Facilities Management Department

Project #   ASU Wilson Hall Replacement - Utility Comparison Existing vs. 5 floor and 6 floor building.

Date: April 8, 2020

Mechanical and Plumbing

Cooling
Wilson Hall Existing  83 tons peak - 4 gpm/ton - 6° dT - 4" chws/r piping feed 8.3 fps.
Wilson Hall 5 story  343 tons peak - 1.7 gpm/ton - 14° dT - 6" chws/r piping feed required. 43% incr.
Wilson Hall 6 story  411 tons peak - 1.7 gpm/ton - 14° dT - 8" chws/r piping feed required. 53% incr.

Heating
Wilson Hall Existing  721 lbs/hr peak  1-1/2" steam feed required, 4" steam feed existing.
Wilson Hall 5 story  3,015 lbs/hr peak  3" pipe required, 4" steam feed existing, 76% incr.
Wilson Hall 6 story  3,618 lbs/hr peak  4" pipe required, 4" steam feed existing, 80% incr.

Plumbing CW supply - HW supply
Wilson Hall Existing  63 gpm CW, 21 gpm hw, 2-1/2" CW feed existing. 2"HW feed existing.
Wilson Hall 5 story  157 gpm CW, 40 gpm hw, 3" CW feed reqd. gen HW at bldg. 60% incr. *
Wilson Hall 6 story  180 gpm CW, 44 gpm hw, 4" CW feed reqd. gen HW at bldg. 65% incr. **

*booster pump potentially needed.
**booster pump required.

Plumbing Sanitary Waste
Existing is 4"
For the 5 or 6 floors change to: 6" at 1/4" per ft. slope -or- 8" at 1/8" per ft. slope.
A lift station may be necessary due to existing conditions and connection depth to the west.

Notes:
Cooling load estimates based on 350 sq.ft. per ton.
Heating load estimates based on 30 btu/hr.
Plumbing CW estimate based on fixture counts using ASPE (IPC/UPC) WSFU assessment and 65 psig.
The RED outline, 5 and 6 floor proposed is overlaid on the BLUE dashed existing 3 floor. Note that the north / south utilities are in a tunnel directly under the buildings. Note that the east / west utilities are in a tunnel, south side, which may be covered by the proposed breezeway and south entry. Column footers may conflict with existing tunnel.

The north/south chilled water piping will need to increase. Further investigation is needed to determine the impacts north of Wilson hall.

Please feel free to address questions or comments to the undersigned.

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