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DUCT SILENCER SCHEDULE

| UNIT NO | LOCATION | SERVICE | | CFM | DIMENSIONS W X D X L | PD IN. WC | MANUFACTURER/ MODEL NO | REMARKS |
|----------------|---------------|----------------|------------------------|--------|-------------------------|-----------------|---------------------------------|-------------------------------------|
| | | BUILDING | ROOM | | | | | |
| L-CS-107-ST-01 | MECH ROOM 107 | LVEA | LASER AREA - 1 | 10,500 | 48 X 36 X 120 | 0.15 | INDUSTRIAL ACOUSTICS CO MS | |
| L-CS-107-ST-02 | MECH ROOM 107 | LVEA | LASER AREA - 2 | 15,000 | 48 X 60 X 120 | 0.10 | INDUSTRIAL ACOUSTICS CO MS | |
| L-CS-107-ST-03 | MECH ROOM 107 | LVEA | LASER AREA - 3 | 15,000 | 48 X 60 X 120 | 0.10 | INDUSTRIAL ACOUSTICS CO MS | |
| L-CS-107-ST-04 | MECH ROOM 107 | LVEA | LASER AREA - 4 | 10,000 | 48 X 36 X 120 | 0.15 | INDUSTRIAL ACOUSTICS CO MS | |
| L-CS-107-ST-05 | MECH ROOM 107 | LVEA | LASER AREA - 5 | 10,000 | 48 X 36 X 120 | 0.15 | INDUSTRIAL ACOUSTICS CO MS | |
| L-CS-107-ST-06 | MECH ROOM 107 | LVEA | MECHANICAL ROOM #107 | 6,000 | 48 X 24 X 84 | 0.07 | INDUSTRIAL ACOUSTICS CO MS | |
| L-CS-107-ST-07 | MECH ROOM 107 | LVEA | GENERAL RETURN OF LVEA | 20,300 | 60 X 60 X 84 | 0.10 | INDUSTRIAL ACOUSTICS CO MS | |
| L-CS-107-ST-08 | MECH ROOM 107 | LVEA | GENERAL RETURN OF LVEA | 20,300 | 60 X 60 X 84 | 0.10 | INDUSTRIAL ACOUSTICS CO MS | |
| L-CS-107-ST-09 | MECH ROOM 107 | LVEA | GENERAL RETURN OF LVEA | 20,300 | 60 X 60 X 84 | 0.10 | INDUSTRIAL ACOUSTICS CO MS | |
| L-CS-107-ST-10 | MECH ROOM 107 | OSB | OSB COLD AIR DECK | 24,000 | 60 X 48 X 84 | 0.25 | INDUSTRIAL ACOUSTICS CO MS | |
| L-CS-107-ST-11 | MECH ROOM 107 | OSB | OSB WARM AIR DECK | 24,000 | 60 X 48 X 84 | 0.15 | INDUSTRIAL ACOUSTICS CO MS | |
| L-CS-107-ST-12 | MECH ROOM 107 | OSB | OSB RETURN AIR | 24,000 | 60 X 60 X 84 | 0.15 | INDUSTRIAL ACOUSTICS CO MS | |
| L-CS-160-ST-13 | MECH ROOM 160 | OFFICES | SUPPLY AIR | 9,700 | 42 X 18 X 60 | 0.40 | INDUSTRIAL ACOUSTICS CO MS | |
| L-CS-160-ST-14 | MECH ROOM 160 | OFFICES | RETURN AIR | 9,000 | 42 X 18 X 60 | 0.36 | INDUSTRIAL ACOUSTICS CO MS | |
| L-CS-107-ST-15 | MECH ROOM 107 | LVEA | OUTSIDE AIR | 2,600 | 24 X 24 X 60 | 0.05 | INDUSTRIAL ACOUSTICS CO MS | |
| L-CS-107-ST-16 | MECH ROOM 107 | LVEA | OUTSIDE AIR | 2,600 | 24 X 24 X 60 | 0.05 | INDUSTRIAL ACOUSTICS CO MS | |
| L-CS-107-ST-17 | MECH ROOM 107 | OSB | OUTSIDE AIR | 650 | 18 X 12 X 60 | 0.05 | INDUSTRIAL ACOUSTICS CO MS | |
| L-CS-107-ST-18 | MECH ROOM 107 | OSB | OUTSIDE AIR | 650 | 18 X 12 X 60 | 0.05 | INDUSTRIAL ACOUSTICS CO MS | |
| L-CS-107-ST-19 | ROOM 149 | OFFICES | TOILET EXHAUST | 950 | 14" X 36 | 0.05 | INDUSTRIAL ACOUSTICS CO FCL | |
| L-CS-107-ST-20 | ROOM 149 | OFFICES | TOILET EXHAUST | 950 | 14" X 36 | 0.05 | INDUSTRIAL ACOUSTICS CO FCL | |
| L-CS-107-ST-21 | ROOM 137 | OFFICES | TOILET EXHAUST | 200 | 12" X 36 | 0.02 | INDUSTRIAL ACOUSTICS CO FCL | |
| L-CS-107-ST-22 | ROOM 137 | OFFICES | TOILET EXHAUST | 200 | 12" X 36 | 0.02 | INDUSTRIAL ACOUSTICS CO FCL | |
| L-CS-107-ST-23 | ROOM 169 | OSB | EF-04 (FUME HOOD) | 800 | 20 X 20 X 36 | 0.05 | INDUSTRIAL ACOUSTICS CO T/S/TXL | 304 S/S PACKLESS CONSTRUCTION, 12"Ø |
| L-CS-107-ST-24 | ROOM 169 | OSB | EF-04 (FUME HOOD) | 800 | 20 X 20 X 36 | 0.05 | INDUSTRIAL ACOUSTICS CO T/S/TXL | 304 S/S PACKLESS CONSTRUCTION, 12"Ø |
| L-CS-107-ST-25 | ROOM 168 | OSB | EF-03 (FUME HOOD) | 800 | 20 X 20 X 36 | 0.05 | INDUSTRIAL ACOUSTICS CO T/S/TXL | 304 S/S PACKLESS CONSTRUCTION, 12"Ø |
| L-CS-107-ST-26 | ROOM 168 | OSB | EF-03 (FUME HOOD) | 800 | 20 X 20 X 36 | 0.05 | INDUSTRIAL ACOUSTICS CO T/S/TXL | 304 S/S PACKLESS CONSTRUCTION, 12"Ø |
| L-EA-203-ST-01 | MECH ROOM 203 | ENDSTATION - A | EXPERIMENT EG. | 560 | 12 X 24 X 84 | 0.05 | INDUSTRIAL ACOUSTICS CO MS | |
| L-EA-203-ST-02 | MECH ROOM 203 | ENDSTATION - A | CLEANING AREA | 840 | 12 X 24 X 84 | 0.07 | INDUSTRIAL ACOUSTICS CO MS | |
| L-EA-203-ST-03 | MECH ROOM 203 | ENDSTATION - A | VEA | 8,400 | 30 X 36 X 84 | 0.20 | INDUSTRIAL ACOUSTICS CO MS | |
| L-EA-203-ST-04 | MECH ROOM 203 | ENDSTATION - A | INSPECTION | 560 | 12 X 24 X 84 | 0.05 | INDUSTRIAL ACOUSTICS CO MS | |
| L-EA-203-ST-05 | MECH ROOM 203 | ENDSTATION - A | MECH. RM | 2,200 | 18 X 24 X 60 | 0.12 | INDUSTRIAL ACOUSTICS CO MS | |
| L-EA-203-ST-06 | MECH ROOM 203 | ENDSTATION - A | RETURN | 8,400 | 32 X 32 X 84 | 0.15 | INDUSTRIAL ACOUSTICS CO MS | |
| L-EA-203-ST-07 | MECH ROOM 203 | ENDSTATION - A | RETURN | 4,200 | 24 X 24 X 84 | 0.12 | INDUSTRIAL ACOUSTICS CO MS | |
| L-EA-203-ST-08 | MECH ROOM 203 | ENDSTATION - A | OUTSIDE AIR | 400 | 18 X 12 X 60 | 0.05 | INDUSTRIAL ACOUSTICS CO MS | |
| L-EA-203-ST-09 | MECH ROOM 203 | ENDSTATION - A | OUTSIDE AIR | 400 | 18 X 12 X 60 | 0.05 | INDUSTRIAL ACOUSTICS CO MS | |
| L-EA-203-ST-10 | MECH ROOM 203 | ENDSTATION - A | VE | 1680 | 12 X 24 X 60 | 0.05 | INDUSTRIAL ACOUSTICS CO MS | |
| L-EB-203-ST-01 | MECH ROOM 203 | ENDSTATION - B | EXPERIMENT EG. | 560 | 12 X 24 X 84 | 0.05 | INDUSTRIAL ACOUSTICS CO MS | |
| L-EB-203-ST-02 | MECH ROOM 203 | ENDSTATION - B | CLEANING AREA | 840 | 12 X 24 X 84 | 0.07 | INDUSTRIAL ACOUSTICS CO MS | |
| L-EB-203-ST-03 | MECH ROOM 203 | ENDSTATION - B | VEA | 8,400 | 30 X 36 X 84 | 0.20 | INDUSTRIAL ACOUSTICS CO MS | |
| L-EB-203-ST-04 | MECH ROOM 203 | ENDSTATION - B | INSPECTION | 560 | 12 X 24 X 84 | 0.05 | INDUSTRIAL ACOUSTICS CO MS | |
| L-EB-203-ST-05 | MECH ROOM 203 | ENDSTATION - B | MECH. RM | 2,200 | 18 X 24 X 60 | 0.12 | INDUSTRIAL ACOUSTICS CO MS | |
| L-EB-203-ST-06 | MECH ROOM 203 | ENDSTATION - B | RETURN | 8,400 | 32 X 32 X 84 | 0.15 | INDUSTRIAL ACOUSTICS CO MS | |
| L-EB-203-ST-07 | MECH ROOM 203 | ENDSTATION - B | RETURN | 4,200 | 24 X 24 X 84 | 0.12 | INDUSTRIAL ACOUSTICS CO MS | |
| L-EB-203-ST-08 | MECH ROOM 203 | ENDSTATION - B | OUTSIDE AIR | 400 | 18 X 12 X 60 | 0.05 | INDUSTRIAL ACOUSTICS CO MS | |
| L-EB-203-ST-09 | MECH ROOM 203 | ENDSTATION - B | OUTSIDE AIR | 400 | 18 X 12 X 60 | 0.05 | INDUSTRIAL ACOUSTICS CO MS | |
| L-EB-203-ST-10 | MECH ROOM 203 | ENDSTATION - B | VE | 1680 | 12 X 24 X 60 | 0.05 | INDUSTRIAL ACOUSTICS CO MS | |

AIR INLET & OUTLET SCHEDULE

| UNIT NO | DESCRIPTION | FACE SIZE | NECK SIZE IN X IN | CONSTRUCTION | MANUFACTURER/ MODEL NO | REMARKS |
|---------|------------------|-----------|----------------------|--------------|---------------------------------------|--------------------------|
| HF-1 | HEPA FILTER | 48 X 24 | 12" Ø | STEEL | AMERICAN AIR FILTER PHARMA-GEL PGA-83 | 5" DEEP FILTER, (1), (2) |
| HF-2 | HEPA FILTER | 24 X 24 | 10" Ø | STEEL | AMERICAN AIR FILTER PHARMA-GEL PGA-43 | 5" DEEP FILTER, (1), (2) |
| CD-1 | CEILING DIFFUSER | 24 X 24 | (3) | ALUMINUM | TITUS PDS TMR-4A | W/OBD |
| CD-2 | CEILING DIFFUSER | N/A | (3) | ALUMINUM | TITUS PDS TMR-4A | W/BUTTERFLY DAMPER |
| RR-1 | RETURN RIGISTER | (3) | N/A | ALUMINUM | TITUS 3FL | W/OBB |
| RR-2 | RETURN RIGISTER | (3) | N/A | ALUMINUM | TITUS 3FL | W/OBB |
| RG-1 | RETURN GRILLE | 24 X 24 | N/A | ALUMINUM | TITUS BF | |
| RG-2 | RETURN GRILLE | (3) | (3) | ALUMINUM | TITUS 3552RL | |
| SR-1 | SUPPLY REGISTER | (3) | (3) | ALUMINUM | TITUS 300F | W/OBD |

(1) PROVIDE WITH HANGING TAPS, STAINLESS STEEL TRIM, 1/2" INSULATION WITH ALUMINUM FOIL
 (2) INITIAL PRESSURE DROP = 0.50" WC, REPLACEMENT PRESSURE DROP = 2.0" WC
 (3) SEE PLANS

VIBRATION ISOLATOR SCHEDULE

| UNIT NO | NAME | LOCATION | (2) ISOLATOR TYPE | (3) SPRING DEFLECTION (INCH) | (2) FRAME TYPE | (2) SEISMIC RESTRAINT | REMARKS |
|----------------------------|--------------------------|----------------|-------------------------|---------------------------------------|----------------------|-----------------------------|---------------------|
| L-CS-107-SF-01, 02, 03, 04 | VANE AXIAL FAN | CORNER STATION | B | 1.0 | G | SL | (TYP 4) FANS |
| L-CS-107-SF-05, 06 | VANE AXIAL FAN | CORNER STATION | B | 1.0 | G | SL | (TYP 2) FANS |
| L-EA-203-SF-01, 02 | VANE AXIAL FAN | END STATION-A | B | 1.0 | G | SL | (TYP 2) FANS |
| L-EB-203-SF-01, 02 | VANE AXIAL FAN | END STATION-B | B | 1.0 | G | SL | (TYP 2) FANS |
| L-CS-190-CH-01, 02, 03 | AIR-COOLED WATER CHILLER | CORNER STATION | C | 1.0 | - | (1) | (TYP 3) CHILLERS |
| L-EA-200-CH-01, 02 | AIR-COOLED WATER CHILLER | END STATION-A | C | 1.0 | - | (1) | (TYP 2) CHILLERS |
| L-EB-200-CH-01, 02 | AIR-COOLED WATER CHILLER | END STATION-B | C | 1.0 | - | (1) | (TYP 2) CHILLERS |
| L-CS-190-WP-01, 02, 03 | CHILLED WATER PUMP | CORNER STATION | C | 1.0 | G | SL | (TYP 3) PUMPS |
| L-EA-200-WP-01, 02 | CHILLED WATER PUMP | END STATION-A | C | 1.0 | G | SL | (TYP 2) PUMPS |
| L-EB-200-WP-01, 02 | CHILLED WATER PUMP | END STATION-B | C | 1.0 | G | SL | (TYP 2) PUMPS |
| L-CS-107-AC-01, 02 | AIR COMPRESSOR | CORNER STATION | C | 1.0 | G | SL | (TYP 2) COMPRESSORS |
| L-EA-203-AC-01, 02 | AIR COMPRESSOR | END STATION-A | C | 1.0 | G | SL | (TYP 2) COMPRESSORS |
| L-EB-203-AC-01, 02 | AIR COMPRESSOR | END STATION-B | C | 1.0 | G | SL | (TYP 2) COMPRESSORS |
| L-CS-160-AH-04 | PACKAGED AIR HANDLER | CORNER STATION | B | 1.0 | G | SL | |
| L-CS-149-EF-01 | IN-LINE EXHAUST FAN | CORNER STATION | D | 1.0 | - | SC | |
| L-CS-137-EF-02 | IN-LINE EXHAUST FAN | CORNER STATION | D | 1.0 | - | SC | |
| L-CS-168-EF-03 | IN-LINE EXHAUST FAN | CORNER STATION | D | 1.0 | - | SC | |
| L-CS-169-EF-04 | IN-LINE EXHAUST FAN | CORNER STATION | D | 1.0 | - | SC | |
| L-EA-208-EF-01 | IN-LINE EXHAUST FAN | END STATION-A | D | 1.0 | - | SC | |
| L-EB-208-EF-01 | IN-LINE EXHAUST FAN | END STATION-B | D | 1.0 | - | SC | |
| L-CS-107-GP-01 | GLYCOL FEED PUMP | CORNER STATION | C | 1.0 | G | SL | |
| L-EA-203-GP-01 | GLYCOL FEED PUMP | END STATION-A | C | 1.0 | G | SL | |
| L-EB-203-GP-01 | GLYCOL FEED PUMP | END STATION-B | C | 1.0 | G | SL | |
| L-CS-195-FP-01 | FIRE PUMP | CORNER STATION | C | 1.0 | G | SL | |
| L-CS-195-FP-02 | FIRE PUMP | CORNER STATION | C | 1.0 | G | SL | |
| L-CS-195-JP-03 | JOCKY PUMP | CORNER STATION | C | 1.0 | G | SL | |
| L-CS-196-DP-04 | DOMESTIC WATER PUMP | CORNER STATION | C | 1.0 | G | SL | |
| L-CS-196-DP-05 | DOMESTIC WATER PUMP | CORNER STATION | C | 1.0 | G | SL | |
| L-CS-196-AH-05 | PACKAGED AIR HANDLER | CORNER STATION | D | 1.0 | - | SC | |

(1) ISOLATOR HOUSING INCLUDES SEISMIC RESTRAINTS
 (2) SEE SPECIFICATIONS FOR CODE LETTER
 (3) STATIC DEFLECTION 3 HZ

NOTES:

1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES SEE SHEETS LA-H-001 AND LA-H-002.

| NO. | DATE | BY | CHKD | ENGR | PROJ | DESCRIPTION |
|-----|---------|-----|------|------|------|--------------------------------|
| 2 | 8-7-98 | DJB | AA | AA | WJW | ISSUED FOR AS-BUILT |
| 1 | 3-20-97 | WVK | AA | AA | TDM | REVISED DUCT SILENCER SCHEDULE |

ISSUED FOR CONSTRUCTION
 DRAWN CLP 11-15-96
 CHECKED MN 10-25-96
 ENGINEER AA 10-23-96
 PROJ TDM 11-15-96

**AS-BUILT
DRAWINGS**



100 WEST WALNUT STREET
PASADENA, CALIFORNIA



CALIFORNIA INSTITUTE OF TECHNOLOGY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

LIGO-D960965-02-0

LASER INTERFEROMETER
GRAVITATIONAL-WAVE OBSERVATORY
SITE NO. 2 - LIVINGSTON, LOUISIANA

| | | | |
|--|--------------|-----------------|----------------|
| TITLE | SCALE | CONTRACT NUMBER | PROJECT NUMBER |
| HVAC EQUIPMENT SCHEDULES SHEET 4 | NONE | PP150969 | 8094 |
| | SHEET NUMBER | LA-H-006 | REVISION |