14142 Denver West Parkway Suite 245
Lakewood, CO 80401
www.unitedtab.com
303.996.8650

Certified
Testing, Adjusting, and Balancing Report

Project Information

Project Name:	Voyager AT&T Cell Site
Address:	8280 HWY 83 Colorado Springs, CO 80920
Elevation:	6,035 ft.
Certified Report Date:	November 15, 2018

Contractor Information

Balancing Technician:	Johnney Holt
Mechanical Contractor:	Westech Mechanical

Mechanical Engineer:

m.squared
ENGINEERS
1357 CALLE AVANZADO
SAN CLEMENTE, CA 92673
(619) 997-4012

Architect:

Not Specified

Project Equipment Information

Capture Hood:	Alnor EBT-731
Water Meter:	Alnor HM670

Semper Fidelis
Veteran Owned and Operated

14142 Denver West Parkway Suite 245
Lakewood, CO 80401
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Warranty Information

Dear Customer,

As we try to build our customer base and insure your complete satisfaction on every project United Test and Balance would like to extend a 180 Day warranty policy for every project. The terms of the warranty are listed below:

United Test and Balance does hereby warrant the before said completed project for a period of 180 Days from the date of the issued Certified Test and Balance Report. That said work shall remain free from all defects in workmanship and material, and that it shall comply with all the specific requirements of the Specifications and other Contract Documents governing the Testing, Adjusting, and Balancing.

It is understood and agreed upon that in the event of defects and the necessity of making repairs, the Owner and/or Contractor will immediately notify United Test and Balance in writing of its conditions and shall give the contractor reasonable time, 30 days, in which to make said repairs. If any person, firm, or corporation other than United Test and Balance has, since the completion of the above work, performed or attempted to perform any repairs to the Mechanical Systems then this warranty will become null and void. This warranty does not cover any repairs made by anyone other than United Test and Balance or one of its authorized representatives.

Thank you for the opportunity to work with you on this project and we look forward to working with you in the future.

Sincerely,

Jeremy Merrill

Jeremy Merrill
Owner
T.A.B.B. Certified Supervisor

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Abbreviation Index

AC	Air Conditioning Unit
AHU	Air Handling Unit
AMP or A	Ampere
APD	Air Pressure Drop
ATMOS	Atmosphere
BHP	Brake Horsepower
BTU	British Thermal Unit
BTUH	BTU per Hour
CFM	Cubic Feet per Minute
CHW	Chilled Water
CHWR	Chilled Water Return
CHWS	Chilled Water Supply
CT	Cooling Tower
CUH	Cabinet Unit Heater
CWR	Condenser Water Return
CWS	Condenser Water Supply
DB	Dry Bulb (Temperature)
DEG or °	Degree
DP or ΔP	Differential Pressure
ΔT	Differential Temperature
(E)	Existing
EA	Exhaust Air
EAT	Entering Air Temperature
EF	Exhaust Fan
ER	Exhaust Register
ERV	Energy Recovery Ventilator
ESP	External Static Pressure
EWT	Entering Water Temperature
°F	Fahrenheit
FPB	Fan Power Box
FCU	Fan Coil Unit
FLA	Full Load Amps
FPM	Feet per Minute
FT.	Feet
HD.	Head
HP	Horsepower
HWR	Hot Water Return
HWS	Hot Water Supply
HZ	Hertz (Cycles per Second)
IN.	Inches
KEF	Kitchen Exhaust Fan
KW	Kilowatt
LAT	Leaving Air Temperature
LB	Pound
LWT	Leaving Water Temperature
MA	Mixed Air
MAX	Maximum
MIN	Minimum
MAU	Make-Up Air
N/A	No Access
Nom. Eff.	Nominal Efficiency
OSA	Outside Air
OD | ID	Outside Diameter | Inside Diameter
P	Pump
PD	Pressure Drop
PF	Power Factor
PFPB	Parallel Fan Power Box
PH	Phase
PSI	Pounds per Square Inch
RA	Return Air
RET	Return
RG	Return Grille
RH	Relative Humidity
RPM	Revolutions per Minute
RTU	Roof-Top Unit
SA	Supply Air
SD	Supply Diffuser
SP	Static Pressure
SF	Service Factor
SFPB	Series Fan Power Box
sq. ft.	Square Feet
T-1|T-2 |T-3	Terminal 1|Terminal 2|Terminal 3
TEMP or °	Temperature
TSP	Total Static Pressure
T-Stat	Thermostat
V	Volts
VAV	Variable Air Volume
VFD	Variable Frequency Drive
VP	Velocity Pressure
WB	Wet Bulb Temperature
W.C.	Water Column
W.G.	Water Gauge

Semper Fidelis
Veteran Owned and Operated

United Test and Balance
14142 Denver West Parkway Suite 245
Lakewood, CO 80401
Phone 303.996.8650

Table Of Contents

PROJECT: Voyager AT&T Cell Site
LOCATION: Colorado Springs , CO
PROJECT #: 2018-1711

DATE: 11/15/2018
CONTACT: Johnney Holt
AUTHOR: Jeremy Merrill

Table Of Contents

United Test and Balance
14142 Denver West Parkway Suite 245
Lakewood, CO 80401
Phone 303.996.8650

Fan Unit

PROJECT: Voyager AT&T Cell Site
LOCATION: Colorado Springs , CO
PROJECT #: 2018-1711

DATE: 11/15/2018
CONTACT: Johnney Holt
AUTHOR: Jeremy Merrill

SYSTEM/UNIT: EF-01

Tested By: Johnney Holt
Date: 11/14/2018

Unit Data	
Fan Manufacturer	Greenheck
Fan Model Number	CW-070-D-X
Fan Serial Number	14891942

Test Data	
Design Airflow	346 CFM
Actual Airflow	289 CFM
Actual RPM	1550 RPM
Motor Volts T1-T2	120 Volts
Motor Amps T1	0.7 Amps
Suction SP	Atmosphere in. wc
Discharge SP	Atmosphere in. wc
Design ESP	0.2 in. wc

Motor Data	
Motor Manufacturer	Greenheck
Motor HP	1/30 HP
Motor RPM	1500/1300/1050 RPM
Motor Rated Volts	115 Volts
Motor Phase	1
Motor FL Amps	1.1 Amps
Motor Service Factor	1.00

Log:

EF-01	11/14/2018	Johnney Holt	Direct drive exhaust fan wired to run on high speed.

EF-01 Exhaust Inlet Summary

System/Unit	Inlet Type	Design Airflow	Prelim Airflow	% Prelim Diff.	Final Airflow	% Final Diff.
Total	Total	345	289	84	289	84
Totals:	**-**	**345**	**289**	**84**	**289**	**84**

COL02000 - LTE 3C/4C

SITE NAME: ACADEMY & I-25
ADDRESS: 8280 HIGHWAY 83
COLORADO SPRINGS, CO 80920
LATITUDE: 38° 57' 10.68" N
LONGITUDE: 10° 48' 4.43" W
FA #: 10093657
PACE #: MRUTH014830/MRUTH014916
SITE TYPE: ROOFTOP

at&t
Your world. Delivered.

SITE INFORMATION

APPLICANT:	AT&T MOBILITY
ADDRESS:	
LAT/LONG TYPE:	NAD-83
ZONING JURISDICTION:	CITY OF COLORADO SPRINGS
ZONING CLASSIFICATION:	PBC
CURRENT USE:	UNMANNED TELECOMMUNICATIONS FACILITY
ASSESSOR'S PARCEL NO.:	6305104004
PROPOSED USE:	UNMANNED TELECOMMUNICATIONS FACILITY
TYPE OF CONSTRUCTION:	V-B
OCCUPANCY GROUP:	U

PROJECT TEAM

CLIENT REPRESENTATIVE:
MASTEC NETWORK SOLUTIONS
7025 S REVERE PKWY, SUITE 100
CENTENNIAL, CO 80112
CONTACT: STEPHANIE GLENDENNING
PH: (303) 334-2809
EMAIL: Stephanie.Glendenning@mastec.com

SITE ACQUISITION:
M.SQUARED ENGINEERS
1387 CALLE AVANZADO
SAN CLEMENTE, CA 92673
CONTACT: JASON EVANS
PH: (208) 866-7725
EMAIL: Jason@m2-eng.com

RF ENGINEER:
AT&T MOBILITY
CONTACT: ROEL SIGUE
PH: (703) 599-8115
EMAIL: rs067v@att.com

ENGINEER:
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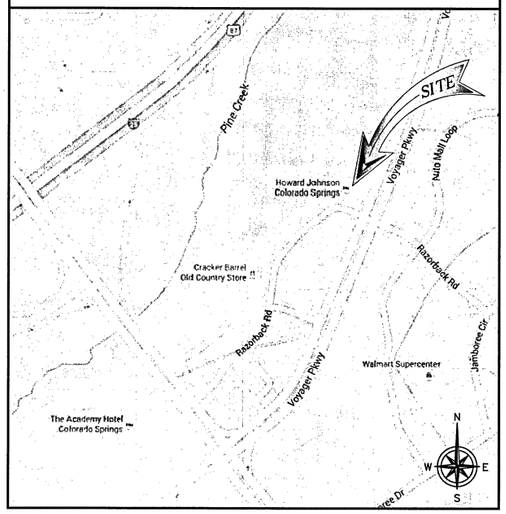
1387 CALLE AVANZADO
SAN CLEMENTE, CA 92673
CONTACT: MICHAEL MONTELLO
PH: (619) 997-4012
EMAIL: Michael@m2-eng.com

PROJECT MANAGER:
MASTEC NETWORK SOLUTIONS
7025 S REVERE PKWY, SUITE 100
CENTENNIAL, CO 80112
CONTACT: STEPHANIE GLENDENNING
PH: (303) 334-2809
EMAIL: Stephanie.Glendenning@mastec.com

CONSTRUCTION MANAGER:
MASTEC NETWORK SOLUTIONS
7025 S REVERE PKWY, SUITE 100
CENTENNIAL, CO 80112
CONTACT: GARY HOPKINS
PH: (303) 435-0611
EMAIL: Gary.Hopkins@mastec.com

VICINITY MAP



DRIVING DIRECTIONS

DIRECTIONS FROM DENVER TECH CENTER:

1. HEAD WEST
2. TURN RIGHT
3. TURN RIGHT TOWARD E BELLEVIEW AVE
4. TURN RIGHT AT E BELLEVIEW AVE
5. SHARP LEFT ONTO E BELLEVIEW AVE
6. USE THE RIGHT LANE TO TAKE THE I-25 N RAMP
7. MERGE ONTO I-25 N
8. KEEP RIGHT, FOLLOW SIGNS FOR US 6 W
9. KEEP LEFT AND MERGE ONTO US-6 W
10. TAKE THE EXIT ONTO I-70 W TOWARD GRAND JCT
11. TAKE EXIT 205 FOR CO-9 N TOWARD US-6 E/SILVERTHORNE/DILLON
12. TURN LEFT ONTO US-40 W/PARK AVE
13. TURN RIGHT ONTO JD HAYS WAY/PINE GROVE RD
14. TURN LEFT ONTO PINE GROVE RD
15. TURN RIGHT ONTO MT WERNER RD
16. TURN LEFT ONTO STEAMBOAT BLVD
17. TURN RIGHT ONTO CLUBHOUSE DR
18. TURN RIGHT ONTO RIVER QUEEN LN
19. DESTINATION WILL BE ON THE RIGHT

PROJECT DESCRIPTION

AT&T WIRELESS PROPOSES TO MODIFY AN EXISTING WIRELESS INSTALLATION. THE SCOPE WILL CONSIST OF THE FOLLOWING:

- INSTALL (3) NEW AT&T 8'-0" PANEL ANTENNAS
- INSTALL (6) NEW AT&T RRH'S @ ANTENNA LEVEL
- INSTALL (3) NEW AT&T SQUIDS @ ANTENNA LEVEL
- INSTALL (1) NEW AT&T BBU W/ NEW ECCM-U UNIT INSIDE
- INSTALL (1) NEW AT&T ECCM-2 IN (E) BBU1
- INSTALL (1) NEW AT&T DC RACK
- INSTALL (1) NEW AT&T BATTERY RACK WITH (10) NEW BATTERY STRINGS
- INSTALL (1) NEW AT&T +24v TO -48v CONVERTER IN (E) +24v POWER PLANT
- INSTALL (1) NEW AT&T HYDROGEN SENSOR
- INSTALL (1) NEW AT&T EXHAUST FAN
- INSTALL (1) NEW AT&T INTAKE LOUVER W/ CONTROL DAMPER, AND ACTUATOR

NOTE: NEW ANTENNAS & EQUIPMENT TO BE PAINTED TO MATCH EXISTING.

GENERAL NOTES

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS REQUIREMENTS ARE NOT REQUIRED IN ACCORDANCE WITH THE 2013 CALIFORNIA BUILDING CODE. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE; NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS NEW.

ENGINEERING

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES.

- 2009 BUILDING CODE (IBC)
- 2009 MECHANICAL CODE
- 2009 FIRE CODE (IFC)
- 2016 NFPA 13 & 72
- 2012 PLUMBING CODE
- 2014 ELECTRICAL CODE
- 2011 LOCAL BUILDING CODE

△3

DO NOT SCALE DRAWINGS

SUBCONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS & FIELD CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

DIGALERT
Call Toll Free
1-800-922-1987
2 Working Days Before You Dig
UNDERGROUND SERVICE ALERT OF COLORADO

CONSTRUCTION DRAWING

IF USING 11"X17" PLOT, DRAWINGS WILL BE HALF SCALE

DRAWING INDEX

SHEET NO:	SHEET TITLE
T-1	TITLE SHEET
GN-1	GENERAL NOTES
GN-2	NEW BATTERY MATERIAL SAFETY DATA SHEET, LEAD ACID BATTERY
A-1	SITE PLAN & ENLARGED SITE PLAN
A-2	EQUIPMENT LAYOUTS
A-3	ANTENNA LAYOUTS
A-4	ELEVATIONS
A-5	ELEVATIONS
D-1	DETAILS
M-1	MECHANICAL PLAN
M-2	MECHNICAL DETAILS
E-1	SINGLE LINE DIAGRAM & LTE RET SCHEMATIC DIAGRAM
G-1	GROUNDING SCHEMATIC & GROUNDING DETAILS
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
RF-1	PLUMBING DIAGRAM

APPROVALS

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS & AUTHORIZE THE SUBCONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT & MAY IMPOSE CHANGES OR MODIFICATIONS.

AT&T RF ENGINEER: _____ DATE: _____
AT&T OPERATIONS: _____ DATE: _____
SITE ACQUISITION: _____ DATE: _____
CONSTRUCTION MANAGER: _____ DATE: _____
PROPERTY OWNER: _____ DATE: _____
ZONING: _____ DATE: _____
PROJECT MANAGER: _____ DATE: _____

at&t Mobility

MasTec Network Solutions
6100 BROKEN SOUND PARKWAY NW
SUITE NO. 6
BOCA RATON, FLORIDA 33487

m.squared ENGINEERS
1387 CALLE AVANZADO
SAN CLEMENTE, CA 92673
(619) 997-4012

DRAWN BY: EG
CHECKED BY: MM

REV	DATE	DESCRIPTION
3	05/18/2016	PER FIRE DEPT. COMMENTS
2	05/09/2016	PER MECHANICAL DESIGN
1	03/25/2016	100% CD'S FOR SUBMITTAL
0	02/09/2016	90% CD'S FOR REVIEW

COLORADO LICENSED
DANIEL A. MONTELLO
35272
PROFESSIONAL ENGINEER

COL02000
ACADEMY & I-25
8280 HIGHWAY 83
COLORADO SPRINGS, CO 80920
ROOFTOP

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

GENERAL NOTES:

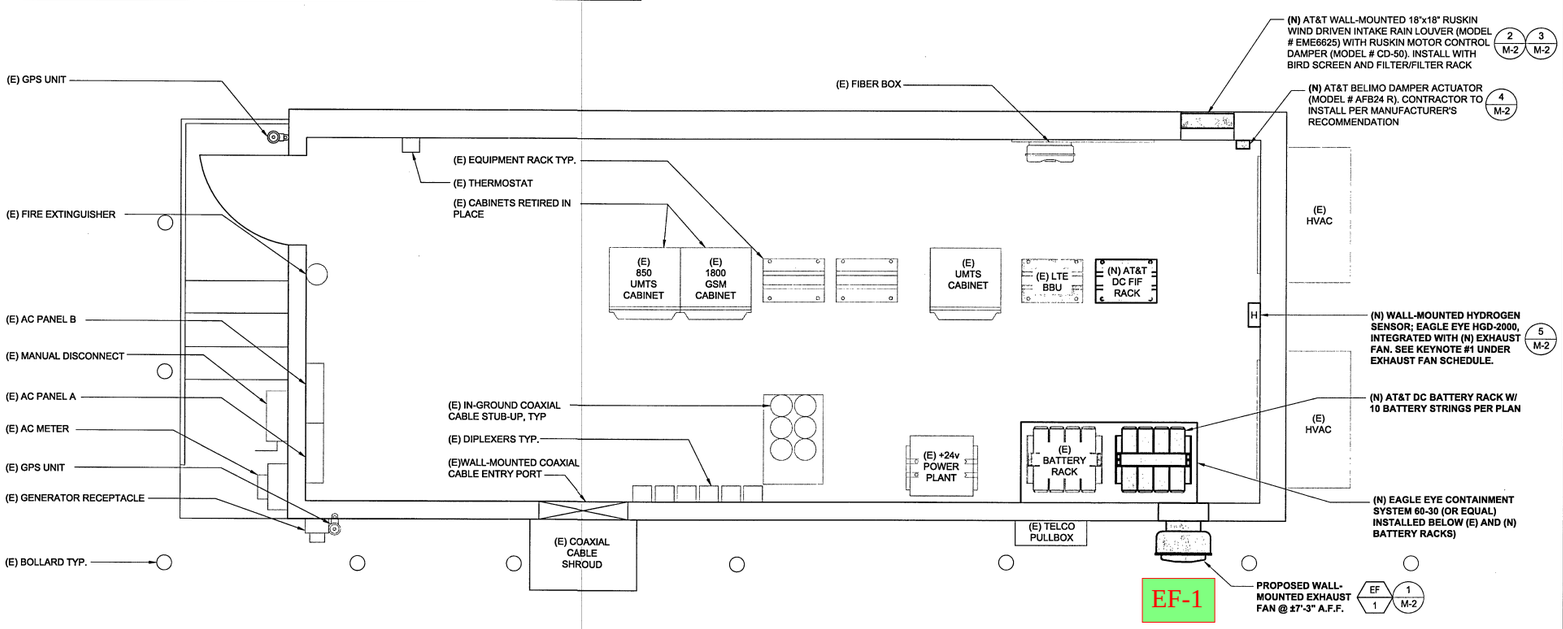
1. THE HVAC CONTRACTOR SHALL PERFORM THE WORK IN ACCORDANCE WITH THE BEST ASHRAE AND INDUSTRIAL STANDARDS.
2. ALL HVAC WORK SHALL COMPLY WITH ALL APPLICABLE CODES OF THE STATE OF COLORADO, LOCAL BUILDING CODES, HAVING JURISDICTION OVER THE CONSTRUCTION.
3. HVAC CONTRACTOR SHALL EXAMINE THE PROJECT SITE AND DISCUSS GENERAL REQUIREMENTS OF BUILDING AND WORK PERFORMANCE WITH OWNER'S REPRESENTATIVE. CONTRACTOR SHALL COORDINATE HIS WORK WITH THE WORK OF OTHERS ON THE PROJECT. CONTRACTOR SHALL CONFIRM EXISTING CONDITIONS AND PROVIDE ALL LABOR AND MATERIALS TO MAKE A WORKABLE AND USABLE SYSTEM.
4. HVAC CONTRACTOR TO REPORT TO OWNER'S REPRESENTATIVE ANY OBSERVATIONS OR CONDITIONS WHICE ARE DISCOVERED IN THE BUILDING WHICH WOYULD PREVENT THE FULLEST USE OF THE HVAC SYSTEM.
5. HVAC CONTRACTOR SHALL ARRANGE AND PAY FOR ALL FEES, PERMITS, AND INSPECTIONS CONCERNING PROJECT WORK.
6. HVAC CONTRACTOR SHALL FIELD VERIFY ALL ELECTRICAL POWER CHARACTERISTICS PRIOR TO ORDERING ANY MECHANICAL EQUIPMENT.
7. ALL LOW VOLTAGE WIRING SHALL BE INSTALLED BY THE HVAC CONTRACTOR.
8. THE ROOM THERMOSTATS SHALL BE CAPABLE OF BEING SET FROM 55° TO 85°F.
9. A DURABLE MAINTENANCE LABEL MUST BE AFFIXED TO MECHANICAL EQUIPMENT. TWO COPIES OF A MAINTENANCE MANUAL FOR THE EQUIPMENTS SHALL BE PROVIDED TO THE OWNER BY THE CONTRACTOR.
10. INSTALL EQUIPMENT AND RUN PIPES AND DUCTS PARALLEL WITH OR AT RIGHT ANGLES TO THE WALLS OF THE BUILDING UNLESS SHOWN OTHERWISE ON THE DRAWINGS. PARALLELED RUNS SHALL BE STRAIGHT AND TRUE WITH OFFSETS UNIFORM AND SYMMETRICAL.
11. CONTRACTOR SHALL COORDINATE WITH BUILDING OWNER CONSTRUCTION TIME AS NOT TO DISTRACT FROM NORMAL WORKING CONDITIONS.
12. CONTRACTOR TO REVIEW AT&T SPECIFICATIONS PRIOR TO BID.

CONTROL SEQUENCE:

1. THE AIR-CONDITIONING UNIT FAN WHICH IS LEAD SHALL RUN CONTINUOUSLY.
2. THE AIR-CONDITIONING UNITS SHALL DUTY CYCLE.
3. UPON A CALL FOR COOLING, THE LEAD AIR-CONDITIONING UNIT SHALL PROVIDE COOLING. IF THE SPACE TEMPERATURE RISES 3°F ABOVE SET POINT, THE AIR-CONDITIONING UNIT WHICH IS THE LAG UNIT SHALL PROVIDE COOLING. WHEN THE ORIGINAL SET POINT IS REACHED, THE LAG AIR-CONDITIONER SHALL CEASE OPERATION.
4. IF A FIRE OR OTHER ALARM IS TRIGGERED, THE CONTROL UNIT TIED TO THE ALARMS ON THE PDF SHUTS DOWN ALL HVAC UNITS TO ELIMINATE THE OXYGEN SUPPLY.
5. THERMAL RUNAWAY IS CONTROLLED/MONITORED BY THE PDF. IF A CELL INCREASES IN TEMEPERATURE, THE STRING IS DROPPED FROM THE SYSTEM AND IS NO LONGER CHARGED. AN ALARM IS SENT TO THE NOC FOR A TECH TO ADDRESS.
6. PDF POWER PLANT WILL MONITOR/REGULATE ALL BATTERIES LINKED TO THE SYSTEM FOR MAX CHARGE VOLTAGE, TEMPERATURE AND PERFORMANCE. THE SITE IS ALSO SYNCED WITH THE SMOKE DETECTION, HYDROGEN SENSOR, FIRE, AND HVAC CONTROLS.
7. BATTERIES ARE MONITORED THROUGH THE TEMPERATURE PROBES INSTALLED ON EACH STRING AND PROTECTED THROUGH THE BREAKERS FOR EACH.
8. FURNISH AND INSTALL GREENHECK MODEL CW-070-VG-1/30-1725RPM SIDE MOUNTED EXHAUST FAN OR ENGINEER APPROVED EQUAL. FAN SHALL PROVIDE A MINIMUM OF 346 CFM AT 0.20 IN WG. THE FAN SHALL BE EQUIPPED WITH A WALL MOUNTED FAN SPEED CONTROLLER AND BACKDRAFT DAMPER. A WALL SWITCH SHALL BE FURNISHED AND INSTALLED TO MANUALLY START AND STOP THE FAN. A CURRENT DETECTOR IN THE FAN POWER CIRCUIT SHALL BE FURNISHED AND INSTALLED TO DETECT A LOSS OF FAN OPERATION AND ANNUNCIATE A REMOTE ALARM TO A MANNED FACILITY IN THE EVENT THE FAN DOES NOT OPERATE WHEN THE HYDROGEN DETECTOR CALLS FOR FAN OPERATION.

NOTES:

1. MECHANICAL DRAWINGS WERE ENGINEERED BASED ON CLIENT INFORMATION AND DIRECTION. CONTRACTOR IS RESPONSIBLE TO VERIFY ON SITE CONDITIONS. ALL CALCULATIONS AND INFORMATION SHALL VERIFIED TO COMPLY WITH CODE REQUIREMENTS.
2. FURNISH A NEW 15A, SINGLE POLE CIRCUIT BREAKER IN CIRCUIT #31 OF EXISTING AC BREAKER PANEL FOR THE NEW EXHAUST FAN.
3. RUN NEW (2)-#12 THHN/THWN-2 + (1)-#12 AWG GND FROM NEW CIRCUIT BREAKER TOWARDS THE NEW EXHAUST FAN.
4. CONTRACTOR SHALL PROVIDE CONNECTION TO EXISTING TEMEPERATURE CONTROL PANEL AND SYSTEM SHALL OPERATE AS SHOWN ON CONTROL SEQUENCE THIS SHEET.
5. COORDINATE WITH THE SHELTER MANUFACTURER PRIOR TO OPENING/CUTTING CONCRETE WALLS. NO REBAR MUST BE DAMAGED OR CUT FOR OPENING.
6. FURNISH AND INSTALL AN 18" X 18" RUSKIN EME6625 WIND DRIVEN INTAKE RAIN LOUVER AND AN 18" X18" RUSKIN MODEL NUMBER CD-50MOTOR CONTROL DAMPER WITH BIRD SCREEN AND FILTER/FILTER RACK AS INDICATED ON THE DRAWINGS.
7. FURNISH AND INSTALL A BELIMO AFB24 ACTUATOR AS INDICATED ON THE DRAWINGS.



EXHAUST FAN SCHEDULE

SYMBOL	MANUFACTURER AND MODEL NO.	SERVICE	LOCATION	TYPE	FAN			V	PH	HZ	WT (LBS)	REMARKS
					CFM	SP (IN WG)	RPM					
EF 1	GREENHECK CW-070-VG-1/30	EQUIPMENT SHELTER	WALL	CENTRIFUGAL	346	0.2	1550	120	1Ø	60	26	1 2 3 4 5 6

1. EF-1 SHALL BE INTERLOCKED WITH HYDROGEN SENSOR AND ACTIVATED WHEN LEVEL REACHES 1% CONCENTRATION.
2. PROVIDE HYDROGEN SENSOR MFR-MODEL EAGLE EYE, HGD-2000 WITH INTERLOCKS TO CONNECT TO EF-1.
3. FAN SHALL BE EQUIPPED AND PRE-ASSEMBLED WITH WALL-HOUSING, BACK DRAFT DAMPER, AND GUARDS.
4. THE FAN SHALL BE EQUIPPED WITH A WALL MOUNTED FAN SPEED CONTROLLER.
5. A WALL SWITCH SHALL BE FURNISHED AND INSTALLED TO MANUALLY START AND STOP THE FAN.
6. A CURRENT DETECTOR IN THE FAN POWER CIRCUIT SHALL BE FURNISHED AND INSTALLED TO DETECT A LOSS OF FAN OPERATION AND ANNUNCIATE A REMOTE ALARM TO A MANNED FACILITY IN THE EVENT THE FAN DOES NOT OPERATE WHEN THE HYDROGEN DETECTOR CALLS FOR FAN OPERATION.

• PROVIDE COPY OF TEST & BALANCE REPORT TO MECHANICAL INSPECTOR @ TIME OF HEATING FINAL.

RELEASED FOR PERMIT
JUN 03 2016
CJC
RBD Mechanical

N W E S

24"x36" SCALE: 1/2" = 1'-0"
11"x17" SCALE: 1/4" = 1'-0"
2' 1' 0" 2'

MECHANICAL PLAN

1

at&t Mobility

MasTec Network Solutions
6100 BROKEN SOUND PARKWAY NW
SUITE NO. 6
BOCA RATON, FLORIDA 33487

m.squared ENGINEERS
1387 CALLE AVANZADO
SAN CLEMENTE, CA 92673
(619) 997-4012

DRAWN BY: EG
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COLORADO LICENSED — JOHN A. WHARTON — 35272 — PROFESSIONAL ENGINEER

COL02000
ACADEMY & I-25
8280 HIGHWAY 83
COLORADO SPRINGS, CO 80920
ROOFTOP

SHEET TITLE
MECHANICAL PLAN

SHEET NUMBER
M-1

NOT USED

24"x36" SCALE: NTS
11"x17" SCALE: NTS

6

RUSKIN CD-50 DAMPER

24"x36" SCALE: NTS
11"x17" SCALE: NTS

3

APPLICATION:
THE CD50 IS A LOW LEAK, EXTRUDED ALUMINUM DAMPER DESIGNED WITH AIRFOIL BLADES FOR HIGHER VELOCITY AND PRESSURE HVAC STYSTEMS. MEETS THE LEAKAGE REQUIREMENTS OF THE INTERNATIONAL ENERGY CONSERVATION CODE BY LEAKING LESS THAN 3 CFM/SQ. FT. AT 1" OF STATIC PRESSURE AND IS AMCA LICENSED AS A CLASS 1A DAMPER.

FRAME:
5" X 1" X 6063T5 EXTRUDED ALUMINUM HAT CHANNEL WITH .125" MINIMUM WALL THICKNESS (127 X 25 X 3.2). LOW PROFILE, 5" X 1/2" (127 X 13) TOP AND BOTTOM FRAMES ON DAMPERS 12" (305) HIGH AND LESS. MOUNTING FLANGES ON BOTH SIDES OF FRAME.

BLADES:
6" (152) WIDE, 6063T5 HEAVY GAGE EXTRUDED ALUMINUM, AIRFOIL SHAPE.

SEALS:
RUSKIPRENE BLADE EDGE SEALS AND FLEXIBLE METAL COMPRESSIBLE JAMB SEALS.

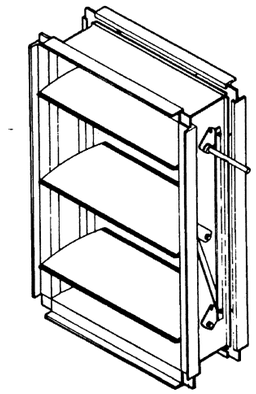
BEARINGS:
MOLDED SYNTHETIC.

LINKAGE:
CONCEALED IN FRAME.

AXLES:
1/2" (13) PLATED STEEL HEX.

TEMPERATURE LIMITS:
-72°F (-58°C) AND +275°F (+135°C) .

NOTE: DAMPER TO BE PAIRED WITH ACTUATORT TO OPEN WHEN FAN IS POWERED.

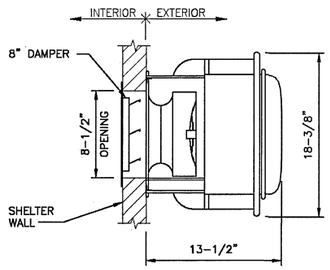


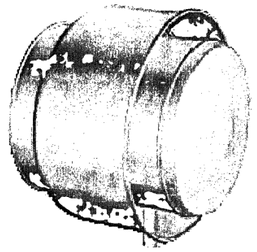
GREENHECK EXHAUST FAN

24"x36" SCALE: NTS
11"x17" SCALE: NTS

1

GREENHECK CW-070-VG-1/30-1725 RPM EXHAUST FAN	
APPROX. WEIGHT	26 LBS
DAMPER SIZE	8" x 8"
WALL OPENING	8-1/2" x 8-1/2"
VOLUME	346 CFM





NOT USED

24"x36" SCALE: NTS
11"x17" SCALE: NTS

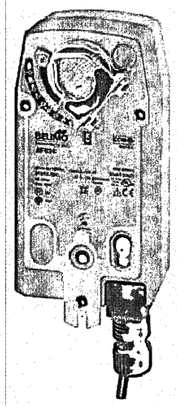
7

BELIMO ACTUATOR

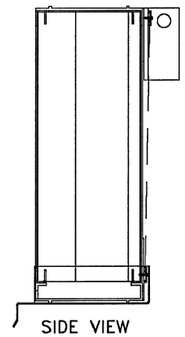
24"x36" SCALE: NTS
11"x17" SCALE: NTS

4

BELIMO AFB24 DAMPER ACTUATOR	
APPROX. WEIGHT	4.6 LBS
POWER SUPPLY	24 VAC, 50/60 HZ 24 VDC
HOUSING	NEMA 2, IPV54, ENCLOSURE TYPE 2



PLAN VIEW



SIDE VIEW

NOT USED

24"x36" SCALE: NTS
11"x17" SCALE: NTS

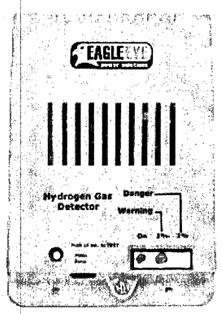
8

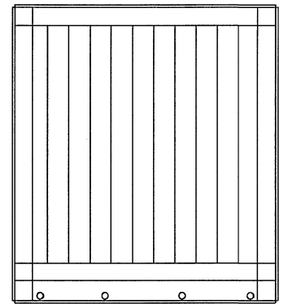
HYDROGEN GAS DETECTOR

24"x36" SCALE: NTS
11"x17" SCALE: NTS

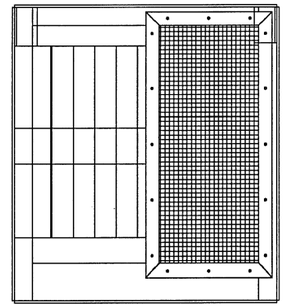
5

EAGLE EYE HGD-2000 HYDROGEN GAS DETECTOR	
ALARM RELAY	FORM A, NORMALLY-OPEN STANDARD FORM B, NORMALLY-CLOSED UPON REQUEST FORM C, AVAILABLE AT ADDITIONAL COST
MOUNTING	(4)-3/16" SCREWS
OPERATING ENVIRONMENT	85 - 265 VAC, 50/60 HZ (STANDARD) 17 - 60 VDC (UPON REQUEST)
DIMENSIONS	7" x 4.75" x 2.5"

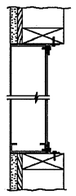




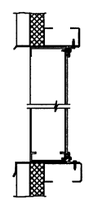
FRONT VIEW



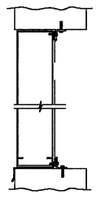
REAR VIEW W/PARTIAL SCREEN



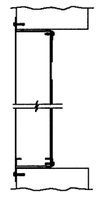
WOOD INSTALLATION



METAL PANEL WALL



MASONARY WALL



FLANGE MOUNT

RUSKIN EME6625 18"x18" LOUVER

24"x36" SCALE: NTS
11"x17" SCALE: NTS

2

RELEASED FOR PERMIT
JUN 03 2016
CJC
RBD Mechanical

at&t Mobility

MasTec
Network Solutions
6100 BROKEN SOUND PARKWAY NW
SUITE NO. 6
BOCA RATON, FLORIDA 33487

m.squared
ENGINEERS
1387 CALLE AVANZADO
SAN CLEMENTE, CA 92673
(619) 997-4012

DRAWN BY:	EG
CHECKED BY:	MM

REV	DATE	DESCRIPTION
3	05/18/2016	PER FIRE DEPT. COMMENTS
2	05/09/2016	PER MECHANICAL DESIGN
1	03/25/2016	100% CD'S FOR SUBMITTAL
0	02/09/2016	90% CD'S FOR REVIEW

COLORADO LICENSED
CHRISTINA A. WHARTON
35272
PROFESSIONAL ENGINEER

COL02000
ACADEMY & I-25
8280 HIGHWAY 83
COLORADO SPRINGS, CO 80920
ROOFTOP

SHEET TITLE

MECHANICAL DETAILS

SHEET NUMBER

M-2