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## MECHANICAL SPECIFICATIONS

### PART 1 - GENERAL

#### SCOPE

FURNISH, INSTALL, TEST, PLACE INTO OPERATION AND GUARANTEE, COMPLETE, OPERABLE, AND APPROVED MECHANICAL WORK. SECURE AND PAY FOR ALL MATERIALS, EQUIPMENT, LABOR, SUPERVISION, FEES, TESTS, AND ALL OTHER COSTS REQUIRED. OWNER TO APPLY FOR AND PAY ALL PERMIT COSTS DIRECTLY.

#### REGULATIONS IN EFFECT

NATIONAL, STATE, AND CITY CODES, ORDINANCES, ETC., HAVING JURISDICTION, RULES AND REQUIREMENTS OF UTILITY SERVING AGENCIES.

NO ADDITIONAL FUNDS WILL BE ALLOCATED FOR WORK REQUIRED TO CONFORM TO REGULATIONS AND REQUIREMENTS.

#### QUALIFICATIONS OF WORKMEN

USE SUFFICIENT JOURNEYMEN CRAFTSMEN AND COMPETENT SUPERVISORS, TO ENSURE PROMPT, PROPER, AND SAFE EXECUTION OF WORK.

#### DESIGN DRAWINGS

DESIGN DRAWINGS ARE DIAGRAMMATIC AND ONLY DEFINE BASIC FUNCTIONS REQUIRED. PROVIDE ALL WORK, MATERIAL, ETC., TO ACCOMPLISH THESE REQUIREMENTS. MINOR DEVIATIONS FROM DESIGN LAYOUT ARE ANTICIPATED AND ARE A PART OF WORK INCLUDED, HOWEVER, MAKE NO CHANGES THAT ALTER CHARACTER OF WORK. DO NOT SCALE DESIGN DRAWINGS.

#### SHOP DRAWINGS

INDEXED BROCHURE COMPLETELY DESCRIBING MAJOR PRODUCTS AND SYSTEMS (SEVEN HARD BOUND COPIES) OR ONE ELECTRONIC PDF FILE.

FOR INFORMATION AND COORDINATION ONLY. PROVIDE SUFFICIENT DATA TO CLEARLY DEFINE THE WORK REQUIRED OF OTHER TRADES FOR PROPER INSTALLATION, OPERATION, AND SERVICE OF EQUIPMENT.

SHOP DRAWINGS ARE NOT A FORUM FOR CHANGES IN PROJECT SCOPE OR REQUIREMENTS.

### PART 2 - PRODUCTS

#### GENERAL

NEW AND UNUSED PRODUCTS OF ESTABLISHED AND REPUTABLE AMERICAN MANUFACTURERS. SIMILAR ITEMS SHALL BE OF SAME MANUFACTURER.

COMPLETE AND OPERABLE SYSTEMS. INCLUDE ANY AND ALL ACCESSORIES REQUIRED FOR PROPER OPERATION AS THOUGH SPECIFICALLY INDICATED. SUCH AS: FILTERS, CONDENSATE DRAINS WITH VENTED TRAPS, RELIEF VALVES, SERVICE VALVES AND STOPS, REMOTE SENSORS, LOW VOLTAGE WIRING, VIBRATION ISOLATORS, AND ITEMS SPECIFICALLY RECOMMENDED BY MANUFACTURER. THERMOSTATS BY G.C..

REFERENCE TO A MANUFACTURER'S PRODUCT IS TO ESTABLISH TYPE, QUALITY, AND PERFORMANCE REQUIRED. THESE QUALIFICATIONS ARE IN ADDITION TO REQUIREMENTS SHOWN ELSEWHERE.

#### TOILET EXHAUST FANS

ROOF MOUNTED INLINE, BELT-DRIVE. STATICALLY AND DYNAMICALLY BALANCED. FURNISH WITH OVERLOAD PROTECTION, DISCONNECT, BACK DRAFT DAMPER, ACOUSTIC LINED HOUSINGS IN UNITS OVER 100 CFM.

CEILING MOUNTED, CENTRIFUGAL DIRECT-DRIVE. STATICALLY AND DYNAMICALLY BALANCED. FURNISH WITH OVERLOAD PROTECTION, DISCONNECT, BACKDRAFT DAMPER. ACOUSTIC LINED HOUSINGS IN UNITS OVER 100 CFM.

#### DUCTWORK

GALVANIZED STEEL. MATERIAL GAGES, JOINTS, SUPPORTS AND BRACING IN COMPLIANCE WITH MECHANICAL CODE AND SMACNA RECOMMENDATIONS.

FLEXIBLE DUCT FOR AIR CONDITIONING TERMINAL BRANCHES: 1" THICK FIBERGLASS DUCT SUPPORTED OVER SPRING STEEL WIRE HELIX. WOVEN FIBERGLASS MESH LINER AND FIBERGLASS REINFORCED METALIZED OUTER JACKET. UL-181 (CLASS 1) AND NFPA 90A AND 90B.

#### DUCT INSULATION

1 1/2" THICK BY 0.5 PCF FIBERGLASS WITH VAPOR BARRIER BLANKET ON METALLIC AIR CONDITIONING SUPPLY AND RETURN DUCTWORK. NO DUCT ALLOWED ON METALLIC.

DUCTWORK INSIDE CONDITIONED SPACE MAY REMAIN UN-INSULATED.

### GRILLES, REGISTERS, AND DIFFUSERS

DIFFUSERS: RECTANGULAR MULTIPLE CONE FIXED PATTERN TYPE (FACE PATTERN SELECTED TO SUIT AIR PATTERN REQUIRED). REMOVABLE CORE/OPOSED BLADED VOLUME CONTROL/ENAMEL FINISH.

FILTER GRILLES: FIXED PIN-SET BARS AT APPROXIMATELY 400, WITH HINGED FACE. ALUMINUM OR ENAMELED STEEL.

SELECT AND SIZE AIR DISTRIBUTION DEVICES IN ACCORDANCE WITH THE REQUIREMENTS OF EACH APPLICATION. DEVICES, GENERALLY, SHALL PROVIDE UNIFORM, DRAFT-FREE AND QUIET AIR DISTRIBUTION. RIGID FRAMES, COMPATIBLE WITH SURFACE OR STRUCTURE.

### PART 3 - EXECUTION

#### GENERAL

PERFORM ALL WORK IN BEST TRADE PRACTICE. ARRANGE FOR GREATEST PRACTICAL EASE OF OPERATION AND SERVICE. INSTALL SQUARELY WITH BUILDING LINES. PROVIDE RIGID, PERMANENT, LEVEL, BASES AND SUPPORTS. ELIMINATE VIBRATION AND RATTLING.

FOLLOW THESE SPECIFICATIONS AND MANUFACTURER'S RECOMMENDED INSTALLATION PROCEDURES.

COVER AND PROTECT ALL EQUIPMENT AND MATERIALS FROM WEATHER, THEFT, ETC. PLUG OR CAP ALL OPEN ENDS OF INSTALLED PIPING AND DUCTWORK.

#### ROUGH-IN AND FINAL CONNECTIONS

THE DRAWINGS INDICATE GENERAL ARRANGEMENTS ONLY. PROVIDE ROUGH-IN AND FINAL CONNECTIONS FOR FIXTURES AND EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S SUGGESTIONS AND PRODUCT REQUIREMENTS.

#### DUCTWORK < 2" W.G.

SHALL BE CONSTRUCTED AND ERECTED PER IMC

RIGID AND AIRTIGHT. TIGHTLY FITTED JOINTS WITH NO VOIDS. CLOSE MINOR GAPS WITH CANVAS TAPE SET INTO AND SEALED WITH BRUSH APPLIED ADHESIVE, OR WITH SILICONE CAULKING COMPOUND. DO NOT UTILIZE PRESSURE SENSITIVE TAPE.

DUCT SEALING TAPES, GASKETS AND MASTICS SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL181A FOR METALLIC DUCTWORK OR 181B FOR FLEXIBLE AIR DUCTS AND INSTALLED PER MFG INSTRUCTIONS.

THROAT RADIUS OF ELBOWS EQUAL TO DUCT WIDTH OR USE SQUARE ELBOWS WITH TURNING VANES. TRANSITIONS NOT TO EXCEED 4 TO 1 RATIO.

#### SIZES SHOWN ARE NET INSIDE DIMENSIONS.

SHIP-LAP CUT ALL JOINTS IN FIBERGLASS DUCTWORK. USE METAL REINFORCING AT ALL CONNECTIONS. CLOSE WITH THERMAL ACTIVATED TAPE.

CONNECT FLEXIBLE DUCTS TO RIGID TRUNK DUCTS WITH FACTORY FABRICATED FITTINGS WITH DAMPER AND SCOOP (WHERE "TAPINS" SERVE SINGLE OUTLETS, AND WHERE TAP-IN DAMPER IS ACCESSIBLE, UNOUT DAMPER MAYBE OMITTED). SECURE FLEX DUCT WITH PANDUIT CLAMPS, INSTALLED TO FACTORY RECOMMENDED TENSION.

#### DUCT INSULATION

WRAP NO VOIDS AND 4" MINIMUM OVERLAP. SECURE WITH WIRES NOT EXCEEDING 18" SPACING.

#### PIPING INSULATION:

ALL PIPING SERVING HEATING/COOLING SYSTEM SHALL BE THERMALLY INSULATED PER TABLE C403.2.9 2015 WSEC

#### AIR DISTRIBUTION DEVICES

INSTALL TIGHTLY AND SQUARE WITH BUILDING LINES. VERIFY EXACT POSITIONING OF ALL DEVICES WITH ARCHITECTURAL DRAWINGS AND NOTES. FLANGED DEVICES SHALL BE SEALED AIR TIGHT WITH SPONGE RUBBER GASKETS. ADJUST BLADES AND DAMPERS FOR PROPER AIR DISTRIBUTION AND FLOW.

#### COMMISSIONING

MECHANICAL SYSTEMS COMMISSIONING AND COMPLETION REQUIREMENTS. GENERAL CONTRACTOR SHALL HIRE A COMMISSIONING AGENT.

COMMISSIONING AGENT SHALL CLEARLY INDICATE PROVISIONS FOR COMMISSIONING AND COMPLETION REQUIREMENTS IN ACCORDANCE WITH 2015 WSEC C408

all mechanical systems, equipment, and controls for which the WSEC requires control functions and / or configuration to perform specific functions are required to be commissioned;

all mechanical systems regardless of individual capacity are required to be commissioned; or provide building heating / cooling capacity calculation demonstrating eligibility for exception

Cx per C408 is required for all applicable mechanical systems;

Include general summary with at a minimum of Items 1 thru 4 of the Cx plan per C408.1.2 including: narrative description of activities, responsibilities of the Cx team, schedule of activities including verification of project close out documentation per C103.6, and conflict of interest plan (if required);

Include in general summary that a Cx project report or Compliance Checklist (Figure C408.1.4.2) shall be completed by the Certified Cx Professional and provided to the owner prior to the final mechanical inspection.

air flow rates shall be tested and balanced within the tolerances defined in the specifications; systems shall be balanced in a manner to first minimize throttling losses, then adjusted to meet design flow conditions

## DUCT SMOKE DETECTORS

### NEW

G.C. TO PROVIDE AND INSTALL.

DUCT SMOKE DETECTORS TO MEET ALL REQUIREMENTS OF IMC, CHAPTER 606.

#### SUPERVISION:

DUCT SMOKE DETECTORS SHALL BE CONNECTED TO THE RELOCATED FIRE ALARM SYSTEM. THE ACTUATION OF A DUCT SMOKE DETECTOR SHALL ACTIVATE A VISIBLE AND AUDIBLE SUPERVISORY SIGNAL AT A CONSTANTLY ATTENDED LOCATION.

#### EXCEPTIONS:

1. THE SUPERVISORY SIGNAL AT A CONSTANTLY ATTENDED LOCATION IS NOT REQUIRED WHERE THE DUCT SMOKE DETECTOR ACTIVATES THE BUILDING'S ALARM-INDICATING APPLIANCES.

2. IN OCCUPANCIES NOT REQUIRED TO BE EQUIPPED WITH A FIRE ALARM SYSTEM, ACTUATION OF A SMOKE DETECTOR SHALL ACTIVATE A VISIBLE AND AN AUDIBLE SIGNAL IN AN APPROVED LOCATION. DUCT SMOKE DETECTOR TROUBLE CONDITIONS SHALL ACTIVATE A VISIBLE OR AUDIBLE SIGNAL IN AN APPROVED LOCATION AND SHALL BE IDENTIFIED AS AIR DUCT DETECTOR TROUBLE.

\*\*EVERY DUCT SMOKE DETECTOR TO HAVE LED MOUNTED IN CEILING BELOW, OR NEAREST WALL IF NO DROP CEILING. PROVIDE REMOTE RESETS TO ROOM #111

## GENERAL NOTES

PROVIDE A CERTIFIED TEST AND BALANCE FOR ALL HVAC SYSTEMS PER AABC OR NEBB STANDARDS. SUBMIT FINAL REPORT TO ARCHITECT OR ENGINEER AND BUILDING LANDLORD.

FLEX DUCT SHOULD NOT EXCEED 8' IN LENGTH

PROVIDE MANUAL DAMPERS @ EACH BRANCH CONNECTION FOR NON RATED AREAS.

ALL HEATING, COOLING, AND VENTILATION UNITS TO BE PERMANENTLY IDENTIFIED AS TO THE AREA SERVED BY THAT UNIT. TAG TO BE SUNLIGHT RESISTANT.

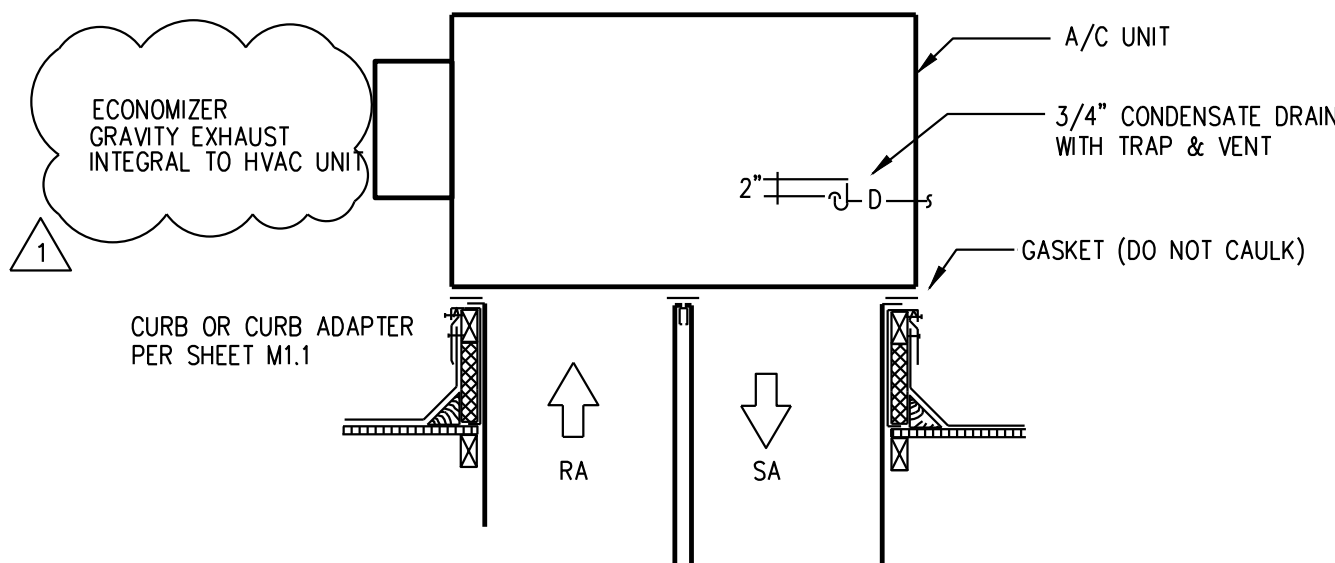
DUCT SIZES SHOWN ARE CLEAR INSIDE DIMENSIONS

PROVIDE RADIUS ELBOWS, TURNING VANES, MANUAL DAMPERS AND SPLITTER DAMPERS IN BRANCHES AND EXTRACTORS WHERE APPLICABLE.

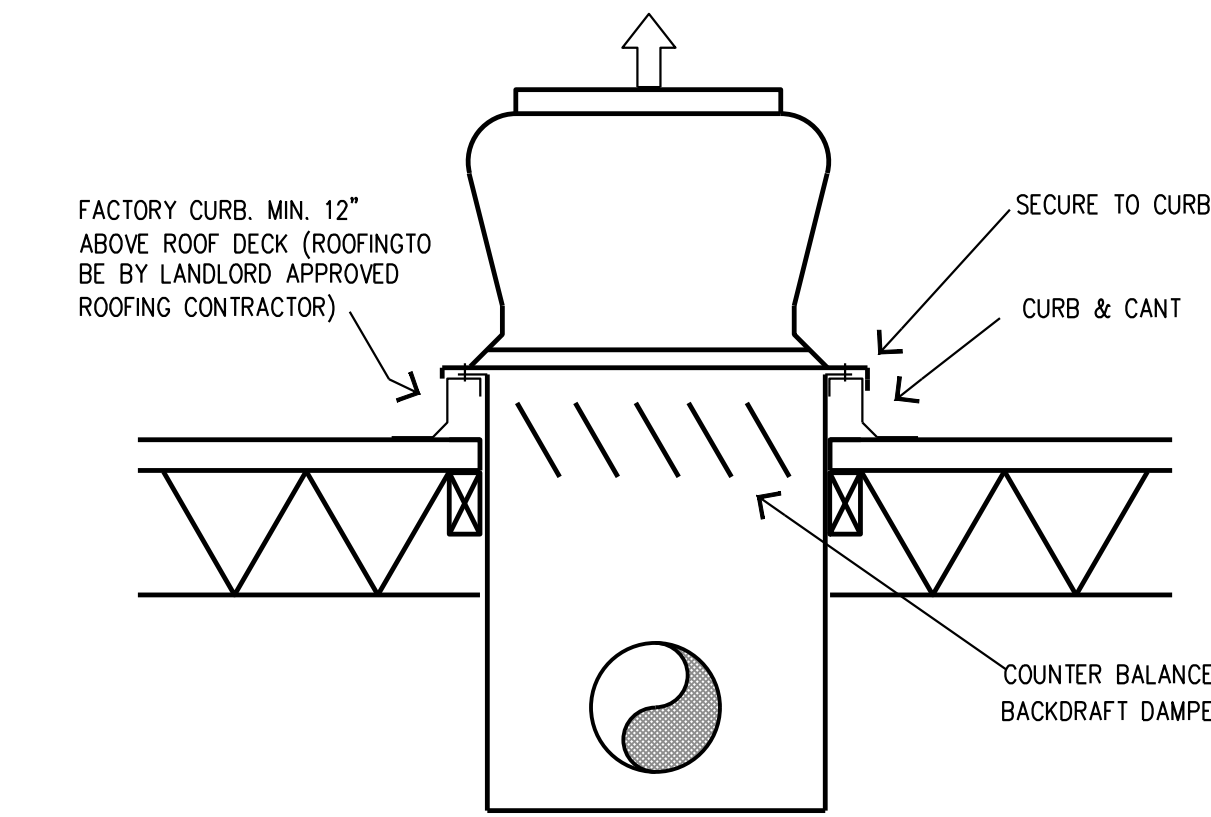
ALL REMOTE SENSORS SHALL BE MOUNTED AT 9'0". THERMOSTATS MOUNTED AT 48" MAX PER ADA.

PROVIDE (1) SET OF FARR 30X30 THROW AWAY FINAL FILTERS, FRAMES, MOUNTING HARDWARE, AND ACCESSORIES.  
PROVIDE (1) SET OF THROW AWAY FILTERS FOR USE DURING CONSTRUCTION PERIOD.

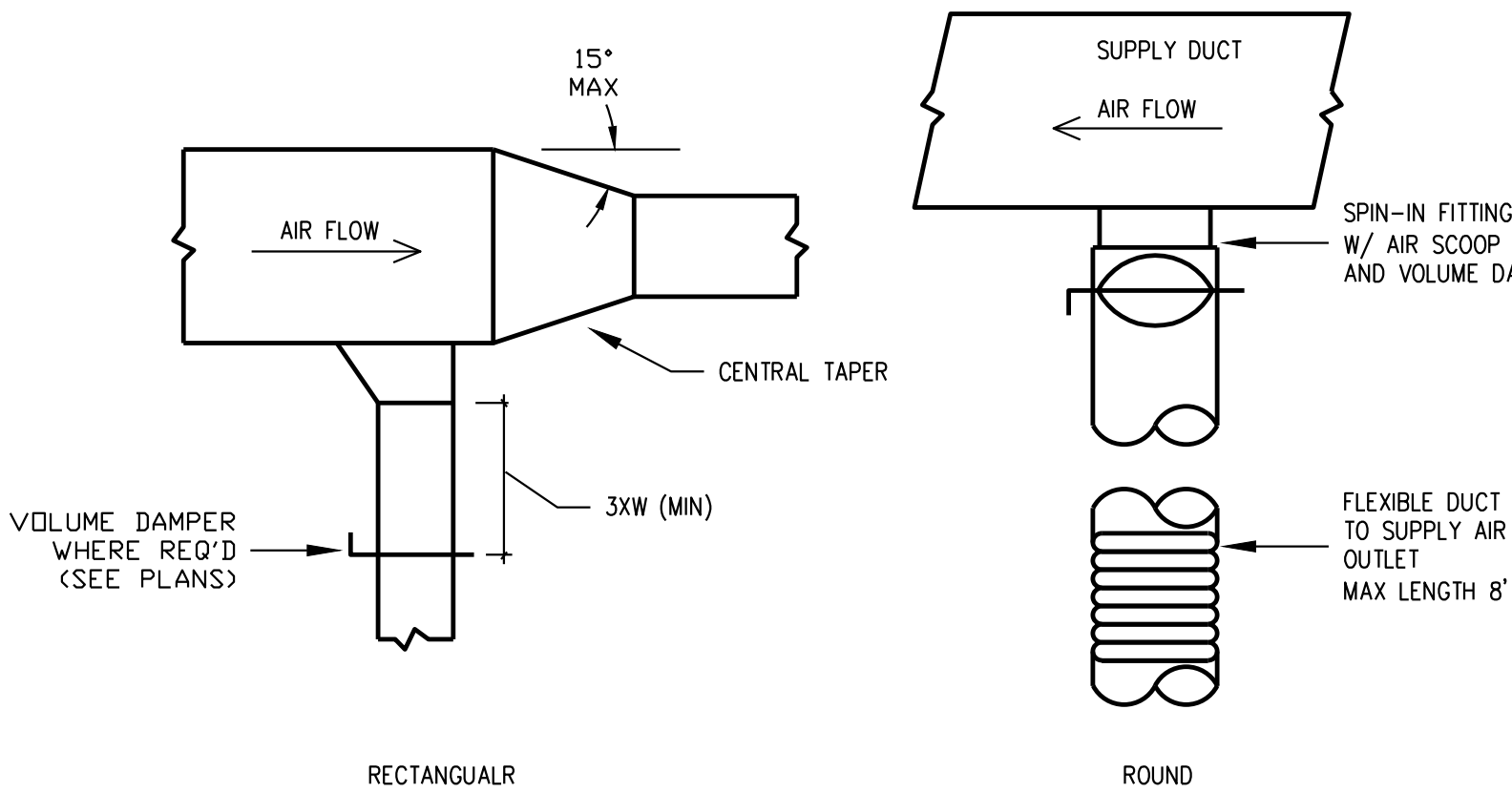
REMOVE THE FILTERS AFTER THE CONSTRUCTION PERIOD AND INSTALL FINAL FILTERS. (PRIOR TO THE BALANCING OF THE SYSTEM)



## A/C INSTALLATION



## UPBLAST EXHAUST FAN



## TYPICAL BRANCH DUCT TAKE-OFFS

## ENERGY COMPLIANCE PER 2015 WASHINGTON STATE CODE

#### EQUIPMENT LOADS:

EQUIPMENT SELECTION/ DESIGN BASED ON DESIGN LOADS CALCULATED USING CARRIER BLOCK LOAD SOFTWARE IN COMPLIANCE WITH THE ASHRAE SYSTEMS AND EQUIPMENT HANDBOOK. SEE TABLE BELOW FOR EXTERIOR DESIGN CONDITIONS. CLIMATE ZONE 4C

#### EQUIPMENT SELECTION:

HEATING AND COOLING EQUIPMENT AND SYSTEMS CAPACITY SHALL NOT EXCEED THE LOADS CALCULATED.

#### EQUIPMENT EFFICIENCY:

ALL MECHANICAL EQUIPMENT MEETS THE EFFICIENCY REQUIREMENTS ACCORDING TO WASHINGTON STATE ENERGY CODE.

#### CONTROLS:

ANY NEW THERMOSTAT MUST BE 7 DAY SOLID STATE PROGRAMMABLE THERMOSTAT, 5" DEADBAND MINIMUM, AUTO SETBACK AND MANUAL OVERRIDE.

#### DUCT AND PLENUM INSULATION AND SEALING

ALL NEW SUPPLY AND RETURN AIR DUCTS AND PLENUMS SHALL BE INSULATED WITH A MINIMUM OF R-8 INSULATION WHERE LOCATED IN UNCONDITIONED SPACES AND A MINIMUM OF R8 WHERE LOCATED OUTSIDE THE BUILDING. WHEN LOCATED INSIDE THE BUILDING ENVELOPE, THE DUCT OR PLENUM SHALL BE SEPARATED FROM THE BUILDING EXTERIOR OR UNCONDITIONED SPACE BY A MINIMUM OF R-8 INSULATION. EXCEPTION: DUCTWORK EXPOSED TO VIEW WITHIN A ZONE THAT SERVES THAT ZONE IS NOT REQUIRED TO BE INSULATED.

ALL JOINTS, LONGITUDINAL AND TRANSVERSE SEAMS AND CONNECTIONS IN DUCTWORK SHALL BE SECURELY FASTENED AND SEALED WITH WELDS, GASKETS, MASTICS, OR TAPES. TAPES AND MASTICS USED TO SEAL DUCTWORK SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL 181A OR 181B. DUCT CONNECTIONS TO FLANGES OF AIR DISTRIBUTION SYSTEM EQUIPMENT SHALL BE SEALED AND MECHANICALLY FASTENED. UNLISTED DUCT TAPE IS NOT PERMITTED AS A SEALANT ON ANY METAL DUCTS.

#### NOTE:

DUCTWORK INSULATION VALUES SET FORTH BY THE WASHINGTON STATE ENERGY CODE SHALL SUPERCEDE ANY OTHER SPECIFICATIONS (INCLUDING MECHANICAL SPECIFICATIONS).

#### ECONOMIZERS:

CONFIGURE FOR PARTIAL COOLING OPERATION EVEN WHERE ADDITIONAL MECHANICAL COOLING IS REQUIRED TO MEET TO MEET LOAD. CONTROL METHOD SHALL NOT INCREASE BUILDING HEATING ENERGY USE DURING NORMAL OPERATION.

MODULATING OSA/RA DAMPERS ARE CONFIGURED TO PROVIDE 100% OSA FOR COOLING. COOLING CONTROLS ARE INTERLOCKED WITH ECONOMIZER CONTROLS SO THAT OSA DAMPER REMAINS 100% OPEN WHEN MECHANICAL COOLING IS ALSO REQUIRED TO MEET COOLING LOAD, UNTIL THE LEAVING AIR TEMP IS < 45° F. HIGH LIMIT SHUT OFF CONTROL METHOD REQUIRED PER TABLE C403.3.3.3

## YORK PACKAGED AC UNIT SCHEDULE - GAS

TAG	NOMINAL TONS	YORK MODEL #	AIR CAPACITIES			GAS INPUT	EFF %	ECONOMIZER	HP RPM	LBS	(EER)	REMARKS
			TOTAL CFM	OA CFM	ESP IWG							
AC1	12.5	ZJ150N20	5000	825	0.5	200 MBH	80	YES	5 1725	1575	12.2	SEE NOTE BELOW
AC2	12.5	ZJ150N20	5000	825	0.5	200 MBH	80	YES	5 1725	1575	12.2	SEE NOTE BELOW
AC3	15	ZJ180N24	6000	990	0.5	240 MBH	80	YES	5 1725	3194	12.4	SEE NOTE BELOW
AC4	12.5	ZJ150N20	5000	825	0.5	200 MBH	80	YES	5 1725	1575	12.2	SEE NOTE BELOW
AC5	10	ZJ120N15	4000	660	0.5	150 MBH	80	YES	3 1725	1365	12.2	SEE NOTE BELOW
AC6	20	ZJ240N24	8000	1330	0.5	300 MBH	80	YES	7.5 1725	3282	11.50	SEE NOTE BELOW

#### NOTES:

- PROVIDE WITH 14" FACTORY ROOF CURB OR CURB ADAPTER AS PER SHEET M1.1, ECONOMIZER, HAIL GUARD, AND FACTORY PROGRAMMABLE T-STAT WITH REMOTE TEMPERATURE AND OCCUPANCY SENSORS.
- COORDINATE WITH ELECTRICAL CONTRACTOR FOR ELECTRICAL INFORMATION PRIOR TO ORDERING EQUIPMENT
- WEIGHT DOES NOT INCLUDE CURB
- VENTILATION SHALL BE CAPABLE OF BEING MINIMIZED TO MINIMUM LEVELS PER IMC OSA CALCULATION ON THIS SHEET
- ALL FAN MOTORS TO BE ECM OR MINIMUM EFF REQUIREMENTS.
- GRAVITY RELIEF FOR ECONOMIZERS. NO POWER EXHAUST.
- GRAVITY RELIEF FOR ECONOMIZERS. NO POWER EXHAUST.

#### YORK NATIONAL ACCOUNTS HVAC EQUIPMENT PACKAGE

PLANET FITNESS HAS A NATIONAL HVAC AGREEMENT WITH YORK INTERNATIONAL. IF YORK HVAC EQUIPMENT IS PURCHASED BY THE MECHANICAL CONTRACTOR, THEY MUST BE ORDERED DIRECTLY FROM YORK NATIONAL ACCOUNTS - NO EXCEPTIONS. THE HVAC MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING AND ACCEPTING THE EQUIPMENT, VERIFYING PROPER QUANTITIES, PROVIDING TEMPORARY STORAGE, LABOR, 1ST YEAR LABOR WARRANTY, FOR QUESTIONS REGARDING TECHNICAL SPECIFICATIONS CONTACT YORK NATIONAL ACCOUNTS, MIKE STEPHENS @ 800-481-9738 OR EMAIL: MICHAEL.G.STEPHENS@YORK.COM, OR FAX 866-406-9675. FOR ALL OTHER INQUIRIES, PLEASE CONTACT WALT JACOB, NATIONAL ACCOUNT SALES MANAGER, AT 405-419-6351 FAX 405-419-6408, EMAIL: WALT.JACOB@YORK.COM

#### PLANET FITNESS

SENSIBLE COOLING CAPACITY		
LOAD	PROVIDED	EQ. TAG
905850 BTUH	990,000 BTUH	(6) GAS/COOL ROOF TOP HVAC UNITS

CALCULATIONS WERE PERFORMED BY THE CARRIER PROGRAM IN COMPLIANCE W/ ASHRAE FUND. & EQUIP SIZING AND MEETS 2015 WSEC REQUIREMENTS-TABLE 403.2.3(1)A

## ROOF TOP EXHAUST FAN SCHEDULE

TAG	MANUF. / MODEL #	TYPE	CFM	ESP	BDD	HP	RPM	SONES	DRIVE	OPER. WT.	REMARKS
EF-1	COOK 100ACRUB	UPBLAST	700	0.25	YES	1/6	1473	9.0	BELT	30 LBS.	RUNS CONTINUOUS
EF-2	COOK 100ACRUB	UPBLAST	700	0.25	YES	1/6	1473	9.0	BELT	30 LBS.	RUNS CONTINUOUS

#### NOTES:

- COORDINATE WITH ELECTRICAL CONTRACTOR AND ELECTRICAL DRAWINGS FOR ELECTRICAL INFORMATION PRIOR TO ORDERING EQUIPMENT
- PROVIDE FAN WITH AUTOMATIC BELT TENSIONER
- PROVIDE FAN WITH BIRD SCREEN
- PROVIDE FAN WITH FACTORY MOUNTED DISCONNECT SWITCH

## CEILING EXHAUST FAN SCHEDULE

TAG	MANUF. / MODEL #	TYPE	CFM	ESP	BDD	WATTS	SONES	DRIVE	OPER. WT.	REMARKS
EF-3	COOK GC-144	CEILING	100	0.25	YES	73	2.0	DIRECT	16 LBS.	PROVIDE SEPARATE WALL SWITCH

#### NOTES:

- COORDINATE WITH ELECTRICAL CONTRACTOR AND ELECTRICAL DRAWINGS FOR ELECTRICAL INFORMATION PRIOR TO ORDERING EQUIPMENT
- PROVIDE WITH FAN SPEED CONTROLLER TO MATCH CFM AND ESP

## DIFFUSER/ REGISTER SCHEDULE

TAG	TITUS MODEL #	DESCRIPTION	FRAME	FINISH	MATERIAL	DAMPER	MAX. INCH	REMARKS
CD-1	TDCA-AA	SUPPLY DIFFUSER	LAY-IN	WHITE	ALUMINUM		25	PAINT BLACK IN ALL BLACK DROP CEILING AND ALL FAUX WOOD CEILING LOCATIONS (TYP)
RG-1	350RL	RETURN GRILLE	LAY-IN	WHITE	ALUMINUM		25	PAINT BLACK IN ALL BLACK DROP CEILING AND ALL FAUX WOOD CEILING LOCATIONS (TYP)
RG-2	350RL	RETURN GRILLE	FLANGE	WHITE	ALUMINUM		25	PAINT TO MATCH WALL FINISH (TYP)
SR-1	300RS	SUPPLY REGISTER	FLANGE	WHITE	ALUMINUM	YES	25	PAINT TO MATCH WALL OR EXPOSED DUCT WORK FINISH (TYP)
EG-1	50F-NIT	EXHAUST GRILLE	LAY-IN	WHITE	ALUMINUM		25	
CDR-1	CSR-P	CONCENTRIC SUPPLY/RETURN GRILLE	EXPOSED	WHITE	STEEL		25	PAINT BLACK TO MATCH CEILING PAINT. MOUNT AS HIGH AS POSSIBLE TO UNDER SIDE OF EXISTING ROOF FRAMING SYSTEM. 60X60 MODULE SIZE FOR 15-25 TONS 48X24 MODULE SIZE FOR 2.5-5 TONS

## OSA VENTILATION CALCULATIONS

BASED ON 2015 IMC TABLE 403.3.1.1

OUTDOOR AIRFLOW RATE IN BREATHING ZONE = R <sub>o</sub> P <sub>2</sub> + R <sub>u</sub> A <sub>2</sub>											
IMC 2015 403.3.1.1.1											
ZONE	FT²	OCC/1000 FT²	P <sub>2</sub>	R <sub>o</sub>	R <sub>u</sub>	A <sub>2</sub>	E <sub>2</sub>				
WOMENS SHOWERS CONTINUOUS -	6 WC/UR	X 20	CFM PER SHOWER HEAD	-	-	-	-	=	120	CFM EXHAUST REQUIRED	
WIENS SHOWERS CONTINUOUS -	6 WC/UR	X 20	CFM PER SHOWER HEAD	-	-	-	-	=	120	CFM EXHAUST REQUIRED	
MENS RESTROOMS CONTINUOUS -	4 WC/UR	X 50	CFM PER WC/UR	-	-	-	-	=	200	CFM EXHAUST REQUIRED	
WOMENS RESTROOMS CONTINUOUS -	4 WC/UR	X 50	CFM PER WC/UR	-	-	-	-	=	200	CFM EXHAUST REQUIRED	
MENS LOCKER ROOM -	625 SQ. FT.	X 0.5	CFM/ SQ. FT.	-	-	-	-	=	313	CFM EXHAUST REQUIRED	
WOMENS LOCKER ROOM -	625 SQ. FT.	X 0.5	CFM/ SQ. FT.	-	-	-	-	=	313	CFM EXHAUST REQUIRED	
CORRIDOR -	3850 SQ. FT.	X 0.06	CFM/ SQ. FT.	-	-	-	-	=	231	CFM OSA REQUIRED	
HEALTH CLUB - AEROBICS -	3140 SQ. FT.	/ 1000 X 40	=	126	X 20	+ 0.06 X 3140 0.8	=	3386	CFM OSA REQUIRED		
HEALTH CLUB - WEIGHTS -	4250 SQ. FT.	/ 1000 X 10	=	43	X 20	+ 0.06 X 4250 0.8	=	1394	CFM OSA REQUIRED		
RECEPTION -	950 SQ. FT.	/ 1000 X 30	=	29	X 5	+ 0.06 X 950 0.8	=	253	CFM OSA REQUIRED		
STORAGE -	450 SQ. FT.	X 0.12	CFM/ SQ. FT.	-	-	-	450 0.8	=	68	CFM OSA REQUIRED	
SPA -	1150 SQ. FT.	/ 1000 X 5	=	6	X 5	+ 0.06 X 1150 0.8	=	124	CFM OSA REQUIRED		



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- NEW 24 X 24 " LAY-IN" CEILING DIFFUSER WITH MANUAL DAMPER @ BRANCH CONNECTION, TYPE CD-1 UNLESS OTHERWISE NOTED. PAINT BLACK AT ALL BLACK DROP CEILING SYSTEMS AND FAUX WOOD ACT LOCATION. TYPE CD-1
- NEW 24 X 24 RETURN GRILLE, TYPE RG-1. PAINT BLACK AT ALL BLACK DROP CEILING SYSTEMS AND FAUX WOOD ACT LOCATIONS.
- NEW 24 X 48 RETURN GRILLE, TYPE RG-1. PAINT BLACK AT ALL BLACK DROP CEILING SYSTEMS AND FAUX WOOD ACT LOCATIONS.
- NEW CEILING MOUNTED EXHAUST GRILLE, TYPE EG-1
- NEW CEILING MOUNTED EXHAUST FAN PROVIDED AND INSTALLED BY G.C.
- NEW DUCTWORK. DUCTWORK TO BE SPIRAL SHAPED AND PAINTED AT EXPOSED DUCT AREAS. MOUNT HIGH AS POSSIBLE IN ALL EXPOSED AREAS.
- NEW VOLUME DAMPER

## LEGEND

- NEW SPACE SENSOR INSTALLED AT 9'0" ABOVE FINISHED FLOOR AND WIRED BACK TO ROOM #111. G.C TO LABEL ALL CONTROLS.
- NEW 24/7 PROGRAMMABLE THERMOSTAT CAPABLE OF ACCEPTING REMOTE TEMP SENSORS AND OCCUPANCY SENSORS - MOUNT 48" AFF
- NEW OCCUPANCY SENSOR INSTALLED AT ADJACENT TO TEMP SENSOR AND WIRED BACK TO T-STAT IN ROOM #112. G.C TO LABEL ALL CONTROLS.
- NEW WALL MOUNTED RETURN GRILLE ( ALSO TRANSFER GRILLE), TYPE RG-2 PAINT TO MATCH ADJACENT WALL FINISHES
- NEW WALL MOUNTED SUPPLY REGISTER. PAINT TO MATCH WALL OR DUCT IT IS MOUNTED TO - TYPE SR-1
- NEW DUCT SMOKE DETECTOR



## MECHANICAL PLAN

SCALE: 1/8" = 1'-0"

## INVESTIGATION OF CONDITIONS

EXAMINE THE CONTRACT DRAWINGS AND ALL AVAILABLE INFORMATION CONCERNING EXISTING INSTALLATION, STRUCTURE, AND LOCAL CONDITIONS. VISIT THE SITE TO UNDERSTAND THE NATURE AND SCOPE OF ALL WORK TO BE PERFORMED AND VERIFY EXISTING CONDITIONS. THE SUBMISSION OF A BID WILL BE TAKEN AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE AND THAT ALL EXISTING CONDITIONS HAVE BEEN CONSIDERED. NOTIFY ENGINEER IF ANY DISCREPANCIES OR CONFLICTS ARE OBSERVED.

## KEYED NOTES

- NEW ROOF TOP EXHAUST FAN. MUST DISCHARGE 10 FT MINIMUM FROM ANY FRESH AIR OPENINGS.
- ENTIRE EXHAUST DUCTWORK SHALL BE ALUMINUM SHEET METAL.
- NEW 10 TON ROOF MOUNTED A/C WITH GAS HEAT AND NEW ROOF CURBS. 28X20 SUPPLY AND 30X20 RETURN DUCT DROPS. SEE PLUMBING FOR CONDENSATE AND GAS PIPING.
- NEW 12.5 TON ROOF MOUNTED A/C WITH GAS HEAT AND NEW ROOF CURBS. 30X20 SUPPLY AND 38X22 RETURN DUCT DROPS. SEE PLUMBING FOR CONDENSATE AND GAS PIPING.
- NEW 15 TON ROOF MOUNTED A/C WITH GAS HEAT AND NEW ROOF CURBS. 36X20 SUPPLY AND 38X22 RETURN DUCT DROPS. SEE PLUMBING FOR CONDENSATE AND GAS PIPING.
- NEW 20 TON ROOF MOUNTED A/C WITH GAS HEAT. 38X22 SUPPLY AND 40X26 RETURN DUCT DROPS. PROVIDE CURB ADAPTER TO FIT UNIT ON EXISTING CURB. SEE PLUMBING FOR CONDENSATE AND GAS PIPING.
- EXTEND SUPPLY/ RETURN DUCTS DOWN TO NEW CONCENTRIC DIFFUSER. MOUNT DIFFUSER AS HIGH AS POSSIBLE TO UNDERSIDE OF STRUCTURE. PAINT BLACK PER ARCHITECT.
- FURNISH AND INSTALL NEW 18" BIGASSFAN (POWERFOL X3 PLUS W/PLANET FITNESS APPEARANCE PACKAGE) TO UNDERSIDE OF EXISTING ROOF STRUCTURE. MAKE ALL NECESSARY WIRING CONNECTIONS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. COORDINATE EXACT LOCATION OF FAN AS TO NOT INTERFERE WITH LIGHTING FIXTURES AND TV TRUSS LATERAL BRACING. INCLUDE A 2'0" MANUFACTURER'S EXTENSION TUBE. PROVIDE FAN CONTROLS (X-SERIES WALL KEYPAD) FOR REMOTE FAN SPEED ADJUSTMENTS BY OWNER. MOUNT CONTROLS IN ROOM 111.
- INSTALL DIRECT VENT / COMBUSTION AIR (CONCENTRIC) WATER HEATER VENT UP THRU ROOF WITH FACTORY WEATHER CAP. INSTALL AND SIZE PER MFG INSTRUCTIONS. MUST DISCHARGE AT MINIMUM OF 10 FEET AWAY FROM ANY OUTSIDE AIR INTAKE.
- MOUNT THERMOSTATS IN ROOM 111. STACKED IN COLUMNS. MOUNT AT 4'0" A.F.F. MAX INCLUDE CONTROLS FOR BIGASSFANS. G.C. TO LABEL ALL T-STATS AND FAN CONTROLLERS
- TRANSFER GRILLE MOUNTED HIGH IN SOFFIT.
- FURNISH AND INSTALL NEW HAIKU84 CEILING FAN. MAKE ALL NECESSARY WIRING CONNECTIONS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. COORDINATE EXACT LOCATION OF FAN AS TO NOT INTERFERE WITH LIGHTING FIXTURES. PROVIDE FAN CONTROLS FOR REMOTE FAN SPEED ADJUSTMENTS BY OWNER. FAN FINISH COLOR TO BE YELLOW.
- MOUNTING LOCATIONS FOR LOUNGE'S HAIKU84 AND B.A.F FAN CONTROLLERS
- MOUNTING LOCATIONS FOR WOMEN'S TOILET ROOM HAIKU84 FAN CONTROLS
- MOUNTING LOCATION FOR MEN'S TOILET ROOM HAIKU84 FAN CONTROLS
- 6" EXHAUST DUCT UP THRU ROOF WITH FACTORY WEATHER CAP. MUST BE 10' MIN FROM ALL FRESH AIR INTAKES.

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ENGINEERING, L.L.C.

3231 SOUTH COUNTRY CLUB WAY, STE. 102 TEMPE, ARIZONA 85282  
P: (602) 393-0201 F: (602) 393-0202  
DRAWN BY: JR CHECKED BY: CM JOB NUMBER: 17091  
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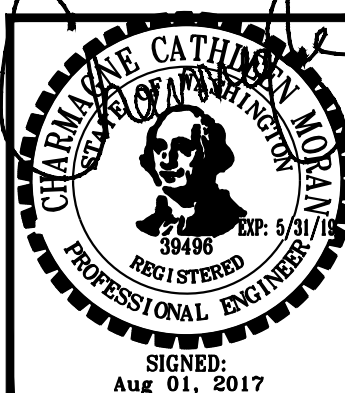
PROPOSED RENOVATION FOR:

PLANET FITNESS

19516 STATE ROUTE 410E  
BONNEY LAKE, WASHINGTON 98391

MICHAEL J. PILKO, ARCHITECT

860 FIRST AVE, SUITE 9A  
KING OF PRUSSIA, PA 19406  
484-928-0650



RHJ ASSOCIATES, P.C.

PROJECT MANAGEMENT

860 1ST AVE, SUITE 9A  
KING OF PRUSSIA, PA 19406  
610 337 4555  
www.rhjassoc.com

DATE: 5/19/2017

REVISIONS

PERMIT COMMENTS: 8/01/2017



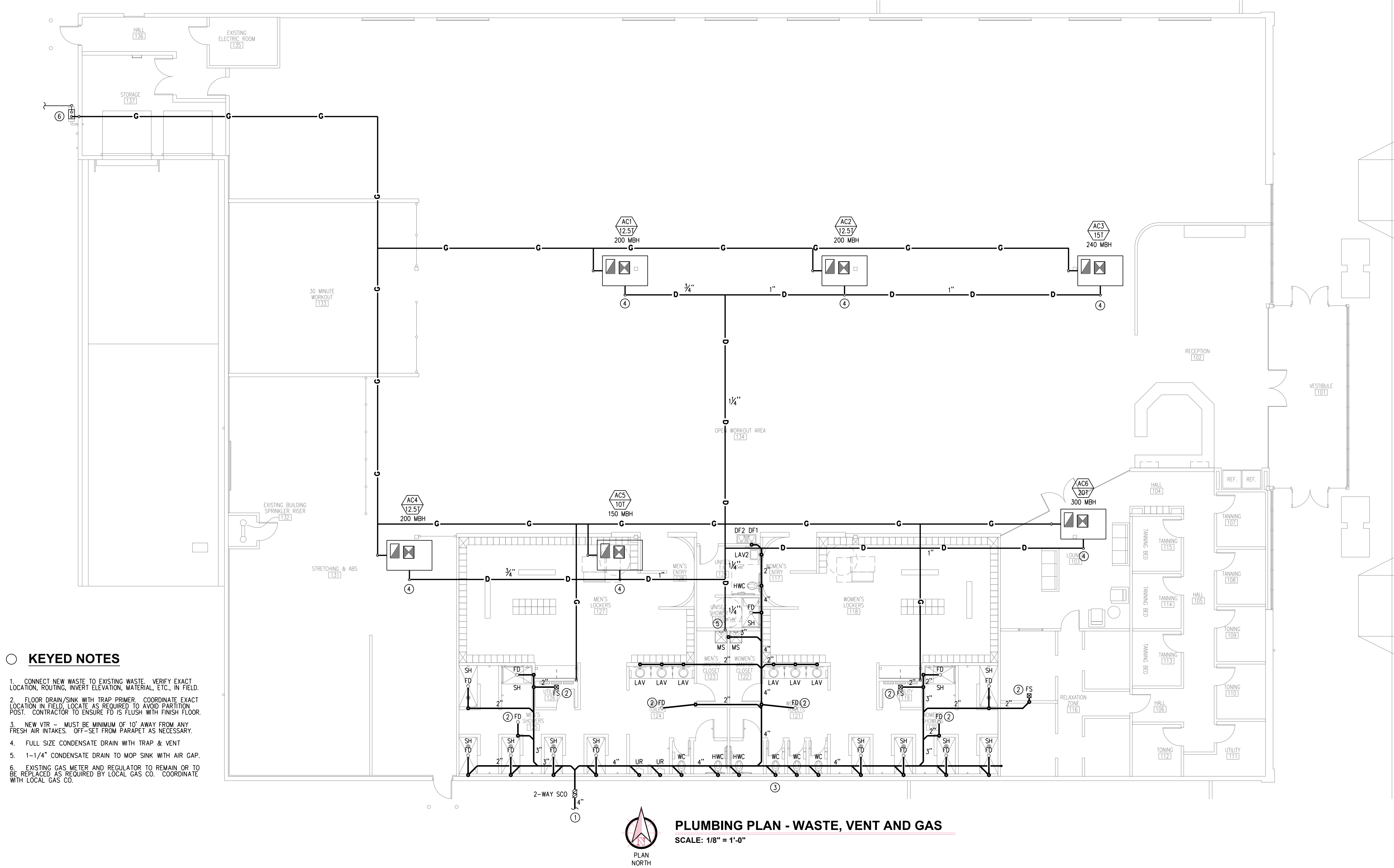








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#### KEYED NOTES

1. CONNECT NEW WASTE TO EXISTING WASTE. VERIFY EXACT LOCATION, ROUTING, INVERT ELEVATION, MATERIAL, ETC., IN FIELD.
2. FLOOR DRAIN/SINK WITH TRAP PRIMER. COORDINATE EXACT LOCATION IN FIELD, LOCATE AS REQUIRED TO AVOID PARTITION POST. CONTRACTOR TO ENSURE FD IS FLUSH WITH FINISH FLOOR.
3. NEW VTR - MUST BE MINIMUM OF 10' AWAY FROM ANY FRESH AIR INTAKES. OFF-SET FROM PARAPET AS NECESSARY.
4. FULL SIZE CONDENSATE DRAIN WITH TRAP & VENT
5. 1-1/4" CONDENSATE DRAIN TO MOP SINK WITH AIR GAP.
6. EXISTING GAS METER AND REGULATOR TO REMAIN OR TO BE REPLACED AS REQUIRED BY LOCAL GAS CO. COORDINATE WITH LOCAL GAS CO.

#### PLUMBING LEGEND

- EXISTING WASTE
- NEW WASTE  
Ø 1/4" PER FOOT MIN.
- NEW VENT PIPING BELOW ROOF
- EXISTING CONDENSATE PIPING
- EXISTING GAS PIPING
- NEW CONDENSATE DRAIN PIPING
- NEW GAS PIPING



#### PLUMBING PLAN - WASTE, VENT AND GAS

SCALE: 1/8" = 1'-0"

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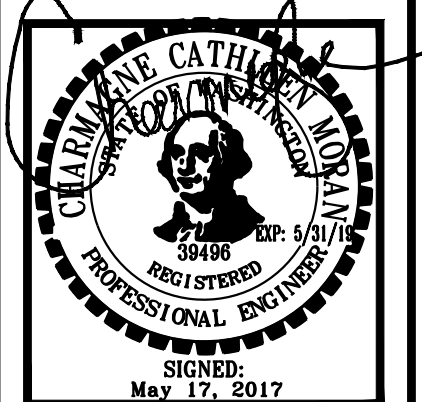
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## PLANET FITNESS

19516 STATE ROUTE 410E  
BONNEY LAKE, WASHINGTON 98391

MICHAEL J. PILKO, ARCHITECT

860 FIRST AVE, SUITE 9A  
KING OF PRUSSIA, PA 19406  
484-928-0650



RHJ ASSOCIATES, P.C.

PROJECT MANAGEMENT

880 1ST AVE, SUITE 9A  
KING OF PRUSSIA, PA 19406  
610 337 4555  
www.rhjassoc.com

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PLUMBING PLAN  
- WASTE, VENT AND  
GAS

# P1.1

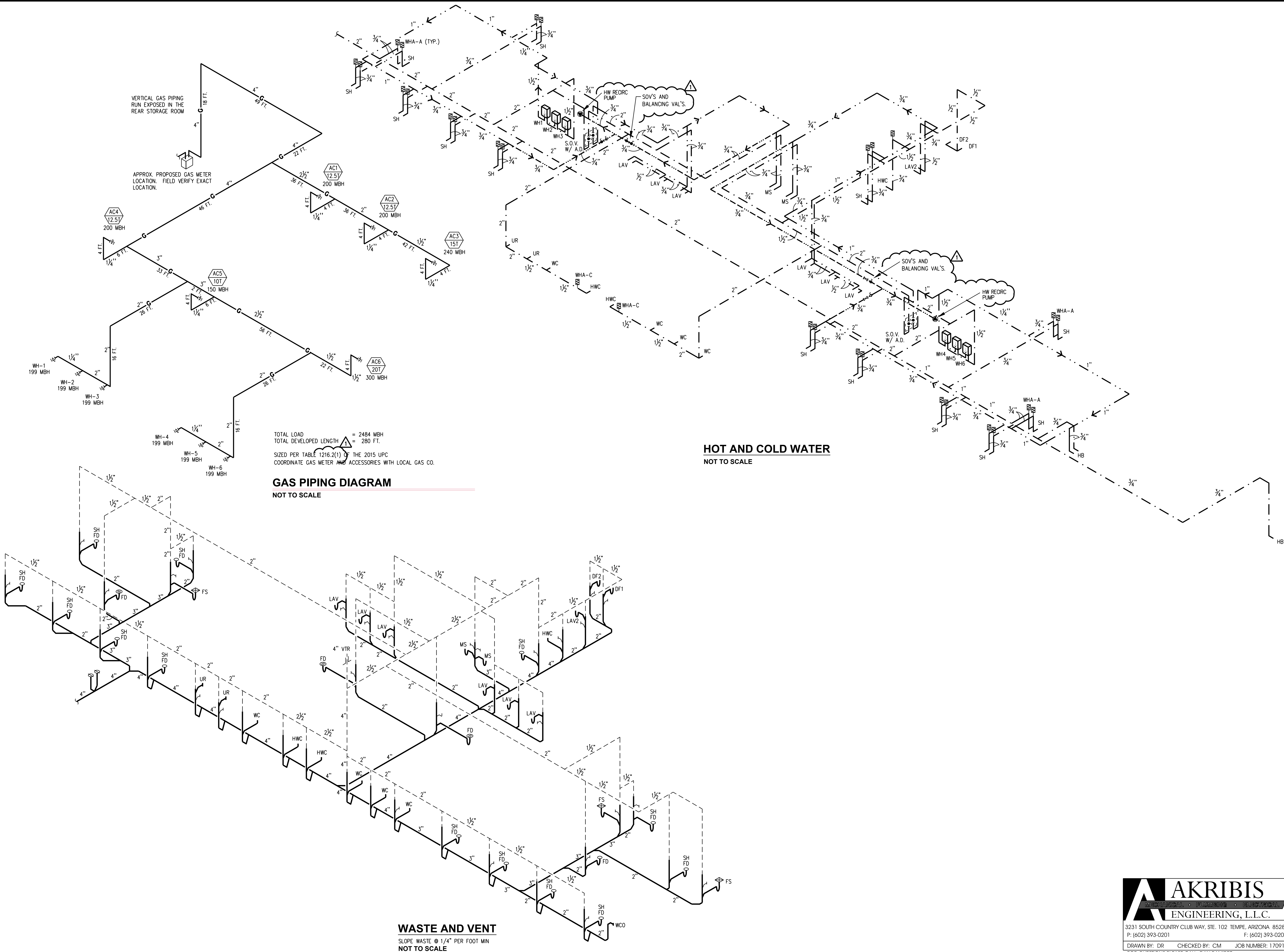
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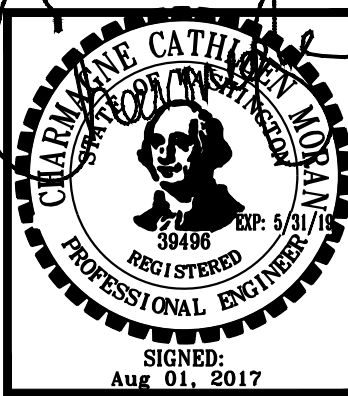
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P: (602) 393-0201 F: (602) 393-0202  
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19516 STATE ROUTE 410E  
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MICHAEL J. PILKO, ARCHITECT  
860 FIRST AVE, SUITE 9A  
KING OF PRUSSIA, PA 19406  
484-928-0650



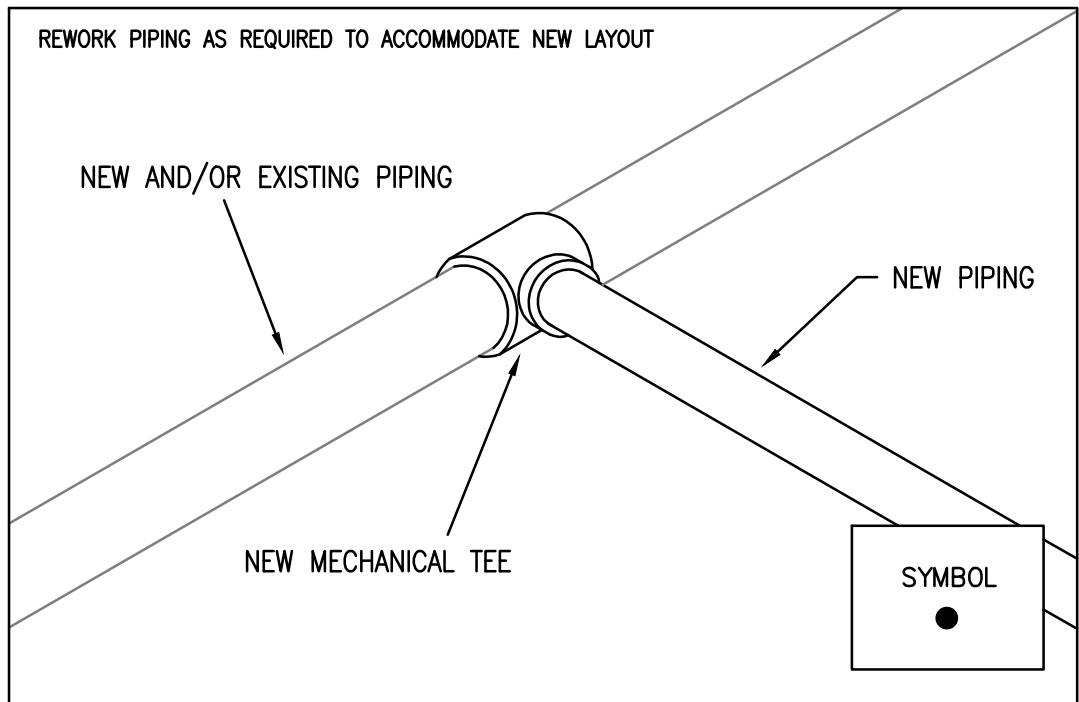
**RHJ ASSOCIATES, P.C.**  
PROJECT MANAGEMENT  
999 1ST AVE, SUITE 9A  
KING OF PRUSSIA, PA 19406  
610 337 4555  
www.rhjassoc.com

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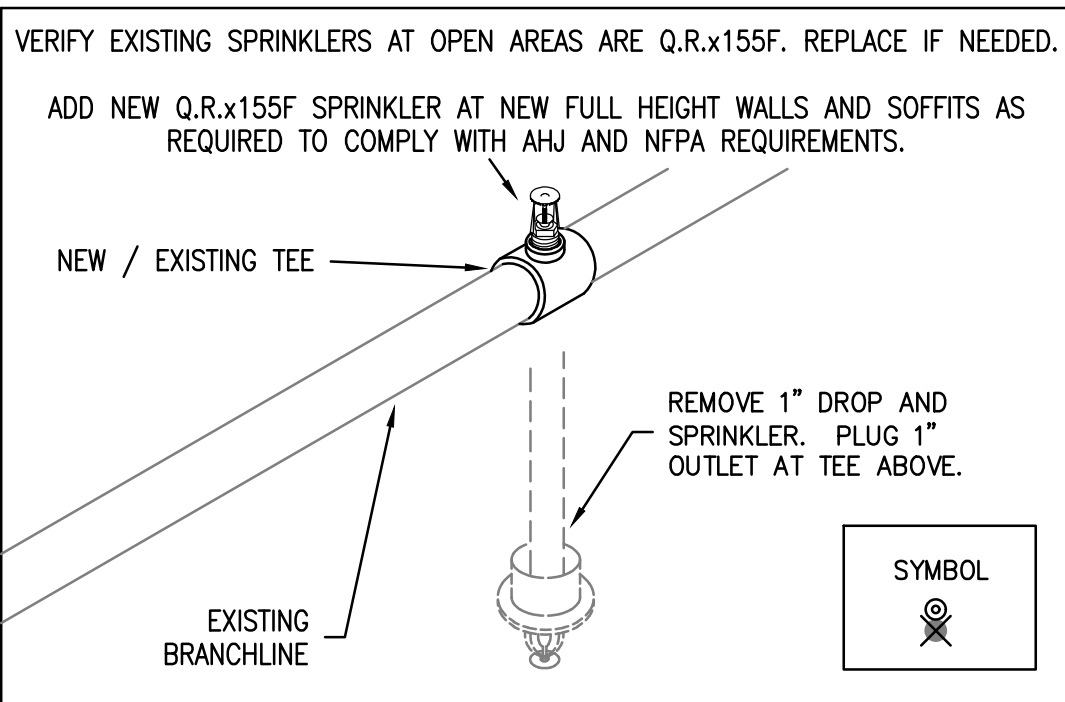
PLUMBING PLAN  
- AIR & VACUUM  
**P1.3**  
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MECHANICAL TEE INSTALLATION DETAIL  
N.T.S.



UPRIGHT INSTALLATION DETAIL  
N.T.S.

## SCOPE OF WORK / HAZARD ANALYSIS

TOTAL PROJECT AREA: + - 22,116 SQ FT

THIS WET PIPE FIRE SPRINKLER SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE CONDITIONS SET FORTH BY THE OWNER AND SHALL COMPLY WITH THE MINIMUM BONNEY LAKE FIRE CODE REQUIREMENTS. FIRE SPRINKLER CONTRACTOR POINT OF CONNECTION TO BE AT EXISTING AND OPERATIONAL WET PIPE FIRE SPRINKLER SYSTEM.

ADOPTED CODE: 2015 IFC WITH LOCAL AMENDMENTS  
N.F.P.A. EDITION: NFPA 13

OCCUPANT USE: ASSEMBLY SPACE.  
EXISTING SYSTEM DENSITY: .20/1500 (ORDINARY HAZARD GROUP II).

EXISTING STANDARD SPRAY PENDENT SPRINKLER SPACING:  
ORDINARY HAZARD AREAS (130 SF MAX.)

NEW STANDARD SPRAY PENDENT SPRINKLER SPACING:  
ORDINARY HAZARD AREAS MAY BE SPACED TO 130 SF MAX. (UTILITY ROOMS, JANITOR ROOMS).  
LIGHT HAZARD/SMOOTH CEILING AREAS MAY BE SPACED TO 225 SF MAX. (WORKOUT AREAS. LOCKER ROOMS AND TANNING)

CONSTRUCTION: 3-B NON-COMBUSTIBLE/COMBUSTIBLE, UNPROTECTED  
OCCUPANCY: A-3 ASSEMBLY (GYMNASIUM)  
A NEW FLOW TEST SHALL BE OBTAINED BY SPRINKLER SUBCONTRACTOR (IF REQUIRED BY A.H.J.) WHEN ADDING BRANCH LINES, PERFORMING HYDRAULIC CALCULATIONS FOR ANY REASON OR IF A DETERIORATION OF THE WATER SUPPLY HAS BEEN OBSERVED DURING SURVEYS, SYSTEM SHUT DOWNS OR INSPECTIONS.

NEW LISTED QUICK RESPONSE SPRINKLER HEADS  
MISC. STORAGE IN STOCK ROOM SHALL NOT EXCEED 10-0 IN HEIGHT.

CONCEPTUAL DRAWINGS, NOT TO BE USED FOR CONSTRUCTION PURPOSES.

FIRE PROTECTION SYMBOLS	
SYMBOL	DESCRIPTION
●	NEW PENDENT SPRINKLER ON 1" DROP TO BRANCH LINE
⊙	NEW 155 f UPRIGHT SPRINKLER ON EXT'G PIPE AT ROOF
⊗	REMOVE EXISTING PENDENT, PLUG 1" OUTLET AT PIPE
1 CO	NEW 1" PIPING (CUT ON JOB)
5 (5)	EXISTING PIPING TO REMAIN REWORK PIPING AS REQUIRED TO ACCOMMODATE NEW LAYOUT
— —	PIPE HANGER LOCATIONS

## GENERAL FIRE SPRINKLER NOTES


- ALL DESIGN, MATERIALS AND INSTALLATION OF THIS FIRE SPRINKLER IMPROVEMENT SHALL COMPLY WITH NFPA 101 AND THE LOCAL FIRE CODE REQUIREMENTS.
- THE SCOPE OF WORK FOR THIS PROJECT IS THE INSTALLATION OF SPRINKLERS AT NEW TENANT SPACE (SEE PLANS).
- ALL NEW PIPING 2-INCH AND SMALLER IN SIZE SHALL BE DYNA-THREAD PIPE WITH BLACK CAST IRON FITTINGS.
- ALL MATERIAL USED IN THE INSTALLATION OF THIS SYSTEM TENANT IMPROVEMENT SHALL BE NEW AND OF CURRENT ISSUE. ALL MATERIAL SHALL BE APPROVED BY UNDERWRITERS LABORATORIES (U.L.) AND BE IN CONFORMANCE WITH THE MOST CURRENT ISSUE OF NFPA 101 AND THE AUTHORITY HAVING JURISDICTION.
- ALL SYSTEM PIPING SHALL BE HYDROSTATICALLY TESTED AS REQUIRED BY AHJ.
- ONE SET OF **STAMPED APPROVED DRAWINGS** SHALL BE MAINTAINED ON SITE AND MADE AVAILABLE AT THE REQUEST OF THE INSPECTOR.
- ALL NEW SPRINKLERS SHALL BE QUICK RESPONSE.
- SPRINKLER CONTRACTOR SHALL VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS PRIOR TO COMMENCING ANY FABRICATION OR INSTALLATION. SPRINKLER CONTRACTOR SHALL VERIFY ACTUAL FIELD CONDITIONS TO ENSURE SPRINKLER COVERAGE IS COMPLETE AND PER CODE REQUIREMENTS. SPRINKLER CONTRACTOR SHALL FIELD FIT OR ADJUST PIPING AND/OR SPRINKLER HEADS WHERE REQUIRED TO MEET FIELD CONDITIONS. SPRINKLER CONTRACTOR IS RESPONSIBLE FOR DETECTING OMISSIONS BY THE ENGINEER OR ANY CHANGES MADE IN THE ARCHITECTURAL DRAWINGS.
- THE INSTALLING CONTRACTOR IS RESPONSIBLE TO REVIEW ALL PLANS AND BECOME FAMILIAR WITH AND ACCOUNT FOR ANY COORDINATION ISSUES, INCLUDING PIPE ELEVATIONS PRIOR TO SUBMITTING A BID. CHANGE ORDERS WILL NOT BE ACCEPTED FOR COORDINATION REVISIONS IN ORDER TO INSURE PROPER INSTALLATION OR MEET ANY AND ALL NATIONAL AND LOCAL CODE REQUIREMENTS.
- THE FIRE SPRINKLER CONTRACTOR SHALL VISIT THE SITE AND BECOME KNOWLEDGEABLE OF THE EXISTING CONDITIONS THEREIN. SHOULD CONDITIONS BE FOUND, WHICH THE CONTRACTOR BELIEVES WILL IMPEDE HIS WORK, THEN SUCH CONDITIONS MUST BE REPORTED IMMEDIATELY TO THE OWNER. FAILURE TO DO SO SHALL CONSTITUTE NOTICE THAT HE IS FULLY AWARE AND SATISFIED OF THE EXISTING CONDITIONS AND THAT WORK SHALL BE PERFORMED WITH NO ADDITIONAL IMPACT ON COST OR SCHEDULE.
- ELEVATIONS AND DIMENSIONS SHOWN ON THESE DRAWINGS ARE NOMINAL. ACTUAL MEASUREMENTS MAY VARY AND SHALL BE DETERMINED BY THE INSTALLING CONTRACTOR.
- NEW PIPING TO TIE INTO EXISTING AND OPERATIONAL WET PIPE FIRE SPRINKLER SYSTEM. NEW PIPING AND SPRINKLER HEADS SHALL MATCH EXISTING SYSTEM DESIGN CRITERIA.

## DEFINITIONS

WORKING DRAWINGS	DRAWINGS DEVELOPED BY THE ENGINEERING FIRM WHICH REPRESENT THE DESIGN CONCEPTS AND RESTRICTIONS OF THE FIRE SPRINKLER SYSTEM.
SHOP DRAWINGS	DRAWINGS DEVELOPED BY THE CONTRACTOR, BASED UPON THE DESIGN CONCEPTS, WHICH DETAIL THE LAYOUT, COORDINATION AND INSTALLATION OF THE SPRINKLER SYSTEM. THIS INCLUDES SUPPLEMENTAL HYDRAULIC CALCULATIONS IF NECESSARY.
AS BUILT DRAWINGS	UPDATED SHOP DRAWINGS, MAINTAINED BY THE CONTRACTOR, WHICH REPRESENT ACTUAL INSTALLATION.

EXAMINE THE CONTRACT DRAWINGS AND ALL AVAILABLE INFORMATION CONCERNING EXISTING INSTALLATION, STRUCTURE, AND LOCAL CONDITIONS. VISIT THE SITE TO UNDERSTAND THE NATURE AND SCOPE OF ALL WORK TO BE PERFORMED AND VERIFY EXISTING CONDITIONS. THE SUBMISSION OF A BID WILL BE TAKEN AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE AND THAT ALL EXISTING CONDITIONS HAVE BEEN CONSIDERED. NOTIFY ENGINEER IF ANY DISCREPANCIES OR CONFLICTS ARE OBSERVED.

THE FIRE SPRINKLER CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND APPLY AND PAY FOR SEPARATE PERMITS UNDER THE REQUIREMENTS SET FORTH IN THESE CONCEPT DRAWINGS. THE SHOP DRAWINGS SHALL INCLUDE HYDRAULIC CALCULATIONS (IF REQUIRED), PIPE SIZES, PIPE LOCATIONS, SPRINKLER HEADS MFG, PIPE HANGING DETAILS, ARM OVER DETAILS AND ANY OTHER INFORMATION PERTINENT TO A COMPLETE FIRE SPRINKLER INSTALLATION IN ACCORDANCE WITH ALL LOCAL, OWNER AND NFPA REQUIREMENTS.



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ENGINEERING, L.L.C.

3231 SOUTH COUNTRY CLUB WAY, STE. 102 TEMPE, ARIZONA 85282  
P: (602) 393-0201 F: (602) 393-0202

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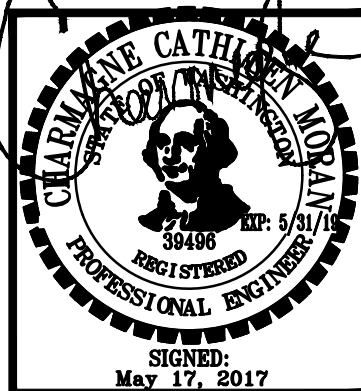
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**PLANET FITNESS**

19516 STATE ROUTE 410E  
BONNEY LAKE, WASHINGTON 98391

MICHAEL J. PILKO, ARCHITECT

860 FIRST AVE, SUITE 9A  
KING OF PRUSSIA, PA 19406  
484-928-0650



**RHJ ASSOCIATES, P.C.**  
PROJECT MANAGEMENT

860 1ST AVE, SUITE 9A  
KING OF PRUSSIA, PA 19408  
610 337 4666  
www.rhjassoc.com

DATE: 5/19/2017

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FIRE SPRINKLER  
DETAILS AND NOTES

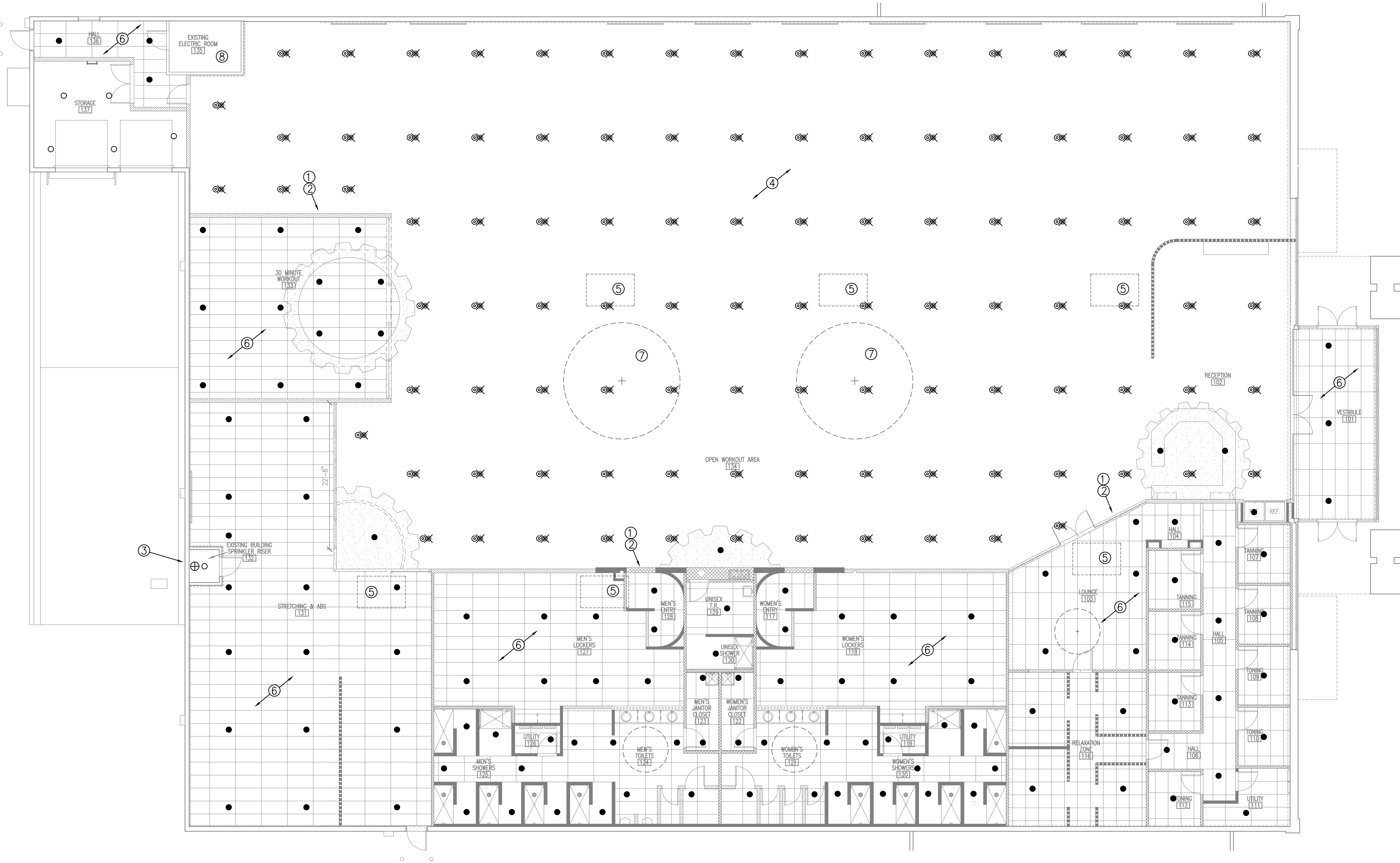
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1. INSTALL NEW SPRINKLERS AT NEW FULL HEIGHT WALLS AND SOFFITS AS REQUIRED (TYPICAL BOTH SIDES OF WALL)
2. VERIFY SPRINKLERS NO CLOSER THAN 4" MIN. FROM NEW WALLS AND SOFFITS. RELOCATE IF NECESSARY (TYP.)
3. SHUT DOWN SPRINKLER SYSTEM IN ACCORDANCE WITH OWNER SHUT DOWN PROCEDURES PRIOR TO WORK EACH DAY. PLUG/CAP UNFINISHED WORK, RECHARGE SPRINKLER SYSTEM AT THE END OF EACH WORK DAY.
4. VERIFY AND REPLACE EXT'G 200F UPRIGHT WITH NEW 155F Q.R. UPRIGHT SPRINKLERS AT EXISTING OUTLET ON TEE AT EXISTING BRANCH LINE AT ROOF IN LIGHT HAZARD AREAS.
5. RELOCATE SPRINKLER PIPING AROUND NEW RTU EQUIPMENT IF REQUIRED.
6. COMBUSTIBLE CONSTRUCTION PRESENT ABOVE CEILINGS. ADD NEW QR 200F UPRIGHT SPRINKLERS (ABOVE CEILINGS) AT NEW WALLS/ OBSTRUCTIONS AS REQUIRED.
7. 11.1.7\* High Volume Low Speed (HVS) Fans.  
The installation of HVS fans in buildings equipped with sprinklers, including ESFR sprinklers, shall comply with the following:  
(1) The maximum fan diameter shall be 24 ft (7.3 m).  
(2) The HVS fan shall be centered approximately between four adjacent sprinklers.  
(3) The vertical clearance from the HVS fan to sprinkler deflector shall be a minimum of 3 ft (0.9 m).  
(4) All HVS fans shall be interlocked to shut down immediately upon receiving a waterflow signal from the alarm
8. NO FIRE SPRINKLER WORK THIS AREA. EXISTING FIRE SPRINKLERS AND COMPONENTS TO REMAIN



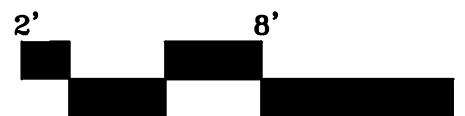
NFPA 13  
Sprinklers shall be permitted to be spaced on opposite sides of obstructions not exceeding 4 ft. in width, provided the distance from the centerline of the obstruction to the sprinkler does not exceed one-half the allowable distance permitted between sprinklers.

NFPA 13  
Continuous or noncontinuous obstructions less than or equal to 18 in. (457 mm) below the sprinkler deflector that prevent the pattern from fully developing shall comply with 8.5.5.2.

EXPOSED DUCTWORK INSTALLED 18"  
BELOW SPRINKLER DEFLECTOR (TYP)

### FIRE SPRINKLER PLAN

SCALE: 1/8" = 1'-0"



VERIFY CEILING HEIGHTS  
WITH GENERAL CONTRACTOR  
BEFORE CUTTING DROPS  
(TYP)

### SPRINKLER LEGEND

	SYMBOL	DESCRIPTION	ORIF.	THREAD	K	TEMP	FINISH	ESCH.	QUAN.
NEW	●	QUICK RESPONSE PENDENT	1/2"	1/2"	5.6	155	CHR	REC	± 116
NEW	⊙	QUICK RESPONSE UPRIGHT	1/2"	1/2"	5.6	155	BR	N/A	± TBD
NEW	○	QUICK RESPONSE UPRIGHT	1/2"	1/2"	5.6	200	BR	N/A	± TBD
(EXIST.)	○	Q.R. SSU ON PIPE	1/2"	1/2"	5.6	TBD	BR		REF.
(EXIST.)	⊙	Q.R. SSU ABOVE (E) CEILING	1/2"	1/2"	5.6	TBD	BR	REF.	
								N/A	

NOTE: ALL SPRINKLER AND ESCUTCHEON FINISHES SHALL BE FACTORY APPLIED TOTAL: TBD  
SPRINKLERS SHALL BE LOCATED A MINIMUM OF 4" FROM A WALL

### INSTALLATION NOTES

1. ALL NEW SUSPENDED CEILINGS THROUGHOUT BUILDING ARE SMOOTH, FLAT AND HORIZONTAL. (SEE PLANS).
2. MINIMUM DISTANCE BETWEEN SPRINKLERS IN SAME ROOM IS 6 FEET.
3. ELEVATIONS AND DIMENSIONS SHOWN ON THESE DRAWINGS ARE NOMINAL. ACTUAL MEASUREMENTS MAY VARY AND SHALL BE MODIFIED AS REQUIRED FOR FIELD CONDITIONS.

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MECHANICAL • PLUMBING • ELECTRICAL  
ENGINEERING, L.L.C.

3231 SOUTH COUNTRY CLUB WAY, STE. 102 TEMPE, ARIZONA 85282  
P: (602) 393-0201 F: (602) 393-0202  
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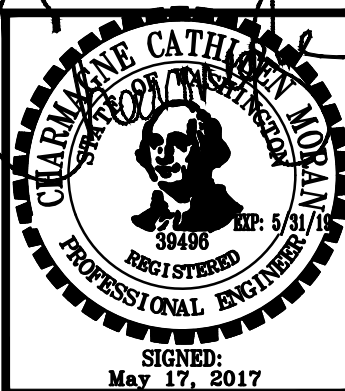
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## PLANET FITNESS

19516 STATE ROUTE 410E  
BONNEY LAKE, WASHINGTON 98391

MICHAEL J. PILKO, ARCHITECT

860 FIRST AVE, SUITE 9A  
KING OF PRUSSIA, PA 19406  
484-928-0650



**RHJ ASSOCIATES, P.C.**  
PROJECT MANAGEMENT

860 1ST AVE, SUITE 9A  
KING OF PRUSSIA, PA 19406  
610 337 4555  
www.rhjassoc.com

DATE: 5/19/2017

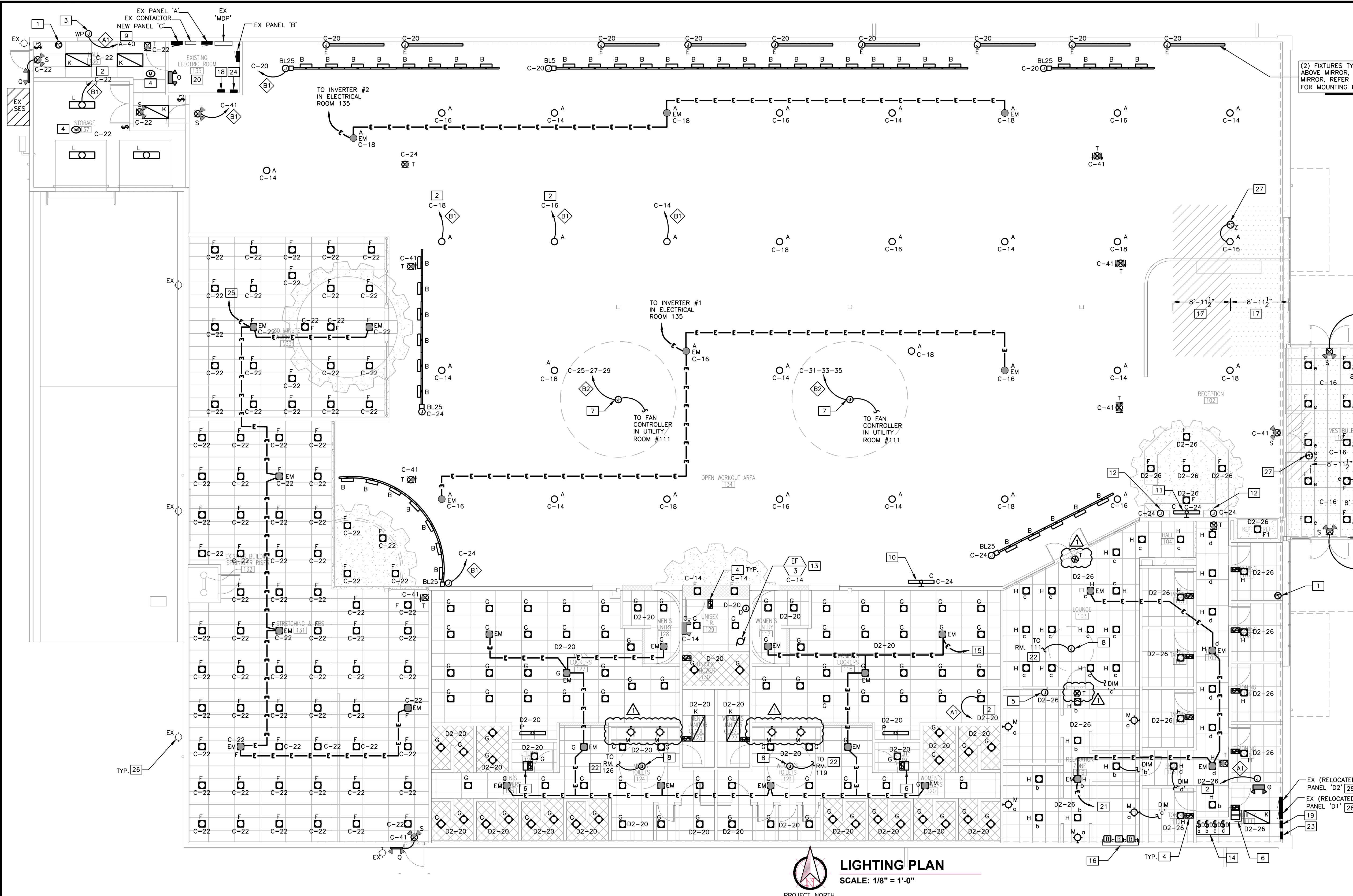
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FIRE SPRINKLER PLAN

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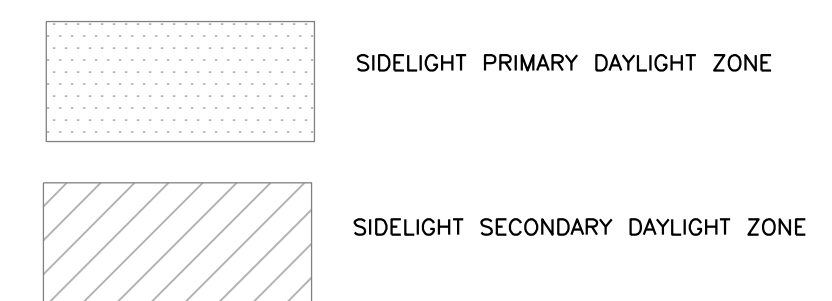


(2) FIXTURES TYPE 'E': ONE FIXTURE ABOVE MIRROR, ONE FIXTURE BELOW MIRROR. REFER TO ARCHITECTURAL DETAILS FOR MOUNTING HEIGHTS (TYP.)

**IECC - CONTROLS:**  
PLANET FITNESS IS A 24/7 OPERATION, THEREFORE 2015 WA STATE ENERGY CODE LIGHTING CONTROLS ARE NOT REQUIRED IN THE DESIGN.

**LIGHTING FIXTURE SCHEDULE & 2015 WA STATE ENERGY CODE COMPLIANCE REPORT PROVIDED ON SHEET E2.2.**

**DAYLIGHT ZONE LEGEND**



**SENSOR LEGEND**

- ENERLITES - DWOS-J (WALL MOUNT - STANDARD ROOM - LINE VOLTAGE)
- INTERMATIC - K4521 (PHOTOCELL - THERMAL-TYPE - LOCKING-TYPE MOUNTING - 120V)
- ENERLITES - MPC-50H (CEILING MOUNT - HIGH BAY - LINE VOLTAGE)
- SENSOR SWITCH: CM ADC VLP
- INTERIOR PHOTOCELL - AUTOMATIC DIMMING - LINE VOLTAGE

**FEEDER SCHEDULE**

NOTE: NOT ALL MAY APPLY TO THIS SHEET.

ID	MAX. AMP	FEEDER SIZE
A1	20A	2#12 & 1#12GRD, 1/2"C
A2	20A	3#12 & 1#12GRD, 1/2"C
A3	20A	4#12 & 1#12GRD, 1/2"C
B1	30A	2#10 & 1#10GRD, 1/2"C
B2	30A	3#10 & 1#10GRD, 1/2"C
B3	30A	4#10 & 1#10GRD, 1/2"C

**ELECTRICAL SHEET INDEX**

- E2.1 - LIGHTING PLAN
- E2.2 - LIGHTING DETAILS
- E3.1 - POWER PLAN
- E3.2 - MECH/POWER PLAN
- E4.1 - FIRE ALARM PLAN
- E5.1 - ELECTRICAL DETAILS
- E5.2 - ELECTRICAL DETAILS

**KEY NOTES**

- PROVIDE PHOTOCELL FOR TENANT SIGN CONTROL. MOUNT ON ROOF FACING NORTH PER MANUFACTURER'S RECOMMENDATION. REFER TO SENSOR LEGEND ON THIS SHEET FOR ADDITIONAL INFORMATION.
- PROVIDE NON-SWITCHED LEG OF AREA LIGHTING CIRCUIT FOR CIRCUITING EMERGENCY / EXIT LIGHT(S).
- PROVIDE J-BOX ON FACADE FOR OWNER SIGN. FIELD VERIFY INSTALLATION LOCATION AND MOUNTING HEIGHT WITH OWNER'S SIGN VENDOR.
- PROVIDE VACANCY SENSOR LIGHTING CONTROL. PROGRAM FOR VACANCY SENSOR (MANUAL ON, AUTO OFF). REFER TO SENSOR LEGEND ON THIS SHEET FOR ADDITIONAL INFORMATION.
- PROVIDE J-BOX ABOVE CEILING AND 120V CIRCUIT FOR STRIP RIBBON LED LIGHT SIGN BY OTHERS.
- CEILING FAN RATED JUNCTION BOX AND SUPPORTS FOR "BIG ASS" FAN PER NEC 314.27(C) & 422.18. COORDINATE ACTUAL WEIGHT WITH MECHANICAL CONTRACTOR. CEILING FAN TO BE INTERLOCKED WITH HVAC UNITS. COORDINATE REQUIREMENTS WITH FIRE ALARM CONTRACTOR.
- PROVIDE CEILING FAN RATED JUNCTION BOX AND SUPPORTS NEC 314.27(C) & 422.18. COORDINATE ACTUAL WEIGHT WITH MECHANICAL CONTRACTOR.
- ROUTE FEEDER VIA ROOF MOUNT PHOTOCELL.
- PROVIDE (4) LIGHTING FIXTURE TYPE 'C' FOR ILLUMINATED SIGN BOX. SEE ARCHITECTURAL DRAWINGS FOR MOUNTING HEIGHTS.
- PROVIDE (3) LIGHTING FIXTURES TYPE 'C' FOR ILLUMINATED SIGN BOX. SEE ARCHITECTURAL DRAWINGS FOR MOUNTING HEIGHTS.
- PROVIDE J-BOX AND 120V CIRCUIT FOR SHELVING WITH LIT MOUNTING RODS. MOUNT J-BOX IN CABINET BELOW.
- REFER TO HVAC/PLUMBING EQUIPMENT SCHEDULE AND GENERAL NOTE #1 FOR ADDITIONAL INFORMATION.
- PROVIDE SWITCHBANK WITH (4) DIMMERS ('a','b','c','d'). COORDINATE LOCATION WITH TENANT. DIMMERS TO BE COMPATIBLE WITH LED FIXTURE DIMMABLE DRIVER. PROVIDE LAMINATE NAMEPLATE AS SHOWN:
  - DIM 'a' - WALL SCONCES - RELAXATION
  - DIM 'b' - RECESSED CANS - RELAXATION
  - DIM 'c' - LOUNGE
  - DIM 'd' - LOUNGE HALL
- CONNECT EMERGENCY LIGHTING FIXTURES IN LOCKER ROOMS TO INVERTER #4 IN UTILITY CLOSET 111.
- PROVIDE BODINE CAT. #BLCD-20B EMERGENCY LIGHTING CONTROL UNITS FOR CONTROLLING EMERGENCY LIGHTS. MOUNT ABOVE ACCESSIBLE CEILING SPACE PER MANUFACTURERS INSTRUCTION. REFER TO LIGHTING CONTROL DIAGRAMS SHEET E2.2 FOR ADDITIONAL INFORMATION.
- PRIMARY/SECONDARY SIDELIGHT DAYLIGHT ZONESS TO COMPLY WITH REQUIREMENTS OF WASHINGTON STATE ENERGY CODE, SECTION C405.2.4.2.
- PROVIDE (2) WALL MOUNT EMERGI-LITE 720W INVERTERS #1,#2. MODEL #EMU1720, FOR OPEN WORKOUT EMERGENCY LIGHTS. STACK INVERTERS ONE ABOVE ANOTHER. FEED INVERTERS #1 FROM LIGHTING CIRCUIT C-16. FEED INVERTER #2 FROM LIGHTING CIRCUIT C-18. REFER TO INVERTER WIRING DIAGRAM ON SHEET E2.2 FOR ADDITIONAL INFORMATION.
- PROVIDE WALL MOUNT EMERGI-LITE 125W INVERTER #3. MODEL #EMU1125, FOR RELAXATION, LOUNGE & HALL 105 EMERGENCY LIGHTS. FEED INVERTER #3 FROM CIRCUIT D2-26. REFER TO RELAXATION/LOUNGE/HALL AREA LIGHTING CONTROL DIAGRAM ON SHEET E2.2 FOR ADDITIONAL INFORMATION.
- EXISTING LIGHTING FIXTURE AND LIGHTING CONTROL IN ROOM TO REMAIN.
- CONNECT EMERGENCY LIGHTING FIXTURES IN RELAXATION, LOUNGE & HALL 105 TO INVERTER #3 IN UTILITY CLOSET 111.
- TO FAN CONTROL IN UTILITY ROOM.
- PROVIDE (1) WALL MOUNT EMERGI-LITE 250W INVERTER #4. MODEL #EMU250 FOR LOCKER ROOMS EMERGENCY LIGHTS. FEED INVERTER #4 FROM LIGHTING CIRCUIT D2-20. REFER TO INVERTER WIRING DIAGRAM ON SHEET E2.2 FOR ADDITIONAL INFORMATION.
- PROVIDE WALL MOUNT EMERGI-LITE 125W INVERTER #5 MODEL #EMU1125, FOR 30-MINUTE WORKOUT AND STRETCH & ABS AREAS EMERGENCY LIGHTS. FEED INVERTER #5 FROM CIRCUIT C-22. REFER TO INVERTER WIRING DIAGRAM ON SHEET E2.2 FOR ADDITIONAL INFORMATION.
- CONNECT EMERGENCY LIGHTING FIXTURES IN 30-MINUTE WORKOUT AND STRETCH & ABS AREAS TO INVERTER #5 IN ELECTRICAL ROOM 135.
- CLEAN AND RE-LAMP EXISTING LIGHTING FIXTURES. REPLACE NON-OPERABLE BALLASTS AND BROKEN LENSES. RE-CIRCUIT IF NECESSARY.
- INTERIOR PHOTOCELL TO BE MOUNTED SUCH THAT IT IS ACCESSED FOR CALIBRATION AS REQUIRED BY WA ENERGY CODE.
- EXISTING PANEL TO BE SHIFTED AND REMOUNTED IF IT'S CURRENT MOUNTING LOCATION INTERFERES WITH NEW PARTITION WALL. RECONNECT BRANCH CIRCUITS IF NECESSARY. SEE ONE LINE DIAGRAM FOR FEEDER REWORK INFORMATION.

PROPOSED RENOVATION FOR:

# PLANET FITNESS

195116 STATE ROUTE 410E  
BONNEY LAKE, WASHINGTON 98391

MICHAEL PILKO, ARCHITECT

860 FIRST AVE, SUITE 9A  
KING OF PRUSSIA, PA 19406  
484-928-0050

**RHJ ASSOCIATES, P.C.**  
PROJECT MANAGEMENT

860 1ST AVE, SUITE 9A  
KING OF PRUSSIA, PA 19406  
610 337-4666  
www.rhjassociates.com

DATE: 5/19/2017

REVISIONS

1	PERMIT COMMENTS	8/01/2017
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LIGHTING PLAN

# E2.1

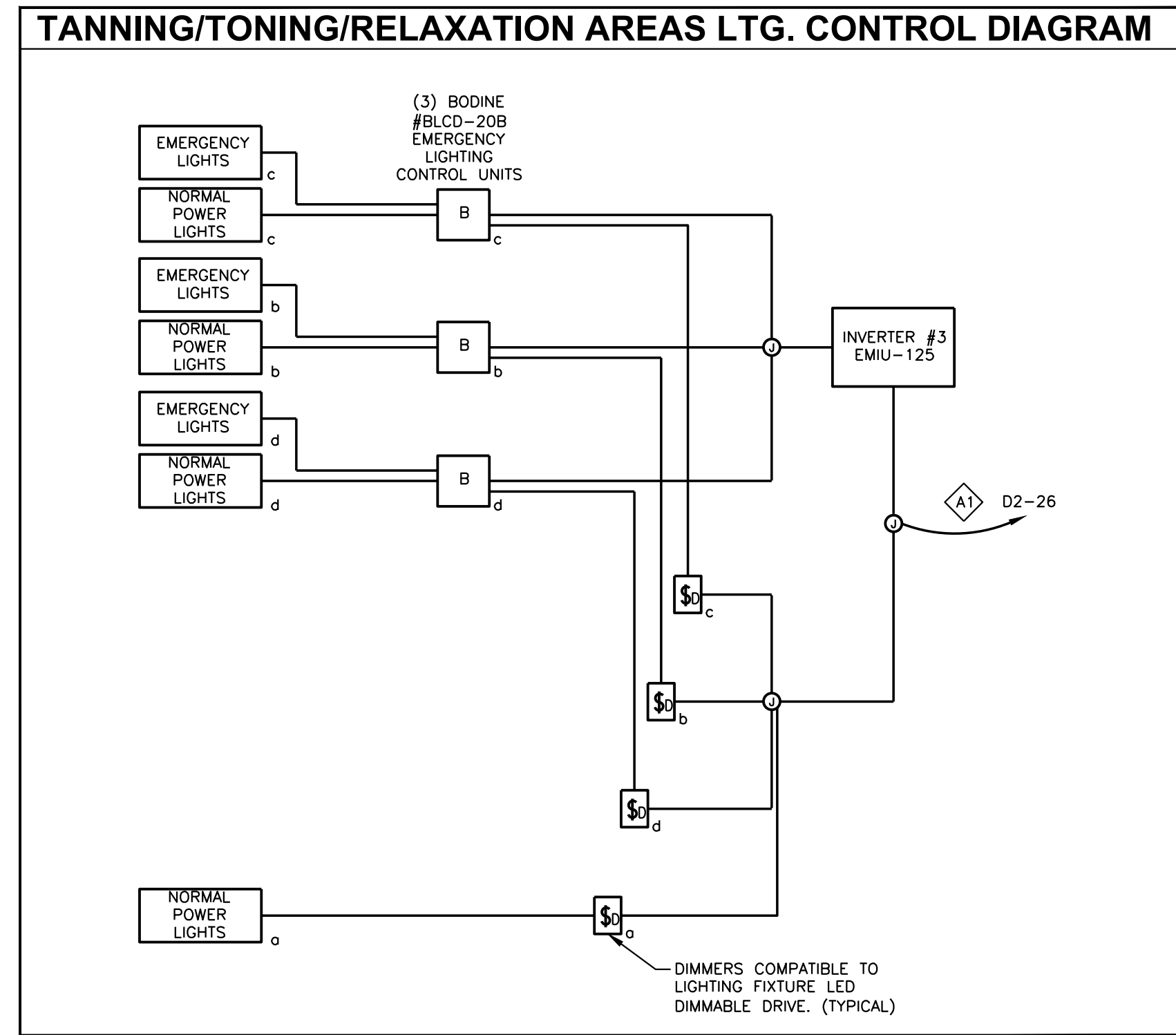
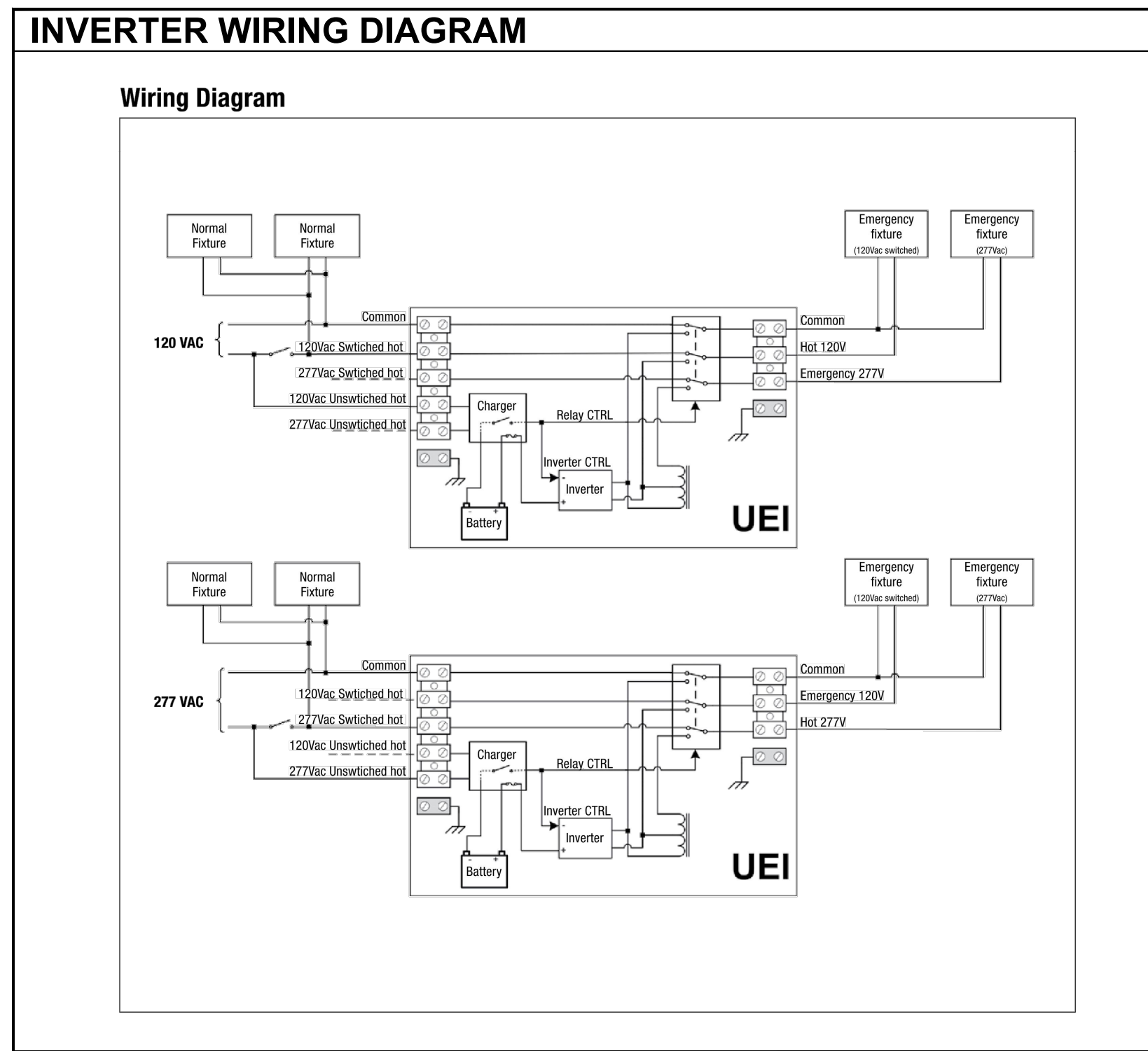
2017-1015



<h1 style="margin: 0;">Lighting Summary</h1> <p style="margin: 0; font-size: 0.8em;">2019 Washington State Energy Code Compliance Forms for Commercial Buildings including R2, R3, R4 over 3 stories and all R1</p>			<h1 style="margin: 0;">LGT-SUM</h1> <p style="margin: 0; font-size: 0.8em;">Revised August 2016</p>																																	
<b>Project Info</b>  <b>Compliance forms do not require a password to use.</b> <i>Instructional and calculating cells are write-protected.</i>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;"><b>Project Title:</b> Planet Fitness - Boney Lake, WA</td> <td style="width: 40%;"><b>Date:</b> 8/1/2017</td> </tr> <tr> <td colspan="2"><b>Applicant Information. Provide contact information for individual who can respond to inquiries about compliance form information provided.</b></td> </tr> <tr> <td><b>Company Name:</b> Planet Fitness</td> <td rowspan="3"><b>For Building Department Use</b></td> </tr> <tr> <td><b>Company Address:</b> 19516-19520 State Road 410E, Boney Lake WA 98391</td> </tr> <tr> <td><b>Applicant Name:</b> Michael J. Pilko</td> </tr> <tr> <td><b>Applicant Phone:</b> 484-928-0650</td> <td></td> </tr> <tr> <td><b>Applicant Email:</b> <a href="mailto:dergo@square.biz">dergo@square.biz</a></td> <td></td> </tr> </table>	<b>Project Title:</b> Planet Fitness - Boney Lake, WA	<b>Date:</b> 8/1/2017	<b>Applicant Information. Provide contact information for individual who can respond to inquiries about compliance form information provided.</b>		<b>Company Name:</b> Planet Fitness	<b>For Building Department Use</b>	<b>Company Address:</b> 19516-19520 State Road 410E, Boney Lake WA 98391	<b>Applicant Name:</b> Michael J. Pilko	<b>Applicant Phone:</b> 484-928-0650		<b>Applicant Email:</b> <a href="mailto:dergo@square.biz">dergo@square.biz</a>																								
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<b>Building Additions</b>  <i>Refer to Section C502.2.6 for additional requirements.</i> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Compliance Method</th> <th style="width: 20%;">Interior lighting</th> <th style="width: 20%;">Exterior lighting</th> </tr> </thead> <tbody> <tr> <td>Lighting systems in addition area comply with all applicable provisions as a stand alone new construction project</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Lighting systems in addition are combined with existing building lighting systems to demonstrate compliance</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </tbody> </table> <p><b>Addition is combined with existing:</b>  <i>For interior lighting projects, include new + existing interior lighting fixture wattage in Proposed Lighting Wattage table in LGT-INT-BLD or LGT-INT-SPACE form.</i>  <i>For exterior lighting projects, include new + existing exterior lighting fixture wattage in Proposed Tradable and Proposed Non-Tradable Lighting Wattage tables in LGT-EXT form.</i></p>					Compliance Method	Interior lighting	Exterior lighting	Lighting systems in addition area comply with all applicable provisions as a stand alone new construction project	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lighting systems in addition are combined with existing building lighting systems to demonstrate compliance	<input type="checkbox"/>	<input type="checkbox"/>																							
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<b>Interior and Exterior Lighting Alterations</b>  <i>Select all Lighting Power and Lighting Control elements that apply to the scope of the retrofit project. If project includes a combination of spaces where less than 50% of the existing fixtures are replaced in some spaces, and 50% or more of the fixtures are replaced in others, then provide separate lighting power compliance forms for the two retrofit conditions. Spaces undergoing the same type of retrofit may be combined into one lighting power compliance form.</i>  <i>Refer to Section C503.6 for additional requirements.</i> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Lighting Power</th> <th style="width: 15%;">Interior lighting</th> <th style="width: 15%;">Parking garage</th> <th style="width: 40%;">Exterior lighting</th> </tr> </thead> <tbody> <tr> <td>50% or more of existing are replaced</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Less than 50% of existing are replaced</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Lamp and/or ballast replacement only – existing total wattage not increased</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </tbody> </table> <p><b>50% or more replaced</b> - Total lighting power of new + existing-to-remain fixtures shall comply with total lighting power in Tables C405.4.2 and C405.5.2. Include new + existing-to-remain fixtures in Proposed Lighting Wattage table in LGT-INT-BLD, LGT-INT-SPACE or LGT-EXT form.  <b>Less than 50% replaced</b> - Total lighting power of new + existing-to-remain fixtures shall not exceed the total lighting power prior to alteration. Include new + existing-to-remain fixtures in the Proposed Lighting Wattage table in LGT-INT-BLD, LGT-INT-SPACE or LGT-EXT form.  <b>50% threshold</b> applies to number of luminaires for interior spaces and parking garages, and total installed wattage for exterior luminaires.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Lighting Controls</th> <th style="width: 15%;">Interior lighting</th> <th style="width: 15%;">Parking garage</th> <th style="width: 40%;">Exterior lighting</th> </tr> </thead> <tbody> <tr> <td>New wiring installed to serve added fixtures and/or fixtures relocated to new circuit(s)</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>New or moved lighting panel</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Interior space is reconfigured - luminaires unchanged or relocated only</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </tbody> </table> <p><input type="checkbox"/> <b>No changes are being made to the interior or exterior lighting systems and existing space uses and configuration are not changed.</b></p>					Lighting Power	Interior lighting	Parking garage	Exterior lighting	50% or more of existing are replaced	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Less than 50% of existing are replaced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Lamp and/or ballast replacement only – existing total wattage not increased	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Lighting Controls	Interior lighting	Parking garage	Exterior lighting	New wiring installed to serve added fixtures and/or fixtures relocated to new circuit(s)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	New or moved lighting panel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Interior space is reconfigured - luminaires unchanged or relocated only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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<b>Change of Space Use</b>  <input type="checkbox"/> Existing interior lighting systems in areas under-going a change in space use are upgraded to comply with LPAs for the new space types per Tables C405.4.2(1) or C405.4.2(2). <i>Identify interior spaces requiring LPD upgrade to the current Code in Proposed Lighting Wattage table in LGT-INT-BLD or LGT-INT-SPACE form.</i>																																				
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<b>Interior Lighting - Building Area Method</b>				<b>LTG-INT-BLD</b>	
2015 Washington State Energy Code Compliance Forms for Commercial Buildings including R2, R3, R4 over 3 stories and all R1				Revised August 2016	
<b>Project Title:</b>	<b>Planet Fitness - Bonney Lake, WA</b>			<b>Date:</b>	<b>8/1/2017</b>
<b>Calculation Area<sup>NOTE 8</sup></b>	<input type="radio"/> Addition - stand alone <input type="radio"/> Addition + existing <input type="radio"/> Spaces where < 50% of luminaires are replaced <input checked="" type="radio"/> Spaces where ≥ 50% of luminaires are replaced <input type="radio"/>			For Building Department Use	
<b>LPA Calculation Type</b>	<input checked="" type="radio"/> Standard <input type="radio"/> Additional Efficiency Package Option C406.3 Reduced Interior Lighting Power <input type="radio"/> To comply with C406.3, the Proposed LPD shall be 25% lower than the Target LPA. <i>Refer to C406.3 for additional requirements.</i>				
<b>Maximum Allowed Lighting Wattage<sup>NOTE 1</sup></b>					
Building Area	Location (plan #, room #, or ALL)	Area Description	Gross Interior Area in ft <sup>2</sup>	Allowed Watts per ft <sup>2</sup>	Watts Allowed (watts/ft <sup>2</sup> x area)
Exercise Center	ALL	Open Gym, Locker Rooms, Spa	1991.9	0 . 67	13346
			Total		19919
<b>Proposed Lighting Wattage</b>					
Building Area	Location (plan #, room #)	Fixture Description <sup>NOTE 2, 3, 4, 5</sup>	Number of Fixtures	Watts per Fixture <sup>NOTE 6</sup>	Watts Proposed
Exercise Center	Open Workout	Type 'A' - High Bay fixture	33	150	4950
Exercise Center	Open Workout	Type 'B' - Track Light w/ BL25 current limiting device	4	300	1200
Exercise Center	Open Workout	Type 'B' - Track Light w/BL5 current limiting device	3	600	600
Exercise Center	Open Workout	Type 'C' - 4' Strip Light - Light Box	7	28	196
Exercise Center	Restroom	Type 'D' - Mirror Light	7	10	70
Exercise Center	Open Workout	Type 'E' - Tape Light	19	44	792
Exercise Center	Open Workout	Type 'F' - Recessed LED can	106	14	1484
Exercise Center	Restrooms/Lounge	(Relaxation/Tanning/Toning)	144	14	2016
Exercise Center	Janitor	Type 'K' - 2x4 Troffer	6	38	228
Exercise Center	Closed Utility	Type 'L' - 4' LED Linear	4	56	224
Exercise Center	Storage	Type 'M' - LED wall sconce	9	6	54
Exercise Center	Locker Room	Type 'P' - 4' Linear Pendant	2	42	84
<b>Compliance by Building Area<sup>NOTE 7</sup></b>					
Building Area	Warnings	Total Allowed Watts	Total Proposed Watts	Interior Lighting Power Allowance	
Exercise Center		13346	11898	COMPLIES	
		Totals	13346      11898		

LIGHTING FIXTURE SCHEDULE - NO SUBSTITUTION										
TYPE	DESCRIPTION	MANUFACTURER AND CATALOG NUMBER	MOUNTING	LAMP DATA				VOLT	NOTES	
				QUAN.	WATT	TYPE	ORDERING CODE			
			①			②				
A	HIGH BAY LIGHT W/ ACRYLIC REFRACTOR	NATIONAL ENERGY & LIGHT: NEL150-HB-3500UNV-BLACK	P	1	150	LED	3500K-LED	120	1	
B	TRACK MOUNTED LIGHT /TRACK	NATIONAL ENERGY & LIGHT: NEL-LM-35K-2FTR (Black)	TRACK	1	35	LED	LED-3500K	120	2	
BL25	2.5A CURRENT LIMITING DEVICE	NORA LTG.: NT-348B/2.5A	-	-	300	-	-	120		
BL5	5A CURRENT LIMITING DEVICE	NORA LTG.: NT-348B/5A	-	-	600	-	-	120		
C	4' STRIP LIGHT - LIGHT BOX	NATIONAL ENERGY & LIGHT: S128-MV	S	1	28	F	T5	120	3	
E	TAPE LIGHT	NATIONAL ENERGY & LIGHT: NUPT5-3500K	S	1	2.7 W/FT	LED	LED-3500K	120	4	
F	RECESSED CAN BLACK TRIM/BAFFLE - 3500K LED	NATIONAL ENERGY & LIGHT: NEL-6-14W-3500K-BB	R	1	14	LED	3500K -LED	120	7	
F1	RECESSED CAN WHITE TRIM/BAFFLE - 3500K LED	NATIONAL ENERGY & LIGHT: NEL-6-14W-3500K-WW	R	1	14	LED	3500K -LED	120	7	
G	RECESSED CAN WHITE TRIM/BAFFLE - 3000K LED	NATIONAL ENERGY & LIGHT: NEL-6-14W-3000K-WW	R	1	14	LED	3000K -LED	120	7	
H	RECESSED CAN BLACK TRIM CONE - 3000K LED	NATIONAL ENERGY & LIGHT: NEL-6-14W-3000K-BB	R	1	14	LED	3000K -LED	120	7	
K	2x4 RECESSED LED TROFFER	NATIONAL ENERGY & LIGHT: NEL-24/38/835 LED UNV	R	1	38	LED	LED	120		
L	4' STRIP LIGHT - STORAGE	TEXAS FLUORESCENT: C-2-32-MV	CHAIN HUNG	2	32	F	T8	120	3	
M	WALL SCONCE	KICHLER: 5051NI	W	1	6	LED	LED	120	3	
O	EMERGENCY LIGHT	NATIONAL ENERGY & LIGHT: EXL-700-HO-W-1	S	2	3	I	TUNGSTEN LED -3500K	120		
P	4' LED LINEAR LIGHT	PACIFIC ADVANCED LTG: HAC-FIL10-1235F0-B2	P	1	42	LED		120	3	
Q	EXTERIOR EMERG LIGHT	NATIONAL ENERGY & LIGHT: WEXH-910L-2W-G	S	2	2	LED	-	6	5	
S	COMBINATION EXT/EMERGENCY LIGHT	NATIONAL ENERGY & LIGHT: CB-810DR-HORC-W-1	S	2	5.4	LED	LED	120	6	
T	EXT LIGHT	NATIONAL ENERGY & LIGHT: KD-800R-RC-W	S	1	3.5	LED	LED	120	6	
①	MOUNTING R - RECESSED W - WALL S - SURFACED P - PENDANT E - EXTERIOR	②	LAMP TYPE HPS - HIGH PRESSURE SODIUM CF - COMPACT FLUORESCENT FWF - FLUORESCENT WITH FIXTURE	MH - METAL HALIDE F - FLUORESCENT I - INCANDESCENT						
GENERAL NOTES:										
1. PROVIDE BALLAST DISCONNECT PER NEC 410.130(G) FOR LIGHTING FIXTURES.										
2. PROVIDE DIMMERS COMPATIBLE WITH DIMMING FIXTURES.										
NOTES:										
1. LIGHTING FIXTURE SHALL BE UNISTRUT HUNG FROM BOTTOM OF ROOF JOISTS.										
2. PROVIDE NORA LTG. TRACK #NT304B, LENGTH PER PLAN. PROVIDE ALL CONNECTIONS, MOUNTING HARDWARE, CONNECTORS, ETC. FOR A COMPLETE AND OPERABLE SYSTEM. MOUNT TRACK ALONG OF UNDERSIDE OF ROOF JOISTS VIA UNISTRUT AS REQUIRED.										
3. REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR FIXTURE MOUNTING HEIGHT.										
4. PROVIDE HARD WIRED, DRY LOCATION LED DRIVER, POWER CONNECTORS, MOUNTING HARDWARE, ETC. FOR A COMPLETE AND OPERABLE SYSTEM. ALL DRIVERS, TRANSFORMERS, POWER CONNECTORS, ETC. TO BE INSTALLED EITHER ABOVE DROP CEILING OR WITHIN PLANE OF THE ROOF JOISTS IN THE EXPOSED, OPEN CEILING AREAS.										
5. CONNECT EXTERIOR EMERGENCY LIGHTING FIXTURE TO HIGH-OUTPUT BATTERY IN EXIT FIXTURE.										
6. PROVIDE HIGH-OUTPUT BATTERY AND CONNECT TO REMOTE EXTERIOR EMERGENCY FIXTURE.										
7. PROVIDE 3000K LED LAMPS IN FIXTURES LOCATED IN LOCKER, TANNING & TONING ROOMS. PROVIDE 3500K LED LAMPS IN LIGHTING FIXTURES LOCATED IN VESTIBULE, OPEN WORKROOM, GYM AREAS AND RECEPTION AREAS.										
Lighting Fixtures shall be ordered from Planet Fitness's Account.										
Please contact: Jim Schmidt - National Energy & Lighting at 603.759.5561 www.NELCompany.com										
Alternate Vendor: Anush Kazarian - SS Lighting at 860-767-0110x252 or ak@sslighting.com.										
General Contractor shall be responsible to coordinate ALL substitutions between two vendors.										
AKRIBIS PROJECT NO. 17091										



PROPOSED RENOVATION FOR:

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**PLANET FITNESS**

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19516 STATE ROUTE 410E  
BONNEY LAKE, WASHINGTON 98391

MICHAEL J. PILKO, ARCHITECT  
860 FIRST AVE, SUITE 9A  
KING OF PRUSSIA, PA. 19406  
484-928-0650

**RHJ ASSOCIATES, P.C.**  
PROJECT MANAGEMENT

860 1ST AVE, SUITE 9A  
KING OF PRUSSIA, PA 19406  
610 337 4555  
[www.rhjassoc.com](http://www.rhjassoc.com)

DATE: 5/19/2017	
REVISIONS	
1	PERMIT COMMENTS 8/01/2017

**LIGHTING DETAILS**

**E2.2**

2017-0105

**AKRIBIS**  
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3231 SOUTH COUNTRY CLUB WAY, STE. 102 TEMPE, ARIZONA 85282  
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FOR QUESTIONS PLEASE CALL: ALLA OSIPOV





14. PROVIDE JUNCTION BOX AND 120V CIRCUIT FOR SENSOR FAUCETS TRANSFORMERS.
15. PROVIDE 120V CIRCUIT FOR LUNK ALARM LIGHT. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS. LIGHT TO BE WIRED TO LUNK PUSH BUTTON AT RECEPTION DESK.
16. PROVIDE 120V CIRCUIT FOR LUNK AIR HORN ALARM AT ROOF DECK. HORN ALARM TO BE WIRED TO LUNK PUSH BUTTON AT RECEPTION DESK. HORN SHALL SOUND WHEN LUNK ALARM PUSH BUTTON SWITCH IS PRESSED.
17. PROVIDE RECEPTACLE FOR HAIR DRYER. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS.
18. PROVIDE RECEPTACLE FOR HAIR MOUNTED TV PROVIDED BY OWNER. COORDINATE LOCATION AND MOUNTING HEIGHT WITH ARCHITECTURAL DRAWING.
19. PROVIDE REQUIRED BY 2014 NEC 110.26 30"x36"x6"-6" MIN CLEARANCE ABOUT ELECTRICAL EQUIPMENT
20. MINI BUCK/BOOST TRANSFORMER FOR EACH TANNING/TONING MACHINE ARE TO BE SUPPLIED BY OWNER. EQUIPMENT PROVIDED AND WIRED BY E.C.
21. PROVIDE NEMA 16-30 TWIST-LOCK RECEPTACLE FOR HYDRO MASSAGE BED. COORDINATE LOCATION WITH EQUIPMENT SUPPLIER.
22. PROVIDE RECEPTACLE WITHIN 5' OF CENTER OF HYDRO MASSAGE BED. COORDINATE LOCATION WITH EQUIPMENT SUPPLIER.
23. PROVIDE 60A/250V/3-POLE NON-FUSIBLE DISCONNECT FOR BODY TONING MACHINE. COORDINATE ELECTRICAL REQUIREMENTS WITH EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN.
24. CEILING FAN. REFER TO LIGHTING PLAN ON SHEET E2.1 FOR CIRCUITING AND CONTROL.
25. PROVIDE 60A/250V/3-POLE NON-FUSIBLE DISCONNECT FOR BODY TANNING MACHINE. COORDINATE ELECTRICAL REQUIREMENTS WITH EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN.
26. E.C. TO INSTALL TWO GANG PLASTIC ELECTRICAL BOX @ 42" A.F.F. AND SINGLE GANG ELECTRICAL BOX WITH PLASTIC COVER @ 9" A.F.F. FOR HYDRO MASSAGE BED VENDOR'S T-MAX CONTROLS INSTALLATION. INCLUDE PULL STRINGS. COORDINATE LOCATION WITH EQUIPMENT SUPPLIER.
27. PROVIDE JUNCTION BOX AND 120V CIRCUIT FOR SENSOR TOILET AUTO FLUSH TRANSFORMERS.

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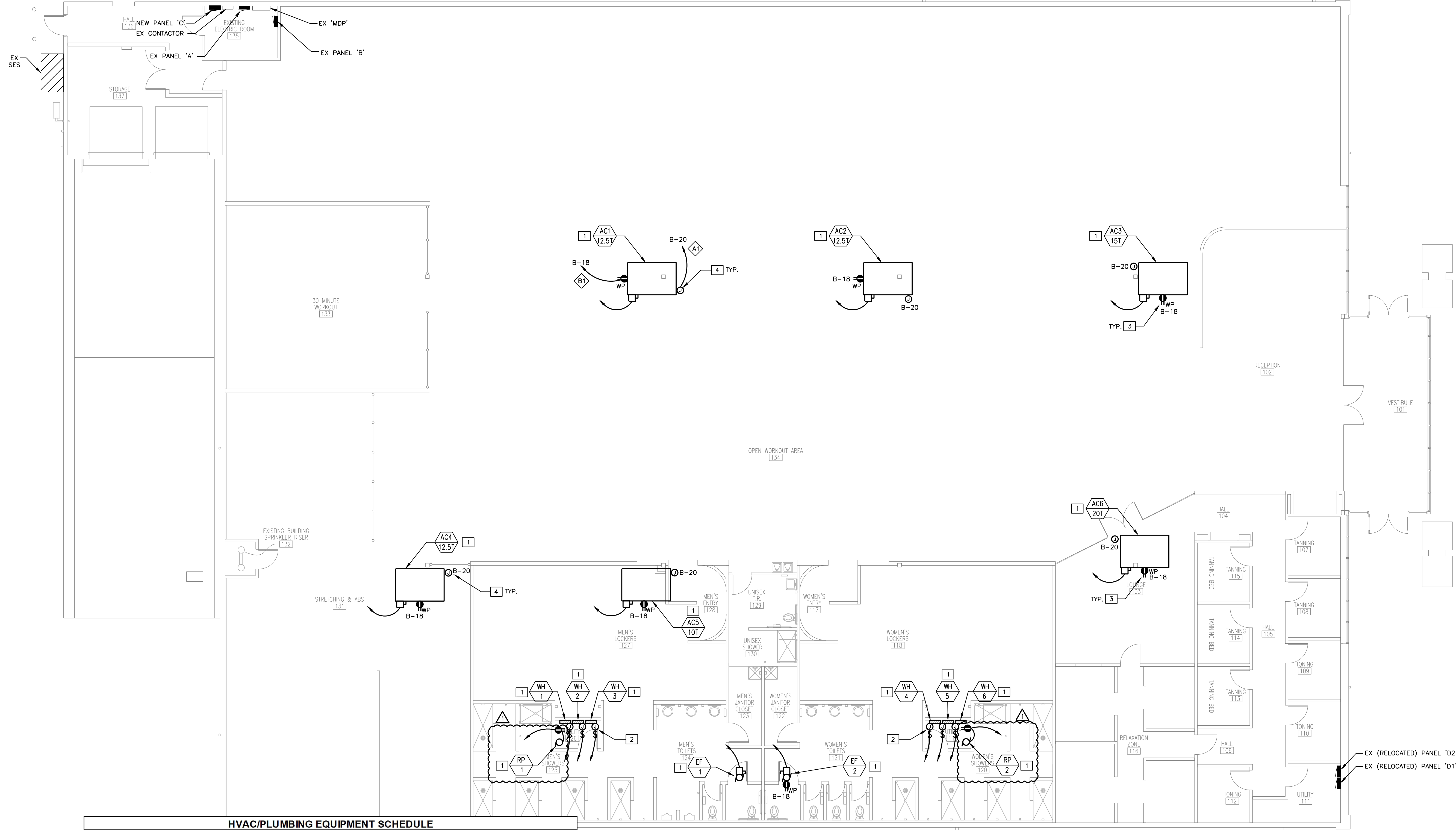
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FOR QUESTIONS PLEASE CALL: ALIA OSIPOV

2017-0105



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HVAC/PLUMBING EQUIPMENT SCHEDULE											
UNIT ID	TONS	HP	KW	FLA	VOLTAGE	PHASE	DISC.	FUSE	SOURCE	FEEDER	NOTES
AC1	12.5			77.4	208	3	100	100A RK1	C	3#1, 1#6 GRD., 1.5°C.	1,2
AC2	12.5			77.4	208	3	100	100A RK1	C	3#1, 1#6 GRD., 1.5°C.	1,2
AC3	15			82.6	208	3	100	100A RK1	C	3#1, 1#6 GRD., 1.5°C.	1,2
AC4	12.5			77.4	208	3	100	100A RK1	C	3#1, 1#6 GRD., 1.5°C.	1,2
AC5	10			58.6	208	3	100	70A RK1	C	3#4, 1#8 GRD., 1.25°C.	1,2
AC6	20			101.8	208	3	200	110A RK1	C	3#1, 1#6 GRD., 1.5°C.	1,2,3
EF-1		1/6		4.4	120	1	30	9A RK1	C	2#12, 1#12 GRD., 1/2°C	2,3
EF-2		1/6		4.4	120	1	30	9A RK1	C	2#12, 1#12 GRD., 1/2°C	2,3
EF-3		FRACT.		1.0	120	1	TS	NA	C	PER PLAN	5
WH-1 (GAS)				0.2	120	1	TS	NA	D2	2#12, 1#12 GRD., 1/2°C.	4
WH-2 (GAS)				0.2	120	1	TS	NA	D2	2#12, 1#12 GRD., 1/2°C.	4
WH-3 (GAS)				0.2	120	1	TS	NA	D2	2#12, 1#12 GRD., 1/2°C.	4
WH-4 (GAS)				0.2	120	1	TS	NA	D2	2#12, 1#12 GRD., 1/2°C.	4
WH-5 (GAS)				0.2	120	1	TS	NA	D2	2#12, 1#12 GRD., 1/2°C.	4
WH-6 (GAS)				0.2	120	1	TS	NA	D2	2#12, 1#12 GRD., 1/2°C.	4
RP-1		FRACT.		1.0	120	1	REC	NA	D2	2#12, 1#12 GRD., 1/2°C.	6
RP-2		FRACT.		1.0	120	1	REC	NA	D2	2#12, 1#12 GRD., 1/2°C.	6

- NOTES:
1. PROVIDE GD, MOTOR-RATED, WP DISCONNECT SWITCH.
  2. FUSE PER MANUFACTURER NAME PLATE RATING.
  3. PROVIDE 75 DEG. RATED FEEDER.
  4. PROVIDE 20A/120V MOTOR RATED SWITCH.
  5. CONTROL BY LIGHTING SWITCH IN ROOM.
  6. HOT WATER RECIRC. PLUMB TO RUN CONTINUOUSLY.

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2/81



## MECHANICAL / POWER PLAN

SCALE: 1/8" = 1'-0"

### KEY NOTES

1. REFER TO HVAC / PLUMBING EQUIPMENT SCHEDULE AND GENERAL NOTE #1 FOR ADDITIONAL INFORMATION.
2. PROVIDE SWITCH AS MEANS OF DISCONNECT FEEDER FOR WATER HEATER. REFER TO GENERAL NOTE #1 FOR ADDITIONAL INFORMATION.
3. PROVIDE EXTERIOR RATED, WP, GFCI ROOF RECEPTACLE WITHIN 25' OF ROOF HVAC UNITS.
4. PROVIDE 120V CONNECTION TO DUCT SMOKE DETECTORS INTERLOCK FOR SIMULTANEOUS UNIT SHUT-DOWN. VERIFY FINAL CONNECTION LOCATION AND REQUIREMENTS WITH MECHANICAL CONTRACTOR.

### GENERAL NOTES

1. WHERE EQUIPMENT DESIGNATION SYMBOL IS SHOWN, REFER TO HVAC/PLUMBING EQUIPMENT SCHEDULE (THIS SHEET) FOR CONTROL/FEEDER, OCP INFORMATION AND SOURCE PANEL. REFER TO PANEL SCHEDULES (SHEET E5.2) FOR CIRCUITING (TYPICAL).
2. DEVICE MOUNTING HEIGHTS ARE SHOWN FOR REFERENCE ONLY. COORDINATE ALL FINAL MOUNTING HEIGHTS AND/OR LOCATIONS AS REQUIRED WITH ARCHITECTURAL DETAILS, ELEVATIONS AND MILLWORK CONTRACTOR.

### FEEDER SCHEDULE

NOTE: NOT ALL MAY APPLY TO THIS SHEET.

ID	MAX. AMP	FEEDER SIZE
A1	20A	2#12 & 1#12GRD, 1/2°C
A2	20A	3#12 & 1#12GRD, 1/2°C
A3	20A	4#12 & 1#12GRD, 1/2°C
B1	30A	2#10 & 1#10GRD, 1/2°C
B2	30A	3#10 & 1#10GRD, 1/2°C
B3	30A	4#10 & 1#10GRD, 1/2°C

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**RHJ ASSOCIATES, P.C.**  
PROJECT MANAGEMENT

880 1ST AVE, SUITE 9A  
KING OF PRUSSIA, PA 19406  
610 337 4556  
www.rhjassoc.com

DATE: 5/19/2017

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MECHANICAL /  
POWER PLAN

**E3.2**

2017-0105

MICHAEL J. PILKO, ARCHITECT

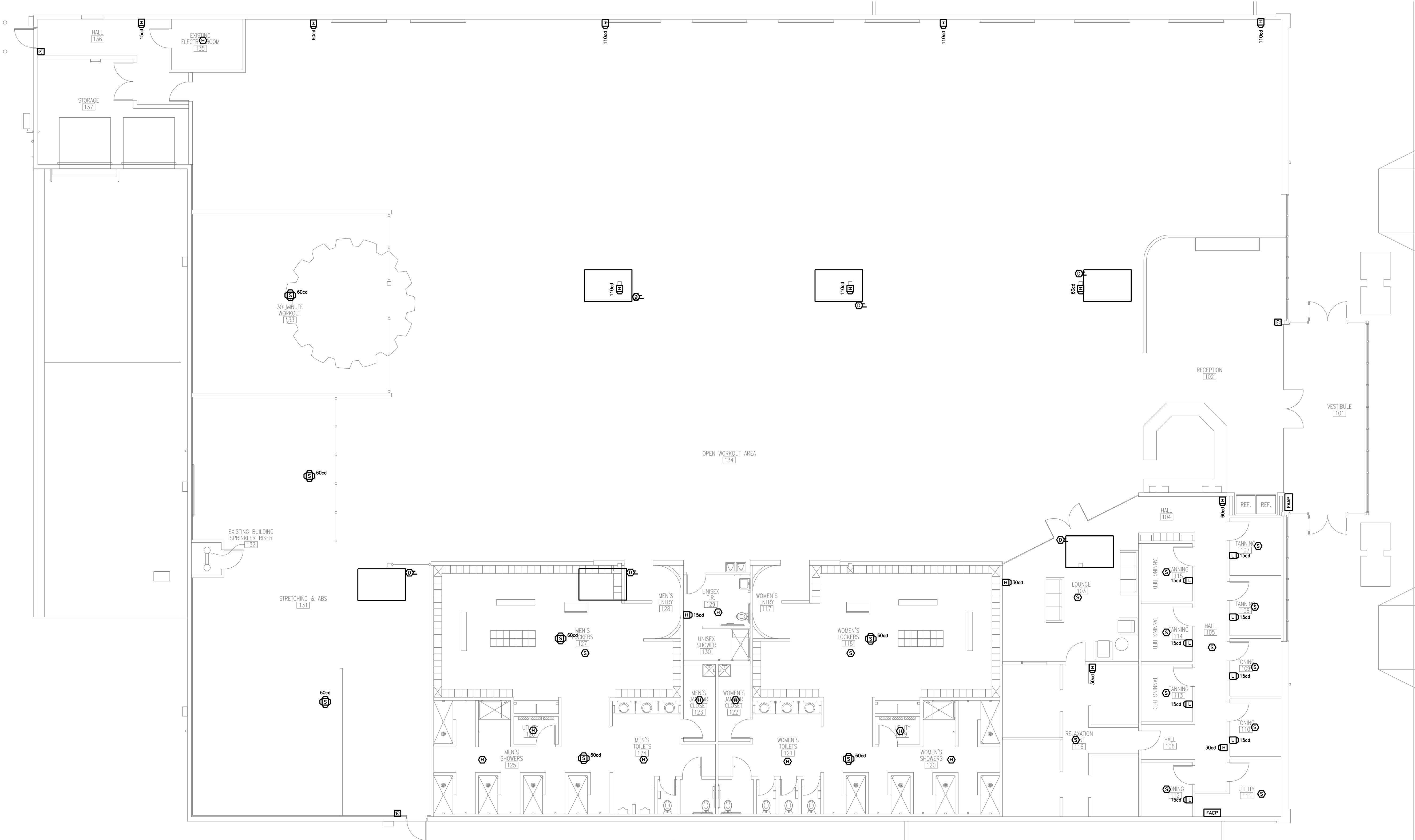
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KING OF PRUSSIA, PA 19406  
484-928-0650

PROPOSED RENOVATION FOR:

**PLANET FITNESS**










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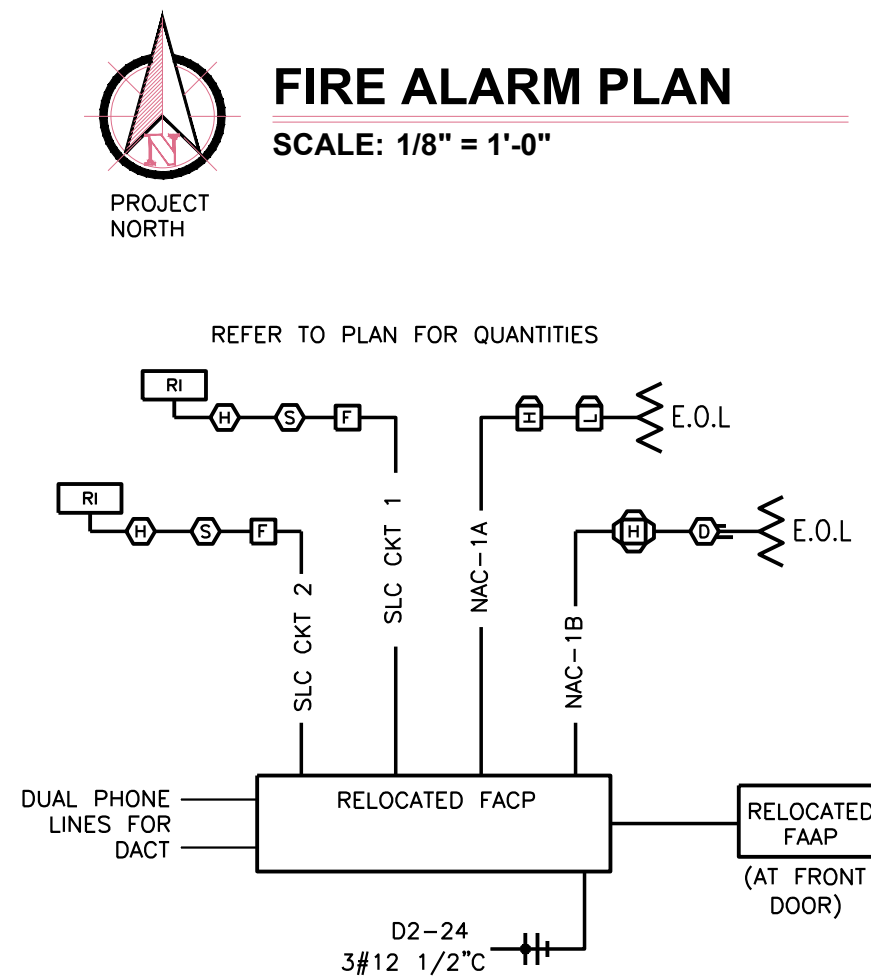




## FIRE ALARM SYMBOL LEGEND

NOTE: NOT ALL SYMBOLS MAY APPLY TO THIS PROJECT

SYMBOL	DESCRIPTION
	MANUAL PULL STATION
	SMOKE DETECTOR (PHOTO ELECTRIC / ION)
	THERMAL DETECTOR
	WALL MOUNTED HORN STROBE
	WALL MOUNTED STROBE
	FIRE ALARM ANNUNCIATOR
	RELOCATED EXISTING FIRE ALARM CONTROL PANEL
	CEILING MOUNTED HORN STROBE
	DUCT SMOKE DETECTOR

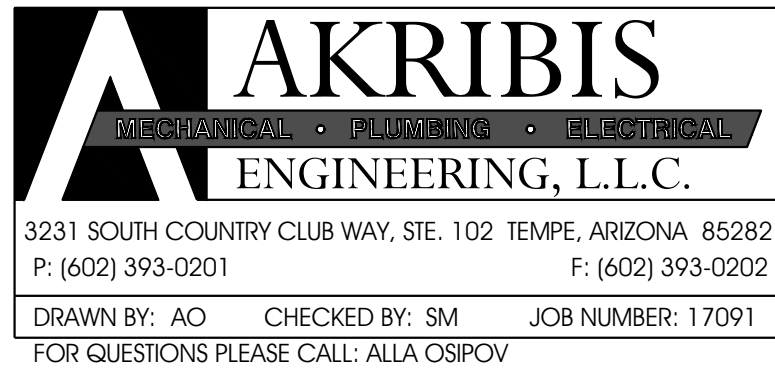


# FIRE ALARM RISER DIAGRAM

NTS

## FIRE ALARM NOTES

1. ALL DEVICES USING PHYSICAL CONDUCTORS SHALL BE INSTALLED SUCH THAT THE OUTGOING AND RETURN CONDUCTORS, EXITING AND RETURNING ARE ROUTED SEPARATELY. THE OUTGOING AND RETURN CONDUCTORS SHALL NOT BE RUN IN THE SAME CABLE ASSEMBLY, ENCLOSURE, OR RACEWAY. ALL OUTGOING AND RETURN CONDUCTORS MUST BE SEPARATED A MINIMUM OF 6 FEET.
2. ALL CONDUCTORS FOR FIRE ALARM SYSTEM SHALL BE MIN. 16ga (CU).
3. ALL F/A DEVICES e.g. (HORNS, PULL STATIONS, DETECTORS, ETC.) SHALL BE RIGIDLY AND SECURELY FASTENED TO WALLS OR CEILINGS.
4. NO SMOKE DETECTOR SHALL BE LOCATED CLOSER THAN 36" TO ANY AIR REGISTER OR DIFFUSER.
5. NO HEAT DETECTOR SHALL BE LOCATED CLOSER THAN 18" TO ANY AIR REGISTER OR DIFFUSER.
6. NO HEAT DETECTOR SHALL BE LOCATED CLOSER THAN 36" TO ANY PART OF ANY HEAT GENERATING DEVICE IN MECHANICAL ROOMS SUCH AS FLUES, BOILERS, WATER HEATERS, ETC.
7. NO HEAT DETECTOR SHALL BE LOCATED CLOSER THAN 12" TO ANY PART OF ANY LIGHT FIXTURE.
8. ALL FIRE ALARM DEVICES TO COMPLY FULLY WITH ALL A.D.A. REQ'D MTS.
9. THE PLAN REPRESENTS A CONCEPTUAL FIRE ALARM SYSTEM. THE FIRE ALARM CONTRACTOR SHALL PREPARE FULL SHOP DRAWINGS WITH LAYOUT, BATTERY AND VOLTAGE DROP CALCULATIONS FOR REVIEW AND APPROVAL BY THE GOVERNING MUNICIPALITY.



**PROPOSED RENOVATION FOR:**

# PLANET FITNESS

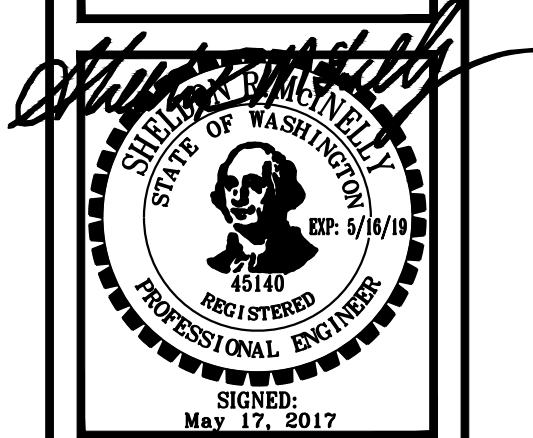
19516 STATE ROUTE 410E  
BONNEY LAKE, WASHINGTON 98391

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MICHAEL J. PILKO, ARCHITECT

860 FIRST AVE, SUITE 9A  
KING OF PRUSSIA, PA 19406

484-928-0650



**RHJ ASSOCIATES, P.C.**

## PROJECT MANAGEMENT

860 1ST AVE, SUITE 9A  
KING OF PRUSSIA, PA 19406  
610 337 4555  
www.rhiassoc.com

010 007 4000  
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# FIRE ALARMS PLAN

143

2017-0105



## SYMBOL LEGEND

### LIGHTING: SEE FIXTURE SCHEDULE

- DOWNLIGHT FIXTURE - SURFACE OR PENDANT  
DOWNLIGHT FIXTURE - CEILING RECESS  
WALL MOUNTED FIXTURE  
EXIT LIGHT FIXTURE - SEE SCHEDULE FOR MOUNTING  
LIGHTING FIXTURE - PENDENT OR SURFACE  
LIGHTING FIXTURE - CEILING RECESS  
EMERGENCY AND/OR N.L. (NIGHT LIGHT) FIXTURE  
BATTERY OPERATED EMERGENCY LIGHT  
LIGHT TRACK WITH NUMBER OF FIXTURES INDICATED  
SITE AREA LIGHT FIXTURE  
BOLLARD OR LANDSCAPE FIXTURE

### WIRING DEVICES, PANELS AND RACEWAYS

- SINGLE POLE SWITCH WITH IDENTIFICATION LETTER  
OCCUPANCY SENSOR SWITCH  
THREE WAY SWITCH WITH IDENTIFICATION LETTER  
FOUR WAY SWITCH WITH IDENTIFICATION LETTER  
MANUAL STARTER  
KEY SWITCH  
DIMMER CONTROL SWITCH  
SWITCH WITH PILOT LIGHT  
SWITCH MOUNTING HEIGHT - 48" AFF. TO CENTER  
SINGLE CONVENIENCE OUTLET- MOUNT 18" AFF. TO CENTER  
DUPLEX CONVENIENCE OUTLET- MOUNT 18" AFF. TO CENTER  
DOUBLE DUPLEX CONVENIENCE OUTLET- MOUNT 18" AFF. TO CENTER  
DUPLEX CONVENIENCE OUTLET- MOUNT 6" ABV COUNTER TO CENTER  
DUPLEX CONVENIENCE OUTLET- MOUNT AT CEILING OR ABOVE WINDOW  
FLOOR TYPE SERVICE FITTING WITH INDICATED DEVICES  
GROUND FAULT INTERRUPTER RECEPTACLE- MOUNT 18" AFF. TO CENTER OR 6" ABV LAV TO CENTER WHERE APPROPRIATE.  
SPECIAL OUTLET WITH IDENTIFICATION, SEE SCHEDULE OR NOTE  
WALL CLOCK- MOUNT 12" BELOW CEILING.  
JUNCTION BOX  
POWER DISTRIBUTION PANELBOARD  
BRANCH CIRCUIT PANELBOARD  
EMERGENCY PANELBOARD  
SWITCHBOARD  
TRANSFORMER- SEE SCHEDULE  
CONDUIT CONCEALED IN CEILING OR WALL  
FLEXIBLE CONDUIT  
CONDUIT - UNDER FLOOR OR UNDER GROUND  
HOME RUN TO PANEL INDICATED  
WIRING DESIGNATIONS, LONG SLASH IS NEUTRAL WIRE, SHORT SLASH IS PHASE WIRE, SLASH WITH DOT IS GROUND WIRE. #10 INDICATES AWG WIRE SIZE.  
MOTOR-SEE EQUIPMENT DATA SCHEDULE  
DISCONNECT SWITCH WITH SIZE AND TYPE INDICATED  
MOTOR CONTROLLER- SEE EQUIPMENT DATA SCHEDULE  
MOTOR CONTROLLER WITH DISCONNECT SWITCH  
RELAY OR CONTACTOR  
PHOTO CELL  
TIME SWITCH  
THERMOSTAT- MOUNT 48" AFF.  
PUSHBUTTON- MOUNT 48" AFF.

### SPECIAL SYSTEMS

- COMBINATION TELEPHONE/DATA OUTLET- MOUNT 18" AFF.  
TELEPHONE OUTLET- MOUNT 18" AFF.  
POWER/DATA POLE  
POWER/DATA WALL FEED  
FIRE ALARM MANUAL STATION- MOUNT 48" AFF.  
FIRE ALARM AUDIO/VISUAL SIGNAL- MOUNT 80" AFF.  
FIRE ALARM VISUAL SIGNAL- MOUNT 80" AFF.  
FIRE ALARM THERMAL DETECTOR  
FIRE ALARM SMOKE DETECTOR  
DUCT-MOUNTED FIRE ALARM SMOKE DETECTOR  
MAGNETIC DOOR HOLDER  
SPRINKLER WATER FLOW SWITCH  
SPRINKLER SUPERVISORY SWITCH  
MONITOR MODULE  
CONTROL MODULE  
TELEVISION OUTLET- MOUNT 18" AFF.  
CLOSED CIRCUIT VIDEO CAMERA OUTLET  
MAGNETIC DOOR SWITCH  
TELEPHONE BOARD  
INTERCOM OUTLET

### ONE-LINE DIAGRAM

- CIRCUIT BREAKER FRAME SIZE/ TRIP, POLE  
LOAD INTERRUPTER SWITCH  
FUSIBLE SWITCH- SW SIZE/ FUSE, 3 POLE  
DRAWOUT CIRCUIT BREAKER OR DEVICE  
GROUND FAULT RELAY OR OTHER TYPE RELAY AS NOTED  
CONTACTOR  
AUTOMATIC OR MANUALLY ACTUATED TRANSFER SWITCH  
TRANSFORMER  
CURRENT TRANSFORMER  
POTENTIAL TRANSFORMER WITH SWITCH AND FUSE  
GROUND ELECTRODE

### ABBREVIATIONS:

- A AMPERE  
AFF ABOVE FINISHED FLOOR  
AIC AMP INTERRUPTING CAPACITY  
ATS AUTOMATIC TRANSFER SWITCH  
C CONDUIT  
CB CIRCUIT BREAKER  
E EMERGENCY  
FS FUSIBLE SWITCH  
GFI GROUND GROUND FAULT INTERRUPTER  
MLO MAIN LUGS ONLY  
MOPP MAXIMUM OVERCURRENT PROTECTION  
NF NON FUSED  
NL NIGHT LIGHT  
P POLE  
PH PHASE  
PNL PANEL  
UNO UNLESS NOTED OTHERWISE ON PLANS  
WP WEATHERPROOF  
WT WATER TIGHT

## ELECTRICAL SPECIFICATIONS

### GENERAL:

- 1.1. ALL ELECTRICAL WORK SHALL COMPLY WITH ALL APPLICABLE CITY, COUNTY, STATE, AND SERVING ELECTRICAL ORDINANCES, RULES, AND REGULATIONS AND THE LATEST ADDITION OF THE NATIONAL ELECTRICAL CODE.
- 1.2. THE COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE A.D.A.A.G. (AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES)
- 1.3. 1.3 FIELD COORDINATE LOCATION OF LIGHTING AND POWER OUTLETS IN ALL MECHANICAL, ELECTRICAL, AND EQUIPMENT ROOMS WITH DUCTWORK, PIPING, AND EQUIPMENT LOCATIONS. ELECTRICAL CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL ELECTRICAL DEVICES AND EQUIPMENT CONNECTIONS WITH ARCHITECTURAL, STRUCTURAL, MECHANICAL, AND OTHER TRADES TO AVOID CONFLICTS WITH HEIGHTS AND LOCATIONS.
- 1.4. ALL CUTTING AND PATCHING REQUIRED FOR INSTALLATION OF NEW RACEWAYS AND EQUIPMENT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. ALL WORK SHALL BE PERFORMED BY A TRADESMAN EXPERIENCED IN THE WORK REQUIRED. ALL FINISHES SHALL MATCH EXISTING ADJACENT FINISHES. PATCH ALL OPENINGS IN FIRE RATED WALLS IN A MANNER MAINTAINING THE ORIGINAL FIRE AND SMOKE RATINGS.
- 1.5. CONTRACTOR SHALL REMOVE AND REINSTALL ALL CEILING TILES AS REQUIRED FOR THE EXECUTION OF ELECTRICAL WORK THAT IS OUTSIDE OF THE CONTRACT LIMITS OF CONSTRUCTION.
- 1.6. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY LOSS OR DAMAGE CAUSED BY HIM OR HIS WORKMEN TO THE FACILITY DURING THE COURSE OF CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING SUCH LOSS OR DAMAGE AT NO ADDITIONAL COST TO THE OWNER.
- 1.7. DRAWINGS ARE DIAGRAMMATIC IN NATURE AND CANNOT SHOW EVERY CONNECTION, JUNCTION BOX, WIRE, CONDUIT, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A COMPLETE AND FUNCTIONAL ELECTRICAL SYSTEM.
- 1.8. NO DESIGN CHANGES SHALL BE MADE TO THE ELECTRICAL SYSTEM WITHOUT THE PRIOR APPROVAL OF THE ELECTRICAL ENGINEER AND THE ELECTRICAL INSPECTOR.

### SCOPE OF WORK

- 2.1. FURNISH ALL MATERIALS, TOOLS, AND LABOR AND PAY ALL PERMITS AND FEES REQUIRED FOR THE ELECTRICAL INSTALLATION UNLESS OTHERWISE NOTED ON PLANS. ALL PERMITS AND INSPECTIONS SHALL BE PROVIDED AS REQUIRED BY THE LOCAL CODE AUTHORITY.
- 2.2. ALL MATERIALS SHALL BE NEW, OF FIRST CLASS QUALITY, SHALL BE U.L. LISTED AND LABELED, AND FREE OF DEFECTS.
- 2.3. VERIFY AND COORDINATE THE FOLLOWING WITH THE MECHANICAL CONTRACTOR:
  - 2.3.A. LOCATION OF EQUIPMENT; E.G. MOTORS, HEATERS, T-STATS, ETC.
  - 2.3.B. EQUIPMENT ELECTRICAL CHARACTERISTICS; E.G. VOLTAGE, PHASE, HP, AMPS, CONTROL WIRING, ETC.
- 2.4. ACQUIRE THE NUMBER OF COMPLETE SETS OF CONTRACT DRAWINGS AND FURNISH SETS TO THE TELEPHONE AND ELECTRICAL POWER UTILITIES FOR UTILITY DESIGN AND COORDINATION AS REQUIRED BY EACH UTILITY. CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMISSION OF ALL PLANS AND PERMITS REQUIRED TO THE UTILITY COMPANY(IES).
- 2.5. INCLUDE ALL CHARGES THAT MAY APPLY FROM THE POWER, TELEPHONE AND OTHER UTILITY COMPANIES. PROVIDE ALL WORK REQUIRED FOR THE INSTALLATION OF UTILITY SERVICES.
- 2.6. FULLY GUARANTEE THE INSTALLATION FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE BY THE OWNER. AGAINST INTERFERE WORKMANSHIP AND MALFUNCTION OF EQUIPMENT. ANY WORK IDENTIFIED TO BE DEFECTIVE WITHIN THE GUARANTEE PERIOD SHALL BE PROMPTLY REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER.

### GROUNDING:

- 3.1. GROUNDING OF ELECTRICAL SERVICE AND EQUIPMENT SHALL BE PER THE APPLICABLE SECTIONS OF NEC ARTICLE 250, AND AS SHOWN ON THE DRAWINGS.
- 3.2. PROVIDE AN INSULATED EQUIPMENT GROUNDING CONDUCTOR, IN ACCORDANCE WITH NEC 250, IN ALL CONDUITS WITH CONDUCTORS.

### CONDUCTORS:

- 4.1. WHERE WIRING AND CONDUIT SIZES ARE INDICATED FOR HOME RUNS, THESE SIZES APPLY TO THE ENTIRE LENGTH FROM THE PROTECTIVE DEVICE IN THE PANEL TO THE EQUIPMENT OR LAST WIRING DEVICE.
- 4.2. CONCEAL ALL CONDUIT IN WALLS, PARTITIONS, ABOVE CEILING, OR IN FLOOR SLAB UNLESS NOTED OTHERWISE ON THE PLANS.
- 4.3. SCHEDULE 40 PVC CONDUIT SHALL BE USED FOR ALL UNDERGROUND EXTERIOR CONDUIT, IN SLABS, BELOW SLABS ON GRADE, AND IN CONCRETE OR MASONRY WALLS. ALL BENDS OVER 90 DEGREES SHALL BE MADE WITH WRAPPED INTERMEDIATE METAL CONDUIT. USE LONG SWEEP FITTINGS FOR ALL 90 DEGREE BENDS. ALL CONDUIT, EXCEPT THAT USED FOR COMMUNICATIONS, SHALL BE PROVIDED WITH A CODE SIZED EQUIPMENT GROUNDING CONDUCTOR.
- 4.4. ALL BELOW GRADE CONDUIT SHALL BE INSTALLED A MINIMUM OF 24 INCHES BELOW FINISHED GRADE, BELOW GRADE CONDUIT SHALL BE 3/4 INCH DIAMETER, MINIMUM.
- 4.5. ALL WIRING SHALL BE IN CONDUIT, RIGID OR INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR ALL CONDUIT LARGER THAN 2 INCH, WHERE SUBJECT TO MOISTURE, OR WHERE SUBJECT TO PHYSICAL DAMAGE. ELECTRICAL METALIC TUBING (EMT) MAY BE USED FOR INTERIOR, PROTECTED CONDUIT, 2 INCHES IN SIZE AND SMALLER.
- 4.6. FLEXIBLE METALLIC CONDUIT SHALL BE USED FOR ALL CONNECTIONS TO MOTORS, LIQUID-TITE CONDUIT SHALL BE USED WHERE SUBJECT TO MOISTURE. BOND FLEXIBLE CONDUIT PER NEC REQUIREMENTS.
- 4.7. INSTALL A PULL WIRE IN ALL EMPTY CONDUITS.
- 4.8. ALL CONDUCTORS SHALL BE COPPER, BRANCH CIRCUIT WIRING SHALL BE #12 AWG MINIMUM, OTHER SIZES AS INDICATED ON THE DRAWINGS OR AS REQUIRED BY CODE. INSULATION SHALL BE THHN/THWN FOR CONDUCTORS #6 AND SMALLER AND XHHW FOR #4 AND LARGER.
- 4.9. CIRCUIT NUMBERS ARE SHOWN FOR CIRCUIT IDENTIFICATION. CIRCUITING SHALL AGREE WITH NUMBERING ON THE PANEL SCHEDULE PROVIDED.
- 4.10. ALL SECONDARY SERVICES, FEEDERS, AND BRANCH CIRCUIT CONDUCTORS SHALL BE COLOR CODED AS FOLLOWS:

PHASE	208/120 VOLT	120/240/1-PH	480/277 VOLT
A	BLACK	BROWN	BROWN
B	RED	RED	ORANGE
C	BLUE	YELLOW	YELLOW
NEUTRAL	WHITE	GRAY	GRAY
GROUND	GREEN	GREEN	GREEN
- 4.11. WRAP UNDERGROUND STEEL CONDUIT WITH HALF LAPPED 3M (OR EQUAL) PIPE PRIMER AND SCOTCHWRAP #50 TAPE, OR PROVIDE PVC COATED PIPE. INSTALL PER MANUFACTURER REQUIREMENTS.
- 4.12. ALL CONDUITS PENETRATING ROOFS, FLOORS, OR WALLS SHALL BE MADE WATERTIGHT BY PROPER FLASHING, CAULKING, OR SEALING.
- 4.13. PROVIDE ALL FIXTURES AND DEVICES WITH SUITABLE METAL OUTLET BOXES, CONFORMING TO NEC ARTICLE 370. SUPPORT BOXES RIGIDLY FROM STRUCTURE.
- 4.14. NO MC CABLE ALLOWED FOR MAIN BRANCH CIRCUITS FROM SES OR PANELBOARDS. MC CABLE MAY BE USED FOR WIRING TO LIGHT FIXTURES AND CIRCUITING IN WALLS TO RECEPTACLES OR OTHER SIMILAR LOADS.

PHASE	208/120 VOLT	120/240/1-PH	480/277 VOLT
A	BLACK	BROWN	BROWN
B	RED	RED	ORANGE
C	BLUE	YELLOW	YELLOW
NEUTRAL	WHITE	GRAY	GRAY
GROUND	GREEN	GREEN	GREEN

- 4.11. WRAP UNDERGROUND STEEL CONDUIT WITH HALF LAPPED 3M (OR EQUAL) PIPE PRIMER AND SCOTCHWRAP #50 TAPE, OR PROVIDE PVC COATED PIPE. INSTALL PER MANUFACTURER REQUIREMENTS.
- 4.12. ALL CONDUITS PENETRATING ROOFS, FLOORS, OR WALLS SHALL BE MADE WATERTIGHT BY PROPER FLASHING, CAULKING, OR SEALING.
- 4.13. PROVIDE ALL FIXTURES AND DEVICES WITH SUITABLE METAL OUTLET BOXES, CONFORMING TO NEC ARTICLE 370. SUPPORT BOXES RIGIDLY FROM STRUCTURE.
- 4.14. NO MC CABLE ALLOWED FOR MAIN BRANCH CIRCUITS FROM SES OR PANELBOARDS. MC CABLE MAY BE USED FOR WIRING TO LIGHT FIXTURES AND CIRCUITING IN WALLS TO RECEPTACLES OR OTHER SIMILAR LOADS.

### SUBMITTALS:

- 5.1. PROVIDE AN ELECTRONIC PDF SUBMITTAL OR MINIMUM OF SIX (6) SETS OF SHOP DRAWINGS FOR THE FOLLOWING; LIGHTING FIXTURES, DISCONNECT SWITCHES, PANEL BOARDS, ALL SHOP DRAWING SUBMITTALS SHALL BE BOUND, LABELED, AND MARKED TO IDENTIFY EXACTLY WHICH ITEM WILL BE PROVIDED.
- 5.2. SUBMIT FIRE ALARM SHOP DRAWINGS TO THE LOCAL AUTHORITY FOR REVIEW.

### SUBSTITUTIONS:

- 6.1. EQUIPMENT LISTED BY BRAND NAME OR CATALOG NUMBER SHALL BE INTERPRETED AS ESTABLISHING A STANDARD OF QUALITY, EXCEPT FOR LIGHTING FIXTURES WHICH SHALL BE ORDERED FROM THE LIGHTING VENDOR LISTED ON THE PLANS AND SPECIFICATIONS.
- 6.2. ANY CONFLICT ARISING FROM THE USE OF SUBSTITUTED MATERIALS SHALL BE THE RESPONSIBILITY OF THE SUPPLIER, WHO SHALL BEAR ALL COSTS REQUIRED TO MAKE THE EQUIPMENT COMPLY WITH THE INTENT OF THE PLANS AND SPECIFICATIONS.
- 6.3. LISTING AS EQUAL DOES NOT RELIEVE THE MANUFACTURER FROM MEETING THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

### LIGHTING:

- 7.1. VERIFY ALL CEILING TYPES WITH CEILING CONTRACTOR AND ORDER CORRECT LIGHTING FIXTURE FOR CEILING BEING INSTALLED. VERIFY RECESSING DEPTHS OF ALL FIXTURES PRIOR TO ORDERING.
- 7.2. FLUORESCENT EMERGENCY LIGHTING FIXTURES, SHOWN SHADED OR NOTED ON THE LUMINAIRE SCHEDULE, SHALL BE PROVIDED WITH A BATTERY PACK TO OPERATE TWO LAMPS FOR A TOTAL OUTPUT OF 1400 LUMENS. MOUNT IN FIXTURE WIREWAY. FIXTURE AND LAMPS SHALL BE SWITCH ABLE, UNLESS NOTED OTHERWISE, WITH A HOT REFERENCE CIRCUIT TO THE BATTERY PACK. PROVIDE ALL REQUIRED PARTS AND ACCESSORIES, INCLUDING INDICATOR LIGHT AND TEST SWITCH. DO NOT ENERGIZE BATTERY PACK UNTIL 24 HOURS PRIOR TO FINAL INSPECTION TO AVOID DESTROYING THE BATTERY DURING CONSTRUCTION.
- 7.3. EXIT SIGNS AND EMERGENCY LIGHTS SHALL BE POWERED FROM A LOCAL LIGHTING CIRCUIT. PROVIDE UNSWITCHED HOT REFERENCE CIRCUIT TO FIXTURES. LUMINAIRES MARKED WITH "NL" SHALL BE UNSWITCHED FOR NIGHT LIGHT OPERATION.
- 7.4. COORDINATE WITH CEILING CONTRACTOR FOR FIRE RATED ENCLOSURES AT LIGHT FIXTURES WHERE REQUIRED. FIRE RATING PROVISIONS SHALL BE BY CEILING CONTRACTOR UNLESS NOTED OTHERWISE. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH CEILING CONTRACTOR TO PROVIDE SUPPORT WIRES FOR LUMINAIRES (TWO PER LUMINAIRE).

### EQUIPMENT:

- 8.1. ALL ELECTRICAL COMPONENTS INSTALLED OUTDOORS, EXPOSED TO WEATHER, OR IN DAMP LOCATIONS SHALL BE WEATHERPROOF, NEMA 3R.
- 8.2. THE SERVICE ENTRANCE ASSEMBLY AND ALL OF ITS COMPONENTS SHALL BE BRACED TO WITHSTAND A MINIMUM OF 100% OF AVAILABLE FAULT CURRENT SUPPLIED BY THE POWER COMPANY AND SHALL BE SUPPLIED WITH COPPER BUSS.
- 8.3. PROVIDE AT THE COMPLETION OF THE PROJECT NEATLY TYPED ACCURATE PANEL BOARD DIRECTORIES INDICATING ALL BRANCH CIRCUITS AND SPARES. ALL SPARES SHALL BE LEFT IN THE OFF POSITION.
- 8.4. PROVIDE A 120 VOLT, 20 AMP, WEATHERPROOF GFCI RECEPTACLE WITHIN 25 FEET AND ACCESSIBLE TO ALL MECHANICAL EQUIPMENT.
- 8.5. LABEL ALL PANEL BOARDS, AND MAJOR SINGLE LINE COMPONENTS WITH PERMANENTLY AFFIXES PHENOLIC LETTERING (1" MINIMUM).
- 8.6. DO NOT MOUNT OUTLET BOXES BACK TO BACK. PROVIDE A MINIMUM 16" OF SEPARATION UNLESS SEPARATED BY A STUD.
- 8.7. PANEL BOARDS SHALL HAVE COPPER BUS, WITH FULL NEUTRAL AND GROUND BUSSES. MINIMUM AC RATING SHALL BE 10,000 AMPS. PANELS SHALL HAVE LOCKING DOORS WITH MATCHING KEYS. PANELS SHALL BE MANUFACTURED BY SQUARE "D", CUTLER HAMMER, OR SIEMENS. LOAD CENTERS ARE NOT ACCEPTABLE.
- 8.8. ALL BRANCH CIRCUIT PANEL BOXES SHALL BE MINIMUM 5-3/4" DEEP AND 20" WIDE. PROVIDE MOUNTING HARDWARE IN ALL SPACES FOR FUTURE DEVICES. ALL RECESSED PANELS SHALL HAVE THREE 3/4" SPARE CONDUITS STUBBED TO ABOVE AND ACCESSIBLE CEILING.
- 8.9. ALL SAFETY SWITCHES SHALL BE HEAVY DUTY TYPE, WITH COVER INTERLOCK AND HANDLE LOCK OFF PROVISIONS. SWITCHES SHALL BE MANUFACTURED BY SQUARE "D", CUTLER HAMMER, OR SIEMENS. RATINGS AND FUSING SHALL BE AS SHOWN ON THE DRAWINGS. COORDINATE FUSING FOR SWITCHES SERVING MECHANICAL EQUIPMENT WITH MANUFACTURERS RECOMMENDED FUSE SIZE.
- 8.10. DRY TYPE TRANSFORMERS SHALL BE 60 HZ, WITH KVA RATINGS AS NOTED ON THE DRAWINGS. TRANSFORMERS SHALL HAVE A SHEET STEEL ENCLOSURE, ALUMINUM WINDINGS AND CORE AND COIL ASSEMBLY SHALL BE MOUNTED FROM THE MOUNTING FRAME WITH VIBRATION ISOLATORS. PROVIDE SIX 2 1/2 % TAPS, FOUR BELOW AND TWO ABOVE NORMAL. INSTALL TRANSFORMERS A MINIMUM OF 9" FROM ADJACENT WALLS OR STRUCTURE. TRANSFORMERS SHALL BE MANUFACTURED BY SQUARE "D", CUTLER HAMMER, OR SIEMENS. TRANSFORMERS SHALL BE COMPLIANT WITH IECC, IECC AND/OR ENERGY EFFICIENCY REQUIREMENTS OF THE ADOPTED CODE BY THE LOCAL AND/OR STATE AUTHORITY HAVING JURISDICTION.

### WIRING DEVICES:

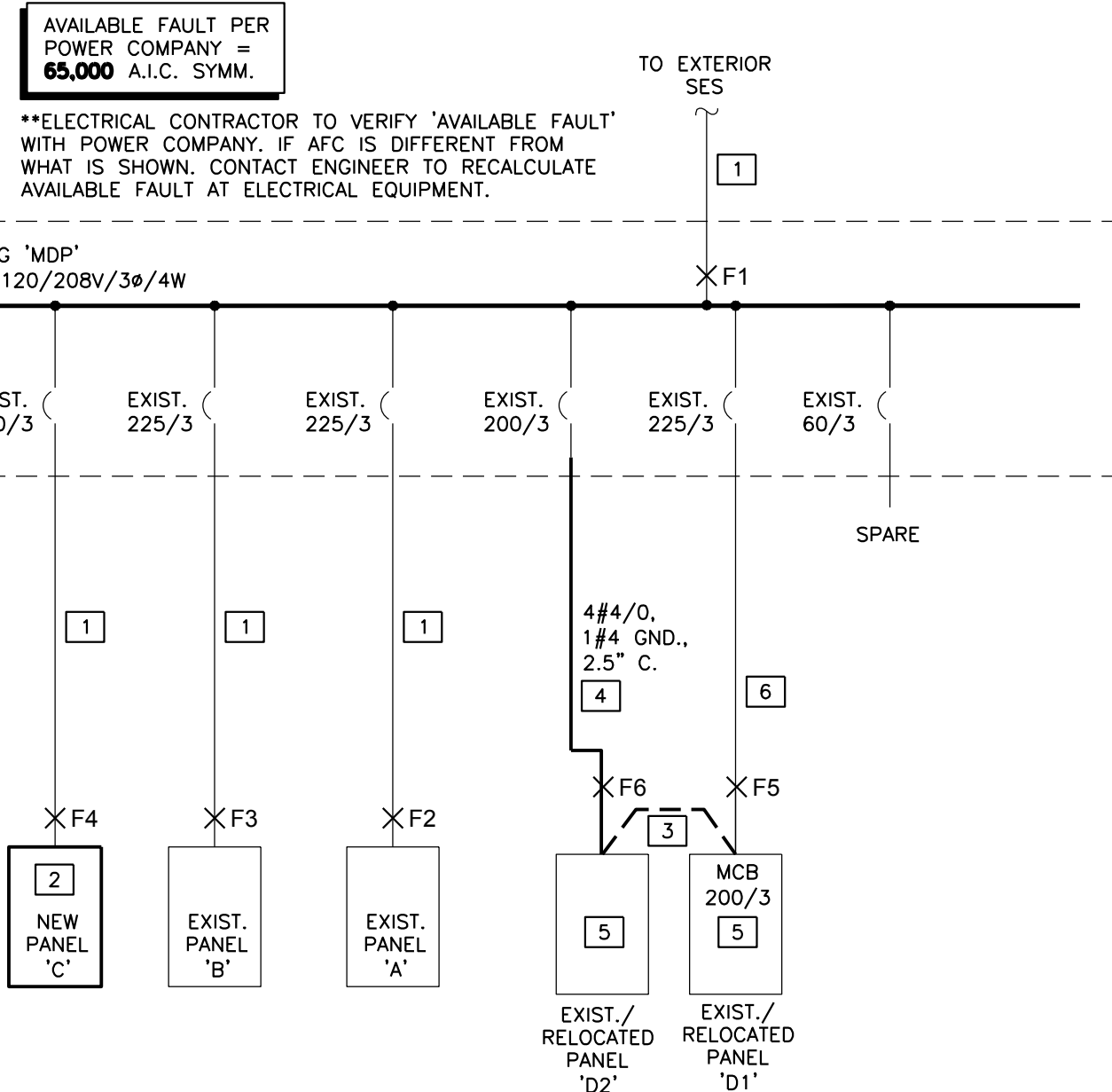
- 9.1. SWITCHES SHALL BE OF THE QUIET TYPE, SPECIFICATION GRADE, 20 AMP, 120/277 VOLT AC. HUBBELL 1221 (SINGLE POLE), 1223 (THREE-WAY). EQUAL BY LEVITON OR PASS & SEYMOUR.
- 9.2. RECEPTACLES, UNLESS NOTED OTHERWISE, SHALL BE DUPLEX, 120 VOLT, 20 AMP, GROUNDING TYPE, NEMA 5-20R, HUBBELL 5362, OR EQUAL BY LEVITON OR PASS & SEYMOUR.
- 9.3. PROVIDE ALL WIRING DEVICES WITH APPROPRIATE COVER PLATES. PROVIDE BLANK COVER PLATES FOR ALL EMPTY BOXES. COVER PLATES SHALL BE LEXAN, PLASTIC OR STAINLESS STEEL IN FINISHED AREAS. GALVANIZED COVER PLATES MAY BE USED IN EQUIPMENT ROOMS.
- 9.4. COORDINATE DEVICE AND COVER PLATE COLORS WITH ARCHITECT.
- 9.5. DUPLEX RECEPTACLES FOR ELECTRIC WATER COOLERS SHALL BE GFCI AND INSTALLED CONCEALED BEHIND THE WATER COOLER ACCESS PLATE, OR DIRECTLY BELOW AND CENTERED ON THE COOLER.
- 9.6. DUPLEX RECEPTACLES INSTALLED OUTDOORS SHALL BE GFCI, WEATHER-RESISTANT TYPE WITH WEATHER-PROOF WHILE-IN-USE COVER.
- 9.7. DEVICES SHALL BE TAMPER-RESISTANT WHERE INSTALLED IN AREAS WHERE REQUIRED BY THE NEC ARTICLES 406 AND 517.

### IECC LIGHTING CONTROL:

- PROGRAMMABLE TIME CLOCK / RELAY PANELS, COMPLIANT WITH IECC AND ASHRAE / IES 90.1 ENERGY CODES, SHALL BE CAPABLE OF:
- 10.1. ACCEPTING REMOTE SWITCH INPUTS FOR BOTH "ON" AND "OFF" OVERRIDES OF BOTH INDIVIDUAL AND GROUPED RELAYS.
  - 10.2. PROGRAMMING A MINIMUM OF 64 TIME OF DAY AND 32 HOLIDAY SCHEDULES.
  - 10.3. 24 HOUR "OFF" OVERRIDE PROGRAM, WITH RETURN TO NORMAL SCHEDULE AFTER 24 HOURS.
  - 10.4. PROVIDING A MINIMUM 4 HOUR MEMORY BATTERY BACK UP OF PROGRAMMED SCHEDULES, RELAY, & SWITCH INPUT ASSIGNMENTS.
  - 10.5. PROVIDING A MINIMUM 5 MINUTE WARNING FLASH PRIOR TO SCHEDULED "OFF" COMMANDS.
  - 10.6. PROVIDING A MAXIMUM 2 HOUR "ON" OVERRIDE OF ANY INDIVIDUAL OR GROUP OF DESIGNATED RELAYS.
  - 10.7. INDICATING INDIVIDUAL AND GROUP RELAY STATUS WITHIN THE CONTROL PANEL.
  - 10.8. MANUAL "ON" AND "OFF" OVERRIDE, WITHIN THE PANEL, OF ANY INDIVIDUAL OR GROUP RELAYS.
  - 10.9. ASTRONOMICAL TIME CLOCK PROGRAMMING.
  - 10.10. REPROGRAMMING OF SWITCH INPUTS, SCHEDULES, AND RELAY ASSIGNMENTS BY THE TENANT, AT THE PANEL, WITHOUT SUPPLEMENTAL SOFTWARE OR FACTORY SUPPORT BEING REQUIRED.
  - 10.11. STANDARD SWITCH RELAYS, RATED FOR 20 AMPS @ 120 / 277 VOLT.
  - 10.12. THE CONTRACTOR SHALL INSTALL ALL NECESSARY SWITCH OVERRIDES, WITHIN THE PERMITTED PROJECT, IN ORDER TO COMPLY WITH IECC AND ASHRAE / IES 90.1 ENERGY CODES.
  - 10.13. THE CONTRACTOR SHALL PROVIDE THE INITIAL PROGRAMMING AND OWNER OPERATIONS TRAINING.
  - 10.14. ALTERNATE LATCHING RELAYS, ALLOWING FOR A UL LISTED PANEL / SYSTEM RATING OF 10K AIC (APPLIES TO B RELAY PANELS AND LARGER) ITEMS 1,3,4,6,& 8 ARE REQUIRED, PER IECC & ASHRAE / IES 90.1.

ELECTRICAL LOAD CALCULATION					
SES					
SES VOLTAGE =		120/208V			
SES AMPERAGE RATING =		1200			
LOADS MDP		Φ A	Φ B	Φ C	
		132.21	132.54	130.94	KVA
	TOTAL KVA :	132.21	132.54	130.94	KVA
	TOTAL AMPS:	1102	1104	1091	AMPS
SES IS RATED FOR 1200 AMPS AT 120/208V					
NOTES:					
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ELECTRICAL LOAD CALCULATION					
MDP					
MDP VOLTAGE =		120/208V			
MDP AMPERAGE RATING =		1200A			
LOADS EXIST: PANEL A EXIST: PANEL B NEW PANEL C EX / RELOC. PANEL D1 EX / RELOC. PANEL D2		Φ A	Φ B	Φ C	
		13.00	13.50	13.00	KVA
		10.43	12.55	13.36	KVA
		65.88	65.83	64.88	KVA
TOTAL KVA :		25.29	25.29	24.79	KVA
		17.61	15.37	14.91	KVA
		132.21	132.54	130.94	KVA
	TOTAL AMPS:	1102	1104	1091	AMPS
MDP IS RATED FOR 1200A AMPS AT 120/208V					
NOTES:					
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## ONE-LINE DIAGRAM

SCALE: NONE

## GENERAL NOTES

1. THIS IS A COMBINATION TWO TIER 65/10K SERIES RATED AND FULLY RATED SYSTEM. REFER TO FAULT-CALCULATION FOR EACH PANEL RATING.
2. ELECTRICAL CONTRACTOR SHALL PROVIDE A SERIES RATED SYSTEM. PROVIDE WARNING LABELS AS REQUIRED BY NEC110.22 AND 240.86(o). ENGRAVED LAMINATED NAMEPLATES SHALL BE PROVIDED AT THE SES AND PANELBOARD. REFER TO NEC 110.22 FOR SPECIFIC WORDING OF SERIES RATED LABELS.
3. NO DESIGN CHANGES MAY BE MADE TO THE SYSTEM WITHOUT PRIOR APPROVAL OF THE DESIGN ENGINEER & THE ELECTRICAL INSPECTOR.
4. DESIGN IS BASED ON 75°C TERMINATIONS. PROVIDE 75°C TERMINATIONS FOR SES AND PANEL.
5. PROVIDE ALL ARC-FLASH LABELING AS REQUIRED PER NEC 110.16.

## KEY NOTES

1. EXISTING FEEDER TO REMAIN.
2. REMOVE EXISTING SERIES RATED PANEL. REPLACE WITH NEW FULLY RATED PANEL PER FAULT CURRENT CALCULATION ON THIS SHEET. RE-CONNECT NEW PANEL TO EXISTING FEEDER.
3. REMOVE FEED-THRU FEEDER.
4. PROVIDE NEW FEEDER TO EXISTING PANEL.
5. EXISTING PANEL TO BE SHIFTED AND REMOUNTED IF IT'S CURRENT MOUNTING LOCATION INTERFERES WITH NEW PARTITION WALL. RECONNECT BRANCH CIRCUITS IF NECESSARY.
6. EXTEND EXISTING FEEDER TO NEW PANEL LOCATION IF PANEL IS SHIFTED.

## FAULT CURRENT CALCULATION - SES

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Fault	F1	F2	F3	F4	F5	F6	F12
Location	MDP	PANEL A	PANEL B	PANEL C	PANEL D1	PANEL D2	
AFC (from source)	65000	65000	65000	65000	65000	65000	
Conductor size	#4/0	#4/0	350 MCM	#4/0	#4/0	#4/0	
Conductor type	Cu.	Cu.	Cu.	Cu.	Cu.	Cu.	
Length	5	10	10	215	215		
# of Sets	1	1	2	1	1		
Type of Conduit	STEEL	STEEL	STEEL	STEEL	STEEL		
C value	15082	15082	19703	15082	15082		
Voltage primary	208	208	208	208	208		
Voltage secondary (xfmr)							
xfmr impedance							
xfmr kva							
"F" Factor		0.18	0.36	0.14	7.72	7.72	
Multiplier		0.85	0.74	0.88	0.11	0.11	
Calculated Fault Current	65000	55111 Fully@ 65K	47834 Fully@ 65K	57150 Fully@ 65K	7458 Fully@ 10K	7458 Fully@ 10K	
NOTE: CONDUCTOR LENGTHS SHOWN IN THIS CALCULATION ARE SHORTEST DISTANCE DIRECT ROUTE AND SHALL NOT BE USED FOR BIDDING PURPOSES.							

**AKRIBIS**  
MECHANICAL • PLUMBING • ELECTRICAL  
ENGINEERING, L.L.C.

3231 SOUTH COUNTRY CLUB WAY, STE. 102 TEMPE, ARIZONA 85282  
P: (602) 393-0201 F: (602) 393-0202

DRAWN BY: AO CHECKED BY: SM JOB NUMBER: 17091  
FOR QUESTIONS PLEASE CALL: ALLA OSPOV

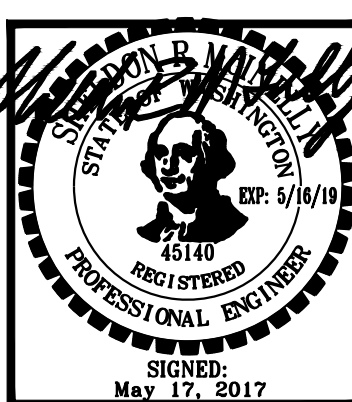
PROPOSED RENOVATION FOR:

**PLANET FITNESS**

19516 STATE ROUTE 410E  
BONNEY LAKE, WASHINGTON 98391

MICHAEL J. PILKO, ARCHITECT

860 FIRST AVE, SUITE 9A  
KING OF PRUSSIA, PA 19406  
484-928-0650



**RHJ ASSOCIATES, P.C.**  
PROJECT MANAGEMENT

860 1ST AVE SUITE 9A  
KING OF PRUSSIA, PA 19406  
610 337 4555  
www.rhjasoc.com

DATE: 5/19/2017

REVISIONS

ELECTRICAL  
DETAILS

**E5.1**

2017-0105



EX / RELOC. PANEL D1										AMPACITY: 225 MAINS: MCB KAIC: 10 RATING: Fully @ 10K											
VOLTAGE: 120/208V NEMA: 1 MOUNTING: SURF PANEL CIRCUITS: 42																					
LOAD	NO.	M	C	N	R	L	C/B	PHASE	C/B	L	R	N	C	M	NO.	LOAD					
[A] TONING RM 112	1			3.11			40		3.61						2	[B] USB LOCKERS					
BEAUTY ANGEL (25.9A)	3			3.11			40		3.61						4	[B] USB LOCKERS					
-	5			3.11			40	3							6	SPARE					
[A] TONING RM 110	7			3.11			40		3.11						8	SPARE					
BEAUTY ANGEL (25.9A)	9			3.11			40		3.11						10	SPARE					
-	11			3.11			40	3							12	SPARE					
[A] TONING RM 109	13			3.11			40		3.11						14	SPARE					
BEAUTY ANGEL (25.9A)	15			3.11			40		3.11						16	SPARE					
-	17			3.11			40	3							18	SPARE					
[A] TANNING BOOTH	19			4.20			50		4.20						20	SPARE					
SUNRISE 480 (35A)	21			4.20			50		4.20						22	SPARE					
RM 108	23			4.20			50	3							24	SPARE					
[A] TANNING BOOTH	25			4.20			50		4.20						26	SPARE					
SUNRISE 480 (35A)	27			4.20			50		4.20						28	SPARE					
RM 107	29			4.20			50	3							30	SPARE					
[A] TANNING BED	31			3.53			40		3.53						32	SPARE					
PASSION 40/3 (29. 37A)	33			3.53			40		3.53						34	SPARE					
RM 115	35			3.53			40	3							36	SPARE					
[A] TANNING BED	37			3.53			40		3.53						38	SPARE					
PASSION 40/3 (29. 37A)	39			3.53			40		3.53						40	SPARE					
RM 114	41			3.53			40	3							42	SPARE					
LIGHTING LOAD @ 125% =										0.00	0.00	0.00	KVA	NOTES:							
RECEPTACLES (1ST 10KVA@										0.00	0.00	0.00	KVA	1. ALL CIRCUIT BREAKERS EXISTING UNLESS OTHERWISE NOTED.							
100% + REMAINDER@ 50%) =										0.00	0.00	0.00	KVA	[A] PROVIDE NEW CIRCUIT BREAKER.							
NON-CONTINUOUS LOAD @ 100% =										25.29	25.29	24.79	KVA	[B] EXISTING CIRCUIT BREAKER. NEW LOAD.							
CONTINUOUS LOAD @ 125% =										0.00	0.00	0.00	KVA	REFER TO KEY NOTE #36 ON SHEET E3.1 FOR ADDITIONAL INFORMATION ON POSSIBLE NEED TO RELOCATE PANEL.							
MOTORS + 25% OF LARGEST MOTOR =										0.00	0.00	0.00	KVA								
TOTAL EX / RELOC. PANEL D1 DEMAND =										25.29	25.29	24.79	KVA								
TOTAL DEMAND AMPS =										210.75	210.75	206.58	AMPS								

PER NEC 210.4(B)

PROVIDE COMMON TRIP HANDLES FOR ALL MULTI-CIRCUIT CONDUIT RUNS.

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EX / RELOC. PANEL D2										AMPACITY: 200 MAINS: MLO KAIC: 10 RATING: Fully @ 10K									
VOLTAGE: 120/208V NEMA: 1 MOUNTING: SURF PANEL CIRCUITS: 42																			
LOAD	NO.	M	C	N	R	L	C/B	PHASE	C/B	L	R	N	C	M	NO.	LOAD			
[A] TANNING BED	1			3.53			40	4.73	4.61	20/1			1.08	1.20	2	[B]REC MASSAGE CHAIRS			
PASSION 40/3 (29. 37A)	3			3.53			40		4.61	20/1			1.08		4	[B]REC 103.116.107.108			
RM113	5			3.53			30	3		20/1					6	[B]REC 103.116.105			
[A]HYDRO MASSAGE BED 116	7			2.00			30	3.00	20/1				1.00		8	[B] VEND. MACH. 102			
[A]HYDRO MASSAGE BED 116	9			2.00			30	3	3.00	20/1			1.00		10	[B] VEND. MACH. 102			
[A]HYDRO MASSAGE BED 116	11			2.00			30		2.10	20/1			0.10		12	[B] SECURITY PANEL			
[A]HYDRO MASSAGE BED 116	13			2.00			30	2	2.10	20/1			0.10		14	[B] C) FAAP			
[A]HYDRO MASSAGE CHAIR 116	15			2.00			30		3.00	20/1			0.90	1.00	16	[B] REC RECEPTION CNTRL 102			
[A]HYDRO MASSAGE CHAIR 116	17			2.00			30	2	2.10	20/1			0.10		18	[B] REC SECURITY PNL			
[A]HYDRO MASSAGE CHAIR 116	19			2.00			30	3.91	20/1	1.71				0.20	20	[B] C) FAAP			
[A]HYDRO MASSAGE CHAIR 116	21			2.00			30	2	2.36	20/1			0.36		22	[B]REC TMB			
[A]HYDRO MASSAGE CHAIR 116	23			2.00			30		2.20	20/1			0.20	0.20	24	[B] C) FAAP			
[A]HYDRO MASSAGE CHAIR 116	25			2.00			30	2	2.81	20/1			0.71		26	[B] C) FAAP			
[A]HYDRO MASSAGE CHAIR 116	27			2.00			30		2.00	20/1					28	[B] C) FAAP			
[A]HYDRO MASSAGE CHAIR 116	29			2.00			30	2	3.20	20/1	1.20				30	[B] C) FAAP			
SPACE	31						30		0.20	20/1			0.20	0.20	32	[B] C) FAAP			
SPACE	33						30		0.20	20/1			0.20	0.20	34	[B] C) FAAP			
SPACE	35						30		0.20	20/1			0.20	0.20	36	[B] C) FAAP			
SPACE	37						30		0.20	20/1			0.20	0.20	38	[B] C) FAAP			
[A] RP-1	39			0.10			20/1		0.30	20/1			0.20	0.20	40	[B] C) FAAP			
[A] RP-2	41			0.10			20/1		0.30	20/1			0.20	0.20	42	[B] C) FAAP			
PER NEC 210.4(A)										PER NEC 210.4(A)									
PROVIDE COMMON TRIP HANDLES FOR ALL MULTI-CIRCUIT CONDUIT RUNS										PROVIDE COMMON TRIP HANDLES FOR ALL MULTI-CIRCUIT CONDUIT RUNS									
LIGHTING LOAD @ 125% = 3.03 0.00 1.50 KVA										NOTES:									
RECEPTACLES (1ST 10KVA@ 100% + REMAINDER@ 50%) = 0.00 2.34 1.08 KVA										1. ALL CIRCUIT BREAKERS EXISTING UNLESS OTHERWISE NOTED.									
NON-CONTINUOUS LOAD @ 100% = 14.23 13.03 12.33 KVA										[A] PROVIDE NEW CIRCUIT BREAKER.									
CONTINUOUS LOAD @ 125% = 0.00 0.00 0.00 KVA										[B] EXISTING CIRCUIT BREAKER, NEW LOAD.									
MOTORS + 25% OF LARGEST MOTOR = 0.35 0.13 0.13 KVA										[C] PROVIDE RED LOCK ON DEVICE.									
TOTAL EX/ RELOC. PANEL D2 DEMAND = 17.61 15.50 15.04 KVA										REFER TO KEY NOTE #5 ON SHEET E3.1 FOR ADDITIONAL INFORMATION ON POSSIBLE NEED TO RELOCATE PANEL.									
TOTAL DEMAND AMPS = 146.77 129.13 125.29 AMPS																			