bSa Challenge 2014

Design COBie test procedure

Bill East, PhD, PE, F.ASCE
Engineer Research and Development Center
buildingSMART alliance Project Coordinator

bSa COBie Design criteria

same as Jan 13 COBie Design Challenge process

criteria

does the data format conform to the COBie 2.4 specification?

- zero errors on COBie Tool Kit Design QC Report is required

does the data content match information found on design drawings?

drawings used

Common BIM File Medical Clinic Model - OR - new Barracks 101 Building drawings

modeling

test will identify all products/equipment to be modeled.

test will define three rooms to be detailed as noted, with appropriate attributes.

Scoring

one scoring round to be completed prior to the event

one minute penalty for each incorrect COBie record

bSa COBie Design criteria

same as Jan 13 COBie Design Challenge process

Architectural design only

all rooms (and finish schedule properties)
all electrical light fixtures (and fixture type (or component) properties)
all plumbing fixtures (and fixture type (or component) properties)

Coordinated design

all room finish schedule data
all scheduled equipment (again, minimum expected list to be provided)
specific equipment identified on drawings for 3 rooms.

Allowed Submission Formats

IFC 2x3 FM Handover MVD, and COBie Responsibility Matrix (same as last year)
COBie 2.4 SpreadsheetML (same as last year)
COBieLite
data submitted must all conform to requried format. Content checking follows…

COBie.Contact Testing

Contact.Record(Count) = 1
required values provided True/False
expected contents is POC at design firm responsible for this deliverable.

COBie.Facility Testing (ARC & ARC-MEP)

Facility.Record(Count) = 1 (exact)
Facility.Name(Value) = “PN 0001”
Facility.Category(Value)=“11-13 24 14: Clinic”
Facility.ProjectName(Value)=“Medical-Dental Clinic”
Facility.Unit Columns G-J, consistent values provided
Facility.AreaMeasurement , a value provided

G	H	I	J	K
LinearUnits	AreaUnits	VolumeUnits	CurrencyUnit	AreaMeasurement
meters	squaremeters	cubicmeters	Dollars	System X 2011 BIM Area

Note: (1) if software specific area measurement and not specification of a specific standard, this should be noted (but not take off points) (2) if building modeled in imperial measurement the base units should be so identified here.

COBie.Floor Testing (ARC & ARC-MEP)

Floor(Count) = 5 (exact)

Floor.Category(Value) = test data
Floor.Elevation(Value) = test data
Floor.Height(Value) =test data

A	D	I	J
Name	Category	Elevation	Height
TOF Footing	Site	-1	0
Roof - Main	Roof	9.25	0
Second Floor	Floor	4.57	4.60
First Floor	Floor	0	4.60
Site	Site	0	0

COBie.Space Testing (ARC & ARC-MEP)

Space(Count) = 269 (exact)

Space(1E21).Description(Value) = “Flammable Storage”
.Category = “13-75 41 24: Hazardous Material Storage Space”
.GrossArea(Value) = “5.665”
.NetArea(Value) = “5.665”
.UseableHeight(Value)=“2700”

Space(A205).Description(Value) = “OH DTR 1”
.Category = “13-41 41 99: Other Healing Spaces”
.GrossArea(Value) = “11.33”
.NetArea(Value) = “11.33”
.UseableHeight(Value)=“2600”

Space(1E15).Description(Value) = “Central Mechanical Room” or equivalent
.Category(Value) = “13-81 21 17: Mechanical Room”
.GrossArea(Value) = “28.914”
.NetArea(Value) = “28.914”
.UsableHeight(Value)=“3350” or floor to bottom of slab

Note that although Net is most likely <> Gross (eg A205) this will not be tested in this Challenge

COBie.Zone Testing (ARC & ARC-MEP)

Zone.SpaceName(1E21).Name(Value) = Logistics
Zone.Name(Logistics).Count = 39 (exact)

Zone.SpaceName(A205).Name(Value) = Dental
Zone.Name(Dental).Count = 32 (exact)

Zone.SpaceName(1E15).Name(Value) = Mechanical
Zone.Name(Mechanical).Count = 13 (exact)

ZONE NAMES BE BASED INFORMATION PROVIDED IN EXAMPLE COBie SAMPLE FILE.
Drawing section labels are not valid zones!

Name	Category	SpaceNames	Description
Dental	Occupancy Zone	2A01	Dental Department
Dental	Occupancy Zone	2A02	Dental Department
Dental	Occupancy Zone	2A03	Dental Department
Dental	Occupancy Zone	2A04	Dental Department
Dental	Occupancy Zone	2A05	Dental Department
Dental	Occupancy Zone	2A06	Dental Department
Dental	Occupancy Zone	2A07	Dental Department
Dental	Occupancy Zone	2A08	Dental Department
Dental	Occupancy Zone	2A09	Dental Department
Dental	Occupancy Zone	2A10	Dental Department
Dental	Occupancy Zone	2A11	Dental Department
Dental	Occupancy Zone	2A12	Dental Department
Dental	Occupancy Zone	2A12A	Dental Department
Dental	Occupancy Zone	2A13	Dental Department
Dental	Occupancy Zone	2A14	Dental Department
Dental	Occupancy Zone	2C01	Dental Department
Dental	Occupancy Zone	2C02	Dental Department
Dental	Occupancy Zone	2C03	Dental Department
Dental	Occupancy Zone	2C04	Dental Department
Dental	Occupancy Zone	2C06	Dental Department
Dental	Occupancy Zone	2C07	Dental Department
Dental	Occupancy Zone	2C08	Dental Department
Dental	Occupancy Zone	2C09	Dental Department
Dental	Occupancy Zone	2C10	Dental Department
Dental	Occupancy Zone	2C12	Dental Department
Dental	Occupancy Zone	2C14	Dental Department
Dental	Occupancy Zone	2C16	Dental Department
Dental	Occupancy Zone	2C17	Dental Department
Dental	Occupancy Zone	2C19	Dental Department
Dental	Occupancy Zone	2C22	Dental Department
Dental	Occupancy Zone	2C23	Dental Department
Dental	Occupancy Zone	2C24	Dental Department

COBie.Type Testing (ARC)

Minimum Types included:

- All types found in tables on this page
- Add “Equip-” types in 3 test spaces.

Cabinet Type A
Cabinet Type B
Cabinet Type C
Counter Top
Counter Top - L Shaped
Door Type A
Door Type B
Door Type C
Door Type E
Door Type F
Door Type G
Door Type H
Drinking Fountain R-2201
Duplex Receptacle
Duplex Receptacle- GFCI
Fire Extinguisher Cabinet
Fire Sprinkler
Grab Bar Type A
Grab Bar Type B
Lavatory P-3070
Lavatory P-3100

Light Fixture A2
Light Fixture A28
Light Fixture A2B
Light Fixture A3
Light Fixture B1
Light Fixture B18
Light Fixture B1B
Light Fixture B1D
Light Fixture B3
Light Fixture B3B
Light Fixture B3D
Light Fixture B3DB
Light Fixture C1
Light Fixture C18
Light Fixture C18B
Light Fixture C1B
Light Fixture C1D
Light Fixture D18
Light Fixture E1
Light Fixture E2
Light Fixture LV
Light Fixture M175
Light Fixture M250
Light Fixture M400
Light Fixture P1
Light Fixture Q1
Light Fixture Q4
Light Fixture Q4B
Light Fixture R1
Light Fixture S
Light Fixture SA
Light Fixture SB
Light Fixture SBB
Light Fixture SC
Light Fixture SCB
Light Fixture SD
Light Fixture SDB
Light Fixture SE
Light Fixture T1
Light Fixture X1
Light Fixture Y1
Light Fixture Y2
Light Switch
Light Switch- Three Way

Mirror
Mop Basin P-4700
PH Meter
PH MONITOR
Shower P-5040
Shower Seat
Sink CS-090M
Sink CS-150
Sink CS-180A
Sink CS-180M
Sink D-0795
Sink D-0800
Sink P-6500
Toilet Door
Towel Dispenser
Urinal P-8150
Water Closet P-9050
Water Closet P-9050M
Window Type W1
Window Type W10
Window Type W11
Window Type W12
Window Type W13
Window Type W3
Window Type W4
Window Type W5
Window Type W6
Window Type W7
Window Type W8
Window Type W9

Modelers may select to either use names of these types found on drawings
Or “pretty names” listed here. Names must be unique, per COBie Spec.

COBie.Type Testing (ARC+MEP model)

Minimum Types included:

- All ARC types
- All types found in tables on this page
- Add “Equip-” types in 3 test spaces.

AC Unit Type 1
AC Unit Type 2
AHU
Air Compressor - Dental
Air Cooled Chiller
Air Cooled Condensing Unit- Large
Air Cooled Condensing Unit- Small
Air Separator
Backflow Preventer
Ball Valve 100 mm
Ball Valve 150 mm
Ball Valve 50 mm
Ball Valve 65 mm
Ball Valve 80 mm
BLOOD GAS ANALYZER
Boiler

Modelers may select to either use names of these types found on drawings
Or “pretty names” listed here. Names must be unique, per COBie Spec.

Elevator-Hydraulic
Expansion Tank
Fan- Centrifugal Air Foil
Fan- In Line Type 1
Fan- In Line Type 2
Fan- In Line Type 3
Fan- Roof Mounted Type 1
Fan- Roof Mounted Type 2
Fan- Roof Mounted Type 3
Fan- Roof Mounted Type 4
Fan- Sidewall Type 1
Fan- Sidewall Type 2
Fan- Sidewall Type 3
Fire Extinguisher Cabinet
Fire Sprinkler

Pump- Cold Water
Pump- Hot Water
Return Diffuser 150 Face
Return Diffuser 200 Face
Return Diffuser 300 Face
Return Diffuser 350 Face
Return Diffuser 400 Face
Return Diffuser 450 Face
Return Diffuser 500 Face

Defibrillator
DirecDigitalControl-DDC-Panel

Supply Diffuser 600 Face
Supply Diffuser Sidewall 200mm
Supply Diffuser Sidewall 400mm
Supply Diffuser Sidewall 800 mm
Supply Diffuser Sidewall Standard
Transformer Switchboard
VAV 100 mm
VAV 125 mm
VAV 150 mm
VAV 175 mm
VAV 200 mm
VAV 225 mm
VAV 250 mm
VAV 300 mm
VAV 350 mm
VAV 400 mm
Water Closet P-9050
Water Closet P-9050M
Water Heater
Workstation D-0935M
Workstation D-0985
X-Ray

COBie.Component Testing (ARC only)

Component(Count) = 3115 components expected ARC, not counting components for the equipment in fully modeled rooms

Spot check of door and window count in two randomly selected rooms on drawing door/window schedule

Spot check of number of lighting fixtures in two randomly selected rooms

Spot check of number of plumbing fixtures in one randomly selected rest room.

http://projects.buildingsmartalliance.org/files/?artifact_id=4448

COBie.Component Testing (ARC+MEP)

Component(Count) = 3956 components expected in ARC+MEP, not counting components for the equipment in fully modeled rooms

Spot-check of ARC elements as described previously.

Complete check of count and location of AC Units, ACCU, Chiller, AHUs, Bolilers, Pumps, Fans, and VAV's

http://projects.buildingsmartalliance.org/files/?artifact_id=4448

COBie.System Testing (ARC+MEP only)

elements found in the sample file to be designated with a System Label Following minimum Systems to be included:

System.Name(Value) = Direct Digital Control System,
System.Category (Value) = 21-81 61 62 21: HVAC Measurement and Control Equipment

System.Name(Value) = Fire Protection System
System.Category(Value) = 21-51 11 11: Fire and Smoke Detection and Alarm

System.Name(Value) = HVAC
System.Category (Value) = 21-51 51 16: Air Distribution

System.Name(Value) =Medical Gas
System.Category (Value) = 21-51 51 16: Air Distribution

COBie.Type/Component.Attribute Testing

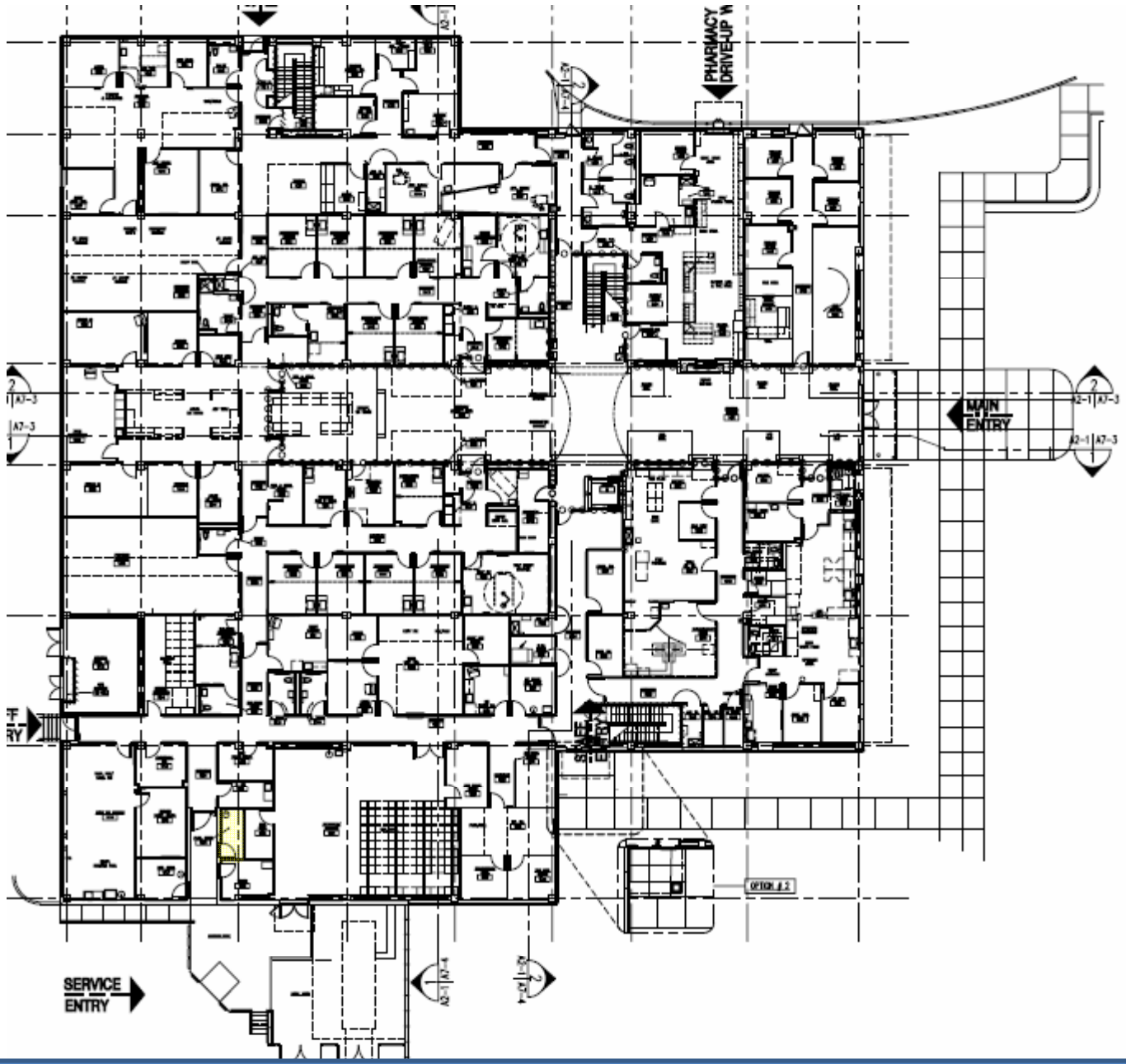
1. COBie Tool Kit scrubs attributes whose values = attribute name, and list of drawing and internal system attributes that have been provided to us. If your product pushes out non-human attributes, please advise and we will discuss adding these to the scrub list.

2. vendor documentation must document use of “family” and “component” objects attributes to ensure that these create proper COBie data for appropriate types of products. This is required since there are multiple user patterns related to product and equipment schedules.

3. All attribute records in the COBie file must be of proper format with units of measure explicitly provided when relevant.

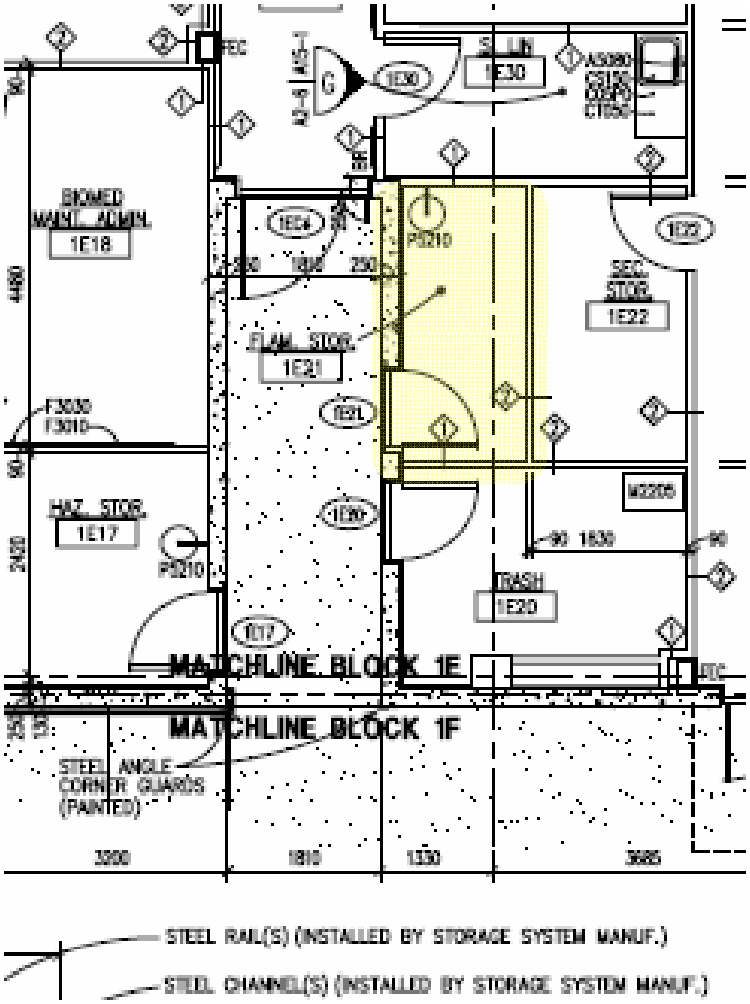
4. A spot check of attributes on spaces (space schedule) and types found in Spaces 1E21, A205, & 1E15. A minimum set of attribute values found in drawing schedules will be expected. Penalty for each component without properties shown as scheduled.

First Test Room



Sheet: Clinic_052_Composite First Floor Plan

COBie.Space.Name(1E21)=“Flammable Storage”



Sheet: Clinic_057_First Floor Plan Block 1E

COBie.Attributes.SheetType(Space).RowName(1E21)

FINISH SCHEDULE

ROOM NO.	ROOM NAME	FLOOR		BASE		WALLS								CEILING			REMARKS
						NORTH		EAST		SOUTH		WEST					
		MAT.	COLOR	MAT.	COLOR	MAT.	COLOR	MAT.	COLOR	MAT.	COLOR	MAT.	COLOR	MAT.	COLOR	HEIGHT	
1E20	TRASH	CONC	–	RB	RB1	GWP	PT1	GWP	PT1	GWP	PT1	GWP	PT1	ACT	ACT2	2400	
1E21	FLAM. STOR.	VCT	VCT1	RB	RB1	GWP	PT1	GWP	PT1	GWP	PT1	GWP	PT1	ACT	ACT1	2700	
1E22	SEC. STOR.	VCT	VCT1	RB	RB1	GWP	PT1	GWP	PT1	GWP	PT1	GWP	PT1	ACT	ACT1	2700	

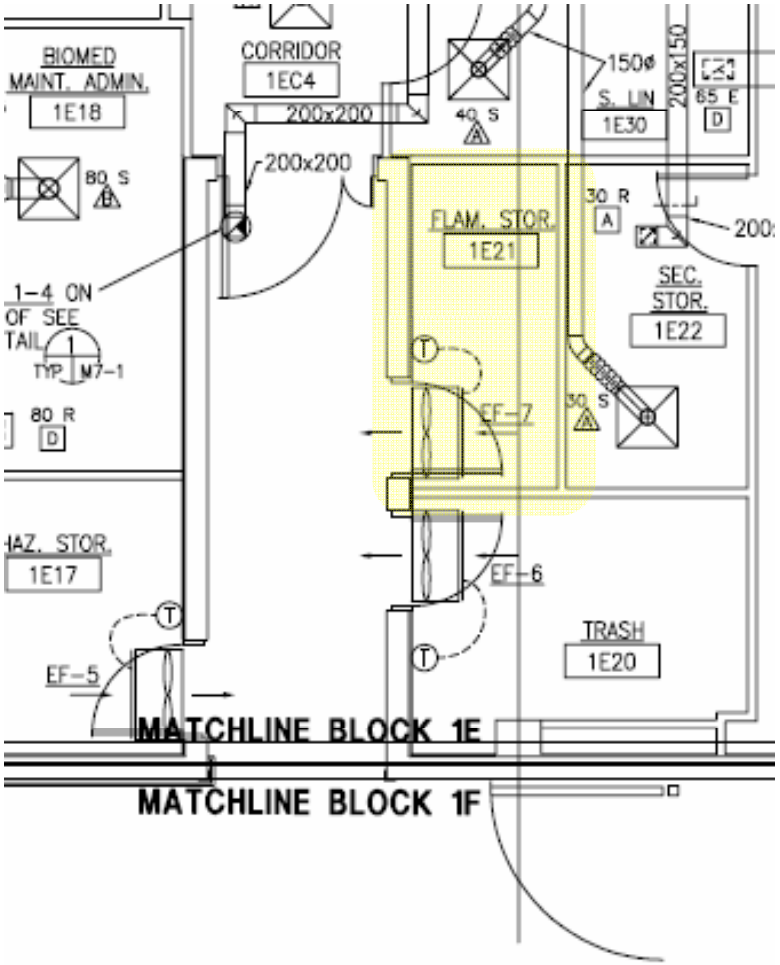
Sheet: Clinic_077_Finish Schedule

COBie.Component (Door 1E21)

DOOR #	WIDTH	HEIGHT	THICKNESS	TYPE	FRAME	FIRE RATING	WEATHER STRIP	LIGHT PROOF	SOUND PROOF	SHIELD	HDW. SET	JAMB NO.	HEAD NO.	THRESH HOLD	PAINT NO	SIGN NO	ROOM NAME	REMARKS
1022	915	2135	45	B	STL.						118	J1	H1	IT	DP3	–	TEAM INTERACTION	
1E18	915	2135	45	A	STL.						114	J1	H1	IT	DP3	–	BIOMED MAINT. ADMIN.	
1E19	915	2135	45	A	STL.						125	J1	H1	IT	DP3	–	ELECTRICAL RM.	
1E20	915	2135	45	E	STL.						5	J4	H4	EXT	DP3 * DP3 **	–	TRASH	* INTERIOR PAINT COLOR ** EXTERIOR PAINT COLOR
1E21	915	2135	45	E	STL.						4	J4	H4	EXT	DP3 * DP3 **	–	FLAM. STOR.	* INTERIOR PAINT COLOR ** EXTERIOR PAINT COLOR
1E22	915	2135	45	A	STL.						112	J1	H2	IT	DP3	–	SEC. STOR.	
1E23	915	2135	45	A	STL.						132	J1	H1	IT	DP3	–	BEE EQUIP. STOR.	
1E24	PR 915	2135	45	E	STL.		X				6	J4	H4	EXT	DP3 * DP3 **	–	RECEIVING/ STORAGE	* INTERIOR PAINT COLOR ** EXTERIOR PAINT COLOR
1E24A	PR 865	2135	45	B	STL.						128	J1	H1	IT	DP3	–	RECEIVING/ STORAGE	

Sheet: Clinic_080_Door Schedule

COBie.Component (Exhaust Fan 7)



Sheet: Clinic_217_HVAC First Floor Plan Block 1E

COBie.Component (Exhaust Fan 7)

FAN SCHEDULE

UNIT NO.	LOCATION	TOTAL A/R L/s	INTERLOCK WITH	TYPE FAN	MAX. RPM	EXT. h_o S.P.	DESIGN MOTOR WATTS	SONES ±	POWER VOLT	POWER PH	POWER CYC	MAX. SOUND POWER LEVEL db 3rd OCTVE BAND	DRIVE	REMARKS
RAF-1	2D-05	9130	AHU-1	1	1050	620	15000	–	480	3	60	84	BELT	SEE NOTE THIS SHEET
RAF-2	2D-05	8290	AHU-2	1	950	520	11000	–	480	3	60	82	BELT	SEE NOTE THIS SHEET
EF1-1	RF. BLOCK 1B	715	AHU-1	2	880	225	370	–	120	1	60	75	BELT	
EF1-2	RF. BLOCK 2B	860	AHU-1	2	775	155	250	–	120	1	60	73	BELT	
EF1-3	RF. BLOCK 1E	1360	AHU-1	2	925	225	750	–	480	3	60	78	BELT	*
EF1-4	RF. BLOCK 1E	70	AHU-1	2	1485	125	30	–	120	1	60	56	DIRECT	W/ SPEED CONTROLLER
EF2-1	2D-05	810	AHU-2	3	750	215	550	–	208	3	60	73	BELT	*
EF2-2	2D-05	1130	AHU-2	3	815	250	750	–	480	3	60	77	BELT	*
EF2-3	2D-05	270	AHU-2	3	1650	325	370	–	120	1	60	76	BELT	
EF-3	1E-15	450	THERMOSTAT	4	27.5	95	125	13.1	120	1	60	–	DIRECT	
SF-4	1E-15A	50	THERMOSTAT	4	20.6	95	62	13.2	120	1	60	–	DIRECT	
EF-5	1E-17	100	THERMOSTAT	4	20.6	95	62	13.2	120	1	60	–	DIRECT	
EF-6	1E-20	100	THERMOSTAT	4	20.6	95	62	13.2	120	1	60	–	DIRECT	
EF-7	1E-21	50	THERMOSTAT	4	20.6	95	62	13.2	120	1	60	–	DIRECT	
SF-1	2D-05	3100	THERMOSTAT	5	45.5	125	750	23	480	3	60	–	DIRECT	* INTERLOCK WITH SPACE SMOKE DETECTOR TO SHUT DOWN FAN ON SMOKE DETECTION

FAN TYPES:

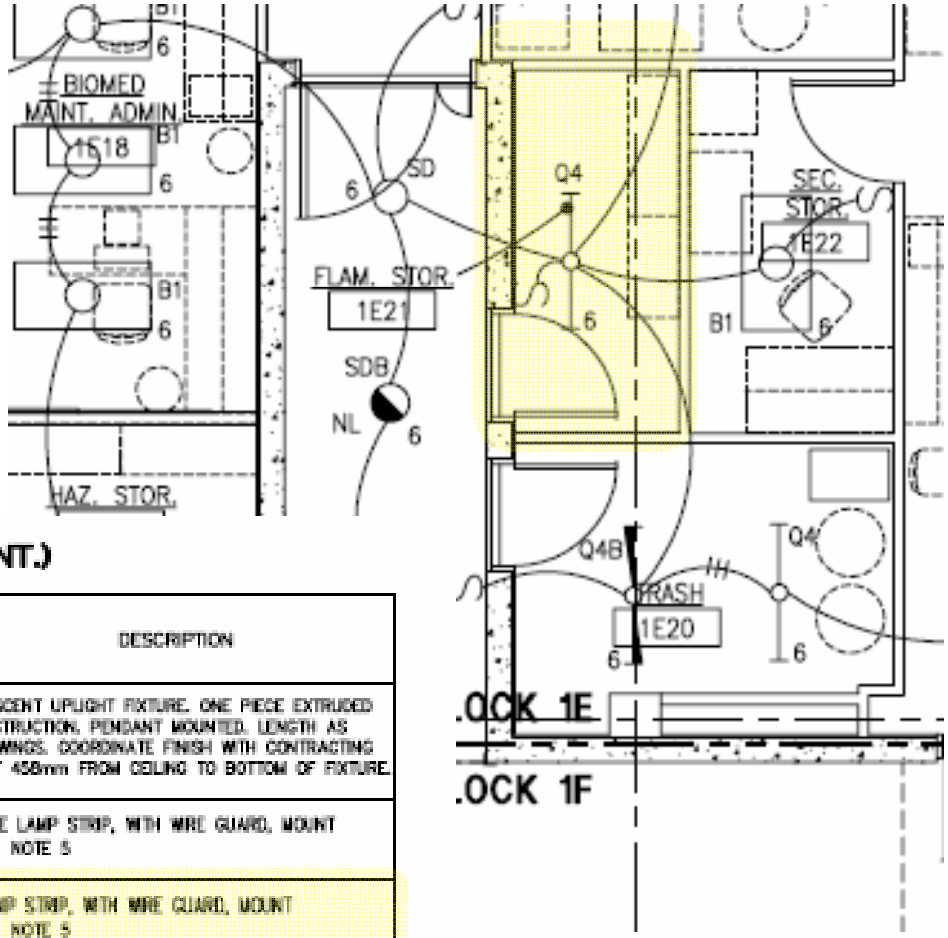
1) CENTRIFUGAL, AIR FOIL FAN, WITH INTERNAL VIBRATION ISOLATION, DOUBLE WALL INSULATED CABINET, MOUNTED IN AIR HANDLING UNIT WITH VARIABLE FREQUENCY DRIVE
2) CENTRIFUGAL ROOF MTD, MOTORIZED DAMPER, PREFABRICATED CURB.
3) CENTRIFUGAL IN LINE, CLASS I CONSTRUCTION
4) WALL MOUNTED, PROPELLER, EXHAUST FAN, WITH WALL HOUSING AND MOTOR OPERATED DAMPER.
5) WALL MOUNTED, PROPELLER, SUPPLY FAN, WITH WALL HOUSING AND MOTOR OPERATED DAMPER.

* PROVIDE MAGNETIC ACROSS THE LINE STARTER AND TURN OVER TO THE ELECTRICAL CONTRACTOR FOR INSTALLATION.

Sheet:Clinic_245_HVAC Schedules - Exhaust Fan 7

COBie.Type(Light Fixture Type Q4)

COBie.Attributes.SheetName(Type).
RowName(Light Fixture Type Q4)



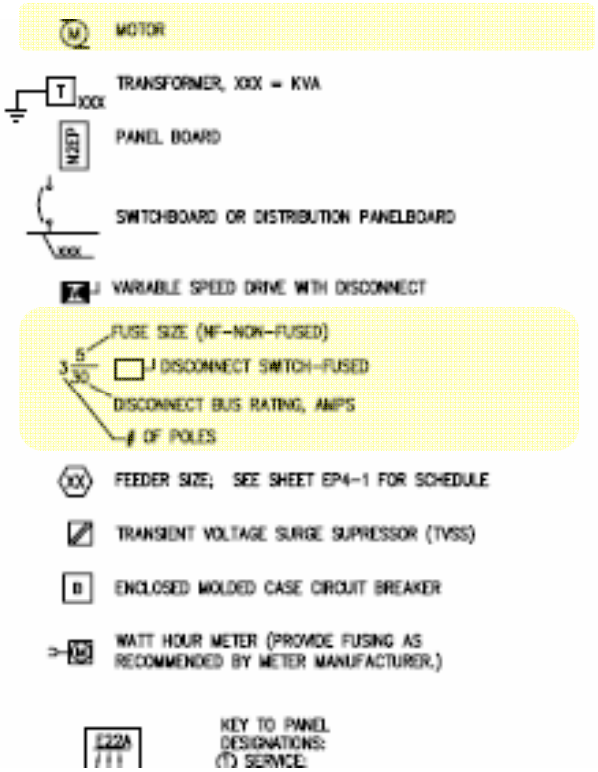
LIGHTING FIXTURE SCHEDULE (CONT.)

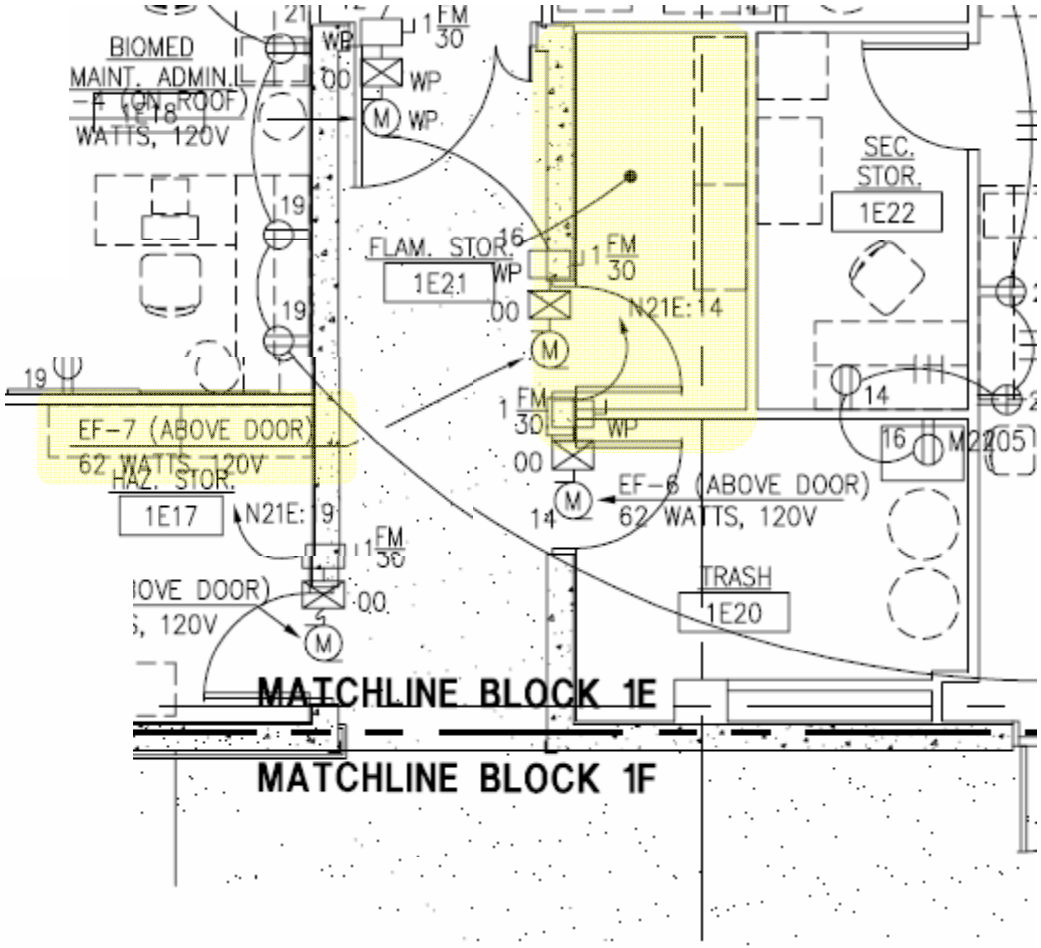
FIXTURE MARK	LAMPS				CU @ RCR=1	VOLTAGE	DESCRIPTION
	NO.	WATTS	TYPE	LUMENS			
P1	3	32	a	2900	0.56	277V	LINEAR FLUORESCENT UPLIGHT FIXTURE. ONE PIECE EXTRUDED ALUMINUM CONSTRUCTION. PENDANT MOUNTED. LENGTH AS SHOWN ON DRAWINGS. COORDINATE FINISH WITH CONTRACTING OFFICER. MOUNT 458mm FROM CEILING TO BOTTOM OF FIXTURE.
Q1	1	32	a	2900	0.88	277V	1219mm SINGLE LAMP STRIP, WITH WIRE GUARD, MOUNT 2438mm AFF. NOTE 5
Q4	2	32	a	2900	0.89	277V	1219mm 2 LAMP STRIP, WITH WIRE GUARD, MOUNT 2438mm AFF. NOTE 5
Q4B	2	32	a	2900	0.89	277V	SAME AS Q4 EXCEPT WITH BATTERY PACK, MOUNT 2438mm AFF. NOTE 5
R1	2	32	a	2900	0.80	277V	305mm x 1219mm (NOMINAL) RECESSED TROFFER.

Sheet: Clinic_263_Lighting - First Floor Plan - Block 1E, Clinic_269_Lighting Fixture Schedule & Notes

COBie.Component (Exhaust Fan 7)

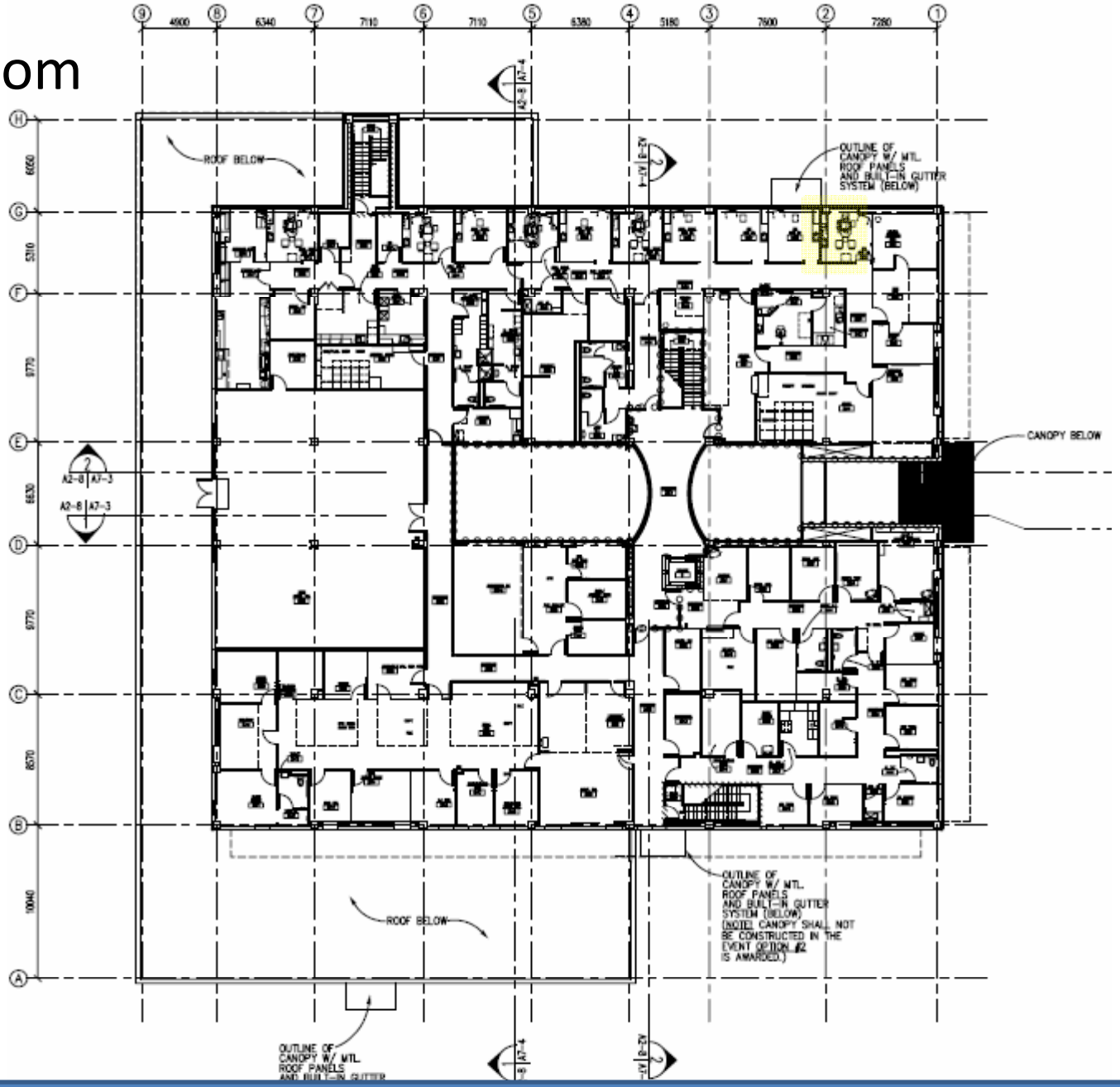
- Service disconnect switch
- Fan motor capacity





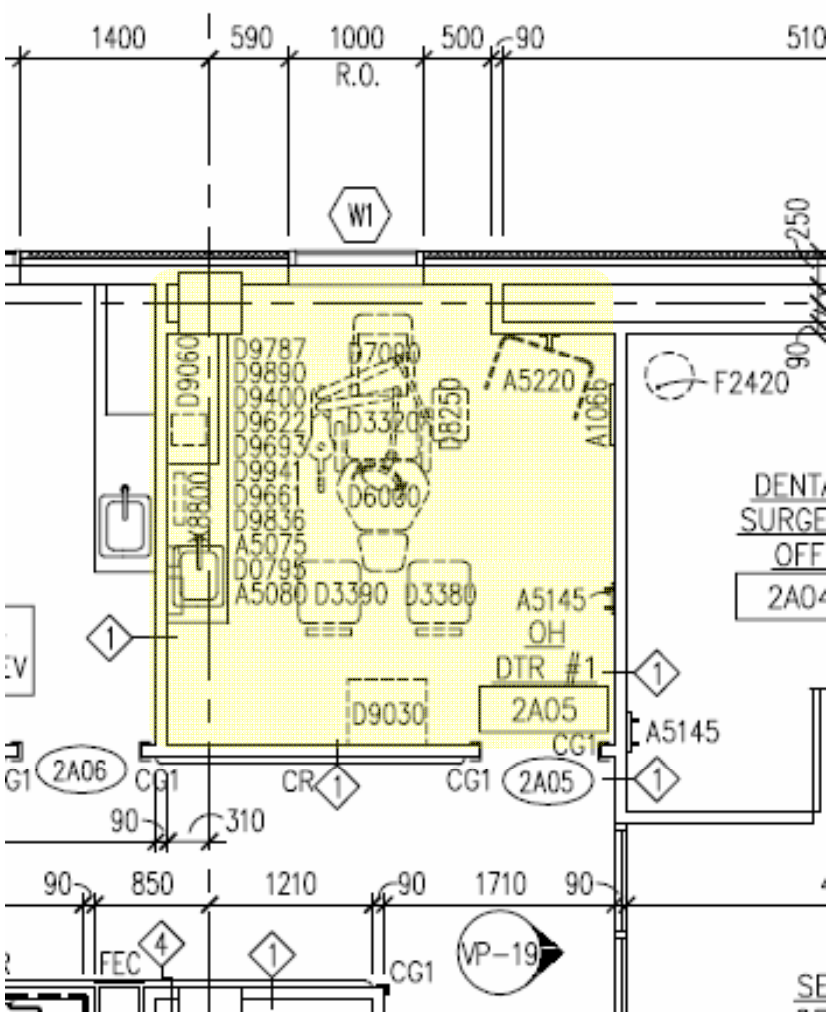
Sheet: Clinic_279_Power - First Floor Plan - Block 1E, Clinic_251_Electrical Legend

Second Test Room



Sheet: Clinic_059_Composite Second Floor Plan

COBie.Space.Name(2A05)="OH DTR #1"



"Overall Health, Dental Treatment Room"
Sheet: Clinic_060_Second Floor Plan Block 2A

COBie.Attributes.SheetType(Space).RowName(2A05)

FINISH SCHEDULE

ROOM		FLOOR		BASE		WALLS								CEILING			REMARKS
						NORTH		EAST		SOUTH		WEST					
NO.	ROOM NAME	MAT.	COLOR	MAT.	COLOR	MAT.	COLOR	MAT.	COLOR	MAT.	COLOR	MAT.	COLOR	MAT.	COLOR	HEIGHT	
1038	INTERACTION STATION	VCT	VCT1,2	RB	RB1	GMP	PT1	GMP	PT1	GMP	PT1	GMP	PT1	ACT	ACT1	2400	10
2A04	DENTAL SURGEON OFF.	CP	CP3	RB	RB1	GMP	PT1	GMP	PT1	GMP	PT1	GMP	PT1	ACT	ACT1	2400	
2A05	CH DTR #1	SV	SV1	IV	IV1	GWL	LGC1	GWL	LGC1	GWL	LGC1	GWL	LGC1	ACT	ACT1	2600	
2A06	CH DTR #2	SV	SV1	IV	IV1	GWL	LGC1	GWL	LGC1	GWL	LGC1	GWL	LGC1	ACT	ACT1	2600	

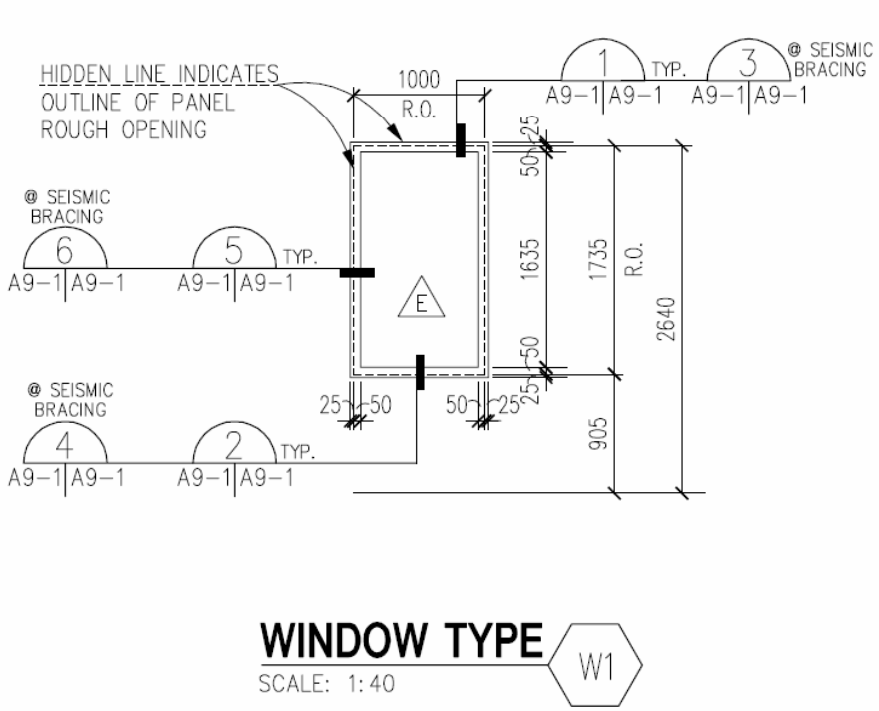
Sheet: Clinic_077_Finish Schedule

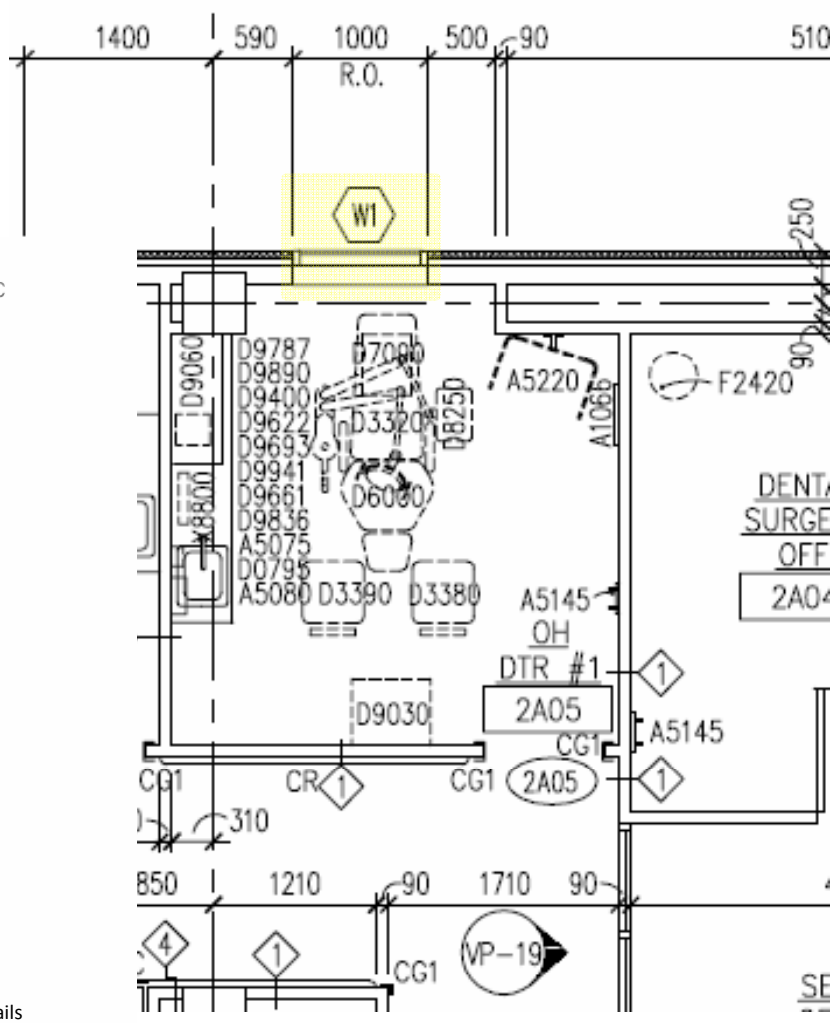
COBie.Component (Door A205)

DOOR #	WIDTH	HEIGHT	THICKNESS	TYPE	FRAME	FIRE RATING	WEATHER STRIP	LIGHT PROOF	SOUND PROOF	SHIELD	HDW. SET	JAMB NO.	HEAD NO.	THRESH HOLD	PAINT NO	SIGN NO	ROOM NAME	REMARKS
1022	915	2135	45	B	STL.						118	J1	H1	IT	DP3	–	TEAM INTERACTION	
2A04	915	2135	45	A	STL.						101	J1	H1	IT	DP3	–	DENTAL SURGEON OFF.	
2A05	915	2135	–	–	STL.						N/A	J2	H2	IT	DP3	–	O.T.R. #1	

Sheet: Clinic_080_Door Schedule

COBie.Component (Window-Type1-2A05)

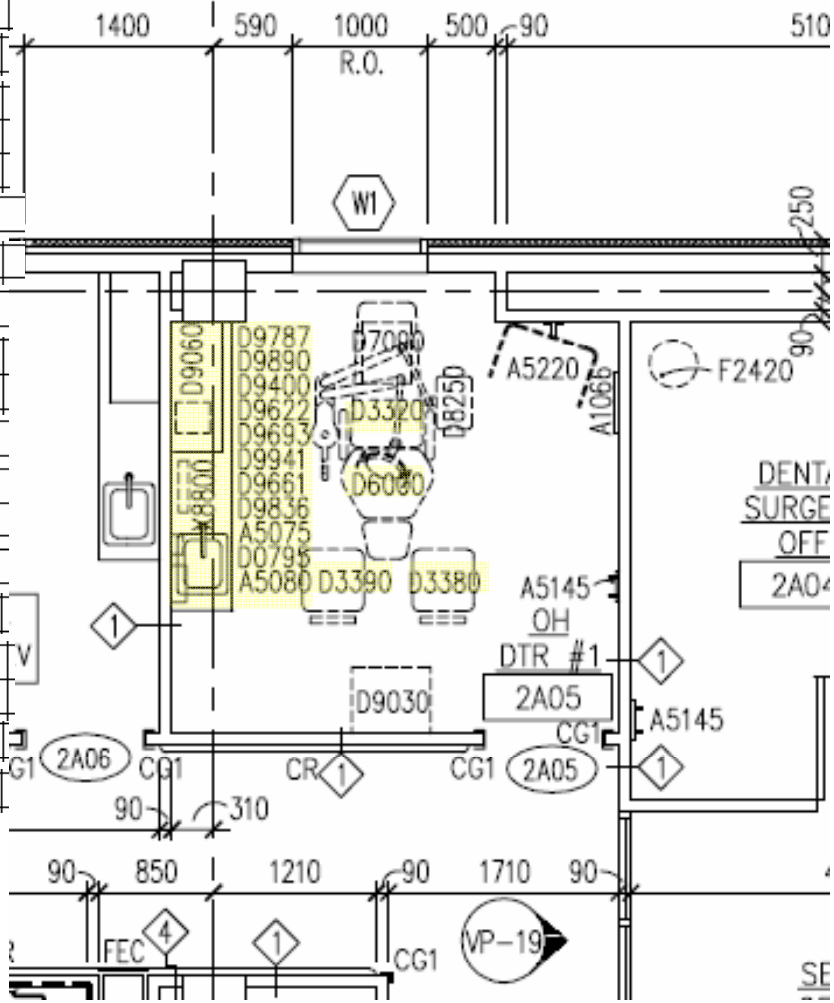




Sheet: Clinic_060_Second Floor Plan Block 2A, Clinic_116_Exterior Window Elevation Schedule And Details

COBie.Types w/Components in RowName(Value) = “2A05”

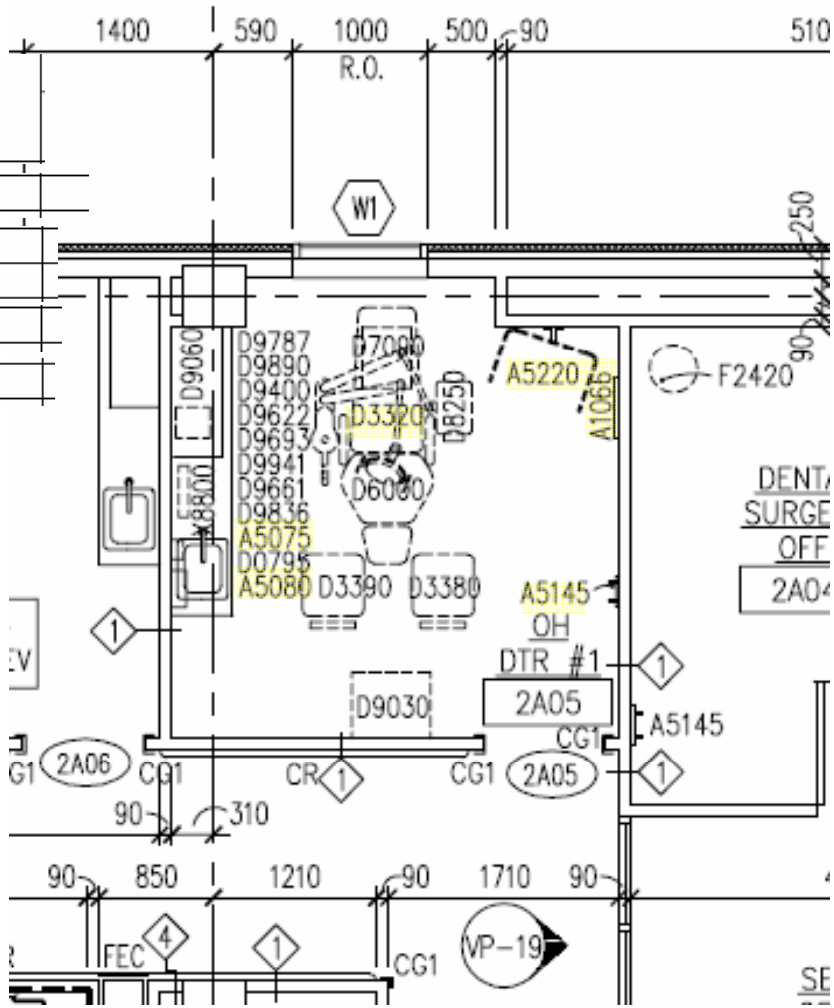
JSN NO.	DESCRIPTION	LOG	SPEC. SECT.
D0795	SINK, CRS, 18 GAUGE, 255 x 355 x 255	A	12351
D3320	CHAIR, OPERATING, DENTAL, W/UNIT MOUNT	R	N/A
D3380	STOOL, OPERATING, DENTAL, DOCTOR	C	N/A
D3390	STOOL, OPERATING, DENTAL, ASSISTANT	C	N/A
D6000	LIGHT, DENTAL, OPERATING, CHAIR	C	N/A
D7090	UTILITY CENTER, DENTAL, FLR MNTD	A	11744
D8250	UNIT, DENTAL, OPERATING	R	N/A
D9030	CABINET, ASSISTANT, DENTAL, MBL, 810 x 560 x 460	C	N/A
D9400	CABINET, W/H, 2SDO, 760 x 965 x 355	A	12351
D9060	PROPHYLAXIS UNIT, ULTRASONIC	R	N/A
D9661	CABINET, BASE, U/C, 2DR, 2DO, 790 x 480 x 460	A	12351
D9662	CABINET, BASE, W/H, 2DR, 165 x 685 x 430	A	12351
D9693	CABINET, BASE, U/C, 5DR, 780 x 480 x 455	A	12351
D9787	CABINET, BASE, U/C, 2DO, 790 x 480 x 455	A	12351
D9836	CABINET, BASE, SINK, U/C, 2DO, 780 x 685 x 455	A	12351
D9890	INSERT, TREATMENT, TRAY	A	12351
D9941	COUNTERTOP, LAMINATED, 19 W. x 445	A	12351
X8800	ILLUMINATOR, FILM, DENTAL, PORTABLE	C	N/A



Sheet: Clinic_060_Second Floor Plan Block 2A, Clinic_071_Equipment Schedule

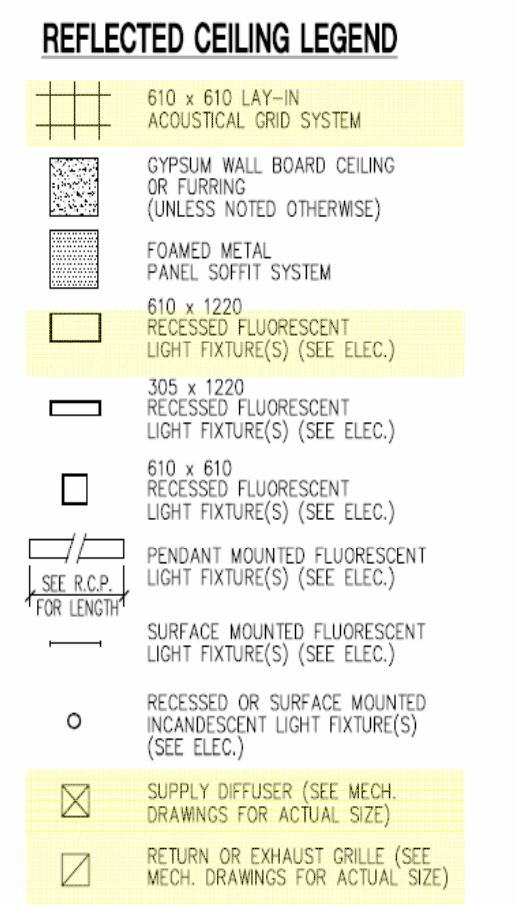
COBie.Types w/Components in RowName(Value) = “2A05”

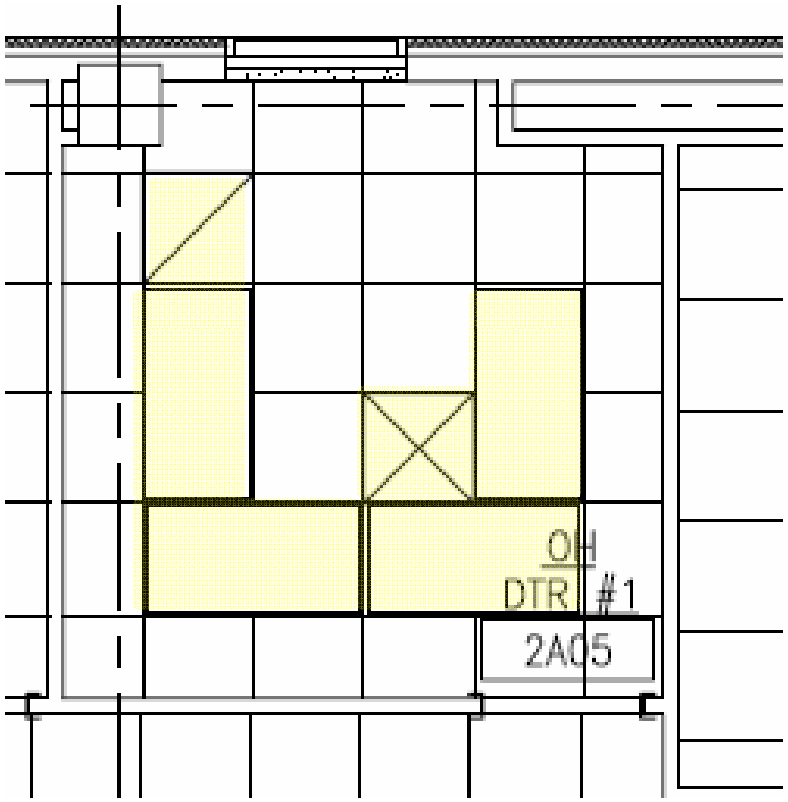
JSN NO.	DESCRIPTION	LOG	SPEC. SECT.
A1066	MIRROR, SS FRAME, 455 x 915 x 6.4	A	10800
A5075	DISPENSER, SOAP, DISPOSABLE	C	N/A
A5080	DISPENSER, PAPER TOWEL, WALL MOUNTED	A	10800
A5145	HOOK, ROBE, 2 PRONG	A	10990
A5220	BRACKET, TELEVISION, WALL MOUNTED	B	11708



Sheet: Clinic_060_Second Floor Plan Block 2A, Clinic_070_Equipment Schedule

COBie.Type(s) from 2A05 Reflected Ceiling Plan





Sheet: Clinic_154_Reflected Ceiling Second Floor Plan - Block 2A

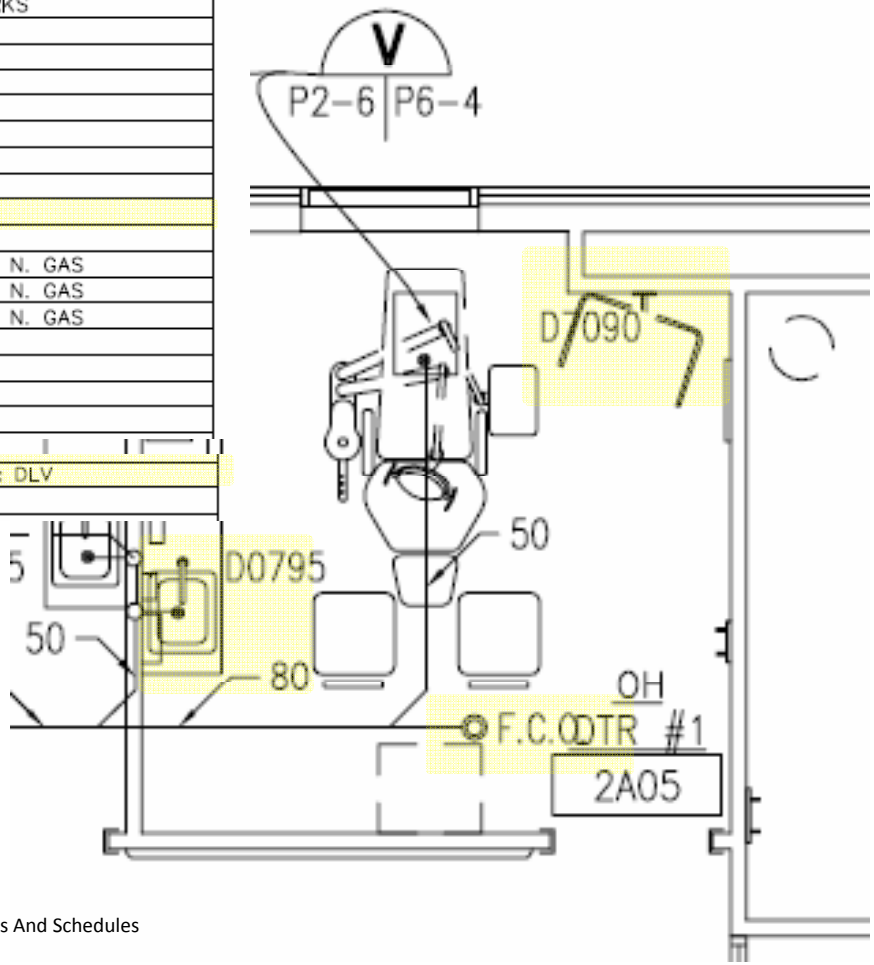
COBie.Type(s) from 2A05 Plumbing drawings and schedules

CONNECTION SCHEDULE

MARK	FIXTURE	CW	HW	W	REMARKS
CS090M	SINK, COUNTER, MOD, 190X483X406	15	15	40	.
CS150	SINK, COUNTER, 250X415X340	15	15	40	.
CS180A	SINK, COUNTER, 304X559X406, MODULAR DROP-IN	15	15	40	.
CS180M	SINK, COUNTER, 304X559X406, MODULAR DROP-IN	15	15	40	.
CS200	SINK, COUNTER, 304X609X457	15	15	40	.
CS220M	SINK, COUNTER, CUP	15	15	40	.
D0757	BOILOUT, ONE TANK	15	15	40	.
D0795	SINK, CRS, 18 GAUGE, 250X350X250	15	15	40	.
D0800	SINK, SS, 304X508X406	15	15	40	.
D0904	WORKSTATION, 1 TECH, (SIM D0905)	–	–	–	DCA & N. GAS
D0915	WORKSTATION, DENT LAB, CERAMIC MODULAR	–	–	–	DCA & N. GAS
D0930M	WORKSTATION CASTING MODULAR	15	15	40	DCA & N. GAS
D0935	WORKSTATION, DENT LAB,INVEST,2425WX600DX925H				DCA
D0935M	WORKSTATION, DENT LAB PLAS W/ 813X406 SINK	15	15	40	DCA
D0942	WORKSTATION, EQUIP BENCH, W/MICROFINISH	–	–	–	
D0981	WORKSTATION, POLISHER ON STAND	15	15	40	DCA
D7090	UTILITY CENTER, DENTAL, FLR MNTD	15	–	40	DCA & DLV
D9010	CABINET, BLAST CLEANING, F/S, 1280X475X400	–	–	–	DCA

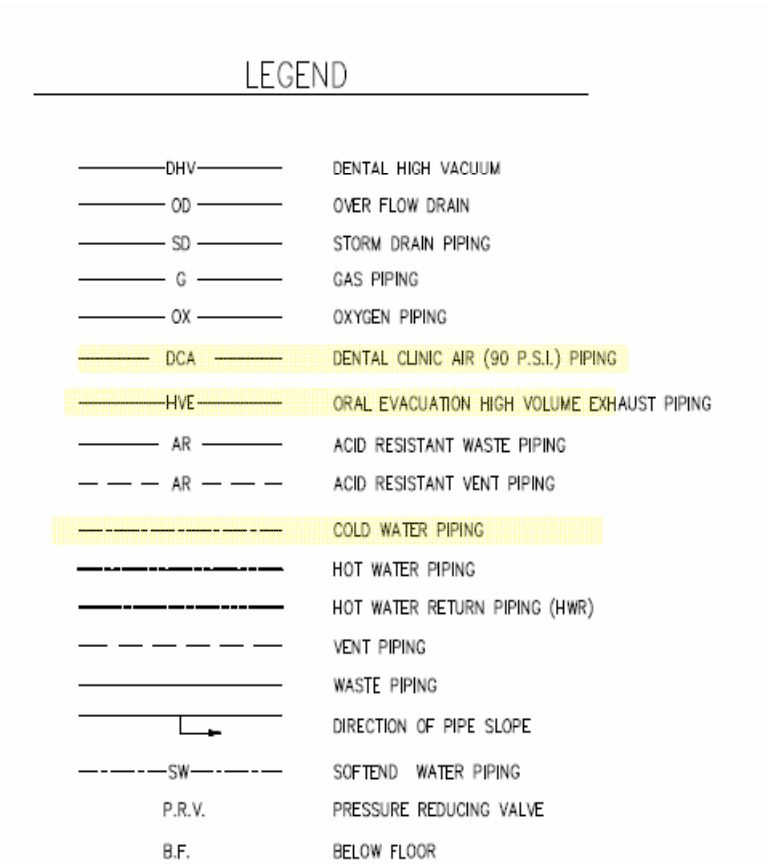
LEGEND

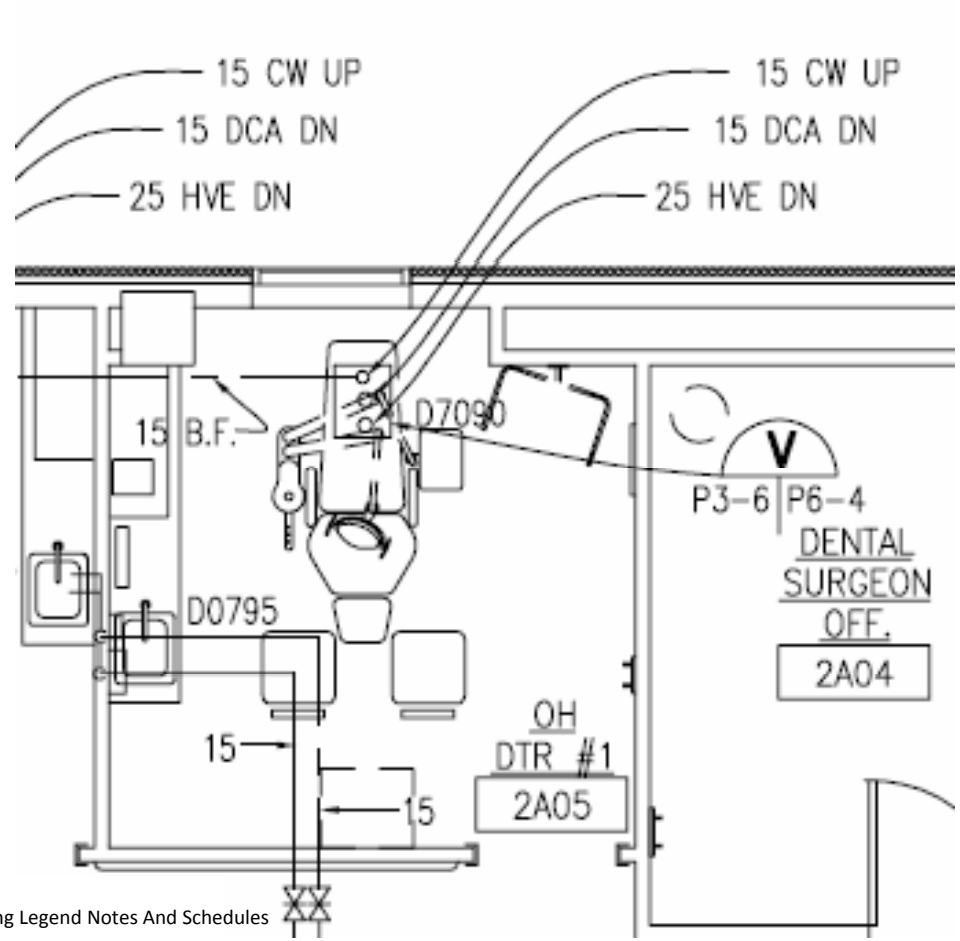
○	H.D.	HUB DRAIN
○	V.T.R.	VENT THRU ROOF
—○	F.C.O.	FLOOR CLEANOUT
⊢○	W.C.O.	WALL CLEANOUT
—|○|—	C.O.T.G.	CLEANOUT TO GRADE



Sheet: Clinic_190_Drain Waste & Vent Piping Second Floor Plan - Block 2A, Clinic_184_Plumbing Legend Notes And Schedules

COBie.Type(s) from 2A05 Plumbing drawings and schedules





Sheet: Clinic_199_Water & Medical Gas Piping Second Floor Plan - Block 2A, Clinic_184_Plumbing Legend Notes And Schedules

COBie.Type(Diffuser C).Component

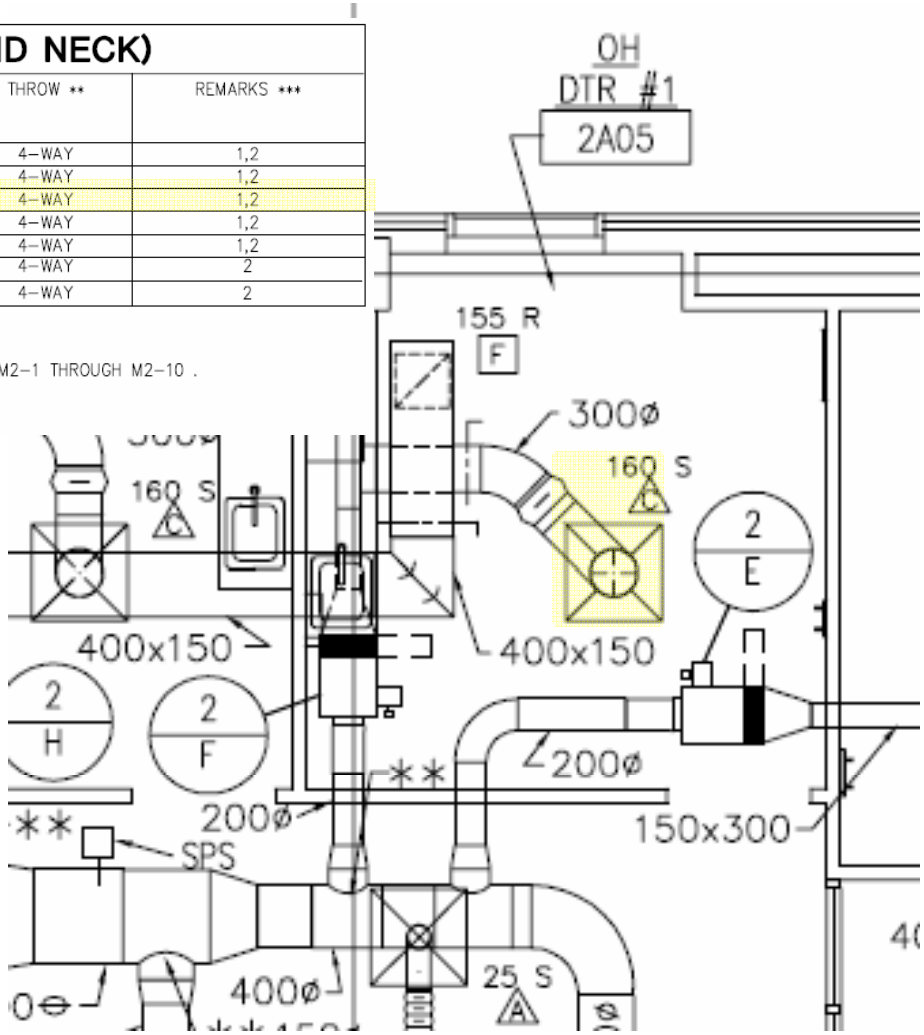
CEILING DIFFUSER SCHEDULE (ROUND NECK)

MARK	MAXIMUM AIR FLOW L/S	NOMINAL ROUND NECK SIZE	MAXIMUM PD Pa	MAXIMUM * NC	THROW **	REMARKS ***
A	50	150	40	20	4-WAY	1,2
B	95	200	30	20	4-WAY	1,2
C	150	250	30	20	4-WAY	1,2
D	210	300	25	20	4-WAY	1,2
E	280	350	25	20	4-WAY	1,2
F	60	200	30	20	4-WAY	2
G	150	250	30	20	4-WAY	2

* NC VALUES ARE BASED ON A ROOM ABSORPTION OF 10dB, RE 10^-12 WATTS, WITH ONE DIFFUSER OPERATING.

** DIFFUSER THROW SHALL BE 4-WAY UNLESS SPECIFICALLY SHOWN OTHERWISE ON SHEET M2-1 THROUGH M2-10 .

*** REMARKS:
1. EXTENDED PANELS FOR USE WITH LAY-IN CEILINGS.
2. OPPOSED BLADE DAMPERS



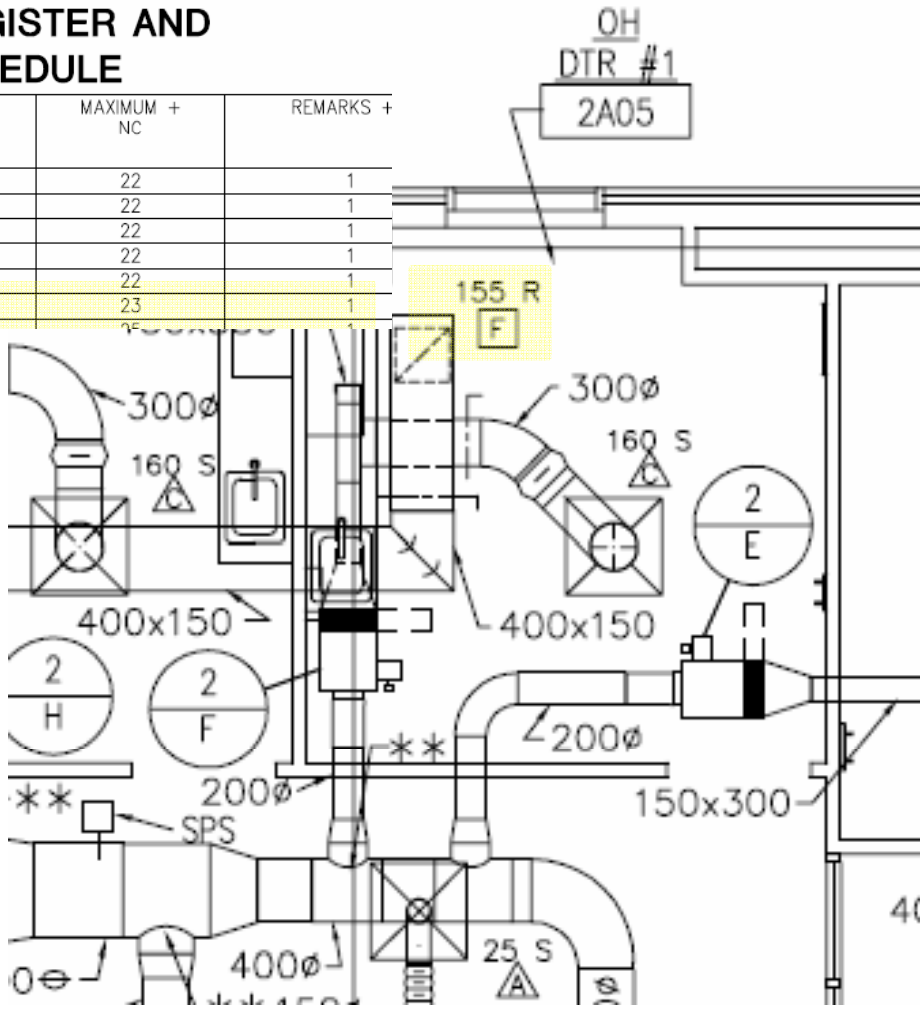
Sheet:Clinic_219_HVAC Second Floor Plan Block 2A, Clinic_247_HVAC Schedules

COBie.Type(Return F).Component

CEILING RETURN / EXHAUST REGISTER AND TRANSFER AIR GRILLE SCHEDULE

MARK	MAXIMUM AIR FLOW L/S	SIZE * mm	ALTERNATE * SIZE	MAXIMUM ** PD Pa	MAXIMUM + NC	REMARKS +
A	35	150x150	–	12.5	22	1
B	50	200x150	–	12.5	22	1
C	64	200x200	250x150	12.5	22	1
D	100	300x200	400x150	12.5	22	1
E	120	300x300	600x150	12.5	22	1
F	170	350x350	–	12.5	23	1

1. OPPOSED BLADE DAMPERS

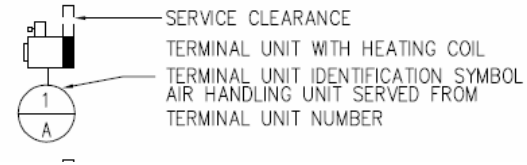


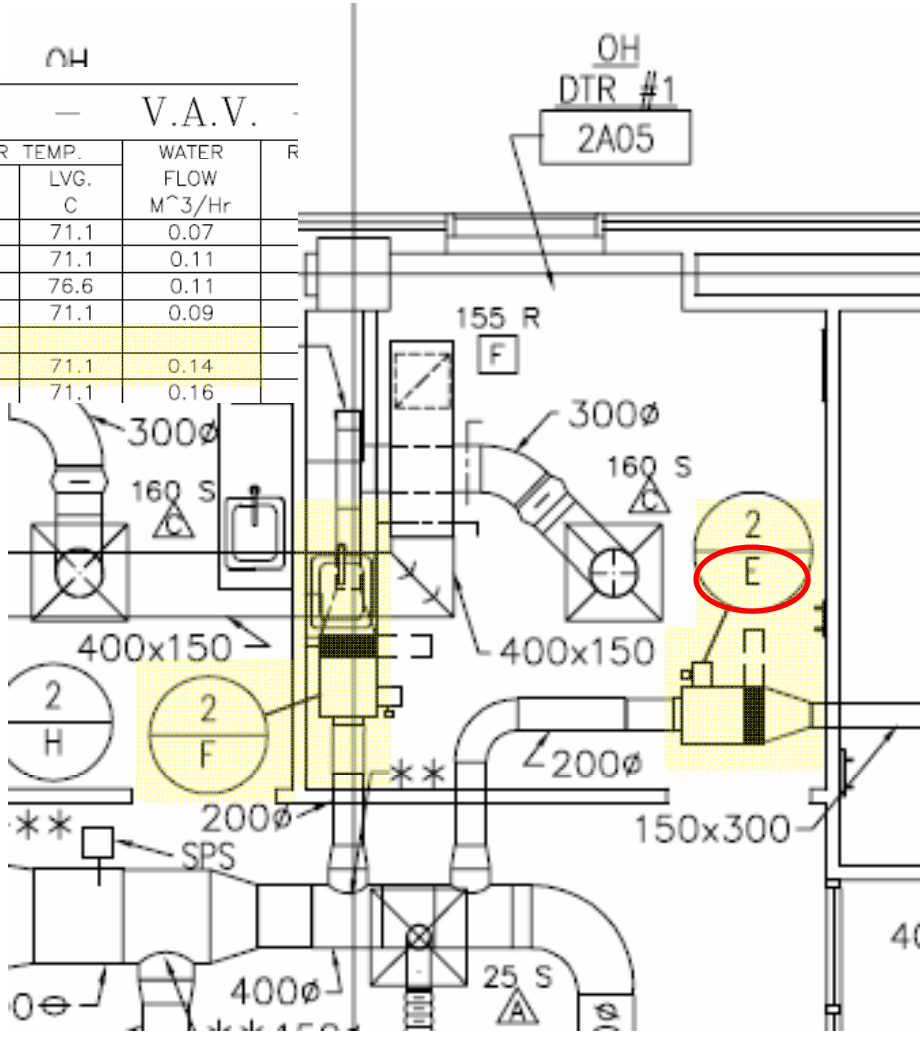
Sheet:Clinic_219_HVAC Second Floor Plan Block 2A, Clinic_247_HVAC Schedules

COBie.Type(Terminal Unit E).Type(Terminal Unit F).Component

AIR TERMINAL UNITS — V.A.V.

MARK	AHU	DESIGN L / sec	MIN SET PT. L / sec	TOTAL CAPACITY Watt	AIR TEMP. ENT. C	AIR TEMP. LVG. C	WATER TEMP. ENT. C	WATER TEMP. LVG. C	WATER FLOW M^3/Hr
A	1	100	60	1006.1	12.8	26.7	82.2	71.1	0.07
B	1	255	85	1425.1	12.8	26.7	82.2	71.1	0.11
C	1	90	40	670.8	12.8	26.7	82.2	76.6	0.11
D	1	210	70	1173.7	12.8	26.7	82.2	71.1	0.09
E	D	E	L E	T E	D				
F	1	185	105	1760.4	12.8	26.7	82.2	71.1	0.14
G1	1	265	85	2073.1	12.8	33.0	82.2	71.1	0.16

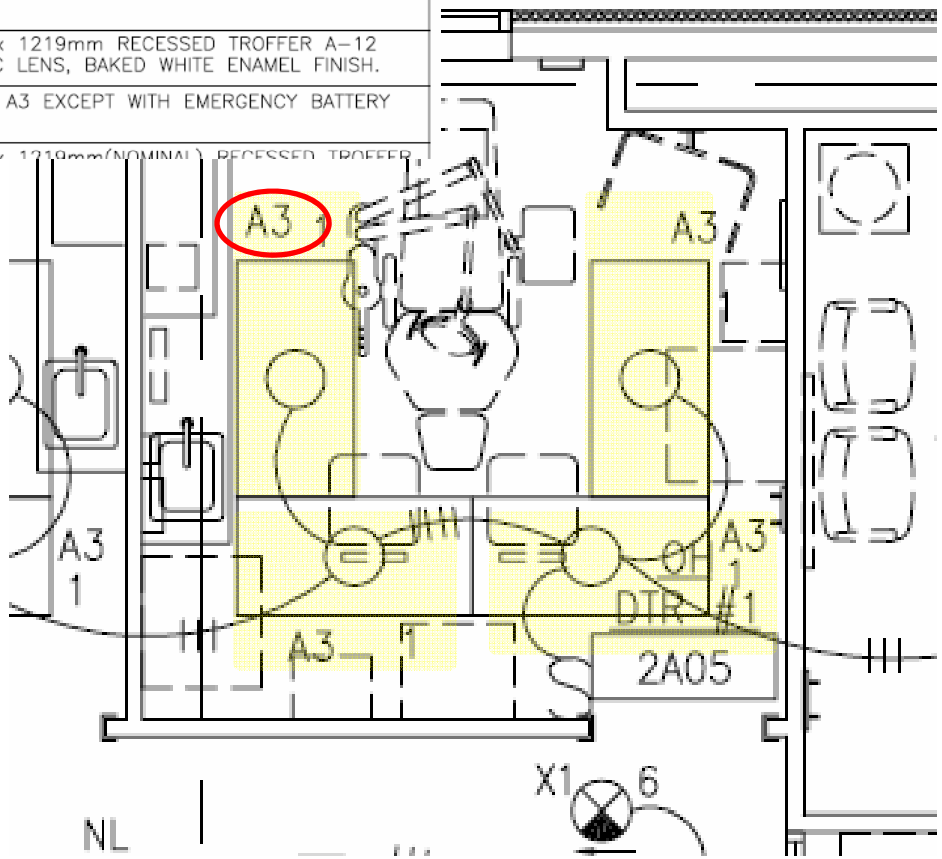




Sheet:Clinic_219_HVAC Second Floor Plan Block 2A, Clinic_246_HVAC Schedules

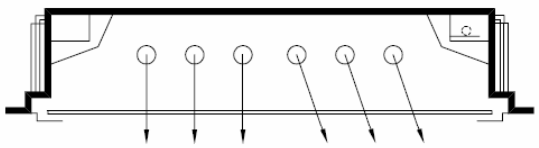
COBie.Type(Light Fixture A3).Component(s)

FIXTURE MARK	LAMPS				CU @ RCR=1	VOLTAGE	DESCRIPTION
	NO.	WATTS	TYPE	LUMENS			
A2	4	32	a	2900	0.77	277V	610mm x 1219mm(NOMINAL) RECESSED TROFFER. A-12 PRISMATIC LENS, BAKED WHITE ENAMEL FINISH.
A2B	4	32	a	2900	0.77	277V	SAME AS A2 EXCEPT WITH EMERGENCY BATTERY PACK.
A28	4	32 or 30	b	1800	0.77	277V	610mm x 1219mm RECESSED TROFFER A-12 PRISMATIC LENS, BAKED WHITE ENAMEL FINISH.
A3B	6	32 or 30	b	1800	0.61	277V	SAME AS A3 EXCEPT WITH EMERGENCY BATTERY PACK.
B1	2	32	a	2900	0.77	277V	610mm x 1219mm(NOMINAL) RECESSED TROFFER



Sheet: Clinic_265_Lighting - Second Floor Plan - Block 2A

COBie.Type(Light Fixture A3).Component(s)



RECESSED, 6–LAMP FLUORESCENT SURGICAL LIGHTING TROFFER WITH DIFFUSER SHIELDING GRID. NOMINAL 610mm x 1219mm IN SIZE AND APPROXIMATELY 111mm DEEP.

HOUSING: 20 GAUGE COLD ROLLED STEEL WITH WELDED OVERLAP HOUSING TO MINIMIZE RADIO FREQUENCY INTERFERENCE. SPRING OPERATED CLOSURE CATCHES. ADJUSTABLE SWAY HANGER.

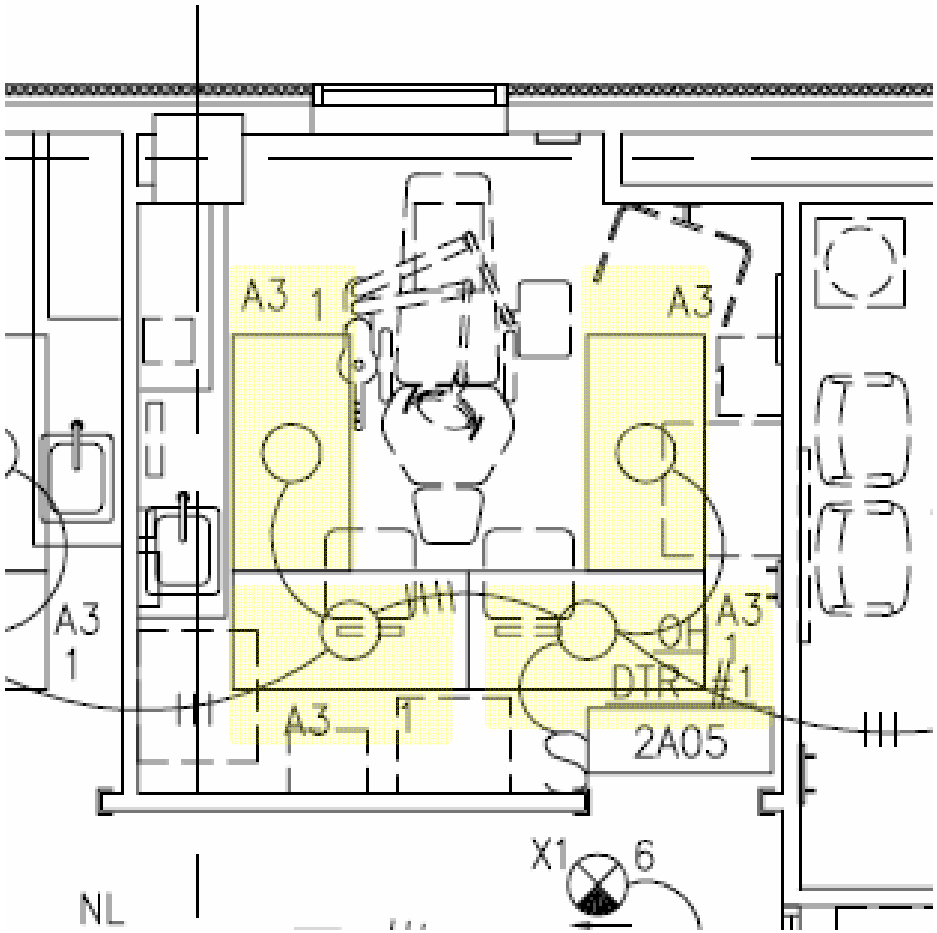
REFLECTOR: HOUSING, WIREWAY COVER, SEPARABLE REFLECTOR, OR COMBINATION THEREOF, TO BE MINIMUM 0.737mm THICK STEEL OR 1.016mm THICK ALUMINUM.

LENS: SYMMETRIC/ASYMMETRIC ACRYLIC DIFFUSER WITH RADIO FREQUENCY INTERFERENCE (RF1) SHIELDING, LOW GLARE AND LIGHT SEAL GASKETING.

FINISHES: HOUSING, DOOR AND TRIM FRAME – BONDERIZED WHITE WITH BAKED ENAMEL, REFLECTING SURFACES MINIMUM OF 85% REFLECTANCE BAKED WHITE ENAMEL.

BALLASTS: THREE – TWO LAMP, HIGH POWER FACTOR, RAPID START BALLASTS.

SURGERY TROFFER
FIXTURE MARK: A3 & A3B



Sheet: Clinic_265_Lighting - Second Floor Plan - Block 2A , Clinic_271_Lighting Details

COBie.Component(s) from 2A05 Power Drawings

WALL RECEPTACLE:

(ALL RECEPTACLES SHALL BE SPECIFICATION GRADE UNLESS NOTED OTHERWISE)

BASIC RECEPTACLE TYPES WITH SUBSCRIPT MODIFIERS SHOWN BELOW.

DUPLEX RECEPTACLE, 20A, 125V, 2P–3 WIRE, NEMA 5–20R.

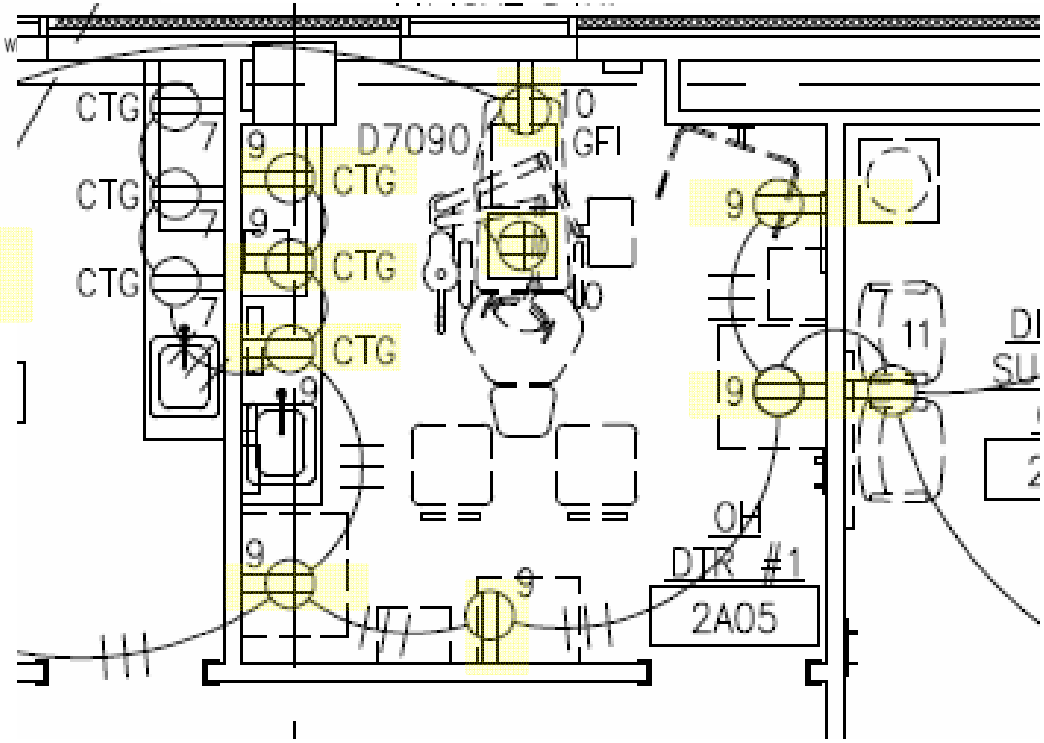
DOUBLE DUPLEX RECEPTACLE, 20A, 125V, 2P–3 WIRE, NEMA 5–20R.

EMERGENCY POWER DUPLEX RECEPTACLE, 20A, 125V, 2P–3 WIRE, NEMA 5–20R.

SPECIAL RECEPTACLE – NEMA CONFIGURATION AS SHOWN BELOW W
ONE OF THE SINGLE SUBSCRIPT LETTERS BELOW.

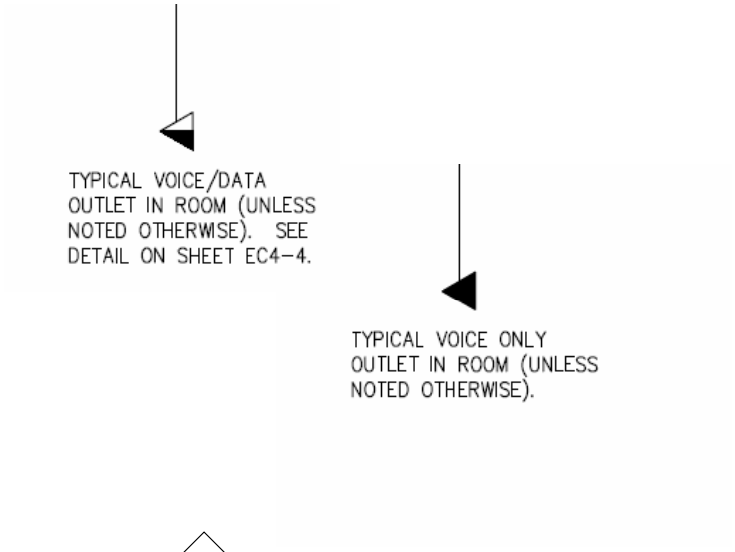
A – 120V, 30A (NEMA L5–30R) LOCKING
B – 230V, 20A, 1ø (NEMA 6–20R)
E – 208V, 30A, 1ø (NEMA 6–30R)
F – 208V, 30A, 3ø (NEMA L15–30R)

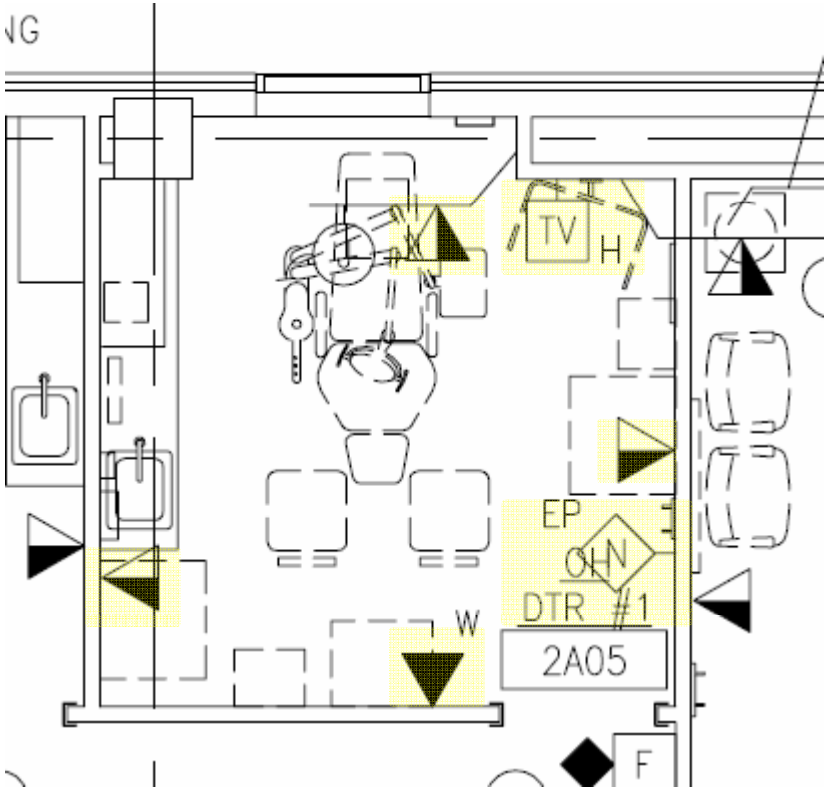
GFI – GROUND FAULT INTERRUPTING RECEPTACLE
CTG – GFI RECEPTACLE MOUNTED 102mm ABOVE COUNTER TOP, BACKSPLASH OR SINK TO CENTER OF RECEPTACLE.



Sheet: Clinic_281_Power - Second Floor Plan - Block 2A , Clinic_251_Electrical Legend

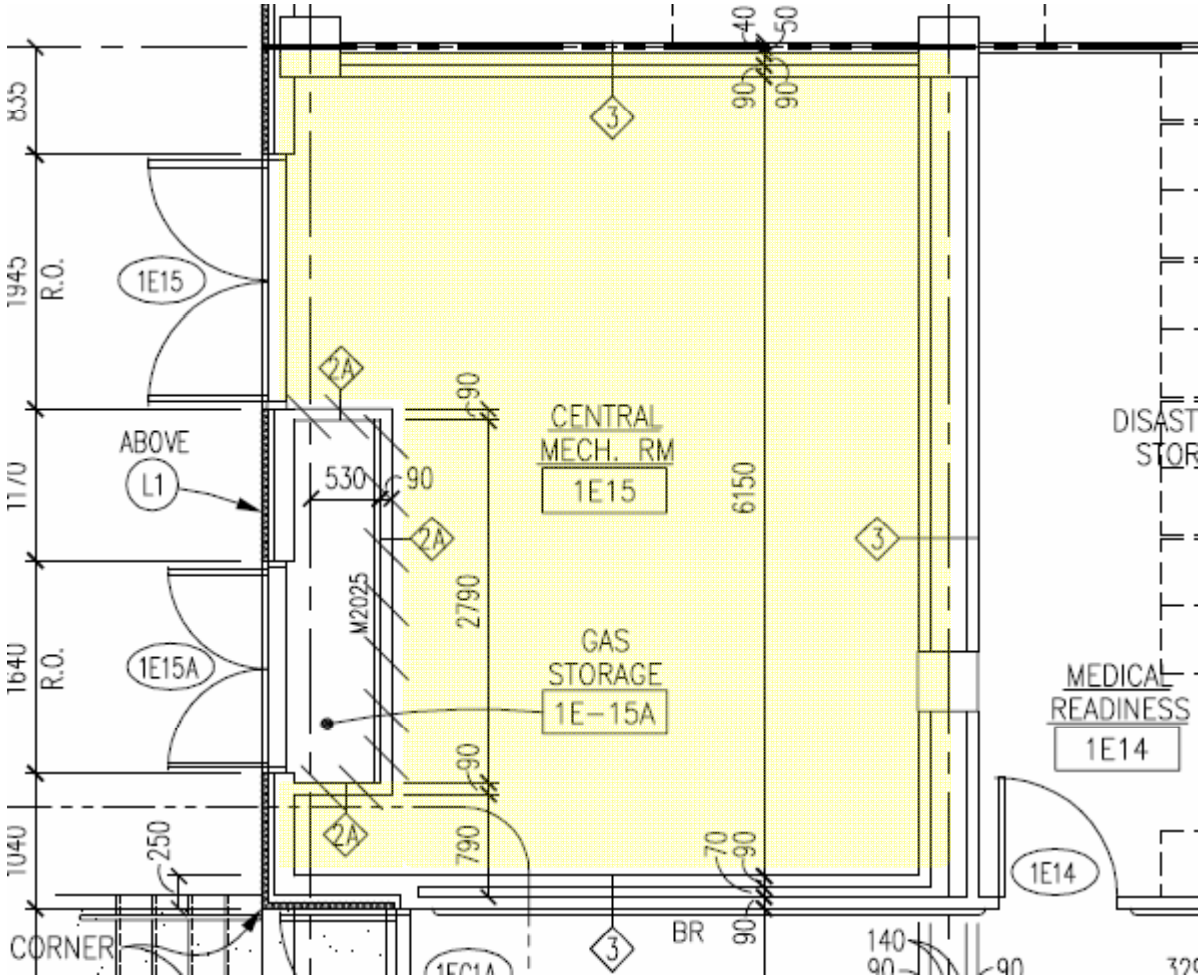
COBie.Component(s) from 2A05 Communication Drawings





Sheet: Clinic_306_Premises Distribution System - Typical Equipment Rack & Wiring , Clinic_300_Communication - Second Floor Plan - Block 2A,

1E15 – Central Mechanical Room

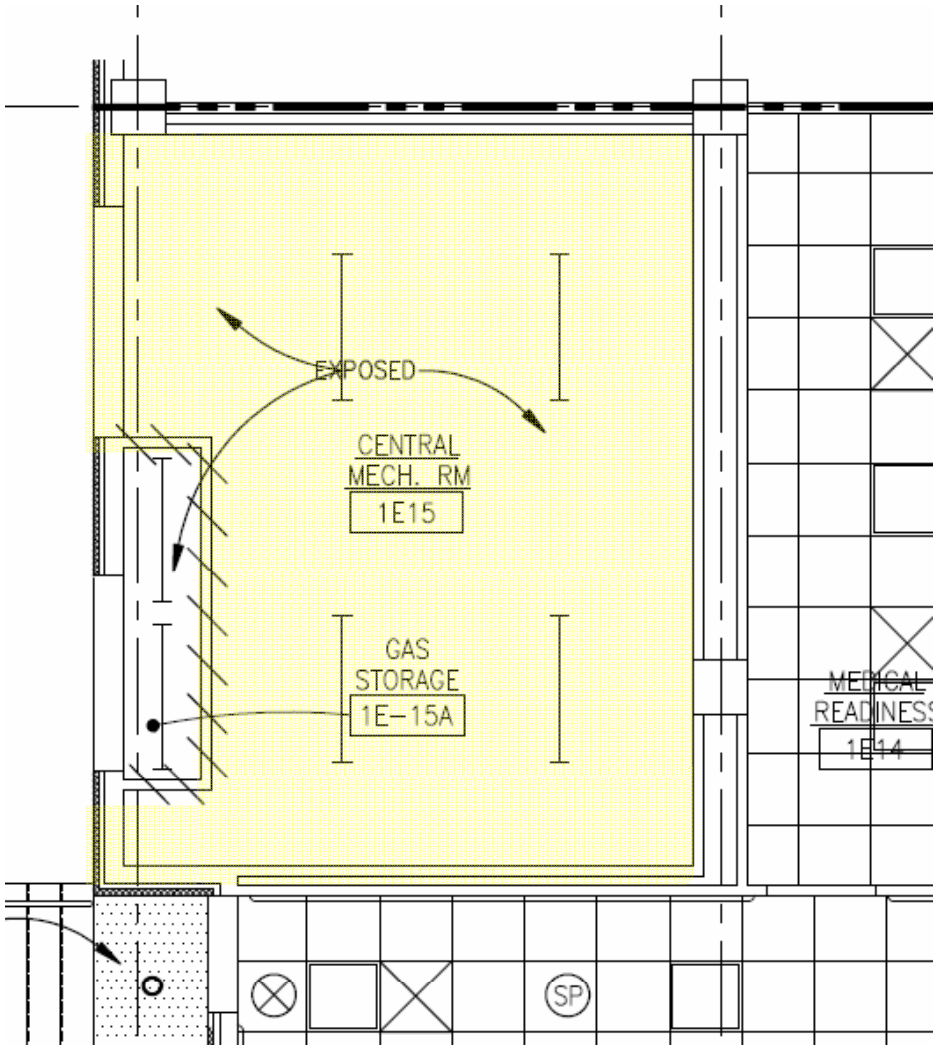


FINISH SCHEDULE

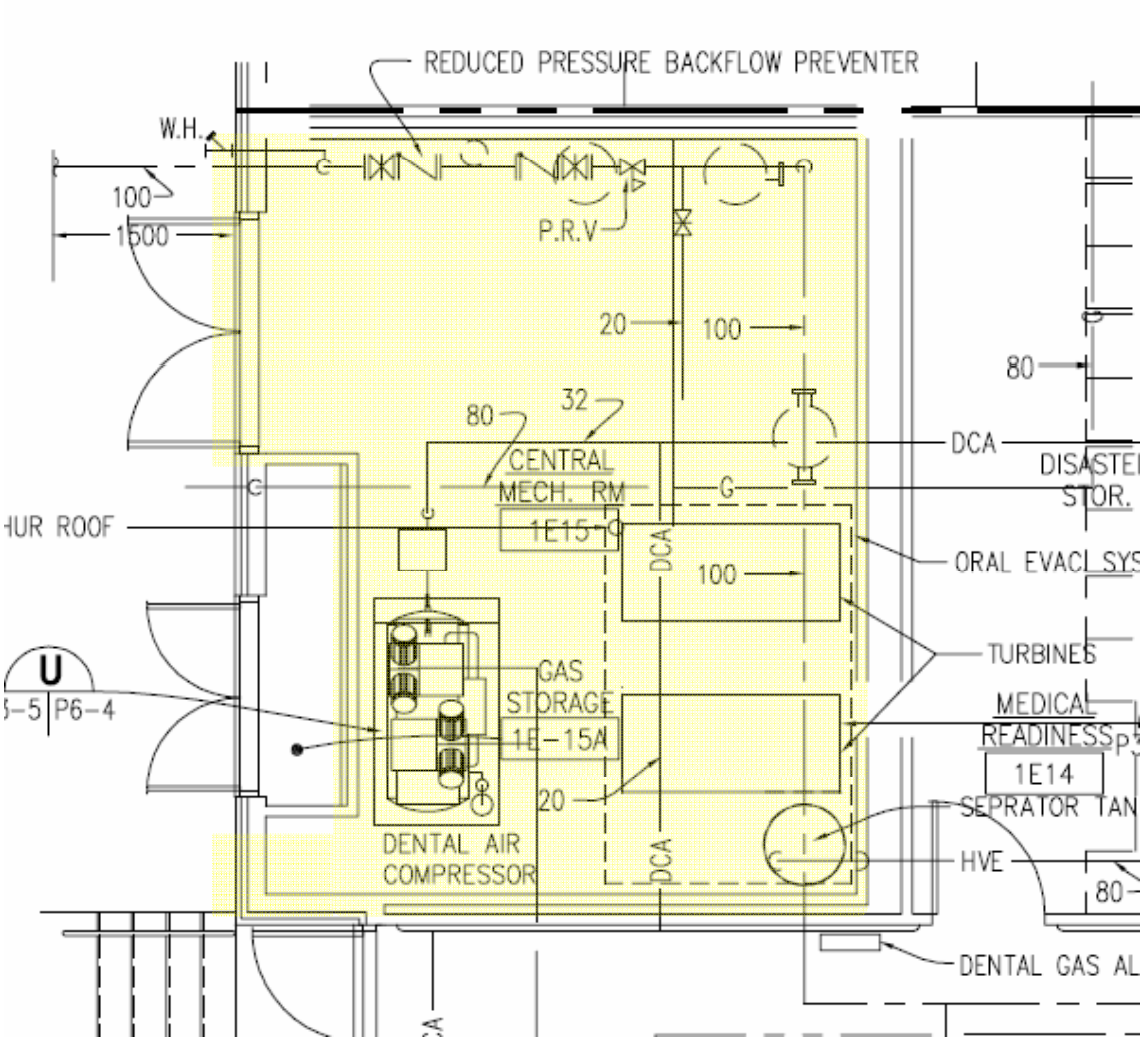
ROOM NO.	ROOM NAME	FLOOR		BASE		WALLS								CEILING			REMARKS
						NORTH		EAST		SOUTH		WEST					
		MAT.	COLOR	MAT.	COLOR	MAT.	COLOR	MAT.	COLOR	MAT.	COLOR	MAT.	COLOR	MAT.	COLOR	HEIGHT	
1E15	CENTRAL MECH. RM	CONC	–	–	–	GWP	PT1	GWP	PT1	GWP	PT1	GWP	PT1	EXP	–	EXP	

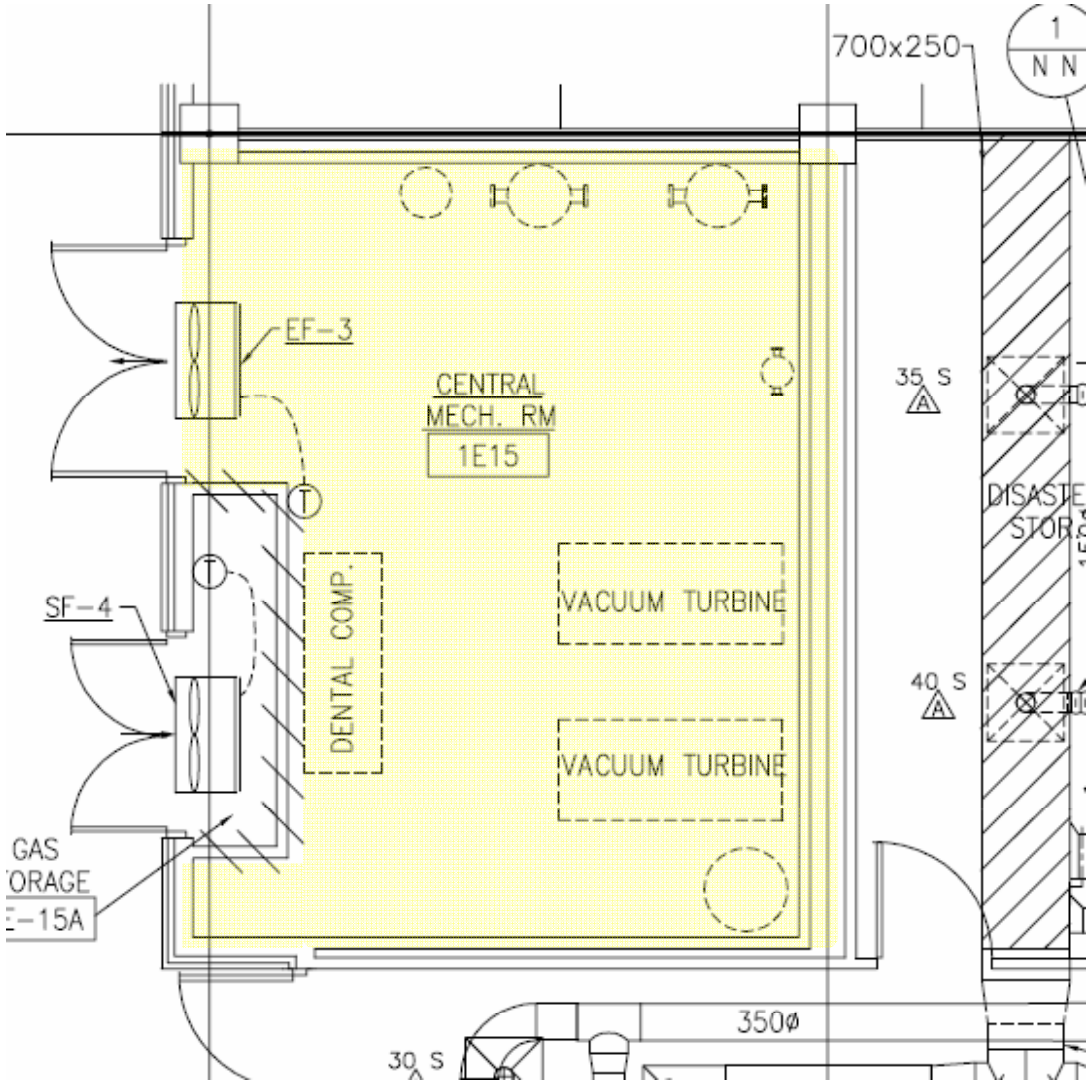
DOOR #	WIDTH	HEIGHT	THICKNESS	TYPE	FRAME	FIRE RATING	WEATHER STRIP	LIGHT PROOF	SOUND PROOF	SHIELD	HDW. SET	JAMB NO.	HEAD NO.	THRESH HOLD	PAINT NO	SIGN NO	ROOM NAME	REMARKS
1022	915	2135	45	B	STL.						118	J1	H1	IT	DP3	–	TEAM INTERACTION	
1E15	PR 915	2135	45	G	STL.						3	H9, H10	J4	EXT	[illegible]	–	CENTRAL MECH. RM	* INTERIOR PAINT COLOR ** EXTERIOR PAINT COLOR

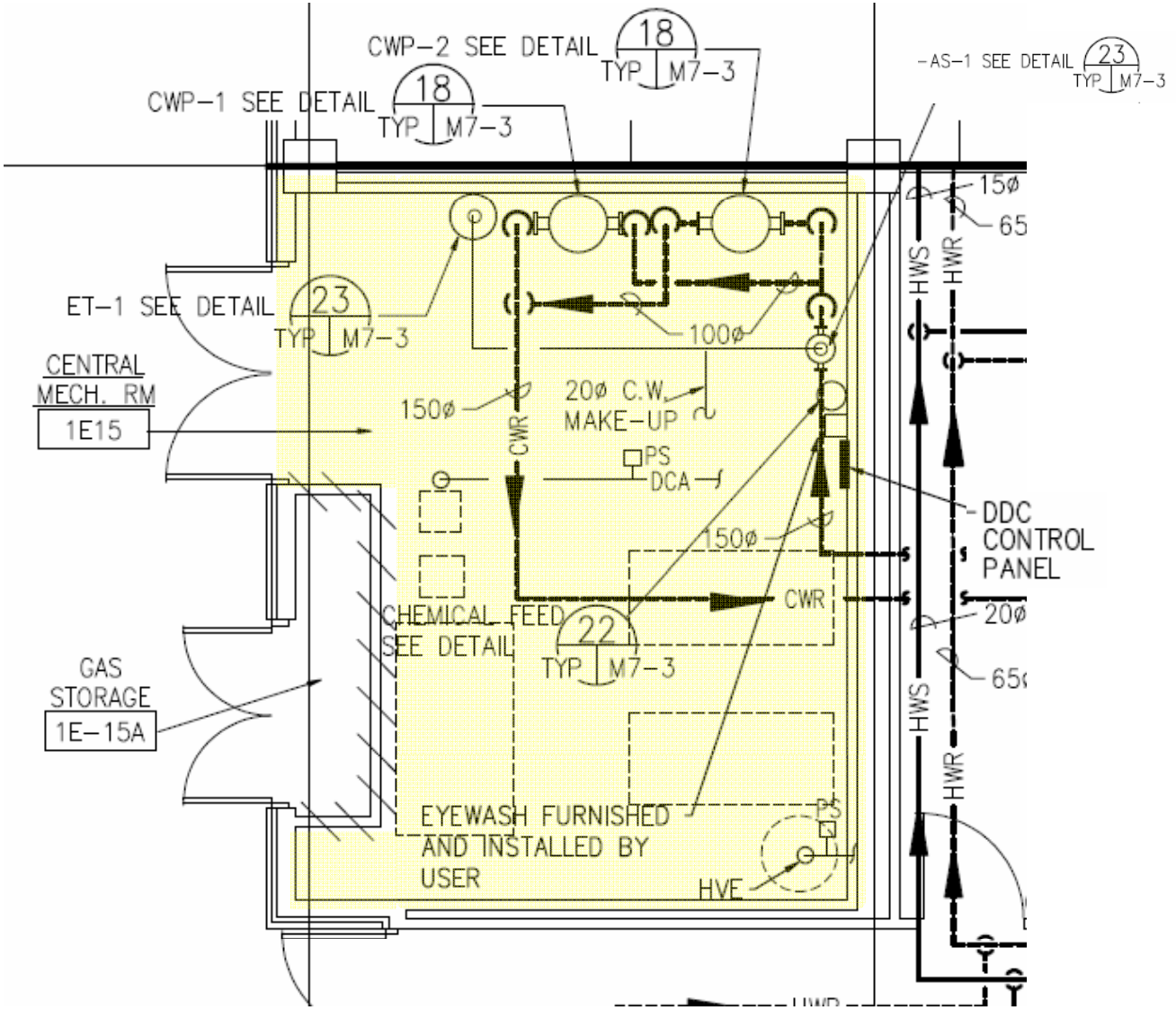
Sheet: Clinic_080_Door Schedule



Sheet: Clinic_217_HVAC First Floor Plan Block 1E


REDUCED PRESSURE BACKFLOW PREVENTER
W.H.
100
1500
P.R.V
20
100
80
32
80
DCA
CENTRAL
MECH. RM
1E15
DISASTE
STOR.
HUR ROOF
ORAL EVACI SYS
100
TURBINES
U
5-5 P6-4
GAS
STORAGE
1E-15A
MEDICAL
READINESS
1E14
SEPRATOR TAN
20
DENTAL AIR
COMPRESSOR
HVE
80
DENTAL GAS AL


700x250
1
N N
EF-3
CENTRAL
MECH. RM
1E15
35 S
A
DISASTE
STOR
SF-4
DENTAL COMP.
VACUUM TURBINE
40 S
A
VACUUM TURBINE
GAS
ORAGE
-15A
350ø
30 S


CWP-2 SEE DETAIL 18 TYP M7-3
CWP-1 SEE DETAIL 18 TYP M7-3
AS-1 SEE DETAIL 23 TYP M7-3
ET-1 SEE DETAIL 23 TYP M7-3
CENTRAL MECH. RM 1E15
GAS STORAGE 1E-15A
CHEMICAL FEED SEE DETAIL 22 TYP M7-3
EYEWASH FURNISHED AND INSTALLED BY USER
DDC CONTROL PANEL
HVE
PS
DCA
CWR
HWS
HWR
150ø
100ø
20ø C.W. MAKE-UP
15ø
65
20ø

FAN SCHEDULE

UNIT NO.	LOCATION	TOTAL AIR L/s	INTERLOCK WITH	TYPE FAN	MAX. RPM	EXT. S.P. Pa	DESIGN MOTOR WATTS	SONES ±	POWER			MAX. SOUND POWER LEVEL db 3rd OCITVE BAND	DRIVE	REMARKS
									VOLT	PH	CYC			
EF–3	1E–15	450	THERMOSTAT	4	27.5	95	125	13.1	120	1	60	–	DIRECT	

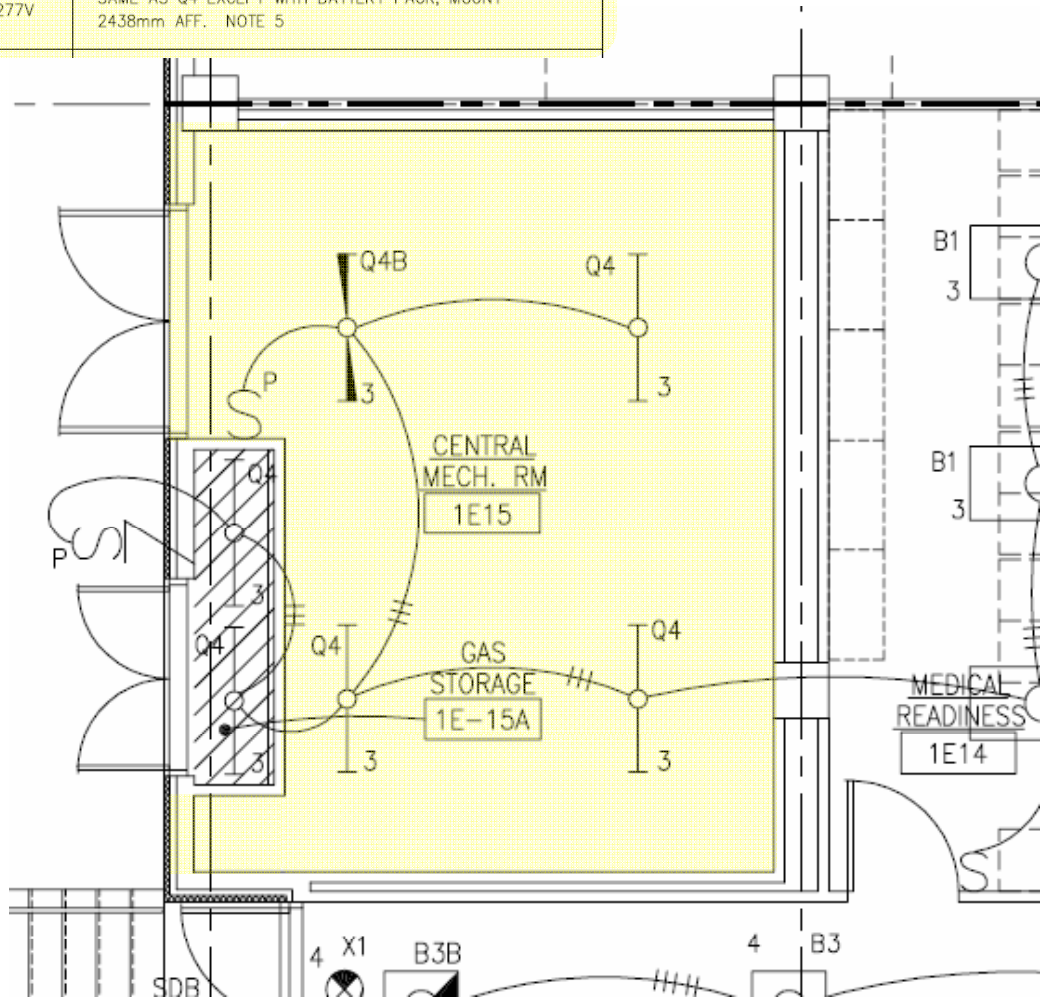
AIR SEPARATOR-EXPANSION TANK SCHEDULE

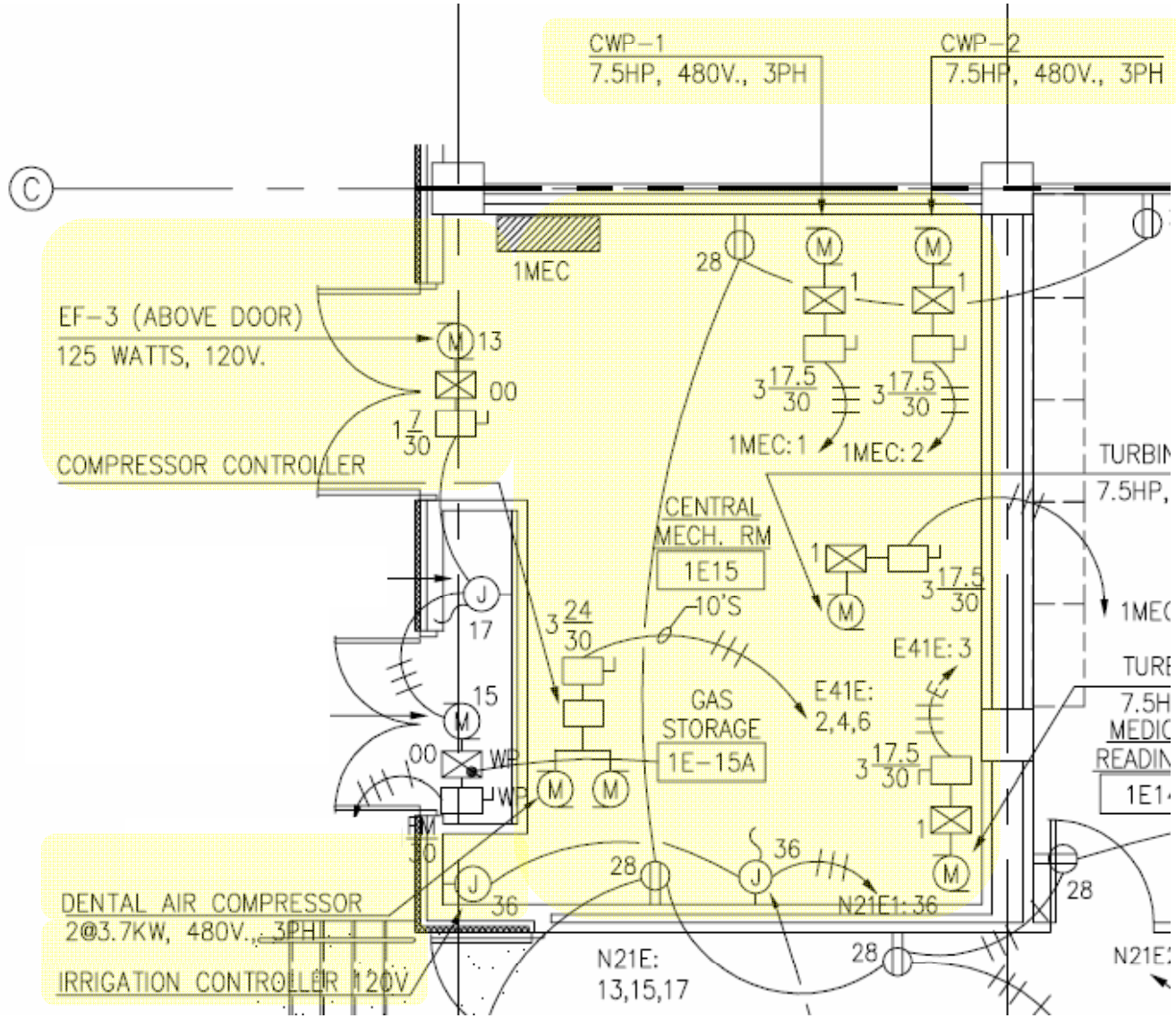
MARK	AIR SEPARATOR DESCRIPTION	M^3/HR	P.D. kPa H_2O	SIZE			REMARKS *NOTE*	PRESSURE RELIEF VALVE			MARK	EXP. TANK DECRIPTION	APPROX. TANK CAPACITY LITERS	MINIMUM ACCEPTANCE VOLUME LITERS	APPROX. SIZE mm	REMARKS
				INLET	OUTLET	AIR		SYSTEM	PRESSURE RELIEF SETTING kPa	MIN. RELIEF CAPACITY kW						
AS–1	1	85.3	6.4	150ø	150ø	32ø	CWS & CWR SYSTEM	AS–1	150	550	ET–1	2	140	140	508 ø x1168	CWS & CWR SYSTEM
AS–2	1	22.0	6.4	100ø	100ø	32ø	HWS & HWR SYSTEM	AS–2	150	350	ET–2	2	215	215	508 ø x1625	HWS & HWR SYSTEM

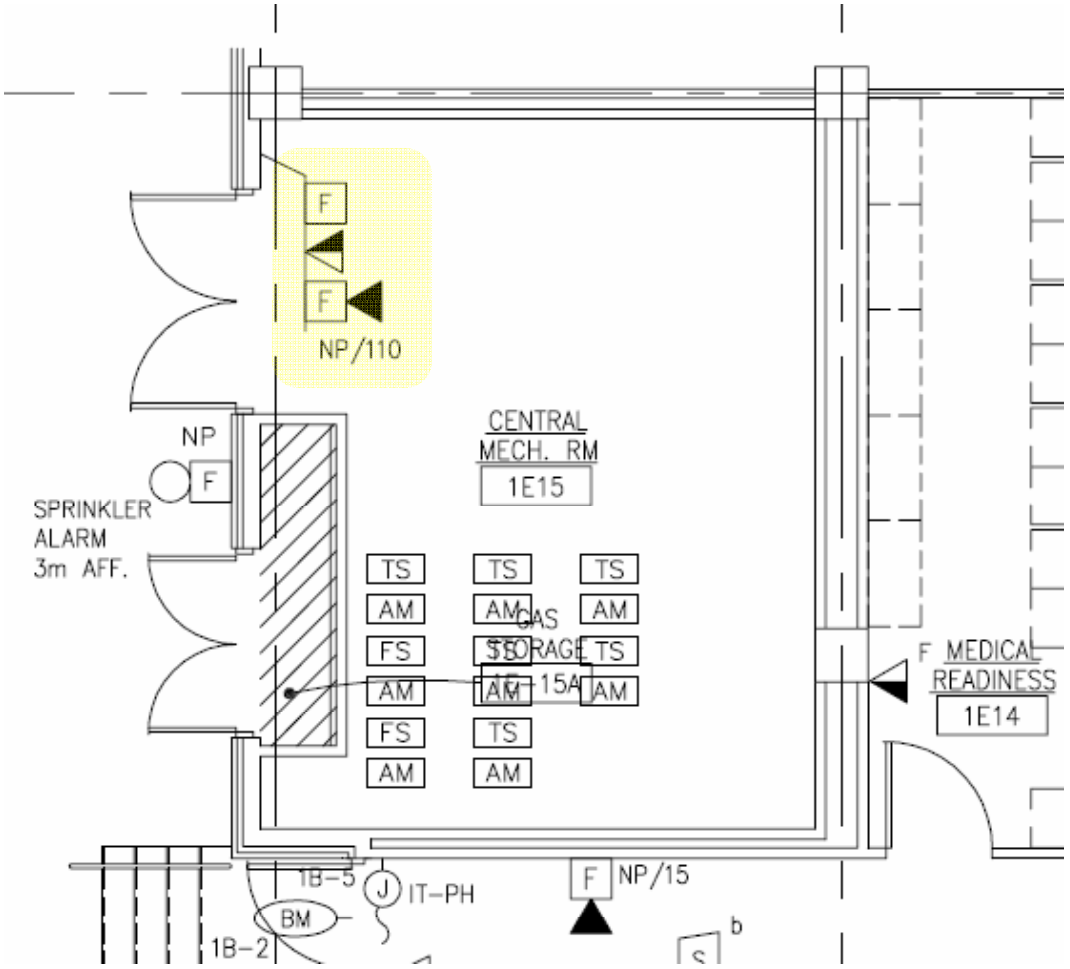
1) CENTRIFUGAL AIR SEPARATOR

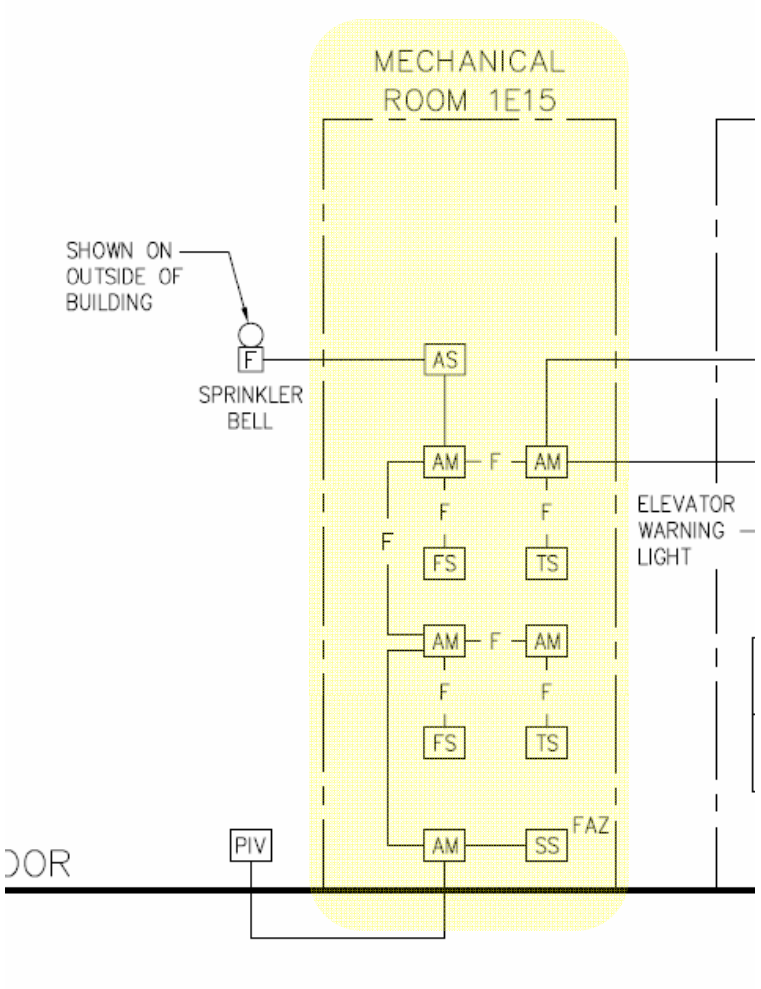
2) VERTICAL, CAPTIVE AIR, BLADDER TYPE

FIXTURE MARK	LAMPS				CU @ RCR=1	VOLTAGE	DESCRIPTION
	NO.	WATTS	TYPE	LUMENS			
Q4	2	32	a	2900	0.89	277V	1219mm 2 LAMP STRIP, WITH WIRE GUARD, MOUNT 2438mm AFF. NOTE 5
Q4B	2	32	a	2900	0.89	277V	SAME AS Q4 EXCEPT WITH BATTERY PACK, MOUNT 2438mm AFF. NOTE 5




CWP-1
7.5HP, 480V., 3PH
CWP-2
7.5HP, 480V., 3PH
1MEC
EF-3 (ABOVE DOOR)
125 WATTS, 120V.
COMPRESSOR CONTROLLER
CENTRAL MECH. RM
1E15
10'S
GAS STORAGE
1E-15A
E41E: 3
E41E: 2,4,6
1MEC: 1
1MEC: 2
N21E1: 36
N21E: 13,15,17
DENTAL AIR COMPRESSOR
2@3.7KW, 480V., 3PH
IRRIGATION CONTROLLER 120V
TURBIN
7.5HP,
1MEC
TURB
7.5H
MEDIC
READIN
1E1


F
F
NP/110
NP
F
SPRINKLER
ALARM
3m AFF.
CENTRAL
MECH. RM
1E15
TS
AM
FS
AM
FS
AM
TS
AM
TS
AM
TS
AM
GAS
STORAGE
1E-15A
F MEDICAL
READINESS
1E14
1B-5
J
IT-PH
BM
1B-2
F
NP/15
b


MECHANICAL
ROOM 1E15
SHOWN ON
OUTSIDE OF
BUILDING
F
SPRINKLER
BELL
AS
AM
F
AM
F
F
F
FS
TS
ELEVATOR
WARNING
LIGHT
AM
F
AM
F
F
FS
TS
AM
SS
FAZ
PIV
OOR

bSa Challenge 2014

Design COBie test procedure

Bill East, PhD, PE, F.ASCE
Engineer Research and Development Center
buildingSMART alliance Project Coordinator