



PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
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Date: 01/12/2023

City Project No.: 22-024 R2

Addendum No.: 1

Plan holders:

Revisions to Plans and Specifications

The following additions, deletions, or modifications shall become part of the Contract Documents.

Item No. 1:

The bid opening date has changed from Thursday, November 10, 2022 to Thursday, February 2, 2023 at 2:30 PM.

Item No. 2:

There is no optional pre-bid meeting for this project.

Item No. 3:

1. Appendix A:
Delete Pages 1-22 and replace with the attached, revised Appendix A consisting of 25 pages.
2. Appendix B:
Delete Pages 1-3 and replace with the attached, revised Appendix B consisting of 3 pages.

If you have any questions, please call me at (209) 668-6029 or email at ccalvario@turlock.ca.us.

Sincerely,

Charlotte Calvario
Engineering Project Coordinator

CITY OF TURLOCK

UV SCOPE OF WORK

ANIMAL SERVICES

801 South Walnut Road

1x 3-ton Wall Unit (Exterior – Wall, shown in red)

Installation of UV light into an existing 3-ton wall unit located on the exterior wall of the secondary animal services facility for added disease mitigation. The basis of design for the new field installed UV-C unit is a Bard 8620-344 UV - C accessory, or approved equal



CITY HALL

156 South Broadway

3x 5-ton Packaged Units (locations shown in red)

Installation of UV light into three existing 5-ton packaged rooftop units located on the roof of City Hall for added disease mitigation. The basis of design for the new field installed UV-C units is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal.

Contractor to field verify existing HVAC units for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream in the supply ductwork as an alternative.

5x 10-ton Packaged Units (locations shown in blue)

Installation of UV light into five existing 10-ton packaged rooftop units located on the roof of City Hall for added disease mitigation. The basis of design for the new field installed UV-C units is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal.

Contractor to field verify existing HVAC units for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.

CITY OF TURLOCK

UV SCOPE OF WORK



CORPORATE YARD

701 South Walnut Road

2x 2-ton Wall Unit (Exterior – Wall, shown in red)

Installation of UV light into two existing 2-ton wall units located on the exterior wall of the Corporate Yard building for added disease mitigation. The basis of design for the new field installed UV-C unit is a Fresh-Aire Tight-Fit Kit UV - C accessory, or approved equal.

CITY OF TURLOCK

UV SCOPE OF WORK



FIRE & PD TRAINING

701 South Walnut Road

4x 4-ton Packaged Units (locations shown in red)

Installation of UV light into four existing 4-ton packaged rooftop units located on the roof of the Training Facility for added disease mitigation. The basis of design for the new field installed UV-C units is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC units for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.

2x 3-ton Packaged Units (locations shown in blue)

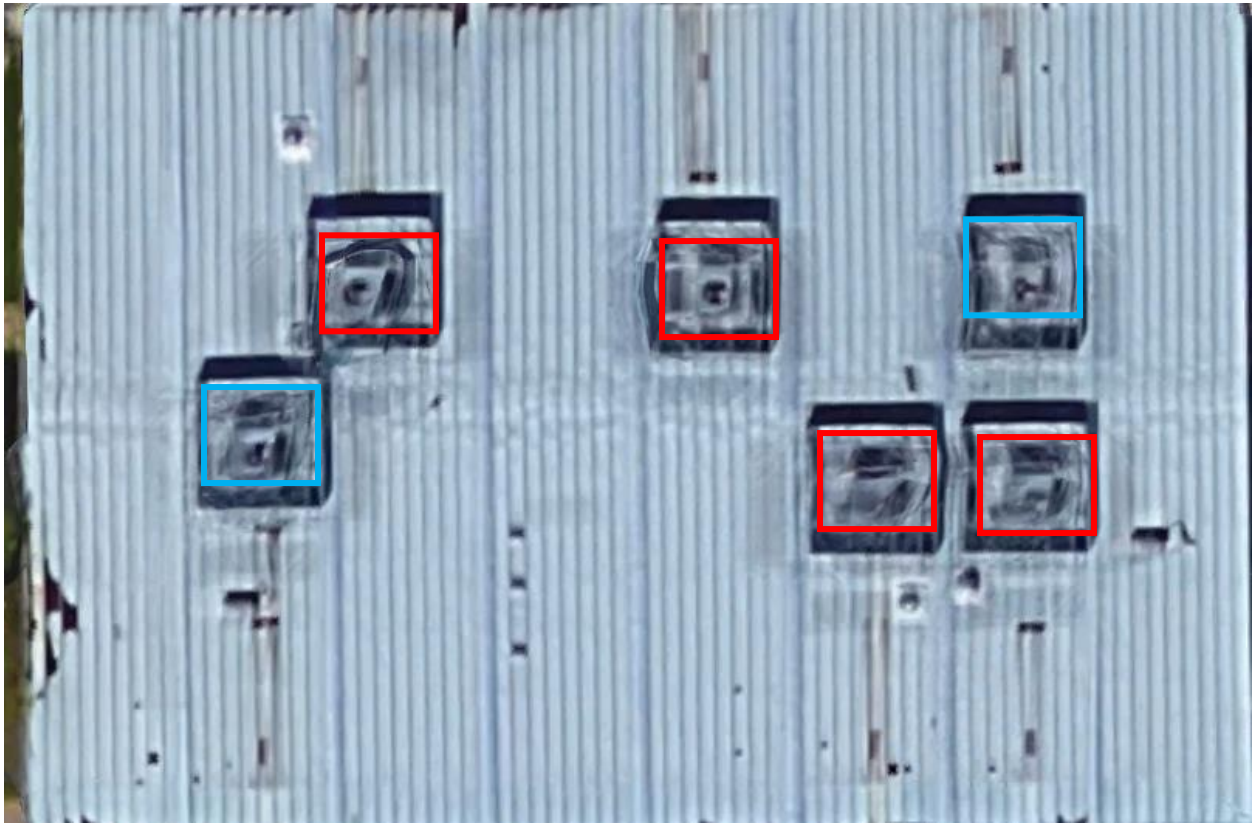
Installation of UV light into two existing 3-ton packaged rooftop units located on the roof of the Training Facility for added disease mitigation. The basis of design for the new field installed UV-C units is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC units for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.

2x Ductless Units (interior)

Installation of UV light into two existing ductless split systems located in the Training Facility for added disease mitigation. The basis of design for the new field installed UV-C units is a Fresh-Aire UV TUV-MINI-LED-SW accessory, or approved equal.

CITY OF TURLOCK

UV SCOPE OF WORK



FIRE STATION #1

540 East Marshall Avenue

5x Air Handlers (interior – Day Room (2), App Bay (1 – not shown in photos), App Bay Crawl Space (2))

Installation of UV light into five existing air handlers located in Fire Station #1 for added disease mitigation. The basis of design for the new field installed UV-C units is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC units for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.

CITY OF TURLOCK

UV SCOPE OF WORK



1 Day Room

CITY OF TURLOCK

UV SCOPE OF WORK



2 Crawl Space



3 Crawl Space

CITY OF TURLOCK

UV SCOPE OF WORK

FIRE STATION #3

501 East Monte Vista Avenue

2x Air Handlers (interior – closet)

Installation of UV light into two existing air handlers located in Fire Station #3 for added disease mitigation. The basis of design for the new field installed UV-C units is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC units for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.



CITY OF TURLOCK

UV SCOPE OF WORK

FIRE STATION #4

2280 North Walnut Road

1x Air Handler (interior – closet)

Installation of UV light into air an existing air handler located in Fire Station #4 for added disease mitigation. The basis of design for the new field installed UV-C unit is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC unit for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.



CITY OF TURLOCK

UV SCOPE OF WORK

FLEET MAINTENANCE

701 South Walnut Road

1x 1.5-ton Packaged Unit (location shown in red)

Installation of UV light into an existing 1.5-ton packaged rooftop unit located on the roof of Fleet Maintenance for added disease mitigation. The basis of design for the new field installed UV-C unit is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC unit for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.



Instrumentation Building

901 South Walnut Road

1x 5-ton Wall Unit (Exterior – Wall, shown in red)

Installation of UV light into an existing 5-ton wall unit located on the exterior wall of the Instrumentation Building for added disease mitigation. The basis of design for the new field installed UV-C unit is a Bard 8620-344 UV - C accessory, or approved equal

CITY OF TURLOCK

UV SCOPE OF WORK



MARTY YERB REC CENTER

600 Columbia Avenue

2x Air Handlers (Not shown in photos)

Installation of UV light into two existing air handlers located in the Marty Yerb Rec Center for added disease mitigation. The basis of design for the new field installed UV-C units is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC units for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.

MUNICIPAL SERVICES

156 South Broadway

7x 5-ton Packaged Units (locations shown in red)

Installation of UV light into seven existing 5-ton packaged rooftop units located on the roof of Municipal Services for added disease mitigation. The basis of design for the new field installed UV-C units is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC units for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.

CITY OF TURLOCK

UV SCOPE OF WORK

4x 10-ton Packaged Units (locations shown in blue)

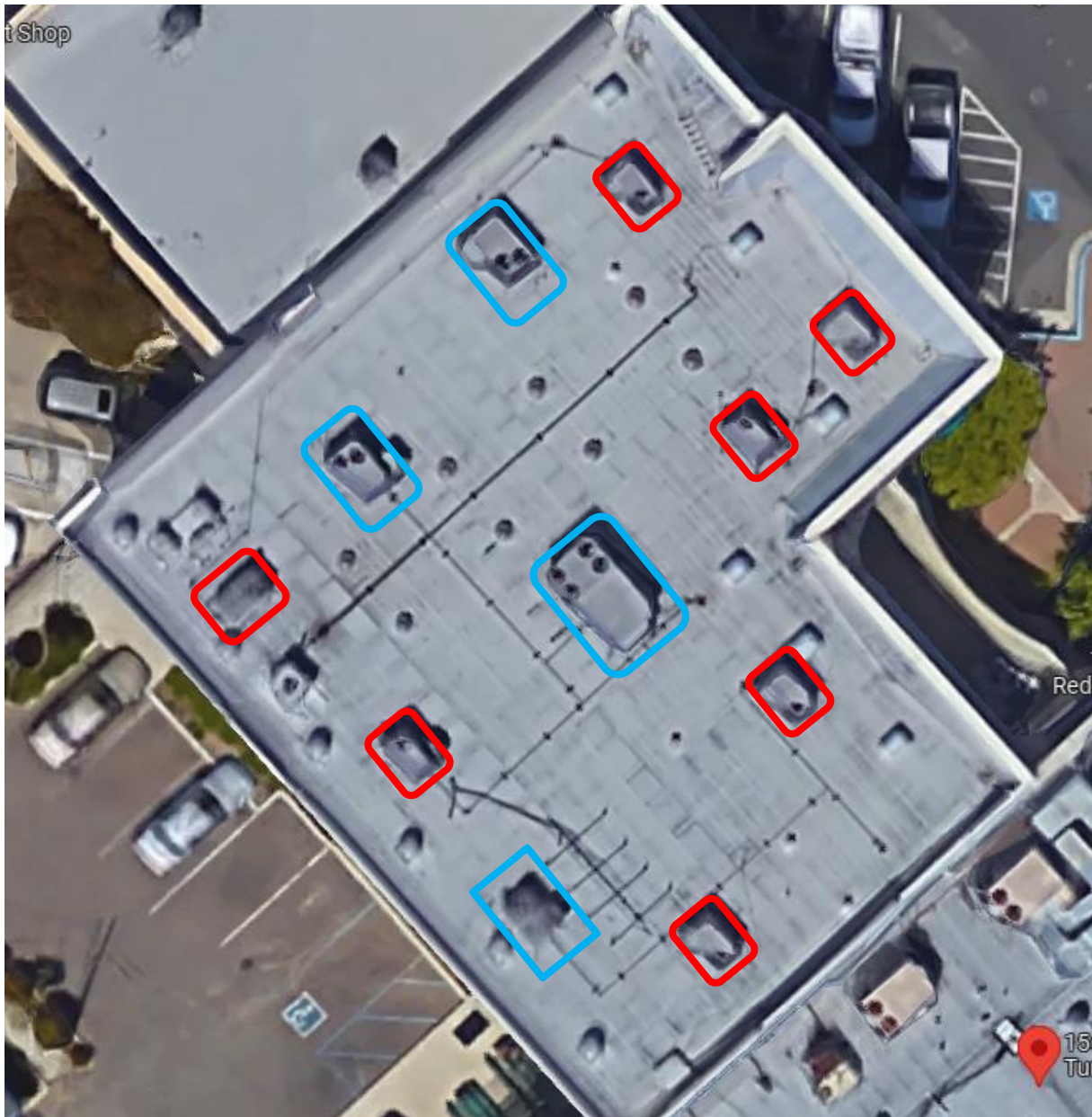
Installation of UV light into four existing 10-ton packaged rooftop units located on the roof of Municipal Services for added disease mitigation. The basis of design for the new field installed UV-C units is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC units for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.

3x Ductless Unit (interior – not shown in photos)

Installation of UV light into three existing ductless split systems located in Municipal Services for added disease mitigation. The basis of design for the new field installed UV-C units is a Fresh-Aire UV TUV-MINI-LED-SW accessory, or approved equal.

CITY OF TURLOCK

UV SCOPE OF WORK



PAL BUILDING

595 High Street

1x 3-ton Packaged Unit (not shown in photos)

Installation of UV light into an existing 3-ton packaged rooftop unit located on the roof of the PAL Building for added disease mitigation. The basis of design for the new field installed UV-C unit is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC unit for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.

CITY OF TURLOCK

UV SCOPE OF WORK

PARK SHOP

701 South Walnut Road

1x Air Handler (not shown in photos)

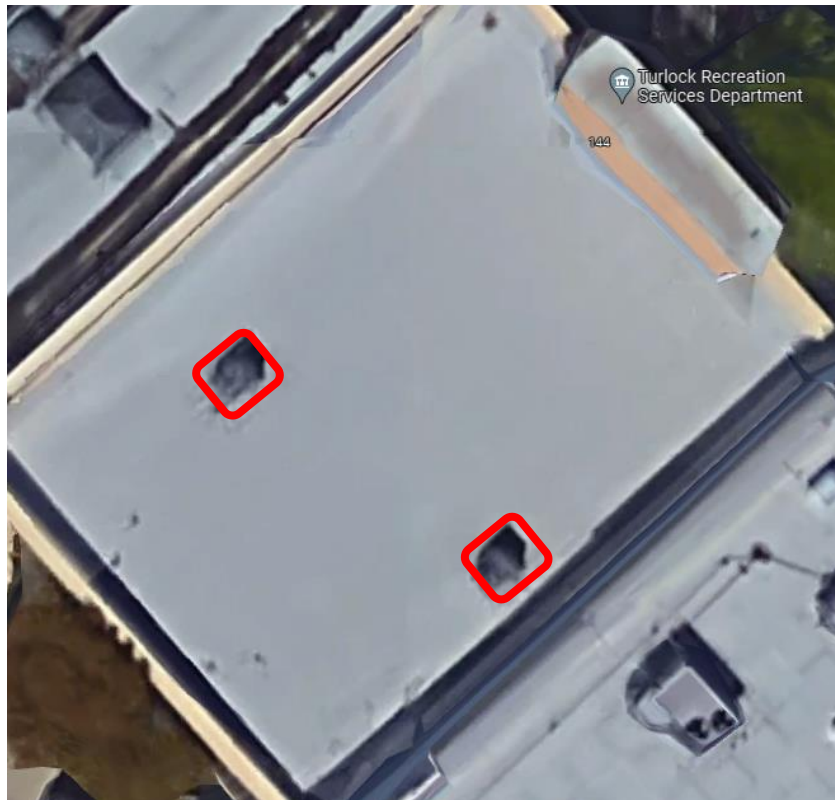
Installation of UV light into an existing air handler located in the Park Shop building for added disease mitigation. The basis of design for the new field installed UV-C unit is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC unit for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.

PARKS, RECREATION, AND OFFICE

144 South Broadway

2x 3.5-ton Packaged Units (Locations shown in red)

Installation of UV light into two existing 3.5-ton packaged rooftop units located on the roof of Parks, Recreation, and Office for added disease mitigation. The basis of design for the new field installed UV-C units is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC units for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.



CITY OF TURLOCK

UV SCOPE OF WORK

PUBLIC SAFETY FACILITY

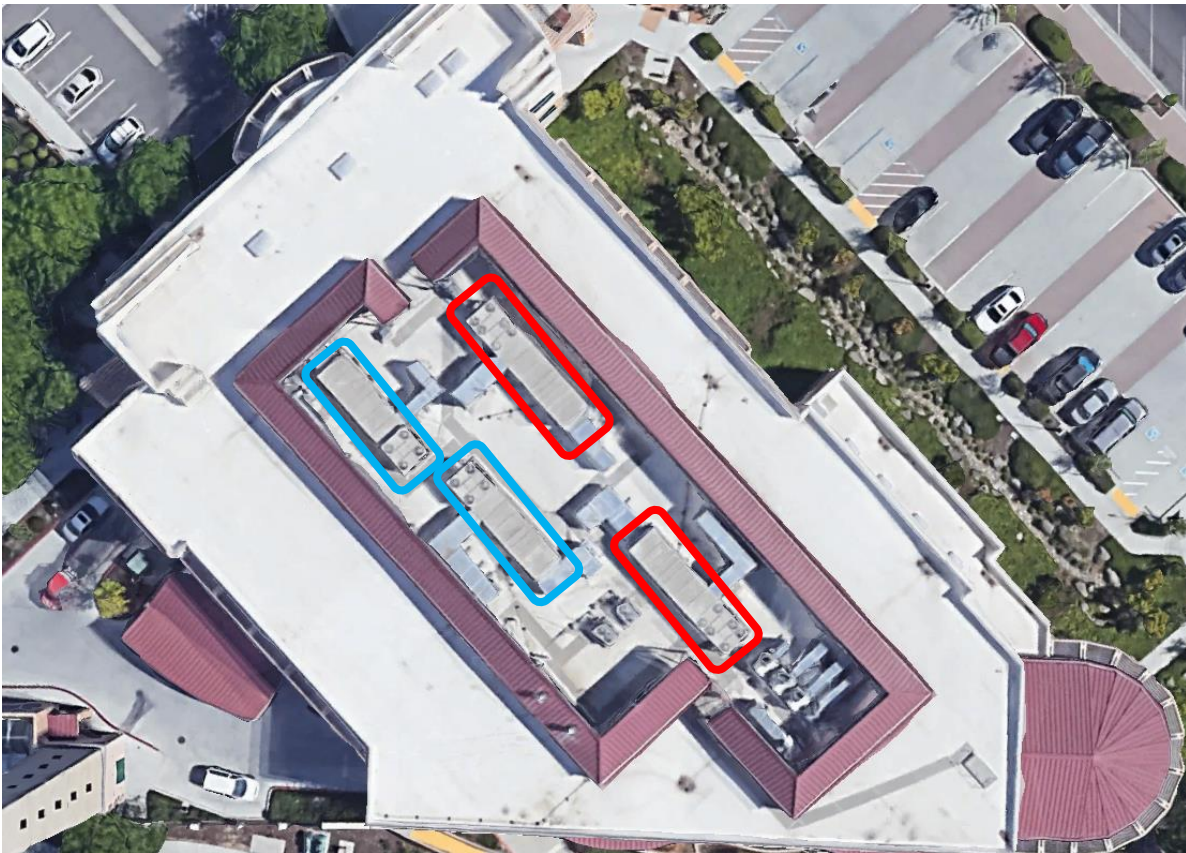
244 North Broadway

2x 81-ton Packaged Units (locations shown in red)

Installation of UV light into two existing 81-ton packaged rooftop units located on the roof of the Public Safety Facility for added disease mitigation. The basis of design for the new field installed UV-C units is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC units for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.

2x 51-ton Packaged Units (locations shown in blue)

Installation of UV light into two existing 51-ton packaged rooftop units located on the roof of the Public Safety Facility for added disease mitigation. The basis of design for the new field installed UV-C units is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC units for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.



CITY OF TURLOCK

UV SCOPE OF WORK

SENIOR CENTER

1911 Cahill Avenue

2x 5-ton Packaged Units (locations shown in red)

Installation of UV light into two existing 5-ton packaged rooftop units located on the roof of Senior Center for added disease mitigation. The basis of design for the new field installed UV-C units is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC units for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.

2x 7.5-ton Packaged Units (locations shown in blue)

Installation of UV light into two existing 7.5-ton packaged rooftop units located on the roof of Senior Center for added disease mitigation. The basis of design for the new field installed UV-C units is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC units for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.



CITY OF TURLOCK

UV SCOPE OF WORK

SHOOTING RANGE

701 South Broadway

1x 2.5-ton Packaged Unit (Not shown in photos)

Installation of UV light into an existing 2.5-ton packaged rooftop unit located on the roof of the Shooting Range for added disease mitigation. The basis of design for the new field installed UV-C unit is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC unit for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.

UTILITIES SHOP

701 South Walnut Road

1x Air Handler (not shown in photos)

Installation of UV light into an existing air handler located in the Utilities Shop building for added disease mitigation. The basis of design for the new field installed UV-C unit is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC unit for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.

WATER COLLECTIONS

901 South Walnut Road

1x Air Handler (Not shown in photos)

Installation of UV light into an existing air handler located in the Water Collections building for added disease mitigation. The basis of design for the new field installed UV-C unit is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC unit for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.

WATER OPERATORS

901 South Walnut Road

2x 3-ton Packaged Units (locations shown in red)

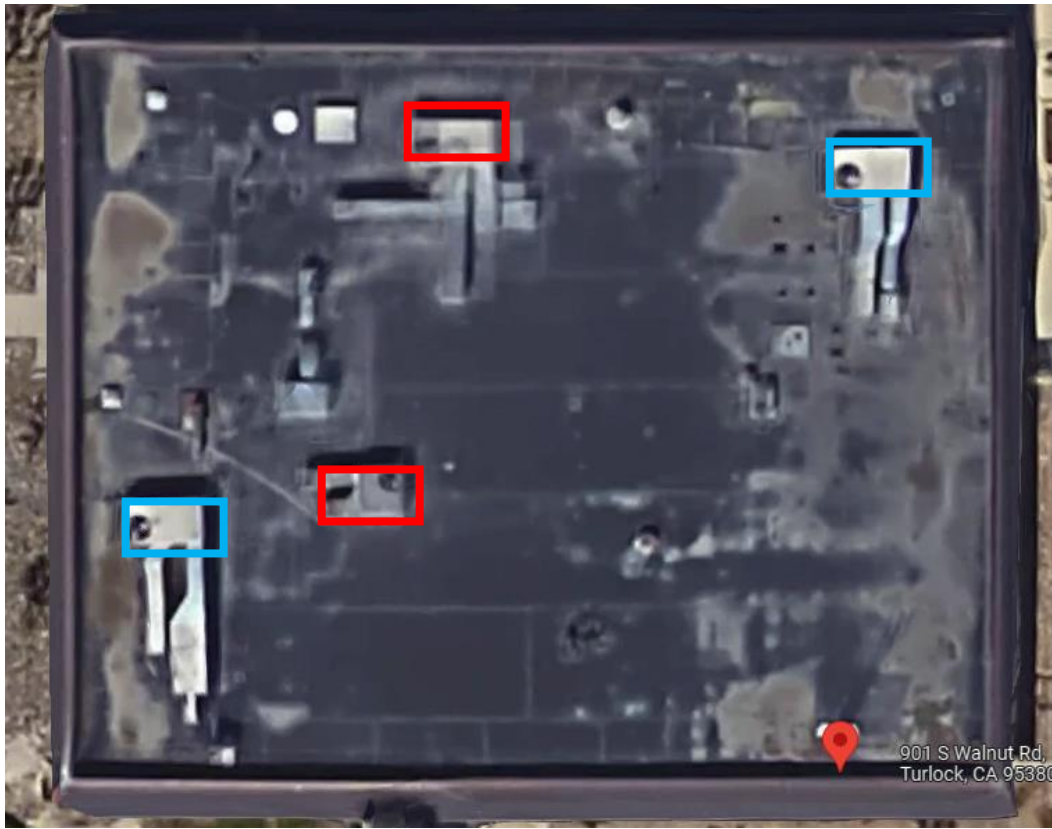
Installation of UV light into two existing 3-ton packaged rooftop units located on the roof of Water Operators building for added disease mitigation. The basis of design for the new field installed UV-C units is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC units for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.

CITY OF TURLOCK

UV SCOPE OF WORK

2x 5-ton Packaged Units (locations shown in blue)

Installation of UV light into two existing 5-ton packaged rooftop units located on the roof of Water Operators building for added disease mitigation. The basis of design for the new field installed UV-C units is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC units for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.



WQC – ACID PHASE BUILDING

901 South Walnut Road

1x 6-ton Packaged Unit (location shown in red)

Installation of UV light into an existing 6-ton packaged rooftop unit serving the Acid Phase Building for added disease mitigation. The basis of design for the new field installed UV-C unit is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC unit for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.

CITY OF TURLOCK

UV SCOPE OF WORK



WQC – BLOWER BUILDING NO.1

901 South Walnut Road

1x 5-ton Packaged Unit (not shown in photos)

Installation of UV light into an existing 5-ton packaged rooftop unit serving Blower Building #1 for added disease mitigation. The basis of design for the new field installed UV-C unit is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC unit for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.

WQC – BLOWER BUILDING NO.2

901 South Walnut Road

1x 3-ton Packaged Unit (not shown in photos)

Installation of UV light into an existing 3-ton packaged rooftop unit serving Blower Building #2 for added disease mitigation. The basis of design for the new field installed UV-C unit is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC unit for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.

CITY OF TURLOCK

UV SCOPE OF WORK

WQC – CHLORINE BUILDING

901 South Walnut Road

1x 8-ton Packaged Unit (not shown in photos)

Installation of UV light into an existing 8-ton packaged rooftop unit serving Chlorine Building for added disease mitigation. The basis of design for the new field installed UV-C unit is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC unit for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.

WQC – ELECTRICAL BUILDING NO.6

901 South Walnut Road

1x 10-ton Packaged Unit (location shown in red)

Installation of UV light into an existing 10-ton packaged rooftop unit serving Electrical Building #6 for added disease mitigation. The basis of design for the new field installed UV-C unit is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC unit for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.



WQC – ELECTRICAL BUILDING NO.7

901 South Walnut Road

2x 10-ton Packaged Units (not shown in photos)

Installation of UV light into two existing 10-ton packaged rooftop units serving Electrical Building #7 for added disease mitigation. The basis of design for the new field installed UV-C units is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor

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UV SCOPE OF WORK

to field verify existing HVAC units for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.

1x 2-ton Packaged Unit (not shown in photos)

Installation of UV light into an existing 2-ton packaged rooftop unit serving Electrical Building #7 for added disease mitigation. The basis of design for the new field installed UV-C unit is a UVR accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC unit for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.

WQC – ELECTRICAL BUILDING NO.8

901 South Walnut Road

1x Wall Unit (Exterior - Wall)

Installation of UV light into an existing 5-ton wall unit located on the exterior wall of the Electrical Building #8 for added disease mitigation. The basis of design for the new field installed UV-C unit is a Bard 8620-344 UV - C accessory, or approved equal



CITY OF TURLOCK

UV SCOPE OF WORK

WQC – PRIMARY ELECTRICAL SERVICE BUILDING

901 South Walnut Road

1x 6-ton Packaged Unit (not shown in photos)

Installation of UV light into an existing 6-ton packaged rooftop unit serving Primary Electrical Service Building for added disease mitigation. The basis of design for the new field installed UV-C unit is a UVR X-Plus accessory with safety interlock switch and sight glass, or approved equal. Contractor to field verify existing HVAC unit for exterior mounting location. In the event of limited clearance between the coil and supply fan prohibiting a unit mounted application, the UV accessory may be placed downstream on the supply ductwork as an acceptable alternative.

UV LIGHT SCHEDULE

SERVICE	MECH EQUIPMENT			BASIS OF DESIGN (OR APPROVED EQUAL)	
	TYPE	BRAND	MODEL	MANUFACTURER	UV MODEL
Animal Services	Wall Unit	BARD	WA372-A10XX4XX	BARD	8620-344
City Hall	Package	TRANE	WCD060C300BC	UVR	X-Plus
	Package	YORK	B3CH060A25C	UVR	X-Plus
	Package	YORK	B3CH060A25C	UVR	X-Plus
	Package	TRANE	WSC120H3R0A030	UVR	X-Plus
	Package	TRANE	WSC120H3RA040	UVR	X-Plus
	Package	TRANE	WSC120H3R0A050	UVR	X-Plus
	Package	TRANE	WSC120H3R0A050	UVR	X-Plus
	Package	TRANE	WSC120H3R0A050	UVR	X-Plus
Corporate Yard	Wall Unit	INTERTHERMS	PWYB024KB0501	FRESH-AIRE	TIGHT-FIT KIT
	Wall Unit	INTERTHERMS	PWYB024KB0501	FRESH-AIRE	TIGHT-FIT KIT
Fire and TPD Training	Package	CARRIER	50SZ-048-301	UVR	X-Plus
	Package	CARRIER	50SZ-048-301	UVR	X-Plus
	Package	CARRIER	50SZ-048-301	UVR	X-Plus
	Package	CARRIER	50SZ-048-301	UVR	X-Plus
	Package	CARRIER	50JS-036-501	UVR	X-Plus
	Package	CARRIER	50J6-036-501	UVR	X-Plus
	Split - Ductless	CARRIER	38MVQ009-1	FRESH-AIRE	TUV-MINI-LED-SW
	Split - Ductless	CARRIER	38MVQ09-1	FRESH-AIRE	TUV-MINI-LED-SW
Fire Station #1	Air Handler	CARRIER	58CTX045---12112	UVR	X-Plus
	Air Handler	CARRIER	58CTX045---13112	UVR	X-Plus
	Air Handler	CARRIER	58CTX110---12122	UVR	X-Plus
	Air Handler	CARRIER	58CTX110---12122	UVR	X-Plus
	Air Handler	CARRIER	FX4CNF030	UVR	X-Plus
Fire Station #3	Air Handler	CARRIER	PG8JAA03607AGJA	UVR	X-Plus
	Air Handler	CARRIER	PG8JAA036090AFJA	UVR	X-Plus
Fire Station #4	Air Handler	HEIL	NDGE075PF02867-768361	UVR	X-Plus
Fleet Maintenance	Package	YORK	DZYS018N03206A	UVR	X-Plus
Instrumentation Building	Wall Unit	BARD	WH602-A10	BARD	8620-344
Marty Yerb Rec Center	Air Handler	DAY & NIGHT	48CVHGFC-608	UVR	X-Plus
	Air Handler	DAY & NIGHT	48CVHFC-608	UVR	X-Plus
Municipal Services	Package	CARRIER	48HJD014AC-501AE	UVR	X-Plus
	Package	CARRIER	48HJD005-551	UVR	X-Plus
	Package	CARRIER	48HJD006-541	UVR	X-Plus
	Package	CARRIER	48HJD007-551	UVR	X-Plus
	Package	CARRIER	48HJD006-541	UVR	X-Plus
	Package	CARRIER	48HJD009-541	UVR	X-Plus
	Package	CARRIER	48HJD008-541	UVR	X-Plus
	Package	CARRIER	48HJD006-541	UVR	X-Plus
	Package	CARRIER	48HJD005-551	UVR	X-Plus
	Package	CARRIER	48HJD007-551	UVR	X-Plus
	Package	CARRIER	48HGD007-551	UVR	X-Plus
	Split - Ductless	CARRIER	38HDC018341	FRESH-AIRE	TUV-MINI-LED-SW
	Split - Ductless	CARRIER	38HDC018341	FRESH-AIRE	TUV-MINI-LED-SW
	Split - Ductless	CARRIER	38HDC024331LA	FRESH-AIRE	TUV-MINI-LED-SW

UV LIGHT SCHEDULE						
SERVICE		MECH EQUIPMENT			BASIS OF DESIGN (OR APPROVED EQUAL)	
		TYPE	BRAND	MODEL	MANUFACTURER	UV MODEL
PAL Building		Package	BRYANT	310JAV036045	UVR	X-Plus
Park Shop		Air Handler	CARRIER	FX4DNF031	UVR	X-Plus
Parks, Recreation, and Office		Package	BRYANT	582APW042060NAAG	UVR	X-Plus
		Package	BRYANT	582APW042060NAAG	UVR	X-Plus
Public Safety Facility		Package	MCQUAY	RPS081DSW	UVR	X-Plus
		Package	MCQUAY	RPS081DSW	UVR	X-Plus
		Package	MCQUAY	RPS051DSW	UVR	X-Plus
		Package	MCQUAY	RPS051DSW	UVR	X-Plus
Senior Center		Package	BRYANT	580FPV090125AA	UVR	X-Plus
		Package	BRYANT	580JP08A125A2A0AA	UVR	X-Plus
		Package	BRYANT	574DPWA420743	UVR	X-Plus
		Package	BRYANT	YSC060G3ELB250	UVR	X-Plus
Shootin Range		Package	TRANE	WCC030F100BG	UVR	X-Plus
Utilities Shop		Air Handler	CARRIER	CNPVP4821A	UVR	X-Plus
Water Collections		Air Handler	GOODMAN	GMP050-3	UVR	X-Plus
Water Operators		Package	BRYANT	580JE04A072A2A0AAA	UVR	X-Plus
		Package	BRYANT	580JE04A072A2A0AAA	UVR	X-Plus
		Package	BRYANT	580JE06A072A2A0AAA	UVR	X-Plus
		Package	BRYANT	580JE06A072A2A0AAA	UVR	X-Plus
Water Quality Control	Acid Phase Building	Package	BRYANT	548JE07A000A2A0AAA	UVR	X-Plus
	Blower Bld No. 1	Package	CARRIER	50HJQ006601	UVR	X-Plus
	Blower Bld No. 2	Package	YORK	J03XPC00N4SZZ10002C	UVR	X-Plus
	Chlorine Building	Package	BRYANT	548JE08D000A2A0AAA	UVR	X-Plus
	Electrical Bld No. 6	Package	YORK	J10XOC00A4SZZ50001A	UVR	X-Plus
	Electrical Bld No. 7	Package	YORK	J10XPC00N4SZZ50001A	UVR	X-Plus
		Package	YORK	J10XPC00N4SZZ50001A	UVR	X-Plus
		Package	YORK	B2HZ024A06B	UVR	X-Plus
	Electrical Bld No. 8	Wall Unit	BARD	W60HA-A05XX4XX	BARD	8620-344
	Primary Electrical Service Bld.	Package	BRYANT	548JE07A000A2A0AAA	UVR	X-Plus

GENERAL NOTES (APPLIES TO ALL EQUIPMENT ABOVE):
A. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO SELECTING & INSTALLING UV ACCESSORIES.
B. FIELD INSTALLATION TO INCLUDE SAFETY INTERLOCK SWITCH AND SIGHT GLASS, OR APPROVED EQUAL.

BASE PROPOSAL

1. **Base Bid** – Provide all labor, materials and equipment required to complete the UV equipment and electrical scopes according to the equipment manufacturer, project specifications and site-specific requirements. This includes (but is not limited to) receiving equipment, offloading, inspection, temporary storage, and all equipment handling.

SCOPE OF WORK

The Contractor shall execute the Work described in the Contract Documents, including all labor, materials, equipment, services, superintendence, and other items required to complete such portion of the work:

GENERAL

The work specifically includes, but is not limited to:

1. All necessary labor, overtime, equipment, safety measures, temporary surface, and dust protection to meet project schedule, including all necessary GC,s – Dumpsters, Porta John's, etc...
2. All demolition, removal and proper disposal of debris created by the work.
3. Patching of existing with UL and NEC approved hardware and methods.
4. Provide and install new UV equipment, necessary sheet metal, piping and ductwork insulation, duct bracing and supports, electrical materials, and fitting required for code compliant, functional installation.
5. Include all necessary balancing valves and dampers necessary to properly balance systems.
6. All electrical equipment, wiring, conduit, disconnects, and motor controls required for equipment installation and operation provided under this scope of work.
7. All communication, control, or interlock wiring required to make mechanical equipment function as designed.
8. All drilling, saw cutting, patching, and repairs as necessary to complete the work.
9. Include all repairs necessary to existing interior and exterior finishes.
10. All costs associated with scheduled shutdowns, tie-ins, and outages.
11. Provide all layout as required to complete the work.
12. Provide competent technicians for startup assistance.
13. Provide all labor, materials, and documentation required by the authorities having jurisdiction (AHJs).
14. Daily cleanup, removal of debris and proper disposal of equipment and debris.
15. All extra materials (attic stock) as specified.
- 16.

NEW WORK:

1. Include all material, labor, and equipment necessary to complete installation of new HVAC equipment and UV systems as designed. Coordinate all work with other trades to prevent out of sequence operations.
2. Coordinate all work to minimize disruption of occupant's activities.
3. Ensure that only "ozone free" UV lamps are used in the AHUs.
4. Install on/off switches with clear identification labels.
5. Install interlocks for access panels, to cut power to the UV lamp when the access panels are removed.
6. Install plastic spy holes to warn workers if the lamp is operating. These will not transmit UV-C radiation but will allow workers to spot the lamp's bluish/purple glow.
7. Add warning labels and signs to identify the hazard and inform workers

PROJECT GUARANTEE

- A. The date of the Certificate of Project Completion shall be the starting date for the guarantee/warranty period.
- B. The Contractor shall deliver to the Owner a written guarantee in a form satisfactory to the Owner. The guarantee shall cover all work performed under this Contract for a period of one (1) year from the date of final or Substantial Completion, except for equipment warranties, which shall be minimum of one year and shall be longer where that is the standard of the equipment manufacturer or as indicated in the Specifications. The guarantee shall cover all design, materials, equipment, and workmanship.
- C. The Contractor shall guarantee to replace or re-execute without cost to the Owner such work as may be found to be faulty, and to make good all damage caused to other work or materials, due to such required replacement or re-execution. This guarantee must be furnished to the Owner and approved by him/her before acceptance and final payment is made.

EXCLUSIONS:

- 1. Hazardous Materials Removal

END OF SCOPE

SECTION 230566 - ULTRAVIOLET EMITTER FOR HVAC DISINFECTION

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Motor starters, Disconnects, and Power wiring of HVAC equipment: Division 26.

1.2 QUALITY ASSURANCE

- A. UL Compliance:
 - 1. Comply with UL Standard 1995 as applicable to usage of UV-C Emitters in HVAC Equipment.
 - 2. UL 867 Certified or better.
- B. CARB Certified air cleaning device or approved equal.

1.3 ACTION SUBMITTALS

- A. Product Data
- B. Operations and Maintenance Manual
- C. Warranty

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Store UV-C Emitters in a clean, dry place and protect from weather and construction traffic. Handle UV-C Emitters carefully to avoid damage to components, enclosures, and finish. Leave factory shipping covers in place until installation and only when called for in the installation instructions. Do not install any damaged components; replace them and return damaged components to equipment manufacturer.
- B. Comply with manufacturers' installation instructions regarding wiring and testing.

PART 2 – PRODUCTS

2.1 UV-C EMITTERS

- A. General
 - 1. Acceptable Manufacturers:
 - a. UVR & BARD models as shown on schedule or approved equal by Steril-Aire, Inc., Light Progress USA, Biozone, Fresh-Aire, or American Ultraviolet.

- b. Include documentation by a recognized Industry Independent Testing Lab on UV-C Emitter performances. Performance results must meet or exceed the performance for Emitters in an HVAC environment as detailed in Paragraphs B & C.
- 2. Quality Assurance:
 - a. Output Verification:
 - 1) Test UV-C Emitters according to ASHRAE 185.1, "Method of Testing UV-C Lights for Use in Air-Handling Units or Air Ducts to Inactivate Airborne Microorganisms."
 - 2) Test UV-C Emitter according to ASHRAE 185.2, "Method of Testing Ultraviolet Lamps for Use in HVAC&R Units or Air Ducts on Irradiated Surfaces."
 - b. Emitters: The UV Power Supply shall have been tested, Listed, and labeled as compliant with UL, CSA, CARB, and CE.
 - c. Coil Decontamination: Initial UV-C Intensity on the coil face shall not be less than 1,225 μ W/cm². At end of manufactures tube warranty period, or 9000 hours, whichever is longer, intensity on the extreme corners of the coil face must exceed 750 μ W/cm²
 - d. Lamps: Each lamp shall contain no more than 5 milligrams of mercury consistent with current environmental practices. Lamps shall include an inner layer comprising of at least one element from the series formed by magnesium, aluminum, titanium, zirconium, and rare earths to repel alkali metals (e.g. mercury) thereby extending lamp life. Lamps shall not produce ozone and shall have the option of being hermetically sealed within a layer of UV-C transmissible FTP to protect against lamp breakage and to contain lamp contents should breakage occur.
- 3. Warranty:
 - a. Power supply shall be warranted to be free from defects for a period of minimum three (3) years.
 - b. Emitters shall be warranted to be free from defects for a period of minimum one (1) year.

B. Design Requirements

- 1. Irradiation: UV-C Emitters are to be installed downstream of the coil in one of two ways:
 - a) Horizontally across the full face of the coil in such an arrangement to provide an equal distribution of UVC energy on the coil. UV-C Emitter lamps shall be installed across the full width of the face of the coil (i.e., perpendicular to the coil fins) to minimize the shadowing effect of the coil fins where possible.
 - b) In the ductwork, mounted on the exterior according to an easy to access maintenance location. UV-C Emitter Lamps shall be installed in sufficient quantity and in such a manner so as to provide an equal distribution of UV-C energy. When installed, the UV-C energy produced shall be of the lowest possible reflected and shadowed-losses and shall produce 360-degree UV-C irradiance from the lamps within the UV cavity.
- 2. Intensity: Intensity shall be measured by a UV-C Radiometer that is accurate to $\pm 3\%$ radiometric and photometric for NIST transfer standards in the monochromatic irradiance at 254nm. The Radiometer shall have a full cosine response filter.
- 3. Installation: The power supply housing shall be capable of installation within the air stream, secondary compartment or NEMA enclosure. Power supply housing shall be a minimum rating of NEMA 3R for

exterior installations. Lamps shall be mounted to irradiate the intended surfaces as well as all of the available line of sight airstream through proper placement, 360° irradiation and incident angle reflection

4. Safety: To protect personnel, all access panels and doors to the UV-C assembly and/or within view of the UV-C assembly shall include mechanical interlock switches to ensure that the UV-C assembly will be de-energized when any of these accesses are opened. A redundant disconnect service switch is to be installed on the AHU's exterior, in plain sight, to provide a method to more specifically de-energize the UV-C Emitter circuits prior to entering the Emitter plenum.

C. Equipment

1. Units shall be high output, HVAC-type, germicidal UV-C light sources, factory assembled and tested. Components shall include a housing, reflector if specified, high efficiency electronic power source, Emitter sockets, Emitter tube, and sight glass, all constructed to withstand HVAC environments.
2. High efficiency electronic power supplies shall be a Class P2 with a power factor greater than 0.98 and a power conversion of greater than 90%. The power supply design shall include RF and EMI suppression. The power supply shall be designed to maximize photon production, irradiance, and reliability in cold airstreams of 0-140 °F, 100% RH. The power supply shall be available in 110-277 VAC, single phase, 50/60 Hz. Power sources shall be UL listed to comply with UL Standard 1995.
3. UV-C Emitter tube shall produce UV-C at 253.7 nm and no ozone or other secondary contaminants. The UVC Emitter shall be designed to maximize photon production, irradiance, and reliability in cold or moving airstreams of up to 2000 fpm and temperatures of 35-140 °F (2-60 °C) and 100% RH.

PART 3 - EXECUTION

1. INSTALLATION OF UV-C EMITTER

- a. Coordinate with HVAC manufacturer or installer and install UV-C Emitter as indicated above.
- b. Provide and install an interlock switch on all access panels and doors leading to the UV-C assembly and/or within view of the Emitter to assure that the UV-C assembly will be de-energized when any of these accesses are opened.
- c. Provide and install a redundant disconnect service switch on the AHU's exterior, in plain sight, to provide a method to more specifically de-energize the UV-C Emitter circuits prior to entering the Emitter plenum.
- d. Provide a sight glass on each unit for each Emitter assembly that provides a safe viewing of the UV light when in operation.
- e. Install Caution Labels in appropriate languages on all accesses to all UV-C Emitters.

END OF SECTION