

SVA
SPEARS/VOTTA & Associates, Inc.
MECHANICAL & ELECTRICAL CONSULTING ENGINEERS
7526 Harford Road
Baltimore, MD 21234
Phone: 410-254-9600
Fax: 410-254-7031
Email: svainc@aol.com

EX. PANEL P2		FRANK ADAM PANELBOARD							
208/120 VOLTS		SURFACE MOUNTED ENCLOSURE							
3 PHASE									
4 WIRE									
200 AMPERE		MAIN LUGS ONLY							
ISC= 10,000 A I.C.									
CKT No.	DESCRIPTION	P/B POLE	AMP	DWG NOTE	CKT No.	DESCRIPTION	P/B POLE	AMP	DWG NOTE
1	EX POOL H&V UNIT	3	?		6	EX WASHER	3	?	
2	EX LOCKER ROOM SUPPLY	3	?		7A	FP-1	1	20	1
					7B	SPACE	2	---	
3	EX GYM H&V UNIT	3	30		8	EX LOCKER ROOM	3	30	
4	EX POOL PUMP	3	100		9	EX A/C LAP POOL	3	40	
5	EX DRYER	3	?		10	REPLACEMENT GYM A/C UNIT	3	60	1

NOTES - PANEL SCHEDULE

1. PROVIDE CIRCUIT BREAKER IN EXISTING SPACE IN PANELBOARD. BREAKER SHALL MATCH EXISTING MANUFACTURER, STYLE, TYPE AND SHORT CIRCUIT RATING. PROVIDE ALL REQUIRED BREAKER MOUNTING ACCESSORIES. IF CIRCUIT BREAKER OF CONFIGURATION CANNOT BE OBTAINED, PROVIDE ENCLOSED CIRCUIT BREAKER ALONG SIDE OF EXISTING PANELBOARD, AND TAP EXISTING BUS WITH BRANCH CIRCUIT WIRING VIA ENCLOSED CIRCUIT BREAKER.

(DESIGNER NOTE: Edit the following list of codes to suit project scope and conditions.)

4) CODE COMPLIANCE: FIRE DETECTION AND ALARM SYSTEM SHALL CONFORM TO THE REQUIREMENTS OF THE LATEST EDITION OF THE FOLLOWING PUBLICATIONS:

- A) INTERNATIONAL BUILDING CODE - 2015
- B) NFPA 70, "NATIONAL ELECTRICAL CODE" - 2014
- C) NFPA 72, "NATIONAL FIRE ALARM AND SIGNALING CODE"
- D) NFPA 90A, "STANDARD FOR THE INSTALLATION OF AIR CONDITIONING AND VENTILATING SYSTEMS"
- E) NFPA 101, "LIFE SAFETY CODE"
- F) ANSINEMA STANDARD 305-2001, "STANDARD FOR FIRE ALARM SYSTEM JOB PRACTICES"

B. PRODUCTS:

- 1) THE EXISTING BUILDING SILENT KNIGHT IFF-1000 FIRE ALARM SYSTEM IS TO REMAIN. MODIFY AND EXTEND THE EXISTING FIRE ALARM SYSTEM TO SERVE THE AREAS RENOVATED OR ADDED UNDER THIS PROJECT.
- 2) THOROUGHLY REVIEW THE EXISTING FIRE ALARM SYSTEM AND SHALL INCLUDE ALL WORK REQUIRED TO PROVIDE A COMPLETE, FULLY FUNCTIONAL, ADA AND NFPA-72 COMPLIANT FIRE ALARM SYSTEM WITHIN THE AREAS TO BE RENOVATED, MODIFIED OR ADDED UNDER THIS PROJECT. WHERE APPLICABLE, EXISTING DEVICES WHICH ARE FULLY COMPLIANT AND CODE/ADA COMPLIANT MAY BE REUSED PROVIDED THEY ARE FULLY FUNCTIONAL AND COMPATIBLE WITH ANY DEVICES ADDED UNDER THIS PROJECT. ANY DEVICES WHICH ARE NOT CODE COMPLIANT OR COMPATIBLE WITH EQUIPMENT INSTALLED UNDER THIS PROJECT SHALL BE REPLACED WITH NEW. INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, ETC. AS MAY BE REQUIRED, INCLUDING MAJOR EQUIPMENT AND DEVICE REPLACEMENTS WHERE REQUIRED, IN THE PROJECT BID.
- 3) PRIOR TO ANY MODIFICATIONS TO THE FIRE ALARM SYSTEM UNDER THIS PROJECT, THE EXISTING FIRE ALARM SYSTEM AND ALL DEVICES IN THE AREAS TO BE RENOVATED, MODIFIED OR ADDED SHALL BE TESTED AND VERIFIED TO BE FULLY FUNCTIONAL. COSTS FOR ALL NECESSARY TESTING SHALL BE INCLUDED IN THE CONTRACT. ANY DEFECTIVE OR NON-FUNCTIONAL DEVICES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER, WHO, AT THE OWNER'S SOLE OPTION, MAY CHOOSE TO REPAIR THE DEFECTIVE DEVICES OR MAY DIRECT THE CONTRACTOR TO REPLACE THE DEFECTIVE DEVICES ON EITHER A TIME AND MATERIALS OR A LUMP SUM CHANGE ORDER BASIS. ONCE MODIFICATIONS TO THE EXISTING FIRE ALARM SYSTEM HAVE BEEN COMPLETED, ANY DEVICES WHICH ARE FOUND TO BE NON-FUNCTIONAL SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER.
- 4) WHERE HVAC EQUIPMENT IS BEING ADDED OR MODIFIED UNDER THIS PROJECT PROVIDE DUCT SMOKE DETECTORS IN THE SUPPLY AND RETURN DUCTS OR AIR STREAM OF ALL HVAC UNITS RATED 2,000 CUBIC FEET PER MINUTE (CFM) OR HIGHER. MOUNT DUCT SMOKE DETECTOR IN SUPPLY AIR (SA) AND RETURN AIR (RA) DUCT AS CLOSE AS POSSIBLE TO AIR HANDLING UNIT OR ROOFTOP UNIT, IN STRICT ACCORDANCE WITH REQUIREMENTS OF NFPA-72 AND NFPA-90A. COORDINATE EXACT LOCATION WITH FIELD DUCT INSTALLATION. WHERE FIELD DUCT INSTALLATION WILL NOT PERMIT A SMOKE DETECTOR TO PROVIDE TOTAL PROTECTION OF THE DUCT SYSTEM, PROVIDE ADDITIONAL DETECTORS IN EACH BRANCH OF THE DUCTWORK, OR PROVIDE ALTERNATIVE, CODE COMPLIANT DETECTION. PROVIDE CONTROL MODULES AS REQUIRED, AND PROGRAM FOR SHUT DOWN OF HVAC UNIT(S) IN ACCORDANCE WITH NFPA-90A.
- 5) PROVIDE ADDITIONAL CONTROL, ZONE AND/OR SYNCHRONIZATION MODULES AT THE EXISTING FIRE ALARM CONTROL PANEL OR REMOTE POWER SUPPLIES AS REQUIRED TO ACCOMMODATE ADDITIONAL FIRE ALARM DEVICES INSTALLED UNDER THIS CONTRACT. PROVIDE ADDITIONAL CONTROL PANEL ENCLLOSURES, POWER SUPPLIES, ETC. AS REQUIRED.

PROVIDE STROBE POWER SUPPLIES, SYNCHRONIZATION MODULES, OR OTHER EQUIPMENT AS REQUIRED TO POWER VISUAL DEVICES INSTALLED UNDER THIS PROJECT. MODIFY THE EXISTING FIRE ALARM SYSTEM AS REQUIRED TO ACCOMMODATE ADA AND NFPA-72 COMPLIANT VISUAL DEVICES.

ENGINEER'S SEAL

ENGINEER'S CERTIFICATION STATEMENT

I certify that these documents were prepared or approved by me, and that I am a duly licensed engineer under the laws of the State of Maryland, license number 20461, expiration date, **May 26, 2018**.

NOTRE DAME PREPARATORY SCHOOL
GYMNASIUM A/C UNIT UPGRADE
 815 HAMPTON LANE
 TOWSON, MARYLAND 21286

REVISIONS:

NO.	DESCRIPTION	DATE
1	ISSUED FOR PERMIT	06/18/17

LAST REV.:

PROJECT NO.: 16016B
DATE: 06/01/17
SCALE: NONE

TITLE:
ELECTRICAL SCHEDULE AND SPECIFICATIONS

SHEET:

ME
303

ELECTRICAL SPECIFICATIONS

1. SECTION 16010 - BASIC ELECTRICAL REQUIREMENTS:

- A. THE WORK OF EACH OF THE ELECTRICAL SECTIONS INCLUDES FURNISHING AND INSTALLING THE MATERIAL, EQUIPMENT, AND SYSTEMS COMPLETE AS SPECIFIED AND/OR INDICATED ON THE DRAWINGS. THE ELECTRICAL INSTALLATIONS, WHEN FINISHED, SHALL BE COMPLETE AND COORDINATED, READY FOR SATISFACTORY SERVICE.
- B. THE WORK UNDER THIS CONTRACT SHALL BE DONE IN STRICT ACCORDANCE WITH ALL APPLICABLE STATE, MUNICIPAL, AND OTHER LOCAL CODES, THE 2014 EDITION OF THE NATIONAL ELECTRICAL CODE, AND THE LATEST EDITION OF THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES (ADAAG).
- C. MAKE APPLICATION AND PAY FOR ALL PERMITS, LICENSES AND INSPECTIONS AS REQUIRED UNDER THE ABOVE CODES.
- D. THE GENERAL ARRANGEMENT OF CONDUIT, WIRING AND EQUIPMENT SHALL BE AS IDENTIFIED ON THE CONTRACT DRAWINGS. CAREFULLY INVESTIGATE THE SITE, STRUCTURAL, AND FINISH CONDITIONS AFFECTING HIS WORK AND SHALL ARRANGE SUCH WORK ACCORDINGLY, PROVIDING SUCH FITTINGS AND ACCESSORIES AS MAY BE REQUIRED TO MEET SUCH CONDITIONS.
- E. PROVIDE ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND SERVICES NECESSARY FOR AND REASONABLY INCIDENTAL TO THE COMPLETE INSTALLATION OF THE ELECTRICAL WORK AND RELATED SYSTEMS AS INDICATED ON THE DRAWINGS OR AS NECESSARY TO PROVIDE A COMPLETE SYSTEM.
- F. PROVIDE ALL NECESSARY TEMPORARY WIRING, LIGHTING AND CONSTRUCTION POWER FOR ALL TRADES AS REQUIRED TO COMPLETE THE PROJECT.
- G. ALL MATERIALS AND EQUIPMENT SHALL BE INSTALLED AND COMPLETED IN A FIRST-CLASS WORKMANLIKE MANNER. ALL MATERIALS SHALL BE NEW AND THE BEST OF THEIR RESPECTIVE KINDS. ALL EQUIPMENT AND SYSTEMS SHALL BE APPROVED BY UL OR SIMILAR NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL).
- H. VISIT THE SITE AND OBSERVE THE CONDITIONS UNDER WHICH THE WORK SHALL BE COMPLETED. NO ALLOWANCE WILL BE MADE SUBSEQUENTLY IN THIS CONTRACT FOR ANY OMISSION, ERROR OR NEGLIGENCE ON THE CONTRACTOR'S PART.
- I. PRIOR TO SUBMISSION OF SHOP DRAWING SUBMITTALS, AND NOT MORE THAN SEVEN (7) DAYS AFTER AWARD OF THE CONTRACT, SUBMIT TO THE ENGINEER FOR APPROVAL A LIST OF SUB-CONTRACTORS, MATERIALS AND EQUIPMENT MANUFACTURERS PROPOSED FOR THE PROJECT. THIS LIST SHALL INCLUDE THE PROPOSED MANUFACTURER OF ALL EQUIPMENT PROPOSED FOR THE PROJECT.
- J. FOLLOWING APPROVAL OF THE LIST OF SUB-CONTRACTORS, MATERIALS AND EQUIPMENT MANUFACTURERS, SUBMIT DETAILED DIMENSIONED SHOP DRAWINGS, TOGETHER WITH WIRING DIAGRAMS, SPECIFICATIONS, OPERATING DATA, AND/OR CATALOG CUTS FOR ALL EQUIPMENT FURNISHED UNDER THIS DIVISION, SHOWN ON THE DRAWINGS OR SPECIFIED HEREIN.
 - 1) SHOP DRAWINGS AND SUBMITTALS MAY BE SUBMITTED IN EITHER HARD COPY OR ELECTRONIC PORTABLE DOCUMENT (PDF) FORMAT. IN EITHER CASE, SHOP DRAWING SUBMITTALS SHALL BE HIGHLIGHTED TO IDENTIFY SPECIFIC INFORMATION RELATIVE TO MATERIAL OR EQUIPMENT COVERED BY THE SUBMITTAL, AND APPLICABLE TO THIS SPECIFIC PROJECT. SHOP DRAWING SUBMITTALS NOT APPROPRIATELY HIGHLIGHTED, OR CONTAINING NUMEROUS NON-APPLICABLE PAGES, WILL NOT BE REVIEWED, BUT WILL BE RETURNED MARKED "REJECTED".
- K. A THOROUGH TEST SHALL BE MADE PRIOR TO ENERGIZING THE SYSTEM TO DEMONSTRATE THAT THE SYSTEM IS ENTIRELY FREE FROM GROUND FAULTS, SHORT CIRCUITS, AND OPEN CIRCUITS; THAT THE RESISTANCE TO GROUND ALL NON-GROUNDED CIRCUITS, BEFORE AND AFTER CONNECTION OF EQUIPMENT MEETS THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AND IEEE STANDARDS AND RECOMMENDATIONS.
- L. IDENTIFY ALL MOTOR STARTERS, SWITCHES, CONTROLS, PANELBOARDS AND OTHER EQUIPMENT. IDENTIFICATION PLATES SHALL BE LAMINATED PHENOLIC PLASTIC, BLACK WITH WHITE ENGRAVED LETTERS. LETTERING SHALL BE 1/4" HIGH MINIMUM.
- M. PROVIDE UPDATED DIRECTORIES FOR EACH PANELBOARD (EXISTING AND NEW) INDICATING THE TYPE LOAD (LIGHTING, RECEPTACLE, HEATER, ETC.) SERVED BY EACH CIRCUIT BREAKER, AS WELL AS THE ROOM IN WHICH THE LOAD IS LOCATED. USING ACTUAL ROOM DESIGNATIONS AND NUMBERS AS DESIGNATED BY FIELD. INSTALLED ROOM SIGNAGE. VERIFY ALL EXISTING LOADS, AND PROVIDE SAME INFORMATION FOR EACH CIRCUIT, INCLUDING EXISTING LOADS, AS INDICATED HEREINBEFORE. PROVIDE ELECTRONIC COPIES OF EACH PANELBOARD DIRECTORY, ON EITHER COMPUTER DISKETTE OR CD-ROM, WITH THE OPERATION AND MAINTENANCE MANUALS.
- N. THE MATERIAL AND WORKMANSHIP OF ALL PARTS OF THE ELECTRICAL INSTALLATION SPECIFIED HEREIN SHALL BE GUARANTEED UNCONDITIONALLY FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE.
- O. UPON COMPLETION OF THE ELECTRICAL INSTALLATION, DELIVER TO THE OWNER ONE (1) SET OF PRINTS OF ELECTRICAL CONTRACT DRAWINGS WHICH SHALL BE LEGIBLY MARKED IN RED PENCIL TO SHOW ALL ADDITIONS, CHANGES AND DEPARTURES OF THE INSTALLATION AS COMPARED WITH THE ORIGINAL DESIGN. THEY SHALL BE SUITABLE FOR USE IN PREPARATION OF RECORD DRAWINGS.
- P. PREPARE THREE (3) COPIES OF A RECORD AND INFORMATION MANUAL. THE MANUAL SHALL BE FOUND IN A THREE-RING LOOSE-LEAF BINDER, PROVIDE THE FOLLOWING DATA IN THE BOOKLET:
 - 1) CUTS OF ALL EQUIPMENT WITH TECHNICAL SPECIFICATIONS.
 - 2) OPERATION AND MAINTENANCE PROCEDURES.
 - 3) SERVICING INSTRUCTIONS.
 - 4) COPIES OF PANELBOARDS DIRECTORIES.
 - 5) COPIES OF WARRANTIES.
 - 6) COPIES OF TEST REPORTS.
- Q. COORDINATE WORK PROVIDED UNDER THIS DIVISION WITH THAT OF ALL OTHER TRADES. THE MECHANICAL AND ALL OTHER DRAWINGS AND SPECIFICATIONS SHALL BE CONSULTED AND COORDINATED WITH PRIOR TO ROUGH-IN.
- R. PROVIDE DISCONNECT SWITCHES AT ALL EQUIPMENT AS REQUIRED BY CODE OR TO FACILITATE MAINTENANCE. DISCONNECT SWITCHES SHALL BE OF PROPER VOLTAGE, CURRENT RATING AND QUANTITY OF POLES REQUIRED FOR THE APPLICATION WHERE INDICATED ON THE DRAWINGS. MAKE ALL FINAL CONNECTIONS TO ALL MECHANICAL OR OTHER EQUIPMENT AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER.
- S. SEAL ALL CONDUIT PENETRATIONS THROUGH FIRE OR SMOKE RATED WALLS, FLOORS AND CEILINGS TO MAINTAIN RATING INTEGRITY OF THE COMPONENT BEING PENETRATED.
- T. VERIFY ALL ELECTRICAL CHARACTERISTICS (VOLTAGE, PHASE, HORSEPOWER, FULL LOAD AMPERES, ETC.) OF MECHANICAL AND OTHER EQUIPMENT TO BE INSTALLED ON THIS PROJECT WITH MECHANICAL OR OTHER APPROPRIATE CONTRACTOR PRIOR TO ROUGH-IN. WHENEVER POSSIBLE, OBTAIN ROUGH-IN DRAWINGS FOR THE ACTUAL ITEM OF EQUIPMENT TO BE INSTALLED PRIOR TO ROUGH-IN. THIS SHALL APPLY TO ALL EQUIPMENT, WHETHER IT IS TO BE INSTALLED UNDER THIS CONTRACT OR BY THE OWNER.
- U. NOTE THAT BRANCH CIRCUIT WIRING IS NOT SHOWN; HOWEVER, CIRCUIT NUMBERS ARE SHOWN ADJACENT TO ALL OUTLETS/FIXTURES. PROVIDE AND INSTALL ALL BRANCH WIRING BASED ON THE CIRCUIT NUMBERS SHOWN TO COMPLETE THE WIRING SYSTEM.

V. ELECTRICAL DEMOLITION:

- 1) ANY EXISTING ELECTRICAL WORK SHOWN ON THESE DRAWINGS IS INDICATED FOR THE CONVEINENCE OF THE CONTRACTOR ONLY. THE OWNER AND ENGINEER IN NO WAY WARRANT OR GUARANTEE EITHER THE ACCURACY OR COMPLETENESS OF THIS INFORMATION. FINAL LOCATIONS AND QUANTITIES SHALL BE FIELD VERIFIED BY THE CONTRACTOR TO THEIR OWN SATISFACTION.
- 2) THE EXTENT OF ELECTRICAL DEMOLITION SHALL BE AS GENERALLY NOTED ON THE DRAWINGS.
- 3) EXISTING ELECTRICAL WORK IN THE AREAS SURROUNDING THE PROJECT AREA SHALL REMAIN IN SERVICE AT ALL TIMES. WHERE EXISTING CIRCUITS PASS THROUGH THE PROJECT AREA, THEY SHALL BE MAINTAINED IN SERVICE AT ALL TIMES. CONTRACTOR SHALL FIELD VERIFY WHICH CIRCUITS MUST REMAIN IN SERVICE.
- 4) WHEREVER EXISTING ELECTRICAL WORK IS TO BE REMOVED, THE FOLLOWING NOTES SHALL APPLY:
 - A) ALL EXISTING WIRING SHALL BE REMOVED BACK TO ITS SOURCE.
 - B) ALL EXISTING NO LONGER IN USE CONDUIT WHICH IS EXPOSED, OR WHICH BECOMES EXPOSED AT ANY TIME DURING CONSTRUCTION SHALL BE REMOVED IN ITS ENTIRETY. CONDUIT STUBS THROUGH THE FLOOR SHALL BE CUT OFF FLUSH WITH THE FLOOR SLAB, FILLED WITH CONCRETE, AND MADE READY TO ACCEPT NEW FLOOR FINISHES WHERE APPLICABLE.
 - C) CONDUIT WHICH REMAINS CONCEALED WITHIN WALLS OR SLABS SHALL BE ABANDONED IN PLACE AFTER REMOVAL OF ALL WIRING.
 - D) WHEREVER EXISTING FLUSH MOUNTED BOXES WILL REMAIN EXPOSED, PROVIDE BLANK COVERPLATES ON THE EXISTING OUTLET BOXES.
 - E) ALL SURFACES WHICH ARE DISTURBED BY DEMOLITION UNDER THIS DIVISION SHALL BE PATCHED WITH MATERIALS TO MATCH THE SURROUNDING SURFACE. PATCHING SHALL BE DONE TO THE COMPLETE SATISFACTION OF THE ENGINEER.
 - F) WHERE EXISTING CIRCUITS ARE REMOVED FROM PANELBOARDS WHICH ARE TO REMAIN, PROVIDE UPDATED TYPED/WRITTEN PANELBOARD DIRECTORIES ON EACH AFFECTED PANELBOARD. DESIGNATE ALL UNUSED CIRCUITS AS "SPARE".
- 5) PRIOR TO REMOVAL OF ANY ELECTRICAL EQUIPMENT FROM THE PROJECT, DETERMINE WHETHER THE OWNER WISHES TO RETAIN THE MATERIAL SHOULD THE OWNER DESIRE TO RETAIN AN ITEM, IT SHALL BE MOVED, BY THE CONTRACTOR, TO THE LOCATION ON THE SITE DIRECTED BY THE OWNER. ALL ELECTRICAL EQUIPMENT, WIRING, ETC. NOT DESIRED BY THE OWNER SHALL BE REMOVED FROM THE PROJECT SITE AND PROPERLY DISPOSED OF BY THE CONTRACTOR AT NO EXPENSE TO THE OWNER.

W. OUTAGES OF ELECTRIC AND TELEPHONE SERVICE:

- 1) OUTAGES OF ELECTRIC, TELEPHONE, OR SPECIAL SYSTEM SERVICES TO EXISTING OCCUPIED AND/OR UNOCCUPIED AREAS OF THE BUILDINGS SHALL BE COORDINATED WITH AND SHALL BE SUBJECT TO THE APPROVAL OF THE OWNER. ANY AND ALL OUTAGES SHALL BE SCHEDULED IN WRITING WITH THE OWNER'S REPRESENTATIVE AND THE ARCHITECT AT LEAST SEVEN (7) DAYS IN ADVANCE OF THE PLANNED OUTAGE. SCHEDULED OUTAGES MAY BE CANCELED AT ANY TIME BY THE OWNER. THE CONTRACTOR SHALL NOT BE ALLOWED ANY EXTRA COMPENSATION FOR RESCHEDULING OUTAGES WHICH MAY BE CANCELED BY THE OWNER. SHOULD THE PLANNED OUTAGES BE REQUIRED AT OTHER THAN NORMAL WORKING HOURS (ON PREMIUM TIME), THE WORK SHALL BE PROVIDED TO THE OWNER AT NO ADDITIONAL COST IN CONTRACT PRICE.

X. OVERTIME HOURS:

- 1) ANY WORK REQUIRED TO BE PERFORMED AT OTHER THAN NORMAL WORKING HOURS (NIGHTS, HOLIDAYS, WEEKENDS, ETC.) SHALL BE TAKEN INTO CONSIDERATION WHEN COMPUTING THE BID. ADDITIONAL COMPENSATION SHALL NOT BE ALLOWED FOR ANY WORK PERFORMED AT OTHER THAN NORMAL WORKING HOURS.

2. SECTION 16050 - BASIC ELECTRICAL MATERIALS AND METHODS:

- A. RACEWAYS:
 - 1) GENERAL:
 - A) INSTALL ALL WIRING IN CONDUIT, EXCEPT AS OTHERWISE SPECIFIED HEREIN.
 - B) MINIMUM CONDUIT SIZE SHALL BE 3/4".
 - C) PROVIDE GROUND WIRE, SIZED PER NATIONAL ELECTRICAL CODE REQUIREMENTS, IN ALL BRANCH CIRCUIT AND FEEDER RACEWAYS.
 - D) ALL CONDUIT SHALL BE U.L. LISTED AND APPROVED FOR THE USE INTENDED.
 - 2) INDOOR RACEWAY INSTALLATIONS: UTILIZE RACEWAY PRODUCTS AS SPECIFIED BELOW, UNLESS OTHERWISE INDICATED:
 - A) EXPOSED, WHERE SUBJECT TO PHYSICAL DAMAGE: RIGID GALVANIZED STEEL CONDUIT OR INTERMEDIATE METAL CONDUIT, WHERE SUBJECT TO PHYSICAL DAMAGE; SUCH LOCATIONS SHALL INCLUDE, BUT ARE NOT NECESSARILY LIMITED TO:
 - (1) MECHANICAL EQUIPMENT ROOMS.
 - (2) ELECTRICAL EQUIPMENT ROOMS AND CLOSETS
 - (3) STORAGE ROOMS.
 - B) CONNECTION TO VIBRATING EQUIPMENT (INCLUDING TRANSFORMERS AND HYDRAULIC, PNEUMATIC, ELECTRIC SOLENOID, OR MOTOR-DRIVEN EQUIPMENT); FLEXIBLE METALLIC CONDUIT.
- B. WIRE AND CABLE (600 VOLT):
 - 1) BUILDING WIRE, UNLESS OTHERWISE INDICATED, SHALL BE RATED 600 VOLT, TYPE THW/THHN INSULATION FOR INTERIOR AND EXTERIOR USE. CONDUCTORS SHALL BE SIZED AND RUN AS INDICATED OR AS REQUIRED TO SUIT THE ACTUAL INSTALLATION.
 - 2) GROUNDED (NEUTRAL) CONDUCTORS:
 - A) NO SHARING OF GROUNDED (NEUTRAL) CONDUCTORS SHALL BE PERMITTED FOR BRANCH CIRCUITS. EACH CIRCUIT REQUIRING A GROUNDED (NEUTRAL) CONDUCTOR CONNECTION SHALL BE PROVIDED WITH A DEDICATED GROUNDED (NEUTRAL) CONDUCTOR FOR EACH PHASE CONDUCTOR. EACH GROUNDED (NEUTRAL) CONDUCTOR SHALL BE SIZED AT 100% OF THE AMPACITY OF THE PHASE CONDUCTORS.
 - 3) EQUIPMENT GROUNDING CONDUCTORS:
 - A) PROVIDE EQUIPMENT GROUNDING CONDUCTORS IN ALL BRANCH CIRCUITS AND FEEDERS SIZED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, ARTICLE 250.