

City of Worcester, Massachusetts

Cambridge Street Sewer Interceptor Rehabilitation Project

Contract No. S23-1

Bid No. 7869-W3

ADDENDUM NO. 2

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To be considered as part of the contract drawings and specifications for the Cambridge Street Sewer Interceptor Rehabilitation Project, dated August 2022:

PRE-BID CONFERENCE

A pre-bid meeting was held on August 18, 2022. A sign in sheet has been provided as Attachment A.

A site walk was held on August 24, 2022.

SPECIFICATIONS

SECTION 01551 – PORTABLE CHANGEABLE MESSAGE SIGN

1. Part 3, Section 3.01.B, DELETE the following paragraph in its entirety:
“For work under this contract, Contractor shall provide up to 600 unit days of message sign operation, with possibly up to three (3) sign units operating for 200 days simultaneously, as required by the Engineer.”

And REPLACE with the following:

“For work under this contract, the Contractor shall provide up to 630-unit days of message sign operation, with up to three (3) sign units operating for 210 days simultaneously, as required by the Engineer. Signs shall be set up a minimum of ten (10) working days prior to the start of work.”

SECTION 02431 – GEOPOLYMER LINING OF SANITARY SEWERS

1. Section 2.03.B, DELETE the following paragraph in its entirety:
“The Contractor shall submit liner thickness calculations to the Engineer for review. Thickness calculations shall substantiate sufficient liner thickness to achieve desired 50-year service life. Regardless of design, installation thickness of 2.0-inches minimum shall be achieved.”

And REPLACE with the following:

“The Contractor shall submit liner thickness calculations to the Engineer for review. Thickness of liner shall be a minimum of 1.5-inches and/or shall substantiate sufficient thickness to achieve structural restoration of existing infrastructure and a 50-year design life (whichever thickness is greater). Geopolymer liner thickness for sewer pipes shall be extended a minimum 1-foot above the crown of pipe at manhole locations.”

2. Section 3.09.B, DELETE the following sentences in their entirety:
“If no direction is provided, or should information conflict, these manholes are to be lined with a minimum thickness of 1-inch. The junctions, bends, shafts, and other structures are to be lined with a minimum thickness of 1-inch.”

SECTION 02435 – SEWER MANHOLE REHABILITATION

1. Section 1.06.B, DELETE the following sentence in its entirety:
“When depth of manhole is less than 25 vertical feet, a thickness of 2-inches shall be used.”

And REPLACE with the following:

“When depth of manhole is less than 25 vertical feet, a minimum thickness of 1-inch shall be used.”

2. Section 1.07.A.5, DELETE the following paragraphs:
“For geopolymer cement liner, signed and sealed designs shall be prepared and submitted by a Licensed Professional Engineer licensed in Massachusetts or in which the product is manufactured in the following conditions:

- i. Manholes – When 25 vertical feet or greater in depth as measured from top of ground at the rim to the manhole.”

And REPLACE with:

“For geopolymer cement liner, signed and stamped designs shall be prepared and submitted by a Professional Engineer licensed in Massachusetts or in the state in which the product is manufactured for all manholes, regardless of depth.”

PLANS

SHEET C500 – CONSTRUCTION DETAILS 1

1. Sheet C500, DELETE MANHOLE REHABILITATION DETAIL and MANHOLE REHABILITATION PLAN.

And REPLACE with the MANHOLE REHABILITATION DETAIL and MANHOLE REHABILITATION PLAN provided in Attachment B – SK-1.

QUESTIONS

- Q1. Will work be allowed during the winter months?
A1. In accordance with the contract documents, the Owner will allow the Contractor to work within the public ways on this Project during the winter months. Refer to Supplement to Special Provisions (G-11 to G-12) for winter work provisions.
- Q2. Will the City allow bypass to be installed in Fall 2022 and work to begin in Spring 2023?
A2. No, contractor shall plan to work continuously. Rehabilitation work shall commence immediately upon approved installation of bypass system.
- Q3. Will the City allow 24-hour shifts?
A3. Work hours are 7:00 AM to 5:00 PM Monday through Friday. Work hours may be extended with approval of the City of Worcester. Noise regulations shall be enforced as specified in Section 01535 – Temporary Bypass Pumping System.
- Q4. Do any sewer lines from side streets tie in as services?
A4. As stated in the notes on Sheet C100 and C101, Pipe Asset IDs SM06386, SM06379 and SM14199 tie in as service connections.

Q5. Can the City share CCTV inspection videos and Multi-Sensor Inspection (MSI) data of the project area?

A5. **For access to inspection videos and data of the sewers that are in the project area, please contact:**

Kara D. Keleher, PE, ENV SP
Weston & Sampson
Email: keleherk@wseinc.com
Phone: 978-573-4060

Q6. What is the estimated thickness of the geopolymer liner?

A6. **For geopolymer lining of sewer pipes, thickness of liner shall be a minimum of 1.5-inches and/or shall substantiate sufficient thickness to achieve structural restoration of existing infrastructure and a 50-year design life (whichever thickness is greater). The Contractor shall submit a design thickness report signed and stamped by a licensed professional engineer for each pipe where geopolymer lining is to be applied. Geopolymer liner thickness for sewer pipes shall be extended a minimum 1-foot above the crown of pipe at manhole locations. Specification Section 02431 – Geopolymer Lining of Sanitary Sewers has been updated to reflect this.**

For geopolymer lining of manholes, a uniform monolithic lining of 1-inch minimum shall be applied when manhole depth is less than 25 vertical feet. Geopolymer liner thickness in manholes greater than 25 vertical feet in depth shall be calculated to achieve structural restoration of manhole and a 50-year design life. The Contractor shall submit a design thickness report signed and stamped by a Licensed Professional Engineer for all manholes, regardless of depth. Specification Section 02435 – Sewer Manhole Rehabilitation has been updated to reflect this. Manhole rehabilitation details have been revised and attached as Attachment B – SK-1.

Q7. Can fences at the South Worcester playground be taken down or removed?

A7. **In accordance with the contract documents, Plan Sheet Number G001 Bypass Notes #4:**

Following initial bypass setup, Contractor shall maintain existing fences and install temporary fences as needed to protect pumps and ensure public safety. Recreational courts and fields are to remain open throughout the duration of project.

Q8. Can areas on streets be used for staging area, i.e., around suction manhole at Camp/Cambridge Street?

A8. **No, the intersection of Camp Street and Cambridge Street needs to remain open to for traffic and for access to playground.**

Q9. Can staging area be expanded to the handball court?

A9. **No, the handball court needs to remain open and accessible for public use throughout construction.**

Q10. The capacity of the system and the dry weather flows have a large variance - what are the flows we need to design our system for?

A10. **The design, installation, and operation of the temporary pumping system shall be the Contractor's responsibility. It should be noted that the sewers in the project area are part of a combined system. Flow volumes are dependent on weather events and may take several days to subside following an event. Bypass pumping systems shall have sufficient capacity to pump all sewer flows during liner installation and other related work. The Contractor may choose to release plugs during non-work hours if bypass pumping system does not have sufficient capacity to pump all sewer flows.**

In addition to the most recent flow metering data provided in the specifications, flow metering data from 2018 has been provided below.

Meter Cambridge SS04648: located at intersection of Cambridge Street and Southbridge Street (between 6/6/2018 – 10/31/2019)

- **Minimum Flow:** 3.29 MGD (observed on 5/22/2019)
- **Average Flow:** 10.78 MGD
- **Peak Flow:** 47.62 MGD (observed on 7/17/2018)

Flow metering data from 7/17/2018 through 7/19/2018 in 5-minute intervals has been included as Attachment C for reference. The purpose of this data is to demonstrate how the system reacts before, during, and after weather events. For access to complete flow metering data from 2018-2019 and 2021-2022 in Excel format, please contact:

Kara D. Keleher, PE, ENV SP
Weston & Sampson
Email: keleherk@wseinc.com
Phone: 978-573-4060

- Q11. Can the City provide the surface area of the pipe that is to be sprayed? The detail provided on C500 is missing a couple measurements to complete our takeoff.
- A11. **Cross sections of pipe SM12454 and additional dimensions for pipe SM14267 derived from Multi-Sensor Inspections have been provided as Attachment D– SK-2.**

END OF ADDENDUM NO. 2

ATTACHMENTS

Attachment A - Pre-bid Meeting Sign-in Sheet

Attachment B – SK-1

Attachment C – Flow Metering Data (7/17/2018 through 7/19/2018)

Attachment D – SK-2

CITY OF WORCESTER, MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS & PARKS
Cambridge Street Sewer Interceptor Rehabilitation Project
Contract No. S23-1, Bid No. 7869-W3

PRE-BID CONFERENCE SIGN-IN SHEET

DATE & TIME: Thursday, August 18, 2022, 10:00 AM

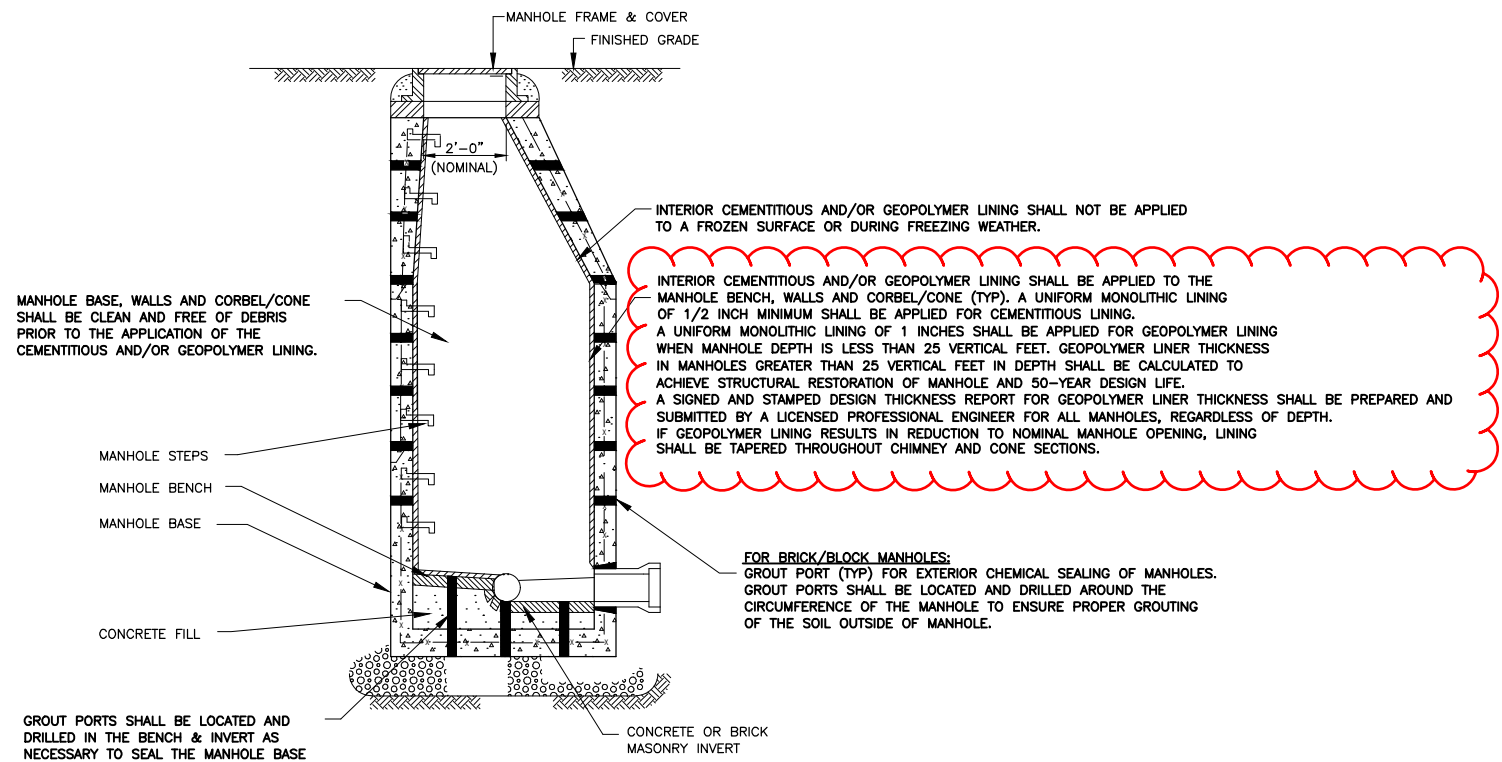
LOCATION: Worcester DPW

20 East Worcester Street, Worcester, MA

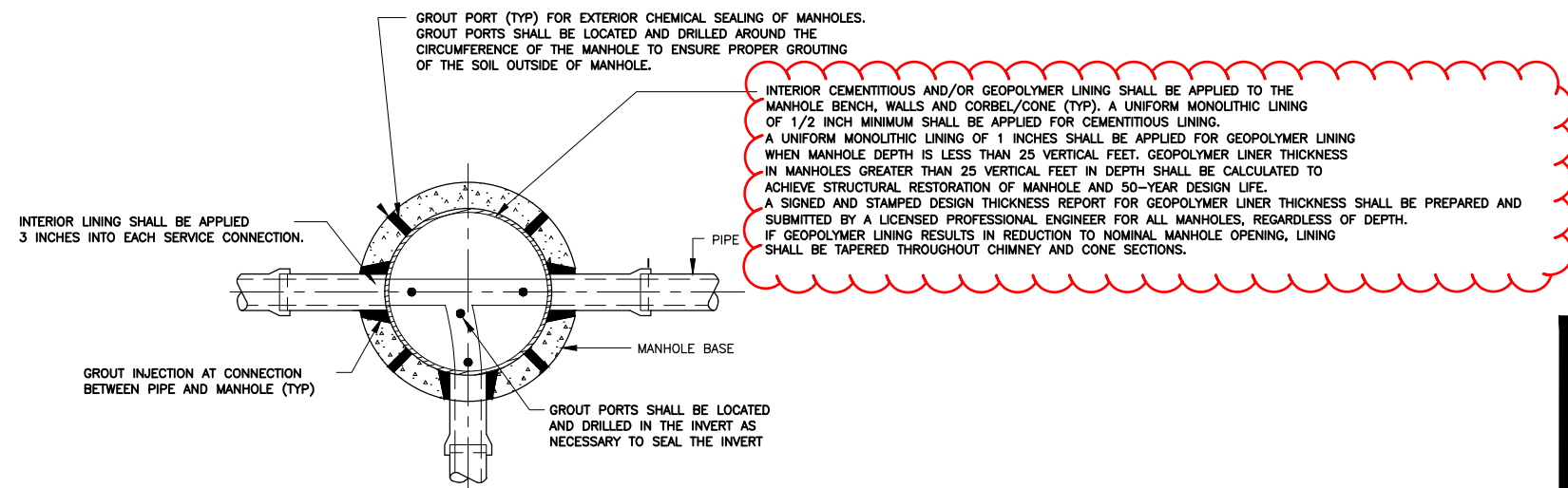
Name	Affiliation Name and Address	Email	Phone Number
JONATHAN CARLSON	XYLEM 99 STOCKHOUSE RD BOZRAH CT 06334	JONATHAN.CARLSON@XYLEM.COM	860-213-6441
JAMES FLEMING	NWMCC 25 MARSHALL ST. CAUTION MA 02021	JFLEMING@NWMCC-BOS.COM	617-590-9222
Frank Ochipinti	Weston & Sampson	occhip.f@wse inc.com	978-532-1900
PAUL PETRYKOWSKI	MICHAEL PIPE SERVICES (MICHAEL TRENCHLESS)	PPETRYKO@MICHELS.US	860-274-5468
Nate Holmes	Inliner Solutions	nate.holmes@gcinc.com	207-841-0906 off.a 207-453-9900
Dave Harris	City of Worcester	HarrisD@worcesterma.gov	508-929-1300

Name	Affiliation Name and Address	Email	Phone Number
Kara Keener	Weston & Sampson	keleherk@wsinc.com	978-573-4060
Mike Huizdos	United Rentals	mhvzdos1@ur.com	508 989-1520
Kelly Bailey	UNITED RENTALS FLUID SOLUTIONS.	BKELLY4@UR.COM	508 868 4298.

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MANHOLE REHABILITATION DETAIL
N.T.S.



MANHOLE REHABILITATION PLAN
N.T.S.

Weston & Sampson

Sheet Number:

SK-1

**Data Averaging: FiveMinute
Worcester_SS04648**

DateTime	UniDepth (in)	Vel (ft/s)	QContinuity (MGD)	Rain (in)
07/17/2018 00:00:00	12.38	6.56	7.347	0
07/17/2018 00:05:00	12.33	6.57	7.313	0
07/17/2018 00:10:00	12.21	6.54	7.175	0
07/17/2018 00:15:00	12.15	6.53	7.109	0
07/17/2018 00:20:00	12.07	6.46	6.969	0
07/17/2018 00:25:00	11.99	6.48	6.932	0
07/17/2018 00:30:00	11.96	6.61	7.043	0
07/17/2018 00:35:00	11.93	6.5	6.897	0
07/17/2018 00:40:00	11.95	6.56	6.98	0
07/17/2018 00:45:00	11.96	6.63	7.059	0
07/17/2018 00:50:00	11.92	6.63	7.029	0
07/17/2018 00:55:00	11.9	6.57	6.952	0
07/17/2018 01:00:00	11.81	6.39	6.683	0
07/17/2018 01:05:00	11.75	6.39	6.637	0
07/17/2018 01:10:00	11.7	6.31	6.507	0
07/17/2018 01:15:00	11.62	6.29	6.433	0
07/17/2018 01:20:00	11.52	6.61	6.674	0
07/17/2018 01:25:00	11.45	6.43	6.431	0
07/17/2018 01:30:00	11.32	6.43	6.328	0
07/17/2018 01:35:00	11.16	6.51	6.271	0
07/17/2018 01:40:00	11.07	6.24	5.948	0
07/17/2018 01:45:00	11.01	6.18	5.841	0
07/17/2018 01:50:00	10.97	6.19	5.815	0
07/17/2018 01:55:00	10.91	6.17	5.754	0
07/17/2018 02:00:00	10.81	6.3	5.799	0
07/17/2018 02:05:00	10.77	6.27	5.741	0
07/17/2018 02:10:00	10.7	6.2	5.622	0
07/17/2018 02:15:00	10.65	6.21	5.589	0
07/17/2018 02:20:00	10.58	6.4	5.708	0
07/17/2018 02:25:00	10.5	6.31	5.567	0
07/17/2018 02:30:00	10.44	6.33	5.544	0
07/17/2018 02:35:00	10.39	6.26	5.439	0
07/17/2018 02:40:00	10.32	6.26	5.394	0
07/17/2018 02:45:00	10.27	6.25	5.342	0
07/17/2018 02:50:00	10.19	6.21	5.252	0
07/17/2018 02:55:00	10.13	6.21	5.203	0
07/17/2018 03:00:00	10.09	6.31	5.258	0
07/17/2018 03:05:00	10.05	6.27	5.199	0
07/17/2018 03:10:00	9.98	6.33	5.197	0
07/17/2018 03:15:00	9.93	6.32	5.155	0
07/17/2018 03:20:00	9.88	6.01	4.866	0
07/17/2018 03:25:00	9.85	6.04	4.866	0
07/17/2018 03:30:00	9.79	6.13	4.894	0
07/17/2018 03:35:00	9.7	5.97	4.705	0
07/17/2018 03:40:00	9.66	6.2	4.856	0
07/17/2018 03:45:00	9.61	6.16	4.787	0
07/17/2018 03:50:00	9.56	6.16	4.757	0
07/17/2018 03:55:00	9.57	6.15	4.754	0
07/17/2018 04:00:00	9.56	6.24	4.818	0
07/17/2018 04:05:00	9.57	6.19	4.775	0
07/17/2018 04:10:00	9.56	5.78	4.456	0
07/17/2018 04:15:00	9.56	5.86	4.517	0
07/17/2018 04:20:00	9.57	5.72	4.421	0
07/17/2018 04:25:00	9.58	5.75	4.447	0
07/17/2018 04:30:00	9.57	5.73	4.425	0
07/17/2018 04:35:00	9.57	5.75	4.442	0
07/17/2018 04:40:00	9.57	6.03	4.664	0
07/17/2018 04:45:00	9.61	6.02	4.675	0
07/17/2018 04:50:00	9.62	5.96	4.638	0
07/17/2018 04:55:00	9.65	5.97	4.669	0
07/17/2018 05:00:00	9.68	6.01	4.721	0
07/17/2018 05:05:00	9.69	6.1	4.798	0
07/17/2018 05:10:00	9.73	5.85	4.631	0
07/17/2018 05:15:00	9.74	6.17	4.885	0
07/17/2018 05:20:00	9.76	5.98	4.758	0
07/17/2018 05:25:00	9.75	5.84	4.635	0
07/17/2018 05:30:00	9.74	5.77	4.573	0
07/17/2018 05:35:00	9.73	5.71	4.516	0

07/17/2018 05:40:00	9.73	5.77	4.567	0
07/17/2018 05:45:00	9.74	5.82	4.614	0
07/17/2018 05:50:00	9.76	5.82	4.627	0
07/17/2018 05:55:00	9.74	5.82	4.612	0
07/17/2018 06:00:00	9.73	5.84	4.623	0
07/17/2018 06:05:00	9.74	5.88	4.658	0
07/17/2018 06:10:00	9.79	5.86	4.681	0
07/17/2018 06:15:00	9.79	6.18	4.938	0
07/17/2018 06:20:00	9.8	6.17	4.936	0
07/17/2018 06:25:00	9.82	6.02	4.828	0
07/17/2018 06:30:00	9.84	5.87	4.719	0
07/17/2018 06:35:00	9.88	5.88	4.759	0
07/17/2018 06:40:00	9.9	5.83	4.73	0
07/17/2018 06:45:00	9.9	5.69	4.614	0
07/17/2018 06:50:00	9.91	5.78	4.702	0
07/17/2018 06:55:00	9.93	5.79	4.715	0
07/17/2018 07:00:00	9.97	5.9	4.832	0
07/17/2018 07:05:00	9.98	5.77	4.728	0
07/17/2018 07:10:00	10	6.26	5.152	0
07/17/2018 07:15:00	10.02	6.08	5.017	0
07/17/2018 07:20:00	10.04	6.18	5.114	0
07/17/2018 07:25:00	10.1	6.18	5.155	0
07/17/2018 07:30:00	10.14	6.19	5.2	0
07/17/2018 07:35:00	10.25	5.96	5.085	0
07/17/2018 07:40:00	10.29	5.96	5.113	0
07/17/2018 07:45:00	10.37	6.11	5.304	0
07/17/2018 07:50:00	10.44	6.1	5.338	0
07/17/2018 07:55:00	10.46	6.03	5.293	0
07/17/2018 08:00:00	10.53	6.02	5.34	0
07/17/2018 08:05:00	10.63	6.01	5.392	0
07/17/2018 08:10:00	10.75	6.04	5.517	0
07/17/2018 08:15:00	10.85	6.11	5.649	0
07/17/2018 08:20:00	10.94	6.13	5.736	0
07/17/2018 08:25:00	11.04	6.06	5.745	0
07/17/2018 08:30:00	11.1	6.1	5.828	0
07/17/2018 08:35:00	11.2	6.14	5.942	0
07/17/2018 08:40:00	11.26	6.14	5.988	0
07/17/2018 08:45:00	11.27	6.16	6.025	0
07/17/2018 08:50:00	11.37	6.46	6.391	0
07/17/2018 08:55:00	11.45	6.18	6.178	0
07/17/2018 09:00:00	11.5	6.13	6.164	0
07/17/2018 09:05:00	11.59	6.13	6.244	0
07/17/2018 09:10:00	11.67	6.13	6.305	0
07/17/2018 09:15:00	11.76	6.33	6.576	0
07/17/2018 09:20:00	11.85	6.35	6.669	0
07/17/2018 09:25:00	11.9	6.39	6.757	0
07/17/2018 09:30:00	11.95	6.27	6.669	0
07/17/2018 09:35:00	11.99	6.26	6.688	0
07/17/2018 09:40:00	12.03	6.37	6.834	0
07/17/2018 09:45:00	12.07	6.39	6.897	0
07/17/2018 09:50:00	12.11	6.48	7.024	0
07/17/2018 09:55:00	12.13	6.49	7.053	0
07/17/2018 10:00:00	12.16	6.5	7.091	0
07/17/2018 10:05:00	12.18	6.44	7.043	0
07/17/2018 10:10:00	12.21	6.5	7.13	0
07/17/2018 10:15:00	12.29	6.48	7.178	0
07/17/2018 10:20:00	12.37	6.64	7.419	0
07/17/2018 10:25:00	12.49	6.63	7.513	0
07/17/2018 10:30:00	12.59	6.64	7.615	0
07/17/2018 10:35:00	12.63	6.52	7.522	0
07/17/2018 10:40:00	12.69	6.65	7.711	0
07/17/2018 10:45:00	12.76	6.5	7.599	0
07/17/2018 10:50:00	12.82	6.57	7.736	0
07/17/2018 10:55:00	12.93	6.58	7.842	0
07/17/2018 11:00:00	12.97	6.61	7.913	0
07/17/2018 11:05:00	13	6.67	8.01	0
07/17/2018 11:10:00	13.03	6.48	7.809	0
07/17/2018 11:15:00	13.09	6.48	7.863	0
07/17/2018 11:20:00	13.12	6.86	8.358	0
07/17/2018 11:25:00	13.13	6.67	8.122	0
07/17/2018 11:30:00	13.14	6.6	8.051	0
07/17/2018 11:35:00	13.17	6.6	8.08	0

07/17/2018 11:40:00	13.22	6.61	8.135	0
07/17/2018 11:45:00	13.22	6.6	8.128	0
07/17/2018 11:50:00	13.19	6.62	8.129	0
07/17/2018 11:55:00	13.21	6.57	8.084	0
07/17/2018 12:00:00	13.2	6.46	7.938	0
07/17/2018 12:05:00	13.18	6.67	8.172	0
07/17/2018 12:10:00	13.18	6.69	8.193	0
07/17/2018 12:15:00	13.19	6.65	8.157	0
07/17/2018 12:20:00	13.15	6.6	8.06	0
07/17/2018 12:25:00	13.1	6.57	7.976	0
07/17/2018 12:30:00	13.09	6.27	7.607	0
07/17/2018 12:35:00	13.1	6.37	7.732	0
07/17/2018 12:40:00	13.08	6.36	7.701	0
07/17/2018 12:45:00	13.04	6.54	7.894	0
07/17/2018 12:50:00	13	6.54	7.862	0
07/17/2018 12:55:00	12.96	6.7	8.011	0
07/17/2018 13:00:00	12.9	6.61	7.854	0
07/17/2018 13:05:00	12.91	6.63	7.892	0
07/17/2018 13:10:00	12.91	6.7	7.972	0
07/17/2018 13:15:00	12.91	6.47	7.692	0
07/17/2018 13:20:00	12.9	6.54	7.762	0
07/17/2018 13:25:00	12.88	6.78	8.043	0
07/17/2018 13:30:00	12.87	6.68	7.911	0
07/17/2018 13:35:00	12.85	6.49	7.665	0
07/17/2018 13:40:00	12.82	6.48	7.638	0
07/17/2018 13:45:00	12.78	6.48	7.593	0
07/17/2018 13:50:00	12.71	6.47	7.522	0
07/17/2018 13:55:00	12.65	6.49	7.49	0
07/17/2018 14:00:00	12.62	6.61	7.608	0
07/17/2018 14:05:00	12.57	6.71	7.676	0
07/17/2018 14:10:00	12.52	6.46	7.353	0
07/17/2018 14:15:00	12.47	6.58	7.447	0
07/17/2018 14:20:00	12.43	6.54	7.358	0
07/17/2018 14:25:00	12.55	6.48	7.403	0.08
07/17/2018 14:30:00	12.58	6.4	7.335	0.01
07/17/2018 14:35:00	14.94	5.31	7.803	0
07/17/2018 14:40:00	15	5.48	8.101	0
07/17/2018 14:45:00	13.82	6.06	7.948	0
07/17/2018 14:50:00	13.19	6.15	7.552	0
07/17/2018 14:55:00	13.04	6.63	8.001	0
07/17/2018 15:00:00	13.01	6.43	7.728	0.01
07/17/2018 15:05:00	13.05	6.55	7.918	0
07/17/2018 15:10:00	13.08	6.55	7.938	0
07/17/2018 15:15:00	13.08	6.5	7.875	0.01
07/17/2018 15:20:00	13.06	6.57	7.944	0.12
07/17/2018 15:25:00	13.17	6.64	8.128	0.1
07/17/2018 15:30:00	13.37	6.67	8.341	0.15
07/17/2018 15:35:00	16.65	6.06	10.435	0.33
07/17/2018 15:40:00	33.74	3.81	18.324	0.29
07/17/2018 15:45:00	37.94	4.18	23.724	0.17
07/17/2018 15:50:00	39.93	4.74	28.869	0.02
07/17/2018 15:55:00	41.37	4.43	28.328	0.02
07/17/2018 16:00:00	42.11	4.87	31.886	0.03
07/17/2018 16:05:00	42.13	4.84	31.711	0.11
07/17/2018 16:10:00	45.88	5.5	40.473	0.22
07/17/2018 16:15:00	70.49	3.17	37.383	0.13
07/17/2018 16:20:00	85.17	3.67	43.559	0.07
07/17/2018 16:25:00	98.58	3.68	43.652	0.11
07/17/2018 16:30:00	110.7	3.72	44.146	0.06
07/17/2018 16:35:00	120.67	3.76	44.692	0.1
07/17/2018 16:40:00	123.61	3.94	46.742	0.03
07/17/2018 16:45:00	118.08	4.01	47.618	0.01
07/17/2018 16:50:00	110.58	3.84	45.572	0.01
07/17/2018 16:55:00	102.03	3.92	46.593	0
07/17/2018 17:00:00	92.67	3.64	43.188	0.01
07/17/2018 17:05:00	82.87	3.72	44.161	0
07/17/2018 17:10:00	72.73	3.54	42.095	0
07/17/2018 17:15:00	59.5	3.78	38.568	0
07/17/2018 17:20:00	45.8	4.52	33.207	0.01
07/17/2018 17:25:00	38.56	5.32	30.828	0.01
07/17/2018 17:30:00	38.34	5.32	30.617	0.02
07/17/2018 17:35:00	37.88	5.76	32.614	0.01

07/17/2018 17:40:00	33.69	6.57	31.496	0.02
07/17/2018 17:45:00	34.24	6.49	31.869	0.02
07/17/2018 17:50:00	33.88	6.5	31.423	0.01
07/17/2018 17:55:00	32.97	6.41	29.781	0.02
07/17/2018 18:00:00	31.09	6.74	28.791	0.02
07/17/2018 18:05:00	27.1	6.72	23.55	0.01
07/17/2018 18:10:00	26.38	6.67	22.493	0.01
07/17/2018 18:15:00	24.9	6.91	21.416	0.02
07/17/2018 18:20:00	24.36	6.85	20.551	0.03
07/17/2018 18:25:00	23.82	6.87	19.983	0.02
07/17/2018 18:30:00	23.68	6.65	19.157	0.01
07/17/2018 18:35:00	23.78	6.6	19.139	0.01
07/17/2018 18:40:00	23.59	6.68	19.127	0
07/17/2018 18:45:00	22.6	6.56	17.642	0
07/17/2018 18:50:00	21.57	6.84	17.212	0
07/17/2018 18:55:00	20.65	7.19	16.963	0
07/17/2018 19:00:00	20.17	7.49	17.064	0
07/17/2018 19:05:00	19.58	7.51	16.395	0
07/17/2018 19:10:00	19.31	7.46	15.948	0
07/17/2018 19:15:00	19.08	7.41	15.563	0
07/17/2018 19:20:00	18.77	7.45	15.29	0.01
07/17/2018 19:25:00	18.55	7.4	14.934	0
07/17/2018 19:30:00	18.24	7.23	14.233	0
07/17/2018 19:35:00	18.05	7.44	14.416	0
07/17/2018 19:40:00	17.78	7.43	14.081	0
07/17/2018 19:45:00	17.57	7.35	13.697	0
07/17/2018 19:50:00	17.38	7.55	13.832	0
07/17/2018 19:55:00	17.29	7.48	13.624	0
07/17/2018 20:00:00	17.02	7.47	13.283	0
07/17/2018 20:05:00	16.87	6.99	12.269	0.02
07/17/2018 20:10:00	16.74	7.27	12.612	0.05
07/17/2018 20:15:00	16.6	7.34	12.591	0.01
07/17/2018 20:20:00	16.54	7.24	12.36	0
07/17/2018 20:25:00	16.42	7.4	12.49	0.01
07/17/2018 20:30:00	16.43	7.18	12.116	0.01
07/17/2018 20:35:00	17.68	6.65	12.489	0
07/17/2018 20:40:00	24.43	5.24	15.787	0.01
07/17/2018 20:45:00	23.36	5.57	15.74	0.05
07/17/2018 20:50:00	22.2	5.82	15.256	0.06
07/17/2018 20:55:00	18.12	6.77	13.187	0.02
07/17/2018 21:00:00	17.75	7.38	13.951	0.01
07/17/2018 21:05:00	17.81	7.18	13.646	0.03
07/17/2018 21:10:00	18.62	6.43	13.04	0.01
07/17/2018 21:15:00	18.86	6.43	13.276	0
07/17/2018 21:20:00	18.77	6.97	14.295	0
07/17/2018 21:25:00	18.43	7.43	14.843	0
07/17/2018 21:30:00	18.17	7.42	14.524	0
07/17/2018 21:35:00	17.9	7.43	14.226	0.01
07/17/2018 21:40:00	17.51	7.42	13.755	0
07/17/2018 21:45:00	17.28	7.08	12.882	0
07/17/2018 21:50:00	17.09	7.3	13.06	0
07/17/2018 21:55:00	16.96	7.16	12.677	0
07/17/2018 22:00:00	16.83	7.08	12.392	0
07/17/2018 22:05:00	16.65	6.96	11.98	0
07/17/2018 22:10:00	16.56	7.09	12.118	0
07/17/2018 22:15:00	16.39	7.15	12.032	0
07/17/2018 22:20:00	16.29	7.26	12.104	0
07/17/2018 22:25:00	16.18	7.24	11.946	0
07/17/2018 22:30:00	16.16	7.17	11.829	0
07/17/2018 22:35:00	16.09	6.89	11.297	0
07/17/2018 22:40:00	15.97	7.13	11.553	0
07/17/2018 22:45:00	15.91	7.08	11.412	0
07/17/2018 22:50:00	15.85	6.77	10.857	0
07/17/2018 22:55:00	15.73	6.92	10.966	0
07/17/2018 23:00:00	15.57	7.08	11.067	0
07/17/2018 23:05:00	15.48	7.09	10.975	0
07/17/2018 23:10:00	15.47	7	10.828	0
07/17/2018 23:15:00	15.41	7.02	10.795	0
07/17/2018 23:20:00	15.38	7.01	10.76	0
07/17/2018 23:25:00	15.36	6.98	10.681	0
07/17/2018 23:30:00	15.34	7	10.705	0
07/17/2018 23:35:00	15.25	7.09	10.751	0

07/17/2018 23:40:00	15.15	7.08	10.62	0
07/17/2018 23:45:00	15.08	6.92	10.315	0
07/17/2018 23:50:00	15.02	6.92	10.248	0
07/17/2018 23:55:00	14.86	6.74	9.833	0
07/18/2018 00:00:00	14.74	6.94	10.002	0
07/18/2018 00:05:00	14.63	6.94	9.899	0
07/18/2018 00:10:00	14.54	6.73	9.512	0
07/18/2018 00:15:00	14.46	7.15	10.032	0
07/18/2018 00:20:00	14.38	6.87	9.559	0
07/18/2018 00:25:00	14.33	6.79	9.401	0
07/18/2018 00:30:00	14.27	7.01	9.634	0
07/18/2018 00:35:00	14.22	6.71	9.18	0
07/18/2018 00:40:00	14.14	6.74	9.142	0
07/18/2018 00:45:00	14.07	6.7	9.033	0
07/18/2018 00:50:00	13.93	6.83	9.07	0
07/18/2018 00:55:00	13.83	6.8	8.936	0
07/18/2018 01:00:00	13.72	6.77	8.787	0
07/18/2018 01:05:00	13.57	6.83	8.74	0
07/18/2018 01:10:00	13.46	6.79	8.578	0
07/18/2018 01:15:00	13.41	6.37	7.997	0
07/18/2018 01:20:00	13.38	6.54	8.192	0
07/18/2018 01:25:00	13.31	6.52	8.101	0
07/18/2018 01:30:00	13.23	6.3	7.762	0
07/18/2018 01:35:00	13.11	6.43	7.828	0
07/18/2018 01:40:00	13.01	6.47	7.784	0
07/18/2018 01:45:00	12.95	6.71	8.017	0
07/18/2018 01:50:00	12.91	6.64	7.894	0
07/18/2018 01:55:00	12.85	6.68	7.887	0
07/18/2018 02:00:00	12.82	6.59	7.756	0
07/18/2018 02:05:00	12.75	6.58	7.682	0
07/18/2018 02:10:00	12.67	6.55	7.573	0
07/18/2018 02:15:00	12.64	6.37	7.353	0
07/18/2018 02:20:00	12.59	6.38	7.316	0
07/18/2018 02:25:00	12.5	6.38	7.244	0
07/18/2018 02:30:00	12.4	6.34	7.107	0
07/18/2018 02:35:00	12.31	6.35	7.049	0
07/18/2018 02:40:00	12.26	6.5	7.174	0
07/18/2018 02:45:00	12.15	6.48	7.062	0
07/18/2018 02:50:00	12.13	6.45	7.012	0
07/18/2018 02:55:00	12.06	6.42	6.926	0
07/18/2018 03:00:00	12.07	6.42	6.934	0
07/18/2018 03:05:00	12.06	6.41	6.911	0
07/18/2018 03:10:00	12.07	6.46	6.963	0
07/18/2018 03:15:00	12.11	6.63	7.188	0
07/18/2018 03:20:00	12.1	6.51	7.053	0
07/18/2018 03:25:00	12.11	6.6	7.157	0
07/18/2018 03:30:00	12.12	6.61	7.173	0
07/18/2018 03:35:00	12.1	6.09	6.601	0
07/18/2018 03:40:00	12.09	6.17	6.678	0
07/18/2018 03:45:00	12.12	5.95	6.457	0
07/18/2018 03:50:00	12.08	6.06	6.549	0
07/18/2018 03:55:00	12.09	6.07	6.565	0
07/18/2018 04:00:00	12.06	6.21	6.691	0
07/18/2018 04:05:00	12.03	6.23	6.685	0
07/18/2018 04:10:00	11.98	6.23	6.653	0
07/18/2018 04:15:00	11.98	6.49	6.935	0
07/18/2018 04:20:00	11.95	6.57	6.992	0
07/18/2018 04:25:00	11.94	6.54	6.95	0
07/18/2018 04:30:00	11.94	6.41	6.812	0
07/18/2018 04:35:00	11.91	6.36	6.724	0
07/18/2018 04:40:00	11.93	6.7	7.109	0
07/18/2018 04:45:00	11.88	6.57	6.93	0
07/18/2018 04:50:00	11.81	6.57	6.874	0
07/18/2018 04:55:00	11.8	6.68	6.976	0
07/18/2018 05:00:00	11.76	6.52	6.776	0
07/18/2018 05:05:00	11.7	6.5	6.7	0
07/18/2018 05:10:00	11.65	6.52	6.687	0
07/18/2018 05:15:00	11.61	6.46	6.594	0
07/18/2018 05:20:00	11.54	6.48	6.559	0
07/18/2018 05:25:00	11.49	6.43	6.462	0
07/18/2018 05:30:00	11.43	6.39	6.382	0
07/18/2018 05:35:00	11.38	6.53	6.475	0

07/18/2018 05:40:00	11.38	6.54	6.482	0
07/18/2018 05:45:00	11.39	6.17	6.12	0
07/18/2018 05:50:00	11.41	6.6	6.57	0
07/18/2018 05:55:00	11.43	6.54	6.526	0
07/18/2018 06:00:00	11.5	5.98	6.022	0
07/18/2018 06:05:00	11.54	6.01	6.078	0
07/18/2018 06:10:00	11.62	5.99	6.116	0
07/18/2018 06:15:00	11.65	6.31	6.466	0
07/18/2018 06:20:00	11.68	6.09	6.264	0
07/18/2018 06:25:00	11.7	6.36	6.556	0
07/18/2018 06:30:00	11.7	6.34	6.546	0
07/18/2018 06:35:00	11.74	6.39	6.627	0
07/18/2018 06:40:00	11.77	6.27	6.521	0
07/18/2018 06:45:00	11.81	6.28	6.567	0
07/18/2018 06:50:00	11.93	6.28	6.664	0
07/18/2018 06:55:00	12.09	6.21	6.723	0
07/18/2018 07:00:00	12.13	6.32	6.869	0
07/18/2018 07:05:00	12.22	6.35	6.974	0
07/18/2018 07:10:00	12.27	6.52	7.203	0
07/18/2018 07:15:00	12.41	6.55	7.355	0
07/18/2018 07:20:00	12.49	6.67	7.566	0
07/18/2018 07:25:00	12.57	6.7	7.666	0
07/18/2018 07:30:00	12.67	6.42	7.438	0
07/18/2018 07:35:00	12.76	6.41	7.49	0
07/18/2018 07:40:00	12.83	6.63	7.815	0
07/18/2018 07:45:00	12.89	6.6	7.833	0
07/18/2018 07:50:00	12.94	6.71	8.007	0
07/18/2018 07:55:00	12.98	6.73	8.062	0
07/18/2018 08:00:00	13.04	6.7	8.081	0
07/18/2018 08:05:00	13.12	6.54	7.956	0
07/18/2018 08:10:00	13.17	6.38	7.813	0
07/18/2018 08:15:00	13.19	6.51	7.984	0
07/18/2018 08:20:00	13.2	6.81	8.371	0
07/18/2018 08:25:00	13.23	6.82	8.408	0
07/18/2018 08:30:00	13.24	6.72	8.284	0
07/18/2018 08:35:00	13.29	6.82	8.455	0
07/18/2018 08:40:00	13.34	6.81	8.495	0
07/18/2018 08:45:00	13.52	6.43	8.177	0
07/18/2018 08:50:00	13.6	6.39	8.196	0
07/18/2018 08:55:00	13.6	6.44	8.254	0
07/18/2018 09:00:00	13.6	6.45	8.269	0
07/18/2018 09:05:00	13.57	6.64	8.49	0
07/18/2018 09:10:00	13.56	6.68	8.529	0
07/18/2018 09:15:00	13.55	6.59	8.406	0
07/18/2018 09:20:00	13.53	6.64	8.457	0
07/18/2018 09:25:00	13.54	6.53	8.319	0
07/18/2018 09:30:00	13.57	6.56	8.392	0
07/18/2018 09:35:00	13.53	6.57	8.36	0
07/18/2018 09:40:00	13.51	6.73	8.55	0
07/18/2018 09:45:00	13.49	6.73	8.534	0
07/18/2018 09:50:00	13.43	6.74	8.487	0
07/18/2018 09:55:00	13.39	6.76	8.482	0
07/18/2018 10:00:00	13.39	6.76	8.479	0
07/18/2018 10:05:00	13.38	6.76	8.477	0
07/18/2018 10:10:00	13.36	6.77	8.462	0
07/18/2018 10:15:00	13.37	6.41	8.024	0
07/18/2018 10:20:00	13.38	6.68	8.367	0
07/18/2018 10:25:00	13.39	6.52	8.18	0
07/18/2018 10:30:00	13.41	6.79	8.528	0
07/18/2018 10:35:00	13.44	6.67	8.402	0
07/18/2018 10:40:00	13.49	6.68	8.466	0
07/18/2018 10:45:00	13.53	6.76	8.615	0
07/18/2018 10:50:00	13.62	6.79	8.725	0
07/18/2018 10:55:00	13.67	6.98	9.022	0
07/18/2018 11:00:00	13.74	6.97	9.073	0
07/18/2018 11:05:00	13.74	6.73	8.753	0
07/18/2018 11:10:00	13.73	6.8	8.84	0
07/18/2018 11:15:00	13.71	6.8	8.824	0
07/18/2018 11:20:00	13.67	6.88	8.893	0
07/18/2018 11:25:00	13.64	6.53	8.413	0
07/18/2018 11:30:00	13.57	6.58	8.412	0
07/18/2018 11:35:00	13.55	6.48	8.258	0

07/18/2018 11:40:00	13.5	6.47	8.211	0
07/18/2018 11:45:00	13.48	6.66	8.432	0
07/18/2018 11:50:00	13.45	6.66	8.411	0
07/18/2018 11:55:00	13.45	6.91	8.719	0
07/18/2018 12:00:00	13.44	6.83	8.61	0
07/18/2018 12:05:00	13.44	6.83	8.617	0
07/18/2018 12:10:00	13.5	6.6	8.372	0
07/18/2018 12:15:00	13.53	6.57	8.36	0
07/18/2018 12:20:00	13.54	6.59	8.394	0
07/18/2018 12:25:00	13.56	6.8	8.685	0
07/18/2018 12:30:00	13.57	6.84	8.755	0
07/18/2018 12:35:00	13.62	6.87	8.828	0
07/18/2018 12:40:00	13.64	6.85	8.823	0
07/18/2018 12:45:00	13.66	6.47	8.353	0
07/18/2018 12:50:00	13.69	6.52	8.445	0
07/18/2018 12:55:00	13.7	6.71	8.69	0
07/18/2018 13:00:00	13.69	6.68	8.653	0
07/18/2018 13:05:00	13.69	6.73	8.716	0
07/18/2018 13:10:00	13.69	6.8	8.804	0
07/18/2018 13:15:00	13.7	6.75	8.754	0
07/18/2018 13:20:00	13.68	6.76	8.752	0
07/18/2018 13:25:00	13.64	6.77	8.717	0
07/18/2018 13:30:00	13.62	6.86	8.821	0
07/18/2018 13:35:00	13.63	6.8	8.743	0
07/18/2018 13:40:00	13.61	6.59	8.455	0
07/18/2018 13:45:00	13.62	6.75	8.675	0
07/18/2018 13:50:00	13.61	6.92	8.89	0
07/18/2018 13:55:00	13.58	6.91	8.85	0
07/18/2018 14:00:00	13.57	6.76	8.638	0
07/18/2018 14:05:00	13.54	6.86	8.743	0
07/18/2018 14:10:00	13.53	6.58	8.374	0
07/18/2018 14:15:00	13.52	6.66	8.477	0
07/18/2018 14:20:00	13.5	6.67	8.457	0
07/18/2018 14:25:00	13.48	6.7	8.475	0
07/18/2018 14:30:00	13.44	6.69	8.435	0
07/18/2018 14:35:00	13.41	6.65	8.359	0
07/18/2018 14:40:00	13.38	6.68	8.372	0
07/18/2018 14:45:00	13.35	6.53	8.153	0
07/18/2018 14:50:00	13.3	6.55	8.134	0
07/18/2018 14:55:00	13.27	6.6	8.171	0
07/18/2018 15:00:00	13.23	6.61	8.147	0
07/18/2018 15:05:00	13.23	6.61	8.146	0
07/18/2018 15:10:00	13.25	6.69	8.263	0
07/18/2018 15:15:00	13.22	6.74	8.292	0
07/18/2018 15:20:00	13.18	6.53	8.005	0
07/18/2018 15:25:00	13.16	6.33	7.746	0
07/18/2018 15:30:00	13.11	6.66	8.103	0
07/18/2018 15:35:00	13.1	6.52	7.917	0
07/18/2018 15:40:00	13.1	6.56	7.967	0
07/18/2018 15:45:00	13.13	6.47	7.88	0
07/18/2018 15:50:00	13.12	6.65	8.09	0
07/18/2018 15:55:00	13.11	6.76	8.226	0
07/18/2018 16:00:00	13.08	6.66	8.079	0
07/18/2018 16:05:00	13.08	6.68	8.095	0
07/18/2018 16:10:00	13.05	6.65	8.033	0
07/18/2018 16:15:00	13.04	6.56	7.907	0
07/18/2018 16:20:00	13.02	6.79	8.175	0
07/18/2018 16:25:00	13.03	6.57	7.916	0
07/18/2018 16:30:00	13.02	6.5	7.829	0
07/18/2018 16:35:00	13.05	6.59	7.964	0
07/18/2018 16:40:00	13.09	6.58	7.989	0
07/18/2018 16:45:00	13.13	6.59	8.032	0
07/18/2018 16:50:00	13.16	6.67	8.148	0
07/18/2018 16:55:00	13.18	6.62	8.117	0
07/18/2018 17:00:00	13.19	6.7	8.225	0
07/18/2018 17:05:00	13.2	6.73	8.264	0
07/18/2018 17:10:00	13.2	6.79	8.337	0
07/18/2018 17:15:00	13.21	6.91	8.492	0
07/18/2018 17:20:00	13.21	6.83	8.394	0
07/18/2018 17:25:00	13.26	6.57	8.125	0
07/18/2018 17:30:00	13.27	6.57	8.137	0
07/18/2018 17:35:00	13.27	6.88	8.521	0

07/18/2018 17:40:00	13.3	6.91	8.578	0
07/18/2018 17:45:00	13.29	6.8	8.435	0
07/18/2018 17:50:00	13.3	6.77	8.405	0
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07/18/2018 18:00:00	13.33	6.95	8.662	0
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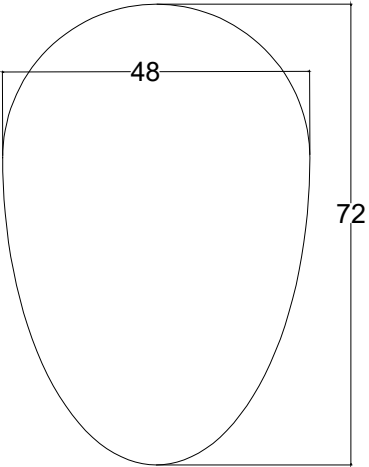
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07/19/2018 19:25:00	13.36	6.69	8.37	0
07/19/2018 19:30:00	13.39	6.66	8.351	0
07/19/2018 19:35:00	13.37	6.69	8.37	0
07/19/2018 19:40:00	13.37	6.79	8.5	0
07/19/2018 19:45:00	13.33	6.84	8.518	0
07/19/2018 19:50:00	13.31	6.86	8.524	0
07/19/2018 19:55:00	13.23	6.75	8.318	0
07/19/2018 20:00:00	13.2	6.64	8.16	0
07/19/2018 20:05:00	13.16	6.61	8.088	0
07/19/2018 20:10:00	13.15	6.61	8.076	0
07/19/2018 20:15:00	13.14	6.71	8.194	0
07/19/2018 20:20:00	13.14	6.68	8.151	0
07/19/2018 20:25:00	13.16	6.64	8.129	0
07/19/2018 20:30:00	13.17	6.69	8.191	0
07/19/2018 20:35:00	13.15	6.69	8.168	0
07/19/2018 20:40:00	13.17	6.68	8.183	0
07/19/2018 20:45:00	13.17	6.57	8.039	0
07/19/2018 20:50:00	13.17	6.72	8.224	0
07/19/2018 20:55:00	13.2	6.72	8.255	0
07/19/2018 21:00:00	13.26	6.72	8.319	0
07/19/2018 21:05:00	13.28	6.74	8.348	0
07/19/2018 21:10:00	13.29	6.63	8.221	0
07/19/2018 21:15:00	13.37	6.63	8.301	0
07/19/2018 21:20:00	13.36	6.64	8.303	0
07/19/2018 21:25:00	13.35	6.69	8.346	0
07/19/2018 21:30:00	13.36	6.7	8.373	0
07/19/2018 21:35:00	13.38	6.64	8.314	0
07/19/2018 21:40:00	13.38	6.53	8.179	0
07/19/2018 21:45:00	13.4	6.65	8.34	0
07/19/2018 21:50:00	13.44	6.69	8.43	0
07/19/2018 21:55:00	13.44	6.73	8.489	0
07/19/2018 22:00:00	13.43	6.69	8.429	0
07/19/2018 22:05:00	13.43	6.83	8.601	0
07/19/2018 22:10:00	13.39	6.76	8.483	0
07/19/2018 22:15:00	13.43	6.67	8.401	0
07/19/2018 22:20:00	13.43	6.69	8.425	0
07/19/2018 22:25:00	13.46	6.67	8.431	0
07/19/2018 22:30:00	13.51	6.66	8.465	0
07/19/2018 22:35:00	13.54	6.8	8.667	0
07/19/2018 22:40:00	13.6	6.82	8.748	0
07/19/2018 22:45:00	13.62	6.74	8.67	0
07/19/2018 22:50:00	13.66	6.84	8.833	0
07/19/2018 22:55:00	13.66	6.73	8.685	0
07/19/2018 23:00:00	13.69	6.73	8.714	0
07/19/2018 23:05:00	13.71	6.72	8.721	0
07/19/2018 23:10:00	13.72	6.68	8.678	0
07/19/2018 23:15:00	13.73	6.79	8.831	0
07/19/2018 23:20:00	13.75	6.81	8.873	0
07/19/2018 23:25:00	13.76	6.81	8.884	0
07/19/2018 23:30:00	13.74	6.8	8.859	0
07/19/2018 23:35:00	13.74	6.72	8.756	0

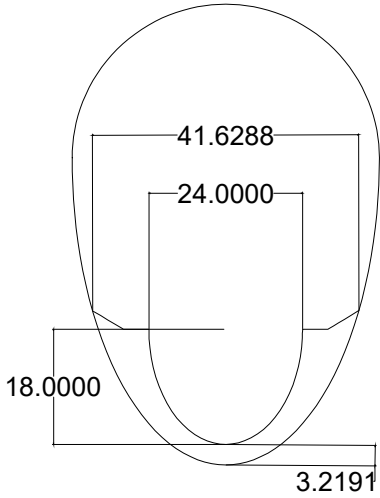
07/19/2018 23:40:00	13.72	6.7	8.714	0
07/19/2018 23:45:00	13.7	6.69	8.684	0
07/19/2018 23:50:00	13.67	6.72	8.683	0
07/19/2018 23:55:00	13.57	6.7	8.568	0

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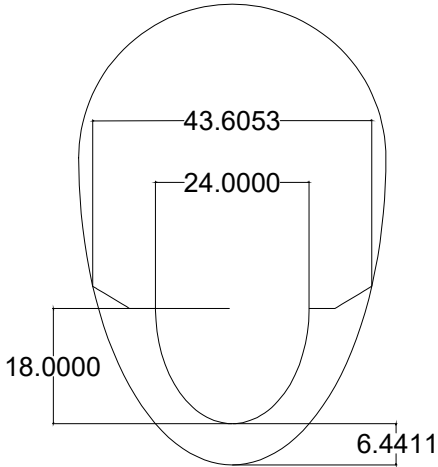
48x72 WITH 24x18 INVERT
SM12454
SS04648 - SS03478
0 - 170 LF
A=2714.336 IN²



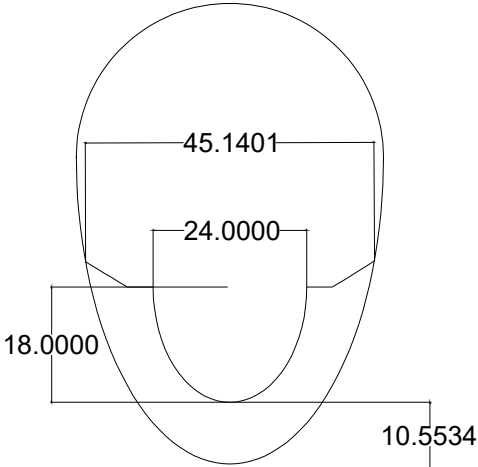
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SM12454
SS04648 - SS03478
170 - 195 LF
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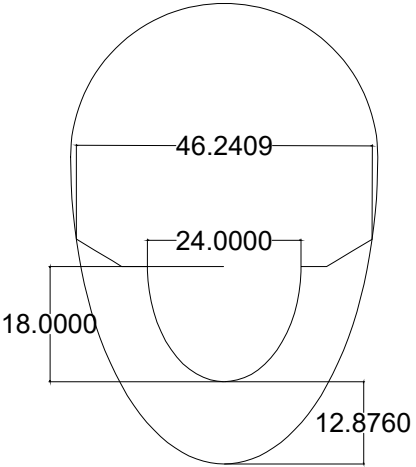
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SM12454
SS04648 - SS03478
195 - 220 LF
A=2,392.4827



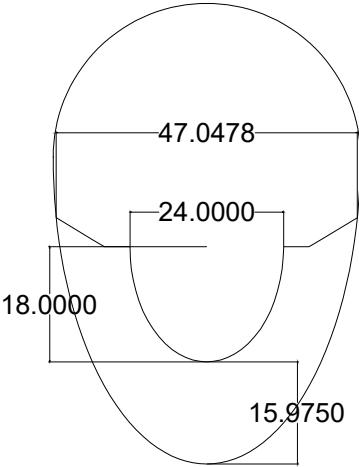
48x72 WITH 24x18 INVERT
SM12454
SS04648 - SS03478
220 - 245 LF
A=2,222.9806 IN²



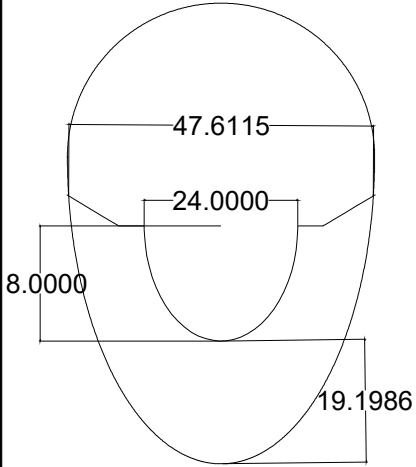
48x72 WITH 24x18 INVERT
SM12454
SS04648 - SS03478
245 - 270 LF
A=2,061.0287 IN²



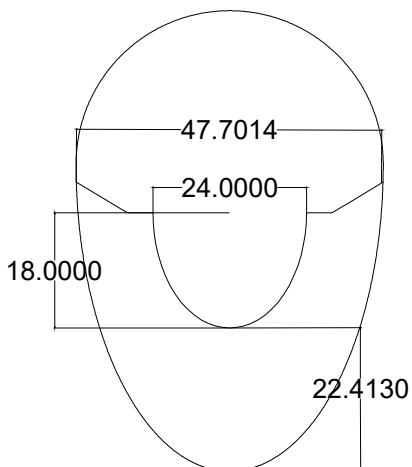
48x72 WITH 24x18 INVERT
SM12454
SS04648 - SS03478
270 - 295 LF
A=1,909.9140 IN²



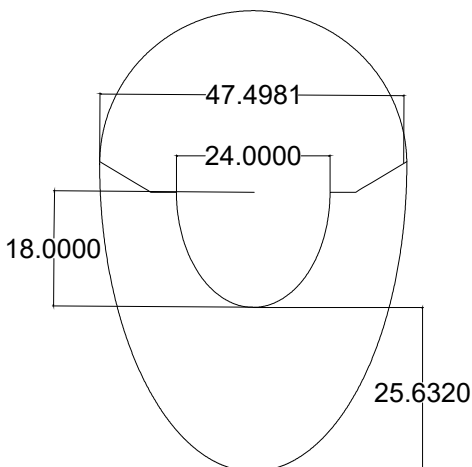
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SM12454
SS04648 - SS03478
295 - 320 LF
A=1,749.6566 IN²



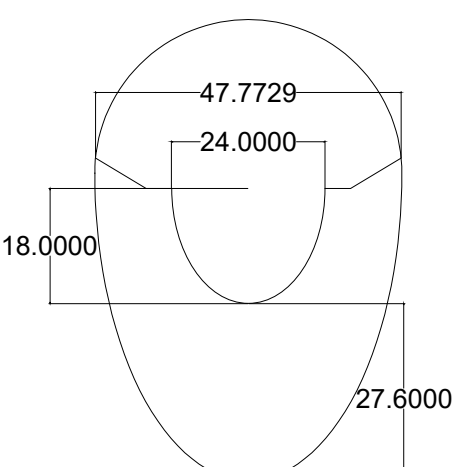
48x72 WITH 24x18 INVERT
SM12454
SS04648 - SS03478
320 - 345 LF
A=1,584.2299 IN²



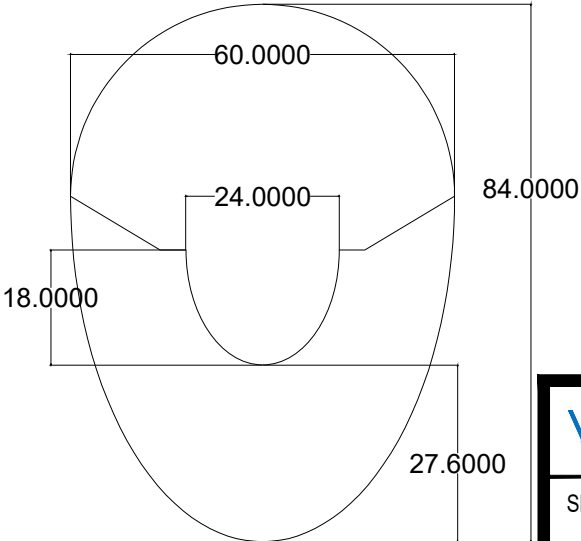
48x72 WITH 24x18 INVERT
SM12454
SS04648 - SS03478
345 - 370 LF
A=1,414.0546 IN²



48x72 WITH 24x18 INVERT
SM12454
SS04648 - SS03478
370 - 385 LF
A=1321.0548 IN²



60x84 WITH 24x18 INVERT
SM14267
SS03478 - SS07196
A=2139.4087



Weston & SampsonSM

Sheet Number:

SK-2