

Wednesday, August 27, 2025**6:00 PM****McFarland Municipal Center**
5915 Milwaukee St, McFarland
Community Room

AGENDA

The public may attend in-person or remotely through the Zoom webinar or telephone options listed below. *Please Note: Virtual attendance is offered as a convenience, but technical difficulties beyond the Village's control may prevent or limit its availability at any meeting. The public is encouraged to attend the meeting in person to assure full access to the proceedings.*

PLEASE CLICK THE LINK BELOW TO JOIN THE ZOOM WEBINAR:

<https://us02web.zoom.us/j/83788865413>

Or by Telephone: +1 (312) 626-6799

Webinar ID: 837 8886 5413

Press *9 to raise/lower hand. Press *6 to mute/unmute.

1. CALL TO ORDER, ROLL CALL.
2. PUBLIC APPEARANCES.
 - a. This is an opportunity for members of the public to address the Public Works and Utilities Committee for items that are not on the agenda. Please remember this is a hybrid meeting conducted in person and through the Zoom online meeting platform. Meeting attendees wishing to address the Committee about items not on the agenda may do so at this time. Zoom attendees should type their name and address in the Question and Answer feature within the Zoom online meeting platform at this time. Members of the public who are present in person and wish to address the Committee should fill out a public comment form and turn into the meeting chairperson. When you are called upon to speak, state your name, address, and provide your comments to the Committee for their consideration. Please adhere to the 3-minute time limit. Additionally, you may send your public comments to public.works@mcfarland.wi.us to be included as part of the meeting.

Members of the public may also speak during their selected agenda item as they designate on the public comment form or in the Question and Answer feature on Zoom.
3. APPROVAL OF MINUTES.
 - a. Motion to approve the minutes of the July 28, 2025 Public Works & Utilities Committee meeting.
4. BUSINESS.
 - a. Introduction and discussion regarding the Well 5 project and conventional water rate case
 - b. Discussion and action to make a recommendation to the Village Board regarding an award of contract for yard waste and drop-off site services.
 - c. Discussion and action to make a recommendation to the Village Board regarding issuing a Request for Proposals for installation of a photovoltaic system for Lift Station #2.
5. SCHEDULE NEXT MEETING DATE.
 - a. Wednesday, September 17, 2025, at 6:00 p.m.

6. ADJOURNMENT.

Any person who has a qualifying disability as defined by the Americans with Disabilities Act that requires the meeting or materials at the meeting to be in an accessible location or format should contact the McFarland Municipal Center at (608)838-3153, 5915 Milwaukee Street, McFarland, Wisconsin, or village.clerk@mcfarland.wi.us by 2:00 p.m. at least 5 business days prior to the meeting so that any necessary arrangements can be made to accommodate each request. If the meeting or request is less than 5 business days from the meeting, requests for accommodations may still be made and reasonable efforts will be made to accommodate each request.

VILLAGE OF MCFARLAND
Public Works & Utilities Committee Minutes

Monday, July 28, 2025 - 6:00 PM

1. CALL TO ORDER, ROLL CALL.

Village President Brassington called the regular meeting of the Public Works & Utilities Committee to order at 6:00 PM in the community room of the Municipal Center. This meeting was also held via Zoom webinar.

Members present: Village President Brassington, Trustee Prill, Pauline Boness, Chris Fredrick, Zach Freeman, Eric Kindschi (arrived at 6:02 pm), Timothy Goers

Members not present: n/a

Staff Present: Public Works Director Lee Igl, Assistant to the Public Works Director Aimee Irwin.

2. PUBLIC APPEARANCES.

- a. *This is an opportunity for members of the public to address the Public Works and Utilities Committee for items that are not on the agenda. Please remember this is a hybrid meeting conducted in person and through the Zoom online meeting platform. Meeting attendees wishing to address the Committee about items not on the agenda may do so at this time. Zoom attendees should type their name and address in the Question and Answer feature within the Zoom online meeting platform at this time. Members of the public who are present in person and wish to address the Committee should fill out a public comment form and turn into the meeting chairperson. When you are called upon to speak, state your name, address, and provide your comments to the Committee for their consideration. Please adhere to the 3-minute time limit. Additionally, you may send your public comments to public.works@mcfarland.wi.us to be included as part of the meeting.*

Members of the public may also speak during their selected agenda item as they designate on the public comment form or in the Question and Answer feature on Zoom.

None.

3. APPROVAL OF MINUTES.

- a. *Motion to approve the minutes of the June 23, 2025, Public Works & Utilities Committee meeting.*

Motion by President Brassington, seconded by Trustee Prill, to approve the minutes of the June 23, 2025, Public Works & Utilities Committee meeting. Motion carries 5-0-1, with Fredrick abstaining.

4. BUSINESS.

- a. *Discussion and action to make a recommendation to the Village Board regarding a proposal for 2025 sidewalk inventory and maintenance.*

Igl provided an overview of the proposal received from Safe Step for 2025 sidewalk maintenance.

- Boness inquired if grinding occurred last year. Igl responded that both grinding and replacements occurred last year.
- Trustee Prill asked what the red pins identified in the proposal. Igl stated these pins show priority one locations.
- Fredrick asked if there would be a way to assure that Safe Step would not take advantage of the funds available. Igl stated he will review Safe Step's proposed locations prior to any work occurring.
- President Brassington asked if it was common to only receive one proposal. Igl explained that over the years there has been very little interest in this type of work.
- Fredrick asked if other contractors were unavailable due to their other commitments. Igl explained he began exploring contractors last fall and, overall, there was a lack of commitment by the contractors rather than availability.
- Goers asked if the budget amount was identified when seeking proposals. Igl stated this information was not included.
- Fredrick suggested more competitive bidding in the future for this type of work.

Motion by Fredrick, seconded by President Brassington, to recommend approval to the Village Board regarding a proposal from Safe Step for 2025 sidewalk maintenance, not to exceed \$100,000. Motion carries 7 - 0 - 0.

b. Discussion and action to make a recommendation to the Village Board regarding the proposed McFarland 2026-2030 Capital Improvement Plan.

Igl reviewed Appendix C, which is the Paving and Utility Plan, focusing on projects planned for 2026.

- President Brassington asked how many hydrants are not operable. Igl responded that about five are in need of repairs.
- Fredrick asked if projects such as Dale Curtain Rd are related to the Highway 51 project. Igl responded that some of the projects identified are being completed in preparation for Highway 51 construction.
- Fredrick shared his concerns related to the amount of debt that the village had taken on and suggested being conscious of the debt going forward. President Brassington responded that the finance committee is aware of the amount of debt and discussions have occurred. Trustee Prill added that the rising debt had been noticed over the last few years.

Motion by President Brassington, seconded by Boness, to recommend approval to the Village Board regarding the 2026-2030 Capital Improvement Plan. Motion carries 7 - 0 - 0.

c. Discussion and action to make a recommendation to the Village Board regarding Resolution #2025-21, a resolution to finalize the special assessment for the 2021 East Side Sanitary Sewer Extension Assessment Report.

President Brassington stated that this business item was not ready for committee review.

Motion by President Brassington, seconded by Fredrick, to table Resolution #2025-21, a resolution to finalize the special assessment for the 2021 East Side Sanitary Sewer Extension Assessment Report until the item is ready for review. Motion carries 7 - 0 - 0.

5. SCHEDULE NEXT MEETING DATE.

a. Wednesday, August 27, 2025, at 6:00 p.m.

6. ADJOURNMENT.

Motion by Fredrick, seconded by Boness, to adjourn at 6:27 PM.

Pursuant to law, written notice of this meeting was given to the public and posted on the public bulletin board in accordance with Open Meetings Law.

Respectfully submitted,
Aimee Irwin
Assistant to the Public Works Director

McFarland
SUMMARY SHEET

MEETING DATE: Wednesday, August 27, 2025

SECTION: Business

DEPARTMENT: Public Works

CONTACT: Matt Schuenke, Village Administrator, Lee Igl, Public Works Director

AGENDA ITEM: Introduction and discussion regarding the Well 5 project and conventional water rate case

PREVIOUS ACTION:

Well 5:

The Public Works & Utilities Committee recommended approval of a proposal from Town & Country Engineering for design and bidding services for Well #5 during their April 28, 2025, meeting.

The Village Board approved the proposal from Town & Country Engineering during their May 13, 2025, meeting.

Conventional water rate case:

The Public Works & Utilities Committee recommended approval of a proposal from Baker Tilly to conduct a conventional rate case for the water utility during their March 24, 2025, meeting.

The Village Board approved the proposal from Baker Tilly during their April 8, 2025, meeting.

ISSUE SUMMARY:

When the Park View Estates neighborhood was created, the Village secured land to accommodate a future drinking water well. The Village-owned Lots 87 & 88 in the subdivision for the well site. Continued growth within the village has led to the need to construct the well in the near future. The Wisconsin Department of Natural Resources permitted the site for the new well in 2007, and the Village's capital plan calls for constructing the well and well house in 2026. The site of the well was relocated to Outlot 10 and additional square footage was obtained from the School District in order to accommodate the well site. Lots 87 & 88 were purchased by Urso to develop two new single-family homes. The adjustment of lots was discussed during the July 22, 2024, committee meeting, with the committee recommending approval of these adjustments. A test well was completed to confirm the characteristics of the aquifer and area geology in 2024 at the newly identified well site.

Town & Country Engineering completed a Public Facilities Needs Assessment in February 2023, which evaluates the water utility's current facilities, identifies and evaluates existing deficiencies, and evaluates future needs. The assessment concluded that the existing wells were approaching their combined maximum pumping capacity. The existing wells were also found to be in need of upgrades to meet current code requirements, extend the life of the facility, and provide reliable back-up generator power in the event of a power failure. Due to these conclusions, discussion began about the construction of a new well. Discussions also occurred



regarding the possible retirement of Well 1 due to the well being the oldest and lowest capacity well in the Village, along with the cost of required upgrades.

The construction of a new well requires several approvals along with approval from the committee and Village Board.

- A construction authorization was required to be filed with the Public Service Commission (PSC), which regulates the water utility.
- It was decided to pursue a low-interest loan through the state's Safe Drinking Water program to be paid back over time through utility revenues.
- An application for a new facility was sent to the Wisconsin DNR.

In conjunction with this project, a conventional rate case would be required in order to develop the water utility rates that would pay back the low-interest loan for the project. A proposal from Baker Tilly was presented and approved for recommendation by the Public Works & Utilities in March 2025 and approval by the Village Board in April 2025. Baker Tilly and village staff correlated to provide the required data for the rate case and conclusions are enclosed from Baker Tilly. Due to the type of project, a two-step increase is recommended. The first step increase could be put into effect in early 2026 and the second increase would occur after the well is put into service, around September 2027. The cumulative increase in water rates, as calculated by Baker Tilly, would be 46.44%. If the committee and Village Board recommend approval of the Well 5 project, the rate case will be filed with the Public Service Commission (PSC), who will have the final approval on the water rate design. Additional steps that will need to occur as part of the rate case include review by the PSC, reviewing rate design proposals from the PSC, a public hearing hosted by the PSC, and determining the date for the first phase rate increase.

As part of the Communications Plan around Well No. 5 Project and Water Rate Case, a [blog](#) post has been created and published to provide additional details.

The following are the next steps in the process of the project and rate case:

- Public Information Meeting on September 3 beginning at 6:00 PM - this meeting is for members of the public for a presentation and Q&A session provided by the Village, Town & Country Engineering, and Baker Tilly. This meeting will also be held via Zoom webinar.
- Village Board meeting on September 9 - the board will be introduced to the proposed project and water rate case. No action will be taken on this item during this meeting.
- Public Works & Utilities Committee meeting on September 17 - the committee will resume and conclude their discussion and may make a recommendation on this item to the Village Board.
- Village Board meeting on October 14 - the board will resume and conclude their discussion and may vote on whether to advance the proposed project and submittal of the water rate case



FINANCIAL/BUDGET IMPACT:

The total estimated cost of Well No. 5 is \$4.2 million. The primary proposed funding is a low-interest loan through the state's Safe Drinking Water program, which will be paid back through utility revenues. In order to bring in enough revenue, a two-phase increase to the Village's water utility rates would be required. The first increase is calculated to raise rates by 26.9% or an estimated increase of \$9.94 per month for residential customers. The second increase is calculated to raise rates by an additional 19.54%. The cumulative increase would estimate an increase of approximately \$16.94 per month or \$33.88 per bimonthly billing cycle.

VILLAGE PLAN REFERENCE:

[2023 Public Facilities Needs Assessment](#)

[2025-2029 Capital Improvement Program](#)

ORDINANCE REFERENCE:

None.

BOARD, COMMISSION OR COMMITTEE RECOMMENDATION:

This item is for discussion only.

ATTACHMENTS:

1. McFarland Water Rate Study Handout

Village of McFarland Water Utility
Water Rate Study - Test Year 2026

	2024 Rate Order	Increase 2024-2026	TY 26 Phase I	Increase Well Project	TY 26 Phase II
Revenue Requirement					
Operation & Maintenance Expenses	\$ 897,345	\$ 101,686	\$ 999,031	\$ -	\$ 999,031
Depreciation expense	322,671	64,379	387,050	114,325	501,375
Taxes (including PILOT)	300,998	119,993	420,991	61,435	482,426
Return on Rate Base	593,883	178,406	772,289	185,235	957,524
Total	2,114,897		2,579,361		2,940,356
Operating Revenues - at 2024 rates	2,114,897		2,082,367		2,082,367
Increase needed	n/a		27%	20%	46%
Rate Base					
Utility Plant in Service	13,137,998	2,881,755	16,019,753	2,964,100	18,983,853
Materials & Supplies	19,450	-	19,450	-	19,450
Accumulated Depreciation	(3,878,023)	(279,810)	(4,157,833)	(114,325)	(4,272,158)
Total	9,279,425		11,881,370		14,731,145
<i>Rate of return on rate base</i>	6.4%		6.5%		6.5%
Average Residential Bill - Estimated					
Bi-monthly bill including fire protection	\$ 73.65		\$ 93.54		\$ 107.53
<i>Increase over current rates - estimated</i>			\$ 19.89		\$ 33.88
<i>Monthly increase in water costs</i>			\$ 9.94		\$ 16.94

Notes:

- O&M increased at 5.5% per year which is in line with inflation, power, chemical and labor costs in the industry
- O&M increase is 22% of the phase I increase and 12% of the overall increase
- Remaining increase is the carrying costs (depreciation, PILOT and return on rate base) related to ongoing capital improvements
- Utility plant in service increased 22% from 2024-2026 and 44% when the Well #5 project is included (phase II)
- Well #5 project is needed to provide additional capacity as well as allow flexibility with future Well #1 decisions
- Well #5 is to be funded with Safe Drinking Water Loan but that requires rates in place by June 2026 to close on loan

**VILLAGE OF
McFarland**
SUMMARY SHEET

MEETING DATE: Wednesday, August 27, 2025

SECTION: Business

DEPARTMENT: Public Works

CONTACT: Lee Igl, Public Works Director, Aimee Irwin, Assistant to the Public Works Director

AGENDA ITEM: Discussion and action to make a recommendation to the Village Board regarding an award of contract for yard waste and drop-off site services.

PREVIOUS ACTION:

None.

ISSUE SUMMARY:

The yard waste and drop-off site contract with Barnes expires on December 31, 2025. The committee reviewed and approved a Request for Proposal (RFP) during their meeting on June 23, 2025. Following approval by the Village Board on July 8th, staff posted the RFP on the village website and emailed the RFP to four contractors. Of the four contractors that were emailed, staff received two proposals. The proposals are enclosed from Barnes Inc. and Pellitteri Waste Systems Inc. Based on the proposals received, staff recommend awarding the contract to Barnes Inc. of Madison for a three-year term. Barnes as our current provider, has done well in completing the work, in a timely manner and has outstanding response and communication to inquiries and needs.

FINANCIAL/BUDGET IMPACT:

Funds to operate the yard waste and provide curbside brush chipping services are included in the storm water and solid waste budget each year. Yard waste collection has a 3% escalator for years 2 and 3 and a 1% escalator for composite and holiday tree clean-up.

VILLAGE PLAN REFERENCE:

None.

ORDINANCE REFERENCE:

None.

BOARD, COMMISSION OR COMMITTEE RECOMMENDATION:

Recommended motion:

Motion, second to recommend approval to the Village Board for the award of contract to Barnes Inc. of Madison for yard waste and drop-off site services for a three-year term.

ATTACHMENTS:



1. Barnes Inc. rec. 07.29.2025
2. Pellitteri rec. 08.06.2025
3. Comparison
4. Barnes RFP Cost Breakdown
5. Pellitteri RFP Cost Breakdown

VILLAGE OF
McFarland
Request For Proposals

Brush and Yard Waste

Bin Maintenance and Curbside Brush Chipping

RFP Issuance Date: July 18, 2025

RFP Due Date: August 6th, 2025

Please Submit to:

Public Works Director, Lee Igl
public.works@mcfarland.wi.us
Subject: Brush and Yard Waste

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SECTION 1

Purpose

The purpose and intent of this Request for Proposal (RFP) is to solicit proposals from qualified Contractor to provide high quality brush and yard waste collection and disposal services for the Village of McFarland. The proposal is required to meet the scope of services detailed within.

The Village is requesting proposals for both a one year and three-year contract. Because of the uncertainty over available funding, proposals are also being sought on three different levels of curbside and drop-off site services.

SECTION 2

History and Background

A. **General** – The Village is located adjacent to the southeast side of the City of Madison in Dane County. The current population of McFarland is estimated at 9,676 residents. The Village is serviced by USH Highway 51 serving as the main connection point between the cities of Madison and Stoughton. The Village has 68 permanent employees supplemented by seasonal, temporary, and part-time employees when necessary. The Village's primary departments include Administration, Community & Economic Development, Communications/Technology, Fire and Rescue, Library, Public Works (including Parks and Utilities), Police, and Senior Outreach. More information about the Village is available at www.mcfarland.wi.us.

SECTION 3

Scope of Work

Specifications of brush and yard waste to be collected:

A. Brush Chipping

- a. Brush pieces will be no longer than ten (10') feet, no shorter than six (6") inches, and no greater than six (6") inches in diameter
- b. The cut ends of the brush pieces will be placed parallel to the curb and stacked in neat piles with the cut ends pointed in the same direction as traffic.
- c. Material must be free of all waste that may clog chipping equipment

B. Yard Waste Pick-up

- a. Yard waste materials to be collected include leaves, lawn clippings, pine needles, house plants, and other non-woody organic matter.
- b. Only yard waste materials placed in open bags (not to exceed 50 gallons in size) bearing an official pre-paid Village sticker will be collected.
- c. Material must be clean of debris or it will be left on site

C. Drop-off Site

- a. Brush must be six (6") inches in diameter or smaller and no longer than ten (10') feet.
- b. Material must be free of waste that may clog the chipping equipment
- c. Loads may be rejected if deemed unclean by Contractor's staff.

D. Holiday Tree Drop-off Site

- a. Residents drop-off holiday trees at the drop-off site between a designated date range.
- b. Contractor to clear drop-off site after date range.
- c. Materials may be rejected if deemed unable to be chipped.

SECTION 4

Request for Proposals

A. Option #1 is a one-year term for 2026.

Provide hourly costs (equipment and personnel) for Yard Waste Collection and Brush Collection and lump sum pricing for Drop Off Site services below:

YARD WASTE COLLECTION

Yard waste collection pricing for curbside pick-up.

Pick-ups to include:

- One Village-wide spring pick-up during the week of April 20, 2026.
- One Village-wide summer pick-up during the week of July 15, 2026
- One Village-wide fall pick-up during the week of November 16, 2026.

2026: \$95.00 per hour/person including travel time.

BRUSH COLLECTION

Brush collection pricing for curbside pick-up.

Pick-ups to include:

- One spring pick-up of three (3) zones starting the week of April 27, 2026
- One summer pick-up of three (3) zones starting the week of July 20, 2026
- One fall pick-up of three (3) zones starting the week of November 9, 2026.

2026: \$95.00 per hour/person including travel time.

DROP OFF SITE

Brush and yard waste collection at the Village's drop off site located at 5115 Terminal Drive McFarland, Wisconsin. Hours of operation are 7:00 am to 7:00 pm, seven days a week. Service the site as needed starting on or before April 1, 2026, and closing on or about December 1, 2026. COST: \$103,385.00. Requested service between December 1st – April 1st will be done at hourly rate stated above.

HOLIDAY TREE DROP OFF SITE

Holiday tree collection at the Village's drop off site located at 5115 Terminal Drive McFarland, Wisconsin. Service the site after February 1, 2026. COST: \$4,828.00

Barnes, Inc.
6433 Nesbitt Rd.
Madison, WI 53719

ADDITIONAL NEEDS AND/OR STORM DAMAGE

Mutually agreed upon additional needs of the Village on an as needed basis and/or for assistance with storm damage clean-up. Pricing will be determined at time of request.

Barnes, Inc.
6433 Nesbitt Rd.
Madison, WI 53719

B. Option #2 is a three-year term for 2026, 2027, and 2028.

Provide hourly costs (equipment and personnel) for Yard Waste Collection and Brush Collection and lump sum pricing for Drop Off Site services below:

YARD WASTE COLLECTION

Yard waste collection pricing for curbside pick-up.

Pick-ups to include:

- One Village-wide spring pick-up during the week of April 20, 2026.
- One Village-wide spring pick-up during the week of April 12, 2027.
- One Village-wide spring pick-up during the week of April 17, 2028.
- One Village-wide summer pick-up during the week of July 13, 2026
- One Village-wide summer pick-up during the week of July 12, 2027
- One village-wide summer pick-up during the week of July 10, 2028
- One Village-wide fall pick-up during the week of November 16, 2026
- One Village-wide fall pick-up during the week of November 15, 2027
- One Village-wide fall pick-up during the week of November 13, 2028

2026: \$95.00 per hour/person including travel time.

2027: \$97.85 per hour/person including travel time.

2028: \$100.79 per hour/person including travel time

BRUSH COLLECTION

Brush collection pricing for curbside pick-up.

Pick-ups to include:

- One spring pick-up of three (3) zones starting the week of April 27, 2026
- One spring pick-up of three (3) zones starting the week of April 19, 2027
- One spring pick-up of three (3) zones starting the week of April 24, 2028
- One summer pick-up of three (3) zones starting the week of July 20, 2026
- One summer pick-up of three (3) zones starting the week of July 19, 2027
- One summer pick-up of three (3) zones starting the week of July 17, 2028
- One fall pick-up of three (3) zones starting the week of November 9, 2026.
- One fall pick-up of three (3) zones starting the week of November 1, 2027.
- One fall pick-up of three (3) zones starting the week of November 6, 2028.

2026: \$95.00 per hour/person including travel time.

2027: \$97.85 per hour/person including travel time.

2028: \$100.79 per hour/person including travel time.

DROP OFF SITE

Brush and yard waste collection at the Village's drop off site located at 5115 Terminal Drive McFarland, Wisconsin. Hours of operation are 7:00 am to 7:00 pm, seven days a week. Service the site as needed starting on or before April 1, 2026, 2027, and 2028, and closing on or about December 1, 2026, 2027, and 2028.

2026: \$103,385.00

2027: \$106,486.55

2028: \$109,681.14

HOLIDAY TREE DROP OFF SITE

Holiday tree collection at the Village's drop off site located at 5115 Terminal Drive McFarland, Wisconsin. Service the site after February 1, 2026, 2027, and 2028.

2026: \$4,828.00

2027: \$4,964.60

2028: \$5,113.54

ADDITIONAL NEEDS AND/OR STORM DAMAGE

Mutually agreed upon additional needs of the Village on an as needed basis and/or for assistance with storm damage clean-up. Pricing will be determined at time of request.

SECTION 5

RFP Submittal Requirements

A. Qualification Details consisting of:

- i. **Cover Letter** – include details about the company and experience performing similar scope of services within the last ten years.
- iii. **References** – Provide three references for which the applicant has provided similar services within the last ten years. Include the company name, name, email, and telephone number of the contact person and a description of services provided to that contact.

B. Cost and Labor Hours Proposal consisting of:

- i. **Cost** – Hourly cost for equipment and personnel to perform Yard Waste and Brush Collection. Lump Sum price with all labor and equipment for service at the Drop Off Site. Provide this for Option #1 (one-year) and Option #2 (three-year).
- ii. **Estimated Labor Hours** – A summary of estimated labor hours for each of the following: Yard Waste Collection, Brush Collection and Drop Off Site services.

E. General requirements consisting of:

- i. **Due Date** – *Responses to the RFP must be received by August 6, 2025.* Proposals received late, for any reason, shall not be accepted.
- ii. **Format & Location** – Prospective contractors shall provide one (1) electronic PDF copy. RFP submittals shall be emailed to Lee Igl at public.works@mcfarland.wi.us, subject: Brush and Yard Waste. Alternatively, consultants may submit an electronic PDF copy via a USB flash drive to the Village of McFarland-Brush and Yard Waste RFP, Attn: Public Works Department, 5915 Milwaukee Street, PO Box 110, McFarland, WI 53558.

SECTION 6

Method & Timeline of Selection

A. Village Administrator, Streets and Utilities Superintendent, and Public Works Director will conduct the evaluation of proposals submitted. This will comprise the RFP Evaluation Team. They will make a recommendation to the Public Works & Utilities Committee for action. The following method and timeline will be utilized in order to select the desired proposal:

- i. **July 18, 2025** – RFP Issuance Date.
- ii. **August 6, 2025** – RFP Due Date.
- iii. **August 6-8, 2025** – During this timeframe, the Evaluation Team will review the proposals and decide which, in its sole discretion, it chooses to further consider via an in-person or virtual interview.
- iv. **August 27, 2025** – The Evaluation Team will make its recommendation to the Public Works & Utilities Committee for their consideration to award a proposal.
- v. **September 9, 2025**–The Village Board will take final action to consider acceptance of the recommended proposal and enter into a contract for this purpose.
- vi. **January 1, 2026** – Contract Start Date.

SECTION 7 Terms and Conditions

Each proposal will be reviewed to determine if it meets the submittal requirements contained within this RFP. Failure to meet the requirements for the RFP can be cause for rejection of the proposal. The Village may reject any proposal if it is conditional, incomplete, contains irregularities, or if in the sole discretion of the Village not considered in our best interest. The Village may waive an immaterial deviation in a proposal, but this shall in no way modify the proposal document or excuse the Contractor from compliance with the contract requirements if the Contractor is awarded a contract. A prospective Contractor may be requested for an interview at the sole discretion of the Village. The recommended Contractor will be selected and approved by the Village Board.

The Village uses a standard template contract for such services and will require its utilization for this project. A copy of the standard template can be provided for review upon request and will be updated to adapt to the proposal ultimately selected.

There is no expressed or implied obligation for the Village to reimburse firms for any expenses incurred in preparing proposals in response to this request. Materials submitted by respondents are subject to public inspection under Wisconsin law. Any language purporting to render the entire proposal confidential or proprietary will be ineffective and will be disregarded.

The Village will not discriminate against individuals due to sex, race, religion, creed, color, national origin, age, disability, sexual orientation, ancestry, marital status, arrest or conviction record, military service, or any other characteristics protected by law. This applies to all Consultants submitting proposals to this project and their sub-consultants.

The Village reserves the right to retain all proposals submitted, and to use any idea in a proposal, regardless of whether the proposal was selected. Submission of a proposal indicates acceptance by the firm of the conditions contained in the RFP, unless clearly and specifically noted in the proposal submitted and confirmed in the contract between the Village and the Consultant.

All property rights, including publication rights of all reports produced by the selected firm in connection with services performed under this agreement shall be vested in the Village.

The Village reserves the right to reject any or all proposals submitted.



July 29, 2025

Village of McFarland
5915 Milwaukee St.
McFarland, WI 53558
Attn: Lee Igl

Lee,

Please see attached our RFP responses for the Village of McFarland Brush and Yard Waste services. The entire team here at Barnes greatly appreciates this opportunity to provide pricing.

Barnes, Inc. has been in business since 1981 providing year-round residential and commercial landscape and snow removal services. We also have been providing municipal brush and yard waste collection services for multiple municipalities, including the City of Monona and the Town of Burke for multiple seasons, as well as continuing services for the Village of McFarland.

Our estimated approximate annual labor hours per the scope of services during this next contract term (up to 3 years) for the Yard Waste Collection, Brush Collection and Drop Off Site Services are as follows:

- Yard Waste Collection: 40 hours total annually.
- Brush Collection: 450 hours annually.
- Drop Off Site Services: 1,500 hours annually.

The lump sum drop off site price increases and hourly rate increases for this next contract term reflect inflation rates since 2022, as well as overall increases in our labor wages, materials, equipment and additional overhead costs as we enter the next contract term.

Please let me know if you have any questions about our RFP responses. The Barnes team looks forward to continuing services for the Village of McFarland.

Sincerely,

A handwritten signature in black ink, appearing to read "Mike Strezlec", is written over a light blue horizontal line.

Mike Strezlec
Commercial Lead Account Manager
Barnes, Inc.

(608) 845-3230 www.barnesinc.net (608) 845-6339 Fax



6433 Nesbitt Road
Madison, WI 53719
608-845-3230
barnesinc@barnesinc.net

REFERENCES

City of Monona
5211 Schluter Rd
Monona, WI
Attn: Dan Stephany
608-222-2525
dstephany@ci.monona.wi.us
City Wide Brush Removal Services

Town of Burke
5365 Reiner Rd
Madison, WI
Attn: PJ Lentz
608-825-8420
Clerk@townofburke.com
City Wide Brush Removal Services

Artis REIT Commercial Properties
8215 Greenway Blvd.
Madison, WI
Attn: Stephen Murphy
Vice President – Real Estate - Madison
608-830-6302
smurphy@artisreit.com

**Full-service landscape maintenance and snow removal services for approximately
75 properties since 1998.**



7035 RAYWOOD ROAD
P.O. BOX 259426
MADISON, WI 53725
P: 608.257.4285 | F: 608.257.1179

PELLITTERI.COM



Village of McFarland
Attn: Lee Igl
Public Works Director
McFarland, WI 53558

August 6th, 2025

Dear Lee,

Thank you for considering Pellitteri Waste Systems, Inc. to be the Village of McFarland's new service provider for Brush and Yard Waste bin maintenance site and curbside collection. We've been honored to be able to provide curbside waste and recycling collection services for your community for the past decade and truly value our partnership.

Being a family-owned and operated company for over 45 years allows us to offer communities a personal, family-to-family approach. We provide a courteous, knowledgeable, fully staffed customer service team to ensure residents and Village staff can talk with live staff, along with Owners who live right here in Dane County.

Pellitteri has been offering municipalities curbside brush and yard waste collection for almost two decades. We have been providing the City of Fitchburg both brush and yard waste services for over 17 years now, consisting of (14) brush and (5) yard waste collections per year! We offer these services for communities regardless of size, such as the Town of Burke, who we've been servicing since our contract started in 2022. The City of Sun Prairie is the largest community we serve, and we have been collecting yard waste for those 11,000 homes for over a decade now.

Our track record of success, paired with a dedicated, fully staffed customer service team, are just a few things that distinguish us from other vendors, and it's something we work very hard to provide. We look forward to showing the Village of McFarland how our continuing commitment to quality, safety, and professionalism truly does make Pellitteri the trusted source for collection services in the area.

We greatly appreciate our partnership with the Village, and it would be our privilege to be able to provide the brush and yard waste collection services moving forward. Thank you for your time, as well as your consideration.

Sincerely,

Danielle Pellitteri
Vice President
Pellitteri Waste Systems, Inc.



Todd C. Bollenbach
Municipal Account Executive
Direct: (608) 257-6232 x331
Cell: (608) 225-7843
toddb@pellitteri.com



RFP Response for:
Brush and Yard Waste
Bin Maintenance and Curbside Brush Chipping



August 6th, 2025

Attn: Lee Igl
Public Works Director



Village of McFarland Yard Waste and Brush Collection RFP: Pellitteri response

Thank you for the opportunity to bid on the Village of McFarland's Brush and Yard Waste Services. These are services we have long offered the communities we partner with, and we welcome the opportunity to provide the Village of McFarland a customized, creative solution to meet the Village's needs.

GENERAL INFORMATION:

- Pellitteri and the Village of McFarland would agree on service dates/weeks prior to the following year of service. The exact weeks outlined on the RFP schedule can not be guaranteed.
- Collection windows are "weather permitting," so collection dates are subject to change.
- We would ask for a two-week window to complete collection, as timing may overlap with other communities and as mentioned above... weather conditions can affect collection.
- Our pricing reflects Pellitteri hauling yard waste and brush collected to Purple Cow Organics. Any disposal increases from Purple Cow will be passed along to the Village, with Pellitteri providing written notification from Purple Cow should that occur.
- Services will continually be offered, provided Pellitteri is still McFarland's waste and recycling collection service provider.
- Any changes made by Purple Cow Organics will be communicated to the Village in a timely manner.
- Any fees assessed to the contractor based on contaminated material from residents will be passed along to the Village.
- The Village of McFarland will give Pellitteri trucks access to any household covered under this contract and will not hold Pellitteri responsible for any damage to roads required to be used for servicing households covered under this contract. The Village of McFarland will secure and provide indemnification to Pellitteri from damage to roadways from normal wear and tear in all private roads, alleys or driveways as well as any abutting landscape.
- Brush and yardwaste must be free of sod, plastics, metal, glass, dirt and woodchips, with no bagged material accepted at the drop-off site.
- Pricing is subject to Pellitteri being awarded both curbside brush and yard waste collection, as well as drop-off site maintenance.
- This proposal in its entirety will be made part of the agreed upon contract if Pellitteri is the successful bidder.

**** Please note: Pellitteri will not be grinding/chipping the brush onsite, as we will be using rear-load compactor trucks that will hold more weight/volume, which will result in less hours to complete this service verses an on-site chipping process.**



Village of McFarland Yard Waste and Brush Collection RFP: Pellitteri response continued...

SECTION 3

Scope of Work

A. Brush Preparation Guidelines

- Brush pieces will be no longer than 5' in length.
- Maximum diameter for brush is 6" wide.
- Minimum diameter for brush is ¼" wide.
- Brush must be at the curb for collection and not the length of the driveway.
- Brush can be placed either parallel to the street with the cut ends pointed the same way as traffic or may be placed perpendicular to the street with the cut ends pointed towards the street.
- Branches less than 1/4" wide and less than 6" long are considered yard waste and should be disposed of as such.
- Residents must place all material curbside by 6:00am on the Monday of the collection week. Contractor will make one pass and not go back through the route again, unless verified as a missed collection.

B. Yard Waste Preparation Guidelines

- Yard waste must be placed in an open bag, not to exceed 50-gallons in size.
- Non-compostable bags will be returned to resident provided a note is left.
- Bags/containers of yard waste must be placed at the curb or the end of a driveway (driveway must be clear of ice, snow or any other obstruction to be collected).
- No loose material in cardboard boxes will be collected.
- Yard waste materials collected include the following: grass clippings, leaves, needles, plants, flowers, weeds, garden waste, plant matter, hay/straw and other non-woody organic matter.
- Residents must place all material curbside by 6:00am on the Monday of the collection week. Contractor will make one pass and not go back through the route again, unless verified as a missed collection.

C. Drop-Off Site Guidelines

- The same guidelines outlined above for yard waste and brush apply to items left at the drop-off site as well.
- Pellitteri will service the dumpsters at the drop-off site Monday-Friday.

D. Holiday Tree Drop-Off Site Guidelines

- Trees must be free of all decorations, lights and wire.

Please note: All brush and yardwaste must be free of sod, rocks, plastic, metal, glass, animal waste, dirt or woodchips. Bagged materials not accepted at the drop-off site.



Village of McFarland Yard Waste and Brush Collection RFP: Pellitteri Response continued...

SECTION 4

A. Option #1 (one year term for 2026)

YARD WASTE COLLECTION

- Pricing will be billed on an hourly basis.
- Hourly cost for curbside yard waste collection is **\$185/hour**.
- Hourly cost is based on a portal-to-portal timeframe (start of collection in McFarland until last load is emptied at Purple Cow).

Estimated Labor Hours: Based on other communities we service, we estimate that it will take between 35-40 hours to complete the yard waste collection. The spring and summer tend to be on the lower side, whereas the fall leaf cleanup tends to be on the longer end of things.

BRUSH COLLECTION

- Pricing and information is the **same as yard waste collection**
- Pellitteri will not be grinding/chipping the brush onsite, as we will be using CDL-level rear-load compactor trucks that will hold more weight/volume, which will result in less hours to complete this service versus on on-site chipping process.

Estimated Labor Hours: Based on other communities we service, we estimate that it will take between 50-60 hours to complete the brush collection.

DROP-OFF SITE

- Pellitteri's proposal would consist of placing 2 to 4 dumpsters (20-yard or 30-yard, depending on space) at the Village drop-off site for brush and yard waste removal (*photo mock-up on page 6*).
- Brush and yard waste would no longer be required to be separated, as they are all co-mingled at the disposal site, Purple Cow Organics.
- We would place dumpsters along the outside bunker walls, so all material can be placed in the middle. We would also ask to eliminate the center barrier wall to allow for more space for unloading materials, as well as make it easier to accommodate the loading of material into the dumpsters.
- Pellitteri will leave a loader on site for our employees to load the dumpsters for the 9-month period and haul the dumpsters at our discretion when full.
- Pellitteri's flat-rate fee to manage the drop-off site is **\$176,900/year**.
- The above billing will be broken down over 9 monthly increments, from April through December.
- Drop-off site will be serviced Monday through Friday.



Village of McFarland Yard Waste and Brush Collection RFP: Pellitteri Response continued...

HOLIDAY TREE DROP-OFF SITE

- Holiday Tree pickup cost is included in the drop-off site
 - A one-time pickup will be completed after February 1st.
 - Any trees dropped off at the site after the tree pickup date will have to wait until the spring program starts again the following year.
-

SECTION 4

B. Option #2 (three-year term for 2026-2028)

- Yard waste collection, brush collection, drop-off site, and holiday tree pricing is exactly the same as Option #1 for 2026. Years 2027 & 2028 would be subject to a **4% annual escalator**.

***Drop off site:
Proposed dumpster location
and barrier wall removal***



Position dumpsters along side walls of drop-off site

Remove barrier wall currently separating brush & yard waste





Brush and Yard Waste Municipal REFERENCES

Community	Contact Name	E-mail	Phone number
City of Fitchburg	Ben Schulte	ben.schulte@fitchburgwi.gov	(608) 345-9628
Pellitteri provides (5) city-wide, curbside yard waste collections and (14) brush collections for the City of Fitchburg			
City of Sun Prairie	Scott Hallebach	shallebach@cityofsunprairie.com	(608) 512-9119
	Jackie Stroller	jstroller@cityofsunprairie.com	(608) 825-0714
Pellitteri provides (4) city-wide, curbside yard waste collections for the City of Sun Prairie			
Town of Burke	PJ Lentz	clerk@townofburke.com	(608) 825-8420
Pellitteri provides (7) town-wide, curbside yard waste collections, as well as Christmas tree pickup for the Town of Burke			



Partnering with a family-owned and operated business does make a difference!

Our Mission

To continue the Pellitteri family business's tradition of service by promptly responding to customer needs, offering individualized solutions, effectively communicating and following through. These solutions will be environmentally and fiscally responsible. Our commitment to safety, professionalism, and personal growth will foster an environment which benefits our team, clients and community.

Our Business Values

- Be honest and truthful in all matters.
- Treat all people as we want to be treated.
- Work safely.
- Be good stewards of our environment.
- Follow all rules and regulations.
- Be friendly and positive, promote a spirit of excitement



Pellitteri Waste Systems is a full-transparency company with **owners who actually live in Dane County** and proudly put their family name on the business. There is a lot at stake personally when your name is on the trucks, and you are raising a family within the markets you are servicing. As you can see, Pellitteri Waste Systems is committed to staying family owned for generations to come!



2023 Wisconsin Department of Natural Resources Recycling Excellence Award



FOR IMMEDIATE RELEASE: 2023-11-15

Contact: Jennifer Semrau, DNR Waste and Materials Management Program

jennifer.semrau@wisconsin.gov or 608-381-0960

DNR CELEBRATES WISCONSIN RECYCLING EXCELLENCE AWARD WINNERS ON AMERICA RECYCLES DAY



PELLITTERI WASTE SYSTEMS

After implementing the first single-stream materials recovery recycling facility in south central Wisconsin in 2012, Pellitteri Waste Systems set a goal to decrease the amount of non-recyclable items coming into the MRF and increase the recyclables it can accept. To accomplish this, the company launched a recycling education initiative and invested in new technology. Its recent education initiative included a seven-minute video of the facility operations, a series of short (one-minute) recycling tip videos, multilingual recycling education, social media and a Recycle Right mobile app. The amount of non-recyclable material received decreased by 24% after the first year and an additional 8% in 2022. Using technology innovations, Pellitteri was also able to expand the materials that can be recycled. Some of the unique materials now accepted include paper cups, aluminum foil, small metal appliances and shredded paper.





2023 Business Friend of the Environment Award



Wisconsin Manufacturers & Commerce Announces 2023 Business Friend of the Environment Award Recipients

MADISON - Wisconsin Manufacturers & Commerce (WMC) – the combined state chamber and manufacturers' association – announced nine companies as recipients of the Wisconsin Business Friend of the Environment Award. For over three decades, WMC has presented this award to businesses that have demonstrated environmental leadership through innovation and innovation.

"Wisconsin businesses lead the charge in protecting the environment, with a commitment to both their communities and the future of the state," said WMC Director of Environmental & Energy Policy Craig. "We are proud to honor the recipients of the Business Friend of the Environment Award and beyond what they are required to protect the environment, we are proud to highlight their important efforts."

Awards are presented in three categories, according to WMC. Businesses must demonstrate they have made significant contributions in areas of sustainability, environmental stewardship, and innovation. The goal of this awards program is to demonstrate to the public that businesses are leading in sound environmental practices.





2022 Outstanding Achievement in Education Award



A non-profit association that provides statewide proactive leadership on waste reduction and recycling through education, advocacy, collaboration, programs and services.

For Immediate Release

Media Contact:

Karin Sieg, Executive Director
Associated Recyclers of Wisconsin
execdirector@arow-online.org
(715) 343-0722

Betsy Powers, Vice President
Associated Recyclers of Wisconsin
bpowers@scsengineers.com
(608) 333-5408

AROW Honors Recycling and Waste Reduction Efforts Throughout Wisconsin at Annual Awards Ceremony

Stevens Point, WI (March 6, 2023) – The Associated Recyclers of Wisconsin (AROW) proudly held their annual awards ceremony last week at the 2023 Wisconsin Integrated Resource Management Conference (www.wirmc.org). The ceremony, held on February 23rd, recognized individuals and organizations for outstanding work in the field of recycling and waste reduction.

This year AROW gave out a total of three awards.

“AROW always looks forward to honoring those working hard in our industry. This year’s recipients clearly demonstrate the strength of recycling in Wisconsin with achievements in public and private industry as well as education,” said Betsy Powers, AROW’s Vice President. “AROW is the voice for recycling and waste reduction in Wisconsin and we are proud to recognize these individuals and groups.”

The prestigious **Christy Dixon Recycler of the Year** award was presented to Aneliese, Development Board Director formerly the Waukesha, WI. This recognition is given to a person who has set high standards. Aneliese has been a leader in the industry for many years.

Some of Aneliese’s highlights over the years include a dividend payment to partner companies, a significant contributor to the development of the Waukesha County Recycling program, and identified a continuous improvement opportunity for a new recycling app specifically designed to take the waste stream to the next level.

Despite being incredibly busy with her ‘day job,’ Aneliese has demonstrated a leadership capacity as Committee Chair, Vice President, and Board Member.

The **Outstanding Achievement in Waste Reduction** award was presented to Waukesha County Recycling. This recognition is given to a program that has made significant contributions to the waste reduction efforts in Wisconsin.

The Waukesha County Recycling team created a partnership that is built to share the benefits of recycling with the community.

Associated Recyclers of Wisconsin
Phone: (715) 343-0722

The **Outstanding Achievement in Education Award** was awarded to Pellitteri Waste Systems of Madison, WI. This award is given to an individual or group from the public, private, or non-profit sector that has excelled in solid waste or recycling environmental education.

Pellitteri is passionate about keeping Wisconsin’s recycling program strong and producing quality material. Pellitteri has accomplished this through their major education focus of educating customers and south central Wisconsin through 24 video shorts on recycling right topics like propane tanks, batteries, electronics, food contamination, etc.; producing Material Recovery Facility operation videos so residents can see first hand how materials get sorted at their facility; paid social media posts and ads; and calendars, cart information, new resident information, recycling information, FAQs and more for 38 municipalities and 44 private homeowner associations. Their commitment to a strong recycling program throughout Wisconsin is evident in their willingness to serve on industry groups and associations such as the Council on Recycling, National Waste and Recycling Association- WI Chapter, and the WI DNR Waste and Materials Management Study Group.

AROW is a membership-based organization, serving the recycling and waste reduction interests of citizens, organizations, municipalities and businesses across the state. For those who support recycling and wish to see more waste diverted into productive use, consider joining the cause by becoming an AROW member.

###

About the Associated Recyclers of Wisconsin (AROW)

Founded in 1990, AROW is an association representing Wisconsin’s recycling, waste reduction and sustainability professionals. The organization provides leadership through education, advocacy, and collaboration and promotes effective, efficient and sustainable material recovery initiatives. For details on AROW, its positions and programs visit www.arow-online.org.



DEPARTMENT OF PUBLIC WORKS DIRECTOR / CITY ENGINEER

CITY OF MIDDLETON
7426 HUBBARD AVENUE
MIDDLETON, WI 53562-3118

PH 608.821.8381 FAX 608.827.1080
E-MAIL: sstauske@cityofmiddleton.us
WEB: www.CityofMiddleton.us

September 27, 2024

Todd Bollenbach, Municipal Account Rep.
Pellitteri Waste Systems

Todd,

I'm writing this letter of recommendation on behalf of the residential and commercial property owners in the City of Middleton being served by Pellitteri Waste Systems.

The City of Middleton made a switch to automated collection in 2010, and while there were some initial bumps in the road to gaining public acceptance of the change from manual collection of unlimited volume, we found the automated system to be efficient, easy to use, and economical. After evaluating proposals from several companies, the City of Middleton chose to enter into a multiple year contract with Pellitteri Waste Systems. Implementation of the automated collection system went much smoother than anticipated thanks in large part to exceptional customer information provided by Pellitteri, as well as timely rollout of the carts.

In addition to getting the new system up and running, Pellitteri has shown over the past nearly 15 years their commitment to customer satisfaction, both with our municipal employees and with our residential and commercial users. Inquiries and complaints (of which there have been very few) have consistently been addressed by Pellitteri's outstanding customer service representatives, with personal involvement of sales and management personnel as appropriate. Pellitteri provides invoicing and customer database updates that work with our format needs, and provides thorough reporting of refuse and recyclable materials collected to help us monitor progress toward our sustainability goals and WDNR reporting requirements.

In 2014, Pellitteri proactively proposed a contract amendment that resulted in more frequent collection of recyclable materials (weekly instead of bi-weekly), and also reduced costs. Pellitteri has been instrumental in community recycling and paper shredding events, and their staff helped us plan for the 2015 construction of our current permanent recycling drop-off facility. Pellitteri has also been very helpful in providing advice to our Sustainability Committee and helped us shape ordinances related to solid waste issues.

As a measure of the City of Middleton's satisfaction with Pellitteri's service, when our contract was approaching its end date in 2023 the City decided to negotiate a 10-year extension instead of soliciting competitive quotes for a new agreement. I'm very pleased with Pellitteri's service, and I highly recommend them.

Sincerely,

Shawn Stauske

Shawn Stauske
Dir. Public Works / City Engineer

To: Todd Bollenbach, Municipal Account Executive
Pellitteri Waste Systems

From: Ben Schulte, Environmental Engineer

Date: September 30, 2024

Subject: Municipal Waste Services

As the Environmental Engineer for the City of Fitchburg, I have been impressed with the quality of service Pellitteri provides to the community. Complaints are generally few and far between, and your customer service team has done an outstanding job addressing complaints as soon as they arise. I can't recall a time where I haven't gotten a response to a question within a couple hours at most, if not immediately.

Fitchburg prides itself on being a leader in recycling and sustainability, and with that in mind, we feel Pellitteri's company philosophy aligns with Fitchburg's values as a community. As the owner of a Material Recovery Facility, Pellitteri has greater control over how our recyclables are used, and go above and beyond what is required by DNR in several instances:

- Recycled glass goes to a local glass recycler to be made into new glass products (rather than being used as an alternate to landfill daily cover as allowed by the DNR).
- Shredded paper is accepted for recycling.
- Paper cartons are accepted for recycling.
- Empty aerosol cans are accepted for recycling.
- Small appliances are accepted for recycling

Your strong commitment to engaging with the community and providing free educational programs to residents is also appreciated. The biannual paper shredding events always have a great turnout, and your recycling tips videos have been a great resource for the City website.

Sincerely,

Ben Schulte

Ben Schulte, PE
Environmental Engineer



City of Monona – Public Works & Utilities

5211 Schluter Road
Monona, Wisconsin 53716
Phone: (608) 222-2525
Fax: (608) 222-9225
www.mymonona.com



Pellitteri has been the City of Monona's solid waste and recycling collection service provider for nearly a year. In that time Pellitteri has exceeded our expectations for customer service and quality of service, both of which are unmatched by any of the city's previous providers. Collection issues are nearly nonexistent, but when an issue does arise, it is solved quickly by Pellitteri's customer service staff. When our customers need to call Pellitteri, they are greeted by a live person, not a recorded phone tree, who is familiar with the City of Monona and our contract with them. They care about our business, and it shows. Their reputation speaks for itself.

Dan Stephany
Director of Public Works
City of Monona

<u>Projected Comparison</u>		
2026	Barnes	Pellitteri
Yardwaste/Brush Collection	\$ 46,550.00	\$ 55,500.00
Drop Off Site	\$ 103,385.00	\$ 176,900.00
Holiday Tree Drop Off Site	\$ 4,828.00	\$ -
	\$ 154,763.00	\$ 232,400.00
2027	Barnes	Pellitteri
Yardwaste/Brush Collection	\$ 47,946.50	\$ 57,720.00
Drop Off Site	\$ 106,486.55	\$ 183,976.00
Holiday Tree Drop Off Site	\$ 4,964.60	\$ -
	\$ 159,397.65	\$ 241,696.00
2028	Barnes	Pellitteri
Yardwaste/Brush Collection	\$ 49,387.10	\$ 60,030.00
Drop Off Site	\$ 109,681.14	\$ 191,335.04
Holiday Tree Drop Off Site	\$ 5,113.54	\$ -
	\$ 164,181.78	\$ 251,365.04

<u>Rate Comparison</u>		
2026	Barnes	Pellitteri
Yardwaste Collection	\$ 95.00	\$ 185.00
Brush Collection	\$ 95.00	\$ 185.00
Drop Off Site	\$ 103,385.00	\$ 176,900.00
Holiday Tree Drop Off Site	\$ 4,828.00	\$ -
2027	Barnes	Pellitteri
Yardwaste Collection	\$ 97.85	\$ 192.40
Brush Collection	\$ 97.85	\$ 192.40
Drop Off Site	\$ 106,486.55	\$ 183,976.00
Holiday Tree Drop Off Site	\$ 4,964.60	\$ -
2028	Barnes	Pellitteri
Yardwaste Collection	\$ 100.79	\$ 200.10
Brush Collection	\$ 100.79	\$ 200.10
Drop Off Site	\$ 109,681.14	\$ 191,335.04
Holiday Tree Drop Off Site	\$ 5,113.54	\$ -

Barnes RFP Cost Breakdown

Option 1 Proposal

	2025 charge	2026 charge	
Yardwaste Collection	\$ 87.78	\$ 95.00	Per Hour
Brush Collection	\$ 87.78	\$ 95.00	Per Hour
Drop Off Site	\$ 93,896.02	\$ 103,385.00	Per Year
Holiday Tree Drop Off Site	\$ 4,388.94	\$ 4,828.00	Per Year

Option 2 Proposal

	2025 charge	2026 charge	2027 charge	2028 charge	
Yardwaste Collection	\$ 87.78	\$ 95.00	\$ 97.85	\$ 100.79	Per Hour
Brush Collection	\$ 87.78	\$ 95.00	\$ 97.85	\$ 100.79	Per Hour
Drop Off Site	\$ 93,896.02	\$ 103,385.00	\$ 106,486.55	\$ 109,681.14	Per Year
Holiday Tree Drop Off Site	\$ 4,388.94	\$ 4,828.00	\$ 4,964.60	\$ 5,113.54	Per Year

2025 Charges

	2025 Rate	Hours per Invoice**	Annual Cost
Yardwaste/Brush Collection	\$ 87.78	361	\$ 31,688.58
Drop Off Site	\$ 31,298.67	3 installments	\$ 93,896.02
Holiday Tree Drop Off Site	\$ 4,388.94		\$ 4,388.94
			\$ 129,973.54

<u>2026 Projected</u>	Rate	Hours per Proposal	Annual Cost
Yardwaste/Brush Collection	\$ 95.00	490	\$ 46,550.00
Drop Off Site	\$ 34,461.67	3 installments	\$ 103,385.00
Holiday Tree Drop Off Site	\$ 4,828.00		\$ 4,828.00
			\$ 154,763.00

<u>2027 Projected</u>	Rate	Hours per Proposal	Annual Cost
Yardwaste/Brush Collection	\$ 97.85	490	\$ 47,946.50
Drop Off Site	\$ 35,495.52	3 installments	\$ 106,486.55
Holiday Tree Drop Off Site	\$ 4,964.60		\$ 4,964.60
			\$ 159,397.65

<u>2028 Projected</u>	Rate	Hours per Proposal	Annual Cost
Yardwaste/Brush Collection	\$ 100.79	490	\$ 49,387.10
Drop Off Site	\$ 36,560.38	3 installments	\$ 109,681.14
Holiday Tree Drop Off Site	\$ 5,113.54		\$ 5,113.54
			\$ 164,181.78

Barnes Yardwaste/Brush Collection Hours

2022	290
2023	336.5
2024	457
Average Hours	361
**Estimated hours per Barnes proposal	490

Pellitteri RFP Cost Breakdown

2025 data is based on current contractor.

<u>Option 1 Proposal</u>			
	2025 charge	2026 charge	
Yardwaste Collection	\$ 87.78	\$ 185.00	<i>Per Hour</i>
Brush Collection	\$ 87.78	\$ 185.00	<i>Per Hour</i>
Drop Off Site	\$ 93,896.02	\$ 176,900.00	<i>Per Year</i>
Holiday Tree Drop Off Site	\$ 4,388.94	\$ -	<i>Per Year</i>

<u>Option 2 Proposal</u>					
	2025 charge	2026 charge	2027 charge	2028 charge	
Yardwaste Collection	\$ 87.78	\$ 185.00	\$ 192.40	\$ 200.10	<i>Per Hour</i>
Brush Collection	\$ 87.78	\$ 185.00	\$ 192.40	\$ 200.10	<i>Per Hour</i>
Drop Off Site	\$ 93,896.02	\$ 176,900.00	\$ 183,976.00	\$ 191,335.04	<i>Per Year</i>
Holiday Tree Drop Off Site	\$ 4,388.94	\$ -	\$ -	\$ -	<i>Per Year</i>

<u>2025 Charges--Current Contractor</u>			
	2025 Rate	Hours per Invoice**	Annual Cost
Yardwaste/Brush Collection	\$ 87.78	361	\$ 31,688.58
Drop Off Site	\$ 31,298.67	3 installments	\$ 93,896.02
Holiday Tree Drop Off Site	\$ 4,388.94		\$ 4,388.94
			\$ 129,973.54

<u>2026 Projected</u>			
	Rate	Hours per Proposal	Annual Cost
Yardwaste/Brush Collection	\$ 185.00	300	\$ 55,500.00
Drop Off Site	\$ 176,900.00		\$ 176,900.00
Holiday Tree Drop Off Site	\$ -		\$ -
			\$ 232,400.00
<u>2027 Projected</u>			
	Rate	Hours per Proposal	Annual Cost
Yardwaste/Brush Collection	\$ 192.40	300	\$ 57,720.00
Drop Off Site	\$ 183,976.00		\$ 183,976.00
Holiday Tree Drop Off Site	\$ -		\$ -
			\$ 241,696.00
<u>2028 Projected</u>			
	Rate	Hours per Proposal	Annual Cost
Yardwaste/Brush Collection	\$ 200.10	300	\$ 60,030.00
Drop Off Site	\$ 191,335.04		\$ 191,335.04
Holiday Tree Drop Off Site	\$ -		\$ -
			\$ 251,365.04

<u>Barnes Yardwaste/Brush Collection Hours</u>	
2022	290
2023	336.5
2024	457
<i>Average Hours</i>	361

McFarland
SUMMARY SHEET

MEETING DATE: Wednesday, August 27, 2025

SECTION: Business

DEPARTMENT: Public Works

CONTACT: Lee Igl, Public Works Director, Andrew Bremer, Comm & Eco Dev Director

AGENDA ITEM: Discussion and action to make a recommendation to the Village Board regarding issuing a Request for Proposals for installation of a photovoltaic system for Lift Station #2.

PREVIOUS ACTION:

ISSUE SUMMARY:

The new Lift Station #2 building has been designed to make it "solar ready", including the ability to add solar panels to the roof and related electrical components within the building's electrical room. Included in the packet is a Request for Proposals to obtain project bids from interested contractors to install the photovoltaic system similar to how the Village previously added solar panels to the Public Works building.

FINANCIAL/BUDGET IMPACT:

The estimated cost for the solar installation provided by HGA is ~\$30K. Funding is through the existing capital borrowing for the entire Lift Station 2 improvement project.

VILLAGE PLAN REFERENCE:

2021 Sustainability Plan. Includes the goal of achieving 50% of total municipal energy consumed per year generated from renewables by 2030 and 100% by 2040.

ORDINANCE REFERENCE:

None

BOARD, COMMISSION OR COMMITTEE RECOMMENDATION:

Recommended motion:

Motion, second, to recommend to the Village Board issuing a Request for Proposals for installation of a photovoltaic system for Lift Station #2.

ATTACHMENTS:

1. McFarland Lift Station 2 Solar Installation RFP

**REQUEST FOR PROPOSAL TO INSTALL
A SOLAR PHOTOVOLTAIC ARRAY AT
THE MCFARLAND LIFT STATION 2**

INTRODUCTION AND GENERAL INFORMATION

The Village of McFarland is requesting bids to design, provide, and install a 14 kW DC roof mounted solar photovoltaic array at the McFarland Lift Station 2 Facility, 6407 Marsh Woods Drive, McFarland, WI. Contractor is to provide bid and additional information for the proposed work addressed to Village of McFarland, P.O. Box 110, McFarland, WI 53558.

SPECIFICATION

All work shall conform to the attached "Photovoltaic System Performance Specification Requirements". Proposals shall include the qualification data described in section 1.6.D. of the attached specifications.

TIMELINE

The Village is expected to award this work on the October 14th, 2025 meeting of the Village Board. Selected contractor will then provide detailed design plans, specifications (including electrical layout plans), and performance guarantee for approval by Village before finalization of contract agreement and commencement of construction in 2025. This will also include a calculation of the expected power production over the first ten year period. Project completion is scheduled for not later than December 31, 2025.

EVALUATION FACTORS

In evaluating the bids, the Village will consider, in addition to the price quoted in the Bid, the following:

1. Compliance with the Scope of work and bid documents.
2. Clarity, pricing structure, and commercial terms and conditions.
3. Execution plan, project team, and ability to meet schedule. Provide relevant resources.
4. Contractor's experience with systems of similar size and scope.
5. Equipment maintenance and reliability history.
6. Length and coverage of equipment warranties and performance guarantees.
7. Life cycle costs, including but not limited to, maintenance requirements.

CONDITIONS

The Village of McFarland shall be exempt from any liability for costs incurred by unsuccessful bidders in preparation of this proposal. The Village of McFarland reserves the right to reject any or all bids.

INSURANCE REQUIREMENTS

The Contractor shall provide the Village with a certificate of insurance and other materials as necessary to demonstrate compliance with the attached "McFarland Lift Station 2 Solar Array Insurance Requirements". A certificate of form is included at the end of that attachment.

INDEMNIFICATION

To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless

the Village of McFarland, Alliant Energy, and Town and Country Engineering, Inc., and against all claims, costs, losses, and damages arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property, including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.

The Village of McFarland will receive sealed bids to complete the proposed work until **12:00 PM, October 2nd, 2025.**

Questions concerning the project or arranging a site visit with Village staff should be directed to: Tim Stieve- Town and Country Engineering at 608-273-3350- or email: tstieve@tcengineers.net

Responses to all inquiries about the project or bid requirements will be distributed to all companies by email based upon the email address supplied to the Village of McFarland by the prospective bidders.

Company name

Address

.....

Contact Name

Phone #

Email

.....
Signature

.....
Name

.....
Date

PHOTOVOLTAIC SYSTEM PERFORMANCE SPECIFICATION REQUIREMENTS

PART 1 GENERAL

1.1 DESCRIPTION

- A. This section includes performance requirements that apply to installing a roof mounted solar electric (Photovoltaic, or PV) system on the roof of the Lift Station 2 project. The design-build contractor shall complete the design, procurement and installation of the solar electric photovoltaic system as detailed in this performance specification.
 - 1. 14 kW_{dc}. See project drawings for roof layout, electrical plan, one-line diagram, and details. The basis of design for the array is 28 modules of Heliene 132HC M10 520W panels, (qty1) Fronius Symo Advanced 15.0-3 480 string inverter.
 - 2. The bid shall clearly itemize manufacturers, model numbers, capacities, locations, and quantities of the panels, racking and inverter products that are proposed.
 - 3. The Contractor may propose other products and system configurations provided they meet the design intent, generate an equal amount of electricity per year as the basis of design, are within the physical limitations of the array locations as indicated on the drawings, and meet all other criteria in the Contract Documents. If alternate products or system configurations are proposed, the bid is to document the proposed solution's impacts to system energy yield, efficiency, longevity, and overall cost effectiveness (on a life-cycle cost basis) to the Owner.
- B. All work in this specification section is subject to the provisions of Division 01 of the Project Manual and all other applicable parts of the Contract Documents related to this work.
- C. All structural design work shall be performed and sealed by a qualified Registered Professional employed or retained by the Contractor. All design work shall conform to the relevant building codes for the jurisdiction.
- D. All electrical design work shall be performed and sealed by a qualified Registered Professional employed or retained by the Contractor. All design work shall conform to the relevant building codes for the jurisdiction.
- E. The Contractor shall follow all roofing manufacturer's requirements with respect to penetrations, protective sheets, drainage channels, and all other areas of work to ensure the roof warranty terms and conditions are unaffected. The Contractor shall coordinate with the Architect, General Contractor, and Roofing Contractor as appropriate to determine all roofing manufacturer's requirements.
- F. Incentives:
 - 1. The Contractor shall apply for and provide support with Owner's application for Focus on Energy Prescriptive Renewable Incentives. The incentive will be paid to the Owner.
 - 2. The project shall meet all criteria required by Focus on Energy to qualify for the Prescriptive Renewable Incentives.

1.2 DEFINITIONS

- A. Electrical Definitions
 - 1. Inverter Output Circuits: The AC conductors from each inverter to the point-of-connection with the building distribution.
 - 2. PV Output/Inverter Input Circuits: The DC conductors from the combiner box to each inverter, including any DC disconnects.

3. PV Source Circuits: The DC conductors between the modules, and all string wiring to the combiner box before the parallel strings are combined.
- B. Electrical Abbreviations
1. AC: Alternating Current
 2. DC: Direct Current
 3. I_{sc} : Short Circuit Current.
 4. MPPT: Maximum Power Point Tracking.
 5. NABCEP: North American Board of Certified Energy Practitioners
 6. PV: Photovoltaic
 7. STC: Standard Test Conditions, 1000 W/m², 1.5 air mass, and 25°C cell temperature.
 8. V_{oc} : Open Circuit Voltage

1.3 DESIGN CRITERIA

- A. Project Location: McFarland, Wisconsin
- B. Electric Utility: Alliant Energy
- C. Design Codes and Standards:
 1. Wisconsin Administrative Code Chapter SPS 361-366 Commercial Building Code based on International Building Code 2015
 2. Wisconsin Administrative Code Chapter SPS 314 Fire Prevention based on NFPA 1, Fire Code – 2012
 3. Wisconsin Administrative Code Chapter SPS 316 Electrical based on NFPA 70, National Electrical Code (NEC) – 2017
 4. ASHRAE Handbook – 2017 Fundamentals
 5. All local requirements in addition to the state codes and standards
- D. Orientation of Panels: 180° (due south)
- E. Tilt Angle: 18.4° (Fixed tilt) Roof pitch is 4:12
- F. Roofing Product: Infiniti Textured Steel Shake, as manufactured by EDCO Products
- G. Minimum DC Power: 14 kW_{dc}
- H. Maximum DC Voltage: 1,000 V_{dc}
- I. Maximum Allowable Voltage Drop: 1.5%
- J. Array-to-Inverter (nominal DC-to-AC) capacity ratio: 0.90 to 1.25
- K. String Sizing Criteria
 1. Strings of PV modules shall be connected in parallel to match voltage and current ratings of the inverter across all ambient temperatures common to site and expected cell temperatures -11°F to 124°F (-24°C to 51°C).
 2. The Contractor shall calculate the maximum number of modules per string based on the maximum system voltage allowed by the selected inverter. Each module's voltage shall be calculated using a temperature corrected open circuit voltage. The open circuit voltage shall be temperature corrected by using the location's lowest expected ambient temperature per NEC 690.7, but in no cases should the selected temperature be warmer than -11°F (-24°C).

3. The Contractor shall calculate the minimum number of modules per string based on meeting the cut-in voltage of the selected inverter. This minimum string size shall be selected based on a temperature corrected maximum power voltage. The maximum power voltage shall be temperature corrected by using the highest expected cell temperature for 98% of the annual hours, but in no cases should the selected temperature be lower than 124°F (51°C). The temperature corrected maximum power voltage then shall be de-rated by 0.85.
 4. All series strings of panels shall contain an equal number of modules and have equal performance characteristics.
- L. PV Source Circuit and PV Output Conductor Sizing Criteria
1. Ampacity and overcurrent protection calculations shall be based on a minimum of 156% of the sum of the parallel strings' short circuit currents. Where installed exposed to direct sunlight, conductor ampacity shall include adjustment for ambient temperature per NEC article 310.15. Conductors shall be:
 - a. Sized to limit voltage drop to 1.5% from array to inverter during full production at MPPT voltage at maximum ambient temperature.
 - b. Sized while considering temperature ratings for all components, including the wiring, terminals, and overcurrent protection devices.
 - c. Sized while considering all required correction factors, such as temperature and conduit fill.

1.4 QUALITY ASSURANCE

- A. Contractor Qualifications:
1. Proximity: The Contractor's place of business or local representative shall be not more than four hours' normal travel time from the project site.
 2. The Contractor shall have active PV Installation Professional certification through NABCEP. The NABCEP-certified individual shall be directly involved with all stages of the installation of the PV system, including duties of supervision and quality control.
 3. The Contractor is required to have experience with minimum of (3) similar completed projects.
- B. Source Limitations: Obtain panels from a single manufacturer, of a single type and rating. Obtain inverters from a single manufacturer, of a single type and a single rating.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- D. The installation shall comply with the State of Wisconsin Public Service Commission and all utility interconnection requirements.

1.5 UTILITY COORDINATION

- A. The Contractor shall coordinate metering and interconnection agreement with the electric utility. Contractor shall pay all interconnection fees including the application review fee, engineering review fee, and distribution system study fee. Contractor shall submit all required forms to utility.

1.6 PRE-CONSTRUCTION SUBMITTALS

- A. The Contractor shall submit all documentation in accordance with the General Conditions outlined by the Project Manual.

- B. It is the Contractor's responsibility to highlight differences/exceptions, if any, between the submitted products and the requirements in the Contract Documents.
- C. The Contractor shall not fabricate materials or order equipment until corresponding submittals have been reviewed and approved.
- D. Qualification Data:
 - 1. The Contractor shall provide the names, addresses, and descriptions of 3 similar projects that the Contractor has completed within the last 5 years.
 - 2. Submit a copy of the resume for each of the Contractor's Registered Professionals, including license numbers.
 - 3. Submit a copy of the resume and NABCEP certification for the personnel.
- E. Product Data: For each type of component indicated below include rated capacities, operating characteristics, furnished specialties and accessories, and installation instructions. Submittals which include more than one model number shall be marked with highlighting and/or crossing out to clearly indicate which model is being submitted.
 - 1. Solar panels
 - 2. Solar panel structural system, including rail, clamps, and brackets
 - 3. Inverters
 - 4. Module level power electronics
 - 5. Energy monitoring devices
 - 6. DC wiring, conduit/raceways, supports, and labeling
 - 7. PV array grounding equipment and devices
 - 8. Combiner boxes
 - 9. Disconnects
 - 10. Fuses
- F. Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 1. Dimensioned plan drawings of roof and all building areas that include system equipment and power distribution. Plan drawings shall show the locations and routing of all system equipment including solar panel array, inverters, disconnects, combiner boxes, metering, and electrical distribution.
 - 2. Elevation drawings of panel and racking structural attachments to roof
 - 3. Electrical riser wiring diagram of solar PV system indicating ratings/sizes of all panels, inverters, overcurrent protection, disconnects, conduit, conductor, and grounding.
- G. Structural Design
 - 1. Sealed and signed structural calculations of foundations, structure, racking, and connections.
 - 2. Calculations for all dead and live (snow and wind) loads for a complete load path to ground and deflection calculations for all beams.
- H. Electrical Design
 - 1. Sealed and signed calculations of:
 - a. Inverter selection
 - b. Maximum and minimum string voltages

- c. DC voltage losses
- d. Ampacity and conductor sizing

I. Permitting and Agreements

- 1. The following permits and agreements shall be procured by the Contractor on behalf of the Owner. The Contractor shall cover the costs for all applicable permits necessary for the construction of the project. All approved permits and agreements shall be submitted for review prior to purchasing any materials or equipment.
 - a. Utility interconnection application and agreement
 - b. Building permit
 - c. Electrical permit

1.7 CLOSEOUT SUBMITTALS

A. As-built drawings

- 1. Dimensioned AutoCAD plan drawings of equipment including solar panel array, inverters, disconnects, combiner boxes, metering, and electrical routing.
- 2. Provide AutoCAD drafted electrical riser diagram of solar PV system indicating ratings of all panels and inverters, wire and conduit types and sizes, and disconnects.
- 3. Provide AutoCAD (.dwg) files, .pdf drawing files, and one full size hard copy drawing sets.

B. Field quality-control test reports

- 1. Include inverter startup reports, and all inspection and testing documentation.

C. Operation and Maintenance Data: Include the following for panels, inverters, electrical distribution, metering, and monitoring.

- 1. Instructions for operating and maintaining equipment, including system startup and shut down procedures, troubleshooting, and a routine maintenance schedule.
- 2. Identification of operating limits which may result in hazardous or unsafe conditions.
- 3. Document ratings of equipment and each major component.
- 4. Technical Data Sheets.
- 5. Wiring Diagrams.
- 6. Parts list.

D. Warranty: Copies of all manufacturer's and installer's warranties.

1.8 WARRANTY

A. Contractor's Workmanship Warranty:

- 1. The Contractor must provide a two-year installation warranty covering any defects of the installation.
- 2. The Contractor's workmanship warranty period shall begin from date of Substantial Completion.

B. Manufacturer Warranties:

- 1. The PV module manufacturer shall agree to replace the PV modules that fail within the specified warranty period, beginning from date of Substantial Completion.
 - a. 10-year product warranty.
 - b. 25-year 80% linear power output warranty.

2. The inverter manufacturer shall agree to replace the inverters that fail within the specified warranty period, beginning from date of Substantial Completion.
 - a. 10-year product warranty.

PART 2 PRODUCTS

2.1 SOLAR PANELS

- A. Manufacturer: Basis of design is Heliene 144HC, M10 SL Modules. Equivalent modules may be accepted and are subject to compliance with project requirements and review.
- B. Performance Requirements:
 1. NRTL (Nationally Recognized Testing Laboratory) Listing: Entire assembly shall be listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for electrical and fire safety according to UL 1703.
 2. FM approved for NFPA 70, Class 1, Division 2, Group C and Group D hazardous locations.
- C. Capacities and Characteristics:
 1. All panels shall be of a single type from a single manufacturer.
 2. Power Output Ratings: STC rated power of between 520 and 550 watts.
 3. Power tolerance of less than 5% variation (maximum minus minimum). Minimum tolerance of -0%.
 4. Manufactured in the U.S.
 5. Nameplates: To identify electrical characteristics, manufacturer's name and address, and model and serial number of component.
 6. Module efficiency: minimum 20.0%
- D. Materials and construction:
 1. Cell type: Monocrystalline
 2. Frame: Anodized black aluminum frame with drainage holes and grounding holes.
 3. Glazing: Tempered safety glass with Anti-Reflective Coating (EN 12150)
 4. Bypass diodes: Minimum of 3 bypass diodes
 5. Junction box: Sealed against dust and moisture to IP65 rating
 6. Output wires: Factory wired separate positive and negative leads of minimum wire size #12 AWG and wire type PV Wire
 7. Output wire connections: Locking quick disconnects rated for use in direct sunlight. Shall meet all requirements of NEC article 690.33.
 8. Anodized aluminum frame with drainage holes and grounding holes.
 9. Operating temperature range of -40°C to +85°C.
 10. Withstand 1" diameter hail at 50 mph without damage.
 11. Load rated at 5400 Pa (113 psf) when used with two rail system.

2.2 INVERTERS

- A. Available Manufacturers: Basis of design is Fronius Symo Advanced 15.0-3 480. An equivalent system with string inverters (and compatible MLPE) or microinverters may be accepted and are subject to compliance with project requirements and review.
- B. Standard Compliance
 - 1. IEEE 1547
 - 2. UL 1741 – anti-islanding
- C. Electrical Characteristics
 - 1. Inverter-Utility Operation Type: Grid-Tied
 - 2. Rated AC Power Output: 15,000 VA
 - 3. Maximum AC Power Output: 15,000 VA
 - 4. AC Output Line Connections: 4-wire WYE (L1-L2-L3-N) plus PE
 - 5. AC Output Voltage Minimum-Nominal-Maximum (L-N): 244 - 277 - 305 VAC
 - 6. AC Output Voltage Minimum-Nominal-Maximum (L-L): 422.5 - 480 - 529 VAC
 - 7. AC Frequency: 60 Hz true sine wave
 - 8. Maximum Continuous Output Current (per Phase): 18 A
 - 9. DC to AC Conversion Efficiency: 98.5% CEC rated efficiency
- D. Features
 - 1. Transformerless design
 - 2. Integral AC & DC disconnects
 - 3. DC side ground fault protection
 - 4. NEC 2017 rapid shutdown compliant upon AC grid disconnect
 - 5. User navigable LCD display
 - 6. LED status lights on enclosure
 - 7. NEMA 3R enclosure
 - 8. Inverter must limit power output to nameplate value. If connected to an array capable of producing more than the inverter’s capacity, the inverter must limit the power without damage.
 - 9. Communication port for diagnostics and communication port for communication with multiple inverters and internet interface device.
- E. Module Level Power Electronics (MLPE)
 - 1. Available Manufacturers: Basis of design is Tigo TS4-X-O Flex MLPE.
 - 2. Features:
 - a. Module-Level Shutdown (NEC 2017 Rapid Shutdown)
 - b. Module-Level Monitoring
 - c. Module-Level DC Optimization with MPPT
 - 3. MLPE devices shall be selected to serve individual modules or pairs of modules. Not more than two modules may be served by one MLPE device.
- F. Inverter Monitoring
 - 1. Provide inverter manufacturer’s monitoring software and interface for module-, string-, inverter-, and system-level monitoring.

2. Coordinate inverter based monitoring with access to web based monitoring platform via owners network.

2.3 INVERTER BASED MONITORING

A. Capabilities:

1. Graphical user interface
 - a. One public display shall be provided showing basic system information consistent with the existing public display. Data such as instantaneous power, accumulated energy, CO2 offset, and other data useful to the general public shall be included. Data will be totalized with existing solar systems. Coordinate with Owner.
 - b. One private display for Owner facility staff shall be provided consistent with the existing private display. The private display shall provide detailed system information at an inverter-by-inverter level. Coordinate with Owner.
2. Trending
 - a. Data trends shall be provided at both the inverter-level and the array-level (i.e., totalized inverter values) for monitoring purposes.
 - b. Inverter data shall be saved to a spreadsheet file (.csv format) monthly so that older trend data can be overwritten.
3. Alerts and Alarms – The inverter alerts and alarms shall be integrated so that general alarms generate notifications to Owner facility staff.

2.4 COMBINER BOX

A. Capacities and Characteristics:

1. DC current and voltage ratings shall be coordinated with array.
2. Positive and negative combiner blocks.
 - a. Number of poles coordinated with array.
3. DC voltage fuses in fingersafe fuse holder.
4. Web-based string performance monitoring.
5. Per string ground fault detection and automatic isolation.
6. Automatic self-testing of main components.
7. Communication to monitoring web server via Zigbee, RS485, or Ethernet.
8. Remote control of cabinets from web server.

B. Materials and construction

1. Powder coated steel, NEMA 4 enclosure.
2. Knockouts
3. Stainless steel hardware.

C. Available Products: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include SolarEdge Monitoring Combiner Box with GFDI.

2.5 ELECTRICAL RACEWAYS AND BOXES

A. Above-Ground: Reference Section 260533 “Raceways and Boxes for Electrical Systems.”

- B. Underground: Reference Section 260543 “Underground Ducts and Raceways for Electrical Systems.”

2.6 PV WIRING

A. PV Source & Output Wiring

1. For use from each string to the combiner box and as a jumper for connection between modules.
2. Type: Photovoltaic (PV) Wire
3. Conductors: Stranded, uncoated copper
4. Insulation: Cross-linked polyethylene (XLPE)
5. Temperature Rating: -40°C to +90°C (wet or dry)
6. Voltage Rating: 1000 V
7. Sunlight and moisture resistant
8. Size: Based on ampacity and voltage drop, but shall be a minimum #10 AWG
9. Color: Black

B. Inverter Input Wiring

1. For use from the combiner box to the inverter inputs.
2. Type: PV, USE-2, or RHH/RHW-2
3. Conductors: Stranded, uncoated copper
4. Insulation: Cross-linked polyethylene (XLPE)
5. Temperature Rating: -40°C to 90°C (wet or dry)
6. Voltage Rating: 1000 V
7. Moisture resistant and suitable for conduit and raceways.
8. See Section 260533 “Raceways and Boxes for Electrical Systems” for conduit requirements for inverter input wiring.

C. Wire Supports

1. Overview: Wire supports shall be metallic clips, clamps, or cable trays that are intended for use with free-air, high voltage DC conductors and grounding wires in exterior conditions.
2. Approval: Clips, clamps, and cable trays shall be approved for use with PV Wire by the local Authority Having Jurisdiction.
3. Wire Protection: All supports shall contain rounded edges and/or an EPDM cushion to avoid damage to the wires. Cable-ties and similar bundling cables/straps without rounded edges and EPDM cushions are not acceptable.
4. Size: Clips, clamps, and cable trays shall be selected for the quantity and size of the wires they are supporting. Wires and supports shall not be installed so loosely that the wires slide freely resulting in movement and poor support, but shall not be installed so tightly that the supports result in damage to the wires.
5. Wire Clips:
 - a. Clips shall be compatible with the selected module frames and rail products.
 - b. Clips shall be of 304 stainless steel or aluminum material. Zinc-plated steel and all-plastic clips are not acceptable.

- c. Available products: Wiley Rail Clips, Heyco HEYClips, or Engineer-approved equivalent.
- 6. Wire Clamps:
 - a. Clamps shall be one-hole style for use with a stainless steel screw or bolt.
 - b. Clamps shall be of 304 stainless steel or aluminum material, and use an EPDM cushion for protection. Zinc-plated steel and all-plastic clamps are not acceptable.
 - c. Available products: Prospect Fastener COL SS Series, or Engineer-approved equivalent.
- 7. Cable Trays:
 - a. Cable trays shall be either continuous, extruded channels or wire mounting rings spaced no greater than 6 inches o.c.
 - b. Cable tray materials shall be powder coated steel, 304 stainless steel, or aluminum.
 - c. Entry/exit points of wires shall be protected using rounded edges, EPDM covers, or similar to avoid wire damage.
 - d. Available products: CMS/Snake Tray Series 407 (Solar Snake Tray), or Engineer-approved equivalent.

2.7 ARRAY CONSTRUCTION AND ATTACHMENT

A. PV Module Rail Framing:

- 1. Roofing product is EDCO Products Architectural Metal Shingles
- 2. Material: Extruded aluminum, alloy 6063-T5 or 6105-T52
- 3. Finish: Provide finish that is matching to the PV module frames. If the PV module frames are clear anodized, then the PV module rails shall be clear anodized. If the PV module frames are black, then the PV module rails shall be black.
- 4. Maximum System Weight (Modules & Rails): Less than 4 lb/sq. ft. (19.53 kg/sq. m).
- 5. End covers and accessories: Provide manufacturer's end covers for each rail end.
- 6. Allowable loads: Rail product shall be selected for the appropriate design loads and span lengths by the Contractor and verified by the Structural Designer of Record.
- 7. Available Products for Pitched Roof Systems: Subject to compliance with the requirements, manufacturers offering products that may be incorporated into the Work include:
 - a. SnapNrack
 - b. Ironridge
 - c. Pro Solar

B. PV Module Clamps:

- 1. Inter-module and end-of-module clamps to be of extruded aluminum and use 18-8 stainless steel hardware.
- 2. Module clamps shall be compatible with the selected PV module rail and PV module frame products.
- 3. Finish: Provide finish that is matching to the PV module frames. If the PV module frames are clear anodized, then the PV module clamps and hardware shall be clear anodized. If the PV module frames are black, then the PV module clamps and hardware shall be black.

C. Rail Mounting Feet and Fasteners:

1. Material: 6000 Series Aluminum with 18-8 Stainless Steel Hardware
2. Finish: Mill Finish
3. Allowable loads: Mounting feet and fastener products shall be selected for the appropriate design loads and span lengths by the Contractor and verified by the Structural Designer of Record. The mounting method shall be suitable for the roof profile and the design loads.
4. Available Products:
 - a. S-5 Clamps (for standing seam installations)
 - 1.) Use S-5-U, S-5-S, or the required clamp for the specific roofing product.
 - 2.) S-5 mini clamps are not acceptable.
 - b. EcoFasten GreenFasten or QuickFoot (for composite shingle installations)

2.8 ROOF PENETRATIONS

A. Roof Flashings

1. General: Comply with the roof manufacturer's requirements for compatible products and installation methods for flashings, sealants, and fasteners.
2. Fasteners: Any fasteners used with flashing and penetrations shall be of 18-8 stainless steel.
3. For Metal Roofs: Provide molded black EPDM pipe flashing with adaptable base using an aluminum reinforcing ring. Flashing shall be capable of sealing a range of conduit pipe sizes. Contractor shall select the correct size flashing considering pipe size, total height off the roof, distance between roof seams, size of penetration, etc. EPDM flashing shall be ICC-ES certified for 35 Year compliance with the International Building Code. Available products: Aztec Washer 35 Year Master Flash or approved equivalent.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrate areas and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Do not begin installation until mounting surfaces have been properly prepared.
- C. Examine all equipment (including PV modules and inverters) and materials before installation. Reject any equipment and materials that are physically damaged in any way, including scratched, dented, bent, wet, moisture damaged, or mold damaged.
- D. Examine supports and supporting structures for suitable conditions where PV system will be installed.
- E. Examine roughing-in of electrical connections. Verify actual locations of connections before panel installation.
- F. Proceed with installation only after unsatisfactory conditions have been corrected.
- G. Protect all new and existing site conditions during the duration of construction of the PV installation.

3.2 MODULE & RACKING INSTALLATION REQUIREMENTS

- A. The entire structure and PV arrays shall be installed according to all code requirements, all related sections in the Project Manual, all direction provided by the Registered Professional, and all manufacturer's requirements.
- B. Cut ends of PV rails flush with the end module clamps for each array. Provide manufacturer's approved rail end caps.
- C. Roof penetrations shall be made watertight using methods that are standard to the roofing industry, are approved by the roofing manufacturer, and do not affect the warranty of the roof.

3.3 ELECTRICAL INSTALLATION

- A. The entire DC electrical system between the PV panels and inverters, including all wiring, grounding, conduits and raceways, combiner boxes, disconnects, overcurrent protection, and penetrations shall be designed and constructed by the Contractor in accordance with NFPA 70 requirements, all related sections within Division 26, all electrical Designer of Record direction, and all manufacturer's requirements.
- B. Contractor to provide all directional boring, trenching, backfilling, compacting and pavement repair as needed to route the electrical feed between the array(s) and building. Refer to C-141 and E-011. The underground conduit and PV output wiring between the parking lot and building shall be directional bored.

3.4 WIRE MANAGEMENT

- A. Exposed DC string conductors and grounding between the PV modules and combiner boxes shall be installed in a neat and workmanlike manner consistent with the highest industry standards with respect to safety, longevity, and aesthetics.
- B. Bending radii of wiring for exposed DC string conductors and grounding shall exceed the minimum allowable bending radius required by the wiring manufacturer. In no cases shall the bending radius be less than five times the conductor diameter.
- C. Exposed DC string wiring and grounding shall not be installed in a manner or location which subjects the wiring to any source of physical damage, including pinch points, sharp/abrasive objects (such as corners of cut rails), and environmental degradation (such as wind, sun, or animals).
- D. Exposed DC string wiring and grounding shall be supported securely to resist movement from wind and other environmental forces, and to accommodate movement from thermal expansion/contraction of the wiring, PV modules, and structure. DC wiring shall be supported with clamps within 12 inches of each outlet/junction box and at intervals no greater than 18 inches between junction boxes.
- E. Exposed DC string wiring shall be installed in a location that is out of direct sunlight as much as possible.
- F. Exposed DC string wiring and grounding shall be installed in a location that is out of the typical line of sight as much as possible, for example on the top/back side of each rail and/or using integral channels of the rail system that are intended for this purpose. This location shall be field coordinated with the Owner and A/E.
- G. Excess PV module cable length shall be coiled and bundled neatly and supported securely. Attach PV panel cables to frames and rails using stainless steel cable clips and/or cushioned clamps intended for the purpose of supporting high voltage DC conductors in exterior conditions.
- H. Exposed DC string wiring and grounding installation shall incorporate drip loops wherever the wires enter enclosures from free air.

- I. PV panel cables may be installed exposed where routed directly behind panels, but all cables shall be installed in a section of conduit where crossing part of the roof not under a panel. Conduit running across roof shall be supported on roof using Cooper B-Line Dura-Blok or equivalent.

3.5 IDENTIFICATION

- A. Identify and label system components according to Division 26, NEC Article 690, and NFPA 1.
 - 1. Provide a unique label for each inverter, PV output circuit, combiner box, PV Source circuit, panel, and disconnect. Labeling shall match labeling shown on as-built diagram and plan provided by contractor.
- B. Provide all labeling required by NEC article 690, including, but not limited to:
 - 1. Label disconnects capable of being energized from both directions as such.
 - 2. Provide plaque at utility service disconnect per article 690.56B. Field verify exact location.
 - 3. Label each photovoltaic disconnecting means per NEC article 690.53.

3.6 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.
- B. Perform startup, tests, and inspections:
 - 1. Visually inspect all electrical connections.
 - 2. Verify correct operation of inverter. Complete manufacturer's startup checklists and ensure no alarms and shutdowns occur. Record inverter parameter settings.
 - 3. Verify correct operation of complete system. Test all disconnect switches and operation modes. Verify overcurrent protection devices do not trip under normal operation conditions.
 - 4. Verify and document system power output:
 - a. Measure power output of each individual inverter.
 - b. Measure power output of each module using the system monitoring.
 - c. All measurements shall be performed at peak solar conditions during a clear day (Solar Radiation $\geq 1,000 \text{ W/m}^2$ in plane of the array).
 - d. Power output shall be at least 90% of expected generation after considering temperature corrections and other derating factors (tolerance, module mismatch, inverter losses, wiring losses, etc.).
 - e. Document date, time, solar radiation conditions, solar cell temperature, and measured power output during test. Record calculations and assumptions used to show expected power output generation.
- C. The Contractor shall fully investigate, troubleshoot, and correct all deficiencies.
- D. Prepare test and inspection reports.

3.7 DEMONSTRATION

- A. Simulate power outage by interrupting normal source, and demonstrate that system disconnects from utility.
- B. Provide owner's maintenance personnel with minimum two hour training session and in compliance with Div 01 Training Requirements.
 - 1. Provide training on function and operation of each piece of equipment.

2. Provide training on maintaining the system.
3. Explain means of disconnecting and re-energizing the system.
4. Explain principles of operation, troubleshooting, and safety.

END OF SPECIFICATION

MCFARLAND LIFT STATION 2 SOLAR ARRAY

INSURANCE REQUIREMENTS

6.03 Contractor's Insurance

D. *Other Additional Insureds:* As a supplement to the provisions of Paragraph 6.03.C of the General Conditions, the commercial general liability, automobile liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies must include as additional insureds (in addition to Owner and Engineer) the following: **None**

E. *Workers' Compensation and Employer's Liability:*

The limits of liability for the insurance required by Paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Worker's Compensation Insurance and related coverages under Paragraphs 6.03 of the General Conditions. Prime Contractors are required to provide Workmen's Compensation Insurance for the duration of this project meeting statutory requirements. Prime Contractors shall require subcontractors to provide Workmen's Compensation Insurance for all subcontractor employees working on this project, unless covered by Prime Contractor's policy.

Employer's Liability	\$500,000
----------------------	-----------

Projects in Wisconsin constructed by out-of-state contractors or subcontractors must be so endorsed on the policy and noted on the certificate.

F. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against claims for:

1. damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees,
2. damages insured by reasonably available personal injury liability coverage, and
3. damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

G. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy must be written on a 1996 (or later) Insurance Services Organization, Inc. (ISO) commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage.
 - a. Such insurance must be maintained for three years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.

2. Blanket contractual liability coverage, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
 3. Severability of interests and no insured-versus-insured or cross-liability exclusions.
 4. Underground, explosion, and collapse coverage.
 5. Personal injury coverage.
 6. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together). If Contractor demonstrates to Owner that the specified ISO endorsements are not commercially available, then Contractor may satisfy this requirement by providing equivalent endorsements.
 7. For design professional additional insureds, ISO Endorsement CG 20 32 07 04 "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.
- H. *Commercial General Liability—Excluded Content:* The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:
1. Any modification of the standard definition of "insured contract" (except to delete the railroad protective liability exclusion if Contractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).
 2. Any exclusion for water intrusion or water damage.
 3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.
 4. Any exclusion of coverage relating to earth subsidence or movement.
 5. Any exclusion for the insured's vicarious liability, strict liability, or statutory liability (other than worker's compensation).
 6. Any limitation or exclusion based on the nature of Contractor's work.
 7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.
- I. *Commercial General Liability—Minimum Policy Limits*

Commercial General Liability	Policy limits of not less than:
General Aggregate	\$2,000,000
Each Person	\$1,000,000
Each Occurrence	\$1,000,000

- J. *Automobile Liability:* Contractor shall purchase and maintain automobile liability insurance for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy must be written on an occurrence basis.

Automobile Liability	Policy limits of not less than:
Bodily Injury	
Each Person	\$1,000,000
Each Accident	\$1,000,000
Property Damage	
Each Accident	\$1,000,000
Combined Single Limit	
Combined Single Limit (Bodily Injury and Property Damage)	\$1,000,000

- K. *Umbrella or Excess Liability:* Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the Paragraphs above. The coverage afforded must be at least as broad as that of each and every one of the underlying policies.

Excess or Umbrella Liability	Policy limits of not less than:
Each Occurrence	\$5,000,000
General Aggregate	\$5,000,000

CERTIFICATE OF INSURANCE

This certifies to the Addressees shown below that the following described policies, subject to their terms, conditions and exclusions, have been issued to:

NAME AND ADDRESS OF INSURED:

DATE:

COVERING (Show Project Name and/or Number and Location) _____

Addressees:
(Owner)

Date:

KIND OF INSURANCE	POLICY NO.	ACTIVE DATES	LIMITS OR LIABILITY	
1. (a) Worker's Compensation	_____	_____	\$ _____	Statutory Worker's Compensation
(b) Employer's Liability	_____	_____	\$ _____	One Accident and Aggregate Disease
2. Comprehensive General Liability	_____	_____	\$ _____	Each Occur.-Premises & Operations
(a) Bodily Injury	_____	_____	\$ _____	Each Occur.-Independent Contractors
	_____	_____	\$ _____	Each Occur.-Completed Oper. & Prod
	_____	_____	\$ _____	Each Occurrence-Contractual
	_____	_____	\$ _____	Aggregate-Completed Oper. & Prod.
(b) Personal Injury	_____	_____	\$ _____	Each Person Aggregate
	_____	_____	\$ _____	General Aggregate
(c) Property Damage	_____	_____	\$ _____	Each Occur.- Premises & Operations
	_____	_____	\$ _____	Each Occur.-Independent Contractors
	_____	_____	\$ _____	Each Occur.-Completed Oper. & Prod
	_____	_____	\$ _____	Each Occurrence-Contractual
	_____	_____	\$ _____	Aggregate-
	_____	_____	\$ _____	Aggregate-Operations, Independent Contractors, Prod. & Contractual
3. Comprehensive Automobile Liability	_____	_____	\$ _____	Each Person
	_____	_____	\$ _____	Each Occurrence
	_____	_____	\$ _____	Each Occurrence
4. Umbrella	_____	_____	\$ _____	

UNDER GENERAL LIABILITY POLICY OR POLICIES

	<u>YES</u>	<u>NO</u>
1. Does Property Damage Liability Insurance shown include coverage for XC and U hazards?	_____	_____
2. Is Occurrence Basis Coverage provided under Property Damage Liability?	_____	_____
3. Is Board Form Property Damage Coverage provided for this Project?	_____	_____
4. Does Personal Injury Liability Insurance include coverage for personal injury sustained by any person as a result of an offense directly or indirectly related to the employment of such person by the Insured?	_____	_____
5. Is coverage provided for Contractual Liability (including indemnification provision) assumed by Insured?	_____	_____

UNDER AUTOMOBILE LIABILITY POLICY OR POLICIES

1. Does coverage above apply to non-owned and hired automobiles?	_____	_____
2. Is Occurrence Basis Coverage provided under Property Damage Liability?	_____	_____

(NAME OF INSURANCE COMPANY)

(ADDRESS)

(SIGNATURE OF AUTHORIZED REPRESENTATIVE)

CANCELLATION OR NON-RENEWAL

In the event of cancellation or non-renewal of any of the foregoing, fifteen (15) days written notice shall be given to the party to whom this certificate is addressed.

EXTENT OF CERTIFICATION

This certificate is issued for information purposes, only, and confers no rights upon the holder. By its issuance the company does not alter, change, modify or extend any of the provisions of the above policies.

ADDITIONAL PARTIES LISTED AS INSURED UNDER CONTRACTOR'S GENERAL LIABILITY POLICY:

		<u>YES</u>	<u>NO</u>
Engineer:	Town & Country Engineering, Inc.	_____	_____
Owner:	Village of McFarland, Wisconsin	_____	_____

2023 LIFT STATION 2 IMPROVEMENTS

Marsh Woods Drive

Village of McFarland, Wisconsin

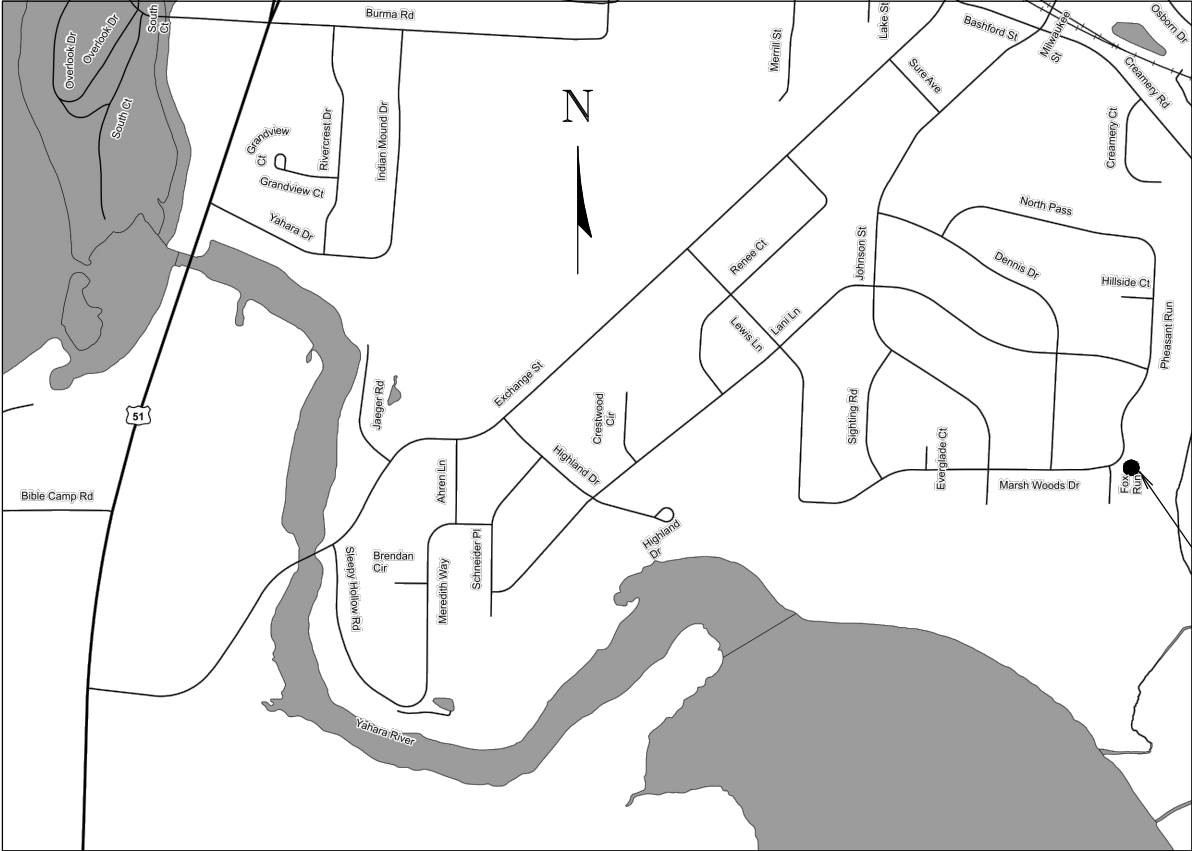
ADDENDUM 2 AND 3
INCLUDED IN THIS SET



TO OBTAIN LOCATION OF PARTICIPANTS' UNDERGROUND FACILITIES BEFORE YOU DIG IN WISCONSIN

CALL DIGGERS HOTLINE
1-800-242-8511
TOLL FREE

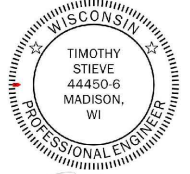
WIS. STATUTE 182.0175 (1974)
REQUIRES MIN. OF 3 WORK DAYS
NOTICE BEFORE YOU EXCAVATE.



NO SCALE



VILLAGE OF MCFARLAND
DANE COUNTY, WISCONSIN



CIVIL/PROCESS ENGINEER



STRUCTURAL ENGINEER



HVAC ENGINEER



PLUMBING ENGINEER



ELECTRICAL ENGINEER

PROJECT NO.: MC 198		DRAWN BY: D.D.E.	2023 LIFT STATION 2 IMPROVEMENTS		SHEET	REVISIONS	BY	DATE		6264 Nesbitt Road Madison, WI 53719 (608) 273-3350 www.tceengineers.net
DRAWING FILE: 00-G		CHECKED BY: T.J.S.	Marsh Woods Drive							
DATE: 11-15-23		REV. DATE:	Village of McFarland, Wisconsin							
					ADD. NO. 2	ENTIRE SET		12-12-23		
					ADD. NO. 3	ENTIRE SET		12-18-23		

00 – GENERAL

00 – G – 01	INDEX SHEET
00 – G – 02	STANDARD ABBREVIATIONS, DESIGNATIONS, SITE/PROCESS LEGENDS & GENERAL NOTES
00 – G – 03	ELECTRICAL SYMBOLS AND ABBREVIATIONS
00 – G – 04	ELECTRICAL SYMBOLS AND ABBREVIATIONS

05 – LIFT STATION SITE

05 – C – 01	EXISTING SITE PLAN AND REMOVAL PLAN
05 – C – 02	SITE IMPROVEMENTS PLAN
05 – C – 03	EROSION CONTROL AND GENERAL NOTES
05 – M – 01	SITE PIPING PLAN
05 – M – 02	PROCESS PLAN AND SECTION EXISTING WET WELL

10 – EXISTING INFLUENT STRUCTURE

10 – M – 01	PROCESS PLAN AND SECTIONS
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20 – EXISTING ADMIN/PROCESS BUILDING

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20 – AS – 02	FOUNDATION PLAN
20 – AS – 03	ROOF FRAMING PLAN
20 – AS – 04	EXTERIOR ELEVATIONS
20 – AS – 05	BUILDING SECTIONS
20 – AS – 06	ENLARGED WALL SECTIONS
20 – M – 01	PROCESS PLAN
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20 – P – 01	PLUMBING PLANS
20 – P – 02	PLUMBING SCHEDULES
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20 – H – 01	HVAC PLAN
20 – H – 02	HVAC SCHEDULES
20 – E – 01	LIGHTING PLAN
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100 – C – 01	SITE DETAILS
100 – AS – 01	STANDARD DETAILS
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100 – AS – 03	STANDARD DETAILS
100 – M – 01	PROCESS DETAILS
100 – E – 01	ONE–LINE
100 – E – 02	SCHEDULES
100 – E – 03	FIELD WIRING SCHEDULE
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100 – W – 01	PID No.1
100 – W – 02	PID No.2
100 – W – 03	SCADA ARCHITECTURE

INDEX SHEET

2023 LIFT STATION 2 IMPROVEMENTS
Marsh Woods Drive
Village of McFarland, Wisconsin

PROJECT NO.:
MC 198

DRAWING FILE:
00-G

DRAWN BY:
D.D.E.

CHECKED BY:
T.J.S.

DATE:
11-15-23

REVISIONS:

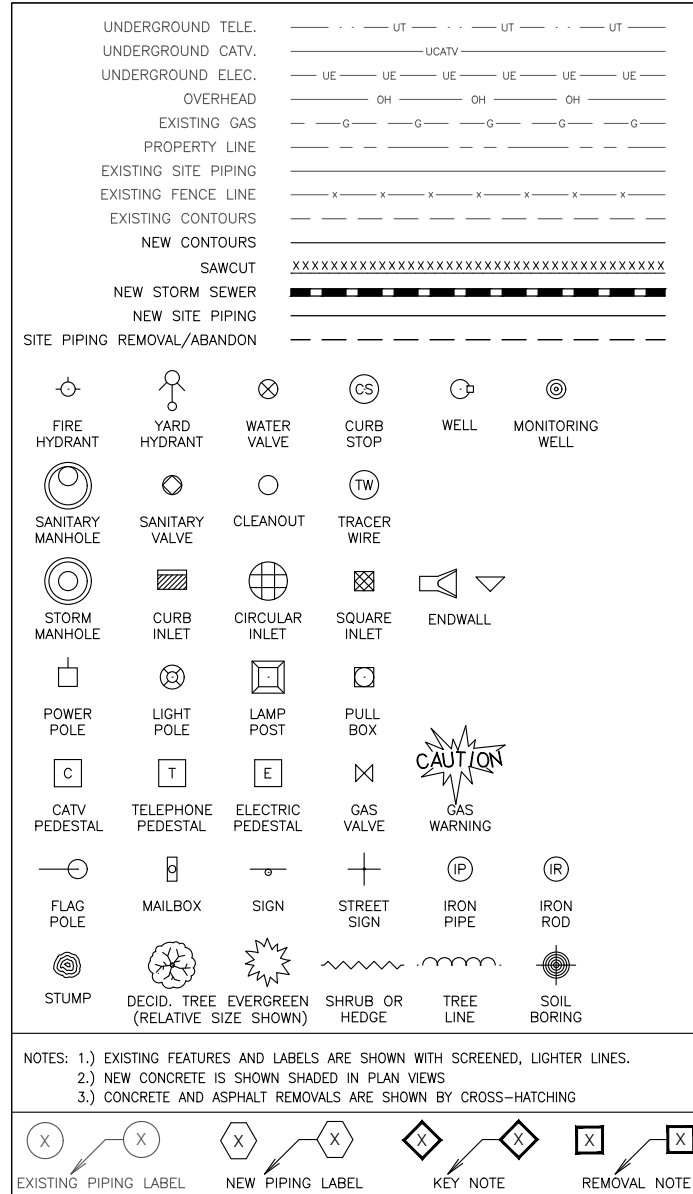
SCALE:

SHEET:

STANDARD ABBREVIATIONS

AER	ACTUATED	M	METER
AFF	AERATION, AEROBIC	MATL	MATERIAL
AHP	ABOVE FINISHED FLOOR	MAX	MAXIMUM
ALP	AIR — HIGH PRESSURE	MECH	MECHANICAL
ALT	AIR — LOW PRESSURE	MFR	MANUFACTURER
ALUM	ALTERNATE	MGD	MILLION GALLONS PER DAY
APPROX	ALUMINUM	MH	MANHOLE
ARCH	APPROXIMATE, —LY	MID	MIDDLE
ASPH	ARCHITECTUAL	MIN	MINIMUM
ASSY	ASPHALT	MISC	MISCELLANEOUS
AVG	ASSEMBLY	MJ	MECHANICAL JOINT
	AVERAGE	ML	MIXED LIQUOR
		MLSS	MIXED LIQUOR SUSPENDED SOLIDS
B/	BOTTOM OF	MM	MILLIMETER
BAF	BAFFLE	MOT	MOTOR, —IZED
BCKWSH	BACKWASH	MTL	METAL
BFV	BUTTERFLY VALVE		
BF	BLIND FLANGE	N	NORTHING
BIT	BITUMINOUS	NH3—N	AMMONIA—NITROGEN
BLDG	BUILDING	NO.	NUMBER
BM	BENCH MARK	NPT	NATIONAL PIPE THREAD
BOD	BIOCHEMICAL OXYGEN DEMAND	NPW	NONPOTABLE WATER
BOT	BOTTOM	NTS	NOT TO SCALE
BSMT	BASEMENT		
BV	BALL VALVE	OC	ON CENTER
BYP	BYPASS	OD	OPENING
		OPNG	OPENING
C/C	CENTER TO CENTER	OVER	OVER, —FLOW
CF	CUBIC FEET		
CFM	CUBIC FEET PER MINUTE	P	PHOSPHORUS
CHAN	CHANNEL	PNEU	PNEUMATIC
CHEM	CHEMICAL	PNV	PINCH VALVE
CI	CAST IRON	PE	POLYETHYLENE
C/L	CENTERLINE	PLMB	PLUMBING
CLASS	CLASSIFICATION	POLY	POLYMER
CLG	CEILING	PP	POWER POLE
CMP	CORRUGATED METAL PIPE	PRV	PRESSURE REDUCING VALVE
CON	CONCENTRIC	PSF	POUNDS PER SQUARE FOOT
CONC	CONCRETE	PSI	POUNDS PER SQUARE INCH
CONN	CONNECTION	PT	POINT
CONTR	CONTRACTOR	PV	PLUG VALVE
CTR, CTRD	CENTER, —ED	PVC	POLYVINYL CHLORIDE
CV	CHECK VALVE	PVMT	PAVEMENT
CY	CUBIC YARD	PW	POTABLE WATER
DAF	DISSOLVED AIR FLOTATION THICKENER	R	RADIUS
DEC	DECANT	R/W	RIGHT—OF—WAY
DEG	DEGREE	RAS	RETURN ACTIVATED SLUDGE
DG	DIGESTER GAS	RCP	REINFORCED CONCRETE PIPE
DIA	DIAMETER	RCY	RECYCLE
DIG	DIGESTER	RED	REDUCER
DI	DUCTILE IRON	REF	REFERENCE
DISCH	DISCHARGE	REQ'D	REQUIRED
DN	DOWN	RM	ROOM
DNR	DEPARTMENT OF NATURAL RESOURCES	ROT	ROTATE, —D
DRN	DRAIN	RR	RAILROAD
DWG	DRAWING	RT	RIGHT
		RWW	RAW WASTEWATER
E	EASTING		
EA	EACH	SAN	SANITARY
ECC	ECCENTRIC	SBR	SEQUENCING BATCH REACTOR
EFFL	EFFLUENT	SCH	SCHEDULE
ELB	ELBOW	SDR	STRUCTURAL DIMENSION RATIO
ELEC	ELECTRIC, —AL	SEC	SECTION
EL, ELEV	ELEVATION	SEP	SEPTAGE
EQ	EQUALIZATION	SF	SQUARE FOOT
EQUIP	EQUIPMENT	SHT	SHEET
EST	ESTIMATE, —D	SLG	SLUDGE
EX	EXISTING	SPEC	SPECIFICATION
		SQ	SQUARE
FH	FIRE HYDRANT	SS	STAINLESS STEEL
FFC	FLANGED FLEXIBLE CONNECTOR	STA	STATION
FL	FLOW LINE	STL	STEEL
FLR	FLOOR	STR	STRUCTURE
FLTR	FILTER	SUP	SUPERNATANT
FM	FORCE MAIN	SNV	SOLENOID VALVE
FRP	FIBERGLASS REINFORCED PLASTIC	SW	SIDEWALK
FT	FEET	SY	SQUARE YARD
FTG	FOOTING		
		T/	TOP OF
GAL	GALLON	T/W	TOP OF WALL
GALV	GALVANIZED	TEMP	TEMPERATURE
GC	GENERAL CONTRACTOR	TSS	TOTAL SUSPENDED SOLIDS
GND	GROUND	TYP	TYPICAL
GR	GRIT		
GV	GATE VALVE	UV	ULTRAVIOLET
HORIZ	HORIZONTAL	VERT	VERTICAL
HP	HORSEPOWER	VF	VERTICAL FEET
HR	HOUR		
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING	W/	WITH
HWL	HIGH WATER LEVEL	W/O	WITHOUT
HYD	HYDRANT	WAS	WASTE ACTIVATED SLUDGE
		WAT	WATER
ID	INSIDE DIAMETER	WW	WASTEWATER
IN	INCH		
INCL	INCLUDE, —ING	YD	YARD
INFL	INFLUENT	YR	YEAR
INV	INVERT		
LB(S)	POUND(S)		
LF	LINEAL FEET		
LIN	LINEAR		
LR	LONG RADIUS		
LS	LUMP SUM		
LT	LEFT		
LWL	LOW WATER LEVEL		

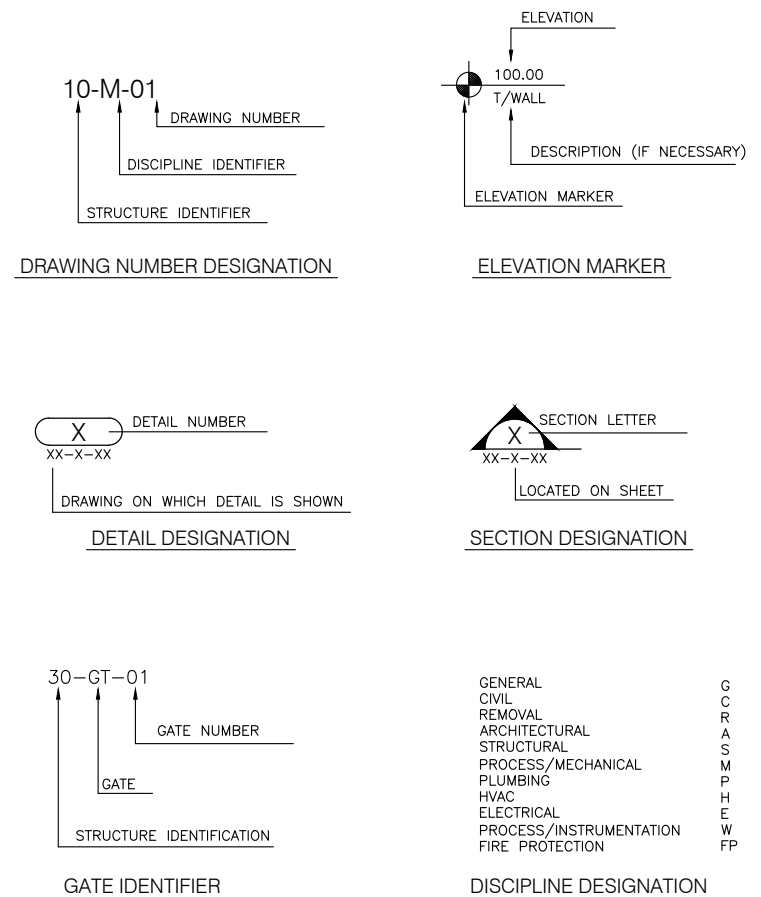
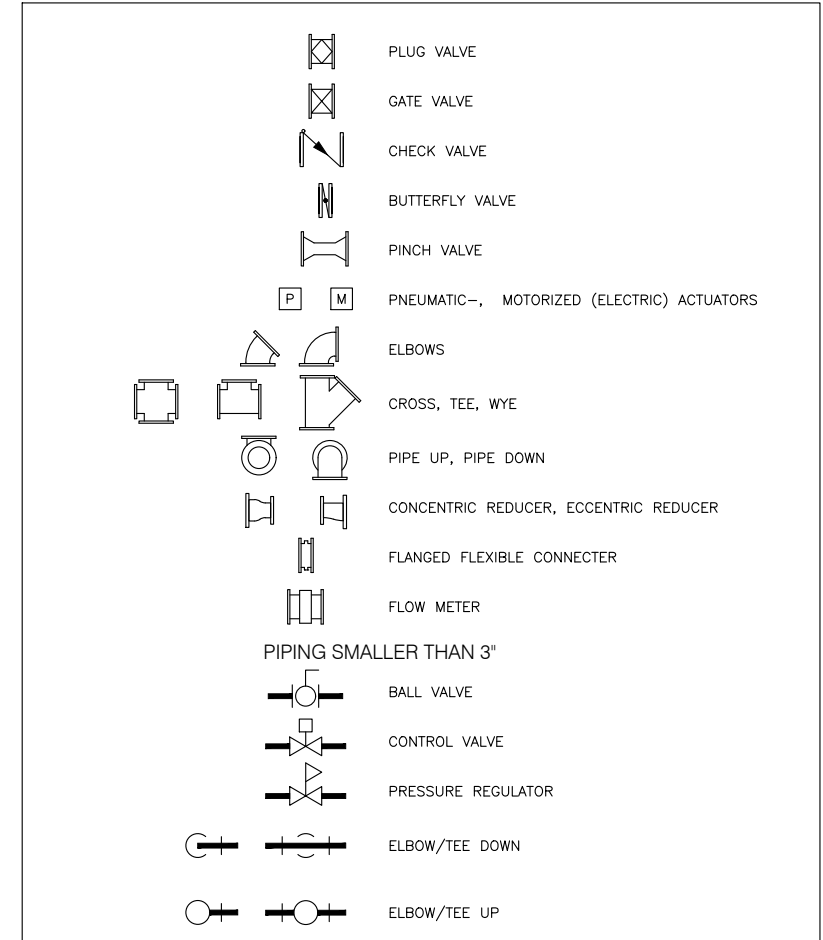
SITE LEGEND



GENERAL NOTES

1. EXISTING INFORMATION, INCLUDING UNDERGROUND PIPING AND UTILITIES, SHOWN ON THE PLANS WAS OBTAINED FROM OWNER INFORMATION AND FIELD MEASUREMENTS WHERE AVAILABLE. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE ACCURACY OF ALL EXISTING INFORMATION AS REQUIRED TO ACCOMMODATE NECESSARY CONSTRUCTION. UTILITIES THAT MAY BE AFFECTED BY CONSTRUCTION MUST BE MAINTAINED AND ANY DAMAGES TO EXISTING UTILITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. THE CONTRACTOR IS RESPONSIBLE FOR THE PRESERVATION OF PROPERTY AND RESTORATION OF DAMAGED PROPERTY CAUSED BY CONSTRUCTION ACTIVITIES. AFTER THE COMPLETION OF CONSTRUCTION, ANY EXISTING PROPERTY DAMAGED AS A RESULT OF THE CONTRACTOR'S ACTIVITIES DURING EXECUTION OF THE CONTRACT SHALL BE RESTORED SO AS TO MATCH THE EXISTING AT NO COST TO THE OWNER.
3. DRAWINGS SCALES MAY VARY FROM ONE SHEET TO THE NEXT. ALL PERSONS SHALL BE RESPONSIBLE FOR VERIFYING THE CORRECT SCALE OF ANY MEASUREMENTS MADE ON THE PLAN SHEETS. DRAWINGS IN GENERAL DO NOT SHOW DIMENSIONS OF EXISTING STRUCTURES. CONSTRUCTION SHALL BE DRAWN PROXIMATELY TO SCALE. CONTRACTOR SHALL OBTAIN ALL DIMENSIONS REQUIRED FOR CONSTRUCTION.
4. WHEN THE TERM "REMOVE" IS USED ON DRAWINGS IT SHALL MEAN THAT THE CONTRACTOR IS TO REMOVE THE REFERENCED MATERIAL OR EQUIPMENT AND DISPOSE OF IN A PROPER MANNER. WHEN THE TERM "REMOVE AND SALVAGE" IS USED THE CONTRACTOR SHALL REMOVE THE REFERENCED MATERIAL OR EQUIPMENT, TRANSPORT TO THE DESTINATION INDICATED, AND UNLOAD THE MATERIAL OR EQUIPMENT AS DIRECTED BY THE OWNER. THE PLANS DO NOT NECESSARILY SPELL OUT ALL ITEMS REQUIRING REMOVAL, DEMOLITION, OR PATCHING. WHERE NOT SHOWN, ALL REMOVAL, DEMOLITION, CUTTING, PATCHING AND OTHER WORK NECESSARY TO ACCOMMODATE NEW CONSTRUCTION SHALL BE PROVIDED AS A PART OF THE CONTRACT.

PROCESS PIPING LEGEND



ELECTRICAL PLAN SYMBOLS

OUTLETS AND DEVICES

	DUPLEX
	DUPLEX (COUNTER TOP HEIGHT)
	SINGLE
	DOUBLE DUPLEX
	SPECIAL OUTLET
	EQUIPMENT CONNECTION
	DATA OUTLET
	TELEPHONE/DATA OUTLET
	TELEPHONE OUTLET
	TELEPHONE BLACKBOARD

LIGHTING

	LUMINAIRE, CEILING MOUNTED, RECESSED OR SURFACE
	WALL MOUNTED FIXTURE
	FIXTURE - DOUBLE OR SINGLE HEAD SPOTLIGHT
	EXIT FIXTURE
	EMERGENCY BATTERY REMOTE HEADS
	EMERGENCY BATTERY UNIT WITH HEADS
	SINGLE POLE MOUNTED FIXTURE
	TWIN POLE MOUNTED FIXTURE

SWITCHES

\$	SINGLE POLE SWITCH
\$ ₂	DOUBLE POLE SWITCH
\$ ₃	THREE WAY SWITCH
\$ ₄	FOUR WAY SWITCH
\$ _a \$ _b \$ _c	SWITCH CONTROL A, B, C
\$ _K	KEY OPERATED
\$ _P	SWITCH WITH PILOT LIGHT
\$ _{WP}	WEATHERPROOF SWITCH
\$ _D	DIMMER SWITCH
	OCCUPANCY SENSOR, WALL MOUNTED
	OCCUPANCY SENSOR, CEILING MOUNTED
\$ _M	MOTOR RATED SWITCH
\$ _{MS}	MANUAL MOTOR STARTER

SERVICE AND DISTRIBUTION

	LIGHTING OR POWER PANEL - RECESSED
	LIGHTING OR POWER PANEL - SURFACE
	DISTRIBUTION PANEL
	MOTOR CONTROL CENTER
	TRANSFORMER - REFER TO ONE-LINE. XX-XFMR-01 INDICATES LOCATION AT STRUCTURE XX.
	CURRENT TRANSFORMER CABINET (UTILITY METERING)
	METER AND SOCKET

MOTOR CONTROL

	DISCONNECT SWITCH, NON-FUSED
	DISCONNECT SWITCH, FUSED
	ENCLOSED CIRCUIT BREAKER
	MAGNETIC CONTACTOR
	ADJUSTABLE FREQUENCY DRIVE
	MAGNETIC MOTOR STARTER
	COMBINATION MAGNETIC MOTOR STARTER
	EQUIPMENT CONTROL PANEL - XXX INDICATES EQUIPMENT SERVED
	PUSHBUTTON
	ON/OFF PUSHBUTTON
	THREE FUNCTION PUSHBUTTON (UP/DOWN/STOP)
	THERMOSTAT
	SOLENOID VALVE
	MOTOR - NUMBER INDICATES HORSEPOWER

GENERAL NOTES

- THIS DRAWING IS A STANDARD LEGEND. SYMBOLS SHOWN MAY NOT ALL APPEAR ON DRAWINGS FOR THIS PROJECT.
- ALL CONTACTS ARE SHOWN IN THE DE-ENERGIZED (SHELF) POSITION. BI-STABLE RELAYS ARE SHOWN IN THE RESET POSITION.
- ONE-LINE DIAGRAMS FOR POWER SWITCHGEAR, USE ANSI STANDARD SYMBOLS AND ABBREVIATIONS.
- SEE INSTRUMENTATION I + C SYMBOLS LEGEND FOR INSTRUMENTATION SYMBOLS AND DETAILS.
- OTHER ABBREVIATIONS PER NECA 100-213 AND ISA S5.1
- ELEVATIONS ADJACENT TO SYMBOLS ARE BASED ON STATION DATUM. HEIGHTS ADJACENT TO SYMBOLS (+4.0) ARE REFERENCED TO FINISHED FLOOR GRADE.
- SEE SPECIFICATIONS AND SCHEDULES FOR COMPONENT REQUIREMENTS FOR MOTOR CONTROLLERS AND FOR CONTRACTORS.

SECURITY AND FIRE PROTECTION

	DOOR HOLDER
	HORN AND STROBE
	HORN ONLY
	STROBE ONLY
	MANUAL PULL STATION
	SMOKE DETECTOR
	HEAT DETECTOR - RATE OF RISE
	HEAT DETECTOR - FIXED TEMPERATURE
	WATER FLOW SWITCH
	LOW PRESSURE SWITCH
	TAMPER SWITCH
	SECURITY CAMERA - WP INDICATES WEATHERPROOF EXTERIOR CAMERA
	MOTION DETECTOR
	FIRE ALARM ANNUNCIATOR
	FIRE ALARM CONTROL PANEL

WIRING AND CONDUIT

- SIZE CONDUIT PER NEC. MINIMUM SIZE $\frac{3}{4}$ ".
- (X)#12 & #12G

REFERS TO NUMBER OF WIRE(S) AND SIZE OF WIRE(S) REQUIRED, WHERE AS:
(1)= ONE WIRE
#12 = THE SIZE OF WIRE REQUIRED
G = GROUND WIRE

- (X) 1-1/2"C

REFERS TO NUMBER OF CONDUIT(S) AND SIZE OF CONDUIT(S) REQUIRED, WHERE AS:

(1)= ONE CONDUIT
1-1/2"C = THE SIZE OF CONDUIT REQUIRED

*REFER TO DRAWINGS FOR REQ'D WIRE AND CONDUIT SIZES AND AMOUNTS

CIRCUITS

	CONDUIT STUB - TERMINATE WITH CAP
	CONDUIT TURNING UP
	CONDUIT TURNING DOWN
	HOMERUN TO PANELBOARD - H(X)-(Y,Z) OR L(X)-(Y,Z) - HIGH OR LOW VOLTAGE PANEL (X) - CIRCUIT (Y,Z) AS INDICATED
	JUNCTION BOX

ELECTRICAL ABBREVIATIONS

1P	ONE POLE
2P	TWO POLE
3P	THREE POLE
4P	FOUR POLE
1P1W	ONE POLE, ONE WIRE
1P2W	ONE POLE, TWO WIRE
2P2W	TWO POLE, TWO WIRE
2P3W	TWO POLE, THREE WIRE
3P2W	THREE POLE, TWO WIRE
3P3W	THREE POLE, THREE WIRE
3P4W	THREE POLE, FOUR WIRE
4P4W	FOUR POLE, FOUR WIRE
A	AMPERE
AC	ALTERNATING CURRENT
AF	AMP FRAME
AFCI	ARC-FAULT CIRCUIT INTERRUPTER
AFD	ADJUSTABLE FREQUENCY DRIVE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
ALUM	ALUMINUM
AS	AMP SWITCH
AT	AMP TRIP
ARCH	ARCHITECT
ATS	AUTOMATIC TRANSFER SWITCH
AUD	AUDIOMETER BOX CONNECTION
AUX	AUXILIARY
A/V	AUDIO VISUAL
AWG	AMERICAN WIRE GAUGE
BLDG	BUILDING
C	CONDUIT (GENERIC TERM FOR RACEWAY.)
CAM	CAMERA
CAT	CATALOG
CATV	CABLE TELEVISION
CB	CIRCUIT BREAKER
CKT	CIRCUIT
COL	COLUMN
C.T.	CURRENT TRANSFORMER
CU	COPPER
CL	CENTERLINE
DC	DIRECT CURRENT
Δ	DELTA
DET	DETECTOR
DISC	DISCONNECT
DIST	DISTRIBUTION
DN	DOWN
DWG	DRAWING

E	WIRED ON EMERGENCY CIRCUIT
EA	EACH
EC	ELECTRICAL CONTRACTOR
ECB	ENCLOSED CIRCUIT BREAKER
EDH	ELECTRICAL DUCT HEATER
EF	EXHAUST FAN
ELEC	ELECTRIC(AL)
ELEV	ELEVATION
EM	EMERGENCY
EMT	ELECTRIC METALLIC TUBING
ENCL	ENCLOSURE
EOL	END OF LINE
EP	EXPLOSION PROOF
EPO	EMERGENCY POWER OFF
EQUIP	EQUIPMENT
EUH	ELECTRIC UNIT HEATER
EW	ELECTRIC WATER COOLER
EW	ELECTRIC WATER HEATER
EXIST.	EXISTING
F	FLUSH
FA	FIRE ALARM
FBO	FURNISHED BY OTHERS
FC	FIRE PROTECTION CONTRACTOR
FCU	FAN COIL UNIT
FDN	FOUNDATION
FIXT	FIXTURE
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FLR	FLOOR
FMC	FLEXIBLE METALLIC CONDUIT
FRE	FIBERGLASS REINFORCED EPOXY CONDUIT
FURN	FURNITURE
G	GROUND
GC	GENERAL CONTRACTOR
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFPE	GROUND FAULT PROTECTION EQUIPMENT
GND	GROUND
GRC	GALVANIZED RIGID CONDUIT
HGT	HEIGHT
HP	HORSEPOWER
HTR	HEATER
HV	HIGH VOLTAGE
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
HW	HOT WATER
HZ	HERTZ (CYCLE) PER SECOND

IAM	INDIVIDUAL ADDRESSABLE MODULE
ID	IDENTIFICATION
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
I/O	INPUT/OUTPUT
IR	PASSIVE INFARED
I.S.	INTRINSICALLY SAFE
J-JO	JUNCTION BOX
KCMIL	ONE THOUSAND CIRCULAR MILS
K/O	KNOCK-OUT
KVA	KILOVOLT AMPERE
KVAR	KILOVOLT AMPERE REACTIVE
KW	KILOWATT
LFMC	LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT
LFNC	LIQUIDTIGHT FLEXIBLE NONMETALLIC CONDUIT
LP	LIGHTING PANELBOARD
LS	LIMIT SWITCH
LTG	LIGHTING
LV	LOW VOLTAGE
MAINT	MAINTAINED
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MC	METAL CLAD CABLE
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MD	MOTORIZED DAMPER
MDP	MAIN DISTRIBUTION PANEL
MISC	MISCELLANEOUS
MFR	MANUFACTURER
MLO	MAIN LUGS ONLY
MOD	MOTOR OPERATED DISCONNECT SWITCH
MTD	MOUNTED
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH
N	NORTH
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NF	NON-FUSED
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NM	NONMETALLIC SHEATHED CABLE
NO	NORMALLY OPEN
NRTL	NATIONALLY RECOGNIZED TESTING LAB
#	NUMBER
NTS	NOT TO SCALE

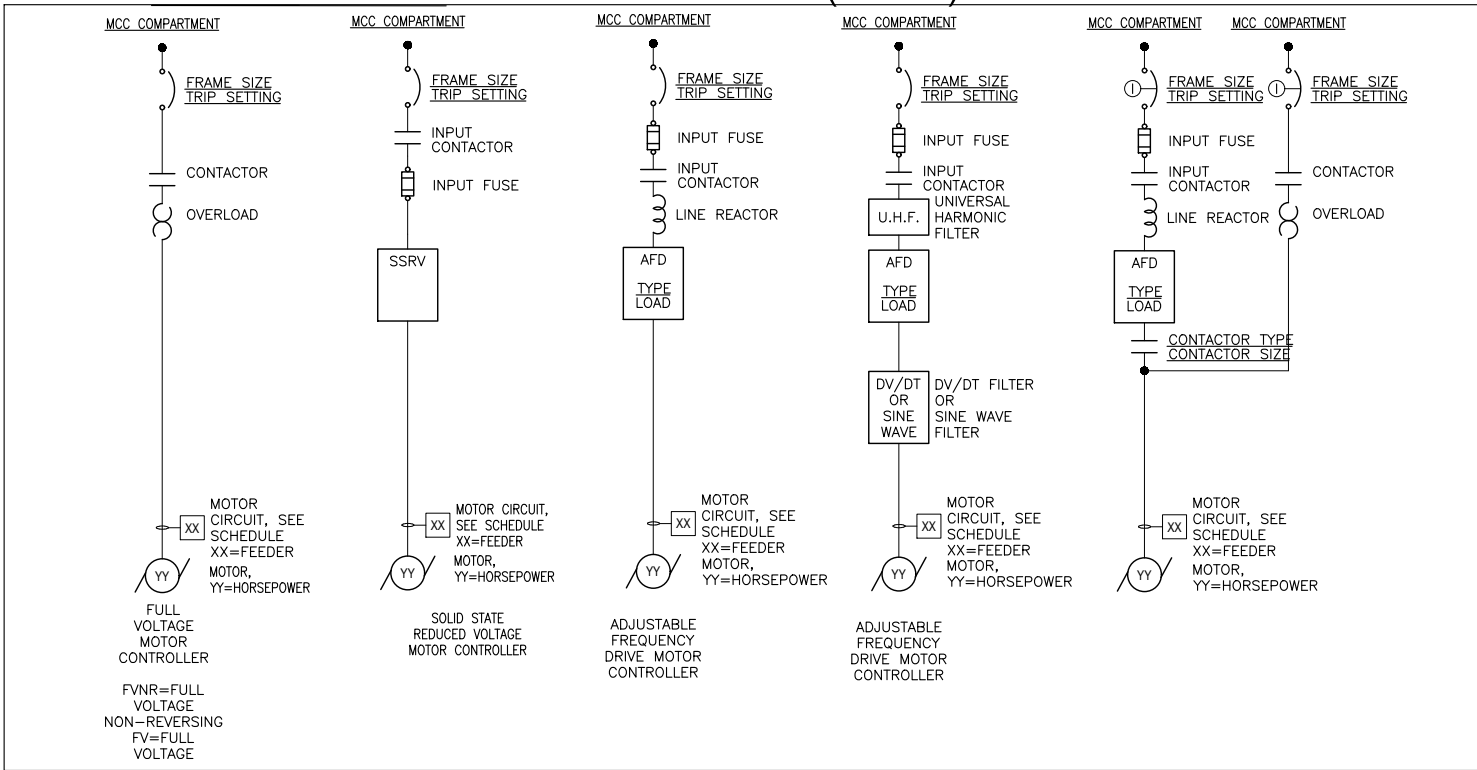
OHD	OVERHEAD DOOR OPERATOR
OL	OVERLOAD
P	POLE
PB	PULL BOX
PC	PLUMBING SYSTEM CONTRACTOR
PE	PRIMARY SERVICE
PEC	PHOTO ELECTRIC CONTROL
PH	PHASE
PIV	POST INDICATING VALVE
PNL	PANEL(BOARD)
PP	POWER PANEL
PR	PAIR
PRI	PRIMARY
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE CONDUIT
PWR	POWER
RE	REMOVE EXISTING
REC	RECESSED
RECP	RECEPTACLE
REQD	REQUIRED
RM	ROOM
RMC	RIGID METAL CONDUIT
RTU	ROOFTOP UNIT
S	SURFACE MOUNTED
SCH	SCHEDULE
SEC	SECONDARY
SIG	SIGNAL
SN	SOLID NEUTRAL
SP	SPARE
SPD	160KA/ PHASE MINIMUM SURGE PROTECTIVE DEVICE
SPEC	SPECIFICATION
SPKR	SPEAKER
SS	STAINLESS STEEL
STP	SHIELDED TWISTED PAIR
STL	CARBON STEEL
SUSP	SUSPENDED
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TC	TELEPHONE CABINET
TCI	TELECOMMUNICATIONS CABLING INSTALLER
TCP	TEMPERATURE CONTROL PANEL
TEL	TELEPHONE/DATA
TEL/DATA	TELEPHONE
TEMP	TEMPORARY
TERM	TERMINAL(S)
TV	TELEVISION
TYP	TYPICAL

UC	UNDER COUNTER
UG	UNDERGROUND
UH	UNIT HEATER
UPS	UNINTERRUPTIBLE POWER SOURCE
UTIL	UTILITY
UTP	UNSHIELDED TWISTED PAIR
V	VOLT
VPD	VARIABLE FREQUENCY DRIVE
W	WATT
W/	WITH
WH	WATTHOUR
WP	WEATHERPROOF
XFMR	TRANSFORMER
XLP	CROSS LINKED POLETHYLENE
Y	WYE
ZAM	ZONE ADAPTER MODULE

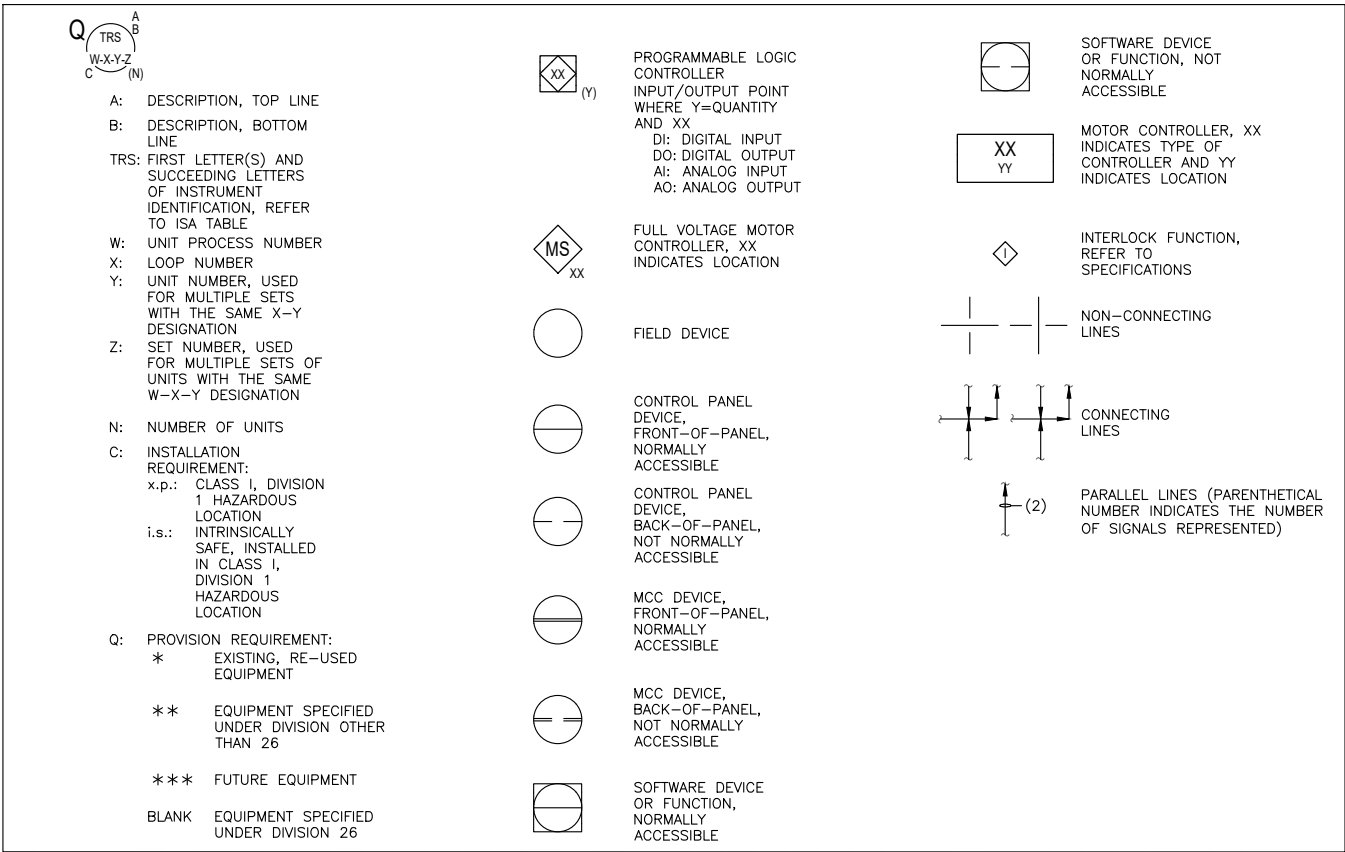
INTERNATIONAL SOCIETY OF AUTOMATION
INSTRUMENT IDENTIFICATION

	FIRST LETTER(S)		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	VARIABLE	READOUT / PASSIVE FUNCTION	OUTPUT / ACTIVE FUNCTION	FUNCTION
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	USER'S CHOICE			CONTROL	CLOSE
D	USER'S CHOICE	DIFFERENCES			DEVIATION
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW, FLOW RATE	RATIO			
G	USER'S CHOICE		GLASS, VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT		INDICATE		
J	POWER				
K	TIME, SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	MOISTURE				MIDDLE, INTERMEDIATE
N	TORQUE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE, RESTRICTION		OPEN
P	PRESSURE (VACUUM)		POINT, TEST CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD		RUN
S	SPEED, FREQUENCY	SAFETY		SWITCH	STOP
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE, PRESENCE	Y AXIS	AUXILIARY DEVICES		
Z	POSITION, DIMENSION	Z AXIS, SAFETY INSTRUMENT OF SYSTEM		DRIVE ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

MOTOR CONTROL (MCC) SYMBOLS



P&ID SYMBOLS (TYPICAL)



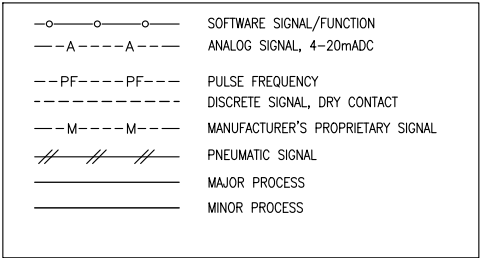
INSTRUMENT WIRING LEGEND

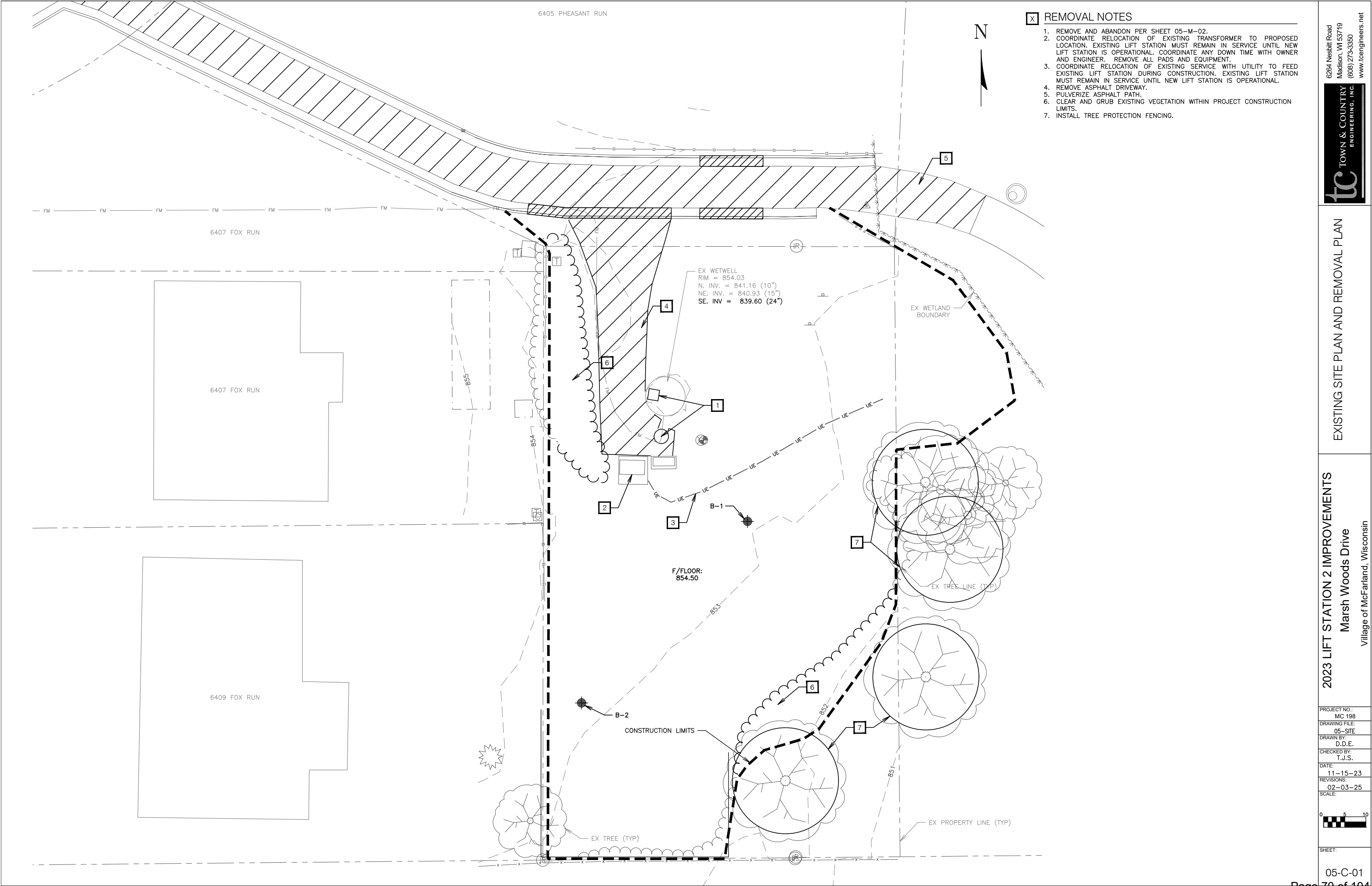
- AX = 2C#16 SHIELDED, TWISTED PAIR CABLE (X = NUMBER OF CABLES)
- DX = #14 THHN WIRE (X = NUMBER OF WIRES)
- MX = 1" CONDUIT FOR CABLE SUPPLIED BY MANUFACTURER (X = NUMBER OF CONDUITS)
- ELX = 3/4" CONDUIT AND CAT6(X) 300V CABLE(S) (X = NUMBER OF CABLES)
- EHX = 3/4" CONDUIT AND CAT6(X) 600V CABLE(S)
- FO(X) = CONDUIT AND FIBER OPTIC CABLE (X = NUMBER OF STRANDS)

PROCESS NOTES

- PROVIDE SEPARATE CONDUITS FOR THE FOLLOWING:
 - 24 V DC ANALOG
 - 24 V DC CONTROL/ DC PULSE
 - INTRINSICALLY SAFE
 - MANUFACTURERS CABLE
 - 120 VOLT CONTROL
 - 120 VOLT POWER
 - 480 VOLT POWER
 - LOW VOLTAGE INSTRUMENTATION
 - COMMUNICATION
- REFER TO SPECIFICATION 26 90 00 FOR LOOP AND OPERATOR INTERFACE FUNCTIONS.
- REFER TO RESPECTIVE DIVISION SPECIFICATIONS FOR ADDITIONAL DETAILS REGARDING INSTRUMENTATION AND CONTROL EQUIPMENT FURNISHED UNDER THOSE SPECIFICATIONS.

LINETYPE LEGEND





- X REMOVAL NOTES**
1. REMOVE AND ABANDON PER SHEET 05-M-02.
 2. COORDINATE RELOCATION OF EXISTING TRANSFORMER TO PROPOSED LOCATION. EXISTING LIFT STATION MUST REMAIN IN SERVICE UNTIL NEW LIFT STATION IS OPERATIONAL. COORDINATE ANY DOWN TIME WITH OWNER AND ENGINEER. REMOVE ALL PADS AND EQUIPMENT.
 3. COORDINATE RELOCATION OF EXISTING SERVICE WITH UTILITY TO FEED EXISTING LIFT STATION DURING CONSTRUCTION. EXISTING LIFT STATION MUST REMAIN IN SERVICE UNTIL NEW LIFT STATION IS OPERATIONAL.
 4. REMOVE ASPHALT DRIVEWAY.
 5. PULVERIZE ASPHALT PATH.
 6. CLEAR AND GRUB EXISTING VEGETATION WITHIN PROJECT CONSTRUCTION LIMITS.
 7. INSTALL TREE PROTECTION FENCING.



TOWN & COUNTRY
ENGINEERING, INC.

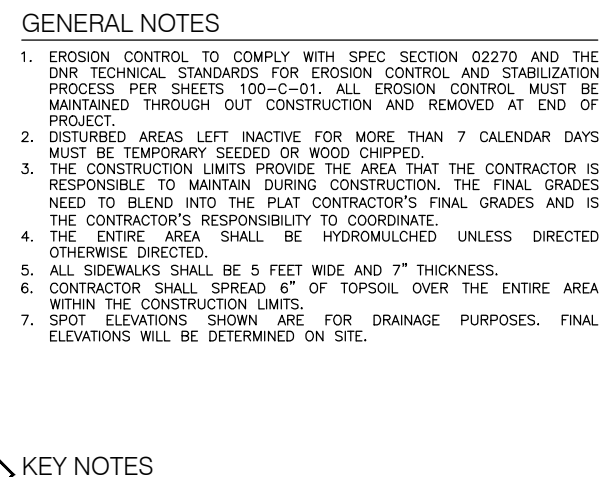
6264 Nesbit Road
Madison, WI 53719
(608) 273-3350
www.tceengineers.net

2023 LIFT STATION 2 IMPROVEMENTS
Marsh Woods Drive
Village of McFarland, Wisconsin

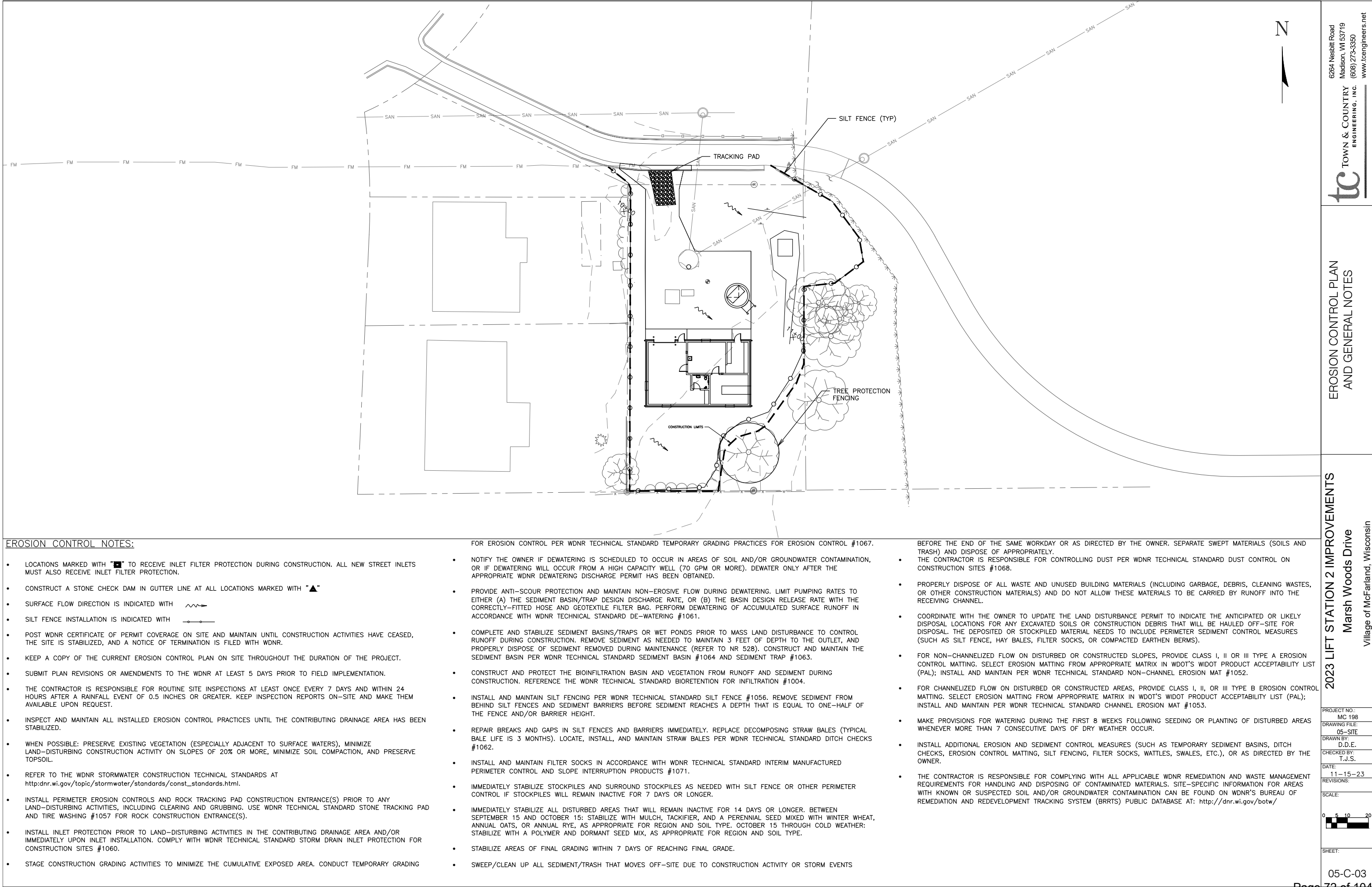
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DRAWING FILE: 05-SITE
DRAWN BY: D.D.E.
CHECKED BY: T.J.S.
DATE: 11-15-23
REVISIONS: 02-03-25
SCALE:

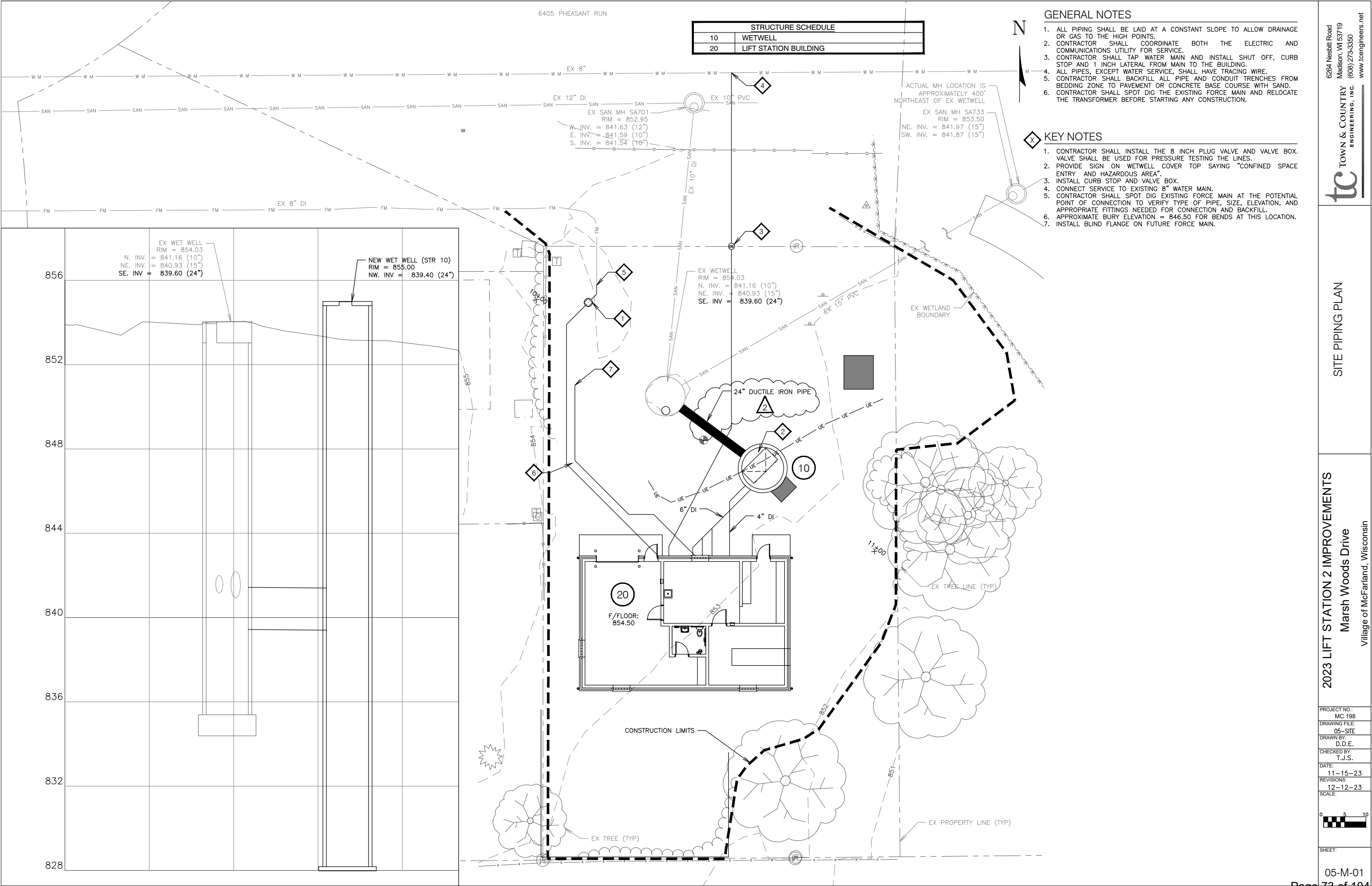
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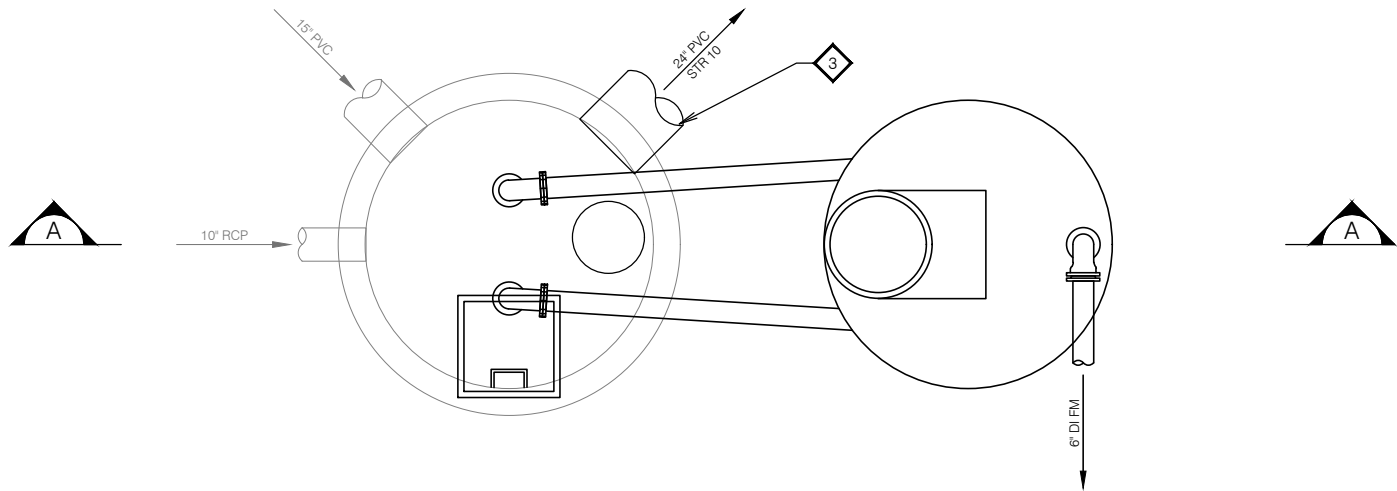
EXISTING SITE PLAN AND REMOVAL PLAN



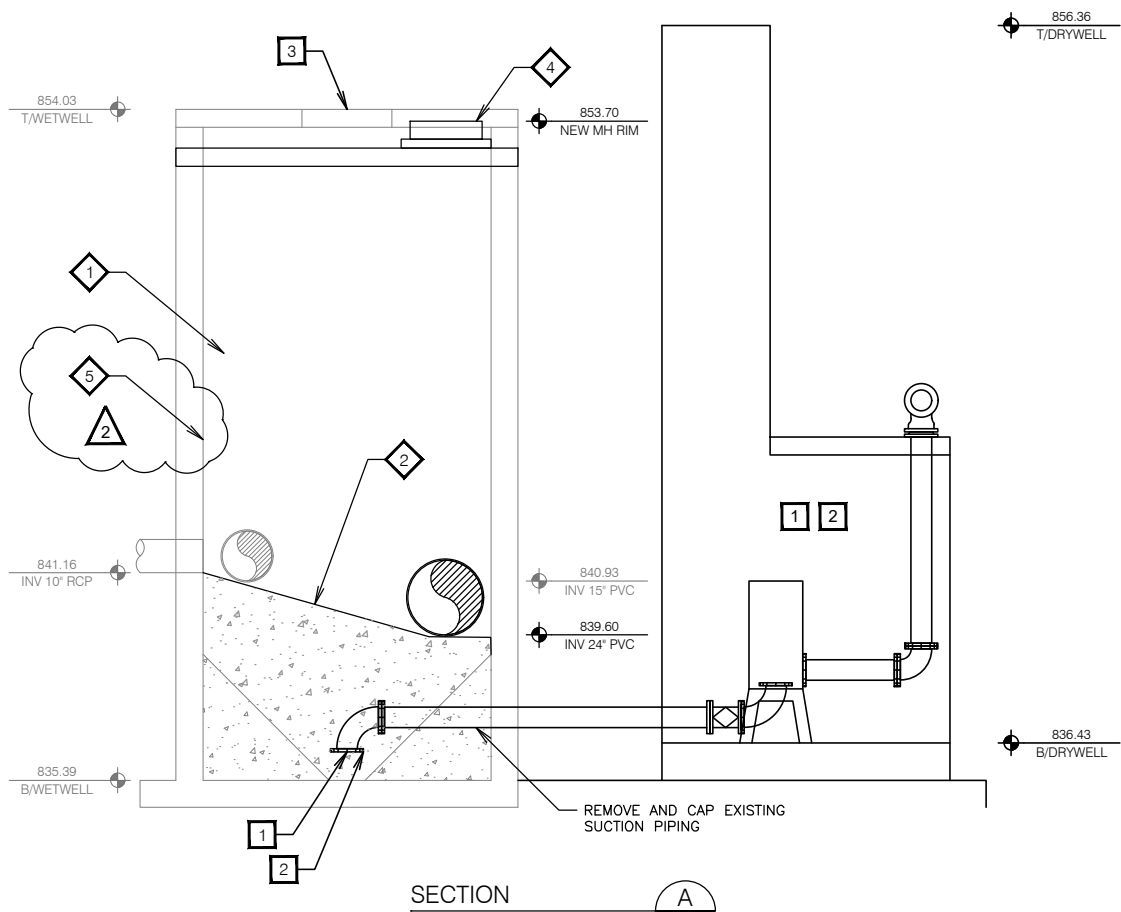
- ## KEY NOTES
1. ALL PAVED AREAS SHALL HAVE A COMBINED MINIMUM DEPTH OF 12" OF 3" BREAKER RUN, 6" OF $\frac{3}{4}$ " CRUSHED AGGREGATE BASE COURSE, 1-3/4" OF BINDER PAVEMENT AND 1-1/2" OF SURFACE PAVEMENT. ACCORDING TO THE VILLAGE STANDARD SPECIFICATIONS.
 2. CONTRACTOR RESPONSIBLE FOR PROVIDING 12" BASE COURSE FOR TRANSFORMER PAD BY OTHERS. TOP OF BASE COURSE=854.00'. PROPOSED LOCATION OF UTILITY TRANSFORMER PAD. INSTALL TRANSFORMER PAD PER ARCHITECTURAL/STRUCTURAL DETAIL 4 ON SHEET 100-AS-03 AS WELL AS UTILITY REQUIREMENTS. COORDINATE EXACT LOCATION WITH ENGINEER.
 3. COORDINATE RELOCATION OF EXISTING TRANSFORMER TO NEW LOCATION. EXISTING LIFT STATION MUST REMAIN IN SERVICE UNTIL NEW LIFT STATION IS FULLY OPERATIONAL. COORDINATE ANY OUTAGES WITH OWNER AND ENGINEER.
 4. COORDINATE RELOCATION OF EXISTING SERVICE WITH UTILITY TO FEED EXISTING LIFT STATION DURING CONSTRUCTION. EXISTING LIFT STATION MUST REMAIN IN SERVICE UNTIL NEW LIFT STATION IS FULLY OPERATIONAL.
 5. APPROXIMATE LOCATION OF ELECTRIC UTILITY METER. COORDINATE EXACT LOCATION WITH ENGINEER.
 6. TRANSFORMER PRIMARY CONDUCTOR INSTALLED BY UTILITY COMPANY. COORDINATE EXACT ROUTING IN FIELD WITH ENGINEER.
 7. TRANSFORMER SECONDARY CONDUCTOR INSTALLED BY UTILITY COMPANY. COORDINATE EXACT ROUTING IN FIELD WITH ENGINEER.
 8. DUCT BANK 'A' CONDUIT ROUTING. SEE UNDERGROUND CONDUIT SCHEDULE LOCATED ON SHEET 100-E-01 FOR ADDITIONAL INFORMATION.
 9. CONSTRUCT NEW BIORETENTION AREA ACCORDING TO DETAIL AS SHOWN ON SHEET 100-C-01.







PROCESS PLAN



SECTION



GENERAL NOTES

1. DRAWINGS IN GENERAL DO NOT SHOW DIMENSIONS OF EXISTING CONSTRUCTION, BUT ARE DRAWN APPROXIMATELY TO SCALE. CONTRACTOR SHALL OBTAIN ALL DIMENSIONS REQUIRED FOR CONSTRUCTION.
2. SEE SPECIFICATIONS FOR GENERAL DEMOLITION REQUIREMENTS.
3. PLANS DO NOT NECESSARILY CALL FOR ALL ITEMS REQUIRING DEMOLITION REMOVAL, CUTTING, OR PATCHING. WHERE NOT SHOWN, ALL DEMOLITION, REMOVAL, CUTTING, PATCHING AND OTHER WORK NECESSARY TO ACCOMMODATE NEW CONSTRUCTION SHALL BE PROVIDED AS A PART OF THE CONTRACT.
4. REFER TO ARCHITECTURAL, STRUCTURAL, PLUMBING, HVAC, AND ELECTRICAL DRAWINGS FOR ADDITIONAL DEMOLITION AND MODIFICATIONS NOT LISTED HERE.
5. EXISTING STRUCTURE IS TO REMAIN IN SERVICE DURING CONSTRUCTION. REFER TO SPECIFICATION SECTION 01 00 00 FOR ANTICIPATED SEQUENCE OF CONSTRUCTION. COORDINATE DEMOLITION SCHEDULE WITH THE OWNER.
6. PLANS FROM EXISTING WET WELL CONSTRUCTION ARE AVAILABLE UPON REQUEST.

REMOVAL NOTES

1. CONTRACTOR TO REMOVE ALL PIPING, EQUIPMENT, ELECTRICAL EQUIPMENT, AND MISC. ITEMS.
2. PUNCH HOLES IN SIDEWALLS NEAR THE BOTTOM, PLUG ALL PIPING AND CONDUIT OPENINGS, REMOVE THE ACCESS TO 3' BELOW NEW GRADES AND BACKFILL LIFT STATION WITH SAND MATERIAL.
3. CONTRACTOR TO REMOVE EXISTING MANHOLE TOP.

KEY NOTES

1. CONTRACTOR TO INSTALL SPECRA SHIELD COATING ON INTERIOR OF STRUCTURE AFTER MODIFICATIONS ARE MADE.
2. FILL WET WELL FLOOR WITH CONCRETE AND SLOPE TO NEW DISCHARGE POINTS.
3. CONTRACTOR SHALL CORE AND LINK SEAL NEW OPENING PER DETAIL 414 - TYPE H - 100-M-01.
4. CONTRACTOR TO PROVIDE AND INSTALL NEW STRUCTURE TOP WITH OPENING FOR NEENAH R-1550 CASTING. NEW TOP SHALL BE H-20 TRAFFIC LOAD RATED. CONTRACTOR TO PROVIDE DESIGN FOR NEW TOP STAMPED BY A STRUCTURAL ENGINEER. CONTRACTOR TO MAKE MODIFICATIONS TO EXISTING STRUCTURE AS NECESSARY TO ACCOMMODATE NEW LID DESIGN AND TARGET FINAL RIM ELEVATION OF 853.70.
5. CONTRACTOR TO INSTALL COATING ON INTERIOR OF STRUCTURE AFTER MODIFICATIONS ARE MADE.

REMOVAL PLAN
EXISTING WET WELL

2023 LIFT STATION 2 IMPROVEMENTS
Marsh Woods Drive
Village of McFarland, Wisconsin

PROJECT NO.:
MC 198
DRAWING FILE:
EX WETWELL
DRAWN BY:
D.D.E.
CHECKED BY:
T.J.S.

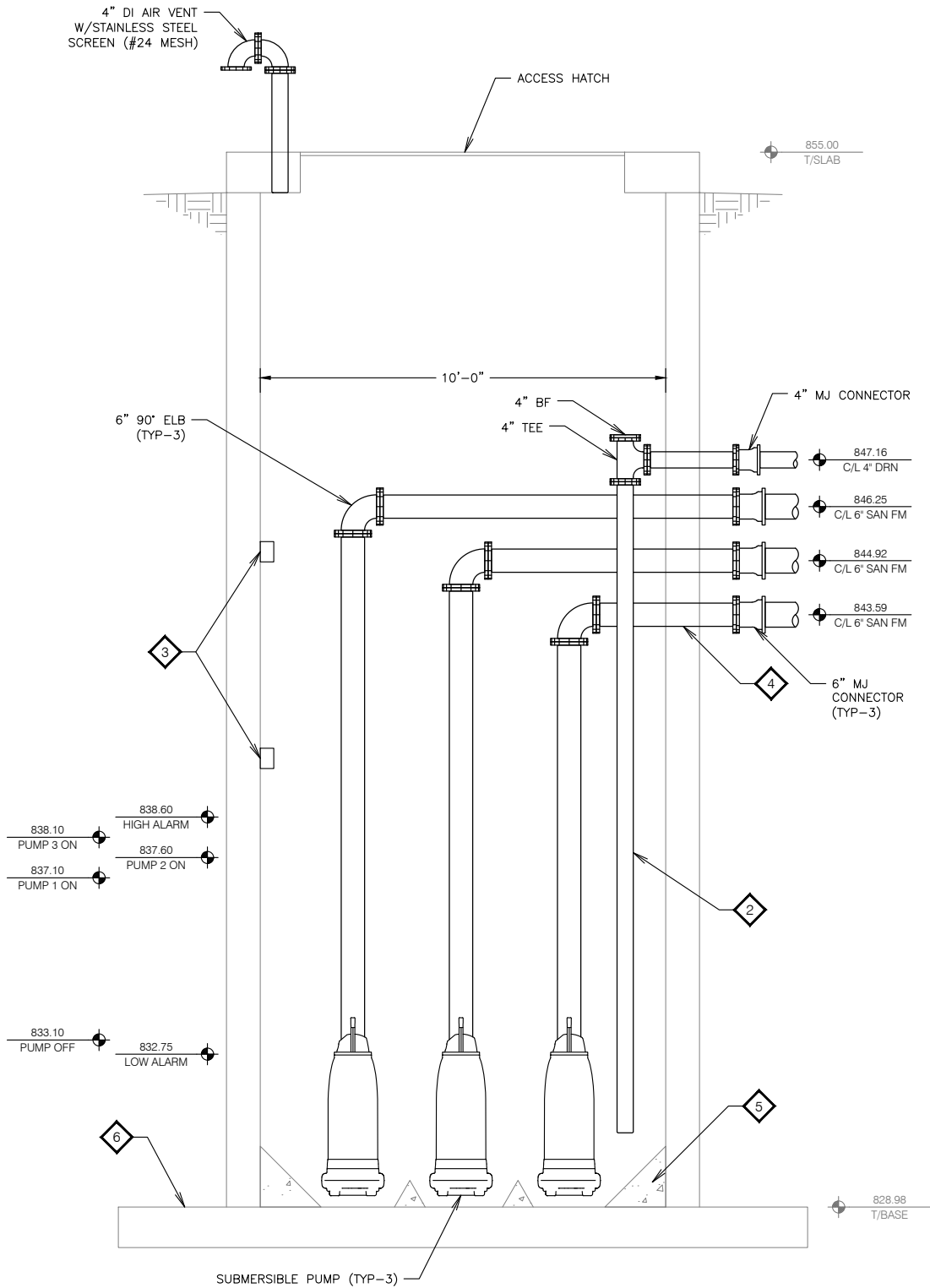
DATE:
11-16-23
REVISIONS:
12-12-23
SCALE:

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FEET

SHEET:

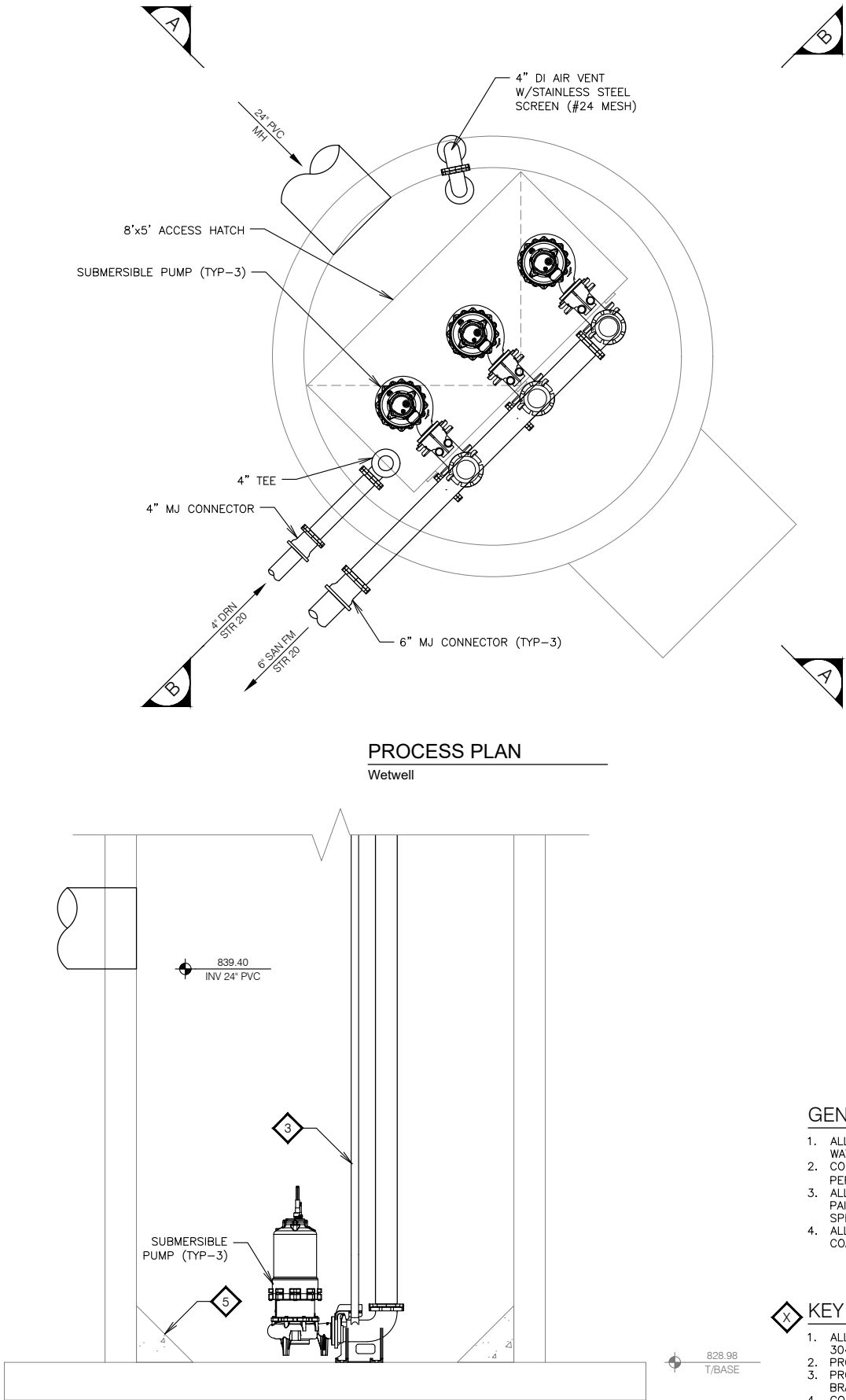
05-M-02

HIGH ALARM	838.60
PUMP 3 ON	838.10
PUMP 2 ON	837.60
PUMP 1 ON	837.10
PUMP OFF	833.10
LOW LEVEL ALARM	832.75



SECTION

B



PROCESS PLAN

Wetwell

SECTION

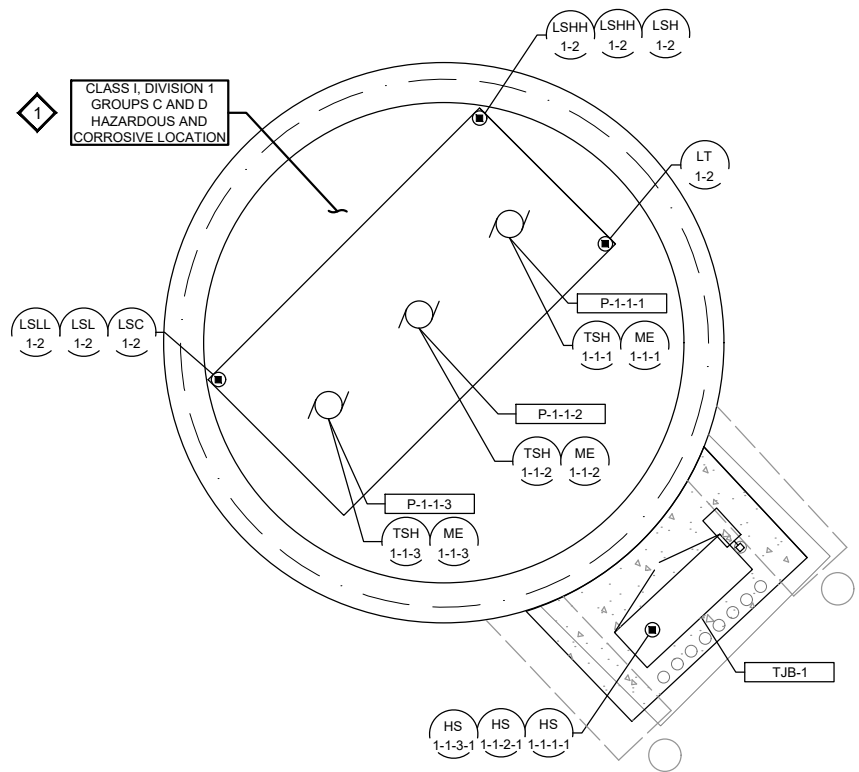
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GENERAL NOTES

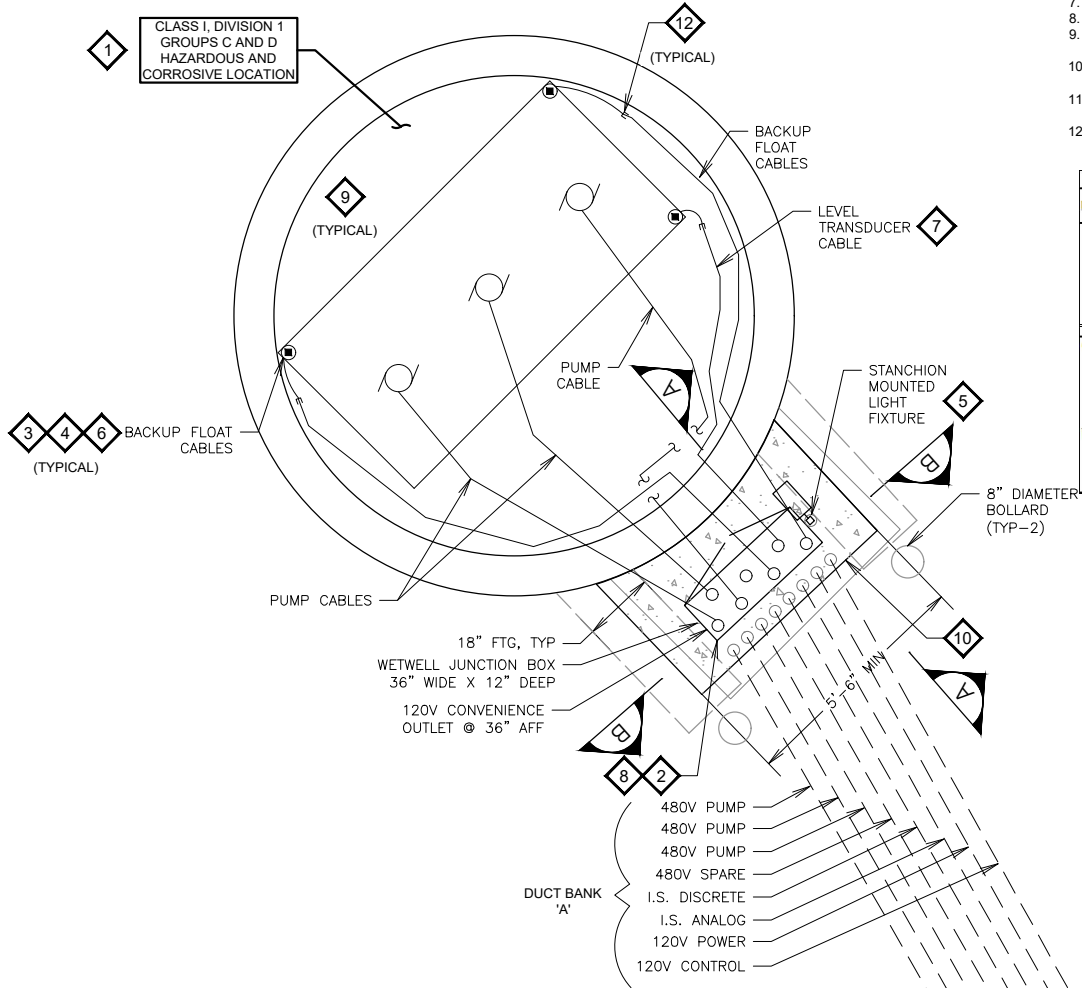
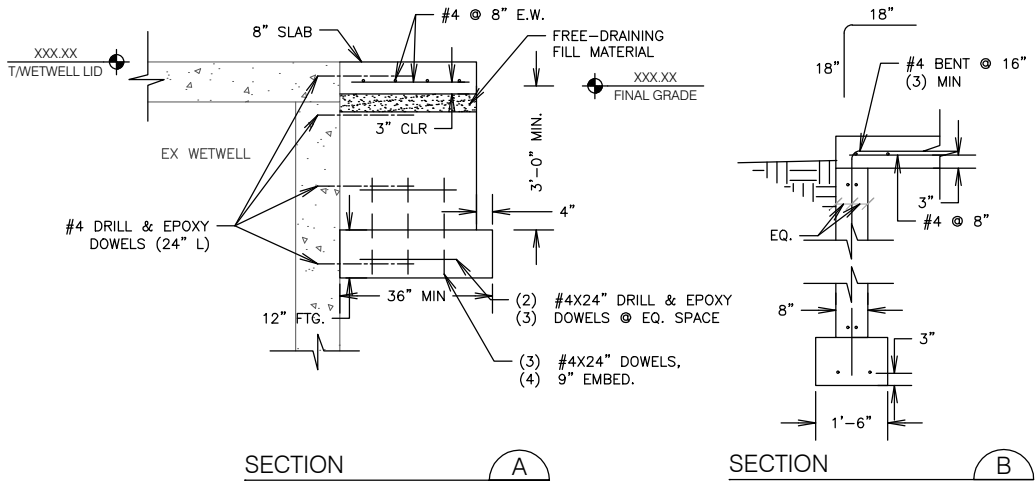
1. ALL PIPING THROUGH THE WETWELL WALLS SHALL BE CORED WITH WATER TIGHT SEALS.
2. CONTRACTOR SHALL GROUT THE BOTTOM OF WETWELL AS SHOWN AND PER MANUFACTURER'S RECOMMENDATIONS.
3. ALL EXPOSED PIPING SHALL BE EPOXY PAINTED CLASS 53 DI AND PAINTED ACCORDING TO THE HIGH PERFORMANCE COATINGS SPECIFICATION UNLESS NOTED OTHERWISE.
4. ALL MATERIAL IN WETWELL WILL BE 304SS, DUCTILE IRON EPOXY COATED, AND PVC COATED RIGID ELECTRIC CONDUIT.

KEY NOTES

1. ALL CONSTRUCTION MATERIALS INSTALLED IN THE WETWELL SHALL BE 304 STAINLESS STEEL UNLESS NOTED OTHERWISE.
2. PROVIDE SS PIPE BRACING PER THE PIPING SPECIFICATIONS.
3. PROVIDE SS GUIDE RAILINGS AND APPROPRIATE INTERMEDIATE SUPPORT BRACING AS PER THE PUMP MANUFACTURERS RECOMMENDATIONS.
4. CONTRACTOR SHALL CORE AND LINK SEAL ALL NEW OPENINGS PER DETAIL 414-TYPE H ON 100-M-01.
5. GROUT ACCORDING TO MANUFACTURERS RECOMMENDATIONS.
6. CONTRACTOR TO VERIFY REQUIRED DIMENSION AND PROVIDE STAMPED BOUYANCY CALCULATIONS.



POWER AND INSTRUMENTATION PLAN



POWER DISTRIBUTION AND CONDUIT ROUTING PLAN

GENERAL NOTES

- DO NOT SCALE DRAWINGS TO DETERMINE EXACT LOCATION OF ELECTRICAL EQUIPMENT AND CONNECTIONS.
- 120V HOMERUN WIRING SHALL BE A MINIMUM OF (2) #12 & #12G IN 3/4" UNLESS OTHERWISE NOTED. SIZE FOR VOLTAGE DROP.
- SEE ONE-LINE DIAGRAM, PANEL SCHEDULE, AND FIELD DEVICE WIRING SCHEDULE FOR WIRING OF ALL PROCESS AND INSTRUMENTATION.
- PROVIDE RACEWAY FOR ALL HVAC EQUIPMENT. PROVIDE WIRING FOR LINE VOLTAGE AND ABOVE POWER AND CONTROL WIRING.
- INSTALL FIELD INSTRUMENTS PER DETAIL REFERENCED IN FIELD DEVICE WIRING SCHEDULE.
- ALL CONDUIT STUBBED UP THROUGH CONCRETE SHALL BE PVC COATED GR.
- SEE SCADA OVERVIEW FOR COMMUNICATIONS CABLING REQUIREMENTS.
- TRANSITION FROM PVC TO FMCCS PRIOR TO TRANSITIONING FROM UNDERGROUND TO EXPOSED CONDUIT.
- UNDERGROUND CONDUIT ROUTING IS DIAGRAMMATIC IN NATURE AND NOT INTENDED TO DICTATE EXACT ROUTING CONTRACTOR IS TO COORDINATE WITH ENGINEER AND DETERMINE BEST ROUTING BASED ON OTHER UTILITIES AND FIELD CONDITIONS.
- ALL EQUIPMENT SHALL BE LABELED PER CITY'S REQUIREMENT.

KEY NOTES

- WETWELL IS CLASS I DIV 1, GROUPS C AND ENVIRONMENT. AREA ABOUT WETWELL VENT IS CLASS I DIV 1 TO A RADIUS OF 3 FEET, AND CLASS I DIV 2 FOR A RADIUS OF 3 TO 5 FEET. AREA ABOUT WETWELL HATCH WHEN OPEN IS CLASS I DIV 2 TO A HEIGHT OF 1.5 FEET AND AN AREA EXTENDING HORIZONTALLY 3 FEET FROM THE HATCH OPENING.
- PROVIDE WETWELL JUNCTION BOX AND CONDUIT ROUTING PER DETAIL E1-18.
- PROVIDE SEPERATE STAINLESS STEEL KELLEMS GRIPS IN WETWELL FOR EACH CABLE.
- PROVIDE TWO FLOAT MOUNTING KITS, ONE FOR LSL-1-2 AD LSL-1-2, LSC-1-2 AND THE SECOND FOR LSH-1-2, LSH-1-2, AND LSH-1-2.
- INSTALL FIXTURE POLE AND BASE PER DETAIL E3-11. FIXTURE TO BE MOUNTED AT 10' AFG AND CONTROLLED BY AN ON-OFF TOGGLE SWITCH LOCATED IN TJB-1 AT STRUCTURE 10.
- FLOAT INSTALLATION PER DETAIL E5-L01.
- TRANSDUCER INSTALLATION PER DETAIL E5-L03.
- LB ENTERS WETWELL VENTILATED JUNCTION PANEL ON BACK SIDE.
- ALL CONDUIT IN WETWELL SHALL BE SLOPED TO DRAIN BACK TO WETWELL, AND SHALL BE BRACED WITH STAINLESS STEEL SUPPORTS.
- CONTRACTOR SHALL DETERMINE FINAL LENGTH AND WIDTH OF PLATFORM TO ALLOW SPACE FOR LBS. DIMENSIONS SHOWN ARE MINIMUM.
- SEE SPECIFICATION SECTION 01000 FOR DIVISION OF WORK BETWEEN THE ELECTRIC UTILITY AND THE CONTRACTOR.
- CONCEAL INSTRUMENTATION AND POWER CONDUCTORS IN CONDUIT WITHIN WETWELL AREA BEFORE TRANSITIONING TO EXPOSED CABLE AT TERMINATION LOCATIONS.

UNDERGROUND CONDUIT SCHEDULE					
ROUTE	CIRCUIT TYPE	CONDUIT QTY	CONDUIT SIZE	CONDUIT TYPE	NOTES
A	480V POWER	3	2"	RNC	1
	120V POWER	1	2"	RNC	1
	120V DISCRETE SIGNAL	1	2"	RNC	1
	I.S. SIGNAL	1	2"	RNC	1
	SPARE POWER	1	2"	RNC	1
	SPARE SIGNAL	1	2"	RNC	1

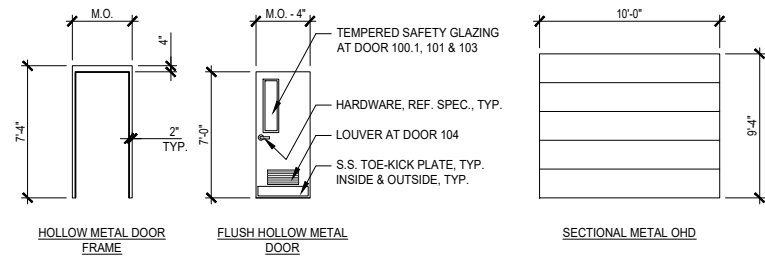
- GENERAL NOTES:
- TRANSITION TO PVC COATED GRG PRIOR TO EXITING GROUND.
 - REFER TO SECTION 26 90 10 FOR ADDITIONAL REQUIREMENTS.
 - WHERE MORE THAN ONE CONDUIT SIZE IS CALLED OUT IN PLANS, USE LARGEST CONDUIT SIZE SPECIFIED.
- TABLE NOTES:
- DIRECT-BURIED CONDUIT PER DETAIL E2-10.

BUILDING CODE SUMMARY	
BUILDING INFORMATION	
PROJECT TYPE	NEW
STRUCTURE PURPOSE	NOTE-3
USE & OCCUPANCY	NOTE-4
NO. STORIES	1
CONSTRUCTION CLASS	IIIB
GROSS AREA NEW CONSTRUCTION	1,600 SF
GROSS AREA EXIST. & NEW	N/A
GROSS ENCLOSED VOLUME	22,000 CF
FIRE SUPPRESSION (Y/N)	N
FIRE ALARM (Y/N)	N
EXIT TRAVEL DIST. (MAX. PER T.1017.2)	NOTE-6
ACCESSIBILITY	NOTE-5
CODE AUTHORITY SUBMITTAL (Y/N)	N

- BUILDING CODE SUMMARY NOTES:
- PROJECT ADDRESS: MARSH WOODS DR., MCFARLAND, WI 53558
 - COMMERCIAL BUILDINGS DELEGATED AUTHORITY: WISCONSIN DEPARTMENT OF SAFETY & PROFESSIONAL SERVICES (IBC 2015)
 - STRUCTURE PURPOSE:
CONSTRUCT NEW MUNICIPAL SEWAGE LIFT STATION
 - USE & OCCUPANCY:
FACTORY GROUP F-2, NO USE SEPARATIONS REQUIRED, TABLE 508.4, ALLOWABLE BUILDING AREA, GROUP F-2 = 19,000 SQ. FT. (NS, MOST RESTRICTIVE), TABLE 506.2
 - ACCESSIBILITY: EXEMPT PER IBC 1103.2.7 AND/OR 1103.2.9
 - ALLOWABLE EXIT TRAVEL DISTANCE: 300' (GROUP F-2)

BASIS OF STRUCTURAL DESIGN	
[1.0] ROOF LIVE LOADS:	
SNOW, GROUND (P _g)/ROOF FLAT (P _f)	30/25 PSF
UNBAL. SNOW LOAD (ASCE-7 FIG. 7-5)	40/25 PSF
IMPORTANCE FACTOR (I _p)	1.0
THERMAL FACTOR (C _t)	1.0
SNOW EXPOSURE FACTOR (C _e)	1.2
[1.1] SUPERIMPOSED ROOF DEAD LOADS (LOADS ON COMPONENTS):	
ROOFING, INSUL., FP, GWB, MISC.	18 PSF
[1.2] FLOOR LIVE LOADS:	
SLAB-ON-GRADE	250 PSF
[2.0] WIND (SIMPLIFIED PROCEDURE LOW-RISE BUILDINGS):	
WIND RISK CATEGORY	II
ENCLOSURE LEVEL	FULL
ULTIMATE DESIGN WIND SPEED (V _{ult})	115 MPH
NOMINAL DESIGN WIND SPEED (V _{asd})	90 MPH
IMPORTANCE FACTOR (I _w)	1.0
EXPOSURE CATEGORY	C
INTERNAL PRESSURE COEFFICIENT	±0.18
[3.0] SEISMIC (EQUIVALENT LATERAL FORCE PROCEDURE):	
SEISMIC RISK CATEGORY	II
SEISMIC IMPORTANCE FACTOR (I _s)	1.00
SITE CLASS	D
SEISMIC DESIGN CATEGORY	A
SEISMIC FORCE-RESISTING SYSTEM	NOTE-2
[4.0] ALLOWABLE SOIL BEARING CAPACITY & SUBGRADE MODULUS:	
FOOTINGS (REF. NOTE-4)	2,000 PSF
SLAB-ON-GRADE (REF. NOTE-4)	150 PCI

- BASIS OF STRUCTURAL DESIGN NOTES:
- PROVIDE FOR ADDITIONAL 5 PSF LL AT ALL ATTIC SPACES.
 - SEISMIC FORCE-RESISTING SYSTEM: A. BEARING WALL SYSTEMS, 9. ORDINARY REINFORCED MASONRY SHEAR WALLS (PER ASCE 7).
 - COMPONENT DELEGATED DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH PROVISIONS OF THE WISCONSIN DEPARTMENT OF ADMINISTRATIVE CODE, CHAPTER SPS 362 (CURRENT EDITION). COMPONENT SUBMITTAL SHALL INCLUDE: WOOD ROOF TRUSSES.
 - REFERENCE CGC GEOTECHNICAL REPORT FOR SUBGRADE BEARING SOILS PREPARATION REQUIREMENTS.



- DOOR NOTES:
- REF. SPECIFICATION SECTION 08 71 00 (3.3) FOR DOOR HARDWARE SETS. HARDWARE TYPE & FINISHES AS SPECIFIED. COORDINATE LOCKSET KEYING WITH OWNER.
 - PROVIDE SHAFT-MOUNTED ELECTRIC OPERATOR (SIDE MOUNT), ACCESS KEYPAD, DOOR SENSING EDGE, & (4) REMOTES. TRACKS SHALL BE HIGH-CLEARANCE.
 - EXTERIOR DOORS 100.1 AND 100.2 & 102 SHALL BE INSULATED.
 - INTERIOR DOOR 103 SHALL BE 2-HR RATED, TEMPERED SAFETY GLAZING SHALL BE RATED FOR 1 1/2 HRS.

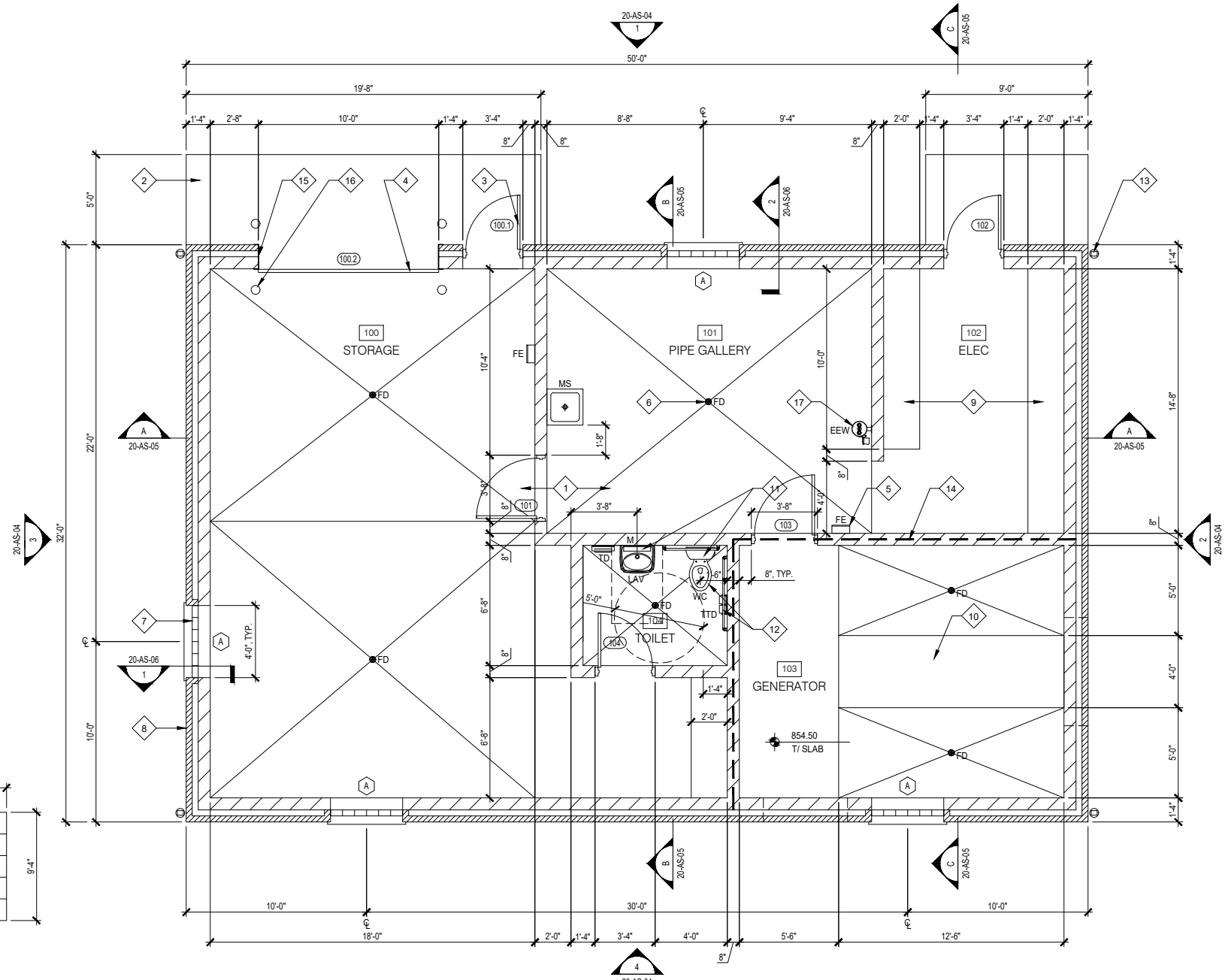
ROOM FINISH SCHEDULE											
BUILDING	ROOM NO.	ROOM NAME	WALLS				FLOOR	BASE	CEILING		REMARKS
			N	E	S	W			MAT'L	HEIGHT	
LIFT STATION NO. 2	100	STORAGE	CMU/PT	CMU/PT	CMU/PT	CMU/PT	SC	N/A	GWB	10'-10"±	NOTE-1, 2
	101	PIPE GALLERY	CMU/PT	CMU/PT	CMU/PT	CMU/PT	SC	N/A	GWB	10'-10"±	NOTE-1, 2
	102	ELECTRICAL	CMU/PT	CMU/PT	CMU/PT	CMU/PT	SC	N/A	GWB	10'-10"±	NOTE-1, 2
	103	EMERGENCY GENERATOR	CMU/PT	CMU/PT	CMU/PT	CMU/PT	SC	N/A	GWB	10'-10"±	NOTE-1, 2, 3
	104	TOILET	CMU/PT	CMU/PT	CMU/PT	CMU/PT	SC	N/A	GWB	10'-10"±	NOTE-1, 2

ROOM FINISH SCHEDULE ABBREVIATIONS:

- C - CONCRETE
CMU - CONCRETE MASONRY UNIT
GWB - 5/8" TYPE-X MOISTURE-RESISTANT GYPSUM WALL BOARD, FINISHED, ORANGE-PEEL TEXTURED & PAINTED
- PT - PAINTED
SC - SEALED CONCRETE

ROOM FINISH SCHEDULE NOTES:

- SEALED CONCRETE FINISH: (2) COATS ARMOR 'AR350' OR EQ., FOLLOW MFR RECOMMENDATIONS FOR SURFACE PREP, MIXING & APPLICATION RATES.
- GWB 5/8" MOISTURE-RESISTANT, TYPE-X, MAX. INSTALLATION GAP 1/16".
- 2-HR FIRE SEPARATION AREA: PROVIDE (2) LAYERS 5/8" TYPE-X GWB AT RM 103 CEILING. O. JOINT COMPOUND & TAPE BOTH LAYERS; FINISHED, PAINTED & TEXTURED EXPOSED SURFACE ONLY.



FLOOR PLAN

1

1/4" = 1'-0"

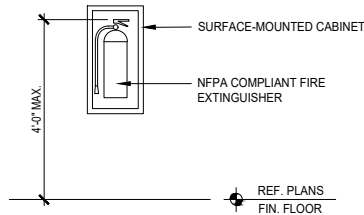
GENERAL NOTES

- KEY NOTES BELOW APPLY TO THIS SHEET ONLY.
- REFERENCE DETAIL 4/100-AS-02 & 5/100-AS-02 FOR APPLICABLE HEAD, JAMB, SILL AND/OR THRESHOLD DETAILS OF CONSTRUCTION.

KEY NOTES

- CONCRETE FLOOR SLAB-ON-GRADE: 4" THICK ROOMS 102 & 104, 6" THICK REMAINING ROOMS
- CONCRETE FROST-PROTECTED STRUCTURAL STOOP
- INSULATED HOLLOW METAL DOOR, FRAME & HARDWARE, REF. DETAIL THIS SHEET AND SPECIFICATIONS 08 11 13 & 08 71 00
- 10'-0"W. X 9'-4"H. INSULATED METAL SECTIONAL OVERHEAD DOOR, REF. DETAIL THIS SHEET AND SPECIFICATION 08 36 13
- FIRE EXTINGUISHER IN SURFACE-MOUNTED CABINET, REF. FIRE EXTINGUISHER MOUNTING ELEVATION THIS SHEET, TYP.
- FLOOR DRAIN (FD), REF. PLUMBING DRAWINGS & FOUNDATION PLAN FOR ELEVATION(S), TYP.
- GLASS BLOCK WINDOW ASSEMBLY AT LOCATIONS SHOWN AND DENOTED 'A', (4) LOCATIONS, TYP.
- 16" INSULATED MASONRY CAVITY WALL, REF. APPLICABLE DETAILS FOR CONSTRUCTION.
- 4" RAISED CONC. PAD, ALSO REF. ELEC. DWGS
- EMERGENCY GENERATOR RAISED ISOLATED BASE
- TOILET ROOM FIXTURES: WC = WATER CLOSET, LAV = LAVATORY, MS = MOP SINK, REF. PLUMBING DRAWINGS & SPECIFICATIONS, ALSO REF. 1/100-AS-03 & 2/100-AS-03 FOR APPLICABLE MOUNTING INFORMATION
- TOILET ROOM ACCESSORIES: GB = STAINLESS STEEL GRAB BARS, TTD = TOILET TISSUE DISPENSER, TD = TOWEL DISPENSER, M = MIRROR, REF. SPECIFICATION 10 80 00 AND REF. 1/100-AS-03 & 2/100-AS-03 FOR APPLICABLE MOUNTING INFORMATION
- FACTORY-FINISHED ALUM. DOWNSPOUT TO UNDERDRAIN SYSTEM, REF. SITE DWGS, TYP. (4) LOCATIONS SHOWN
- 2-HR RATED WALL AND CEILING SYSTEM REQUIRED BETWEEN GENERATOR ROOM 103 AND ADJACENT STRUCTURE (HEAVY DASHED LINE)
- 1/8" PLATE STEEL PROTECTIVE JAMB COVER, 2" RETURNS, GALVANIZED & PAINTED, (2) REQD
- 8" CONCRETE-FILLED STEEL PIPE BOLLARD
- WALL-MOUNTED EMERGENCY EYE WASH (EEW) STATION, REF. PLUMBING DWGS FOR SPECIFICATIONS

FIRE EXTINGUISHER NOTE:
PROVIDE WALL FIRE EXTINGUISHERS (FE), GENERAL LOCATIONS AS SHOWN ON FLOOR PLAN. COORDINATE EXACT PLAN LOCATION TO ACCOMMODATE INSTALLATIONS BY OTHER TRADES.



FIRE EXTINGUISHER MOUNTING ELEVATION

6264 Nesbitt Road
Madison, WI 53719
(608) 273-3350
www.tcengineers.net

TOWN & COUNTRY
ENGINEERING, INC.

STRUCTURE PLAN & CODE

2023 LIFT STATION 2 IMPROVEMENTS

Marsh Woods Drive

Village of McFarland, Wisconsin

PROJECT NO.: MC 198

DRAWING FILE:

DRAWN BY: WTS

CHECKED BY:

DATE: 6/28/23

REVISIONS:

SCALE:

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FEET

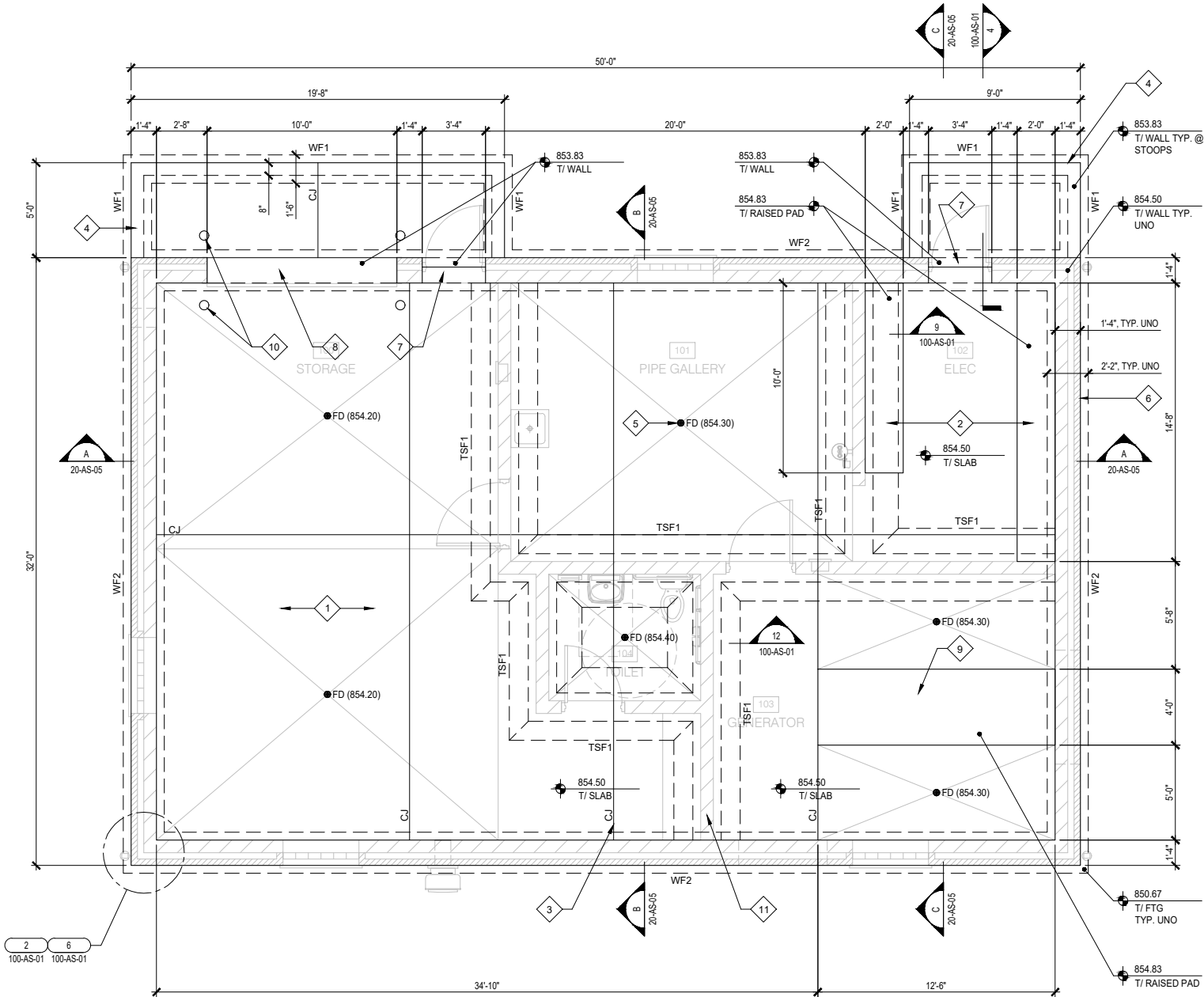
SHEET:

20-AS-01

NOTE:
ALL FINISH-EXPOSED FORMED CONCRETE SURFACES SHALL RECEIVE A SMOOTH RUBBED FINISH PER SPECIFICATION SECTION 03 30 00 (3.7). CONCRETE SLABS SHALL BE FINISHED TO TOLERANCE $F_2=25$, $F_1=20$, UNO.

WALL FOOTINGS				
MARK	SIZE		REINF.	REMARKS
	W (IN)	T (IN)		
WF1	1'-6"	12"	(2) #4 CONT.	-
WF2	2'-0"	12"	(3) #5 CONT.	-
TSF1	1'-8"	12"	-	REF. 12/100-AS-01

NOTES:
1. FOOTINGS ARE CENTERED BELOW CONCRETE (OR CMU) WALLS TYP. UNO.
2. INSTALL CONC. WALL-TO-FOOTING DOWELS, #4 X 24" STRAIGHT DOWELS @ 48" O.C., 9" EMBED. INTO FOOTING, TYP. UNO.



FOUNDATION PLAN

1

1/4" = 1'-0"

GENERAL NOTES

- KEY NOTES BELOW APPLY TO THIS SHEET ONLY.
- REF. 8/100-AS-01 FOR CONCRETE REINFORCING LAP SPLICE TABLE AND REINFORCING CLEAR COVER REQUIREMENTS.
- REF. 3/100-AS-01 FOR CONCRETE REINFORCING TYPICAL BAR BEND DETAILING.
- SEQUENCED CONCRETE PLACEMENT SHALL UTILIZE LAP SPLICES AS INDICATED IN 8/100-AS-01 EXCEPT WHERE APPROVED BY A/E IN ADVANCE WHERE DETAIL 7/100-AS-01 MAY BE PERMITTED.
- REF. 11/100-AS-01 FOR UTILITY PIPING/CONDUIT CONFLICTS WITH FOUNDATION, TYP.
- A SITE-SPECIFIC GEOTECHNICAL SUBSURFACE INVESTIGATION AND REPORT WAS COMPLETED FOR THE SITE. RECOMMENDATIONS THEREIN SHALL BE INCORPORATED INTO THE PROJECT REQUIREMENTS. IN GENERAL, BIDDER SHALL PROVIDE FOR ENTIRE PROJECT BASE BID TO INCLUDE THE FOLLOWING SOILS WORK:

- PREPARE BUILDING FOOTING BEARING SOILS TO MEET MINIMUM CAPACITY INDICATED IN 'BASIS OF BUILDING STRUCTURAL DESIGN' TABLE ON SHEET 02-AS-01. SUBSTANDARD SOILS THAT MAY BE ENCOUNTERED REQUIRING ADDITIONAL SUB-GRADE REMOVAL & REPLACEMENT WITH ENGINEERED FILL, AS APPROVED IN ADVANCE BY ENGINEER, SHALL BE PROVIDED FOR WITH UNIT COSTS UNDER SUPPLEMENTAL BID ITEM.

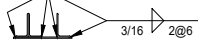
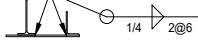
- PREPARE CONCRETE FLOOR SLAB-ON-GRADE SUB-GRADE AS DETAILED IN REPORT, OR AS OTHERWISE DETAILED ON DRAWINGS WHICHEVER PROVIDES FOR GREATER SUB-GRADE CAPACITY. MIN. 6" COMPACTED AGGREGATE BASE BELOW FLOOR SLAB-ON-GRADE REQUIRED. ALSO REF. 5/100-AS-01 FOR VAPOR RETARDER REQUIREMENTS.

- FOR DETAILED DESCRIPTION OF SOILS AND FOUNDATION SUB-GRADE PREPARATION, REFER TO:

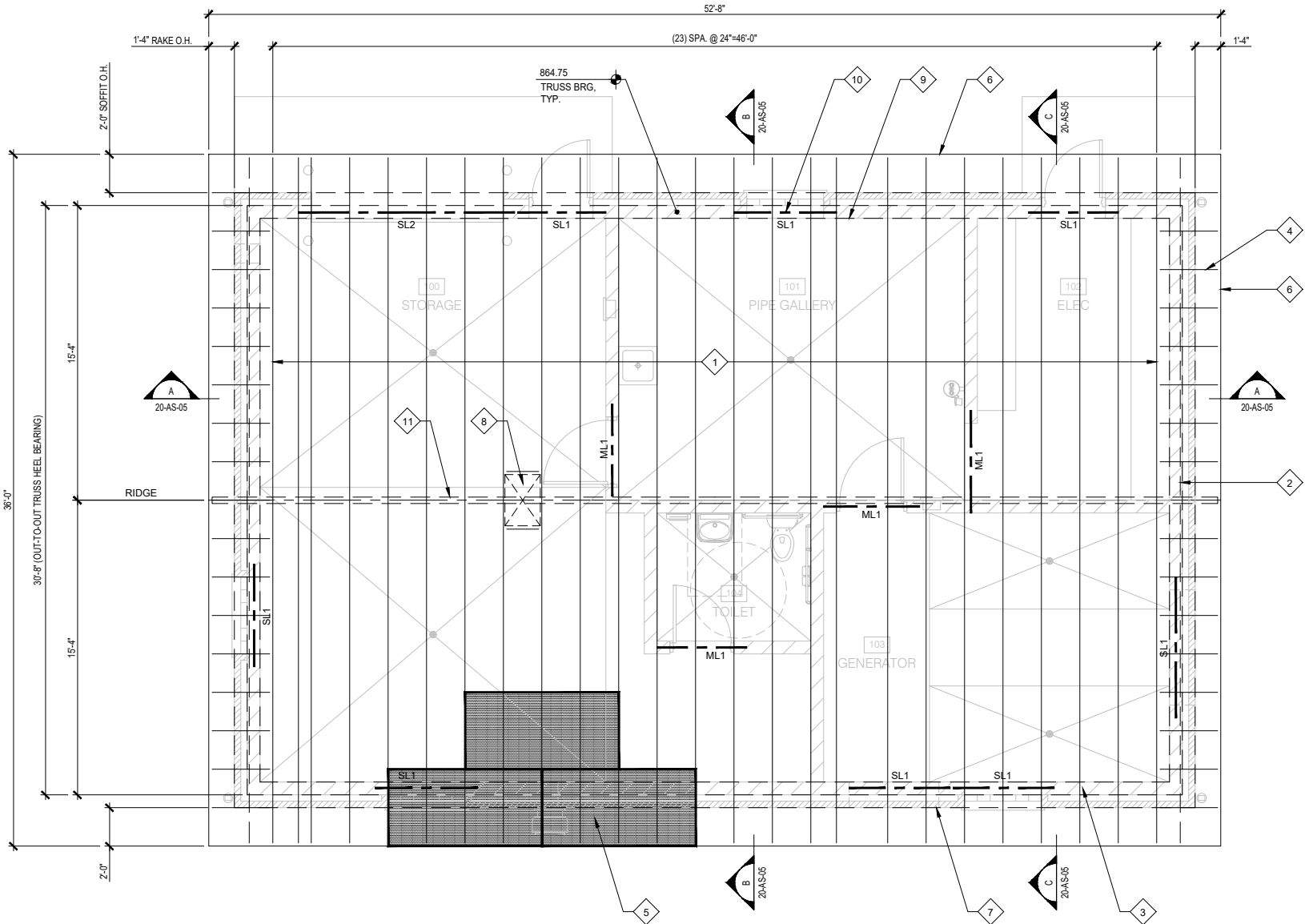
GEOTECHNICAL EXPLORATION REPORT
CGC, INC.
MAY 26, 2023
CGC REPORT NO.: C23162 (MAY 26, 2023)
(AND REVISION-1, OCTOBER 24, 2023)
CGC CONTACT:
TIM F. GASSENHEIMER, PE, CST
2921 PERRY ST., MADISON, WI 53713
608-288-7887

KEY NOTES

- CONCRETE SLAB-ON-GRADE:
 - ROOMS 102 & 104: 4" THICK, REINF. W/6X W1.4 X W1.4 WWF, SLAB PLACED OVER 10 MIL VAPOR RETARDER
 - ELSEWHERE: 6" THICK, REINFORCE W/ (1) MAT #4 BARS @ 18" O.C. E.W. CENTERED IN SLAB, SLAB PLACED OVER 10 MIL VAPOR RETARDER
 - STRUCTURAL STOOPS: REF. 4/100-AS-01
 - WHERE WWF SPECIFIED, FURNISH IN FLAT SHEETS, CENTER IN SLAB, MIN. 6" OVERLAP WWF SHEET EDGES, REF. 6/100-AS-03 FOR SUB-GRADE PREP. & POLY VAPOR RETARDER REQUIREMENTS, SLAB FINISH TOLERANCE FF = 25, FL = 20, STEEL TROWEL FINISH INTERIOR SLABS, BROOM FINISH EXT. SLABS, PITCH FLOOR TO FLOOR DRAINS WHERE PRESENT, TYP.
- 4" RAISED EQUIPMENT PAD, ALSO REF. ELEC. DWGS
- CONCRETE SLAB CONTROL JOINT (CJ), SAW-CUT WITHIN 12 HRS CONCRETE PLACEMENT/FINISHING, REF. 5/100-AS-01
- NEW STRUCTURAL CONCRETE STOOP AT EXTERIOR WALK DOORS & OVERHEAD DOOR
- FLOOR DRAIN, FLOOR SLOPE AS SHOWN, T/DRAIN EL. AS SHOWN IN PARENTHESIS, ALSO REF. PLUMBING DWGS
- CONCRETE FROST WALL AND CONT. FTG
- DROP T/WALL ELEVATION DOWN 8" AT WALK DOOR OPENINGS TO ALLOW STOOP SLAB OVER-POUR, LOCATE CONSTRUCTION JOINT BETWEEN INTERIOR SLAB AND EXT. STOOP SLAB BELOW THRESHOLD
- DROP T/WALL ELEVATION DOWN 8" AT OVERHEAD DOOR OPENING TO ALLOW GARAGE FLOOR SLAB OVER-POUR, REF. 13/100-AS-01
- ISOLATED RAISED EQUIPMENT BASE, REF. 3/100-AS-03, SIM./TYP.
- 8" CONCRETE-FILLED STEEL PIPE BOLLARD, REF. 8/100-AS-02, TYP.
- THICKENED SLAB FOOTING, REF. SCHEDULE THIS SHEET, TYP.

LINTEL SCHEDULE		
MARK	TYPE	DETAIL/REMARKS
ML1	8"W. BOND BEAM W/2-#5 CONT. (& LOOSE STEEL LINTEL AT MASONRY VENEER LOCATIONS)	 GROUT W/ MIN. 3,000 PSI CONC.
SL1	B/B L6X3 1/2X3/8 (LLV) WITH 3/8" T. BOT. PL., PL. WIDTH = WALL MINUS 1"	 3/16 2@6
SL2	W8X24 & L6X3 1/2X3/8 (LLV) WITH 3/8" T. BOT. PL., PL. WIDTH = WALL MINUS 1"	 1/4 2@6

- NOTES:
- MINIMUM LINTEL BEARING 8" UNLESS DETAILED OTHERWISE.
 - INSTALL LINTEL TYPE 'ML1' AT MISC. HVAC OPENINGS < 24" WIDE (NOT SHOWN).



ROOF FRAMING PLAN

1

1/4" = 1'-0"



GENERAL NOTES

- KEY NOTES BELOW APPLY TO THIS SHEET ONLY.
- VERIFY SIZE AND LOCATION OF ANY AND ALL ROOF & WALL OPENINGS WITH MECHANICAL, HVAC AND ELECTRICAL CONTRACTORS. OPENINGS LESS THAN 24 INCHES IN DIMENSION ARE GENERALLY NOT SHOWN.
- UNO, WOOD FASTENING SHALL BE COMPLETED IN ACCORDANCE WITH IBC 2015 TABLE 2304.9.1.
- TRUSS COMPONENT DELEGATED DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH PROVISIONS OF THE WISCONSIN DEPARTMENT OF ADMINISTRATIVE CODE, CHAPTER SPS 362 (CURRENT EDITION).
- G.C. SHALL SUBMIT THE FOLLOWING COMPONENT DESIGNS TO A/E: WOOD ROOF TRUSSES.
- NEW TRUSS WEB GEOMETRY SHALL BE AS DESIGNED BY TRUSS SUPPLIER.
- TRUSS DESIGN SUPERIMPOSED DEAD AND LIVE DESIGN LOADS:
 - DL: 15 PSF TOP CHORD, 5 PSF BOT. CHORD
 - LL: 25 PSF TOP CHORD, 5 PSF BOT. CHORD
- REF. 7/100-AS-02 FOR PERMANENT TRUSS BRACING REQUIREMENTS. BRACING INSTALLATION SHALL BE IN COMPLIANCE WITH 'BUILDING COMPONENT SAFETY INFORMATION' (BCSI) MANUAL JOINTLY PRODUCED BY THE TRUSS PLATE INSTITUTE (TPI) AND STRUCTURAL BUILDING COMPONENTS ASSOCIATION (SBCA), 2013 EDITION., UPDATED MARCH 2015.
- INSTALL PERMANENT TRUSS BRIDGING AS RECOMMENDED BY TRUSS SUPPLIER.
- ALL WOOD IN CONTACT WITH MASONRY SHALL BE PRESSURE-TREATED.

KEY NOTES

- WOOD COMMON TRUSSES AT 24" O.C., TYP.
- STEP-DOWN WOOD END WALL TRUSS, TYP.
- TRUSS BEARING ON 8" CMU STRUCTURAL WYTHE P.T. WOOD NAILER PLATES BELOW
- 2X LOOKOUTS @ 24" O.C.
- 19/32" STRUCTURAL USE OSB SHEATHING, SPAN RATING 32/16, SPAN PERPENDICULAR TO TRUSS, STAGGER JOINTS
- 2X8 FASCIA ALL AROUND
- MASONRY CAVITY WALL BELOW (DASHED LINES)
- 22"x32" ATTIC ACCESS, PROVIDE MITERED 1X4 FINISH WOOD TRIMMED OPENING, REMOVABLE ACCESS PANEL: PLYWOOD & 5/8" TYPE-X GWB FINISH SURFACE, GRAVITY MOUNTED, 3" MIN. POLYSTYRENE ON ATTIC SIDE, EXPOSED WOOD PAINTED
- SIMPSON STRONG-TIE 'H2.5' (OR EQ.) HOLD-DOWN ANCHOR, EA. TRUSS BRG. OPTION: USE (1) MITEK 'TIMBERLOK' THROUGH DOUBLE TOP PLATE INTO BOT. CHORD TRUSS AT EA. TRUSS AND/OR LOOKOUT BEARING (MIN. SERVICE CAPACITY UPLIFT = 420#, SHEAR = 320# EA. ANCHOR), OR APPROVED EQUAL
- STEEL (OR MASONRY) LINTEL OVER OPENING, REF. LINTEL SCHEDULE THIS SHEET, TYP.
- CONT. RIDGE VENT ABOVE (DASHED LINE)

6264 Nesbitt Road
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TC TOWN & COUNTRY
ENGINEERING, INC.

ROOF FRAMING PLAN

2023 LIFT STATION 2 IMPROVEMENTS

Marsh Woods Drive

Village of McFarland, Wisconsin

PROJECT NO.:
MC 198

DRAWING FILE:

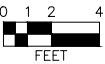
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6/28/23

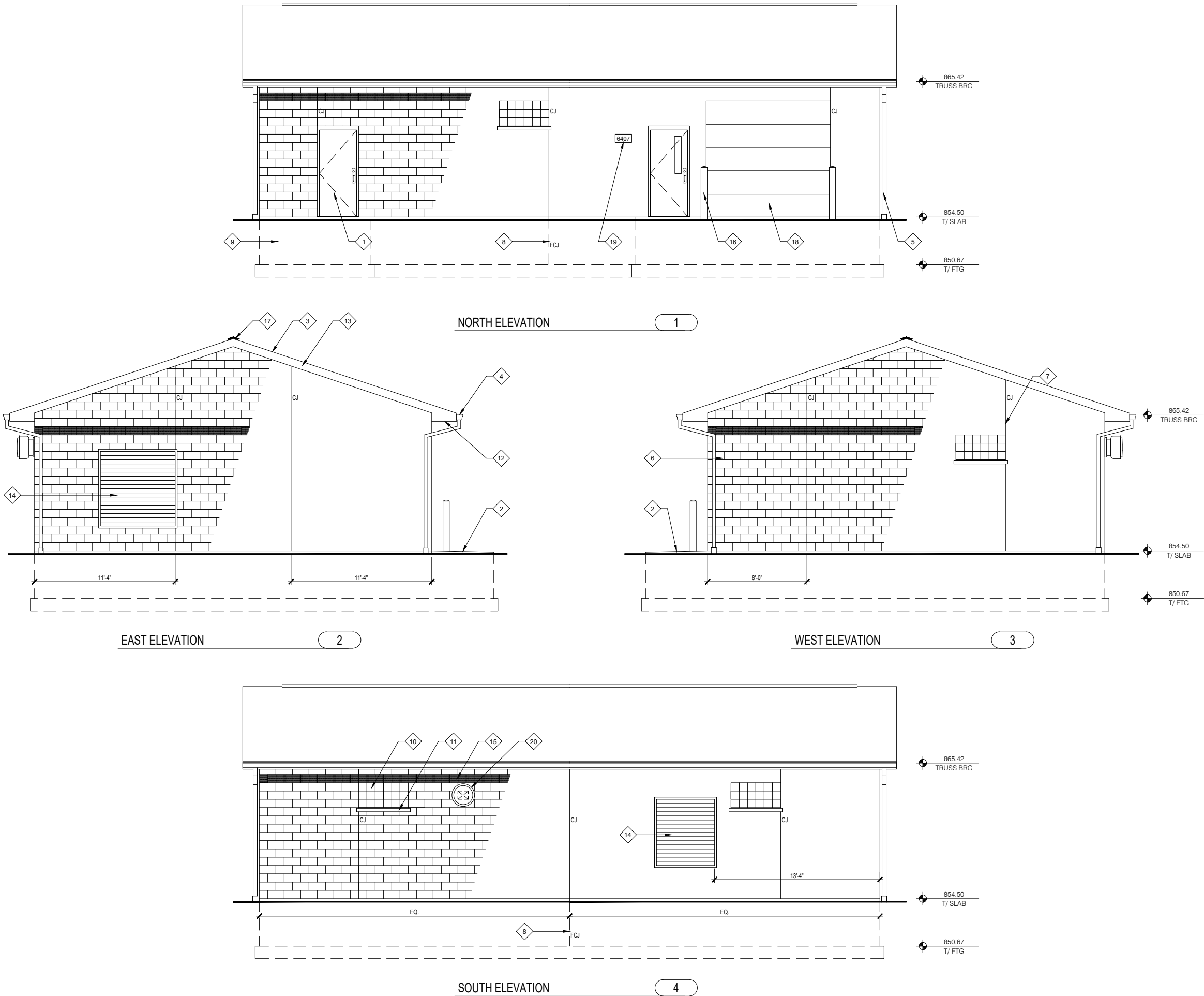
REVISIONS:

SCALE:



SHEET:

20-AS-03



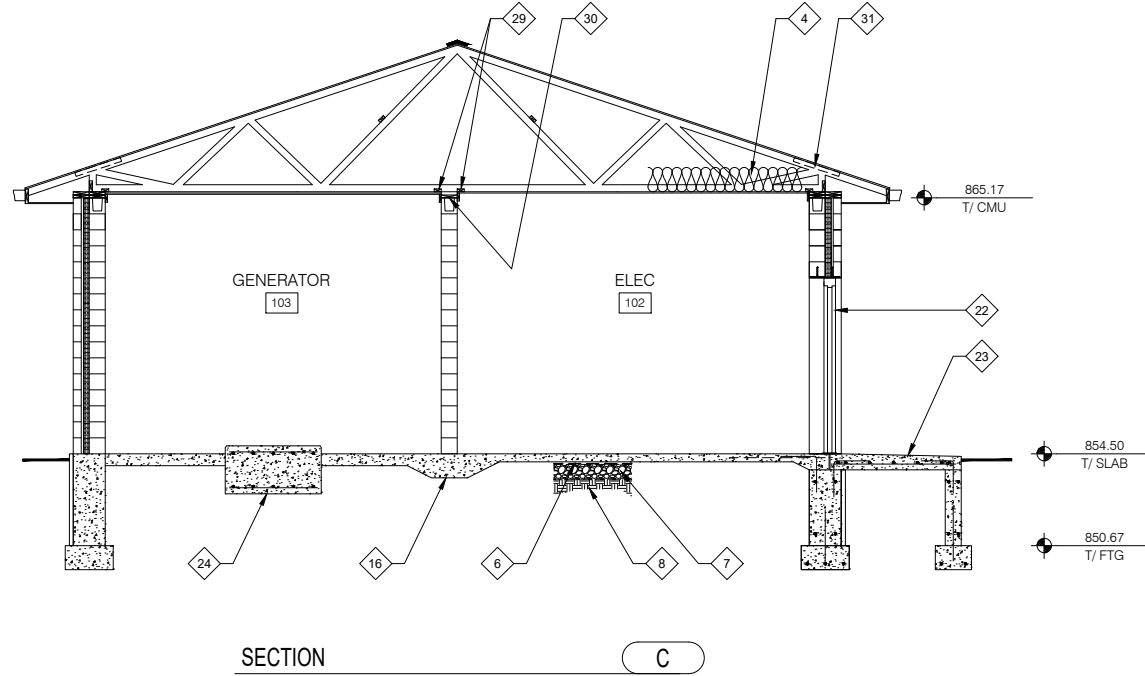
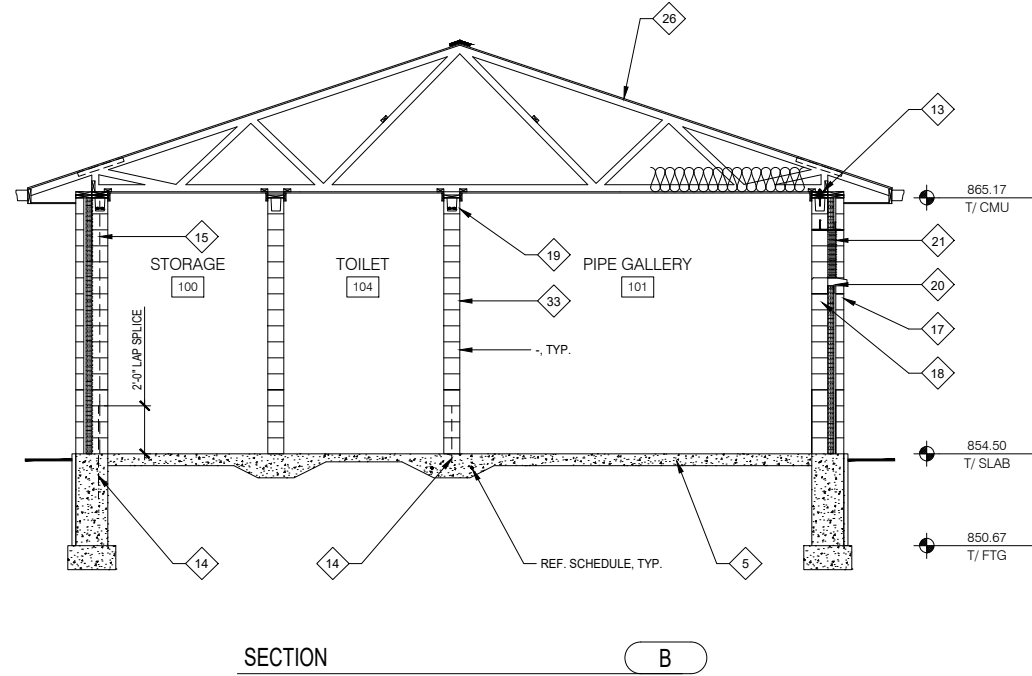
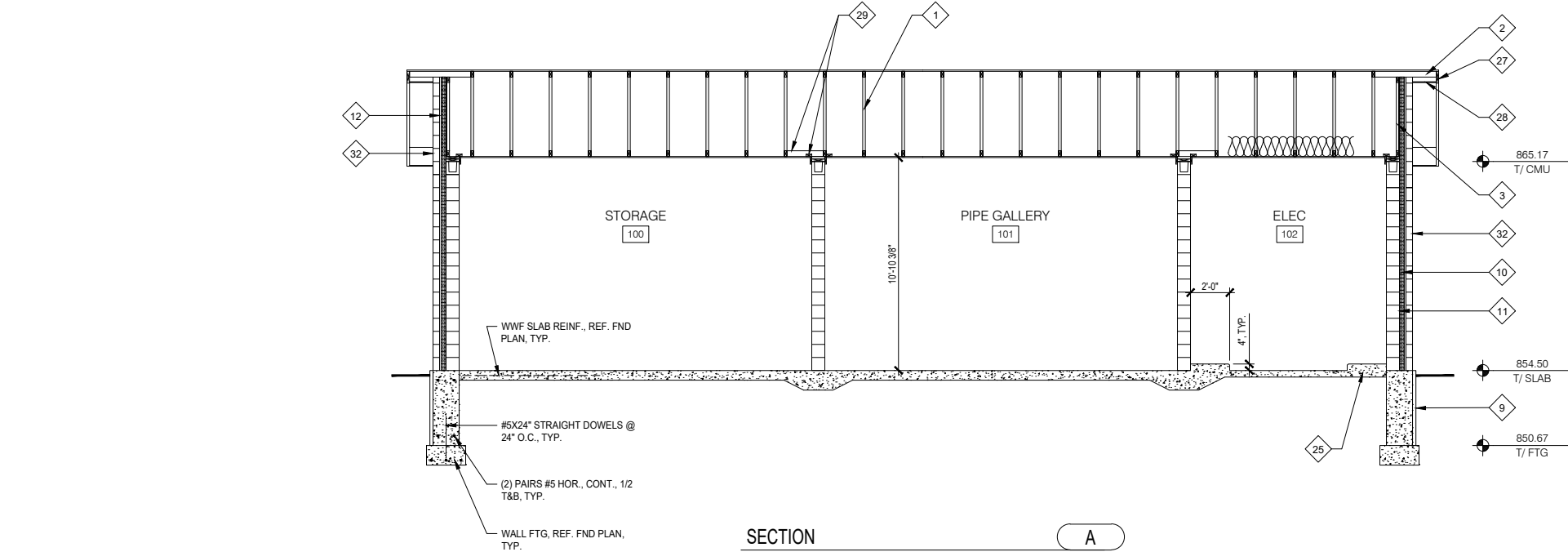
- GENERAL NOTES**
- KEY NOTES BELOW APPLY TO THIS SHEET ONLY.
 - EXPOSED CONCRETE SURFACES TO RECEIVE 'GROUT-CLEAN RUBBED FINISH' PER SPECIFICATION SECTION 03 30 00, TYP. AS APPLICABLE.
- KEY NOTES**
- HOLLOW METAL DOOR, FRAME & HARDWARE, AS SCHEDULED
 - STRUCTURAL CONCRETE STOOP
 - ROOF SYSTEM, REF. ENLARGED DETAILS, SPECIFICATIONS & APPLICABLE DETAILS FOR UNDERLAYMENT, DRIP EDGE, FLASHING, AND ICE & WATER SHIELD REQUIREMENTS
 - FACTORY-FINISHED SEAMLESS TYPE-K COMMERCIAL ALUMINUM 6"W. GUTTER
 - FACTORY-FINISHED 3" X 4" DOWNSPOUT SYSTEM, DISCHARGE INTO BELOW-GRADE STORM WATER CONVEYANCE SYSTEM, TYP. AT (4) LOCATIONS SHOWN
 - INSULATED CAVITY-WALL MASONRY STRUCTURE, SPLIT-FACED CMU VENEER, RUNNING BOND
 - MASONRY CONTROL JOINT (CJ) AT LOCATIONS SHOWN, REF. 3/100-AS-02, TYP.
 - FOUNDATION CONTROL JOINT (FCJ), ONLY AT (2) LOCATIONS SHOWN, ALIGN WITH MASONRY CONTROL JOINT, REF. 1/100-AS-01
 - CAST-IN-PLACE CONCRETE FOUNDATION
 - GLASS BLOCK WINDOW SYSTEM, TYP.
 - PRECAST CONCRETE SILL WITH DRIP, TYP.
 - FACTORY-FINISHED VENTED ALUMINUM SOFFIT, TYP. AT EAVE AND RAKE
 - FACTORY-FINISHED ALUMINUM CLAD FASCIA SYSTEM, TYP.
 - LOUVER, REF. HVAC DWGS
 - CMU VENEER ACCENT COURSE, RUNNING BOND
 - 8" CONCRETE-FILLED PIPE BOLLARD, (2) LOC. SHOWN, REF. 8/100-AS-02
 - CONT. RIDGE VENT. SYSTEM, ASPHALT SHINGLE EXPOSED SURFACE TO MATCH ROOF SHINGLE SYSTEM
 - INSULATED METAL SECTIONAL OVERHEAD DOOR
 - ADDRESS INSERT BLOCK, COORDINATE MATERIAL, STYLE AND '6407' FONT WITH OWNER
 - EXHAUST FAN, REF. HVAC DWGS

EXTERIOR ELEVATIONS

2023 LIFT STATION 2 IMPROVEMENTS
Marsh Woods Drive
Village of McFarland, Wisconsin

PROJECT NO.: MC 198
DRAWING FILE:
DRAWN BY: WTS
CHECKED BY:
DATE: 6/28/23
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GENERAL NOTES

- KEY NOTES BELOW APPLY TO THIS SHEET ONLY.

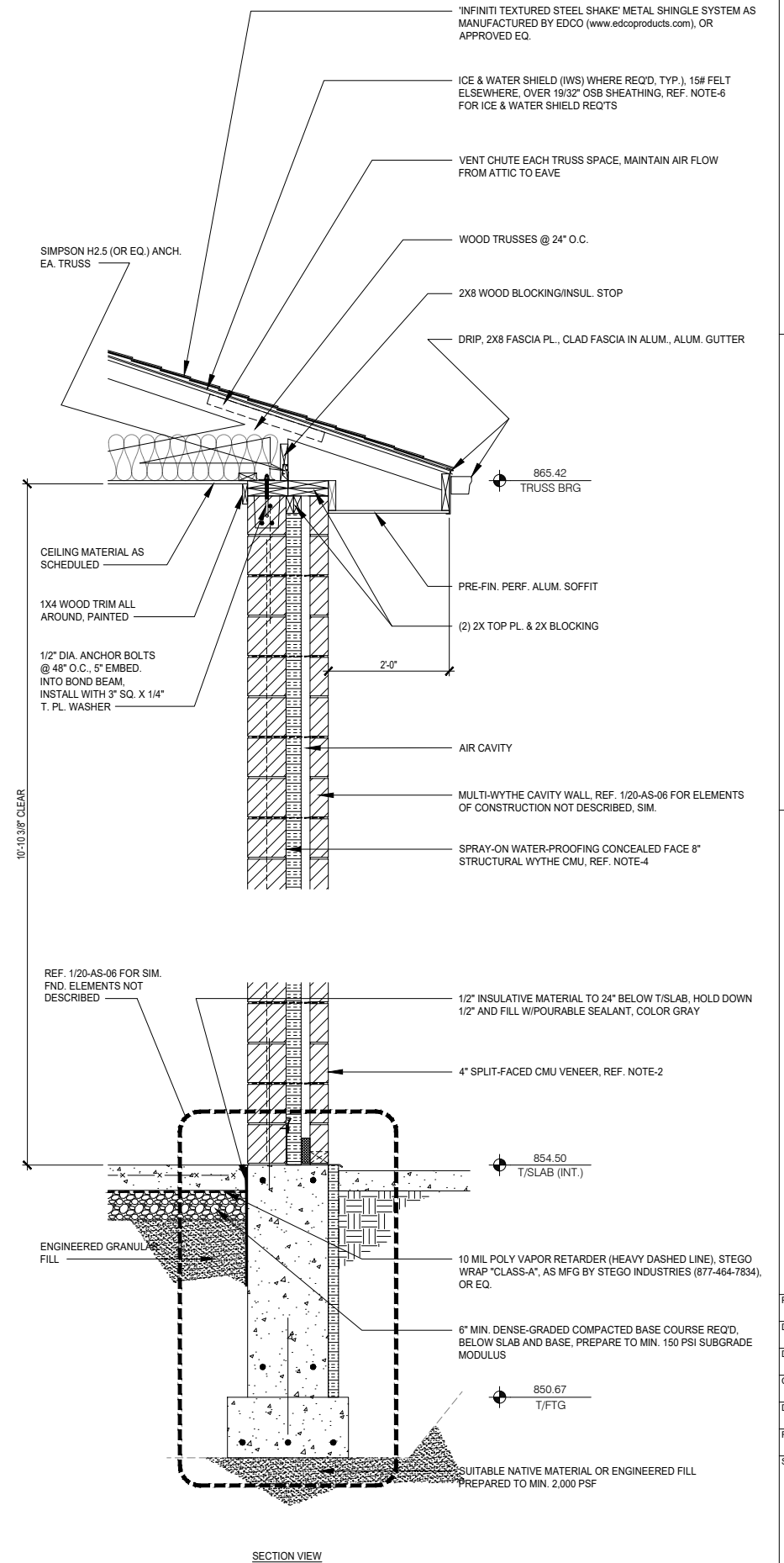
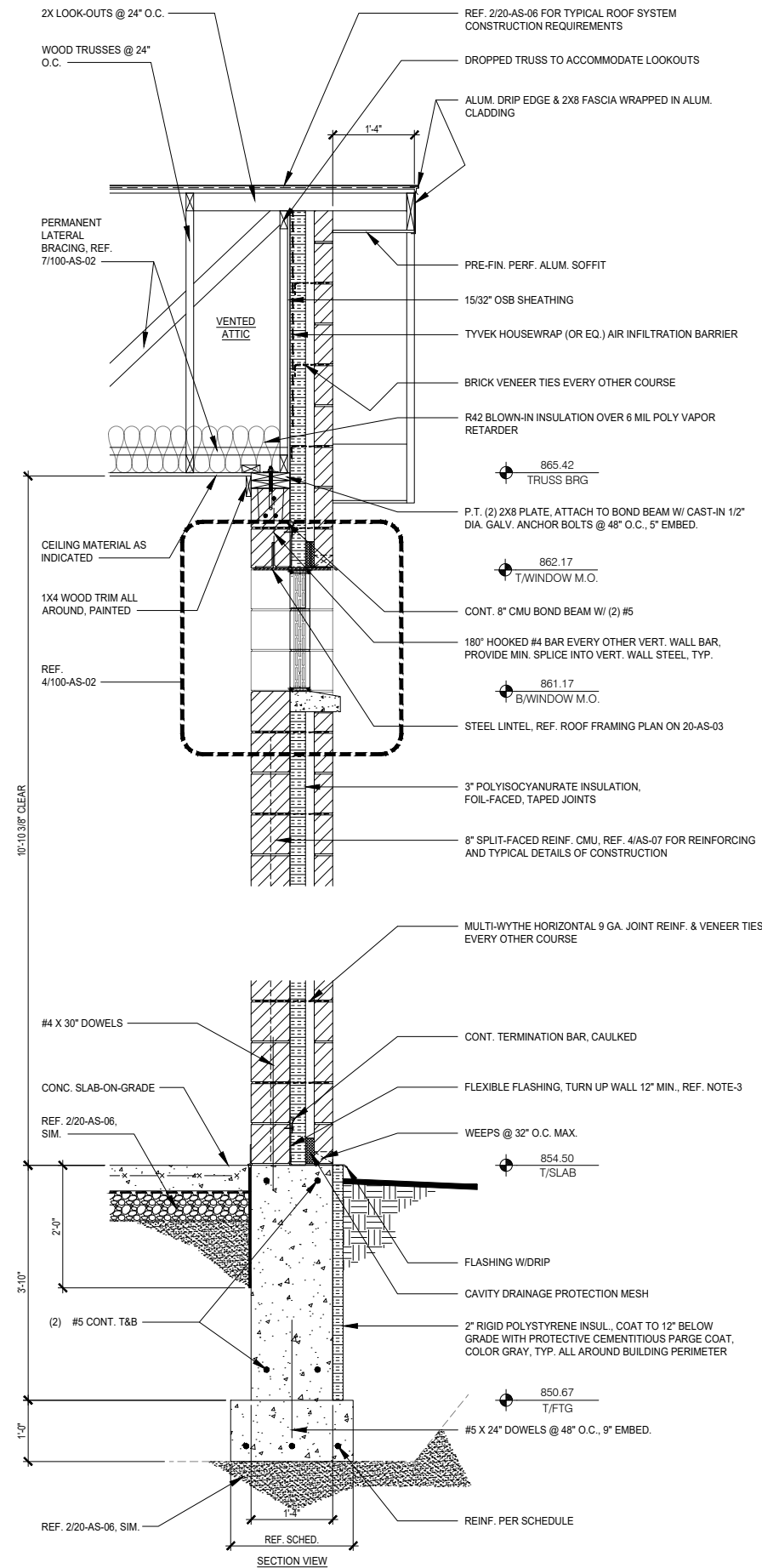
KEY NOTES

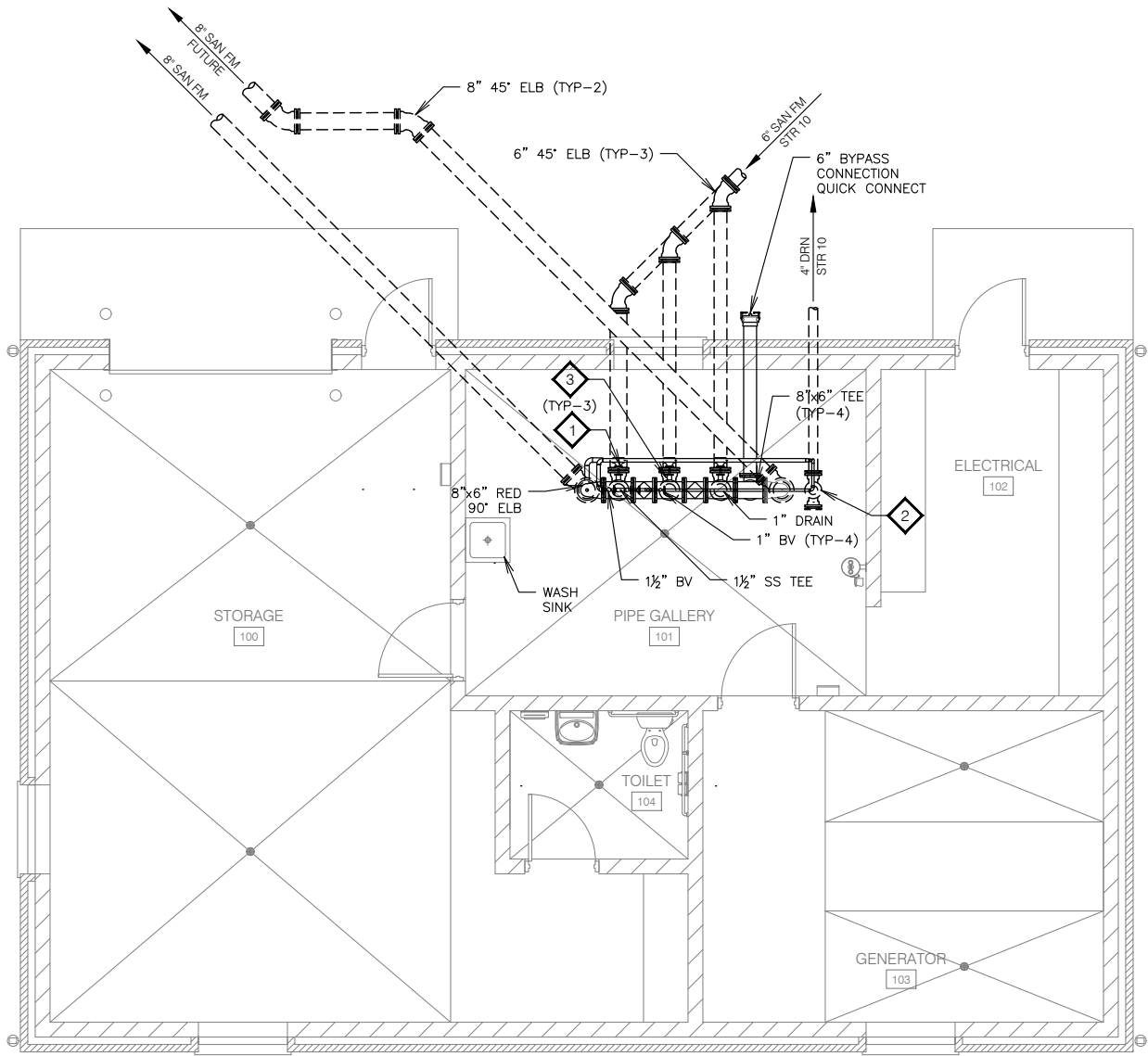
- WOOD ROOF TRUSSES @ 24" O.C.
- 2X LOOK-OUTS AT 24" O.C.
- DROPPED ENDWALL TRUSS TO ACCEPT LOOK-OUTS, TYP.
- R42 BLOWN-IN INSULATION OVER 6 MIL POLY VAPOR RETARDER, TYP.
- CONCRETE SLAB-ON-GRADE, REF. 20-AS-02 FOR REINF.
- 10 MIL POLY VAPOR RETARDER, TYP. IMMEDIATELY BELOW ALL INTERIOR SLAB-ON-GRADE FLOORS, TYP.
- MIN. 6" COMPACTED CRUSHED AGGREGATE SUB-BASE BELOW SLABS-ON-GRADE, TYP.
- REF. GENERAL NOTES ON SHEET 20-AS-02 FOR SUB-GRADE PREP. REQUIREMENTS AT SLAB-ON-GRADE, THICKENED SLABS AND CONTINUOUS WALL FOOTINGS
- 2" POLYSTYRENE INSULATION TO MIN. 48" BELOW GRADE, TYP. AT PERIM. WALLS, FIRST COAT EXT. BUILDING WALLS BELOW GRADE W/ ASPHALTIC COATING, SPRAY-APPLIED, COAT EXPOSED FACE INSULATION TO 12" BELOW GRADE WITH PROTECTIVE CEMENTITIOUS COATING, COLOR GRAY, TYP.
- 3" POLYISOCYANURATE INSULATION, FOIL-FACED & TAPED, TYP.
- SPRAY-ON MOISTURE BARRIER CONCEALED FACE 8" STRUCTURAL WYTHE, TYP.
- 15/32" OSB WALL SHEATHING AT GABLE END WALL TRUSSES, INSTALL AIR-INFILTRATION BARRIER OVER OSB PRIOR TO VENEER TIE ATTACHMENT, TYP.
- 1/2" DIA. EXPANSION ANCHORS @ MAX. 48" O.C. THRU DOUBLE P.T. BEARING PLATE, INSTALL W/ 3" SQ. X 1/4" PL. WASHER AT EA. ANCHOR, TYP.
- MASONRY DOWELS, REF. 1/100-AS-02, TYP.
- REINFORCED STRUCTURAL MASONRY WYTHE, REF. 1/100-AS-02, TYP.
- THICKENED SLAB FOOTING, REF. FND PLAN FOR REINF.
- PRECAST CONC. SILL WITH DRIP, TYP.
- SOLID BULLNOSE CMU AT INT. WINDOW SILL, TYP.
- CONT. BOND BEAM UNIT, REINF. W/ (2) #5 CONT., TYP.
- GLASS BLOCK WINDOW ASSEMBLY, REF. SCHED., TYP.
- STEEL LINTEL, REF. ROOF FRAMING PLAN & SCHEDULE
- HOLLOW METAL DOOR & FRAME
- REINFORCED CONCRETE STRUCTURAL STOOP, REF. 4/100-AS-01, TYP.
- RAISED EQUIP. BASE, ISOLATED, REF. 3/100-AS-03 FOR REINF., REF. 'H' DWGS & CONFIRM T/ BASE EL. BASED ON EQUIP. FINAL SELECTION PRIOR TO CONSTRUCTION
- 4" RAISED EQUIPMENT PAD, REF. 9/100-AS-01, ALSO REF. 'E' DWGS
- 19/32" OSB ROOF SHEATHING
- FACTORY-FINISHED ALUM. CLADDING OVER 2X8 FASCIA, TYP.
- FACTORY-FINISHED VENTED ALUM. SOFFIT, TYP.
- WOOD BLOCKING FOR TOP OF WALL BRACING & TRIM ATTACHMENT, TYP.
- INTERIOR PARTITION WALLS RECEIVE ONLY (1) P.T. TOP PLATE, AT WALLS SEPARATING RM 103 PACK SPACE BETWEEN TOP PLATE & TRUSS BOTTOM CHORD WITH FIRE SAFINGS TO 2-HR PROTECTION LIMIT, TYP.
- VENT CHUTE EA. TRUSS SPACE
- SPLIT-FACED CMU VENEER, RUNNING BOND
- INTERIOR CMU PARTITION WALLS ARE VERTICALLY UNREINFORCED EXCEPT FOR DOWELS INDICATED, REF. 1/100-AS-02 FOR REQUIRED HORIZONTAL JOINT AND BOND BEAM REINFORCING, TYP.

NOTE:
REINFORCING NOT SHOWN ALL LOCATIONS, WHERE TYPICAL REF.
CONSTRUCTION NOTES ELSEWHERE THIS SHEET FOR SIMILAR
REINFORCING REQUIREMENTS.

DETAIL 1 & 2/20-AS-06 NOTES:

1. NOTES APPLY COLLECTIVELY TO SIMILAR DETAILING SHOWN IN DETAILS THIS SHEET.
2. CMU VENEER TO BE COUNTY MATERIALS SPLIT-FACED CMU VENEER, OR EQ., SIZE "8"HX16"LX4"T. (NOMINAL).
3. CONT. FLEXIBLE FLASHING, GOP "PERM-A-BARRIER," OR EQ., RETURN UP FACE OF CONCRETE WALL MIN. 12" AND FASTEN WITH CONT. TERMINATION BAR & CAULK.
4. SPRAY-APPLY FLUID MOISTURE PROTECTION BARRIER TO CONCEALED FACE CMU WALL WITHIN CAVITY SPACE PRIOR TO FLEXIBLE FLASHING AND INSULATION INSTALLATION.
5. HOLD-DOWN ANCHOR EA. TRUSS
6. INSTALL ICE & WATER SHIELD CONT. BARRIER 5'-0" INWARD FROM ROOF EDGES AND ALSO ALONG RIDGE.





GENERAL NOTES

1. ALL PIPING SHALL BE EPOXY PAINTED DUCTILE IRON, CLASS 53, UNLESS NOTED.



KEY NOTES

1. 1/2" TAP WITH BALL VALVE FOR PRESSURE GAUGE.
2. PROVIDE WYE FOR SANITARY DRAIN CONNECTION. ELEVATION DETERMINED BY PLUMBING PLANS.
3. 1" SS TAP WITH 1" BALL VALVE CONNECTED TO 1" SS DRAIN LINE ON THE 6" INLET PIPES, LOCATED ABOUT 1' BELOW CV.



6264 Nesbitt Road
Madison, WI 53719
(608) 273-3350
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PROCESS PLAN
STRUCTURE 20

2023 LIFT STATION 2 IMPROVEMENTS
Marsh Woods Drive
Village of McFarland, Wisconsin

PROJECT NO.:
MC 198
DRAWING FILE:
20-M
DRAWN BY:
D.D.E.
CHECKED BY:
T.J.S.

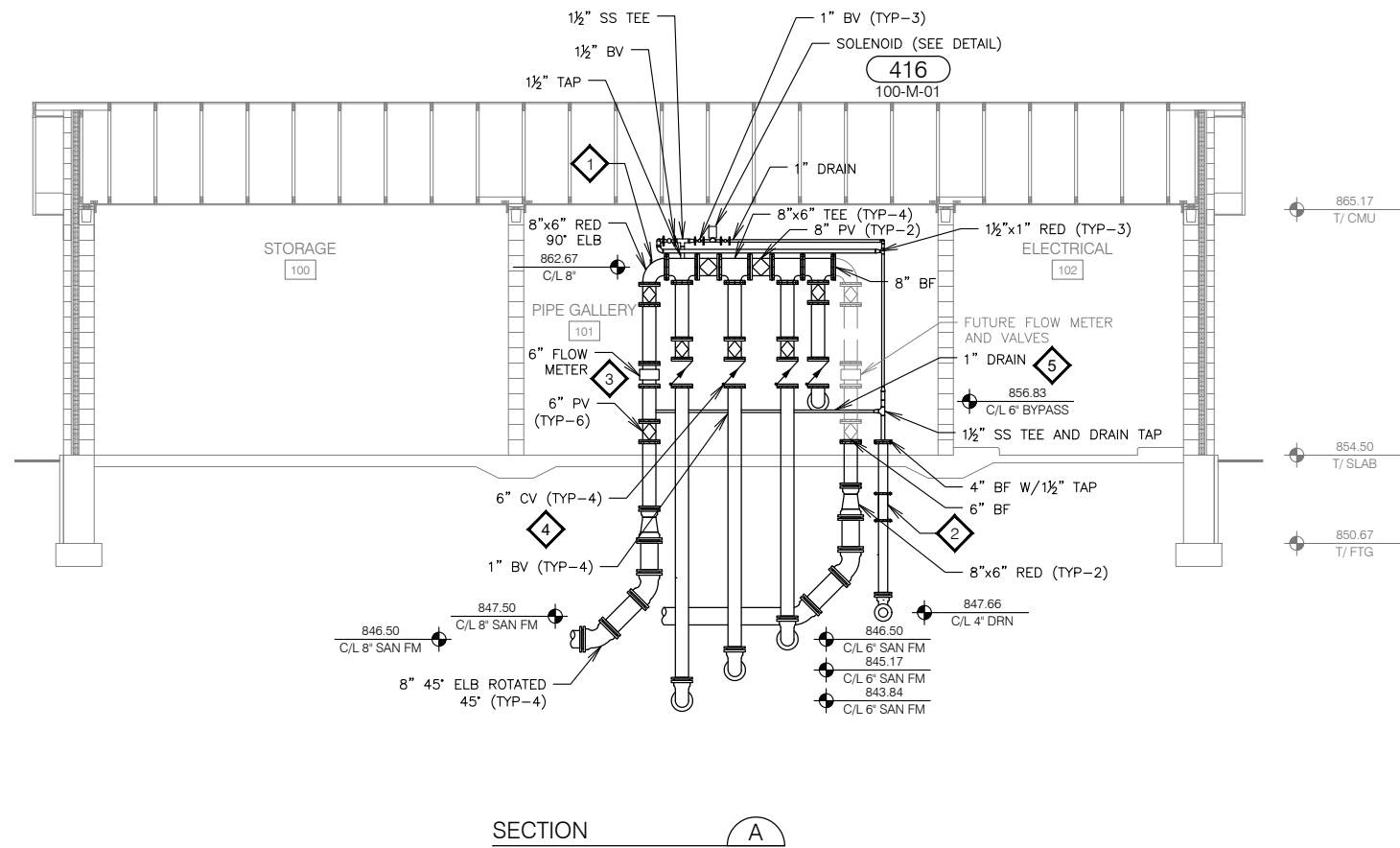
DATE:
11-15-23
REVISIONS:

SCALE:



SHEET:

20-M-01



GENERAL NOTES

- ALL PIPING SHALL BE EPOXY PAINTED DUCTILE IRON, CLASS 53, UNLESS NOTED.

KEY NOTES

- 1" TAP WITH BALL VALVE AND PRESSURE GAUGE.
- PROVIDE WYE FOR SANITARY DRAIN CONNECTION. ELEVATION DETERMINED BY PLUMBING PLANS.
- CLEAR PIPE LENGTH BEFORE THE 6" METER SHOULD BE MINIMUM OF 30" AND CLEAR PIPE LENGTH AFTER METER SHALL BE A MINIMUM OF 18".
- PUMP CHECK VALVES SHALL BE APCO MODEL 6000 BE DEZURIK OR GA INDUSTRIES 250-D.
- THE 1" DRAIN LINE SHALL BE TAPPED INTO EACH FM (4 TOTAL) WITH 1" TAP AND STAINLESS STEEL BALL VALVE TO ALLOW DRAINING THE PIPE.

PROCESS SECTION
STRUCTURE 20

2023 LIFT STATION 2 IMPROVEMENTS
Marsh Woods Drive
Village of McFarland, Wisconsin

PROJECT NO.:
MC 198
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REVISIONS:

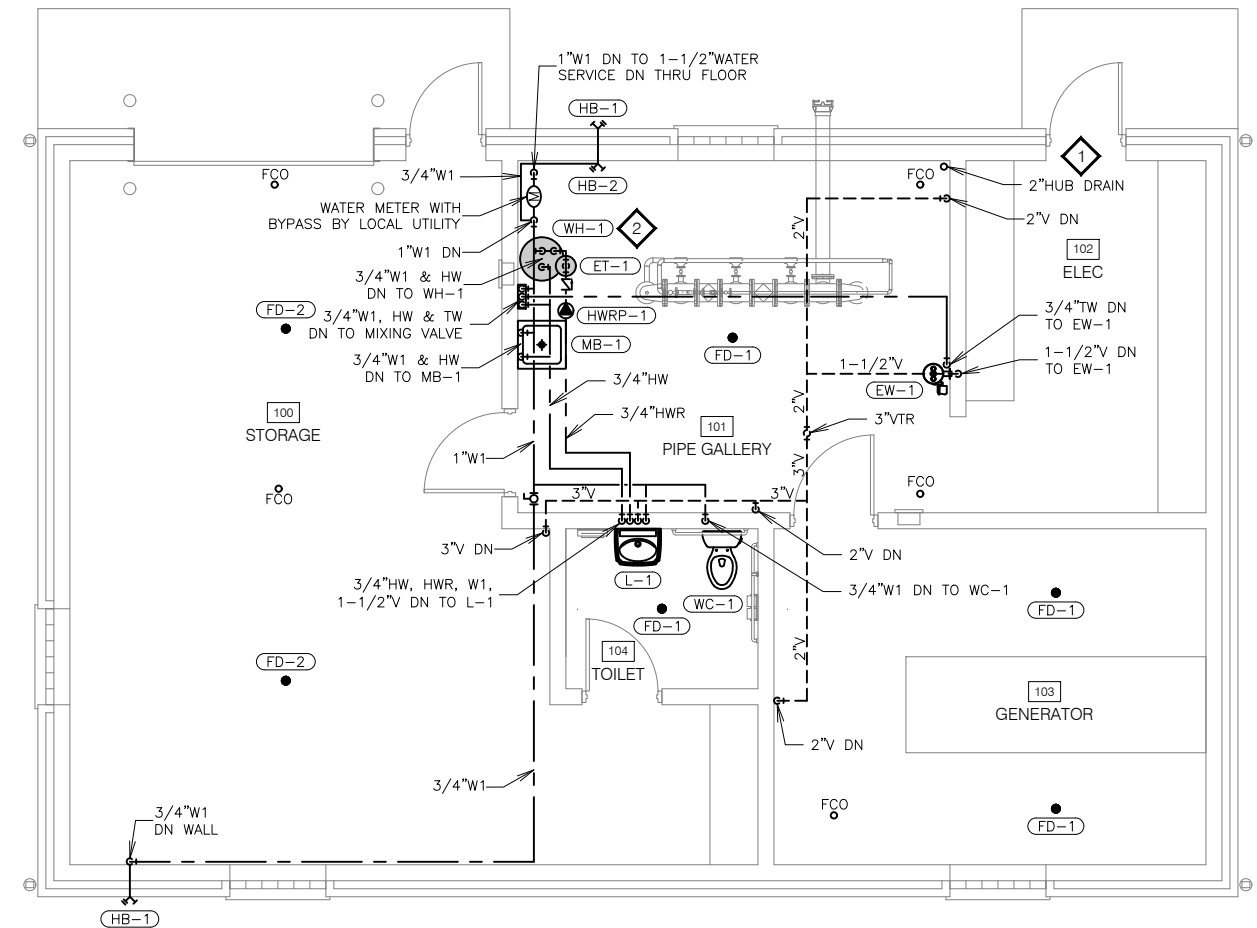
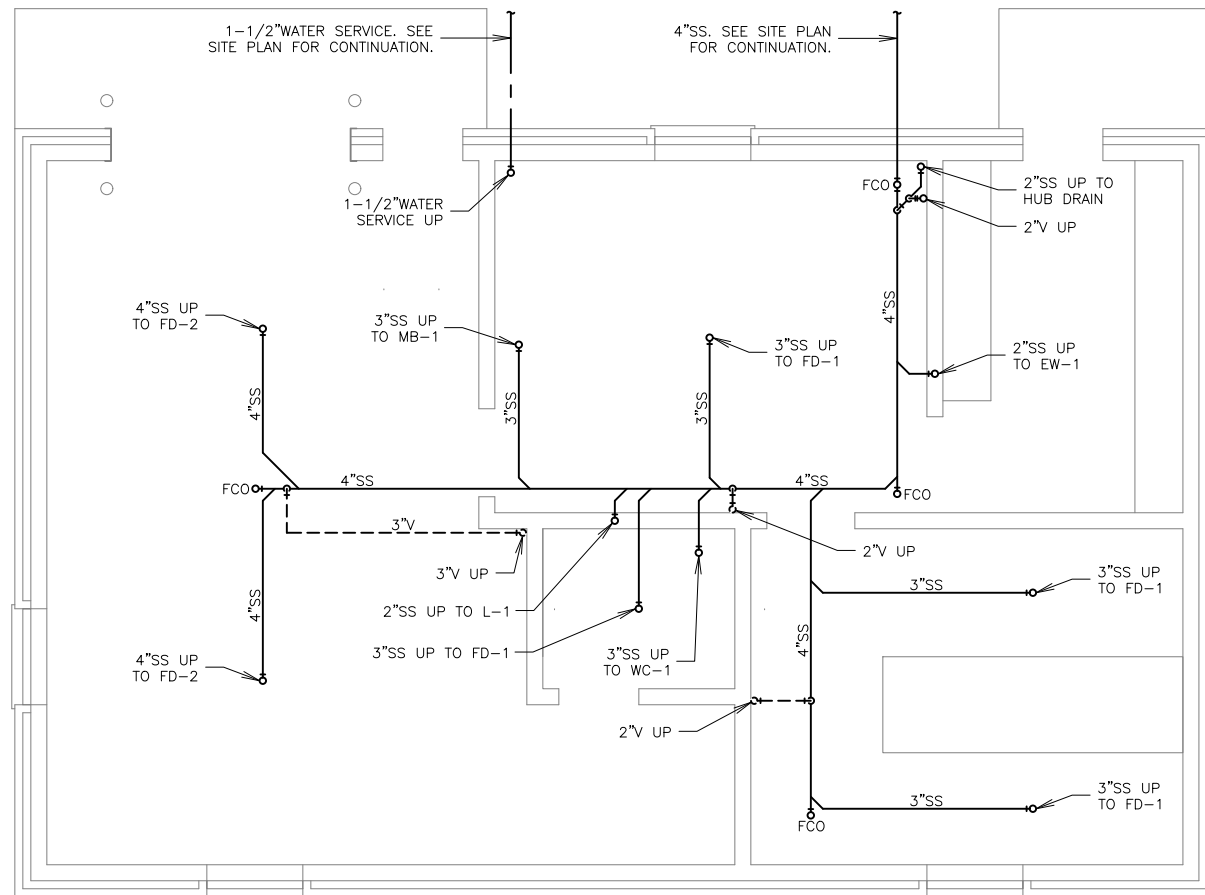
SCALE:
0 1 2 4
FEET

SHEET:

20-M-02

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Madison, WI 53719
(608) 273-3350
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tc TOWN & COUNTRY
ENGINEERING, INC.



 KEY NOTES

1. HUB DRAIN FOR AIR CONDITIONER CONDENSATE. COORDINATE EXACT LOCATION WITH HVAC CONTRACTOR. SEE THE TYPICAL HUB DRAIN DETAIL.
2. MOUNT ELECTRIC WATER HEATER HIGH ON WALL. FIELD VERIFY EXACT LOCATION. SEE THE ELECTRIC WATER HEATER DETAIL.

WATER CALCULATION WORKSHEET

Information Needed for Water Service Sizing

- 120Demand of building in gallons per minute.
- 82Low pressure in main.
- 10Difference in elevation from main to meter (or external pressure tank to building control valve).
- 1"Size of water meter (if applicable).
- 120Developed length from main to meter (or external pressure tank to building control valve).

First Find Available Pressure After the Water Meter
(or at building control valve)

- 1.8Find pressure loss due to friction in 1 1/2 inch diameter water service.
- 4.3Find pressure loss due to elevation, main to meter (or external pressure tank to building control valve). Multiply the difference in elevation by .434 psi/ft.
- 6Find pressure loss due to meter. (from manufacturer or AWWA)
- 69.9Subtract the loss due to friction (Step 6), loss due to elevation (Step 7), and loss due to meter (Step 8) from the low main pressure (or low pressure at external pressure tank) (Step 2). This calculation is the availabe pressure after the water meter (or at the building control valve). This answer is entered in Line B, below.

Information Needed for Water Distribution Sizing

Using the following formula, find the pressure available for uniform loss (psi/100' of pipe)

A = [B - (C + D + E)] / F x 100

- 46.5Pressure available for uniform loss (psi/100' of pipe).
- 69.9Available pressure after water meter (at the building control valve or low pressure at internalpressure tank). (See step 9 above)
- 35Pressure needed at controlling fixture.
- 0.0Difference in elevation between water meter (building control valve or internal pressure tank) and controlling fixture in feet 0 x .434 psi/ft.
- 0Pressure loss due to water softeners, water treatment devices, instantaneous water heaters and backflow preventors which serve the controlling fixture. Conventional water heaters usually do not have a pressure loss.
- 75Developed length from water meter (building control valve or internal pressure tank) to controlling fixture in feet 50 x 1.5

PUMPS

MARK	MANUFACTURER	MODEL	PUMP TYPE	MATERIAL	GPM	HEAD (FT WC)	MOTOR				REMARKS
							WATTS	RPM	VOLTS	PHASE	
HWRP-1	BELL & GOSSETT	NBF-25	INLINE	BRONZE	2	10	125	2,950	115	1	1, 2
1. PROVIDE WITH PLUG IN POWER CORD. 2. PROVIDE AQUASTAT AND TIMER.											

PLUMBING FIXTURE SCHEDULE

MARK	MANUFACTURER	MODEL	DESCRIPTION	WSFU			DFU
				HW	CW	TOTAL	VALUE
EW-1	GUARDIAN	G1750	WALL MOUNTED EYE/FACE WASH WITH STAINLESS STEEL BOWL, TWO ABS PLASTIC GENTLE SPRAY EYE/FACE WASH HEADS WITH INTERNAL FLOW CONTROL, FILTERS, AND FLIP TOP DUST COVERS, A 1/2" CHROME PLATED BRASS STAY OPEN BALL VALVE ACTIVATED BY A POWDER COATED CAST ALUMINUM FLAG HANDLE AND CAST ALUMINUM WALL BRACKET WITH POWDER COATED FINISH. PROVIDE WITH 1-1/2"CHROME PLATED BRASS TAILPIECE AND P-TRAP WITH CLEANOUT PLUG. MIXING VALVE: GUARDIAN MODEL G6020 THERMOSTATIC MIXING VALVE WITH INTEGRAL STRAINER CHECKSTOPS ON INLETS, ADJUSTABLE SET POINT AND DIAL THERMOMETER IN SURFACE MOUNTED STAINLESS STEEL CABINET.	NA	NA	NA	NA
FD-1	SIOUX CHIEF	863-43NR	ADJUSTABLE 3" FLOOR DRAIN, PVC ADAPTER BODY, ABS TOP HOUSING AND FLASHING COLLAR WITH ROUND NICKEL-BRONZE RING AND STRAINER, PROVIDE 3"SCHEDULE 40 HUB ADAPTER.	N/A	N/A	N/A	3.0
FD-2	JR SMITH	2142	4"FLOOR DRAIN, DUCO CAST IRON BODY AND FLASHING COLLAR WITH 12" ROUND HEAVY DUTY DUCTILE IRON TRACTOR GRATE AND REMOVEABLE SOLID FREE STANDING SEDIMENT BUCKET.	NA	NA	NA	4.0
HB-1	WOODFORD	19	FREEZELESS WALL FAUCET WITH ANTI-SIPHON AND NON-RUPTURE PROTECTION, AUTOMATIC DRAINING, 3/4" MALE HOSE THREAD NOZZLE, BRASS VALVE BODY, ONE PIECE VALVE PLUNGER TO CONTROL BOTH FLOW AND DRAINAGE, HARDENED STAINLESS STEEL OPERATING STEM AND OVAL POWDER COATED DIE CAST ALUMINUM HANDLE.	NA	4.0	4.0	NA
HB-2	WOODFORD	24	NON-FREEZE AREA, ANTI-SIPHON VACUUM BREAKER PROTECTED WALL FAUCET, 3/4"MALE HOSE THREAD NOZZLE, BRASS VALVE BODY, ONE PIECE VALVE PLUNGER, HARDENED STAINLESS STEEL OPERATING STEM AND POLYCARBONATE WHEEL HANDLE. PROVIDE WITH POLISHED CHROME FINISH.	NA	4.0	4.0	NA
L-1	KOHLER	K-2005 KINGSTON	WALL MOUNT VITREOUS CHINA LAVATORY DRILLED FOR CONCEALED ARM CARRIER. FAUCET OPENINGS 4" ON CENTER WITH OVERFLOW. COORDINATE COLOR WITH ARCHITECT. FAUCET: CHICAGO FAUCET 2200-4E2805ABCP, 4" CENTERS, SINGLE METAL LEVER HANDLE, 0.5 GPM. DRAIN: KOHLER K-7131-A-CP, 1-1/4" OFFSET DRAIN WITH GRID STRAINER AND KOHLER K-8999 1-1/4"x1-1/2" CAST BRASS ADJUSTABLE "P" TRAP WITH C.O. PLUG. SUPPLIES AND STOPS: CHICAGO FAUCET 1006 ANGLE VALVE WITH LOOSE KEY HANDLE, 1/2" FEMALE INLET, 1/2"OD x 12" RISER (QUANTITY OF 2). PROVIDE "HANDY-SHIELD MAXX" PIPE INSULATION ON P-TRAP, WATER VALVES AND EXPOSED SUPPLY PIPING.	0.5	0.5	1.0	1.0
MB-1	FIAT	TSB3000	24"x24"x12" PRECAST TERRAZZO MOP BASIN WITH 6"DROP FRONT, STAINLESS STEEL CAPS ON ALL CURBS AND STAINLESS STEEL CAST-IN DRAIN BODY FOR 3"PIPE. FAUCET: CHICAGO FAUCET 835-369CP, VACUUM BREAKER SPOUT, 3/4" MALE HOSE THREAD OUTLET, WALL BRACE AND PAIL HOOK. PROVIDE WATTS 8B VACUUM BREAKER ON FAUCET. HOSE & WALL HOOK: FIAT #832-AA, 30"LONG FLEXIBLE HEAVY DUTY 5/8" RUBBER HOSE WITH 3/4" COUPLING ON ONE END AND STAINLESS STEEL WALL BRACKET.	2.0	2.0	3.0	3.0
WC-1	KOHLER	K-3493 HIGHLINE	ADA COMPLIANT, FLOOR MOUNT, VITREOUS CHINA, PRESSURE ASSISTED TANK WATER CLOSET WITH ELONGATED BOWL, 17-1/8" RIM HEIGHT AND 1.6 GALLON FLUSH. COORDINATE COLOR WITH ARCHITECT. SEAT: KOHLER K-4650 SOLID PLASTIC, OPEN FRONT WITH COVER. SUPPLIES AND STOPS: CHICAGO FAUCET 1006 ANGLE VALVE WITH LOOSE KEY HANDLE, 1/2" FEMALE INLET, 1/2"OD x 12" RISER.	N/A	3.0	3.0	6.0
WH-1	AO SMITH	DEL-20	ELECTRIC WATER HEATER WITH 20 GALLON GLASS LINED STORAGE TANK, A SINGLE 2,500 WATT, 208V/1Ø HEATING ELEMENT CONTROLLED BY AN INTEGRALLY MOUNTED THERMOSTAT WITH HIGH TEMPERATURE CUT-OFF SWITCH, TEMPERATURE/PRESSURE RELIEF VALVE AND DRAIN VALVE.	N/A	N/A	N/A	N/A

PLUMBING GENERAL NOTES

1. THESE DRAWINGS DO NOT ATTEMPT TO SHOW THE COMPLETE DETAILS OF BUILDING CONSTRUCTION, WHICH AFFECT THE PLUMBING INSTALLATION. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND REFER TO THE ARCHITECTURAL, CIVIL, STRUCTURAL, HVAC AND ELECTRICAL DRAWINGS FOR ADDITIONAL DETAILS WHICH AFFECT THE PROPER INSTALLATION OF THIS WORK. NO EXTRA PAYMENT WILL BE ALLOWED FOR THE FAILURE TO OBTAIN THIS INFORMATION.
2. CONTRACTOR SHALL COORDINATE HIS WORK WITH THE WORK OF OTHER TRADES. RESOLVE ALL CONFLICTS AT NO ADDITIONAL COST TO THE OWNER OR ARCHITECT.
3. THESE DRAWINGS ARE A DIAGRAMMATIC REPRESENTATION OF WORK TO BE ACCOMPLISHED AND AS SUCH DO NOT SHOW ALL REQUIRED OFFSETS OF PIPING. PLUMBING CONTRACTOR SHALL INSTALL MATERIAL AND EQUIPMENT AS TO CONFORM TO THE STRUCTURE, EQUIPMENT CONNECTIONS AND MAINTAIN HEADROOM AND PASSAGEWAY.
4. ALL NON-POTABLE WATER PIPING AND FIXTURES SHALL CLEARLY BE LABELED AS SUCH.

PLUMBING ABBREVIATIONS

BFP	BACKFLOW PREVENTER
CO	CLEANOUT
DN	DOWN
ES	EMERGENCY SHOWER
EW	EYE WASH
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
HB	HOSE BIB
HD	HUB DRAIN
LAV	LAVATORY
RD	ROOF DRAIN
SH	SHOWER
SPD	SUMP PUMP DISCHARGE
UG	UNDERGROUND
WC	WATER CLOSET
WCO	WALL CLEANOUT
WH	WATER HEATER
VTR	VENT THRU ROOF

PLUMBING LEGEND

- DOMESTIC COLD WATER (W1)
- DOMESTIC HOT WATER (HW)
- DOMESTIC TEMPERED WATER (TW)
- .-.-.-

DOMESTIC HOT WATER RETURN (HWR)
- NON-POTABLE WATER (W2)
- SANITARY SEWER (SS)
- STORM PIPING (ST)
- - - - -

VENT (V)
- 

BALL VALVE
- 

GATE VALVE
- 

CHECK VALVE
- 

CONTROL VALVE
- 

PRESSURE REGULATOR
- 

STRAINER
- 

HOSE BIB
- 

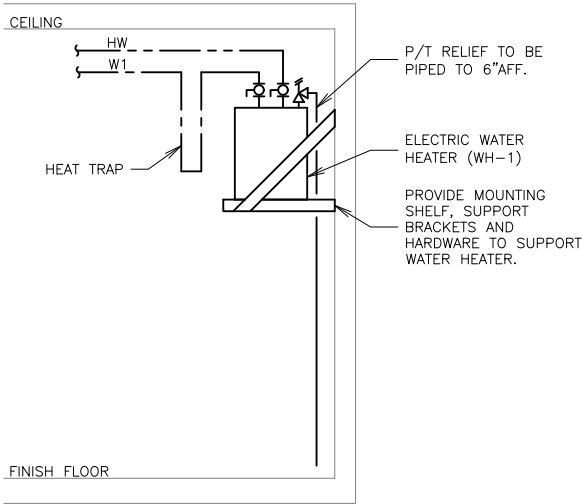
PIPE ELBOW/TEE DOWN
- 

PIPE ELBOW/TEE UP
- 

CAPPED PIPE END

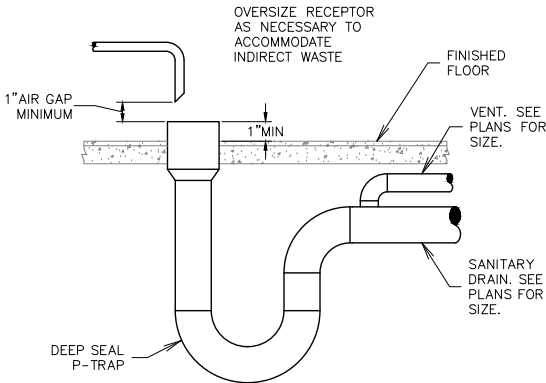
POTABLE WATER EXPANSION TANK

MARK	MANUFACTURER	MODEL	CAPACITY		SYSTEM CONNECTION (INCHES)	MAXIMUM OPERATING PRESSURE (PSI)	DIMENSIONS		REMARKS
			TANK VOLUME (GALLONS)	ACCEPTANCE VOLUME (GALLONS)			DIAMETER (INCHES)	HEIGHT (INCHES)	
ET-1	BELL & GOSSETT	PTA-12	5	3.3	3/4"	150	12"	14"	1
1. TANK SHALL BE ASME RATED.									



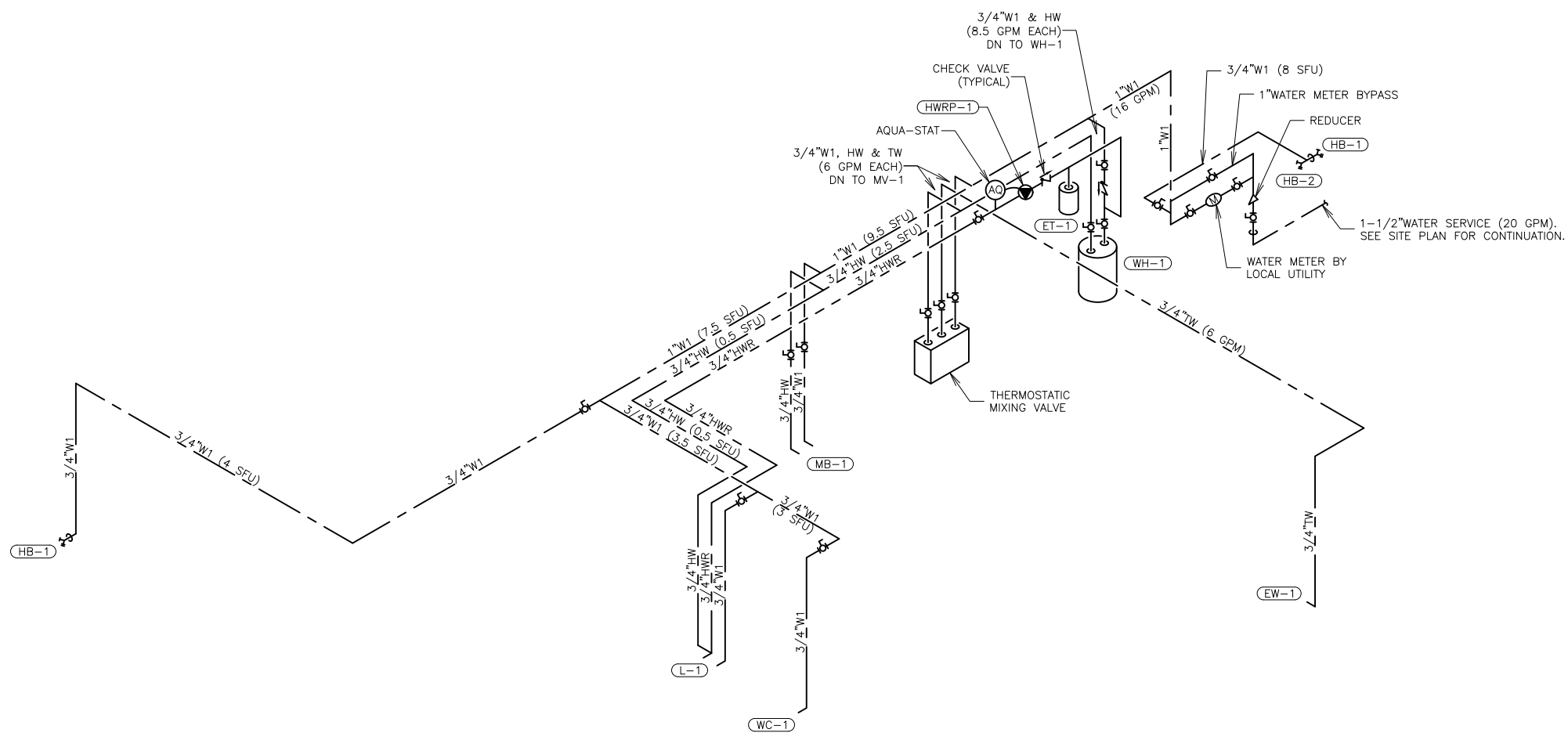
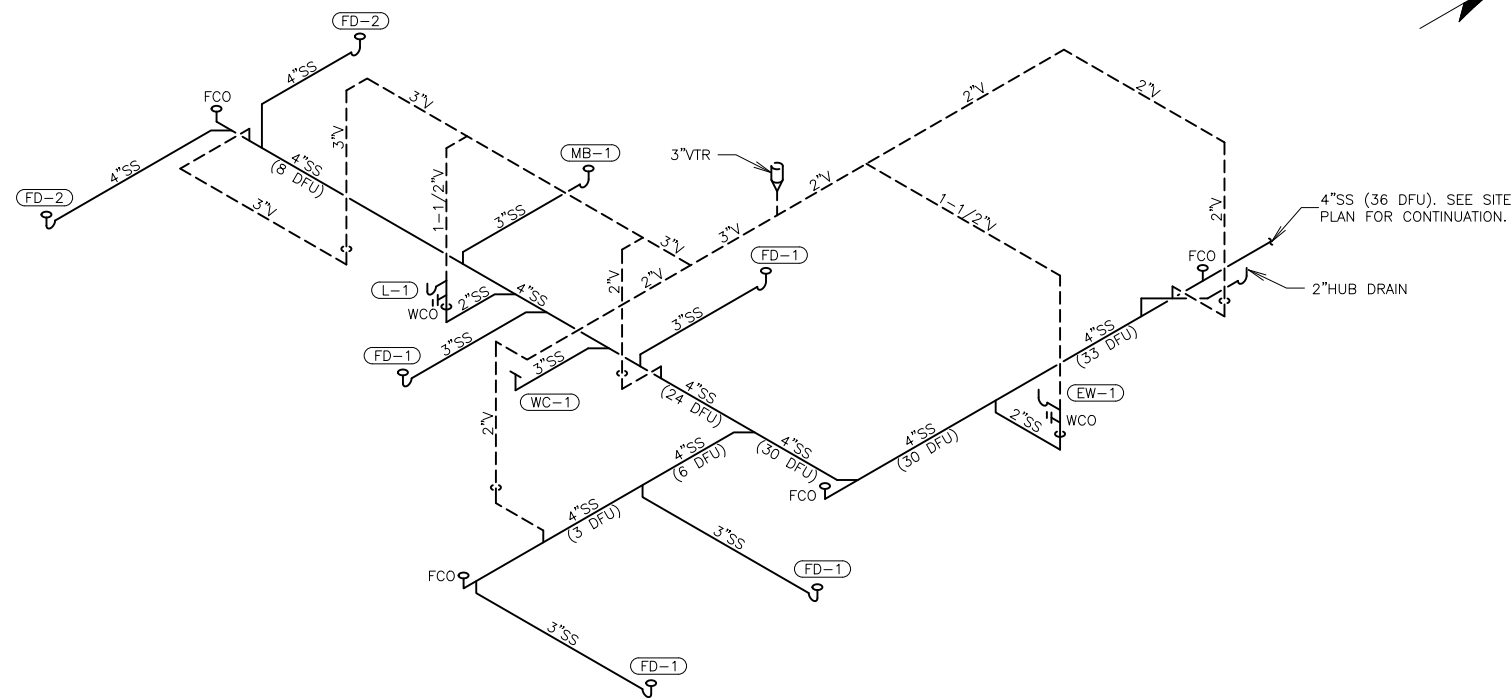
DETAIL
ELECTRIC WATER HEATER

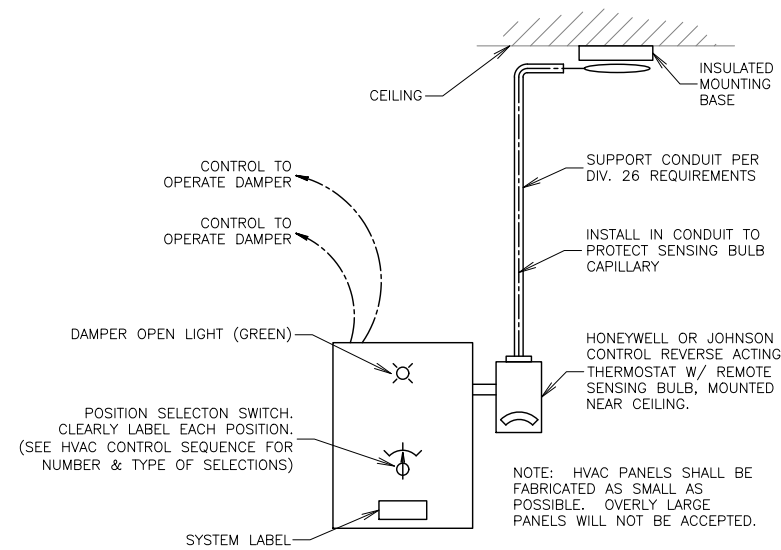
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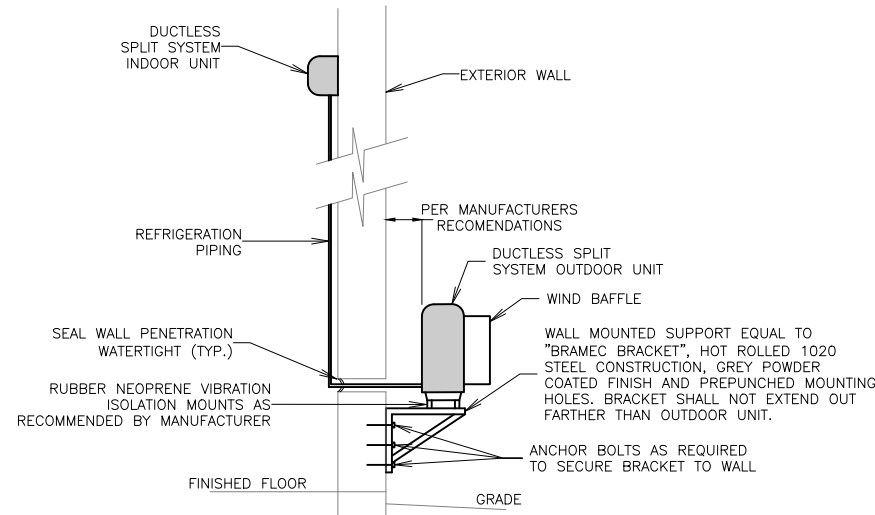
DETAIL
TYPICAL HUB DRAIN

1



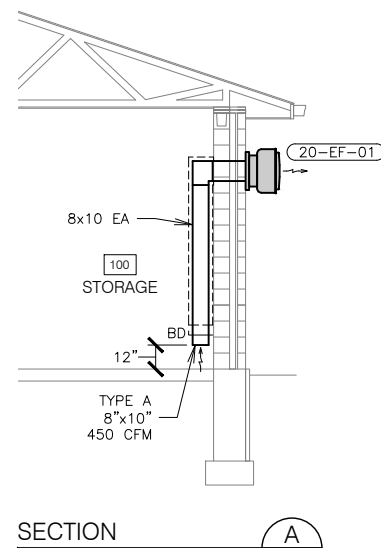


DETAIL 2
TYPICAL HVAC CONTROL PANEL

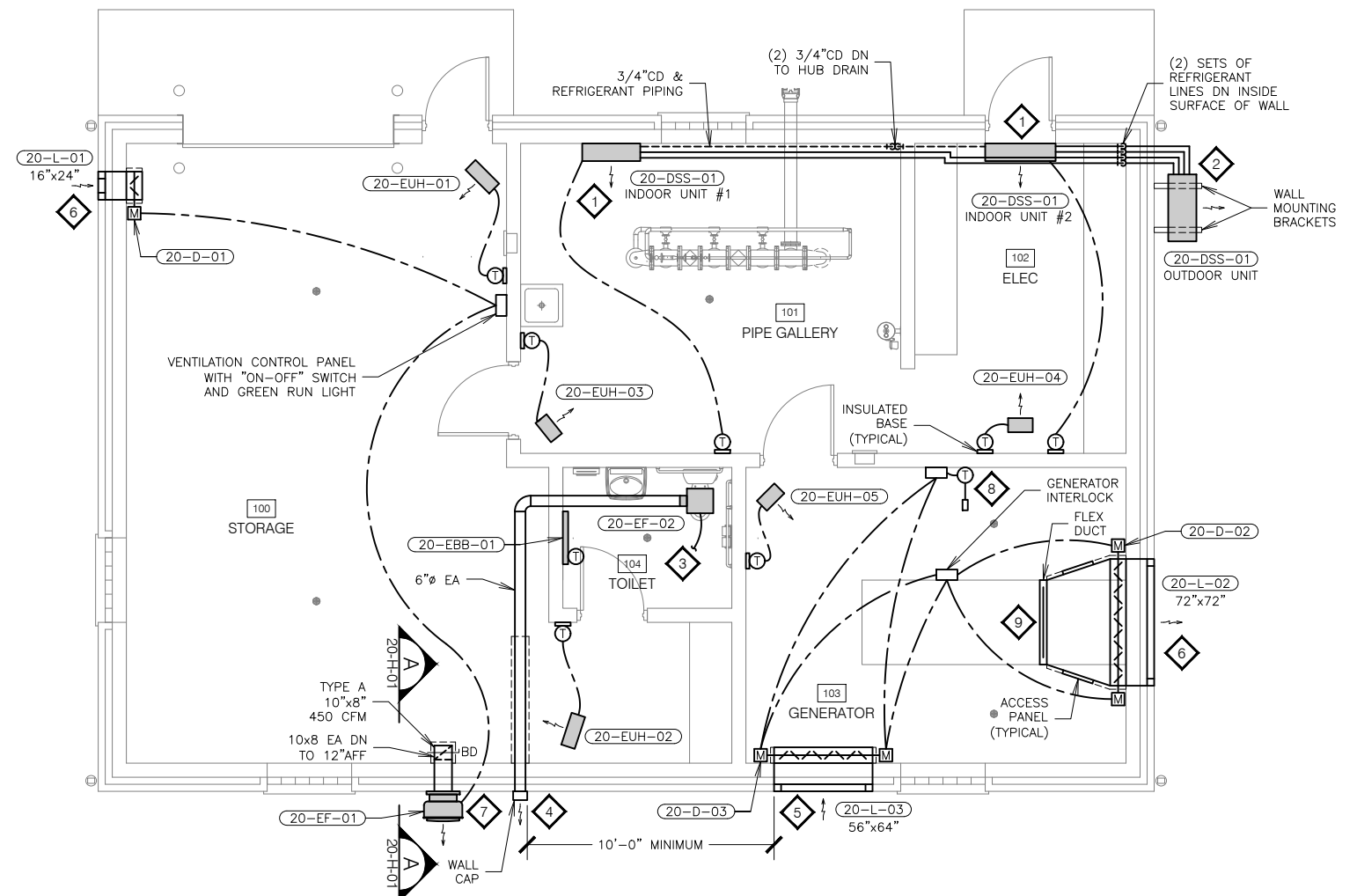


DETAIL 1
DUCTLESS SPLIT SYSTEM

- KEY NOTES**
1. MOUNT 20-DSS-01 (INDOOR UNIT) HIGH ON WALL PER MANUFACTURERS RECOMMENDATIONS. FIELD VERIFY EXACT LOCATION. REFRIGERANT PIPING SHALL DROP VERTICALLY ALONG THE INSIDE SURFACE OF THE WALL AND PENETRATE THE WALL AT THE ELEVATION OF THE OUTDOOR CONDENSING UNIT. DO NOT RUN PIPING DOWN THE OUTSIDE SURFACE OF THE WALL. SEE THE DUCTLESS SPLIT SYSTEM DETAIL ON THIS SHEET.
 2. MOUNT 20-DSS-01 (OUTDOOR UNIT) TO WALL WITH WALL MOUNTING BRACKETS. BOTTOM OF UNIT SHALL BE AT A HEIGHT OF 2'-0" ABOVE GRADE. FIELD VERIFY EXACT LOCATION, SIZE AND INSTALL REFRIGERANT PIPING PER MANUFACTURERS RECOMMENDATIONS. SEE THE DUCTLESS SPLIT SYSTEM DETAIL ON THIS SHEET. ALL EXTERIOR REFRIGERANT PIPING SHALL BE PAINTED WITH UV RESISTANT PAINT TO MATCH BUILDING COLOR.
 3. INTERLOCK OPERATION OF TOILET ROOM EXHAUST FAN WITH ROOM LIGHT SWITCH.
 4. INSTALL WALL CAP FOR TOILET EXHAUST AT A MINIMUM HEIGHT OF 8'-0" AFF. FIELD VERIFY EXACT LOCATION.
 5. TOP OF LOUVER SHALL BE AT A HEIGHT OF 8'-0" AFF.
 6. TOP OF LOUVER SHALL BE AT A HEIGHT OF 9'-4" AFF.
 7. TOP OF WALL OPENING SHALL BE AT A HEIGHT OF 8'-8" AFF.
 8. HVAC CONTROL PANEL WITH "ON-OFF-AUTO" SWITCH AND REVERSE-ACTING THERMOSTAT WITH SENSING BULB NEAR THE CEILING FOR ELECTRIC CONTROL DAMPERS. FIELD VERIFY FINAL LOCATION. SEE THE TYPICAL HVAC CONTROL PANEL DETAIL ON THIS SHEET.
 9. PROVIDE DUCTED CONNECTION FROM GENERATOR RADIATOR TO LOUVER (20-L-02). COORDINATE RADIATOR CONNECTION SIZE WITH GENERATOR MANUFACTURER. PROVIDE ACCESS PANELS IN DUCTWORK.



SECTION A



HVAC PLAN

DUCTLESS SPLIT SYSTEMS																	
MARK	MANUFACTURER	MODEL		TYPE	LOCATION	COOLING CAPACITY (BUTH)	HEATING CAPACITY (BTUH)	AIRFLOW (CFM)	ELECTRICAL UNIT				PHYSICAL DATA				REMARKS
		INDOOR UNIT	OUTDOOR UNIT						AMPS	MCA	MOCp	VOLTS / PH	LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)	WEIGHT (LBS)	
20-DSS-01	LG	#1 - LSN120HSV5	-	HIGH WALL	PIPE GALLERY	12,000	13,600	459 / 338 / 317	0.4	-	-	208-230V / 1Ø	33	8	12	20	1, 2, 3
		#2 - LMN249HVT	-	HIGH WALL	ELEC	24,000	25,600	597 / 452 / 367	0.4	-	-	208-230V / 1Ø	40	9	14	30	1, 2, 3
		-	LMU363HV	MULTI-ZONE	OUTSIDE	36,000	36,000	2,119	15	18.4	25	208-230V / 1Ø	38	16	33	140	1, 4, 5
1. PROVIDE DISCONNECT. 2. INDOOR UNIT IS POWERED FROM OUTDOOR UNIT. 3. PROVIDE WALL MOUNTED WIRED THERMOSTAT. 4. PROVIDE LOW AMBIENT WIND BAFFLE TO PERMIT OPERATION DOWN TO 0°F. 5. PROVIDE WALL MOUNTING BRACKETS FOR OUTDOOR UNIT.																	

FANS																
MARK	MANUFACTURER	MODEL	SERVICE	LOCATION	CONSTRUCTION			AIR			ELECTRICAL			WEIGHT (LBS)	SONES	REMARKS
					TYPE	FAN MATERIAL	DRIVE	CFM	ESP (IN WC)	RPM	HP	BHP	VOLTS / PH			
20-EF-01	GREENHECK	CUE-095-VG	STORAGE	EXTERIOR WALL	SIDEWALL	ALUMINUM	DIRECT	450	0.25	1,327	1/6	0.07	115 / 1Ø	50	6.6	1, 2, 3, 4
20-EF-02	GREENHECK	SP-A200	TOILET	TOILET	CEILING	ALUMINUM	DIRECT	75	0.50	776	29 WATTS	-	115 / 1Ø	20	2.5	1, 2, 5, 6, 7
1. PROVIDE GRAVITY BACKDRAFT DAMPER. 2. PROVIDE FACTORY MOUNTED AND WIRED DISCONNECT SWITCH. 3. PROVIDE VARI-GREEN EC MOTOR WITH DIAL SPEED CONTROL MOUNTED ON MOTOR FOR BALANCING PURPOSES. 4. PROVIDE KYNAR FINSH. COLOR SELECTION BY ARCHITECT. 5. PROVIDE WHITE ALUMINUM GRILLE AND SPEED CONTROL MOUNTED ON FAN FOR BALANCING PURPOSES. 6. PROVIDE NEOPRENE VIBRATION ISOLATION HANGERS. 7. PROVIDE ALUMINUM WALL CAP EQUAL TO GREENHECK MODEL WC-6.																

ELECTRIC UNIT HEATERS										
MARK	MANUFACTURER	MODEL	KW	CFM	MOTOR		UNIT ELECTRICAL		OPERATING WEIGHT	REMARKS
					HP	RPM	AMPS	VOLTS / PH		
20-EUH-01	Q-MARK	MUH07-41	7.5	650	1/30	1,600	9.0	480 / 3Ø	38 LBS	1, 2, 3
20-EUH-02	Q-MARK	MUH07-41	7.5	650	1/30	1,600	9.0	480 / 3Ø	38 LBS	1, 2, 3
20-EUH-03	Q-MARK	MUH03-41	3	350	1/100	1,600	3.6	480 / 3Ø	27 LBS	1, 2, 3
20-EUH-04	Q-MARK	MUH03-41	3	350	1/100	1,600	3.6	480 / 3Ø	27 LBS	1, 2, 3
20-EUH-05	Q-MARK	MUH05-41	5	350	1/100	1,600	6.0	480 / 3Ø	27 LBS	1, 2, 3
1. PROVIDE FACTORY MOUNTED AND WIRED INTEGRAL DISCONNECT SWITCH. 2. PROVIDE REMOTE WALL MOUNTED THERMOSTAT. 3. MOUNT HEATER SUCH THAT THE BOTTOM OF THE UNIT IS AT A HEIGHT OF 8'-0" AFF.										

DIFFUSERS AND GRILLES								
TYPE	MANUFACTURER	MODEL	TYPE	SERVICE	MATERIAL	MOUNTING	FINISH	REMARKS
A	CONTR. FABRICATED	-	-	EXHAUST	STAINLESS STEEL	DUCT	MILL	1
1. 1" x 1" STAINLESS STEEL SCREENING WITH STAINLESS STEEL FRAMED BORDER.								

ELECTRIC BASEBOARD						
MARK	MANUFACTURER	MODEL	LENGTH	ELECTRICAL		REMARKS
				WATTS	VOLTS / PH	
20-EBB-01	Q-MARK	QMKC25126	30"	500	120 / 1Ø	1, 2
1. PROVIDE FACTORY MOUNTED AND WIRED INTEGRAL THERMOSTAT. 2. PROVIDE FACTORY MOUNTED AND WIRED INTEGRAL DISCONNECT.						

LOUVERS													
MARK	MANUFACTURER	MODEL	SERVICE	CFM	CONSTRUCTION		SIZE			MAX FREE AREA VELOCITY (FPM)	MAX PRESSURE DROP (IN WC)	FINISH	REMARKS
					TYPE	MATERIAL	WIDTH	HEIGHT	DEPTH				
20-L-01	GREENHECK	ESK-402	STORAGE	450	INTAKE	ALUMINUM	16"	24"	4"	689	0.08	70% KYNAR	1, 2
20-L-02	GREENHECK	ESK-402	GENERATOR	7,700	EXHAUST	ALUMINUM	72"	72"	4"	689	0.08	70% KYNAR	1, 2
20-L-03	GREENHECK	ESK-402	GENERATOR	8,063	INTAKE	ALUMINUM	56"	64"	4"	689	0.08	70% KYNAR	1, 2
1. COLOR SELECTION BY ARCHITECT. 2. PROVIDE WITH BIRD SCREEN													

ELECTRIC CONTROL DAMPERS							
MARK	MANUFACTURER	MODEL	BLADE CONFIGURATION	SIZE	LOCATION	VOLTS/ PHASE	REMARKS
20-D-01	TAMCO	SERIES 9000	PARALLEL	16" x 24"	20-L-01	115V / 1Ø	1
20-D-02	TAMCO	SERIES 9000	PARALLEL	72" x 72"	20-L-02	115V / 1Ø	1
20-D-03	TAMCO	SERIES 9000	PARALLEL	56" x 64"	20-L-03	115V / 1Ø	1
1. PROVIDE WITH BELIMO ACTUATOR. VERIFY NUMBER OF ACTUATORS REQUIRED AND COORDINATE WITH ELECTRICAL CONTRACTOR.							

HVAC GENERAL NOTES

1. THESE DRAWINGS DO NOT ATTEMPT TO SHOW THE COMPLETE DETAILS OF BUILDING CONSTRUCTION, WHICH AFFECT THE MECHANICAL INSTALLATION. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND REFER TO THE ARCHITECTURAL, CIVIL, STRUCTURAL, PLUMBING AND ELECTRICAL DRAWINGS FOR ADDITIONAL DETAILS WHICH AFFECT THE PROPER INSTALLATION OF THIS WORK. NO EXTRA PAYMENT WILL BE ALLOWED FOR THE FAILURE TO OBTAIN THIS INFORMATION.
2. CONTRACTOR SHALL COORDINATE HIS WORK WITH THE WORK OF OTHER TRADES. RESOLVE ALL CONFLICTS AT NO ADDITIONAL COST TO THE OWNER OR ARCHITECT.
3. THESE DRAWINGS ARE A DIAGRAMMATIC REPRESENTATION OF WORK TO BE ACCOMPLISHED AND AS SUCH DO NOT SHOW ALL REQUIRED OFFSETS OF DUCTWORK AND PIPING. MECHANICAL CONTRACTOR SHALL INSTALL MATERIAL AND EQUIPMENT AS TO CONFORM TO THE STRUCTURE, EQUIPMENT CONNECTIONS AND MAINTAIN HEADROOM AND PASSAGEWAY.
4. KEY NOTES PERTAIN ONLY TO THE DRAWING THEY ARE LOCATED ON.
5. DUCT SIZES ARE CLEAR INSIDE DIMENSIONS.
6. ALL BRANCH DUCTS SHALL MATCH DIFFUSER NECK SIZES UNLESS OTHERWISE NOTED.
7. ALL CONTROL WIRING SHALL BE RUN IN CONDUIT.
8. MAINTAIN 10' MINIMUM DISTANCE FROM OUTSIDE AIR INTAKES TO ANY EXHAUST OR TOILET VENTS.

HVAC ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AP	ACCESS PANEL
BD	BALANCING DAMPER
BOD	BOTTOM OF DUCT
CAI	COMBUSTION AIR INTAKE
CD	CONDENSATE DRAIN
CFM	CUBIC FEET PER MINUTE
DIA	DIAMETER
DN	DOWN
EA	EXHAUST AIR
EF	EXHAUST FAN
MIN	MINIMUM
MAX	MAXIMUM
OA	OUTSIDE AIR
RA	RETURN AIR
SA	SUPPLY AIR
UG	UNDERGROUND

HVAC LEGEND

	HVAC EQUIPMENT
	DUCTWORK
	INSULATED DUCTWORK
	THERMOSTAT
	REVERSE-ACTING THERMOSTAT
	DUCT UP
	DUCT DOWN
	FLEX DUCT
	MOTORIZED DAMPER
	BALANCING DAMPER
	ELBOW WITH TURNING VANES
	AIR FLOW INDICATOR
	DOOR UNDER CUT
	BALL VALVE
	PIPE ELBOW/TEE DOWN
	PIPE ELBOW/TEE UP
	CAPPED PIPE END

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HVAC SCHEDULES

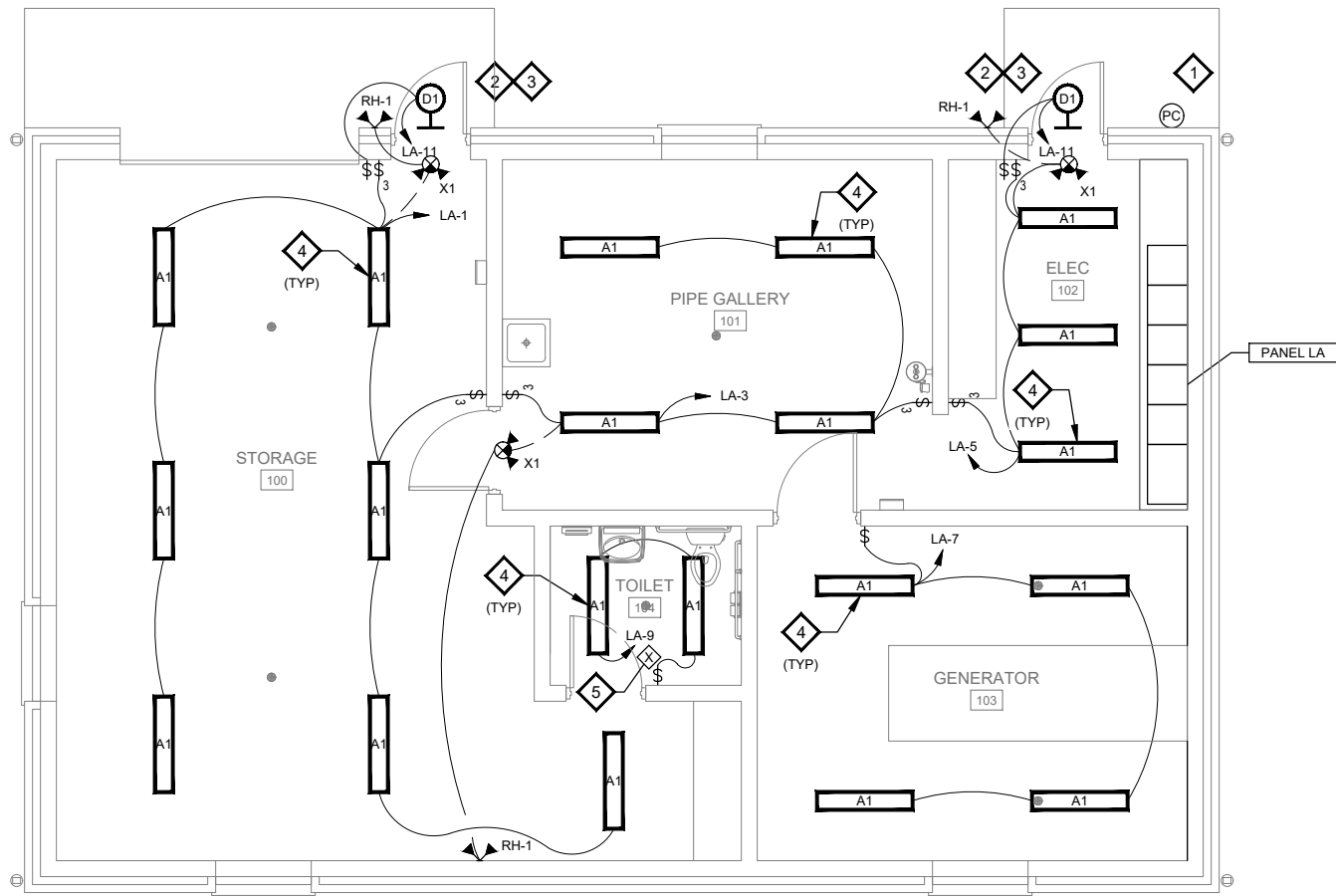
2023 LIFT STATION 2 IMPROVEMENTS
Marsh Woods Drive
Village of McFarland, Wisconsin

PROJECT NO.:
MC 198
DRAWING FILE:
20-H-02
DRAWN BY:
B.M.C.
CHECKED BY:
M.R.R.
DATE:
11-14-23
REVISIONS:

SCALE:

SHEET:

20-H-02



ELECTRICAL LIGHTING PLAN

GENERAL NOTES

1. DO NOT SCALE DRAWINGS TO DETERMINE EXACT LOCATION OF ELECTRICAL EQUIPMENT AND CONNECTIONS.
2. 120V HOMERUN WIRING SHALL BE A MINIMUM OF (2) #12 & #12G IN 3/4" UNLESS OTHERWISE NOTED. SIZE FOR VOLTAGE DROP.
3. SEE ONE-LINE DIAGRAM, PANEL SCHEDULE, AND FIELD DEVICE WIRING SCHEDULE FOR WIRING OF ALL PROCESS AND INSTRUMENTATION.
4. PROVIDE RACEWAY FOR ALL HVAC EQUIPMENT. PROVIDE WIRING FOR LINE VOLTAGE AND ABOVE POWER AND CONTROL WIRING.
5. INSTALL FIELD INSTRUMENTS PER DETAIL REFERENCED IN FIELD DEVICE WIRING SCHEDULE.
6. ALL CONDUIT STUBBED UP THROUGH CONCRETE SHALL BE PVC COATED GRS.
7. SEE SCADA OVERVIEW FOR COMMUNICATIONS CABLING REQUIREMENTS.

KEY NOTES

1. PROVIDE PHOTOCELL, TORK MODEL #2001, OR EQUAL, TO CONTROL EXTERIOR WALL PACK FIXTURES.
2. WIRE EXTERIOR TYPE "D1" FIXTURES TO BE CONTROLLED FROM PHOTOCELL AND INTERNAL MOTION SENSOR WHEN SWITCH IS IN THE ON POSITION. CIRCUIT AS INDICATED.
3. MOUNT TYPE "D1" FIXTURES 12" ABOVE HEIGHT OF DOOR OPENING.
4. MOUNT TYPE "A1" FIXTURES TIGHT TO CEILING AT LOCATIONS SHOWN.
5. PROVIDE VACANCY SENSOR.

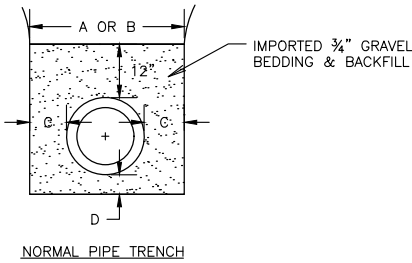


1. DO NOT SCALE DRAWINGS TO DETERMINE EXACT LOCATION OF ELECTRICAL EQUIPMENT AND CONNECTIONS.
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6. ALL CONDUIT STUBBED UP THROUGH CONCRETE SHALL BE PVC COATED GRs.
7. SEE SCADA OVERVIEW FOR COMMUNICATIONS CABLING REQUIREMENTS.
8. SEE SECTION 01000 FOR DIVISION OF WORK BETWEEN THE ELECTRIC UTILITY AND THE CONTRACTOR.

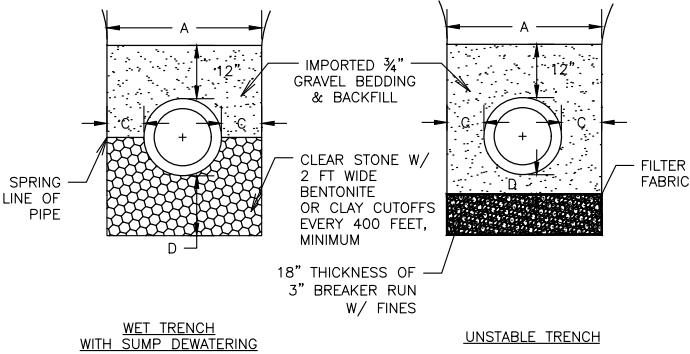
1. PROVIDE 4" CONCRETE HOUSEKEEPING PAD FOR MCC. SEE ARCHITECTURAL/STRUCTURAL DETAILS FOR REQUIREMENTS. PAD TO EXTEND 4" IN FRONT OF AND 2" TO THE SIDES OF EQUIPMENT. COORDINATE SIZE WITH EQUIPMENT TO BE SUPPLIED.
2. NEC REQUIRED MINIMUM WORKING SPACE (TYP.)
3. INSTALL GENERATOR PER DETAIL E4-03 ON SHEET 100-E-04 AND PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE CONCRETE HOUSEKEEPING PAD PER ARCHITECTURAL/STRUCTURAL REQUIREMENTS.
4. INSTALL GENERATOR REMOTE ANNUNCIATOR ON THE DOOR OF THE AUTOMATIC TRANSFER SWITCH.
5. INSTALL GENERATOR E-STOP SWITCH ON WALL.
6. INTERLOCK DAMPERS WITH GENERATOR OPERATION AND THERMOSTAT CONTROL. REFER TO HVAC PLANS AND ELECTRICAL CONTROLS DESCRIPTIONS.
7. INDOOR UNIT POWERED BY OUTDOOR UNIT.
8. PROVIDE 2#10 AND 1#10 GROUND PER MANUFACTURER'S RECOMMENDATIONS FOR POWER CONDUCTORS TO DSS.
9. INTERLOCK OPERATION OF TOILET ROOM EXHAUST FAN WITH ROOM LIGHT SWITCH..
10. MOUNT INTERIOR CONTROL PANEL PER DETAIL E2-01.
11. PROVIDE CONDUIT ENTRANCE PER E2-14.
12. PROVIDE ANTENNA AND INSTALL PER DETAILS E6-02 AND E6-03 IN LOCATION AND AT HEIGHT AS DIRECTED BY SYSTEM INTEGRATOR.
13. MOUNT TELEMETRY RADIO ANTENNAS PER DETAIL E6-02 AND E6-03 AT HEIGHT AS DETERMINED BY SYSTEM INTEGRATOR. PROVIDE 1-1/2" C FOR ANTENNA CABLE TO RADIO LOCATION IN LCP.
14. PROVIDE GFCI RECEPTACLES WITH METALLIC WEATHERPROOF WHEN IN USE COVERPLATES.
15. NOT USED.
16. NOT USED.
17. NOT USED.
18. PROVIDE RACEWAY AND CONDUCTOR FOR LOCAL CONTROL STATION AND SAFETY SYSTEM OF OVERHEAD DOOR OPERATOR PER MANUFACTURER'S INSTALLATION REQUIREMENTS.
19. PROVIDE 2-POLE TOGGLE SWITCH TO SERVE AS LOCAL DISCONNECT FOR WH-1.
20. RECEPTACLE DEDICATED TO HWRP-1 LOCATED ADJACENT TO CORD AND PLUG CONNECTED PUMP. COORDINATE EXACT LOCATION WITH PLUMBING CONTRACTOR.
21. PROVIDE 3/4" CONDUIT FROM DOOR FRAME TO JUNCTION BOX LOCATED IN ATTIC SPACE ABOVE FOR FUTURE SECURITY SYSTEM.

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DIMENSIONS:
A: OUTSIDE DIAMETER OF PIPE PLUS 24" MAXIMUM, EXCEPT NEED NOT BE LESS THAN 36". TRENCH SHIELDS NARROWER THAN 4 FEET INSIDE WIDTH WILL NOT BE REQUIRED UNLESS SPECIFICALLY REQUIRED IN THE PROJECT SPECIFICATIONS.
B: FOR ROCK, OUTSIDE DIAMETER OF PIPE PLUS 18" MAXIMUM, EXCEPT NEED NOT BE LESS THAN 36".
C: MINIMUM - 6"
D: MINIMUM 4" BELOW BARREL AND 3" BELOW BELL.

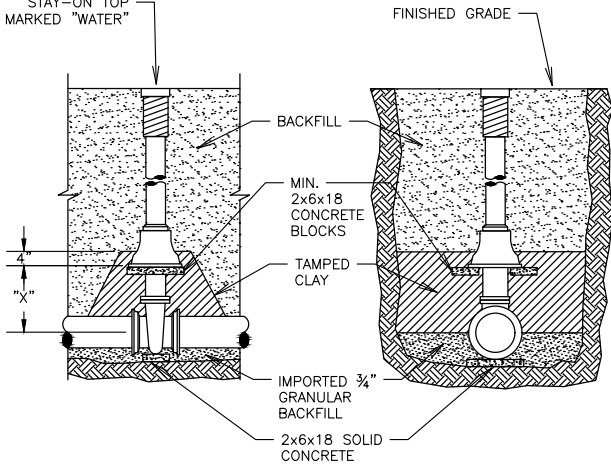


NORMAL PIPE TRENCH



DETAIL
TRENCH WIDTH AND BEDDING

100



VIEW ALONG PIPELINE

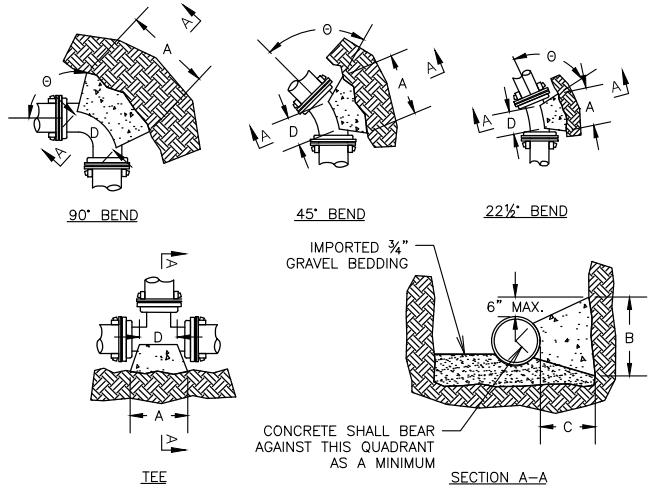
SECTION VIEW

PIPE DIA., INCHES	6	8	10	12	14	16
"x" DIMENSION, INCHES	12	13	17	21	25	30

- NOTES:
- SOLID CONCRETE BLOCKS MUST BE USED.
 - VALVES SHALL BE SECURED WITH RODDING OR MEGALUGS TO THE NEAREST "TEE" FITTING OR TO THE FIRST JOINT CONNECTING A FULL SECTION OF WATER MAIN PIPE. SEE RODDING DETAIL "OFFSET AND RODDING".

DETAIL
VALVE BOX SETTING

101



WOOD BLOCKING MAY NOT BE USED. ONLY SOLID CONCRETE BLOCKS ARE ALLOWED.

DIMENSION "D" SHALL BE AS LARGE AS POSSIBLE, BUT THE CONCRETE SHALL NOT INTERFERE WITH THE MECHANICAL JOINTS.

DIMENSION "C" SHALL BE AT LEAST 6 INCHES, AND LARGE ENOUGH TO MAKE THE "theta" ANGLE EQUAL TO OR GREATER THAN 45 DEGREES WITH THE DIMENSION "A" AS SHOWN ON THE TABLE, OR GREATER, AND WITH DIMENSION "D" AS LARGE AS POSSIBLE.

CONCRETE SHALL BE CLASS "CC". SEE SECTION 03301.

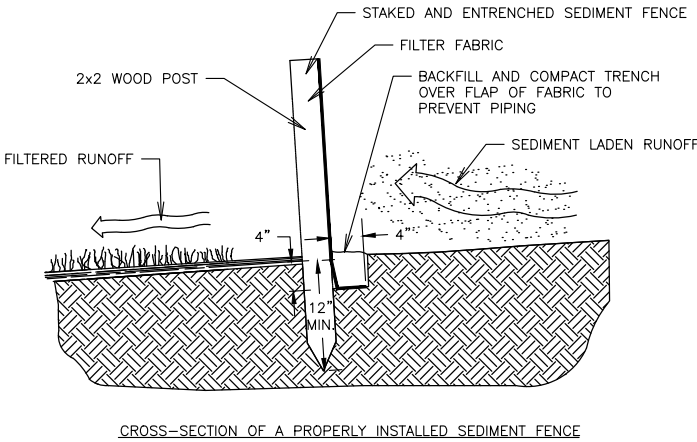
PIPE SIZE *		BUTTRESS DIMENSIONS											
		TEES		22.5° BEND		45° BEND		90° BEND					
A	B	A	B	A	B	A	B	A	B				
		A	B	A	B	A	B	A	B				
6	1'-3"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-4"	1'-2"				
8	1'-6"	1'-4"	1'-0"	1'-0"	1'-4"	1'-2"	1'-10"	1'-6"	1'-6"				
10/12	2'-3"	2'-0"	1'-4"	1'-4"	1'-10"	1'-10"	2'-8"	2'-3"	2'-3"				
14/18	3'-2"	2'-6"	1'-10"	1'-8"	2'-6"	2'-4"	3'-10"	2'-10"	2'-10"				
18/24	4'-0"	3'-0"	2'-4"	2'-0"	3'-3"	2'-10"	5'-0"	3'-4"	3'-4"				
22/24	5'-3"	3'-4"	2'-10"	2'-4"	4'-0"	3'-3"	6'-4"	3'-10"	3'-10"				
30	6'-3"	4'-3"	3'-6"	3'-0"	5'-4"	3'-10"	8'-0"	4'-8"	4'-8"				

* = FOR TEE THIS WILL BE THE BRANCH PIPE

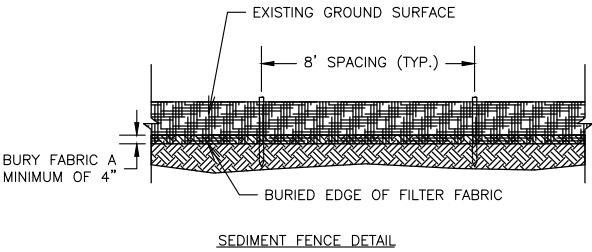
DIMENSIONS IN THE TABLE ARE BASED ON A WATER PRESSURE OF 150 PSI AND SOIL RESISTANCE OF 200 LBS/SQ.FT.

DETAIL
BUTTRESS

102



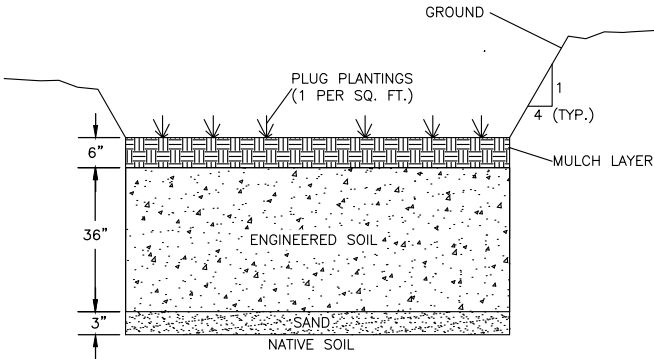
CROSS-SECTION OF A PROPERLY INSTALLED SEDIMENT FENCE



SEDIMENT FENCE DETAIL

DETAIL
SEDIMENT FENCE

103



DETAIL
BIORETENTION AREA

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SITE DETAILS

2023 LIFT STATION 2 IMPROVEMENTS
Marsh Woods Drive
Village of McFarland, Wisconsin

PROJECT NO.:
MC 198
DRAWING FILE:
100-C
DRAWN BY:
D.D.E.
CHECKED BY:
T.J.S.

DATE:
11-15-23
REVISIONS:

SCALE:

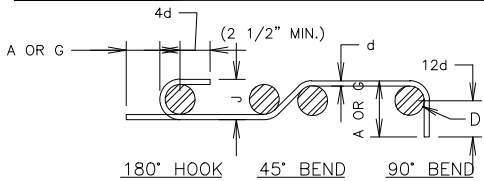
N.T.S.

SHEET:

100-C-01

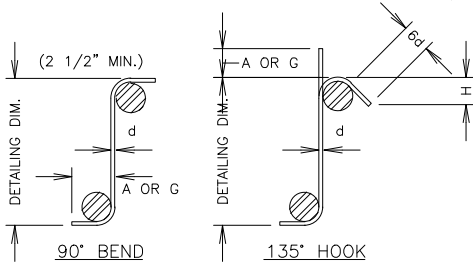
BAR SIZE	D	180°		90°
		A OR G	J	A OR G
#3	2 1/4"	6d	5"	3"
#4	3"		6"	4"
#5	3 3/4"		7"	5"
#6	4 1/2"		8"	6"
#7	5 1/4"		10"	7"
#8	6"	8d	11"	8"
#9	9 1/2"		15"	11 3/4"
			16"	

NOTE: "D" DENOTES FINISHED BAR BEND DIAMETER.

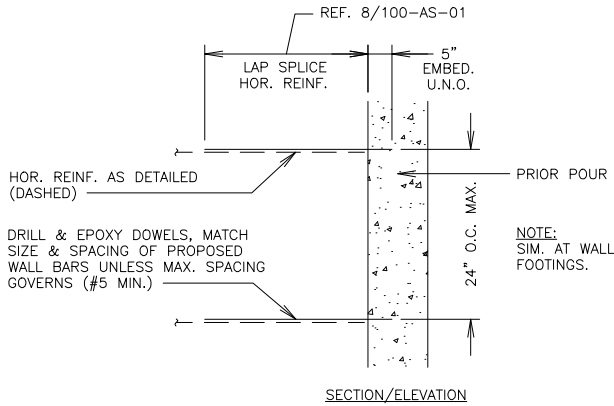


BAR SIZE	D	90° HOOK		135° HOOK
		A OR G	A OR G	H
#3	1 1/2"	4"	4 1/4"	3"
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"

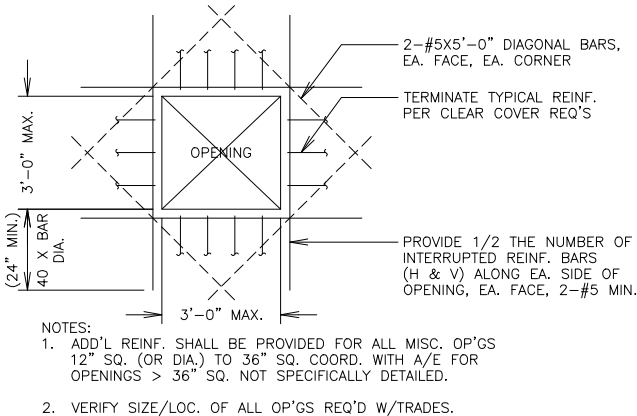
NOTE: "D" DENOTES FINISHED BAR BEND DIAMETER.



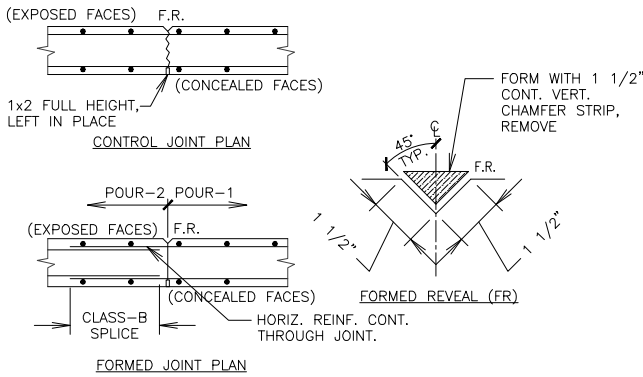
DETAIL 3 NTS
MILD REINFORCING BENDS



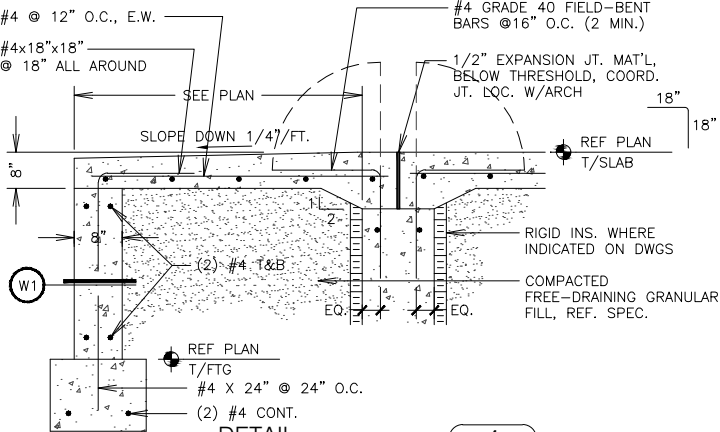
DETAIL 7 NTS
SEQUENCED CONCRETE PLACEMENT



DETAIL 10 NTS
ADD'L REINF. AT CONC. WALL OPENINGS



DETAIL 1 NTS
FOUNDATION WALL CONTROL JOINT



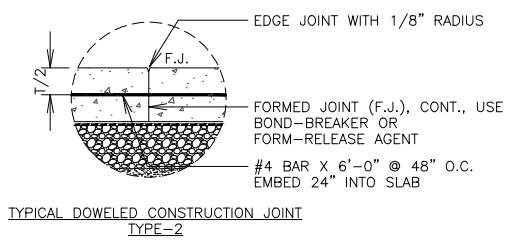
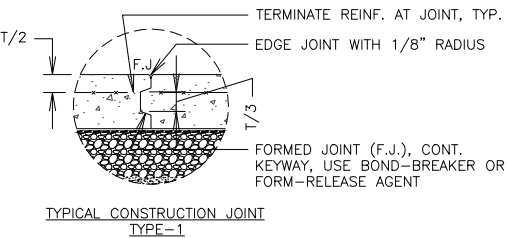
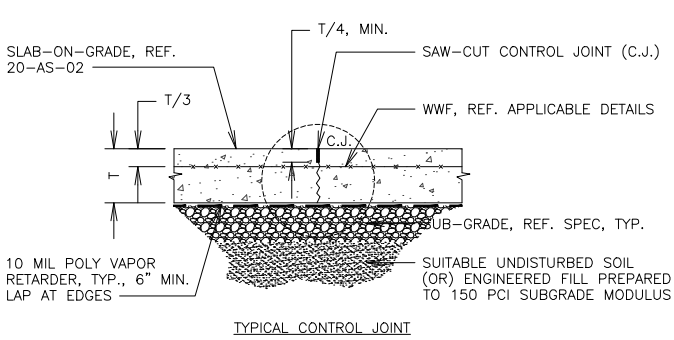
DETAIL 4 NTS
STRUCTURAL CONCRETE STOOP

CLASS-B TENSION LAP SPLICE SCHEDULE

CLASS BAR SIZE	COL. (N/A)		FOUNDATIONS						SLABS					
			f'c = 4 KSI			f'c = 5 KSI			f'c = 4 KSI			f'c = 5 KSI		
	f'c = 4 KSI	f'c = 5 KSI	BOT. BARS	TOP BARS	*BARS	BOT. BARS	TOP BARS	*BARS	BOT. BARS	TOP BARS	*BARS	BOT. BARS	TOP BARS	*BARS
#3	16	16	16	18	24	16	16	21	16	18	24	16	16	21
#4	19	17	19	24	32	17	22	28	19	24	32	17	22	28
#5	23	21	23	30	40	21	27	35	23	30	40	21	27	35
#6	28	25	28	36	47	25	33	42	28	36	47	25	33	42
#7	33	29	33	42	55	29	38	50	33	43	57	30	39	51
#8	39	35	39	51	67	35	46	60	44	57	75	39	51	67
#9	50	44	50	64	84	44	58	75	56	72	94	50	65	84
#10	88	79	63	82	107	56	73	96	70	92	120	63	82	107
#11	108	97	77	100	131	69	90	117	86	112	147	77	101	131

NOTES:

1. * DENOTES EPOXY-COATED REINFORCING, AS APPLICABLE WHERE INDICATED ON DWGS ONLY.

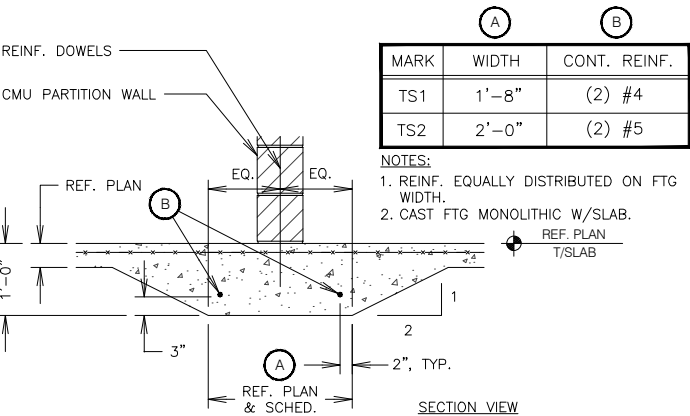


DETAIL 5 NTS
SLAB-ON-GRADE JOINTS

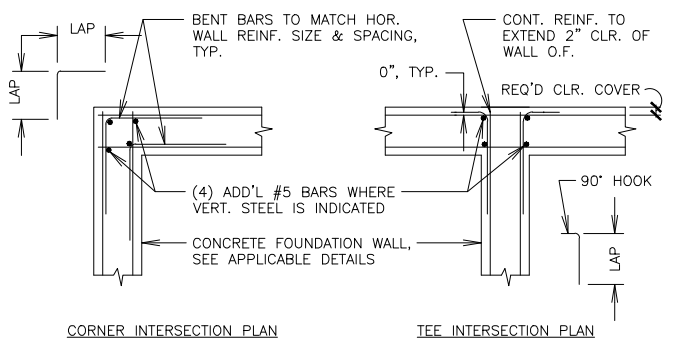
CONCRETE REINFORCING SHALL HAVE THE FOLLOWING MINIMUM COVER, TYPICAL UNLESS DETAILED OTHERWISE:

- CONCRETE IN CONTACT AND/OR PLACED AGAINST EARTH (3")
- CONCRETE EXPOSED TO WEATHER: #5 & SMALLER (2")
- CONCRETE WITH INTERIOR EXPOSURE (1 1/2")

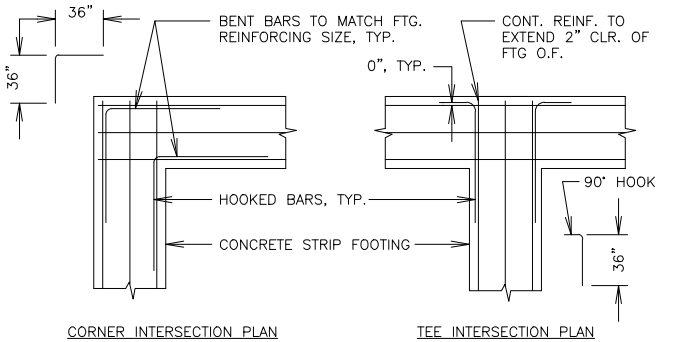
DETAIL 8 NTS
REINF. LAP SPLICE & PROTECTIVE COVER



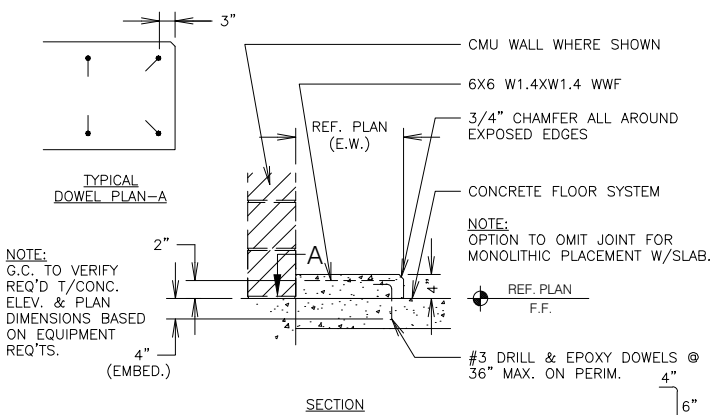
DETAIL 12 NTS
THICKENED SLAB FOOTING



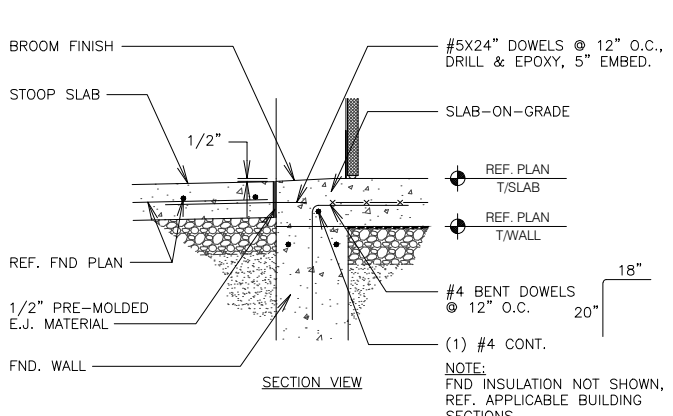
DETAIL 2 NTS
CONC. WALL INTERSECTION REINFORCING (TYP. UNLESS NOTED OTHERWISE)



DETAIL 6 NTS
FOOTING INTERSECTION REINFORCING



DETAIL 9 NTS
NON-ISOLATED EQUIPMENT PAD



DETAIL 13 NTS
THRESHOLD AT OVERHEAD DOOR

WINDOW HEAD

WINDOW JAMB

WINDOW SILL

DETAIL 4 NTS

WINDOW HEAD, JAMB, & SILL

DOOR HEAD

DOOR JAMB

DOOR THRESHOLD

DETAIL 5 NTS

DOOR HEAD, JAMB, & THRESHOLD

DETAIL 1 NTS
TYPICAL CMU WALL REINFORCING

MASONRY PIER SCHEDULE				
MARK	TYPE	VERT. REINF.	HORIZ. TIES	REMARKS
MP1	1	1-#5	N/A	-
MP2	2	2-#5	8" O.C.	-
MP3	3	4-#5	8" O.C.	-
-	-	-	-	-

NOTES:
1. GROUT REINFORCED CORES SOLID, FOUNDATION DOWELS REQ'D AT EA. VERTICAL BAR.

DETAIL 2 NTS

CMU PIER SCHEDULE

DETAIL 6 NTS

DETAIL 3 NTS

SECTION VIEW-A

DETAIL 8 NTS

PIPE BOLLARD

GABLE END PERMANENT BRACING

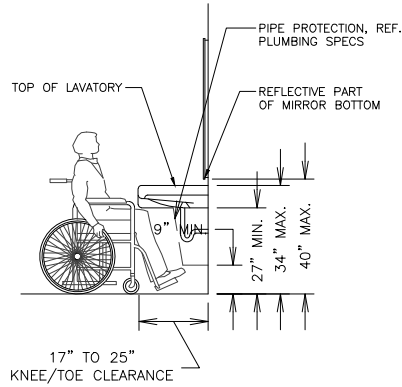
PERMANENT DIAGONAL TRUSS BRACING

⊗ KEY NOTES

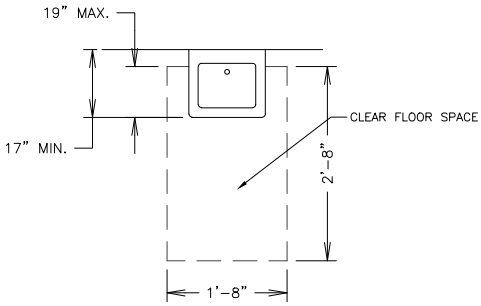
- A. 2X4 MIN. STRESS-GRADED LUMBER CONT. LATERAL RESTRAINT (LR), MIN. (1) TRUSS OVERLAP, ATTACH TO EA. TRUSS W/(2) 10d NAILS
- B. 2X WOOD TRUSSES @ 24" O.C.
- C. 2X4 MIN. STRESS-GRADED LUMBER DIAGONAL BRACE @ 16'-0" O.C., ATTACH TO EACH TRUSS W/(2) 10d NAILS
- D. BLOCKING EITHER SIDE DIAGONAL LOCATION
- E. TRUSS TOP CHORD
- F. TRUSS BOTTOM CHORD
- G. GABLE END TRUSS
- H. 2X4 NO.2 SPF X-BRACING AT MIDSPAN AND AT 48" O.C., EXTEND BACK 8'-0" FROM GABLE, ATTACH TO GABLE AND TRUSS VERTICALS W/(3) 16d NAILS
- I. GABLE SHEATHING EDGES WITHIN 4'-0" OF GABLE TRUSS
- J. 2X4 SPF OUTRIGGER AT 24" O.C., CLIP TO GABLE TOP CHORD W/SIMPSON HB, (2) 8d NAILS
- K. BLOCK BETWEEN OUTLOOKERS, FASTEN TO GABLE TOP CHORD W/10d TOENAILS AT 8" O.C.
- L. DROPPED GABLE END TRUSS TOP CHORD
- M. CLIP END OF LATERAL RESTRAINT TO GABLE BOTTOM CHORD W/SIMPSON H2.5 W/(8) 8d
- N. GABLE BOTTOM CHORD, FASTEN TO TOP PLATE W/10d TOENAILS AT 8" O.C.
- O. STRAP GABLE TRUSS TO STUD WALL W/SIMPSON MSTA12 W/(8) 10d, SPACING 48" O.C., AS APPLICABLE
- P. 2X4X8" SPF LATERAL RESTRAINT AT 48" O.C., FASTEN TO EACH TRUSS W/(2) 16d COMMON NAILS

DETAIL 7 NTS

WOOD TRUSS PERMANENT BRACING

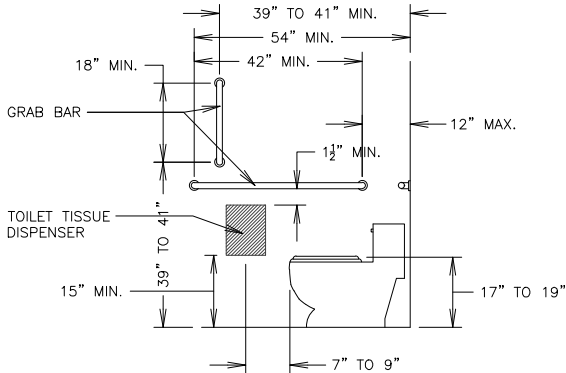


SIDE ELEVATION VIEW

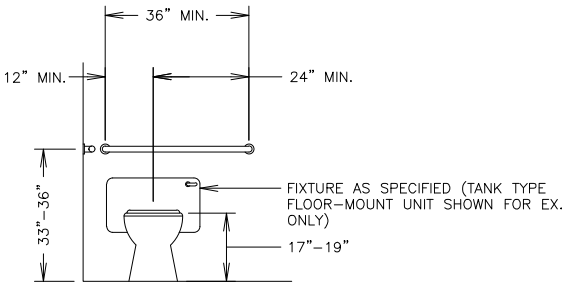


PLAN VIEW

DETAIL 1 NTS
ACCESSIBILITY AT LAVATORY

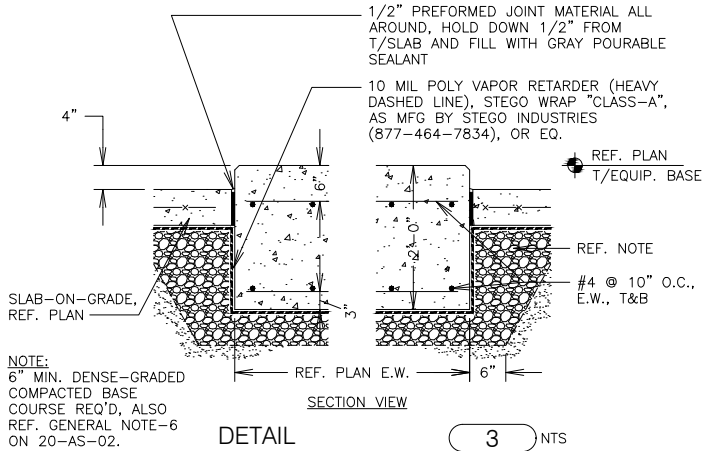


SIDE ELEVATION VIEW



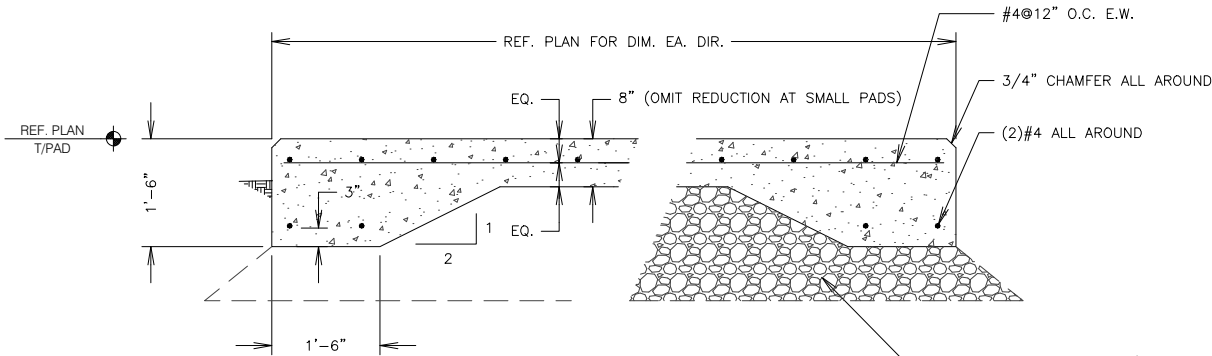
FRONT ELEVATION VIEW

DETAIL 2 NTS
ACCESSIBILITY AT WATER CLOSET



SECTION VIEW

DETAIL 3 NTS
ISOLATED EQUIPMENT BASE



TYPICAL SECTION

DETAIL 4 NTS
THICKENED EDGE EQUIPMENT SLAB

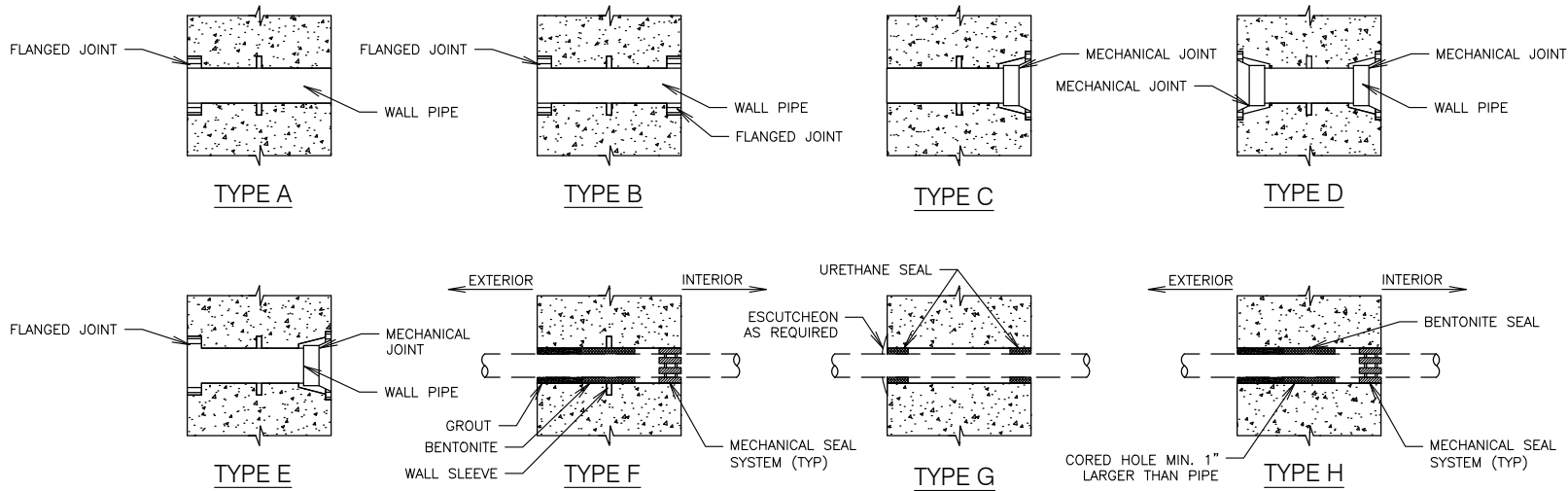
STANDARD DETAILS

2023 LIFT STATION 2 IMPROVEMENTS
Marsh Woods Drive
Village of McFarland, Wisconsin

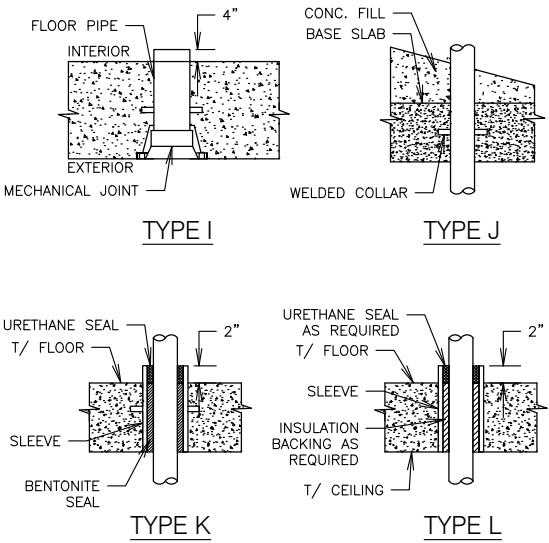
PROJECT NO.: MC 198
DRAWING FILE:
DRAWN BY: WTS
CHECKED BY:
DATE: 6/28/23
REVISIONS:
SCALE:

SHEET:

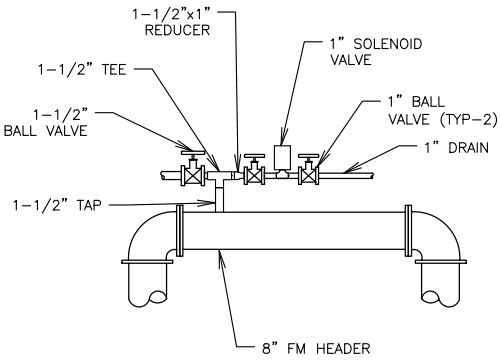
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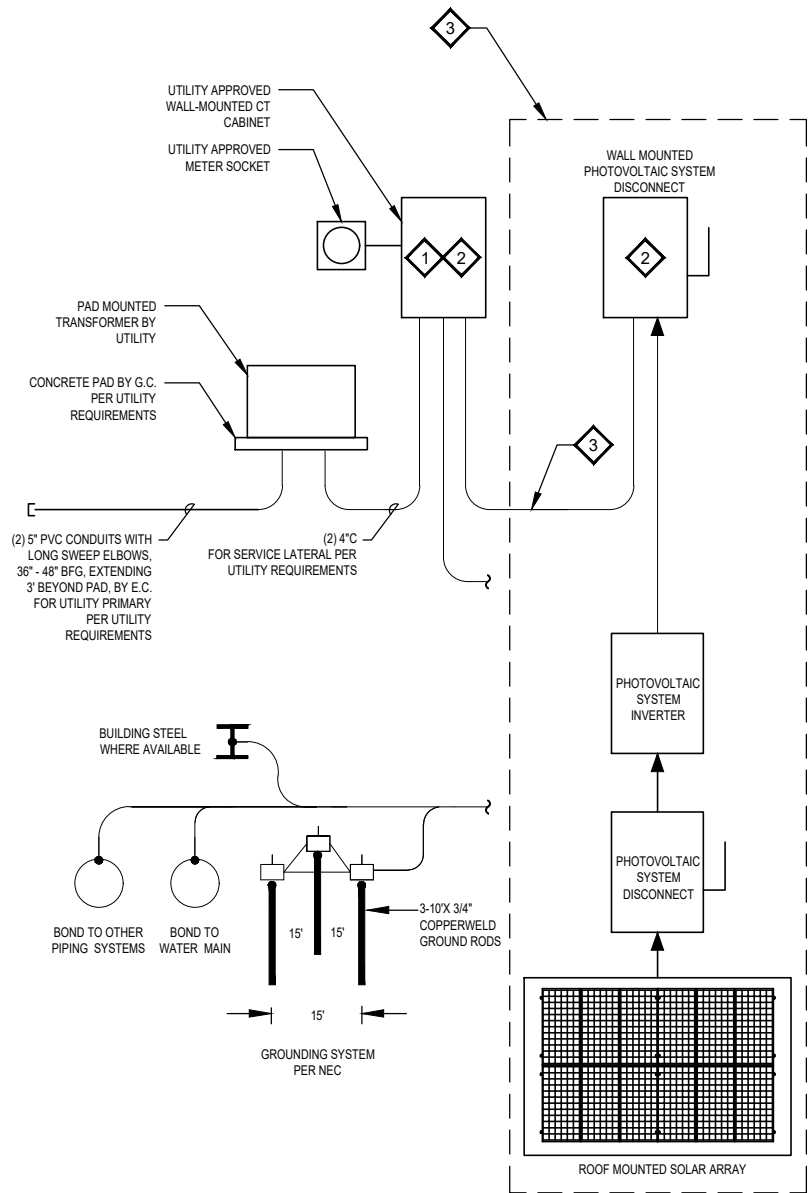
DETAIL 414
WALL PIPING PENETRATION (SEE SPECS FOR USE)



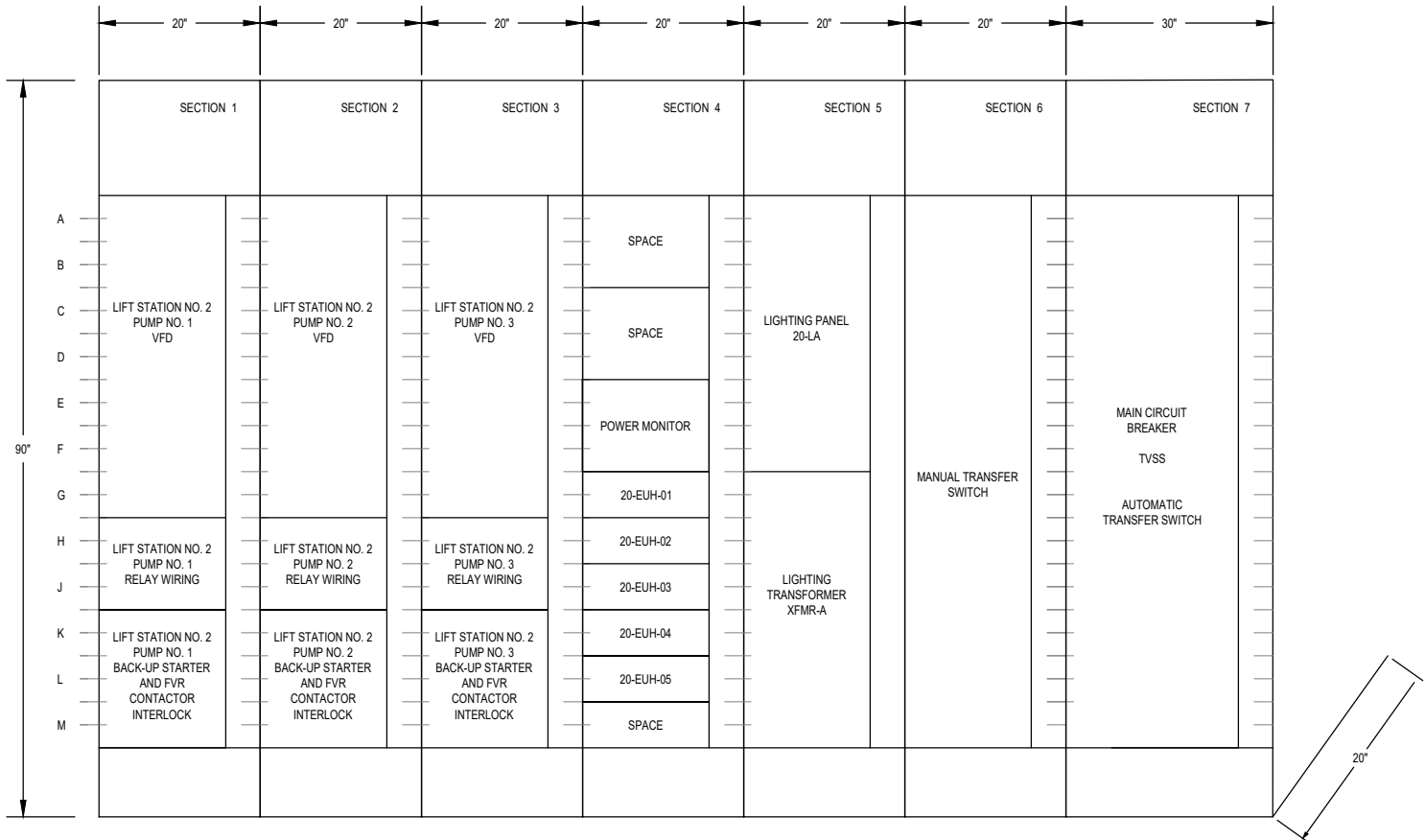
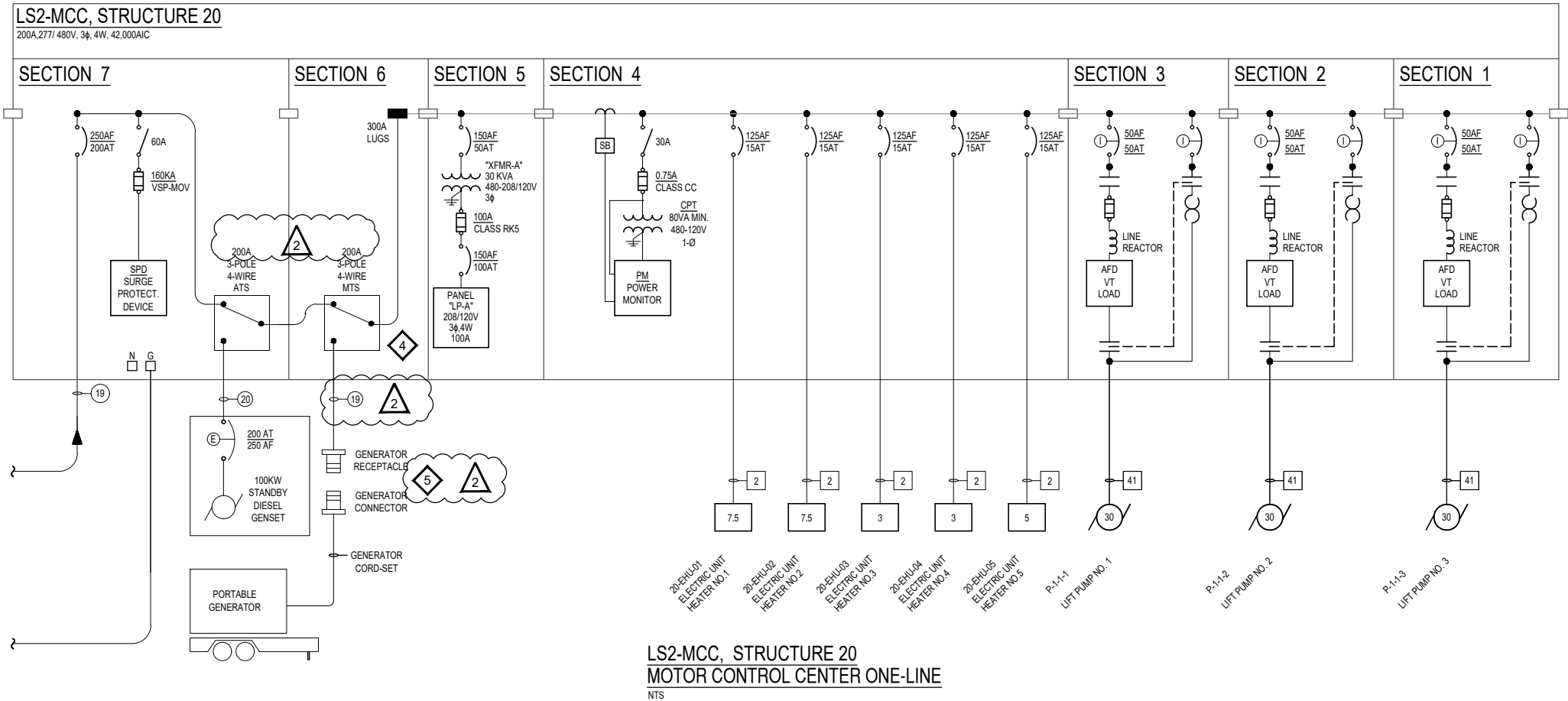
DETAIL 415
BASE/FLOOR PIPING PENETRATION (SEE SPECS FOR USE)



DETAIL 416
AIRE RELEASE SOLENOID VALVE



- KEY NOTES**
1. PROVIDE CT CABINET AS SPECIFIED AND PER UTILITY REQUIREMENTS. INSTALL CT'S PROVIDED BY UTILITY. PROVIDE LOAD SIDE LUGS SUFFICIENT TO ACCOMMODATE FUTURE PHOTOVOLTAIC FEEDER IN ADDITION TO UTILITY FEEDER.
 2. PROVIDE PLACARDING TO INDICATE THAT EQUIPMENT IS FED BY TWO POWER SOURCES, AND THE LOCATIONS OF THE DISCONNECTS.
 3. PHOTOVOLTAIC SYSTEM FURNISHED AND INSTALLED BY PHOTOVOLTAIC SYSTEM SUPPLIER.
 4. MANUAL TRANSFER SWITCH WITH MECHANICALLY INTERLOCKED CIRCUIT BREAKERS.
 5. PROVIDE GENERATOR RECEPTACLE AND MATING CORD CONNECTOR RATED 100A, 480/277, 5-POLE, 4-WIRE WITH GROUND, MELTRIC DS 100, OR EQUAL. PROVIDE ANGLE ADAPTER AND BOX FOR BUILDING MOUNTING. PROVIDE INLET AND CORD END CONNECTORS DESIGNED FOR REVERSE SERVICE GENERATOR APPLICATION.



LS2-MCC
MOTOR CONTROL CENTER FRONT ELEVATION
NTS

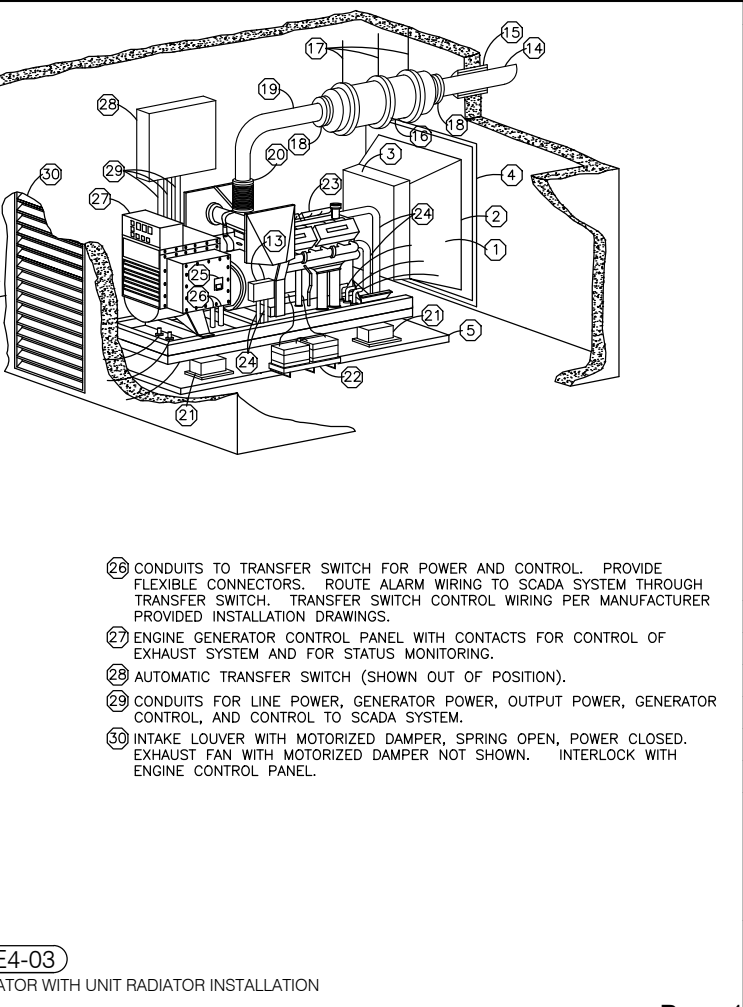
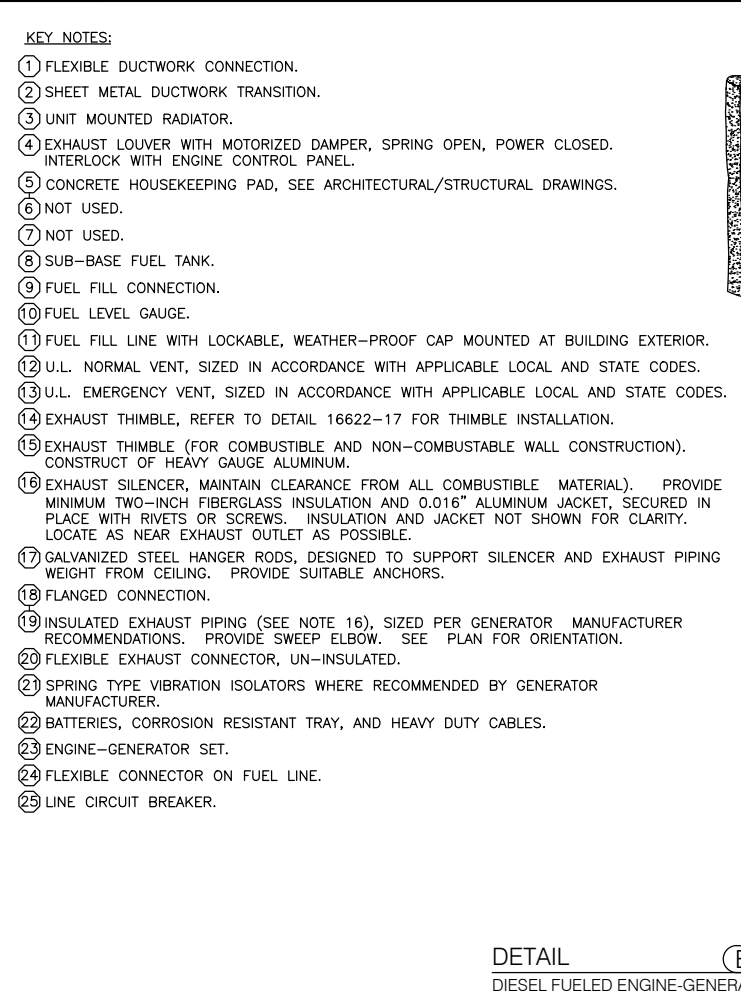
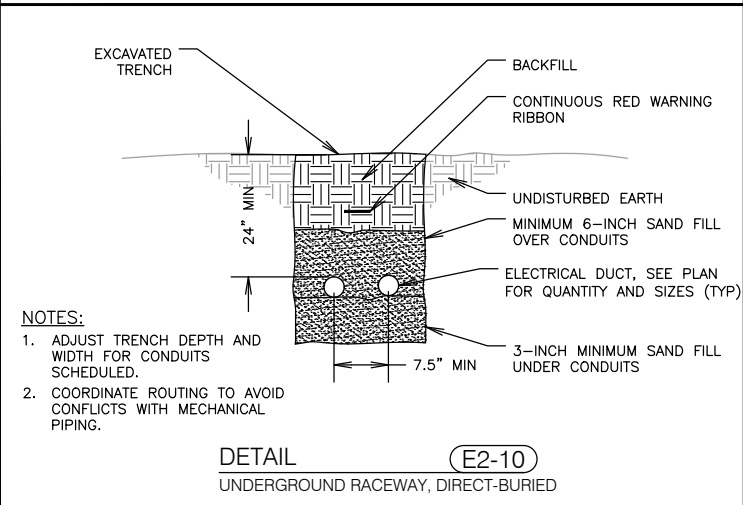
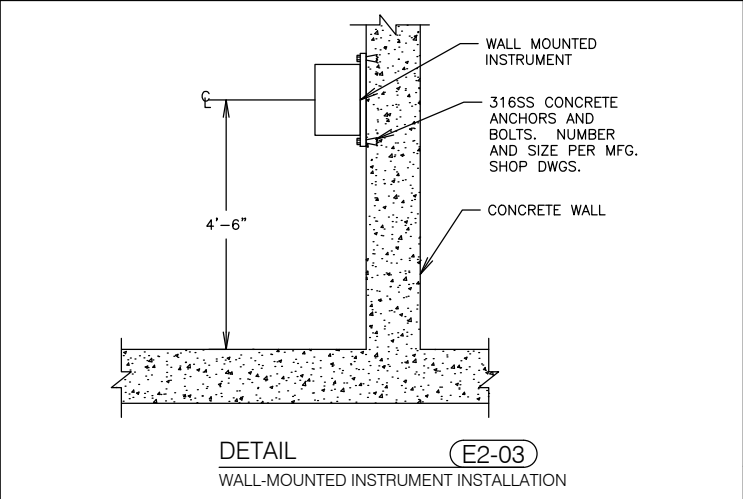
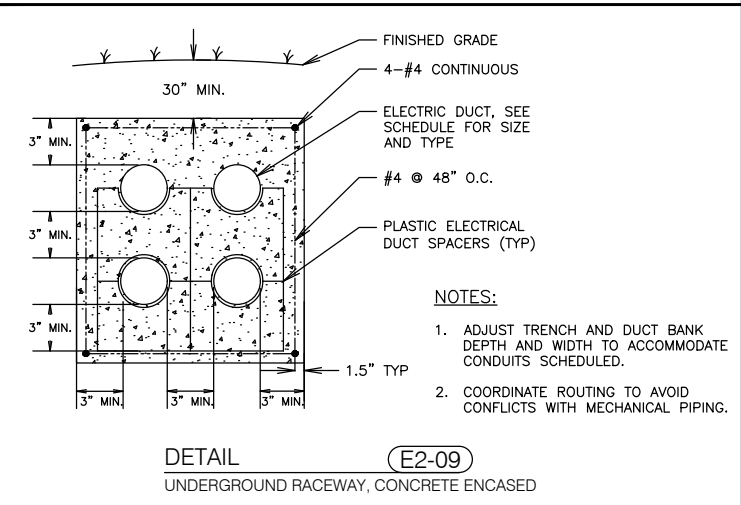
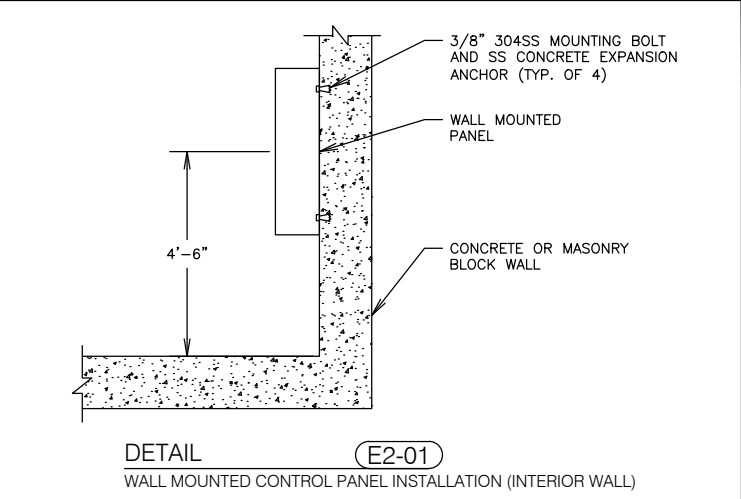
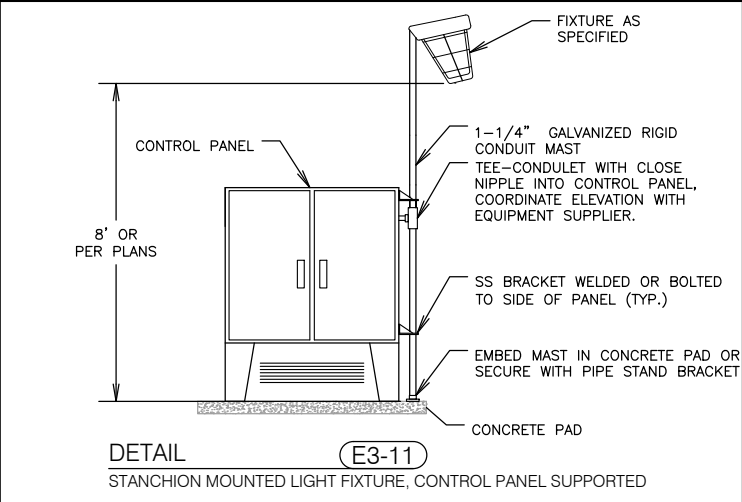
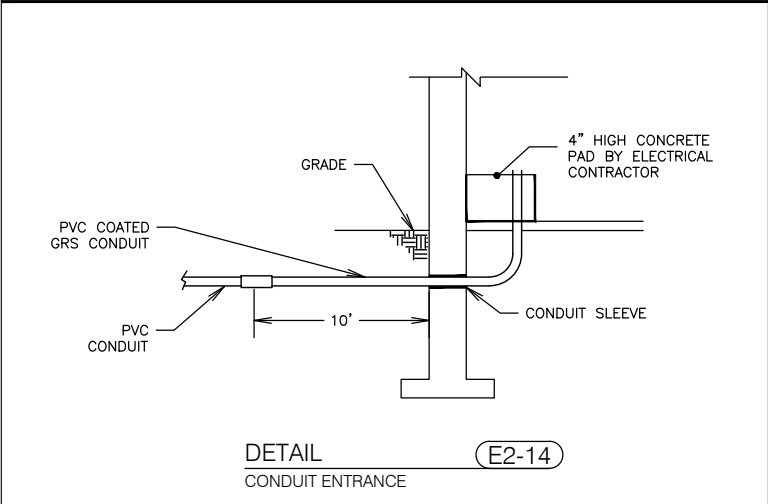
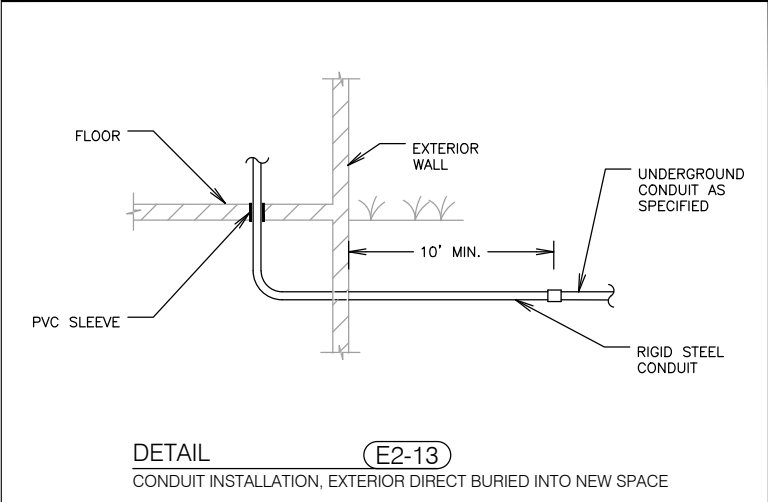
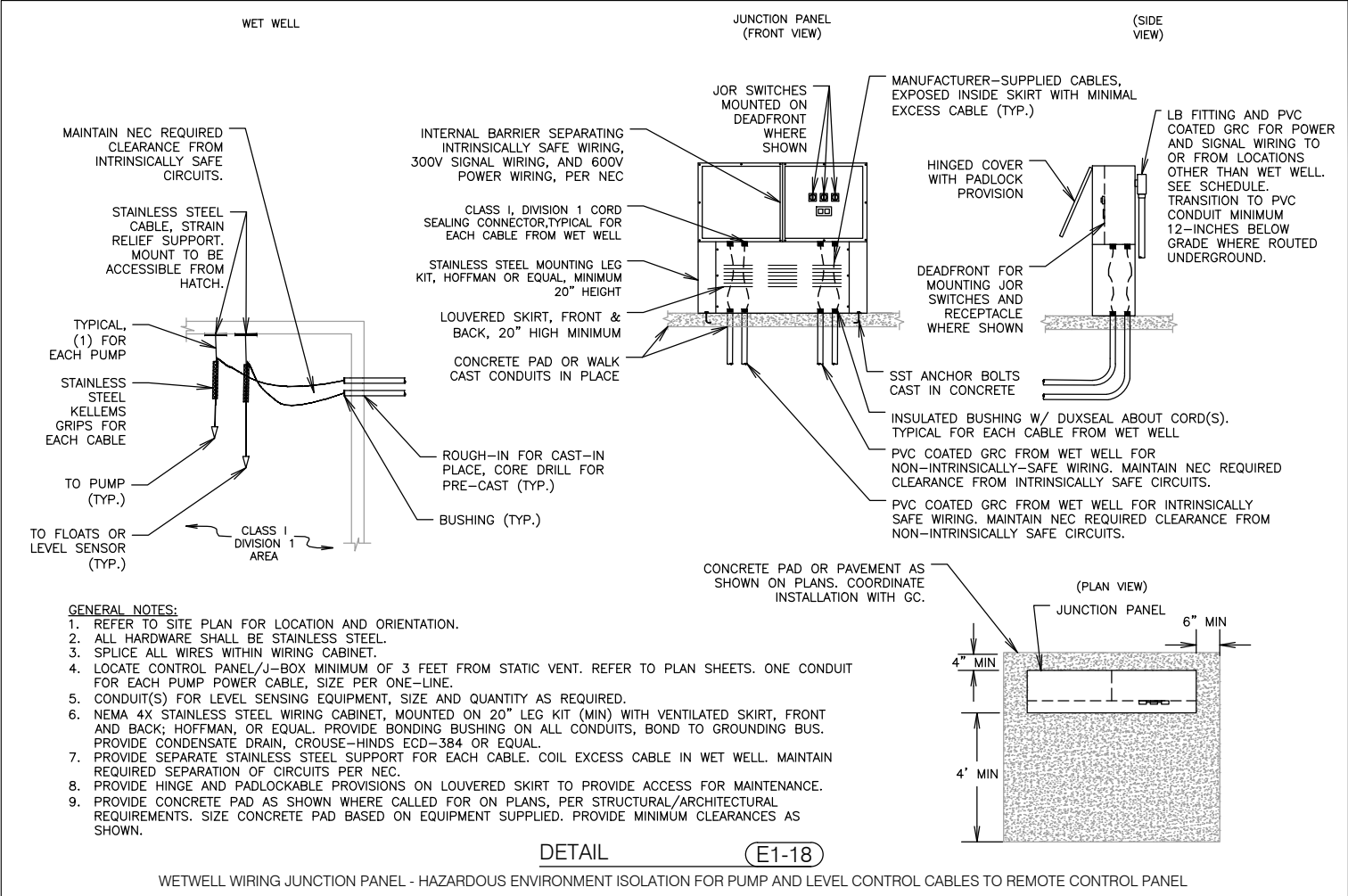
THREE PHASE PANEL SCHEDULE										20-LA										
TYPE: <u>LIGHTING & APPLIANCE</u>					BUS AMPCACITY: <u>225A</u>															
VOLTAGE <u>208 /120 - 3P4W</u>					BUS CONSTRUCTION: <u>CU</u>					MAIN CIRCUIT BREAKER: <u>175A</u>										
MOUNT: <u>SURFACE</u>					GROUND BUS: <u>YES</u>					SUB-FEED LUGS: <u>NONE</u>										
<u>SINGLE TUB</u>					ISOLATED GROUND BUS: <u>NO</u>					INTERRUPTING CAPACITY: <u>10 KAIC</u>										
	DESCRIPTION	LOAD	BKR	A	B	C	BKR	LOAD	DESCRIPTION											
1	LIGHTS, STORAGE RM 100	3.25	20/1	4.3	***	***	20/1	1.00	LOCAL CONTROL PANEL	2										
3	LIGHTS, PIPE GALLERY RM 101	1.75	20/1	***	2.3	***	20/1	0.50	FE/FIT-2	4										
5	LIGHTS, ELEC RM 102	1.50	20/1	***	***	6.5	20/1	5.00	OH DOOR OPERATOR	6										
7	LIGHTS, GENERATOR RM 103	1.75	20/1	1.8	***	***	20/1		SPARE	8										
9	LIGHTS, TOILET RM 104, 20-EF-02	1.50	20/1	***	1.5	***	20/1		SPARE	10										
11	LIGHTS, EXTERIOR	0.50	20/1	***	***	0.5	20/1		SPARE	12										
13	LIGHTS, TJB-1	0.50	20/1	0.5	***	***	20/1		SPARE	14										
15	RECEPT, STORAGE RM 100	12.00	20/1	***	12.0	***	20/1		SPARE	16										
17	RECEPT, PIPE GALLERY RM 101	6.00	20/1	***	***	6.0	20/1		SPARE	18										
19	RECEPT, ELEC RM 102	4.50	20/1	4.5	***	***	20/1		SPARE	20										
21	RECEPT, GENERATOR RM 103	4.50	20/1	***	4.5	***	20/1		SPARE	22										
23	RECEPT, TOILET RM 104	3.00	20/1	***	***	3.0	20/1		SPARE	24										
25	RECEPT, EXTERIOR	1.50	20/1	1.5	***	***			SPACE	26										
27	HWRP-1	1.00	20/1	***	1.0	***			SPACE	28										
29	WH-1	21.00	30/2	***	***	21.0			SPACE	30										
31		21.00		***	***	***			SPACE	32										
33	20-EBB-01	4.50	20/1	***	4.5	***			SPACE	34										
35	20-EF-01, 20-D-01	6.00	20/1	***	***	7.0	20/1	1.00	20-D-02, 20-D-03	36										
37	20-EF-02	1.00	20/1	1.0	***	***	20/1		GENERATOR FUEL FILL BOX	38										
39	20-DSS-01	18.40	30/2	***	18.4	***	20/1		GENERATOR BLOCK HEATER	40										
41		18.40		***	***	18.4	20/1		GENERATOR BATT. CHARGER	42										
TOTAL AMPS / PHASE:				34.5	44.2	62.4														
KVA / PHASE:				4.1	5.3	7.5	TOTAL CONNECTED KVA: <u>17.0</u>													

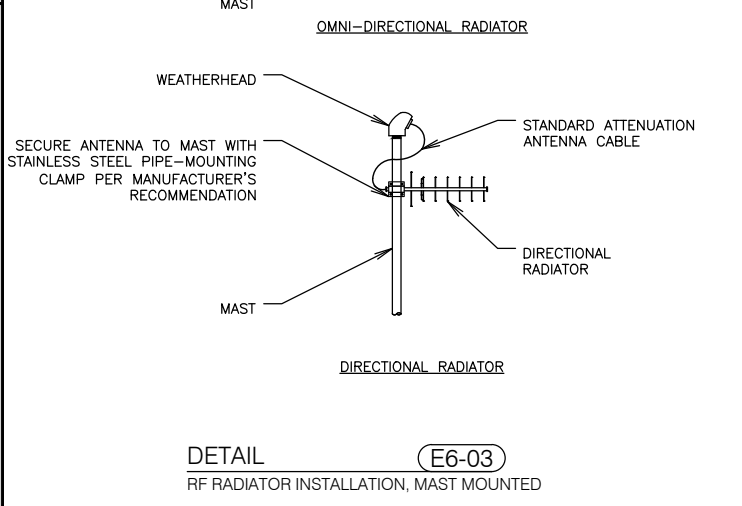
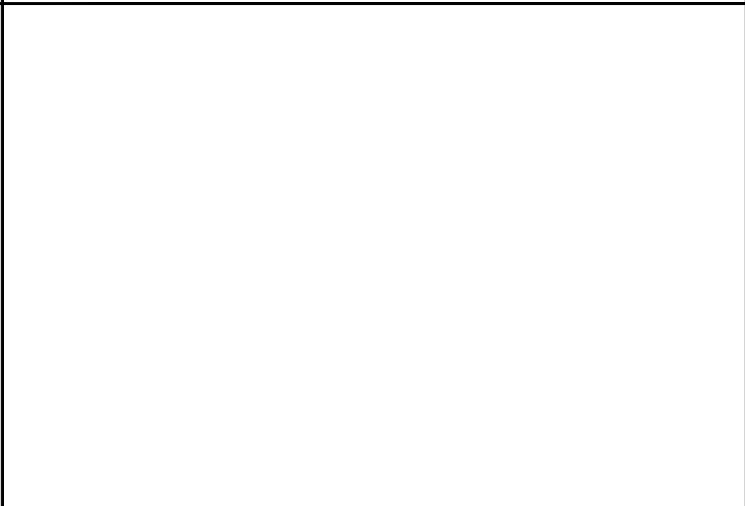
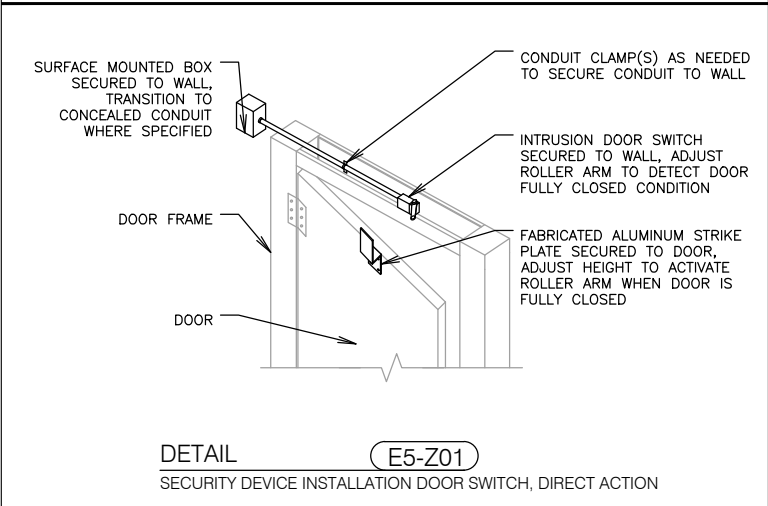
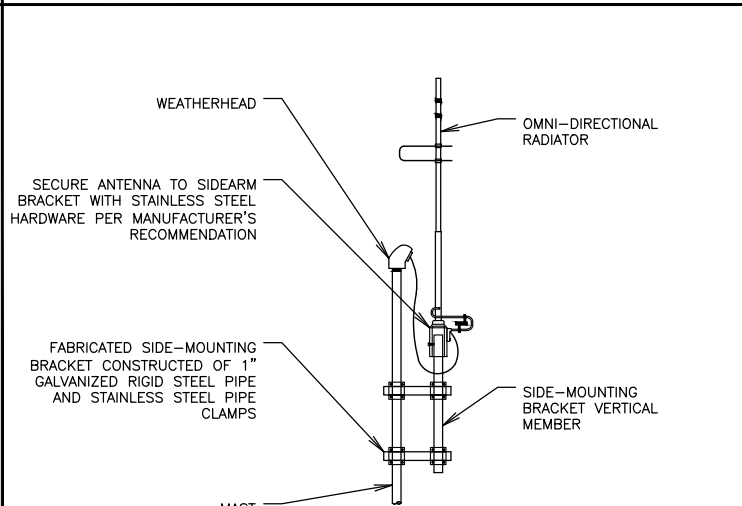
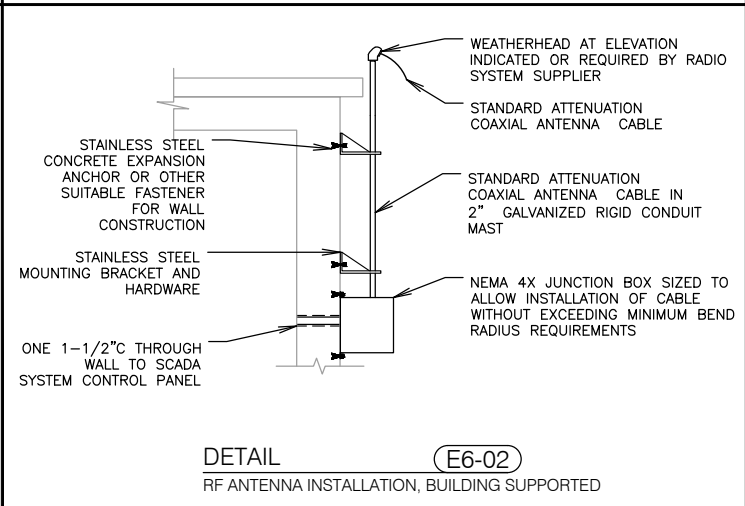
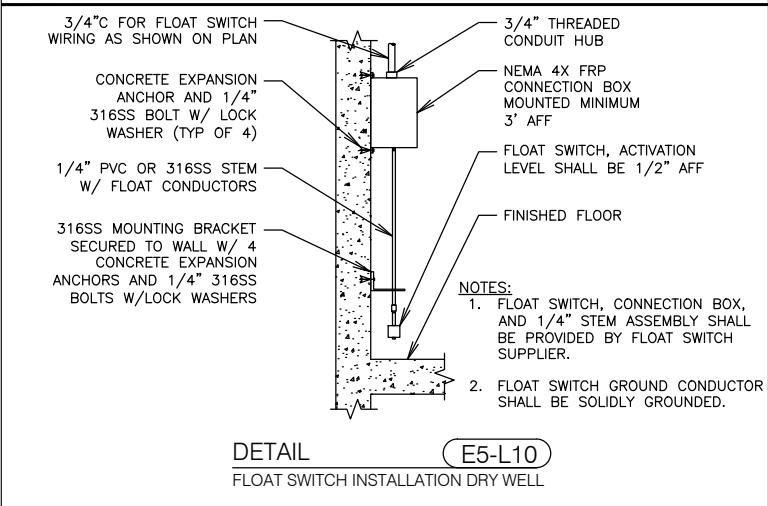
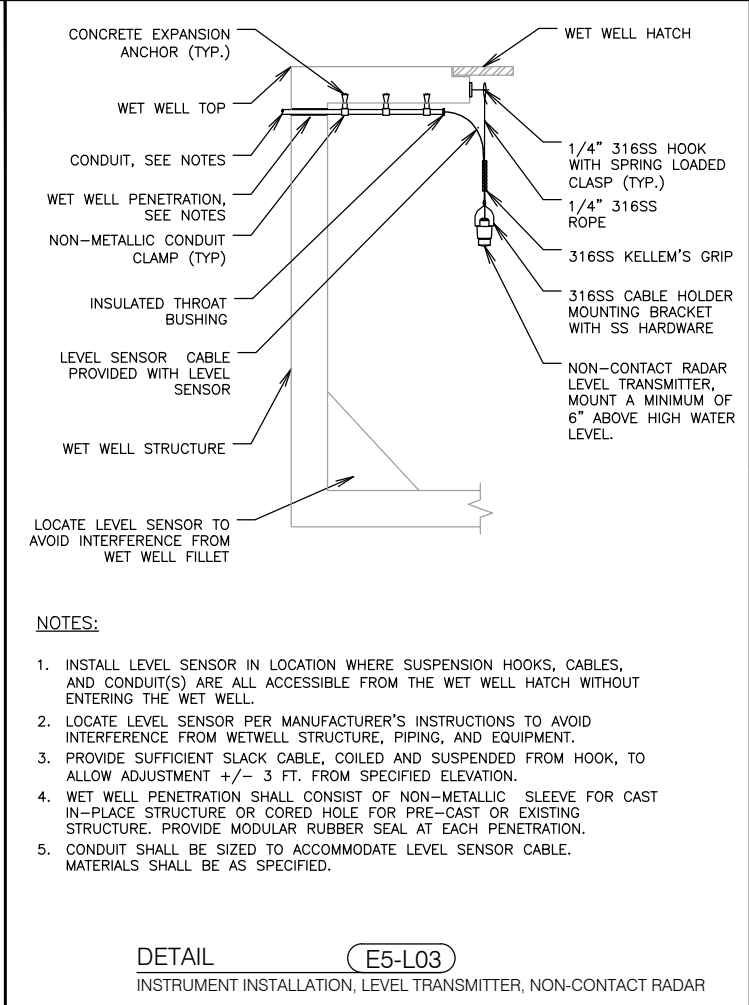
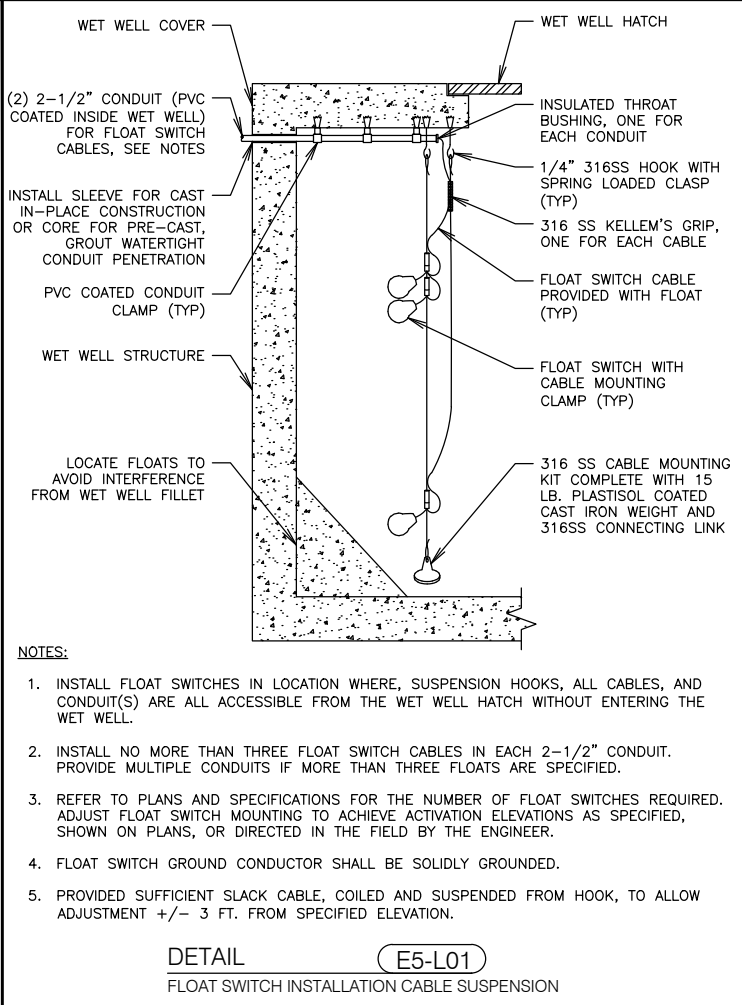
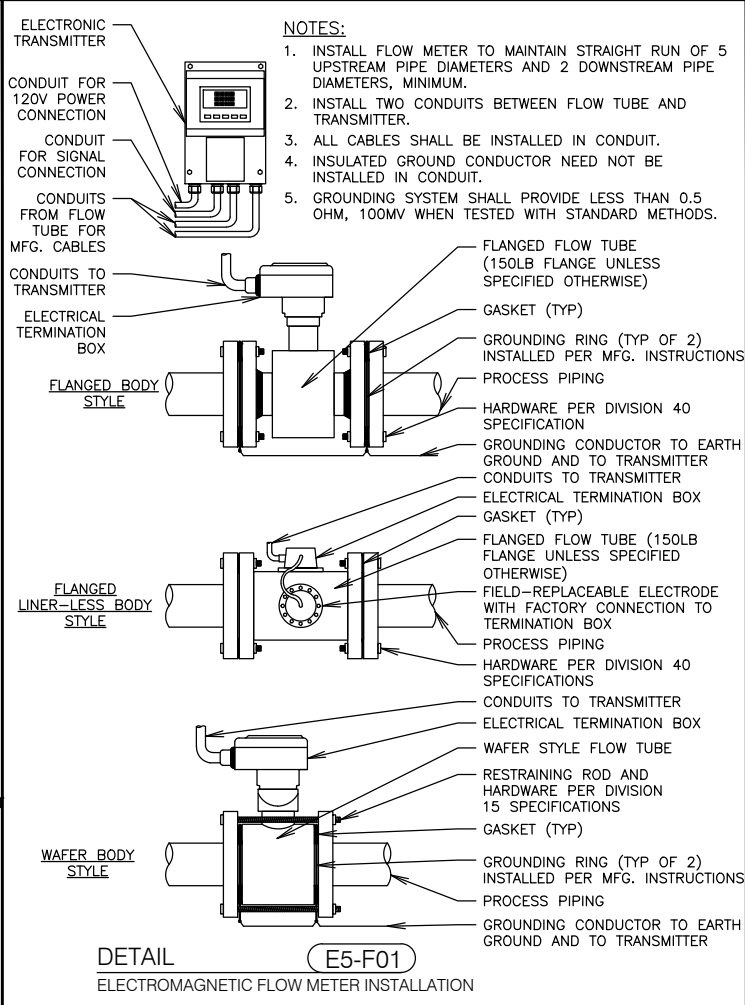
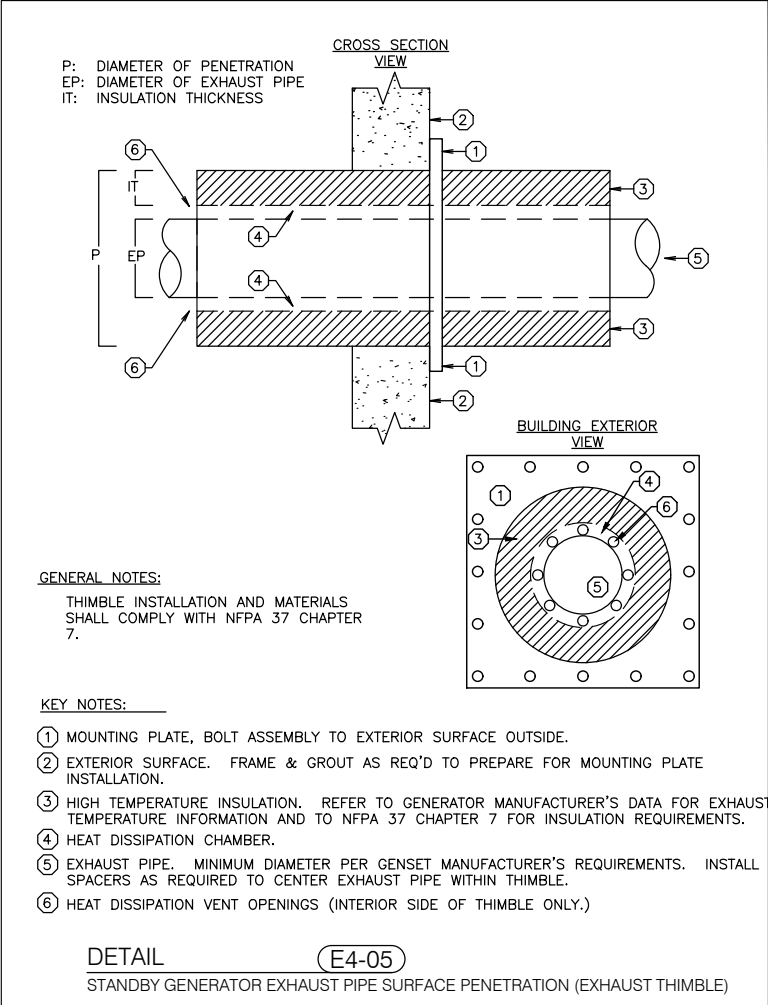
FIXTURE SCHEDULE						
TYPE	DESCRIPTION	LAMP TYPE	WATTS	MANUFACTURER	CATALOG NUMBER	NOTE
A	1X4, LENSED INDUSTRIAL STRIP	LED - 4000K	52	METALUX	4SNLED-LD5-56L-LW-UNV-L840-CD1-U	
D1	WALL PACK, EXTERIOR	LED - 3000K	52	GARDCO	121-32L-530-WW-G4-4-UNV-BL-IMR3-BZ	
D2	POLE MOUNTED, EXTERIOR	LED - 4000K	45	CROUSE-HINDS	VMVL5P-UNV1-S891	
X1	EXIT FIXTURE	LED	N/A	SURE-LITES	LPXC-25-R3	
RH-1	EXIT FIXTURE - REMOTE HEADS	LED	N/A	SURE-LITES	SRM-25-D	
GENERAL NOTES:						
1. ALL BALLASTS SHALL BE LOWHARMONIC ELECTRONIC.						
2. HUBBELL AND DAYBRITE SHALL BE CONSIDERED EQUAL.						
FIXTURE NOTES:						

FEEDER SCHEDULE															
IDENTIFIER	THERMAL-MAGNETIC CIRCUIT BREAKER	BREAKER PICKUP AMPS (80%)	SINGLE-PHASE TWO-WIRE CIRCUIT		SINGLE OR THREE-PHASE THREE-WIRE CIRCUIT		THREE-PHASE FOUR-WIRE CIRCUIT		ALL	MAX. DISTANCES (FT) 480V 3-PHASE		MAX. DISTANCES (FT) 240V 3-PHASE		MAX. DISTANCES (FT) 208V 3-PHASE OR 120/240V 1-PHASE	
			CONDUIT	CIRCUIT CONDUCTORS	CONDUIT	CIRCUIT CONDUCTORS	CONDUIT	CIRCUIT CONDUCTORS		EQUIPMENT GROUNDING CONDUCTOR	FEEDER (2% DROP)	BRANCH (3% DROP)	FEEDER (2% DROP)	BRANCH (3% DROP)	FEEDER (2% DROP)
1	10	8	3/4"	(2) #12	3/4"	(3) #12	3/4"	(4) #12	#12	335	502	167	251	145	218
2	15	12	3/4"	(2) #12	3/4"	(3) #12	3/4"	(4) #12	#12	223	335	112	167	97	145
3	20	16	3/4"	(2) #12	3/4"	(3) #12	3/4"	(4) #12	#12	167	251	84	126	73	109
4	25	20	3/4"	(2) #10	3/4"	(3) #10	3/4"	(4) #10	#10	212	317	106	159	92	138
5	30	24	3/4"	(2) #10	3/4"	(3) #10	3/4"	(4) #10	#10	176	264	88	132	76	115
6	35	28	3/4"	(2) #8	3/4"	(3) #8	3/4"	(4) #8	#10	241	361	120	181	104	157
7	40	32	3/4"	(2) #8	3/4"	(3) #8	3/4"	(4) #8	#10	211	316	105	158	91	137
8	45	36	3/4"	(2) #8	3/4"	(3) #8	3/4"	(4) #8	#10	187	281	94	140	81	122
9	50	40	3/4"	(2) #8	3/4"	(3) #8	3/4"	(4) #8	#10	169	253	84	126	73	110
10	60	48	3/4"	(2) #6	3/4"	(3) #6	1"	(4) #6	#10	224	336	112	168	97	146
11	70	56	1"	(2) #4	1"	(3) #4	1-1/4"	(4) #4	#8	305	457	152	228	132	198
12	80	64	1"	(2) #4	1"	(3) #4	1-1/4"	(4) #4	#8	266	400	133	200	115	173
13	90	72	1"	(2) #3	1"	(3) #3	1-1/4"	(4) #3	#8	290	436	145	218	126	189
14	100	80	1"	(2) #3	1"	(3) #3	1-1/4"	(4) #3	#8	261	392	131	196	113	170
15	110	88	1"	(2) #2	1"	(3) #2	1-1/2"	(4) #2	#6	307	461	154	230	133	200
16	125	100	1-1/4"	(2) #1	1-1/2"	(3) #1	1-1/2"	(4) #1	#6	340	510	170	255	147	221
17	150	120	1-1/4"	(1) #1/0	1-1/2"	(3) #1/0	2"	(4) #1/0	#6	355	533	178	266	154	231
18	175	140	N/A	N/A	2"	(3) #2/0	2"	(4) #2/0	#6	377	566	189	283	163	245
19	200	160	N/A	N/A	2"	(3) #3/0	2"	(4) #3/0	#6	413	619	206	310	179	268
20	225	180	N/A	N/A	2"	(3) #4/0	2-1/2"	(4) #4/0	#4	459	688	229	344	199	298
21	250	200	N/A	N/A	2-1/2"	(3) 250KCMIL	3"	(4) 250KCMIL	#4	484	725	242	363	210	314
22	300	240	N/A	N/A	3"	(3) 350KCMIL	3"	(4) 350KCMIL	#4	552	829	276	414	239	359
23	350	280	N/A	N/A	3"	(3) 500KCMIL	3-1/2"	(4) 500KCMIL	#3	647	970	323	485	280	420
24	400	320	N/A	N/A	3-1/2"	(3) 600KCMIL	4"	(4) 600KCMIL	#3	661	992	331	496	286	430
25	450	360	N/A	N/A	(2) 2"	2 SETS OF (3) #4/0	(2) 2-1/2"	2 SETS OF (4) #4/0	#2	459	688	229	344	199	298
26	500	400	N/A	N/A	(2) 2-1/2"	2 SETS OF (3) 250KCMIL	(2) 3"	2 SETS OF (4) 250KCMIL	#2	484	725	242	363	210	314
27	600	480	N/A	N/A	(2) 3"	2 SETS OF (3) 350KCMIL	(2) 3"	2 SETS OF (4) 350KCMIL	#1	552	829	276	414	239	359
28	700	560	N/A	N/A	(2) 3"	2 SETS OF (3) 500KCMIL	(2) 3-1/2"	2 SETS OF (4) 500KCMIL	#1/0	647	970	323	485	280	420
29	800	640	N/A	N/A	(2) 3-1/2"	2 SETS OF (3) 600KCMIL	(2) 4"	2 SETS OF (4) 600KCMIL	#1/0	661	992	331	496	286	430
30	900	720	N/A	N/A	(3) 3"	3 SETS OF (3) 350KCMIL	(3) 3"	3 SETS OF (4) 350KCMIL	#2/0	552	829	276	414	239	359
31	1000	800	N/A	N/A	(4) 2-1/2"	4 SETS OF (3) 250KCMIL	(4) 3"	4 SETS OF (4) 250KCMIL	#2/0	484	725	242	363	210	314
32	1200	960	N/A	N/A	(4) 3"	4 SETS OF (3) 350KCMIL	(4) 3"	4 SETS OF (4) 350KCMIL	#3/0	552	829	276	414	239	359
33	1600	1280	N/A	N/A	(4) 3-1/2"	4 SETS OF (3) 600KCMIL	(4) 4"	4 SETS OF (4) 600KCMIL	#4/0	661	992	331	496	286	430
34	1800	1440	N/A	N/A	(6) 3"	6 SETS OF (3) 350KCMIL	(6) 3"	6 SETS OF (4) 350KCMIL	250KCMIL	552	829	276	414	239	359
35	2000	1600	N/A	N/A	(6) 3"	6 SETS OF (3) 500KCMIL	(6) 3-1/2"	6 SETS OF (4) 500KCMIL	250KCMIL	679	1019	340	509	294	442
36	2500	2000	N/A	N/A	(6) 3-1/2"	6 SETS OF (3) 600KCMIL	(6) 4"	6 SETS OF (4) 600KCMIL	350KCMIL	635	952	317	476	275	413
37	3000	2400	N/A	N/A	(8) 3"	8 SETS OF (3) 500KCMIL	(8) 3-1/2"	8 SETS OF (4) 500KCMIL	400KCMIL	604	906	302	453	262	392
38	4000	3200	N/A	N/A	(10) 3-1/2"	8 SETS OF (3) 600KCMIL	(10) 4"	8 SETS OF (4) 600KCMIL	500KCMIL	529	793	264	397	229	344
39	20	16	N/A	N/A	1"	3C#12 SHIELDED MOTOR CABLE	N/A	N/A	(3) #10	167	251	84	126	73	109
40	30	24	N/A	N/A	1"	3C#10 SHIELDED MOTOR CABLE	N/A	N/A	(3) #10	176	264	88	132	76	115
41	50	40	N/A	N/A	1"	3C#8 SHIELDED MOTOR CABLE	N/A	N/A	(3) #10	189	253	84	126	73	110
42	80	48	N/A	N/A	1 1/4"	3C#6 SHIELDED MOTOR CABLE	N/A	N/A	(3) #10	224	336	112	168	97	146
43	80	64	N/A	N/A	1 1/4"	3C#4 SHIELDED MOTOR CABLE	N/A	N/A	(3) #10	266	400	133	200	115	173
44	100	80	N/A	N/A	1 1/2"	3C#3 SHIELDED MOTOR CABLE	N/A	N/A	(3) #10	261	392	131	196	113	170
45	125	100	N/A	N/A	2"	3C#1 SHIELDED MOTOR CABLE	N/A	N/A	(3) #8	340	510	170	255	147	221
46	175	140	N/A	N/A	2"	3C#2/0 SHIELDED MOTOR CABLE	N/A	N/A	(3) #6	377	566	189	283	163	245
47	200	160	N/A	N/A	2"	3C#3/0 SHIELDED MOTOR CABLE	N/A	N/A	(3) #4	413	619	206	310	179	268
48	225	180	N/A	N/A	2"	3C#4/0 SHIELDED MOTOR CABLE	N/A	N/A	(3) #4	459	688	229	344	199	298
49	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
50	300	240	N/A	N/A	2 1/2"	3C#350 KCMIL SHIELDED MOTOR CABLE	N/A	N/A	(3) #2	552	829	276	414	239	359
51	350	280	N/A	N/A	3"	3C#500 KCMIL SHIELDED MOTOR CABLE	N/A	N/A	(3) #1	647	970	323	485	280	420
52	450	360	N/A	N/A	(2) 2"	2 SETS 3C#4/0 SHIELDED MOTOR CABLE	N/A	N/A	(3) #4 EACH	459	688	229	344	199	298
53	600	480	N/A	N/A	(2) 2 1/2"	2 SETS 3C#350 KCMIL SHIELDED MOTOR CABLE	N/A	N/A	(3) #2 EACH	552	829	276	414	239	359
54	700	560	N/A	N/A	(2) 3"	2 SETS 3C#500 KCMIL SHIELDED MOTOR CABLE	N/A	N/A	(3) #1 EACH	647	970	323	485	280	420
PLAN NOTATION:															
			SINGLE-PHASE, TWO-WIRE FEEDER, NUMBER IS THE FEEDER IDENTIFIER												
			SINGLE OR THREE-PHASE, THREE-WIRE FEEDER, NUMBER IS THE FEEDER IDENTIFIER												
			THREE-PHASE, FOUR-WIRE FEEDER, NUMBER IS THE FEEDER IDENTIFIER												

STR-10: PROCESS INSTRUMENTATION AND EQUIPMENT WIRING SCHEDULE													
TAG NUMBER	DESCRIPTION	FIRST SIGNAL/CONTROL HOMERUN			SECOND SIGNAL/CONTROL HOMERUN			POWER HOMERUN				DETAIL	NOTES
		DESTINATION	WIRING TYPE	WIRING	DESTINATION	WIRING TYPE	WIRING	CIRCUIT	VOLTAGE	CKT. BKR.	WIRING		
TJB-1	TERMINAL JUNCTION BOX	LS-LCP	120VAC DISCRETE	D16	LS-LCP	24VDC ANALOG	A1					E1-18	
TJB-1	TERMINAL JUNCTION BOX							LA-XX	120V/1-PH	20A/1-POLE	2#12 & #12G		
TSH-1-1-1	TEMPERATURE SWITCH, HIGH, LIFT PUMP NO.1 MOTOR	TJB-1	120VAC DISCRETE	D2									
ME-1-1-1	MOISTURE SWITCH, HIGH, LIFT PUMP NO.1 MOTOR	TJB-1	120VAC DISCRETE	D2									
HS-1-1-1-1	JOG-OFF-REMOTE, LIFT PUMP NO.1	LS-LCP	120VAC DISCRETE	D3									
TSH-1-1-2	TEMPERATURE SWITCH, HIGH, LIFT PUMP NO.2 MOTOR	TJB-1	120VAC DISCRETE	D2									
ME-1-1-2	MOISTURE SWITCH, HIGH, LIFT PUMP NO.2 MOTOR	TJB-1	120VAC DISCRETE	D2									
HS-1-1-2-1	JOG-OFF-REMOTE, LIFT PUMP NO.2	LS-LCP	120VAC DISCRETE	D3									
TSH-1-1-3	TEMPERATURE SWITCH, HIGH, LIFT PUMP NO.3 MOTOR	TJB-1	120VAC DISCRETE	D2									
ME-1-1-3	MOISTURE SWITCH, HIGH, LIFT PUMP NO.3 MOTOR	TJB-1	120VAC DISCRETE	D2									
HS-1-1-3-1	JOG-OFF-REMOTE, LIFT PUMP NO.3	LS-LCP	120VAC DISCRETE	D3									
LSH-1-2	LEVEL SWITCH, BACK UP REQUIRED, WET WELL	TJB-1	I.S. DISCRETE	D2								E5-L01	
LSHH-1-2	LEVEL SWITCH, HIGH HIGH, BACK-UP REQUIRED, WET WELL	TJB-1	I.S. DISCRETE	D2								E5-L01	
LSC-1-2	LEVEL SWITCH, LEAD PUMP ON, WET WELL	TJB-1	I.S. DISCRETE	D2								E5-L01	
LSL-1-2	LEVEL SWITCH, LOW, PUMPS OFF, WET WELL	TJB-1	I.S. DISCRETE	D2								E5-L01	
LSLL-1-2	LEVEL SWITCH, LOW WETWELL LEVEL, WET WELL	TJB-1	I.S. DISCRETE	D2								E5-L01	
LSHH-1-2	LEVEL SWITCH, HIGH ALARM, WET WELL	TJB-1	I.S. DISCRETE	D2								E5-L01	
LT-1-2	LEVEL TRANSDUCER, RADAR, WET WELL LEVEL	TJB-1	I.S. ANALOG	A1								E5-L03	

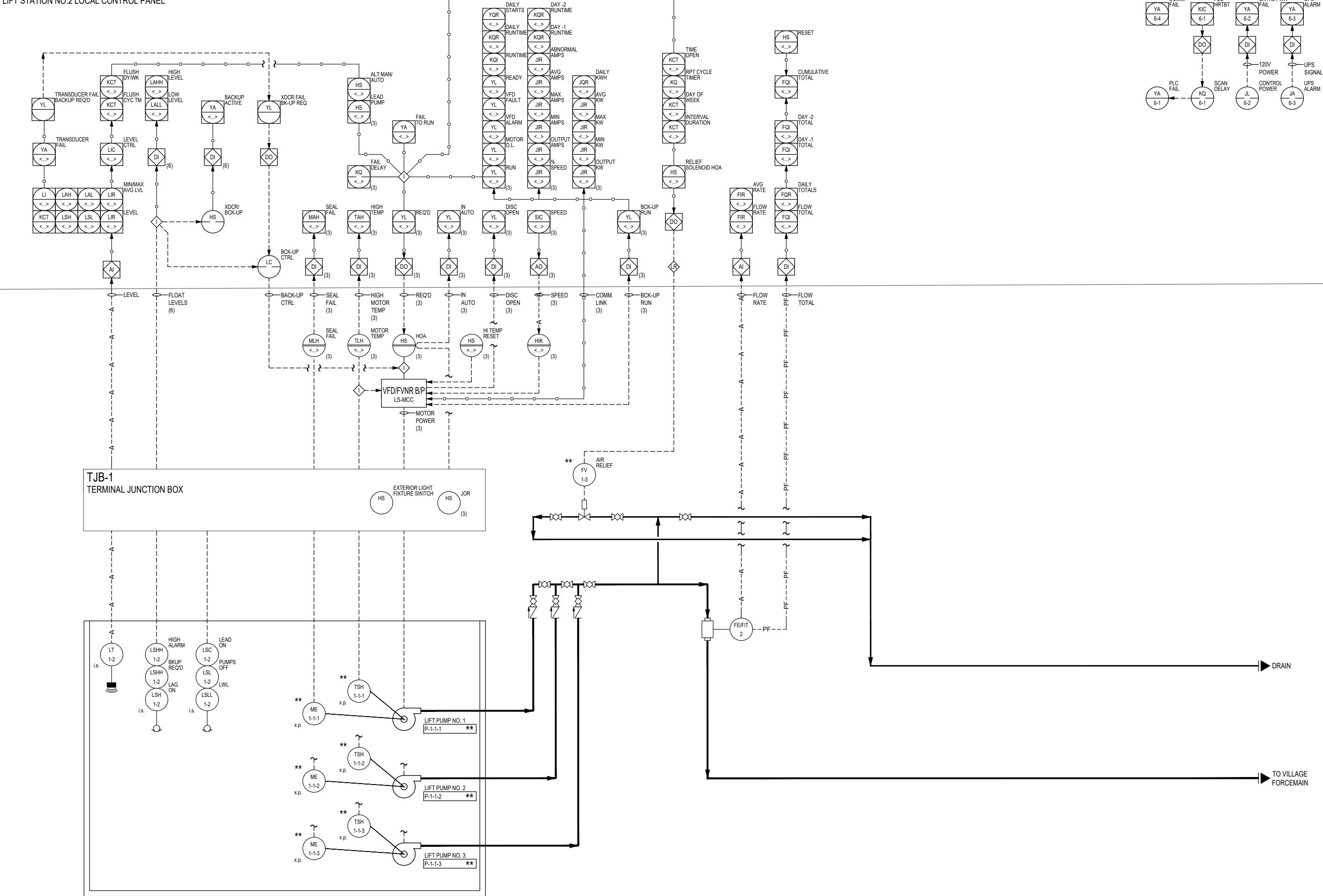
STR-20: PROCESS INSTRUMENTATION AND EQUIPMENT WIRING SCHEDULE													
TAG NUMBER	DESCRIPTION	FIRST SIGNAL/CONTROL HOMERUN			SECOND SIGNAL/CONTROL HOMERUN			POWER HOMERUN				DETAIL	NOTES
		DESTINATION	WIRING TYPE	WIRING	DESTINATION	WIRING TYPE	WIRING	CIRCUIT	VOLTAGE	CKT. BKR.	WIRING		
FV-1-3	AIR RELIEF VALVE	LS-LCP	120VAC DISCRETE	D2									
FE/FIT-2	FLOW ELEMENT/INDICATING TRANSMITTER, LIFT STATION NO.2	LS-LCP	24VDC ANALOG	A1	LS-LCP	PULSE FREQUENCY	A1	LA-XX	120V/1-PH	20A/1-POLE	2#12 & #12G	E5-F01	
TT-3-1	TEMPERATURE TRANSMITTER, PIPE GALLERY	LS-LCP	24VDC ANALOG	A1								E2-03	
LSH-3-2	FLOODING SWITCH, PIPE GALLERY	LS-LCP	120VAC DISCRETE	D2								E5-F12	
ZS-4-1-1	DOOR SWITCH, STORAGE ROOM	LS-LCP	120VAC DISCRETE	D2								E5-Z01	
ZS-4-1-2	DOOR SWITCH, ELECTRICAL ROOM	LS-LCP	120VAC DISCRETE	D2								E5-Z01	
LCP-5-1	AUTOMATIC TRANSFER SWITCH	LS-LCP	120VAC DISCRETE	D12									
HS-5-2	GENERATOR E-STOP	LCP-5-2-1	120VAC DISCRETE	D2								E2-03	
LCP-5-2-1	GENERATOR CONTROL PANEL	LS-LCP	120VAC DISCRETE	D4	LCP-5-1	120VAC DISCRETE	D2						
LCP-5-2-2	GENERATOR REMOTE ANUNCIATOR	LS-LCP	MANUFACTURER'S CABLE	M1									
JA-5-3	POWER MONITOR	LS-LCP	COPPER ETHERNET600V	EH1									
LS-LCP	LIFT STATION NO.2 LOCAL CONTROL PANEL							LA-XX	120V/1-PH	20A/1-POLE	2#12 & #12G	E2-01	
LS-MCC	LIFT STATION MOTOR CONTROL CENTER	LS-LCP	24VDC ANALOG	A3									
LS-MCC	LIFT STATION MOTOR CONTROL CENTER	LS-LCP	120VAC DISCRETE	D50	LS-LCP	ETHERNET	E3						





LS-LCP
LIFT STATION NO.2 LOCAL CONTROL PANEL

LIFT STATION PUMP CONTROL AND ALTERNATION STRATEGY



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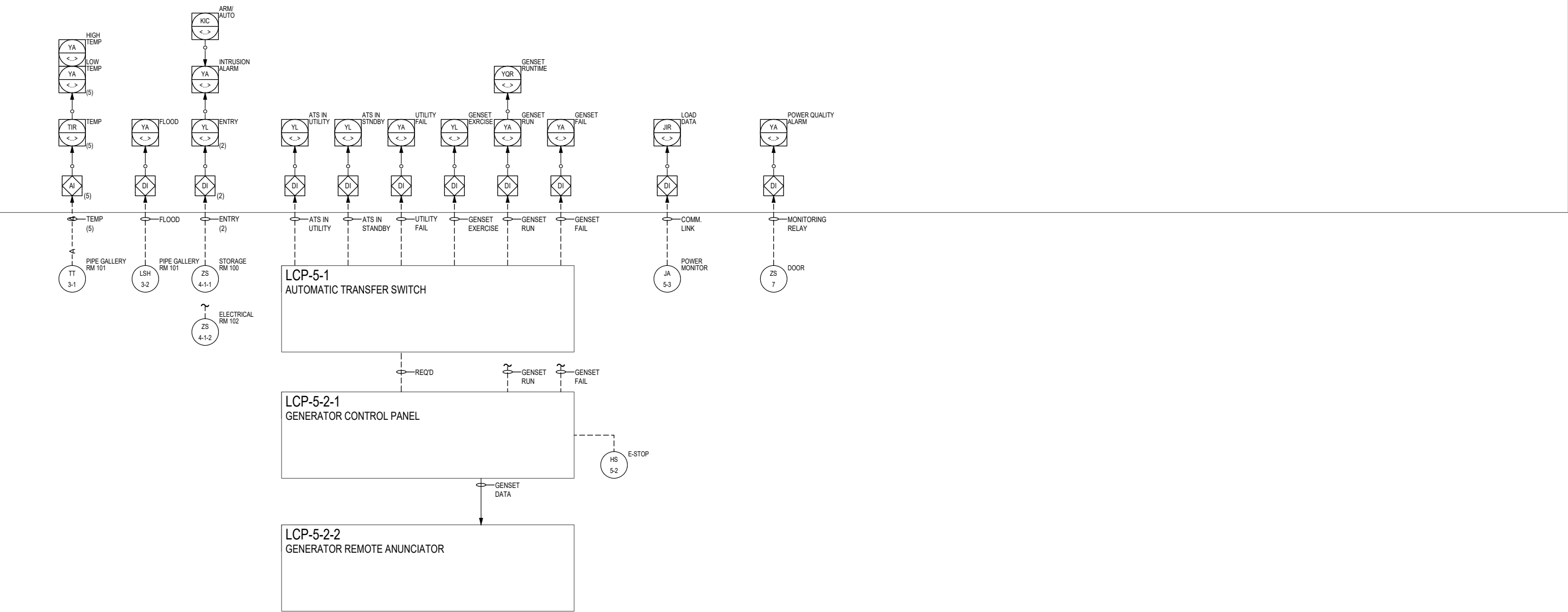
PID No.1
STRUCTURE 10

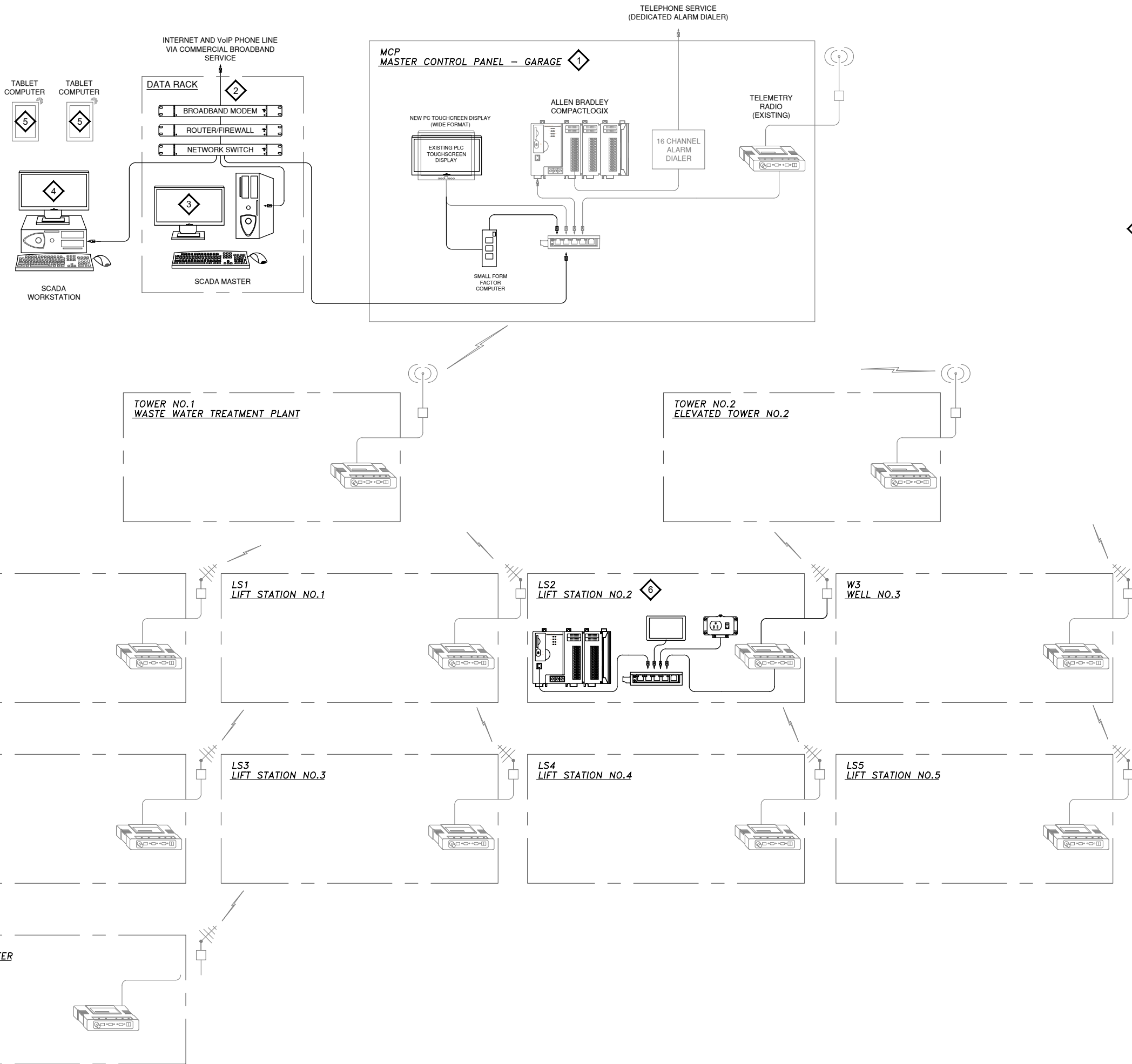
2023 LIFT STATION 2 IMPROVEMENTS
Marsh Woods Drive
Village of McFarland, Wisconsin

PROJECT NO.: MC 198
DRAWING FILE: 100-W-01 PID No.1
DRAWN BY: N.W.W
CHECKED BY: S.R.M.
DATE: 11-17-23
REVISIONS:
SCALE:
0 1 2 4
FEET
SHEET:

100-W-01
PID No.1

LS-LCP
LIFT STATION NO.2 LOCAL CONTROL PANEL





- GENERAL NOTES**
- THIS DRAWING INCLUDES PLAN NOTES THAT ARE REFERENCED ON THE SCADA SYSTEM ARCHITECTURE DRAWING.
 - ALL EQUIPMENT SHOWN IS NEW, UNLESS OTHERWISE NOTED.
 - REFER TO SCADA SYSTEM P&IDS FOR I/O REQUIREMENTS OF NEW PLC SYSTEM. PROVIDE A MINIMUM OF 10% SPARE I/O FOR EACH TYPE IN USE AT EACH PANEL.
 - THE SYSTEM INTEGRATOR SHALL CONFIGURE ALL ETHERNET SWITCHING EQUIPMENT TO PROVIDE OPTIMAL NETWORK PERFORMANCE.
 - CONFIGURE ROUTER/FIREWALL AS GATEWAY BETWEEN SCADA NETWORK AND OFFICE NETWORK.
 - ETHERNET CABLES SHALL BE INDUSTRIAL UTP CAT 6 CABLE. PROVIDE ALL CABLE REQUIRED FOR A COMPLETE AND OPERABLE SYSTEM.
 - PROVIDE A GRAPHIC OPERATOR MANUAL. INCLUDE SCREEN PRINTOUTS OF EACH SCREEN, AND A NARRATIVE FOR WHAT IS DISPLAYED, ALL OPERATOR ADJUSTABLE SET-POINTS, AND PERMISSIBLE RANGES OF VALUES.
 - SCADA GRAPHIC DESIGN, ALARM POINT ENABLE/DISABLE FUNCTIONALITY, AND ALARM AND EVENT LOGGING AND REPORTING SHALL COMPLY WITH TYPICAL TOWN & COUNTRY PROJECT REQUIREMENTS.

- KEY NOTES**
- PLC BASED MASTER SCADA SYSTEM CONTROL PANEL WITH THE FOLLOWING:
 - 1.1. COMPACTLOGIX PLC - EXISTING
 - 1.2. ETHERNET SWITCH - EXISTING
 - 1.3. HARDWIRED 16-CHANNEL BACK-UP ALARM DIALER - EXISTING
 - 1.4. TELEMETRY RADIO - EXISTING
 - 1.5. REPLACE EXISTING PLC TYPE TOUCHSCREEN WITH PC TYPE, PANEL MOUNTED, WIDE FORMAT TOUCHSCREEN.
 - 1.6. SMALL FORM-FACTOR, FANLESS PC WINDOWS 10 PRO WORKSTATION. PROVIDE AVEVA INTOUCH RUN-TIME WITH I/O, 10K TAG COUNT.
 - 1.7. 2 TB EXTERNAL BACK-UP SOLID STATE HARD DRIVE W/ ACRONIS BACK-UP SOFTWARE.
 - 1.8. CAT 6 PATCH CORDS.
 - 1.9. USB CABLES.
 - 1.10. AC UPS - EXISTING
 - DATA RACK - SIZED TO FIT BETWEEN THE BOTTOM OF CABINETS AND TOP OF COUNTER TOP.
 - 2.1. BROADBAND MODEM - EXISTING
 - 2.2. ROUTER/FIREWALL.
 - 2.3. NETWORK SWITCH.
 - 2.4. AC UPS.
 - SCADA SERVER
 - 3.1. HARDWARE
 - 3.1.1. SERVER CLASS COMPUTER.
 - 3.1.2. CAT 6 PATCH CORDS.
 - 3.1.3. USB CABLES.
 - 3.1.4. 2 TB EXTERNAL BACK-UP SOLID STATE HARD DRIVE WITH ACRONIS BACK-UP SOFTWARE.
 - 3.2. SOFTWARE
 - 3.2.1. WINDOWS 10 PRO OPERATING SYSTEM. PROVIDE AVEVA INTOUCH SCADA APPLICATION WITH 10K TAG COUNT; (1) COPY WITH I/O, (2) COPIES WITHOUT I/O, "FLOATING LICENSES"
 - 3.2.2. INTOUCH GRAPHIC SCREENS
 - 3.2.2.1. RE-USE EXISTING SCREENS EXCEPT FOR LIFT STATION NO.2 WHICH SHALL BE REVISED TO REFLECT UPGRADES.
 - 3.2.3. MICROSOFT OFFICE PRODUCTIVITY SOFTWARE.
 - 3.2.4. TOP VIEW DIALER SOFTWARE - UPGRADE EXISTING
 - 3.2.5. DATA MANAGEMENT APPLICATION (HACH WIMS).
 - 3.2.6. MAINTENANCE MANAGEMENT SOFTWARE - (ALLMAX ANTERO)
 - 3.2.7. SEE SECTION 26 90 00 SPECIFICATIONS FOR ADDITIONAL DETAIL.
 - SCADA DESK COMPUTER
 - 4.1. WORKSTATION CLASS COMPUTER.
 - 4.2. WINDOWS 10 OPERATING SYSTEM.
 - 4.3. MICROSOFT OFFICE PRODUCTIVITY SOFTWARE.
 - 4.4. CONFIGURE TO ACCESS SCADA SERVER INTOUCH APPLICATION FLOATING LICENSE VIA AN RDP CONNECTION.
 - 4.5. INSTALL HACH WIMS CLIENT.
 - 4.6. INSTALL ALLMAX ANTERO CLIENT.
 - CONFIGURE OWNER'S EXISTING TABLET COMPUTERS AND SMARTPHONES FOR INTOUCH ACCESS ANYWHERE SCADA SYSTEM ACCESS.
 - LOCAL CONTROL PANEL WITH THE FOLLOWING:
 - 6.1. COMPACTLOGIX PLC W/EMBEDDED I/O.
 - 6.2. PANELVIEW TOUCHSCREEN.
 - 6.3. ETHERNET SWITCH.
 - 6.4. RE-USE EXISTING TELEMETRY RADIO.
 - 6.5. DC UPS.
 - 6.6. GRACEPORT.

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SCADA ARCHITECTURE

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