

THE APPROVED CONSTRUCTION PLANS,  
DOCUMENTS AND ALL ENGINEERING MUST  
BE POSTED ON THE JOB AT ALL  
INSPECTIONS IN A VISIBLE AND READILY  
ACCESSIBLE LOCATION.

FULL SIZED LEDGIBLE COLOR PLANS ARE  
REQUIRED TO BE PROVIDED BY THE  
PERMITEE ON SITE FOR INSPECTION

## *CHC Puyallup Cannery HVAC Load Analysis*

for

Miller Hayashi Architect  
118 North 35th St. Suite 200  
Seattle, WA. 98103



Prepared By:

Tres West Engineers

Friday, October 21, 2022

PRCTI20221698



## Building Summary Loads

Building peaks in July at 5pm.



| Bldg Load Descriptions | Area Quan | Sen Loss | %Tot Loss | Lat Gain | Sen Gain | Net Gain | %Net Gain |
|------------------------|-----------|----------|-----------|----------|----------|----------|-----------|
| Roof                   | 12,090    | 27,943   | 3.85      | 0        | 14,087   | 14,087   | 2.01      |
| Wall                   | 6,985     | 20,960   | 2.89      | 0        | 16,428   | 16,428   | 2.34      |
| Glass                  | 2,266     | 46,280   | 6.38      | 0        | 76,812   | 76,812   | 10.94     |
| Floor Slab             | 426       | 12,368   | 1.71      | 0        | 0        | 0        | 0.00      |
| Skin Loads             |           | 107,551  | 14.83     | 0        | 107,327  | 107,327  | 15.28     |
| Lighting               | 17,410    | 0        | 0.00      | 0        | 68,317   | 68,317   | 9.73      |
| Equipment              | 27,077    | 0        | 0.00      | 0        | 106,247  | 106,247  | 15.13     |
| People                 | 324       | 0        | 0.00      | 74,520   | 93,150   | 167,670  | 23.87     |
| Partition              | 0         | 0        | 0.00      | 0        | 0        | 0        | 0.00      |
| Cool. Pret.            | 0         | 0        | 0.00      | 0        | 0        | 0        | 0.00      |
| Heat. Pret.            | 0         | 0        | 0.00      | 0        | 0        | 0        | 0.00      |
| Cool. Vent.            | 15,807    | 0        | 0.00      | 46,997   | 129,144  | 176,140  | 25.08     |
| Heat. Vent.            | 15,807    | 537,067  | 74.07     | 0        | 0        | 0        | 0.00      |
| Cool. Infil.           | 1,406     | 0        | 0.00      | 4,101    | 19,988   | 24,089   | 3.43      |
| Heat. Infil.           | 1,406     | 80,459   | 11.10     | 0        | 0        | 0        | 0.00      |
| Draw-Thru Fan          | 0         | 0        | 0.00      | 0        | 25,827   | 25,827   | 3.68      |
| Blow-Thru Fan          | 0         | 0        | 0.00      | 0        | 0        | 0        | 0.00      |
| Reserve Cap.           | 0         | 0        | 0.00      | 0        | 26,676   | 26,676   | 3.80      |
| Reheat Cap.            | 0         | 0        | 0.00      | 0        | 0        | 0        | 0.00      |
| Supply Duct            | 0         | 0        | 0.00      | 0        | 0        | 0        | 0.00      |
| Return Duct            | 0         | 0        | 0.00      | 0        | 0        | 0        | 0.00      |
| Misc. Supply           | 0         | 0        | 0.00      | 0        | 0        | 0        | 0.00      |
| Misc. Return           | 0         | 0        | 0.00      | 0        | 0        | 0        | 0.00      |
| Building Totals        |           | 725,076  | 100.00    | 125,618  | 576,676  | 702,294  | 100.00    |

| Building Summary    | Sen Loss | %Tot Loss | Lat Gain | Sen Gain | Net Gain | %Net Gain |
|---------------------|----------|-----------|----------|----------|----------|-----------|
| Ventilation         | 537,067  | 74.07     | 46,997   | 129,144  | 176,140  | 25.08     |
| Infiltration        | 80,459   | 11.10     | 4,101    | 19,988   | 24,089   | 3.43      |
| Pretreated Air      | 0        | 0.00      | 0        | 0        | 0        | 0.00      |
| Zone Loads          | 107,551  | 14.83     | 74,520   | 401,718  | 476,238  | 67.81     |
| Plenum Loads        | 0        | 0.00      | 0        | 0        | 0        | 0.00      |
| Fan/Duct/Misc Loads | 0        | 0.00      | 0        | 25,827   | 25,827   | 3.68      |
| Building Totals     | 725,076  | 100.00    | 125,618  | 576,676  | 702,294  | 100.00    |

## Check Figures

|                                                |         |            |
|------------------------------------------------|---------|------------|
| Total Building Supply Air (based on a 20° TD): | 21,984  | CFM        |
| Total Building Vent. Air (71.90% of Supply):   | 15,807  | CFM        |
| Total Conditioned Air Space:                   | 24,318  | Sq.ft      |
| Supply Air Per Unit Area:                      | 0.9040  | CFM/Sq.ft  |
| Area Per Cooling Capacity:                     | 415.5   | Sq.ft/Ton  |
| Cooling Capacity Per Area:                     | 0.0024  | Tons/Sq.ft |
| Heating Capacity Per Area:                     | 29.82   | Btuh/Sq.ft |
| Total Heating Required With Outside Air:       | 725,077 | Btuh       |
| Total Cooling Required With Outside Air:       | 58.52   | Tons       |





## Air Handler #1 - FCU1-1 - Summary Loads

| Zn No | Description<br>Zone Peak Time   | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|---------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 1     | Waiting 100<br>2pm July         | 1,520<br>45<br>18,240    | 8,410<br>710<br>0.47            | 27,253<br>1,329<br>0.87         | 10,421<br>0<br>0           | 2AC/Hr<br>608<br>710           | 2AC/Hr<br>608<br>728           |
| 28    | Public Restroom 124<br>3pm July | 112<br>0<br>1,008        | 336<br>28<br>0.25               | 821<br>40<br>0.36               | -2<br>0<br>0               | 4AC/Hr<br>67<br>28             | 4AC/Hr<br>67<br>22             |
| 29    | Public Restroom 125<br>3pm July | 112<br>0<br>1,008        | 336<br>28<br>0.25               | 825<br>40<br>0.36               | -2<br>0<br>0               | 4AC/Hr<br>67<br>28             | 4AC/Hr<br>67<br>22             |
| 38    | Janitor 132<br>3pm July         | 71<br>0<br>638           | 213<br>18<br>0.25               | 516<br>25<br>0.35               | -1<br>50<br>50             | 4AC/Hr<br>43<br>18             | 4AC/Hr<br>43<br>14             |
|       | Zone Peak Totals:               | 1,815                    | 9,296                           | 29,414                          | 10,416                     |                                |                                |
|       | Total Zones: 4                  | 45                       | 785                             | 1,434                           | 50                         | 785                            | 785                            |
|       | Unique Zones: 4                 | 20,894                   | 0.43                            | 0.79                            | 50                         | 785                            | 785                            |



## Air Handler #1 - FCU1-1 - Total Load Summary

Air Handler Description: FCU1-1 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.67 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.74 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 1pm in July.  
Outdoor Conditions: Clg: 86° DB, 67° WB, 69.81 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |             |             |
|------------------------------|-------------|-------------|
| Zone Space sensible loss:    | 2,323 Btuh  |             |
| Infiltration sensible loss:  | 6,974 Btuh  | 122 CFM     |
| Outside Air sensible loss:   | 35,929 Btuh | 785 CFM     |
| Supply Duct sensible loss:   | 0 Btuh      |             |
| Return Duct sensible loss:   | 0 Btuh      |             |
| Return Plenum sensible loss: | 0 Btuh      |             |
| Total System sensible loss:  |             | 45,225 Btuh |

|                                                              |         |
|--------------------------------------------------------------|---------|
| Heating Supply Air: $9,296 / (.986 \times 1.08 \times 11) =$ | 785 CFM |
| Winter Vent Outside Air (100.0% of supply) =                 | 785 CFM |

|                                             |             |             |
|---------------------------------------------|-------------|-------------|
| Zone space sensible gain:                   | 27,653 Btuh |             |
| Infiltration sensible gain:                 | 1,693 Btuh  |             |
| Draw-thru fan sensible gain:                | 1,684 Btuh  |             |
| Supply duct sensible gain:                  | 0 Btuh      |             |
| Reserve sensible gain:                      | 0 Btuh      |             |
| Total sensible gain on supply side of coil: |             | 31,030 Btuh |

|                                                              |           |
|--------------------------------------------------------------|-----------|
| Cooling Supply Air: $31,084 / (.986 \times 1.1 \times 20) =$ | 1,433 CFM |
| Summer Vent Outside Air (54.8% of supply) =                  | 785 CFM   |

|                                             |            |             |
|---------------------------------------------|------------|-------------|
| Return duct sensible gain:                  | 0 Btuh     |             |
| Return plenum sensible gain:                | 0 Btuh     |             |
| Outside air sensible gain:                  | 9,361 Btuh | 785 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh     |             |
| Total sensible gain on return side of coil: |            | 9,361 Btuh  |
| Total sensible gain on air handling system: |            | 40,391 Btuh |

|                                           |             |             |
|-------------------------------------------|-------------|-------------|
| Zone space latent gain:                   | 10,350 Btuh |             |
| Infiltration latent gain:                 | 395 Btuh    |             |
| Outside air latent gain:                  | 2,334 Btuh  |             |
| Total latent gain on air handling system: |             | 13,078 Btuh |
| Total system sensible and latent gain:    |             | 53,470 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 1,433 CFM         |
| Total Air Handler Vent. Air (54.76% of Supply):   | 785 CFM           |
| Total Conditioned Air Space:                      | 1,815 Sq.ft       |
| Supply Air Per Unit Area:                         | 0.7898 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 407.3 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0025 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 24.92 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 45,225 Btuh       |
| Total Cooling Required With Outside Air:          | 4.46 Tons         |



## Air Handler #3 - FCU1-3 - Summary Loads

|             |              |
|-------------|--------------|
| Building    | Planning     |
| Engineering | Public Works |
| Fire        | Traffic      |

| Zn No | Description<br>Zone Peak Time          | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|----------------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 3     | Reception 101 Work<br>102<br>10am July | 527<br>16<br>5,797       | 4,567<br>193<br>0.37            | 12,920<br>630<br>1.20           | 3,843<br>0<br>0            | 2AC/Hr<br>193<br>193           | 2AC/Hr<br>193<br>226           |
| 4     | Storage 103<br>3pm July                | 120<br>0<br>1,080        | 360<br>15<br>0.13               | 820<br>40<br>0.33               | -2<br>0<br>0               | 2AC/Hr<br>36<br>15             | 2AC/Hr<br>36<br>14             |
| 5     | 1st Hall 1<br>10am July                | 253<br>0<br>2,783        | 2,678<br>113<br>0.45            | 4,702<br>229<br>0.91            | 78<br>0<br>0               | 2AC/Hr<br>93<br>113            | 2AC/Hr<br>93<br>82             |
|       | Zone Peak Totals:                      | 900                      | 7,606                           | 18,442                          | 3,920                      |                                |                                |
|       | Total Zones: 3                         | 16                       | 322                             | 899                             | 0                          | 322                            | 322                            |
|       | Unique Zones: 3                        | 9,660                    | 0.36                            | 1.00                            | 0                          | 322                            | 322                            |



### Air Handler #3 - FCU1-3 - Total Load Summary

Air Handler Description: FCU1-3 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.42 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.83 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 1pm in July.  
Outdoor Conditions: Clg: 86° DB, 67° WB, 69.81 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |             |             |
|------------------------------|-------------|-------------|
| Zone Space sensible loss:    | 4,382 Btuh  |             |
| Infiltration sensible loss:  | 3,224 Btuh  | 56 CFM      |
| Outside Air sensible loss:   | 14,739 Btuh | 322 CFM     |
| Supply Duct sensible loss:   | 0 Btuh      |             |
| Return Duct sensible loss:   | 0 Btuh      |             |
| Return Plenum sensible loss: | 0 Btuh      |             |
| Total System sensible loss:  |             | 22,345 Btuh |

|                                                              |         |
|--------------------------------------------------------------|---------|
| Heating Supply Air: $7,606 / (.986 \times 1.08 \times 22) =$ | 322 CFM |
| Winter Vent Outside Air (100.0% of supply) =                 | 322 CFM |

|                                             |             |             |
|---------------------------------------------|-------------|-------------|
| Zone space sensible gain:                   | 16,332 Btuh |             |
| Infiltration sensible gain:                 | 783 Btuh    |             |
| Draw-thru fan sensible gain:                | 1,056 Btuh  |             |
| Supply duct sensible gain:                  | 0 Btuh      |             |
| Reserve sensible gain:                      | 107 Btuh    |             |
| Total sensible gain on supply side of coil: |             | 18,278 Btuh |

|                                                              |         |
|--------------------------------------------------------------|---------|
| Cooling Supply Air: $19,491 / (.986 \times 1.1 \times 20) =$ | 899 CFM |
| Summer Vent Outside Air (35.8% of supply) =                  | 322 CFM |

|                                             |            |             |
|---------------------------------------------|------------|-------------|
| Return duct sensible gain:                  | 0 Btuh     |             |
| Return plenum sensible gain:                | 0 Btuh     |             |
| Outside air sensible gain:                  | 3,840 Btuh | 322 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh     |             |
| Total sensible gain on return side of coil: |            | 3,840 Btuh  |
| Total sensible gain on air handling system: |            | 22,118 Btuh |

|                                           |            |             |
|-------------------------------------------|------------|-------------|
| Zone space latent gain:                   | 3,680 Btuh |             |
| Infiltration latent gain:                 | 182 Btuh   |             |
| Outside air latent gain:                  | 957 Btuh   |             |
| Total latent gain on air handling system: |            | 4,820 Btuh  |
| Total system sensible and latent gain:    |            | 26,938 Btuh |

### Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 899 CFM           |
| Total Air Handler Vent. Air (35.82% of Supply):   | 322 CFM           |
| Total Conditioned Air Space:                      | 900 Sq.ft         |
| Supply Air Per Unit Area:                         | 0.9987 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 400.9 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0025 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 24.83 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 22,345 Btuh       |
| Total Cooling Required With Outside Air:          | 2.24 Tons         |



## Air Handler #4 - FCU1-4 - Summary Loads

|               |              |
|---------------|--------------|
| ISSUED PERMIT |              |
| Building      | Planning     |
| Engineering   | Public Works |
| Fire          | Traffic      |

| Zn No | Description<br>Zone Peak Time | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 6     | Office 104                    | 113                      | 3,351                           | 5,977                           | 265                        | 2AC/Hr                         | 2AC/Hr                         |
|       | 10am July                     | 1                        | 137                             | 291                             | 0                          | 41                             | 41                             |
|       |                               | 1,243                    | 1.21                            | 2.58                            | 0                          | 41                             | 41                             |
|       | Zone Peak Totals:             | 113                      | 3,351                           | 5,977                           | 265                        |                                |                                |
|       | Total Zones: 1                | 1                        | 137                             | 291                             | 0                          | 41                             | 41                             |
|       | Unique Zones: 1               | 1,243                    | 1.21                            | 2.58                            | 0                          | 41                             | 41                             |



## Air Handler #4 - FCU1-4 - Total Load Summary

Air Handler Description: FCU1-4 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.14 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.96 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 10am in July.  
Outdoor Conditions: Clg: 74° DB, 64° WB, 71.88 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |            |            |
|------------------------------|------------|------------|
| Zone Space sensible loss:    | 2,936 Btuh |            |
| Infiltration sensible loss:  | 415 Btuh   | 7 CFM      |
| Outside Air sensible loss:   | 1,897 Btuh | 41 CFM     |
| Supply Duct sensible loss:   | 0 Btuh     |            |
| Return Duct sensible loss:   | 0 Btuh     |            |
| Return Plenum sensible loss: | 0 Btuh     |            |
| Total System sensible loss:  |            | 5,247 Btuh |

|                                                              |         |
|--------------------------------------------------------------|---------|
| Heating Supply Air: $3,351 / (.986 \times 1.08 \times 23) =$ | 137 CFM |
| Winter Vent Outside Air (30.3% of supply) =                  | 41 CFM  |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Zone space sensible gain:                   | 5,982 Btuh |            |
| Infiltration sensible gain:                 | -5 Btuh    |            |
| Draw-thru fan sensible gain:                | 342 Btuh   |            |
| Supply duct sensible gain:                  | 0 Btuh     |            |
| Reserve sensible gain:                      | 0 Btuh     |            |
| Total sensible gain on supply side of coil: |            | 6,319 Btuh |

|                                                             |         |
|-------------------------------------------------------------|---------|
| Cooling Supply Air: $6,319 / (.986 \times 1.1 \times 20) =$ | 291 CFM |
| Summer Vent Outside Air (14.2% of supply) =                 | 41 CFM  |

|                                             |          |            |
|---------------------------------------------|----------|------------|
| Return duct sensible gain:                  | 0 Btuh   |            |
| Return plenum sensible gain:                | 0 Btuh   |            |
| Outside air sensible gain:                  | -45 Btuh | 41 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh   |            |
| Total sensible gain on return side of coil: |          | -45 Btuh   |
| Total sensible gain on air handling system: |          | 6,274 Btuh |

|                                           |          |            |
|-------------------------------------------|----------|------------|
| Zone space latent gain:                   | 230 Btuh |            |
| Infiltration latent gain:                 | 35 Btuh  |            |
| Outside air latent gain:                  | 245 Btuh |            |
| Total latent gain on air handling system: |          | 510 Btuh   |
| Total system sensible and latent gain:    |          | 6,784 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 291 CFM           |
| Total Air Handler Vent. Air (14.22% of Supply):   | 41 CFM            |
| Total Conditioned Air Space:                      | 113 Sq.ft         |
| Supply Air Per Unit Area:                         | 2.5784 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 199.9 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0050 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 46.44 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 5,247 Btuh        |
| Total Cooling Required With Outside Air:          | 0.57 Tons         |



## Air Handler #5 - FCU1-5 - Summary Loads

| Zn No | Description<br>Zone Peak Time | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 7     | Office 105<br>3pm July        | 82<br>1<br>896           | 1,151<br>47<br>0.58             | 1,171<br>57<br>0.70             | 228<br>0<br>0              | 2AC/Hr<br>30<br>30             | 2AC/Hr<br>30<br>30             |
|       | Zone Peak Totals:             | 82                       | 1,151                           | 1,171                           | 228                        |                                |                                |
|       | Total Zones: 1                | 1                        | 47                              | 57                              | 0                          | 30                             | 30                             |
|       | Unique Zones: 1               | 896                      | 0.58                            | 0.70                            | 0                          | 30                             | 30                             |



## Air Handler #5 - FCU1-5 - Total Load Summary

Air Handler Description: FCU1-5 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.03 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.83 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 5pm in July.  
Outdoor Conditions: Clg: 86° DB, 67° WB, 69.39 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |            |            |
|------------------------------|------------|------------|
| Zone Space sensible loss:    | 851 Btuh   |            |
| Infiltration sensible loss:  | 299 Btuh   | 5 CFM      |
| Outside Air sensible loss:   | 1,368 Btuh | 30 CFM     |
| Supply Duct sensible loss:   | 0 Btuh     |            |
| Return Duct sensible loss:   | 0 Btuh     |            |
| Return Plenum sensible loss: | 0 Btuh     |            |
| Total System sensible loss:  |            | 2,519 Btuh |

|                                                              |        |
|--------------------------------------------------------------|--------|
| Heating Supply Air: $1,151 / (.986 \times 1.08 \times 23) =$ | 47 CFM |
| Winter Vent Outside Air (63.6% of supply) =                  | 30 CFM |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Zone space sensible gain:                   | 1,093 Btuh |            |
| Infiltration sensible gain:                 | 74 Btuh    |            |
| Draw-thru fan sensible gain:                | 67 Btuh    |            |
| Supply duct sensible gain:                  | 0 Btuh     |            |
| Reserve sensible gain:                      | 0 Btuh     |            |
| Total sensible gain on supply side of coil: |            | 1,234 Btuh |

|                                                             |        |
|-------------------------------------------------------------|--------|
| Cooling Supply Air: $1,238 / (.986 \times 1.1 \times 20) =$ | 57 CFM |
| Summer Vent Outside Air (52.4% of supply) =                 | 30 CFM |

|                                             |          |            |
|---------------------------------------------|----------|------------|
| Return duct sensible gain:                  | 0 Btuh   |            |
| Return plenum sensible gain:                | 0 Btuh   |            |
| Outside air sensible gain:                  | 356 Btuh | 30 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh   |            |
| Total sensible gain on return side of coil: |          | 356 Btuh   |
| Total sensible gain on air handling system: |          | 1,591 Btuh |

|                                           |          |            |
|-------------------------------------------|----------|------------|
| Zone space latent gain:                   | 230 Btuh |            |
| Infiltration latent gain:                 | 15 Btuh  |            |
| Outside air latent gain:                  | 89 Btuh  |            |
| Total latent gain on air handling system: |          | 334 Btuh   |
| Total system sensible and latent gain:    |          | 1,925 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 57 CFM            |
| Total Air Handler Vent. Air (52.37% of Supply):   | 30 CFM            |
| Total Conditioned Air Space:                      | 82 Sq.ft          |
| Supply Air Per Unit Area:                         | 0.7001 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 508.1 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0020 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 30.90 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 2,519 Btuh        |
| Total Cooling Required With Outside Air:          | 0.16 Tons         |





## Air Handler #6 - FCU1-6 - Summary Loads

|             |              |
|-------------|--------------|
| Building    | Planning     |
| Engineering | Public Works |
| Fire        | Traffic      |

| Zn No | Description<br>Zone Peak Time | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 8     | Office 106                    | 115                      | 1,892                           | 2,026                           | 228                        | 2AC/Hr                         | 2AC/Hr                         |
|       | 3pm July                      | 1                        | 77                              | 99                              | 0                          | 42                             | 42                             |
|       |                               | 1,263                    | 0.67                            | 0.86                            | 0                          | 42                             | 42                             |
|       | Zone Peak Totals:             | 115                      | 1,892                           | 2,026                           | 228                        |                                |                                |
|       | Total Zones: 1                | 1                        | 77                              | 99                              | 0                          | 42                             | 42                             |
|       | Unique Zones: 1               | 1,263                    | 0.67                            | 0.86                            | 0                          | 42                             | 42                             |



|             |              |
|-------------|--------------|
| Building    | Planning     |
| Engineering | Public Works |
| Fire        | Traffic      |

## Air Handler #6 - FCU1-6 - Total Load Summary

Air Handler Description: FCU1-6 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.05 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.90 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 3pm in July.  
Outdoor Conditions: Clg: 89° DB, 67° WB, 65.22 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |            |            |
|------------------------------|------------|------------|
| Zone Space sensible loss:    | 1,470 Btuh |            |
| Infiltration sensible loss:  | 421 Btuh   | 7 CFM      |
| Outside Air sensible loss:   | 1,927 Btuh | 42 CFM     |
| Supply Duct sensible loss:   | 0 Btuh     |            |
| Return Duct sensible loss:   | 0 Btuh     |            |
| Return Plenum sensible loss: | 0 Btuh     |            |
| Total System sensible loss:  |            | 3,819 Btuh |

|                                                              |        |
|--------------------------------------------------------------|--------|
| Heating Supply Air: $1,892 / (.986 \times 1.08 \times 23) =$ | 77 CFM |
| Winter Vent Outside Air (54.5% of supply) =                  | 42 CFM |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Zone space sensible gain:                   | 1,898 Btuh |            |
| Infiltration sensible gain:                 | 129 Btuh   |            |
| Draw-thru fan sensible gain:                | 116 Btuh   |            |
| Supply duct sensible gain:                  | 0 Btuh     |            |
| Reserve sensible gain:                      | 0 Btuh     |            |
| Total sensible gain on supply side of coil: |            | 2,143 Btuh |

|                                                             |        |
|-------------------------------------------------------------|--------|
| Cooling Supply Air: $2,143 / (.986 \times 1.1 \times 20) =$ | 99 CFM |
| Summer Vent Outside Air (42.6% of supply) =                 | 42 CFM |

|                                             |          |            |
|---------------------------------------------|----------|------------|
| Return duct sensible gain:                  | 0 Btuh   |            |
| Return plenum sensible gain:                | 0 Btuh   |            |
| Outside air sensible gain:                  | 639 Btuh | 42 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh   |            |
| Total sensible gain on return side of coil: |          | 639 Btuh   |
| Total sensible gain on air handling system: |          | 2,781 Btuh |

|                                           |          |            |
|-------------------------------------------|----------|------------|
| Zone space latent gain:                   | 230 Btuh |            |
| Infiltration latent gain:                 | -2 Btuh  |            |
| Outside air latent gain:                  | -11 Btuh |            |
| Total latent gain on air handling system: |          | 217 Btuh   |
| Total system sensible and latent gain:    |          | 2,999 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 99 CFM            |
| Total Air Handler Vent. Air (42.61% of Supply):   | 42 CFM            |
| Total Conditioned Air Space:                      | 115 Sq.ft         |
| Supply Air Per Unit Area:                         | 0.8605 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 459.4 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0022 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 33.26 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 3,819 Btuh        |
| Total Cooling Required With Outside Air:          | 0.25 Tons         |



## Air Handler #7 - FCU1-7 - Summary Loads

|             |              |
|-------------|--------------|
| Building    | Planning     |
| Engineering | Public Works |
| Fire        | Traffic      |

| Zn No | Description<br>Zone Peak Time | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 10    | Office 108                    | 95                       | 1,314                           | 1,501                           | 228                        | 2AC/Hr                         | 2AC/Hr                         |
|       | 3pm July                      | 1                        | 54                              | 73                              | 0                          | 35                             | 35                             |
|       |                               | 1,045                    | 0.57                            | 0.77                            | 0                          | 35                             | 35                             |
|       | Zone Peak Totals:             | 95                       | 1,314                           | 1,501                           | 228                        |                                |                                |
|       | Total Zones: 1                | 1                        | 54                              | 73                              | 0                          | 35                             | 35                             |
|       | Unique Zones: 1               | 1,045                    | 0.57                            | 0.77                            | 0                          | 35                             | 35                             |



## Air Handler #7 - FCU1-7 - Total Load Summary

Air Handler Description: FCU1-7 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.03 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.87 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 3pm in July.  
Outdoor Conditions: Clg: 89° DB, 67° WB, 65.22 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |            |            |
|------------------------------|------------|------------|
| Zone Space sensible loss:    | 966 Btuh   |            |
| Infiltration sensible loss:  | 349 Btuh   | 6 CFM      |
| Outside Air sensible loss:   | 1,594 Btuh | 35 CFM     |
| Supply Duct sensible loss:   | 0 Btuh     |            |
| Return Duct sensible loss:   | 0 Btuh     |            |
| Return Plenum sensible loss: | 0 Btuh     |            |
| Total System sensible loss:  |            | 2,909 Btuh |

|                                                              |        |
|--------------------------------------------------------------|--------|
| Heating Supply Air: $1,314 / (.986 \times 1.08 \times 23) =$ | 54 CFM |
| Winter Vent Outside Air (64.9% of supply) =                  | 35 CFM |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Zone space sensible gain:                   | 1,395 Btuh |            |
| Infiltration sensible gain:                 | 106 Btuh   |            |
| Draw-thru fan sensible gain:                | 86 Btuh    |            |
| Supply duct sensible gain:                  | 0 Btuh     |            |
| Reserve sensible gain:                      | 0 Btuh     |            |
| Total sensible gain on supply side of coil: |            | 1,587 Btuh |

|                                                             |        |
|-------------------------------------------------------------|--------|
| Cooling Supply Air: $1,587 / (.986 \times 1.1 \times 20) =$ | 73 CFM |
| Summer Vent Outside Air (47.6% of supply) =                 | 35 CFM |

|                                             |          |            |
|---------------------------------------------|----------|------------|
| Return duct sensible gain:                  | 0 Btuh   |            |
| Return plenum sensible gain:                | 0 Btuh   |            |
| Outside air sensible gain:                  | 529 Btuh | 35 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh   |            |
| Total sensible gain on return side of coil: |          | 529 Btuh   |
| Total sensible gain on air handling system: |          | 2,116 Btuh |

|                                           |          |            |
|-------------------------------------------|----------|------------|
| Zone space latent gain:                   | 230 Btuh |            |
| Infiltration latent gain:                 | -2 Btuh  |            |
| Outside air latent gain:                  | -9 Btuh  |            |
| Total latent gain on air handling system: |          | 219 Btuh   |
| Total system sensible and latent gain:    |          | 2,335 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 73 CFM            |
| Total Air Handler Vent. Air (47.61% of Supply):   | 35 CFM            |
| Total Conditioned Air Space:                      | 95 Sq.ft          |
| Supply Air Per Unit Area:                         | 0.7701 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 488.1 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0020 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 30.62 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 2,909 Btuh        |
| Total Cooling Required With Outside Air:          | 0.19 Tons         |



|                                                                        |              |
|------------------------------------------------------------------------|--------------|
| City of Puyallup<br>Development & Permitting Services<br>ISSUED PERMIT |              |
| Building                                                               | Planning     |
| Engineering                                                            | Public Works |
| Fire                                                                   | Traffic      |

## Air Handler #8 - FCU1-2 - Summary Loads

| Zn No | Description<br>Zone Peak Time  | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|--------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 9     | Storage 107<br>3pm July        | 72<br>0<br>788           | 709<br>71<br>0.99               | 595<br>29<br>0.41               | -1<br>0<br>0               | 2AC/Hr<br>26<br>71             | 2AC/Hr<br>26<br>27             |
| 11    | Staff Restroom 109<br>3pm July | 84<br>0<br>752           | 251<br>25<br>0.30               | 573<br>28<br>0.33               | -1<br>0<br>0               | 4AC/Hr<br>50<br>25             | 4AC/Hr<br>50<br>26             |
| 12    | MED ROOM 110<br>3pm July       | 84<br>1<br>714           | 238<br>24<br>0.28               | 934<br>46<br>0.54               | 229<br>0<br>0              | 3AC/Hr<br>36<br>24             | 3AC/Hr<br>36<br>43             |
| 13    | Lab 111<br>3pm July            | 138<br>4<br>1,173        | 391<br>39<br>0.28               | 2,533<br>124<br>0.89            | 918<br>0<br>0              | 3AC/Hr<br>59<br>39             | 3AC/Hr<br>59<br>117            |
| 15    | Spec Restroom 113<br>3pm July  | 59<br>0<br>527           | 176<br>18<br>0.30               | 369<br>18<br>0.31               | -1<br>90<br>90             | 10AC/Hr<br>88<br>18            | 10AC/Hr<br>88<br>17            |
| 16    | 1st Hall 2<br>3pm July         | 313<br>0<br>3,133        | 1,709<br>171<br>0.55            | 2,615<br>128<br>0.41            | -5<br>0<br>0               | 2AC/Hr<br>104<br>171           | 2AC/Hr<br>104<br>121           |
| 17    | 1st Hall 3<br>3pm July         | 310<br>0<br>3,100        | 1,190<br>119<br>0.38            | 2,199<br>107<br>0.35            | -5<br>0<br>0               | 2AC/Hr<br>103<br>119           | 2AC/Hr<br>103<br>101           |
| 26    | Consult 122<br>3pm July        | 123<br>1<br>1,352        | 451<br>45<br>0.37               | 1,264<br>62<br>0.50             | 228<br>0<br>0              | 2AC/Hr<br>45<br>45             | 2AC/Hr<br>45<br>58             |
|       | Zone Peak Totals:              | 1,182                    | 5,115                           | 11,083                          | 1,360                      |                                |                                |
|       | Total Zones: 8                 | 6                        | 511                             | 540                             | 90                         | 511                            | 511                            |
|       | Unique Zones: 8                | 11,538                   | 0.43                            | 0.46                            | 90                         | 511                            | 511                            |



## Air Handler #8 - FCU1-2 - Total Load Summary

Air Handler Description: FCU1-2 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.25 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.90 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 3pm in July.  
Outdoor Conditions: Clg: 89° DB, 67° WB, 65.22 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |             |             |
|------------------------------|-------------|-------------|
| Zone Space sensible loss:    | 1,265 Btuh  |             |
| Infiltration sensible loss:  | 3,851 Btuh  | 67 CFM      |
| Outside Air sensible loss:   | 23,403 Btuh | 511 CFM     |
| Supply Duct sensible loss:   | 0 Btuh      |             |
| Return Duct sensible loss:   | 0 Btuh      |             |
| Return Plenum sensible loss: | 0 Btuh      |             |
| Total System sensible loss:  |             | 28,518 Btuh |

|                                                             |         |
|-------------------------------------------------------------|---------|
| Heating Supply Air: $5,115 / (.986 \times 1.08 \times 9) =$ | 511 CFM |
| Winter Vent Outside Air (100.0% of supply) =                | 511 CFM |

|                                             |            |             |
|---------------------------------------------|------------|-------------|
| Zone space sensible gain:                   | 9,908 Btuh |             |
| Infiltration sensible gain:                 | 1,175 Btuh |             |
| Draw-thru fan sensible gain:                | 635 Btuh   |             |
| Supply duct sensible gain:                  | 0 Btuh     |             |
| Reserve sensible gain:                      | 0 Btuh     |             |
| Total sensible gain on supply side of coil: |            | 11,717 Btuh |

|                                                              |         |
|--------------------------------------------------------------|---------|
| Cooling Supply Air: $11,717 / (.986 \times 1.1 \times 20) =$ | 540 CFM |
| Summer Vent Outside Air (94.6% of supply) =                  | 511 CFM |

|                                             |            |             |
|---------------------------------------------|------------|-------------|
| Return duct sensible gain:                  | 0 Btuh     |             |
| Return plenum sensible gain:                | 0 Btuh     |             |
| Outside air sensible gain:                  | 7,761 Btuh | 511 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh     |             |
| Total sensible gain on return side of coil: |            | 7,761 Btuh  |
| Total sensible gain on air handling system: |            | 19,478 Btuh |

|                                           |            |             |
|-------------------------------------------|------------|-------------|
| Zone space latent gain:                   | 1,380 Btuh |             |
| Infiltration latent gain:                 | -16 Btuh   |             |
| Outside air latent gain:                  | -130 Btuh  |             |
| Total latent gain on air handling system: |            | 1,233 Btuh  |
| Total system sensible and latent gain:    |            | 20,711 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 540 CFM           |
| Total Air Handler Vent. Air (94.62% of Supply):   | 511 CFM           |
| Total Conditioned Air Space:                      | 1,182 Sq.ft       |
| Supply Air Per Unit Area:                         | 0.4572 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 684.7 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0015 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 24.13 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 28,518 Btuh       |
| Total Cooling Required With Outside Air:          | 1.73 Tons         |



|             |              |
|-------------|--------------|
| Building    | Planning     |
| Engineering | Public Works |
| Fire        | Traffic      |

## Air Handler #9 - FCU1-8 - Summary Loads

| Zn No | Description<br>Zone Peak Time | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 18    | Exam/Consult 114<br>3pm July  | 107<br>2<br>909          | 963<br>103<br>0.96              | 1,512<br>74<br>0.69             | 458<br>85<br>85            | 6AC/Hr<br>91<br>103            | 6AC/Hr<br>91<br>67             |
| 19    | Exam/Consult 115<br>3pm July  | 106<br>2<br>903          | 301<br>32<br>0.30               | 1,392<br>68<br>0.64             | 458<br>85<br>85            | 6AC/Hr<br>90<br>32             | 6AC/Hr<br>90<br>61             |
| 20    | Exam/Consult 116<br>3pm July  | 107<br>2<br>912          | 304<br>33<br>0.30               | 1,400<br>68<br>0.64             | 458<br>85<br>85            | 6AC/Hr<br>91<br>33             | 6AC/Hr<br>91<br>62             |
| 21    | Provider Pod 117<br>5pm July  | 638<br>14<br>6,384       | 6,951<br>743<br>1.16            | 15,148<br>739<br>1.16           | 3,329<br>640<br>640        | 6AC/Hr<br>638<br>743           | 6AC/Hr<br>638<br>669           |
| 22    | Exam/Consult 118<br>3pm July  | 92<br>2<br>785           | 262<br>28<br>0.30               | 1,286<br>63<br>0.68             | 459<br>85<br>85            | 6AC/Hr<br>79<br>28             | 6AC/Hr<br>79<br>57             |
| 23    | Exam/Consult 119<br>3pm July  | 93<br>2<br>791           | 264<br>28<br>0.30               | 1,291<br>63<br>0.68             | 459<br>0<br>0              | 6AC/Hr<br>79<br>28             | 6AC/Hr<br>79<br>57             |
| 24    | Procedure 120<br>5pm July     | 180<br>3<br>1,533        | 2,386<br>255<br>1.41            | 5,646<br>275<br>1.53            | 716<br>135<br>135          | 6AC/Hr<br>153<br>255           | 6AC/Hr<br>153<br>249           |
|       | Zone Peak Totals:             | 1,325                    | 11,432                          | 27,676                          | 6,337                      |                                |                                |
|       | Total Zones: 7                | 27                       | 1,222                           | 1,349                           | 1,115                      | 1,222                          | 1,222                          |
|       | Unique Zones: 7               | 12,217                   | 0.92                            | 1.02                            | 1,115                      | 1,222                          | 1,222                          |



## Air Handler #9 - FCU1-8 - Total Load Summary

Air Handler Description: FCU1-8 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.63 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.82 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 5pm in July.  
Outdoor Conditions: Clg: 86° DB, 67° WB, 69.39 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |             |             |
|------------------------------|-------------|-------------|
| Zone Space sensible loss:    | 7,354 Btuh  |             |
| Infiltration sensible loss:  | 4,077 Btuh  | 71 CFM      |
| Outside Air sensible loss:   | 32,463 Btuh | 1,222 CFM   |
| Supply Duct sensible loss:   | 0 Btuh      |             |
| Return Duct sensible loss:   | 0 Btuh      |             |
| Return Plenum sensible loss: | 0 Btuh      |             |
| Total System sensible loss:  |             | 43,895 Btuh |

|                                                              |           |
|--------------------------------------------------------------|-----------|
| Heating Supply Air: $11,432 / (.986 \times 1.08 \times 9) =$ | 1,222 CFM |
| Winter Vent Outside Air (100.0% of supply) =                 | 1,222 CFM |

|                                             |             |
|---------------------------------------------|-------------|
| Zone space sensible gain:                   | 26,588 Btuh |
| Infiltration sensible gain:                 | 1,013 Btuh  |
| Draw-thru fan sensible gain:                | 1,585 Btuh  |
| Supply duct sensible gain:                  | 0 Btuh      |
| Reserve sensible gain:                      | 69 Btuh     |
| Total sensible gain on supply side of coil: | 29,254 Btuh |

|                                                              |           |
|--------------------------------------------------------------|-----------|
| Cooling Supply Air: $29,254 / (.986 \times 1.1 \times 20) =$ | 1,349 CFM |
| Summer Vent Outside Air (90.6% of supply) =                  | 1,222 CFM |

|                                             |             |
|---------------------------------------------|-------------|
| Return duct sensible gain:                  | 0 Btuh      |
| Return plenum sensible gain:                | 0 Btuh      |
| Outside air sensible gain:                  | 7,784 Btuh  |
| Blow-thru fan sensible gain:                | 0 Btuh      |
| Total sensible gain on return side of coil: | 7,784 Btuh  |
| Total sensible gain on air handling system: | 37,039 Btuh |

|                                           |             |
|-------------------------------------------|-------------|
| Zone space latent gain:                   | 6,210 Btuh  |
| Infiltration latent gain:                 | 208 Btuh    |
| Outside air latent gain:                  | 3,632 Btuh  |
| Total latent gain on air handling system: | 10,050 Btuh |
| Total system sensible and latent gain:    | 47,089 Btuh |

## Check Figures

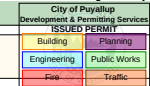
|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 1,349 CFM         |
| Total Air Handler Vent. Air (90.55% of Supply):   | 1,222 CFM         |
| Total Conditioned Air Space:                      | 1,325 Sq.ft       |
| Supply Air Per Unit Area:                         | 1.0185 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 337.6 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0030 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 33.14 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 43,895 Btuh       |
| Total Cooling Required With Outside Air:          | 3.92 Tons         |





## Air Handler #10 - FCU1-12 - Summary Loads

| Zn No | Description<br>Zone Peak Time    | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|----------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 47    | Quite Operatory 142<br>10am July | 130<br>3<br>1,425        | 2,232<br>142<br>1.10            | 4,905<br>239<br>1.85            | 730<br>0<br>0              | 6AC/Hr<br>142<br>142           | 6AC/Hr<br>142<br>142           |
|       | Zone Peak Totals:                | 130                      | 2,232                           | 4,905                           | 730                        |                                |                                |
|       | Total Zones: 1                   | 3                        | 142                             | 239                             | 0                          | 142                            | 142                            |
|       | Unique Zones: 1                  | 1,425                    | 1.10                            | 1.85                            | 0                          | 142                            | 142                            |



## Air Handler #10 - FCU1-12 - Total Load Summary

Air Handler Description: FCU1-12 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.11 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.88 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 1pm in July.  
Outdoor Conditions: Clg: 86° DB, 67° WB, 69.81 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |            |            |
|------------------------------|------------|------------|
| Zone Space sensible loss:    | 1,757 Btuh |            |
| Infiltration sensible loss:  | 475 Btuh   | 8 CFM      |
| Outside Air sensible loss:   | 6,520 Btuh | 142 CFM    |
| Supply Duct sensible loss:   | 0 Btuh     |            |
| Return Duct sensible loss:   | 0 Btuh     |            |
| Return Plenum sensible loss: | 0 Btuh     |            |
| Total System sensible loss:  |            | 8,752 Btuh |

|                                                              |         |
|--------------------------------------------------------------|---------|
| Heating Supply Air: $2,232 / (.986 \times 1.08 \times 15) =$ | 142 CFM |
| Winter Vent Outside Air (100.0% of supply) =                 | 142 CFM |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Zone space sensible gain:                   | 4,086 Btuh |            |
| Infiltration sensible gain:                 | 115 Btuh   |            |
| Draw-thru fan sensible gain:                | 281 Btuh   |            |
| Supply duct sensible gain:                  | 0 Btuh     |            |
| Reserve sensible gain:                      | 0 Btuh     |            |
| Total sensible gain on supply side of coil: |            | 4,482 Btuh |

|                                                             |         |
|-------------------------------------------------------------|---------|
| Cooling Supply Air: $5,186 / (.986 \times 1.1 \times 20) =$ | 239 CFM |
| Summer Vent Outside Air (59.6% of supply) =                 | 142 CFM |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Return duct sensible gain:                  | 0 Btuh     |            |
| Return plenum sensible gain:                | 0 Btuh     |            |
| Outside air sensible gain:                  | 1,699 Btuh | 142 CFM    |
| Blow-thru fan sensible gain:                | 0 Btuh     |            |
| Total sensible gain on return side of coil: |            | 1,699 Btuh |
| Total sensible gain on air handling system: |            | 6,181 Btuh |

|                                           |          |            |
|-------------------------------------------|----------|------------|
| Zone space latent gain:                   | 690 Btuh |            |
| Infiltration latent gain:                 | 27 Btuh  |            |
| Outside air latent gain:                  | 424 Btuh |            |
| Total latent gain on air handling system: |          | 1,140 Btuh |
| Total system sensible and latent gain:    |          | 7,321 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 239 CFM           |
| Total Air Handler Vent. Air (59.57% of Supply):   | 142 CFM           |
| Total Conditioned Air Space:                      | 130 Sq.ft         |
| Supply Air Per Unit Area:                         | 1.8466 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 212.3 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0047 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 67.59 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 8,752 Btuh        |
| Total Cooling Required With Outside Air:          | 0.61 Tons         |



|             |              |
|-------------|--------------|
| Building    | Planning     |
| Engineering | Public Works |
| Fire        | Traffic      |

## Air Handler #11 - FCU1-9 - Summary Loads

| Zn No | Description<br>Zone Peak Time | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 25    | Office 121                    | 133                      | 1,723                           | 3,295                           | 255                        | 2AC/Hr                         | 2AC/Hr                         |
|       | 5pm July                      | 1                        | 70                              | 161                             | 0                          | 49                             | 49                             |
|       |                               | 1,466                    | 0.53                            | 1.21                            | 0                          | 49                             | 49                             |
|       | Zone Peak Totals:             | 133                      | 1,723                           | 3,295                           | 255                        |                                |                                |
|       | Total Zones: 1                | 1                        | 70                              | 161                             | 0                          | 49                             | 49                             |
|       | Unique Zones: 1               | 1,466                    | 0.53                            | 1.21                            | 0                          | 49                             | 49                             |



|                                                       |              |
|-------------------------------------------------------|--------------|
| City of Puyallup<br>Development & Permitting Services |              |
| ISSUED PERMIT                                         |              |
| Building                                              | Planning     |
| Engineering                                           | Public Works |
| Fire                                                  | Traffic      |

## Air Handler #11 - FCU1-9 - Total Load Summary

Air Handler Description: FCU1-9 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.08 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.93 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 5pm in July.  
Outdoor Conditions: Clg: 86° DB, 67° WB, 69.39 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |            |            |
|------------------------------|------------|------------|
| Zone Space sensible loss:    | 1,234 Btuh |            |
| Infiltration sensible loss:  | 489 Btuh   | 9 CFM      |
| Outside Air sensible loss:   | 2,237 Btuh | 49 CFM     |
| Supply Duct sensible loss:   | 0 Btuh     |            |
| Return Duct sensible loss:   | 0 Btuh     |            |
| Return Plenum sensible loss: | 0 Btuh     |            |
| Total System sensible loss:  |            | 3,960 Btuh |

|                                                              |        |
|--------------------------------------------------------------|--------|
| Heating Supply Air: $1,723 / (.986 \times 1.08 \times 23) =$ | 70 CFM |
| Winter Vent Outside Air (69.5% of supply) =                  | 49 CFM |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Zone space sensible gain:                   | 3,173 Btuh |            |
| Infiltration sensible gain:                 | 122 Btuh   |            |
| Draw-thru fan sensible gain:                | 189 Btuh   |            |
| Supply duct sensible gain:                  | 0 Btuh     |            |
| Reserve sensible gain:                      | 0 Btuh     |            |
| Total sensible gain on supply side of coil: |            | 3,483 Btuh |

|                                                             |         |
|-------------------------------------------------------------|---------|
| Cooling Supply Air: $3,483 / (.986 \times 1.1 \times 20) =$ | 161 CFM |
| Summer Vent Outside Air (30.4% of supply) =                 | 49 CFM  |

|                                             |          |            |
|---------------------------------------------|----------|------------|
| Return duct sensible gain:                  | 0 Btuh   |            |
| Return plenum sensible gain:                | 0 Btuh   |            |
| Outside air sensible gain:                  | 583 Btuh | 49 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh   |            |
| Total sensible gain on return side of coil: |          | 583 Btuh   |
| Total sensible gain on air handling system: |          | 4,066 Btuh |

|                                           |          |            |
|-------------------------------------------|----------|------------|
| Zone space latent gain:                   | 230 Btuh |            |
| Infiltration latent gain:                 | 25 Btuh  |            |
| Outside air latent gain:                  | 145 Btuh |            |
| Total latent gain on air handling system: |          | 400 Btuh   |
| Total system sensible and latent gain:    |          | 4,466 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 161 CFM           |
| Total Air Handler Vent. Air (30.43% of Supply):   | 49 CFM            |
| Total Conditioned Air Space:                      | 133 Sq.ft         |
| Supply Air Per Unit Area:                         | 1.2049 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 358.1 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0028 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 29.71 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 3,960 Btuh        |
| Total Cooling Required With Outside Air:          | 0.37 Tons         |



## Air Handler #12 - FCU1-10 - Summary Loads

| Zn No | Description<br>Zone Peak Time | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 30    | Break Room 126<br>5pm July    | 335<br>9<br>3,689        | 4,284<br>246<br>0.73            | 9,824<br>479<br>1.43            | 2,133<br>0<br>0            | 4AC/Hr<br>246<br>246           | 4AC/Hr<br>246<br>246           |
|       | Zone Peak Totals:             | 335                      | 4,284                           | 9,824                           | 2,133                      |                                |                                |
|       | Total Zones: 1                | 9                        | 246                             | 479                             | 0                          | 246                            | 246                            |
|       | Unique Zones: 1               | 3,689                    | 0.73                            | 1.43                            | 0                          | 246                            | 246                            |



|                                                       |              |
|-------------------------------------------------------|--------------|
| City of Puyallup<br>Development & Permitting Services |              |
| ISSUED                                                | PERMIT       |
| Building                                              | Planning     |
| Engineering                                           | Public Works |
| Fire                                                  | Tram         |

## Air Handler #12 - FCU1-10 - Total Load Summary

Air Handler Description: FCU1-10 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.22 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.83 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 5pm in July.  
Outdoor Conditions: Clg: 86° DB, 67° WB, 69.39 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |             |             |
|------------------------------|-------------|-------------|
| Zone Space sensible loss:    | 3,052 Btuh  |             |
| Infiltration sensible loss:  | 1,231 Btuh  | 22 CFM      |
| Outside Air sensible loss:   | 11,258 Btuh | 246 CFM     |
| Supply Duct sensible loss:   | 0 Btuh      |             |
| Return Duct sensible loss:   | 0 Btuh      |             |
| Return Plenum sensible loss: | 0 Btuh      |             |
| Total System sensible loss:  |             | 15,542 Btuh |

|                                                              |         |
|--------------------------------------------------------------|---------|
| Heating Supply Air: $4,284 / (.986 \times 1.08 \times 16) =$ | 246 CFM |
| Winter Vent Outside Air (100.0% of supply) =                 | 246 CFM |

|                                             |            |             |
|---------------------------------------------|------------|-------------|
| Zone space sensible gain:                   | 9,518 Btuh |             |
| Infiltration sensible gain:                 | 306 Btuh   |             |
| Draw-thru fan sensible gain:                | 563 Btuh   |             |
| Supply duct sensible gain:                  | 0 Btuh     |             |
| Reserve sensible gain:                      | 0 Btuh     |             |
| Total sensible gain on supply side of coil: |            | 10,386 Btuh |

|                                                              |         |
|--------------------------------------------------------------|---------|
| Cooling Supply Air: $10,386 / (.986 \times 1.1 \times 20) =$ | 479 CFM |
| Summer Vent Outside Air (51.4% of supply) =                  | 246 CFM |

|                                             |            |             |
|---------------------------------------------|------------|-------------|
| Return duct sensible gain:                  | 0 Btuh     |             |
| Return plenum sensible gain:                | 0 Btuh     |             |
| Outside air sensible gain:                  | 2,933 Btuh | 246 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh     |             |
| Total sensible gain on return side of coil: |            | 2,933 Btuh  |
| Total sensible gain on air handling system: |            | 13,320 Btuh |

|                                           |            |             |
|-------------------------------------------|------------|-------------|
| Zone space latent gain:                   | 2,070 Btuh |             |
| Infiltration latent gain:                 | 63 Btuh    |             |
| Outside air latent gain:                  | 731 Btuh   |             |
| Total latent gain on air handling system: |            | 2,864 Btuh  |
| Total system sensible and latent gain:    |            | 16,184 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 479 CFM           |
| Total Air Handler Vent. Air (51.35% of Supply):   | 246 CFM           |
| Total Conditioned Air Space:                      | 335 Sq.ft         |
| Supply Air Per Unit Area:                         | 1.4280 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 248.7 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0040 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 46.34 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 15,542 Btuh       |
| Total Cooling Required With Outside Air:          | 1.35 Tons         |



## Air Handler #13 - FCU1-13 - Summary Loads

| Zn No | Description<br>Zone Peak Time   | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|---------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 31    | DA Station 127<br>5pm July      | 101<br>1<br>1,112        | 1,395<br>83<br>0.82             | 2,891<br>141<br>1.39            | 249<br>0<br>0              | 2AC/Hr<br>37<br>83             | 2AC/Hr<br>37<br>72             |
| 32    | Quite Operatory 128<br>5pm July | 126<br>3<br>1,069        | 1,419<br>84<br>0.67             | 3,603<br>176<br>1.40            | 708<br>0<br>0              | 6AC/Hr<br>107<br>84            | 6AC/Hr<br>107<br>90            |
| 33    | Quite Operatory 129<br>5pm July | 126<br>3<br>1,069        | 1,419<br>84<br>0.67             | 3,603<br>176<br>1.40            | 708<br>0<br>0              | 6AC/Hr<br>107<br>84            | 6AC/Hr<br>107<br>90            |
|       | Zone Peak Totals:               | 353                      | 4,233                           | 10,098                          | 1,665                      |                                |                                |
|       | Total Zones: 3                  | 7                        | 251                             | 492                             | 0                          | 251                            | 251                            |
|       | Unique Zones: 3                 | 3,251                    | 0.71                            | 1.40                            | 0                          | 251                            | 251                            |



|                                                       |              |
|-------------------------------------------------------|--------------|
| City of Puyallup<br>Development & Permitting Services |              |
| ISSUED PERMIT                                         |              |
| Building                                              | Planning     |
| Engineering                                           | Public Works |
| Fire                                                  | Traffic      |

## Air Handler #13 - FCU1-13 - Total Load Summary

Air Handler Description: FCU1-13 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.23 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.87 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 5pm in July.  
Outdoor Conditions: Clg: 86° DB, 67° WB, 69.39 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |             |             |
|------------------------------|-------------|-------------|
| Zone Space sensible loss:    | 3,148 Btuh  |             |
| Infiltration sensible loss:  | 1,085 Btuh  | 19 CFM      |
| Outside Air sensible loss:   | 11,486 Btuh | 251 CFM     |
| Supply Duct sensible loss:   | 0 Btuh      |             |
| Return Duct sensible loss:   | 0 Btuh      |             |
| Return Plenum sensible loss: | 0 Btuh      |             |
| Total System sensible loss:  |             | 15,719 Btuh |

|                                                              |         |
|--------------------------------------------------------------|---------|
| Heating Supply Air: $4,233 / (.986 \times 1.08 \times 16) =$ | 251 CFM |
| Winter Vent Outside Air (100.0% of supply) =                 | 251 CFM |

|                                             |            |             |
|---------------------------------------------|------------|-------------|
| Zone space sensible gain:                   | 9,828 Btuh |             |
| Infiltration sensible gain:                 | 270 Btuh   |             |
| Draw-thru fan sensible gain:                | 578 Btuh   |             |
| Supply duct sensible gain:                  | 0 Btuh     |             |
| Reserve sensible gain:                      | 0 Btuh     |             |
| Total sensible gain on supply side of coil: |            | 10,676 Btuh |

|                                                              |         |
|--------------------------------------------------------------|---------|
| Cooling Supply Air: $10,676 / (.986 \times 1.1 \times 20) =$ | 492 CFM |
| Summer Vent Outside Air (51.0% of supply) =                  | 251 CFM |

|                                             |            |             |
|---------------------------------------------|------------|-------------|
| Return duct sensible gain:                  | 0 Btuh     |             |
| Return plenum sensible gain:                | 0 Btuh     |             |
| Outside air sensible gain:                  | 2,993 Btuh | 251 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh     |             |
| Total sensible gain on return side of coil: |            | 2,993 Btuh  |
| Total sensible gain on air handling system: |            | 13,669 Btuh |

|                                           |            |             |
|-------------------------------------------|------------|-------------|
| Zone space latent gain:                   | 1,610 Btuh |             |
| Infiltration latent gain:                 | 55 Btuh    |             |
| Outside air latent gain:                  | 746 Btuh   |             |
| Total latent gain on air handling system: |            | 2,411 Btuh  |
| Total system sensible and latent gain:    |            | 16,080 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 492 CFM           |
| Total Air Handler Vent. Air (50.97% of Supply):   | 251 CFM           |
| Total Conditioned Air Space:                      | 353 Sq.ft         |
| Supply Air Per Unit Area:                         | 1.3959 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 263.2 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0038 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 44.57 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 15,719 Btuh       |
| Total Cooling Required With Outside Air:          | 1.34 Tons         |





|                                                       |             |              |  |
|-------------------------------------------------------|-------------|--------------|--|
| City of Puyallup<br>Development & Permitting Services |             |              |  |
| ISSUED PERMIT                                         | Planning    |              |  |
| Building                                              | Engineering | Public Works |  |
| Fire                                                  | Traffic     |              |  |

## Air Handler #14 - FCU1-14 - Summary Loads

| Zn No | Description<br>Zone Peak Time       | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 14    | Staff Restroom 131<br>3pm July      | 59<br>0<br>527           | 176<br>30<br>0.50               | 369<br>24<br>0.41               | -1<br>50<br>50             | 10AC/Hr<br>88<br>30            | 10AC/Hr<br>88<br>24            |
| 34    | Changing 151<br>3pm July            | 43<br>0<br>387           | 129<br>22<br>0.50               | 377<br>25<br>0.57               | -1<br>45<br>45             | 4AC/Hr<br>26<br>22             | 4AC/Hr<br>26<br>25             |
| 35    | Staff Restroom 130<br>3pm July      | 55<br>0<br>495           | 165<br>28<br>0.50               | 435<br>28<br>0.52               | -1<br>50<br>50             | 4AC/Hr<br>33<br>28             | 4AC/Hr<br>33<br>28             |
| 36    | Staff Restroom 130<br>3pm July      | 55<br>0<br>495           | 165<br>28<br>0.50               | 435<br>28<br>0.52               | -1<br>50<br>50             | 4AC/Hr<br>33<br>28             | 4AC/Hr<br>33<br>28             |
| 37    | Dental Equipment<br>137<br>3pm July | 94<br>0<br>799           | 267<br>45<br>0.48               | 723<br>47<br>0.50               | -1<br>30<br>30             | 2AC/Hr<br>27<br>45             | 2AC/Hr<br>27<br>47             |
| 39    | Lead Provider 133<br>3pm July       | 101<br>1<br>1,112        | 371<br>62<br>0.62               | 1,091<br>71<br>0.70             | 228<br>30<br>30            | 2AC/Hr<br>37<br>62             | 2AC/Hr<br>37<br>71             |
| 41    | Coat Locker 135<br>3pm July         | 79<br>0<br>668           | 223<br>37<br>0.48               | 702<br>46<br>0.58               | -1<br>45<br>45             | 4AC/Hr<br>45<br>37             | 4AC/Hr<br>45<br>46             |
| 42    | Patient Restroom 136<br>3pm July    | 79<br>0<br>790           | 264<br>44<br>0.56               | 575<br>37<br>0.47               | -1<br>125<br>125           | 10AC/Hr<br>132<br>44           | 10AC/Hr<br>132<br>37           |
| 48    | 1st Hall 6<br>11am July             | 348<br>0<br>3,824        | 2,154<br>362<br>1.04            | 3,944<br>257<br>0.74            | 72<br>127<br>127           | 2AC/Hr<br>127<br>362           | 2AC/Hr<br>127<br>257           |
| 50    | Storage 149<br>3pm July             | 112<br>0<br>1,008        | 336<br>56<br>0.50               | 699<br>46<br>0.41               | -2<br>20<br>20             | 2AC/Hr<br>34<br>56             | 2AC/Hr<br>34<br>46             |
| 51    | Pano 150<br>3pm July                | 78<br>0<br>858           | 286<br>48<br>0.62               | 620<br>40<br>0.52               | -2<br>50<br>50             | 6AC/Hr<br>86<br>48             | 6AC/Hr<br>86<br>40             |
| 52    | Provider Pod 145<br>3pm July        | 252<br>8<br>2,772        | 925<br>155<br>0.62              | 4,303<br>280<br>1.11            | 1,835<br>200<br>200        | 6AC/Hr<br>277<br>155           | 6AC/Hr<br>277<br>281           |
| 53    | Storage 146<br>3pm July             | 113<br>0<br>1,243        | 415<br>70<br>0.62               | 727<br>47<br>0.42               | -2<br>30<br>30             | 2AC/Hr<br>41<br>70             | 2AC/Hr<br>41<br>47             |



**Air Handler #14 - FCU1-14 - Summary Loads (cont'd)**

| Zn No | Description<br>Zone Peak Time | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 54    | Sterile 148<br>3pm July       | 465<br>3<br>3,953        | 1,319<br>222<br>0.48            | 4,440<br>289<br>0.62            | 683<br>390<br>390          | 6AC/Hr<br>395<br>222           | 6AC/Hr<br>395<br>289           |
| 55    | Kitchenette 154<br>3pm July   | 87<br>0<br>740           | 247<br>41<br>0.48               | 669<br>44<br>0.50               | -1<br>30<br>30             | 2AC/Hr<br>25<br>41             | 2AC/Hr<br>25<br>44             |
| 56    | 1st Hall 4<br>3pm July        | 382<br>0<br>4,206        | 1,404<br>236<br>0.62            | 3,039<br>198<br>0.52            | -7<br>140<br>140           | 2AC/Hr<br>140<br>236           | 2AC/Hr<br>140<br>198           |
| 57    | 1st Hall 5<br>3pm July        | 238<br>0<br>2,614        | 872<br>146<br>0.62              | 1,888<br>123<br>0.52            | -5<br>85<br>85             | 2AC/Hr<br>87<br>146            | 2AC/Hr<br>87<br>123            |
|       | Zone Peak Totals:             | 2,639                    | 9,719                           | 25,037                          | 2,792                      |                                |                                |
|       | Total Zones: 17               | 12                       | 1,632                           | 1,631                           | 1,497                      | 1,632                          | 1,632                          |
|       | Unique Zones: 17              | 26,489                   | 0.62                            | 0.62                            | 1,497                      | 1,632                          | 1,632                          |



## Air Handler #14 - FCU1-14 - Total Load Summary

Air Handler Description: FCU1-14 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.77 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.92 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 1pm in July.  
Outdoor Conditions: Clg: 86° DB, 67° WB, 69.81 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |             |             |
|------------------------------|-------------|-------------|
| Zone Space sensible loss:    | 878 Btuh    |             |
| Infiltration sensible loss:  | 8,841 Btuh  | 155 CFM     |
| Outside Air sensible loss:   | 43,218 Btuh | 1,632 CFM   |
| Supply Duct sensible loss:   | 0 Btuh      |             |
| Return Duct sensible loss:   | 0 Btuh      |             |
| Return Plenum sensible loss: | 0 Btuh      |             |
| Total System sensible loss:  |             | 52,937 Btuh |

|                                                             |           |
|-------------------------------------------------------------|-----------|
| Heating Supply Air: $9,719 / (.986 \times 1.08 \times 6) =$ | 1,632 CFM |
| Winter Vent Outside Air (100.0% of supply) =                | 1,632 CFM |

|                                             |             |             |
|---------------------------------------------|-------------|-------------|
| Zone space sensible gain:                   | 22,328 Btuh |             |
| Infiltration sensible gain:                 | 2,146 Btuh  |             |
| Draw-thru fan sensible gain:                | 1,916 Btuh  |             |
| Supply duct sensible gain:                  | 0 Btuh      |             |
| Reserve sensible gain:                      | 8,588 Btuh  |             |
| Total sensible gain on supply side of coil: |             | 34,978 Btuh |

|                                                              |           |
|--------------------------------------------------------------|-----------|
| Cooling Supply Air: $35,372 / (.986 \times 1.1 \times 20) =$ | 1,631 CFM |
| Summer Vent Outside Air (100.1% of supply) =                 | 1,632 CFM |

|                                             |             |             |
|---------------------------------------------|-------------|-------------|
| Return duct sensible gain:                  | 0 Btuh      |             |
| Return plenum sensible gain:                | 0 Btuh      |             |
| Outside air sensible gain:                  | 10,355 Btuh | 1,632 CFM   |
| Blow-thru fan sensible gain:                | 0 Btuh      |             |
| Total sensible gain on return side of coil: |             | 10,355 Btuh |
| Total sensible gain on air handling system: |             | 45,333 Btuh |

|                                           |            |             |
|-------------------------------------------|------------|-------------|
| Zone space latent gain:                   | 2,760 Btuh |             |
| Infiltration latent gain:                 | 500 Btuh   |             |
| Outside air latent gain:                  | 4,853 Btuh |             |
| Total latent gain on air handling system: |            | 8,113 Btuh  |
| Total system sensible and latent gain:    |            | 53,447 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 1,631 CFM         |
| Total Air Handler Vent. Air (100.06% of Supply):  | 1,632 CFM         |
| Total Conditioned Air Space:                      | 2,639 Sq.ft       |
| Supply Air Per Unit Area:                         | 0.6182 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 592.5 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0017 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 20.06 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 52,937 Btuh       |
| Total Cooling Required With Outside Air:          | 4.45 Tons         |

|             |              |
|-------------|--------------|
| Building    | Planning     |
| Engineering | Public Works |
| Fire        | Traffic      |



## Air Handler #15 - FCU1-15 - Total Load Summary

Air Handler Description: FCU1-15 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.08 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.84 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 1pm in July.  
Outdoor Conditions: Clg: 86° DB, 67° WB, 69.81 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |            |            |
|------------------------------|------------|------------|
| Zone Space sensible loss:    | 1,228 Btuh |            |
| Infiltration sensible loss:  | 475 Btuh   | 8 CFM      |
| Outside Air sensible loss:   | 6,520 Btuh | 142 CFM    |
| Supply Duct sensible loss:   | 0 Btuh     |            |
| Return Duct sensible loss:   | 0 Btuh     |            |
| Return Plenum sensible loss: | 0 Btuh     |            |
| Total System sensible loss:  |            | 8,223 Btuh |

|                                                              |         |
|--------------------------------------------------------------|---------|
| Heating Supply Air: $1,703 / (.986 \times 1.08 \times 11) =$ | 142 CFM |
| Winter Vent Outside Air (100.0% of supply) =                 | 142 CFM |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Zone space sensible gain:                   | 3,023 Btuh |            |
| Infiltration sensible gain:                 | 115 Btuh   |            |
| Draw-thru fan sensible gain:                | 201 Btuh   |            |
| Supply duct sensible gain:                  | 0 Btuh     |            |
| Reserve sensible gain:                      | 0 Btuh     |            |
| Total sensible gain on supply side of coil: |            | 3,340 Btuh |

|                                                             |         |
|-------------------------------------------------------------|---------|
| Cooling Supply Air: $3,716 / (.986 \times 1.1 \times 20) =$ | 171 CFM |
| Summer Vent Outside Air (83.1% of supply) =                 | 142 CFM |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Return duct sensible gain:                  | 0 Btuh     |            |
| Return plenum sensible gain:                | 0 Btuh     |            |
| Outside air sensible gain:                  | 1,699 Btuh | 142 CFM    |
| Blow-thru fan sensible gain:                | 0 Btuh     |            |
| Total sensible gain on return side of coil: |            | 1,699 Btuh |
| Total sensible gain on air handling system: |            | 5,039 Btuh |

|                                           |          |            |
|-------------------------------------------|----------|------------|
| Zone space latent gain:                   | 690 Btuh |            |
| Infiltration latent gain:                 | 27 Btuh  |            |
| Outside air latent gain:                  | 424 Btuh |            |
| Total latent gain on air handling system: |          | 1,140 Btuh |
| Total system sensible and latent gain:    |          | 6,179 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 171 CFM           |
| Total Air Handler Vent. Air (83.13% of Supply):   | 142 CFM           |
| Total Conditioned Air Space:                      | 130 Sq.ft         |
| Supply Air Per Unit Area:                         | 1.3232 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 251.5 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0040 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 63.50 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 8,223 Btuh        |
| Total Cooling Required With Outside Air:          | 0.51 Tons         |



## Air Handler #16 - FCU1-16 - Summary Loads

|             |              |
|-------------|--------------|
| Building    | Planning     |
| Engineering | Public Works |
| Fire        | Traffic      |

| Zn No | Description<br>Zone Peak Time       | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 44    | West Operatory 139<br>2pm September | 798<br>9<br>7,980        | 9,686<br>798<br>1.00            | 19,556<br>954<br>1.19           | 1,805<br>0<br>0            | 6AC/Hr<br>798<br>798           | 6AC/Hr<br>798<br>798           |
|       | Zone Peak Totals:                   | 798                      | 9,686                           | 19,556                          | 1,805                      |                                |                                |
|       | Total Zones: 1                      | 9                        | 798                             | 954                             | 0                          | 798                            | 798                            |
|       | Unique Zones: 1                     | 7,980                    | 1.00                            | 1.19                            | 0                          | 798                            | 798                            |



## Air Handler #16 - FCU1-16 - Total Load Summary

Air Handler Description: FCU1-16 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.45 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.91 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 3pm in July.  
Outdoor Conditions: Clg: 89° DB, 67° WB, 65.22 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |             |             |
|------------------------------|-------------|-------------|
| Zone Space sensible loss:    | 7,023 Btuh  |             |
| Infiltration sensible loss:  | 2,663 Btuh  | 47 CFM      |
| Outside Air sensible loss:   | 36,527 Btuh | 798 CFM     |
| Supply Duct sensible loss:   | 0 Btuh      |             |
| Return Duct sensible loss:   | 0 Btuh      |             |
| Return Plenum sensible loss: | 0 Btuh      |             |
| Total System sensible loss:  |             | 46,213 Btuh |

|                                                              |         |
|--------------------------------------------------------------|---------|
| Heating Supply Air: $9,686 / (.986 \times 1.08 \times 11) =$ | 798 CFM |
| Winter Vent Outside Air (100.0% of supply) =                 | 798 CFM |

|                                             |             |             |
|---------------------------------------------|-------------|-------------|
| Zone space sensible gain:                   | 17,175 Btuh |             |
| Infiltration sensible gain:                 | 813 Btuh    |             |
| Draw-thru fan sensible gain:                | 1,120 Btuh  |             |
| Supply duct sensible gain:                  | 0 Btuh      |             |
| Reserve sensible gain:                      | 0 Btuh      |             |
| Total sensible gain on supply side of coil: |             | 19,108 Btuh |

|                                                              |         |
|--------------------------------------------------------------|---------|
| Cooling Supply Air: $20,677 / (.986 \times 1.1 \times 20) =$ | 954 CFM |
| Summer Vent Outside Air (83.7% of supply) =                  | 798 CFM |

|                                             |             |             |
|---------------------------------------------|-------------|-------------|
| Return duct sensible gain:                  | 0 Btuh      |             |
| Return plenum sensible gain:                | 0 Btuh      |             |
| Outside air sensible gain:                  | 12,113 Btuh | 798 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh      |             |
| Total sensible gain on return side of coil: |             | 12,113 Btuh |
| Total sensible gain on air handling system: |             | 31,220 Btuh |

|                                           |            |             |
|-------------------------------------------|------------|-------------|
| Zone space latent gain:                   | 2,070 Btuh |             |
| Infiltration latent gain:                 | -14 Btuh   |             |
| Outside air latent gain:                  | -203 Btuh  |             |
| Total latent gain on air handling system: |            | 1,853 Btuh  |
| Total system sensible and latent gain:    |            | 33,073 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 954 CFM           |
| Total Air Handler Vent. Air (83.69% of Supply):   | 798 CFM           |
| Total Conditioned Air Space:                      | 798 Sq.ft         |
| Supply Air Per Unit Area:                         | 1.1949 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 289.5 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0035 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 57.91 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 46,213 Btuh       |
| Total Cooling Required With Outside Air:          | 2.76 Tons         |



|                                                       |              |
|-------------------------------------------------------|--------------|
| City of Puyallup<br>Development & Permitting Services |              |
| ISSUED PERMIT                                         |              |
| Building                                              | Planning     |
| Engineering                                           | Public Works |
| Fire                                                  | Traffic      |

## Air Handler #17 - FCU1-17 - Summary Loads

| Zn No | Description<br>Zone Peak Time       | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 45    | East Operatory 140<br>2pm September | 768<br>9<br>7,680        | 10,145<br>768<br>1.00           | 19,574<br>954<br>1.24           | 1,814<br>0<br>0            | 6AC/Hr<br>768<br>768           | 6AC/Hr<br>768<br>768           |
|       | Zone Peak Totals:                   | 768                      | 10,145                          | 19,574                          | 1,814                      |                                |                                |
|       | Total Zones: 1                      | 9                        | 768                             | 954                             | 0                          | 768                            | 768                            |
|       | Unique Zones: 1                     | 7,680                    | 1.00                            | 1.24                            | 0                          | 768                            | 768                            |





|             |              |
|-------------|--------------|
| Building    | Planning     |
| Engineering | Public Works |
| Fire        | Traffic      |

## Air Handler #17 - FCU1-17 - Total Load Summary

Air Handler Description: FCU1-17 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.45 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.90 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 1pm in July.  
Outdoor Conditions: Clg: 86° DB, 67° WB, 69.81 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |             |             |
|------------------------------|-------------|-------------|
| Zone Space sensible loss:    | 7,581 Btuh  |             |
| Infiltration sensible loss:  | 2,563 Btuh  | 45 CFM      |
| Outside Air sensible loss:   | 35,153 Btuh | 768 CFM     |
| Supply Duct sensible loss:   | 0 Btuh      |             |
| Return Duct sensible loss:   | 0 Btuh      |             |
| Return Plenum sensible loss: | 0 Btuh      |             |
| Total System sensible loss:  |             | 45,298 Btuh |

|                                                               |         |
|---------------------------------------------------------------|---------|
| Heating Supply Air: $10,145 / (.986 \times 1.08 \times 12) =$ | 768 CFM |
| Winter Vent Outside Air (100.0% of supply) =                  | 768 CFM |

|                                             |             |             |
|---------------------------------------------|-------------|-------------|
| Zone space sensible gain:                   | 17,947 Btuh |             |
| Infiltration sensible gain:                 | 622 Btuh    |             |
| Draw-thru fan sensible gain:                | 1,121 Btuh  |             |
| Supply duct sensible gain:                  | 0 Btuh      |             |
| Reserve sensible gain:                      | 0 Btuh      |             |
| Total sensible gain on supply side of coil: |             | 19,690 Btuh |

|                                                              |         |
|--------------------------------------------------------------|---------|
| Cooling Supply Air: $20,695 / (.986 \times 1.1 \times 20) =$ | 954 CFM |
| Summer Vent Outside Air (80.5% of supply) =                  | 768 CFM |

|                                             |            |             |
|---------------------------------------------|------------|-------------|
| Return duct sensible gain:                  | 0 Btuh     |             |
| Return plenum sensible gain:                | 0 Btuh     |             |
| Outside air sensible gain:                  | 9,159 Btuh | 768 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh     |             |
| Total sensible gain on return side of coil: |            | 9,159 Btuh  |
| Total sensible gain on air handling system: |            | 28,850 Btuh |

|                                           |            |             |
|-------------------------------------------|------------|-------------|
| Zone space latent gain:                   | 2,070 Btuh |             |
| Infiltration latent gain:                 | 145 Btuh   |             |
| Outside air latent gain:                  | 2,283 Btuh |             |
| Total latent gain on air handling system: |            | 4,498 Btuh  |
| Total system sensible and latent gain:    |            | 33,348 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 954 CFM           |
| Total Air Handler Vent. Air (80.47% of Supply):   | 768 CFM           |
| Total Conditioned Air Space:                      | 768 Sq.ft         |
| Supply Air Per Unit Area:                         | 1.2427 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 276.4 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0036 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 58.98 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 45,298 Btuh       |
| Total Cooling Required With Outside Air:          | 2.78 Tons         |



## Air Handler #19 - FCU1-11 - Summary Loads

|             |              |
|-------------|--------------|
| Building    | Planning     |
| Engineering | Public Works |
| Fire        | Traffic      |

| Zn No | Description<br>Zone Peak Time | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 49    | Office 143<br>10am July       | 100<br>1<br>1,000        | 2,067<br>84<br>0.84             | 4,096<br>200<br>2.00            | 258<br>0<br>0              | 2AC/Hr<br>33<br>33             | 2AC/Hr<br>33<br>33             |
|       | Zone Peak Totals:             | 100                      | 2,067                           | 4,096                           | 258                        |                                |                                |
|       | Total Zones: 1                | 1                        | 84                              | 200                             | 0                          | 33                             | 33                             |
|       | Unique Zones: 1               | 1,000                    | 0.84                            | 2.00                            | 0                          | 33                             | 33                             |



## Air Handler #19 - FCU1-11 - Total Load Summary

Air Handler Description: FCU1-11 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.09 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.94 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 10am in July.  
Outdoor Conditions: Clg: 74° DB, 64° WB, 71.88 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |            |            |
|------------------------------|------------|------------|
| Zone Space sensible loss:    | 1,733 Btuh |            |
| Infiltration sensible loss:  | 334 Btuh   | 6 CFM      |
| Outside Air sensible loss:   | 1,526 Btuh | 33 CFM     |
| Supply Duct sensible loss:   | 0 Btuh     |            |
| Return Duct sensible loss:   | 0 Btuh     |            |
| Return Plenum sensible loss: | 0 Btuh     |            |
| Total System sensible loss:  |            | 3,592 Btuh |

|                                                              |        |
|--------------------------------------------------------------|--------|
| Heating Supply Air: $2,067 / (.986 \times 1.08 \times 23) =$ | 84 CFM |
| Winter Vent Outside Air (39.5% of supply) =                  | 33 CFM |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Zone space sensible gain:                   | 4,100 Btuh |            |
| Infiltration sensible gain:                 | -4 Btuh    |            |
| Draw-thru fan sensible gain:                | 235 Btuh   |            |
| Supply duct sensible gain:                  | 0 Btuh     |            |
| Reserve sensible gain:                      | 0 Btuh     |            |
| Total sensible gain on supply side of coil: |            | 4,330 Btuh |

|                                                             |         |
|-------------------------------------------------------------|---------|
| Cooling Supply Air: $4,330 / (.986 \times 1.1 \times 20) =$ | 200 CFM |
| Summer Vent Outside Air (16.7% of supply) =                 | 33 CFM  |

|                                             |          |            |
|---------------------------------------------|----------|------------|
| Return duct sensible gain:                  | 0 Btuh   |            |
| Return plenum sensible gain:                | 0 Btuh   |            |
| Outside air sensible gain:                  | -36 Btuh | 33 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh   |            |
| Total sensible gain on return side of coil: |          | -36 Btuh   |
| Total sensible gain on air handling system: |          | 4,294 Btuh |

|                                           |          |            |
|-------------------------------------------|----------|------------|
| Zone space latent gain:                   | 230 Btuh |            |
| Infiltration latent gain:                 | 28 Btuh  |            |
| Outside air latent gain:                  | 197 Btuh |            |
| Total latent gain on air handling system: |          | 455 Btuh   |
| Total system sensible and latent gain:    |          | 4,749 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 200 CFM           |
| Total Air Handler Vent. Air (16.69% of Supply):   | 33 CFM            |
| Total Conditioned Air Space:                      | 100 Sq.ft         |
| Supply Air Per Unit Area:                         | 1.9967 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 252.7 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0040 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 35.92 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 3,592 Btuh        |
| Total Cooling Required With Outside Air:          | 0.40 Tons         |



|               |              |
|---------------|--------------|
| ISSUED PERMIT |              |
| Building      | Planning     |
| Engineering   | Public Works |
| Fire          | Traffic      |

## Air Handler #20 - MDF 123 - Summary Loads

| Zn No | Description<br>Zone Peak Time | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 27    | MDF 123                       | 85                       | 255                             | 6,073                           | -1                         | 2AC/Hr                         | 2AC/Hr                         |
|       | 3pm July                      | 0                        | 26                              | 313                             | 0                          | 26                             | 26                             |
|       |                               | 765                      | 0.30                            | 3.68                            | 0                          | 26                             | 26                             |
|       | Zone Peak Totals:             | 85                       | 255                             | 6,073                           | -1                         |                                |                                |
|       | Total Zones: 1                | 0                        | 26                              | 313                             | 0                          | 26                             | 26                             |
|       | Unique Zones: 1               | 765                      | 0.30                            | 3.68                            | 0                          | 26                             | 26                             |



## Air Handler #20 - MDF 123 - Total Load Summary

Air Handler Description: MDF 123 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.15 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 1.00 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 3pm in July.  
Outdoor Conditions: Clg: 89° DB, 67° WB, 65.22 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |            |            |
|------------------------------|------------|------------|
| Zone Space sensible loss:    | 0 Btuh     |            |
| Infiltration sensible loss:  | 255 Btuh   | 4 CFM      |
| Outside Air sensible loss:   | 1,167 Btuh | 26 CFM     |
| Supply Duct sensible loss:   | 0 Btuh     |            |
| Return Duct sensible loss:   | 0 Btuh     |            |
| Return Plenum sensible loss: | 0 Btuh     |            |
| Total System sensible loss:  |            | 1,423 Btuh |

|                                                           |        |
|-----------------------------------------------------------|--------|
| Heating Supply Air: $255 / (.986 \times 1.08 \times 9) =$ | 26 CFM |
| Winter Vent Outside Air (100.0% of supply) =              | 26 CFM |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Zone space sensible gain:                   | 5,995 Btuh |            |
| Infiltration sensible gain:                 | 78 Btuh    |            |
| Draw-thru fan sensible gain:                | 367 Btuh   |            |
| Supply duct sensible gain:                  | 0 Btuh     |            |
| Reserve sensible gain:                      | 0 Btuh     |            |
| Total sensible gain on supply side of coil: |            | 6,441 Btuh |

|                                                             |         |
|-------------------------------------------------------------|---------|
| Cooling Supply Air: $6,441 / (.986 \times 1.1 \times 19) =$ | 313 CFM |
| Summer Vent Outside Air (8.2% of supply) =                  | 26 CFM  |

|                                             |          |            |
|---------------------------------------------|----------|------------|
| Return duct sensible gain:                  | 0 Btuh   |            |
| Return plenum sensible gain:                | 0 Btuh   |            |
| Outside air sensible gain:                  | 387 Btuh | 26 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh   |            |
| Total sensible gain on return side of coil: |          | 387 Btuh   |
| Total sensible gain on air handling system: |          | 6,828 Btuh |

|                                           |         |            |
|-------------------------------------------|---------|------------|
| Zone space latent gain:                   | 1 Btuh  |            |
| Infiltration latent gain:                 | -1 Btuh |            |
| Outside air latent gain:                  | -7 Btuh |            |
| Total latent gain on air handling system: |         | -7 Btuh    |
| Total system sensible and latent gain:    |         | 6,821 Btuh |

### Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 19° TD): | 313 CFM           |
| Total Air Handler Vent. Air (8.16% of Supply):    | 26 CFM            |
| Total Conditioned Air Space:                      | 85 Sq.ft          |
| Supply Air Per Unit Area:                         | 3.6781 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 149.4 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0067 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 16.74 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 1,423 Btuh        |
| Total Cooling Required With Outside Air:          | 0.57 Tons         |

Note: Due to the system's negative latent gain, tonnage is based solely on sensible gain.



|                                                       |              |
|-------------------------------------------------------|--------------|
| City of Puyallup<br>Development & Permitting Services |              |
| ISSUED PERMIT                                         |              |
| Building                                              | Planning     |
| Engineering                                           | Public Works |
| Fire                                                  | Traffic      |

## Air Handler #21 - FCU2-1 - Summary Loads

| Zn No | Description<br>Zone Peak Time                   | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 58    | Waiting 200, Level 2<br>Landing 235<br>3pm July | 670<br>20<br>8,040       | 4,232<br>223<br>0.33            | 12,222<br>596<br>0.89           | 4,586<br>0<br>0            | 2AC/Hr<br>268<br>223           | 2AC/Hr<br>268<br>270           |
| 59    | Work Room 202,<br>Reception 201<br>11am July    | 490<br>7<br>4,900        | 4,250<br>224<br>0.46            | 8,377<br>408<br>0.83            | 1,702<br>0<br>0            | 2AC/Hr<br>163<br>224           | 2AC/Hr<br>163<br>185           |
| 60    | Public Rest Room<br>273<br>2pm July             | 47<br>0<br>400           | 242<br>13<br>0.27               | 442<br>22<br>0.46               | 2<br>50<br>50              | 4AC/Hr<br>27<br>13             | 4AC/Hr<br>27<br>10             |
| 97    | Jan. 236<br>3pm July                            | 73<br>0<br>657           | 388<br>20<br>0.28               | 683<br>33<br>0.46               | -1<br>50<br>50             | 2AC/Hr<br>22<br>20             | 2AC/Hr<br>22<br>15             |
|       | Zone Peak Totals:                               | 1,280                    | 9,112                           | 21,724                          | 6,289                      |                                |                                |
|       | Total Zones: 4                                  | 27                       | 480                             | 1,059                           | 100                        | 480                            | 480                            |
|       | Unique Zones: 4                                 | 13,997                   | 0.37                            | 0.83                            | 100                        | 480                            | 480                            |



## Air Handler #21 - FCU2-1 - Total Load Summary

Air Handler Description: FCU2-1 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.50 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.78 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 1pm in July.  
Outdoor Conditions: Clg: 86° DB, 67° WB, 69.81 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |             |             |
|------------------------------|-------------|-------------|
| Zone Space sensible loss:    | 4,440 Btuh  |             |
| Infiltration sensible loss:  | 4,671 Btuh  | 82 CFM      |
| Outside Air sensible loss:   | 21,965 Btuh | 480 CFM     |
| Supply Duct sensible loss:   | 0 Btuh      |             |
| Return Duct sensible loss:   | 0 Btuh      |             |
| Return Plenum sensible loss: | 0 Btuh      |             |
| Total System sensible loss:  |             | 31,076 Btuh |

|                                                              |         |
|--------------------------------------------------------------|---------|
| Heating Supply Air: $9,112 / (.986 \times 1.08 \times 18) =$ | 480 CFM |
| Winter Vent Outside Air (100.0% of supply) =                 | 480 CFM |

|                                             |             |             |
|---------------------------------------------|-------------|-------------|
| Zone space sensible gain:                   | 20,306 Btuh |             |
| Infiltration sensible gain:                 | 1,134 Btuh  |             |
| Draw-thru fan sensible gain:                | 1,244 Btuh  |             |
| Supply duct sensible gain:                  | 0 Btuh      |             |
| Reserve sensible gain:                      | 183 Btuh    |             |
| Total sensible gain on supply side of coil: |             | 22,867 Btuh |

|                                                              |           |
|--------------------------------------------------------------|-----------|
| Cooling Supply Air: $22,960 / (.986 \times 1.1 \times 20) =$ | 1,059 CFM |
| Summer Vent Outside Air (45.3% of supply) =                  | 480 CFM   |

|                                             |            |             |
|---------------------------------------------|------------|-------------|
| Return duct sensible gain:                  | 0 Btuh     |             |
| Return plenum sensible gain:                | 0 Btuh     |             |
| Outside air sensible gain:                  | 5,723 Btuh | 480 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh     |             |
| Total sensible gain on return side of coil: |            | 5,723 Btuh  |
| Total sensible gain on air handling system: |            | 28,590 Btuh |

|                                           |            |             |
|-------------------------------------------|------------|-------------|
| Zone space latent gain:                   | 6,210 Btuh |             |
| Infiltration latent gain:                 | 264 Btuh   |             |
| Outside air latent gain:                  | 1,427 Btuh |             |
| Total latent gain on air handling system: |            | 7,901 Btuh  |
| Total system sensible and latent gain:    |            | 36,491 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 1,059 CFM         |
| Total Air Handler Vent. Air (45.32% of Supply):   | 480 CFM           |
| Total Conditioned Air Space:                      | 1,280 Sq.ft       |
| Supply Air Per Unit Area:                         | 0.8272 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 420.9 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0024 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 24.28 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 31,076 Btuh       |
| Total Cooling Required With Outside Air:          | 3.04 Tons         |



## Air Handler #22 - FCU2-5 - Summary Loads

|             |              |
|-------------|--------------|
| Building    | Planning     |
| Engineering | Public Works |
| Fire        | Traffic      |

| Zn No | Description<br>Zone Peak Time | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 90    | Exam/ Consult 227<br>2pm July | 99<br>2<br>841           | 510<br>84<br>0.85               | 1,496<br>83<br>0.84             | 463<br>84<br>84            | 6AC/Hr<br>84<br>84             | 6AC/Hr<br>84<br>84             |
|       | Zone Peak Totals:             | 99                       | 510                             | 1,496                           | 463                        |                                |                                |
|       | Total Zones: 1                | 2                        | 84                              | 83                              | 84                         | 84                             | 84                             |
|       | Unique Zones: 1               | 841                      | 0.85                            | 0.84                            | 84                         | 84                             | 84                             |





|                                                       |              |
|-------------------------------------------------------|--------------|
| City of Puyallup<br>Development & Permitting Services |              |
| ISSUED PERMIT                                         |              |
| Building                                              | Planning     |
| Engineering                                           | Public Works |
| Fire                                                  | Traffic      |

## Air Handler #22 - FCU2-5 - Total Load Summary

Air Handler Description: FCU2-5 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.04 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.80 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 2pm in July.  
Outdoor Conditions: Clg: 88° DB, 67° WB, 66.47 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |            |            |
|------------------------------|------------|------------|
| Zone Space sensible loss:    | 229 Btuh   |            |
| Infiltration sensible loss:  | 281 Btuh   | 5 CFM      |
| Outside Air sensible loss:   | 3,852 Btuh | 84 CFM     |
| Supply Duct sensible loss:   | 0 Btuh     |            |
| Return Duct sensible loss:   | 0 Btuh     |            |
| Return Plenum sensible loss: | 0 Btuh     |            |
| Total System sensible loss:  |            | 4,361 Btuh |

|                                                           |        |
|-----------------------------------------------------------|--------|
| Heating Supply Air: $510 / (.986 \times 1.08 \times 6) =$ | 84 CFM |
| Winter Vent Outside Air (100.0% of supply) =              | 84 CFM |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Zone space sensible gain:                   | 1,415 Btuh |            |
| Infiltration sensible gain:                 | 81 Btuh    |            |
| Draw-thru fan sensible gain:                | 98 Btuh    |            |
| Supply duct sensible gain:                  | 0 Btuh     |            |
| Reserve sensible gain:                      | 210 Btuh   |            |
| Total sensible gain on supply side of coil: |            | 1,804 Btuh |

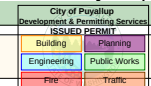
|                                                             |        |
|-------------------------------------------------------------|--------|
| Cooling Supply Air: $1,804 / (.986 \times 1.1 \times 20) =$ | 83 CFM |
| Summer Vent Outside Air (101.2% of supply) =                | 84 CFM |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Return duct sensible gain:                  | 0 Btuh     |            |
| Return plenum sensible gain:                | 0 Btuh     |            |
| Outside air sensible gain:                  | 1,186 Btuh | 84 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh     |            |
| Total sensible gain on return side of coil: |            | 1,186 Btuh |
| Total sensible gain on air handling system: |            | 2,990 Btuh |

|                                           |          |            |
|-------------------------------------------|----------|------------|
| Zone space latent gain:                   | 460 Btuh |            |
| Infiltration latent gain:                 | 3 Btuh   |            |
| Outside air latent gain:                  | 69 Btuh  |            |
| Total latent gain on air handling system: |          | 532 Btuh   |
| Total system sensible and latent gain:    |          | 3,522 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 83 CFM            |
| Total Air Handler Vent. Air (101.17% of Supply):  | 84 CFM            |
| Total Conditioned Air Space:                      | 99 Sq.ft          |
| Supply Air Per Unit Area:                         | 0.8402 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 337.3 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0030 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 44.06 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 4,361 Btuh        |
| Total Cooling Required With Outside Air:          | 0.29 Tons         |



## Air Handler #23 - FCU2-2 - Summary Loads

| Zn No | Description<br>Zone Peak Time | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 61    | Office 203<br>10am July       | 115<br>1<br>1,150        | 1,579<br>65<br>0.56             | 3,124<br>152<br>1.32            | 262<br>0<br>0              | 2AC/Hr<br>38<br>59             | 2AC/Hr<br>38<br>71             |
| 62    | Office 204<br>10am July       | 337<br>2<br>3,370        | 2,299<br>94<br>0.28             | 5,042<br>246<br>0.73            | 555<br>0<br>0              | 2AC/Hr<br>112<br>86            | 2AC/Hr<br>112<br>114           |
| 63    | Dental Flex 206<br>11am July  | 260<br>2<br>2,600        | 4,390<br>179<br>0.69            | 6,300<br>307<br>1.18            | 509<br>0<br>0              | 2AC/Hr<br>87<br>163            | 2AC/Hr<br>87<br>143            |
| 68    | 2nd Hall 5<br>3pm July        | 321<br>0<br>3,531        | 2,088<br>85<br>0.27             | 2,891<br>141<br>0.44            | -6<br>0<br>0               | 2AC/Hr<br>118<br>78            | 2AC/Hr<br>118<br>66            |
| 69    | 2nd Hall 6<br>2pm July        | 275<br>0<br>3,025        | 1,891<br>77<br>0.28             | 2,767<br>135<br>0.49            | 12<br>0<br>0               | 2AC/Hr<br>101<br>70            | 2AC/Hr<br>101<br>63            |
|       | Zone Peak Totals:             | 1,308                    | 12,247                          | 20,124                          | 1,332                      |                                |                                |
|       | Total Zones: 5                | 5                        | 500                             | 981                             | 0                          | 456                            | 456                            |
|       | Unique Zones: 5               | 13,676                   | 0.38                            | 0.75                            | 0                          | 456                            | 456                            |



|                                                       |              |
|-------------------------------------------------------|--------------|
| City of Puyallup<br>Development & Permitting Services |              |
| ISSUED PERMIT                                         |              |
| Building                                              | Planning     |
| Engineering                                           | Public Works |
| Fire                                                  | Traffic      |

## Air Handler #23 - FCU2-2 - Total Load Summary

Air Handler Description: FCU2-2 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.46 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.94 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 1pm in July.  
Outdoor Conditions: Clg: 86° DB, 67° WB, 69.81 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |             |             |
|------------------------------|-------------|-------------|
| Zone Space sensible loss:    | 7,682 Btuh  |             |
| Infiltration sensible loss:  | 4,564 Btuh  | 80 CFM      |
| Outside Air sensible loss:   | 20,866 Btuh | 456 CFM     |
| Supply Duct sensible loss:   | 0 Btuh      |             |
| Return Duct sensible loss:   | 0 Btuh      |             |
| Return Plenum sensible loss: | 0 Btuh      |             |
| Total System sensible loss:  |             | 33,113 Btuh |

|                                                               |         |
|---------------------------------------------------------------|---------|
| Heating Supply Air: $12,247 / (.986 \times 1.08 \times 23) =$ | 500 CFM |
| Winter Vent Outside Air (91.1% of supply) =                   | 456 CFM |

|                                             |             |             |
|---------------------------------------------|-------------|-------------|
| Zone space sensible gain:                   | 18,101 Btuh |             |
| Infiltration sensible gain:                 | 1,108 Btuh  |             |
| Draw-thru fan sensible gain:                | 1,152 Btuh  |             |
| Supply duct sensible gain:                  | 0 Btuh      |             |
| Reserve sensible gain:                      | 784 Btuh    |             |
| Total sensible gain on supply side of coil: |             | 21,145 Btuh |

|                                                              |         |
|--------------------------------------------------------------|---------|
| Cooling Supply Air: $21,269 / (.986 \times 1.1 \times 20) =$ | 981 CFM |
| Summer Vent Outside Air (46.5% of supply) =                  | 456 CFM |

|                                             |            |             |
|---------------------------------------------|------------|-------------|
| Return duct sensible gain:                  | 0 Btuh     |             |
| Return plenum sensible gain:                | 0 Btuh     |             |
| Outside air sensible gain:                  | 5,437 Btuh | 456 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh     |             |
| Total sensible gain on return side of coil: |            | 5,437 Btuh  |
| Total sensible gain on air handling system: |            | 26,582 Btuh |

|                                           |            |             |
|-------------------------------------------|------------|-------------|
| Zone space latent gain:                   | 1,150 Btuh |             |
| Infiltration latent gain:                 | 258 Btuh   |             |
| Outside air latent gain:                  | 1,355 Btuh |             |
| Total latent gain on air handling system: |            | 2,764 Btuh  |
| Total system sensible and latent gain:    |            | 29,346 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 981 CFM           |
| Total Air Handler Vent. Air (46.48% of Supply):   | 456 CFM           |
| Total Conditioned Air Space:                      | 1,308 Sq.ft       |
| Supply Air Per Unit Area:                         | 0.7499 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 534.9 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0019 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 25.32 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 33,113 Btuh       |
| Total Cooling Required With Outside Air:          | 2.45 Tons         |



|                                                       |              |
|-------------------------------------------------------|--------------|
| City of Puyallup<br>Development & Permitting Services |              |
| ISSUED PERMIT                                         |              |
| Building                                              | Planning     |
| Engineering                                           | Public Works |
| Fire                                                  | Traffic      |

## Air Handler #24 - FCU2-3 - Summary Loads

| Zn No | Description<br>Zone Peak Time | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 70    | Provider Pod 207<br>3pm July  | 635<br>12<br>6,985       | 3,415<br>541<br>0.85            | 9,202<br>600<br>0.94            | 2,748<br>693<br>693        | 6AC/Hr<br>699<br>541           | 6AC/Hr<br>699<br>600           |
| 71    | Exam/Consult 208<br>3pm July  | 91<br>2<br>876           | 504<br>80<br>0.87               | 1,435<br>94<br>1.02             | 458<br>86<br>86            | 6AC/Hr<br>88<br>80             | 6AC/Hr<br>88<br>94             |
| 72    | Exam/Consult 209<br>3pm July  | 92<br>2<br>883           | 507<br>80<br>0.87               | 1,441<br>94<br>1.02             | 458<br>86<br>86            | 6AC/Hr<br>88<br>80             | 6AC/Hr<br>88<br>94             |
| 73    | Exam/Consult 210<br>3pm June  | 91<br>2<br>874           | 1,799<br>285<br>3.13            | 2,424<br>158<br>1.74            | 432<br>90<br>90            | 6AC/Hr<br>87<br>285            | 6AC/Hr<br>87<br>158            |
| 74    | Exam/Consult 211<br>3pm July  | 95<br>2<br>908           | 522<br>83<br>0.87               | 1,466<br>96<br>1.01             | 458<br>90<br>90            | 6AC/Hr<br>91<br>83             | 6AC/Hr<br>91<br>96             |
| 75    | Exam/Consult 212<br>3pm July  | 92<br>2<br>883           | 507<br>80<br>0.87               | 1,441<br>94<br>1.02             | 458<br>86<br>86            | 6AC/Hr<br>88<br>80             | 6AC/Hr<br>88<br>94             |
| 76    | Exam/Consult 213<br>3pm July  | 94<br>2<br>900           | 517<br>82<br>0.87               | 1,458<br>95<br>1.01             | 458<br>90<br>90            | 6AC/Hr<br>90<br>82             | 6AC/Hr<br>90<br>95             |
|       | Zone Peak Totals:             | 1,190                    | 7,772                           | 18,867                          | 5,471                      |                                |                                |
|       | Total Zones: 7                | 24                       | 1,231                           | 1,230                           | 1,221                      | 1,231                          | 1,231                          |
|       | Unique Zones: 7               | 12,310                   | 1.03                            | 1.03                            | 1,221                      | 1,231                          | 1,231                          |



## Air Handler #24 - FCU2-3 - Total Load Summary

Air Handler Description: FCU2-3 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.58 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.82 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 1pm in July.  
Outdoor Conditions: Clg: 86° DB, 67° WB, 69.81 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |             |             |
|------------------------------|-------------|-------------|
| Zone Space sensible loss:    | 3,663 Btuh  |             |
| Infiltration sensible loss:  | 4,109 Btuh  | 72 CFM      |
| Outside Air sensible loss:   | 30,661 Btuh | 1,231 CFM   |
| Supply Duct sensible loss:   | 0 Btuh      |             |
| Return Duct sensible loss:   | 0 Btuh      |             |
| Return Plenum sensible loss: | 0 Btuh      |             |
| Total System sensible loss:  |             | 38,433 Btuh |

|                                                             |           |
|-------------------------------------------------------------|-----------|
| Heating Supply Air: $7,772 / (.986 \times 1.08 \times 6) =$ | 1,231 CFM |
| Winter Vent Outside Air (100.0% of supply) =                | 1,231 CFM |

|                                             |             |             |
|---------------------------------------------|-------------|-------------|
| Zone space sensible gain:                   | 17,473 Btuh |             |
| Infiltration sensible gain:                 | 997 Btuh    |             |
| Draw-thru fan sensible gain:                | 1,445 Btuh  |             |
| Supply duct sensible gain:                  | 0 Btuh      |             |
| Reserve sensible gain:                      | 6,377 Btuh  |             |
| Total sensible gain on supply side of coil: |             | 26,293 Btuh |

|                                                              |           |
|--------------------------------------------------------------|-----------|
| Cooling Supply Air: $26,679 / (.986 \times 1.1 \times 20) =$ | 1,230 CFM |
| Summer Vent Outside Air (100.1% of supply) =                 | 1,231 CFM |

|                                             |            |             |
|---------------------------------------------|------------|-------------|
| Return duct sensible gain:                  | 0 Btuh     |             |
| Return plenum sensible gain:                | 0 Btuh     |             |
| Outside air sensible gain:                  | 7,341 Btuh | 1,231 CFM   |
| Blow-thru fan sensible gain:                | 0 Btuh     |             |
| Total sensible gain on return side of coil: |            | 7,341 Btuh  |
| Total sensible gain on air handling system: |            | 33,633 Btuh |

|                                           |            |             |
|-------------------------------------------|------------|-------------|
| Zone space latent gain:                   | 5,520 Btuh |             |
| Infiltration latent gain:                 | 233 Btuh   |             |
| Outside air latent gain:                  | 3,660 Btuh |             |
| Total latent gain on air handling system: |            | 9,413 Btuh  |
| Total system sensible and latent gain:    |            | 43,046 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 1,230 CFM         |
| Total Air Handler Vent. Air (100.06% of Supply):  | 1,231 CFM         |
| Total Conditioned Air Space:                      | 1,190 Sq.ft       |
| Supply Air Per Unit Area:                         | 1.0341 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 331.7 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0030 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 32.30 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 38,433 Btuh       |
| Total Cooling Required With Outside Air:          | 3.59 Tons         |



|             |              |
|-------------|--------------|
| Building    | Planning     |
| Engineering | Public Works |
| Fire        | Traffic      |

## Air Handler #25 - FCU2-4 - Summary Loads

| Zn No | Description<br>Zone Peak Time | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 67    | 2nd Hall 4<br>3pm July        | 270<br>0<br>2,970        | 1,783<br>147<br>0.54            | 2,614<br>127<br>0.47            | -5<br>77<br>77             | 2AC/Hr<br>99<br>147            | 2AC/Hr<br>99<br>128            |
| 77    | Restroom 214<br>2pm July      | 65<br>0<br>553           | 335<br>28<br>0.42               | 577<br>28<br>0.43               | 2<br>50<br>50              | 4AC/Hr<br>37<br>28             | 4AC/Hr<br>37<br>28             |
| 78    | Restroom 215<br>2pm July      | 65<br>0<br>553           | 335<br>28<br>0.42               | 597<br>29<br>0.45               | 2<br>50<br>50              | 4AC/Hr<br>37<br>28             | 4AC/Hr<br>37<br>29             |
| 80    | Storage 217<br>2pm July       | 103<br>0<br>876          | 530<br>44<br>0.42               | 958<br>47<br>0.45               | 3<br>30<br>30              | 2AC/Hr<br>29<br>44             | 2AC/Hr<br>29<br>47             |
| 81    | Consult 218<br>2pm July       | 146<br>2<br>1,241        | 752<br>62<br>0.42               | 1,933<br>94<br>0.65             | 465<br>125<br>125          | 6AC/Hr<br>124<br>62            | 6AC/Hr<br>124<br>94            |
| 82    | Consult 219<br>3pm July       | 150<br>2<br>1,275        | 1,857<br>153<br>1.02            | 2,735<br>133<br>0.89            | 458<br>128<br>128          | 6AC/Hr<br>128<br>153           | 6AC/Hr<br>128<br>134           |
|       | Zone Peak Totals:             | 799                      | 5,590                           | 9,415                           | 925                        |                                |                                |
|       | Total Zones: 6                | 4                        | 460                             | 459                             | 460                        | 453                            | 453                            |
|       | Unique Zones: 6               | 7,467                    | 0.58                            | 0.57                            | 460                        | 460                            | 460                            |



## Air Handler #25 - FCU2-4 - Total Load Summary

Air Handler Description: FCU2-4 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.22 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.90 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 1pm in July.  
Outdoor Conditions: Clg: 86° DB, 67° WB, 69.81 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Exhaust controls outside air, ----- Winter: Exhaust controls outside air.

|                              |             |             |
|------------------------------|-------------|-------------|
| Zone Space sensible loss:    | 3,098 Btuh  |             |
| Infiltration sensible loss:  | 2,492 Btuh  | 44 CFM      |
| Outside Air sensible loss:   | 11,239 Btuh | 460 CFM     |
| Supply Duct sensible loss:   | 0 Btuh      |             |
| Return Duct sensible loss:   | 0 Btuh      |             |
| Return Plenum sensible loss: | 0 Btuh      |             |
| Total System sensible loss:  |             | 16,829 Btuh |

|                                                              |         |
|--------------------------------------------------------------|---------|
| Heating Supply Air: $5,590 / (.986 \times 1.08 \times 11) =$ | 460 CFM |
| Winter Vent Outside Air (100.0% of supply) =                 | 460 CFM |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Zone space sensible gain:                   | 8,597 Btuh |            |
| Infiltration sensible gain:                 | 605 Btuh   |            |
| Draw-thru fan sensible gain:                | 539 Btuh   |            |
| Supply duct sensible gain:                  | 0 Btuh     |            |
| Reserve sensible gain:                      | 0 Btuh     |            |
| Total sensible gain on supply side of coil: |            | 9,742 Btuh |

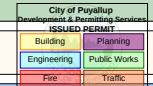
|                                                             |         |
|-------------------------------------------------------------|---------|
| Cooling Supply Air: $9,954 / (.986 \times 1.1 \times 20) =$ | 459 CFM |
| Summer Vent Outside Air (100.2% of supply) =                | 460 CFM |

|                                             |            |             |
|---------------------------------------------|------------|-------------|
| Return duct sensible gain:                  | 0 Btuh     |             |
| Return plenum sensible gain:                | 0 Btuh     |             |
| Outside air sensible gain:                  | 1,496 Btuh | 460 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh     |             |
| Total sensible gain on return side of coil: |            | 1,496 Btuh  |
| Total sensible gain on air handling system: |            | 11,238 Btuh |

|                                           |            |             |
|-------------------------------------------|------------|-------------|
| Zone space latent gain:                   | 920 Btuh   |             |
| Infiltration latent gain:                 | 141 Btuh   |             |
| Outside air latent gain:                  | 1,368 Btuh |             |
| Total latent gain on air handling system: |            | 2,429 Btuh  |
| Total system sensible and latent gain:    |            | 13,667 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 459 CFM           |
| Total Air Handler Vent. Air (100.21% of Supply):  | 460 CFM           |
| Total Conditioned Air Space:                      | 799 Sq.ft         |
| Supply Air Per Unit Area:                         | 0.5745 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 701.6 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0014 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 21.06 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 16,829 Btuh       |
| Total Cooling Required With Outside Air:          | 1.14 Tons         |



## Air Handler #26 - FCU2-9 - Summary Loads

| Zn No | Description<br>Zone Peak Time    | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|----------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 66    | 2nd Hall 3<br>3pm July           | 407<br>0<br>3,663        | 2,163<br>176<br>0.43            | 3,759<br>183<br>0.45            | -6<br>125<br>125           | 2AC/Hr<br>122<br>176           | 2AC/Hr<br>122<br>165           |
| 93    | Restroom 230<br>2pm July         | 63<br>0<br>536           | 324<br>26<br>0.42               | 560<br>27<br>0.43               | 2<br>50<br>50              | 4AC/Hr<br>36<br>26             | 4AC/Hr<br>36<br>25             |
| 94    | Dirty 231, Clean 232<br>2pm July | 160<br>0<br>1,360        | 824<br>67<br>0.42               | 1,181<br>58<br>0.36             | 5<br>230<br>230            | 10AC/Hr<br>227<br>67           | 10AC/Hr<br>227<br>52           |
| 95    | Kitchenette 233<br>5pm July      | 137<br>0<br>1,165        | 1,928<br>157<br>1.15            | 4,433<br>216<br>1.58            | 20<br>40<br>40             | 2AC/Hr<br>39<br>157            | 2AC/Hr<br>39<br>194            |
| 96    | Charging / Supply<br>3pm July    | 135<br>0<br>1,215        | 718<br>58<br>0.43               | 1,142<br>56<br>0.41             | -2<br>40<br>40             | 2AC/Hr<br>41<br>58             | 2AC/Hr<br>41<br>50             |
|       | Zone Peak Totals:                | 902                      | 5,957                           | 11,075                          | 19                         |                                |                                |
|       | Total Zones: 5                   | 0                        | 485                             | 540                             | 485                        | 464                            | 464                            |
|       | Unique Zones: 5                  | 7,938                    | 0.54                            | 0.60                            | 485                        | 485                            | 485                            |





## Air Handler #26 - FCU2-9 - Total Load Summary

Air Handler Description: FCU2-9 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.25 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.99 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 5pm in July.  
Outdoor Conditions: Clg: 86° DB, 67° WB, 69.39 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Exhaust controls outside air, ----- Winter: Exhaust controls outside air.

|                              |             |             |
|------------------------------|-------------|-------------|
| Zone Space sensible loss:    | 3,307 Btuh  |             |
| Infiltration sensible loss:  | 2,649 Btuh  | 46 CFM      |
| Outside Air sensible loss:   | 11,530 Btuh | 485 CFM     |
| Supply Duct sensible loss:   | 0 Btuh      |             |
| Return Duct sensible loss:   | 0 Btuh      |             |
| Return Plenum sensible loss: | 0 Btuh      |             |
| Total System sensible loss:  |             | 17,487 Btuh |

|                                                              |         |
|--------------------------------------------------------------|---------|
| Heating Supply Air: $5,957 / (.986 \times 1.08 \times 12) =$ | 485 CFM |
| Winter Vent Outside Air (100.0% of supply) =                 | 485 CFM |

|                                             |            |             |
|---------------------------------------------|------------|-------------|
| Zone space sensible gain:                   | 9,948 Btuh |             |
| Infiltration sensible gain:                 | 658 Btuh   |             |
| Draw-thru fan sensible gain:                | 634 Btuh   |             |
| Supply duct sensible gain:                  | 0 Btuh     |             |
| Reserve sensible gain:                      | 414 Btuh   |             |
| Total sensible gain on supply side of coil: |            | 11,654 Btuh |

|                                                              |         |
|--------------------------------------------------------------|---------|
| Cooling Supply Air: $11,700 / (.986 \times 1.1 \times 20) =$ | 540 CFM |
| Summer Vent Outside Air (89.9% of supply) =                  | 485 CFM |

|                                             |            |             |
|---------------------------------------------|------------|-------------|
| Return duct sensible gain:                  | 0 Btuh     |             |
| Return plenum sensible gain:                | 0 Btuh     |             |
| Outside air sensible gain:                  | 1,578 Btuh | 485 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh     |             |
| Total sensible gain on return side of coil: |            | 1,578 Btuh  |
| Total sensible gain on air handling system: |            | 13,231 Btuh |

|                                           |            |             |
|-------------------------------------------|------------|-------------|
| Zone space latent gain:                   | 0 Btuh     |             |
| Infiltration latent gain:                 | 135 Btuh   |             |
| Outside air latent gain:                  | 1,442 Btuh |             |
| Total latent gain on air handling system: |            | 1,577 Btuh  |
| Total system sensible and latent gain:    |            | 14,808 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 540 CFM           |
| Total Air Handler Vent. Air (89.89% of Supply):   | 485 CFM           |
| Total Conditioned Air Space:                      | 902 Sq.ft         |
| Supply Air Per Unit Area:                         | 0.5982 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 731.0 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0014 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 19.39 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 17,487 Btuh       |
| Total Cooling Required With Outside Air:          | 1.23 Tons         |



|                                                       |              |
|-------------------------------------------------------|--------------|
| City of Puyallup<br>Development & Permitting Services |              |
| ISSUED PERMIT                                         |              |
| Building                                              | Planning     |
| Engineering                                           | Public Works |
| Fee                                                   | Traffic      |

## Air Handler #27 - FCU2-6 - Summary Loads

| Zn No | Description<br>Zone Peak Time | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 83    | Provider Pod 220<br>5pm July  | 916<br>20<br>7,784       | 8,858<br>908<br>0.99            | 21,730<br>1,060<br>1.16         | 4,732<br>778<br>778        | 6AC/Hr<br>778<br>908           | 6AC/Hr<br>778<br>869           |
| 84    | Tele Health 221<br>2pm July   | 47<br>1<br>402           | 244<br>25<br>0.53               | 728<br>35<br>0.75               | 232<br>27<br>27            | 4AC/Hr<br>27<br>25             | 4AC/Hr<br>27<br>29             |
| 85    | Tele Health 222<br>2pm July   | 47<br>1<br>402           | 244<br>25<br>0.53               | 728<br>35<br>0.75               | 232<br>27<br>27            | 4AC/Hr<br>27<br>25             | 4AC/Hr<br>27<br>29             |
| 86    | Exam/ Consult 223<br>2pm July | 97<br>2<br>825           | 499<br>51<br>0.53               | 1,478<br>72<br>0.74             | 463<br>82<br>82            | 6AC/Hr<br>82<br>51             | 6AC/Hr<br>82<br>59             |
| 87    | Exam/ Consult 224<br>2pm July | 98<br>2<br>833           | 505<br>52<br>0.53               | 1,487<br>72<br>0.74             | 463<br>83<br>83            | 6AC/Hr<br>83<br>52             | 6AC/Hr<br>83<br>59             |
| 88    | Exam/ Consult 225<br>2pm July | 97<br>2<br>825           | 499<br>51<br>0.53               | 1,478<br>72<br>0.74             | 463<br>82<br>82            | 6AC/Hr<br>82<br>51             | 6AC/Hr<br>82<br>59             |
| 89    | Exam/ Consult 226<br>2pm July | 99<br>2<br>841           | 510<br>52<br>0.53               | 1,496<br>73<br>0.74             | 463<br>84<br>84            | 6AC/Hr<br>84<br>52             | 6AC/Hr<br>84<br>60             |
|       | Zone Peak Totals:             | 1,401                    | 11,358                          | 29,124                          | 7,048                      |                                |                                |
|       | Total Zones: 7                | 30                       | 1,164                           | 1,420                           | 1,163                      | 1,164                          | 1,164                          |
|       | Unique Zones: 7               | 11,912                   | 0.83                            | 1.01                            | 1,163                      | 1,164                          | 1,165                          |



|                          |
|--------------------------|
| ISSUED PERMIT            |
| Building Planning        |
| Engineering Public Works |
| Fire Traffic             |

## Air Handler #27 - FCU2-6 - Total Load Summary

Air Handler Description: FCU2-6 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.67 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.81 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 5pm in July.  
Outdoor Conditions: Clg: 86° DB, 67° WB, 69.39 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |             |             |
|------------------------------|-------------|-------------|
| Zone Space sensible loss:    | 7,382 Btuh  |             |
| Infiltration sensible loss:  | 3,976 Btuh  | 69 CFM      |
| Outside Air sensible loss:   | 28,832 Btuh | 1,164 CFM   |
| Supply Duct sensible loss:   | 0 Btuh      |             |
| Return Duct sensible loss:   | 0 Btuh      |             |
| Return Plenum sensible loss: | 0 Btuh      |             |
| Total System sensible loss:  |             | 40,189 Btuh |

Heating Supply Air:  $11,358 / (.986 \times 1.08 \times 9) =$  1,164 CFM  
Winter Vent Outside Air (100.0% of supply) = 1,164 CFM

|                                             |             |             |
|---------------------------------------------|-------------|-------------|
| Zone space sensible gain:                   | 27,841 Btuh |             |
| Infiltration sensible gain:                 | 988 Btuh    |             |
| Draw-thru fan sensible gain:                | 1,668 Btuh  |             |
| Supply duct sensible gain:                  | 0 Btuh      |             |
| Reserve sensible gain:                      | 285 Btuh    |             |
| Total sensible gain on supply side of coil: |             | 30,782 Btuh |

Cooling Supply Air:  $30,782 / (.986 \times 1.1 \times 20) =$  1,420 CFM  
Summer Vent Outside Air (82.0% of supply) = 1,164 CFM

|                                             |            |             |
|---------------------------------------------|------------|-------------|
| Return duct sensible gain:                  | 0 Btuh     |             |
| Return plenum sensible gain:                | 0 Btuh     |             |
| Outside air sensible gain:                  | 6,943 Btuh | 1,164 CFM   |
| Blow-thru fan sensible gain:                | 0 Btuh     |             |
| Total sensible gain on return side of coil: |            | 6,943 Btuh  |
| Total sensible gain on air handling system: |            | 37,725 Btuh |

|                                           |            |             |
|-------------------------------------------|------------|-------------|
| Zone space latent gain:                   | 6,900 Btuh |             |
| Infiltration latent gain:                 | 203 Btuh   |             |
| Outside air latent gain:                  | 3,462 Btuh |             |
| Total latent gain on air handling system: |            | 10,565 Btuh |
| Total system sensible and latent gain:    |            | 48,290 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 1,420 CFM         |
| Total Air Handler Vent. Air (82.03% of Supply):   | 1,164 CFM         |
| Total Conditioned Air Space:                      | 1,401 Sq.ft       |
| Supply Air Per Unit Area:                         | 1.0130 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 348.2 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0029 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 28.68 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 40,189 Btuh       |
| Total Cooling Required With Outside Air:          | 4.02 Tons         |



|                          |
|--------------------------|
| ISSUED PERMIT            |
| Building Planning        |
| Engineering Public Works |
| Fire Traffic             |

## Air Handler #28 - FCU2-7 - Summary Loads

| Zn No | Description<br>Zone Peak Time | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 91    | Exam/ Consult 228<br>2pm July | 111<br>2<br>944          | 571<br>94<br>0.85               | 1,608<br>94<br>0.85             | 464<br>94<br>94            | 6AC/Hr<br>94<br>94             | 6AC/Hr<br>94<br>94             |
|       | Zone Peak Totals:             | 111                      | 571                             | 1,608                           | 464                        |                                |                                |
|       | Total Zones: 1                | 2                        | 94                              | 94                              | 94                         | 94                             | 94                             |
|       | Unique Zones: 1               | 944                      | 0.85                            | 0.85                            | 94                         | 94                             | 94                             |



|                                                       |              |  |  |
|-------------------------------------------------------|--------------|--|--|
| City of Puyallup<br>Development & Permitting Services |              |  |  |
| ISSUED PERMIT                                         |              |  |  |
| Building                                              | Planning     |  |  |
| Engineering                                           | Public Works |  |  |
| Fire                                                  | Traffic      |  |  |

## Air Handler #28 - FCU2-7 - Total Load Summary

Air Handler Description: FCU2-7 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.04 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.81 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 2pm in July.  
Outdoor Conditions: Clg: 88° DB, 67° WB, 66.47 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |            |            |
|------------------------------|------------|------------|
| Zone Space sensible loss:    | 257 Btuh   |            |
| Infiltration sensible loss:  | 315 Btuh   | 6 CFM      |
| Outside Air sensible loss:   | 4,319 Btuh | 94 CFM     |
| Supply Duct sensible loss:   | 0 Btuh     |            |
| Return Duct sensible loss:   | 0 Btuh     |            |
| Return Plenum sensible loss: | 0 Btuh     |            |
| Total System sensible loss:  |            | 4,890 Btuh |

|                                                           |        |
|-----------------------------------------------------------|--------|
| Heating Supply Air: $571 / (.986 \times 1.08 \times 6) =$ | 94 CFM |
| Winter Vent Outside Air (100.0% of supply) =              | 94 CFM |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Zone space sensible gain:                   | 1,517 Btuh |            |
| Infiltration sensible gain:                 | 91 Btuh    |            |
| Draw-thru fan sensible gain:                | 110 Btuh   |            |
| Supply duct sensible gain:                  | 0 Btuh     |            |
| Reserve sensible gain:                      | 319 Btuh   |            |
| Total sensible gain on supply side of coil: |            | 2,037 Btuh |

|                                                             |        |
|-------------------------------------------------------------|--------|
| Cooling Supply Air: $2,037 / (.986 \times 1.1 \times 20) =$ | 94 CFM |
| Summer Vent Outside Air (100.4% of supply) =                | 94 CFM |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Return duct sensible gain:                  | 0 Btuh     |            |
| Return plenum sensible gain:                | 0 Btuh     |            |
| Outside air sensible gain:                  | 1,330 Btuh | 94 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh     |            |
| Total sensible gain on return side of coil: |            | 1,330 Btuh |
| Total sensible gain on air handling system: |            | 3,367 Btuh |

|                                           |          |            |
|-------------------------------------------|----------|------------|
| Zone space latent gain:                   | 460 Btuh |            |
| Infiltration latent gain:                 | 4 Btuh   |            |
| Outside air latent gain:                  | 77 Btuh  |            |
| Total latent gain on air handling system: |          | 541 Btuh   |
| Total system sensible and latent gain:    |          | 3,908 Btuh |

## Check Figures

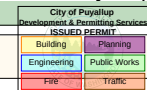
|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 94 CFM            |
| Total Air Handler Vent. Air (100.44% of Supply):  | 94 CFM            |
| Total Conditioned Air Space:                      | 111 Sq.ft         |
| Supply Air Per Unit Area:                         | 0.8463 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 340.8 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0029 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 44.06 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 4,890 Btuh        |
| Total Cooling Required With Outside Air:          | 0.33 Tons         |



|                                                       |              |
|-------------------------------------------------------|--------------|
| City of Puyallup<br>Development & Permitting Services |              |
| ISSUED PERMIT                                         |              |
| Building                                              | Planning     |
| Engineering                                           | Public Works |
| Fee                                                   | Traffic      |

## Air Handler #29 - FCU2-8 - Summary Loads

| Zn No | Description<br>Zone Peak Time | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 92    | Exam/ Consult 229<br>5pm July | 98<br>2<br>833           | 1,140<br>83<br>0.85             | 2,923<br>143<br>1.45            | 474<br>0<br>0              | 6AC/Hr<br>83<br>83             | 6AC/Hr<br>83<br>83             |
|       | Zone Peak Totals:             | 98                       | 1,140                           | 2,923                           | 474                        |                                |                                |
|       | Total Zones: 1                | 2                        | 83                              | 143                             | 0                          | 83                             | 83                             |
|       | Unique Zones: 1               | 833                      | 0.85                            | 1.45                            | 0                          | 83                             | 83                             |



## Air Handler #29 - FCU2-8 - Total Load Summary

Air Handler Description: FCU2-8 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.07 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.87 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 5pm in July.  
Outdoor Conditions: Clg: 86° DB, 67° WB, 69.39 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |            |            |
|------------------------------|------------|------------|
| Zone Space sensible loss:    | 862 Btuh   |            |
| Infiltration sensible loss:  | 278 Btuh   | 5 CFM      |
| Outside Air sensible loss:   | 3,813 Btuh | 83 CFM     |
| Supply Duct sensible loss:   | 0 Btuh     |            |
| Return Duct sensible loss:   | 0 Btuh     |            |
| Return Plenum sensible loss: | 0 Btuh     |            |
| Total System sensible loss:  |            | 4,953 Btuh |

|                                                              |        |
|--------------------------------------------------------------|--------|
| Heating Supply Air: $1,140 / (.986 \times 1.08 \times 13) =$ | 83 CFM |
| Winter Vent Outside Air (100.0% of supply) =                 | 83 CFM |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Zone space sensible gain:                   | 2,854 Btuh |            |
| Infiltration sensible gain:                 | 69 Btuh    |            |
| Draw-thru fan sensible gain:                | 167 Btuh   |            |
| Supply duct sensible gain:                  | 0 Btuh     |            |
| Reserve sensible gain:                      | 0 Btuh     |            |
| Total sensible gain on supply side of coil: |            | 3,090 Btuh |

|                                                             |         |
|-------------------------------------------------------------|---------|
| Cooling Supply Air: $3,090 / (.986 \times 1.1 \times 20) =$ | 142 CFM |
| Summer Vent Outside Air (58.5% of supply) =                 | 83 CFM  |

|                                             |          |            |
|---------------------------------------------|----------|------------|
| Return duct sensible gain:                  | 0 Btuh   |            |
| Return plenum sensible gain:                | 0 Btuh   |            |
| Outside air sensible gain:                  | 993 Btuh | 83 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh   |            |
| Total sensible gain on return side of coil: |          | 993 Btuh   |
| Total sensible gain on air handling system: |          | 4,084 Btuh |

|                                           |          |            |
|-------------------------------------------|----------|------------|
| Zone space latent gain:                   | 460 Btuh |            |
| Infiltration latent gain:                 | 14 Btuh  |            |
| Outside air latent gain:                  | 248 Btuh |            |
| Total latent gain on air handling system: |          | 722 Btuh   |
| Total system sensible and latent gain:    |          | 4,806 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 142 CFM           |
| Total Air Handler Vent. Air (58.46% of Supply):   | 83 CFM            |
| Total Conditioned Air Space:                      | 98 Sq.ft          |
| Supply Air Per Unit Area:                         | 1.4541 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 244.7 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0041 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 50.54 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 4,953 Btuh        |
| Total Cooling Required With Outside Air:          | 0.40 Tons         |



|                                                       |              |
|-------------------------------------------------------|--------------|
| City of Puyallup<br>Development & Permitting Services |              |
| ISSUED PERMIT                                         |              |
| Building                                              | Planning     |
| Engineering                                           | Public Works |
| Fire                                                  | Traffic      |

## Air Handler #30 - FCU2-10 - Summary Loads

| Zn No | Description<br>Zone Peak Time | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 100   | Exam/ Consult 239<br>5pm July | 99<br>2<br>841           | 1,142<br>84<br>0.85             | 2,928<br>143<br>1.44            | 474<br>0<br>0              | 6AC/Hr<br>84<br>84             | 6AC/Hr<br>84<br>84             |
|       | Zone Peak Totals:             | 99                       | 1,142                           | 2,928                           | 474                        |                                |                                |
|       | Total Zones: 1                | 2                        | 84                              | 143                             | 0                          | 84                             | 84                             |
|       | Unique Zones: 1               | 841                      | 0.85                            | 1.44                            | 0                          | 84                             | 84                             |





## Air Handler #30 - FCU2-10 - Total Load Summary

Air Handler Description: FCU2-10 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.07 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.87 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 5pm in July.  
Outdoor Conditions: Clg: 86° DB, 67° WB, 69.39 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |            |            |
|------------------------------|------------|------------|
| Zone Space sensible loss:    | 861 Btuh   |            |
| Infiltration sensible loss:  | 281 Btuh   | 5 CFM      |
| Outside Air sensible loss:   | 3,852 Btuh | 84 CFM     |
| Supply Duct sensible loss:   | 0 Btuh     |            |
| Return Duct sensible loss:   | 0 Btuh     |            |
| Return Plenum sensible loss: | 0 Btuh     |            |
| Total System sensible loss:  |            | 4,994 Btuh |

|                                                              |        |
|--------------------------------------------------------------|--------|
| Heating Supply Air: $1,142 / (.986 \times 1.08 \times 13) =$ | 84 CFM |
| Winter Vent Outside Air (100.0% of supply) =                 | 84 CFM |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Zone space sensible gain:                   | 2,858 Btuh |            |
| Infiltration sensible gain:                 | 70 Btuh    |            |
| Draw-thru fan sensible gain:                | 168 Btuh   |            |
| Supply duct sensible gain:                  | 0 Btuh     |            |
| Reserve sensible gain:                      | 0 Btuh     |            |
| Total sensible gain on supply side of coil: |            | 3,095 Btuh |

|                                                             |         |
|-------------------------------------------------------------|---------|
| Cooling Supply Air: $3,095 / (.986 \times 1.1 \times 20) =$ | 143 CFM |
| Summer Vent Outside Air (59.0% of supply) =                 | 84 CFM  |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Return duct sensible gain:                  | 0 Btuh     |            |
| Return plenum sensible gain:                | 0 Btuh     |            |
| Outside air sensible gain:                  | 1,004 Btuh | 84 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh     |            |
| Total sensible gain on return side of coil: |            | 1,004 Btuh |
| Total sensible gain on air handling system: |            | 4,099 Btuh |

|                                           |          |            |
|-------------------------------------------|----------|------------|
| Zone space latent gain:                   | 460 Btuh |            |
| Infiltration latent gain:                 | 14 Btuh  |            |
| Outside air latent gain:                  | 250 Btuh |            |
| Total latent gain on air handling system: |          | 725 Btuh   |
| Total system sensible and latent gain:    |          | 4,823 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 143 CFM           |
| Total Air Handler Vent. Air (58.96% of Supply):   | 84 CFM            |
| Total Conditioned Air Space:                      | 99 Sq.ft          |
| Supply Air Per Unit Area:                         | 1.4417 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 246.3 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0041 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 50.44 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 4,994 Btuh        |
| Total Cooling Required With Outside Air:          | 0.40 Tons         |



|                                                       |              |
|-------------------------------------------------------|--------------|
| City of Puyallup<br>Development & Permitting Services |              |
| ISSUED                                                | PERMIT       |
| Building                                              | Planning     |
| Engineering                                           | Public Works |
| Fire                                                  | Traffic      |

## Air Handler #31 - FCU2-11 - Summary Loads

| Zn No | Description<br>Zone Peak Time | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 99    | Exam/ Consult 238<br>2pm July | 110<br>2<br>935          | 566<br>94<br>0.85               | 1,599<br>93<br>0.85             | 464<br>0<br>0              | 6AC/Hr<br>94<br>94             | 6AC/Hr<br>94<br>94             |
|       | Zone Peak Totals:             | 110                      | 566                             | 1,599                           | 464                        |                                |                                |
|       | Total Zones: 1                | 2                        | 94                              | 93                              | 0                          | 94                             | 94                             |
|       | Unique Zones: 1               | 935                      | 0.85                            | 0.85                            | 0                          | 94                             | 94                             |



|                                                                        |              |
|------------------------------------------------------------------------|--------------|
| City of Puyallup<br>Development & Permitting Services<br>ISSUED PERMIT |              |
| Building                                                               | Planning     |
| Engineering                                                            | Public Works |
| Fire                                                                   | Traffic      |

## Air Handler #31 - FCU2-11 - Total Load Summary

Air Handler Description: FCU2-11 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.04 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.81 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 2pm in July.  
Outdoor Conditions: Clg: 88° DB, 67° WB, 66.47 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |            |            |
|------------------------------|------------|------------|
| Zone Space sensible loss:    | 254 Btuh   |            |
| Infiltration sensible loss:  | 312 Btuh   | 5 CFM      |
| Outside Air sensible loss:   | 4,280 Btuh | 94 CFM     |
| Supply Duct sensible loss:   | 0 Btuh     |            |
| Return Duct sensible loss:   | 0 Btuh     |            |
| Return Plenum sensible loss: | 0 Btuh     |            |
| Total System sensible loss:  |            | 4,846 Btuh |

|                                                           |        |
|-----------------------------------------------------------|--------|
| Heating Supply Air: $566 / (.986 \times 1.08 \times 6) =$ | 94 CFM |
| Winter Vent Outside Air (100.0% of supply) =              | 94 CFM |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Zone space sensible gain:                   | 1,509 Btuh |            |
| Infiltration sensible gain:                 | 90 Btuh    |            |
| Draw-thru fan sensible gain:                | 109 Btuh   |            |
| Supply duct sensible gain:                  | 0 Btuh     |            |
| Reserve sensible gain:                      | 311 Btuh   |            |
| Total sensible gain on supply side of coil: |            | 2,019 Btuh |

|                                                             |        |
|-------------------------------------------------------------|--------|
| Cooling Supply Air: $2,019 / (.986 \times 1.1 \times 20) =$ | 93 CFM |
| Summer Vent Outside Air (100.4% of supply) =                | 94 CFM |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Return duct sensible gain:                  | 0 Btuh     |            |
| Return plenum sensible gain:                | 0 Btuh     |            |
| Outside air sensible gain:                  | 1,318 Btuh | 94 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh     |            |
| Total sensible gain on return side of coil: |            | 1,318 Btuh |
| Total sensible gain on air handling system: |            | 3,337 Btuh |

|                                           |          |            |
|-------------------------------------------|----------|------------|
| Zone space latent gain:                   | 460 Btuh |            |
| Infiltration latent gain:                 | 4 Btuh   |            |
| Outside air latent gain:                  | 77 Btuh  |            |
| Total latent gain on air handling system: |          | 540 Btuh   |
| Total system sensible and latent gain:    |          | 3,877 Btuh |

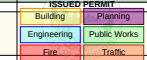
## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 93 CFM            |
| Total Air Handler Vent. Air (100.43% of Supply):  | 94 CFM            |
| Total Conditioned Air Space:                      | 110 Sq.ft         |
| Supply Air Per Unit Area:                         | 0.8464 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 340.4 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0029 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 44.06 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 4,846 Btuh        |
| Total Cooling Required With Outside Air:          | 0.32 Tons         |



## Air Handler #32 - FCU2-12 - Summary Loads

| Zn No | Description<br>Zone Peak Time      | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|------------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 101   | Provide Pod 240<br>5pm July        | 936<br>20<br>7,956       | 8,448<br>883<br>0.94            | 21,733<br>1,060<br>1.13         | 4,735<br>790<br>790        | 6AC/Hr<br>796<br>883           | 6AC/Hr<br>796<br>869           |
| 102   | Exam/ Consult 241<br>2pm July      | 99<br>2<br>841           | 510<br>53<br>0.54               | 1,496<br>73<br>0.74             | 463<br>85<br>85            | 6AC/Hr<br>84<br>53             | 6AC/Hr<br>84<br>60             |
| 103   | Exam/ Consult 242<br>2pm July      | 97<br>2<br>825           | 499<br>52<br>0.54               | 1,478<br>72<br>0.74             | 463<br>85<br>85            | 6AC/Hr<br>82<br>52             | 6AC/Hr<br>82<br>59             |
| 104   | Exam/ Consult 243<br>2pm July      | 98<br>2<br>833           | 505<br>53<br>0.54               | 1,487<br>72<br>0.74             | 463<br>85<br>85            | 6AC/Hr<br>83<br>53             | 6AC/Hr<br>83<br>59             |
| 105   | Exam/ Consult 244<br>2pm September | 106<br>2<br>901          | 1,176<br>123<br>1.16            | 2,756<br>134<br>1.27            | 430<br>95<br>95            | 6AC/Hr<br>90<br>123            | 6AC/Hr<br>90<br>110            |
| 106   | Tele Health 245<br>2pm July        | 46<br>1<br>391           | 237<br>25<br>0.54               | 716<br>35<br>0.76               | 232<br>15<br>15            | 6AC/Hr<br>39<br>25             | 6AC/Hr<br>39<br>29             |
| 107   | Tele Health 246<br>2pm July        | 46<br>1<br>391           | 237<br>25<br>0.54               | 716<br>35<br>0.76               | 232<br>15<br>15            | 6AC/Hr<br>39<br>25             | 6AC/Hr<br>39<br>29             |
|       | Zone Peak Totals:                  | 1,428                    | 11,611                          | 30,380                          | 7,018                      |                                |                                |
|       | Total Zones: 7                     | 30                       | 1,214                           | 1,481                           | 1,170                      | 1,214                          | 1,214                          |
|       | Unique Zones: 7                    | 12,138                   | 0.85                            | 1.04                            | 1,170                      | 1,214                          | 1,214                          |



## Air Handler #32 - FCU2-12 - Total Load Summary

Air Handler Description: FCU2-12 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.70 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.82 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 5pm in July.  
Outdoor Conditions: Clg: 86° DB, 67° WB, 69.39 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |             |             |
|------------------------------|-------------|-------------|
| Zone Space sensible loss:    | 7,560 Btuh  |             |
| Infiltration sensible loss:  | 4,051 Btuh  | 71 CFM      |
| Outside Air sensible loss:   | 30,946 Btuh | 1,214 CFM   |
| Supply Duct sensible loss:   | 0 Btuh      |             |
| Return Duct sensible loss:   | 0 Btuh      |             |
| Return Plenum sensible loss: | 0 Btuh      |             |
| Total System sensible loss:  |             | 42,557 Btuh |

|                                                              |           |
|--------------------------------------------------------------|-----------|
| Heating Supply Air: $11,611 / (.986 \times 1.08 \times 9) =$ | 1,214 CFM |
| Winter Vent Outside Air (100.0% of supply) =                 | 1,214 CFM |

|                                             |             |             |
|---------------------------------------------|-------------|-------------|
| Zone space sensible gain:                   | 28,617 Btuh |             |
| Infiltration sensible gain:                 | 1,006 Btuh  |             |
| Draw-thru fan sensible gain:                | 1,740 Btuh  |             |
| Supply duct sensible gain:                  | 0 Btuh      |             |
| Reserve sensible gain:                      | 585 Btuh    |             |
| Total sensible gain on supply side of coil: |             | 31,948 Btuh |

|                                                              |           |
|--------------------------------------------------------------|-----------|
| Cooling Supply Air: $32,110 / (.986 \times 1.1 \times 20) =$ | 1,481 CFM |
| Summer Vent Outside Air (82.0% of supply) =                  | 1,214 CFM |

|                                             |            |             |
|---------------------------------------------|------------|-------------|
| Return duct sensible gain:                  | 0 Btuh     |             |
| Return plenum sensible gain:                | 0 Btuh     |             |
| Outside air sensible gain:                  | 7,356 Btuh | 1,214 CFM   |
| Blow-thru fan sensible gain:                | 0 Btuh     |             |
| Total sensible gain on return side of coil: |            | 7,356 Btuh  |
| Total sensible gain on air handling system: |            | 39,304 Btuh |

|                                           |            |             |
|-------------------------------------------|------------|-------------|
| Zone space latent gain:                   | 6,900 Btuh |             |
| Infiltration latent gain:                 | 207 Btuh   |             |
| Outside air latent gain:                  | 3,609 Btuh |             |
| Total latent gain on air handling system: |            | 10,715 Btuh |
| Total system sensible and latent gain:    |            | 50,020 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 1,481 CFM         |
| Total Air Handler Vent. Air (81.97% of Supply):   | 1,214 CFM         |
| Total Conditioned Air Space:                      | 1,428 Sq.ft       |
| Supply Air Per Unit Area:                         | 1.0370 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 342.6 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0029 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 29.80 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 42,557 Btuh       |
| Total Cooling Required With Outside Air:          | 4.17 Tons         |



|                                                       |              |
|-------------------------------------------------------|--------------|
| City of Puyallup<br>Development & Permitting Services |              |
| ISSUED PERMIT                                         |              |
| Building                                              | Planning     |
| Engineering                                           | Public Works |
| Fire                                                  | Traffic      |

## Air Handler #33 - FCU2-13 - Summary Loads

| Zn No | Description<br>Zone Peak Time | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 65    | 2nd Hall 2<br>2pm July        | 436<br>0<br>3,924        | 2,485<br>152<br>0.35            | 4,125<br>201<br>0.46            | 15<br>130<br>130           | 2AC/Hr<br>131<br>152           | 2AC/Hr<br>131<br>127           |
| 108   | Med Room 271<br>2pm July      | 103<br>2<br>876          | 530<br>32<br>0.32               | 1,533<br>75<br>0.73             | 463<br>0<br>0              | 2AC/Hr<br>29<br>32             | 2AC/Hr<br>29<br>47             |
| 109   | Elec. 270<br>2pm July         | 112<br>0<br>952          | 577<br>35<br>0.32               | 1,042<br>51<br>0.45             | 4<br>35<br>35              | 2AC/Hr<br>32<br>35             | 2AC/Hr<br>32<br>32             |
| 110   | Storage 272<br>2pm July       | 40<br>0<br>340           | 206<br>13<br>0.32               | 372<br>18<br>0.45               | 1<br>11<br>11              | 2AC/Hr<br>11<br>13             | 2AC/Hr<br>11<br>11             |
| 111   | Consult 250<br>2pm July       | 157<br>2<br>1,335        | 808<br>50<br>0.32               | 2,036<br>99<br>0.63             | 465<br>135<br>135          | 6AC/Hr<br>133<br>50            | 6AC/Hr<br>133<br>63            |
| 112   | Office 251<br>2pm July        | 150<br>1<br>1,275        | 772<br>47<br>0.32               | 1,683<br>82<br>0.55             | 235<br>45<br>45            | 2AC/Hr<br>43<br>47             | 2AC/Hr<br>43<br>52             |
| 113   | Office 252<br>2pm September   | 150<br>1<br>1,275        | 1,500<br>92<br>0.61             | 2,902<br>142<br>0.94            | 188<br>0<br>0              | 2AC/Hr<br>43<br>92             | 2AC/Hr<br>43<br>89             |
|       | Zone Peak Totals:             | 1,148                    | 6,878                           | 13,694                          | 1,371                      |                                |                                |
|       | Total Zones: 7                | 6                        | 422                             | 668                             | 356                        | 422                            | 422                            |
|       | Unique Zones: 7               | 9,976                    | 0.37                            | 0.58                            | 356                        | 422                            | 422                            |



## Air Handler #33 - FCU2-13 - Total Load Summary

Air Handler Description: FCU2-13 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.31 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.90 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 1pm in July.  
Outdoor Conditions: Clg: 86° DB, 67° WB, 69.81 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |             |             |
|------------------------------|-------------|-------------|
| Zone Space sensible loss:    | 3,548 Btuh  |             |
| Infiltration sensible loss:  | 3,330 Btuh  | 58 CFM      |
| Outside Air sensible loss:   | 11,804 Btuh | 422 CFM     |
| Supply Duct sensible loss:   | 0 Btuh      |             |
| Return Duct sensible loss:   | 0 Btuh      |             |
| Return Plenum sensible loss: | 0 Btuh      |             |
| Total System sensible loss:  |             | 18,682 Btuh |

|                                                              |         |
|--------------------------------------------------------------|---------|
| Heating Supply Air: $6,878 / (.986 \times 1.08 \times 15) =$ | 422 CFM |
| Winter Vent Outside Air (100.0% of supply) =                 | 422 CFM |

|                                             |             |             |
|---------------------------------------------|-------------|-------------|
| Zone space sensible gain:                   | 12,578 Btuh |             |
| Infiltration sensible gain:                 | 808 Btuh    |             |
| Draw-thru fan sensible gain:                | 784 Btuh    |             |
| Supply duct sensible gain:                  | 0 Btuh      |             |
| Reserve sensible gain:                      | 89 Btuh     |             |
| Total sensible gain on supply side of coil: |             | 14,259 Btuh |

|                                                              |         |
|--------------------------------------------------------------|---------|
| Cooling Supply Air: $14,470 / (.986 \times 1.1 \times 20) =$ | 667 CFM |
| Summer Vent Outside Air (63.2% of supply) =                  | 422 CFM |

|                                             |            |             |
|---------------------------------------------|------------|-------------|
| Return duct sensible gain:                  | 0 Btuh     |             |
| Return plenum sensible gain:                | 0 Btuh     |             |
| Outside air sensible gain:                  | 2,860 Btuh | 422 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh     |             |
| Total sensible gain on return side of coil: |            | 2,860 Btuh  |
| Total sensible gain on air handling system: |            | 17,119 Btuh |

|                                           |            |             |
|-------------------------------------------|------------|-------------|
| Zone space latent gain:                   | 1,380 Btuh |             |
| Infiltration latent gain:                 | 188 Btuh   |             |
| Outside air latent gain:                  | 1,253 Btuh |             |
| Total latent gain on air handling system: |            | 2,822 Btuh  |
| Total system sensible and latent gain:    |            | 19,941 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 667 CFM           |
| Total Air Handler Vent. Air (63.16% of Supply):   | 422 CFM           |
| Total Conditioned Air Space:                      | 1,148 Sq.ft       |
| Supply Air Per Unit Area:                         | 0.5813 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 690.8 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0014 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 16.27 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 18,682 Btuh       |
| Total Cooling Required With Outside Air:          | 1.66 Tons         |



## Air Handler #34 - FCU2-16 - Summary Loads

|             |              |
|-------------|--------------|
| Building    | Planning     |
| Engineering | Public Works |
| Fire        | Traffic      |

| Zn No | Description<br>Zone Peak Time | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 98    | Exam/ Consult 237<br>2pm July | 98<br>2<br>833           | 505<br>83<br>0.85               | 1,487<br>82<br>0.84             | 463<br>0<br>0              | 6AC/Hr<br>83<br>83             | 6AC/Hr<br>83<br>83             |
|       | Zone Peak Totals:             | 98                       | 505                             | 1,487                           | 463                        |                                |                                |
|       | Total Zones: 1                | 2                        | 83                              | 82                              | 0                          | 83                             | 83                             |
|       | Unique Zones: 1               | 833                      | 0.85                            | 0.84                            | 0                          | 83                             | 83                             |





## Air Handler #34 - FCU2-16 - Total Load Summary

Air Handler Description: FCU2-16 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.04 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.79 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 2pm in July.  
Outdoor Conditions: Clg: 88° DB, 67° WB, 66.47 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |            |            |
|------------------------------|------------|------------|
| Zone Space sensible loss:    | 227 Btuh   |            |
| Infiltration sensible loss:  | 278 Btuh   | 5 CFM      |
| Outside Air sensible loss:   | 3,813 Btuh | 83 CFM     |
| Supply Duct sensible loss:   | 0 Btuh     |            |
| Return Duct sensible loss:   | 0 Btuh     |            |
| Return Plenum sensible loss: | 0 Btuh     |            |
| Total System sensible loss:  |            | 4,317 Btuh |

|                                                           |        |
|-----------------------------------------------------------|--------|
| Heating Supply Air: $505 / (.986 \times 1.08 \times 6) =$ | 83 CFM |
| Winter Vent Outside Air (100.0% of supply) =              | 83 CFM |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Zone space sensible gain:                   | 1,407 Btuh |            |
| Infiltration sensible gain:                 | 80 Btuh    |            |
| Draw-thru fan sensible gain:                | 97 Btuh    |            |
| Supply duct sensible gain:                  | 0 Btuh     |            |
| Reserve sensible gain:                      | 203 Btuh   |            |
| Total sensible gain on supply side of coil: |            | 1,786 Btuh |

|                                                             |        |
|-------------------------------------------------------------|--------|
| Cooling Supply Air: $1,786 / (.986 \times 1.1 \times 20) =$ | 82 CFM |
| Summer Vent Outside Air (101.1% of supply) =                | 83 CFM |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Return duct sensible gain:                  | 0 Btuh     |            |
| Return plenum sensible gain:                | 0 Btuh     |            |
| Outside air sensible gain:                  | 1,174 Btuh | 83 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh     |            |
| Total sensible gain on return side of coil: |            | 1,174 Btuh |
| Total sensible gain on air handling system: |            | 2,960 Btuh |

|                                           |          |            |
|-------------------------------------------|----------|------------|
| Zone space latent gain:                   | 460 Btuh |            |
| Infiltration latent gain:                 | 3 Btuh   |            |
| Outside air latent gain:                  | 68 Btuh  |            |
| Total latent gain on air handling system: |          | 532 Btuh   |
| Total system sensible and latent gain:    |          | 3,492 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 82 CFM            |
| Total Air Handler Vent. Air (101.13% of Supply):  | 83 CFM            |
| Total Conditioned Air Space:                      | 98 Sq.ft          |
| Supply Air Per Unit Area:                         | 0.8405 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 336.8 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0030 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 44.06 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 4,317 Btuh        |
| Total Cooling Required With Outside Air:          | 0.29 Tons         |



|                                                       |              |
|-------------------------------------------------------|--------------|
| City of Puyallup<br>Development & Permitting Services |              |
| ISSUED PERMIT                                         | Planning     |
| Building                                              | Public Works |
| Engineering                                           | Fire         |
| Public Works                                          | Traffic      |

## Air Handler #35 - FCU2-14 - Summary Loads

| Zn No | Description<br>Zone Peak Time      | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|------------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 114   | Provider Pod 253<br>2pm July       | 630<br>12<br>6,930       | 4,493<br>685<br>1.09            | 10,582<br>663<br>1.05           | 2,787<br>700<br>700        | 6AC/Hr<br>693<br>685           | 6AC/Hr<br>693<br>663           |
| 115   | Procedure 254<br>3pm July          | 147<br>2<br>1,411        | 811<br>124<br>0.84              | 1,959<br>123<br>0.83            | 458<br>145<br>145          | 6AC/Hr<br>141<br>124           | 6AC/Hr<br>141<br>123           |
| 116   | Exam/ Consult 255<br>3pm July      | 96<br>2<br>922           | 529<br>81<br>0.84               | 1,479<br>93<br>0.97             | 458<br>95<br>95            | 6AC/Hr<br>92<br>81             | 6AC/Hr<br>92<br>93             |
| 117   | Exam/ Consult 256<br>3pm July      | 99<br>2<br>950           | 546<br>83<br>0.84               | 1,507<br>94<br>0.95             | 458<br>100<br>100          | 6AC/Hr<br>95<br>83             | 6AC/Hr<br>95<br>94             |
| 118   | Exam/ Consult 257<br>3pm July      | 110<br>2<br>1,056        | 607<br>92<br>0.84               | 1,611<br>101<br>0.92            | 458<br>110<br>110          | 6AC/Hr<br>106<br>92            | 6AC/Hr<br>106<br>101           |
| 119   | Exam/ consult 258<br>3pm July      | 105<br>2<br>1,008        | 579<br>88<br>0.84               | 1,564<br>98<br>0.93             | 458<br>100<br>100          | 6AC/Hr<br>101<br>88            | 6AC/Hr<br>101<br>98            |
| 120   | Exam/ Consult 259<br>2pm September | 109<br>2<br>1,046        | 1,294<br>197<br>1.81            | 2,837<br>178<br>1.63            | 425<br>100<br>100          | 6AC/Hr<br>105<br>197           | 6AC/Hr<br>105<br>178           |
|       | Zone Peak Totals:                  | 1,296                    | 8,858                           | 21,538                          | 5,503                      |                                |                                |
|       | Total Zones: 7                     | 24                       | 1,350                           | 1,349                           | 1,350                      | 1,332                          | 1,332                          |
|       | Unique Zones: 7                    | 13,324                   | 1.04                            | 1.04                            | 1,350                      | 1,350                          | 1,350                          |



|               |              |
|---------------|--------------|
| ISSUED PERMIT |              |
| Building      | Planning     |
| Engineering   | Public Works |
| FIRE          | Traffic      |

## Air Handler #35 - FCU2-14 - Total Load Summary

Air Handler Description: FCU2-14 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.63 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.84 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 1pm in July.  
Outdoor Conditions: Clg: 86° DB, 67° WB, 69.81 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Exhaust controls outside air, ----- Winter: Exhaust controls outside air.

|                              |             |             |
|------------------------------|-------------|-------------|
| Zone Space sensible loss:    | 4,411 Btuh  |             |
| Infiltration sensible loss:  | 4,447 Btuh  | 78 CFM      |
| Outside Air sensible loss:   | 33,018 Btuh | 1,350 CFM   |
| Supply Duct sensible loss:   | 0 Btuh      |             |
| Return Duct sensible loss:   | 0 Btuh      |             |
| Return Plenum sensible loss: | 0 Btuh      |             |
| Total System sensible loss:  |             | 41,876 Btuh |

|                                                             |           |
|-------------------------------------------------------------|-----------|
| Heating Supply Air: $8,858 / (.986 \times 1.08 \times 6) =$ | 1,350 CFM |
| Winter Vent Outside Air (100.0% of supply) =                | 1,350 CFM |

|                                             |             |             |
|---------------------------------------------|-------------|-------------|
| Zone space sensible gain:                   | 20,019 Btuh |             |
| Infiltration sensible gain:                 | 1,080 Btuh  |             |
| Draw-thru fan sensible gain:                | 1,585 Btuh  |             |
| Supply duct sensible gain:                  | 0 Btuh      |             |
| Reserve sensible gain:                      | 6,285 Btuh  |             |
| Total sensible gain on supply side of coil: |             | 28,968 Btuh |

|                                                              |           |
|--------------------------------------------------------------|-----------|
| Cooling Supply Air: $29,259 / (.986 \times 1.1 \times 20) =$ | 1,349 CFM |
| Summer Vent Outside Air (100.1% of supply) =                 | 1,350 CFM |

|                                             |            |             |
|---------------------------------------------|------------|-------------|
| Return duct sensible gain:                  | 0 Btuh     |             |
| Return plenum sensible gain:                | 0 Btuh     |             |
| Outside air sensible gain:                  | 4,391 Btuh | 1,350 CFM   |
| Blow-thru fan sensible gain:                | 0 Btuh     |             |
| Total sensible gain on return side of coil: |            | 4,391 Btuh  |
| Total sensible gain on air handling system: |            | 33,359 Btuh |

|                                           |            |             |
|-------------------------------------------|------------|-------------|
| Zone space latent gain:                   | 5,520 Btuh |             |
| Infiltration latent gain:                 | 252 Btuh   |             |
| Outside air latent gain:                  | 4,014 Btuh |             |
| Total latent gain on air handling system: |            | 9,785 Btuh  |
| Total system sensible and latent gain:    |            | 43,145 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 1,349 CFM         |
| Total Air Handler Vent. Air (100.05% of Supply):  | 1,350 CFM         |
| Total Conditioned Air Space:                      | 1,296 Sq.ft       |
| Supply Air Per Unit Area:                         | 1.0411 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 360.5 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0028 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 32.31 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 41,876 Btuh       |
| Total Cooling Required With Outside Air:          | 3.60 Tons         |



## Air Handler #36 - FCU2-15 - Summary Loads

| Zn No | Description<br>Zone Peak Time     | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-----------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 64    | 2nd Hall 1<br>2pm July            | 765<br>0<br>8,415        | 5,639<br>296<br>0.39            | 8,893<br>434<br>0.57            | 33<br>0<br>0               | 2AC/Hr<br>281<br>296           | 2AC/Hr<br>281<br>249           |
| 121   | Foster / Adoption 260<br>1pm July | 290<br>2<br>3,190        | 3,882<br>203<br>0.70            | 6,284<br>306<br>1.06            | 520<br>0<br>0              | 2AC/Hr<br>106<br>203           | 2AC/Hr<br>106<br>176           |
| 122   | Storage 261<br>3pm July           | 72<br>0<br>720           | 407<br>21<br>0.30               | 681<br>33<br>0.46               | -1<br>0<br>0               | 2AC/Hr<br>24<br>21             | 2AC/Hr<br>24<br>19             |
| 123   | Nutri / Infant 262<br>10am July   | 110<br>2<br>1,100        | 1,671<br>88<br>0.80             | 3,897<br>190<br>1.73            | 491<br>0<br>0              | 2AC/Hr<br>37<br>88             | 2AC/Hr<br>37<br>109            |
| 124   | Lab 263<br>10am July              | 160<br>2<br>1,600        | 2,478<br>130<br>0.81            | 5,519<br>269<br>1.68            | 505<br>0<br>0              | 6AC/Hr<br>160<br>130           | 6AC/Hr<br>160<br>154           |
| 125   | Blood 264<br>10am July            | 55<br>1<br>550           | 835<br>44<br>0.80               | 1,948<br>95<br>1.73             | 246<br>0<br>0              | 6AC/Hr<br>55<br>44             | 6AC/Hr<br>55<br>55             |
| 126   | Lab Wait 265<br>3pm July          | 55<br>3<br>550           | 311<br>16<br>0.30               | 1,383<br>67<br>1.23             | 689<br>0<br>0              | 2AC/Hr<br>18<br>16             | 2AC/Hr<br>18<br>39             |
| 127   | Spec Restroom 266<br>2pm July     | 51<br>0<br>434           | 263<br>14<br>0.27               | 452<br>22<br>0.43               | 2<br>0<br>0                | 10AC/Hr<br>72<br>14            | 10AC/Hr<br>72<br>13            |
| 128   | Spec Restroom 267<br>2pm July     | 51<br>0<br>434           | 263<br>14<br>0.27               | 452<br>22<br>0.43               | 2<br>0<br>0                | 10AC/Hr<br>72<br>14            | 10AC/Hr<br>72<br>13            |
|       | Zone Peak Totals:                 | 1,609                    | 15,748                          | 29,508                          | 2,486                      |                                |                                |
|       | Total Zones: 9                    | 10                       | 825                             | 1,439                           | 0                          | 825                            | 825                            |
|       | Unique Zones: 9                   | 16,992                   | 0.51                            | 0.89                            | 0                          | 825                            | 826                            |



|                                                       |              |
|-------------------------------------------------------|--------------|
| City of Puyallup<br>Development & Permitting Services |              |
| ISSUED                                                | PERMIT       |
| Building                                              | Planning     |
| Engineering                                           | Public Works |
| Fire                                                  | Tram         |

## Air Handler #36 - FCU2-15 - Total Load Summary

Air Handler Description: FCU2-15 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.68 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.92 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 1pm in July.  
Outdoor Conditions: Clg: 86° DB, 67° WB, 69.81 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |             |             |
|------------------------------|-------------|-------------|
| Zone Space sensible loss:    | 10,077 Btuh |             |
| Infiltration sensible loss:  | 5,671 Btuh  | 99 CFM      |
| Outside Air sensible loss:   | 37,778 Btuh | 825 CFM     |
| Supply Duct sensible loss:   | 0 Btuh      |             |
| Return Duct sensible loss:   | 0 Btuh      |             |
| Return Plenum sensible loss: | 0 Btuh      |             |
| Total System sensible loss:  |             | 53,526 Btuh |

|                                                   |         |
|---------------------------------------------------|---------|
| Heating Supply Air: 15,748 / (.986 X 1.08 X 18) = | 825 CFM |
| Winter Vent Outside Air (100.0% of supply) =      | 825 CFM |

|                                             |             |             |
|---------------------------------------------|-------------|-------------|
| Zone space sensible gain:                   | 26,227 Btuh |             |
| Infiltration sensible gain:                 | 1,377 Btuh  |             |
| Draw-thru fan sensible gain:                | 1,690 Btuh  |             |
| Supply duct sensible gain:                  | 0 Btuh      |             |
| Reserve sensible gain:                      | 1,867 Btuh  |             |
| Total sensible gain on supply side of coil: |             | 31,160 Btuh |

|                                                  |           |
|--------------------------------------------------|-----------|
| Cooling Supply Air: 31,189 / (.986 X 1.1 X 20) = | 1,438 CFM |
| Summer Vent Outside Air (57.4% of supply) =      | 825 CFM   |

|                                             |            |             |
|---------------------------------------------|------------|-------------|
| Return duct sensible gain:                  | 0 Btuh     |             |
| Return plenum sensible gain:                | 0 Btuh     |             |
| Outside air sensible gain:                  | 9,843 Btuh | 825 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh     |             |
| Total sensible gain on return side of coil: |            | 9,843 Btuh  |
| Total sensible gain on air handling system: |            | 41,003 Btuh |

|                                           |            |             |
|-------------------------------------------|------------|-------------|
| Zone space latent gain:                   | 2,300 Btuh |             |
| Infiltration latent gain:                 | 321 Btuh   |             |
| Outside air latent gain:                  | 2,454 Btuh |             |
| Total latent gain on air handling system: |            | 5,075 Btuh  |
| Total system sensible and latent gain:    |            | 46,078 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 1,438 CFM         |
| Total Air Handler Vent. Air (57.38% of Supply):   | 825 CFM           |
| Total Conditioned Air Space:                      | 1,609 Sq.ft       |
| Supply Air Per Unit Area:                         | 0.8939 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 419.0 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0024 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 33.27 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 53,526 Btuh       |
| Total Cooling Required With Outside Air:          | 3.84 Tons         |



|                                                       |              |
|-------------------------------------------------------|--------------|
| City of Puyallup<br>Development & Permitting Services |              |
| ISSUED                                                | PERMIT       |
| Building                                              | Planning     |
| Engineering                                           | Public Works |
| Fire                                                  | Traffic      |

## Air Handler #38 - IDF - Summary Loads

| Zn No | Description<br>Zone Peak Time | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 79    | IDF 216<br>2pm July           | 86<br>0<br>731           | 443<br>73<br>0.85               | 6,211<br>320<br>3.72            | 3<br>0<br>0                | 6AC/Hr<br>73<br>73             | 6AC/Hr<br>73<br>73             |
|       | Zone Peak Totals:             | 86                       | 443                             | 6,211                           | 3                          |                                |                                |
|       | Total Zones: 1                | 0                        | 73                              | 320                             | 0                          | 73                             | 73                             |
|       | Unique Zones: 1               | 731                      | 0.85                            | 3.72                            | 0                          | 73                             | 73                             |



|                                                       |              |
|-------------------------------------------------------|--------------|
| City of Puyallup<br>Development & Permitting Services |              |
| ISSUED PERMIT                                         |              |
| Building                                              | Planning     |
| Engineering                                           | Public Works |
| Fee                                                   | Traffic      |

## Air Handler #38 - IDF - Total Load Summary

Air Handler Description: IDF Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.15 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 1.00 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 3pm in July.  
Outdoor Conditions: Clg: 89° DB, 67° WB, 65.22 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |            |            |
|------------------------------|------------|------------|
| Zone Space sensible loss:    | 199 Btuh   |            |
| Infiltration sensible loss:  | 244 Btuh   | 4 CFM      |
| Outside Air sensible loss:   | 3,346 Btuh | 73 CFM     |
| Supply Duct sensible loss:   | 0 Btuh     |            |
| Return Duct sensible loss:   | 0 Btuh     |            |
| Return Plenum sensible loss: | 0 Btuh     |            |
| Total System sensible loss:  |            | 3,789 Btuh |

|                                                           |        |
|-----------------------------------------------------------|--------|
| Heating Supply Air: $443 / (.986 \times 1.08 \times 6) =$ | 73 CFM |
| Winter Vent Outside Air (100.0% of supply) =              | 73 CFM |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Zone space sensible gain:                   | 6,137 Btuh |            |
| Infiltration sensible gain:                 | 74 Btuh    |            |
| Draw-thru fan sensible gain:                | 376 Btuh   |            |
| Supply duct sensible gain:                  | 0 Btuh     |            |
| Reserve sensible gain:                      | 0 Btuh     |            |
| Total sensible gain on supply side of coil: |            | 6,587 Btuh |

|                                                             |         |
|-------------------------------------------------------------|---------|
| Cooling Supply Air: $6,587 / (.986 \times 1.1 \times 19) =$ | 320 CFM |
| Summer Vent Outside Air (22.9% of supply) =                 | 73 CFM  |

|                                             |            |            |
|---------------------------------------------|------------|------------|
| Return duct sensible gain:                  | 0 Btuh     |            |
| Return plenum sensible gain:                | 0 Btuh     |            |
| Outside air sensible gain:                  | 1,110 Btuh | 73 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh     |            |
| Total sensible gain on return side of coil: |            | 1,110 Btuh |
| Total sensible gain on air handling system: |            | 7,696 Btuh |

|                                           |          |            |
|-------------------------------------------|----------|------------|
| Zone space latent gain:                   | 1 Btuh   |            |
| Infiltration latent gain:                 | -1 Btuh  |            |
| Outside air latent gain:                  | -19 Btuh |            |
| Total latent gain on air handling system: |          | -19 Btuh   |
| Total system sensible and latent gain:    |          | 7,678 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 19° TD): | 320 CFM           |
| Total Air Handler Vent. Air (22.86% of Supply):   | 73 CFM            |
| Total Conditioned Air Space:                      | 86 Sq.ft          |
| Supply Air Per Unit Area:                         | 3.7180 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 134.1 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0075 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 44.06 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 3,789 Btuh        |
| Total Cooling Required With Outside Air:          | 0.64 Tons         |

Note: Due to the system's negative latent gain, tonnage is based solely on sensible gain.



|                                                       |              |
|-------------------------------------------------------|--------------|
| City of Puyallup<br>Development & Permitting Services |              |
| ISSUED PERMIT                                         |              |
| Building                                              | Planning     |
| Engineering                                           | Public Works |
| Fire                                                  | Traffic      |

## Air Handler #39 - Elec 134 - Summary Loads

| Zn No | Description<br>Zone Peak Time | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|-------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 40    | Elec 134                      | 140                      | 419                             | 1,081                           | -2                         | 2AC/Hr                         | 2AC/Hr                         |
|       | 3pm July                      | 0                        | 42                              | 56                              | 0                          | 42                             | 42                             |
|       |                               | 1,256                    | 0.30                            | 0.40                            | 0                          | 42                             | 42                             |
|       | Zone Peak Totals:             | 140                      | 419                             | 1,081                           | -2                         |                                |                                |
|       | Total Zones: 1                | 0                        | 42                              | 56                              | 0                          | 42                             | 42                             |
|       | Unique Zones: 1               | 1,256                    | 0.30                            | 0.40                            | 0                          | 42                             | 42                             |





|                          |
|--------------------------|
| ISSUED PERMIT            |
| Building Planning        |
| Engineering Public Works |
| Fire Traffic             |

## Air Handler #39 - Elec 134 - Total Load Summary

Air Handler Description: Elec 134 Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.03 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 1.00 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 3pm in July.  
Outdoor Conditions: Clg: 89° DB, 67° WB, 65.22 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |            |            |
|------------------------------|------------|------------|
| Zone Space sensible loss:    | 0 Btuh     |            |
| Infiltration sensible loss:  | 419 Btuh   | 7 CFM      |
| Outside Air sensible loss:   | 1,917 Btuh | 42 CFM     |
| Supply Duct sensible loss:   | 0 Btuh     |            |
| Return Duct sensible loss:   | 0 Btuh     |            |
| Return Plenum sensible loss: | 0 Btuh     |            |
| Total System sensible loss:  |            | 2,336 Btuh |

|                                                           |        |
|-----------------------------------------------------------|--------|
| Heating Supply Air: $419 / (.986 \times 1.08 \times 9) =$ | 42 CFM |
| Winter Vent Outside Air (100.0% of supply) =              | 42 CFM |

|                                             |          |            |
|---------------------------------------------|----------|------------|
| Zone space sensible gain:                   | 953 Btuh |            |
| Infiltration sensible gain:                 | 128 Btuh |            |
| Draw-thru fan sensible gain:                | 65 Btuh  |            |
| Supply duct sensible gain:                  | 0 Btuh   |            |
| Reserve sensible gain:                      | 0 Btuh   |            |
| Total sensible gain on supply side of coil: |          | 1,146 Btuh |

|                                                             |        |
|-------------------------------------------------------------|--------|
| Cooling Supply Air: $1,146 / (.986 \times 1.1 \times 19) =$ | 56 CFM |
| Summer Vent Outside Air (75.3% of supply) =                 | 42 CFM |

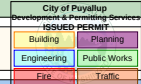
|                                             |          |            |
|---------------------------------------------|----------|------------|
| Return duct sensible gain:                  | 0 Btuh   |            |
| Return plenum sensible gain:                | 0 Btuh   |            |
| Outside air sensible gain:                  | 636 Btuh | 42 CFM     |
| Blow-thru fan sensible gain:                | 0 Btuh   |            |
| Total sensible gain on return side of coil: |          | 636 Btuh   |
| Total sensible gain on air handling system: |          | 1,782 Btuh |

|                                           |          |            |
|-------------------------------------------|----------|------------|
| Zone space latent gain:                   | 0 Btuh   |            |
| Infiltration latent gain:                 | -2 Btuh  |            |
| Outside air latent gain:                  | -11 Btuh |            |
| Total latent gain on air handling system: |          | -12 Btuh   |
| Total system sensible and latent gain:    |          | 1,770 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 19° TD): | 56 CFM            |
| Total Air Handler Vent. Air (75.31% of Supply):   | 42 CFM            |
| Total Conditioned Air Space:                      | 140 Sq.ft         |
| Supply Air Per Unit Area:                         | 0.3984 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 940.0 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0011 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 16.74 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 2,336 Btuh        |
| Total Cooling Required With Outside Air:          | 0.15 Tons         |

Note: Due to the system's negative latent gain, tonnage is based solely on sensible gain.



## Air Handler #40 - Fire Sprinkler 100A - Summary Loads

| Zn No | Description<br>Zone Peak Time   | Area<br>People<br>Volume | Htg.Loss<br>Htg.CFM<br>CFM/Sqft | Sen.Gain<br>Clg.CFM<br>CFM/Sqft | Lat.Gain<br>S.Exh<br>W.Exh | Htg.O.A.<br>Req.CFM<br>Act.CFM | Clg.O.A.<br>Req.CFM<br>Act.CFM |
|-------|---------------------------------|--------------------------|---------------------------------|---------------------------------|----------------------------|--------------------------------|--------------------------------|
| 2     | Fire Spinkler 100A<br>10am July | 20<br>0<br>200           | 380<br>16<br>0.78               | 277<br>14<br>0.68               | 6<br>0<br>0                | 2AC/Hr<br>7<br>7               | 2AC/Hr<br>7<br>7               |
|       | Zone Peak Totals:               | 20                       | 380                             | 277                             | 6                          |                                |                                |
|       | Total Zones: 1                  | 0                        | 16                              | 14                              | 0                          | 7                              | 7                              |
|       | Unique Zones: 1                 | 200                      | 0.78                            | 0.68                            | 0                          | 7                              | 7                              |



|             |              |
|-------------|--------------|
| Building    | Planning     |
| Engineering | Public Works |
| Fire        | Traffic      |

## Air Handler #40 - Fire Sprinkler 100A - Total Load Summary

Air Handler Description: Fire Sprinkler 100A Constant Volume - Sum of Peaks  
Supply Air Fan: Draw-Thru with program estimated horsepower of 0.01 HP  
Fan Input: 67% motor and fan efficiency with 2 in. water across the fan  
Sensible Heat Ratio: 0.99 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 11am in July.  
Outdoor Conditions: Clg: 79° DB, 65° WB, 69.80 grains, Htg: 29° DB  
Indoor Conditions: Clg: 75° DB, 50% RH, Htg: 72° DB

Summer: Ventilation controls outside air, ----- Winter: Ventilation controls outside air.

|                              |          |          |
|------------------------------|----------|----------|
| Zone Space sensible loss:    | 313 Btuh |          |
| Infiltration sensible loss:  | 67 Btuh  | 1 CFM    |
| Outside Air sensible loss:   | 305 Btuh | 7 CFM    |
| Supply Duct sensible loss:   | 0 Btuh   |          |
| Return Duct sensible loss:   | 0 Btuh   |          |
| Return Plenum sensible loss: | 0 Btuh   |          |
| Total System sensible loss:  |          | 685 Btuh |

|                                                            |        |
|------------------------------------------------------------|--------|
| Heating Supply Air: $380 / (.986 \times 1.08 \times 23) =$ | 16 CFM |
| Winter Vent Outside Air (42.9% of supply) =                | 7 CFM  |

|                                             |          |          |
|---------------------------------------------|----------|----------|
| Zone space sensible gain:                   | 261 Btuh |          |
| Infiltration sensible gain:                 | 6 Btuh   |          |
| Draw-thru fan sensible gain:                | 16 Btuh  |          |
| Supply duct sensible gain:                  | 0 Btuh   |          |
| Reserve sensible gain:                      | 0 Btuh   |          |
| Total sensible gain on supply side of coil: |          | 283 Btuh |

|                                                           |        |
|-----------------------------------------------------------|--------|
| Cooling Supply Air: $293 / (.986 \times 1.1 \times 20) =$ | 13 CFM |
| Summer Vent Outside Air (49.5% of supply) =               | 7 CFM  |

|                                             |         |          |
|---------------------------------------------|---------|----------|
| Return duct sensible gain:                  | 0 Btuh  |          |
| Return plenum sensible gain:                | 0 Btuh  |          |
| Outside air sensible gain:                  | 29 Btuh | 7 CFM    |
| Blow-thru fan sensible gain:                | 0 Btuh  |          |
| Total sensible gain on return side of coil: |         | 29 Btuh  |
| Total sensible gain on air handling system: |         | 312 Btuh |

|                                           |         |          |
|-------------------------------------------|---------|----------|
| Zone space latent gain:                   | 0 Btuh  |          |
| Infiltration latent gain:                 | 4 Btuh  |          |
| Outside air latent gain:                  | 25 Btuh |          |
| Total latent gain on air handling system: |         | 29 Btuh  |
| Total system sensible and latent gain:    |         | 341 Btuh |

## Check Figures

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Total Air Handler Supply Air (based on a 20° TD): | 13 CFM            |
| Total Air Handler Vent. Air (49.50% of Supply):   | 7 CFM             |
| Total Conditioned Air Space:                      | 20 Sq.ft          |
| Supply Air Per Unit Area:                         | 0.6734 CFM/Sq.ft  |
| Area Per Cooling Capacity:                        | 704.4 Sq.ft/Ton   |
| Cooling Capacity Per Area:                        | 0.0014 Tons/Sq.ft |
| Heating Capacity Per Area:                        | 34.26 Btuh/Sq.ft  |
| Total Heating Required With Outside Air:          | 685 Btuh          |
| Total Cooling Required With Outside Air:          | 0.03 Tons         |