

Meeting Minutes: Plumbing Board

Date: Jan. 21, 2025
Time: 9:30 a.m.
Minutes by: Lyndy Logan
Location: Minnesota Room, DLI, 443 Lafayette Rd. No., St. Paul, MN 55155

Members

1. Karl Abrahamson (Secretary)
 2. Richard Becker (Chair) – WebEx
 3. Kent Erickson (Vice Chair)
 4. Adam Johnson
 5. Jonathan Lemke
 6. Justin Parizek
 7. Bruce Pylkas
 8. Scott Stewart
 9. Rick Wahlen
 10. Mike Westemeier (DLI CO's Designee)
 11. Shane Willis – WebEx
 12. Philip Wood
- David Weum (MDH CO's Des) (Non-V) – WebEx

Members Absent

Sam Arnold

DLI Staff & Visitors

Adam Case (Board. Counsel, DLI)
Thomas Eisert (DLI) – WebEx
Todd Green (DLI) – WebEx
Brad Jensen
Lyndy Logan (DLI)
Hannah Mardaus (DLI) – WebEx
Ken McGurran (DLI) – WebEx
Greg Metz (DLI)

DLI Staff & Visitors continued...

Steve Nuebel (DLI) – WebEx
Sean O'Neil (DLI)
Bruce Baillargeon (McGough)
Greg Buchal (Larson Engineering)
Tom Degenaro (Michels Sales)
Mike Dryke (Jamar Co.)
John Galt (DOH) – WebEx
Ivo Guillen (TKDA) – WebEx
Cara Hall (TKDA) – WebEx
Mitch Honsa (Larson Engineering)
Rick Jacobs (Local 34)
Mike Johnson (J-Berd Mechanical)
Braden Korwin (TKDA) – WebEx
Amanda Kieffer (TKDA)
Stephanie Menning (MUCA) – WebEx
Jake Miles (Larson Engineering) – WebEx
Bradley Peters (City of Rochester) – WebEx
Jim Peterson (MN PHCC)
Logan Quiggle (TKDA) – WebEx
Leigh Stoakes (Xcel Energy)
Gary Thaden (MMCA)
Scott Thompson (My Plumbing Training)
Keira Unangst (TKDA) – WebEx
Luke Wangsness (TKDA) – WebEx
Keith Weinzierl (Hallberg Eng.)
Chad Whiting (U of M) – WebEx
Erik Zercher (DNR) – WebEx

1. **Call to Order, Chair**

- A. Chair Becker called the meeting to order at 9:33 AM. The secretary took roll call, and a quorum was declared with 12 of 13 voting members present in person or via WebEx.
- B. Announcements – Introductions (members and attendees) – Chair Becker
 - Everyone present in person and remotely can hear all discussions.
 - All votes will be taken by roll call if any member attends remotely.
 - All handouts discussed and WebEx instructions are posted on the Board's website.
 - WebEx instructions/procedures can be found on the board's website at:
<https://www.dli.mn.gov/about-department/boards-and-councils/plumbing-board>

2. Approval of meeting agenda

A motion was made by Lemke, seconded by Erickson, to approve the agenda with a correction to item 1, Call to Order, changing Chair Becker to Vice-chair Erickson. The roll call vote passed unanimously with 12 votes in favor; the motion carried.

3. Approval of previous meeting minutes

A motion was made by Wahlen, seconded by Wood, to approve the Oct. 15, 2024, meeting minutes with a correction to item 1, Call to Order, changing Chair Becker to Vice-chair Erickson. The roll call vote passed unanimously with 11 votes in favor and one abstention (Becker); the motion carried.

4. Regular Business

Expense reports were approved.

5. Special Business

A. Enforcement & Licensing update

- Plumbing enforcement actions are updated monthly and can be found here: <https://www.dli.mn.gov/business/plumbing-contractors/plumbing-enforcement-actions>.
- Contractors who have been fined due to unlicensed activity can be viewed in the [CCLD Review Newsletter](#).

- **Licensing Unit/License & Registrations**

○ Plumbing contractors	1,807
○ Registered employers	57
○ Master plumbers	3,264
○ Journeyworker plumbers	3,381
○ Registered unlicensed plumbers	5,963
○ Water conditioning contractors	65
○ WC masters	129
○ WC journey workers	162
○ Registered unlicensed WC	208
○ Backflow prevention testers	655
○ Backflow prevention rebuilders	828
○ Pipelaying Bond	287
○ Mechanical Bond	2,582
○ Med Gas Certification	217
○ Exams administered in CY 2024 (by DLI to date/all trades)	9,726
○ Exams administered PLB-specific in CY 2024	510

- Master (**144**), Journeyworker (**366**)

- **Enforcement Unit**

○ Active plumbing investigations	103
○ Orders issued in 2024 (CY)	91
<ul style="list-style-type: none">▪ Suspension for child support deficiencies not published	
○ Investigations closed	114

- Although not an agenda item, Gary Thaden, the government affairs director for the Minnesota Mechanical Contractors Association (MMCA), addressed the Board. Having served with MMCA since 1985, he announced his retirement at the end of February. Gary played a pivotal role in the establishment of this Plumbing Board when the legislation was enacted in 2007. Over the years, he has participated in

numerous Plumbing Board and Committee meetings. He expressed his gratitude to the Board for allowing his participation and thanked the members for their dedication and hard work. He shared his enjoyment in working with the plumbing industry at the state level.

B. Department update – Mike Westemeier

- Plumbing plan reviews are now at an eight-week turnaround, down from ten weeks in October. The goal is to reduce this further to around seven weeks in the coming weeks. Currently, there are 160 plans in the queue, typical for this time of year, compared to 400 previously. A new plan reviewer will be starting soon, leaving one vacancy. We are also discussing the need for additional staff.

C. CCLD Fee change proposal update – Greg Metz (Attachment A)

D. Variance Petition, Oak-Land Middle School – Larson Engineering (Attachments B & C)

- Adam Case, the Board's attorney, provided an overview of the variance process. The board can ask questions and engage in discussions. Regarding the legal standards for variances, they fall into two categories: mandatory and discretionary. A variance is deemed mandatory when applying the rule to a specific situation does not serve the rule's purpose. Conversely, a variance is considered discretionary when the Board determines that applying the rule would lead to hardship or injustice. Furthermore, granting the variance must align with public interest and must not prejudice any person's or entity's substantial legal or economic rights.
- Mitch Honsa introduced himself and Greg McCall, both civil engineers at Larson Engineering, and Keith Weinzierl, a mechanical engineer with Hallberg Engineering.
- Honsa said that the project is located in Lake Elmo, serving the Stillwater School District, just north of Interstate 94 on Manning Avenue. The school was constructed in 1966, with the first additions made in 1969. These early additions, highlighted in an orangish color on **slide 2 (Attachment C)**, were significant, occurring just three years after the original construction. There were no further additions until 2015, which included a small classroom addition. On **slide 3**, they're planning three additions to the school: a science wing, a classroom wing, and a gymnasium/field house. This new gymnasium will also function as a storm shelter. Additionally, they will renovate the existing gymnasium in the center of the building into a media center. The project will bring city utilities to the site, replacing the current well and septic system. They'll enhance fire access with a new loop and improve traffic flow, addressing the current issue of traffic backing up onto Manning Avenue during student drop-off and pick-up. The county will not permit the current situation, so they plan to rework the queuing on-site for better traffic management. Moreover, they will install a large underground infiltration system to accommodate the new additions. **Slide 4** introduces the current roof system and its drainage. The roof drains into a series of seven dry wells throughout the site, each designated by color. The yellow roof section in question is 44,000 square feet and currently drains through an 8-inch vitrified clay pipe, which does not meet current building codes. They plan to upgrade this pipe to a 15-inch PVC pipe to comply with modern standards, updating all downstream facilities accordingly. **Slide 5** addresses the affected plumbing codes. Section 1101.4.4 requires changing the pipe material under the new building addition. Section 310.5 introduces the surcharging rule, prohibiting obstruction of flow, which is an issue with the current dry wells as they do not meet this code. **Slide 6** is regarding exterior site issues. The existing infrastructure, designed before the surcharging rule, features dry wells with minimal cubic storage volume, which is insufficient for the 44,000-square-foot roof area. Low

elevation on the site limits alternative outlets for the roof system. The watershed prohibits redirecting water to Rose Lake/Sunfish Lake (**slide 7**) due to flooding issues, and the shoreland district overlay restricts hard surfaces, impacting the placement of new additions. The current drainage patterns are suboptimal, and the only city utility on-site is a shallow storm sewer in the county roadway, challenging to connect with. They plan significant storm infrastructure on the south end of the site to support the new additions, but it lacks the capacity for the entire roof. **Slide 8** shows another option, raising the leader inside the building. However, the current roof leader, running from the south to the north end of the building, faces numerous conflicts with other classrooms. Updating this would require extensive changes and potential code violations, making it impractical. Lastly, unknown construction factors could impact the project's feasibility. This building, constructed in 1966, comes with its share of potential unknown construction issues despite having the original record plans. For example, there could be unforeseen challenges such as asbestos in the roof systems or classrooms. **Slide 9**, for the variance they're proposing if approved, is to redirect as much roof water as possible to our new underground infiltration system. This will be at a higher elevation in the new addition compared to the existing roof leader. The existing roof leader will be upgraded to a 15-inch line, redirecting flow back into the current dry wells but with a reduced roof area to service them. **Slide 10**, if the variance is denied, they'll still redirect as much roof water as possible. However, the new roof leader would then channel water to a lift station, which would pump the water to a riprap or concrete wall system for dispersion. Additionally, there will be a French drain in front of this setup to allow water to infiltrate before reaching the neighbor's property. Although the lift station is designed for a 15-inch line, it is limited by the 8-inch interior pipe capacity and needs to store water for about a 5-minute interval between pump cycles. As a result, it requires a 20 to 25 foot deep lift station to handle the flow rates of the 15-inch line.

Slide 11, in conclusion, the roof water flowing into the drywall is an existing condition, only impacted by the new proposed building addition's location. To avoid construction and maintenance difficulties associated with the lift station for stormwater, we're requesting a variance for the surcharging pipes while reducing the roof area servicing the existing dry wells to minimize potential surcharging. They believe this variance won't adversely affect anyone. Are there any questions?

- Chair Becker said Honsa mentioned the existing dry wells and the two methods where they didn't absorb or keep up, what is the elevation of the rim on the drywells?
- Honsa said they're about 4 to 5 feet below the currently finished floor elevation. Then they outlet into a kind of a low area, like a depressed area on the ground. Then there's probably about another foot of elevation before they actually outlet the area and then flow downstream. This would be the top of the drywell.
- Honsa referred again to **slide 6**, noting there's a 907 contour around the two rims. This contour has to fill with water before it overflows to the south, which is slightly above the rim.
- Phillip Wood asked Honsa how much of the 40,000 square feet was removed from the load and Honsa replied, about 8,400 square feet or roughly 18%.

- Bruce Pylkas asked if Larson Engineering had been in previous discussions with the department's plumbing plan review staff and Honsa replied that he had spoken with Mike Westemeier [supervisor, Plumbing Plan Review].
- Westemeier said the code focuses on health and life safety, which is the founding Board's priority. Cost isn't a factor in meeting code. Have you considered the budget for installing a lift station compared to the overall budget? You would still comply with the code by installing a lift station, which, though not ideal for stormwater, might be necessary. Have you considered the cost difference between following the code and seeking a variance?
- Honsa said the way this is proceeding, this is out for bid and they've proceeded with the lift station design, aiming to save the building owners costs. This almost 100-year-old building is unlikely to be torn down and rebuilt.
- Greg McCall said the costs related to civil ground numbers for the lift station are around \$300,000, he doesn't have the percentage of the overall construction cost.
- Chair Becker asked, what is the building's finished floor elevation and Honsa replied, it's 911.40. Becker clarified that the drywall rim is about 2 feet below and Honsa said yes, they intend to maintain this by renovating the old drywells. The building has no basement and is on a single elevation, with utility tunnels below.
- McCall said the existing roof is overflowed via scuppers. The project will redirect these sections to a new storm system, adding new pipe overflow drains that will daylight out the side, regardless of the variance outcome.
- Honsa said the Manning elevation is 902.30 with the building's elevation at 903.65, about 1.35 feet higher. It is over 500 feet away. Given this, the slope would increase the pipe size, and county procedures wouldn't allow the difference in pipe size.
- Justin Parizek asked Adam Case if he should refrain from participating in this discussion since he has children attending this school district and Case said this would be a good idea.
- Chair Becker asked, what is the length of the new 15-inch main?
- Honsa said he isn't sure but approximately 30 feet, given the 50 feet from the building to the property line. Not a significant amount.
- Pylkas said, you mentioned a watershed restriction for everything going to the northwest, correct and Honsa replied yes. Pylkas said, so, your only option is to push the water east across Manning, where it will eventually end up, or infiltrate it into the dry wells if the variance is accepted.
- McCall said that ultimately, you have two options: route it east to Manning or install an underground system large enough to infiltrate the entire roof system for events like a 2-year, 10-year, and 100-year storm, essentially accounting for no volume. With the watershed drawdown, based on your soil's characteristics, you can only account for a volume up to a certain height. On our site, that's just over a foot. So, we'd need to create a volume big enough to handle all those storm events in that foot, essentially planning for a 7-inch rainfall as a 100-year event. This would be 7 inches over the entire roof area, needing to infiltrate within a foot. This restriction means we don't have the available space to implement such a solution.
- Pylkas, to clarify, you're saying there's a lack of elevation or fall from the building's outlet to where it would go under Manning Avenue?
- McCall said, yes, there's insufficient elevation and inadequately sized infrastructure to connect to.

- Pylkas asked if they have considered the cost of jacking boring Manning instead of installing a lift station.
- Honsa said the existing storm infrastructure under the roadway is designed to dissipate water from ditch sections, moving from one side of the road to the other through ditch sections. The elevations on the other side of Manning aren't significantly lower than at the inlet. Therefore, jacking and boring wouldn't help, as you're still dealing with a 3-foot ditch adjacent to the roadway.
- Pylkas said that the area is mostly farmland aside from the holiday station until you reach some housing and Honsa said yes. Pylkas said a creek or watershed is running east from the other side of Manning. If you could get the water to the other side of Manning would this solve your problem?
- Honsa replied, no. It still lacks enough elevation; it would be too low.
- Honsa referred to **slide 1** again. The farmer east of the road currently experiences flooding issues from the county-updated ditch, and the county is looking to improve that situation. Currently, it's hard to see, but there's a small basin here that doesn't function properly. During parts of the summer, this water backs up and fills the entire area. This is where they would be directing all of our additional water, as the culvert crosses the road here and flows down. At the moment, the watershed is satisfied with their approach, since they are matching rates and volumes. However, if they were to redirect that water, they would need to implement a system to maintain those same rates and volumes.
- Westemeier said you are constructing a new stormwater retention system for other parts of the new building, correct? Honsa replied yes. Westemeier asked Honsa to clarify why this system can't be connected to the new one. What is the limiting factor?
- Honsa said the difference in elevation between where the roof drains exit the new building is significant. The bottom of the new system is still about a foot above where the existing drain exits the addition. They can't lower the new system, as it is tied to the outlet that crosses the county road. There's a large pipe running along the south side of the property that is very flat and serves two roofs. It must accommodate the flow rates of these roofs. The system is designed to hold back water in the underground system, acting as a bypass for the two roof drains.
- Abrahamson, for clarification, you mentioned that the water under Manning drains to the south and floods the farmer's property in June, correct? Honsa replied yes.
- Abrahamson asked where the water would be pumped if a lift station were installed.
- Honsa said it would go to the neighborhood to the south, matching the current condition with the drywell. If they surcharge, the water will overflow to the south, as Manning Avenue separates the drainage areas. So, to the south of our site is different from the southeast of our site.
- Abrahamson said, so when the drywell overflows, the water flows south to the neighboring farm property, correct? Honsa replied, yes, and the same would happen with the lift station.
- Abrahamson asked what codes were followed when the drywell was originally installed. He is unaware of any specific plumbing or storm drainage codes allowing for drywells in the 60s. The system likely wasn't designed to modern standards, and now we're adding more water to it. His concern is understanding the design and codes for the original installation. Considering the existing conditions, can you guarantee that water won't affect neighboring properties? The farm is likely to be

developed eventually, as the area is growing. Whether a lift station is installed or a variance granted, we're still adding more water to those farmlands, which will need to be addressed.

- Honsa said they're reducing the roof area and changing the water flow direction through the underground system. They're lowering the flow to the roof bleeder system, whether it goes to the lift station or the drywell. The watershed ensures we match existing conditions for stormwater flow. They're proposed construction will maintain or reduce the current flow rates.
- Abrahamson said he appreciates this; however, there's still a concern.
- Honsa said the site already has serious parking and queuing issues that they aim to improve. The district is working with the adjacent property owner for first claim on the land. The city has integrated this into their future development plans, giving the school district priority for the property. They have been coordinating through city council meetings, planning for future growth and improvements. This site was designed in the past and poses challenges, but they're working within these constraints to improve it for the future.
- Abrahamson said it seems like the issue is being delayed.
- Honsa said the city has a plan for future development in the area. They've even considered how to redesign the intersection for future parking and basins.
- Pylkas asked, if you could go to the northwest, could this resolve your issue?
- Honsa replied, yes, he believes so, if they could. It would be more cost-effective than installing a lift station. Normally, we design for 2-year, 10-year, and 100-year storm events. However, the watershed is focusing on a scenario beyond the 100-year event, considering extreme conditions such as a week-apart rainfall. This affects upstream and downstream areas and represents the worst-case scenario. This is also being evaluated for Rose Lake due to its flooding problems. The watershed needs a solution for this as well.
- Pylkas asked if they have considered contributing to their efforts, which could also solve their problem?
- Honsa said not necessarily because their site is significantly higher than Rose Lake. The watershed previously collaborated with a nearby farmer to create rapid infiltration basins, pumping lake water uphill to mitigate issues. This worked well initially but later caused problems by flooding crops, leading to their prohibition. So, pursuing a similar approach might have repercussions.
- Case reiterated the process for the Board to deny or grant a variance request.
- Chair Becker asked Abrahamson for his thoughts and Abrahamson said we've got a site that has more issues than just running to those drywells with water and water removal. They state there are future plans. He is uncertain if they can address this from a variance standpoint, but anything they implement would need to be temporary and come with certain stipulations. They have numerous drainage issues at every location—whether it's the lake or the site. They're causing flooding in neighboring properties. It would be beneficial if they were further along with developing the farm or considering a potential purchase to address the drainage issues for the entire site. Whether the Board accepts the variance or they install a lift station, there is still flooding issues impacting the farms. Both the east side and west side of Manning are affected. He is struggling with this, Richard, because it seems like no matter what they do, they're just deferring the problem.

- Chair Becker said he is looking at it another way, upsizing the drainage system exiting the building to one that meets code requirements is an improvement over what's currently in place, which isn't working properly. As part of this plan, you're going to be cutting down the volume of discharge. In the event that the land to the south is acquired and developed, I would certainly like to see an appropriate system installed to connect the discharge, rather than just leaving the drywells in place.
- Abrahamson agreed, this is where his original question came from previously. Why do those drywells exist? He understands they were necessary when the area was originally farmland with no drainage. However, they must have been approved by the authority having jurisdiction at the time. It would be beneficial to see if there is any documentation on this from the city or other relevant sources. We do have the code back in the office, but it states that the storm sewer should go to an acceptable location designated by the administrative authority. There should be something on record with the original blueprints explaining why drywells were chosen, their intended capacity, and how much they could handle. With the building's expansion, there are now significant drainage issues. Even if this variance improves the building's infrastructure, he isn't sure if it would also improve the drainage.
- Westemeier said the concern with imposing conditions is that there currently isn't a storm drainage system in place, only ditches. The odds of installing a storm system when there's only a ditch on Manning are slim. Imposing a condition requiring connection to a storm system may not be effective, as there isn't one available, and the city may lack the ability to enforce such a condition.
- Abrahamson asked, is there any storm drainage on 10th? What is the city's plan for that area?
- Honsa said that currently there is no storm drainage on 10th, and Manning was recently updated, so there are no immediate plans to reconstruct that roadway to include new infrastructure. There haven't been any discussions about mitigating Rose Lake. It seems to be a widely recognized issue that won't be resolved anytime soon based on my conversations. Regarding the development to the south, every year there's talk about it being developed, but it never actually happens. This issue has been continuously discussed. They've even conducted preliminary designs on a feasible layout, but nothing ever comes to fruition. So, to answer, I'm not sure if there's a concrete plan to improve infrastructure in Lake Elmo. There are significant challenges with their wells and other infrastructure, like sanitary and water mains. He isn't sure if stormwater is the city's biggest concern, though it's likely a priority for the watershed management.
- Pylkas asked if Honsa mentioned if there is a reason preventing them from creating a pond?
- Honsa said yes, first, our entire site to the west, where we have available land, is uphill. So, creating a pond there would essentially mean excavating a massive crater. Additionally, there's the drawdown rule, which allows only a foot to achieve the required volume. If they created a pond, it would need to outlet to Rose Lake, which is the only location with a low enough elevation. The pond would need to dissipate water after each storm event, which could mean something like 100,000 cubic feet of water within a foot. So, effectively, all those fields would become a pond if we went this route.
- Chair Becker asked if anyone on the board has a recommendation regarding the alteration or variance request. It's a challenge because, regardless of the approach,

the ultimate issue remains—where does the water go? At the end of the day, we need to make a decision.

- Erickson clarified the request; they're proposing to use drywells instead of installing a pump system. Is that why you're here?
- Honsa replied yes, they're looking to reduce the area going to the drywells and continue their current usage.
- Erickson, so, if they switch to a pump system, will you approve that design? So, the water still goes out into that field. Is there a ditch or waterway on the south side that eventually directs it to Rose Lake?
- Honsa said no, the south side of our site does not drain into Rose Lake. Ultimately, the water flows to 94. However, there are drainage ditches on the east side of his property, which cross the road and connect to Manning, resembling the neighboring property to the south. It seems the water pools on one side and overflows to the south, which hasn't caused issues with his southern fields, except when the lake is pumped. Issues mainly occur on the southeast side, where county infrastructure redirected ditch water. Whether they use dry wells or a pump, it should function similarly and not impact his fields. This aligns with the watershed variance on their property.
- Lemke asked for clarification, asking if the question posed to the Plumbing Board was, can they surge the 15-inch pipe installation? Honsa replied yes.
- Honsa said it is the same situation that has been going on for 69 years with a reduced area and less water. Upsizing should still meet current codes without mechanical devices.
- Lemke said the real question at hand is whether to approve the variance request to surge the 15-inch pipe, considering the alternative, though more costly, approach.
- Chair Becker confirmed Lemke's summary and recommended denying the variance since the proposed alternative meets the code. He noted that past interpretations likely led to surcharges but emphasized the need to comply with the current code moving forward. Acknowledging the significant cost of the lift station, he stated that while avoiding mechanical devices is preferable, the new setup must adhere to current code requirements. The key issue isn't the discharge end, so he recommended not approving the variance request.

A motion was made by Becker, seconded by Erickson, to deny the variance petition request for Oak-Land Middle School. As presented, there is an alternative approach designed using a lift station that would allow the piping to not be surcharged, complying with the code; therefore, even with the increased cost, this is not reason enough to allow the variance. The majority roll call vote ruled with 10 in favor, one against (Wahlen), and one abstention (Parizek); the motion passed.

A motion by Lemke, seconded by Wood, to take a 10-minute recess from 11 AM to 11:10 AM. The roll call vote was unanimous with 12 votes in favor; the motion carried.

- E. **Variance Petition, Xcel Energy St. Paul Service Ctr. – TKDA Inc. (Attachments D and E)**
- Abrahamson and Pylkas abstained from voting and all discussions.
 - Amanda Kieffer, TKDA, introduced herself as the civil engineer of record on the project, along with Lee Stoakes, Xcel's project manager, and Bruce Baillargeon, McGough's project manager.

- In addition to her presentation, Kieffer noted several important points. For example, on **slide 6**, she mentioned multiple inflows into their chamber system: one on the west side (not shown in the picture) and another on the north side, visible in the chamber system. Water enters structure 183 from these inflows before dropping into the chamber system, ensuring no backup past 183 during water quality events. On the south side, manhole 178 acts as the pretreatment structure where water drops into the chamber.
- Chair Becker asked about the first storm connection into the building, to which Kieffer replied it is way up on the northeast corner, about 600-700 feet of pipe. She mentioned indirect connections, like roof drains, and highlighted disconnected points due to higher elevations. Becker confirmed his calculations with Kieffer about surcharging based on water quality and permanent pool volume.
- Chair Becker inquired about the next manhole upstream from manhole 167, which Kieffer informed was 228 feet away. Becker noted this project is specific to the City of St. Paul, so DLI isn't involved.
- Lemke asked if the piping hits a filter station before reaching the yellow section. Kieffer confirmed that manhole 178 acts as the pretreatment system, fulfilling watershed district and MPCA requirements. This structure will be cleaned regularly.
- Chair Becker queried the design velocity for typical flows in their 36 and 42-inch RCP. Kieffer noted they designed for 5-7, though she lacked exact velocity figures. The storm sewer on site is designed for larger events, evaluating 10-year, 50-year, and 100-year events to avoid flooding.
- Kieffer explained their design approach for different pipe sizes, aiming for efficiency due to significant drainage through limited pipes. Parizek asked about potential sand surcharging, which Kieffer clarified occurs only if debris is picked up, not from the system itself.
- Kieffer detailed the system's construction, involving corrugated metal pipe backfilled with rock, sand with drain tile, geotextiles, and a specific jointing system. Wahlen added context, noting his experience with such systems and Xcel's responsibility for maintenance.
- Westemeier discussed unexpected issues like a discovered water table problem. Kieffer explained considerations about potential pumping during construction and related feasibility over budget concerns. Additionally, she noted that their system isn't designed for prolonged water exposure, which was unanticipated due to the site's clay composition.
- Westemeier and Kieffer discussed the half-foot difference between the bottom of the system and expected water levels, which involved consultation with Geotech and contractors. Kieffer emphasized their confidence in the design, which includes measures like adding rock at the bottom to allow groundwater flow underneath, promoting a stable construction platform.

A motion was made by Wahlen, seconded by Wood, to approve the variance petition for Xcel Energy St. Paul Service Center. The majority roll call vote ruled with 10 in favor and two abstentions (Abrahamson and Pylkas); the motion passed.

- F. **Status and timeline of 2024 UPC ad hoc Rulemaking Committee and potential rulemaking**
- Abrahamson mentioned that the Committee meets monthly and still has a few chapters and outstanding RFAs to review. Due to the high volume of pending items, future meetings may be scheduled from 9 a.m. to 3 or 4 p.m., instead of noon.
 - Case will explore the possibility of concluding future Committee meetings at 3 or 4 p.m., starting with the February meeting.

6. Committee Reports

- A. **2024 UPC ad hoc Rulemaking Committee update – Secretary Abrahamson**
- Visit the [UPC Committee’s webpage](#) for all RFAs received to date, meeting minutes, and future meeting dates.
- B. **Construction Codes Advisory Council (CCAC) – Abrahamson (rep) / Lemke (alt)**
- Abrahamson gave a brief recap from the last CCAC meeting held on [see presentation – Nov. 21, 2024](#)

7. Complaints and Correspondence

[Final Interpretation PB0183](#) issued Oct. 15, 2024 (sections 706.3, 706.4)

8. Open Forum

None

9. Board Discussion

None

10. Announcements

Next regular quarterly meeting – 9:30 a.m., 3rd Tuesday of each quarter – DLI / WebEx

- April 15, 2025
- July 15, 2025 (annual meeting – election of officers)
- Oct. 21, 2025

11. Adjournment

A motion was made by Lemke, seconded by Erickson, to adjourn the meeting at 11:52 a.m. The roll call vote was unanimous with 12 votes in favor of the motion; the motion passed.

Respectfully submitted,

Karl Abrahamson

Karl Abrahamson
Secretary

Green meeting practices

The State of Minnesota is committed to minimizing in-person environmental impacts by following green meeting practices. DLI is minimizing the environmental impact of its events by following green meeting practices. DLI encourages you to use electronic copies of handouts or to print them on 100% post-consumer processed chlorine-free paper, double-sided.

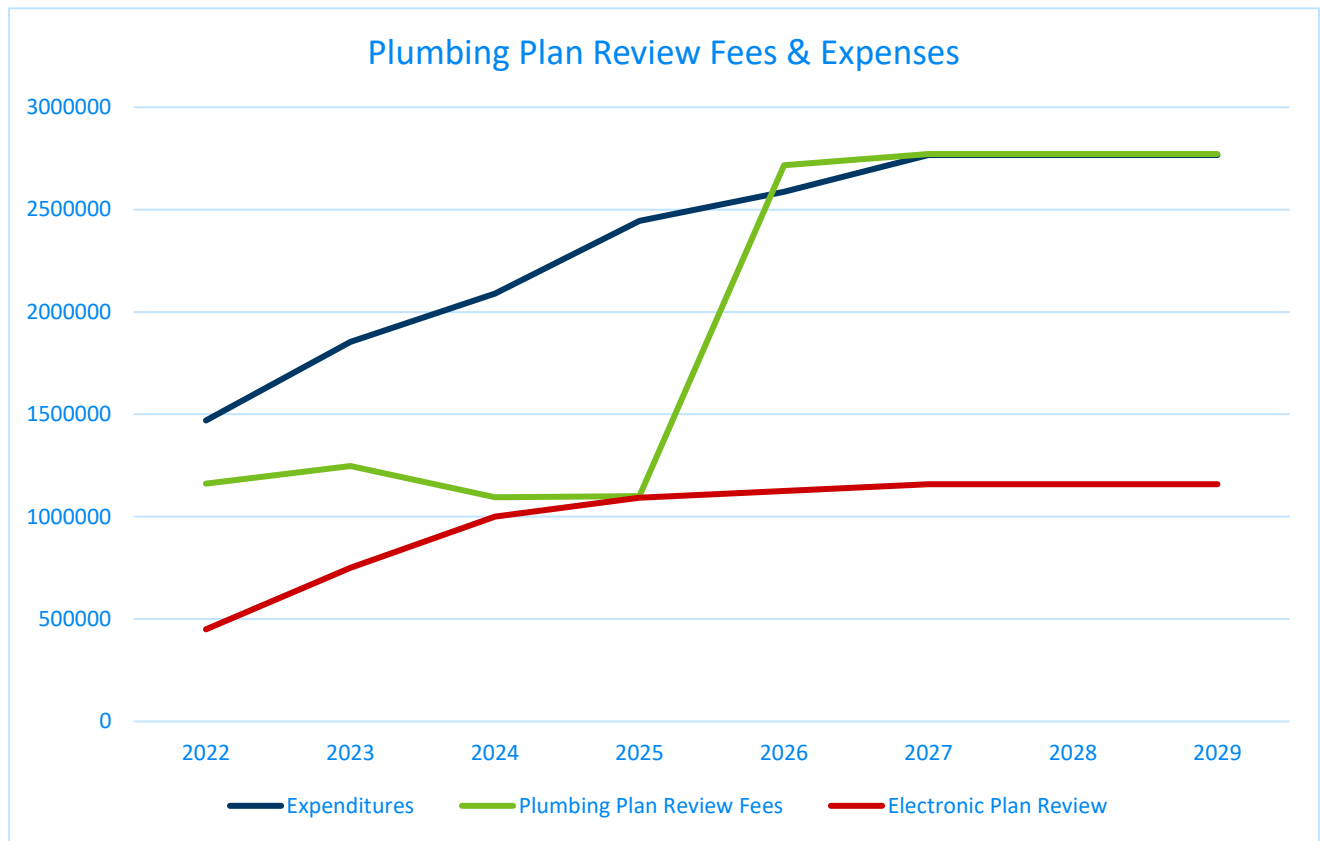
CCLD Fee Change Proposals

CCLD proposes increasing fees for the following programs to align with the costs of each program's services.

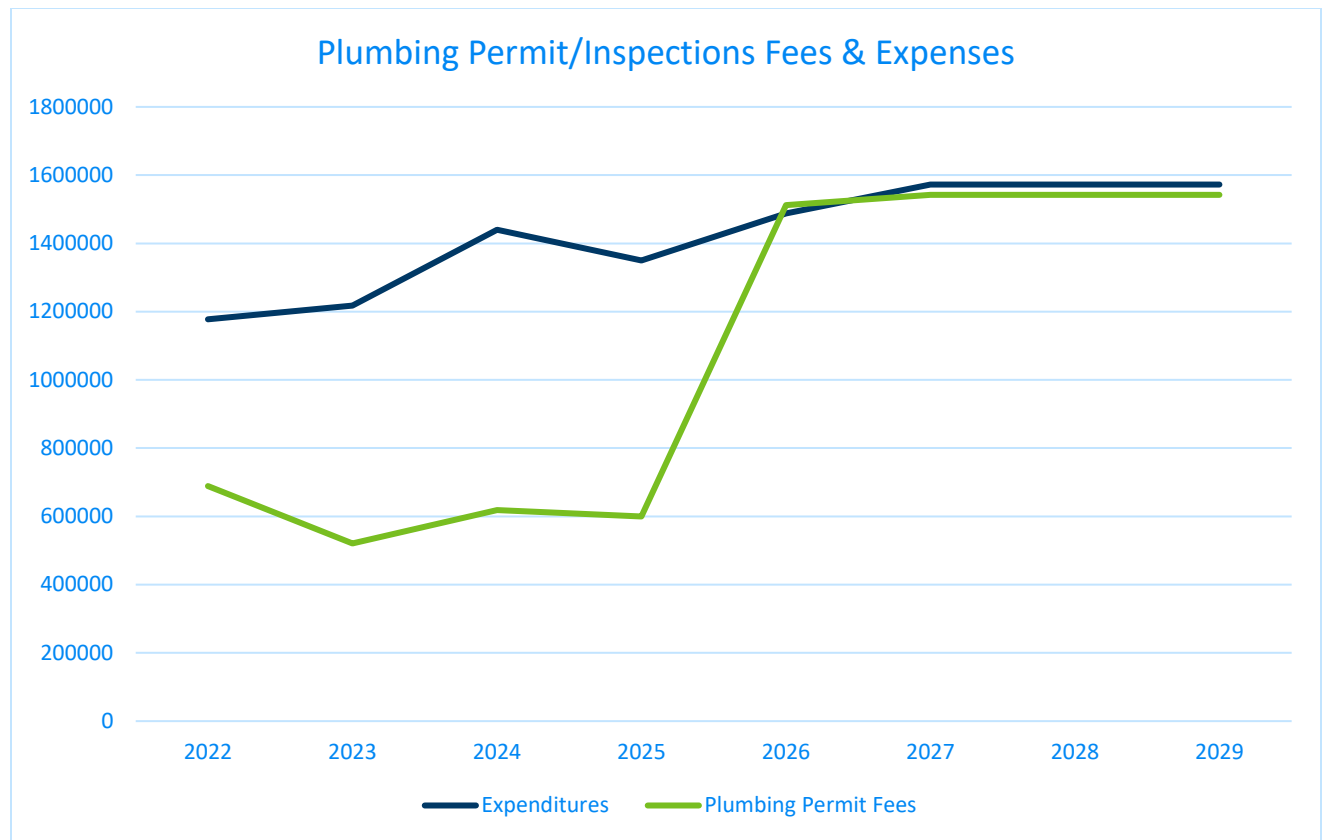
Unit	Year of last fee change
Electrical Inspections	2007
Plumbing Inspections	2013
Boiler & Pressure Vessel Registrations	2005
Plumbing Plan Review	2007
Manufactured Structures	2008
Elevator Operating Permits	2007

Proposed plumbing fees comparison

Project Type	Drainage Fixture Units	Interceptors, Separators, Drains	Valuation	Existing Plan Review Fee	Proposed Plan Review Fee	Existing Permit Fee	Proposed Permit Fee
Senior care center	60	1	\$100,000	\$450	\$2,901	\$1,626	\$2,931
School dishwasher replacement	4	0	\$2,500	\$250	\$191	\$201	\$221
Minor restroom remodel	5	0	\$7,000	\$0	\$0	\$226	\$467
Medium sized Clinic	81	0	\$387,122	\$350	\$2,533	\$2,126	\$4,294
Medical office addition	94	43	\$882,500	\$1,576	\$2,950	\$3,526	\$7,190
Fitness Center	44	2	\$65,950	\$250	\$1,797	\$1,251	\$2,790
School renovation	187	3	\$800,000	\$1,901	\$2,909	\$4,851	\$5,117
Convenience store	40	2	\$115,000	\$420	\$1,571	\$1,151	\$3,025
Small office & shop building	10	1	\$28,692	\$320	\$1,100	\$376	\$1,625
Restaurant	27	9	\$14,000	\$250	\$613	\$1,001	\$838
Medium apartment building	138	2	\$98,776	\$1,459	\$2,901	\$3,776	\$2,931



Plumbing Plan Review								
	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	FY 29
Expenditures (in thousands)	\$1,470	\$1,853	\$2,090	\$2,444	\$2,587	\$2,766	\$2,766	\$2,766
Plan Review Fees	\$1,161	\$1,247	\$1,095	\$1,100	\$2,717	\$2,771	\$2,771	\$2,771
Number of Reviews	2125	2269	2437	2620				
% Electronic Plan Review	63%	83%	94%	95%				
Average Plan Review queue wait times	56 days	72 days	86 days	40 days	28 days	28 days	28 days	28 days
Plan Review Staff	8	10	13	15	15	14	14	14



Plumbing Inspections								
	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	FY 29
Expenditures (in thousands)	\$1,178	\$1,217	\$1,440	\$1,350	\$1,488	\$1,572	\$1,572	\$1,572
Permit Fees (in thousands)	\$689	\$521	\$618	\$600	\$1,512	\$1,542	\$1,542	\$1,542
Number of Permits	908	943	1108	1192				
Plumbing Inspectors	6	7	7	7	8	8	8	8



December 10, 2024

Lyndy Logan
Plumbing Board
Minnesota Department of Labor
443 Lafayette Road North
St. Paul, MN 55155

Re: Variance Petition
Oak-Land Middle School Additions Project
Lake Elmo, MN

Dear Lyndy Logan,

We are petitioning for a variance regarding Minnesota State Plumbing Code 310.5 regarding the specific situation at the Oak-Land Middle School Project. We are making this petition on behalf of Stillwater Area Public School for this project.

Please see the attached information regarding this petition. If you have questions or need additional information you can contact myself or Mitch Honsa at Larson Engineering (office phone: 651-481-9120)

Thank you for your consideration of this petition.

Sincerely,
Larson Engineering, Inc.



Greg A. Buchal, PE
Project Manager

Attachments:
Variance Petition Memo Dated 12-10-2024
Exhibits 1 through 5



MEMORANDUM

To: Minnesota State Plumbing Board Date: December 10, 2024
From: Larson Engineering, Inc. Project No: 12246044
Project: Oak-Land Middle School Additions & Renovations
Re: Variance Regarding 2020 Minnesota Plumbing Code Section 310.5

We are petitioning for a variance regarding the 2020 Minnesota Plumbing Code: 2018 Uniform Plumbing Code (UPC) section 310.5 as incorporated in the Minnesota Plumbing Code by Minnesota Rules, part 4714.0050. The variance is being specifically requested because of the final interpretation for inquiry PB0519, stating that plumbing code does not allow storm sewers to be surcharged.

Existing Conditions

Oak-Land Middle School, which was built in 1966, currently has a portion of the existing roof drains being collected in an 8-inch pipe extending through the building, under the floor slab, until it exits the building on the south side and discharges into several existing dry wells. The site soil conditions are generally sandy, such that the current system has been working well.

Proposed Addition and New Conditions

The School District will be adding additional classroom space to the school and one of the proposed additions is located on the south side of the existing building. It is our understanding that since the new building addition extends over a portion of the existing storm drainage pipe currently connected to the drywells, that pipe now being under a building, needed to be compliant with the Minnesota Plumbing Code since the existing material, vitrified clay pipe, is not an approved material allowed under the building. Due to the roof drainage area, it was determined that the existing 8-inch pipe would no longer be sufficiently sized in consideration of the current Plumbing Code requirements and would need to be upsized to a 15-inch pipe under and downstream of the proposed addition and would still be directed to the dry well. Some of the existing roof water, along with the roof water from the new addition is being re-directed separately to a storm water treatment system, such that less water would be flowing through the new 15" roof drain pipe and entering the existing dry wells.

Since this current system of routing the roof water to the dry wells has been working well, it is our desire to continue to have the roof water flow to the drywell. However, since the roof drain pipe was upgraded, it is our understanding that everything downstream of the new connection will need to be compliant with the current Minnesota Plumbing Code standards, which is where we run into the issue of surcharging the pipe, since the existing drywell has no outlet other than infiltrating water through the native sandy soils or overflowing via the rim of the dry well structure and then surfacing draining to the south. Should surcharging of this inlet pipe to the drywell occur, and water flows out the top of the dry well, the new rim elevation of the dry well (909.40) is two (2) feet below the building floor slab elevation (911.40) and would not result in water backing up into the building or on the roof.

Also, should the current primary drainage system from the roof drains to the dry well not be functioning properly, the existing secondary roof drainage system would allow the water on the roof to be discharged on to grade.

If the roof water in this particular situation is not allowed to continue to flow to the existing drywell, a new storm sewer lift station would be required. The lift station is needed since the invert elevation of the existing roof drain pipe going to the dry well is too deep to discharge water to the existing storm sewer outlet from the site. To raise the invert elevation of the existing roof drainage pipe would require extensive floor removal within the school building and rerouting pipe mostly in areas of the school that are not currently being renovated.

The requirement for a lift station has significant cost and a lift station was not anticipated or budgeted for by the School District for this addition project. Space constraints, other site utilities, the proximity of the property line to the building addition, and site drainage patterns also add difficulty to incorporating the proposed lift station into the overall storm water design.

Summary

Because the roof water flowing to the dry well is an existing condition, and this condition is being impacted only due to the proposed building classroom addition location, to avoid the hardships related to constructing and maintaining a lift station for this storm water, we request a variance be granted to the rule for surcharging pipes for this particular situation with the drywell. We are not aware of anyone that would be adversely impacted by this variance.

Remarks

Thank you for your consideration of this variance request. If you need additional information or have question please contact Larson Engineering, Inc.

Greg Buchal, PE T: 612-991-2601 EM: gbuchal@larsonengr.com.
Mitch Honsa, PE T: 651-448-0931 EM: mhonsa@larsonengr.com

Attachments:

- Exhibit 1 – Existing Roof Drain Routing with Proposed Addition
- Exhibit 2 – Proposed Roof Drain Routing with Proposed Addition
- Exhibit 3 – Roof Drainage Areas
- Exhibit 4 – Underground Plumbing Plan Roof Drain Routing – South Portion
- Exhibit 5 – Underground Plumbing Plan Roof Drain Routing - North Portion

Mitchell,

As Lyndy noted below that yes you are on the agenda for the meeting. I did take a look at what you have submitted and have a couple of pointers that may help the Variance request along. Please keep in mind, I cannot speak for the board nor do I know how the Board will decide but from past variance request the Board was not always able to make a decision on the first attempt as they felt additional information was needed to help make the decision. This resulted in a delay and the need for additional meetings.

I have the following thoughts on what you submitted:

1. On the drawings can you please provide the water quality level for the dry wells? Can you explain how often the pipes will surcharge(what Rain event will it occur?) What rain event will the dry well overflow the manhole structure? The water quality volume for the drywells is the volume between the Rim and bottom of the structure. That being said, the structures are 6' in diameter and one has a rim to invert height of 8'and the other has a rim to invert height of 9.5'. Therefore, the water quality volume provided in the 9.5' tall structure is about 267 CF and the water quality volume in the 8' structure is about 226 CF. Looking at the roof water in consideration of the typical civil engineering stormwater design standards, water draining from the roof to the drywells would overflow/cause surcharging of the pipe in all storm water events such as 2-yr (2 in) , 10-yr (4 in), and 100-yr (7 in). There are some unknowns about the original design of the existing dry wells that could affect our calculations such as the rate water dissipates from the drywell. Based on our current soil borings for the new addition, infiltration rates used for our stormwater design for the underlying soils are about 0.8-0.6 in/hr. Some areas of Lake Elmo have more rapid infiltration where the rates are up to 12-30 in/hr. I mention this because the site adjacent to ours has two rapid infiltration basins that were designed with the Valley Branch Watershed, so water could be dissipating from the drywells at a much higher rate. The manager of facilities and site operations for the Stillwater Area Public Schools has stated he believes the drywells only overflow in the event of larger rainfalls such a 1" – 2" events or greater. He has also worked with the district for over 25 year managing the facilities and there haven't been any significant issues with water surcharging in pipes interior to the building to his knowledge.
2. Provide a larger site plan showing elevations of the storm system, helps explain why you cannot connect to existing. Show other work that will be completed on the site. I have attached utility drawings to this email that depict the design if the drywells are maintained, but please note that the stormwater system for the site are rather complex and cluttered. This was initially withheld from the submittal to prevent confusion. The attached plan sheets are not the most recent utility plans for the project as the project is set to start construction this spring and we needed to proceed forward with an alternate design that included a lift station to service the existing roof leader which greatly increased the cost of the civil related work.
3. Explain why the project cannot make changes inside the building. Both above and below grade?(have you considered all options?) Options have been discussed with the design team for the project. Based upon conversations with the Mechanical Engineer (Hallberg Engineering), the pipe that runs north/south under the center of the building which is shown in Exhibit 5, was installed relatively deep and this pipe has several other storm lines that split off it at this low elevation and roof drain pipe extends -through numerous classrooms that are outside the scope of the current project (that are highlighted in green in the exhibit). Due to budget considerations, this additional work could not be incorporated into the project.

4. Can you connect more of the existing roof to the new 10" RWL to reduce the surcharge or eliminate it entirely? Does this impact the amount of surcharged pipe in the building? Always try and minimize the impact if possible. Hallberg Engineering rerouted as much of the roof as possible to the new higher roof leader that goes to our underground stormwater treatment system. About 18% of the existing roof that drained to the existing roof leader was re-routed to the new roof leader. Based upon my response in item #1, it's hard to quantify exactly how much this reduction in roof area will help the surcharge of the existing drywells.
5. Does raising the rim elevation of the structure impact the amount of surcharged pipe? I know it will but in other words, could you avoid raising the rim elevation to help minimize the amount of surcharged pipe? Raising the rim will affect the how much the existing pipe is surcharged as this is the only known outlet for the roof water other than the overflow flow scuppers on the roof. The raised rim elevations will still be 2' below finished floor elevation. The reason the rims were raised was because just south of the existing drywells an overflow route will be installed for our underground system. This will be a 24" pipe that crosses our site in this area as our only outlet is the Washington County storm sewer located along Manning Avenue on the southeast corner of the site. This overflow route needs ground cover so this governed the rim of the adjacent drywells.

If you can provide any of these answers via revised drawings to Lyndy by Friday 1/10/25, she would be able to incorporate into the package for review by the Plumbing Board or you can present some of the information when you come and talk to the board.

I am hopeful with the added information that the Board can make a decision on your variance request.

Mike

Mike Westemeier, P.E.

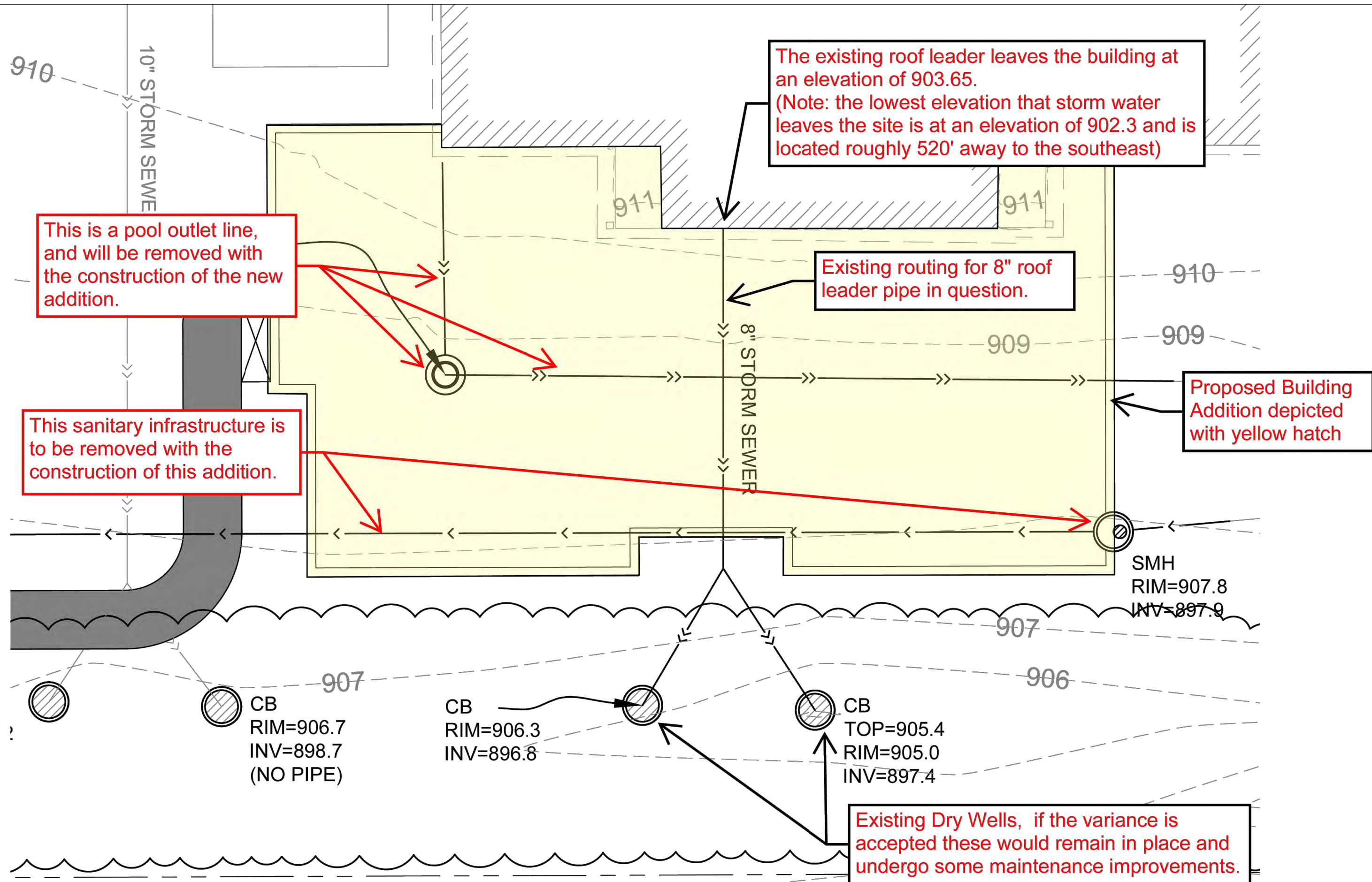
Engineering Administrative Plumbing Plan Review | Construction Codes and Licensing

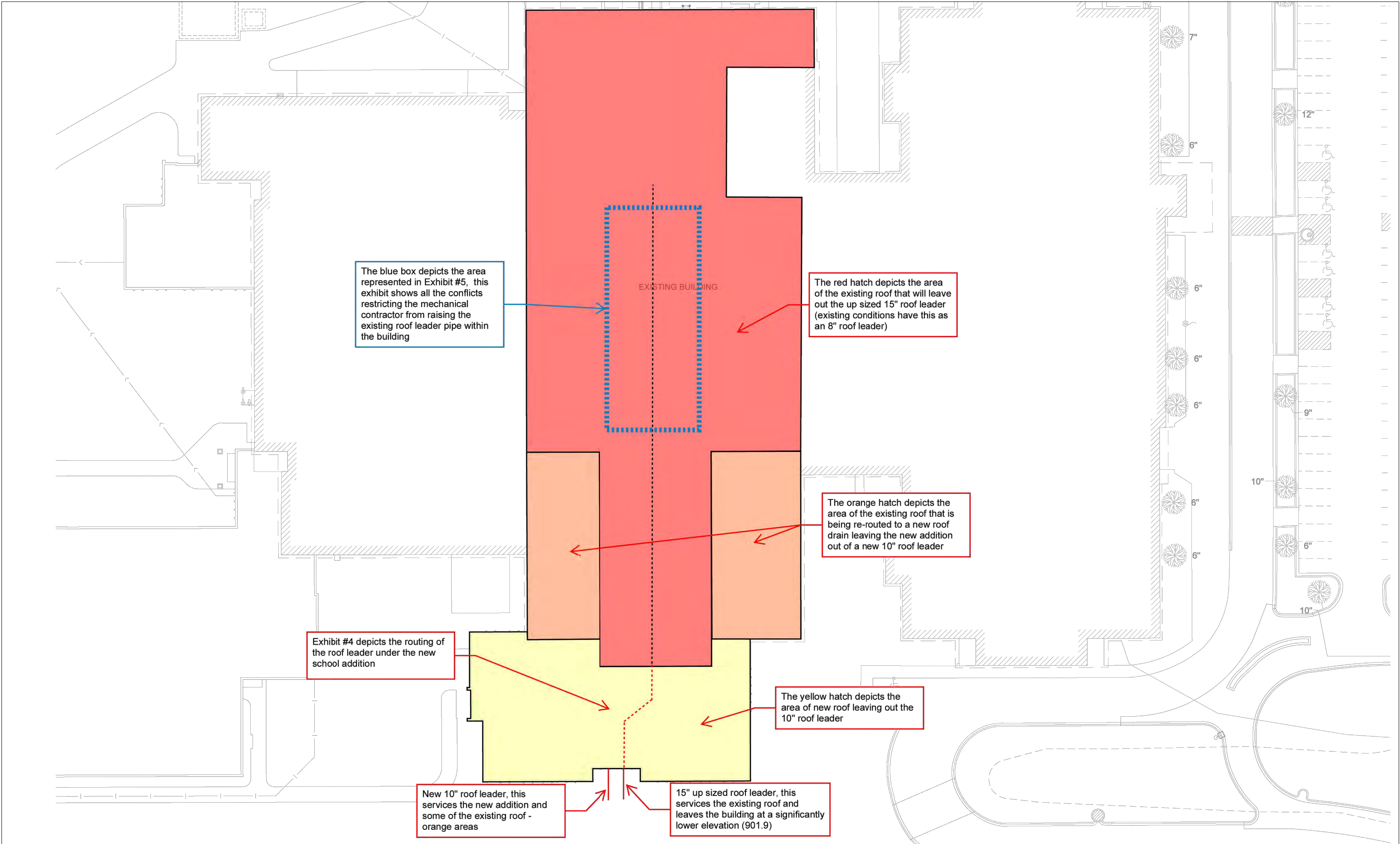
Minnesota Department of Labor and Industry

443 Lafayette Road N., St. Paul, MN 55155

Phone: 651-284-5898 | Web: www.dli.mn.gov







SYMBOL LEGEND

- STORM MANHOLE

○

CATCH BASIN

▣

CURB INLET

▲

FLARED END

○

SANITARY MANHOLE
- ⊕

HYDRANT

⊕

GATE VALVE & BOX

⊗

WATER SHUTOFF

☀

LIGHT POLE
- CTV

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OE

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WET
- CABLE UNDERGROUND LINE

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ELECTRIC OVERHEAD LINE

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ELECTRIC UNDERGROUND LINE

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FIBER OPTIC UNDERGROUND LINE

—

NATURAL GAS UNDERGROUND LINE

—

SANITARY SEWER PIPE

—

STORM SEWER PIPE

—

WETLAND
- TELEPHONE UNDERGROUND LINE

—

WATERMAIN PIPE

—

DRAINTILE PIPE

—

PROPERTY LINE

—

EASEMENT LINE

—

RIGHT-OF-WAY LINE

—

SETBACK LINE

CITY OF LAKE ELMO'S STANDARD PLAN
NOTES FOR SANITARY SEWER PLANS

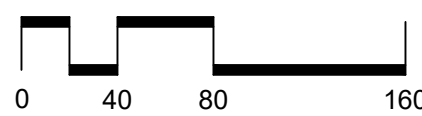
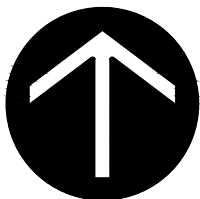
- ALL SANITARY SEWER AND ACCESSORIES MUST BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF LAKE ELMO STANDARD SPECIFICATIONS AND DETAILS.
- ALL SANITARY SEWER PVC PIPE SHALL BE INSTALLED IN ACCORDING TO CITY OF STANDARD DRAWING 103 "GRANULAR MATERIAL BEDDING METHOD" (FOR PVC SANITARY SEWER PIPE).
- UNLESS NOTED OTHERWISE, ALL SMOOTH WALLED SANITARY SEWER PVC PIPE AND FITTINGS SHALL BE SDR 35 WITH ELASTOMETRIC GASKETED JOINTS.
- ALL SANITARY SEWER SERVICES SHALL BE 4-INCH PVC, SCH. 40, UNLESS NOTED OTHERWISE.
- SMOOTH WALLED PVC PIPE AND FITTINGS SHALL CONFORM WITH THE REQUIREMENTS OF ASTM D-3034 FOR THE SIZE, STANDARD DIMENSION RATION (SDR), AND STRENGTH REQUIREMENTS INDICATED ON THE PLANS, SPECIFICATIONS, AND SPECIAL PROVISIONS.
- REINFORCED CONCRETE PIPE AND FITTINGS SHALL CONFORM WITH THE REQUIREMENTS OF M-DOT SPEC 3236 (REINFORCED CONCRETE PIPE) FOR THE TYPE, SIZE, AND STRENGTH CLASS SPECIFIED HEREIN.
- JOINTS OF MANHOLE RISER SECTIONS SHALL BE TONGUE AND GROOVE WITH RUBBER "O" RING JOINTS PROVIDED ON ALL SANITARY SEWER MANHOLES.
- SANITARY SEWER INLET AND OUTLET PIPES SHALL BE JOINED TO THE MANHOLE WITH A GASKETED, FLEXIBLE, WATERTIGHT CONNECTION TO ALL DIFFERENTIAL SETTLEMENT OF THE PIPE AND MANHOLE.
- A 1'-0" TO 1'-4" MANHOLE SECTION SHALL BE INSTALLED UNDER THE CONE SECTION TO ALLOW FOR HEIGHT ADJUSTMENT WHENEVER POSSIBLE.
- ALL SERVICE LINE STUBS MUST HAVE 2" x 2" HARDWOOD MARKER WITH METAL SPIKE RUNNING FROM THE END OF PIPE TO FINISHED GRADE ELEVATION.
- UPON MARKING A CONNECTION TO AN EXISTING SANITARY SEWER STUB OR MANHOLE, DIRT AND DEBRIS SHALL BE PREVENTED FROM ENTERING THE EXISTING SEWER BY IMMEDIATELY INSTALLING WATERTIGHT PLUGS AS NEEDED IN THE EXISTING MANHOLE.
- ALL MAINLINE SANITARY SEWER AND SERVICES SHALL HAVE TRACER WIRE PER CITY SPECIFICATIONS AND DETAILS.

CITY OF LAKE ELMO'S STANDARD PLAN
NOTES FOR STORM SEWER PLANS

- ALL STORM SEWER AND ACCESSORIES MUST BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF LAKE ELMO STANDARD SPECIFICATIONS AND DETAILS.
- REINFORCED CONCRETE PIPE AND FITTINGS SHALL CONFORM WITH THE REQUIREMENTS OF M-DOT SPEC 3236 (REINFORCED CONCRETE PIPE) FOR THE TYPE, SIZE, AND STRENGTH CLASS SPECIFIED HEREIN.
- PRECAST CONCRETE MANHOLE AND CATCH BASIN SECTIONS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-477.
- A 1'-0" TO 1'-4" MANHOLE SECTION SHALL BE INSTALLED UNDER THE CONE SECTION TO ALLOW FOR HEIGHT ADJUSTMENT WHENEVER POSSIBLE.
- JOINTS OF MANHOLE RISER SECTIONS SHALL BE TONGUE AND GROOVE WITH RUBBER "O" RING JOINTS PROVIDED ON ALL STORM SEWER MANHOLES.
- RIP--RAP SHALL BE HAND-PLACED OVER GEOTEXTILE FABRIC AND CONFORM TO M-DOT SPEC. 3601, CLASS III, OR AS SPECIFIED HEREIN.
- THE GEOTEXTILE FABRIC USED UNDER RIP--RAP SHALL EXTEND 3-FT UNDER THE APRON.
- FURNISH & INSTALL TRASH GUARDS ON ALL FLARED END SECTIONS.
- ALL SILT SHALL BE CLEANED OUT FROM THE RIP - RAP AT THE END OF THE PROJECT.
- STORM SEWER STRUCTURES WITHIN 10 FT OF WATERMAIN ARE TO HAVE WATER TIGHT CONNECTIONS PER MDH REQUIREMENTS.
- ALL NEW STORM SEWER PIPE SHALL BE FLUSHED AND TELEVISED PRIOR TO SUBSTANTIAL COMPLETION -SEE SPECIFICATION SECTION 700 - CLOSEOUT REQUIREMENTS

CITY OF LAKE ELMO'S STANDARD PLAN
NOTES FOR WATERMAIN PLANS

- ALL WATERMAIN AND ACCESSORIES MUST BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF LAKE ELMO STANDARD SPECIFICATIONS AND DETAILS.
- MANIPULATION OF EXISTING VALVES SHALL BE PERFORMED ONLY BY CITY PERSONNEL.
- WATERMAIN SHALL BE DUCTILE IRON PIPE, ENCASED IN POLYETHYLENE, CLASS--52.
- ALL FITTINGS SHALL COMPLY WITH CEAM SPEC. 2611.2.A1. ALL FITTINGS SHALL BE DUCTILE IRON PIPE WITH POLYETHYLENE ENCASEMENT. ALL CONNECTIONS SHALL BE INSTALLED UTILIZING COR--BLUE NUTS & BOLTS.
- USE GATE VALVES FOR ALL APPLICATIONS UP THROUGH 12 INCHES.
- GATE VALVES SHALL BE RESILIENT WEDGE AMERICAN FLOW CONTROL SERIES 2500 OR APPROVED EQUAL. GATE VALVES MUST COMPLY WITH CEAM SPEC 2611.2.C.2.
- USE BUTTERFLY VALVES FOR ALL APPLICATIONS GREATER THAN 12 INCHES.
- BUTTERFLY VALVES SHALL BE MUELLER LINESEAL III, OR APPROVED EQUAL. BUTTERFLY VALVES SHALL COMPLY WITH CEAM SPEC. 26 11.2.CA.
- BOLTS AND NUTS ON ALL VALVES AND HYDRANTS SHALL BE STAIN LESS STEEL.
- ALL HYDRANTS SHALL BE INSTALLED 5.0 FEET BACK OF CURB.
- HYDRANTS SHALL BE WATEROUS "PACER", MODEL WB-67 OR APPROVED EQUAL, FITTED WITH FH 800 SERIES FLEX STAKE AND PAINTED RED.
- HYDRANTS SHALL HAVE TWO OUTLET NOZZLES FOR 2- $\frac{1}{2}$ " (1. D.) HOSE CONNECTIONS AND ONE 4" STORZ NOZZLE (MODEL WB-67) AND PENTAGON NUT END CAP.
- THE CURB STOP SERVICE ASSEMBLY SHALL HAVE A MINIMUM 1 - FT ADJUSTMENT RANGE AND SHALL EXTEND 6 INCHES ABOVE FINISHED GRADE FULLY EXTENDED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING WATER TO HOMES AND BUSINESSES WHOSE WATER SUPPLY IS DISRUPTED DURING THE COURSE OF THE PROJECT.



OAK-LAND MIDDLE
SCHOOL 2025-26
ADDITION AND
RENOVATION

820 Manning Ave N,
Lake Elmo, MN 55042

Independent School
District #834

1875 Greeley Street South
Stillwater, MN 55082

Wold

WOLD ARCHITECTS
AND ENGINEERS

332 Minnesota Street, Suite W2000
St. Paul, Minnesota 55101
woldae.com | 651 227 7773

Larson
Engineering, Inc.

3524 Labore Road
White Bear Lake, MN 55110
651.481.9120 (f) 651.481.9201
www.larsonengr.com

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I hereby certify that this plan, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the state of Minnesota.

Greg A. Buchal
Greg A. Buchal, P.E.

Date: 11.12.24 Reg. No.: 23793

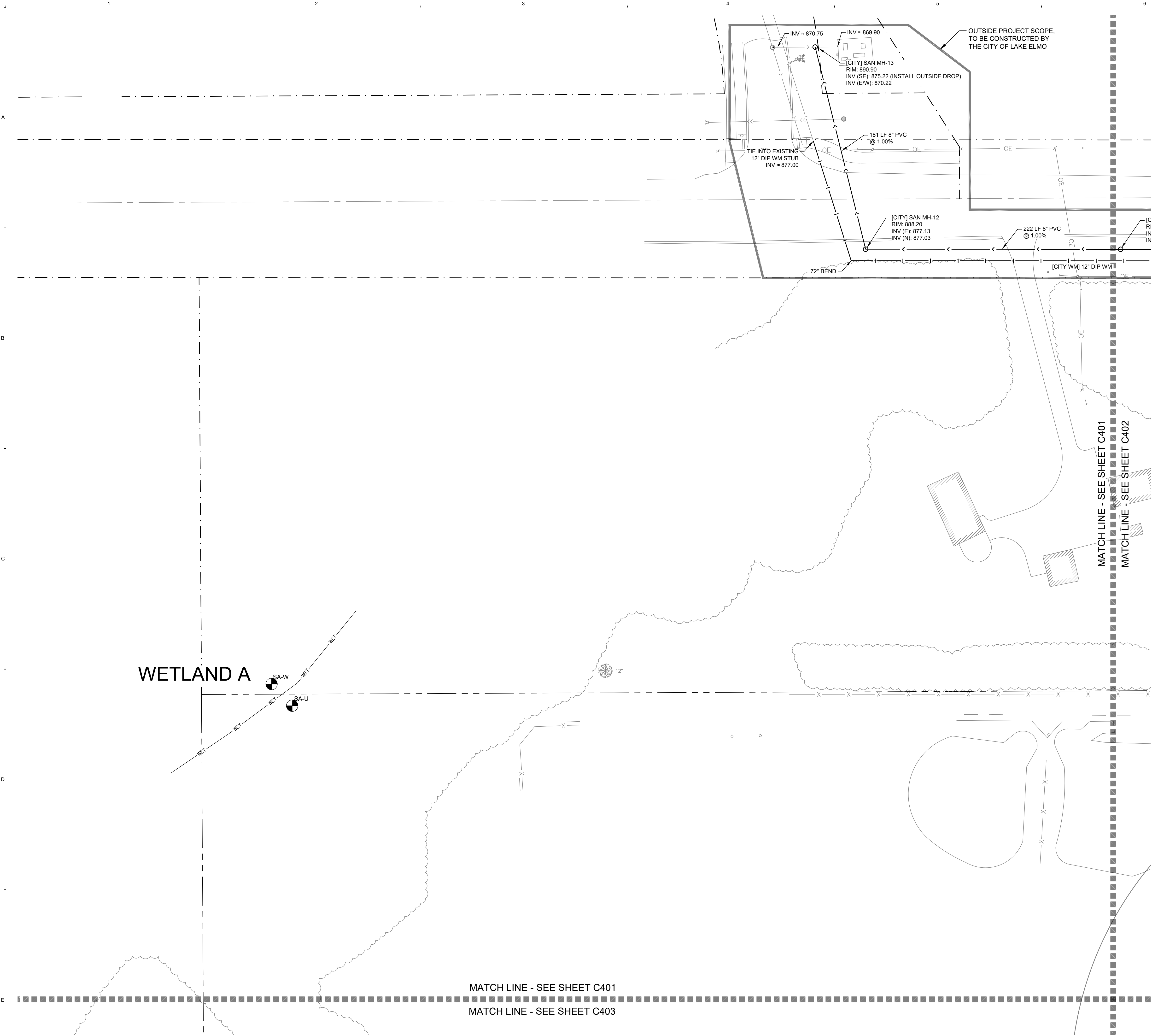
Revisions		
Description	Date	Num
ADDENDUM #2	NOVEMBER 26, 2024	1

Comm: 12246044
Date: 11-12-2024
Drawn: MTH
Check: NJN

UTILITY PLAN -
OVERALL

C400

MN



SYMBOL LEGEND

- STORM MANHOLE
- CATCH BASIN
- CURB INLET
- FLARED END
- SANITARY MANHOLE
- HYDRANT
- GATE VALVE & BOX
- WATER SHUTOFF
- POWER POLE
- LIGHT POLE
- CTV
- OE
- UE
- F0
- GAS
- GAS
- CABLE UNDERGROUND LINE
- ELECTRIC OVERHEAD LINE
- ELECTRIC UNDERGROUND LINE
- FIBER OPTIC UNDERGROUND LINE
- NATURAL GAS UNDERGROUND LINE
- SANITARY SEWER PIPE
- STORM SEWER PIPE
- TELEPHONE UNDERGROUND LINE
- WATERMAIN PIPE
- DRAINTILE PIPE
- PROPERTY LINE
- EASEMENT LINE
- RIGHT-OF-WAY LINE

KEY NOTES

- 2' X 3' CATCH BASIN, SEE DETAIL 7/C701
_A: CASTING & FRAME: NEENAH R-3067-C, TYLE L GRATE
_B: CASTING & FRAME: NEENAH R-4342
- CATCH BASIN MANHOLE, SEE DETAIL 5/C701
_A: CASTING & FRAME: NEENAH R-4342
- STORM MANHOLE, CASTING & FRAME: NEENAH R-1642, TYLE B LID, SEE DETAIL 5/C701
- INLINE DRAIN, SEE DETAIL 8/C701
- WATERMAIN VERTICAL OFFSET, SEE DETAIL 7/C702
- INSTALL SALVAGED RAIN GUARDIAN TURRET, SEE DETAIL 8/C703
- FLARED END SECTION, SEE DETAIL 4/C701
_A: TYPE 1 - HDPE
_B: TYPE 2 - RCP
- SANITARY MANHOLE, SEE DETAIL 1/C702
- STRUCTURE ADJUSTMENT, SEE DETAIL 2/C705
- HYDRANT WITH GATE VALVE, SEE DETAIL 3/C702
- GATE VALVE AND BOX, SEE DETAIL 4/C702
- TRUST BLOCKING, SEE DETAIL 6/C702

CITY OF LAKE ELMO NOTES

- See sheet C400 for City of Lake Elmo Standard Plan Notes for Sanitary Sewer Plans, Storm Sewer Plans, and Watermain Plans.

BENCHMARK

ELEVATIONS ARE BASED MN/DOT GEODETIC DATABASE STATION# 33601 (KRAFTHEFER MN 163) WHICH IS LOCATED 3 MILES SOUTH OF LAKE ELMO AND NEAR THE INTERSECTION OF INTERSTATE 94 AND COUNTY ROAD 15. ELEVATION=912.41 (NGVD 29)

OAK-LAND MIDDLE SCHOOL 2025-26 ADDITION AND RENOVATION

820 Manning Ave N,
Lake Elmo, MN 55042

Independent School District #834

1875 Greeley Street South
Stillwater, MN 55082

Wold

WOLD ARCHITECTS AND ENGINEERS

332 Minnesota Street, Suite W2000
St. Paul, Minnesota 55101
woldae.com | 651 227 7773

Larson Engineering, Inc.
3524 Labore Road
White Bear Lake, MN 55110
651.481.9120 (f) 651.481.9201
www.larsonengr.com

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I hereby certify that this plan, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the state of Minnesota.

Greg A. Buchal
Greg A. Buchal, P.E.

Date: 11.12.24 Reg. No.: 23793

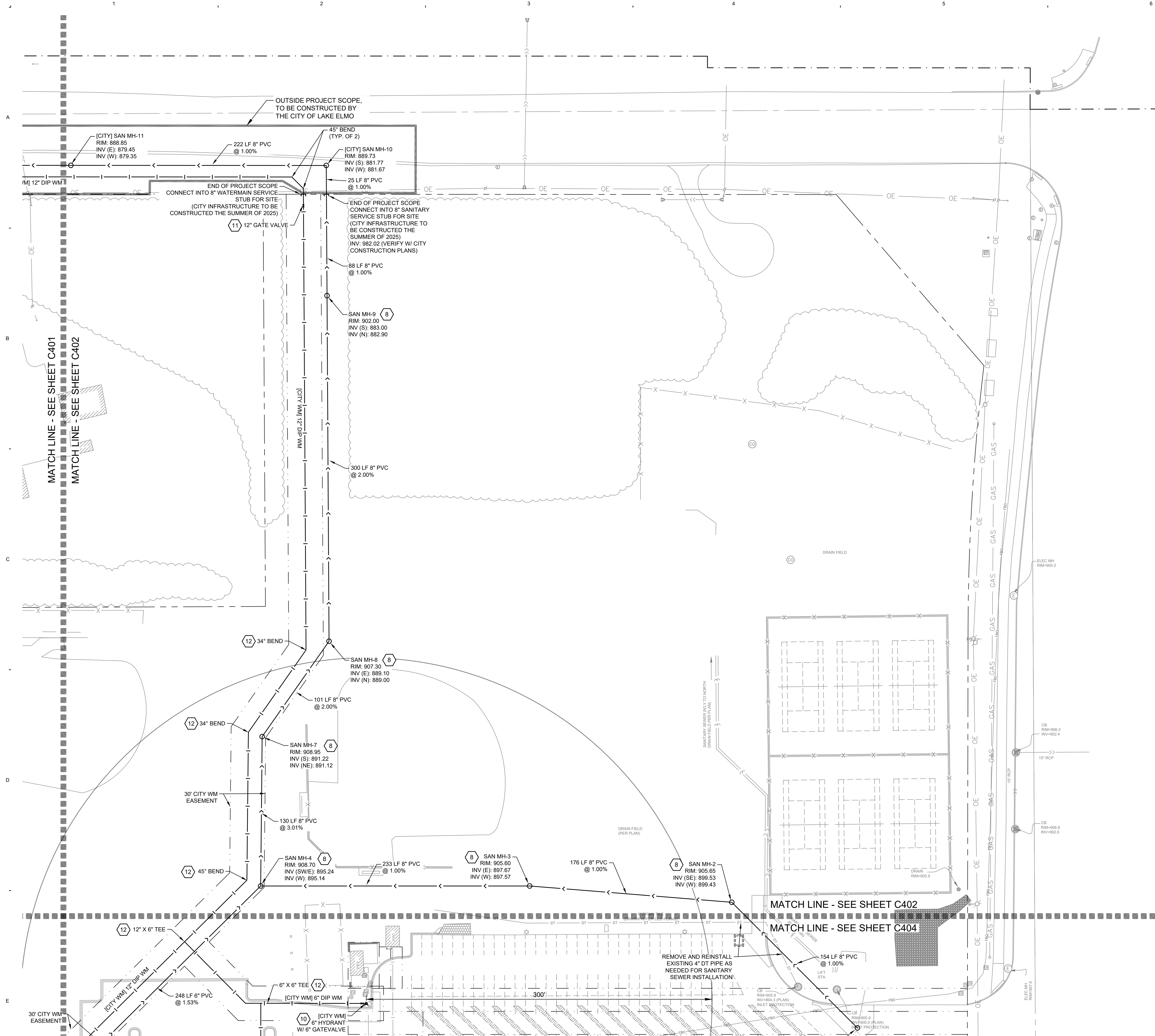
Revisions			Δ
Description	Date	Num	
ADDENDUM #2	NOVEMBER 26, 2024	1	

Comm: 12246044
Date: 11-12-2024
Drawn: MTH
Check: NJN











UTILITY PLAN - NORTHWEST

C401

MN



SYMBOL LEGEND

- | | | | |
|---|------------------|---|------------------|
|  | STORM MANHOLE |  | HYDRANT |
|  | CATCH BASIN |  | GATE VALVE & BOX |
|  | CURB INLET |  | WATER SHUTOFF |
|  | FLARED END |  | POWER POLE |
|  | SANITARY MANHOLE |  | LIGHT POLE |
-
- | | |
|--------------------------|------------------------------------|
| _____ CTV | _____ CABLE UNDERGROUND LINE |
| _____ OE | _____ ELECTRIC OVERHEAD LINE |
| _____ UE | _____ ELECTRIC UNDERGROUND LINE |
| _____ FO | _____ FIBER OPTIC UNDERGROUND LINE |
| _____ GAS _____ GAS | _____ NATURAL GAS UNDERGROUND LINE |
| _____ » _____ » | _____ SANITARY SEWER PIPE |
| _____ T _____ T | _____ STORM SEWER PIPE |
| _____ _____ | _____ TELEPHONE UNDERGROUND LINE |
| _____ BT _____ BT | _____ WATERMAIN PIPE |
| _____ - _____ - | _____ DRAIN TILE PIPE |
| _____ . _____ . | _____ PROPERTY LINE |
| _____ x _____ x | _____ EASEMENT LINE |
| _____ + _____ + | _____ RIGHT-OF-WAY LINE |

KEY NOTES

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- 5 WATERMAIN VERTICAL OFFSET, SEE DETAIL 7/C702
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- 11 GATE VALVE AND BOX, SEE DETAIL 4/C702
- 12 TRUST BLOCKING, SEE DETAIL 6/C702

CITY OF LAKE ELMO NOTES

- See sheet C400 for City of Lake Elmo Standard Plan Notes for Sanitary Sewer Plans, Storm Sewer Plans, and Watermain Plans.

BENCHMARK

ELEVATIONS ARE BASED MN/DOT GEODETIC
DATABASE STATION# 33601 (KRAFTHEFER
MN 163) WHICH IS LOCATED 3 MILES SOUTH
OF LAKE ELMO AND NEAR THE INTERSECTION
OF INTERSTATE 94 AND COUNTY ROAD 15.
ELEVATION=912.41 (NGVD 29)

OAK-LAND MIDDLE SCHOOL 2025-26 ADDITION AND RENOVATION

820 Manning Ave N,
Lake Elmo, MN 55042

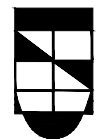
**Independent School
District #834**

1875 Greeley Street South
Stillwater, MN 55082



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Larson
Engineering, Inc.

3524 Labore Road
White Bear Lake, MN 55110
651.481.9120 (f) 651.481.920
www.larsonengr.com

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I hereby certify that this plan, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the state of Minnesota.

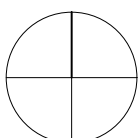
Greg A Buchal
Greg A. Buchal, P.E.

Date: 11.12.24 Reg. No.: 23793

[illegible]Comm: 12246044Date: 11-12-2024

Drawn: MTH

Check: **NJN**



UTILITY PLAN - NORTHEAST

C402

Page 13 of 15

MN

MATCH LINE - SEE SHEET C401

MATCH LINE - SEE SHEET C403

SYMBOL LEGEND

- STORM MANHOLE

○

CATCH BASIN

□

CURB INLET

▲

FLARED END

○

SANITARY MANHOLE
- ⊗

HYDRANT

⊗

GATE VALVE & BOX

⊗

WATER SHUTOFF

○

POWER POLE

○

LIGHT POLE
- CTV

OE

UE

F0

GAS

GAS
- CABLE UNDERGROUND LINE

ELECTRIC OVERHEAD LINE

ELECTRIC UNDERGROUND LINE

FIBER OPTIC UNDERGROUND LINE

NATURAL GAS UNDERGROUND LINE

SANITARY SEWER PIPE

STORM SEWER PIPE

TELEPHONE UNDERGROUND LINE

WATERMAIN PIPE

DRAINTILE PIPE

PROPERTY LINE

EASEMENT LINE

RIGHT-OF-WAY LINE

KEY NOTES

- 1

2' X 3' CATCH BASIN , SEE DETAIL 7/C701
_A: CASTING & FRAME: NEENAH R-3067-C, TYLE L GRATE
_B: CASTING & FRAME: NEENAH R-4342
- 2

CATCH BASIN MANHOLE, SEE DETAIL 5/C701
_A: CASTING & FRAME: NEENAH R-4342
- 3

STORM MANHOLE, CASTING & FRAME: NEENAH R-1642, TYLE B LID, SEE DETAIL 5/C701
- 4

INLINE DRAIN, SEE DETAIL 8/C701
- 5

WATERMAIN VERTICAL OFFSET, SEE DETAIL 7/C702
- 6

INSTALL SALVAGED RAIN GUARDIAN TURRET, SEE DETAIL 8/C703
- 7

FLARED END SECTION, SEE DETAIL 4/C701
_A: TYPE 1 - HDPE
_B: TYPE 2 - RCP
- 8

SANITARY MANHOLE, SEE DETAIL 1/C702
- 9

STRUCTURE ADJUSTMENT, SEE DETAIL 2/C705
- 10

HYDRANT WITH GATE VALVE, SEE DETAIL 3/C702
- 11

GATE VALVE AND BOX, SEE DETAIL 4/C702
- 12

TRUST BLOCKING, SEE DETAIL 6/C702

CITY OF LAKE ELMO NOTES

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OAK-LAND MIDDLE SCHOOL 2025-26 ADDITION AND RENOVATION

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I hereby certify that this plan, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the state of Minnesota.

Greg A. Buchal, P.E.

Date: 11.12.24 Reg. No.: 23793

Revisions			Δ
Description	Date	Num	
ADDENDUM #2	NOVEMBER 26, 2024	1	

Comm: 12246044

Date: 11.12.2024

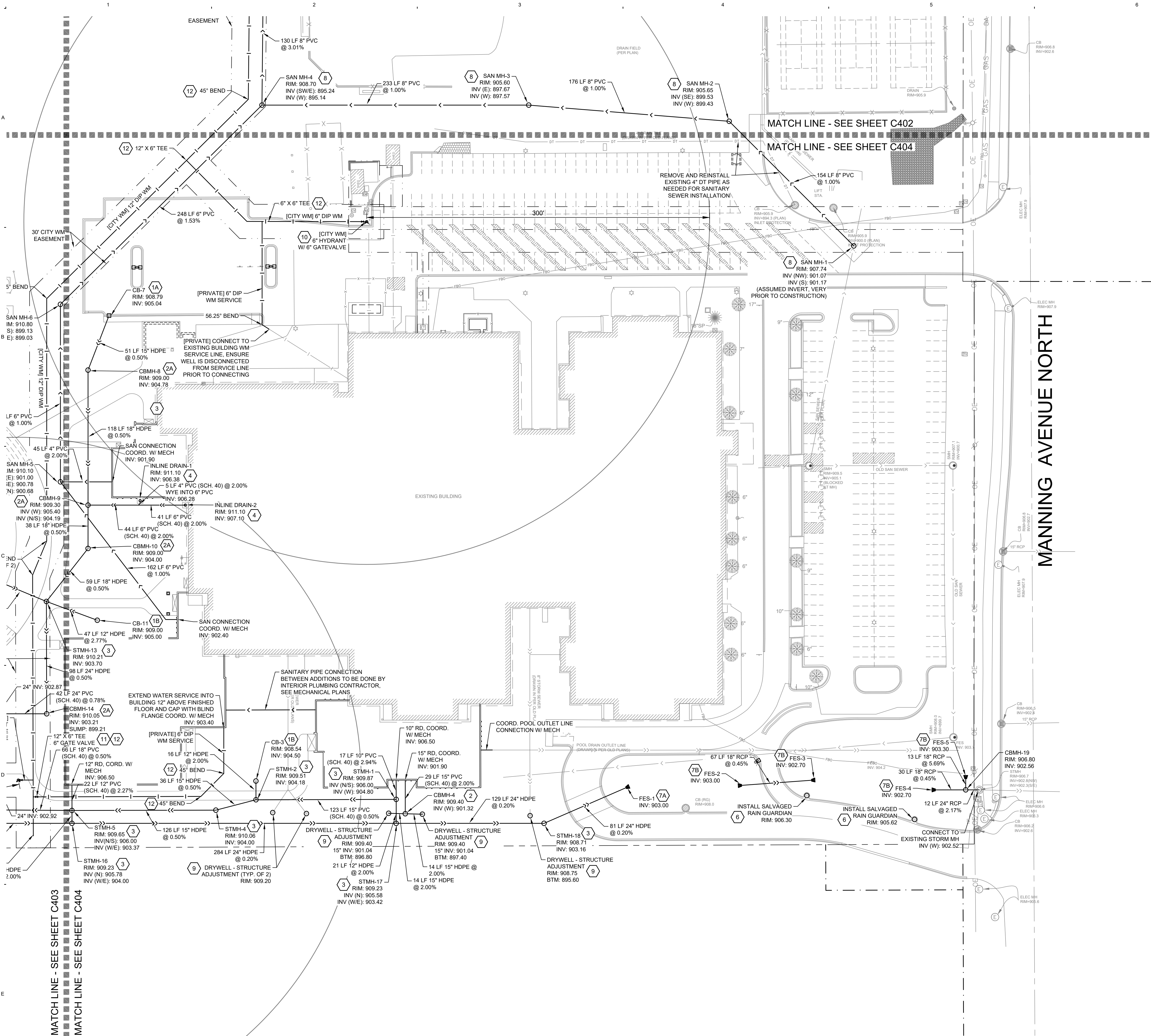
Drawn: MTH

Check: NJN

UTILITY PLAN - SOUTHWEST

C403

MN



SYMBOL LEGEND

- STORM MANHOLE
- CATCH BASIN
- CURB INLET
- FLARED END
- SANITARY MANHOLE
- HYDRANT
- GATE VALVE & BOX
- WATER SHUTOFF
- POWER POLE
- LIGHT POLE
- CTV
- OE
- UE
- F0
- GAS
- GAS
- CABLE UNDERGROUND LINE
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- NATURAL GAS UNDERGROUND LINE
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- STORM SEWER PIPE
- TELEPHONE UNDERGROUND LINE
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- DRAIN TILE PIPE
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KEY NOTES

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- INLINE DRAIN, SEE DETAIL 8/C701
- WATERMAIN VERTICAL OFFSET, SEE DETAIL 7/C702
- INSTALL SALVAGED RAIN GUARDIAN TURRET, SEE DETAIL 8/C703
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- HYDRANT WITH GATE VALVE, SEE DETAIL 3/C702
- GATE VALVE AND BOX, SEE DETAIL 4/C702
- TRUST BLOCKING, SEE DETAIL 6/C702

CITY OF LAKE ELMO NOTES

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OAK-LAND MIDDLE SCHOOL 2025-26 ADDITION AND RENOVATION

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Greg A. Buchal, P.E.
Date: 11.12.24 Reg. No.: 23793

Revisions		
Description	Date	Num
ADDENDUM #2	NOVEMBER 26, 2024	1

Comm: 12246044
Date: 11.12.2024
Drawn: MTH
Check: NJN

UTILITY PLAN - SOUTHEAST

C404



Attachment C

Oak-Land Middle School 2025-26 Addition and Renovation

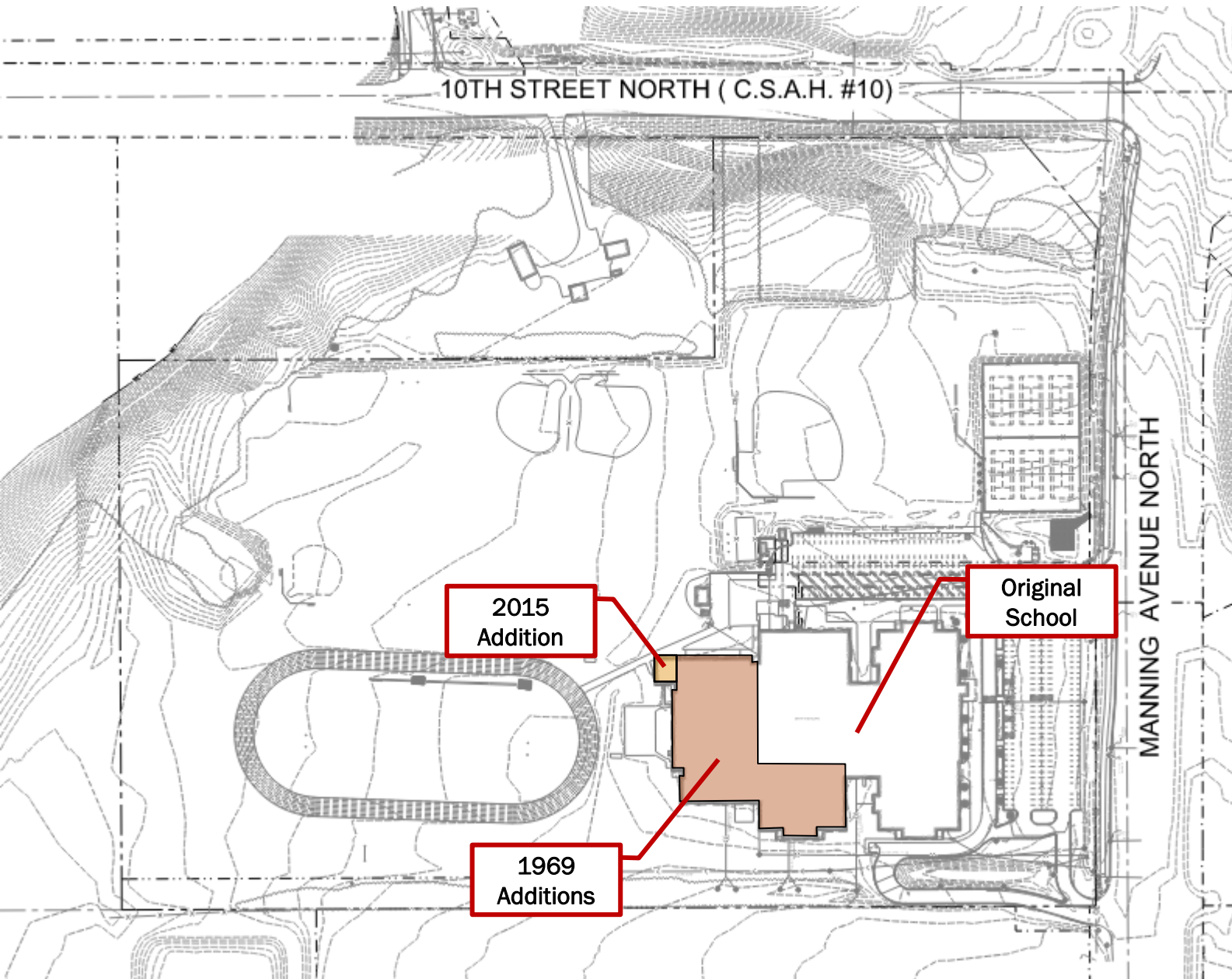
INDEPENDENT SCHOOL DISTRICT #834

820 MANNING AVENUE NORTH

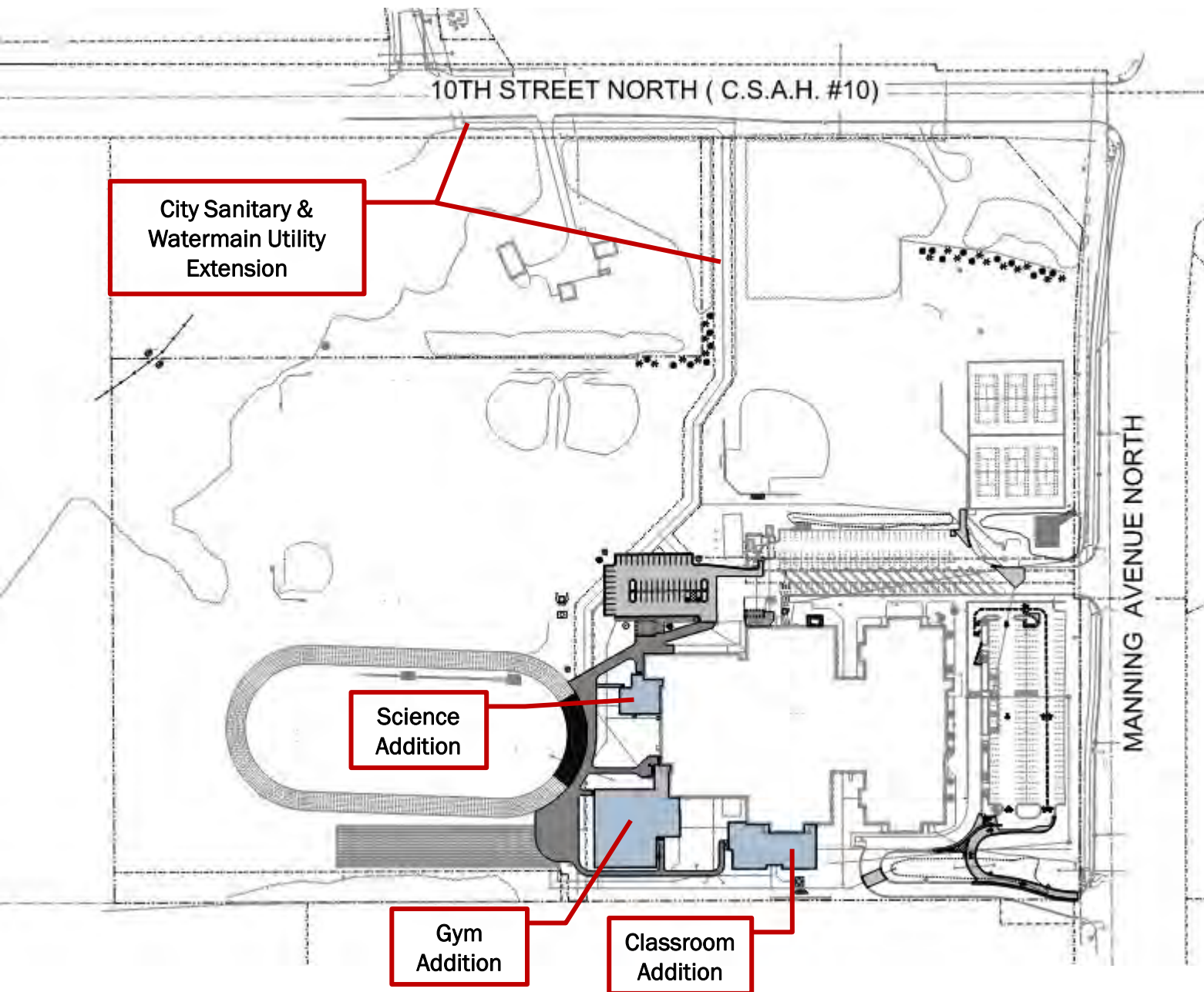
LAKE ELMO, MN 55042

SITE HISTORY

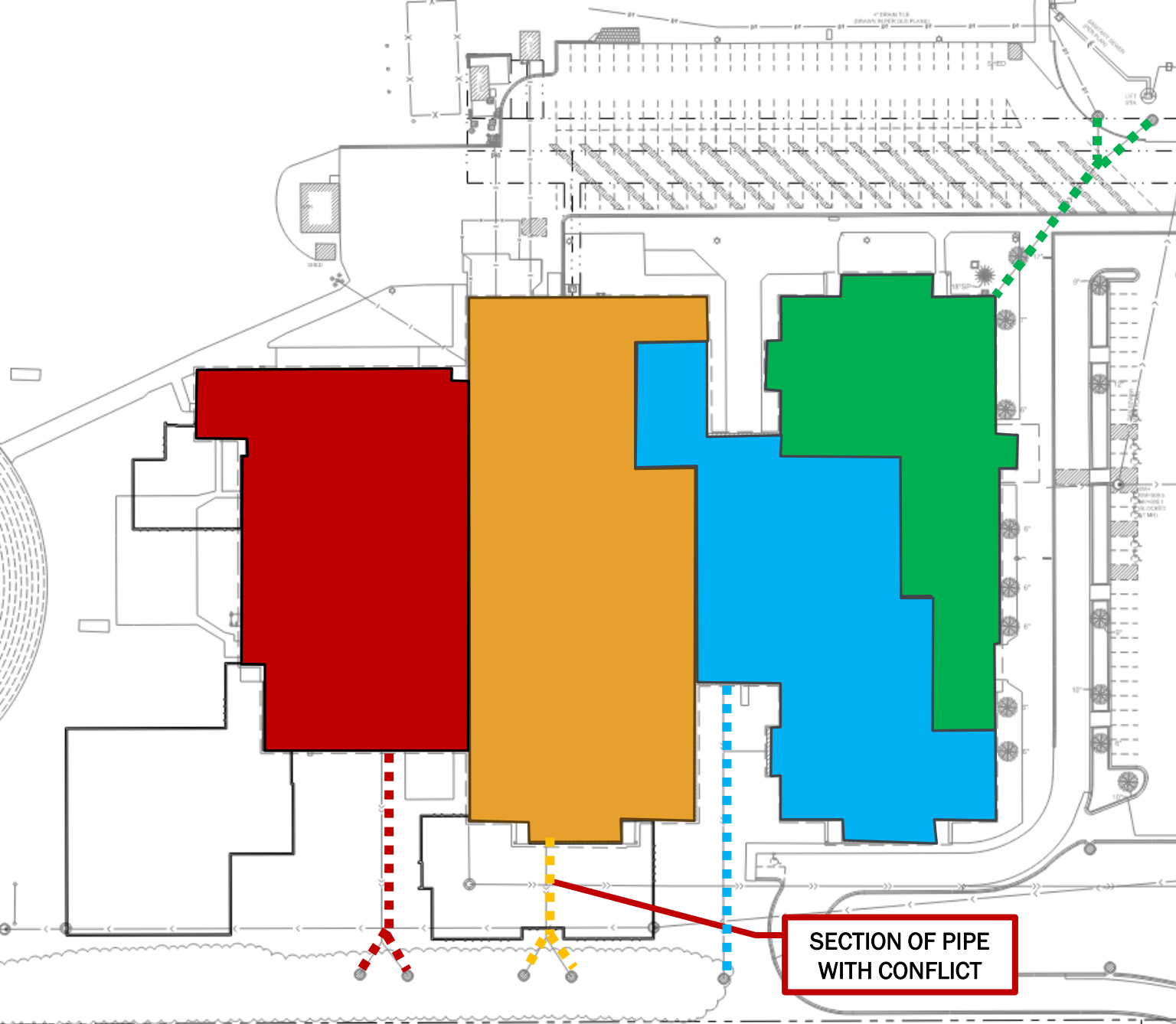
- 1966 THE ORIGINAL BUILDING WAS CONSTRUCTED
- 1969 THE WEST AND SOUTH ADDITIONS WERE CONSTRUCTED
- 2015 NORTHWESTERN CLASSROOM ADDITION



2025-26 PROPOSED ADDITION AND RENOVATION IMPROVEMNETS



- ADDITIONAL CLASSROOM WING
- SCIENCE WING
- NEW GYMNASIUM/FIELD HOUSE
- RENOVATION OF THE OLD GYMNASIUM INTO A MEDIA CENTER
- BRINGING CITY UTILITIES TO THE SITE (SANITARY & WATER)
- PROVIDING FIRE ACCESS LOOP AROUND THE SITE TO PROVIDE BETTER COVERAGE
- RE-WORKING ON-SITE QUEUING AND TRAFFIC FLOW TO REDUCE CONGESTION ON MANNING AVENUE NORTH
- PROVIDING UNDERGROUND INFILTRATION SYSTEM TO TREAT NEW ADDITIONS & PARKING LOT ALONG WITH SOME OF THE EXISTING SITE.



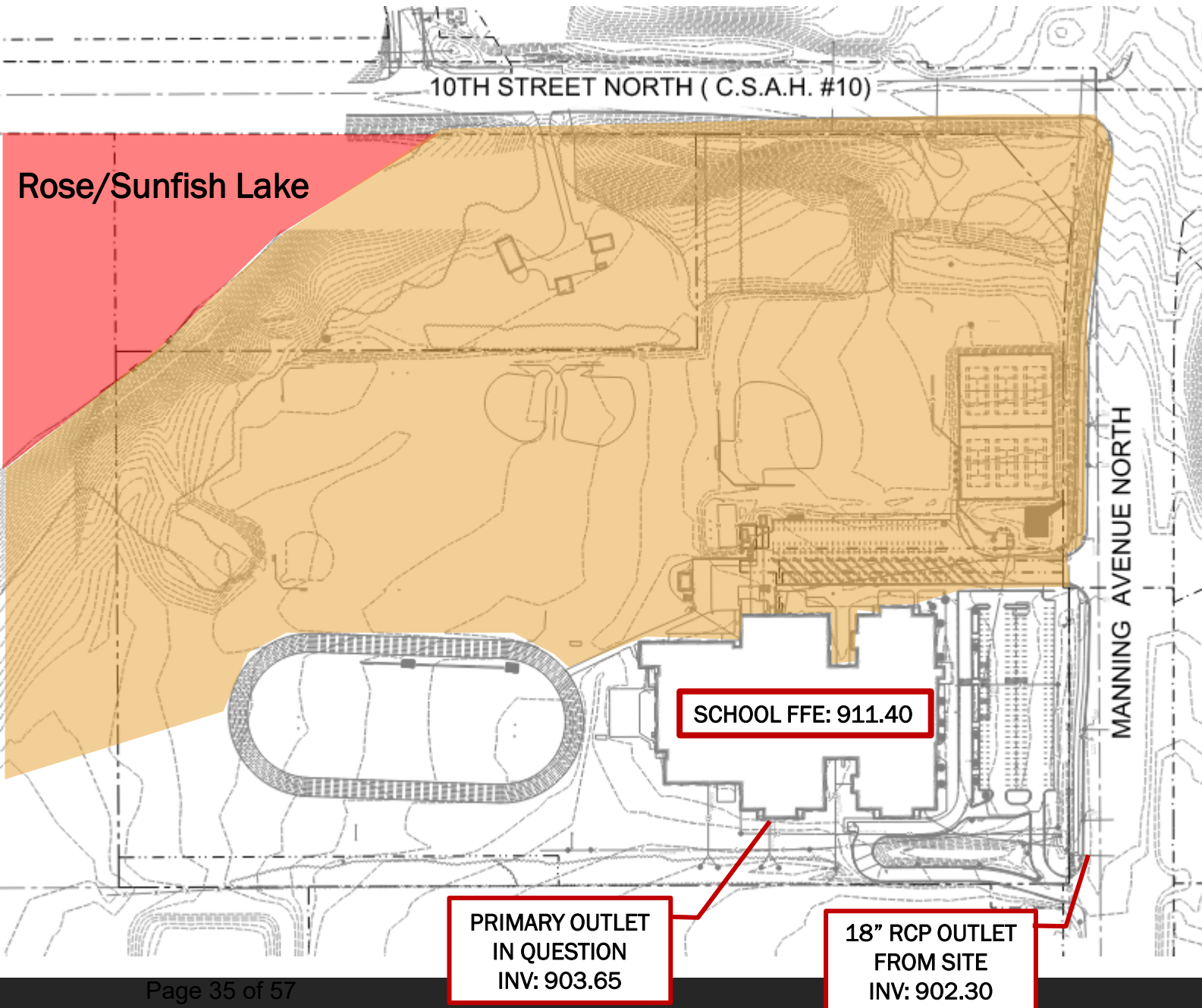
EXISTING ROOF DRAINAGE AND SCHOOL ADDITION CONTRUCTION IMPLICATIONS

- ALL EXISTING ROOF LEADERS DRAIN TO A SERIES OF DRYWELLS THROUGHOUT THE SITE
- THE ADDITION ON THE SOUTH OF THE BUILDING IS BEING PLACED OVER SOME OF THE EXTERIOR PIPING.
- THE ROOF DRAIN IN QUESTION IS A 8 INCH DIAMETER VITRIFIED CLAY PIPE MATERIAL. THIS IS NOT A BUILDING CODE APPROVE MATERIAL.
- THIS 8 INCH ROOF LEADER CURRENTLY SERVICES ABOUT 44,000 SF OF ROOF WHICH IS DEPICTED IN ORANGE
- CURRENTLY BUILDING CODE STANDARDS WOULD REQUIRE THIS PIPE TO BE A PVC PIPE WITH A DIAMETER OF 15 INCHES AND FOR THE PROPECT TO BRING UP TO CODE ALL DOWNSTREAM FACILITIES

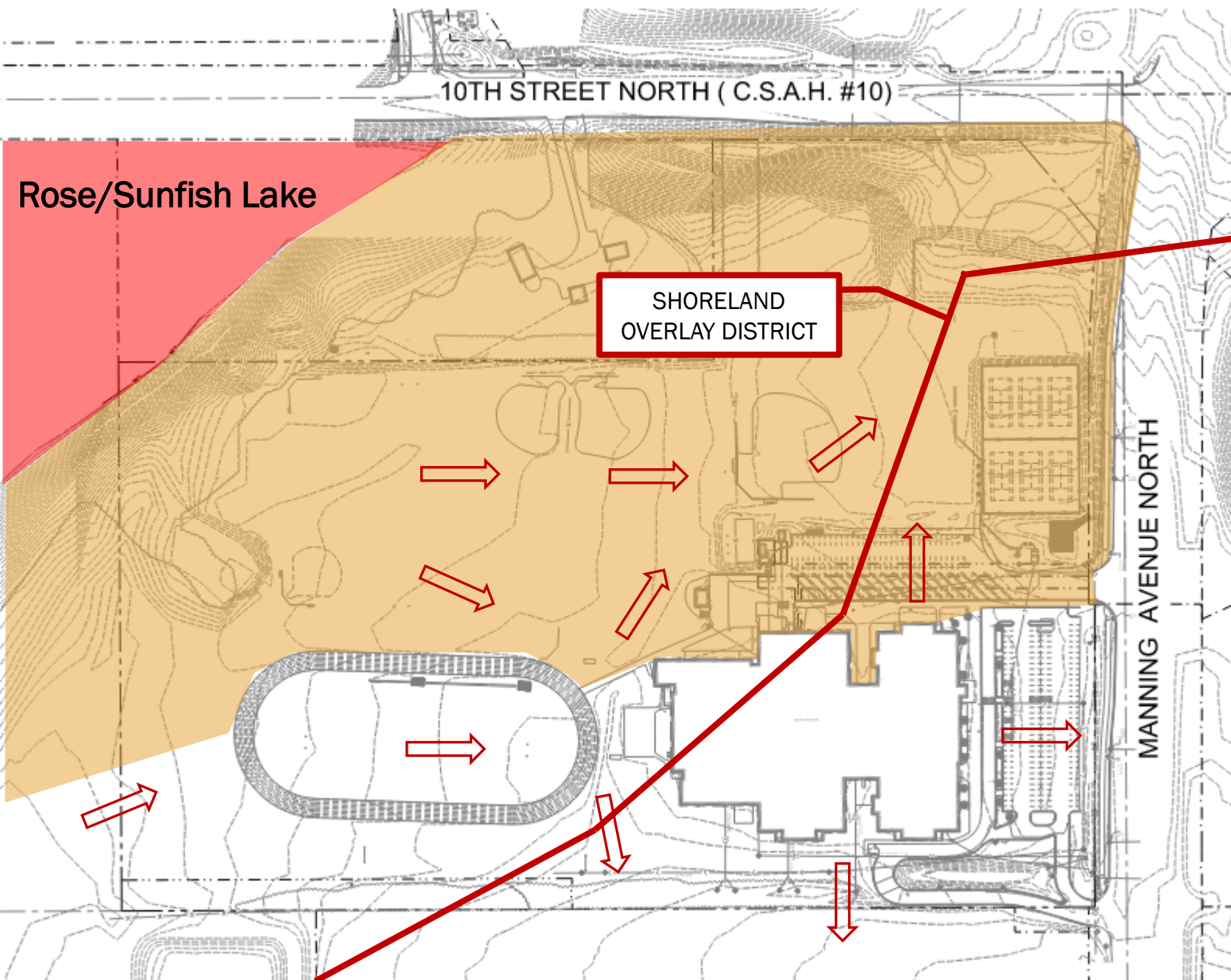
AFFECTED PLUMBING CODE SECTIONS

- SECTION 1101.4.4: UNDERGROUND BUILDING STORM DRAINS SHALL COMPLY WITH THE APPLICABLE STANDARDS REFERENCED IN TABLE 701.2 FOR UNDERGROUND DRAIN, WASTE, AND VENT PIPE.
- SECTION 310.5: [N]O FITTING, FIXTURE AND PIPING CONNECTION, APPLIANCE, DEVICE, OR METHOD OF INSTALLATION THAT OBSTRUCTS OR RETARDS THE FLOW OF WATER, WASTES, SEWAGE, OR AIR IN THE DRAINAGE OR VENTING SYSTEMS . . . SHALL BE USED UNLESS IT IS INDICATED AS ACCEPTABLE IN THIS CODE OR IS APPROVED IN ACCORDANCE WITH SECTION 301.2 OF THIS CODE.”
 - FINAL INTERPRETATION PB01060: NO, A DRAINAGE SYSTEM IS NOT SURCHARGED BY DESIGN WHEN THE INLET PIPE ENTERS A STORMWATER RETENTION POND ABOVE THE LEVEL ATTAINED BY THE WATER QUALITY VOLUME, WHICH EQUALS THE MPCA REQUIRED POND LEVEL OF 1800 CUBIC FEET PER ACRE OF DRAINAGE AREA PLUS THE VOLUME OF 1.0 INCH OF RUNOFF FROM THE NET INCREASE IN IMPERVIOUS SURFACES

PRIMARY EXTERIOR ISSUES



- EXTERIOR ELEVATION THE ROOF LEADER LEAVES THE BUILDING
 - BUILDING FINISH FLOOR ELEVATION = 911.40 (100' 00")
 - OUTLET ELEVATION = 903.65 (92' 3")
 - 7' 9" FROM FFE TO INVERT OF ROOF LEADER
- EXISTING STORMWATER INFRASTRUCTURE WAS DESIGNED PRIOR TO RECENT SUCHARGING CONCERNS
 - STANDARD DESIGN OF DRY WELLS ONLY HAVE TWO WAYS OF OUTLETTING
 - OPTION 1: EXFILTRATION WHICH OCCURS AT THE BOTTOM AND SIDES OF THE DRYWELL
 - OPTION 2: OVERFLOWING VIA THE RIM OF THE DRYWELL STRUCTURE THIS OCCURS WHEN THE DRYWELL IS UNABLE TO EXFILTRATE WATER AT THE RATE IT RECEIVES WATER.
 - DRYWELLS WERE NEVER DESIGNED TO PROVIDE WATER QUALITY VOLUME.
 - CURRENT DRYWELL SERVICING THE ROOF LEADER IN QUESTION PROVIDES ROUGHLY 200 CF OF WATER QUALITY VOLUME (WQV) WHICH WOULD BE SUFFICIENT FOR A ROOF WITH AN AREA 2,400 SF
- LACK OF LOCATIONS ON SITE WITH LOW ELEVATION.
 - ROSE/SUNFISH LAKE WATERSHED: CAN'T INCREASE RATES OR VOLUME TO THE LAKE IN ANY STORM EVENT.
 - LOWEST GRADE AT SOUTH PROPERTY LINE = 906.00
 - LOW STORM INVERT LEAVING THE SITE = 902.30
- POSSIBLE OUTLET LOCATION IS JUST OVER 500 FEET FROM EXISTING ROOF LEADER CONNECTION POINT

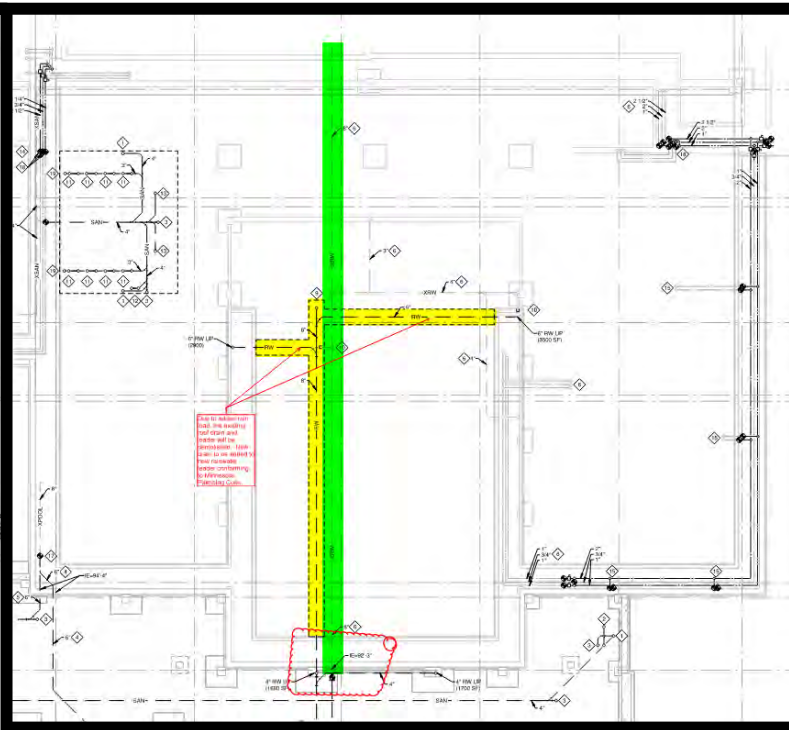
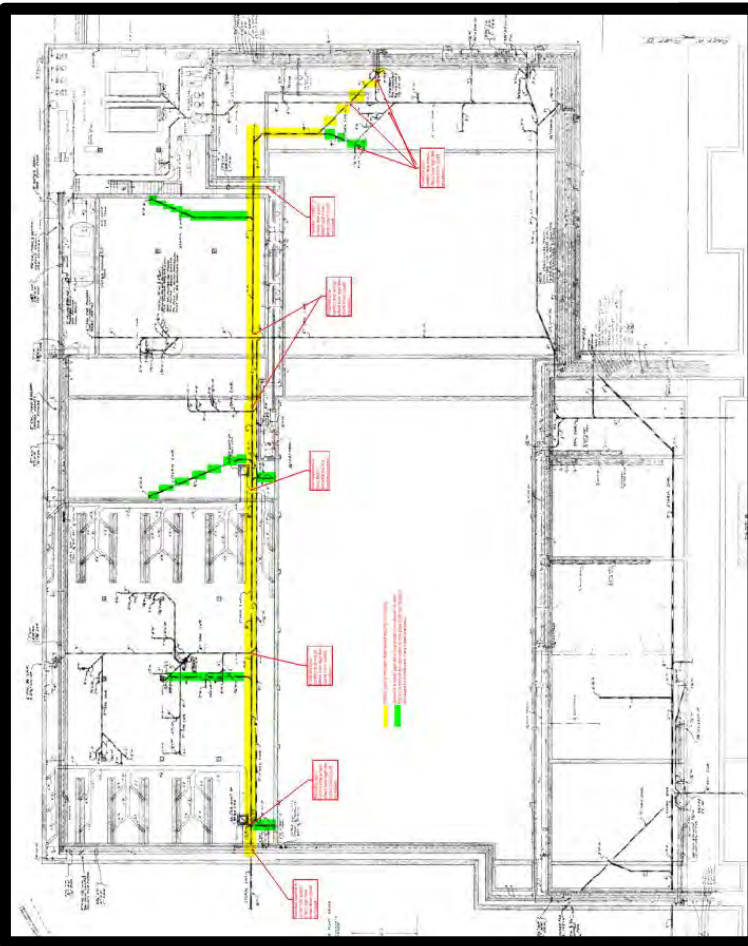


PRIMARY EXTERIOR ISSUES (CONTINUED)

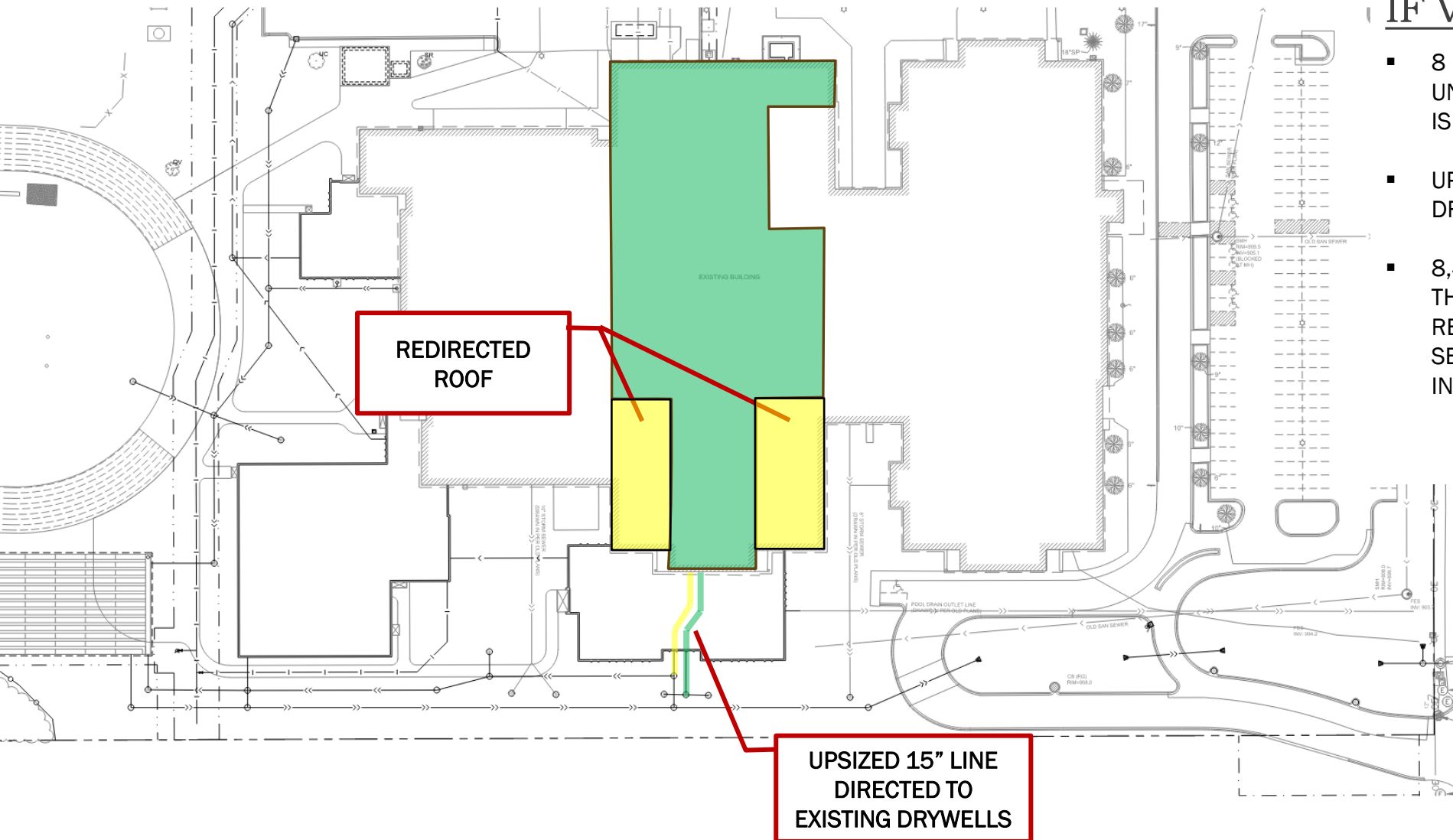
- ROSE/SUNFISH LAKE - CURRENTLY EXPERIENCES PERIODIC FLOODING THROUGHOUT THE SPRING AND SUMMER AND IS REGULARLY PUMPED. VALLEY BRANCH WATERSHED DISTRICT IS THE AUTHORITY HAVING JURISDICTION (AHJ) PROHIBITS THE REDIRECTION OF STORMWATER RUNOFF TO THE LAKE
- SHORELAND DISTRICT - THE CITY OF LAKE ELMO HAS A SHORELAND OVERLAY DISTRICT FOR ROSE/SUNFISH LAKE. THIS LIMITS THE AMOUNT OF HARD SURFACE THAT CAN BE CREATED WITHIN THE OVERLAY DISTRICT. 15% OF THE OVERLAY DISTRICT CAN BE HARD SURFACE.
- EXISTING DRAINAGE PATTERNS - CURRENTLY DRAINS THE DRAIN FROM WEST TO EAST DIRECTING THE MAJORITY OF RUNOFF TOWARDS THE SCHOOL.
- CITY/COUNTY INFRASTRUCTURE - THE ONLY CITY/COUNTY INFRASTRUCTURE CURRENTLY ADJACENT TO THE SITE IS STORM SEWER AND IT WAS ONLY DESIGNED TO SERVICE THE DITCH INFRASTRUCTURE ADJACENT TO THE COUNTY ROADWAYS. THIS MEANS THE STORM SEWER INFRASTRUCTURE IS ALL RELATIVELY SHALLOW ADJACENT TO THE SCHOOL SITE.
- PROPOSED INFRASTRUCTURE - THERE IS A LARGE AMOUNT OF STORMWATER INFRASTRUCTURE BEING INSTALLED ON THE SOUTH END OF THE PROJECT TO TREAT/DIRECT THE RUNOFF FROM THE NEW IMPROVEMENTS.

PRIMARY INTERIOR ISSUES

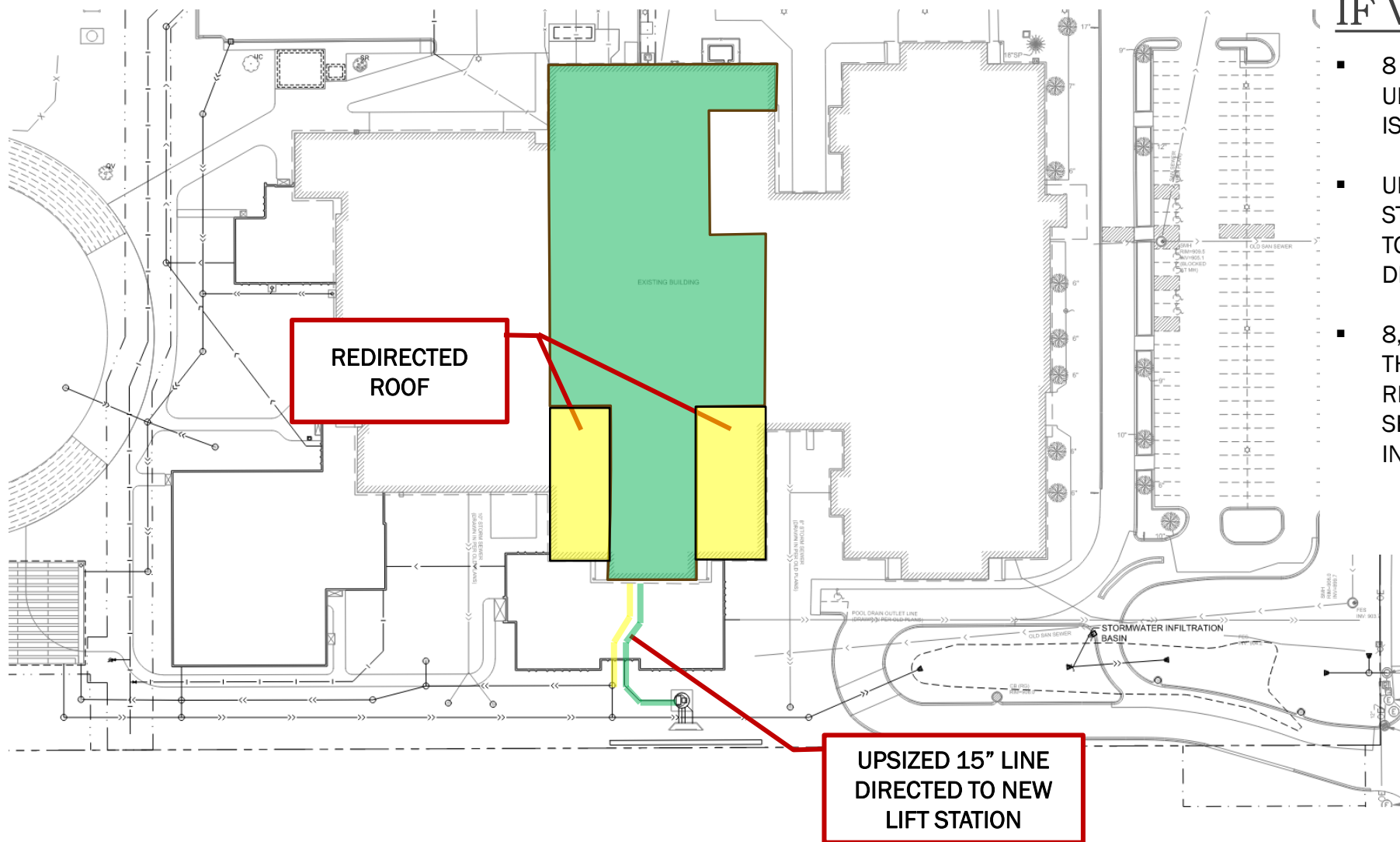
- 8" PIPE RUNS THE WHOLE LENGTH OF THE BUILDING FROM NORTH END TO THE SOUTH END.
- THERE ARE LARGE NUMBER OF KNOWN CONFLICTS WITH RAISING THE STORM PIPE SUCH AS CONDUITS, SANITARY PIPING, OR EXISTING FOOTINGS.
- NUMEROUS BRANCH STORM DRAINS THAT ENTER VARIOUS CLASS ROOM OUTSIDE THE SCOPE OF THE PROJECT. THESE SMALLER OFF SHOOTS WERE NOT DESIGNED TO THE CURRENT PLUMBING CODES FOR RAINFALL RATES.
 - ASSUMING THESE COULD BE WORKED AROUND, THE MOST THE MAIN NORTH/SOUTH LINE COULD BE RAISED IS 36 INCHES
- THE CONSTRUCTION UNKNOWNNS THAT WOULD COME UP IF THE PROJECT TRIED TO RAISE THE ROOF LEADER.



PROPOSED CONDITIONS IF VARAINCE IS APPROVED



- 8 INCH VCP IS REVISED TO A 15 INCH PVC UNDER NEW ADDITION, DOWN STREAM PIPING IS ADJUSTED ACCORDNGLY
- UPSIZED PIPE CONNECTS BACK INTO EXISTING DRYWELLS
- 8,400 SF OF EXISTING ROOF THAT GOES TO THE EXISTING 8 INCH LINE WILL BE REDIRECTED TO A NEW ROOF LEADER SERVICED BY A NEW UNDERGROUND INFILTRATION SYSTEM.



PROPOSED CONDITIONS IF VARAINCE IS DENIED

- 8 INCH VCP IS REVISED TO A 15 INCH PVC UNDER NEW ADDITION, DOWN STREAM PIPING IS ADJUSTED ACCORDNGLY
- UPSIZED PIPE CONNECTS INTO A NEW LIFT STATION STRUCTURE DESIGNED TO BE ABLE TO PUMP 2,900 GALLONS PER MINUTE AND DISCHARGES ON GRADE.
- 8,400 SF OF EXISTING ROOF THAT GOES TO THE EXISTING 8 INCH LINE WILL BE REDIRECTED TO A NEW ROOF LEADER SERVICED BY A NEW UNDERGROUND INFILTRATION SYSTEM.

CONCLUSION

BECAUSE THE ROOF WATER FLOWING TO THE DRY WELL IS AN EXISTING CONDITION, AND THIS CONDITION IS BEING IMPACTED ONLY DUE TO THE PROPOSED BUILDING CLASSROOM ADDITION LOCATION, TO AVOID THE HARDSHIPS RELATED TO CONSTRUCTING AND MAINTAINING A LIFT STATION FOR THIS STORM WATER, WE ARE REQUESTING A VARIANCE BE GRANTED TO THE RULE FOR SURCHARGING PIPES FOR THIS PARTICULAR SITUATION WITH THE DRYWELL WHILE PROVIDING A REDUCTION IN THE ROOF AREA TO THE EXISTING DRYWELL TO HELP REDUCE POTENTIAL SURCHARGING. WE ARE NOT AWARE OF ANYONE THAT WOULD BE ADVERSELY IMPACTED BY THIS VARIANCE.

Questions?

Thank You

January 8, 2025

Submitted via Email: lyndy.logan@state.mn.us

Ms. Lyndy Logan
Minnesota Department of Labor and Industry.
443 Lafayette Road North
St. Paul, Minnesota 55155

Re: Request for Minnesota Plumbing Code Variance
Xcel Energy St. Paul Service Center
TKDA Project No. 0014963.067

Dear Ms. Logan:

TKDA, on behalf of Xcel Energy, is requesting a variance to the Minnesota Plumbing Code for the proposed St. Paul Service Center. This letter is a petition for a variance and contains the information below as required by 2024 Minnesota Statutes 14.056.

- Mr. Leigh Stoakes, Xcel Energy Senior Project Engineer, is the owner requesting the variance. Mr. Stoakes' address is:

Leigh Stoakes
414 Nicollet Mall, Mezzanine
Minneapolis, MN 55401

- TKDA, on behalf of, Xcel Energy is requesting a variance to the 2020 Minnesota Plumbing Code, Section 310.5, Obstruction of Flow. In the case of the site stormwater, the code applies to stormwater surcharging storm sewer pipe. The original design of the storm sewer pipe and stormwater filtration chamber system for this project met the code. No water surcharged any storm pipes for the water quality event (2-inch rainfall). However, during construction of the stormwater chambers the contractor encountered an unforeseen and unexpected condition. The groundwater level is at an elevation higher than expected. The ground water elevation is 3.5 feet above the bottom of the chamber system. It is not feasible to construction the filtration chamber system below the groundwater level. Therefore, the chamber system needs to be revised by raising it above the groundwater level, a vertical distance of 3.75 feet. This revision will result in temporary surcharging pipe upstream of the chamber system to structure CB 166 (reference attached Pipe Surge Exhibit) during the water quality event (2-inch rainfall).
- This variance is justified because the surcharged pipe is temporary. The stormwater filtration chamber system will draw down in 48 hours, through filtration, and drain the water in the surcharged pipe. The surcharging is limited to approximately 415 feet of pipes directly upstream of the chamber system. No water will surcharge any pipes at the proposed building in any rain event up to and including the 100-year event. The surcharging is a temporary condition. However, the request for a variance is permanent.
- Xcel Energy has no knowledge of previously requesting a variance from the Department of Labor and Industry (DLI).
- Per discussions with Mike Westemeir at the DLI, he is not aware of any previously approved variances for similar cases.
- No other persons or facilities will be adversely affected if this variance is approved.

Sincerely,



Brent D. Paulsen, PE
Civil Group Manager, Facilities Division
TKDA

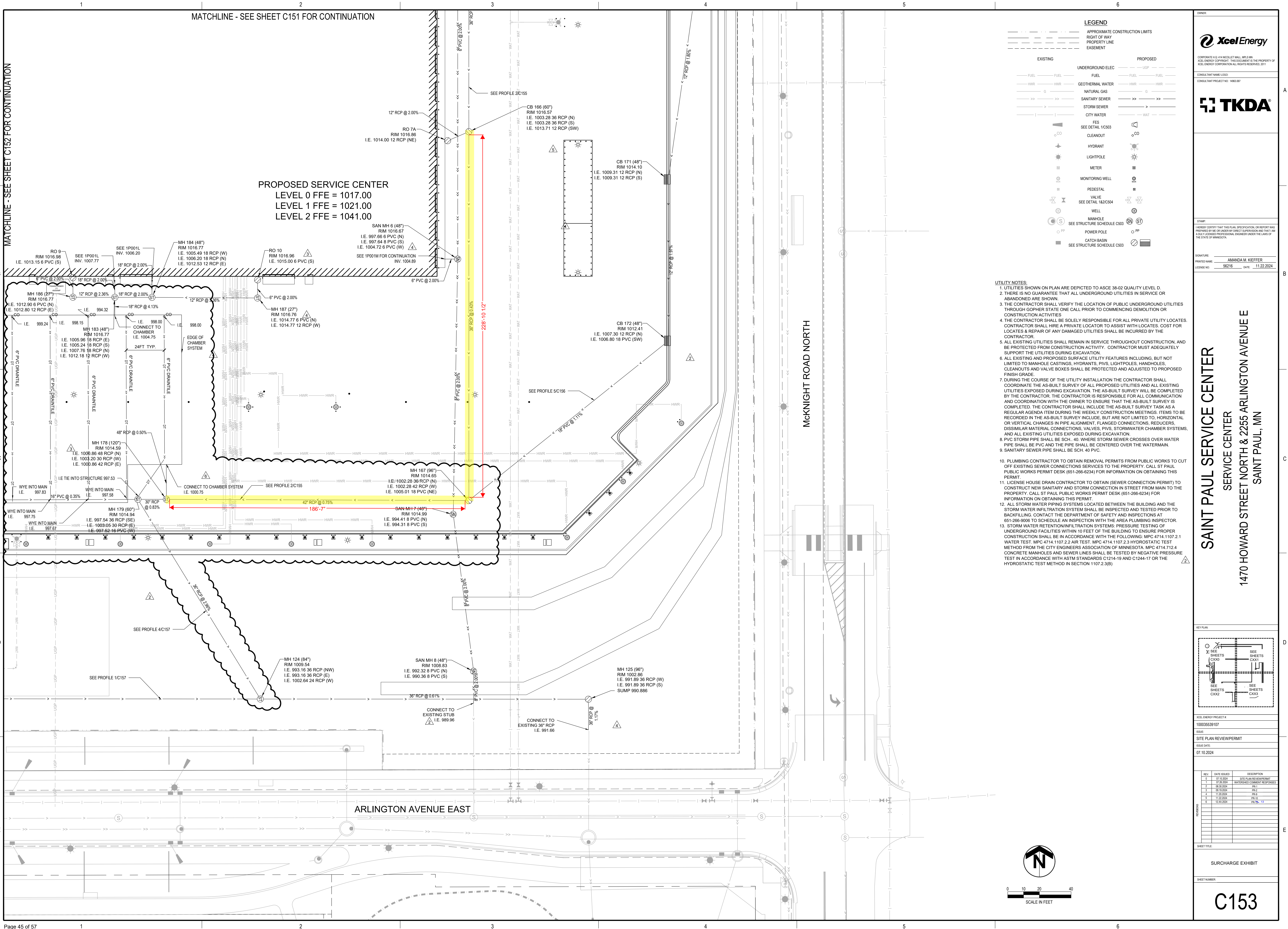


Leigh W. Stoakes, PE
Senior Project Engineer
Xcel Energy

Attachments: Pipe Surcharge Exhibit

c: Craig Coil – TKDA
Andy Koshire – TKDA

BDP:LS:slp



Xcel Saint Paul Service Center – Variance Petition

Amanda Kieffer, PE, TKDA Civil Engineer of Record

Leigh Stoakes, Xcel Project Manager

Bruce Baillargeon, McGough Project Manager



Stormwater Filtration System



- Three Stormwater filtration systems on site. Two at grade ponds on the west side of the site, higher elevation. One underground stormwater chamber system.
- Filtration on site due to soil types and fueling on site.
- Fueling is upstream of the Chamber system. System includes a liner.



Variance Petition – Chamber System

- 2020 Minnesota Plumbing Code, Section 310.5, Obstruction of Flow.
- Key Points
 - The original design of the storm sewer pipe and stormwater filtration chamber system for this project met the code for the Water Quality Event (all 3 definitions further described in these slides).
 - During construction of the stormwater chambers the contractor encountered an unforeseen and unexpected condition. The groundwater level is at an elevation higher than expected. The ground water elevation is 3.5 feet above the bottom of the chamber system.
 - Therefore, the chamber system needs to be revised by raising it above the groundwater level, a vertical distance of 3.75 feet.
 - This revision will result in temporary surcharging pipe upstream of the chamber system.



Variance Justification

- The surcharged pipe is temporary. The stormwater filtration chamber system will draw down in 48 hours, through filtration, and drain the water in the surcharged pipe. The surcharging is limited to pipes directly upstream of the chamber system.
- No water will surcharge any pipes at the proposed building in any rain event up to and including the 100-year event.
- The surcharging is a temporary condition. However, the request for a variance is permanent.
- Alternatives for construction were considered with the Geotechnical Engineer to keep the system at its current elevation with the ground water, but it was determined to be infeasible due to:
 - The amount and flow of the ground water.
 - The clay soils and limited pumping options.
 - Soil Instability.
 - Constructability and durability of the system liner within groundwater.
 - Buoyancy concerns during construction.

DOLI Final Interpretation – Issued Nov. 6, 2023

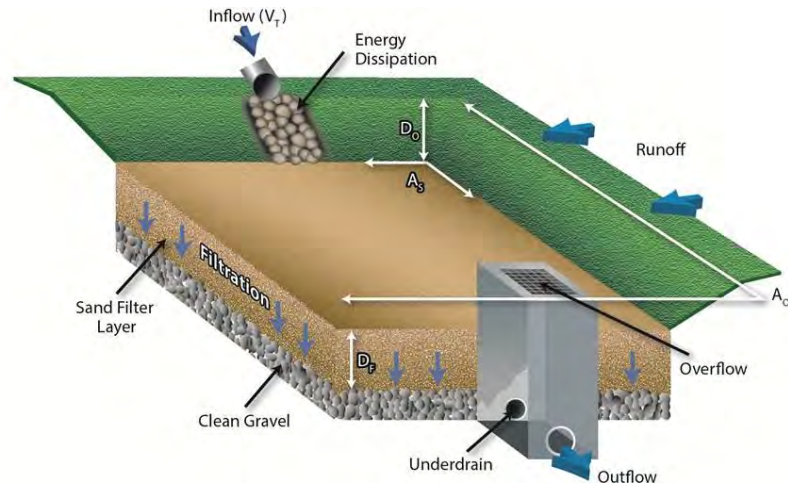
- Question: Is a drainage system surcharged by design when an inlet drainage pipe of a stormwater retention pond is designed to be above the MPCA required pond level of 1800 cubic feet per acre of drainage area plus the volume of 1.0 inch of runoff from the net increase in impervious surfaces created by the project?
- Answer: No, a drainage system is not surcharged by design when the inlet pipe enters a stormwater retention pond above the level attained by the water quality volume, which equals the MPCA required pond level of 1800 cubic feet per acre of drainage area plus the volume of 1.0 inch of runoff from the net increase in impervious surfaces.

DOLI Water Quality Volume

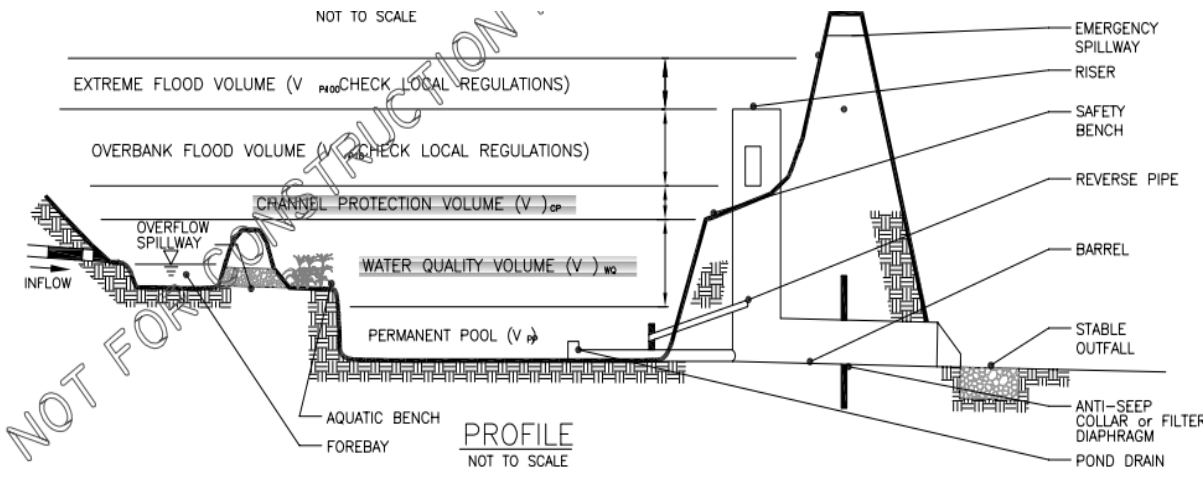
- 65,340.30 CF
- Elevation= 1002.45



MPCA Definition of Water Quality Volume



- The *Required* minimum water quality volume, or live storage (V_{wq}), is 1.0 inch of runoff from the net increase in impervious surfaces created by the project. This should be calculated as an instantaneous volume.
- The *Required* minimum permanent pool volume, or dead storage (V_{pp} below the outlet elevation), is 1800 cubic feet of storage below the outlet pipe for each acre that drains to the pond
- Source: MPCA Stormwater Manual



MPCA Water Quality Volume

-
- Sanitary Sewer Collection System Plan View
- Key Features and Labels:
- Manholes (MH):**
 - MH 186 (27") RIM 1016.77, I.E. 1012.90 6 PVC (N), I.E. 1012.80 12 RCP (E)
 - MH 187 (27") RIM 1016.76, I.E. 1014.77 6 PVC (N), I.E. 1014.77 12 RCP (W)
 - MH 183 (48") RIM 1016.77, I.E. 1005.96 18 RCP (E), I.E. 1005.24 18 RCP (S), I.E. 1007.76 18 RCP (N), I.E. 1012.18 12 RCP (W)
 - MH 178 (120") RIM 1014.59, I.E. 1000.86 48 RCP (N), I.E. 1003.20 30 RCP (W), I.E. 1000.86 42 RCP (E)
 - MH 179 (60") RIM 1014.94, I.E. 997.54 36 RCP (SE), I.E. 1003.05 30 RCP (E), I.E. 997.62 16 PVC (W)
 - MH 167 (96") RIM 1014.65, I.E. 1002.28 36 RCP (N), I.E. 1002.28 42 RCP (W), I.E. 1005.01 18 PVC (NE)
 - SAN MH 7 (48") RIM 1014.99, I.E. 994.41 8 PVC (N), I.E. 994.31 8 PVC (S)
 - Pipes:**
 - 18" RCP @ 2.00%
 - 12" RCP @ 2.36%
 - 18" RCP @ 2.00%
 - 18" RCP @ 4.13%
 - 12" RCP @ 0.95%
 - 6" PVC @ 2.00%
 - 6" PVC DRAIN TILE
 - 48" RCP @ 0.50%
 - 30" RCP @ 0.83%
 - 12" RCP @ 0.75%
 - 36" RCP @ 2.95%
 - 8" PVC @ 2.00%
 - 36" RCP @ 0.43%
 - 8" PVC @ 2.00%
 - Structures and Connections:**
 - RO 9: RIM 1016.98, I.E. 1013.15 6 PVC (S)
 - SEE 1P001L INV. 1007.77
 - SEE 1P001L INV. 1006.20
 - MH 184 (48") RIM 1016.77, I.E. 1005.49 18 RCP (W), I.E. 1006.20 18 RCP (N), I.E. 1012.53 12 RCP (E)
 - RO 10: RIM 1016.96, I.E. 1015.00 6 PVC (S)
 - SEE 1P001M FOR CONTINUATION INV. 1004.89
 - CONNECT TO CHAMBER I.E. 1004.75
 - CONNECT TO CHAMBER SYSTEM I.E. 1000.75
 - SEE PROFILE 2/C155
 - WYE INTO MAIN I.E. 997.83
 - WYE INTO MAIN I.E. 997.58
 - WYE INTO MAIN I.E. 997.75
 - WYE INTO MAIN I.E. 997.67
 - I.E. TIE INTO STRUCTURE 997.53
 - EDGE OF CHAMBER SYSTEM
 - Other Labels:**
 - 116'-0"
 - 24FT. TYP.
 - 3
 - 4
 - 6
 - 2



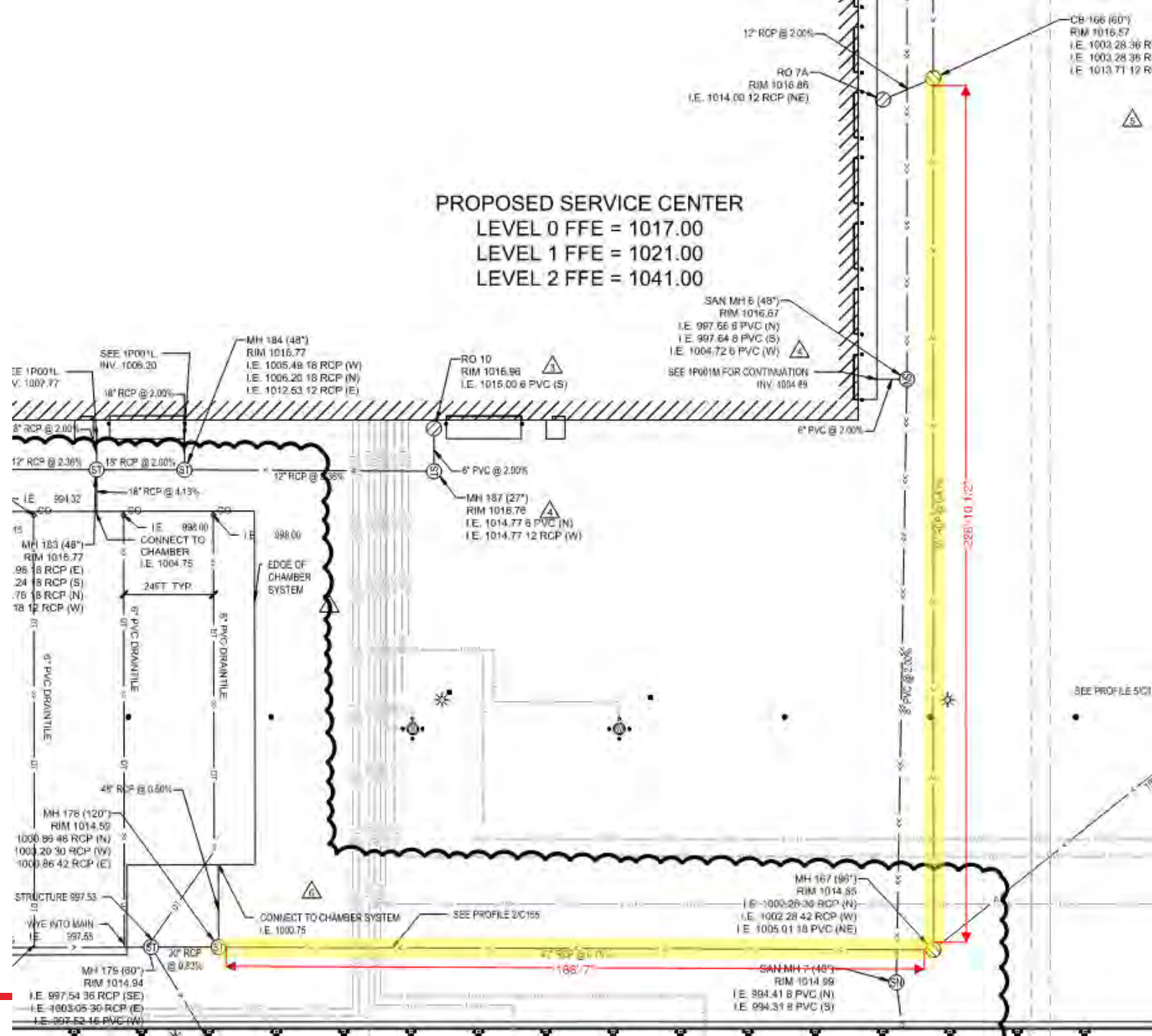
Ramsey Washington and City of Saint Paul Water Quality Volume

- Water Quality Volume = 1.1 inch over the new and re-constructed impervious areas.
- Filtration is allowed at a 55% Credit.
- Therefore, the WQV is 2 inches over the new and re-constructed impervious areas.

SURCHARGE BASED ON VOLUME

Watershed and City Water Quality Volume

- 89,000 CF
- Elevation= 1003.20





Surcharge Based on Peak Rates

- The system will back up above 1000.86 for rainfall events above 1.06 in rainfall event. MSE 24-hour distribution.
- This assumes that the water will start to filter once it hits the system, which it will.



Conclusion

- Site groundwater constraints will adversely impact the system long term if installed at the current elevation.
- Owner will maintain and clean pipes on a regular basis.
- No adverse affect even at 100-yr event.