RAI 03.07.02-21

QUESTION:

For SSE ground motions, 10 CFR Part 50, Appendix S requires that SSCs will remain functional and within applicable stress, strain, and deformation limits and the evaluation must take into account soil-structure interaction (SSI) effects and the expected duration of the vibratory motion. STP is a deep non-uniform soil site which is modeled with a large number of soil layers in the SSI analysis. Use of any SASSI based code for STP application must be carefully verified and validated for the project specific applications. STP had identified a numerical instability problem in the original SSI analyses using ACS SASSI NQA Version 2.2.1. In view of the identified instability with ACS SASSI, STP has decided to use SASSI 2000, Version 3.0 for SSI analyses and performed additional project specific validation for this SASSI version. However, to gain additional assurance and confidence in the SSI analysis results, the staff as part of the review of Section 3.7 STP RCOL, will perform a confirmatory analysis to verify acceptability of the design basis STP SSI analysis results for the UHS/RSWPH. As such, the applicant is requested to provide the following information for the confirmatory SSI analysis of the UHS/RSWPH model for the mean soil case:

1. Electronic files of the input acceleration time histories for the SASSI analysis
2. Electronic files of the input data for the SASSI program modules: SITE, POINT3, HOUSE, ANALYS, MOTION, and STRESS.
3. The result of maximum accelerations, transfer functions and acceleration response spectra at a few selected structure nodes calculated from separate input in the x, y and z directions. The output locations should be identified by the node numbers and direction in the model and shall include nodes on the basemats, on the roofs and different wall elevations, both in the middle and at periphery of both the UHS basin and RSWPH structures.

In addition to the electronic input files, the applicant is requested to provide the following clarifications, if not already provided in the FSAR:

1. A sketch showing the building layout and dimensions
2. A table summarizing the layer thicknesses and properties for the mean soil case
3. A table summarizing the added mass properties for water in the basin
4. A list of frequencies used in the analysis including the cut-off frequency

RESPONSE:

Part 1: Electronic Input and Output Files

Attached files provide the requested input and output files. All analysis files are in the units of kip, feet, and seconds. The files for both the ultimate heat sink (UHS) and reactor service water pump house (RSWPH) include:

1. Input time histories are provided in the folder "time histories":

   - "MODIFH1.acc" for accelerations in the model Y-direction (North-South Direction)
   - "RMODIFH2.acc" for accelerations in the model X-direction (East-West Direction)
   - "MODIFV1.acc" for accelerations in the model Z-direction (Vertical Direction)

2. The following input files are provided:

   - SITE, POINT3, HOUSE, and ANALYS modules are in the folder "SitePointHouseAnalys". Please note the following:

     - File "UHS2aBE.hdat" for HOUSE input – note that this file uses SASSI2000 thick shell elements and may not be compatible with other SASSI versions.
     - File "UHS2aBEX(freq).SDAT" is for SITE input in the X direction where (freq) represents the four digit frequency number as listed in the frequencies of analysis table provided in Part 2 of this response.
     - Files "UHS2aY.sdat" and "UHS2aZ.sdat" are for SITE input in the Y and Z directions, respectively. Note that these files are for restart only after X direction analysis has been run.
     - File "UHS2a.PDAT" is for POINT3 input. Files "UHS2aX.ADAT", "UHS2aY.ADAT", and "UHS2aZ.ADAT" are for ANALYS input in the X, Y and Z directions, respectively.

   - Input file "UHS2a.mdat" in the folder "Motion" is for input to MOTION to request transfer functions, peak accelerations, and response spectra.
   - Input file "UHS2stress_shell01.sdat" in the folder "Stress" is for input to STRESS to request the shell element stresses for the first 350 shell elements.

   The analyses are first run for each frequency in the X direction, and then, for the Y and Z directions, using restart option. Each run of ANALYS produces a tape 8 file for the frequency and direction of analysis. Frequencies for each direction are subsequently combined using the COMBIN module which requires renaming the tape 8 files to tape 21 and tape 22 and requires no other input.

3. Output MOTION files for transfer functions, peak accelerations, and response spectra are in the folder "Motion". The outputs are in the files "UHS2aBEX.mout", "UHS2aBEY.mout", and "UHS2aBEZ.mout" for the X, Y, and Z directions of motion, respectively.

   The following locations were used for generation of output in the MOTION file. See the following Figure 03.07.02-21a for location of the nodes.

   - Node 1561Corner of pump house base slab/wall intersection,
   - Node 8614 corner of basin slab, wall intersection,
   - Node 9183 center of basin base slab,
   - Node 15101 wall of pump house,
   - Node 16544 center of pump house roof slab,
   - Node 16765 mid-height wall of basin at the intersection with the buttress,
   - Node 17920 mid height wall of cooling tower support structure,
   - Node 18377 top corner of cooling tower support structure.

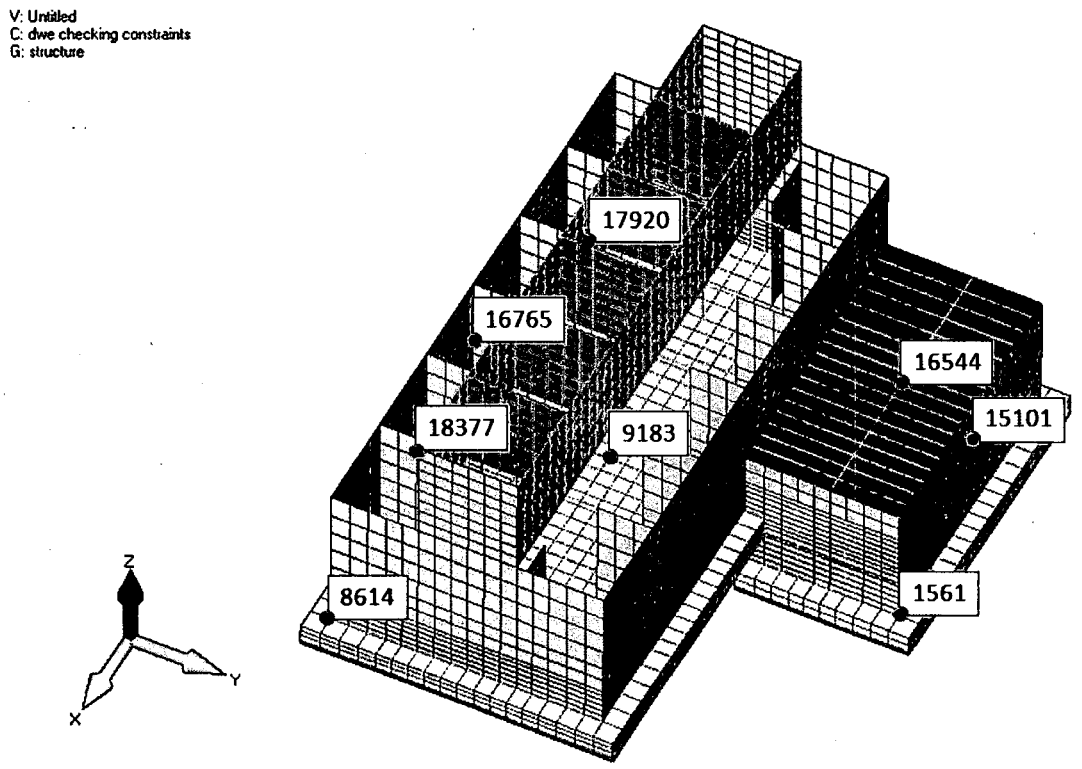


Figure 03.07.02-21a: Node Locations for UHS - Pump House Model Output

Additionally provided are the output files for STRESS representing the thick shell element stresses for the first 350 shell elements. The output is provided in the folder "Stress" in the files "UHS2BEXstress_shell01.STOUT", "UHS2BEYstress_shell01.STOUT", and "UHS2BEZstress_shell01.STOUT" for the X, Y, and Z directions of motion respectively. These first 350 shell elements represent the lowest shells in the pump house walls as highlighted in Figure 03.07.02-21b below:

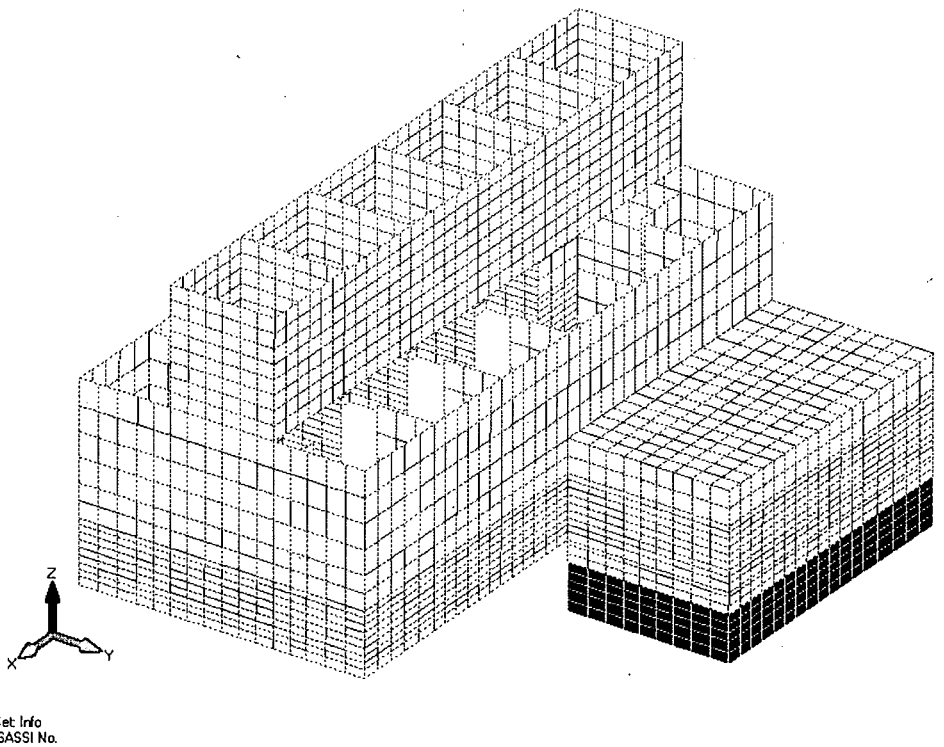


Figure 03.07.02-21b: Shell Elements in UHS – Pump House Model. Elements 1-350 Highlighted in Red

Part 2: Additional Information

1. Attached Figures 03.07.02-21c through 03.07.02-21g provide building layout and key dimensions.

2. The layer thicknesses and properties for the mean soil case are shown in the table below:

Layer No.	Thickness (ft)	Unit wt (ksf)	S Wave Velocity (ft/s)	P Wave Velocity (ft/s)	S Wave Damping	P Wave Damping
1	2.75	0.124	548.1	1475.9	0.012	0.012
2	3.25	0.124	579.0	1559.0	0.013	0.013
3	3.50	0.124	599.6	1731.8	0.014	0.014
4	3.50	0.124	596.5	3041.5	0.016	0.016
5	3.50	0.124	598.4	3051.3	0.016	0.016
6	3.50	0.124	598.9	3054.0	0.017	0.017
7	3.00	0.124	598.3	3050.9	0.018	0.018
8	3.00	0.122	680.1	3468.0	0.020	0.020
9	4.00	0.121	730.8	3726.7	0.021	0.021
10	2.00	0.121	733.4	3739.4	0.022	0.022
11	4.00	0.122	755.1	3850.4	0.018	0.018
12	4.00	0.122	777.3	3963.5	0.015	0.015
13	4.00	0.122	774.6	3949.6	0.016	0.016
14	4.00	0.122	771.2	3932.2	0.017	0.017
15	4.00	0.122	771.7	3935.0	0.017	0.017
16	5.00	0.122	856.8	4368.6	0.017	0.017
17	5.00	0.122	924.8	4715.5	0.017	0.017
18	2.00	0.122	925.0	4716.5	0.017	0.017
19	5.50	0.122	924.2	4712.6	0.017	0.017
20	5.60	0.122	939.9	4763.9	0.017	0.017
21	6.10	0.123	1012.5	5000.0	0.014	0.014
22	6.10	0.123	1010.3	5000.0	0.015	0.015
23	6.10	0.123	1008.2	5000.0	0.015	0.015
24	6.10	0.125	1037.9	5000.0	0.016	0.016
25	6.30	0.125	1040.8	5000.0	0.017	0.017
26	6.40	0.125	1062.3	5000.0	0.016	0.016
27	6.50	0.125	1084.5	5000.0	0.014	0.014
28	6.60	0.125	1090.3	5000.0	0.013	0.013
29	6.75	0.125	1119.9	5000.0	0.017	0.017
30	6.75	0.125	1119.3	5000.0	0.017	0.017

Layer No.	Thickness (ft)	Unit wt (ksf)	S Wave Velocity (ft/s)	P Wave Velocity (ft/s)	S Wave Damping	P Wave Damping
31	6.75	0.125	1117.8	5000.0	0.017	0.017
32	6.75	0.125	1117.4	5000.0	0.017	0.017
33	6.75	0.125	1116.8	5000.0	0.017	0.017
34	6.50	0.125	1102.1	5000.0	0.015	0.015
35	6.50	0.125	1100.6	5000.0	0.016	0.016
36	6.75	0.125	1118.6	5000.0	0.017	0.017
37	6.75	0.125	1126.1	5000.0	0.018	0.018
38	6.75	0.125	1125.9	5000.0	0.018	0.018
39	6.75	0.125	1129.8	5000.0	0.018	0.018
40	6.75	0.125	1130.1	5000.0	0.018	0.018
41	6.75	0.125	1128.5	5000.0	0.018	0.018
42	6.75	0.125	1126.7	5000.0	0.018	0.018
43	6.80	0.124	1146.4	5000.0	0.018	0.018
44	6.90	0.124	1154.5	5000.0	0.018	0.018
45	7.10	0.125	1185.1	5059.6	0.017	0.017
46	7.40	0.127	1222.2	5137.0	0.015	0.015
47	7.30	0.127	1221.4	5133.7	0.016	0.016
48	7.30	0.127	1221.2	5133.0	0.016	0.016
49	7.50	0.126	1249.8	5252.9	0.017	0.017
50	7.40	0.127	1237.7	5202.1	0.015	0.015
51	7.50	0.126	1247.3	5242.4	0.016	0.016
52	7.60	0.123	1266.9	5324.9	0.018	0.018
53	7.60	0.123	1266.5	5323.4	0.018	0.018
54	7.60	0.123	1266.3	5322.6	0.018	0.018
55	7.60	0.123	1266.0	5321.2	0.018	0.018
56	7.60	0.123	1268.9	5333.3	0.018	0.018
57	7.60	0.123	1270.3	5339.0	0.018	0.018
58	7.60	0.123	1269.9	5337.6	0.018	0.018
59	8.70	0.126	1443.5	6067.4	0.015	0.015
60	9.50	0.128	1575.1	6620.6	0.013	0.013
61	9.50	0.124	1600.0	6725.1	0.015	0.015
62	9.50	0.128	1604.9	6745.6	0.013	0.013
63	9.50	0.128	1604.5	6744.1	0.013	0.013
64	9.50	0.128	1603.7	6740.8	0.013	0.013
65	9.50	0.126	1592.9	6695.2	0.014	0.014
66	8.90	0.126	1479.0	6216.6	0.015	0.015
67	8.50	0.128	1417.2	5956.7	0.015	0.015

Layer No.	Thickness (ft)	Unit wt (ksf)	S Wave Velocity (ft/s)	P Wave Velocity (ft/s)	S Wave Damping	P Wave Damping
68	8.10	0.126	1339.3	5629.3	0.016	0.016
69	7.30	0.123	1219.2	5124.3	0.019	0.019
70	7.30	0.123	1219.1	5124.0	0.019	0.019
71	7.30	0.123	1218.9	5123.3	0.019	0.019
72	7.30	0.124	1209.9	5087.2	0.019	0.019
73	7.20	0.127	1192.6	5018.0	0.018	0.018
74	7.30	0.123	1213.6	5101.1	0.019	0.019
75	7.30	0.123	1213.6	5101.1	0.019	0.019
76	7.30	0.123	1213.4	5100.1	0.019	0.019
77	7.30	0.123	1213.3	5099.7	0.019	0.019
78	7.30	0.123	1215.9	5110.8	0.019	0.019
79	7.40	0.123	1224.1	5145.1	0.019	0.019
80	7.40	0.123	1224.1	5145.1	0.019	0.019
81	8.50	0.123	1419.0	5964.3	0.016	0.016
82	8.80	0.123	1465.0	6157.6	0.015	0.015
83	8.70	0.123	1442.8	6064.5	0.017	0.017
84	8.70	0.123	1435.9	6035.3	0.017	0.017
85	8.70	0.123	1435.6	6034.3	0.017	0.017
86	8.70	0.123	1435.5	6033.9	0.017	0.017
87	8.60	0.123	1435.4	6033.3	0.017	0.017
88	8.60	0.123	1435.3	6032.6	0.017	0.017
89	8.60	0.123	1435.2	6032.3	0.017	0.017
90	8.60	0.123	1435.0	6031.5	0.017	0.017
91	9.10	0.125	1515.0	6091.2	0.013	0.013
92	10.20	0.129	1688.6	6204.3	0.006	0.006
93	10.20	0.129	1688.6	6204.3	0.006	0.006
94	10.20	0.129	1688.6	6204.3	0.006	0.006
95	10.20	0.129	1688.6	6204.3	0.006	0.006
96	10.20	0.129	1688.6	6204.3	0.006	0.006
97	10.20	0.129	1688.6	6204.3	0.006	0.006
98	10.20	0.129	1688.6	6204.3	0.006	0.006
99	10.20	0.129	1688.6	6204.3	0.006	0.006
100	10.20	0.129	1693.4	6221.8	0.006	0.006
Halfspace		0.129	1693.4	6221.8	0.006	0.006

3. Enclosure 1 provides a summary of the added hydrodynamic masses for the UHS in the Soil Structure Interaction (SSI) analysis.

4. The frequencies used for the mean soil case analysis in SASSI2000 are listed in the table below. The cutoff frequency was 20.26 Hz.

	X-Direction		Y-Direction		Z-Direction	
	Frequency No.	Frequency (Hz)	Frequency No.	Frequency (Hz)	Frequency No.	Frequency (Hz)
1	4	0.098	4	0.098	4	0.098
2	10	0.244	10	0.244	10	0.244
3	20	0.488	20	0.488	20	0.488
4	30	0.732	30	0.732	30	0.732
5	40	0.977	40	0.977	40	0.977
6	60	1.465	60	1.465	60	1.465
7	70	1.709	70	1.709	70	1.709
8	80	1.953	80	1.953	80	1.953
9	90	2.197	90	2.197	90	2.197
10	100	2.441	100	2.441	100	2.441
11	120	2.930	120	2.930	120	2.930
12	130	3.174	130	3.174	130	3.174
13	140	3.418	140	3.418	140	3.418
14	150	3.662	150	3.662	150	3.662
15	160	3.906	160	3.906	160	3.906
16	170	4.150	170	4.150	170	4.150
17	180	4.395	180	4.395	180	4.395
18	190	4.639	190	4.639	190	4.639
19	200	4.883	200	4.883	200	4.883
20	220	5.371	220	5.371	220	5.371
21	230	5.615	230	5.615	230	5.615
22	240	5.859	240	5.859	240	5.859
23	245	5.981	245	5.981	245	5.981
24	250	6.104	250	6.104	250	6.104
25	260	6.348	260	6.348	260	6.348
26	270	6.592	270	6.592	270	6.592
27	280	6.836	280	6.836	280	6.836
28	290	7.080	290	7.080	290	7.080
29	295	7.202	295	7.202	295	7.202
30	300	7.324	300	7.324	300	7.324
31	310	7.568	310	7.568	310	7.568

	X-Direction		Y-Direction		Z-Direction	
	Frequency No.	Frequency (Hz)	Frequency No.	Frequency (Hz)	Frequency No.	Frequency (Hz)
32	320	7.812	320	7.812	320	7.812
33	330	8.057	330	8.057	330	8.057
34	340	8.301	340	8.301	340	8.301
35	360	8.789	360	8.789	360	8.789
36	370	9.033	370	9.033	370	9.033
37	375	9.155	375	9.155	375	9.155
38	380	9.277	380	9.277	380	9.277
39	400	9.766	400	9.766	400	9.766
40	420	10.250	420	10.250	420	10.250
41	430	10.500	430	10.500	430	10.500
42	440	10.740	440	10.740	440	10.740
43	450	10.990	450	10.990	450	10.990
44	460	11.230	460	11.230	460	11.230
45	480	11.720	480	11.720	480	11.720
46	485	11.840	485	11.840	485	11.840
47	490	11.960	490	11.960	490	11.960
48	500	12.210	500	12.210	500	12.210
49	520	12.700	520	12.700	520	12.700
50	540	13.180	540	13.180	540	13.180
51	560	13.670	560	13.670	560	13.670
52	565	13.790	565	13.790	565	13.790
53	570	13.920	570	13.920	570	13.920
54	580	14.160	580	14.160	590	14.400
55	590	14.400	590	14.400	600	14.650
56	600	14.650	600	14.650	610	14.890
57	610	14.890	610	14.890	620	15.140
58	620	15.140	620	15.140	640	15.620
59	640	15.620	640	15.620	660	16.110
60	660	16.110	660	16.110	680	16.600
61	680	16.600	680	16.600	700	17.090
62	700	17.090	700	17.090	720	17.580
63	720	17.580	720	17.580	740	18.070
64	740	18.070	740	18.070	760	18.550
65	760	18.550	760	18.550	780	19.040
66	780	19.040	780	19.040	800	19.530
67	800	19.530	800	19.530	830	20.260
68	830	20.260	830	20.260		

No COLA change is required for this response.

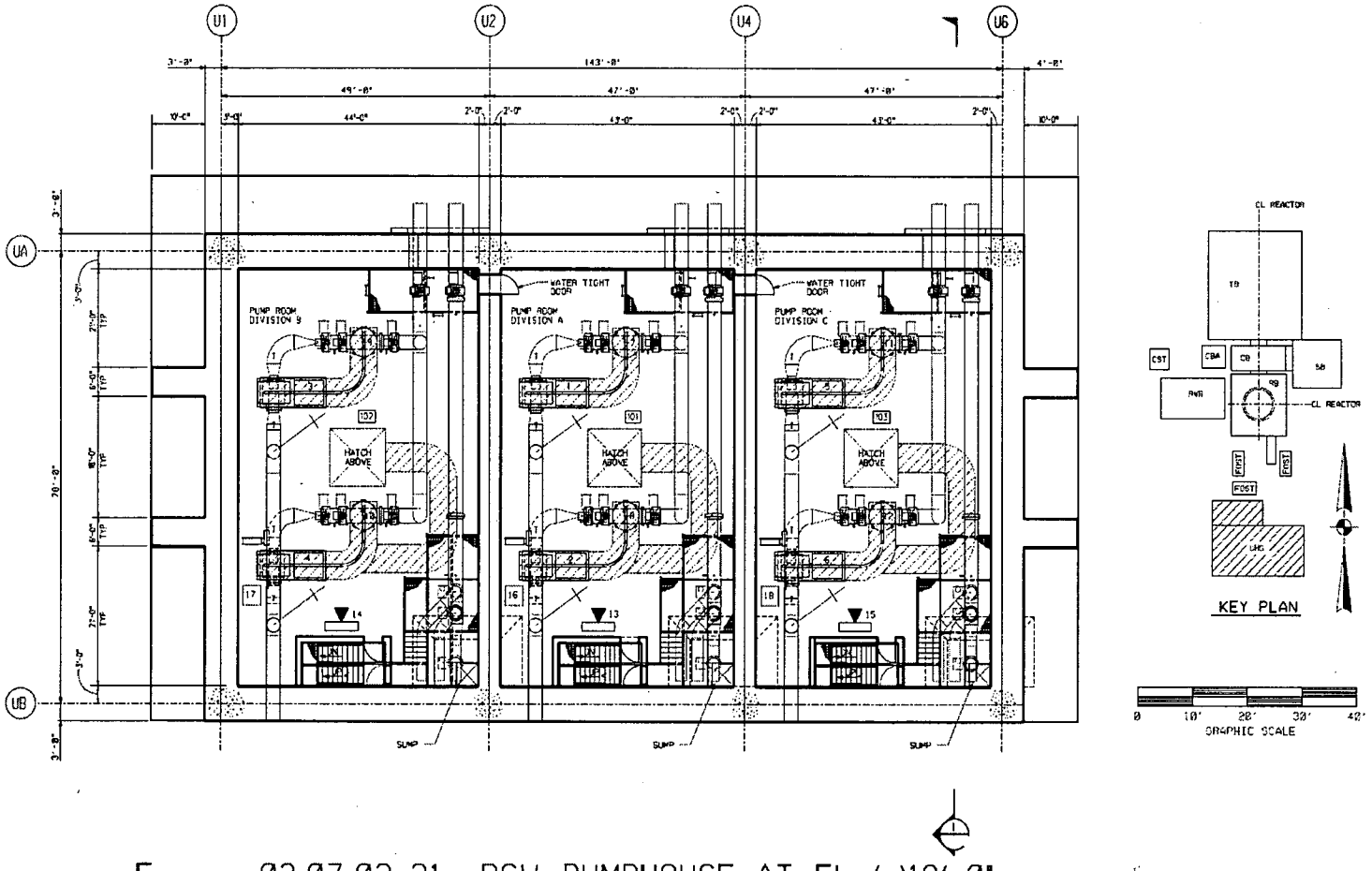


Figure 03.07.02-21c: RSW PUMPHOUSE AT EL (-)18'-0"

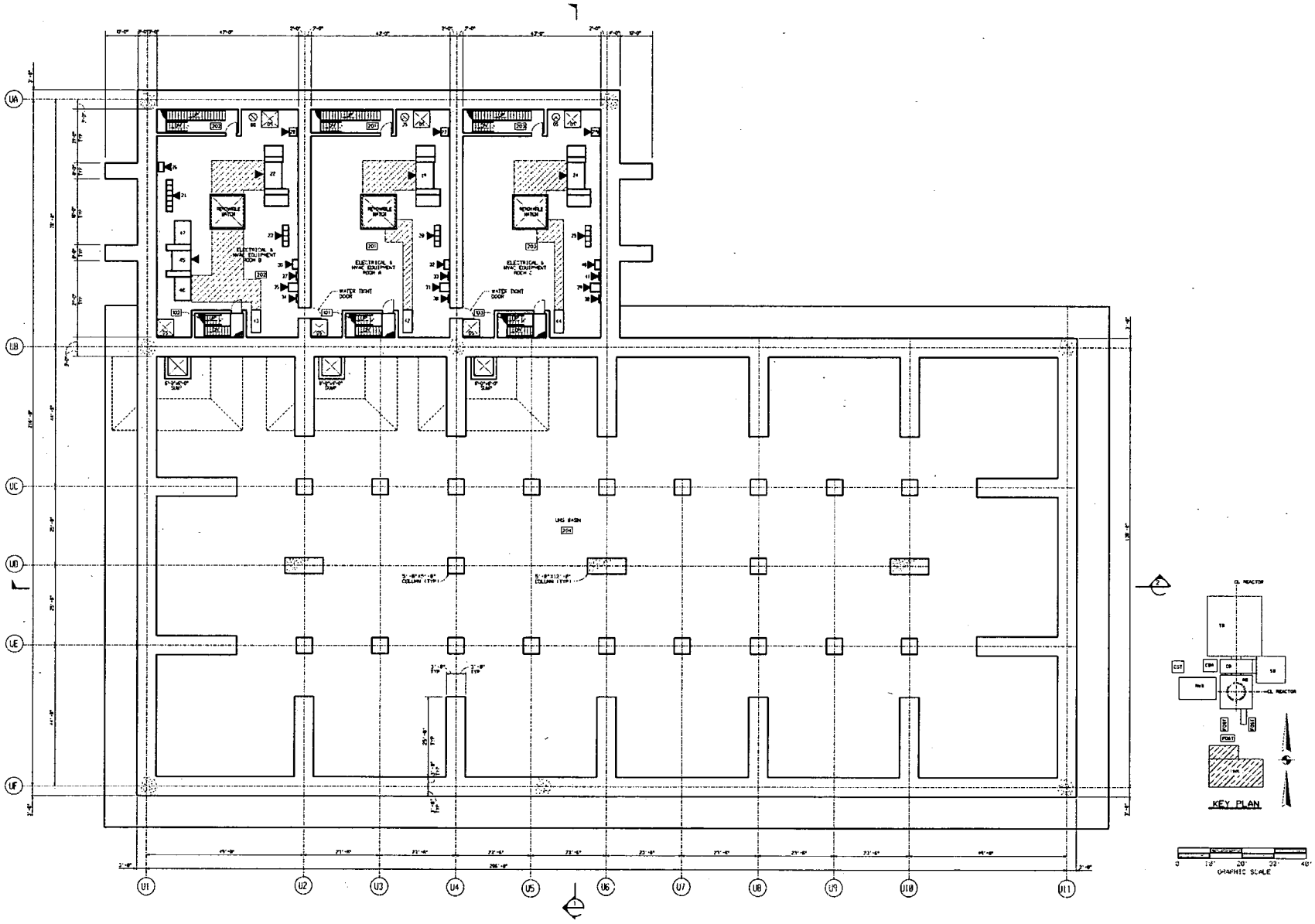


Figure 03.07.02-21d: UHS AND RSW PUMPHOUSE PLAN AT EL 14'-0"

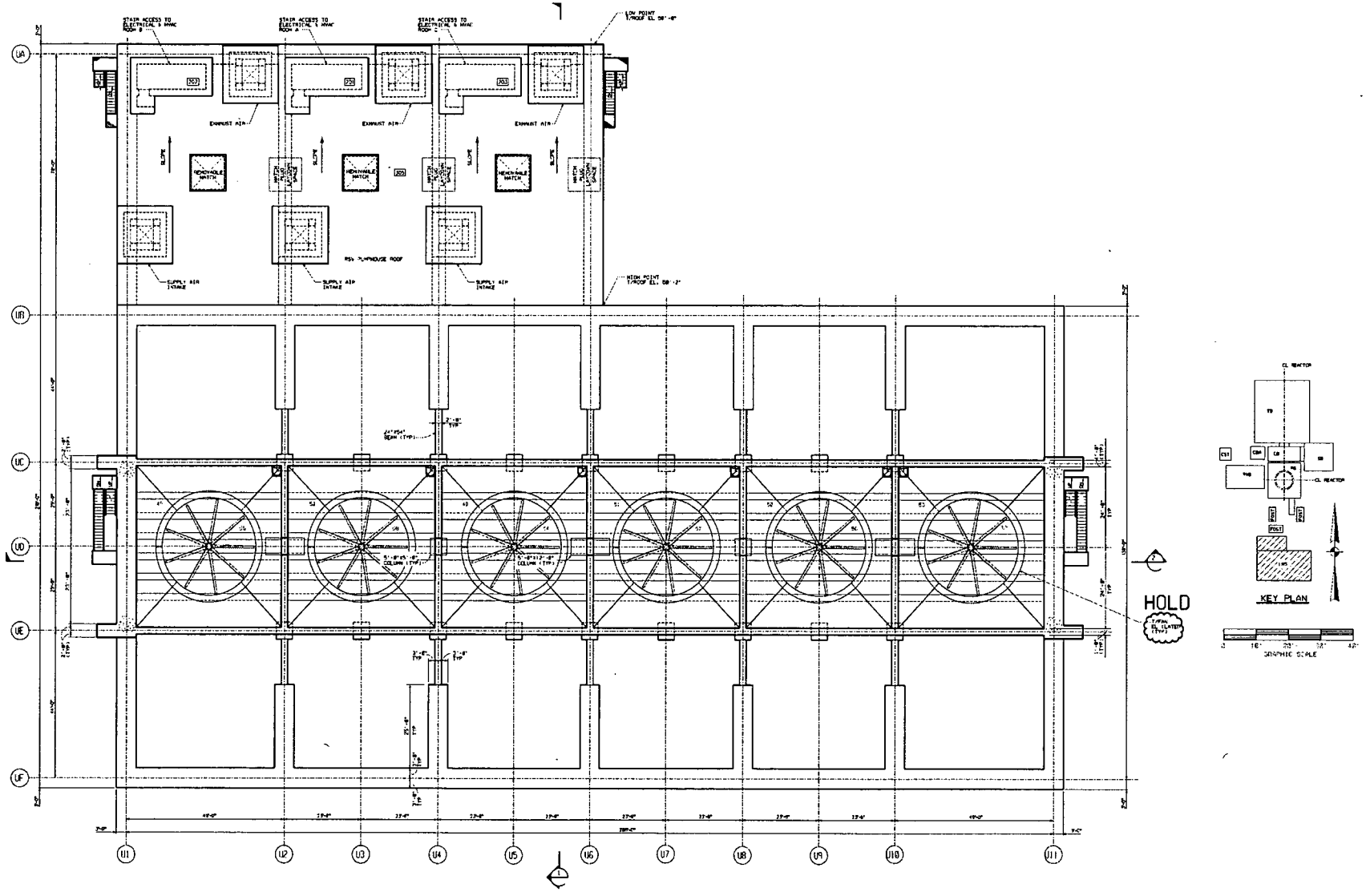


Figure 03.07.02-21e: UHS AND RSW PUMPHOUSE AT EL 97'-6" (UNLESS NOTED)

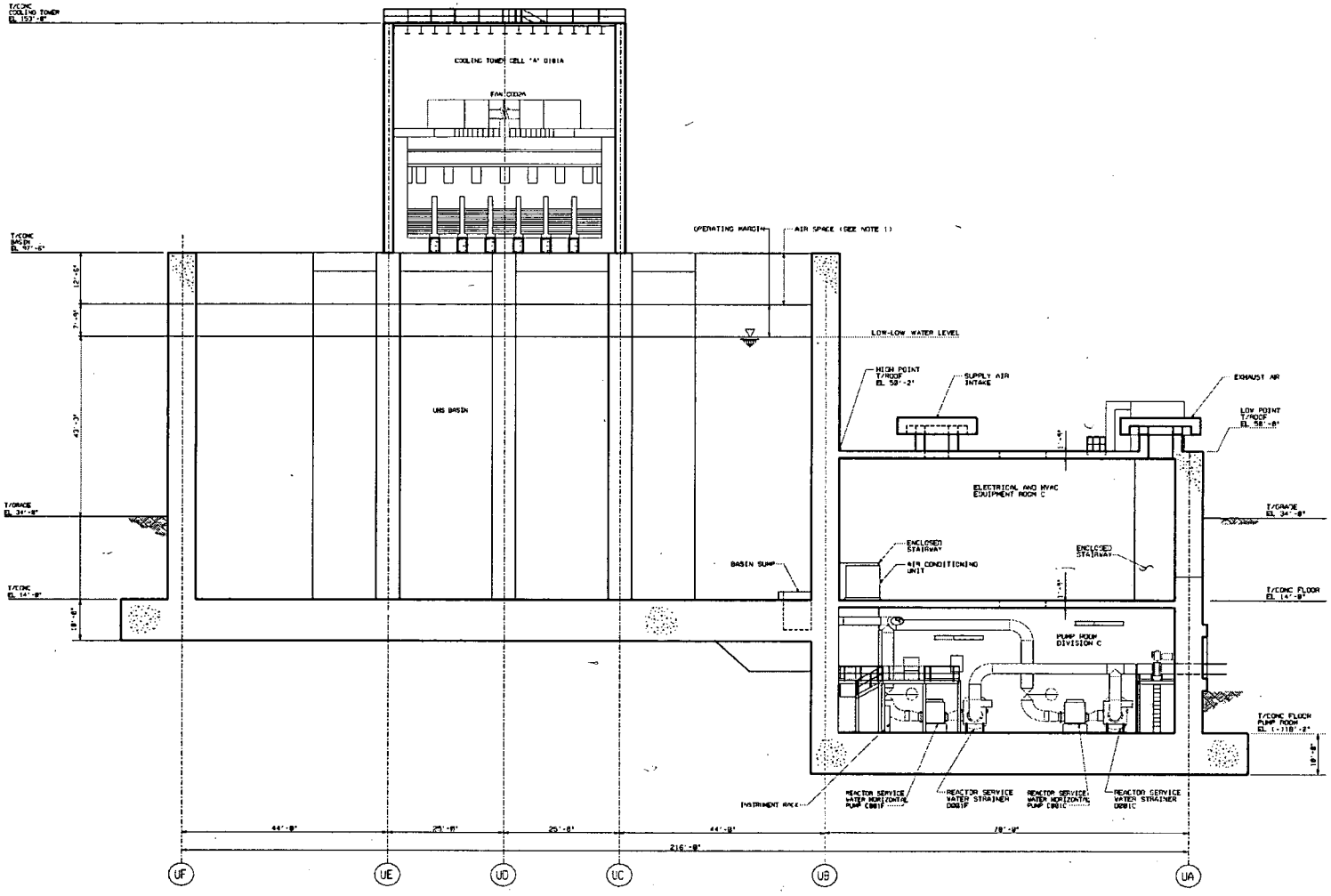


Figure 03.07.02-21f: SECTION 1

GRAPHIC SCALE

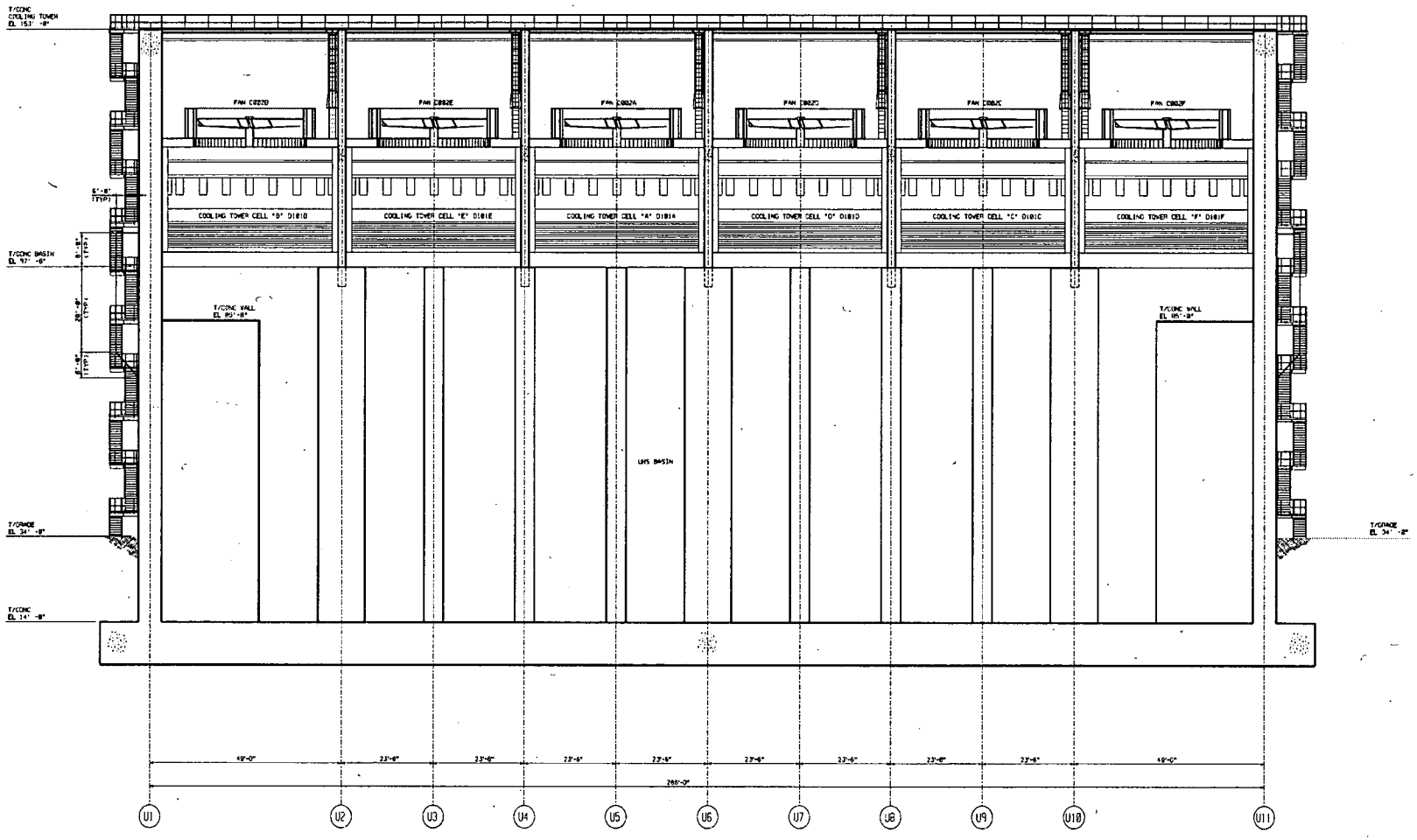


Figure 03.07.02-21g: SECTION 2

GRAPHIC SCALE

Enclosure to RAI 03.07.02-21

Summary of the Added Hydrodynamic Masses for the UHS in the SSI Analysis

UHS SSI Model Hydrodynamic Masses

The hydrodynamic nodal masses on the walls in the UHS SSI model are calculated based on the tributary areas of each wall node. Tables of the tributary areas and nodal masses follow along with sketches indicating where the masses are applied. The hydrodynamic nodal mass in the global Z direction on the foundation mat in the UHS SSI model is calculated based on the tributary area and is then divided evenly among the nodes. A sketch of the mass location in the global Z direction on the foundation mat is also provided. Finally, a table summarizing the additional hydrodynamic mass properties along with the corresponding SASSI node number is provided at the end of this document.

Nodal Assignment of Impulsive Mass for West and East Walls of the UHS Basin

Effective Width

w_{eff} Left (ft)	6.33	9.33	9.33	8.00	8.00	8.33	8.33	8.33	8.33	8.33	8.33	8.00	8.00	9.33	9.33
w_{eff} Right (ft)	9.33	9.33	8.00	8.00	8.33	8.33	8.33	8.33	8.33	8.33	8.00	8.00	9.33	9.33	6.33
w_{eff} (ft)	11.00	9.33	8.67	8.00	8.17	8.33	8.33	8.33	8.33	8.33	8.17	8.00	8.67	9.33	11.00
Horizontal Node Index	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Effective Height

Vertical Node Index	h_{eff} Below (ft)	h_{eff} Above (ft)	h_{eff} (ft)
9	11.67	5.58	11.42
8	8.00	11.67	9.84
7	8.00	8.00	8.00
6	2.75	8.00	5.38
5	3.25	2.75	3.00
4	3.50	3.25	3.38
3	3.50	3.50	3.50
2	3.50	3.50	3.50
1	3.50	3.50	5.25

Impulsive Mass Properties

h c.g., Impulsive Mass	26.625 ft
W_o, E-W	44243 kips
W_o, E-W	22122 kips per 1 wall
m_o, E-W	687.0 kips*s^2/ft per 1 wall

A_e, Effective Area Per Each Node (ft^2)

Vertical Node Index	h_{eff}														
9	11.42	125.5	106.5	98.9	91.3	93.2	95.1	95.1	95.1	95.1	95.1	93.2	91.3	98.9	106.5	125.5
8	9.84	108.1	91.8	85.2	78.7	80.3	81.9	81.9	81.9	81.9	81.9	80.3	78.7	85.2	91.8	108.1
7	8.00	88.0	74.6	69.3	64.0	65.3	66.6	66.6	66.6	66.6	66.6	65.3	64.0	69.3	74.6	88.0
6	5.38	59.1	50.1	46.6	43.0	43.9	44.8	44.8	44.8	44.8	44.8	43.9	43.0	46.6	50.1	59.1
5	3.00	33.0	28.0	26.0	24.0	24.5	25.0	25.0	25.0	25.0	25.0	24.5	24.0	26.0	28.0	33.0
4	3.38	37.1	31.5	29.2	27.0	27.6	28.1	28.1	28.1	28.1	28.1	27.6	27.0	29.2	31.5	37.1
3	3.50	38.5	32.7	30.3	28.0	28.6	29.2	29.2	29.2	29.2	29.2	28.6	28.0	30.3	32.7	38.5
2	3.50	38.5	32.7	30.3	28.0	28.6	29.2	29.2	29.2	29.2	29.2	28.6	28.0	30.3	32.7	38.5
1	5.25	57.7	49.0	45.5	42.0	42.9	43.7	43.7	43.7	43.7	43.7	42.9	42.0	45.5	49.0	57.7
w_{eff} -->		11.00	9.33	8.67	8.00	8.17	8.33	8.33	8.33	8.33	8.33	8.17	8.00	8.67	9.33	11.00
Horizontal Node Index -->		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Nodal Assignment of Impulsive Mass for West and East Walls of the UHS Basin (cont'd)

A_i Total Area of Wall on Which the Impulsive Mass Acts

h imp	53.3 ft
w	132.0 ft
A total	7029.0 ft^2

Mass per each Node $(kips*s^2)/ft$, 1 Wall

Vertical Node Index															
9	12.3	10.4	9.7	8.9	9.1	9.3	9.3	9.3	9.3	9.3	9.1	8.9	9.7	10.4	12.3
8	10.6	9.0	8.3	7.7	7.8	8.0	8.0	8.0	8.0	8.0	7.8	7.7	8.3	9.0	10.6
7	8.6	7.3	6.8	6.3	6.4	6.5	6.5	6.5	6.5	6.5	6.4	6.3	6.8	7.3	8.6
6	5.8	4.9	4.6	4.2	4.3	4.4	4.4	4.4	4.4	4.4	4.3	4.2	4.6	4.9	5.8
5	3.2	2.7	2.5	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.5	2.7	3.2
4	3.6	3.1	2.9	2.6	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.6	2.9	3.1	3.6
3	3.8	3.2	3.0	2.7	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.7	3.0	3.2	3.8
2	3.8	3.2	3.0	2.7	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.7	3.0	3.2	3.8
1	5.6	4.8	4.4	4.1	4.2	4.3	4.3	4.3	4.3	4.3	4.2	4.1	4.4	4.8	5.6
Horizontal Node Index -->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Sum of Nodal Masses for Each Level 1-7

Vertical Node Index	h (ft)	Mass	M * h
9	47.67	147.2	7018.2
8	36.00	126.8	4566.5
7	28.00	103.2	2889.1
6	20.00	69.3	1386.5
5	17.25	38.7	667.4
4	14.00	43.5	609.4
3	10.50	45.1	474.0
2	7.00	45.1	316.0
1	3.50	67.7	237.0

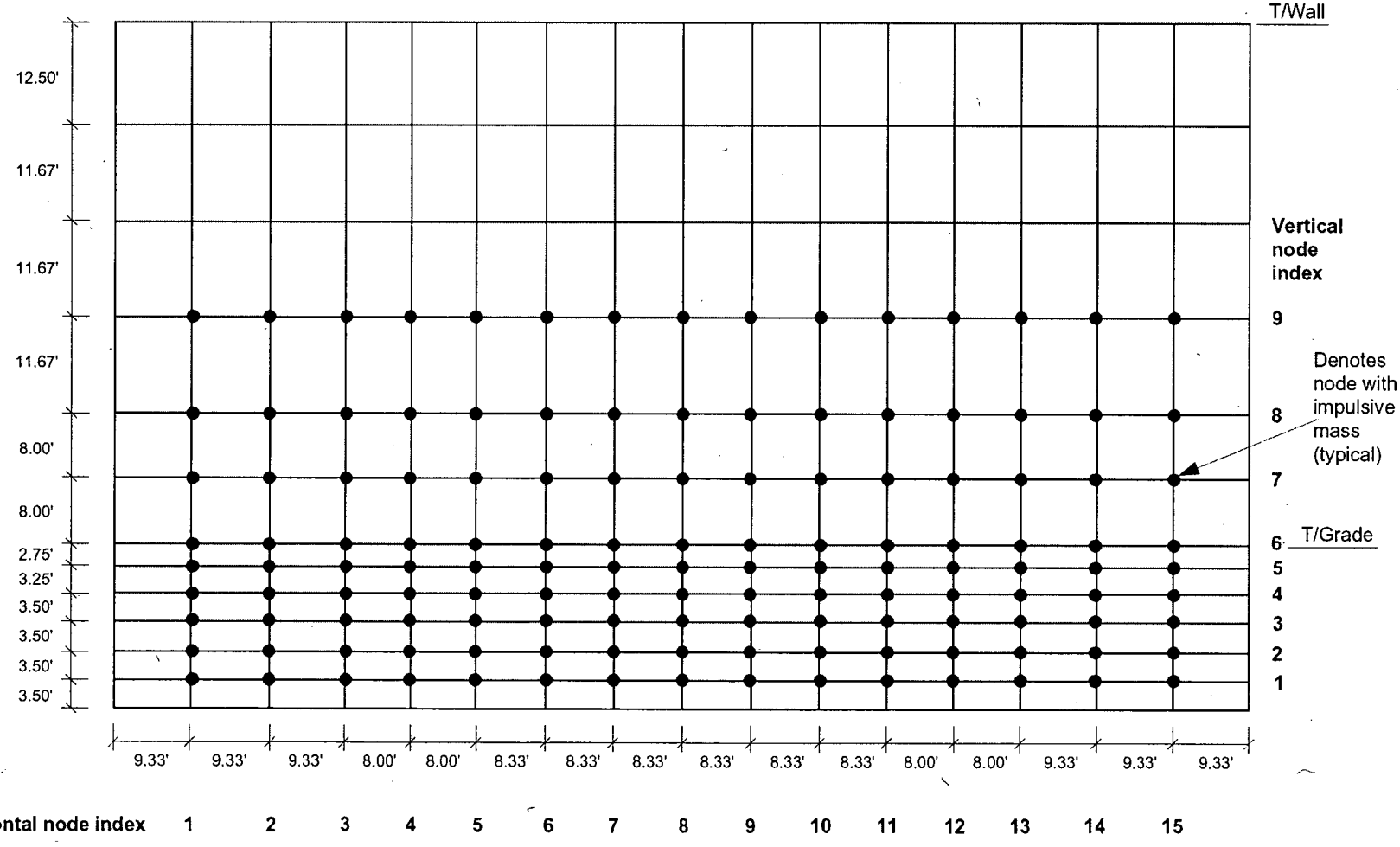
Sum of Discrete Impulsive Mass	686.8 $kips*s^2/ft$ per 1 wall	
h C.G. Discrete Impulsive Mass	26.45 ft	
h_discrete - h_actual	-0.18 ft	**Note [1]**

Notes:

Note [1] This is a check to verify that the h C.G. of the discrete mass distribution is equal to the h C.G of the actual mass distribution (as calculated in A7)

UHS west and east wall — SSI model

See the Impulsive Mass for West and East Walls of the UHS Basin table for masses corresponding to horizontal and vertical indices.



Nodal Assignment of Impulsive Mass for North and South Walls of the UHS Basin

Effective Width

w_{eff} Left (ft)	6.33	9.33	9.33	10.50	10.50	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	10.50	10.50	9.33	9.33
w_{eff} Right (ft)	9.33	9.33	10.50	10.50	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	10.50	10.50	9.33	9.33	6.33
w eff (ft)	11.00	9.33	9.92	10.50	9.17	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	9.17	10.50	9.92	9.33	11.00
Horizontal Node Index -->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33

Effective Height

Vertical Node Index	h_{wa} Below (ft)	h_{wa} Above (ft)	h_{wa} (ft)
9	11.67	5.58	11.42
8	8.00	11.67	9.84
7	8.00	8.00	8.00
6	2.75	8.00	5.38
5	3.25	2.75	3.00
4	3.50	3.25	3.38
3	3.50	3.50	3.50
2	3.50	3.50	3.50
1	3.50	3.50	5.25

Impulsive Mass Properties

h c.g. Impulsive Mass	26.625 ft
W_w N-S	86826 kips
W_w N-S	43413 kips per 1 wall
m_w N-S	1348.2 kips*sec^2*ft^{-1} per 1 wall

A_v .Effective Area Per Each Node (ft^2)

Vertical Node Index	h_{wa}																																
9	11.42	125.5	106.5	113.2	119.9	104.6	89.4	89.4	89.4	89.4	89.4	89.4	89.4	89.4	89.4	89.4	89.4	89.4	89.4	89.4	89.4	89.4	89.4	89.4	89.4	89.4	89.4	89.4	89.4	104.6	119.9	113.2	100.5	125.5
8	9.84	108.1	91.8	97.5	103.3	90.1	77.0	77.0	77.0	77.0	77.0	77.0	77.0	77.0	77.0	77.0	77.0	77.0	77.0	77.0	77.0	77.0	77.0	77.0	77.0	77.0	77.0	77.0	77.0	90.1	103.3	97.5	91.8	108.1
7	8.00	88.0	74.6	79.3	84.0	73.3	62.6	62.6	62.6	62.6	62.6	62.6	62.6	62.6	62.6	62.6	62.6	62.6	62.6	62.6	62.6	62.6	62.6	62.6	62.6	62.6	62.6	62.6	62.6	73.3	84.0	79.3	74.6	88.0
6	5.38	59.1	50.1	53.3	56.4	49.3	42.1	42.1	42.1	42.1	42.1	42.1	42.1	42.1	42.1	42.1	42.1	42.1	42.1	42.1	42.1	42.1	42.1	42.1	42.1	42.1	42.1	42.1	42.1	49.3	56.4	53.3	50.1	59.1
5	3.00	33.0	28.0	29.7	31.5	27.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	27.5	31.5	29.7	28.0	33.0
4	3.38	37.1	31.5	33.5	35.4	30.9	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	30.9	35.4	33.5	31.5	37.1
3	3.50	38.5	32.7	34.7	36.8	32.1	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	32.1	36.8	34.7	32.7	38.5
2	3.50	38.5	32.7	34.7	36.8	32.1	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	27.4	32.1	36.8	34.7	32.7	38.5
1	5.25	57.7	49.0	52.1	55.1	48.1	41.1	41.1	41.1	41.1	41.1	41.1	41.1	41.1	41.1	41.1	41.1	41.1	41.1	41.1	41.1	41.1	41.1	41.1	41.1	41.1	41.1	41.1	41.1	48.1	55.1	52.1	49.0	57.7
w_{eff} -->		11.00	9.33	9.92	10.50	9.17	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	9.17	10.50	9.92	9.33	11.00
Horizontal Node Index -->		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33

Nodal Assignment of Impulsive Mass for North and South Walls of the UHS Basin (cont'd)

A_i Total Area of Wall on Which the Impulsive Mass Acts

h imp	53.25 ft
w	280 ft
A total	14910 ft^2

Mass per each Node (kips*s^2)/ft. 1 Wall

Vertical Node Index	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
9	11.3	9.6	10.2	10.8	9.5	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	9.5	10.8	10.2	9.6	11.3
8	9.8	8.3	8.8	9.3	8.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	8.2	9.3	8.8	8.3	9.8
7	8.0	6.7	7.2	7.6	6.6	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	6.6	7.6	7.2	6.7	8.0
6	5.3	4.5	4.8	5.1	4.5	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	4.5	5.1	4.8	4.5	5.3
5	3.0	2.5	2.7	2.8	2.5	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.5	2.8	2.7	2.5	3.0
4	3.4	2.8	3.0	3.2	2.8	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.8	3.2	3.0	2.8	3.4
3	3.5	3.0	3.1	3.3	2.9	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.9	3.3	3.1	3.0	3.5
2	3.5	3.0	3.1	3.3	2.9	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.9	3.3	3.1	3.0	3.5
1	5.2	4.4	4.7	5.0	4.4	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	4.4	5.0	4.7	4.4	5.2
Horizontal Node Index -->																																	

Sum of Nodal Masses for Each Level 1-7

Vertical Node Index	h (ft)	Mass	M * h
9	47.67	288.9	13772.4
8	36.00	248.9	8961.2
7	28.00	202.5	5669.4
6	20.00	136.0	2720.8
5	17.25	75.9	1309.8
4	14.00	85.4	1195.9
3	10.50	88.6	930.1
2	7.00	88.6	620.1
1	3.50	132.9	465.1

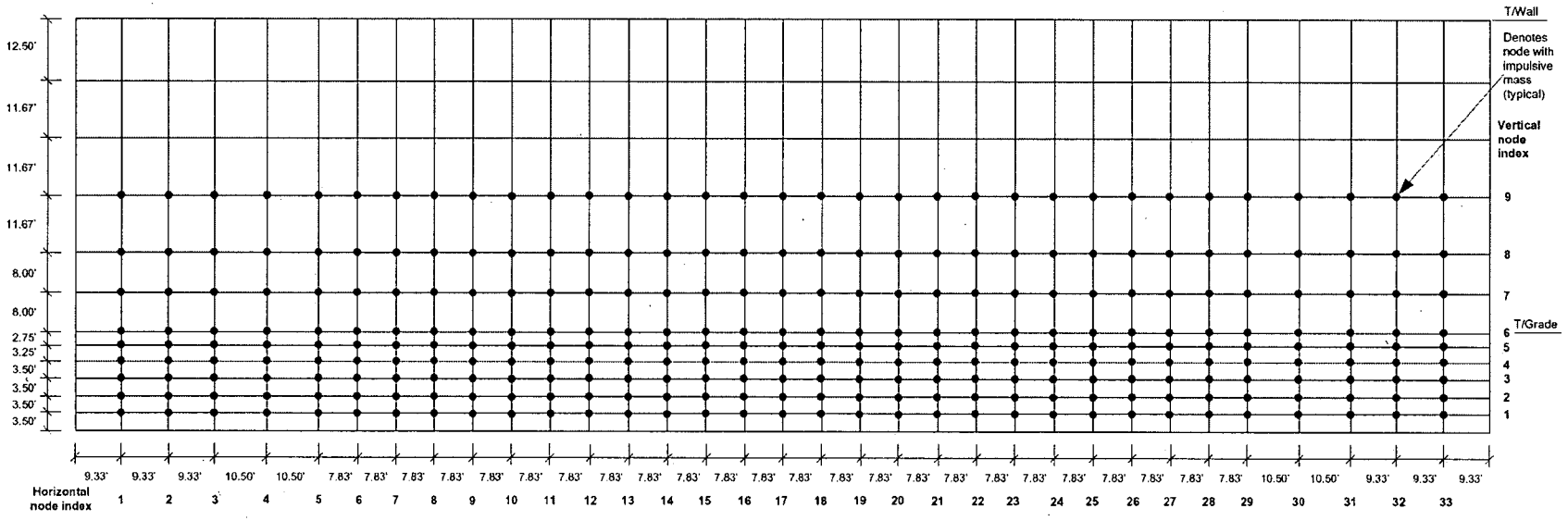
Sum of Discrete Impulsive Mass	1347.7 kips*s^2*ft^{-1} per 1 wall	
h C.G. Discrete Impulsive Mass	26.45 ft	
h_discrete - h_actual	-0.18 ft	Note [1]

Notes:

Note [1] This is a check to verify that the h C.G. of the discrete mass distribution is equal to the h C.G of the actual mass distribution (as calculated in A7)

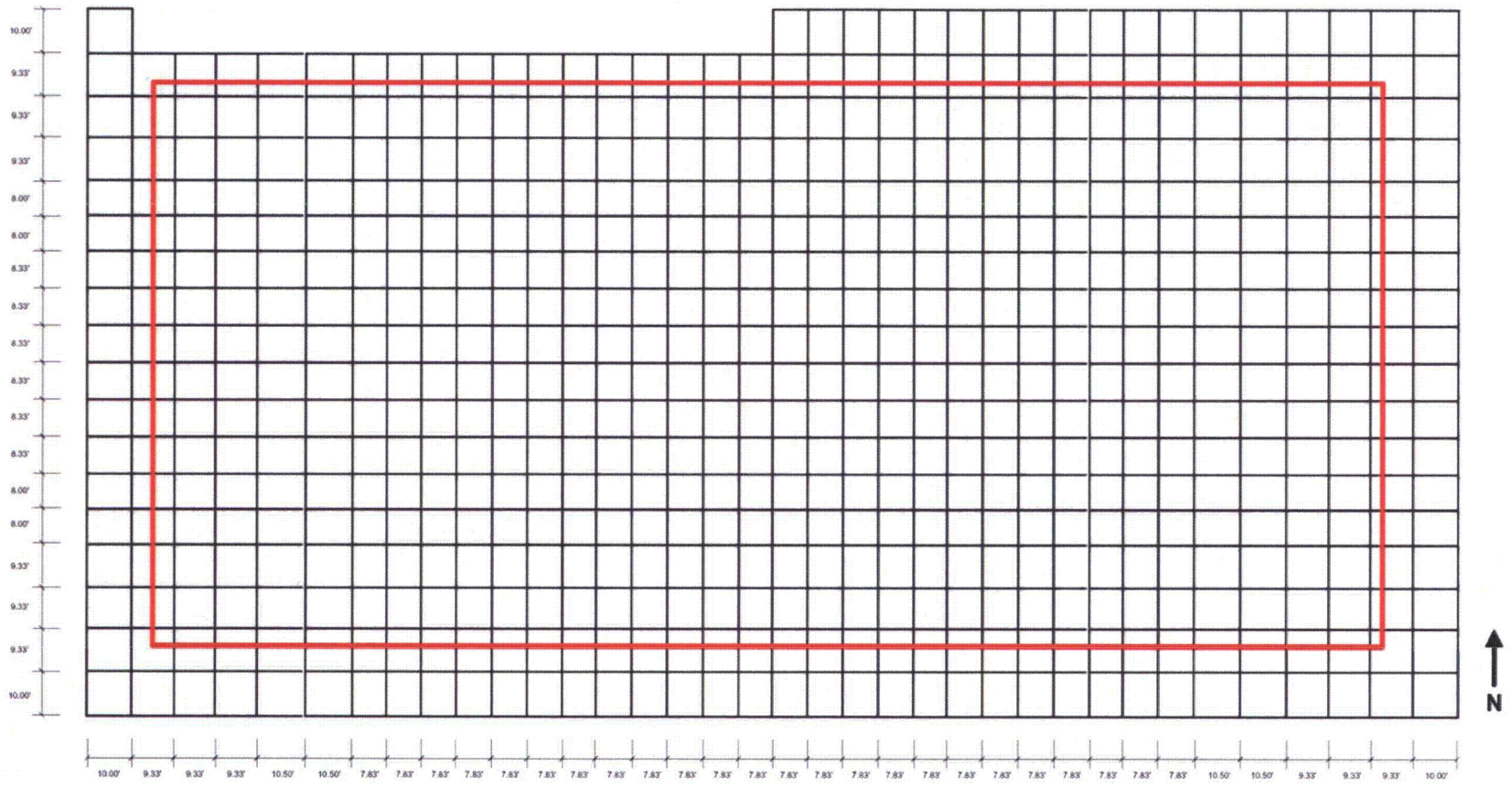
UHS south and north wall — SSI model

See the Impulsive Mass for South and North Walls of the UHS Basin table for masses corresponding to horizontal and vertical indices.



UHS basin foundation mat — SSI model

The locations of applied hydrodynamic masses are on the nodes within the rectangle.



Hydrostatic mass = 9.508 kips·sec^2/ft per node, total number of nodes =495, total hydrostatic mass = 9.508 kips·sec^2/ft per node x 495 nodes = 4707 kips·sec^2/ft

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
16845	12.27	0.00	0.00
16422	10.57	0.00	0.00
16184	8.60	0.00	0.00
15759	5.78	0.00	0.00
14793	3.22	0.00	0.00
13794	3.63	0.00	0.00
12841	3.76	0.00	0.00
11888	3.76	0.00	0.00
10935	5.64	0.00	0.00
16838	10.41	0.00	0.00
16415	8.97	0.00	0.00
16177	7.30	0.00	0.00
15752	4.90	0.00	0.00
14786	2.74	0.00	0.00
13787	3.08	0.00	0.00
12834	3.19	0.00	0.00
11881	3.19	0.00	0.00
10928	4.79	0.00	0.00
16831	9.67	0.00	0.00
16408	8.33	0.00	0.00
16170	6.78	0.00	0.00
15675	4.55	0.00	0.00
14709	2.54	0.00	0.00
13710	2.86	0.00	0.00
12757	2.96	0.00	0.00
11804	2.96	0.00	0.00
10851	4.45	0.00	0.00
16829	8.93	0.00	0.00
16406	7.69	0.00	0.00
16168	6.26	0.00	0.00
15638	4.20	0.00	0.00
14672	2.35	0.00	0.00
13673	2.64	0.00	0.00
12720	2.74	0.00	0.00
11767	2.74	0.00	0.00
10814	4.11	0.00	0.00
16821	9.11	0.00	0.00
16398	7.85	0.00	0.00
16160	6.38	0.00	0.00
15595	4.29	0.00	0.00
14629	2.39	0.00	0.00
13630	2.69	0.00	0.00
12677	2.79	0.00	0.00
11724	2.79	0.00	0.00
10771	4.19	0.00	0.00
16819	9.29	0.00	0.00
16396	8.01	0.00	0.00
16158	6.51	0.00	0.00

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
13862	0.00	2.39	0.00
12909	0.00	2.48	0.00
11956	0.00	2.48	0.00
11003	0.00	3.72	0.00
16866	0.00	8.08	0.00
16443	0.00	6.96	0.00
16205	0.00	5.66	0.00
15829	0.00	3.81	0.00
14863	0.00	2.12	0.00
13864	0.00	2.39	0.00
12911	0.00	2.48	0.00
11958	0.00	2.48	0.00
11005	0.00	3.72	0.00
16867	0.00	8.08	0.00
16444	0.00	6.96	0.00
16206	0.00	5.66	0.00
15832	0.00	3.81	0.00
14866	0.00	2.12	0.00
13867	0.00	2.39	0.00
12914	0.00	2.48	0.00
11961	0.00	2.48	0.00
11008	0.00	3.72	0.00
16868	0.00	8.08	0.00
16445	0.00	6.96	0.00
16207	0.00	5.66	0.00
15833	0.00	3.81	0.00
14867	0.00	2.12	0.00
13868	0.00	2.39	0.00
12915	0.00	2.48	0.00
11962	0.00	2.48	0.00
11009	0.00	3.72	0.00
16869	0.00	8.08	0.00
16446	0.00	6.96	0.00
16208	0.00	5.66	0.00
15835	0.00	3.81	0.00
14869	0.00	2.12	0.00
13870	0.00	2.39	0.00
12917	0.00	2.48	0.00
11964	0.00	2.48	0.00
11011	0.00	3.72	0.00
16870	0.00	8.08	0.00
16447	0.00	6.96	0.00
16209	0.00	5.66	0.00
15838	0.00	3.81	0.00
14872	0.00	2.12	0.00
13873	0.00	2.39	0.00
12920	0.00	2.48	0.00
11967	0.00	2.48	0.00

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
15558	4.38	0.00	0.00
14592	2.44	0.00	0.00
13593	2.75	0.00	0.00
12640	2.85	0.00	0.00
11687	2.85	0.00	0.00
10734	4.27	0.00	0.00
16817	9.29	0.00	0.00
16394	8.01	0.00	0.00
16156	6.51	0.00	0.00
15556	4.38	0.00	0.00
14590	2.44	0.00	0.00
13591	2.75	0.00	0.00
12638	2.85	0.00	0.00
11685	2.85	0.00	0.00
10732	4.27	0.00	0.00
16815	9.29	0.00	0.00
16392	8.01	0.00	0.00
16154	6.51	0.00	0.00
15484	4.38	0.00	0.00
14518	2.44	0.00	0.00
13519	2.75	0.00	0.00
12566	2.85	0.00	0.00
11613	2.85	0.00	0.00
10660	4.27	0.00	0.00
16813	9.29	0.00	0.00
16390	8.01	0.00	0.00
16152	6.51	0.00	0.00
15447	4.38	0.00	0.00
14481	2.44	0.00	0.00
13482	2.75	0.00	0.00
12529	2.85	0.00	0.00
11576	2.85	0.00	0.00
10623	4.27	0.00	0.00
16811	9.29	0.00	0.00
16388	8.01	0.00	0.00
16150	6.51	0.00	0.00
15445	4.38	0.00	0.00
14479	2.44	0.00	0.00
13480	2.75	0.00	0.00
12527	2.85	0.00	0.00
11574	2.85	0.00	0.00
10621	4.27	0.00	0.00
16806	9.11	0.00	0.00
16380	7.85	0.00	0.00
16142	6.38	0.00	0.00
15367	4.29	0.00	0.00
14401	2.39	0.00	0.00
13402	2.69	0.00	0.00

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
11014	0.00	3.72	0.00
16871	0.00	8.08	0.00
16448	0.00	6.96	0.00
16210	0.00	5.66	0.00
15839	0.00	3.81	0.00
14873	0.00	2.12	0.00
13874	0.00	2.39	0.00
12921	0.00	2.48	0.00
11968	0.00	2.48	0.00
11015	0.00	3.72	0.00
16872	0.00	8.08	0.00
16449	0.00	6.96	0.00
16211	0.00	5.66	0.00
15841	0.00	3.81	0.00
14875	0.00	2.12	0.00
13876	0.00	2.39	0.00
12923	0.00	2.48	0.00
11970	0.00	2.48	0.00
11017	0.00	3.72	0.00
16873	0.00	8.08	0.00
16450	0.00	6.96	0.00
16212	0.00	5.66	0.00
15844	0.00	3.81	0.00
14878	0.00	2.12	0.00
13879	0.00	2.39	0.00
12926	0.00	2.48	0.00
11973	0.00	2.48	0.00
11020	0.00	3.72	0.00
16874	0.00	8.08	0.00
16451	0.00	6.96	0.00
16213	0.00	5.66	0.00
15845	0.00	3.81	0.00
14879	0.00	2.12	0.00
13880	0.00	2.39	0.00
12927	0.00	2.48	0.00
11974	0.00	2.48	0.00
11021	0.00	3.72	0.00
16875	0.00	8.08	0.00
16452	0.00	6.96	0.00
16214	0.00	5.66	0.00
15847	0.00	3.81	0.00
14881	0.00	2.12	0.00
13882	0.00	2.39	0.00
12929	0.00	2.48	0.00
11976	0.00	2.48	0.00
11023	0.00	3.72	0.00
16876	0.00	8.08	0.00
16453	0.00	6.96	0.00

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
12449	2.79	0.00	0.00
11496	2.79	0.00	0.00
10543	4.19	0.00	0.00
16804	8.93	0.00	0.00
16378	7.69	0.00	0.00
16140	6.26	0.00	0.00
15330	4.20	0.00	0.00
14364	2.35	0.00	0.00
13365	2.64	0.00	0.00
12412	2.74	0.00	0.00
11459	2.74	0.00	0.00
10506	4.11	0.00	0.00
16797	9.67	0.00	0.00
16371	8.33	0.00	0.00
16133	6.78	0.00	0.00
15288	4.55	0.00	0.00
14322	2.54	0.00	0.00
13323	2.86	0.00	0.00
12370	2.96	0.00	0.00
11417	2.96	0.00	0.00
10464	4.45	0.00	0.00
16790	10.41	0.00	0.00
16364	8.97	0.00	0.00
16126	7.30	0.00	0.00
15246	4.90	0.00	0.00
14280	2.74	0.00	0.00
13281	3.08	0.00	0.00
12328	3.19	0.00	0.00
11375	3.19	0.00	0.00
10422	4.79	0.00	0.00
16783	12.27	0.00	0.00
16357	10.57	0.00	0.00
16119	8.60	0.00	0.00
15239	5.78	0.00	0.00
14273	3.22	0.00	0.00
13274	3.63	0.00	0.00
12321	3.76	0.00	0.00
11368	3.76	0.00	0.00
10415	5.64	0.00	0.00
16851	12.27	0.00	0.00
16428	10.57	0.00	0.00
16190	8.60	0.00	0.00
15765	5.78	0.00	0.00
14799	3.22	0.00	0.00
13800	3.63	0.00	0.00
12847	3.76	0.00	0.00
11894	3.76	0.00	0.00
10941	5.64	0.00	0.00

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
16215	0.00	5.66	0.00
15850	0.00	3.81	0.00
14884	0.00	2.12	0.00
13885	0.00	2.39	0.00
12932	0.00	2.48	0.00
11979	0.00	2.48	0.00
11026	0.00	3.72	0.00
16877	0.00	8.08	0.00
16454	0.00	6.96	0.00
16216	0.00	5.66	0.00
15851	0.00	3.81	0.00
14885	0.00	2.12	0.00
13886	0.00	2.39	0.00
12933	0.00	2.48	0.00
11980	0.00	2.48	0.00
11027	0.00	3.72	0.00
16878	0.00	8.08	0.00
16455	0.00	6.96	0.00
16217	0.00	5.66	0.00
15853	0.00	3.81	0.00
14887	0.00	2.12	0.00
13888	0.00	2.39	0.00
12935	0.00	2.48	0.00
11982	0.00	2.48	0.00
11029	0.00	3.72	0.00
16879	0.00	8.08	0.00
16456	0.00	6.96	0.00
16218	0.00	5.66	0.00
15856	0.00	3.81	0.00
14890	0.00	2.12	0.00
13891	0.00	2.39	0.00
12938	0.00	2.48	0.00
11985	0.00	2.48	0.00
11032	0.00	3.72	0.00
16880	0.00	8.08	0.00
16457	0.00	6.96	0.00
16219	0.00	5.66	0.00
15857	0.00	3.81	0.00
14891	0.00	2.12	0.00
13892	0.00	2.39	0.00
12939	0.00	2.48	0.00
11986	0.00	2.48	0.00
11033	0.00	3.72	0.00
16881	0.00	9.46	0.00
16458	0.00	8.15	0.00
16220	0.00	6.63	0.00
15859	0.00	4.45	0.00
14893	0.00	2.49	0.00

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
16844	10.41	0.00	0.00
16421	8.97	0.00	0.00
16183	7.30	0.00	0.00
15758	4.90	0.00	0.00
14792	2.74	0.00	0.00
13793	3.08	0.00	0.00
12840	3.19	0.00	0.00
11887	3.19	0.00	0.00
10934	4.79	0.00	0.00
16837	9.67	0.00	0.00
16414	8.33	0.00	0.00
16176	6.78	0.00	0.00
15715	4.55	0.00	0.00
14749	2.54	0.00	0.00
13750	2.86	0.00	0.00
12797	2.96	0.00	0.00
11844	2.96	0.00	0.00
10891	4.45	0.00	0.00
16830	8.93	0.00	0.00
16407	7.69	0.00	0.00
16169	6.26	0.00	0.00
15673	4.20	0.00	0.00
14707	2.35	0.00	0.00
13708	2.64	0.00	0.00
12755	2.74	0.00	0.00
11802	2.74	0.00	0.00
10849	4.11	0.00	0.00
16828	9.11	0.00	0.00
16405	7.85	0.00	0.00
16167	6.38	0.00	0.00
15636	4.29	0.00	0.00
14670	2.39	0.00	0.00
13671	2.69	0.00	0.00
12718	2.79	0.00	0.00
11765	2.79	0.00	0.00
10812	4.19	0.00	0.00
16820	9.29	0.00	0.00
16397	8.01	0.00	0.00
16159	6.51	0.00	0.00
15559	4.38	0.00	0.00
14593	2.44	0.00	0.00
13594	2.75	0.00	0.00
12641	2.85	0.00	0.00
11688	2.85	0.00	0.00
10735	4.27	0.00	0.00
16818	9.29	0.00	0.00
16395	8.01	0.00	0.00
16157	6.51	0.00	0.00

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
13894	0.00	2.80	0.00
12941	0.00	2.90	0.00
11988	0.00	2.90	0.00
11035	0.00	4.35	0.00
16882	0.00	10.84	0.00
16459	0.00	9.34	0.00
16221	0.00	7.60	0.00
15861	0.00	5.10	0.00
14895	0.00	2.85	0.00
13896	0.00	3.20	0.00
12943	0.00	3.32	0.00
11990	0.00	3.32	0.00
11037	0.00	4.98	0.00
16883	0.00	10.23	0.00
16460	0.00	8.82	0.00
16222	0.00	7.17	0.00
15863	0.00	4.82	0.00
14897	0.00	2.69	0.00
13898	0.00	3.03	0.00
12945	0.00	3.14	0.00
11992	0.00	3.14	0.00
11039	0.00	4.71	0.00
16884	0.00	9.63	0.00
16461	0.00	8.30	0.00
16223	0.00	6.75	0.00
15866	0.00	4.53	0.00
14900	0.00	2.53	0.00
13901	0.00	2.85	0.00
12948	0.00	2.95	0.00
11995	0.00	2.95	0.00
11042	0.00	4.43	0.00
16885	0.00	11.35	0.00
16462	0.00	9.78	0.00
16224	0.00	7.95	0.00
15867	0.00	5.34	0.00
14901	0.00	2.98	0.00
13902	0.00	3.36	0.00
12949	0.00	3.48	0.00
11996	0.00	3.48	0.00
11043	0.00	5.22	0.00
8657	0.00	0.00	9.51
8659	0.00	0.00	9.51
8660	0.00	0.00	9.51
8661	0.00	0.00	9.51
8662	0.00	0.00	9.51
8664	0.00	0.00	9.51
8666	0.00	0.00	9.51
8667	0.00	0.00	9.51

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
15557	4.38	0.00	0.00
14591	2.44	0.00	0.00
13592	2.75	0.00	0.00
12639	2.85	0.00	0.00
11686	2.85	0.00	0.00
10733	4.27	0.00	0.00
16816	9.29	0.00	0.00
16393	8.01	0.00	0.00
16155	6.51	0.00	0.00
15519	4.38	0.00	0.00
14553	2.44	0.00	0.00
13554	2.75	0.00	0.00
12601	2.85	0.00	0.00
11648	2.85	0.00	0.00
10695	4.27	0.00	0.00
16814	9.29	0.00	0.00
16391	8.01	0.00	0.00
16153	6.51	0.00	0.00
15448	4.38	0.00	0.00
14482	2.44	0.00	0.00
13483	2.75	0.00	0.00
12530	2.85	0.00	0.00
11577	2.85	0.00	0.00
10624	4.27	0.00	0.00
16812	9.29	0.00	0.00
16389	8.01	0.00	0.00
16151	6.51	0.00	0.00
15446	4.38	0.00	0.00
14480	2.44	0.00	0.00
13481	2.75	0.00	0.00
12528	2.85	0.00	0.00
11575	2.85	0.00	0.00
10622	4.27	0.00	0.00
16810	9.11	0.00	0.00
16387	7.85	0.00	0.00
16149	6.38	0.00	0.00
15408	4.29	0.00	0.00
14442	2.39	0.00	0.00
13443	2.69	0.00	0.00
12490	2.79	0.00	0.00
11537	2.79	0.00	0.00
10584	4.19	0.00	0.00
16805	8.93	0.00	0.00
16379	7.69	0.00	0.00
16141	6.26	0.00	0.00
15365	4.20	0.00	0.00
14399	2.35	0.00	0.00
13400	2.64	0.00	0.00

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
8668	0.00	0.00	9.51
8670	0.00	0.00	9.51
8672	0.00	0.00	9.51
8673	0.00	0.00	9.51
8674	0.00	0.00	9.51
8676	0.00	0.00	9.51
8678	0.00	0.00	9.51
8679	0.00	0.00	9.51
8680	0.00	0.00	9.51
8682	0.00	0.00	9.51
8684	0.00	0.00	9.51
8685	0.00	0.00	9.51
8686	0.00	0.00	9.51
8687	0.00	0.00	9.51
8689	0.00	0.00	9.51
8771	0.00	0.00	9.51
8774	0.00	0.00	9.51
8776	0.00	0.00	9.51
8778	0.00	0.00	9.51
8781	0.00	0.00	9.51
8784	0.00	0.00	9.51
8788	0.00	0.00	9.51
8790	0.00	0.00	9.51
8793	0.00	0.00	9.51
8796	0.00	0.00	9.51
8800	0.00	0.00	9.51
8802	0.00	0.00	9.51
8805	0.00	0.00	9.51
8808	0.00	0.00	9.51
8812	0.00	0.00	9.51
8814	0.00	0.00	9.51
8817	0.00	0.00	9.51
8820	0.00	0.00	9.51
8824	0.00	0.00	9.51
8826	0.00	0.00	9.51
8828	0.00	0.00	9.51
8830	0.00	0.00	9.51
8834	0.00	0.00	9.51
8845	0.00	0.00	9.51
8848	0.00	0.00	9.51
8850	0.00	0.00	9.51
8852	0.00	0.00	9.51
8855	0.00	0.00	9.51
8858	0.00	0.00	9.51
8862	0.00	0.00	9.51
8864	0.00	0.00	9.51
8867	0.00	0.00	9.51
8870	0.00	0.00	9.51

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
12447	2.74	0.00	0.00
11494	2.74	0.00	0.00
10541	4.11	0.00	0.00
16803	9.67	0.00	0.00
16377	8.33	0.00	0.00
16139	6.78	0.00	0.00
15328	4.55	0.00	0.00
14362	2.54	0.00	0.00
13363	2.86	0.00	0.00
12410	2.96	0.00	0.00
11457	2.96	0.00	0.00
10504	4.45	0.00	0.00
16796	10.41	0.00	0.00
16370	8.97	0.00	0.00
16132	7.30	0.00	0.00
15252	4.90	0.00	0.00
14286	2.74	0.00	0.00
13287	3.08	0.00	0.00
12334	3.19	0.00	0.00
11381	3.19	0.00	0.00
10428	4.79	0.00	0.00
16789	12.27	0.00	0.00
16363	10.57	0.00	0.00
16125	8.60	0.00	0.00
15245	5.78	0.00	0.00
14279	3.22	0.00	0.00
13280	3.63	0.00	0.00
12327	3.76	0.00	0.00
11374	3.76	0.00	0.00
10421	5.64	0.00	0.00
16749	0.00	11.35	0.00
16323	0.00	9.78	0.00
16085	0.00	7.95	0.00
15137	0.00	5.34	0.00
14171	0.00	2.98	0.00
13172	0.00	3.36	0.00
12219	0.00	3.48	0.00
11266	0.00	3.48	0.00
10313	0.00	5.22	0.00
16750	0.00	9.63	0.00
16324	0.00	8.30	0.00
16086	0.00	6.75	0.00
15138	0.00	4.53	0.00
14172	0.00	2.53	0.00
13173	0.00	2.85	0.00
12220	0.00	2.95	0.00
11267	0.00	2.95	0.00
10314	0.00	4.43	0.00

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
8874	0.00	0.00	9.51
8876	0.00	0.00	9.51
8879	0.00	0.00	9.51
8882	0.00	0.00	9.51
8886	0.00	0.00	9.51
8888	0.00	0.00	9.51
8891	0.00	0.00	9.51
8894	0.00	0.00	9.51
8898	0.00	0.00	9.51
8900	0.00	0.00	9.51
8902	0.00	0.00	9.51
8904	0.00	0.00	9.51
8908	0.00	0.00	9.51
8919	0.00	0.00	9.51
8922	0.00	0.00	9.51
8924	0.00	0.00	9.51
8926	0.00	0.00	9.51
8930	0.00	0.00	9.51
8933	0.00	0.00	9.51
8938	0.00	0.00	9.51
8940	0.00	0.00	9.51
8944	0.00	0.00	9.51
8947	0.00	0.00	9.51
8952	0.00	0.00	9.51
8954	0.00	0.00	9.51
8958	0.00	0.00	9.51
8961	0.00	0.00	9.51
8966	0.00	0.00	9.51
8968	0.00	0.00	9.51
8972	0.00	0.00	9.51
8975	0.00	0.00	9.51
8980	0.00	0.00	9.51
8982	0.00	0.00	9.51
8985	0.00	0.00	9.51
8987	0.00	0.00	9.51
8991	0.00	0.00	9.51
9036	0.00	0.00	9.51
9038	0.00	0.00	9.51
9039	0.00	0.00	9.51
9040	0.00	0.00	9.51
9041	0.00	0.00	9.51
9043	0.00	0.00	9.51
9045	0.00	0.00	9.51
9046	0.00	0.00	9.51
9047	0.00	0.00	9.51
9049	0.00	0.00	9.51
9051	0.00	0.00	9.51
9052	0.00	0.00	9.51

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
16751	0.00	10.23	0.00
16325	0.00	8.82	0.00
16087	0.00	7.17	0.00
15140	0.00	4.82	0.00
14174	0.00	2.69	0.00
13175	0.00	3.03	0.00
12222	0.00	3.14	0.00
11269	0.00	3.14	0.00
10316	0.00	4.71	0.00
16752	0.00	10.84	0.00
16326	0.00	9.34	0.00
16088	0.00	7.60	0.00
15142	0.00	5.10	0.00
14176	0.00	2.85	0.00
13177	0.00	3.20	0.00
12224	0.00	3.32	0.00
11271	0.00	3.32	0.00
10318	0.00	4.98	0.00
16753	0.00	9.46	0.00
16327	0.00	8.15	0.00
16089	0.00	6.63	0.00
15144	0.00	4.45	0.00
14178	0.00	2.49	0.00
13179	0.00	2.80	0.00
12226	0.00	2.90	0.00
11273	0.00	2.90	0.00
10320	0.00	4.35	0.00
16754	0.00	8.08	0.00
16328	0.00	6.96	0.00
16090	0.00	5.66	0.00
15147	0.00	3.81	0.00
14181	0.00	2.12	0.00
13182	0.00	2.39	0.00
12229	0.00	2.48	0.00
11276	0.00	2.48	0.00
10323	0.00	3.72	0.00
16755	0.00	8.08	0.00
16329	0.00	6.96	0.00
16091	0.00	5.66	0.00
15148	0.00	3.81	0.00
14182	0.00	2.12	0.00
13183	0.00	2.39	0.00
12230	0.00	2.48	0.00
11277	0.00	2.48	0.00
10324	0.00	3.72	0.00
16756	0.00	8.08	0.00
16330	0.00	6.96	0.00
16092	0.00	5.66	0.00

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
9053	0.00	0.00	9.51
9055	0.00	0.00	9.51
9057	0.00	0.00	9.51
9058	0.00	0.00	9.51
9059	0.00	0.00	9.51
9061	0.00	0.00	9.51
9063	0.00	0.00	9.51
9064	0.00	0.00	9.51
9065	0.00	0.00	9.51
9066	0.00	0.00	9.51
9068	0.00	0.00	9.51
9073	0.00	0.00	9.51
9075	0.00	0.00	9.51
9076	0.00	0.00	9.51
9077	0.00	0.00	9.51
9078	0.00	0.00	9.51
9080	0.00	0.00	9.51
9082	0.00	0.00	9.51
9083	0.00	0.00	9.51
9084	0.00	0.00	9.51
9086	0.00	0.00	9.51
9088	0.00	0.00	9.51
9089	0.00	0.00	9.51
9090	0.00	0.00	9.51
9092	0.00	0.00	9.51
9094	0.00	0.00	9.51
9095	0.00	0.00	9.51
9096	0.00	0.00	9.51
9098	0.00	0.00	9.51
9100	0.00	0.00	9.51
9101	0.00	0.00	9.51
9102	0.00	0.00	9.51
9103	0.00	0.00	9.51
9105	0.00	0.00	9.51
9150	0.00	0.00	9.51
9153	0.00	0.00	9.51
9155	0.00	0.00	9.51
9157	0.00	0.00	9.51
9161	0.00	0.00	9.51
9164	0.00	0.00	9.51
9168	0.00	0.00	9.51
9170	0.00	0.00	9.51
9174	0.00	0.00	9.51
9177	0.00	0.00	9.51
9181	0.00	0.00	9.51
9183	0.00	0.00	9.51
9187	0.00	0.00	9.51
9190	0.00	0.00	9.51

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
15150	0.00	3.81	0.00
14184	0.00	2.12	0.00
13185	0.00	2.39	0.00
12232	0.00	2.48	0.00
11279	0.00	2.48	0.00
10326	0.00	3.72	0.00
16757	0.00	8.08	0.00
16331	0.00	6.96	0.00
16093	0.00	5.66	0.00
15153	0.00	3.81	0.00
14187	0.00	2.12	0.00
13188	0.00	2.39	0.00
12235	0.00	2.48	0.00
11282	0.00	2.48	0.00
10329	0.00	3.72	0.00
16758	0.00	8.08	0.00
16332	0.00	6.96	0.00
16094	0.00	5.66	0.00
15154	0.00	3.81	0.00
14188	0.00	2.12	0.00
13189	0.00	2.39	0.00
12236	0.00	2.48	0.00
11283	0.00	2.48	0.00
10330	0.00	3.72	0.00
16759	0.00	8.08	0.00
16333	0.00	6.96	0.00
16095	0.00	5.66	0.00
15156	0.00	3.81	0.00
14190	0.00	2.12	0.00
13191	0.00	2.39	0.00
12238	0.00	2.48	0.00
11285	0.00	2.48	0.00
10332	0.00	3.72	0.00
16760	0.00	8.08	0.00
16334	0.00	6.96	0.00
16096	0.00	5.66	0.00
15159	0.00	3.81	0.00
14193	0.00	2.12	0.00
13194	0.00	2.39	0.00
12241	0.00	2.48	0.00
11288	0.00	2.48	0.00
10335	0.00	3.72	0.00
16761	0.00	8.08	0.00
16335	0.00	6.96	0.00
16097	0.00	5.66	0.00
15160	0.00	3.81	0.00
14194	0.00	2.12	0.00
13195	0.00	2.39	0.00

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
9194	0.00	0.00	9.51
9196	0.00	0.00	9.51
9200	0.00	0.00	9.51
9203	0.00	0.00	9.51
9207	0.00	0.00	9.51
9209	0.00	0.00	9.51
9212	0.00	0.00	9.51
9214	0.00	0.00	9.51
9218	0.00	0.00	9.51
9263	0.00	0.00	9.51
9265	0.00	0.00	9.51
9266	0.00	0.00	9.51
9267	0.00	0.00	9.51
9268	0.00	0.00	9.51
9270	0.00	0.00	9.51
9272	0.00	0.00	9.51
9273	0.00	0.00	9.51
9274	0.00	0.00	9.51
9276	0.00	0.00	9.51
9278	0.00	0.00	9.51
9279	0.00	0.00	9.51
9280	0.00	0.00	9.51
9282	0.00	0.00	9.51
9284	0.00	0.00	9.51
9285	0.00	0.00	9.51
9286	0.00	0.00	9.51
9288	0.00	0.00	9.51
9290	0.00	0.00	9.51
9291	0.00	0.00	9.51
9292	0.00	0.00	9.51
9293	0.00	0.00	9.51
9295	0.00	0.00	9.51
9300	0.00	0.00	9.51
9302	0.00	0.00	9.51
9303	0.00	0.00	9.51
9304	0.00	0.00	9.51
9305	0.00	0.00	9.51
9307	0.00	0.00	9.51
9309	0.00	0.00	9.51
9310	0.00	0.00	9.51
9311	0.00	0.00	9.51
9313	0.00	0.00	9.51
9315	0.00	0.00	9.51
9316	0.00	0.00	9.51
9317	0.00	0.00	9.51
9319	0.00	0.00	9.51
9321	0.00	0.00	9.51
9322	0.00	0.00	9.51

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
12242	0.00	2.48	0.00
11289	0.00	2.48	0.00
10336	0.00	3.72	0.00
16762	0.00	8.08	0.00
16336	0.00	6.96	0.00
16098	0.00	5.66	0.00
15162	0.00	3.81	0.00
14196	0.00	2.12	0.00
13197	0.00	2.39	0.00
12244	0.00	2.48	0.00
11291	0.00	2.48	0.00
10338	0.00	3.72	0.00
16763	0.00	8.08	0.00
16337	0.00	6.96	0.00
16099	0.00	5.66	0.00
15165	0.00	3.81	0.00
14199	0.00	2.12	0.00
13200	0.00	2.39	0.00
12247	0.00	2.48	0.00
11294	0.00	2.48	0.00
10341	0.00	3.72	0.00
16764	0.00	8.08	0.00
16338	0.00	6.96	0.00
16100	0.00	5.66	0.00
15166	0.00	3.81	0.00
14200	0.00	2.12	0.00
13201	0.00	2.39	0.00
12248	0.00	2.48	0.00
11295	0.00	2.48	0.00
10342	0.00	3.72	0.00
16765	0.00	8.08	0.00
16339	0.00	6.96	0.00
16101	0.00	5.66	0.00
15168	0.00	3.81	0.00
14202	0.00	2.12	0.00
13203	0.00	2.39	0.00
12250	0.00	2.48	0.00
11297	0.00	2.48	0.00
10344	0.00	3.72	0.00
16766	0.00	8.08	0.00
16340	0.00	6.96	0.00
16102	0.00	5.66	0.00
15171	0.00	3.81	0.00
14205	0.00	2.12	0.00
13206	0.00	2.39	0.00
12253	0.00	2.48	0.00
11300	0.00	2.48	0.00
10347	0.00	3.72	0.00

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
9323	0.00	0.00	9.51
9325	0.00	0.00	9.51
9327	0.00	0.00	9.51
9328	0.00	0.00	9.51
9329	0.00	0.00	9.51
9330	0.00	0.00	9.51
9332	0.00	0.00	9.51
9377	0.00	0.00	9.51
9380	0.00	0.00	9.51
9382	0.00	0.00	9.51
9384	0.00	0.00	9.51
9388	0.00	0.00	9.51
9391	0.00	0.00	9.51
9396	0.00	0.00	9.51
9398	0.00	0.00	9.51
9402	0.00	0.00	9.51
9405	0.00	0.00	9.51
9410	0.00	0.00	9.51
9412	0.00	0.00	9.51
9416	0.00	0.00	9.51
9419	0.00	0.00	9.51
9424	0.00	0.00	9.51
9426	0.00	0.00	9.51
9430	0.00	0.00	9.51
9433	0.00	0.00	9.51
9438	0.00	0.00	9.51
9440	0.00	0.00	9.51
9443	0.00	0.00	9.51
9445	0.00	0.00	9.51
9449	0.00	0.00	9.51
9460	0.00	0.00	9.51
9463	0.00	0.00	9.51
9465	0.00	0.00	9.51
9467	0.00	0.00	9.51
9470	0.00	0.00	9.51
9473	0.00	0.00	9.51
9477	0.00	0.00	9.51
9479	0.00	0.00	9.51
9482	0.00	0.00	9.51
9485	0.00	0.00	9.51
9489	0.00	0.00	9.51
9491	0.00	0.00	9.51
9494	0.00	0.00	9.51
9497	0.00	0.00	9.51
9501	0.00	0.00	9.51
9503	0.00	0.00	9.51
9506	0.00	0.00	9.51
9509	0.00	0.00	9.51

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
16767	0.00	8.08	0.00
16341	0.00	6.96	0.00
16103	0.00	5.66	0.00
15172	0.00	3.81	0.00
14206	0.00	2.12	0.00
13207	0.00	2.39	0.00
12254	0.00	2.48	0.00
11301	0.00	2.48	0.00
10348	0.00	3.72	0.00
16768	0.00	8.08	0.00
16342	0.00	6.96	0.00
16104	0.00	5.66	0.00
15174	0.00	3.81	0.00
14208	0.00	2.12	0.00
13209	0.00	2.39	0.00
12256	0.00	2.48	0.00
11303	0.00	2.48	0.00
10350	0.00	3.72	0.00
16769	0.00	8.08	0.00
16343	0.00	6.96	0.00
16105	0.00	5.66	0.00
15177	0.00	3.81	0.00
14211	0.00	2.12	0.00
13212	0.00	2.39	0.00
12259	0.00	2.48	0.00
11306	0.00	2.48	0.00
10353	0.00	3.72	0.00
16770	0.00	8.08	0.00
16344	0.00	6.96	0.00
16106	0.00	5.66	0.00
15178	0.00	3.81	0.00
14212	0.00	2.12	0.00
13213	0.00	2.39	0.00
12260	0.00	2.48	0.00
11307	0.00	2.48	0.00
10354	0.00	3.72	0.00
16771	0.00	8.08	0.00
16345	0.00	6.96	0.00
16107	0.00	5.66	0.00
15180	0.00	3.81	0.00
14214	0.00	2.12	0.00
13215	0.00	2.39	0.00
12262	0.00	2.48	0.00
11309	0.00	2.48	0.00
10356	0.00	3.72	0.00
16772	0.00	8.08	0.00
16346	0.00	6.96	0.00
16108	0.00	5.66	0.00

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
9513	0.00	0.00	9.51
9515	0.00	0.00	9.51
9517	0.00	0.00	9.51
9519	0.00	0.00	9.51
9523	0.00	0.00	9.51
9534	0.00	0.00	9.51
9537	0.00	0.00	9.51
9539	0.00	0.00	9.51
9541	0.00	0.00	9.51
9544	0.00	0.00	9.51
9547	0.00	0.00	9.51
9551	0.00	0.00	9.51
9553	0.00	0.00	9.51
9556	0.00	0.00	9.51
9559	0.00	0.00	9.51
9563	0.00	0.00	9.51
9565	0.00	0.00	9.51
9568	0.00	0.00	9.51
9571	0.00	0.00	9.51
9575	0.00	0.00	9.51
9577	0.00	0.00	9.51
9580	0.00	0.00	9.51
9583	0.00	0.00	9.51
9587	0.00	0.00	9.51
9589	0.00	0.00	9.51
9591	0.00	0.00	9.51
9593	0.00	0.00	9.51
9597	0.00	0.00	9.51
9679	0.00	0.00	9.51
9681	0.00	0.00	9.51
9682	0.00	0.00	9.51
9683	0.00	0.00	9.51
9684	0.00	0.00	9.51
9686	0.00	0.00	9.51
9688	0.00	0.00	9.51
9689	0.00	0.00	9.51
9690	0.00	0.00	9.51
9692	0.00	0.00	9.51
9694	0.00	0.00	9.51
9695	0.00	0.00	9.51
9696	0.00	0.00	9.51
9698	0.00	0.00	9.51
9700	0.00	0.00	9.51
9701	0.00	0.00	9.51
9702	0.00	0.00	9.51
9704	0.00	0.00	9.51
9706	0.00	0.00	9.51
9707	0.00	0.00	9.51

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
15183	0.00	3.81	0.00
14217	0.00	2.12	0.00
13218	0.00	2.39	0.00
12265	0.00	2.48	0.00
11312	0.00	2.48	0.00
10359	0.00	3.72	0.00
16773	0.00	8.08	0.00
16347	0.00	6.96	0.00
16109	0.00	5.66	0.00
15184	0.00	3.81	0.00
14218	0.00	2.12	0.00
13219	0.00	2.39	0.00
12266	0.00	2.48	0.00
11313	0.00	2.48	0.00
10360	0.00	3.72	0.00
16774	0.00	8.08	0.00
16348	0.00	6.96	0.00
16110	0.00	5.66	0.00
15186	0.00	3.81	0.00
14220	0.00	2.12	0.00
13221	0.00	2.39	0.00
12268	0.00	2.48	0.00
11315	0.00	2.48	0.00
10362	0.00	3.72	0.00
16775	0.00	8.08	0.00
16349	0.00	6.96	0.00
16111	0.00	5.66	0.00
15189	0.00	3.81	0.00
14223	0.00	2.12	0.00
13224	0.00	2.39	0.00
12271	0.00	2.48	0.00
11318	0.00	2.48	0.00
10365	0.00	3.72	0.00
16776	0.00	8.08	0.00
16350	0.00	6.96	0.00
16112	0.00	5.66	0.00
15190	0.00	3.81	0.00
14224	0.00	2.12	0.00
13225	0.00	2.39	0.00
12272	0.00	2.48	0.00
11319	0.00	2.48	0.00
10366	0.00	3.72	0.00
16777	0.00	9.46	0.00
16351	0.00	8.15	0.00
16113	0.00	6.63	0.00
15192	0.00	4.45	0.00
14226	0.00	2.49	0.00
13227	0.00	2.80	0.00

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
9708	0.00	0.00	9.51
9709	0.00	0.00	9.51
9711	0.00	0.00	9.51
9646	0.00	0.00	9.51
9652	0.00	0.00	9.51
9658	0.00	0.00	9.51
9664	0.00	0.00	9.51
9670	0.00	0.00	9.51
8698	0.00	0.00	9.51
8704	0.00	0.00	9.51
8710	0.00	0.00	9.51
8716	0.00	0.00	9.51
8722	0.00	0.00	9.51
8721	0.00	0.00	9.51
8719	0.00	0.00	9.51
8717	0.00	0.00	9.51
8705	0.00	0.00	9.51
8707	0.00	0.00	9.51
8701	0.00	0.00	9.51
8703	0.00	0.00	9.51
8699	0.00	0.00	9.51
8724	0.00	0.00	9.51
8726	0.00	0.00	9.51
8723	0.00	0.00	9.51
8715	0.00	0.00	9.51
8713	0.00	0.00	9.51
8711	0.00	0.00	9.51
8709	0.00	0.00	9.51
8697	0.00	0.00	9.51
8696	0.00	0.00	9.51
8694	0.00	0.00	9.51
9674	0.00	0.00	9.51
9672	0.00	0.00	9.51
9671	0.00	0.00	9.51
9663	0.00	0.00	9.51
9661	0.00	0.00	9.51
9659	0.00	0.00	9.51
9645	0.00	0.00	9.51
9644	0.00	0.00	9.51
9642	0.00	0.00	9.51
9669	0.00	0.00	9.51
9667	0.00	0.00	9.51
9665	0.00	0.00	9.51
9655	0.00	0.00	9.51
9657	0.00	0.00	9.51
9653	0.00	0.00	9.51
9649	0.00	0.00	9.51
9651	0.00	0.00	9.51

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
12274	0.00	2.90	0.00
11321	0.00	2.90	0.00
10368	0.00	4.35	0.00
16778	0.00	10.84	0.00
16352	0.00	9.34	0.00
16114	0.00	7.60	0.00
15194	0.00	5.10	0.00
14228	0.00	2.85	0.00
13229	0.00	3.20	0.00
12276	0.00	3.32	0.00
11323	0.00	3.32	0.00
10370	0.00	4.98	0.00
16779	0.00	10.23	0.00
16353	0.00	8.82	0.00
16115	0.00	7.17	0.00
15196	0.00	4.82	0.00
14230	0.00	2.69	0.00
13231	0.00	3.03	0.00
12278	0.00	3.14	0.00
11325	0.00	3.14	0.00
10372	0.00	4.71	0.00
16780	0.00	9.63	0.00
16354	0.00	8.30	0.00
16116	0.00	6.75	0.00
15199	0.00	4.53	0.00
14233	0.00	2.53	0.00
13234	0.00	2.85	0.00
12281	0.00	2.95	0.00
11328	0.00	2.95	0.00
10375	0.00	4.43	0.00
16781	0.00	11.35	0.00
16355	0.00	9.78	0.00
16117	0.00	7.95	0.00
15200	0.00	5.34	0.00
14234	0.00	2.98	0.00
13235	0.00	3.36	0.00
12282	0.00	3.48	0.00
11329	0.00	3.48	0.00
10376	0.00	5.22	0.00
16853	0.00	11.35	0.00
16430	0.00	9.78	0.00
16192	0.00	7.95	0.00
15804	0.00	5.34	0.00
14837	0.00	2.98	0.00
13839	0.00	3.36	0.00
12886	0.00	3.48	0.00
11933	0.00	3.48	0.00
10980	0.00	5.22	0.00

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
9647	0.00	0.00	9.51
8990	0.00	0.00	9.51
9448	0.00	0.00	9.51
8920	0.00	0.00	9.51
9378	0.00	0.00	9.51
8688	0.00	0.00	9.51
9522	0.00	0.00	9.51
9596	0.00	0.00	9.51
9710	0.00	0.00	9.51
8833	0.00	0.00	9.51
8725	0.00	0.00	9.51
9673	0.00	0.00	9.51
8907	0.00	0.00	9.51
9331	0.00	0.00	9.51
9294	0.00	0.00	9.51
9217	0.00	0.00	9.51
9104	0.00	0.00	9.51
9067	0.00	0.00	9.51
9151	0.00	0.00	9.51
9264	0.00	0.00	9.51
9301	0.00	0.00	9.51
9037	0.00	0.00	9.51
9074	0.00	0.00	9.51
8658	0.00	0.00	9.51
8772	0.00	0.00	9.51
8846	0.00	0.00	9.51
8695	0.00	0.00	9.51
9461	0.00	0.00	9.51
9535	0.00	0.00	9.51
9680	0.00	0.00	9.51
9643	0.00	0.00	9.51
8683	0.00	0.00	9.51
8823	0.00	0.00	9.51
8897	0.00	0.00	9.51
8979	0.00	0.00	9.51
9586	0.00	0.00	9.51
9512	0.00	0.00	9.51
9437	0.00	0.00	9.51
9705	0.00	0.00	9.51
8681	0.00	0.00	9.51
8818	0.00	0.00	9.51
8892	0.00	0.00	9.51
8973	0.00	0.00	9.51
9703	0.00	0.00	9.51
9581	0.00	0.00	9.51
9507	0.00	0.00	9.51
9431	0.00	0.00	9.51
9206	0.00	0.00	9.51

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
16854	0.00	9.63	0.00
16431	0.00	8.30	0.00
16193	0.00	6.75	0.00
15805	0.00	4.53	0.00
14839	0.00	2.53	0.00
13840	0.00	2.85	0.00
12887	0.00	2.95	0.00
11934	0.00	2.95	0.00
10981	0.00	4.43	0.00
16855	0.00	10.23	0.00
16432	0.00	8.82	0.00
16194	0.00	7.17	0.00
15807	0.00	4.82	0.00
14841	0.00	2.69	0.00
13842	0.00	3.03	0.00
12889	0.00	3.14	0.00
11936	0.00	3.14	0.00
10983	0.00	4.71	0.00
16856	0.00	10.84	0.00
16433	0.00	9.34	0.00
16195	0.00	7.60	0.00
15809	0.00	5.10	0.00
14843	0.00	2.85	0.00
13844	0.00	3.20	0.00
12891	0.00	3.32	0.00
11938	0.00	3.32	0.00
10985	0.00	4.98	0.00
16857	0.00	9.46	0.00
16434	0.00	8.15	0.00
16196	0.00	6.63	0.00
15811	0.00	4.45	0.00
14845	0.00	2.49	0.00
13846	0.00	2.80	0.00
12893	0.00	2.90	0.00
11940	0.00	2.90	0.00
10987	0.00	4.35	0.00
16858	0.00	8.08	0.00
16435	0.00	6.96	0.00
16197	0.00	5.66	0.00
15814	0.00	3.81	0.00
14848	0.00	2.12	0.00
13849	0.00	2.39	0.00
12896	0.00	2.48	0.00
11943	0.00	2.48	0.00
10990	0.00	3.72	0.00
16859	0.00	8.08	0.00
16436	0.00	6.96	0.00
16198	0.00	5.66	0.00

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
9289	0.00	0.00	9.51
9326	0.00	0.00	9.51
9062	0.00	0.00	9.51
9099	0.00	0.00	9.51
9060	0.00	0.00	9.51
9097	0.00	0.00	9.51
9201	0.00	0.00	9.51
8720	0.00	0.00	9.51
8718	0.00	0.00	9.51
9668	0.00	0.00	9.51
9666	0.00	0.00	9.51
9324	0.00	0.00	9.51
9287	0.00	0.00	9.51
8677	0.00	0.00	9.51
8811	0.00	0.00	9.51
8885	0.00	0.00	9.51
8965	0.00	0.00	9.51
8714	0.00	0.00	9.51
9699	0.00	0.00	9.51
9193	0.00	0.00	9.51
9283	0.00	0.00	9.51
9320	0.00	0.00	9.51
9423	0.00	0.00	9.51
9662	0.00	0.00	9.51
9500	0.00	0.00	9.51
9574	0.00	0.00	9.51
9056	0.00	0.00	9.51
9093	0.00	0.00	9.51
9697	0.00	0.00	9.51
8675	0.00	0.00	9.51
8712	0.00	0.00	9.51
8806	0.00	0.00	9.51
9569	0.00	0.00	9.51
9660	0.00	0.00	9.51
8880	0.00	0.00	9.51
8959	0.00	0.00	9.51
9417	0.00	0.00	9.51
9495	0.00	0.00	9.51
9054	0.00	0.00	9.51
9091	0.00	0.00	9.51
9188	0.00	0.00	9.51
9281	0.00	0.00	9.51
9318	0.00	0.00	9.51
9409	0.00	0.00	9.51
9488	0.00	0.00	9.51
9562	0.00	0.00	9.51
9693	0.00	0.00	9.51
9180	0.00	0.00	9.51

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
15815	0.00	3.81	0.00
14849	0.00	2.12	0.00
13850	0.00	2.39	0.00
12897	0.00	2.48	0.00
11944	0.00	2.48	0.00
10991	0.00	3.72	0.00
16860	0.00	8.08	0.00
16437	0.00	6.96	0.00
16199	0.00	5.66	0.00
15817	0.00	3.81	0.00
14851	0.00	2.12	0.00
13852	0.00	2.39	0.00
12899	0.00	2.48	0.00
11946	0.00	2.48	0.00
10993	0.00	3.72	0.00
16861	0.00	8.08	0.00
16438	0.00	6.96	0.00
16200	0.00	5.66	0.00
15820	0.00	3.81	0.00
14854	0.00	2.12	0.00
13855	0.00	2.39	0.00
12902	0.00	2.48	0.00
11949	0.00	2.48	0.00
10996	0.00	3.72	0.00
16862	0.00	8.08	0.00
16439	0.00	6.96	0.00
16201	0.00	5.66	0.00
15821	0.00	3.81	0.00
14855	0.00	2.12	0.00
13856	0.00	2.39	0.00
12903	0.00	2.48	0.00
11950	0.00	2.48	0.00
10997	0.00	3.72	0.00
16863	0.00	8.08	0.00
16440	0.00	6.96	0.00
16202	0.00	5.66	0.00
15823	0.00	3.81	0.00
14857	0.00	2.12	0.00
13858	0.00	2.39	0.00
12905	0.00	2.48	0.00
11952	0.00	2.48	0.00
10999	0.00	3.72	0.00
16864	0.00	8.08	0.00
16441	0.00	6.96	0.00
16203	0.00	5.66	0.00
15826	0.00	3.81	0.00
14860	0.00	2.12	0.00
13861	0.00	2.39	0.00

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
9277	0.00	0.00	9.51
9314	0.00	0.00	9.51
8951	0.00	0.00	9.51
9050	0.00	0.00	9.51
9087	0.00	0.00	9.51
9656	0.00	0.00	9.51
9403	0.00	0.00	9.51
9483	0.00	0.00	9.51
9557	0.00	0.00	9.51
9691	0.00	0.00	9.51
9175	0.00	0.00	9.51
9275	0.00	0.00	9.51
9312	0.00	0.00	9.51
8945	0.00	0.00	9.51
9048	0.00	0.00	9.51
9085	0.00	0.00	9.51
9654	0.00	0.00	9.51
8671	0.00	0.00	9.51
8799	0.00	0.00	9.51
8873	0.00	0.00	9.51
8708	0.00	0.00	9.51
8794	0.00	0.00	9.51
8868	0.00	0.00	9.51
8669	0.00	0.00	9.51
8706	0.00	0.00	9.51
9167	0.00	0.00	9.51
9271	0.00	0.00	9.51
9308	0.00	0.00	9.51
9395	0.00	0.00	9.51
8665	0.00	0.00	9.51
9476	0.00	0.00	9.51
9550	0.00	0.00	9.51
9687	0.00	0.00	9.51
8937	0.00	0.00	9.51
9044	0.00	0.00	9.51
9081	0.00	0.00	9.51
8702	0.00	0.00	9.51
8787	0.00	0.00	9.51
9650	0.00	0.00	9.51
8861	0.00	0.00	9.51
8782	0.00	0.00	9.51
8856	0.00	0.00	9.51
8931	0.00	0.00	9.51
9162	0.00	0.00	9.51
9269	0.00	0.00	9.51
9306	0.00	0.00	9.51
9389	0.00	0.00	9.51
9042	0.00	0.00	9.51

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
12908	0.00	2.48	0.00
11955	0.00	2.48	0.00
11002	0.00	3.72	0.00
16865	0.00	8.08	0.00
16442	0.00	6.96	0.00
16204	0.00	5.66	0.00
15827	0.00	3.81	0.00
14861	0.00	2.12	0.00

UHS hydrodynamic mass assignment			
SASSI Node	Mass x (kip-s^2/ft)	Mass y (kip-s^2/ft)	Mass z (kip-s^2/ft)
9079	0.00	0.00	9.51
9685	0.00	0.00	9.51
9471	0.00	0.00	9.51
9545	0.00	0.00	9.51
8663	0.00	0.00	9.51
8700	0.00	0.00	9.51
9648	0.00	0.00	9.51