ATTACHMENTS

CITY OF SHEBOYGAN

REQUEST FOR PUBLIC WORKS COMMITTEE CONSIDERATION

ITEM DESCRIPTION: A resolution authorizing the appropriate City officials to execute a Permanent Easement, Underground Utility Easements, and a Temporary Easement between the City of Sheboygan and its board of Water Commissioners, that are specific to the new Raw Water Improvements Project.

REPORT PREPARED BY: Joseph Kerlin, Parks & Forestry Superintentant

REPORT DATE: August 19, 2021 **MEETING DATE:** August 24, 2021

FISCAL SUMMARY:

Budget Line Item:	N/A
Budget Summary:	N/A
Budget Expenditure:	N/A
Budgeted Revenue:	N/A

STATUTORY REFERENCE:

Wisconsin Statues:	N/A
Municipal Code:	N/A

BACKGROUND / ANALYSIS: The Sheboygan Water Utility is in the process of updating their Raw Water Intake infrastructure and pump station. The project is tentatively scheduled to start in the Spring of 2022 and be completed in the fall of 2023. As part of these upgrades, the Sheboygan Water Utility will need several easements in Vollrath Park from the City of Sheboygan to successfully complete the project.

The resolution was referred to the Marina, Parks & Forestry Commission to go through their process under Sheboygan Municipal Code 74-2(a). The Commission held three public hearings in accordance with Sheboygan Municipal Code 74-2(a). There were no public speakers at any of the three public hearings.

The Marina, Parks & Forestry Commission, by a unanimous vote, moved to recommend the Public Works Committee approve and recommend Res. No.24-21-22 authorizing the appropriate City officials to execute a Permanent Easement, Underground Utility Easements, and a Temporary Easement between the City of Sheboygan and its board of Water Commissioners, that are specific to the new Raw Water Improvements Project.

STAFF COMMENTS: City staff agrees with the motion made by Marina, Parks and Forestry Commission and recommend the adoption of the listed easements for the Raw Water Improvements Project by the Public Works committee.

ACTION REQUESTED: Motion to recommend the Public Works Committee adopt Res. No.24-21-22 authorizing the appropriate City officials to execute a Permanent Easement, Underground Utility Easements, and a Temporary Easement between the

City of Sheboygan and its Board of Water Commissioners, that are specific to the new Raw Water Improvements Project.

ATTACHMENTS:

I. Res. No. 24-21-22
II. Easements

III

DIRECT REFERRAL TO PUBLIC WORKS COMMITTEE

Res. No. 24 - 21 - 22. By Alderpersons Dekker and Perrella. June 29, 2021.

A RESOLUTION authorizing the appropriate City officials to execute a Permanent Easement, Underground Utility Easements, and a Temporary Easement between the City of Sheboygan and its Board of Water Commissioners, that are specific to the new Raw Water Improvements Project.

RESOLVED: That the Mayor and City Clerk are hereby authorized to execute the three (3) Easement documents, copies of which are attached.

_____

_____

Public Works

I HEREBY CERTIFY that the foregoing Resolution was duly passed by the Common Council of the City of Sheboygan, Wisconsin, on the _____ day of _____, 20____.

Dated _____ 20____. _____, City Clerk

Approved _____ 20____. _____, Mayor

PERMANENT EASEMENT

THIS INDENTURE made this _____ day of July, 2021, by and between the City of Sheboygan, Wisconsin, a municipal corporation of the State of Wisconsin, "GRANTOR," and the City of Sheboygan, Wisconsin, by its Board of Water Commissioners, "GRANTEE";

W I T N E S S E T H:

KNOW ALL MEN BY THESE PRESENTS that the said GRANTOR, in consideration of one dollar ($1.00) and other valuable consideration in hand paid by said GRANTEE, and the covenants hereinafter contained, receipt of which is hereby acknowledged, hereby grants a permanent easement to GRANTEE for municipal water utility purposes to construct, maintain, operate and repair a water utility intake facility in, under and upon the property described in Exhibit A.2 attached hereto.

RETURN TO:

City Attorney Charles C. Adams
828 Center Ave., Suite 210
Sheboygan, WI 53081

59281014370
Parcel Ident. No.

The covenants herein contained shall run with the land and be binding upon the parties hereto and their successors and assigns.

IN WITNESS WHEREOF, GRANTOR has caused the execution of this document on the ____ day of July, 2021.

GRANTOR:
CITY OF SHEBOYGAN

BY: _____
Ryan Sorenson
Mayor

ATTEST: _____
Meredith DeBruin
City Clerk

STATE OF WISCONSIN)
)SS.
COUNTY OF SHEBOYGAN)

Personally came before me, this ___ day of July, 2021, Ryan Sorenson, Mayor, and Meredith DeBruin, City Clerk, of the above-named corporation, to me known to be the persons who executed the foregoing instrument, and to me known to be such Mayor and City Clerk of the City of Sheboygan, and acknowledged that they executed the foregoing instrument as such officers of said corporation, by its authority.

_____
Notary Public, State of Wisconsin
My commission expires _____

IN WITNESS WHEREOF, GRANTEE has caused the execution of this document on the ____ day of July, 2021.

GRANTEE:
BOARD OF WATER COMMISSIONERS
OF THE CITY OF SHEBOYGAN

BY: _____
Gerald R. Van De Kreeke
President

ATTEST: _____
Mark J. Smith
Secretary

STATE OF WISCONSIN)
)SS.
COUNTY OF SHEBOYGAN)

Personally came before me, this _____ day of July, 2021, Gerald R. Van De Kreeke and Mark J. Smith of the above-named board, to me known to be the persons who executed the foregoing instrument, and to me known to be such President and Secretary of the Board of Water Commissioners of the City of Sheboygan, and acknowledged that they executed the foregoing instrument as such officers of said board, by its authority.

_____
Notary Public, State of Wisconsin
My commission expires _____

This document is authorized by and in accordance with Res. No. ___-21-22.

This instrument drafted by:
Charles C. Adams
City Attorney
Sheboygan, WI 53081
WI State Bar No. 1021454

EXHIBIT A.2
PERMANENT UTILITY EASEMENT

A parcel of land located in the southeast quarter of Section 14, T15N, R23E, City of Sheboygan, Sheboygan County, Wisconsin, and being a part of Vollrath Park, more particularly described as follows:

Commencing at the SW corner of Block 7, Corson and Mallmann's Subdivision; thence N. 01°-48'-57" W. along the west line of said Block 7, 119.50 feet to the south right-of-way line of Park Avenue; thence N.00°-35'-44" W. 548.0 feet; thence easterly at a right angle N. 89°-01'-12" E, 52.10 feet, this point being also the northwesterly corner of the Sheboygan Water Utility property and the point of beginning of the PERMANENT EASEMENT; thence the following bearings and distances along the north property line of said property: N. 33°-25'-00" E. 83.84 feet, thence N. 61°-00' 11" E. 87.30 feet to a Lake Michigan rock revetment; thence northwesterly N. 42°-10'-35" W along the top of said Lake Michigan rock revetment 271.99 feet; Thence S. 47°-54'-57" W , 92.41 feet; thence S. 37°-47'-49" E, 203.56 feet; thence S. 05°-57'-14" W, 34.09 feet, thence S. 54°-34'-11" W, 35.85 feet, thence S. 02°-39'-01" E, 35.16 feet, thence S. 58°-38'-25" E, 46.16 feet to the west line of the Sheboygan Water Utility property, thence N. 10°-54'-05" W along said west line, 23.17 feet to the northwesterly corner of the Sheboygan Water Utility property and the point of beginning.

This parcel containing **30,315 SF**, or 0.69 Acre more or less.

UNDERGROUND UTILITY EASEMENTS

THIS INDENTURE made this _____ day of July, 2021, by and between the City of Sheboygan, Wisconsin, a municipal corporation of the State of Wisconsin, "GRANTOR," and the City of Sheboygan, Wisconsin, by its Board of Water Commissioners, "GRANTEE";

W I T N E S S E T H:

KNOW ALL MEN BY THESE PRESENTS that the said GRANTOR, in consideration of one dollar ($1.00) and other valuable consideration in hand paid by said GRANTEE, and the covenants hereinafter contained, receipt of which is hereby acknowledged, hereby grants permanent underground utility easements to GRANTEE for municipal water utility purposes to construct, maintain, operate and repair a water utility intake facility in, under and upon the property described in Exhibit B.2 attached hereto.

RETURN TO:

City Attorney Charles C. Adams
828 Center Ave., Suite 210
Sheboygan, WI 53081

59281014370
Parcel Ident. No.

The covenants herein contained shall run with the land and be binding upon the parties hereto and their successors and assigns.

IN WITNESS WHEREOF, GRANTOR has caused the execution of this document on the ____ day of July, 2021.

GRANTOR:
CITY OF SHEBOYGAN

BY: _____
Ryan Sorenson
Mayor

ATTEST: _____
Meredith DeBruin
City Clerk

STATE OF WISCONSIN)
)SS.
COUNTY OF SHEBOYGAN)

Personally came before me, this ___ day of July, 2021, Ryan Sorenson, Mayor, and Meredith DeBruin, City Clerk, of the above-named corporation, to me known to be the persons who executed the foregoing instrument, and to me known to be such Mayor and City Clerk of the City of Sheboygan, and acknowledged that they executed the foregoing instrument as such officers of said corporation, by its authority.

_____
Notary Public, State of Wisconsin
My commission expires _____

IN WITNESS WHEREOF, GRANTEE has caused the execution of this document on the ____ day of July, 2021.

GRANTEE:
BOARD OF WATER COMMISSIONERS
OF THE CITY OF SHEBOYGAN

BY: _____
Gerald R. Van De Kreeke
President

ATTEST: _____
Mark J. Smith
Secretary

STATE OF WISCONSIN)
)SS.
COUNTY OF SHEBOYGAN)

Personally came before me, this _____ day of July, 2021, Gerald R. Van De Kreeke and Mark J. Smith of the above-named board, to me known to be the persons who executed the foregoing instrument, and to me known to be such President and Secretary of the Board of Water Commissioners of the City of Sheboygan, and acknowledged that they executed the foregoing instrument as such officers of said board, by its authority.

_____
Notary Public, State of Wisconsin
My commission expires _____

This document is authorized by and in accordance with Res. No. ___-21-22.

This instrument drafted by:
Charles C. Adams
City Attorney
Sheboygan, WI 53081
WI State Bar No. 1021454

EXHIBIT B.2
UTILITY EASEMENTS

Utility Easement #1

A parcel of land located in the southeast quarter of Section 14, T15N, R23E, City of Sheboygan, Sheboygan County, Wisconsin, and being a part of Vollrath Park, more particularly described as follows:

Commencing at the SW corner of Block 7, Corson and Mallmann's Subdivision; thence N. 01°-48'-57" W. along the west line of said Block 7, 119.50 feet to the south right-of-way line of Park Avenue; thence N.00°-35'-44" W. 525.21 feet; thence easterly at a right angle N. 89°-24'-16" E, 56.25 feet, to the point of beginning of the UTILITY EASEMENT; thence S. 10°-54'-02" E. 96.46 feet; thence S. 39°-15'-25" E. 33.13 feet; thence N. 83°-53'-32" W. 54.53 feet; thence N. 06°-32'-23" E. 69.85 feet; thence N. 16°-18'-53" W. 62.75; thence S. 58°-38'-25" E. 28.92 feet to the point of beginning.

This parcel containing **3067 SF**, or 0.07 Acres more or less.

Utility Easement #2

A parcel of land located in the southeast quarter of Section 14, T15N, R23E, City of Sheboygan, Sheboygan County, Wisconsin, and being a part of Vollrath Park, more particularly described as follows:

Commencing at the SW corner of Block 7, Corson and Mallmann's Subdivision; thence N. 01°-48'-57" W. along the west line of said Block 7, 119.50 feet to the south right-of-way line of Park Avenue; thence N.00°-35'-44" W. 586.63 feet; thence easterly at a right angle N. 89°-01'-12" E, 18.67 feet to the point of beginning of the UTILITY EASEMENT; thence N. 16°-07' 16" W. 10.72 feet; thence N. 06°-53' 13" E. 73.90 feet; thence S. 37°-47' 49" E., 39.22 feet; thence S. 05°-57' 14" W. 34.09 feet; thence S. 54°-34' 11" W. 32.38 feet to the point of beginning.

This parcel containing **1666 SF**, or 0.04 Acres more or less.

Utility Easement #3

A parcel of land located in the southeast quarter of Section 14, T15N, R23E, City of Sheboygan, Sheboygan County, Wisconsin, and being a part of Vollrath Park, more particularly described as follows:

Commencing at the SW corner of Block 7, Corson and Mallmann's Subdivision; thence N. 01°-48'-57" W. along the west line of said Block 7, 119.50 feet to the south right-of-way line of Park Avenue; thence N.00°-35'-44" W. 548.0 feet; thence easterly at a right angle N. 89°-01'-12" E, 52.10 feet, this point being also the northwesterly corner of the Sheboygan Water Utility property; thence N. 33°-25'-00" E, 83.84 feet along the property boundary for Sheboygan Water Utility, thence N. 61°-00'-11" E, 87.30 feet along said property boundary; thence N. 42°-10'-35" W., 271.99 feet along the rock revetment of Lake Michigan; thence S. 47°-54'-57" W., 24.68 feet to the point of beginning of the UTILITY EASEMENT; thence S. 47°-54'-57" W., 21.42 feet; thence N. 87°-38'-24" W., 25.82 feet; thence N. 44°-28'-24" W., 40.59 feet; thence N. 47°-50'-53" E, 15.01 feet along the Southeasterly boundary of VOLLRATH BOULEVARD Right-of-way as referenced to CSM A-19009 filed 06-26-90; thence S. 44°-28'-24" E, 34.05 feet; thence S. 87°-38'-24" E, 35.18 feet to the point of beginning.

This parcel containing **1017 SF**, or 0.02 Acres more or less.

Utility Easement #4

A parcel of land located in the southeast quarter of Section 14, T15N, R23E, City of Sheboygan, Sheboygan County, Wisconsin, and being a part of Vollrath Park, more particularly described as follows:

Commencing at the SW corner of Block 7, Corson and Mallmann's Subdivision; thence N. 01°-48'-57" W. along the west line of said Block 7, 119.50 feet to the south right-of-way line of Park Avenue; thence N.00°-35'-44" W. 548.0 feet; thence easterly at a right angle N. 89°-01'-12" E, 52.10 feet, this point being also the northwesterly corner of the Sheboygan Water Utility property; thence N. 33°-25'-00" E, 83.84 feet along the property boundary for Sheboygan Water Utility, thence N. 61°-00'-11" E, 87.30 feet along said property boundary; thence N. 42°-10'-35" W., 271.99 feet along the rock revetment of Lake Michigan; thence S. 47°-54'-57" W., 92.41 feet; thence S. 37°-47'-49" E., 22.84 feet to the point of beginning of the UTILITY EASEMENT; thence S. 37°-47'-49" E., 17.50 feet; thence S. 83°-13'-56" W., 64.71 feet; thence S. 89°-05'-43" W., 93.07 feet; thence N. 47°-50'-53" E., 22.75 feet along the Southeasterly boundary of VOLLRATH BOULEVARD Right-of-way as referenced to CSM A-19009 filed 06-26-90; thence N. 89°-05'-43" E., 75.20 feet; thence N. 83°-13'-56" E., 54.92 feet to the point of beginning.

This parcel containing **2159 SF**, or 0.05 Acres more or less.

TEMPORARY EASEMENT

THIS INDENTURE made this _____ day of July, 2021, by and between the City of Sheboygan, Wisconsin, a municipal corporation of the State of Wisconsin, "GRANTOR," and the City of Sheboygan, Wisconsin, by its Board of Water Commissioners, "GRANTEE";

W I T N E S S E T H:

KNOW ALL MEN BY THESE PRESENTS that the said GRANTOR, in consideration of one dollar ($1.00) and other valuable consideration in hand paid by said GRANTEE, and the covenants hereinafter contained, receipt of which is hereby acknowledged, hereby grants a temporary, non-exclusive easement to GRANTEE for municipal water utility purposes to construct, maintain, operate and repair a water utility intake facility in, under and upon the property described in Exhibit C.2 attached hereto.

RETURN TO:

City Attorney Charles C. Adams
828 Center Ave., Suite 210
Sheboygan, WI 53081

59281014370
Parcel Ident. No.

The covenants herein contained shall run with the land and be binding upon the parties hereto and their successors and assigns.

IN WITNESS WHEREOF, GRANTOR has caused the execution of this document on the ____ day of July, 2021.

GRANTOR:
CITY OF SHEBOYGAN

BY: _____
Ryan Sorenson
Mayor

ATTEST: _____
Meredith DeBruin
City Clerk

STATE OF WISCONSIN)
)SS.
COUNTY OF SHEBOYGAN)

Personally came before me, this ___ day of July, 2021, Ryan Sorenson, Mayor, and Meredith DeBruin, City Clerk, of the above-named corporation, to me known to be the persons who executed the foregoing instrument, and to me known to be such Mayor and City Clerk of the City of Sheboygan, and acknowledged that they executed the foregoing instrument as such officers of said corporation, by its authority.

_____
Notary Public, State of Wisconsin
My commission expires _____

IN WITNESS WHEREOF, GRANTEE has caused the execution of this document on the ____ day of July, 2021.

GRANTEE:
BOARD OF WATER COMMISSIONERS
OF THE CITY OF SHEBOYGAN

BY: _____
Gerald R. Van De Kreeke
President

ATTEST: _____
Mark J. Smith
Secretary

STATE OF WISCONSIN)
)SS.
COUNTY OF SHEBOYGAN)

Personally came before me, this _____ day of July, 2021, Gerald R. Van De Kreeke and Mark J. Smith of the above-named board, to me known to be the persons who executed the foregoing instrument, and to me known to be such President and Secretary of the Board of Water Commissioners of the City of Sheboygan, and acknowledged that they executed the foregoing instrument as such officers of said board, by its authority.

_____
Notary Public, State of Wisconsin
My commission expires _____

This document is authorized by and in accordance with Res. No. ___-21-22.

This instrument drafted by:
Charles C. Adams
City Attorney
Sheboygan, WI 53081
WI State Bar No. 1021454

EXHIBIT C.2
TEMPORARY EASEMENT

A parcel of land located in the southeast quarter of Section 14, T15N, R23E, City of Sheboygan, Sheboygan County, Wisconsin, and being a part of Vollrath Park, more particularly described as follows:

Commencing at the SW corner of Block 7, Corson and Mallmann's Subdivision; thence N. 01°-48'-57" W. along the west line of said Block 7, 119.50 feet to the south right-of-way line of Park Avenue; thence N.00°-35'-44" W. 549.52 feet; thence easterly at a right angle N. 89°-01'-12" E, 17.09 feet, this point being also along the westerly line of the Permanent Utility Easement and the point of beginning of the TEMPORARY EASEMENT; thence the following bearings and distances along the west property line of said property: N. 02°-39'- 01" W. 35.16 feet; thence N. 54°-34'-11" E. 35.85 feet; thence N. 05°-57'-14" E. , 34.09 feet; thence N. 37°-47'-49" W, 203.56 feet; thence N. 47°-54'-57" E, 92.41 feet to a Lake Michigan rock revetment; thence northwesterly N. 42°-10'-35" W, along the top of said Lake Michigan rock revetment 58.71 feet to the south line of Vollrath Blvd.; Thence S. 47°-50'-53" W, 97.95 feet along said south line, thence S. 37°-47'-49" E, 214.09 feet, thence S. 41°-18'-51" W, 147.13 feet, thence S06°-13'-10" W, 20.40 feet, thence N. 84°-47'-19" E, 105.66 feet to the westerly line of the Permanent Utility Easement and the point of beginning.

This parcel containing **16,927 SF**, or 0.38 Acre more or less.

CITY OF SHEBOYGAN

REQUEST FOR PUBLIC WORKS COMMITTEE CONSIDERATION

ITEM DESCRIPTION: A resolution authorizing the appropriate City officials to execute a Lease Agreement between the City of Sheboygan, the Ellwood H. May Environmental Park Association of Sheboygan County, Inc., and the Sheboygan Area School District.

REPORT PREPARED BY: Joseph L. Kerlin, Superintendent of Parks and Forestry

REPORT DATE: August 17, 2021 **MEETING DATE:** August 24, 2021

FISCAL SUMMARY:

Budget Line Item:	N/A
Budget Summary:	N/A
Budgeted Expenditure:	N/A
Budgeted Revenue:	N/A

STATUTORY REFERENCE:

Wisconsin Statutes:	N/A
Municipal Code:	N/A

BACKGROUND / ANALYSIS: The Sheboygan Area School District has leased classroom space in the Maywood Ecology Center for several years now from the City of Sheboygan and the Ellwood H. May Environmental Park Association of Sheboygan County. The lease agreements have been beneficial to all parties and they are requesting to enter into another lease to start September 7, 2021 and end on June 9, 2022.

STAFF COMMENTS: The new agreement has been reviewed and updated by the City Attorney, Chuck Adams. The Department agrees that this is an acceptable educational program to be held at the Maywood Environmental Park.

ACTION REQUESTED: Motion to recommend the Common Council adopt Res. No. 43-21-22 authorizing the appropriate City officials to execute a Lease Agreement between the City of Sheboygan, the Ellwood H. May Environmental Park Association of Sheboygan County, Inc., and the Sheboygan Area School District.

ATTACHMENTS:

I. Res. No. 43-21-22
II. Lease Agreement between City of Sheboygan, The Ellwood H. May Environmental Park Association of Sheboygan County, Inc., and the Sheboygan Area School District

III

4.4

Res. No. 43 - 21 - 22. By Alderpersons Dekker and Perrella.
August 2, 2021.

A RESOLUTION authorizing the appropriate City officials to execute a Lease Agreement between the City of Sheboygan, the Ellwood H. May Environmental Park Association of Sheboygan County, Inc., and the Sheboygan Area School District.

RESOLVED: That the Mayor and City Clerk are hereby authorized to execute the Lease Agreement, a copy of which is attached hereto and incorporated herein.

PW

I HEREBY CERTIFY that the foregoing Resolution was duly passed by the Common Council of the City of Sheboygan, Wisconsin, on the _____ day of _____, 20____.

Dated _____ 20____. _____, City Clerk

Approved _____ 20____. _____, Mayor

LEASE AGREEMENT

BETWEEN:

City of Sheboygan

("CITY")

Ellwood H. May Environmental Park Association of Sheboygan County, Inc.

("MPA")

AND

Sheboygan Area School District (SASD)

("SASD")

In consideration of CITY leasing certain premises within Ellwood H. May Environmental Park, a city park ("the Property") to SASD and other valuable consideration, the receipt and sufficiency of which consideration is hereby acknowledged, and in consideration of the duty of MPA to provide youth and school education programs at the Property during the school year on behalf of the City, the Parties agree as follows:

Leased Property

1. CITY agrees to lease classroom space to SASD, specifically the Environmental Lab, and the Program Room within the Ecology Center at the Ellwood H. May Environmental Park located at 3615 Mueller Road, Sheboygan, WI 53083, for use by Warriner High School.
2. No animals are allowed to be kept in or about the Property.
3. Subject to the provisions of this Lease, SASD staff and students are entitled to park in designated areas on or about the Property.
4. In addition to park rules, all rules adopted by SASD and Warriner High School regarding smoking, use of drugs or alcohol, dress codes, and behavior apply to the use of Maywood's buildings and grounds.

Term

5. The term of the Lease commences at 8:00 a.m. on September 7, 2021 and ends at 3:00 p.m. on June 9, 2022.

Rent

6. Subject to the provisions of this Lease, the rent for the Classrooms is $1,111.11 per month (the "Rent").

7. SASD will pay half of the Rent by check on or before the 1st of each and every month of the term of this Lease, beginning September 1. No payment shall be required for the month of June. Payment shall be made to MPA by the Environmental Park Director ("Director"). MPA is authorized to use said funds to perform any and all of its duties under the Memorandum of Understanding between MPA and the City ("MOU").

Tenant Improvements

8. SASD may NOT make improvements or permanent changes to the Property without authorization from the Director.

Utilities and Other Charges

9. SASD shall not be responsible for the payment of the utilities and other charges in relation to the Property, including electricity, water/sewer, internet, telephone, natural gas, garbage collection and alarm/security system.

Insurance

10. SASD is hereby advised and understands that the personal property of SASD is not insured by the City or MPA for either damage or loss, and neither the City nor MPA assume any liability for any such loss.
11. SASD agrees that it shall hold harmless the City and its officers, employees, representatives, volunteers, and assigns, and MPA and its officers, employees, representatives, volunteers, and assigns, and shall indemnify and hold harmless all such persons or entities for any claims for damage to property or injury to persons which may be occasioned by any activity carried on under the terms of the lease.
12. SASD agrees that it shall furnish and maintain such liability insurance as will protect SASD, the City, MPA, and all of their officers, employees, representatives, volunteers, and assigns, from all claims for damage to property or bodily injury, including death, which may arise from the operations under the lease or in connection therewith. Such insurance shall provide coverage of not less than three million dollars ($3,000,000) per occurrence. The policy shall further provide that it may not be cancelled except upon thirty (30) days written notice served upon both the City and MPA. Failure to provide such insurance shall terminate the Lease.

Governing Law

13. This Lease will be construed in accordance with and exclusively governed by the laws of the State of Wisconsin.

Severability

14. If there is a conflict between any provision of this Lease and the provisions of law, such provisions of the Lease will be amended or deleted as necessary in order to comply with the law. Further, any provisions that are required by law are incorporated into this Lease.
15. The invalidity or unenforceability of any provisions of this Lease will not affect the validity of enforceability of any other provision of this Lease. Such other provisions remain in full force and effect.

Amendment of Lease

16. This Lease may only be amended or modified by a written document executed by the Parties.

Assignment of Lease

17. SASD shall not assign the Lease, or sublet or grant any concession or license to use the Property or any part of the Property. Any assignment, subletting, concession, or license, whether by operation of law or otherwise, will be void and will, at the City's option, terminate this Lease.

Additional Clauses

18. Room assignments may need to be adjusted on occasion to meet program obligations scheduled prior to this Lease Agreement. In such cases, MPA staff will attempt to notify Warriner High School teaching staff at least one day in advance.
19. Should any party determine that the Lease needs to be terminated, SASD is obligated to complete rent payments through the month in which termination will occur.
20. The City and MPA are willing to permit use of lab equipment at the Property by Warriner High School students and staff as part of the curriculum, but with the understanding that coordinated equipment use is necessary to accommodate the other schools using the Property. Any equipment or rooms determined to have been damaged by students or staff of Warriner High School must be repaired or replaced at the expense of SASD.

Damage to Property

21. In case the City and or MPA chooses not to rebuild or repair property damage at the Property not caused by the negligence or willful act of the Tenant or the Tenant's employees, students, or visitors , the City may end the Lease by giving appropriate notice.
22. Property and equipment damage caused by students or staff of Warriner High School will be repaired/replaced at the expense of SASD.

Maintenace

23. SASD will, at its sole expense, keep and maintain the Property and appurtenances in good and sanitary condition and repair during the term of this Lease and any renewal of this Lease.
24. Major maintenance and repair of the Property involving anticipated or actual costs in excess of $100.00 per incident not due to SASD's misuse, waste, or neglect of that of SASD's employees, students, or visitors will be the responsibility of MPA or their assigns.
25. SASD shall also perform the following maintenance in respect to the Property: Rooms must be maintained for use in meetings/programs at alternate times, and returned to an agreed upon arrangement at the end of each day that rooms are used.

Care and Use of Property

26. SASD will promptly notify the Director of any damage to rooms or to any furnishings supplied by the City or MPA, or of any situation that may significantly interfere with the normal uses of the Property.
27. SASD will not engage in any illegal trade or activity on or about the Property.
28. The Parties will comply with standards of health, sanitation, fire, housing and safety as required by law.
29. The Parties will use reasonable efforts to maintain the Property in such a condition as to prevent the accumulation of moisture and the growth of mold. SASD will promptly notify the Director in writing of any moisture accumulation that occurs or of any visible evidence of mold discovered by SASD. MPA will promptly respond to any such written notices from SASD.
30. At the expiration of the term of this Lease, SASD will quit and surrender the Property in as good a state and condition as they were at the commencement of the Lease, reasonable use and wear and tear excepted.

Rules and Regulations

31. SASD will obey all rules of Maywood and the City regarding the Property, including any rules related to the ongoing coronavirus pandemic.

Address for Notice

32. For any matter relating to this tenancy, SASD may be contacted at the Property or through the phone number below:
    a. Name: Sheboygan Area School District
    b. Phone: 920/459-3500
33. For any matter relating to the tenancy, whether during or after this tenancy has been terminated, the City's address for notice is:
    a. Name: Ellwood H. May Environmental Park Association of Sheboygan County, Inc.
    b. Address: 3615 Mueller Road, Sheboygan, WI 53083
    c. Phone: 920/459-3906

General Provisions

34. All monetary amounts stated or referred to in this Lease are based in the United States dollar.
35. Any waiver by the City or MPA of any failure by SASD to perform or observe the provisions of this Lease will not operate as a waiver of the City's or MPA's rights under this Lease in respect of any subsequent defaults, breaches or non-performance and will not defeat or affect in any way the City's rights or MPA's rights in respect of any subsequent default or breach.
36. This Lease will extend to and be binding upon and inure to the benefit of the respective heirs, executors, administrators, successors and assigns, as the case may be, of each of the Parties. All covenants are to be construed as conditions of the Lease.
37. All sums payable by SASD to MPA pursuant to any provision of the Lease will be deemed to be additional rent and will be recovered by MPA as rental arrears.
38. Locks may not be added or changed without the prior written agreement of the Parties, or unless the changes are made in compliance with the Act.
39. SASD will be charged an additional amount of $25.00 for each N.S.F. check or checks returned by SASD's financial institution.
40. Headings are inserted for the convenience of the Parties only and are not to be considered when interpreting this Lease. Words in the singular mean and include the plural and vice versa. Words in the masculine mean and include the feminine and vice versa.
41. The Lease may be executed in counterparts. Facsimile and emailed signatures are binding and are considered to be original signatures.
42. This Lease constitutes the entire agreement between Parties.
43. Time is of the essence in the Lease.

IN WITNESS WHEREOF Sheboygan Area School District, Ellwood H. May Environmental Park Association of Sheboygan County, Inc., and the City of Sheboygan have duly affixed their signatures on this ___ day of April, 2021.

City of Sheboygan

_____

Ryan Sorenson, Mayor

_____

Meredith De Bruin, City Clerk

Ellwood H. May Environmental Park Assoc.

_____

Samantha Lammers, Director

Sheboygan Area School District

_____

Seth Harvatine, Superintendent

III

5.3

Res. No. 47 - 21 - 22. By Alderpersons Dekker and Perrella.
August 16, 2021.

A RESOLUTION authorizing the appropriate City officials to accept a grant from the Sheboygan County Stewardship Fund and a grant from Restoration of Our Trees Sheboygan for Emerald Ash Borer Mitigation.

WHEREAS, the City has been awarded a grant in the amount of $15,000 from the Sheboygan County Stewardship Fund; and

WHEREAS, the City has also been awarded a grant in the amount of $10,000 from Restoration of Our Trees Sheboygan ("ROOTS"); and

WHEREAS, both of these grants will be used for Emerald Ash Borer Mitigation, including the re-planting of trees in nine parks and the installation of a Gravel Bed by the Municipal Service Building that will be used annually to accelerate the growth of bare root trees that the City will purchase each spring; and

WHEREAS, copies of the Grant Agreements are attached to this Resolution.

NOW, THEREFORE, BE IT RESOLVED: That the Mayor is authorized to accept these grants from the Sheboygan County Stewardship Fund and ROOTS.

BE IT FURTHER RESOLVED: That the appropriate City officials are instructed to take the steps necessary to comply with the terms and conditions specified in the Grant Agreements.

Dean Dekker

Public Works

I HEREBY CERTIFY that the foregoing Resolution was duly passed by the Common Council of the City of Sheboygan, Wisconsin, on the _____ day of _____, 20____.

Dated _____ 20____. _____, City Clerk

Approved _____ 20____. _____, Mayor

Sheboygan County
Planning & Conservation Department

Administration Building | 508 New York Avenue | Sheboygan, WI 53081-4126
P: (920) 459-3060 | P: (920) 459-1370 | F: (920) 459-1371
E: plancon@sheboygancounty.com

Director
Aaron C. Brault

July 15, 2021

Municipal Service Building
Attn: Tim Bull
2026 New Jersey Ave
Sheboygan, WI 53081

RE: 2021 Sheboygan County Stewardship Fund Grant Award for Emerald Ash Borer Nine Park Mitigation project and Brags Project

Dear Mr. Bull:

Congratulations! I am pleased to inform you that the City of Sheboygan has been awarded funding in the amount of $15,000 from the Sheboygan County Stewardship Fund.

Enclosed you will find two (2) copies of the Stewardship Grant Agreement. Please have both copies signed by the appropriate representative at the City of Sheboygan and return one copy to the Sheboygan County Planning & Conservation Department. Upon receipt, we will process a request through our Finance Department for the initial payment of $7,500. You should receive a check from the Sheboygan County Treasurer within approximately two (2) weeks of returning the signed agreement.

Please be sure to read the agreement thoroughly. In order for you to receive final reimbursement, the Department must receive receipts indicating which items or services were charged to the Stewardship grant. At that time, we will also provide you with the signage you are required to post if applicable.

If you have any further questions, please feel free to contact me.

Sincerely,

Tyler Betry
Deputy Director / County Conservationist

CC: Anthony Fessler – ROOTS

STEWARDSHIP GRANT AGREEMENT

SPONSOR:	Sheboygan County
APPLICANT:	City of Sheboygan
PROJECT SCOPE AND DESCRIPTION OF PROJECT:	Project Development: Emerald Ash Borer Mitigation and Brags Project
PERIOD COVERED BY THIS AGREEMENT:	July 15th, 2021 – July 15th, 2022

PROJECT COSTS

Total Award:	$15,000
Paid at Execution of Agreement:	$7,500
Paid by Project Completion Date:	$7,500

The persons signing for the Sponsor represent both personally and as an agent of his or her principal that he or she is authorized to execute this agreement and bind his or her principal, either by a duly adopted resolution or otherwise.

_____ (Grantee)	**Sheboygan County** (Sponsor)
By: _____ (Signature)	By: _____ (Signature)
_____ (Printed name)	**Aaron Brault** (Printed name)
_____ (Title)	**Director** (Title)
_____ (Date)	**7/15/2021** (Date)

Be sure to read and understand the information on the accompanying page as some changes have been made. Please retain invoices and/or receipts to be submitted to the Department to in order to receive payment.

1. Sheboygan County, through its Planning and Conservation Department (Department) and the Grantee mutually agree to perform this agreement in accordance with the Sheboygan County Stewardship Program and with the project proposal, application, terms, promises, conditions, plans, specifications, estimates, maps, and also any assurances attached hereto and made a part hereof.

2. The Department hereby promises, in consideration of the covenants and agreements made by the Applicant herein, to obligate to the Applicant the amount of $15,000 and to tender to Applicant that obligation. However, if the actual project cost is less than $15,000, the grant payment shall be limited to the actual project cost. The Applicant hereby promises, in consideration of the promises made by the Department herein, to execute the project described herein in accordance with this Agreement.

3. The Applicant agrees to comply with all applicable Wisconsin Statutes, Wisconsin Administrative codes, and Ordinances and rules of the Sheboygan County Board in fulfilling terms of this Agreement

4. The Department agrees that the Applicant shall have sole control of the method, hours worked, and time and manner of any performance under this Agreement other than as specifically provided herein. The Department reserves the right only to inspect the job site or premises for the sole purpose of ensuring that the performance is progressing or has been completed in compliance with the Agreement. The Department takes no responsibility of supervision or direction of the performance of the Agreement to be performed by the Applicant or the Applicant's employees or agents. The Applicant is an Independent Contractor for all purposes, not an employee or agent of the Department. The Department further agrees that it will exercise no control over the selection and dismissal of the Applicant's employees or agents.

5. This Agreement, together with any referenced parts and attachments, shall constitute the entire agreement and previous communications or agreements pertaining to this Agreement or other written documentation, signed by both parties, prior to the termination date of the Agreement. Time extensions and scope changes to the Agreement may be granted to the Applicant by the Department in writing without the requirements of Applicant signature.

6. The Applicant may rescind this Agreement in writing at any time prior to the starting of the project and before expending any funds. After the project has been started or funds expended, this Agreement may be rescinded, modified, or amended only by mutual agreement in writing.

7. Failure by the Applicant to comply with the terms of this Agreement shall not cause the suspension of all obligations of the Department hereunder if, in the judgment of the Planning Director, such failure was due to no fault of the Applicant. In such case, any amount required to settle at minimum costs any irrevocable obligations properly incurred shall be eligible for assistance under this Agreement, at the Department's discretion.

8. The Applicant agrees to reimburse the Department of any and all funds the Department deems appropriate in the event the Applicant fails to comply with the conditions of this Agreement or project proposal as described, or fails to provide public benefits as indicated in the project application, proposal description, or this Agreement. In addition, should the Applicant fail to comply with the conditions of this Agreement, fail to progress due to nonappropriation of funds, or fail to progress with or complete the project to the satisfaction of the Department, all obligations of the Department under this Agreement may be terminated, including further project cost payment.

9. The Applicant agrees to save, keep harmless, defend, and indemnify the Department and all its officers, employees, and agents against any kind and all liability claims, costs of whatever kind and nature, for injury to or death of any person or persons, and for loss or damage to any property occurring in connection with or in any way incident to or arising out of the occupancy, use, service, operation, or performance of work in connection with this Agreement or omissions of Applicant's employees, agents, or representatives.

10. In connection with the performance of work under this Agreement, the Applicant agrees not to discriminate against any employee or applicant for employment nor against any person who may subsequently use the project because of age, race, religion, color, handicap, sex, physical condition, developmental disability as defined in Wis. Stat. § 51.01(5), sexual orientation, arrest or conviction record, or national origin. This provision shall include, but not be limited to, the following: Employment, upgrading, demotion, or transfer, recruitment advertising, layoff or termination, rates of pay, or other forms of compensation; selection for training, including apprenticeship, and in the subsequent use and enjoyment of the project.

11. Applicant shall establish and maintain adequate records of all expenditures incurred under this Agreement. All records must be kept in accordance with generally accepted accounting principles and be consistent with federal and state laws and local ordinances. The Department and its duly authorized representatives shall have the right to audit, review, examine, copy, and transcribe any pertinent records or documents relating to any contract resulting from this Agreement by the Applicant. Copies of invoices and/or receipts for specific items or services purchased will be required for reimbursement; for acquisition projects, a copy of the deed must also be submitted. The Applicant shall retain all documents applicable to the Agreement for a period of not less than two (2) years after the final payment is made, or longer where required by law.

12. The Department reserves the right to cancel this Agreement in whole or in part without penalty due to nonappropriation of funds by the Sheboygan County Board.

13. Applicant agrees to post a minimum of one Sheboygan County Stewardship Fund Grant sign, provided by the Department, at the project site for a minimum of 5 years after acquisition has been finalized or the project development process has been completed.

ROOTS

RESTORATION OF OUR TREES SHEBOYGAN

A collaborative effort between Sheboygan Rotary Club and Lakeshore Natural Resources Partnership

June 11, 2021

Mr. Tim Bull
City Forester/Project Director
Department of Parks and Forestry Division
City of Sheboygan
Municipal Service Building
2026 New Jersey Avenue
Sheboygan, WI 53081-4714

Subject: Selection of City of Sheboygan 9 Park EAB Mitigation and BRAGS Construction ROOTS Grant Request by Sheboygan County Rotary Foundation Community Investment Fund

Dear Tim:

On behalf of ROOTS, I am pleased to confirm our earlier e-mail announcement that your application to the Sheboygan County Rotary Foundation (SCRF) for funding through our CIF has been approved in its entirety for 2021-2022. Congratulations to you, Superintendent of Parks and Forestry Joe Kerlin, and your entire team on an excellent project and proposal.

As explained in our published guidelines, the ROOTS grant for this project is subject to the schedule milestones, performance measures, guidelines themselves, and the general planning details contained in your detailed application. Particular reference is made to the scheduling milestones, performance measurements, and reporting expectations. Please exercise best efforts to adhere to them.

ROOTS recognizes that EAB mitigation measures may be subject to considerations of weather, tree stock availability, and other exigencies not always anticipated at the time of application. Should such considerations impact scheduling or performance, we ask the City to timely communicate these to me as the ROOTS point of contact to develop appropriate accommodations or changes in the plan. ROOTS will work with the Division as needed so long as we are kept informed of circumstances.

With the understanding that the ROOTS CIF is substantially funding the acquisition of tree stock for this project as well as financial support to construct the BRAGS gravel bed, please provide invoice(s) or statements of tree acquisition and other costs when available to you to seek reimbursement of an amount of up to $15,000. Unless otherwise mutually agreed, the remaining amount of the grant of $10,000 will be released upon project completion upon receipt of all required reporting and performance metric measures.

Attached to this award letter are a limited set of General Conditions and Understandings subject to which this CIF grant is awarded. I ask that you or the authorized representative of the City please sign acceptance of these conditions and understanding and return them to the undersigned as acceptance within 30 days of receipt of this letter.

Again, our congratulations on this award. ROOTS and its Rotary sponsors and are pleased to pursue this collaborative private/non-profit and public sector project for the benefit of the Sheboygan community. Per our prior understanding, if the joint City-ROOTS application to the Sheboygan County Stewardship Fund results in any financial award later this summer, the ROOTS CIF contribution will be reduced by the amount of any such award whether paid to the City or our Foundation. If you have any questions or concerns, please continue to communicate with me at 920-946-6770 (cell) or at fessler.e.anthony@gmail.com. On behalf of Rotary and ROOTS, we look forward to continuing our collaborative work with the City of Sheboygan to address this serious environmental problem.

Sincerely,

E. Anthony Fessler
ROOTS Coordinator
Sheboygan Rotary Club

Encl: General Conditions and Understandings

cc: Chairman, Sheboygan County Rotary Foundation
President, Sheboygan Rotary Club
Mayor of the City of Sheboygan

RESTORATON OF OUR TREES SHEBOYGAN (ROOTS)
COMMUNITY INVESTMENT FUND
PROJECT GRANT

TERMS AND CONDITIONS

As authorized representative of the grant recipient identified, it is understood and agreed that the identified ROOTS CIF grant is awarded subject to the following terms and conditions:

1. Performance. The recipient entity will agree to perform the identified mitigation measures in a timely other manner planning and subject representations to the milestones, made in scheduling in its application to the ROOTS of 6-8-2021 and shall comply with the ROOTS CIF Phase I guidelines published May 2020 upon which its submission is based.

2. Changes or Modifications. Within the limits of the award, the recipient may request modifications or changes to its original plan and proposal for ROOTS evaluation in response to material availability, weather conditions, or other exigencies not anticipated at the time of application. ROOTS will exercise best efforts to accommodate reasonable requests on a timely basis and notify the grant recipient of approval or disapproval of its request.

3. Communications and Project Reporting. The grant recipient shall provide a written interim progress report at the conclusion of each mitigation planting season to include maps or aerial/overhead type projections of specific mitigation measures including identifying species, sizes, replanting locations, and approximate dates. The recipient shall submit a final project report at its conclusion to include an inventory of all mitigation planting specifying siting, approximate date(s), and replanted species and completion of the Bare Roots Accelerated Growth System (BRAGS) gravel bed. The final report should contain one or more annotated/descriptive overhead type maps or aerial type depictions of final mitigation measures/re-plantings. Recipient plans for maximizing sustainability of mitigation efforts are to be included in all final reports. ROOTS and recipient representatives will exercise best efforts to respond promptly and thoroughly to reasonable requests for information, documentation, data, or project updates. Recipient may submit periodic requests for ROOTS support in assembling volunteer Rotarian or other community member or private/non-profit organizational support for appropriate mitigation tasks.

4. Cooperation and Coordination with ROOTS Applications for Carbon Credits, Offsets or Community Forestation Certification. in the event ROOTS pursues a strategy of seeking funding to its SCRF CIF through the development of a carbon offset, carbon credit, community forestation certification program, or other comparable initiatives, subject to applicable law and regulation, recipient agrees to exercise best efforts to coordinate and provide support.

5. Applicable Law. The recipient and ROOTS commit to compliance with applicable Wisconsin Statutes and Wisconsin Administrative Codes as well as applicable U.S. Federal and County or local law, regulations, or ordinances in carrying out the project.

6. Release of Grant Funding. Unless otherwise agreed in advance, release of grant funding shall be as outlined in the ROOTS award letter and upon submission to the ROOTS coordinator to include required invoices, reports or other documentation as specified.

7. Indemnification. The grant recipient shall save, hold harmless, defend, and indemnify Restoration Of Our Trees Sheboygan (ROOTS) including the Sheboygan Rotary Club, its executive agent the Sheboygan

County Rotary Foundation (SCRF), and its partner organization, the Lakeshore Resource Partnership (LNRP), all of their officers, directors, employees and members, against any and all liability, claims, and costs of whatever kind and nature, for injury to or death of any person or persons, and for loss or damage to any property (public or otherwise) occurring in connection with or in any way incident to arising out of the occupancy, use, service, operation or performance of work in connection with this agreement and/or project or otherwise due to the act or omission of the grant recipient, its employees, agents or representatives.

8. Repayment; Termination. To reimburse the Sheboygan County Rotary Foundation as ROOTS executive agent any and all funds it deems reasonable for recipient failure to meet guidelines, milestones, or performance standards applicable to the project. ROOTS will provide timely written notice of any such failure where after recipient shall have 60 days to cure or achieve a mutually agreed accommodation or change to the plan.

9. Public Relations Coordination and Cooperation. ROOTS and recipient will coordinate and cooperate in the development and issuance of both commercial and social media releases associated with the project emphasizing the collaborative efforts of all sponsors, entities or organizations involved. ROOTS and the recipient will develop one or more public events to celebrate and publicize the project to the community to which media and the public may be invited. Public gatherings shall comply with public health guidelines then in effect due to the COVID 19 pandemic or other such concern. The recipient, subject to any legal or regulatory limitations, will actively support and endorse the ROOTS strategic objective to build its private/corporate donor funded SCRF CIF corpus to facilitate future Emerald Ash Borer mitigation projects throughout Sheboygan County.

The person signing for the recipient represents as an agent of his principal that he/she is authorized to execute the Terms and Conditions of this Agreement and bind his or her principal by duly adopted resolution or otherwise.

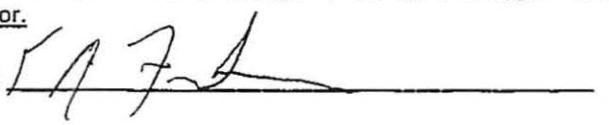
Project title and date submitted: City of Sheboygan Emerald Ash Borer Nine Park Mitigation and Installation of BRAGS Gravel Bed -2021-2022.

Date Application Submitted: 6-8-2021.

Representative of Applicant Submitting: _____
Printed Name and Title

Signature of Person Authorized to Sign for Applicant: _____

Restoration Of Our Trees Sheboygan (ROOTS), Sheboygan County Rotary Foundation: E. Anthony Fessler, Coordinator.

Signature: 

Date: 6-11-2021

Return to ROOTS Coordinator within 30 days of receipt:

E. Anthony Fessler
1615 Briarwood Road
Sheboygan, WI 53083

CITY OF SHEBOYGAN

REQUEST FOR PUBLIC WORKS COMMITTEE CONSIDERATION

ITEM DESCRIPTION: A resolution authorizing the appropriate City officials to accept a grant from the Sheboygan County Stewardship Fund and a grant from Restoration of Our Trees Sheboygan for Emerald Ash Borer Mitigation.

REPORT PREPARED BY: Joseph Kerlin, Parks & Forestry Superintentant

REPORT DATE: August 17, 2021 **MEETING DATE:** August 24, 2021

FISCAL SUMMARY:

Budget Line Item:	N/A
Budget Summary:	N/A
Budget Expenditure:	N/A
Budgeted Revenue:	N/A

STATUTORY REFERENCE:

Wisconsin Statues:	N/A
Municipal Code:	N/A

BACKGROUND / ANALYSIS: The Department of Public Works has applied for and has received $10,000 grant from Restoration of Our Trees Sheboygan and a $15,000 grant from the Sheboygan County Stewardship Fund. The Sheboygan County Stewardship Fund provides $15,000 for the project and the Grantee provides $15,000 for the project.

Both grants, equalling $25,000, and the city's matching of $15,000, will be used for Emerald Ash Borer Mitigation, including the re-planting of trees in nine parks and the installation of a gravel bed for the planting of bare root trees. Bare root trees will be purchased annually in the spring and placed in the gravel bed to further accelerate the growth of the root system and allowing the department to plant the trees later in the fall. Bare Root trees can be purchased at a much cheaper rate than container or ball and burlap trees. The end result of using a gravel bed system will be an annual savings on the purchasing of trees and the planting of healthier trees.

STAFF COMMENTS: Public Works staff is comfortable with the terms and conditions of the two agreements and recommends accepting the grants.

ACTION REQUESTED: Motion to recommend the Common Council adopt Res. No. 47-21-22 authorizing the appropriate City officials to accept a grant from the Sheboygan County Stewardship Fund and a grant from Restoration of Our Trees Sheboygan for Emerald Ash Borer Mitigation.

ATTACHMENTS:

I. Res. No. 47-21-22

II. Sheboygan County Stewardship Fund Grant
III. Restoration of Our Trees Sheboygan Community Investment Fund Project Grant

III

Other Matters

9.1

Res. No. 48 - 21 - 22. By Alderpersons Dekker and Perrella.
August 16, 2021.

A RESOLUTION authorizing the appropriate City officials to enter into a contract with Tweet/Garot Mechanical, Inc. for the construction of improvements to the HVAC System at the Waste Water Treatment Plant, and to make related expenditures.

WHEREAS, the City of Sheboygan has advertised for bids to construct improvements to the HVAC System at the Waste Water Treatment Plant (the "Project"); and

WHEREAS, the low bid was from Tweet/Garot Mechanical, Inc. ("Tweet/Garot") in the amount of $316,228; and

WHEREAS, City Staff has reviewed the bids and determined that the low bid met all of the specifications; and

WHEREAS, completion of the Project requires the completion of certain related work, such as electrical improvements and mold removal and painting of the grit room ("Related Work"), which is not included in the bid from Tweet/Garot; and

WHEREAS, the estimated cost of the Related Work is $27,000.

NOW, THEREFORE, BE IT RESOLVED: That the appropriate city officials are authorized to enter into the attached Agreement with Tweet/Garot for the Project.

PW

BE IT FURTHER RESOLVED: That the appropriate City officials are hereby authorized to draw funds, not to exceed $374,850.80, which includes the cost of the Project, the Related Work, and a Contingency, from Account No. 60138300-621200.

Dem Dekker

I HEREBY CERTIFY that the foregoing Resolution was duly passed by the Common Council of the City of Sheboygan, Wisconsin, on the _____ day of _____, 20____.

Dated _____ 20____. _____, City Clerk

Approved _____ 20____. _____, Mayor

AGREEMENT
BETWEEN THE CITY OF SHEBOYGAN, WISCONSIN AND
TWEET/GAROT MECHANICAL, INC.

REGARDING HVAC IMPROVEMENTS IN THE INFLUENT PUMP BUILDING AND GRIT ROOM AT THE SHEBOYGAN WASTEWATER TREATMENT FACILITY

This Agreement ("Agreement") is made and entered into effective this ____ day of _____, 2021 (the "Effective Date"), by and between the City of Sheboygan (the "City" or "Owner"), a municipal corporation, and Tweet/Garot Mechanical, Inc. ("Contractor").

WITNESSETH:

WHEREAS, the City desires to improve the HVAC System in a portion of the Influent Pump Building and Grit Room at the Sheboygan Wastewater Treatment Facility (the "Improvements"); and

WHEREAS, Contractor desires to provide the City with the necessary labor, equipment, and materials required to furnish and install the Improvements.

NOW, THEREFORE, the parties hereto agree as follows:

Article 1. Scope of Services

Contractor shall provide all labor, materials, equipment, transportation, appliances, and services necessary to complete all work shown in or reasonably inferred from the Project Manual (a copy of which is attached to this Agreement as Exhibit 1) or the Contract Drawings (a copy of which is attached to this Agreement as Exhibit 2) as required for a complete, turn-key installation and commissioning (including training of City Staff) of the HVAC Improvements in the Influent Pump Building and Grit Room at the Sheboygan Wastewater Treatment Facility, 3333 Lakeshore Drive, Sheboygan, Wisconsin 53081 (the "Services"). For the avoidance of doubt, the Services do not include the Alternate specified in the Project Manual.

Contractor's Services shall be performed in accordance with the Project Manual and Contract Drawings.

Contractor is responsible for the provision of all licenses and permits[1] and for paying all legitimate costs required by private utility and communication companies as part of the Services.

[1] Contractor shall be responsible for obtaining any and all applicable City permits and paying any and all applicable permit fees prior to beginning work.

Article 2. Standard of Care

Contractor shall be responsible for completion of the Services in a manner consistent with that degree of care and skill ordinarily exercised by members of the same profession currently practicing under similar circumstances ("Standard of Care"). The City's Representative shall be the sole judge of the adequacy of Contractor's work in meeting the Standard of Care; however, the City's Representative shall not unreasonably withhold its approval as to the adequacy of Contractor's performance. Upon notice to Contractor, Contractor will, without additional compensation, correct or replace any and all Services not meeting the Standard of Care.

Contractor shall be solely responsible for all construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under this Agreement. The Contractor must employ, as far as possible, such methods and means in carrying out the work as will not cause any interruption or interference with the operation of the Wastewater Treatment Plant or with any other contractors.

The materials installed as a result of this Agreement shall be fully warranted against defects—including defects due to faulty materials, equipment, or workmanship—by Contractor for 1 year from date of final acceptance, regardless of whether the work was performed by Contractor or an approved subcontractor.[2] Upon receipt of notice of defect from the City, the Contractor shall promptly correct or replace any and all materials or workmanship found to be defective. All manufacturer's warranties shall also apply and be honored by Contractor.

Article 3. City's Representative

The City designates Steve Jossart or his designee as its Representative for purposes of this Agreement (the "City's Representative" or "Owner's Representative"). If the City's Representative deems it appropriate, the City's Representative may consult with other employees of the City, or may retain an appropriate outside expert to assist with the management of this Project.

If the City's Representative observes any work performed by the Contractor to not be in conformity with the Agreement, the City's Representative will report that to the Contractor. The City's Representative will have authority to stop any portion of the work not in conformity with the Agreement until the City has investigated and decided upon an appropriate procedure.

Article 4. Compensation

The City shall pay Contractor for the Services an amount not to exceed $316,228.00 ("Contract Amount").[3]

---

[2] Neither Final Payment nor any other provision in this Agreement shall relieve Contractor of its responsibility for correcting work.

[3] The intent is that the Contract Amount includes the cost of all labor and materials, water, fuel, tools, equipment, light, transportation, and all other expenses as may be necessary for the proper execution and completion of the Services.

Contractor shall submit Requests for Payment, not more frequently than monthly, based upon the approved Schedule of Values. The City shall not pay for materials stored at the Wastewater Treatment Plant.

Payment will be made to Contractor within 60 days of receipt of each Request for Payment. The Request for Payment shall be sent to:

Steve Jossart
City of Sheboygan
3333 Lakeshore Drive
Sheboygan, Wisconsin 53081

Contractor shall be required to file waivers of lien from all suppliers and subcontractors with the City prior to receiving payment. The submission of the Request for Payment shall be deemed a waiver and release by Contractor of all liens and claims with respect to the work and period to which such Request for Payment pertains except as specifically reserved and noted on such request.

Additional services not set forth in Article 1, or changes in the Services, must be authorized in writing by the City or its Representative prior to such work being performed, or expenses incurred. The City shall not make payment for any unauthorized work or expenses.

Contractor will not be allowed any extra compensation by reason of any such matters or things concerning which the Contractor did not inform himself prior to submitting a bid.

The City may withhold payment, in whole or in part, in addition to a 10% retainage, to the extent necessary to protect itself from a loss on account of any of the following ("Withheld Amounts"):

- Payments that may be earned or due for just claims for labor or materials furnished in and about the work.
- Defective work not remedied.
- Failure of Contractor to make payments due to subcontractors, material suppliers, or employees.
- Reasonable doubt that this Contract can be completed for the balance then unpaid.
- The probable filing of claims by other parties against Contractor which may adversely affect the City.
- Damage to the City or a third party.

The City will disburse, and shall have the right to act as agent for Contractor in disbursing the Withheld Amounts to the party or parties who are entitled to payment. The City will provide the Contractor with a proper accounting of all such funds disbursed on behalf of the Contractor.

The City also reserves the right to refuse payment of the final 10% due to Contractor until the City's Representative is satisfied that all subcontractors, material suppliers, and employees of the Contractor have been paid in full.

Contractor shall deliver to the City a complete release of all liens arising out of this Agreement before receiving payment of the final Request for Payment and the 10% retainage.

Partial payment made under this Agreement is not evidence of the proper performance by Contractor either in whole or in part, and no payment made by the City shall be construed to be an acceptance of defective or improper work. Acceptance of the work by the City shall occur only upon Final Payment by the City which will occur after Final Acceptance. The City agrees to make reasonable efforts to schedule its Final Inspection in a timely manner and to process the Final Payment in a timely manner upon Final Acceptance. (For the avoidance of doubt, the warranties and guarantees in this Agreement shall continue to apply even after Final Payment by the City.)

Article 5. Appropriation of Funds

If funds for the continued fulfillment of this Agreement by the City are at any time not forthcoming or are insufficient, through failure of any entity, including the City itself, to appropriate funds or otherwise, then the City shall have the right to terminate this Agreement without penalty.

Article 6. Performance and Payment Bond

Contractor shall, within 10 days of approval of this Agreement by the Common Council of the City of Sheboygan, provide the City with a Performance Bond and a Payment Bond in the amount of 100% of the Contract Amount.

Failure by Contractor to perform the work in a timely or satisfactory manner may result in forfeiture of the Contractor's Performance Bond. Failure by Contractor to make timely payments to approved subcontractors, material suppliers, or employees may result in forfeiture of Contractor's Payment Bond.

If the Surety on any bond furnished by Contractor becomes a party to supervision or liquidation, or its right to do business in the State of Wisconsin is terminated, Contractor shall, within 30 calendar days thereafter, substitute another bond or surety, both of which must be acceptable to the City.

Article 7. Schedule

Contractor shall commence work after receiving a Notice to Proceed from the City's Representative. At that point, Contractor shall commence work promptly, and shall continue the prosecution of the Services as quickly as is practicable until the Services are completed.

Contractor shall, pursuant to the requirements of the Project Manual, submit an initial Construction Progress Schedule and all necessary updates and revisions to the Construction Project Schedule.

It is anticipated that Contractor shall construct work in stages, to accommodate operation of the Wastewater Treatment Plant during the construction period.

Contractor shall complete the services within 120 days of receiving the Notice to Proceed, or within such extra time as may have been allowed by a mutually agreed extension (the "Deadline"). The City's Representative shall have the authority to consent to an extension of the Deadline on behalf of the City.

The Parties agree that no charges or claims for damages shall be made by Contractor for any delays or hindrances, from any cause whatsoever, during the progress of any portion of the services specified in the Agreement. Such delays or hindrances, if any, may be compensated for by an extension of time for a reasonable period as may be mutually agreed upon between the Parties, it being understood however, that permitting Contractor to proceed to complete any service, or any part of the services / project, after the date to which the time of completion may have been extended shall, in no way operate as a waiver on the part of the City of any of its rights herein.

Failure of the Contractor to adhere to the schedule as specified or to promptly replace rejected materials shall render the Contractor liable for all costs in excess of the contract price when alternate procurement is necessary. Excess costs shall include the administrative costs and other costs attributable to the delay.

No work aside from that performed during the regular work week will be allowed unless prior notice is given to the City's Representative and the City's Representative consents to the work being performed during that time. (Emergency work may be performed without prior permission.) Any work performed without prior notice and approval to do so may be required to be removed for inspection at Contractor's expense.

Article 8. Workmanship and Quality of Materials

All material shall be new, newest model year, and free from defects. Items which are used, demonstrators, obsolete, seconds, or which have been discontinued are unacceptable without prior written approval of the City's Representative.

Whenever, in any document, an article, material, or equipment is defined by describing a proprietary product, or by using the name of a manufacturer or vendor, the term "or equal" or the term "the equivalent" if not inserted, shall be implied, and it is done for the express purpose of establishing a basis of durability and efficiency and not for the purpose of limiting competition. Whenever material or equipment is submitted for approval as being equal to that specified, the submittal shall include sufficient information and data to demonstrate that the material or equipment conforms to all contractual requirements. The decision as to whether or not such material or equipment is equal to that specified shall be made by the City's Representative. The approval by the City's Representative of alternate material or equipment as being equivalent to that specified shall not in any way relieve Contractor of responsibility for failure of the material or equipment due to faulty design, material, or workmanship, to perform the function required by the contract documents. The City's Representative shall be the sole and final judge of equivalency.

Article 9. Safety Requirements

All materials, equipment, and supplies provided to the City must comply fully with all safety requirements set forth under state and federal law, including all applicable OSHA Standards.

Contractor shall be responsible for the safety of its employees at all times and shall provide all equipment necessary to insure their safety. Contractor shall ensure the enforcement of all applicable safety rules, regulations, ordinances and laws, whether federal, state, or local.

Contractor shall provide the necessary safeguards including, but not limited to, warning signs and barricades, to avoid all necessary hazards and protect the public, the work, and the property at all times, including on days when no work is being done.

The City shall not be responsible for any loss or damage to the project materials prior to their installation or to Contractor's tools and equipment from any cause whatsoever.

Contractor's Superintendent of Safety shall make daily inspections upon the arrival and leaving of the site at the close of each workday.

Article 10. Access to Records

Both parties understand that the City is bound by the Wisconsin Public Records Law and, as such, this contract is subject to that law. Contractor acknowledges that it is obligated to assist the City in retaining and producing records related to the contract, and that the failure to do so shall constitute a material breach of the contract, in which case Contractor must defend and hold the City harmless from liability under that law.

Contractor shall maintain all records related to this contract for a period of not less than 7 years after receipt of Final Payment under the Agreement, except in the event of litigation or settlement of claims arising from the performance of this Agreement, in which case records shall also be maintained until the disposition of all such litigation, appeals, claims, or exceptions related thereto.

Article 11. Termination

The City may terminate or suspend performance of this Agreement at the City's prerogative at any time upon written notice to Contractor. The City's Representative shall have the authority to provide this written notice. Contractor shall terminate or suspend performance of the Services on a schedule acceptable to the City and the City shall pay Contractor for all the Services performed up to the date that written notice is received, plus reasonable termination or suspension expenses. Upon restart, an equitable adjustment shall be made to Contractor's compensation and the schedule of services.

If the City fails to make payment through no fault of the Contractor for a period of 30 days after such payment is due in accordance with the Contract Documents, the Contractor may, upon 7 days written notice to the City, terminate the Agreement and recover from the City payment for all work executed and for any proven loss sustained upon any materials, equipment, tools, and construction equipment and machinery, including reasonable profit and damages.

If Contractor defaults or fails to fulfill in a timely and proper manner its obligations pursuant to this Agreement, the City may, 7 days after written notice has been delivered to Contractor, and without prejudice to any other remedy it may have, make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due to Contractor. In the alternative the City may, at its option, terminate this Agreement and take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by Contractor, and may finish the project by whatever method it may deem expedient. In case the expenses incurred by the City (including payments previously made to Contractor) shall be less than the sum which would have been payable

under the Agreement if it had been completed by Contractor, Contractor shall be entitled to receive the difference. However, in case such expense shall exceed the sum which would have been payable under the Agreement, Contractor will be liable and shall pay to the City the amount of said excess. By taking over prosecution of the work, the City does not forfeit the right to recover damages from Contractor or its surety, for failure to complete the work or for defects in the work.

For the avoidance of doubt, the specific remedies identified in this Article 11 are not exclusive. In other words, the City may pursue any remedy in law or equity in the event that Contractor defaults under this Agreement.

Article 12. Default

If Contractor breaches this Agreement or fails to perform the work in an acceptable manner, it shall be considered in default. Any one or more of the following will be considered a default:

- Failure to begin the work under this Agreement within the time specified.
- Failure to perform the work with sufficient supervision, workers, equipment and materials to ensure prompt completion of said work within the time limits allowed.
- Unsuitable performance of the work as determined by City.
- Neglecting or refusing to remove defective materials or failure to perform anew such work as shall have been rejected.
- Discontinuing the prosecution of the work or any part of it.
- Inability to finance the work adequately.
- If, for any other reason, Contractor breaches this Agreement or fails to carry on the work in an acceptable manner.

The City shall send Contractor a written notice of default. If Contractor, within a period of 7 days after such notice, fails to remedy the default, then the City shall have full power and authority, without violation of the Agreement, to take the prosecution of the work out of the hands of Contractor, as set forth in this Agreement.

Article 13. Identity of Contractor

Contractor acknowledges that one of the primary reasons for its selection by the City to perform the Services is the qualifications and experience of Contractor. Contractor thus agrees that the Services to be performed pursuant to this Agreement shall be performed by Contractor. Contractor shall not subcontract any part of the Services without the prior written permission of the City[4]. The City's Representative shall have the ability to provide this written permission.

The City reserves the right to perform a criminal background check on any employee of Contractor or an approved Subcontractor performing work at the Wastewater Treatment Plant, to reject any of

[4] In the event that the City allows part of the Services to be subcontracted, Contractor shall still be fully responsible to the City for the acts or omissions of any subcontractor and anyone employed directly or indirectly by the subcontractor. This is in addition to any liability imposed by law upon the Contractor.

the Contractor's personnel or approved Subcontractor's personnel, and the City reserves the right to request that acceptable replacement personnel be assigned to the project.

Article 14. Independent Contractor Status

During the entire term of this Agreement, Contractor shall be an independent contractor, and in no event shall any of its personnel, agents or subcontractors be construed to be, or represent themselves to be, employees of the City. Contractor shall be solely responsible for the payment and reporting of all employee and employer taxes, including social security, unemployment, and any other federal, state, or local taxes required to be withheld from employees or payable on behalf of its employees.

Article 15. Indemnification

Contractor is responsible to the City for the acts and omissions of its employees, subcontractors, and any other persons performing any of the work under a contract with Contractor.

As such, to the extent permitted by law, Contractor shall defend and hold the City—including its Officials, Agents, and Employees—harmless from all liability, including, but not limited to, claims, actions, causes of action, liens, losses, damages, costs, legal fees, expenses, or judgments resulting from claimed injury, death, damage to property, or loss of use of property or any person or legal entity arising out of or in any way connected with the performance of work or work to be performed under this Agreement.

For the avoidance of doubt, this obligation to defend and hold the City harmless applies—among other instances—if the claimed liability arises out of:

- A violation of any law, ordinance, regulation, order, or decree by the Contractor, its employees, subcontractors, or any other person performing any of the work under a contract with Contractor.
- The failure on the part of Contractor, its employees, subcontractors, or any other person performing any of the work under a contract with Contractor, to complete any of the covenants, acts, matters, or things assigned to them under this Agreement.

Contractor shall reimburse the City for any costs, expenses, judgments, and legal fees paid or incurred, by or on behalf of the City, its Officials, Agents, or Employees, or paid for on behalf of the City, its Officials, Agents, or Employees by insurance purchased or self-insurance provided by the City.

For the avoidance of doubt, Contractor shall further hold the City, its Officials, Agents, and Employees harmless from liability or claims for any injuries to or death of Contractor's employees (or the employees of any authorized subcontractor) arising out of or in any way connected with the work or work to be performed under this Agreement, including protection against any claim of the contractor or subcontractor for any payments under any worker's compensation law or any expenses of or any payments made by any worker's compensation insurance carrier on behalf of said contractor or sub-contractor, and the contractor shall hold the City harmless from any costs, expenses, judgments, and attorney's fees with respect to any above referenced workers' compensation claims incurred or paid by the City or paid on its behalf or on behalf of its Officials, Agents, or Employees by insurance purchased or self-insurance provided by the City.

Article 16. Insurance

Contractor shall not commence work under this Agreement until it has obtained all insurance required under this Article. Additionally, Contractor shall not allow any approved subcontractor to commence work on its subcontract until the subcontractor has obtained all insurance required under this Article.

During the performance of any and all Services under this Agreement, Contractor shall maintain the following insurance in full force and effect, and shall provide proof of insurance to the City's Representative listing the City of Sheboygan as an additional insured:

a. Workers' Compensation Insurance – Contractor shall acquire and maintain, for the duration of the Agreement, Workers' Compensation Insurance that meets all statutory requirements.

b. Commercial General Liability and Property Damage Insurance – Contractor shall acquire and maintain, for the duration of this Agreement, Commercial General Liability Insurance with a policy limit of at least $2,000,000 per occurrence and $2,000,000 in the aggregate. The Commercial General Liability Insurance shall include operations, contractor's protective insurance, products coverage, completed operations, and contractual coverage.

c. Comprehensive Automobile Liability and Property Damage – Contractor shall acquire and maintain, for the duration of this Agreement, Comprehensive Automobile Liability and Property Damage Insurance that covers the operation of owned, hired, and non-owned motor vehicles with a policy limit – for liability, bodily injury, and property damage – of at least $1,000,000 per occurrence and $1,000,000 in the aggregate.

The proof of insurance referenced above shall require the insurance company to notify the City at least 30 days prior to the expiration, cancellation, non-renewal, or material change in the coverage. The Certificate Holder on the proof of insurance should be listed as:

City of Sheboygan, Wisconsin
828 Center Ave., Suite 110
Sheboygan, Wisconsin 53081

The proof of insurance must contain an original signature.

Approval of the insurance by the City's Representative shall not relieve or decrease the extent to which Contractor may be held responsible for payment of damages resulting from Contractor's provision of the Services or its operations under this Agreement. If Contractor fails or refuses to procure or maintain the insurance required by these provisions, or fails or refuses to furnish the City the required proof that the insurance has been procured and is in force and paid for, the City shall have the right at its election to terminate the Agreement.

Article 17. Conflict of Interest
Contractor declares that it has no present interest, nor shall it acquire any interest, direct or indirect, which would conflict with the performance of Services under this Agreement. Contractor agrees that no person having any such interest shall be employed in the performance of this Agreement.

Article 18. Waiver
No failure of either party to enforce a term of this Agreement against the other shall be construed as a waiver of that term, nor shall it in any way affect the party's right to enforce that term. No waiver by any party of any term of this Agreement—which may only occur in writing—shall be considered to be a waiver of any other term or breach thereof.

Article 19. Severability
The invalidity, illegality, or unenforceability of any provision of this Agreement or the occurrence of any event rendering any portion or provision of this Agreement void shall in no way affect the validity or enforceability of any other portion or provision of this Agreement. Any void provision shall be deemed severed from this Agreement, and the balance of the Agreement shall be construed and enforced as if it did not contain the particular provision held to be void. The parties further agree to amend this Agreement to replace any stricken provision with a valid provision that comes as close as possible to the intent of the stricken provision. The provisions of this Article shall not prevent this entire Agreement from being void should a provision which is of the essence of this Agreement be determined void.

Article 20. Assignment
Neither the City nor Contractor shall assign any rights or duties under this Agreement without the prior written consent of the other party and, to the extent necessary, Contractor's Surety. Such written approval by the City shall not relieve the Contractor of the obligations incurred by the Contractor under the terms of this Agreement.

Article 21. Third Party Rights
Nothing in this Agreement shall be construed to give any rights or benefits to anyone other than the City and Contractor.

Nothing in this Agreement shall create any contractual relationship between any subcontractor and the City. Contractor agrees to bind every approved subcontractor (and every subcontractor of a subcontractor) by the terms of this Contract as far as applicable to that subcontractor's work, unless specifically noted to the contrary in a subcontract approved in writing as adequate by the City. The City's Representative shall have the authority to consent to a subcontract as being adequate.

Article 22. Governing Law and Venue
This Agreement shall be governed by the laws of the State of Wisconsin. Venue of any disputes arising under this Agreement shall be in the Sheboygan County Circuit Court, Wisconsin.

Article 23. Non-Discrimination and Equal Opportunity
In connection with the performance of work under this Agreement, Contractor agrees not to discriminate against any employee or applicant for employment because of age, race, religion, color,

handicap, sex, physical condition, disability, developmental disability (as defined in Wis. Stat. 51.01(5)), sexual orientation (as defined in Wis. Stat. 111.32(13m)), gender identity, or national origin. This provision shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship.

Contractor further agrees to take affirmative action to ensure equal employment opportunities.

Article 24. Compliance with Laws
In performing the Services under this Agreement, Contractor shall comply with any and all applicable federal, state, and local statutes, ordinances, plans, rules, and regulations.

The City reserves the right to cancel this Agreement if Contractor fails to follow the requirements of Wis. Stat. 77.66 and related statutes regarding certification for collection of sales and use tax. The City also reserves the right to cancel this Agreement with any state or federally debarred contractor.

Contractor shall have any and all licenses and permits required to perform the work specified, and shall furnish proof of such licensing authorization and permits upon request.

Article 25. Notices
Any notice required by this Agreement shall be made in writing to the individuals/addresses specified below:

City: **Contractor:**

City Clerk		
City of Sheboygan		Tweet-Garot Mechanical, Inc.
828 Center Ave.		325 Reid Street
Sheboygan, Wisconsin 53083		De Pere, Wisconsin 54115

Nothing contained in this Article shall be construed to restrict the transmission of routine communications between representatives of the City and Contractor.

Article 26. Intent to be Bound
The City and Contractor each binds itself and its successors, executors, administrators, permitted assigns, legal representatives and, in the case of a partnership, its partners to the other party to this Agreement, and to the successors, executors, administrators, permitted assigns, legal representatives and partners of such other party in respect to all provisions of this Agreement.

Article 27. Force Majeure
Neither party shall be in default by reason of any failure in performance of this Agreement when such failure in performance is caused by or results from causes beyond the reasonable control of the affected party and without fault or negligence on the part of the affected party. Such causes may include, but are not restricted to, acts of nature or the public enemy, acts of the government in either

its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather.

Article 28. Integration and Modification
This Agreement may be modified only by a written amendment signed by both parties hereto.

This Agreement consists of the following parts, each of which is as fully a part of this Agreement as if fully set out herein:

1. This Agreement and its Exhibits
    a. Exhibit 1 – The Project Manual (including the Invitation to Bid, Instructions to Bidders, General Conditions, Standard Terms and Conditions, and Specifications [Divisions 1, 5, 6, 22, and 23])
    b. Exhibit 2 – Contract Drawings (prepared by AECOM)
2. Any Written Amendment to the Agreement which may be delivered or issued after the Effective Date of the Agreement (including Change Orders)

(collectively "the Contract").

This Contract is the entire and integrated agreement between the City and Contractor regarding the subject matter of this Contract. It supersedes all prior and contemporaneous communications, representations and agreements that are not part of this Contract.

In resolving conflicts, errors, discrepancies and disputes concerning the Scope of Work to be performed by Contractor, the document expressing the greater quantity, quality, or other scope of work in question, or imposing the greater obligation upon Contractor and affording the greater right or remedy to the City shall govern. If the Contract Documents and the Specifications should be contradictory in any part, the Specifications shall govern; otherwise, the documents shall be given precedence in the order set forth above.

Article 29. Non-Collusion
Contractor is certifying, under penalty of perjury, that to the best of its knowledge and belief:

1. The prices in its bid were arrived at independently, without collusion, consultation, communication, or agreement for the purpose of restricting competition as to any other matter relating to such prices with any other bidder or with any other competitor.

2. Unless otherwise required by law, the prices quoted in Contractor's bid were not disclosed by Contractor prior to opening.

3. No attempt was made to induce any other person, partnership, or corporation to submit or not submit a response to the City regarding the Services for the purpose of restricting competition.

Article 30. Other Provisions

1. Material Safety Data Sheet. If any item(s) on an order(s) resulting from this Agreement is a hazardous chemical, as defined under 29 C.F.R. 1910.1200, Contractor shall provide 1 copy of a Material Safety Data Sheet for each item with the shipped container(s) and 1 copy with the Request for Payment(s).

2. Advertising and News Releases. Reference to or use of the City, or any of its departments, officials, or employees, for commercial promotion is prohibited. News releases pertaining to this procurement shall not be made without prior approval of the City's Representative. Release of broadcast e-mails pertaining to this procurement shall not be made without prior written authorization of the City's Representative.

3. Foreign Corporation. A foreign corporation (any corporation other than a Wisconsin corporation) which becomes a party to this Agreement is required to conform to all the requirements of Wis. Stat. 180 relating to a foreign corporation, and must possess a certificate of authority from the Wisconsin Department of Financial Institutions, unless the corporation is transacting business in interstate commerce or is otherwise exempt from the requirement of obtaining a certificate of authority.

4. Authority. Each person executing this Agreement on behalf of a party hereto represents and warrants to the other party: That the execution and delivery of this Agreement has been duly authorized, that the person or persons executing this Agreement have the full power, authority, and right to do so, and that such execution is sufficient and legally binding on such party to enable this Agreement to be enforceable in accordance with its terms.

5. Intellectual Property. Contractor shall pay for any royalties and license fees associated with intellectual property used in the completion of the Services. Contractor shall defend any suits or claims for infringement of any intellectual property rights related to the completion of the Services, and shall hold the City harmless from any liability associated with any such suit or claim.

6. Interpreting the Contract Documents. In interpreting the Agreement, words describing materials that have a well-known technical or trade meaning shall be construed in accordance with such well known meanings unless otherwise specifically defined.

7. Asbestos Materials.

    a. The City is not aware of any Asbestos Containing Materials that will be disturbed or impacted by the Services. Roofing materials are assumed to contain asbestos. If the Contractor needs to remove roofing materials, the roofing materials can be sent to a licensed landfill with other demolition debris.

    b. During the course of work, should Contractor encounter any materials believed to contain asbestos, the City shall be notified immediately.

8. Definitions.

   a. Final Acceptance: The event that occurs when the City issues to Contractor a written statement that Contractor has completed all Punch List items, has made all necessary submittals to the City, and has satisfied all of Contractor's obligations under the Agreement.

   b. Final Inspection: The inspection conducted by the City to determine what work must still be completed by Contractor in order for Completion of the Services to occur. After the Final Inspection, the City shall provide Contractor with a Punch List that Contractor must complete in order for Completion of the Services to occur.

   c. Final Payment: Payment by the City to Contractor after Completion of the Services the result of which is Contractor receiving all payments due under the terms of the Agreement for performing and completing the Services.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed the day and year first written above.

CITY OF SHEBOYGAN, WISCONSIN	**CONTRACTOR**
BY: _____ Ryan Sorenson, Mayor	**BY:** _____
ATTEST: _____ Meredith DeBruin, City Clerk	**ATTEST:** _____
DATE: _____	**DATE:** _____

This Agreement Authorized by Resolution _____

EXHIBIT
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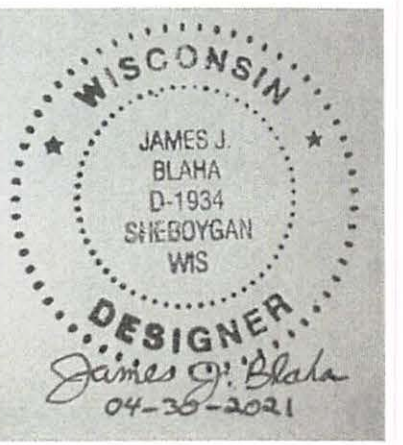
1

Project Manual

Influent Pump Building HVAC Improvements
for
Sheboygan Regional Wastewater Treatment Facility
Sheboygan, Wisconsin
Project No. 60654430

April 2021



Prepared by:

AECOM
2985 South Ridge Road, Suite B
Green Bay, Wisconsin 54304
Telephone: 920-468-1978
Telefax: 920-468-3312

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SHEBOYGAN REGIONAL WASTEWATER TREATMENT FACILITY
INFLUENT PUMP BUILDING
HVAC IMPROVEMENTS
SHEBOYGAN, WI
April 2021

TECHNICAL SPECIFICATIONS
TABLE OF CONTENTS

DIVISION 23 – HEATING AND VENTILATING

REQUEST FOR BIDS

1995-21

CITY OF SHEBOYGAN

Wastewater Treatment

Facility Influent Building

HVAC Improvements

City of Sheboygan
spirit on the lake.

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CITY OF SHEBOYGAN INVITATION
TO BID
BID #1995-21
Improvements to Influent Building HVAC

Bids will be received by the City of Sheboygan Purchasing Agent until1:00 p.m. Local Time, **Tuesday, June 15, 2021** for the Provision, Installation and Commissioning of Improvements to the Heating, Ventilation and Air Conditioning System (HVAC) in a portion of the Influent Pump Building at the Sheboygan Regional Wastewater Treatment Facility, 3333 Lakeshore Drive, Sheboygan WI 53081

Bids are to be electronically mailed to the City of Sheboygan, attention Bernard Rammer, Purchasing Agent at Bernard.rammer@sheboyganwi.gov

A single contract will be awarded for providing all labor, equipment, and materials required to furnish and install the system including commissioning and training.

Detailed specifications may be obtained at no cost by contacting Bernard Rammer, Purchasing agent at (920) 459-3469 or via email at bernard.rammer@sheboyganwi.gov.

In order to be considered, bids must be accompanied by a bid bond or Certified check in an amount not less than 5% of the total lump sum bid to act as surety that if awarded the work, the bidder will successfully complete the contract phase. Bidders are to enclose an electronic copy of their bid surety in the electronic submittal.

A performance and payment bond in an amount not less than 100% of the lump sum bid amount will be required to be provided to the City of Sheboygan within ten days of receipt of the notice of award. All bids received must remain in effect for not less than 30 days following the due date.

A mandatory pre-bid conference will be held on **Wednesday June 2, 2021** Beginning at 10:00 AM. All attendees may be subject to temperature checks prior to entry and will be required to wear a mask. Social distancing will be observed during the conference.

The successful contractor shall maintain, and a certificate of insurance shall be furnished to the Purchasing Agent for Worker's Compensation Insurance for all workers on this contract, as well as Public Liability and Property Damage Insurance, including Contractors Contingent and Protective Insurance, as will protect him and any subcontractor performing work covered by this contract, from claims for damages for personal injury, including accidental death as well as claims for property damages which may arise from operations under this contract.

In order to be considered, All Contractors must have on file a Bidders Proof of Responsibility with the City of Sheboygan Engineering Dept. Forms are included with the bid documents and completed applications are required to be received no less than 5 business days prior to the bid due date. Bids from Contractors received without a Valid approved Bidders Proof of Responsibility will not be considered.

The contract document will accompany a City of Sheboygan purchase Order referencing the terms and conditions of the bid documents.

The City of Sheboygan is exempt from Federal Excise Tax and State Sales Tax. Bids shall be made exclusive of these taxes. Certification will be furnished to the successful bidder upon request.

The City of Sheboygan reserves the right to reject any or all bids, to waive informalities in the bidding process, or to accept any bid considered most advantageous to the City of Sheboygan.

Bernard R. Rammer Purchasing Agent

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1.1 GENERAL

A. The Bidder shall visit and examine the site to acquaint himself with the adjacent areas, means of approach to the site, means of equipment ingress, conditions of actual job site, and facilities for delivering, storing, placing and handling of materials and equipment.

B. Contractors shall inform themselves of all the conditions under which the work is to be performed concerning the site of the work, the structure of the ground, the obstacles which may be encountered, whether shown on the plans or not, and all other relevant matters concerning the work to be performed.

C. The Contractor to whom a Contract is awarded will not be allowed any extra compensation by reason of any such matters or things concerning which the Contractor did not inform himself prior to submitting a proposal. The successful Contractor must employ, as far as possible, such methods and means in the carrying out of his work as will not cause any interruption or interference with the operation of the facility or with any other Contractors.

D. The Contractor is expected to base his bid price on materials and equipment complying fully with the Contract Drawings and Specifications, and in the event he names or includes in his bid materials or equipment which do not conform, he will, if awarded a contract, be responsible for furnishing materials and equipment which fully conform at no change in his contact price.

E. Contractor must satisfy themselves by personal examination of the locations of the proposed work and by such other means as they may prefer as to the correctness of any quantities listed in the Bid, and shall not, after submission of their Bid, dispute or complain of such estimate, nor assert that there was any misunderstanding in regard to the nature or amount of work to be done.

F. Before submitting a Bid, each Contractor should read the complete Contract Documents, including Invitation to Bid, Instructions to Bidders, the Form of Contract, and the Specifications, all of which contain provisions applicable not only to the successful Contractor, but also to any of his subcontractors.

1.2 INTERPRETATION OF DRAWINGS AND SPECIFICATIONS

A. Bidders shall bring inadequacies and omissions or conflicts to the Owners attention at least five days before the due date for bids. Prompt clarification will be supplied to the Bidders by addendum.

B. Signing of the Contract will be considered as implicitly denoting that the Contractor has thorough comprehension of the project and scope of the Contract Documents.

C. Neither the Owner nor the Engineer will be responsible for oral instructions.

1.3 BID REQUIREMENTS

A. Each Contractor shall submit only one Bid.

B. Each Contractor must submit with his Bid, special data, if any, in respect to items of equipment, alternates, or other items which any section of the Contract Document requires to be submitted with each Bid.

1.4 SUBMISSION OF BIDS

A. Sealed bids must be made on the form provided and will be received by the Owner

B. Each Proposal shall be firmly sealed in an envelope labeled "Bid for HVAC Improvements-Wastewater Treatment Facility" and delivered to the office designated in the Invitation to Bid.

C. All proposals are to be made out in accordance with the Instructions and on the Bid Form included in this document.

D. Bid amounts shall be inserted in words and in figures and in case of conflict, written word amounts will govern.

E. Addenda issued during the time of bidding shall become a part of the Contract Documents. Bidders shall acknowledge receipt of each addendum in their bids.

F. The list of Subcontractors will not be required to be submitted with the bid, however, the successful Bidder shall submit in writing the names of prospective subcontractors and material suppliers for the Owner's approval prior to their employment.

1.5 WITHDRAWAL OF BIDS

A. Bids may be withdrawn by written request received from Bidder or his agent prior to the time fixed for opening of bids, without prejudice to the right of the Bidder to file a new bid. Withdrawn bids will be returned unopened. Negligence on the part of the Bidder in preparing his bid confers no right for withdrawal of the bid after it has been opened.

B. No bid may be withdrawn for a period of 30 days after the day set for the opening thereof.

1.6 PERFORMANCE AND BID BONDS

A. All bidders will be required to submit a bid bond for 5 percent of the total amount of the bid. If awarded a contract, the contractor will be required to submit a performance bond for the total amount of the contract.

1.7 NOTICE OF ASBESTOS MATERIALS

A. The Owner is not aware of any ACM's (Asbestos Containing Materials) that will be disturbed or impacted by the project. Roofing materials are assumed to contain asbestos. If the Contractor's roofing sub-contractor needs to remove roofing materials they can be sent to a licensed landfill with other demolition debris.

B. During the course of the work should the Contractor encounter any materials he/she believes may contain asbestos the owner should be notified immediately for further testing and or abatement by a licensed abatement contractor.

1.8 RESERVATIONS

A. The Owner reserves the right to reject all bids, or any bid, or to waive any informality in any bid, or to accept any bid which will best serve the interests of the Owner.

B. The Owner reserves the right to perform a criminal background check on all employees of the Contractor and/or sub-Contractor performing work in the building.

1.9 COMMENCEMENT AND COMPLETION

A. The successful bidder must agree to commence work on or before a date to be specified in a written "Notice to Proceed" and to fully complete the work within 120 consecutive calendar days thereafter. Completion time will be converted to a specific date at the time the "Notice to Proceed" is issued.

B. The Owner anticipates commencement of work in the second/third Quarter of 2021 or as soon as possible following contract ratification

C. Please note that the completion of this project will be in 2021

1.10 POWER OF ATTORNEY

A. Attorney's-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

End

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BID FORM

Sheboygan Wastewater Treatment Facility
HVAC Improvements in the Influent Pump Building

Bids Due: 1:00 PM, Tuesday June 15, 2021

To: City of Sheboygan Finance Department
Attn: Bernard Rammer
828 Center Ave
Sheboygan, WI 53081
Bernard.rammer@sheboyganwi.gov

Company _____

Address _____ City _____ Zip_____

hereby agrees to provide all labor and materials as required for a complete, turn-key installation of HVAC Improvements in the influent Pump Building at the Sheboygan Wastewater Treatment Facility, 3333 Lakeshore Dr. Sheboygan WI 53081 at the pricing herein set forth.

HVAC Improvements Lump Sum Base Bid

For the sum of _____ dollars

and _____ cents

$_____

ALTERNATE # 1 Change Ductwork and Fitting Materials from 316 Stainless Steel to Type II Grade 1 Rigid PVC, Class 14333 D ASTM D-1784

Add Deduct (Circle One) $_____

RECEIPT OF ADDENDA

The undersigned acknowledges receipt of Addenda

Number 1 dated_____

Number 2 dated_____

Number 3 dated_____

COMMENCEMENT AND COMPLETION OF CONTRACT WORK

The undersigned agrees, if awarded the contract, to commence the contract work on or before a date to be specified in a written notice to proceed, and to complete the work within the time stated in the Instructions to Bidders.

Firm Name _____

(Telephone) _____

(Email) _____

(Name of person signing) _____

(Title)_____

Signature_____

Date_____

(Seal, if bid is by a Corporation)

Date: _____

End

DIVISION 1 -GENERAL REQUIREMENTS

1.1 PROTECTION OFPERSONS

A. Work shall be executed in compliance with the Federal Occupational Safety and Health Act and the Wisconsin Administrative Code, Chapter 35, Safety in Construction.

1.2 APPLICATION OF THIS DIVISION OF THESPECIFICATIONS

A. The work is subject to the requirements of the Instructions to Bidders and this Division 1.

B. The Contractor is fully responsible for seeing that no work shown is inadvertently left out.

1.3 INTENT OF CONTRACT DOCUMENTS

A. The Sections of the Contract Document and the Contract Drawings are complementary and what is called for by any one shall be binding as if called for by all. The intention of the Contract Document is to include in the contract price the cost of all labor and materials, water, fuel, tools, plants, equipment, light, transportation, and all other expenses as may be necessary for the proper execution and completion of the work included in the Contract.

B. In interpreting the Contract Documents, words describing materials which have a well-known technical or trade meaning unless otherwise specifically defined in the Contract Documents, shall be construed in accordance with such well known meanings recognized by Architects, Engineers, and thetrade.

C. Any work shown on the Contract Drawings and not covered in the Contract Specifications, or included in the Contract Specifications and not shown on the Contract Drawings, shall be executed by the Contractor as though both shown on the Contract Drawings and included in the Contract Specifications. If the Contract Drawings and the Specifications should be contradictory in any part, the Contract Specifications shall *govern*.

1.4 SCOPE OF WORK

A. The Contract work shall include the furnishing of all labor, materials, equipment, transportation, appliances and services necessary to complete all work shown or reasonably inferred on the drawings and/or as described in the specifications.

1.5 OWNER'SREPRESENTATIVE

A. All work under this Contract will be regularly viewed by the Owner's Representatives. Owner's Representatives will regularly visit the site of the project and observe the work for conformity with the Contract Documents, and will immediately report any lack of conformity to the Contractor.

B. The Owner's Representatives will have authority to stop any portion of the work not in conformity with the Documents until the Owner has investigated and decided upon procedure.

C. No work aside from that performed during the regular work week will be allowed unless prior due notice is given to the Owner or to the Owner's Representatives. Any work performed without prior notice and approval to do so may be required to be removed for inspection at Contractor's expense.

1.6 SUPERINTENDENCE

A. The Contractor will give personal superintendence to the work, or have at the site of the work, at all times, a competent foreman, superintendent, or other representative, satisfactory to the Owner and having the authority to act for the Contractor.

B. Insofar as is practicable, and excepting in the event of discharge by the Contractor, or in the event of proven incompetence, the individual who has been accepted by the Owner to represent the contractor shall so act, and shall follow without delay instructions of the Engineer in the prosecution of the work in conformity with thecontract.

1.7 LABOR

A. The Contractor shall employ none but competent and skilled workmen and foremen in the prosecution of work on this Contract. The Owner shall have the authority to order the removal from the work any Contractor's employee who refuses to or neglects to obey any of its instructions or those of the Engineer or Inspectors, relating to the carrying out of the provisions and intent of the provisions of the Contract, or who is incompetent, unfaithful, abusive, threatening or disorderly in his conduct, and any such person shall not again be employed on this project.

1.8 FIRE PROTECTION

A. The Contractor shall provide and maintain an adequate number of hand fire extinguishers and take all other precautions necessary to prevent fires, and shall conform to local Fire Department regulations.

1.9 LAWS, REGULATIONS, FEES ANDPERMITS

A. The Contractor shall comply with all laws, ordinances, rules and regulations of the local Building Department, Fire Department, Health Department, Department of Water Supply, Gas and Electricity, Department of Highways and all State and Federal agencies having jurisdiction.

B. Contractor shall obtain and pay for all necessary permits, fees and inspections required by such agencies. **Note: City Building Inspection does not waive permit fees for other City Departments.**

C. Contractor shall pay for legitimate costs required by private utility and communication companies.

1.10 WATCHMEN AND OTHER SAFEGUARDS

A. The Contractor shall provide the necessary safeguards including, but not limited to, warning signs and barricades to prevent accidents, to avoid all necessary hazards, and protect the public, the work and the property at all times, including Saturdays, Sundays, holidays and other times when no work is being done.

B. Neither the Owner nor the Engineer shall be responsible for any loss or damage to the project materials, tools, equipment, etc., from any cause whatsoever.

1.11 CODES AND STANDARDS

A. All materials and workmanship shall comply with all applicable codes, specifications, local ordinances, industry standards and utility company regulations.

B. In case of difference between building codes, specifications, state laws, local ordinances, industry standards and utility company regulations and the Contract Documents, the most stringent shall govern. The Contractor shall promptly notify the Engineer in writing of any such difference.

C. Non-compliance: Should the Contractor perform any work that does not comply with the requirements of the applicable building codes, state laws, local ordinances, industry standards and utility company regulations, he shall bear all costs arising in correcting the deficiencies.

D. Applicable Codes and Standards shall include all state laws, local ordinances, utility company regulations, and the applicable requirements of the following nationally accepted Codes and Standards:

1. Building Codes:

   a. ICC Codes.

   b. National Electrical Code.

   c. Wisconsin Administrative Code.

   d. National fire Code

2. Industry Standards, Codes and Specifications:

   a. AIEE- American Institute of Electrical Engineers

   b. ANSI -American National Standards Inst.

   c. ASME- American Society of Mechanical Engineers

   d. ASTM- American Society of Testing Materials

   e. IPCEA- Insulated Power Cable Engineers Assoc.

   f. NBS- National Bureau of Standards

   g. NEMA- National Electrical Manufacturers Assoc

   h. NFPA- National Fire Protection Assoc.

   i. OSHA- Occupational Safety and Health Act

   j. UL- Underwriters Laboratories

   k. MSS - Manufacturers Standardization Society

   l. AISC -American Institute of Steel Construction

   m. AWS -American Welding Society

   n. ACCA- Air Conditioning Contractors of America

   o. Air Conditioning and Refrigeration Institute

   p. American Society of Heating, Refrigerating and Air Conditioning Engineers

   q. SMACNA- Sheet Metal and Air Conditioning Contractors National Association

1.12 CUTTING AND PATCHING

A. The Contractor shall be responsible for all required cutting, etc., and shall make all required repairs thereafter to satisfaction of the Engineer, but in no case shall the Contractor cut into any major structural element, beam or column without the written approval of the Engineer.

1.13 INSURANCE AND LIABILITY

A. The Contractor and the Surety will be held responsible for and shall save the Owner harmless from all liability for damages occasioned by the digging up, use or occupancy of the street, alley, highway, public grounds and private grounds or which may result therefrom, or which may result in any way from the negligence or carelessness of the Contractor, his agents, employees or workmen; or by reason of the elements, unforeseen or unusual difficulties, obstructions, or obstacles encountered in the prosecution of the work; and they shall indemnify the Owner for and save it harmless from all claims and liabilities, actions and causes of action, and liens for materials furnished or labor performed in the construction or execution of the work, and from

all costs, charges and expenses incurred in defending such suits or actions, and from and against all claims and liabilities for injury or damage to persons or property emanating from defective or careless work methods, or from and against all claims or liabilities for royalties, license fees, actions, suits, charges and expenses or damage from infringement for reason of the use of any invention or improvement in tools, equipment or plant or any process, device or combination of devices used in the construction of the work.

B. The Contractor shall not commence work under a Contract until he has obtained all insurance required under this paragraph and has filed certificates thereof with the Owner, nor shall the Contractor allow a Subcontractor to commence work until all similar insurance required has been so obtained and filed.

C. Workmen's Compensation

1. Statutory coverages as required by chapter 102 of the Revised Statutes of the State of Wisconsin and all acts amendatory thereof and supplementary thereto, for all employees of the contractor. All subcontractors shall furnish to the Contractor and to the Owner, evidence of similar insurance for all of their respective employees unless such employees are covered by the protection afforded by the contractor.

D. Comprehensive General Liability and Property Damage Insurance

1. Coverage to include operations; contractor's protective insurance, products coverage and completed operations; contractual coverage; underground coverage; blasting, explosion and collapse; all subject to the following limits:

2.	Bodily Injury	$1,000,000 per Person
		$2,000,000 Aggregate
3.	Property Damage	$500,000 per Occurrence
		$500,000 Aggregate

E. Comprehensive Automobile Liability and Property Damage

1. Operation of owned, hired and non-owned motor vehicles:

2.	Bodily Injury	$1,000,000 per Person
		$1,000,000 per Occurrence
3.	Property Damage	$1,000,000 per Occurrence

F. If the Contractor is employing Subcontractors or hiring pieces of equipment from another firm/contractor, said Contractor must furnish certificates of insurance for each to the Owner.

1.14 LAWS TO BE OBSERVED

A. The Contractor shall give all notices and comply with all Federal, State and Local laws, ordinances and regulations in any manner affecting the conduct of the work and all such orders and degrees as exist, or may be enacted by bodies or tribunals having any jurisdiction or authority over the work, and shall indemnify and save harmless the Owner against any claim or liability arising from, or based on, the violation of any such law, ordinance, regulation, order or decree, whether by himself or his employees.

1.15 PUBLIC SAFETY AND CONVENIENCE

A. The Contractor shall at all times so conduct his work as to insure the least possible obstruction to traffic and the least possible inconvenience to the general public and to the employees of the Owner.

1.16 USE OF JOB SITE

A. The Contractor shall confine his equipment, apparatus, the storage of materials and operations of his workman to limits indicated by the law, ordinances, permit or directions of the Owner and shall not encumber the premises with his materials.

B. The Contractor shall not load or permit any part of the structure to be loaded with a weight that will endanger its safety. The contractor shall observe and enforce the Owner's instructions regarding signs, advertisements, fires and smoke.

1.17 SCHEDULE OF VALUES

A. The Contractor shall within ten (10) days of receipt of notice to proceed, submit a complete breakdown of the Contract Amount showing the value assigned to each part of the work, including an allowance for profit and overhead. Upon approval of the breakdown of the Contract Amount by the Engineer, it shall be used as the basis for all Requests for Payment.

1.18 REQUESTS FOR PAYMENT

A. The Contractor may submit periodically but not more than once each month a Request for Payment of work done on the site and materials delivered and stored on the site. The Contractor shall furnish the Engineer all reasonable facilities required for obtaining the necessary information relative to the progress and execution of the work. Payment for materials stored on the site will be conditioned upon evidence submitted to establish the Owner's title to such materials. Each Request for Payment shall be computed from the work completed on all items listed in the Schedule of Values, less 10% to be retained until final completion and acceptance of the work and less previous payments.

B. The Contractor shall be required to file waivers of lien from all suppliers, subcontractors, etc., with the Owner prior to receiving payment on the project.

1.19 RELEASE OF LIENS

A. The Contractor shall deliver to the Owner a complete release of all liens arising out of this Contract before the retained percentage or before the final Request for Payment is paid. If any lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner such amounts as the Owner may have been compelled to pay in discharging such liens, including all costs and a reasonable attorney's fee.

1.20 PATENTS

A. The Contractor shall pay for all royalties and license fees. The Contractor shall defend all suits or claims for infringement of any patent rights and shall save the Owner harmless from loss on account thereof.

1.21 COOPERATION WITH OWNER

A. Personnel in the employ of the Contractor or any of his subcontractors, either directly or indirectly, are prohibited from using any existing facilities on adjacent property or trespassing in or about adjacent facilities.

1.22 SUBCONTRACTS

A. The Contractor shall notify the Owner, in writing, of the names of the subcontractors proposed on the Contract and shall not employ any subcontractors until the Owner's approval in writing has been obtained.

B. The Contractor agrees to be fully responsible to the Owner for the acts or omissions of his subcontractors and of anyone employed directly or indirectly by him or them, and this Contract obligation shall be in addition to the liability imposed by law upon the Contractor.

C. Nothing contained in the Contract documents shall create any contractual relationship between any subcontractors and the Owner. The Contractor agrees to bind every subcontractor (and every subcontractor of a subcontractor) by the terms of the General and special Provisions of the Contract, the Contract Drawings and Specifications, as far as applicable to his work, unless specifically noted to the contrary in a subcontract approved in writing as adequate by the Owner.

1.23 ASSIGNMENT OF CONTRACT

A. No assignment by the Contractor of any construction contract, or any part thereof, or of the funds to be received there under by the Contractor, will be recognized, unless such assignment has had the written approval of the Owner and the Surety has been given due notice of such assignment and has furnished written consent thereto. Such written approval by the Owner shall not relieve that Contractor of the obligations incurred by him under the terms of this Contract. In addition to the usual recitals in assignment contracts, the following language must be set forth:

"It is agreed that the funds to be paid to the assignee under this assignment are subjected to a prior lien for services rendered or materials supplied for the performance of the work called for in said contract in favor of any persons, firms, or corporations rendering such services or supplying such materials".

1.24 OTHER CONTRACTS

A. The Owner may award other contracts for additional work at the site of the project (or other locations) and the Contractor shall fully cooperate with such other Contractors and carefully fit his own work to that provided under other contracts as may be directed by the Owner. The Contractor shall not commit or permit any act which will interfere with the performance of work by any other contractor.

1.25 OWNER'S RIGHT TO DO WORK

A. If the Contractor neglects to prosecute the work to be performed on this Contract properly, or fails to perform any provision of this Contract, the Owner, after three days' written notice to the Contractor and his Surety, may, without prejudice to any other remedy he may have, make good such deficiencies and may deduct the cost thereof from the payment due the Contractor.

1.26 TERMINATION BY THE CONTRACTOR

A. If the Owner fails to make payment through no fault of the Contractor for a period of thirty (30) days after such payment is due in accordance with the Contract Documents, the Contractor may, upon seven (7) days written notice to the Owner terminate the Contract and recover from the Owner payment for all work executed and for any proven loss sustained upon any materials, equipment, tools, and construction equipment and machinery including reasonable profit and damages.

1.27 TERMINATION BY THE OWNER

A. If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents or fails to perform any provision of the Contract, the Owner may, after seven (7) days written notice to the Contractor and without prejudice to any other remedy he may have, make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor or, at his option, may terminate the Contract and take possession of the site and of all material, equipment, tools and construction equipment and machinery thereon owned by the Contractor and may finish the work by whatever method he may deem expedient, and if the unpaid balance of the Contract sum exceeds the expense of finishing the work, such excess shall be paid to the contractor, but if such expense exceeds such unpaid balance, the Contractor shall pay the difference to the Owner.

1.28 CHANGES IN THE WORK

A. The Owner without invalidating the Contract may order changes in the work consisting of additions, deletions, or modifications, the Contract Sum and the Contract Time being adjusted accordingly. All such changes in the work shall be authorized by written Change Order signed by the Owner.

B. The Contract Sum and the Contract Time may be changed only by Change Order.

C. The cost or credit to the Owner from a change in the work shall be determined by mutual agreement before executing the work involved.

1.29 CORRECTION OF WORK

A. The Contractor shall correct any work that fails to conform to the requirements of the Contract Documents where such failure to conform appears during the progress of the work, and shall remedy any defects due to faulty materials, equipment or workmanship which appear within a period of one year from the date of final payment of the Contract or within such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents. The provisions of this Article apply to work done by Subcontractors as well as to work done by direct employees of the Contractor. The obligations of the Contractor under this paragraph shall be in addition to and not in limitation of any obligations imposed upon him by special guarantees required by the Contract Documents or otherwise prescribed by law.

1.30 SANITARY CONVENIENCE

A. The Contractor shall have access to the use of sanitary facilities available to the general public.

1.31 CLEANING UP AND FINAL INSPECTION

A. The Contractor shall at all times keep the site of the work free from accumulation of waste material or rubbish caused by his employees on the construction work, and at the completion of the work he shall remove all his rubbish from and about the work and all his tools, equipment, scaffolding, and surplus materials, and shall leave the competed work clean and ready for use. In case of dispute, the Owner may remove the rubbish and surplus materials and charge the cost to the several Contractors, if more than one is employed on the project, in proportion to the amounts as shall be determined by the Owner to be just.

1.32 OWNER'S RIGHT TO WITHHOLD CERTAIN AMOUNTS AND MAKE APPLICATION

A. The Owner may withhold from payments to the Contractor, in addition to retained percentage, such an amount or amounts as may be necessary to cover:

1. Payments that may be earned or due for just claims for labor or materials furnished in and about the work.
2. For defective work not remedied.
3. For failure of the contractor to make proper payments to the Subcontractors.

4. Reasonable doubt that this Contract can be completed for the balance then unpaid.

5. Evidence of damage to another Contractor.

6. Liquidated damages due to failure to meet contract completion dates.

B. The Owner will disburse and shall have the right to act as agent for the Contractor in disbursing such funds as have been withheld pursuant to this paragraph to the part or parties who are entitled to payment therefrom. The Owner will render to the Contractor a proper accounting of all such funds disbursed in behalf of the Contractor.

C. The Owner also reserves the right, even after full completion and acceptance of the work, to refuse payment of the final ten percent (10%) due the contractor until it is satisfied that all Subcontractors, material suppliers and employees of the Contractor have been paid in full.

1.33 CHANGES-PAYMENT

A. The Owner may, in accordance with the rules of its Common Council, authorize changes in the work to be performed or the materials to be furnished under the provisions of this Contract.

B. Adjustment, if any, in the amounts to be paid to the Contractor by reason of any such changes shall be determined by one or more of the following methods:

1. By an acceptable lump sum or unit price proposal by the Contractor.

2. On a cost-plus limited basis not to exceed a specified limit (defined as the cost of labor, materials and insurance) plus a specified percentage of the cost of such labor, materials and insurance provided the specified percentage does not

exceed fifteen percent (15%) of the aggregate of the cost of such labor, materials and insurance, and shall in no event exceed a specified limit.

B. No claim for an addition to the contract price will be valid unless authorized as aforesaid.

C. In cases where a lump sum proposal is submitted by the Contractor in Excess of Five Hundred Dollars ($500.00) and the Owner considers the proposal so submitted is excessive or unreasonable for the changes or added work contemplated; the Owner reserves the right to request a proposal for the same changed items from other Contractors. If a proposal for such added work is obtained from other Contractors at a lesser amount, the Owner reserves the right to make an award of such work to another Contractor, unless the Contractor on this Contract agrees to do the added work or changed work for the price named by the other Contractor.

E. It shall be expressly understood and hereby agreed to by the Contractor that no claim for extra work will be recognized by the Owner unless same has been ordered, in writing, by the Owner, or unless claim for such added work has been filed by the Contractor within five (5) days after the end of the calendar month in which such alleged work was performed. Inspectors and Resident Engineers are not authorized to act for the Owner in giving orders for the Owner for extra or additional work, either in writing or verbally.

1.34 DEDUCTION FOR UNCORRECTED WORK

A. If the Owner deems it expedient to accept work damaged or not done in accordance with the Contract, an equitable adjustment will be made with a proper deduction from the contract price for unsatisfactory work.

1.35 FINAL ACCEPTANCE OF THE WORK

A. The Contract shall be deemed as having been finally accepted by the Owner when its governing body, by formal resolution, accepts the work.

1.36 CORRECTION OF WORK AFTER FINAL PAYMENT

A. Neither the final payment on this Contract by the Owner nor any provision in these Contract Documents shall relieve the Contractor or Surety of the responsibility for negligence in the furnishing and installation of faulty materials or for faulty workmanship which shows up within the extent of the period provided by law nor of the responsibility of remedying such faulty workmanship and materials.

1.37 OWNER'S RIGHT TO USE UNCOMPLETED WORK

A. The Owner shall have the right to take possession of and use portions of the work prior to final acceptance without waiving rights against the Contractor or his Surety for defects in the work or failure to complete same in its entirety.

1.38 PAYMENTS

A. Pay estimate periods shall close on the last day of each calendar month so that completed estimates can be computed for processing. On each partial payment during the progress of the project, the Owner will retain an amount in accordance with Chapter 66.29 Wisconsin Statutes. No payment will be made for material stored at the job site.

1.39 DELAYS

A. If the work of the Contractor is delayed because of any acts or omissions of any other Contractor, the Contractor shall have no claim against the Owner on that account other than an extension of time.

B. In case any action in court is brought against the Owner or Engineer, or any officer or agent of either of them, for the failure, omission or neglect of the Contractor, utility company or Owner of other facilities within the project area to perform any of the covenants, acts, matters or things by this Contract undertaken, or for injury or damage caused by the alleged negligence of the Contractor or his subcontractors or his or their agents, or in connection with any claim based on lawful demands of subcontractors, workmen, material men, or suppliers, the Contractor shall indemnify and *save* harmless the Owner and Engineer and their officers or agents, from all losses, damages, costs, expenses, judgments or decrees arising out of such action.

STANDARD TERMS AND CONDITIONS

1.0 SPECIFICATIONS: The specifications in this request are the minimum acceptable. When specific manufacturer and model numbers are used, they are to establish a design, type of construction, quality, functional capability and/or performance level desired, unless otherwise specified. When alternates are bid/proposed, they must be identified by manufacturer, stock number, and such other information necessary to establish an acceptable equivalency. The City shall be the sole and final judge of equivalency.

2.0 HOW TO AMEND A REQUEST FOR BID, PROPOSAL OR QUOTE:

2.1 Public Works Projects are subject to WI Stats 66.0901(5): If a person submits a bid or proposal for the performance of public work under any public contract to be let by a municipality and the bidder claims that a mistake, omission or error has been made in preparing the bid, the bidder shall, before the bids are opened, make known the fact that an error, omission or mistake has been made. If the bidder makes this fact known, the bid shall be returned to the bidder unopened and the bidder may not bid upon the public contract unless it is re-advertised and relet upon the re- advertisement. If a bidder makes an error, omission or mistake and discovers it after the bids are opened, the bidder shall immediately and without delay give written notice and make known the fact of the mistake, omission or error which has been committed and submit to the municipality clear and satisfactory evidence of the mistake, omission or error and that it was not caused by any careless act or omission on the bidder's part in the exercise of ordinary care in examining the plans or specifications and in conforming with the provisions of this section. If the discovery and notice of a mistake, omission or error causes a forfeiture, the bidder may not recover the moneys or certified check forfeited as liquidated damages unless it is proven before a court of competent jurisdiction in an action brought for the recovery of the amount forfeited, that in making the mistake, error or omission the bidder was free from carelessness, negligence or inexcusable neglect.

2.2 Non-Public Work Projects: After a Request for Bid/Proposal/Quote has been filed with the City of Sheboygan Purchasing Department, the responder may submit an amended response BEFORE THE DUE DATE AND TIME set in the request. All the conditions and provisions of the original Bid/Proposal/Quote will be in effect. No submittals or amendments will be accepted after the due date and time of the request. This does not preclude the City from requesting additional information and/or clarification.

3.0 DEVIATIONS AND EXCEPTIONS: Deviations and exceptions from original text, terms, conditions, or specifications shall be described fully, on the bidder's/proposer's letterhead, signed, and attached to the request. In the absence of such statement, the bid/proposal shall be accepted as in strict compliance with all terms, conditions, and specifications and the bidders/proposers shall be held liable.

4.0 QUALITY: Unless otherwise indicated in the request, all material shall be new, newest model year, and free from defects. Items which are used, demonstrators, obsolete, seconds, or which have been discontinued are unacceptable without prior written approval by the City.

5.0 QUANTITIES: The quantities shown on this request are based on estimated needs. The City reserves the right to increase or decrease quantities to meet actual needs.

6.0 DELIVERY: Deliveries shall be F.O.B. destination freight prepaid and included unless otherwise specified.

7.0 PRICING AND DISCOUNT: The City qualifies for governmental discounts. Unit prices shall reflect these discounts.

7.1 Unit prices shown on the bid/proposal or contract shall be the price per unit of sale (e.g., gal., cs., doz., ea.) as stated on the request or contract. For any given item, the quantity multiplied by the unit price shall establish the extended price; the unit price shall govern in the bid/proposal evaluation.

7.2 Prices established in continuing agreements and term contracts may be lowered due to general market conditions.

8.0 RESPONSES TO REMAIN OPEN: Responses must remain open and will be deemed to be open and subject to acceptance until awarding of the bid/proposal is finalized, or a minimum of sixty (60) days unless otherwise specified.

9.0 ACCEPTANCE-REJECTION: The City reserves the right to accept or reject any or all bids/proposals, to waive any technicality in any bid/proposal submitted, request clarification of any bid/proposal, award a bid/proposal that is not the lowest price, and to accept any part of a bid/proposal as deemed to be in the best interests of the City.

10.0 GUARANTEED DELIVERY: Failure of the Contractor to adhere to delivery schedules as specified or to promptly replace rejected materials shall render the Contractor liable for all costs in excess of the contract price when alternate procurement is necessary. Excess costs shall include the administrative costs and other costs attributable to the delay.

11.0 CONTRACT AND EXECUTION OF CONTRACT: Unless otherwise specified in the bid/proposal, the successful responder agrees to enter into a contract, a copy of which will be on file in the office of the City of Sheboygan Purchasing Department. Contractor shall and will well and truly execute and perform this contract under the terms applicable to the satisfaction of the City, and shall promptly make payment to each and every person or party entitled thereto of all the claims for work or labor performed and materials furnished in the performance of this contract.

12.0 ENTIRE AGREEMENT: These Standard Terms and Conditions shall apply to any contract or order awarded as a result of this request except where special requirements are stated elsewhere in the request; in such cases, the special requirements shall apply. Further, the written contract and/or order with referenced parts and attachments shall constitute the entire agreement and no other terms and conditions in any document, acceptance, or acknowledgment shall be effective or binding unless expressly agreed to in writing by the City.

13.0 APPLICABLE LAW AND COMPLIANCE: This contract shall be governed under the laws of the State of Wisconsin. The Contractor shall at all times comply with and observe all federal and state laws, local laws, ordinances, and regulations which are in effect during the period of this contract and which in any manner affect the work or its conduct. The City reserves the right to cancel this contract if the contractor fails to follow the requirements of s. 77.66, Wis. Stats., and related statutes regarding certification for collection of sales and use tax. The City also reserves the right to cancel this contract with any state or federally debarred contractor or a contractor that is presently identified on the list of parties excluded from federal procurement and non-procurement contracts.

14.0 LICENSES AND PERMITS: Contractor shall have and/or provide any and all licenses and permits required to perform the work specified and furnish proof of such licensing authorization and permits with their bids if required.

15.0 ASSIGNMENT: No right or duty in whole or in part of the Contractor under this contract may be assigned or delegated without the prior written consent of the City.

16.0 NONEXCLUSIVE CONTRACT: Unless otherwise stated, the City reserves the right to purchase work or materials outside of this contract.

17.0 NONDISCRIMINATION & AFFIRMATIVE ACTION: In connection with the performance of work under this contract, the Contractor agrees not to discriminate against any employee or applicant for employment because of age, race, religion, color, handicap, sex, physical condition, developmental disability as defined in s. 51.01(5), Wis. Stats., sexual orientation as defined in s. 111.32(13m), Wis. Stats., or national origin. This provision shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. Except with respect to sexual orientation, the contractor further agrees to take affirmative action to ensure equal employment opportunities.

18.0 INDEPENDENT CAPACITY: The parties hereto agree that the contractor, its officers, agents, and employees, in the performance of this agreement shall act in the capacity of an independent contractor and not as an officer, employee, or agent of the City. The contractor agrees to take such steps as may be necessary to ensure that each subcontractor of the contractor will be deemed to be an independent contractor and will not be considered or permitted to be an agent, servant, joint venture, or partner of the City.

19.0 SAFETY REQUIREMENTS: All materials, equipment, and supplies provided to the City must comply fully with all safety requirements as set forth by the Wisconsin Administrative Code and all applicable OSHA Standards.

20.0 WARRANTY: Unless otherwise specifically stated, equipment purchased as a result of this request shall be warranted against defects by the Contractor for one (1) year from date of receipt. The equipment manufacturer's standard warranty shall apply as a minimum and must be honored by the Contractor.

21.0 INSURANCE RESPONSIBILITY: If insurance is required, satisfactory proof of the existence and carriage of such insurance of the kinds and limits specified will be required.

22.0 CANCELLATION: The City reserves the right to cancel any contract in whole or in part without penalty due to non- appropriation of funds or for failure of the contractor to comply with terms, conditions, and specifications of this contract.

23.0 OPEN RECORDS: Both parties understand that the City is bound by the Wisconsin Public Records Law, and as such, responses and contracts are subject to and conditioned on the provisions of the law. Contractor acknowledges that it is obligated to assist the City in retaining and producing records that are subject to Wisconsin Public Records Law, and that the failure to do so shall constitute a material breach of the contract, and that the Contractor must defend and hold the City harmless from liability under that law. Except as otherwise authorized, those records shall be maintained for a period of seven (7) years after receipt of final payment under the contract.

24.0 MATERIAL SAFETY DATA SHEET: If any item(s) on an order(s) resulting from this award(s) is a hazardous chemical, as defined under 29CFR 1910.1200, the Contractor shall provide one (1) copy of a Material Safety Data Sheet for each item with the shipped container(s) and one (1) copy with the invoice(s).

25.0 ADVERTISING AND NEWS RELEASES: Reference to or use of the City, any of its departments, officials, or employees, for commercial promotion is prohibited. News releases pertaining to this procurement shall not be made without prior approval of the City. Release of broadcast e-mails pertaining to this procurement shall not be made without prior written authorization of the City.

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SPECIFICATIONS

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DIVISION 1

GENERAL REQUIREMENTS

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SECTION 01 11 00
SUMMARY OF WORK

PART 1 GENERAL

1.01 PROJECT DESCRIPTION

A. Work of this Contract comprises mechanical construction of heating and ventilation system improvements for the raw wastewater influent pump building and grit room of the Sheboygan WWTP.

1.02 FORM OF SPECIFICATIONS

A. Some Work described in these Specifications use systems approach to identify systems of structure or facility.

1. System components are either specified in system specification or by reference to another section.

1.03 CONTRACTS

A. Perform Work under single lump sum Contract with CITY.

1.04 WORK BY OTHERS

A. Electrical Work:

1. CITY will furnish and install electrical conduit and wiring for power and controls.

1.05 CONTRACTOR'S USE OF PREMISES

A. CITY will occupy Site and existing buildings during entire period of construction for conduct of normal operations. Cooperate with CITY during construction operations to minimize conflict and facilitate CITY'S operations.

B. CONTRACTOR shall, at all times, conduct operations to ensure least inconvenience to CITY, other CONTRACTORS, general public, and operation of existing wastewater facility.

C. Coordinate use of premises under direction of CITY.

D. Assume full responsibility for protection and safekeeping of materials and equipment under this Contract.

1.06 MILESTONES (WORK SEQUENCE)

A. Construct Work in stages to accommodate operation of existing processing facilities during construction period; coordinate Construction Progress Schedule and operations with CITY for substantial completion by October 31, 2021.

PART 2 PRODUCTS

(Not Used)

PART 3 EXECUTION

(Not Used)

* * * END OF SECTION * * *

SECTION 01 23 00
ALTERNATE BID ITEMS

PART 1 GENERAL

1.01 SUMMARY

A. This section includes administrative and procedural requirements governing Alternates.

1.02 DEFINITIONS

A. Alternate is amount proposed by Bidder and stated on Bid Form for certain work defined in Bidding Requirements that may be added to or deducted from Contract Price if CITY decides to accept corresponding change in either amount of construction to be completed, or in materials, equipment, or installation methods described in Contract Documents.

B. Cost or credit for each alternate is net addition or deduction from Contract price to incorporate Alternate into Work. No other adjustments will be made to Contract Price.

1.03 PROCEDURES

A. Coordination:

1. Modify or adjust affected adjacent work as necessary to completely and fully integrate work of Alternate into Project.
2. Include as part of each Alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for complete installation whether or not indicated as part of Alternate.

B. Execute accepted alternates under same conditions as other work of Contract.

PART 2 PRODUCTS

(Not Used)

PART 3 EXECUTION

3.01 DESCRIPTION OF ALTERNATES

A. Alternate 1: AIR DISTRIBUTION DUCTWORK:

1. Change ductwork and fitting material, as designated on Drawings and Specifications, from 316SS to Type II, Grade 1 RIGID PVC Class 14333-D, ASTM D-1784.

a. Material shall be VIRON® International Corporation VI-A-DUC®.

2. Pertinent Work specified elsewhere:

a. Air Distribution: Section 23 30 10.

* * * END OF SECTION * * *

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SECTION 01 29 73
SCHEDULE OF VALUES

PART 1 GENERAL

1.01 SUMMARY

A. CONTRACTOR to submit Schedule of Values allocated to various portions of Work as required by General Conditions. Upon request of CITY, support values with data substantiating their correctness.

1.02 FORM AND CONTENT OF SCHEDULE OF VALUES

A. CONTRACTOR'S standard forms and automated printout will be considered for approval by CITY. Identify schedule with the following:

1. CITY purchase order number.
2. Name and address of CONTRACTOR.
3. Contract designation.
4. Date of submission.

B. Identify installed value of component parts of Work in sufficient detail to serve as basis for computing values for progress payments during construction.

C. Use general table of contents of this Project Manual to establish format for listing component items in schedule.

1. Identify each line item with number and title of respective Specification division and section.
2. If Project consists of multiple structures, break down schedule by structure.

D. Provide separate listing for General Requirements (Division 1) items, such as insurance premiums, mobilization, field supervision etc.

E. For each Specification division, list subvalues of major materials, equipment or operations under division.

F. For various portions of work:

1. Each item shall include directly proportional amount of CONTRACTOR'S overhead and profit.
2. For items on which progress payments will be requested for stored materials, break down value into the following:

a. Cost of materials, delivered and unloaded, with taxes paid.
b. Total installed value including CONTRACTOR'S overhead and profit.

G. Sum of values listed in schedule shall equal total Contract sum.

PART 2 PRODUCTS

(Not Used)

PART 3 EXECUTION

(Not Used)

* * * END OF SECTION * * *

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SECTION 01 32 16
CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.01 SUMMARY

A. Within **10** days after Notice of Award, prepare and submit to CITY for review preliminary Construction Progress Schedule.

B. No Work shall be performed between 6:00 p.m. and 7:00 a.m., nor on Saturdays, Sundays or legal holidays without written permission of CITY. Emergency work may be performed without prior permission.

C. Night work may be established by CONTRACTOR as regular procedure with written permission of CITY. Such permission may be revoked at any time by CITY if CONTRACTOR fails to maintain adequate equipment and supervision for proper execution and control of Work at night.

1.02 FORM OF SCHEDULE

A. Prepare schedule in form of horizontal-bar-chart type.

1. Provide separate horizontal time bar for each trade, activity or operation.
2. Provide continuous vertical line to identify first working day of each week.
3. Scale and space to allow for notations and future revisions.
4. Schedule each activity in construction sequence.

B. Format of Listings: Chronological order of start of each activity or operation.

1.03 CONTENT OF SCHEDULE

A. Construction Progress Schedule:

1. Show complete sequence of construction by activity or operation.
2. Coordinate Construction Progress Schedule with Submittals.
3. Show dates for beginning and completion of each activity or operation during construction and installation dates for major items of equipment. Activities and operations shall include, but not be limited to following.

a. Material and equipment order, manufacturer, delivery, installation, and checkout, including allowance items.
b. Performance tests and supervisory services activity.
c. Piping and, duct work, installation.
j. Heating and ventilating, work activity.
q. Alterations work.
r. Allowance for inclement weather.
s. Demolition.
v. System startup.
w. Final cleanup.
x. O&M data submittal.

4. Show projected percentage of completion for each item as of first day of each month.

1.04 SCHEDULE REVISIONS

A. Every **60 days**, revise Construction Progress Schedule to reflect changes in progress of Work.

1.05 DELAYS AND RECOVERY

A. If, at any time during Project, CONTRACTOR fails to complete activity by its latest scheduled completion date, CONTRACTOR shall, within 3 working days, submit to CITY written statement as to how and when Work force will be reorganized to return Contract to current construction schedule.

B. When it becomes apparent from progress evaluation and updated schedule data that milestone completion or Contract completion dates will not be met, CONTRACTOR shall take some or all of following actions.

1. Increase construction staffing in such quantities and crafts as shall substantially eliminate backlog of Work.
2. Increase number of working hours per shift, shifts per Work day, Work days per week, or amount of construction equipment, or combination of foregoing sufficient to substantially eliminate backlog of Work.
3. Reschedule Work items to achieve concurrency of accomplishment.

C. Addition of equipment or construction forces, increasing working hours or other method, manner or procedure to return to current Construction Progress Schedule will not be considered justification for amending Contract Documents or treated as acceleration.

1.06 SUBMITTAL REQUIREMENTS

A. For initial submittal of Construction Progress Schedule and subsequent revisions thereof, submit PDF file and [3] copies of schedule to CITY. Failure to submit schedule on timely basis as previously noted shall be considered cause for withholding progress payments otherwise due under this Contract.

PART 2 PRODUCTS

(Not Used)

PART 3 EXECUTION

(Not Used)

* * * END OF SECTION * * *

SECTION 01 33 00
SUBMITTALS

PART 1 GENERAL

1.01 SUMMARY

A. Section specifies procedural requirements for Work-related (non-administrative) submittals including Shop Drawings, substitutions, product data, samples, test data, operations and maintenance data, and other miscellaneous Work-related submittals.

1. Submittals for record drawings are specified in Section 01 78 39.

B. Administrative Submittals: Procedures concerning items such as listing of manufacturers, Suppliers, Subcontractors, Construction Progress Schedule, schedule of Shop Drawing submissions, bonds, payment applications, insurance certificates, and schedule of values are specified elsewhere.

C. Work-Related Submittals:

1. Substitutes and "Or Equal" Items:

a. Includes material or equipment which CONTRACTOR requests ENGINEER to accept, after Effective Date of the Agreement.

2. Shop Drawings:

a. Includes technical data and drawings specially prepared for this Project, including fabrication and installation drawings, diagrams, data sheets, schedules, templates, patterns, reports, instructions, design mix formulas, measurements, and similar information not in standard printed form.
b. Standard catalog type information prepared without specific reference to Project is not considered as Shop Drawing.

3. Product Data:

a. Includes standard catalog type printed information on manufactured materials, equipment and systems that has not been specially prepared for this Project, including manufacturer's product specifications, catalog cuts, standard wiring diagrams, printed performance curves, mill reports, and standard color charts.

4. Test Results:

a. Includes source and field quality inspection and test reports, actual performance curves, and certifications of results prepared specifically for equipment, material, and systems provided for this Project.
b. Standard catalog charts or standard test results are considered Product Data.

5. Operations and Maintenance Data:

a. Includes information and directions for operating and maintaining equipment provided and installed for this Project. May be standard for equipment or prepared specifically for this Project.

6. Miscellaneous Submittals:

   a. Work-related submittals that do not fit in previous categories, includes schedules, photographs, guarantees, warranties, certifications, maintenance agreements, workmanship bonds, survey data and reports, physical work records, copies of industry standards, field measurement data, extra materials, keys, and similar information, devices, and materials applicable to Work.

1.02 SUBMITTAL PROCEDURES

A. Scheduling:

1. CONTRACTOR is not required to submit preliminary or final schedule of Submittals; however, submittals to CITY shall be completed within 4 weeks of Notice to Proceed.

B. Coordination:

1. Coordinate preparation and processing of submittals with performance of Work. Coordinate each submittal with other submittals and related activities such as substitution requests, testing, purchasing, fabrication, delivery, and similar activities requiring sequential activity.
2. Coordinate submission of different units of interrelated Work so one submittal not be delayed by ENGINEER'S need to review related submittal. ENGINEER may withhold action on submittal requiring coordination with other submittals until related submittals are provided.
3. Prepare and transmit each submittal sufficiently in advance of scheduled performance of related Work and other applicable activities.

C. Submittal Preparation:

1. Stamp and sign each submittal certifying to review of submittal, verification of material, and equipment, field measurement, field construction criteria, and coordination of information within submittal with Contract Documents.
2. Transmittal Form: Identify following:

   a. Date of submittal and dates of previous submittals.
   b. Project title and number.
   c. Submittal number.
   d. Contract identification.
   e. Names of:

      1) CONTRACTOR.
      2) Supplier.
      3) Manufacturer.

   f. Identification of equipment and material with equipment identification numbers, motor numbers, and Specification section number.
   g. Variations from Contract Documents.

D. Resubmittal Preparation:

1. Comply with requirements described in Submittal Preparation above, and in addition:

   a. Identify on transmittal form submittal is resubmission.
   b. Make corrections or changes in submittals required by ENGINEER'S notations on returned submittal.

c. Respond to ENGINEER'S notations:

1) On transmittal or separate page attached to CONTRACTOR'S resubmission transmittal, answer or acknowledge in writing notations or questions indicated by ENGINEER on ENGINEER'S transmittal form returning reviewed submission to CONTRACTOR.
2) Identify each response by question or notation number established by ENGINEER.
3) If CONTRACTOR does not respond to each notation or question, resubmission will be returned without action by ENGINEER until CONTRACTOR provides written response to ENGINEER'S notations or questions.

d. CONTRACTOR-initiated revisions or variations.

1) On transmittal form, identify variations or revisions from previously reviewed submittal, other than those called for by ENGINEER.

1.03 SPECIFIC SUBMITTAL REQUIREMENTS

A. General:

1. Specific submittal requirements for individual units of Work are specified in applicable Specification section. Except as otherwise indicated in Specification sections, comply with requirements specified below for each indicated type of submittal.
2. If ENGINEER has responded to Written Clarification/Interpretation/Request submitted by CONTRACTOR, CONTRACTOR shall include ENGINEER'S response with applicable submittal.

B. Requests for Substitute Items:

1. Collect data for items to be submitted for review as substitute items into one submittal for each item of material or equipment.
2. Submit with other scheduled submittals for material or equipment allowing time for ENGINEER to evaluate additional information required to be submitted.
3. If CONTRACTOR requests to substitute for material or equipment specified, but not identified in Specification as requiring submittals, CONTRACTOR shall indicate substitution submittal in Submittal Schedule.

C. Shop Drawings:

1. Submit newly prepared information, with graphic information at accurate scale and name of preparer indicated (firm name). Show dimensions and note which are based on field measurement, identify materials and equipment included in Work, and revisions on resubmittals. Indicate compliance with standards and notation of coordination requirements with other Work. Encircle, bubble or otherwise indicate selections of products or materials and/or variations from Contract Documents or previous submittals. Highlighting may be used in addition to circling or bubbling of appropriate materials or variations from Contract Documents or previous submittals to direct the attention of the reviewer, but may not be utilized exclusively due to the difficulty in continuity of selections through copying and/or scanning of the submittal. Other acceptable means of selection of materials, products or variations from Contract Documents or previous submittals include striking out selections not included as part of the submittal, providing an arrow pointing directly to the selection or other means that remain after copying and/or scanning.
2. If Drawings prepared by ENGINEER are used in preparation of Shop Drawings, remove ENGINEER'S identification.
3. Provide 8 in. by 3 in. blank space for CONTRACTOR and ENGINEER stamps.
4. Submittals:

a. Submit PDF file.
b. Submit 3 blue line or black line prints for other drawings.

D. Product Data:

1. Preparation:

   a. Collect required data into single submittal for each unit of Work or system. Where product data includes information on several similar materials or equipment, some of which are not required for use on Project or not included in submittal, mark copies to show which items are not applicable to Project.
   b. Where product data must be specially prepared for equipment, materials or systems, because standard printed data is not suitable for use, submit data as Shop Drawing and not as product data.

2. Submittals:

   a. Submit PDF file and 3 copies.
   b. Submittal is final when ENGINEER returns submittal marked "No Exception Taken", or "Make Corrections Noted".

3. Distribution:

   a. Maintain one set of product data (for each submittal) at Project site, available for reference by ENGINEER and others.

E. Test Results:

1. Preparation:

   a. Identify each test by Specification section and type of test.

2. Submittals:

   a. Submit PDF file and 3 copies.
   b. Submittal is to confirm that results of tests verify materials, products, and systems comply with Contract Documents and are not for approval.

3. Distribution:

   a. Unless otherwise required in Specifications, test results shall be submitted to ENGINEER'S field office or if ENGINEER has no field office to ENGINEER'S office.

F. Miscellaneous:

1. Guarantees, Warranties, Maintenance Agreements, and Workmanship Bonds:

   a. Refer to Specification sections for requirements. Submittal is considered final when submittal returned by ENGINEER, marked "No Exceptions Taken" or "Make Corrections Noted".
   b. In addition to copies desired for CONTRACTOR'S use, furnish PDF file and two (2) executed copies. Provide two (2) additional copies where required for maintenance data.

2. Survey Data:

   a. Refer to Specification sections for requirements on property surveys, building or structure condition surveys, field measurements, quantitative records of actual Work, damage surveys, photographs, and similar data. Copies will not be returned.

1) Condition Surveys: PDF file and 3 copies.

3. Certifications:

   a. Refer to Specification sections for requirement on submittal of certifications. Submit 6 copies. Certifications are submitted for review of conformance with specified requirements and information.

4. Closeout Submittals:

   a. Refer to Specification sections and Section 01 78 39 for requirements on submittal of closeout information, materials, tools, and similar items.

      1) Materials and Tools: Spare parts, extra and overrun stock, maintenance tools and devices, keys, and similar physical units to be submitted.
      2) Operating and maintenance data.

G. Operating and Maintenance (O&M) Data:

1. Organize operations and maintenance information into suitable sets of manageable size, and bind into individual binders properly identified and indexed (thumb-tabbed). Include emergency instructions, safety precautions, spare parts listing, copies of warranties, wiring diagrams, recommended "turn-around" cycles, inspection procedures, Shop Drawings, Product Data, and similar applicable information.

   a. Manufacturer's printed instructions regarding safety precautions for both (a) protection of personnel operating equipment and systems and (b) prevention of damage to equipment and systems.
   b. Shop Drawings and other submittals included in O&M data shall be corrected to include, in same format and style as original submittal, review comments.
   c. Data may be submitted on CD Rom if approved by ENGINEER.

2. Binders: Commercial quality D-Ring binder with durable and cleanable plastic covers. Paperboard and laminated paperboard covers are not acceptable.

   a. Do not fill binders to more than 75% of capacity.
   b. When multiple binders are used for an item of equipment, organize contents into related groupings. Each binder cover shall bear identification of specific contents.

3. Cover Label: Label each binder cover and spine with typed or printed title "OPERATION AND MAINTENANCE INSTRUCTIONS" and following:

   a. Project title.
   b. Name(s) of applicable building(s) or structure(s) as shown on Drawings in which equipment located.
   c. Name of equipment as set forth in Contract Documents.
   d. Specification section number for equipment as set forth in Contract Documents.

4. Submit after equipment requiring O&M data has been returned "No Exceptions Taken" or "Make Corrections Noted".
5. Submit bookmarked PDF file and 3 copies of each manual.

H. General Distribution:

1. Unless required elsewhere, provide distribution of submittals to Subcontractors, suppliers, governing authorities, and others as necessary for proper performance of Work.

2. Provide copies of submittals bearing ENGINEER'S action stamp to:

   a. Job site file.
   b. Record documents file.

1.04 ACTION ON SUBMITTALS

A. ENGINEER'S Action:

1. General:

   a. Except for submittals for record and similar purposes, where action and return on submittals is required or requested, ENGINEER will review each submittal, mark with appropriate action, and return. Where submittal must be held for coordination, ENGINEER will so advise CONTRACTOR without delay.
   b. ENGINEER will stamp each submittal with uniform, self-explanatory action stamp, appropriately marked with submittal action.

2. Notification of Insufficient Information:

   a. If information submitted is not sufficient to complete review of submittal, ENGINEER will send transmittal to CONTRACTOR notifying CONTRACTOR that additional information is required.
   b. Submittal will be placed in an "On Hold" status and not returned until CONTRACTOR provides additional information.

3. Unsolicited Submittals: ENGINEER will return unsolicited submittals to CONTRACTOR without reviewing.

B. Action Stamp:

1. Marking: No Exceptions Taken.

   a. Final Unrestricted Release: When submittals are marked as "No Exceptions Taken", Work covered by submittal may proceed provided it complies with Contract Documents. Acceptance of Work depends on that compliance.

2. Marking: Make Corrections Noted.

   a. Final-But-Restricted Release: When submittals are marked as "Make Corrections Noted Exceptions", Work covered by submittal may proceed provided it complies with ENGINEER'S notations or corrections on submittal and with Contract Documents. Acceptance of Work depends on that compliance. Resubmittal not required.

3. Marking: Rejected; See Remarks.

   a. Submittal Not Accepted: When submittals are marked as "Rejected; See Remarks", do not proceed with Work covered by submittal. Work covered by submittal does not comply with Contract Documents.
   b. Prepare new submittal for different material or equipment supplier or different product line or material of same supplier complying with Contract Documents.

4. Marking: Amend and Resubmit.

a. Returned for Resubmittal: When submittals are marked as "Amend and Resubmit", do not proceed with Work covered by submittal. Do not permit Work covered by submittals to be used at Project site or elsewhere where Work is in progress.
b. Revise submittal or prepare new submittal in accordance with ENGINEER'S notations in accordance with resubmittal requirements of this section. Resubmit without delay. Repeat if required to obtain different action marking.

PART 2 PRODUCTS

(Not Used)

PART 3 EXECUTION

(Not Used)

* * * END OF SECTION * * *

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SECTION 01 35 16
ALTERATION AND REMOVAL PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes Work as shown on CONTRACT Drawings D-1 and D-2:

1. Alterations to existing buildings or structures.
2. Cutting and patching and removals of equipment.

B. Cut, move or remove items as necessary to provide access to allow alterations and new Work to proceed in existing structures, buildings, or facilities.

C. Work Includes:

1. Alterations:

a. Cutting, moving or removal of items as shown on Drawings.

2. Cutting and Patching:

a. Removal and replacement of defective Work and Work not conforming to Contract Documents.
b. To make several parts fit properly.

1.02 ALTERATIONS, CUTTING, AND PROTECTION

A. Survey and record condition of existing facilities to remain in-place that may be affected by alteration operations. After alteration work is complete, survey conditions again and restore existing facilities to pre-alteration condition.

B. Perform Work of moving, removal, cutting, and patching with trades qualified to perform Work in manner causing least damage to each type of Work.

1. Cut finish surfaces such as masonry, tile, plaster or metals, by methods to terminate surfaces in straight line at natural point of division.

C. Protect existing finishes, equipment, and adjacent Work which is to remain, from damage.

D. Provide shoring, needling, and bracing to keep building(s) or structures structurally secure and free of damaging deflection for installation of new structural members.

E. Do not pile material to endanger building or structure.

1.03 SECURITY

A. When keys to locked areas are needed to provide access to areas to perform Work, obtain from CITY. Return keys at end of each day's Work.

B. Employees of CONTRACTOR and Subcontractors involved in Work shall wear identifying button or badge when working in or around building.

1.04 PROTECTION AND CONTINUITY OF UTILITIES AND OPERATIONS

A. Protect existing utilities so they will continue to function during and after construction.

B. Where interference with such facilities occurs, cooperate with CITY of facility and, if necessary, alter facility to eliminate interference.

PART 2 PRODUCTS

2.01 PRODUCTS FOR PATCHING, EXTENDING, AND MATCHING

A. Provide same products, salvaged materials, types of construction or finish as that in existing structure, as needed to patch, extend or match existing Work.

1. Generally, Contract Documents will not define products or standards of workmanship present in existing construction, determine products by inspection and necessary testing and workmanship by use of existing as sample of comparison.

PART 3 EXECUTION

3.01 PREPARATION

A. Where new work conceals existing surfaces or spaces CONTRACTOR shall remove foreign substances such as accumulated dirt, dust, grease, sludge, and odoriferous material before concealing existing surfaces.

B. Where surfaces are to remain exposed CONTRACTOR shall remove foreign substances described above.

3.02 REMOVAL, RELOCATION AND SECURING MATERIALS AND EQUIPMENT

A. Where existing materials and equipment are removed or relocated, remove materials no longer used such as studs, straps, conduits, ducts, wires, anchors, piping and supports. Remove or cut off concealed or embedded materials such as conduit, boxes, anchors, piping or other materials to not less than 3/4 in. below finished surface.

B. Materials that cannot be removed shall be secured to adjacent structure to prevent coming loose.

C. Repair affected surfaces to conform to type, quality, and finish of adjacent surfaces.

3.03 CUTTING AND PATCHING

A. Inspect existing conditions of Work, including components subject to damage or movement during cutting, or patching.

B. After uncovering Work, inspect conditions affecting installation of new materials.

C. Do not cut or notch structural members without specific written approval of CITY.

3.04 RESTORATION

A. Where existing partitions are removed, patch floors, walls, and ceilings with finish materials matching existing to provide smooth planes without breaks, steps or bulkheads.

1. Where change of plane is 2 in. or more, request instructions from CITY as to method of making transition.
2. Trim and refinish existing doors as necessary to clear new floors or flooring material.

B. Patch and replace portions of existing finished surface damaged by CONTRACTOR'S operations.

1. Provide adequate support of substrate prior to patching finish.

2. Refinish patched portions of painted or coated surfaces to produce uniform color and texture over entire surface.
3. When existing surface finish cannot be matched, refinish entire surface to nearest intersections.

C. Clean and repair damage caused by installation or by use of temporary facilities.

3.05 CLEANING

A. Perform periodic and final cleaning as specified in Section 01 74 13, and:

1. Clean CITY-occupied areas daily.
2. Clean spillage, overspray, and heavy collection of dust in CITY-occupied areas immediately.

B. At completion of alterations work in each area, provide final cleaning and return space to condition suitable d

C. Remove debris from site each day. Removed material, except that listed or marked by ENGINEER for retention, becomes property of CONTRACTOR.

* * * END OF SECTION * * *

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SECTION 01 74 13
CLEANING

PART 1 GENERAL

1.01 SUMMARY

A. Execute cleaning during progress of Work and at completion of Work.

B. Refer to specification sections for specific cleaning for Products or Work.

1.02 DISPOSAL REQUIREMENTS

A. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations, and anti-pollution laws.

PART 2 PRODUCTS

2.01 MATERIALS

A. Use only those cleaning materials which will not create hazards to property and persons or damage surfaces of material to be cleaned.

PART 3 EXECUTION

3.01 DURING CONSTRUCTION

A. Keep premises and adjacent properties free from accumulations of waste materials, rubbish, and other debris resulting from construction operations.

B. Provide on-site containers for collection and removal of waste materials, debris, and rubbish in accordance with applicable regulations.

3.02 CLEANING

A. Complete following cleaning before requesting inspection for certification of substantial completion of entire Project or portion of Project.

1. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight exposed interior and exterior surfaces.
2. Ventilating Systems:

    a. Clean permanent filters and replace disposable filters if units were operated during construction.
    b. Clean ducts, blowers, and coils if units were operated without filters during construction.

3. Broom clean interior hard surface floors and exterior paved surfaces; rake clean other surfaces of grounds.

B. Prior to substantial completion CONTRACTOR with OWNER, shall conduct inspection of sight-exposed interior and exterior surfaces and work areas to verify Work and site is clean.

* * * END OF SECTION * * *

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SECTION 01 78 39
PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Maintain at site one record copy of:

1. Drawings.
2. Project Manual.
3. Addenda.
4. Change orders and other modifications to Contract.
5. ENGINEER'S Field Orders, Work Change Directives, Written Amendments, or clarifications.
6. Returned Shop Drawings and other submittals.
7. Field test records.
8. Construction photographs.
9. Associated permits.

1.02 SUBMITTALS

A. At Substantial Completion:

1. Deliver 1 marked up set of Drawings to ENGINEER for use in preparation of record drawings.

B. Submit with transmittal letter containing following:

1. Date.
2. Project title and number.
3. CONTRACTOR'S name and address.
4. Title of record document.
5. Signature of CONTRACTOR or authorized representative.

PART 2 PRODUCTS

(Not Used)

PART 3 EXECUTION

3.01 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. Store record documents on-site from documents used for construction.

B. Maintain record documents in clean, dry, legible condition and in good order. Do not use record documents for construction purposes.

C. Make record documents and samples available for inspection by ENGINEER or OWNER.

D. Failure to properly maintain record documents may be reason to delay portion of progress payments until records comply with Contract Documents.

3.02 RECORD DOCUMENTS

A. General:

1. Maintain 1 complete set of Drawings and Project Manual, including Addenda, legibly annotated to show changes made during construction.
2. Label each document "PROJECT RECORD" in neat, large printed letters.
3. Record information concurrently with construction progress:

    a. Do not conceal Work until information is recorded.
    b. Record changes made by Field Order, Change Order or Work Directive Change and identify document number.

4. Give particular attention to concealed equipment and materials that would be difficult to measure and record at later date.

B. Drawings:

1. Graphically depict changes by modifying or adding to plans, details, sections, elevations, or schedules.
2. Make changes on each sheet affected by changes.
3. Dimensions:
4. Location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure.
5. Details not on original Drawings.
6. Location and identification of exposed interior piping, including those shown schematically on Drawings.
7. Size of equipment and location including connections.

C. Specifications:

1. Mark Specification sections to show substantial variations in actual Work performed in comparison with text of Specifications and modifications.
2. Include variations in products delivered to site and from manufacturer's installation instructions and recommendations.
3. Give particular attention to substitutions and selection of options and similar information.
4. Note related record drawing information and Product Data.

* * * END OF SECTION * * *

DIVISION 5

METALS

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SECTION 05 51 20
ALUMINUM STAIRS

PART 1 - GENERAL

1.01 DESCRIPTION:

A. This section describes materials, fabrication, and installation of aluminum stairs as indicated and in compliance with Contract Documents.

1.02 REFERENCES:

A. Aluminum Association (AA):

1. Aluminum Design Manual–Specifications and Guidelines for Aluminum Structures.

B. ASTM International (ASTM):

1. B209: Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
2. B221: Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes.
3. B429: Specification for Aluminum-Alloy Extruded Structural Pipe and Tube.

C. American Welding Society (AWS):

1. A2.4: Standard Symbols for Welding, Brazing, and Nondestructive Examination.
2. D1.1: Structural Welding Code - Steel.

1.03 SUBMITTALS:

A. Submit the following shop drawings in accordance with Section 01 33 00.

1. Shop drawings showing clearly the location, size and details of all members
2. Indicate materials, dimensions, connection attachments, anchorage, size and type of fasteners, holes, finishes, and accessories for aluminum stairs.
3. Reference materials of construction by ASTM designation and grade.
4. Indicate welds including length and size of all shop and field welds by symbols conforming to AWS standards.

B. Product Data:

1. Manufacturer's catalog sheets on pre-manufactured items.

1.04 QUALITY ASSURANCE:

A. Comply with the requirements specified in Section 01 43 00.

B. Obtain field measurements and elevations prior to preparation of shop drawings and fabrication.

C. Welding Qualification and Certification:

1. Furnish written welding procedure for all welds in conformance with AWS Structural Welding Code.

2. Use welders, tackers and welding operators certified by test to perform type of work required in conformance with AWS Structural Welding Code. Maintain current test records certified by an independent testing laboratory.
3. Maintain duplicate qualification and certification records at the job site readily available for examination.

1.05 DELIVERY, STORAGE AND HANDLING:

A. Comply with the requirements specified in Section 01 66 10

B. Identify and match-mark materials, items and fabrications, for installation and field assembly.

C. Deliver items to jobsite as complete units, wherever practicable, ready for installation or erection, with anchors, fasteners and miscellaneous metal items required for installation.

D. Carefully handle and store materials, protected from weather, corrosion and other damage.

E. Store off the ground on suitable supports.

F. Accept material on site. Inspect for damage.

G. Do not incorporate damaged material in the work.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Aluminum plates, shapes, pipe and castings shall conform to the following ASTM specifications, alloy and temper designations.

1. Extruded structural shapes: ASTM B221 Alloy 6061-T6.
2. Extruded structural pipe: ASTM B429 Alloy 6061-T6.
3. Plate: ASTM B209 Alloy 6061-T6.
4. Bolts, washers and nuts: Type 304 stainless steel.

B. Welding:

1. Provide filler materials appropriate for the alloys and tempers in accordance with the AWS Structural Welding Code.

C. Railings per Section 05 52 00.

2.02 FABRICATION:

A. General:

1. Fabricate true to shape, size and tolerances as indicated and specified.
2. Straighten work bent by shearing or punching.
3. Dress exposed edges and ends of metal smooth, with no sharp edges and with corners slightly rounded.
4. Provide sufficient quantity and size of anchors for the proper fastening of the work.
5. Fabricate details and connection assemblies in accordance with drawings, with projecting corners clipped and filler pieces welded flush.

6. Provide clips, lugs, brackets, straps, plates, bolts, nuts, washers, and similar items, as required for fabrication and erection.
7. Use connections of type and design required by forces to be resisted, and to provide secure fastening.
8. Fit work together in fabrication shop and deliver complete, or in parts, ready to be set in place.

B. Welding:

1. Grind exposed edges of welds to a 1/8 inch (3 mm) minimum radius. Grind burrs, jagged edges and surface defects smooth.
2. Prepare welds and adjacent areas such that there is no undercutting or reverse ridges on the weld bead and no sharp peaks or ridges along the weld bead.
3. Grind embedded pieces of electrode or wire flush with adjacent surface of weld bead.

C. Bolting:

1. Provide stainless steel stud bolts and nuts with heavy aluminum washers for fastening aluminum material.
2. Provide holes required for the connection of adjacent or adjoining work wherever noted on drawings. Locate holes for bolting to supports to a tolerance of 1/16-inch (2 mm) of exact dimensions indicated.

2.03 ALUMINUM STAIRS:

A. Provide aluminum stairs fabricated from structural aluminum channel stringers, aluminum pipe rails and fiberglass treads.

PART 3 - EXECUTION

3.01 GENERAL:

A. Set and secure in place as indicated. Where bolted connections are used, draw together and draw nuts tightly. Use bolts of lengths required so that they do not project more than 1/4-inch (6 mm) beyond face of nut. Do not use washers unless specified. Provide hexagonal head bolts with hexagonal nuts.

B. Locate anchors and anchor bolts and build into connecting work.

C. Install stairs in accordance with accepted shop drawings.

3.02 CORROSION PROTECTION FOR ALUMINUM SURFACES:

A. Coat aluminum surfaces which will be in contact with concrete or masonry.

B. Where aluminum surfaces come in contact with dissimilar metals, keep the dissimilar metallic surfaces from direct contact by use of neoprene gaskets or washers.

3.03 CLOSEOUT ACTIVITIES:

A. Provide in accordance with Section 01 77 00.

* * * END OF SECTION * * *

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SECTION 05 52 00
ALUMINUM RAILINGS

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Furnish and install guardrails, including connectors, fasteners, and system required accessories.

1.02 REFERENCES:

A. Aluminum Association (AA):

1. Aluminum Association Designation System for Aluminum Finishes
2. AAMA 607.1: Voluntary Guide Specification and Inspection Methods for Clear Anodic Finishes for Architectural Aluminum

B. ASTM International (ASTM):

1. B210: Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes
2. B221/B221M: Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
3. B241: Standard Specification for Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube
4. B429: Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube
5. C1107: Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
6. E985: Standard Specification for Permanent Metal Railing Systems and Rails for Buildings

C. American Welding Society (AWS):

1. C5.6: Recommended Practices for Gas Metal Arc Welding
2. D1.1-1.17: Structural Welding Code.

D. National Ornamental & Miscellaneous Metals Association (NOMMA):

1. Guideline 1: Joint Finishes.
2. Metal Rail Manual.

1.03 SUBMITTALS:

A. Submit the following shop drawings in accordance with Section 01 33 00.

1. Show fabrication and installation of railings assembled from standard components. Include plans, elevations, component details, materials, finishes, connection and joining methods, and mounting details to adjoining work.
2. Identify location and type indicated.

B. Product Data:

1. Manufacturer's literature.
2. Assembly and installation instructions.

C. Operation and Maintenance Data:

1. Manufacturer's instructions describing procedures for maintaining including cleaning materials, application methods, and precautions as to use of materials which may be detrimental to finish when improperly used.

1.04 QUALITY ASSURANCE:

A. Comply with the requirements specified in Section 01 61 00.

B. Obtain field measurements prior to preparation of shop drawings and fabrication.

C. Manufacturer shall have minimum five years' experience specializing in manufacturing products specified in the section.

D. Welding Qualification and Certification:

1. Furnish written welding procedure for all welds in conformance with AWS Structural Welding Code.
2. Each welder, tacker and welding operator shall be certified by test to perform type of work required in conformance with AWS Structural Welding Code. Testing shall be conducted, and witnessed by an independent testing laboratory.
3. Maintain duplicate qualification and certification records at the job site readily available for examination.

1.05 DELIVERY STORAGE AND HANDLING:

A. Comply with the requirements specified in Section 01 66 10.

B. Deliver, store and handle materials in manner preventing damage to finished surfaces.

C. Store materials in a dry, well ventilated, weather tight place.

1.06 SITE CONDITIONS.

A. Field verify measurements prior to fabrication and indicate measurements in shop drawings.

PART 2 - PRODUCTS

2.01 ALUMINUM RAILING SYSTEM AND COMPONENTS:

A. Material: ASTM B429, alloy 6063-T6, Schedule 40, 1-1/2 inch (38.1 mm) diameter minimum extruded structural pipe or tube rails and schedule 80 posts.

B. Railings at open-side construction shall consist of two members with posts. Locate intermediate rails between top rail and finish floor as indicated on Drawings.

C. Fabrication:

1. Angles, offsets, other changes in alignment, and joining of posts and rails shall be made with welded connections. Miter and weld joints by fitting post to top rail and intermediate rail to post, mitering corners, groove welding joints, and grinding smooth. Run top rails continuously over post.

2. Rail splices shall be butted and reinforced by tight fitting interior sleeve not less than 6 inch (152.4 mm) long.
3. Provided expansion joint splices at 30 feet (9,114 mm) maximum spacing, with slip joint internal sleeve extending minimum of 4 inch (101.6 mm) beyond each side of joint. Weld to one side only. Locate within 12 inch (304.8 mm) of posts.
4. Space posts as shown on Drawings. Erect posts plumb in each direction.
5. Fabricate joints which will be exposed to weather so as to exclude water. Provide weep holes at the lowest possible point on all railing system posts.

D. Anchorage:

1. For posts set on stair or platform stringers, provide base flange welded to post and bolted to stringer with minimum of two 1/2-inch (13 mm) bolts, or weld post to stringer.

E. Finishes:

1. Aluminum Association Finish Designation: AA-M12A41 (Mechanical finish, nonspecular, anodic coating, architectural Class I, clear coating 0.7 mil complying with AAMA 607.1 on exposed surfaces.

a. Extruded Components: 0.7 mil anodized.
b. Cast Components: 0.4 mil anodized.

2.02 DISSIMILAR METAL:

A. Keep surfaces of dissimilar metal from direct contact by coating the dissimilar metal with a heavy coat of an asphalt paint.

B. Keep surfaces of aluminum components from direct contact with concrete or mortar by coating with a heavy coat of an asphalt paint.

2.03 GROUT AND ANCHORING CEMENT:

A. Nonshrink, nonmetallic, nonstaining and noncorrosive grout premixed and factory packaged. Provide grout conforming to requirements of ASTM C 1107.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. Install as shown on Drawings and accepted Shop Drawings.

B. Set posts plumb and aligned in each direction to within 1/4-inch in 12 feet.

C. Set rails horizontal or parallel to rake of steps to within 1/4 inch in 12 feet.

3.02 CLEANING:

A. Wash thoroughly using clean water and soap, rinse with clean water.

B. Do not use acid solution, steel wool or other harsh abrasive.

C. When stain remains after washing, remove finish and restore in accordance with manufacturer's instructions.

3.03 PROTECTION:

A. Protect surfaces of completed installations to prevent damage during construction activities.

3.04 REPAIR OF DEFECTIVE WORK:

A. Remove stained or otherwise defective work and replace with no additional cost to Owner.

3.05 CLOSEOUT ACTIVITIES:

A. Provide in accordance with Section 01 77 00.

* * * END OF SECTION * * *

DIVISION 6

WOOD, PLASTICS, AND COMPOSITES

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SECTION 06 60 10
FIBERGLASS REINFORCED GRATING AND STAIR TREADS

PART 1 - GENERAL

1.01 DESCRIPTION:

A. This section includes:

1. FRP Grating and Stair Treads.

B. Furnish all labor, materials, equipment and incidentals necessary to install the fiberglass polymer products specified.

1.02 REFERENCES:

A. ASTM International (ASTM):

1. D70: Standard Test Method for Density of Semi-Solid Bituminous Materials (Pycnometer Method).
2. D256: Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
3. D635: Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
4. D638: Standard Test Method for Tensile Properties of Plastics.
5. D695: Standard Test Method for Compressive Properties of Rigid Plastics.
6. D696: Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between-30 Degree C and 30 Degree C with a Vitreous Silica Dilatometer.
7. D732: Standard Test Method for Shear Strength of Plastics by Punch Tool.
8. D790: Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
9. D792: Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
10. D2583: Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.
11. D3918: Standard Terminology Relating to Reinforced Plastic Pultruded Products.
12. E84: Standard Test Method for Surface Burning Characteristics of Building Materials.
13. G152: Standard Practice for Operating Open Flame Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials
14. G153: Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials

1.03 SUBMITTALS:

A. Submit the following shop drawings in accordance with Section 01 33 00.

1. Detail shop drawings indicating:

a. Dimensions.
b. Sectional assembly.
c. Location and identification mark.
d. Connections, connections to structure and fastening methods.
e. Size and location of supporting frames required.
f. Materials of construction.
g. Installation instructions.

2. Catalog data and design tables showing limits for span length and deflection under various and concentrated loads.

1.04 QUALITY ASSURANCE:

A. Comply with the requirements specified in Section 01 43 00.

B. Provide documentation showing that the Contractor doing this work has a minimum of 5 years experience in the manufacture and installation of FRP systems similar to that indicated for this project, with sufficient capacity to produce required units without causing delay of work.

C. Install materials in accordance with the manufacturer's instructions.

1.05 DELIVERY STORAGE AND HANDLING:

A. Comply with the requirements specified in Section 01 66 10.

B. Store materials during and after shipment to prevent cracking, twisting, bending, breaking, chipping or damage of any kind to materials, including damage due to over exposure to sun.

C. Remove material that is damaged from the site, at no cost to the Owner.

D. Identify and match-mark all materials, items, and fabrications for installation and field assembly.

PART 2 - PRODUCTS

2.01 MANUFACTURERS:

A. Seasafe, Inc.

B. Strongwell

C. IMCO Reinforced Plastics, Inc.

D. International Grating, Inc.

E. Fibergrate Composite Structures, Inc.

F. Creative Pultrusions, IncGENERAL:

A. Provide new materials free from defects and imperfections that might affect performance of finished product.

B. After fabrication, seal cut ends, holes and abrasions of FRP shapes with a compatible resin coating to prevent intrusion of corrosion and moisture.

C. Fabricate so that exposed surfaces are smooth and true to form.

D. Manufacture FRP products using isophthalic polyester or vinyl ester resin with flame retardant and UV inhibitor additives. Provide synthetic surface veil covering exterior surface. Provide FRP shapes with flame spread of 25 or less in accordance with ASTM E84.

E. Provide FRP products exposed to weather with ultraviolet inhibitor and one mil thick UV coating to shield from ultra-violet light.

F. Provide Type 316L stainless steel metal accessories unless noted otherwise.

2.03 FRP GRATING AND STAIR TREADS:

A. Fabricate grating and Stair Treads from pultruded bearing bars and cross rods. Assemble grating using a locking cross-rod design that makes a permanent connection between the cross-rod and bearing bar, and is completely bond into a one-piece panel.

B. Color shall be gray. Stair treads shall have a safety yellow nosing.

C. Provide grating with a slip resistant epoxy grit surface.

D. Use Type 316L stainless steel grating hold down clamps spaced as required by manufacturer, but not greater than 4 feet (1,200 mm) on center. Provide two at each support with a minimum of four per panel.

E. Position grating sections flat and square with ends bearing minimum 1-1/4 inches (30 mm) on supporting structure.

F. Maximum Grating Clearances:

1. 1/4-inches (6 mm) from vertical steel sections.
2. 1/4-inches (6 mm) between sections and at ends.

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Remove and replace damaged items at no cost to Owner.

B. Examine supports for size, layout and alignment. Maintain surfaces free of debris.

3.02 INSTALLATION:

A. Install and make connections in accordance with accepted submittals and manufacturer's written instructions.

B. Install materials accurately in location and elevation, level and plumb. Field fabricate as necessary for accurate fit.

3.03 CLOSEOUT ACTIVITIES:

A. Provide in accordance with Section 01 77 00.

* * * END OF SECTION * * *

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DIVISION 22

PLUMBING

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SECTION 22 05 29
PIPE HANGERS, SUPPORTS AND ANCHORS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. System of pipe supports and anchors with necessary inserts, bolts, nuts, restraining and hanger rods, washers, miscellaneous steel, and other accessories.

1.02 DEFINITIONS

A. Submerged: At or below point 1 ft., 6 in. above peak (maximum) water surface elevations in water holding structure.

1.03 SYSTEM DESCRIPTION

A. Design Requirements:

1. Design, detail and installation of pipe support system shall be responsibility of CONTRACTOR.
2. Pipe support system components shall withstand dead loads imposed by weight of pipes filled with water plus insulation, plus live loads due to thermal expansion, vibration, internal test pressures, and have minimum safety factor of 5.
3. Absence of pipe supports and details on Drawings shall not relieve CONTRACTOR of responsibility for providing them throughout plant.
4. Supply design loading criteria to pre-engineered metal building manufacturer for piping supported from steel members.

1.03 SUBMITTALS

A. Shop Drawings:

1. Pipe supporting system, including manufacturer's product data, dimensions, sizes, types, location, maximum loadings, thrust anchorage, and installation instructions.

B. Submit in accordance with Section 01 33 00.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fee and Mason.

B. Grinnell.

C. Carpenter-Patterson.

D. Unistrut.

E. Superstrut.

F. Or equal.

2.02 GENERAL

A. MSS types indicated are typical of types and quality of standard pipe supports and hangers to be employed.

B. Provide factory fabricated piping hangers and supports, clamps, hanger rod attachments, building attachments, saddles, shields, thrust anchorage, and other miscellaneous products of MSS SP-58 type indicated or shop fabricated supports; comply with MSS SP-58 and manufacturer's published product information. Where MSS type not indicated, provide proper selection for installation requirements and comply with MSS SP-58 and manufacturer's published product information.

2.03 MATERIALS

A. Hangers, rods, clamps, protective shields, metal framing, support components, and hanger accessories shall be galvanized unless otherwise noted.

B. Hangers, rods, clamps, protective shields, metal framing, support components, and hanger accessories associated with Wet Well and Grit Room shall be Type 316 stainless steel or epoxy coated galvanized steel.

2.04 HORIZONTAL PIPING HANGERS AND SUPPORTS

A. General:

1. Unless otherwise shown or specified, hangers for 2-1/2 in. and smaller pipe shall be split-ring, adjustable swivel, clevis or roller type, hangers for 3 in. pipe or greater shall be clevis or roller type.
2. Hangers for use with spring supports shall be split-ring or clamp type.
3. Hangers for fiberglass reinforced pipe shall be saddle type.
4. Each hanger shall be designed to permit at least 1-1/2 in. vertical adjustment after installation.

B. Adjustable Swivel Split-Ring Hanger: MSS Type 6.

C. Adjustable Clevis Hanger: MSS Type 1, fabricated from steel.

D. Adjustable Band Hanger: MSS Type 7, fabricated from steel.

E. Adjustable Swivel-Band Hanger: MSS Type 10.

F. Clamp: MSS Type 4.

G. Single Roll Support: MSS Type 41, including axle roller and threaded sockets.

H. Adjustable Roller Hanger: MSS Type 43, including axle roller and clevis.

I. Roll/Stand: MSS Type 44, including roller, stand, and axle.

J. Adjustable Roll/Base: MSS Type 46, including roller, adjustable base, and stand.

K. Steel Brackets: Welded structural steel shapes complying with following.

1. Light Duty: MSS Type 31.
2. Medium Duty: MSS Type 32.
3. Heavy Duty: MSS Type 33.

L. Adjustable Saddle Support:

1. MSS Type 38, including saddle, pipe, and reducer.
2. Fabricate base support from steel pipe and include cast iron flange or welded steel plate.

M. Stanchion Saddle Support:

1. MSS Type 37, including saddle and U-bolt.
2. Fabricate base support from steel pipe and include cast iron flange or welded steel plate.

N. Strap or wire hangers not acceptable.

2.05 VERTICAL PIPING CLAMPS

A. 2-Bolt Riser Clamp: MSS Type 8, galvanized or plastic coated.

B. 4-Bolt Riser Clamp: MSS Type 42, include pipe spacers at inner bolt holes, galvanized or plastic coated.

2.06 HANGER RODS AND ATTACHMENTS

A. Hanger Rods:

1. ASTM A36/A36M, threaded both ends or continuous threaded.
2. Rods shall conform to following sizes.

Pipe Size	Minimum Rod Diameter (in.)
Up to 2 in.	3/8
2-1/2 in and 3 in.	1/2
4 in.	5/8
6 in.	3/4
8 in. to 12 in.	7/8
14 in. and Up	1
Trapeze Hangers	As Required

B. Turnbuckles: MSS Type 13.

C. Weldless Eye Nut: MSS Type 17.

D. Eye Socket: MSS Type 16.

E. Clevis: MSS Type 14.

2.07 BUILDING ATTACHMENTS

A. Individual Concrete Inserts:

1. MSS Type 18, malleable iron.
2. MSS Type 19, steel.
3. Minimum Safe Load: 1,100 lbs.

B. Continuous Concrete Inserts:

1. Unistrut, P-3200 Series.
2. Fee and Mason, Figure 9000.
3. Superstrut.

4. Or equal.

C. Top Beam C-Clamp: MSS Type 19.

D. C-Clamps: MSS Type 23, steel.

E. Single-Side Clamp: MSS Type 25.

F. Top I-Beam Clamp: MSS Type 25.

G. Side Beam Clamp: MSS Type 20.

H. Concrete Anchors:

1. Comply with Section 05 5000.
2. Minimum Safety Factor: 5.

2.08 SADDLES AND SHIELDS

A. Protection Saddles: MSS Type 39.

B. Protection Shields: MSS Type 40.

C. Wood Insulation Saddle:

1. Elcen Metal Products Company.
2. Or equal.

2.09 MISCELLANEOUS MATERIALS

A. Metal Framing Systems:

1. Unistrut, galvanized.
2. Fee and Mason, galvanized.
3. Or equal.

B. Shop-Fabricated Anchors and Supports:

1. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
2. Restraining Rods: ASTM A307.

PART 3 EXECUTION

3.01 GENERAL

A. Proceed with installation of hangers, supports, and anchors after required building structural work is complete and concrete support structure has reached 28 day compressive strength as specified in Section 03 30 10.

B. Install hangers, supports, clamps, and attachments from building structure. Comply with MSS SP-58. Group parallel runs of horizontal piping to be supported together on trapeze type hangers where possible.

C. Install supports to provide indicated pipe slopes and maximum pipe deflections allowed by ASME B31.1 are not exceeded.

D. Except as otherwise indicated for exposed continuous pipe runs, install hangers and supports of same type and style as installed for adjacent similar piping.

E. Do not support piping from other piping.

F. Prevent contact between dissimilar metals. Where concrete or metal pipe support is used, place 1/8 in. thick teflon, neoprene rubber or plastic strip under piping at point of bearing. Cut to fit entire area of contact between pipe and support.

G. Prevent electrolysis in support of copper tubing by use of hangers and supports which are copper plated, plastic coated or by other recognized industry methods. Electrician's tape is not an acceptable isolation method.

H. Apply anti-seize compound to nuts and bolts.

3.02 INSTALLATION OF BUILDING ATTACHMENTS

A. Support piping from structural framing, unless otherwise noted.

B. Concrete Inserts:

1. Locate inserts so total load on insert does not exceed manufacturer's recommended maximum load. Location of inserts shall be approved by ENGINEER.
2. Where necessary to anchor supports to hardened concrete or completed masonry, use concrete anchors.

C. Attach to structural steel with beam clamps.

3.03 THRUST ANCHORS AND GUIDES

A. Thrust Anchors:

1. For suspended piping, center thrust anchors as closely as possible between expansion joints and between elbows and expansion joints. Anchors shall hold pipe securely and be sufficiently rigid to force expansion and contraction movement to take place at expansion joints or elbows and preclude separation of joints.
2. Provide thrust anchors as required to resist thrust due to changes in diameter or direction or dead ending of pipe lines. Anchorage shall be required wherever bending stresses exceed allowable for pipe. Wall pipes may be used as thrust anchors.
3. Restraining rod size and number shall be as shown on Drawings.

B. Pipe guides shall be provided adjacent to sliding expansion joints in accordance with recommendations of National Association of Expansion Joint Manufacturers.

3.04 PIPE SUPPORT

A. Spacing:

Type of Pipe	Maximum Pipe Support Spacing (ft)
Steel	
10 in. and over	22
8 in.	19
6 in.	17
5 in.	16
4 in.	14

Type of Pipe	Maximum Pipe Support Spacing (ft)
3-1/2 in.	13
3 in.	12
2-1/2 in.	11
2 in.	10
1-1/2 in.	9
1 in.	7
3/4 in.	6
1/2 in.	5
Stainless Steel	
1 in. and smaller	6
1-1/2 in. through 4 in.	8
6 in.	8
8 in. and 10 in.	10
12 in.	10
14 in.	12
16 in.	12
18 in. and larger	14

B. Where piping of various sizes is to be supported together, space supports for smallest pipe size or install intermediate supports for smaller diameter pipe.

C. Provide minimum of 2 pipe supports for each pipe run.

D. Where piping connects to equipment, support by pipe support and not by equipment, unless approved by equipment manufacturer.

E. Unless otherwise shown or authorized by ENGINEER, place piping running parallel to walls approximately 1-1/2 in. out from face of wall and at least 3 in. below ceiling.

F. Pedestal pipe supports shall be adjustable with stanchion, saddle, and anchoring flange.

G. Piping supports for vertical piping passing through floor sleeves shall be galvanized steel riser clamps.

H. Piping passing through sleeves or openings in interior wall sleeves shall be carried by supports or hangers. Do not rest on wall.

I. Support piping in manner preventing undue strain on valve, fitting or equipment. Provide pipe supports at changes in direction or elevation, adjacent to flexible couplings, adjacent to nonrigid joints, and where otherwise shown. Do not install pipe supports and hangers in equipment access areas or bridge crane runs.

J. Install supports to allow controlled movement of piping systems, permit freedom of movement between pipe anchors, and facilitate action of expansion joints, expansion loops, expansion bends, and similar units.

K. Piping shall be free to move when expands or contracts, except where fixed anchors are indicated. Where adequate hanger rod swing length cannot be provided or where pipe movement based on expansion of 1 in./100 ft for each 100°F change in temperature exceed 1/2 in., provide approved roller supports.

L. Support piping 6 in. and larger on trapeze hangers with rollers.

* * * END OF SECTION * * *

SECTION 22 05 53
PIPING AND EQUIPMENT IDENTIFICATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Plastic pipe markers.
2. Plastic equipment markers.
3. Painting natural gas piping.
4. Piping system color coding schedule.

B. Identification furnished as part of equipment is specified as part of equipment assembly in other sections and shall comply with requirements of this section.

C. Identification requirements of electrical work, not work of this section.

1.02 SUBMITTALS

A. Product Data: Submit manufacturer's technical product data and installation instructions for each identification material and device required. Submit listing of each flow stream identifier with associated color coding.

B. Submit in accordance with Section 01 33 00.

1.03 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of identification devices of types and sizes required, whose products have been in satisfactory use in similar service for not less than 5 yrs.

B. Regulatory Requirements:

1. ANSI Standards: Comply with ASME A13.1 for lettering size, length of color field, colors, and viewing angles of identification devices.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Allen Systems, Inc.

B. Brady (W.H.) Company, Signmark Division.

C. Marking Services, Inc.

D. Industrial Safety Supply Company, Inc.

E. Seton Name Plate Corporation.

F. Or equal.

2.02 MECHANICAL IDENTIFICATION MATERIALS

A. Provide manufacturer's recommended products as specified for each application.

B. Where more than single type is specified for application, selection is installer's option, but provide single selection for each product category.

C. Bands, markers, and identification materials used in mechanical rooms and process locations shall be rated for exterior application and suitable for withstanding occasional wash down.

2.03 LETTERING AND GRAPHICS

A. Coordinate names, abbreviations, and other designations used in mechanical identification work with corresponding designations shown, specified or scheduled. Provide numbers, lettering, and wording as indicated or if not indicated, as recommended by manufacturers or required for proper identification and operation and maintenance of mechanical systems and equipment.

B. Multiple Systems: Where multiple systems of same generic name are shown or specified, provide identification indicating individual system number as well as service (i.e., Make-up air units; MAU-1 and MAU-2, etc.).

2.04 PLASTIC PIPE MARKERS

A. Snap-On Type: Provide preprinted, semi-rigid snap-on, color coded pipe markers complying with ASME A13.1.

B. Pressure Sensitive Type: Provide preprinted, permanent adhesive, color coded, pressure sensitive vinyl pipe markers complying with ASME A13.1. Dot matrix printing is not acceptable.

C. Small Pipes: For external diameters less than 6 in. (including insulation, if any), provide full band pipe markers, extending 360 degrees around pipe at each location, fastened by 1 of following methods:

1. Snap-on application of pretensioned, semi-rigid plastic pipe marker.
2. Adhesive lap joint in pipe marker overlap.
3. Taped to pipe (or insulation) with color coded plastic adhesive tape not less than 4 in. wide, full circle at both ends of pipe marker, tape lapped 1-1/2 in.

D. Lettering: Comply with piping system nomenclature as specified, scheduled or shown and abbreviate only as necessary for each application length, and only with approval of ARCHITECT/ENGINEER. Lettering height shall be as follows:

Outside Pipe Diameter (in.)	Minimum Letter Height (in.)	Minimum Length of Marker (in.)
3/4 to 1-1/4	1/2	8
1-1/2 to 2	3/4	8
2-1/2 to 6	1-1/4	12

E. Arrows: Print each pipe marker with arrows indicating direction of flow, either integrally with piping system service lettering (to accommodate both directions), or as separate unit of plastic.

F. Label and band colors in accordance with ASME A13.1, Pipe Identification Schedule and following:

1. Lettering and arrows:

   a. Black on yellow background for inherently hazardous materials.
   b. White on blue (gaseous) or green (liquid) for low hazard materials.

c. White on red background for fire quenching materials.

2. Banding: Colors and band spacing as scheduled or as shown on Drawings.

2.05 PLASTIC EQUIPMENT MARKERS

A. 2-ply, 1/8 in. thick laminated engraved plastic, engraved.

1. Color: Black letters on white background.

B. Nomenclature: Include following, matching terminology on schedules as closely as possible:

1. Equipment name (i.e. chilled water pump No. 1).
2. Equipment Tag No. (i.e. 30-P-1).

C. Size: Provide approximate 3 in. by 6 in. (minimum) for equipment.

1. 1 in. high letters for equipment tag number.
2. 1/2 in. high letters for descriptive equipment name.

2.06 PAINTING OR COATING

A. Ferrous Metal:

1. Ferrous metal surfaces, normal exposure; stairs, ladders, handrails, exposed structural steel, catwalks, convectors, machinery, piping, and like items.

a. Step One: Blast clean to a commercial finish SSPC SP-6.
b. Step Two: Apply the following polyamide epoxy system curing time for each coat must be 12 hours.

2. Tnemec or equal:

a. One coat Tnemec Series 66-1255 Beige Hi-Build Epoxoline primer, 2.0 - 3.0 mils.
b. One coat of Tnemec Series 66 - color 2.0-3.0 mils.
c. For exterior exposure only add one coat Series 73 Endura-Shield, 2.0-3.0 mils.

PART 3 EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS

A. Coordination: Where identification are to be applied to surfaces requiring insulation, painting or other covering or finish including valve tags in finished mechanical spaces, install identification after completion of covering and painting. Install identification prior to installation of acoustical ceilings and similar removable concealment.

3.02 PIPING SYSTEM IDENTIFICATION

A. Locate pipe markers with arrows and color bands as follows wherever piping exposed to view in occupied spaces, machine rooms, accessible maintenance spaces (shafts, tunnels, plenums), and exterior non-concealed locations.

1. Near each valve and control device.
2. Near locations where pipes pass through walls or floors, ceilings or enter non-accessible enclosures.
3. At access doors, manholes, and similar access points permitting view of concealed piping.
4. Near major equipment items and other points of origination and termination.

5. Spaced intermediately at maximum spacing of 30 ft along each piping run, except reduce spacing to 20 ft in congested areas of piping and equipment.
6. On piping above removable acoustical ceilings, except omit intermediately spaced markers.

B. Locate color bands at each marker and at intermediate spacing not to exceed 10 ft between bands, and at lesser spacing as indicated or as required by local codes.

C. Locate directional arrows at each marker. Provide 2 arrows at each tee or branch fitting.

D. Where piping is normally visible from more than 1 side, provide 2 or 3 labels and arrows spaced at 120 degree intervals around pipe in accordance with ASME A13.1.

E. Painting or Coating:

1. Painting of natural gas piping is work of this Section.
2. Colors listed are general. Actual colors will be selected at later date based on approved manufacturer and listed on color coordinating schedule. Colors shall match existing piping system color coding.

3.03 MECHANICAL EQUIPMENT IDENTIFICATION

A. Install plastic equipment marker on or near each major item of mechanical equipment and each operational device, if not otherwise specified for each item or device. Provide signs for each unit having equipment tag number on Drawings or in Specifications.

3.04 ADJUSTING AND CLEANING

A. Adjusting: Relocate any mechanical identification device visually blocked.

B. Cleaning: Clean face of identification devices.

3.05 FIELD QUALITY ASSURANCE

A. Final Survey and Repairs:

1. 1 yr after date of substantial completion, CONTRACTOR shall perform walk-through survey of mechanical identification systems and shall remove and replace any bands, labels, tags or markers that are loose, discolored, or defective.
2. Replacement materials shall be provided by CONTRACTOR, not drawn from OWNER'S extra material.

Piping Identification Schedule
Table 1 to Section 22 05 53

Flowstream Identifier	Background Label Color	Pipe Label Text	Pipe Color	Pipe Banding
FLAMMABLE GAS				
(NG)	Yellow	Natural Gas	Red	---

* * * END OF SECTION * * *

DIVISION 23

HEATING AND VENTILATING

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SECTION 23 05 93
TESTING, ADJUSTING, AND BALANCING

PART 1 - GENERAL

1.01 SUMMARY

A. Extent of testing, adjusting, and balancing (TAB) work required by this section indicated on Drawings, schedules, and by requirements of this section. Defined to include, but not necessarily limited to, air distribution systems, hydronic distribution systems, and associated equipment and apparatus of mechanical work. Work consists of setting speed and volume (flow) adjusting facilities provided for systems, recording data, conducting tests, preparing and submitting reports, and recommending modifications to Work as required by Contract Documents.

B. Section Includes:

1. Fans.
2. Make-up air units.
3. Ductwork systems.

C. Equipment sections describe installation and startup of equipment to be tested, adjusted, and balanced.

D. Piping system sections describe pressure testing of piping and ductwork systems.

1.02 SUBMITTALS

A. Tests:

1. Submit certified test reports signed by test and balance supervisor performing TAB work.
2. Include identification and types of instruments used and most recent calibration date with submission of final test report.
3. Submit biographical data on ENGINEER directly supervising testing, adjusting, and balancing work.

B. Shop Drawings:

1. Submit sample test data forms complete with certifying agency logo, identifying required test data, date, page number, system designation, system location, Project name, and balancer's name.

C Operation and Maintenance (O&M) Data:

1. Include copies of certified test reports, identification of instruments, and data on ENGINEER.

D. Submit in accordance with Section 01 33 00.

1.03 QUALITY ASSURANCE

A. Tester's Qualifications: Firm certified by NEBB in testing and balancing disciplines similar to those required for Project, not installer of system to be tested, and otherwise independent of Project.

B. Regulatory Requirements:

1. NEBB Compliance: Comply with NEBB'S Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems, as applicable to mechanical air and hydronic distribution systems and associated equipment and apparatus.

C. Industry Standards: Comply with ASHRAE recommendations pertaining to measurements, instruments, and testing, adjusting, and balancing except as otherwise indicated.

1.04 PROJECT/SITE CONDITIONS

A. Do not proceed with testing, adjusting, and balancing work until system complete and operable. Ensure no later residual work still to be completed.

B. Do not proceed until Work scheduled for testing, adjusting, and balancing clean and free from debris, dirt, and discarded building materials.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. Except as otherwise indicated, use same products as used in original construction for patching holes in insulation, ductwork, and housings cut or drilled for test purposes, including access for test instruments, attaching jigs, and similar purposes.

1. At tester's option, plastic plugs with retainers may be used to patch drilled holes in ductwork and housings.

2.02 TEST INSTRUMENTS

A. Utilize test instruments and equipment for TAB work required of type, precision, and capacity as recommended in following TAB standards.

1. NEBB'S Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine installed Work and conditions under which testing to be done to ensure Work complete, clean, and operable. Do not proceed with TAB work until unsatisfactory conditions corrected in manner acceptable to tester.

3.02 ADJUSTMENT

A. Test, adjust, and balance environmental systems and components as indicated, in accordance with procedures outlined in applicable standards.

1. Adjust flows to within -0% to +10% of scheduled values, or as otherwise instructed by ENGINEER.

B. Test, adjust, and balance system during summer season for air conditioning systems and during winter season for heating systems, including minimum period of operation at outside conditions within 5°F (3°C) wet bulb temperature of maximum summer design condition, and within 10°F (6°C) dry bulb temperature of minimum winter design condition. When seasonal operation does not permit measuring final temperatures, then take final temperature readings when seasonal operation permits.

C. Patch holes in insulation, ductwork, and housings cut or drilled for test purposes in same manner as original construction.

D. Mark equipment settings including damper control positions, valve indicators, fan speed control levers, and similar controls and devices to show final settings at completion of TAB work. Provide markings with paint or other suitable permanent identification materials.

E. Retest, adjust, and balance systems subsequent to significant system modifications and resubmit test results.

1. Provide services of qualified testing and balancing technician for random checking of systems by ENGINEER. If, during spot checking by ENGINEER, performance less than 10% of installation falls outside of specified performance parameters, rebalance entire installation.

3.03 REPORT PREPARATION

A. Prepare report of test results including instrumentation calibration reports, in format recommended by applicable standards.

B. Prepare report of recommendations for correcting unsatisfactory mechanical performances when system cannot be successfully balanced including, where necessary, modifications exceeding requirements of Contract Documents for mechanical work.

* * * END OF SECTION * * *

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SECTION 23 07 00
HVAC INSULATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Ductwork System Insulation:

a. Make-up air ductwork located outdoors and within dog house.

1.02 SUBMITTALS

A. Schedule below identifies information required for each item of material or equipment.

Unit Type	Submittal Information Item
Ductwork System Insulation	1

B. Submittal Information:

1. Product Data: Submit manufacturer's specifications and installation instructions for each type of mechanical insulation. Submit schedule showing manufacturer's product number, thickness, and furnished accessories for each mechanical system requiring insulation.

C. Submit Item 1 in accordance with Section 01 33 00.

D. Information submitted by CONTRACTOR, but not designated to be submitted will be returned without actions by ENGINEER.

1.03 QUALITY ASSURANCE

A. Manufacturers: Firms regularly engaged in manufacture of mechanical insulation products of types and sizes required whose products have been in satisfactory use in similar service for not less than 3 yrs.

B. Installer: Firm with at least 5 yrs successful installation experience on projects with mechanical insulations similar to that required for Project.

C. Flame-Smoke Ratings: Provide composite mechanical insulation (insulation, jackets, coverings, sealers, mastics, and adhesives) with flame spread rating of 25 or less, and smoke developed rating of 50 or less, tested in accordance with ASTM E84.

D. Regulatory Requirements:

1. International Mechanical Code (2015).
2. International Energy Code (2015).

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver insulation, coverings, cements, adhesives, and coatings to site in containers with manufacturer's stamp or label affixed, showing fire hazard ratings of products.

B. Protect insulation against dirt, water, chemical, and mechanical damage. Do not install damaged insulation; remove from Project site.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer's equipment used as basis of design for Project is name indicated in Specifications for particular type of equipment or application contained in these Contract Documents. If no manufacturer listed, basis of design is industry standard indicated.

2.02 GENERAL

A. Provide materials and products complying with NFPA No. 90A and meeting requirements for flames spread of less than 25, smoke developed rating of less than 50, and fuel contributed of less than 50 when tested in accordance with ASTM E84.

2.03 FIBERGLASS INSULATION MATERIALS

A. Manufacturers:

1. Certainteed Corporation.
2. Schuller International, Inc.
3. Knauf Fiberglass Corporation.
4. Owens-Corning Fiberglass Corporation.
5. Or equal.

B. Rigid Fiberglass Ductwork Insulation: ASTM C612, high temperature, rigid fibrous glass board with Schedule 1 jacket type and minimum thickness, and class for service temperatures indicated.

1. FGD-1 (Nonload Bearing): ASTM C612, Class 1; ASTM C547, ASTM C553, ASTM C592, and ASTM C612, Form A, Class 1, average density 1.5 pcf, maximum k = 0.24 Btu in./hr sq ft °F, to 400°F (204°C).
2. FGD-2 (Load Bearing): ASTM C612, Class 2; ASTM C547, ASTM C553, ASTM C592, and ASTM C612, Form A, Class 2, average density 3.0 pcf, maximum k = 0.23 Btu in./hr sq ft °F, to 400°F (204°C).

2.04 VAPOR BARRIER AND JACKETING MATERIALS

A. JK1, Kraft Paper Faced Vapor Barrier Material: FS HH-B-100B, Type I, all service type aluminum foil and fiberglass yarn reinforced kraft paper. Manville Type AP, or equal.

1. Maximum water vapor permeability, ASTM E96/E96M, 0.02 perms.
2. Minimum tensile strength, ASTM D828, 40 lbs/in. width.
3. Minimum Mullen burst pressure, ASTM D774/D774M, 70 psi.

B. JA1, Aluminum Foil Faced Vapor Barrier Material: ASTM C 1136,Type II, all service type aluminum foil and fiberglass yarn reinforced kraft paper. Manville Type FSK, or equal.

1. Maximum water vapor permeability, ASTM E96/E96M, 0.02 perms.
2. Minimum tensile strength, ASTM D828, 40 lbs./in. width.
3. Minimum Mullen burst pressure, ASTM D774/D774M, 70 psi.

C. Weatherproof Rigid Metal Jacket Materials:

1. JRA, 0.016 in. aluminum, with Pittsburg seam, butt joint strips, matching fitting covers, and weatherproof mastic.

2.05 INSULATION ACCESSORIES

A. Ductwork Insulation Accessories: Provide staples, wires, bands, wire netting, stud pins, and metal cover tape, anchors, corner angles, and similar accessories as recommended by insulation manufacturer for application indicated.

B. Insulating Compounds: Provide fire retardant, moisture resistant, mildew resistant, and verminproof cements, mastics, sealers, protective finishes, and similar compounds as recommended by insulation manufacturer for applications intended.

1. Insulation Bonding and Lap Adhesives: Benjamin Foster No. 85-20, or equal.
2. Vapor Barrier Coatings: Benjamin Foster No. 30-35, or equal.
3. Lagging Adhesives: Benjamin Foster No. 30-36, or equal.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's written instructions and recognized industry practices to ensure insulation serves intended purpose.

B. Install insulation materials with smooth and even surfaces and on clean and dry surfaces. Butt insulation joints together to ensure complete and wrinkle-free fit over surfaces to be covered. Do not use mastic or joint sealer as filler for gaping joints and excessive voids resulting from poor workmanship. Apply insulation using staggered joint method for both single and double layer construction, where feasible. Where multiple layers required, apply each layer of insulation separately.

C. Maintain integrity of vapor barrier of insulation and protect to prevent puncture and other damage.

D. Extend insulation without interruption through walls, floors, and similar penetrations, except where otherwise indicated.

E. Install insulation on systems and equipment subsequent to testing and acceptance tests. Do not apply insulation to hot surfaces.

F. Insulate each continuous run of piping with full length units of insulation, with single cut piece to complete run. Do not use cut pieces or scraps abutting each other.

G. Cover insulated equipment surfaces with glass cloth jacketing wrinkle-free and positively secured. Lap seams at least 2 in. Apply over vapor barrier where applicable. Do not insulate boiler manholes, handholes, cleanouts, ASME stamps or manufacturer's nameplates. Provide beveled edge at interruptions of insulation.

H. Trowel insulated surfaces with layer of insulating cement, leaving smooth continuous surface. Fill in scored block, seams, chipped edges, and depressions and cover over wire netting and joints with cement.

I. Cover valves, fittings, and similar items in each piping system with equivalent thickness and composition of insulation as applied to adjoining pipe run. Install factory molded, precut or job fabricated fittings, at installer's option, except where specific form or type indicated.

J. Provide removable insulation sections to cover parts of equipment which will be opened periodically for maintenance. Include metal vessel covers, fasteners, flanges, frames, and accessories.

K. Corner Angles: Except for oven and hood exhaust duct insulation, install corner angles on external corners of insulation on ductwork in exposed finished spaces before covering with jacketing.

L. Install protective metal shields and insulated inserts wherever needed to prevent compression of insulation.

M. Pipe Hanger Insulation Inserts: Butt pipe insulation against pipe hanger insulation inserts. For hot piping, apply 3 in. wide vapor barrier tape or band over butt joints. For cold piping, apply wet coat of vapor barrier lap cement on butt joints and seal joints with 3 in. wide vapor barrier tape or band.

N. Insulation Exposed to Weather: Protect from weather by installing Type JRA jacketing.

O. Metal Jackets for ductwork located outdoors: Ensure longitudinal and circumferential joints overlap at least 2 inches wide, with field-cut edge of circumferential joint turned under one inch to provide smooth edge. Place longitudinal joints to shed water. Seal joints with insulation manufacturer's recommended weatherproof coating. Secure jackets in place with aluminum bands on 9 inch centers. Do not use dissimilar metals for direct duct connections. Where pipes penetrate exterior walls, continue increased thickness required for pipe exposed to weather and metal jackets through sleeve to a point 2 inches (50.8 mm) beyond interior wall surface. Where metal jacket abuts an uninsulated surface, seal joints with weather proof mastic, recommended by insulation manufacturer. Apply two coats of weatherproof coating recommended by insulation manufacturer to entire surface with a layer of glass cloth embedded between coats. Ensure glass cloth overlaps not less than 2 inches (50.8 mm) at joints and adjoining surface. Each coat of weatherproof coating shall be 1/16-inch (1.588 mm) minimum thickness.

3.02 DUCTWORK AND EQUIPMENT INSULATION

A. Insulate ductwork and equipment in accordance with Schedule 1.

B. Definitions:

1. Exposed: Installed in plain view of sight. (Example: Ductwork installed in Mechanical Rooms and Buildings with no drop ceilings.)
2. Concealed: Installed out of sight. (Example: Ductwork installed above drop ceiling, within duct chase, or within a roof mounted doghouse)

3.03 PROTECTION AND REPLACEMENT

A. Replace damaged insulation which cannot be repaired satisfactorily, including units with vapor barrier damage and moisture saturated units.

B. Protection: Protect insulation work during remainder of construction period to avoid damage and deterioration.

SCHEDULE 1 TO SECTION 23 07 00
Ductwork and Equipment Insulation Thickness (in.)

Item	Insulation Type	Jacket Type	Insulation Thickness
Ductwork located outside and concealed within roof mounted dog house	FGD-1	JK-1/JA-1 w/ JRA	2
	FGE-6	JK-1/JA-1 w/ JRA	2

* * * END OF SECTION * * *

SECTION 23 09 33
AUTOMATIC TEMPERATURE CONTROL SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

A. System Description:

1. Provide electric and/or direct digital control (DDC) systems for HVAC equipment specified.
2. Provide all the necessary control hardware including required processor, controllers, room sensors, and relays meet the HVAC control sequence of operation and other requirements of this Section. Control sequences are specified in Section 23 09 93.
3. All Electric/ DDC system components included shall be installed in manufacturer provided controls panel and/or enclosed within Temperature Control Panel (TCP-1).
4. Provide all required hardware/ devices, control wiring, calibration, testing, commissioning, software programming, and data base generation for a fully functioning HVAC Electric/ DDC Control System.
5. Note that not all devices described in this specification are required for this Project.
6. Roof top make-up air heating units are provided with manufacturer provided electric controls; See Section 23 73 33.

B. Control System Types:

1. The following control system types may be used in this Project.

a. Electric/Electronic Control System (Electric):

1) System using simple electric or electronic control devices.
2) User interface at control device.

b. DDC Control System (Non-Networked DDC):

1) Microprocessor-based DDC Control System utilizing standalone DDC Controllers.
2) Information within control system can be utilized by any control component over high-speed network.
3) User interface at temperature control panel.

Control Type Schedule		
Location	**System**	**Control Type**
All	Simple thermostatic controlled electric heaters (EH's) and fans, manually/locally controlled fans and systems controlled by TCP-1.	Electric/DDC (Non-BAS)

C. Provide following electrical work as Work of this section, complying with requirements of Division 26.

1. Control and power wiring between field installed controls, indicating devices, and unit control panels.

D. Work by Others:

1. Power supply wiring for HVAC Equipment by Owner.
2. Non-UPS 20-amp power circuit for control power for HVAC Automatic Temperature Control System devices by Owner.

1.02 DEFINITIONS

A. Point Chart:

1. System Description: Particular system to which the following points apply.
2. Point Type:

    a. Supervised Binary: Point type having 2 conditions or values and no intermediate units. Change of state initiates alarm or advisory sequence and requires acknowledgment of alarm condition and initiates alarm or advisory sequence. Provide software definable advisory sequence.
    b. Binary: Point type having 2 conditions or values and no intermediate values.
    c. Analog: Point type having continuous range of values. Accomplish analog sensing by RTD sensing elements located directly in medium to be measured. Locate temperature sensors within wells when measuring liquid temperatures.
    d. Start/Stop: Point type changing binary state of controlled variable.
    e. Adjust: Point type changing analog condition of controlled variable.

B. Analog Indication: Type of readout provided for analog points accessed by operator.

C. Binary Indication: Type of readout provided for binary points accessed by operator or alarming condition.

D. Applications/Programs: Building automation system/direct digital control processes to be applied to system or point identified under point type.

1.03 SUBMITTALS

A. Product Data:

1. Submit manufacturer's technical product data for each control device furnished indicating dimensions, capacities, performance characteristics, electrical characteristics, finishes of materials, and installation and startup instructions.
2. Motors: For poly-phase motors 5 hp and larger, submit in accordance NEC. For single-phase, definite purpose, special purpose and general purpose poly-phase motors less than 5 hp, submit NEMA design types, construction, insulation class, NEMA frame size, horsepower, voltage and amp draw characteristics, and service factor for each common application.

B. Shop Drawings: Submit for each electric control system.

1. Schematic flow diagram of system showing fans, pumps, coils, dampers, valves, and control devices.
2. Label each control device with setting or adjustable range of control.
3. Indicate required electrical wiring. Differentiate between portions of wiring factory-installed and portions field-installed. Provide wiring diagrams for each control device along with other details required to demonstrate that the system has been coordinated and will function as a system.
4. Provide details of construction, layout, and location of each temperature control panel (TCP) within the building, including instruments location within panel and panel face, and labeling. Indicate which piece of mechanical equipment is associated with each controller and what area within the building is being served by that equipment. For terminal unit control, provide a room schedule that would list mechanical equipment tag, room number of space served, address of DDC controller, and other pertinent information required for service.
5. Provide written description of sequence of operation.
6. Represent panel mounted control components within designated panel section on Drawings. Provide one-line detailed schematic of wiring.
7. Provide one-line schematic for starters affected by control system showing interlocks between starters and control system and any other interlocks not necessarily provided as part of control system.
8. Dampers: Submit leakage and flow characteristics of dampers, and size schedule for controlled dampers.

C. Operating and Maintenance (O&M) Data:

1. Maintenance instructions including lubrication instructions, filter replacement, motor and drive replacement, and spare parts lists. Include this data in maintenance manual.
2. Provide schedule of maintenance tasks necessary to keep CONTRACTOR guarantee in effect through guarantee period.
3. Provide list of recommended frequency of recommended preventive maintenance procedures and tools required to perform tasks. Provide instructions for each task in O&M data.

D. Submit in accordance with Section 01 33 10.

1.04 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of electric control/ DDC control equipment, of types and sizes required, whose products have been in satisfactory use in similar service for not less than 8 yrs.

B. Installer's Qualifications: Firm specializing and experienced in electric control/ DDC control system design and installation, and manufacturer, or franchised representative of manufacturer of control system to be installed for no less than 3 years.

1. Service response time during warrantee period shall be four hours or less, 24-hours/day, 7-days/week.

C. Regulatory Requirements:

1. Provide electrical products tested, listed, and labeled by UL and complying with NEMA standards for electrical requirements of areas in which controls are installed.
2. DDC manufacturer shall provide written proof with shop drawings that the equipment being provided is in compliance with F.C.C. rules governing the control of interferences caused by Digital Electronic Equipment to Radio Communications (Part 15, Subpart J, Class A).
3. Refer to Drawings for specific area classifications impacting control system design.

1.05 DELIVERY, STORAGE AND HANDLING

A. Ship each piece of equipment and control device in factory cartons. Provide factory-applied plastic end caps on each length of pipe and tube.

B. Maintain cartons and end caps through shipping, storage, and handling as required to prevent equipment and pipe end damage and eliminate dirt and moisture from equipment and inside of pipe and tube.

C. Store equipment indoors in clean, dry area until ready for installation.

D. Any damaged equipment and control devices shall be replaced.

1.06 MAINTENANCE

A. Within 30 days after Substantial Completion, present to OWNER for consideration, preventive maintenance contract to cover service incidental to continued proper performance of system and devices during guarantee period.

B. Maintenance of system components are not CONTRACTOR'S responsibility during and after guarantee period, unless contracted for by OWNER.

C. Provide schedule of maintenance tasks necessary to keep CONTRACTOR guarantee in effect through guarantee period.

D. Provide list of recommended preventive maintenance procedures including task frequency and tools required to perform tasks. Provide instructions for each task in O&M data.

E. OWNER will keep records, schedules, and other reports documenting OWNER-performed prescribed maintenance procedures during guarantee period. CONTRACTOR not liable for defective systems, devices or components or repair, if OWNER-performed required preventive maintenance procedures not performed and documented.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer's equipment used as basis of design for Project is name indicated in Specification for particular type of equipment or application contained in Contract Documents. If no manufacturer listed, basis of design is industry standard indicated.

B. Manufacturers:

1. Automated Logic Controls.
2. Carrier United Technologies.
3. Distech Controls.
4. Johnson Controls.
5. Honeywell.
6. Siemens.
7. Or equal.

2.02 GENERAL

A. Provide automatic temperature control products and supporting system components of type, architecture, size, and capacities indicated, conforming to manufacturer's standard materials and components as published in product information; designed and constructed as recommended by manufacturer and required for application indicated.

2.03 VALVES

A. Control Valves:

1. General:

   a. Provide factory-fabricated, electrically actuated control valves of type, body material, and pressure class required.
   b. Where type or body material not indicated, provide selection as determined by manufacturer for installation requirements and pressure class based on maximum pressure and temperature in piping system.
   c. Equip control valves with heavy duty actuators and proper shut-off rating for each individual application.

2. Water Service Valves: Equal percentage characteristics with rangeability of 50 to 1.
3. Single Sealed Valves: Cage type trim providing seating and guiding surfaces for plug on top and bottom guided plugs.
4. Double Seated Valves: Balanced plug type with cage type trim providing sealing and guiding surfaces on top and bottom guided plugs.
5. Valve Trim and Stems: All sizes, polished stainless steel.
6. Packing: Spring loaded Teflon, self-adjusting.
7. Valve Pressure Drop: Size valves for following.

   a. 3-Way Valves: Valve pressure drop shall equal or exceed pressure drop of terminal devices served. Pressure drops of valves in secondary piping bridge circuits shall not exceed 5 ft of water column.

b. 2-Way Valves: Valve pressure drop shall not exceed 5 ft. of water column.

2.04 ACTUATORS

A. Electric Operators: Size motors to operate with sufficient reserve power to provide smooth modulating action or 2-position action as specified in Section 23 09 93.

1. Provide permanent split capacitor or shaded pole type motors with gear trains completely oil immersed and sealed. Equip spring return motors, where indicated on Drawings or in operational sequence, with integral spiral spring mechanism. Furnish entire spring mechanism in housings designed for easy removal for service or adjustment of limit switches, auxiliary switches or feedback potentiometer.
2. Equip motors for outdoor locations and outside air intakes with O-ring gaskets designed to make motors completely weatherproof, and internal heaters permitting normal operation at -40°F (-40°C).
3. Furnish multiple spring return motors for dampers larger than 25 sq. ft. Size spring return motors for running torque rating with minimum 3 to 1rated to required torque ratio.
4. Furnish modulating electric operators with control circuitry designed to accept 4-20 mA, 2 to 10 vdc, or pulse width modulation input control signals, appropriate to application.

2.05 INPUT DEVICES

A. Room Thermostats/ Space Sensors:

1. Provide auto changeover, solid state programmable thermostats with user adjustable temperature and relative humidity set-points, dead bands, and offsets.

a. Temperature range: 50°F to 104°F.
b. Humidity range: 10% to 90%.

2. Provide explosion-proof override thermostat located inside Grit Room:

a. Nema-7 & 9 rated; Class I, Divisions 1 and 2, Groups C & D.
b. Temperature range: 36°F to 82°F.
c. Adjustable set-point knob.
d. Snap action switch operation in SPDT configuration rated to 22 amps at 480VAC max.
e. Dwyer Model 862E or equal.

B. Temperature Sensors:

1. Provide temperature sensing elements of nickel wire, electric resistance type for space, well, or duct insertion application.
2. Elements shall have reference resistance of 1,000 ohms/°F, with reference resistance of 1,000 ohms at 70°F, with temperature coefficient of 3 ohms/°F.
3. Resistance tolerances shall be 1.0% at 70°F.
4. Minimum ambient temperature range shall be -40°F to 216°F.

C. Water Flow Switches:

1. Stainless steel or bronze paddle types.
2. Chilled Water Application: Vapor-proof type to prevent condensation in switch.
3. Bellows actuated mercury or snap acting type with appropriate scale range and differential adjustment for service indicated.

D. Static Pressure Sensors:

1. Provide pressure sensors as required for the applications.
2. Un-directional with ranges not exceeding 150 percent of maximum expected input.

3. Temperature compensated with typical thermal error or 0.06 percent of full scale in temperature range of 40°F to 100°F.
4. Accuracy: One percent of full scale with repeatability 0.3 percent.
5. Output: 0-5 Vdc with power at 12 to 28 Vdc.

E. Humidity Sensors:

1. Provide linearly proportional humidity sensing elements for room or duct insertion application.
2. Elements operating range of 10% to 90% relative humidity with accuracy of 1% and maximum drift of 11%/year.

F. Carbon Dioxide Sensor:

1. Provide linearly proportional CO_2 sensing elements for return duct insertion application.
2. Elements operating range 0 to 2000 PPM adjustable with accuracy +/- 30 PPM or +/- 3% of reading at normal temperature and pressure.
3. Output: 0-20 mA or 0-10 Vdc with power at 12 to 28 Vdc.

G. Carbon Monoxide Sensor:

1. The detector shall be an ETL listed unit containing a control board and sensor board that conforms completely to the UL 3111-1 standard.
2. The detector shall contain carbon monoxide and nitrogen dioxide sensor.
3. Carbon monoxide detection levels shall range from 20 to 55 ppm.
4. The detector shall have a power supply fuse rated for 0.4 amps at 24 volt power.
5. The detector shall provide a 4-20 ma DC or 0-10 VDC signal and shall have separate proportional outputs for carbon monoxide. The signal shall be compatible with building management system.
6. Output relays providing a normally closed set of contacts for the low alert and for the alarm shall be provided. These relays shall provide a fail-safe that will automatically activate the ventilation equipment.

2.06 OUTPUT DEVICES

A. Relays and Contactors:

1. UL listed units rated for 100,000 cycles with resistive loads. Equip with replaceable molded coils and replaceable silver cadmium oxide contacts. Coat core laminations with heat resistant inorganic film to reduce core losses.
2. For line and load terminals on contactors with higher than 35 amp rating, provide 1-piece formed and welded pressure type.
3. For 35 amp or lower rating, provide screw type contactors.
4. Equip field-mounted contactors with suitable steel enclosures.

2.07 ELECTRONIC CONTROLLERS

A. Electronic Controllers:

1. Provide electronic controllers designed as individual components and fully protected by steel enclosures.
2. Provide individual controllers of multiple input type with provisions for user adjustment.
3. Identify adjustments clearly on controllers including proportional band and authority.
4. Where single electronic controller required for specific application, can be built-in as integral part of control motor, but only where provided with easily accessible control adjustment.
5. Provide 2-position or proportional electric controller power output as required by specified sequence of operations.

B. Step Controllers:

1. Provide step controllers for control sequencing or control of staged outputs with heavy duty switching rated to handle loads.

2.08 FIELD PROCESSING UNITS (FPU)

A. General:

1. Provide stand-alone, programmable, microprocessor based direct digital controllers with hardware and operation/programmer terminals, suitable for multi-function operation, capable of being incorporated into larger BAS. Integration of individual equipment controllers is anticipated unless noted in the indicated control sequences.
2. Include controller, controller enclosure, field termination equipment, line power subassembly, self-diagnostic board, 720-hour minimum back-up power, power filter, magnetic media loader, and microprocessor.
3. Operating Environment: 0°F to 140°F, 10% to 90% relative humidity.
4. Communication Port: BACnet MS/TP – 9600bps, 19.2 kbps, 38.4 kbps, or ARCNET 156 kbps.
5. Expandability: Xnet remote expansion port for communication with up to 3 MPC XPIO expanders (500 kbps).
6. Inputs: 12 inputs, configurable for 0-5 Vdc, 0-10 Vdc, 0-20 mA, thermistor (10k Type II), 1k RTD (Platinum, Nickel, or Balco), and Dry Contact. Inputs are 14 bit A/D and support up to 40 pulses per second (12.5 msec min. pulse).
7. Outputs: 8 outputs, configurable for 0-10 Vdc, 0-20 mA, or 24 VDC (50 mA relay drive). Outputs have H-O-A switches, including potentiometer for manual adjustment of analog outputs.
8. Power Requirement: 24VAC +/- 10%, 60 Hz, 50 VA power consumption, 26 VDC, 23 W.
9. Power Protection: Replaceable 3 Amp Pico fuses.
10. Battery: 10-year Lithium CR123A battery, 720 hours of time retention during power outages.
11. Real Time Clock: Battery-backed real time clock.
12. Status Indicators: LED status for communications and low battery, 7-segment status display for running, errors, and power.
13. Provide Carrier i-Vu^{R} user interface, plug-and-play BACnet controllers, Model MPC Open XP.

B. Local Display and Adjustment Panel:

1. Provide portable or permanent local display and adjustment panel with digital display for current values of analog variables, binary conditions, off-normal scans, and other analog or binary information required for analysis and adjustment of each system being controlled.
2. Provide keyboard for access of information relative to desired system point or parameter and for manual local adjustments of control function parameters including, but not limited to following.

    a. Proportional gain.
    b. Integral rate.
    c. Velocity and acceleration constants associated with incremental control.
    d. On-Off values of 2-position control.
    e. Analog high and low limits.
    f. Control setpoints.

C. Field Programmability:

1. Provide each FPU with necessary mathematic, logic, and utility functions, standard automatic control functions, and calculations in read-only memory (ROM) available in any combination for unit software. Provide routines including, but not limited to following.

    a. Math routines for basic arithmetic, binary logic, relational logic, and fixed formulas for psychometric calculations.
    b. Utility routines for process entry and exit, keyboard functions, variable adjustments, output, alarm indication, and restart.

c. Control routines for signal compensation, loop control, energy conservation, and timed programming.

2. Share final field programs in random access memory (RAM).

a. Provide password access only to operators with password number for program and control parameter adjustments.
b. Provide display of variables without password. Provide indication when operator in limited access mode.

D. Calibration Compensation:

1. Provide hardware with provisions for automatic compensation for power supply fluctuations from long-term sensor drift and short-term sensor drift caused by ambient temperature variations, to maintain accurate, long-term calibration of analog-sensing and modulating-output circuits.

E. Diagnostics:

1. Provide nondestructive self-test procedure for each FPU, in final program, to check microprocessor and FPU circuits.
2. Provide alarm indication when problem condition detected, until problem condition corrected.
3. Identify problem conditions during operator-activated alarm scans.

F. Default Operating Procedure and Alarm:

1. Identify system input and output parameters for reliability for use in control function calculations.
2. Indicate alarm condition and use preprogrammed default value in control function calculation software when automatic control function calculation requires use of value (sensed or calculated) identified as unreliable.
3. Annunciate alarm conditions such as Off-Normal, high, and low at local display and adjustment panel.

G. Field Processing Unit (FPU) Cabinets:

1. Provide enclosed metal cabinet for each FPU and associated input/output modules.
2. Provide each cabinet with key lock. Provide 2 master keys for FPU cabinets.
3. Terminate control wiring and system communications for FPUs at numbered terminal strips inside FPU cabinets.

H. UL Approval:

1. Provide FPUs approved and listed by UL as signaling systems.
2. Provide FPUs conforming with requirements of FCC.

2.09 SOFTWARE

A. Program system to perform automatic control functions necessary to optimally control energy consumption, including but not limited to following.

1. Comply with requirements of Section 23 09 93.
2. Accept inputs and produce outputs required for proper system operation for specified control sequences, for configurations involving following point types.

a. Contact inputs (binary).
b. Analog inputs.
c. Pulse-width modulated outputs.
d. 2-mode outputs such as start/stop, day/night.
e. Pulse totalization inputs (for accumulator functions).

3. HVAC Automatic Control Functions: Dry bulb economizer control, unoccupied cycle (time programming), master-submaster reset, demand reset, adaptive optimal start, totalization, summer/winter switchover, duty cycling, demand limiting, and interlocking.
4. OWNER-Tailored Programs: Provide library of routines, available in firmware, allowing generation of additional programs as may be required for specific OWNER requirements including, but not limited to following.

    a. Trending of variables; historical data storage; totalizing; holiday programming and custom calculation routines for calculating OWNER-requested system parameters such as boiler efficiency, chiller efficiency, and instantaneous electrical demand rate. Provide OWNER-tailored programs where indicated on point chart.

5. Provide operator controlled, on-line trend log program capability to sample analog and binary channels at operator-prescribed time of day or intervals for each trend for minimum 30-sample capacity.

B. Include global synchronization of field processing unit clocks and shared sensor data.

2.10 PANELS

A. Temperature Control Panels (TCP): Provide temperature control panels with suitable brackets for wall mounting for each control system. Locate local control panels adjacent to systems served.

1. Fabricate panels of 14 ga furniture quality steel or 6063-T5 extruded aluminum alloy, totally enclosed with hinged doors and keyed lock, with manufacturer's standard shop painted finish and color. Provide UL listed and certified cabinets for use with line voltage devices and NEMA rating suitable to the hazard classification. Provide Owner with two master keys for each control panel.

    a. Physical size of temperature control panel shall be determined by controls contractor and shall depend on the number of devices provided. Any additional TCP's not shown shall be included in the base bid.
    b. The maximum panel width shall be limited to 36-in.
    c. The maximum servicing height shall not exceed 7'-0" above finish floor.

2. Panel-Equipment: Include controllers, relays, switches and other control devices. Fasten devices with adjustments accessible through front of panels.
3. Door-Mounted Equipment: Flush-mount (on hinged door) manual switches including damper Minimum-Off positioning switches, Summer-Winter switches, and Manual-Automatic switches, including dial thermometers, pressure gauges, digital touchscreen displays, LED indicating lights, and operator keypads.
4. Temperature control panels mounted inside Mechanical/ Electrical Rooms shall be constructed to Nema-4. Any panels located in chemical rooms or any other corrosive and/or wet environment shall be constructed to Nema-4X.
5. Indicating lights on the panel cover shall be minimum ¾-in. diam. oil tight push to test lights, with 24 VAC replaceable light bulbs. Lights shall be LED; Green for run/energized, Red for fault/alarm.
6. Furnish panel as-built electrical wiring diagrams and secured to inside of panel door or enclosed in plastic jacket placed inside of panel.
7. Provide non-destructible labeling on the inside surface of panel door to indicate the source (panel and circuit breaker number) of power to the panel.
8. Provide on-piece molded plastic terminal blocks with screw type terminals and barriers rated for 600 volts.
9. Provide 120V/24V fused transformer located within the control panel to power all devices requiring same.

2.11 CONTROL WIRING

A. Control Wiring: Provide wiring, high or low voltage other than power wiring required for proper operation of mechanical systems.

1. Control wiring from TCP's to field devices, motor starter control circuits, interlocks, thermostats, and equipment controllers shall be installed in conduit.
2. Includes all control wiring required to execute the sequence of operation.
3. Includes all control and power wiring between field installed controls, indicating devices, and unit control panels.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions under which electric control systems to be installed. Do not proceed with Work until unsatisfactory conditions corrected.

3.02 INSTALLATION

A. Install system and materials in accordance with manufacturer's instructions, roughing-in drawings, details on Drawings, and approved submittals. Install electrical components and use electrical products complying with requirements of applicable Division 26 sections of these Specifications. Mount controllers at convenient locations and heights.

B. Installation of Mechanical Devices: Refer to other Division 23 sections for installation of valve bodies, control sensor wells, and dampers.

3.03 EQUIPMENT AND WIRING

A. Control Wiring: Install and color code control wiring without splices between terminal points. Install in accordance with NFPA No. 70 and applicable sections of Division 26. Install wiring incidental to system installation.

1. Install circuits over 25 v with color coded minimum No. 12 wire in electric metallic tubing.
2. Install circuits under 25 v with color coded minimum No. 18 wire with 0.031 in. high temperature (105°F (41°C)) plastic insulation on each conductor and plastic sheath over all.
3. Install electronic circuits with color coded minimum No. 22 wire with 0.023 in polyethylene insulation on each conductor with plastic jacketed copper shield over all.
4. Install low voltage circuits, located in concrete slabs and masonry walls or exposed in occupied areas, in electric conduit.
5. Enclose line and low voltage wiring in raceway as follows:

    a. In classified areas: All conduit shall be rigid in classified areas.
    b. Concealed conduit: Conduit concealed above suspended ceilings or in masonry unit cores may be EMT.
    c. Exposed conduit: Conduit exposed lower than 10 feet above floor shall be rigid. Conduit exposed higher than 10 feet above floor may be EMT.

6. Do not install digital bus wiring in same conduit with line voltage wiring or other conductors with highly inductive loads.
7. Enclose line voltage wiring in conduit (EMT). Enclose low voltage wiring in conduit (EMT) when exposed.

B. Installation of Actuator Motors: Power damper motor from line voltage power or from dedicated transformer. Do not power damper motor from MCC or combination starter control transformer.

C. Installation of Relays and Starters: Where relays or motor starters are required to control single phase motors, damper operators and other loads, mount relays or starters in temperature control panels or dedicated electrical cabinets in accordance with UL 50 and Section 26 05 34.

3.04 FINAL ADJUSTMENT OF EQUIPMENT

A. After completion of installation, adjust thermostats, control valves, motors, and similar equipment provided under this section.

B. Verify programming for proper control action and adjust operating setpoints to achieve optimum system operation.

C. Include computer programming, record drawings, labor for adjusting and validating, and checkout necessary for operational system.

D. Provide specially trained personnel for final adjustment Work.

E. Startup, test, and adjust control systems. Demonstrate compliance with requirements. Replace damaged or malfunctioning controls and equipment.

F. Include callback capabilities during the warranty period to correct and debug control system problems without additional cost to Owner.

G. Provide field labor to coordinate commissioning activities with the TAB contractor and make final program adjustments upon completion of the TAB work.

H. Include a verification report of final system calibration.

I. Include field labor as required to test, debug, reprogram as needed, and recalibrate upon first change of seasons.

3.05 FIELD QUALITY CONTROL

A. Manufacturer's Field Services:

1. Supplier's or manufacturer's representative for equipment specified herein shall be present at jobsite or classroom designated by OWNER for mandays indicated, travel time excluded, for assistance during construction, startup, and training of OWNER'S personnel for equipment operation. Include:

   a. 1 manday for Installation Services
   b. 1 manday for Instructional Services
   c. 1 manday for Post Startup Services

2. Supplier or manufacturer shall direct services to system and equipment operation, maintenance, troubleshooting, and equipment and system-related areas. See Section 01 60 10.

B. Operator Instruction:

1. Provide hands-on operator instruction to OWNER'S operating personnel during system commissioning and at such time acceptable performance of automatic temperature controls established. Provide instruction during normal working hours by CONTRACTOR'S representative familiar with system software, hardware, and accessories.
2. At mutually agreed upon time during system commissioning, provide instruction to OWNER'S designated personnel on operation of equipment within automatic temperature control system and describe intended use with respect to programmed functions specified.

3. Include overall operational program, equipment functions (individually and as part of total integrated system), commands, advisories, and appropriate operator intervention required in responding to system operation. Include in O&M data.
4. Include a follow up operator instruction event at first change of season.
5. Provide operator instruction as noted above.

3.06 CLEANING

A. Clean factory finished surfaces. Repair marred or scratched surfaces with manufacturer's touch-up paint.

* * * END OF SECTION * * *

SECTION 23 09 93
AUTOMATIC CONTROL SEQUENCES

PART 1 GENERAL

1.01 SUMMARY

A. Operating equipment, devices, controllers, and system components required for automatic temperature control systems are specified in Sections 23 09 33.

1.02 DEFINITIONS

A. Control Sequences: Manner and method by which automatic temperature controls function. Requirements for each type of operation are described in this section.

B. Normal Mode: Mode or position-controlled device assumes without power.

C. Automatic Mode: Mode or position-controlled device assumes when under control of automatic system of controls.

D. Manual Mode: Mode or position-controlled device assumes when under manual control. Unless otherwise specified, manual mode implied and affects only device for which manual mode or position identified.

E. BAS: Building Automation System or HVAC Control System is used interchangeably.

1.03 SUBMITTALS

A. Shop Drawings:

1. Schematic flow diagram of system showing fans, pumps, coils, dampers, valves, and control devices.
2. Label each control device with setting or adjustable range of control.
3. Indicate pneumatic piping, factory and field wiring.
4. Indicate each control panel required with internal and external piping and wiring clearly indicated. Provide detail of panel face including controls, instruments, and labeling.
5. Include written description of sequence of operation.

B. Submit in accordance with Section 23 09 33.

PART 2 PRODUCTS

(Not Used)

PART 3 EXECUTION

3.01 SEQUENCES OF OPERATION

A. Provide functioning automatic temperature control systems to control equipment as described in following functional descriptions and as depicted on Drawings.

3.02 INDIRECT-FIRED MAKE-UP AIR UNIT – 100% OA (PUMP BUILDING)

A. Control Sequence – Make-up Air Unit, MAU:

1. General:

   a. Manufacturer provided DDC controller and remote interface to be mounted at TCP-1 as specified in Section 23 73 33.
   b. Provide interposing relay with 120 volt coil and dry contact at TCP-1 to accept 120 volt signal from existing Wet Well light switch. Owner to provide 120 volt signal from light switch to TCP-1.

2. Units Served:

   a. MAU-4: Interlocked with roof exhaust fan (RE-1) and exhaust damper (CD-1).
   b. MAU-5: Interlocked with existing roof exhaust fan (RE-2) and exhaust damper (field verify).

3. Normal Mode: Off.

   a. Unit Fan: Off.
   b. Exhaust Fans: Off.
   c. Exhaust Air Damper: Closed.
   d. Gas Control Valve: Closed.
   e. Discharge Air Damper: Closed.
   f. Combustion Air Damper: Closed.
   g. Power Venter: Off.

4. Automatic/Hand Mode:

   a. Fan Control:

      1) MAU-4 (Grit Room): Start and stop unit automatically through manufacturer provided DDC controller and remote interface control panel including supply fan Hand-Off switch and Heat On-Off switch. Operate make-up air unit manually and run continuous.
      2) MAU-5 (Wet Well): Start and stop unit automatically through manufacturer provided DDC controller and remote interface control panel containing supply fan Hand-Off-Automatic switch and Heat On-Off switch. In Automatic mode, receive run signal within TCP-1, start fan, and run continuous. In Hand mode, start fan, and operate continuous.
      3 Provide 7-day programmable timeclock within TCP-1. Provide "MAU-5 Run Signal" to be sent to MAU-5 interface controller when the following occur:

         a) MAU-5 to operate at 10-minute intervals on the hour from 6:00 am to 6:00 pm, field adjustable.
         b) MAU-5 to operate when Wet Well Lights are turned on; Receive 120V signal at TCP-1 from light switch to activate run signal to operate Wet Well ventilation system.

   b. Damper Control: When unit called to operate, open discharge air damper.
   c. Power Venter Control: When unit called to operate in heating mode, turn on integral power vent exhauster.
   d. Exhaust Fan Control: Provide fan START contact closure(s) for motor star inputs provided by Owner. When fan is called to operate, open exhaust air damper, send START signal to OWNER, and operate fan continuously. When Run signal removed, reverse procedure. Contractor shall coordinate all Electrical Work with Owner.
   e. Heat Mode: Control discharge air temperature through discharge air temperature sensor (mounted in supply duct) with remote temperature selector located at remote interface control

panel and room override thermostat (Grit Room only). Set discharge air temperature and room override thermostat at 55°F, field adjustable. Provide discharge temperature digital readout at remote control panel. On demand for heat, open gas valve to minimum position, on further demand for heat, modulate gas valve to fully open position for each burner in stages. On satisfaction of demand for heat, reverse procedure.

f. Filter Status: Indicate filter pressure drop through remote interface control pane and unit mounted differential pressure switch and transmitter. When filter pressure drop exceeds 0.5 in. wg, (field adjustable) indicate "Dirty Filter" alarm condition.

* * * END OF SECTION * * *

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SECTION 23 11 23
NATURAL GAS SYSTEMS

PART 1 GENERAL

1.01 DEFINITIONS

A. Gas Utility: WE Energies, Telephone (800) 714-7700.

1.02 SUBMITTALS

A. Product Data: Submit manufacturer's technical product data and installation instructions for natural gas systems materials and products.

B. Submit in accordance with Section 01 33 10.

1.03 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of natural gas systems products, of types, materials, and sizes required, whose products have been in satisfactory use in similar service for not less than 5 yrs.

B. Installer's Qualifications: Firm with at least 3 yrs of successful installation experience on projects with natural gas systems work similar to that required for Project.

C. Regulatory Requirements:

1. ANSI Compliance: Fabricate and install natural gas piping in accordance with ASME B31.9.
2. NFPA Compliance: Fabricate and install natural gas systems in accordance with NFPA 54.
3. Utility Compliance: Fabricate and install natural gas systems in accordance with local gas utility company.
4. Fabricate and install natural gas systems in accordance with the Wisconsin Mechanical Code.

1.04 MAINTENANCE

A. Tools:

1. Furnish 2 valve wrenches for each type of gas valve installed that require valve wrench.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer's equipment used as basis of design for Project is name indicated in Specification for particular type of equipment or application contained in these Contract Documents. If no manufacturer listed, basis of design is industry standard indicated.

B. Manufacturers: Subject to compliance with requirements above, provide equipment of 1 of following manufacturers to greatest extent possible.

1. Gas Cocks:

a. DeZurik Corporation.
b. McDonald Manufacturing Company.
c. Rockwell International, Flow Control Division.

d. Or equal.

2.02 MATERIALS AND PRODUCTS

A. General:

1. Provide piping materials and factory-fabricated piping products of sizes, types, pressure ratings, and capacities indicated. Where not indicated, provide proper selection determined by CONTRACTOR to comply with installation requirements.
2. Provide materials and products complying with NFPA 54 where applicable; base pressure rating on natural gas piping system maximum design pressures.
3. Provide sizes and types matching piping and equipment connection fittings of materials which match pipe materials used in natural gas systems.
4. Where more than 1 type materials or products indicated, selection is CONTRACTOR'S option.

2.03 BASIC PIPES AND PIPE FITTINGS

A. Provide pipes and pipe fittings complying with NFPA 54, the Wisconsin enrolled International Mechanical Code, and in accordance with following.

1. Building Distribution Piping:

a. Pipe size 3/4 in. and smaller located within roof curb after gas stop: Black steel pipe; Schedule 40; malleable iron threaded fittings.
b. All pipe sizes: Black steel pipe; Schedule 40; wrought steel butt-welded fittings.

2.04 BASIC PIPING SPECIALTIES

A. Provide piping specialties complying with following.

1. Pipe escutcheons, 316-stainless steel associated with Grit Room, galvanized steel elsewhere.
2. Pipe sleeves; 316-stainless steel associated with Grit Room, steel elsewhere.
3. Sleeve seals; 30-year caulk to provide gas tight seal.

2.05 BASIC SUPPORTS AND ANCHORS

A. Provide supports and anchors complying with Section 22 05 29 and in accordance with following.

1. Adjustable swivel pipe rings for horizontal piping hangers and supports.
2. 2-bolt riser clamps for vertical piping supports.
3. Concrete inserts, C-clamps, and steel brackets for building attachments.
4. Supports provided inside grit room shall be 316-stainless steel or epoxy coated galvanized steel.

2.06 SPECIAL VALVES

A. Gas Cocks: Provide AGA certified cocks of plug or ball valve configuration meeting following requirements for service pressures required.

1. Building Service Entrance Valves:

a. 1/2 in. through 2 in.: Lock-wing gas stop less check.
b. 2 in. through 3 in.: Lock-wing gas stop less check.

2. Branch Main and Unit Isolation Valves: Provide 1 of following for branch main isolation and at each unit.

   a. 1/2 in. through 2 in.:

      1) Flat-tee head gas stop with top check.
      2) Square head gas stop with top check.
      3) Lever handle gas stop with top check.
      4) Furnace pilot gas stop with 1/8 in. pilot tap and top check.

   b. 2 in. through 3 in.:

      1) Flat-tee head gas stop less top check.
      2) Square head gas stop less top check.

3. Construction:

   a. Low pressure gas stops (less than 2 psig): ASTM B62 bronze, ASME B1.20.1 threaded end connections.
   b. Medium pressure gas stops (less than 25 psig): ASTM B62 bronze, ASME B1.20.1 threaded end connections.

2.07 PRESSURE REGULATING VALVES

A. Regulators for Inlet Pressures of 2 psi and Less Natural Gas Service:

1. Provide single stage, corrosion-resistant gas pressure regulators with aluminum die cast body, corrosion resistant integral parts, and threaded ends for gas pipe up to 2 in. for inlet and outlet gas pressures, specific gravity and volume flow indicated on Drawings.

   a. Provide automatic vent limiter orifice vent where allowed by ANSI standards.

B. Regulators for Inlet Pressures over 2 psi Natural Gas Service:

1. Provide two stage, corrosion resistant gas pressure regulators with aluminum die cast body, corrosion resistant integral parts, over-pressure protection device (ANSI certified up to 65 psi), and threaded ends for gas pipe up to 2 in., and flanged ends for gas pipe 2-/12 in. (and larger) for inlet and outlet gas pressures, specific gravity, and volume flow indicated on Drawings.

   a. Provide direct hard piped atmospheric vent to outside of building for regulators installed inside buildings controlling pressures 2 psi and higher.

2.08 BASIC IDENTIFICATION

A. Provide identification complying with Section 22 05 53 in accordance with following.

1. Building Distribution Piping: Plastic pipe markers.
2. Gas Valves: Plastic valve tags.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions under which natural gas system materials and products to be installed.

B. Do not proceed with Work until unsatisfactory conditions corrected.

3.02 INSTALLATION OF NATURAL GAS PIPING

A. Install natural gas piping in accordance with the Wisconsin enrolled international Mechanical Code and Fuel Gas Code.

B. Use sealants on metal gas piping threads chemically resistant to natural gas. Use sealants sparingly, and apply to only male threads of metal joints.

C. Remove cutting and threading burrs before assembly of piping.

D. Do not install defective piping or fittings. Do not use pipe with threads which are chipped, stripped or damaged.

E. Plug each gas outlet, including valves, with threaded plug or cap immediately after installation and retain until continuing piping or equipment connections complete.

F. Ground gas piping electrically and continuously within Project, and bond tightly to grounding connection.

G. Install drip-legs in gas piping where indicated and required by code or regulation.

H. Install "Tee" fitting with bottom outlet plugged or capped at bottom of pipe risers.

I. Use dielectric unions where dissimilar metals joined together.

J. Install piping with 1/64 in./ft (1/8%) downward slope in direction of flow.

K. Install piping parallel to other piping, but maintain minimum of 12 in. clearance between gas piping and steam or hydronic piping above 200°F (93°C).

L. For piping running through ducts or air plenums, install in welded conduit, ventilated to outside on both ends.

M. For risers running through concrete or asphalt, install through minimum 6 in. pipe sleeve. Fill annular space with gravel.

3.03 INSTALLATION OF SUPPORTS AND ANCHORS

A. Install supports and anchors in accordance with Section 22 05 29.

3.04 INSTALLATION OF VALVES

A. Gas Cocks: Provide at connection to gas train for each gas-fired equipment item and on risers and branches where indicated.

B. Locate gas cocks where easily accessible and protected from possible injury.

C. Pressure Regulating Valves: Install as indicated; comply with utility requirements. Pipe atmospheric vent to outdoors, full size of outlet. Install gas shutoff valve upstream of each pressure regulating valve.

3.05 EQUIPMENT CONNECTIONS

A. Connect gas piping to each gas-fired equipment item, with drip-leg and shutoff gas cock. Comply with equipment manufacturer's instructions.

3.06 INSTALLATION OF BASIC IDENTIFICATION

A. Install mechanical identification in accordance with Section 22 05 53.

3.07 FIELD QUALITY CONTROL

A. Piping Tests: Inspect, test, and purge natural gas systems in accordance with NFPA 54 and local utility requirements.

3.08 CLEANING

A. Clean and inspect natural gas systems in accordance with requirements of ASME B31.1. Clean exterior surfaces of installed piping systems of superfluous materials and prepare for application of specified coatings (if any). Flush out piping systems with clean water before proceding with required tests. Inspect each run of each system for completion of joints, supports, and accessory items.

* * * END OF SECTION * * *

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SECTION 23 30 10
AIR DISTRIBUTION SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Metal ductwork.
2. Equipment housings.
3. Control dampers.
4. Duct hardware.
5. Duct access doors.
6. Flexible connections.
7. Registers and grilles.

1.02 DEFINITIONS

A. Low Pressure Ductwork: Ductwork subjected to velocities of 2,500 fpm or less, or operating pressures of 2 in. or less, positive or negative.

1.03 SUBMITTALS

A. Schedule below identifies information required for each item of material or equipment.

Description	Submittal Information Item
Metal ductwork	1
Turning vanes	1
Duct hardware	1
Duct access doors	1
Flexible connections	1
Registers and grilles	1,2

B. Submittal Information:

1. Product Data: Manufacturer's specifications for equipment showing dimensions, weights, capacities, ratings, performance characteristics, gauges, color and finish of materials, and installation instructions.
2. Shop and Assembly Drawings: Show unit dimensions, construction details, and field connection details.

C. Submit in accordance with Section 01 33 00.

1.04 QUALITY ASSURANCE

A. Installer's Qualifications: Firm with at least 3 years of successful installation experience on projects with nonmetallic ductwork systems similar to that required for Project.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect shop-fabricated and factory-purchased ductwork, accessories, and purchased products from damage during shipping, storage, and handling. Prevent end damage and dirt and moisture from entering ducts and fittings.

B. Where possible, store ductwork inside and protect from weather. Where necessary to store outside, store above grade and enclose with waterproof wrapping.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer's equipment used as basis of design for Project is name indicated in schedule. Where schedule not provided, basis of design is name indicated in Specification for particular type of equipment or application contained in these Contract Documents. If no manufacturer listed, basis of design is industry standard indicated.

2.02 METAL DUCTWORK

A. Provide metal ductwork as noted on the drawings and as specified below:

1. Sheet Metal: Comply with ASTM A527, lock-forming quality, with ASTM A525, G90 zinc-coating; mill phosphatized for exposed locations.
2. Aluminum Sheet: Comply with ASTM B209, Alloy 3003, Temper H14.
3. Stainless Steel Sheet: Comply with ASTM A167, ANSI type 316 with No. 2B finish.
4. Duct Sealant: Non-hardening, non-migrating mastic or liquid elastic sealant (type applicable for fabrication/installation detail) as compounded and recommended by manufacturer specifically for sealing joints and seams in ductwork.
5. Duct Cement: Non-hardening migrating mastic or liquid neoprene based cement (type applicable for fabrication/installation detail) as compounded and recommended by manufacturer specifically for cementing fitting components, or longitudinal seams in ductwork.
6. Ductwork Support Materials:

    a. For galvanized steel ductwork, provide hot-dipped galvanized steel fasteners, anchors, rods, trim and angles for support of ductwork.
    b. For aluminum ductwork, provide aluminum support materials except where materials electrolytic ally separated from ductwork.
    c. Provide matching stainless steel support materials for exposed stainless steel ductwork.

B. Shop or Factory Fabrication:

1. Fabricate shop or manufactured duct fittings to match adjoining ducts and to comply with duct requirements as applicable to fittings. Fabricate mitered fittings to include turning vanes unless noted without turning vanes.
2. Fabricate ductwork of gauges and reinforcement complying with SMACNA "Low Pressure Duct Standards for 2.0 in. wg Pressure Class." unless otherwise indicated.
3. Ductwork shall be sealed at all joints/ connections, both transverse and longitudinal seams complying with IMC and IECC sealing requirements. All ductwork shall be sealed using either a Class A or B seal.
4. Fabricate ductwork with accessories installed during fabrication to greatest extent possible.
5. Fabricate fan housings and air plenums with minimum 16 gauge thickness of materials specified.

C. Application:

1. Provide stainless steel ductwork for:

a. Rectangular exhaust and supply ductwork associated with Influent PS Wet Well and Grit Room.
b. Rectangular supply ductwork connecting to make-up air units located on roof.

2.03 TURNING VANES

A. Manufacturers:

1. Aero Dyne Company.
2. Duro Dyne Corporation.
3. Or equal.

B. Manufactured Turning Vanes: Provide turning vanes constructed of 1-1/2 in. wide curved blades set at 3/4 in. on center, supported with bars perpendicular to blades set at 2 in. on center, and set into side strips suitable for mounting in ductwork. Material to match ductwork.

2.04 DUCT HARDWARE

A. Manufacturers:

1. Ventfabrics, Inc.
2. Young Regulator Company.
3. Duro Dyne Corporation.
4. Or equal.

B. Test Holes: Provide in ductwork at fan inlet, outlet, and elsewhere as indicated, duct test holes consisting of slot and cover for instrument tests.

C. Quadrant Locks: Provide for each manual damper, quadrant lock device on one end of shaft and end bearing plate on other end for damper lengths over 12 in. Provide extended quadrant locks and end extended bearing plates for externally insulated ductwork.

2.05 DUCT ACCESS DOORS

A. Manufacturers:

1. Ruskin Manufacturing Company.
2. Duro Dyne Corporation.
3. Ventfabrics, Inc.
4. Or equal.

B. Construction: Construct of same or greater gauge as ductwork served, provide insulated doors for insulated ductwork. Provide flush frames for uninsulated ductwork, extended frames for externally insulated duct. Provide one side hinged, other side with 1 handle type latch for doors 12 in. high and smaller, 2 handle type latches for larger doors.

2.06 FLEXIBLE CONNECTIONS

A. Manufacturers:

1. Duro Dyne Corporation.

2. Ventfabrics, Inc.
3. Or equal.

B. Provide flexible duct connections wherever ductwork connects to vibration isolated equipment. Construct flexible connections of neoprene-coated flameproof fabric crimped into duct flanges for attachment to duct and equipment. Make airtight joint. Provide adequate joint flexibility to allow for thermal, axial, transverse, and torsional movement, and also capable of absorbing vibrations of connected equipment.

2.07 REGISTERS AND GRILLES

A. Manufacturers:

1. Titus Products, Division of Philips Industries, Inc.
2. C.G. Carnes Company, Division of Wehr Corporation.
3. Or equal.

B. Provide manufacturer's standard wall registers and grilles where shown of size, shape, capacity, and type indicated constructed of materials and components as scheduled and required for complete installation.

C. Performance: Provide wall registers and grilles having, as minimum, temperature and velocity traverses, air throw, pressure drop, and noise criteria ratings for each size device listed in manufacturer's current data.

D. Register and Grille Materials:

1. Steel Construction: Manufacturer's standard steel frames and blades.
2. Aluminum Construction: Manufacturer's standard extruded aluminum frames and blades.
3. Stainless Steel Construction: Manufactures standard stainless steel frame and blades.

E. Register and Grille Faces: Provide fixed, single deflection, or double deflection blades as scheduled.

F. Register and Grille Mountings: Perimeter framed register or grille suitable for T-bar lay-in mounting or surface mounting as scheduled.

G. Dampers: Provide aluminum or stainless steel opposed blade dampers as scheduled.

H. Register and Grille Finishes: Provide manufacturers standard, baked white enamel finish, unless specified otherwise.

PART 3 EXECUTION

3.01 GENERAL

A. Coordinate layout with suspended ceiling and lighting layouts and similar finished Work.

B. Coordinate duct installations with installation of accessories, dampers, coil frames, equipment, controls, and other associated items of ductwork system.

3.02 INSTALLATION OF DUCTWORK AND EQUIPMENT SLEEVES

A. Locate ductwork runs, except as otherwise indicated, vertically and horizontally, avoid diagonal runs wherever possible. Locate runs as indicated by diagrams, run ductwork in shortest route not obstructing

usable space or block access for servicing building and equipment. Install close to walls, overhead construction, and other structural and permanent enclosure elements of building.

B. Complete fabrication of Work at Project necessary to match shop-fabricated work and accommodate installation requirements.

C. Install each run with minimum of joints. Align ductwork accurately at connections, within 1/8 in. misalignment tolerance and with internal surfaces smooth.

D. Support ductwork with suitable ties, braces, hangers, and anchors of type holding ducts true to shape and preventing buckling. Comply with SMACNA "HVAC Duct Construction Standards". Ductwork hangars shall be two rod trapeze type incorporating a structural or bent metal angle. Strap type hangers are not allowed.

E. Assemble, install, and seal ductwork in accordance with recognized industry practices to achieve airtight (less than 5% leakage) and noiseless (no objectionable noise) systems, capable of performing each indicated service.

3.03 INSTALLATION OF DUCTWORK ACCESSORIES

A. Install ductwork accessories in accordance with manufacturer's installation instructions, with applicable portions of details of construction shown in SMACNA standards, and in accordance with recognized industry practices to ensure products serve intended function.

B. Install turning vanes in all square and rectangular 90° elbows.

C. Install access doors to open against system air pressure. Install access doors at each automatic control damper and at both side of fire dampers.

D. Install motor operated dampers within or as close as possible to building envelope elements including roof decks and exterior walls.

3.04 CLEANING AND PROTECTION

A. Clean ductwork internally, unit by unit as installed, of dust and debris. Clean external surfaces of foreign substances.

B. Temporary Closure: At ends of ducts not connected to equipment or air distribution devices at time of ductwork installation, provide temporary closure of polyethylene film or other covering to prevent entrance of dust and debris until time connections are completed.

END OF SECTION

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SECTION 23 34 00
FANS AND ACCESSORIES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Centrifugal roof ventilators.
2. Prefabricated curbs and equipment support units.

B. Electrical Work by Owner; not Work of this section.

1. Power supply wiring from power source to power connection on fan motor. Include starters, disconnects, and required electrical devices, except where specified as furnished or factory-installed, by manufacturer.

C. Provide following electrical work as Work of this Section, complying with requirements of the National Electrical Code.

1. Interlock control wiring between fan units and field-installed control elements, indicating devices, and unit control panels.

1.02 SUBMITTALS

A. Schedule below identifies information required for each item of material or equipment.

Unit Type	Submittal Information Item
Centrifugal roof ventilators	1,2,3,4,5,6
Prefabricated roof curbs	1

B. Submittal information:

1. Product Data: Submit manufacturer's technical data for fans, including specifications, capacity ratings, certified sound power data, dimensions, weights, materials, accessories furnished, and installation instructions. Submit fan performance curves with operating point clearly indicated.
2. Shop Drawings: Submit assembly type drawings showing fan dimensions, required clearances, construction details, assembly of component methods, and field connection details.
3. Shop Drawings, Wiring Diagrams: Manufacturer's electrical requirements for power supply wiring to fans.
4. Shop Drawings, Wiring Diagrams: Manufacturer's ladder type for interlock and control wiring. Differentiate between portions of wiring factory-installed and portions to be field-installed.
5. Motors: For single-phase, definite purpose, special purpose and general purpose poly-phase motors less than 5 hp, submit NEMA design types, construction, insulation class, NEMA frame size, horsepower, voltage and amp draw characteristics, and service factor for each common application.
6. Operating and Maintenance (O&M) Data:

    a. Maintenance instructions including lubrication instructions, filter replacement, motor and drive replacement, troubleshooting guide and spare parts lists.

C. Submit in accordance with Section 01 33 00.

1.03 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of fans of types and sizes required, whose products have been in satisfactory use in similar service for not less than 3 yrs.

B. Regulatory Requirements:

1. AMCA Compliance: Provide power ventilators which have been tested and rated in accordance with AMCA standards, and bear AMCA Certified Ratings Seal.
2. UL Compliance: Provide power ventilators UL listed and having UL label affixed.
3. NEMA Compliance: Provide motors and electrical accessories complying with NEMA standards.

1.04 MAINTENANCE

A. Spare Parts:

1. Furnish 1 spare set of belts for each belt driven fan provided.

PART 2 PRODUCTS

2.01 CENTRIFUGAL ROOF VENTILATORS

A. Manufacturer's:

1. Greenheck Fan Corporation.
2. Cook (Loren) Company.
3. PennBarry Company.
4. Or equal.

B. Type: Centrifugal fan, belt driven, spun-aluminum weatherproof housing with square base to suit roof curb. Capacitor-start, induction-run type motor for belt driven fans.

1. Housing Design: Provide following types of centrifugal roof ventilators as indicated on Drawings or schedules.

a. Up-blast.

2. Spark Resistant Construction: Fans shall be Spark C construction with aluminum rub ring
3. Curb mounted.

C. Electrical: Heavy duty, NEMA-7 disconnect switch, field-mounted inside fan housing, wiring junction box mounted and wired. Provide conduit chase within unit for electrical connection. Motors shall be NEMA Premium efficient and shall be explosion proof; Class I, Division 2, Group D.

D. Bird Screens: Removable bird screens, 1/2 in. mesh, 16 ga aluminum.

E. Coating: Coat entire fan assembly inside and out, including factory-mounted accessories with Permatector Concrete-Gray.

F. Accessories: Provide following accessories as indicated and as scheduled.

1. Grip notch belts, plus spare set of belts.
2. Bearings with grease fittings.
3. Extended lubrication lines.
4. Roof curb, galvanized, 14-in. high, coated same as fan.
5. Foam curb seal.

6. Stainless steel shaft, 300 series.
7. Stainless steel fasteners.

2.02 PREFABRICATED ROOF CURBS

A. Manufacturer's:

1. Custom Curb, Inc.
2. Pate Company.
3. Thy Curb, Division of Thybar Corporation.
4. Or equal.

B. Fabricate structural framing for units of structural quality sheet steel (ASTM A1011/A1011M, Grade 40), formed to profiles indicated or, if not indicated, to manufacturer's standard profiles for coordination with roofing, insulation, and deck construction. Include 45° cantered strips and deck flanges with offsets to accommodate roof insulation. Weld corners and seams to form watertight units.

1. Fabricate units from zinc-coated steel, ASTM A653/A653M, Grade C, designation G90 hot-dip coating, mill phosphatized. Clean and paint with rust-inhibitive metal primer paint of type recommended by manufacturer, 2.0 mils dry film thickness.

C. Reinforce continuous runs of over 3 ft 0 in. length by inserting welded stiffeners of heavy gauge with flanges required to provide sufficient rigidity and strength to withstand maximum lateral forces in addition to superimposed vertical loads.

D. Sloping Roof Decks: For deck slopes of 1/4 in./ft and more, fabricate support units to form level top edge.

E. Gauge and Height: Fabricate units of metal gauge and to height above roof surface indicated.

1. Where gauge or height is not indicated, fabricate units of 14 ga metal, and nominal height of 14 in.

F. Provide treated wood nailer, not less than 1-5/8 in. thick and of width indicated, but not less than width of support wall assembly. Anchor nailer securely to top of metal frame unit.

G. Provide lumber pressure treated with water-borne preservatives for "above ground" use, complying with AWPB LP-2.

H. Insulate units inside structural support wall with rigid glass fiber insulation board of approximately 3 lbs density and 1-1/2-in. minimum thickness, except as otherwise indicated.

I. Provide support liners where shown, formed of 22 ga galvanized sheet metal, mill phosphatized, flanged at lower edges.

1. Extend support liners through deck construction to coordinate with ductwork below as indicated.
2. Use perforated metal for support liners, with approximately 1000, 3/32 in. dia holes/sq ft to provide sound absorbing surfaces.

2.03 MOTORS

A. Except where more stringent requirements indicated in unit Specifications, or equipment schedules, provide manufacturer's standard motor complying with following requirements.

B. Definite Purpose Motors: NEMA MG 1-18.

C. Poly-Phase Motors:

1. Type: Continuous duty; squirrel cage; induction, fractional, and integral horsepower motors; rated in accordance with NEMA MG1-10.33.

    a. 1/3 to 3 hp: NEMA B or C as determined appropriate for application by equipment manufacturer.
    b. Where rated motor loads produce uncorrected motor power factors less than 0.90, provide capacitors for power factor correction to 0.95.

2. Enclosure Classification: Totally enclosed fan cooled, explosion proof motor.
3. Insulation Class Rating: Suitable for continuous operation in 405C environment, tested in accordance with IEEE 112 and 114.

    a. Fractional horsepower motors: Class A.
    b. Integral horsepower motors: Class B.
    c. High starting torque motors: Class F.
    d. Definite purpose motors: Class A, B, F or H as determined appropriate for application by equipment manufacturer.

D. Service Factor: Minimum 1.15 for NEMA A, B, and C poly-phase motors, in accordance with NEMA MG 1-12.47 for fractional horsepower motors.

E. Bearings: Permanently lubricated ball or regreasable sleeve bearings with inner and outer shaft seals, designed to resist thrust loading.

F. Efficiency: Provide high efficiency poly-phase motors in accordance with IEEE 112, Test Method B.

G. Provide motors with reserve power to deliver 10% extra air at 20% higher static head without exceeding motor nameplate capacity or operating in motor service factor.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions under which fans to be installed. Do not proceed with Work until unsatisfactory conditions corrected.

3.02 INSTALLATION OF CENTRIGUGAL FANS

A. Install centrifugal fans where indicated in accordance with manufacturer's installation instructions and recognized industry practices to ensure centrifugal fans comply with requirements and serve intended function.

B. Support fans from adjacent walls or structural roof members as required or as indicated on Drawings.

C. Install centrifugal exhaust fans where shown on drawings. Secure each fan rigidly in place onto roof curb provided.

1. Install accessories supplied loose.

D. Electrical Wiring: Install electrical devices furnished by manufacturer but not specified to be factory-mounted. Furnish copy of manufacturer's wiring diagram submittal to Owner for electrical installer.

1. Verify electrical wiring installation is in accordance with manufacturer's submittal and installation requirements of the National Electrical Code. Verify proper rotation direction of fan wheels. Do not proceed with equipment startup until wiring installation acceptable to equipment installer.

E. Remove shipping bolts and temporary supports within ventilators. Adjust dampers for free operation.

3.03 INSTALLATION OF ROOF CURBS

A. Comply with manufacturer's instructions and recommendations.

B. Comply with installation provisions of installer of existing roofing system to maintain existing system warranty.

C. Anchor units securely to supporting structural substrates, adequate to withstand lateral and thermal stresses and inward and outward loading pressures.

1. Except as otherwise indicated, install roof accessory items in accordance with construction details of "NRCA Roofing and Waterproofing Manual."

D. Isolation: Where metal surfaces of units to be installed in contact with noncompatible metal or corrosive substrates, including wood, apply bituminous coating on concealed metal surfaces, or provide other permanent separation.

3.04 FIELD QUALITY CONTROL

A. After installation of fans complete, test each fan to demonstrate proper operation of units at performance requirements specified.

B. When possible, field correct malfunctioning units, then retest to demonstrate compliance.

C. Replace units which cannot be satisfactorily corrected.

3.05 CLEANING

A. Clean factory-finished surfaces. Repair marred or scratched surfaces with manufacturer's touch-up paint.

* * * END OF SECTION * * *

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SECTION 23 73 33
INDIRECT-FIRED HEATING AND VENTILATING UNITS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Rooftop Indirect-Fired Gas Heating and Ventilating Units.

B. Provide factory installed interlock wiring as specified.

C. Electrical Work by Owner; not Work of this section.

1. Power supply wiring from power source to power connection on makeup air units, including starters, disconnects, and required electrical devices, except where specified as furnished or factory-installed by manufacturer.

D. Provide following electrical work as work of this section, complying with requirements of the National Electrical Code.

1. Control wiring between heating and ventilating unit and field-installed control devices.

E. Refer to other Division 23 sections for automatic temperature controls not factory-installed or otherwise provided by unit supplier; as required in conjunction with fuel-fired units.

1.02 SYSTEM DESCRIPTION

A. Performance Requirements:

1. See schedule on Drawings.

1.03 SUBMITTALS

A. Schedule below identifies information required for each item of material or equipment.

Terminal Unit Type	Item
Rooftop Indirect-Fired Gas Heating and Ventilating Unit	1, 2, 3, 4, 5, 6

B. Submittal Information:

1. Product Data: Submit manufacturer's technical product data including rated capacities of selected model clearly indicated weights, furnished specialties and accessories, packaged controls with schematics and sequence of operation and installation and startup instructions. Provide characteristic fan curves for each size of unit provided.
2. Shop Drawings: Submit manufacturer's assembly type shop drawings indicating dimensions, weight loadings, required clearances, and methods of component assembly.
3. Shop Drawings, Wiring Diagrams: Manufacturer's electrical requirements for power supply wiring to terminal units.
4. Shop Drawings, Wiring Diagrams: Manufacturer's ladder type for interlock and control wiring. Differentiate between portions of wiring factory-installed and portions to be field-installed.

5. Motors: For poly-phase motors 5 hp and larger, submit in accordance with requirements of Section 26 05 90. For single-phase definite purpose, special purpose and general purpose poly-phase motors less than 5 hp, submit NEMA design types, construction, insulation class, NEMA frame size, horsepower, voltage and amp draw characteristics, and service factor for each common application.
6. Operating and Maintenance (O&M) Data:

    a. Maintenance instructions including lubrication instructions, filter replacement, motor and drive replacement, and spare parts lists.
    b. Include O&M Data, Product Data, and Shop Drawings in single-bound manuals.

C. Submit Items 1 through 5 in accordance with Section 01 33 00.

D. Submit Item 6 in accordance with Section 01 78 23.

E. Information submitted by CONTRACTOR, but not designated to be submitted will be returned without action by ENGINEER.

1.04 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of fuel-fired heating units, of types and capacities required, whose products have been in satisfactory use in similar service for not less than 5 yrs.

B. Regulatory Requirements:

1. NFPA Compliance: Install fuel gas piping and gas-fired heating equipment in accordance with NFPA 54.
2. ANSI Compliance: Install gas-fired heating equipment in accordance with ANSI Z83.8.
3. Provide gas safety controls to meet ANSI Standards and Factory Mutual (FM) insurance requirements.
4. UL Compliance: Provide rooftop heating and cooling units UL listed and labeled.

1.05 DELIVERY, STORAGE AND HANDLING

A. Handle fuel-fired heating units and components carefully to prevent damage, breaking, denting and scoring. Do not install damaged fuel-fired heating units or components.

B. Store fuel-fired heating units and components in dry place. Protect from weather, dirt, fumes, water, construction debris, and physical damage.

C. Comply with manufacturer's rigging and installation instructions for unloading fuel-fired heating units, and moving them to final location.

D. Ship units in one piece from factory completely wired and piped, with exception of remote control devices, O/A weather hoods, filter cabinets, vent caps and roof curbs. Provide lifting lugs from factory for rigging unit.

1.06 MAINTENANCE

A. Extra Materials:

1. Furnish spare parts for each fuel-fired heating unit.

    a. 1 set of matched fan belts for each belt-driven fan.
    b. 1 set of filters for each unit.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer's equipment used as basis of design for Project is name indicated in schedule contained in these Contract Documents.

1. Greenheck Fan Corporation, Schofield, WI
2. Absolute Aire, Inc., Kalamazoo, MI.
3. Modine Manufacturing Company, Racine, WI.
4. Weather-Rite, Inc., Minneapolis, MN.
5. Or equal.

2.02 HOUSING CONSTRUCTION AND ACCESSORIES

A. Construction: Unit shall be of internal frame type construction of galvanized steel. All frames and panel shall be G90 galvanized steel. Where top panels are joined, there shall be a standing seam to ensure positive weather protection. All metal-to-metal surfaces exposed to the weather shall be sealed, requiring no caulking at the job site.

1. Entire unit shall be double wall construction and insulated in accordance with NFPA 90A and NFPA 90B and tested to meet UL 181 erosion requirements.

a. Outside casing shall be constructed from 18 gauge, galvanized (G90) steel meeting ASTM A653 for components that do not receive a painted finish. Provide pre-painted polyester urethane powder coating on G60 galvanized steel for highest corrosion resistance as scheduled.
b. Base rails shall be 12 gauge, galvanized (G90) steel.

2. Insulation: All interior surfaces excluding duct furnace section shall be lined with 1 in. 1.5 lb density thermafiber faced fiberglass insulation and fastened in place with adhesive and welded pins per SMACNA.

a. Fire hazard classification: maximum flame spread of 25 and smoke developed of 50, when tested in accordance with ASTM C 411.
b. Floor of each unit shall be insulated with 1-in. thick rigid fiberglass insulation, covered on one surface with integral aluminum foil. Full interior coverage of entire cabinet to include walls and roof of unit shall be semi-rigid type and installed between inner and outer shells of all cabinet exterior components when double walls are specified. Full interior coverage on entire unit.

3. All components shall be easily accessible through removable doors.
4. Access panels: Units shall be equipped with insulated hinged access panels to provide easy access to all major components. Access panels shall be fabricated of 18 gauge galvanized (G90) steel.

a. Painted cabinets shall have similar matching access panels as specified.

5. Locate observation ports on access door and opposite burner end section for observation of main and pilot flames.
6. Supply air plenum section at the unit discharge for downward, upward, or side discharge as shown on Drawings.
7. Air intake weather hood shall be constructed of G90 galvanized steel with 1/2 in. galvanized expanded metal bird screen mounted at the intake.
8. Full curb cap base.

2.03 ROOFTOP UNITS

A. Units in outdoor locations shall be weatherproofed and gasketed to prevent infiltration of rain or snow into unit.

B. Pitch or gable unit roof surfaces to prevent water accumulation. Flat roof surfaces with sheet metal cross breaks are not acceptable.

C. NEMA 3R weatherproof electrical enclosures.

D. Roof Curb: Provide full perimeter roof mounting curb constructed of minimum 18-gauge galvanized steel, 24 in. high curb, and complete with wood nailer, neoprene sealing strip and fully welded Z bar with 1 in. upturn on inner perimeter, to provide complete seal against elements. Curb shall include 1in., 3 lb. rigid fiberglass insulation on inner surfaces.

E. Electrical and gas service connections shall be routed up through roof curb.

1. Contractor shall provide new gas pipe and electrical conduit penetrations through precast concrete with gas tight seals. Coordinate with owner on required conduit sizes.

F. Service receptacle: 120 VAC GFCI service outlet shall be factory-provided and installed by Owner near unit. Separate 120V power feed to be provided by Owner.

2.04 FILTERS

A. Provide V-bank filter section or as scheduled, with access doors sized to allow easy removal of filters. Filter removal shall be from one side as shown on Drawings.

B. Filter media shall be as scheduled:

1. Replaceable Media: Disposable 2 in. 30% pleated filters (MERV-8) enclosed in permanent galvanized metal frame linked together to be continuous across full width of filter housing.
2. Filter section to be designed so that velocities across the filters do not exceed 550 ft./min.

C. Provide differential pressure switch to indicate dirty filter condition.

2.05 DAMPERS

A. Unless otherwise scheduled, provide discharge dampers for outdoor units.

B. Provide low leak dampers equipped with an all weather double neoprene seal, fastened with positive grip PVC backing, on interlocking edges.

C. Drive damper blades by heavy duty, weather protected, spring return damper motor.

2.06 FANS AND DRIVE

A. Centrifugal Fans: Double-width, double-inlet, belt-driven, statically and dynamically balanced at factory, with adjustable motor base. Blower assembly shall be mounted on heavy gauge galvanized rails and further mounted on minimum 1.125-in. thick neoprene vibration isolators.

B. Rate centrifugal fans in accordance with AMCA Standard Test Code, Bulletin 210. Fan manufacturer shall be member of AMCA.

C. Mount fan wheels on solid turned ground and polished steel fan shaft with keyway for driven shaft. Select fan shafts for stable operation at least 20% below first critical RPM. Provide fan shafts with rust inhibiting coating.

D. Bearings: Ball bearing, self-aligning, permanently lubricated, heavy duty, pillow-block.

E. Provide extended grease lines with zerk fittings terminating outside serviceable side of unit.

F. Driver and driven sheaves shall be of keyed hub type. Driven sheave shall be of fixed pitch diameter and driver sheave shall be of variable pitch diameter through 10 hp and fixed pitch above 10 hp. After installation and initial unit startup, provide additional fixed sheaves and belts as required to achieve proper system balance.

G. V-belt Drives: Size for 135% of motor horsepower.

2.07 MOTORS

A. Except where more stringent requirements are indicated in unit specifications, or equipment schedules, provide manufacturer's standard, high-efficiency motor complying with following requirements.

B. Definite Purpose Motors: Provide in accordance with NEMA MG 1-18.

C. Service Factor: 1.30 (minimum), suitable for continuous service at 120°F ambient temperature.

D. Motors shall be 1750 rpm, standard NEMA frame. Motors mounted in airstream shall be of totally enclosed (TEFC) construction. Motors mounted out of airstream may be of open (ODP) construction.

E. Motor mounting shall be adjustable to allow for variations in belt tension.

F. Bearings: Permanently lubricated ball or regreaseable sleeve bearings with inner and outer shaft seals, designed to resist thrust loading.

G. Power Supply: Provide motor suitable for power supply as specified on equipment schedule.

2.08 HEAT EXCHANGER

A. Gas-fired Unit Construction: Four-pass tubular heat exchanger, constructed from 409 stainless steel. Heat exchanger tubes shall be installed on the vest plate by means of swaged assembly, welded connections are not acceptable. Heat exchanger tubes shall be supported by a minimum of two fabricated assemblies that support the tubes and also permit expansion and contraction of the tubes.

B. Heat exchangers shall have a 10-year extended warranty.

C. Shall be encased in weather-tight metal housing with intake air vents. Large, metal lift-off or hinged door shall provide easy access to the enclosed vest plate, control circuitry, gas train, burner assembly, and exhaust blower.

D. Thermal efficiency of the units shall be a minimum of 80% efficient for all air-flow ranges.

2.09 BURNER

A. Indirect gas-fired line burner suitable for complete combustion of natural gas and having the following turndown ratios:

a. 8:1 for MAU-4 with standard electronic modulating controls.

b. 12:1 for MAU-5 with standard electronic modulating controls.

B. Burner combustion shall be clean and odorless. Combustion efficiency must limit products of combustion to maximum of 5 ppm carbon monoxide and maximum of 0.5 ppm nitrogen dioxide.

C. 409 Stainless steel burners should be used on outside units, units equipped with separate combustion, or inside units where combustion air is pulled from corrosive environment.

D. Burner(s) shall be located for service removal without disconnecting the main gas supply piping.

E. 409 Stainless steel combustion baffles, non-clogging gas ports, spark-ignited intermittent pilot and flame safeguard system.

F. Arrange burner so pilot runs length of burner and ignites burner instantaneously. Pilot shall be automatically ignited by spark plug through standard ignition transformer. Main burner and pilot gas piping connections shall be accessible.

G. Burner assembly and piping to include gas control valve fail-safe shut off valve(s), main and pilot pressure regulators, manual shut off valves, and electric pilot valve.

H. Design burner assembly for natural gas pressure of 14 in. water column to unit. If burner requires lower natural gas supply pressure, provide pressure regulator with unit.

I. Provide vent assembly as follows:

1. Power Vented Units: Integral power exhauster.

2.10 CONTROLS

A. The unit shall be constructed so that it can function as a stand-alone heating and ventilating system controlled by factory-furnished controllers, thermostats, and sensors or it can be operated by a Building Automation System (BAS). This unit shall be controlled by a factory-installed microprocessor programmable controller, DDC controller, that is connected to space sensors specified.

1. Contractor shall provide a complete control system including manufacturer provided controls and other required control components required to meet the sequence of operation specified in Section 23 09 93.
2. Automatic temperature controls provided shall be located in temperature control panel, TCP-1.

B. Unit shall incorporate a DDC controller with integral LCD screen that provides text readouts of status, operating settings, and alarm conditions. DDC controllers shall have a built-in keypad to permit operator to access read-out screens and change settings without the use of ancillary equipment, devices or software. DCC controllers that require the use of equipment or software that is not factory installed in the unit are not acceptable. Alarm readouts consisting of flashing light codes are not acceptable. Owner-specified ventilating conditions can be input by means of pushbuttons.

1. Operating protocol: The DDC controls shall be factory-programmed for Modbus IP for monitoring of the unit's status and/or control of the unit's functions through the Plants SCADA system; Schneider Electric ClearSCADA.

C. Remote Interface: Contractor shall provide and install a remote interface that functions as remote indicator of owner-selected operating parameters and also permits remote inputting of new operating parameters. Remote panel shall have a large LCD user interface screen similar in form and function to the screen on the DDC. Installed location of room display shall be as specified on the plans.

1. Install both remote interfaces to be mounted at TCP-1 to control/ operate MAU-4 and MAU-5.

D. Sensors to be provided with the unit:

1. Sensors shall be rated for the space classification as noted on drawings.
2. Discharge air temperature sensor.
3. Override space temperature sensor. Sensors shall be rated NEMA-7, explosion proof.
4. Dirty filter sensor.

E. See Section 23 09 93 for automatic control sequences and exhaust fan interlocks.

2.11 SOURCE QUALITY CONTROL

A. Factory test units and controls for construction and operation.

B. Fan and fan assemblies shall be dynamically balanced during factory test run.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions under which makeup air units to be installed. Do not proceed with Work until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Install units in accordance with manufacturer's installation instructions. Install units plumb and level, firmly anchored in locations indicated, and maintain manufacturer's recommended clearances.

B. Electrical Wiring: Install electrical devices furnished by manufacturer, but not specified to be factory-mounted. Furnish copy of manufacturer's wiring diagram.

1. Verify electrical wiring installation is in accordance with manufacturer's submittal and installation requirements of the National Electrical Code.
2. Extend power wiring from fused disconnect to electrical junction box on unit. Provide line or low voltage wire from remote thermostat and unit remote control panel to electrical junction box on unit. Comply with requirements of the National Electrical Code for wiring.

C. Ductwork: Comply with Section 23 30 10. Connect supply ducts to unit with flexible duct connections. Provide transitions no greater than 15° in any direction to exactly match unit duct connection sizes.

D. Gas Piping: Comply with Section 23 11 23. Connect gas piping to unit gas train with shutoff cock, drip leg, and 1/8 in. NPT plugged test connection. Provide union with sufficient clearance for unit removal and service.

3.03 FIELD QUALITY ASSURANCE

A. Startup heating and ventilating units, in accordance with manufacturer's startup instructions. Test controls and demonstrate compliance with requirements. Replace damaged or malfunctioning controls and equipment.

B. Balance heating and ventilating unit in accordance with Section 23 05 93. Furnish and install new fixed pitch belt sheaves as required to achieve indicated air flow.

C. Verify proper line and manifold gas pressure. Check and calibrate controls and adjust burner for maximum efficiency.

3.04 GROUNDING

A. Provide positive equipment ground for heating air unit components.

3.05 DEMONSTRATION AND TRAINING

A. Engage a factory authorized service representative to train owner's maintenance personnel to adjust, operate and maintain the entire unit.

* * * END OF SECTION * * *

EXHIBIT 2

AECOM DRAWINGS

SHEBOYGAN REGIONAL WASTEWATER TREATMENT FACILITY
INFLUENT PUMP BUILDING - HVAC IMPROVEMENTS
SHEBOYGAN, WI
APRIL 2021

DRAWING INDEX

SHEET NO.	DRAWING NO.	DRAWING TITLE
		DRAWINGS
1	G-1	COVER AND INDEX SHEET
2	G-2	HVAC SYMBOLS AND ABBREVIATIONS
3	H-1	HVAC DEMO PLAN
4	H-2	HVAC DEMO PLAN
5	H-3	HVAC ROOF PLAN EL 623.17
6	H-4	HVAC FLOOR PLAN EL 606.38
7	H-5	HVAC FLOOR PLAN EL 594.88
8	H-6	HVAC FLOOR PLAN EL 577.48
9	H-9	HVAC SCHEDULES
10	H-10	HVAC DETAILS
11	S-1	STRUCTURAL PARTIAL ROOF PLANS AND DETAILS

HVAC DRAWINGS AND DETAILS

STRUCTURAL DRAWINGS AND DETAILS

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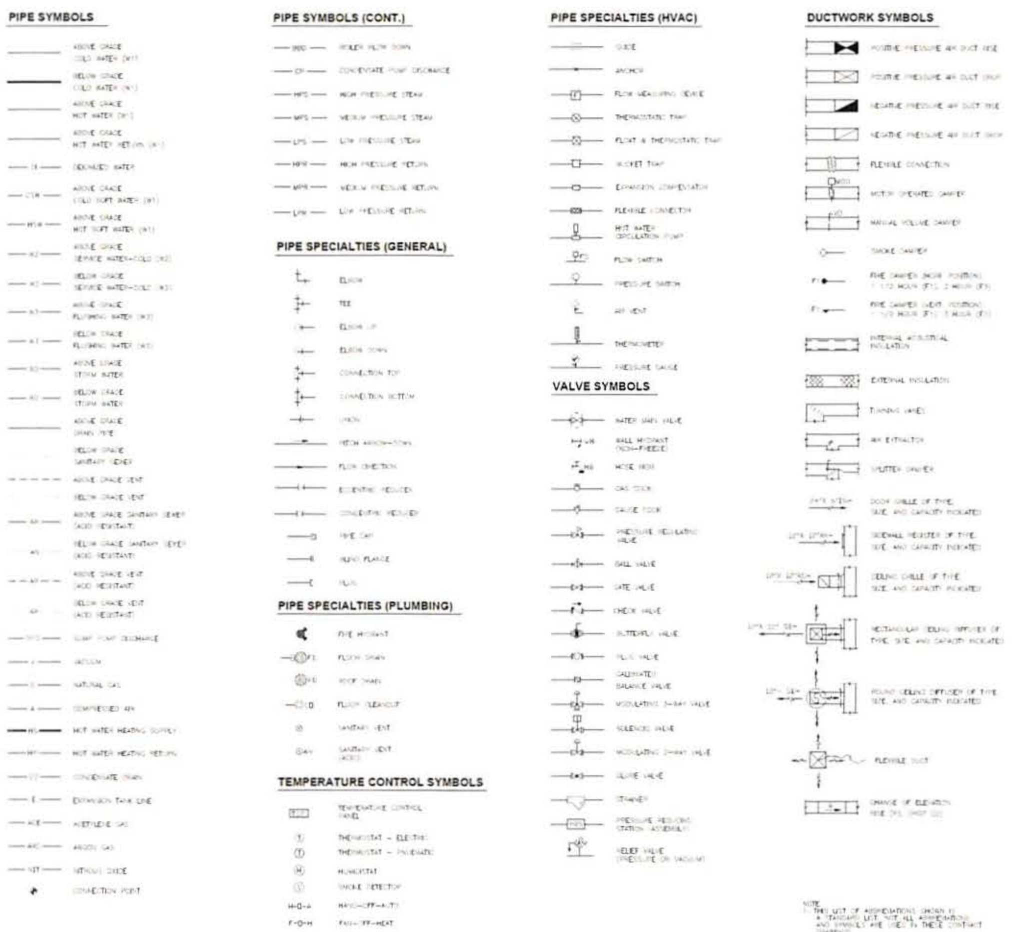
PROJECT NUMBER
60554811

SHEET TITLE
COVER AND INDEX SHEET

DWG NUMBER G-1 SHT NUMBER 1

ABBREVIATIONS

A	AIR
AC	AIR COMPRESSOR
AFF	ABOVE FINISHED FLOOR
BDD	BACK DRAFT DAMPER
BOD	BOTTOM OF DUCT
CAL	COMBUSTION AIR LOUVER
CD	CEILING DIFFUSER
CF	CEILING FAN
CUH	CABINET HEATER
CP	CIRCULATING PUMP (DOMESTIC HOT WATER)
DG	DOOR GRILLE
DFU	DRAINAGE FIXTURE UNITS
DV	DRAIN VALVE
EAL	EXHAUST AIR LOUVER
EG	EXHAUST GRILLE
EH	EXHAUST HOOD
ER	EXHAUST REGISTER
ESP	EXTERNAL STATIC PRESSURE
EWC	ELECTRIC WATER COOLER
FCU	FAN COIL UNIT
FVD	FIRE VOLUME DAMPER
H&C	HOT AND COLD WATER
HRU	HEAT RECOVERY UNIT
HVU	HEATING & VENTILATING UNIT
HWA	HIGH WATER ALARM
HWL	HIGH WATER LEVEL
IH	INTAKE HOOD
LD	LINEAR DIFFUSER
LG	LINEAR GRILLE
MAU	MAKE-UP AIR UNIT
MB	MOP BASIN
MOD	MOTOR OPERATED DAMPER
OAL	OUTDOOR AIR LOUVER
P	PUMP
RA	RETURN AIR
RAL	RETURN AIR LOUVER
RG	RETURN GRILLE
RH	RELIEF HOOD
RTU	ROOF TOP UNIT
SD	SMOKE DAMPER
SG	SUPPLY GRILLE
SP	SUMP PUMP
SPD	SUMP PUMP DISCHARGE
SR	SUPPLY REGISTER
SS	SAMPLE SINK
TCP	TEMPERATURE CONTROL PANEL
TD	TRANSFER DUCT
TG	TRANSFER GRILLE
TOD	TOP OF DUCT
TSP	TOTAL STATIC PRESSURE
TW	TEPID WATER
U	URINAL
VD	VOLUME DAMPER (MANUAL)
VTR	VENT THROUGH ROOF
WSFU	WATER SUPPLY FIXTURE UNITS



NOTE:
1. THIS LIST OF ABBREVIATIONS SHOWN IS A STANDARD LIST. NOT ALL ABBREVIATIONS AND SYMBOLS ARE USED IN THESE CONTRACT DRAWINGS.

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SHEET TITLE
HVAC SYMBOLS AND ABBREVIATIONS

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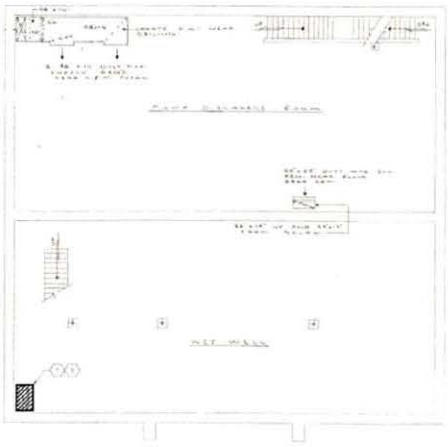
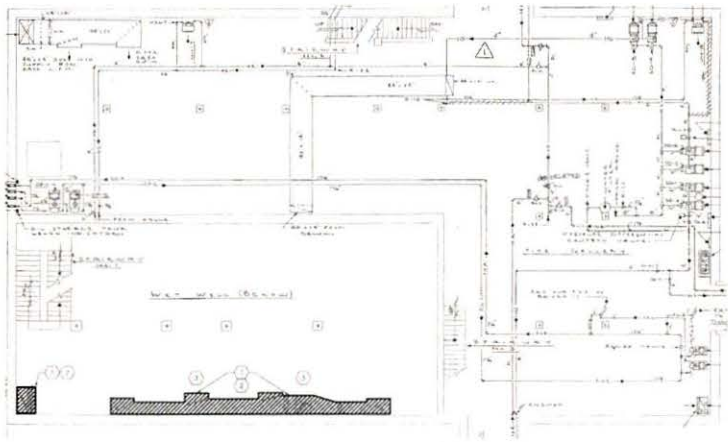
G-2

SHT NUMBER



HVAC DEMO PLAN EL. 577.46



HVAC DEMO PLAN EL. 594.88

REMOVAL NOTES

1. REMOVE AND DISCARD EXISTING DUCTWORK AND SUPPORTS.
2. CONTRACTOR TO PROVIDE REQUIRED SCAFFOLDING DOWN IN WET WELL TO ACCESS/REMOVE EXISTING DUCTWORK. SEE SECTION 01 35 16 FOR ADDITIONAL CONFINED SPACE INSTRUCTIONS.
3. WITH EFFLUENT DRAINED TO BE LOWERED WITH SUBMERSIBLE PUMP. CONTRACTOR TO PREVENT FALLING DEBRIS INSIDE CHANNEL.

LEGEND

: DEMOLISH (DECOMMISSION AND REMOVE ITEMS)

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HVAC DEMO PLAN

DWG NUMBER

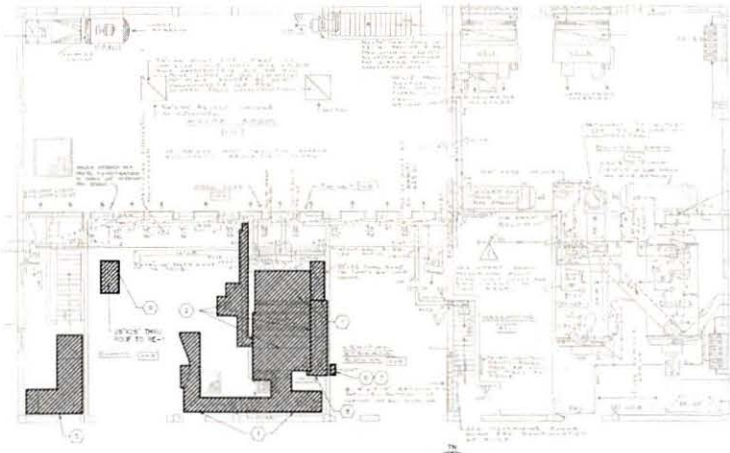
D-1

SHT NUMBER

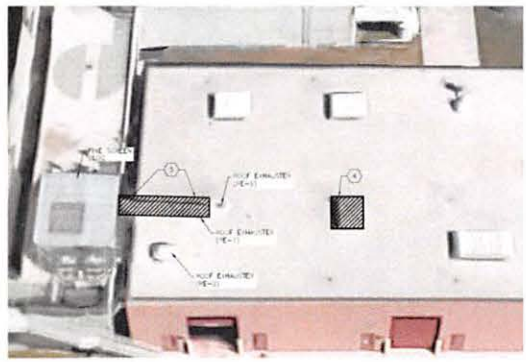
SHT

LEGEND

DEMOLISH (DECOMMISSION AND REMOVE ITEM)



HVAC DEMO PLAN EL. 606.38



HVAC ROOF DEMO PLAN
N.T.S.

REMOVAL NOTES

1. REMOVE AND DISCARD EXISTING LOUVRE AND SUPPORTS.
2. REMOVE AND DISCARD EXISTING AIR-HANDLING UNIT AND ASSOCIATED SUPPORTS, HOT WATER SUPPLY/RETURN PIPING, CIRCULATING PUMP AND CONTROLS. CAP ENDS OF HOT WATER SUPPLY/RETURN PIPES BACK AT WALL PIPES. OWNER TO DISCONNECT AND REMOVE POWER SUPPLY AT UNIT BACK TO POWER SOURCE. COORDINATE POWER DISCONNECTION WORK WITH OWNER PRIOR TO DEMOLITION WORK.
3. REMOVE AND DISCARD EXISTING TWELVE FAN ROOF EXHAUSTER (RE-1) AND ASSOCIATED DUCTWORK CONNECTING BETWEEN UNIT ROOM AND FIVE SCREEN BUILDING. OWNER TO DISCONNECT AND REMOVE POWER SUPPLY TO FAN TO BE REUSED FOR NEW ROOF EXHAUSTER. CONTRACTOR TO COORDINATE POWER DISCONNECTION WITH OWNER PRIOR TO DEMOLITION WORK.
4. REMOVE AND DISCARD EXISTING LOUVRY INTAKE HOOD.
5. REMOVE AND DISCARD ANY EXISTING DUCTWORK AND/OR SUPPORTS LOCATED IN STAIRWELL ASSOCIATED WITH EXISTING ROOF EXHAUSTER (RE-1) TO REMAIN.
6. REMOVE AND DISCARD EXISTING HEATING/VENTILATING CONTROL PANEL (M-1) AND ASSOCIATED CONDUIT, WIRING AND CONDUIT BETWEEN PANEL AND SHED-TYP UNIT HEATER. OWNER TO DISCONNECT POWER SUPPLY TO PANEL TO BE REUSED FOR NEW TEMPERATURE CONTROL PANEL TO BE LOCATED IN SAME LOCATION. CONTRACTOR TO COORDINATE POWER DISCONNECTION WITH OWNER PRIOR TO DEMOLITION WORK.
7. CONTRACTOR TO SEAL UP EXISTING WALL PENETRATIONS WITH NON-SHRINK GROUT, PROVIDING GAS TIGHT SEAL.
8. REMOVE AND DISCARD EXISTING HOT WATER UNIT HEATER AND ASSOCIATED HOT WATER SUPPLY AND RETURN PIPING AND CONTROLS. OWNER TO DISCONNECT AND REMOVE POWER SUPPLY AT UNIT BACK TO POWER SOURCE. COORDINATE POWER DISCONNECTION WITH OWNER.
9. REMOVE AND DISCARD EXISTING DUCTWORK AND SUPPORTS ASSOCIATED WITH ROOF EXHAUSTER (RE-1).

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HVAC DEMO PLAN

DWG NUMBER
D-2

SHT NUMBER
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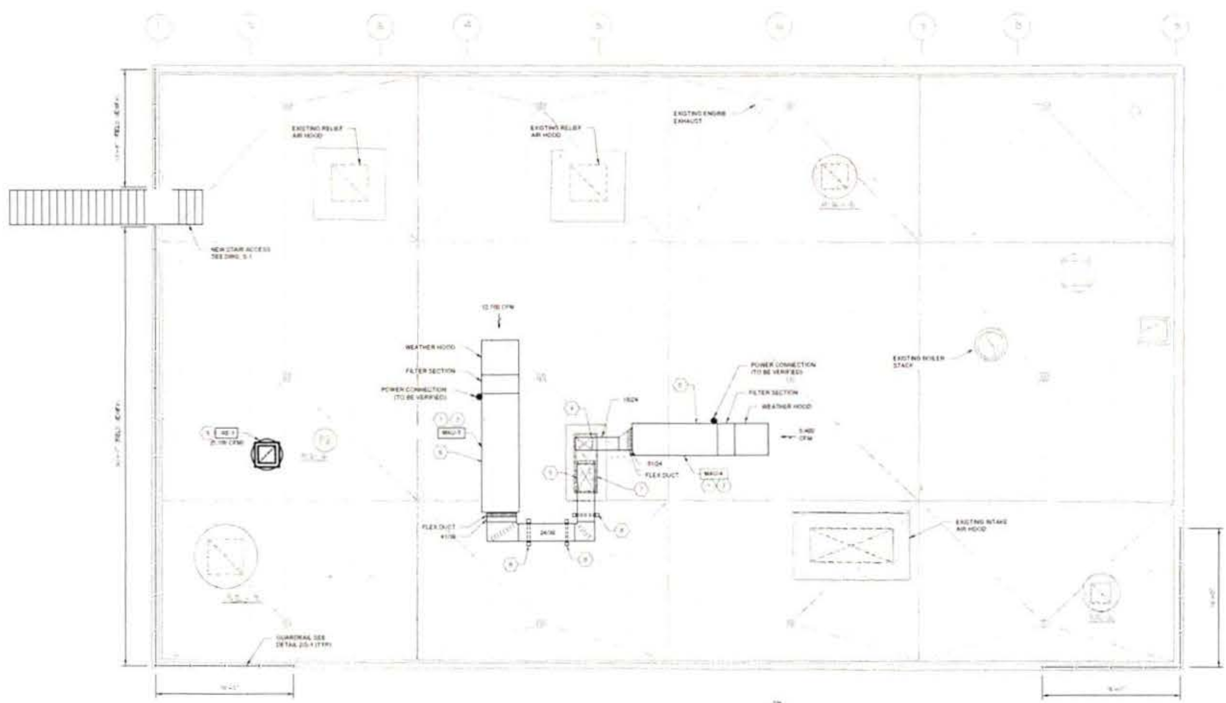

HVAC ROOF PLAN EL 627.71

SCALE

PLAN NOTES

1. INDIRECT-FIRED MAKE-UP AIR UNIT MOUNTED ON ROOF ON MANUFACTURER PROVIDED CURB. SEE DETAIL 8
2. UNIT SERVES GRIT ROOM BELOW
3. UNIT SERVES WET WELL BELOW
4. 24/18 SA DUCT ON THROUGH EXISTING OPENING TO GRIT ROOM
5. 24/16 SA DUCT ON THROUGH EXISTING OPENING TO GRIT ROOM
6. UNIT SERVICE ACCESS THIS SIDE
7. PROVIDE NEW 14" HIGH ROOF CURB AND ALUMINUM DOG HOUSE OVER EXISTING 78/28 OPENING. TOP PANEL OF DOG HOUSE TO BE PITCHED TO PREVENT WATER ACCUMULATION. EXTEND NEW DUCTS FROM MAKE-UP AIR UNITS THROUGH SIDES OF DOG HOUSE. PROVIDE WEATHER PROOF FLASHING AND SEALANT AROUND NEW DUCT PENETRATIONS
8. PROVIDE ROOF SUPPORT STAND. SEE DETAIL 6
9. UPBLAST CENTRIFUGAL ROOF EXHAUST FAN, BELT DRIVEN, TO BE MOUNTED OVER EXISTING 28.5" X 28.5" OPENING WITH MANUFACTURER PROVIDED CURB. PROVIDE THIN TWICK TREATED LUMBER AT OPENING PERIMETER TO MAKE OPENING 28.5" X 28.5" AS RECOMMENDED BY FAN MANUFACTURER. SEE CURB DETAIL 8

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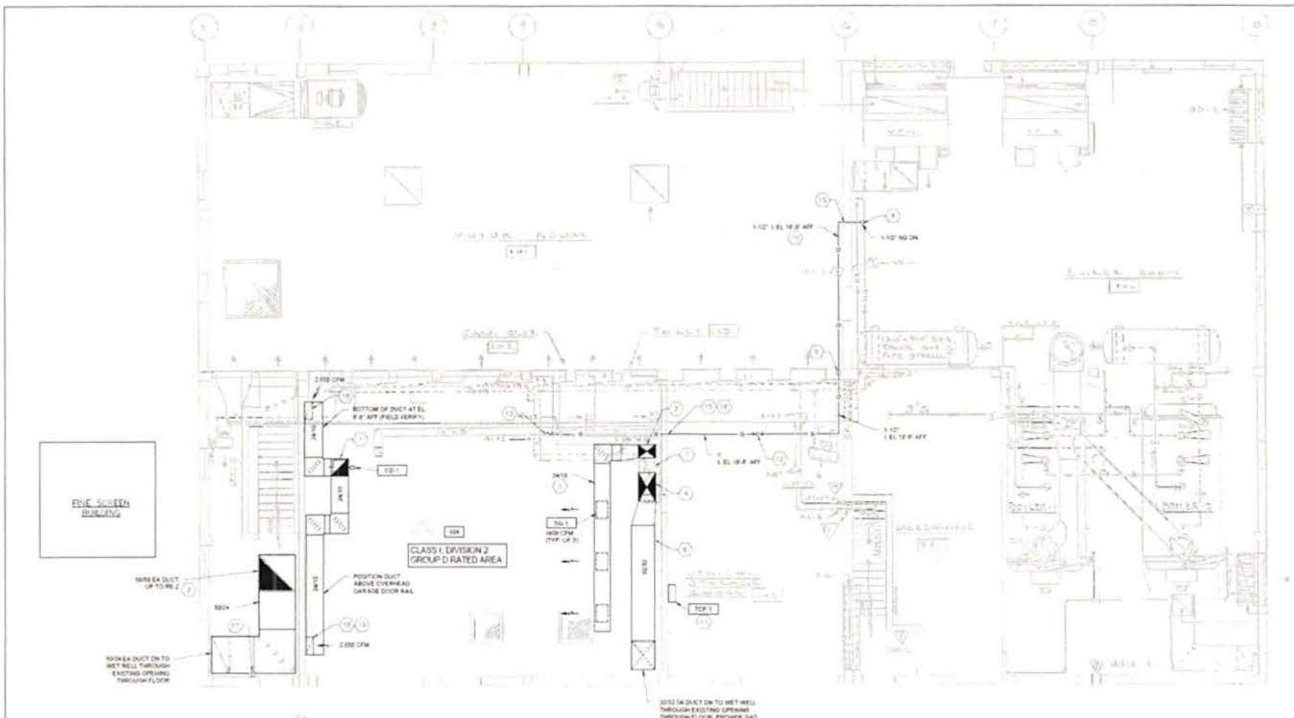
HVAC ROOF PLAN EL 627.71

DWG NUMBER

H-1

SHT NUMBER



HVAC FLOOR PLAN EL 606.38

SCALE

PLAN NOTES

1. 24/24 EA UP TO NEW ROOF EXHAUSTER (RE-1). EXHAUST 5,150 CFM
2. EXISTING ROOF EXHAUSTER (RE-2). EXHAUST 13,500 CFM
3. 18/24 SA DUCT DN FROM MAU-4 ON ROOF
4. 24/24 SA DUCT DN FROM MAU-5 ON ROOF
5. BOTTOM OF DUCT AT EL 13'-4" AFF
6. BOTTOM OF DUCT AT EL 15'-0" AFF
7. EXISTING 16/28 FRESH AIR DUCT REMOVED. EXISTING OPENING TO BE RE-USED
8. CONNECT 1-1/2" NG TO EXISTING 2-1/2" NG SERVING OIL BOILER. PROVIDE 1-1/2" GAS COCK IN DROP AT EL 4'-0" AFF
9. 1-1/2" NG DN BELOW CONCRETE BEAM
10. INSTALL NG PIPE AT WALL. MAXIMUM DISTANCE FROM WALL IS 1'-0" TO CLEAR OVERHEAD CRANE
11. TEMPERATURE CONTROL PANEL LOCATED BETWEEN THE MUNDER UNIT WASHER PANEL AND MCC. MAXIMUM PANEL WIDTH IS 24". BOTTOM OF PANEL AT EL 4'-8" AFF. OWNER TO PROVIDE 120V/1PH 20 AMP POWER CIRCUIT
12. 3/4" NG UP TO MAU-4. PROVIDE 3/4" GAS COCK AND 3/4" PRESSURE REGULATOR WITHIN ROOF CURB. INLET PRESSURE IS 3 PSI OUTLET PRESSURE IS 1/2 PSI. CONNECTED LOAD IS 900 CFH NG. EXTEND VENT TO OUTSIDE. EXTEND 3/4" NG PIPE TO EACH BURNER AND PROVIDE 3/4" DRIP LEG
13. 1" NG UP TO MAU-5. PROVIDE 1" GAS COCK AND 1" PRESSURE REGULATOR WITHIN ROOF CURB. INLET PRESSURE IS 3 PSI. OUTLET PRESSURE IS 1/2 PSI. CONNECTED LOAD IS 1,300 CFH NG. EXTEND VENT TO OUTSIDE. EXTEND 3/4" NG PIPE TO EACH BURNER AND PROVIDE 3/4" DRIP LEG
14. NOT USED
15. PROVIDE NEW PIPE PENETRATION THROUGH EXISTING MASONRY WALL. SEE DETAIL 7
16. PROVIDE GAS TIGHT SEAL AT PIPE PENETRATION
17. OWNER FURNISHED NEMA 7 SINGLE POLE ON/OFF SWITCH. OWNER TO PROVIDE 120 VOLT SIGNAL FROM SWITCH TO TCP-1 TO ACTIVATE RUN SIGNAL TO OPERATE WET WELL VENTILATION SYSTEM
18. 24/12 EA DUCT DN TO EL 1'-8" AFF. PROVIDE 1/2"x1/2" SS HARDWARE CLOTH BETWEEN TWO DUCT FLANGES AT EXHAUST INLET
19. LOCATE DUCT TIGHT TO WALL TO CLEAR OVERHEAD GARAGE DOOR

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HVAC FLOOR PLAN EL 606.38

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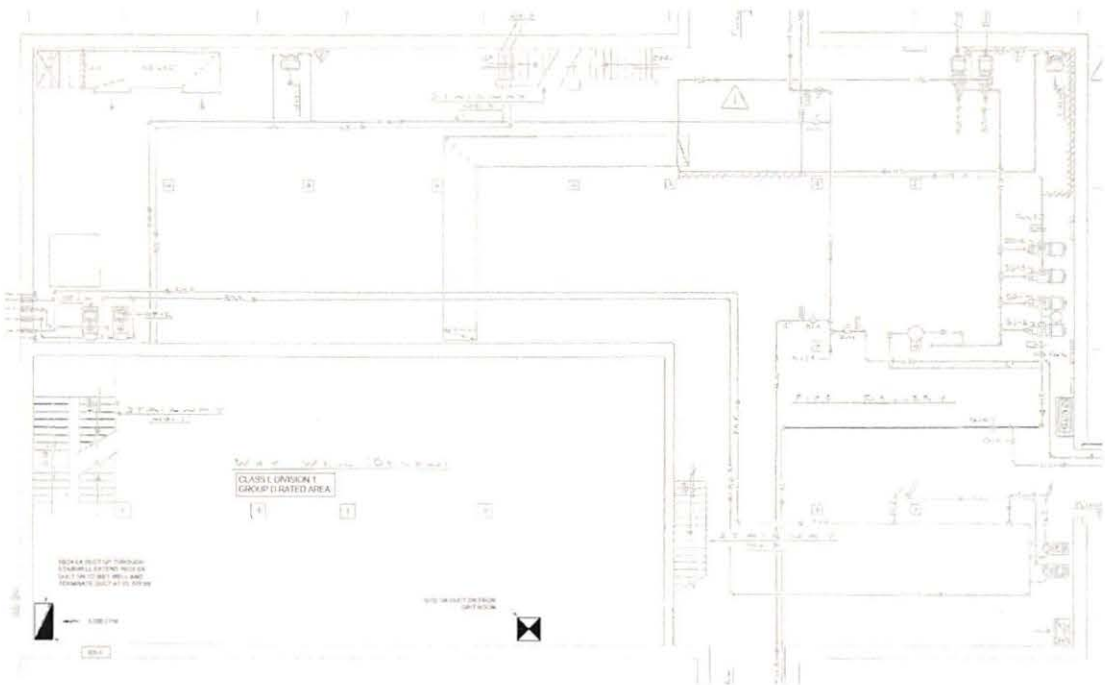
H-2

SHT NUMBER



HVAC FLOOR PLAN EL 594.88

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HVAC FLOOR PLAN EL 594.88

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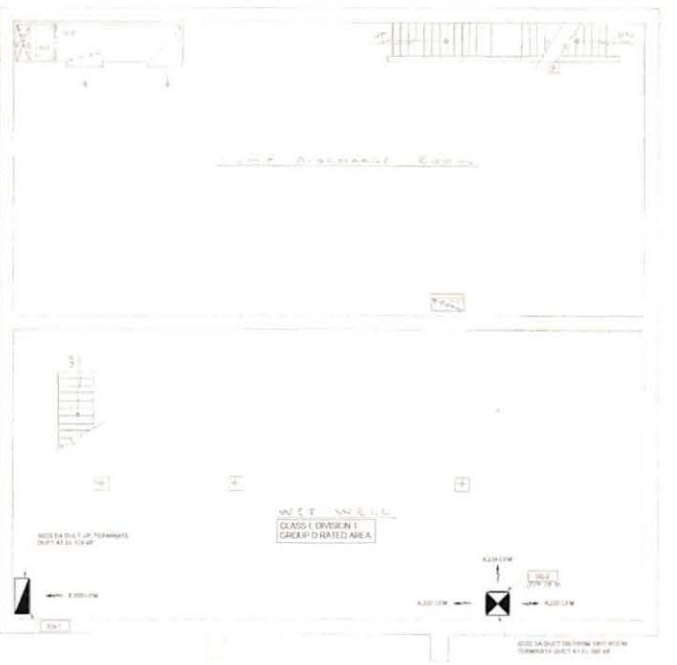
H-3

SHT NUMBER

SHEET



HVAC FLOOR PLAN EL 577.46

SCALE

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HVAC FLOOR PLAN EL 577.46

DWG NUMBER
H-4

SHT NUMBER
SHT

CONTROL DAMPER SCHEDULE

TAG NO	QTY	MANUFACTURER MODEL NO OR EQUAL	TYPE	BLADE TYPE	MAX AIR VELOCITY (FPM)	MAX AIR PRESSURE (IN. W.C.)	WIDTH (IN)	HEIGHT (IN)	AIR DATA: TYPE	AIR DATA: MAX CFM	AIR DATA: VELOCITY (FPM)	DAMPER ACTUATOR: MANUFACTURER MODEL NO. OR EQUAL	DAMPER ACTUATOR: HOUSING	DAMPER ACTUATOR: CONTROL TYPE	DAMPER ACTUATOR: FAIL POSITION	DAMPER ACTUATOR: TORQUE (IN. LB.)	DAMPER ACTUATOR: QUANTITY	DAMPER ACTUATOR: VOLTAGE	DAMPER ACTUATOR: AUXILIARY SWITCHES	RELATED LOUVER	RELATED SYSTEM	REMARKS
CD-1	1	RUSKIN CD50VO1	HEAVY DUTY	OPPOSED	3000	8.0	24	24	EXHAUST	5,100	1,275	BELIMO FSNF120-S	BELIMO ZS-200 (EXP)	2 POSITION	CLOSED	70	1	115 VAC	(2) SPDT	-	RE-1	BS, SSC

BS = BLADE SEAL (EPDM) EXP = EXPLOSION PROOF SSC = STAINLESS STEEL (TYPE 304) CONSTRUCTION SPDT = SINGLE POLE DOUBLE THROW

FAN SCHEDULE

15838

TAG NO	MANUFACTURER MODEL NO OR EQUAL	UNIT AREA SERVED	TYPE	AIR DATA: MAX CFM	AIR DATA: MIN CFM	AIR DATA: ESP (IN WG)	AIR DATA: BHP	FAN RPM	MAXIMUM TIP SPEED (FPM)	DRIVE TYPE	MOTOR DATA: HP	MOTOR DATA: VOLT	MOTOR DATA: PH	MOTOR DATA: HZ	MOTOR DATA: RPM	MOTOR DATA: ET	DISCONNECT SWITCH	REMARKS
RE-1	GREENHECK CUBE-240-15	PUMP BLDG - GRIT ROOM	UPBLAST CENTRIFUGAL ROOF EXHAUST	5,100	5,100	0.75	1.28	776	4,979	BELT	1-1/2	460	3	60	1725	EXP	NEMA-7	AH, AB, ARR, B, C1, CS, ELL, GNB, PEM, RC, SBC, SSS

AH = ALUMINUM HOUSING
AB = ALUMINUM BIRDSCREEN
ARR = ALUMINUM RUB RING
B = BEARINGS WITH GREASE FITTINGS
C = COATING (PERMATECTOR - GRAY)
CS = CURB SEAL
ET = ENCLOSURE TYPE
ELL = EXTENDED LUBE LINES
EXP = EXPLOSION PROOF (CLASS I, DIVISION 1)
GNB = GRIP NOTCHED BELTS (PLUS SPARE)
PEM = PREMIUM EFFICIENT MOTOR
RC = ROOF CURB (ALUMINM, 14-IN. HIGH, INSULATED, C- COATED)
SBC = SPARK B CONSTRUCTION
SSS = STAINLESS STEEL SHAFT

REGISTER & GRILLE SCHEDULE

TAG NO	MANUFACTURER MODEL NO OR EQUAL	LOCATION SERVED	TYPE	DUCT SIZE (IN.)	FRAME SIZE (IN.)	AIR PATTERN	MATERIAL	FINISH	DAMPER	STD AIR (CFM)	MAX APD (IN WG)	MAX NC	MOUNTING	REMARKS
SG-1	TITUS 300RL-SS	PUMP BLDG - GRIT ROOM	SUPPLY GRILLE (3/4" BLADE SPACING)	24 x 16	25-13/16 x 17-13/16	DD	316 SS	#4 MILL	NA	1,800	0.17	33	SURFACE MOUNT	TYPICAL OF 3
SG-2	TITUS 300RS-SS	PUMP BLDG - WET WELL	SUPPLY GRILLE (3/4" BLADE SPACING)	24 x 36	25-13/16 x 37-13/16	DD	316 SS	#4 MILL	NA	4,233	0.17	36	SURFACE MOUNT	TYPICAL OF 3
EG-1	TITUS 350RL-SS	PUMP BLDG - WET WELL	EXHAUST GRILLE (3/4" BLADE SPACING)	44 x 44	45-5/8 x 45-5/8	SD	316 SS	#4 MILL	OBD	6,500	0.06	21	SURFACE MOUNT	TYPICAL OF 2

DD = DOUBLE DEFLECTION
OBD = OPPOSED BLADE DAMPER (316 SS)
SD = SINGLE DEFLECTION
SS = STAINLESS STEEL

MAKE-UP AIR UNIT SCHEDULE

TAG NO	MANUFACTURER MODEL NO OR EQUAL	LOCATION SERVED	TYPE	FUEL TYPE	GAS SUPPLY PRESS (IN. W.C.)	HEATING CAPACITY: INPUT (MBH)	HEATING CAPACITY: OUTPUT (MBH)	FILTER DATA: TYPE	FILTER DATA: SIZE (IN.)	FILTER DATA: MERV	FILTER DATA: APD (IN. W.G.) CLEAN/DIRTY	AIR DATA: SCFM	AIR DATA: EAT (°F) @ 100%	AIR DATA: LAT (°F)	AIR DATA: ESP (IN. W.C.)	AIR DATA: TSP (IN. W.C.)	AIR DATA: DRIVE TYPE	AIR DATA: FAN TYPE	AIR DATA: FAN SIZE	ELECTRICAL DATA: VOLT	ELECTRICAL DATA: PH	ELECTRICAL DATA: HZ	ELECTRICAL DATA: HP	ELECTRICAL DATA: BHP	ELECTRICAL DATA: MCA	ELECTRICAL DATA: MOP	UNIT WEIGHT (LBS)
MAU-4	GREENHECK IGX-112-H22	PUMP BLDG - GRIT ROOM	IF 100% OA	NAT. GAS	14	600	480	PLEATED	2	8	0.15/0.60	5,400	-15.0	67.3	0.90	1.23	BELT	FC	12	480	3	60	5	4.08	10.8	15	1,500
MAU-5	GREENHECK IGX-120-H32	PUMP BLDG - WET WELL	IF 100% OA	NAT. GAS	14	1200	960	PLEATED	2	8	0.15/0.60	12,700	-15.0	55.0	1.25	2.04	BELT	FC	20	460	3	60	15	10.38	28.1	45	3,400

GENERAL NOTES

1. THE MECHANICAL CONTRACTOR IS TO BE RESPONSIBLE FOR CO-ORDINATING ALL TRADES AND IS ACTING AS THE PRIME ON THIS PROJECT.
2. THE DRAWINGS ARE SCHEMATIC IN NATURE. ALL REQUIRED DUCTWORK AND PIPING MODIFICATIONS SHALL BE INCLUDED IN BASE BID TO ACCOMMODATE ACTUAL FIELD CONDITIONS. FINAL LOCATIONS OF ALL WORK SHALL BE COORDINATED IN THE FIELD AND INSTALLED AS REQUIRED.
3. CONTRACTOR SHALL COORDINATE ALL WORK WITH THAT OF OTHER TRADES. COORDINATE WALL, FLOOR, AND ROOF OPENINGS WITH RESPONSIBLE TRADES.
4. INSTALL ALL DUCTWORK, PIPING, AND SUSPENDED EQUIPMENT AS HIGH AS POSSIBLE TO PROVIDE MAXIMUM CLEARANCE UNLESS SPECIFIED OTHERWISE.
5. ALL EQUIPMENT, PIPING AND DUCTWORK SHALL BE SUPPORTED AS DETAILED, SPECIFIED AND AS REQUIRED TO PROVIDE A VIBRATION FREE INSTALLATION.
6. DUCT SIZES SHOWN ARE CLEAR INSIDE DIMENSIONS.
7. ALL DUCTWORK PROVIDED WITH BASE BID SHALL BE 316 STAINLESS STEEL, NO. 2B FINISH UNLESS NOTED OTHERWISE.
8. ALL DUCTWORK PROVIDED WITH ALTERNATE BID SHALL BE PVC DUCT. PROVIDE [illegible] OR EQUAL.
9. ALL DUCTWORK SUPPORTS SHALL BE 316 STAINLESS STEEL. SUPPORTS SHALL BE DESIGNED AND PROVIDED BY CONTRACTOR AS PART OF BASE BID.
10. DUCTWORK AND HVAC PIPING SHALL BE INSULATED AS SPECIFIED IN SECTION 23 0700.
11. PROVIDE TURNING VANES IN 90° ELBOWS.
12. GAS BUILDING DISTRIBUTION PIPING SHALL BE WELDED SCHEDULE 40 BLACK STEEL PIPE AND PAINTED RED MATCHING EXISTING.
13. CONTRACTOR SHALL INCLUDE ROOFING REPAIR AS PART OF BASE BID. REMOVE EXISTING ROOFING AS REQUIRED FOR THESE EFFECTED AREAS REQUIRING NEW ROOF CURBS AND/OR SUPPORT STANDS AND REPLACE WITH NEW MATERIALS MATCHING EXISTING. MAINTAINING EXISTING ROOF SLOPE AND PROVIDE ADEQUATE DRAINAGE.
14. HVAC CONTROLS SHALL BE DESIGNED AND PROVIDED BY INSTALLING CONTRACTOR AND SHALL BE INCLUDED IN BASE BID. HVAC CONTROLS PROVIDED SHALL BE STAND-ALONE AND SHALL BE ELECTRICAL AND/OR DDC CONTROLS AS SPECIFIED IN SECTIONS 23 0933 AND 23 0953. MAKE-UP AIR UNITS SHALL BE PROVIDED WITH DDC CONTROLS AND SHALL BE ETHERNET TCP/IP AND BACNET COMPATIBLE. DDC CONTROLS PROVIDED FOR MONITORING DATA PURPOSES AS REQUIRED BY OWNER.
15. ALL CONTROL WIRING SHALL BE INSTALLED IN EITHER RIGID OR EMT CONDUIT AS SPECIFIED IN DIVISION 23. CONTROL WIRING INSTALLED IN CLASSIFIED AREAS SHALL BE INSTALLED IN RIGID CONDUIT.
16. ELECTRICAL SCOPE OF WORK:
    - A. POWER SUPPLY INCLUDING WIRE, CONDUIT, AND ELECTRICAL DEVICES BY OWNER (UNLESS SPECIFIED TO BE FURNISHED BY MANUFACTURER).
    - B. CONTRACTOR TO COORDINATE POWER REQUIREMENTS WITH OWNER AND ESTABLISH SCHEDULE FOR WORK TO BE COMPLETED BY OWNER.
    - C. CONTROL POWER REQUIRED UNDER SECTION 23 0933 IS WORK BY DIVISION 23.
    - D. CORE DRILLING THROUGH WALLS, FLOORS AND ROOFS TO BE PROVIDED BY THE GENERAL/PRIME CONTRACTOR.

MAKE-UP AIR UNIT SCHEDULE CONT.

TAG NO	REMARKS
MAU-1	DD, DS, EGL, HD, HE, HEW, HEM, IC, IH, PC, PE, RC, SO, VI, WH
MAU-2	DD, DS, EGL, HD, HE, HEW, HEM, IC, IH, PC, PE, RC, SO, VI, WH

DD = DISCHARGE DAMPER (LOW LEAKAGE, MOTORIZED)
DS = DISCONNECT SWITCH (NEMA 3R, LOCKABLE)
EGL = EXTENDED GREASE LINES
FC = FORWARD CURVE
HD = HORIZONTAL DISCHARGE (END)
HE = HEAT EXCHANGER(S)/ BURNERS (409 STAINLESS STEEL)
HEW = HEAT EXCHANGER WARRANTY (10 YEARS)
HEM = HIGH EFFICIENCY MOTOR
IC = INSULATED CABINET, DOUBLE WALL CONSTRUCTION
IF = INDIRECT FIRED (POWERED VENTED)
MCA = MOTOR CONTROL AMPS
MOP = MAXIMUM OVERCURRENT PROTECTION
OA = OUTDOOR AIR
PC = PACKAGED CONTROLS
(DDC MICROPROCESSOR W/ PLANT SCADA MONITORING CAPABILITY)
RC = ROOF CURB (WELDED 18 GA. GALV. STEEL, 24-IN. HIGH)
SO = SERVICE OUTLET (TO BE POWERED SEPARATELY)
VI = VIBRATION ISOLATION (NEOPRENE)
WH = WEATHER HOOD W/ BIRDSCREEN

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SHEBOYGAN WWTP INFLUENT PUMP BUILDING

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CITY OF SHEBOYGAN
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ISSUE/REVISION

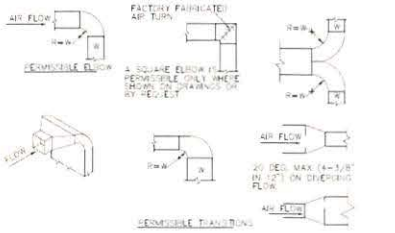
I/R	DATE	DESCRIPTION
5	04/06/2021	BID SET

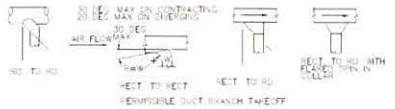
PROJECT NUMBER
60554811

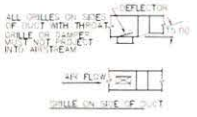
SHEET TITLE
HVAC SCHEDULES

DWG NUMBER H-5

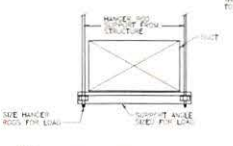
SHT NUMBER



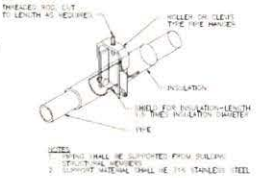




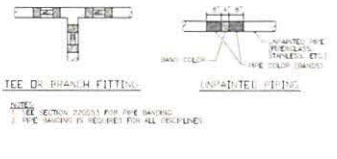
1 DUCT TRANSITIONS DETAIL
H-6
NOT TO SCALE



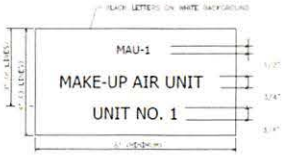
2 DUCT HANGING DETAIL
H-6
NOT TO SCALE



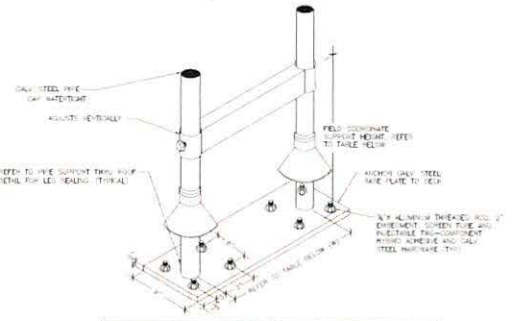
3 PIPE HANGING DETAIL
H-6
NOT TO SCALE



4 PIPING SYSTEM IDENTIFICATION
H-6
NOT TO SCALE



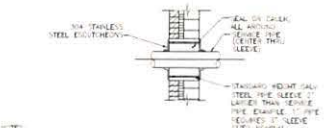
5 EQUIPMENT MARKERS DETAIL
H-6
NOT TO SCALE



WIDTH OR LENGTH OF EQUIPMENT/SUPPORT	MAX HEIGHT OF LEGS ABOVE FINISHED ROOF
UP TO 24"	12" *
12" AND UP	36" *

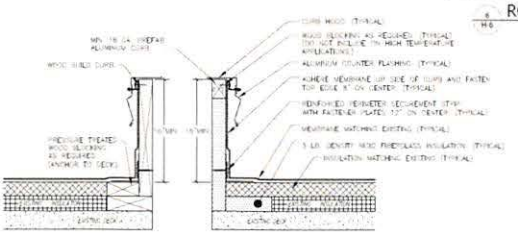
* REQUIRED HEIGHT TALLER THAN SHOWN TO BE APPROVED BY STRUCTURAL ENGINEER

6 ROOF SUPPORT STAND DETAIL
H-6
NOT TO SCALE

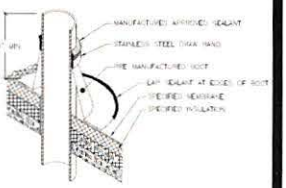


NOTES:
1. FOR EXISTING WALL PENETRATION, CORE DRILL THROUGH CONCRETE/MASONRY AND GROUT IN SLEEVE.
2. PROVIDE AIR TIGHT SEALANT AT PIPE PENETRATIONS (MEANING CLASSIFIED AND UNCLASSIFIED SPACES) AND AS SPECIFIED ON DRAWINGS.

7 PIPE PENETRATION THROUGH MASONRY WALL
H-6
NOT TO SCALE



8 ROOF CURB DETAIL (SINGLE PLY MEMBRANE)
H-6
NOT TO SCALE



9 PIPE THROUGH ROOF DETAIL (SINGLE PLY MEMBRANE)
H-6
NOT TO SCALE

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SHEBOYGAN WWTP INFLUENT PUMP BUILDING

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ISSUE/REVISION

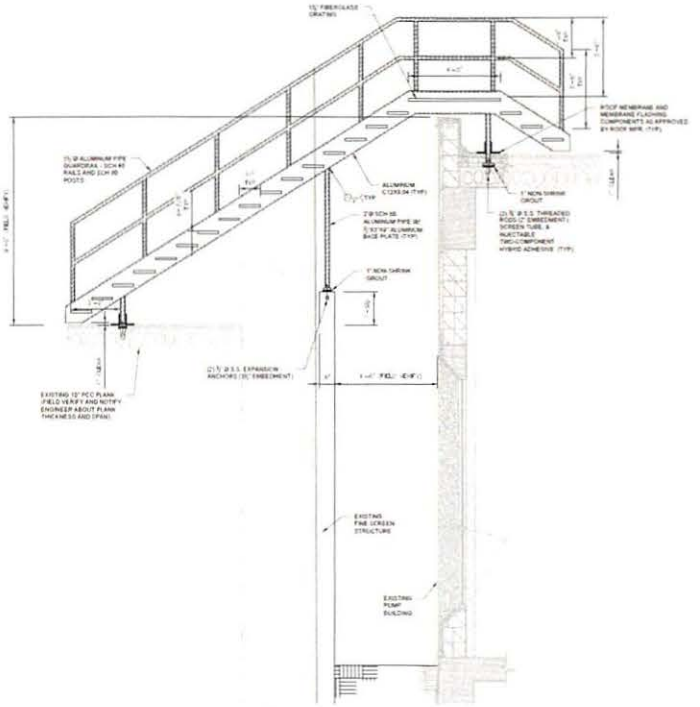
0	04/30/2021	BID SET
NO.	DATE	DESCRIPTION

PROJECT NUMBER
60554811

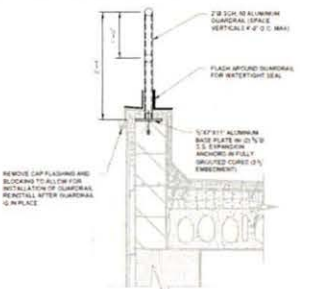
SHEET TITLE
HVAC DETAILS

DWG NUMBER
H-6

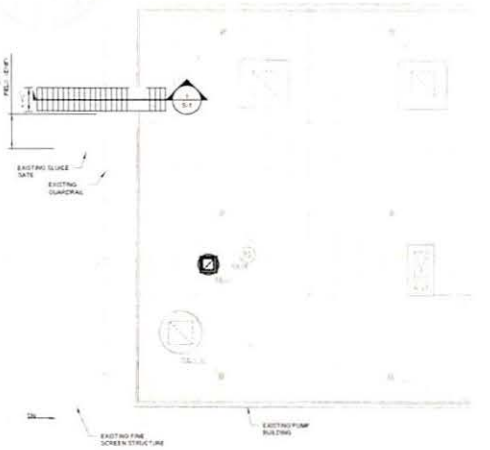
SHT NUMBER
SHEET 1 OF 1



STAIR SECTION



GUARDRAIL DETAIL



PARTIAL ROOF PLANS

AECOM

PROJECT
SHEBOYGAN WWTP
INFLUENT PUMP
BUILDING

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CITY OF SHEBOYGAN

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ISSUE/REVISION

3	04/30/2021	BID SET
NO.	DATE	DESCRIPTION

PROJECT NUMBER
60554811

SHEET TITLE
STRUCTURAL PARTIAL ROOF PLANS AND DETAILS

DWG NUMBER
S-1

SHT NUMBER
SHEET

CITY OF SHEBOYGAN

REQUEST FOR PUBLIC WORKS COMMITTEE CONSIDERATION

ITEM DESCRIPTION: A resolution authorizing the appropriate City officials to enter into a contract with Tweet/Garot Mechanical, Inc. for the construction of improvements to the HVAC System at the Waste Water Treatment Plant, and to make related expenditures.

REPORT PREPARED BY: Steve Jossart

REPORT DATE: August 16, 2021 **MEETING DATE:** August 24, 2021

FISCAL SUMMARY:

Budget Line Item:	60138300-631200
Budget Summary:	Replacement Costs
Budgeted Expenditure:	$ 308,000
Budgeted Revenue:	N/A

STATUTORY REFERENCE:

Wisconsin Statutes:	N/A
Municipal Code:	N/A

BACKGROUND / ANALYSIS: The existing HVAC unit which supplies heat and ventilation for the grit room and raw wastewater wet well is beyond repair and requires replacement. The grit room is an area of the wastewater plant where rejects from the grit removal and fine screen systems are dewatered, compacted, and disposed of in an open 15-yard waste hopper. The raw wastewater wet well is located below this room and is where the incoming raw wastewaters are collected and then pumped to the treatment process. These areas are classified due to the potential for explosive conditions to exist and ventilation is critical to maintain the atmosphere of these areas so they can be occupied by plant personnel and contractors when required.

STAFF COMMENTS: The existing Influent Building HVAC system has been in disrepair for a number of years and in its present state provides no heat and minimal ventilation. Much of the duct work is compromised, or is no longer in place, due to total failure of the supports and ducts. The original system used a hot water coil located in the air handler to supply heat to both areas from the facilities hydronic (hot water) heating system, but the heating coil has been out of service for a number of years and can no longer be repaired. Due to the corrosive nature of the area in which the existing unit is installed, it was determined that it would be more cost effective to install two new air handling units on the roof and provide access to the units for maintenance. Each air handler is designed to ventilate and heat one of the two areas that were previously ventilated by the existing unit. The expected service life of the new HVAC system is approximately 25 years.

The project scope includes the purchase and installation of two separate natural gas fired HVAC units mounted on the roof of the influent building. One unit will be dedicated to the grit room and is designed to maintain positive pressure in the space to prevent

corrosion of the equipment as well as minimize odors associated with the process. The second unit will be dedicated to the wet well and will ensure adequate air changes are maintained to ventilate and heat the space so that personnel can occupy the area for maintenance purposes. All duct work inside the building and wet well will be stainless steel to prevent failure from corrosion. Access to the roof will be provided from a new stair way to eliminate the risks associated with lifting parts through a scuttle opening. A hand rail will be installed around the roof's edge, so that all equipment can be safely accessed without the use of fall restraints. The grit room will be cleaned, sanitized, and painted once all of the existing equipment and duct work has been removed.

Cost Breakdown:

Air Handling Equipment Installation, Duct Work, Gas Piping, Stairs and Handrail Installation, Roofing, and all demolition work.	Tweet Garot Mechanical	$ 316,228.00
Electrical Installation	WWTP Staff	$ 10,000.00
Cleaning Grit Room	H2O Under Pressure	$ 7,000.00
Painting Grit Room	Crane Engineering	$ 10,022.80
Contingency (10%)		$ 31,600.00
TOTAL		**$ 374,850.80**

ACTION REQUESTED: Motion to recommend the Common Council adopt Res. No. 48-21-22 authorizing the appropriate City officials to enter into a contract with Tweet/Garot Mechanical, Inc, for the construction of improvements to the HVAC System at the Waste Water Treatment Plant, and to make related expenditures.

ATTACHMENTS:

I. Res. No. 48-21-22
II. Tweet/Garot Mechanical Contract

X

7.3

Gen. Ord. No. 20 - 21 - 22. By Alderpersons Dekker and Perrella.
August 16, 2021.

AN ORDINANCE creating a no parking zone on the east side of North 9th Street north of Center Avenue.

THE COMMON COUNCIL OF THE CITY OF SHEBOYGAN DO ORDAIN AS FOLLOWS:

Section 1. Pursuant to Section 118-126 of the Municipal Code entitled "Prohibitions and Restrictions Authorized," the east side of North 9th Street from 70 feet north of the north curb line of Center Avenue to 245 feet north of the north curb line of Center Avenue is hereby added to the list of locations where parking is not permitted.

Section 2. The Department of Public Works and the Police Department are hereby authorized and directed to install the signs to give notification of the aforementioned parking restriction.

Section 3. All ordinances or parts thereof in conflict with the provisions of this ordinance are hereby repealed to the extent of such conflict, and this ordinance shall be in effect from and after its passage and publication.

Dean Dekker

Public Works

I HEREBY CERTIFY that the foregoing Ordinance was duly passed by the Common Council of the City of Sheboygan, Wisconsin, on the _____ day of _____, 20____.

Dated _____ 20____. _____, City Clerk

Approved _____ 20____. _____, Mayor

CITY OF SHEBOYGAN

REQUEST FOR PUBLIC WORKS COMMITTEE CONSIDERATION

ITEM DESCRIPTION: An ordinance creating a no parking zone on the east side of North 9th Street north of Center Avenue.

REPORT PREPARED BY: Ryan Sazama, City Engineer

REPORT DATE: August 19, 2021 **MEETING DATE:** August 24, 2021

FISCAL SUMMARY:

Budget Line Item:	N/A
Budget Summary:	N/A
Budgeted Expenditure:	N/A
Budgeted Revenue:	N/A

STATUTORY REFERENCE:

Wisconsin Statutes:	N/A
Municipal Code:	N/A

BACKGROUND / ANALYSIS: There are concerns with vehicles parking near the driveway that exits and enters onto North 9th Street from the parking lot located on the northside of City Hall creating sight distance issues for vehicles exiting the parking lot. Parked vehicles at this location are also blocking the view of the new visitor signage for City Hall.

STAFF COMMENTS: The Department of Public Works recommends adding the parking restriction of No Parking on this section of North 9th Street for the safety reasons listed above.

ACTION REQUESTED: Motion to recommend the Common Council adopt General Ordinance 20-21-22 creating a no parking zone on the east side of North 9th Street north of Center Avenue.

ATTACHMENTS:

I. Gen. Ord. 20-21-22

CITY OF SHEBOYGAN

REQUEST FOR PUBLIC WORKS COMMITTEE CONSIDERATION

ITEM DESCRIPTION: An ordinance creating parking limits so as to add a two-hour parking limit between 8:00 a.m. and 5:00 p.m. Monday through Saturday for four parking stalls in South Pier Parking Lot A.

REPORT PREPARED BY: Ryan Sazama, City Engineer

REPORT DATE: August 19, 2021 **MEETING DATE:** August 24, 2021

FISCAL SUMMARY:

Budget Line Item:	N/A
Budget Summary:	N/A
Budget Expenditure:	N/A
Budgeted Revenue:	N/A

STATUTORY REFERENCE:

Wisconsin Statues:	N/A
Municipal Code:	N/A

BACKGROUND / ANALYSIS: The existing City owned parking lot (Lot A) which is located at South Pier currently has 34 parking stalls and none of the stalls per City ordinance have any type of parking time limit restrictions. For a majority of the day the parking lot is used by the fishing community due to its close proximity to the fish cleaning station. The proposed four parking stalls with the two-hour parking limit will allow parking for the local retail businesses located in this area of South Pier.

STAFF COMMENTS: City staff supports creating four parking stalls with a two-hour parking limit to alleviate parking concerns for the local retail businesses.

ACTION REQUESTED: Motion to recommend the Common Council adopt Gen. Ord. No. 21-21-22 creating parking limits so as to add a two-hour parking limit between 8:00 a.m. and 5:00 p.m. Monday through Saturday for four parking stalls in South Pier Parking Lot A.

ATTACHMENTS:

I. Gen. Ord. No. 21-21-22

X

7.4

Gen. Ord. No. 21 - 21 - 22. By Alderpersons Dekker and Perrella.
August 16, 2021.

AN ORDINANCE creating parking limits so as to add a two-hour parking limit between 8:00 a.m. and 5:00 p.m. Monday through Saturday for four parking stalls in South Pier Parking Lot A.

THE COMMON COUNCIL OF THE CITY OF SHEBOYGAN DO ORDAIN AS FOLLOWS:

Section 1. Pursuant to Section 118-126 of the Municipal Code entitled "Prohibitions and Restrictions Authorized," parking in the four parking stalls in the southeast corner of South Pier Parking Lot A shall be limited to two hours between 8:00 a.m. and 5:00 p.m. Monday through Saturday.

Section 2. The Department of Public Works and the Police Department are hereby authorized and directed to install the signs to give notification of the aforementioned parking restriction.

Section 3. All ordinances or parts thereof in conflict with the provisions of this ordinance are hereby repealed to the extent of such conflict, and this ordinance shall be in effect from and after its passage and publication.

Dean Dekker

Public Works

I HEREBY CERTIFY that the foregoing Ordinance was duly passed by the Common Council of the City of Sheboygan, Wisconsin, on the _____ day of _____, 20____.

Dated _____ 20____. _____, City Clerk

Approved _____ 20____. _____, Mayor