

DIVISION 26 - ELECTRICAL SPECIFICATION

26 05 01.00 - COMMON REQUIREMENTS FOR ELECTRIC

General Requirements:
The General Provisions of the Contract including the General and Supplemental Conditions and General Requirements apply to the work in this section. Before submitting a bid, examine documents of all other trades, visit the site and get acquainted with all conditions that may in any way affect the execution of this contract. Take measurements and be responsible for exact size and locations of all openings required for the installation of work. Field dimensions are reasonably accurate and should govern in setting out work. Where detailed method of installation is not indicated or where variations exist between described work and approved practice, direction of the Owners representative on job site shall be followed.

Whenever the words "contractor", "this contractor", etc. appear on drawings or in these specifications for the Electrical Work, it shall refer to the Electrical Sub-Contractor. Whenever the word "Provide" appears in these documents, it shall be interpreted to mean "Furnish and Install". Whenever the word "Relocate" appears in these documents, it shall be interpreted to mean "disconnect electrical feed, mounting, and pull out, store and protect device, re-install, rework and extend conduit and wire to new location, re-energize and test."

The exact mounting height of devices shall be determined in the field with relation to architectural details and equipment being served. It shall be the responsibility of this contractor to coordinate outlet location with other equipment. The Owners representative shall be permitted to relocate any outlet prior to installation within a 15 foot limit at no additional charge in contract price. All fasteners, hangers and methods of hanging exposed work in finished areas shall be submitted to the Owners representative for approval before installation.

The contract includes all items of material and labor required for the complete installation and full operation of the electrical work as shown on the drawings and hereinafter specified. All materials and methods shall be in accordance with applicable codes, regulations and/or ordinances and meet the approval of local inspection authority having jurisdiction. The latest edition of NFPA 70 shall be the minimum requirement for all work. Examine the drawings and specifications for compliance with the above codes, regulations and ordinances and base bid and work accordingly. Obtain and pay for all permits and inspections related to this work. A certificate of approval for work from inspection authority shall be given to the Owner before final acceptance will be given by Owners representative.

All work, materials, and equipment shall have a one year warranty after acceptance of the work by the Owner. Any defective items shall be removed and replaced at the electrical sub-contractors expense and to the satisfaction of the engineer and owner's representative.

Perform work under this contract in close harmony with other contractors so completed work shall present a neat and workmanlike installation. Exposed finishes materials and equipment shall be carefully cleaned and wiped to remove grease, smudges, fingerprints, dust and other spots and left smooth and clean. During the progress of the work, the electrical sub-contractor shall carefully clean the job site and shall leave the premises and all portions of the building in which he is working free of debris and in a clean and safe condition.

This contractor shall be responsible for the training of owner's representatives of each system to the satisfaction of the Owners representative.

The Electrical Contractor shall consult the Plumbing, HVAC and Structural plans (where applicable) in all instances before installing his work so that his work will not interfere with those branches. In the event of a conflict, this contractor shall report to the Owners representative at once and do no further work to be installed until a satisfactory arrangement is decided upon. Any work done, or equipment placed in position by this contractor, or creating a conflict in violation hereof, shall be readjusted to the satisfaction of the Owner's representative at the expense of the contractor. The decision of the Owners representative shall be final in regard to changes due to conflicting conditions. Contractor shall complete his work or any part thereof at such time as may be designated by the Owner, so that it can be used for temporary or permanent use and such use of the system shall not be construed as an acceptance of same by Owner.

Obtain the latest The North Face Design and Construction Standards document(s) from the Owner. Comply with all Owners specific requirements in addition to requirements set forth in these specifications and accompanying drawings. Should there be a conflict, the Owner's standards shall take precedence, unless prevailing codes and regulations mandate otherwise.

Record Drawings and Operating Instructions and Service Manual:

Two sets of electrical drawings shall be provided as record drawings which shall be separate, clean, copies reserved for the purpose of showing a complete picture of the work as actually installed. These drawings shall include all work done under this contract and the electrical contractor shall make any notations, neat and legible thereon daily as work proceeds. The drawings shall be available for inspection at all times and shall be kept at the job at a location designated by the Owners representative. At the completion of the work, these record drawings shall be signed by the electrical contractor, dated and returned to the Owners representative. Final payment of contract will not be made until receipt and review of said drawings.

Provide two neatly bound (with tabbed sections) copies of maintenance books, instruction books and parts list pertaining to all equipment furnished. Submit to the Owners representative for approval. Final payment will not be made until drawings for record, maintenance and instruction manuals are delivered to the Owners representative.

26 05 02.00 - COMMON ELECTRICAL MATERIALS AND METHODS

All materials and equipment shall be new. All materials, apparatus and equipment shall bear the seal of Underwriters Laboratories Inc. (UL), or a similar credible testing agency, label where regularly supplied. Certain manufacturers of materials and plans are specified and detailed according to their specifications. This contractor shall base his bid on furnishing and installing this make of material and equipment.

Where more than one make of material or equipment is specified, the contractor shall state in his bid which make he proposes to furnish. Shop drawings shall be submitted on material and equipment to be furnished by the contractor for Engineers approval. This approval to be obtained prior to shipment of equipment.

Hold routing of new raceways in new and existing buildings as tightly as possible to the structure above. Obtain approval of owner's representative prior to installation. Do not install any electrical work within 6 inches of roof decking.

Neatly dress all work. Install all work parallel and perpendicular to surfaces or exposed structural members, and follow surface contours where possible. Keep all conduit splices to a minimum. Install splices and tap conductors which possess equivalent or better mechanical strength and insulation rating than conductors being spliced. Use splice and tap connectors which are compatible with conductor material. All wires shall be run continuous from outlet to luminaire to minimize insulation value of joints shall be in excess of wire. Provide adequate length of conductors within electrical enclosures and train the conductors to terminal points with no excess. Bundle multiple conductors, with conductors no larger than 10 AWG cabled in individual circuits. Make terminations so there is no bare conductor at the terminal.

Maintain a uniform elevation for all cable runs wherever possible. All cables shall be supported/anchored at maximum 4 foot intervals and within 12" of box or outlet and shall not sag. Install cables in a manner that prevents overheating. Cables shall be fastened directly to the structure using factory clamps/clips specifically designed for the respective cable (Caddy or equal).

Keep conductor splices to a minimum. Pull conductors simultaneously where more than one is being installed in same raceway. Use UL listed pulling compound or lubricant, where necessary. Increase wire sizes per NFPA 70 to offset voltage drop as/if required.

Branch subfeeder circuits shall be sheathed as shown on the floor plans. Where outlets are indicated by letters on plans, they shall be controlled by corresponding switches.

Outlets shall be located approximately as shown on the plans and shall be wired to provide control of outlets indicated. All wires of any one circuit shall be run in the same conduit.

Mechanical wire splicers shall be Scotchlock insulated type, TandB Stakon or approved equal. The conductors terminating at each wired outlet shall be left not less than 8" long at their outlet fittings to facilitate installation of devices or luminaires. Friction and rubber tape conform to Federal Specifications HH-T-11 and HH-T-12. Plastic electrical tape shall be Scotch #33+ or approved equal.

Do not share neutrals when amongst multiple branch circuits or with multi-wire branch circuits.

Provide grounding electrode conductors per NFPA 70 for service entrances and derived systems.

Provide all feeders and branch circuits with insulated (green covering) equipment ground conductors per NFPA 70.

Only install conduit exposed on rooftops when it is impossible to do otherwise. Where specifically indicated for such installation case-by-case elsewhere in documents, installation convenience, physical considerations, lack of coordination with other trades and similar rationales, are not sufficient reasons for doing so. In cases where conduits must be installed on rooftops, devise cable runs and methods per NFPA 70. Provide expansion fittings, which are UL listed and labeled for their respective applications, at all conduit expansion joints and at maximum distances of 100 feet. Paint all such joints with at least two coats of UL listed weatherproof paint. Provide white paint on flat rooftops that have a white membrane, and for otherwise-colored roof finishes that are not visible from the building interior or from the ground. Select color of paint to match the select colors to match surrounding surfaces; submit colors to Architect for review and approval.

Maintain a uniform elevation for all cable runs wherever possible. All cables shall be supported/anchored at maximum 4 foot intervals and within 12" of box or outlet and shall not sag. Install cables in a manner that prevents overheating. Cables shall be fastened directly to the structure using factory clamps/clips specifically designed for the respective cable (Caddy or equal).

Only where installed for non-utility applications; all wiring for emergency system feeders and receptacle branch circuits shall be in conduit with no exceptions.

This contractor shall provide the following guaranteeing required for the admission of his work. Any damage done by this contractor to the building during the progress of his work shall be made good at his own expense. All patching shall be done by a skilled craftsman in that respective trade. It shall be the responsibility of this contractor to supervise the installation of, and pay for all additional members, wood or metal and labor which may be required for support, protection or temporary electrical apparatus employed in the execution of this contractors work.

Seal all new floor, ceiling, wall, slab, etc. penetrations to match or exceed existing assembly fire ratings. Provide sleeve seals for all sleeves, provide sleeves for all penetrations. All penetrations of fire-rated or smoke-rated wall, floors ceilings, etc. shall be sealed immediately after raceways are installed. All new electrically related work shall be supported directly from building structural members. New electrically related work shall not be supported from

ductwork, ductwork hanger, ceiling supports, existing conduit support, etc.

26 05 03.00 - SUBMITTALS FOR ELECTRICAL SYSTEMS

General:
Provide submittals in accordance with the Contract Documents. In addition to Division 01, the Contractor is advised to review and comply with the requirements articulated within each Division and within each section of that Division.

Some Divisions may include a division-specific "Submittal Requirements for ..." section. Where this section exists, it articulates additional requirements for submittals that apply to the work of that Division. The following requirements help to identify, track and keep the project organized for all parties involved. They are necessary to ensure a timely turnaround and an appropriate technical review. Submittals that do not conform to the administrative requirements are rejected and returned, without technical review.

Submittal Requirements:

Supply submittals for each section: Submittals shall be supplied on a section-by-section and type-by-type basis. For example, independent product data submittals shall be furnished for each section that requires product data submittals. Independent shop drawing submittals shall be furnished for each section that requires shop drawings. Separate PDF file packages shall be submitted for each section, for each submittal type. Each PDF shall represent a single standalone submittal.

Include a transmittal: Transmittals shall enumerate each submittal for each section of each type and iteration.

Include cover sheet / title page: The cover sheet shall include the information identified in the contract documents. It shall be included as the first page of each electronic and/or hardcopy document-based submittal. An editable and printable PDF form created with editable fields and specification compliant appearance is available from KLH upon request. It is also downloadable from the KLH website at www.klhengrs.com.

Include an index: The index shall enumerate the contents of the submittal.

Include checklists: Where checklists are included with the specifications, complete and include them within the appropriate submittal. Supply complete submittals: Complete submittals of each type are required. Partial submittals will be rejected. Where a section requires a product data submittal, all product data for that section shall be supplied together, at one time, as one complete submittal. When resubmittal is required (e.g. Revise and Resubmit) the revised submittal shall be more complete, more accurate and more contract-compliant than its rejected predecessor. The submittal number (for each section and type) shall increment for each subsequent submittal (00 – Original submission, 01 – First Resubmission, 02 – Second Resubmission, etc.). Resubmittals shall include a copy of the reviewers comments supplied with the prior submittal rejection and shall be amended with a description of the specific action taken to comply with the reviewer's comments. The absence of this on the resubmittal is cause for rejection.

Name electronic files to match the submittal ID and cover sheet: The electronic file name of submittals shall match the submittal ID included on the submittals cover page. For example: The original/first product data submittal for Section 260519 would be labeled as "260519.00-PD-00"; the first resubmittal of same shall be labeled "260519.00-PD-01". The original/first shop drawings submittal file for the same section would be labeled "260519.00-SD-00"; the first resubmittal of same shall be labeled "260519.00-SD-01".

Use of Electronic Drawings from the Owner's Design Team:

Plan drawings for the project were created with Revit.

Revit files are not available. If expressly permitted by the Owner and the terms of the Contract, editable electronic versions of published two-dimensional plan drawings may be made available for the creation of shop and as-built drawings for a nominal surcharge by sheet series for projects that were designed in Revit and must be converted to an AutoCAD or Navisworks format.

Due to the proprietary nature of internal design systems, editable native-software versions of some drawings, including but not limited to system diagrams and details will not be made available in an editable form. In these cases, electronic versions of the drawings may be made available only in PDF, JPG or similar non-editable electronic form, at the sole discretion of the Design Professional.

The Request Drawings form can be accessed, filled out and submitted at the following internet address (scroll down to bottom of home page): <http://www.klhengrs.com>.

26 05 05.00 - EXISTING CONDITIONS

General Requirements:
It is not the intent of electrical documents that existing conditions be accurately shown. Existing electrical work is shown to a very limited extent on drawings and is shown for general planning reference only. Locations and information were derived from drawings, elevations or from portions of documents that were prepared for previously installed work (not from record drawings or "as-builts").

Perform a detailed pre-bid walk-through field inspection to review the existing structures and premises, to accurately determine existing conditions, and to determine scope of required electrically related work. Include applicable accessible ceiling cavity areas in this inspection.

Minimize risks to individuals and property throughout the duration of the project. Coordinate with and obtain approval from the Owner and Design Professional for all materials, methods, steps, locations, installations, etc. prior to commencement of work. Determine and employ means and methods as required to safely and securely implement all related work.

Do not reuse removed electrical materials unless specifically indicated in project documents. Existing wiring systems may be utilized only to the extent indicated in project documents, or as directed by Owner's representative in field.

Determine which existing branch circuits must remain active. Reconnect (or maintain in operation where applicable) and schedule them. Completely re-type panelboard directories or panelboards affected by this project using accurate "as-built" information. Where applicable ensure that reconnected shared neutrals are properly balanced with the correct phase conductors. Where applicable, provide correct color coding for the location of reconnected conductors in a manner compliant with NFPA 70.

If required to accommodate construction related activities temporarily remove, store in protected location on site, and reinstall conflicting electrical equipment, luminaires, or devices that are to remain on or be relocated. The following applies to electrical materials that will remain or be reused under this project: Protect during construction activities; Clean and re-lamp luminaires immediately prior to occupancy of the finished construction area; Clean and service (if service is required) equipment in the construction area immediately prior to occupancy of the area.

Provide and maintain temporary partitions and barriers adequate to prevent the spread of dust and dirt to adjacent finished areas and other system components. Protect adjacent installations during cutting and patching operations. Remove protection and barriers or demolition operations as required to prevent the spread of dust and particulate matter resulting from electrical work from entering occupied spaces, including any air intakes to operating HVAC systems. Make temporary enclosures through walls and floors immediately prior to installation of work. Properly and promptly seal existing openings immediately after installation of work. Provide temporary enclosures to contain dust and debris during work. Meet with HVAC installer to determine special fire requirements related to electrical that may apply to this project. Cooperate with HVAC installer to ensure that all affect electrical work and are affected by electrical work.

Inspect existing electrical work areas accessed under this project and bring into compliance with NFPA 70. This applies to the extent that such work is uncovered in the immediate project areas affected by construction activities and only to the limited extent that it applies to pre-existing general installation methods such as missing protection bars prior to opening knockouts, minor conduit re-anchoring and minor exposed wiring/connectors. Where extensive code compliance violations are discovered, immediately bring them to the attention of the Owner's representative (in writing) along with proposed cost for corrections and impact (if any) on the construction schedule.

Power Continuity Requirements:

The following notes broadly define some of the specialty base bid scope of work required to provide special temporary power for new and existing facilities to accommodate utility power interruptions. Field verify all specifics and provide materials, normal time labor, premium time labor, services, etc. for all work under base bid, including but not limited to the following.

Locate, identify, and protect electrical services passing through demolition areas and serving other areas outside the demolition limits. Maintain services to areas outside demolition limits. When services must be interrupted, provide temporary services for affected areas. It is recognized that there may be some conduit systems rendered inactive by demolition, causing disconnection of "downstream" outlets, etc. Investigate these types of conditions (for all systems) prior to demolition. Provide necessary corrective electrical work prior to demolition to ensure that such "downstream" devices remain permanently active throughout demolition, during new construction, and after project completion.

Provide work in a manner that ensures existing systems and components remain fully operational in occupied spaces during occupied periods. Maintain existing electrical service and feeders to occupied areas and connected facilities, unless otherwise indicated, or when authorized otherwise in writing by Owner's representative. Provide temporary service during interruptions to existing facilities. Schedule momentary outages when necessary for replacing existing wiring systems with new wiring systems. When that "cutting-over" has been successfully accomplished, remove related wiring that has been abandoned.

Carefully coordinate work and system shutdowns in advance with Owner's representative, and with affected trades so that normal building activities and other construction trades are minimally affected. Perform electrically related construction work, which will affect an occupied area (including those which are located outside the immediate area of project work) at special times as directed by Owner's representative in field.

During construction related electrical outages, switchovers, disconnections, reconnections, etc. provide all temporary insulated conductors, taps, jumpers, etc. to and from existing and new or temporary electrical equipment, including but not limited to, conductors, splices, lug fittings, rework, premium time, security and safety measures, etc. Schedule all outages in advance with Owner, at days of week and times of day or night as directed by Owner, as necessary to accommodate all construction related electrical outages, switchovers and related connections and disconnections.

Interim Life Safety Work:

Provide interim electrical fire alarm and life safety protection in demolition and construction areas as indicated below. Contact Design Professional if further definition is needed. Remove all temporary life safety work when no longer needed.

Provide temporary UL 924 compliant exit and egress lighting along egress routes affected by this project. Remove this work when no longer needed.

26 05 19.00 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

General:

Furnish and install all necessary cable of the size and type indicated on the drawings or specified hereinafter. All wire shall be copper. All wiring shall be new. No wire smaller than #12 AWG shall be installed unless specifically designated. Use of #14 color coded wire will be allowed for control circuits only. Provide stranded conductors for all sizes unless indicated otherwise.

Provide THHN/THWN-2 insulation for all conductors as appropriate for the locations where installed. Provide color coded insulation jacket for phase identification. All wires shall be rated at 600 volts. Provide type XHHW-2 insulation for all wiring below grade or subject to moisture.

Provide the following minimum wire sizes based on distances from panel to first device of a 15 or 20 ampere general lighting or receptacle branch circuit. In addition to upsizing conductors as required for voltage drop, provide minimum #10 AWG conductors to the last device for branch circuits more than 150 feet in length.

Distance	AWG Wire Sizes
Up to 80 feet	#12
61 to 90 feet	#10
91 to 150 feet	#8
151 to 240 feet	#6

Provide the following minimum AWG conductor sizes for general branch circuiting grounds that are not indicated on drawings, based on using copper conductors. Where applicable increase as required to accommodate voltage drop and to accommodate special conditions. Do not derate any grounded (neutral) conductors. Temperature ratings listed below pertain to both wire and terminations.

Source Breaker/Fuse	60 Deg. C Rating	Equipment Grounding
AWG Wire Size	AWG Wire Size	AWG Wire Size
15 Ampere	#12	#12
20 Ampere	#12	#12
25 Ampere	#10	#10
30 Ampere	#10	#10
35 Ampere	#8	#10
40 Ampere	#8	#10
45 Ampere	#6	#10
50 Ampere	#6	#10
60 Ampere	#4	#10
70 Ampere	#4	#8
80 Ampere	#3	#8
90 Ampere	#2	#8
100 Ampere	#1	#8

All conductors shall be rated for 90 deg. C minimum. Provide with full parity sized green insulated equipment ground conductor. Provide compatible steel fittings with integral red plastic insulated through bushings. Compliant with NFPA 70, article 330. Cables shall be 90 deg. C, rated with all components and fittings listed for grounding and compliant with the following: UL Std. 4 and UL Std. 83; ANSI E119 and E121; NFPA 70, Articles 250.100, 250.101, 250.102, 250.103, 250.104, 250.105, 250.106, 250.107, 250.108, 250.109, 250.110, 250.111, 250.112, 250.113, 250.114, 250.115, 250.116, 250.117, 250.118, 250.119, 250.120, 250.121, 250.122, 250.123, 250.124, 250.125, 250.126, 250.127, 250.128, 250.129, 250.130, 250.131, 250.132, 250.133, 250.134, 250.135, 250.136, 250.137, 250.138, 250.139, 250.140, 250.141, 250.142, 250.143, 250.144, 250.145, 250.146, 250.147, 250.148, 250.149, 250.150, 250.151, 250.152, 250.153, 250.154, 250.155, 250.156, 250.157, 250.158, 250.159, 250.160, 250.161, 250.162, 250.163, 250.164, 250.165, 250.166, 250.167, 250.168, 250.169, 250.170, 250.171, 250.172, 250.173, 250.174, 250.175, 250.176, 250.177, 250.178, 250.179, 250.180, 250.181, 250.182, 250.183, 250.184, 250.185, 250.186, 250.187, 250.188, 250.189, 250.190, 250.191, 250.192, 250.193, 250.194, 250.195, 250.196, 250.197, 250.198, 250.199, 250.200, 250.201, 250.202, 250.203, 250.204, 250.205, 250.206, 250.207, 250.208, 250.209, 250.210, 250.211, 250.212, 250.213, 250.214, 250.215, 250.216, 250.217, 250.218, 250.219, 250.220, 250.221, 250.222, 250.223, 250.224, 250.225, 250.226, 250.227, 250.228, 250.229, 250.230, 250.231, 250.232, 250.233, 250.234, 250.235, 250.236, 250.237, 250.238, 250.239, 250.240, 250.241, 250.242, 250.243, 250.244, 250.245, 250.246, 250.247, 250.248, 250.249, 250.250, 250.251, 250.252, 250.253, 250.254, 250.255, 250.256, 250.257, 250.258, 250.259, 250.260, 250.261, 250.262, 250.263, 250.264, 250.265, 250.266, 250.267, 250.268, 250.269, 250.270, 250.271, 250.272, 250.273, 250.274, 250.275, 250.276, 250.277, 250.278, 250.279, 250.280, 250.281, 250.282, 250.283, 250.284, 250.285, 250.286, 250.287, 250.288, 250.289, 250.290, 250.291, 250.292, 250.293, 250.294, 250.295, 250.296, 250.297, 250.298, 250.299, 250.300, 250.301, 250.302, 250.303, 250.304, 250.305, 250.306, 250.307, 250.308, 250.309, 250.310, 250.311, 250.312, 250.313, 250.314, 250.315, 250.316, 250.317, 250.318, 250.319, 250.320, 250.321, 250.322, 250.323, 250.324, 250.325, 250.326, 250.327, 250.328, 250.329, 250.330, 250.331, 250.332, 250.333, 250.334, 250.335, 250.336, 250.337, 250.338, 250.339, 250.340, 250.341, 250.342, 250.343, 250.344, 250.345, 250.346, 250.347, 250.348, 250.349, 250.350, 250.351, 250.352, 250.353, 250.354, 250.355, 250.356, 250.357, 250.358, 250.359, 250.360, 250.361, 250.362, 250.363, 250.364, 250.365, 250.366, 250.367, 250.368, 250.369, 250.370, 250.371, 250.372, 250.373, 250.374, 250.375, 250.376, 250.377, 250.378, 250.379, 250.380, 250.381, 250.382, 250.383, 250.384, 250.385, 250.386, 250.387, 250.388, 250.389, 250.390, 250.391, 250.392, 250.393, 250.394, 250.395, 250.396, 250.397, 250.398, 250.399, 250.400, 250.401, 250.402, 250.403, 250.404, 250.405, 250.406, 250.407, 250.408, 250.409, 250.410, 250.411, 250.412, 250.413, 250.414, 250.415, 250.416, 250.417, 250.418, 250.419, 250.420, 250.421, 250.422, 250.423, 250.424, 250.425, 250.426, 250.427, 250.428, 250.429, 250.430, 250.431, 250.432, 250.433, 250.434, 250.435, 250.436, 250.437, 250.438, 250.439, 250.440, 250.441, 250.442, 250.443, 250.444, 250.445, 250.446, 250.447, 250.448, 250.449, 250.450, 250.451, 250.452, 250.453, 250.454, 250.455, 250.456, 250.457, 250.458, 250.459, 250.460, 250.461, 250.462, 250.463, 250.464, 250.465, 250.466, 250.467, 250.468, 250.469, 250.470, 250.471, 250.472, 250.473, 250.474, 250.475, 250.476, 250.477, 250.478, 250.479, 250.480, 250.481, 250.482, 250.483, 250.484, 250.485, 250.486, 250.487, 250.488, 250.489, 250.490, 250.491, 250.492, 250.493, 250.494, 250.495, 250.496, 250.497, 250.498, 250.499, 250.500, 250.501, 250.502, 250.503, 250.504, 250.505, 250.506, 250.507, 250.508, 250.509, 250.510, 250.511, 250.512, 250.513, 250.514, 250.515, 250.516, 250.517, 250.518, 250.519, 250.520, 250.521, 250.522, 250.523, 250.524, 250.525, 250.526, 250.527, 250.528, 250.529, 250.530, 250.531, 250.532, 250.533, 250.534, 250.535, 250.536, 250.537, 250.538, 250.539, 250.540, 250.541, 250.542, 250.543, 250.544, 250.545, 250.546, 250.547, 250.548, 250.549, 250.550, 250.551,