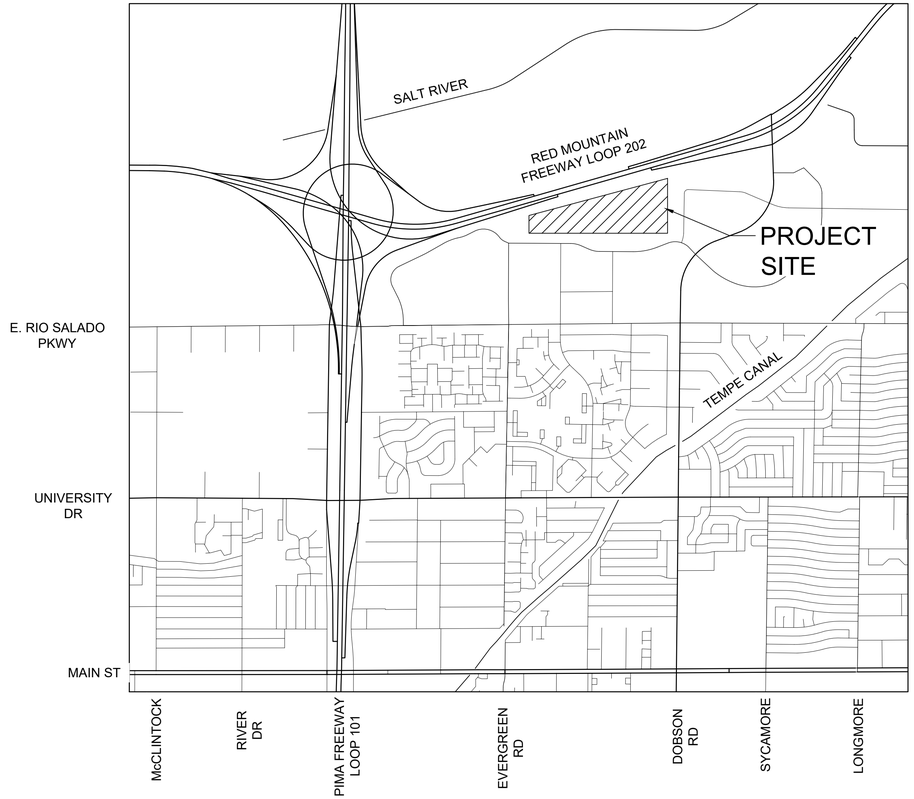
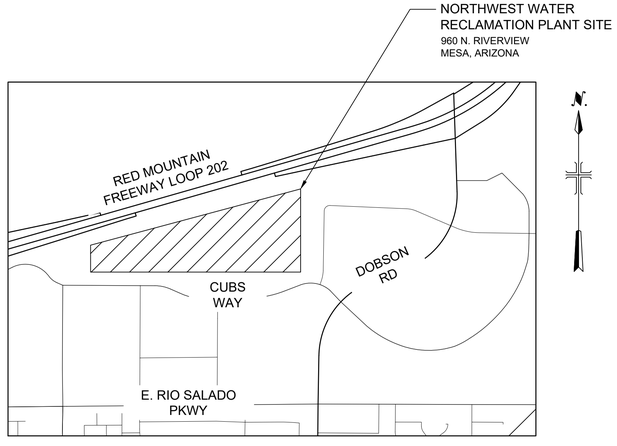
mesa·az

CITY OF MESA, AZ
NORTHWEST WATER RECLAMATION PLANT
PHASE 1: FLARE TO FUEL RENEWABLE NATURAL GAS (RNG) SYSTEM DESIGN
CITY PROJECT NO. CP0870-001

DECEMBER 2022



LOCATION MAP
NOT TO SCALE



VICINITY MAP
NOT TO SCALE

SCOPE OF WORK

THE WORK TO BE PERFORMED UNDER THIS CONTRACT INCLUDES, BUT IS NOT LIMITED TO, CONSTRUCTING THE WORK DESCRIBED BELOW AND ALL RELATED APPURTENANCES.

1. GENERALLY CONSTRUCTING A NEW RENEWABLE NATURAL GAS (RNG) SYSTEM THAT SHALL BE THREE STAGE MEMBRANE TYPE WITH INTEGRATED COMPRESSION AND BIOGAS PRE-TREATMENT TO CONVERT RAW DIGESTER GAS TO NATURAL GAS PIPELINE QUALITY PRODUCT GAS.
2. CONSTRUCTING NEW LOW PRESSURE DIGESTER GAS SUPPLY PIPING TO THE RNG SYSTEM INCLUDING PIPE SUPPORTS AND APPURTENANCES.
3. CONSTRUCTING A NEW MEMBRANE SYSTEM INCLUDING A SET OF LEAD/LAG H2S TREATMENT VESSELS, LOW PRESSURE BIOGAS BLOWER AND DEHYDRATION SYSTEM, REFRIGERATED GAS DRYER SYSTEM WITH GLYCOL CHILLER, LEAD/LAG SILOXANE/VOC TREATMENT VESSELS, SLIDING VANE GAS COMPRESSOR SYSTEM, MEMBRANE SKIDS WITH ENCLOSURE, AND CONDENSATE DRAINS/TRAPS.
4. CONSTRUCTING A GAS MONITORING SYSTEM THAT DRAWS SAMPLES FROM THE RNG PRODUCT GAS AND ANALYZES GAS SAMPLES FOR COMPLIANCE WITH REQUIRED GAS QUALITY SPECIFICATIONS AS WELL AS AN INTERCONNECTION BYPASS VALVE TO DIVERT OFF SPECIFICATION GAS TO EXISTING PLANT WASTE GAS BURNERS/FLARES.
5. CONSTRUCTING A GAS ODORIZER SYSTEM, PRESSURIZED RNG PRODUCT GAS PIPING, RNG GAS PRESSURE REGULATING, CUSTODIAL TRANSFER GAS METERING, AND ALL OTHER APPEARANCES REQUIRED FOR CONNECTION WITH AN ONSITE NATURAL GAS UTILITY PIPELINE.
6. CONSTRUCTING OFF-SPECIFICATION GAS PIPING, PRESSURE REGULATION, AND INTERCONNECTION WITH EXISTING LOW PRESSURE DIGESTER GAS PIPING.
7. ASSOCIATED WORK SUCH AS DEMOLITION, SITE WORK, CONCRETE, METALS, PIPING SYSTEMS, INSTRUMENTATION AND CONTROLS, ELECTRICAL, HVAC, AND OTHER REQUIRED CONSTRUCTION ASSOCIATED WITH THE PROJECT.

DEFERRED SUBMITTALS

10 73 16, PRE-ENGINEERED METAL CANOPIES

APPROVED _____

Contact Arizona 811 at least two full working days before you begin excavation
ARIZONA811 BLUE STAKE, INC.
Call 811 or click Arizona811.com

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

DRAWING INDEX

APPLICABLE CODES OR UPDATED AS NEEDED:

2018 IBC	2018 IMC	2017 NEC	2018 IECC
2018 IFC	2018 IFGC	2010 ADAAG	
2018 IPC	2018 IEBC	ADA 2009 ICC A117.1	

(SEE SHEET G-04 FOR BUILDING CODE DATA)

CITY OF MESA BENCHMARK:

ALL ELEVATIONS ARE BASED ON THE CITY OF MESA DATUM. BM EL. 1201.05 AT THE TOP OF SRP IRRIGATION STRUCTURE SOUTHWEST OF EAST QUARTER CORNER, SECTION 19 T1N RSE (SW CORNER OF 8TH STREET AND DOBSON ROAD). SEE ELEVATION EQUATION FOR PORTIONS OF THE NEW FACILITY.

ELV. AS SHOWN IN THIS DRAWING SET = RECORD DWG. EL. - 0.45'

ALL EXISTING STRUCTURES HAVE BEEN FIELD-VERIFIED AS .45' LOWER THAN ELEVATIONS ON RECORD DRAWINGS USING THE CITY OF MESA INFORMATION. CONTRACTOR TO FIELD VERIFY ELEVATIONS.

PLANT BENCHMARKS:

TWO BENCH MARKS WERE INSTALLED AT THE PLANT BASED ON THE CITY OF MESA BENCHMARK.

PLANT BENCHMARK #1: TOP OF ANCHOR ON SOUTHWEST CORNER OF VAULT OUTSIDE AND TO THE EAST OF THE MAIN GATE.
ELEVATION = 1194.99

PLANT BENCHMARK #2: TOP OF SOUTHWEST CORNER OF CONCRETE UTILITY VAULT LOCATED AT THE NORTHEAST CORNER OF ADMINISTRATION/MAINTENANCE BUILDING.
ELEVATION = 1192.93

ARCADIS

Registered Professional Engineers (Civil)
CERTIFICATE NO.
39480
BRIAN J. BUBELA
Date Signed 12-12-22

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

COVER SHEET & DRAWING INDEX

DRAWING G-1

DRAWN BY: S. ALLEN
ENGINEER: S. ALLEN
APPROVED BY: E. AUERBACH

340 W.O. _____
PROJ. NO. CP0870-001

SHEET 1 OF 49

CATALOG NUMBER: A-251648

DATE SAVED: 12/12/22 C:\USERS\SALLEN\ACCDOCS\ARCADIS\AUS--30046397.0000--FLARE TO FUEL\PROJECT FILES\0_WIP\GENERAL\G-1.DWG

ABBREVIATIONS

A

A/C	AIR CONDITIONING
ABAN	ABANDONED
ADH	ADHESIVE
AGGR	AGGREGATE
AHR	ANCHOR
AHU	AIR HANDLING UNIT
ALT	ALTERNATE
ALUM	ALUMINUM
AMB	AMBIENT
ASPH	ASPHALT
ATM	ATMOSPHERE
AUTO	AUTOMATIC
AUX	AUXILIARY
AVG	AVERAGE

B

BDRY	BOUNDARY
BFP	BACKFLOW PREVENTER
BFV	BUTTERLFY VALVE
BLDG	BUILDING
BO	BLOWOFF
BRK	BRICK
BYP	BY PASS

C

C	COPPER
CB	CATCH BASIN
CFM	CUBIC FEET PER MINUTE
CI	CAST IRON, CURB INLET
CIP	CAST IN PLACE, CAST IRON PIPE
CJ	CONSTRUCTION JOINT, CONTROL JOINT
CFM	CUBIC FEET PER MINUTE
CFH	CUBIC FEET PER HOUR
CL, ℄	CENTER LINE
CO	CLEANOUT, CARBON MONOXIDE
COM	CITY OF MESA
CONC	CONCRETE
COND	CONDENSATE
CONT	CONTRACTOR
CS	CARBON STEEL
CTR	CENTER
CW	COLD WATER

D

DAT	DATUM
dB	DECIBELS
DEG	DEGREE
DEMO	DEMOLITION
DEPT	DEPARTMENT
DET	DETAIL
DI	DUCTILE IRON
DIA	DIAMETER
DIM	DIMENSION
DISCH	DISCHARGE
DIST	DISTANCE
DIV	DIVISION, DIVIDE
DR	DRAIN, DOOR
DWG	DRAWING

E

E	EAST
EA	EACH
EC	EDGE OF CURB
EFL	EFFLUENT
EHH	ELECTRICAL HANDHOLE
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
EMER	EMERGENCY
EMH	ELECTRICAL MANHOLE
ENGR	ENGINEER
EP	EDGE OF PAVEMENT, ELECTRICAL PANEL
EQUIP	EQUIPMENT
EXIST	EXISTING
EXH	EXHAUST
EXP	EXPANSION
EXT	EXTERIOR

F

FD	FLOOR DRAIN
FDN	FOUNDATION
FE	FIRE EXTINGUISHER
FH	FIRE HYDRANT
FIG	FIGURE
FLG	FLANGE
FLR	FLOOR
FP	FIRE PROTECTION
FT	FOOT, FEET
FTV	FIELD TO VERIFY
FUT	FUTURE

G

G	GAS
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GEN	GENERAL
GND	GROUND
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GR	GRADE

H

HDR	HEADER
HH	HAND HOLE
HP	HORSEPOWER
HT	HEIGHT
HVAC	HEATING, VENTILATING & AIR CONDITIONING
HW	HOT WATER
HWY	HIGHWAY
HYD	HYDRANT
Hz	HERTZ

I

I/O	INPUT/OUTPUT
ID	IDENTIFICATION
IN	INCH
INF	INFLUENT
INFO	INFORMATION
INSTL	INSTALL
INSTR	INSTRUMENT
INSUL	INSULATION
INT	INTERIOR
INV	INVERT
INV EL	INVERT ELEVATION
IP	IRON PIPE
IPT	IRON PIPE THREAD
ISO	ISOMETRIC

J

J	JUNCTION BOX
J-BOX	JUNCTION BOX
JT	JOINT

K

KO	KNOCKOUT
KW	KILOWATT
KWH	KILOWATT HOUR
KWHM	KILOWATT HOUR METER
KWM	KILOWATT METER

L

LB	POUND
LF	LINEAR FOOT
LONG	LONGITUDINAL
LP	LIGHT POLE
LT	LIGHT
LTG	LIGHTING
LV	LOW VOLTAGE

M

MAG	MARICOPA ASSOCIATION OF GOVERNMENTS
MAN	MANUAL
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MMBTU	MILLION BRITISH THERMAL UNIT
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MFR	MANUFACTURER
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MIN	MINIMUM, MINUTE
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MOD	MODEL, MODULE
MOT	MOTOR
MTD	MOUNTED
MULT	MULTIPLE

N

N	NORTH
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NPW	NON-POTABLE WATER
NO	NUMBER, NORMALLY OPEN
NTS	NOT TO SCALE

O

O/C	OPEN/CLOSE
OD	OUTSIDE DIAMETER
OF	OVERFLOW
OPT	OPTIONAL

P

PB	PULL BOX, PANELBOARD
PC	POINT OF CURVE, PRECAST CONCRETE
PCF	POUNDS PER CUBIC FOOT
PFD	PROCESS FLOW DIAGRAM
PH	PHASE
PL, ℙ	PROPERTY LINE
PLAS	PLASTER, PLASTIC
PNL	PANEL
PREFAB	PREFABRICATED
PRESS	PRESSURE
PROJ	PROJECT
PROP	PROPERTY
PRV	PRESSURE REDUCING VALVE, PRESSURE RELIEF VALVE, OR PRESSURE REGULATING VALVE
PS CONC	PRESTRESSED CONCRETE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH GAGE
PT	PRESSURE TREATED
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
PVT	POINT OF VERTICAL TANGENCY
PW	POTABLE WATER
PWR	POWER

Q

QA	QUALITY ASSURANCE
QC	QUALITY CONTROL
QTY	QUANTITY

R

R	RADIUS
RC	REINFORCED CONCRETE
RDC	REDUCER
REBAR	REINFORCING STEEL BARS
REF	REFERENCE
REINF	REINFORCE (D) (ING) (MENT)
REPL	REPLACE
REQ	REQUIRE
RGS	RIGID GALVANIZED STEEL CONDUIT
ROW	RIGHT OF WAY
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
RV	ROOF VENT

S

S	SOUTH
S/S	START/STOP
SAMP	SAMPLE
SAN	SANITARY
SCHED	SCHEDULE
SCHEM	SCHEMATIC
SD	STORM DRAIN
SECT	SECTION
SF	SQUARE FOOT
SP	SPARE
SPEC	SPECIFICATION
SPKLR	SPRINKLER
SPRT	SUPPORT
SQ FT	SQUARE FOOT
SQ IN	SQUARE INCH
SQ YD	SQUARE YARD
SRV	SAFETY RELIEF VALVE
SS	SANITARY SEWER, STAINLESS STEEL
STA	STATION
STD	STANDARD
STL	STEEL
STOR	STORAGE
STR	STRUCTURAL
SUSP	SUSPENDED
SV	SOLENOID VALVE
SW	SWITCH, SIDEWALK
SWBD	SWITCHBOARD
SWD	SIDE WATER DEPTH
SWGR	SWITCHGEAR
SYM	SYMBOL
SYMM	SYMMETRICAL
SYS	SYSTEM

T

TBD	TO BE DETERMINED
TBR	TO BE REMOVED
TEMP	TEMPORARY, TEMPERATURE
TERM	TERMINAL
THD	THREAD
TMH	TOP OF MANHOLE
TYP	TYPICAL

U

UGND	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
UP	UTILITY POLE
UPS	UNINTERRUPTIBLE POWER SUPPLY

V

V	VENT, VOLT
VAC	VOLTAGE ALTERNATING CURRENT
VAR	VARIES
VEH	VEHICLE
VEL	VELOCITY
VENT	VENTILATION
VOLT	VOLTAGE

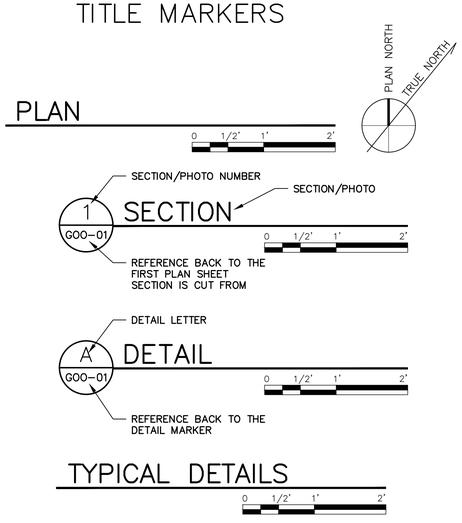
W

W	WEST, WATT
W/	WITH
W/O	WITHOUT
WC	WATER CLOUMN
WD	WIDTH
WF	WIDE FLANGE
WL	WIND LOAD
WI	WROUGHT IRON
WLD	WELDED
WM	WATER MAIN, WATER METER
WP	WEATHERPROOF
WT	WEIGHT, WATER TIGHT
WW	WASTE WATER

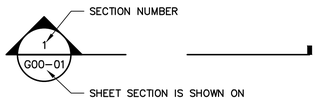
X

X-BRACE	CROSS BRACE
X-SECT	CROSS SECTION

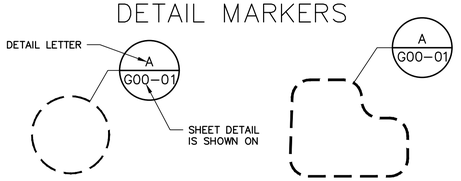
TITLE MARKERS



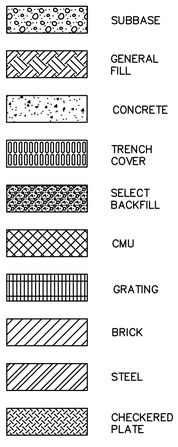
SECTION MARKERS



DETAIL MARKERS

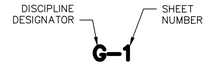


SYMBOL

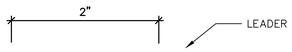


1

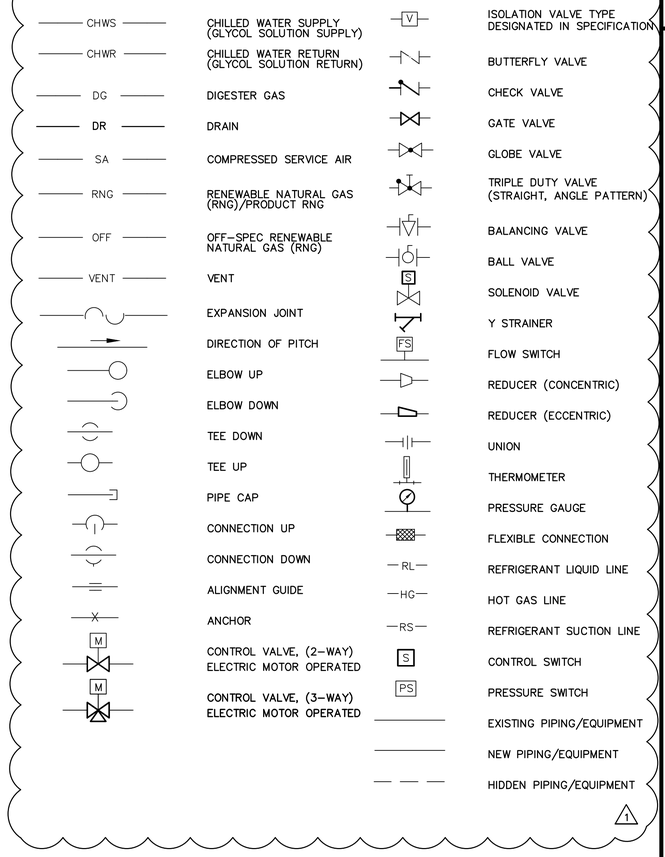
SHEET NUMBER IDENTIFICATION



DIMENSIONS AND LEADERS



PIPING SYMBOLS



SHEET KEY MARKER IDENTIFICATION

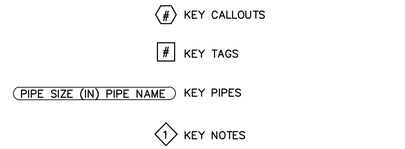
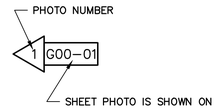


PHOTO MARKER



DISCIPLINE DESIGNATOR

G	GENERAL
D	DEMOLITION
C	CIVIL (SITE)
S	STRUCTURAL
M	MECHANICAL (PROCESS)
I	INSTRUMENTATION
E	ELECTRICAL

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

1 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Professional Engineer CERTIFICATE NO. 39480 BRIAN J. BUBELA Date Signed 12/12/2022

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

ABBREVIATIONS AND SYMBOLS

DRAWING G-2

DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B. BUBELA

340 W.O.____
PROJ. NO. CP0870-001

SHEET 2 OF 49

CATALOG NUMBER: A-251649

DATE SAVED: 12/12/22 C:\USERS\SALLEN\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\GENERAL\G-2.DWG

GENERAL NOTES:

1. THE FOLLOWING NOTES ARE GENERAL AND APPLY TO ALL SHEETS OF THESE CONTRACT DOCUMENTS.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS BEFORE STARTING WORK AND SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FIELD VERIFICATION OF THE EXISTING CONDITIONS INCLUDING THE LOCATION AND DIMENSIONS OF ALL EXISTING CONSTRUCTION AND UTILITIES. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF THERE IS A CONFLICT BETWEEN THE EXISTING CONSTRUCTION AND THE CONTRACT DOCUMENTS PRIOR TO PROCEEDING WITH THE WORK.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE PROPOSED YARD PIPING DOES NOT CONFLICT OR INTERFERE WITH EXISTING STRUCTURES OR UTILITIES IN THE CONSTRUCTION AREA. CONTRACTOR SHALL TEMPORARILY RELOCATE CONFLICTING UTILITIES AT THE TIE-IN OR CONNECTION LOCATIONS AND REINSTALL UTILITIES AS NECESSARY, WITH NO ADDITIONAL COST TO THE OWNER.
4. UNLESS OTHERWISE INDICATED OR SPECIFIED ON THE CONTRACT DRAWINGS, CONTRACTOR SHALL USE THE APPLICABLE DETAILS FOR PUBLIC WORKS CONSTRUCTION AS PUBLISHED BY THE MARICOPA ASSOCIATION OF GOVERNMENTS (MAG) AND AS AMENDED BY THE CITY OF MESA (COM). TYPICAL DETAILS SHALL APPLY EVEN IF NOT SPECIFICALLY CALLED OUT ON THE CONTRACT DRAWINGS.
5. CONTRACTOR SHALL COMPLY WITH LOCAL CONSTRUCTION STORM WATER DISCHARGE REGULATIONS AND REQUIREMENTS.
6. ALL PIPELINES SHALL HAVE A MINIMUM COVER OF 36" UNLESS THE COVER DEPTH IS SPECIFICALLY INDICATED ON THE DRAWINGS. PIPELINES SHALL BE ROUTED AS SHOWN UNLESS MINOR REVISIONS ARE NECESSARY TO AVOID EXISTING UTILITIES, STRUCTURES, ETC. THE CONTRACTOR SHALL FIELD VERIFY ALL LOCATIONS, SIZES, MATERIAL TYPES, AND ELEVATIONS SHOWN AROUND THE NEW CONSTRUCTION AREA PRIOR TO THE START OF CONSTRUCTION.
7. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT THE EXISTING CONDITIONS FROM DAMAGE. ALL FACILITIES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR RECONSTRUCTED IMMEDIATELY AT NO ADDITIONAL COST TO THE OWNER.
8. CONTRACTOR SHALL MAKE CONNECTIONS TO EXISTING PIPELINES, EQUIPMENT, ETC. AS REQUIRED AND SHALL PROVIDE ALL FITTINGS, ADAPTORS, AND APPURTENANCES REQUIRED TO MAKE THE CONNECTIONS. CONTRACTOR SHALL PROVIDE ALL SUPPORTS REQUIRED FOR A COMPLETE AND WORKING SYSTEM.
9. CONTRACTOR SHALL ADJUST ALL VALVE BOXES AND MANHOLES TO FINISHED GRADE UNLESS OTHERWISE SHOWN OR DIRECTED.

GENERAL SITE NOTES:

1. ALL ELEVATIONS ARE BASED ON THE CITY OF MESA DATUM. BENCHMARK EL. 1201.05. AT THE TOP OF SRP IRRIGATION STRUCTURE SOUTHWEST OF EAST QUARTER CORNER. SECTION 19 T1N RSE (SW CORNER OF 8TH STREET AND DOBSON ROAD). PLANT BENCHMARKS #1 AND #2 HAVE BEEN ESTABLISHED BASED ON CITY OF MESA DATUM AND ARE FURTHER DESCRIBED AND LOCATED ON SHEETS G-1 AND G-4. SEE ELEVATION EQUATION FOR PORTIONS OF THE NEW FACILITY.
   A. ELV. AS SHOWN IN THIS DRAWING SET = RECORD DWG. EL. - 0.45'
   B. ALL EXISTING STRUCTURES HAVE BEEN FIELD-VERIFIED AS .45' LOWER THAN ELEVATIONS ON RECORD DRAWINGS USING THE CITY OF MESA INFORMATION CONTRACTOR TO FIELD VERIFY ELEVATIONS.
2. ALL WORK AND MATERIALS SHALL CONFORM TO CURRENT UNIFORM STANDARD SPECIFICATIONS AND DETAILS FOR PUBLIC WORKS CONSTRUCTION AS PUBLISHED BY THE MARICOPA ASSOCIATION OF GOVERNMENTS AND AS AMENDED BY THE CITY OF MESA. ALL WORK AND MATERIALS NOT IN CONFORMANCE WITH THESE AMENDED SPECIFICATIONS AND DETAILS ARE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.
3. THE INFORMATION SHOWN ON DRAWINGS CONCERNING THE TYPE AND LOCATION OF EXISTING UNDERGROUND UTILITIES IS APPROXIMATE AND HAS NOT BEEN INDEPENDENTLY VERIFIED BY THE ENGINEER OR THE ENGINEER'S AGENT. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MAY OCCUR BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND AND OVERHEAD UTILITIES.
   A. CALL 602-263-1100 OR 811 FOR BLUE STAKE SERVICES.
4. CONTRACTOR SHALL POTHOLE EXISTING UTILITIES AHEAD OF CONSTRUCTION TO ALLOW FOR ANY NECESSARY ADJUSTMENTS IN GRADE LINE AND TO VERIFY PIPE MATERIALS FOR ORDERING THE APPROPRIATE TRANSITION AND TIE-IN FITTINGS THAT MAY BE REQUIRED.
5. THE CONTRACTOR IS RESPONSIBLE TO REMOVE ALL ABANDONED UTILITIES THAT INTERFERE WITH PROPOSED IMPROVEMENTS. THE CITY OF MESA UTILITIES DEPARTMENT LOCATING SECTION WILL ASSIST THE CONTRACTOR AS NEEDED, IN DETERMINING IF THE UTILITY (GAS, WATER, AND WASTEWATER ONLY) IS ABANDONED BY CALLING 480-644-4500.
6. THE CONTRACTOR SHALL COORDINATE WORK SCHEDULES TO PREVENT ANY CONFLICTING WORK CONDITIONS WITH THE CITY OF MESA UTILITY AND TRANSPORTATION CREWS.
7. THE CONTRACTOR IS ADVISED THAT A DUST CONTROL PERMIT AND A DUST CONTROL PLAN MAY BE REQUIRED BY THE MARICOPA COUNTY AIR QUALITY DEPARTMENT. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN THIS PERMIT, IF NECESSARY, AND COMPLY WITH ITS REQUIREMENTS. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE A COPY OF THE DUST CONTROL PERMIT AND DUST CONTROL PLAN TO THE CITY FOR REVIEW.
8. INSPECTIONS SHALL BE PROVIDED BY THE CITY OF MESA. THE CONTRACTOR SHALL NOTIFY THE CITY INSPECTION DEPARTMENT AT LEAST 48 HOURS IN ADVANCE OF ANY CONSTRUCTION.
9. THE JOB SITE SHALL BE CLEANED OF ANY DEBRIS OR SPOIL RESULTING FROM THIS PROJECT AT THE COMPLETION OF CONSTRUCTION.
10. ALL EQUIPMENT AND MATERIALS NOT SHOWN OR SPECIFIED ON THE PLANS OR SPECIFICATIONS, BUT REQUIRED TO COMPLETE THIS PROJECT, SHALL BE SUPPLIED BY THE CONTRACTOR AS PART OF THIS CONTRACT WORK (NO ADDITIONAL COST TO THE CITY).
11. CONTRACTOR SHALL MAINTAIN PLANT OPERATIONS AND EXISTING EQUIPMENT AT ALL TIMES.
12. CONTRACTOR SHALL COVER AND PROTECT EXISTING EQUIPMENT DURING CONSTRUCTION.
13. ALL SHUTDOWNS SHALL BE COORDINATED WITH THE CITY OF MESA.
14. WHEREVER PAVEMENT REPLACEMENT PER MESA STD DETAIL M-19.04.1 OR MAG STD DETAIL 200 IS REFERRED TO WITHIN THESE PLANS, BACKFILLING SHALL BE PER THE CITY OF MESA STREET TRENCH BACKFILLING AND PAVEMENT REPLACEMENT POLICY STATEMENT, REVISED SEPTEMBER 29, 1999.
15. ANY SURVEY MARKERS DISTURBED OR DAMAGED BY THE CONTRACTOR SHALL BE REPLACED IN KIND BY A REGISTERED LAND SURVEYOR AT NO ADDITIONAL COST TO THE CITY.
16. ALL EXISTING PAVEMENT MARKINGS, SIGNS, AND SIGNAL EQUIPMENT THAT ARE NOT PART OF THIS PROJECT BUT NEED TO BE REMOVED, REPLACED, RELOCATED, OR REPAIRED BECAUSE OF CONTRACTOR'S WORK WILL BE DONE AT THE CONTRACTOR'S EXPENSE.
17. THE CONTRACTOR IS ADVISED THAT DAMAGE TO ANY PUBLIC SERVICES OR SYSTEMS AS A RESULT OF THIS PROJECT SHALL BE REPAIRED BY THE CONTRACTOR AND INSPECTED BY THE CITY INSPECTOR. DEPENDING ON DAMAGES, ALL REPAIRS SHALL BE DONE WITHIN 24 HOURS. THE CONTRACTOR IS ADVISED THAT ANY COSTS RELATED TO REPAIR OR REPLACEMENT OF DAMAGED PUBLIC SERVICES OR SYSTEMS AS A RESULT OF CONTRACTOR'S NEGLIGENCE SHALL BE BORNE BY THE CONTRACTOR.

GENERAL CONSTRUCTION NOTES:

1. THE TOTAL BID PRICE SHALL COVER ALL WORK REQUIRED BY THE CONTRACT DOCUMENTS. ALL COSTS FOR THE PROVIDING OF ALL SERVICES, MATERIALS, EQUIPMENT, LABOR, TRANSPORTATION, CONSTRUCTION EQUIPMENT AND MACHINERY TOOLS, APPLIANCES, FUEL, POWER, LIGHT, HEAT, TELEPHONE, WATER, SANITARY FACILITIES, AND ALL OTHER FACILITIES AND INCIDENTALS NECESSARY FOR THE PERFORMANCE, TESTING, START-UP, AND COMPLETION OF WORK, AND ALL OVERHEAD AND PROFIT SHALL BE INCLUDED IN THE UNIT AND LUMP SUM PRICES BID. ALL WORK NOT SPECIFICALLY SET FORTH AS A PAY ITEM IN THE BID SHALL BE CONSIDERED A SUBSIDIARY OBLIGATION OF CONTRACTOR AND ALL COSTS IN CONNECTION THEREWITH SHALL BE INCLUDED IN THE PRICES BID.
2. IN THE CASE OF ANY INCIDENT INVOLVING GAS LEAKAGE, THE CONTRACTOR SHALL NOTIFY THE LOCAL FIRE DEPARTMENT FIRST, GAS UTILITY SECOND AND THEN THE CONTRACTING OFFICER. EXCEPT FOR IMMEDIATE HAZARD TO LIFE, OR IN CASE OF AN ACTUAL FIRE ENDANGERING LIFE OR PROPERTY, THE CONTRACTOR SHALL NOT SHUT OFF THE HIGH PRESSURE MAIN.

CONSTRUCTION PREPARATION ACTIVITIES:

1. THE CITY OF MESA FLARE TO FUEL PROJECT IS ANTICIPATED TO BEGIN IN THE AUTUMN OF 2022. SOIL DISTURBANCE SHALL BE MINIMIZED PRIOR TO INSTALLING EROSION AND SEDIMENT CONTROLS IN ACCORDANCE WITH THIS PLAN.
2. ATLEAST 48 HOURS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING EARTH DISTURBANCE ACTIVITIES INTO AN AREA PREVIOUSLY UNMARKED FOR UTILITIES, NOTIFICATION SHALL BE MADE TO ARIZONA 811 FOR THE FIELD LOCATION AND MARKING OF EXISTING UNDERGROUND UTILITIES.
3. MAINTAIN A COPY OF THE APPROVED / STAMPED CONSTRUCTION PLANS AND APPROVED TRAFFIC CONTROL PLAN AT THE PROJECT SITE AT ALL TIMES.
4. MARK THE APPROVED LIMITS OF DISTURBANCE (I.E., CONSTRUCTION BOUNDARIES) AND FLAG THE LOCATIONS OF FOREIGN UTILITIES.
5. MARK OR FENCE FOR PROTECTION ANY ENVIRONMENTALLY SENSITIVE AREAS.
6. MOBILIZE CREW, FACILITIES, EQUIPMENT, AND MATERIALS REQUIRED TO PERFORM THE WORK.
7. INSTALL STABILIZED CONSTRUCTION ENTRANCES WHERE LOCATED ON THE DRAWINGS.
8. INSTALL SEDIMENT FILTER DEVICES (E.G., SILT FENCE, COMPOST FILTER SOCKS, INLET PROTECTION) AND WATER BARS AT THE LOCATIONS SHOWN ON THE EROSION & SEDIMENT CONTROL PLAN DRAWINGS AND DOWN GRADIENT OF EARTH DISTURBANCE ACTIVITIES WHERE NECESSARY/APPROPRIATE.
9. CLEAR AND GRUB THE CONSTRUCTION ROW OF TREES, BRUSH, LOGS, AND ROCKS AS NECESSARY. HAUL MERCHANTABLE TIMBER OFF-SITE OR STACK AT A LANDOWNER-DESIGNATED LOCATION ON-SITE, BUT NOT WITHIN 50 FEET OF STREAMS, WETLANDS, OR FLOODPLAINS. UNMERCHANTABLE MATERIALS MAY BE CHIPPED AND BLOWN OFF THE CONSTRUCTION ROW (PER LANDOWNER AGREEMENT AND APPROVALS), EXCEPT WITHIN 50 FEET OF STREAMS, WETLANDS, OR FLOODPLAINS.
10. PERFORM GRADING AS NECESSARY TO PROVIDE A LEVEL WORK SURFACE AND LEAVE ROOTSTOCK IN PLACE IN AREAS WHERE THE GROUND IS RELATIVELY FLAT AND DOES NOT REQUIRE GRADING.
11. SEGREGATE THE TOPSOIL FROM THE SUBSOIL, WHERE POSSIBLE, FOR REUSE DURING SITE RESTORATION.

PIPELINE INSTALLATION ACTIVITIES:

1. PRIOR TO EXCAVATION, CONTRACTOR TO VERIFY SITE LAYOUT PROVIDED BY A SURVEYOR LICENSED IN THE STATE OF ARIZONA. AT A MINIMUM, STATIONING, NORTHING/EASTING COORDINATES, AND ELEVATIONS SHALL BE PROVIDED FOR THE FOLLOWING:
   A. ALL FIELD BENDS OR POINTS OF INTERSECT.
   B. ALL FOREIGN LINE CROSSINGS AND FOREIGN LINES WITHIN 5 FEET OF THE NEW SYSTEM. INCLUDE ELEVATION FOR MINIMUM CLEARANCE CONFIRMATION OF ALL CROSSINGS.
   C. ALL SLABS.

   UPDATE AS-BUILT DRAWINGS PRIOR TO BACKFILLING THE PIPELINE. AT A MINIMUM, STATIONING, NORTHING/EASTING COORDINATES, AND ELEVATIONS SHALL BE PROVIDED FOR ALL VALVES, POINTS OF INTERSECT AND SERVICE CONNECTIONS.
2. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS IN THE FIELD PRIOR TO COMMENCING ANY FABRICATION, ORDERING OF MATERIALS, OR CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE CITY OF MESA IMMEDIATELY IF ANY CONDITIONS ARE FOUND THAT WOULD IMPEDE THE PERFORMANCE OF THE WORK ACCORDING TO CONTRACT DOCUMENTS.
3. BEFORE STARTING ANY WORK AFFECTING A ROADWAY, THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE CITY OF MESA. ALL TRAFFIC CONTROLS, AS SPECIFIED IN THE TRAFFIC CONTROL PLAN, SHALL BE INSTALLED PRIOR TO COMMENCING WORK.
4. EXCAVATE THE PIPELINE TRENCH TO A DEPTH THAT WILL ALLOW FOR THE REQUIRED MINIMUM COVER TO BE PLACED OVER THE PIPELINE AFTER BACKFILLING. EXCAVATIONS WILL NOT BE LEFT OPEN OVERNIGHT.
5. STRING THE PIPE SECTION ALONG THE OPEN TRENCH IN A CONTINUOUS LINE.
6. BEND PIPE SECTIONS WHERE NECESSARY TO SHAPE THE PIPE TO THE CONTOURS OF THE TERRAIN, WELD THE PIPE JOINTS TOGETHER INTO LONG STRINGS AND PLACE THE STRINGS ON TEMPORARY SUPPORTS, AND LOWER THE PIPELINE INTO THE TRENCH.
7. ALL UTILITIES CROSSING STREETS MUST BE BORED OR PUNCHED UNLESS PERMISSION TO OPEN CUT HAS BEEN GIVEN IN WRITING BY THE CITY OF MESA (COM).
8. ALL EXCAVATIONS WITHIN THE IMMEDIATE AREA OF EXISTING UTILITIES SHALL BE PERFORMED BY HAND. ANY DAMAGE TO ANY EXISTING UTILITIES CAUSED BY THE CONTRACTOR'S WORK SHALL BE IMMEDIATELY REPAIRED BY QUALIFIED PERSONNEL AT THE CONTRACTOR'S EXPENSE.
9. ADEQUATELY SUPPORT, SHORE UP OR OTHERWISE PROTECT UNDERGROUND UTILITIES WHENEVER EXPOSED IN THE TRENCH.
10. EXPOSE EXISTING MAINS AT CONNECTION POINTS 10 DAYS PRIOR TO MAKING CONNECTIONS TO DETERMINE ELEVATION, VERIFY MATERIAL, AND CONFIRM OUTER DIAMETER OF PIPE.
11. PROVIDE AT LEAST 48 HOURS NOTICE TO THE CITY OF MESA (COM) AND ENGINEER BEFORE ANY CUT-INS OR CONNECTIONS TO EXISTING MAINS ARE COMOLETED.
12. CONNECT NEW MAINS TO EXISTING MAINS USING PROPER FITTINGS AND, IN A MANNER, ACCEPTABLE TO OWNER AND ENGINEER.
13. NOTIFY THE CITY OF MESA 48 HOURS PRIOR TO BACKFILLING ANY NEW PIPING.
14. BACKFILL THE TRENCH USING EXISTING SUBSOIL MATERIAL AND ROUGH GRADE THE CONSTRUCTION AREA TO PRE-CONSTRUCTION CONTOURS MINUS THE DEPTH OF THE TOPSOIL OR PAVING, AS NECESSARY. SEE SHEET M-9 FOR GAS PIPE TRENCH DETAIL.
15. REPLACE THE SEGREGATED TOPSOIL AND PERFORM FINAL GRADING.
16. MOUND SOIL, AS NECESSARY, TO ALLOW FOR SETTLEMENT.

RESTORATION AND DEMOBILIZATION ACTIVITIES:

1. RESTORE ALL DISTURBED AREAS TO PRE-CONSTRUCTION CONDITIONS BY SOIL AMENDMENTS AND MULCH OR EROSION CONTROL BLANKET (WHERE REQUIRED) IN ACCORDANCE WITH THIS PLAN.
2. REMOVE STABILIZED CONSTRUCTION ENTRANCES AND RESTORE ENTRANCE AREAS TO PRE-CONSTRUCTION CONDITIONS.
3. INSTALL ASPHALT PAVING, GRAVEL, OR CONCRETE WHERE PREVIOUSLY REMOVED.
4. CONTRACTOR SHALL CONFIRM TIE-IN LOCATIONS AS PROVIDED IN THE CONTRACT DRAWINGS AND COORDINATE WITH EQUIPMENT MANUFACTURERS PRIOR TO ANY SLAB CONSTRUCTION, CONCRETE WORK, AND TIE IN LOCATIONS.
5. CONTRACTOR SHALL COORDINATE THE EQUIPMENT ARRIVAL SCHEDULE WITH THE WORK SCHEDULE, AS PREPARED BY THE CONTRACTOR.
6. CONTRACTOR SHALL PERFORM ALL NECESSARY NON-DESTRUCTIVE TESTING, COATINGS, PURGING AND PRESSURIZATION PLANNING TO BRING THE SYSTEM INTO SERVICE.
7. CONTRACTOR SHALL COORDINATE STARTUP SEQUENCING WITH THE PLANT STAFF PRIOR TO BRINGING THE SYSTEM INTO SERVICE.
8. REMOVE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES (E.G., COMPOST FILTER SOCKS) ONCE THE ENTIRE SITE HAS BEEN STABILIZED BY A MINIMUM, UNIFORM, NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST EROSION.
9. IMMEDIATELY STABILIZE AREAS (IF ANY) DISTURBED DURING REMOVAL OF TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES.
10. DEMOBILIZE CREW, FACILITIES, EQUIPMENT, AND MATERIALS FROM THE SITE.

GENERAL SAFETY NOTES:

1. ALL WORK SHALL BE PERFORMED AS PER OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
2. EXCAVATION & TRENCH SAFETY: STRICT ADHERENCE TO OSHA PART 1926 SUBPART P NUMBER 1926.652 AND ASSOCIATED APPENDICES IS REQUIRED.
   A. DESIGN AND SLOPING OF BENCHING SYSTEMS SHALL BE IN ACCORDANCE WITH OPTIONS PROVIDED IN SECTION NUMBER 1926.652(B).
   B. SLOPING AND BENCHING SYSTEMS NOT UTILIZING OPTION (1) OR OPTION (2) OR OPTION (3) UNDER PARAGRAPH 1926.652(b) SHALL BE APPROVED BY A REGISTERED PROFESSIONAL ENGINEER.
   C. A DESIGNATED COMPETENT PERSON SHOULD BE ONSITE WHILE EXCAVATING, PRIOR TO ENTERING AN EXCAVATION AND DURING WORK INSIDE THE EXCAVATION.
   D. INSPECTIONS BY A COMPETENT PERSON MUST BE DOCUMENTED AND CONDUCTED DAILY, BEFORE EACH SHIFT AND AS CONDITIONS CHANGE.
3. THE EXCAVATION AND REPLACEMENT PLANNED FOR THIS PROJECT WHERE BENCHING AND SLOPING IS NOT A FEASIBLE OPTION MAY REQUIRE A TEMPORARY EXCAVATION PROTECTION SYSTEM (EPS). THE TEMPORARY EPS FOR THIS PROJECT WILL BE A "MEANS AND METHODS" BY THE CONTRACTOR, AND SHALL BE DESIGNED AND INSTALLED BY THE CONTRACTOR, TO PROTECT EXISTING FEATURES FROM ANY VERTICAL AND HORIZONTAL MOVEMENT.
4. DETAILS OF THE EPS MUST CONFORM WITH THE REQUIREMENTS OF 29CFR1926 AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE STATE AND FEDERAL SAFETY CODES. SHEETING, SHORING, OR OTHER APPROVED PRE-ENGINEERED PROTECTIVE SYSTEMS MAY BE USED. THE REQUIREMENTS OF ANY PROTECTIVE SYSTEM SHALL BE AS CONTAINED IN 29CFR1926. IT MAY BE LEFT IN PLACE ONLY WITH THE WRITTEN PERMISSION OF THE ENGINEER.
5. TEMPORARY EXCAVATIONS MUST BE CONDUCTED IN ACCORDANCE WITH THE U.S. DEPARTMENT OF LABOR - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARD 1926 SUBPART P TITLED "EXCAVATIONS". OSHA PERTAIN TO SAFETY ASPECTS OF EXCAVATIONS SUCH AS: SOIL CLASSIFICATION, SLOPING AND BENCHING, SHORING, AND ASSISTANCE WITH SELECTING THE APPROPRIATE PROTECTIVE SYSTEM. PRIOR TO WORKERS ENTERING AN EXCAVATION, THE CONTRACTOR'S COMPETENT PERSON, AS DEFINED BY OSHA, MUST INSPECT THE EXCAVATION AND DEEM IT SAFE FOR ENTRY.

REGULATORY COMPLIANCE:

1. CONSTRUCTION TO COMPLY WITH CITY OF MESA OPERATIONS AND MAINTENANCE MANUALS.
2. AT A MINIMUM, THE FOLLOWING CONSTRUCTION INSPECTION SERVICES ARE REQUIRED:
   A. GENERAL INSPECTOR CERTIFIED WITH API 1169
   B. MATERIAL INSPECTOR: RECEIVE AND ISSUE MATERIALS TO CONTRACTOR. ADDRESS DEFECTS AND VERIFY ALL MILL TEST REPORTS.
   C. WELDING INSPECTOR CERTIFIED WITH AMERICAN WELDING SOCIETY (AWS) AS A CERTIFIED WELDING INSPECTOR (CWI).
   D. COATING INSPECTOR TO OBSERVE THE APPLICATION PROCESSES AND VERIFY MILL THICKNESS OF THE COATING ON JOINTS OR FIELD REPAIRS. COATING INSPECTOR TO BE CERTIFIED AS A NATIONAL ASSOCIATION OF CORROSION ENGINEERS (NACE) CIP LEVEL 1 INSPECTOR.
3. 100% OF ABOVE GROUND WELDS SHALL ALSO BE TESTED WITH APPROVED NON-DESTRUCTIVE METHOD.
4. ALL FIELD PERSONNEL SHALL BE OPERATOR QUALIFIED FOR EACH REQUIRED CONSTRUCTION ACTIVITY.

CATHODIC PROTECTION:

1. ALL EXISTING CATHODIC PROTECTION TEST STATIONS, ANODES, RECTIFIERS AND FOREIGN LINE CROSSINGS SHALL BE TRANSFERRED FROM THE ABANDONED FACILITIES AND CONNECTED TO THE NEW MAIN.

EROSION AND SEDIMENT CONTROL NOTES:

1. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE LATEST EDITION OF THE ARIZONA STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL, THESE CONSTRUCTION DRAWINGS, AND THE PROJECT STORMWATER POLLUTION PREVENTION PLAN (SWPPP). THE CONTRACTOR WILL NOTIFY THE ENGINEER OF ANY CONFLICTS OR DISCREPANCIES BETWEEN THESE SOURCES AND SHALL COMPLY WITH THE MOST STRINGENT REQUIREMENT, UNLESS OTHERWISE DIRECTED TO BY THE ENGINEER.
2. LOCATIONS OF TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES MAY VARY DEPENDING ON ACTUAL FIELD CONDITIONS ENCOUNTERED AT TIME OF CONSTRUCTION. ADDITIONAL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES MAY BE REQUIRED AT TIME OF CONSTRUCTION AS DIRECTED BY OWNER OR THE ENGINEER.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING AND MAINTAINING ALL NECESSARY TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES UNTIL NO LONGER REQUIRED.
4. TO THE EXTENT PRACTICABLE, THE CONTRACTOR SHALL MINIMIZE THE AREA OF BARE SOIL EXPOSED AT ANY GIVEN TIME.
5. DURING CONSTRUCTION, ACTIVE AREAS THAT COULD CONTRIBUTE TO THE EROSION, MIGRATION, AND/OR TRACKING OF SOIL/SEDIMENT PRIOR TO RESTORATION ACTIVITIES WILL BE LIMITED TO NO MORE THAN FIVE (5) ACRES AT ANY ONE TIME.
6. DURING CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL INSPECT ALL EROSION AND SEDIMENT CONTROL MEASURES DAILY FOR DEFICIENCIES OR REQUIRED MAINTENANCE.
7. DURING CONSTRUCTION ACTIVITIES, AN ARIZONA STATE-QUALIFIED INSPECTOR, AS DEFINED BY THE CONSTRUCTION GENERAL PERMIT, SHALL INSPECT THE CONSTRUCTION SITE AT LEAST ONCE EVERY 7 CALENDAR DAYS. THE QUALIFIED INSPECTOR SHALL PREPARE A REPORT IN ACCORDANCE WITH THE REQUIREMENTS OF THE SWPPP.
8. THE CONTRACTOR OR QUALIFIED INSPECTOR, AS APPLICABLE, SHALL NOTIFY THE CITY OF MESA'S REPRESENTATIVE(S) AND APPROPRIATE CONTRACTORS OF ANY REQUIRED CORRECTIVE ACTIONS WITHIN 1 BUSINESS DAY FOLLOWING THE INSPECTION AND SHALL COMPLETE THE CORRECTIVE ACTIONS IN A REASONABLE TIME FRAME (E.G., PRIOR TO THE NEXT ANTICIPATED PRECIPITATION EVENT, TO THE EXTENT POSSIBLE).
9. THE CONTRACTOR SHALL IMPLEMENT APPROPRIATE DUST CONTROL MEASURES (AS DETAILED IN THE SWPPP) AT ALL TIMES TO MINIMIZE THE GENERATION AND POTENTIAL OFF-SITE MIGRATION OF FUGITIVE DUST.
10. THE CONTRACTOR SHALL UTILIZE GOOD HOUSEKEEPING PRACTICES (I.E., MAINTAIN A NEAT AND ORDERLY SITE) SO THAT MISCELLANEOUS CONSTRUCTION DEBRIS DOES NOT IMPACT STORMWATER RUNOFF.
11. THE CONTRACTOR SHALL PREVENT TRACKING OF SOIL MATERIALS ONTO OFF-SITE AREAS (E.G., PUBLIC ROADS). ANY SOIL MATERIALS ACCIDENTALLY TRACKED OR OTHERWISE SPILLED/DROPPED ONTO OFF-SITE AREAS SHALL BE IMMEDIATELY CLEANED UP.
12. THE CONTRACTOR SHALL CONTROL RUNOFF DOWN THE TRENCH WITH PERIODIC BERMS AND, AS NEEDED, BY PUMPING TO A DEWATERING FILTER BAG.
13. THE CONTRACTOR SHALL PRESERVE NATURAL VEGETATION BOTH ON AND OFF THE SITE, UNLESS THE VEGETATION HAS BEEN SPECIFICALLY IDENTIFIED FOR REMOVAL.
14. THE CONTRACTOR SHALL CONTAIN SEDIMENT-LADEN RUNOFF TO THE WORK AREA AND NOT ALLOW SEDIMENT TO COLLECT ON ANY OFF-SITE AREA OR IN WATERWAYS. WATERWAYS INCLUDE BOTH NATURAL AND MAN-MADE OPEN DITCHES, STORM DRAINS, LAKES, PONDS, AND WETLANDS.
15. THE CONTRACTOR SHALL COMPLETE ALL PERMANENT SOIL EROSION CONTROL MEASURES AS SOON AS POSSIBLE AFTER FINAL GRADING (WEATHER PERMITTING) OR UPON COMPLETION OF THE FINAL EARTH DISTURBANCE. IF IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE THE EARTH DISTURBANCE, THEN THE CONTRACTOR SHALL MAINTAIN TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES UNTIL PERMANENT CONTROL MEASURES ARE IN PLACE AND THE AREA IS STABILIZED.

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Professional Engineer (Civil) CERTIFICATE NO. 39480 BRIAN J. BUBELA Date Signed 12-2-22

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

GENERAL NOTES

DRAWING G-3

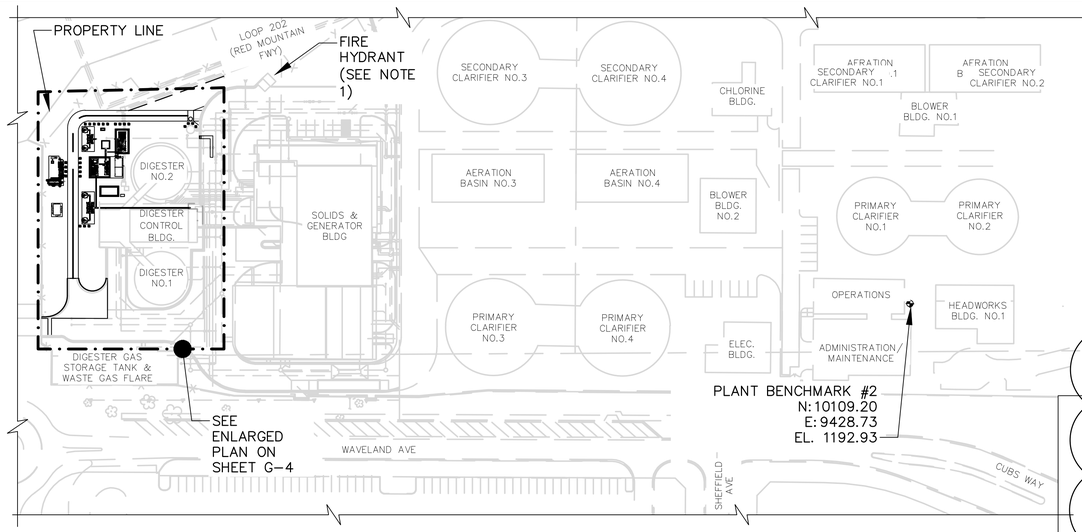
DRAWN BY: S. ALLEN
ENGINEER: A. AUERBACH
APPROVED BY: B. BUBELA

340 W.O. ____
PROJ. NO. CP0870-001

SHEET 3 OF 49

CATALOG NUMBER: A-251650

DATE SAVED: 11/16/22 C:\USERS\SALLEN\ACCDOCS\ARCADIS\US-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\GENERAL\G-3.DWG

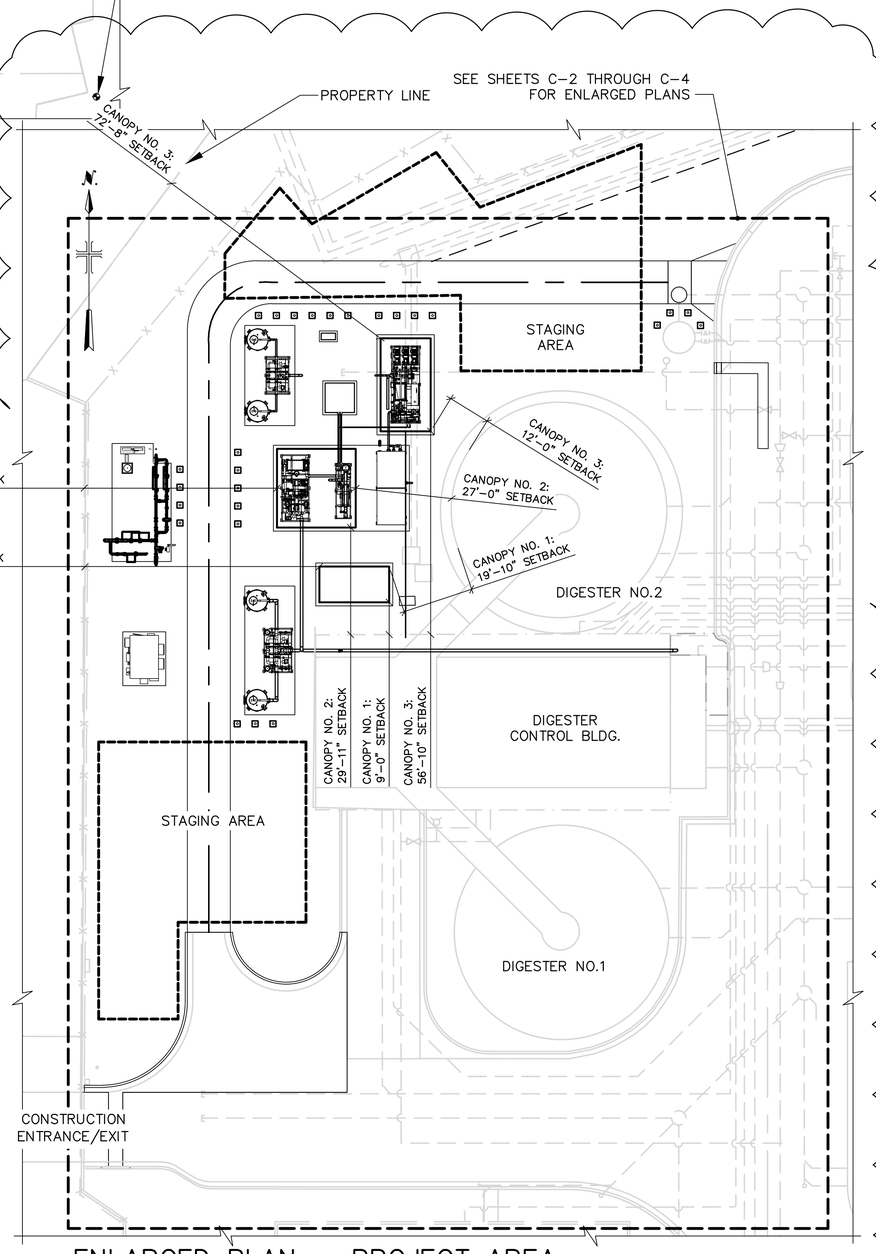


NORTHWEST WATER RECLAMATION PLANT

960 N RIVERVIEW MESA, AZ

0 40' 80' 160'

PLANT BENCHMARK #1
N: 10030.78
E: 9723.15
EL. 1194.992



ENLARGED PLAN – PROJECT AREA

0 10' 20' 40'

BUILDING CODE DATA

LOCATION:	MESA, AZ
PLANT:	NORTHWEST WATER RECLAMATION PLANT
ADDRESS:	960 N RIVERVIEW
BUILDING STRUCTURES:	PRE-ENGINEERED METAL SHADE CANOPIES OVER EQUIPMENT (3 TOTAL)
CONSTRUCTION TYPE:	II-B
OCCUPANCY CLASSIFICATION:	U
BUILDING AREA:	CANOPY NO. 1: 195 SF (19'-6" X 10'-0") CANOPY NO. 2: 484 SF (22'-0" X 22'-0") CANOPY NO. 3: 364 SF (26'-0" X 14'-0")
AUTOMATIC SPRINKLER SYSTEM:	NOT PROVIDED
BUILDING AREA ALLOWANCE:	8,500 SF
BUILDINGS ON SAME LOT:	SEPARATED
HEIGHT OF STRUCTURE:	12.5 FEET
ALLOWABLE BUILDING HEIGHT:	55 FEET
PROPERTY SETBACK DISTANCE:*	CANOPY NO. 1: 65'-11" CANOPY NO. 2: 53'-11" CANOPY NO. 3: 72'-8"
NEARBY BUILDINGS SETBACK DISTANCE (TO DIGESTER CONTROL BUILDING):*	CANOPY NO. 1: 9'-0" CANOPY NO. 2: 29'-11" CANOPY NO. 3: 56'-10'
NEARBY BUILDINGS SETBACK DISTANCE (TO DIGESTER NO. 2):*	CANOPY NO. 1: 19'-10" CANOPY NO. 2: 27'-0" CANOPY NO. 3: 12'-0"
REQUIRED FIRE RESISTANCE RATING:	STRUCTURAL FRAMING: 0 HOURS FLOOR: 0 HOURS ROOF: 0 HOURS
BUILDING SECTION & ELEVATONS:	TO BE PROVIDED UNDER DEFERRED SUBMITTAL (SECTION 10 73 16, PRE-ENGINEERED METAL CANOPIES)

* MINIMUM SETBACK DISTANCE DIMENSIONS SHOWN ON ENLARGED PLAN – PROJECT AREA.

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

GENERAL NOTES:

1. SEE GENERAL NOTES ON SHEET G-3.
2. ALL DIMENSIONS AND ELEVATIONS OF EXISTING STRUCTURES ARE BASED ON RECORD DRAWING INFORMATION AND HAVE NOT BEEN FIELD-VERIFIED. CONTRACTOR TO VERIFY DIMENSIONS FOR PERFORMANCE OF THE WORK.
3. ALL TRENCHING FOR THE 4-INCH HDPE PIPE SHALL BE INSTALLED IN ACCORDANCE WITH MAG SPECIFICATION 601. PAVEMENT AND SURFACE RESTORATION SHALL BE PERFORMED ACCORDING TO MAG SPECIFICATION 601.6.
4. BUILDING/STRUCTURE NAMES SHOWN ARE PROVIDED FOR CITY OF MESA FIRE DEPARTMENT
5. FOR LIMITS OF DEMOLITION, COORDINATE WITH LOCATION OF NEW PIPING, STRUCTURES, AND ROADWAYS SHOWN ON DEMO AND CIVIL DRAWINGS.
6. CONTRACTOR SHALL PROVIDE A SYSTEM TO PROTECT EXISTING STRUCTURES OR FACILITIES AS INDICATED IN SPECIFICATION SECTION 02 41 00 DEMOLITION.
7. CONTRACTOR TO VERIFY THE UNDERGROUND UTILITIES IN THE PROJECT AND PROTECT THEM IN PLACE

NOTES:

1. LOCATION OF EXISTING FIRE HYDRANT WITHIN 500 FEET OF NEW WORK, AS COMPLIANT WITH LOCAL FIRE CODE.
2. LIMITS OF CONSTRUCTION AND CONTRACTOR STAGING AREAS ARE CONFINED TO THE DESIGNATED AREAS, SHOWN IN KEY SITE PLAN. CONTRACTOR SHALL SEEK APPROVAL FROM THE CITY OF MESA IF DESIGNATED AREAS ARE INSUFFICIENT.

LEGEND

- BENCHMARK
- AREA OF WORK
- STAGING AREA
- KEY SITE CIVIL PLAN

1 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Professional Engineer CERTIFICATE NO. 39480 BRIAN J. BUBELA Date Signed 12-12-2022

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

OVERALL PLAN & BUILDING CODE DATA

DRAWING G-4

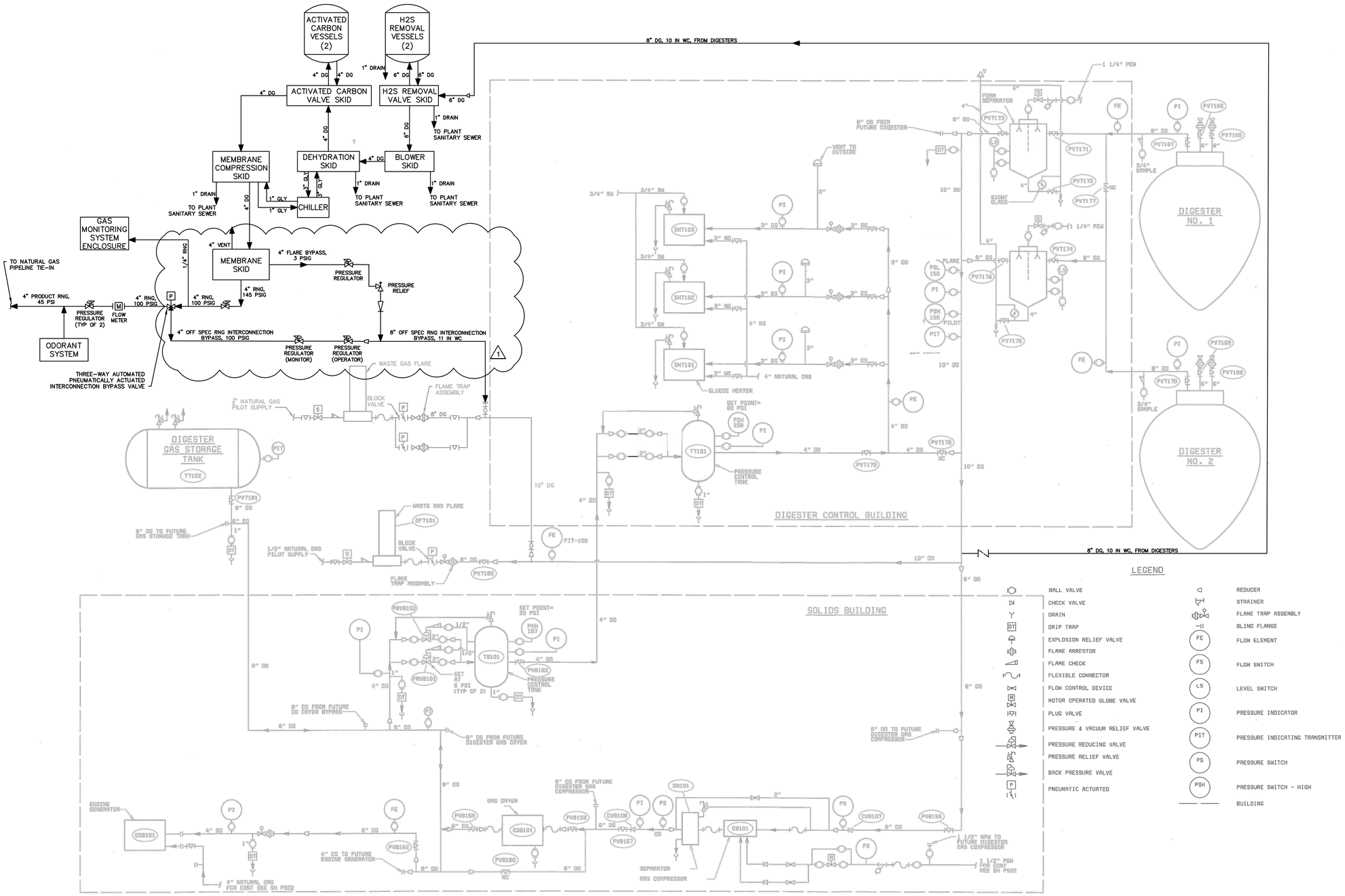
DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B. BUBELA

340 W.O.____
PROJ. NO. CP0870-001

SHEET 4 OF 49

CATALOG NUMBER: A-251651

DATE SAVED: 12/12/22 C:\USERS\SALLEN\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WP\GENERAL\G-4.DWG



mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

GENERAL NOTES:

1. ALL REQUIRED VALVES, PIPING, AND APPURTENANCES ARE NOT INCLUDED ON THIS PFD.
2. REFER TO INSTRUMENTATION P&IDS FOR ADDITIONAL DETAILS.
3. PIPING AND EQUIPMENT WITH SCREENED (GREY) LINES ARE EITHER EXISTING FEATURES DERIVED FROM RECORD DRAWING SOURCES AND OR ITEMS TO BE FURNISHED AND INSTALLED BY OTHERS UNDER OTHER CONTRACTS.

1 REVISION 1: 100% SUBMITTAL FOR CONSTRUCTION

ARCADIS

Registered Professional Engineer (AZ) CERTIFICATE NO. 39480 BRIAN J. BUBELA Date Signed 12/2022

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

PROCESS FLOW DIAGRAM

DRAWING G-5

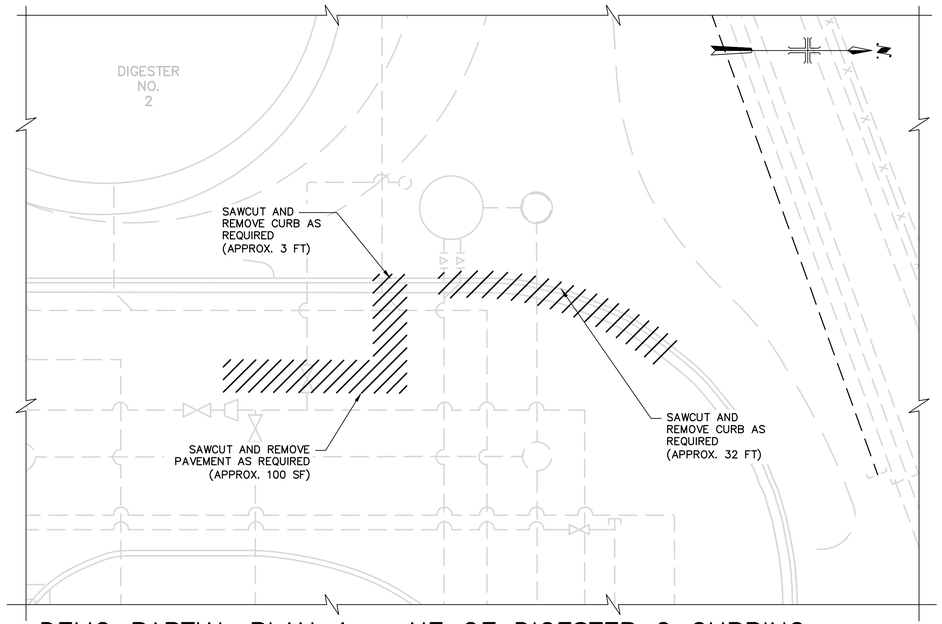
DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B.BUBELA

340 W.O.____
PROJ. NO. CP0870-001

SHEET 5 OF 49

CATALOG NUMBER: A-251652

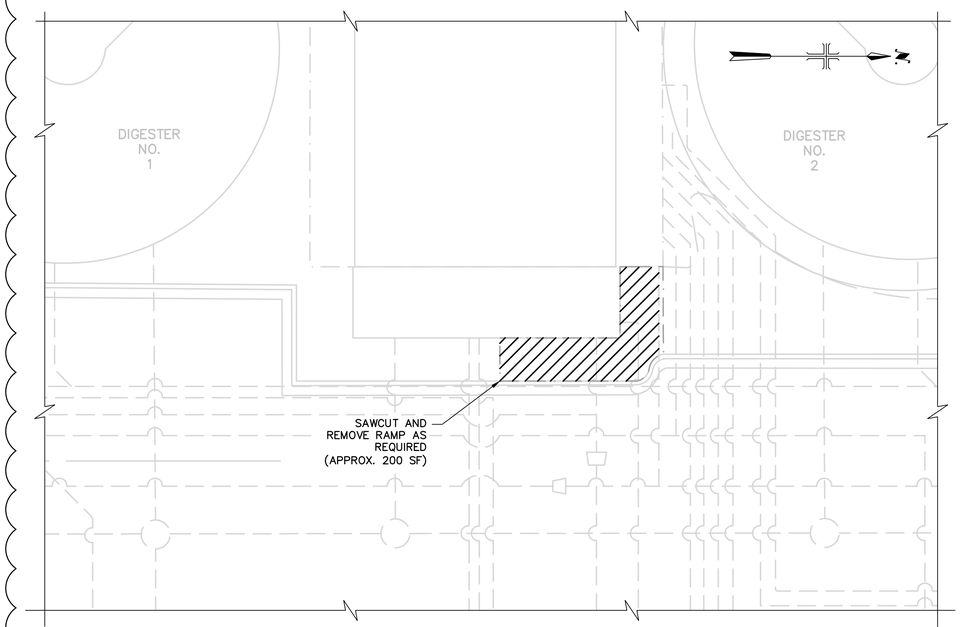
DATE SAVED: 12/11/22 C:\USERS\SALLEN\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\GENERAL\G-5.DWG



DEMO PARTIAL PLAN 1 – NE OF DIGESTER 2 CURBING

SCALE: 1" = 10'–0"

0 10' 20'



DEMO PARTIAL PLAN 3 – DIGESTER CONTROL BUILDING RAMP

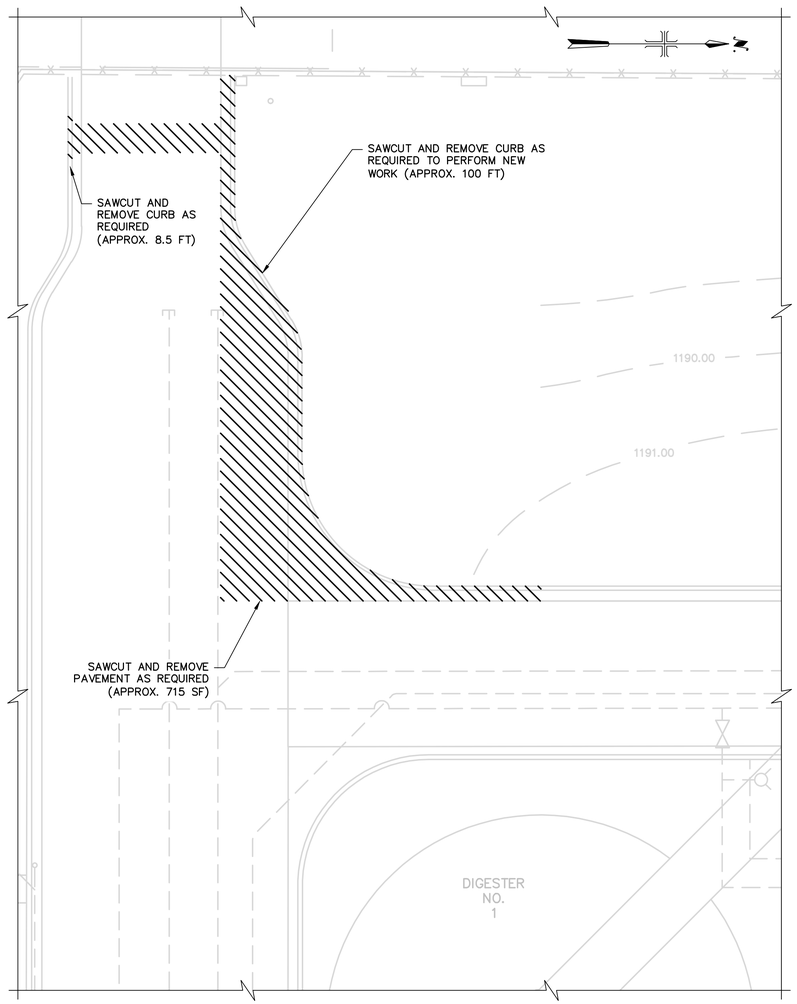
SCALE: 1" = 10'–0"

0 10' 20'

1

SYMBOLS

DEMOLITION



DEMO PARTIAL PLAN 2 –
WEST GATE CURBING AND ASPHALT

SCALE: 1" = 10'–0"

0 10' 20'

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

GENERAL NOTES:

1. ALL DIMENSIONS AND ELEVATIONS OF EXISTING STRUCTURES ARE BASED ON RECORD DRAWING INFORMATION AND HAVE NOT BEEN FIELD–VERIFIED. CONTRACTOR TO VERIFY DIMENSIONS FOR PERFORMANCE OF THE WORK.
2. ALL WORK AND MATERIALS SHALL CONFORM TO CURRENT UNIFORM STANDARD SPECIFICATIONS AND DETAILS FOR PUBLIC WORKS CONSTRUCTION AS PUBLISHED BY THE MARICOPA ASSOCIATION OF GOVERNMENTS (MAG) AND AS AMENDED BY THE CITY OF MESA. ALL WORK AND MATERIALS NOT IN CONFORMANCE WITH THESE AMENDED SPECIFICATIONS AND DETAILS ARE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.
3. INSPECTIONS SHALL BE PROVIDED BY THE CITY OF MESA. THE CONTRACTOR SHALL NOTIFY THE CITY INSPECTION DEPARTMENT AT LEAST 48 HOURS IN ADVANCE OF ANY CONSTRUCTION.
4. THE JOB SITE SHALL BE CLEANED OF ANY DEBRIS OR SPOIL RESULTING FROM THIS PROJECT AT THE COMPLETION OF CONSTRUCTION.
5. ALL EQUIPMENT AND MATERIALS NOT SHOWN OR SPECIFIED ON THE PLANS OR SPECIFICATIONS, BUT REQUIRED TO COMPLETE THIS PROJECT, SHALL BE SUPPLIED BY THE CONTRACTOR AS PART OF THIS CONTRACT WORK (NO ADDITIONAL COST TO THE CITY).
6. MAINTAIN OPERATIONS AND EXISTING EQUIPMENT AT ALL TIMES.
7. COVER AND PROTECT EXISTING EQUIPMENT DURING CONSTRUCTION.

1 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Registered Professional Engineer (Civil)
CERTIFICATE NO.
39480
BRIAN J. BUBELA
Date Signed 12/2022

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

SYMBOLS, NOTES AND DEMO PLANS

DRAWING D-1

DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B. BUBELA

340 W.O.
PROJ. NO. CP0870-001

SHEET 6 OF 49

CATALOG NUMBER: A-251653

DATE SAVED: 12/12/22 C:\USERS\SALLEN\ACCDOCS\ARCADIS\AUS–30046397.0000–FLARE TO FUEL\PROJECT FILES\0_WIP\DEMO\D–1.DWG

ABBREVIATIONS

ACH	AIR CHANGES PER HOUR
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AFR	ABOVE FINISHED ROOF
AL	ALUMINUM
AMB	AMBIENT
APPROX	APPROXIMATE
ATC	AUTOMATIC TEMPERATURE CONTROL
AUTO	AUTOMATIC
BBO	BATTERY BACK UP OPEN
BDD	BACKDRAFT DAMPER
BHP	BRAKE HORSE POWER
BLDG	BUILDING
BOD	BOTTOM OF DUCT
BOG	BOTTOM OF GRILLE
BOT EL	BOTTOM ELEVATION
BOU	BOTTOM OF UNIT
BTU/HR	BRITISH THERMAL UNITS PER HOUR
BTUH	BRITISH THERMAL UNITS PER HOUR
℄	CENTER LINE
CD	CEILING DIFFUSER
CFM	CUBIC FEET OF AIR PER MINUTE
CGD	COMBUSTION GAS DETECTOR
COM	CITY OF MESA
CONC	CONCRETE
COND	CONDENSATE
CONN	CONNECTION
CONT	CONTINUATION
DIA	DIAMETER
DN	DOWN
DWG	DRAWING
DX	DIRECT EXPANSION
EA	EACH
EAT	ENTERING AIR TEMPERATURE
ECAV	EXHAUST CONSTANT AIR VOLUME
EG	EXHAUST GRILLE
EL	ELEVATION
ER	EXHAUST REGISTER
ESP	EXTERNAL STATIC PRESSURE
EQUIP	EQUIPMENT
EWT	ENTERING WATER TEMPERATURE
EVAV	EXHAUST VARIABLE AIR VOLUME
EXH	EXHAUST
EXIST	EXISTING
F&B	FACE & BYPASS
FD	FIRE DAMPER
FLR	FLOOR
FO	FUEL OIL
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FOPR	FUEL OIL PRESSURE RELIEF
FPM	FEET PER MINUTE
FT	FEET
GAL	GALVANIZED
GBD	GRAVITY BACKDRAFT DAMPER
GPM	GALLONS PER MINUTE
HHWR	HEATING HOT WATER RETURN
HHWS	HEATING HOT WATER SUPPLY
HP	HORSEPOWER
HVAC	HEATING, VENTILATION & AIR CONDITIONING
KW	KILOWATT
◣	LOUVER
LAT	LEAVING AIR TEMPERATURE
LBG	LINEAR BAR GRILLE
LCD	LIQUID CRYSTAL DISPLAY
LWT	LEAVING WATER TEMPERATURE
MAG	MARICOPA ASSOCIATION OF GOVERNMENTS
MAX	MAXIMUM
MBH	THOUSAND BTUH
MCA	MINIMUM CIRCUIT AMPACITY
MD	MOTORIZED DAMPER
MERV	MINIMUM EFFICIENCY REPORTING VALUE
MECH	MECHANICAL
MIN	MINIMUM
MFR	MANUFACTURER
MOP	MAX OVERCURRENT PROTECTION
MTD	MOUNTED
NA	NOT APPLICABLE
NK	NECK
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
NFA	NET FREE AREA
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAI	OUTSIDE AIR INTAKE
OPNG	OPENING
PD	PRESSURE DROP
PE	PNEUMATIC/ELECTRIC
PVC	POLYVINYL CHLORIDE
RECIP	RECIPROCATING
RG	RETURN GRILLE
RL	REFRIGERANT LIQUID
RM	ROOM
RR	RETURN REGISTER
RO	ROOF OPENING
RS	REFRIGERANT SUCTION
RV	RELIEF VENT
SC	SPRING CLOSE
SCAV	SUPPLY CONSTANT AIR VOLUME
SCH	SCHEDULE
SCR	SILICON CONTROLLED RECTIFIER
SD	SMOKE DETECTOR
SG	SUPPLY GRILLE
SMD	SMOKE DAMPER
SO	SPRING OPEN
SP	STATIC PRESSURE
SRV	SAFETY RELIEF VALVE
SR	SUPPLY REGISTER
SS	STAINLESS STEEL
SVAV	SUPPLY VARIABLE AIR VOLUME
TOD	TOP OF DUCT
TS	TOTAL STATIC
TSP	TOTAL STATIC PRESSURE
TVS	TEMPORARY VENTILATION STATION
TYP	TYPICAL
VAS	VENTILATION ALARM STATION
VD	MANUAL VOLUME DAMPER
VH	VALVE HEATING
VMS	VENTILATION MONITORING STATION
WB	WET BULB
WG	WATER GAUGE
WPD	WATER PRESSURE DROP
W/	WITH

EQUIPMENT

AC	AIR CONDITIONING UNIT
ACC	AIR COOLED CONDENSER
ACCU	AIR COOLED CONDENSING UNIT
AHU	AIR HANDLING UNIT
CH	CHILLER
CRAC	COMPUTER ROOM AIR CONDITIONER
CWH	CABINET WALL HEATER
DDC	DIRECT DIGITAL CONTROL
DH	DEHUMIDIFICATION UNIT
EBH	ELECTRIC BASEBOARD HEATER
EF	EXHAUST FAN
EUH	ELECTRIC UNIT HEATER
FACP	FIRE ALARM CONTROL PANEL
FBP	FIBER BRANCH PANEL
FPP	FIBER PATCH PANEL
GDC	GLYCOL DRY COOLER
HMCS	HVAC MONITORING AND CONTROL SYSTEM
HUH	HOT WATER UNIT HEATER
HV	HEATING AND VENTILATING UNIT
HVAC	HEATING, VENTILATING, AIR CONDITIONING UNIT
HWB	HOT WATER BOILER
HWP	HOT WATER PUMP
HWPP	HOT WATER PRIMARY PUMP
HWSP	HOT WATER SECONDARY PUMP
MAU	MAKE-UP AIR UNIT
PSP	PURGE STATION PANEL
PTAC	PACKAGED TERMINAL AC UNIT
RHP	RADIANT HEATING PANEL
SF	SUPPLY FAN
SPP	SMOKE PURGE PANEL

PIPING SYMBOLS

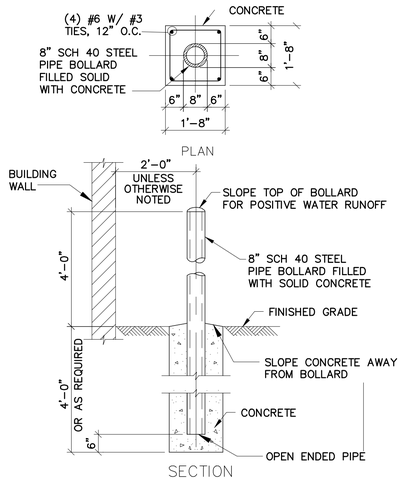
CHWS	CHILLED WATER SUPPLY (GLYCOL SOLUTION SUPPLY)
CHWR	CHILLED WATER RETURN (GLYCOL SOLUTION RETURN)
DG	DIGESTER GAS
DR	DRAIN
SA	COMPRESSED SERVICE AIR
RNG	RENEWABLE NATURAL GAS (RNG)/PRODUCT RNG
OFF	OFF-SPEC RENEWABLE NATURAL GAS (RNG)
VENT	VENT
	EXPANSION JOINT
	DIRECTION OF PITCH
	ELBOW UP
	ELBOW DOWN
	TEE DOWN
	TEE UP
	PIPE CAP
	CONNECTION UP
	CONNECTION DOWN
	ALIGNMENT GUIDE
	ANCHOR
M	CONTROL VALVE, (2-WAY) ELECTRIC MOTOR OPERATED
M	CONTROL VALVE, (3-WAY) ELECTRIC MOTOR OPERATED

V	ISOLATION VALVE TYPE DESIGNATED IN SPECIFICATION
	BUTTERFLY VALVE
	CHECK VALVE
	GATE VALVE
	GLOBE VALVE
	TRIPLE DUTY VALVE (STRAIGHT, ANGLE PATTERN)
	BALANCING VALVE
	BALL VALVE
S	SOLENOID VALVE
	Y STRAINER
FS	FLOW SWITCH
	REDUCER (CONCENTRIC)
	REDUCER (ECCENTRIC)
	UNION
	THERMOMETER
	PRESSURE GAUGE
	FLEXIBLE CONNECTION
RL	REFRIGERANT LIQUID LINE
HG	HOT GAS LINE
RS	REFRIGERANT SUCTION LINE
S	CONTROL SWITCH
PS	PRESSURE SWITCH
	EXISTING PIPING/EQUIPMENT
	NEW PIPING/EQUIPMENT
	HIDDEN PIPING/EQUIPMENT

1

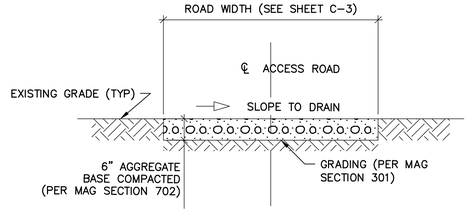
SITE PLAN SYMBOLS

	BOLLARD
	BUSH
12"	TREE (DECIDUOUS)
	FIRE HYDRANT
C.O.	CLEAN OUT
OR	POWER POLE
	POWER & TELEPHONE POLE
	LAMP POLE
WV OR	VALVE IN VALVE BOX
	VALVE IN VALVE MANHOLE
800.00	NEW SPOT ELEVATION
SLOPE	SLOPE DIRECTION
	EXISTING CONTOUR
	PROPOSED CONTOUR
	STABILIZED ROAD
	NEW STRUCTURE
	EXISTING STRUCTURE



BOLLARD TYPE 1

SCALE: 1/2"= 1'=0"



NOTES:

1. REFER TO MAG STANDARD DETAIL NO.202
2. SLOPE STABILIZED ROAD IN THE SAME DIRECTION AS EXISTING TOPOGRAPHY TO ALLOW FOR DRAINAGE.

A / C-1 STABILIZED ROAD

NOT TO SCALE

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

GENERAL NOTES:

1. THE SYMBOLS AND ABBREVIATIONS LIST ON THIS SHEET IS A COMPREHENSIVE STANDARD GUIDE INTENDED FOR GENERAL USE ON ALL PROJECTS. NOT ALL THE SYMBOLS AND ABBREVIATIONS CONTAINED ARE NECESSARILY USED.
2. CONTRACTOR TO VERIFY FIELD CONDITIONS PRIOR TO BEGINNING WORK SHOWN.
3. LOCATION, ELEVATION AND DIMENSIONS OF EXISTING PIPING, DUCTWORK, STRUCTURES AND OTHER FEATURES ARE SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE AT THE TIME OF THE PREPARATION OF THESE PLANS BUT DO NOT PURPORT TO BE ABSOLUTELY CORRECT. THE CONTRACTOR SHALL VERIFY THE LOCATIONS, ELEVATIONS AND DIMENSIONS OF ALL EXISTING PIPING, DUCTWORK, STRUCTURES AND OTHER FEATURES AFFECTING HIS WORK PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER (IN WRITING) IF ANY LOCATIONS, ELEVATIONS AND DIMENSIONS OF EXISTING PIPING, DUCTWORK, STRUCTURES AND OTHER FEATURES SIGNIFICANTLY DIFFER FROM THOSE SHOWN. THE ENGINEER WILL ISSUE WRITTEN INSTRUCTIONS IF WARRANTED. IT IS THE INTENT OF THIS CONTRACT THAT THE CONTRACTOR BE RESPONSIBLE TO MAKE ANY AND ALL ADJUSTMENTS IN CONSTRUCTION NECESSARY TO SUIT EXISTING DIMENSIONS OR ELEVATIONS, AT NO CHANGE IN CONTRACT PRICE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
4. EQUIPMENT SIZES AND LOCATIONS ARE APPROXIMATE. ACTUAL DIMENSIONS TO BE DETERMINED BY EQUIPMENT BEING FURNISHED.
5. CONCRETE PAD SIZES AND LOCATIONS SHALL BE COORDINATED DURING CONSTRUCTION WITH APPROVED EQUIPMENT.
6. FINAL SIZES OF FLOOR OPENINGS, WALL OPENINGS, ROOF OPENINGS, DUCT PLENUMS, DUCT TRANSITIONS AND PIPING CONNECTIONS TO EQUIPMENT SHALL BE COORDINATED WITH EQUIPMENT ACTUALLY BEING FURNISHED.
7. FIELD COORDINATE FOR EXISTING FLOOR DRAIN LOCATIONS.
8. WHERE PIPING OR DUCTWORK CONNECTS TO EXISTING PIPING OR DUCTWORK, MODIFY EXISTING PIPING OR DUCTWORK AS REQUIRED TO MAKE CONNECTION.
9. WHERE PIPES OR DUCTS PENETRATE THROUGH EXISTING FLOORS, WALLS, OR SLABS, CORE DRILL OR SAW CUT PENETRATION.
10. PATCH EXISTING PENETRATIONS THROUGH WALLS AND FLOORS THAT RESULTED FROM DEMOLITION OF EXISTING DUCTWORK, PIPING AND EQUIPMENT.
11. PROVIDE PIPE SLEEVES AND MECHANICAL SEALS FOR ALL PIPING AND CONTAINMENT CONDUIT PENETRATIONS THRU CONCRETE OR MASONARY CONSTRUCTION INCLUDING BUT NOT LIMITED TO WALLS, FLOORS, ROOFS, PADS, UNDERGROUND STRUCTURES EXCEPT WHERE OTHERWISE NOTED.
12. REFER TO CODE COMPLIANCE DRAWINGS UNDER GENERAL DRAWING CATEGORY FOR ADDITIONAL DESIGN INFORMATION REQUIRED UNDER THIS CONTRACT.
13. CONTRACTOR SHALL REFER TO THE CITY OF MESA (COM) STANDARD DETAILS AND SPECIFICATIONS AND SUBSEQUENTLY MARICOPA ASSOCIATION OF GOVERNMENTS (MAG) STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION FOR GENERAL DETAILS IF UNSPECIFIED IN DESIGN SPECIFICATIONS AND/OR DESIGN DRAWINGS.

1 REVISION 1: 100% SUBMITTAL FOR CONSTRUCTION

ARCADIS

Professional Engineer CERTIFICATE NO. 39480 BRIAN J. BUBELA

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

CIVIL ABBREVIATIONS, SYMBOLS, NOTES & DETAILS

DRAWING C-1

DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B. BUBELA

340 W.O.
PROJ. NO. CP0870-001

SHEET 7 OF 49

CATALOG NUMBER: A-251654

DATE SAVED: 12/12/22 C:\USERS\SALLEN\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\CIVIL\C-1.DWG

REPLACE CURB IN KIND (APPROX. 8.5 LF) SEE MAG STD DET 220, TYPE A

EXISTING MECHANICAL GATE EQUIPMENT

EXISTING SCREEN WALL

SEE SHEET M-6 FOR ENLARGED PLANS

RNG INTERCONNECTION STATION & ODORANT SYSTEM FF. EL. 1191.00 (SEE NOTE 3)

SEE SHEET M-7 FOR ENLARGED PLANS

ODORIZER SYSTEM

ODORANT VALVE BOX (TYP), SEE MAG STD DET 391

INSTALL NEW CURB (APPROX. 62 LF) SEE MAG STD DET 220, TYPE A

TRENCH BACKFILL AND SURFACE REPLACEMENT IN KIND, SEE COM STD DET 19.04, TYPE B

R24'-1 3/4"

1189.00

1190.10

GAS MONITORING STATION FF. EL. 1191.00 (SEE NOTE 3)

N 10,231.12
E 8,570.50

RNG INTERCONNECTION REGULATOR

N 10,279.79
E 8,569.00

BOLLARD TYPE 1 (TYP OF 4), SEE DETAIL ON SHEET C-1

END OF CURB

SLOPE @2%

℄ ACCESS ROAD

12'-0"

R11'-7 1/4"

EDGE OF EXISTING PAVEMENT

1190.00

BOLLARD TYPE 1 (TYP OF 3), SEE DETAIL ON SHEET C-1

H2S VALVE SKID & VESSELS FF. EL. 1191.50 (SEE NOTE 3)

BOLLARD TYPE 1 (TYP OF 5), SEE DETAIL ON SHEET C-1

5'-0" (TYP)

AC VALVE SKID & VESSELS FF. EL. 1191.50 (SEE NOTE 3)

R15'-7 3/8"

1191.00

SEE SHEET M-2 FOR ENLARGED PLANS

N 10,243.92
E 8,534.41

BLOWER SKID

N 10,316.80
E 8,534.41

SLOPE @2%

GAS ANALYZER FF. EL. 1191.50 (SEE NOTE 3)

N 10,315.22
E 8,534.68

ELECTRICAL AND TERMINATION CABINET EQUIPMENT (PAD EL. 1191.50)

15'-4"

DEHYDRATION SKID

CHILLER FF. EL. 1191.50 (SEE NOTE 3)

N 10,301.30
E 8,540.11

N 10,250.43
E 8,550.18

FF. EL. 1191.50 (SEE NOTE 3)

MEMBRANE ENCLOSURE

N 10,241.10
E 8,556.36

N 10,283.55
E 8,554.84

MEMBRANE COMPRESSION SKID FF. EL. 1191.50 (SEE NOTE 3)

N 10,314.21
E 8,561.76

1189.00

REPLACE SURFACE IN KIND (APPROX. 1780 SF) SEE MAG STD DET 19.04, TYPE B

EXISTING PAVEMENT

EXISTING CONCRETE CURB

1191.00

1191.00

BOLLARD TYPE 1 (TYP OF 10), SEE DETAIL ON SHEET C-1

1" COMPRESSED AIR POINT OF ENTRY SEE NOTE 7 WALL PENETRATION, SEE DETAILS ON SHEET M-8

1189.75

SLOPE @2%

℄ ACCESS ROAD

1189.75

ACCESS ROAD, SEE STABILIZED ACCESS ROAD DETAIL ON SHEET C-1

EXISTING MH

5'-0"

6'-6"

6'-6"

12'-9"

5'-0"

5'-0"

DIGESTER NO. 1

DIGESTER CONTROL BUILDING

DIGESTER NO. 2

EXISTING PAVEMENT

A
M-3

REPLACE CURB IN KIND (APPROX. 3 LF) SEE MAG STD DET 220, TYPE A

TRENCH BACKFILL AND REPLACE SURFACE IN KIND

BOLLARDS TYPE 1 (TYP OF 4, EQUALLY SPACED @ 5'-0" O.C.) SEE C-1 FOR DETAIL

DRIVEWAY, SEE COM STD DET M-42

REPLACE CURB IN KIND (APPROX. 33 LF) SEE MAG STD DET 220, TYPE A

1

DATE SAVED: 12/13/22 C:\USERS\SALLEN\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\CIVIL\C-2.DWG

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

GENERAL NOTES:

1. ALL ELEVATIONS ARE BASED ON THE CITY OF MESA DATUM. BM EL 1201.05 AT THE TOP OF SRP IRRIGATION STRUCTURE SOUTHWEST OF EAST QUARTER CORNER, SECTION 19 T1N R5E (SW CORNER OF 8TH STREET AND DOBSON ROAD). SEE ELEVATION EQUATION FOR PORTONS OF THE NEW FACILITY.

   ELV. AS SHOWN IN THIS DRAWING SET = RECORD DWG. EL. – 0.45'

   ALL EXISTING STRUCTURES HAVE BEEN FIELD-VERIFIED AS .45' LOWER THAN ELEVATIONS ON RECORD DRAWINGS USING THE CITY OF MESA INFORMATION CONTRACTOR TO FIELD VERIFY ELEVATIONS.

2. ALL DIMENSIONS AND ELEVATIONS OF EXISTING STRUCTURES ARE BASED ON RECORD DRAWING INFORMATION AND HAVE NOT BEEN FIELD-VERIFIED. CONTRACTOR TO VERIFY DIMENSIONS FOR PERFORMANCE OF THE WORK.

3. EQUIPMENT TOP OF PAD ELEVATIONS SHALL BE 4" ABOVE FINISHED GRADE. FOR SLAB DETAILS, SEE SHEET S-2.

4. ALL WORK AND MATERIALS SHALL CONFORM TO CURRENT UNIFORM STANDARD SPECIFICATIONS AND DETAILS FOR PUBLIC WORKS CONSTRUCTION AS PUBLISHED BY THE MARICOPA ASSOCIATION OF GOVERNMENTS (MAG) AND AS AMENDED BY THE CITY OF MESA. ALL WORK AND MATERIALS NOT IN CONFORMANCE WITH THESE AMENDED SPECIFICATIONS AND DETAILS ARE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.

5. INSPECTIONS SHALL BE PROVIDED BY THE CITY OF MESA. THE CONTRACTOR SHALL NOTIFY THE CITY INSPECTION DEPARTMENT AT LEAST 48 HOURS IN ADVANCE OF ANY CONSTRUCTION.

6. CONTRACTOR SHALL PROVIDE A PROTECTION SYSTEM TO PROTECT EXISTING STRUCTURES OR FACILITIES AS INDICATED IN SPECIFICATIONS SECTION 02 41 00 DEMOLITION.

7. CONTRACTOR SHALL TIE 1" COMPRESSED AIR INTO EXISTING PLANT AIR PIPE LOCATED ON NORTHERN INTERIOR WALL OF THE DIGESTER CONTROL BUILDING, GROUND FLOOR. CONTRACTOR TO FIELD VERIFY EXISTING PLANT AIR LINE AND ADJUST POINT OF ENTRY LOCATION, AS NEEDED. 1

0 10' 20'

1 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Professional Engineer (Civil) CERTIFICATE NO. 39480 BRIAN J. BUBELA Date Signed 12.2022

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

PARTIAL FACILITIES AND GRADING PLAN

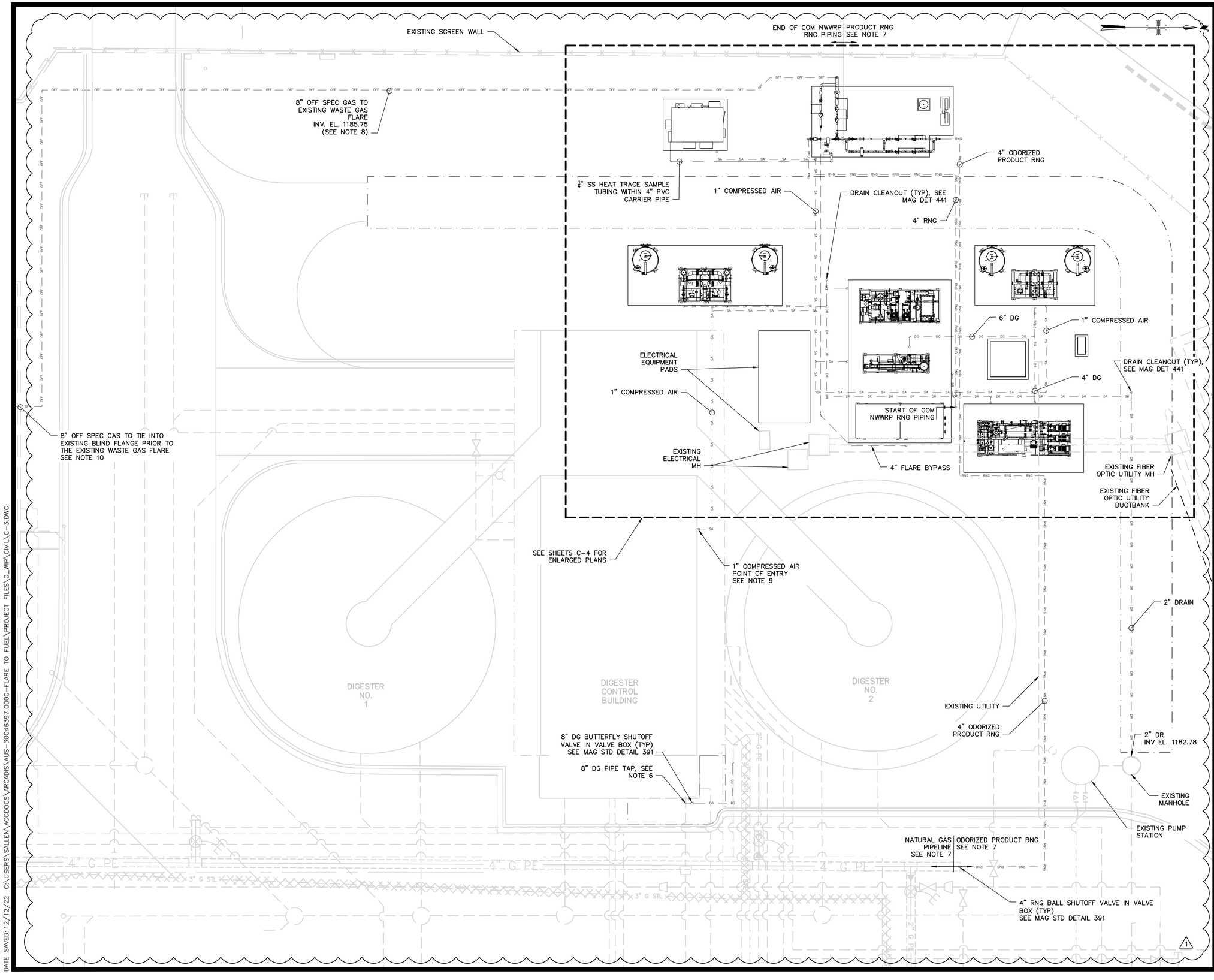
DRAWING C-2

DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B. BUBELA

340 W.O.
PROJ. NO. CP0870-001

SHEET 8 OF 49

CATALOG NUMBER: A-251655



mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

GENERAL NOTES:

1. ALL ELEVATIONS ARE BASED ON THE CITY OF MESA DATUM. BM EL 1201.05 AT THE TOP OF SRP IRRIGATION STRUCTURE SOUTHWEST OF EAST QUARTER CORNER, SECTION 19 T1N R5E (SW CORNER OF 8TH STREET AND DOBSON ROAD). SEE ELEVATION EQUATION FOR PORTONS OF THE NEW FACILITY.

   ELV. AS SHOWN IN THIS DRAWING SET = RECORD DWG. EL. – 0.45'

   ALL EXISTING STRUCTURES HAVE BEEN FIELD–VERIFIED AS .45' LOWER THAN ELEVATIONS ON RECORD DRAWINGS USING THE CITY OF MESA INFORMATION CONTRACTOR TO FIELD VERIFY ELEVATIONS.

2. ALL DIMENSIONS AND ELEVATIONS OF EXISTING STRUCTURES ARE BASED ON RECORD DRAWING INFORMATION AND HAVE NOT BEEN FIELD–VERIFIED. CONTRACTOR TO VERIFY DIMENSIONS FOR PERFORMANCE OF THE WORK.

3. ALL WORK AND MATERIALS SHALL CONFORM TO CURRENT UNIFORM STANDARD SPECIFICATIONS AND DETAILS FOR PUBLIC WORKS CONSTRUCTION AS PUBLISHED BY THE MARICOPA ASSOCIATION OF GOVERNMENTS (MAG) AND AS AMENDED BY THE CITY OF MESA. ALL WORK AND MATERIALS NOT IN CONFORMANCE WITH THESE AMENDED SPECIFICATIONS AND DETAILS ARE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.

4. INSPECTIONS SHALL BE PROVIDED BY THE CITY OF MESA. THE CONTRACTOR SHALL NOTIFY THE CITY INSPECTION DEPARTMENT AT LEAST 48 HOURS IN ADVANCE OF ANY CONSTRUCTION.

5. CONTRACTOR SHALL PROVIDE A PROTECTION SYSTEM TO PROTECT EXISTING STRUCTURES OR FACILITIES AS INDICATED IN SECTION 01500 OF THE SPECIFICATIONS.

6. CONTRACTOR SHALL PERFORM USING THE HOT TAPPING METHOD FOR ATTACHING A BRANCH CONNECTION ON THE OUTSIDE OF THE OPERATING PIPELINE WITHOUT DISRUPTING SERVICE.

7. NON–JURISDICTIONAL ODORIZED RNG LINE TO BE CONSTRUCTED IN COMPLIANCE WITH PHMSA TITLE 49 §192.

8. CONTRACTOR TO CONFIRM NEW FLARE IS OPERATIONAL AND FULLY FUNCTIONAL PRIOR TO CONNECTING THE 8" OFF SPEC GAS TO EXISTING WASTE GAS FLARE. CONTRACTOR SHALL CLOSE ALL ISOLATION VALVES AT EXISTING FLARE AND LOCKOUT/TAGOUT PRIOR TO CONNECTING OFF SPEC PIPING TO THE NEW WASTE GAS FLARE.

9. CONTRACTOR SHALL TIE 1" COMPRESSED AIR INTO EXISTING PLANT AIR PIPE LOCATED ON NORTHERN INTERIOR WALL OF THE DIGESTER CONTROL BUILDING, GROUND FLOOR. CONTRACTOR TO FIELD VERIFY EXISTING PLANT AIR LINE AND ADJUST POINT OF ENTRY LOCATION, AS NEEDED.

10. CONTRACTOR SHALL ISOLATE ALL VALVES TO EXISTING "OLD" FLARE WITH LOCKOUT/TAGOUT.

1

0 10' 20'

1 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Professional Engineer (Civil) CERTIFICATE NO. 39480 BRIAN J. BUBELA Date Signed: 12-12-22

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

PARTIAL YARD PIPING PLAN

DRAWING C-3

DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B.BUBELA

340 W.O.
PROJ. NO. CP0870-001

SHEET 9 OF 49

CATALOG NUMBER: A-251656

DATE SAVED: 12/12/22 C:\USERS\SALLEN\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\CIVIL\C-3.DWG

EXISTING SCREEN WALL

END OF COM NWWRP PRODUCT RNG
RNG PIPING SEE NOTE 7

8" OFF TO EXISTING
WASTE GAS FLARE
INV EL. 1184.50

GAS MONITORING SYSTEM

RNG INTERCONNECTION
STATION & ODORANT
SYSTEM

1/2" SA
INV EL. 1185.00

4" ODORIZED PRODUCT
RNG
INV. EL. 1184.50

1" HEAT TRACE SAMPLE
TUBING WITHIN 4" CARRIER
PIPE
INV. EL. 1185.50

4" RNG
INV. EL. 1184.50

1/2" SA
INV EL. 1185.00

H2S VALVE SKID &
VESSELS

DRAIN CLEANOUT (TYP), SEE
MAG DET 441

1" DR – 90° BEND
INV EL. 1186.64

1" DR – 90° BEND
INV EL. 1186.76

AC VALVE SKID &
VESSELS

1" DR – 1"x1"x2"TEE
INV EL. 1186.54

BLOWER SKID

1" DR – 90° BEND
INV EL. 1187.26

1" DR – 1"x1"x1" TEE
INV EL. 1187.04

6" DG
INV EL. 1186.00

4" DG
INV EL. 1186.75

GAS ANALYZER

CHILLER

DEHYDRATION SKID

ELECTRICAL
EQUIPMENT
PADS

2" DR – 90° BEND
INV EL. 1186.09

1" DR – 90° BEND
INV EL. 1188.27

2" DR – 1"X2"X2"TEE
INV EL. 1185.48

2" DR –
2"X2"X2"TEE
INV EL. 1185.27

1/2" SA
INV EL. 1185.00

2" DR – 45° BEND
INV EL. 1184.59

DRAIN CLEANOUT
(TYP), SEE MAG DET
441

4" FLARE BYPASS
INV EL. 1184.00

START OF COM
NWWRP RNG PIPING

MEMBRANE
ENCLOSURE

1" DR – 90° BEND
INV EL. 1185.37

2" DR – 45° BEND
INV EL. 1184.56

MEMBRANE
COMPRESSION
SKID

DIGESTER
CONTROL
BUILDING

EXISTING
ELECTRICAL
MH

4" RNG
INV EL. 1184.75

EXISTING FIBER
OPTIC UTILITY
DUCTBANK

EXISTING FIBER
OPTIC UTILITY MH

EXISTING UTILITY

4" ODORIZED PRODUCT
RNG
INV. EL. 1184.50

FOR CONTINUATION SEE
SHEET C–3

DIGESTER
NO. 2

DATE SAVED: 12/12/22 C:\USERS\SALLEN\ACCDOCS\ARCADIS\AUS–30046397.0000–FLARE TO FUEL\PROJECT FILES\0_WIP\CIVIL\C–4.DWG

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

GENERAL NOTES:

1. ALL ELEVATIONS ARE BASED ON THE CITY OF MESA DATUM. BM EL 1201.05 AT THE TOP OF SRP IRRIGATION STRUCTURE SOUTHWEST OF EAST QUARTER CORNER, SECTION 19 T1N R5E (SW CORNER OF 8TH STREET AND DOBSON ROAD). SEE ELEVATION EQUATION FOR PORTONS OF THE NEW FACILITY.

ELV. AS SHOWN IN THIS DRAWING SET = RECORD DWG. EL. – 0.45'

ALL EXISTING STRUCTURES HAVE BEEN FIELD–VERIFIED AS .45' LOWER THAN ELEVATIONS ON RECORD DRAWINGS USING THE CITY OF MESA INFORMATION CONTRACTOR TO FIELD VERIFY ELEVATIONS.

2. ALL DIMENSIONS AND ELEVATIONS OF EXISTING STRUCTURES ARE BASED ON RECORD DRAWING INFORMATION AND HAVE NOT BEEN FIELD–VERIFIED. CONTRACTOR TO VERIFY DIMENSIONS FOR PERFORMANCE OF THE WORK.

3. ALL WORK AND MATERIALS SHALL CONFORM TO CURRENT UNIFORM STANDARD SPECIFICATIONS AND DETAILS FOR PUBLIC WORKS CONSTRUCTION AS PUBLISHED BY THE MARICOPA ASSOCIATION OF GOVERNMENTS (MAG) AND AS AMENDED BY THE CITY OF MESA. ALL WORK AND MATERIALS NOT IN CONFORMANCE WITH THESE AMENDED SPECIFICATIONS AND DETAILS ARE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.

4. INSPECTIONS SHALL BE PROVIDED BY THE CITY OF MESA. THE CONTRACTOR SHALL NOTIFY THE CITY INSPECTION DEPARTMENT AT LEAST 48 HOURS IN ADVANCE OF ANY CONSTRUCTION.

5. CONTRACTOR SHALL PROVIDE A PROTECTION SYSTEM TO PROTECT EXISTING STRUCTURES OR FACILITIES AS INDICATED IN SECTION 01500 OF THE SPECIFICATIONS.

6. CONTRACTOR SHALL PERFORM USING THE HOT TAPPING METHOD FOR ATTACHING A BRANCH CONNECTION ON THE OUTSIDE OF THE OPERATING PIPELINE WITHOUT DISRUPTING SERVICE.

7. NON–JURISDICTIONAL ODORIZED RNG LINE TO BE CONSTRUCTED IN COMPLIANCE WITH PHMSA TITLE 49 §192.

8. CONTRACTOR TO CONFIRM NEW FLARE IS OPERATIONAL AND FULLY FUNCTIONAL PRIOR TO CONNECTING THE 8" OFF SPEC GAS TO EXISTING WASTE GAS FLARE. CONTRACTOR SHALL CLOSE ALL ISOLATION VALVES AT EXISTING FLARE AND LOCKOUT/TAGOUT PRIOR TO CONNECTING OFF SPEC PIPING TO THE NEW WASTE GAS FLARE.

0 5' 10'

1 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Professional Engineer CERTIFICATE NO. 39480 BRIAN J. BUBELA Date Signed 12-2021

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

ENLARGED PIPING PLAN

DRAWING C-4

DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B.BUBELA

340 W.O.
PROJ. NO. CP0870-001

SHEET 10 OF 49

CATALOG NUMBER: A-251657

GENERAL

1. THESE NOTES ARE GENERAL AND SUPPLEMENTAL TO THE SPECIFICATIONS AND APPLY TO THE ENTIRE PROJECT UNLESS MODIFIED OR NOTED OTHERWISE IN THE CONTRACT DOCUMENTS.
2. DESIGN IS IN ACCORDANCE WITH AND CONSTRUCTION SHALL COMPLY WITH THE MESA BUILDING CODE (IBC 2018 EDITION).
3. ROOF LOAD:

   LIVE LOAD = 20 PSF

4. SEISMIC DESIGN DATA:

   SEISMIC IMPORTANCE FACTOR, IE = 1.5
   RISK CATEGORY = III
   MAPPED SPECTRAL RESPONSE ACCELERATIONS:
   Ss = 0.187
   S1 = 0.066
   SPECTRAL RESPONSE COEFFICIENTS:
   Sds = 0.199
   Sd1 = 0.106
   SEISMIC DESIGN CATEGORY = B

5. WIND DESIGN DATA:

   BASIC DESIGN WIND SPEED = 108 MPH
   ALLOWABLE STRESS DESIGN WIND SPEED = 84 MPH
   WIND IMPORTANCE FACTOR = III
   WIND EXPOSURE CATEGORY = C

6. EQUIPMENT ANCHOR BOLT SIZES, TYPES, AND PATTERNS SHALL BE AS REQUIRED BY THE APPROVED EQUIPMENT MANUFACTURER. ALL BOLT PATTERNS SHALL BE TEMPLATED TO ENSURE ACCURACY OF PLACEMENT.
7. STRUCTURAL DRAWINGS SHALL BE USED IN COORDINATION WITH DRAWINGS OF ALL OTHER DISCIPLINES AND MANUFACTURER'S SHOP DRAWINGS.
8. IF A CONFLICT IS FOUND BETWEEN DIFFERENT PORTIONS OF THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL NOTIFY THE OWNER IMMEDIATELY. CONTINUED CONSTRUCTION OF THE AREA IN CONFLICT SHALL BE AT THE CONTRACTOR'S OWN RISK UNTIL THE CONFLICT IS RESOLVED BY THE OWNER.
9. NO BACKFILL SHALL BE PLACED AGAINST ANY WALL UNLESS ALL SUPPORTING ELEMENTS OF THE STRUCTURE HAVE BEEN CONSTRUCTED AND HAVE REACHED THE SPECIFIED MINIMUM CONCRETE STRENGTH.
10. DO NOT SCALE THESE DRAWINGS, USE DIMENSIONS.
11. CONTRACTOR'S CONSTRUCTION AND/OR ERECTION SEQUENCES SHALL RECOGNIZE AND CONSIDER THE EFFECTS OF THERMAL MOVEMENTS OF STRUCTURAL ELEMENTS DURING THE CONSTRUCTION PERIOD.
12. WHERE CONNECTIONS TO OR MODIFICATIONS OF EXISTING STRUCTURES ARE SHOWN, EXISTING FOUNDATIONS, WALLS, COLUMNS, SLABS, (CONCRETE, STEEL, ETC.) ARE ASSUMED TO BE IN GOOD CONDITION. THIS MUST BE VERIFIED IN THE FIELD BY THE CONTRACTOR. UNSOUND CONDITIONS SHALL BE REPORTED TO THE OWNER. ALL UNSOUND STRUCTURAL ELEMENTS SHALL BE REPAIRED TO SOUND CONDITION AS APPROVED BY THE OWNER. EXISTING CONSTRUCTION DIMENSIONS SHALL BE VERIFIED BY THE GENERAL CONTRACTOR BEFORE WORK COMMENCES. VARIATIONS FROM DIMENSIONS SHOWN ON THESE DRAWINGS SHALL BE REPORTED TO THE OWNER.
13. NO COLD OR HOT WEATHER CONSTRUCTION, AS DEFINED IN SPECIFICATION SECTION 03300, IS PERMITTED WITHOUT WRITTEN APPROVAL FROM THE OWNER.
14. FOR SIZES AND LOCATIONS OF EQUIPMENT SUPPORTS AND PIPE OPENINGS, SEE OTHER DISCIPLINE DRAWINGS. OPENING SIZES LESS THAN 12" ARE NOT SHOWN ON STRUCTURAL DRAWINGS, REFERENCE OTHER DISCIPLINE DRAWINGS FOR LOCATIONS.
15. ALL GRATING TO BE ALUMINUM (UON).

FOUNDATIONS

1. NET ALLOWABLE BEARING PRESSURE IS 2,500 PSF.
2. CONCRETE GENERAL NOTES APPLY TO FOUNDATIONS.
3. MINIMUM REQUIRED DEPTH FROM ADJACENT FINISHED GRADE TO BOTTOM OF FOUNDATION IS 2'-0" (UON).
4. FOR FOUNDATION DESIGN CRITERIA REFER TO GEOTECHNICAL STUDY PERFORMED BY MAXIM TECHNOLOGIES INC, DATED OCTOBER 14, 1998.

SPECIAL INSPECTION

1. THE FOLLOWING ITEMS SHALL BE SUBJECT TO SPECIAL INSPECTION, MADE AND WITNESSED BY OR UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER. TEST REPORTS, CERTIFICATES OF INSPECTION SHALL BE PREPARED AND FILED WITH THE DEPARTMENT OF BUILDINGS:
   A. SHORING, BRACING, STRUCTURAL STABILITY
   B. CONCRETE INSPECTION PER SPECIFICATIONS
   C. CONCRETE ANCHORS AND ANCHOR BOLTS
   D. SUBGRADE COMPACTION
   E. STRUCTURAL STEEL INSPECTION PER SPECIFICATIONS
2. THE DESIGNATED INSPECTING AGENCY FOR SPECIAL INSPECTION SHALL PERFORM ON SITE INSPECTION IN ACCORDANCE WITH REGULATIONS UNDER THE SUPERVISION OF A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF ARIZONA.
3. THE DESIGNATED INSPECTING AGENCY IS RESPONSIBLE FOR ALL REQUIRED TESTING AND INSPECTION (INCLUDING SPECIAL INSPECTION). THE SPECIAL INSPECTION ENGINEERS ARE RESPONSIBLE FOR FILING AND OBTAINING APPROVAL OF ALL STATEMENTS, TEST AND INSPECTION REPORTS, INCLUDING STEEL AND CONCRETE PRODUCER'S CERTIFICATES.
4. CONTRACTOR TO NOTIFY THE SPECIAL INSPECTION ENGINEERS AT LEAST 48 HOURS PRIOR TO START OF WORK.

CONCRETE

1. CONCRETE 28-DAY COMPRESSIVE STRENGTH:

   CLASS A – 4500 PSI – ALL CONCRETE UON
   CLASS B – 3000 PSI – DUCT BANKS, UNREINFORCED ENCASEMENTS, CURBS AND GUTTERS

2. REINFORCEMENT: ASTM A615, GRADE 60.
3. CONCRETE COVER FOR REINFORCING:

   A. SURFACES CAST AGAINST SUBGRADE 3"
   B. TOP SURFACES OF SLABS WHERE PVC WATERSTOP IS REQUIRED IN WALLS 3"
   C. FORMED SURFACES IN CONTACT WITH WEATHER, SOIL, OR LIQUID 2"
   D. BOTTOM SURFACES OF SLABS OVER LIQUID 2"
   E. SURFACES NOT IN CONTACT WITH WEATHER, SOIL, OR LIQUID 1 1/2"

4. CONSTRUCTION JOINTS SHALL BE LOCATED AS SHOWN ON THE DRAWINGS. WHERE NOT SHOWN, CONSTRUCTION JOINTS SHALL BE LOCATED AS REQUIRED BY THE SPECIFICATIONS. CONSTRUCTION JOINT TYPES AND LOCATIONS SHALL BE AS APPROVED BY THE ENGINEER.
5. EQUIPMENT SUPPORTS, ANCHORAGES, OPENINGS, RECESSES AND REVEALS NOT SHOWN ON THE STRUCTURAL DRAWINGS BUT REQUIRED BY OTHER CONTRACT DOCUMENTS, SHALL BE PROVIDED FOR PRIOR TO PLACING CONCRETE.
6. AT ALL TYPICAL CURBS, EQUIPMENT PADS, AND PIPE SUPPORT PIERS, REINFORCING DOWELS SHOWN MAY BE REPLACED WITH MATCHING DOWELS SET IN EPOXY IN DRILLED HOLES AS SPECIFIED. DOWELS LOCATED CLOSER THAN 3 INCHES FROM ANY EDGE OF CONCRETE SHALL NOT BE REPLACED WITH DRILLED DOWELS.
7. WHERE DRILLED EPOXY DOWELS ARE PLACED INTO HARDENED CONCRETE, ADJUST THE DOWEL LOCATIONS AS NEEDED TO AVOID DRILLING THROUGH ANY REINFORCING BARS. IF THE DOWEL LOCATION NEEDS TO BE MODIFIED, CONTACT THE ENGINEER BEFORE PROCEEDING.
8. DOWELS, ANCHOR BOLTS, PIPES, AND OTHER EMBEDDED ITEMS SHALL BE HELD SECURELY IN POSITION WHILE CONCRETE IS BEING PLACED.
9. CONDUITS AND PIPES EMBEDDED IN OR PENETRATING THROUGH CONCRETE SHALL BE SPACED ON CENTER NOT LESS THAN 3 TIMES THEIR OUTSIDE DIMENSION, BUT NOT LESS THAN 2 1/2 INCHES CLEAR. OUTSIDE DIMENSION OF EMBEDDED ITEMS SHALL NOT EXCEED 1/3 OF THE CONCRETE MEMBER THICKNESS. CLEAR SPACING REQUIREMENTS SHALL APPLY FOR EMBEDDED CONDUITS OR PIPES CROSSING AT AN ANGLE LESS THAN 60 DEGREES.
10. THE EFFECTIVE DIMENSION USED TO MEET MEMBER THICKNESS LIMITATIONS SHALL BE THE SUM OF THE OUTER DIMENSIONS OF CROSSING ELEMENTS.
11. EMBEDDED CONDUITS AND PIPES SHALL BE LOCATED BETWEEN THE LAYERS OF REINFORCEMENT AND A MINIMUM OF 2 1/2 INCHES CLEAR FROM APPROXIMATELY PARALLEL REINFORCING BARS. REQUIREMENTS FOR EMBEDDED ELEMENTS CROSSING REINFORCING BARS SHALL BE AS REQUIRED FOR CROSSING EMBEDDED ELEMENTS.
12. REINFORCING BARS AND ACCESSORIES SHALL NOT BE IN CONTACT WITH ANY METAL PIPE, PIPE FLANGE, METAL CONDUIT, OR OTHER METAL PARTS EMBEDDED IN CONCRETE. A MINIMUM CLEARANCE OF 2 INCHES SHALL BE PROVIDED.
13. CONTRACTOR SHALL PROVIDE 3/4 INCH CHAMFER USING WOOD CHAMFER STRIPS ON ALL EXPOSED CORNERS OF COLUMNS, BEAMS AND WALLS OR AS REQUIRED TO MATCH EXISTING.
14. PROVIDE ADDITIONAL REINFORCEMENT AT OPENINGS AND WALL INTERSECTIONS AS SHOWN ON TYPICAL DETAILS (UON).

ABBREVIATIONS

AB	ANCHOR BOLTS	ID	INSIDE DIAMETER
ADD'L	ADDITIONAL	IF	INSIDE FACE
AL	ALUMINUM	INV	INVERT
ALT	ALTERNATE	JT	JOINT
ANCH	ANCHOR	KO	KNOCK OUT
APPROX	APPROXIMATE	L	ANGLE (STRUCTURAL SHAPE)
A	ARCHITECTURAL	LG	LONG
BAL	BALANCE	LL	LIVE LOAD
BET	BETWEEN	LLH	LONG LEG HORIZ
BL	BUILDING LINE	LLV	LONG LEG VERT
BLDG	BUILDING	LOC	LOCATION
BLK	BLOCK	LP	LOW POINT
BM	BEAM	LW	LONG WAY
BOT	BOTTOM	MAS	MASONRY
BRG	BEARING	MTCH	MATCH/MATCHING
C	CHANNEL STRUCTURAL SHAPE	MAX	MAXIMUM
CANT'L	CANTILEVER	MECH	MECHANICAL
CJ	CONSTRUCTION JOINT	MEZZ	MEZZANINE
CL	CLEAR	MFR	MANUFACTURE, MANUFACTURER
CMU	CONCRETE MASONRY UNIT	MH	MANHOLE
COL	COLUMN	MID	MIDDLE
COMP	COMPRESSIBLE	MIN	MINIMUM
CONC	CONCRETE	N	NORTH
CONN	CONNECTION	NF	NEAR FACE
CONST	CONSTRUCTION	#	NUMBER
CONT	CONTINUOUS	NTS	NOT TO SCALE
CSTG	CASTING	OC	ON CENTER
C/C	CENTER TO CENTER	OD	OUTSIDE DIAMETER
CTR	CENTER	OF	OUTSIDE FACE
DET	DETAIL	OPNG	OPENING
DIA	DIAMETER	OPP	OPPOSITE
DIAG	DIAGONAL	PC	PRECAST CONCRETE
DIM	DIMENSION	PCO	PILE CUT OFF
DL	DEAD LOAD	PL	PLATE
DN	DOWN	PSF	POUNDS PER SQUARE FOOT
DO	DITTO	PVC	POLYVINYL CHLORIDE
DP	DEEP	R	RISER
DWG	DRAWING	RAD	RADIUS
DWL	DOWEL	RD	ROOF DRAIN
E	EAST	REINF	REINFORCEMENT
EA	EACH	REQD	REQUIRED
EF	EACH FACE	RM	ROOM
EJ	EXPANSION JOINT	RO	ROUGH OPENING
EL	ELEVATION	S	SOUTH
ELEC	ELECTRICAL	SECT	SECTION
EMB	EMBEDMENT	SHT	SHEET
ENCL	ENCLOSURE	SIM	SIMILAR
EQ	EQUAL	SL	SLAB
EQUIP	EQUIPMENT	SP	SPIRAL
ES	EACH SIDE	SPA	SPACING
EW	EACH WAY	SPEC	SPECIFICATION
EW T&B	EACH WAY TOP & BOTTOM	SQ	SQUARE
EXIST	EXISTING	SST	STAINLESS STEEL
EXP	EXPANSION	STD	STANDARD
EXT	EXTERIOR	STIR	STIRRUP
FB	FLOOR BEAM	STL	STEEL
FD	FLOOR DRAIN	STRUCT	STRUCTURAL
FDN	FOUNDATION	SW	SHORT WAY
FF	FAR FACE	T&B	TOP AND BOTTOM
FIN	FINISH	TOC	TOP OF CONCRETE
FL	FLOOR	THK	THICK
FS	FOOTING STEP	T/	TOP OF
FTG	FOOTING	T	TREAD
GA	GAUGE	TYP	TYPICAL
GALV	GALVANIZE	UON	UNLESS OTHERWISE NOTED
GB	GRADE BEAM	VERT	VERTICAL
GR	GRADE	W	WEST
GRTG	GRATING	WF	WIDE FLANGE STRUCTURAL SHAPE, WIDTH, WEST
H	HIGH	W/	WITH
HT	HEIGHT	WP	WORKING POINT
HORIZ	HORIZONTAL	WS	WALL STEP
HP	HIGH POINT		
HS	HIGH STRENGTH		
HVAC	HEATING, VENTILATING & AIR CONDITIONING		

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

1 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Professional Engineer CERTIFICATE NO. 39480 BRIAN J. BUBELA Date Signed 12/2022

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

STRUCTURAL GENERAL NOTES & ABBREVIATIONS

DRAWING S-1

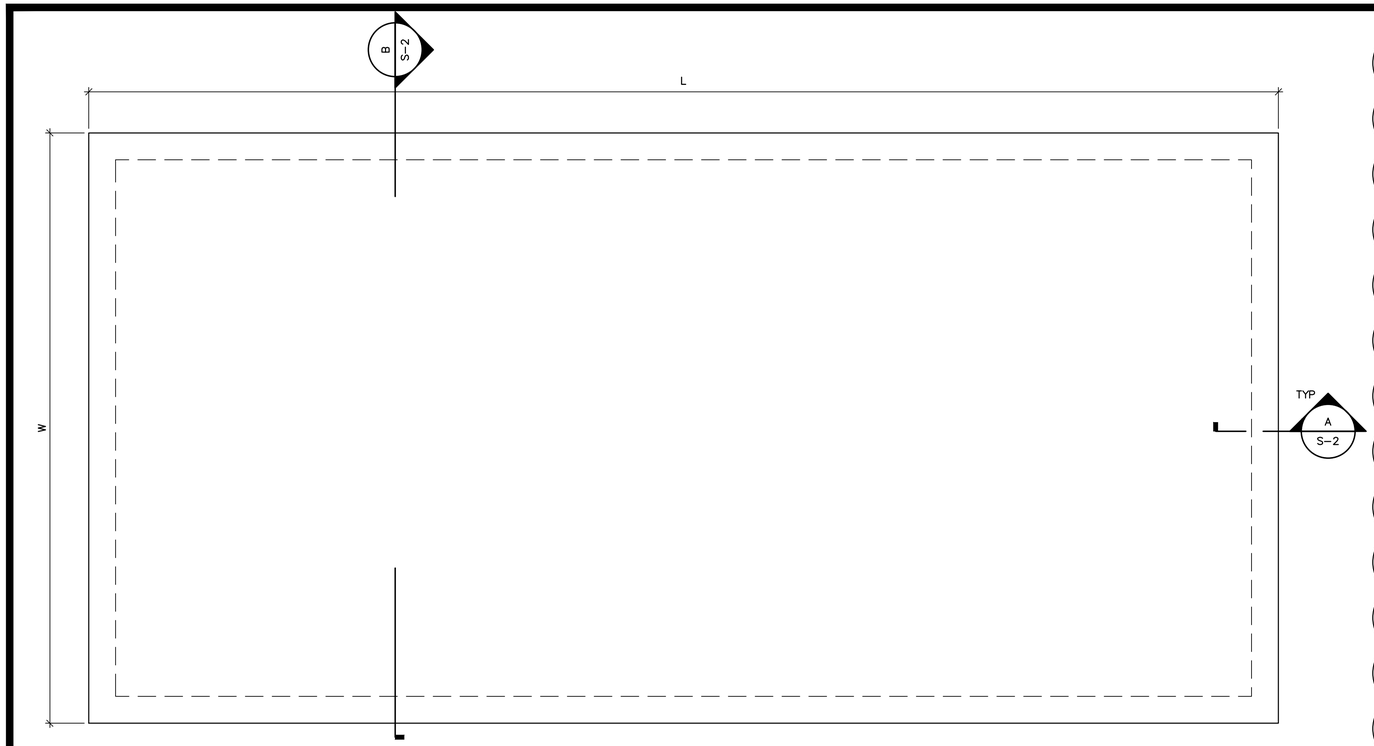
DRAWN BY: S. CRIBBIN
ENGINEER: I. DZIOBA
APPROVED BY: G. OSSES

340 W.O.
PROJ. NO. CP0870-001

SHEET 11 OF 49

CATALOG NUMBER: A-251658

DATE SAVED: 12/9/22 C:\USERS\SALLEN\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\STRUCT\S-1.DWG



TYPICAL CONCRETE PAD PLAN

SCALE: 3/8" = 1'-0"

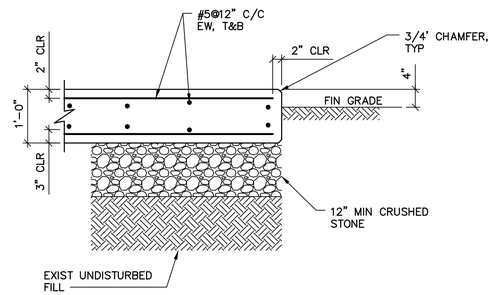
0 2' 4' 6'

NOTES:

1. COORDINATE EQUIPMENT PAD SIZE AND LOCATION WITH MECHANICAL EQUIPMENT AND MECHANICAL DRAWINGS.
2. TYPICAL FOUNDATION FOR PIPE SUPPORT SHALL BE 2'-0"X2'-0"X2'-4" THICK, EXTENDS 4" ABOVE GRADE, WITH #4 @ 6" OC, EW, T&B. TYPICAL SPACE BETWEEN SUPPORTS SHALL BE 10'-0" MAXIMUM.
3. SEE MECHANICAL DRAWINGS FOR PIPE SUPPORT LOCATIONS WHEN REQUIRED.
4. THE STRUCTURAL PAD SHALL BE CHECKED AGAINST THE PRE-ENGINEERED METAL CANOPY FOUNDATION DESIGN LOAD PROVIDED BY THE CANOPY MANUFACTURER. CONTRACTOR SHALL NOT CONSTRUCT TREATMENT PAD AND COMPRESSION PAD TILL SUBMITTAL 10 73 16, PRE-ENGINEERED METAL CANOPIES HAS BEEN APPROVED.

1

EQUIPMENT PAD/ SLAB SCHEDULE			
SLAB/EQUIPMENT	LENGTH "L" (FT)	WIDTH "W" (FT)	WEIGHT (LBS)
COMPRESSION SLAB	28'-0"	16'-0"	
MEMBRANE COMPRESSOR SKID			17,000
TREATMENT SLAB	38'-0"	24'-0"	
BLOWER SKID			16,000
DEHYDRATION SKID			7,000
MEMBRANE ENCLOSURE			19,000
H2S SLAB	36'-0"	14'-0"	
VALVE SKID			10,000
H2S VESSEL (EACH)			14,500
CHILLER SLAB	9'-6"	9'-6"	
CHILLER UNIT			2,500
ACTIVATED CARBON SLAB	28'-0"	16'-0"	
VALVE SLAB			6,000
GAS ANALYZER SLAB (TYPICAL SMALL PAD)	5'-0"	3'-0"	
RNG INTERCONNECTION STATION & ODORANT SYSTEM SLAB	15'-0" (+10'-0")	27'-6" (+4'-0")	
GAS MONITORING STATION SLAB	12'-0"	15'-0"	
ELECTRICAL SLAB	21'-6"	12'-0"	
TERMINATION CABINET SLAB (TYPICAL SMALL PAD)	4'-6"	2'-6"	

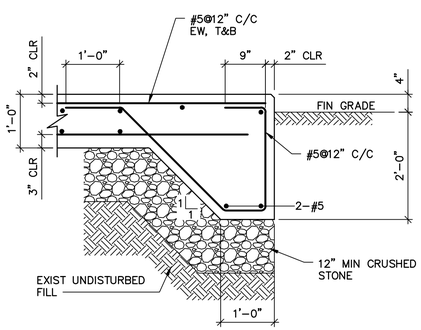


TYPICAL SMALL PAD SECTION

SCALE: 3/8" = 1'-0"

0 1' 2' 3'

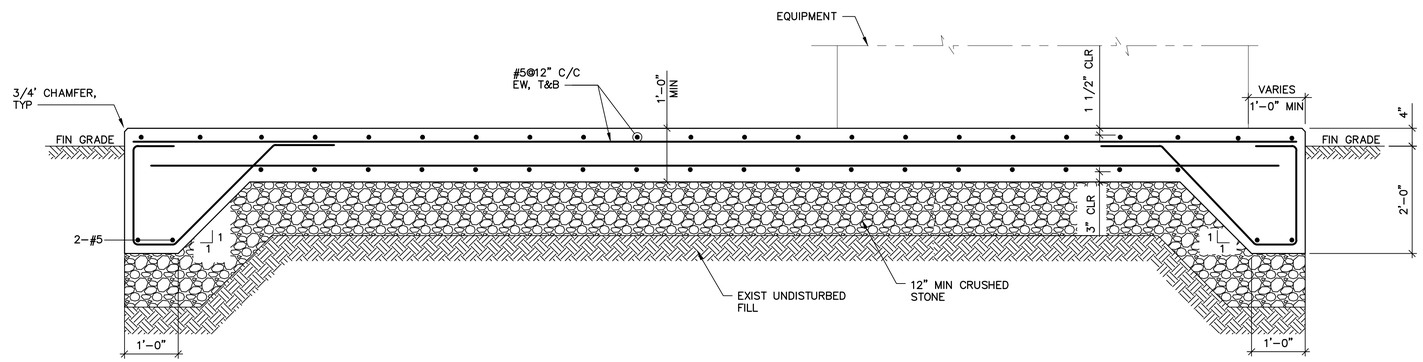
1



A S-2 SECTION

SCALE: 3/4" = 1'-0"

0 1' 2' 3'



B S-2 SECTION

SCALE: 3/4" = 1'-0"

0 1' 2' 3'

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

1 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Registered Professional Engineer (Civil) CERTIFICATE NO. 39480 BRIAN J. BUBELA Date Signed 12/9/22

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

EQUIPMENT PAD PLAN AND SECTIONS

DRAWING S-2

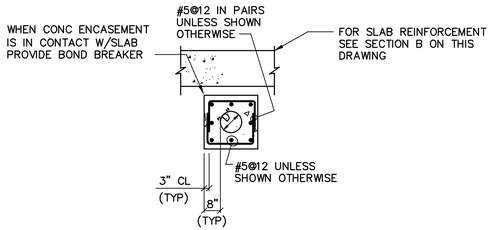
DRAWN BY: S. CRIBBIN
ENGINEER: I. DZIGBA
APPROVED BY: G. OSSES

340 W.O.____
PROJ. NO. CP0870-001

SHEET 12 OF 49

CATALOG NUMBER: A-251659

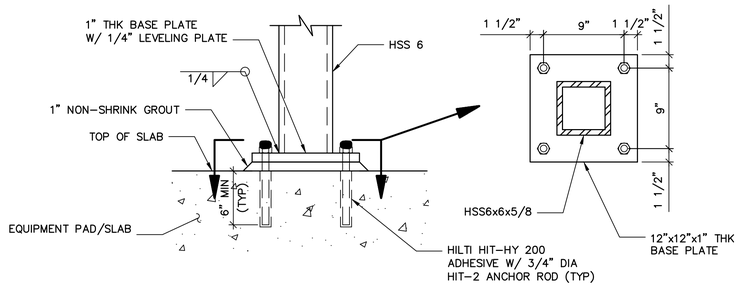
DATE SAVED: 12/9/22 C:\USERS\SALLEN\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\STRUCT\S-2.DWG



NOTES:

1. FOR PIPE DIAMETER AND ELEVATION AND EXACT LOCATION OF ENCASEMENT, SEE CIVIL, MECHANICAL, HVAC AND PLUMBING DRAWINGS.
2. ALL PIPES LOCATED BENEATH STRUCTURES SHALL BE IN CONCRETE. ENCASEMENT SHALL EXTEND 5'–0" (MIN) BEYOND STRUCTURE.
3. PROVIDE COMPACTED SELECT FILL TO UNDERSIDE OF STRUCTURES.
4. CONCRETE PIPE ENCASEMENT SHALL BE CAST SEPARATELY FROM THE CONCRETE SLAB. PROVIDE BOND BREAKER OR LAYER OF SELECT FILL BETWEEN ENCASEMENT AND CONCRETE SLAB.
5. BOTTOM REINFORCEMENT TO BE CONTINUOUS WHERE POSSIBLE.
6. WHERE CENTER TO CENTER SPACING OF THE PIPES ARE LESS THAN 1'–8", THE CONCRETE ENCASEMENT SHOULD BE COMBINED WITH ONE BIG STIRRUP HOUSING THE PIPES.

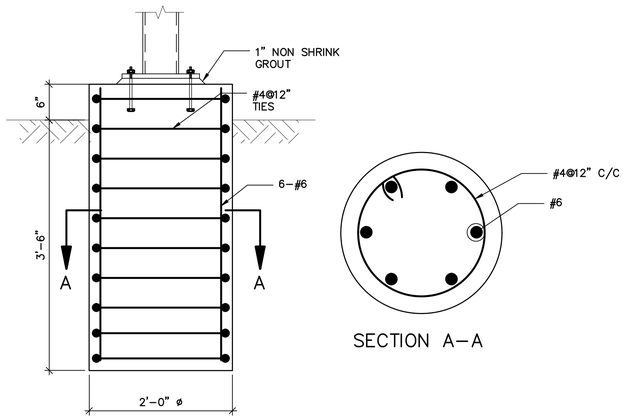
PIPE ENCASEMENT DETAIL



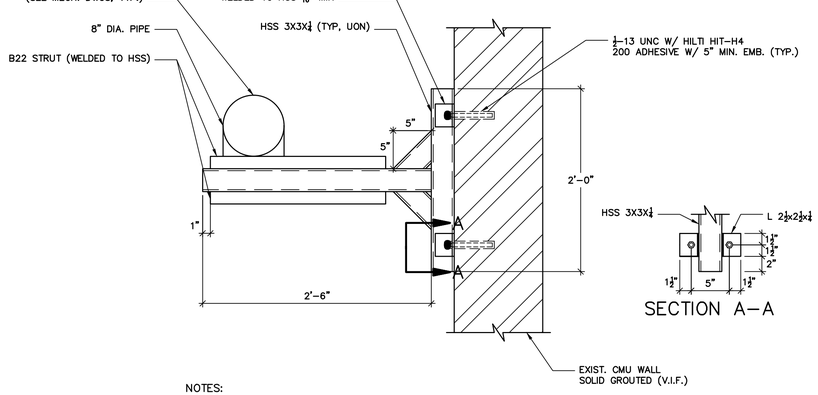
NOTES:

1. THE ABOVE DETAIL IS APPLICABLE WHEN THE HEIGHT OF PIPE/CONDUIT IS 8'–0" TO 15'–0" ABOVE FINISH GRADE ELEVATION.
2. POSTS SHALL NOT EXCEED 8'–0" OC MAX SPACING.

PIPE/CONDUIT SUPPORT POST ANCHORAGE DETAIL



TYPICAL LIGHT POLE FOUNDATION DETAIL



NOTES:

1. ALL HSS–TO–HSS CONNECTIONS SHALL BE WELDED 3/16" MINIMUM WELD SIZE.
2. 8'–0" MAX SPACING OF SUPPORT.

TYPICAL PIPE SUPPORT DETAIL

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Registered Professional Engineer (Civil) CERTIFICATE NO. 39480 BRIAN J. BUBELA Date Signed 12/2022

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

DETAILS I

DRAWING S-3

DRAWN BY: Z. SANGALANG
ENGINEER: I. DZIGBA
APPROVED BY: G. OSSES

340 W.O. ____
PROJ. NO. CP0870-001

SHEET 13 OF 49

CATALOG NUMBER: A-251660

DATE SAVED: 12/9/22 C:\USERS\SALLEN\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\STRUCT\S-3.DWG

FLOW STREAM ABBREVIATIONS

AHP	AIR, HIGH PRESSURE
AI	AIR, INSTRUMENT
ALP	AIR, LOW PRESSURE
BD	BASIN DRAIN
BYP	BYPASS
CA	COMPRESSED AIR
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CW	POTABLE WATER (CITY WATER)
D	DRAIN
DGH	DIGESTER GAS, HIGH PRESSURE
DGL	DIGESTER GAS, LOW PRESSURE
DS	DIGESTED SLUDGE
DWS	DEWATERED SLUDGE
FLT	FILTRATE
FC	FERRIC CHLORIDE
FW	FINISH WATER
E	ELECTRICITY
G	NATURAL GAS
GR	GRIT
GTS	GRAVITY THICKENED SLUDGE
HSW	HIGH STRENGTH WASTE
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
LOC	LUBE OIL, CLEAN
LOD	LUBE OIL, DIRTY
LPO	LIQUID POLYMER
LYS	LYSED WAS
NG	NATURAL GAS
O	OVERFLOW
PD	PROCESS DRAIN
PLE	PLANT EFFLUENT
PO	POLYMER SOLUTION
PSD	PRIMARY SLUDGE
PSM	PRIMARY SCUM
PW	PLANT WATER
RAS	RETURN ACTIVATED SLUDGE
RCY	RECYCLE
RNG	RENEWABLE NATURAL GAS
RSD	RECYCLED SLUDGE
RWW	RAW WASTEWATER
SA	SAMPLE
SE	SECONDARY EFFLUENT
SI	SECONDARY INFLUENT
SLG	BLENDED SLUDGE
SOD	CAUSTIC SODA
SS	STORM SEWER
SSM	SECONDARY SCUM
SWR	STORMWATER
TAS	THICKENED ACTIVATED SLUDGE
TDS	THICKENED DIGESTED SLUDGE
TG	TAIL GAS
TO	THICKENER OVERFLOW
TPS	THICKENED PRIMARY SLUDGE
TWAS	THICKENED WAS
UD	UNDERDRAIN
V	VENT
W1	WATER (POTABLE)
W2	WATER (POTABLE WATER AFTER A BACKFLOW PREVENTER)
W3	WATER (PROCESS EFFLUENT USED FOR FLUSHING WATER OR OTHER UTILITY REQUIREMENTS)
WAS	WASTE ACTIVATED SLUDGE

LEGEND

- P / 1 — PUMP
- SP / 1 — SUMP PUMP
- V / 1 — VALVE
- M / 1 — METER
- WH / 1 — WATER HEATER
- BFP / 1 — BACKFLOW PREVENTER
- WC / 1 — WALL CASTING
- G / 1 — GATE
- SG / 1 — SLIDE GATE
- FG / 1 — FABRICATED GATE

SYMBOLS

- UNDISTURBED SOIL
- ROCK
- SUBBASE
- MUDMAT
- SELECT BACKFILL
- GENERAL FILL
- GRATING
- PLANK GRATING
- STEEL
- CHECKERED PLATE
- BRICK
- CMU
- CONCRETE
- GROUT
- TRENCH COVER
- RIGID INSULATION
- WOOD (ROUGH)
- WOOD (FINISHED)
- DEMOLITION

PIPE MATERIAL

CI	CAST IRON
DIP	DUCTILE IRON
GALV	GALVANIZED STEEL
HDPE	HIGH DENSITY POLYETHYLENE
PVC	POLYVINYL CHLORIDE
SS	STAINLESS STEEL

PIPING AND APPURTENANCES LEGEND

- FLANGED JOINT
- MECHANICAL JOINT/RESTRAINED JOINT
- WELDED JOINT
- BELL AND SPIGOT JOINT
- GROOVED OR SHOULDERED END JOINT
- BLIND FLANGE
- MECHANICAL JOINT/ RESTRAINED JOINT PLUG
- FLARE END
- EXPANSION COUPLING
- HARNESSED EXPANSION COUPLING
- FLANGE COUPLING ADAPTER
- HARNESSED FLANGE COUPLING ADAPTER
- FLEXIBLE COUPLING
- HARNESSED FLEXIBLE COUPLING
- MAGNETIC FLOW METER
- INSULATED PIPE
- TURN UP
- TURN DOWN
- REDUCER/INCREASER
- RECTANGULAR TO ROUND TRANSITION PIECE
- BLIND FLANGE
- QUICK CONNECT ADAPTER (MALE)
- QUICK CONNECT ADAPTER (FEMALE)
- STRAINER
- UNION
- FLAME ARRESTER
- DRIP TRAP (D)
- SEDIMENT TRAP (ST)
- STATIC MIXER
- STATIC MIXER (FIT)
- DOPPLER TYPE FLOWMETER (D)
- MAGNETIC FLOWMETER (M)
- TEMPERATURE REGULATING VALVE (T)
- THREE WAY VALVE
- NEEDLE VALVE
- TEMPERATURE GAUGE (T)
- PRESSURE GAUGE
- INLINE PRESSURE GAUGE
- FLOW TOTALIZER
- ROTAMETER
- HOSE REEL
- PRESSURE SWITCH (PS)
- PRESSURE SWITCH/GAUGE WITH DIAPHRAGM SEAL (PS)
- THERMAL SHUTOFF VALVE
- ANTI–SIPHON VALVE
- PULSATION DAMPENER
- THERMAL MASS FLOWMETER (FE)
- CALIBRATION CHAMBER
- FLEXIBLE HOSE CONNECTION
- RUPTURE DISC
- MOTORIZED OPERATOR (M)
- PNEUMATIC OPERATOR
- DIFFERENTIAL PRESSURE GAUGE WITH DIAPHRAGM SEAL
- PRESSURE GAUGE WITH DIAPHRAGM SEAL
- DIFFERENTIAL PRESSURE GAUGE
- PIPE FLOW
- OPEN CHANNEL FLOW
- AIR FLOW
- WATER SURFACE ELEVATION

VALVE LEGEND

ARV	AIR RELEASE VALVE
AV	AIR AND VACUUM VALVE
BA	BALL VALVE
BD	BUTTERFLY DAMPER
BFV	BUTTERFLY VALVE
CV	CHECK VALVE
BCV	BALL CHECK VALVE
CS	CURB STOP
DV	DIAPHRAGM VALVE
DB	DUCKBILL CHECK VALVE
PV	PLUG VALVE
GV	GATE VALVE
GL	GLOBE VALVE
KG	KNIFE GATE VALVE
PRV	PRESSURE REDUCING VALVE
PR	PRESSURE RELIEF VALVE
SV	SOLENOID VALVE
TE	TELESCOPIING VALVE
YH	YARD HYDRANT
FH	FIRE HYDRANT
HB	HOSE BIBB

EQUIPMENT LEGEND

- CENTRIFUGAL PUMP
- PROGRESSING CAVITY PUMP
- GEAR/ROTARY LOBE PUMP
- DIAPHRAGM PUMP
- BLOWER/COMPRESSOR
- GRINDER
- PLUNGER PUMP
- SUBMERSIBLE SEWAGE PUMP
- VERTICAL PUMP
- HEAT EXCHANGER (HE)
- MIXER

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Professional Engineer (Civil) CERTIFICATE NO. 39480 BRIAN J. BUBELA Date Signed 12/2022

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

ABBREVIATIONS, SYMBOLS, & NOTES

DRAWING M-1

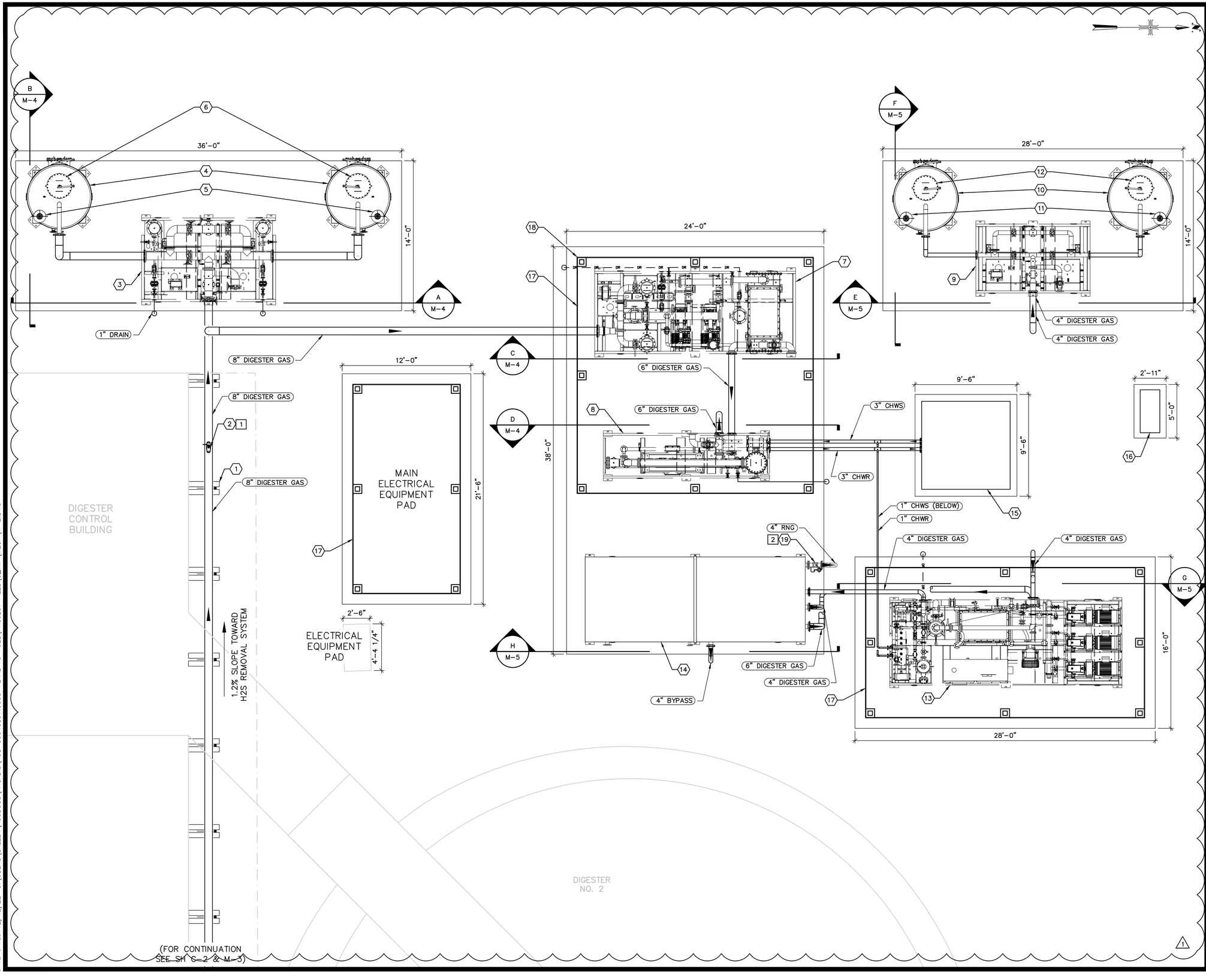
DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B. BUBELA

340 W.O.
PROJ. NO. CP0870-001

SHEET 14 OF 49

CATALOG NUMBER: A-251661

DATE SAVED: 12/9/22 C:\USERS\SALLEN\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\MECH\M-1.DWG



DATE SAVED: 12/12/22 C:\USERS\SALLEN\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\MECH\M-2.DWG

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

NOTES

KEY CALLOUTS:

1. PIPE BRACKET SUPPORT, SEE DETAIL ON SHEET M-8
2. 8" FLOW METER (VENDOR SUPPLIED,CONTRACTOR INSTALLED)
3. H2S REMOVAL VALVE SKID (PROVIDED BY MANUFACTURER)
4. H2S REMOVAL VESSELS (PROVIDED BY MANUFACTURER)
5. H2S REMOVAL VESSEL RUPTURED DISC (PROVIDED BY MANUFACTURER)
6. 24" H2S REMOVAL MEDIA ACCESS DOOR (PROVIDED BY MANUFACTURER)
7. BLOWER SKID
8. DEHYDRATION SKID
9. ACTIVATED CARBON VALVE SKID (PROVIDED BY MANUFACTURER)
10. ACTIVATED CARBON VESSELS (PROVIDED BY MANUFACTURER)
11. ACTIVATED CARBON VESSEL RUPTURE DISK (PROVIDED BY MANUFACTURER)
12. 24" ACTIVATED CARBON MEDIA ACCESS DOOR (PROVIDED BY MANUFACTURER)
13. MEMBRANE COMPRESSION SKID
14. MEMBRANE ENCLOSURE
15. GLYCOL CHILLER CONDENSER
16. GAS ANALYZER
17. EXTENT OF CANOPY ROOF, DESIGN PROVIDED BY THIRD PARTY
18. CANOPY SUPPORT BRACE, DESIGN PROVIDED BY THIRD PARTY
19. 4" PRESSURE REGULATOR AND PRESSURE INDICATING TRANSMITTER (SUPPLIED BY CONTRACTOR)

KEY TAGS:

1	FE-300
	FIT 300
2	PCV-13-200
	PIT-202

0 2' 4' 8'

1 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Professional Engineer (Civil) CERTIFICATE NO. 39480 BRIAN J. BUBELA Date signed 12-2022

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

RNG SYSTEM PLAN

DRAWING M-2

DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B. BUBELA

340 W.O.____
PROJ. NO. CP0870-001

SHEET 15 OF 49

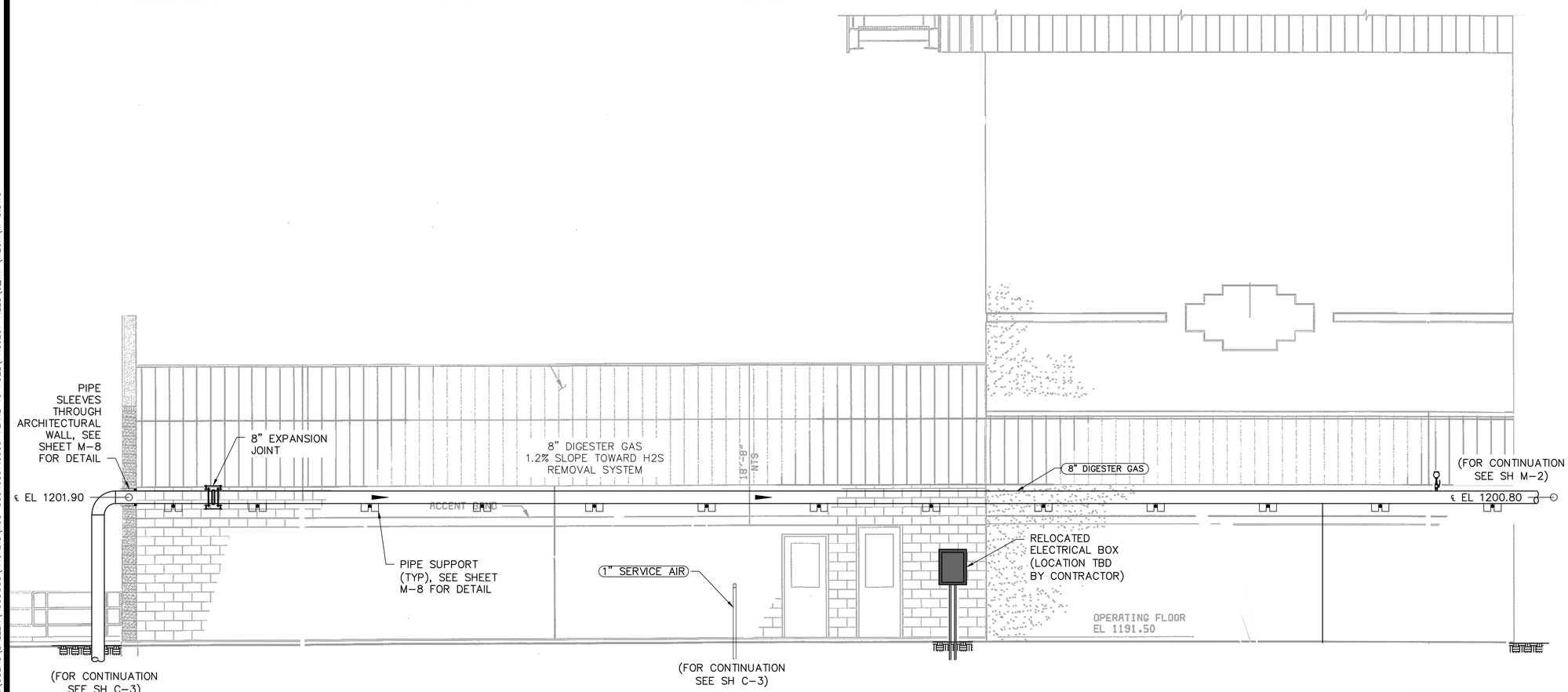
CATALOG NUMBER: A-251662

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

GENERAL NOTES

1. CONTRACTOR TO FIELD VERIFY.ALL PIPING & CONNECTION LOCATIONS AND ELEVATIONS.
2. 8'–0" MAX. SPACING OF SUPPORT.



A / C–3 DIGESTER CONTROL BUILDING NORTH EXTERIOR WALL SECTION

0 2' 4' 6'

ARCADIS

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

DIGESTER CONTROL BUILDING SECTION

DRAWING M-3

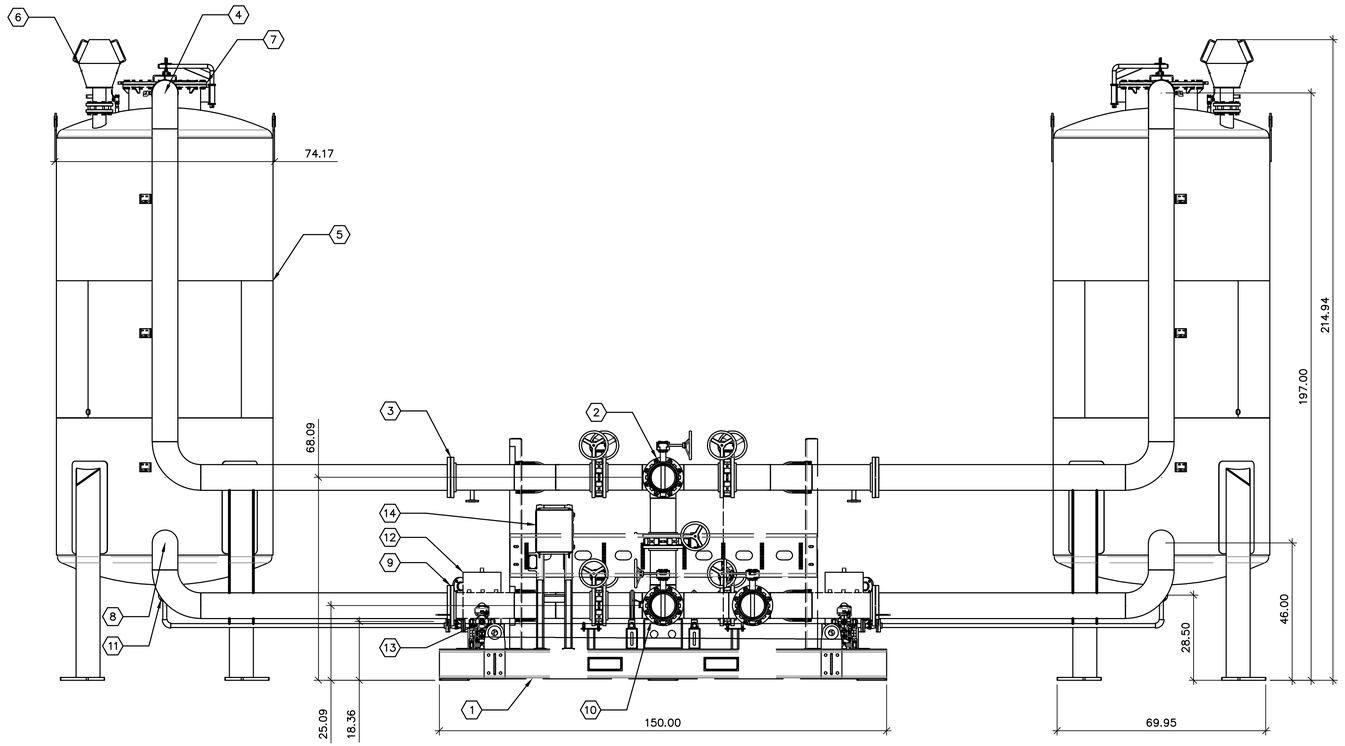
DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B.BUBELA

340 W.O.
PROJ. NO. CP0870-001

SHEET 16 OF 49

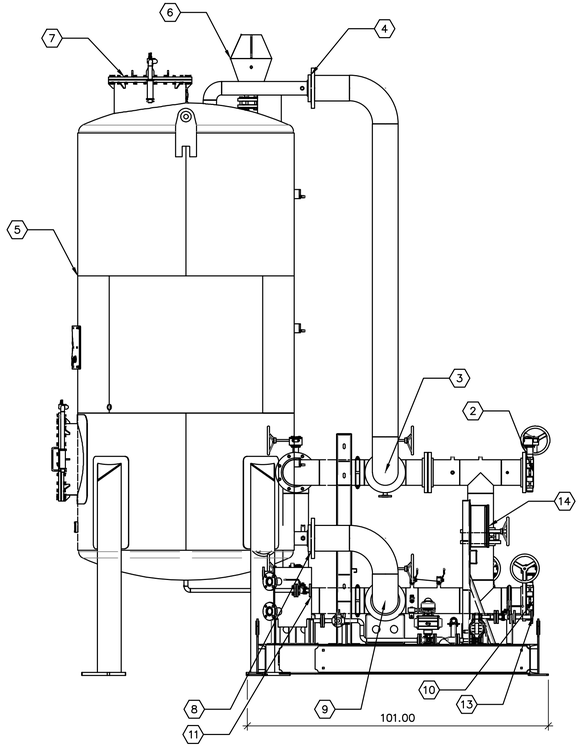
CATALOG NUMBER: A-251663

DATE SAVED: 12/9/22 C:\USERS\SALLEN\ACCDOCS\ARCADIS\AUS–30046397.0000–FLARE TO FUEL\PROJECT FILES\0_WIP\MECH\M–3.DWG



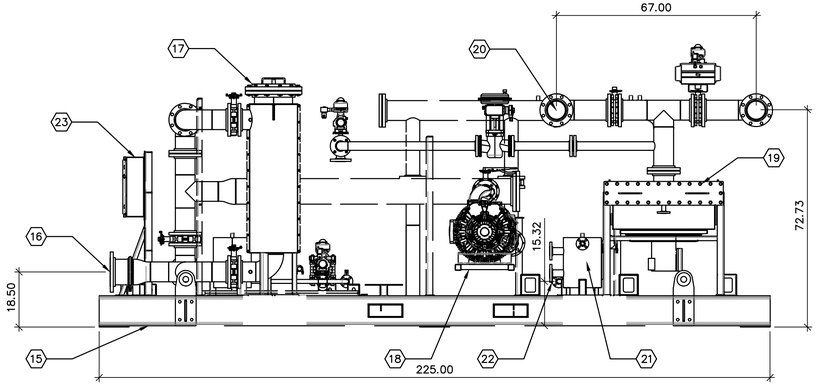
A M-2 H2S REMOVAL SYSTEM SECTION 1

0 1' 2' 4'



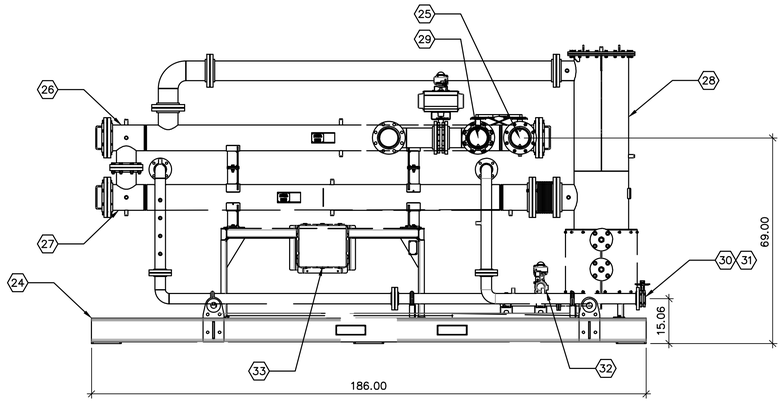
B M-2 H2S REMOVAL SYSTEM SECTION 2

0 1' 2' 4'



C M-2 BLOWER SKID SECTION

0 1' 2' 4'



D M-2 DEHYDRATION SKID SECTION

0 1' 2' 4'

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

GENERAL NOTES

1. CONTRACTOR TO ROUTE SERVICE AIR SUPPLY TO NECESSARY EQUIPMENT. SEE P&ID SHEET I–13 FOR DETAILS.

KEY CALLOUTS:

1. H2S REMOVAL VALVE SKID (PROVIDED BY MANUFACTURER)
2. 8" FLG INLET FROM DIGESTERS
3. 8" FLG OUTLET TO H2S REMOVAL VESSEL
4. 8" FLG INLET FROM H2S REMOVAL VALVE SKID
5. H2S REMOVAL VESSEL (PROVIDED BY MANUFACTURER)
6. H2S REMOVAL VESSEL RUPTURED DISC (PROVIDED BY MANUFACTURER)
7. 24" H2S REMOVAL MEDIA ACCESS DOOR (PROVIDED BY MANUFACTURER)
8. 8" FLG OUTLET TO H2S REMOVAL VALVE SKID
9. 8" FLG INLET FROM H2S REMOVAL VESSEL
10. 8" FLG OUTLET TO BLOWER SKID
11. 1" FLG OUTLET TO DRIP TRAP
12. DRIP TRAP (PROVIDED BY MANUFACTURER)
13. 1" FLG DRAIN
14. H2S VALVE SKID JUNCTION BOX (PROVIDE BY MANUFACTURER)
15. BLOWER SKID (PROVIDED BY MANUFACTURER)
16. 8" FLG INLET FROM H2S VALVE SKID
17. MESH FILTER (PROVIDED BY MANUFACTURER)
18. REGENERATIVE BLOWER (PROVIDED BY MANUFACTURER)
19. AIR COOLER
20. 6" FLG OUTLET TO DEHYDRATION SKID
21. DRIP TRAP (PROVIDED BY MANUFACTURER)
22. 1" FLG DRAIN
23. BLOWER SKID JUNCTION BOX (PROVIDE BY MANUFACTURER)
24. DEHYDRATION SKID (PROVIDED BY MANUFACTURER)
25. 6" FLG INLET FROM BLOWER SKID
26. HX NO.1 ECONOMIZER (PROVIDE BY MANUFACTURER)
27. HX NO.2 ECONOMIZER (PROVIDE BY MANUFACTURER)
28. KNOCKOUT TANK (PROVIDED BY MANUFACTURER)
29. 6" FLG OUTLET TO AC VALVE SKID
30. 3" FLG GLYCOL OUTLET TO CHILLER
31. 3" FLG GLYCOL OUTLET FROM CHILLER
32. 1" FLG DRAIN
33. DEHYDRATION JUNCTION BOX (PROVIDED BY MANUFACTURER)

DIMENSIONAL CALLOUT IN INCHES

ARCADIS

Professional Engineer (Civil) CERTIFICATE NO. 39480 BRIAN J. BUBELA Date Signed 12-7-2022

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

RNG SYSTEM SECTIONS I

DRAWING M-4

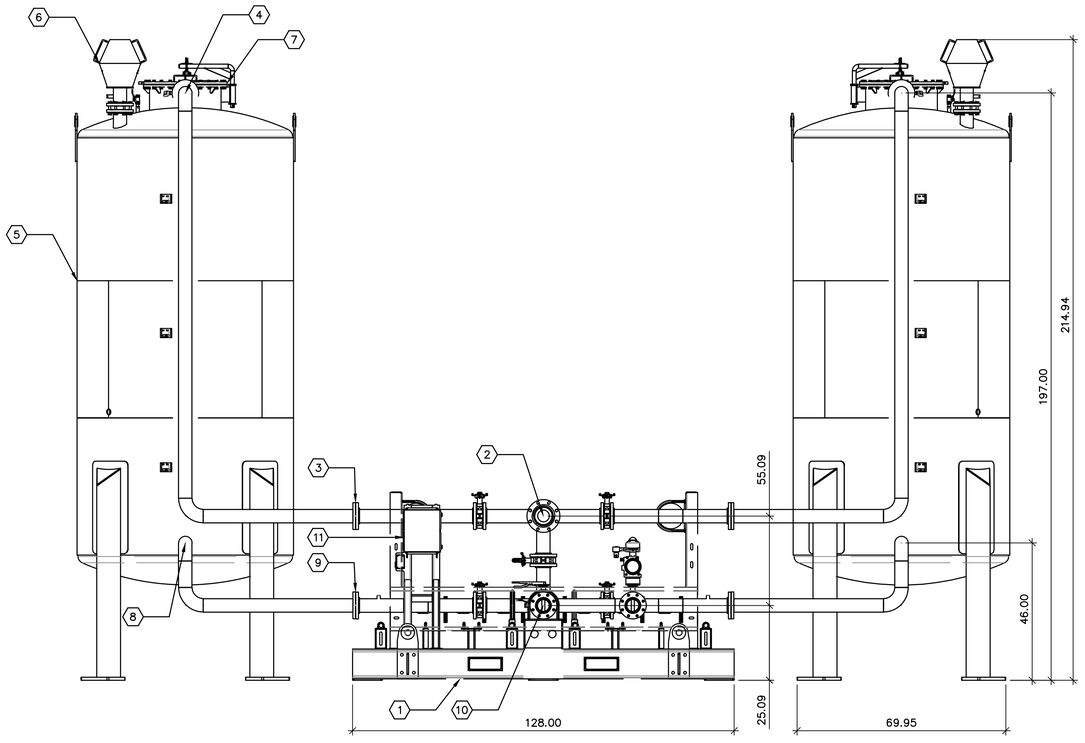
DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B. BUBELA

340 W.O.
PROJ. NO. CP0870-001

SHEET 17 OF 49

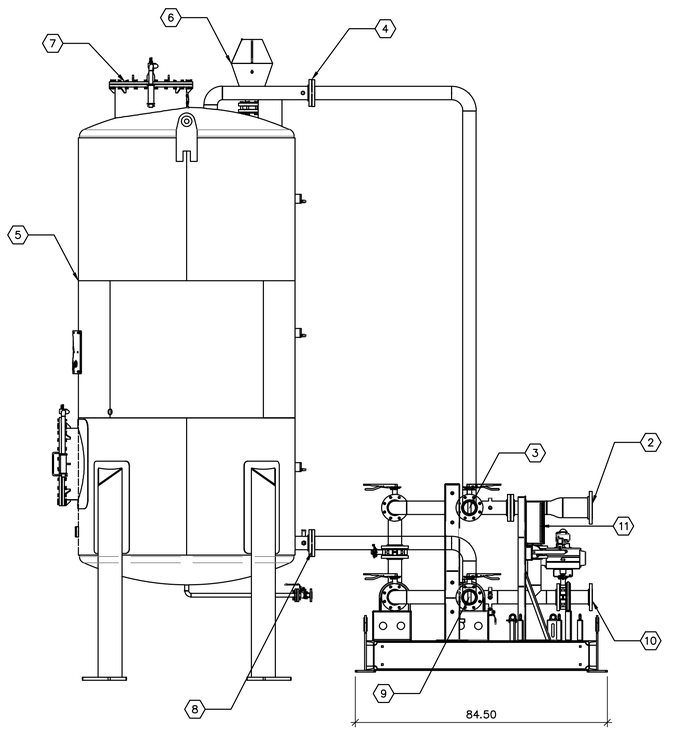
CATALOG NUMBER: A-251664

DATE SAVED: 12/9/22 C:\USERS\SALLEN\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\MECH\M-4.DWG



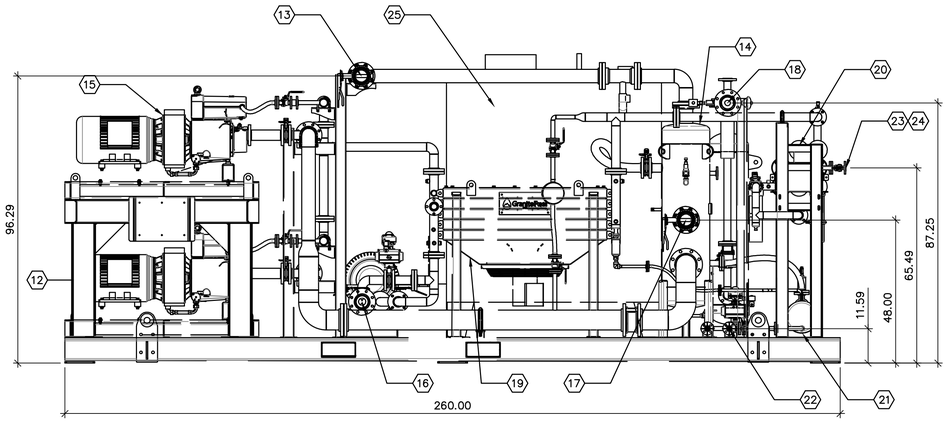
E M-2 ACTIVATED CARBON TREATMENT SYSTEM SECTION 1

0 1' 2' 4'



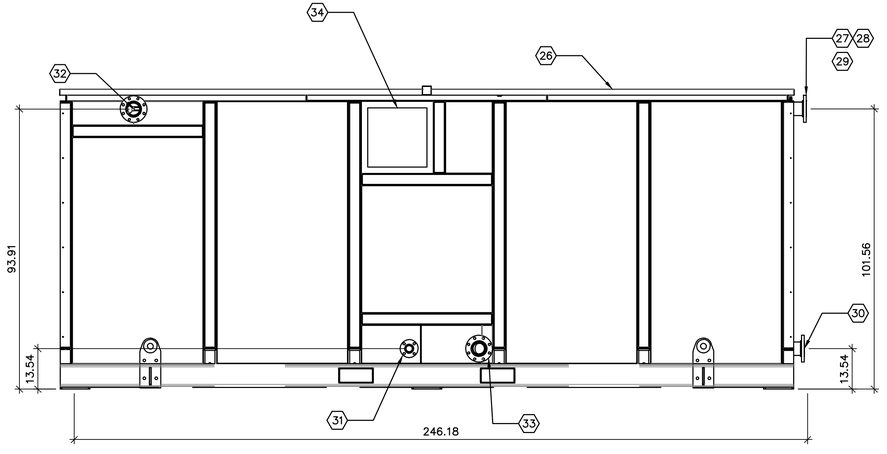
F M-2 ACTIVATED CARBON SYSTEM SECTION 2

0 1' 2' 4'



G M-2 MEMBRANE COMPRESSION SKID SECTION

0 1' 2' 4'



H M-2 MEMBRANE ENCLOSURE SECTION

0 1' 2' 4'

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

GENERAL NOTES

1. CONTRACTOR TO ROUTE SERVICE AIR SUPPLY TO NECESSARY EQUIPMENT. SEE P&ID SHEET I–13 FOR DETAILS.

KEY CALLOUTS:

1. AC VALVE SKID (PROVIDED BY MANUFACTURER)
2. 6" FLG INLET FROM DIGESTERS
3. 4" FLG OUTLET TO H2S REMOVAL VESSEL
4. 4" FLG INLET FROM AC VALVE SKID
5. AC VESSEL (PROVIDED BY MANUFACTURER)
6. AC VESSEL RUPTURED DISC (PROVIDED BY MANUFACTURER)
7. 24" AC MEDIA ACCESS DOOR (PROVIDED BY MANUFACTURER)
8. 4" FLG OUTLET TO AC VALVE SKID
9. 4" FLG INLET FROM AC VESSEL
10. 4" FLG OUTLET TO BLOWER SKID
11. AC VALVE SKID JUNCTION BOX (PROVIDE BY MANUFACTURER)
12. MEMBRANE COMPRESSION SKID (PROVIDED BY MANUFACTURER)
13. 4" FLG INLET FROM AC VALVE SKID
14. MIXING TANK (PROVIDED BY MANUFACTURER)
15. COMPRESSOR (TYP OF 3, PROVIDED BY MANUFACTURER)
16. 4" FLG INLET FROM STAGE 2 PERMEATE
17. 4" FLG INLET FROM STAGE 3 RETANTATE
18. 4" FLG OUTLET TO MEMBRANE ENCLOSURE
19. AIR COOLER
20. DEHYDRATION SYSTEM (PROVIDE BY MANUFACTURER)
21. CONDENSATE ACCUMULATOR
22. 1" FLG DRAIN
23. MEMBRANE COMPRESSION SKID JUNCTION BOX (PROVIDE BY MANUFACTURER)
24. 1" FLG GLYCOL INLET FROM CHILLER
25. 1" FLG GLYCOL OUTLET TO CHILLER
26. MEMBRANE ENCLOSURE (PROVIDE BY MANUFACTURER)
27. 4" FLG INLET FROM COMPRESSION SKID
28. 4" FLG OUTLET TO MEMBRANE COMPRESSION SKID MIXING TANK
29. 4" FLG OUTLET TO MEMBRANE COMPRESSION SKID GAS BOOSTER
30. 4" FLG PRODUCT GAS OUTLET TO MONITORING
31. 2" FLG INLET FROM MEMBRANE COMPRESSION SKID GAS BOOSTER
32. 4" FLG OUTLET TO VENT, SEE M–8 FOR TYPICAL GOOSENECK VENT DETAIL
33. 4" FLG OUTLET BYPASS TO FLARE
34. VENTILATION FAN

DIMENSIONAL CALLOUT IN INCHES

ARCADIS

Professional Engineer CERTIFICATE NO. 39480 BRIAN J. BUBELA Date Signed 12 2022

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

RNG SYSTEM SECTIONS II

DRAWING M-5

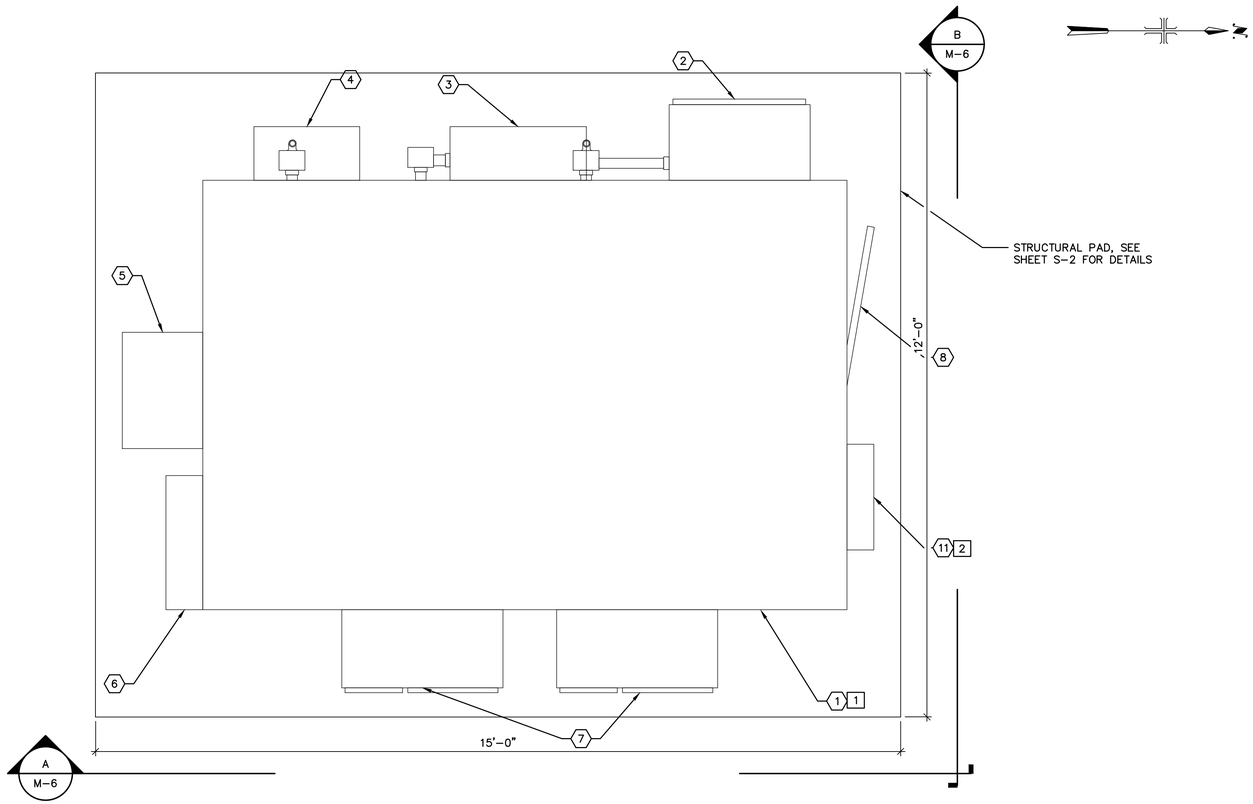
DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B. BUBELA

340 W.O. _____
PROJ. NO. CP0870-001

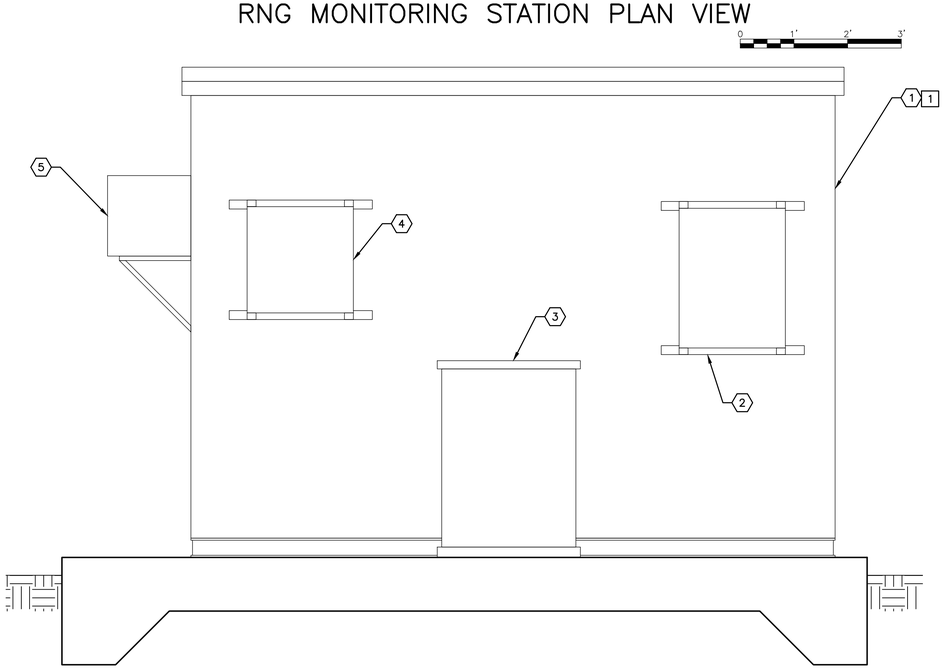
SHEET 18 OF 49

CATALOG NUMBER: A-251665

DATE SAVED: 12/12/22 C:\USERS\SALLEN\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\MECH\M-5.DWG



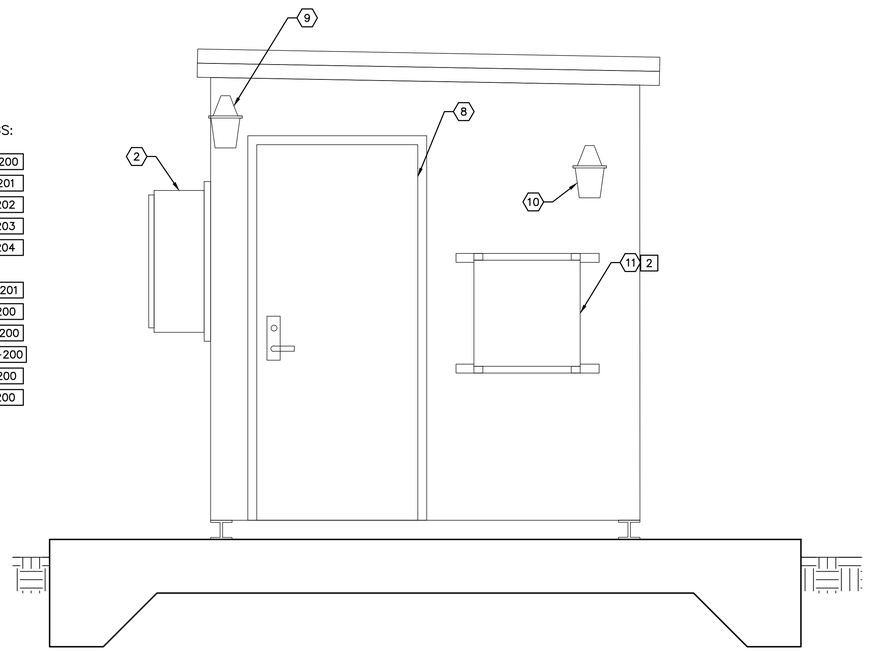
RNG MONITORING STATION PLAN VIEW



KEY TAGS:

1 LCP-13-200
AE-13-201
AE-13-202
AE-13-203
AE-13-204

2 LCP-13-201
AA-13-200
ASH-13-200
ASHH-13-200
AIT-13-200
AE-13-200



A M-6 RNG MONITORING STATION SECTION VIEW 1

B M-6 RNG MONITORING STATION SECTION VIEW 2

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

GENERAL NOTES:

1. COMBUSTIBLE GAS ALARM PANEL SHALL BE NEMA 4X RATED AND MOUNTED AT AN ACCESSIBLE LOCATION. CONTRACTOR TO COORDINATE WITH GAS MONITORING STATION MANUFACTURER FOR MOUNTING LOCATION.

KEY CALLOUTS:

1. GAS MONITORING ENCLOSURE
2. AUTOMATIC TRANSFER SWITCH
3. UPS ENCLOSURE
4. COMMUNICATIONS ENCLOSURE
5. EXPLOSION PROOF AIR CONDITIONING UNIT
6. SOLENOID SHUTDOWN PANEL
7. 3 CYLINDER SPA (TYP OF 2)
8. ENCLOSURE DOOR
9. STROBE LIGHT
10. EXTERIOR LIGHT
11. COMBUSTIBLE GAS ALARM PANEL

ARCADIS

Registered Professional Engineer (Civil)
CERTIFICATE NO.
39480
BRIAN J. BUBELA
Date Signed 12-9-2022

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

GAS MONITORING PLAN & SECTIONS

DRAWING M-6

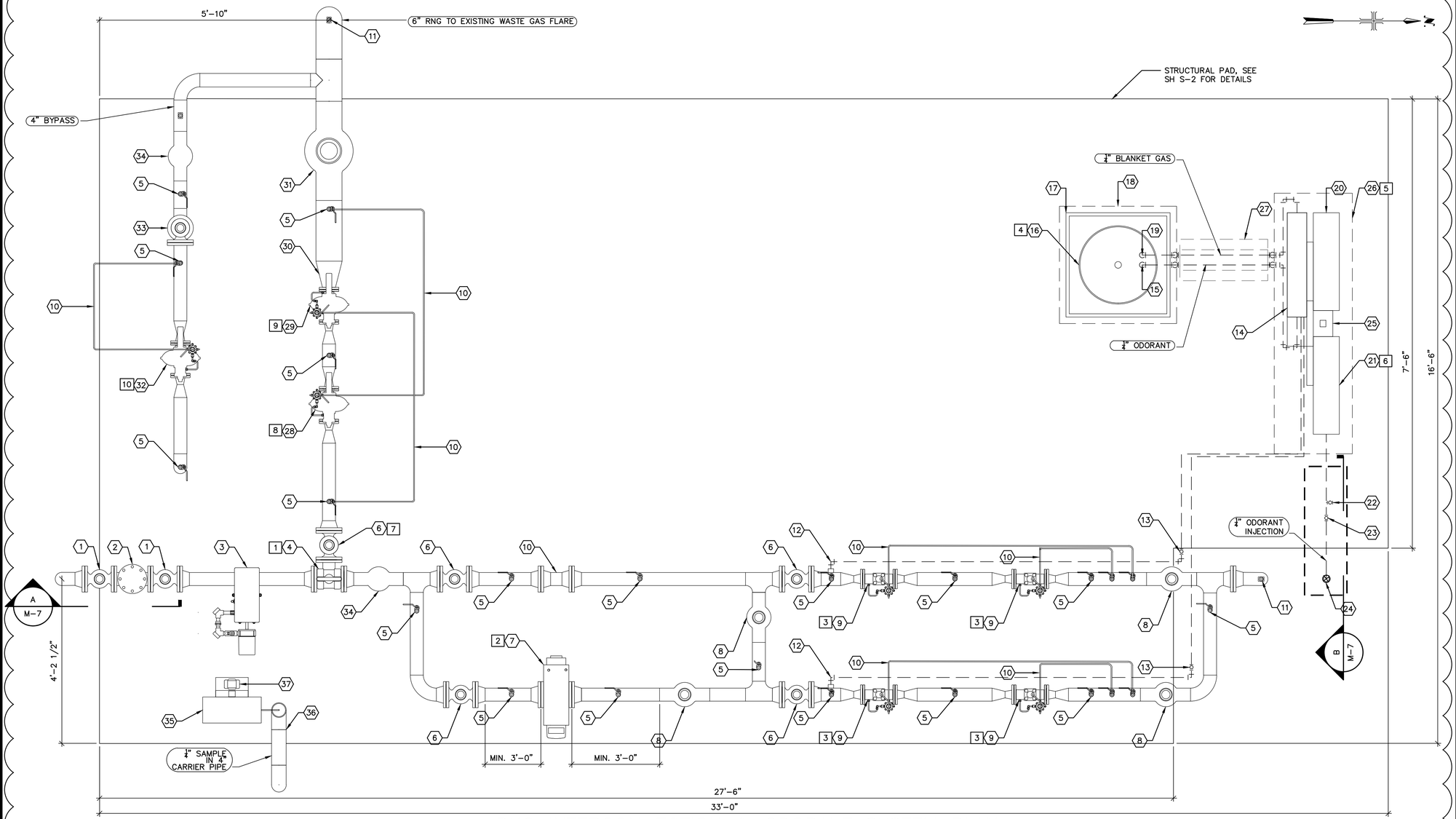
DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B. BUBELA

340 W.O. ____
PROJ. NO. CP0870-001

SHEET 19 OF 49

CATALOG NUMBER: A-251666

DATE SAVED: 12/9/22 C:\USERS\SALLEN\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\MECH\M-6.DWG

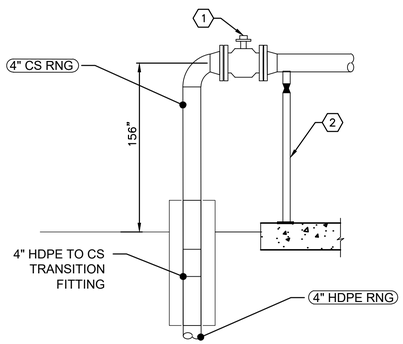


RNG INTERCONNECTION & ODORANT SYSTEM PLAN

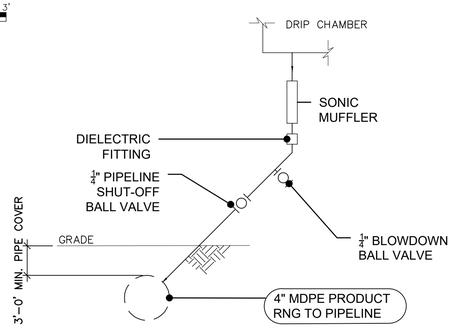
0 1' 2' 3'

KEY TAGS:

1	VLV–13–200 ZSC 200 ZSO 200	5	LCP–13–300
2	FE–300 FIT 300	6	LCP–13–302 SV–300
3	PCV–13–300 PCV–13–301 PCV–13–302 TNK–13–300	7	VLV–13–200 ZSC 200 ZSO 200
4	PCV–13–303 LI 301	8	PCV–13–201
		9	PCV–13–202
		10	PCV–13–203



A M–7 RNG INTERCONNECTION SECTION



B M–7 ODORANT INJECTION POINT DETAIL

NOT TO SCALE

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

GENERAL NOTES

1. PRESSURE REGULATION, DESIGN PROVIDED BY THE CITY OF MESA. SEE DETAIL ON SHEET M–9.
2. FOR ANODE DETAILS, SEE SPEC SECTION 33 42 13.16.

KEY CALLOUTS:

1. 4" BALL VALVE
2. 4" WYE STRAINER
3. HEATED PROBE ENCLOSURE, SEE NOTE 1
4. 4" THREE–WAY INTERCONNECTION BYPASS VALVE
5. 2" BYPASS BALL VALVE AND THREADED PIPE NIPPLE
6. 4" FLG ISOLATION BALL VALVE
7. FLOW METER
8. 4" WELD END ISOLATION BALL VALVE
9. PRESSURE REGULATOR (SEE NOTE 1)
10. ⅜" TUBING
11. PRESSURE INDICATING TRANSMITTER
12. BLANKET GAS SUCTION POINT
13. ¼" ODORANT ISOLATION BALL VALVE
14. ODORANT INJECTION PANEL (GPL 750 CONTROLLER)
15. ODORANT TANK INLET
16. 60 GAL ASME ODORANT TANK
17. ODORANT CONTAINMENT AREA
18. ODORANT CONTAINMENT AREA SUNSHIELD (DESIGNED BY OTHERS)
19. ODORANT TANK OUTLET
20. ODORANT CONTROL SYSTEM LOCAL CONTROL PANEL
21. ODORANT SOLENOID OPERATED DRIP CHAMBER
22. ¼" ODORANT BYPASS BALL VALVE
23. ¼" ODORANT ISOLATION BALL VALVE
24. ODORANT INJECTION POINT (SEE DETAIL 1 ON THIS SHEET FOR DETAIL)
25. ODORANT PANEL MOUNTING FRAME
26. ODORANT CONTROL SUNSHADE (DESIGNED BY OTHERS)
27. PIPE PROTECTOR COVER
28. PRESSURE REGULATOR (MONITOR), SET AT 13" WC
29. PRESSURE REGULATOR (OPERATOR), SET AT 11" WC
30. 4" X 8" INCREASER
31. 8" BALL VALVE
32. PRESSURE REGULATOR, SET AT 11" WC
33. PRESSURE RELIEF VALVE
34. 4" CHECK VALVE
35. SAMPLE CONDITIONING ENCLOSURE
36. ¼" SAMPLE LINE AND POWER IN 4" PVC HEAT TRACED CARRIER PIPE TO GAS MONITORING ENCLOSURE, SEE NOTE 1
37. COMBUSTIBLE GAS DETECTOR

1 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Professional Engineer CERTIFICATE NO. 39480 BRIAN J. BUBELA Arizona U.S.A.

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

RNG INTERCONNECTION & ODORANT SYSTEM PLAN & SECTIONS

DRAWING M-7

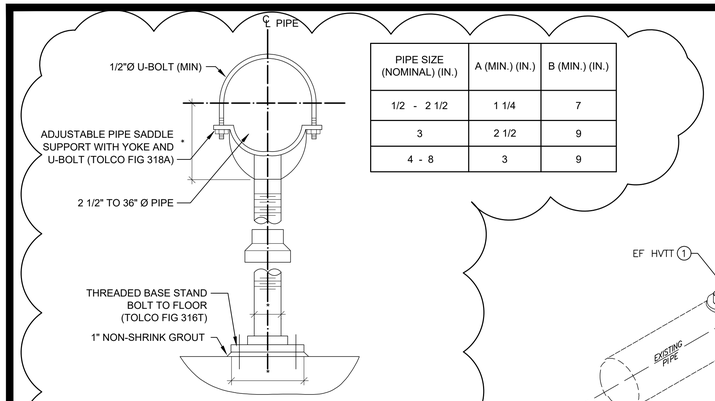
DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B. BUBELA

340 W.O.
PROJ. NO. CP0870-001

SHEET 20 OF 49

CATALOG NUMBER: A-251667

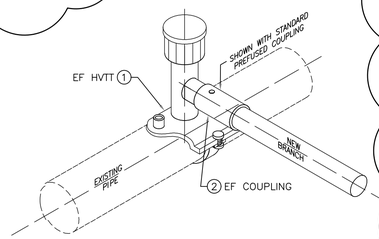
DATE SAVED: 12/13/22 C:\USERS\SALLEN\ACCDOCS\ARCADIS\AUS–30046397.0000–FLARE TO FUEL\PROJECT FILES\0_WIP\MECH\M–7.DWG



PIPE SIZE (NOMINAL) (IN.)	A (MIN.) (IN.)	B (MIN.) (IN.)
1/2 - 2 1/2	1 1/4	7
3	2 1/2	9
4 - 8	3	9

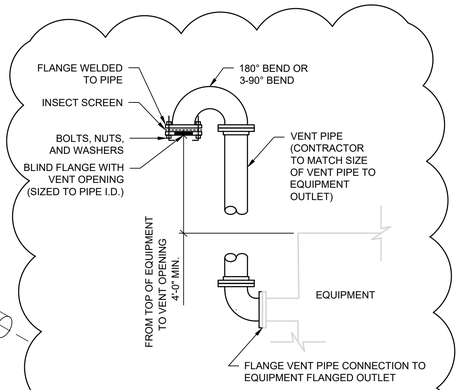
TYPICAL ADJUSTABLE PIPE SADDLE SUPPORT

NOT TO SCALE



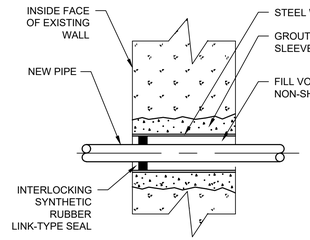
TYPICAL PIPE SADDLE TAPPING TEE

NOT TO SCALE



TYPICAL GOOSENECK VENT DETAIL

NOT TO SCALE

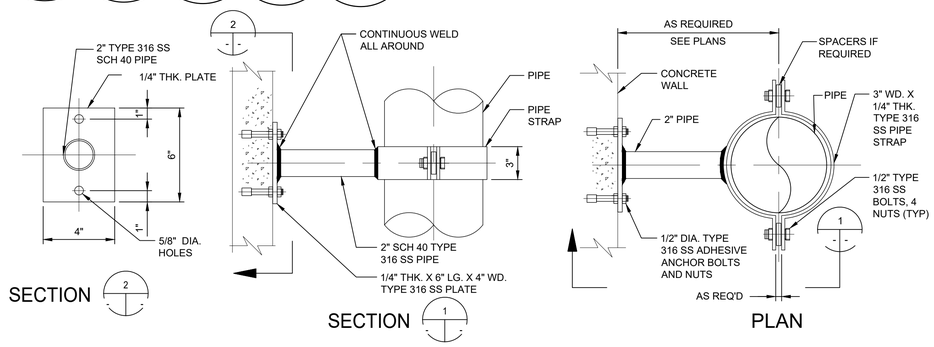


NOTES:

1. TYPICAL FOR PIPES 3" AND LARGER THROUGH EXISTING BLOCK OR CONCRETE BUILDING WALLS IN DRY AREAS ONLY.
2. PROVIDE A WALL PIPE WITH WATERSTOP FOR WET AREAS, PROCESS TANKS, PUMPS STATIONS, BURIED PENETRATIONS AND ALL PENETRATIONS WITHIN 2 FEET ABOVE THE MAX WATER SURFACE. SEE DETAIL THIS SHEET.
3. OMIT SLEEVE FOR PIPES UNDER 3"

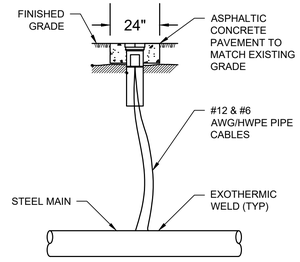
TYPICAL EXISTING WALL PENETRATION DETAIL

NOT TO SCALE



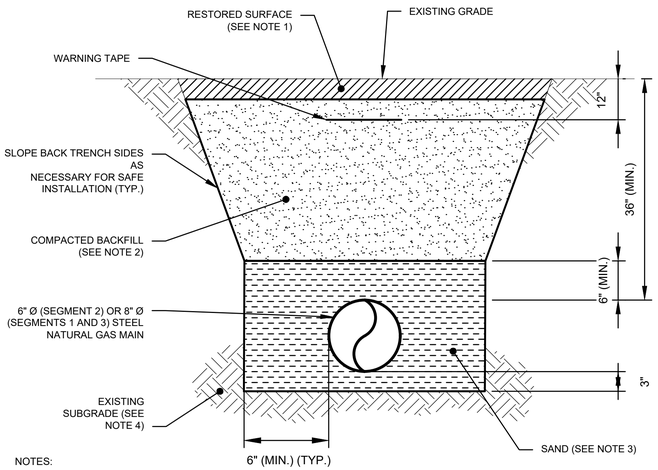
VERTICAL PIPE SUPPORT DETAIL

NOT TO SCALE



FLUSH MOUNT (TYP)

NOT TO SCALE

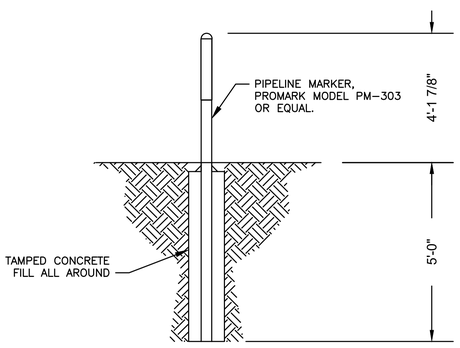


NOTES:

1. DISTURBED SURFACES SHALL BE RESTORED TO MATCH PRE-CONSTRUCTION CONTOURS AND GROUND COVER. IN VEGETATED AREAS, TOPSOIL SHALL BE STRIPPED PRIOR TO TRENCHING AND REPLACED IN-KIND FOLLOWING COMPACTED BACKFILL PLACEMENT. IN NON-VEGETATED AREAS, THE SURFACE WILL BE RESTORED TO THE PRE-CONSTRUCTION MATERIAL TYPE AND THICKNESS.
2. COMPACTED BACKFILL SHALL BE FREE OF LUMPS AND ROCKS LARGER THAN 1 INCH, EXCESSIVE LOAM OR ORGANIC MATTER, FROZEN MATERIAL, VERY SOFT CLAYS, SWELLING CLAYS, AND FINE UNIFORM SANDS THAT MAY BE DIFFICULT TO COMPACT. COMPACTED BACKFILL SHALL BE PLACED IN LIFTS NOT TO EXCEED EIGHT INCHES TO AT LEAST 90% OF MAXIMUM DRY DENSITY FOR COHESIVE MATERIALS OR 95% OF MAXIMUM DRY DENSITY FOR COHESIONLESS MATERIALS AS DETERMINED VIA STANDARD PROCTOR. BACKFILL MUST BE WITHIN -2 TO +2 PERCENT OF OPTIMUM MOISTURE CONTENT. EXISTING SITE SOILS MAY BE UTILIZED FOR BACKFILL PROVIDED IT MEETS THESE REQUIREMENTS.
3. BANK SAND SHALL BE FREE OF CLAY AND ORGANIC MATERIALS AND MEET THE REQUIREMENTS OF NYSDOT SPECIFICATION 733-15 SAND BACKFILL. HAND PAD APPROVED SAND AROUND MAIN, PROVIDING A MINIMUM OF 6" ABOVE MAIN. SAND SHALL BE COMPACTED TO AT LEAST 95% OF MAXIMUM DRY DENSITY AS DETERMINED VIA STANDARD PROCTOR.
4. COMPACT SUBGRADE UNDERLYING THE GAS PIPE TRENCH TO AT LEAST 90% OF MAXIMUM DRY DENSITY FOR COHESIVE MATERIALS OR 95% OF MAXIMUM DRY DENSITY FOR COHESIONLESS MATERIALS AS DETERMINED VIA STANDARD PROCTOR. BACKFILL MUST BE WITHIN -2 TO +2 PERCENT OF OPTIMUM MOISTURE CONTENT AT THE TIME OF COMPACTION.
5. TRENCH WIDTHS SHALL BE MINIMIZED TO GREATEST EXTENT PRACTICAL. MAXIMUM WIDTH OF TRENCH FOR 6" AND 8" PIPE IS 24 INCHES. ENLARGEMENT OF THE TRENCH AT BRANCH CONNECTIONS MAY BE REQUIRED. CONTRACTOR WILL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH LABOR AND MATERIALS REQUIRED WHEN OUTSIDE THE MAXIMUM TRENCH WIDTH.
6. NOT MORE THAN 150 FEET OF TRENCH MAY BE OPENED IN ADVANCE OF INSTALLING PIPE.
7. DO NOT WASTE ANY SATISFACTORY EXCAVATED MATERIAL. REUSE EXCAVATED MATERIALS FOR THE CONSTRUCTION OF FILLS, EMBANKMENTS, SUBGRADES, SHOULDERS, BACKFILL OR FOR SIMILAR PURPOSES.
8. WHILE THE EXCAVATION IS OPEN, MAINTAIN THE WATER LEVEL CONTINUOUSLY, AT LEAST 6-12 INCHES BELOW THE TRENCH SUBGRADE.
9. MAINTAIN 6" MINIMUM CLEARANCE BETWEEN GAS PIPES AND OTHER STRUCTURES.

GAS PIPE TRENCH

NOT TO SCALE

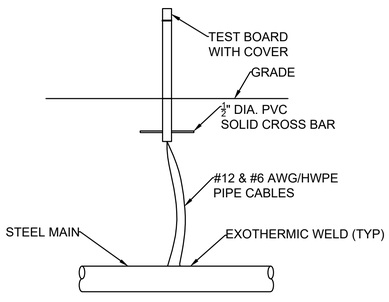


NOTES:

1. A LINE MARKER MUST BE PLACED AND MAINTAINED AS CLOSE AS PRACTICAL OVER EACH BURIED MAIN AT THE FOLLOWING LOCATIONS:
   - AT EACH CROSSING OF A PUBLIC ROAD
   - LOCATED WITHIN LINE OF SIGHT
2. REMOVE LOOSE MATERIAL FROM BOTTOM OF HOLE. PLACE CONCRETE FOR ENCASEMENT AGAINST FIRM UNDISTURBED EARTH
3. MARKER MUST BE YELLOW WITH BLACK PRINT
4. MARKER WARNING MUST READ THE FOLLOWING:
   - "WARNING" AT LEAST 1" HIGH WITH A 1/4" STROKE
   - NAME OF THE OPERATOR AND TELEPHONE NUMBER WHERE THE OPERATOR CAN BE REACHED AT ALL TIMES.

TYPICAL PIPELINE MARKER

NOT TO SCALE



ABOVE GRADE MARKER (TYP)

NOTES:

1. ALL EXISTING TEST STATIONS SHALL BE CONNECTED TO NEW GAS MAIN
2. PVC PIPE IS INSTALLED SUCH THAT 4 FEET OF THE PIPE ARE BELOW GRADE WITH CROSS BAR INSERTED AS SHOWN.
3. PROTECT BY A TRIANGULAR BARRIER OUTSIDE OF WEST POINT GROUNDS
4. CLEARLY IDENTIFY STATIONING AND GLOBAL POSITIONING SYSTEM (GPS) COORDINATES
5. CONTAIN TWO CABLES:
   - 5.1. NO. 6 AWG BOND CABLE FROM THE STRUCTURE DETERMINING STRUCTURE-TO-SOIL POTENTIALS AND FOR CONNECTING TO GALVANIC ANODE(S) IF REQUIRED.
   - 5.2. NO. 12 AWG TEST CABLE FROM THE STRUCTURE FOR DETERMINING STRUCTURE-TO-SOIL POTENTIALS
6. ENSURE ALL CABLES FOR GIVEN LOCATION TERMINATE WITHIN THE SAME TEST STATION ENCLOSURE.
7. PROVIDE FLUSH MOUNTED TEST STATIONS IN PAVED AREAS OR OTHER AREAS WHERE DAMAGE BY VEHICLES MAY OCCUR
8. PROVIDE ABOVE GRADE TEST STATIONS WHERE THEY ARE NOT SUBJECT TO VEHICULAR DAMAGE OR ARE LOCATED IN AREAS WHERE FLUSH MOUNTED TEST STATIONS CAN EASILY BE COVERED OVER AND LOST.
9. PROVIDE TEST STATIONS AT ALL FOREIGN STRUCTURES THAT CROSS THE PIPELINE, CASINGS, UNDERGROUND DIELECTRIC INSULATION UNIONS AND BONDS.

CATHODIC PROTECTION TEST STATION

NOT TO SCALE

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

1 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Registered Professional Engineer (Civil)
CERTIFICATE NO.
39480
BRIAN J. BUBELA
Date Signed: 12/9/2022

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

DETAILS I

DRAWING M-8

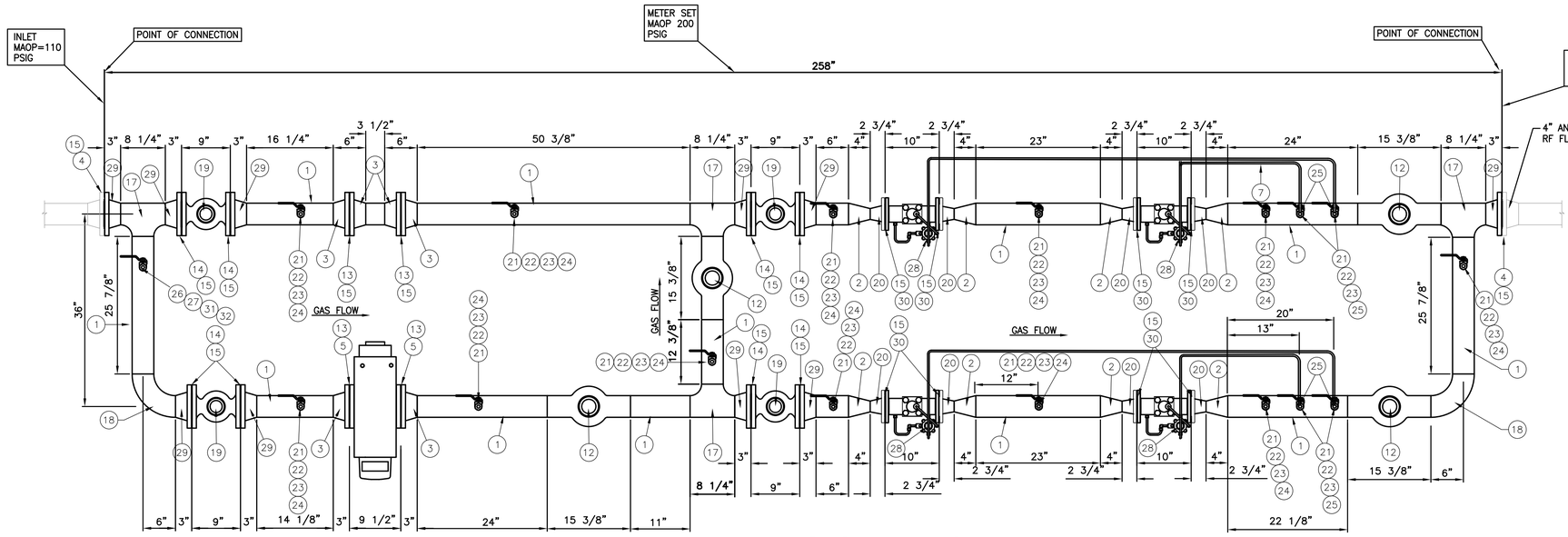
DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B. BUBELA

340 W.O.____
PROJ. NO. CP0870-001

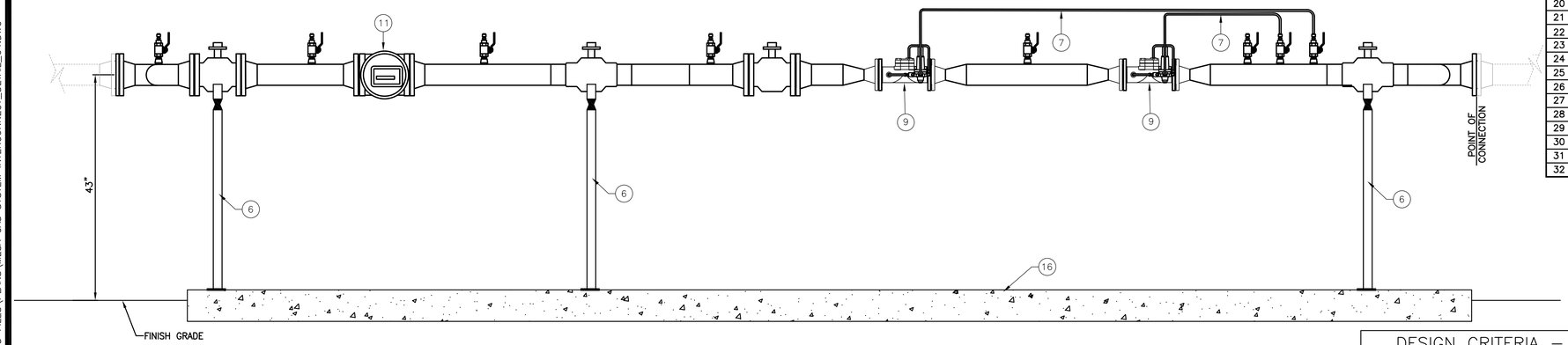
SHEET 21 OF 49

CATALOG NUMBER: A-251668

DATE SAVED: 12/9/22 C:\USERS\SALLEN\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\MECH\M-8.DWG



PLAN VIEW - GAS METER SET



PROFILE VIEW - GAS METER SET

MATERIAL LIST FOR METER SET
MATERIALS TO BE SUPPLIED BY CITY OF MESA

ITEMS	DESCRIPTION	QUANTITY	BIN #
1	4" STEEL GAS PIPE, 0.237" WT, GR-B	23 LF.	N/A
2	4" X 2" WELD REDUCER	8 EA.	65965-530
3	4" WELD NECK, FF FLANGE - ANSI CLASS 150	6 EA.	N/A
4	4" ANSI CLASS 150 FLANGE INSULATING KIT, TYPE-F WITH RING GASKET	2 EA.	N/A
5	5/8" X 3 1/2" STUD BOLT GR-B7 CHROMIUM W HH NUT(1), GR 2H CARBON STEEL	16 EA.	N/A
6	METER SET SUPPORT	6 EA.	N/A
7	3/8" O.D. STAINLESS STEEL TUBING	AS REQ./LF.	N/A
8	1/4" NPT X 3/8" TUBE OD MALE CONNECTOR (SWAGELOCK CAT. SS 600-1-4)	4 EA.	N/A
9	MOONEY 2"X1" ANSI 150 REGULATOR WITH 100% CAPACITY, 75 DURO DIAPHRAGM, FP-7 SERIES 20 PILOT BLUE SPRING (25-90 PSIG), TYPE 24 RESTRICTOR, TYPE C MOUNTING AND TYPE D TUBING AND FD-5 FILTER DRYER ASSEMBLY, EPOXY COATED CARBON STEEL FILTER HOUSING, 1/4" PORTS, 2/3 R7F (SULFA-TRAP) 1/3 SILICA GEL, PAINTED CARTRIDGE.	4 EA.	N/A
10	4" RING GASKET, 4-1/2" X 6-7/8"	1 EA.	28535-120
11	4" FLOWSIC500, DN100 GAS METER W/ TEMPERATURE AND PRESSURE SENSORS AND BOLT KIT.	1 EA.	N/A
12	4" WELD END BALL VALVE ANSI CLASS 150	4 EA.	67075-044
13	4" FULL FACE GASKET	4 EA.	N/A
14	4" RING GASKET	8 EA.	N/A
15	5/8" X 3 1/2" STUD BOLT GR-B7 CHROMIUM W HH NUT(2), GR 2H CARBON STEEL	160 EA.	32020-322
16	CONCRETE SLAB PER CITY OF MESA STANDARD DETAIL M-40.03.. 22'-0" X 9'-0" MINIMUM (PROVIDED BY CUSTOMER).	84 SF MIN.	N/A
17	4" TEE STEEL WELD	4 EA.	65984-657
18	4" WELD 90 DEGREE WELD ELBOW	2 EA.	65942-123
19	4" BALL VALVE FLANGED, RF ANSI 150	4 EA.	N/A
20	2" FLANGE STEEL WELD NECK RF ANSI 150	8 EA.	N/A
21	3/4" X 2000 LB WELD-O-LET	16 EA.	N/A
22	3/4" X 2000 LB FNPT BALL VALVE WITH LOCKING DEVICE	16 EA.	N/A
23	3/4" X 3" LONG PIPE NIPPLE (THREADED ONE END)	16 EA.	N/A
24	3/4" SQUARE HEAD PLUG	12 EA.	65954-147
25	3/4" NPT X 3/8" TUBE OD MALE CONNECTOR (SWAGELOCK CAT. SS 600-1-12)	4 EA.	N/A
26	2" X 2000 LB WELD-O-LET	1 EA.	N/A
27	2" X 2000 LB FNPT BALL VALVE WITH LOCKING DEVICE	1 EA.	N/A
28	1/4" NPT X 3/8" TUBE OD CONNECTOR (SWAGELOK CAT. SS 600-1-4)	4 EA.	N/A
29	4" WELD NECK RF FLANGE, ANSI CLASS 150	10 EA.	65944-344
30	2" RING GASKET FOR ANSI CLASS 150 FLANGE	8 EA.	N/A
31	2" X 4" LONG PIPE NIPPLE (THREAD ONE END)	1 EA.	N/A
32	2" SQUARE HEAD PLUG	1 EA.	N/A

TO BE FILLED OUT BY C.O.M. INSPECTOR OR CONSTRUCTION CREW:

PRESSURE TEST RECORD	INSPECTOR: _____
PIPE SIZE: 4"	PIPE TYPE: 4" COATED STEEL W.T. 0.237" GRADE B
LEAK TEST	
TEST PRESSURE (RECOMMENDED): 90 PSIG	TEST PRESSURE (ACTUAL): _____
DURATION (MIN. RECOMMENDED): 30 MIN.	DURATION (ACTUAL): _____
DATE ON: _____ DATE OFF: _____	TIME ON: _____ TIME OFF: _____
STRENGTH TEST	
TEST PRESSURE (RECOMMENDED): 300 PSIG	TEST PRESSURE (ACTUAL): _____
DURATION (MIN. RECOMMENDED): 1 HOUR	DURATION (ACTUAL): _____
DATE ON: _____ DATE OFF: _____	TIME ON: _____ TIME OFF: _____
NOTE: CONDUCT LEAK TEST PRIOR TO STRENGTH TEST. MAOP=200 PSIG	
COMMENTS:	

GAS GENERAL NOTES:

1. ALL GAS MATERIALS SHALL COMPLY WITH CITY OF MESA GAS MATERIAL SPECIFICATIONS.
2. MAOP OF NEW GAS METER SET SHALL BE ESTABLISHED AT 200 PSIG.
3. ALL GAS PIPING SHALL BE STRENGTH AND LEAK TESTED PER LATEST CITY OF MESA OPERATIONS, MAINTENANCE, CONSTRUCTION PRACTICES AND EMERGENCY PLAN MANUAL SECTIONS 7 AND 8. ALL WELDS SHALL BE NON-DESTRUCTIVELY TESTED.
4. ALL PIPING DOWNSTREAM OF INLET FLANGE SHALL BE CLASSIFIED AS GATHERING LINE.

DESIGN CRITERIA - STEEL PIPE

STEEL GAS PIPE DESIGN CRITERIA

FORMULA AND CALCULATIONS FOR DETERMINING MAXIMUM DESIGN PRESSURE:
P=(2*S*t/D)*F*E*t SEE 192.105
- P=DESIGN PRESSURE IN POUNDS PER SQUARE INCH GAUGE.
- S=YIELD STRENGTH IN POUNDS PER SQUARE INCH, DETERMINED IN ACCORDANCE WITH 192.107.
- D=NOMINAL OUTSIDE DIAMETER OF THE PIPE IN INCHES.
- t=NOMINAL WALL THICKNESS OF THE PIPE IN INCHES.
- F=DESIGN FACTOR DETERMINED IN ACCORDANCE WITH 192.111, ALL PIPELINES SHALL BE DESIGNED FOR A CLASS FOUR (4) LOCATION, F=0.40
- E=LONGITUDIONAL JOINT FACTOR DETERMINED IN ACCORDANCE WITH 192.113
- T=TEMPERATURE DE-RATING FACTOR DETERMINED IN ACCORDANCE WITH 192.115

FORMULA IS TAKEN FROM THE CODE OF FEDERAL REGULATIONS TITLE 49-TRANSPORTATION; PART 192, TRANSPORTATION OF NATURAL AND OTHER GAS BY PIPELINE; MINIMUM FEDERAL SAFETY STANDARDS. SEE 192.105.

4 INCH H.P. STEEL PIPE

CALCULATION FOR DETERMINING MAXIMUM DESIGN PRESSURE:
P=? P=2*35000*0.237*.40*1*1/(4.50)
P= 1,475 PSIG

E=1
T=1
F=0.4
S=35000
D=4.5
t=0.237

CONCLUSION: MAXIMUM DESIGN PRESSURE OF PIPE IS 1,475 PSIG.

FORMULA AND CALCULATIONS FOR DETERMINING HOOP STRESS.
GAS PIPE SHALL OPERATE AT A HOOP STRESS OF LESS THAN 20% OF THE SPECIFIED MINIMUM YIELD STRENGTH TO BE CLASSIFIED AS A DISTRIBUTION MAIN.

$$Sh = \frac{P \times D}{2 \times t}$$

- Sh= HOOP STRESS, PSI.
- P = INTERNAL PRESSURE, PSIG.
- D = OUTSIDE DIAMETER OF PIPE IN INCHES
- t = NOMINAL WALL THICKNESS IN INCHES

GIVEN:
- P=200 PSIG (MAOP)
- D=4.50
- t= 0.237 WALL THICKNESS

SYMS=35,000 PSI

$$Sh = \frac{200 \times 4.50}{2 \times .237} \quad Sh = 1,899$$

$$\%SYMS = \frac{1,899}{35,000} = 5.4\%$$

SCALE: 1" = 1'
0 0.5 1 1.5 2

Scot A. Sherwood
Registered Professional Engineer
Certificate No.
35211
SCOT A. SHERWOOD
06/20/2022
Date Signed
ARIZONA, U.S.A.

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

REGULATOR STATION DETAIL

DRAWING M-9

DRAWN BY: A BISILLE
ENGINEER: S SHERWOOD
APPROVED BY: S SHERWOOD

ACTIVITY: _____
PROJ. NO.: CP0870-001

SHEET 22 OF 49

CATALOG NUMBER: A-251669

DATE SAVED: 2/14/22 I:\CP0870INTC FLARE TO FUEL MESA GAS SYSTEM INTERCONNECT\DESIGN\CADD FILES\PLANS\MESA GAS SYSTEM INTERCONNECT_DETAIL_04.DWG

INSTRUMENT IDENTIFICATION LEGEND

	FIRST LETTER		SECOND LETTER		
	MEASURED OR INITIATING VARIABLE,	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER FLAME		NOT USED	NOT USED	NOT USED
C	CONDUCTIVITY (ELECTRICAL)			CONTROL	CLOSED
D	DENSITY (MASS) OR SPECIFIC GRAVITY	DIFFERENTIAL			
E	VOLTAGE (EMF)		PRIMARY ELEMENT		
F	FLOW RATE	RATIO (FRACTION)			
G	INTRUSION		GLASS GAGE (UNCALIBRATED)		
H	HAND (MANUALLY INITIATED)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME OR TIME SCHEDULE			CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOISTURE OR HUMIDITY				MIDDLE OR INTER-MEDIATE
N	SEQUENCE, STRATEGY		NOT USED	NOT USED	NOT USED
O	NOT USED		ORIFICE (RESTRICTION)		OPEN
P	PRESSURE OR VACUUM		POINT (TEST CONNECTION)	PULSE	
Q	QUANTITY	INTEGRATE OR TOTALIZE			
R	RADIOACTIVITY		RECORD OR PRINT		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION			VALVE, DAMPER OR LOUVER	
W	WEIGHT OR FORCE		WELL		
X	UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT STATUS	Y AXIS		RELAY OR COMPUTE	
Z	POSITION			DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

BASE INSTRUMENTATION SYMBOLS

FIT # — INSTRUMENT FIELD MOUNTED
SEE THIS SHEET FOR DETAILS OF INSTRUMENT TAGGING SYSTEM.
FULL TAG NUMBER SHOULD BE INCLUDED ON INSTRUMENT INDEX. POWER SUPPLY REQUIRED LOCALLY WHERE SHOWN.

FIR # — INSTRUMENT PANEL FACE MOUNTED

FY # (X / Y) — INSTRUMENT RELAY MOUNTED IN REAR OF PANEL (BROKEN LINE). ACTIVATES AND DEACTIVATES CONTROL AND/OR ALARM SWITCHES AT PRESET VALUE. EQUIPMENT NUMBER (Y) ONLY WHEN NECESSARY. SEE BELOW FOR FUNCTIONS (X).

- △ DIFFERENCE
- > HIGH SELECTOR
- < LOW SELECTOR
- P/I PNEUMATIC/CURRENT CONVERTER
- I/I CURRENT/CURRENT CONVERTER (REPEATER)
- Σ SUMMATION
- AV AVERAGE
- % RATIO

FR # / AR # (DO) — FR & AR ARE TWO FUNCTIONS AS PART OF ONE UNIIT. (CIRCLES TOUCH)

SYMBOLS FOR ANALYTICAL DEVICES:
- CH_4-METHANE
- Cl_2-CHLORINE
- DO-DISSOLVED OXYGEN
- H_2S-HYDROGEN SULFIDE
- H_3PO_4-PHOSPHORIC ACID
- H_2SO_4-SULFURIC ACID
- MeOH-METHANOL
- NaHOCL-SODIUM HYPOCHLORITE
- $Na_2S_2O_5$-SODIUM METHA-BISULFITE
- O_2-OXYGEN
- ORP -OXYDATION REDUCTION POTENTIAL
- pH-HYDROGEN ION CONCENTRATION

△▽ DISCRETE INPUT/OUTPUT

▲▼ ANALOG INPUT/OUTPUT

▲▽ PULSE INPUT/OUTPUT

IAS — INSTRUMENT AIR SUPPLY

120V — 120V AC POWER SUPPLY

480V — 480V AC POWER SUPPLY

24V — 24V DC POWER SUPPLY

PROGRAMMABLE LOGIC CONTROLLER (PLC) CONTROL BLOCK

XXX / ### — SCADA SIGNAL DESCRIPTION

— INTERLOCK
- INTERLOCK CONTROL STRATEGY

FIT # — THERMAL MASS METER

FE # — ULTRASONIC TRANSIT FLOWMETER

FIT # — VENTURI

FE # — ORIFICE PLATE

FE # — ROTAMETER

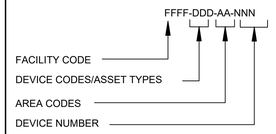
LE # — ULTRASONIC OR RADAR ELEMENT

VORTEX FLOWMETER

ABBREVIATIONS

BLWR	BLOWER(S)
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CP	CONTROL PANEL
CPCV	CHLORINATED POLYVINYL CHLORIDE
CW	CITY WATER
DGL	DIGESTER GAS LOW PRESSURE
DGH	DIGESTER GAS HIGH PRESSURE
DIP	DUCTILE IRON
HDPE	HIGH DENSITY POLYETHYLENE
HSW	HIGH STRENGTH WASTE
HWS	HOT WATER SUPPLY
FLT	FILTRATE
GBT	GRAVITY BELT THICKENER
LCP	LOCAL CONTROL PANEL
NG	NATURAL GAS
POL	POLYMER
PSA	PRESSURE SWING ADSORPTION
PVC	POLYVINYL CHLORIDE
RAS	RETURN ACTIVATED SLUDGE
RNG	RENEWABLE NATURAL GAS
SLG	BLENDED SLUDGE
SOD	CAUSTIC SODA
SS	STAINLESS STEEL
TW	THERMOWELL
TWAS	THICKENED WASTE ACTIVATED SLUDGE
WAS	WASTE ACTIVATED SLUDGE

INSTRUMENT TAGGING SYSTEM



VALVE SYMBOLS

GATE VALVE
GLOBE VALVE
PLUG VALVE
DIAPHRAGM VALVE
BALL VALVE
PINCH VALVE
NEEDLE VALVE
CHECK VALVE
3-WAY VALVE
RELIEF VALVE
PRESSURE SELF REGULATING VALVE
BACK PRESSURE SELF REGULATING VALVE
KNIFE GATE VALVE
BUTTERFLY VALVE
FLAME ARRESTOR

PIPING SYMBOLS

Y STRAINER
VENT
DIAPHRAGM SEAL WITH ISOLATION VALVE
PULSATION DAMPENER
FLEXIBLE HOSE
QUICK-CONNECT
CALIBRATION COLUMN
EYE WASH/EMERGENCY SHOWER
UNION
BACKFLOW PREVENTOR
SINGLE BASKET STRAINER
DRAIN
REDUCER
RUPTURE DISC
CONDENSATE TRAP

EQUIPMENT SYMBOLS

CENTRIFUGAL PUMP
METERING PUMP
SUBMERSIBLE PUMP
PROGRESSIVE CAVITY PUMP
PERISTALTIC PUMP
POSITIVE DISPLACEMENT PUMP
BLOWER, CENTRIFUGAL
AIR COOLER
M — MOTOR
P — PNEUMATIC
VFD — VARIABLE FREQUENCY DRIVE
MCC — MOTOR CONTROL CENTER
STR — MOTOR STARTER
SLIDING VANE COMPRESSOR
COMPRESSOR
HEAT EXCHANGE CHILLER
MIXER
ROTARY LOBE PUMP
TUBE AND SHELL HEAT EXCAHNGER
HEAT EXCHANGER

PANEL DEVICE SYMBOLS

HS / L/O/R — HAND SWITCH (MANUAL SELECTOR)
FUNCTION SUBSCRIPT (LOCATION MAY VARY)

PB / ESTOP — PUSHBUTTON
FUNCTION SUBSCRIPT (LOCATION MAY VARY)

FUNCTION SUBSCRIPTS FOR HAND SWITCH AND PUSHBUTTON CONTROLS:

ESTOP	E-STOP
F/O/R	FORWARD-OFF-REVERSE
F/O/JR	FORWARD-OFF-JOG REVERSE
H/O/A	HAND-OFF-AUTO
H/O/R	HAND-OFF-REMOTE
H/O/SBY	HAND-OFF-STANDBY
L/O/R	LOCAL-OFF-REMOTE
M/A	MANUAL-AUTO
M/O/A	MANUAL-OFF-AUTO
O/C	OPEN-CLOSE
O/O	ON-OFF
O/S/C	OPEN-STOP-CLOSE
RS	RESET
R/L	REMOTE-LOCAL
R/O	RUN-OFF
SC	SPEED CONTROL POTENTIOMETER
SCR	SILICON CRYSTAL RECTIFIER
S/S	START-STOP
S/SLO	START-STOP WITH LOCKOUT

IL (G) — INDICATING LIGHT UNIT
G-GREEN (OFF,STOP,CLOSED)
R-RED (RUN,START,OPEN)
W-WHITE (POWER ON)
A-AMBER (ALARM CONDITION)
F-FLASHES ON ELECTRIC OR MECHANICAL MALFUNCTION

1 — INTERLOCK
1 = NOTE NUMBER

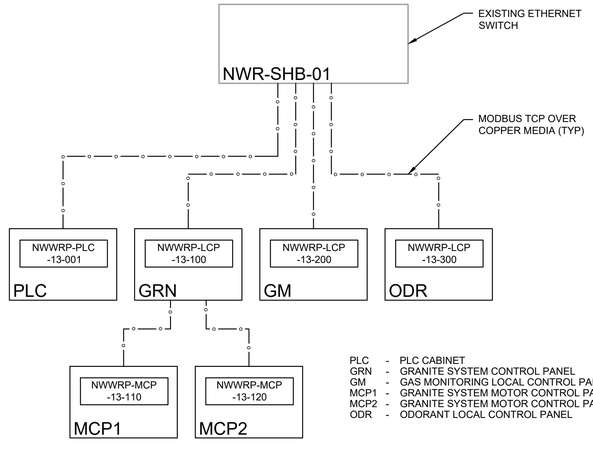
ELECTRONIC HORN

W — STROBE LIGHT
A - AMBER
W - WHITE
R - RED
B - BLUE

INTERCONNECTING LINES WITH DOT INDICATE ROUTING OF THE SAME SIGNAL.

INTERCONNECTING LINES WITHOUT DOT INDICATE ROUTING OF MORE THAN ONE SIGNAL

NETWORK DIAGRAM



PLC - PLC CABINET
GRN - GRANITE SYSTEM CONTROL PANEL
GM - GAS MONITORING LOCAL CONTROL PANEL
MCP1 - GRANITE SYSTEM MOTOR CONTROL PANEL 1
MCP2 - GRANITE SYSTEM MOTOR CONTROL PANEL 2
ODR - ODORANT LOCAL CONTROL PANEL

GENERAL NOTES

1. COORDINATE WORK WITH OTHER DRAWINGS AND DISCIPLINES.
2. THE SYMBOLS SHOWN ON THIS SHEET ARE STANDARD DESIGNATIONS. NOT ALL SYMBOLS ARE APPLICABLE TO THE INCLUDED DIAGRAMS AND INSTRUMENT TAGGING SYSTEM.
3. NOT ALL PIPING, FITTINGS, AND TANK DETAILS ARE SHOWN. REFER TO PROCESS DRAWINGS FOR ACTUAL DETAILS.
4. INSTRUMENT IDENTIFICATION AND LOOP NUMBERS APPEAR WITH INSTRUMENT SYMBOL.
5. TAG NUMBER DOES NOT CHANGE IF SIGNAL IS BROUGHT TO ANOTHER CONTRACT AREA.
6. FINAL ALPHA CHARACTER IN TAG (E.G. FI-101A) INDICATES DUPLICATE DEVICE EXISTS. FI-101B MAY BE IN A A PANEL.

LINE TYPES

- SOFTWARE LINK, SYSTEM FUNCTION CONNECTION OR COMMUNICATION LINK
- ETHERNET COMMUNICATION
- MAIN PROCESS LINE
- AUXILIARY SYSTEMS
- ELECTRIC (ELECTRONIC) SIGNAL
- PNEUMATIC SIGNAL
- CAPILLARY LINE
- HYDRAULIC SIGNAL
- SONIC SIGNAL
- HEAT TRACED AND INSULATED
- TELEPHONE LINK
- FUTURE
- EXISTING
- LIMITS OF VENDOR SUPPLY
- AREA LIMIT

DRAWING CONTINUATION LEGEND

PROCESS LINES (ON/OFF PAGE):

PROCESS AREA — CONN — DRAWING I-XXX

PROCESS LINE
NOT WITHIN THE BOUNDARY OF THIS SET OF DRAWINGS

PROCESS MEDIUM — PROCESS EQUIPMENT

PROCESS LINE
NOT WITHIN THE BOUNDARY OF THIS SET OF DRAWINGS

CONN: CONNECTION NUMBER

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Professional Engineer — CERTIFICATE NO. 30027 — JEFFREY A SOKOL — Date Signed 12-22-22

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

P&ID
SYMBOLS AND LEGEND

DRAWING: I-1

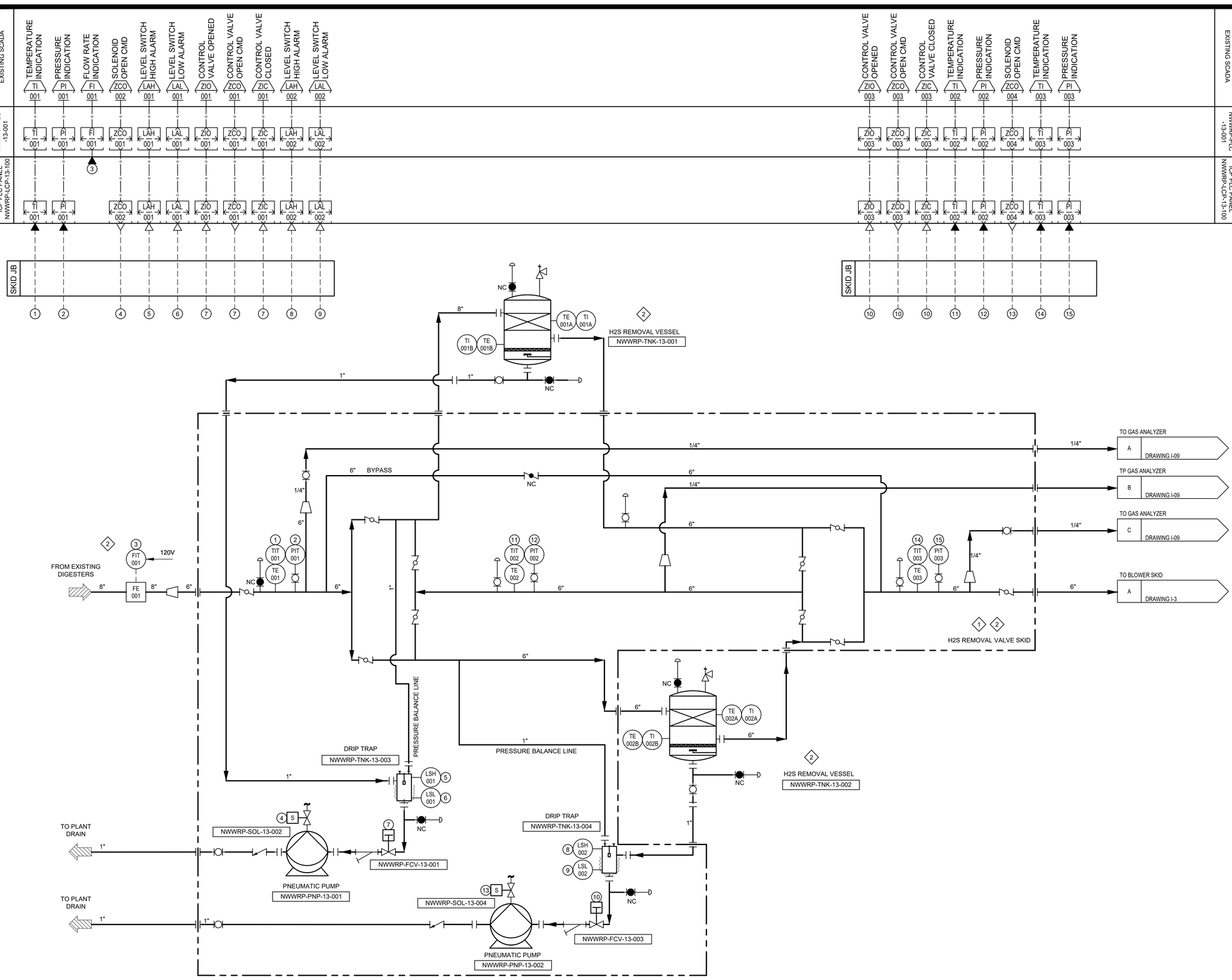
DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B. BUBELA

340 W.O. _____
PROJ. NO. CP0870-001

SHEET 23 OF 49

CATALOG NUMBER: A-251670

DATE SAVED: 12/12/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\INS\MESA P&IDS\MESA P&IDS 12 09 22.DWG



DATE SAVED: 12/12/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\INS\MESA P&IDS 12 09 22.DWG

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

KEY NOTES

1. ABBREVIATED FIELD INSTRUMENT TAG ID USED. ALL FIELD INSTRUMENT TAGS ON THIS SHEET HAVE THE FOLLOWING TAG "NWWRP-XXX-13-###"; WHERE "XXX" IS THE DEVICE CODE AND "###" IS THE DEVICE NUMBER.
2. SUPPLIED BY GRANITE SYSTEM VENDOR; INSTALLED BY CONTRACTOR.

GENERAL NOTES:

1. INFORMATION WITHIN MANUFACTURER SCOPE OF SUPPLY IS SHOWN FOR INFORMATION ONLY BASED ON THE LATEST COORDINATION WITH MANUFACTURER DURING DESIGN. MANUFACTURER IS RESPONSIBLE FOR PROVIDING COMPLETE PACKAGED SYSTEM MEETING THE SPECIFIED REQUIREMENTS. FINAL PACKAGED SYSTEM P&ID'S SHALL BE PROVIDED DURING CONSTRUCTION SUBMITTAL REVIEW PROCESS, AND SHALL MEET THE CONTRACT REQUIREMENTS FOR TAGGING AND IDENTIFICATION.

ARCADIS

30027 JEFFREY A SOKOL — Registered Professional Engineer — State of Arizona

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

P&ID - H2S VALVE SKID AND VESSELS

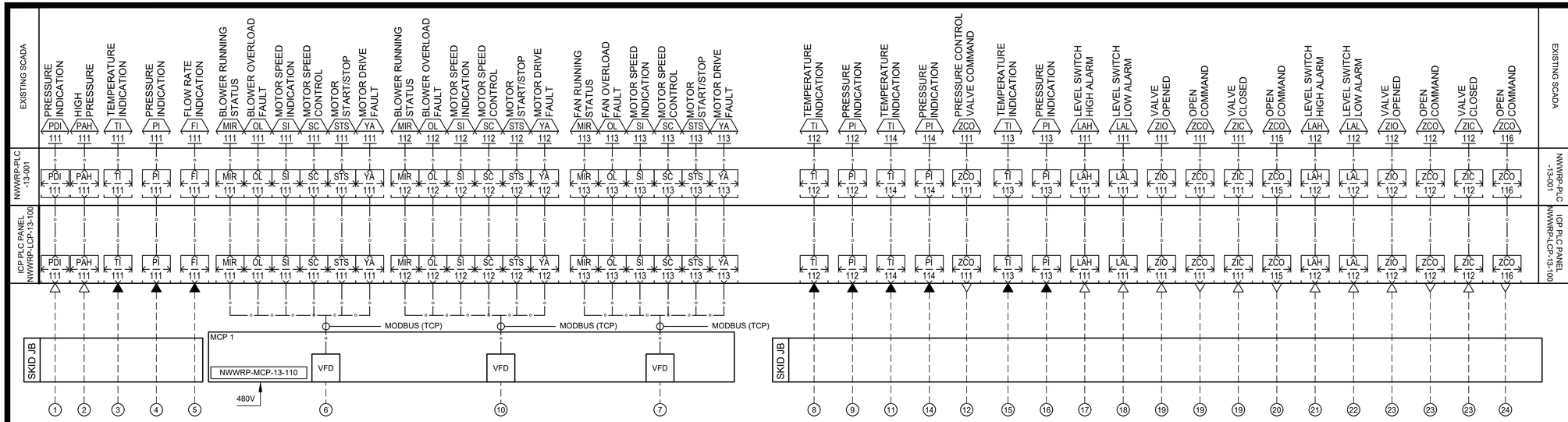
DRAWING I-2

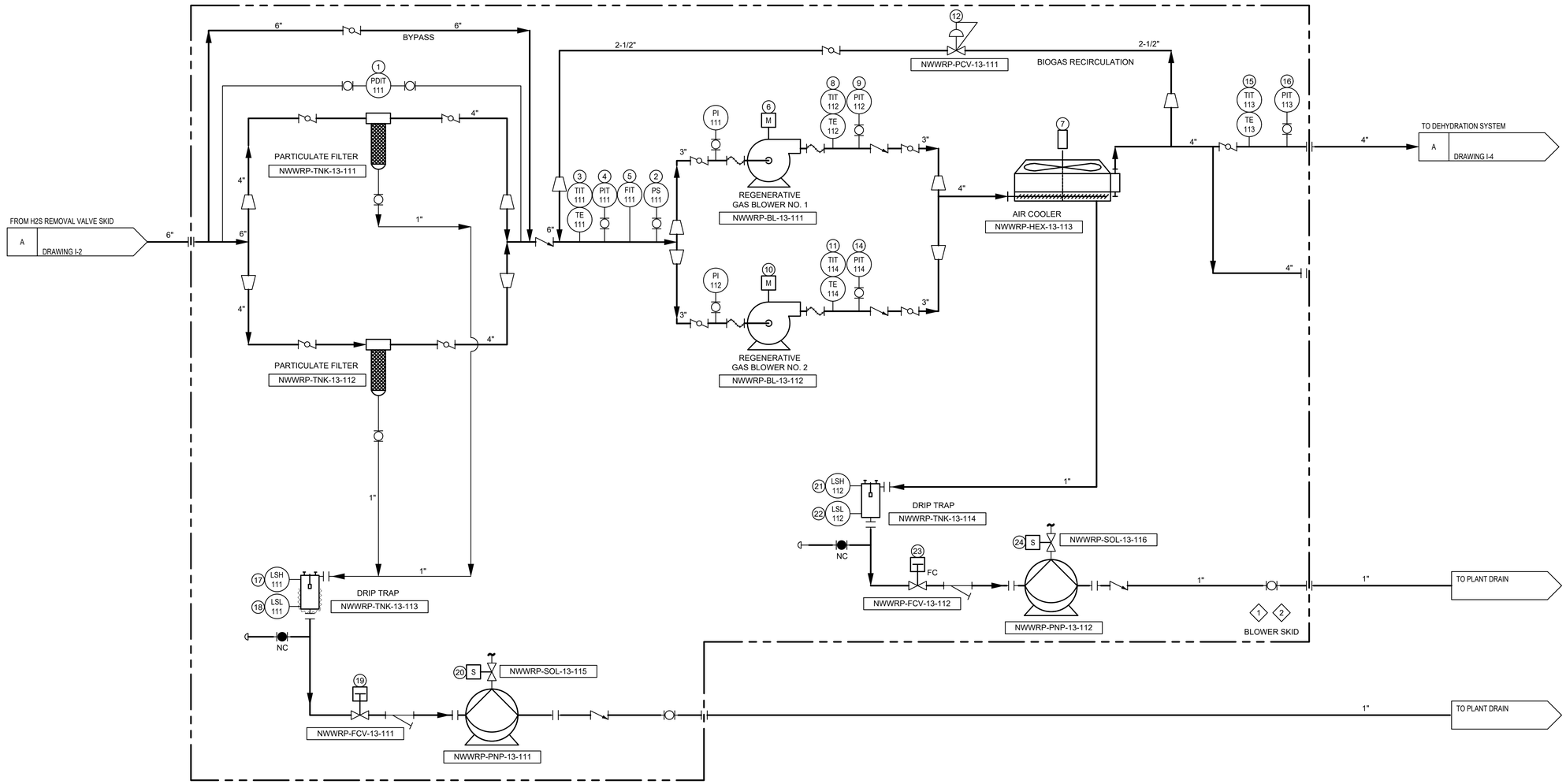
DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B. BUBELA

340 W.O. ____
PROJ. NO. CP0870-001

SHEET 24 OF 49

CATALOG NUMBER: A-251671





DATE SAVED: 12/12/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS--30046397.0000--FLARE TO FUEL\PROJECT FILES\0_WIP\INS\MESA P&IDS 12 09 22.DWG

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

KEY NOTES

1. ABBREVIATED FIELD INSTRUMENT TAG ID USED. ALL FIELD INSTRUMENT TAGS ON THIS SHEET HAVE THE FOLLOWING TAG "NWWRP-XXX-13-###"; WHERE "XXX" IS THE DEVICE CODE AND "###" IS THE DEVICE NUMBER.
2. SUPPLIED BY GRANITE SYSTEM VENDOR; INSTALLED BY CONTRACTOR.

GENERAL NOTES:

1. INFORMATION WITHIN MANUFACTURER SCOPE OF SUPPLY IS SHOWN FOR INFORMATION ONLY BASED ON THE LATEST COORDINATION WITH MANUFACTURER DURING DESIGN. MANUFACTURER IS RESPONSIBLE FOR PROVIDING COMPLETE PACKAGED SYSTEM MEETING THE SPECIFIED REQUIREMENTS. FINAL PACKAGED SYSTEM P&ID'S SHALL BE PROVIDED DURING CONSTRUCTION SUBMITTAL REVIEW PROCESS, AND SHALL MEET THE CONTRACT REQUIREMENTS FOR TAGGING AND IDENTIFICATION.

ARCADIS

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

P&ID - BLOWER SKID

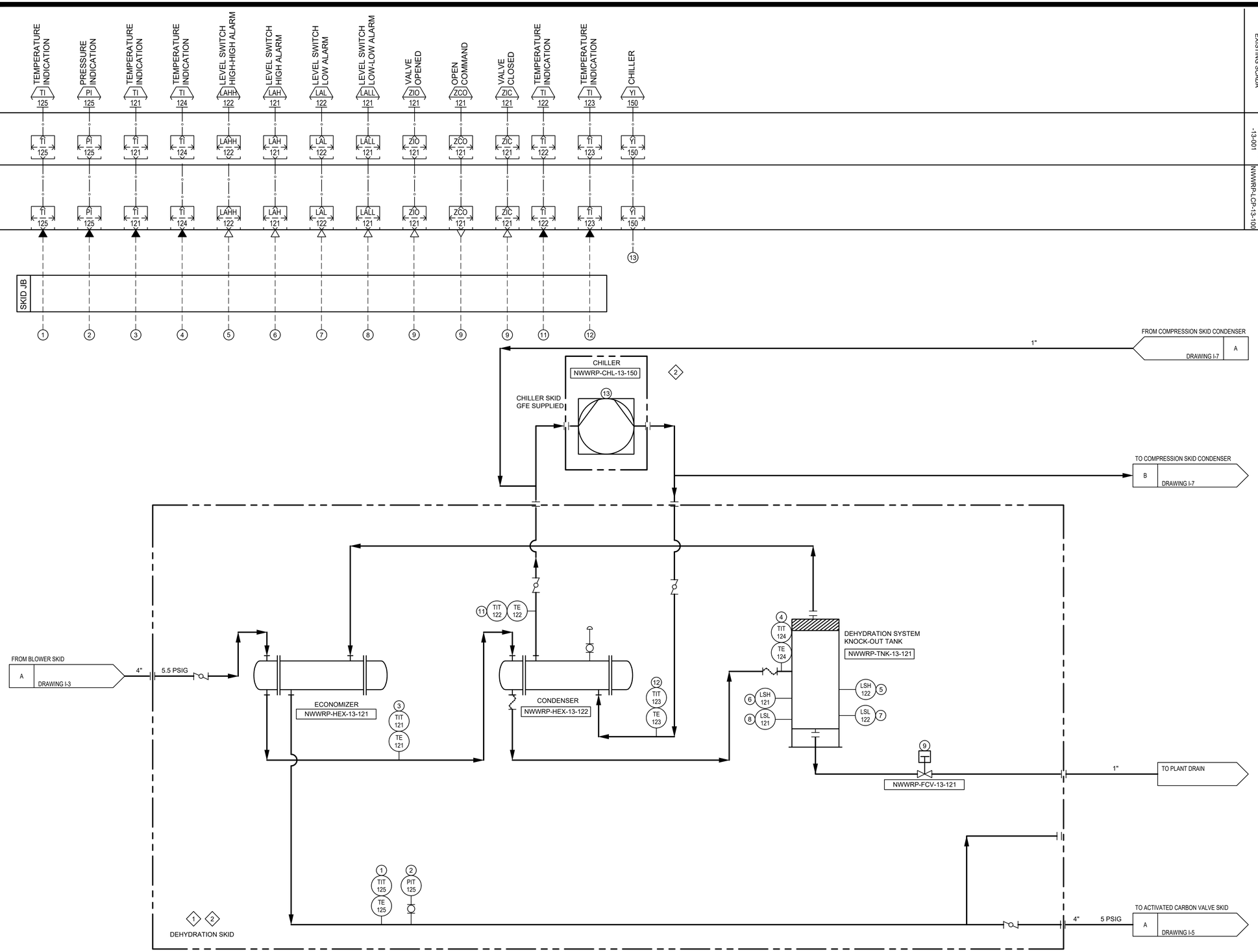
DRAWING I-3

DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B. BUBELA

340 W.O. _____
PROJ. NO. CP0870-001

SHEET 25 OF 49

CATALOG NUMBER: A-251672



DATE SAVED: 12/12/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\INS\MESA P&IDS\MESA P&IDS 12 09 22.DWG

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

KEY NOTES

1. ABBREVIATED FIELD INSTRUMENT TAG ID USED. ALL FIELD INSTRUMENT TAGS ON THIS SHEET HAVE THE FOLLOWING TAG "NWWRP-XXX-13-###"; WHERE "XXX" IS THE DEVICE CODE AND "###" IS THE DEVICE NUMBER.
2. SUPPLIED BY GRANITE SYSTEM VENDOR; INSTALLED BY CONTRACTOR.

GENERAL NOTES:

1. INFORMATION WITHIN MANUFACTURER SCOPE OF SUPPLY IS SHOWN FOR INFORMATION ONLY BASED ON THE LATEST COORDINATION WITH MANUFACTURER DURING DESIGN. MANUFACTURER IS RESPONSIBLE FOR PROVIDING COMPLETE PACKAGED SYSTEM MEETING THE SPECIFIED REQUIREMENTS. FINAL PACKAGED SYSTEM P&ID'S SHALL BE PROVIDED DURING CONSTRUCTION SUBMITTAL REVIEW PROCESS, AND SHALL MEET THE CONTRACT REQUIREMENTS FOR TAGGING AND IDENTIFICATION.

ARCADIS

30027 JEFFREY A SOKOL CERTIFICATE NO. Date Signed 12-12-22

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

P&ID - DEHYDRATION SKID AND CHILLER

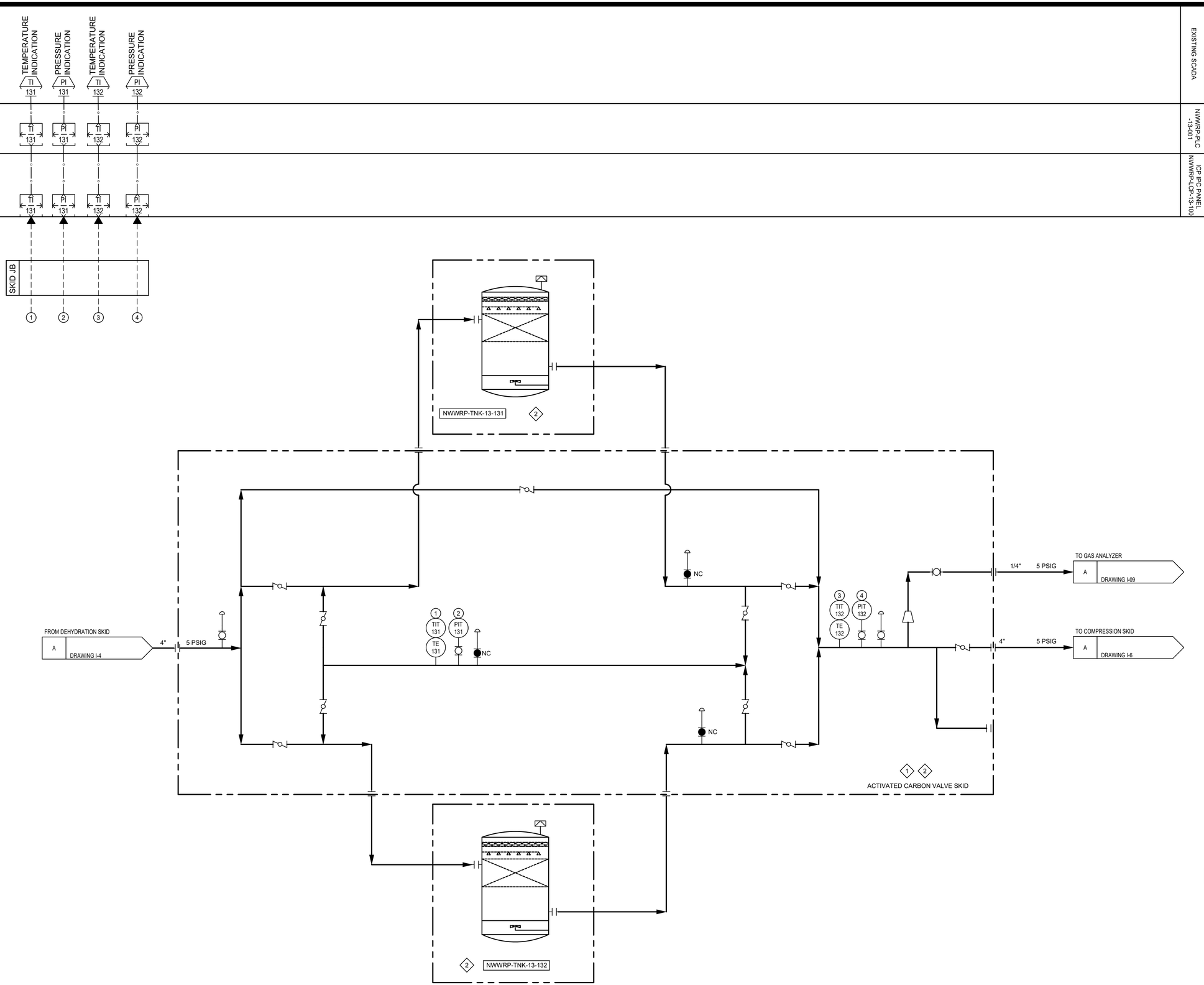
DRAWING I-4

DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B. BUBELA

340 W.O. ____
PROJ. NO. CP0870-001

SHEET 26 OF 49

CATALOG NUMBER: A-251673



mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

KEY NOTES

1. ABBREVIATED FIELD INSTRUMENT TAG ID USED. ALL FIELD INSTRUMENT TAGS ON THIS SHEET HAVE THE FOLLOWING TAG "NWWRP-XXX-13-###"; WHERE "XXX" IS THE DEVICE CODE AND "###" IS THE DEVICE NUMBER.
2. SUPPLIED BY GRANITE SYSTEM VENDOR; INSTALLED BY CONTRACTOR.

GENERAL NOTES:

1. INFORMATION WITHIN MANUFACTURER SCOPE OF SUPPLY IS SHOWN FOR INFORMATION ONLY BASED ON THE LATEST COORDINATION WITH MANUFACTURER DURING DESIGN. MANUFACTURER IS RESPONSIBLE FOR PROVIDING COMPLETE PACKAGED SYSTEM MEETING THE SPECIFIED REQUIREMENTS. FINAL PACKAGED SYSTEM P&ID'S SHALL BE PROVIDED DURING CONSTRUCTION SUBMITTAL REVIEW PROCESS, AND SHALL MEET THE CONTRACT REQUIREMENTS FOR TAGGING AND IDENTIFICATION.

ARCADIS

Jeffrey A. Sokol — Certificate No. 30027 — Date Signed 12-12-22

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

P&ID - ACTIVATED CARBON VALVE SKID AND ACTIVATED CARBON VESSELS

DRAWING: I-5

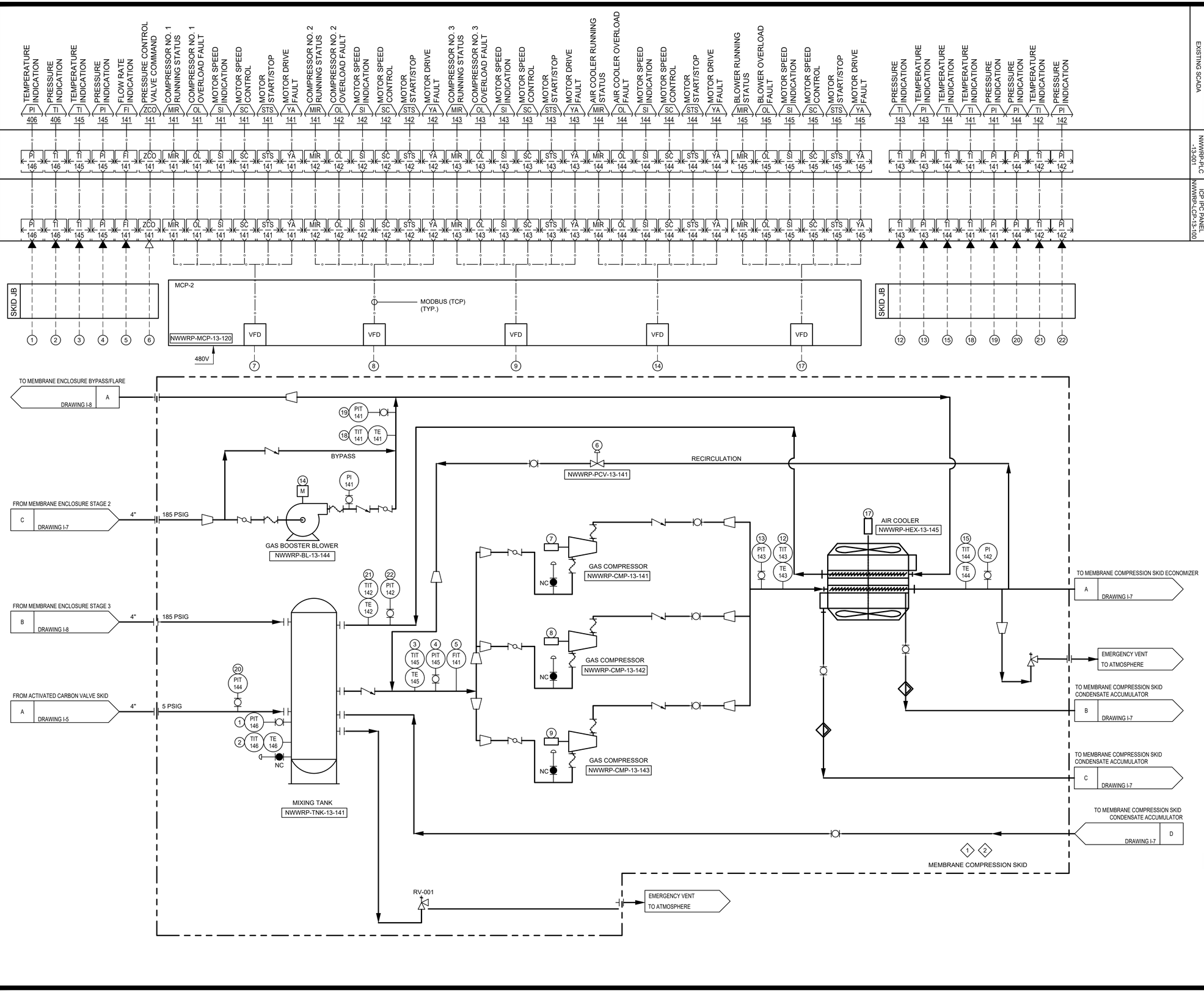
DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B. BUBELA

340 W.O. ____
PROJ. NO. CP0870-001

SHEET 27 OF 49

CATALOG NUMBER: A-251674

DATE SAVED: 12/12/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\INS\MESA P&IDS\MESA P&IDS 12 09 22.DWG



DATE SAVED: 12/12/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\INS\MESA P&IDS\MESA P&IDS 12 09 22.DWG

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

KEY NOTES

1. ABBREVIATED FIELD INSTRUMENT TAG ID USED. ALL FIELD INSTRUMENT TAGS ON THIS SHEET HAVE THE FOLLOWING TAG "NWWRP-XXX-13-###"; WHERE "XXX" IS THE DEVICE CODE AND "###" IS THE DEVICE NUMBER.
2. SUPPLIED BY GRANITE SYSTEM VENDOR; INSTALLED BY CONTRACTOR.

GENERAL NOTES:

1. INFORMATION WITHIN MANUFACTURER SCOPE OF SUPPLY IS SHOWN FOR INFORMATION ONLY BASED ON THE LATEST COORDINATION WITH MANUFACTURER DURING DESIGN. MANUFACTURER IS RESPONSIBLE FOR PROVIDING COMPLETE PACKAGED SYSTEM MEETING THE SPECIFIED REQUIREMENTS. FINAL PACKAGED SYSTEM P&ID'S SHALL BE PROVIDED DURING CONSTRUCTION SUBMITTAL REVIEW PROCESS, AND SHALL MEET THE CONTRACT REQUIREMENTS FOR TAGGING AND IDENTIFICATION.

ARCADIS

30027 JEFFREY A SOKOL CERTIFICATE NO. Date Signed 12-12-22 Arizona Board of Technical Registration

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

P&ID - MEMBRANE COMPRESSION SKID SHEET 1 OF 2

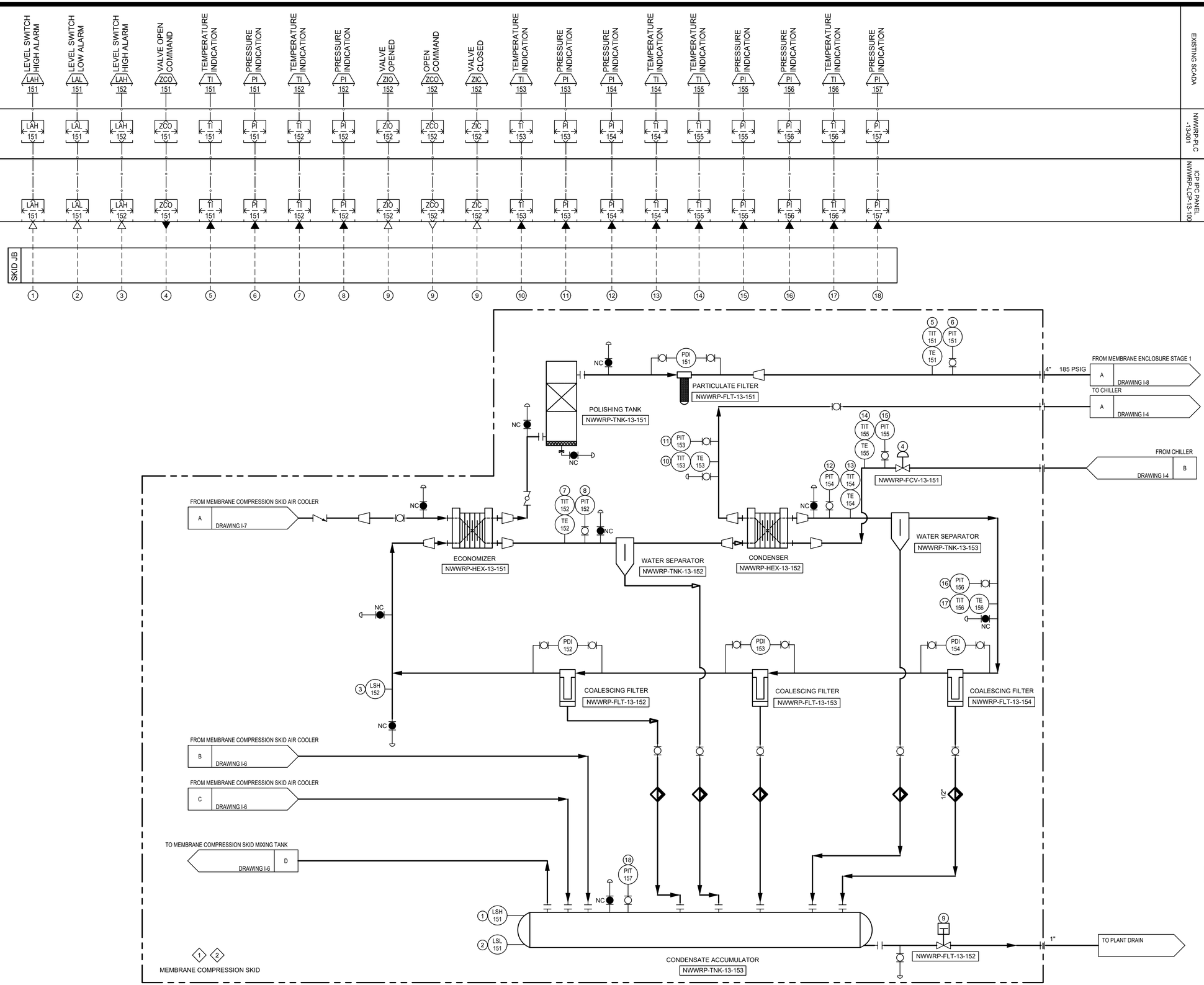
DRAWING I-6

DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B. BUBELA

340 W.O. ____
PROJ. NO. CP0870-001

SHEET 28 OF 49

CATALOG NUMBER: A-251675



mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

KEY NOTES

1. ABBREVIATED FIELD INSTRUMENT TAG ID USED. ALL FIELD INSTRUMENT TAGS ON THIS SHEET HAVE THE FOLLOWING TAG "NWWRP-XXX-13-###"; WHERE "XXX" IS THE DEVICE CODE AND "###" IS THE DEVICE NUMBER.
2. SUPPLIED BY GRANITE SYSTEM VENDOR; INSTALLED BY CONTRACTOR.

GENERAL NOTES:

1. INFORMATION WITHIN MANUFACTURER SCOPE OF SUPPLY IS SHOWN FOR INFORMATION ONLY BASED ON THE LATEST COORDINATION WITH MANUFACTURER DURING DESIGN. MANUFACTURER IS RESPONSIBLE FOR PROVIDING COMPLETE PACKAGED SYSTEM MEETING THE SPECIFIED REQUIREMENTS. FINAL PACKAGED SYSTEM P&ID'S SHALL BE PROVIDED DURING CONSTRUCTION SUBMITTAL REVIEW PROCESS, AND SHALL MEET THE CONTRACT REQUIREMENTS FOR TAGGING AND IDENTIFICATION.

ARCADIS

Arizona Licensed Professional Engineer CERTIFICATE NO. 30027 JEFFREY A SOKOL Date Signed 12-12-22

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

P&ID - MEMBRANE COMPRESSION SKID SHEET 2 OF 2

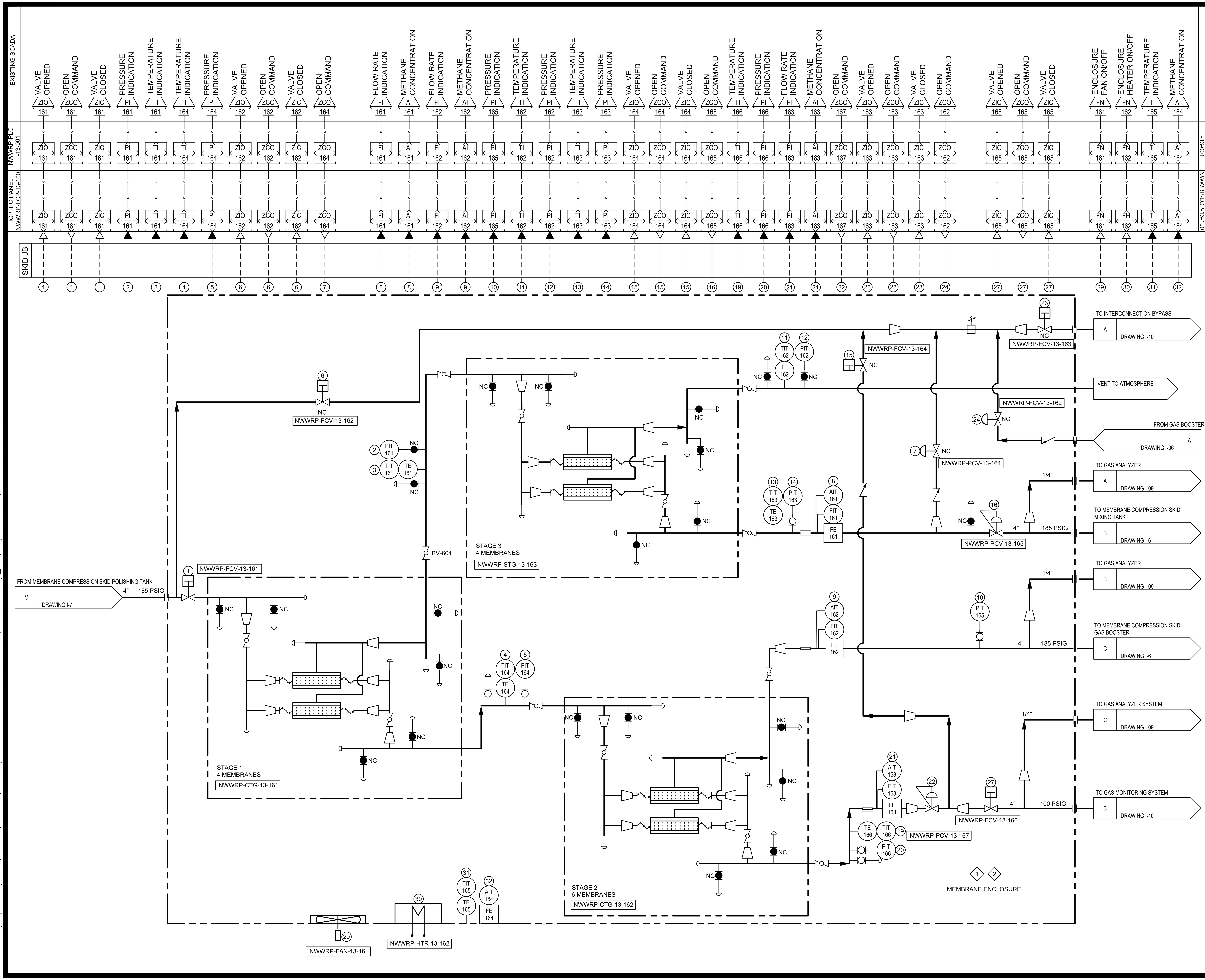
DRAWING I-7

DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B. BUBELA

340 W.O. ____
PROJ. NO. CP0870-001

SHEET 29 OF 49

CATALOG NUMBER: A-251676



BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD ELEVATION= 1201.05 (CITY OF MESA DATUM) (SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

KEY NOTES

1. ABBREVIATED FIELD INSTRUMENT TAG ID USED. ALL FIELD INSTRUMENT TAGS ON THIS SHEET HAVE THE FOLLOWING TAG "NWWRP-XXX-13-###"; WHERE "XXX" IS THE DEVICE CODE AND "###" IS THE DEVICE NUMBER.
2. SUPPLIED BY GRANITE SYSTEM VENDOR; INSTALLED BY CONTRACTOR.

GENERAL NOTES:

1. INFORMATION WITHIN MANUFACTURER SCOPE OF SUPPLY IS SHOWN FOR INFORMATION ONLY BASED ON THE LATEST COORDINATION WITH MANUFACTURER DURING DESIGN. MANUFACTURER IS RESPONSIBLE FOR PROVIDING COMPLETE PACKAGED SYSTEM MEETING THE SPECIFIED REQUIREMENTS. FINAL PACKAGED SYSTEM P&ID'S SHALL BE PROVIDED DURING CONSTRUCTION SUBMITTAL REVIEW PROCESS, AND SHALL MEET THE CONTRACT REQUIREMENTS FOR TAGGING AND IDENTIFICATION.

Registered Professional Engineer (Electrical) CERTIFICATE NO. 30027 JEFFREY A SOKOL Date Signed 12 12 2022 ARIZONA, U.S.A.

CITY OF MESA ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

P&ID - MEMBRANE ENCLOSURE

DRAWING I-8

DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B. BUBELA

340 W.O. ____
PROJ. NO. CP0870-001

SHEET 30 OF 49

CATALOG NUMBER: A-251677

EXISTING SCADA

NWWRP-PLC -13-001

ICP IPC PANEL NWWRP-LCP-13-100

ANALYZER FAULT
AN 170

AN 170

AN 170

1

ETHERNET

FROM H2S REMOVAL VALVE SKID
A
DRAWING I-2

FROM H2S REMOVAL VALVE SKID
B
409379-PID-1201

FROM H2S REMOVAL VALVE SKID
C
DRAWING I-2

FROM ACTIVATED CARBON SKID
A
DRAWING I-5

FROM MEMBRANE PRODUCT GAS
C
DRAWING I-8

FROM MEMBRANE ENCLOSURE STAGE 2 PRODUCT GAS
B
DRAWING I-8

FROM MEMBRANE ENCLOSURE STAGE 3 VENT TO ATMOSPHERE
A
DRAWING I-8

GAS ANALYZER INLINE PRE-TREATMENT

GAS ANALYZER INLINE PRE-TREATMENT

GAS ANALYZER INLINE PRE-TREATMENT

GAS ANALYZER INLINE PRE-TREATMENT

GAS ANALYZER INLINE PRE-TREATMENT

GAS ANALYZER INLINE PRE-TREATMENT

VENT TO ATMOSPHERE

1

GAS ANALYZER

1 2

GAS ANALYZER

EXISTING SCADA

NWWRP-PLC -13-001

ICP IPC PANEL NWWRP-LCP-13-100

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

KEY NOTES

1. ABBREVIATED FIELD INSTRUMENT TAG ID USED. ALL FIELD INSTRUMENT TAGS ON THIS SHEET HAVE THE FOLLOWING TAG "NWWRP-XXX-13-###"; WHERE "XXX" IS THE DEVICE CODE AND "###" IS THE DEVICE NUMBER.

2. SUPPLIED BY GRANITE SYSTEM VENDOR; INSTALLED BY CONTRACTOR.

GENERAL NOTES:

1. INFORMATION WITHIN MANUFACTURER SCOPE OF SUPPLY IS SHOWN FOR INFORMATION ONLY BASED ON THE LATEST COORDINATION WITH MANUFACTURER DURING DESIGN. MANUFACTURER IS RESPONSIBLE FOR PROVIDING COMPLETE PACKAGED SYSTEM MEETING THE SPECIFIED REQUIREMENTS. FINAL PACKAGED SYSTEM P&ID'S SHALL BE PROVIDED DURING CONSTRUCTION SUBMITTAL REVIEW PROCESS, AND SHALL MEET THE CONTRACT REQUIREMENTS FOR TAGGING AND IDENTIFICATION.

ARCADIS

Professional Engineer Certificate
30027
JEFFREY A SOKOL
Date Signed 12-12-2022

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

P&ID - GRANITE GAS ANALYZER SYSTEM

DRAWING I-9

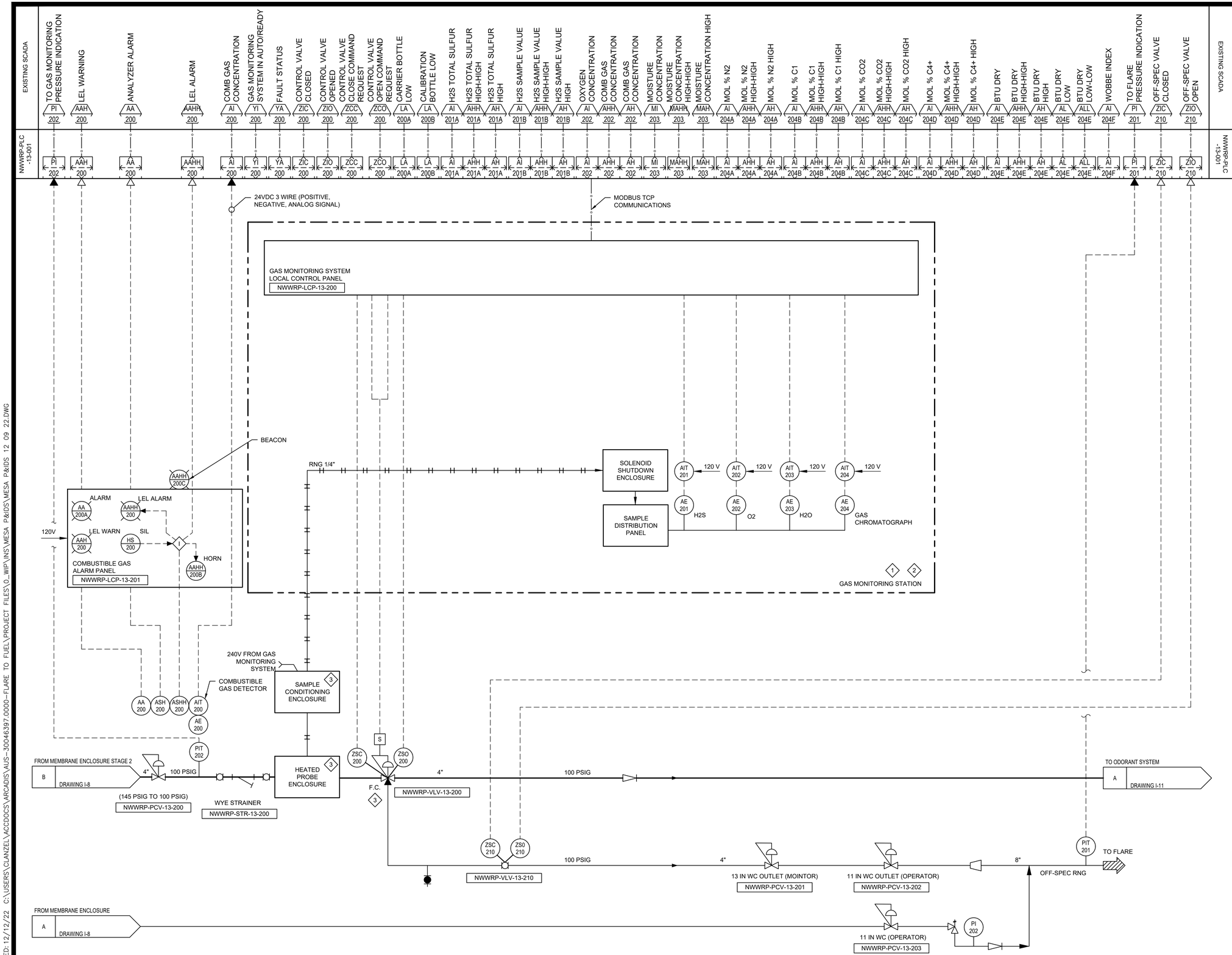
DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B. BUBELA

340 W.O. _____
PROJ. NO. CP0870-001

SHEET 31 OF 49

CATALOG NUMBER: A-251678

DATE SAVED: 12/12/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\INS\MESA P&IDS\MESA P&IDS 12 09 22.DWG



DATE SAVED: 12/12/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\INS\MESA P&IDS 12 09 22.DWG

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

KEY NOTES

1. ABBREVIATED FIELD INSTRUMENT TAG ID USED. ALL FIELD INSTRUMENT TAGS ON THIS SHEET HAVE THE FOLLOWING TAG "NWWRP-XXX-13-###"; WHERE "XXX" IS THE DEVICE CODE AND "###" IS THE DEVICE NUMBER.
2. SUPPLIED BY GAS MONITORING SYSTEM VENDOR; INSTALLED BY GAS MONITORING SYSTEM VENDOR. GAS MONITORING SYSTEM CONTROL EQUIPMENT AND CONFIGURATION AS SHOWN IS BASED ON VALTRONICS SYSTEM. OR EQUAL VENDORS MAY HAVE DIFFERENT CONFIGURATIONS.
3. SUPPLIED BY GAS MONITORING SYSTEM VENDOR; INSTALLED BY CONTRACTOR. GAS MONITORING SYSTEM CONTROL EQUIPMENT AND CONFIGURATION AS SHOWN IS BASED ON VALTRONICS SYSTEM. OR EQUAL VENDORS MAY HAVE DIFFERENT CONFIGURATIONS.

GENERAL NOTES:

1. INFORMATION WITHIN MANUFACTURER SCOPE OF SUPPLY IS SHOWN FOR INFORMATION ONLY BASED ON THE LATEST COORDINATION WITH MANUFACTURER DURING DESIGN. MANUFACTURER IS RESPONSIBLE FOR PROVIDING COMPLETE PACKAGED SYSTEM MEETING THE SPECIFIED REQUIREMENTS. FINAL PACKAGED SYSTEM P&ID'S SHALL BE PROVIDED DURING CONSTRUCTION SUBMITTAL REVIEW PROCESS, AND SHALL MEET THE CONTRACT REQUIREMENTS FOR TAGGING AND IDENTIFICATION.

ARCADIS

30027 JEFFREY A SOKOL CERTIFICATE NO. Date Signed 12-12-22 Arizona Board of Technical Registration

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

P&ID - GAS MONITORING SYSTEM

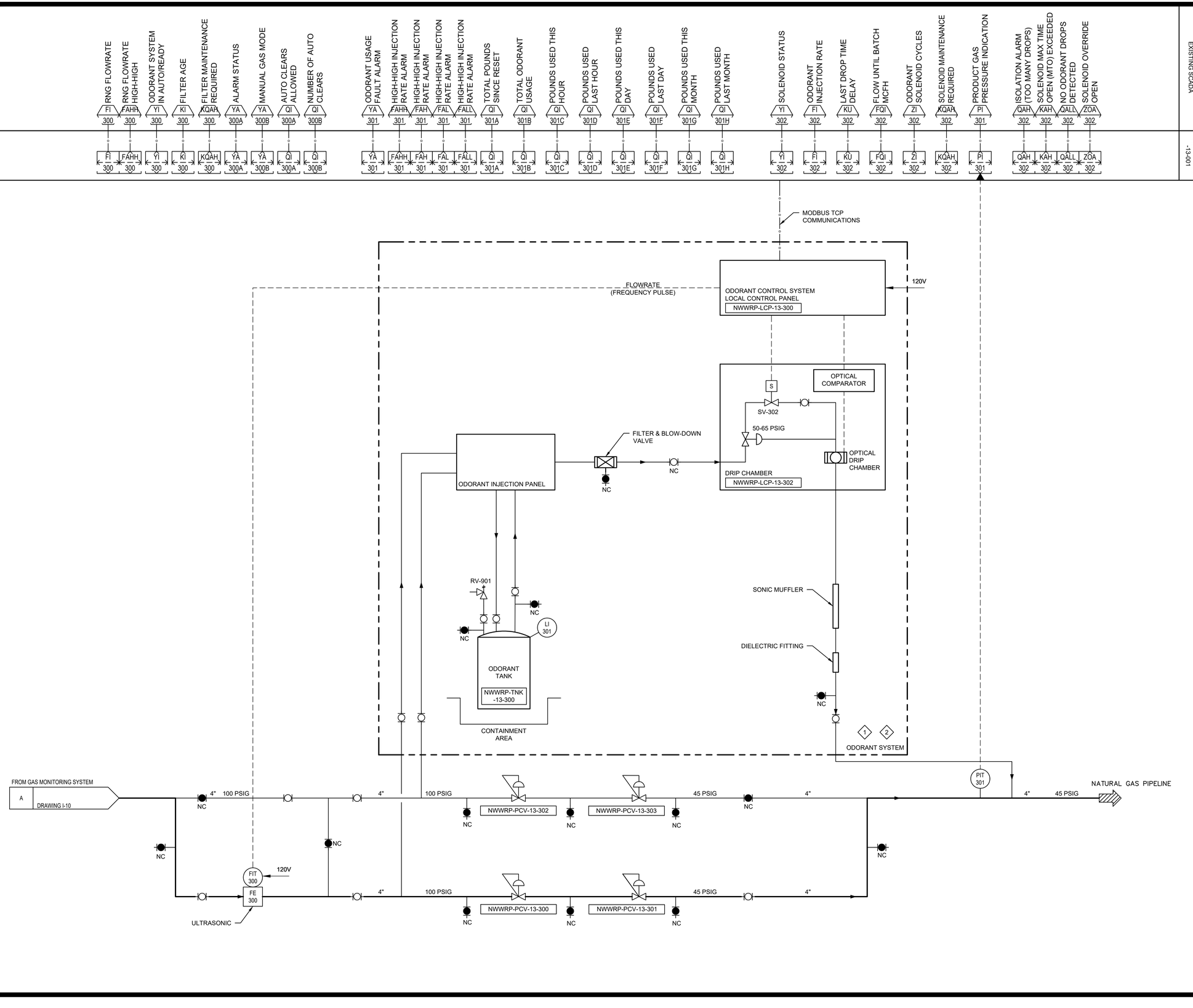
DRAWING: I-10

DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B. BUBELA

340 W.O. ____
PROJ. NO. CP0870-001

SHEET 32 OF 49

CATALOG NUMBER: A-251679



BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

KEY NOTES

1. ABBREVIATED FIELD INSTRUMENT TAG ID USED. ALL FIELD INSTRUMENT TAGS ON THIS SHEET HAVE THE FOLLOWING TAG "NWWRP-XXX-13-###"; WHERE "XXX" IS THE DEVICE CODE AND "###" IS THE DEVICE NUMBER.
2. SUPPLIED BY ODORANT SYSTEM VENDOR; INSTALLED BY ODORANT SYSTEM VENDOR. ODORANT SYSTEM CONTROL EQUIPMENT AND CONFIGURATION AS SHOWN IS BASED ON GPL SYSTEM. OR EQUAL VENDORS MAY HAVE DIFFERENT CONFIGURATIONS.

GENERAL NOTES:

1. INFORMATION WITHIN MANUFACTURER SCOPE OF SUPPLY IS SHOWN FOR INFORMATION ONLY BASED ON THE LATEST COORDINATION WITH MANUFACTURER DURING DESIGN. MANUFACTURER IS RESPONSIBLE FOR PROVIDING COMPLETE PACKAGED SYSTEM MEETING THE SPECIFIED REQUIREMENTS. FINAL PACKAGED SYSTEM P&ID'S SHALL BE PROVIDED DURING CONSTRUCTION SUBMITTAL REVIEW PROCESS, AND SHALL MEET THE CONTRACT REQUIREMENTS FOR TAGGING AND IDENTIFICATION.

ARCADIS

30027 JEFFREY A SOKOL — Certificate No. — Date Signed 12-12-22

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

P&ID - ODORANT SYSTEM

DRAWING: I-11

DRAWN BY: S. ALLEN
ENGINEER: E. AUERBACH
APPROVED BY: B. BUBELA

340 W.O.
PROJ. NO: CP0870-001

SHEET 33 OF 49

CATALOG NUMBER: A-251680

DATE SAVED: 12/12/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS--30046397.0000--FLARE TO FUEL\PROJECT FILES\0_WIP\INS\MESA P&IDS\MESA P&IDS 12 09 22.DWG

CONDUIT ALPHA IDENTIFIERS

AA	2-#14, 1-#14 GND, 3/4"C
AB	3-#14, 1-#14 GND, 3/4"C
AC	4-#14, 1-#14 GND, 3/4"C
AD	5-#14, 1-#14 GND, 3/4"C
AE	6-#14, 1-#14 GND, 3/4"C
AF	7-#14, 1-#14 GND, 3/4"C
AG	8-#14, 1-#14 GND, 3/4"C
AH	9-#14, 1-#14 GND, 3/4"C
AJ	10-#14, 1-#14 GND, 3/4"C
AK	12-#14, 1-#14 GND, 3/4"C
AL	14-#14, 1-#14 GND, 1"C
AM	16-#14, 1-#14 GND, 1"C
AN	18-#14, 1-#14 GND, 1"C
AP	20-#14, 1-#14 GND, 1"C
AQ	24-#14, 1-#14 GND, 1-1/2"C
AR	28-#14, 1-#14 GND, 1-1/2"C
AS	32-#14, 1-#14 GND, 1-1/2"C
AT	34-#14, 1-#14 GND, 1-1/2"C
AU	38-#14, 1-#14 GND, 1-1/2"C
AV	42-#14, 1-#14 GND, 1-1/2"C
AW	46-#14, 1-#14 GND, 1-1/2"C
BA	2-#12, 1-#12 GND, 3/4"C
BB	3-#12, 1-#12 GND, 3/4"C
BC	4-#12, 1-#12 GND, 3/4"C
BD	5-#12, 1-#12 GND, 3/4"C
BE	6-#12, 1-#12 GND, 3/4"C
BF	7-#12, 1-#12 GND, 3/4"C
BG	8-#12, 1-#12 GND, 3/4"C
BH	9-#12, 1-#12 GND, 1"C
BJ	10-#12, 1-#12 GND, 1"C
BK	12-#12, 1-#12 GND, 1"C
BL	15-#12, 1-#12 GND, 1-1/2"C
BM	18-#12, 1-#12 GND, 1-1/2"C
BN	21-#12, 1-#12 GND, 1-1/2"C

CA	2-#10, 1-#10 GND, 3/4"C
CB	3-#10, 1-#10 GND, 3/4"C
CC	4-#10, 1-#10 GND, 3/4"C
CD	5-#10, 1-#10 GND, 3/4"C
CE	6-#10, 1-#10 GND, 3/4"C
CF	7-#10, 1-#10 GND, 3/4"C
CG	8-#10, 1-#10 GND, 1"C
CH	9-#10, 1-#10 GND, 1"C
CJ	10-#10, 1-#10 GND, 1"C
DA	2-#8, 1-#8 GND, 3/4"C
DB	3-#8, 1-#8 GND, 3/4"C
DC	4-#8, 1-#8 GND, 1"C
EA	2-#6, 1-#6 GND, 3/4"C
EB	3-#6, 1-#6 GND, 3/4"C
EC	4-#6, 1-#6 GND, 1"C

FA	1-#16 STP, 3/4"C
FB	2-#16 STP, 3/4"C
FC	3-#16 STP, 1"C
FD	4-#16 STP, 1-1/2"C
FE	5-#16 STP, 1-1/2"C
FF	6-#16 STP, 1-1/2"C
FG	7-#16 STP, 1-1/2"C
FH	8-#16 STP, 2"C
FJ	9-#16 STP, 2"C
FK	10-#16 STP, 2"C
GA	1-#16 STT, 3/4"C
GB	2-#16 STT, 1"C
GC	3-#16 STT, 1"C
GD	4-#16 STT, 1-1/2"C
GE	5-#16 STT, 1-1/2"C
GF	6-#16 STT, 1-1/2"C
GG	7-#16 STT, 1-1/2"C
GH	8-#16 STT, 2"C
GJ	9-#16 STT, 2"C
GK	10-#16 STT, 2"C
HA	MANF CABLE(S), 3/4"C
HB	MANF CABLE(S), 1"C
HC	MANF CABLE(S), 1-1/2"C
HD	MANF CABLE(S), 2"C
JA	1-PLC REMOTE I/O CABLE, 1"C
JB	2-PLC REMOTE I/0 CABLES, 1"C
KA	3/4"C WITH PULL STRING
KB	1"C WITH PULL STRING
KC	1-1/2" C WITH PULL STRING
KD	2" C WITH PULL STRING
LA	1-LONWORKS CABLE, 3/4"C
LB	2-LONWORKS CABLES, 3/4"C
NA	1-ETHERNET SHIELDED CABLE, 3/4"C
NB	2-ETHERNET SHIELDED CABLES, 3/4"C
NC	3-ETHERNET SHIELDED CABLES, 3/4"C
ND	4-ETHERNET SHIELDED CABLES, 1"C

ONE LINE DIAGRAM SYMBOLS

- CAPACITOR
- CURRENT TRANSFORMER
- GROUND CONNECTION
- FUSE-VOLTAGE AS REQUIRED TYPE AND RATING AS SHOWN
- LIGHTNING ARRESTOR WITH GROUND
- POWER TRANSFORMER WITH GROUNDED SECONDARY
- STARTER CONTROL TRANSFORMER, 120V SECONDARY WITH PRIMARY FUSES, AND SECONDARY MINIMUM RATING 100VA
- 20/100, 20/100 THERMAL-MAGNETIC MOLDED CASE CKT BREAKER; TRIP RATING ABOVE, FRAME RATING BELOW; TYPICAL FOR OTHER TYPES OF BREAKERS. BREAKER TO BE 3 POLE UON AS 2P OR 1P. DRAWOUT TYPE WHEN INDICATED
- A MCP / FVNR 1 COMBINATION MOTOR STARTER WITH MOTOR CIRCUIT PROTECTOR AND THERMAL OVERLOAD PROTECTION. NUMBER INDICATES NEMA STARTER SIZE
  FVNR = FULL VOLTAGE, NON-REVERSING
  SSRV = SOLID STATE, REDUCED VOLTAGE
  FVR = FULL VOLTAGE REVERSING
  2S = TWO SPEED
  AT = AUTO TRANSFORMER
- COMBINATION MOTOR STARTER WITH MOTOR CIRCUIT PROTECTOR OR CIRCUIT BREAKERS AND THERMAL PROTECTOR
- SPD SURGE PROTECTION DEVICE
- AF / FR FUSED DISCONNECT SWITCH
  AF = FRAME RATING
  FR = FUSE RATING
  FUSES SHALL BE PROVIDED WITH REJECTION TYPE FUSE HOLDERS
- METER ELECTRONIC POWER QUALITY METER
- EXTERNAL TERMINATION POINT
- MOTOR HEATER

PLAN SYMBOLS

- XX / NL * TYPICAL LED LUMINAIRE
  SEE SCHEDULE FOR SPECIFICS
  XX- FIXTURE TYPE
  NL= NIGHT LIGHT (UNSWITCHED)
  EM = EMERGENCY BATTERY PACK
  * INDICATES CONTROLING SWITCH DESIGNATION
- PC PHOTOCELL
- OS OCCUPANCY SENSOR
- OPS OCCUPANCY/PHOTOCELL SENSOR
- S SINGLE POLE SWITCH, 20A UON
- S^3_a THREE WAY SWITCH
  LOWER CASE DENOTES SWITCHING
- S^4_a FOUR WAY SWITCH
  LOWER CASE DENOTES SWITCHING
- Φ^*_{XU} DUPLEX CONVENIENCE RECEPTACLE, 20A, 120V, 2P, 3W UNLESS OTHERWISE NOTED
- Φ^*_{XU} SINGLE CONVENIENCE RECEPTACLE, 2 POLE, 3 WIRE; 120 VAC. 20 AMP UNLESS OTHERWISE NOTED
- COMMUNICATION FACEPLATE AND BOX
- MOV ## MOTOR OPERATED VALVE OR GATE
  XXXX INDICATES LOOP NUMBER
- X F X CB X DISCONNECT SWITCH;
  "F" INDICATES FUSED DISCONNECT SWITCH "CB" INDICATES ENCLOSED CIRCUIT BREAKER, "X" INDICATES AMPERES
- J JUNCTION BOX, CONDULET, FITTING AS REQUIRED BY NEC, UNLESS NOTED OTHERWISE
- J FLEXIBLE CONDUIT CONNECTION BETWEEN JUNCTION BOX AND DEVICE
- CHH COMMUNICATIONS HANDHOLE
- CMH COMMUNICATIONS MANHOLE
- EHH ELECTRICAL POWER AND CONTROL HANDHOLE
- EMH ELECTRICAL POWER AND CONTROL MANHOLE
- TP GROUND ROD IN GROUND WELL WITH WELDED CONNECTION. "TP" DENOTES TEST POINT WITH BOLTED CONNECTION
- GROUND ROD WITH WELDED CONNECTION.
- GROUND GRID CABLE CONNECTION, WELDED
- S OR SV SOLENOID VALVE
- CONTROL STATION, QUANTITY/TYPE OF DEVICES PER SPECIFICATIONS

- M MOTOR CONTACTOR
- MTR 5 ELECTRIC MOTOR;
  NUMBER INDICATES HORSEPOWER
- TE TERMINAL ENCLOSURE
- VFD-# VARIABLE FREQUENCY DRIVE
  "#" INDICATES NAME
- MCC-# MOTOR CONTROL CENTER
  "#" INDICATES NAME
- PP-# POWER PANELBOARD
  "#" INDICATES NAME
- LP-# LIGHTING PANELBOARD
  "#" INDICATES NAME
- FE ### FLOW ELEMENT
- FS ### FLOW SWITCH
- FIT ### FLOW TRANSMITTER
- LE ### LEVEL ELEMENT
- LIT ### LEVEL INDICATOR TRANSMITTER
- AE ### ANALYZER ELEMENT
- AIT ### ANALYZER INDICATOR TRANSMITTER
- PS ### PRESSURE SWITCH
- PIT ### PRESSURE INDICATOR TRANSMITTER
- TIT ### TEMPERATURE INDICATOR TRANSMITTER
- FCV ### FLOW CONTROL VALVE
- WSH ### HIGH TORQUE SWITCH
- ZS ### LIMIT SWITCH
- H HORN
- S SIREN
- LD LEAK DETECTOR
- FS FLOW SWITCH
- LS LIMIT SWITCH
- PS PRESSURE SWITCH
- PB EXPOSED PULL BOX
- SEW-1 EMERGENCY SHOWER EYEWASH
- SEW-2 EMERGENCY SHOWER EYEWASH
  FREEZE RESISTANT
- EW EMERGENCY EYEWASH
- R BEACON
  (LETTER DENOTES COLOR)

CONDUIT IDENTIFICATION

$ 1 0 1 P 1
- MULTIPLE CONDUIT IDENTIFIER
- PURPOSE CODE
- NUMERIC IDENTIFIER
- EXISTING CONDUIT IDENTIFIER

PURPOSE CODES	
A	ANALOG WIRING
C	CONTROL WIRING
F	FIBER OPTIC
N	NETWORK
P	POWER
S	SECURITY

MULTIPLE CONDUIT IDENTIFIER

IF A NUMBER IS PRESENT, THAT NUMBER REPRESENTS ONE OF SEVERAL PURPOSE CODE CONDUITS FOR THAT NUMERIC IDENTIFIER. A SHORT-HAND NOTATION HAS BEEN USED IN THE CONDUIT SCHEDULE TO DENOTE MULTIPLE CONDUITS ON ONE ENTRY LINE. FOR EXAMPLE, THE NOTATION "701P1:7" REPRESENTS CONDUITS 701P1, 701P2, 701P3, 701P4, 701P5, 701P6 AND 701P7. THE FILL FOR EACH OF THESE CONDUITS SHALL BE AS INDICATED ON THE ASSOCIATED ENTRY LINE, OR AS SPECIFICALLY NOTED. EACH CONDUIT IN THE SHORT HAND NOTATION SHALL BE TAGGED APPROPRIATELY.

CONDUIT AND WIRING SYMBOLS

- 101P / OR CONDUIT HOMERUN. NUMBER OR LETTER INDICATES CONDUIT CONTENTS. CONTRACTOR SHALL FIELD ROUTE FROM EQUIPMENT TO DESIGNATED LOCATION. DASHED LINE TYPE INDICATES UNDERGROUND SECONDARY DUCT BANK OR CONCEALED CONDUIT IN CONCRETE FLOOR, CEILING OR WALL UNLESS OTHERWISE INDICATED OR NOTED
- EXPOSED CONDUIT
- CONDUIT(S) TURN UP OR STUB-UP WITH CAP
- CONDUIT TURNS DOWN
- UNDERGROUND SECONDARY DUCT BANK OR CONCEALED CONDUIT IN CONCRETE FLOOR, CEILING OR WALL UNLESS OTHERWISE INDICATED OR NOTED
- CONDUIT CONNECTION FOR EXISTING AND NEW CONDUITS. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDUIT LOCATION.
- G GROUND CABLE
- G GROUND CABLE COILED
- DEMOLITION
- CONDUIT STUB-UP
- 101P CONDUITS IDENTIFIED BY A NUMBER SHALL CONFORM TO THE CONDUIT SCHEDULE. CONDUIT NUMBERS WITH AN "*" ARE EXISTING.
- AA CONDUITS IDENTIFIED BY ALPHA IDENTIFIERS SHALL CONFORM TO THE TABLE ON DWG NO. E-2
- AC / 101C CONDUCTOR ONLY HOMERUN. ALPHA IDENTIFIER SHALL CONFORM TO THE CONDUIT ALPHA IDENTIFIERS TABLE ON DWG NO. E-2. CONTRACTOR SHALL ROUTE CONDUCTORS IN EQUIPMENT TO DESIGNATED CONDUIT.
- CONDUIT SEAL OFF WITH COMPOUND
- $ # OR $ # CONDUIT KEY IDENTIFIER
  $ = EXISTING CONDUITS
- HOT OR SWITCHED CONDUCTOR
  NEUTRAL CONDUCTOR
  GROUND CONDUCTOR
  X CONDUITS WITH QUANTITY OF CONDUCTORS AS INDICATED BY HASH MARKS. UNLESS OTHERWISE NOTED, THE CONTRACTOR SHALL FURNISH AND INSTALL 3/4" CONDUIT AND THE CORRECT NUMBER OF #12 AWG CONDUCTORS.
  X=SHALL INDICATE WIRE SIZE OTHER THAN #12 AWG

ABBREVIATIONS

A	AMPERES
AB	ADMINISTRATION BUILDING
A/I	ANALOG INPUT
A/O	ANALOG OUTPUT
A/C	AIR CONDITIONING
AC	ALTERNATING CURRENT
AFC	ABOVE FINISHED CONCRETE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AUX	AUXILIARY
AUTO	AUTOMATIC
AWG	AMERICAN WIRE GAUGE
BKR	BREAKER
BLDG	BUILDING
BV	BUTTERFLY VALVE
C	CONDUIT
CAT	CATEGORY
CB	CIRCUIT BREAKER
CHH	COMMUNICATIONS HANDHOLE
CKT	CIRCUIT
CLG	CEILING
CO	CONDUIT ONLY
CP-1	CONTROL PANEL, NUMBER AS NOTED
CPT	CONTROL POWER TRANSFORMER
CS	CONTROL STATION
CT	CURRENT TRANSFER
CU	COPPER
DISC	DISCONNECT
DISC SW	DISCONNECT SWITCH
DM	DIGITAL METER
DPDT	DOUBLE POLE DOUBLE THROW
DWG	DRAWING
EDB	ELECTRICAL DUCTBANK
EHH	ELECTRICAL HANDHOLE
EL, ELEV	ELEVATION
EMH	ELECTRICAL MANHOLE
ENCL	ENCLOSURE
EO	ELECTRICALLY OPERATED
EXIST	EXISTING
FDR	FEEDER
FIN	FINISHED
FLEX	FLEXIBLE
FS	FLOW SWITCH
FT	FEET OR FOOT
FUT	FUTURE
G	GAS OR GROUND
GALV	GALVANIZED
GFI	GROUND FAULT INTERRUPTER GUARANTEED
GND	GROUND
HDG	HOT DIPPED GALVANIZED
HZ	HERTZ
IC	INTERRUPTING CURRENT
IHH	INSTRUMENTATION HANDHOLE
IMH	INSTRUMENTATION MANHOLE
IN OR "	INCHES OR INCH
IND	INDICATING
INSTANT	INSTANTANEOUS
INSTR	INSTRUMENT
INTLK	INTERLOCK
I/O	INPUT-OUTPUT
ITP	INTERMEDIATE TERMINATION PANEL
IWW	INSTRUMENTATION WIREWAY
KAIC	THOUSAND AMPERE INTERRUPTING CAPACITY (SYMMETRICAL)
KCMIL	THOUSAND CIRCULAR MILS
KVA	KILOVOLT AMPERES
KW	KILOWATTS
LCCS	LIGHTING CONTACTOR CONTROL STATION
LCP	LOCAL CONTROL PANEL
LP	LIGHTING PANELBOARD
LS	LEVEL SWITCH OR LIMIT SWITCH
LT	LIGHT
LTG	LIGHTING
LV	LOW VOLTAGE
MA	MILLIAMPERE
MANF	MANUFACTURER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MFR	MANUFACTURER
MIN	MINIMUM
MOV	MOTOR OPERATED VALVE OR GATE MOTOR
MTR	MOTOR
MV	MILLIVOLT
N/A	NOT APPLICABLE
NEC	NATIONAL ELECTRICAL CODE
NEUT	NEUTRAL
NIC	NOT IN CONTRACT
NO	NUMBER
NP	NAMEPLATE
NRFFU	NUMBER RESERVED FOR FUTURE USE
NTS	NOT TO SCALE
P	POWER CONDUIT
PB	PULLBOX OR PROCESS BUILDING PROCESS
PCP	CONTROL PANEL
P-MCP	PALL MAIN CONTROL PANEL
PDS	PRESSURE DIFFERENTIAL SWITCH
PNL	PANEL
POS	POSITION
PP	POWER PANELBOARD
PR	PAIR
PRI	PRIMARY
PS	PRESSURE SWITCH
PSP	PUMP STARTER PANEL
PVC	POLYVINYL CHLORIDE
REC	RECOMMENDATION
RECPT	RECEPTACLE
REQ	REQUIRED
RGS	RIGID GALVANIZED STEEL CONDUIT
RNG	RENWEABLE NATURAL GAS
SEC	SECONDARY
SPEC	SPECIFICATION
SS	STAINLESS STEEL
SPD	SURGE PROTECTION DEVICE
SPDT	SINGLE POLE, DOUBLE THROW
SRG	SURGE
STL	STEEL
STP	SHIELDED TWISTED PAIR
STR	STARTER
STT	SHIELDED TWISTED TRIAD
SV	SOLENOID VALVE
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
T	TRANSFORMER
TB	TERMINAL BOX
TCOND	TEE CONDUIT
TE	TERMINAL ENCLOSURE
TEMP	TEMPERATURE
TERM	TERMINAL
TL	TWISTLOCK
TYP	TYPICAL
TRANSF	TRANSFER
UON	UNLESS OTHERWISE NOTED
UNGND	UNDERGROUND
UTP	UNSHIELDED TWISTED PAIR
V	VOLTS
VAC	VOLTS ALTERNATING CURRENT
VCS	VALVE CONTROL STATION
VDC	VOLT DIRECT CURRENT
VFD	VARIABLE FREQUENCY DRIVE
W	WATTS
W/O	WITHOUT
WM	WATTMETER
WPU	WEATHERPROOF WHILE IN USE
WW	WIREWAY
XDER	TRANSDUCER
XFMR	TRANSFORMER
1PH	SINGLE-PHASE
3PH	THREE-PHASE
3W	THREE WIRE
4W	FOUR WIRE

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Registered Professional Engineer (Civil) CERTIFICATE NO. 30027 JEFFREY A. SOKOL Date Signed 12-7-22

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

ELECTRICAL LEGEND

DRAWING E-1

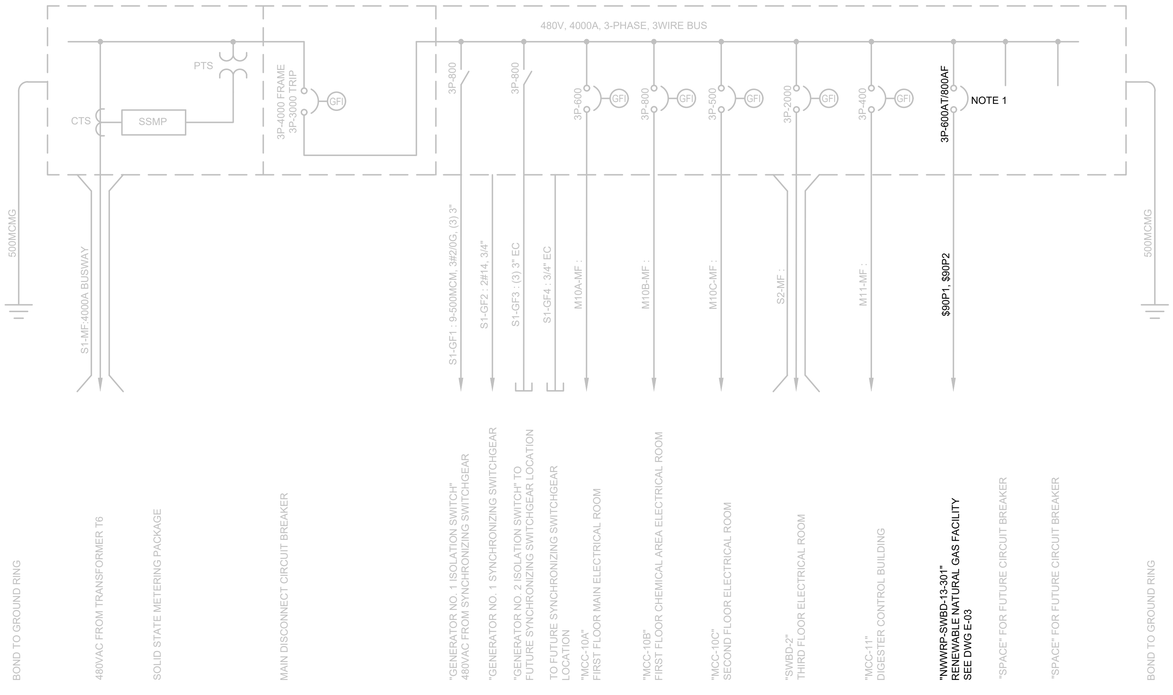
DRAWN BY: C. LANZEL
ENGINEER: E. CASTILLO
APPROVED BY: J. SOKOL

340 W.O. _____
PROJ. NO. CP0870-001

SHEET 34 OF 49

CATALOG NUMBER: A-251681

DATE SAVED: 12/7/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\ELEC\E-1.DWG



EXIST MAIN SWITCHBOARD SWBD-1
ONE LINE DIAGRAM

EXIST MAIN SWITCHBOARD SWBD-1
ELEVATION

1

MAIN SWITCHBOARD SWBD-1 480V LOAD SUMMARY			
LOAD DESCRIPTION	**KVA**	**HP**	**AMP**
EXISTING LOAD	504		607
SWITCHBOARD NWWRP-SWBD-13-301	418		503
NEW TOTAL LOAD	**922**		**1110**
MAIN SWITCHBOARD SWBD-1 CAPACITY (NEW TOTAL LOAD DOES NOT EXCEED CAPACITY OF THE SWITCHBOARD AND THEREFORE IS ACCEPTABLE)	**2491**		**3000**

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

GENERAL NOTES:

1. EXISTING SWITCHBOARD SWBD-1: UTILIZE EXISTING SPARE SQUARE D ELECTRONIC TRIP MX3680, 800AMP, 3-POLE, 480VAC, 65KAIC CIRCUIT BREAKER TO PROVIDE POWER TO NEW SWITCHBOARD NWWRP-SWBD-13-301. REMOVE CIRCUIT BREAKER ARP100 RATED PLUG AND RETURN TO OWNER. FURNISH AND INSTALL NEW ARP075 RATING PLUG. UPDATE CIRCUIT BREAKER NAMEPLATE AS INDICATED ON THE ONE LINE DIAGRAM.

1 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Professional Engineer Certificate No. 30027 JEFFREY A SOKOL Date Signed 12-9-22

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

SOLIDS BUILDING
EXIST MAIN SWITCHBOARD SWBD-1 ONE LINE DIAGRAM

DRAWING: E-2

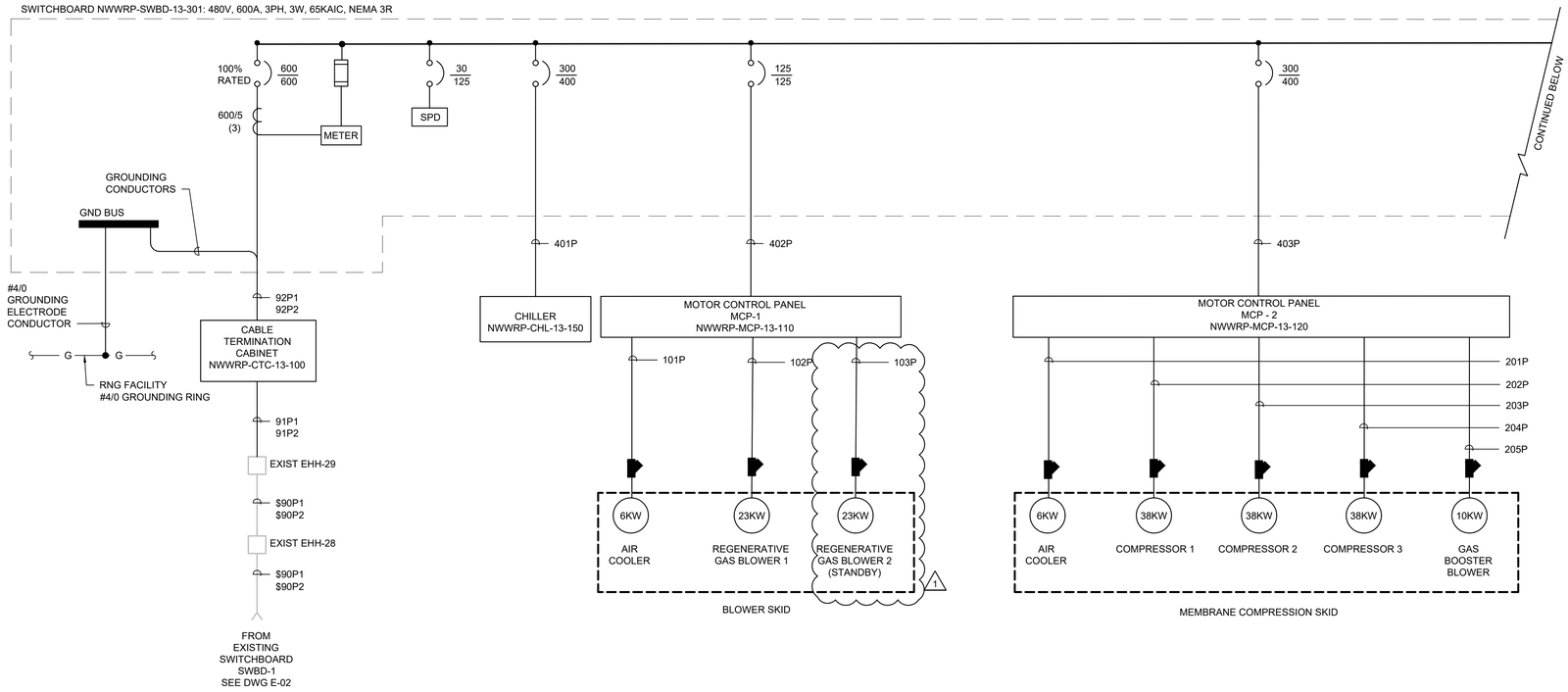
DRAWN BY: C. LANZEL
ENGINEER: E. CASTILLO
APPROVED BY: J. SOKOL

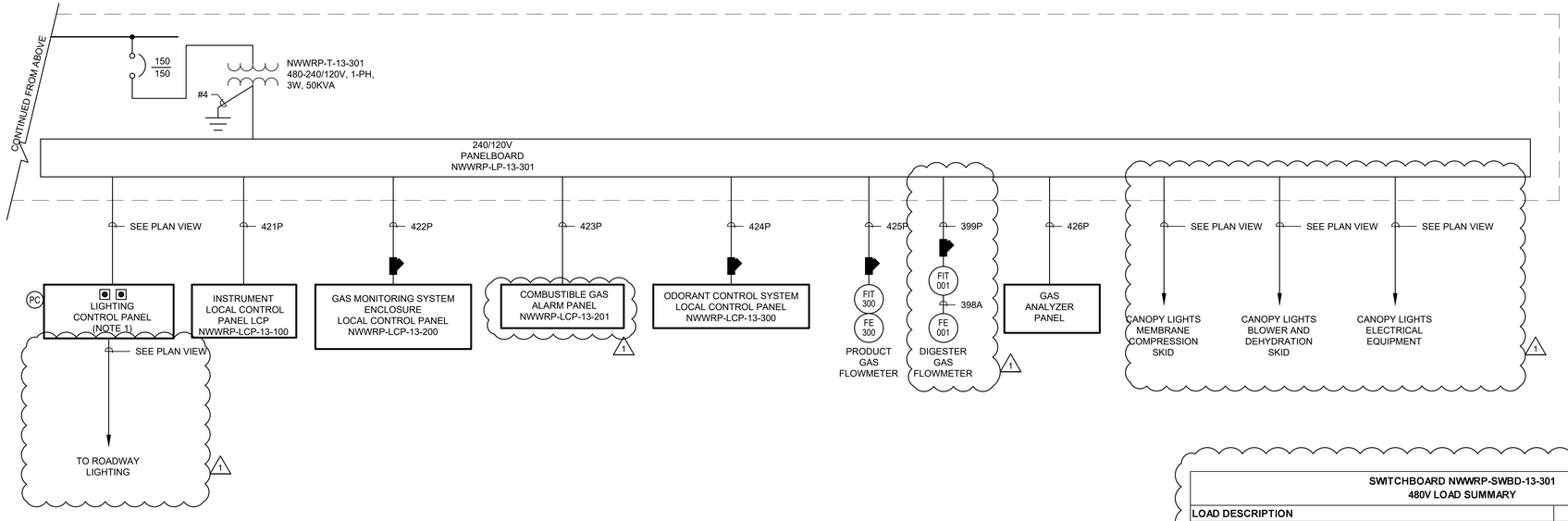
340 W.O. _____
PROJ. NO. CP0870-001

SHEET 35 OF 49

CATALOG NUMBER: A-251682

DATE SAVED: 12/9/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\ELEC\E-2.DWG





1

SWITCHBOARD NWWRP-SWBD-13-301 480V LOAD SUMMARY			
LOAD DESCRIPTION	**KVA**	**HP**	**AMP**
MOTOR CONTROL PANEL MCP-1 NWWRP-MCP-13-110	71		86
MOTOR CONTROL PANEL MCP-2 NWWRP-MCP-13-120	166		200
CHILLER SYSTEM	137		165
TRANSFORMER T-RNG (480-240/120V)/ PANELBOARD NWWRP-LP-13-301	25		53
TOTAL LOAD	**418**		**503**

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

NOTES:
1. TWO GANG DEVICE BOX WITH 120/277V, 20A, THREE POSITION, MAINTAINED, CENTER OFF, TOGGLE SWITCH AND AND PHOTOCELL FOR CONTROL OF NORTH AND WEST SITE LIGHTING. PROVIDE WEATHER PROOF HINGED COVER OVER TOGGLE SWITCH. IN HAND POSITION LIGHTS WILL BE ON CONTINUOUSLY, IN OFF POSITION LIGHTS WILL BE OFF AND AUTO POSITION LIGHTS WILL OPERATE WHEN PHOTOCELL PERMITS. PHOTOCELL SHALL BY MANUFACTURER INTERMATIC MODEL K4236C WITH RATING OF 120VAC, 1800 WATTS, 15 AMP, UL LISTED FOR OUTDOOR USE. PHOTOCELL HOUSING SHALL BE CONSTRUCTED OF HIGH IMPACT POLYCARBONATE.

1 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Professional Engineer CERTIFICATE NO. 30027 JEFFREY A SOKOL Date Signed 12-12-22

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

SWITCHBOARD NWWRP-SWBD-13-301 ONE LINE DIAGRAM

DRAWING E-3

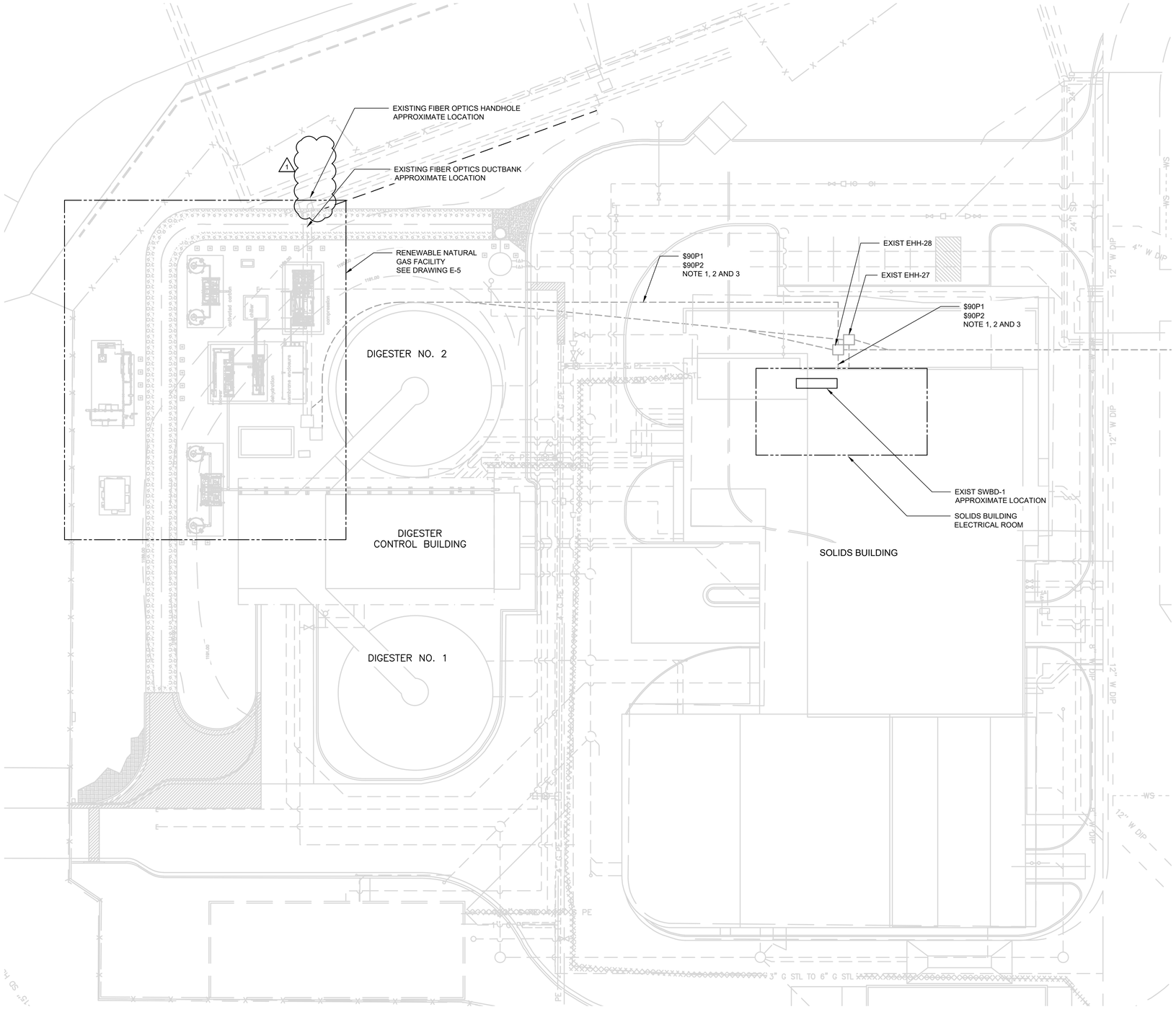
DRAWN BY: C. LANZEL
ENGINEER: E. CASTILLO
APPROVED BY: J. SOKOL

340 W.O.____
PROJ. NO. CP0870-001

SHEET 36 OF 49

CATALOG NUMBER: A-251683

DATE SAVED: 12/12/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\ELEC\E-3.DWG



mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

NOTES:

1. PULL MANDREL THROUGH EXISTING CONDUITS BEFORE PULLING IN NEW CABLE.
2. EXISTING CONDUITS CONTINUE UNDERGROUND TO EXISTING SWBD-1 LOCATED IN THE SOLIDS BUILDING ELECTRICAL ROOM.
3. EXISTING UNDERGROUND PIPES, ELECTRICAL DUCTBANKS, COMMUNICATIONS DUCTBANKS, STRUCTURES AND FEATURES HAVE NOT BEEN HORIZONTALLY OR VERTICALLY IDENTIFIED. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UNDERGROUND PIPES, DUCTBANKS AND FEATURES PRIOR TO CONSTRUCTION AND SHALL ROUTE NEW DUCTBANKS TO AVOID CONFLICTS. REFER TO CIVIL DRAWINGS FOR MORE INFORMATION.

1 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Professional Engineer – Electrical – CERTIFICATE NO. 30027 – JEFFREY A SOKOL – Date Signed 12-12-2022

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

ELECTRICAL
SITE PLAN

DRAWING
E-4

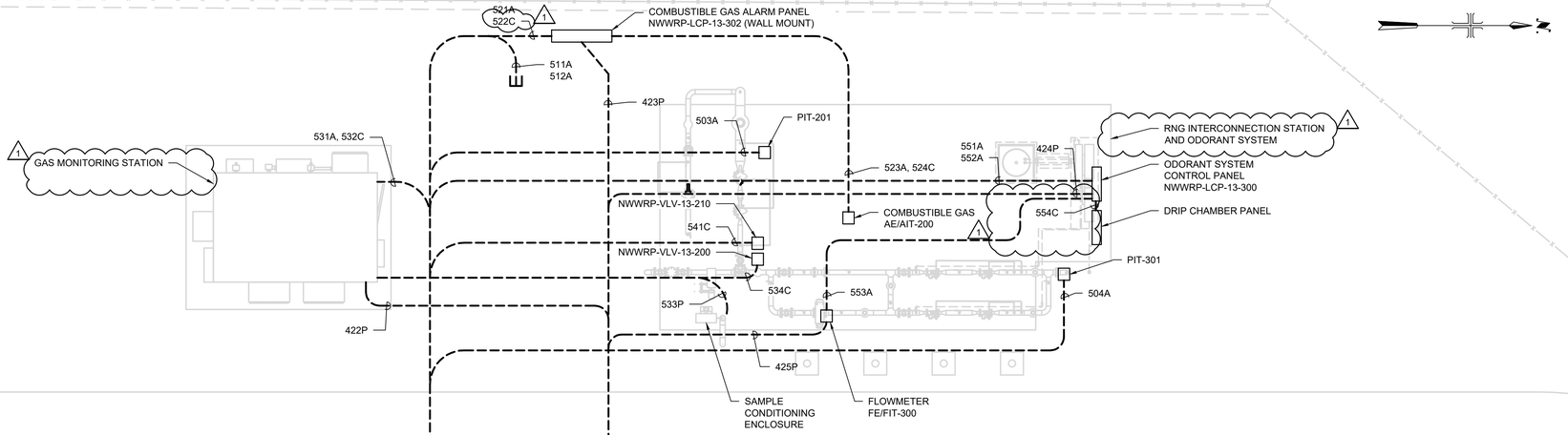
DRAWN BY: C. LANZEL
ENGINEER: E. CASTILLO
APPROVED BY: J. SOKOL

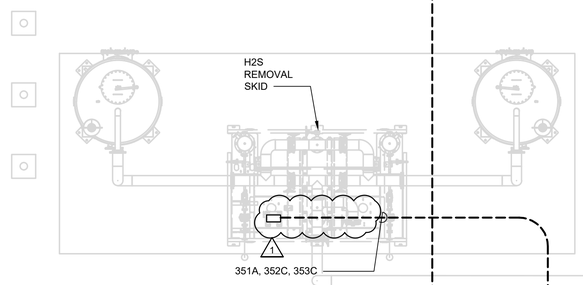
340 W.O. _____
PROJ. NO. CP0870-001

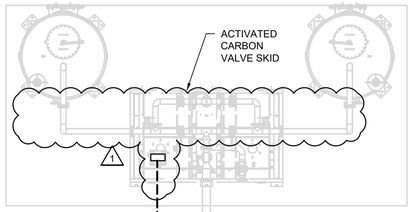
SHEET
37 OF 49

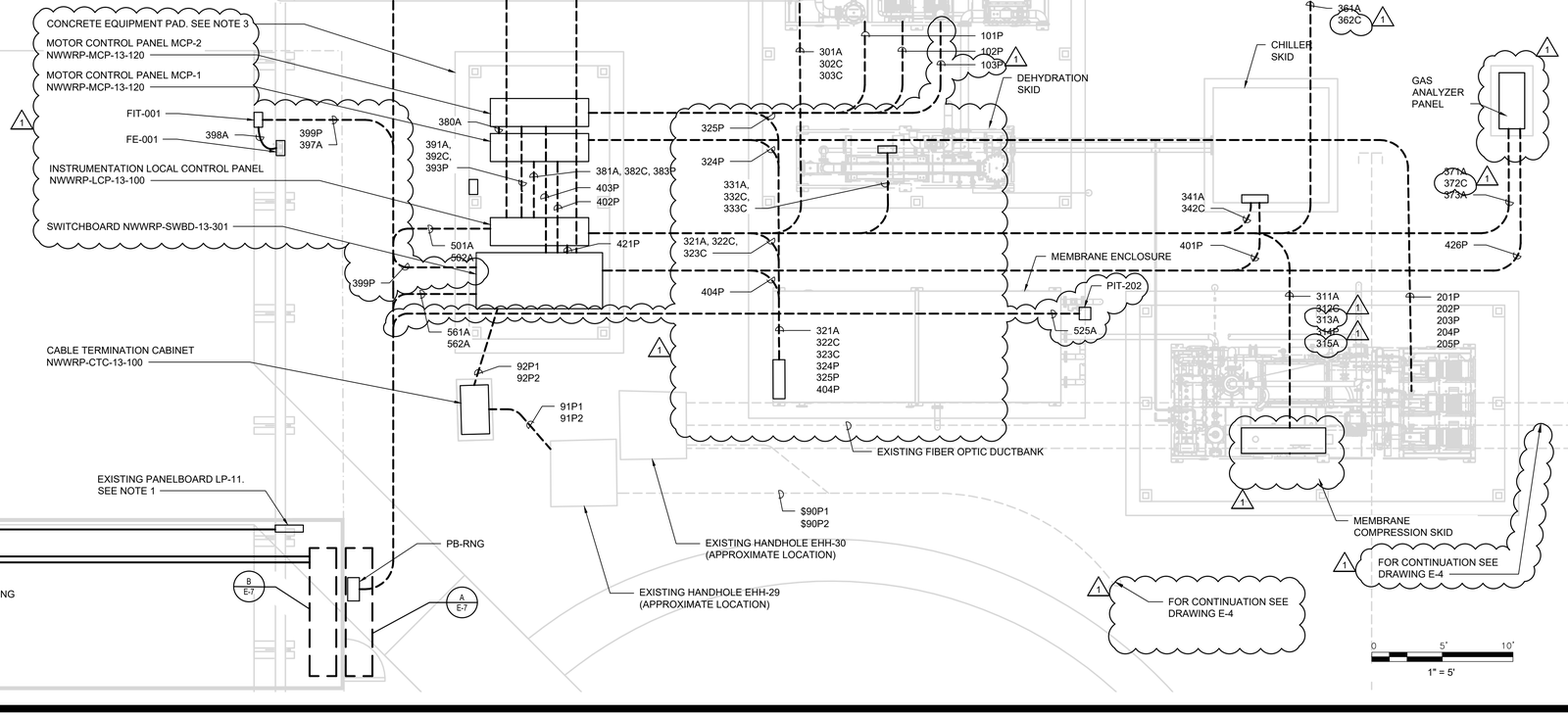
CATALOG NUMBER:
A-251684

DATE SAVED: 12/9/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\ELEC\E-4.DWG









mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

NOTES:

1. REMOVE EXISTING CIRCUIT BREAKER FROM PANELBOARD CIRCUIT NO. 37. FURNISH AND INSTALL ONE (1) 120VAC, 1-POLE, 20A THERMAL MAGNETIC CIRCUIT BREAKER IN PANELBOARD CIRCUIT NO. 37. CIRCUIT BREAKER SHALL BE UTILIZED TO PROVIDE 120VAC POWER TO PLC-13-001. CIRCUIT BREAKER MANUFACTURER SHALL BE SQUARE D AND SUITABLE FOR INSTALLATION IN A NQOD SERIES PANELBOARD.
2. EXISTING UNDERGROUND PIPES, ELECTRICAL DUCTBANKS, COMMUNICATIONS DUCTBANKS, STRUCTURES AND FEATURES HAVE NOT BEEN HORIZONTALLY OR VERTICALLY IDENTIFIED. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UNDERGROUND PIPES, DUCTBANKS AND FEATURES PRIOR TO CONSTRUCTION AND SHALL ROUTE NEW DUCTBANKS TO AVOID CONFLICTS. REFER TO CIVIL DRAWINGS FOR MORE INFORMATION.
3. SEE STRUCTURAL DETAILS FOR CONCRETE EQUIPMENT PAD.
4. CONDUIT STUB UPS, IF SHOWN, ARE DIAGRAMMATIC. ACTUAL LOCATIONS SHALL BE FIELD INSTALLED BASED UPON APPROVED SHOP DRAWINGS

1 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Registered Professional Engineer
CERTIFICATE NO.
30027
JEFFREY A SOKOL
Date Signed 12/12/22
Not Valid Without Signature

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

RENEWABLE NATURAL GAS POWER PLAN

DRAWING: E-5

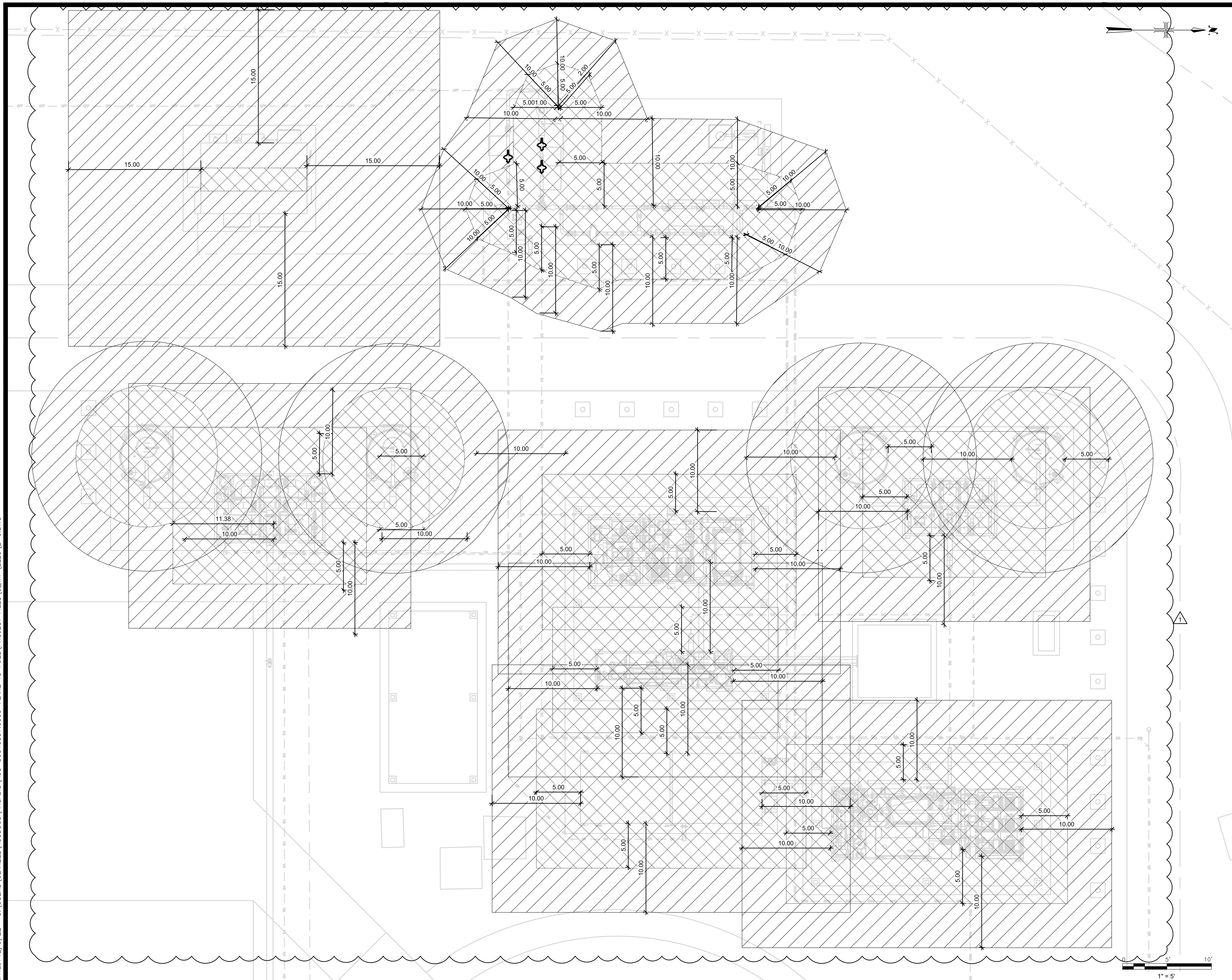
DRAWN BY: C. LANZEL
ENGINEER: E. CASTILLO
APPROVED BY: J. SOKOL

340 W.O. _____
PROJ. NO. CP0870-001

SHEET: 38 OF 49

CATALOG NUMBER: A-251685

DATE SAVED: 12/12/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\ELEC\E-5.DWG



BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD ELEVATION= 1201.05 (CITY OF MESA DATUM) (SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

LEGEND:

CLASS 1 DIVISION 1, GROUP D

CLASS 1 DIVISION 2, GROUP D

UNCLASSIFIED

NOTES:

1. AREA CLASSIFICATIONS ARE BASED ON NFPA 497 AND NFPA 820.
2. BOUNDARY AREAS SHOWN ARE APPROXIMATE TO CONVEY AWARENESS. FIELD MEASURE FOR EXACT BOUNDARY AREAS IN ACCORDANCE WITH THE APPLICABLE NFPA ARTICLES CITED.
3. ALL EQUIPMENT LOCATED IN THE IDENTIFIED CLASSIFIED AREA SHALL BE LISTED ACCORDINGLY. ALL ELECTRICAL WORK IN THE IDENTIFIED CLASSIFIED AREA SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE.
4. EXISTING UNDERGROUND PIPES, ELECTRICAL DUCTBANKS, COMMUNICATIONS DUCTBANKS, STRUCTURES AND FEATURES HAVE NOT BEEN HORIZONTALLY OR VERTICALLY IDENTIFIED. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UNDERGROUND PIPES, DUCTBANKS AND FEATURES PRIOR TO CONSTRUCTION AND SHALL ROUTE NEW DUCTBANKS TO AVOID CONFLICTS.

EQUIPMENT SKIDS, VESSELS AND EXPOSED GAS PIPING RACKS:

1. CLASS 1, DIVISION 1, GROUP D ENVELOPE EXTENDS FIVE FEET HORIZONTALLY FROM SIDES OF EQUIPMENT AND TEN FEET VERTICALLY FROM TOP OF EQUIPMENT.
2. CLASS 1, DIVISION 2, GROUP D EXTENDS FIVE (5) FEET HORIZONTALLY AND VERTICALLY BEYOND THE CLASS 1, DIVISION 1, GROUP D ENVELOPE.

GAS MONITORING SYSTEM ENCLOSURE:

1. CLASS 1, DIVISION 1, GROUP D ENVELOPE EXTENDS 1'-6" HORIZONTALLY AND VERTICALLY IN ALL DIRECTIONS FROM ENCLOSURE VENTS.
2. CLASS 1, DIVISION 2, GROUP D ENVELOPE EXTENDS FIFTEEN FEET HORIZONTALLY FROM ALL SIDES AND FIFTEEN FEET VERTICALLY FROM TOP OF BUILDING.

1 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Registered Professional Engineer (Electrical) CERTIFICATE NO. 30027 JEFFREY A SOKOL Date Signed 12.12.2022 ARIZONA, U.S.A.

CITY OF MESA ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

RENEWABLE NATURAL GAS AREA CLASSIFICATION PLAN

DRAWING E-6

DRAWN BY: C. LANZEL
ENGINEER: E. CASTILLO
APPROVED BY: J. SOKOL

340 W.O. ____
PROJ. NO. CP0870-001

SHEET 39 OF 49

CATALOG NUMBER: A-251686

DATE SAVED: 12/9/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\ELEC\E-6.DWG

PANELBOARD:	**NWWRP-LP-13-301**						
VOLTAGE, PHASE & WIRE:	240/120	VAC	1PH, 3W		**LOCATION:**	INSIDE OF NWWRP-SWBD-RNG	
BUS SIZE (MINIMUM)	225	AMPS			**ENCLOSURE:**	NEMA 3R INTEGRATED SWBD	
MAIN BREAKER SIZE:	225	AMPS			**MOUNTING:**	INSIDE OF NWWRP-SWBD-RNG	
BREAKER TYPE	BOLT ON				**AIC / BRACING:**	10 K FULLY RATED	
NEUTRAL BUS	100%				**FED FROM:**	TRANSFORMER T-RNG	

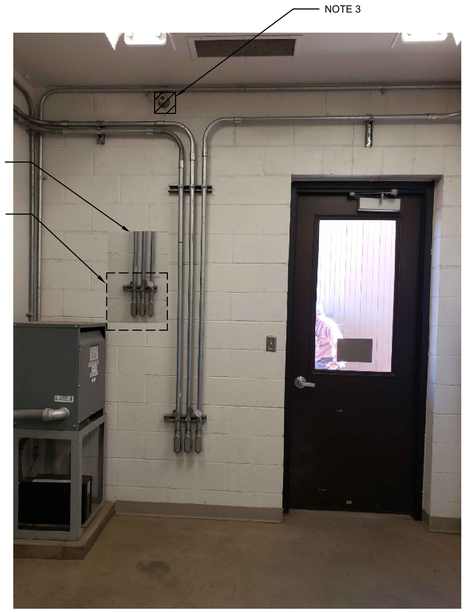
CKT NO.	LOAD DESCRIPTION	BREAKER AMP	KVA A	KVA B	KVA A	KVA B	BREAKER AMP	LOAD DESCRIPTION	CKT NO.
1	GAS MONITORING ENCLOSURE	100	7.2		0.4		15	SWITCHBOARD LIGHTS	2
3				7.2		0.6	15	SWITCHBOARD HEATERS	4
5	FLOWMETER FIT-300	15	0.4		1.4		20	ROADWAY LIGHTING	6
7	COMBUSTIBLE GAS ALARM PANEL NWWRP-LCP-13-201	20		0.2		0.8	20	CANOPY LIGHTS - MEMBRANE COMPRESSION SKID	8
9	ODORANT CONTROL SYSTEM PANEL NWWRP-LCP-13-300	20	0.6		0.8		20	CANOPY LIGHTS - BLOWER AND DEHYDRATION SKIDS	10
11	RNG CONTROL PANEL NWWRP-LCP-13-100 CKT 1	40		2.0		0.1	15	LIGHTING CONTROL PANEL CONTROLS	12
13	RNG CONTROL PANEL NWWRP-LCP-13-100 CKT 2	40	2.0		1.3		20	CANOPY LIGHTS - ELECTRICAL EQUIPMENT	14
15	DIGESTER GAS PIPE FLOWMETER FIT-001	15		0.4		0.0	20	SPARE	16
17	SPARE	20	0.0		0.0		20	SPARE	18
	SUBTOTALS		10.2	9.8	3.9	1.5			

NOTES:

SUBTOTAL KVA A PHASE = 14.1 **AMPS A PHASE = 117.3**
SUBTOTAL KVA B PHASE = 11.3 **AMPS B PHASE = 94.4**

TOTAL KVA = 25.4

A E-5 DIGESTER CONTROL BUILDING
ELECTRICAL ROOM EXTERIOR NORTH WALL
NOT TO SCALE



B E-5 DIGESTER CONTROL BUILDING
ELECTRICAL ROOM INTERIOR NORTH WALL
NOT TO SCALE

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

NOTES:
1. REMOVE EXISTING WALL MOUNTED PULL BOX AND CONDUIT AS INDICATED ON THIS DRAWING.
2. PROVIDE THREADED CONDUIT CAP FOR EACH CONDUIT.
3. REMOVE EXISTING CONDUIT STUB-OUT. REPAIR WALL TO MATCH EXISTING INTERIOR AND EXTERIOR WALLS.
4. MOUNT PULLBOX PB-RNG IN AVAILABLE SPACE ON BUILDING EXTERIOR.
5. THE FOLLOWING CONDUITS SHALL CONNECT INTO THE BOTTOM OF PULLBOX PB-RNG. LINEWORK IS SHOWN DIAGRAMMATICALLY. 397A, 501A, 502A, 511A, 512A, 521A, 522C, 525A, 531A, 532C, 541C, 551A, 552A, 561A, AND 562A.
6. PULLBOX PB-RNG ON EXTERIOR WALL, SHOWN FOR REFERENCE.
7. CONDUITS 571A, 572A, AND 573C ARE NEW AND ARE SHOWN PICTORIALLY ON THIS ELEVATION TO ILLUSTRATE INTENT. CONTINUE THESE NEW CONDUITS TO THEIR DESTINATION.

1 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Professional Engineer CERTIFICATE NO. 30027 JEFFREY A. SOKOL Date Signed 12-2-22

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

PANELBOARD SCHEDULE

DRAWING E-7

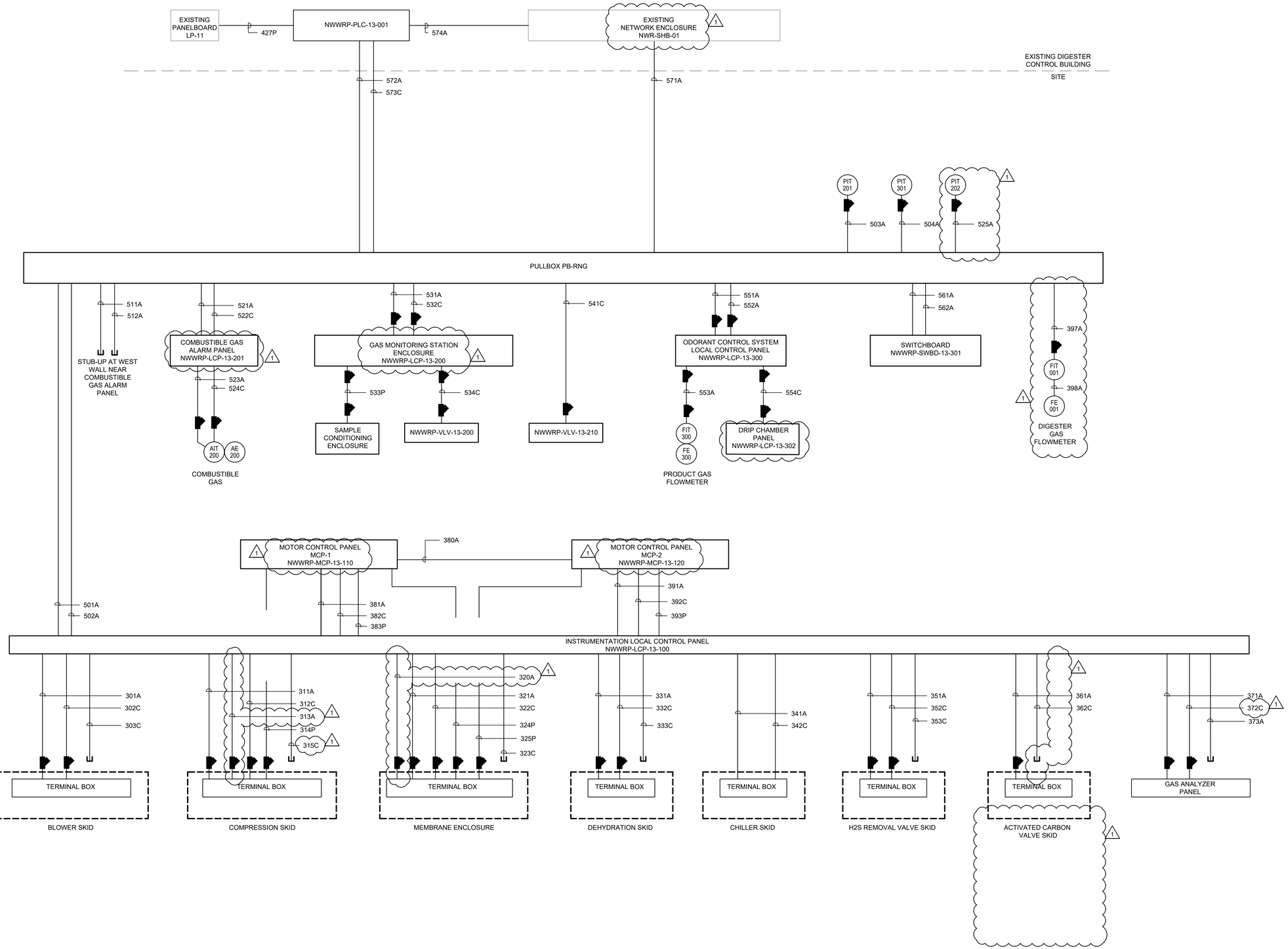
DRAWN BY: C. LANZEL
ENGINEER: E. CASTILLO
APPROVED BY: J. SOKOL

340 W.O. ____
PROJ. NO. CP0870-001

SHEET 40 OF 49

CATALOG NUMBER: A-251687

DATE SAVED: 12/11/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\ELEC\E-7.DWG



DATE SAVED: 12/12/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\ELEC\E-8.DWG

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

1 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Registered Professional Engineer (Civil) CERTIFICATE NO. 30027 JEFFREY A. SOKOL Date Signed 12-12-22

DRAWN BY: C. LANZEL
ENGINEER: E. CASTILLO
APPROVED BY: J. SOKOL

340 W.O. ____
PROJ. NO. CP0870-001

CITY OF MESA
ENGINEERING DEPARTMENT

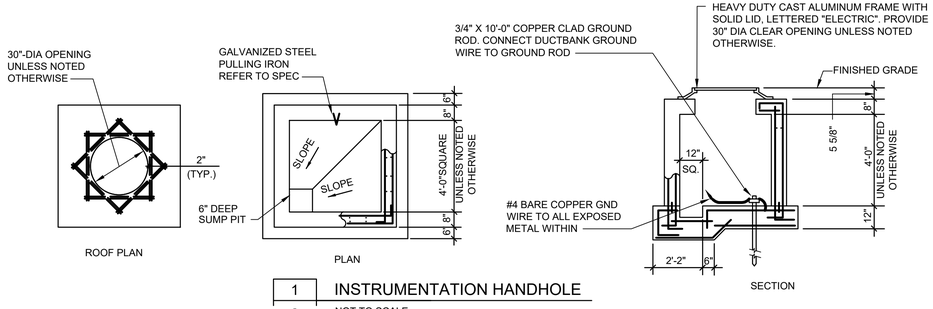
NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

BLOCK DIAGRAM

DRAWING E-8

SHEET 41 OF 49

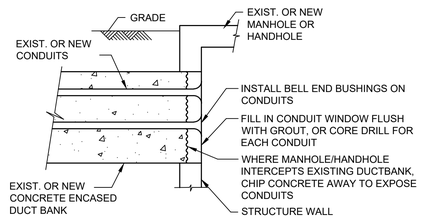
CATALOG NUMBER: A-251688



1 INSTRUMENTATION HANDHOLE

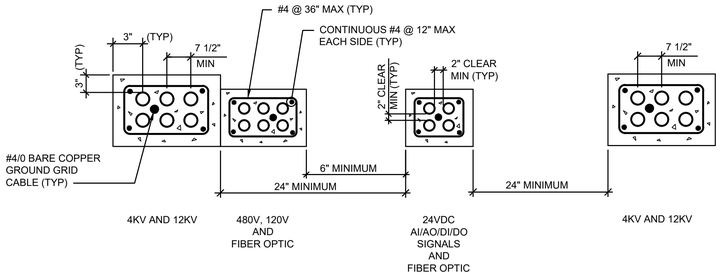
NOT TO SCALE
SEE NOTE 1

NOTES:
1. BELOW GRADE HAND HOLES SHALL BE MINIMUM 4'X4'X4'D, BUT IN NO INSTANCE LESS THAN 125% OF THE DIMENSIONS REQUIRED BY THE NEC.



2 DUCTBANK PENETRATION AT HANDHOLE/MANHOLE

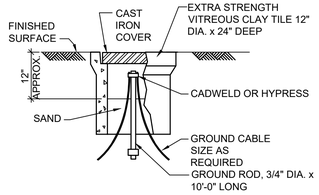
NOT TO SCALE



3 UNDERGROUND DUCTBANKS

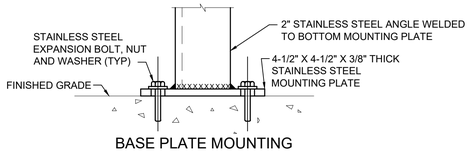
NOT TO SCALE
SEE NOTES 1 AND 2

NOTES:
1. ALL DUCTBANKS REQUIRE MINIMUM 24" COVER PER NEC.
2. REBAR REINFORCEMENT IS REQUIRED ONLY BENEATH ROADWAYS.

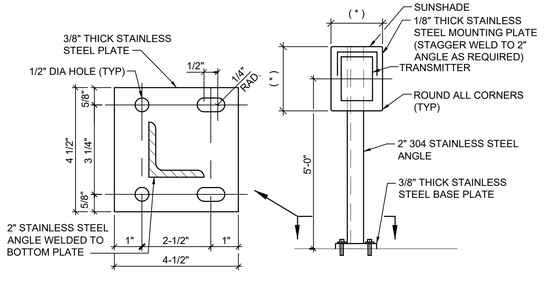


4 GROUND WELL DETAIL

NOT TO SCALE



BASE PLATE MOUNTING



PLAN AT BASE PLATE ELEVATION

5 TRANSMITTER MOUNTING DETAIL

NOT TO SCALE

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

30027 JEFFREY A SOKOL

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

DETAILS

DRAWING E-9

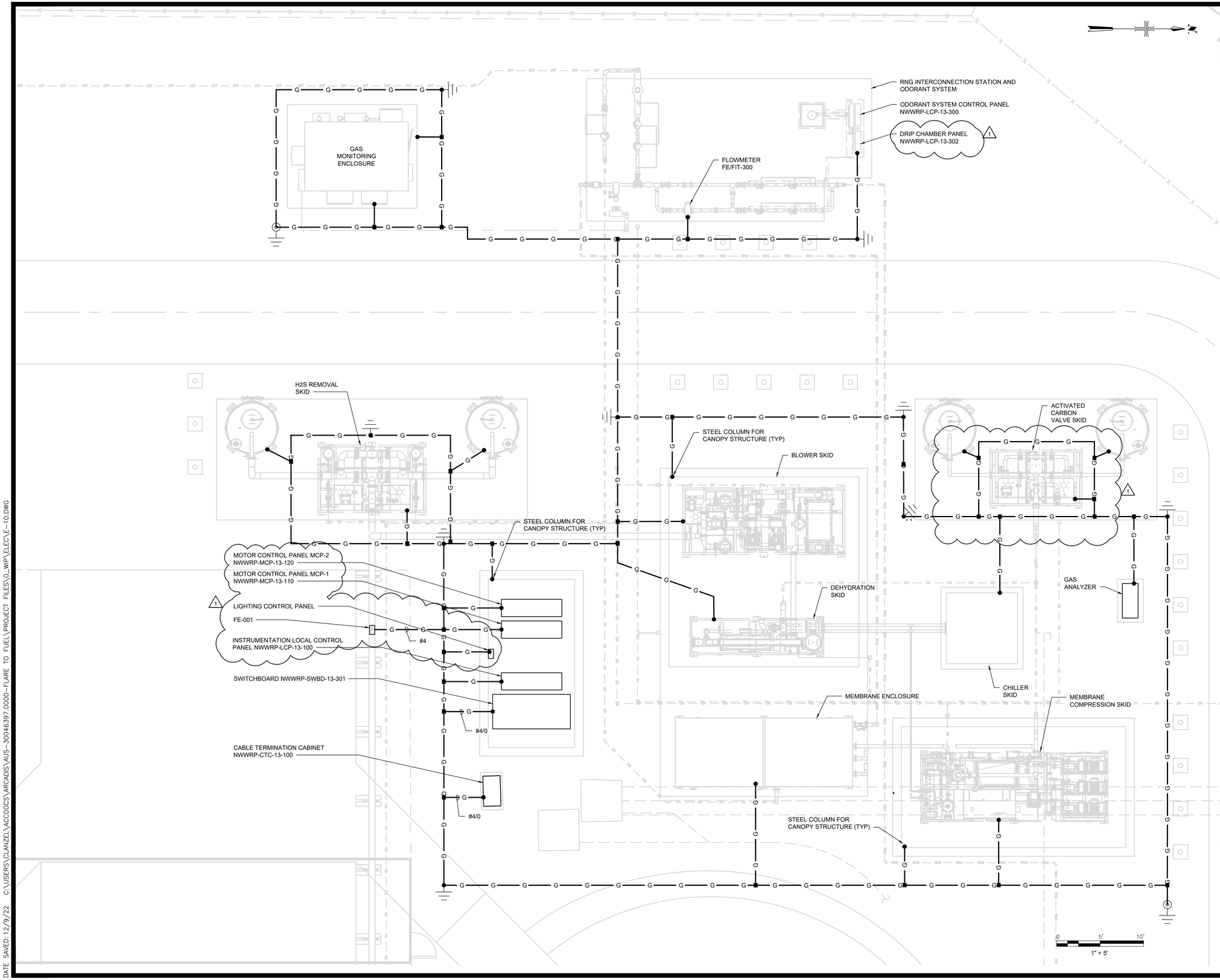
DRAWN BY: C. LANZEL
ENGINEER: E. CASTILLO
APPROVED BY: J. SOKOL

340 W.O. _____
PROJ. NO. CP0870-001

SHEET 42 OF 49

CATALOG NUMBER: A-251689

DATE SAVED: 12/7/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\ELEC\E-9.DWG



BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

NOTES:

1. GROUNDING RING COPPER SHALL BE AWG #4/0 BARE COPPER.
2. BONDING CONNECTIONS TO EQUIPMENT AND STEEL COLUMNS FROM GROUNDING RING SHALL BE AWG #4 BARE COPPER UNLESS NOTED OTHERWISE. BONDING LOCATIONS ARE DIAGRAMMATIC. MAKE CONNECTIONS AT LOCATIONS PROVIDED BY THE EQUIPMENT MANUFACTURERS.
3. COORDINATE GROUNDING RING / GROUNDING RODS WITH LIGHTNING PROTECTION SYSTEM.

1 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

30027 JEFFREY A SOKOL

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

GROUNDING PLAN

DRAWING E-10

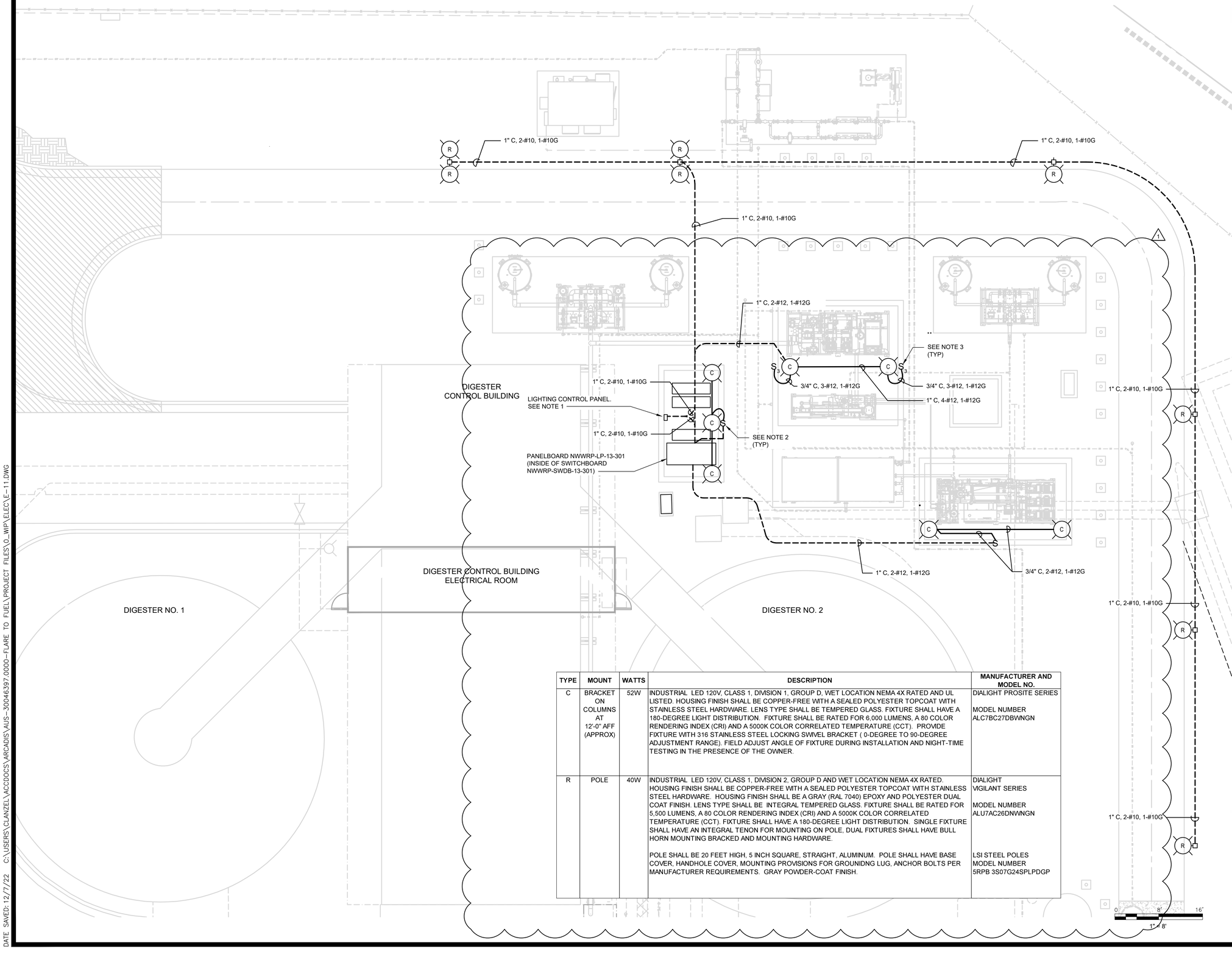
DRAWN BY: C. LANZEL
ENGINEER: E. CASTILLO
APPROVED BY: J. SOKOL

340 W.O. _____
PROJ. NO. CP0870-001

SHEET 43 OF 49

CATALOG NUMBER: A-251690

DATE SAVED: 12/9/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\ELEC\E-10.DWG



TYPE	MOUNT	WATTS	DESCRIPTION	MANUFACTURER AND MODEL NO.
C	BRACKET ON COLUMNS AT 12'-0" AFF (APPROX)	52W	INDUSTRIAL LED 120V, CLASS 1, DIVISION 1, GROUP D, WET LOCATION NEMA 4X RATED AND UL LISTED. HOUSING FINISH SHALL BE COPPER-FREE WITH A SEALED POLYESTER TOPCOAT WITH STAINLESS STEEL HARDWARE. LENS TYPE SHALL BE TEMPERED GLASS. FIXTURE SHALL HAVE A 180-DEGREE LIGHT DISTRIBUTION. FIXTURE SHALL BE RATED FOR 6,000 LUMENS, A 80 COLOR RENDERING INDEX (CRI) AND A 5000K COLOR CORRELATED TEMPERATURE (CCT). PROVIDE FIXTURE WITH 316 STAINLESS STEEL LOCKING SWIVEL BRACKET (0-DEGREE TO 90-DEGREE ADJUSTMENT RANGE). FIELD ADJUST ANGLE OF FIXTURE DURING INSTALLATION AND NIGHT-TIME TESTING IN THE PRESENCE OF THE OWNER.	DIALIGHT PROSITE SERIES MODEL NUMBER ALC7BC27DBWNGN
R	POLE	40W	INDUSTRIAL LED 120V, CLASS 1, DIVISION 2, GROUP D AND WET LOCATION NEMA 4X RATED. HOUSING FINISH SHALL BE COPPER-FREE WITH A SEALED POLYESTER TOPCOAT WITH STAINLESS STEEL HARDWARE. HOUSING FINISH SHALL BE A GRAY (RAL 7040) EPOXY AND POLYESTER DUAL COAT FINISH. LENS TYPE SHALL BE INTEGRAL TEMPERED GLASS. FIXTURE SHALL BE RATED FOR 5,500 LUMENS, A 80 COLOR RENDERING INDEX (CRI) AND A 5000K COLOR CORRELATED TEMPERATURE (CCT). FIXTURE SHALL HAVE A 180-DEGREE LIGHT DISTRIBUTION. SINGLE FIXTURE SHALL HAVE AN INTEGRAL TENON FOR MOUNTING ON POLE, DUAL FIXTURES SHALL HAVE BULL HORN MOUNTING BRACKED AND MOUNTING HARDWARE. POLE SHALL BE 20 FEET HIGH, 5 INCH SQUARE, STRAIGHT, ALUMINUM. POLE SHALL HAVE BASE COVER, HANDHOLE COVER, MOUNTING PROVISIONS FOR GROUNIDNG LUG, ANCHOR BOLTS PER MANUFACTURER REQUIREMENTS. GRAY POWDER-COAT FINISH.	DIALIGHT VIGILANT SERIES MODEL NUMBER ALU7AC26DNWNGN LSI STEEL POLES MODEL NUMBER 5RPB 3S07G24SPLPDGP

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

NOTES:

1. LIGHTING CONTROL PANEL SHALL BE PROVIDED WITH (1) HAND-OFF-AUTO SWITCHES, (1) PHOTOCELL, (1) LIGHTING CONTACTORS, TERMINAL BLOCKS, ETC. ROADWAY LIGHTS SHALL BE CONTROLLED BY THE HOA SWITCH AND THE LIGHTING CONTACTOR. IN AUTO MODE THE LIGHTS SHALL RESPOND TO THE PHOTOCELL CONTROL. IN HAND MODE THE LIGHTS SHALL OPERATE CONTINUOUSLY. IN OFF MODE CONTROLLED LIGHTS SHALL NOT OPERATE. LIGHTING CIRCUITS SHALL HAVE DEDICATED HOT AND NEUTRAL CONDUCTORS. GROUNDS SHALL BE SHARED. LIGHTING CONTROL PANEL SHALL BE NEMA 4X RATED. CONTROLS SHALL OPERATE AT 120VAC. PEDESTAL MOUNT LIGHTING CONTROL PANEL.
2. FURNISH AND INSTALL 120VAC, 20A, 1-POLE SWITCH WITH WEATHERPROOF COVER. MOUNT ON CANOPY COLUMN 48-INCHES ABOVE FINISHED GRADE. SWITCH CONTROLS CANOPY LIGHTS.
3. FURNISH AND INSTALL 120VAC, 20A, 3-WAY SWITCH WITH WEATHERPROOF COVER. MOUNT ON CANOPY COLUMN 48-INCHES ABOVE FINISHED GRADE. SWITCH CONTROLS CANOPY LIGHTS.

1 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Professional Engineer Certificate No. 30027 JEFFREY A SOKOL Date Signed 12-7-22

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

SITE LIGHTING PLAN

DRAWING E-11

DRAWN BY: C. LANZEL
ENGINEER: E. CASTILLO
APPROVED BY: J. SOKOL

340 W.O.
PROJ. NO: CP0870-001

SHEET 44 OF 49

CATALOG NUMBER: A-251691

DATE SAVED: 12/7/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\ELEC\E-11.DWG

CONDUIT SCHEDULE

CONDUIT No.	CONDUIT SIZE	FILL QTY	FILL SIZE	FROM	TO	REMARKS	"CIRCUIT No.(s) (BY CONTRACTOR)"	DWG. No.(s)
$90P1	3"	3	350KCMIL	EXIST SWITCHBOARD SWBD-1	EXIST EHH-29	POWER (EXIST CONDUIT)		E-3, E-5
-		1	#1			GROUND		
-								
$90P2	3"	3	350KCMIL	EXIST SWITCHBOARD SWBD-1	EXIST EHH-29	POWER (EXIST CONDUIT)		E-3, E-5
-		1	#1			GROUND		
-								
91P1	3"	3	350KCMIL	EXIST EHH-29	CABLE TERMINAL CABINET	POWER		E-3, E-5
-		1	#1			GROUND		
-								
91P2	3"	3	350KCMIL	EXIST EHH-29	CABLE TERMINAL CABINET	POWER		E-3, E-5
		1	#1			GROUND		
-								
92P1	3"	3	350KCMIL	CABLE TERMINAL CABINET	SWITCHBOARD NWWRP-13-301	POWER		E-3, E-5
		1	#1			GROUND		
-								
92P2	3"	3	350KCMIL	CABLE TERMINAL CABINET	SWITCHBOARD NWWRP-13-301	POWER		E-3, E-5
		1	#1			GROUND		
-								
101P	2"	1	#10 VFD CABLE	AIR COOLER ON BLOWER SKID	MCP-1 NWWRP-MCP-13-110	POWER/GROUND		E-3, E-5
-								
102P	2"	1	#6 VFD CABLE	REGENERATIVE GAS BLOWER 1 ON BLOWER SKID	MCP-1 NWWRP-MCP-13-110	POWER/GROUND		E-3, E-5
103P	2"	1	#6 VFD CABLE	REGENERATIVE GAS BLOWER 2 ON BLOWER SKID	MCP-1 NWWRP-MCP-13-110	POWER/GROUND		E-3, E-5
-								
201P	2"	1	#10 VFD CABLE	AIR COOLER ON COMPRESSION SKID	MCP-2 NWWRP-MCP-13-120	POWER/GROUND		E-3, E-5
-								
202P	2"	1	#2 VFD CABLE	ME COMPRESSOR 1 ON COMPRESSION SKID	MCP-2 NWWRP-MCP-13-120	POWER/GROUND		E-3, E-5
-								
203P	2"	1	#2 VFD CABLE	ME COMPRESSOR 2 ON COMPRESSION SKID	MCP-2 NWWRP-MCP-13-120	POWER/GROUND		E-3, E-5
-								
204P	2"	1	#2 VFD CABLE	ME COMPRESSOR 3 ON COMPRESSION SKID	MCP-2 NWWRP-MCP-13-120	POWER/GROUND		E-3, E-5
-								
205P	2"	1	#10 VFD CABLE	ME COMPRESSOR 3 ON COMPRESSION SKID	MCP-2 NWWRP-MCP-13-120	POWER/GROUND		E-3, E-5
-								
301A	2"	9	#16STP	BLOWER SKID	NWWRP-LCP-13-100	SIGNAL		E-5, E-8
-								
302C	2"	30	#14	BLOWER SKID	NWWRP-LCP-13-100	CONTROL		E-5, E-8
		1	#14			GROUND		
-								
303C	2"	1	PULLSTRING	BLOWER SKID	NWWRP-LCP-13-100	SPARE		E-5, E-8
-								
311A	2"	14	#16STP	COMPRESSION SKID	NWWRP-LCP-13-100	SIGNAL		E-5, E-8
-								
312C	2"	2	#14	COMPRESSION SKID	NWWRP-LCP-13-100	CONTROL		E-5, E-8
-		1	#14			GROUND		
-								
313A	2"	13	#16STP	COMPRESSION SKID	NWWRP-LCP-13-100	SIGNAL		E-5, E-8
314P	1"	2	#8	COMPRESSION SKID	NWWRP-LCP-13-100	POWER		E-5, E-8
		1	#8			GROUND		
-								
315C	2"	1	PULLSTRING	COMPRESSION SKID	NWWRP-LCP-13-100	SPARE		
-								
320A	2"	6	#16STP	MEMBRANE ENCLOSURE	NWWRP-LCP-13-100	SIGNAL		E-5, E-8
321A	2"	13	#16STP	MEMBRANE ENCLOSURE	NWWRP-LCP-13-100	SIGNAL		E-5, E-8
-								
322C	2"	42	#14	MEMBRANE ENCLOSURE	NWWRP-LCP-13-100	CONTROL		E-5, E-8
-		1	#14			GROUND		
-								

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

1 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

30027 JEFFREY A SOKOL — Date Signed 12-12-2022

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

CONDUIT SCHEDULE I

DRAWING E-12

DRAWN BY: C. LANZEL
ENGINEER: E. CASTILLO
APPROVED BY: J. SOKOL

340 W.O.
PROJ. NO. CP0870-001

SHEET 45 OF 49

CATALOG NUMBER: A-251692

DATE SAVED: 12/12/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\ELEC\E-12.DWG

CONDUIT SCHEDULE

CONDUIT No.	CONDUIT SIZE	FILL QTY	FILL SIZE	FROM	TO	REMARKS	"CIRCUIT No.(s) (BY CONTRACTOR)"	DWG. No.(s)
323C	2"	1	PULLSTRING	MEMBRANE ENCLOSURE	NWWRP-LCP-13-100	SPARE		E-5, E-8
-								
324P	1"	3	#4	MEMBRANE ENCLOSURE	MCP-1 NWWRP-MCP-13-110	POWER		E-5, E-8
-		1	#8			GROUND		
-								
325P	1"	3	#4	MEMBRANE ENCLOSURE	MCP-2 NWWRP-MCP-13-120	POWER		E-5, E-8
-		1	#8			GROUND		
-								
331A	2"	6	#16STP	DEHYDRATION SKID	NWWRP-LCP-13-100	SIGNAL		E-5, E-8
-								
332C	2"	14	#14	DEHYDRATION SKID	NWWRP-LCP-13-100	CONTROL		E-5, E-8
-		1	#14			GROUND		
-								
333C	2"	1	PULLSTRING	DEHYDRATION SKID	NWWRP-LCP-13-100	SPARE		E-5, E-8
-								
341A	2"	1	ETHERNET	CHILLER SKID	NWWRP-LCP-13-100	SIGNAL		E-5, E-8
-								
342C	2"	1	PULLSTRING	CHILLER SKID	NWWRP-LCP-13-100	SPARE		E-5, E-8
-								
351A	2"	12	#16STP	H2S REMOVAL VLV SKID	NWWRP-LCP-13-100	SIGNAL		E-5, E-8
-								
352C	2"	24	#14	H2S REMOVAL VLV SKID	NWWRP-LCP-13-100	CONTROL		E-5, E-8
-		1	#14			GROUND		
-								
353C	2"	1	PULLSTRING	H2S REMOVAL VLV SKID	NWWRP-LCP-13-100	SPARE		E-5, E-8
-								
361A	2"	4	#16STP	ACT CARBON VLV SKID	NWWRP-LCP-13-100	SIGNAL		E-5, E-8
-								
362C	2"	1	PULLSTRING	ACT CARBON VLV SKID	NWWRP-LCP-13-100	CONTROL		E-5, E-8
-								
-								
-								
-								
-								
-								
371A	2"	1	ETHERNET	GAS ANALYZER PANEL	NWWRP-LCP-13-100	SIGNAL		E-5, E-8
-								
372C	2"	2	#14	GAS ANALYZER PANEL	NWWRP-LCP-13-100	SIGNAL		E-5, E-8
-		1	#14					
373A	2"	1	PULLSTRING	GAS ANALYZER PANEL	NWWRP-LCP-13-100	SPARE		E-5, E-8
-								
380A	1"	10	#16STP	MCP-1 NWWRP-MCP-13-110	MCP-2 NWWRP-MCP-13-120	SIGNAL		E-5, E-8
-								
381A	2"	3	ETHERENT	MCP-1 NWWRP-MCP-13-110	NWWRP-LCP-13-100	SIGNAL		E-5, E-8
-								
382C	2"	1	PULLSTRING	MCP-1 NWWRP-MCP-13-110	NWWRP-LCP-13-100	CONTROL		E-5, E-8
-								
-								
383P	1"	2	#8	MCP-1 NWWRP-MCP-13-110	NWWRP-LCP-13-100	POWER		E-5, E-8
-		1	#8			GROUND		
-								
391A	2"	4	ETHERNET	MCP-2 NWWRP-MCP-13-120	NWWRP-LCP-13-100	SIGNAL		E-5, E-8
-								
392C	2"	1	PULLSTRING	MCP-2 NWWRP-MCP-13-120	NWWRP-LCP-13-100	CONTROL		E-5, E-8
-		1	#14			GROUND		
-								
393P	1"	2	#8	MCP-2 NWWRP-MCP-13-120	NWWRP-LCP-13-100	POWER		E-5, E-8
-		1	#8			GROUND		

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

1 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

30027 JEFFREY A SOKOL — Registered Professional Engineer — CERTIFICATE NO. — Date Signed 12-12-22

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

CONDUIT SCHEDULE II

DRAWING E-13

DRAWN BY: C. LANZEL
ENGINEER: E. CASTILLO
APPROVED BY: J. SOKOL

340 W.O.
PROJ. NO. CP0870-001

SHEET 46 OF 49

CATALOG NUMBER: A-251693

DATE SAVED: 12/12/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\ELEC\E-13.DWG

CONDUIT SCHEDULE

CONDUIT No.	CONDUIT SIZE	FILL QTY	FILL SIZE	FROM	TO	REMARKS	"CIRCUIT No.(s) (BY CONTRACTOR)"	DWG. No.(s)
397A	3/4"	1	#16STP	FIT-001	PULLBOX PB-RNG	CONTROL		E-5, E-8
398A	3/4"	1	MFR CABLE	FE-001	FIT-001	CONTROL		E-5, E-8
-								
399P	1"	2	#10	FIT-001	SWITCHBOARD NWWRP-13-301	POWER		E-3, E-5
		1	#10			GROUND		
-								
401P	3"	3	350KCMIL	CHILLER SKID	SWITCHBOARD NWWRP-13-301	POWER		E-3, E-5
-		1	#1			GROUND		
-								
402P	3"	3	#1/0	MCP-1 NWWRP-MCP-13-110	SWITCHBOARD NWWRP-13-301	POWER		E-3, E-5
-		1	#4			GROUND		
-								
403P	3"	3	#1/0	MCP-2 NWWRP-MCP-13-120	SWITCHBOARD NWWRP-13-301	POWER		E-3, E-5
-		1	#4			GROUND		
-								
404P	2"	4	#8	MEMBRANE ENCLOSURE	SWITCHBOARD NWWRP-13-301	POWER		E-3, E-5
-		1	#8			GROUND		
-								
421P	1"	2	#8	NWWRP-LCP-13-100	SWITCHBOARD NWWRP-13-301	POWER		E-3, E-5
-		1	#8			GROUND		
-								
422P	2"	3	#1	GAS MONITORING STATION	SWITCHBOARD NWWRP-13-301	POWER		E-3, E-5
-		1	#4			GROUND		
-								
423P	1"	2	#10	COMB GAS ALARM PANEL	SWITCHBOARD NWWRP-13-301	POWER		E-3, E-5
-		1	#10			GROUND		
-								
424P	1"	2	#10	ODORANT SYSTEM CONTROL PANEL	SWITCHBOARD NWWRP-13-301	POWER		E-3, E-5
-		1	#10			GROUND		
-								
425P	1"	2	#10	FIT-300	SWITCHBOARD NWWRP-13-301	POWER		E-3, E-5
-		1	#10			GROUND		
-								
426P	1"	2	#10	GAS ANALYZER PANEL	SWITCHBOARD NWWRP-13-301	POWER		E-3, E-5
-		1	#10			GROUND		
-								
427P	3/4"	2	#12	NWWRP-PLC-13-001	EXISTING PANELBOARD LP-11	POWER		E-3, E-5
-		1	#12			GROUND		
-								
-								
501A	1"	2	ETHERNET	NWWRP-LCP-13-100	PULLBOX PB-RNG	SIGNAL		E-5, E-8
-								
502A	1"	1	PULLSTRING	NWWRP-LCP-13-100	PULLBOX PB-RNG	SPARE		E-5, E-8
-								
503A	1"	1	#16STP	PIT-201	PULLBOX PB-RNG	SIGNAL		E-5, E-8
-								
504A	1"	1	#16STP	PIT-301	PULLBOX PB-RNG	SIGNAL		E-5, E-8
-								
511A	2"	1	PULLSTRING	STUBUP	PULLBOX PB-RNG	SPARE		E-5, E-8
-								
512A	2"	1	PULLSTRING	STUBUP	PULLBOX PB-RNG	SPARE		E-5, E-8
-								
521A	1"	1	#16STT	COMB GAS ALARM PANEL NWWRP-LCP-13-302	PULLBOX PB-RNG	SIGNAL		E-5, E-8
-								
522C	1"	6	#14	COMB GAS ALARM PANEL NWWRP-LCP-13-302	PULLBOX PB-RNG	CONTROL		E-5, E-8
-		1	#14			GROUND		
-								

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

1 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

Professional Engineer — 30027 JEFFREY A SOKOL — DATE SIGNED 12-7-22

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

CONDUIT SCHEDULE III

DRAWING E-14

DRAWN BY: C. LANZEL
ENGINEER: E. CASTILLO
APPROVED BY: J. SOKOL

340 W.O. ____
PROJ. NO. CP0870-001

SHEET 47 OF 49

CATALOG NUMBER: A-251694

DATE SAVED: 12/9/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\ELEC\E-14.DWG

CONDUIT SCHEDULE

CONDUIT No.	CONDUIT SIZE	FILL QTY	FILL SIZE	FROM	TO	REMARKS	"CIRCUIT No.(s) (BY CONTRACTOR)"	DWG. No.(s)
523A	3/4"	1	#16STT	COMB GAS DETECTOR	COMB GAS ALARM PANEL NWWRP-LCP-13-302 (1)	CONTROL		E-5, E-8
-								
524C	3/4"	6	#14	COMB GAS DETECTOR	COMB GAS ALARM PANEL NWWRP-LCP-13-302	CONTROL		E-5, E-8
		1	#14			GROUND		
-								
525A	1"	1	#16STP	PIT-202	PULLBOX PB-RNG	SIGNAL		E-5, E-8 (1)
-								
531A	1"	1	ETHERNET	GAS MONITORING STATION (1)	PULLBOX PB-RNG	SIGNAL		E-5, E-8
-								
532C	1"	1	PULLSTRING	GAS MONITORING STATION	PULLBOX PB-RNG	SPARE		E-5, E-8
-								
533P	1"	3	#12	SAMPLE CONDITIONING ENCLOSURE	GAS MONITORING STATION (1)	POWER		E-5, E-8
-		1	#12			GROUND		
-								
534C	1"	6	#14	NWWRP-VLV-13-200	GAS MONITORING STATION (1)	CONTROL		E-5, E-8
-		1	#14			GROUND		
-								
541C	1"	8	#14	NWWRP-VLV-13-210	PULLBOX PB-RNG	CONTROL		E-5, E-8
-		1	#14			GROUND		
-								
551A	1"	1	ETHERNET	ODORANT SYSTEM	PULLBOX PB-RNG	SIGNAL		E-5, E-8
-								
552A	1"	1	PULLSTRING	ODORANT SYSTEM	PULLBOX PB-RNG	SPARE		E-5, E-8
-								
553A	3/4"	1	#16STP	FIT-300	ODORANT SYSTEM	CONTROL		E-5, E-8
-								
554C	3/4"	6	#14	DRIP CHAMBER	ODORANT SYSTEM	CONTROL		E-5, E-8
-		1	#14			GROUND		
-								
561A	1"	1	ETHERNET	SWITCHBOARD NWWRP-SWBD-13-301	PULLBOX PB-RNG	SIGNAL		E-5, E-8
-								
562A	1"	1	PULLSTRING	SWITCHBOARD NWWRP-SWBD-13-301	PULLBOX PB-RNG	SPARE		E-5, E-8
-								
571A	2"	5 (1)	ETHERNET	PULLBOX PB-RNG	EXIST NETWORK ENCL	SIGNAL		E-5, E-8
-								
572A	2"	1 (1)	#16STT	PULLBOX PB-RNG	NWWRP-PLC-13-001	SIGNAL		E-5, E-8
		4	#16STP					
-								
573C	2"	14	#14	PULLBOX PB-RNG	NWWRP-PLC-13-001	CONTROL		E-5, E-8
-		2	#14			GROUND		
-								
574A	3/4"	1	ETHERNET	EXIST NETWORK ENCL	NWWRP-PLC-13-001	SIGNAL		E-5, E-8
-								

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

(1) 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

30027 JEFFREY A SOKOL — Date Signed 12-9-22

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

CONDUIT SCHEDULE IV

DRAWING E-15

DRAWN BY: C. LANZEL
ENGINEER: E. CASTILLO
APPROVED BY: J. SOKOL

340 W.O. ____
PROJ. NO. CP0870-001

SHEET 48 OF 49

CATALOG NUMBER: A-251695

DATE SAVED: 12/9/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\ELEC\E-15.DWG

PROPERTY LINE

PROPERTY LINE

PROPERTY LINE

PROPERTY LINE

DIGESTER
CONTROL BUILDING

DIGESTER CONTROL BUILDING
ELECTRICAL ROOM

DIGESTER NO.2

Statistics

Description	Symbol	Avg	Max	Min
Calc Zone #1	+	2.4 fc	38.6 fc	0.0 fc

1" = 8'

DATE SAVED: 12/7/22 C:\USERS\CLANZEL\ACCDOCS\ARCADIS\AUS-30046397.0000-FLARE TO FUEL\PROJECT FILES\0_WIP\ELEC\E-16.DWG

mesa·az

BENCHMARK: BRASS CAP AT TOP OF SRP IRRIGATION STRUCTURE, SOUTHWEST CORNER OF 8TH STREET AND DOBSON ROAD
ELEVATION= 1201.05 (CITY OF MESA DATUM)
(SEE SHEET G-3 FOR DETAILS)

100% SUBMITTAL – ISSUED FOR CONSTRUCTION

1 100% SUBMITTAL – ISSUED FOR CONSTRUCTION

ARCADIS

30027
JEFFREY A SOKOL
Date Signed 12-7-22

CITY OF MESA
ENGINEERING DEPARTMENT

NWWRP PHASE 1: FLARE TO FUEL RNG SYSTEM DESIGN

PHOTOMETRIC PLAN

DRAWING E-16

DRAWN BY: C. LANZEL
ENGINEER: E. CASTILLO
APPROVED BY: J. SOKOL

340 W.O.
PROJ. NO: CP0870-001

SHEET 49 OF 49

CATALOG NUMBER: A-251696