



PROJECT DESCRIPTION

SIGNAL BUTTE WTP
CITY PROJECT No. C01600
DESIGN REVIEW CASE No. DR15-017

CASE NUMBER: PLN2015-00077
ADDRESS: 10950 East Elliot Road
LOCATION: Located near the northeast corner of Elliot Road and Signal Butte Road
PROJECT DESCRIPTION: City of Mesa Drinking Water Treatment Plant

General Site

The Signal Butte Water Treatment Plant (WTP) is planned on an existing 102.5-acre (23.5 -acres inside the fence) City of Mesa owned parcel located on the north side of Elliot Road east of Signal Butte Road. Siphon Draw Wash is located on the north side of the property. There is an existing SRP Substation located to the north of the property line. A USBR power easement is located on the east side of the property. The Signal Butte WTP is the subject of this application. It includes the improvements associated with the new water treatment plant to be located inside the existing fence.

Existing Improvements

Existing improvements on the parcel include two City of Mesa groundwater supply well sites; Well 22 is located on the northeast side of the property, and Well 21 located to the southeast property line next to Elliot Road. The 23.5-acre fenced WTP area is surrounded by an existing 8-foot masonry block wall on the west, south and east sides and an 8-foot chain link fence on the north side of the WTP area. In 2008, the site outside the fence along the frontage between the 8-foot masonry wall and Elliot Road. was landscaped with undulating berms, with decomposed granite, irrigated native trees and shrubs. The area to the west of the WTP fence includes a 5.8 acre-ft retention basin and dry wells for infiltration. The area between the west fence and Signal Butte Road is landscaped with decomposed granite ground cover, irrigated native trees and shrubs. There are undulating berms with decomposed granite ground cover and irrigated native trees and shrubs landscaping along a 45 ft wide corridor east of the existing east site fence.

Other site improvements constructed in 2008 within the existing 8-foot block wall include an onsite nearly buried 7.5 million gallon potable water reservoir and potable water booster pumps located outside on top of the reservoir. These pumps pump potable water to two Mesa water distribution zones. Two integral color block buildings associated with the reservoir include the 1,042 sf influent building and the 5,248 sf effluent building. There is a 7,600 sf integral color block electrical building and standby emergency engine generators located outside the electrical building on a slab-on-grade surrounded by a 14-foot block fence.

Proposed Uses

The proposed use is a water treatment plant facility serving the City's potable water distribution system. The WTP will treat water from the Central Arizona Project Canal. The WTP facility will include a combination of above grade concrete basins and partially buried basins, chemical storage and feed facilities, enclosed solids dewatering, additional pumps at the reservoir pump station, operations and maintenance buildings. The treatment plant will have an initial capacity of 24 million gallons per day (mgd) and an ultimate capacity of 48 mgd.

The following new facilities are associated with the initial 24 mgd capacity water treatment plant and included in this project:

New Buildings

- Partial two story Operations Building
- Chemical feed buildings (2)
- On-site sodium hypochlorite (0.8% bleach) generation building
- On-site ozone generation building
- Solids dewatering building
- Well storage building
- Sludge pump station building

New Basins / Containment

- Treatment complex
- Recovered water basin
- Washwater treatment units
- Gravity thickener
- Thickened sludge tank
- Sludge holding bed
- Chemical containment area / tanks in the following areas:
 - Sodium hypochlorite
 - Fluoride
 - Other Chemicals (coagulant and polymer)

Other Areas (constructed on slab-on-grade)

- Raw water control
- Carbon dioxide injection
- Liquefied oxygen tank and evaporator
- Liquefied carbon dioxide tank and evaporator

Other Site Improvements

- New Entrance Gate (in addition to the existing driveway and entrance)
- On-site improvements within the fence such as roads and parking
- Emergency retention basin (5.8 acre-feet for interim emergency raw water)
- Fire supply piping and hydrants
- North stormwater retention basin (2.0 acre-feet)
- South stormwater retention basin (0.5 acre-feet)
- Bock wall fencing on north side of WTP area
- Landscaping at the Operations Building

Concept for Other Future Property Improvements not included with this Application:

In 2011 the City developed a conceptual landscape master plan for the City's Parcel outside the confines of the fenced water treatment plant area. The conceptual landscape plan includes a combination of passive recreational uses (such as trails along Siphon Draw Wash) and active recreational uses. While the residential areas around the site have a few pocket parks, the City anticipates a growing demand for soccer in the southeast valley, and anticipates this site as an opportunity to partially fill that demand. The park concept is currently named *Desert Edge Park*. The park improvements are not a part of this review application and are subject to change once the design by others is underway. The purpose of including the following information in the project description is to provide a general overview of the overall plan for the entire City of Mesa owned parcel which includes the potable water treatment plant.

Parcel Improvements (outside the WTP area fence Desert Edge Park)

In the future the City will select a consultant for design of Desert Edge Par, and the 2011 conceptual park / landscape plan will be revisited. The 2011 conceptual park plan included the following:

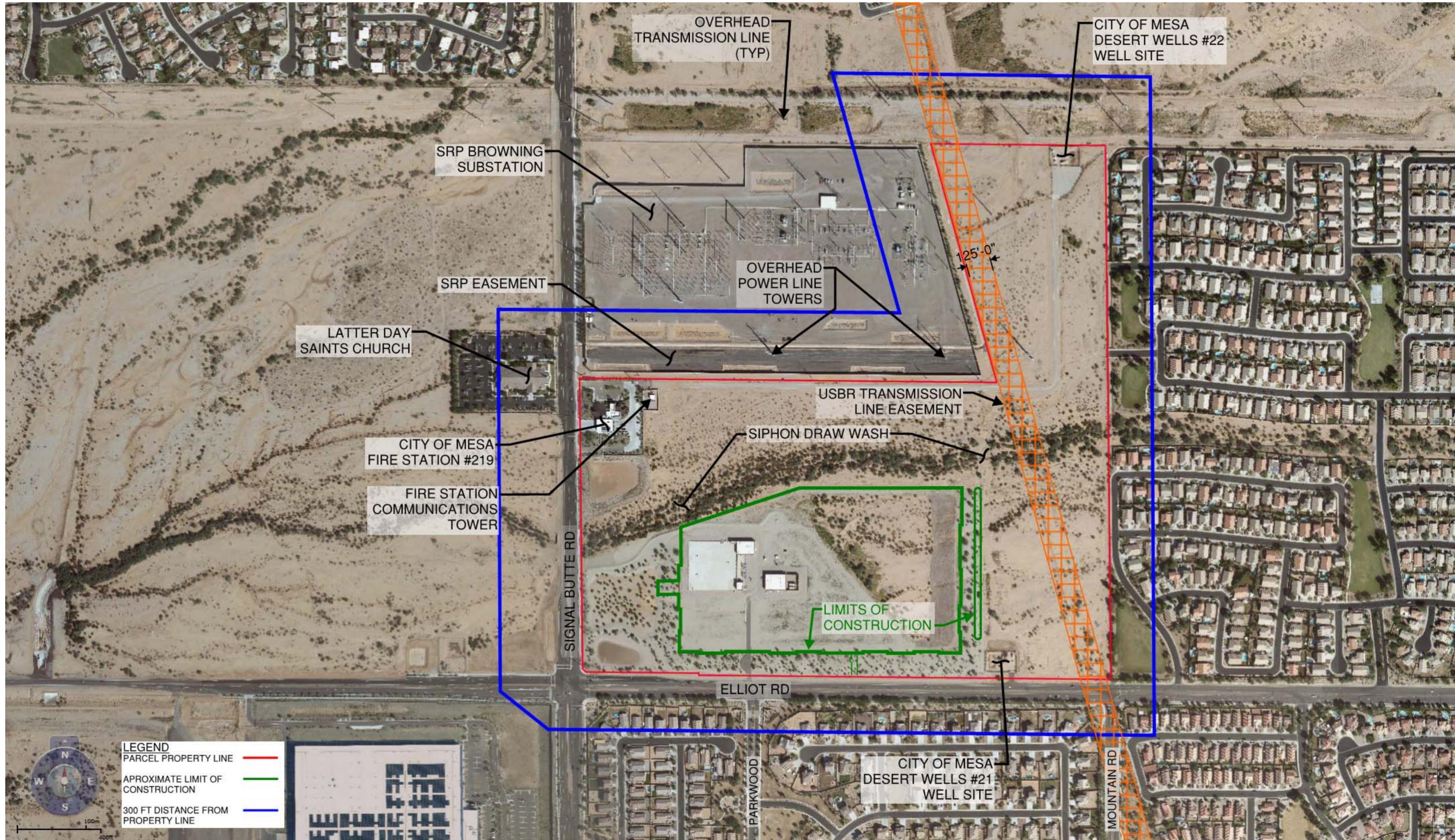
- Separate drive and access to the park
- Drives in the park for access to parking and to the north well site (Well 22)
- Six regulation size soccer fields, four located to the north of Siphon Draw Wash and two located east of the WTP fence and retention basin.
- Two junior size soccer fields located east of the two regulation soccer fields on the east side of the site.
- Passive recreation area (Dog Park)
- Parking pockets
- Soft Trails along the wash
- A desert trail park experience area
- Concession / Restroom / Maintenance area.
- Shaded areas

The park improvements may be constructed in a phased approach and will not coincide with construction of the water treatment plant. The park improvements will be after the initial 24 mgd water treatment plant construction. This Design Review Board application is for the water treatment plant improvements and not the planned park improvements.

Anticipated Water Treatment Plant Time-line and Future Phasing:

The following describes phasing for the future water treatment plant construction and future water treatment plant expansions. Expansion dates are estimated and depend on water demand growth in the City's water pressure zones.

- Phase 1: 24 mgd water treatment plant – Construction 2016 – 2018
- Phase 2: 12 mgd water treatment plant expansion - Estimated On-line 2028.
- Phase 3: 12 mgd water treatment plant expansion - Estimated 2040



DESIGN REVIEW BOARD

DRAFT

LINE IS 1 INCH
(IF NOT 1", SCALE ACCORDINGLY)



Black & Veatch Corporation
Phoenix, Arizona

CITY OF MESA

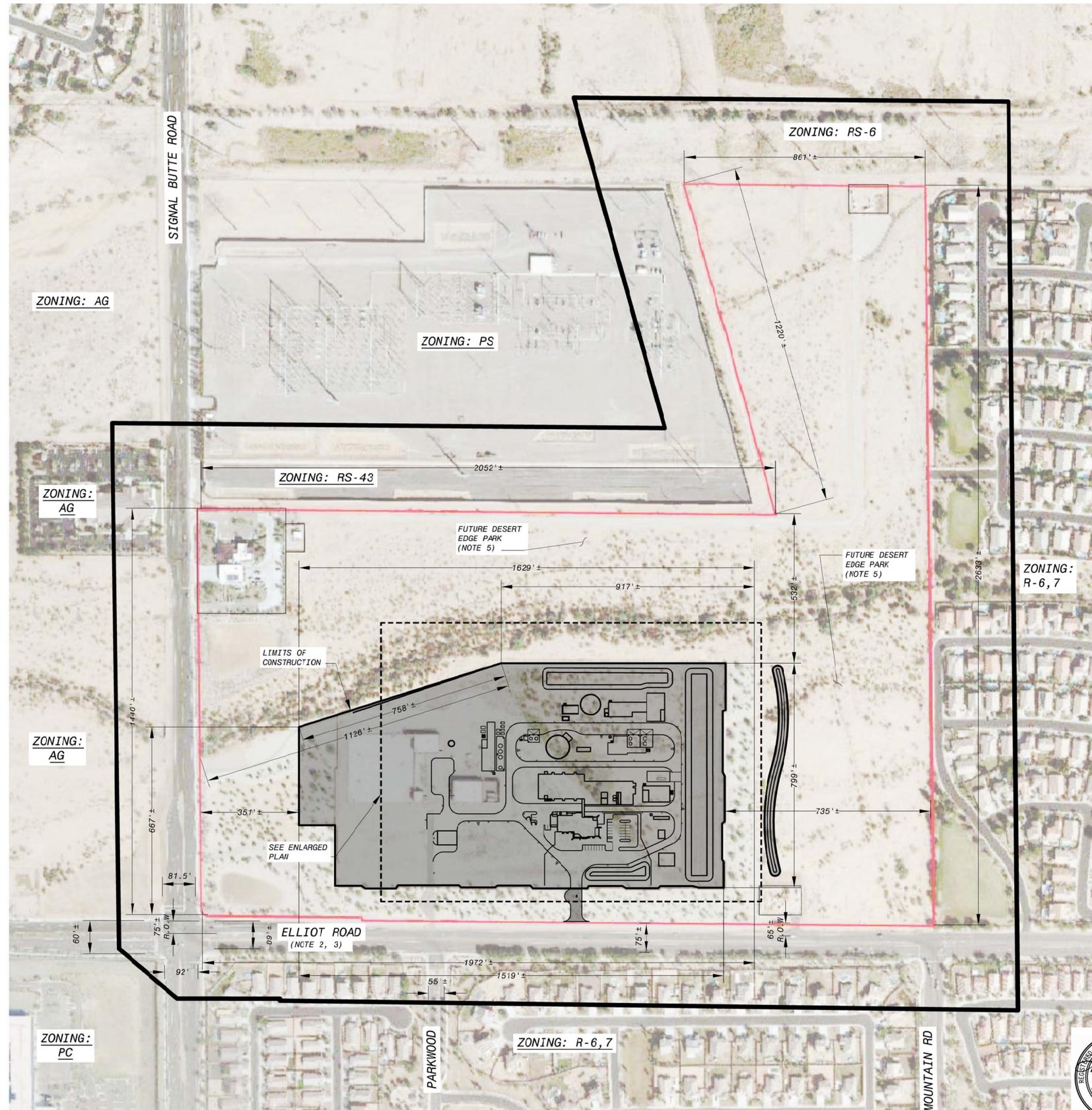
SIGNAL BUTTE WATER TREATMENT PLANT
MESA, ARIZONA

OVERALL SITE AERIAL

MARCH 2015

COM PN: C01600
B&V PN: 183056 (PW)

OWNER: CITY OF MESA
APPLICANT: CHRISTOPHER SCOTT, P.E. (CITY OF MESA ENGINEERING DEPARTMENT)
REGISTRANT: LISA JACKSON, P.E. (BLACK & VEATCH)



VICINITY MAP
NO SCALE

SITE ADDRESS

10950 E. ELLIOT ROAD
MESA, AZ 85212

PROPERTY OWNER

CITY OF MESA

ZONING

EXISTING: PS
PROPOSED: PS

ACREAGE

GROSS: 102.5 ACRES
NET: 94.8 ACRES
LIMITS OF CONSTRUCTION: 23.5 ACRES

RELATED CASE NUMBERS

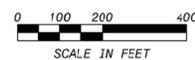
DR05-045
Z05-062

NOTES:

1. SITE AND SET BACK DIMENSIONS ARE APPROXIMATE AND HAVE BEEN NOT BEEN SURVEYED.
2. FOR SIGNAL BUTTE ROAD IMPROVEMENTS SEE CITY OF MESA PROJECT NO. 09-003-001. ROADWAY IMPROVEMENTS INCLUDE IMPROVEMENTS TO ELLIOT ROAD AT THE INTERSECTION WITH SIGNAL BUTTE ROAD.
3. ROADWAY IMPROVEMENTS, NEW RIGHT OF WAY DEDICATIONS, AND TRAFFIC VISIBILITY TRIANGLES FOR ELLIOT ROAD ARE NOT INCLUDED IN THIS PROJECT AND MAY BE INCLUDED IN A FUTURE CITY OF MESA PROJECT AS INDICATED IN THE MAG REGIONAL TRANSPORTATION PLAN.
4. 1/2 STREET IMPROVEMENTS INCLUDING THE NEW PRIMARY ENTRANCE TO THE SIGNAL BUTTE WATER TREATMENT PLANT WILL BE INCLUDED IN CITY OF MESA PROJECT NO. 01-645-002.
5. EXISTING TOPOGRAPHY EAST AND NORTH OF THE PROJECT SITE TO BE REVISED AS PART OF THE NEW LANDSCAPING AND RECREATIONAL AREAS OF THE NEW DESERT EDGE PARK THAT IS NOT INCLUDED IN THIS PROJECT.

— CITY OF MESA PARCEL
 — 300 FT DISTANCE FROM PROPERTY LINE

DRAFT DESIGN REVIEW BOARD



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 REGISTRANT: LISA JACKSON, P.E. (BLACK & VEATCH)

LINE IS 1 INCH
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CITY OF MESA

SIGNAL BUTTE WATER TREATMENT PLANT
MESA, ARIZONA

OVERALL SITE PLAN

APRIL 2015

FIGURE: 1

COM PN: C01600
E&V PN: 183056 (PW)

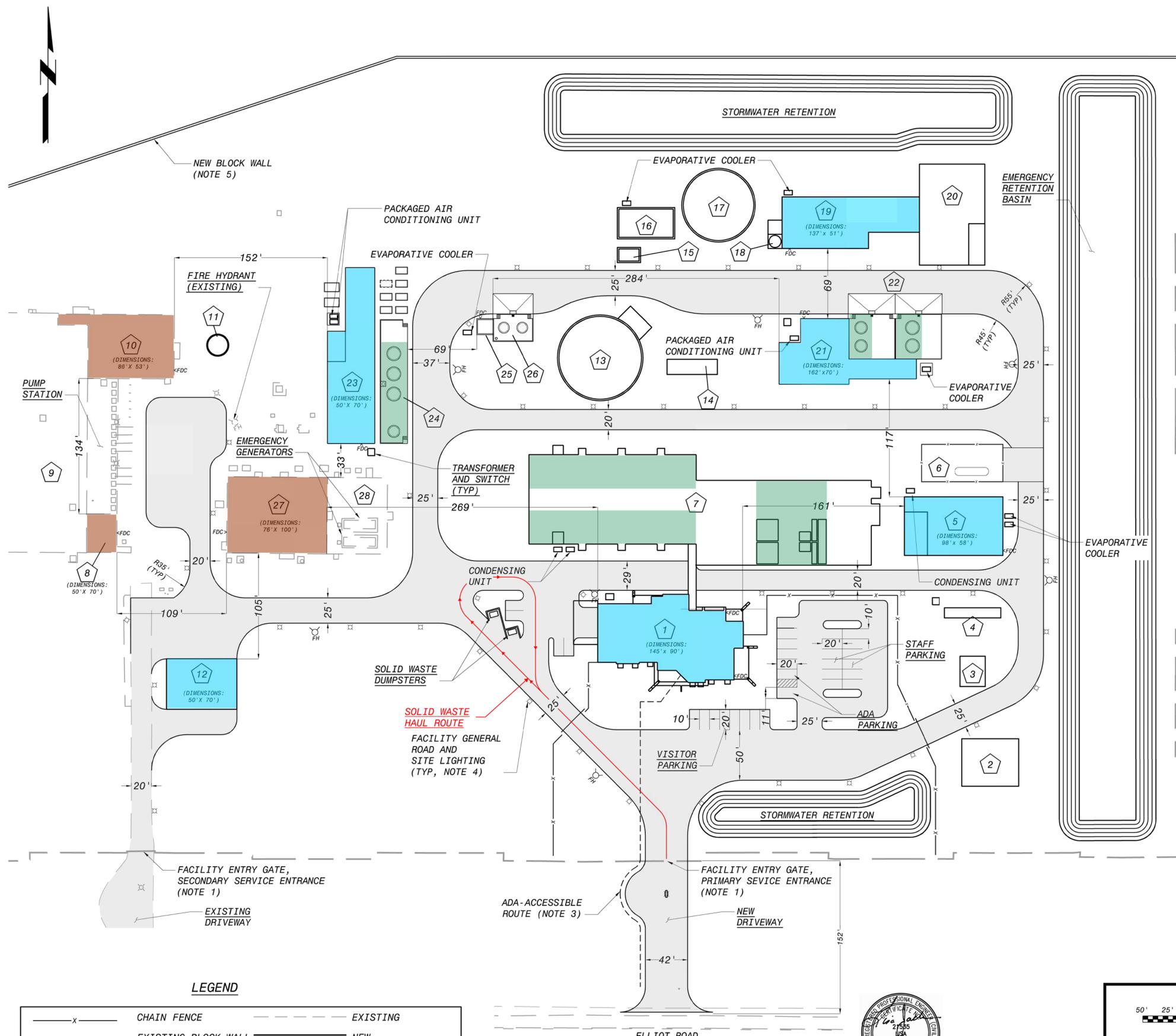


TABLE 1 - FACILITY HEIGHTS AND AREAS

No.	Facility	New	Height Above Grade, Ft.	Footprint, SQ.FT.	Savor Footing SQ.FT.
1	Operations Building	X	30	9243	####
	- First Floor and Maintenance			9243	9243
	- Second Floor			2644	2644
2	Raw Water Control Area	X	5	2684	-
3	Carbon Dioxide Injection	X	14.8	750	-
4	Carbon Dioxide Tank Storage	X	12	560	-
5	Ozone Generation Building	X	23.3	5684	-
6	Liquefied Oxygen Storage	X	6	2997	-
7	Treatment Complex	X	42.8	29972	-
8	Reservoir Influent Building		18.7	1152	-
9	Reservoir		0.5	56051	-
10	Reservoir Effluent Building		18.7	5795	-
11	Falcon Field Feed Tank	X	25	381	-
12	Well Storage Building	X	14.3	3500	-
13	Recovered Water Basin	X	6.8	6154	-
14	Washwater Treatment Unit	X	38.5	750	-
15	Sludge Flow Splitter	X	10	345	-
16	Sludge Pump Station	X	15	1767	-
17	Gravity Thickener Basin	X	3.5	4186	-
18	Thickened Sludge Tank	X	22	196	-
19	Dewatering Building	X	21.5	6157	-
20	Sludge Holding Bed	X	4	6500	-
21	Chemical Building	X	23.3	7568	-
22	Chemical Containment Area/Tanks	X	27	4118	-
23	Sodium Hypochlorite Generation Building	X	23.3	6528	-
24	Sodium Hypochlorite Containment Area/Tanks	X	30	2591	-
25	Fluoride Building	X	12	289	-
26	Fluoride Containment Area/Tanks	X	22.5	950	-
27	Electrical Building		19.4	7551	-
28	Standby Power Generator Area		14.9	4516	-

TABLE 2 - SETBACK DISTANCES

No.	Facility	Distance to Property Line, FT			
		North	South	East	West
1	Operations Building	1072	296	1195	1271
2	Raw Water Control Area	1212	197	922	1631
3	Carbon Dioxide Injection	1072	295	954	1631
4	Carbon Dioxide Tank Storage	1083	364	938	1616
5	Ozone Generation Building	973	425	935	1577
6	Liquefied Oxygen Storage	921	498	935	1595
7	Treatment Complex	934	413	1066	1205
8	Reservoir Influent Building	996	418	1816	764
9	Reservoir	797	417	1845	528
10	Reservoir Effluent Building	797	591	1758	768
11	Falcon Field Feed Tank	818	812	1703	896
12	Well Storage Building	1140	263	1699	841
13	Recovered Water Basin	796	573	1291	1236
14	Washwater Treatment Unit	839	600	1218	1344
15	Sludge Flow Splitter	729	710	1293	1296
16	Sludge Pump Station	689	734	1258	1296
17	Gravity Thickener Basin	650	732	1178	1361
18	Thickened Sludge Tank	715	726	1152	1446
19	Dewatering Building	677	727	1015	1460
20	Sludge Holding Bed	644	712	950	1570
21	Chemical Building	826	583	958	1472
22	Chemical Containment Area/Tanks	773	614	997	1477
23	Sodium Hypochlorite Generation Building	751	528	1558	1006
24	Sodium Hypochlorite Containment Area/Tanks	802	528	1525	1058
25	Fluoride Building	802	637	1440	1155
26	Fluoride Containment Area/Tanks	796	631	1400	1171
27	Electrical Building	958	420	1607	904
28	Standby Power Generator Area	958	420	1547	1004

TABLE 3 - PARKING

	REQUIRED	PROVIDED
STANDARD (10 FT X 20 FT)	30	25
ADA-COMPLIANT	1	2

- NOTES:**
- FOR NEW ENTRANCE GATE AND SIGNAGE SEE FIGURE "XX" "ENTRANCE SIGNAGE".
 - EXISTING GATE AND SIGNAGE CAN BE FOUND IN THE INCLUDED REFERENCE SET FOR CITY OF MESA (COM) PROJECT 01-600-01, SHEETS C-04 THROUGH C-06.
 - SIDEWALK SHALL HAVE MINIMUM WIDTH OF 5 FT WITH DOOR LOCATED AT THE FACILITY WALL FOR ENTRANCE TO THE SITE. SIDEWALK ALONG ELLIOT ROAD TO BE INCLUDED WITH IMPROVEMENTS TO ELLIOT ROAD THAT ARE SEPARATE FROM THIS PROJECT.
 - GENERAL SITE ROADWAY LIGHTING WITHIN THE NEW WATER TREATMENT PLANT ARE 250W HIGH PRESSURE SODIUM LUMINAIRES ON 20 FT POLES. SEE REPRESENTATIVE LUMINAIRE AND POLE CUT SHEETS INCLUDED WITH THE SUBMITTAL PACKAGE.
 - NEW BLOCK WALL ON NORTH SIDE OF WATER TREATMENT PLANT TO MATCH EXISTING SITE BLOCK WALL. FOR EXISTING BLOCK WALL PLANS, SECTIONS, AND DETAILS SEE SHEETS L20 - L23 IN THE REFERENCE SET FOR COM PROJECT 01-600-01.

DESIGN REVIEW BOARD

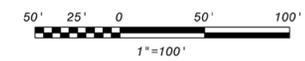
LEGEND

	CHAIN FENCE		EXISTING
	EXISTING BLOCK WALL		NEW
	NEW BLOCK WALL		SHADE CANOPY
	PAVEMENT		

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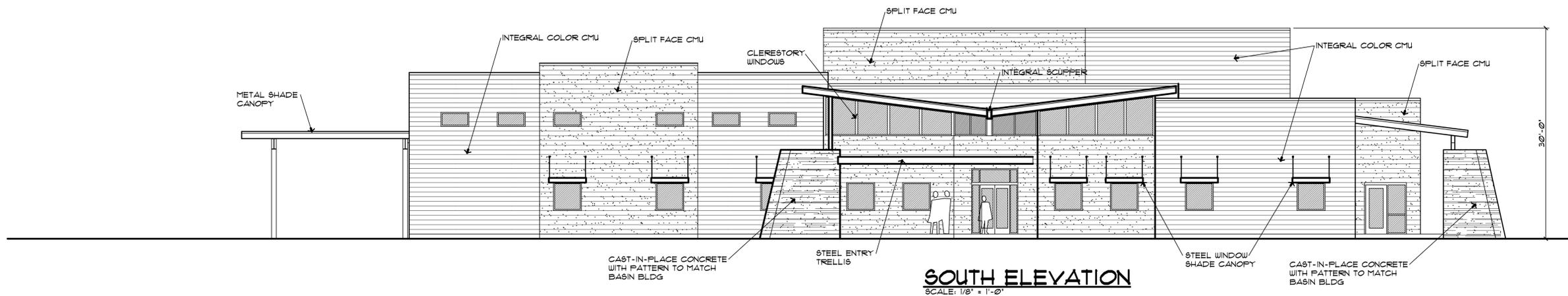
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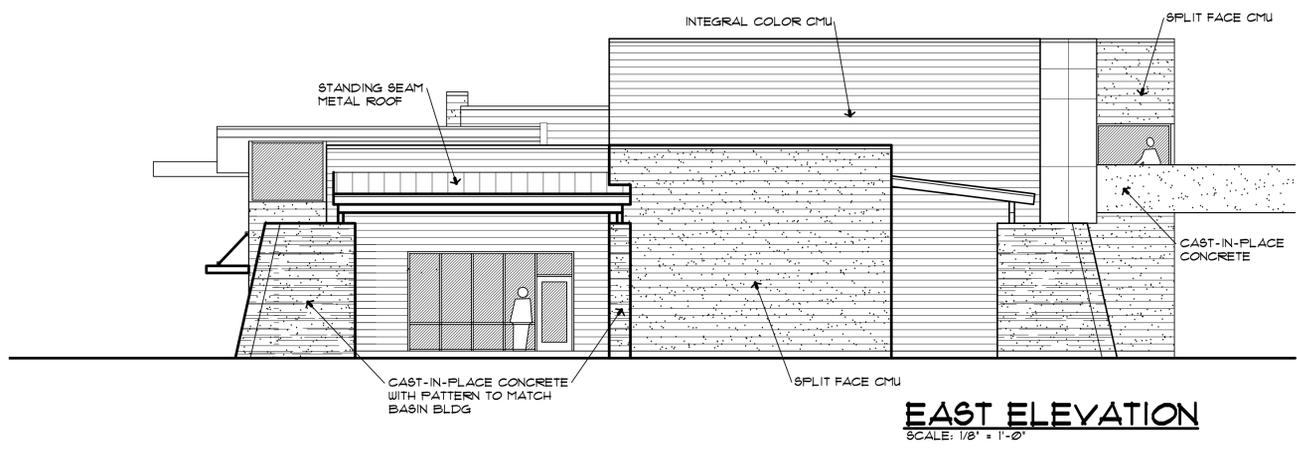
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CITY OF MESA
 SIGNAL BUTTE WATER TREATMENT PLANT
 MESA, ARIZONA
 ENLARGED SITE PLAN
 APRIL 2015
 COM PN: C01600
 B&V PN: 183056 (PW)

FIGURE: 2



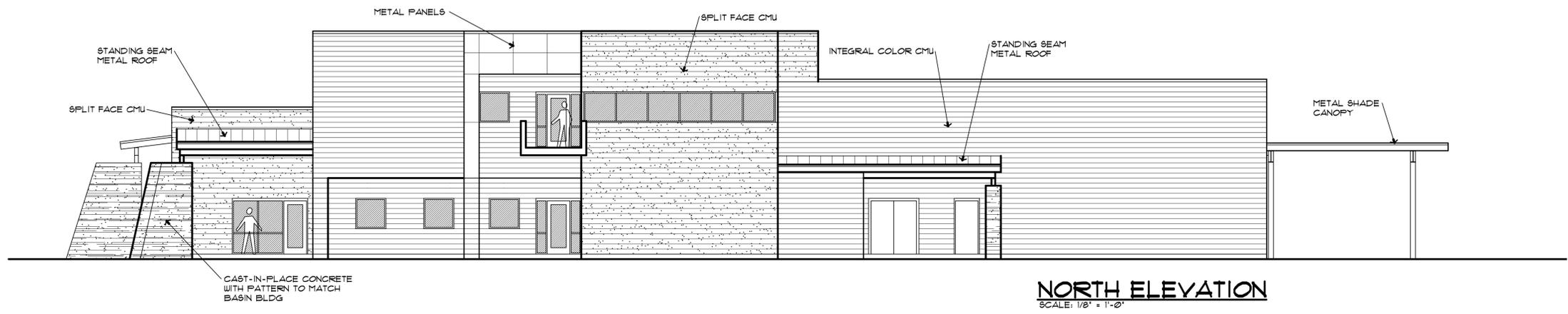
SOUTH ELEVATION
SCALE: 1/8" = 1'-0"



EAST ELEVATION
SCALE: 1/8" = 1'-0"



WEST ELEVATION
SCALE: 1/8" = 1'-0"



NORTH ELEVATION
SCALE: 1/8" = 1'-0"

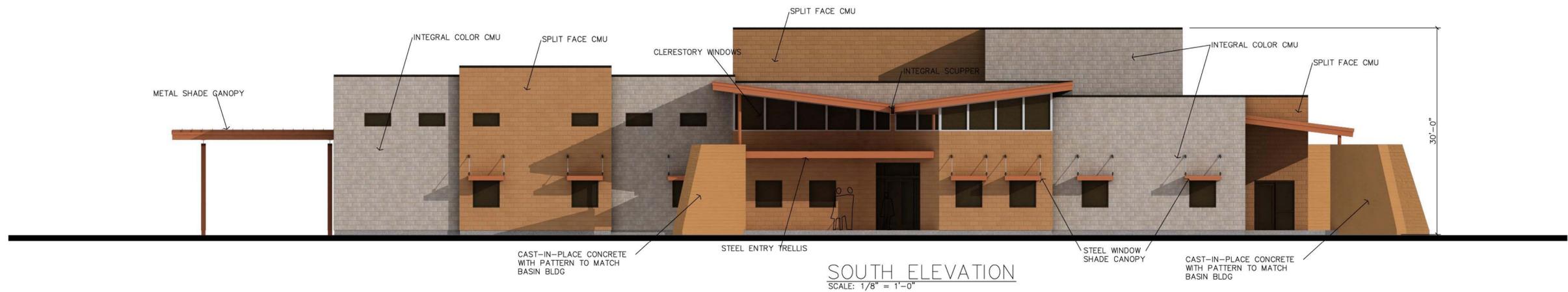
DESIGN REVIEW SUBMITTAL

	<p>BLACK & VEATCH Phoenix, Arizona</p>
	<p>CITY OF MESA ENGINEERING DEPARTMENT</p>
	<p>SIGNAL BUTTE WATER TREATMENT PLANT</p>
	<p>OPERATIONS BLDG ELEVATIONS</p>
	<p>REGISTERED ARCHITECT 15961 BOYD H. THACKER EXPIRES 9-30-2016</p>
<p>DRAWN BY: BHT ENGINEER: XXX APPROVED BY: BHT</p>	<p>DRAWING SHEET A3 000 OF 000</p>
<p>ACTIVITY: XXXX PROJ. NO.: 1413</p>	<p>CATALOG NUMBER:</p>

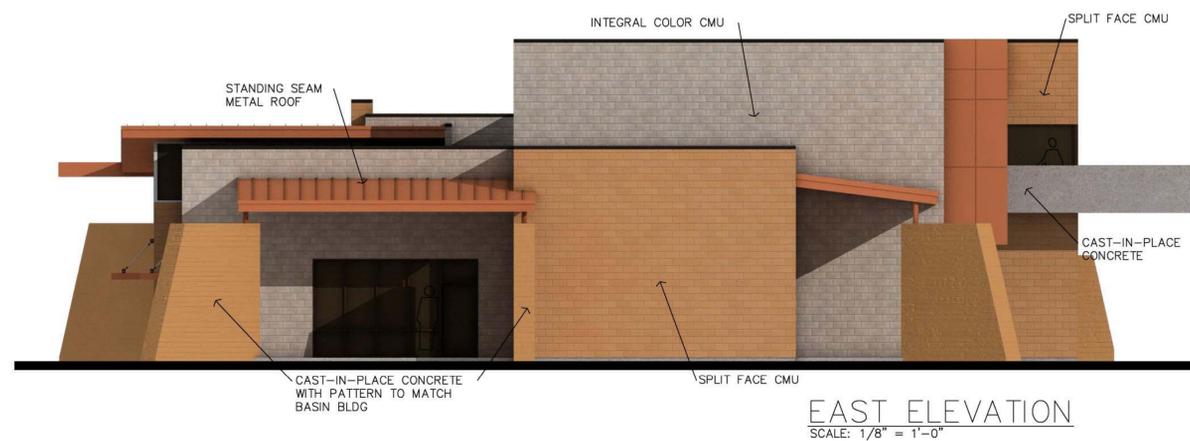
brock, craig and thacker
architects, ltd.

James A. Brock, P.E., AIA
141 West University Ave., Suite 2, Mesa, Arizona 85201 480-940-2001
fax: 480-940-2002

Boyd H. Thacker, AIA
15961 Boyd H. Thacker, AIA
e-mail: bth@brockcraigthacker.com



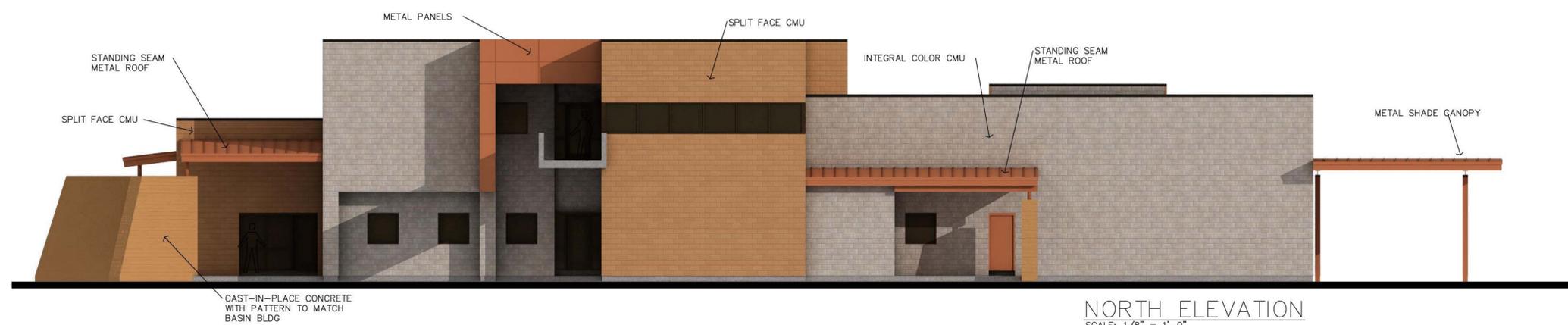
SOUTH ELEVATION
SCALE: 1/8" = 1'-0"



EAST ELEVATION
SCALE: 1/8" = 1'-0"

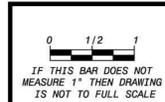


WEST ELEVATION
SCALE: 1/8" = 1'-0"



NORTH ELEVATION
SCALE: 1/8" = 1'-0"

DESIGN REVIEW SUBMITTAL



Black & Veatch Corporation
Phoenix, Arizona



CITY OF MESA
ENGINEERING DEPARTMENT

SIGNAL BUTTE
WATER TREATMENT PLANT

OPERATIONS BLDG
ELEVATIONS



DRAWN BY: BHT
ENGINEER: XXX
APPROVED BY: BHT
ACTIVITY: XXXX
PROJ. NO.: 1413

DRAWING
A3
SHEET
000 OF 000
CATALOG NUMBER:

brock, craig and thacker
architects, ltd.



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fax: 480-969-8283
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145 East University Drive, Suite 3, Mesa, Arizona 85201 480-969-3081
e-mail: bct@bctarchitects.net

FEATURES & SPECIFICATIONS

INTENDED USE – Ideal for parking areas, street lighting, walkways and car lots.

CONSTRUCTION – Rugged, die-cast, soft corner aluminum housing with 0.12" nominal wall thickness. Die-cast door frame has impact-resistant, tempered, glass lens that is fully gasketed with one-piece tubular silicone. Finish: Standard finish is dark bronze (DDB) polyester powder finish, with other architectural colors available.

OPTICS – Anodized, aluminum reflectors: IES full cutoff distributions R2 (asymmetric), R3 (asymmetric), R4 (forward throw) and R5S (square) are interchangeable. High-performance anodized, segmented aluminum reflectors IES full cutoff distributions SR2 (asymmetric), SR3 (asymmetric) and SR4SC (forward throw, sharp cutoff). High-performance reflectors attach with tool-less fasteners and are rotatable and interchangeable.

ELECTRICAL – Ballast: High pressure sodium: 70-150W is high reactance, high power factor. Constant wattage autotransformer for 200-400W. Metal halide: 70-150W is high reactance, high power factor and is standard with pulse-start ignitor technology. "SCWA" not required. Constant wattage autotransformer for 175-400W. Super CWA (pulse start ballast), 88% efficient and EISA legislation compliant, is required for metal halide 151-400W (SCWA option) for US shipments only. CSA, NOM or INTL required for probe start shipments outside of the US. Pulse-start ballast (SCWA) required for 200W, 320W, or 350W. Ballast is 100% factory-tested.

Socket: Porcelain, horizontally oriented medium base socket for 70-150M. Mogul base socket for 175M and above, and 70-400S, with copper alloy, nickel-plated screw shell and center contact. UL listed 1500W, 600V.

LISTINGS – UL Listed (standard). CSA Certified (see Options). UL listed for 25°C ambient and wet locations. IP65 rated in accordance with standard IEC 529.

WARRANTY – 1-year limited warranty. Complete warranty terms located at www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Specifications subject to change without notice.



Catalog Number
Notes
Type

CONTOUR
SERIES

Soft Square Lighting

KAD



Specifications

EPA: 1.2 ft.²

*Weight: 35.9 lbs (16.28 kg)

Length: 17-1/2" (44.5)

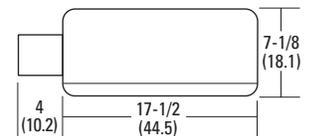
Width: 17-1/2" (44.5)

Depth: 7-1/8" (18.1)

All dimensions are inches (centimeters) unless otherwise specified.

*Weight as configured in example below.

METAL HALIDE: 70-400W
HIGH PRESSURE SODIUM: 70-400W
20' TO 35' MOUNTING



ORDERING INFORMATION For shortest lead times, configure product using **bolded options**.

Example: KAD 400M R3 TB SCWA SPD04 LPI

KAD	Wattage			Distribution		Voltage	Ballast	Mounting ¹²	
KAD	Metal halide 70M ^{1,2} 250M ⁵ 100M ¹ 320M ⁴ 150M 350M ^{3,4} 175M ³ 400M ^{5,6} 200M ⁴	High pressure sodium ¹ 70S 100S 150S 250S 400S	Ceramic metal halide 70MHC ^{1,2} 100MHC ¹ 150MHC	Standard reflectors R2 IES type II asymmetric ⁷ R3 IES type III asymmetric ⁷ R4 IES type IV forward throw ⁷ R5S IES type V square	High performance reflectors ⁸ SR2 IES type II asymmetric ⁷ SR3 IES type III asymmetric ⁷ SR4SC IES type IV forward throw	120 208 ⁹ 240 ⁹ 277 347 480 ⁹ TB ¹⁰ 23050HZ ¹¹	(blank) Magnetic ballast CWI Contant wattage isolated ¹¹ Pulse Start SCWA Super CWA pulse-start ballast NOTE: For shipments to U.S. territories, SCWA must be specified to comply with EISA.	Ships in fixture carton SPD___ Square pole RPD___ Round pole WBD___ Wall bracket WWD___ Wood or pole wall Ships separately ^{13,14} DAD12P Degree arm (pole) DAD12WB Degree arm (wall) WBA Decorative wall bracket ¹⁵ KMA Mast arm external fitter KTMB Twin mounting bar	Arm length 04 4" arm 06 6" arm 09 9" arm 12 12" arm

Options	Finish ²⁰			Lamp ²¹
Shipped installed in fixture SF Single fuse (120, 277, 347V) ¹⁶ DF Double fuse (208, 240, 480V) ¹⁶ PD Power tray ¹⁷ PER NEMA twist-lock receptacle only (no photocontrol) QRS Quartz restrrike system ¹⁸ QRSTD QRS time delay ¹⁸ WTB Terminal wiring block ¹⁷	CSA CSA Certified INTL Available MH for probe start shipping outside the U.S. REGC1 California Title 20, effective 1/1/2010 Shipped separately ¹³ HS House side shield PE1 NEMA twist-lock PE (120, 208, 240V)	PE3 NEMA twist-lock PE (347V) PE4 NEMA twist-lock PE (480V) PE7 NEMA twist-lock PE (277V) SC Shorting cap for PER option VG Vandal guard ¹⁹ WG Wire guard ¹⁹	(blank) Dark bronze DWH White DBL Black DMB Medium bronze DNA Natural aluminum Super Durable Finishes DDBXD Dark bronze DBLXD Black	DNAXD Natural aluminum DWHXD White DDBTXD Textured dark bronze DBLTXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white LPI Lamp included L/LP Less lamp

Accessories: Tenon Mounting Slipfitter (RPxx required.)
Order as separate catalog number. Must be used with pole mounting.

		Number of fixtures					
Tenon O.D.	One	Two@180°	Two@90°	Three@120°	Three@90°	Four@90°	
2-3/8"	T20-190	T20-280	T20-290 ²²	T20-320 ²²	T20-390 ²²	T20-490 ²²	
2-7/8"	T25-190	T25-280	T25-290 ²²	T25-320	T25-390 ²²	T25-490 ²²	
4	T35-190	T35-280	T35-290 ²²	T35-320	T35-390 ²²	T35-490 ²²	

Notes

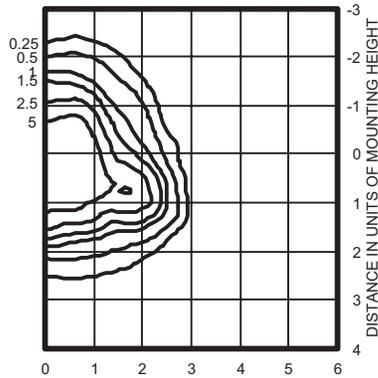
- Not available with SCWA.
- Not available with 480V.
- These wattages do not comply with California Title 20 regulations.
- Must be ordered with SCWA.
- These wattages require the REGC1 option to be chosen for shipments into California for Title 20 compliance. 250M REGC1 is not available in 347 or 480V.
- Reduced jacket ED28 required for SR2, SR3 and SR4SC optics.
- House-side shield available.
- High performance reflectors not available with QRSTD.
- Must specify CWI for use in Canada.
- Optional multi-tap ballast (120, 208, 240, 277V; in Canada: 120, 277, 347V).
- Consult factory for available wattages.
- 9" arm is required when two or more luminaires are oriented on a 90° drilling pattern.
- May be ordered as an accessory.
- Must specify finish when ordered as an accessory.
- Available with SPD04 and SPD09.
- Must specify voltage. N/A with TB.
- Only available with SR2, SR3 and SR4SC optics.
- Max allowable wattage lamp included.
- Prefix with KAD when ordered as an accessory.
- See www.lithonia.com/archcolors for additional color options.
- Must be specified. L/LP not available with MHC.
- Must use RPD09.

KAD Metal Halide, Arm-mounted Soft Square Cutoff

Coefficient of Utilization _____
Initial Footcandles _____

KAD 400M R2 Test no. 1193083101P

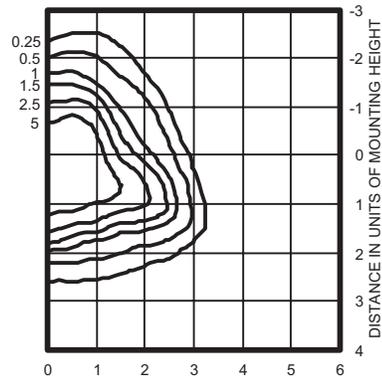
ISOILLUMINANCE PLOT (Footcandle)



400W pulse start metal halide lamp, rated 38000 lumens. Footcandle values based on 20' mounting height.
Classification: Type II, Short, Full Cutoff

KAD 400M R3 Test no. 1192040902P

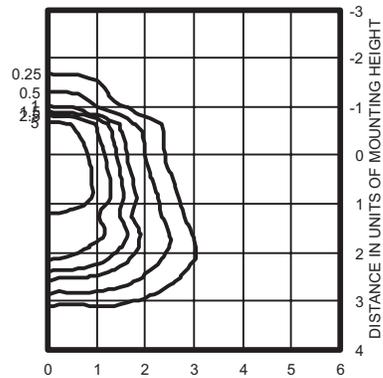
ISOILLUMINANCE PLOT (Footcandle)



400W pulse start metal halide lamp, rated 38,000 lumens. Footcandle values based on 20' mounting height.
Classification: Type II, Short, Full Cutoff

KAD 400M R4 Test no. 1191110101P

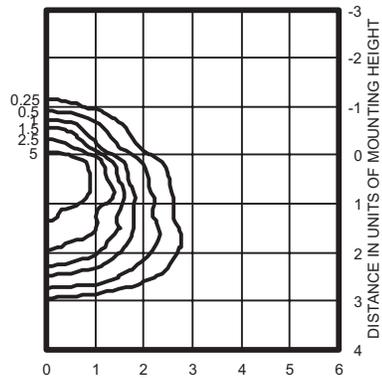
ISOILLUMINANCE PLOT (Footcandle)



400W pulse start metal halide lamp, rated 38,000 lumens. Footcandle values based on 20' mounting height.
Classification: Unclassified (Type III, Very Short), Full Cutoff

KAD 400M R4HS Test no. 1192061101P

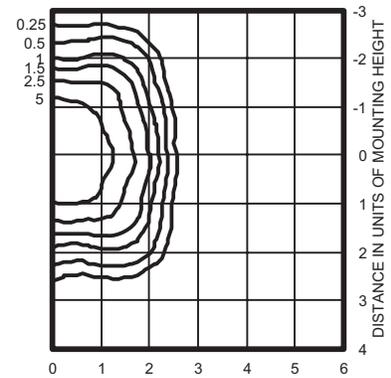
ISOILLUMINANCE PLOT (Footcandle)



400W pulse start metal halide lamp, rated 38,000 lumens. Footcandle values based on 20' mounting height.
Classification: Unclassified (Type III, Very Short), Full

KAD 400M R5S Test no. 1194040801P

ISOILLUMINANCE PLOT (Footcandle)



400W pulse start metal halide lamp, rated 38000 lumens. Footcandle values based on 20' mounting height.
Classification: Unclassified (Type NC, Very Short), Full Cutoff

Notes

- 1 Photometric data for other distributions can be accessed at www.lithonia.com.
- 2 Tested to current IES and NEMA standards under stabilized laboratory conditions. Various operating factors can cause differences between laboratory data and actual field measurements. Dimensions and specifications on this sheet are based on the most current available data and are subject to change without notice.
- 3 For electrical characteristics, consult outdoor technical data specification sheets on www.lithonia.com.

Mounting Height Correction Factor

(Multiply the fc level by the correction factor)

- 25 ft. = 0.64
- 35 ft. = 0.32
- 40 ft. = 0.25

$$\left(\frac{\text{Existing Mounting Height}}{\text{New Mounting Height}} \right)^2 = \text{Correction Factor}$$



SOUTH ELEVATION
SCALE 1/8" = 1'-0"



EAST ELEVATION
SCALE 1/8" = 1'-0"



WEST ELEVATION
SCALE 1/8" = 1'-0"

NOTE: TANK CANOPY NOT SHOWN



NORTH ELEVATION
SCALE 1/8" = 1'-0"

DRAFT

LINE IS 1 INCH
(IF NOT 1", SCALE ACCORDINGLY)



CITY OF MESA

SIGNAL BUTTE WATER TREATMENT PLANT
MESA, ARIZONA

SOLIDS DEWATERING BUILDING
ELEVATIONS

MARCH 2015

FIGURE: X-X

COM PN: C01600
B&V PN: 183056

OWNER: CITY OF MESA
APPLICANT: CHRISTOPHER SCOTT, P.E. (CITY OF MESA ENGINEERING DEPARTMENT)
REGISTRANT: RICHARD BARTHOLOMEW (BLACK & VEATCH)



SOUTH ELEVATION
SCALE 1/8" = 1'-0"



EAST ELEVATION
SCALE 1/8" = 1'-0"



WEST ELEVATION
SCALE 1/8" = 1'-0"



NORTH ELEVATION
SCALE 1/8" = 1'-0"

DRAFT

LINE IS 1 INCH
(IF NOT 1", SCALE
ACCORDINGLY)



CITY OF MESA

SIGNAL BUTTE WATER TREATMENT PLANT
MESA, ARIZONA

CHEMICAL BUILDING
ELEVATIONS

MARCH 2015

FIGURE: X-X

COM PN: C01600
B&V PN: 183056

OWNER: CITY OF MESA
APPLICANT: CHRISTOPHER SCOTT, P.E. (CITY OF MESA ENGINEERING DEPARTMENT)
REGISTRANT: RICHARD BARTHOLOMEW (BLACK & VEATCH)



WEST ELEVATION
SCALE 1/8" = 1'-0"



NORTH ELEVATION
SCALE 1/8" = 1'-0"



SOUTH ELEVATION
SCALE 1/8" = 1'-0"

NOTE: TANK CANOPY NOT SHOWN



EAST ELEVATION
SCALE 1/8" = 1'-0"

DRAFT

LINE IS 1 INCH
(IF NOT 1", SCALE
ACCORDINGLY)

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Black & Veatch Corporation
Phoenix, Arizona

CITY OF MESA

SIGNAL BUTTE WATER TREATMENT PLANT
MESA, ARIZONA

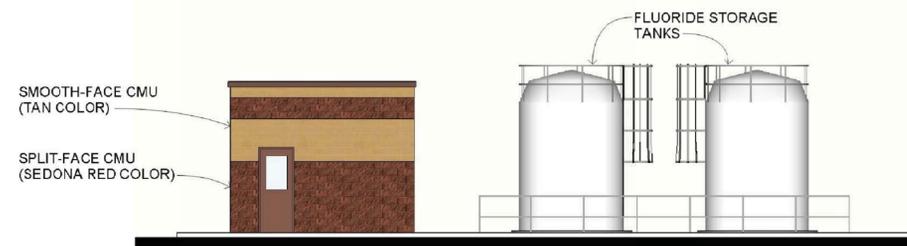
SODIUM HYPOCHLORITE BUILDING
ELEVATIONS

MARCH 2015

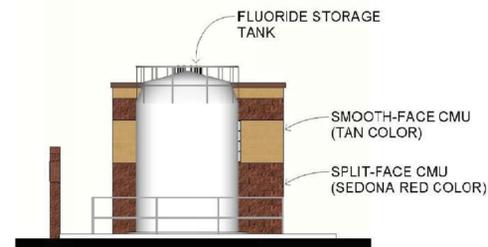
FIGURE: X-X

COM PN: C01600
B&V PN: 183056

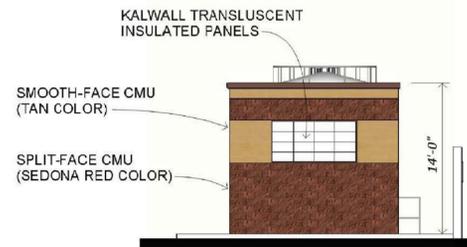
OWNER: CITY OF MESA
APPLICANT: CHRISTOPHER SCOTT, P.E. (CITY OF MESA ENGINEERING DEPARTMENT)
REGISTRANT: RICHARD BARTHOLOMEW (BLACK & VEATCH)



SOUTH ELEVATION
SCALE 1/8" = 1'-0"

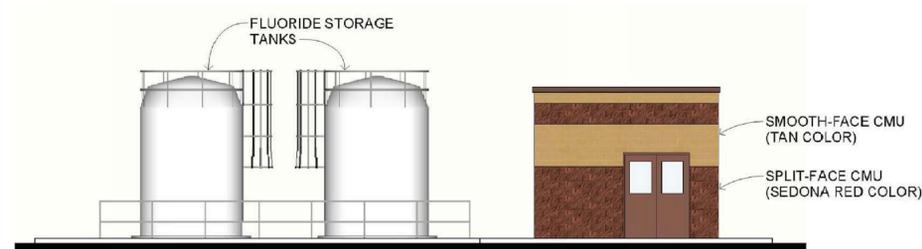


EAST ELEVATION
SCALE 1/8" = 1'-0"



WEST ELEVATION
SCALE 1/8" = 1'-0"

NOTE: TANK CANOPY NOT SHOWN



NORTH ELEVATION
SCALE 1/8" = 1'-0"

DRAFT

LINE IS 1 INCH
(IF NOT 1", SCALE
ACCORDINGLY)

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CITY OF MESA

SIGNAL BUTTE WATER TREATMENT PLANT
MESA, ARIZONA

FLUORIDE BUILDING
ELEVATIONS

MARCH 2015

FIGURE: X-X

COM PN: C01600
B&V PN: 183056

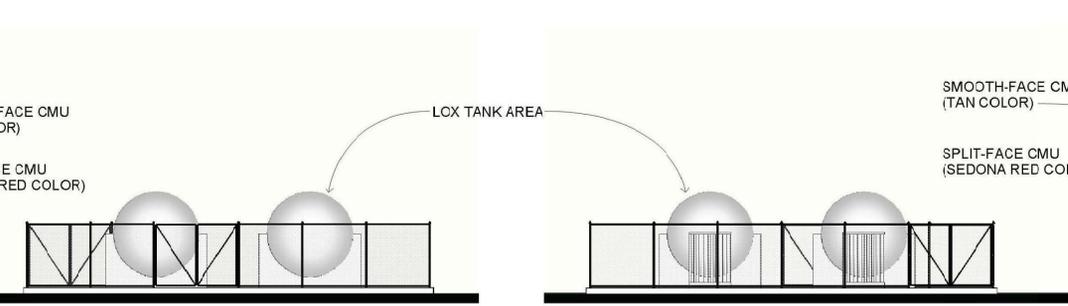
OWNER: CITY OF MESA
APPLICANT: CHRISTOPHER SCOTT, P.E. (CITY OF MESA ENGINEERING DEPARTMENT)
REGISTRANT: RICHARD BARTHOLOMEW (BLACK & VEATCH)



SOUTH ELEVATION
SCALE 1/8" = 1'-0"



EAST ELEVATION
SCALE 1/8" = 1'-0"



WEST ELEVATION
SCALE 1/8" = 1'-0"



NORTH ELEVATION
SCALE 1/8" = 1'-0"

DRAFT

LINE IS 1 INCH
(IF NOT 1", SCALE
ACCORDINGLY)



CITY OF MESA

SIGNAL BUTTE WATER TREATMENT PLANT
MESA, ARIZONA

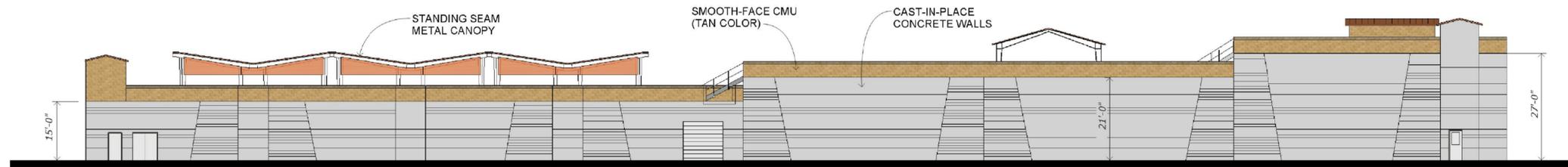
OZONE FACILITY
ELEVATIONS

MARCH 2015

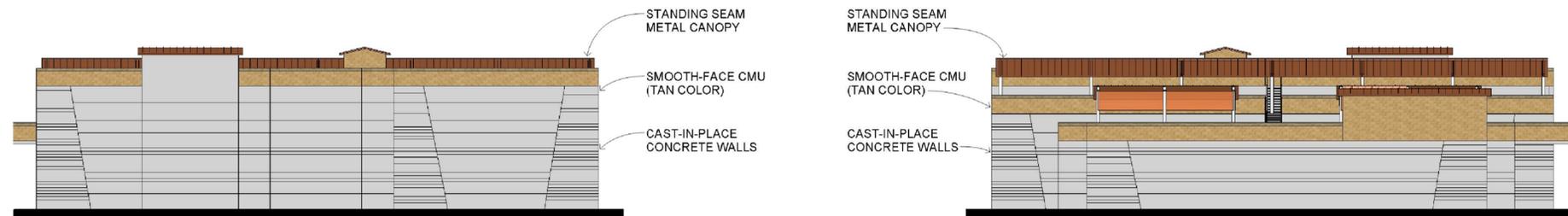
OWNER: CITY OF MESA
APPLICANT: CHRISTOPHER SCOTT, P.E. (CITY OF MESA ENGINEERING DEPARTMENT)
REGISTRANT: RICHARD BARTHOLOMEW (BLACK & VEATCH)

FIGURE: X-X

COM PN: C01600
B&V PN: 183056

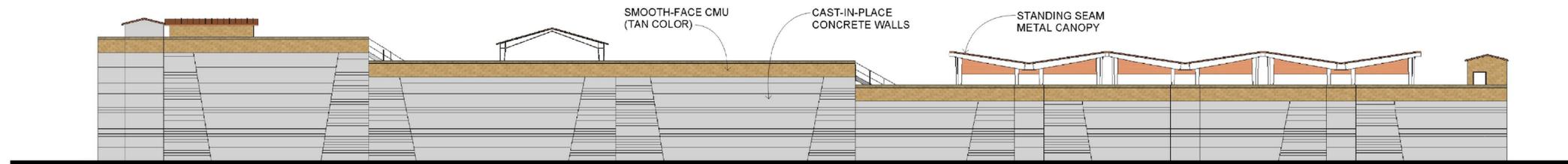


SOUTH ELEVATION
SCALE 1/8" = 1'-0"



EAST ELEVATION
SCALE 1/8" = 1'-0"

WEST ELEVATION
SCALE 1/8" = 1'-0"



NORTH ELEVATION
SCALE 1/8" = 1'-0"

DRAFT

LINE IS 1 INCH
(IF NOT 1", SCALE
ACCORDINGLY)

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Phoenix, Arizona

CITY OF MESA

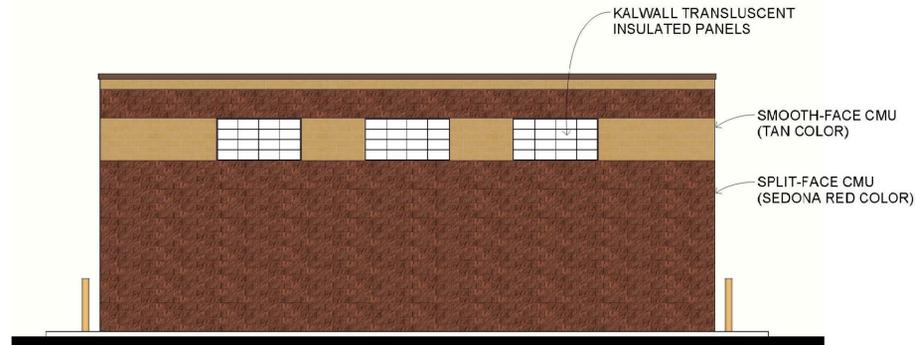
SIGNAL BUTTE WATER TREATMENT PLANT
MESA, ARIZONA
TREATMENT BASIN STRUCTURE
ELEVATIONS
MARCH 2015

FIGURE: X-X

COM PN: C01600
B&V PN: 183056



SOUTH ELEVATION
SCALE 1/8" = 1'-0"



EAST ELEVATION
SCALE 1/8" = 1'-0"



WEST ELEVATION
SCALE 1/8" = 1'-0"



NORTH ELEVATION
SCALE 1/8" = 1'-0"

DRAFT

LINE IS 1 INCH
(IF NOT 1", SCALE
ACCORDINGLY)

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Black & Veatch Corporation
Phoenix, Arizona

CITY OF MESA

SIGNAL BUTTE WATER TREATMENT PLANT
MESA, ARIZONA

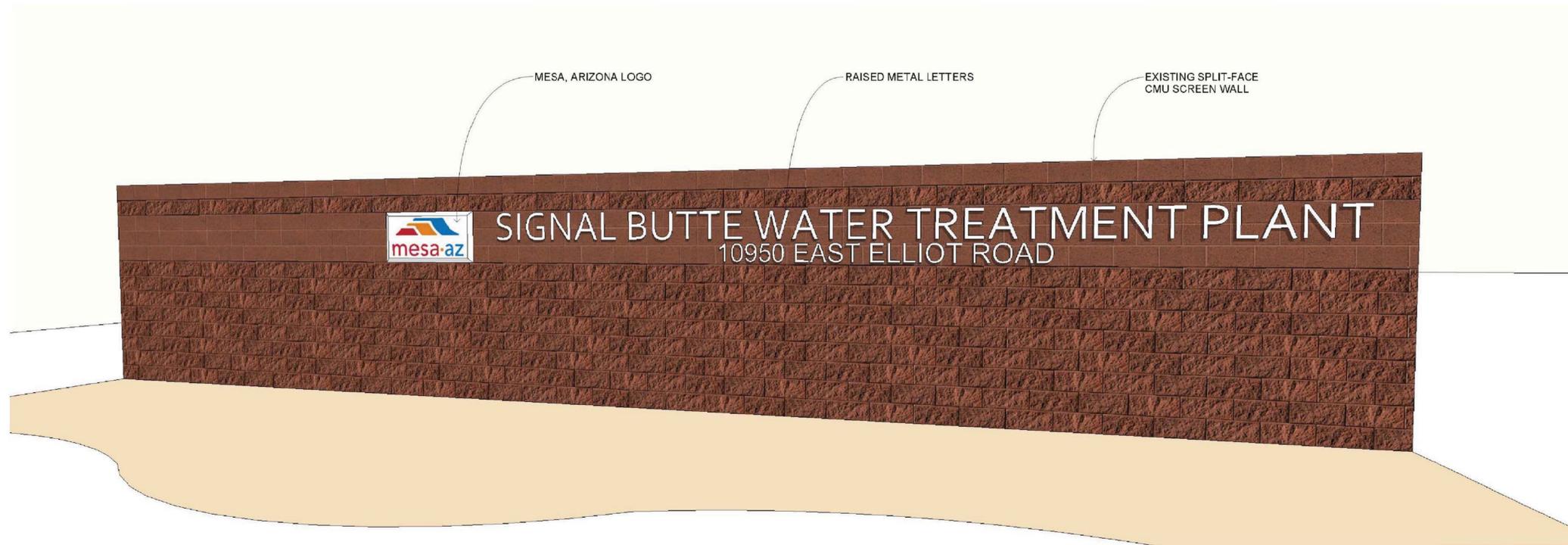
WELL STORAGE BUILDING
ELEVATIONS

MARCH 2015

FIGURE: X-X

COM PN: C01600
B&V PN: 183056

OWNER: CITY OF MESA
APPLICANT: CHRISTOPHER SCOTT, P.E. (CITY OF MESA ENGINEERING DEPARTMENT)
REGISTRANT: RICHARD BARTHOLOMEW (BLACK & VEATCH)



ENTRANCE SIGNAGE
NO SCALE

DRAFT

LINE IS 1 INCH
(IF NOT 1", SCALE
ACCORDINGLY)

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Phoenix, Arizona

CITY OF MESA

SIGNAL BUTTE WATER TREATMENT PLANT
MESA, ARIZONA

ENTRANCE SIGNAGE

MARCH 2015

FIGURE: X-X

COM PN: C01600
B&V PN: 183056

OWNER: CITY OF MESA
APPLICANT: CHRISTOPHER SCOTT, P.E. (CITY OF MESA ENGINEERING DEPARTMENT)
REGISTRANT: RICHARD BARTHOLOMEW (BLACK & VEATCH)

FEATURES & SPECIFICATIONS

INTENDED USE — Round tapered aluminum roadway pole with upsweep mast arm(s) for up to 40 foot mounting heights including rise of arm.

CONSTRUCTION — Shaft: Shaft is spun tapered from seamless 6063 alloy aluminum tubing and heat-treated to a T6 temper. Circumferential satin-brushed finish. Round in cross-section down length of shaft and cone tapered to the base diameter.

Arm: Body of mounting arm is tapered aluminum alloy 6063-T6 tube with 2-3/8" OD (2" NPS) pipe size at luminaire end. The pole end of the arm is welded to an aluminum alloy 6063-T6 mounting plate.

Mounting: Arm mounting plate bolts to the shaft using stainless steel bolts, nuts and washers. A grommet is provided for the 1-1/4" diameter wiring hole between the pole shaft and the bracket arm.

Anchor base: Cast from A356 aluminum alloy and heat treated to T6 temper. Base plate and shaft are circumferentially welded top and bottom.

Anchor bolts: Fabricated from carbon steel bar with minimum-yield strength of 55,000 psi. Upper portion of anchor bolt is galvanized per ASTM A-153. Each anchor bolt is furnished with two hex nuts and two flat washers.

Grounding: Provision located inside hand hole rim. Grounding hardware is not included (provided by others).

Hand hole: A nominal 3" x 5" or 4" or 6" reinforced flush covered hand hole is centered 18" above the base

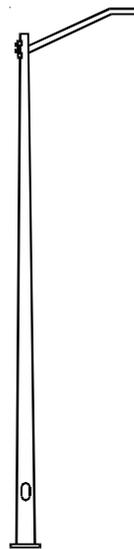
Hardware: Stainless steel

Top cap: Removable top cap provided.

Bolt covers: A356 bolt covers included with anchor base unless otherwise specified.

Finish: Must specify finish.

Catalog Number	
Notes	Type



Anchor Base Poles / Mounting Arm Combo

RTAU

ROUND TAPERED ALUMINUM POLE WITH UPSWEEP MAST ARM

20' to 40' Fixture Mounting Height

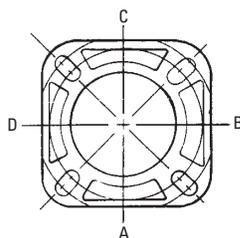
ORDERING INFORMATION

Lead times will vary depending on options selected. Consult with your sales representative.

Example: RTAU 20 6G BMA US4 BA VD

RTAU						
Shaft/arm type	Nominal fixture mounting height	Mounting	Arm length ³	Options	Finish ⁴	
RTAU	20 – 40 feet (See back page.)	BMA Bolt on mast arm	US4 4' arm length US6 6' arm length US8 8' arm length	Shipped installed	Standard colors	
	Nominal shaft base size/wall thickness (See back page.)			L/AB Less anchor bolts FBC Full base cover VD Vibration damper TP Tamper proof H1-18Axx Horizontal arm bracket (1 fixture) ^{1,2} FDLxx Festoon outlet less electrical ¹ CPL12xx 1/2" coupling ¹ CPL34xx 3/4" coupling ¹ CPL1xx 1" coupling ¹ NPL12xx 1/2" threaded nipple ¹ NPL34xx 3/4" threaded nipple ¹ NPL1xx 1" threaded nipple ¹ EHHxx Extra handhole ¹		DDB Dark bronze DWH White DBL Black DMB Medium bronze DNA Natural aluminum BA Brushed aluminum

HANDHOLE ORIENTATION



Arm is located on side B

NOTES:

- Specify location and orientation when ordering option.
For 1st "x": Specify the height in feet above base of pole.
Example: 5ft = 5 and 20ft = 20
For 2nd "x": Specify orientation from handhole (A,B,C,D)
Refer to the Handhole Orientation diagram on this page.
- Horizontal arm is 18" x 2-3/8" O.D. tenon standard.
- Additional arm lengths and types available, some restrictions apply.
- Finish must be specified. Additional colors available; see www.lithonia.com/archcolors or Architectural Colors brochure (Form No. 794.3).

Classic colors

DSS	Sandstone
DGC	Charcoal gray
DTG	Tennis green
DBR	Bright red
DSB	Steel blue

Class 1 architectural anodized

ABL	Black
ADB	Dark bronze
ANA	Natural

Architectural colors (powder finish)⁴

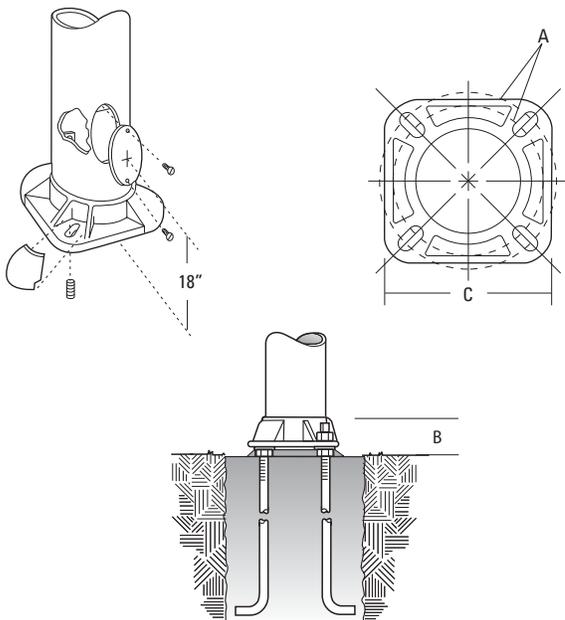
RTAU Round Tapered Aluminum Poles with Mast Arm

TECHNICAL INFORMATION

Catalog Number	Fixture mount ht. (ft) ¹	Mtg. arm length (feet)	Pole shaft diam. (in. x in.)	Wall thickness (in.)	EPA ft ² with 1.3 gust	Max. Weight (lbs.)	Bolt circle (in.)	Bolt size (inches)	App. ship weight (pounds)
					100 mph				
RTAU 20 6E BMA US4	20'	4'	4.5" x 6"	0.156	2	65	9-10	.75 x 30 x 3	90
RTAU 20 6G BMA US6	20'	6'	4.5" x 6"	0.188	2	65	9-10	.75 x 30 x 3	100
RTAU 20 6G BMA US8	20'	8'	4.5" x 6"	0.188	1.74	65	9-10	.75 x 30 x 3	105
RTAU 25 7E BMA US4	25'	4'	4.5" x 7"	0.156	2	65	10-11	1 x 36 x 4	120
RTAU 25 7G BMA US6	25'	6'	4.5" x 7"	0.188	2	65	10-11	1 x 36 x 4	140
RTAU 25 8E BMA US8	25'	8'	4.5" x 8"	0.156	1.74	65	11-12	1 x 36 x 4	135
RTAU 30 8E BMA US4	30'	4'	4.5" x 8"	0.156	2	65	11-12	1 x 36 x 4	150
RTAU 30 8G BMA US6	30'	6'	4.5" x 8"	0.188	2	65	11-12	1 x 36 x 4	170
RTAU 30 8G BMA US8	30'	8'	4.5" x 8"	0.188	1.74	65	11-12	1 x 36 x 4	175
RTAU 35 8G BMA US4	35'	4'	4.5" x 8"	0.188	2	65	11-12	1 x 36 x 4	190
RTAU 35 8J BMA US6	35'	6'	4.5" x 8"	0.250	2	65	11-12	1 x 36 x 4	240
RTAU 35 8J BMA US8	35'	8'	4.5" x 8"	0.250	1.74	65	11-12	1 x 36 x 4	245
RTAU 40 8J BMA US4	40'	4'	4.5" x 8"	0.250	2	65	11-12	1 x 36 x 4	255
RTAU 40 8J BMA US6	40'	6'	4.5" x 8"	0.250	2	65	11-12	1 x 36 x 4	260
RTAU 40 10G BMA US8	40'	8'	6" x 10"	0.188	1.74	65	14-15	1 x 48 x 4	265

NOTES:

- 1 Denotes fixture mounting height, NOT nominal pole height.



POLE DATA

Shaft base size	Bolt circle A	Bolt projection B	Base square C	Template description	Anchor bolt description
6"	9" – 10"	4.75"	9.75"	ABTEMPLATEPJ50033	AB30-0
7"	10" – 11"	4.75"	10.5"	ABTEMPLATEPJ50034	AB36-0
8"	11" – 12"	4.25"	11.5"	ABTEMPLATEPJ50035	AB36-0
10"	14" – 15"	5.25"	14"	ABTEMPLATEPJ50481	AB481-0

IMPORTANT:

- These specifications are intended for general purposes only. Lithonia reserves the right to change material or design, without prior notice, in a continuing effort to upgrade its products.

IMPORTANT INSTALLATION NOTES:

- **Do not** erect poles without having fixtures installed.
- Factory-supplied templates must be used when setting anchor bolts. Lithonia Lighting will not accept claim for incorrect anchorage placement due to failure to use factory template.
- If poles are stored outside, all protective wrapping must be removed immediately upon delivery to prevent finish damage.
- Lithonia Lighting is not responsible for the foundation design.

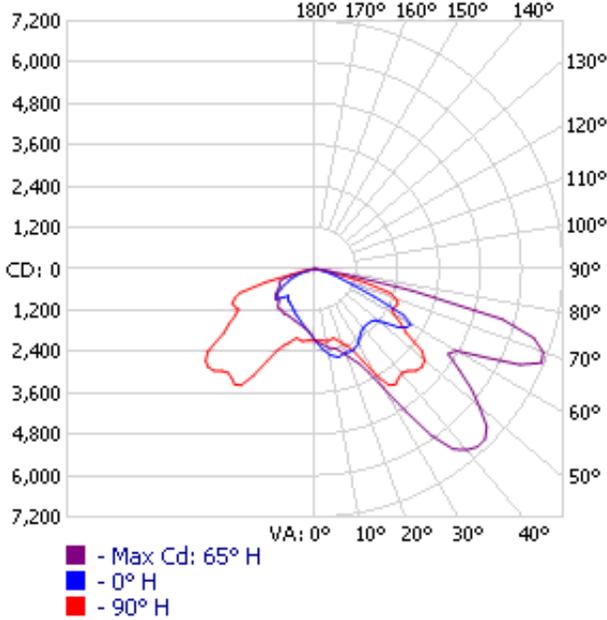
OUTDOOR PHOTOMETRIC REPORT

CATALOG: KAD 250M R3 (PROBE)

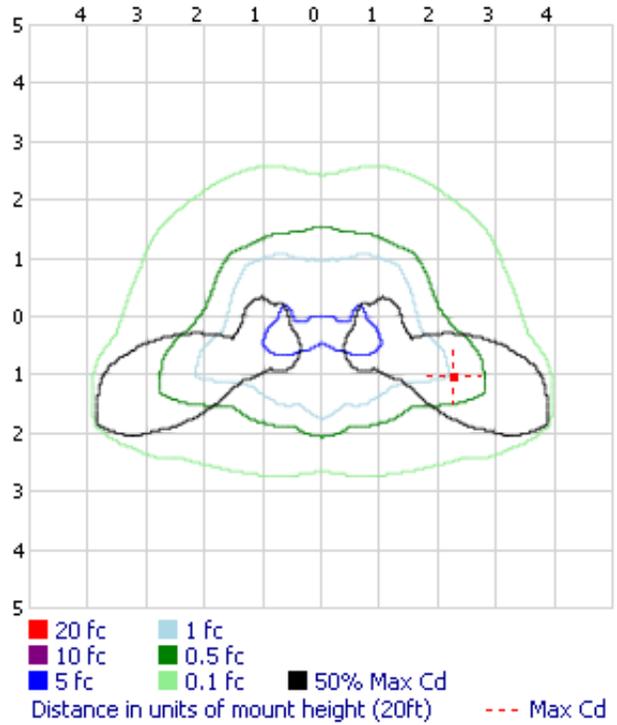
TEST #: 1192042001
 TEST LAB: ACUITY BRANDS LIGHTING CONYERS LAB
 ISSUE DATE: 9/4/2008
 CATALOG: KAD 250M R3 (PROBE)
 DESCRIPTION: AREA LUMINAIRE, 250W MH, R3 REFLECTOR, FULL CUTOFF MEETS THE 'NIGHTTIME FRIENDLY' CRITERIA
 SERIES: KAD
 LAMP CAT #: M250/U
 LAMP: ONE 250-WATT CLEAR BT-28 METAL HALIDE, HORIZONTAL POSITION.
 LAMP OUTPUT: 1 LAMP, RATED LUMENS/LAMP: 19500
 INPUT WATTAGE: 297
 LUMINOUS OPENING: RECTANGLE (L: 14.4", W: 14.4")
 TER VALUE: 38 (BF = 1)
 TER CATEGORY: AREA & SITE LIGHT - TYPE II
 MAX CD: 7,119.0 AT HORIZONTAL: 65°, VERTICAL: 67.5°
 CUTOFF CLASS: FULL CUTOFF
 ROADWAY CLASS: SHORT, TYPE II
 EFFICIENCY: 67%



Polar Candela Distribution



Isofootcandle Plot



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OUTDOOR PHOTOMETRIC REPORT
 CATALOG: KAD 250M R3 (PROBE)



ZONAL LUMEN SUMMARY

ZONE	LUMENS	% LAMP	% LUMINAIRE
0-30	1,974.2	10.1%	15.1%
0-40	4,010.6	20.6%	30.7%
0-60	9,216.0	47.3%	70.5%
60-90	3,854.5	19.8%	29.5%
70-100	1,479.2	7.6%	11.3%
90-120	0	0%	0%
0-90	13,070.5	67%	100%
90-180	0	0%	0%
0-180	13,070.5	67%	100%

LUMENS PER ZONE

ZONE	LUMENS	% TOTAL	ZONE	LUMENS	% TOTAL
0-10	201.1	1.5%	90-100	0	0%
10-20	621.3	4.8%	100-110	0	0%
20-30	1,151.8	8.8%	110-120	0	0%
30-40	2,036.4	15.6%	120-130	0	0%
40-50	2,645.0	20.2%	130-140	0	0%
50-60	2,560.5	19.6%	140-150	0	0%
60-70	2,375.2	18.2%	150-160	0	0%
70-80	1,422.4	10.9%	160-170	0	0%
80-90	56.9	0.4%	170-180	0	0%

ROADWAY SUMMARY

CUTOFF CLASSIFICATION:	FULL CUTOFF	
DISTRIBUTION:	TYPE II, SHORT	
MAX CD, 90 DEG VERT:	0	
MAX CD, 80 TO <90 DEG:	967.0	
	LUMENS	% LAMP
DOWNWARD STREET SIDE:	8,400.4	43.1%
DOWNWARD HOUSE SIDE:	4,669.5	23.9%
DOWNWARD TOTAL:	13,069.9	67%
UPWARD STREET SIDE:	0	0%
UPWARD HOUSE SIDE:	0	0%
UPWARD TOTAL:	0	0%
TOTAL LUMENS:	13,069.9	67%

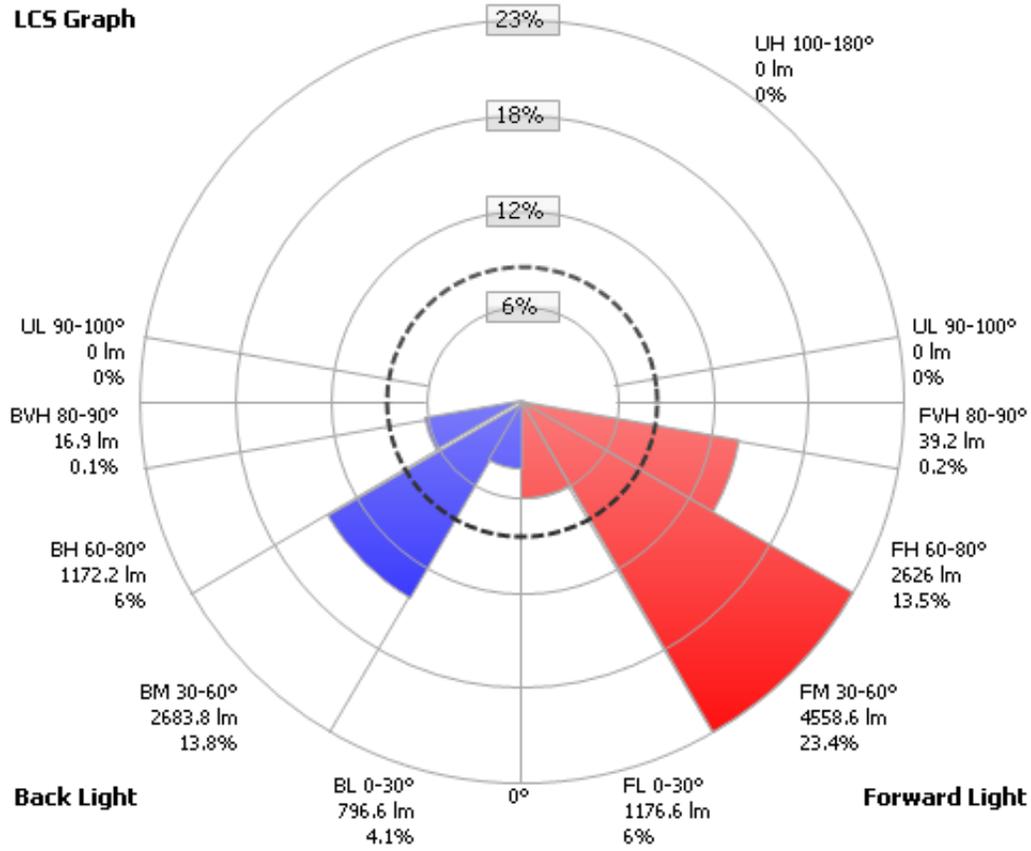
LCS TABLE

BUG RATING	B3 - U0 - G3	
FORWARD LIGHT	LUMENS	LUMENS %
LOW(0-30):	1,176.6	6%
MEDIUM(30-60):	4,558.6	23.4%
HIGH(60-80):	2,626.0	13.5%
VERY HIGH(80-90):	39.2	0.2%
BACK LIGHT		
LOW(0-30):	796.6	4.1%
MEDIUM(30-60):	2,683.8	13.8%
HIGH(60-80):	1,172.2	6%
VERY HIGH(80-90):	16.9	0.1%
UPLIGHT		
LOW(90-100):	0	0%
HIGH(100-180):	0	0%
TRAPPED LIGHT:	6,430.1	33%

OUTDOOR PHOTOMETRIC REPORT
CATALOG: KAD 250M R3 (PROBE)



LCS Graph



Scale = Max LCS %

Trapped Light: 6430.1lm, 33%

OUTDOOR PHOTOMETRIC REPORT
 CATALOG: KAD 250M R3 (PROBE)



CANDELA TABLE - TYPE C

	0	15	25	35	45	55	65	75	85	90	105	115	125	135	145	155	165	175	180	
0	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067
5	2315	2336	2340	2338	2293	2282	2223	2188	2149	2098	2079	2049	2034	1985	1950	1905	1872	1853	1866	
10	2535	2572	2533	2535	2478	2459	2400	2319	2260	2163	2127	2065	2020	1946	1866	1843	1780	1741	1720	
15	2650	2681	2689	2740	2748	2666	2539	2399	2239	2163	2075	2038	1931	1870	1788	1741	1722	1667	1609	
20	2578	2625	2765	2915	2964	2954	2802	2652	2504	2352	2297	2246	2110	2001	1909	1788	1700	1622	1531	
25	2613	2631	2841	2993	3151	3299	3216	3028	2855	2646	2603	2496	2336	2163	2026	1860	1693	1589	1441	
30	2516	2613	2896	3175	3391	3629	3906	4009	3904	3678	3572	3434	3134	2646	2194	1940	1724	1564	1443	
35	2295	2379	2722	3188	3658	4446	5423	5912	5187	4341	4087	3959	3719	3297	2683	2246	1870	1589	1385	
40	2202	2244	2551	3063	3867	5047	6620	6854	5522	4269	3931	3771	3576	3354	3011	2625	1975	1533	1324	
45	2211	2266	2490	3040	3824	4690	6445	6983	5661	4452	4171	4015	3697	3214	2960	2720	2040	1533	1180	
50	2324	2391	2517	2962	3286	3736	5441	6240	5341	4391	4150	3974	3596	3219	2824	2514	1981	1373	1211	
55	2943	2828	2494	2993	2978	3138	4487	5115	4122	3407	3237	3077	2841	2716	2652	2172	1767	1394	1225	
60	3214	2943	2276	2798	2851	2876	3873	4737	4058	2952	2666	2527	2340	2400	2443	1693	1484	1268	1152	
65	1897	1831	1736	2145	2564	2755	4105	6562	5302	3099	2586	2227	1903	1882	1626	1398	1268	1125	1006	
70	786	872	1112	1344	1810	2204	4212	7051	5606	3040	2484	2135	1763	1700	1451	1305	1213	1106	926	
75	404	470	651	850	1117	1632	2943	5634	4142	1775	1476	1223	981	920	741	813	897	714	509	
80	20	16	35	80	427	454	505	967	722	349	312	238	162	152	156	103	138	166	144	
85	0	0	0	0	0	0	6	23	45	14	4	0	6	0	0	0	0	0	0	
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	