

Document 00910-CSP

ADDENDUM NO. 05

Date of Addendum: 03/30/2020

PROJECT NAME: Kashmere MSC HVAC Improvements  
PROJECT NO: WBS No. H-000086-0001-3  
PROPOSAL DATE: Thursday, April 2, 2020 (No change to Proposal Date)  
FROM: City of Houston, General Services Department  
900 Bagby, 2nd Floor, City Hall Annex  
Houston, Texas 77002  
Greg Quintero, Senior Project Manager  
  
TO: Prospective Proposers

This Addendum forms a part of the Proposal Documents and will be incorporated into the Contract, as applicable. Insofar as the original Project Manual and Drawings are inconsistent, this Addendum governs.

**CHANGES TO DRAWINGS**

1. Delete Drawing M0.00, NOTES & LEGENDS, and replace with revised Drawing M0.00, NOTES & LEGENDS dated 03.30.20
2. Delete Drawing M0.02, SCHEDULES, and replace with revised Drawing M0.02, SCHEDULES dated 03.30.20
3. Delete Drawing M3.01, ROOF PLAN - PROPOSED, and replace with revised Drawing M3.01, ROOF PLAN - PROPOSED dated 03.30.20
4. Delete Drawing M4.02, DETAILS, and replace with revised Drawing M4.02, DETAILS dated 03.30.20
5. Delete Drawing M5.01, BAS CONTROL, and replace with revised Drawing M5.01, BAS CONTROL dated 03.30.20
6. Delete Drawing E1.00, ONE LINE DIAGRAM, and replace with revised Drawing E1.00, ONE LINE DIAGRAM dated 03.30.20

END OF ADDENDUM NO. 05

(CRC:     )      

DATED: 03/30/2020

Richard Vella  
Assistant Director  
Real Estate, Design & Construction Division  
General Services Department

## MECHANICAL SYMBOLS LEGEND

	SUPPLY AIR DUCT UP (PLAN)		DIFFUSER TYPE AND CFM		CHECK VALVE, SWING GATE
	SUPPLY AIR DUCT DOWN (PLAN)		THERMOSTAT - MOUNT 48" AFF UNO		ANGLE PRESSURE RELIEF VALVE
	RETURN OR OUTSIDE AIR DUCT UP (PLAN)		HUMIDISTAT		PRESSURE REDUCING VALVE
	RETURN OR OUTSIDE AIR DUCT DOWN (PLAN)		FIRESTAT		LOCK SHIELD
	EXHAUST AIR DUCT UP (PLAN)		TEMPERATURE SENSOR/ CO2 SENSOR/ HUMIDITY SENSOR. MOUNT 48" AFF UNO		QUICK OPENING/CLOSING VALVE
	EXHAUST AIR DUCT DOWN (PLAN)		SMOKE DETECTOR		PRESSURE REGULATOR
	RETURN AIR/TRANSFER AIR BOOT		PIPE UP		STRAINER W/BLOW DOWN VALVE
	CEILING SUPPLY AIR DEVICE		PIPE DOWN		THREE-WAY CONTROL VALVE (ELECTRIC)
	SIDEWALL SUPPLY		CAP		TWO-WAY CONTROL VALVE (ELECTRIC)
	CEILING RETURN AIR / EXHAUST REGISTER		90° ELBOW		FLEXIBLE CONNECTION
	RETURN AIR GRILLE WITH BOOT		45° ELBOW		EXPANSION JOINT
	BRANCH DUCT TAP		45° ELBOW DOWN (OGEE)		THERMOMETER
	DUCT SPLIT WITH DAMPER		TEE		THERMOMETER WELL
	DUCT SPLIT WITHOUT VANES		TEE UP		TEST PLUG
	ACCESS DOOR		TEE DOWN		PRESSURE GAUGE W/GAUGE COCK
	TRANSITION IN DUCT		TOP CONNECTION		MANUAL AIR VENT
	FLEXIBLE DUCT CONN. TO RECTANGULAR DUCT WITH SPIN-IN CONNECTOR		CROSS		AUTOMATIC AIR VENT
	ACCESS PANEL		UNION (SCREWED)		SOLENOID VALVE
	DUCT ELBOW WITH TURNING VANES		UNION (FLANGE)		FLOW SWITCH
	DUCT ELBOW WITHOUT VANES		DUCT MOUNTED TEMPERATURE SENSOR		TEMPERATURE AND PRESSURE RELIEF VALVE
	FLEXIBLE CONNECTION, FLEXIBLE DUCT		DUCT MOUNTED PRESSURE SENSOR		STEAM TRAP
	VOLUME DAMPER		DUCT MOUNTED SMOKE DETECTOR		STEAM MOISTURE SEPARATOR
	MOTORIZED VOLUME DAMPER		PIPE BREAK		CONTROL, ELECTRIC-PNEUMATIC
	FIRE DAMPER		CONCENTRIC REDUCER		CONTROL, PNEUMATIC-ELECTRIC
	SMOKE DAMPER		ECCENTRIC REDUCER		RED. PRESS PRINCIPAL BACKFLOW PREVENTER
	COMBINATION FIRE/SMOKE DAMPER		END SUCTION PUMP		PRIMARY CHILLED WATER RETURN
	AIR FLOW MONITORING STATION		BALL VALVE		PRIMARY CHILLED WATER SUPPLY
	AIR PRESSURE DIFFERENTIAL SWITCH		BUTTERFLY VALVE		CONDENSER WATER RETURN
	RISE IN DUCT ELEVATION		ISOLATION VALVE		CONDENSER WATER SUPPLY
	DROP IN DUCT ELEVATION		GATE VALVE WITH QUICK DISCONNECT		HYDRONIC HOT WATER RETURN
	SPLITTER DAMPER - DIMENSION AS NOTED ON DRAWING		TWO-WAY CONTROL VALVE		HYDRONIC HOT WATER SUPPLY
	BACK DRAFT DAMPER		THREE-WAY CONTROL VALVE		CONDENSATE DRAIN
	UNDERCUT DOOR 1"		BALANCING VALVE		SECONDARY CHILLED WATER RETURN
	REFER TO DETAIL #1 ON DRAWING M-7		MEDIUM PRESSURE STEAM SUPPLY		SECONDARY CHILLED WATER SUPPLY
	FLOW METER		CO2 SENSOR		

NOTE:  
NOT ALL ITEMS NECESSARILY USED.

## MECHANICAL GENERAL NOTES

- DO NOT OPERATE AIR HANDLERS, FAN COIL UNITS, OR EXHAUST FANS WITHOUT TEMPORARY AIR FILTERS DURING CONSTRUCTION. THE CLEANING OF FOULED COILS OR FAN ASSEMBLIES DUE TO CONSTRUCTION DEBRIS WILL BE THE RESPONSIBILITY OF THE HVAC CONTRACTOR.
- RECTANGULAR, OR ROUND DUCT SIZES INDICATED ARE ACTUAL SHEET METAL DIMENSIONS IN INCHES. ALL ROUND DUCT SIZES INDICATE NET FREE INSIDE DIAMETER AND DO NOT ACCOUNT FOR ANY INSULATION. ROUND DUCTS ARE EXTERNALLY INSULATED PER SPECIFICATIONS.
- SCHEDULED MANUFACTURERS ARE BASIS OF DESIGN. SEE SPECIFICATIONS FOR OTHER ACCEPTABLE MANUFACTURERS.
- MAJOR EQUIPMENT SHOWN ON THE PLANS AND ELEVATIONS ILLUSTRATE THE GENERAL ARRANGEMENT AND SPACE ALLOCATION. VERIFY THE SPACE REQUIREMENTS FOR EACH SYSTEM COMPONENT USING MANUFACTURER CERTIFIED SHOP DRAWINGS AND MAKE THE NECESSARY ADJUSTMENTS IN EQUIPMENT PLACEMENT AND CONNECTIONS IN ORDER TO ACCOMMODATE THE EXACT EQUIPMENT TO BE INSTALLED.
- REFER TO SPECIFICATIONS FOR SUPPORTS, ANCHOR BOLTS AND HANGERS FOR ALL EQUIPMENT. OTHER MISCELLANEOUS STEEL BRACING, SUPPORTS, AND REINFORCING STEEL REQUIRED TO SUPPORT EQUIPMENT SHALL BE FURNISHED AS PART OF THE SCOPE OF WORK OF DIVISION 23.
- PROVIDE SMOKE DETECTOR FOR ALL UNITS AS REQUIRED BY CODE. COORDINATE WITH 2012 UMC SECTION WITH HOUSTON AMENDMENTS. REFER ELECTRICAL DRAWINGS FOR CONNECTING SMOKE DETECTORS TO FIRE ALARM CONTROL PANEL. INSTALL SMOKE DETECTORS IN CONFORMANCE WITH 2012 UMC WITH CITY OF HOUSTON, TX AMENDMENTS.
- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE CODES, STANDARDS AND AUTHORITIES HAVING JURISDICTION.
- ALL SUPPLY AND RETURN AIR DUCTS LOCATED IN UNCONDITIONED ATTICS OR OUTSIDE SHALL BE INSULATED.
- FLEX DUCTS SHALL BE SAME SIZE AS DIFFUSER NECKS.
- SEAL ALL EXTERIOR PENETRATIONS
- DO NOT RUN DUCT OR PIPE OVER ELECTRICAL PANELS.
- COORDINATE EXACT LOCATION OF EQUIPMENT, DUCTWORK, AIR DEVICES, AND THERMOSTATS WITH EXISTING CONDITIONS.
- PROVIDE UL LISTED FIRESTOP AT ALL RATED WALL & FLOOR PENETRATION.
- ALL DUCT RUN-OUTS TO SUPPLY AND EXHAUST DIFFUSERS AND REGISTERS SHALL HAVE MANUAL BALANCING DAMPERS. PROVIDE YOUNG REGULATORS WHERE CEILING IS INACCESSIBLE.
- ALL DUCTWORK SHALL BE IN ACCORDANCE WITH LATEST SMACNA STANDARDS.
- SECURE ALL PERMITS AND PROVIDE ANY REQUIRED TEMPORARY UTILITIES.
- LOCATE VALVES WITHIN 18" OF CEILING SO THAT THEY ARE WITHIN REACH.
- PROVIDE AUTOMATIC AIR VENTS ON ALL HIGH POINTS OF PIPING SYSTEMS AND DRAIN VALVE CONNECTIONS AT ALL LOW POINTS OF PIPING SYSTEMS.
- REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION ON SCOPE OF WORK AND REQUIRED INSTALLATION.
- VERIFY FINAL LOCATION OF SPACE SENSORS WITH ENGINEER AND OWNER'S PROJECT REPRESENTATIVE PRIOR TO ANY INSTALLATION WORK.
- MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL NOT EXCEED 6'-0". PROVIDE RIGID ROUND INSULATED AIR DUCT RUNOUT AS REQUIRED. FLEXIBLE DUCT SHALL HAVE THE EQUIVALENT OF ONLY TWO 90 DEG. ELBOWS MAXIMUM. FLEXIBLE DUCT SIZE SHALL MATCH THE DIFFUSER NECK SIZE.
- THE AIR QUANTITIES SHOWN ON THE DRAWINGS FOR INDIVIDUAL OUTLETS MAY BE CHANGED TO OBTAIN UNIFORM TEMPERATURE WITHIN EACH SPACE OR ZONE, BUT THE TOTAL AIR QUANTITY SHOWN FOR EACH ZONE MUST BE OBTAINED.
- THE CONTRACTOR SHALL ENSURE THAT ALL DUCTWORK EITHER STORED ON SITE OR INSTALLED IN THE BUILDING IS THOROUGHLY SEALED TO PROTECT AGAINST DIRT AND MOISTURE UNTIL SUCH TIME THAT THE BUILDING IS DEEMED BY THE OWNER TO BE ADEQUATELY CLEAN TO ALLOW FOR START-UP OF THE ASSOCIATED AIR HANDLING EQUIPMENT. IF DUCTWORK IS NOT SEALED AS SPECIFIED, THEN THE CONTRACTOR SHALL HAVE SUCH DUCTWORK PROFESSIONALLY CLEANED TO AN AS-NEW CONDITION AT NO COST TO THE OWNER.
- NO PORTION OF THE TOTAL CONTRACT WILL BE DECLARED SUBSTANTIALLY COMPLETE UNTIL THE AUTOMATIC TEMPERATURE CONTROL SYSTEM HAS BEEN DEMONSTRATED TO BE COMPLETE AND FUNCTIONING AS INTENDED. THE TEMPERATURE CONTROL SYSTEM WILL BE COMPLETE AND FUNCTIONING AS INTENDED WHEN ALL OF THE SPACE TEMPERATURES ARE MAINTAINED AT PLUS OR MINUS TWO DEGREES OF SETPOINT.
- INCLUDE TESTING AND BALANCING SERVICES (TAB) AND COMMISSIONING SERVICES IN BASE SCOPE OF WORK. PROVIDE TAB SERVICES FROM AN AABC OR NEBB QUALIFIED TAB AGENCY. TEST AND AIR BALANCE RTU'S, EXH FANS, AND SPLIT DX UNITS PER AGENCY STANDARDS. PROVIDE SERVICES OF A QUALIFIED COMMISSIONING AGENT. INCLUDE MECHANICAL INSTALLER, EQUIPMENT VENDORS, TAB AGENCY, AND BAS CONTROLS INSTALLER IN THE COMMISSIONING WORK. TEST AND VERIFY FUNCTIONALITY OF ALL SYSTEM AND EQUIPMENT CONTROL SEQUENCES. TEST AND VERIFY PERFORMANCE OF NEW EQUIPMENT AND SYSTEMS PROVIDED. RESOLVE DEFICIENCIES AND DEMONSTRATE SYSTEM OPERATIONS AND PERFORMANCE TO OWNER.

## MECHANICAL DEMOLITION NOTES

- WHERE WORK IN RENOVATED AREAS AFFECTS SYSTEMS IN OTHER AREAS OF THE FACILITY, THE CONTRACTOR SHALL COORDINATE THIS WORK WITH THE OWNER. THIS WORK SHALL BE DONE TO FIT FACILITY OPERATIONAL SCHEDULE AND MINIMIZE THE DISRUPTIONS/DISCOMFORT TO OCCUPIED AREAS. THE CONTRACTOR SHALL REPAIR (TO THE OWNER'S SATISFACTION) ALL EXISTING CONDITIONS DAMAGED DURING DEMOLITION OR RENOVATION.
- CONTRACTOR TO REPAIR ANY FINISHES IN AREAS OUTSIDE OF CONSTRUCTION LIMIT DAMAGED, DUE TO ACCESSING WORK. REPAIR SHALL MATCH EXISTING AND BE TO OWNER'S SATISFACTION.
- ALL EQUIPMENT NOTED TO BE REMOVED SHALL BE CAREFULLY REMOVED TO MINIMIZE POSSIBLE DAMAGE TO EQUIPMENT AND STRUCTURE. RETURN REMOVED EQUIP. SUCH AS GRILLES THERMOSTATS ETC. TO THE OWNER FOR THE DISPOSITION OF SAME. IF OWNER DOES NOT ACCEPT THIS EQUIP. CONTRACTOR SHALL DISPOSE OF THE SAME.
- PERFORM DEMOLITION WORK SHOWN ON THE PLAN. VERIFY THE DEMOLITION WORK SHALL NOT ADVERSELY AFFECT OTHER AREAS WHICH ARE NOT PART OF CONSTRUCTION AREA OR DEMOLITION. VERIFY PRIOR TO DEMOLISHING SAME.
- THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING HIS BID TO VERIFY EXISTING CONDITIONS. BY SUBMITTING HIS BIDS THE CONTRACTOR ACKNOWLEDGES THAT HE HAS VISITED THE SITE AND THAT HIS BID IS ADEQUATE TO PERFORM WORK NECESSARY TO MAKE SYSTEM OPERATIONAL AT NO ADDITIONAL COSTS TO THE OWNER.
- COORDINATE SCHEDULING OF ALL UTILITY AND SERVICE INTERRUPTIONS REQD. BY THE WORK WITH SERVICES, AT LEAST 48 HOURS IN ADVANCE. THIS IS TO BE DONE BY FACILITY ENGINEERS ONLY.
- GENERAL CONTRACTOR OR ANY OF HIS SUBORDINATES ARE NOT TO SHUT OFF ANY UTILITIES OR FACILITY MANAGERS/OWNERS AND THE HEADS FOR THE DEPARTMENTS CONCERNED.

## ISSUE LOG

NO.	DATE	DESCRIPTION
1	01.13.20	ISSUE FOR BID & CONSTRUCTION
	03.30.20	ADDENDUM No. 05

CONSULTANT:



INFRASTRUCTURE ASSOCIATES, INC.  
6117 RICHMOND AVE., SUITE 200  
Houston, Texas 77057  
TBPB REGISTRATION NO. F-4506  
(713) 622-0120 PH / (713) 622-0557 FAX  
WWW.IAHOUSTON.COM

SEAL:



PROJECT NAME:

**KASHMERE RENOVATION**

4802 LOCKWOOD DR.  
HOUSTON TX, 77026  
WBS NO.: H-000086-001-3-01-03



**CITY OF HOUSTON**

OTHER APPROVALS

WATER ENGINEERING _____	TRAFFIC AND TRANSPORTATION _____
WASTEWATER ENGINEERING _____	STREET, BRIDGE, & ROW ENGINEERING _____
STORMWATER ENGINEERING _____	PLANNING & DEVELOPMENT _____

DATE: 03-30-20  
SCALE: As indicated  
DRAWN BY: CT  
CHECKED BY: MF

SHEET NAME:

**NOTES & LEGENDS**

SHEET NO:

**MO.00**

### PACKAGED ROOF TOP UNIT SCHEDULE

PLAN MARK	SERVING	UNIT TYPE	SUPPLY FAN						COOLING COIL					ELECTRICAL DATA			ELECTRIC HEATER	MAXIMUM WEIGHT (LB)	MAKE AND MODEL	REMARKS	
			S/A FLOW (CFM)	O/A FLOW (CFM)	E.S.P. (IN. WG.)	FAN TYPE	DRIVE TYPE	HP	CAPACITY		MAX FACE VEL	EAT DB/WB (°F)	LAT DB/WB (°F)	AMBIENT TEMP (°F)	VOLTAGE V/P/Hz	MCA	MOCP				CAPACITY (KW)
									TOTAL (MBH)	SENS (MBH)											
RTU-1	SR./YOUTH PRGM.	SINGLE ZONE CV	3900	675	1.50	PLENUM	NOTE IS	4	138	108	4.50	79.0/66.0	55/54	105	4.60/3/60	59	60	26	1050	DAIKIN	ALL
RTU-2	MULTI PURP. RM.	SINGLE ZONE CV	2100	270	1.50	PLENUM	NOTE IS	3	82	62	4.50	78.0/65.2	55/54	105	4.60/3/60	27	30	10	615	DAIKIN	ALL
RTU-3	OFFICE/LOBBY	SINGLE ZONE CV	3150	240	1.50	PLENUM	NOTE IS	5	110	86	4.50	76.8/64.5	55/54	105	4.60/3/60	37	45	15	880	DAIKIN	ALL
RTU-4	AUDITORIUM	SINGLE ZONE CV	5400	1560	1.50	PLENUM	NOTE IS	5	229	161	4.50	81.7/67.9	55/54	105	4.60/3/60	67	70	30	1850	DAIKIN	ALL
RTU-5	KITCHEN	SINGLE ZONE CV	800	200	0.75	PLENUM	NOTE IS	2	32	24	4.50	75.6/63.5	55/54	105	4.60/3/60	17	20	6.0	460	DAIKIN	1,2,4,5,6,7,8,9,10,11,12,13
RTU-6	DAYCARE	SINGLE ZONE CV	3800	300	1.50	PLENUM	NOTE IS	5	136	107	4.50	76.5/64.1	55/54	105	4.60/3/60	54	60	26	1035	DAIKIN	ALL
RTU-7	DAY CARE OFFICES	SINGLE ZONE CV	2400	300	1.50	PLENUM	NOTE IS	3	84	66	4.50	77.1/64.5	55/54	105	4.60/3/60	37	40	12	615	DAIKIN	ALL
RTU-8	SR. AREA/CORRIDOR	SINGLE ZONE CV	2600	220	1.50	PLENUM	NOTE IS	3	86	70	4.50	76.5/64.2	55/54	105	4.60/3/60	37	40	16	1035	DAIKIN	ALL
RTU-9	AMPHITHEATER	SINGLE ZONE CV	2400	220	1.50	PLENUM	NOTE IS	4	84	66	4.50	77.2/64.6	55/54	105	4.60/3/60	37	40	12	615	DAIKIN	ALL
RTU-10	OFFICE/CORRIDOR	SINGLE ZONE CV	4800	550	1.50	PLENUM	NOTE IS	5	171	134	4.50	78.3/65.4	55/54	105	4.60/3/60	67	70	33	930	DAIKIN	ALL
RTU-11	OFFICE/CORRIDOR	SINGLE ZONE CV	1800	225	1.50	PLENUM	NOTE IS	4	64	50	4.50	77.5/64.9	55/54	105	4.60/3/60	27	30	14	570	DAIKIN	1,2,4,5,6,7,8,9,10,11,12,13

- NOTES:
- PROVIDE WATER SENSING DEVICE IN THE PRIMARY DRAIN PAN TO SHUT THE UNIT OFF WHEN O/A IS ON HIGH ALARM.
  - PROVIDE UNITS WITH CURB ADAPTERS.
  - PROVIDE UNIT WITH MINIMUM 2 COMPRESSORS
  - UNIT REFRIGERANT SHALL BE R-410
  - UNIT EER SHALL COMPLY WITH LATEST IECC REQUIREMENTS
  - PROVIDE MOTORIZED OUTSIDE AIR DAMPER. DAMPER OPERATION SHALL BE INTERLOCKED WITH UNIT OPERATION
  - PROVIDE UNIT WITH 2" MERV II FILTER.
  - PROVIDE UNIT WITH SINGLE POINT ELECTRICAL CONNECTION WITH FACTORY INSTALLED PHASE PROTECTION
  - PROVIDE UNIT WITH HOT GAS REHEAT AND HUMIDITY CONTROL SEQUENCE
  - PROVIDE UNIT WITH FACTORY DIGITAL CONTROL SYSTEM, REMOTE TOUCH SCREEN, BACKET FOR N2 INTERFACE WITH EXISTING JCI BAS SYSTEM
  - PROVIDE UNIT WITH ECONOMIZER AND POWER EXHAUST
  - PROVIDE SMOKE DETECTOR IN SUPPLY AIR DUCT TO TURN OFF UNIT IF SMOKE IS DETECTED.
  - PROVIDE UNIT WITH MULTI STAGE REFRIGERATION AND MULTI STAGE HEATING.
  - PROVIDE UNIT WITH POWER GFCI CONVENIENCE OUTLET
  - PROVIDE UNIT WITH DIRECT DRIVE OR BELT DRIVE FAN
  - PROVIDE MANUFACTURER'S STARTUP AND COMMISSIONING SERVICES. SEE GENERAL NOTES FOR ADDITIONAL INFORMATION.

### EXHAUST FAN SCHEDULE

PLAN MARK	SERVING	AIR VOLUME (CFM)	FAN TYPE	DRIVE TYPE	E.S.P. IN WG	FAN SPEED (RPM)	MOTOR			MANUFACTURER & MODEL	LOCATION	REMARKS
							HP	V/P/Hz	RPM			
EF-1	RESTROOM	100	DOWN-BLAST	DIRECT	0.75	1725	1/6	115/1/60	1725	GREENHECK G-065-VG	ROOF	1, 2, 3, 4, 5, 6
EF-2	RESTROOM	100	DOWN-BLAST	DIRECT	0.90	1725	1/4	115/1/60	1725	GREENHECK G-085-VG	ROOF	1, 2, 3, 4, 5, 6
EF-3	RESTROOM	100	DOWN-BLAST	DIRECT	0.85	1725	1/4	115/1/60	1725	GREENHECK G-085-VG	ROOF	1, 2, 3, 4, 5, 6
EF-4	RESTROOM	160	DOWN-BLAST	DIRECT	0.75	1725	1/4	115/1/60	1725	GREENHECK G-085-VG	ROOF	1, 2, 3, 4, 5, 6
EF-5	RESTROOM	160	DOWN-BLAST	DIRECT	0.75	1725	1/4	115/1/60	1725	GREENHECK G-085-VG	ROOF	1, 2, 3, 4, 5, 6
EF-6	RESTROOM	280	DOWN-BLAST	DIRECT	0.75	1725	1/4	115/1/60	1725	GREENHECK G-085-VG	ROOF	1, 2, 3, 4, 5, 6
EF-7	RESTROOM	200	DOWN-BLAST	DIRECT	0.75	1725	1/4	115/1/60	1725	GREENHECK G-085-VG	ROOF	1, 2, 3, 4, 5, 6
EF-8	RESTROOMS/JANITORS	660	DOWN-BLAST	DIRECT	0.75	1725	1/4	115/1/60	1725	GREENHECK G-085-VG	ROOF	1, 2, 3, 4, 5, 6
EF-9	SHOWER AREA	200	DOWN-BLAST	DIRECT	0.75	1725	1/4	115/1/60	1725	GREENHECK G-085-VG	ROOF	1, 2, 3, 4, 5, 6
EF-10	ELECTRICAL CLOSET	150	DOWN-BLAST	DIRECT	0.75	1725	1/4	115/1/60	1725	GREENHECK G-085-VG	ROOF	1, 2, 3, 4, 5, 6

- NOTES:
- FAN SHALL BE SUITABLE FOR OUTDOOR INSTALLATION AND OPERATION.
  - FIELD VERIFY AND MATCH EXISTING ROOF CURBS.
  - PROVIDE MOTORIZED DAMPER FOR UNIT WITH 300+ CFM. PROVIDE GRAVITY DAMPER ON UNITS WITH LESS THAN 300 CFM. MOTORIZED DAMPER SHALL CLOSE WHEN ASSOCIATED FAN IS DE-ENERGIZED.
  - PROVIDE ECM MOTOR WITH DIAL MOUNTED ON UNIT MOTOR ENCLOSURE.
  - INTERLOCK FAN OPERATION WITH RTU SERVING THAT AREA.
  - PROVIDE UNIT WITH SINGLE POINT ELECTRICAL CONNECTION AND DISCONNECT SWITCH.

### SPLIT DX FAN COIL UNIT SCHEDULE

MARK	LOCATION	SERVING	S/A CFM	O/A CFM	COIL VEL (FPM)	FAN HP	ESP (INCH W.C.)	EAT DB/WB (°F)	LAT DB/WB (°F)	SENSIBLE CAP. (BTUH)	TOTAL CAP. (BTUH)	ELECTRICAL HEATER (KW)	AMBIENT AIR TEMP (°F)	MAKE	ELECTRICAL		REMARKS	
															MCA/MOCP	V/P/Hz		
FCU-1	INDOOR	COMPUTER ROOM	1,200	300	394	1/2	0.4	76/64	55/54	26,900	33,200	5	-	CARRIER	25/30	208/3/60	ALL	
CU-1	OUTDOOR	FCU-1	N/A											105	CARRIER	18/20	208/1/60	ALL

- NOTES:
- PROVIDE MATCHING CONDENSING UNIT AND REFRIGERANT LINES FOR THE REQUIRED DISTANCE.
  - PROVIDE WITH CONTROL VOLTAGE POWER SUPPLY AND PROGRAMMABLE WALL THERMOSTAT.
  - PROVIDE UNIT WITH SUITABLE FOR OUTDOOR INSTALLATION.
  - COMPLY WITH LATEST IEER 2015 REQUIREMENTS
  - PROVIDE UNIT WITH 2" DISPOSABLE MERV II FILTERS.
  - PROVIDE UNIT WITH CONDENSATE PUMP AND POWER THE PUMP FROM THE UNIT.

### ISSUE LOG

NO.	DATE	DESCRIPTION
1	01.13.20	ISSUE FOR BID & CONSTRUCTION
	03.30.20	ADDENDUM No. 05

CONSULTANT:



INFRASTRUCTURE ASSOCIATES, INC.  
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WWW.IAHOUSTON.COM

SEAL:



PROJECT NAME:  
**KASHMERE RENOVATION**

4802 LOCKWOOD DR.  
HOUSTON TX, 77026  
WBS NO.: H-000086-001-3-01-03



**CITY OF HOUSTON**

#### OTHER APPROVALS

WATER ENGINEERING _____	TRAFFIC AND TRANSPORTATION _____
WASTEWATER ENGINEERING _____	STREET, BRIDGE, & ROW ENGINEERING _____
STORMWATER ENGINEERING _____	PLANNING & DEVELOPMENT _____

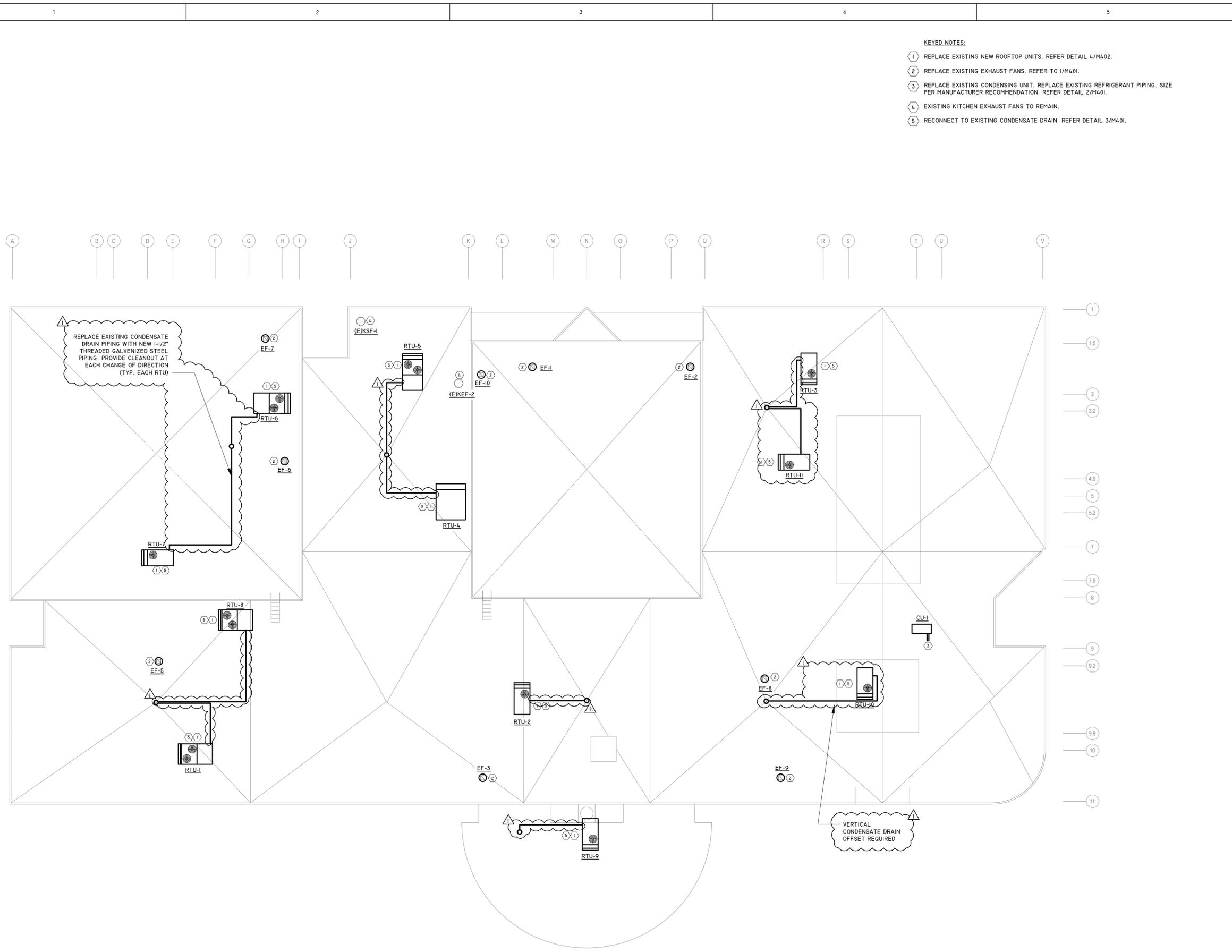
DATE: 03-30-20  
SCALE: As indicated  
DRAWN BY: CT  
CHECKED BY: MF

SHEET NAME:

**SCHEDULES**

SHEET NO:

**MO.02**



- KEYED NOTES:
- ① REPLACE EXISTING NEW ROOFTOP UNITS. REFER DETAIL 4/M402.
  - ② REPLACE EXISTING EXHAUST FANS. REFER TO 1/M401.
  - ③ REPLACE EXISTING CONDENSING UNIT. REPLACE EXISTING REFRIGERANT PIPING. SIZE PER MANUFACTURER RECOMMENDATION. REFER DETAIL 2/M401.
  - ④ EXISTING KITCHEN EXHAUST FANS TO REMAIN.
  - ⑤ RECONNECT TO EXISTING CONDENSATE DRAIN. REFER DETAIL 3/M401.

1 ROOF PLAN - PROPOSED - HVAC  
SCALE: 3/32" = 1'-0"

ISSUE LOG		
NO.	DATE	DESCRIPTION
1	01.13.20	ISSUE FOR BID & CONSTRUCTION
	03.30.20	ADDENDUM No. 05

CONSULTANT:

**Infrastructure Associates**

INFRASTRUCTURE ASSOCIATES, INC.  
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PROJECT NAME:  
**KASHMERE RENOVATION**

4802 LOCKWOOD DR.  
HOUSTON TX, 77026  
WBS NO.: H-000086-001-3-01-03



OTHER APPROVALS

WATER ENGINEERING _____	TRAFFIC AND TRANSPORTATION _____
WASTEWATER ENGINEERING _____	STREET, BRIDGE, & ROW ENGINEERING _____
STORMWATER ENGINEERING _____	PLANNING & DEVELOPMENT _____

DATE: 03-30-20  
SCALE: As indicated  
DRAWN BY: CT  
CHECKED BY: MF

SHEET NAME:  
**ROOF PLAN - PROPOSED**

SHEET NO:  
**M3.01**

1

2

3

4

5

ISSUE LOG

NO.	DATE	DESCRIPTION
1	01.13.20	ISSUE FOR BID & CONSTRUCTION
	03.30.20	ADDENDUM No. 05

CONSULTANT:



INFRASTRUCTURE ASSOCIATES, INC.  
 6117 RICHMOND AVE., SUITE 200  
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 TBPE REGISTRATION NO. F-4506  
 (713) 622-0120 PH (713) 622-0557 FAX  
 WWW.IAHOUSTON.COM

SEAL:



PROJECT NAME:  
**KASHMERE RENOVATION**

4802 LOCKWOOD DR.  
 HOUSTON TX, 77026  
 WBS NO.: H-000086-001-3-01-03



CITY OF HOUSTON

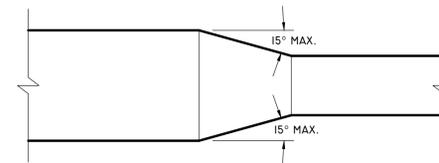
OTHER APPROVALS

WATER ENGINEERING _____	TRAFFIC AND TRANSPORTATION _____
WASTEWATER ENGINEERING _____	STREET, BRIDGE, & ROW ENGINEERING _____
STORMWATER ENGINEERING _____	PLANNING & DEVELOPMENT _____

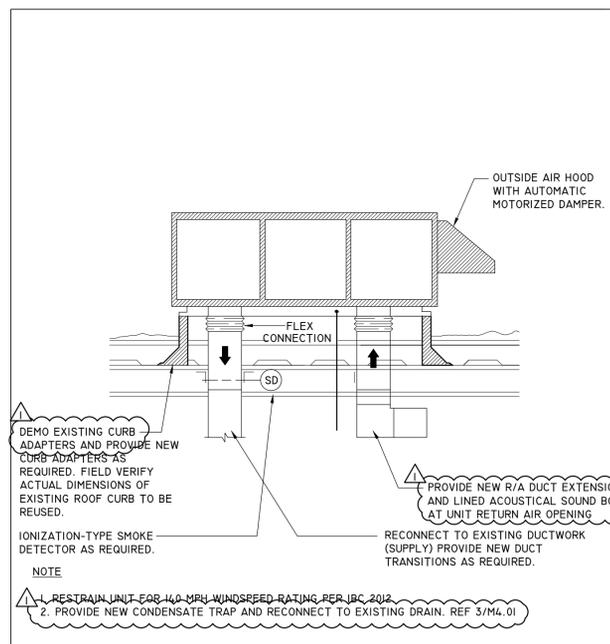
DATE: 03-30-20  
 SCALE: As indicated  
 DRAWN BY: CT  
 CHECKED BY: MF

SHEET NAME:  
**DETAILS**

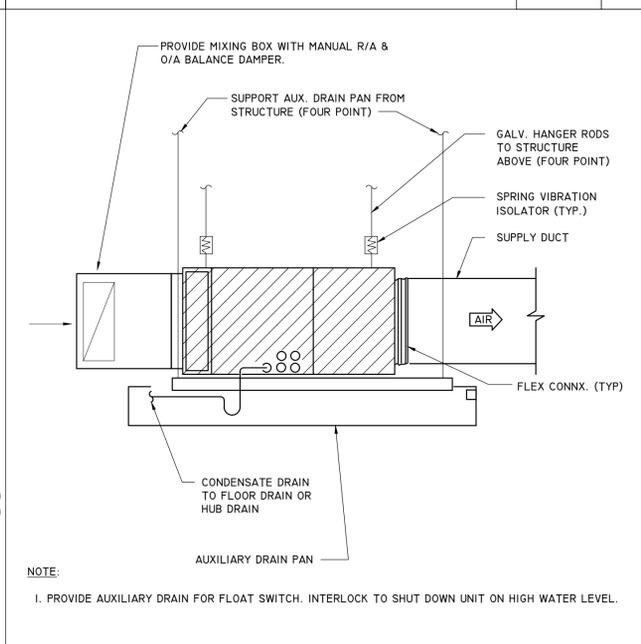
SHEET NO:  
**M4.02**



DUCT TRANSITION DETAIL NOT TO SCALE 2



ROOF-TOP UNIT INSTALLATION DETAIL NOT TO SCALE 3



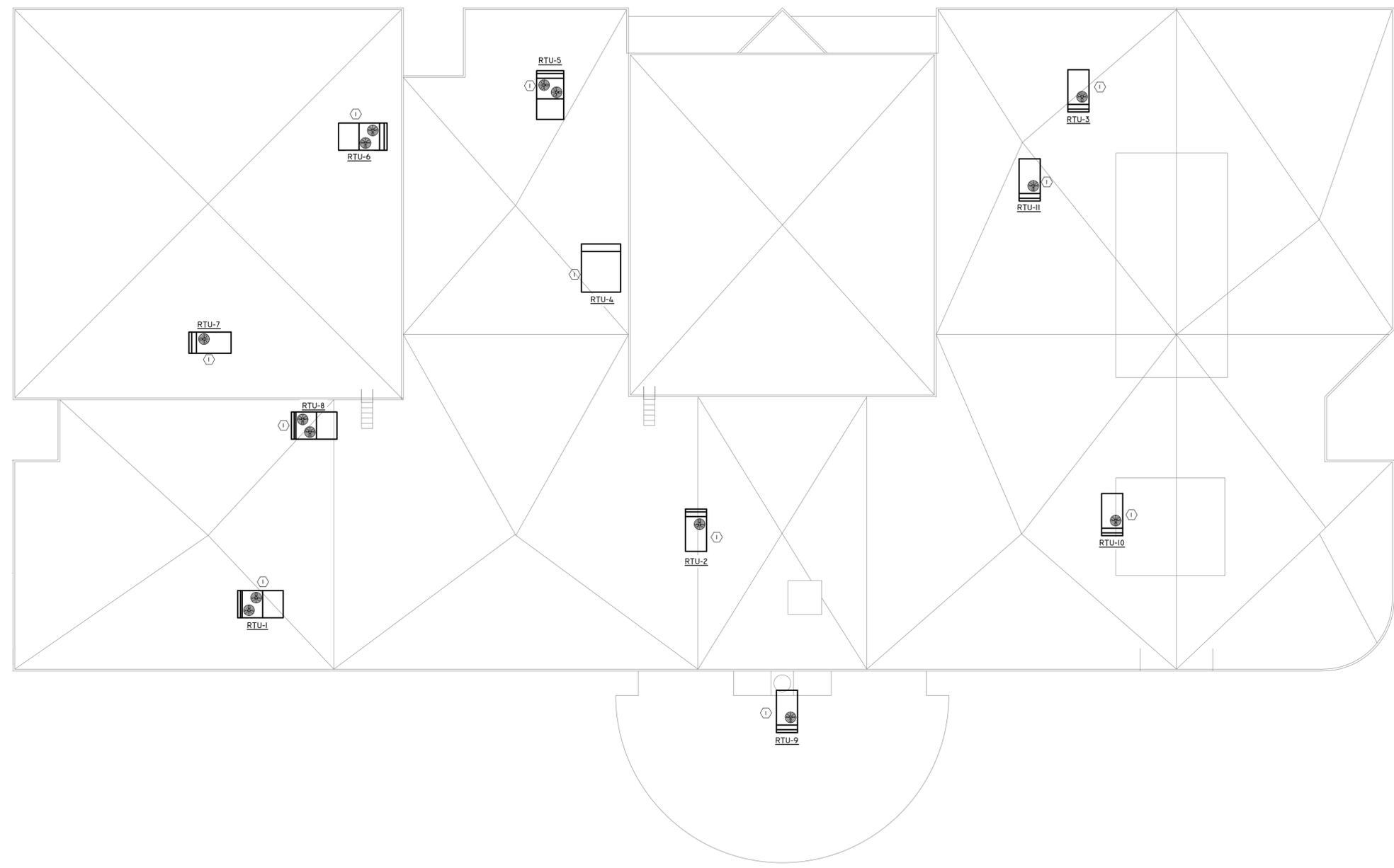
SUSPENDED FAN COIL UNIT DETAIL NOT TO SCALE 1

GENERAL NOTES:

1. IMPORT AVAILABLE BACNET OBJECTS INTO EXISTING JOHNSON CONTROLS METASYS.
2. UPDATE EXISTING USER INTERFACE GRAPHIC SCREENS TO INTEGRATE AND CONTROL NEW RTU EQUIPMENT.
3. PROVIDE ONE (1) NEW BAS COMPUTER WORKSTATION WITH OPERATING SYSTEM AND JCI GRAPHIC USER INTERFACE SOFTWARE INSTALLED AND CONFIGURED FOR EXISTING METASYS SYSTEM ACCESS AND CONTROL. LOCATE WORKSTATION IN FACILITY PER OWNERS' INSTRUCTION. PROVIDE NETWORK CABLING AS REQUIRED.
4. COMMISSION BAS CONTROLS. REFERENCE GENERAL NOTES FOR ADDITIONAL INFORMATION.

KEYED NOTES:

- (1) PROVIDE BACNET (OR N2) COMMUNICATION INTERFACE FROM EXISTING JOHNSON CONTROLS METASYS BAS SYSTEM TO NEW RTU'S. PROVIDE NETWORK COMMUNICATIONS CABLING AS REQUIRED.



ISSUE LOG

NO.	DATE	DESCRIPTION
1	01.13.20	ISSUE FOR BID & CONSTRUCTION
	03.30.20	ADDENDUM No. 05

CONSULTANT:



INFRASTRUCTURE ASSOCIATES, INC.  
 6117 RICHMOND AVE., SUITE 200  
 Houston, Texas 77057  
 TPPE REGISTRATION NO. F-4506  
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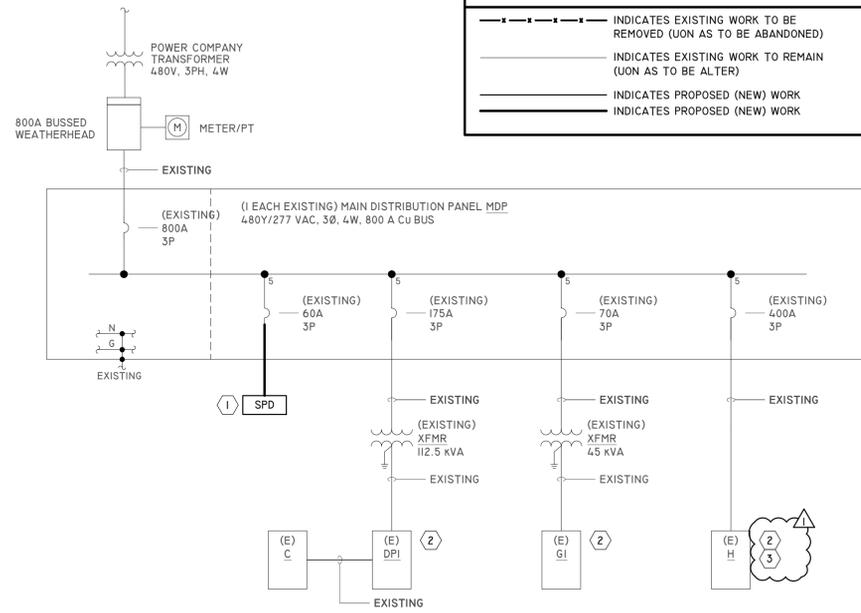
OTHER APPROVALS

WATER ENGINEERING _____	TRAFFIC AND TRANSPORTATION _____
WASTEWATER ENGINEERING _____	STREET, BRIDGE, & ROW ENGINEERING _____
STORMWATER ENGINEERING _____	PLANNING & DEVELOPMENT _____

DATE: 03-30-20  
 SCALE: As indicated  
 DRAWN BY: CT  
 CHECKED BY: MF

SHEET NAME:  
**BAS CONTROL**

SHEET NO:  
**M5.01**



**1 PARTIAL EXISTING ONE LINE DIAGRAM**  
SCALE: NTS

### LINE TYPE LEGEND

- INDICATES EXISTING WORK TO BE REMOVED (UN AS TO BE ABANDONED)
- INDICATES EXISTING WORK TO REMAIN (UN AS TO BE ALTER)
- INDICATES PROPOSED (NEW) WORK
- INDICATES PROPOSED (NEW) WORK

**EXISTING PANELBOARD**

PANEL: DPI LOCATION: -

WIRE SIZE	LOAD DESCRIPTION	LOAD KVA	BRKR SIZE	CKT NO	A	B	C	CKT NO	BRKR SIZE	LOAD KVA	LOAD DESCRIPTION	WIRE SIZE
-	(E) PANEL B	20	100	1				2	100	20	PANEL A	-
-	-	-	-	3				4	-	-	-	-
-	-	-	-	5				6	3	-	-	-
-	(E) PANEL C	19	100	7				8	-	-	-	-
-	-	-	-	9				10	-	-	-	-
-	-	-	-	11				12	-	-	-	-
-	-	-	-	13				14	-	-	-	-
-	-	-	-	15				16	-	-	-	-
-	-	-	-	17				18	-	-	-	-
-	-	-	-	19				20	-	-	-	-
-	-	-	-	21				22	-	-	-	-
-	-	-	-	23				24	-	-	-	-

CONN LTG - xi.25+ - KVA    CONN EQUIP - xi.0+ - KVA    CONN HVAC - xi.0+ - KVA    ALL WIRING FOR 20A/FP CKT SHALL CONSIST OF 2#12, 1#12G IN 3/4" UNLESS OTHERWISE NOTED.  
XFER LOAD - xi.0+ - KVA    CONN RCPT - - - KVA    TOTAL LOAD - 59 KVA    163 AMPS

### ELECTRICAL LOAD ANALYSIS

PROJECT: KASHMERE RENOVATION  
4802 LOCKWOOD DR  
HOUSTON, TX 77026

LOAD DESCRIPTION	KVA ADDED
A. INTERIOR LIGHTING:	
1. ALL INTERIOR LIGHTS TO REMAIN	+0 KVA
B. RECEPTACLES:	
1. NO RECEPTACLES ADDED TO PLAN	+0 KVA
C. EQUIPMENT:	
1. HVAC SYSTEM REMOVED AND REPLACED WITH NEW	+0 KVA
2. EXHAUST FANS REMOVED/ REPLACED WITH NEW	+0 KVA
<b>TOTAL LOAD ADDED (KVA)</b>	<b>+0 KVA</b>

HVAC SYSTEM SHALL BE REMOVED AND REPLACED WITH NEW AND SAME CAPACITY.

**EXISTING PANELBOARD**

PANEL: H LOCATION: ELECTRICAL ROOM

WIRE SIZE	LOAD DESCRIPTION	LOAD KVA	BRKR SIZE	CKT NO	A	B	C	CKT NO	BRKR SIZE	LOAD KVA	LOAD DESCRIPTION	WIRE SIZE
3#6	(N) RTU-1	35	60	1				2	30	18	(N) RTU-2	3#10
#10G	VIA 60AS/NF/3P/NEMA 3R	-	-	3				4	-	-	VIA 30AS/NF/3P/NEMA 3R	#10G
1" C	-	-	-	5				6	3	-	-	1" C
3#6	(N) RTU-3	25	45	7				8	70	45	(N) RTU-4	3#4
#10G	VIA 60AS/NF/3P/NEMA 3R	-	-	9				10	-	-	VIA 100AS/NF/3P/NEMA 3R	#8G
1" C	-	-	-	11				12	3	-	-	1 1/2" C
3#12	(N) RTU-5	11	20	13				14	60	36	(N) RTU-6	3#6
#12G	VIA 30AS/NF/3P/NEMA 3R	-	-	15				16	-	-	VIA 60AS/NF/3P/NEMA 3R	#10G
1" C	-	-	-	17				18	3	-	-	1" C
3#8	(N) RTU-7	25	40	19				20	40	25	(N) RTU-8	3#8
#10G	VIA 60AS/NF/3P/NEMA 3R	-	-	21				22	-	-	VIA 60AS/NF/3P/NEMA 3R	#10G
1" C	-	-	-	23				24	3	-	-	1" C
3#8	(N) RTU-9	25	40	25				26	70	45	(N) RTU-10	3#4
#10G	VIA 60AS/NF/3P/NEMA 3R	-	-	27				28	-	-	VIA 100AS/NF/3P/NEMA 3R	#8G
1" C	-	-	-	29				30	3	-	-	1 1/2" C
-	-	-	-	31				32	30	18	(N) RTU-11	3#10
-	-	-	-	33				34	-	-	VIA 30AS/NF/3P/NEMA 3R	#10G
-	-	-	-	35				36	3	-	-	1" C
-	-	-	-	37				38	-	-	-	-
-	-	-	-	39				40	-	-	-	-
-	-	-	-	41				42	-	-	-	-

CONN LTG - xi.25+ - KVA    CONN EQUIP - xi.0+ - KVA    CONN HVAC - 306 xi.0+ - 306 KVA    ALL WIRING FOR 20A/FP CKT SHALL CONSIST OF 2#12, 1#12G IN 3/4" UNLESS OTHERWISE NOTED.  
XFER LOAD - xi.0+ - KVA    CONN RCPT - - - KVA    TOTAL LOAD - 306 KVA    368 AMPS

**EXISTING PANELBOARD**

PANEL: C LOCATION: -

WIRE SIZE	LOAD DESCRIPTION	LOAD KVA	BRKR SIZE	CKT NO	A	B	C	CKT NO	BRKR SIZE	LOAD KVA	LOAD DESCRIPTION	WIRE SIZE
-	(E) EXISTING	0.8	20/1	1				2	30	1.3	(E) EXISTING	-
-	(E) EXISTING	0.8	20/1	3				4	2	-	-	-
-	(E) EXISTING	0.8	20/1	5				6	20/1	0.8	SPARE	-
-	(E) EXISTING	0.8	20/1	7				8	20/1	0.8	SPARE	-
-	(E) EXISTING	0.8	20/1	9				10	20/1	0.8	SPARE	-
#10	(N) EF #6, #7 **	1.2	20/1	11				12	20/1	0.8	(E) EXISTING	-
#10	(N) EF #1, #10 **	1.2	20/1	13				14	20/1	0.8	(E) EXISTING	-
#10	(N) EF #5, #4 **	0.6	20/1	15				16	20/1	0.8	(E) EXISTING	-
-	(E) EXISTING	0.8	20/1	17				18	20/1	0.8	(E) EXISTING	-
-	(E) EXISTING	0.8	20/1	19				20	20/1	0.8	(E) EXISTING	-
#12	(N) EF #2 **	0.6	20/1	21				22	20/1	0.8	(E) EXISTING	-
-	SPARE	-	-	23				24	20/1	0.8	(E) EXISTING	-
-	SPARE	-	-	25				26	20/1	0.8	(E) EXISTING	-
-	SPARE	-	-	27				28	20/1	0.8	(E) EXISTING	-
-	SPARE	-	-	29				30	20/1	0.8	(E) EXISTING	-
-	(E) EXISTING	0.8	20/1	31				32	20/1	0.8	(E) EXISTING	-
-	(E) EXISTING	0.8	20/1	33				34	20/1	0.8	(E) EXISTING	-
-	(E) EXISTING	0.8	20/1	35				36	20/1	0.8	(E) EXISTING	-
-	(E) EXISTING	0.8	20/1	37				38	20/1	0.8	(E) EXISTING	-
-	(E) EXISTING	0.8	20/1	39				40	20/1	0.8	(E) EXISTING	-
-	-	-	-	41				42	20/1	0.8	(E) EXISTING	-

CONN LTG - xi.25+ - KVA    CONN EQUIP - xi.0+ - KVA    CONN HVAC - 5 xi.0+ - 5 KVA    ALL WIRING FOR 20A/FP CKT SHALL CONSIST OF 2#12, 1#12G IN 3/4" UNLESS OTHERWISE NOTED.  
XFER LOAD - xi.0+ - KVA    CONN RCPT - - - KVA    TOTAL LOAD - 28 KVA    77 AMPS

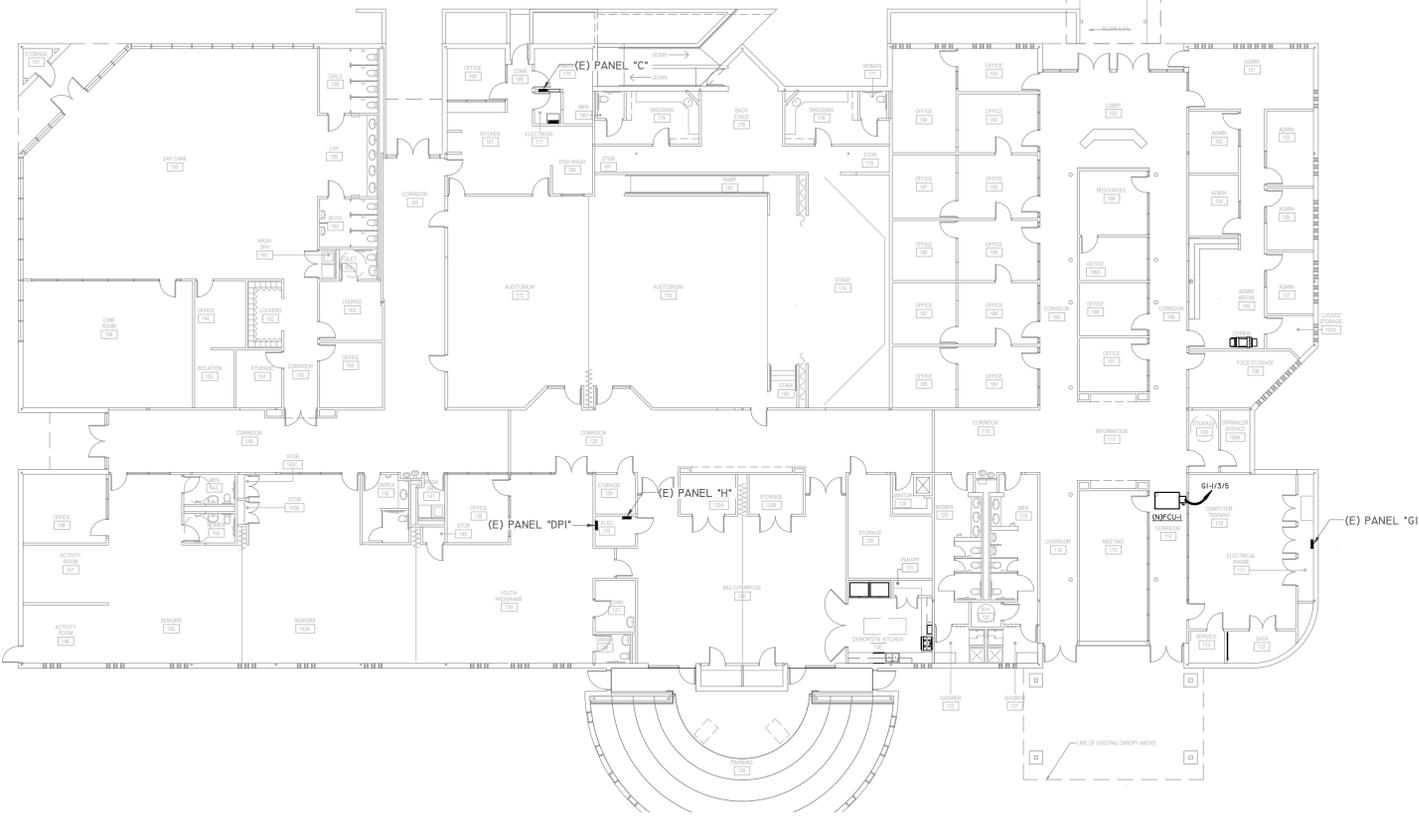
**EXISTING PANELBOARD**

PANEL: GI LOCATION: -

WIRE SIZE	LOAD DESCRIPTION	LOAD KVA	BRKR SIZE	CKT NO	A	B	C	CKT NO	BRKR SIZE	LOAD KVA	LOAD DESCRIPTION	WIRE SIZE
3#10	(N) CU-4 **	6	30	1				2	20/1	0.8	(E) EXISTING	-
#10G	VIA 30AS/NF/3P/NEMA 3R	-	-	3				4	20/1	0.8	(E) EXISTING	-
1" C	-	-	-	5				6	20/1	0.8	(E) EXISTING	-
-	(E) EXISTING	0.8	20/1	7				8	20/1	0.8	(E) EXISTING	-
-	(E) EXISTING	0.8	20/1	9				10	20/1	0.8	(E) EXISTING	-
-	(E) EXISTING	0.8	20/1	11				12	20/1	0.8	(E) EXISTING	-
-	(E) EXISTING	0.8	20/1	13				14	20/1	0.8	(E) EXISTING	-
-	SPARE	-	-	15				16	20/1	0.8	(E) EXISTING	-
-	SPARE	-	-	17				18	20/1	0.8	(E) EXISTING	-
-	(E) EXISTING	0.8	20/1	19				20	20/1	0.8	(E) EXISTING	-
-	(E) EXISTING	0.8	20/1	21				22	20/1	0.8	(E) EXISTING	-
-	(E) EXISTING	0.8	20/1	23				24	20/1	0.8	(E) EXISTING	-
-	(E) EXISTING	0.8	20/1	25				26	20/1	0.8	(E) EXISTING	-
-	(E) EXISTING	0.8	20/1	27				28	20/1	0.8	(E) EXISTING	-
-	(E) EXISTING	0.8	20/1	29				30	20/1	0.8	(E) EXISTING	-
-	(E) EXISTING	0.8	20/1	31				32	20/1	0.8	(E) EXISTING	-
-	(E) EXISTING	0.8	20/1	33				34	20/1	-	SPARE	-
-	(E) EXISTING	0.8	20/1	35				36	20/1	-	SPARE	-
-	(E) EXISTING	0.8	20/1	37				38	-	-	SPARE	-
#12	(N) EF #5	0.6	20/1	39				40	20	2	(N) FCU-1	2#12
#10	(N) EF #8, #9	1.2	20/1	41				42	3	-	VIA 30AS/NF/2P/NEMA 1	#10G

CONN LTG - xi.25+ - KVA    CONN EQUIP - xi.0+ - KVA    CONN HVAC - 2 xi.0+ - 2 KVA    ALL WIRING FOR 20A/FP CKT SHALL CONSIST OF 2#12, 1#12G IN 3/4" UNLESS OTHERWISE NOTED.  
XFER LOAD - xi.0+ - KVA    CONN RCPT - 24 - 24 KVA    TOTAL LOAD - 19 KVA    55 AMPS

- ELECTRICAL KEYED NOTES:**
- REPLACE SPD WITH CURRENT TECHNOLOGIES #SL3-200-480-3Y-MN-T-M3-F-4-HPI WITH #HPI-6Y CABLE IN 1" IMC.
  - REPLACE EXISTING TVSS WITH LIKE.
  - PROVIDE NEW SPD: CURRENT TECHNOLOGIES #SL3-100-480-3Y-MN-B-M3-F-HPI WITH #HPI-6Y CABLE IN 1" IMC. PROVIDE ADDITIONAL 60A/15P BREAKER FOR CONNECTION IN NEAREST BREAKER SPACE TO MAIN.



**1 FLOOR PLAN**  
SCALE: 1/16" = 1'-0"

**ISSUE LOG**

NO.	DATE	DESCRIPTION
1	01.13.20	ISSUE FOR BID & CONSTRUCTION
	03.30.20	ADDENDUM NO. 05

CONSULTANT:

INFRASTRUCTURE ASSOCIATES, INC.  
6117 RICHMOND AVE., SUITE 200  
Houston, Texas 77057  
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WWW.IAHOUSTON.COM

SEAL:

3/30/20

PROJECT NAME:  
**KASHMERE RENOVATION**

4802 LOCKWOOD DR.  
HOUSTON TX, 77026

WBS NO.: H-000086-001-3-01-03

**CITY OF HOUSTON**

OTHER APPROVALS

WATER ENGINEERING	TRAFFIC AND TRANSPORTATION
WASTEWATER ENGINEERING	STREET, BRIDGE, & ROW ENGINEERING
STORMWATER ENGINEERING	PLANNING & DEVELOPMENT

DATE: 03-30-20  
SCALE: As indicated  
DRAWN BY: JD  
CHECKED BY: SK

SHEET NAME:  
**ONE LINE DIAGRAM**

SHEET NO:  
**E1.00**