



ENERGY RESEARCH PARK Building 9B – Package 2

Schematic Design

PROJECT MANUAL
Perkins + Will Project No: 185178.000
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**P E R K I N S
+ W I L L**

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SECTION NO.	SECTION TITLE	SECTION DESCRIPTION
DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS		
00 11 13	Advertisement for Bids	Form used for publicly bid work
00 11 16	Invitation to Bid	Form used for privately bid work
00 21 13	Instructions to Bidders	
00 22 13	Supplementary Instructions to Bidders	
00 26 00	Procurement Substitution Procedures	
00 31 32	Geotechnical Data Preamble	
00 31 33	Envelope Compliance	
00 41 13	Bid Form	
00 42 13	Proposal Form	
00 43 23	Alternates Bid Form	
00 43 36	Proposed Subcontractors Form	
00 43 73	Proposed Schedule of Values Form	
00 43 76	Sales Tax Exemption Form	
00 51 00	Notice of Award Form	
00 52 76	Sales Tax Assignment Contract	
00 55 00	Notice to Proceed Form	
00 60 00	Attic Stock Replacement Materials Inventory	
	Change Proposal Form	
	Part Asset Inventory Form	
	Pay Request Form	
	Maintenance Material (Attic Stock)/ Replacement Stock Submittal	
	Part Asset Inventory Form	
	Final Completion Form	
00 61 13	Performance and Payment Bond	
00 72 00	Uniform General Conditions	
00 73 00	Supplemental General and Special Conditions UHS OGC	
DIVISION 01 - GENERAL REQUIREMENTS		
01 10 00	Summary	Summary of the Work, phased construction, purchase contracts, Owner-furnished products, access to site, and work restrictions.
01 21 00	Allowances	Provisions for cash allowances including lump-sum, unit cost, contingency, and testing and inspecting allowances.
01 23 00	Alternates	Provisions for change-of-scope and cost comparison type alternates.

01 25 00	Substitution Procedures	Procedural requirements for requests for substitutions during construction.
01 26 00	Contract Modification Procedures	Procedural requirements for changes to the Contract.
01 29 00	Payment Procedures	Administrative requirements for Contractor's Applications for Payment.
01 31 00	Project Management and Coordination	Administrative requirements for project meetings; preconstruction, preinstallation, and project closeout conferences; RFIs; and project Web sites.
01 32 00	Construction Progress Documentation	Contractor's Construction Schedule including Gantt charts and CPM schedules; Contractor's reports.
01 32 33	Photographic Documentation	Construction photographs, video recordings, and web-based photographic documentation.
01 33 00	Submittal Procedures	Procedures for Action and Informational Submittals including Delegated-Design Submittals and Submittals Schedule.
01 35 91	Quality Requirements	Quality-assurance and -control requirements, special tests and inspections, and Contractor's quality-control plan.
01 42 00	References	Common definitions and terms; and acronyms and trade names of associations, government agencies, and other entities referenced in MasterSpec.
01 45 29	Testing Laboratory Procedures	Section includes requirements for quality assurance and quality control to be completed by the Testing Laboratory for the following structural items: Concrete Forming and Accessories, Concrete Reinforcing, Cast-in-Place Concrete, Precast Structural Concrete, Masonry, Structural Steel, Steel Joists, Steel Decking, Earthwork
01 50 00	Temporary Facilities and Controls	Temporary utilities and facilities for construction support, security, and protection.
01 56 39	Temporary Tree and Plant Protection	Construction-phase tree and plant protection, trimming, protection- zone fencing, and pruning
01 57 13	Temporary Erosion and Sediment Control	Erosion and sedimentation control and other control related practices utilized during construction
01 57 23	Temporary Storm Water Pollution Control	Storm water pollution prevention related practices, notifications, utilized

		during construction activities.
01 60 00	Product Requirements	Administrative and procedural requirements for product, material, and equipment selection and handling; warranties; and comparable products.
01 73 00	Execution	General requirements for product installation, cutting and patching, protection, field engineering, and progress cleaning.
01 73 29	Cutting and Patching	Section includes general administrative and procedural requirements governing cutting and patching.
01 74 19	Construction Waste Management and Disposal	Salvaging, recycling, and disposing of nonhazardous demolition and construction waste.
01 77 00	Closeout Procedures	Contract closeout including Substantial Completion and Final Completion procedures, warranties, and final cleaning.
01 78 23	Operation and Maintenance Data	Emergency, operation, and maintenance manuals for products and equipment.
01 78 39	Project Record Documents	Record Drawings, Specifications, and Product Data.
01 79 00	Demonstration and Training	Administrative and procedural requirements for instructing Owner's personnel in operation and maintenance.
01 81 13	Sustainable Design Requirements	Section includes general requirements and procedures for compliance with basic sustainable design and construction considerations.
01 91 13	General Commissioning Requirements	Administrative requirements and procedures for commissioning all systems.
DIVISION 02 - EXISTING CONDITIONS		
02 41 19	Selective Demolition	Demolition of selected portions of existing buildings, structures, and associated site improvements.
DIVISION 03 - CONCRETE		
03 01 30	Maintenance of Cast-In-Place Concrete	Concrete patching and repair, epoxy crack injection, corrosion inhibiting surface treatment, polymer overlays and sealers, and composite structural performance.
03 15 19	Under Slab Vapor Retarders	Vapor retarders for cast-in-place

		concrete slabs on grade.
03 30 00	Cast-In-Place Concrete	General building and structural applications; concrete mixtures, formwork, reinforcing, finishing, and curing.
03 30 53	Miscellaneous Cast-In-Place Concrete	Cast-in-place concrete for limited applications.
03 33 00	Architectural Concrete	Specially formed, placed, and finished architectural concrete.
03 54 16	Hydraulic Cement Underlayment	Self-leveling, hydraulic-cement-based underlayment.
DIVISION 04 - MASONRY		
04 01 21	Masonry Restoration and Cleaning	
04 20 00	Unit Masonry	CMU,. Brick, structural-clay facing tile, and stone trim units.
04 26 13	Masonry Veneer	Brick veneer over wood- or metal-stud backup.
04 43 13.13	Anchored Stone Masonry Veneer	Stone laid in mortar and anchored to backup with masonry veneer anchors.
04 72 00	Cast Stone Masonry	Architectural features, facing, trim, and site accessories.
DIVISION 05 - METALS		
05 12 00	Structural Steel Framing	Structural steel framing for buildings.
05 12 13	Architecturally Exposed Structural Steel Framing	Architecturally exposed structural steel framing for buildings.
05 21 00	Steel Joist Framing	Standard manufactured open-web units, including steel joists, long-span steel joists, and joist girders.
05 31 00	Steel Decking	Roof, floor, and form steel deck.
05 40 00	Cold-Formed Metal Framing	Load-bearing and exterior non-load-bearing wall studs; floor, ceiling, and roof joists; and rafters.
05 44 00	Cold-Formed Metal Trusses	Cold-formed steel trusses for roofs and floors.
05 50 00	Metal Fabrications	Metal items (not sheet metal) made from iron and steel shapes, stainless steel, and non-ferrous metals.
05 52 13	Pipe and Tube Railings	Railings fabricated from aluminum, stainless-steel, and steel pipe and tubing
05 53 19	Expanded metal Gratings	Expanded metal gratings and frames
DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES		
06 10 00	Rough Carpentry	Wood framing, furring, frounds, nailers, and blocking
06 16 00	Sheathing	Roof and wall sheathing, subflooring, and underlayment. Includes wood, non-

		wood, and composite products.
06 20 23	Interior Finish Carpentry	Exposed and nonstructural.
06 41 16	Plastic-Laminate-Faced Architectural Cabinets	Custom-made plastic-laminate cabinets.
06 64 00	Plastic Paneling	Plastic paneling for utilitarian applications.
DIVISION 07 - THERMAL AND MOISTURE PROTECTION		
07 13 26	Self-Adhering Sheet Waterproofing	Self-adhering, positive-side sheet waterproofing; drainage panels; pedestal-supported concrete pavers.
07 14 13	Hot Fluid-Applied Rubberized Asphalt Waterproofing	Hot, rubberized-asphalt waterproofing for plaza deck and below-grade walls
07 14 16	Cold Fluid-Applied Waterproofing	Polyurethane, polyester, and latex-rubber types; drainage panels, insulation, and plaza-deck pavers.
07 16 13	Polymer Modified Cement Waterproofing	Polymer-modified cementitious waterproofing.
07 16 19	Metal Oxide Waterproofing	Expanding iron-oxide, cementitious waterproofing.
07 17 00	Bentonite Waterproofing	Bentonite sheet membrane and panel waterproofing systems.
07 21 00	Thermal Insulation	General building insulation installed at project site, excluding roof insulation.
07 25 00	Weather Barriers	Building paper and building wrap water-resistant barriers, drainage materials, and flexible flashing.
07 26 00	Vapor Retarders	Interior sheet vapor retarders used in framed construction and in crawl spaces.
07 27 26	Fluid-Applied Membrane Air Barriers	Vapor-retarding and vapor-permeable high-build, medium-build, and low-build types.
07 27 29	Air-Barrier Coatings	
07 41 13	Formed Metal Roof Panels	Standard-profile exposed-fastener, lap-seam panels, and horizontal-seam (Bermuda-type) panels.
07 42 13.53	Metal Soffit Panels	Concealed-fastener, lap-seam, metal panels, with and without perforations.
07 46 16	Aluminum Siding	Aluminum siding and soffit.
07 46 46	Fiber-Cement Siding	Fiber-cement siding and soffit
07 54 23	Thermoplastic Polyolefin (TPO) Roofing	Adhered, mechanically fastened, and loosely laid TPO systems.
07 62 00	Sheet Metal Flashing and Trim	Custom-fabricated roof and wall flashings and roofdrainage systems, and manufactured through-wall flashing and reglets.

07 71 00	Roof Specialties	Manufactured copings, roof-edge flashings and drainage systems, and counter flashings.
07 71 29	Manufactured Roof Expansion Joints	Factory-fabricated, bellows-type, and aluminum roof-expansion-joint assemblies.
07 72 00	Roof Accessories	Roof curbs, equipment supports, roof hatches, heat and smoke vents, gravity ventilators, pipe supports, roof walkways, and preformed flashing sleeves.
07 81 00	Applied Fireproofing	Cementitious and mineral-fiber fire-resistant materials classified as SFRM.
07 84 13	Penetration Firestopping	Systems installed in fire-resistance-rated walls, horizontal assemblies, and smoke barriers.
07 82 00	Board Fireproofing	Mineral-fiber and calcium silicate boards
07 84 13	Penetration Firestopping	Systems installed in fire-resistance-rated walls, horizontal assemblies, and smoke barriers.
07 84 43	Joint Firestopping	Systems installed in or between fire-rated construction, at exterior curtain wall/floor intersections, and in smoke barriers.
07 84 46	Fire-Resistive Joint Systems	
07 92 00	Joint Sealants	Elastomeric joint sealants including, silicone, urethane, STPE, polysulfide, butyl, and latex.
07 92 19	Acoustical Joint Sealants	For use in interior sound-rated construction.
07 95 00	Expansion Control	
07 95 13.13	Interior Expansion Joint Cover Assemblies	For use in interior sound-rated construction.
07 95 13.16	Exterior Expansion Joint Cover Assemblies	Expansion joint cover assemblies for exterior building walls, soffits, and parapets
DIVISION 08 - OPENINGS		
08 11 13	Hollow Metal Doors and Frames	Hollow-metal doors and frames for commercial use.
08 12 13	Hollow Metal Frames	Hollow-metal frames for commercial and residential use.
08 12 16	Aluminum Frames	Interior frames for wood or aluminum doors and glazing in gypsum-board partitions.
08 14 16	Flush Wood Doors	Wood-veneer, hardboard, and plastic-

		laminate faced flush wood doors.
08 31 13	Access Doors and Frames	Wall and ceiling units
08 32 13	Sliding Aluminum-Framed Glass Doors	For Exterior locations
08 37 23	Overhead Coiling Doors	Galvanized-steel, stainless-steel, and aluminum curtain assemblies.
08 41 13	Aluminum-Framed Entrances and Storefronts	Storefront framing, entrance doors, and hardware; also used for window walls, ribbon walls, strip windows, and punched openings.
08 42 13	Aluminum-Framed Entrances	Entrance doors and hardware; and framing for sidelights, transoms, and vestibules.
08 42 29.23	Sliding Automatic Entrances	Power-operated single, biparting, and telescoping units.
08 44 13	Glazed Aluminum Curtain Walls	Curtain wall framing; also used for window walls, ribbon walls, strip windows, and punched openings.
08 71 00	Door Hardware	For specifying door hardware by using a schedule that names products or indicates BHMA designations.
08 71 13	Automatic Door Operators	Power operators, low-energy power operators, and ow-energy power-assist door operators for swinging doors; furnished separately from doors and frames.
08 80 00	Glazing	Plain, laminated, and insulating glass
08 83 00	Mirrors	Unframed, silvered flat glass mirrors including annealed monolithic, film-backed, laminated, and tempered.
08 87 00	Glazing Surface Films	
08 91 19	Fixed Louvers	Fixed metal louvers.
08 95 16	Wall Vents	Wall vents, also called brick or foundation vents.
DIVISION 09 - FINISHES		
09 05 61.13	Moisture Vapor Emission Control	Membrane-forming systems that reduce the rate of moisture vapor emission through interior concrete
09 05 65	Preinstallation Testing for Flooring	Substrate moisture testing, relative humidity testing, and alkalinity testing for non-breathable floor finishes.
09 05 65x	Preinstallation Testing Report Form	
09 21 16	Gypsum Board Assemblies	
09 21 16.23	Gypsum Board Shaft Wall Assemblies	Fire-resistance-rated vertical shaft and horizontal enclosures, including metal framing
09 22 16	Non-Structural Metal	Steel framing for gypsum board and

	Framing	plaster partitions and ceilings.
09 29 00	Gypsum Board	Interior gypsum board, exterior gypsum board for ceilings and soffits, and tile backing boards.
09 30 13	Ceramic Tiling	Ceramic mosaic, quarry, pressed floor, porcelain, and glazed wall tile.
09 51 13	Acoustical Panel Ceilings	Mineral-base, glass-fiber-base, and ceramic- and mineral-base panels with exposed suspension systems.
09 54 36	Suspended Decorative Grids	Rigid, open-frame, suspended grid, ceiling systems.
09 63 41	Exterior Stone Paving	
09 65 13	Resilient Base and Accessories	Resilient base, stair accessories, and molding accessories.
09 65 19	Resilient Tile Flooring	Solid vinyl, rubber, vinyl composition, and resilient terrazzo floor tiles.
09 67 23	Resinous Flooring	Fluid-applied monolithic flooring including decorative epoxy and urethane resins.
09 68 13	Tile Carpeting	Modular carpet tile for commercial applications
09 72 00	Wall Coverings	Vinyl, textile, and woven glass-fiber wall coverings, and wallpaper.
09 84 33	Sound-Absorbing Wall Units	Shop-fabricated, fabric-wrapped, sound-absorbing, sound-diffusing, and sound-reflecting wall panels tested for acoustical performance.
09 84 36	Sound-Absorbing Ceiling Units	Shop-fabricated, fabric-wrapped, sound-absorbing, sound-diffusing, and sound-reflecting panels and sound-absorbing baffle panels applied to ceilings or suspended.
09 91 13	Exterior Painting	Exterior painting.
09 91 23	Interior Painting	Interior painting
09 96 53	Elastomeric Coatings	Pigmented, water-based, elastomeric coatings for use over concrete, masonry, and stucco.
09 97 26	Cementitious Coatings	Polymer-modified cementitious coatings on masonry and concrete; exterior and interior.
DIVISION 10 - SPECIALTIES		
10 11 00	Visual Display Units	Markerboards, tackboards, floor-to-ceiling assemblies and support systems, sliding units, and conference units.
10 11 46	Visual Display Fabrics	Fabric-backed-vinyl dry-erase wall coverings.
10 21 13	Toilet Compartments	Toilet enclosures, entrance screens, and urinal screens

10 26 00	Wall and Door Protection	Predominantly plastic products and assemblies that protect surfaces of walls, corners, and doors from damage.
10 28 00	Toilet, Bath, and Laundry Accessories	Standard commercial units.
10 44 13	Fire Protection Cabinets	Fire-protection cabinets and security fire-protection cabinets.
10 44 16	Fire Extinguishers	Portable fire extinguishers
10 45 13	Photoluminescent Egress Path Markings	Luminous egress path markings, used in stairs and exit enclosures, to help occupants exit in an emergency.
10 51 13	Metal Lockers	Corridor, athletic, and open-front athletic metal lockers
DIVISION 11 - EQUIPMENT		
11 52 13	Projection Screens	Front projection screens.
DIVISION 12 - FURNISHINGS		
12 24 13	Roller Window Shades	Manually and motor-operated roller shades installed vertically or at skylights.
12 35 53.13	Metal Laboratory Casework	Metal laboratory cabinets including countertops, accessories, and service fittings.
12 48 13	Entrance Floor Mats and Frames	Roll-up (removable) rail mats as well as resilient entrance mats. Frames are also included.
12 61 00	Fixed Audience Seating	Upholstered and un-upholstered assembly-space seating for interior or exterior applications; also continuous lecture-hall tables.
12 93 00	Site Furnishings	Seating, tables, bicycle racks and lockers, trash and ash receptacles, planters, and bollards for outdoor locations.
12 93 10	Bollards	
DIVISION 13 - SPECIAL CONSTRUCTION		
DIVISION 14 - CONVEYING EQUIPMENT		
DIVISION 21 - FIRE SUPPRESSION		
21 05 00	Common Work Results for Fire Suppression	Definitions, shop drawings, cooperation with other trades, space limitations, electrical power, painting, access doors, and safety instructions.
21 05 53	Identification for Fire-Suppression Piping and	Pip[e labels

	Equipment	
21 12 00	Fire Protection Systems	Fully sprinklered building, per NFPA 13.
21 13 13	Wet-Pipe Fire Sprinkler Systems	Steel pipe with welded outlets and Victaulic fittings through 2"; steel pipe with class 150 malleable iron fittings for smaller. Replace temporary service to 9A
21 13 18	Pre-Action Sprinkler System	Pre-action system for new IDF and AV rooms.
DIVISION 22 - PLUMBING		
22 00 00	Plumbing Piping Systems	Sanitary - Cast iron. Domestic - 3" and smaller -L Copper with Press Fittings; 4" and larger-Galvanized Schedule 40 steel: Natural Gas - Schedule 40 steel welded, sleeved in schedule 20 steel where located above ceiling. Lab air & vac: Piping and outlets; connected to existing air compressor and existing vacuum pump in 9A; copper with brazed joints. Hose reels in lab ceiling above islands (water/gas/air/vac)
22 01 00	Plumbing General Provisions	
22 07 00	System Insulation	For freeze protection.
22 10 00	Plumbing Pumps	Hot water recirc pump
22 05 53	Identification for Plumbing Piping and Equipment	Labels, Stencils and Tags
22 10 10	Plumbing Piping Valves and Accessories	Ball valves 2" and smaller with SS full port ball; butterfly valves for larger sizes. Floor sinks, cleanouts, hose bibbs and wall hydrants, automatic trap primers, backflow preventers, water hammer arrestors, strainers, gas pressure regulators.
22 10 20	Plumbing Piping and Accessories	
22 12 00	Electric Water Heaters	Electric storage tank water heater with recirc pump
22 30 00	Plumbing Fixtures and Trim	Grade A commercial quality, low flow fixtures, hardwired lavatory faucets, manual flush valves
22 40 00	Floor Drains	Storm drainage is gutter and downspout by General Contractor, no interior roof drains
DIVISION 23 - HEATING, VENTILATING, AND AIR CONDITIONING		
23 00 00	Mechanical Scope of Work	
23 01 00	Mechanical General Provisions	

23 03 00	Basic Materials and Methods	Definitions, shop drawings, cooperation with other trades, space limitations, electrical power, painting, access doors, and safety instructions
23 04 00	Motors and Controllers	
23 05 29	Hangers and Supports for HVAC Piping and Equipment	Single and multiple hangers, framing systems, and stands and supports.
23 05 48	Vibration Isolation	Vibration isolation devices.
23 05 53	Identification for HVAC Piping and Equipment	Labels, stencils, and tags.
23 05 93	Testing, Adjusting and Balancing	Contractor's coordination activities with the TAB contractor.
23 07 00	System Insulation	Duct and condensate drain insulation
23 08 00	Commissioning of HVAC	
23 09 10	Laboratory Airflow Controls	
23 20 00	HVAC Piping Systems	Condensate drains
23 20 10	HVAC Piping and Accessories	Unions, drain pans
23 23 00	Refrigerant Piping	Piping, specialties, and refrigerant for IT and AV room spilt systems
23 31 13	Ductwork	Rectangular and round, including hangers and supports.
23 33 00	Ductwork Accessories	Vanes and hardware; volume dampers, fire and smoke dampers,
23 33 19	Sound Attenuators	Duct silencers.
23 34 23	HVAC Power Ventilators	Roof, wall, and ceiling-mounting ventilators.
23 36 00	HVAC Terminal Units	Single-duct and fan-powered types.
23 37 13	Air Distribution devices	Round, rectangular, perforated, diffusers. Fixed and adjustable registers and grilles.
23 40 00	Filters and Accessories	
23 62 13	Air-Cooled Split System Air Conditioning Units	For IT and AV rooms
23 74 13	Packaged Rooftop Units	factory standard models and accessories; not custom
DIVISION 25 - BUILDING AUTOMATION		
25 50 00	Integrated Automation Facility Controls	Building Automation System (BAS) with direct digital control systems utilizing the BACnet protocol.
DIVISION 26 - ELECTRICAL		
26 00 01	Electrical General Provisions	Basic materials and methods for electrical construction
26 00 02	Electrical Scope of Work	Provide labor, materials, tools, machinery, equipment, appliances, fixtures, devices, and services necessary to complete the specified electrical work of this Division.

		Coordinate Work with other trades to prevent conflicts without impeding job progress.
26 01 25	Electrical Testing	Conduct a thermographic test of the main switchboards/switchgear. Test low and medium Voltage Conductors and Cable
26 05 01	Electrical Basic Materials and Methods	Basic materials and methods for electrical construction
26 05 13	300/600 Volt, Cable, Wire, and Connectors	300 and 600 volt electrical cable, wire, and connector work. Aluminum option per UH std spec will be considered . 600 volt feeder conductors shall have its insulation resistance tested. MC cable may be used, for drops in partitions to receptacles; for lay-in fixture pigtails (8'); for switch leg drops; from fixture junction boxes to nonlay-in fixtures. Type MC cable shall not be used for branch circuit homeruns, or receptacle to receptacle wiring in partitions; where more than three conductors are required; where exposed; or in lengths exceeding 20'.
26 05 26	Grounding and Bonding for Electrical systems	For each electrical grounding connection, provide a complete assembly of materials to construct a completely grounded electrical system.
26 05 33	Electrical Raceways	All electrical conductors shall be installed in conduit or surface metallic raceways, except where metal clad Type MC cable or modular wiring is allowed.
26 05 34	Electrical Boxes	Galvanized steel
26 05 35	Electrical Gutters and Wireways	Galvanized steel electrical gutters and wireways in the types and sizes indicated, min 16 gauge, rounded edges and smooth surfaces. Provide hinged or removable cover on raceway when noted on drawings. All power wiring raceways shall have a cover. No stamped knock out's.
26 05 36	Electrical Cable Tray	Aluminum tray and accessories

26 05 53	Identification for Electrical Systems	Electrical system identification. Warning signs and operational tags. Painting of electrical work.
26 05 73	Short Circuit Analysis-Coordination Study	Provide the Engineer with a Power System Short Circuit Analysis, Protective Device Coordination Study, Emergency Power System Selective Coordination Study and Arc Flash and Electrical Hazard Study
26 09 16	Electrical Controls and Relays	
26 09 23	Lighting Control Devices	Ceiling-mounted infrared/ultrasonic sensors with relay control packs. All occupancy sensor lighting controls shall include auxiliary contacts to provide indication of room occupancy status to the BAS. Wall sensors are not allowed.
26 09 26	Low Voltage Lighting Controls	Low voltage switches, as well as their associated wiring
26 12 19	Medium Voltage Pad-Mounted Transformers	Oil-filled pad mounted transformer, dead front, loop feed, copper windings for building service
26 22 00	Low Voltage Transformers	Dry- Type General Purpose Transformers. K-Factor Rated Dry-Type Transformers. Dry-Type Harmonic Mitigating Transformers.
26 24 13	Low Voltage Switchboards	Provide switchboards which have been UL-labeled for service entrance and meet applicable requirements of UL 891. Comply with National Electrical Manufacturers' Association (NEMA) Standard PB2, SG-5 and ANSI C37.20.
26 24 16	Panelboards	Lighting and appliance panelboards shall be dead front safety type equipped with molded case circuit breakers. Power distribution panelboards shall be dead front type equipped with fusible switches or circuit breakers. All panelboards 400a and under shall be with door or with hinged trim. All panel boards that are above 400 amps shall have a multi paneled cover.
26 27 01	Electrical Service Entrance	
26 27 17	Equipment Wiring	For each electrical connection indicated, provide a complete assembly of materials, including pressure

		connectors, terminals (lugs), electrical insulating tape, heat-shrinkable insulating tubing, cable ties, solderless wire nuts, and other items and accessories as needed to complete splices and terminations.
26 27 18	Miscellaneous Electrical Controls and Control Wiring	Furnish miscellaneous 120 volt control power circuits and control wiring as required for systems and equipment furnished by this and other Divisions. Starters and controllers for non 120 volt equipment and motors shall be furnished with control power transformers, and control power circuits will not be required. Where control power transformers are not furnished, then 120 volt control power circuits shall be furnished by this Division.
26 27 26	Wiring Devices	factory-fabricated wiring devices, selection to correspond with branch circuit wiring and overcurrent protection. Attachment of wires to devices shall be by screw pressure under the head of binding screws. Arrangements depending on spring pressure or tension are not acceptable. All binding screws shall be brass or bronze. Receptacles: NEMA Standard WD1 General Duty Decorator: Commercial specification grade decorator type receptacles, 2-pole, 3-wire grounding, with green hexagonal equipment ground screw, ground terminals and poles internally connected to mounting yoke, with metal mounting straps, back and side wired with screw type terminals, molded high impact thermoplastic compound
26 28 13	Low Voltage Fuses	Contractor shall base his proposal upon Bussmann fuses
26 28 17	Enclosed Circuit Breakers	Enclosed, molded-case circuit breaker conforming to NEMA AB 1, suitable for use where so applied
26 28 18	Enclosed Switches	Heavy-duty type, dead front, sheet steel-enclosed, surface-mounted safety

		switches. Rated for the voltage of the circuit in which they are installed. Safety switches used as motor disconnects shall be horsepower rated for the motor served
26 29 13	Enclosed Motor Controllers	Individual motor starters shall consist of an integrally mounted, magnetic, full-voltage, non-reversing, in a heavy-duty type, dead front, sheet steel enclosure. Constructed and tested in accordance with the latest NEMA standards and shall be NEMA standard sizes. IEC sizes are not acceptable. All starters shall contain 480V – 120V control transformer.
26 32 13	Engine Generators	New diesel outdoor rated engine-driven generator set, complete with safety devices, main output breaker, weatherproof enclosure and vibration isolators. Fuel connection, fuel tank fill, supply, return and vent line. Engine exhaust piping, and silencer. Unit shall be capable of continuous standby service.
26 36 23	Automatic Transfer Switches	Automatic transfer switches with number of poles, voltage and full load current rating as required. Transfer switches shall be UL-listed per applicable UL standards as a recognized component for emergency systems and rated for all classes of loads. Sizes rated below 400 amperes shall also be rated for 100% tungsten lamp loads. ATS shall form a complete grounded, continuous-duty, integral assembly which is metal enclosed, dead front, and suitable for the voltage, amperage, load starting characteristics and environment
26 43 13	Transient Voltage Surge Protection Devices	Transient voltage surge suppressors on the secondary side of each substation transformer. Parallel, multi-staged, hybrid design. Fast-acting, high-energy dissipators and transient-energy protectors. Self-restoring and fully automatic, with a total system response time not to exceed 5 nanoseconds. Status alarm monitor circuit, surge counter, and audible alarm to facilitate a positive diagnosis of continuous

		operation
26 51 00	Interior Lighting	Fluorescent fixtures. Led exit lights
26 56 00	Exterior Lighting	Wallpacks
DIVISION 27 - COMMUNICATIONS		
27 05 00	Common Work Results for Communications	Methods, Coordination and Materials Applicable to Multiple Division 27 Sections
27 05 26	Grounding and Bonding for Communications	Grounding for Communications Systems and Equipment
27 05 28	Pathways for Communications	Conduit, Wire Tray, Surface Raceway, Floor Boxes and Poke-throughs
27 05 43	Underground Ducts and Raceways	Conduit, Handholes and Innerduct
27 05 53	Identification for Communications Systems	Tags, Labels and Signs for Communication Equipment
27 11 00	Communications Equipment Room Fittings	Methods and Materials for MDF/IDF rooms
27 13 00	Communications Backbone Cabling	Methods and Materials for Copper and Fiber Optic Backbone Infrastructure
27 15 00	Communications Horizontal Cabling	Methods and Materials for Horizontal Copper Voice and Data Cable
27 16 19	Communications Patch Cords, Station Cords and cross-connect Wire	Methods and Materials for Patch and Cross-Connect Cables
27 20 00	Data Communications Equipment	Methods and Coordination for Data Communications Equipment
27 30 00	Voice Communications Equipment	Methods and Coordination for Voice Communications Equipment
27 40 00	Audiovisual Systems	Methods and Materials for Audiovisual Systems
DIVISION 28 - ELECTRONIC SAFETY AND SECURITY		
28 05 00	Common Work Results for Electronic Safety and Security	Methods, Coordination and Materials Applicable to Multiple Division 28 Sections
28 05 26	Grounding and Bonding for Electronic Safety and Security	Grounding for ESS Systems and Equipment
28 05 28	Pathways for Electronic Safety and Security	Conduit, Wire Tray, Surface Raceway, Floor Boxes, Poke-throughs
28 05 53	Identification for Electronic Safety and Security	Tags, Labels and Signs for ESS Equipment
28 06 00	Testing for Electronic Safety and Security	Methods and Deliverables for ECC Functional Testing
28 13 00	Access Control	System Software, head End Equipment and Field & Monitoring Devices
28 16 00	Intrusion Detection	Intrusion Detection & Signaling Devices and Alarm Control Panel

