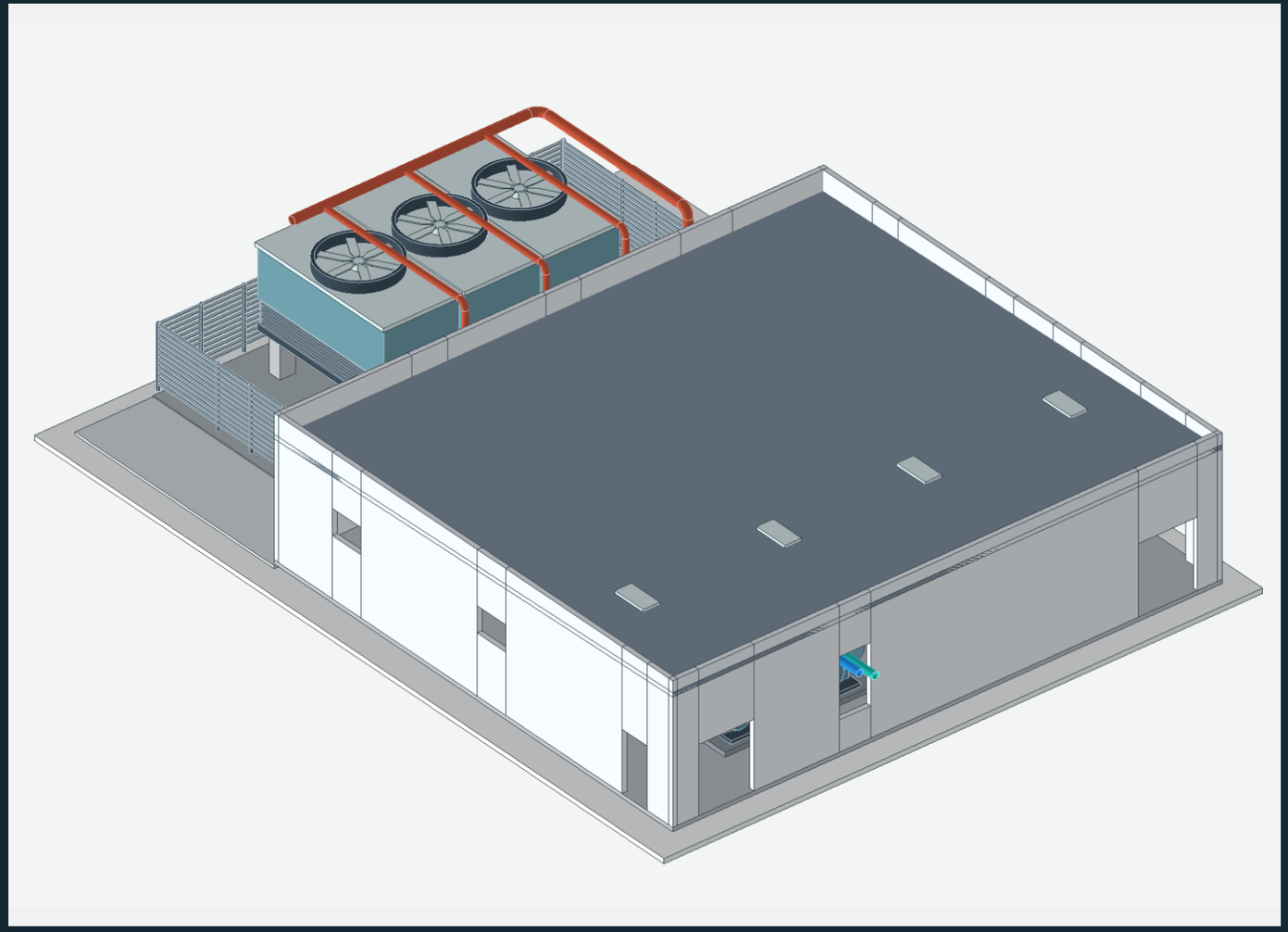
Chiller plant from 2D to 3D

A demonstration study developed in Autodesk Inventor.

Reconstructed from publicly available 2D technical drawings. Components and pipework without documented dimensions are indicative.



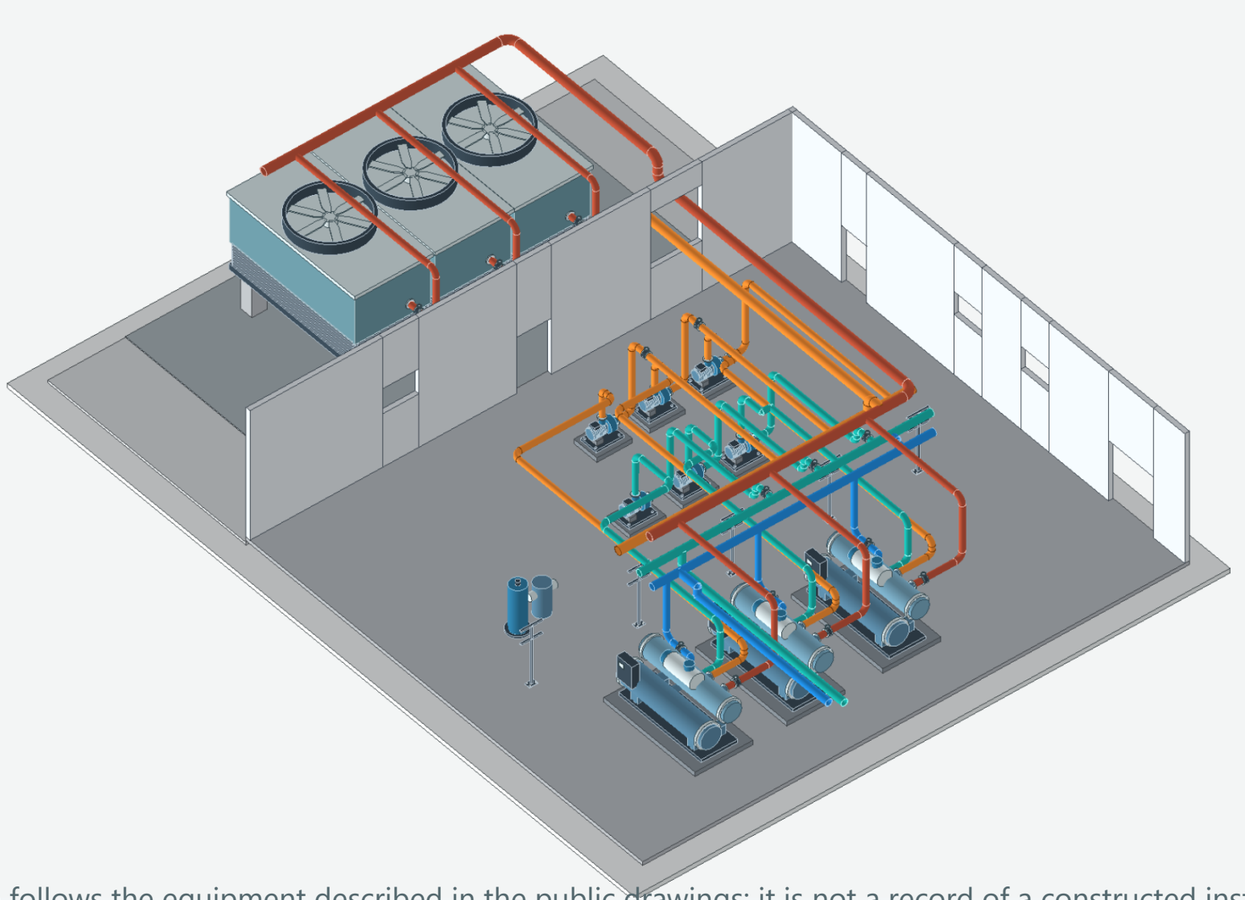
The chiller plant

The equipment room, outdoor yard and main circuits brought together in one assembly.

3
chiller units

3
evaporative cooling towers

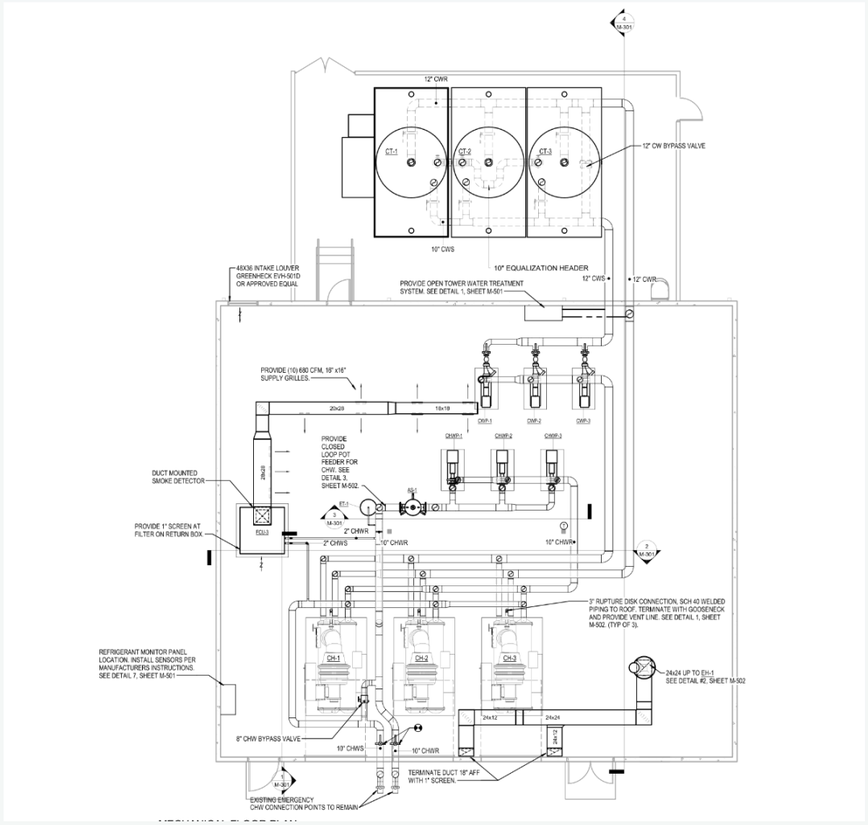
6
main pumps



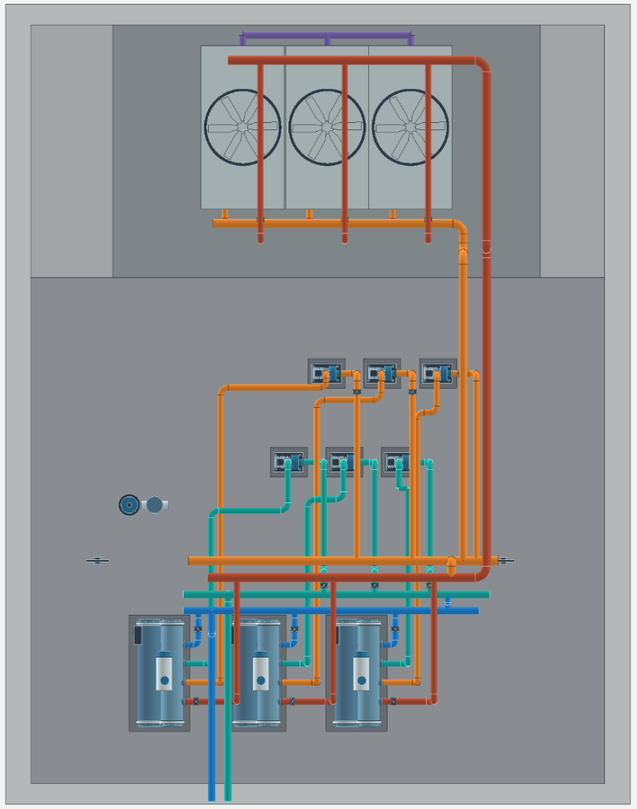
The configuration follows the equipment described in the public drawings; it is not a record of a constructed installation.

The 2D plan and the top view

The comparison keeps the towers to the north and the chillers along the south side of the room.



Reference 2D technical extract



Top view of the model with the enclosure hidden

Public technical extracts without title blocks or identifying details. Original annotations retained.

Building and outdoor yard

The slab, walls and roof provide a shared reference for the equipment.

21.13 × 18.69 m

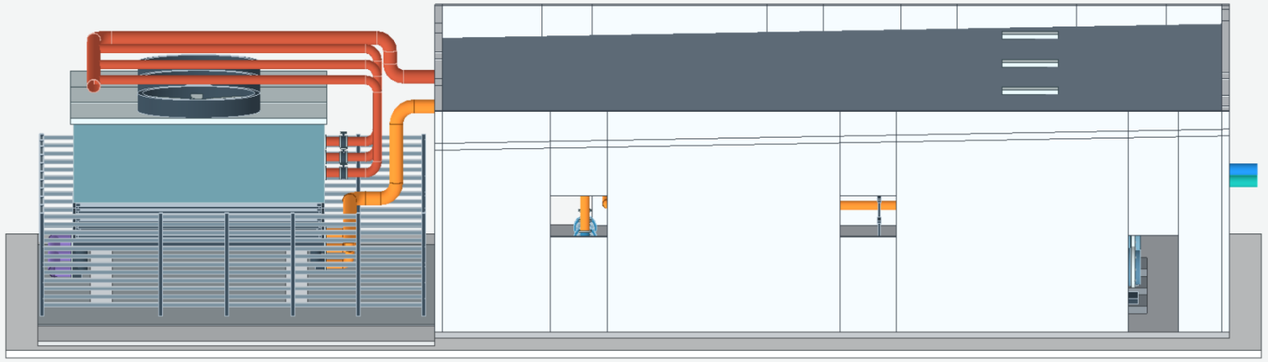
Nominal equipment-building footprint stated in the drawings.

5.22 m

Top of wall above the slab level.

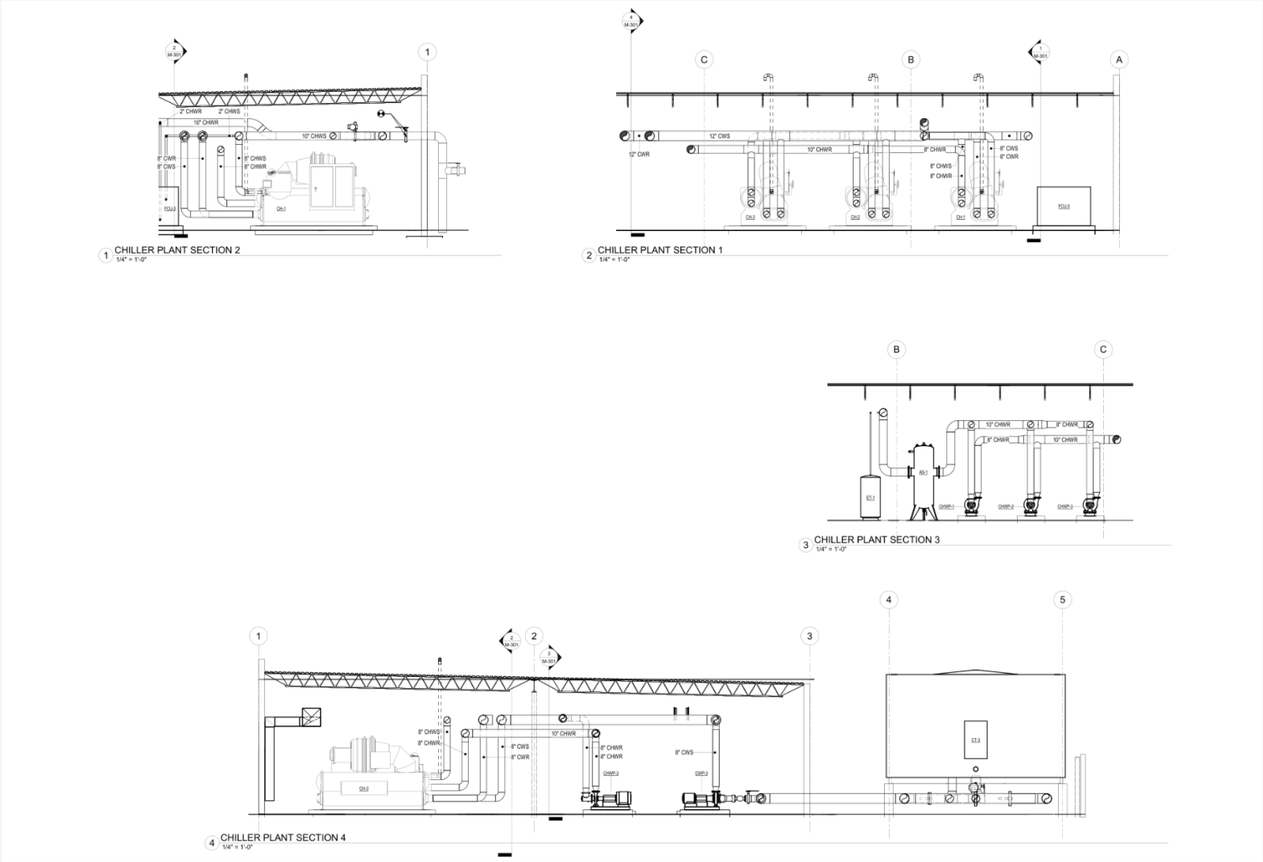
15.77 m

Width of the tower yard, extending approximately 9.35 m to the north.



Sections complete the dimensions

Views perpendicular to the plan clarify changes in level and relationships between components.



Vertical dimensions

Sections help position headers relative to the equipment, floor and roof.

Connections to the outside

The sections show how the equipment room, pumps and tower area relate to each other.

Pipework at different levels

Comparing plans and sections helps reconstruct pipes that pass above other circuits.

Public technical extracts without title blocks or identifying details. Original annotations retained.

Chiller units

Three machines arranged in a row along the equipment-room wall.

CH-1, CH-2 and CH-3

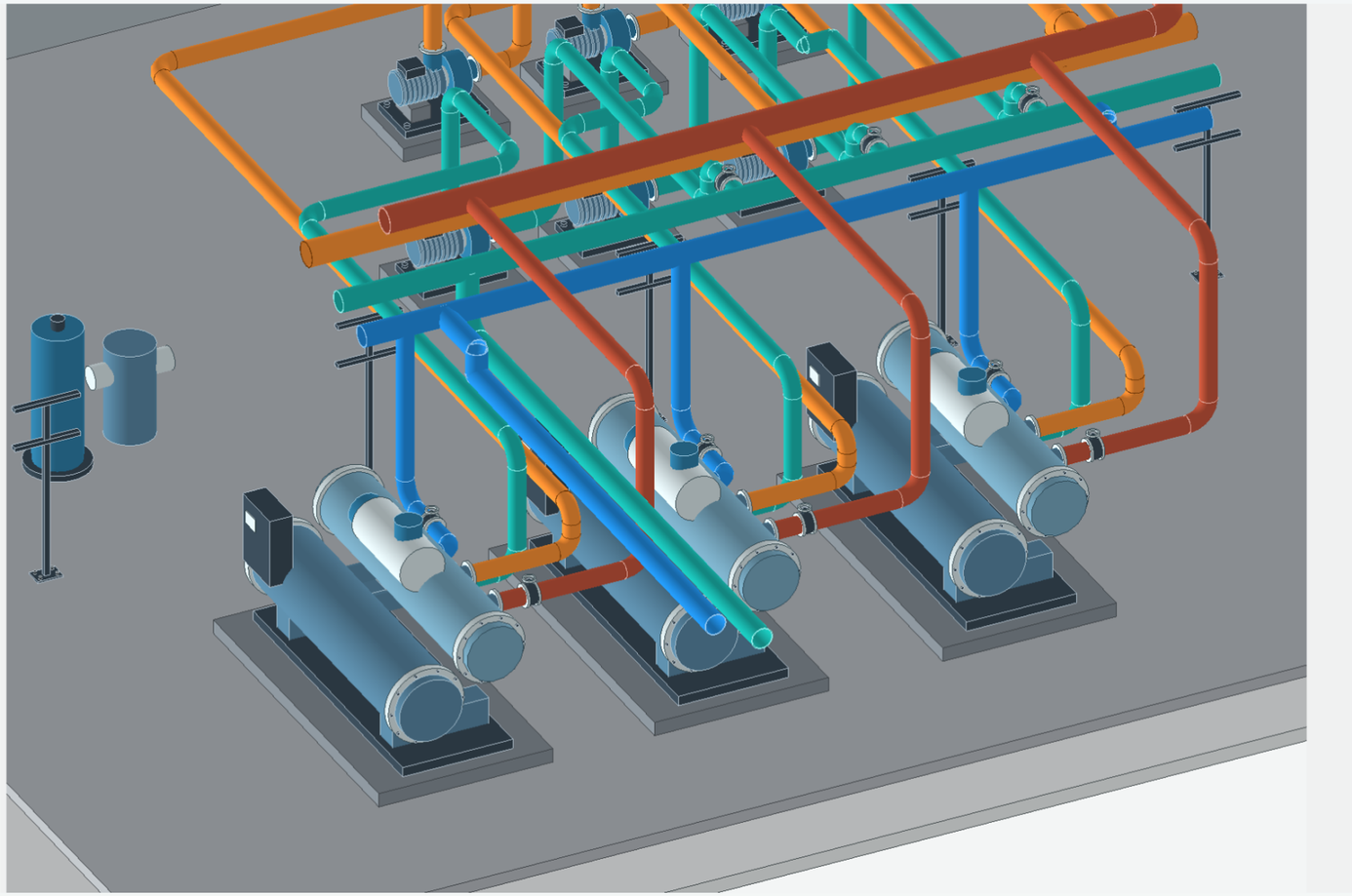
Each unit cools the primary-circuit water and rejects heat to the cooling-tower circuit.

400 TR per unit

Nominal capacity stated in the drawings, equivalent to approximately 1.41 MW per machine.

Envelopes and connections

The model reconstructs equipment envelopes and main connections. Internal details require supplier drawings.



Evaporative cooling towers

Three towers connect to the condenser-water circuit in the outdoor yard.

CT-1, CT-2 and CT-3

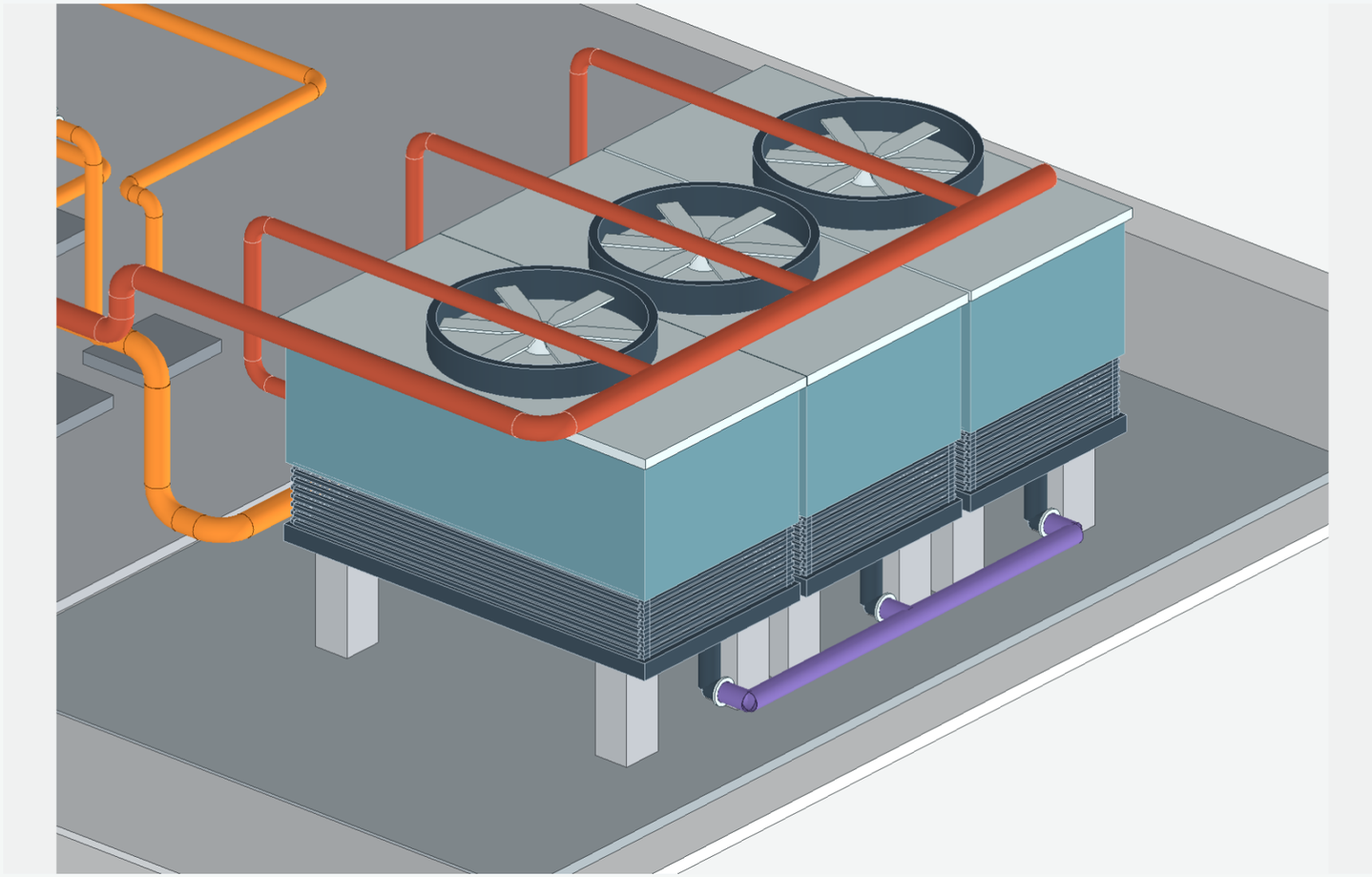
The towers occupy three adjacent positions on the north side.

Connections

The 3D view clarifies the relationship between equipment, bases and incoming pipework.

External envelope

The bodies and fans help explain volumes, distances and access routes in the yard.



Pumps and fittings

Two rows of pumps serve circuits with distinct functions.

CHWP-1, CHWP-2 and CHWP-3

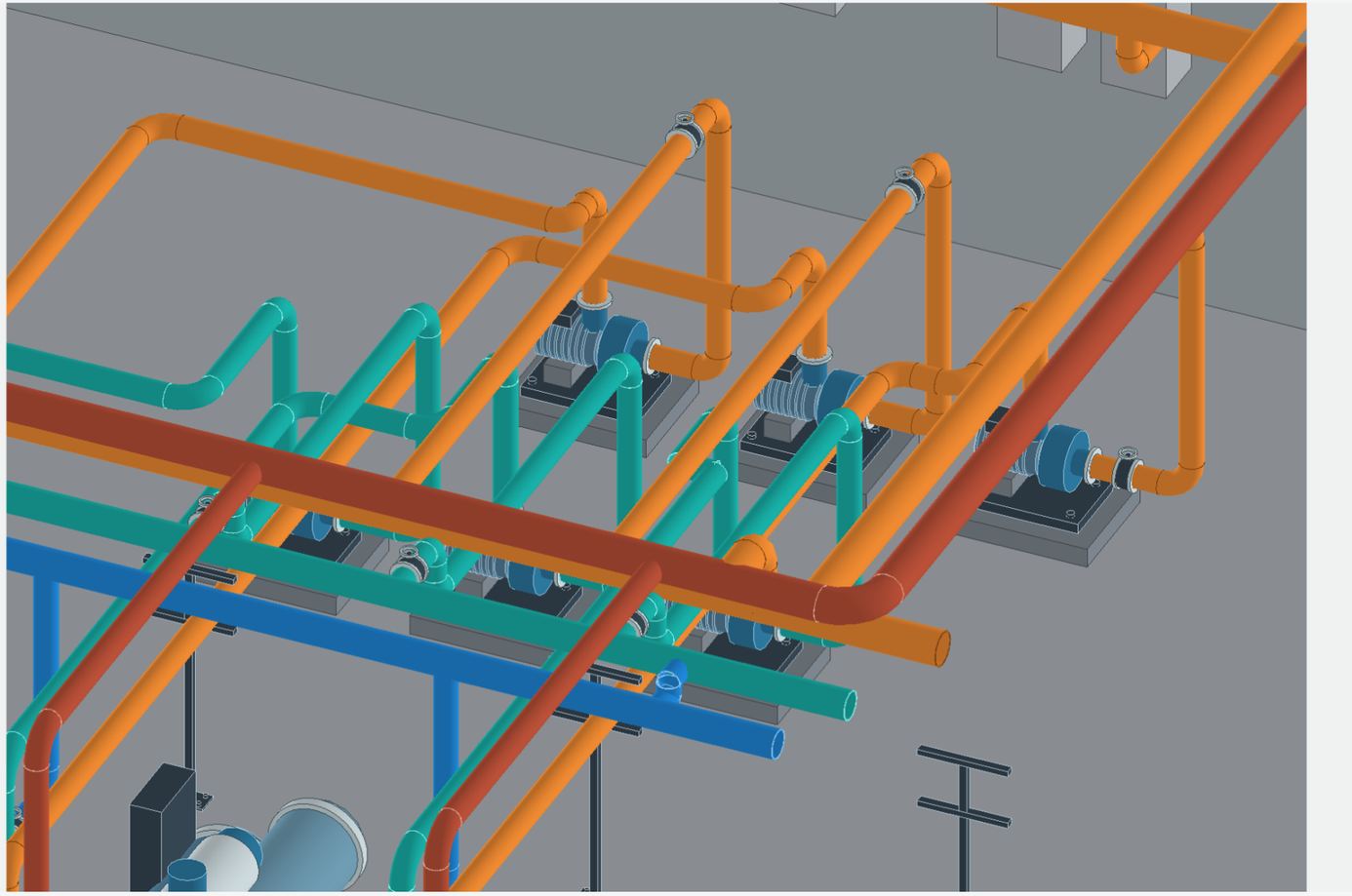
Pumps serving the chilled-water circuit.

CWP-1, CWP-2 and CWP-3

Pumps serving the condenser-water circuit.

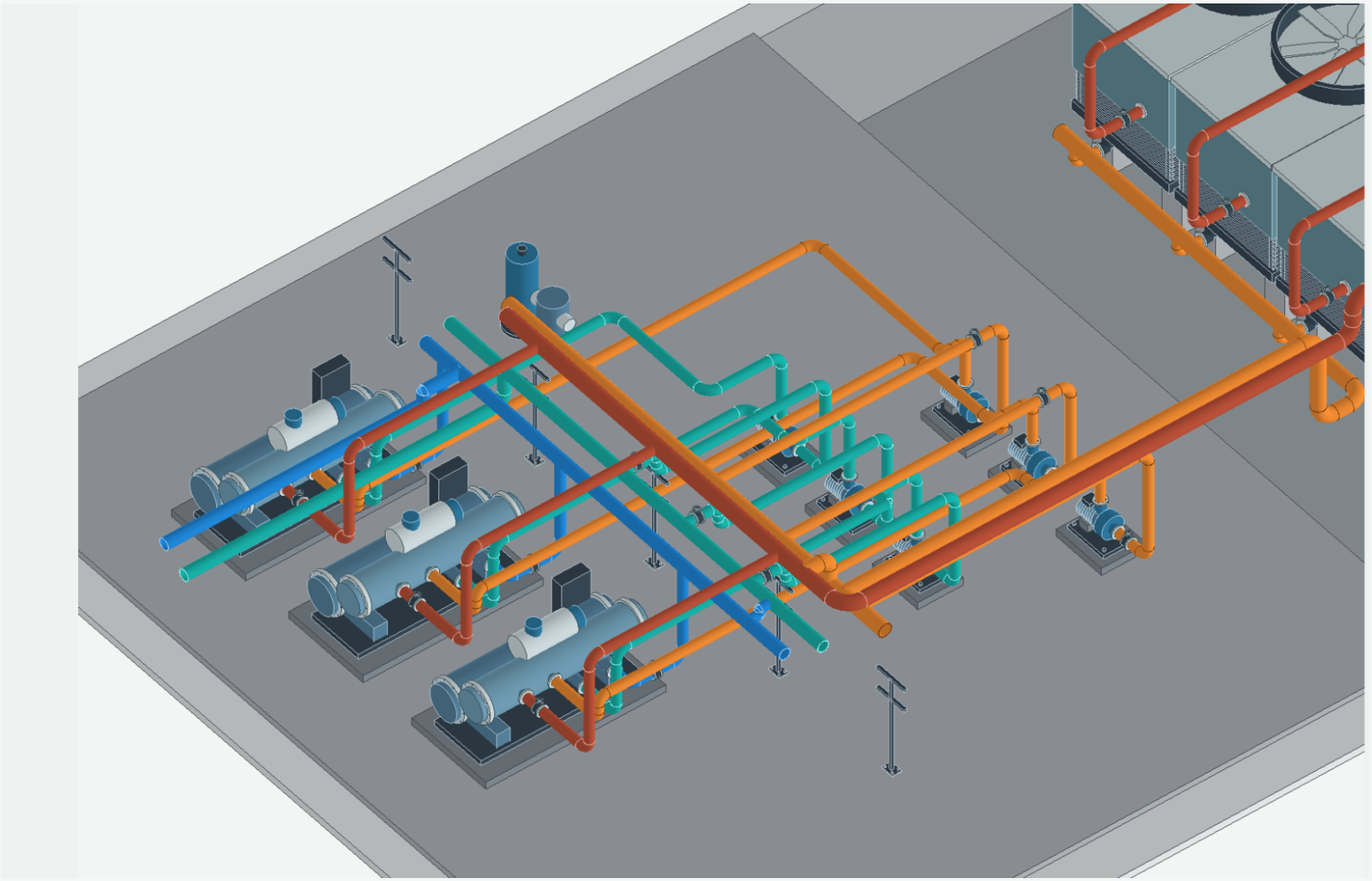
Typical arrangement

The 2D details show the base, fittings, valves and flexible connections for a typical pump.



Supply and return

Indicative routes of the main branches between the equipment room and the outdoor yard.



CHWS
Chilled-water supply

CHWR
Chilled-water return

CWS
Condenser-water supply

CWR
Condenser-water return

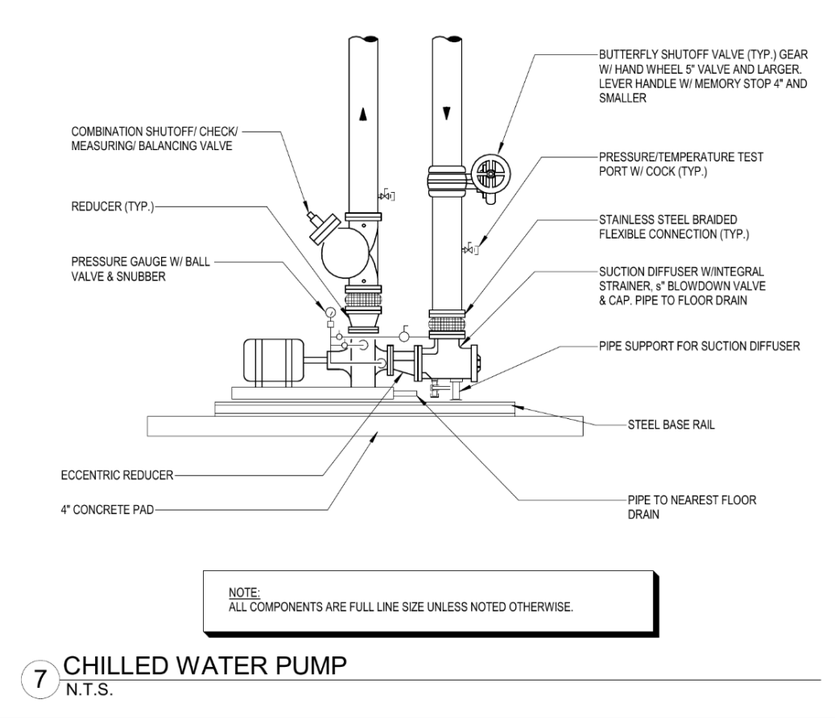
EQ
Cooling-tower equalisation

8”, 10”, 12”

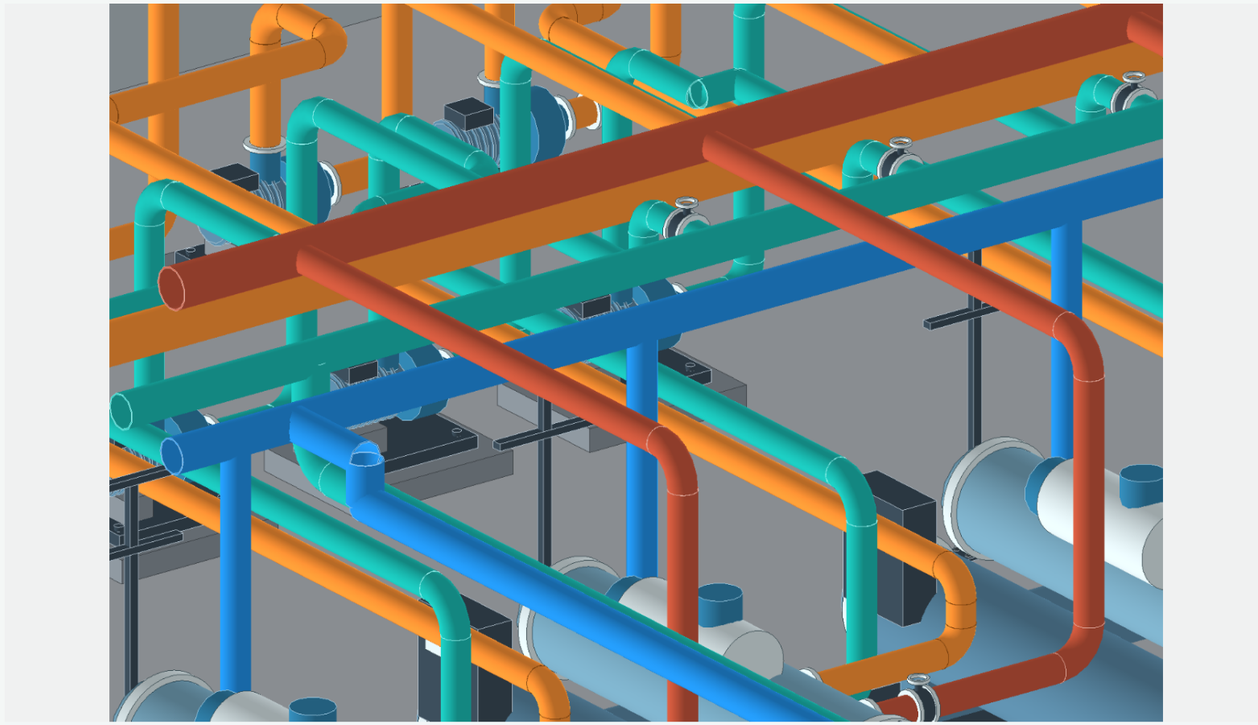
Nominal diameters recurring in the reference sections.

Valves, flanges and supports

Comparing a 2D detail and the 3D assembly makes the connections easier to understand.



Typical pump installation detail



Detail of the 3D model

Reducers, valves and flexible connections are reconstructed to illustrate the arrangement of the components.

Public technical extracts without title blocks or identifying details. Original annotations retained.

What the 3D assembly makes possible

The same model can be examined from different viewpoints in Autodesk Inventor.

Spatial understanding

Hide the enclosure and rotate the model to follow the connections between machines.

Envelopes and access

Measure distances, create sections and assess maintenance clearances.

Coordination

Isolate a circuit to examine routes, penetrations and potential clashes.

Technical communication

Generate isometric views, elevations and details from the same assembly.

Checks depend on the available dimensions and the level of detail in the model.

What can be done starting from 2D

With the plan alone

Start with the horizontal arrangement of walls, equipment and visible routes.

With sections and dimensions

Add heights, diameters, supports and connections to reconstruct the geometry.

With supplier drawings

Refine connections, variant envelopes and the internal geometry of the equipment.

A digital study to understand and communicate.

A demonstration reconstruction from public 2D drawings. Undimensioned geometry and pipework are indicative; this model is not construction documentation.