls, protective devices or equipment provided as necessary to make the system or equipment operate satisfactorily and any faulty materials or workmanship shall be replaced or repaired.
 - 2. On failure of the warrantor to do the above after written notice from Owner, the Owner shall have the Work done at the cost of the warrantor.
- C. Provide new materials, equipment, apparatus and labor to replace that determined by Owner to be defective or faulty within the warranty period.
- D. Unless otherwise noted, warranties shall commence upon the Owner's final acceptance of the project.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to bidding visit the site and determine all existing conditions affecting work in this Division. The Contractor shall thoroughly review the locale, working conditions, conflicting utilities and the conditions in which the electrical work will take place. Verify all existing conditions in the field. No allowances will be made subsequently for any costs that may be incurred because of any error or omission due to failure to examine the site and to notify the Owner's Representative of any discrepancies between Drawings and Specifications and actual site conditions.
- B. Examine all Drawings and Specifications to familiarize with the type of construction to be used, and the nature and extent of work of other trades.

- C. Observe the conditions under which deliveries of materials and equipment shall be made and under which such materials and equipment can be stored, and shall include adequate provision in the bid proposal.

3.2 FIELD VERIFICATION

- A. All dimensions, locations of equipment and connections to utilities or pre-existing equipment shall be verified in field prior to construction and installation.
- B. All roughing in construction dimensions shall be made from architectural plans where discrepancies may exist.
- C. Architectural plans will hold precedence over electrical plans as to location of partitions, devices and light fixtures.
- D. Measurements in existing buildings shall take precedence over all other plans with regards to identifying location of existing installations.

3.3 PROVISIONS FOR LATER INSTALLATIONS

- A. The Contractor shall be responsible for being aware of the nature and arrangement of the materials and construction to which the work attaches or passes through, and shall propose support and penetration details that are consistent with maintaining the integrity and performance of the construction such as, but not limited to, fire-resistive construction, acoustically rated construction, vibration isolated construction, water tight construction, fire proofed construction, and isolated construction.
- B. This work shall be incorporated into the initial shop drawing review of the construction (wall, floor, roof, etc.) that is affected so that the Owner's Representative may review the impact of the holes.
- C. The contractor shall bear the cost of time and materials for the Owner's Representative to re-analyze the construction if the original spacing principles are not adhered to, for whatever reason.
- D. Once the structural shop drawings are returned with no exception taken, the contractor shall bear the cost of time and materials for the Owner's Representative to review the appropriateness of cutting or drilled holes in planned or existing construction.

3.4 PROTECTION

- A. All stock-piled material shall be placed on pallets, and protected from weather and from entry of foreign material and construction dust by plastic. All stored materials and equipment shall be carefully inspected and cleaned prior to installation and replaced with new material or equipment if found to be damaged, corroded, etc.
- B. Equipment which is observed to be exposed to the weather, dirt or construction debris can be interpreted by the Owner's Representative as defective equipment under this clause.

3.5 TOOLS AND EQUIPMENT

- A. Furnish all tools and equipment necessary for the proper installation, protection and upkeep of the work.
- B.

3.6 PROTECTION AND CLEANING

- A. Protection: Fully protect all finished parts of the materials and equipment against physical damage from whatever cause during the progress of the work and until completion.
- B. During construction, cap all conduits so as to prevent the entrance of sand and dirt.
- C. Clean premises of all excess construction material and debris caused by work, in accordance with Division 01.
- D. Surfaces shall be left clean, debris shall be removed, and equipment shall be furnished in prime coat finish unless otherwise specified.
- E. Clean exterior of conduit and equipment, exposed in complete structure. Remove rust, paint overspray, fireproofing overspray, plaster and dirt by wire brushing; remove grease, oil and similar materials by wiping with clean rags and suitable solvents.
- F. Equipment, light fixtures, devices and Other Items with Factory Finish: Remove grease, oil, paint overspray, fireproofing overspray, gypsum board mudsplatters and leave surfaces clean.

3.7 IDENTIFICATION

- A. The Contractor shall submit a schedule for equipment identification.

3.8 SETTING OF PROTECTIVE DEVICE

- A. Prior to final completion of the Project, set all protective device relays and internal settings to provide adjustment between upstream and downstream protective devices. Settings shall be based on the accepted coordination study.

3.9 OPERATIONAL TESTS

- A. Before acceptance tests are performed, demonstrate to the Owner's Representative that all systems and components are complete and fully operational.
- B. Perform operational tests on all equipment to determine compliance with Specifications.

3.10 FINAL INSPECTION

- A. As the work nears completion, review the requirements of the Contract Documents, inspect the work and inform all parties involved in work to be corrected or completed before the project can be deemed substantially complete.
- B. When the project is substantially complete, notify the Owner's Representative in writing of this fact, listing those items of work remaining incomplete, the reason for incompleteness, and the anticipated date that all remaining work will be completed. Carry out own final inspection and be satisfied that the work is complete. Final inspection of the project will then be scheduled by the Owner's Representative.
- C. The Owner's Representative reserves the right to cancel and reschedule the inspection in the event considerable more work remains to be completed or corrected than indicated in the written request for inspection.
- D. All items not completed or found not complying with drawings or specifications by the Owner's Representative will be identified in an inspection report by Owner's Representative.
- E. Correct all items on inspection report. Make the correction and initial and date each item on the report after corrections have been completed.

3.11 PROJECT CLOSE-OUT

- A. Prior to requesting Owner's Representative's inspection for certification of substantial completion, complete the following and list known exceptions in request:
 - 1. Obtain final inspections and approvals from all governmental jurisdictions that are required for the project.
 - 2. Submit record drawings, maintenance manuals, warranties, and similar final record information.
 - 3. Deliver tools, spare parts, extra stocks of materials, and similar physical items to the Owner.
 - 4. Complete start-up, testing and demonstration of systems to the satisfaction of the Owner's Representative that the entire installation is complete, properly adjusted and is in proper operating condition.
 - 5. Complete final cleaning requirements.

END OF SECTION