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Ref: 22024

28th June 2020

Brett Hutton
JCDecaux
Unit 2-3, 182-190 Euston Rd,
Alexandria NSW 2015

RE: Western Distributor Digital Signage
Lot 1012 DP870307, Pyrmont Sydney, NSW, 2009
Structural Feasibility Report

1.0 Introduction

This assessment has been conducted by Dennis Bunt Consulting Engineers Pty Ltd (DBCE) at the request of JCDecaux. No responsibility under the law of contract, tort or otherwise for any loss or damage is accepted.

The purpose of this assessment is to investigate the structural feasibility of a "Supersite" digital sign located on Sydney Trains land adjacent to the Light Rail Station.

The appearance of the sign is based on the architectural drawings by Tzannes 21034/ 000(C), 100(B), 200(C), 300(D) and 900(B). It is to be "Hero" sign, ie have a striking look different to a typical advertising sign.

The top of the sign will be located approximately 21.8m above the ground and 12m above the Western Distributor elevated roadway so the sign can be viewed by outbound traffic on the Western Distributor.

The digital screen will have a landscape orientation and approximate dimensions of 12.48m x 3.2m.

The structure will consist of a column 3m in diameter with the sign box fixed to the top of the column and cantilevering to one side. The structure will consist of steel tubes forming an open appearance with mesh between the tubes for plants to grow on.

2.0 Site Description / Footing

The sign is to be located on Sydney Trains land adjacent to the Light rail station.

The structures column will be fixed to a 3m high concrete plinth located on sloping ground that visually appears to be rock. Depending on a future geotechnical report the concrete plinth will be either

1. Fixed to the top the rock by drilling anchors into the rock surface
2. Fixed to concrete piles that will extend into the ground and below the surface of the adjacent track if the rock is of insufficient strength to support the sign loads.

The vertical steel tubes that make up the column will continue pass the top of the concrete plinth and will be bolted to the side of the plinth.

Access to the digital sign will be via a door placed in the base of the column above the concrete plinth. The door will be accessed from the light rail platform by going down a ladder onto the tracks and up a ladder on the retaining wall opposite the platform. Access will be done under the supervision of a Protection Officer. A ladder will be located inside the column so a technician can climb up to the horizontal box structure on the top of the column and access the back of the digital screen for maintenance. The ladder will also enable access to the plants growing on the structure for upkeep of the plants. There will be platforms inside the column at 3m centres and a platform behind the digital screen.

3.0 Structure

The structure is to be open in appearance. It is to consist of steel tubes with steel mesh between the tubes for plants to grow on.

For transport purposes the structure will be divided into 3 sections, the vertical column, a transition piece, and the box supporting the digital screen.

The vertical column will be 3m in diameter and consists of twelve 200mm diameter steel tubes. There will be horizontal tubes located inside the vertical tubes at 3m centres vertically. The vertical and horizontal tubes structurally form a Vierendeel truss that can support the weight of the sign box and the bending moments when wind or earthquake loads are applied laterally to the sign box.

The vertical members will start to flare out near the top of the column and form a transition piece.

A horizontal box structure will cantilever off the transition piece and support the digital screen.

The flared section and the box are structurally like the column in that they consist of 200mm diameter tubes with mesh infill for plant growth except for the front of the sign box where the digital screen is located. There will be vertical 75mm RHS members in the front of the box

for the digital screen to fix to. The sloping and horizontal members and vertical members behind the screen will form a welded frame to resist bending and deflection.

4.0 Structural Design Specifications

Importance level 2 (AS1170.0)

Digital screen weight 60Kg/m2

Wind loads to AS1170.2

- Design life 50 years
- Region A2
- Terrain category 2.5
- Region Wind speed ULS V_{500} = 45m/s
- Region Wind speed SLS V_{25} = 37m/s

Earthquake loads to AS1170.4
Kp = 1.3
Z= .08
Soil Classification = Ce (minimum)
Earthquake Design Cat = II

DBCE has done preliminary modelling of the structure using the computer program "Microstran".

The total weight of the steel structure modelled was found to be approximately 34.5 tonnes.

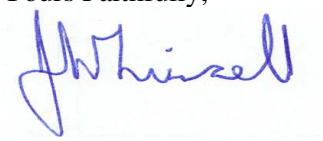
5.0 Conclusions/Recommendations

Preliminary analysis of the structure done by DBCE found the structure to be satisfactory for both strength and deflection. Refer to the appendix A.

A geotechnical engineer will need to be engaged to investigate the ground conditions at the base of the column.

If you have any questions, please do not hesitate to ring the undersigned on 9451 7757

Yours Faithfully,



John Linsell BE(Hons), MIEAust, CPEng, NPER(Struct)
for Dennis Bunt Consulting Engineers Pty Ltd.

Appendix A

Preliminary Structural Analysis

Microstran V9

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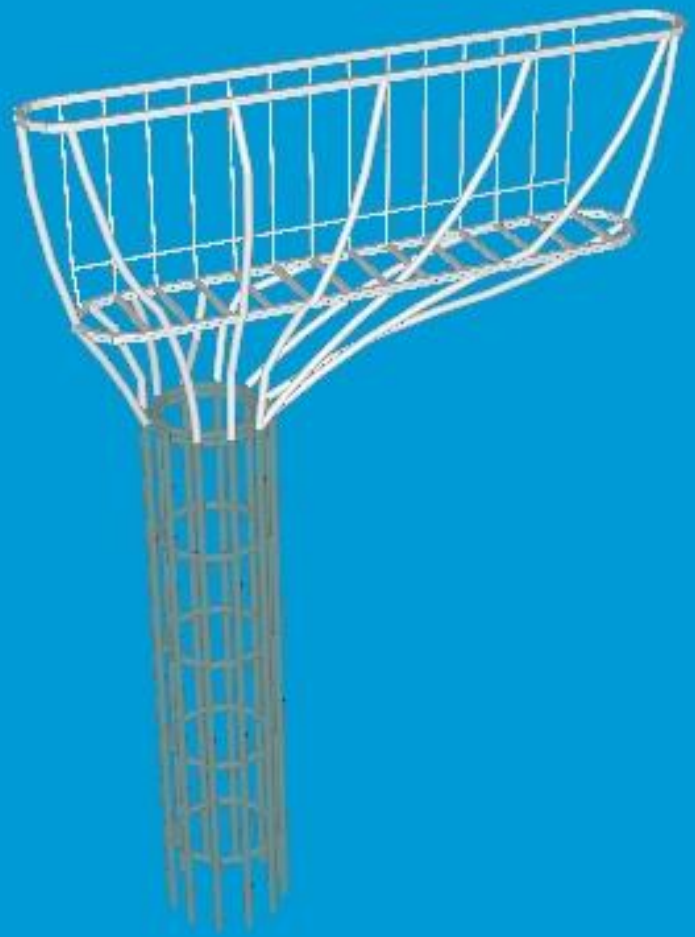
Microstran V9



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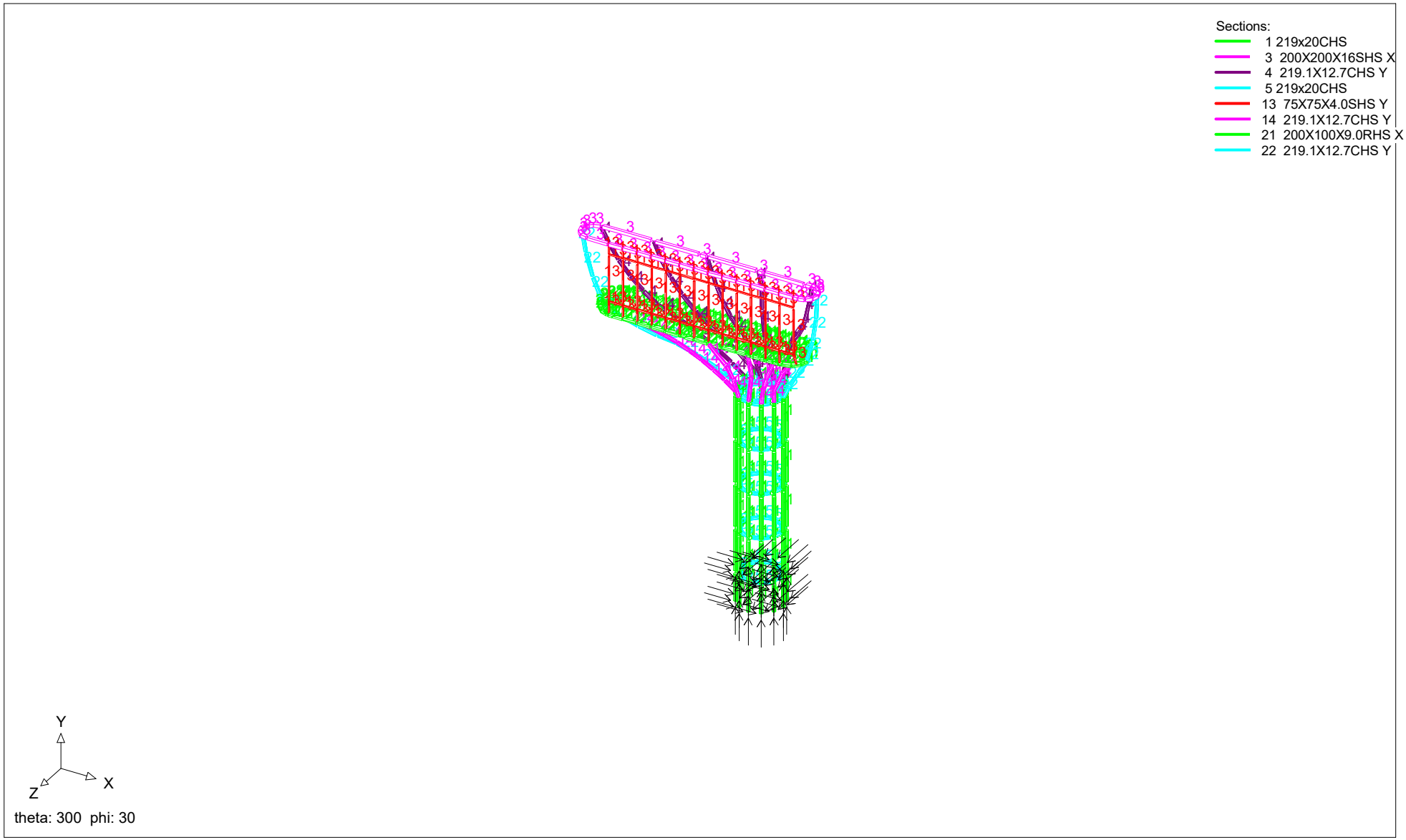
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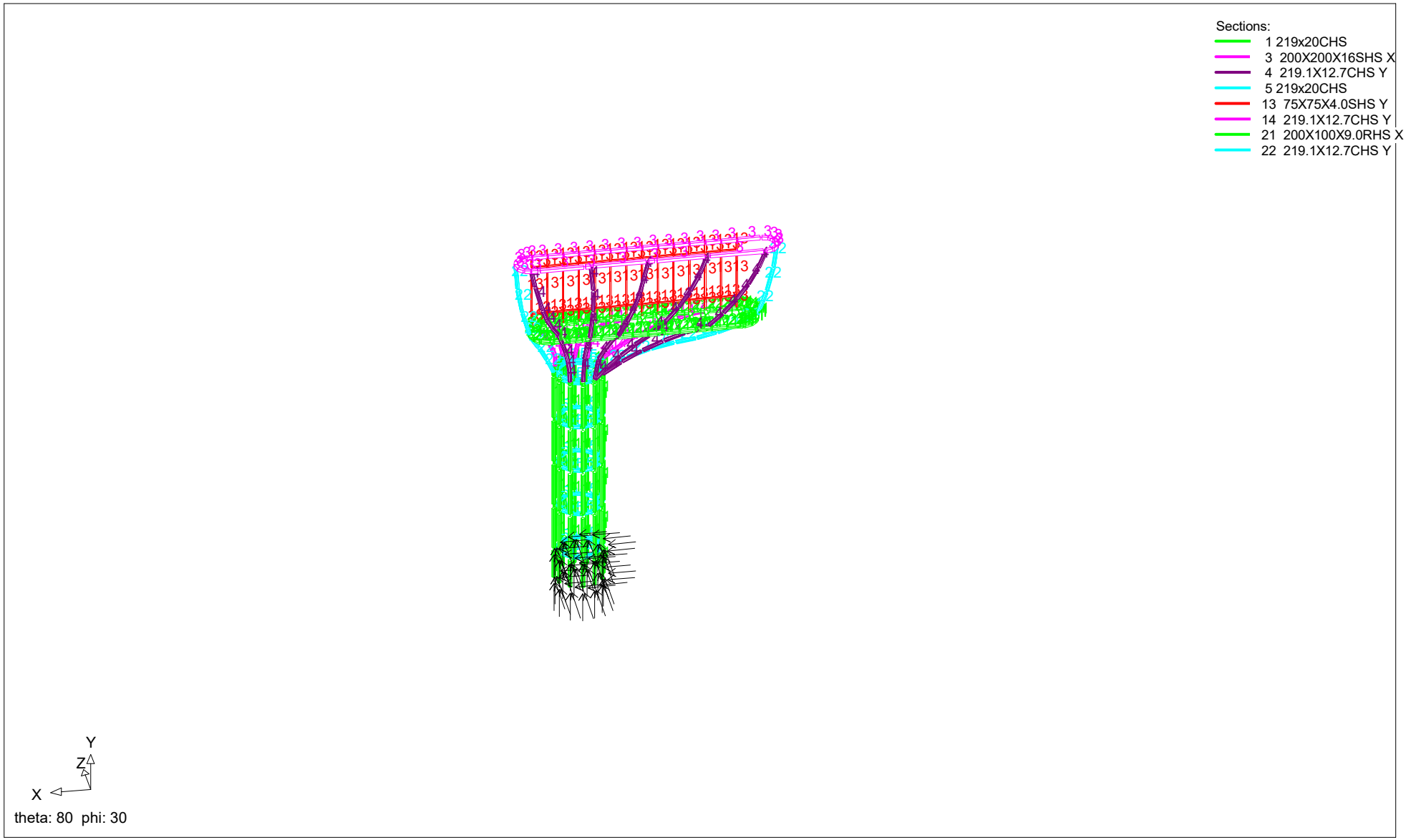
3 200X200X16SHS X
4 219.1X12.7CHS Y
5 219x20CHS
13 75X75X4.0SHS Y
14 219.1X12.7CHS Y
21 200X100X9.0RHS X
22 219.1X12.7CHS Y
Y
Z
X
theta: 300 phi: 30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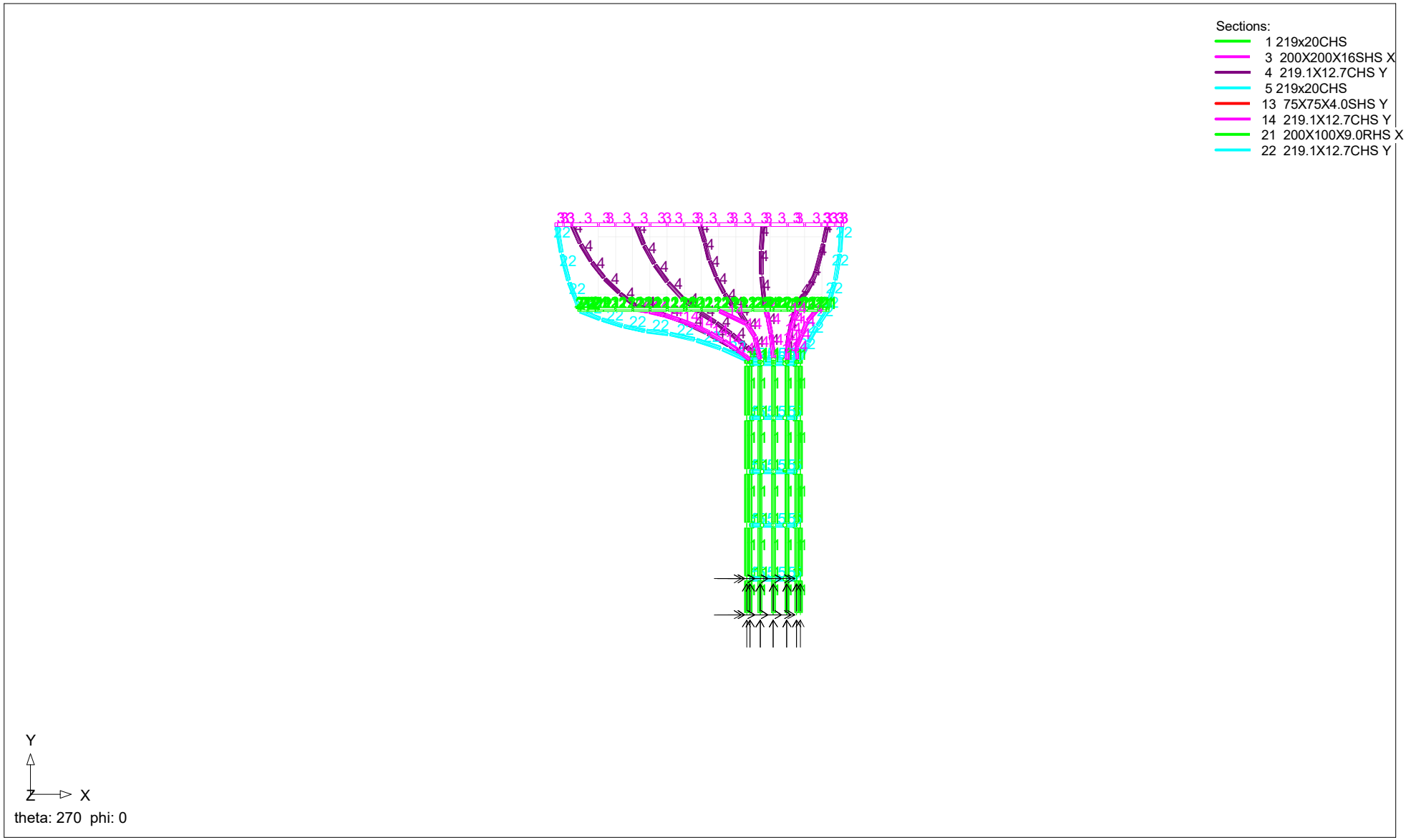
5 219x20CHS
13 75X75X4.0SHS Y
14 219.1X12.7CHS Y
21 200X100X9.0RHS X
22 219.1X12.7CHS Y
Y
Z
X
theta: 80 phi: 30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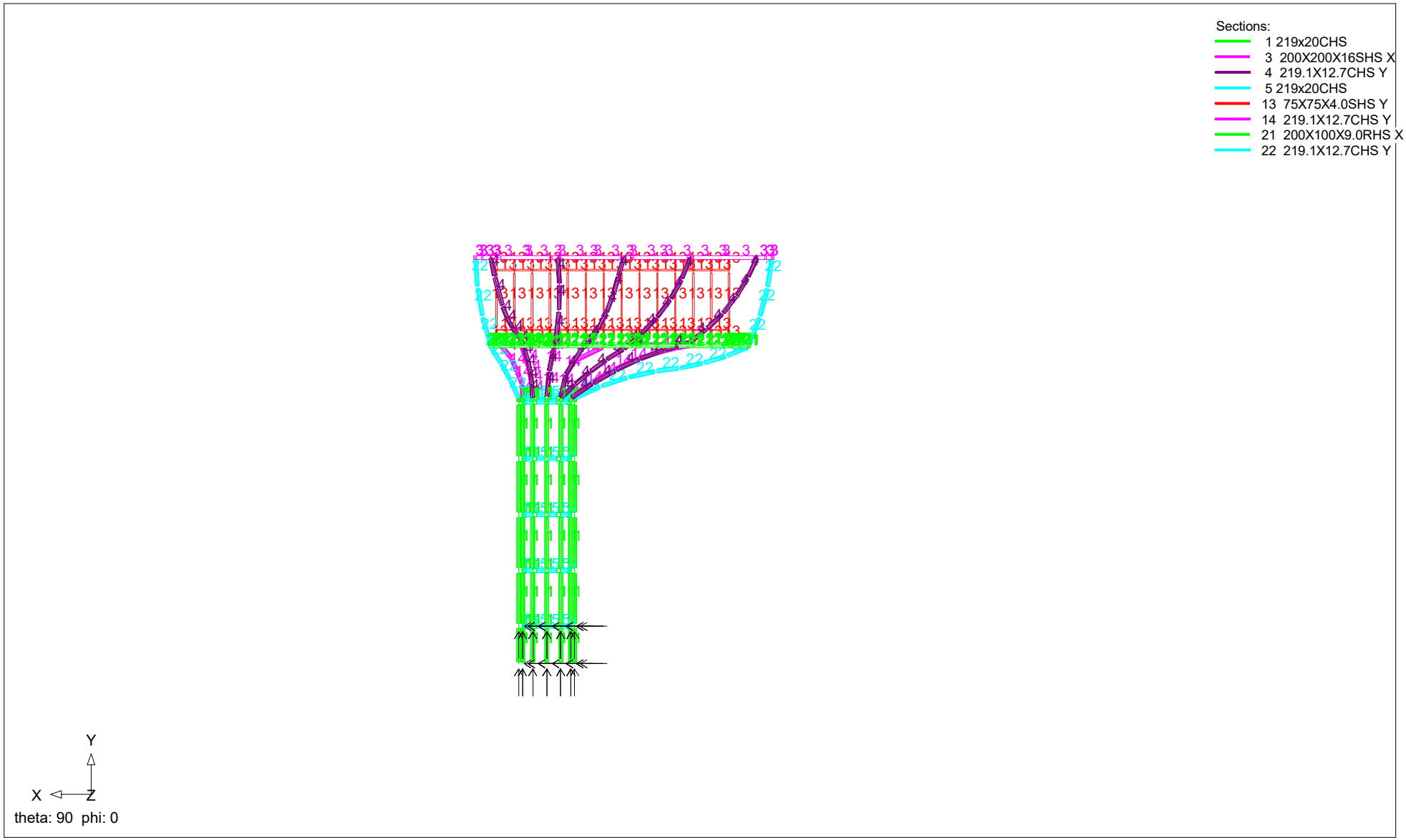
22 219.1X12.7CHS Y
Y
Z
X
theta: 270 phi: 0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21 200X100X9.0RHS X
22 219.1X12.7CHS Y
Y
X
Z
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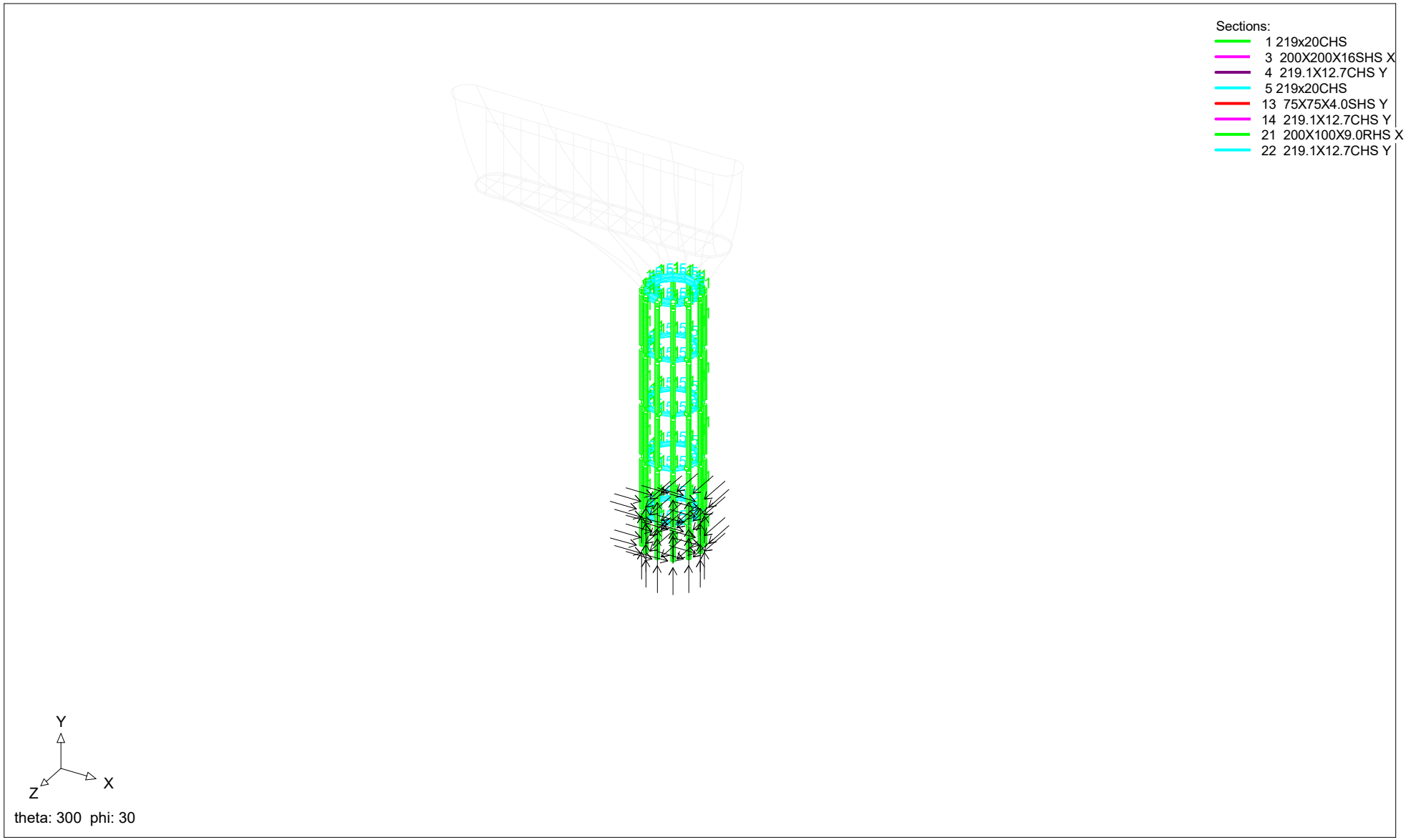
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