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ILLINOIS PROFESSIONAL DESIGN
FIRM #184-000350

PROJECT NARRATIVE and RESPONSES to the STANDARDS for a PLANNED UNIT DEVELOPMENT for the LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT TRAINING and MAINTENANCE FACILITY

Project No: 23-3640.02

FOR:
City of Crest Hill
Planning & Zoning
20600 City Center Boulevard
Crest Hill, IL 60403

OWNER:
Lockport Township Fire Protection District
19623 Renwick Road
Lockport, IL 60441

March 5, 2025

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FGMARCHITECTS

March 5, 2025

City of Crest Hill Plan Commission
20600 City Center Boulevard
Crest Hill, IL 60403

Subject: Lockport Township Fire Protection District Planned Unit Development/ Special Use Permit Application and Submittal for combined Preliminary and Final PUD.

Dear Crest Hill Plan Commission,

I am submitting the attached documents for the Planned Unit Development for the Lockport Township Fire Protection District Training grounds located in the City of Crest Hill. Please accept these documents for the **combined** Preliminary and Final Planned Unit Development/ Special Use Permit application for this project. We intend to be placed on the agenda for the March 13 Plan Commission meeting.

Included in this packet is our response to the City of Crest Hill Community Development and Engineering review comments dated January 27, 2025. Additionally, we have provided a Project Narrative booklet that addresses both the review comments and zoning ordinance comments in more detail.

As requested in the City's review comments, the Application for the Development (Appendix C) is included in the Project Narrative.

We respectfully request that you accept this submission for the Preliminary and Final Steps in the City's Planned Unit Development review and approval process. Should you have any questions or require further information, please do not hesitate to contact me.

Respectfully submitted,

Jennifer Villena-Johnson, AIA | Project Architect
jennifervillena@fgmarchitects.com

cc: John O'Connor, Fire Chief
Jason Estes, FGM Architects
Wally Hadeler, CORE Construction

Enclosure(s): Response to CCH review comments (January 27, 2025)
Project Narrative booklet
Exhibits

PART 1

APPLICATION FOR DEVELOPMENT

City of Crest Hill Development Handbook **Appendix C**

Application for Development

For Office Use Only: **Case Number:**

Project Name: Lockport Township Fire Protection District - Training Grounds

Owner:	Lockport Township Fire Protection District	**Correspondence To:**	John O'Connor, Chief
Street No:	19623 Renwick Rd.	**Street No:**	19623 Renwick Rd.
City, State, Zip:	Lockport, IL 60441	**City, State, Zip:**	Lockport, IL 60441
Phone:	835-838-3287	**Phone:**	835-919-2445
Email or fax:		**Email or fax:**	joconnor@lockportfire.org

Property Address:		**Property Information:**	
Street No:		**Lot Width:**	700 l.f.
City, State, Zip:		**Lot Depth:**	800 l.f.
PIN:	part of 11-04-29-200-009-0000	**Total Area:**	560,000 sq. ft. (12.8558 acres)

* Attach a copy of the legal description of the property and applicable fees.
* Submit electronic version of the legal description to:
mdeharo@cityofcresthill.com and lthrasher@cityofcresthill.com.

Existing Zoning: M-1 **Existing Land Use:** Farmland

Requested Zoning: M-1 **Proposed Land Use:** Training Grounds with Training and Vehicle Maintenance facility

Adjoining Properties Zoning and Uses:

North of Property: Forest Preserve

South of Property: M-1

East of Property: M-1

West of Property: M-1

Purpose Statement (intended use and approval sought): Preliminary and Final Planned Unit Development Plan
Refer to Project Narrative and Responses to Standards for a Planned Unit Development for the Lockport Township Fire Protection District Training and Maintenance Facility.

Development Request: Please check all that apply and describe:

__ Rezoning: _____
*Please attach written responses to items listed in Section 12.8-5 of the Zoning Ordinance.

X Special Use: Refer to Project Narrative and Responses to Standards for a Planned Unit Development for the Lockport Township Fire Protection District Training and Maintenance Facility.
* Please attach written responses to items listed in Section 12.7-6 of the Zoning Ordinance.

__ Variance: _____
* Please attach written responses to items listed in Section 12.6-2 of the Zoning Ordinance.

X Planned Unit Development: Refer to Project Narrative and Responses to Standards for a Planned Unit Development for the Lockport Township Fire Protection District Training and Maintenance Facility.
* Please attach written responses to items listed in Sections 10.0-4 & 10.5 of the Zoning Ordinance.

__ Annexation: _____

__ Plat: _____

X Other: Zoning Ordinance Text Amendment for the Outdoor Firing Range. Refer to Project Narrative and Responses to Standards for a Planned Unit Development for the Lockport Fire Protection District Training and Maintenance Facility.

Contact Information – If not yet known, please indicate as TBD. Check those parties in which copies of all correspondences should be forwarded.

__Civil Engineer	Dwight Trostle, P.E.	Phone Number	o. 224-802-2723 c. 630-774-9023
Company	Pinnacle Engineering Group	Email Address	datrostle@pinnacle-engr.com
Construction Manager __~~Contractor~~	Wally Hadeler	Phone Number	o. 309-404-4700 c. 847-450-4584
Company	CORE Construction	Email Address	wallyhadeler@coreconstruction.com
__Architect	Jennifer Villena-Johnson, AIA	Phone Number	o. 630-574-8300 d. 630-574-7074
Company	FGM Architects	Email Address	jennifervillena@fgmarchitects.com
__Builder	TBD	Phone Number	
Company		Email Address	

I agree to be present (in person or by counsel) when the Plan Commission and City Council hear this development request.

Signature of the Applicant — February 20, 2025 Date

If you (the applicant) are not the owner of record, please provide the owner's signature.

Signature of the Owner — Date

PART 2

PROJECT SUMMARY

The Lockport Township Fire Protection District (FPD) seeks approval of Special Use Permits for a Planned Unit Development (PUD) in the form of an Institutional Use with an accessory firing range on a 12.86-acre parcel located in the City of Crest Hill. The property was donated to the FPD by the State of Illinois with the intent of creating a centrally located training facility for the fire district. This development will provide a unique center that supports both practical and classroom training for fire and law enforcement agencies. These training experiences will improve the agencies' ability to respond to emergency situations within Lockport Township and beyond.

The project site is located on the south side of Division Street, adjacent to the Statesville Correctional Facility. The property is currently farmed but is zoned M-1 Light Manufacturing. It is bordered on the east, south, and west by the Department of Corrections, which is also zoned M-1. To the north, across Division Street, lies the Will County Forest Preserve. The nearest residential district is approximately 1,600 feet to the northwest, while the furthest is approximately 6,700 feet to the south. Two governmental outdoor firing ranges are located to the east of the project site, within one mile. One is operated by the Illinois State Police and the other is operated by the Department of Corrections. The direction of fire at both of these ranges is to the west and northwest, while the proposed range is to the south. The intent of this new range is to offload the impact at the other ranges and reduce overall noise from firing ranges within the community.

The proposed training grounds are designed for regional use, focusing solely on public safety, with the potential for collaboration between fire and law enforcement in training and coordination. As the training requirements for both fire services and law enforcement continue to grow, providing these facilities will enable the District and participating departments to meet—and potentially exceed—these needs through consistent, realistic training. This facility, being centrally located within the Fire District, will also help reduce overtime and out-of-service training costs, allowing the District to remain fiscally responsible while maintaining high-quality response services. The communities within the District, with the City of Crest Hill at its center, will greatly benefit from the establishment of these training grounds.

The following are key reasons for the importance of this centrally located training facility:

- **Improved Response Times for Training**: A centrally located facility ensures fire companies can remain in-service and return to their assigned stations quickly, maintaining district-wide emergency readiness.
- **Standardized Training Across the District** – A single, well-equipped facility provides a consistent training environment for all firefighters, ensuring that personnel across different stations receive uniform instruction and practice the same procedures.
- **Enhanced Hands-on-Experience** - A dedicated training facility allows firefighters to practice real-life scenarios in controlled settings, including live fire exercises, search-and-rescue drills, hazardous material responses, and water rescue improving their skills and preparedness.

- **Increased Safety and Efficiency** – Firefighting is a high-risk profession, and a specialized training facility provides a safe environment to learn and refine techniques before facing real emergencies. This reduces the likelihood of injuries and operational errors in the field.
- **Cost-Effective Training Solution** – Instead of relying on multiple locations or external training programs, a centralized facility offers a long-term cost savings by providing in-house training resources, reducing expenses associated with outsourcing and travel.
- **Supports Continuous Learning and Certification** – A dedicated training facility ensures that firefighters can regularly update their skills, meet certification requirements, and adapt to new firefighting techniques and equipment advancements.
- **Facilitates Joint Training with Other Agencies** – A central facility allows for collaboration with neighboring fire departments, law enforcement, EMS, and other emergency response teams, enhancing interagency coordination during large-scale incidents.
- **Improved ISO Score** – Currently an ISO level 2, Lockport Fire has not been able to capture any "Facility points" which are necessary to reach an ISO level 1. This certification can offer several advantages to both homeowners and businesses in the Fire District. This training center would meet the "Facility" criteria to maximize on all training points for the higher score.
- **Back-Up EOC for WCEMA** – In the event of an emergency or natural disaster, this facility will be equipped to operate as a back-up EOC (Emergency Operations Center) for the Will County Emergency Management Agency.
- **Improved Department Operations** – Moving emergency vehicle maintenance to a dedicated facility allows for the FD to move all specialized equipment/ vehicles to Station #6 which is the center of the district and has the most staffing. This allows for reduced response times throughout the fire district for water rescue, technical rescue, hazardous materials, search and rescue type emergencies as well as fire investigations.

Overall, a centrally located fire department training facility strengthens the district's emergency preparedness, enhances firefighter skills, and ultimately improves public safety by ensuring that first responders are well-trained and ready for any situation.

Project Development Components

The project will include three primary elements:

1. **Training and Maintenance Building**
2. **Training Grounds**
3. **Outdoor Firing Range**

Descriptions of each component are as follows. Please refer to section "Site Elements and Buildings Description" within the project narrative for additional detailed information.

1. **Training/Maintenance Facility (Building 1)**
   The Training/Maintenance Facility will be located on the northwest corner of the property. The single-story building will be approximately 24,240 square feet. Approximately half of the building will be dedicated for classroom training while the other half will be dedicated for emergency vehicle maintenance operations.

Classroom education plays a vital role in training programs. Training requirements will include week-long classes held multiple times a year, ensuring efficient use of this facility. Expanding the classroom's availability to other departments will foster inter-governmental communication and encourage the exchange of ideas. Additionally, training events will attract visitors to the City of Crest Hill, supporting local businesses such as restaurants and shops. The classroom area of the building will feature three classrooms, each with a capacity of 50 people.

Fire protection district personnel and other public safety departments will use these spaces for training sessions. Classroom training will take place typically 3 days per week and may run from 9:00 a.m. to 4:00 p.m. Each session may include one to two fire companies and have a maximum of 10-15 people per session (including trainers). EMS training will usually take place one day per week, and their hours of operation and number of participants will be similar to the practical training sessions.
Based on the anticipated load, a typical week will see approximately 10-15 vehicles entering and exiting the site four days per week.

The District will move the maintenance operations to the new facility, which will free up space at Station 6. The maintenance side of the building will include a total of 12 bays (6 double bays). 4 bays will be used for maintenance operations, while 8 bays will be used for reserve vehicles, including ladder trucks, engines, ambulances and other emergency response vehicles. The maintenance department typically services one vehicle on a daily basis, so the anticipated traffic load is minimal.

It is anticipated that the facility will host one to two special events per year, with attendance ranging from 100-150 people. The owner will implement strategies to ensure the safe exit of vehicles onto Division Street following these events.

2. Training Grounds

Realistic physical training is a critical element for public safety. Having training grounds centralized within the District allows training to occur more frequently while keeping staff in service for emergency response. The proposed grounds have some fixed functions that the Fire Service immediately will utilize, but training evolves and the grounds have multiple areas that will be available for future props and events based upon current needs and regulations.

The outdoor practical training will occur on the same days as classroom training as noted above. Participants will either be in the classroom OR out on the training grounds. Therefore, this will not add to the daily traffic load.

Specialty team training will take place monthly from 8:00 a.m. to 12:00 p.m., with a maximum of 30 participants, including trainers.

A. Burn Tower: A fire department training burn tower is a critical component of firefighter training, providing a controlled environment for realistic, hands-on experience in fire suppression, search and rescue, and emergency response. A multi-story burn training tower

is a requirement for the District to meet mandated requirements with regulation ranking improvements (for example, improving their ISO ratings). The following include the importance of a burn tower and how it is used:

- **Realistic Live Fire Training** – Firefighters will experience live fire conditions in a controlled setting, preparing them for real-world emergencies while minimizing risk.
- **Improved Fire Suppression Techniques** – Firefighters can practice extinguishing fires in various scenarios, learning how fire behaves in different structures and improving their hose handling and attack strategies.
- **Enhanced Search and Rescue Skills** – The tower can be used for search-and-rescue drills in smoke-filled environments, helping firefighters develop essential skills to locate and evacuate victims under challenging conditions.
- **Tactical Ventilation Training** – Firefighters can practice proper ventilation techniques, including roof and window ventilation, to control fire spread and improve visibility during real emergencies. These ventilation techniques ensure firefighters can effectively release heat and smoke, improving safety and fire control.
- **Safe Exposure to Heat and Smoke Conditions** – Training in a burn tower helps firefighters acclimate to high-heat and low-visibility environments, teaching them to maintain composure and effectiveness under pressure.
- **Multi-Story Training Scenarios** – Since many burn towers are multi-level, they simulate fires in apartment buildings, commercial structures, and industrial settings, providing varied and adaptable training. Firefighters can practice ladder rescues, rappelling, and high-angle rescue techniques for multi-story buildings.
- **Incident Command and Team Coordination** – Fire departments can use the burn tower for large-scale drills that involve incident command training, teamwork, and communication strategies critical for real emergency responses.
- **Forcible Entry Exercises** – Firefighters practice breaking through doors, windows, and barriers commonly encountered in burning buildings.
- **Hazardous Materials and Confined Space Training** – Some burn towers are designed to incorporate hazardous materials and confined space rescue training for specialized response scenarios.
- **Multi-Agency Training** – Burn towers provide an opportunity for joint exercises with law enforcement, EMS, and other emergency responders to improve coordination during large-scale incidents.

A fire department training burn tower is an essential tool for firefighter preparedness, offering realistic and diverse training scenarios that improve response capabilities and safety. By providing hands-on experience in fire suppression, search and rescue, and tactical operations, burn towers help ensure firefighters are well-equipped to handle real emergencies effectively.

B. Outdoor Tower Training Classroom with Storage: A dirty classroom is a designated training area within a fire department training facility designed for hands-on, practical exercises that involve the use of firefighting tools, equipment, and techniques in a controlled environment. Unlike a traditional classroom, this space is built to withstand dirt, debris, water, smoke and

physical impact, allowing firefighters to train in realistic conditions without damaging clean indoor spaces.

Key characteristics of a Dirty Classroom:

- Durable and Impact-Resistant Construction – Floors and walls are designed to withstand heavy use, soot, water, and rough handling of tools and gear
- Multi-Purpose Training Environment – Used for skills training such as hose handling, SCBA drills, search and rescue techniques, forcible entry, extrication simulations, and ventilation exercises
- Equipped for Tool Use – Allow firefighters to work with hydraulic tools, saws, ladders, axes, and other firefighting equipment
- Wash and Decontamination Stations – Provides facilities to clean gear and personnel after training sessions involving hazardous materials or contaminants
- Ventilated and Open Space – Designed to accommodate smoke, dust, and airborne particles during training exercises
- Safe and Controlled Setting – Provides a structured environment for realistic drills while minimizing risks associated with uncontrolled outdoor training

Purpose and Benefits:

- Enables practical, hands-on skill development
- Bridges the gap between classroom theory and field applications
- Enhance firefighter familiarity with tools and techniques in a safe yet realistic environment
- Reduces damage to clean training spaces while allowing for messy or high-impact exercises

C. Training pond (also serving as stormwater detention): Having an available body of water is an essential training resource for a fire department water rescue team, allowing first responders to develop the skills necessary to perform rescues in lakes, rivers, ponds, and floodwaters. Practical, hands-on training in real aquatic environments ensures that firefighters and rescue personnel are fully prepared for water-related emergencies. This resource provides the following advantages:

- **Realistic Training Conditions** – Practicing in an actual body of water simulates real-life rescue scenarios, including varying currents, depths, and visibility conditions.
- **Hands-On Swift Water and Flood Training** – Training in natural or controlled water conditions prepares rescuers for emergencies such as flash floods, river rescues, and watercraft accidents. Training on rescuing conscious and unconscious victims using throw bags, reach tools, and personal flotation devices as well coordinated practice our underwater ROV (remotely operated vehicles)
- **Improved Victim Recovery Techniques** – Water rescues require specialized search and recovery methods, including surface and underwater searches, which can be efficiently practiced in a real aquatic environment.
- **Boat Operations and Navigation** – A body of water allows for hands-on training with rescue boats, jet skis, and other watercraft, ensuring rescuers can maneuver efficiently in different water conditions

- **Ice Rescue Preparedness** – In colder climates, having a body of water for winter training helps firefighters practice ice rescues, including self-rescue victim extrication, and proper use of ice rescue suits.
- **Diver and Underwater Rescue Training** – If the department has a dive team, a training water body is essential for teaching proper diving techniques, underwater search patterns, and victim recovery.
- **Adaptation to Low Visibility and Challenging Environments** – Natural bodies of water often have unpredictable conditions, helping rescuers learn to navigate murky water, debris, and other hazards they may face in real rescues.

Having a body of water for fire department water rescue training is crucial for preparing rescuers to handle diverse aquatic emergencies safely and effectively. Whether performing surface rescues, navigating floodwaters, or executing ice and dive rescues, practical experience in real water conditions ensures that firefighters and rescue teams can respond quickly and efficiently.

D. Vehicle Extrication Training Area: A dedicated outdoor area for vehicle extrication training is crucial for fire departments to ensure firefighters and rescue personnel are well-prepared to handle motor vehicle accidents and other entrapment emergencies. It provides a safe, realistic, and controlled environments where teams can develop their skills and refine techniques, ultimately leading to more efficient rescues and better patient outcomes. Benefits of an extrication training area include:

- **Realistic Training Scenarios** – Firefighters can practice extricating victims from damaged vehicles in a setting that closely mimics real-life crash scenes, including overturned vehicles, multi-car collisions, and confined spaces.
- **Hands-On Tool Proficiency** – Training in an outdoor area allows firefighters to use hydraulic rescue tools (Jaws of Life), cutting equipment, spreaders, and stabilizing devices in realistic conditions, improving their speed and effectiveness.
- **Safe and Controlled Learning Environment** – Unlike practicing in an uncontrolled or ad-hoc location, a dedicated area ensures a safe space for training without interfering with emergency operations or public areas.
- **Multi-Vehicle and Complex Scenario Training** – Firefighters can practice advanced extrication techniques involving multiple vehicles, trucks, buses, and even motorcycles to prepare for a variety of accident situations.
- **Time-Critical Skill Development** – Vehicle extrication often involves victims in critical condition. Regular training in a dedicated space helps firefighters refine their skills to work efficiently under pressure, reducing extrication time and improving patient survival rates.
- **Stabilization and Safety Techniques** – Extrication is not just about cutting; stabilizing vehicles and ensuring the safety of victims and rescuers is essential. A designated outdoor area allows for proper training in cribbing, strut placement, and airbag deployments.

- **Exposure to Changing Environmental Conditions** – Practicing extrication outdoors allows firefighters to train in various weather conditions (rain, heat, snow), preparing them for real-world emergencies that may occur in similar environments.
- **Collaboration with Other Emergency Services** – A dedicated extrication training area allows for joint drills with EMS, law enforcement, and towing companies, ensuring seamless coordination during actual rescues.
- **Debriefing and Continuous Improvement** – A set training area provides a space for post-exercise debriefing, reviewing techniques, and improving strategies based on real-time performance evaluations.

E. K-9 Training: The districts highly trained K9's play a vital role in locating missing people, disaster victims, and trapped individuals. A specialized training space ensures they develop and maintain the skills needed for effective deployments in real emergencies. A dedicated open area for K9 training allows:

- **Realistic Search and Rescue Scenarios** – A training area allows SAR dogs to practice searching for victims in different environments, such as collapsed structures, wooded areas, and open fields, mimicking real-world emergencies.
- **Consistent and Controlled Training** – Regular training in a designated space ensures K9s and their handlers maintain peak performance, improving their ability to locate victims quickly and accurately.
- **Enhances K9 Scent Detection Abilities** – Search dogs rely on scent tracking to find missing persons. A training area with various scent sources, obstacles, and hiding places helps reinforce their ability to differentiate between human scents in diverse conditions.
- **Adaptation to Various Terrains** – A well-designed K9 training area includes confined spaces, water features, and forested sections to prepare the dog for different search environments.
- **Improved Agility and Endurance** – Search and rescue work requires K9s to navigate through unstable surfaces, climb obstacles, and maneuver in tight spaces. A training area with agility equipment like tunnels, ladders, and balance beams enhances their physical fitness and confidence.
- **Strengthens Handler-K9 Communication** – Training in a controlled environment allows handlers to practice giving commands, interpreting K9 behavior, and working as an effective team in high-stress situations.
- **Emergency Preparedness for Large-Scale Incidents** – A well-trained SAR K9 is a valuable asset in disasters like building collapses, floods, and wilderness rescues. A dedicated training area ensures they are ready for rapid deployment in real emergencies.

A dedicated K9 training area is crucial for maintaining the effectiveness of a fire department's search and rescue dog team. By providing a safe and realistic environment to refine scent detection, agility, and teamwork, SAR K9s can perform at their highest level when lives are at stake. Investing in proper training infrastructure ensures these invaluable dogs remain mission-ready for any emergency.

F. Miscellaneous Open Space: Maintaining open space on fire department training grounds is a strategic investment that allows for growth, adaptability, and enhanced training opportunities. Fire service needs evolve over time, and having flexible, unused land ensures that training facilities can expand and adapt to meet future demands. Advantages include:

- **Room for Facility Expansion** – Open space provides the opportunity to add new training structures as training needs grow.
- **Adaptability to New Training Methods** – Firefighting tactics, equipment, and safety regulations change over time. Open space allows the department to adjust training grounds to accommodate modern techniques and evolving fire service standards.
- **Multi-Disciplinary Training Areas** – As fire departments take on more specialized roles (hazmat, technical rescue, urban search and rescue, wildland firefighting), an open area can be developed to provide diverse, scenario-based training exercises.
- **Large-Scale Incident Simulations** – Open space allows for mass casualty drills, disaster response training, and multi-agency exercises involving fire, EMS, police, and other emergency services.
- **Vehicle and Apparatus Training** – A designated open area can be used for emergency vehicle operations (EVOC), pump operations, and aerial ladder placement drills, ensuring firefighters are skilled in maneuvering fire apparatus in various conditions.
- **Outdoor Practical Training** – Open space can be utilized for hose deployment drills, water supply operations, and large-diameter hose evolutions, which require extensive space to simulate real-world conditions.
- **Future Technology Integration** – As new technologies such as virtual reality (VR) training units, drone operations, and robotic firefighting equipment become more common, an open training area ensures the department can integrate these advancements.
- **Cost-Effective Growth** – Instead of relocating or acquiring new land, having existing open space allows the department to expand training capabilities on-site, saving costs and resources in the long run.
- **Community and Public Safety Events** – Open space can serve as a venue for firefighter recruitment events, public fire education programs, or large-scale community drills, strengthening relationships with the public and promoting fire safety awareness.

Having open space on fire department training grounds is a valuable asset that provides flexibility, adaptability, and growth potential. It ensures that training facilities remain future-ready, capable of evolving with new challenges, technologies, and training requirements. By planning for expansion, fire departments can enhance firefighter preparedness, improve emergency response capabilities, and maintain a cutting-edge training environment for years to come.

3. Outdoor Firing Range

This development will include a law enforcement training facility, consisting of a firing range to be constructed and operated by the Lockport Police Department. This range will serve public safety training purposes and an inter-governmental agreement will be drafted to outline the parameters. Only departments within Lockport Township Fire Protection District will be able to

utilize the range, under the supervision of a range-master of the Lockport Police Department who will write guidelines for its safe use and operation. The proposed range will be 100 yards so that officers can become certified in mandated long gun fire training. There are two other State ranges located to the east of the project site within 1 mile. One is the Illinois State Police, firing to the northwest and the other is the Department of Corrections, firing to the west. Neither existing State controlled ranges have been designed or constructed for noise suppression, and both are firing in the direction of Crest Hill Ward 2.

The firing range at the training grounds will be located at the southeast corner of the property, with its firing direction facing due south. The range will be surrounded on three sides (east, south, and west) by 24-foot-tall berms, which will feature native plantings with deep roots to help stabilize them. The shooting platform will be positioned on the north side of the firing range, with a 20-foot-tall sound attenuation wall directly behind it. The nearest residential districts are approximately 2,000 feet to the northwest, 3,000 feet to the northeast, and 5,000 to 6,000 feet to the south.

The Lockport police department intends to purchase two pre-manufactured structures similar to car ports so that they can have shelter during inclement weather. These structures will be approximately 10 ft x 15 ft and a maximum of 15 feet tall. The structures will be placed on top of the shooting range and will not be visible by the public.

Various police departments will be using this facility. The Lockport Police Department and the City of Crest Hill will have very similar needs. Each department will use the facility 1-2 times per month, with training from 7:30 a.m. to 3:30 p.m. Each department will likely have approximately 10 officers arriving in 2 hour time waves.
The Village of Romeoville Police Department is only interested in using the facility for rifle training, and therefore their use of the facility will be significantly less than other departments.

Lockport PD also conducts various in-house training days. Some of these training days may occur at the new facility, but not all. These in-house training days will be approximately 10 training days per year, starting from 7:00 a.m. and ending at 3:00 p.m. Each day will typically host between 8 and 12 officers. Traffic generated from police fire training will be minimal based upon the limited intent of use.

The type of ammunition used will be lead. This is the most common and cost effective ammunition and what law enforcement purchases regularly. The Lockport PD will follow the "EPA's Best Management Practices for Lead at Outdoor Shooting Ranges (EPA-902-B-01-001)" for recommended remediation measures for lead in earthen berms.

Noise

FGMA shared the zoning ordinance noise level requirements with two acoustical engineering firms, Siebein Acoustic and Soundscape Engineering. It was the opinion of both firms that the city's ordinance noise standards are outdated. They noted that typical ambient noise (non-firing range noise) such as standard neighborhood equipment (i.e. residential condensing units, yard maintenance equipment, etc.) would exceed the city's ordinance requirements and would not

meet the levels posted in the ordinance. Both engineers recommended that the City revisit the ordinance posted levels in the future to better align with state standards and expectations. Consequently, the owner is requesting the text amendment to the Zoning Ordinance noise related performance standards as described in detail in Part 8 of this Project Narrative.

Soundscape Engineering, LLC has been retained by the Lockport Township Fire Protection District to assess the noise transmission from the proposed firing range to the surrounding neighborhoods and evaluate the effectiveness of the sound mitigation strategies described below. A report will be completed prior to the March 13 Plan Commission meeting. In the meantime, the engineer has provided a preliminary "sound statement", which is included in the exhibits section of the Project Narrative (Exhibit 'S').

Effective strategies for reducing noise at shooting ranges include high berms, side berms, covered shooting positions, and baffles. The proposed range will include high side and backstop berms with native plantings (which help to absorb sound) and a tall sound attenuating wall behind the shooters. Direction of fire is an important factor when situating a firing range. The proposed range will be firing to the south, where the residential districts are much further away than the residential district to the northwest. It should be noted that the greatest amount of noise will always be in the direction of fire. With this in mind, the dB level difference between the direction of fire and behind fire can be equated to about a 10dB difference on average. In addition, we have rearranged the layout of the training grounds so that the firing range is pointing away from the closest residential area. The firing range was also moved to the southwest corner of the training grounds, the furthest point away from the closest residential area. The training facility classroom on the training grounds has been placed directly north of the firing range so that it acts as an additional sound buffer between the range and the closest subdivision to the north.

There are currently two outdoor firing ranges within 1 mile of the proposed training grounds site. Both ranges fire towards the west and northwest (in the direction of Ward 2). Not only will the firing direction of the proposed range be facing south, but the range will also alleviate the load impact of the other two ranges.

<u>Text Amendment to Zoning Ordinance</u>

The inclusion of the firing range will require text amendments to the M-1 Zoning District Use Table, and Section 2 (Definitions) of the Zoning Ordinance to define and permit an "Outdoor Firing Range, for Government Training Purposes", as well as modifications to Section 8.8 of the Zoning Ordinance to specifically exempt this type of firing range from the City's existing Noise Performance Standards. Please refer to the section titled "PROPOSED TEXT AMENDMENTS to the City of Crest Hill Zoning Ordinance" within the project narrative for more details.

Proposed Development Requirements and Operational Requirements by Lockport Police Department:

Development Requirements:

1. Private outdoor public safety range used exclusively by public safety agencies who work and operate within the Lockport Township Fire Protection District (Fire District).
2. The range will be designed by a design professional (FGMA architect) with the assistance of range masters from the Lockport Police Department.
3. The public safety outdoor range will be owned by the Fire District, but operated and supervised by the Lockport Police Department as defined in an IGA.
4. Environmental Protection: The Public Safety outdoor range shall be designed such that it is in compliance with the Best Management Practices for Lead at Outdoor Shooting Ranges. The range shall be designed to prevent contamination of any waterway considered "Waters of the U.S." as defined by the U.S. Army Corp of Engineers, wetland or floodplain in accordance with the Clean Water Act.
5. A safety plan shall be provided that complies with the requirements of the NRA current edition of "The Range Manual, A guide to Planning and construction."

Operational Requirements:

1. These operational requirements will be defined in an IGA between the Fire District and each agency that wishes to use the Public Safety Range.
2. Hours of operation (Defined by the LPD) – 7:00 AM to 10:00 PM Monday through Friday. 8:00 AM to 4:00 PM Saturday and Sunday**.**
3. Night shooting shall occur a maximum of once per week. (LPD).
5. Liability insurance: Proof of liability insurance in the minimum amount of two million dollars ($2,000,000) shall be provided to the Lockport Township Fire Protection District that names the Fire District as an additional insured party and shall save and hold the Fire District, its appointed officials, and employees working within the scope of their duties harmless from and against all claims, demands and causes of action of any kind or character, including the cost of defense thereof, arising in favor of a person or groups members or employees or third parties on account or representatives. The Fire District shall be notified immediately if there are any changes or lapses to this liability insurance coverage. The Public Safety Range will have a Standard Operating Procedure drafted by a certified Range Master from the Lockport Polce Department.
6. Each agency using the Public Safety Range will be responsible for providing their own certified Range Master who will present, ensuring the safe operation of the Public Safety Range whenever in use. The Range Master shall notify both the Fire District and the Lockport Police Department when their training begins and ends.

SITE LIGHTING

Parking lot and drive lighting will be LED type, on 25 foot tall light poles. The building will have LED wall packs above the overhead doors and there will be recessed lighting at the main entrance. In addition to the general site lighting, there will be spot lights placed inside the berms for night time shooting. These lights will be LEDs and will be mounted on 25 ft. tall poles Lighting cut sheets are included in the

photometric submittal. Night time shooting will be very minimal and will not extend beyond 10:00 p.m.

A photometric plan is provided and it includes a statement by the electrical engineer that the site lighting complies with the Site Lighting Development Standards in the zoning ordinance (Section 8.7-4). Foot candles at the site boundaries will meet the ordinance. Refer to Exhibit 'J'.

DEVELOPMENT SCHEDULE

The anticipated project schedule is as follows. Final dates will be dependent on PUD approvals and permitting.

Sequence of construction:

1. Mass/Rough grading (July 2025 through September 2025)
    a. Rough grading
    b. Construction of road subsurface
    c. Pond excavation. Soils removed will be placed in the area where the outdoor firing range will be located and will be used to construct the berms to the maximum extent possible.
    d. Berm Construction
    e. Site Utilities
    f. Building pad construction
2. Building Construction (August 2025 through June 2026)
    a. Building 1 Training/ Maintenance Facility.
    b. Building 2 Tower Training Classroom
3. Burn Tower – Exact dates to be determined. Current plan would be to install during other building construction.
4. Remaining Site Work (April 2026 through June 2026)
    a. Fine Grading
    b. Walks, Curbs, etc.
    c. Paving
    d. Landscaping

REQUESTED APPLICATION WAIVERS

LTFPD is requesting waivers to the following application submittal requirements:

- FINAL Construction Drawings are required as part of the Preliminary & Final Planned Unit Development process. These will be provided as part of the FINAL ENGINEERING. This submittal will be providing ENGINEERING IMPROVEMENT DRAWINGS.
- Market Analysis: Not applicable. This project will not include residential, commercial or industrial uses.
- Tax and School Impact Analysis: Not applicable. The Owner is a governmental agency and will not be taxed.

EXCEPTIONS TO THE ORDINANCES

Lockport Township Fire Protection District is requesting several exceptions to the zoning ordinance. The following are the requested exceptions:

- Building façade masonry quantities
- Use of metal panels for exterior building material.
- Height of accessory structures
- Use of shipping containers
- Building signage
- Curb cut widths
- Plantings on parking lot islands
- Loading zones

Please refer to section ZONING ORDINANCE EXCEPTIONS for additional detail.

PART 3

RESPONSE TO PLANNED UNIT DEVELOPMENT OBJECTIVES

The following are responses to the Objectives in the Zoning Ordinance, Section 10.0-2.

Through proper planning and design, each PUD should include features which further, and are in compliance with, the following objectives:

1. To allow for the design of developments that are architecturally and environmentally innovative, and that achieve better utilization of land than is possible through strict application of standard zoning and subdivision controls.
   RESPONSE: The proposed public safety training grounds project is committed to fostering collaboration among various public safety agencies, supporting coordination of various public safety functions, and developing a one-stop shop that serves multiple needs. By embracing a flexible approach to zoning controls, the project aims to maximize land use efficiency, ensuring that the development not only meets operations requirements but also enhances the surrounding environment.

2. To encourage land development that, to the greatest extent possible, preserves natural vegetation, respects natural topographic and geologic conditions, and refrains from adversely affecting flooding, soil, drainage, and other natural ecological conditions.
   RESPONSE: The existing farmland does not have any natural vegetation that would be negatively impacted. Tree lines are located outside the property boundaries and will not be altered. There will be minor topographic changes to the site, except for the firing range which will have berms built to mitigate noise from the firing range. Engineering solutions, including stormwater detention, are in place to prevent negative impact on stormwater drainage.

3. To combine and coordinate architectural styles, building forms, and structural/visual relationships within an environment that allows mixing of different land uses in an innovative and functionally efficient manner.
   RESPONSE: The Training/ Maintenance Facility design is representative of a rural industrial structure that is well suited for the site. The impressive design will have a strong street presence and will be a source of pride for the District.

4. To provide for abundant, accessible, and properly located public open and recreation space, private open and recreation space, schools, and other public and private facilities.
   RESPONSE: This project is specifically designed for public safety training and is not suitable for public or private recreational use.

5. To promote the efficient use of land resulting in networks of utilities, streets, and other infrastructure features that maximize the allocation of fiscal and natural resources.
   RESPONSE: This property is very well suited to use as public safety training grounds. In the context of training grounds, the site is keeping the general parking and Training/ Maintenance

building on the north side of the site, adjacent to Division Street, while maintaining open areas on the southern half of the site for various types of training exercises. While there will be some structures on the site, the vast majority of the area will be open and flexible for the training needs of the District.

6. To enable land developments to be completely compatible and congruous with adjacent and nearby land developments.
   RESPONSE: The property is located within an M-1, Light Manufacturing District, which aligns with the surroundings area's industrial land use. The site was previously owned by the Department of Corrections (DOC) and will now be used for training purposes by the District. The adjacent properties to the east, south, and west are owned by the DOC, while the Will County Forest Preserve lies across Division Street to the north. Given the surrounding properties are primarily designated for manufacturing activities, the proposed training grounds will be compatible with the existing land uses.

7. To ensure that development occurs at proper locations, away from environmentally sensitive areas, and on land physically suited to construction.
   RESPONSE: The site is well-suited for development as training grounds due to its location and current land use. The property is centrally situated within the District, which ensures efficient access for in-service staff during training events. The land is currently used for farming, and there are no environmentally sensitive areas nearby that would be negatively impacted by development. Additionally, the flat and open terrain of the site makes it physically suitable for construction and training activities, minimizing environmental disruption.

8. To allow unique and unusual land uses to be planned for and located in a manner that ensures harmony with the surrounding community.
   RESPONSE: The Training/Maintenance building, the primary structure on the site, will be located on the northern side of the property. Its street front position is preferred as it provides a prominent presence within the community. This location also allows for easy access to general parking and ensures smooth entry and exit for large vehicles accessing the maintenance building, without disrupting the training areas to the south. Berms will be installed along the perimeter of the property to offer weather protection during training sessions and create a visual buffer from adjacent properties.

9. To create a method for the permanent preservation of historic buildings and/or landmarks.
   RESPONSE: This property, currently used as farmland, does not have any historic buildings or landmarks.

10. To provide a variety of housing types.
    RESPONSE: This PUD is not for a residential district and therefore this item is not applicable.

11. To provide a development that does not endanger the public health, welfare, or safety.
    RESPONSE: The intent of this training facility is to train individuals and improve their responses to emergency calls. This will improve overall public health, welfare and safety of the community through public safety service and response.

FGMARCHITECTS

PART 4

COMMUNITY BENEFIT STATEMENT
Response to Zoning Ordinance 10.3-2.b.9.

Please refer to following pages for Community Benefit Statement.

Lockport Township Fire Protection District

19623 Renwick Road | Lockport, Illinois 60441
Office 815.838.3287 | Fax 815.838.9141 | www.lockportfire.org

Community Benefit Statement
RE: Proposed Public Safety Training and Maintenance Facility

February 3rd, 2025

Dear Mayor and City Council Members,

The Lockport Township Fire Protection District (LTFPD) submits this Community Benefit Statement to express our strong support for the proposed Fire and Police Training and Maintenance Facility within the City of Crest Hill. We believe this facility will provide essential benefits to our community, bolster public safety operations, and enhance regional emergency response capabilities for both fire and law enforcement agencies.

1. Enhanced Training and Preparedness

The establishment of a joint training facility will create a state-of-the-art environment for our emergency responders to practice critical skills and maintain certifications. As first responders, our personnel must remain prepared for a diverse array of challenges. The proposed facility will allow LTFPD firefighters to participate in cutting-edge training programs that mirror real-world scenarios. These experiences will improve our ability to respond to fires, medical emergencies, hazardous materials incidents, and other complex emergencies within Lockport Township and beyond.

2. Collaboration and Interagency Cooperation

This facility will foster vital collaboration between fire, police, and emergency medical services (EMS) personnel. Joint training exercises will enhance coordination between LTFPD and the Crest Hill Police Department, as well as neighboring departments. The shared space will allow both agencies to streamline their operations during emergencies and ensure that response times are as fast and efficient as possible. By training together, we can better understand each other's roles and procedures, which ultimately results in better outcomes for those we serve.

3. Public Safety and Crisis Management

A dedicated training and maintenance facility directly supports our mission of protecting the lives and property of our residents. The ability to conduct realistic training simulations—such as active shooter drills, fire suppression techniques, and mass casualty responses—will directly contribute to improved public safety and crisis management during real-world emergencies. This facility will also serve as a hub for post-event analysis, training refreshers, and specialized instruction, ensuring our personnel are always at the top of their game.

4. Economic and Community Impact

While the primary benefit of the facility is enhancing the safety and preparedness of our first responders, there are also important economic benefits for the community. By developing a central training hub within

Lockport Township Fire Protection District

19623 Renwick Road | Lockport, Illinois 60441
Office 815.838.3287 | Fax 815.838.9141 | www.lockportfire.org

Crest Hill, we create opportunities for local employment and potentially attract training-related business and tourism to the area. Additionally, the long-term operational costs of the facility can be offset by shared resources between the city, fire district, and police department, creating fiscal efficiency for all stakeholders.

5. Maintenance of Equipment and Apparatus

The facility will also provide space for the regular maintenance and repair of fire and EMS apparatus, ensuring that equipment is always in operational condition. The expansion of the emergency vehicle maintenance program will allow LTFPD to offset taxpayer dollars by providing maintenance service to other emergency providers.

6. Improved Response Times and Readiness

Through continuous training and state-of-the-art equipment maintenance, we anticipate a direct improvement in our fire district's response times and overall readiness. Better-trained personnel, operating well-maintained vehicles and apparatus, can be deployed faster to incidents, thereby improving outcomes in emergencies. Additionally, the new maintenance facility will alleviate space at Station #6 for all Specialty Team apparatus. This station is centrally located within the Fire District and will allow for reduced response times for Water Rescue, Technical Rescue, Search & Rescue and Hazardous Materials type emergency incidents.

Conclusion

In conclusion, the proposed Public Safety Training and Maintenance Facility represents a significant opportunity to enhance public safety, promote interagency collaboration, and create a well-maintained, prepared, and efficient emergency response community. The Lockport Township Fire Protection District strongly supports this project and looks forward to working with the City of Crest Hill to ensure its successful development and operation.

We are confident that this facility will serve as a cornerstone for continued excellence in emergency services and public safety in our region. Please do not hesitate to contact us should you require additional information or wish to discuss the proposal further.

Thank you for your consideration of this important initiative.

Sincerely,

John O'Connor, Fire Chief
Lockport Township Fire Protection District
joconnor@lockportfire.org

PART 5

LETTERS OF SUPPORT

Please refer to following pages for Letters of Support.

DISTRICT OFFICE:
1050 W. ROMEO RD
ROMEOVILLE,, IL 60446
TEL 815-725-2741

CAPITOL OFFICE:
253-E STRATTON BUILDING
SPRINGFIELD, IL 62706
(217) 782-3316

Natalie Manley
STATE REPRESENTATIVE
98TH DISTRICT

February 10, 2025
Fire Chief John O'Connor
Lockport Township Fire Protection District
19623 Renwick Rd
Lockport, Illinois 60441

Dear Chief O'Connor,

I am pleased to offer my full support for the development of a new public safety training facility that will serve the dedicated first responders of our community. The establishment of this facility is a vital step toward enhancing the preparedness and effectiveness of our area fire and police departments, ensuring the highest level of service and protection for the residents of Lockport Township and the 98 th District.

Our public safety depends on the seamless cooperation between fire, police and emergency medical services. In times of crisis, our first responders must work together efficiently and effectively. A joint training facility will provide the opportunity to strengthen interagency cooperation and enhance overall emergency management.

Investing in this training facility is an investment in the safety and well-being of our entire community. It will ensure our first responders have access to modern resources and realistic, comprehensive training which will help prepare them for the ever-evolving challenges that they face in the line of duty. This initiative reflects our collective commitment to public safety, and I commend the Lockport Township Fire Protection District and the Lockport Police Department for their dedication to fostering a collaborative approach.

As your State Representative I stand in strong support of this project and will continue to advocate for the improved safety of the residents of our community. Please do not hesitate to contact me if I can be of any further assistance in advancing this important initiative.

Sincerely,

State Representative Natalie A. Manley

Natalie A. Manley

Village of Romeoville
Where Community Matters

February 18, 2025

Public officials,

I would like to take this opportunity to show my support for the public safety range that is proposed by the Lockport Fire District. The Romeoville Police Department supports the idea of an outdoor range suitable for training of Police Officers and an equitable agreement for use by Romeoville Police Officers.

The Increased state mandates for Police Departments have created a need for locations in which these training requirements can be met in a safe and efficient manner. The proposed location and range will allow for both of these requirements to be achieved.

Thank you for your consideration,

Brant Hromadka / Chief of Police

LOCKPORT POLICE DEPARTMENT

Richard Harang
Chief of Police

1212 S. Farrell Road
Lockport, IL 60441
(815) 838-2132
Fax: (815) 838-9233
www.lockportpolice.info

February 18, 2025

Chief John O'Connor
Lockport Fire Protection District
19623 Renwick Rd.
Lockport, IL 60441

Dear Chief O'Connor,

I am writing this letter to express my ardent support for the proposed pubic safety training facility that will be built on Division St in Crest Hill. This facility will be a shining example of cooperation and collaboration among numerous area public safety agencies and is a model of what other agencies should strive for as we seek to improve training and preparedness for both the fire and police services.

Every part of this facility serves to benefit all of our communities. The multipurpose training and maintenance building will provide needed classroom space to conduct the ever-increasing number of continuing education courses that are required by both of our professions. While most people would not consider a burn tower as being a valuable training aid for law enforcement, the structure provides a location for officers to practice critical exercises in building searches and clearance in a dynamic environment. The presence of an outdoor public safety firing range holds benefits beyond traditional marksmanship training. The space will allow officers a location where they can drill with critical equipment such as ballistic shields, aerial and ground drones, and less lethal weapons.

There can be no doubt that well trained first responders are vital to a community's safety and security. Through your leadership in developing this educational partnership opportunity, you are ensuring that this benefit is extended to every resident who lives within the fire district's boundaries and beyond.

Sincerely,

Rich Harang
Chief of Police
Lockport Police Department

Lewis University Police Department

Mike Zegadlo
Chief of Police

Chief John O'Connor
Lockport Township Fire Protection District
19623 W. Renwick Road
Lockport, Illinois 60441-3600

October 7, 2024

Dear Chief O'Connor:

I am writing to express my support for the project proposal for the Lockport Fire Training and Maintenance Facility. Having reviewed the plans and considered the insights you've personally shared, I believe the facility would have a significant positive impact on public safety throughout our community. The proposal to integrate police use of force training facilities into the project creates a unique opportunity for collaboration in training and preparedness across multiple disciplines. Our community members will be the beneficiaries of this new era of collaboration.

As demonstrated by the success of programs like rescue task force training and unified command and control training, first responders are most effective when they are highly collaborative and seamlessly integrated. The days of siloed structures with minimal communication are gone. Modern effective first response relies on collaboration, communication and mutual awareness. Lockport Township Fire Protection District has been a leader in embracing this mindset.

As a tactical trainer for most of my law enforcement career, I'm continually challenged to access modern facilities to deliver the best use of force training to my officers. Whether it be de-escalation, open hand control tactics, less-lethal weapons systems, or firearms, training for these types of high-risk, low-frequency encounters is crucial to officer and community safety. Finding safe, modern, accessible facilities to conduct the training is an on-going challenge, especially for small departments with limited resources like LUPD. The facility your department is proposing would be a game-changer for many first responders in our jurisdiction and I support it without reservation.

Thank you for leadership on this project and your continued support and assistance to LUPD and the Lewis University community. Your collaboration and partnership are invaluable!

Sincerely,

Michael J. Zegadlo
Chief of Police

WILL COUNTY, ILLINOIS
EMERGENCY MANAGEMENT AGENCY

JENNIFER BERTINO-TARRANT
WILL COUNTY EXECUTIVE

ALLISON ANDERSON, CEM
DIRECTOR

P. 815-740-8351
F. 815-723-8895

Will County Office Building
302 N. Chicago Street
Joliet, IL 60432

John O'Connor
Fire Chief
Lockport Township Fire Protection District
19623 Renwick Road
Lockport, IL 60441

Re: Letter of Support for Lockport Fire Protection District's Public Safety Training Facility

Dear Chief O'Connor,

I am writing to express my strong support for the Lockport Fire Protection District's Public Safety Training Facility. As the Director of the Will County Emergency Management Agency, I have witnessed firsthand the critical need for accessible, high-quality training opportunities for our public safety professionals. This facility represents a significant investment in the safety, preparedness, and effectiveness of our fire service personnel and the broader emergency response community.

The addition of this training facility will provide fire departments across the region with a dedicated space to conduct realistic, scenario-based training exercises. The ability to train in a controlled environment that mirrors real-world emergency situations will enhance the readiness of our firefighters, ensuring they are well-prepared to respond to fires, hazardous materials incidents, technical rescues, and other complex emergencies.

Beyond its impact on fire departments, this facility will serve as a vital resource for multi-agency training and collaboration. As emergency incidents grow in complexity, cross-disciplinary coordination is more critical than ever. A centrally located, purpose-built training site will foster stronger relationships among fire departments, law enforcement agencies, emergency medical services, and emergency management professionals, ultimately leading to more efficient and effective emergency responses in Will County and beyond.

Furthermore, investing in local training capabilities reduces the need for agencies to send personnel out of the region for specialized training, resulting in cost savings and increased availability of emergency responders within their respective jurisdictions. The Lockport Fire Protection District's vision for this facility aligns with the highest standards of public safety excellence and preparedness, making it an invaluable asset to our community.

I strongly encourage your support for this initiative. The Lockport Fire Protection District's Public Safety Training Facility will play a crucial role in strengthening our emergency response capabilities, enhancing firefighter safety, and ultimately protecting the residents of Will County. I appreciate your time and consideration and look forward to seeing this project come to fruition.

Respectfully,

Allison J. Anderson

Allison J. Anderson

Meg Loughran Cappel

SENATOR • 49th SENATE DISTRICT
WWW.SENATORLOUGHRANCAPPEL.COM

Springfield Office:
Stratton Office Building
Section C, Room M
Springfield, IL 62706
(217) 782-0052

District Office:
20660 Caton Farm Rd.
Unit D
Crest Hill, IL 60403
(815) 267-6119

February 19, 2025

Fire Chief John O'Connor
Lockport Township Fire Protection District
19623 Renwick Road
Lockport, Illinois 60441

Dear Chief O'Connor,

I am writing to express my full support for the development of a new public safety training facility to benefit the dedicated first responders of our community. Providing police, fire, and EMS personnel with a modern training environment is essential to recreating realistic scenarios that mimic real life emergencies.

A comprehensive training facility will not only benefit firefighters but will also provide an opportunity for police and fire personnel to train together, strengthening coordination during emergencies. In times of crisis, seamless collaboration between fire and law enforcement is essential to ensure public safety, whether responding to fires, medical emergencies, natural disasters, or other critical incidents. By training alongside one another, first responders can improve communication, refine joint response strategies, and enhance overall efficiency in life-saving efforts.

This project is a necessary investment in the future of our community's safety. By approving this state-of-the-art training facility, we are equipping our first responders with the skills and experience they need to protect residents in any situation. I commend the Lockport Township Fire Protection District and the Lockport Police Department for their commitment to advancing public safety through this initiative.

I fully support this project and encourage all necessary approvals and funding to be granted to make this facility a reality. Thank you for your consideration of this important initiative.

Sincerely,

Meg Loughran Cappel

Senator Meg Loughran Cappel
Illinois State Senate District 49

PART 6

SITE ELEMENTS AND BUILDING DESCRIPTIONS

The following is a description of the site elements and buildings included in the Planned Unit Development.

Project Location: 12.86 acre parcel of land west of Statesville Correction Facility
Project PIN: 11-04-29-200-009-0000

A. SITE:

1. Entrance: A single entrance will be provided to the site. The drive will be accessed directly off Division Street. The existing gravel frontage road will be eliminated within the property boundaries.

2. Parking: Quantity of parking provided is greater than the required parking based on the Zoning Ordinance Off-Street Parking and Loading:
    a. Zoning Ordinance 11.8-4: The maintenance side of the building is considered Warehouse and Storage Building. There will be 2-4 employees. The maintenance bay will be able to house 12 vehicles (6 double bays). The total maximum required parking is 16.
    b. Zoning Ordinance 11.8-5: The training side of the building is considered Business, Professional, Trade School. There will be 3 classrooms for 50 students each. There will be 1 training officer and up to 3 instructors. The total maximum parking required is 42.
    c. Total required parking is 58, including 3 accessible parking spaces (Illinois Accessibility Code, Table 208.2).
    d. Total actual parking is 175, including 6 accessible parking spaces.

3. Trash Enclosure: There will a 3 sided enclosure (solid fence) made of aluminum posts with attached vinyl slats (CCH Code of Ordinances 7.12.050,D). The enclosure will be approximately 6 ft. tall (minimum required is 6 ft. tall).

4. Extrication Area: This is an area for training on vehicles where extrication training will take place. The area will be approximately 75 ft wide x 150 ft. long and will be graveled surface.

5. Burn Pit: The burn pit is an area where excess materials that are removed from the burn tower will be placed for final burning. The area will be approximately 40 ft x 40 ft.

6. Storm detention/ Training Pond: The storm detention pond will also be used as training pond. There will be a dive dock, a vehicle dive prop, a boat ramp and an area where pump trucks can draft from the pond directly into the pump truck.

7. Memorial Plaza: A 25 ft. diameter memorial plaza will be located between the Training/

Maintenance Facility and the Shooting Range. The plaza will be placed between the two facilities and will be accessed by concrete sidewalks. The plaza will have 3 flag poles (30 ft. maximum height) and will be surrounded on the west side by shade trees, and smaller plantings.

B. BUILDINGS:

1. Training/ Maintenance Facility (Building No. 1):
    a. Building Use: Approximately half of the facility will be used for classroom training. It will include 3 classrooms, an office, break rooms, storage spaces, mechanical spaces (IT, HVAC, Electrical, Sprinkler) and toilet facilities. The other half of the facility will be used for reserve vehicle storage and maintenance of FPD vehicles.
    b. Building Construction: The primary structure and exterior envelope will be a pre-engineered building, Construction type 3B.
    c. Number of Stories: 1.
    d. Building Height: Approximately 35'-0" to the median height of the tallest roof.
    e. Exterior Construction Materials:
        i. Roof: Metal panels.
        ii. Walls: Metal panels and masonry
        iii. Exterior Windows and Doors: Aluminum storefront with 1" insulated, low-E glazing.
        iv. Exterior Lighting:
            1. Wall packs above overhead doors.
            2. Wall sconces at man doors.
            3. Downlighting at main entrance

2. Outdoor Training Classroom, Building 2 (Accessory Structure):
    a. Building Use: Training area and refuge during inclement weather.
    b. Building Construction: Structural frame will be steel. Storage containers will separate 2 areas under the roof.
    c. Building Size (footprint): 3,360 gsf.
    d. Number of Stories: 1
    e. Building Height: Approximately 15'-6" to the highest point.
    f. Exterior Construction Materials:
        i. Roof: Metal panels.
        ii. Walls: Storage containers, metal.
    g. Exterior Lighting: pendant lighting underneath roof structure.

3. Main Burn Tower:
    a. Building Use: Tower is used for training purposes, including fire fighting, search and rescue, forcible entry and technical rescue to name a few.
    b. Building Construction: Pre-manufactured box containers specifically designed for fire fighting training.
    c. Building Size:
        i. Overall GSF: 7,892

ii. Footprint GSF: 2,676

d. Number of Stories: 4
e. Building Height: 45'-3"
f. Exterior Construction Materials: Metal panels for roof and walls.

4. Range Canopy (refer to Section C below for further description of the shooting range):
   a. Structure Use: Cover during inclement weather and shooting platform.
   b. Structure Construction: Pre-manufactured metal structure w/ metal roof (no walls) sitting on a 20' x 60' concrete slab on grade.
   c. Structure Size: Two structures at approximately 150 square feet each.
   d. Structure Height: 15'-0" maximum.

5. Noise Barrier Wall, adjacent to range canopy (refer to Section C below for further description of the shooting range):
   a. Structure Use: Deflect noise on north side of shooting range.
   b. Structure Construction: Perforated reinforced fiberglass walls (tongue and groove design), supported by vertical steel columns anchored to concrete footings.
   c. Structure Size: Approximately 70 ft. in length and 20 ft. in height.

C. OUTDOOR FIRING RANGE:

The sole intent of the outdoor shooting range is the cooperation between law enforcement and the fire service in Lockport Township to best utilize property donated by the State of Illinois for training purposes to better serve the community and the resident who live here. It is understood that the Lockport Township Fire Protection District will be requesting an approval for a TEXT AMENDMENT to the City of Crest Hill Zoning Ordinance for the inclusion of the shooting range. The text amendment is included in the Project Narrative.

- The firing range will be located on the southeast corner of the property.
- The overall size of the firing range (including berms) is approximately 210 ft. wide by 420 ft. long.
- The firing range is 100 yards by 27 yards wide.
- Firing Direction – South
- Range is surrounded by 24 ft. high berms on the east, west and south sides with natural vegetation designed to dampen sound. The berms will have a hybrid slope. The first 12 ft. will have a slope of 1:1.5 and the next 12 ft. will have a slope of 1:1. These berms are steep and are intended to be low-no maintenance. The spoils from the site excavation are expected to be used for the berms. Geotech mats will be placed on the berm to aid in the establishment of native plantings.
- Two canopy type structures placed on the concrete platform will be used as cover during inclement weather. Each of these structures is approximately 10'w x 15'l x 15'h.
- Majority of the training will be using handguns on the southernmost part of the range 15-20 yards from the end berm.
- There will be spot lighting on the range for evening/ nighttime shooting.
- There will be a vertical sound attenuation barrier wall on the north side of the shooting range, directly behind the canopies. Refer to description above.

PART 7

ZONING ORDINANCE EXCEPTIONS

Lockport Township Fire Protection District is requesting exceptions for the items listed below.

A. Masonry requirements on Training/Maintenance Facility (Building 1):
    a. Zoning Ordinance 8.7-2.(2): Total quantity of masonry required on one façade is 80%. The majority of the masonry is on the west and north sides of the building. The west façade has a maximum of 45% and the north façade has a maximum of 40%.
B. Metal panels on Training/Maintenance Facility (Building 1) and Tower Training Classroom (Building 2):
    a. Zoning Ordinance 8.7-2(3.): Metal panels will be disapproved unless a variance is granted. The building materials for the Training/Maintenance Facility (Building 1) is a combination of metal panels and stone.
    b. The building materials for the Tower Training Classroom are a combination of metal panels and storage containers.
C. Accessory Buildings maximum height:
    a. Zoning Ordinance 8.3-7: maximum height of accessory buildings is 15'-0".
    b. Buildings 2 will be approximately 15'-6" to the highest point.
    c. Burn Tower will have a height up to 45'-6".
D. Shipping Containers:
    a. Zoning Ordinance 8.3-9.6: shipping containers are not permitted. Building 2 and the Burn Tower are constructed using shipping containers.
E. Training/Maintenance Facility Building Signage:
    a. Municipal Code 15.12.080, C, 2: Bottom of wall signs should be 10'-0" above grade. The bottom of the signage on the West side of the building is 6'-0" above grade.
F. Curb cut width at main entrance:
    a. Municipal Code, 15.04.040.I.(8): The maximum width of a curb cut is 30'-0". The proposed curb cut is approximately 150 ft., which allows fire trucks to enter and exit the site safely.
G. Parking lot island landscaping:
    a. Zoning Ordinance, 11.6-2: Parking lot islands are required to be landscaped. There are a few islands on the south side of the Training/Maintenance facility that will be striped to allow for large vehicle maneuvering AND for the driver testing area.
H. Loading Zone:
    a. Zoning Ordinance 11.11-15: A 12' x 65' loading zone is required for schools, institutions and places of assembly that are greater than 20,000 square feet. Firstly, the Training facility side will be 10,285 square feet. The maintenance side will be 12,785 square feet. Secondly, the training side of the facility will not operate the same as a school, hospital, church where there is a need for drop off/ pick up areas. This is a facility where trainees will drive themselves (or carpool) and park for the day.

PART 8

PROPOSED TEXT AMENDMENTS to the City of Crest Hill Zoning Ordinance

Lockport Township Fire Protection District is requesting text amendments to the City of Crest Hill Zoning Ordinance.

Final language will be defined as part of the City's text amendment review and approval process.

Section 2.0 Definitions
Add Outdoor Firing Range, Government Training Purposes: The use of a designated outdoor area accessory to a government training facility for the discharging of firearms for the purposes of target practice or military/law enforcement training.

Off Street Parking
Section 11.8-5 Schools, Institutions, and Places of Assembly
Add **k.** Outdoor Firing Range, Government Training Purposes: One (1) parking space shall be provided for each firing station located within the designated outdoor firing range, plus two (2) parking spaces for the instructors/employees.

Table 4: Index of Permitted & Special Uses – Non Residential Uses
Add:

Use	M-1	Use Standards
Outdoor Firing Range, Government Training Purposes (accessory)	*S*	

Section 8.8-1 Noise
Following the first two paragraphs in the ordinance
"The operation on any property shall not create or cause to be created noise in excess of the maximum sound levels permitted by the applicable Illinois Pollution Board Rules and Regulations for Noise Pollution.
In addition to the standards set forth above, no land use or other activity within the City, other than those specified below, shall be conducted in such a manner that it generates a level of sound on another property which is greater than the sound level set forth in the table below as established for residential and non-residential uses. "

Add :
Outdoor government training firing ranges that have received special use approval from the City of Crest Hill are exempt from the standards specifics below.

PART 9

EXHIBITS

(24 x 36 drawings)

- Exhibit 'A' 1 Civil Preliminary & Final Planned Unit Development Plan
- Exhibit 'B' Engineering Improvement Plans and Details
  - C1 Cover Sheet
  - C2 Project Specifications
  - C3 Existing Conditions & Demolition Plan
  - C4 Site Dimensional & Paving Plan (North)
  - C5 Site Dimensional & Paving Plan (South)
  - C6 Grading Plan (North)
  - C7 Grading Plan (South)
  - C8 Utility Plan (North)
  - C9 Utility Plan (South)
  - C10 Site Stabilization Plan (North
  - C11 Site Stabilization Plan (South)
  - C12 Construction Standards
  - C13 Construction Standards
  - C14 Construction Standards
  - C15 Construction Standards
  - C16 Construction Standards
  - C17 Construction Standards
- Exhibit 'C' Plat of Survey
- Exhibit 'D' Overall Truck Turn Exhibits
  - 1 Overall Truck Turn Exhibit
  - 2 Overall Truck Turn Exhibit
- Exhibit 'E' Landscape Plans and Details
  - L1 Landscape Overview & Tree Plan
  - L2 Landscape Enlargement
  - L3 Landscape Enlargement
  - L4 Landscape Details
  - L5 Landscape General Notes
- Exhibit 'F' Architectural Site Plan and Details
  - AS0.1 Overall Architectural Site Plan
  - AS1.1 Site Details
- Exhibit 'G' Training/ Maintenance Facility (Building 1) Plans and Elevations
  - A1.1 Training/ Maintenance Facility (Building 1) Overall Floor Plan
  - A1.2 Exterior Elevations
  - A1.3 Exterior Elevations
  - A1.4 Perspectives
  - A1.5 Perspectives
- Exhibit 'H' A3.0 Training/ Maintenance Facility (Building 1) Signage Details

- Exhibit 'I' A2.1 Tower Training Classroom (Building 2) Plans and Elevations
- Exhibit 'J' Site Plan Photometrics
    - ES-1.1 Overall Site Plan Photometrics
    - ES-1.2 Overall Site Plan Fixture Cuts

(11 x 17 drawings)

- Exhibit 'K' Zoning Map with firing range distances
- Exhibit 'L' Existing Agricultural Drain Tile Investigation Plan
- Exhibit 'M' Main Burn Tower Floor Plans and Elevations

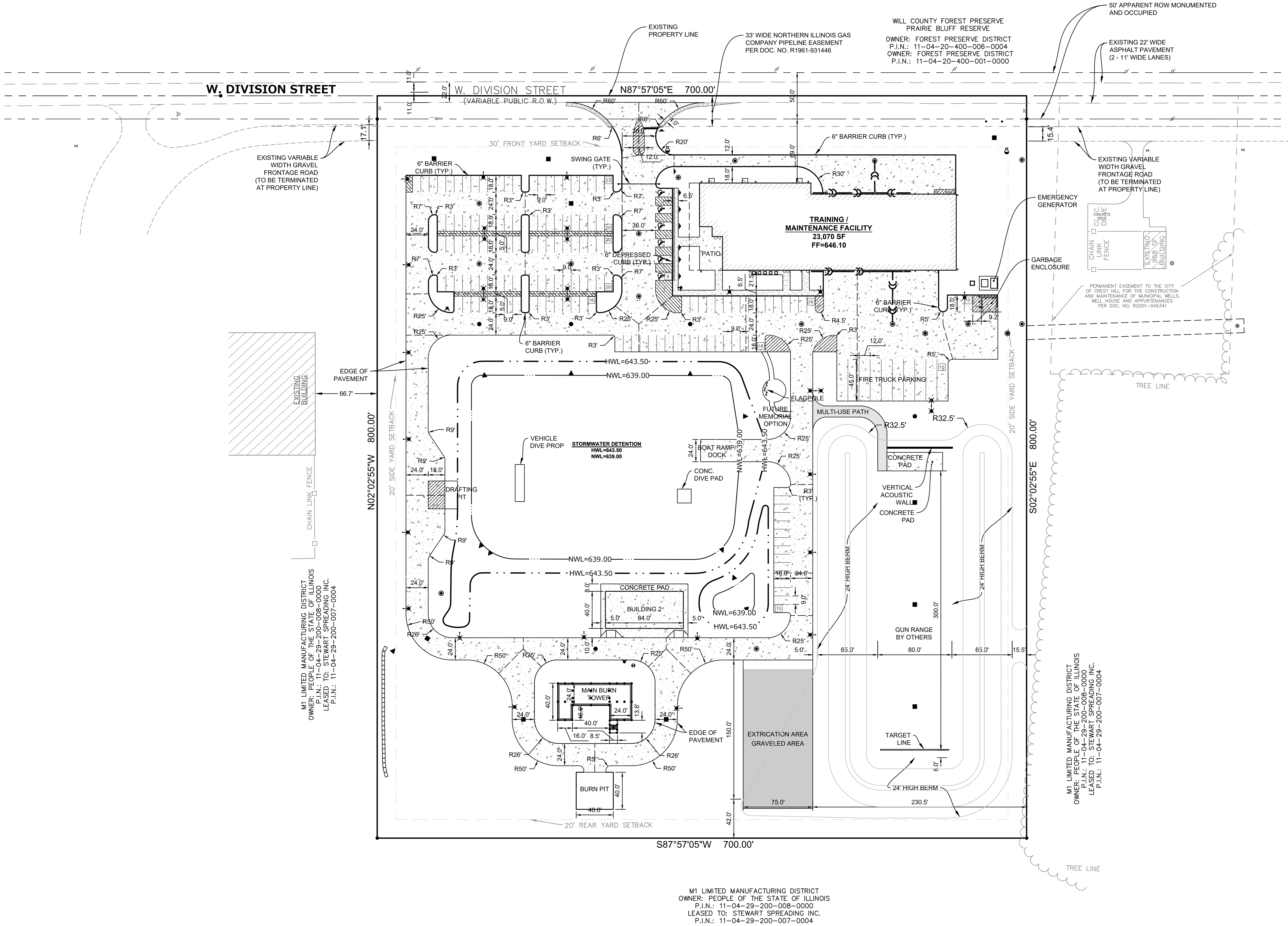
(8-1/2 x 11 documents)

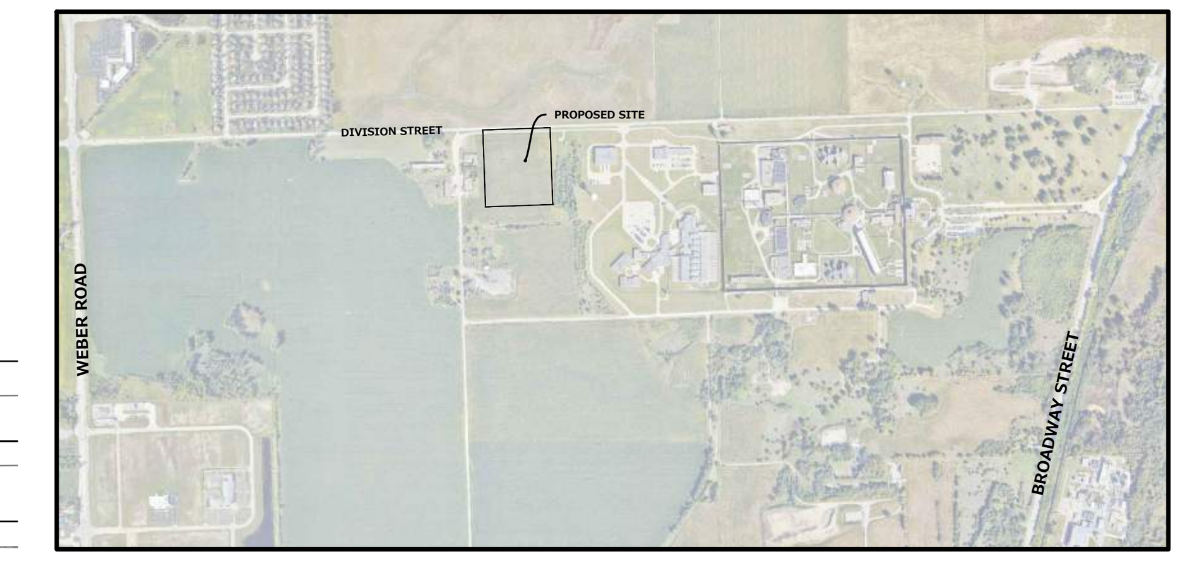
- Exhibit 'N' Stormwater Management Report
- Exhibit 'O' Quit Claim Deed
- Exhibit 'P' Traffic Impact Study
- Exhibit 'Q' Soil Borings report
- Exhibit 'R' Range Sound Test Results
- Exhibit 'S' Sound Statement from Soundscape Engineering, LLC

EXHIBIT ‘A’

CIVIL PRELIMINARY & FINAL PLANNED UNIT DEVELOPMENT PLAN

EXHIBIT 'A'





LOCATION MAP SCALE: 1"=2000'

LEGEND

CONCRETE PAVEMENT
8" PORTLAND CEMENT CONCRETE MINIMUM 4000 PSI AT 14 DAYS
6" COMP. CA-6 AGGREGATE BASE COURSE, TYPE B

PAVEMENT SECTION SHALL BE PER GEOTECHNICAL ENGINEER'S RECOMMENDATION OR PER OWNERS SPECIFICATION

SIDEWALK
5" PORTLAND CEMENT CONCRETE
4" COMPACTED CA-6 AGGREGATE BASE COURSE, TYPE B

GRAVEL
12" CA-6 COMPACTED AGGREGATE

6" BARRIER CURB
B-6.12 CURB & GUTTER
DEPRESSED B-6.12 CURB & GUTTER
10 PARKING STALL COUNT (NOT TO BE PAINTED)

CONTACT INFORMATION

ENGINEER:
PINNACLE ENGINEERING GROUP, LLC
BRIAN JOHNSON, PE, CPESC
1051 E MAIN STREET, SUITE 217
EAST DUNDEE, IL 60118

PROPERTY OWNER:
LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT
19623 W. RENWICK ROAD
LOCKPORT, IL 60441

UTILITY LEGEND

EXISTING / PROPOSED

SANITARY MANHOLE
STORM MANHOLE
CATCH BASIN
INLET
PRECAST FLARED END SECTION
CONCRETE HEADWALL
VALVE VAULT
VALVE BOX
FIRE HYDRANT
BUFFALO BOX
CLEANOUT
SANITARY SEWER
FORCE MAIN
STORM SEWER
DRAIN TILE
WATER MAIN
LIGHTING
ELECTRICAL CABLE
ELECTRICAL TRANSFORMER OR PEDESTAL
POWER POLE
GUY WIRE
STREET SIGN
GAS MAIN
TELEPHONE LINE

SITE DATA

TOTAL PROPERTY AREA:	560,000 SF (12.86 ACRES)
APPARENT ROW MONUMENTED & OCCUPIED:	0.40 ACRES
DEVELOPED AREA:	12.46 ACRES
PIN:	11-04-29-200-009-0000
EXISTING ZONING: M1 - LIMITED MANUFACTURING DISTRICT	
TRAINING MAINTENANCE FACILITY	
FLOOR AREA:	23,070 SF
CONCRETE PAD:	5,452 SF
MAIN BURN TOWER:	2,678 SF
FAR:	0.056
OUTDOOR FIRING RANGE:	24,720 SF
LOT COVERAGE:	245,162 SF (43.8%)
TOTAL FRONT YARD AREA:	49,143 SF
IMPERVIOUS (FRONT YARD):	11,814 SF (76.0%)
LANDSCAPING (FRONT YARD):	37,329 (24.0%)
REQUIRED PARKING:	
TRAINING FACILITY:	2 SPACES / 3 EMPLOYEES = 38 SPACES
(TRADE SCHOOL)	1 SPACE / 4 STUDENTS = 4 SPACES
MAINTENANCE FACILITY:	1 SPACE / EMPLOYEE = 6 SPACES
(WAREHOUSE)	1 SPACE / VEHICLE = 12 SPACES
TOTAL REQUIRED:	60 SPACES
PROVIDED PARKING:	
FAR:	159 STALLS (INCLUDING 6 ADA SPACES)
TRUCK:	10 STALLS

LANDSCAPING NOTE

- NO TREES ARE BEING PRESERVED ON THE SUBJECT SITE DUE TO LACK OF EXISTING TREE VEGETATION ON SITE

NORTH

GRAPHICAL SCALE (FEET)
0 1" = 60' 120'

THESE PLANS AND DESIGNS ARE COPYRIGHT PROTECTED AND MAY NOT BE USED IN WHOLE OR IN PART WITHOUT THE WRITTEN CONSENT OF PINNACLE ENGINEERING GROUP, LLC

2/18/2025 5:07 PM – Z:\Projects\2023\5219.00-IL\600 – CAD\FINAL\EXHIBITS\CONCEPTUAL PUD – SITE PLAN 02-12-25.dwg

REVIEWED: DAT
DESIGNED: DAT
DRAFTED: JAM

PLAN I DESIGN I DELIVER
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PINNACLE ENGINEERING GROUP
IL DESIGN FIRM 184.006289-0010
ENGINEERING I NATURAL RESOURCES I SURVEYING

CHICAGO OFFICE:
1051 E. MAIN ST. | SUITE 217
EAST DUNDEE, IL 60118
(847) 551-5300
CHICAGO I MILWAUKEE : NATIONWIDE

LOCKPORT TOWNSHIP FPD
TRAINING & MAINTENANCE FACILITY
CREST HILL, ILLINOIS

REVISIONS

1	PUD RESUBMITTAL	01/10/25
2	PUD PRELIM AND FINAL	02/13/25

PRELIMINARY AND FINAL PLANNED UNIT DEVELOPMENT PLAN

PEG JOB No. 5219.10-IL
PEG PM DAT
START DATE 08-05-24
SCALE 1"=60'

SHEET 1 OF 1

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PRELIMINARY AND FINAL PLANNED UNIT DEVELOPMENT PLAN

EXHIBIT ‘B’

ENGINEERING IMPROVEMENT PLANS AND DETAILS

EXHIBIT B

ENGINEERING IMPROVEMENT PLANS
FOR
LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT
W. DIVISION STREET
CREST HILL, ILLINOIS 60403

PLANS PREPARED
FOR

fgma

1211 WEST 22nd STREET, SUITE 700
OAK BROOK, ILLINOIS 60523
(630) 574-8300

LEGEND

	EXISTING	PROPOSED
SANITARY MANHOLE		
STORM MANHOLE		
CATCH BASIN		
INLET		
PRECAST FLARED END SECTION		
CONCRETE HEADWALL		
VALVE VAULT		
VALVE BOX		
FIRE HYDRANT		
BUFFALO BOX		
CLEANOUT		
SANITARY SEWER		
FORCE MAIN		
STORM SEWER		
WATER MAIN	W	W
UTILITY CROSSING		X
GRANULAR TRENCH BACKFILL		
LIGHTING		
ELECTRICAL CABLE	E	E
ELECTRICAL TRANSFORMER OR PEDESTAL	E	
POWER POLE		
POWER POLE WITH LIGHT		
GUY WIRE		
STREET SIGN		
GAS MAIN	G	G
TELEPHONE LINE	T	T
CONTOUR	749	749
SPOT ELEVATION	×(750.00)	×750.00
WETLANDS		
FLOODWAY		
FLOODPLAIN		
HIGH WATER LEVEL (HWL)		
NORMAL WATER LEVEL (NWL)		
DIRECTION OF SURFACE FLOW		
DITCH OR SWALE		
DIVERSION SWALE		
OVERFLOW RELIEF ROUTING		
TREE WITH TRUNK SIZE	6" 6"	
SOIL BORING	B-2 B-3	B-1
TOPSOIL PROBE		
FENCE LINE, TEMPORARY SILT	SF	SF
FENCE LINE, WIRE		
FENCE LINE, CHAIN LINK OR IRON		
FENCE LINE, WOOD OR PLASTIC		
CONCRETE SIDEWALK		
CURB AND GUTTER		
DEPRESSED CURB		
REVERSE PITCH CURB & GUTTER		
EASEMENT LINE		
PROPERTY LINE		

ABBREVIATIONS

BL	BASE LINE	NWL	NORMAL WATER LEVEL
C	LONG CHORD OF CURVE	PC	POINT OF CURVATURE
C & G	FLOW LINE AND GUTTER	PT	POINT OF TANGENCY
CB	CATCH BASIN	PVI	POINT OF VERTICAL INTERSECTION
CL	CENTERLINE	R	RADIUS
D	DEGREE OF CURVE	ROW	RIGHT-OF-WAY
EP	EDGE OF PAVEMENT	SAN	SANITARY SEWER
FF	FINISHED FLOOR	ST	STORM SEWER
FG	FINISHED GRADE	T	TANGENCY OF CURVE
FL	FLOW LINE	TB	TOP OF BANK
FP	FLOODPLAIN	TC	TOP OF CURB
FR	FRAME	TF	TOP OF FOUNDATION
FW	FLOODWAY	TP	TOP OF PIPE
HWL	HIGH WATER LEVEL	TS	TOP OF SIDEWALK
INV	INVERT	TW	TOP OF WALK
L	LENGTH OF CURVE	WM	WATER MAIN
MH	MANHOLE	△	INTERSECTION ANGLE

CONTACTS

FGM ARCHITECTS
JASON M. ESTES, AIA
VICE PRESIDENT & PRINCIPAL
1211 W. 22nd STREET, SUITE 705
OAK BROOK, ILLINOIS 60523
(630) 574-8300

PINNACLE ENGINEERING GROUP, LLC
BRIAN JOHNSON, PE, CPESC
1051 E MAIN STREET, SUITE 217
EAST DUNDEE, IL 60118
(847) 551-5301

CITY OF CREST HILL
RONALD J. WIEDEMAN, PE
CITY ENGINEER
20600 CITY CENTER BOULEVARD
CREST HILL, ILLINOIS 60403
(815) 741-5122

CITY OF CREST HILL
MIKE EULITZ
INTERIM DIRECTOR OF PUBLIC WORKS
2090 OAKLAND AVENUE
CREST HILL, ILLINOIS 60403
(815) 741-5108

UTILITY CONTACTS

CABLE TELEVISION

COMCAST CABLE
(630) 600-6352 PHONE

ELECTRIC

COMED
(800) 334-7661

NATURAL GAS

NICOR
(888) 642-6748

TELECOMMUNICATIONS

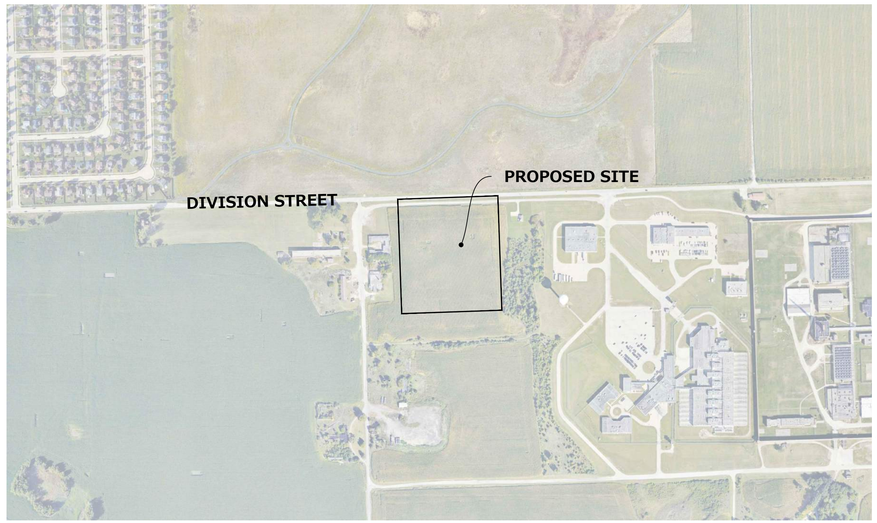
AT&T
(800) 244-4444

BENCHMARKS

REFERENCE BENCHMARK:
WRI 012 (PID: DP5467) WILL COUNTY TO REACH THE STATION FROM THE JUNCTION OF I-55 WITH COUNTY ROAD 36 (RENWICK RD) ABOUT 2.2 MI (3.5 KM) SOUTHEAST OF PLAINFIELD, IL, GO EAST ON COUNTY ROAD 36 (RENWICK RD) FOR 2.1 MI (3.4 KM) TO WEBER ROAD. CONTINUE EAST ON COUNTY ROAD 36 (RENWICK RD) FOR 1.0 MI (1.6 KM) TO THE STATION ON THE LEFT. THE STATION IS LOCATED 32.5 FT (9.9 M) NORTH OF THE EDGE OF PAVEMENT OF COUNTY ROAD 36 (RENWICK RD), 28.5 FT (8.7 M) WEST OF A FIRE HYDRANT AND 7 FT (2.1 M) SOUTH OF A CHAIN LINK FENCE.
DATUM: NAVD88
ELEVATION: 661.68

SITE BENCHMARK 1:
SOUTH FLANGE BOLT ON HYDRANT LOCATED EAST OF PROPERTY, SOUTH SIDE OF W. DIVISION STREET.
ELEVATION: 645.42

EXISTING TOPOGRAPHY SHOWN REPRESENTS SITE CONDITIONS AS PREPARED BY PINNACLE ENGINEERING GROUP, LTD., INC. ON JANUARY 5, 2024. CONTRACTOR SHALL FIELD CHECK EXISTING HORIZONTAL AND VERTICAL SITE FEATURES AND CONDITIONS PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING CONSTRUCTION.



LOCATION MAP
SCALE: 1" = 500'

GENERAL NOTES

1. THE CITY OF CREST HILL COMMUNITY AND ECONOMIC DEVELOPMENT DEPARTMENT SHALL BE NOTIFIED 48 HOURS PRIOR TO COMMENCEMENT OF WORK AND 24 HOURS PRIOR TO EACH INSPECTION AT (815) 741-5107.
2. ALL UTILITY COMPANIES, INCLUDING CITY OF CREST HILL, SHALL BE CONTACTED AND THEIR FACILITIES SHALL BE LOCATED PRIOR TO ANY WORK IN ANY EASEMENT, RIGHT-OF-WAY, OR SUSPECTED UTILITY LOCATION. REPAIR OF ANY DAMAGE TO EXISTING FACILITIES SHALL BE RESPONSIBILITY OF THE CONTRACTOR. UTILITY LOCATIONS SHOWN HEREIN ARE FOR GRAPHIC ILLUSTRATION ONLY AND ARE NOT TO BE RELIED UPON.
3. PRIOR TO COMMENCEMENT OF ANY OFFSITE CONSTRUCTION, THE CONTRACTOR SHALL SECURE WRITTEN AUTHORIZATION THAT ALL OFFSITE EASEMENTS HAVE BEEN SECURED, AND THAT PERMISSION HAS BEEN GRANTED TO ENTER ONTO PRIVATE PROPERTY.
4. EXCEPT WHERE MODIFIED BY THE CONTRACT DOCUMENTS, ALL WORK PROPOSED HEREON SHALL BE IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS (LATEST EDITION):
   a. THE MUNICIPAL CODE AND STANDARDS OF CITY OF CREST HILL.
   b. "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" BY ILLINOIS DEPARTMENT OF TRANSPORTATION.
   c. "SUPPLEMENTAL SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS" BY ILLINOIS DEPARTMENT OF TRANSPORTATION.
   d. "STANDARD SPECIFICATIONS FOR TRAFFIC CONTROL ITEMS" BY ILLINOIS DEPARTMENT OF TRANSPORTATION.
   e. "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES " (M.U.T.C.D.) LATEST EDITION.
   f. "STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS" BY ILLINOIS SOCIETY OF PROFESSIONAL ENGINEERS, ET AL.
   g. OTHER STANDARDS OR SPECIFICATIONS SPECIFICALLY REFERRED TO IN AN INDIVIDUAL PROVISION OF THESE STANDARDS AND SPECIFICATIONS.
   h. "ILLINOIS RECOMMENDED STANDARDS FOR SEWAGE WORKS" AS PUBLISHED BY THE I.E.P.A.
   i. "ILLINOIS URBAN MANUAL" AS PREPARED BY THE U.S. DEPT. OF AGRICULTURE & IL. ASSOCIATION OF SOIL AND WATER CONSERVATION DISTRICTS.
   j. THE CONTRACT DOCUMENTS, GENERAL CONDITIONS, SPECIAL PROVISIONS AND SUPPLEMENTAL CONDITIONS OF THE PROJECT AS PREPARED BY PINNACLE ENGINEERING GROUP, LLC.
   k. ALL DOCUMENTS CITED IN THE ABOVE STANDARDS AND SPECIFICATIONS RELEVANT TO THE SUBJECT UNDER CONSIDERATION. IF A CONFLICT ARISES BETWEEN ANY PROVISION(S) OF THE REFERENCE ITEMS ABOVE AND ANY PROVISION(S) OF THESE STANDARDS AND SPECIFICATIONS, THEN THE MORE RESTRICTIVE PROVISION(S) SHALL APPLY.
   l. UPON COMPLETON OF THE PROJECT, THE DEVELOPER SHALL PROVIDE FINAL "RECORD DRAWINGS" (DIGITAL CAD AND PDF FILES, PLUS 1 MYLAR SEPIA REPRODUCIBLE. SIGNED AND SEALED BY THE ENGINEER) OF ALL INFORMATION NECESSARY FOR PERMIT CONSENT AND MUNICIPAL ACCEPTANCE. THIS MAY INCLUDE (BUT NOT LIMITED TOO) UTILITIES WHICH INCLUDE THE LOCATIONS AND ELEVATIONS OF MAINS, SERVICE LINES, STRUCTURES, PAVED AREAS, SITE GRADING (INCLUDE ADA AREAS), STORMWATER FACILITIES, STREET LIGHTS, CURBS AND MONUMENTS. FINAL DRAWINGS MUST ALSO INCLUDE A STATE PLANE COORDINATE SYSTEM TIE-IN. IN ADDITION TO THE DRAWINGS, AN ELECTRONIC FILE (IN DWG OR DGN FORMAT) OF THE RECORD DRAWINGS MUST BE SUBMITTED ON CD-ROM.

INDEX OF SHEETS

DRAINAGE CERTIFICATE

I, BRIAN JOHNSON, HEREBY CERTIFY THAT ADEQUATE STORM WATER STORAGE AND DRAINAGE CAPACITY HAS BEEN PROVIDED FOR THIS DEVELOPMENT, SUCH THAT SURFACE WATER FROM THE DEVELOPMENT WILL NOT BE DIVERTED ONTO AND CAUSE DAMAGE TO THE ADJACENT PROPERTY FOR STORMS UP TO AND INCLUDING THE ONE HUNDRED (100) YEAR EVENT, AND THAT THE DESIGN PLANS ARE IN COMPLIANCE WITH ALL APPLICABLE STATE, COUNTY, AND VILLAGE ORDINANCES.

DATED THIS 21ST DAY OF JANUARY, 2025.

Brian D. Johnson
ENGINEER

FOR PRELIMINARY AND FINAL
PLANNED UNIT DEVELOPMENT

BRIAN D. JOHNSON
062-061674
LICENSED
PROFESSIONAL
ENGINEER
STATE OF ILLINOIS

Brian D. Johnson

EXPIRATION DATE: NOVEMBER 30, 2025

811 Know what's below. Call before you dig.
Formerly JULIE 1-800-892-0123

PINNACLE ENGINEERING GROUP, LLC
ENGINEER'S LIMITATION

PINNACLE ENGINEERING GROUP, LLC AND THEIR CONSULTANTS DO NOT WARRANT OR GUARANTEE THE ACCURACY AND COMPLETENESS OF THE DELIVERABLES HEREIN BEYOND A REASONABLE DILIGENCE. IF ANY MISTAKES, OMISSIONS, OR DISCREPANCIES ARE FOUND TO EXIST WITHIN THE DELIVERABLES, THE ENGINEER SHALL BE PROMPTLY NOTIFIED PRIOR TO BID SO THAT THEY MAY HAVE THE OPPORTUNITY TO TAKE WHATEVER STEPS NECESSARY TO RESOLVE THEM. FAILURE TO PROMPTLY NOTIFY THE ENGINEER OF SUCH CONDITIONS SHALL ABSOLVE THE ENGINEER FROM ANY RESPONSIBILITY FOR THE CONSEQUENCES OF SUCH FAILURE. ACTIONS TAKEN WITHOUT THE KNOWLEDGE AND CONSENT TO THE ENGINEER, OR IN CONTRADICTION TO THE ENGINEER'S DELIVERABLES OR RECOMMENDATIONS, SHALL BECOME THE RESPONSIBILITY NOT OF THE ENGINEER BUT OF THE PARTIES RESPONSIBLE FOR TAKING SUCH ACTION.

FURTHERMORE, PINNACLE ENGINEERING GROUP, LLC IS NOT RESPONSIBLE FOR CONSTRUCTION SAFETY OR THE MEANS AND METHODS OF CONSTRUCTION.

2/19/2025 1:47 PM — Z:\Projects\2023\5219.00-IL\600 — CAD\FINAL\SHEETSET\C-1 COVER SHEET.dwg

DRAFTED: DKT DESIGNED: DAT REVIEWED: BDJ

PLAN | DESIGN | DELIVER
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PINNACLE ENGINEERING GROUP
ENGINEERING | NATURAL RESOURCES | SURVEYING
IL DESIGN FIRM 184.006289-0010
CHICAGO OFFICE:
1051 E. MAIN ST. | SUITE 217
EAST DUNDEE, IL 60118
(847) 551-5300
CHICAGO | MILWAUKEE : NATIONWIDE

LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT
CREST HILL, ILLINOIS

REVISIONS

1	PER VILLAGE REVIEW	02/20/25			

COVER SHEET

PEG JOB No. 5219.00-IL | DAT
PEG PM | START DATE 01-21-25
SCALE | NONE

SHEET C-1 OF C-17

LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT - COVER SHEET

www.pinnacle-engr.com

EXHIBIT B

GENERAL NOTES

1. THE STANDARD SPECIFICATIONS LISTED ON THE COVER SHEET, THESE CONSTRUCTION PLANS, THE SPECIAL PROVISIONS, GENERAL CONDITIONS AND SUBSEQUENT DETAILS ARE ALL TO BE CONSIDERED AS PART OF THE CONTRACT DOCUMENTS. INCIDENTAL ITEMS OR ACCESSORIES NECESSARY TO COMPLETE THIS WORK MAY NOT BE SPECIFICALLY NOTED BUT ARE TO BE CONSIDERED A PART OF THE CONTRACT.

2. NO CONSTRUCTION PLANS SHALL BE USED FOR CONSTRUCTION UNLESS SPECIFICALLY MARKED "FOR CONSTRUCTION". PRIOR TO COMMENCEMENT OF CONSTRUCTION, THE INDIVIDUAL SUBCONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AFFECTING THEIR WORK WITH THE ACTUAL CONDITIONS AT THE JOB SITE. IF THERE ARE ANY DISCREPANCIES FROM WHAT IS SHOWN ON THE CONSTRUCTION PLANS, THEY MUST IMMEDIATELY REPORTED SAME TO THE ENGINEER BEFORE DOING ANY WORK, OTHERWISE THE INDIVIDUAL SUBCONTRACTOR ASSUMES FULL RESPONSIBILITY. IN THE EVENT OF DISAGREEMENT BETWEEN THE CONSTRUCTION PLANS, STANDARD SPECIFICATIONS AND/OR SPECIAL DETAILS, THE INDIVIDUAL SUBCONTRACTOR SHALL SECURE WRITTEN INSTRUCTIONS FROM THE ENGINEER PRIOR TO PROCEEDING WITH ANY PART OF THE WORK AFFECTED BY OMISSIONS OR DISCREPANCIES. FAILING TO SECURE SUCH INSTRUCTION, THE INDIVIDUAL SUBCONTRACTOR WILL BE CONSIDERED TO HAVE PROCEEDED AT THEIR OWN RISK AND EXPENSE. IN THE EVENT OF ANY DOUBT OR QUESTION ARISING WITH RESPECT TO THE TRUE MEANING OF THE CONSTRUCTION PLANS OR SPECIFICATIONS, THE DECISION OF THE ENGINEER SHALL BE FINAL AND CONCLUSIVE.

3. ALL WORK PERFORMED UNDER THIS CONTRACT SHALL BE GUARANTEED AGAINST ALL DEFECTS IN MATERIALS AND WORKMANSHIP OF WHATEVER NATURE BY THE INDIVIDUAL SUBCONTRACTOR AND THEIR SURETY FOR A PERIOD OF 24 MONTHS FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK BY THE MUNICIPALITY, OTHER APPLICABLE GOVERNMENTAL AGENCIES, AND THE OWNER.

4. BEFORE ACCEPTANCE BY THE OWNER AND FINAL PAYMENT, ALL WORK SHALL BE INSPECTED AND APPROVED BY THE OWNER OR HIS REPRESENTATIVE. FINAL PAYMENT WILL BE MADE AFTER ALL OF THE INDIVIDUAL SUBCONTRACTORS' WORK HAS BEEN APPROVED AND ACCEPTED, AND IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

5. UPON AWARD OF THE CONTRACT AND WHEN REQUIRED BY THE OWNER, THE INDIVIDUAL SUBCONTRACTOR SHALL FURNISH A LABOR, MATERIAL AND PERFORMANCE BOND IN THE PENAL SUM OF 100 PERCENT OF THE CONTRACT GUARANTEEING COMPLETION OF THE WORK. THE UNDERWRITER SHALL BE APPROVED BY THE OWNER.

6. THE INDIVIDUAL SUBCONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS FOR CONSTRUCTION ALONG OR ACROSS EXISTING STREETS OR HIGHWAYS INCLUDING THE USE AND ACCESS OF EXISTING STREETS.THE INDIVIDUAL SUBCONTRACTOR SHALL MAKE ARRANGEMENTS FOR THE PROPER BRACING, SHORING AND OTHER REQUIRED PROTECTION OF ALL ROADWAYS BEFORE CONSTRUCTION BEGINS. THE INDIVIDUAL SUBCONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE STREETS OR ROADWAYS AND ASSOCIATED STRUCTURES AND SHALL MAKE REPAIRS AS NECESSARY TO THE SATISFACTION OF THE ENGINEER.

7. EASEMENTS FOR THE EXISTING UTILITIES, BOTH PUBLIC AND PRIVATE, AND UTILITIES WITHIN PUBLIC RIGHTS-OF-WAY ARE SHOWN ON THE PLANS ACCORDING TO AVAILABLE RECORDS. THE INDIVIDUAL SUBCONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION IN THE FIELD OF THESE UTILITY LINES AND THEIR PROTECTION FROM DAMAGE DUE TO CONSTRUCTION OPERATIONS. IF EXISTING UTILITY LINES OF ANY NATURE ARE ENCOUNTERED WHICH CONFLICT IN LOCATION WITH NEW CONSTRUCTION, THE INDIVIDUAL SUBCONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY SO THAT THE CONFLICT MAY BE RESOLVED.

8. THE INDIVIDUAL SUBCONTRACTOR SHALL REVIEW AND DETERMINE ALL IMPROVEMENTS AND SHALL VERIFY ALL QUANTITIES AS PROVIDED BY THE ENGINEER OR OWNER FOR BIDDING PURPOSES. THE INDIVIDUAL SUBCONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER. THE CONTRACT PRICE SUBMITTED BY THE INDIVIDUAL SUBCONTRACTOR SHALL BE CONSIDERED AS A LUMP SUM FOR THE COMPLETE PROJECT UNLESS THERE IS A PLAN REVISION AND/OR WRITTEN CHANGE TO THE SCOPE OF WORK.

9. WHENEVER THE PERFORMANCE OF WORK IS INDICATED ON THE PLANS, AND NO ITEM IS INCLUDED IN THE CONTRACT FOR PAYMENT, THE WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT, AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

10. WHENEVER, DURING CONSTRUCTION OPERATIONS, ANY LOOSE MATERIAL IS DEPOSITED IN THE FLOW LINE OF GUTTERS, DRAINAGE STRUCTURES, DITCHES, ETC. SUCH THAT THE NATURAL FLOW LINE OF WATER IS OBSTRUCTED, THIS LOOSE MATERIAL SHALL BE REMOVED AT THE CLOSE OF EACH WORKING DAY BY THE RESPONSIBLE PARTY. AT THE CONCLUSION OF CONSTRUCTION OPERATIONS, ALL DRAINAGE STRUCTURES AND FLOW LINES SHALL BE FREE FROM DIRT AND DEBRIS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.

11. THE INDIVIDUAL SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ADEQUATE SIGNS,TRAFFIC CONTROL DEVICES,AND WARNING DEVICES TO INFORM AND PROTECT THE PUBLIC DURING ALL PHASES OF CONSTRUCTION. BARRICADES AND WARNING SIGNS SHALL BE PROVIDED IN ACCORDANCE WITH THE I.D.O.T. STANDARD SPECIFICATIONS. ADEQUATE LIGHTING SHALL BE MAINTAINED FROM DUSK TO DAWN AT ALL LOCATIONS WHERE CONSTRUCTION OPERATIONS WARRANT, OR AS DESIGNATED BY THE ENGINEER OR MUNICIPALITY. ALL TRAFFIC CONTROL WORK SHALL BE DONE IN ACCORDANCE WITH THE I.D.O.T. "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."

12. ALL PERMANENT TYPE PAVEMENTS OR OTHER PERMANENT IMPROVEMENTS WHICH ABUT THE PROPOSED IMPROVEMENT AND MUST BE REMOVED, SHALL BE SAWED FULL DEPTH. PRIOR TO REMOVAL. ALL ITEMS SO REMOVED SHALL BE REPLACED WITH SIMILAR CONSTRUCTION MATERIALS TO THEIR ORIGINAL CONDITION OR BETTER. PAYMENT FOR SAWING SHALL BE INCLUDED IN THE COST FOR REMOVAL OF EACH ITEM AND REPLACEMENT WILL BE PAID UNDER THE RESPECTIVE ITEMS IN THE CONTRACT, UNLESS OTHERWISE INDICATED.

13. REMOVED PAVEMENT, SIDEWALK, CURB AND GUTTER, ETC. SHALL BE DISPOSED OF BY THE INDIVIDUAL SUBCONTRACTOR AT HIS OWN EXPENSE AT LOCATIONS APPROVED BY THE OWNER. IF ONSITE DISPOSAL IS NOT FEASIBLE, THE INDIVIDUAL SUBCONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AN OFFSITE DUMP SITE AT HIS OWN EXPENSE.

14. WHERE OVERHANGING BRANCHES INTERFERE WITH OPERATIONS OF CONSTRUCTION, SAID BRANCHES SHALL BE TRIMMED AND SEALED IN ACCORDANCE WITH ARTICLE 253.09 OF THE I.D.O.T. STANDARD SPECIFICATIONS, AND THE COST OF SAME SHALL BE INCIDENTAL TO THE CONTRACT. TREES SHALL BE REMOVED ONLY AFTER RECEIVING APPROVAL OF THE OWNER. THE OWNER SHALL DESIGNATE WHICH TREES ARE TO BE REMOVED.

15. ALL EXISTING TRAFFIC SIGNS, STREET SIGNS, ETC., WHICH INTERFERE WITH CONSTRUCTION OPERATIONS AND ARE NOT NOTED FOR REMOVAL OR DISPOSAL, SHALL BE REMOVED AND RESET BY THE INDIVIDUAL SUBCONTRACTOR IN ACCORDANCE WITH I.D.O.T. STANDARD SPECIFICATIONS AT LOCATIONS AS DESIGNATED BY THE ENGINEER. THIS SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED. DAMAGE TO THESE ITEMS SHALL BE REPAIRED BY THE INDIVIDUAL SUBCONTRACTOR AT HIS OWN EXPENSE. ALL SIGNS NOT REQUIRED TO BE RESET SHALL BE DELIVERED TO THE MUNICIPALITY AS APPROPRIATE. ALL MAIL BOXES THAT INTERFERE WITH CONSTRUCTION SHALL BE SIMILARLY RELOCATED AT NO ADDITIONAL COST.

16. NOTIFY THE ENGINEER OF ALL FIELD TILE ENCOUNTERED DURING CONSTRUCTION OPERATIONS. NO FIELD TILE SHALL BE DIRECTLY OR INDIRECTLY CONNECTED TO THE PROPOSED STORM SEWER. A RECORD OF THE LOCATION OF ALL FIELD TILE OR ON-SITE DRAIN PIPE ENCOUNTERED SHALL BE KEPT BY THE CONTRACTOR AND TURNED OVER TO THE ENGINEER UPON COMPLETION OF THE PROJECT. THE COST OF THIS WORK SHALL BE CONSIDERED AS INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

17. DURING CONSTRUCTION OPERATIONS THE INDIVIDUAL SUBCONTRACTOR SHALL INSURE POSITIVE DRAINAGE AT THE CONCLUSION OF EACH DAY. DRAINAGE MAY BE ACHIEVED BY DITCHING, PUMPING OR ANY OTHER ACCEPTABLE METHOD. THE INDIVIDUAL SUBCONTRACTOR'S FAILURE TO PROVIDE THE ABOVE WILL PRECLUDE ANY POSSIBLE ADDED COMPENSATION REQUESTED DUE TO DELAYS OR UNSUITABLE MATERIALS CREATED AS A RESULT THEREOF.

18. IT SHALL BE THE RESPONSIBILITY OF THE INDIVIDUAL SUBCONTRACTOR TO REMOVE FROM THE SITE ANY AND ALL MATERIALS AND DEBRIS WHICH RESULT FROM HIS CONSTRUCTION OPERATIONS AT NO ADDITIONAL EXPENSE TO THE OWNER.

19. THE INDIVIDUAL SUBCONTRACTOR SHALL COMPLY WITH AND OBSERVE THE RULES AND REGULATIONS OF O.S.H.A. AND APPROPRIATE AUTHORITIES REGARDING SAFETY PROVISIONS.

20. THE ENGINEER AND OWNER ARE NOT RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES, TIME OF PERFORMANCE, PROGRAMS OR FOR ANY SAFETY PRECAUTIONS USED BY THE INDIVIDUAL SUBCONTRACTOR. THE INDIVIDUAL SUBCONTRACTOR IS SOLELY RESPONSIBLE FOR EXECUTION OF HIS WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND SPECIFICATIONS.

21. ALL INDIVIDUAL SUBCONTRACTORS AND THEIR SUBCONTRACTORS OR ANY TIER SHALL INDEMNIFY THE OWNER, ENGINEER, AND ARCHITECT FROM ALL LIABILITY RESULTING FROM ANY NEGLIGENT ACT OR OMISSION WITH THEIR CONSTRUCTION, INSTALLATION, AND TESTING OF WORK ON THIS PROJECT AND SHALL NAME THEM AS ADDITIONAL INSURED ON THEIR COMMERCIAL GENERAL LIABILITY POLICIES FOR CLAIMS ARISING OUT OF THE WORK ON THIS PROJECT. A PROPER CERTIFICATE OF INSURANCE SHALL BE ISSUED PRIOR TO THE START OF CONSTRUCTION.

22. ELECTRIC, TELEPHONE, NATURAL GAS, AND OTHER UTILITY COMPANIES HAVE UNDERGROUND AND/OR OVERHEAD SERVICE FACILITIES IN THE VICINITY OF THE PROPOSED WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING THE UTILITY COMPANIES LOCATE THEIR FACILITIES IN THE FIELD PRIOR TO CONSTRUCTION AND SHALL ALSO BE RESPONSIBLE FOR THE MAINTENANCE AND PRESERVATION OF THESE FACILITIES. THE CONTRACTOR SHALL CALL 811 FOR UTILITY LOCATIONS.

23. THE INDIVIDUAL SUBCONTRACTOR TO HAVE A COMPETENT SUPERINTENDENT ON THE PROJECT SITE AT ALL TIMES IRRESPECTIVE OF THE AMOUNT OF WORK SUBLET THE SUPERINTENDENT SHALL BE CAPABLE OF READING AND UNDERSTANDING THE PLANS AND SPECIFICATIONS, SHALL HAVE FULL AUTHORITY TO EXECUTE ORDERS TO EXPEDITE THE PROJECT, AND SHALL BE RESPONSIBLE FOR SCHEDULING AND HAVE CONTROL OF ALL WORK AS THE AGENT OF THE INDIVIDUAL SUBCONTRACTOR. FAILURE TO COMPLY WITH THIS PROVISION WILL RESULT IN A SUSPENSION OF WORK.

24. THE INDIVIDUAL SUBCONTRACTOR SHALL KEEP A SET OF "APPROVED" CONSTRUCTION PLANS ON THE JOB SITE, AND SHALL MAINTAIN (AS INDICATED HEREIN AND ELSEWHERE WITHIN THESE CONSTRUCTION NOTES, SPECIFICATIONS, AND PLANS) A LEGIBLE RECORD ON SAID PLANS OF AND FIELD TILE ENCOUNTERED, ANY MODIFICATIONS TO ALIGNMENT AND/OR TO PLANS AND SPECIFICATIONS OF PROPOSED IMPROVEMENTS, ETC. UPON COMPLETION OF THE INDIVIDUAL SUBCONTRACTORS' WORK, SAID PLANS AND INFORMATION SHALL BE PROVIDED TO ENGINEER. FINAL CONTRACT PAYMENT SHALL NOT COME DUE UNTIL THIS INFORMATION IS RECEIVED BY THE ENGINEER.

EARTHWORK

1. WORK UNDER THIS SECTION SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:

   A. CLEARING AND REMOVAL OF ALL UNDESIRABLE TREES AND OTHER VEGETATIVE GROWTH WITHIN THE CONSTRUCTION AREA. TREE REMOVAL SHALL BE AS DESIGNATED BY THE OWNER AND SHALL BE KEPT TO A MINIMUM. WHERE FEASIBLE, AND WHEN PERMITTED BY OWNER, TREES AND BRUSH REMOVED MAY BE BURIED ONSITE IN FUTURE YARD AND OPEN SPACE AREAS. IF ADEQUATE AND APPROPRIATE SPACE IS NOT AVAILABLE FOR ONSITE BURIAL, THE TREES AND BRUSH SHALL BE DISPOSED OF OFFSITE.
   B. STRIPPING OF TOPSOIL FROM ALL STREET, DRIVEWAY, PARKING AREA, RIGHT-OF-WAY, BUILDING PAD, AND OTHER DESIGNATED STRUCTURAL AREAS.
   C. STOCKPILING OF TOPSOIL AT LOCATIONS AS DIRECTED BY THE OWNER. TOPSOIL STOCKPILED FOR FUTURE USE SHALL BE RELATIVELY FREE FROM LARGE ROOTS, STICKS, WEEDS, BRUSH, STONES LARGER THAN ONE INCH DIAMETER, OR OTHER LITTER AND WASTE PRODUCTS INCLUDING EXTRANEOUS MATERIALS NOT CONDUCIVE TO PLANT GROWTH. TOPSOIL SHALL BE STOCKPILED IN SEQUENCE TO ELIMINATE ANY REHANDLING OR DOUBLE MOVEMENTS BY THE CONTRACTOR. FAILURE TO PROPERLY SEQUENCE THE STOCKPILING OPERATIONS SHALL NOT CONSTITUTE A CLAIM FOR ADDITIONAL COMPENSATION. NO MATERIAL SHALL BE STOCKPILED IN FRONT YARDS, OVERLAND DRAINAGE SWALES (FLOOD ROUTING AREAS), PROPOSED UTILITY LOCATIONS, UTILITY EASEMENTS, OR IN THE RIGHT-OF-WAY.
   D. REMOVING UNSUITABLE MATERIALS AS SPECIFIED FROM ROADWAY, DRIVEWAY/PARKING, BUILDING PAD, AND OTHER DESIGNATED AREAS.
   E. DEMOLITION AND REMOVAL OF EXISTING PAVEMENTS INCLUDING OFFSITE DISPOSAL OF SAME, AT A DUMP SITE AS SELECTED BY THE CONTRACTOR. ONSITE DISPOSAL MAY BE ALLOWED IF APPROVED BY THE OWNER.
   F. CLAY CUT AND CLAY FILL WITH COMPACTION WITHIN ROADWAY, DRIVEWAY/PARKING, BUILDING PAD, AND OTHER DESIGNATED AREAS.
   G. EXCAVATION AND GRADING OF THE OPEN SPACE AND/OR YARD AREAS PER PLAN INCLUDING DESIGNATED DETENTION BASIN GRADING, CONSTRUCTION OF BERMS, ETC.
   H. PLACEMENT AND COMPACTION OF CLAY TO THE DESIGN SUBGRADE ELEVATIONS AS REQUIRED BY THE STANDARDS AND DETAILS ON THE CONSTRUCTION PLANS. THE CONTRACTOR WILL NOTE THAT THE ELEVATIONS SHOWN ON THE CONSTRUCTION PLANS ARE FINISHED GRADE ELEVATIONS AND THAT PAVEMENT AND/OR TOPSOIL REPLACEMENT THICKNESS MUST BE SUBTRACTED TO DETERMINE SUBGRADE ELEVATIONS.
   I. PLACEMENT AND COMPACTION OF NON-STRUCTURAL FILLS.
   J. IF REQUIRED, REMOVAL FROM SITE AND DISPOSAL OF ANY EXCESS OR UNSUITABLE MATERIAL UPON COMPLETION OF MASS GRADING.
   K. MOVEMENT AND COMPACTION OF SPOIL MATERIAL FROM THE CONSTRUCTION OF UNDERGROUND UTILITIES.
   L. BACKFILLING OF CURBS AND/OR PAVEMENT AND SIDEWALK AFTER INSTALLATION OF SAME IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
   M. FINAL SHAPING AND TRIMMING TO THE LINES, GRADES, AND CROSS SECTIONS SHOWN IN THESE PLANS; AND TOPSOIL PLACEMENT TO DESIGN FINISHED GRADE ELEVATIONS AT LOCATIONS DESIGNATED IN THE CONTRACT DOCUMENTS.
   N. SOIL EROSION CONTROL MEASURES IN ACCORDANCE WITH THE SOIL EROSION CONTROL SPECIFICATIONS INCLUDED WITHIN THE CONTRACT DOCUMENTS.

2. THE QUANTITIES GIVEN IN THE ENGINEER'S SUMMARY FOR EARTHWORK ARE INTENDED AS A GUIDE FOR THE CONTRACTOR IN DETERMINING THE SCOPE OF THE COMPLETED PROJECT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALL MATERIAL QUANTITIES AND APPRISE THEMSELVES OF ALL SITE CONDITIONS. THE CONTRACT PRICE SUBMITTED BY THE CONTRACTOR SHALL BE CONSIDERED AS LUMP SUM FOR THE COMPLETE PROJECT. NO CLAIMS FOR EXTRA WORK WILL BE RECOGNIZED UNLESS ORDERED IN WRITING BY THE OWNER.

3. PRIOR TO ONSET OF MASS GRADING OPERATIONS, THE EARTHWORK CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH THE SOIL EROSION CONTROL SPECIFICATIONS. THE INITIAL ESTABLISHMENT OF EROSION CONTROL PROCEDURES AND THE PLACEMENT OF FILTER FENCING, ETC. TO PROTECT ADJACENT PROPERTY SHALL OCCUR BEFORE MASS GRADING BEGINS, AND IN ACCORDANCE WITH THE SOIL EROSION CONTROL CONSTRUCTION SCHEDULE.

4. PRIOR TO COMMENCEMENT OF GRADING ACTIVITIES, A TREE PROTECTION FENCE SHALL BE ERECTED AROUND ANY TREE DESIGNATED ON THE PLANS TO BE PRESERVED. SAID FENCE SHALL BE PLACED IN A CIRCLE CENTERED AROUND THE TREE, THE DIAMETER OF WHICH SHALL BE SUCH THAT THE ENTIRE DRIP ZONE (EXTENT OF FURTHEST EXTENDING BRANCHES) SHALL BE WITHIN THE FENCE LIMITS. THE EXISTING GRADE WITHIN THE FENCED AREA SHALL NOT BE DISTURBED.

5. THE GRADING OPERATIONS ARE TO BE CLOSELY SUPERVISED AND INSPECTED, PARTICULARLY DURING THE REMOVAL OF UNSUITABLE MATERIAL AND THE CONSTRUCTION OF EMBANKMENTS OR BUILDING PADS, BY THE SOILS ENGINEER OR HIS REPRESENTATIVE. ALL TESTING, INSPECTION AND SUPERVISION OF SOIL QUALITY, UNSUITABLE REMOVAL, REPLACEMENT, MODIFICATION AND OTHER SOILS RELATED OPERATIONS SHALL BE ENTIRELY THE RESPONSIBILITY OF THE SOILS ENGINEER.

6. A QUALIFIED SOILS ENGINEER SHALL REGULARLY INSPECT THE EXCAVATION OF ANY OPEN WATER AREAS TO INSURE THAT THEY WILL BE CAPABLE OF MAINTAINING DESIGNED NORMAL WATER LEVELS. GRAVEL OR SAND SEAMS OR OTHER CONDITIONS WHICH MAY BE ENCOUNTERED, AND WHICH MIGHT TEND TO DE-WATER THESE AREAS, SHALL BE REMEDIED AS DIRECTED BY THE SOILS ENGINEER (FOR EXAMPLE, LINING, CLAY BLANKET, BENTONITE, ETC.).

7. THE GRADING AND CONSTRUCTION OF THE SITE IMPROVEMENTS SHALL NOT CAUSE PONDING OF STORMWATER. ALL AREAS ADJACENT TO THESE IMPROVEMENTS SHALL BE GRADED TO ALLOW POSITIVE DRAINAGE.

8. THE PROPOSED GRADING ELEVATIONS SHOWN ON THE PLANS ARE FINISHED GRADE. TOPSOIL OF THE THICKNESS SHOWN IN THE STANDARDS AND DETAILS ON THE CONSTRUCTION PLANS IS TO BE PLACED BEFORE FINISHED GRADE ELEVATIONS ARE ACHIEVED.

9. THE SELECTED STRUCTURAL FILL MATERIAL SHALL BE PLACED IN LEVEL UNIFORM LAYERS SO THAT THE COMPACTED THICKNESS IS APPROXIMATELY SIX INCHES; IF COMPACTION EQUIPMENT DEMONSTRATES THE ABILITY TO COMPACT GREATER THICKNESS, THEN A GREATER THICKNESS MAY BE ALLOWED WITH APPROVAL FROM SOILS ENGINEER. EACH LAYER SHALL BE THOROUGHLY MIXED DURING SPREADING TO INSURE UNIFORMITY.

10. EMBANKMENT MATERIAL WITHIN ROADWAY, DRIVEWAY, PARKING AREAS, AND OTHER STRUCTURAL CLAY FILL AREAS SHALL BE COMPACTED TO A MINIMUM OF NINETY PERCENT (90%) OF MAXIMUM DENSITY IN ACCORDANCE WITH ASTM SPECIFICATION D-1557 (MODIFIED PROCTOR METHOD), OR TO SUCH OTHER DENSITY AS MAY BE DETERMINED APPROPRIATE BY THE SOILS ENGINEER. EMBANKMENT MATERIAL FOR BUILDING PADS SHALL BE COMPACTED TO A MINIMUM OF NINETY FIVE PERCENT (95%) OF MAXIMUM DENSITY IN ACCORDANCE WITH ASTM DESIGNATION D-1557 (MODIFIED PROCTOR METHOD), OR TO SUCH OTHER DENSITY AS MAY BE DETERMINED APPROPRIATE BY THE SOILS ENGINEER.

11. EMBANKMENT MATERIAL (RANDOM FILL) WITHIN NON-STRUCTURAL FILL AREAS SHALL BE COMPACTED TO A MINIMUM OF EIGHTY FIVE PERCENT (85%) OF MAXIMUM DENSITY IN ACCORDANCE WITH ASTM SPECIFICATION D-1557 (MODIFIED PROCTOR METHOD), OR TO SUCH OTHER DENSITY AS MAY BE DETERMINED APPROPRIATE BY THE SOILS ENGINEER.

12. THE SURFACE VEGETATION, TOPSOIL, AND ANY OBVIOUSLY SOFT UNDERLYING SOIL SHOULD BE STRIPPED FROM ALL AREAS TO RECEIVE CLAY FILL. IF THE UNDERLYING SUBGRADE SOILS RUT DEEPER THAN ONE INCH UNDER THE CONSTRUCTION EQUIPMENT OR IF THE MOISTURE CONTENT EXCEEDS THAT NEEDED FOR PROPER COMPACTION, THE SOIL SHALL BE SCARIFIED, DRIED AND RECOMPACTED TO THE REQUIRED SPECIFICATIONS (SEE SECTIONS 205 AND 301 OF THE I.D.O.T. SPECIFICATIONS).

13. ALL PAVEMENT SUBGRADE SHALL HAVE A MINIMUM IBR OF 3.0 AS DETERMINED BY THE SOILS ENGINEER. THE PROPOSED PAVEMENT DESIGN HAS BEEN BASED ON A MINIMUM IBR OF 3.0; THEREFORE, IF AREAS OF PAVEMENT SUBGRADE ARE ENCOUNTERED WHICH DO NOT PROVIDE A MINIMUM IBR OF 3.0, SUBGRADE REPLACEMENT OR PAVEMENT DESIGN REVISIONS SHALL BE PROVIDED WHICH ARE ADEQUATE TO OBTAIN EQUIVALENT PAVEMENT STRENGTH, AS DETERMINED BY THE SOILS ENGINEER AND THE ENGINEER.

14. PRIOR TO UTILITY CONSTRUCTION, PROPOSED PAVEMENT AREAS, BUILDING PADS, DRIVEWAYS AND SIDEWALKS, AND YARD/OPEN SPACE AREAS SHALL BE ROUGH EXCAVATED OR FILLED TO PLUS OR MINUS ONE FOOT OF DESIGN SUBGRADE ELEVATIONS BY THE CONTRACTOR.

15. COMPLETED GRADING FOR PROPOSED BUILDING PADS, AS WELL AS PROPOSED SUBGRADE AREAS FOR PAVEMENT, DRIVEWAYS AND SIDEWALKS, AND YARD/OPEN SPACE AREAS SHALL BE WITHIN A TOLERANCE OF PLUS OR MINUS 0.1 FOOT OF DESIGN SUBGRADE ELEVATIONS.

16. THE SUBGRADE FOR PROPOSED STREET AND PAVEMENT AREAS SHALL BE PROOF-ROLLED BY THE CONTRACTOR AND ANY UNSTABLE AREAS ENCOUNTERED SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE SOILS ENGINEER.

17. UPON COMPLETION OF THE SURFACE IMPROVEMENTS, AND EXCEPT WHERE OTHERWISE NOTED, THE EXCAVATION CONTRACTOR SHALL RESPREAD A MINIMUM OF 6 INCHES OF TOPSOIL ON ALL DESIGNATED OPEN SPACE, PARKWAY, LANDSCAPE, AND OTHER NON-STRUCTURAL AREAS PER PLAN. SAID DESIGNATED AREAS TO BE RESPREAD BY THE EXCAVATION CONTRACTOR SHALL BE AS INDICATED WITHIN THE CONTRACT DOCUMENTS. TOPSOIL SHALL BE RESPREAD ON THE REMAINING AREAS BY THE LANDSCAPE CONTRACTOR.

18. RIPRAP MATERIAL TO BE PROVIDED IN CONJUNCTION WITH THE EARTHWORK IMPROVEMENTS SHALL CONFORM TO SECTION 281 OF THE I.D.O.T. SPECIFICATIONS.

19. SOIL BORING REPORTS, AVAILABLE AT THE OFFICE OF THE ENGINEER AND THE OWNER, ARE SOLELY FOR THE INFORMATION AND GUIDANCE OF THE CONTRACTORS. THE OWNER AND ENGINEER MAKE NO REPRESENTATION OR WARRANTY REGARDING THE INFORMATION CONTAINED IN THE BORING LOGS. THE CONTRACTOR SHALL MAKE HIS OWN INVESTIGATIONS AND SHALL PLAN THEIR WORK ACCORDINGLY. ARRANGEMENTS TO ENTER THE PROPERTY DURING THE BIDDING PHASE MAY BE MADE UPON REQUEST OF THE OWNER. THERE WILL BE NO ADDITIONAL PAYMENT FOR EXPENSES INCURRED BY THE CONTRACTOR RESULTING FROM ADVERSE SOIL OR GROUND WATER CONDITIONS.

20. IF SHOWN ON THE PLANS, OPEN AREAS TO BE SEEDED SHALL BE SEEDED IN ACCORDANCE WITH THE SOIL EROSION CONTROL SPECIFICATIONS AND FINAL LANDSCAPE PLAN.

21. IT SHALL BE THE RESPONSIBILITY OF THE EXCAVATION CONTRACTOR TO REMOVE FROM THE SITE ANY AND ALL MATERIALS AND DEBRIS WHICH RESULT FROM HIS CONSTRUCTION OPERATIONS AT NO ADDITIONAL EXPENSE TO THE OWNER.

22. SOILS ENGINEER SHALL BE ON SITE DURING ALL EARTHWORK OPERATIONS, PAVING, AND CONCRETE PREPARATION AND POUR.

UNDERGROUND UTILITIES

1. WORK UNDER THIS SECTION SHALL INCLUDE TRENCHING, AUGERING AND INSTALLATION OF PIPE, CASTINGS, STRUCTURES, BACKFILLING OF TRENCHES AND COMPACTION, AND TESTING AS SHOWN ON THE CONSTRUCTION PLANS. FITTINGS AND ACCESSORIES NECESSARY TO COMPLETE THE WORK MAY NOT BE SPECIFIED BUT SHALL BE CONSIDERED AS INCIDENTAL TO THE COST OF THE CONTRACT.

2. ALL SEWER AND WATER MAIN SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE "STANDARD SPECIFICATIONS FOR SEWER AND WATER MAIN CONSTRUCTION IN ILLINOIS," LATEST EDITION, THE SANITARY DISTRICT SEWER PERMIT ORDINANCE AND THE STANDARD SPECIFICATIONS AND CONSTRUCTION DETAILS AND ORDINANCES OF THE MUNICIPALITY.

3. ROUGH GRADING TO WITHIN ONE FOOT OF FINISHED SUBGRADE SHALL BE COMPLETED BY THE EARTHWORK CONTRACTOR PRIOR TO COMMENCEMENT OF UNDERGROUND UTILITY INSTALLATION.

4. ALL UTILITY TRENCHES BENEATH PROPOSED OR EXISTING UTILITIES, PROPOSED OR EXISTING PAVEMENT, EXISTING DRIVEWAYS AND SIDEWALKS, PROPOSED DRIVEWAYS AND SIDEWALKS WHERE DESIGNATED BY THE OWNER AND AT A 1:1 SLOPE ON EITHER SIDE OF SAME, AND/OR WHEREVER ELSE SHOWN ON THE CONSTRUCTION PLAN SHALL BE BACKFILLED WITH SELECT GRANULAR IN ACCORDANCE WITH THE CONSTRUCTION STANDARDS.

5. "BAND-SEAL" OR SIMILAR FLEXIBLE TYPE COUPLINGS SHALL BE USED WHEN CONNECTING SEWER PIPES OF DISSIMILAR MATERIALS. WHEN CONNECTING TO AN EXISTING SEWER MAIN BY MEANS OTHER THAN AN EXISTING WYE, TEE, OR AN EXISTING MANHOLE, ONE OF THE FOLLOWING METHODS SHALL BE USED:
   A. CIRCULAR SAW-CUT OF SEWER MAIN BY PROPER TOOLS ("SHEWER-TAP" MACHINE OR SIMILAR) AND PROPER INSTALLATION OF HUB-WYE SADDLE OR HUB-TEE SADDLE.
   B. REMOVE AN ENTIRE SECTION OF PIPE (BREAKING ONLY THE TOP OF ONE BELL) AND REPLACE WITH A WYE OR TEE BRANCH SECTION.
   C. WITH A PIPE CUTTER, NEATLY AND ACCURATELY CUT OUT DESIRED LENGTH OF PIPE FOR INSERTION OF PROPER FITTING, USING "BAND-SEAL" OR SIMILAR COUPLINGS TO HOLD IT FIRMLY IN PLACE.

6. ALL FLOOR DRAINS AND FLOOR DRAIN SUMP PUMPS SHALL DISCHARGE INTO THE SANITARY SEWER. ALL DOWNSPOUTS, FOOTING DRAINS AND SUBSURFACE STORMWATERS SHALL DISCHARGE INTO THE STORM SEWER OR ONTO THE GROUND BUT NOT INTO THE SANITARY SEWER.

7. SANITARY SEWERS SHALL BE CONSTRUCTED OF THE FOLLOWING MATERIALS UNLESS SPECIFIED OTHERWISE ON THE PLANS:
   A. POLYVINYL CHLORIDE PLASTIC GRAVITY SEWER PIPE (PVC) CONFORMING TO ASTM DESIGNATION D-3034 FOR SANITARY SEWERS OF 15 INCH DIAMETER OR LESS, AND CONFORMING TO ASTM DESIGNATION F-679 FOR PIPE OF 18 INCH to 21 INCH DIAMETER, WITH AN SDR OF 26, WITH ELASTOMERIC GASKET JOINTS CONFORMING TO ASTM DESIGNATION D-3212. THE GASKET SHALL COMPLY WITH ASTM F-477.
   B. WATER MAIN QUALITY C-900 PRESSURE PIPE IN ACCORDANCE WITH AWWA C900 FOR SIZES 4 INCH TO 12 INCH DIAMETER OR AWWA C905 FOR SIZES 14 INCH TO 48 INCH DIAMETER. PVC PIPE JOINTS SHALL BE FLEXIBLE ELASTOMERIC SEALS PER ASTM D-3139 AND F-477.

8. ALL SANITARY SEWER MANHOLES SHALL HAVE ECCENTRIC CONES. CONE OPENINGS SHALL BE CENTERED PARALLEL TO THE MAINLINE FLOW. ALL STRUCTURE SECTIONS AND ADJUSTING RINGS SHALL BE SECURELY SEALED TO EACH OTHER OR TO THE CONE SECTION OR TOP BARREL SECTION OF THE MANHOLE USING RESILIENT, FLEXIBLE, NON-HARDENING, PREFORMED, BITUMINOUS MASTIC (RAM-NEK, OR APPROVED EQUAL). THIS MASTIC SHALL BE APPLIED IN SUCH A MANNER THAT NO SURFACE WATER OR GROUND WATER INFLOW CAN ENTER THE MANHOLE THROUGH GAPS BETWEEN BARREL SECTIONS OR CONE SECTIONS AND ADJUSTING RINGS. SANITARY SEWER MANHOLES SHALL BE 4 FOOT DIAMETER PRECAST STRUCTURES (UNLESS OTHERWISE NOTED ON THE PLANS), WITH APPROPRIATE FRAME AND LIDS (SEE CONSTRUCTION STANDARDS SHEET). ALL SANITARY SEWER MANHOLES SHALL INCORPORATE THE USE OF EXTERNAL CHIMNEY SEALS (SEE CONSTRUCTION STANDARDS).

9. ALL SANITARY SEWERS, STORM SEWERS, AND SEWER SERVICES IN SEPARATE SEWER AREAS SHALL BE INSTALLED ON GRANULAR CRUSHED STONE BEDDING CLASS IA, (I.D.O.T. GRADATION CA-11), CONFORMING TO ASTM D-2321, WITH A MINIMUM THICKNESS EQUAL TO ONE FOURTH OF THE OUTSIDE DIAMETER OF THE SEWER PIPE, BUT NOT LESS THAN 4 INCHES NOR MORE THAN 8 INCHES. BEDDING SHALL EXTEND TO THE SPRING LINE OF THE PIPE IN ALL CASES (UNLESS INDICATED OTHERWISE ON THE CONSTRUCTION DETAILS). FOR PVC SANITARY SEWER, THE BEDDING SHALL EXTEND TO 1 FOOT ABOVE THE TOP OF THE PIPE. BEDDING MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-33 FOR SOUNDNESS AND ASTM C-67 FOR GRADATION. COST FOR BEDDING SHALL BE MERGED WITH THE UNIT PRICE BID FOR THE SEWER, WATER MAIN, ETC. SEE MWRD GENERAL NOTE 6 FOR SANITARY AND STORM BEDDING REQUIREMENTS IN COMBINED SEWER AREAS.

10. ALL SANITARY SERVICE CONNECTIONS TO MAINLINE SEWER SHALL BE MADE WITH PRECAST WYES OR TEES MANUFACTURED SPECIFICALLY FOR THAT PURPOSE. SANITARY SEWER SERVICE MATERIAL TO BE SAME AS MAINLINE SEWER UNLESS SPECIFICALLY INDICATED OTHERWISE.

11. SANITARY SERVICES SHALL BE LAID TO A MINIMUM GRADE OF 1.00 PERCENT. THE END OF EACH SERVICE SHALL BE SEALED WITH A MANUFACTURER'S WATERTIGHT PLUG. SANITARY SERVICE STUBS SHALL BE MARKED IN ACCORDANCE WITH THESE CONSTRUCTION NOTES.

12. UNLESS OTHERWISE INDICATED STORM SEWER SHALL BE HDPE ADS N12 HP FOR SIZES 12"-30". PIPE SHALL HAVE A SMOOTH INTERIOR AND ANNULAR EXTERIOR CORRUGATIONS AND MEET OR EXCEED ASTM F2736 AND AASHTO MP-21. FOR PIPE 36"-60" PIPE SHALL HAVE A SMOOTH INTERIOR AND ANNULAR EXTERIOR CORRUGATIONS AND MEET OR EXCEED ASTM F2881 AND AASHTO MP-21. PIPE SHALL BE JOINED WITH A GASKETED INTEGRAL BELL AND SPIGOT JOINT MEETING THE REQUIREMENTS OF ASTM F2736 OR F2881, FOR THE RESPECTIVE DIAMETERS. 12"-60" SHALL BE WATERTIGHT ACCORDING TO THE REQUIREMENTS OF ASTM D3212. SPIGOTS SHALL HAVE GASKETS MEETING THE REQUIREMENTS OF ASTM F477. GASKET SHALL BE INSTALLED BY THE PIPE MANUFACTURER AND COVERED WITH A REMOVABLE, PROTECTIVE WRAP TO ENSURE THE GASKET IS FREE FROM DEBRIS. JOINT LUBRICANT SHALL BE USED ON THE GASKET AND BELL DURING JOINT ASSEMBLY. INSTALLATION SHALL BE IN ACCORDANCE WITH ASTM D2321 AND ADS RECOMMENDED INSTALLATION GUIDELINES, WITH THE EXCEPTION THAT MINIMUM COVER IN TRAFFIC AREAS FOR 12"-48" DIAMETERS SHALL MEET HS-25 LOADING. INSTALLATION SHALL MEET OR EXCEED MANUFACTURERS SPECIFICATIONS AND RECOMMENDATIONS.

13. STORM SEWER MANHOLES SHALL BE PRECAST STRUCTURES, WITH THE DIAMETER DEPENDENT ON THE PIPE SIZE AND WITH APPROPRIATE FRAME AND LIDS (SEE CONSTRUCTION STANDARDS). WHERE NOTED ON THE PLANS OR CONSTRUCTION STANDARDS, MANHOLES SHALL INCORPORATE WATERSTOP GASKETS AT ALL PIPE PENETRATIONS.

14. WATER MAIN SHALL BE DUCTILE IRON PIPE, CLASS 52 CONFORMING TO ANSI A-21.51 OR AWWA C-151. RUBBER-GASKET JOINTS SHALL CONFORM TO ANSI A-21.11 OR AWWA C-111. MIN. COVER FROM FINISHED GRADE TO TOP OF WATER MAIN SHALL BE 5.5'.

15. WATER MAIN FITTINGS (BENDS, ELBOWS, TEES, INCREASES, REDUCERS, ETC.) MAY OR MAY NOT BE SPECIFICALLY REFERENCED ON THE CONSTRUCTION PLANS; HOWEVER, THEY ARE TO BE CONSIDERED AS INCIDENTAL AND INCLUDED IN THE LINEAL FOOTAGE COST OF THE WATER MAIN.

16. UNLESS NOTED OTHERWISE, GATE VALVES IN ACCORDANCE WITH MUNICIPAL STANDARDS SHALL BE USED WHEREVER VALVES ARE CALLED FOR. VALVES SHALL BE IRON BODY, BRONZE MOUNTED, PARALLEL RESILIENT SEAT VALVES PER AWWA C-509. ALL VALVES SHALL BE RATED FOR 300 PSI TEST PRESSURE AND 200 PSI WORKING PRESSURE.

17. VALVE VAULTS SHALL BE USED AT LOCATIONS SHOWN ON THE PLANS. VAULTS SHALL BE PRECAST CONCRETE STRUCTURES, WITH APPROPRIATE FRAME AND LIDS (SEE CONSTRUCTION STANDARDS SHEET).

18. HYDRANTS SHALL BE OF THE MANUFACTURE AND EQUIPPED WITH AUXILIARY VALVES AND VALVE BOXES IN ACCORDANCE WITH THE MUNICIPALITY'S STANDARD. EACH HYDRANT SHALL BE EQUIPPED WITH TWO 2-1/2 INCH HOSE NOZZLE AND ONE 4-1/2 INCH PUMPER PORT. HOSE THREADS SHALL BE THE STANDARD OF THE MUNICIPALITY. ALL HYDRANTS SHALL OPEN LEFT (COUNTER-CLOCKWISE). ALL FIRE HYDRANTS SHALL BE SET 3 FEET TO 7 FEET FROM BACK OF CURB.

19. WATER SERVICES SHALL BE LAID NOT LESS THAN 5.5 FEET BELOW GRADE.

20. THRUST BLOCKING SHALL BE INSTALLED ON WATER MAINS AT ALL BENDS, TEES, ELBOWS, ETC. COST SHALL BE MERGED WITH UNIT PRICE FOR INSTALLED PIPE. RETAINER GLANDS OR MEGA-LUG FITTINGS MAY BE USED AS AN ALTERNATE IF APPROVED BY THE MUNICIPALITY.

21. ALL WATER MAINS SHALL HAVE COMPACTED (CA-6) GRANULAR BEDDING, A MINIMUM OF 4 INCHES BELOW THE BOTTOM OF THE PIPE FOR THE FULL LENGTH. COST FOR BEDDING SHALL BE MERGED WITH THE UNIT PRICE BID FOR THE WATER MAIN.

22. WHENEVER POSSIBLE, A WATER MAIN MUST BE LAID AT LEAST 10 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED DRAIN OR SEWER LINE. SHOULD LOCAL CONDITIONS EXIST WHICH WOULD PREVENT A LATERAL SEPARATION OF 10 FEET, A WATER MAIN MAY BE LAID CLOSER THAN 10 FEET TO A STORM OR SANITARY SEWER PROVIDED THAT THE WATER MAIN INVERT IS AT LEAST 18 INCHES ABOVE THE CROWN OF THE SEWER, AND IS EITHER IN A SEPARATE TRENCH OR IN THE SAME TRENCH ON AN UNDISTURBED EARTH SHELF LOCATED TO ONE SIDE OF THE SEWER. IF IT IS IMPOSSIBLE TO OBTAIN PROPER HORIZONTAL OR VERTICAL SEPARATION AS DESCRIBED ABOVE, THEN THE SEWER MUST ALSO BE CONSTRUCTED OF WATER MAIN TYPE MATERIAL AND PRESSURE TESTED TO THE MAXIMUM EXPECTED SURCHARGE HEAD TO ASSURE WATERTIGHTNESS BEFORE BACKFILLING.

23. WHENEVER WATER MAINS MUST CROSS HOUSE SEWERS, STORM SEWERS OR SANITARY SEWERS, THE WATER MAIN SHALL BE LAID AT SUCH AN ELEVATION THAT THE INVERT OF THE WATER MAIN IS 18 INCHES ABOVE THE CROWN OF THE DRAIN OR SEWER. THIS VERTICAL SEPARATION MUST BE MAINTAINED FOR THAT PORTION OF THE WATER MAIN LOCATED WITHIN 10 FEET HORIZONTALLY OF ANY SEWER OR DRAIN CROSSED. THIS MUST BE MEASURED AS THE NORMAL DISTANCE FROM THE WATER MAIN TO THE DRAIN OR SEWER. IF IT IS IMPOSSIBLE TO OBTAIN THE PROPER VERTICAL SEPARATION AS DESCRIBED ABOVE, OR IF IT IS NECESSARY FOR THE WATER MAIN TO PASS UNDER A SEWER OR DRAIN, THEN THE SEWER MUST BE CONSTRUCTED OF WATER MAIN TYPE MATERIAL. THIS CONSTRUCTION MUST EXTEND ON EACH SIDE OF THE CROSSING UNTIL THE NORMAL DISTANCE FROM THE WATER MAIN TO THE SEWER OR DRAIN LINE IS AT LEAST 10 FEET. IN MAKING SUCH CROSSINGS, CENTER A LENGTH OF WATER MAIN PIPE OVER/UNDER THE SEWER TO BE CROSSED SO THAT THE JOINTS WILL BE EQUIDISTANT FROM THE SEWER AND AS REMOTE THERE FROM AS POSSIBLE. WHERE A WATER MAIN MUST CROSS UNDER A SEWER, A VERTICAL SEPARATION OF 18 INCHES BETWEEN THE INVERT OF THE SEWER AND THE CROWN OF THE WATER MAIN SHALL BE MAINTAINED, ALONG WITH MEANS TO SUPPORT THE LARGER SIZED SEWER LINES TO PREVENT THEIR SETTLING AND BREAKING THE WATER MAIN.

24. WATER AND SANITARY BUILDING SERVICES SHALL BE IN SEPARATE TRENCHES WITH A MINIMUM OF 10 FEET HORIZONTAL SEPARATION; OR IF THE SANITARY SEWER AND WATER SERVICES ARE INSTALLED IN THE SAME TRENCH, THE WATER SERVICE IS TO BE PLACED ON A SOLID SHELF A MINIMUM OF 18 INCHES ABOVE THE SANITARY SERVICE AND THE SANITARY SEWER SERVICE SHALL BE CONSTRUCTED WITH EITHER PVC SCH-40 AND SOLVENT CEMENT, DUCTILE IRON, OR SIMILAR TYPE MATERIAL AS APPROVED BY THE MUNICIPAL BUILDING DEPARTMENT.

UNDERGROUND UTILITIES (CONT'D)

25. THE UNDERGROUND CONTRACTOR SHALL PLACE AND MOUND EXCESS EXCAVATED TRENCH MATERIAL ADJACENT TO THE TRENCHES IN AN ORDERLY FASHION SO AS NOT TO CREATE A HAZARD OR OBSTRUCTION, AND TO MAINTAIN THE SITE IN A WORKABLE CONDITION. THE DISPOSAL AND PLACEMENT OF ALL EXCESS TRENCH MATERIAL SHALL BE THE RESPONSIBILITY OF THE EARTH EXCAVATING CONTRACTOR.

26. THE UNDERGROUND CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING ANY EXCAVATION FOR THE INSTALLATION OF THE SEWER OR WATER SYSTEMS.

27. ANY ANTICIPATED COST OF SHEETING SHALL BE REFLECTED IN THE CONTRACT AMOUNTS. NO ADDITIONAL COST WILL BE ALLOWED FOR SHEETING OR BRACING.

28. FRAMES AND LIDS (OR GRATES) FOR SANITARY, WATER MAIN AND STORM SEWER STRUCTURES SHALL BE AS INDICATED WITHIN THESE IMPROVEMENT PLANS. (SEE CONSTRUCTION STANDARDS).

29. ALL STRUCTURES SHALL HAVE A MINIMUM OF 3 INCHES AND A MAXIMUM OF 8 INCHES OF ADJUSTING RINGS (2 RINGS MAXIMUM).

30. ALL TOP OF FRAMES FOR STORM AND SANITARY SEWERS AND VALVE VAULT COVERS AND B-BOXES ARE TO BE ADJUSTED TO MEET FINAL FINISHED GRADE UPON COMPLETION OF FINISHED GRADING AND FINAL INSPECTIONS. THIS ADJUSTMENT IS TO BE MADE BY THE UNDERGROUND CONTRACTOR AND THE COST IS TO BE CONSIDERED INCIDENTAL. THE UNDERGROUND CONTRACTOR SHALL INSURE THAT ALL ROAD AND PAVEMENT INLETS OR STRUCTURES (FRAMES AND GRATES) ARE AT FINISHED GRADE. ANY ADJUSTMENTS NECESSITATED BY THE CURB OR PAVING CONTRACTOR TO ACHIEVE FINAL RIM GRADE, RESULTING IN AN EXTRA FOR SAID ADJUSTMENTS, WILL BE CHARGED TO THE UNDERGROUND CONTRACTOR.

31. THE CONTRACTOR SHALL INSTALL A 2 IN. X 4 IN. X 8 FT. POST ADJACENT TO THE TERMINUS OF THE SANITARY SERVICE, STORM SERVICE, AND WATER MAIN SERVICE, AS WELL AS SANITARY MANHOLES, STORM MANHOLES, CATCH BASINS, INLETS, AND VALVE VAULTS WITHIN TURF AREAS. THE POST SHALL EXTEND A MINIMUM F 4 FEET ABOVE THE GROUND. THE TOP 12 INCHES OF SAID POST SHALL BE PAINTED AS FOLLOWS: SANITARY-RED; WATER MAIN-BLUE; STORM-GREEN.

32. SANITARY SEWERS INCLUDING MANHOLES AND SERVICE LINES SHALL BE SUBJECTED TO EITHER AN INFILTRATION TEST OR AIR TEST, AND APPLICABLE DEFLECTION TEST BY THE CONTRACTOR. ALLOWABLE INFILTRATION SHALL NOT EXCEED 100 GALLONS PER INCH DIAMETER OF PIPE PER MILE PER DAY. THE CONTRACTOR SHALL COORDINATE ALL TESTING SO THAT IT CAN BE WITNESSED BY THE MUNICIPAL ENGINEER, MUNICIPAL PUBLIC WORKS DEPARTMENT AND SANITARY DISTRICT AS APPROPRIATE. TESTING PROCEDURES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR SEWER AND WATER MAIN CONSTRUCTION, SECTION 31-1. IN ADDITION, VACUUM TESTING OF A MANHOLE SHALL BE REQUIRED PER ASTM C-1244.

32. THE MAIN LINE SANITARY SEWER SHALL BE TELEVISED PRIOR TO ACCEPTANCE AND A VIDEO TAPE SHALL BE PROVIDED TO THE MUNICIPALITY. ALL NECESSARY CORRECTIVE WORK SHALL BE PERFORMED BY THE CONTRACTOR WITHOUT DELAY. COST FOR TELEVISING AND FURNISHING VIDEO TAPE AND CORRECTIVE WORK SHALL BE INCIDENTAL TO THE CONTRACT (MERGED INTO UNIT PRICE OF THE SEWER PIPE).

33. ALL WATER MAINS SHALL BE SUBJECTED TO A PRESSURE TEST BY THE CONTRACTOR. HYDROSTATIC PRESSURE TEST AND LEAKAGE SHALL BE BASED ON 150 PSI FOR 2 HOURS. WATER MAINS SHALL BE CHLORINATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

34. THE UNDERGROUND CONTRACTOR SHALL CONSIDER INCIDENTAL TO THE CONTRACT ANY CHLORINATION AND TESTING OF EXISTING WATER MAIN WHERE CONNECTIONS TO AND INCLUSION OF SUCH MAINS IS INDICATED ON THE DRAWINGS. IN THE EVENT THAT THE PRESSURE TESTS INVOLVING EXISTING MAINS FAIL, AND SUCH FAILURES ARE ATTRIBUTABLE TO DEFECTIVE ORIGINAL WORKMANSHIP AND MATERIAL, THEN THE CONTRACTOR SHALL BE ENTITLED TO ADDITIONAL PAYMENT FOR CORRECTING THE DEFICIENCIES.

35. THE CONTRACTOR SHALL MAINTAIN A LEGIBLE RECORD ON A SET OF CONSTRUCTION PLANS INFORMATION CONCERNING ALL MANHOLES, WYES AND SERVICES, VALVE BOXES, CURB BOXES, ETC. SUCH THAT THEY CAN BE LOCATED IN THE FIELD IN A MANNER ACCEPTABLE TO THE APPLICABLE GOVERNMENTAL AGENCY. FINAL CONTRACT PAYMENT SHALL NOT COME DUE UNTIL THIS INFORMATION IS RECEIVED BY THE ENGINEER.

36. ALL CATCH BASINS, SUMPS, DETENTION BASINS AND OTHER AREAS ACCUMULATING SEDIMENT ARE TO BE CLEANED AT THE END OF THE PROJECT PRIOR TO FINAL ACCEPTANCE. CLEANING MAY ALSO BE REQUIRED DURING THE COURSE OF THE CONSTRUCTION OF THE PROJECT IF IT IS DETERMINED THAT THE SILT AND DEBRIS TRAPS ARE NOT FUNCTIONING PROPERLY OR EXCESS DEBRIS HAS COLLECTED.

37. IT SHALL BE THE RESPONSIBILITY OF THE UNDERGROUND CONTRACTOR TO REMOVE FROM THE SITE ANY AND ALL MATERIALS AND DEBRIS WHICH RESULT FROM HIS CONSTRUCTION OPERATIONS AT NO ADDITIONAL EXPENSE TO THE OWNER.

EROSION AND SEDIMENT CONTROL NOTES

1. ALL EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES ARE TO BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE "ILLINOIS URBAN MANUAL," LATEST EDITION, AND THE "COOK COUNTY WATERSHED MANAGEMENT ORDINANCE", LATEST EDITION.

2. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY CONSTRUCTION OR DISTURBANCE OF THE SITE. THE MEASURES MAY HAVE TO BE ADJUSTED TO MEET FIELD CONDITIONS DURING CONSTRUCTION. ANY MEASURES, IN ADDITION TO THOSE OUTLINED IN THE PLANS WHICH ARE DEEMED NECESSARY BY THE VILLAGE, SHALL BE IMPLEMENTED IMMEDIATELY BY THE DEVELOPER.

3. REGULAR INSPECTION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL MEASURES MUST BE PROVIDED IN ORDER TO VERIFY THE INTENDED PURPOSE IS ACCOMPLISHED. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PROPER WORKING CONDITION AT ALL TIMES.

4. ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS SHALL BE PROTECTED TO PREVENT TRACKING OF DEBRIS, DIRT, AND MUD ONTO ADJACENT STREETS, PARKING LOTS, OR PROPERTIES. THIS CAN BEST BE ACCOMPLISHED THROUGH THE USE OF A STABILIZED CONSTRUCTION ENTRANCE. ANY SEDIMENT, SOIL, DEBRIS, DIST OR MUD THAT REACHES AND IMPROVED PUBLIC RIGHT-OF-WAY, STREET, OR PARKING AREA SHALL BE REMOVED DAILY, OR AS ACCUMULATIONS WARRANT, AND TRANSPORTED TO A CONTROLLED SEDIMENT DISPOSAL AREA. THE VILLAGE HAS THE OPTION TO STOP ALL WORK AT THE SITE UNTIL THE AREA STREETS HAVE BEEN CLEANED.

5. ALL SEDIMENT MUST BE PREVENTED FROM ENTERING ANY PUBLIC OR PRIVATE STORM DRAINAGE SYSTEM. REUSABLE INLET FILTER BASKETS (FLEXSTORM, CATCHALL, OR EQUIVALENT), SEDIMENT BASINS, AND WATER FILTERING BAGS, SHALL BE PROVIDED AS NEEDED.

6. ALL DRAINAGE SWALES SHALL BE SODDED. AREAS OR EMBANKMENTS HAVING SLOPES STEEPER THAN OR EQUAL TO 3H:1V, AND APPROVED BY THE VILLAGE, SHALL BE STABILIZED WITH SOD, MATTING , OR EROSION CONTROL BLANKET IN COMBINATION WITH APPROPRIATE SEEDING.

7. WEEKLY, AND AFTER ANY RAINFALL GREATER THAN ½", THE DEVELOPER SHALL INSPECT ALL SEDIMENT CONTROL MEASURES AND ANY DAMAGED DEVICES SHALL BE REPAIRED OR REPLACED IMMEDIATELY. THE VILLAGE WILL ALSO BE COMPLETING WEEKLY EROSION CONTROL INSPECTIONS IN ACCORDANCE WITH MS4 REQUIREMENTS.

8. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED UNTIL THE SITE IS PERMANENTLY STABILIZED. THESE PRACTICES SHALL BE MAINTAINED ON A YEAR-ROUND BASIS DURING CONSTRUCTION AND ANY PERIODS OF CONSTRUCTION SHUTDOWN UNTIL PERMANENT STABILIZATION IS ACHIEVED. ALL PERMANENT EROSION CONTROL MEASURES SHALL BE CLEANED AT THE END OF CONSTRUCTION AND PRIOR TO FINAL ACCEPTANCE BY THE VILLAGE.

9. SOIL STOCKPILES SHALL BE LOCATED TO AVOID EROSION OF SOIL ONTO NEIGHBORING PROPERTIES OR INTO RESTORED PROJECT AREAS. STOCKPILES SHALL BE LOCATED SO THAT A DRAINAGE SWALE IS LOCATED BETWEEN THE STOCKPILE AND ANY DOWNSTREAM PROPERTIES. IF A STOCKPILE IS TO REMAIN IN PLACE FOR MORE THAN 7 DAYS, IT MUST BE SEEDED AND BLANKED TO MINIMIZE SOIL EROSION BY BOTH WIND AND WATER.

10. THE DEVELOPER IS RESPONSIBLE FOR OBTAINING A SEPARATE NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FROM THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY WHENEVER 1 ACRE OR MORE OF PROPERTY IS DISTURBED.

11. THE DEVELOPER IS RESPONSIBLE FOR REPAIRING AND MAINTAINING A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AT THE PROJECT SITE FOR ANY DEVELOPMENT GREATER THAN 1 ACRE. AN EROSION CONTROL PLAN US REQUIRED FOR ALL SITES REGARDLESS OF SIZE.

12. DISTURBED AREAS SHALL BE STABILIZED WITH TEMPORARY OR PERMANENT MEASURES WITHIN SEVEN (7) CALENDAR DAYS OF THE END OF ACTIVE HYDRAULIC DISTURBANCE, OR REDISTURBANCE.

13. IF DEWATERING SERVICES ARE USED, ADJOINING PROPERTIES AND DISCHARGE LOCATIONS SHALL BE PROTECT FROM EROSION. DISCHARGES SHALL BE ROUTED THROUGH AN EFFECTIVE SEDIMENT CONTROL MEASURE (E.G. SEDIMENT TRAP, SEDIMENT BAGS, SEDIMENT BASIN, OR OTHER APPROPRIATE TEMPORARY MEASURE.)

14. EROSION CONTROL BLANKET AND TEMPORARY SEEDING SHALL BE REQUIRED ON ALL INTERIOR DETENTION BASIN SIDE SLOPES BETWEEN NORMAL WATER LEVEL AND HIGH WATER LEVEL, IMMEDIATELY AFTER CONSTRUCTION AND CONFIRMATION OF REQUIRED STORAGE VOLUME.

PAVING, CURBS & WALKS

1. WORK UNDER THIS SECTION SHALL INCLUDE FINAL SUBGRADE SHAPING AND PREPARATION; FORMING, JOINTING, PLACEMENT OF ROADWAY AND PAVEMENT BASE COURSE MATERIALS AND SUBSEQUENT BINDER AND/OR SURFACE COURSES; PLACEMENT, FINISHING AND CURING OF CONCRETE; FINAL CLEAN-UP; AND ALL RELATED WORK.

2. ALL PAVING, SIDEWALK, AND CURB AND GUTTER WORK SHALL BE DONE IN ACCORDANCE WITH THE I.D.O.T. STANDARD SPECIFICATIONS AND PER THE VILLAGE OF EAST DUNDEE CONSTRUCTION STANDARDS AND DETAILS.

3. PAVEMENT SUBGRADE AND BASE COURSE SHALL BE PROOF-ROLLED AND WITNESSED BY THE VILLAGE ENGINEER PRIOR TO PLACEMENTS OF THE AGGREGATE BASE AND HOT-MIX ASPHALT BINDER COURSE

4. SUBGRADE FOR PROPOSED PAVEMENT SHALL BE FINISHED BY THE EXCAVATION CONTRACTOR TO WITHIN 0.1 FOOT, PLUS OR MINUS, OF PLAN ELEVATION. THE PAVING CONTRACTOR SHALL SATISFY HIMSELF THAT THE SUBGRADE HAS BEEN PROPERLY PREPARED AND THAT THE FINISH TOP OF SUBGRADE ELEVATION HAS BEEN GRADED WITHIN TOLERANCES ALLOWED IN THESE SPECIFICATIONS. UNLESS THE PAVING CONTRACTOR ADVISES THE OWNER AND ENGINEER IN WRITING PRIOR TO FINE GRADING FOR BASE COURSE CONSTRUCTION, IT IS UNDERSTOOD THAT HE HAS APPROVED AND ACCEPTS THE RESPONSIBILITY FOR THE SUBGRADE. PRIOR TO PLACEMENT OF PAVEMENT BASE MATERIALS, THE PAVING CONTRACTOR SHALL FINE GRADE THE SUBGRADE SO AS TO INSURE THE PROPER THICKNESS OF PAVEMENT COURSES. NO CLAIMS FOR EXCESS TONNAGE OF BASE MATERIALS DUE TO IMPROPER SUBGRADE PREPARATION WILL BE HONORED.

5. THE PROPOSED PAVEMENT SHALL CONSIST OF THE SUB-BASE COURSE, BASE COURSE, HOT-MIX ASPHALT BINDER COURSE, AND HOT-MIX ASPHALT SURFACE COURSE, OF THE THICKNESS AND MATERIALS AS SPECIFIED ON THE CONSTRUCTION PLANS. A PRIME COAT OF THE TYPE AND AT THE RATE SPECIFIED ON THE CONSTRUCTION PLANS SHALL BE APPLIED TO THE SUB-BASE COURSE AND BETWEEN HMA BINDER AND HMA SURFACE COURSES. UNLESS SHOWN AS A BID ITEM, PRIME COAT SHALL BE CONSIDERED AS INCIDENTAL TO THE COST OF THE CONTRACT. ALL PAVEMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE I.D.O.T. STANDARD SPECIFICATIONS

6. THE MAXIMUM SIZED AGGREGATE FOR THE HOT-MIX ASPHALT SURFACE COURSE MIXTURE SHALL BE 3/8 INCH. THE HOT-MIX ASPHALT BINDER COURSE SHALL BE AS SPECIFIED IN ARTICLE 1030.04 OF THE I.D.O.T. STANDARD SPECIFICATIONS. THE CONTRACTOR SHALL SUBMIT A HOT-MIX ASPHALT DESIGN TO THE ENGINEER PRIOR TO THE INSTALLATION OF THE HOT-MIX ASPHALT.

7. HOT-MIX ASPHALT BINDER COURSE SHALL BE PLACED ONLY WHEN THE AMBIENT AIR TEMPERATURE IS AT LEAST 40 DEGREES FAHRENHEIT AND THE FORECAST CALLS FOR RISING TEMPERATURES. HOT-MIX ASPHALT SURFACE COURSE SHALL BE PLACED ONLY WHEN THE AMBIENT AIR TEMPERATURE IS AT LEAST 45 DEGREES FAHRENHEIT AND THE FORECAST CALLS FOR RISING TEMPERATURES. NO ASPHALT WORK SHALL BE ALLOWED BETWEEN NOVEMBER 1ST AND APRIL 1ST WITHOUT PERMISSION FROM THE VILLAGE ENGINEER.

8. AFTER THE INSTALLATION OF THE BASE COURSE, ALL TRAFFIC SHALL BE KEPT OFF THE BASE UNTIL THE BINDER COURSE IS LAID. AFTER INSTALLATION OF THE BINDER COURSE, AND UPON THE COMPLETION OF INSPECTION OF SAME AND APPROVAL BY THE VILLAGE AND OWNER, THE PAVEMENT SHALL BE CLEANED, A TACK COAT PROVIDED AND THE SURFACE COURSE PLACED. ALL DAMAGED AREAS IN THE BINDER, BASE, OR CURB AND GUTTER SHALL BE REPAIRED TO THE SATISFACTION OF THE VILLAGE AND OWNER, PRIOR TO LAYING THE SURFACE COURSE. THE PAVING CONTRACTOR SHALL PROVIDE WHATEVER EQUIPMENT AND MANPOWER IS NECESSARY, INCLUDING THE USE OF POWER BROOMS, TO PREPARE THE PAVEMENT FOR APPLICATION OF THE SURFACE COURSE. EQUIPMENT AND MANPOWER FOR CLEANING SHALL BE CONSIDERED AS INCIDENTAL TO THE COST OF THE CONTRACT. TACK COAT FOR THE BINDER COURSE SHALL ALSO BE CONSIDERED AS INCIDENTAL TO THE COST OF THE CONTRACT AND SHALL BE APPLIED TO THE BINDER AT A RATE OF 0.05 GALLONS PER SQUARE YARD, UNLESS DESIGNATED OTHERWISE.

9. CONCRETE PAVEMENT SHALL BE OF THE THICKNESS AND DIMENSIONS AS SHOWN IN THE PLANS. ALL CONCRETE PAVEMENT SHALL CONFORM TO I.D.O.T. STANDARD SPECIFICATION SECTION 420 UNLESS NOTED OTHERWISE ON PLANS.

10. COMBINATION CURB AND GUTTER (WHEN REQUIRED) SHALL BE OF THE TYPE AS DETAILED IN THE CONSTRUCTION PLANS. ALL CURB AND GUTTER SHALL CONFORM TO I.D.O.T. STANDARD SPECIFICATION SECTION 606 UNLESS OTHERWISE NOTED ON THE PLANS. THE CONTRACTOR IS CAUTIONED TO REFER TO THE CONSTRUCTION STANDARDS AND THE PAVEMENT CROSS SECTION TO DETERMINE THE GUTTER FLAG THICKNESS AND THE AGGREGATE BASE COURSE THICKNESS BENEATH THE CURB AND GUTTER. THE AGGREGATE BENEATH THE CURB AND GUTTER SHALL BE INCLUDED IN THE UNIT PRICE OF THE CURB AND GUTTER -OR- THE ROADWAY SUB-BASE AGGREGATE MATERIAL SHALL BE EXTENDED BENEATH THE CURB AND GUTTER AND WILL BE INCLUDED IN THE COST FOR PAVEMENT SUB-BASE).

11. 3/4 IN. THICK PREMOULDED FIBER EXPANSION JOINTS WITH 1 IN. X 8 IN. PLAIN ROUND EPOXY COATED STEEL DOWEL BARS SHALL BE INSTALLED AT 60 FOOT INTERVALS AND AT ALL P.C.'S, P.T.'S, CURB RETURNS, AND AT THE END OF EACH POUR. ALTERNATE ENDS OF THE DOWEL BARS SHALL BE GREASED AND FITTED WITH METAL EXPANSION TUBES. 3/4 IN. THICK FIBRE EXPANSION JOINTS SHALL BE USED IN EVERY CASE WHERE THE SIDEWALK COINCIDES WITH THE CURB AND GUTTER. WHEN PROPOSED CURB AND GUTTER MATCHES INTO EXISTING EXISTING PCC CURB AND GUTTER THE CONTRACTOR SHALL INSTALL TWO (2) NO. 4 1 IN. X 8 IN. LONG EPOXY COATED REBAR. REBAR SHALL BE DRILLED AND GROUTED INTO EXISTING CURB AND GUTTER. CONTRACTION JOINTS SHALL BE PROVIDED AT 15 FOOT (MAXIMUM) INTERVALS IN THE CURB. THE COST OF THESE JOINTS SHALL BE CONSIDERED AS INCIDENTAL TO THE COST OF THE CONTRACT. ALL POURED IN PLACE CONCRETE CURB AND GUTTER SHALL INCORPORATE TWO NO. 4 EPOXY COATED REINFORCING BARS, 10 FEET LONG, INSTALLED WHEREVER THE CURB AND GUTTER CROSSES UTILITY TRENCHES OR SERVICE LINES, THE COST OF WHICH SHALL BE CONSIDERED INCIDENTAL TO THE COST OF CONCRETE CURB AND GUTTER.

12. CURING AND WEATHER PROTECTION OF ALL EXPOSED CONCRETE SURFACES SHALL BE IN ACCORDANCE WITH THE I.D.O.T. STANDARD SPECIFICATIONS. NO HONEY-COMBING OF THE CURB AND GUTTER WILL BE ACCEPTED.

13. CURBS SHALL BE DEPRESSED NO MORE THAN ½" ABOVE FLOWLINE AT LOCATIONS WHERE PUBLIC WALKS/PEDESTRIAN PATHS INTERSECT CURB LINES AT STREET INTERSECTIONS AND OTHER LOCATIONS WHERE DIRECTED, FOR THE PURPOSE OF PROVIDING ACCESS FOR THE HANDICAPPED. (SEE CONSTRUCTION STANDARDS FOR DETAILS).

14. SIDEWALKS (WHERE REQUIRED) SHALL BE OF THE THICKNESS AND DIMENSIONS AS SHOWN ON THE CONSTRUCTION PLANS. ALL SIDEWALKS SHALL CONFORM TO I.D.O.T. STANDARD SPECIFICATION SECTION 424, UNLESS OTHERWISE NOTED ON THE PLANS. ALL SIDEWALKS CONSTRUCTED OVER UTILITY TRENCHES SHALL BE REINFORCED WITH THREE NO. 4 EPOXY COATED REINFORCING BARS, 10 FEET LONG (MINIMUM).

15. BACKFILLING OF CURBS OR PAVEMENT SHALL BE THE RESPONSIBILITY OF THE EXCAVATION CONTRACTOR.

16. IT SHALL BE THE RESPONSIBILITY OF THE RESPECTIVE CONTRACTOR TO REMOVE FROM THE SITE ANY AND ALL MATERIALS AND DEBRIS WHICH RESULT FROM HIS CONSTRUCTION OPERATIONS AT NO ADDITIONAL EXPENSE TO THE OWNER.

17. TESTING OF THE SUB-BASE, BASE COURSE, BINDER COURSE, SURFACE COURSE AND CONCRETE WORK SHALL BE REQUIRED IN ACCORDANCE WITH THE I.D.O.T. STANDARD SPECIFICATIONS AND IN ACCORDANCE WITH THE SPECIFIC REQUIREMENTS OF THE VILLAGE. A QUALIFIED TESTING FIRM SHALL BE EMPLOYED BY THE OWNER TO PERFORM THE REQUIRED TESTS AND PROVIDE THE RESULTS TO THE CONSULTING ENGINEER AND THE VILLAGE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL QUALITY CONTROL TESTING.

18. PAINTED PAVEMENT MARKINGS AND SYMBOLS, OF THE TYPE AND COLOR AS NOTED ON THE CONSTRUCTION PLANS, SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 780 OF THE I.D.O.T. STANDARD SPECIFICATIONS. PAINTED PAVEMENT MARKINGS SHALL ONLY BE APPLIED WHEN THE AIR TEMPERATURE IS 50 DEGREES FAHRENHEIT OR ABOVE.

19. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3500 PSI AT 14 DAYS.

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LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT
CREST HILL, ILLINOIS

REVISIONS

No.	Description	Date
1	PER VILLAGE REVIEW	02/20/25

PROJECT SPECIFICATIONS

PEG JOB No. 5219.00-IL
PEG PM DAT
START DATE 01-21-25
SCALE NONE

SHEET C-2 OF C-17

LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT - PROJECT SPECIFICATIONS

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DRAFTED: DKT DESIGNED: DAT REVIEWED: BDJ

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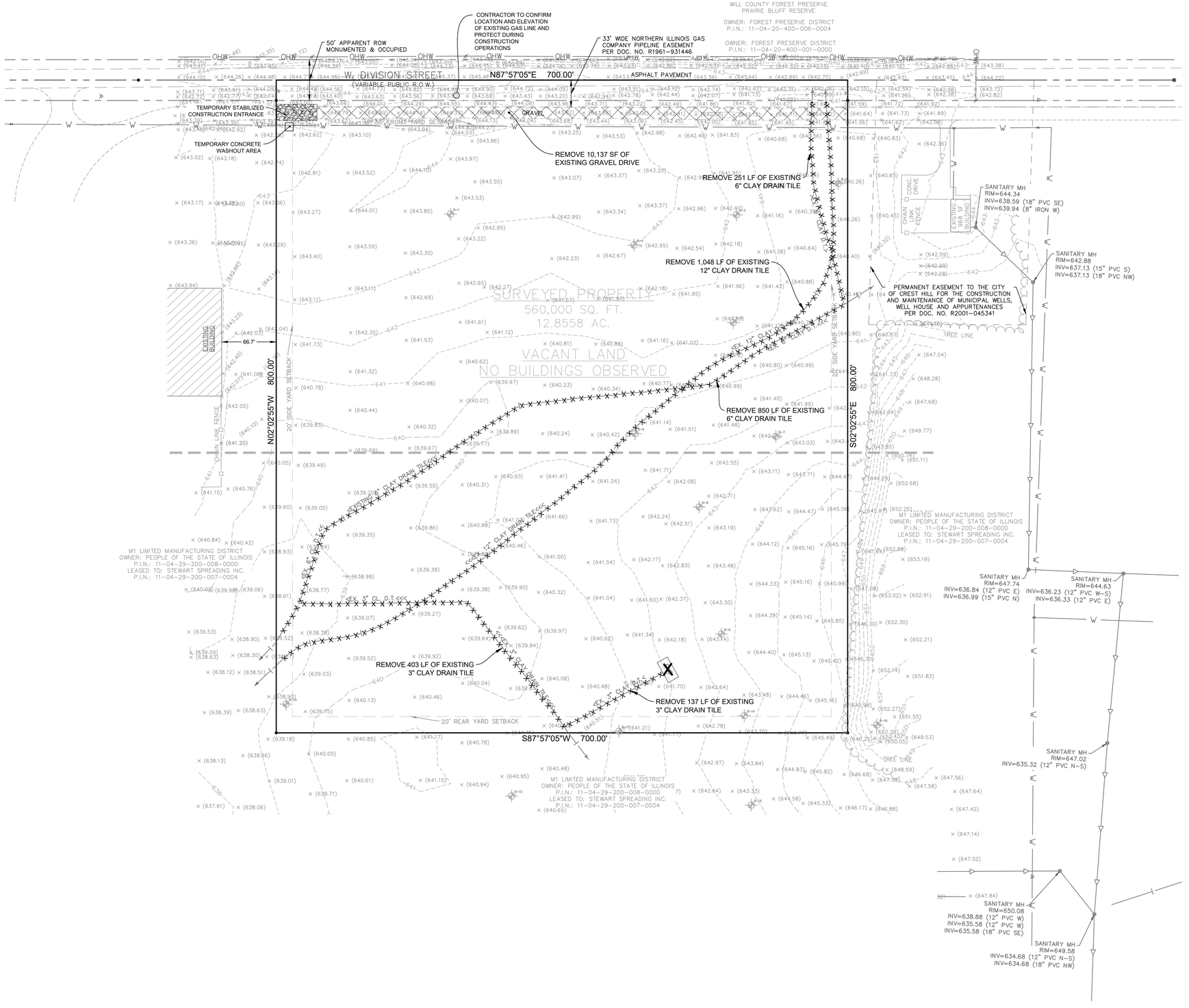
EXHIBIT B



DEMOLITION NOTES

1. CONTRACTOR SHALL CONTACT 811 PRIOR TO CONSTRUCTION AND NOTIFY ENGINEERING OF ANY CONFLICTS WITH THE PROPOSED IMPROVEMENTS.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR DEMOLITION, REMOVAL AND DISPOSAL OF ALL STRUCTURES, FOUNDATIONS, SIDEWALKS, PAVEMENT, DRIVES, DRAINAGE STRUCTURES, UTILITIES, BRUSH/TREE CLEARING ETC., SUCH THAT THE IMPROVEMENTS SHOWN ON THESE PLANS CAN BE CONSTRUCTED.THE CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL DEBRIS FROM THE SITE AND DISPOSING THE DEBRIS IN A LAWFUL MANNER. ALL MATERIAL REMOVED SHALL BE DISPOSED OF IN AN APPROVED LOCATION.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FOR DEMOLITION AND DISPOSAL.
4. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANIES PRIOR TO THE REMOVAL AND/OR RELOCATION OF UTILITIES. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANY CONCERNING PORTIONS OF WORK WHICH MAY BE PERFORMED BY THE UTILITY COMPANY AND ANY FEES WHICH ARE TO BE PAID TO THE UTILITY COMPANY FOR THEIR SERVICES. THE CONTRACTOR IS RESPONSIBLE FOR PAYING FOR ALL FEES AND CHARGES.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ANY DRAIN TILES AND NOTIFYING THE ENGINEER PRIOR TO CONSTRUCTION.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING THE EXISTING IRRIGATION SYSTEM IF FOUND IN THE AREAS OF PROPOSED IMPROVEMENTS. THE EXISTING IRRIGATION SYSTEM TO REMAIN SHALL BE CAPPED OR MODIFIED SO IT CAN CONTINUE TO OPERATE AS ORIGINALLY INTENDED.
7. ALL EXISTING INFORMATION AND EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE AND ARE GIVEN FOR THE CONVENIENCE OF THE CONTRACTOR. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THEIR ACCURACY. PRIOR TO THE START OF ANY DEMOLITION ACTIVITY, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES FOR LOCATION OF EXISTING UTILITIES.
8. ALL UTILITIES SHALL BE COORDINATED WITH THE APPROPRIATE UTILITY COMPANY OR AGENCY.
9. CONTRACTOR SHALL SECURE THE SITE FROM THE PUBLIC AT ALL TIMES WITH FENCING, BARRICADES, ENCLOSURES, AND/OR OTHER APPROVED PRACTICES.
10. ACCESS SHALL BE MAINTAINED FOR SURROUNDING PROPERTIES AT ALL TIMES DURING CONSTRUCTION.
11. PRIOR TO DEMOLITION OCCURRING, ALL SPECIFIED EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE INSTALLED.
12. SHOULD REMOVAL AND/OR RELOCATION ACTIVITIES DAMAGE FEATURES INDICATED TO REMAIN, THE CONTRACTOR SHALL PROVIDE NEW MATERIALS IN ACCORDANCE WITH THE LOCAL AND STATE STANDARDS AT THEIR EXPENSE.
13. CONTRACTOR SHALL SAW-CUT (FULL DEPTH) ALL EXISTING HARD SURFACES WHERE A PORTION OF THE HARD SURFACE SHALL REMAIN AND OTHER BE REMOVED. IF ANY DAMAGE IS INCURRED ON ANY OF THE SURROUNDING PAVEMENT, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IT'S REMOVAL AND REPAIR.
14. CONTRACTOR SHALL MAINTAIN AND KEEP CLEAN ALL EXISTING SIDEWALKS, WALKING PATHS, AND SITE ACCESS TO ENSURE THE SAFETY OF THE SURROUNDS PUBLIC AND BUSINESSES.
15. MAINTAIN EXISTING SITE DRAINAGE THROUGHOUT THE COURSE OF THE DEMOLITION WORK.

DEMOLITION LEGEND

FULL DEPTH GRAVEL REMOVAL

SITE FEATURE TO BE REMOVED

NOTES:

1. EXISTING TOPOGRAPHY SHOWN REPRESENTS SITE CONDITIONS AS PREPARED BY PINNACLE ENGINEERING GROUP, LTD., INC. ON JANUARY 5, 2024. CONTRACTOR SHALL FIELD CHECK EXISTING HORIZONTAL AND VERTICAL SITE FEATURES AND CONDITIONS PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING CONSTRUCTION.
2. EXISTING FIELD TILE INFORMATION PROVIDED BY HUDDLESTON MCBRIDE PROFESSIONAL LAND DRAINAGE SERVICES DATED 5/22/24.

NORTH

GRAPHICAL SCALE (FEET)

0 1" = 60' 120'

LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT - EXISTING CONDITIONS & DEMOLITION PLAN

www.pinnacle-engr.com

2/19/2025 1:47 PM - Z:\Projects\2023\5219.00-IL\600 - CAD\FINAL\SHEETSET\C-4 EXISTING.dwg

DRAFTED: DKT DESIGNED: DAT REVIEWED: BBJ

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LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT

CREST HILL, ILLINOIS

REVISIONS

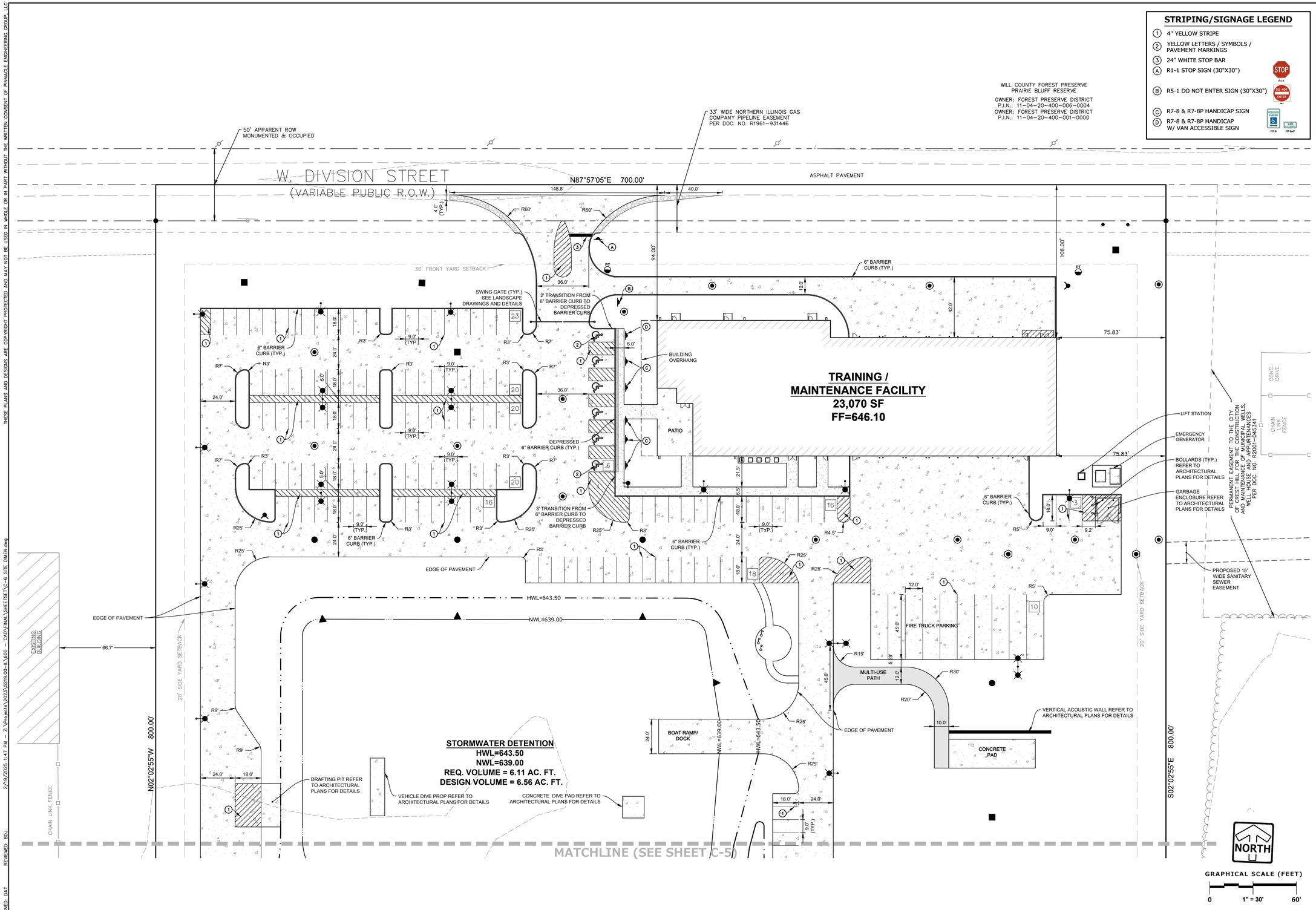
1	PER VILLAGE REVIEW	02/20/25			

EXISTING CONDITIONS & DEMOLITION PLAN

PEG JOB No. 5219.00-IL
PEG PM DAT
START DATE 01-21-25
SCALE 1"=60'

SHEET C-3 OF C-17

EXHIBIT B



STRIPING/SIGNAGE LEGEND

1. 4" YELLOW STRIPE
2. YELLOW LETTERS / SYMBOLS / PAVEMENT MARKINGS
3. 24" WHITE STOP BAR
- A. R1-1 STOP SIGN (30"X30")
- B. R5-1 DO NOT ENTER SIGN (30"X30")
- C. R7-8 & R7-8P HANDICAP SIGN
- D. R7-8 & R7-8P HANDICAP W/ VAN ACCESSIBLE SIGN

R1-1 · R5-1 · R7-8 · R7-8aP

SITE DIMENSIONAL AND PAVING NOTES

1. ALL PROPOSED CURB SHALL BE 6" CONCRETE BARRIER CURB UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS ARE FACE OF CURB TO FACE OF CURB OR BUILDING FACE UNLESS OTHERWISE NOTED.
3. BUILDING DIMENSIONS, GRADING, PARKING, AND UTILITY LAYOUT HAVE BEEN PREPARED BASED UPON ARCHITECTURAL INFORMATION. SUBSEQUENT ARCHITECTURAL CHANGES MAY EXIST AND CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION. IN CASE OF DISCREPANCIES BETWEEN ARCHITECTURAL PLANS AND CIVIL PLANS, NOTIFY BOTH ARCHITECT AND ENGINEER.
4. LOCATION OF PRIVATE SIDEWALKS SHALL BE COORDINATED WITH PROPOSED DOORWAYS. CONTRACTOR TO VERIFY ACTUAL BUILDING PLAN LOCATIONS WITH ARCHITECT/DEVELOPER PRIOR TO CONSTRUCTING THE SIDEWALKS.
5. REBAR / TIEBARS SHALL BE USED IN ALL LOCATIONS WHERE CONCRETE ABUTS OTHER CONCRETE FEATURES (ie. SIDEWALK ADJACENT TO FOUNDATION WALL, PAVEMENT, AND SIDEWALK ADJACENT TO CURB). TIEBAR SIZE AND SPACING SHALL BE PER IDOT SPECIFICATIONS.
6. CONTRACTOR SHALL CONSTRUCT ALL HANDICAP ACCESSIBLE ROUTES IN ACCORDANCE WITH LOCAL AND STATE ADA REQUIREMENTS.
7. PAVEMENT SLOPES THROUGH HANDICAP ACCESSIBLE PARKING AREAS SHALL BE 2.00% MAXIMUM IN ANY DIRECTION.

LEGEND

CONCRETE PAVEMENT
- 8" PORTLAND CEMENT CONCRETE (NO FLY ASH, LOW CHERT MIX) WITH 2 LAYERS OF 6"X6" (W1.4 X W1.4) WWF
- 6" COMP. CA-6 AGGREGATE BASE COURSE, TYPE B (WHERE CONCRETE APRON IS ADJACENT TO CURB AND GUTTER, CONTRACTOR SHALL INSTALL NO. 6 DEFORMED 18" LONG (NON EPOXY) CURB TIE BARS @ 30" SPACING O.C.)

PAVEMENT SECTION SHALL BE PER GEOTECHNICAL ENGINEER'S RECOMMENDATION OR PER OWNERS SPECIFICATION

SIDEWALK
- 5" PORTLAND CEMENT CONCRETE
- 4" COMPACTED CA-6 AGGREGATE BASE COURSE, TYPE B

GRAVEL
- 12" COMPACTED CA-6 AGGREGATE BASE

STONE APRON
- 6" COMPACTED CA-6 AGGREGATE

6" BARRIER CURB

DEPRESSED 6" BARRIER CURB

10 PARKING STALL COUNT (NOT TO BE PAINTED)

SITE DATA

TOTAL PROPERTY AREA:	560,000 SF (12.86 ACRES)
APPARENT ROW MONUMENTED & OCCUPIED:	0.40 ACRES
DEVELOPED AREA:	12.46 ACRES
PIN:	11-04-29-200-009-0000
EXISTING ZONING:	M1 - LIMITED MANUFACTURING DISTRICT
TRAINING MAINTENANCE FACILITY	
FLOOR AREA:	23,070 SF
BUILDING 2 CONCRETE PAD:	5,452 SF
MAIN BURN TOWER:	2,678 SF
FAR:	0.056
OUTDOOR FIRING RANGE:	24,720 SF
PROPOSED LOT COVERAGE:	245,161 SF (43.8%)
TOTAL FRONT YARD AREA:	49,143 SF
IMPERVIOUS (FR YARD):	11,814 SF (76.0%)
LANDSCAPING (FR YARD):	37,329 SF (24.0%)
REQUIRED PARKING:	
TRAINING FACILITY:	
2 SPACES / 3 EMPLOYEES	= 38 SPACES
TRADE SCHOOL:	
1 SPACE / 4 STUDENTS	= 4 SPACES
MAINTENANCE FACILITY:	
1 SPACE / EMPLOYEE	= 6 SPACES
WAREHOUSE:	
1 SPACE / VEHICLE	= 12 SPACES
TOTAL REQUIRED:	= 60 SPACES
PROVIDED PARKING:	
CAR:	157 STALLS (INCLUDING 6 ADA SPACES)
TRUCK:	10 STALLS

LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT - SITE DIMENSIONAL & PAVING PLAN (NORTH)

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LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT

CREST HILL, ILLINOIS

REVISIONS

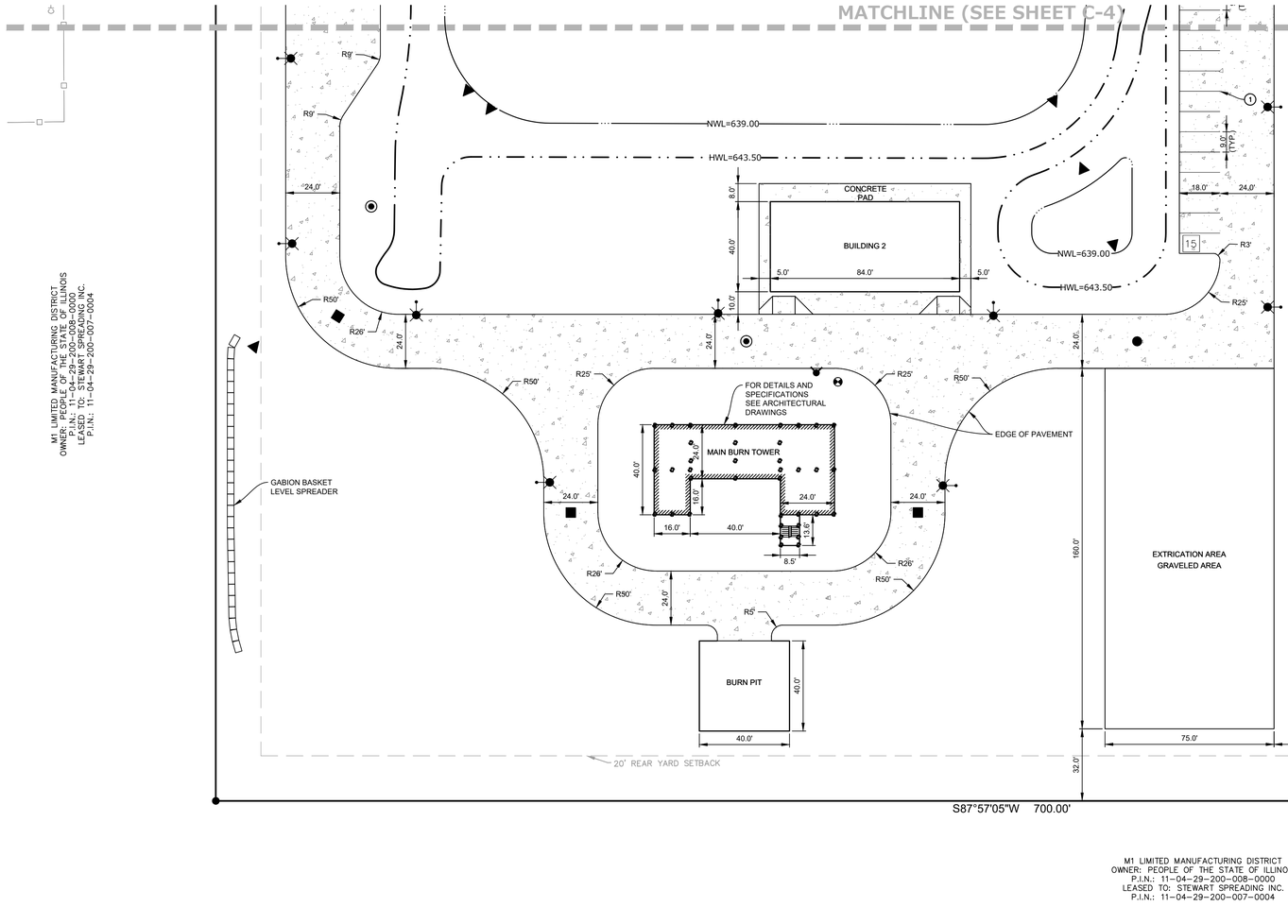
1	PER VILLAGE REVIEW	02/20/25			

SITE DIMENSIONAL & PAVING PLAN (NORTH)

PEG JOB No. 5219.00-1L
PEG PM: DAT
START DATE: 01-24-25
SCALE: 1"=30'

SHEET C-4 OF C-17

EXHIBIT B



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LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT
CREST HILL, ILLINOIS

REVISIONS

1	PER VILLAGE REVIEW	02/20/25			

SITE DIMENSIONAL & PAVING PLAN (SOUTH)

PEG JOB No. 5219.00-IL
PEG PM DAT
START DATE 01-21-25
SCALE 1"=30'

SHEET C-5 OF C-17

LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT - SITE DIMENSIONAL & PAVING PLAN (SOUTH)

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EXHIBIT B

W. DIVISION STREET
(VARIABLE PUBLIC R.O.W.)

50' APPARENT ROW
MONUMENTED & OCCUPIED

33' WIDE NORTHERN ILLINOIS GAS
COMPANY PIPELINE EASEMENT
PER DOC. NO. R1961-931446

WILL COUNTY FOREST PRESERVE
PRAIRIE BLUFF RESERVE
OWNER: FOREST PRESERVE DISTRICT
P.I.N.: 11-04-20-400-006-0004
OWNER: FOREST PRESERVE DISTRICT
P.I.N.: 11-04-20-400-001-0000

ASPHALT PAVEMENT

GRAVEL

30' FRONT YARD SETBACK

TRAINING / MAINTENANCE FACILITY
23,070 SF
FF=646.10

PATIO

STORMWATER DETENTION
HWL=643.50
NWL=639.00
REQ. VOLUME = 6.11 AC. FT.
DESIGN VOLUME = 6.56 AC. FT.

HWL=643.50
NWL=639.00

BOAT RAMP/
DOCK

MULTI-USE
PATH

FIRE TRUCK PARKING

CONCRETE
PAD

EXISTING
BUILDING

20' SIDE YARD SETBACK

CHAIN LINK FENCE

CONC.
DRIVE

PERMANENT EASEMENT TO THE CITY
OF CREST HILL FOR THE CONSTRUCTION
AND MAINTENANCE OF MUNICIPAL WELLS,
WELL HOUSE AND APPURTENANCES
PER DOC. NO. R2001-145451

MATCHLINE (SEE DETAIL SHEET C-17)

GRADING NOTES

1. CONTRACTOR SHALL CONTACT 811 PRIOR TO CONSTRUCTION AND NOTIFY ENGINEERING OF ANY CONFLICTS WITH THE PROPOSED IMPROVEMENTS.
2. BUILDING DIMENSIONS, GRADING, PARKING, AND UTILITY LAYOUT HAVE BEEN PREPARED BASED UPON ARCHITECTURAL INFORMATION. SUBSEQUENT ARCHITECTURAL CHANGES MAY EXIST AND CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION. IN CASE OF DISCREPANCIES BETWEEN ARCHITECTURAL PLANS AND CIVIL PLANS, NOTIFY BOTH ARCHITECT AND ENGINEER.
3. REFER TO GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION. GREEN/OPEN SPACE SHALL HAVE A MINIMUM OF 6" OF TOPSOIL RESPREAD. NATIVE AREAS SHALL HAVE A MINIMUM OF 12" OF TOPSOIL.
4. CONTRACTOR SHALL MEET ALL COMPACTION REQUIREMENTS AS SPECIFIED ON SHEET C-2 AND PER IDOT SPECIFICATIONS.
5. CONTRACTOR SHALL CONSTRUCT ALL HANDICAP ACCESSIBLE ROUTES IN ACCORDANCE WITH LOCAL AND STATE ADA REQUIREMENTS
6. PAVEMENT SLOPES THROUGH HANDICAP ACCESSIBLE PARKING AREAS SHALL BE 2.00% MAXIMUM IN ANY DIRECTION.
7. ALL EXISTING AND PROPOSED CONTOURS ARE SHOWN IN 1' INCREMENTS.
8. CONTRACTOR SHALL NOT BLOCK DRAINAGE.
9. CONTRACTOR SHALL ADJUST ALL RIM ELEVATIONS OF EXISTING STRUCTURES TO PROPOSED GRADE.
10. CONTRACTOR SHALL REFER TO PLAN SPECIFICATIONS, SOIL EROSION CONTROL PLAN, AND SWPPP PRIOR TO CONSTRUCTION FOR WATER QUALITY REQUIREMENTS ASSOCIATED WITH LAND DISTURBANCE.

LEGEND

EXISTING	PROPOSED	
○	●	STORM DRAINAGE STRUCTURE
▷	▶	PRECAST FLARED END SECTION
▢	▣	CLEANOUT
749	749	CONTOUR
×(750.00)	×750.00	SPOT ELEVATION
←	←OR	DIRECTION OF SURFACE FLOW
		OVERFLOW RELIEF ROUTING

ELEVATIONS

1. CONTOURS ARE SHOWN AS FINISHED GRADE.
2. SPOT ELEVATIONS ARE SHOWN AS FLOW LINE ALONG THE CURB AND GUTTER AND FINISHED GRADE ELSE WHERE UNLESS SPECIFIED AS BELOW:
   - T/W= TOP OF RETAINING WALL
   - B/W= BOTTOM OF RETAINING WALL
   - EP = EDGE OF PAVEMENT
   - TC = TOP OF CURB
   - TDC = TOP OF DEPRESSED CURB
   - T/S = TOP OF SIDEWALK
   - FL = FLOW LINE
   - R = STRUCTURE RIM GRADE

NORTH

GRAPHICAL SCALE (FEET)
0 1" = 30' 60'

www.pinnacle-engr.com

GRADING PLAN (NORTH)

LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT - GRADING PLAN (NORTH)

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CREST HILL, ILLINOIS

REVISIONS

1	PER VILLAGE REVIEW	02/20/25			

GRADING PLAN (NORTH)

PEG JOB No. 5219.00-1L
PEG PM DAT
START DATE 01-21-25
SCALE 1"=30'

SHEET C-6 OF C-17

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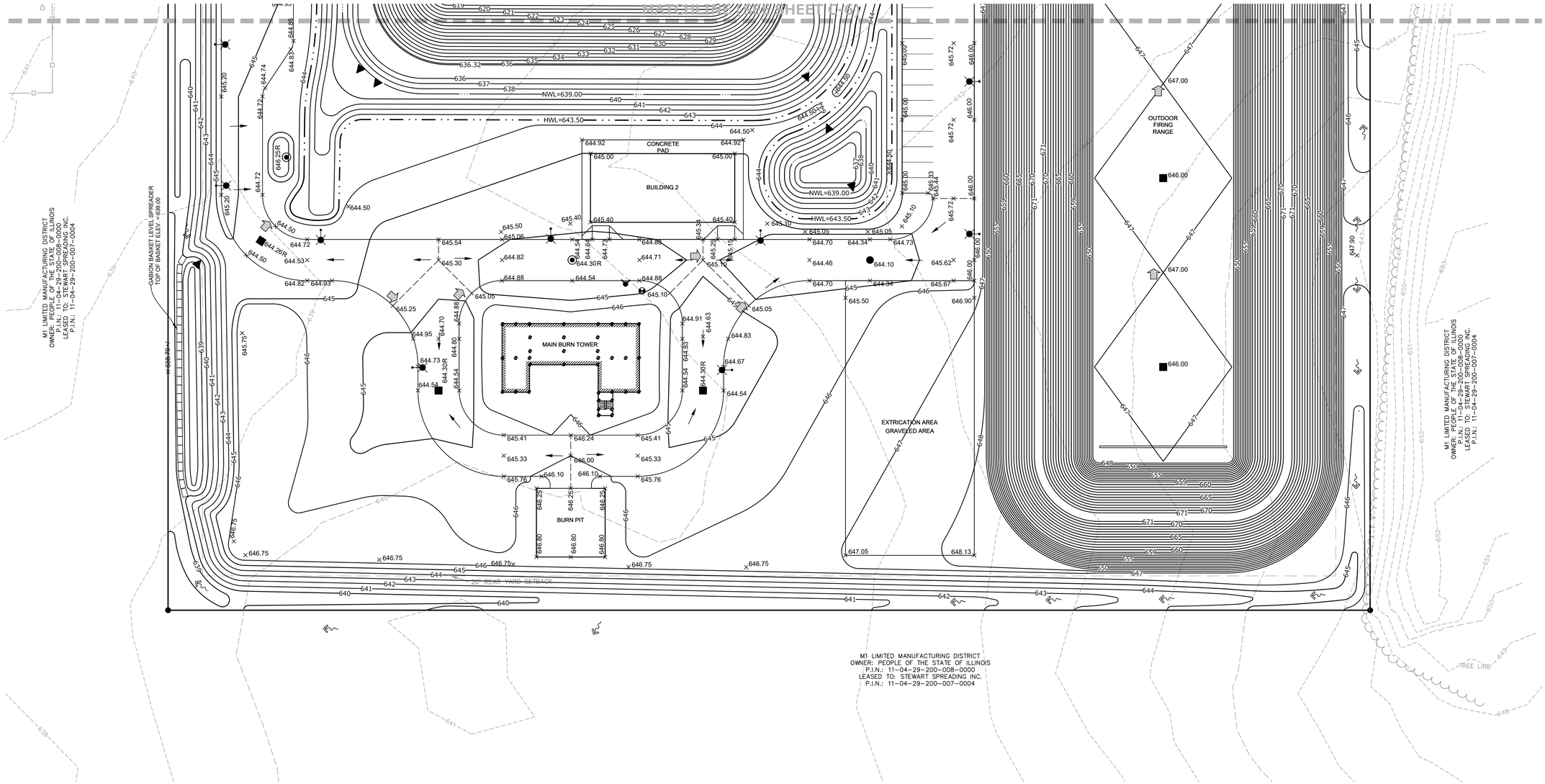
EXHIBIT B



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LEGEND

EXISTING	PROPOSED	
○	●	STORM DRAINAGE STRUCTURE
▷	▶	PRECAST FLARED END SECTION
▢	▣	CLEANOUT
749	749	CONTOUR
(750.00)	×750.00	SPOT ELEVATION
←	←	DIRECTION OF SURFACE FLOW

ELEVATIONS

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GRAPHICAL SCALE (FEET)

0 1" = 30' 60'

LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT - GRADING PLAN (SOUTH)

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REVISIONS

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GRADING PLAN (SOUTH)

PEG JOB No. 5219.00-IL DAT
PEG PM
START DATE 01-21-25
SCALE 1"=30'

SHEET C-7 OF C-17

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EXHIBIT B

NOTE:
I/WE AGREE THAT ANY EXISTING FIELD TILE ON THE PROPERTY SHALL BE PROTECTED FROM DAMAGE AND THAT EXISTING DRAINAGE THOROUGH THE PROPERTY SHALL BE MAINTAINED. IF ANY EXISTING TILE IS ENCOUNTERED, IT SHALL BE REPAIRED AND/OR REROUTED BACK TO ITS ORIGINAL ROUTE AND FUNCTION.

UTILITY NOTES

1. CONTRACTOR SHALL CONTACT 811 PRIOR TO CONSTRUCTION AND NOTIFY ENGINEERING OF ANY CONFLICTS WITH THE PROPOSED IMPROVEMENTS.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FOR UTILITY CONSTRUCTION.
3. ALL EXISTING INFORMATION AND EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE AND ARE GIVEN FOR THE CONVENIENCE OF THE CONTRACTOR. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THEIR ACCURACY. PRIOR TO THE START OF ANY DEMOLITION ACTIVITY, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES FOR LOCATION OF EXISTING UTILITIES.
4. ALL UTILITIES SHALL BE COORDINATED WITH THE APPROPRIATE UTILITY COMPANY OR AGENCY.
5. ALL MANHOLES AND VALVE VAULTS SHALL BE PER VILLAGE OF ROUND LAKE PARK AND "WATER," "STORM SEWER," OR "SANITARY SEWER" CAST INTO THE LID. ALL OPEN LIDS OR GRATES SHALL HAVE THE WORDS "DRAINS TO RIVER, DUMP NO WASTE" PERMANENTLY INSCRIBED.
6. BUILDING DIMENSIONS, GRADING, PARKING, AND UTILITY LAYOUT HAVE BEEN PREPARED BASED UPON ARCHITECTURAL INFORMATION. SUBSEQUENT ARCHITECTURAL CHANGES MAY EXIST AND CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION. IN CASE OF DISCREPANCIES BETWEEN ARCHITECTURAL PLANS AND CIVIL PLANS, THE CIVIL PLANS SHALL TAKE PRECEDENCE.
7. CONTRACTOR SHALL VERIFY LOCATION, SIZE, AND ELEVATION OF ALL BUILDING SERVICES WITH ARCHITECTURAL AND MEP PLANS.
8. CONTRACTOR SHALL ADJUST ALL RIM ELEVATIONS OF EXISTING STRUCTURES TO PROPOSED GRADE.
9. ALL UTILITY DIMENSIONS ARE TO CENTER OF PIPE OR CENTER OF STRUCTURE UNLESS OTHERWISE NOTED.
10. CONTRACTOR SHALL CONTACT EACH UTILITY COMPANY AND COORDINATE FINAL LOCATIONS OF ALL ELECTRIC, GAS, AND TELEPHONE SERVICES PRIOR TO START OF CONSTRUCTION. ALL UTILITY SLEEVES AND PIPE SHALL BE INCLUDED IN BID.
11. CONTRACTOR SHALL LOCATE ALL EXISTING SEWER AND WATERMAIN LOCATION, SIZE, CONNECTION AND WHERE PROPOSED UTILITIES SHALL CROSS OR POTENTIALLY COME IN CONFLICT WITH EXISTING LINES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ENGINEERING OF ANY DISCREPANCIES OR CONFLICTS.
12. LIGHTING IS SHOWN FOR REFERENCE ONLY. REFER TO PHOTOMETRICS PLAN FOR CONSTRUCTION.
13. UNDERGROUND IMPROVEMENTS SHALL BE CONSTRUCTED AND TESTED IN ACCORDANCE WITH THE VILLAGE, THE STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS AND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, IDOT. IN THE EVENT OF CONFLICTING GUIDELINES, THE MORE RESTRICTIVE SHALL GOVERN.

LEGEND

PROPOSED

- SANITARY MANHOLE
- STORM MANHOLE
- CATCH BASIN/RISER
- INLET
- PRECAST FLARED END SECTION
- CONCRETE HEADWALL
- VALVE VAULT
- VALVE BOX
- FIRE HYDRANT
- BUFFALO BOX
- CLEANOUT
- SANITARY SEWER
- FORCEMAIN
- STORM SEWER
- W — WATERMAIN
- STREET LIGHT
- STREET SIGN
- LABELED UTILITY CROSSING

STORMWATER DETENTION
HWL=643.50
NWL=639.00
REQ. VOLUME = 6.11 AC. FT.
DESIGN VOLUME = 6.56 AC. FT.

GRAPHICAL SCALE (FEET)
0 — 1" = 30' — 60'

MATCHLINE (SEE SHEET C-9)
MATCHLINE (SEE DETAIL SHEET C-17)

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(847) 551-5300
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LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT
CREST HILL, ILLINOIS

REVISIONS

1	PER VILLAGE REVIEW	02/20/25			

UTILITY PLAN (NORTH)

PEG JOB No.: 5219.00-IL
PEG PM: DAT
START DATE: 01-21-25
SCALE: 1"=30'

SHEET C-8 OF C-17

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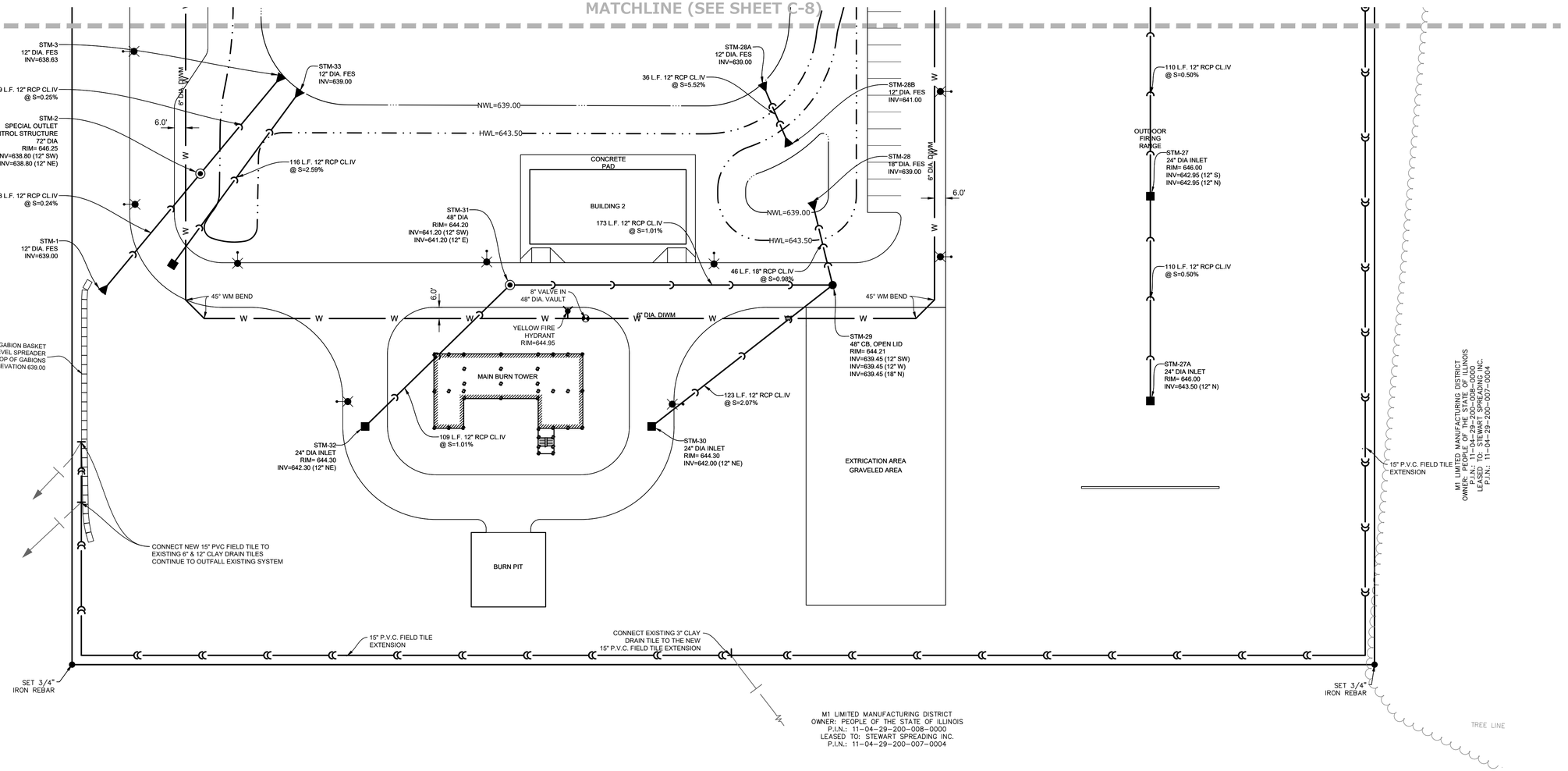
LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT - UTILITY PLAN (NORTH)

EXHIBIT B

NOTE:
I/WE AGREE THAT ANY EXISTING FIELD TILE ON THE PROPERTY SHALL BE PROTECTED FROM DAMAGE AND THAT EXISTING DRAINAGE THOROUGH THE PROPERTY SHALL BE MAINTAINED. IF ANY EXISTING TILE IS ENCOUNTERED, IT SHALL BE REPAIRED AND/OR REROUTED BACK TO ITS ORIGINAL ROUTE AND FUNCTION.

UTILITY NOTES

1. CONTRACTOR SHALL CONTACT 811 PRIOR TO CONSTRUCTION AND NOTIFY ENGINEERING OF ANY CONFLICTS WITH THE PROPOSED IMPROVEMENTS.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FOR UTILITY CONSTRUCTION.
3. ALL EXISTING INFORMATION AND EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE AND ARE GIVEN FOR THE CONVENIENCE OF THE CONTRACTOR. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THEIR ACCURACY. PRIOR TO THE START OF ANY DEMOLITION ACTIVITY, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES FOR LOCATION OF EXISTING UTILITIES.
4. ALL UTILITIES SHALL BE COORDINATED WITH THE APPROPRIATE UTILITY COMPANY OR AGENCY.
5. ALL MANHOLES AND VALVE VAULTS SHALL BE PER VILLAGE OF ROUND LAKE PARK AND "WATER," "STORM SEWER," OR "SANITARY SEWER" CAST INTO THE LID. ALL OPEN LIDS OR GRATES SHALL HAVE THE WORDS "DRAINS TO RIVER, DUMP NO WASTE" PERMANENTLY INSCRIBED.
6. BUILDING DIMENSIONS, GRADING, PARKING, AND UTILITY LAYOUT HAVE BEEN PREPARED BASED UPON ARCHITECTURAL INFORMATION. SUBSEQUENT ARCHITECTURAL CHANGES MAY EXIST AND CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION. IN CASE OF DISCREPANCIES BETWEEN ARCHITECTURAL PLANS AND CIVIL PLANS, THE CIVIL PLANS SHALL TAKE PRECEDENCE.
7. CONTRACTOR SHALL VERIFY LOCATION, SIZE, AND ELEVATION OF ALL BUILDING SERVICES WITH ARCHITECTURAL AND MEP PLANS.
8. CONTRACTOR SHALL ADJUST ALL RIM ELEVATIONS OF EXISTING STRUCTURES TO PROPOSED GRADE.
9. ALL UTILITY DIMENSIONS ARE TO CENTER OF PIPE OR CENTER OF STRUCTURE UNLESS OTHERWISE NOTED.
10. CONTRACTOR SHALL CONTACT EACH UTILITY COMPANY AND COORDINATE FINAL LOCATIONS OF ALL ELECTRIC, GAS, AND TELEPHONE SERVICES PRIOR TO START OF CONSTRUCTION. ALL UTILITY SLEEVES AND PIPE SHALL BE INCLUDED IN BID.
11. CONTRACTOR SHALL LOCATE ALL EXISTING SEWER AND WATERMAIN LOCATION, SIZE, ELEVATION, AND CONDITION AT POINTS OF CONNECTION AND WHERE PROPOSED UTILITIES SHALL CROSS OR POTENTIALLY COME IN CONFLICT WITH EXISTING LINES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ENGINEERING OF ANY DISCREPANCIES OR CONFLICTS.
12. LIGHTING IS SHOWN FOR REFERENCE ONLY. REFER TO PHOTOMETRICS PLAN FOR CONSTRUCTION.
13. UNDERGROUND IMPROVEMENTS SHALL BE CONSTRUCTED AND TESTED IN ACCORDANCE WITH THE VILLAGE, THE STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS AND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, IDOT. IN THE EVENT OF CONFLICTING GUIDELINES, THE MORE RESTRICTIVE SHALL GOVERN.



LEGEND

PROPOSED

- SANITARY MANHOLE
- STORM MANHOLE
- CATCH BASIN/RISER
- INLET
- PRECAST FLARED END SECTION
- CONCRETE HEADWALL
- VALVE VAULT
- VALVE BOX
- FIRE HYDRANT
- BUFFALO BOX
- CLEANOUT
- SANITARY SEWER
- FORCEMAIN
- STORM SEWER
- WATERMAIN
- STREET LIGHT
- STREET SIGN
- LABELED UTILITY CROSSING

NORTH

GRAPHICAL SCALE (FEET)

0 1" = 30' 60'

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LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT
CREST HILL, ILLINOIS

REVISIONS

1	PER VILLAGE REVIEW	02/20/25			

UTILITY PLAN (SOUTH)

PEG JOB No. 5219.00-IL
PEG PM DAT
START DATE 01-21-25
SCALE 1"=30'

SHEET C-9 OF C-17

LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT - UTILITY PLAN (SOUTH)

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EXHIBIT B

50' APPARENT ROW
MONUMENTED & OCCUPIED

33' WIDE NORTHERN ILLINOIS GAS
COMPANY PIPELINE EASEMENT
PER DOC. NO. R1961-931446

WILL COUNTY FOREST PRESERVE
PRAIRIE BLUFF RESERVE
OWNER: FOREST PRESERVE DISTRICT
P.I.N.: 11-04-20-400-006-0004
OWNER: FOREST PRESERVE DISTRICT
P.I.N.: 11-04-20-400-001-0000

W. DIVISION STREET
(VARIABLE PUBLIC R.O.W.)

ASPHALT PAVEMENT

TEMPORARY STABILIZED
CONSTRUCTION ENTRANCE

TEMPORARY CONCRETE
WASHOUT AREA

INLET PROTECTION
(TYP.)

SILT FENCE
(TYP.)

**TRAINING /
MAINTENANCE FACILITY
23,070 SF
FF=646.10**

PATIO

EMERGENCY
GENERATOR

GARBAGE
ENCLOSURE SEE
ARCHITECTURAL
DRAWINGS

PERMANENT EASEMENT TO THE CITY
OF CREST HILL FOR THE CONSTRUCTION
AND MAINTENANCE OF MUNICIPAL WELLS,
WELL HOUSE AND APPURTENANCES
PER DOC. NO. R2001-145841

CONC.
DRIVE

CHAIN
LINK
FENCE

INLET PROTECTION
(TYP.)

INLET PROTECTION
(TYP.)

INLET PROTECTION
(TYP.)

FIRE TRUCK PARKING

MULTI-USE
PATH

CONCRETE
PAD

**STORMWATER DETENTION
HWL=643.50
NWL=639.00
REQ. VOLUME = 6.11 AC. FT.
DESIGN VOLUME = 6.56 AC. FT.**

BOAT RAMP/
DOCK

EXISTING
BUILDING

66.7'

CHAIN LINK FENCE

MATCHLINE (SEE SHEET C-9)

MATCHLINE (SEE DETAIL SHEET C-17)

SITE STABILIZATION NOTES

1. THE NOTICE OF INTENT (NOI) AND NPDES PERMIT SHALL BE OBTAINED FOR DEVELOPMENT OVER 1 ACRE, PRIOR TO ANY EARTH MOVING ACTIVITIES.
2. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE ILLINOIS URBAN MANUAL, LATEST EDITION.
3. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY CONSTRUCTION OR DISTURBANCE OF THE SITE. THE MEASURES MAY HAVE TO BE ADJUSTED TO MEET FIELD CONDITIONS DURING CONSTRUCTION. ANY MEASURES, IN ADDITION TO THOSE OUTLINED IN THE PLANS AND WHICH ARE DEEMED NECESSARY BY THE VILLAGE, SHALL BE IMPLEMENTED IMMEDIATELY BY THE DEVELOPER.
4. REGULAR INSPECTION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL MEASURES MUST BE PROVIDED BY THE DEVELOPER. INSPECTIONS SHOULD OCCUR WEEKLY, AND AFTER ANY RAINFALL GREATER THAN 1/2". ANY NON-FUNCTIONING SEDIMENT CONTROL MEASURES OR DAMAGED DEVICES THAT ARE FOUND DURING INSPECTION SHALL BE REPAIRED OR REPLACED IMMEDIATELY. THE DEVELOPER SHALL BE RESPONSIBLE FOR ANY SEDIMENT WHICH LEAVES THE PROPERTY, AND THE DEVELOPER IS ALSO RESPONSIBLE FOR MAINTENANCE OF ALL SEDIMENT CONTROL MEASURES UNTIL THE SITE IS PERMANENTLY STABILIZED.
4. ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS SHALL BE PROTECTED TO PREVENT TRACKING OF DEBRIS, DIRT, AND MUD ONTO ADJACENT STREETS, PARKING LOTS, OR PROPERTIES. ANY DEBRIS, DIRT, OR MUD THAT REACHES AN IMPROVED PUBLIC RIGHT-OF-WAY, STREET, OR PARKING AREA SHALL BE PROMPTLY REMOVED, AND TRANSPORTED TO A PROPER DISPOSAL AREA.
5. ALL SEDIMENT MUST BE PREVENTED FROM ENTERING ANY PUBLIC OR PRIVATE STORM DRAINAGE SYSTEM. REUSABLE INLET FILTER BASKETS (FLEXSTORM, CATCHALL, OR EQUIVALENT), SEDIMENT BASINS, AND WATER FILTERING BAGS,SHALL BE PROVIDED AS NEEDED.
6. ALL DRAINAGE SWALES SHALL BE STABILIZED WITH SPECIFIED EROSION CONTROL BLANKET.
7. TOPSOIL STOCKPILES SHALL BE LOCATED TO AVOID EROSION OF STOCKPILE ONTO NEIGHBORING PROPERTIES OR INTO RESTORED PROJECT AREAS. STOCKPILES SHALL BE LOCATED SO THAT A DRAINAGE SWALE IS LOCATED BETWEEN THE STOCKPILE AND ANY DOWNSTREAM PROPERTIES. IF A STOCKPILE IS TO REMAIN IN PLACE FOR MORE THAN 14 DAYS, IT MUST BE SEEDED AND BLANKETED TO MINIMIZE SOIL EROSION BY BOTH WIND AND WATER.
8. THE DEVELOPER IS RESPONSIBLE FOR OBTAINING A SEPARATE NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FROM THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY WHENEVER 1 ACRE OR MORE OF PROPERTY IS DISTURBED. FOR DEVELOPMENTS OVER 1 ACRE, THE DEVELOPER MUST ALSO PREPARE AND MAINTAIN A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AT THE PROJECT SITE, ALONG WITH THE NPDES PERMIT. FOR DEVELOPMENTS LESS THAN 1 ACRE, A SEDIMENT AND EROSION CONTROL PLAN MUST BE MAINTAINED BY THE DEVELOPER.
9. DISTURBED AREAS SHALL BE STABILIZED WITH TEMPORARY OR PERMANENT MEASURES WITHIN 7 CALENDAR DAYS.
10. IF DEWATERING SERVICES ARE USED, ADJACENT PROPERTIES AND DISCHARGE LOCATIONS SHALL BE PROTECTED FROM EROSION. DISCHARGES FROM CONSTRUCTION DEWATERING SHALL BE ROUTED THROUGH AN EFFECTIVE SEDIMENT CONTROL MEASURE SUCH AS A SEDIMENT TRAP, A SEDIMENT BASIN, OR ANY OTHER APPROPRIATE MEASURE.

EROSION CONTROL LEGEND

- SEED AND BLANKET — SEE LANDSCAPE PLAN FOR SEED MIX BLANKET-NAG S75
- BERM STABILIZATION — REFER TO LANDSCAPE PLAN PLANTING SPECIFICATIONS
- INLET PROTECTION
- —SF— SILT FENCE

NOTE:
EROSION CONTROL TO BE APPLIED PER THE ILLINOIS URBAN MANUAL, LATEST EDITION.

NORTH

GRAPHICAL SCALE (FEET)
0 — 1" = 30' — 60'

LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT - SITE STABILIZATION PLAN (NORTH)

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PROTECTION DISTRICT**
CREST HILL, ILLINOIS

REVISIONS

1	PER VILLAGE REVIEW	02/20/25			

**SITE STABILIZATION PLAN
(NORTH)**

PEG JOB No. 5219.00-IL
PEG PM DAT
START DATE 01-21-25
SCALE 1"=30'

SHEET
C-10
OF
C-17

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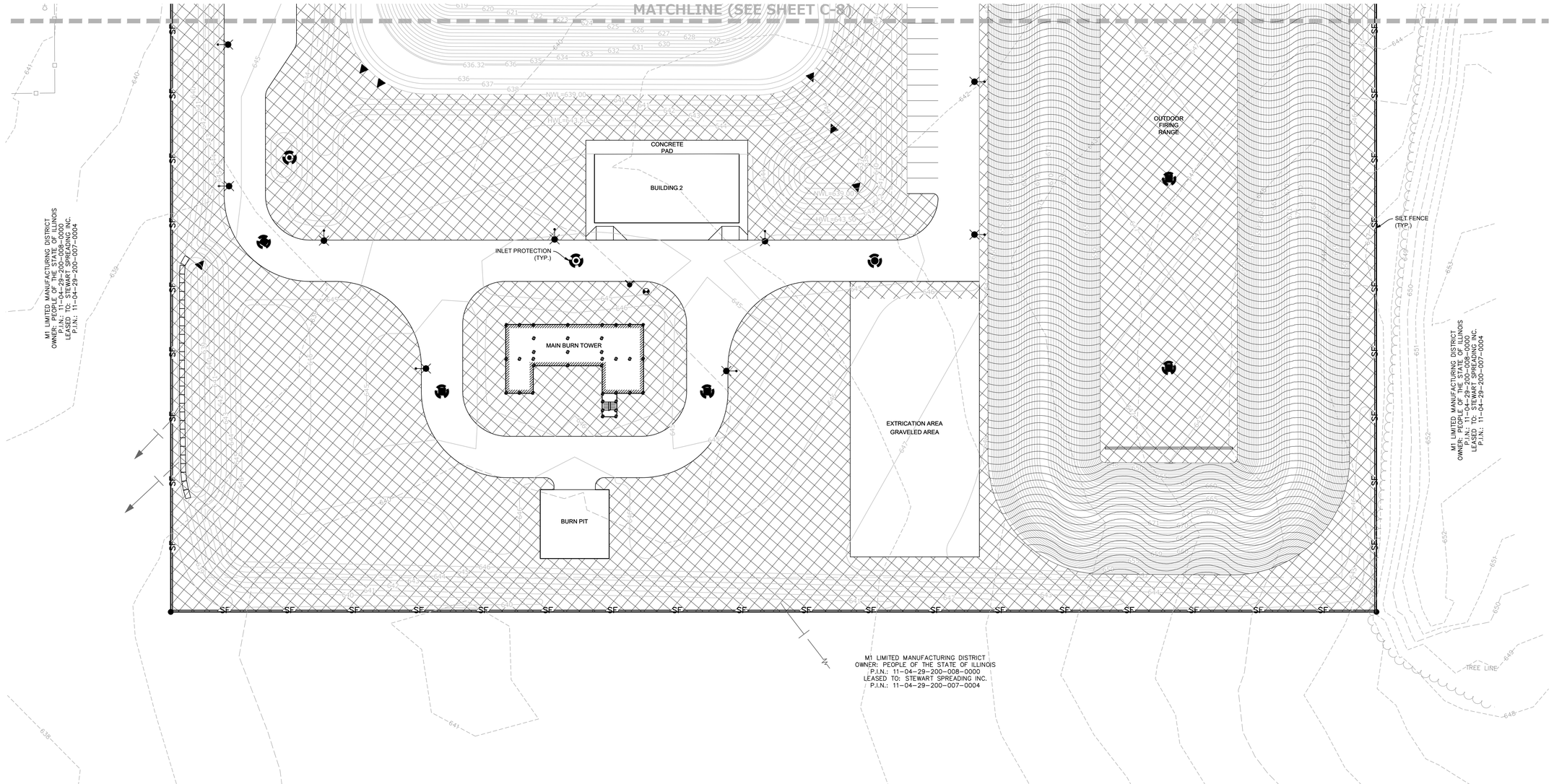
EXHIBIT B



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EROSION CONTROL LEGEND

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- INLET PROTECTION
- —SF— SILT FENCE

NOTE:
EROSION CONTROL TO BE APPLIED PER THE ILLINOIS URBAN MANUAL, LATEST EDITION.

LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT - SITE STABILIZATION PLAN (SOUTH)

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CREST HILL, ILLINOIS

REVISIONS

1	PER VILLAGE REVIEW	02/20/25			

SITE STABILIZATION PLAN (SOUTH)

PEG JOB No. 5219.00-IL
PEG PM DAT
START DATE 01-21-25
SCALE 1"=30'

SHEET C-11 OF C-17

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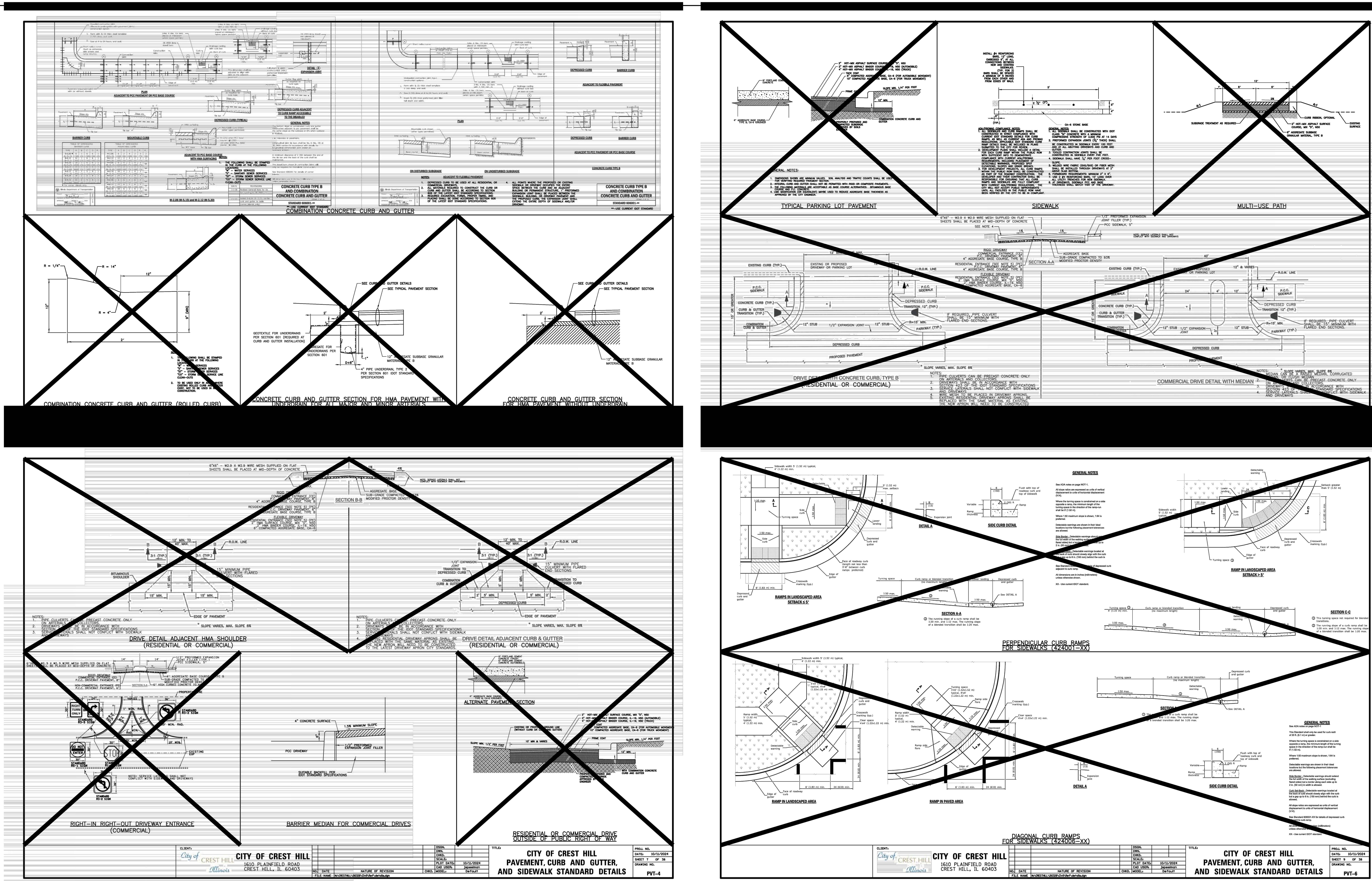
EXHIBIT B



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LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT
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REVISIONS

1	PER VILLAGE REVIEW	02/20/25

CONSTRUCTION STANDARDS

PEG JOB No. 5219.00-IL
PEG PM DAT
START DATE 01-21-25
SCALE NONE

SHEET C-12 OF C-17

LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT - CONSTRUCTION STANDARDS

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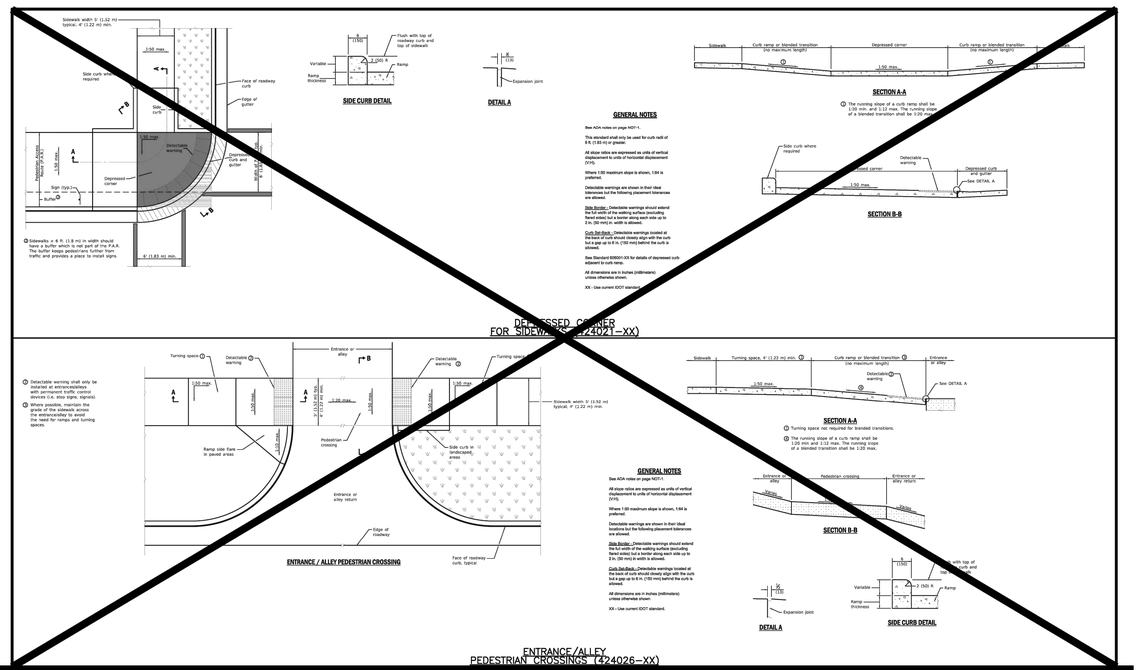

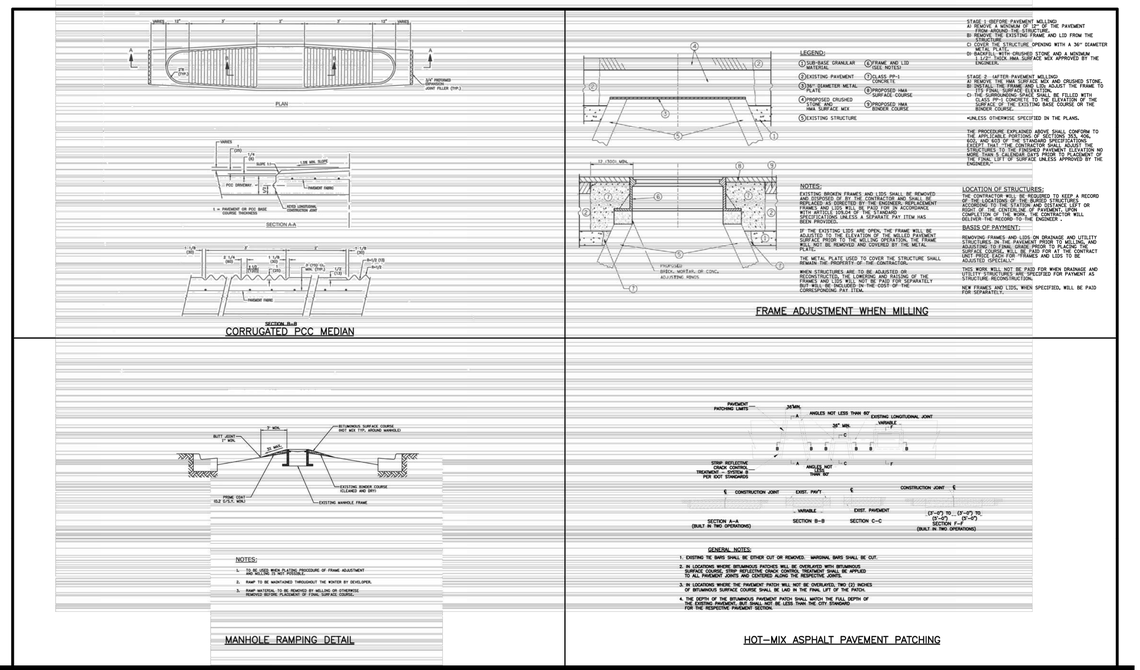

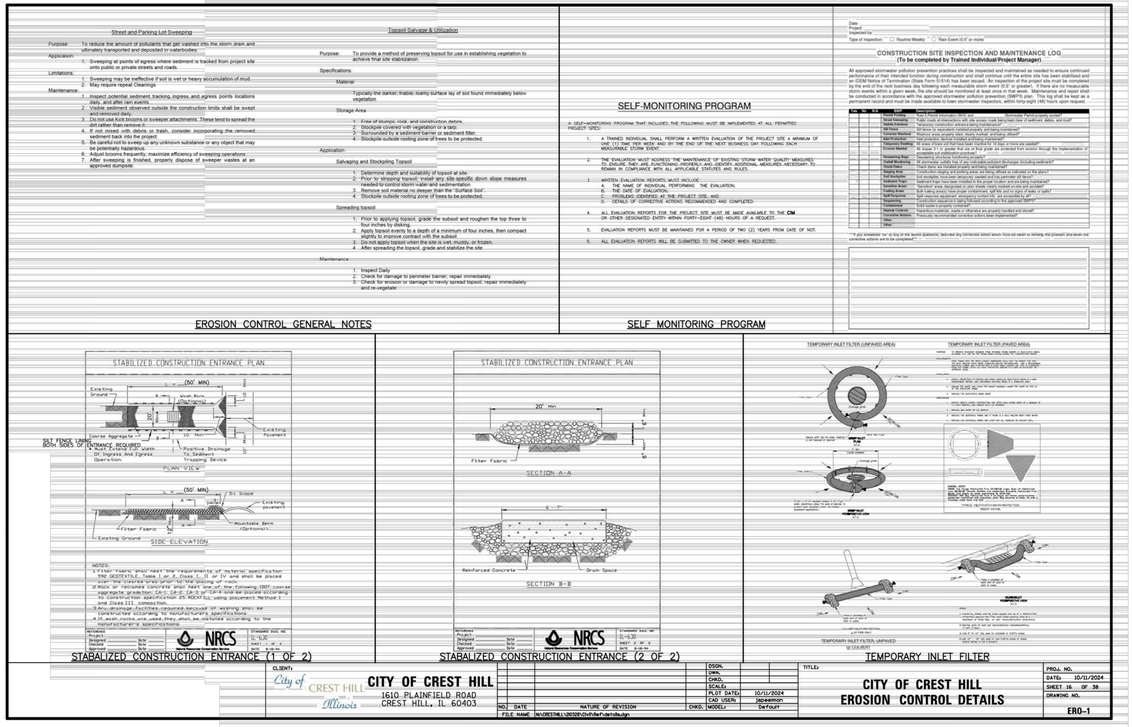

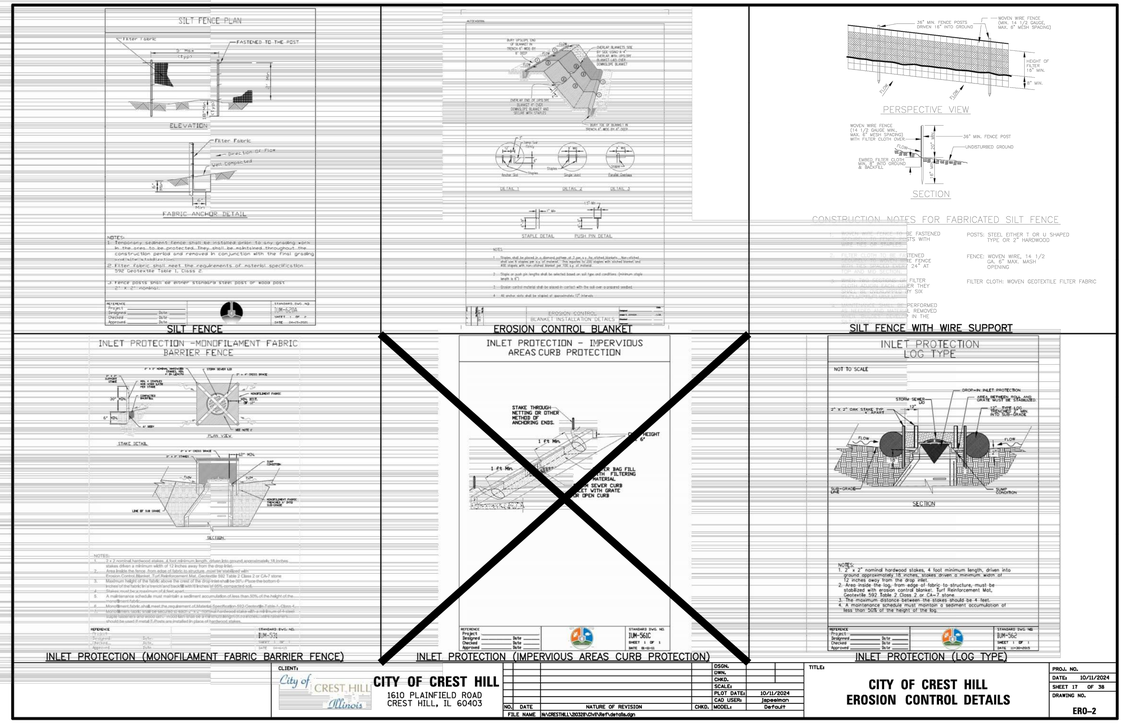

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REVISIONS

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CONSTRUCTION STANDARDS

PEG JOB No. 5219.00-IL
PEG PM DAT
START DATE 01-21-25
SCALE NONE

SHEET C-13 OF C-17

LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT - CONSTRUCTION STANDARDS

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EXHIBIT B

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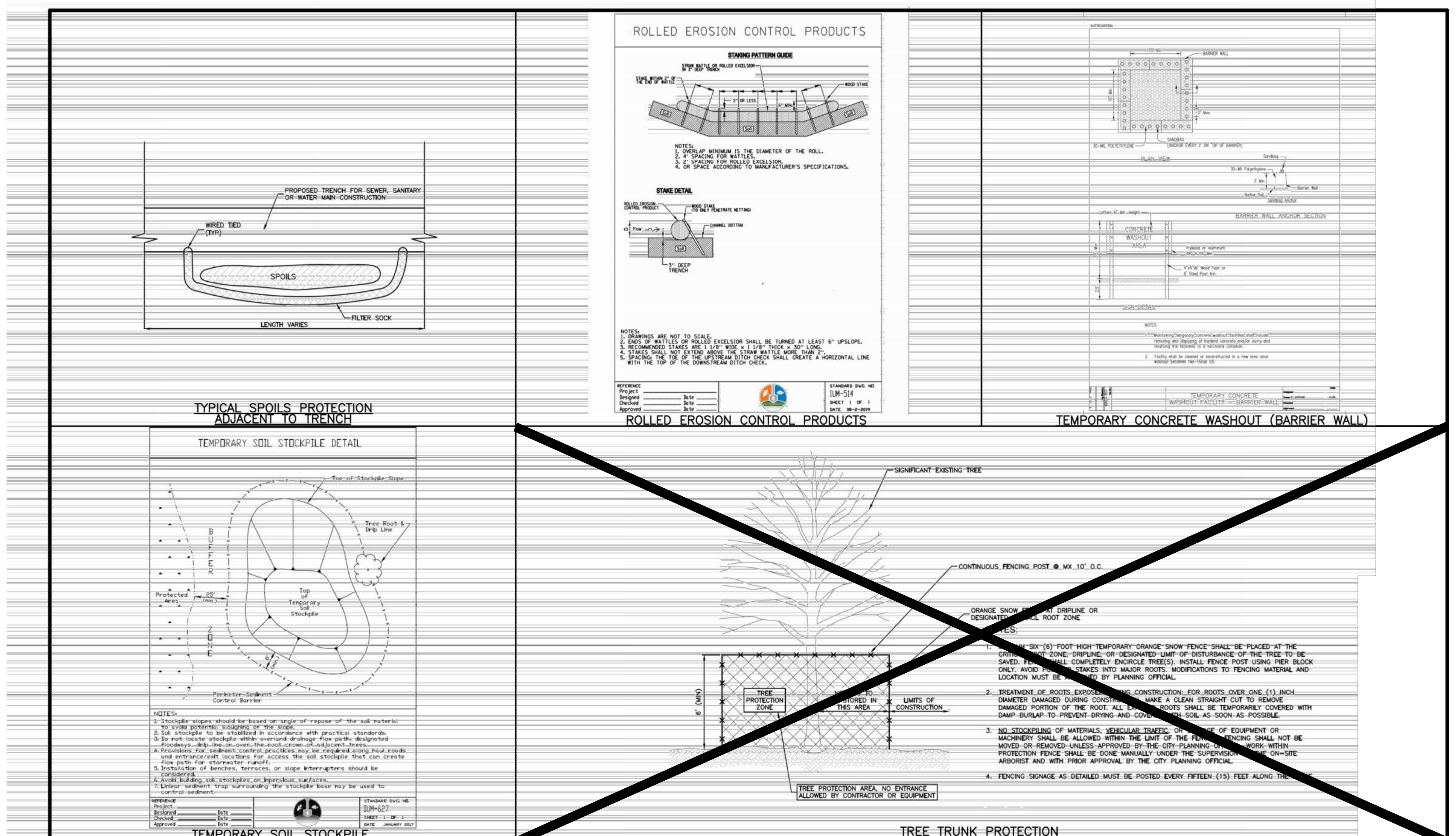

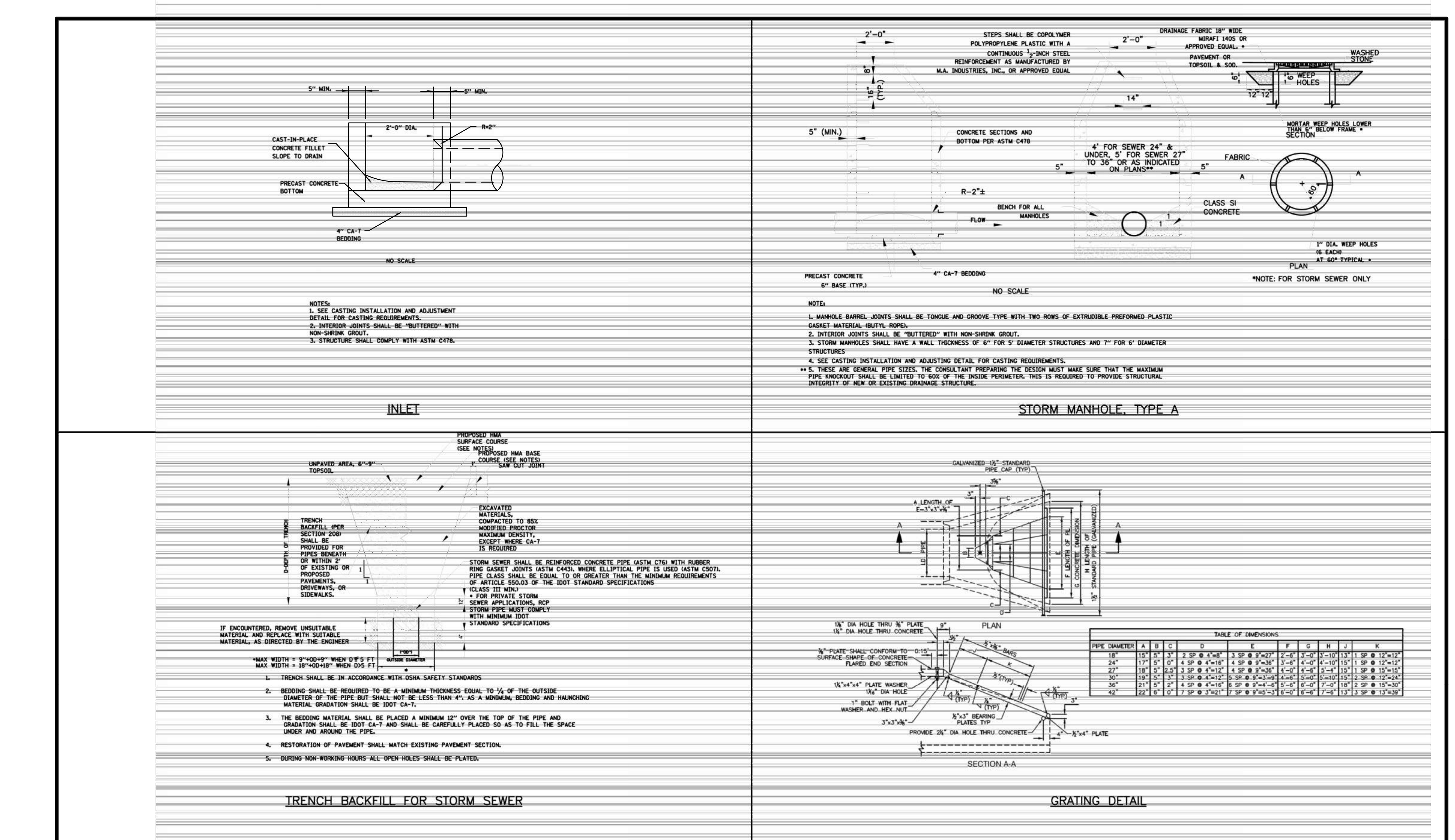

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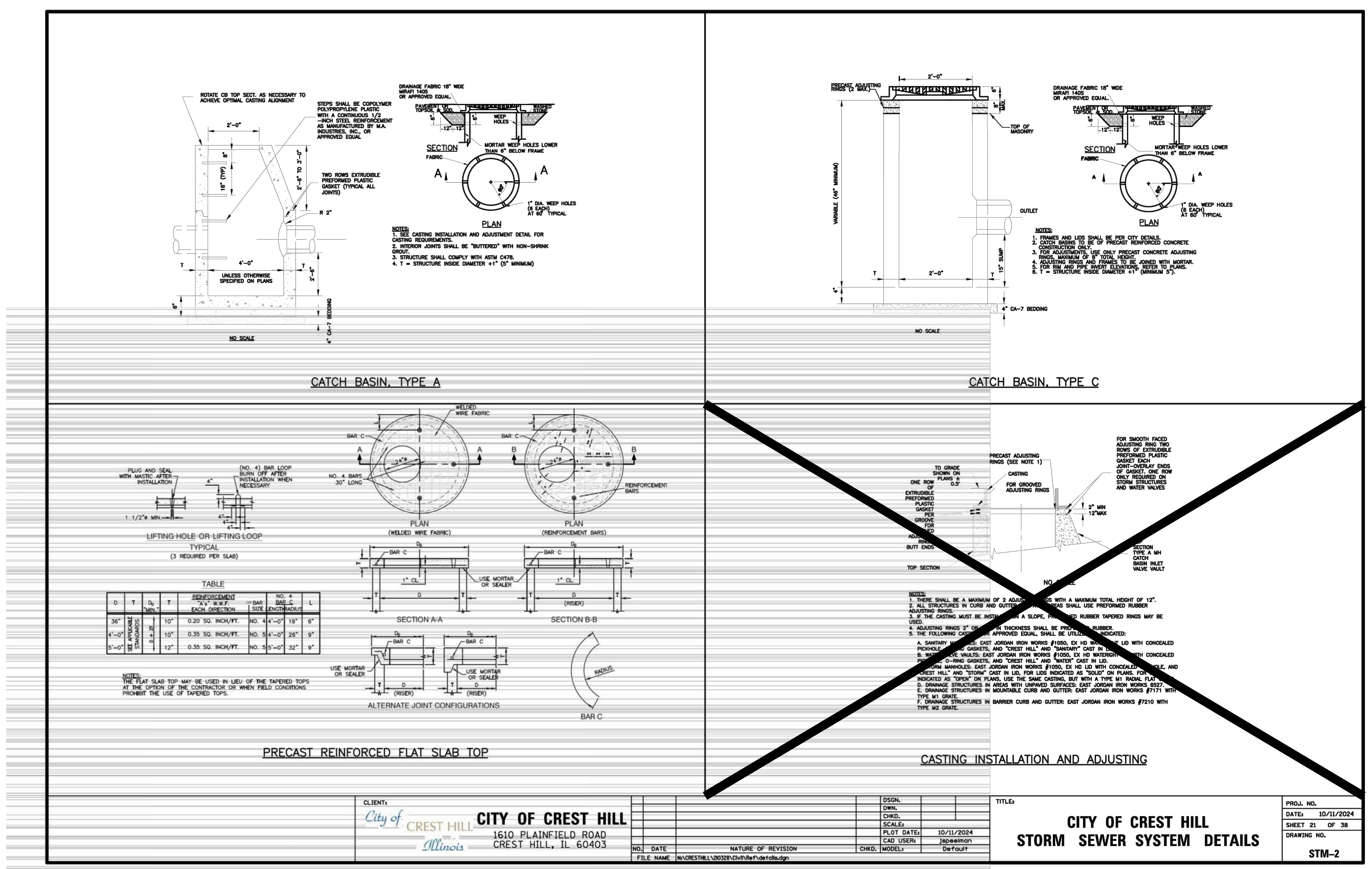

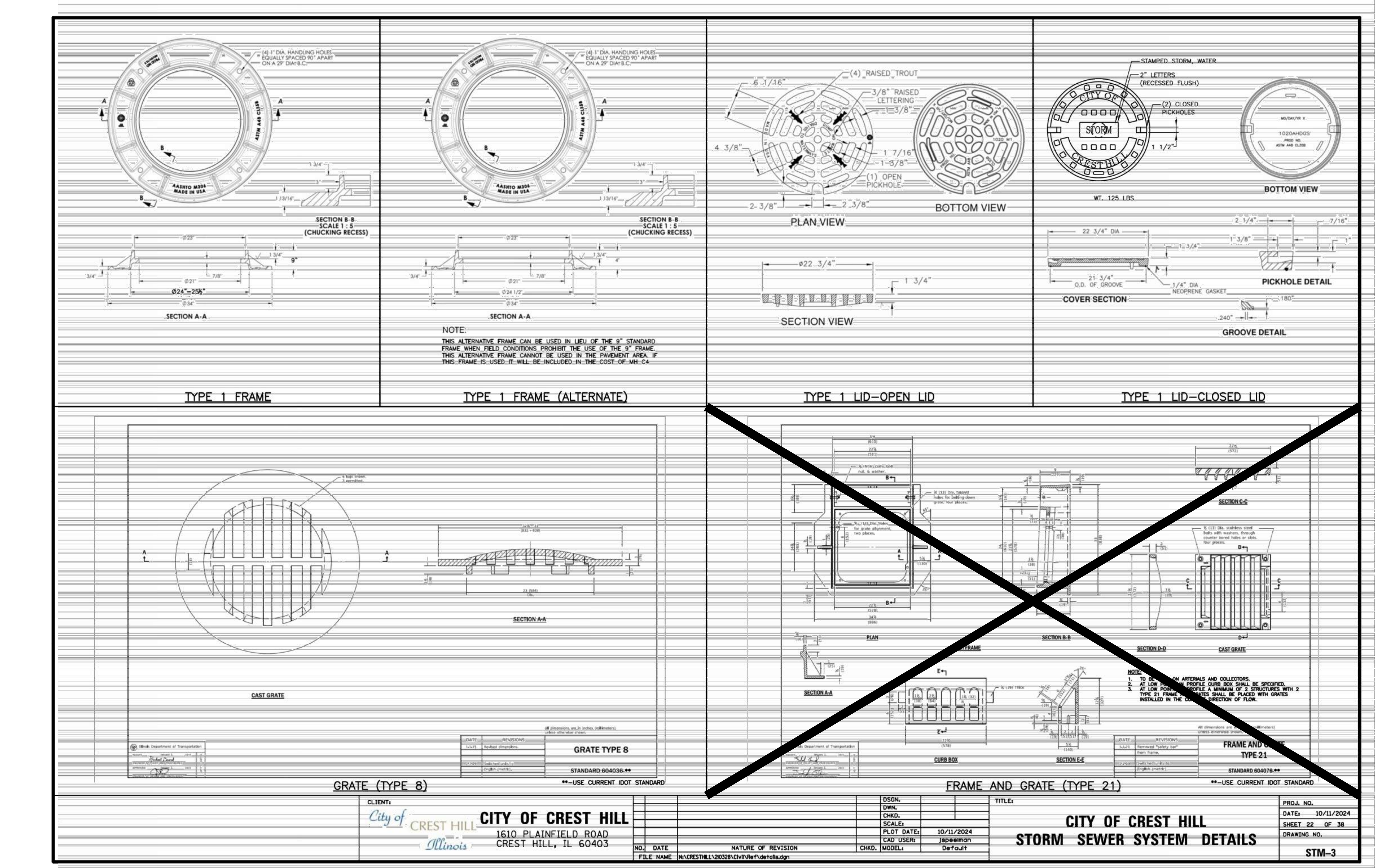

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CREST HILL, ILLINOIS

REVISIONS

1	PER VILLAGE REVIEW	02/20/25

CONSTRUCTION STANDARDS

PEG JOB No. 5219.00-IL
PEG PM DAT
START DATE 01-21-25
SCALE NONE

SHEET
C-14
OF
C-17

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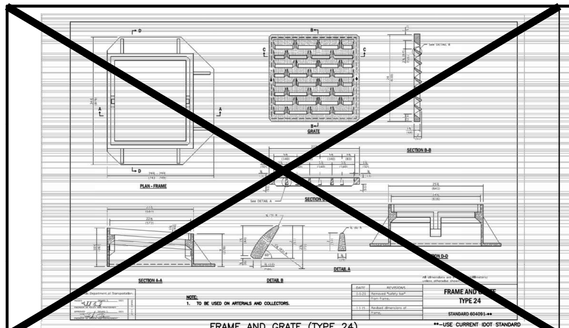
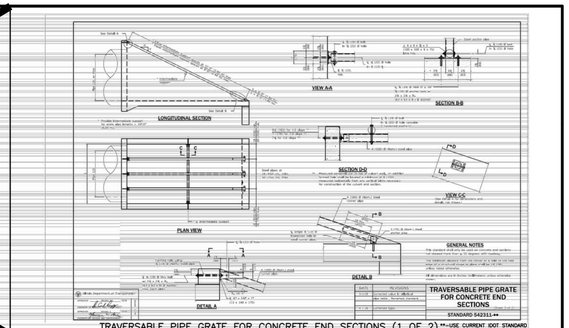
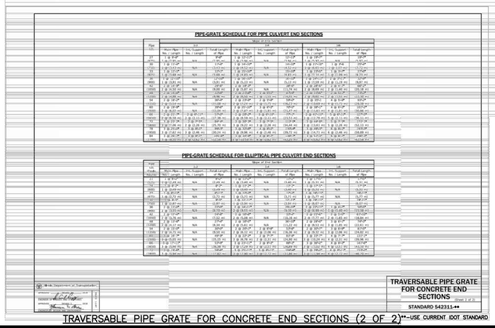
LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT - CONSTRUCTION STANDARDS



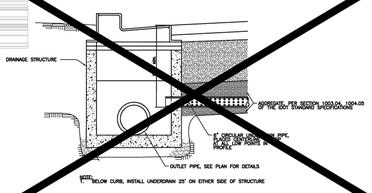
FRAME AND GRATE (TYPE 24)



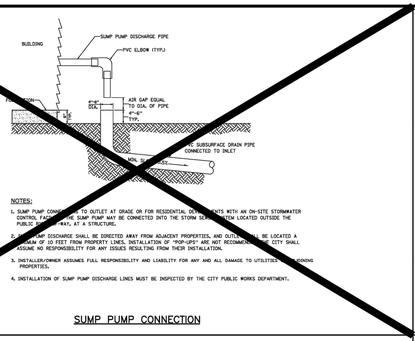
TRAVERSABLE PIPE GRATE FOR CONCRETE END SECTIONS (1 OF 2) **-USE CURRENT IDOT STANDARD



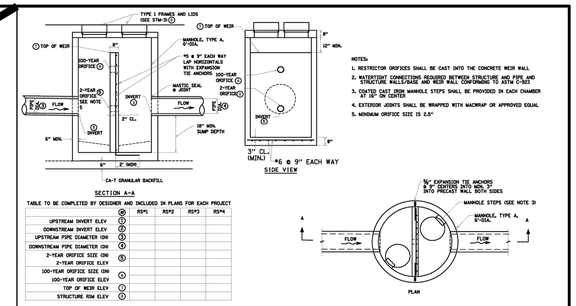
TRAVERSABLE PIPE GRATE FOR CONCRETE END SECTIONS (2 OF 2)**-USE CURRENT IDOT STANDARD



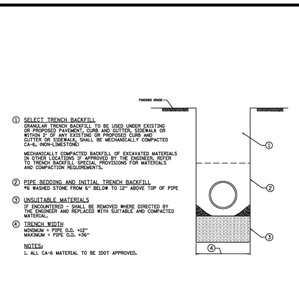
UNDERDRAIN CONNECTION TO STRUCTURE AT LOW POINTS FOR ALL COLLECTOR AND RESIDENTIAL STREETS



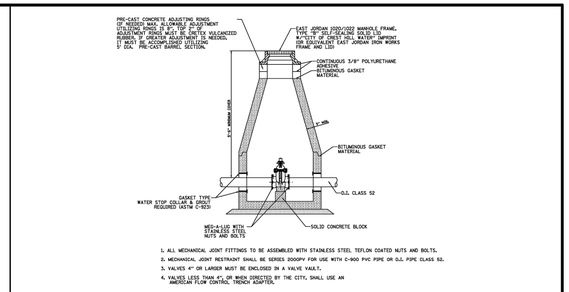
SUMP PUMP CONNECTION



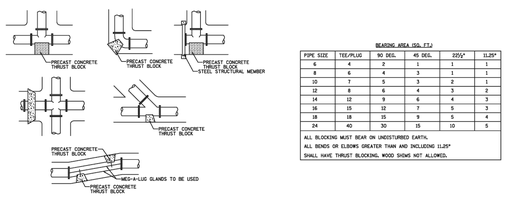
DETENTION POND RESTRICTOR STRUCTURE



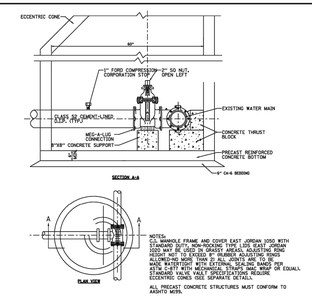
TYPICAL WATER MAIN TRENCH



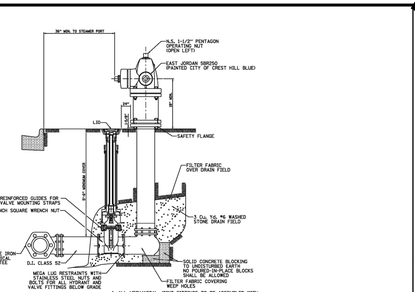
TYPICAL VALVE VAULT



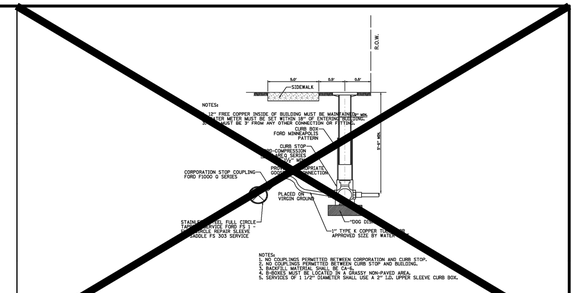
THRUST BLOCK DETAIL



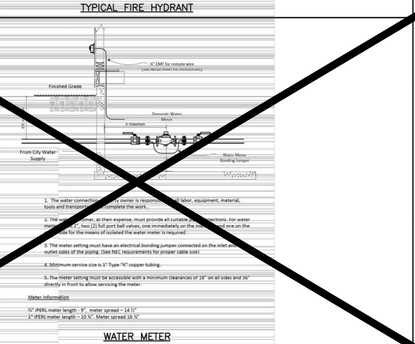
WATER MAIN PRESSURE CONNECTION



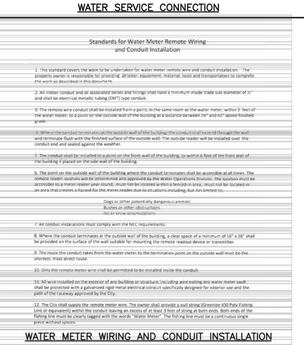
TYPICAL FIRE HYDRANT



WATER SERVICE CONNECTION



WATER METER



WATER METER WIRING AND CONDUIT INSTALLATION

CITY OF CREST HILL
1610 PLAINFIELD ROAD
CREST HILL, IL 60403

CITY OF CREST HILL
WATER DISTRIBUTION SYSTEM DETAILS

PROJ. NO.
DATE: 10/11/2024
SHEET 25 OF 38
DRAWING NO.
WTR-1

CITY OF CREST HILL
1610 PLAINFIELD ROAD
CREST HILL, IL 60403

CITY OF CREST HILL
WATER DISTRIBUTION SYSTEM DETAILS

PROJ. NO.
DATE: 10/11/2024
SHEET 26 OF 38
DRAWING NO.
WTR-2

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LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT
CREST HILL, ILLINOIS

REVISIONS
1 PER VILLAGE REVIEW 02/20/25

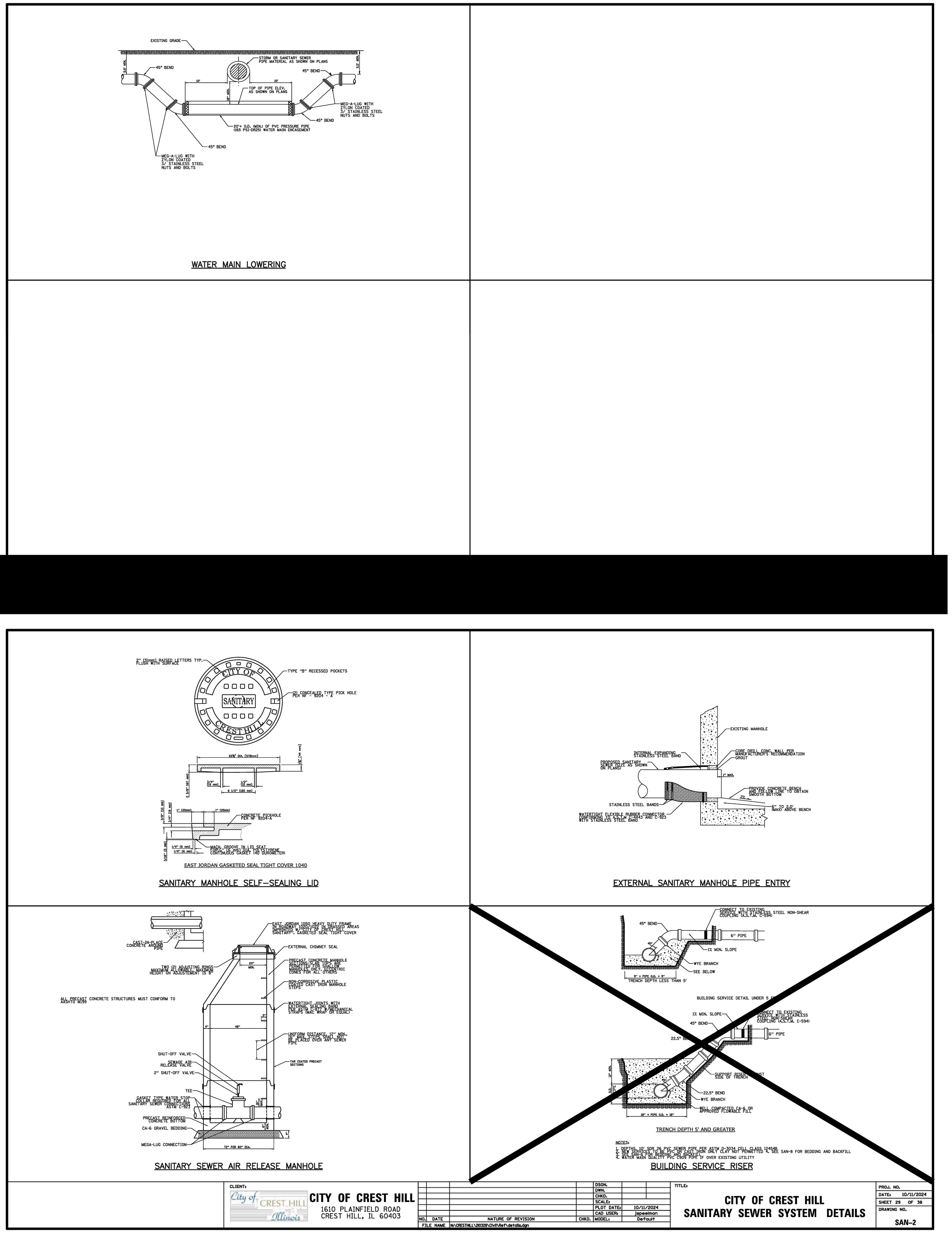
CONSTRUCTION STANDARDS

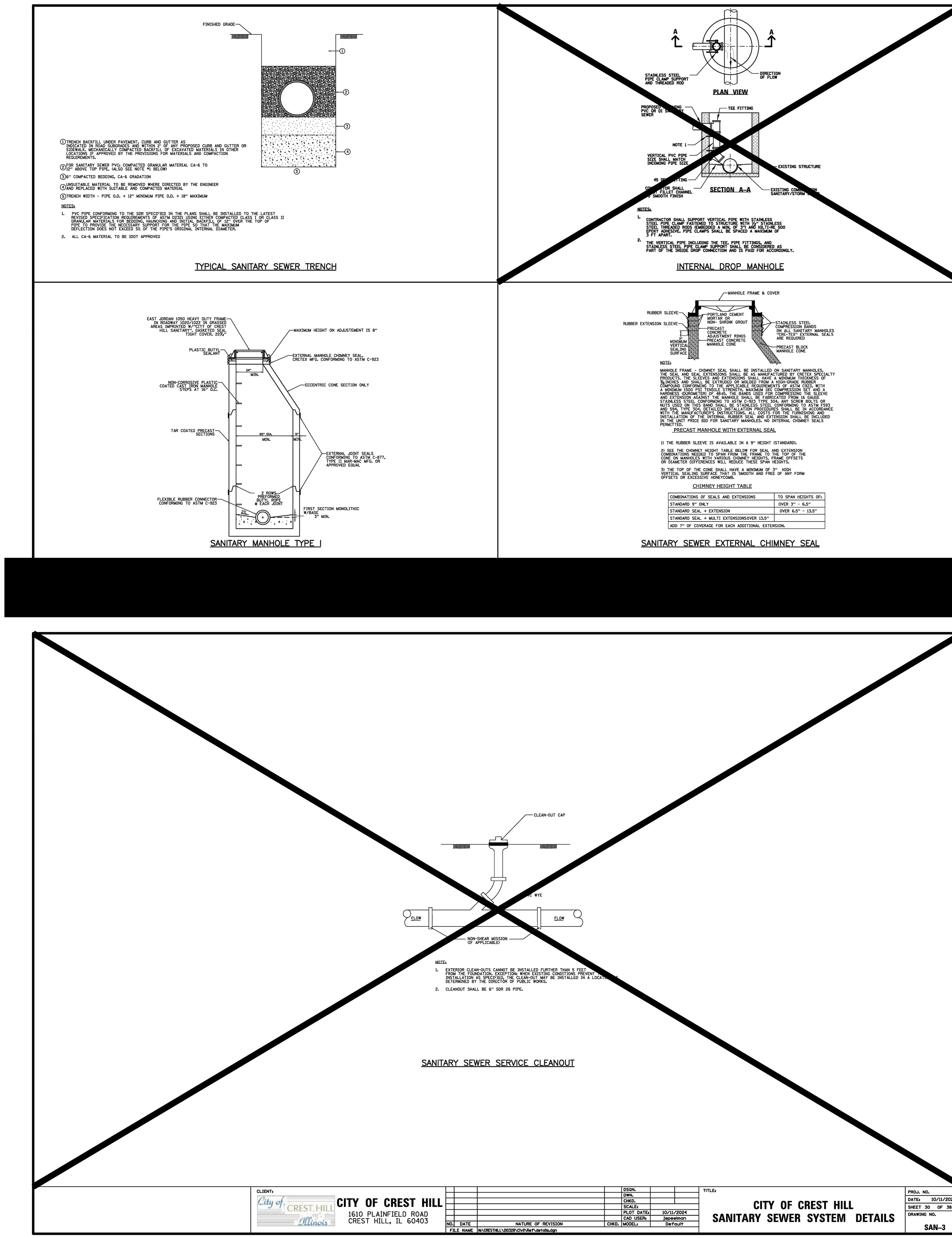
PEG JOB No. 5219.00-IL
PEG PM DAT
START DATE 01-21-25
SCALE NONE

SHEET C-15 OF C-17

LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT - CONSTRUCTION STANDARDS

EXHIBIT B





2/19/2025 1:49 PM

DRAFTED: DKT DESIGNED: DAT REVIEWED: BDJ

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LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT
CREST HILL, ILLINOIS

REVISIONS

1	PER VILLAGE REVIEW	02/20/25

CONSTRUCTION STANDARDS

PEG JOB No. 5219.00-IL
PEG PM DAT
START DATE 01-21-25
SCALE NONE

SHEET
C-16
OF
C-17

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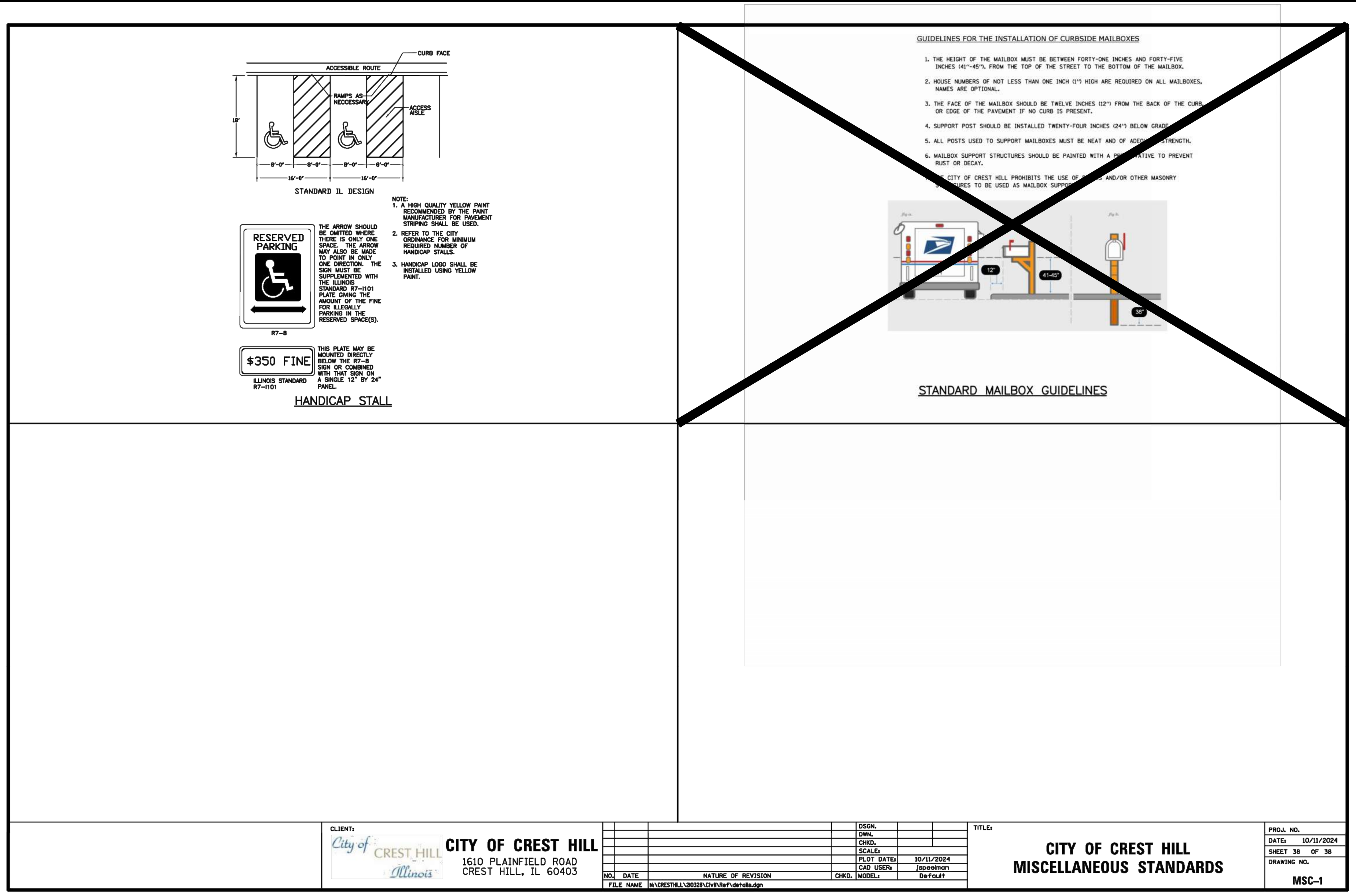
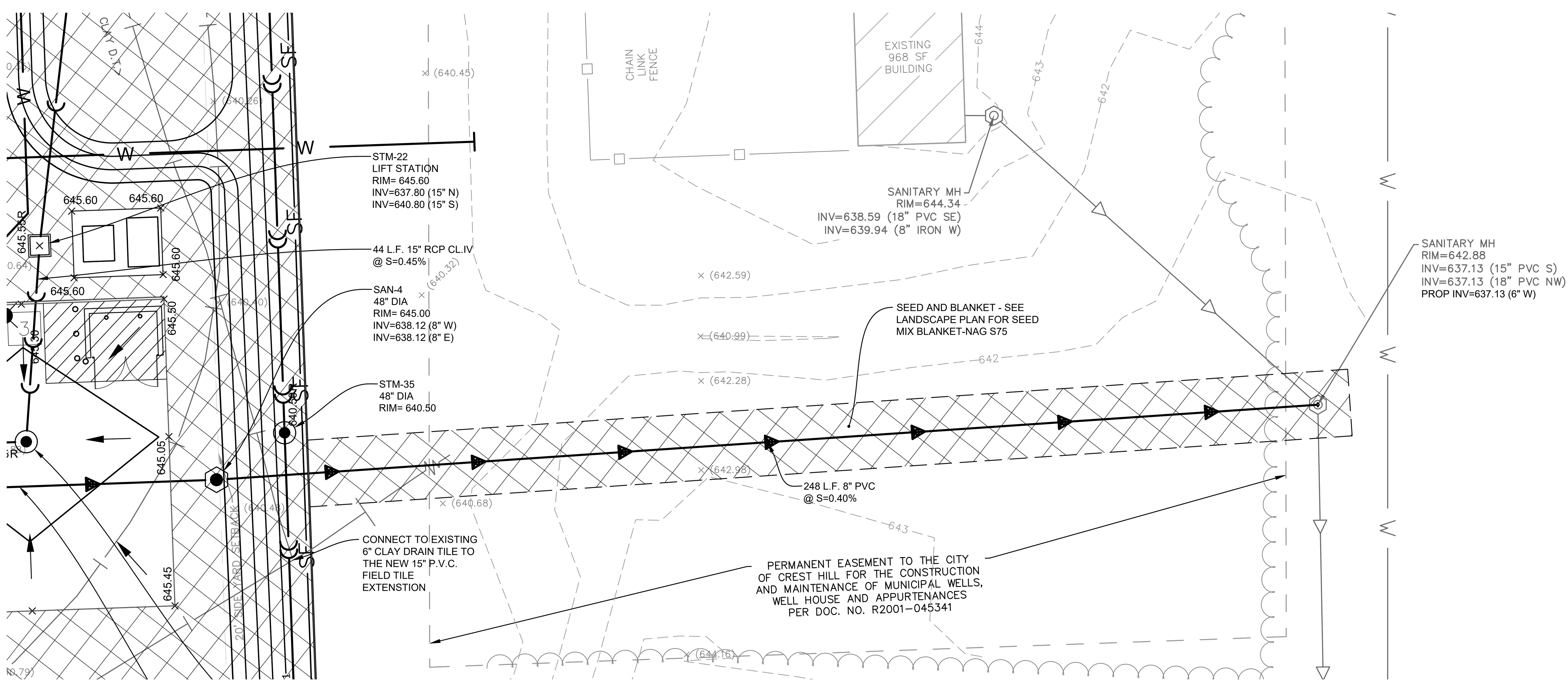
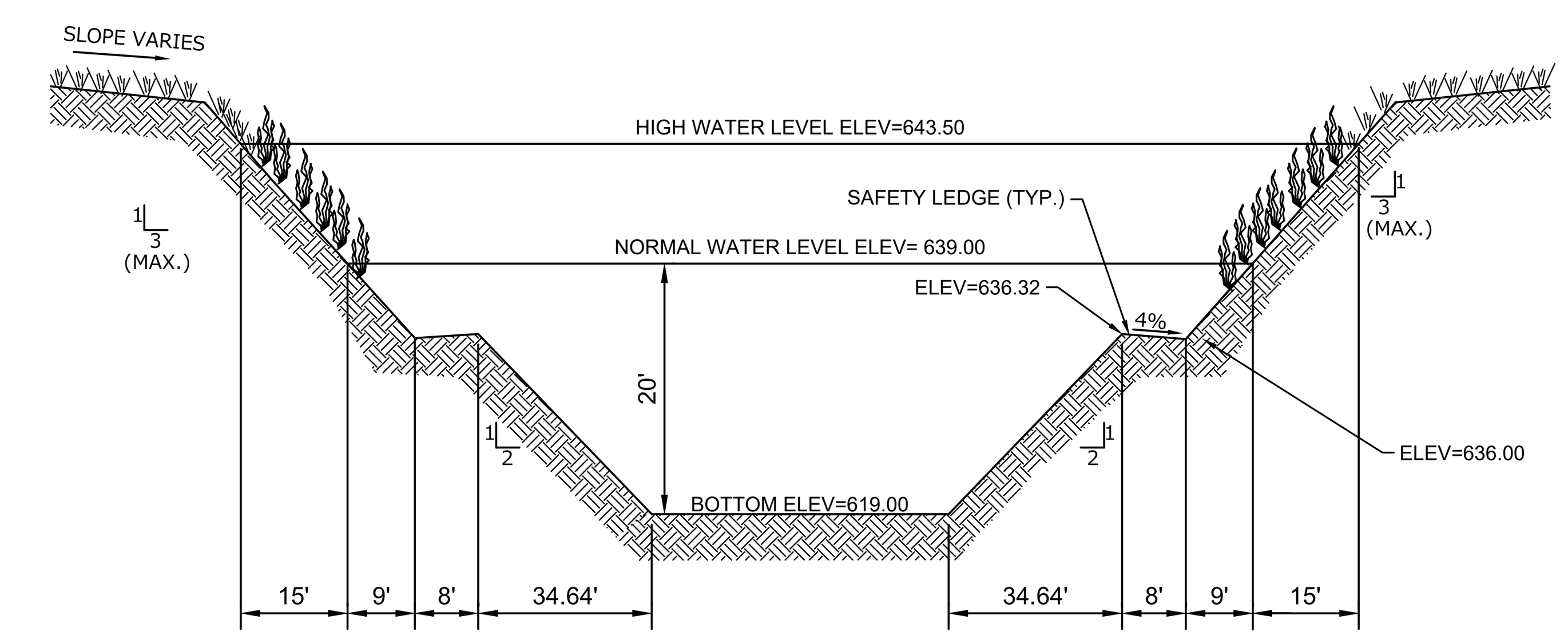
LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT - CONSTRUCTION STANDARDS

EXHIBIT B



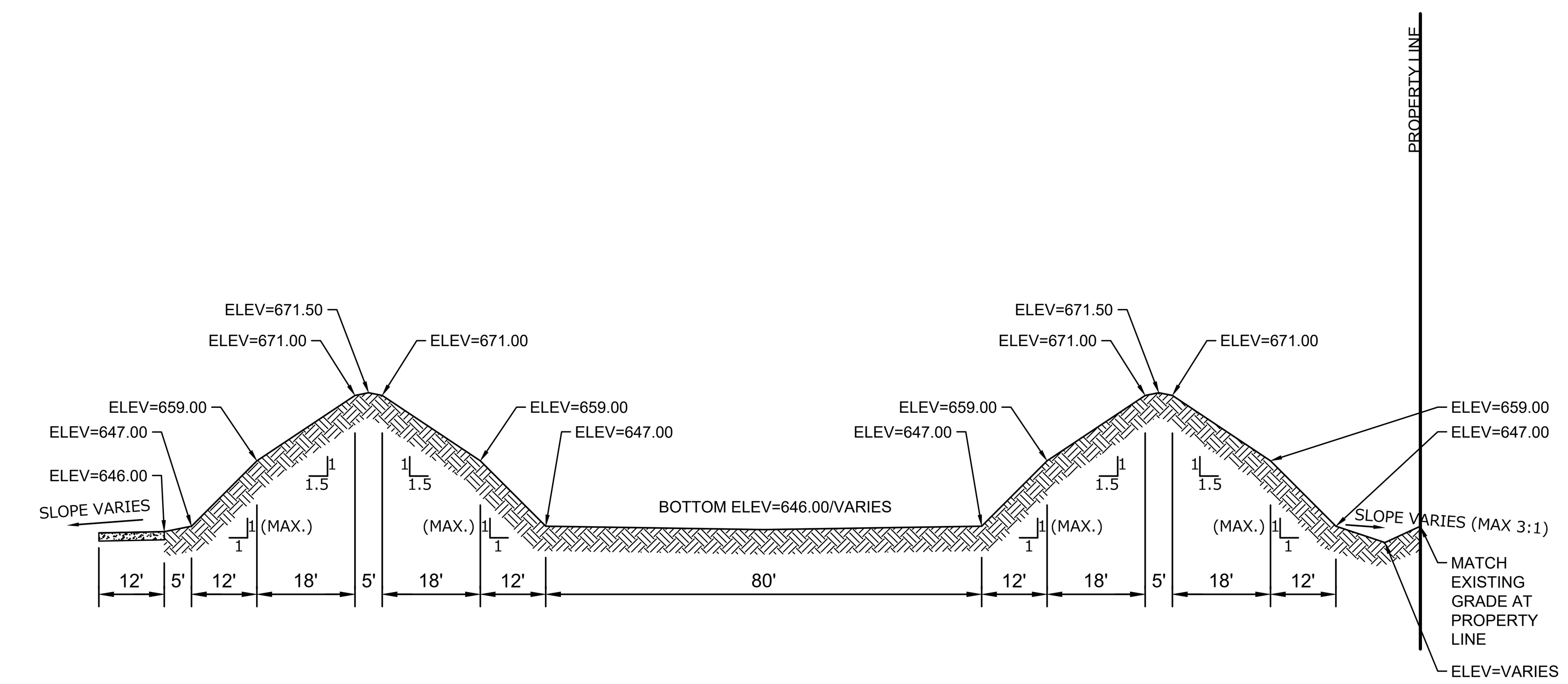




A QUALIFIED SOILS ENGINEER SHALL REGULARLY INSPECT THE EXCAVATION OF THE LAKE AREA TO INSURE THAT THE LAKES WILL BE CAPABLE OF MAINTAINING DESIGNED NORMAL WATER LEVELS. GRAVEL OR SAND SEAMS OR OTHER CONDITIONS WHICH MAY BE ENCOUNTERED, AND WHICH MIGHT TEND TO DEWATER THE LAKES, SHALL BE REMEDIED AS DIRECTED BY THE SOILS ENGINEER (I.E. LINING, CLAY BLANKET, BENTONITE, ETC.).

DETAIL NOT TO SCALE

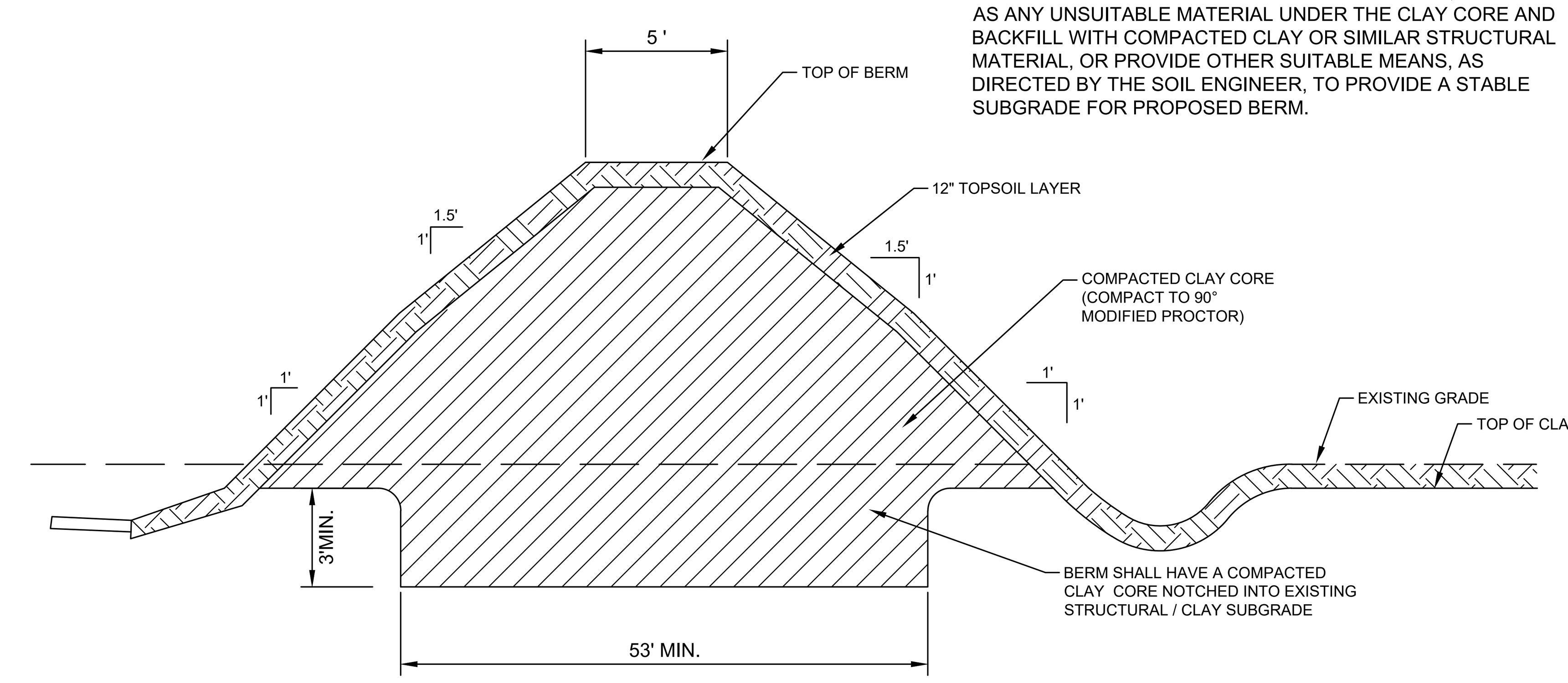
STORMWATER DETENTION POND CROSS-SECTION



DETAIL NOT TO SCALE

BERM SURROUNDING GUN RANGE CROSS-SECTION

NOTE:
REMOVE EXISTING TOPSOIL / ORGANIC MATERIAL, AS WELL AS ANY UNSUITABLE MATERIAL UNDER THE CLAY CORE AND BACKFILL WITH COMPACTED CLAY OR SIMILAR STRUCTURAL MATERIAL, OR PROVIDE OTHER SUITABLE MEANS, AS DIRECTED BY THE SOIL ENGINEER, TO PROVIDE A STABLE SUBGRADE FOR PROPOSED BERM.



OUTDOOR FIRING RANGE BERM SECTION

2/19/2025 1:49 PM - Z:\Projects\2023\5219.00-IL\600 - CAD\FINAL\SHEETSET\CONSTRUCTION STANDARDS.dwg

DRAFTED: DKT DESIGNED: DAT REVIEWED: BDJ

EXHIBIT ‘C’

PLAT OF SURVEY

EXHIBIT 'C'

NORTH

GRAPHICAL SCALE (FEET)

0 1" = 60' 120'

LEGAL DESCRIPTION:

THAT PART OF THE NORTHEAST QUARTER OF SECTION 29, TOWNSHIP 36 NORTH, RANGE 10 EAST OF THE THIRD PRINCIPAL MERIDIAN, DESCRIBED AS FOLLOWS: COMMENCING AT THE NORTHEAST CORNER OF SAID SECTION 29; THENCE SOUTH 87 DEGREES 56 MINUTES 40 SECONDS WEST, ON THE NORTH LINE OF SAID NORTHEAST QUARTER, 400.00 FEET TO THE POINT OF BEGINNING; THENCE SOUTH 02 DEGREES 03 MINUTES 20 SECONDS EAST, PERPENDICULAR TO SAID NORTH LINE, 800.00 FEET; THENCE SOUTH 87 DEGREES 56 MINUTES 40 SECONDS WEST, PARALLEL WITH SAID NORTH LINE, 700.00 FEET; THENCE NORTH 02 DEGREES 03 MINUTES 20 SECONDS WEST, PERPENDICULAR TO SAID NORTH LINE, 800.00 FEET TO THE NORTH LINE OF SAID NORTHEAST QUARTER; THENCE NORTH 87 DEGREES 56 MINUTES 40 SECONDS EAST, ON SAID NORTH LINE, 700.00 FEET TO THE POINT OF BEGINNING), ALL IN WILL COUNTY, ILLINOIS.

BENCHMARKS:

REFERENCE BENCHMARK:
WRI 012 (PID: DP5467) WILL COUNTY

TO REACH THE STATION FROM THE JUNCTION OF I-55 WITH COUNTY ROAD 36 (RENWICK RD) ABOUT 2.2 MI (3.5 KM) SOUTHEAST OF PLAINFIELD, IL, GO EAST ON COUNTY ROAD 36 (RENWICK RD) FOR 2.1 MI (3.4 KM) TO WEBER ROAD. CONTINUE EAST ON COUNTY ROAD 36 (RENWICK RD) FOR 1.0 MI (1.6 KM) TO THE STATION ON THE LEFT.

THE STATION IS LOCATED 32.5 FT (9.9 M) NORTH OF THE EDGE OF PAVEMENT OF COUNTY ROAD 36 (RENWICK RD), 28.5 FT (8.7 M) WEST OF A FIRE HYDRANT AND 7 FT (2.1 M) SOUTH OF A CHAIN LINK FENCE.

DATUM: NAVD88
ELEVATION: 661.68

SITE BENCHMARK 1:
SOUTH FLANGE BOLT ON HYDRANT LOCATED EAST OF PROPERTY, SOUTH SIDE OF W. DIVISION STREET.
ELEVATION: 646.03

GENERAL NOTES

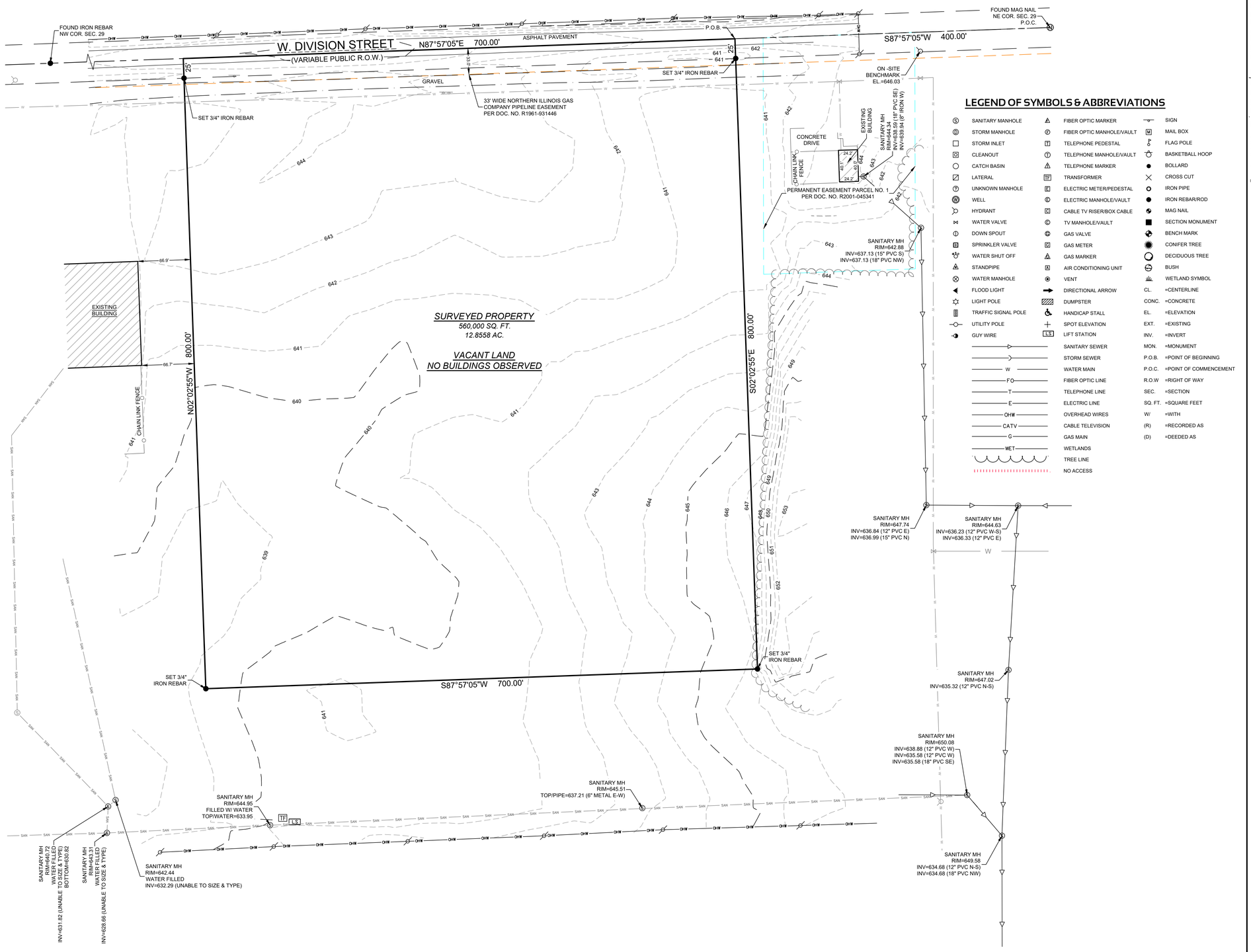
1. Survey prepared for: FGM Architects
2. Field work completed on January 5, 2024
3. No title or letter report was provided for this survey. Boundary based on Deed No. R2023-037042 provided by Property Insight Vesting Deed and Easement Search No.66728775-JMM dated January 2, 2024.
4. Flood Zone Classification: The property lies with in Zone "X" of the Flood Insurance Rate Map Community Panel No. 17197C0153G with an effective date of February 15, 2019. Zone "X" areas are determined to be outside the 0.2% annual chance floodplain.
5. Gross Land Area: 560,000 Square Feet (12.8558 Acres).
6. Vertical Datum: North American Vertical Datum of 1988 (12), (NAVD88). Contours are shown at a 1' interval based on actual ground survey of the current ground terrain. Reference Benchmark: WRI 012 (PID: DP5467) WILL COUNTY, Elevation = 661.68
7. The location and size of underground structures and utilities shown hereon have been located based on a reasonable visual observation and are shown for informational purposes only. PINNACLE ENGINEERING GROUP, LLC. does not guarantee the location of utilities shown. Contact J.U.L.I.E. prior to the start of any activity.
8. No wetlands were delineated or observed in the process of conducting the fieldwork.

I, Paul A. Kubicek, an Illinois Professional Land Surveyor, do hereby certify that "This professional service conforms to the current Illinois minimum standards for a boundary survey" and that the PLAT OF SURVEY hereon drawn is a correct representation to the best of my knowledge and belief with the information provided.

PROFESSIONAL LAND SURVEYOR
PAUL A. KUBICEK
035-003296
OAK CREEK, WI
STATE OF ILLINOIS

SIGNED _____

PAUL A. KUBICEK, ILLINOIS PROFESSIONAL LAND SURVEYOR 035-003296
EXPIRES 11/30/2024
PINNACLE ENGINEERING GROUP, LLC #184006289-0010
EXPIRES 04/30/2025



LEGEND OF SYMBOLS & ABBREVIATIONS

SANITARY MANHOLE	FIBER OPTIC MARKER	SIGN	
STORM MANHOLE	FIBER OPTIC MANHOLE/VAULT	MAIL BOX	
STORM INLET	TELEPHONE PEDESTAL	FLAG POLE	
CLEANOUT	TELEPHONE MANHOLE/VAULT	BASKETBALL HOOP	
CATCH BASIN	TELEPHONE MARKER	BOLLARD	
LATERAL	TRANSFORMER	CROSS CUT	
UNKNOWN MANHOLE	ELECTRIC METER/PEDESTAL	IRON PIPE	
WELL	ELECTRIC MANHOLE/VAULT	IRON REBAR/ROD	
HYDRANT	CABLE TV RISER/BOX CABLE	MAG NAIL	
WATER VALVE	TV MANHOLE/VAULT	SECTION MONUMENT	
DOWN SPOUT	GAS VALVE	BENCH MARK	
SPRINKLER VALVE	GAS METER	CONIFER TREE	
WATER SHUT OFF	GAS MARKER	DECIDUOUS TREE	
STANDPIPE	AIR CONDITIONING UNIT	BUSH	
WATER MANHOLE	VENT	WETLAND SYMBOL	
FLOOD LIGHT	DIRECTIONAL ARROW	CL. =CENTERLINE	
LIGHT POLE	DUMPSTER	CONC. =CONCRETE	
TRAFFIC SIGNAL POLE	HANDICAP STALL	EL. =ELEVATION	
UTILITY POLE	SPOT ELEVATION	EXT. =EXISTING	
GUY WIRE	LIFT STATION	INV. =INVERT	
SANITARY SEWER		MON. =MONUMENT	
STORM SEWER		P.O.B. =POINT OF BEGINNING	
W WATER MAIN		P.O.C. =POINT OF COMMENCEMENT	
FO FIBER OPTIC LINE		R.O.W =RIGHT OF WAY	
T TELEPHONE LINE		SEC. =SECTION	
E ELECTRIC LINE		SQ. FT. =SQUARE FEET	
OHW OVERHEAD WIRES		W/ =WITH	
CATV CABLE TELEVISION		(R) =RECORDED AS	
G GAS MAIN		(D) =DEEDED AS	
WET WETLANDS			
TREE LINE			
NO ACCESS			

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WEST DIVISION STREET
CREST HILL, WILL COUNTY, ILLINOIS 60441

PLAT OF SURVEY

REVISIONS

1	Added Utilities Per Plan	2/7/2024
2	Offsite Sanitary	5/15/2024
3	Additional Offsite Sanitary	7/03/2024
4	Additional Offsite Topography	8/02/2024

PEG JOB No.: 5219.00
PEG PM: DAT
DATE: 1/15/2023
SCALE: 1"=60'
DRAFTED BY: KGD

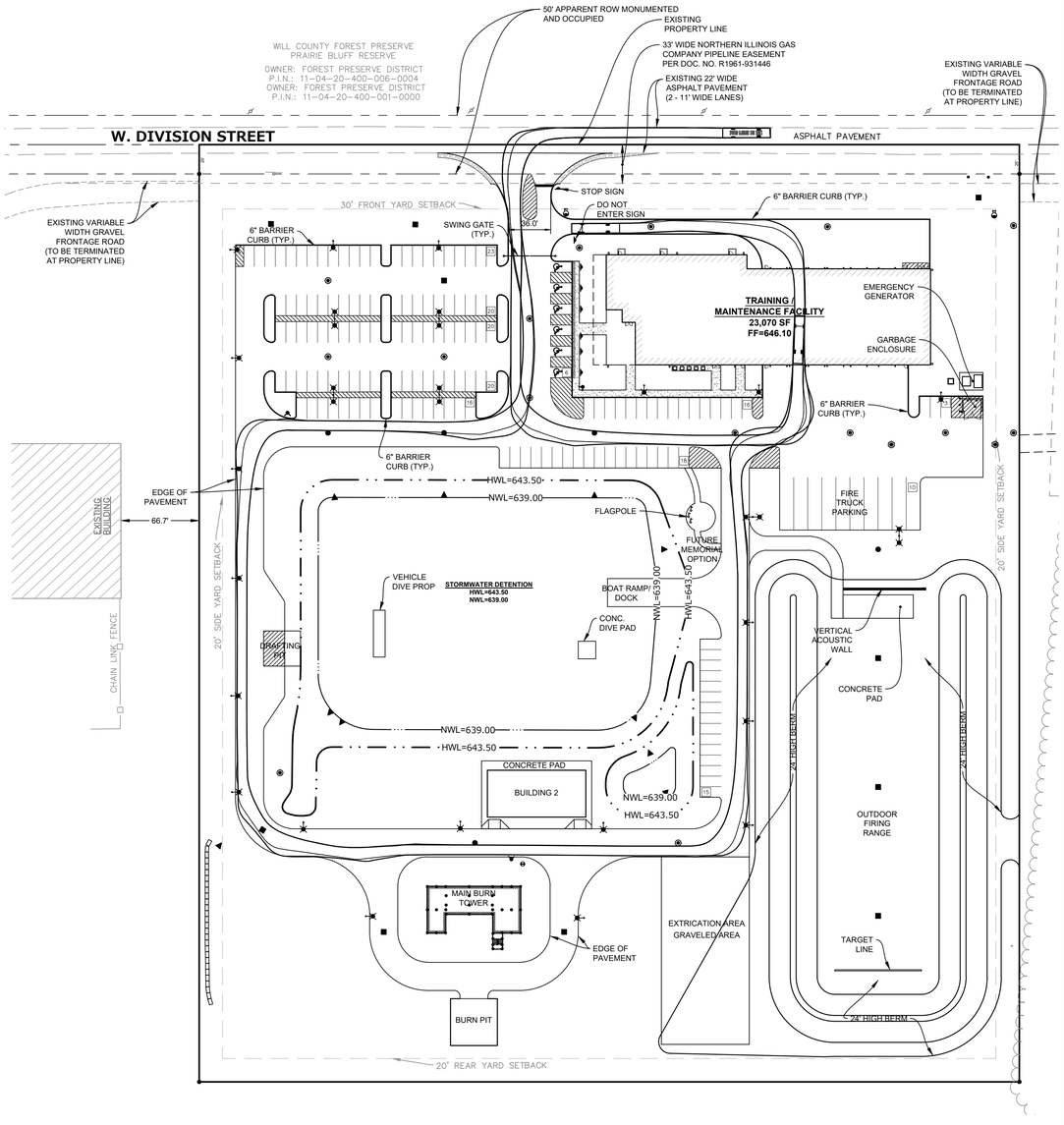
SHEET 1 OF 1

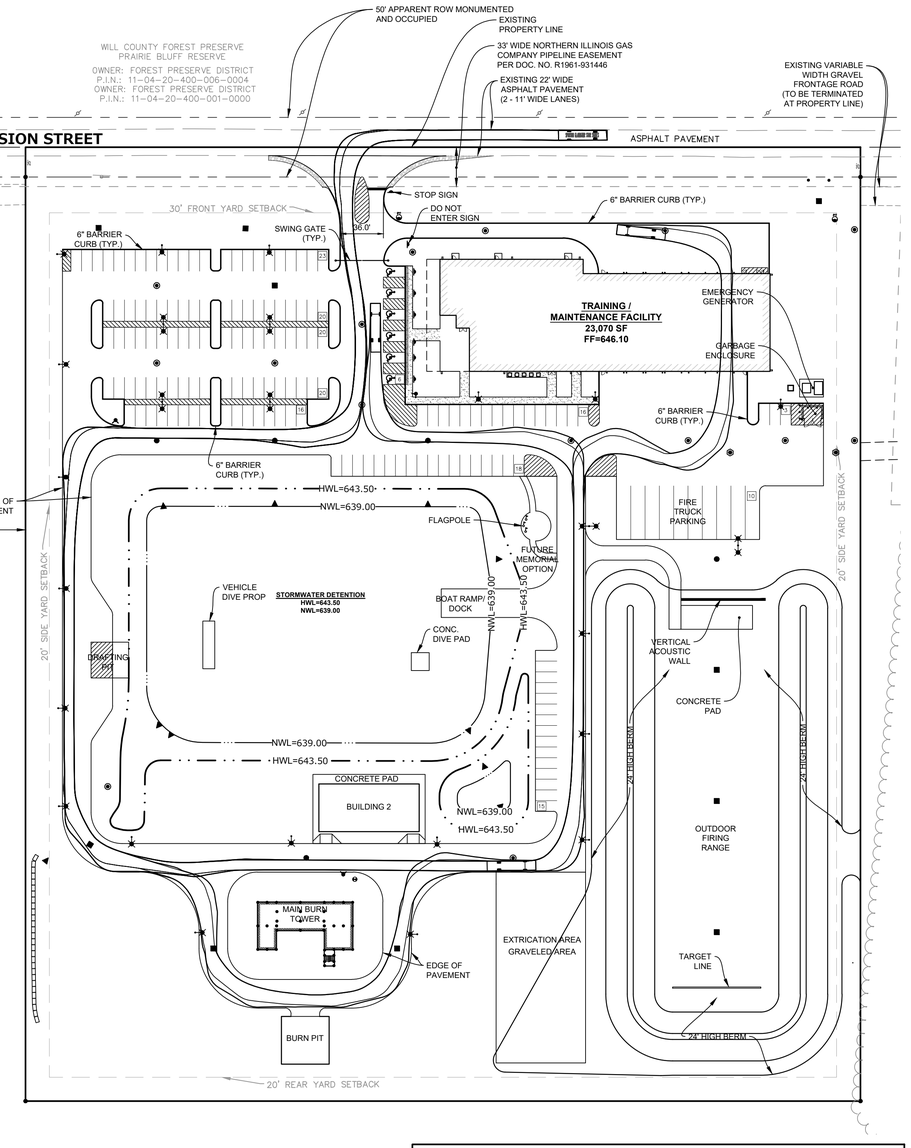
SURVEY

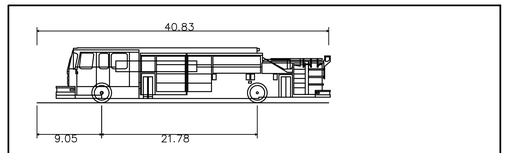
EXHIBIT ‘D’

OVERALL TRUCK TURN EXHIBITS

EXHIBIT 'D'







SPARTAN GLADIATOR STAR SERIES	
Overall Length	40.830ft
Overall Width	8.250ft
Overall Body Height	7.693ft
Min Body Ground Clearance	0.604ft
Track Width	7.870ft
Lock-to-lock time	6.00s
Max Wheel Angle	46.30°

NORTH

GRAPHICAL SCALE (FEET)

0 1" = 60' 120'

PRELIMINARY AND FINAL PLANNED UNIT DEVELOPMENT PLANS

DRAFTED: JAM DESIGNED: DAT REVIEWED: DAT 2/18/2025 5:09 PM – Z:\Projects\2023\5219.00-IL\600 – CAD\FINAL\Exhibits\Truck Turn Exhibit 02-03-2025.dwg

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REVISIONS

1	PUD RESUBMITTAL	01/10/25	
2	PRELIMINARY AND FINAL PLANNED UNIT DEVELOPMENT SUBMITTAL	02/20/25	

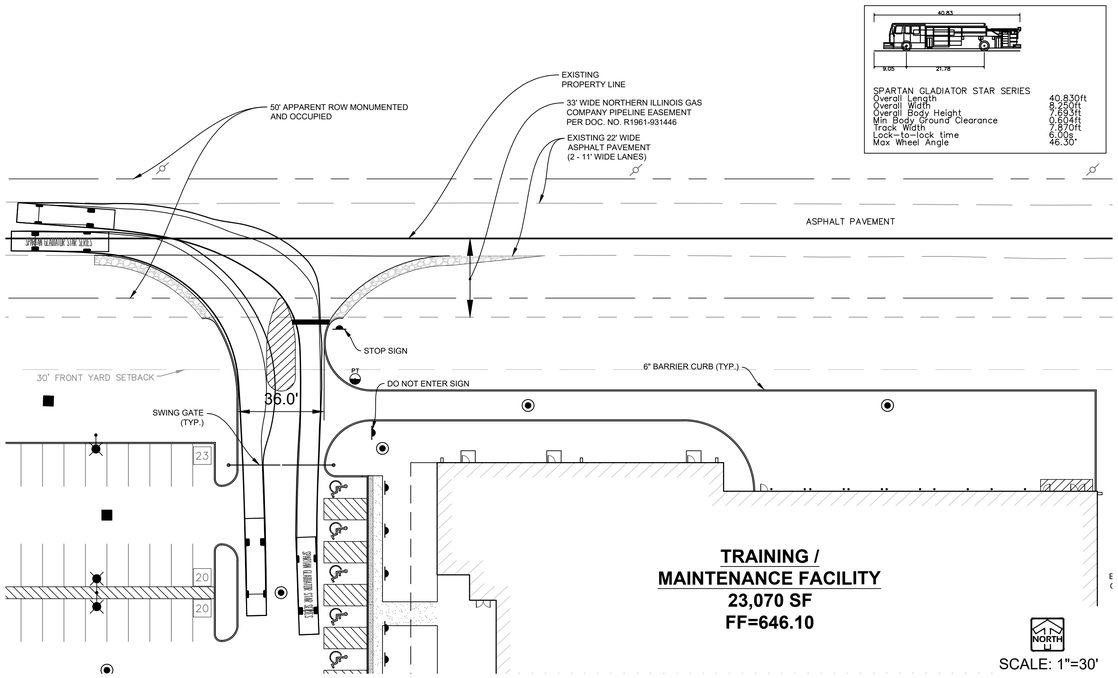
OVERALL TRUCK TURN EXHIBIT

PEG JOB No. 5219.10-IL
PEG PM DAT
START DATE 02/18/25
SCALE 1"=60'

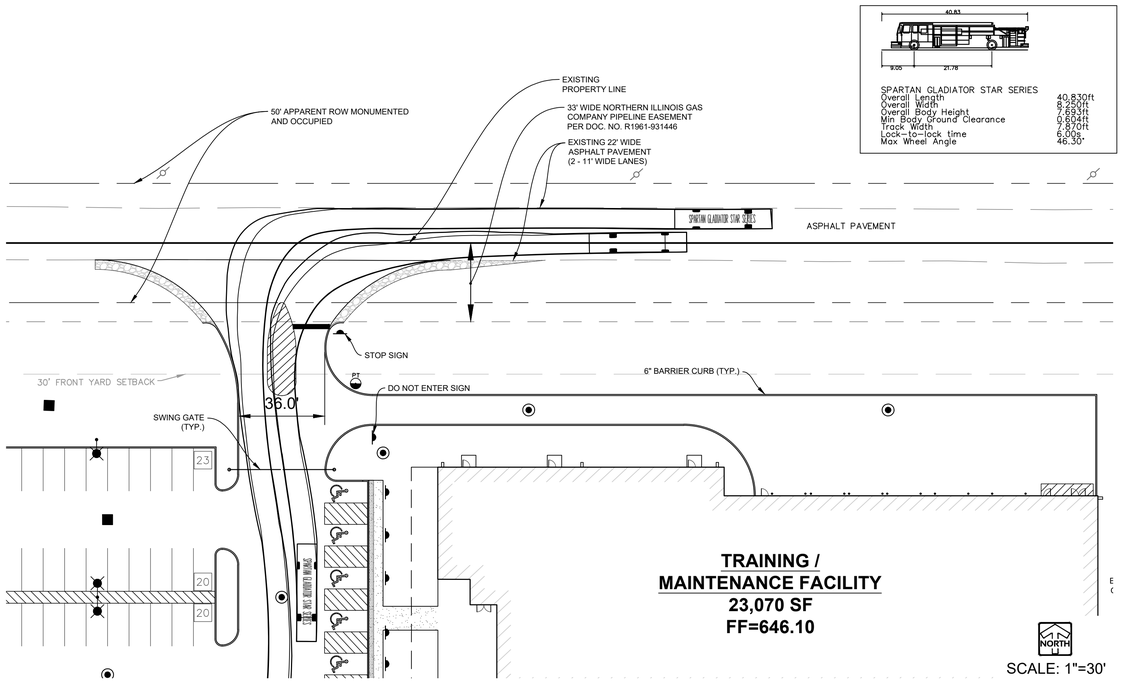
SHEET 1 OF 2

PRELIMINARY AND FINAL PLANNED UNIT DEVELOPMENT PLAN

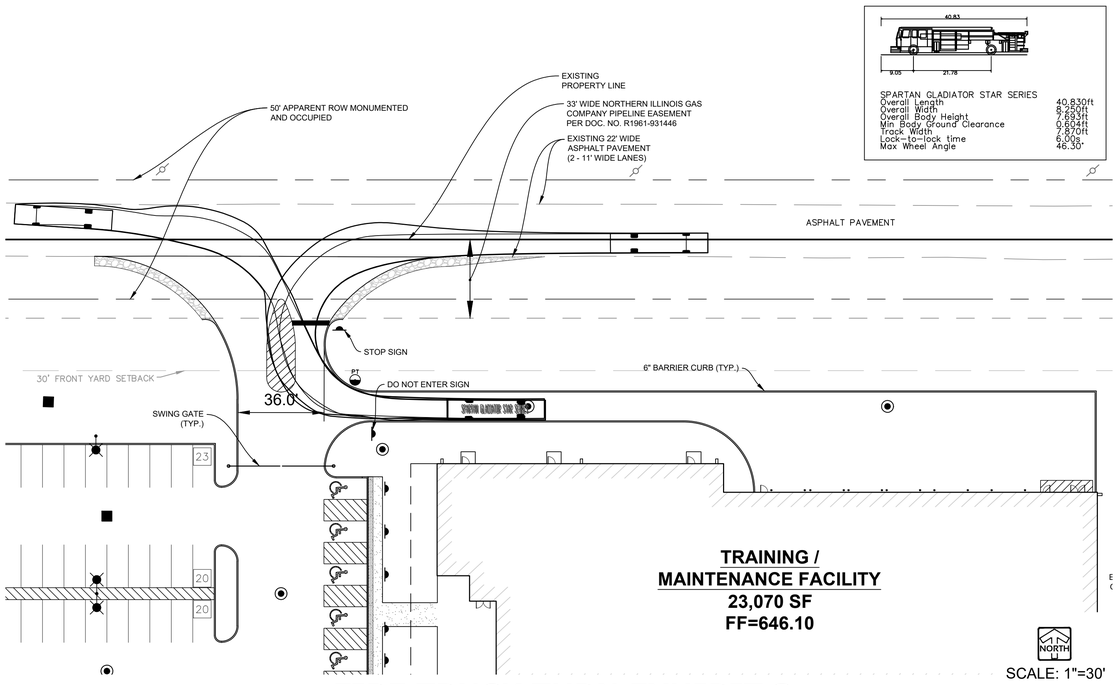
EXHIBIT 'D'



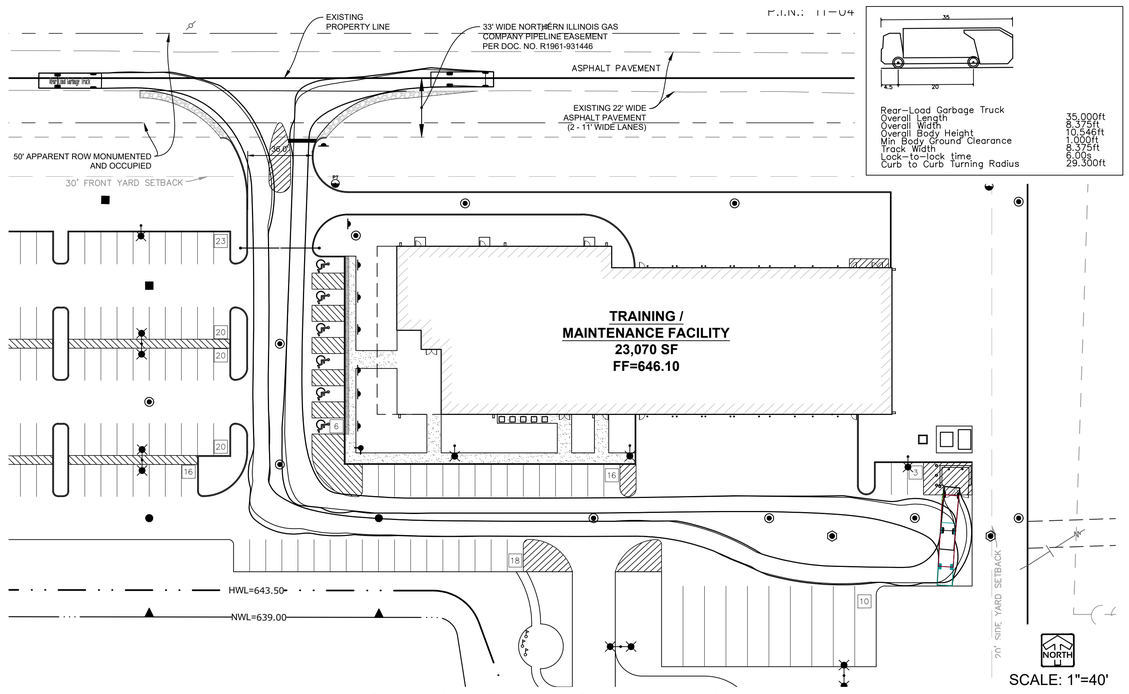
FIRE TRUCK TURN EXHIBIT 1



FIRE TRUCK TURN EXHIBIT 2



FIRE TRUCK TURN EXHIBIT 3



FIRE TRUCK TURN EXHIBIT 4

PRELIMINARY AND FINAL PLANNED UNIT DEVELOPMENT PLANS

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CREST HILL, ILLINOIS

REVISIONS

1	PUD RESUBMITTAL	01/10/25	
2	PRELIMINARY AND FINAL PLANNED UNIT DEVELOPMENT SUBMITTAL	02/20/25	

OVERALL TRUCK TURN EXHIBIT

PEG JOB No. 5219.10-IL
PEG PM DAT
START DATE 02/18/25
SCALE 1"=40'&1"=30'

SHEET 2 OF 2

PRELIMINARY AND FINAL PLANNED UNIT DEVELOPMENT PLAN

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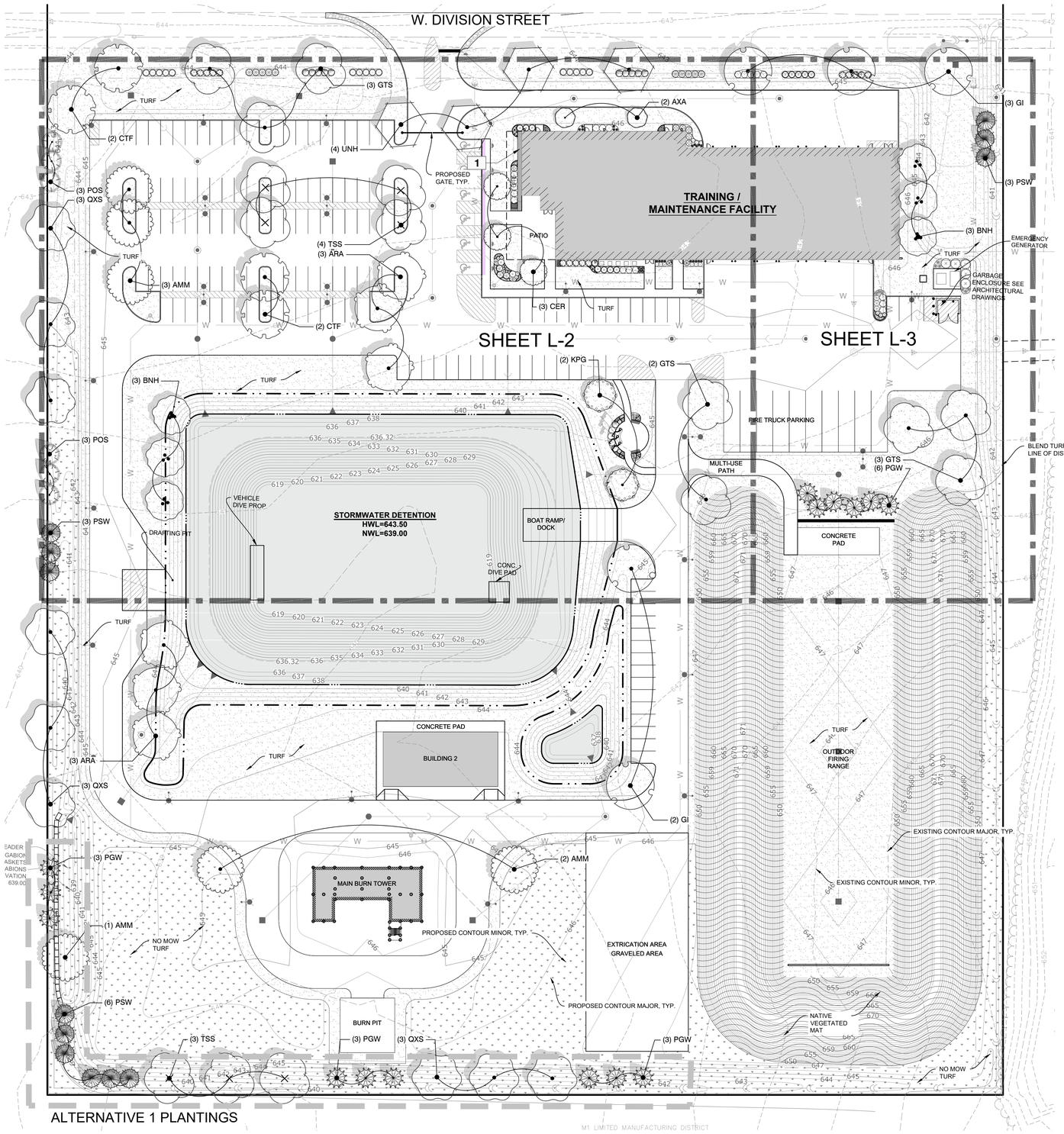
EXHIBIT ‘E’

LANDSCAPE PLANS AND DETAILS

EXHIBIT E



ALTERNATIVE 1 PLANTINGS

M1 LIMITED MANUFACTURING DISTRICT

PLANT SCHEDULE MAIN						
CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE		REMARKS
TREES						
ARA	6	Acer rubrum 'Autumn Flame'	Autumn Flame Maple	1.5" Cal.		50` T x 40` W
AMM	5	Acer saccharum 'Flax Mill Majesty'	Flax Mill Majesty Maple	1.5" Cal.		55` T x 45` W
AXA	2	Acer x freemanii `Armstrong`	Armstrong Freeman Maple	1.5" Cal.		60` T x 15` W
BNH	6	Betula nigra 'Heritage'	Heritage River Birch Muti-Stem	7` Ht.		50` T x 40` W
CTF	4	Corylus colurna	Turkish Filbert	1.5" Cal.		45` T x 35` W
GTS	8	Gleditsia triacanthos inermis 'Shademaster'	Shademaster Locust	1.5" Cal.		60` T x 50` W
GI	5	Gymnocladus dioicus `McKBranched`	Decaf Kentucky Coffeetree	1.5" Cal.		50` T x 50` W
QXS	6	Quercus x schuetti	Swamp Bur Oak	1.5" Cal.		70` T x 65` W
TSS	4	Tilia tomentosa 'Sterling'	Sterling Silver Linden	1.5" Cal.		45` T x40` W
UNH	4	Ulmus americana 'New Harmony'	New Harmony Elm	1.5" Cal.		60` T x 60` W
EVERGREEN TREES						
PGW	6	Picea glauca	White Spruce	6` Ht.		50` T x 15` W
POS	6	Picea omorika	Serbian Spruce	6` Ht.		55` T x 20` W
PSW	6	Pinus strobus	White Pine	6` Ht.		65` T x 30` W
ORNAMENTAL TREES						
CER	3	Cercis canadensis	Eastern Redbud	1.5" Cal.		25` T x 25` W
KPG	2	Koelreuteria paniculata	Golden Rain Tree	1.5" Cal.		30` T x 30` W
SHRUBS						
CWL	3	Cotinus coggygria 'Lilla'	Lilla Dwarf Smoke Tree	2 gal.		4` T x 4` W
HIS	3	Hydrangea arborescens 'NCHA1'	Invincibelle Spirit Hydrangea	2 gal.		4` T x 3` W
HVS	12	Hydrangea p `Vanilla Strawberry`	Vanilla Strawberry Hydrangea	3 gal.		6` T x 5` W
HHJ	2	Hydrangea quercifolia 'PIIHQ-I'	Jetstream Oakleaf Hydrangea	3 gal.		5` T x 5` W
RPP	15	Rosa rugosa `Purple Pavement`	Purple Pavement Rugosa Rose	2 gal.		5` T x 5` W
SBE	3	Sambucus nigra `Black Lace`	Black Lace Elderberry	3 gal.		6` T x 6` W
SDC	6	Spiraea japonica 'NCSX1'	Double Play Candy Corn Spirea	2 gal.		2` T x 2.5` W
SP2	3	Syringa x 'Penda'	Bloomerang Purple Lilac	3 gal.		4` T x 4` W
SOP	6	Syringa x 'SMNJRPI'	Bloomerang Dwarf Pink Lilac	2 gal.		4` T x 3` W
SDP	8	Syringa x 'SMSJBP7'	Bloomerang Dark Purple Lilac	3 gal.		4` T x 5` W
VIG	8	Viburnum dentatum deamii 'SMVDBL'	All That Glows Arrowwood Viburnum	3 gal.		5` T x 5` W
EVERGREEN SHRUBS						
JSP	5	Juniperus chinensis `J.N. Select Blue`	Star Power Juniper	4` Ht.		16` T x 9` W
JSG	15	Juniperus chinensis `Sea Green`	Sea Green Juniper	3 gal.		5` T x 5` W
JOG	13	Juniperus chinensis `Sea of Gold`	Sea of Gold Juniper	3 gal.		3` T x 5` W
JSB	3	Juniperus sabina `Buffalo`	Buffalo Juniper	3 gal.		1` T x 7` W
JGO	10	Juniperus virginiana `Grey Owl`	Grey Owl Juniper	3 gal.		3` T x 5` W
TMT	6	Taxus x media `Tauntonii`	Tauton Yew	3 gal.		4` T x 5` W
THH	2	Thuja occidentalis `Holmstrup`	Holmstrup Cedar	4` Ht.		14` T x 5` W
TFC	7	Thuja occidentalis 'Congabe'	Fire Chief Arborvitae	2 gal.		2` T x 3` W
ORNAMENTAL GRASSES						
AGD	15	Andropogon gerardii `Dancing Wind`	Dancing Wind Big Blue Stem	1 gal.		36` T x 30` W
CKF	9	Calamagrostis x a `Karl Foerster`	Karl Foerster Reed Grass	1 gal.		36` T x 24` W
CFO	11	Calamagrostis x a `Overdam`	Overdam Reed Grass	1 gal.		24` T x 24` W
MSM	5	Miscanthus sinensis 'Malepartus'	Malepartus Miscanthus	1 gal.		48` T x 30` W
PFR	5	Panicum virgatum 'Prairie Fire'	Prairie Fire Switch Grass	1 gal.		42` T x 24` W
STD	6	Sporobolus heterolepis `Tara`	Prairie Dropseed	1 gal.		15` T x 20` W
CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
PERENNIALS						
AML	6	Aruncus x `Misty lace`	Misty Lace Goatsbeard	4.5" Cont.	24" o.c.	20" T x 24" W
CMW	6	Calamintha nepeta 'Montrose White'	Montrose White Calamint	4.5" cont.	20" o.c.	18" T x 18" W
CC6	23	Coreopsis verticillata 'Route 66'	Route 66 Threadleaf Tickseed	4.5" Cont.	20" o.c.	20" T x 20" W
ERM	13	Echinacea p 'Rainb299'	Butterfly Rainbow Marcella Coneflower	4.5" cont.	24" o.c.	15" T x 24" W
HPP	9	Heuchera m `Palace Purple`	Palace Purple Coral Bells	4.5" Cont.	18" o.c.	18" T x 18" W
HFW	6	Hosta x `Frances Williams`	Frances Williams Hosta	4.5" cont.	30" o.c.	24" T x 54" W
MT	10	Monarda x 'Purple Rooster'	Purple Rooster Bee Balm	4.5" cont.	24" o.c.	30" T x 24" W
PLS	9	Perovskia atriplicifolia 'Little Spire'	Little Spire Russian Sage	4.5" cont.	22" o.c.	24" T x 24" W
SYMBOL	QTY	BOTANICAL NAME	COMMON NAME			REMARKS
TURF						
	153,534 sf	Turf Hydroseed	Reinders - Cadet 70/30 Fescue/Blue Mix			
	73,234 sf	Turf Hydroseed Low Grow	Reinders No Mow/Low Grow Mix			
VEGETATED MAT						
	57,413 sf	Native Vegetated Mat	AGRECOL Upland Meadow Mix			UPLAND MEADOW MIX

REFERENCE NOTES SCHEDULE			
SYMBOL	CODE	DESCRIPTION	QTY
	1	STONE MULCH- EITHER APLINE WHITE OR ROUND RAPIDS	1.63 cy

PLANT SCHEDULE ALT 1					
CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
TREES					
AMM	1	Acer saccharum 'Flax Mill Majesty'	Flax Mill Majesty Maple	1.5" Cal.	55` T x 45` W
QXS	3	Quercus x schuetti	Swamp Bur Oak	1.5" Cal.	70` T x 65` W
TSS	3	Tilia tomentosa 'Sterling'	Sterling Silver Linden	1.5" Cal.	45` T x40` W
EVERGREEN TREES					
PGW	9	Picea glauca	White Spruce	6` Ht.	50` T x 15` W
PSW	6	Pinus strobus	White Pine	6` Ht.	65` T x 30` W

LANDSCAPE IMPROVEMENT TABLE	GROSS LOT	REQUIRED
MINIMUM PLANTINGS:		
• **1 APPROVED PLANTING/ 725 OF GROSS LOT**	**560,000 SQ FT**	**773 PLANTINGS**
LANDSCAPE PLANTING TYPES	**SIZE**	**PROVIDED**
CANOPY TREES	**1.5" CAL**	**50**
EVERGREENS	**6'**	**18**
ORNAMENTAL TREES	**1.5"**	**5**
SHRUBS	**2-3 GAL**	**69**
EVERGREEN SHRUBS	**2-3 GAL**	**61**
ORNAMENTAL GRASSES	**1 GAL**	**51**
PERENNIALS	**1 GAL**	**82**
TURF AREA 227,989 SQ FT	**PER 300 SQ FT**	**760**
VET. MAT 57,413 SQ FT	**PER 300 SQ FT**	**192**
	TOTAL	**1287**

NOTES:

- NO TREES ARE BEING PRESERVED ON THE SUBJECT SITE DUE TO LACK OF EXISTING TREE VEGETATION ON SITE
- ALTERNATIVE 1 PLANTINGS NOT INCLUDED IN CALCULATIONS

NORTH

GRAPHICAL SCALE (FEET)

0 1" = 40' 80'

PRELIMINARY AND FINAL PLANNED UNIT DEVELOPMENT PLANS

DRAWN: JSJ DESIGNED: JSJ REVIEWED: DJB

PLAN | DESIGN | DELIVER
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ENGINEERING | NATURAL RESOURCES | SURVEYING
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(847) 551-5300
CHICAGO | MILWAUKEE : NATIONWIDE

LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT
CREST HILL, ILLINOIS

REVISIONS

1	PUD RESUBMITTAL	01/10/25	
2	PRELIMINARY AND FINAL PLANNED UNIT DEVELOPMENT	02/20/25	
	SUBMITTAL		

LANDSCAPE OVERVIEW & TREE PLAN

PEG JOB No. 5219.00-IL
PEG PM DAT
START DATE 01-21-25
SCALE 1"=40'

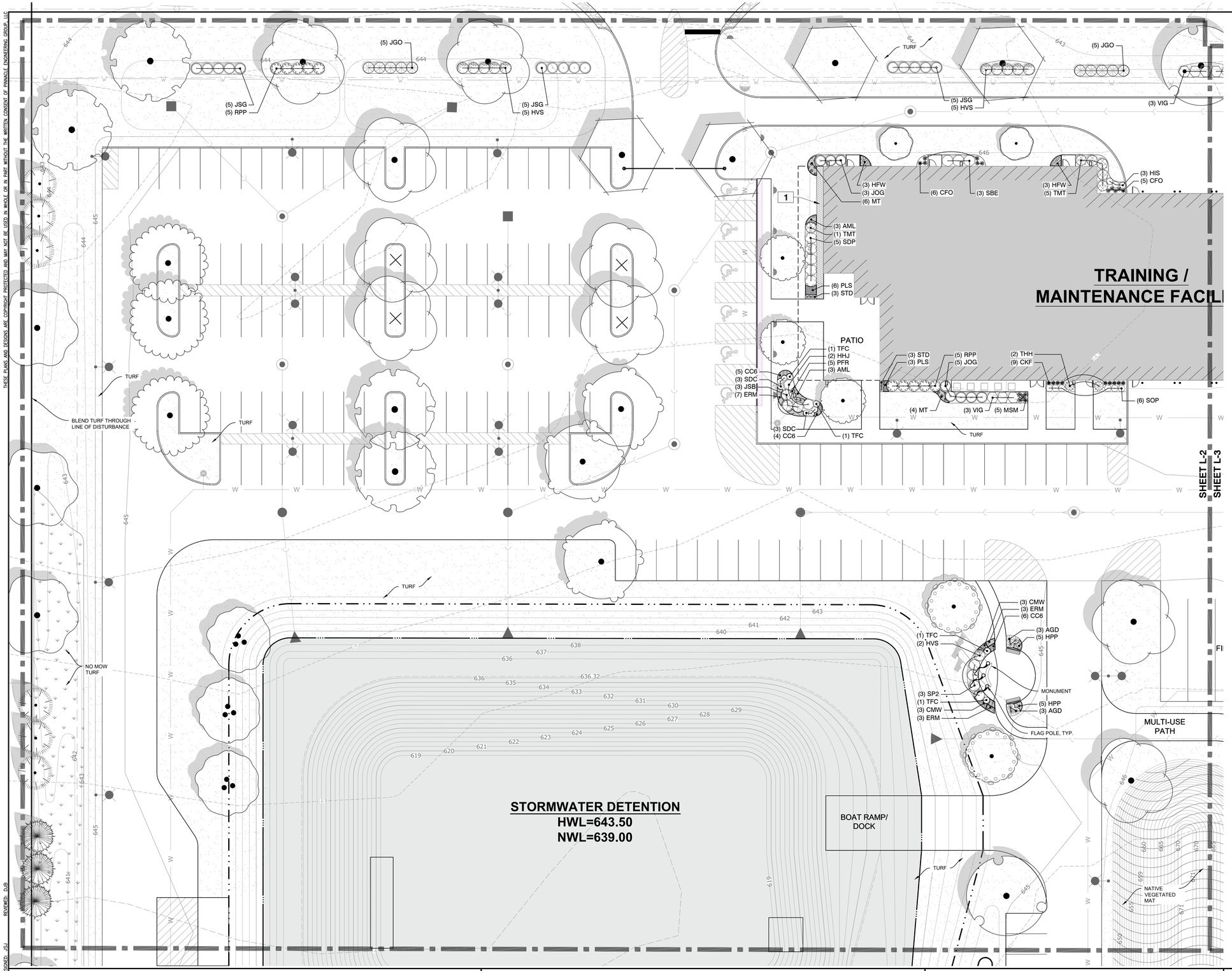
SHEET L-1 OF L-5

www.pinnacle-engr.com

LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT - LANDSCAPE OVERVIEW & TREE PLAN

EXHIBIT E

W. DIVISION STREET



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UNH	Ulmus americana 'New Harmony'	New Harmony Elm
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PSW	Pinus strobus	White Pine
ORNAMENTAL TREES		
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KPG	Koelreuteria paniculata	Golden Rain Tree
SHRUBS		
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HVS	Hydrangea p `Vanilla Strawberry`	Vanilla Strawberry Hydrangea
HHJ	Hydrangea quercifolia 'PIIHQ-I'	Jetstream Oakleaf Hydrangea
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STD	Sporobolus heterolepis `Tara`	Prairie Dropseed
PERENNIALS		
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CMW	Calamintha nepeta 'Montrose White'	Montrose White Calamint
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	Turf Hydroseed Low Grow	Reinders No Mow/Low Grow Mix
VEGETATED MAT		
	Native Vegetated Mat	AGRECOL Upland Meadow Mix

REFERENCE NOTES SCHEDULE		
SYMBOL	CODE	DESCRIPTION
	1	STONE MULCH- # 1 CLEAR STONE

NORTH

GRAPHICAL SCALE (FEET)

0 1" = 20' 40'

PRELIMINARY AND FINAL PLANNED UNIT DEVELOPMENT PLANS

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REVIEWED: DJB

LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT
CREST HILL, ILLINOIS

REVISIONS

1	PUD RESUBMITTAL	01/10/25			
2	PRELIMINARY AND FINAL	02/20/25			
	PLANNED UNIT DEVELOPMENT				
	SUBMITTAL				

LANDSCAPE ENLARGEMENT

PEG JOB No. 5219.00-1L
PEG PM DAT
START DATE 01-21-25
SCALE 1" = 20'

SHEET L-2 OF L-5

LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT - LANDSCAPE ENLARGEMENT

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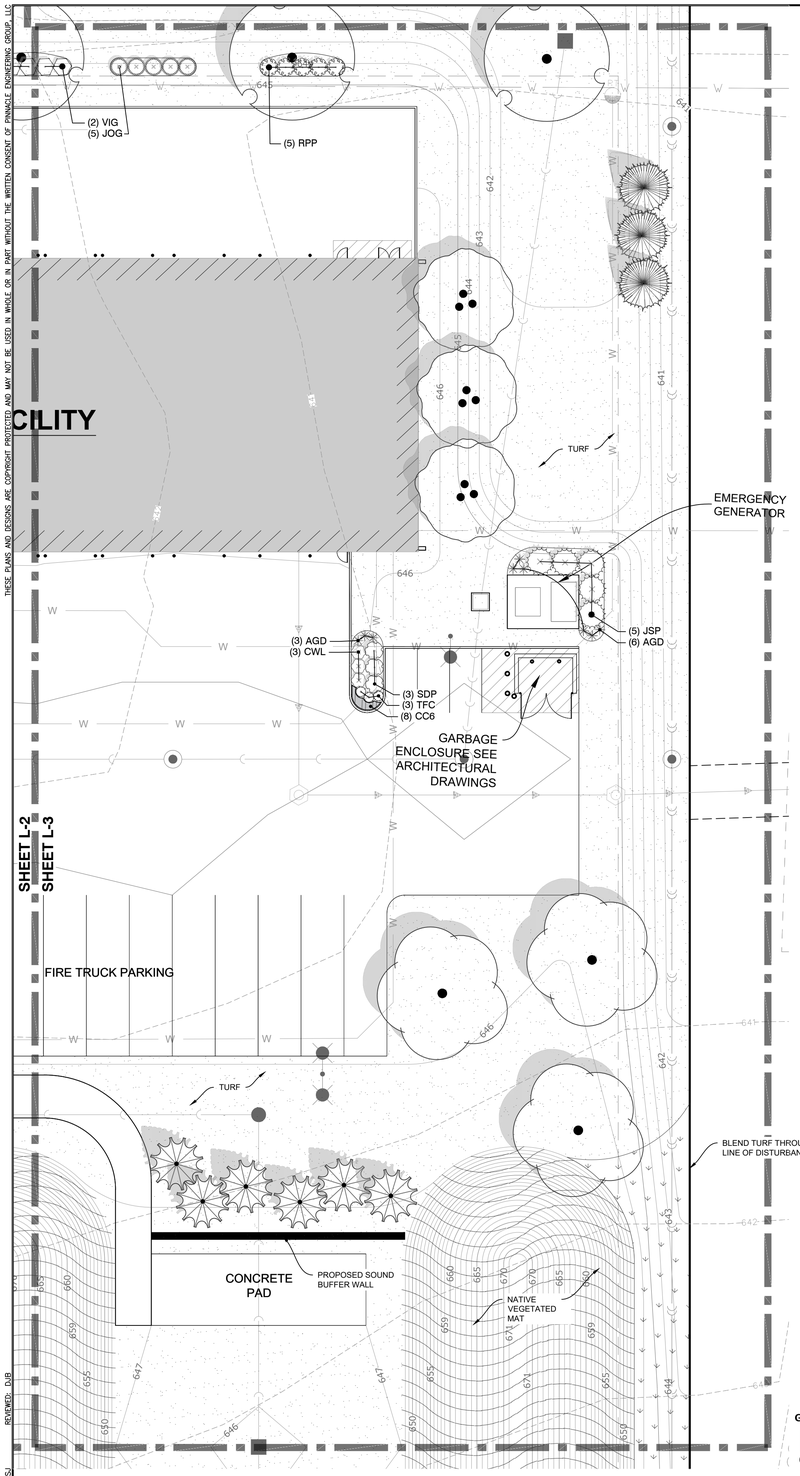
EXHIBIT E



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2	PRELIMINARY AND FINAL PLANNED UNIT DEVELOPMENT SUBMITTAL	02/20/25			

LANDSCAPE ENLARGEMENT

PEG JOB No. 5219.00-IL
PEG PM DAT
START DATE 01-21-25
SCALE 1" = 20'

SHEET L-3 OF L-5

DESIGNED - JSJ
DRAFTED - JSJ
REVIEWED - DJB

LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT - LANDSCAPE

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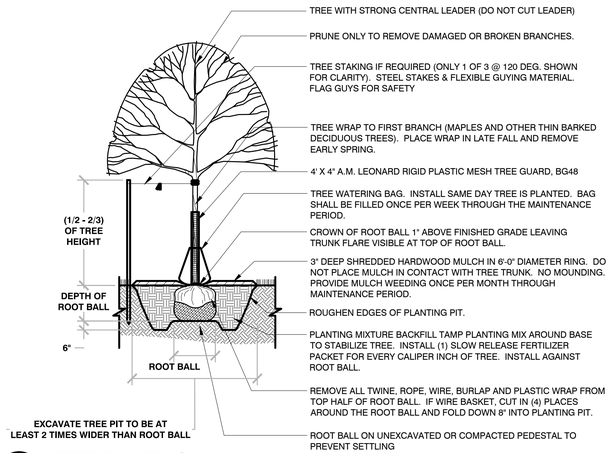
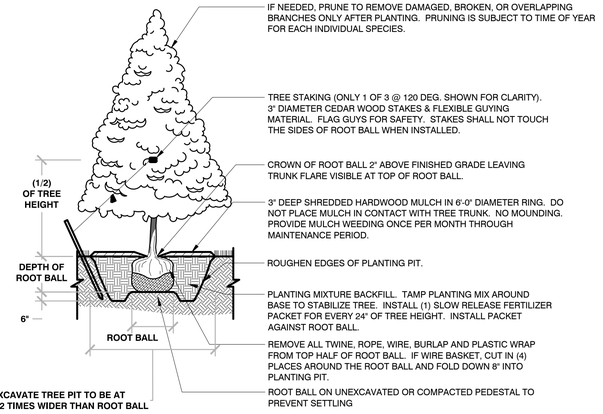
EXHIBIT E



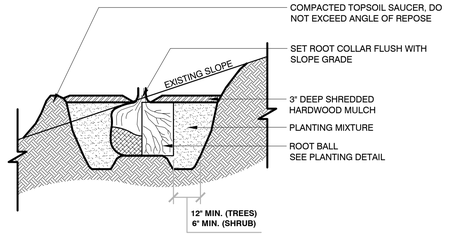
1 TREE PLANTING

1/4" = 1'-0" 329343-01



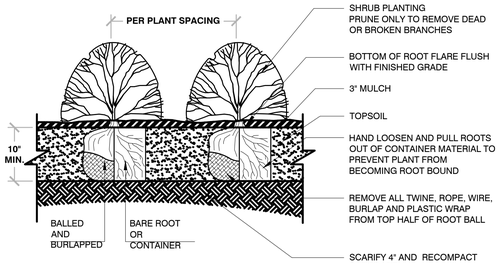
2 EVERGREEN TREE PLANTING

1/4" = 1'-0" 329343-03



3 TREE PLANTING ON SLOPE

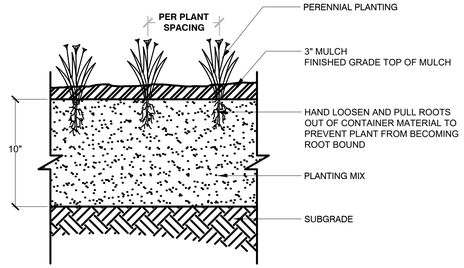
3/8" = 1'-0" 329343-02



BAREROOT PLANTING NOTES:
1. SOAK ROOTS IN WATER FOR AT LEAST ONE HOUR BUT NOT MORE THAN 24 HOURS PRIOR TO PLANTING.
2. SCARIFY SIDES AND BOTTOMS OF HOLE.
3. PROCEED WITH CORRECTIVE PRUNING OF THE TOP AND BOTTOM ROOTS.
4. TRANSFER PLANT DIRECTLY FROM WATER TO HOLE. SET PLANT SO THE ROOT FLARE IS APPROXIMATELY AT THE FINISHED SOIL ELEVATION. SPREAD ROOTS OUT EVENLY. PLUMB AND IMMEDIATELY BACKFILL WITH PLANTING SOIL MIX.
5. WATER THOROUGHLY WITHIN 2 HOURS TO SETTLE PLANTS AND FILL VOIDS.
6. BACKFILL VOIDS AND WATER SECOND TIME.
7. PLACE MULCH WITHIN 48 HOURS OF THE SECOND WATERING UNLESS SOIL MOISTURE IS EXCESSIVE.

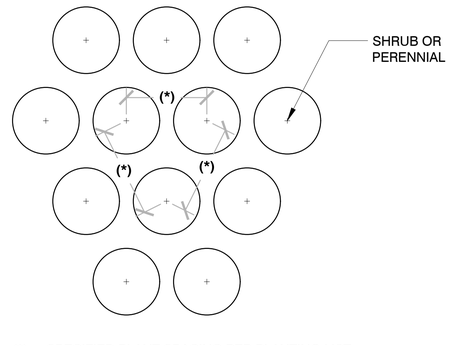
4 SHRUB PLANTING

1/2" = 1'-0" 329333-02



5 PERENNIAL PLANTING

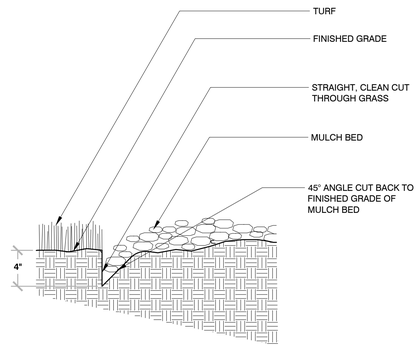
1" = 1'-0" 3293-01



(*) = SPECIFIED PLANT SPACING PER PLANTING LIST

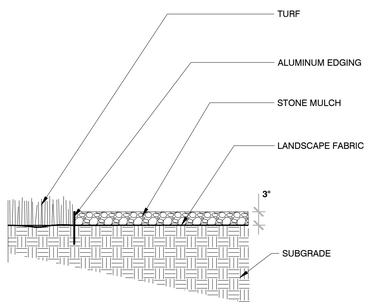
6 PLANT SPACING

3/4" = 1'-0" 3293-02



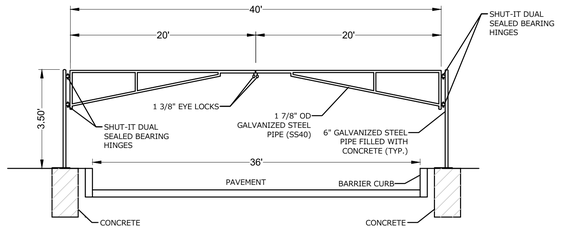
7 TRENCHED BED EDGE

3/4" = 1'-0" 3293-03



8 STONE MULCH ALONG TURF

3/4" = 1'-0" 329413-04



NOTES:
1. GATE TO BE PROVIDED WITH REFLECTORS FACING BOTH DIRECTIONS.
2. GATE TO OPEN TOWARDS THE PROPOSED PARKING LOT - AWAY FROM AND NOT TOWARDS ADJOINING PUBLIC ROADWAY / R.O.W.
3. GATE TO BE NORMALLY LOCKED, WITH KEY TO LOCK PROVIDED TO THE CITY OF CRESTHILL, THE LOCKPORT FIRE PROTECTION DISTRICT, POLICE DEPARTMENT, AND OTHER DESIGNATED GROUPS WHICH MAY NEED "EMERGENCY" ACCESS.
4. GATE AND POSTS TO BE BARRIER GATE BRANDS, SENTINEL 40 FT MANUAL DOUBLE SWING BARRIER GATE, GALVANIZED STEEL OR APPROVED EQUIVALENT.
5. THIS DETAIL IS CONCEPTUAL ONLY. PRIOR TO INSTALLATION, COMPLETE DETAILED DRAWINGS AND SPECIFICATIONS OF THE GATE, POSTS, LOCKING DEVICE, REFLECTIONS, CONCRETE FOUNDATIONS, ETC. ARE TO BE SUBMITTED BY THE CONTRACTOR, AND APPROVED BY THE OWNER, CITY, AND THE ENGINEER.

9 ACCESS ROAD GATE

NTS VIEW-482461095

PRELIMINARY AND FINAL PLANNED UNIT DEVELOPMENT PLANS

DRAFTED: JSJ
DESIGNED: JSJ
REVIEWED: DJB

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LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT
CREST HILL, ILLINOIS

REVISIONS

1	PUD RESUBMITTAL	02/10/25			
2	PRELIMINARY AND FINAL	02/20/25			
	PLANNED UNIT DEVELOPMENT				
	SUBMITTAL				

LANDSCAPE DETAILS

PEG JOB No. 5219.00-IL
PEG PM DAT
START DATE 01-21-25
SCALE VARIES

SHEET L-4 OF L-5

LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT - LANDSCAPE DETAILS

GENERAL PLANTING NOTES

1. THE LAYOUT OF ALL PLANTING BEDS AND INDIVIDUAL TREES AND SHRUBS SHALL BE STAKED BY THE CONTRACTOR IN ADVANCE OF INSTALLATION. FLAGGING, STAKES, OR PAINT MAY BE USED TO DELINEATE LOCATIONS AS SCALED FROM THE PLANS. AN APPROVED REPRESENTATIVE WILL REVIEW THESE LOCATIONS WITH THE CONTRACTOR AND MAKE MINOR ADJUSTMENTS AS NECESSARY. BED LAYOUT SHALL ALSO INCLUDE PERENNIAL GROUPINGS BY SPECIES.
2. THE CONTRACTOR IS RESPONSIBLE FOR INDEPENDENTLY DETERMINING THE PLANT MATERIAL QUANTITIES REQUIRED BY THE LANDSCAPE PLANS. REPORT ANY DISCREPANCIES TO THE LANDSCAPE ARCHITECT.
3. NO PLANT MATERIAL OR PLANT SIZE SUBSTITUTIONS WILL BE ACCEPTED WITHOUT APPROVAL BY THE LANDSCAPE ARCHITECT. ANY CHANGES SHALL BE SUBMITTED TO THE LANDSCAPE ARCHITECT IN WRITING PRIOR TO INSTALLATION.
4. ALL BNB STOCK SHALL BE NURSERY GROWN IN A CLAY LOAM SOIL FOR A MINIMUM OF THREE GROWING SEASONS WITHIN 200 MILES OF PROJECT LOCATION, IN A ZONE COMPATIBLE WITH USDA HARDINESS ZONE 5A. SEED SHALL BE PROVIDED FROM A NURSERY (WITHIN 200 MILES) WITH A SIMILAR PLANT HARDINESS ZONE AS PROJECT LOCATION. EXISTING SOIL SHALL BE AMENDED PER SOIL ANALYSIS REPORT TO ENSURE A PROPER GROWING MEDIUM IS ACHIEVED.
5. ALL PLANT MATERIAL SHALL COMPLY WITH STANDARDS DESCRIBED IN AMERICAN STANDARD OF NURSERY STOCK - Z60.1 ANSI. LANDSCAPE ARCHITECT OR OWNERS AUTHORIZED REPRESENTATIVE RESERVES THE RIGHT TO INSPECT AND POTENTIALLY REJECT ANY PLANT MATERIAL DEEMED TO NOT MEET THE REQUIRED STANDARDS.
6. ALL STOCK SHALL BE FREE OF DISEASES AND HARMFUL INSECTS, DAMAGE, DISORDERS AND DEFORMITIES.
7. TREES SHALL HAVE SINGLE, STRAIGHT TRUNKS AND WELL BALANCED BRANCH SYSTEMS. MUTLI-STEM TREES SHALL HAVE 3-4 STRAIGHT TRUNKS AND WELL BALANCED BRANCH SYSTEMS. HEIGHT-TO-CALIPER RATIOS SHALL BE CONSISTENT WITH THE LATEST EDITION OF ANSI Z60.1.
8. ROOT SYSTEMS SHALL BE LARGE ENOUGH TO ALLOW FOR FULL RECOVERY OF THE TREE, AND SHALL CONFORM TO STANDARDS AS THEY APPEAR IN THE MOST CURRENT REVISION OF THE AMERICAN ASSOCIATION OF NURSERYMEN'S AMERICAN STANDARD OF NURSERY STOCK ANSI Z60.1.
9. BNB TREES SHALL BE DUG WITH A BALL OF SOIL, NOT SOFT BALLED OR POTTED AND SHALL BE FIRM IN THEIR ROOTBALL. ROOT BALL SHALL BE WRAPPED (WITH BIODEGRADABLE MATERIAL). THE TREE ROOT FLARE, OR COLLAR, SHALL BE AT OR WITHIN THE TOP THREE INCHES OF GRADE.
10. ALL SPRING TREES MUST BE FRESHLY DUG IN THE MOST RECENT SPRING.
11. ALL AUTUMN TREES MUST BE FRESHLY DUG IN THE MOST RECENT AUTUMN.
12. TREES SHALL BE ALIVE, HEALTHY AND APPROPRIATELY MOIST, AT TIME OF DELIVERY. TREES SHALL BE SUBJECT TO INSPECTION FOR CONFORMITY TO SPECIFICATION REQUIREMENTS AND APPROVAL BY THE LANDSCAPE ARCHITECT OR OWNERS REPRESENTATIVE. THE LANDSCAPE ARCHITECT OR OWNERS REPRESENTATIVE RESERVES THE RIGHT TO REJECT ANY TREES THAT DO NOT MEET THE SPECIFICATIONS OR THAT HAVE BEEN DAMAGED DURING SHIPMENT. THE LANDSCAPE INSTALLER MUST RECEIVE APPROVAL FROM LANDSCAPE ARCHITECT FOR ANY SUBSTITUTIONS OR ALTERATIONS.
13. ALL PLANT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH PLANTING DETAILS.
14. ALL PLANTING BEDS SHALL HAVE A MINIMUM 10" DEPTH OF PREPARED SOIL. WITH APPROVAL, EXISTING SOIL MAY BE UTILIZED PROVIDED THE PROPER SOIL AMENDMENTS ARE TILLED THOROUGHLY INTO THE TOP 10" OF SOIL. REFER TO SOIL PLACEMENT NOTES.
15. WHILE PLANTING TREES AND SHRUBS, BACKFILL $\frac{2}{3}$ OF PLANTING HOLE AND WATER TREE THOROUGHLY BEFORE INSTALLING THE REMAINDER OF SOIL MIXTURE. AFTER ALL SOIL HAS BEEN PLACED INTO THE PLANTING HOLE WATER THOROUGHLY AGAIN.
16. THE CONTRACTOR MUST LABEL ALL TREES WITH THE COMMON AND BOTANICAL NAMES PRIOR TO FINAL INSPECTION.
17. OAK TREES SHALL BE TREATED FOR TWO-LINE CHESTNUT BORER BOTH AT THE TIME OF INSTALLATION AND DURING THE SECOND GROWING SEASON.
18. ALL PLANTING BEDS SHALL BE MULCHED WITH 3" DEEP SHREDDED HARDWOOD MULCH, AND ALL TREES PLANTED IN TURF AREAS SHALL RECEIVE A 3" DEEP SHREDDED HARDWOOD MULCHED RING AS SHOWN IN PLANTING DETAILS.
19. ALL PLANTING BEDS AND TREE RINGS SHALL HAVE A 4" DEEP TRENCHED BED EDGE CREATED BY EITHER A FLAT LANDSCAPE SPADE OR MECHANICAL EDGER. BED EDGES ARE TO BE CUT CLEAN AND SMOOTH AS SHOWN ON LANDSCAPE PLANS WITH A CLEAN DEFINITION BETWEEN TURF AND PLANTING AREAS.
20. ALL AREAS RECEIVING STONE MULCH TO RECEIVE STEEL BED EDGING. CONTRACTOR TO PROVIDE STEEL EDGING SPECIFICATION FOR APPROVAL PRIOR TO INSTALLATION. STEEL EDGING TO BE INSTALLED PER MANUFACTURERS RECOMMENDATION.
21. AREAS THAT CALL FOR STONE MULCH SHALL RECEIVE LANDSCAPE FABRIC WITH 3" DEEP ALPINE STONE MULCH. REFER TO STONE MULCH DETAILS . CONTRACTOR TO PROVIDE LANDSCAPE FABRIC AND MULCH SPECIFICATIONS TO LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION. LANDSCAPE FABRIC SHALL BE INSTALLED TO COVER THE ENTIRE AREA TO RECEIVE STONE MULCH WITH EACH SEAM OVERLAPPING A MINIMUM OF 6".
22. ALL TURF SEED AREAS SHALL RECEIVE A MINIMUM OF 6" DEPTH OF TOPSOIL. WITH APPROVAL, EXISTING SOIL MAY BE UTILIZED PROVIDED THE PROPER SOIL AMENDMENTS ARE TILLED THOROUGHLY INTO THE TOP 6" OF SOIL AS INDICATED IN THE SOIL PLACEMENT NOTES. REQUIRED AMENDMENTS SHALL BE DETERMINED BASED ON A SOIL ANALYSIS TO BE PERFORMED. ALL TOPSOIL AMENDMENT SHALL BE AGED WEED FREE MANURE OR CLASS 1 ORGANIC MATTER.
23. FOR LAWN SEEDING, APPLY A STARTER FERTILIZER AND SEED UNIFORMLY AT THE RATE RECOMMENDED BY MANUFACTURER, AND PROVIDE A MULCH COVERING THAT IS SUITABLE TO PROMOTE SEED GERMINATION AND TURF ESTABLISHMENT. CONTRACTOR TO PROVIDE FERTILIZER, SEED, AND MULCH SPECIFICATIONS TO THE LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION. EROSION CONTROL MEASURES ARE TO BE INSTALLED IN THOSE AREAS REQUIRING STABILIZATION (SWALES, SLOPES EXCEEDING 1:3, AND THOSE LOCATIONS INDICATED IN CIVIL DRAWINGS).
24. THE CONTRACTOR TO ENSURE A SMOOTH, UNIFORM QUALITY TURF IS ACHIEVED WITH NO BARE SPOTS LARGER THAN 6" X 6". ANY BARE SPOTS LARGER THAN 6" X6" AT THE END OF ESTABLISHMENT PERIOD SHALL BE RESEEDED AT THE CONTRACTORS EXPENSE TO OBTAIN A DENSE, UNIFORM LAWN.
25. ALL FINISH GRADING AND LAWN AREAS TO BE INSTALLED BY LANDSCAPE CONTRACTOR.
26. ALL DISTURBED AREAS WITHIN THE PROJECT SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION.
27. ALL DISTURBED AREAS OUTSIDE THE LIMITS OF WORK SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE OWNER.
28. THE CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES, INCLUDING ANY IRRIGATION LINES, PRIOR TO DIGGING. CONSULT J.U.L.I.E.
29. TREES SHALL BE INSTALLED NO CLOSER THAN:
    - -10 FEET FROM ANY FIRE HYDRANT
    - - 7 FEET FROM STORM SEWER, SANITARY SEWER LATERALS, DRIVEWAYS, AND WATER SERVICE
30. THE CONTRACTOR SHALL ENSURE THAT SOIL CONDITIONS AND COMPACTION ARE ADEQUATE TO ALLOW FOR PROPER DRAINAGE AROUND THE CONSTRUCTION SITE. UNDESIRABLE CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT PRIOR TO BEGINNING OF WORK. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE PROPER SURFACE AND SUBSURFACE DRAINAGE IN ALL AREAS
31. THE CONTRACTOR IS RESPONSIBLE FOR ALL PERMITS, FEES, AND LICENSES NECESSARY FOR THE INSTALLATION OF THIS PLAN.
32. THE CONTRACTOR IS TO REVIEW ALL SITE ENGINEERING DOCUMENTS PRIOR TO INSTALLATION. ANY CONFLICTS MUST BE REPORTED TO THE LANDSCAPE ARCHITECT. THESE LANDSCAPE DRAWINGS ARE FOR THE INSTALLATION OF PLANT MATERIALS ONLY UNLESS OTHERWISE STATED.
33. THE CONTRACTOR SHALL PROVIDE WATERING AND MAINTENANCE SERVICES FOR A PERIOD OF 60 DAYS TO ENSURE VEGETATIVE ESTABLISHMENT. UPON COMPLETION OF THE PROJECT, CONTRACTOR SHALL SUPPLY THE OWNER IN WRITING WITH ONGOING WATERING AND MAINTENANCE INSTRUCTIONS.
34. PLANT MATERIALS SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM TIME OF OWNER ACCEPTANCE. ONLY ONE REPLACEMENT PER PLANT WILL BE REQUIRED DURING THE WARRANTY PERIOD EXCEPT IN THE EVENT OF FAILURE TO COMPLY WITH THE SPECIFIED REQUIREMENTS.
35. THE CONTRACTOR IS RESPONSIBLE TO CONDUCT A FINAL WALK THROUGH WITH THE LANDSCAPE ARCHITECT AND OR OWNERS REPRESENTATIVE TO ANSWER QUESTIONS, PROVIDE INSTRUCTIONS, AND ENSURE THAT PROJECT REQUIREMENTS HAVE BEEN MET.

SOIL PLACEMENT NOTES

1. LOOSEN SUBGRADE TO A MINIMUM DEPTH INDICATED IN PLANTING NOTES USING A CULTI-MULCHER OR SIMILAR EQUIPMENT, AND REMOVE STONES MEASURING OVER 1-1/2 INCHES IN ANY DIMENSION, STICKS, RUBBISH AND OTHER EXTRANEOUS MATTER. AREAS ADJACENT TO WALKS AND PAVEMENT SHALL BE FREE OF EXCESS STONE AND PAVING MATERIALS SO AS TO PROVIDE AN UNINTERRUPTED CROSS SECTION OF SOIL. INTERNAL PARKING ISLANDS SHALL BE LOOSENED TO A DEPTH OF 30".
2. THOROUGHLY BLEND PLANTING SOIL MIX FOR PLANTING BED AREAS. (1 PART EXISTING SOIL, 1 PART TOPSOIL, 1 PART ORGANIC SOIL AMENDMENT, 2.9 POUNDS PER CUBIC YARD OF 4-4-4 ANALYSIS SLOW-RELEASE FERTILIZER)
3. TREE AND SHRUB HOLES SHALL BE FILLED WITH A PREPARED PLANTING MIXTURE OF 1 PART TOPSOIL, 2 PARTS PLANTING SOIL MIX.
4. SPREAD SOIL AND SOIL AMENDMENTS TO DEPTH INDICATED ON DRAWINGS, BUT NOT LESS THAN REQUIRED TO MEET FINISH GRADES AFTER NATURAL SETTLEMENT. (FINISH GRADE OF PLANTING BEDS SHALL BE 3" BELOW ALL ADJACENT SURFACES. FINISH GRADE OF TURF SEEDING AREAS SHALL BE 1" BELOW ALL ADJACENT HARD SURFACES, WALKS, AND CURBS.)
5. PLACE APPROXIMATELY 1/2 OF TOTAL AMOUNT OF SOIL REQUIRED. WORK INTO TOP OF LOOSENED SUBGRADE TO CREATE A TRANSITION LAYER, THEN PLACE REMAINDER OF THE SOIL. SOIL TRANSITION LAYER SHALL BE TILLED TO A MINIMUM DEPTH OF 6" BELOW THE DEPTH OF NEWLY PLACED SOIL. PARKING LOT ISLANDS SHALL BE CROWNED TO A HEIGHT OF 6" TO PROVIDE PROPER DRAINAGE UNLESS OTHERWISE NOTED.
6. DO NOT SPREAD IF PLANTING SOIL OR SUBGRADE IS FROZEN, MUDDY, OR EXCESSIVELY WET.
7. FINISH GRADING: GRADE SOIL TO A SMOOTH, UNIFORM SURFACE PLANE WITH A LOOSE, UNIFORMLY FINE TEXTURE.
8. ROLL AND RAKE, REMOVE RIDGES, AND FILL DEPRESSIONS TO MEET FINISH GRADES.
9. RESTORE PLANTING BEDS IF ERODED OR OTHERWISE DISTURBED AFTER FINISH GRADING AND BEFORE PLANTING.

NATIVE VEGETATED MAT: UPLAND MEADOW MIX

SPECIFICATIONS: AGREOL NATIVE VEGETATED MAT PLANTED WITH UPLAND MEADOW OR APPROVED EQUIVALENT.

1. THIS PRODUCT REQUIRES A LEAD TIME OF 12-16 WEEKS.
2. NATIVE VEGETATED MAT (NVM) SHALL HAVE A DEGRADABLE CORE.
3. SEED MIX TO BE USED IN THE NVM SHALL BE THE UPLAND MEADOW MIX.

PREPARATION:

1. ELIMINATE SURFACE AND SUBSURFACE COMPACTION TO ALLOW RAPID DEEP ROOT DEVELOPMENT OF NATIVES.
2. ELIMINATE ALL EXISTING VEGETATION. USE A NON SELECTIVE NON-PERSISTING HERBICIDE LIKE GLYPHOSATE OR REPEATED MECHANICAL WEED CONTROL CULTIVATIONS OR SMOTHERING TECHNIQUES.
3. ELIMINATE SURFACE ROUGHNESS (CLODS, SMALL TREE STUMPS, ETC.) TO PREVENT ROOT PRUNING FROM AIR GAPS.
4. AMEND SOIL WITH CLEAN COMPOST OR OTHER MEDIA AND MIX INTO SURFACE TO DECREASE TRANSITIONAL ROOTING TIME INTO EXISTING SOIL.
5. IF SOIL IS EXCESSIVELY DRY PRE WATER SITE OR WATER AS NVM IS LAID.

TRANSPORTATION:

1. PICK UP PRODUCT NO MORE THAN 48 HOUR PRIOR TO INSTALLATION.
2. NATIVE VEGETATED MAT MUST BE KEPT COOL AND MOIST DURING TRANSPORTATION TO AVOID ROOT HAIR PRUNING (DRY BACK). A REFRIGERATED AIR RIDE TRUCK MAY BE NECESSARY FOR LONG HAULS. A TARPED TRUCK OR TRAILER CAN BE SUFFICIENT FOR SHORT HAULS.

INSTALLATION:

1. HANDLE THE NATIVE VEGETATED MAT WITH CARE TO MINIMIZE ROOT AND VEGETATIVE DAMAGE. KEEP THE MATERIAL MOIST AND COOL AT ALL TIMES AT THE INSTALL SITE. INSTALL NVM WITHIN 48 HOURS OF BEING LOADED ONTO THE TRUCK.
2. INSTALL NVM SEAMS TIGHTLY TO PREVENT EDGE DRY BACK. TUCK THE EDGES OF NVM INTO THE GROUND BY CUTTING A LIP INTO THE SOIL WITH A SPADE. LAY NATIVE VEGETATED MAT SO THAT THE ENDS OF THE PIECES DO NOT LINE UP WITH THE ADJOINING ROW, BUT CREATE A STAGGERED PATTERN.
3. ANCHOR THE NVM WITH WOOD STAKES, LANDSCAPE STAPLES, J-HOOKED REBAR OR EARTH ANCHORS TO PREVENT THE NVM FROM MOVING, SLIPPING DOWN-SLOPE OR FLOATING IN A HYDRAULIC APPLICATION. THE NUMBER AND TYPE OF STAKES WILL BE SITE DEPENDENT.

IRRIGATION:

1. WATER THE NATIVE VEGETATED MAT AS SOON AS POSSIBLE AFTER INSTALLATION. IF SOIL IS EXCESSIVELY DRY PRE WATER SITE OR WATER AS NVM IS LAID. WETTING HOT EXPOSED SOIL WILL ALSO REDUCE HEAT INJURY TO PERISHABLE PRAIRIE ROOT HAIRS.
2. INITIALLY SOAK SOIL THE NVM TO A NEARLY SATURATED CONDITION.
3. WATER EVERY DAY FOR THE FIRST 5 TO 7 DAYS. PLAN FOR AT LEAST 1"+ PER WEEK.
4. FOR 2 TO 6 WEEKS AFTER INSTALLATION, WATER TO A WET CONDITION AND LET DRY BACK MAKING THE ROOTS GROW DEEPER FOR MOISTURE.

MAINTENANCE:

1. WATERING - THIS LOCATION FOR THE NATIVE VEGETATED MAT IS IN AN EXTREME CONDITION, THE NVM WILL HAVE TO BE WATERED. IT MAY TAKE 3 TO 5 YEARS TO GET PRAIRIE ROOTS TO THEIR FULL ROOTING POTENTIAL.
2. WEED CONTROL - THE THICK NATURE OF NATIVE VEGETATED MAT COUPLED WITH THE SOIL-LESS, WEED FREE GROWING MEDIA WILL HELP PREVENT MUCH OF THE WEED SEED BANK FROM GROWING THROUGH. ELIMINATING ALL PRE-EXISTING PERENNIAL VEGETATION PRIOR TO INSTALLATION WILL FURTHER REDUCE LONG TERM MAINTENANCE NEEDS. IF WIND BORNE WEEDS ARE INTRODUCED TO THE SITE, SIMPLY HAND WEED OR SELECTIVELY USE GLYPHOSATE HERBICIDE. DO NOT SPRAY WEEDY PLANTS AS THE DRIFT COULD ELIMINATE OTHER PLANTS CREATING HOLES IN THE DESIRABLE VEGETATION.
3. BURNING - BURNING CAN BE INTRODUCED IN YEAR THREE ONLY IF THE NVM CONTAINS THE DEGRADABLE CORE MATERIAL. NATIVE VEGETATED MAT BURNS SHOULD ONLY BE CONDUCTED BY TRAINED PROFESSIONALS.

SEED SOURCE AND NATIVE VEGETATIVE MAT (NVM) NOTES:

1. CADET 70/30 FESCUE BLUE SEED MIX FROM REINDERS INC
   FORMULA- 35% LONGFELLOW 3 CHEWINGS FESCUE
   35% WINDWARD / SILHOUETTE CHEWINGS FESCUE
   20% GRANITE KENTUCKY BLUEGRASS
   10% MERCURY KENTUCKY BLUEGRASS
   SEEDING RATE
   5 - 7 LBS. PER 1,000 SQ. FT.
   225 - 325 LBS. PER ACRE

2. NO MOW / LOW GROW SEED MIX FROM REINDERS INC
   FORMULA- 45% SPARTAN II HARD FESCUE
   40% QUATRO SHEEPS FESCUE
   15% TURF TYPE ANNUAL RYE GRASS
   SEEDING RATE
   5 - 7 LBS. PER 1,000 SQ. FT.
   225 - 325 LBS. PER ACRE

3. UPLAND MEADOW NVM FROM AGRECOL NATIVE SEED & PLANT NURSERY
   UPLAND MEADOWS ARE DRY, SANDY OR ROCKY ENVIRONMENTS WITH LITTLE TOPSOIL. THIS DIVERSE MIX OF DROUGHT-TOLERANT GRASSES AND WILDFLOWERS GROW BEST UNDER FULL SUN.
   #UPMD MESIC TO DRY
   FULL SUN TO PART SUN
   9.00 PLS LBS/ACRE
   87.00 SEEDS/ SQ. FT

Wildflowers		Oz/Acre
Achillea millefolium	Native Yarrow	0.75
Agastache foeniculum	Lavender Hyssop	0.50
Amorpha canescens	Leadplant	2.00
Asclepias syriaca	Common Milkweed	2.00
Chamaecrista fasciculata	Partridge Pea	8.00
Coreopsis palmata	Prairie Coreopsis	2.00
Dalea candida	White Prairie Clover	2.50
Dalea purpurea	Purple Prairie Clover	2.00
Echinacea purpurea	Purple Coneflower	8.00
Heliopsis helianthoides	Early Sunflower	4.00
Liatris pycnostachya	Prairie Blazing Star	1.50
Monarda fistulosa	Wild Bergamot	0.50
Monarda punctata	Dotted Mint	1.00
Ratibida pinnata	Yellow Coneflower	6.00
Rosa arkansana	Prairie Wild Rose	2.00
Rudbeckia hirta	Black-Eyed Susan	2.00
Solidago speciosa	Showy Goldenrod	0.50
Tradescantia ohiensis	Ohio Spiderwort	4.00
Verbena stricta	Hoary Vervain	1.50
Zizia aptera	Heart-Leaved Golden Alexanders	1.00
Grasses, Sedges, & Rushes		**Oz/Acre**
Bouteloua curtipendula	Side Oats Grama	40.00
Bouteloua gracilis	Blue Grama	4.00
Elymus canadensis	Canada Wild Rye	16.00
Juncus tenuis	Path Rush	0.25
Koeleria cristata (macrantha)	June Grass	4.00
Schizachyrium scoparium	Little Bluestem	16.00
Sorghastrum nutans	Indian Grass	4.00
Sporobolus heterolepis	Prairie Dropseed	8.00

LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT - LANDSCAPE GENERAL NOTES

PRELIMINARY AND FINAL PLANNED UNIT DEVELOPMENT PLANS

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DRAFTED: JSJ
DESIGNED: JSJ
REVIEWED: DJB

LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT
CREST HILL, ILLINOIS

REVISIONS

1	PUD RESUBMITTAL	01/10/25			
2	PRELIMINARY AND FINAL	02/20/25			
	PLANNED UNIT DEVELOPMENT				
	SUBMITTAL				

LANDSCAPE GENERAL NOTES

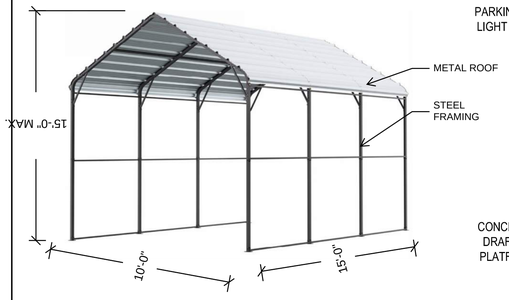
PEG JOB No. 5219.00-JL
PEG PM DAT
START DATE 01-21-25
SCALE NA

SHEET
L-5
OF
L-5

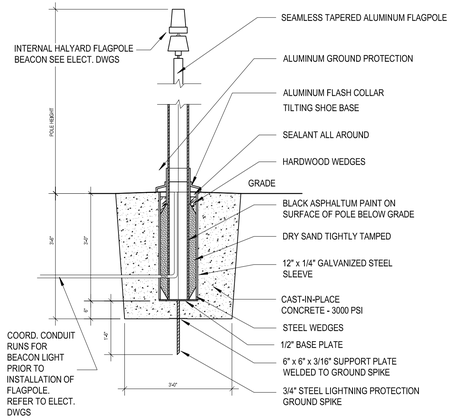
EXHIBIT ‘F’

ARCHITECTURAL SITE PLAN AND DETAILS

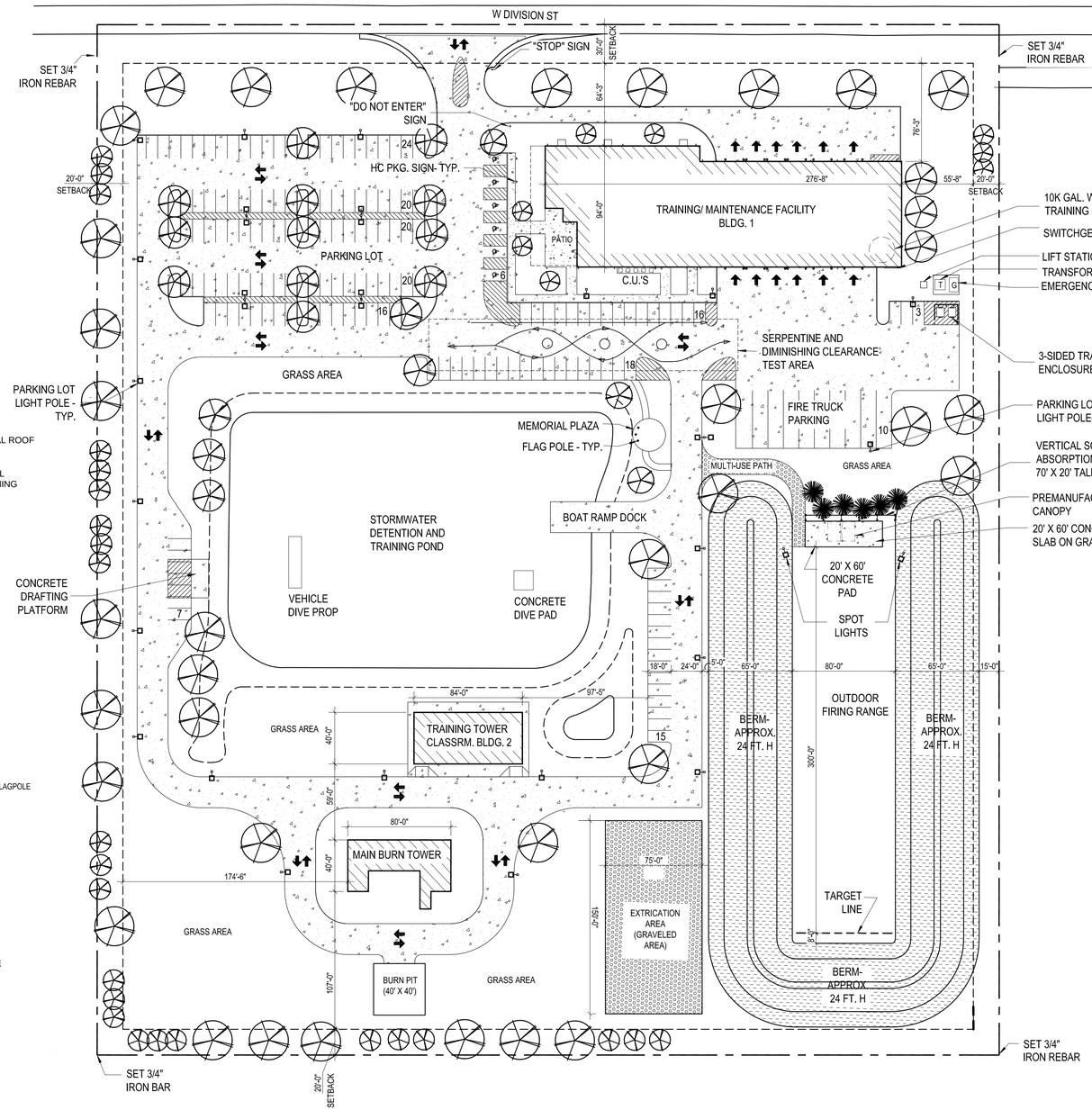
EXHIBIT 'F'



3 | PRE-MANUFACTURED CANOPY
NTS



2 | DETAIL - FLAG POLE
1/2" =1'-0"



1 | OVERALL ARCHITECTURAL SITE PLAN
1" = 50'-0"

GENERAL NOTES
1. REFER TO CIVIL DRAWINGS FOR ADDITIONAL INFORMATION.
2. REFER TO LANDSCAPE DRAWINGS FOR ADDITIONAL INFORMATION.
3. REFER TO ELECTRICAL DRAWINGS FOR PHOTOMETRIC PLAN.
4. CONCRETE PAVEMENT THROUGHOUT.
5. BUILDINGS ON SITE:
   - A. BUILDING 1 TRAINING/ MAINTENANCE FACILITY:
     - BUILDING FOOTPRINT: 23,070 GSF
     - OVERALL BUILDING AREA: 24,240 GSF
   - B. BUILDING 2 TOWER TRAINING CLASSROOM: 3,360 GSF
   - C. MAIN BURN BUILDING:
     - BUILDING FOOTPRINT: 2,560 GSF
     - OVERALL BUILDING AREA: 7,892 GSF
   - D. OUTDOOR FIRING RANGE STRUCTURE:
     - CONRETE PAD 1,200 GSF
     - PRE-MANUFACTURED CANOPY: 300 GSF
6. IMPERVIOUS AREA, M-1 ZONING:
   - A. PROPERTY AREA: 12.856 ACRES (560,000 SF)
   - B. ALLOWABLE (85%): 10.928 ACRES (476,155 SF)
   - C. ACTUAL (43.65%): 5.612 ACRES (244,454 SF)

TRAFFIC DIRECTION OF TRAVEL
LIGHT POLE
BUILDING FOOTPRINT
CONCRETE, REFER TO CIVIL DRAWINGS
BERM
GRAVEL
EXISTING ROAD
PROPERTY LINE
BUILDING SETBACK

LEGEND - SITE PLAN
12" = 1'-0"

PARKING REQUIREMENTS
(CITY OF CREST HILL ZONING ORDINANCE)

USE (OCCUPANCY)	REQ'D # PKG.	ACTUAL
BUSINESS (ZONING ORD. 11.8-5)	38 (CLASSROOMS) 4 (EMPLOYEES)	152
WAREHOUSE (ZONING ORD. 11.8-4)	4 EMPLOYEES 12 VEHICLES	10
TOTAL	58	169
ACCESSIBLE PKG.	3	6
TOTAL	61	175

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CIVIL
PINNACLE ENGINEERING GROUP
1051 E MAIN ST
EAST DUNDEE, ILLINOIS, 60118
847.551.5300 (O)
ILLINOIS STATE CERTIFICATE OF AUTHORITY
NO. 184.006289-0010035.003296

STRUCTURAL
JOHNSON WILBUR ADAMS, INC
330 S NAPERVILLERD, SUITE 300
WHEATON, ILLINOIS, 60187
630.653.5060 (O)
ILLINOIS STATE CERTIFICATE OF AUTHORITY
NO. 184-005176

MEP
WT GROUP
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224.293.6333 (O)
ILLINOIS STATE CERTIFICATE OF AUTHORITY
NO. 184.00757-0-0015

CONSTRUCTION MANAGER
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801 WARRENVILLE RD
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309.404.4700 (O)
ILLINOIS STATE CERTIFICATE OF AUTHORITY
NO. NA

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NO	DATE	ISSUANCE DESCRIPTION
1	08-05-2024	PUD SUBMITTAL
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3	02-20-2025	PRELIMINARY & FINAL PLANNED UNIT DEVELOPMENT PLAN

LOCKPORT TOWNSHIP FPD TRAINING GROUNDS
LOCKPORT FIRE PROTECTION DISTRICT
W DIVISION ST, LOCKPORT, ILLINOIS 60441

PRELIMINARY & FINAL PLANNED UNIT DEVELOPMENT PLAN

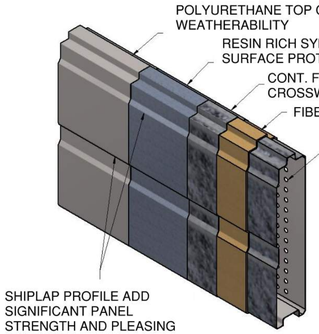
OVERALL ARCHITECTURAL SITE PLAN

SHEET NO.
AS0.1

JOB NO. 23-3640.02

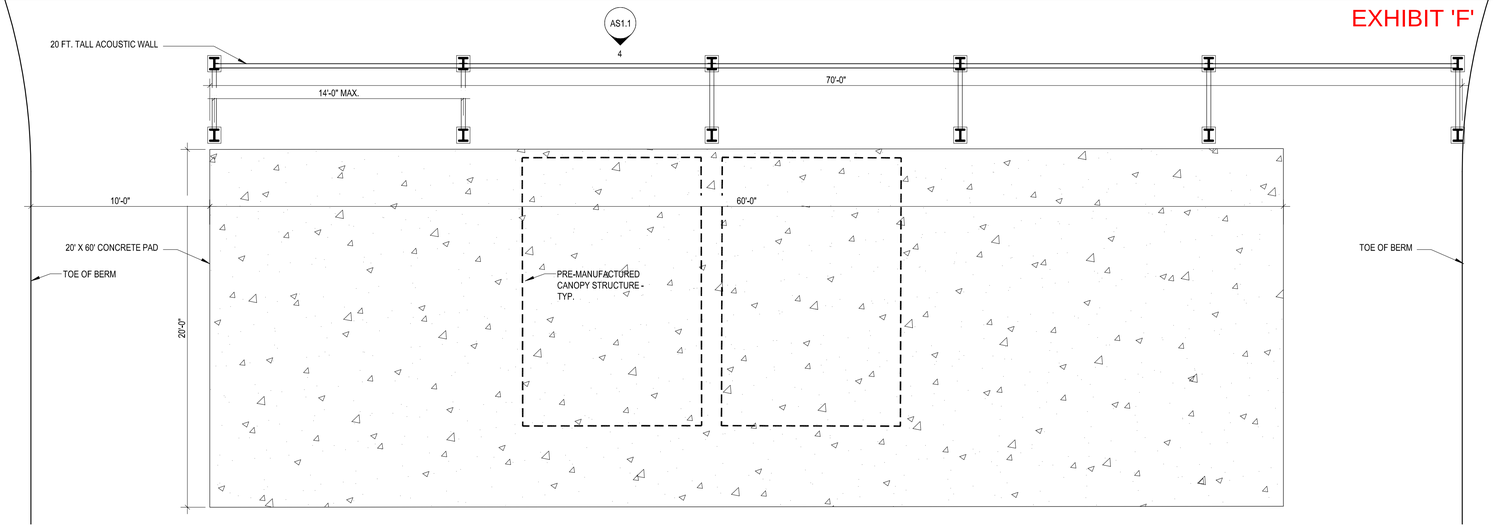
2/20/2025
C:\revit temp\2022\23-3640.02_Lockport_Township_FPD_Trning_Grnds-2022_central_CD_taylorwillsTS2NW.rvt

EXHIBIT 'F'

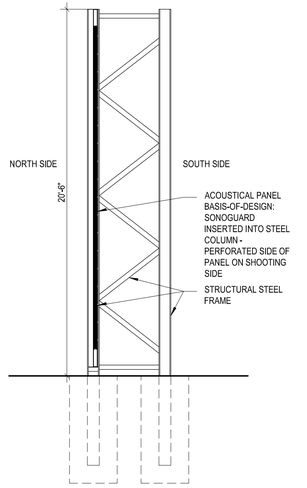


Sound Fighter® Systems' SonaGuard® Noise Barrier Panels

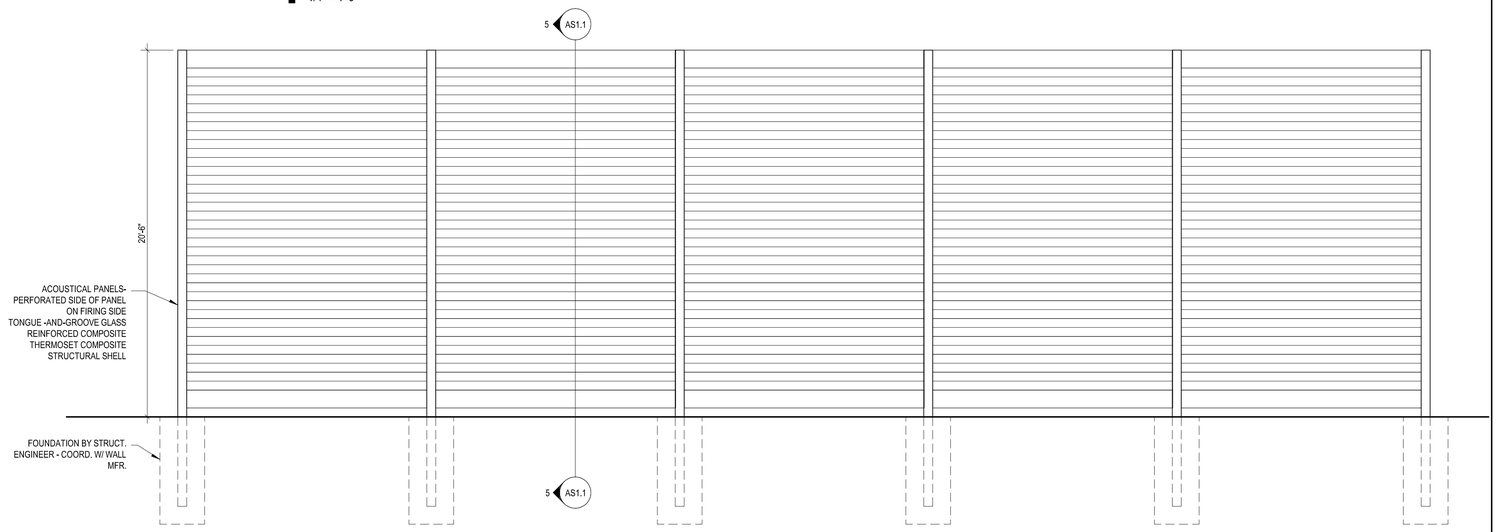
7 | ACOUSTICAL WALL - BASIS OF DESIGN
NTS



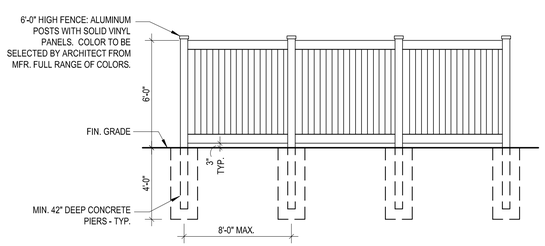
6 | PLAN - CONCRETE PAD AND ACOUSTICAL WALL
1/4" = 1'-0"



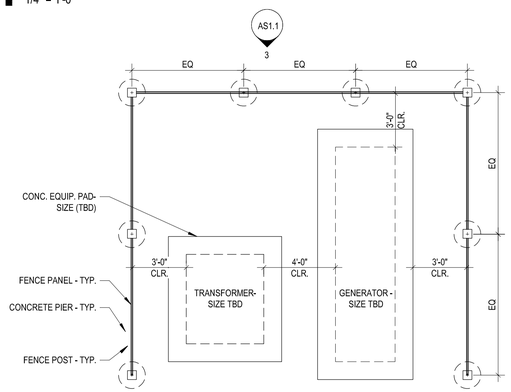
5 | SECTION - ACOUSTICAL WALL
1/4" = 1'-0"



4 | ELEVATION (STREET SIDE) - ACOUSTICAL WALL
1/4" = 1'-0"

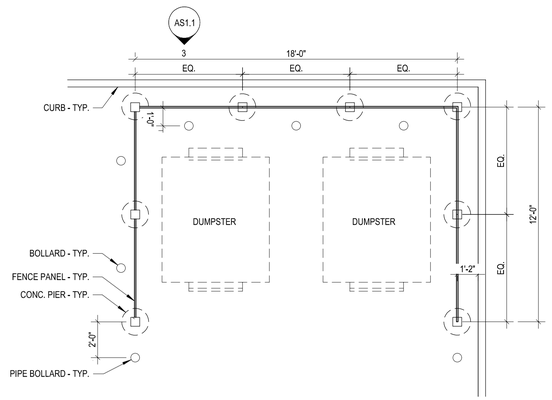


3 | FENCE ELEVATION - TYP.
1/4" = 1'-0"



NOTE: EXACT SIZE OF FENCE AND EQUIPMENT PADS TO BE DETERMINED ONCE EQUIPMENT IS SIZED

2 | GENERATOR AND TRANSFORMER PLAN
1/4" = 1'-0"



1 | TRASH ENCLOSURE PLAN
1/4" = 1'-0"

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ISSUANCE

NO	DATE	DESCRIPTION
3	02-20-2025	PRELIMINARY & FINAL PLANNED UNIT DEVELOPMENT PLAN

LOCKPORT TOWNSHIP FPD TRAINING GROUNDS
LOCKPORT FIRE PROTECTION DISTRICT
W DIVISION ST, LOCKPORT, ILLINOIS 60441

PRELIMINARY & FINAL PLANNED UNIT DEVELOPMENT PLAN

SITE DETAILS

SHEET NO.
AS1.1

JOB NO. 23-3640.02

EXHIBIT ‘G’

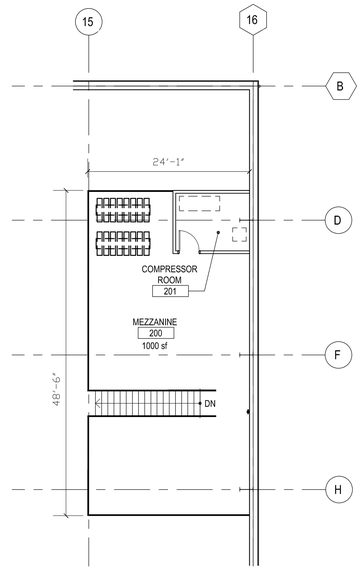
TRAINING/ MAINTENANCE FACILITY
(BUILDING 1)
PLANS AND ELEVATIONS

EXHIBIT 'G'

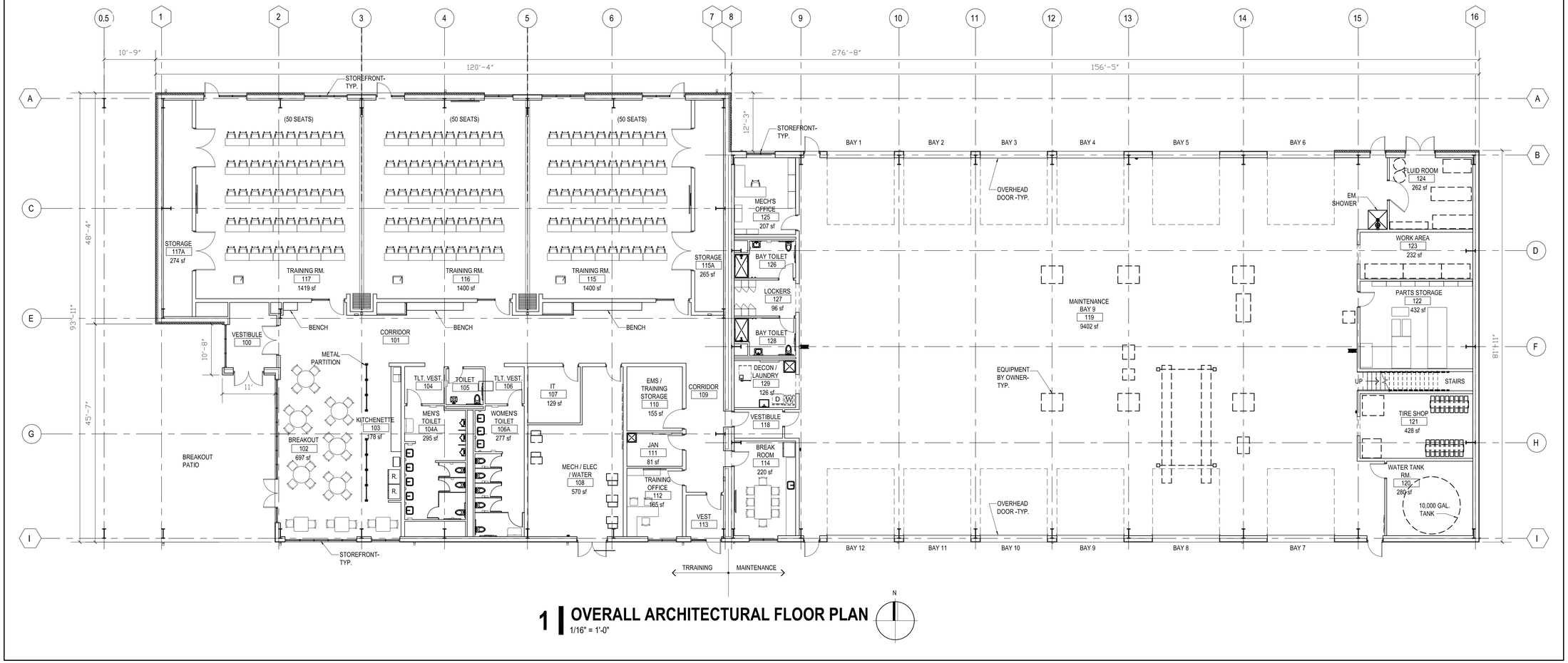
GENERAL INFORMATION

1. BUILDING SIZE:

OVERALL FOOTPRINT :	23,070	SQ. FT.
TRAINING/CLASSROOM SIDE:	10,285	SQ. FT.
MAINTENANCE SIDE:	12,785	SQ. FT.
MEZZANINE:	1,170	SQ. FT.
TOTAL BUILDING AREA:	24,240	SQ. FT.



2 | MEZZANINE PLAN
3/32" = 1'-0"



1 | OVERALL ARCHITECTURAL FLOOR PLAN
1/16" = 1'-0"

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TRAINING GROUNDS
LOCKPORT FIRE PROTECTION DISTRICT
W DIVISION ST, LOCKPORT, ILLINOIS 60441

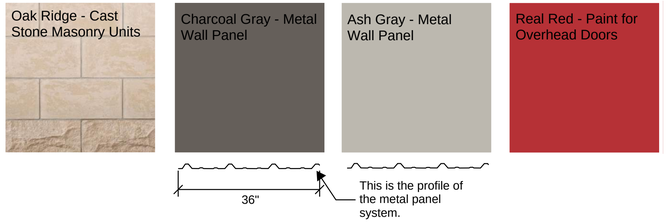
PRELIMINARY & FINAL PLANNED UNIT DEVELOPMENT PLAN

TRAINING/ MAINTENANCE FACILITY (BUILDING 1) OVERALL FLOOR PLAN

SHEET NO.
A1.1

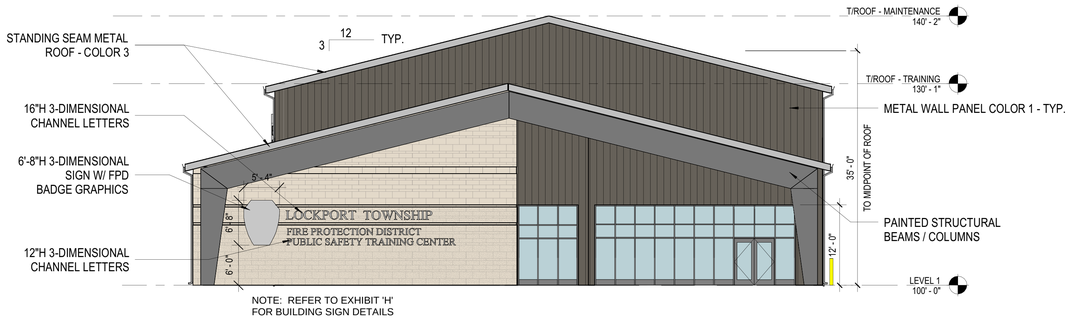
JOB NO. 23-3640.02

EXHIBIT 'G'



MASONRY CALCULATIONS

	REQUIRED	ACTUAL
TOTAL MASONRY SF	20%	23%
ONE FACADE WALL	80%	-
- NORTH FACADE WALL		40%
- WEST FACADE WALL		44%



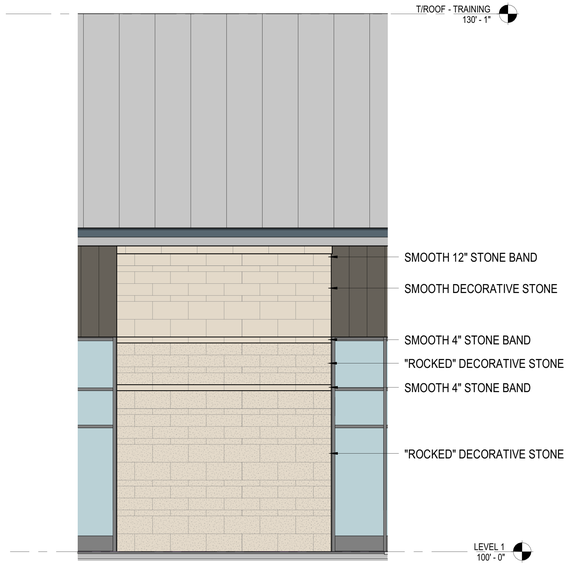
2 BUILDING ELEVATION - WEST

3/32" = 1'-0"

MATERIAL CALCULATIONS

MASONRY: 44%
METAL: 56%

NOTE: GLAZING AND OPENINGS ARE NOT INCLUDED IN PERCENTAGES OF MATERIALS.



3 MASONRY WALL DETAIL

1/4" = 1'-0"

1 BUILDING ELEVATION - NORTH

3/32" = 1'-0"

MATERIAL CALCULATIONS

MASONRY: 40%
METAL: 60%

NOTE: GLAZING AND OPENINGS ARE NOT INCLUDED IN PERCENTAGES OF MATERIALS.

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ILLINOIS STATE CERTIFICATE OF AUTHORITY NO. 184-007570-0015

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309.404.4700 (O)
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TRAINING GROUNDS
LOCKPORT FIRE PROTECTION DISTRICT
W DIVISION ST, LOCKPORT, ILLINOIS 60441

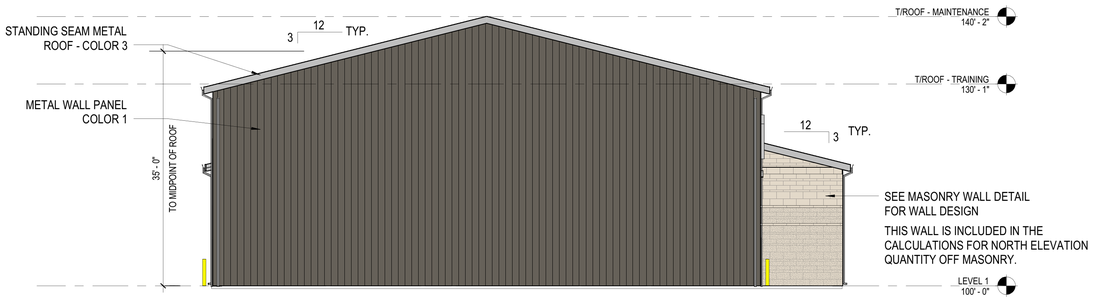
PRELIMINARY & FINAL PLANNED UNIT DEVELOPMENT PLAN

EXTERIOR ELEVATIONS

SHEET NO.
A1.2

JOB NO. 23-3640.02

EXHIBIT 'G'



2 BUILDING ELEVATION - EAST

3/32" = 1'-0"

1 BUILDING ELEVATION - SOUTH

3/32" = 1'-0"

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PRELIMINARY & FINAL PLANNED UNIT DEVELOPMENT PLAN

EXTERIOR ELEVATIONS

SHEET NO.
A1.3

JOB NO. 23-3640.02

EXHIBIT 'G'

2 VIEW FROM NORTHEAST

1 VIEW FROM NORTHWEST

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LOCKPORT FIRE PROTECTION DISTRICT
W DIVISION ST, LOCKPORT, ILLINOIS 60441

PRELIMINARY & FINAL PLANNED UNIT DEVELOPMENT PLAN

PERSPECTIVES

SHEET NO.
A1.4

JOB NO. 23-3640.02

2/18/2025 2:15:18 PM
Autodesk Docs://Lockport Township Fire Protection District/23-3640.02_Lockport_Township_FPD_Trning_Grnds-2022_CD.rvt

EXHIBIT 'G'

2 | VIEW FROM SOUTHWEST

1 | VIEW FROM SOUTHEAST

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PRELIMINARY & FINAL PLANNED UNIT DEVELOPMENT PLAN

PERSPECTIVES

SHEET NO.
A1.5

JOB NO. 23-3640.02

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Autodesk Docs://Lockport Township Fire Protection District/23-3640.02_Lockport_Township_FPD_Trning_Grnds-2022_CD.rvt

EXHIBIT ‘H’

TRAINING/ MAINTENANCE FACILITY
(BUILDING 1)
SIGNAGE DETAILS

EXHIBIT 'H'

2 NORTH WALL SIGNAGE
1/2" = 1'-0"

3 DIMENSIONAL BADGE
1/2" = 1'-0"

1 WEST WALL SIGNAGE
1/2" = 1'-0"

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LOCKPORT FIRE PROTECTION DISTRICT
W DIVISION ST, LOCKPORT, ILLINOIS 60441

PRELIMINARY & FINAL PLANNED UNIT DEVELOPMENT PLAN

SIGNAGE DETAILS

SHEET NO.
A3.0

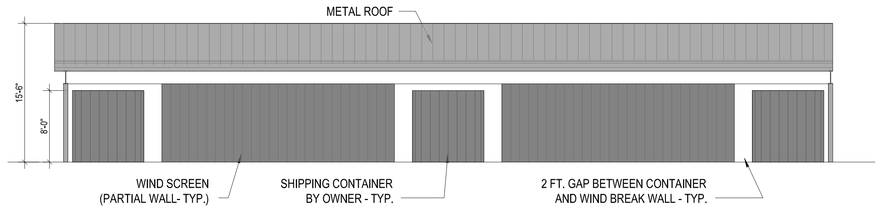
JOB NO. 23-3640.02

EXHIBIT 'I'

TOWER TRAINING CLASSROOM
(BUILDING 2)
PLAN AND ELEVATIONS

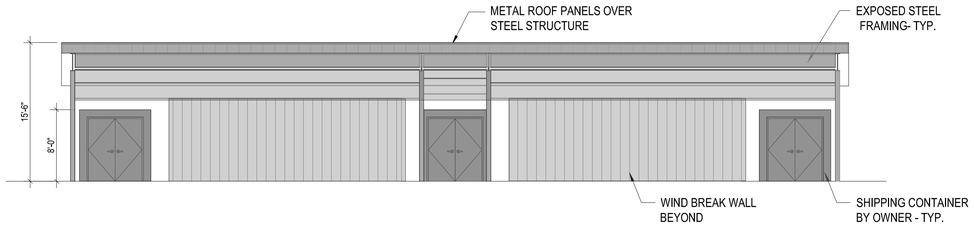
EXHIBIT 'I'

ACCESSORY STRUCTURE



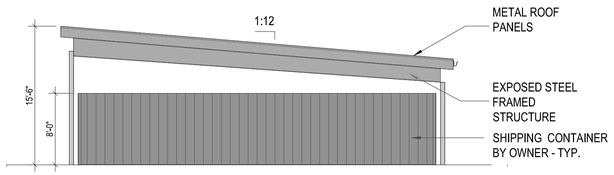
5 | NORTH ELEVATION - BUILDING 2

1/8" = 1'-0"



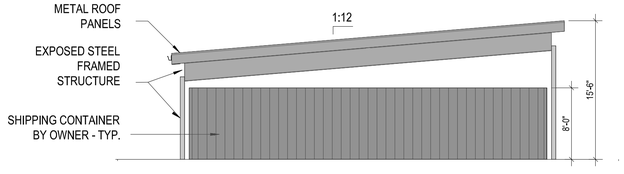
4 | SOUTH ELEVATION - BUILDING 2

1/8" = 1'-0"



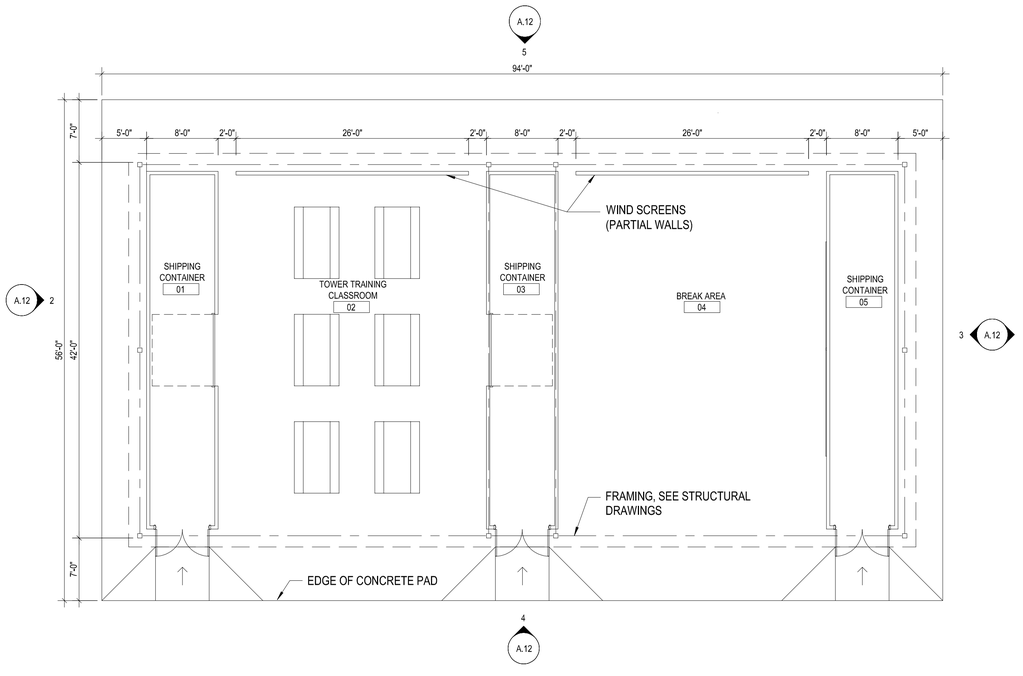
3 | EAST ELEVATION - BUILDING 2

1/8" = 1'-0"



2 | WEST ELEVATION - BUILDING 2

1/8" = 1'-0"



1 | FLOOR PLAN- BUILDING 2

1/8" = 1'-0"

N

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1211 W 22nd St, Suite 700
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630.574.8300 OFFICE
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ILLINOIS PROFESSIONAL DESIGN
FIRM #184-000350

CIVIL
PINNACLE ENGINEERING GROUP
1051 E MAIN ST
EAST DUNDEE, ILLINOIS, 60118
847.551.5300 (O)
ILLINOIS STATE CERTIFICATE OF AUTHORITY
NO. 184.006289-0010035.003296

STRUCTURAL
JOHNSON WILBUR ADAMS, INC
330 S NAPERVILLERD, SUITE 300
WHEATON, ILLINOIS, 60187
630.653.9060 (O)
ILLINOIS STATE CERTIFICATE OF AUTHORITY
NO. 184-005176

MEP
WT GROUP
2675 PRATUM AVE
HOFFMAN ESTATES, ILLINOIS, 60192
224.293.6333 (O)
ILLINOIS STATE CERTIFICATE OF AUTHORITY
NO. 184.007570-0015

CONSTRUCTION MANAGER
CORE CONSTRUCTION GROUP
801 WARRENVILLE RD
LISLE, ILLINOIS, 60532
309.404.4700 (O)
ILLINOIS STATE CERTIFICATE OF AUTHORITY
NO. 5691-171-5

NOT FOR CONSTRUCTION

FOR REVIEW ONLY

Not for regulatory approval, permit or construction.

The information on this document is preliminary or incomplete, not for construction, recording purposes, or implementation.

ISSUANCE		
NO	DATE	DESCRIPTION
1	08-05-2024	PUD SUBMITTAL
2	01-10-2025	PUD RESUBMITTAL
3	02-20-2025	PRELIMINARY & FINAL PLANNED UNIT DEVELOPMENT PLAN

LOCKPORT TOWNSHIP FPD
TRAINING GROUNDS
LOCKPORT FIRE PROTECTION DISTRICT
W DIVISION ST, LOCKPORT, ILLINOIS 60441

PRELIMINARY & FINAL PLANNED UNIT DEVELOPMENT PLAN

TOWER TRAINING CLASSROOM (BUILDING 2) PLAN AND ELEVATIONS

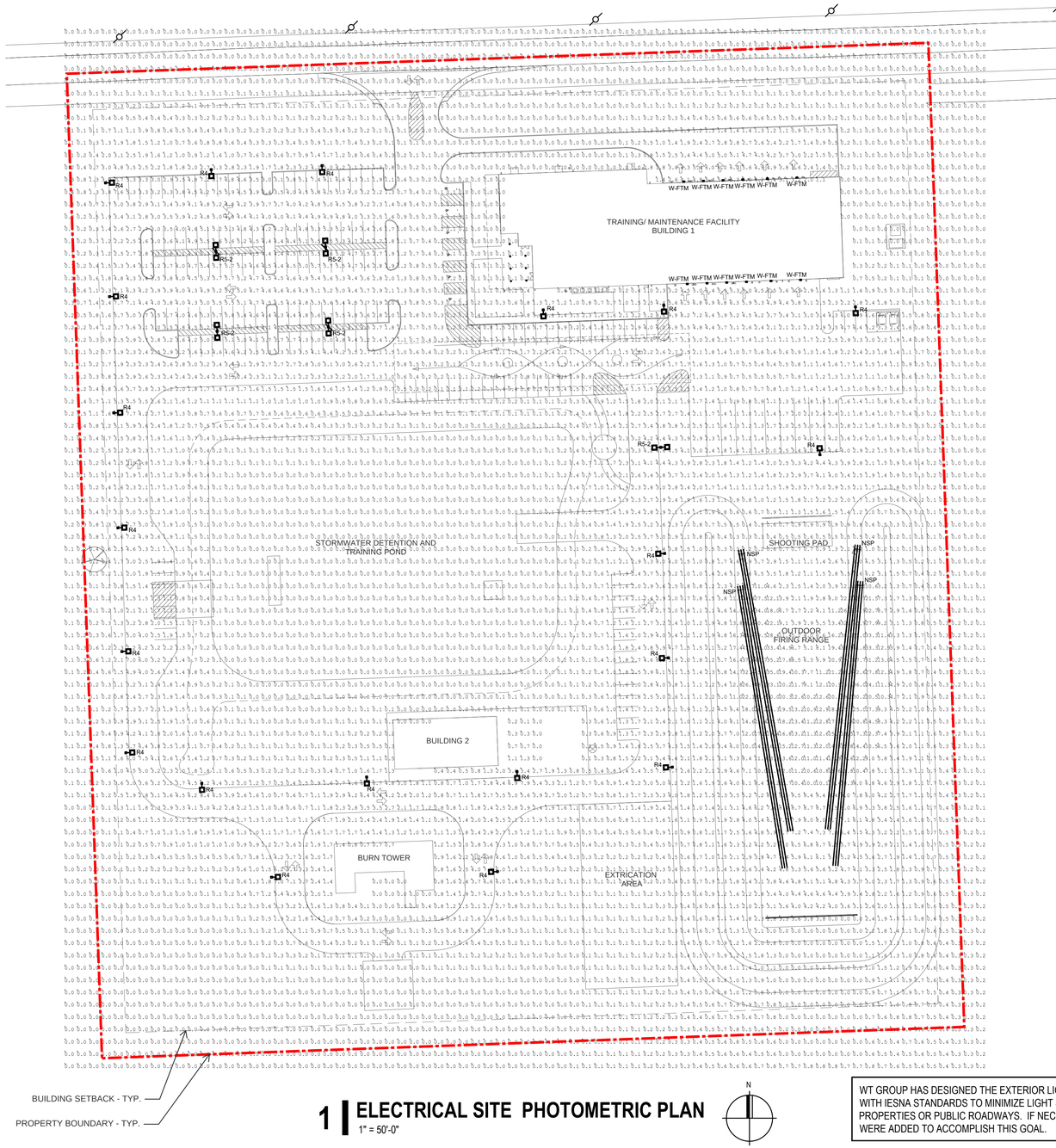
SHEET NO.
A2.1

JOB NO. 23-3640.02

EXHIBIT ‘J’

OVERALL SITE PLAN PHOTOMETRICS

EXHIBIT J



1 | ELECTRICAL SITE PHOTOMETRIC PLAN

1" = 50'-0"

WT GROUP HAS DESIGNED THE EXTERIOR LIGHTING IN ACCORDANCE WITH IESNA STANDARDS TO MINIMIZE LIGHT SPILLAGE ONTO ADJACENT PROPERTIES OR PUBLIC ROADWAYS. IF NECESSARY, LIGHT SHIELDS WERE ADDED TO ACCOMPLISH THIS GOAL.

Luminaire Schedule							
Symbol	Qty	Label	LLF	Lumens	Watts	Description	[MANUFAC]
	12	NSP	0.930	82790	645.6021	RSXF4 LED P8 40K NSP	Lithonia Lighting
	19	R4	0.930	16573	133.14	RSX1 LED P4 40K R4	Lithonia Lighting
	6	R5-2	0.930	16793	133.14	RSX1 LED P4 40K R5	Lithonia Lighting
	12	W-FTM	0.930	4742	46.6589	WDGE2 LED P4 40K 70CRI TFTM	Lithonia Lighting

Calculation Summary						
Label	Units	Avg	Max	Min	Avg/Min	Max/Min
CalcPts_1	Fc	1.65	51.8	0.0	N.A.	N.A.
Object_11_Side_1	Fc	48.00	54	38	1.26	1.42
Overflow Parking Lot 1	Fc	1.65	2.7	0.8	2.06	3.38
Parking Lot 1	Fc	3.05	9.1	0.1	30.50	91.00
Target	Fc	47.84	54.0	38.0	1.26	1.42

Notes :
1. Calculation Work Plane : Grade
2. Fixture Mounting Height : 20'-0" ABOVE GRADE
3. Calculation Point Spacing : 10'x10'

fgma
FGM Architects Inc.
1211 W 22nd St, Suite 700
Oak Brook, Illinois 60523
630.574.8300 OFFICE
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ILLINOIS PROFESSIONAL DESIGN FIRM #184-000350

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ISSUANCE		
NO	DATE	DESCRIPTION
1	08-05-2024	PUD SUBMITTAL
2	01-10-2025	PUD RESUBMITTAL
3	02-20-2025	PRELIMINARY & FINAL PLANNED UNIT DEVELOPMENT PLAN

LOCKPORT TOWNSHIP FPD
TRAINING GROUNDS
LOCKPORT FIRE PROTECTION DISTRICT
W DIVISION ST, LOCKPORT, ILLINOIS 60441

PRELIMINARY & FINAL PLANNED UNIT DEVELOPMENT PLAN

OVERALL SITE PLAN PHOTOMETRICS

SHEET NO.
ES-1.1

JOB NO. 23-3640.02

7/28/2024 1:48:54 PM
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EXHIBIT J

RSX1 LED
Area Luminaire

Catalog Number

Notes

Type: FIXTURE TYPE R-4 AND R5

Hit the Tab key or mouse over the page to see all interactive elements.

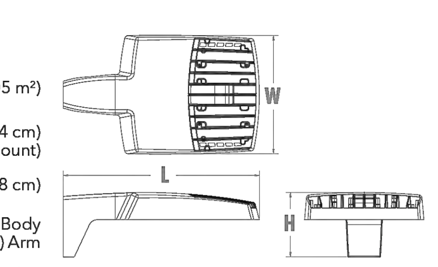
Introduction

The new RSX LED Area family delivers maximum value by providing significant energy savings, long life and outstanding photometric performance at an affordable price. The RSX1 delivers 7,000 to 17,000 lumens allowing it to replace 70W to 400W HID luminaires.

The RSX features an integral universal mounting mechanism that allows the luminaire to be mounted on most existing drill hole patterns. This "no-drill" solution provides significant labor savings. An easy-access door on the bottom of mounting arm allows for wiring without opening the electrical compartment. A mast arm adaptor, adjustable integral slipfitter and other mounting configurations are available.

Specifications

EPA (ft²@0°):	0.57 ft² (0.05 m²)
Length:	21.8" (55.4 cm) (SPA mount)
Width:	13.3" (33.8 cm)
Height:	3.0" (7.6 cm) Main Body; 7.2" (18.4 cm) Arm
Weight (SPA mount):	22.0 lbs (10.0 kg)



design select

Items marked by a shaded background qualify for the Design Select program and ship in 15 days or less. To learn more about Design Select, visit www.acuitybrands.com/designselect.
*See ordering tree for details

Design Select options indicated by this color background.

Ordering Information

EXAMPLE: RSX1 LED P4 40K R3 MVOLT SPA DDBXD

Series	Performance Package	Color Temperature	Distribution	Voltage	Mounting
RSX1 LED	P1 P2 P3 P4	30K 3000K 40K 4000K 50K 5000K	R2 Type 2 Wide R3 Type 3 Wide R3S Type 3 Short R4 Type 4 Wide R4S Type 4 Short R5 Type 5 Wide ¹ R5S Type 5 Short ¹ AFR Automotive Front Row AFRR90 Automotive Front Row Right Rotated AFRL90 Automotive Front Row Left Rotated	MVOLT (120V-277V) ² HVOLT (347V-480V) ³ XVOLT (277V-480V) ⁴ (use specific voltage for options as noted) 120 ⁵ 277 ⁵ 208 ⁵ 347 ⁵ 240 ⁵ 480 ⁵	SPA Square pole mounting (3.0" min. SQ pole for 1 at 90°, 3.5" min. SQ pole for 2, 3, 4 at 90°) RPA Round pole mounting (3.2" min. dia. RND pole for 1 at 90°, 2 at 180°, 3 at 120°, 3.0" min. dia. RND pole for 2, 3, 4 at 90°) MA Mast arm adaptor (fits 2-3/8" OD horizontal tenon) IS Adjustable slipfitter (fits 2-3/8" OD tenon) ⁶ WBA Wall bracket ¹ WBASC Wall bracket with surface conduit box AASP Adjustable tilt arm square pole mounting ⁶ AARP Adjustable tilt arm round pole mounting ⁶ AAWB Adjustable tilt arm with wall bracket ⁶ AAWSC Adjustable tilt arm wall bracket and surface conduit box ⁶

Options		Finish
Shipped Installed HS House-side shield ⁷ PE Photocontrol, button style ⁸,⁹ PER7 Seven-wire twist-lock receptacle only (no controls) ⁹,¹⁰,¹¹ SF Single fuse (120, 277, 347) ⁵ DF Double fuse (208, 240, 480) ⁵ SPD20KV 20KV Surge pack (10KV standard) FAO Field adjustable output ⁹ DMG 0-10V dimming extend out back of housing for external control (control ordered separate) ⁹	**Shipped Installed** ***Standalone and Networked Sensors/Controls (factory default settings, see table page 9)** NLTAIR2 PIRHN nLight AIR generation 2, with Networked, Bi-Level motion/ambient sensor ⁹,¹²,¹³,¹⁴ BAA Buy America(n) Act and/or Build America Buy America Qualified CCE Coastal Construction ¹⁵ *Note: NLTAIR2 PIRHN with nLight Air can be used as a standalone or networked solution. Sensor coverage pattern is affected when luminaire is tilted. **Shipped Separately (requires some field assembly)** EGS External glare shield ⁷ EGFV External glare full visor (360° around light aperture) ⁷ BS Bird spikes ¹⁶	DDBXD Dark Bronze DBLXD Black DNAXD Natural Aluminum DWHXD White DDBTXD Textured Dark Bronze DBLBXD Textured Black DNATXD Textured Natural Aluminum DWHGXD Textured White

Ordering Information

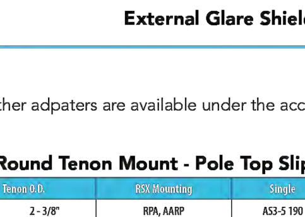
Accessories
Ordered and shipped separately.

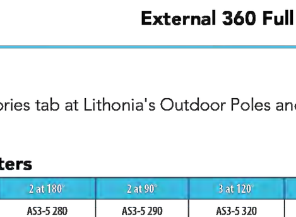
RSX1HS	RSX1 House side shield (includes 1 shield)
RSX1HSAFRR U	RSX1 House side shield for AFR rotated optics (includes 1 shield)
RSX1EGS (FINISH) U	External glares hield (specify finish)
RSX1EGFV (FINISH) U	External glare full visor (specify finish)
RSXRPA (FINISH) U	RSX Universal round pole adaptor plate (specify finish)
RSXWBA (FINISH) U	RSX WBA wall bracket (specify finish) ¹
RSXSCB (FINISH) U	RSX Surface conduit box (specify finish, for use with WBA, WBA not included)
DLL127F 1.5 JU	Photocell -SSL twist-lock (120-277V) ¹⁷
DLL347F 1.5 CUL JU	Photocell -SSL twist-lock (347V) ¹⁷
DLL480F 1.5 CUL JU	Photocell -SSL twist-lock (480V) ¹⁷
DSHORT SBK U	Shorting cap ¹⁷

NOTES
1. Any Type 5 distribution, is not available with WBA.
2. MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
3. HVOLT driver operates on any line voltage from 347-480V (50/60 Hz).
4. XVOLT driver not available with P1 or P2. XVOLT driver operates on any line voltage from 277V-480V (50/60 Hz). XVOLT not available with fusing (SF or DF) and not available with PE.
5. Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
6. Maximum tilt is 90° above horizontal.
7. It may be ordered as an accessory.
8. Requires MVOLT or 347V.
9. Two or more of the following options cannot be combined including PE, DMG, PER7, FAO and NLTAIR2 PIRHN. (Exception: PE and FAO can be combined; also PE and DMG can be combined.)
10. Compatible with standard twist-lock photocells for dusk to dawn operation or advanced control nodes that provide 0-10V dimming signals. Wire 4/Wire 5 wired to dimming leads on driver. Wire6/Wire7 capped inside luminaire. Twistlock photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories. Shorting Cap included.
11. For units with option PER7, the mounting must be restricted to +/- 45° from horizontal aim per ANSI C136.10-2010.
12. Must be ordered with PIRHN.
13. Requires MVOLT or HVOLT.
14. Must be ordered with NLTAIR2. For additional information on PIRHN visit here.
15. CCE option not available with WBA, WBASC, AASP, AARP, AAWB, AAWBSC, EGS, EGFV and BS.
16. Must be ordered with fixture for factory pre-drilling.
17. Requires luminaire to be specified with PER7 option. Ordered and shipped as a separate line item from Acuity Brands Controls.

External Shields


House Side Shield

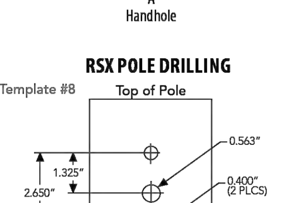

External Glare Shield


External 360 Full Visor

Pole/Mounting Informatiion

Accessories including bullhorns, cross arms and other adpaters are available under the accessories tab at Lithonia's Outdoor Poles and Arms product page. Click here to visit Accessories.

HANDHOLE ORIENTATION



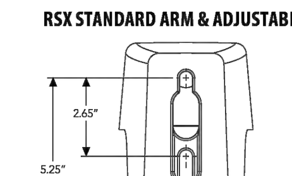
Round Tenon Mount - Pole Top Slipfitters

Tenon O.D.	RSX Mounting	Single	2 at 180°	2 at 90°	3 at 120°	3 at 90°	4 at 90°
2 - 3/8"	RPA, AARP	AS3-5 190	AS3-5 280	AS3-5 290	AS3-5 320	AS3-5 390	AS3-5 490
2 - 7/8"	RPA, AARP	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
4"	RPA, AARP	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490

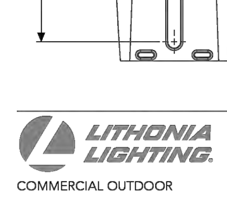
Drill/Side Location by Configuration Type

Drilling Template	Mounting Option	Single	2 @ 180	2 @ 90	3 @ 120	3 @ 90	4 @ 90
	Head Location	Side B	Side B & D	Side B & C	Round Pole Only	Side B, C & D	Side A, B, C & D
#8	Drill Nomenclature	DM19AS	DM28AS	DM29AS	DM32AS	DM39AS	DM49AS

RSX POLE DRILLING
Template #8



RSX STANDARD ARM & ADJUSTABLE ARM



RSX1 - Luminaire EPA

*Includes luminaire and integral mounting arm. Other tenons, arms, brackets or other accessories are not included in this EPA data.

Mounting Type	Tilt	Single	2 @ 90	2 @ 180	3 @ 90	3 @ 120	4 @ 90	2 Side by Side	3 Side by Side	4 Side by Side
SPA - Square Pole Adaptor	0°	0.57	1.03	1.05	1.52	1.36	2.03	1.31	1.7	2.26
RPA - Round Pole Adaptor	0°	0.62	1.08	1.15	1.62	1.46	2.13	1.36	1.8	2.36
MA - Mast Arm Adaptor	0°	0.49	0.95	0.89	1.36	1.2	1.87	1.23	1.54	2.1
IS - Integral Slipfitter AASP/AARP - Adjustable Arm Square/Round Pole	0°	0.57	1.03	1.05	1.52	1.36	2.03	1.31	1.7	2.26
	10°	0.68	1.34	1.33	2	1.74	2.64	1.35	2.03	2.71
	20°	0.87	1.71	1.73	2.56	2.26	3.42	1.75	2.62	3.49
	30°	1.24	2.19	2.3	3.21	2.87	4.36	2.49	3.73	4.97
	40°	1.81	2.68	2.98	3.85	3.68	5.30	3.62	5.43	7.24
	45°	2.11	2.92	3.44	4.2	4.08	5.77	4.22	6.33	8.44
	50°	2.31	3.17	3.72	4.52	4.44	6.26	4.62	6.94	9.25
	60°	2.71	3.66	4.38	5.21	5.15	7.24	5.43	8.14	10.86
	70°	2.78	3.98	4.54	5.67	5.47	7.91	5.52	8.27	11.03
	80°	2.76	4.18	4.62	5.97	5.76	8.31	5.51	8.27	11.03
	90°	2.73	4.25	4.64	6.11	5.91	8.47	5.45	8.18	10.97

RSXF4 LED
Floodlight

Catalog Number

Notes

Type: FIXTURE TYPE NSP

Hit the Tab key or mouse over the page to see all interactive elements.

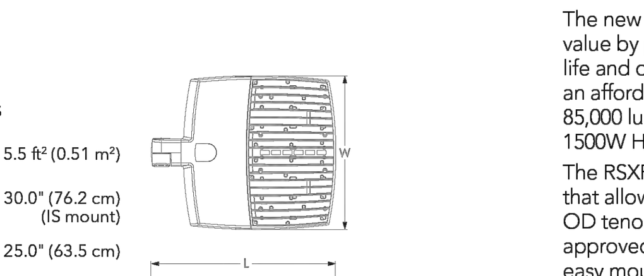
Introduction

The new RSXF LED Flood family delivers maximum value by providing significant energy savings, long life and outstanding photometric performance at an affordable price. The RSXF4 delivers 40,000 to 85,000 lumens allowing it to replace 1000W and 1500W HID floodlights.

The RSXF features an adjustable integral slipfitter that allows the luminaire to be mounted on a 2-3/8" OD tenon. Integral cover/wire box serves as an approved splice compartment allowing for fast, easy mounting and wiring without opening the electrical compartment. A yoke and other mounting configurations are available.

Specifications

EPA (ft²@45°):	5.5 ft² (0.51 m²)
Length:	30.0" (76.2 cm) (IS mount)
Width:	25.0" (63.5 cm)
Height:	3.0" (7.6 cm) Main Body; 7.6" (19.3 cm) Arm
Weight (max):	68 lbs (30.8 kg)



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*See ordering tree for details

Design Select options indicated by this color background.

Ordering Information

EXAMPLE: RSXF4 LED P8 40K WFL MVOLT IS DDBXD

Series	Performance Package	Color Temperature	Distribution	Voltage	Mounting
RSXF4 LED	P1 P2 P3 P4 P5 P6 P7 ¹ P8 ¹	30K 3000K 40K 4000K 50K 5000K	AWFD Area Wide Forward WFL Wide Flood MFL Medium Flood ¹ NFL Narrow Flood SP Spot NSP Narrow Spot	MVOLT (120V-277V) ² HVOLT (347V-480V) ³ XVOLT (277V-480V) ⁴ (use specific voltage for options as noted) 120 ⁵ 277 ⁵ 208 ⁵ 347 ⁵ 240 ⁵ 480 ⁵	IS Adjustable slipfitter (fits 2-3/8" OD tenon) ⁶ YKC64 Yoke with 16-3 SO cord, 4ft ⁶ AASP Adjustable tilt arm square pole mounting ⁶ AARP Adjustable tilt arm round pole mounting ⁶ AAWB Adjustable tilt arm with wall bracket ⁶ AAWSC Adjustable tilt arm wall bracket and surface conduit box ⁶

Options		Finish
Shipped Installed PE Photocontrol, button style ⁷,⁸ PER7 Seven-wire twist-lock receptacle only (no controls) ⁸,⁹,¹⁰ SF Single fuse (120, 277, 347) ⁵ DF Double fuse (208, 240, 480) ⁵ SPD20KV 20KV Surge pack (10KV standard) FAO Field adjustable output ⁸ DMG 0-10V dimming extend out back of housing for external control (control ordered separate) ⁸ DS Dual switching ⁸,¹¹	**Shipped Installed** ***Standalone and Networked Sensors/Controls (factory default settings, see table page 5)** NLTAIR2 PIRHN nLight AIR generation 2 ,with Networked Bi-Level motion/ambient sensor ⁸,¹²,¹³,¹⁴ BAA Buy America(n) Act and/or Build America Buy America Qualified CCE Coastal Construction ¹⁵ **Shipped Separately (requires some field assembly)** UBV Upper/bottom visor ¹⁶ FV Full visor ¹⁶ BS Bird spikes ¹⁷ *Note: NLTAIR2 PIRHN with nLight Air can be used as a standalone dimming sensor with out-of-box settings or as a wireless networked solution. See factory default settings table. Sensor coverage pattern is affected when luminaire is tilted.	DDBXD Dark Bronze DBLXD Black DNAXD Natural Aluminum DWHXD White DDBTXD Textured Dark Bronze DBLBXD Textured Black DNATXD Textured Natural Aluminum DWHGXD Textured White

Ordering Information

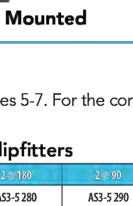
Accessories
Ordered and shipped separately.

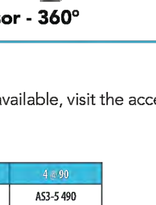
RSXF4FV (FINISH) U	RSXF4 Full visor (specify finish)
RSXF4UBV (FINISH) U	RSXF4 Upper/bottom visor (specify finish)
DLL127F 1.5 JU	Photocell -SSL twist-lock (120-277V) ¹⁸
DLL347F 1.5 CUL JU	Photocell -SSL twist-lock (347V) ¹⁸
DLL480F 1.5 CUL JU	Photocell -SSL twist-lock (480V) ¹⁸
DSHORT SBK U	Shorting cap ¹⁸

NOTES
1. MFL not available with performance packages P7 and P8.
2. MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
3. HVOLT driver operates on any line voltage from 347-480V (50/60 Hz).
4. XVOLT driver operates on any line voltage from 277V-480V (50/60 Hz). XVOLT not available with fusing (SF or DF) and not available with PE.
5. Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
6. Maximum tilt is 90° above horizontal.
7. Requires MVOLT or 347V.
8. Two or more of the following options cannot be combined including PE, DMG, PER7, FAO, DS and NLTAIR2 PIRHN. (Exception: PE and FAO can be combined; also PE and DMG can be combined.)
9. Compatible with standard twist-lock photocells for dusk to dawn operation or advanced control nodes that provide 0-10V dimming signals. Wire 4/Wire 5 wired to dimming leads on driver. Wire6/Wire7 capped inside luminaire. Twistlock photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories. Shorting Cap included.
10. For units with option PER7, the mounting must be restricted to +/- 45° from horizontal aim per ANSI C136.10-2010.
11. DS requires (2) separately switched circuits. DS provides 50/50 fixture operation via (2) different sets of leads using (2) drivers. DS only available with packages P4, P5, P6, P7 and P8.
12. Must be ordered with PIRHN.
13. Must be ordered with NLTAIR2. For additional information on PIRHN visit here.
14. Requires MVOLT or HVOLT.
15. CCE option not available with AASP, AARP, AAWB, AAWBSC, UVB, FV and BS.
16. May be ordered as an accessory.
17. Must be ordered with fixture for factory pre-drilling.
18. Requires luminaire to be specified with PER7 option. Ordered and shipped as a separate line item from Acuity Brands Controls.

External Shields


UBV Visor - Top Mounted

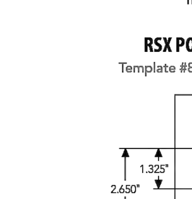

UBV Visor - Bottom Mounted


Full Visor - 360°

Pole/Mounting Informatiion

Accessories including bullhorns, cross arms and other adapters are available on pages 5-7. For the complete line of accessories available, visit the accessories tab at Lithonia's Outdoor Poles and Arms product page. Click here to visit Accessories.

HANDHOLE ORIENTATION



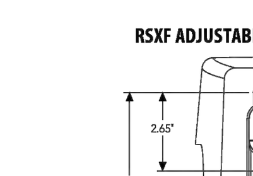
Round Tenon Mount - Pole Top Slipfitters

Tenon O.D.	RSX Mounting	Single	2 @ 180	2 @ 90	3 @ 120	3 @ 90	4 @ 90
2 - 3/8"	AARP	AS3-5 190	AS3-5 280	AS3-5 290	AS3-5 320	AS3-5 390	AS3-5 490
2 - 7/8"	AARP	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
4"	AARP	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490

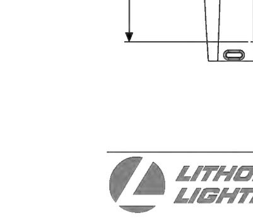
Drill Side Location by Configuration Type

Drilling Template	Mounting Option	Single	2 @ 180	2 @ 90	3 @ 120	3 @ 90	4 @ 90
	Head Location	Side B	Side B & D	Side B & C	Round Pole Only	Side B, C & D	Side A, B, C & D
#8	Drill Nomenclature	DM19AS	DM28AS	DM29AS	DM32AS	DM39AS	DM49AS

RSX POLE DRILLING
Template #8



RSXF ADJUSTABLE ARM



RSXF4 - Luminaire EPA

*Includes luminaire and integral mounting arm. Other tenons, arms, brackets or other accessories are not included in this EPA data.

Mounting Type	Tilt	Single	2 @ 90	2 @ 180	3 @ 90	3 @ 120	4 @ 90	2 Side by Side	3 Side by Side	4 Side by Side
IS - Integral Slipfitter AASP/AARP - Adjustable Arm Square/Round Pole	0°	0.69	1.34	1.36	1.80	2.00	2.66	1.39	2.08	2.78
	10°	1.13	2.05	2.22	3.10	2.91	4.01	2.26	3.39	4.52
	20°	1.91	3.14	3.57	4.84	4.26	6.23	3.82	5.73	7.64
	30°	3.23	4.70	5.70	7.25	6.52	9.31	6.46	9.69	12.92
	40°	4.71	6.04	7.96	9.37	9.04	12.04	9.42	14.13	18.84
	45°	5.46	6.72	9.10	10.47	10.31	13.40	10.92	16.38	21.84
	50°	5.58	7.29	9.51	11.46	10.93	14.56	11.16	16.74	22.32
	60°	5.81	8.50	10.35	13.44	12.41	16.89	11.62	17.43	23.24
	70°	6.13	9.29	10.98	14.92	13.50	18.57	12.26	18.39	24.52
	80°	6.28	9.88	11.47	15.86	14.22	19.72	12.56	18.84	25.12
	90°	6.43	10.17	11.78	16.26	14.56	20.33	12.86	19.29	25.72
YK - Yoke Mounting	0°	0.88	1.62	1.72	2.19	2.41	3.21	1.66	2.49	3.32
	10°	1.31	2.32	2.58	3.42	3.36	4.55	2.53	3.80	5.06
	20°	2.09	3.41	3.93	5.16	4.71	6.77	4.09	6.14	8.18
	30°	3.41	4.97	6.06	7.57	6.97	9.85	6.73	10.10	13.46
	40°	4.89	6.31	8.32	9.69	9.49	12.58	9.69	14.54	19.38
	45°	5.64	6.99	9.46	10.79	10.76	13.94	11.19	16.79	22.38
	50°	5.76	7.56	9.87	11.78	11.38	15.10	11.43	17.15	22.86
	60°	5.99	8.77	10.71	13.76	12.86	17.43	11.89	17.84	23.78
	70°	6.31	9.56	11.34	15.24	13.95	19.11	12.53	18.80	25.06
	80°	6.46	10.15	11.83	16.18	14.67	20.26	12.83	19.25	25.66
	90°	6.61	10.44	12.14	16.58	15.01	20.87	13.13	19.70	26.26

LITHONIA LIGHTING®

Catalog Number

Notes

Type

FEATURES & SPECIFICATIONS

INTENDED USE — **These specifications are for USA standards only.** Square Straight Steel is a general purpose light pole for up to 39-foot mounting heights. This pole provides a robust yet cost effective option for mounting area lights and floodlights.

CONSTRUCTION —

Pole Shaft: The pole shaft is of uniform dimension and wall thickness and is made of a weldable-grade, hot-rolled, commercial-quality steel tubing with a minimum yield of 55 KSI (11-gauge, 0.120"), or 50 KSI (7-gauge, 0.179"). Shaft is one-piece with a full-length longitudinal high-frequency electric resistance weld. Uniformly square in cross-section with flat sides, small corner radii and excellent torsional qualities. Available shaft widths are 4", 5" and 6".

Pole Top: Options include 4" tenon top, drilled for side mount fixture, tenon with drilling (includes extra handhole) and open top. Side drilled and open top poles include a removable top cap.

Handhole: A reinforced handhole with grounding provision is provided at 18" from the base on side A. Positioning the handhole lower may not be possible and requires engineering review; consult Tech Support-Outdoor for further information. Every handhole includes a cover and cover attachment hardware. The handhole has a nominal dimension of 2.5" x 5".

Base Cover: A durable ABS plastic two-piece full base cover, finished to match the pole, is provided with each pole assembly. Additional base cover options are available upon request.

Anchor Base/Bolts: Anchor base is fabricated from steel that meets ASTM A36 standards and can be altered to match existing foundations; consult factory for modifications. Anchor bolts are manufactured to ASTM F1554 Standards grade 55, (55 KSI minimum yield strength and tensile strength of 75-95 KSI). Top threaded portion (nominal 12") is hot-dipped galvanized per ASTM A-153.

HARDWARE — All structural fasteners are high-strength galvanized carbon steel. All non-structural fasteners are galvanized or zinc-plated carbon steel or stainless steel.

FINISH — Extra durable painted finish is coated with TGIC (Triglycidyl Isocyanurate) Polyester powder that meets 5A and 5B classifications of ASTM D3359. Powder-coat finishes include Dark Bronze, White, Black, and Natural Aluminum colors. Architectural Colors and Special Finishes are available by quote and include, but are not limited to Paint over Hot-dipped Galvanized, RAL Colors, Custom Colors and Extended Warranty Finishes.

BUY AMERICAN ACT — Product with the BAA option is assembled in the USA and meets the Buy America(n) government procurement requirements under FAR, DFARS and DOT regulations.
Please refer to www.acuitybrands.com/buy-american for additional information.

INSTALLATION — **Do not** erect poles without having fixtures installed. Factory-supplied templates must be used when setting anchor bolts. Lithonia Lighting will not accept claim for incorrect anchorage placement due to failure to use Lithonia Lighting factory templates. If poles are stored outside, all protective wrapping must be removed immediately upon delivery to prevent finish damage. Lithonia Lighting is not responsible for the foundation design.

WARRANTY — 1-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty/terms-and-conditions

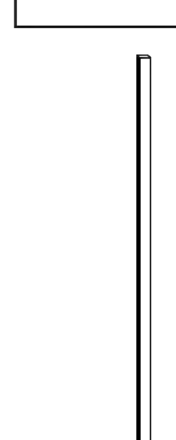
NOTE: Actual performance may differ as a result of end-user environment and application.
Specifications subject to change without notice.

Anchor Base Poles

SSS

SQUARE STRAIGHT STEEL

BAA



SSS Square Straight Steel Poles

ORDERING INFORMATION — Lead times will vary depending on options selected. Consult with your sales representative.

Example: SSS 20 5C DM19 DDBXD

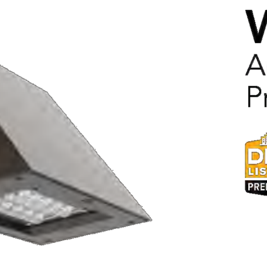
Series	Nominal fixture mounting height	Nominal shaft base size/wall thickness¹	Mounting²	Options	Finish
SSS	10'-39' (for 1/2 ft increments, add -6 to the pole height. **Ex:** 20-6 equals 20ft 6in.) (See technical information table for complete ordering information.)	4C 4" 11g (0.120") 4G 4" 7g (0.179") 5C 5" 11g (0.120") 5G 5" 7g (0.179") 6G 6" 7g (0.179") (See technical information table for complete ordering information.)	Tenon mounting PT Open top (includes top cap) T20 2-3/8" O.D. (2" NPS) T25 2-7/8" O.D. (2-1/2" NPS) T30 3-1/2" O.D. (3" NPS) T35 4" O.D. (3-1/2" NPS) KAC/KAD/KSE/KSF/KVR/KVF Drill mounting³ DM19 1 at 90° DM28 2 at 180° DM28 PL 2 at 180° with one side plugged DM29 2 at 90° DM39 3 at 90° DM49 4 at 90° CSX/DSX/RSX/AERIS™/OMERO™/KAX Drill mounting³ DM19AS 1 at 90° DM28AS 2 at 180° DM29AS 2 at 90° DM39AS 3 at 90° DM49AS 4 at 90° RAD drill mounting³ DM19RAD 1 at 90° DM28RAD 2 at 180° DM29RAD 2 at 90° DM39RAD 3 at 90° DM49RAD 4 at 90° ESX Drill mounting³ DM19ESX 1 at 90° DM28ESX 2 at 180° DM29ESX 2 at 90° DM39ESX 3 at 90° DM49ESX 4 at 90°	Shipped installed VD Vibration damper⁴ HAxy Horizontal arm bracket (1 fixture)⁵,⁶ FDLxy Festoon outlet less electrical⁵,⁷ CPL12/xy 1/2" coupling⁵ CPL34/xy 3/4" coupling⁵ CPL1/xy 1" coupling⁵ NPL12/xy 1/2" threaded nipple⁵ NPL34/xy 3/4" threaded nipple⁵ NPL1/xy 1" threaded nipple⁵ EHHxy Extra handhole⁵,⁸ STLHHC Steel handhole cover (standard is plastic, finish is smooth)⁹ FBCSTL2PC 2 Piece steel base cover (standard is plastic)⁹ IC Interior coating¹⁰ L/AB Less anchor bolts (Include when anchor bolts are not needed) TP Tamper resistant handhole cover fasteners NEC NEC 410.30 compliant gasketed handhole (Not UL Labeled) UL UL listed with label (Includes NEC compliant cover) BAA Buy America(n) Act Compliant¹¹ VM/original order# Match pole to prior order or project¹²	Super durable paint colors DDBXD Dark bronze DBLXD Black DNAXD Natural aluminum DWHXD White DSSXD Sandstone DGCXD Charcoal gray DTGXD Tennis green DBRXD Bright red DSBXD Steel blue DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white Other finishes GALV Galvanized finish Architectural colors and special finishes¹³ [PAINT] GALV Paint over galvanizing VP30 3 year warranty extension VP53 5 year warranty extension RAL#### Use designated Lithonia Lighting nomenclature in brochure Custom color Nomenclature assigned through Customer Care "Custom Color Process"

NOTES:
1. Wall thickness will be signified with a "C" (11 Gauge) or a "G" (7-Gauge) in nomenclature. "C" - 0.120" \| "G" - 0.179".
2. PT open top poles include top cap. When ordering tenon mounting and drill mounting for the same pole, specify as drilling option/tenon option. The combination includes a required extra handhole. *Example: DM28/T20.*
3. Refer to the fixture spec sheet for the correct drilling template pattern and orientation compatibility.
4. On 4" and 5" poles, VD cannot be installed if provisions (EHH, FDL, NPL, CPL) are located higher than 2/3 of the pole's total height. *Example: Pole height is 25ft, A provision cannot be placed above 16ft.*
5. Specify location and orientation when ordering option.
For "x": Specify the height above the base of pole in feet or feet and inches; separate feet and inches with a "-". *Example: 5ft = 5 and 20ft 3in = 20-3*
For "y": Specify orientation from handhole (A,B,C,D) Refer to the Handhole Orientation diagram below. *Example: 1/2" coupling at 5' 8", orientation C = CPL12/5-8C*
6. Horizontal arm is 18" x 2-3/8" O.D. tenon standard, with radius curve providing 12" rise and 2-3/8" O.D. If ordering two horizontal arm at the same height, specify with HAxyy. *Example: HA20BD.*
7. FDL does not come with GFCI outlet or handhole cover. These must be supplied by contractor or electrician.
8. Combination of tenon-top and drill mount includes extra handhole. EHH includes cover.
9. Plastic hand hole cover and base covers come standard with all poles. Items ship separately. Additional parts can be ordered as replacements.
10. Provides enhanced corrosion resistance. N/A with GALV.
11. Use when mill certifications are required.
12. Must add original order number. Not for replacement parts or post sales issues, contact tech support or post sales teams. VM is used to ensure poles match in appearance exactly from order to order, on a single project site. A common use case would be a multi-phase project with multiple orders. *Example: VM/010-36784*
13. Must be quoted through AQD. Finishes do not require RFA. RAL colors available are shown in "Architectural Colors brochure". Lead times may be extended up to 2 weeks due to paint procurement.

Accessories: *Order as separate catalog number.*

PL DT20	Plugs for ESX drillings
PL DT8	Plugs for DMxxAS drillings
FVD xxFT	Field installed vibration damper (snake style)

WDGE2 LED
Architectural Wall Sconce
Precision Refractive Optic



Catalog Number

Notes

Type: FIXTURE TYPE W-FTM

Hit the Tab key or mouse over the page to see all interactive elements.

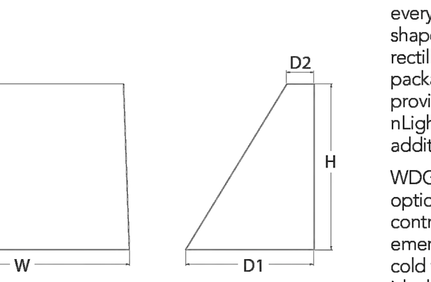
Introduction

The WDGE LED family is designed to meet specifier's every wall-mounted lighting need in a widely accepted shape that blends with any architecture. The clean rectilinear design comes in four sizes with lumen packages ranging from 1,200 to 25,000 lumens, providing a true site-wide solution. Embedded with nLight® AIR wireless controls, the WDGE family provides additional energy savings and code compliance.

WDGE2 with industry leading precision refractive optics provides great uniform distribution and optical control. When combined with multiple integrated emergency battery backup options, including an 18W cold temperature option, the WDGE2 becomes the ideal wall-mounted lighting solution for pedestrian scale applications in any environment.

Specifications

Depth (D1):	7"
Depth (D2):	1.5"
Height:	9"
Width:	11.5"
Weight: (without options)	13.5 lbs



WDGE LED Family Overview

Luminaire	Optics	Standard EM, 0°C	Cold EM, -20°C	Sensor	P0	P1	P2	P3	P4	P5	P6
					Approximate Lumens (4000K, 80CRI)						
WDGE1 LED	Visual Comfort	4W		--	750	1,200	2,000	--	--	--	--
WDGE2 LED	Visual Comfort	10W	18W	Standalone / nLight	--	1,200	2,000	3,000	4,500	6,000	--
WDGE2 LED	Precision Refractive	10W	18W	Standalone / nLight	700	1,200	2,000	3,200	4,200	--	--
WDGE3 LED	Precision Refractive	15W	18W	Standalone / nLight	--	7,500	8,500	10,000	12,000	--	--
WDGE4 LED	Precision Refractive			Standalone / nLight	--	12,000	16,000	18,000	20,000	22,000	25,000

Ordering Information

EXAMPLE: WDGE2 LED P3 40K 80CRI VF MVOLT SRM DDBXD

Series	Package	Color Temperature	CRI	Distribution	Voltage	Mounting	
WDGE2 LED	P0¹ P1² P2² P3² P4²	27K 2700K 30K 3000K 40K 4000K 50K 5000K AMB³ Amber	70CRI⁴ 80CRI LW³ Limited Wavelength	T1S Type I Short T2M Type II Medium T3M Type III Medium T4M Type IV Medium TFTM Forward Throw Medium	MVOLT 347⁵ 480⁵	**Shipped included** SRM Surface mounting bracket ICW Indirect Canopy/Ceiling Washer bracket (dry/damp locations only)⁶	**Shipped separately** AWS 3/8inch Architectural wall spacer PBBW Surface-mounted back box (top, left, right conduit entry). Use when there is no junction box available.

Options		Finish
E10WH Emergency battery backup, Certified in CA Title 20 MAEDBS (10W, 5°C min) E20WC Emergency battery backup, Certified in CA Title 20 MAEDBS (18W, -20°C min) PE⁷ Photocell, Button Type DMG⁸ 0-10V dimming wires pulled outside fixture (for use with an external control, ordered separately) BCE Bottom conduit entry for back box (PBBW). Total of 4 entry points. BAA Buy America(n) Act Compliant	**Standalone Sensors/Controls** PIR Bi-level (100/35%) motion sensor for 8-15' mounting heights. Intended for use on switched circuits with external dusk to dawn switching. PIRH Bi-level (100/35%) motion sensor for 15-30' mounting heights. Intended for use on switched circuits with external dusk to dawn switching PIR1FC3V Bi-level (100/35%) motion sensor for 8-15' mounting heights with photocell pre-programmed for dusk to dawn operation. PIRH1FC3V Bi-level (100/35%) motion sensor for 15-30' mounting heights with photocell pre-programmed for dusk to dawn operation. **Networked Sensors/Controls** NLTAIR2 PIR nLightAIR Wireless enabled bi-level motion/ambient sensor for 8-15' mounting heights. NLTAIR2 PIRH nLightAIR Wireless enabled bi-level motion/ambient sensor for 15-30' mounting heights. See page 4 for out of box functionality	DDBXD Dark bronze DBLXD Black DNAXD Natural aluminum DWHXD White DSSXD Sandstone DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white DSSTXD Textured sandstone

Accessories
Ordered and shipped separately.

WDGEAWS DDBXD	WDGE 3/8inch Architectural Wall Spacer (specify finish)
WDGE2PBBW DDBXD U	WDGE2 surface-mounted back box (specify finish)

NOTES
1. P0 option not available with sensors/controls.
2. P1-P4 not available with AMB and LW.
3. AMB and LW always go together.
4. 70CRI only available with T3M and T4M.
5. 347V and 480V not available with E10WH or E20WC.
6. Not qualified for DLC. Not available with emergency battery backup or sensors/controls.
7. PE not available in 480V or with sensors/controls.
8. DMG option not available with sensors/controls.

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Performance Package	System Watts	Dist. Type	27K Lumens	27K LPW	27K B	27K U	27K G	30K Lumens	30K LPW	30K B	30K U	30K G	40K Lumens	40K LPW	40K B	40K U	40K G	50K Lumens	50K LPW	50K B	50K U	50K G	Amber Lumens	Amber LPW	Amber B	Amber U	Amber G
			27K (2700K, 80 CRI)					30K (3000K, 80 CRI)					40K (4000K, 80 CRI)					50K (5000K, 80 CRI)					Amber (Limited Wavelength)				
P0	7W	T1S	636	92	0	0	0	666	97	0	0	0	699	101	0	0	1	691	100	0	0	1	712	47	0	0	1
		T2M	662	96	0	0	0	693	101	0	0	0	728	106	0	0	0	719	104	0	0	0	741	48	0	0	0
		T3M	662	96	0	0	0	693	101	0	0	0	728	106	0	0	0	719	104	0	0	0	741	48	0	0	0
		T4M	648	94	0	0	0	679	98	0	0	0	712	103	0	0	0	704	102	0	0	0	726	47	0	0	0
		TFTM	652	95	0	0	0	683	99	0	0	0	717	104	0	0	0	708	103	0	0	0	730	48	0	0	1
P1	11W	T1S	1,105	99	0	0	1	1,157	104	0	0	1	1,215	109	0	0	1	1,200	107	0	0	1					
		T2M	1,150	103	0	0	1	1,204	108	0	0	1	1,264	113	0	0	1	1,249	112	0	0	1					
		T3M	1,150	103	0	0	1	1,205	108	0	0	1	1,265	113	0	0	1	1,250	112	0	0	1					
		T4M	1,126	101	0	0	1	1,179	106	0	0	1	1,238	111	0	0	1	1,223	110	0	0	1					
		TFTM	1,133	101	0	0	1	1,186	106	0	0	1	1,245	112	0	0	1	1,230	110	0	0	1					
P2	19W	T1S	1,801	95	1	0	1	1,886	99	1	0	1	1,981	104	1	0	1	1,957	103	1	0	1					
		T2M	1,875	99	1	0	1	1,963	103	1	0	1	2,061	109	1	0	1	2,037	107	1	0	1					
		T3M	1,876	99	1	0	1	1,964	103	1	0	1	2,062	109	1	0	1	2,038	107	1	0	1					
		T4M	1,836	97	1	0	1	1,922	101	1	0	1	2,018	106	1	0	1	1,994	105	1	0	1					
		TFTM	1,847	97	1	0	1	1,934	102	1	0	1	2,030	107	1	0	1	2,006	106	1	0	1					
P3	32W	T1S	2,809	87	1	0	1	2,942	92	1	0	1	3,089	96	1	0	1	3,052	95	1	0	1					
		T2M	2,924	91	1	0	1	3,062	95	1	0	1	3,215	100	1	0	1	3,176	99	1	0	1					
		T3M	2,925	91	1	0	1	3,063	95	1	0	1	3,216	100	1	0	1	3,177	99	1	0	1					
		T4M	2,862	89	1	0	1	2,997	93	1	0	1	3,147	98	1	0	1	3,110	97	1	0	1					
		TFTM	2,880	90	1	0	1	3,015	94	1	0	1	3,166	99	1	0	1	3,128	97	1	0	1					
P4	47W	T1S	3,729	80	1	0	1	3,904	84	1	0	1	4,099	88	1	0	1	4,051	87	1	0	1					
		T2M	3,881	83	1	0	1	4,063	87	1	0	1	4,267	91	1	0	1	4,216	90	1	0	1					
		T3M	3,882	83	1	0	1	4,065	87	1	0	1	4,268	91	1	0	1	4,217	90	1	0	1					
		T4M	3,799	81	1	0	1	3,978	85	1	0	1	4,177	90	1	0	1	4,127	88	1	0	1					
		TFTM	3,822	82	1	0	1	4,002	86	1	0	1	4,202	90	1	0	1	4,152	89	1	0	1					

Performance Package	System Watts	Dist. Type	27K Lumens	27K LPW	27K B	27K U	27K G	30K Lumens	30K LPW	30K B	30K U	30K G	40K Lumens	40K LPW	40K B	40K U	40K G	50K Lumens	50K LPW	50K B	50K U	50K G
			27K (2700K, 70 CRI)					30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
P0	7W	T3M	737	107	0	0	0	763	111	0	0	0	822	119	0	0	0	832	121	0	0	1
		T4M	721	105	0	0	0	746	108	0	0	0	804	117	0	0	1	814	118	0	0	1
P1	11W	T3M	1,280	115	0	0	1	1,325	119	0	0	1	1,427	128	1	0	1	1,445	129	1	0	1
		T4M	1,253	112	0	0	1	1,297	116	0	0	1	1,397	125	0	0	1	1,415	127	0	0	1
P2	19W	T3M	2,087	110	1	0	1	2,160	114	1	0	1	2,327	123	1	0	1	2,357	124	1	0	1
		T4M	2,042	108	1	0	1	2,114	111	1	0	1	2,278	120	1	0	1	2,306	121	1	0	1
P3	32W	T3M	3,254	101	1	0	1	3,369	105	1	0	1	3,629	113	1	0	1	3,675	114	1	0	1
		T4M	3,185	99	1	0	1	3,297	103	1	0	1	3,552	111	1	0	1	3,597	112	1	0	1
P4	47W	T3M	4,319	93	1	0	1	4,471	96	1	0	1	4,817	103	1	0	2	4,878	105	1	0	2
		T4M	4,227	91	1	0	1	4,376	94	1	0	2	4,714	101	1	0	2	4,774	102	1	0	2

WT GROUP HAS DESIGNED THE EXTERIOR LIGHTING IN ACCORDANCE WITH IESNA STANDARDS TO MINIMIZE LIGHT SPILLAGE ONTO ADJACENT PROPERTIES OR PUBLIC ROADWAYS. IF NECESSARY, LIGHT SHIELDS WERE ADDED TO ACCOMPLISH THIS GOAL.

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CONSTRUCTION MANAGER
CORE CONSTRUCTION GROUP
801 WARRENVILLE RD
LISLE, ILLINOIS, 60532
309.404.4700 (O)
ILLINOIS STATE CERTIFICATE OF AUTHORITY
NO. 5691-171-5

NOT FOR CONSTRUCTION

FOR REVIEW ONLY

Not for regulatory approval, permit or construction.

The information on this document is preliminary or incomplete, not for construction, recording purposes, or implementation.

ISSUANCE		
NO	DATE	DESCRIPTION
1	08-05-2024	PUD SUBMITTAL
2	01-10-2025	PUD RESUBMITTAL
3	02-20-2025	PRELIMINARY & FINAL PLANNED UNIT DEVELOPMENT PLAN

LOCKPORT TOWNSHIP FPD TRAINING GROUNDS
LOCKPORT FIRE PROTECTION DISTRICT
W DIVISION ST, LOCKPORT, ILLINOIS 60441

PRELIMINARY & FINAL PLANNED UNIT DEVELOPMENT PLAN

OVERALL SITE PLAN FIXTURE CUTS

SHEET NO.
ES-1.2

JOB NO. 23-3640.02

7/28/2024 1:48:54 PM
C:\revit temp\2022\23-3640.02_Lockport_Township_FPD_Trning_Grnds-2022_central_DD_jennifervillena.rvt

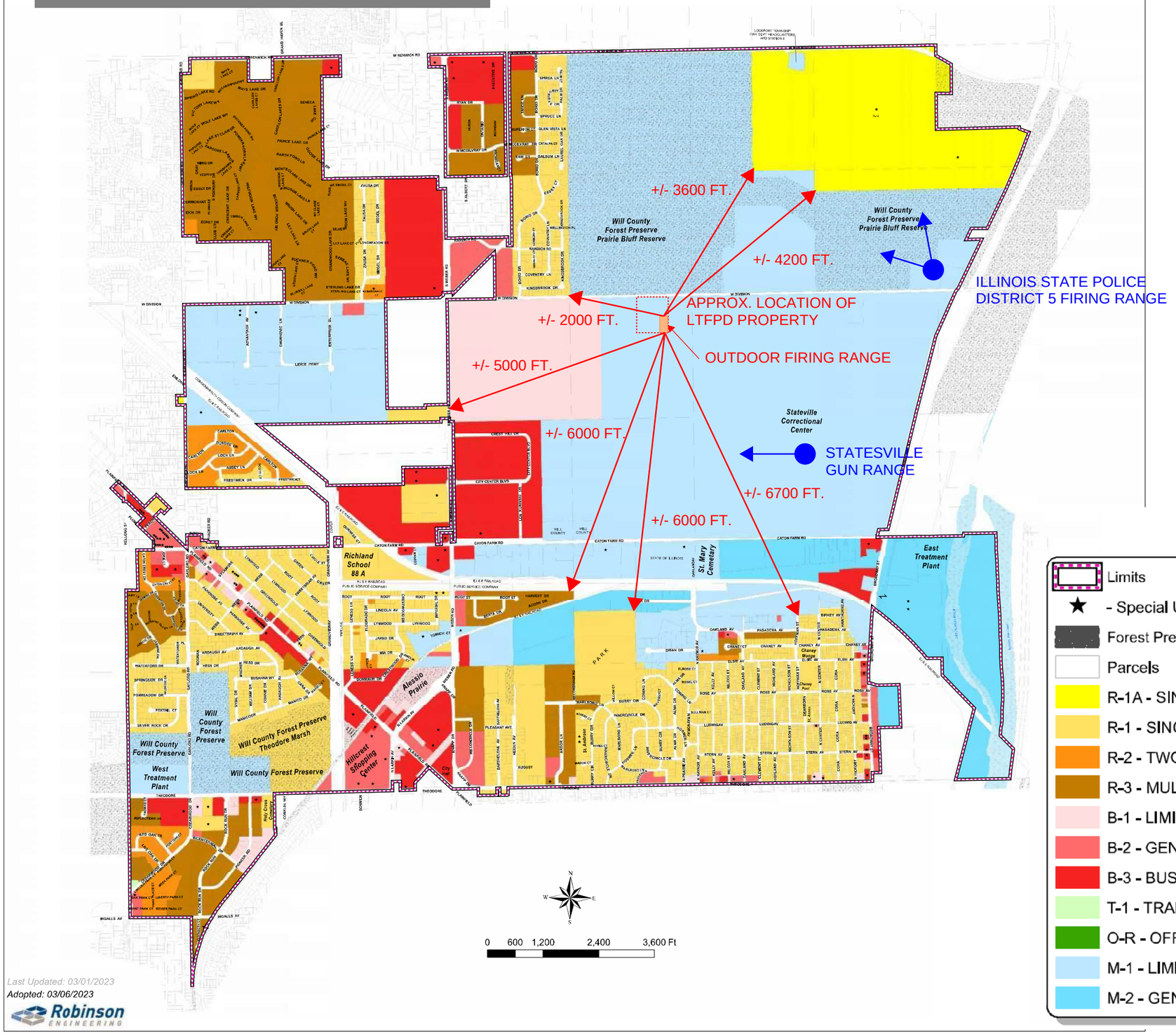
EXHIBIT ‘K’

ZONING MAP
WITH FIRE RANGE DISTANCES

EXHIBIT 'K'

City of Crest Hill

Zoning Map 2023



Last Updated: 03/01/2023
Adopted: 03/06/2023

Robinson ENGINEERING

EXHIBIT ‘L’

EXISTING AGRICULTURAL DRAIN TILE INVESTIGATION PLAN

EXISTING AGRICULTURAL DRAIN TILE INVESTIGATION PLAN

EXHIBIT 'L'

Lockport Twp Fire Protection

Prepared for: FGM Architects Inc.

Section no. 29, Lockport Twp.,Will Co., IL.

EXISTING SUBSURFACE AGRICULTURAL DRAIN TILE INVESTIGATION REPORT

Lockport Twp Fire Protection
FGM Architects Inc.

Lockport Twp Fire Protection / FGM Architects Inc. , FIELD FILE NO. 9-11-29 , DATE: 5/22/24 .
IN ACCORDANCE WITH WILL COUNTY EXISTING DRAIN TILE INVESTIGATION AND LOCATION STANDARDS

DESCRIPTION CHART NO. 1A : INVESTIGATION SLIT TRENCH LOCATIONS

ID NO.	SZ.	TYPE / QUALITY	FLOW %	SILT %	DEPTH (GRD./INV.)	FIELD NOTES:
A	--	NO TILE LOCATED	--	--	--	NO DRAIN TILE LOCATED
B1	8"	CLAY / GOOD	100%	75%	24"	RESTRICTED FLOW AND SURCHARGED
B2	8"	CLAY / GOOD	NO	100%	22"	SILT RESTRICTED / NO CAPACITY
C	--	NO TILE LOCATED	--	--	--	NO DRAIN TILE LOCATED
D1	6"	CLAY / GOOD	NO	10%	40"	ACTIVE FLOW RATE AND CAPACITY
D2	12"	CLAY / GOOD	50%	10%	78"	ACTIVE FLOW RATE AND CAPACITY
E1	6"	CLAY / FAIR	100%	CLEAN	12"	RESTRICTED FLOW AND SURCHARGED
E2	12"	CLAY / GOOD	50%	10%	64"	ACTIVE FLOW RATE AND CAPACITY
F	--	NO TILE LOCATED	--	--	--	NO DRAIN TILE LOCATED
G	--	NO TILE LOCATED	--	--	--	NO DRAIN TILE LOCATED
H	--	NO TILE LOCATED	--	--	--	NO DRAIN TILE LOCATED

DESCRIPTION CHART NO. 1B : SURVEY DATA POINT LOCATIONS

DATA POINT	SZ.	TYPE / QUALITY	FLOW %	SILT %	DEPTH (HUB/INV)	FIELD NOTES:
1	12"	CLAY / GOOD	50%	10%	12"	MAINLINE AT PROPERTY INGRESS
2	6"	CLAY / FAIR	100%	CLEAN	12"	LATERAL AT PROPERTY INGRESS
3	8"	CLAY / GOOD	100%	10%	33"	MAINLINE AT PROPERTY EGRESS
4	12"	CLAY / GOOD	50%	10%	72"	MAINLINE AT PROPERTY EGRESS
5	3"	CLAY / GOOD	100%	75%	25"	LATERAL AT PROPERTY INGRESS
6	8"	CLAY / GOOD	100%	10%	38"	MAINLINE AT PROPERTY INGRESS

MAP LEGEND :

- EXISTING DRAIN TILE FLOW DIRECTION
- EX. POLYETHYLENE MAINLINE OR SYSTEM PART
- EX. CLAY DRAIN TILE MAINLINE OR SYSTEM PARTS
- EX. CONCRETE DRAIN TILE MAINLINE OR SYSTEM PART
- EXISTING DRAIN TILE CONTINUES TO UPLAND WATERSHED
- EXISTING DRAIN TILE OUTLETS TO SURFACE
- EXIST. DRAIN TILE (1) INSPECTION STRUCTURE / (2) CATCH BASIN
- EXIST. DRAIN TILE (1) LOCATED END / (2) ASSUMED END
- EXISTING DRAIN TILE CONTINUES TO OFF-SITE OUTLET SYSTEM
- EXISTING DRAIN TILE FAILURE / FLOW SURCHARGE TO SURFACE
- EXISTING DRAIN TILE MAPPED BY SPECULATION AND ASSUMPTION
- EXISTING DRAIN TILE ABANDONED (NOT FUNCTIONAL)
- EXISTING DRAIN TILE "BLOWOUT" OR FAILURE
- HAND PROBE OR ELECTRONIC SCAN FOR DRAIN TILE LOCATION
- INVESTIGATION SLIT TRENCH FOR INVESTIGATION
- SPECIFIC PIT EXCAVATION FOR INVESTIGATION
- SURVEY DATA POINTS
- REPORT IDENTIFICATION NUMBER

REPORT LEGEND :

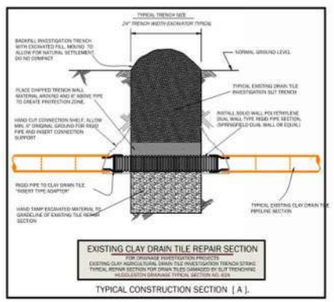
ID NO.	POINT OF EXCAVATION FOR SPECIFIC DRAIN TILE INVESTIGATION.
SZ. (SIZE)	DRAIN TILE INTERNAL DIAMETER IN INCHES.
MATERIAL / QUALITY	TYPE OF TILE MATERIALS, PIPE QUALITY - GOOD, FAIR & POOR.
FLOW %	PERCENTAGE OF TILE DIAMETER OCCUPIED BY ACTIVE FLOW.
(R)	RESTRICTED OR BACKED UP FLOW, SURCHARGED CONDITION
SILT %	PERCENTAGE OF TILE DIAMETER OCCUPIED BY RESTRICTIVE SILT.
(A)	ABANDONED, FILLED WITH SILT BLOCKAGE, NO FLOW POTENTIAL
DEPTH	MEASUREMENT FROM EXISTING GROUND LEVEL TO PIPE INVERT.

(GENERAL NOTES)

MAINLINE TILE	TRUNK LINE OR MUTUAL DRAIN, COLLECTOR OF SUB-SYSTEMS.
SUB-MAIN TILE	SECONDARY TRUNK LINE OR RANDOM SYSTEM COLLECTOR.
LATERAL TILE	FEEDER LINE, SERVICE TILE OR SYSTEM SPUR.
"BLOWOUT"	EXISTING SYSTEM PIPE FAILURE OR RESTRICTION.
DRAIN TILE ENDS	MAINLINE, SUB-MAIN OR LATERAL PLANNED TERMINATION.
SLIT TRENCH	INVESTIGATION TRENCH, TYPICAL 2'- 0" WIDE x 6'- 0" DEPTH.

SPECIAL NOTES :

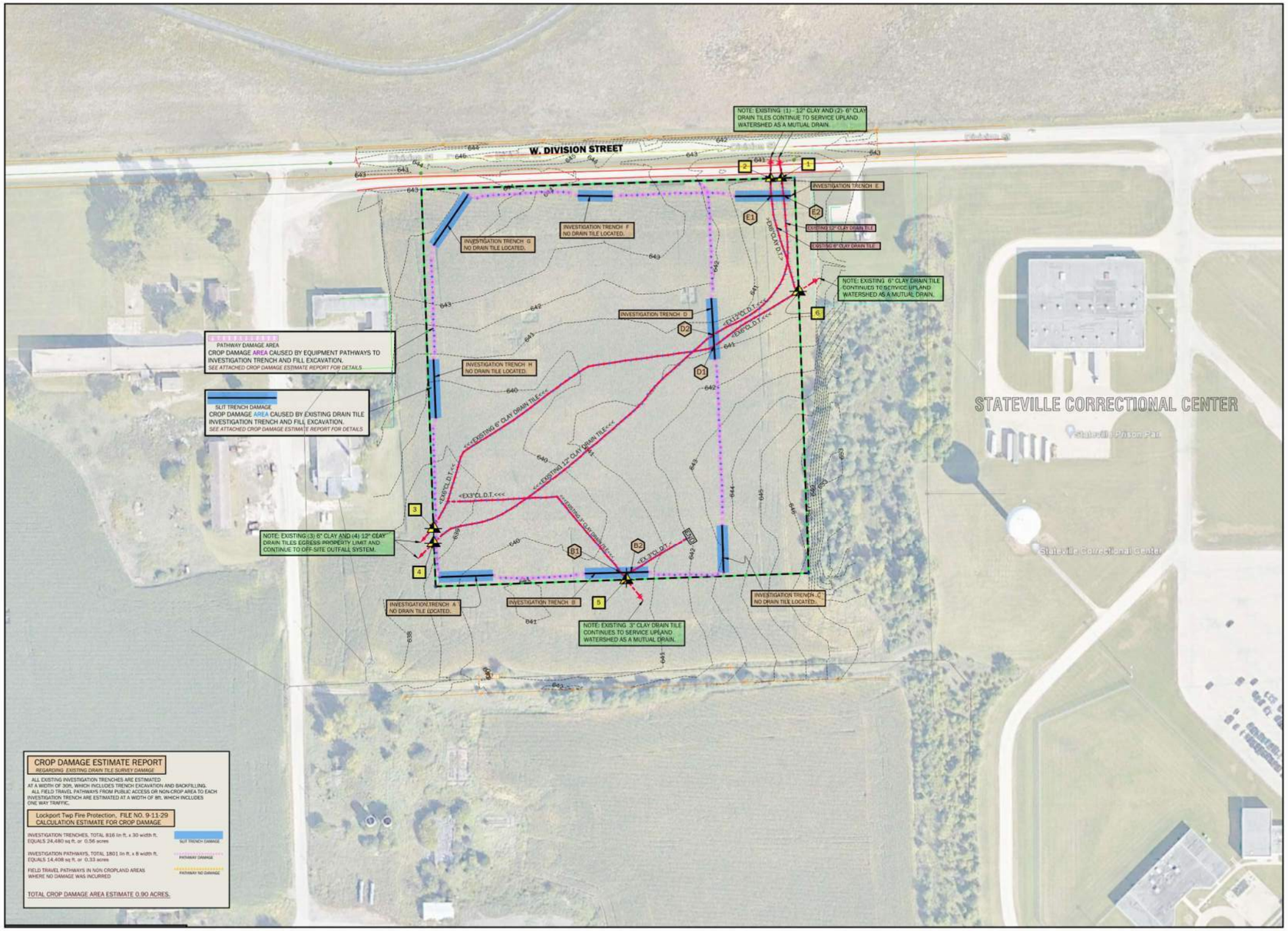
- ALL EXISTING AGRICULTURAL DRAIN TILES LOCATED DURING THIS INVESTIGATION SURVEY HAVE BEEN IDENTIFIED ON THIS PLAN AND FIELD STAKED AT < 50' INTERVALS, IN SOME OCCASIONS CERTAIN EXISTING LOCAL DRAIN TILE SECTIONS MAY BE SPECULATED AND CONSIDERED AS AN ASSUMED ROUTE WHICH SHALL BE DELINEATED ON THIS PLAN.
- ANY EXISTING DRAIN TILE NOT ENCOUNTERED DURING SLIT TRENCHING OR PROBE TRANSECT PROCEDURES WILL REMAIN UNKNOWN.
- ALL EXISTING DRAIN TILES DAMAGED DURING THE INVESTIGATION PROCESS SHALL BE REPAIRED TO THEIR ORIGINAL STATE IN ACCORDANCE WITH NATURAL RESOURCE CONSERVATION SERVICE STANDARDS FOR DRAIN TILE INSTALLATION AND REPAIR. (HUDDLESTON DRAINAGE (624) TYPICAL STANDARD "B").
- ALL EXISTING DRAIN TILE LOCATION DIMENSIONS HAVE BEEN SURVEYED BY AGRICULTURAL GRADE GPS SURVEY SYSTEMS AND INCLUDE SUB METER ACCURACY, ALL LOCATIONS PERTINENT TO FINAL DESIGN SHALL BE VERIFIED BY THE PROJECT SURVEYOR. THIS DRAIN TILE INVESTIGATION REPORT IS INTENDED TO IDENTIFY EXISTING DRAIN TILE MAINLINE SYSTEMS ONLY INCLUDING ADDITIONAL PRIORITY ON DRAIN TILES WHICH MAY SERVICE THE UPLAND PROPERTY OF OTHERS OR WITH MUTUAL DRAINAGE STATUS.
- THIS DRAIN TILE INVESTIGATION REPORT SHALL BE FILED WITH HUDDLESTON DRAINAGE LAND DRAINAGE CO., AND WILL BE REPRODUCED AND DISBURSED ONLY BY PERMISSION OF THE CONTRACT PRINCIPALS.



EXISTING CLAY DRAIN TILE REPAIR SECTION
FOR ORIGINAL INVESTIGATION PROCEDURE STEPS
EXISTING CLAY AGRICULTURAL DRAIN TILE INVESTIGATION TRENCH DETAIL
TYPICAL REPAIR SECTION FOR DRAIN TILES DAMAGED BY SLIT TRENCHING
HUDDLESTON DRAINAGE TYPICAL SECTION NO. 624

TYPICAL CONSTRUCTION SECTION [A].

THESE SYMBOLS REPRESENT SURVEY DATA POINTS WHICH HAVE BEEN STAKED IN THE FIELD FOR THE SPECIFIC PURPOSE OF ELECTRONIC LOCATION AND ELEVATION DETERMINATION BY THE PROJECT SURVEYOR.
THESE DATA POINTS CONSIST OF A 2" X 2" GROUND HUB AND A 3'-0" ON-LINE LOCATION STAKE WHICH INCLUDES DATA POINT IDENTIFICATION NUMBER, SEPARATION MEASUREMENT FROM HUB TO PIPE INVERT, AND PIPE SIZE.
ALL EXISTING DRAIN TILE ROUTES HAVE BEEN FIELD STAKED WITH "EXISTING DRAIN TILE" PIN FLAGS AT 50' INTERVALS AND DOUBLE FLAGS AT INTERSECTIONS.



CROP DAMAGE ESTIMATE REPORT
REGARDING EXISTING DRAIN TILE SURVEY DAMAGE

ALL EXISTING INVESTIGATION TRENCHES ARE ESTIMATED AT A WIDTH OF 30ft, WHICH INCLUDES TRENCH EXCAVATION AND BACKFILLING, ALL FIELD TRAVEL PATHWAYS FROM PUBLIC ACCESS OR NON-CROP AREA TO EACH INVESTIGATION TRENCH ARE ESTIMATED AT A WIDTH OF 8ft. WHICH INCLUDES ONE WAY TRAFFIC.

Lockport Twp Fire Protection, FILE NO. 9-11-29
CALCULATION ESTIMATE FOR CROP DAMAGE

INVESTIGATION TRENCHES, TOTAL 816 lin ft. x 30 width ft. EQUALS 24,480 sq ft. or 0.56 acres — SLIT TRENCH DAMAGE

INVESTIGATION PATHWAYS, TOTAL 1801 lin ft. x 8 width ft. EQUALS 14,408 sq ft. or 0.33 acres — PATHWAY DAMAGE

FIELD TRAVEL PATHWAYS IN NON CROPLAND AREAS WHERE NO DAMAGE WAS INCURRED — PATHWAY NO DAMAGE

TOTAL CROP DAMAGE AREA ESTIMATE 0.90 ACRES.

PROJECT CLIENT:
FGM Architects Inc.
Jennifer Villena-Johnson , Project Manager
550 W Van Buren Street, Suite 1420, Chicago, IL., 60607

APPROVED BY AND DATE:	TOM HUDDLESTON 5/22/24
ACKNOWLEDGMENTS:	HUDDLESTON DRAINAGE MAP and ARCHIVE SYSTEMS
DRAWN BY AND DATE:	TOM HUDDLESTON 5/22/24
PROJECT DATE:	5/22/24
FIELD FILE NO.:	9-11-29
DRAWING NO.	9-11-29_X1

REVISIONS

DATE:	BY:	DESCRIPTION:

WEATHER CONDITIONS:	DRAWING SCALE:	SHEET NO.
SUNNY/ WARM - 70o	1" TO 100'	ONE OF ONE

1976 48 2024 — ILLINOIS FARM BUREAU MEMBER — 811 Know what's below. Call before you dig. A241302148 DIG NUMBER

NORTH

Lockport Twp Fire Protection
HUDDLESTON McBRIDE
PROFESSIONAL LAND DRAINAGE SERVICES
9504 FOWLER RD., ROCHELLE, ILLINOIS PHONE 815-562-6007

COORDINATE SYSTEM: ILLINOIS STATE PLANE EAST NAD 83

M:\Huddmac_Data\1 HUDDMAC ACTIVE FILES\1 AUTOCAD DRAWINGS\ACTIVE CADD\9-11-29@FGM LOCKPORT FIRE\9-11-29_X1.dwg, HUDDMAC, 5/23/2024 8:09:46 AM, Tom, AutoCAD PDF (High Quality Print).pc3; ARCH full bleed D (36.00 x 24.00 Inches), 1:200

EXHIBIT ‘M’

MAIN BURN TOWER
PLANS AND ELEVATIONS

EXHIBIT 'M'

PROPOSAL FOR FIRE TRAINING FACILITY
LOCKPORT F.P.D. - LOCKPORT, IL.

CONCEPTUAL VIEWS

UNIT SPECIFICATIONS
**STAIRWELLS ARE NOTED IN DRAWINGS IF THEY ARE HALF OR FULLY ENCLOSED.*

UNIT SPECIFICATIONS

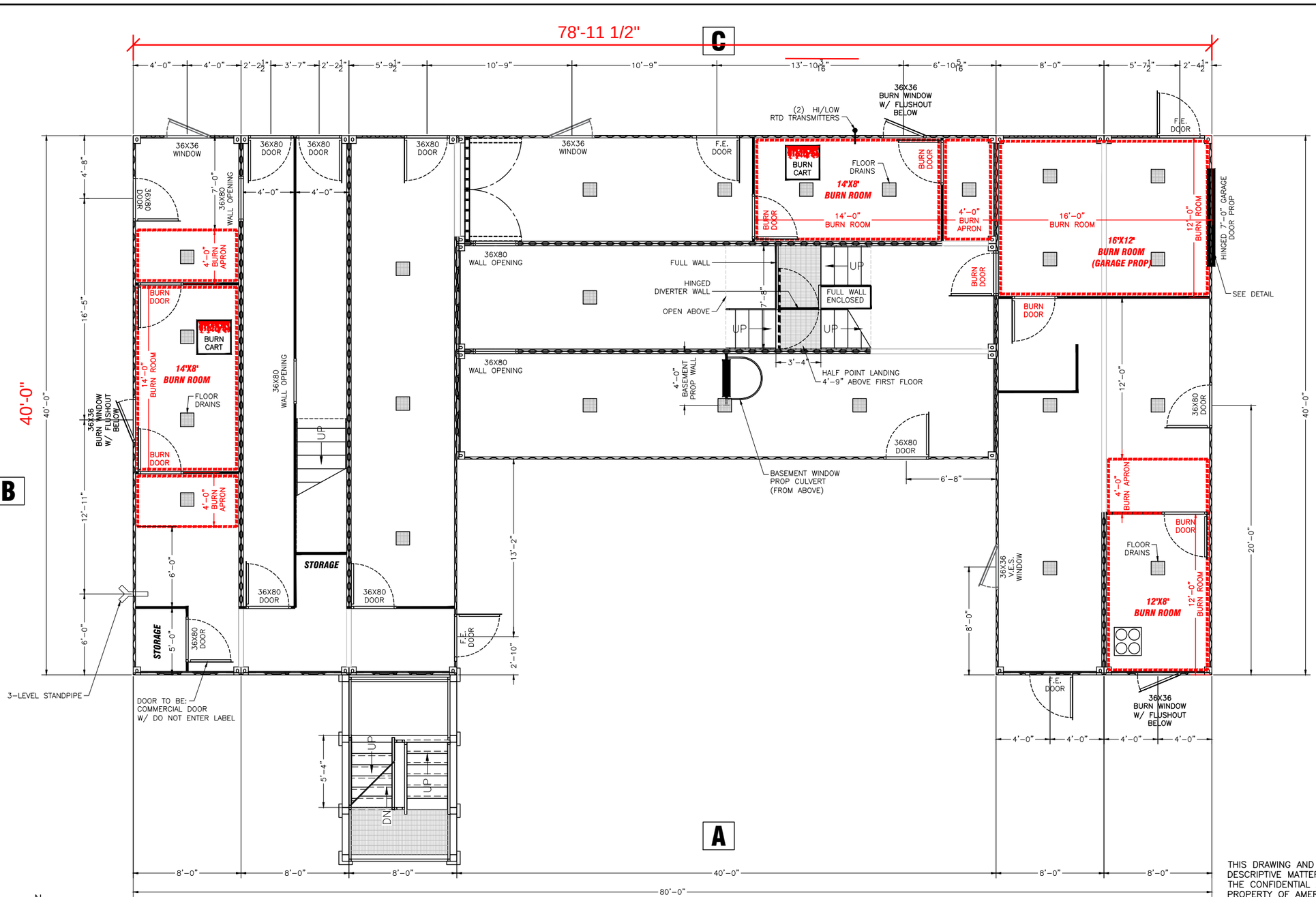
- 18 - 40' ISO CONTAINERS
- 1 - 20' ISO CONTAINER
- 6 - 14'X8' BURN ROOMS
- 5 - 4'X8' BURN APRONS
- 1 - BURN BALCONY
- 5 - BURN WINDOWS
- 11 - BURN DOORS
- 1 - 12-ZONE RTD SYSTEM
- 27 - FLOOR DRAINS
- 5 - FLUSH-OUT HATCHES
- 3 - BURN CARTS
- 18 - 36X36 WINDOWS
- 24 - 36X80 DOORS
- 3 - STANDARD COMMERCIAL DOORS W/ "DO NOT ENTER" LABELS
- 1 - V.E.S. WINDOW
- 1 - 5-LEVEL INT. CENTRAL STAIRCASE
- 1 - HINGED DIVERTER WALL
- 1 - 5-LEVEL INT. STAIRCASE
- 2 - PIVOTED WALLS
- 4 - 36X80 WALL OPENINGS
- 1 - 40' INT. WALL (HALLWAY)
- 1 - 2-LEVEL INT. STAIRCASE
- 1 - INT. STAIRCASE LANDING
- 1 - 3-LEVEL EXT. STAIR TOWER
- 1 - 16X16 ROOF PITCH PROP(6/12 PITCH)
- 10 - SAFETY GATES
- 1 - BASEMENT WINDOW PROP
- 1 - HINGED GARAGE DOOR PROP
- 1 - BULKHEAD DECK ACCESS
- 2 - RAPPEL ANCHORS
- 3 - RECESSED BALCONIES
- 4 - F.E. DOORS
- 36 - FLOOR DRAINS

TRAINING AREA = 7892 SQ.FT.

AMERICAN FIRE TRAINING SYSTEMS, INC.
12315 SOUTH NEW AVE., POB #39
LEMONT, ILLINOIS 60439
(630) 257-0112

PROPOSAL FOR FIRE TRAINING FACILITY
LOCKPORT F.P.D. - LOCKPORT, IL.

DRAWN BY:	PRD
REV:	–
DATE:	05–31–23
SCALE:	–
P NO.	P001208
DWG NO.	A00



FIRST FLOOR PLAN

2560 SQ. FT.

AMERICAN FIRE TRAINING SYSTEMS, INC.
12315 SOUTH NEW AVE., POB #39
LEMONT, ILLINOIS 60439
(630) 257-0112

PROPOSAL FOR FIRE TRAINING FACILITY
LOCKPORT F.P.D. - LOCKPORT, IL.

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SCALE:	–
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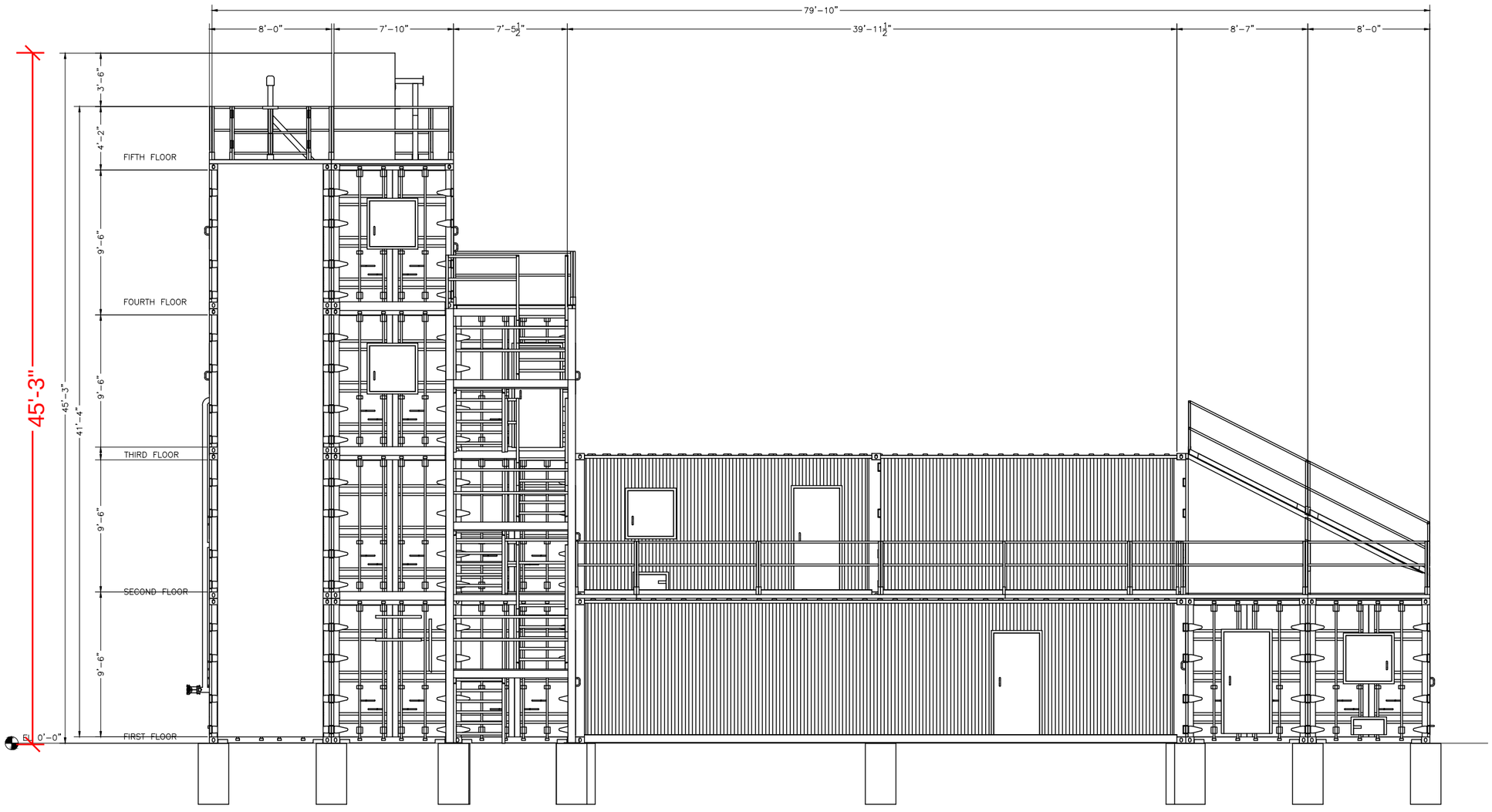
DWG NO.	A01



ELEVATION VIEW LOOKING SOUTH (ALPHA)

AMERICAN FIRE TRAINING SYSTEMS, INC.
12315 SOUTH NEW AVE., POB #39
LEMONT, ILLINOIS 60439
(630) 257-0112

PROPOSAL FOR FIRE TRAINING FACILITY
LOCKPORT F.P.D. - LOCKPORT, IL.

DRAWN BY:	PRD
REV:	–
DATE:	05–31–23
SCALE:	–
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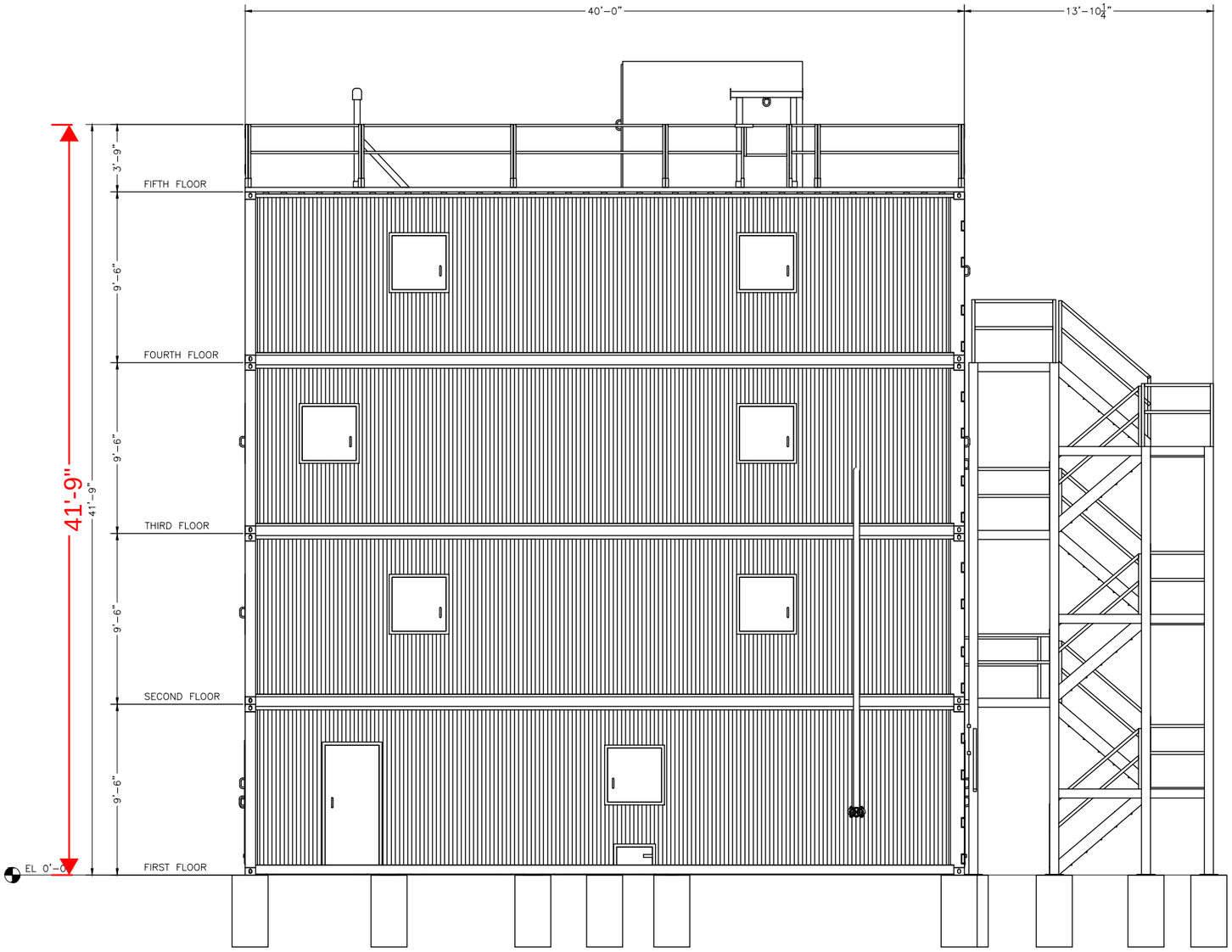
DWG NO.	A06



ELEVATION VIEW LOOKING WEST (BRAVO)

AMERICAN FIRE TRAINING SYSTEMS, INC.
12315 SOUTH NEW AVE., POB #39
LEMONT, ILLINOIS 60439
(630) 257-0112

PROPOSAL FOR FIRE TRAINING FACILITY
LOCKPORT F.P.D. - LOCKPORT, IL.

DRAWN BY:	PRD
REV:	–
DATE:	05–31–23
SCALE:	–
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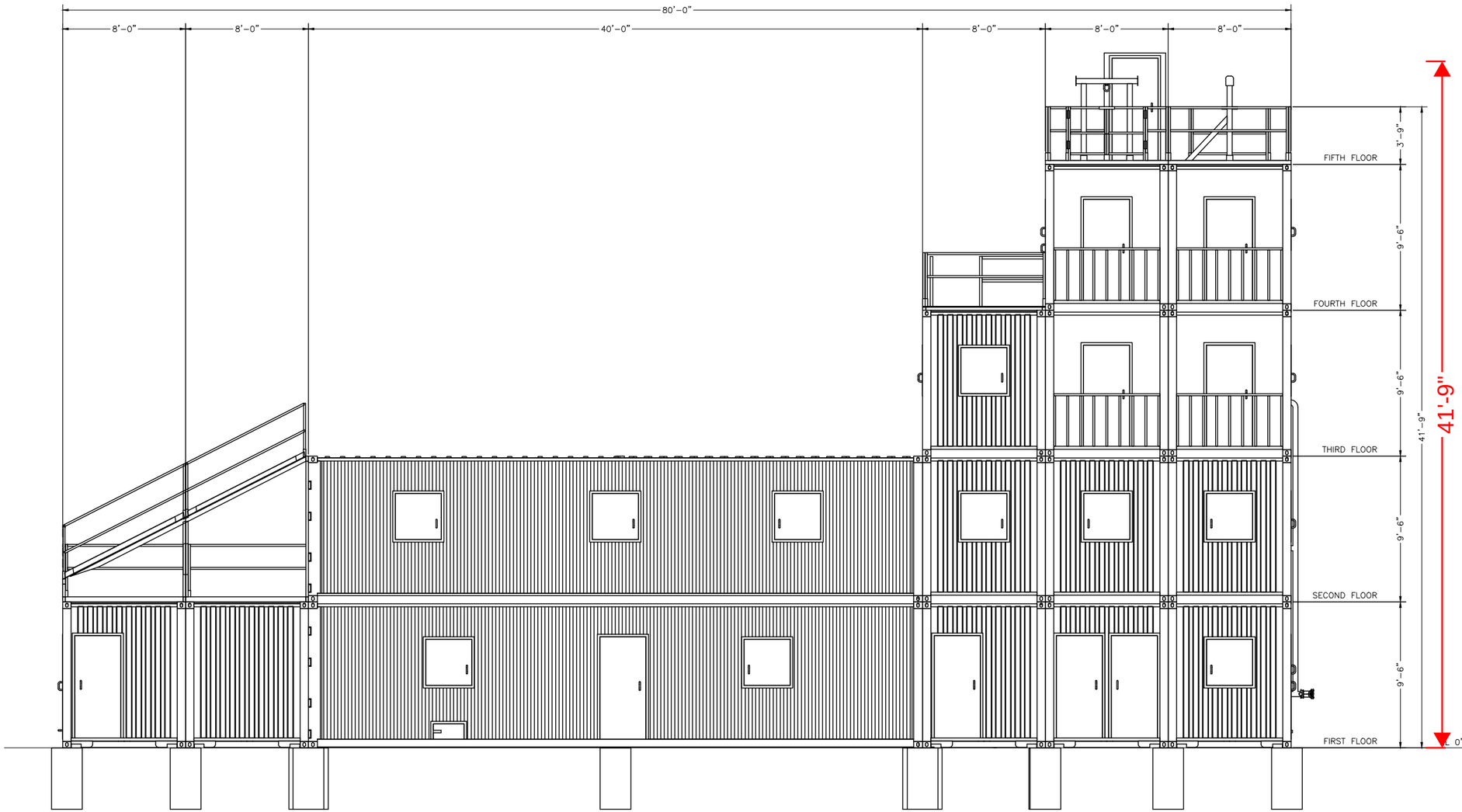
DWG NO.	A07



ELEVATION VIEW LOOKING NORTH (CHARLIE)

AMERICAN FIRE TRAINING SYSTEMS, INC.
12315 SOUTH NEW AVE., POB #39
LEMONT, ILLINOIS 60439
(630) 257-0112

PROPOSAL FOR FIRE TRAINING FACILITY
LOCKPORT F.P.D. - LOCKPORT, IL.

DRAWN BY:	PRD
REV:	–
DATE:	05–31–23
SCALE:	–
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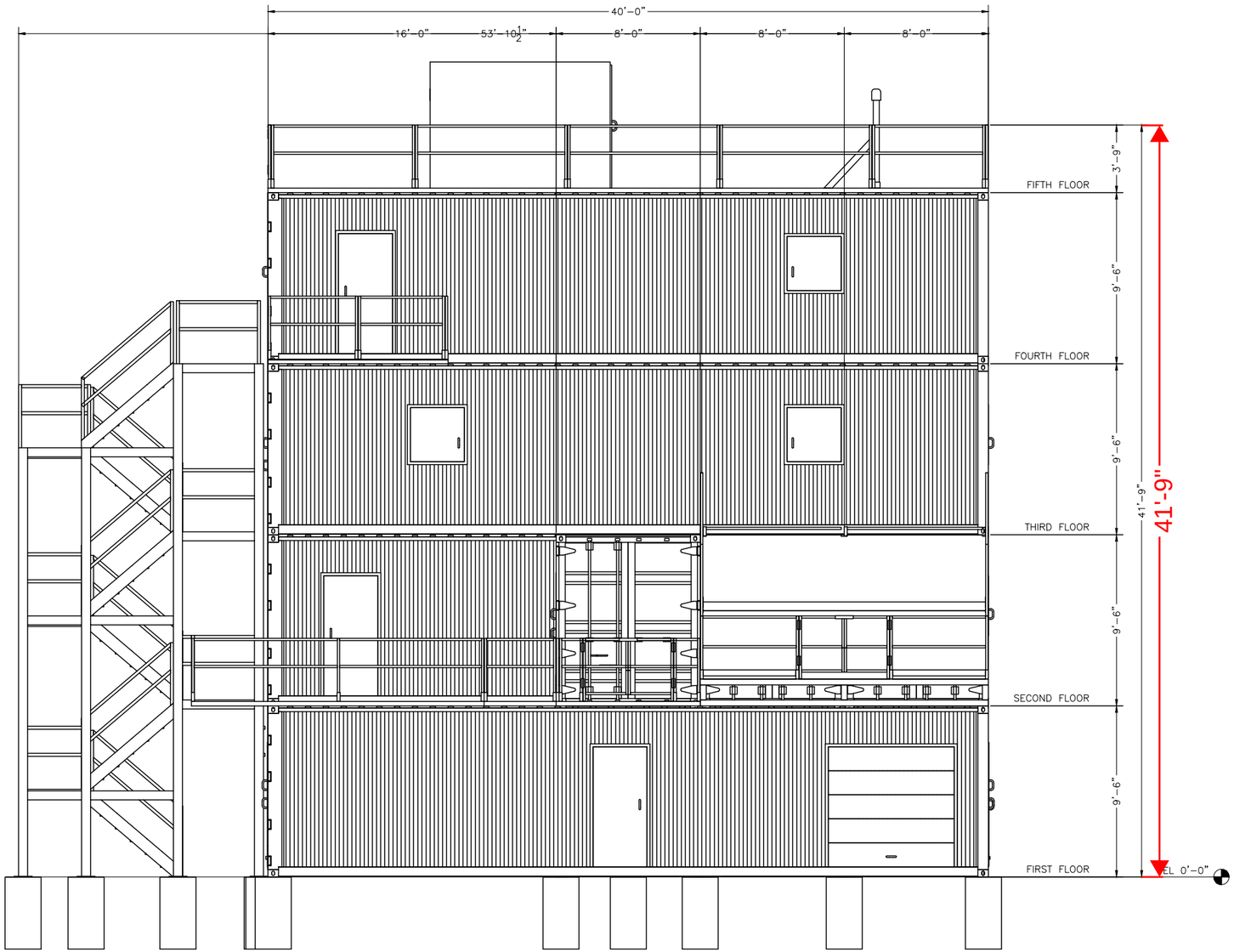
DWG NO.	A08



ELEVATION VIEW LOOKING EAST (DELTA)

AMERICAN FIRE TRAINING SYSTEMS, INC.
12315 SOUTH NEW AVE., POB #39
LEMONT, ILLINOIS 60439
(630) 257-0112

PROPOSAL FOR FIRE TRAINING FACILITY
LOCKPORT F.P.D. - LOCKPORT, IL.

DRAWN BY:	PRD
REV:	–
DATE:	05-31-23
SCALE:	–
P NO.	P001208
DWG NO.	A09

EXHIBIT ‘N’

STORMWATER MANAGEMENT PLAN

PINNACLE ENGINEERING GROUP

Plan | Design | Deliver

www.pinnacle-engr.com

FINAL

STORMWATER MANAGEMENT REPORT

Lockport Township Fire Protection District

W. Division Street

Crest Hill, IL 60403

Prepared For:

FGMArchitects

Jason M. Estes, AIA

1211 W. 22nd St., Suite 700

Oak Brook, IL 60523

Prepared By:

Pinnacle Engineering Group

Brian Johnson, P.E., CPESC

1051 E. Main Street, Suite 217

East Dundee, IL 60118

847-551-5300

Brian.Johnson@pinnacle-engr.com

PEG Job No. 5219.00-IL

February 18, 2025

TABLE OF CONTENTS

Will County Site Development Permit Submittal Checklist

Applicant:	Reviewer:	Permit No.:

The following tables contain a checklist of the requirements before a review for a Site Development Permit submittal will be accepted. Not all requirements pertain to every submittal. For those requirements that you believe do not pertain to this submittal, please give the reasons in the comment box.

All plans and calculations must be signed and sealed by an Illinois Registered Professional Engineer.

TAB 1 – PROJECT OVERVIEW

Identifier	Requirement	Section	Comments
1A	Completed Site Development Permit Application		
1B	Copy of a completed Joint Application form with transmittal letters to the appropriate agencies (wetland or floodplain submittal).	502.5 502.6	Not applicable
1C	Copies of other relevant permits(i.e. NPDES, IDNR) or approvals (include applications if permits have not been issued)	502.2(g)	
1D	Narrative description of development, existing and proposed conditions, and project planning principles considered, including BMPs utilized.	502.2(d)	
1E	Subsurface drainage investigation report	502.2(h)	

Name of Applicant: _____ Name of Reviewer: _____

Signature of Applicant: _____ Signature of Reviewer: _____

Date: _____ Date: _____

PROJECT INFORMATION:

Project Name: Lockport Township Fire Protection District

Site Location: Division St.

Township, Range: T 3N, Range 10 East

Site Area (acres): 12.856

Please check the following activities that apply (from the flow chart):

Type of development:	☐ Residential	☐ Commercial	☐ Industrial	☐ Agricultural	☒ Other

The site has the following constraints:		
Floodplain	Floodway	Wetlands
☐YES	☐YES	☐YES
☒NO	☒NO	☒NO

Qualified Review Specialist Signature _____ Qualified Review Specialist Signature _____ Qualified Wetland Review Specialist _____

Print Name _____ Print Name _____ Print Name _____

TAB 1

1A COMPLETE SITE DEVELOPMENT PERMIT APPLICATION

1B COPY OF JOINT APPLICATION FORM WITH TRANSMITTAL LETTERS TO THE APPROPRIATE AGENCIES. (WETLAND OR FLOODPLAIN SUBMITTAL, OTHERWISE DELETE THIS SECTION AND ADD COMMENT ON TAB 1 OVERVIEW TABLE)

Not Applicable for this project.

1C COPIES OF OTHER RELEVANT PERMITS (I.E. NPDES, IDNR) OR APPROVALS (INCLUDE APPLICATIONS IF PERMITS HAVE NOT BEEN ISSUED) – (IF NOT RELEVANT, DELETE THIS SECTION)

Please refer to **Appendix I** for copies of these permits.

1D NARRATIVE DESCRIPTION OF DEVELOPMENT, EXISTING AND PROPOSED CONDITIONS, AND PROJECT PLANNING PRINCIPLES CONSIDERED, INCLUDING BMPS UTILIZED.

This project site is currently part of the Stateville Correctional Center property near Joliet, IL and is located to the west of IL-53, and south of Division Street. There is a Stateville maintenance building to the west and Stateville buildings and parking lots to the east. The existing area this project will be located in is currently undeveloped.

1E SUBSURFACE DRAINAGE INVESTIGATION REPORT.

Please refer to **Appendix J** for this report.

Will County Site Development Permit Submittal Checklist

TAB 2 – STORMWATER SUBMITTAL

Identifier	Requirement	Section	Comments
2A	Narrative description of the existing and proposed site conditions. Include description of off-site conditions.	502.4(a)	
2B	Schedule for implementation of the site stormwater plan.	502.4(b)	
2C	Site runoff calculations:	502.4(c)	
2C1	Documentation of the procedures/assumptions used to calculate hydrologic and hydraulic conditions for sizing major and minor systems.		
2C2	Cross-section data for open channels.		
2C3	Hydraulic grade line and water surface elevations under design conditions.		
2C4	Hydraulic grade line and water surface elevations under base flood conditions		
2D	Site Runoff and Storage Calculations:	502.4(d)	
2D1	Calculation of hydraulically connected impervious area and corresponding retention volume.		
2D2	Documentation of the procedures/assumptions used to calculate hydrologic and hydraulic conditions for determining the allowable release rate.		
2D3	Documentation of the procedures/assumptions used to calculate on-site depressional storage.		
2D4	Documentation of the procedures/assumptions used to calculate hydrologic and hydraulic conditions for determining the storage volume.		
2D5	Elevation-area-storage data.		
2D6	Elevation-discharge data.		

TAB 2

2A Narrative description of the existing and proposed site conditions. Include description of off-site conditions.

Existing Drainage Conditions

The site is located along Division Street in Crest Hill, Illinois. The current site conditions consist mainly of row crops along with a gravel road along the north side of the development area. Please refer to **Appendix F** for the **Existing Conditions Drainage Exhibit**. Stormwater from the site generally flows to the southwest side of the site, where it exits the site to the adjacent parcel.

There are approximately **7.142 acres** of **offsite area** that are currently tributary to the site. This offsite area consists of **pavement, gravel, green space, row crops, and wooded areas**. The runoff from the offsite area currently sheet flows through the site or is collected within existing drain tiles where it exists the site to the southwest.

Proposed Drainage Conditions

Onsite Drainage Conditions

The proposed improvements include the development of a fire station and related parking, utilities, and stormwater management facilities. Along with the fire station, several training facilities including a dive pond that will also be used to provide stormwater detention, a main burn tower, a burn pit and an extrication area. There is also a proposed future gun range which includes a covered area. Please refer to **Appendix G** for the **Proposed Drainage Exhibit**.

Offsite Drainage Conditions

There are approximately **7.142 acres** of **offsite area** that is tributary to the site. **Offsite Area 1 (OF1)** is approximately **6.307 acres** and will be routed around the site via 15" perforated PVC drainage tiles. **Offsite Area 2 (OF2)** is approximately **0.826 acres** and will be routed around the site via a channel that runs along the southeast and east sides of the site. **Offsite Area 3 (OF3)** is approximately **0.009 acres** and will be conveyed through the proposed stormwater system to the detention basin. The stormwater from this area will be bypassed over the internal weir wall within the outlet control structure. Please refer to **Appendix G** for the calculations supporting the bypass flows over the weir and through the channel.

2B SCHEDULE FOR IMPLEMENTATION OF THE SITE STORMWATER PLAN.

The stormwater basins, which will be developed prior to the site improvements, will be used to provide runoff control for the site.

2C SITE RUNOFF CALCULATIONS:

2C1	Documentation of the procedures/assumptions used to calculate hydrologic and hydraulic conditions for sizing major and minor systems.

Site Runoff Calculations

The site will utilize an above ground detention basin to meet the site runoff requirements. This detention basin will have a bottom elevation approximately 20 feet below the normal water level so that the basin can be used as a dive training facility.

There are approximately **1.825 acres** of **disturbed area** and **0.018 acres** of **undisturbed area** that will not be directed to the basin. The runoff from this undetained area will be subtracted from the overall allowable release rate to determine the allowable release rate from the pond.

Calculation Method

HydroCAD was used to analyze the stormwater for the 2-year and 100-year, 24-hour storm events.

Soil Types

According to the United States Department of Agriculture – Natural Resources Conservation Service Web Soil Survey, the site contains three (3) soil types. The soil map unit, description and hydrologic soil group is listed in **Table 2-1** below and the Web Soil Survey is included in **Appendix C**.

Table 2-1: Soil Types Present Onsite

Map Symbol	Map Unit Name	Hydrologic Soil Group
67A	Harpster silty clay loam, 0 to 2 percent slopes	B/D
146A	Elliott silt loam, 0 to 2 percent slopes	C/D
146B	Elliot silt loam, 2 to 4 percent slopes	C/D
232A	Ashkum silty clay loam, 0 to 2 percent slopes	C/D

Soils within the proposed disturbed area and offsite areas are mapped as silty clay loam and silt loam. These soils are poorly drained and somewhat poorly drained, and the native soils have Hydrologic Soil Group (HSG) classifications of B/D and C/D.

Rainfall Intensity

Will County requires designing the drainage system based on rainfall data from the Updated Illinois State Water Survey Bulletin 70 (Updated Bulletin 70) for the 2-year and 100-year 24-hour events. The table below lists the rainfall depths for these storm events for the Northeast zone from the Updated Bulletin 70.

Table 2-2: Rainfall Depth Data

Storm	Depth (in)
2-Year, 24-Hour	3.34
100-Year, 24-Hour	8.57

Rainfall Distribution

The 3rd Quartile Huff distribution was used for the 24-hour duration storm events in the stormwater analysis. Please see the table below for the distribution quartile that was used for the various storm durations.

Table 2-3: Rainfall Distribution

Duration	Distribution Quartile
1 Hour	1
2 Hour	1
3 Hour	1
6 Hour	1
12 Hour	2
18 Hour	3
24 Hour	3
48 Hour (2 Day)	4
72 Hour (3 Day)	4
120 Hour (5 Day)	4
240 Hour (10 Day)	4

2C2 Cross-section data for open channels.

Refer to **Appendix G** for the channel calculations.

2C3 Hydraulic grade line and water surface elevations under design conditions.

The on-site storm sewers were designed to pass the Updated Bulletin 70's 10-yr, rainfall event from the surface areas to the basin. There are several drain tiles in the area that direct water to the site, the flow from these drain tiles will be collected within the proposed storm sewer system, ie. drain tiles are proposed to be installed around the east property line and along the south property line routing the storm water from the northeast corner of the site to the southwest corner of the site. Please refer to the storm sewer calculations within **Appendix H**.

2C4 Hydraulic grade line and water surface elevations under base flood conditions.

Not applicable, due to overland flood routing to detention facility.

2D SITE RUNOFF AND STORAGE CALCULATIONS.

2D1 Calculation of hydraulically connected impervious area and corresponding retention volume.

Part T203.5 of the Will County Technical Guidance Manual states that: Extended detention is required for sites that have an agricultural land use downstream of its storage facility.

2D2 Documentation of the procedures/assumptions used to calculate hydrologic and hydraulic conditions for determining the allowable release rate.

The site will utilize an above ground detention basin to meet the site runoff requirements. This detention basin will have a bottom elevation 20 feet below the normal water level so that the basin can be used as a dive training facility.

There are approximately **1.843** of area that will not be directed to the basin, this consists of **1.843 acres** from **onsite area**. The runoff from this undetained area will be subtracted from the overall allowable release rate to determine the allowable release rate from the pond.

Procedures/Assumptions Used to Calculate Hydrologic and Hydraulic Conditions

Existing Site Runoff Calculations

The site currently consists of **12.504 acres of pervious areas** and **0.352 acres of impervious area**. The cover types are shown on the Existing Pervious Impervious Exhibit included in this Tab.

Watershed Delineation – Existing Conditions

Please refer to the Existing Pervious Impervious Exhibit located in Section 2-4 of this tab.

Curve Numbers – Existing Conditions

As stated in Part 2C1, the hydrologic soil group for the site and surrounding areas ranges from B to D. The table below summarizes the curve numbers used for the various cover types for the existing conditions.

Table 2-4: Existing Conditions Curve Numbers

Cover Type	Curve Number
Row Crops	89
Pervious Areas	80
Gravel	96
Woods	79
Impervious Areas	98

Proposed Site Runoff Calculations

Watershed Delineation – Proposed Conditions

There one drainage area for the proposed site that directs water to the basin Please refer to the Drainage Area Exhibit for the drainage area delineation and the proposed cover types within the drainage area.

Curve Numbers – Proposed Conditions

As stated in Part 2C1, the hydrologic soil group for the site and surrounding areas ranges from B to D. The table below summarizes the curve numbers used for the various cover types for the proposed conditions.

Table 2-5: Proposed Conditions Curve Numbers

Cover Type	Curve Number
Pervious Areas	80
Gravel Areas	98*
Impervious Areas	98
Water	100
Note: A curve number of 98 was used for the gravel extrication area to allow the area to be paved in the future.	

Allowable Release Rate

Part T203.1 of the Will County Technical Guidance Manual SW Regulations require that the discharge from the site not exceed 0.04 cfs/acre for the 2-year, 24-hour storm event and 0.15 cfs/acre for the 100-year, 24-hour storm event.

The Will County Stormwater Management Ordinance has two release rate requirements, the first is for the 100-year frequency at a rate of 0.15 cfs/acre for the and the second is for the 2-year frequency, which has a release rate of 0.04 cfs/acre. These release rates are based on the project's development area. Please see the table below for the allowable release rates for the 2 and 100-year frequency storms.

Table 2-6: Allowable Release Rates

Development Area (ac)	2-Year allowable Release Rate (cfs)	100-Year allowable Release Rate (cfs)
12.737	0.509	1.911

2D3	Documentation of the procedures/assumptions used to calculate on-site depressional storage.

Not applicable, there are no existing depressional storage areas on the site.

2D4	Documentation of the procedures/assumptions used to calculate hydrologic and hydraulic conditions for determining the storage volume.

HydroCAD was used to evaluate the proposed detention basins using the TR-20 method. First the cover types and their respective curve numbers for the two drainage areas were entered into the model. Next the basin information was entered into HydroCAD, including the elevation area information. The orifice structure was designed to be a dual restrictor, with the lower restrictor designed to meet the allowable release rate for the 2-year, 24-hour rainfall event. The second restrictor elevation was set at just above the 2-year, 24-hour high water level and then sized to meet the allowable release rate for the 100-year, 24-hour allowable release rate.

Table 2-6: Release Rate Summary

Condition	2-Year Release Rate (cfs)	100-Year Release Rate (cfs)
Allowable	0.509	1.911
Undetained	0.36	1.36
Outlet Control Structure Discharge	0.13	0.54
Total	0.49	1.90

In order to evaluate the overflow weir capacity, the restrictors were removed from the HydroCAD model, representing clogged conditions. The clogged conditions analysis was performed for the 100-year, critical duration using the Updated Bulletin 70 rainfall data.

2D5	Elevation-area-storage data.

Table 2-7: Elevation area-storage-discharge Table

Elevation (ft)	Area (sf)	Storage (cf)	Storage (ac-ft)	Cumulative Storage (ac-ft)	Discharge (cfs)
639.00	55,560	0	0	0	0
640.00	59,104	57,332	1.316	1.316	0.11
641.00	62,464	60,784	1.395	2.712	0.28
642.00	65,896	64,180	1.473	4.185	0.42
643.00	69,762	67,829	1.557	5.742	0.52
643.50	73,275	35,759	0.821	6.563	0.57

2D6	Elevation-discharge data.

Please see table above for Elevation-discharge information.

Outlet Structure and Emergency Overflow Weir

The outlet control structure consists of 2 orifices, one for the 2-year, 24-hour rainfall event and one for the 100-year, 24-hour event. The outlet control structure also features an internal weir wall to convey stormwater that reaches higher than the Basin System's high-water level, including offsite flow that is conveyed to the site via drain tiles.

Storage facilities shall be designed so that the existing conditions pre-development peak runoff rate from the 100-year, critical duration rainfall will not be exceeded assuming the primary restrictor is blocked. One foot of freeboard shall be provided over the blocked restrictor water level.

The critical duration runoff will be conveyed via the 6-foot internal weir wall within the outlet control structure and will reach an elevation of 643.91 feet. In addition to the internal weir wall, each of the basins will also include emergency overflow weirs that have been sized to pass their respective 100-year, 48-hour inflows.

Model Results

The table below summarizes the results for the 2 and 100-year, 24-hour storm events for the site.

Table 2-10: Basin Summary Table

Parameter		Value
Water Level	NWL (ft MSL)	639.00
	2-Year Calculated HWL (ft MSL)	640.42
	100-Year Calculated HWL (ft MSL)	643.22
	Provided HWL (ft MSL)	643.50
Volume	2-Year Volume Required (ac-ft)	1.888
	100-Year Volume Required (ac-ft)	6.106
	Volume Provided (ac-ft)	6.563
Orifice	2-Year, 24-Hour Orifice Diameter (in)	2.10
	2-Year, 24-Hour Orifice Elevation (ft MSL)	639.00
	100-Year, 24-Hour Orifice Diameter (in)	2.70
	100-Year, 24-Hour Orifice Elevation (ft MSL)	640.50
Total Site Discharge	2-Year, 24-Hour Allowable Discharge (cfs)	0.509
	2-Year, 24-Hour Discharge (cfs)	0.490
	100-Year, 24-Hour Allowable Discharge (cfs)	1.911
	100-Year, 24-Hour Discharge (cfs)	1.900

Will County Site Development Permit Submittal Checklist

TAB 3 – FLOODPLAIN SUBMITTAL

Identifier	Requirement	Section	Comments
3A	Regulatory floodplain boundary determination:	502.5(a)	Not applicable
3A1	Provide source of flood profile information.		Not applicable
3A2	Provide all hydrologic and hydraulic study information for site-specific floodplain studies, unnumbered Zone A area elevation determinations, and floodplain map revisions.		Not applicable
3B	Floodway hydrologic and hydraulic analyses for the following conditions:	502.5(b)	Not applicable
3B1	Existing conditions (land use and stream system).		Not applicable
3B2	Proposed conditions (land use and stream system).		Not applicable
3B3	Tabular summary of 100-year flood elevations and discharges for existing and proposed conditions.		Not applicable
3B4	Calculations and assumptions used for model development.		Not applicable
3B5	Hydraulic/hydrologic computer model input/output.		Not applicable
3C	Floodplain fill and compensatory storage calculations for below and above 10-year flood elevation:	502.5(c)	Not applicable
3C1	Tabular summary for below and above 10-year flood elevation of fill, compensatory storage, and compensatory storage ratios provided in proposed plan.		Not applicable
3C2	Cross-sections used for above calculations with a location and topographical map		Not applicable
3D	Floodproofing Measures:	502.5(d)	Not applicable
3D1	Narrative discussion of flood proofing measures including material specifications, calculations, design details, operation summary, etc.		Not applicable
3D2	Insure structures built on fill in or near Special Flood Hazard Areas are reasonable safe form flooding (see TB10-01 published by FEMA)		Not applicable
3E	Flood Easements when required.	502.5(e)	Not applicable
3F	Special Use Permit for floodplain development (when required)		Not applicable
3G	Sign-off from IDNR (when required)		Not applicable

TAB 3

3A REGULATORY FLOODPLAIN BOUNDARY DETERMINATION.

3A1	Provide source of flood profile information.

Not applicable.

3A2	Provide all hydrologic and hydraulic study information for site-specific floodplain studies, unnumbered Zone A area elevation determinations, and floodplain map revisions.

Not applicable.

3B FLOODWAY HYDROLOGIC AND HYDRAULIC ANALYSES FOR THE FOLLOWING CONDITIONS:

3B1	Existing conditions (land use and stream system).

Not applicable.

3B2	Proposed conditions (land use and stream system).

Not applicable.

3B3	Tabular summary of 100-year flood elevations and discharges for existing and proposed conditions.

Not applicable.

3B4	Calculations and assumptions use for model development.

Not applicable.

3B5	Hydraulic/hydrologic computer model input/output.

Not applicable.

3C FLOODPLAIN FILL AND COMPENSATORY STORAGE CALCULATIONS FOR BELOW AND ABOVE 10-YEAR FLOOD ELEVATION:

3C1	Tabular summary for below and above 10-year flood elevation of fill, compensatory storage, and compensatory storage ratios provided in proposed plan.

Not applicable.

3C2	Cross-sections used for above calculations with a location and topographical map.

Not applicable.

3D FLOODPROOFING MEASURES:

3D1	Narrative discussion of flood proofing measures including material specifications, calculations, design details, operation summary, etc..

Not applicable.

3D2	Insure structures built on fill in or near Special Flood Hazard Areas are reasonable safe from flooding (see TB10-01 published by FEMA).

Not applicable.

3E FLOOD EASEMENTS WHEN REQUIRED:

Not applicable.

3F SPECIAL USE PERMIT FOR FLOODPLAIN DEVELOPMENT (WHEN REQUIRED):

Not applicable.

3G SIGN-OFF FROM IDNR (WHEN REQUIRED):

Not applicable.

Will County Site Development Permit Submittal Checklist

TAB 4 – WETLAND SUBMITTAL

Identifier	Requirement	Section	Comments
4A	A statement of wetland determination as to which wetlands on the development site are Isolated Waters of Will County or Waters of the U.S. to the U.S. Army Corps of Engineers (Corps), including a statement of all required buffer areas.	502.6	Not applicable
4A1	The jurisdictional determination shall be included with the wetland submittal.		Not applicable
4B	For Wetland impacts to Waters of the U.S. or Isolated Waters of Will County, the following information is required:	502.6(a)	Not applicable
4B1	Wetland delineation and wetland determination report.		Not applicable
4B2	A U.S. Army Corps permit for the proposed development or a letter from the Corps stating that the proposed development does not require Corps authorization.		Not applicable
4B3	A cover letter signed by a Qualified Wetland Professional, that provides a clear project purpose and need statement, a description of the proposed activity, area (in acres) of wetland and/or buffer impact;		Not applicable
4B4	A delineation of the wetlands consistent with the requirements provided “Requirements for Wetland Delineation” as requires in Section 407.2 of this ordinance, signed by a Qualified Wetland Professional;		Not applicable
4B5	A statement on the occurrence of any High Quality Aquatic Resource (HQAR) on or adjoining the development, signed by a Certified Wetland Specialist;		Not applicable
4B6	Documentation that the development is in compliance with the Illinois Department of Natural Resource’s Endangered Species Consultation Program and the Illinois Natural Areas Preservation Act;		Not applicable
4B7	Documentation that the development is in compliance with the U.S. Fish and Wildlife Service’s consultation program under the Endangered Species Act;		Not applicable
4B8	A mitigation plan meeting the requirements of this Ordinance;		Not applicable
4B9	A discussion, hydrology calculations or other supporting information to document that on-site preserved wetlands and off site wetlands will not be impacted either from adverse changes in hydrology or pollutant/sediment loading or erosion.		Not applicable
4B10	A copy of the Natural Resources Information Report (NRI) for development that is required to obtain a NRI performed by the Will County Soil and Water Conservation District;		Not applicable
4B11	A narrative of the alternative measures taken to avoid, minimize, or mitigate for wetland impacts to Isolated Waters of Will County;		Not applicable
4B12	Shoreline and streambank erosion restoration that meet the requirements contained in Section 502.9 and Section 502.10 are exempt from submittal requirements contained in this section.		Not applicable

TAB 4

4A A STATEMENT OF WETLAND DETERMINATION AS TO WHICH WETLANDS ON THE DEVELOPMENT SITE ARE ISOLATED WATERS OF WILL COUNTY OR WATERS OF THE U.S. TO THE U.S. ARMY CORPS OF ENGINEERS (CORPS), INCLUDING A STATEMENT OF ALL REQUIRED BUFFER AREAS.

4A1	The jurisdictional determination shall be included with the wetland submittal.

Not applicable.

4B FOR WETLAND IMPACTS TO WATERS OF THE U.S. OR ISOLATED WATERS OF WILL COUNTY, THE FOLLOWING INFORMATION IS REQUIRED:

4B1	Wetland delineation and wetland determination report.

Not applicable.

4B2	A U.S. Army Corps permit for the proposed development or a letter from the Corps stating that the proposed development does not require Corps authorization.

Not applicable.

4B3	A cover letter signed by a Qualified Wetland Professional, that provides a clear project purpose and need statement, a description of the proposed activity, area (in acres) of wetland and/or buffer impact;

Not applicable.

4B4	A delineation of the wetlands consistent with the requirements provided “Requirements for Wetland Delineation” as requires in Section 407.2 of this ordinance, signed by a Qualified Wetland Professional;

Not applicable.

4B5	A statement on the occurrence of any High Quality Aquatic Resource (HQAR) on or adjoining the development, signed by a Certified Wetland Specialist;

Not applicable.

4B6	Documentation that the development is in compliance with the Illinois Department of Natural Resource’s Endangered Species Consultation Program and the Illinois Natural Areas Preservation Act;

Not applicable.

4B7	Documentation that the development is in compliance with the U.S. Fish and Wildlife Service's consultation program under the Endangered Species Act;

Not applicable.

4B8	A mitigation plan meeting the requirements of this Ordinance;

Not applicable.

4B9	A discussion, hydrology calculations or other supporting information to document that on-site preserved wetlands and off site wetlands will not be impacted either from adverse changes in hydrology or pollutant/sediment loading or erosion.

Not applicable.

4B10	A copy of the Natural Resources Information Report (NRI) for development that is required to obtain a NRI performed by the Will County Soil and Water Conservation District;

Not applicable.

4B11	A narrative of the alternative measures taken to avoid, minimize, or mitigate for wetland impacts to Isolated Waters of Will County;

Not applicable.

4B12	Shoreline and streambank erosion restoration that meet the requirements contained in Section 502.9 and Section 502.10 are exempt from submittal requirements contained in this section.

Not applicable.

Will County Site Development Permit Submittal Checklist

TAB 5 – PLAN SET SUBMITTAL

Identifier	Requirement	Section	Comments
5A	Site Topographic Map:	502.3(a)	
5A1	Map scales at 1 inch = 50 feet (or less) and accurate to +/- 0.5 feet.		Refer to Engineering Improvement Plans
5A2	Existing and proposed contours (1 foot interval) on-site and within 100 feet of site.		Refer to Engineering Improvement Plans
5A3	Existing and proposed drainage patterns and watershed boundaries including depressional storage areas.		See **Appendices F and G**
5A4	Delineation of pre-development regulatory floodplain/floodway limits.		Not applicable
5A5	Delineation of post-development regulatory floodplain / floodway limits.		Not applicable
5A6	Location of cross-sections and any other modeled features.		Refer to Engineering Improvement Plans
5A7	Location of drain tiles and note "I/We agree that any existing field tile on the property shall be protected from damage and that existing drainage through the property shall be maintained. If any existing field tile is encountered, it shall be repaired and/or rerouted back to its original route and function."		Refer to Engineering Improvement Plans and **Appendix J**
5A8	Location of all wetlands, lakes, ponds, etc. with normal water elevation noted, including appropriate buffers.		Not applicable
5A9	Location of all (existing and proposed) buildings on the site, including tops of foundation, lowest openings in foundation, and finished garage floor elevations. Also included should be structure elevations within 100 feet of subject property.		Refer to Engineering Improvement Plans
5A10	Nearest base flood elevations.		Not applicable
5A11	FEMA (if floodplain) or Will County Survey Control Network benchmark.		Not applicable
5A12	Note stating that no stockpiling or filling in floodplain is allowed.		Not applicable
5B	General Plan View Drawing (may be more than one drawing for clarity)	502.3(b)	
5B1	Map scales at 1 inch = 50 feet (or less) and accurate to +/- 0.5 feet contour interval.		Refer to Engineering Improvement Plans
5B2	Existing major and minor stormwater systems.		Refer to Engineering Improvement Plans
5B3	Proposed major and minor stormwater systems.		Refer to Engineering Improvement Plans
5B4	Design details for stormwater facilities (i.e. structure and outlet work detail drawings, etc.).		Refer to Engineering Improvement Plans
5B5	Scheduled maintenance program for permanent stormwater facilities including BMP measures.		Refer to Engineering Improvement Plans
5B6	Planned maintenance tasks and schedule.		Refer to Engineering Improvement Plans

Will County Site Development Permit Submittal Checklist

TAB 5 – PLAN SET SUBMITTAL…CONTINUED

5B7	Identification of persons responsible for maintenance.		Refer to Engineering Improvement Plans
5B8	Permanent public access maintenance easements granted or dedicated to, and accepted by, a government entity.		Refer to Plat of Survey
5B9	Legal Description and PIN		Refer to Plat of Survey the site PIN is 11-04-29-200-009-0000
5B10	Method of Sewer and Water service with locations, including septic fields drawn to scale.		Refer to Engineering Improvement Plans
5B11	Name, address, and phone number of Engineer and Owner.		Refer to Engineering Improvement Plans
5B12	Percent impervious surface lot coverage of site.		Refer to **Appendix G**
5B13	Drainage Certificate		Refer to Engineering Improvement Plans
5B14	Parking plan showing compliance with the Will Co. Zoning Ordinance and ADA requirements.		Refer to Engineering Improvement Plans
5B15	Building and parking setbacks.		Refer to Engineering Improvement Plans
5C	Sediment/Erosion Control Plan:	502.3(c)	
5C1	Sediment/erosion control installation measures and schedule.		Refer to Engineering Improvement Plans
5C2	Existing and proposed roadways, structures, parking lots, driveways, sidewalks and other impervious surfaces.		Refer to Engineering Improvement Plans
5C3	Landscape plan		Refer to Engineering Improvement Plans
5C4	Limits of clearing and grading.		Refer to Engineering Improvement Plans
5C5	Floodplain/Floodway Locations.		Not applicable
5C6	Proposed buffer location.		Not applicable
5C7	Existing soil types, vegetation and land cover conditions.		Refer to **Appendix F**
5C8	List of maintenance tasks and schedule for sediment/erosion control measures.		Refer to Engineering Improvement Plans
5C9	Note stating “Erosion control to be applied per the Illinois Urban Manual, latest edition.”		Refer to Engineering Improvement Plans
5D	Vicinity Topographic Map:	502.3(d)	
5D1	Vicinity topographic map covering entire area upstream of the development site and downstream to a suitable hydraulic boundary condition.		Refer to Engineering Improvement Plans
5D2	Watershed boundaries for areas draining through or from the development.		Refer to **Appendix F**
5D3	Soil types, vegetation and land cover affecting runoff upstream of the site for any area draining through the site.		Refer to **Appendix F**
5D4	Location of development site within the major watersheds.		Refer to **Appendix F**

TAB 5

5A SITE TOPOGRAPHIC MAP:

Refer to Engineering Improvement Plans and **Appendices F, G, and J**.

5B GENERAL PLAN VIEW DRAWING (MAY BE MORE THAN ONE DRAWING FOR CLARITY):

Refer to Engineering Improvement Plans, Plat of Survey, and **Appendix G**.

5C SEDIMENT/EROSION CONTROL PLAN:

Refer to Engineering Improvement Plans and **Appendix F**.

5D VICINITY TOPOGRAPHIC MAP:

Refer to Engineering Improvement Plans and **Appendix F**.

Will County Site Development Permit Submittal Checklist

TAB 6 – SECURITY SUBMITTAL

Identifier	Requirement	Section	Comments
6A	Estimate of Probable Cost to construct stormwater facilities.		EOPC will be provided under separate cover
6B	Development security:	1201.1	
6B1	Schedule for the completion of stormwater facilities.		This item will be provided under separate cover
6B2	Irrevocable letter of credit for 125% of estimated probable cost to construct the stormwater facilities.		This item will be provided under separate cover
6B3	Right to draw on the security statement - signed by the holder of the security.		This item will be provided under separate cover
6B4	Right to enter the development site to complete required work that is not completed according to schedule.		This item will be provided under separate cover
6B5	Indemnification statement - signed by developer.		This item will be provided under separate cover
6C	Sediment and erosion control security:	1202.1	
6C1	Irrevocable letter of credit for 110% of estimated probable cost to install sediment and erosion control facilities.		This item will be provided under separate cover
6C2	Right to draw on the security statement - signed by the holder of the security.		This item will be provided under separate cover
6C3	Right to enter the development site to complete required work that is not installed and maintained according to schedule.		This item will be provided under separate cover
6D	Letter of Credit Requirements:	1203	
6D1	Statement that indicates that the lending institution capital resources at least $10,000,000, or as authorized.		This item will be provided under separate cover
6D2	Lending institution has an office location within the Chicago Metropolitan Area.		This item will be provided under separate cover
6D3	Lending institution is insured by the Federal Deposit Insurance Corporation.		This item will be provided under separate cover
6D4	Allows Chief Subdivision Engineer to withdraw without consent of developer.		This item will be provided under separate cover
6D5	Allows Chief Subdivision Engineer to withdraw within 45 days of expiration date.		This item will be provided under separate cover

TAB 6

6A ESTIMATE OF PROBABLE COST TO CONSTRUCT STORMWATER FACILITIES.

EOPC will be provided under separate cover

6B DEVELOPMENT SECURITY:

6B1	Schedule for the completion of stormwater facilities.

This item will be provided under separate cover

6B2	Irrevocable letter of credit for 125% of estimated probable cost to construct the stormwater facilities. (Separate document to be provided by developer)

This item will be provided under separate cover

6B3	Right to draw on the security statement - signed by the holder of the security.

This item will be provided under separate cover

6B4	Right to enter the development site to complete required work that is not completed according to schedule.

This item will be provided under separate cover

6B5	Indemnification statement - signed by developer.

This item will be provided under separate cover

6C SEDIMENT AND EROSION CONTROL SECURITY:

6C1	Irrevocable letter of credit for 110% of estimated probable cost to install sediment and erosion control facilities. (Separate document to be provided by developer)

This item will be provided under separate cover

6C2	Right to draw on the security statement - signed by the holder of the security.

This item will be provided under separate cover

6C3	Right to enter the development site to complete required work that is not completed according to schedule.

This item will be provided under separate cover

6D LETTER OF CREDIT REQUIREMENTS:

6D1	Statement that indicates that the lending institution capital resources at least $10,000,000, or as authorized.

This item will be provided under separate cover

6D2	Lending institution has an office location within the Chicago Metropolitan Area.

This item will be provided under separate cover

6D3	Lending institution is insured by the Federal Deposit Insurance Corporation.

This item will be provided under separate cover

6D4	Allows Chief Subdivision Engineer to withdraw without consent of developer.

This item will be provided under separate cover

6D5	Allows Chief Subdivision Engineer to withdraw within 45 days of expiration date.

This item will be provided under separate cover

DEVELOPER'S STATEMENT

Right to Draw on Securities
Section 1201.1 (c & d) & 1202.1.b

I,_____, do hereby grant to the Chief Subdivision Engineer of Will County the right to draw on the performance security posted in accordance with Site Development Permit #_____ for the purpose of completing any and all Stormwater Facilities and completing or maintaining Sediment and Erosion Control Measures included in the referenced permit. The decision to draw on the security shall be at the discretion of the Chief Subdivision Engineer. I further grant the right to enter the property for the purpose of performing the work to whoever the Chief Subdivision Engineer designates and agree to indemnify Will County against any increased costs attributable to concurrent activities or conflicts between the Chief Subdivision Engineer's designees and any other contractors on site. I further warrant that I am a duly authorized representative of the developer with the authority to make this statement, and that this statement shall remain binding until final inspection and acceptance of all permitted Stormwater Facilities.

STATEMENT FOR: _____
Developer

BY: _____
Name and Signature

TITLE: _____

RELEASED BY FINAL ACCEPTANCE

FOR: _____
County/Community

BY: _____
Chief Subdivision Engineer

DATE: _____

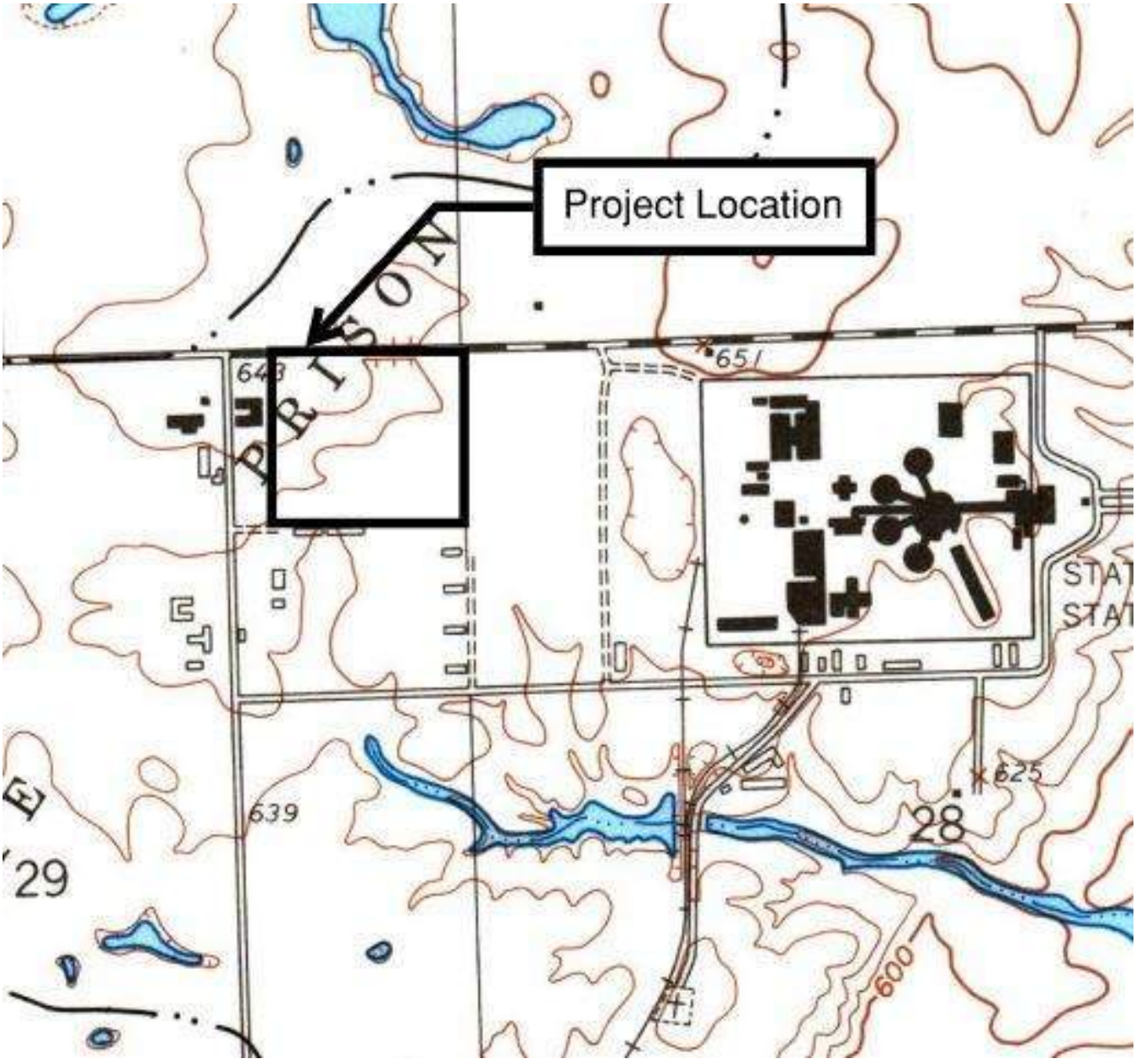
APPENDICES

Appendix A – Site Location Map

(Source: Google Earth)

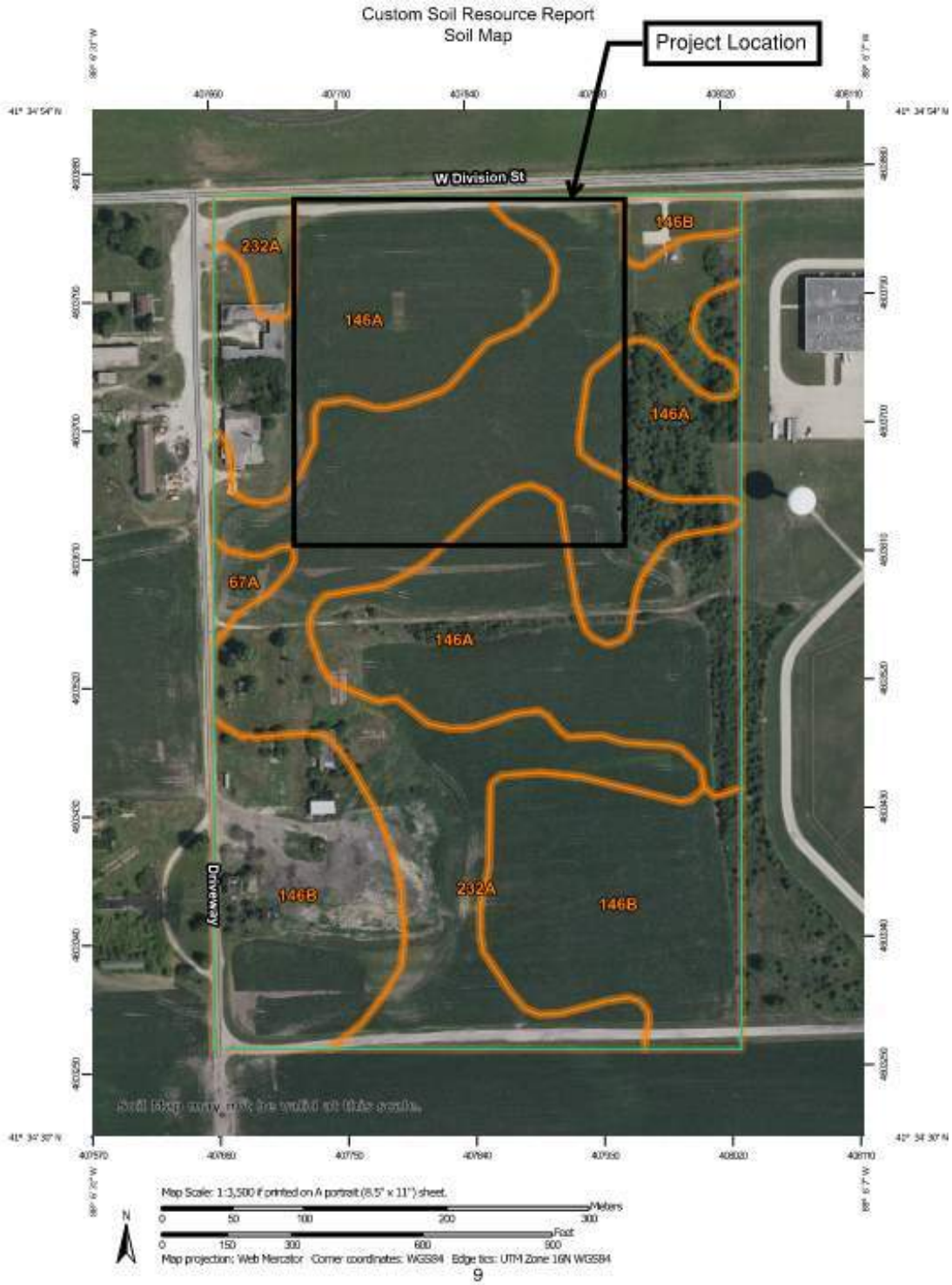
Appendix B – Floods in Joliet Quadrangle, IL (Hydrologic Investigations Atlas HA-89)

(Source: https://gispub.mwrd.org/swima/)



Appendix C – NRCS Soil Survey

(Source: USDA & NCS)



United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Will County, Illinois

September 25, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:3,500 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Will County, Illinois
Survey Area Data: Version 17, Aug 31, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 7, 2020—Oct 13, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
67A	Harpster silty clay loam, 0 to 2 percent slopes	0.5	1.0%
146A	Elliott silt loam, 0 to 2 percent slopes	19.2	35.0%
146B	Elliott silt loam, 2 to 4 percent slopes	14.4	26.2%
232A	Ashkum silty clay loam, 0 to 2 percent slopes	20.9	37.9%
Totals for Area of Interest		**55.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Will County, Illinois

67A—Harpster silty clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2t705
Elevation: 490 to 960 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 46 to 55 degrees F
Frost-free period: 145 to 195 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Harpster, drained, and similar soils: 93 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Harpster, Drained

Setting

Landform: Depressions on lake plains, depressions on outwash plains, depressions on till plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Calcareous loess and/or glacial drift

Typical profile

Akp - 0 to 18 inches: silty clay loam
Bg1 - 18 to 36 inches: silty clay loam
Bg2 - 36 to 41 inches: silty clay loam
Cg - 41 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: R110XY025IL - Ponded Calcareous Sedge Meadow
Hydric soil rating: Yes

Minor Components

Drummer, drained

Percent of map unit: 5 percent
Landform: Swales on outwash plains, swales on till plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R110XY024IL - Ponded Depressional Sedge Meadow, R108XA013IL - Wet Outwash Prairie
Hydric soil rating: Yes

Elburn

Percent of map unit: 2 percent
Landform: Till plains, outwash plains
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R108XA012IL - Outwash Prairie
Hydric soil rating: No

146A—Elliott silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2sss0
Elevation: 570 to 930 feet
Mean annual precipitation: 33 to 42 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 150 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Elliott and similar soils: 94 percent
Minor components: 6 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Elliott

Setting

Landform: Ground moraines, till plains
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Thin mantle of loess or other silty material over silty clay loam till

Typical profile

Ap - 0 to 6 inches: silt loam

A - 6 to 11 inches: silty clay loam
Bt1 - 11 to 16 inches: silty clay
2Bt2 - 16 to 41 inches: silty clay loam
2Cd - 41 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 29 to 45 inches to densic material
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: C/D
Ecological site: R110XY007IL - Moist Glacial Drift Upland Prairie
Forage suitability group: Mod AWC, high water table (G095BY004WI), High AWC, high water table (G095BY007WI)
Other vegetative classification: Mod AWC, high water table (G095BY004WI), High AWC, high water table (G095BY007WI)
Hydric soil rating: No

Minor Components

Ashkum, drained

Percent of map unit: 4 percent
Landform: Till plains, ground moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R110XY024IL - Ponded Depressional Sedge Meadow
Hydric soil rating: Yes

Urban land

Percent of map unit: 1 percent
Landform: Ground moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Orthents, clayey

Percent of map unit: 1 percent
Landform: Till plains, ground moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear

Across-slope shape: Linear
Ecological site: F095XB010WI - Loamy and Clayey Upland
Hydric soil rating: No

146B—Elliott silt loam, 2 to 4 percent slopes

Map Unit Setting

National map unit symbol: 2sss1
Elevation: 570 to 930 feet
Mean annual precipitation: 33 to 42 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 150 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Elliott and similar soils: 94 percent
Minor components: 6 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Elliott

Setting

Landform: Ground moraines, till plains
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Thin mantle of loess or other silty material over silty clay loam till

Typical profile

Ap - 0 to 9 inches: silt loam
A - 9 to 13 inches: silty clay loam
2Bt1 - 13 to 17 inches: silty clay
2Bt2 - 17 to 35 inches: silty clay loam
2Cd - 35 to 60 inches: silty clay loam

Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: 25 to 39 inches to densic material
Drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Ecological site: R110XY007IL - Moist Glacial Drift Upland Prairie
Hydric soil rating: No

Minor Components

Ashkum, drained

Percent of map unit: 4 percent
Landform: Till plains, ground moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R110XY024IL - Ponded Depressional Sedge Meadow
Hydric soil rating: Yes

Urban land

Percent of map unit: 1 percent
Landform: Ground moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Orthents, clayey

Percent of map unit: 1 percent
Landform: Till plains, ground moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F095XB010WI - Loamy and Clayey Upland
Hydric soil rating: No

232A—Ashkum silty clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2ssrw
Elevation: 520 to 930 feet
Mean annual precipitation: 33 to 41 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 160 to 190 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Ashkum, drained, and similar soils: 92 percent

Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ashkum, Drained

Setting

Landform: End moraines, ground moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Clayey colluvium over till

Typical profile

Ap - 0 to 12 inches: silty clay loam
Bg1 - 12 to 29 inches: silty clay
2Bg2 - 29 to 54 inches: silty clay loam
2Cg - 54 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 25 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: R110XY024IL - Ponded Depressional Sedge Meadow
Hydric soil rating: Yes

Minor Components

Peotone, drained

Percent of map unit: 5 percent
Landform: Depressions on ground moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R110XY024IL - Ponded Depressional Sedge Meadow
Hydric soil rating: Yes

Orthents, clayey

Percent of map unit: 2 percent
Landform: Ground moraines, lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve

Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F095XB010WI - Loamy and Clayey Upland
Hydric soil rating: No

Urban land

Percent of map unit: 1 percent
Landform: Ground moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

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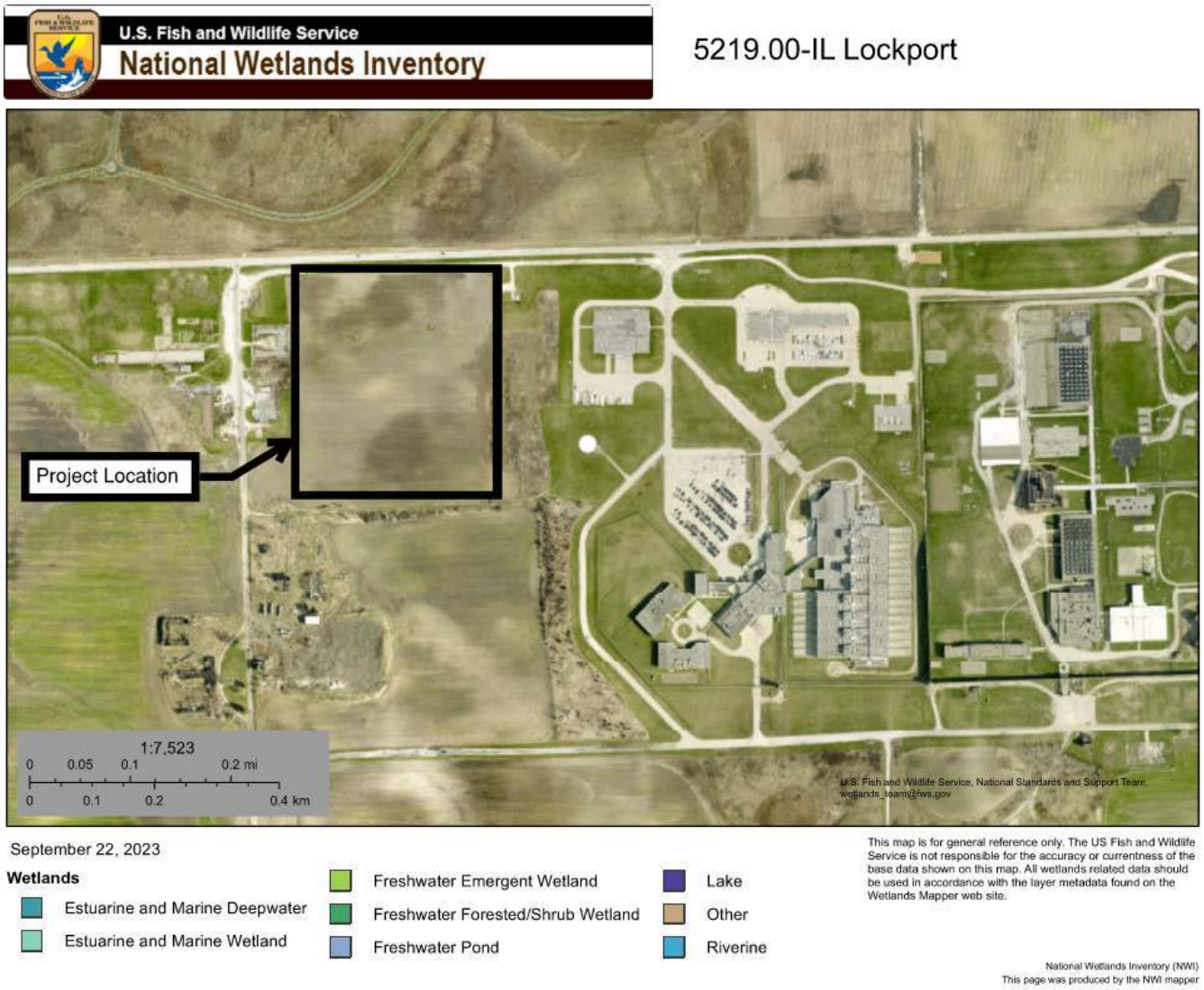
Appendix D – National Wetlands Inventory

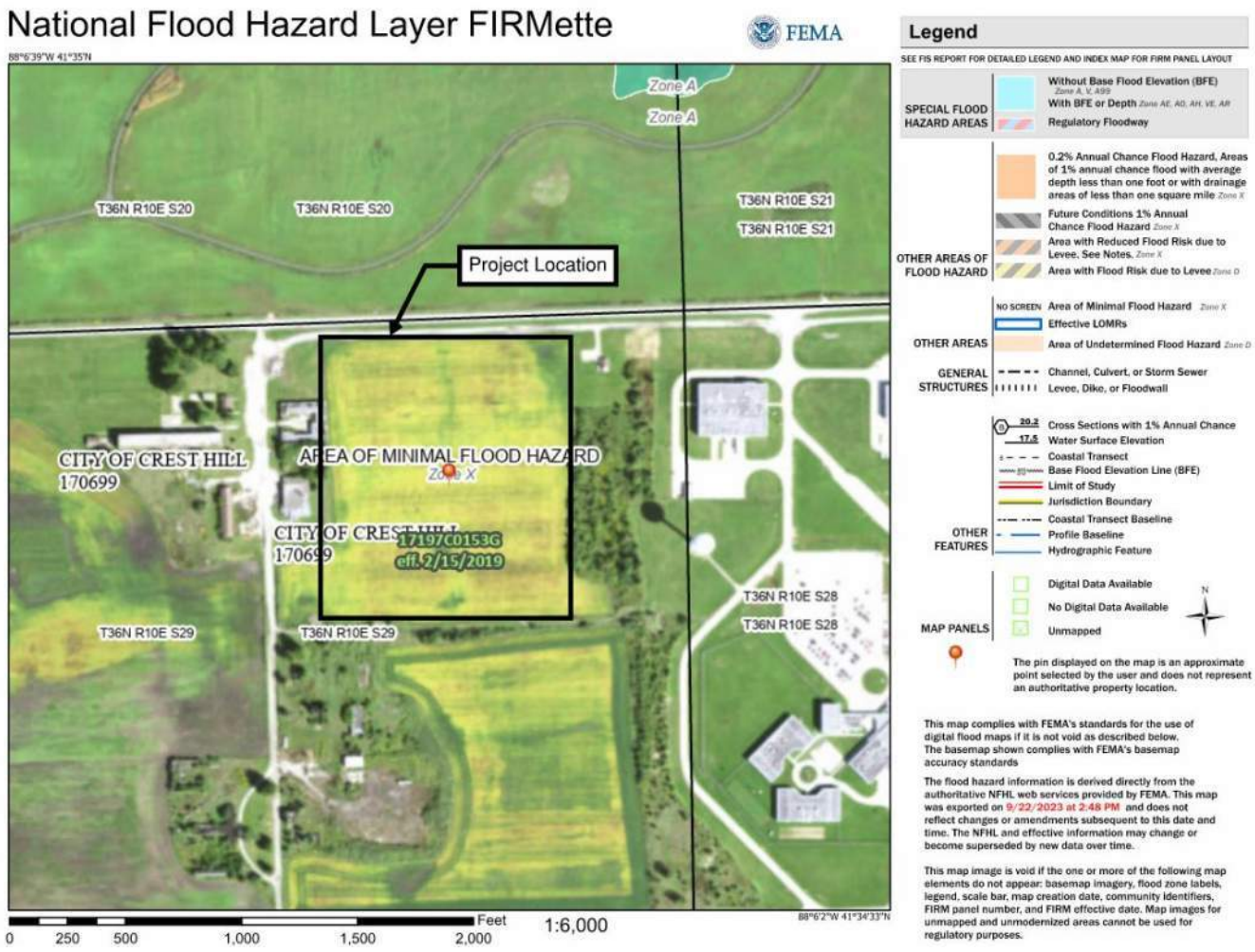
(Source: U.S. Fish and Wildlife Service)



Appendix E – Flood Insurance Rate Map (FIRM)ette (Based on Panel No. *17197C0153G*)

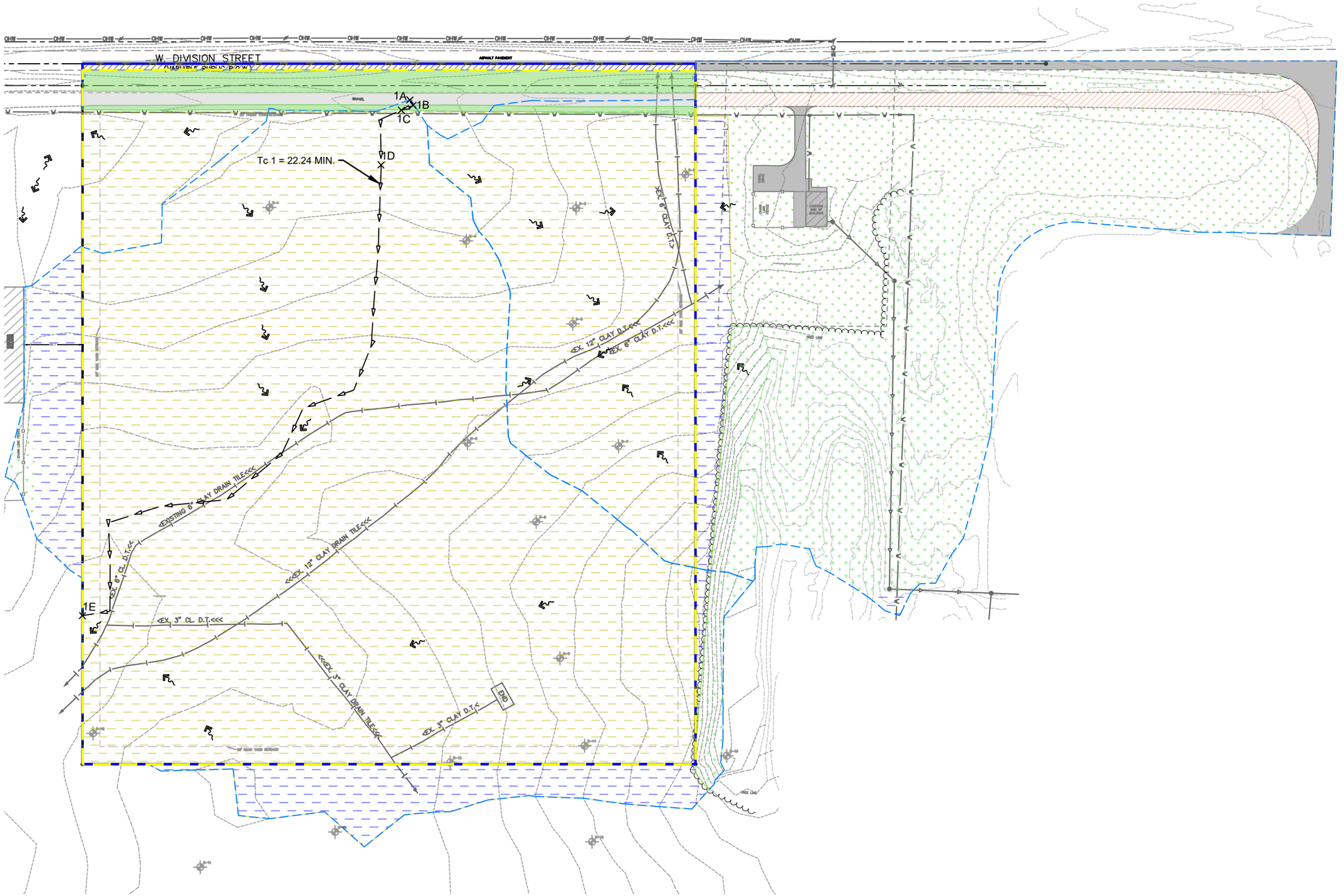
(Source: Federal Emergency Management Agency, https://msc.fema.gov/portal/search?) effective date 8/19/2008

NORTH



Appendix F – Existing Stormwater Calculations

Appendix F.1 – Existing Conditions Drainage Exhibit



LEGEND

	SITE AREA -	12.856 AC (560,000 S.F.)
	DEVELOPMENT AREA	12.322 AC (536,742 S.F.)
	GREEN SPACE PERVIOUS AREA	0.520 AC (22,644 S.F.)
	ROW CROPS	11.985 AC (522,052 S.F.)
	GRAVEL AREA	0.233 AC (10,136 S.F.)
	UNDEVELOPED IMPERVIOUS AREA ONSITE	0.119 AC (5,168 S.F.)
	OFFSITE GREEN SPACE PERVIOUS AREA	3.269 AC (142,408 S.F.)
	OFFSITE WOODED PERVIOUS AREA	2.069 AC (90,104 S.F.)
	OFFSITE ROW CROPS	1.560 AC (67,940 S.F.)
	OFFSITE GRAVEL AREA	0.321 AC (13,981 S.F.)
	OFFSITE IMPERVIOUS AREA	0.451 AC (19,632 S.F.)

NORTH

SCALE: 1"=120'

JOB NO. 5219.00-IL

EXISTING CONDITIONS DRAINAGE EXHIBIT - LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT

02/18/25

PINNACLE ENGINEERING GROUP

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Appendix F.2 – Existing Time of Concentration Calculation

Existing Time of Concentration (Tc) or travel time (Tt)

Project #: 5219.00-IL
Project: Lockport Township Fire Protection District
Location: W. Division Street

Sheet Flow (Applicable to Tc only)

	Segment ID		AB	BC	CD
1. Surface description (Table 3-1)			Gravel	Dense Grass	Cultivated Soils
2. Manning's roughness coefficient, n (table 3-1)			0.011	0.24	0.06
3. Flow length, L (total L 100ft)		ft	7.2	14.85	77.98
4. 2-year 24-hour rainfall, p_2		in	3.34	3.34	3.34
5. Land slope, s		ft/ft	0.0194	0.0034	0.004
6. Tt=(0.007(nL)^(0.8))/((p2^(0.5))*(s^(0.4)))					
	Compute Tt	min	0.15	6.17	7.19

Shallow Concentrated Flow

	Segment ID		DE		
7. Surface description (paved or unpaved)			Unpaved		
8. Flow length, L		ft	733.44		
9. Watercourse slope, s		ft/ft	0.0075		
10. Average velocity, V (figure 3-1)		ft/s	1.4		
11. Tt=L/3600V					
	Compute Tt	min	8.73		

Channel Flow

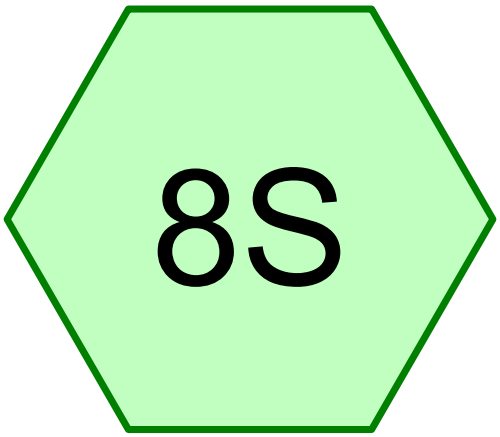
	Segment ID		CD		
12. Cross sectional flow area, a		sq.ft.	0.349		
13. Wetted perimter, Pw		ft	2.094		
14. Hydraulic radius, r=a/Pw, compute r		ft	0.167		
15. Channel slope, s		ft/ft	0.0036		
16. Manning's roughness coefficient, n			0.013		
17. V=(1.49*r^(2/3)*s^(1/2))/n		ft/s	2.08		
18. Flow length, L		ft	0		
19. Tt=L/3600V					
	Compute Tt	min	0.00		

20. Watershed or subarea Tc or Tt (add Tt in steps 6,11 & 19)	8.88	6.17	7.19

General Rule of Thumb - if Tc is less than 0.17 hr, use 0.17 hr

MIN 22.24

Appendix F.3 – Existing Conditions HydroCAD Analysis



Existing Site

Subcat Reach Pond Link

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	U70 2-YR, 24-HR	Huff B70 0-10sm	3Q	Scale	24.00	1	3.34	2
2	U70 100-YR, 24-HR	Huff B70 0-10sm	3Q	Scale	24.00	1	8.57	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.520	80	>75% Grass cover, Good, HSG D (8S)
0.233	96	Gravel surface, HSG D (8S)
0.119	98	Paved parking, HSG D (8S)
11.985	89	Row crops, straight row, Good, HSG D (8S)
12.857	**89**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
12.857	HSG D	8S
0.000	Other	
12.857		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.520	0.000	0.520	>75% Grass cover, Good	8S
0.000	0.000	0.000	0.233	0.000	0.233	Gravel surface	8S
0.000	0.000	0.000	0.119	0.000	0.119	Paved parking	8S
0.000	0.000	0.000	11.985	0.000	11.985	Row crops, straight row, Good	8S
0.000	**0.000**	**0.000**	**12.857**	**0.000**	**12.857**	**TOTAL AREA**	

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment8S: Existing Site Runoff Area=12.857 ac 0.93% Impervious Runoff Depth=2.21"
Tc=22.2 min CN=89 Runoff=3.64 cfs 2.368 af

Total Runoff Area = 12.857 ac Runoff Volume = 2.368 af Average Runoff Depth = 2.21"
99.07% Pervious = 12.738 ac 0.93% Impervious = 0.119 ac

Summary for Subcatchment 8S: Existing Site

Runoff = 3.64 cfs @ 16.10 hrs, Volume= 2.368 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Huff B70 0-10sm 3Q scaled to 24.00 hrs U70 2-YR, 24-HR Rainfall=3.34", Smoothing=On

	Area (ac)	CN	Description
	11.985	89	Row crops, straight row, Good, HSG D
	0.520	80	>75% Grass cover, Good, HSG D
*	0.233	96	Gravel surface, HSG D
	0.119	98	Paved parking, HSG D
	12.857	89	Weighted Average
	12.738		99.07% Pervious Area
	0.119		0.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, EXISTING CONDITIONS**

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment8S: Existing Site Runoff Area=12.857 ac 0.93% Impervious Runoff Depth=7.25"
Tc=22.2 min CN=89 Runoff=10.67 cfs 7.764 af

Total Runoff Area = 12.857 ac Runoff Volume = 7.764 af Average Runoff Depth = 7.25"
99.07% Pervious = 12.738 ac 0.93% Impervious = 0.119 ac

Summary for Subcatchment 8S: Existing Site

Runoff = 10.67 cfs @ 16.00 hrs, Volume= 7.764 af, Depth= 7.25"

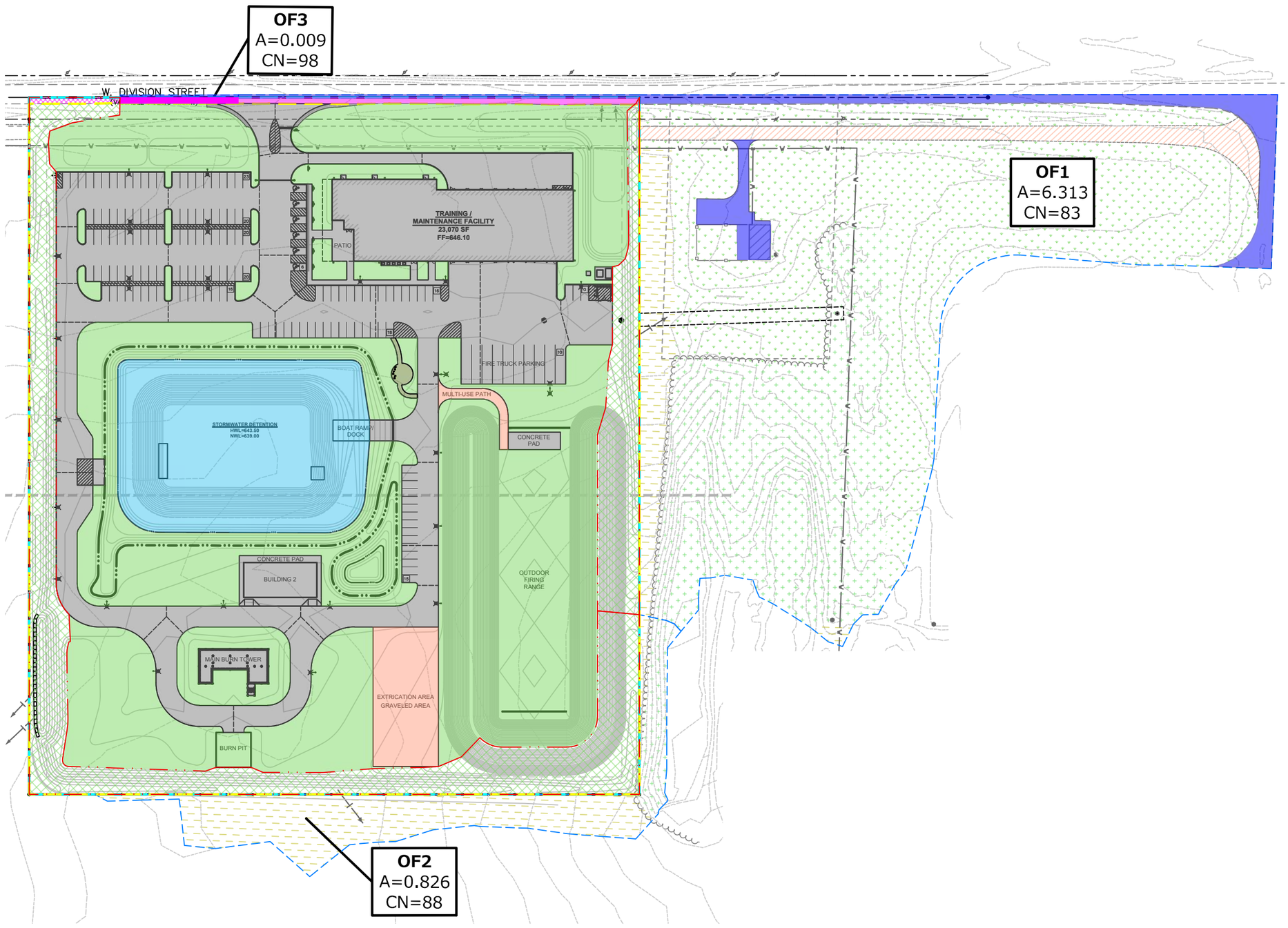
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Huff B70 0-10sm 3Q scaled to 24.00 hrs U70 100-YR, 24-HR Rainfall=8.57", Smoothing=On

	Area (ac)	CN	Description
	11.985	89	Row crops, straight row, Good, HSG D
	0.520	80	>75% Grass cover, Good, HSG D
*	0.233	96	Gravel surface, HSG D
	0.119	98	Paved parking, HSG D
	12.857	89	Weighted Average
	12.738		99.07% Pervious Area
	0.119		0.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, EXISTING CONDITIONS**

Appendix G – Proposed Stormwater Calculations

Appendix G.1 – Proposed Drainage Exhibit



LEGEND

- SITE AREA = 560,000 SF = 12.856 ACRES
- DEVELOPED AREA = 554,831 SF = 12.737 ACRES
- PERVIOUS AREA = 235,355 SF = 5.403 ACRES
- UNDETAINED PERVIOUS AREA = 79,484 SF = 1.825 ACRES
- IMPERVIOUS AREA = 170,160 SF = 3.906 ACRES
- FUTURE IMPERVIOUS AREA = 787 SF = 0.018 ACRES
- GRAVEL IMPERVIOUS AREA = 13,513 SF = 0.310 ACRES
- UNDEVELOPED IMPERVIOUS AREA = 4,402 SF = 0.101 ACRES
- UNDEVELOPED UNDETAINED IMPERVIOUS AREA = 767 SF = 0.018 ACRES
- STORMWATER DETENTION = 55,560 SF = 1.275 ACRES
- OFFSITE IMPERVIOUS AREA = 19,337 SF = 0.444 ACRES
- OFFSITE GRAVEL IMPERVIOUS AREA = 13,981 SF = 0.321 ACRES
- OFFSITE ROW CROPS PERVIOUS AREA = 48,961 SF = 1.124 ACRES
- OFFSITE WOODED AREA PERVIOUS AREA = 89,087 SF = 2.045 ACRES
- OFFSITE GREEN SPACE PERVIOUS AREA = 139,722 SF = 3.208 ACRES

NORTH

SCALE: 1"=120'

JOB NO. 5219.00-IL

2/18/2025 8:55 PM – Z:\Projects\2023\5219.00–IL\600 – CAD\FINAL\EXHIBITS\PROPOSED DRAINAGE EXHIBIT 2025–02–18.dwg

PROPOSED DRAINAGE EXHIBIT - LOCKPORT TOWNSHIP FIRE PROTECTION DISTRICT

02/18/25

PINNACLE ENGINEERING GROUP

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Appendix G.2 – Allowable Release Rate

Allowable Release Rate Calculation

Project:	Lockport Township Fire Protection District	
Location:	W. Division Street, Crest Hill	
PEG Project No.:	5219.00-IL	
Date:	02-19-25	

Allowable Release Rate		Original Design	
Aurora Release Rate:	2-yr, 24-hr	0.04	cfs/acre
Size of Development:		12.737	acres
Allowable Release rate from site:	2-yr, 24-hr	**0.509**	**cfs**
Undetained Release (refer to HydroCAD):		0.360	cfs
Allowable release rate from restrictor:		0.15	cfs

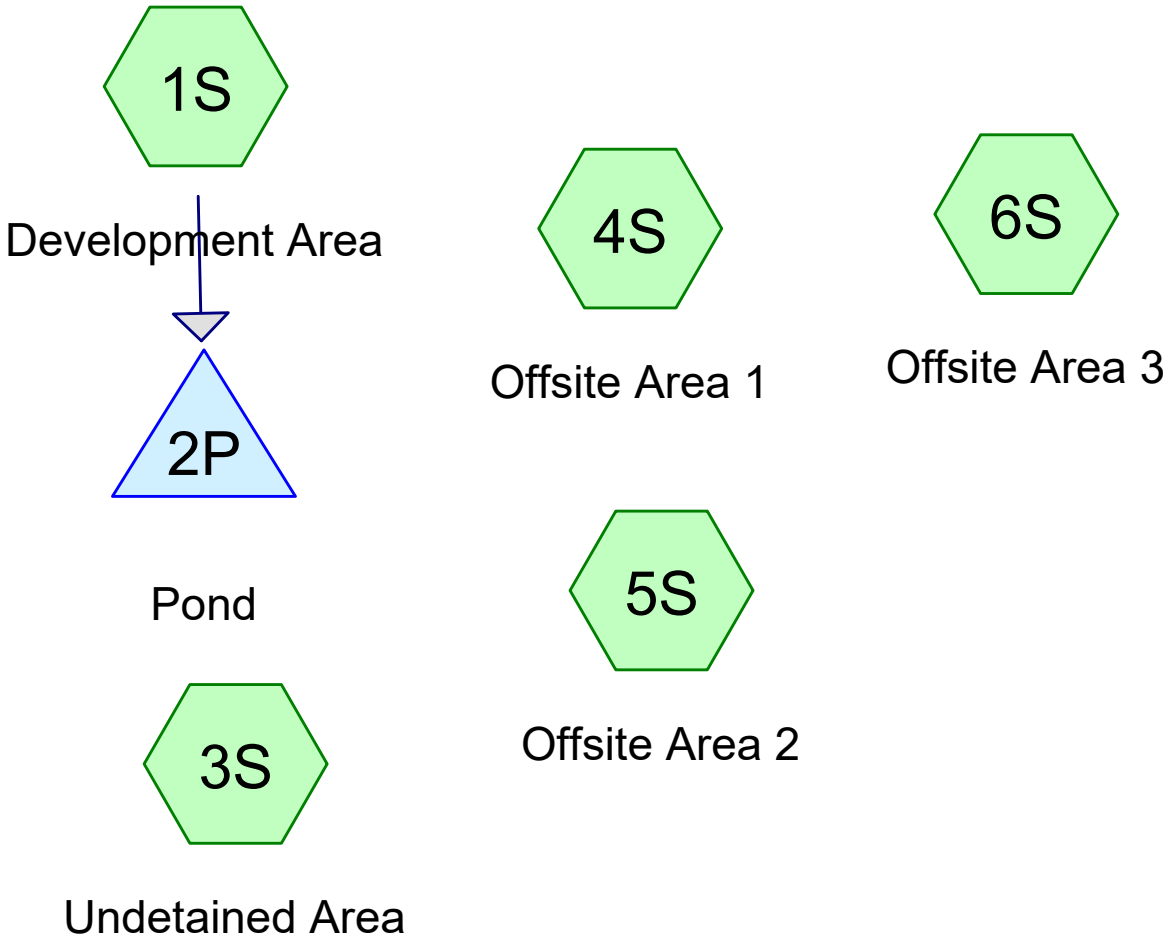
Allowable Release Rate Calculation

Project:	Lockport Township Fire Protection District
Location:	W. Division Street, Crest Hill
PEG Project No.:	5219.00-IL
Date:	02-19-25

Allowable Release Rate		Original Design	
Aurora Release Rate:	100-yr, 24-hr	0.15	cfs/acre
Size of Development:		12.737	acres
Allowable Release rate from site:	100-yr, 24-hr	**1.911**	**cfs**
Undetained Release (refer to HydroCAD):		1.360	cfs
Allowable release rate from restrictor:		0.55	cfs

Appendix G.3 – Proposed HydroCAD Analysis

RELEASE RATE FROM SYSTEM



Subcat Reach Pond Link

Routing Diagram for 2025-02-18 5219.00-IL Proposed Conditions Bulletin 70 2 & 100-yr

Prepared by Pinnacle Engineering Group, Printed 2/19/2025

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	U70 2-YR, 24-HR	Huff B70 0-10sm	3Q	Scale	24.00	1	3.34	2
2	U70 100-YR, 24-HR	Huff B70 0-10sm	3Q	Scale	24.00	1	8.57	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
8.611	80	>75% Grass cover, Good, HSG D (1S, 4S)
0.310	98	Gravel surface, HSG D (1S)
0.321	96	Gravel surface, HSG D (4S)
1.275	100	NWL surface area (1S)
1.825	77	Native Plantings HSG D (3S)
4.368	98	Paved parking, HSG D (1S, 3S, 4S, 6S)
1.124	89	Row crops, straight row, Good, HSG D (4S, 5S)
2.045	79	Woods, Fair, HSG D (4S, 5S)
19.879	**86**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
18.603	HSG D	1S, 3S, 4S, 5S, 6S
1.275	Other	1S
19.879		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	8.611	0.000	8.611	>75% Grass cover, Good	1S, 4S
0.000	0.000	0.000	0.631	0.000	0.631	Gravel surface	1S, 4S
0.000	0.000	0.000	0.000	1.275	1.275	NWL surface area	1S
0.000	0.000	0.000	1.825	0.000	1.825	Native Plantings	3S
0.000	0.000	0.000	4.368	0.000	4.368	Paved parking	1S, 3S, 4S, 6S
0.000	0.000	0.000	1.124	0.000	1.124	Row crops, straight row, Good	4S, 5S
0.000	0.000	0.000	2.045	0.000	2.045	Woods, Fair	4S, 5S
0.000	**0.000**	**0.000**	**18.603**	**1.275**	**19.879**	**TOTAL AREA**	

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment1S: Development Area Runoff Area=474,588 sf 50.41% Impervious Runoff Depth=2.21"
Tc=10.0 min CN=89 Runoff=3.10 cfs 2.006 af

Subcatchment3S: Undetained Area Runoff Area=80,251 sf 0.96% Impervious Runoff Depth=1.31"
Tc=10.0 min CN=77 Runoff=0.36 cfs 0.202 af

Subcatchment4S: Offsite Area 1 Runoff Area=274,734 sf 6.90% Impervious Runoff Depth=1.65"
Tc=0.0 min CN=82 Runoff=1.45 cfs 0.868 af

Subcatchment5S: Offsite Area 2 Runoff Area=35,967 sf 0.00% Impervious Runoff Depth=2.04"
Tc=0.0 min CN=87 Runoff=0.22 cfs 0.140 af

Subcatchment6S: Offsite Area 3 Runoff Area=388 sf 100.00% Impervious Runoff Depth=3.11"
Tc=0.0 min CN=98 Runoff=0.00 cfs 0.002 af

Pond 2P: Pond Peak Elev=640.42' Storage=82,256 cf Inflow=3.10 cfs 2.006 af
Outflow=0.13 cfs 0.371 af

Total Runoff Area = 19.879 ac Runoff Volume = 3.218 af Average Runoff Depth = 1.94"
70.05% Pervious = 13.925 ac 29.95% Impervious = 5.954 ac

Summary for Subcatchment 1S: Development Area

Runoff = 3.10 cfs @ 15.84 hrs, Volume= 2.006 af, Depth= 2.21"
Routed to Pond 2P : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Huff B70 0-10sm 3Q scaled to 24.00 hrs U70 2-YR, 24-HR Rainfall=3.34", Smoothing=On

	Area (sf)	CN	Description
	235,355	80	>75% Grass cover, Good, HSG D
	170,160	98	Paved parking, HSG D
*	13,513	98	Gravel surface, HSG D
*	55,560	100	NWL surface area
	474,588	89	Weighted Average
	235,355		49.59% Pervious Area
	239,233		50.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Minimum**

Summary for Subcatchment 3S: Undetained Area

Runoff = 0.36 cfs @ 16.83 hrs, Volume= 0.202 af, Depth= 1.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Huff B70 0-10sm 3Q scaled to 24.00 hrs U70 2-YR, 24-HR Rainfall=3.34", Smoothing=On

	Area (sf)	CN	Description
*	79,484	77	Native Plantings HSG D
	767	98	Paved parking, HSG D
	80,251	77	Weighted Average
	79,484		99.04% Pervious Area
	767		0.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Summary for Subcatchment 4S: Offsite Area 1

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 1.45 cfs @ 16.02 hrs, Volume= 0.868 af, Depth= 1.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Huff B70 0-10sm 3Q scaled to 24.00 hrs U70 2-YR, 24-HR Rainfall=3.34", Smoothing=On

Area (sf)	CN	Description
139,722	80	>75% Grass cover, Good, HSG D
13,981	96	Gravel surface, HSG D
83,321	79	Woods, Fair, HSG D
18,761	89	Row crops, straight row, Good, HSG D
18,949	98	Paved parking, HSG D
274,734	82	Weighted Average
255,785		93.10% Pervious Area
18,949		6.90% Impervious Area

Summary for Subcatchment 5S: Offsite Area 2

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.22 cfs @ 15.64 hrs, Volume= 0.140 af, Depth= 2.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Huff B70 0-10sm 3Q scaled to 24.00 hrs U70 2-YR, 24-HR Rainfall=3.34", Smoothing=On

Area (sf)	CN	Description
5,766	79	Woods, Fair, HSG D
30,201	89	Row crops, straight row, Good, HSG D
35,967	87	Weighted Average
35,967		100.00% Pervious Area

Summary for Subcatchment 6S: Offsite Area 3

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.00 cfs @ 15.61 hrs, Volume= 0.002 af, Depth= 3.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Huff B70 0-10sm 3Q scaled to 24.00 hrs U70 2-YR, 24-HR Rainfall=3.34", Smoothing=On

Area (sf)	CN	Description
388	98	Paved parking, HSG D
388		100.00% Impervious Area

Summary for Pond 2P: Pond

Inflow Area = 10.895 ac, 50.41% Impervious, Inflow Depth = 2.21" for U70 2-YR, 24-HR event
Inflow = 3.10 cfs @ 15.84 hrs, Volume= 2.006 af
Outflow = 0.13 cfs @ 24.20 hrs, Volume= 0.371 af, Atten= 96%, Lag= 502.1 min
Primary = 0.13 cfs @ 24.20 hrs, Volume= 0.371 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 640.42' @ 24.20 hrs Surf.Area= 60,504 sf Storage= 82,256 cf

Plug-Flow detention time= 1,258.1 min calculated for 0.370 af (18% of inflow)
Center-of-Mass det. time= 887.2 min (1,819.8 - 932.6)

Volume	Invert	Avail.Storage	Storage Description
#1	639.00'	285,884 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
639.00	55,560	0	0
640.00	59,104	57,332	57,332
641.00	62,464	60,784	118,116
642.00	65,896	64,180	182,296
643.00	69,762	67,829	250,125
643.50	73,275	35,759	285,884

Device	Routing	Invert	Outlet Devices		
#1	Primary	639.00'	**2.1" Vert. Orifice/Grate**	C= 0.600	Limited to weir flow at low heads
#2	Primary	640.50'	**2.7" Vert. Orifice/Grate**	C= 0.600	Limited to weir flow at low heads

Primary OutFlow Max=0.13 cfs @ 24.20 hrs HW=640.42' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.13 cfs @ 5.55 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment1S: Development Area Runoff Area=474,588 sf 50.41% Impervious Runoff Depth=7.25"
Tc=10.0 min CN=89 Runoff=9.10 cfs 6.579 af

Subcatchment3S: Undetained Area Runoff Area=80,251 sf 0.96% Impervious Runoff Depth=5.80"
Tc=10.0 min CN=77 Runoff=1.36 cfs 0.890 af

Subcatchment4S: Offsite Area 1 Runoff Area=274,734 sf 6.90% Impervious Runoff Depth=6.40"
Tc=0.0 min CN=82 Runoff=4.98 cfs 3.365 af

Subcatchment5S: Offsite Area 2 Runoff Area=35,967 sf 0.00% Impervious Runoff Depth=7.01"
Tc=0.0 min CN=87 Runoff=0.68 cfs 0.482 af

Subcatchment6S: Offsite Area 3 Runoff Area=388 sf 100.00% Impervious Runoff Depth=8.33"
Tc=0.0 min CN=98 Runoff=0.01 cfs 0.006 af

Pond 2P: Pond Peak Elev=643.22' Storage=265,958 cf Inflow=9.10 cfs 6.579 af
Outflow=0.54 cfs 1.488 af

Total Runoff Area = 19.879 ac Runoff Volume = 11.323 af Average Runoff Depth = 6.84"
70.05% Pervious = 13.925 ac 29.95% Impervious = 5.954 ac

Summary for Subcatchment 1S: Development Area

Runoff = 9.10 cfs @ 15.79 hrs, Volume= 6.579 af, Depth= 7.25"
Routed to Pond 2P : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Huff B70 0-10sm 3Q scaled to 24.00 hrs U70 100-YR, 24-HR Rainfall=8.57", Smoothing=On

	Area (sf)	CN	Description
	235,355	80	>75% Grass cover, Good, HSG D
	170,160	98	Paved parking, HSG D
*	13,513	98	Gravel surface, HSG D
*	55,560	100	NWL surface area
	474,588	89	Weighted Average
	235,355		49.59% Pervious Area
	239,233		50.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Minimum**

Summary for Subcatchment 3S: Undetained Area

Runoff = 1.36 cfs @ 15.83 hrs, Volume= 0.890 af, Depth= 5.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Huff B70 0-10sm 3Q scaled to 24.00 hrs U70 100-YR, 24-HR Rainfall=8.57", Smoothing=On

	Area (sf)	CN	Description
*	79,484	77	Native Plantings HSG D
	767	98	Paved parking, HSG D
	80,251	77	Weighted Average
	79,484		99.04% Pervious Area
	767		0.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Summary for Subcatchment 4S: Offsite Area 1

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 4.98 cfs @ 15.62 hrs, Volume= 3.365 af, Depth= 6.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Huff B70 0-10sm 3Q scaled to 24.00 hrs U70 100-YR, 24-HR Rainfall=8.57", Smoothing=On

Area (sf)	CN	Description
139,722	80	>75% Grass cover, Good, HSG D
13,981	96	Gravel surface, HSG D
83,321	79	Woods, Fair, HSG D
18,761	89	Row crops, straight row, Good, HSG D
18,949	98	Paved parking, HSG D
274,734	82	Weighted Average
255,785		93.10% Pervious Area
18,949		6.90% Impervious Area

Summary for Subcatchment 5S: Offsite Area 2

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.68 cfs @ 15.62 hrs, Volume= 0.482 af, Depth= 7.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Huff B70 0-10sm 3Q scaled to 24.00 hrs U70 100-YR, 24-HR Rainfall=8.57", Smoothing=On

Area (sf)	CN	Description
5,766	79	Woods, Fair, HSG D
30,201	89	Row crops, straight row, Good, HSG D
35,967	87	Weighted Average
35,967		100.00% Pervious Area

Summary for Subcatchment 6S: Offsite Area 3

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.01 cfs @ 15.61 hrs, Volume= 0.006 af, Depth= 8.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Huff B70 0-10sm 3Q scaled to 24.00 hrs U70 100-YR, 24-HR Rainfall=8.57", Smoothing=On

Area (sf)	CN	Description
388	98	Paved parking, HSG D
388		100.00% Impervious Area

Summary for Pond 2P: Pond

Inflow Area = 10.895 ac, 50.41% Impervious, Inflow Depth = 7.25" for U70 100-YR, 24-HR event
Inflow = 9.10 cfs @ 15.79 hrs, Volume= 6.579 af
Outflow = 0.54 cfs @ 24.17 hrs, Volume= 1.488 af, Atten= 94%, Lag= 503.3 min
Primary = 0.54 cfs @ 24.17 hrs, Volume= 1.488 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 643.22' @ 24.17 hrs Surf.Area= 71,339 sf Storage= 265,958 cf (6.11 AC-FT)

Plug-Flow detention time= 1,345.5 min calculated for 1.486 af (23% of inflow)
Center-of-Mass det. time= 940.7 min (1,812.8 - 872.1)

Volume	Invert	Avail.Storage	Storage Description
#1	639.00'	285,884 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
639.00	55,560	0	0
640.00	59,104	57,332	57,332
641.00	62,464	60,784	118,116
642.00	65,896	64,180	182,296
643.00	69,762	67,829	250,125
643.50	73,275	35,759	285,884

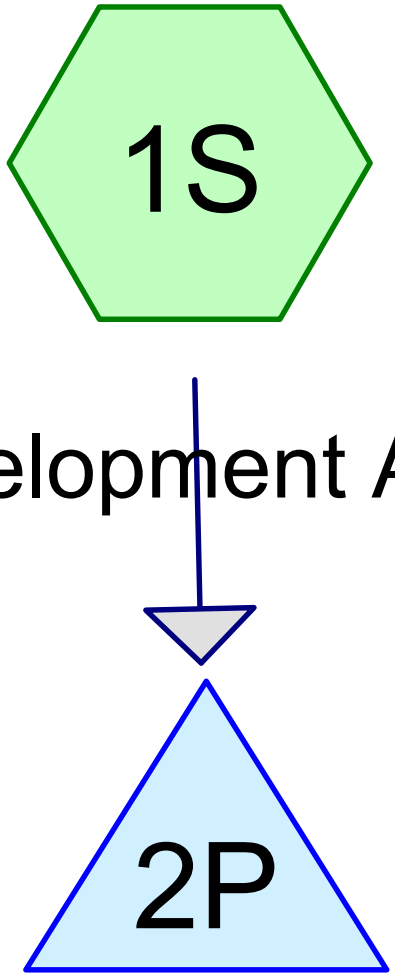
Device	Routing	Invert	Outlet Devices		
#1	Primary	639.00'	**2.1" Vert. Orifice/Grate**	C= 0.600	Limited to weir flow at low heads
#2	Primary	640.50'	**2.7" Vert. Orifice/Grate**	C= 0.600	Limited to weir flow at low heads

Primary OutFlow Max=0.54 cfs @ 24.17 hrs HW=643.22' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.24 cfs @ 9.79 fps)
└**2=Orifice/Grate** (Orifice Controls 0.31 cfs @ 7.78 fps)

Stage-Discharge for Pond 2P: Pond

Elevation (feet)	Primary (cfs)
639.00	0.00
639.05	0.00
639.10	0.02
639.15	0.03
639.20	0.04
639.25	0.05
639.30	0.05
639.35	0.06
639.40	0.06
639.45	0.07
639.50	0.07
639.55	0.08
639.60	0.08
639.65	0.09
639.70	0.09
639.75	0.09
639.80	0.10
639.85	0.10
639.90	0.10
639.95	0.11
640.00	0.11
640.05	0.11
640.10	0.12
640.15	0.12
640.20	0.12
640.25	0.12
640.30	0.13
640.35	0.13
640.40	0.13
640.45	0.14
640.50	0.14
640.55	0.15
640.60	0.16
640.65	0.18
640.70	0.20
640.75	0.22
640.80	0.23
640.85	0.25
640.90	0.26
640.95	0.27
641.00	0.28
641.05	0.29
641.10	0.30
641.15	0.31
641.20	0.32
641.25	0.32
641.30	0.33
641.35	0.34
641.40	0.35
641.45	0.35
641.50	0.36
641.55	0.37
641.60	0.37
641.65	0.38
641.70	0.39
641.75	0.39
641.80	0.40
641.85	0.41
641.90	0.41
641.95	0.42
642.00	0.42
642.05	0.43
642.10	0.43
642.15	0.44
642.20	0.45
642.25	0.45
642.30	0.46
642.35	0.46
642.40	0.47
642.45	0.47
642.50	0.48
642.55	0.48
642.60	0.49
642.65	0.49
642.70	0.50
642.75	0.50
642.80	0.51
642.85	0.51
642.90	0.52
642.95	0.52
643.00	0.52
643.05	0.53
643.10	0.53
643.15	0.54
643.20	0.54
643.25	0.55
643.30	0.55
643.35	0.56
643.40	0.56
643.45	0.56
643.50	**0.57**

CLOGGED CONDITIONS



Subcat Reach Pond Link

Events for Pond 2P: Pond

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
U70 2-YR, 24-HR	3.10	0.00	640.50	87,393
U70 100-YR, 10-MIN	53.18	0.00	639.65	37,076
U70 100-YR, 15-MIN	63.88	0.00	639.90	51,356
U70 100-YR, 30-MIN	**72.80**	0.00	640.40	81,240
U70 100-YR, 1-HR	67.55	0.00	640.91	112,762
U70 100-YR, 2-HR	53.33	0.00	641.47	148,040
U70 100-YR, 3-HR	42.74	0.00	641.78	167,791
U70 100-YR, 6-HR	27.26	0.00	642.32	203,786
U70 100-YR, 12-HR	14.86	0.00	642.91	243,529
U70 100-YR, 18-HR	11.34	0.00	643.24	266,784
U70 100-YR, 24-HR	9.10	1.72	643.70	**285,884**
U70 100-YR, 48-HR	6.40	**5.06**	**643.91**	285,884
U70 100-YR, 72-HR	1.45	0.00	640.88	110,595
U70 100-YR, 120-HR	0.51	0.00	639.80	45,474
U70 100-YR, 240-HR	0.20	0.00	639.28	15,771

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	U70 100-YR, 48-HR	Huff B70 0-10sm	4Q	Scale	48.00	1	9.28	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
5.403	80	>75% Grass cover, Good, HSG D (1S)
0.310	98	Gravel surface, HSG D (1S)
1.275	100	NWL surface area (1S)
3.906	98	Paved parking, HSG D (1S)
10.895	**89**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
9.620	HSG D	1S
1.275	Other	1S
10.895		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	5.403	0.000	5.403	>75% Grass cover, Good	1S
0.000	0.000	0.000	0.310	0.000	0.310	Gravel surface	1S
0.000	0.000	0.000	0.000	1.275	1.275	NWL surface area	1S
0.000	0.000	0.000	3.906	0.000	3.906	Paved parking	1S
0.000	**0.000**	**0.000**	**9.620**	**1.275**	**10.895**	**TOTAL AREA**	

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment1S: DevelopmentArea Runoff Area=474,588 sf 50.41% Impervious Runoff Depth>7.91"
Tc=10.0 min CN=89 Runoff=6.40 cfs 7.181 af

Pond 2P: Pond Peak Elev=643.91' Storage=285,884 cf Inflow=6.40 cfs 7.181 af
Outflow=5.06 cfs 0.616 af

Total Runoff Area = 10.895 ac Runoff Volume = 7.181 af Average Runoff Depth = 7.91"
49.59% Pervious = 5.403 ac 50.41% Impervious = 5.492 ac

Summary for Subcatchment 1S: Development Area

Runoff = 6.40 cfs @ 43.35 hrs, Volume= 7.181 af, Depth> 7.91"
Routed to Pond 2P : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Huff B70 0-10sm 4Q scaled to 48.00 hrs U70 100-YR, 48-HR Rainfall=9.28", Smoothing=On

	Area (sf)	CN	Description
	235,355	80	>75% Grass cover, Good, HSG D
	170,160	98	Paved parking, HSG D
*	13,513	98	Gravel surface, HSG D
*	55,560	100	NWL surface area
	474,588	89	Weighted Average
	235,355		49.59% Pervious Area
	239,233		50.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Minimum**

Summary for Pond 2P: Pond

[92] Warning: Device #3 is above defined storage
[93] Warning: Storage range exceeded by 0.41'
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=13)

Inflow Area = 10.895 ac, 50.41% Impervious, Inflow Depth > 7.91" for U70 100-YR, 48-HR event
Inflow = 6.40 cfs @ 43.35 hrs, Volume= 7.181 af
Outflow = 5.06 cfs @ 46.05 hrs, Volume= 0.616 af, Atten= 21%, Lag= 162.3 min
Primary = 5.06 cfs @ 46.05 hrs, Volume= 0.616 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 643.91' @ 46.05 hrs Surf.Area= 73,275 sf Storage= 285,884 cf

Plug-Flow detention time= 2,127.6 min calculated for 0.615 af (9% of inflow)
Center-of-Mass det. time= 724.7 min (2,816.9 - 2,092.2)

Volume	Invert	Avail.Storage	Storage Description
#1	639.00'	285,884 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
639.00	55,560	0	0
640.00	59,104	57,332	57,332
641.00	62,464	60,784	118,116
642.00	65,896	64,180	182,296
643.00	69,762	67,829	250,125
643.50	73,275	35,759	285,884

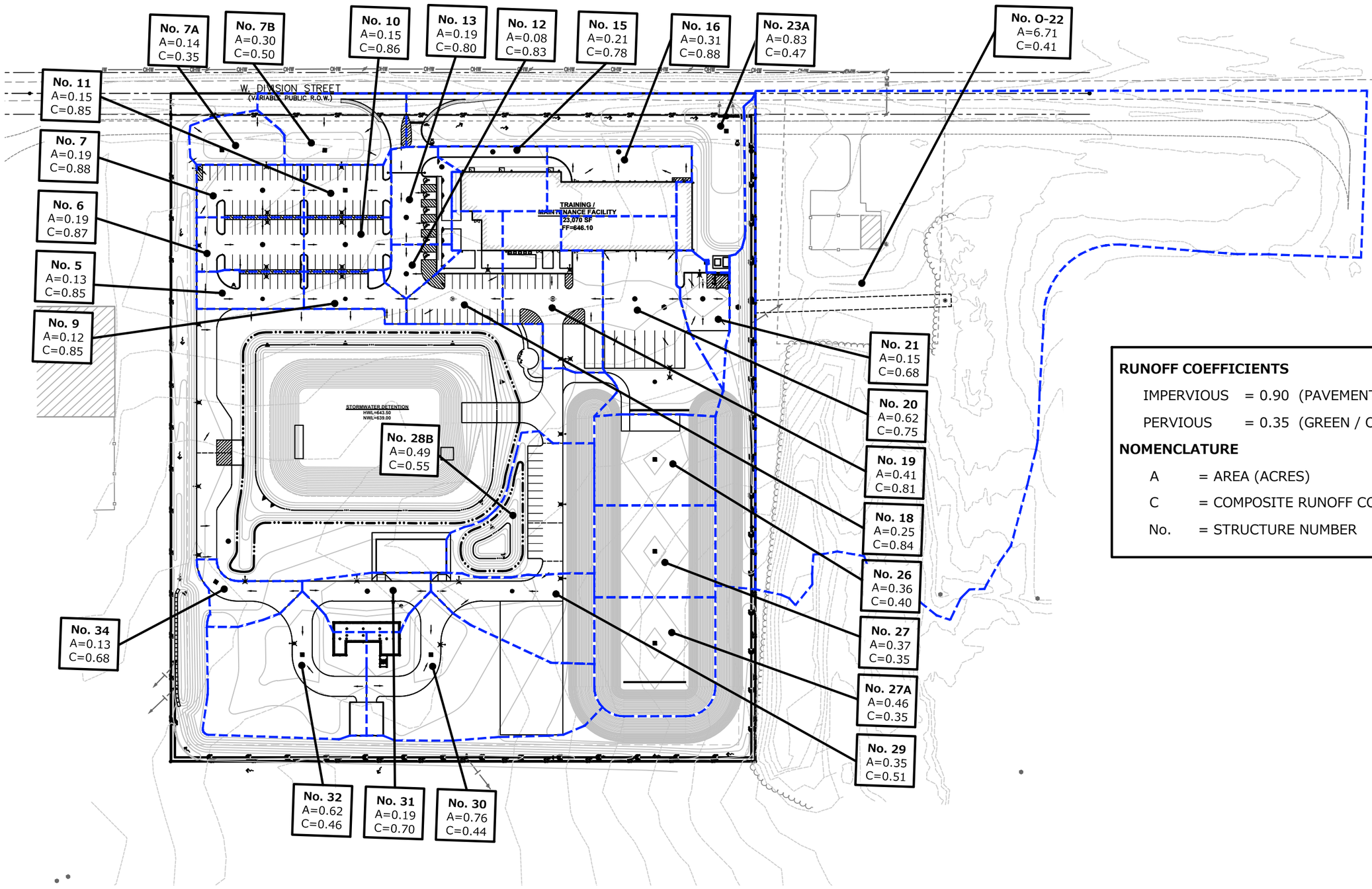
Orifices set to 0 to represent clogged conditions

Device	Routing	Invert	Outlet Devices
#1	Primary	639.00'	**2.1" Vert. Orifice/Grate** **X 0.00** C= 0.600 Limited to weir flow at low heads
#2	Primary	640.50'	**2.7" Vert. Orifice/Grate** **X 0.00** C= 0.600 Limited to weir flow at low heads
#3	Primary	643.50'	**6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=5.06 cfs @ 46.05 hrs HW=643.91' (Free Discharge)
- **1=Orifice/Grate** (Controls 0.00 cfs)
- **2=Orifice/Grate** (Controls 0.00 cfs)
- **3=Sharp-Crested Rectangular Weir** (Weir Controls 5.06 cfs @ 2.09 fps)

Appendix H – Storm Sewer Calculations

Appendix H.1 – Storm Sewer Tributary Area Exhibit



RUNOFF COEFFICIENTS

IMPERVIOUS = 0.90 (PAVEMENT & BUILDING)

PERVIOUS = 0.35 (GREEN / OPEN SPACE)

NOMENCLATURE

A = AREA (ACRES)

C = COMPOSITE RUNOFF COEFFICIENT

No. = STRUCTURE NUMBER

NORTH

SCALE: 1"=120'

STORM SEWER TRIBUTARY AREA EXHIBIT

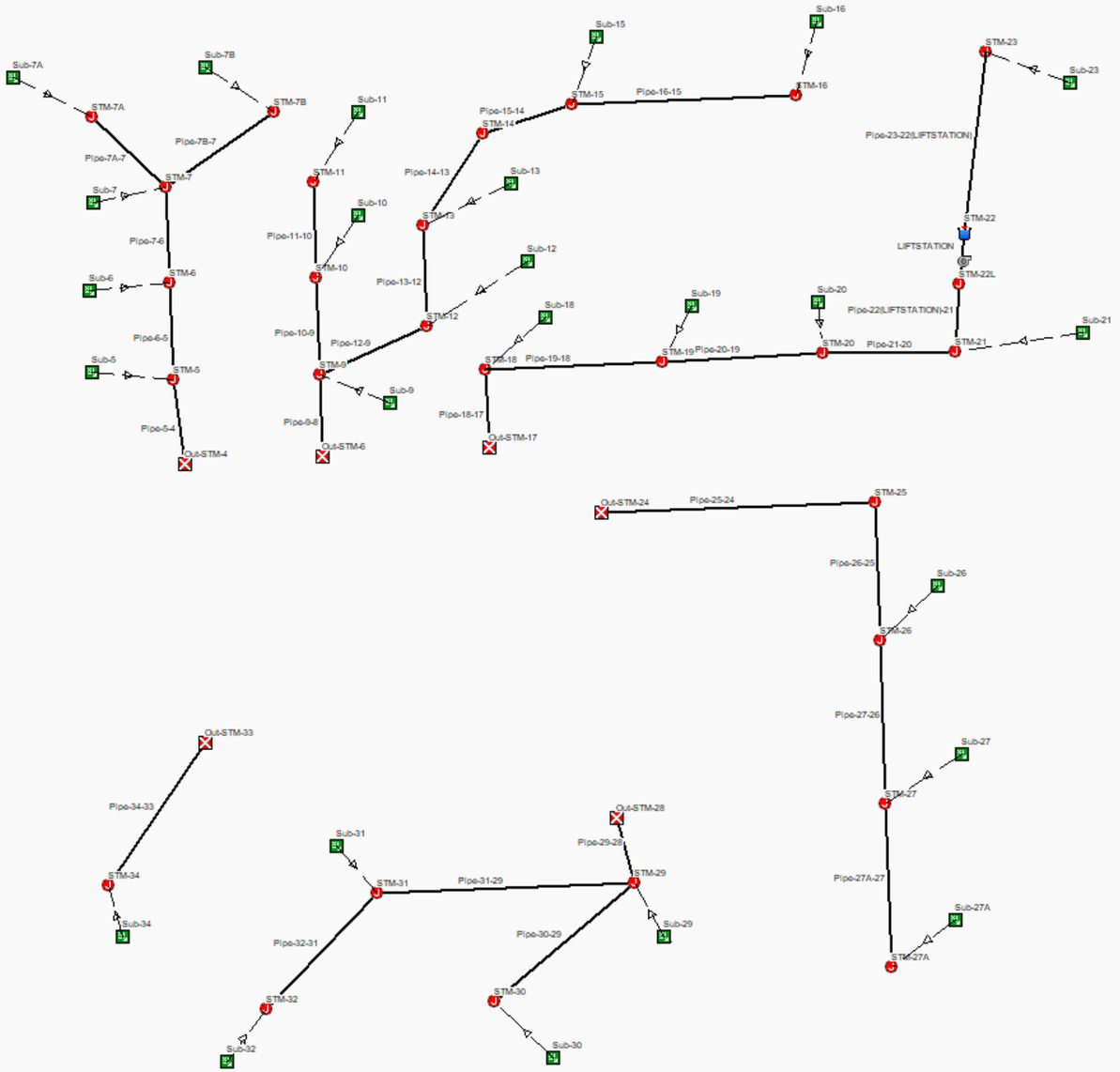
JOB NO. 5219.00-IL 02/18/25

PINNACLE ENGINEERING GROUP

1051 E. MAIN STREET | SUITE 217 | EAST DUNDEE, IL 60118 | WWW.PINNACLE-ENGR.COM | CHICAGO@PINNACLE-ENGR.COM

PLAN | DESIGN | DELIVER

Appendix H.2 – Storm and Sanitary Analysis


Sub-7A
Sub-7B
STM-7A
STM-7B
Pipe-7B-7
Pipe-7A-7
STM-7
Sub-7
Pipe-7-6
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Sub-6
Pipe-6-5
STM-5
Sub-5
Pipe-5-4
Out-STM-4
Sub-11
STM-11
Pipe-11-10
Sub-10
STM-10
Pipe-10-9
Pipe-9-8
Out-STM-6
Pipe-12-9
STM-9
Sub-9
Pipe-13-12
Sub-12
STM-12
Pipe-14-13
Sub-13
STM-13
Pipe-15-14
Sub-15
STM-14
STM-15
Pipe-16-15
Sub-16
STM-16
Sub-18
STM-18
Pipe-19-18
Sub-19
STM-19
Pipe-20-19
Sub-20
STM-20
Pipe-21-20
STM-21
Sub-21
Pipe-18-17
Out-STM-17
STM-23
Sub-23
Pipe-23-22(LIFTSTATION)
STM-22
LIFTSTATION
STM-22L
Pipe-22(LIFTSTATION)-21
Out-STM-24
Pipe-25-24
STM-25
Pipe-26-25
Sub-26
STM-26
Pipe-27-26
Sub-27
STM-27
Pipe-27A-27
Sub-27A
STM-27A
Out-STM-33
Pipe-34-33
STM-34
Sub-34
Sub-31
STM-31
Pipe-31-29
Out-STM-28
Pipe-29-28
STM-29
Sub-29
Pipe-32-31
STM-32
Sub-32
Pipe-30-29
STM-30
Sub-30

Project Description

File Name	StormSTM.SPF

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	Rational
Time of Concentration (TOC) Method	User-Defined
Link Routing Method	Kinematic Wave
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	NO

Analysis Options

Start Analysis On	00:00:00	0:00:00
End Analysis On	00:00:00	0:00:00
Start Reporting On	00:00:00	0:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	0
Subbasins	25
Nodes	35
Junctions	28
Outfalls	6
Flow Diversions	0
Inlets	0
Storage Nodes	1
Links	29
Channels	0
Pipes	28
Pumps	1
Orifices	0
Weirs	0
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period	10 year(s)

Subbasin Summary

SN	Subbasin ID	Area (ac)	Weighted Runoff Coefficient	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	Sub-10	0.15	0.8600	0.62	0.53	0.08	0.96	0 00:05:00
2	Sub-11	0.15	0.8500	0.62	0.53	0.08	0.95	0 00:05:00
3	Sub-12	0.08	0.8300	0.62	0.52	0.04	0.49	0 00:05:00
4	Sub-13	0.19	0.8000	0.62	0.50	0.09	1.13	0 00:05:00
5	Sub-15	0.21	0.7800	0.62	0.48	0.10	1.22	0 00:05:00
6	Sub-16	0.31	0.8800	0.62	0.55	0.17	2.03	0 00:05:00
7	Sub-18	0.25	0.8400	0.62	0.52	0.13	1.56	0 00:05:00
8	Sub-19	0.41	0.8100	0.62	0.50	0.21	2.47	0 00:05:00
9	Sub-20	0.62	0.7500	0.62	0.47	0.29	3.46	0 00:05:00
10	Sub-21	0.15	0.6800	0.62	0.42	0.06	0.76	0 00:05:00
11	Sub-23	0.83	0.4700	0.62	0.29	0.24	2.90	0 00:05:00
12	Sub-26	0.36	0.4000	0.62	0.25	0.09	1.07	0 00:05:00
13	Sub-27	0.37	0.3500	0.62	0.22	0.08	0.96	0 00:05:00
14	Sub-27A	0.46	0.3500	0.62	0.22	0.10	1.20	0 00:05:00
15	Sub-29	0.35	0.5100	0.62	0.32	0.11	1.33	0 00:05:00
16	Sub-30	0.76	0.4400	0.62	0.27	0.21	2.49	0 00:05:00
17	Sub-31	0.19	0.7000	0.62	0.43	0.08	0.99	0 00:05:00
18	Sub-32	0.62	0.4600	0.62	0.29	0.18	2.12	0 00:05:00
19	Sub-34	0.13	0.6800	0.62	0.42	0.05	0.66	0 00:05:00
20	Sub-5	0.13	0.8500	0.62	0.53	0.07	0.82	0 00:05:00
21	Sub-6	0.19	0.8700	0.62	0.54	0.10	1.23	0 00:05:00
22	Sub-7	0.19	0.8800	0.62	0.55	0.10	1.24	0 00:05:00
23	Sub-7A	0.14	0.7200	0.62	0.45	0.06	0.75	0 00:05:00
24	Sub-7B	0.30	0.5000	0.62	0.31	0.09	1.12	0 00:05:00
25	Sub-9	0.12	0.8500	0.62	0.53	0.06	0.76	0 00:05:00

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft^2)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	STM-10	Junction	640.58	643.85	640.58	643.85	0.00	1.88	641.01	0.00	2.84	0 00:00	0.00	0.00
2	STM-11	Junction	641.85	643.85	641.85	643.85	0.00	0.95	642.15	0.00	1.70	0 00:00	0.00	0.00
3	STM-12	Junction	639.78	644.10	639.78	644.10	0.00	4.47	640.71	0.00	3.39	0 00:00	0.00	0.00
4	STM-13	Junction	640.17	644.10	640.17	644.10	0.00	4.05	641.04	0.00	3.06	0 00:00	0.00	0.00
5	STM-14	Junction	640.60	646.00	640.60	646.00	0.00	3.08	641.32	0.00	4.68	0 00:00	0.00	0.00
6	STM-15	Junction	640.97	644.84	640.97	644.84	0.00	3.09	641.69	0.00	3.15	0 00:00	0.00	0.00
7	STM-16	Junction	641.84	644.84	641.84	644.84	0.00	2.03	642.49	0.00	2.35	0 00:00	0.00	0.00
8	STM-18	Junction	639.25	644.15	639.25	644.15	0.00	9.97	640.43	0.00	3.72	0 00:00	0.00	0.00
9	STM-19	Junction	639.79	644.00	639.79	644.00	0.00	8.66	640.92	0.00	3.08	0 00:00	0.00	0.00
10	STM-20	Junction	640.23	644.35	640.23	644.35	0.00	6.47	641.36	0.00	2.99	0 00:00	0.00	0.00
11	STM-21	Junction	640.60	644.35	640.60	644.35	0.00	3.44	641.44	0.00	2.91	0 00:00	0.00	0.00
12	STM-22L	Junction	640.80	645.40	640.80	645.40	0.00	2.77	641.53	0.00	3.87	0 00:00	0.00	0.00
13	STM-23	Junction	638.50	640.50	638.50	640.50	0.00	2.90	639.25	0.00	1.25	0 00:00	0.00	0.00
14	STM-25	Junction	641.27	646.35	641.27	646.35	0.00	3.00	641.92	0.00	4.43	0 00:00	0.00	0.00
15	STM-26	Junction	642.40	645.50	642.40	645.50	0.00	3.00	643.08	0.00	2.42	0 00:00	0.00	0.00
16	STM-27	Junction	642.95	645.50	642.95	645.50	0.00	2.06	643.64	0.00	1.86	0 00:00	0.00	0.00
17	STM-27A	Junction	643.50	645.50	643.50	645.50	0.00	1.20	643.99	0.00	1.51	0 00:00	0.00	0.00
18	STM-29	Junction	639.45	644.21	639.45	644.21	0.00	6.56	640.31	0.00	3.90	0 00:00	0.00	0.00
19	STM-30	Junction	642.00	644.30	642.00	644.30	0.00	2.49	642.49	0.00	1.81	0 00:00	0.00	0.00
20	STM-31	Junction	641.20	644.20	641.20	644.20	0.00	3.02	641.90	0.00	2.30	0 00:00	0.00	0.00
21	STM-32	Junction	642.30	644.30	642.30	644.30	0.00	2.12	642.85	0.00	1.45	0 00:00	0.00	0.00
22	STM-34	Junction	642.00	644.00	642.00	644.00	0.00	0.66	642.23	0.00	1.77	0 00:00	0.00	0.00
23	STM-5	Junction	639.52	643.85	639.52	643.85	0.00	4.93	640.37	0.00	3.48	0 00:00	0.00	0.00
24	STM-6	Junction	640.11	643.85	640.11	643.85	0.00	4.18	640.87	0.00	2.98	0 00:00	0.00	0.00
25	STM-7	Junction	640.70	643.85	640.70	643.85	0.00	3.03	641.44	0.00	2.41	0 00:00	0.00	0.00
26	STM-7A	Junction	641.50	643.50	641.50	643.50	0.00	0.75	641.80	0.00	1.70	0 00:00	0.00	0.00
27	STM-7B	Junction	641.50	643.50	641.50	643.50	0.00	1.12	641.90	0.00	1.60	0 00:00	0.00	0.00
28	STM-9	Junction	639.32	643.85	639.32	643.85	0.00	6.79	640.38	0.00	3.47	0 00:00	0.00	0.00
29	Out-STM-17	Outfall	639.00					9.96	640.18					
30	Out-STM-24	Outfall	639.00					2.97	639.65					
31	Out-STM-28	Outfall	639.00					6.55	639.86					
32	Out-STM-33	Outfall	639.00					0.65	639.23					
33	Out-STM-4	Outfall	639.00					4.93	639.85					
34	Out-STM-6	Outfall	639.00					6.79	640.06					
35	STM-22	Storage Node	637.80	645.60	637.80		0.00	2.77	637.80				0.00	0.00

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Reported Condition
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	(ft)		(min)	
1	Pipe-10-9	Pipe	STM-10	STM-9	65.00	640.58	639.32	1.9400	12.000	0.0130	1.87	4.96	0.38	5.90	0.43	0.43	0.00	Calculated
2	Pipe-11-10	Pipe	STM-11	STM-10	65.00	641.85	640.58	1.9500	12.000	0.0130	0.94	4.98	0.19	6.41	0.29	0.29	0.00	Calculated
3	Pipe-12-9	Pipe	STM-12	STM-9	78.92	639.78	639.32	0.5800	15.000	0.0130	4.46	4.93	0.90	4.61	0.93	0.74	0.00	Calculated
4	Pipe-13-12	Pipe	STM-13	STM-12	67.51	640.17	639.78	0.5800	15.000	0.0130	4.05	4.91	0.82	4.52	0.86	0.69	0.00	Calculated
5	Pipe-14-13	Pipe	STM-14	STM-13	73.94	640.60	640.17	0.5800	15.000	0.0130	3.07	4.93	0.62	4.27	0.71	0.57	0.00	Calculated
6	Pipe-15-14	Pipe	STM-15	STM-14	63.65	640.97	640.60	0.5800	15.000	0.0130	3.08	4.93	0.63	4.26	0.72	0.57	0.00	Calculated
7	Pipe-16-15	Pipe	STM-16	STM-15	150.67	641.84	640.97	0.5800	12.000	0.0130	1.95	2.71	0.72	6.44	0.63	0.63	0.00	Calculated
8	Pipe-18-17	Pipe	STM-18	Out-STM-17	55.52	639.25	639.00	0.4500	24.000	0.0130	9.96	15.18	0.66	5.16	1.18	0.59	0.00	Calculated
9	Pipe-19-18	Pipe	STM-19	STM-18	119.99	639.79	639.25	0.4500	24.000	0.0130	8.62	15.18	0.57	5.03	1.08	0.54	0.00	Calculated
10	Pipe-20-19	Pipe	STM-20	STM-19	98.19	640.23	639.79	0.4500	18.000	0.0130	6.45	7.03	0.92	4.60	1.13	0.75	0.00	Calculated
11	Pipe-21-20	Pipe	STM-21	STM-20	81.39	640.60	640.23	0.4500	15.000	0.0130	3.42	4.36	0.79	3.99	0.83	0.67	0.00	Calculated
12	Pipe-22(LIFTSTATION)-21	Pipe	STM-22L	STM-21	44.17	640.80	640.60	0.4500	15.000	0.0130	2.77	4.35	0.64	3.77	0.72	0.58	0.00	Calculated
13	Pipe-23-22(LIFTSTATION)	Pipe	STM-23	STM-22	158.58	638.50	637.80	0.4400	15.000	0.0130	2.77	4.29	0.65	6.46	0.73	0.58	0.00	Calculated
14	Pipe-25-24	Pipe	STM-25	Out-STM-24	184.78	641.27	639.00	1.2300	12.000	0.0130	2.97	3.95	0.75	5.65	0.65	0.65	0.00	Calculated
15	Pipe-26-25	Pipe	STM-26	STM-25	92.90	642.40	641.27	1.2200	12.000	0.0130	3.00	3.93	0.76	5.55	0.65	0.65	0.00	Calculated
16	Pipe-27-26	Pipe	STM-27	STM-26	110.00	642.95	642.40	0.5000	12.000	0.0130	2.04	2.52	0.81	3.66	0.68	0.68	0.00	Calculated
17	Pipe-27A-27	Pipe	STM-27A	STM-27	110.00	643.50	642.95	0.5000	12.000	0.0130	1.15	2.52	0.46	5.17	0.47	0.47	0.00	Calculated
18	Pipe-29-28	Pipe	STM-29	Out-STM-28	45.94	639.45	639.00	0.9800	18.000	0.0130	6.55	10.40	0.63	6.23	0.86	0.58	0.00	Calculated
19	Pipe-30-29	Pipe	STM-30	STM-29	123.40	642.00	639.45	2.0700	12.000	0.0130	2.43	5.12	0.47	9.29	0.48	0.48	0.00	Calculated
20	Pipe-31-29	Pipe	STM-31	STM-29	173.39	641.20	639.45	1.0100	12.000	0.0130	2.97	3.58	0.83	5.25	0.69	0.69	0.00	Calculated
21	Pipe-32-31	Pipe	STM-32	STM-31	108.81	642.30	641.20	1.0100	12.000	0.0130	2.07	3.58	0.58	7.12	0.54	0.54	0.00	Calculated
22	Pipe-34-33	Pipe	STM-34	Out-STM-33	115.91	642.00	639.00	2.5900	12.000	0.0130	0.65	5.73	0.11	7.25	0.23	0.23	0.00	Calculated
23	Pipe-5-4	Pipe	STM-5	Out-STM-4	57.29	639.52	639.00	0.9100	15.000	0.0130	4.93	6.15	0.80	5.61	0.84	0.68	0.00	Calculated
24	Pipe-6-5	Pipe	STM-6	STM-5	65.00	640.11	639.52	0.9100	15.000	0.0130	4.17	6.15	0.68	5.42	0.75	0.60	0.00	Calculated
25	Pipe-7-6	Pipe	STM-7	STM-6	65.00	640.70	640.11	0.9100	12.000	0.0130	3.02	3.39	0.89	4.93	0.73	0.73	0.00	Calculated
26	Pipe-7A-7	Pipe	STM-7A	STM-7	68.60	641.50	640.70	1.1700	12.000	0.0130	0.74	3.85	0.19	5.39	0.30	0.30	0.00	Calculated
27	Pipe-7B-7	Pipe	STM-7B	STM-7	88.54	641.50	640.70	0.9000	12.000	0.0130	1.09	3.39	0.32	5.71	0.39	0.39	0.00	Calculated
28	Pipe-9-8	Pipe	STM-9	Out-STM-6	55.08	639.32	639.00	0.5800	18.000	0.0130	6.79	8.01	0.85	5.10	1.06	0.71	0.00	Calculated
29	LIFTSTATION	Pump	STM-22	STM-22L		637.80	640.80				2.77							

Junction Input

SN	Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft^2)	Minimum Pipe Cover (in)
1	STM-10	640.58	643.85	3.27	640.58	0.00	643.85	0.00	0.00	27.24
2	STM-11	641.85	643.85	2.00	641.85	0.00	643.85	0.00	0.00	12.00
3	STM-12	639.78	644.10	4.32	639.78	0.00	644.10	0.00	0.00	36.84
4	STM-13	640.17	644.10	3.93	640.17	0.00	644.10	0.00	0.00	32.16
5	STM-14	640.60	646.00	5.40	640.60	0.00	646.00	0.00	0.00	49.80
6	STM-15	640.97	644.84	3.87	640.97	0.00	644.84	0.00	0.00	31.44
7	STM-16	641.84	644.84	3.00	641.84	0.00	644.84	0.00	0.00	24.00
8	STM-18	639.25	644.15	4.90	639.25	0.00	644.15	0.00	0.00	34.80
9	STM-19	639.79	644.00	4.21	639.79	0.00	644.00	0.00	0.00	26.52
10	STM-20	640.23	644.35	4.12	640.23	0.00	644.35	0.00	0.00	31.44
11	STM-21	640.60	644.35	3.75	640.60	0.00	644.35	0.00	0.00	30.00
12	STM-22L	640.80	645.40	4.60	640.80	0.00	645.40	0.00	0.00	0.00
13	STM-23	638.50	640.50	2.00	638.50	0.00	640.50	0.00	0.00	9.00
14	STM-25	641.27	646.35	5.08	641.27	0.00	646.35	0.00	0.00	48.96
15	STM-26	642.40	645.50	3.10	642.40	0.00	645.50	0.00	0.00	25.20
16	STM-27	642.95	645.50	2.55	642.95	0.00	645.50	0.00	0.00	18.60
17	STM-27A	643.50	645.50	2.00	643.50	0.00	645.50	0.00	0.00	12.00
18	STM-29	639.45	644.21	4.76	639.45	0.00	644.21	0.00	0.00	39.12
19	STM-30	642.00	644.30	2.30	642.00	0.00	644.30	0.00	0.00	15.60
20	STM-31	641.20	644.20	3.00	641.20	0.00	644.20	0.00	0.00	24.00
21	STM-32	642.30	644.30	2.00	642.30	0.00	644.30	0.00	0.00	12.00
22	STM-34	642.00	644.00	2.00	642.00	0.00	644.00	0.00	0.00	12.00
23	STM-5	639.52	643.85	4.33	639.52	0.00	643.85	0.00	0.00	36.96
24	STM-6	640.11	643.85	3.74	640.11	0.00	643.85	0.00	0.00	29.88
25	STM-7	640.70	643.85	3.15	640.70	0.00	643.85	0.00	0.00	25.80
26	STM-7A	641.50	643.50	2.00	641.50	0.00	643.50	0.00	0.00	12.00
27	STM-7B	641.50	643.50	2.00	641.50	0.00	643.50	0.00	0.00	12.00
28	STM-9	639.32	643.85	4.53	639.32	0.00	643.85	0.00	0.00	36.36

Junction Results

SN	Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation Attained (ft)	Max HGL Depth Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	STM-10	1.88	0.96	641.01	0.43	0.00	2.84	640.58	0.00	0 00:05	0 00:00	0.00	0.00
2	STM-11	0.95	0.95	642.15	0.30	0.00	1.70	641.85	0.00	0 00:05	0 00:00	0.00	0.00
3	STM-12	4.47	0.49	640.71	0.93	0.00	3.39	639.78	0.00	0 00:05	0 00:00	0.00	0.00
4	STM-13	4.05	1.13	641.04	0.87	0.00	3.06	640.17	0.00	0 00:05	0 00:00	0.00	0.00
5	STM-14	3.08	0.00	641.32	0.72	0.00	4.68	640.60	0.00	0 00:05	0 00:00	0.00	0.00
6	STM-15	3.09	1.22	641.69	0.72	0.00	3.15	640.97	0.00	0 00:05	0 00:00	0.00	0.00
7	STM-16	2.03	2.03	642.49	0.65	0.00	2.35	641.84	0.00	0 00:05	0 00:00	0.00	0.00
8	STM-18	9.97	1.56	640.43	1.18	0.00	3.72	639.26	0.01	0 00:05	0 00:00	0.00	0.00
9	STM-19	8.66	2.47	640.92	1.13	0.00	3.08	639.80	0.01	0 00:05	0 00:00	0.00	0.00
10	STM-20	6.47	3.46	641.36	1.13	0.00	2.99	640.24	0.01	0 00:05	0 00:00	0.00	0.00
11	STM-21	3.44	0.76	641.44	0.84	0.00	2.91	640.60	0.00	0 00:05	0 00:00	0.00	0.00
12	STM-22L	2.77	0.00	641.53	0.73	0.00	3.87	640.80	0.00	0 00:05	0 00:00	0.00	0.00
13	STM-23	2.90	2.90	639.25	0.75	0.00	1.25	638.50	0.00	0 00:05	0 00:00	0.00	0.00
14	STM-25	3.00	0.00	641.92	0.65	0.00	4.43	641.27	0.00	0 00:05	0 00:00	0.00	0.00
15	STM-26	3.00	1.07	643.08	0.68	0.00	2.42	642.40	0.00	0 00:05	0 00:00	0.00	0.00
16	STM-27	2.06	0.96	643.64	0.69	0.00	1.86	642.95	0.00	0 00:05	0 00:00	0.00	0.00
17	STM-27A	1.20	1.20	643.99	0.49	0.00	1.51	643.50	0.00	0 00:05	0 00:00	0.00	0.00
18	STM-29	6.56	1.33	640.31	0.86	0.00	3.90	639.45	0.00	0 00:05	0 00:00	0.00	0.00
19	STM-30	2.49	2.49	642.49	0.49	0.00	1.81	642.00	0.00	0 00:05	0 00:00	0.00	0.00
20	STM-31	3.02	0.99	641.90	0.70	0.00	2.30	641.20	0.00	0 00:05	0 00:00	0.00	0.00
21	STM-32	2.12	2.12	642.85	0.55	0.00	1.45	642.30	0.00	0 00:05	0 00:00	0.00	0.00
22	STM-34	0.66	0.66	642.23	0.23	0.00	1.77	642.00	0.00	0 00:05	0 00:00	0.00	0.00
23	STM-5	4.93	0.82	640.37	0.85	0.00	3.48	639.52	0.00	0 00:05	0 00:00	0.00	0.00
24	STM-6	4.18	1.23	640.87	0.76	0.00	2.98	640.11	0.00	0 00:05	0 00:00	0.00	0.00
25	STM-7	3.03	1.24	641.44	0.74	0.00	2.41	640.70	0.00	0 00:05	0 00:00	0.00	0.00
26	STM-7A	0.75	0.75	641.80	0.30	0.00	1.70	641.50	0.00	0 00:05	0 00:00	0.00	0.00
27	STM-7B	1.12	1.12	641.90	0.40	0.00	1.60	641.50	0.00	0 00:05	0 00:00	0.00	0.00
28	STM-9	6.79	0.76	640.38	1.06	0.00	3.47	639.33	0.01	0 00:05	0 00:00	0.00	0.00

Pipe Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow (cfs)	Flap Gate	No. of Barrels
1	Pipe-10-9	65.00	640.58	0.00	639.32	0.00	1.26	1.9400	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
2	Pipe-11-10	65.00	641.85	0.00	640.58	0.00	1.27	1.9500	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
3	Pipe-12-9	78.92	639.78	0.00	639.32	0.00	0.46	0.5800	CIRCULAR	15.000	15.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
4	Pipe-13-12	67.51	640.17	0.00	639.78	0.00	0.39	0.5800	CIRCULAR	15.000	15.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
5	Pipe-14-13	73.94	640.60	0.00	640.17	0.00	0.43	0.5800	CIRCULAR	15.000	15.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
6	Pipe-15-14	63.65	640.97	0.00	640.60	0.00	0.37	0.5800	CIRCULAR	15.000	15.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
7	Pipe-16-15	150.67	641.84	0.00	640.97	0.00	0.87	0.5800	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
8	Pipe-18-17	55.52	639.25	0.00	639.00	0.00	0.25	0.4500	CIRCULAR	24.000	24.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
9	Pipe-19-18	119.99	639.79	0.00	639.25	0.00	0.54	0.4500	CIRCULAR	24.000	24.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
10	Pipe-20-19	98.19	640.23	0.00	639.79	0.00	0.44	0.4500	CIRCULAR	18.000	18.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
11	Pipe-21-20	81.39	640.60	0.00	640.23	0.00	0.37	0.4500	CIRCULAR	15.000	15.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
12	Pipe-22(LIFTSTATION)-21	44.17	640.80	0.00	640.60	0.00	0.20	0.4500	CIRCULAR	15.000	15.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
13	Pipe-23-22(LIFTSTATION)	158.58	638.50	0.00	637.80	0.00	0.70	0.4400	CIRCULAR	15.000	15.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
14	Pipe-25-24	184.78	641.27	0.00	639.00	0.00	2.27	1.2300	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
15	Pipe-26-25	92.90	642.40	0.00	641.27	0.00	1.13	1.2200	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
16	Pipe-27-26	110.00	642.95	0.00	642.40	0.00	0.55	0.5000	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
17	Pipe-27A-27	110.00	643.50	0.00	642.95	0.00	0.55	0.5000	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
18	Pipe-29-28	45.94	639.45	0.00	639.00	0.00	0.45	0.9800	CIRCULAR	18.000	18.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
19	Pipe-30-29	123.40	642.00	0.00	639.45	0.00	2.55	2.0700	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
20	Pipe-31-29	173.39	641.20	0.00	639.45	0.00	1.75	1.0100	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
21	Pipe-32-31	108.81	642.30	0.00	641.20	0.00	1.10	1.0100	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
22	Pipe-34-33	115.91	642.00	0.00	639.00	0.00	3.00	2.5900	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
23	Pipe-5-4	57.29	639.52	0.00	639.00	0.00	0.52	0.9100	CIRCULAR	15.000	15.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
24	Pipe-6-5	65.00	640.11	0.00	639.52	0.00	0.59	0.9100	CIRCULAR	15.000	15.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
25	Pipe-7-6	65.00	640.70	0.00	640.11	0.00	0.59	0.9100	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
26	Pipe-7A-7	68.60	641.50	0.00	640.70	0.00	0.80	1.1700	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
27	Pipe-7B-7	88.54	641.50	0.00	640.70	0.00	0.80	0.9000	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
28	Pipe-9-8	55.08	639.32	0.00	639.00	0.00	0.32	0.5800	CIRCULAR	18.000	18.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1

Pipe Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Froude Number	Reported Condition
		(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(min)		
1	Pipe-10-9	1.87	0 00:05	4.96	0.38	5.90	0.18	0.43	0.43	0.00		Calculated
2	Pipe-11-10	0.94	0 00:05	4.98	0.19	6.41	0.17	0.29	0.29	0.00		Calculated
3	Pipe-12-9	4.46	0 00:06	4.93	0.90	4.61	0.29	0.93	0.74	0.00		Calculated
4	Pipe-13-12	4.05	0 00:05	4.91	0.82	4.52	0.25	0.86	0.69	0.00		Calculated
5	Pipe-14-13	3.07	0 00:05	4.93	0.62	4.27	0.29	0.71	0.57	0.00		Calculated
6	Pipe-15-14	3.08	0 00:05	4.93	0.63	4.26	0.25	0.72	0.57	0.00		Calculated
7	Pipe-16-15	1.95	0 00:05	2.71	0.72	6.44	0.39	0.63	0.63	0.00		Calculated
8	Pipe-18-17	9.96	0 00:05	15.18	0.66	5.16	0.18	1.18	0.59	0.00		Calculated
9	Pipe-19-18	8.62	0 00:05	15.18	0.57	5.03	0.40	1.08	0.54	0.00		Calculated
10	Pipe-20-19	6.45	0 00:05	7.03	0.92	4.60	0.36	1.13	0.75	0.00		Calculated
11	Pipe-21-20	3.42	0 00:05	4.36	0.79	3.99	0.34	0.83	0.67	0.00		Calculated
12	Pipe-22(LIFTSTATION)-21	2.77	0 00:05	4.35	0.64	3.77	0.20	0.72	0.58	0.00		Calculated
13	Pipe-23-22(LIFTSTATION)	2.77	0 00:05	4.29	0.65	6.46	0.41	0.73	0.58	0.00		Calculated
14	Pipe-25-24	2.97	0 00:06	3.95	0.75	5.65	0.55	0.65	0.65	0.00		Calculated
15	Pipe-26-25	3.00	0 00:05	3.93	0.76	5.55	0.28	0.65	0.65	0.00		Calculated
16	Pipe-27-26	2.04	0 00:05	2.52	0.81	3.66	0.50	0.68	0.68	0.00		Calculated
17	Pipe-27A-27	1.15	0 00:05	2.52	0.46	5.17	0.35	0.47	0.47	0.00		Calculated
18	Pipe-29-28	6.55	0 00:05	10.40	0.63	6.23	0.12	0.86	0.58	0.00		Calculated
19	Pipe-30-29	2.43	0 00:05	5.12	0.47	9.29	0.22	0.48	0.48	0.00		Calculated
20	Pipe-31-29	2.97	0 00:05	3.58	0.83	5.25	0.55	0.69	0.69	0.00		Calculated
21	Pipe-32-31	2.07	0 00:05	3.58	0.58	7.12	0.25	0.54	0.54	0.00		Calculated
22	Pipe-34-33	0.65	0 00:05	5.73	0.11	7.25	0.27	0.23	0.23	0.00		Calculated
23	Pipe-5-4	4.93	0 00:05	6.15	0.80	5.61	0.17	0.84	0.68	0.00		Calculated
24	Pipe-6-5	4.17	0 00:05	6.15	0.68	5.42	0.20	0.75	0.60	0.00		Calculated
25	Pipe-7-6	3.02	0 00:05	3.39	0.89	4.93	0.22	0.73	0.73	0.00		Calculated
26	Pipe-7A-7	0.74	0 00:05	3.85	0.19	5.39	0.21	0.30	0.30	0.00		Calculated
27	Pipe-7B-7	1.09	0 00:05	3.39	0.32	5.71	0.26	0.39	0.39	0.00		Calculated
28	Pipe-9-8	6.79	0 00:05	8.01	0.85	5.10	0.18	1.06	0.71	0.00		Calculated

Storage Nodes

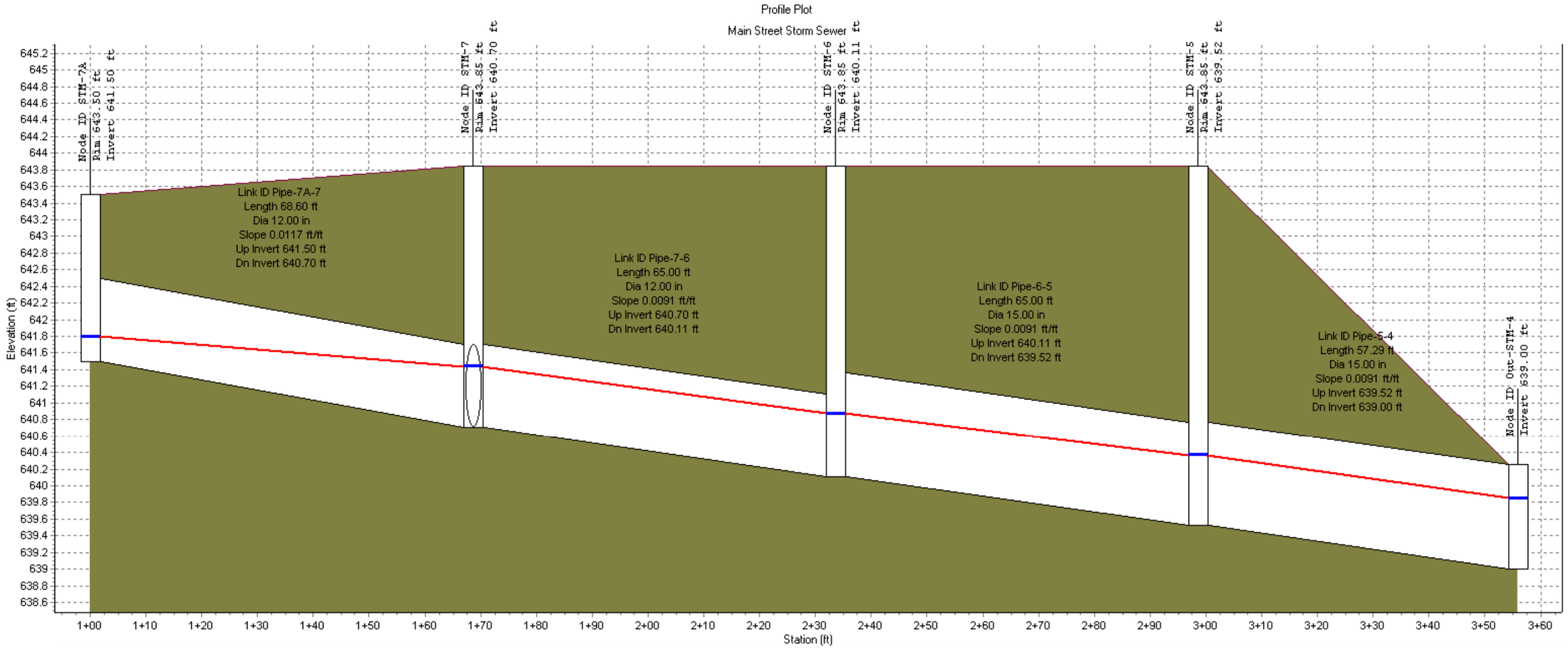
Storage Node : STM-22

Input Data

Invert Elevation (ft)	637.80
Max (Rim) Elevation (ft)	645.60
Max (Rim) Offset (ft)	7.80
Initial Water Elevation (ft)	637.80
Initial Water Depth (ft)	0.00
Ponded Area (ft^2)	0.00
Evaporation Loss	0.00

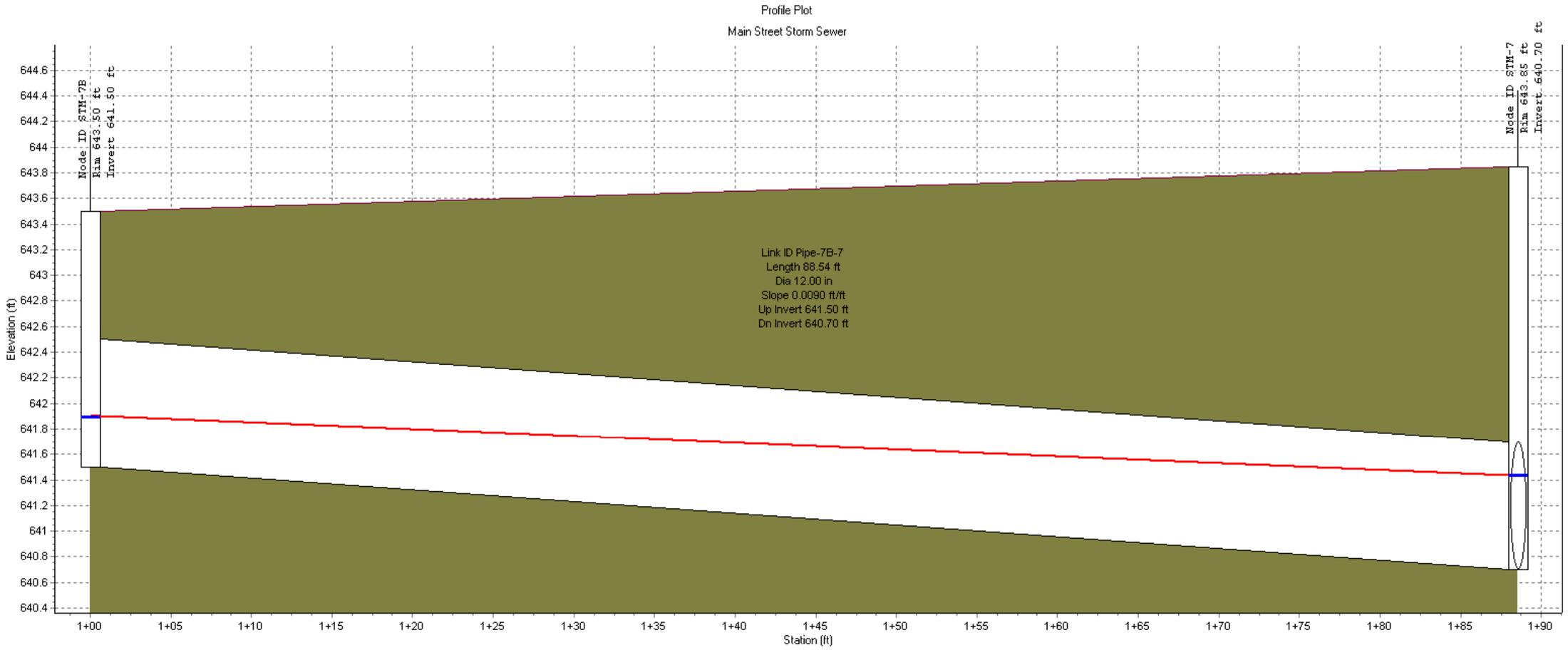
Output Summary Results

Peak Inflow (cfs)	2.77
Peak Lateral Inflow (cfs)	0
Peak Outflow (cfs)	2.77
Peak Exfiltration Flow Rate (cfm)	0
Max HGL Elevation Attained (ft)	637.8
Max HGL Depth Attained (ft)	0
Average HGL Elevation Attained (ft)	637.8
Average HGL Depth Attained (ft)	0
Time of Max HGL Occurrence (days hh:mm)	0 00:00
Total Exfiltration Volume (1000-ft^3)	0
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0



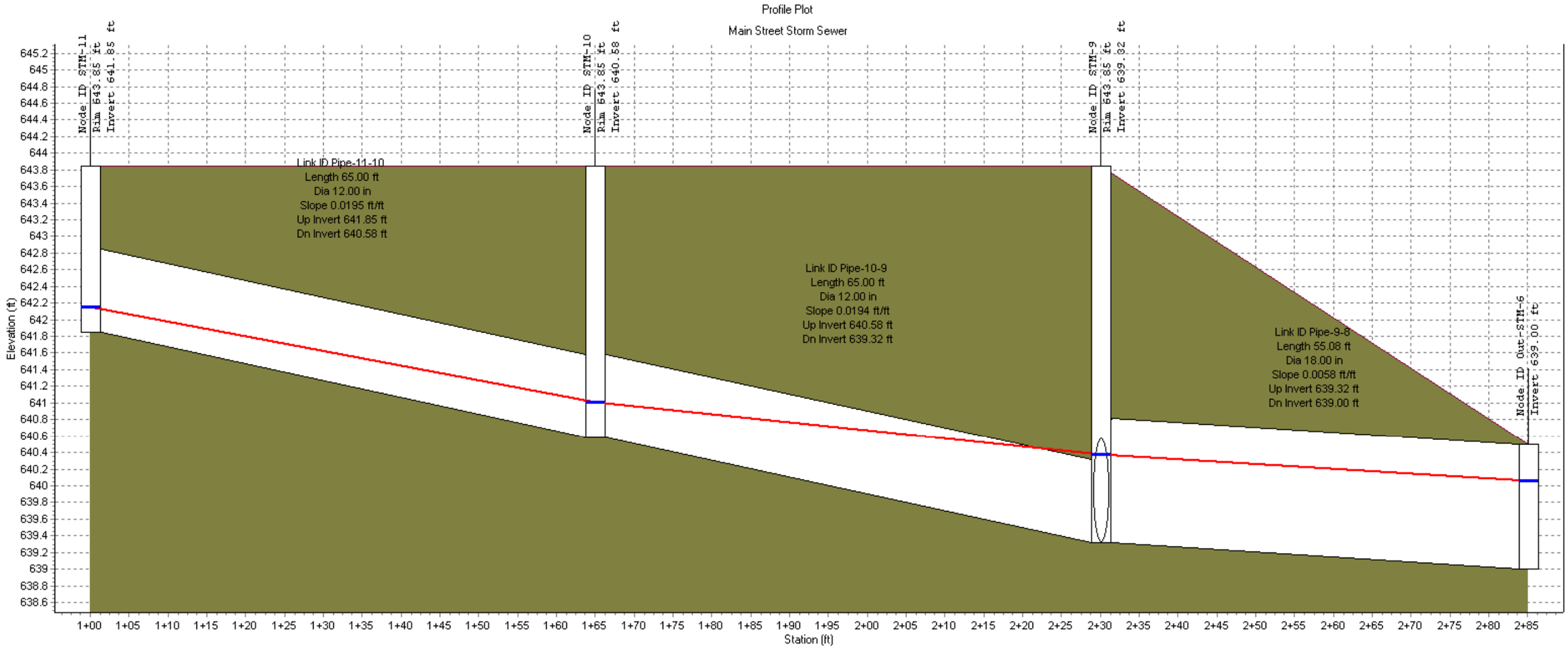
Node ID:	STM-7A	STM-7	STM-6	STM-5	Out-STM-4
Rim (ft):	643.50	643.85	643.85	643.85	
Invert (ft):	641.50	640.70	640.11	639.52	639.00
Min Pipe Cover (ft):	1.00	2.15	2.49	3.08	
Max HGL (ft):	641.80	641.44	640.87	640.37	639.85

Link ID:	Pipe-7A-7	Pipe-7-6	Pipe-6-5	Pipe-5-4	
Length (ft):	68.60	65.00	65.00	57.29	
Dia (in):	12.00	12.00	15.00	15.00	
Slope (ft/ft):	0.0117	0.0091	0.0091	0.0091	
Up Invert (ft):	641.50	640.70	640.11	639.52	
Dn Invert (ft):	640.70	640.11	639.52	639.00	
Max Q (cfs):	0.74	3.02	4.17	4.93	
Max Vel (ft/s):	5.39	4.93	5.42	5.61	
Max Depth (ft):	0.30	0.73	0.75	0.84	



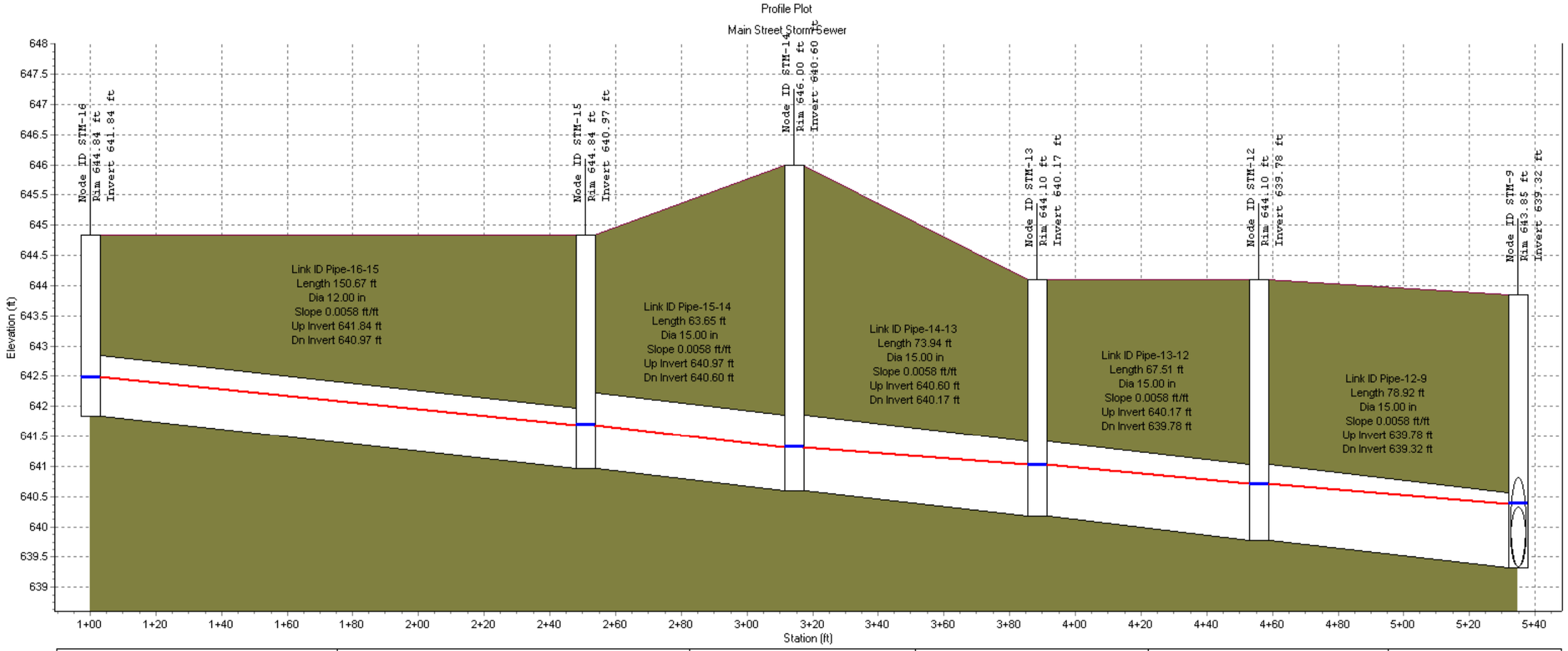
Node ID:	STM-7B	STM-7
Rim (ft):	643.50	643.85
Invert (ft):	641.50	640.70
Min Pipe Cover (ft):	1.00	2.15
Max HGL (ft):	641.90	641.44

Link ID:	Pipe-7B-7
Length (ft):	88.54
Dia (in):	12.00
Slope (ft/ft):	0.0090
Up Invert (ft):	641.50
Dn Invert (ft):	640.70
Max Q (cfs):	1.09
Max Vel (ft/s):	5.71
Max Depth (ft):	0.39



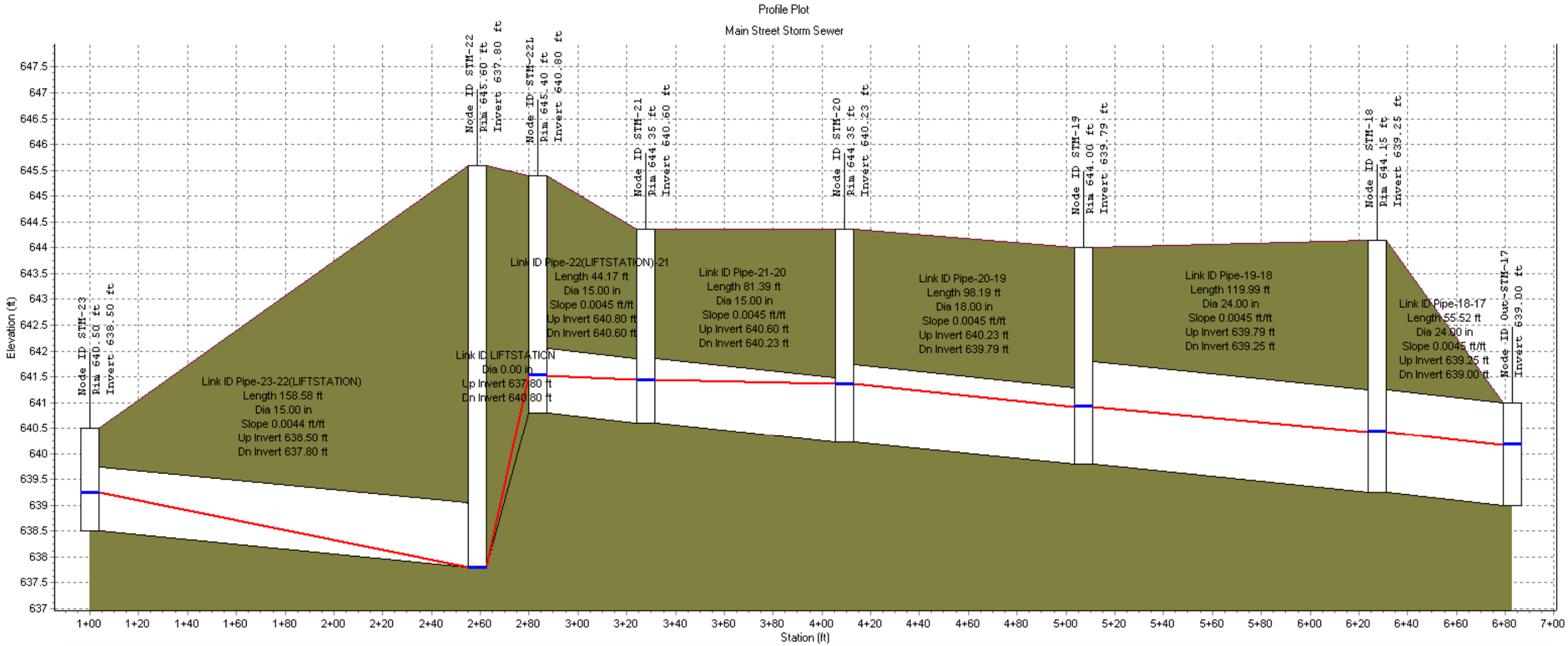
Node ID:	STM-11	STM-10	STM-9	Out-STM-6
Rim (ft):	643.85	643.85	643.85	
Invert (ft):	641.85	640.58	639.32	639.00
Min Pipe Cover (ft):	1.00	2.27	3.03	
Max HGL (ft):	642.15	641.01	640.38	640.06

Link ID:	Pipe-11-10	Pipe-10-9	Pipe-9-8
Length (ft):	65.00	65.00	55.08
Dia (in):	12.00	12.00	18.00
Slope (ft/ft):	0.0195	0.0194	0.0058
Up Invert (ft):	641.85	640.58	639.32
Dn Invert (ft):	640.58	639.32	639.00
Max Q (cfs):	0.94	1.87	6.79
Max Vel (ft/s):	6.41	5.90	5.10
Max Depth (ft):	0.29	0.43	1.06



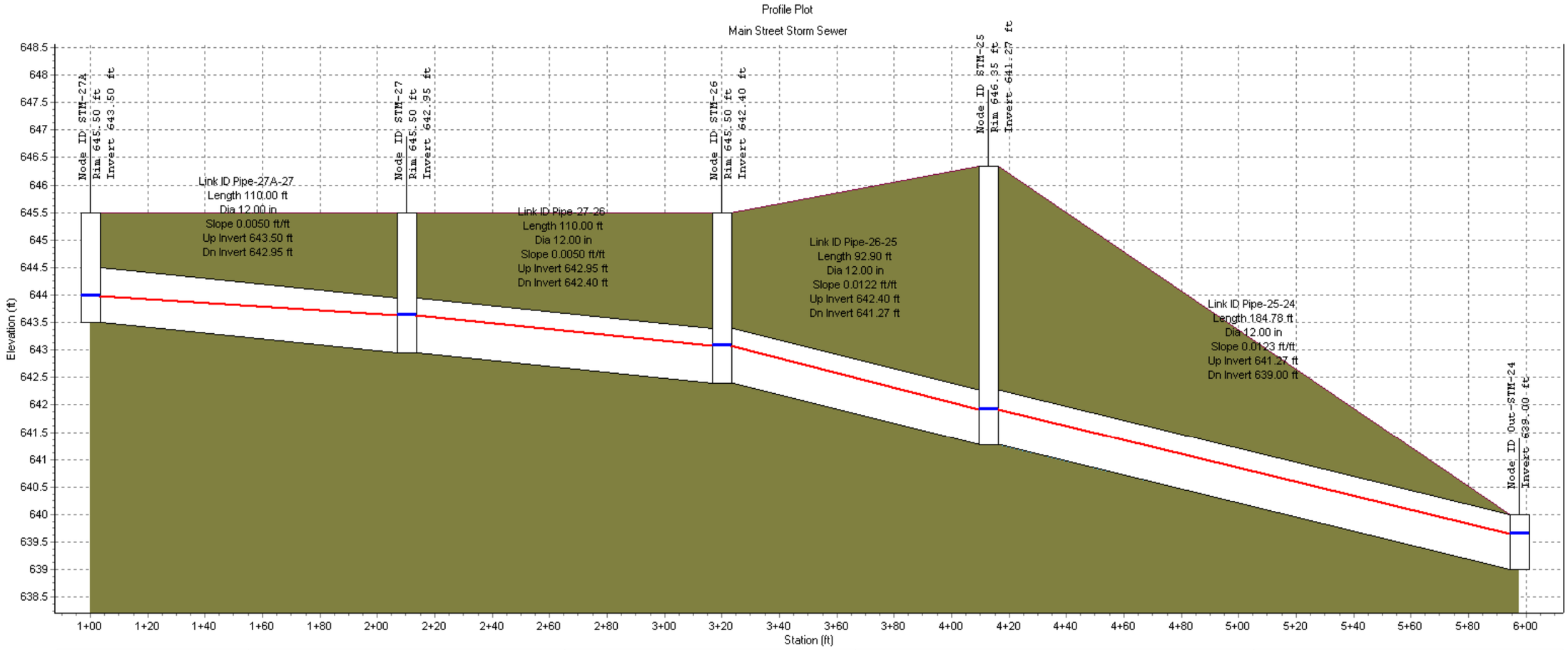
Node ID:	STM-16	STM-15	STM-14	STM-13	STM-12	STM-9
Rim (ft):	644.84	644.84	646.00	644.10	644.10	643.85
Invert (ft):	641.84	640.97	640.60	640.17	639.78	639.32
Min Pipe Cover (ft):	2.00	2.62	4.15	2.68	3.07	3.03
Max HGL (ft):	642.49	641.69	641.32	641.04	640.71	640.38

Link ID:	Pipe-16-15	Pipe-15-14	Pipe-14-13	Pipe-13-12	Pipe-12-9
Length (ft):	150.67	63.65	73.94	67.51	78.92
Dia (in):	12.00	15.00	15.00	15.00	15.00
Slope (ft/ft):	0.0058	0.0058	0.0058	0.0058	0.0058
Up Invert (ft):	641.84	640.97	640.60	640.17	639.78
Dn Invert (ft):	640.97	640.60	640.17	639.78	639.32
Max Q (cfs):	1.95	3.08	3.07	4.05	4.46
Max Vel (ft/s):	6.44	4.26	4.27	4.52	4.61
Max Depth (ft):	0.63	0.72	0.71	0.86	0.93



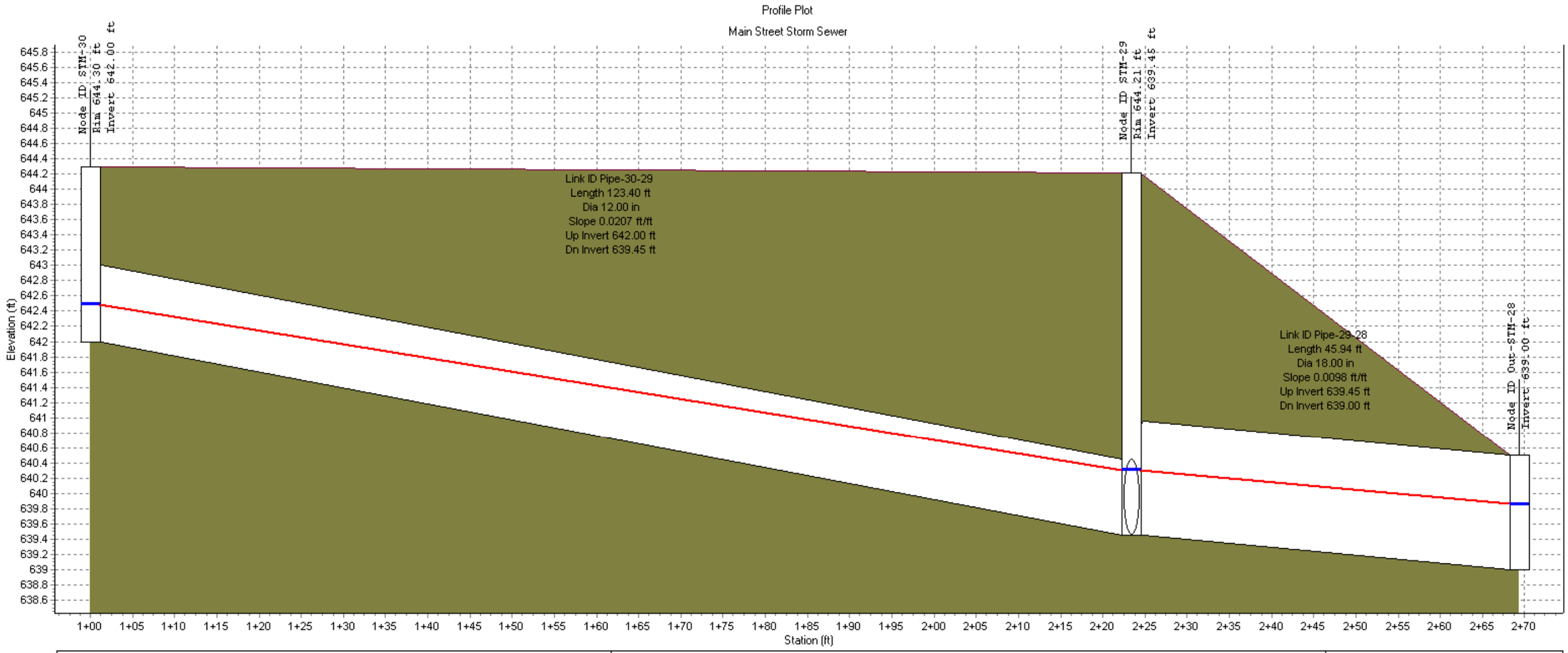
Node ID:	STM-23	STM-22	STM-22L	STM-21	STM-20	STM-19	STM-18	Out-STM-17
Rim (ft):	640.50	645.60	645.40	644.35	644.35	644.00	644.15	
Invert (ft):	638.50	637.80	640.80	640.60	640.23	639.79	639.25	639.00
Min Pipe Cover (ft):	0.75		0.00	2.50	2.62	2.21	2.90	
Max HGL (ft):	639.25	637.80	641.53	641.44	641.36	640.92	640.43	640.18

Link ID:	Pipe-23-22(LIFTSTATION)	LIFTSTATION	Pipe-22(LIFTSTATION)-21	Pipe-21-20	Pipe-20-19	Pipe-19-18	Pipe-18-17
Length (ft):	158.58		44.17	81.39	98.19	119.99	55.52
Dia (in):	15.00	0.00	15.00	15.00	18.00	24.00	24.00
Slope (ft/ft):	0.0044		0.0045	0.0045	0.0045	0.0045	0.0045
Up Invert (ft):	638.50	637.80	640.80	640.60	640.23	639.79	639.25
Dn Invert (ft):	637.80	640.80	640.60	640.23	639.79	639.25	639.00
Max Q (cfs):	2.77	2.77	2.77	3.42	6.45	8.62	9.96
Max Vel (ft/s):	6.46	0.00	3.77	3.99	4.60	5.03	5.16
Max Depth (ft):	0.73	0.00	0.72	0.83	1.13	1.08	1.18



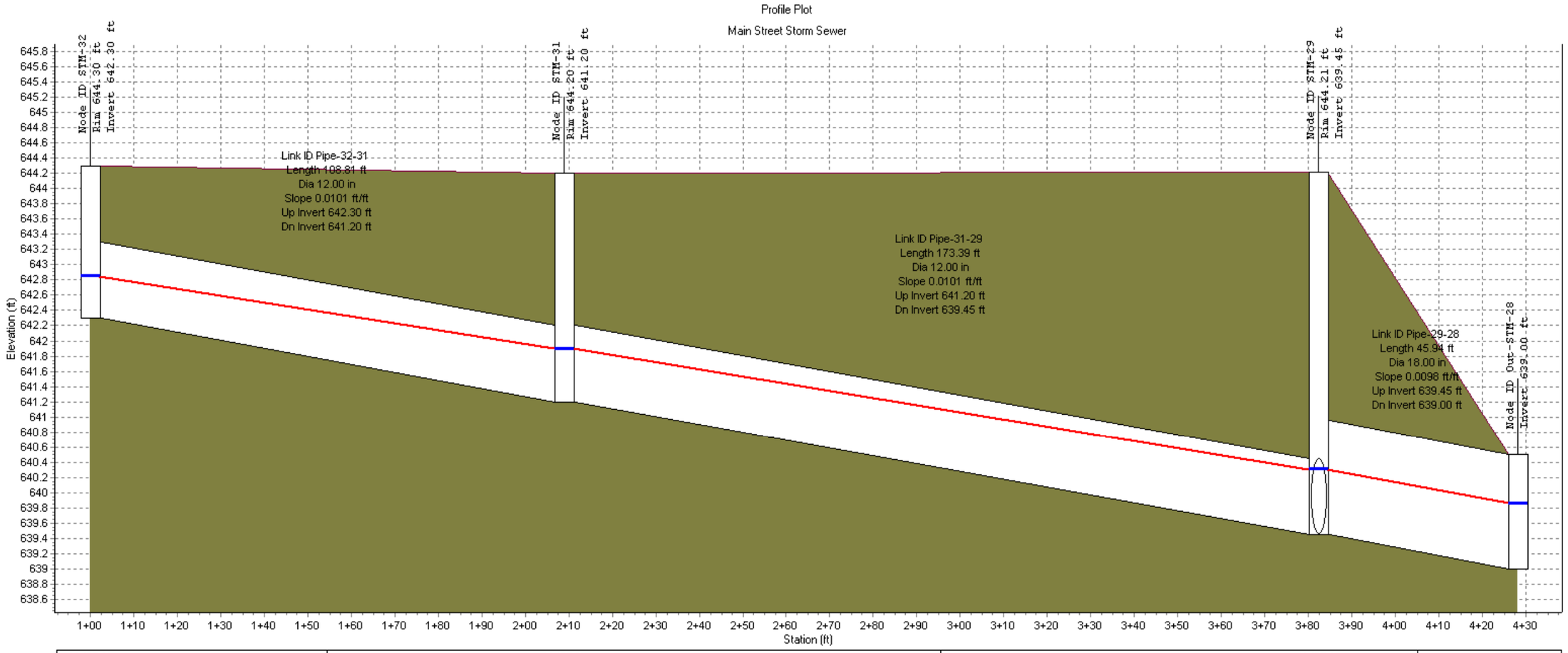
Node ID:	STM-27A	STM-27	STM-26	STM-25	Out-STM-24
Rim (ft):	645.50	645.50	645.50	646.35	
Invert (ft):	643.50	642.95	642.40	641.27	639.00
Min Pipe Cover (ft):	1.00	1.55	2.10	4.08	
Max HGL (ft):	643.99	643.64	643.08	641.92	639.65

Link ID:	Pipe-27A-27	Pipe-27-26	Pipe-26-25	Pipe-25-24
Length (ft):	110.00	110.00	92.90	184.78
Dia (in):	12.00	12.00	12.00	12.00
Slope (ft/ft):	0.0050	0.0050	0.0122	0.0123
Up Invert (ft):	643.50	642.95	642.40	641.27
Dn Invert (ft):	642.95	642.40	641.27	639.00
Max Q (cfs):	1.15	2.04	3.00	2.97
Max Vel (ft/s):	5.17	3.66	5.55	5.65
Max Depth (ft):	0.47	0.68	0.65	0.65



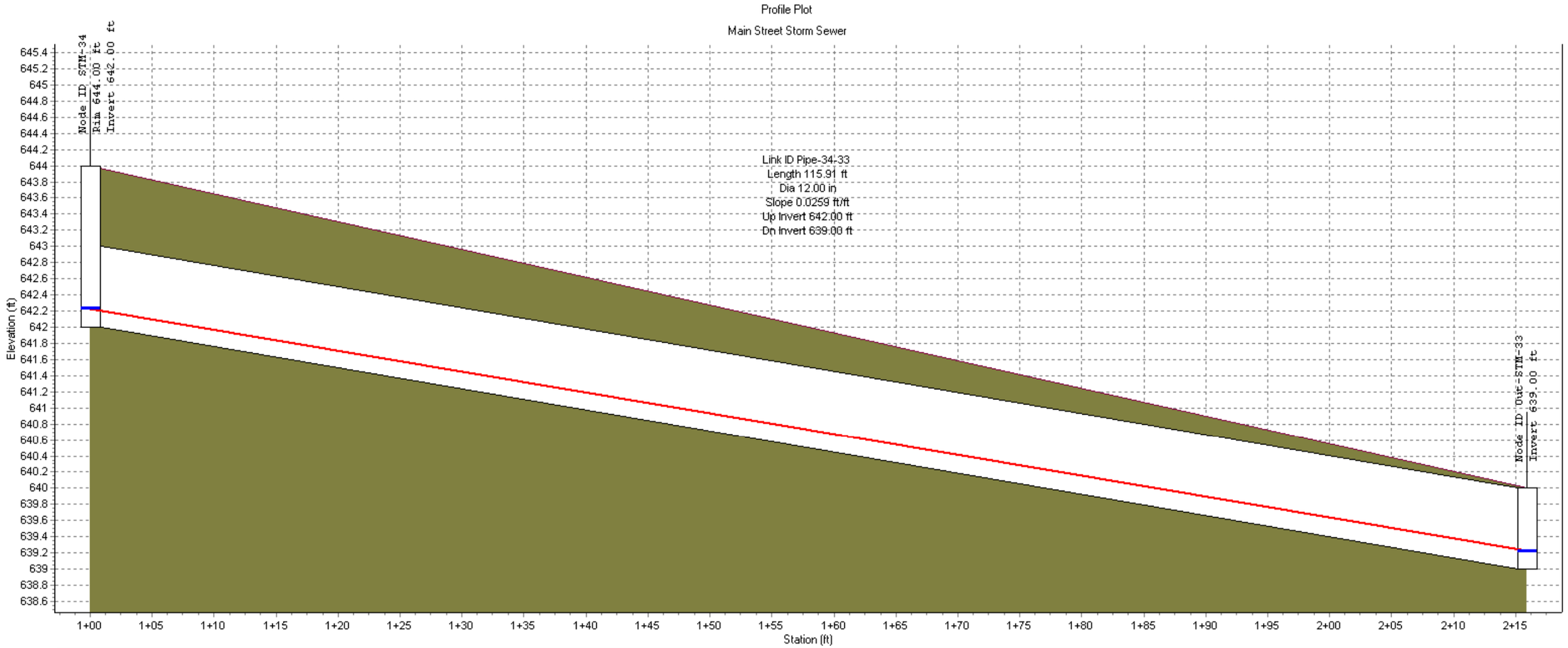
Node ID:	STM-30	STM-29	Out-STM-28
Rim (ft):	644.30	644.21	
Invert (ft):	642.00	639.45	639.00
Min Pipe Cover (ft):	1.30	3.26	
Max HGL (ft):	642.49	640.31	639.86

Link ID:	Pipe-30-29	Pipe-29-28
Length (ft):	123.40	45.94
Dia (in):	12.00	18.00
Slope (ft/ft):	0.0207	0.0098
Up Invert (ft):	642.00	639.45
Dn Invert (ft):	639.45	639.00
Max Q (cfs):	2.43	6.55
Max Vel (ft/s):	9.29	6.23
Max Depth (ft):	0.48	0.86



Node ID:	STM-32	STM-31	STM-29	Out-STM-28
Rim (ft):	644.30	644.20	644.21	
Invert (ft):	642.30	641.20	639.45	639.00
Min Pipe Cover (ft):	1.00	2.00	3.26	
Max HGL (ft):	642.85	641.90	640.31	639.86

Link ID:	Pipe-32-31	Pipe-31-29	Pipe-29-28
Length (ft):	108.81	173.39	45.94
Dia (in):	12.00	12.00	18.00
Slope (ft/ft):	0.0101	0.0101	0.0098
Up Invert (ft):	642.30	641.20	639.45
Dn Invert (ft):	641.20	639.45	639.00
Max Q (cfs):	2.07	2.97	6.55
Max Vel (ft/s):	7.12	5.25	6.23
Max Depth (ft):	0.54	0.69	0.86



Node ID:	STM-34	Out-STM-33
Rim (ft):	644.00	
Invert (ft):	642.00	639.00
Min Pipe Cover (ft):	1.00	
Max HGL (ft):	642.23	639.23

Link ID:	Pipe-34-33
Length (ft):	115.91
Dia (in):	12.00
Slope (ft/ft):	0.0259
Up Invert (ft):	642.00
Dn Invert (ft):	639.00
Max Q (cfs):	0.65
Max Vel (ft/s):	7.25
Max Depth (ft):	0.23

Appendix I – Copies of other relevant permits

Appendix I.1 – EcoCAT Approval

EcoCAT
Ecological Compliance Assessment Tool

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Applicant:	Pinnacle Engineering Group, LLC.	*IDNR Project Number:*	2413174
Contact:	Jake McCord	*Date:*	04/15/2024
Address:	1051 E Main St. Suite 217 East Dundee, IL 60118		
Project:	Lockport Township Fire Protection District		
Address:	W. Division Street, Crest Hill		

Description: The proposed improvements include the construction of a 31,345 square foot building, a 12,500 square foot building, a 2,656 square foot building, and 133,777 square feet of impervious area which includes a parking lot, concrete pads for utilities, a sidewalk, and a burn pit. The remaining impervious area to be developed consists of a 51,604 square foot detention basin. The developed pervious area/green space consists of 294,719 square feet.

The existing property is farmland and there is no impervious area to be removed.

Natural Resource Review Results

Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location.

Consultation is terminated. This consultation is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Termination does not imply IDNR's authorization or endorsement.

Location

The applicant is responsible for the accuracy of the location submitted for the project.

County: Will

Township, Range, Section:
36N, 10E, 29

IL Department of Natural Resources Contact
Adam Rawe
217-785-5500
Division of Ecosystems & Environment

Government Jurisdiction
IL Environmental Protection Agency
Cathy Demeroukas
1021 North Grand Avenue East
Springfield, Illinois 62794

Disclaimer

The Illinois Natural Heritage Database cannot provide a conclusive statement on the presence, absence, or condition of natural resources in Illinois. This review reflects the information existing in the Database at the time of this inquiry, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, compliance with applicable statutes and regulations is required.

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Appendix I.2 – State Historical Preservation Office – Exemption Letter

Illinois Department of Natural Resources
JB Pritzker, Governor • Natalie Phelps Finnie, Director
One Natural Resources Way • Springfield, Illinois 62702-1271
www.dnr.illinois.gov

Will County
Crest Hill
Division St, E of Weber Rd
IEPA, Pinnacle-5219.10-IL
New Construction of a Training and Maintenance Facility,
Lockport Township Fire Protection District

PLEASE REFER TO: SHPO LOG #001042224

May 17, 2024

Jake McCord
Pinnacle Engineering Group
1051 E. Main St., Suite 217
East Dundee, IL 60118

The Illinois State Historic Preservation Office is required by the Illinois State Agency Historic Resources Preservation Act (20 ILCS 3420, as amended, 17 IAC 4180) to review all state undertakings for their effect on cultural resources. Pursuant to this requirement, we have received information regarding the above referenced project for our comment.

According to the information provided there is no federal involvement in your project. Be aware the state law is less restrictive than the federal cultural resource laws concerning archaeology. If your project will use federal loans or grants, need federal agency permits, use federal property, or involve assistance from a federal agency, then your project must be reviewed under the National Historic Preservation Act of 1966, as amended. Please notify us immediately if such is the case.

Our files do not identify any known historic properties within this proposed project area, nor is it within the high probability area for archaeological resources as defined in the state Act. Accordingly, this project is **EXEMPT** pursuant to Section 6 of the Illinois State Agency Historic Resources Preservation Act. An archaeological survey for your above referenced project is not *required* under Illinois law as there is no public funding and it is not on public land. Please know, however, we are always receptive to reviewing the results of any due diligence survey coverages that may help prevent unanticipated discoveries during construction.

This does not pertain to any discovery during construction, nor is it a clearance for purposes of the Illinois Human Remains Protection Act (20 ILCS 3440).

If further assistance is needed please contact Jeff Kruchten, Principal Archaeologist, at 217/785-1279 or jeff.kruchten@illinois.gov.

Sincerely,

Carey L. Mayer

Carey L. Mayer, AIA
Deputy State Historic
Preservation Officer

Appendix J – Subsurface drainage investigation report

Construction & Geotechnical Material Testing, Inc.

60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

May 23, 2023

Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

CGMT Project No. 23G0270

Reference: ***Report of Subsurface Exploration and Geotechnical Engineering Services, Proposed New Training Grounds, Lockport Fire Protection District, Division Street, East of Borio Drive, Lockport, Illinois***

Dear Mr. Estes:

CGMT, Inc. has completed the subsurface exploration and geotechnical engineering analyses for the proposed New Training Grounds to be located at Division Street, East of Borio Drive, in Lockport, Illinois. This report describes the subsurface exploration procedures, laboratory testing, and geotechnical recommendations for project construction. A Boring Location Plan is included in the Appendix of this report along with the Boring Logs performed for the exploration.

We appreciate this opportunity to be of service to the Lockport Fire Protection District and FGM Architects, Inc. during the design phase of this project. If you have any questions with regard to the information and recommendations presented in this report, or if we can be of further assistance to you in any way during the planning or construction of this project, please do not hesitate to contact us.

Respectfully,

CONSTRUCTION AND GEOTECHNICAL MATERIAL TESTING, INC.

Pratik Patel, P.E.
Vice President

3pc: Encl.

REPORT OF

SUBSURFACE EXPLORATION AND
GEOTECHNICAL ENGINEERING SERVICES

NEW TRAINING GROUNDS
LOCKPORT FIRE PROTECTION DISTRICT
DIVISION STREET, EAST OF BORIO DRIVE
LOCKPORT, ILLINOIS

CGMT PROJECT NO. 23G0270

FOR

FGM ARCHITECTS, INC.
OAK BROOK, ILLINOIS

MAY 23, 2023

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EXECUTIVE SUMMARY

Construction & Geotechnical Material Testing, Inc. (CGMT) has completed your subsurface exploration and geotechnical engineering project. The subsurface conditions encountered during our exploration and CGMT's conclusions and recommendations are summarized below. This summary should not be considered apart from the entire text of the report with all the qualifications and considerations mentioned herein. Details of our conclusions and recommendations are discussed in the following sections and in the Appendix of this report.

The project site is located at Division Street, East of Borio Drive in Lockport, Illinois. A total of sixteen (16) exploratory borings, B-1 through B-16, were performed for this project. The soil conditions encountered at the borings performed at the site are summarized as follows.

Approximately 8 to 22 inches of topsoil was encountered at the ground surface at the boring locations. Beneath the topsoil, the borings encountered dark brown and brown, stiff to hard silty clay and sandy clay fill soils that extended to depths of approximately 3½ to 6 feet below the existing ground surface below the existing ground surface. The clay fill soils were underlain by brown, dense gravel fill soils that extended to a depth of approximately 8½ feet below grade, where brown, stiff sandy clay fill that extended to a depth of approximately 13½ feet below grade. Beneath the fill, the borings encountered natural, stiff to hard silty clay soils that continued to the boring termination depths of approximately 20 feet below the existing ground surface. Boring B-7 encountered a layer of brown, medium dense silt between depths of approximately 8½ to 13½ feet below grade.

If available, records of compaction obtained during the mass earthwork phase of the project should be provided to CGMT for our review. However, if records are not available, the existing fill soils appear to have been placed with some measure of control of moisture content and density and it should be feasible to support floor slabs, pavements, and new fill.

If the Lockport Fire Protection District is willing to accept some risk of total and differential settlement and associated long term maintenance, the existing fill material similar to those encountered in the borings extending to depths of approximately 3½ to 13½ feet below the surrounding grade may remain in place below floor slabs and pavements but the subgrade must pass a proofroll under the observation of a CGMT geotechnical engineer or soils technician. However, if the Lockport Fire Protection District is unwilling to accept the risk, then the existing fill soils should be completely removed and replaced with new engineered fill.

Based on the anticipated structural loading and subsurface conditions, conventional shallow foundation systems consisting of spread and/or continuous footings, extended through existing fill soils (encountered in the borings to depths of approximately 3½ to 13½ feet below the existing ground surface) bearing on the natural, stiff to hard silty clay and sandy clay is considered feasible and appropriate to support the proposed training center improvements. For footings, extended through existing fill soils, bearing at depths of at least 3½ feet below grade on natural, stiff to hard silty clay and sandy clay or new, properly compacted engineered fill, we recommend a maximum net allowable soil bearing pressure of 3,000 psf be used to proportion the footings.

We recommend that the excavation of building foundations be monitored full-time by a CGMT geotechnical engineer or his representative to verify that the exposed subgrade materials and the soil bearing pressure will be suitable for the proposed structure.

Report Prepared By:

Nicholas Wolff

Nicholas P. Wolff, P.E.
Geotechnical Engineer

Report Reviewed By:

Pratik Patel

Pratik K. Patel, P.E.
Vice President

1
PROJECT OVERVIEW

Introduction

This report presents the results of our subsurface exploration and engineering services for the proposed new training grounds for the Lockport Fire Protection District in Lockport, Illinois. A General Location Plan included in the Appendix of this report, shows the approximate location of this project.

Project Description

ITEM	DESCRIPTION
Site Layout	See Boring Location Diagram in the Appendix
Proposed Construction	The new fire station training facility will include a single story, CMU framed fire station building covering 18,860 square feet, training/maintenance facility, burn tower, and several other training accessories.
Structural Loads	Max. column loads: 200 kips (Anticipated); Max. wall loads: 4 kips per lineal foot (Anticipated)
Grading and Existing Site Considerations	We estimate less than 2 to 3 feet of grade changes will be necessary to establish final site grades.
Ancillary Improvements	Parking for several passenger vehicles, drive areas and a central retention area are also planned.

Scope of Work

The conclusions and recommendations contained in this report are based on the soil borings performed in the vicinity of the proposed building and pavement areas, and associated laboratory testing of selected soil samples. The scope of the subsurface exploration included the following.

Number of Borings	Depth (feet)
16	20

The results of the soil borings, along with a Boring Location Plan showing the approximate locations where the borings were performed, are included in the Appendix of this report. Once the samples were returned to our laboratory we laboratory tests on selected representative soil samples from the borings to evaluate pertinent engineering properties, and, we analyzed the field and laboratory data to develop appropriate engineering recommendations.

The purpose of this report is to provide information and geotechnical engineering recommendations with regard to:

- Subsurface Soil and Groundwater Conditions
- Seismic Considerations
- Site Preparation and Earthwork
- Foundation Design and Construction
- Floor Slab Design and Construction
- Pavement Design and Construction

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EXPLORATION RESULTS

Site Description

ITEM	DESCRIPTION
Project Location	The project site is located on the south side of Division Street, approximately 3,000 east of Borio Drive, in Lockport, Illinois.
Existing Site Improvements	At the time of our exploration, the project site was an agricultural field.
Existing Topography	The site is rolling with the lowest site grades located at the southwest corner of the project site. Site grades across the site ranged from approximately 624 feet down to 619 feet.

Soil Conditions

A total of sixteen (16) borings, B-1 through B-16 were performed for this project. The subsurface conditions encountered at the borings performed at the site can be summarized as follows.

Approximately 8 to 22 inches of topsoil was encountered at the ground surface at the boring locations. Beneath the topsoil, the borings encountered dark brown and brown, stiff to hard silty clay and sandy clay fill soils that extended to depths of approximately 3½ to 6 feet below the existing ground surface below the existing ground surface. The clay fill soils were underlain by brown, dense gravel fill soils that extended to a depth of approximately 8½ feet below grade, where brown, stiff sandy clay fill that extended to a depth of approximately 13½ feet below grade. Beneath the fill, the borings encountered natural, stiff to hard silty clay soils that continued to the boring termination depths of approximately 20 feet below the existing ground surface. Boring B-7 encountered a layer of brown, medium dense silt between depths of approximately 8½ to 13½ feet below grade.

SOILS	SOIL CHARACTERISTICS
Silty Clay & Sandy Clay (Existing Fill)	Unconfined Compressive Strengths: 1.0 to 4.5+ tsf Dry Density Determinations: 89.6 to 105.3 pcf Moisture Contents: 13.3 to 26.4 percent
Gravel (Existing Fill)	Dense; 36 blows per foot
Silty Clay & Sandy Clay (Existing Fill)	Unconfined Compressive Strengths: 1 to 4.5+ tsf Moisture Contents: 10.5 to 22.1 percent
Silt (Natural)	Medium dense; 10 blows per foot

The specific soil types observed at the borings are noted on the boring logs, enclosed in the Appendix.

Groundwater Observations

Observations for groundwater were made during sampling and upon completion of the drilling operations at the boring locations. In auger drilling operations, water is not introduced into the boreholes, and the groundwater position can often be obtained by observing water flowing into or out of the boreholes. Furthermore, visual observation of the soil samples retrieved during the auger drilling exploration can often be used in evaluating the groundwater conditions. Groundwater levels were observed during drilling and immediately the completion of drilling. Groundwater measurements are summarized in the table below.

BORINGS	GROUNDWATER LEVELS (FEET)	
	DURING DRILLING	IMMEDIATELY AFTER COMPLETION
B-1 through B-4	6 to 13.5	3.5 to 6
B-5 through B-16	None	None

Glacial till soils in the Midwest frequently oxidize from gray to brown above the level at which the soil remains saturated. The seasonal high water table is often interpreted to be near this zone of color change. Based on the results of this exploration, the seasonal high water table may be located at depths of approximately 6 to 13½ feet below current grade.

More definitive evidence of prevailing groundwater levels could be obtained through the use of groundwater monitoring wells, which CGMT could install and monitor if requested.

It should be noted that the groundwater level can vary based on precipitation, evaporation, surface run-off and other factors not immediately apparent at the time of this exploration. Surface water runoff will be a factor during general construction, and steps should be taken during construction to control surface water runoff and to remove any water that may accumulate in the proposed excavations as well as floor slab and pavement areas. Precipitation generally varies seasonally. To assist in anticipating groundwater fluctuations changes throughout the year, average monthly precipitation is provided in the table below. Average precipitation levels were obtained from wunderground.com.

Seasonal Precipitation													
Month	January	February	March	April	May	June	July	August	September	October	November	December	Total
Normal Precipitation (inches)	1.73	1.79	2.50	3.38	3.68	3.45	3.70	4.90	3.21	3.15	3.15	2.25	36.89

Seismic Zone

Based on the 2015 International Building Code, Table 1615.1.1 Site Class Definitions, the site soils can be characterized as Site Class D. Site Class D is described as Stiff Soil Profile for the top 100 ft of the site soil profile. Since we drilled to a maximum depth of 20 feet for this exploration, based on our experience with the soils in this area, the available geologic maps and following the direction of IBC 2015 when there are no borings to 100 feet deep, it is our opinion the site would be defined as Site Class D.

CGMT also calculated the spectral response factors based on the site class as well as the latitude and longitude of the project location using United States Geological Survey (USGS) seismic calculator software. The calculated values are presented in the table below.

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Seismic Design Criteria					
Lockport FPD Training Grounds					
Lockport, Illinois					
Latitude	41.580468	Longitude	-88.105588	Site Class	D
S_s	0.160g	S_{MS}	0.255g	S_{DS}	0.170g
S_1	0.068g	S_{M1}	0.164g	S_{D1}	0.110g

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ANALYSIS AND RECOMMENDATIONS

Overview

The following recommendations have been developed on the basis of the previously described project characteristics and subsurface conditions encountered. If there are any changes to the project characteristics or if different subsurface conditions are encountered during construction, CGMT should be consulted so that the recommendations of this report can be reviewed.

A summary of the results of the exploration are provided in the table below.

Preliminary Bearing Table

Boring	Boring Depth (feet)	Depth to Groundwater (feet)		Approximate Depth to Soils Suitable for a Net Allowable Bearing Pressure of 3,000 psf*
		During Drilling	After Completion	
B-1	20	13.5	12.5	3.5
B-2	20	6	10	6
B-3	20	13	12	6
B-4	20	13.5	15	3.5
B-5	20	None	None	3.5
B-6	20	None	None	3.5
B-7	20	None	None	3.5
B-8	20	None	None	3.5
B-9	20	None	None	3.5
B-10	20	None	None	3.5
B-11	20	None	None	3.5
B-12	20	None	None	3.5
B-13	20	None	None	3.5
B-14	20	None	None	3.5
B-15	20	None	None	13.5
B-16	20	None	None	3.5

* To be used a minimum of 3½ feet below adjacent outside grade.

Subgrade Preparation and Engineered Fill

Subgrade Preparation

Initial subgrade preparation should consist of complete stripping/removal of topsoil, asphalt pavement course, existing base course materials, vegetation, and any other soft or unsuitable/deleterious materials from the location of the new FPD training grounds, as well as, pavement areas. Unsuitable materials, such as topsoil/buried topsoil or organic soils, should either be stockpiled for later use in landscaping fills or placed in approved disposal areas either on-site or off-site.

We recommend that the project geotechnical engineer or his representative should be on site to monitor stripping and site preparation operations and observe that unsuitable soils have been satisfactorily removed and to observe proofrolling.

Due to the widely spaced distribution of borings combined with the potential for soil disturbance, the accuracy of topsoil thicknesses based upon measurements at the boring locations is limited. In addition, the density of the surface soils also may impact the measured topsoil thickness. As such, the thicknesses reported on the boring logs should be considered approximate. To provide improved estimates for stripping volumes, CGMT recommends a supplemental topsoil survey be performed.

The presence of field tiles should be considered when developing plans and specifications. Where field tiles are encountered, we recommend that they be rerouted to a storm sewer system or properly abandoned upgradient from the site. Field tiles in new building and pavement areas should be removed or grouted.

After removal of unsuitable/deleterious materials and stripping to the desired grade, and prior to fill placement, we recommend the stripped/exposed subgrades be observed by an experienced geotechnical engineer or his authorized representative at the time of construction in order to aid in identifying localized soft/loose or unsuitable materials which should be removed. Proofrolling using a loaded dump truck having an axle weight of at least 10 tons, may be used at this time to aid in identifying localized soft or unsuitable material which should be removed. Any soft or unsuitable materials encountered during proofrolling should be compacted in place or removed and replaced with an approved backfill compacted to the criteria given below. Prior to proofrolling, pavement and floor slab areas that will receive less than 1 foot of new fill, should be scarified to a depth of about 9 inches, moisture conditioned, and recompacted as recommended below.

If available, records of compaction obtained during the mass earthwork phase of the project should be provided to CGMT for our review. However, if records are not available, the existing fill soils appear to have been placed with some measure of control of moisture content and density and it should be feasible to support floor slabs, pavements, and new fill.

If the Lockport Fire Protection District is willing to accept some risk of total and differential settlement and associated long term maintenance, the existing fill material similar to those encountered in the borings extending to depths of approximately 3½ to 13½ feet below the surrounding grade may remain in place below floor slabs and pavements but the subgrade must pass a proofroll under the observation of a CGMT geotechnical engineer or soils technician. However, if the Lockport Fire Protection District is unwilling to accept the risk, then the existing fill soils should be completely removed and replaced with new engineered fill.

During final preparation of subgrades, a smooth drum roller is often used to provide a flat surface and provide for better drainage to reduce the negative impact of rain events. Due to the relative sensitivity of the silty clay and sandy clay soils, we recommend that these materials be static rolled (no vibrations) to reduce the potential for subgrade soil disturbance. We also recommend crowning the subgrade to provide positive drainage off the building and pavement area subgrades.

Engineered Fill

Where new fill material is required for backfill or to otherwise reach the design subgrade elevation beneath slabs-on-grade and pavements, we recommend that engineered fill be used. Any soil placed as engineered fill should be an approved material, free of organic matter or debris, be a non-frost susceptible soil, and have a liquid limit and plasticity index less than 40 and 15, respectively. The project geotechnical engineer should be consulted to determine the suitability of off-site/on-site materials for use as engineered fill, prior to use or placement. We do not recommend the use of 3-inch stone as engineered fill to backfill undercuts, particularly under floor slabs and foundations. Fill materials containing large voids are more susceptible to future movement that may become unstable resulting in excessive and variable settlement.

Fill should be placed in lifts not exceeding 8 inches in loose thickness, moisture conditioned to within 2 percent of the optimum moisture content, and compacted to at least 95 percent of the maximum dry density obtained in accordance with ASTM Specification D 1557, Modified Proctor Method. Fill placed below footing base elevations should be compacted to at least 95 percent of the material's modified Proctor maximum dry density (ASTM D 1557). Engineered fill placed to support foundations should extend 1 foot beyond the outside edges of the footings and from that point outward laterally 1 foot for every 2 feet of fill thickness below the footings. Laboratory proctor tests should be performed on fill materials to determine the maximum dry density and optimum moisture content. A shrinkage factor of 15 percent can be assumed for estimating earthwork quantities for bidding purposes.

We recommend suitable silty clays used to raise the grade or backfill undercuts should be compacted with a sheepsfoot roller. Granular engineered fill should be compacted with a smooth drum roller or adequate heavy vibratory plate. Moisture control during earthwork operations, including the use of disking or appropriate drying equipment and techniques, should be expected.

In-place density tests should be performed with a minimum of 1 test per 2,000 square feet of fill area for each lift of fill placed. We recommend that the placement of engineered fill be monitored full-time by CGMT representative and in-place density tests should be performed to verify the adequacy of the compaction for each lift of fill placed.

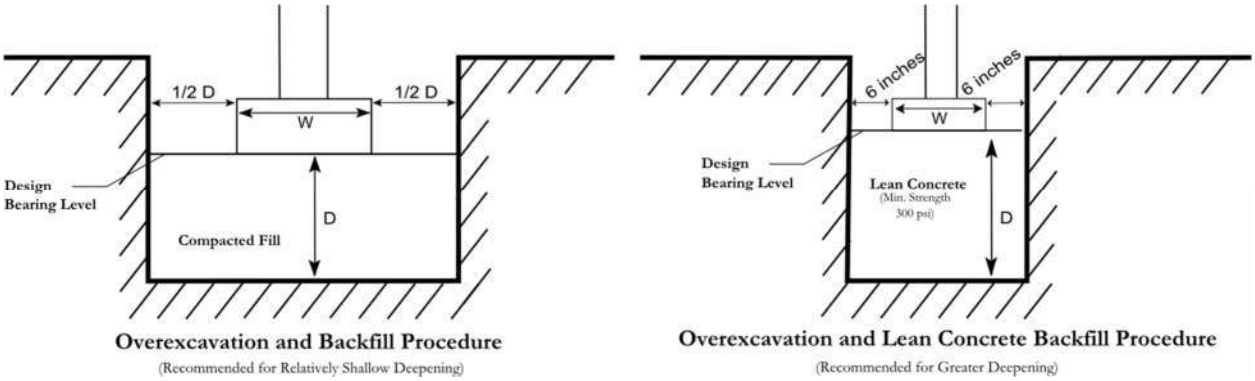
Footing Foundations

Based on the anticipated structural loading and subsurface conditions, conventional shallow foundation systems consisting of spread and/or continuous footings, extended through existing fill soils (encountered in the borings to depths of approximately 3½ to 13½ feet below the existing ground surface) bearing on the natural, stiff to hard silty clay and sandy clay is considered feasible and appropriate to support the proposed training center improvements. For footings, extended through existing fill soils, bearing at depths of at least 3½ feet below grade on natural, stiff to hard silty clay and sandy clay or new, properly compacted engineered fill, we recommend a maximum net allowable soil bearing pressure of 3,000 psf be used to proportion the footings.

To reduce the potential for foundation bearing failure and excessive settlement due to local shear or "punching" action, we recommend that continuous footings have a minimum width of 18 inches and that isolated column footings have a minimum lateral dimension of 30 inches. In addition, footings should be placed at a depth to provide adequate frost cover protection. We recommend the footings be placed at a minimum depth of 3½ feet below finished grade.

We recommend that the excavation of building foundations be monitored on a full-time basis by a CGMT geotechnical engineer or his representative to verify that the exposed subgrade materials and the soil bearing capacity will be suitable for the proposed building and is consistent with the boring log information obtained during the geotechnical exploration.

The contractor should be prepared to undercut/overexcavate and extend the footings to soils of adequate bearing capacity. As an alternative, after overexcavation and removal of weaker/low bearing capacity soils or unsuitable soils, the foundation subgrade can be raised using compacted engineered fill or lean concrete to a minimum frost depth of 3½ feet below final exterior grade. Engineered fill should be compacted to a minimum of 95 percent of the maximum dry density as discussed in the **Subgrade Preparation and Engineered Fill** section. The zone of the engineered fill placed below the foundations should extend 1 foot beyond the outside edges of the footings and from that point, outward laterally 1 foot inches for every 2 feet of fill thickness below the footing. The overexcavation and backfill procedure is depicted in the figure below. If lean concrete is used to replace weaker/low bearing soils or unsuitable soils, no lateral overexcavation will be necessary, but the excavation should be 1 foot wider than the footing (6 inches on each side).



Settlement of the conventional shallow foundations, designed in accordance with our recommendations presented in this report, is expected to be within tolerable limits for the proposed building. For footings, extended through existing fill soils, placed on natural, stiff to hard silty clay, sandy clay, or properly compacted engineered fill and designed as discussed above, maximum total settlement is expected to be in the range of 1 inch or less. These settlement values are based on our engineering experience with the soil and the anticipated structural loading, and are to guide the structural engineer with his design.

Floor Slab Design

For the design and construction of the new building slabs-on-grade for the proposed building, we recommend that all existing vegetation, topsoil or organic soils, and any unsuitable/deleterious materials should be removed and replaced with compacted engineered fill as discussed in the **Site Preparation and Engineered Fill** section. If the removal is performed in accordance with these recommendations, we anticipate floor slabs for the structures will be supported on stable and approved subgrades consisting of silty clay, or on new engineered fill.

It is assumed that the existing floor slab subgrade has performed satisfactorily during the proofroll discussed in the Subgrade Preparation subsection, even though existing fill soils were encountered to depths of 3½ to 13½ feet. Provided that the floor slab subgrade passes a proofroll, the risk of excessive settlement is low. However, if the floor slab subgrade does not pass the proofroll, some undercutting and placement of controlled backfill will be required.

We recommend that floor slabs be underlain by a minimum of 6 inches of granular material having a maximum aggregate size of 1½ inches and no more than 2 percent of fines. Prior to placing the granular material, the floor subgrade soil should be properly compacted, proofrolled, and free of standing water, mud, and frozen soil. For design of Portland cement concrete slabs-on-grade, a modulus of subgrade reaction (k) of 100 pounds per cubic inch (pci) can be used for slabs constructed on subgrade prepared as discussed herein.

A properly designed and constructed capillary break layer can often mitigate the need for a moisture retarder and can assist in more uniform curing of concrete. If a vapor retarder is considered to provide additional moisture protection, special attention should be given to the surface curing of the slabs to reduce uneven drying of the slabs and associated cracking and/or slab curling. The use of a blotter or cushion layer above the vapor retarder can also be considered for project specific reasons. Please refer to ACI 302.1R96 *Guide for Concrete Floor and Slab Construction* and ASTM E 1643 *Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs* for additional guidance on this issue.

We recommend that the floor slab be isolated from the foundation footings so differential settlement of the structure will not induce shear stresses on the floor slab. Also, in order to reduce the crack width of any shrinkage cracks that may develop near the surface of the slab, we recommend mesh reinforcement as a minimum be included in the design of the floor slab. Temperature and shrinkage reinforcements in slabs on ground should be positioned in the upper third of the slab thickness. The Wire Reinforcement Institute recommends the mesh reinforcement be placed 2 inches below the slab surface or upper one-third of slab thickness, whichever is closer to the surface. Adequate construction joints, contraction joints and isolation joints should also be provided in the slab to reduce the impacts of cracking and shrinkage. Please refer to ACI 302.1R96 *Guide for Concrete Floor and Slab Construction* for additional information regarding concrete slab joint design.

Pavements

For the design and construction of exterior pavements, we recommend that topsoil and otherwise unsuitable soils be removed before construction of new pavements and that new pavements will be supported by stable and approved subgrades consisting of silty clay or on new engineered fill.

It is assumed that the existing pavement subgrade has performed satisfactorily during the proofroll discussed in the **Subgrade Preparation** subsection, even though existing fill soils were encountered to depths of 3½ to 13½ feet. Provided that the pavement subgrade passes a proofroll, the risk of excessive settlement is low. However, if the pavement subgrade does not pass the proofroll, some undercutting and placement of controlled backfill will be required.

We anticipate the new pavement will be constructed of asphaltic concrete or Portland cement concrete. We expect that the proposed parking lot will generally be utilized for light duty traffic, and the driveways and loading and unloading areas be utilized for light to medium duty traffic. Heavy traffic loads would be anticipated for areas near any dumpsters where garbage trucks would often cross. We recommend the pavement subjected to light traffic be underlain by a minimum of 8 inches of base course granular material, similar to Illinois Department of Transportation gradation CA-6.

Assuming the pavement subgrade will consist predominantly of the cohesive soils and new fill prepared in accordance with the recommendations given in this report, an estimated IBR value of 3 could be used in proportioning a flexible pavement section. Similarly, an estimated modulus of subgrade reaction value equal to 100 pounds per cubic inch could be used for design of rigid concrete pavement sections. A Subgrade Stability Rating (SSR) rating of (Poor) should be used for pavement design. Concrete pavements should be air-entrained Portland cement concrete with a minimum compressive strength of 4,000 psi and a minimum flexural strength of 650 psi. Concrete strength requirements are outlined in article 1020.04 of the Standard Specifications for Road and Bridge Construction, effective April 1, 2016.

Some typical pavement sections used in this region of the country are given below which could be considered for preliminary estimating purposes. Other sections can also be considered. These sections assume a low volume of light vehicle loads (automobiles, vans, pickups, etc.). They should also be considered minimum thicknesses, and, as such, periodic maintenance should be anticipated. Final design sections should consider details such as final grades, traffic loadings, traffic volumes, the desired design life and any local, county or city codes. If you wish, we would be pleased to perform a detailed pavement section design using AASHTO or Asphalt Institute procedures when this information is available. It should also be noted that these sections do not consider if the binder course will be subject to construction vehicle traffic for an extended period of time. Some distress to the binder course and aggregate base could occur, if this is the case.

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TYPICAL PAVEMENT SECTIONS*

	Light Duty (Parking Lots)	Heavy Duty ** (Drives)
Portland Cement Concrete	5 inches	6 inches
Full Depth Asphalt	5.5 inches	7 inches
Combined Section:		
Asphalt	3 inches	4 inches
Crushed Stone Base Course	8 inches	10 inches

* All materials should meet the current Illinois Department of Transportation Standard Specifications for Road and Bridge Construction requirements.

** In areas of anticipated heavy traffic, delivery trucks, or concentrated loads, a minimum concrete thickness of 7 inches is recommended but should be evaluated further when loading conditions are known.

Minimum design requirements for hot-mix asphalt (HMA) shall follow Article 1030.05 of the Standard Specifications for Road and Bridge Construction, effective April 1, 2016. During asphalt pavement construction, the wearing and leveling course should be compacted to a minimum of 93 percent of the theoretical density value. Prior to placing the granular material, the pavement subgrade soil should be properly compacted, proofrolled, and free of standing water, mud, and frozen soil.

An important consideration with the design and construction of pavements is surface and subsurface drainage. Where standing water develops, either on the pavement surface or within the base course layer, softening of the subgrade and other problems related to the deterioration of the pavement can be expected. Furthermore, good drainage should reduce the possibility of the subgrade materials becoming saturated over a long period of time. We would be pleased to be of further assistance to you in the design of the project pavements by providing additional recommendations during construction of the project.

Periodic maintenance of pavements should be anticipated. The subgrade parameters provided in this report consider that significant changes in the subgrade moisture content do not occur. To reduce the potential for changes in subgrade moisture, all paved areas should be sloped to provide rapid drainage of surface water and to drain water away from the pavement edges. Water that is allowed to pond on or adjacent to the pavement can saturate and soften the subgrade soils and subsequently accelerate pavement deterioration.

Granular base or subbase materials directly below pavement sections can also collect infiltrated surface water and soften the subgrade as well as increase the effects of frost action, both of which can be detrimental to pavements. For these reasons, where granular materials are used over a cohesive soil subgrade or where the groundwater level is within 3.5 feet of finished pavement subgrade, we recommend that consideration be given to using pavement underdrains hydraulically connected to the granular base or subbase to improve the pavement performance and extend its service life. Underdrains should be installed at 300 to 500 feet intervals and at low points in the roadway profile. Pipe underdrains shall be installed according to Check Sheet #19 of the Supplemental Specifications and Recurring Special Provisions, effective January 1, 2015.

Stormwater Detention Ponds

The soils encountered in most borings generally consisted of silty clay. A clay liner will be needed if significant sandy textured soils are encountered during pond excavation. Recommendations for construction of low permeability clay liners are included below. For the most part, reworking of the exposed clay soils on the sides and bottom of the pond should develop a satisfactory liner.

The silty clay soils encountered at the site generally appear suitable for liner material provided they include relatively small amounts of sand and silt. We would recommend that further evaluation of the on-site soils (or any off-site borrow materials) for use as liner material be performed at the time of construction.

We recommend that compacted low permeability clay liners have a minimum thickness of 24 inches. For construction of the clay liners, it may be necessary to bench side walls of the ponds horizontally, with 1 to 3-foot vertical steps. This would allow horizontal placement and compaction of the liner section. However, adequate compaction for the purpose of detention is probably possible for cohesive fill placed in lifts parallel to the cut slope. Permanent slopes should be constructed at 3(H) on 1(V) or flatter, and erosion control measures should also be used.

Suitable low permeability clay liner material should be placed horizontally in loose lifts of 9 inches or less and compacted to a minimum of 93 percent of the material's maximum modified Proctor dry density (ASTM D-1557). Formation of the liner in three or more lifts would be conducive to constructing a low permeability liner. Clay liner materials should be placed and compacted at moisture contents within about 0 to +4 percent of the material's optimum moisture content. The moisture contents of the liner materials should be maintained to avoid desiccation and shrinkage cracking of the clay liner.

In general, infiltration rates in soil decrease during rain events as the pore spaces between soil grains fill with stored water. The infiltration rates provided here are estimations based on relevant literature and our empirical observations with local soils. On site testing, with the use of a double-ring infiltrometer for example, would provide better site-specific infiltration estimates. For clays, initial estimated infiltration rates may be on the order of ½ inch per hour but would drop to the saturated steady-state infiltration rate of approximately 0.1 inches per hour within 30 minutes to 1 hour, or less in the case of well compacted or desiccated subgrades.

General Construction Considerations

We recommend that the subgrade preparation, installation of the foundations, and construction of slabs-on-grade be monitored by a CGMT geotechnical engineer or his representative. Methods of verification and identification such as proofrolling, DCP testing and hand auger probe holes will be necessary to further evaluate the subgrade soils and identify unsuitable soils. The contractor should be prepared to overexcavate footing excavations at isolated locations. We recommend that excavations of new foundations be monitored on a full-time basis by a CGMT geotechnical engineer or his representative to verify that the soil bearing pressure and the exposed subgrade materials will be suitable for the proposed training grounds and are consistent with the boring log information obtained during this geotechnical exploration. We would be pleased to provide these services.

Since localized areas of soft/unsuitable soils may be present below the bearing elevation of foundations, we recommend that hand-auger borings be performed to at least half the footing width, or a minimum of 3 feet below each isolated column footing and to at least 2 feet below continuous footings. Hand auger borings should be performed at each column footing and at approximately 20-foot intervals along continuous footings to verify the suitability of the soils to support the recommended maximum net allowable bearing pressure. If soft/unsuitable soils are encountered, the footings should be extended until suitable bearing soils are encountered or the unsuitable soils should be removed beneath the base of the footing and replaced with compacted engineered fill or lean concrete. The foundation contractor should expect undercutting/overexcavation or removal of unsuitable material without delay and replacement with engineered fill at the time of foundation excavation/construction.

All loose or soft soils in the subgrade or foundation excavation areas should be densified or removed before placing any concrete or fill. Accumulated water or runoff water at the base of the foundation excavations should also be promptly removed. Groundwater seepage is anticipated not to be a major factor during foundation excavations or undercutting. If encountered, we believe sump and pump system should be adequate to remove accumulated seepage from the bottom of excavations prior to placement of concrete or crushed stone. Concrete should not be placed in water. To reduce the potential for frost heave related problems; forms should be used prior to the placement of foundation concrete.

Exposure to the environment may weaken the soils at the foundations bearing level if the excavations remain open for too long a time. Therefore, foundation concrete should be placed the same day that excavations are opened, when possible. If the bearing soils are softened by surface water intrusion or exposure, the softened soils must be removed from the immediately prior to placement of concrete.

We recommend adequate surface and subsurface drainage be considered in the design and construction of floor slabs and pavements. Where standing water develops, either on slab or pavement surfaces or within the base course layer, softening of the subgrade and other problems related to the deterioration of the floor slabs and pavements can be expected. Adequate drainage should reduce the possibility of the subgrade materials becoming saturated over a long period of time. To reduce water infiltration to the pavement section and within the base course layer resulting in softening of the subgrade and deterioration of the slabs and pavements, we recommend the timely repair or sealing of joints and cracks in slabs and pavement.

All unsuitable materials should be removed and replaced with environmentally clean, inorganic fill and free of debris or harmful matter. Unsuitable materials removed from the project site should be disposed of in accordance with all applicable federal, state, and local regulations.

The contractor should avoid stockpiling excavated materials immediately adjacent to the excavation walls. We recommend that stockpile materials be kept back from the excavation a minimum distance equal to the excavation depth to avoid surcharging the excavation walls. If this is impractical due to space constraints, the excavation walls should be retained with bracing designed for the anticipated surcharge loading.

Excavations should comply with the requirements of OSHA 29CFR, Part 1926, Subpart P, "Excavations" and its appendices, as well as other applicable codes. This document states that the contractor is solely responsible for the design and construction of stable, temporary excavations. The excavations should not only be in accordance with current OSHA excavation and trench safety standards but also with applicable local, state, and federal regulations. The contractor should shore, slope or bench the excavation sides when appropriate. In no case should excavations extend below the level of adjacent structures, utilities or pavements, unless underpinning or other adequate support is provided. Site safety is the sole responsibility of the contractor, who shall also be responsible for the means, methods and sequencing of construction operations.

13
EXPLORATION PROCEDURES

Subsurface Exploration Procedures

The soil borings were located in the field by a CGMT Field Engineer based on the proposed boring site plan provided to us. As required by the State of Illinois, the driller notified Illinois One-Call System, JULIE, to verify underground utilities in the vicinity of the project site prior to drilling operations.

The soil borings were performed with a truck-mounted rotary-type auger drill rig, which utilized continuous hollow stem augers to advance the boreholes. Representative soil samples were obtained at 2½ foot intervals for the first 10 feet and 5 foot intervals thereafter by means of conventional split-barrel sampling procedures. In this procedure, a 2-inch O.D., split-barrel sampler is driven into the soil a distance of 18 inches by a 140-pound hammer falling 30 inches. The number of blows required to drive the sampler through a 12-inch interval, after initial setting of 6 inches, is termed the Standard Penetration Test (SPT) or N-value and is indicated for each sample on the boring logs. The SPT value can be used as a qualitative indication of the in-place relative density of cohesionless soils. In a less reliable way, it also indicates the consistency of cohesive soils. This indication is qualitative, since many factors can significantly affect the standard penetration resistance value and prevent a direct correlation between drill crews, drill rigs, drilling procedures, and hammer-rod-sampler assemblies. The drill rig utilized an automatic trip hammer to drive the sampler. Consideration of the effect of the automatic hammer's efficiency was included in the interpretation of subsurface information for the analyses prepared for this report.

The drill crew maintained a field log of the soils encountered in the borings. After recovery, each geotechnical soil sample was removed from the sampler and visually classified. Representative portions of each soil sample were then sealed in jars and brought to our laboratory in Elk Grove Village, Illinois for further visual examination and laboratory testing. After completion of the drilling operations, the boreholes were backfilled with auger cuttings to the existing ground surface.

Laboratory Testing Program

Representative soil samples were selected and tested in our laboratory to check field classifications and to determine pertinent engineering properties. The laboratory testing program included visual classifications and unconfined compressive strength and moisture content determinations. Dry density determinations were performed on selected samples of existing fill soils.

An experienced geotechnical engineer classified each soil sample on the basis of texture and plasticity in accordance with the Unified Soil Classification System. The group symbols for each soil type are indicated in parentheses following the soil descriptions on the boring logs. A brief explanation of the Unified System is included with this report. The geotechnical engineer grouped the various soil types into the major zones noted on the boring logs. The stratification lines designating the interfaces between earth materials on the boring logs and profiles are approximate; in situ, the transitions may be gradual.

Unconfined compressive strength tests were performed on cohesive soil samples with the use of a calibrated hand penetrometer. In the hand penetrometer test, the unconfined compressive strength of a soil sample is estimated, to a maximum of 4½ tons per square foot (tsf) by measuring the resistance of a soil sample to penetration of a small, calibrated spring-loaded cylinder.

The soil samples will be retained in our laboratory for a period of 60 days, after which, they will be discarded unless other instructions are received as to their disposal.

14
CLOSING

We recommend that the construction activities be monitored by CGMT to provide the necessary overview and to check the suitability of the subgrade soils for supporting the foundations. Once final loads become available, CGMT must be contacted to review the recommendations presented herein.

This report has been prepared in order to aid in the evaluation of this property and to assist the architect and/or engineer in the design of this project. The scope is limited to the specific project and locations described herein and our description of the project represents our understanding of the significant aspects relative to soil and foundation characteristics. In the event that any change in the nature or location of the proposed construction outlined in this report are planned, we should be informed so that the changes can be reviewed and the conclusions of this report modified or approved in writing by the geotechnical engineer. It is recommended that all construction operations dealing with earthwork and foundations be reviewed by an experienced geotechnical engineer to provide information on which to base a decision as to whether the design requirements are fulfilled in the actual construction. If you wish, we would welcome the opportunity to provide field construction services for you during construction.

The analysis and recommendations submitted in this report are based upon the data obtained from the soil borings and tests performed at the locations as indicated on the Boring Location Plan and other information referenced in this report. This report does not reflect any variations, which may occur between the borings. In the performance of the subsurface exploration, specific information is obtained at specific locations at specific times. However, it is a well known fact that variations in soil conditions exist on most sites between boring locations and also such situations as groundwater levels vary from time to time. The nature and extent of variations may not become evident until the course of construction. If variations then appear evident, after performing on-site observations during the construction period and noting characteristics and variations, a reevaluation of the recommendations for this report will be necessary.

APPENDIX

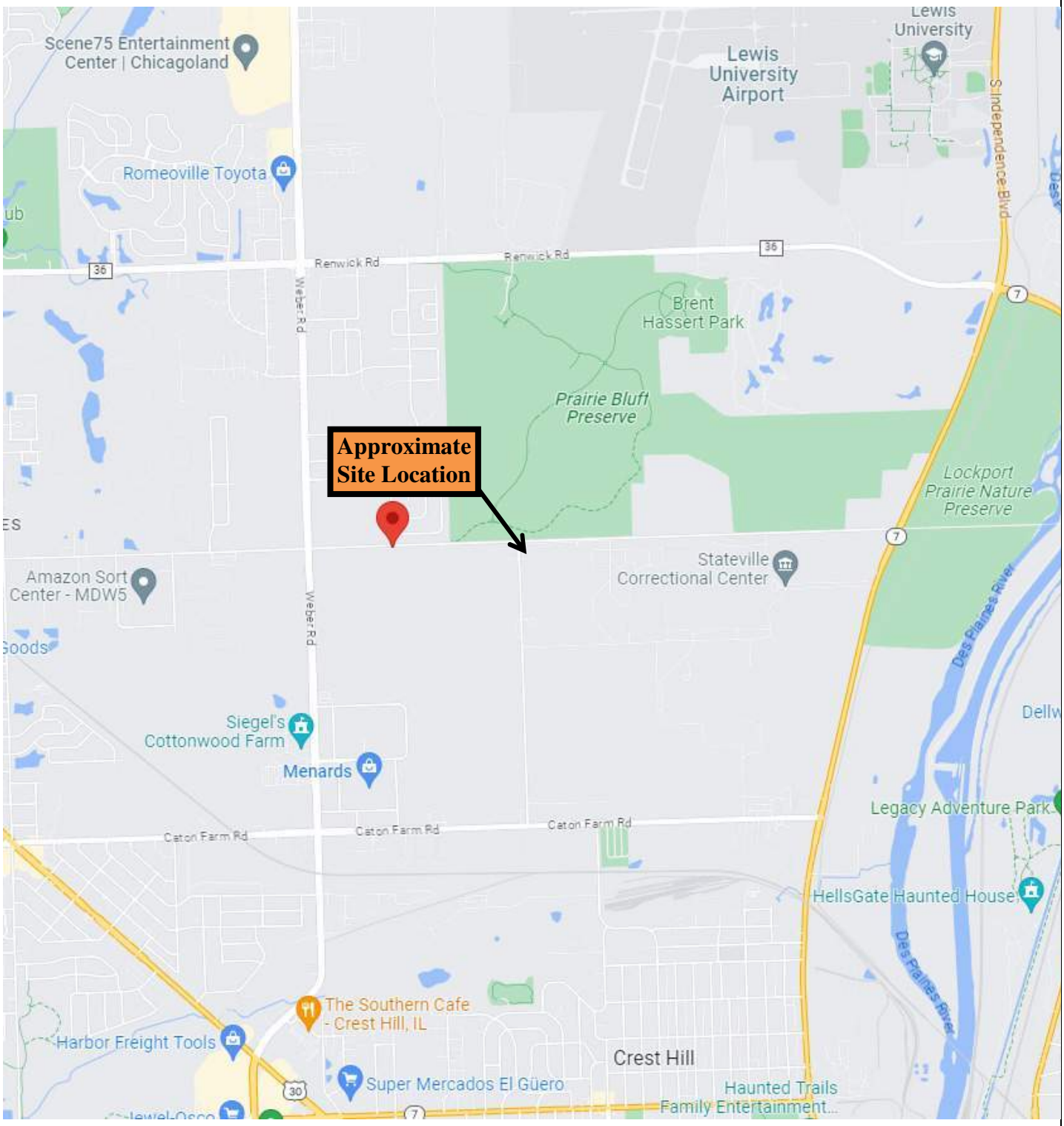
Vicinity Map

Boring Location Plan

Boring Logs

Unified Soil Classification System

Reference Notes for Boring Logs



	VICINITY MAP	N	**CGMT Project No. 23G0270** **New Training Grounds** **Division Street, East of Borio Drive** **Lockport, Will County, Illinois**

Drawing Not To Scale

N

LEGEND

- Approximate Soil Boring Location

Soil Boring Location Diagram

Lockport FPD Training Grounds

W. Division Street
Lockport, Illinois 60441

Project Manager	Project Number
P. Patel	23G0270
Date	Sheet Number
5/23/2023	Fig. 1

Drawing Not To Scale

N

LEGEND

- Approximate Soil Boring Location

Soil Boring Location Diagram

Lockport FPD Training Grounds

W. Division Street
Lockport, Illinois 60441

Project Manager	Project Number
P. Patel	23G0270
Date	Sheet Number
5/23/2023	Fig. 2

Drawing Not To Scale

LEGEND

- Approximate Soil Boring Location

Soil Boring Location Diagram

Lockport FPD Training Grounds

W. Division Street
Lockport, Illinois 60441

Project Manager	Project Number
P. Patel	23G0270
Date	Sheet Number
5/23/2023	Fig. 3

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-01**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 12" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0		Silty Clay, Trace Sand and Gravel, brown, very stiff (CL FILL)	SS-1 1.0' - 2.5' 8" Recovery	2 3 4	18.0	2.25	
	2.0							
	3.0							
	4.0		Silty Clay, Trace Sand and Gravel, brown and gray, stiff to hard (CL)	SS-2 3.5' - 5.0' 18" Recovery	4 6 6	17.1	4.5+	
	5.0							
	6.0			SS-3 6.0' - 7.5' 18" Recovery	4 6 8	16.5	4.5+	
	7.0							
	8.0							
	9.0			SS-4 8.5' - 10.0' 15" Recovery	3 5 7	18.8	1.0	
	10.0							
	11.0							
	12.0							
	13.0							
	14.0		Silty Clay, Trace Sand and Gravel, gray, very stiff (CL)	SS-5 13.5' - 15.0' 18" Recovery	3 6 8	18.1	2.0	
	15.0							
	16.0							
	17.0							
	18.0							
	19.0			SS-6 18.5' - 20.0' 18" Recovery	4 6 8	22.1	2.75	
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: 13½ feet
Immediately After Drilling: 12½ feet

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-02**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 12" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0		Silty Clay, Trace Sand and Gravel, dark brown, stiff (CL FILL)	SS-1 1.0' - 2.5' 12" Recovery	2 2 2	26.4	1.75	**Dry Density:** 1.0' - 2.5'= 89.6 lbs/ft^3
	2.0		Saturated					
	3.0							
			Sandy Clay, Trace Gravel, brown, stiff (CL FILL)	SS-2 3.5' - 5.0' 15" Recovery	- 2 2	16.5	1.75	
	4.0							
	5.0							
	6.0		Silty Clay, Trace Sand and Gravel, gray, very stiff (CL)	SS-3 6.0' - 7.5' 18" Recovery	3 2 2	19.9	2.0	
	7.0							
	8.0							
	9.0			SS-4 8.5' - 10.0' 18" Recovery	2 5 6	16.7	3.0	
	10.0							
	11.0							
	12.0							
	13.0							
	14.0			SS-5 13.5' - 15.0' 18" Recovery	3 6 8	19.3	2.5	
	15.0							
	16.0							
	17.0							
	18.0							
	19.0			SS-6 18.5' - 20.0' 18" Recovery	3 6 8	20.0	2.25	
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: 6 feet
Immediately After Drilling: 10 feet

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.

60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-03**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 18" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0			SS-1	2	-	-	
			Silty Clay, Trace Sand and Gravel, brown, very stiff (CL FILL)	1.0' - 2.5'	2	23.2	2.25	
	2.0			10" Recovery	3			
	3.0							
			Sandy Clay, Trace Gravel, brown, stiff (CL FILL)	SS-2	2			
	4.0			3.5' - 5.0'	5	17.7	1.0	
				8" Recovery	7			
	5.0							
	6.0		Silty Clay, Trace Sand and Gravel, brown and gray, very stiff to hard (CL)	SS-3	3			
				6.0' - 7.5'	6	21.4	3.0	
	7.0			18" Recovery	6			
	8.0							
				SS-4	2			
	9.0			8.5' - 10.0'	4	16.8	4.5+	
				17" Recovery	8			
	10.0							
	11.0							
	12.0							
	13.0							
			Silty Clay, Trace Sand and Gravel, gray, very stiff (CL)	SS-5	3			
	14.0			13.5' - 15.0'	6	15.2	3.25	
				18" Recovery	8			
	15.0							
	16.0							
	17.0							
	18.0							
				SS-6	3			
	19.0			18.5' - 20.0'	5	20.0	2.5	
				18" Recovery	6			
	20.0		END of BORING at 20 Feet					

Drilling Contractor:	CGMT, Inc.	**Water Level (Ft.)**	
Drilling Method:	3¼" O.D. H.S.A. Split Spoon Sampling	**During Drilling:**	13 feet
Drilling Equipment:	CME-45C Truck Mounted Drill Rig	**Immediately After Drilling:**	12 feet
	REVIEWED BY: NPW		

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-04**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 14" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0		Silty Clay, Trace Sand and Gravel, brown, very stiff (CL FILL)	SS-1 1.0' - 2.5' 9" Recovery	2 3 4	17.1	3.0	
	2.0							
	3.0		Silty Clay, Trace Sand and Gravel, brown and gray, hard (CL)	SS-2 3.5' - 5.0' 12" Recovery	4 6 7	16.6	4.5+	
	4.0							
	5.0							
	6.0			SS-3 6.0' - 7.5' 17" Recovery	3 7 9	15.0	4.5+	
	7.0							
	8.0							
	9.0			SS-4 8.5' - 10.0' 18" Recovery	3 8 9	15.2	4.5+	
	10.0							
	11.0							
	12.0							
	13.0							
	14.0		Silty Clay, Trace Sand and Gravel, gray, stiff to very stiff (CL)	SS-5 13.5' - 15.0' 18" Recovery	2 6 7	15.1	2.0	
	15.0							
	16.0							
	17.0							
	18.0							
	19.0			SS-6 18.5' - 20.0' 18" Recovery	2 4 6	21.1	1.75	
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: 13½ feet
Immediately After Drilling: 15 feet

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-05**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 15" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0		Silty Clay, Trace Sand and Gravel, brown, very stiff (CL FILL)	SS-1 1.0' - 2.5' 11" Recovery	2 4 4	19.7	3.75	**Dry Density:** 1.0' - 2.5'= 105.3 lbs/ft^3
	2.0							
	3.0		Silty Clay, Trace Sand and Gravel, brown and gray, very stiff to hard (CL)	SS-2 3.5' - 5.0' 14" Recovery	3 4 5	15.9	4.5+	
	4.0							
	5.0							
	6.0			SS-3 6.0' - 7.5' 18" Recovery	3 4 13	16.6	3.25	
	7.0							
	8.0							
	9.0		Silty Clay, Trace Sand and Gravel, gray, stiff to very stiff (CL)	SS-4 8.5' - 10.0' 18" Recovery	3 4 6	15.4	2.75	
	10.0							
	11.0							
	12.0							
	13.0							
	14.0			SS-5 13.5' - 15.0' 18" Recovery	3 4 7	15.1	2.75	
	15.0							
	16.0							
	17.0							
	18.0							
	19.0			SS-6 18.5' - 20.0' 18" Recovery	2 3 6	21.8	1.25	
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: None
Immediately After Drilling: None

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.

60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-06**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 17" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0			SS-1	2	-	-	
			Silty Clay, Trace Sand and Gravel, brown, very stiff (CL FILL)	1.0' - 2.5'	3	19.2	2.0	
	2.0			16" Recovery	3			
	3.0							
			Silty Clay, Trace Sand and Gravel, brown and gray, very stiff (CL)	SS-2	2			
	4.0			3.5' - 5.0'	3	17.8	3.75	
				12" Recovery	4			
	5.0							
	6.0		Silty Clay, Trace Sand and Gravel, gray, very stiff (CL)	SS-3	3			
				6.0' - 7.5'	5	15.5	3.5	
	7.0			16" Recovery	7			
	8.0							
				SS-4	4			
	9.0			8.5' - 10.0'	6	13.9	3.0	
				11" Recovery	8			
	10.0							
	11.0							
	12.0							
	13.0							
				SS-5	3			
	14.0			13.5' - 15.0'	4	17.5	2.0	
				7" Recovery	7			
	15.0							
	16.0							
	17.0							
	18.0							
				SS-6	3			
	19.0			18.5' - 20.0'	4	21.1	2.0	
				18" Recovery	5			
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: None
Immediately After Drilling: None

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-07**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 13" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0		Silty Clay, Trace Sand and Gravel, brown, hard (CL FILL)	SS-1 1.0' - 2.5' 13" Recovery	3 4 8	13.3	4.5+	
	2.0							
	3.0		Silty Clay, Trace Sand and Gravel, brown and gray, very stiff to hard (CL)	SS-2 3.5' - 5.0' 12" Recovery	3 4 6	14.9	4.5+	
	4.0							
	5.0							
	6.0			SS-3 6.0' - 7.5' 16" Recovery	1 3 5	16.8	3.0	
	7.0							
	8.0							
	9.0		Silt, Trace Sand and Gravel, brown, medium dense (ML)	SS-4 8.5' - 10.0' 14" Recovery	3 6 4	23.1	-	
	10.0							
	11.0							
	12.0							
	13.0							
	14.0		Silty Clay, Trace Sand and Gravel, gray, very stiff (CL)	SS-5 13.5' - 15.0' 18" Recovery	2 3 6	16.6	3.5	
	15.0							
	16.0							
	17.0							
	18.0							
	19.0			SS-6 18.5' - 20.0' 16" Recovery	2 4 6	20.6	2.5	
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: None
Immediately After Drilling: None

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-08**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 20" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0			SS-1	2	-	-	
			Silty Clay, Trace Sand and Gravel, brown, very stiff (CL FILL)	1.0' - 2.5'	3	16.3	2.0	
	2.0			7" Recovery	3			
	3.0							
			Silty Clay, Trace Sand and Gravel, brown and gray, hard (CL)	SS-2	3			
	4.0			3.5' - 5.0'	3	14.8	4.0	
				13" Recovery	3			
	5.0							
	6.0			SS-3	3			
				6.0' - 7.5'	4	16.6	4.5+	
	7.0			18" Recovery	8			
	8.0							
				SS-4	3			
	9.0			8.5' - 10.0'	5	15.7	4.5+	
				17" Recovery	7			
	10.0							
	11.0							
	12.0							
	13.0							
			Silty Clay, Trace Sand and Gravel, gray, very stiff (CL)	SS-5	4			
	14.0			13.5' - 15.0'	5	18.9	3.25	
				13" Recovery	8			
	15.0							
	16.0							
	17.0							
	18.0							
				SS-6	3			
	19.0			18.5' - 20.0'	5	19.2	2.0	
				18" Recovery	6			
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: None
Immediately After Drilling: None

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-09**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 11" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0		Sandy Clay, Trace Gravel, brown, very stiff (CL FILL)	SS-1 1.0' - 2.5' 16" Recovery	2 3 4	18.1	2.25	
	2.0							
	3.0		Silty Clay, Trace Sand and Gravel, brown and gray, very stiff to hard (CL)	SS-2 3.5' - 5.0' 15" Recovery	3 4 4	14.9	3.5	
	4.0							
	5.0							
	6.0			SS-3 6.0' - 7.5' 16" Recovery	3 5 6	13.9	4.0	
	7.0							
	8.0							
	9.0			SS-4 8.5' - 10.0' 14" Recovery	5 7 7	16.4	4.5+	
	10.0							
	11.0							
	12.0							
	13.0							
	14.0		Silty Clay, Trace Sand and Gravel, gray, very stiff (CL)	SS-5 13.5' - 15.0' 13" Recovery	2 5 6	13.6	2.0	
	15.0							
	16.0							
	17.0							
	18.0							
	19.0			SS-6 18.5' - 20.0' 16" Recovery	4 5 6	10.5	2.75	
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: None
Immediately After Drilling: None

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-10**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 12" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0		Silty Clay, Trace Sand and Gravel, dark brown, very stiff (CL FILL)	SS-1 1.0' - 2.5' 10" Recovery	2 4 4	21.4	2.0	**Dry Density:** 1.0' - 2.5'= 97.1 lbs/ft^3
	2.0							
	3.0							
	4.0		Silty Clay, Trace Sand and Gravel, brown and gray, very stiff to hard (CL)	SS-2 3.5' - 5.0' 14" Recovery	2 5 4	17.2	2.5	
	5.0							
	6.0			SS-3 6.0' - 7.5' 18" Recovery	3 3 6	15.7	4.5+	
	7.0							
	8.0							
	9.0			SS-4 8.5' - 10.0' 15" Recovery	4 8 10	14.3	4.5+	
	10.0							
	11.0							
	12.0							
	13.0							
	14.0		Silty Clay, Trace Sand and Gravel, gray, very stiff (CL)	SS-5 13.5' - 15.0' 15" Recovery	3 5 9	19.3	3.0	
	15.0							
	16.0							
	17.0							
	18.0							
	19.0			SS-6 18.5' - 20.0' 18" Recovery	3 6 7	16.6	3.75	
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: None
Immediately After Drilling: None

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: B-11
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 8" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0		Sandy Clay, Trace Gravel, brown, hard (CL FILL)	SS-1 1.0' - 2.5' 9" Recovery	2 5 7	14.8	4.5+	
	2.0							
	3.0		Silty Clay, Trace Sand and Gravel, brown and gray, very stiff to hard (CL)	SS-2 3.5' - 5.0' 8" Recovery	2 5 6	15.5	4.5+	
	4.0							
	5.0							
	6.0			SS-3 6.0' - 7.5' 18" Recovery	3 6 8	17.5	4.5+	
	7.0							
	8.0							
	9.0			SS-4 8.5' - 10.0' 18" Recovery	6 6 6	17.2	3.75	
	10.0							
	11.0							
	12.0							
	13.0							
	14.0		Silty Clay, Trace Sand and Gravel, gray, stiff (CL)	SS-5 13.5' - 15.0' 18" Recovery	3 5 6	21.2	1.5	
	15.0							
	16.0							
	17.0							
	18.0							
	19.0			SS-6 18.5' - 20.0' 18" Recovery	3 4 6	21.7	1.5	
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: None
Immediately After Drilling: None

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: B-12
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 13" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0		Sandy Clay, Trace Gravel, brown, stiff (CL FILL)	SS-1 1.0' - 2.5' 6" Recovery	2 3 3	14.7	1.0	
	2.0							
	3.0		Silty Clay, Trace Sand and Gravel, brown and gray, hard (CL)	SS-2 3.5' - 5.0' 12" Recovery	4 6 10	13.4	4.5+	
	4.0							
	5.0							
	6.0			SS-3 6.0' - 7.5' 18" Recovery	4 5 8	16.3	4.5+	
	7.0							
	8.0							
	9.0			SS-4 8.5' - 10.0' 15" Recovery	5 7 13	15.7	4.5+	
	10.0							
	11.0							
	12.0							
	13.0							
	14.0		Silty Clay, Trace Sand and Gravel, gray, very stiff (CL)	SS-5 13.5' - 15.0' 16" Recovery	3 5 7	17.2	3.25	
	15.0							
	16.0							
	17.0							
	18.0							
	19.0			SS-6 18.5' - 20.0' 18" Recovery	3 5 5	21.2	2.0	
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: None
Immediately After Drilling: None

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-13**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 22" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0			SS-1 1.0' - 2.5' 10" Recovery	2 3 6	- 23.9	- 2.5	
	2.0		Silty Clay, Trace Sand and Gravel, dark brown, very stiff (CL FILL)					
	3.0							
	4.0		Silty Clay, Trace Sand and Gravel, brown and gray, very stiff to hard (CL)	SS-2 3.5' - 5.0' 12" Recovery	4 5 6	20.5	3.0	
	5.0							
	6.0			SS-3 6.0' - 7.5' 18" Recovery	2 3 7	14.8	4.5+	
	7.0							
	8.0							
	9.0		Silty Clay, Trace Sand and Gravel, gray, very stiff (CL)	SS-4 8.5' - 10.0' 17" Recovery	2 6 8	14.9	3.75	
	10.0							
	11.0							
	12.0							
	13.0							
	14.0			SS-5 13.5' - 15.0' 18" Recovery	2 6 7	14.9	3.0	
	15.0							
	16.0							
	17.0							
	18.0							
	19.0			SS-6 18.5' - 20.0' 18" Recovery	3 3 6	20.1	2.0	
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: None
Immediately After Drilling: None

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-14**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 16" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0			SS-1	2	-	-	
			Sandy Clay, Trace Gravel, brown, very stiff (CL FILL)	1.0' - 2.5'	2	15.7	2.5	
	2.0			17" Recovery	4			
	3.0							
			Silty Clay, Trace Sand and Gravel, brown and gray, very stiff to hard (CL)	SS-2	5			
	4.0			3.5' - 5.0'	5	14.2	4.5+	
	5.0			18" Recovery	5			
	6.0			SS-3	3			
				6.0' - 7.5'	5	18.2	4.5+	
	7.0			18" Recovery	7			
	8.0							
				SS-4	2			
	9.0			8.5' - 10.0'	5	18.6	3.0	
	10.0			18" Recovery	6			
	11.0							
	12.0							
	13.0							
			Silty Clay, Trace Sand and Gravel, gray, very stiff (CL)	SS-5	2			
	14.0			13.5' - 15.0'	3	15.2	3.0	
	15.0			18" Recovery	5			
	16.0							
	17.0							
	18.0							
				SS-6	2			
	19.0			18.5' - 20.0'	3	20.3	2.5	
				18" Recovery	6			
	20.0		END of BORING at 20 Feet					

Drilling Contractor:	CGMT, Inc.	**Water Level (Ft.)**	
Drilling Method:	3¼" O.D. H.S.A. Split Spoon Sampling	**During Drilling:**	None
Drilling Equipment:	CME-45C Truck Mounted Drill Rig	**Immediately After Drilling:**	None
	REVIEWED BY: NPW		

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: B-15
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 12" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0		Silty Clay, Trace Sand and Gravel, dark brown, very stiff (CL FILL)	SS-1 1.0' - 2.5' 9" Recovery	2 2 4	18.6	2.5	
	2.0							
	3.0		Silty Clay, Trace Sand and Gravel, brown, hard (CL FILL)	SS-2 3.5' - 5.0' 18" Recovery	3 4 5	17.8	4.5+	
	4.0							
	5.0							
	6.0		Gravel, Trace Sand, brown, Dense (GP FILL)	SS-3 6.0' - 7.5' 4" Recovery	24 22 14	5.4	-	
	7.0							
	8.0							
	9.0		Sandy Clay, Trace Gravel, brown, stiff (CL FILL)	SS-4 8.5' - 10.0' 16" Recovery	11 10 9	14.6	1.5	
	10.0							
	11.0							
	12.0							
	13.0							
	14.0		Silty Clay, Trace Sand and Gravel, gray, very stiff (CL)	SS-5 13.5' - 15.0' 18" Recovery	4 6 8	18.2	3.0	
	15.0							
	16.0							
	17.0							
	18.0							
	19.0			SS-6 18.5' - 20.0' 18" Recovery	4 5 6	21.2	2.5	
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: None
Immediately After Drilling: None

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-16**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

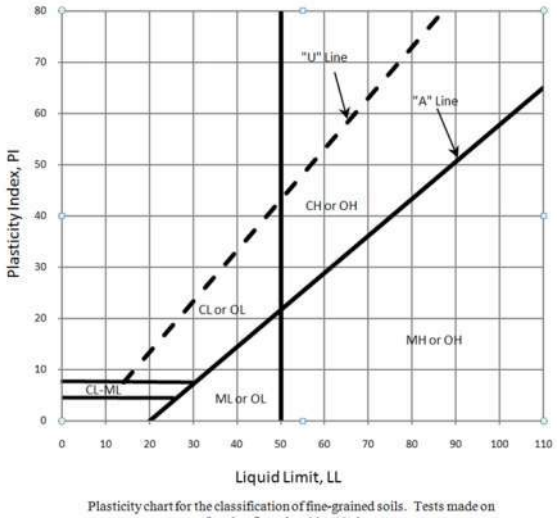
Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 13" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0		Silty Clay, Trace Sand and Gravel, brown, very stiff (CL FILL)	SS-1 1.0' - 2.5' 14" Recovery	2 4 6	14.4	3.25	
	2.0							
	3.0							
	4.0		Silty Clay, Trace Sand and Gravel, brown and gray, stiff to hard (CL)	SS-2 3.5' - 5.0' 15" Recovery	3 5 5	16.4	4.5+	
	5.0							
	6.0			SS-3 6.0' - 7.5' 18" Recovery	4 6 10	16.6	4.5+	
	7.0							
	8.0							
	9.0			SS-4 8.5' - 10.0' 18" Recovery	3 4 6	16.3	3.75	
	10.0							
	11.0							
	12.0							
	13.0							
	14.0			SS-5 13.5' - 15.0' 18" Recovery	3 4 7	15.9	3.25	
	15.0							
	16.0							
	17.0							
	18.0							
	19.0			SS-6 18.5' - 20.0' 16" Recovery	3 4 4	20.7	1.5	
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: None
Immediately After Drilling: None

UNITED SOIL CLASSIFICATION SYSTEM
(ASTM D-2487)

Major Division		Group Symbol	Typical Names	Classification on basis of percentage of fines	Classification Criteria
Coarse-grained soils: More than 50% retained on No. 200 sieve	Gravels: More than 50% of coarse fraction retained on No. 4 sieve	GW	Well-graded gravels and gravel-sand mixtures, little or no fines	GW, GP, SW, SP GM, GC, SM, SC Borderline classification requiring use of dual symbol	$C_u = D_{60}/D_{10}$ greater than 4 $C_z = (D_{30})^2/(D_{10}XD_{60})$ between 1 & 3
		GP	Poorly graded gravels and gravel-sand mixtures, little or no fines		Not meeting both criteria for GW
		GM	Silty gravels, gravel-sand-silt mixtures		Atterberg limits plot below "A" line or plasticity index less than 4
		GC	Clayey gravels, gravel-sand-clay mixtures		Atterberg limits plot above "A" line and plasticity index greater than 7
	Sands: More than 50% of coarse fraction passes No. 4 sieve	SW	Well-graded sands and gravelly sands, little or no fines	Less than 5% pass No. 200 sieve More than 12% pass No. 200 sieve 5% to 12% pass No. 200 sieve	$C_u = D_{60}/D_{10}$ greater than 6 $C_z = (D_{30})^2/(D_{10}XD_{60})$ between 1 & 3
		SP	Poorly graded sands and gravelly sands, little or no fines		Not meeting both criteria for SW
		SM	Silty sands, sand-silt mixtures		Atterberg limits plot below "A" line or plasticity index less than 4
		SC	Clayey sands, sand-clay mixtures		Atterberg limits plot above "A" line and plasticity index greater than 7
Fine-grained soils: 50% or more passing No. 200 sieve	Silts and Clays: Liquid limit 50% or less	ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands	Note: U-line represents approximate upper limit of LL and PI combinations natural soils (empirically determined). ASTM D-2487	
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays		
		OL	Organic silts and organic silty clays of low plasticity		
	Silts and Clays: Liquid limit greater than 50%	MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts		
		CH	Inorganic clays of high plasticity, fat clays		
		OH	Organic clays of medium to high plasticity		
Highly organic soils		Pt	Peat, muck and other highly organic soils		Fibrous organic matter; will char, burn or glow



Plasticity chart for the classification of fine-grained soils. Tests made on fraction finer than No. 40 sieve

Borderline classifications, used for soils possessing characteristics of two groups, are designated by combinations of group symbols. For example: GW-GC, well-graded gravel-sand mixture with clay binder

UNIFIED SOIL CLASSIFICATION SYSTEM

REFERENCE NOTES FOR BORING LOGS

I. Drilling and Sampling Symbols:

SS – Split Spoon Sampler
ST – Shelby Tube Sampler
RC – Rock Core: NX, BX, AX
PM – Pressuremeter
DC – Dutch Cone Penetrometer
RB – Rock Bit Drilling
BS – Bulk Sample of Drilling
PA – Power Auger (no sample)
HSA – Hollow Stem Auger
WS – Wash Sample

Standard Penetration (Blows/Ft) refers to the blows per foot of a 140 lb. hammer falling 30 inches on a 2 inch O.D. split spoon sampler, as specified in ASTM D-1586. The blow count is commonly referred to as the N-value.

II. Correlation of Penetration Resistances to Soil Properties:

Relative Density-Sands, Silts

SPT – N	Relative Density
0 – 3	Very Loose
4 – 9	Loose
10 – 29	Medium Dense
30 – 49	Dense
50 – 80	Very Dense

Consistency of Cohesive Soils

Unconfined Compressive Strength, Qp, tsf	Consistency
under 0.25	Very Soft
0.25 – 0.49	Soft
0.50 – 0.99	Firm
1.00 – 1.99	Stiff
2.00 – 3.99	Very Stiff
4.00 – 8.00	Hard
over 8.00	Very Hard

III Unified Soil Classification Symbols:

GP – Poorly Graded Gravel
GW – Well Graded Gravel
GM – Silty Gravel
GC – Clayey Gravel
SP – Poorly Graded Sand
SW – Well Graded Sand
SM – Silty Sand
SC – Clayey Sand
ML – Low Plasticity Silt
MH – High Plasticity Silt
CL – Low Plasticity Clay
CH – High Plasticity Clay
OL – Low Plasticity Organic
OH – High Plasticity Organic
CL-ML – Dual Classification (Typical)

IV. Water Level Measurement Symbol:

WL – Water Level
WS – While Sampling
WD – While Drilling
BCR – Before Casing Removal
ACR – After Casing Removal
WCI – Wet Cave In
DCI – Dry Cave In

The water levels are those water levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in a granular soil. In clays and plastic silts, the accurate determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally applied.

EXHIBIT ‘O’

QUIT CLAIM DEED

EXHIBIT 'O'

QUIT CLAIM DEED
ILLINOIS STATUTORY

R2023037042
KAREN A. STUKEL
WILL COUNTY RECORDER
RECORDED ON
07/24/2023 02:24:41 PM
RECORDING FEES: 52.00
IL RENTAL HSNG:
CONSIDERATION: 0.00
WILL COUNTY TAX:
IL STATE TAX:
PAGES: 4
LEH

THE GRANTOR(S), the **People of the State of Illinois, by its Department of Corrections**, of the City of Springfield, County of Sangamon, State of Illinois, for and in consideration of One Dollar ($1.00) and other good and valuable considerations in hand paid. CONVEY and QUIT CLAIM to the **Lockport Township Fire Protection District, an Illinois municipal corporation**, organized and existing under the laws of the State of Illinois (Grantee's Address) 19623 W. Renwick Road, Lockport, Illinois 60441, Lockport Township, of Will County, State of Illinois, the following described real estate situated in the County of Will in the State of Illinois, to wit:

Legal descriptions attached as Exhibit "A" and made a part hereof

hereby releasing and waiving all rights under and by virtue of the Homestead Exemption Laws of the State of Illinois.

SUBJECT TO: 1) General taxes for and subsequent years; If any; and
2) Existing public utilities, existing public roads, and any and all reservations, easements, encumbrances, covenants, conditions and restrictions of record; and
3) The Property being used by the Grantee, the Lockport Township Fire Protection District, for public purposes related to the Fire Protection District and that if the Lockport Township Fire Protection District ceases to exist, if the Property is used for any purposes other than the public purposes related to the Fire Protection District, or if an attempt is made to sell the Property, then the Grantor, State of Illinois, shall have the right to re-enter the premises and, upon exercise of such re-entry, all right, title and interest of the Lockport Township Fire Protection District, or its successors or assigns, in the Property shall cease and the Property will immediately revert to the State of Illinois without any further action by the State of Illinois

Permanent Real Estate Index Number(s): **part of 11-04-29-200-001-0000**
Property Address of Real Estate: **Vacant Land, W. Division St., Crest Hill**, IL 60403
Nearest cross street: Bond Dr

Dated this 13th **day of** July, **2023**

Latoya Hughes
Acting Director
Illinois Department of Corrections

By: Latoya Hughes by Jared Brunk
Jared Brunk
Chief Administrative Officer
Illinois Department of Corrections

STATE OF ILLINOIS)
) **ss.**
COUNTY OF WILL)

I, the undersigned, a Notary Public in and for said County, in the State aforesaid, CERTIFY THAT Jared Brunk, Chief Administrative Officer of the Illinois Department of Corrections, personally known to me to be the person(s) whose name(s) is subscribed to the foregoing instrument, appeared before me this day in person, and acknowledged that they signed, sealed, and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth, including the release and waiver of the right of homestead.

Given under my hand and official seal, this 13th day of July, 2023

Cynthia A. Miller
(Notary Public)

OFFICIAL SEAL
CYNTHIA A. MILLER
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES 12-18-2024

Prepared By:

Jeffrey D. Greenspan, Attorney at Law, 9445 Keeler Avenue, Skokie, IL 60076

Mail To:

John O'Conner
Fire Chief
Lockport Township Fire Protection District
19623 Renwick Road
Lockport, IL 60441

Grantee's address/
Name and Address of Taxpayer:

Lockport Township Fire Protection District
19623 Renwick Road
Lockport, IL 60441

EXEMPT under provisions of Paragraph E
Section 31-45, Real Estate Transfer Tax Law
Date: 7/13/2023

Buyer, Seller or Representative

EXHIBIT "A"
Legal Description of the Land

THAT PART OF THE NORTHEAST QUARTER OF SECTION 29, TOWNSHIP 36 NORTH, RANGE 10 EAST OF THE THIRD PRINCIPAL MERIDIAN, DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHEAST CORNER OF SAID SECTION 29;THENCE SOUTH 87 DEGREES 56 MINUTES 40 SECONDS WEST, ON THE NORTH LINE OF SAID NORTHEAST QUARTER, 400.00 FEET TO THE POINT OF BEGINNING; THENCE SOUTH 02 DEGREES 03 MINUTES 20 SECONDS EAST, PERPENDICULAR TO SAID NORTH LINE, 800.00 FEET; THENCE SOUTH 87 DEGREES 56 MINUTES 40 SECONDS WEST, PARALLEL WITH SAID NORTH LINE, 700.00 FEET; THENCE NORTH 02 DEGREES 03 MINUTES 20 SECONDS WEST, PERPENDICULAR TO SAID NORTH LINE, 800.00 FEET TO THE NORTH LINE OF SAID NORTHEAST QUARTER; THENCE NORTH 87 DEGREES 56 MINUTES 40 SECONDS EAST, ON SAID NORTH LINE, 700.00 FEET TO THE POINT OF BEGINNING, ALL IN WILL COUNTY, ILLINOIS.

SAID PARCEL CONTAINING 12.856 ACRES, MORE OR LESS.

FOR INFORMATION ONLY:

Permanent Index Number: part of 11-04-29-200-001-0000
Common Address: Vacant Land, W. Division St. Crest Hill, IL 60403
Nearest cross street: Boreo Dr.

KAREN A. STUKEL
WILL COUNTY RECORDER
AFFIDAVIT OF METES AND BOUNDS

STATE OF ILLINOIS)
COUNTY OF WILL) SS

Jared Brunk, being duly sworn on oath, states that affiant resides at Illinois Department of Corrections, 1301 Concordia Court, Springfield, IL 62794-9277.

That the attached deed is not in violation of Section 1 of the Plat Act (765 ILCS 205/1) for one of the following reasons:

1. The division or subdivision of land into parcels or tracts of 5.0 acres or more in size which does not involve any new streets or easements of access.

2. The division of lots or blocks of less than one (1) acre in any recorded subdivision which does not involve any new streets or easements of access.

3. The sale or exchange of parcels of land between owners of adjoining and contiguous land.

4. The conveyance of parcels of land or interests therein for use as right of way for railroads or other public utility facilities and other pipe lines which does not involve any new streets or easements of access.

5. The conveyance of land owned by a railroad or other public utility which does not involve any new streets or easements of access.

6. The conveyance of land for highway or other public purposes or grants or conveyances relating to the dedication of land for public use or instruments relating to the vacation of land impressed with a public use.

7. Conveyances made to correct descriptions in prior conveyances.

8. The sale or exchange of parcels or tracts of land following the division into no more than two (2) parts of a particular parcel or tract of land existing on July 17, 1959 and not involving any new streets or easements of access.

9. The sale of a single lot of less than 5.0 acres from a larger tract when a survey is made by an Illinois Registered Land Surveyor; provided, that this exemption shall not apply to the sale of any subsequent lots from the same larger tract of land, as determined by the dimensions and configuration of the larger tract on October 1, 1973, and provided also that this exemption does not invalidate any local requirements applicable to the subdivision of land.

10. The preparation of a plat for wind energy devices under Section 10-620 of the Property Tax Code.

11. This conveyance is of land described in the same manner as title was taken by grantor(s).

*****CIRCLE NUMBER ABOVE WHICH IS APPLICABLE TO ATTACHED DEED*****

AFFIANT further states that affiant makes this affidavit for the purpose of inducing the Recorder of Deeds of Will County, Illinois, to accept the attached deed for recording.

SUBSCRIBED AND SWORN TO BEFORE ME
this 13th day of July, 2022

Cynthia A. Miller
Notary Public

OFFICIAL SEAL
CYNTHIA A. MILLER
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES 12-18-2024

Jared Brunk
AFFIANT

EXHIBIT ‘P’

TRAFFIC IMPACT STUDY

EXHIBIT 'P'

Traffic Impact Study
Lockport FPD Training Facility

Crest Hill, Illinois

Prepared For:

PINNACLE ENGINEERING GROUP

KLOA
Kenig, Lindgren, O'Hara, Aboona, Inc.

November 15, 2024

1. Introduction

This report summarizes the methodologies, results, and findings of a traffic impact study conducted by Kenig, Lindgren, O'Hara, Aboona, Inc. (KLOA, Inc.) for the proposed Lockport Township Fire Protection District (FPD) training and maintenance facility to be located in Crest Hill, Illinois. The site, which is currently vacant, is located on the south side of Division Street approximately 0.85 miles east of Weber Road and adjacent on the east, south, and west to the Stateville Correctional Center Prison (Stateville). As proposed, the approximately 23,400 square-foot facility is to consist of a training facility for the Lockport Township FPD, maintenance facility for the FPD's fire equipment, and a law enforcement shooting range. Access to the facility is to be provided via a proposed access drive to be located on the south side of Division Street.

The purpose of this study was to examine background traffic conditions, assess the impact that the proposed facility will have on traffic conditions in the area, and determine if any roadway or access improvements are necessary to accommodate the traffic generated by the proposed facility. **Figure 1** shows the location of the site in relation to the area roadway system. **Figure 2** shows an aerial view of the site. The sections of this report present the following:

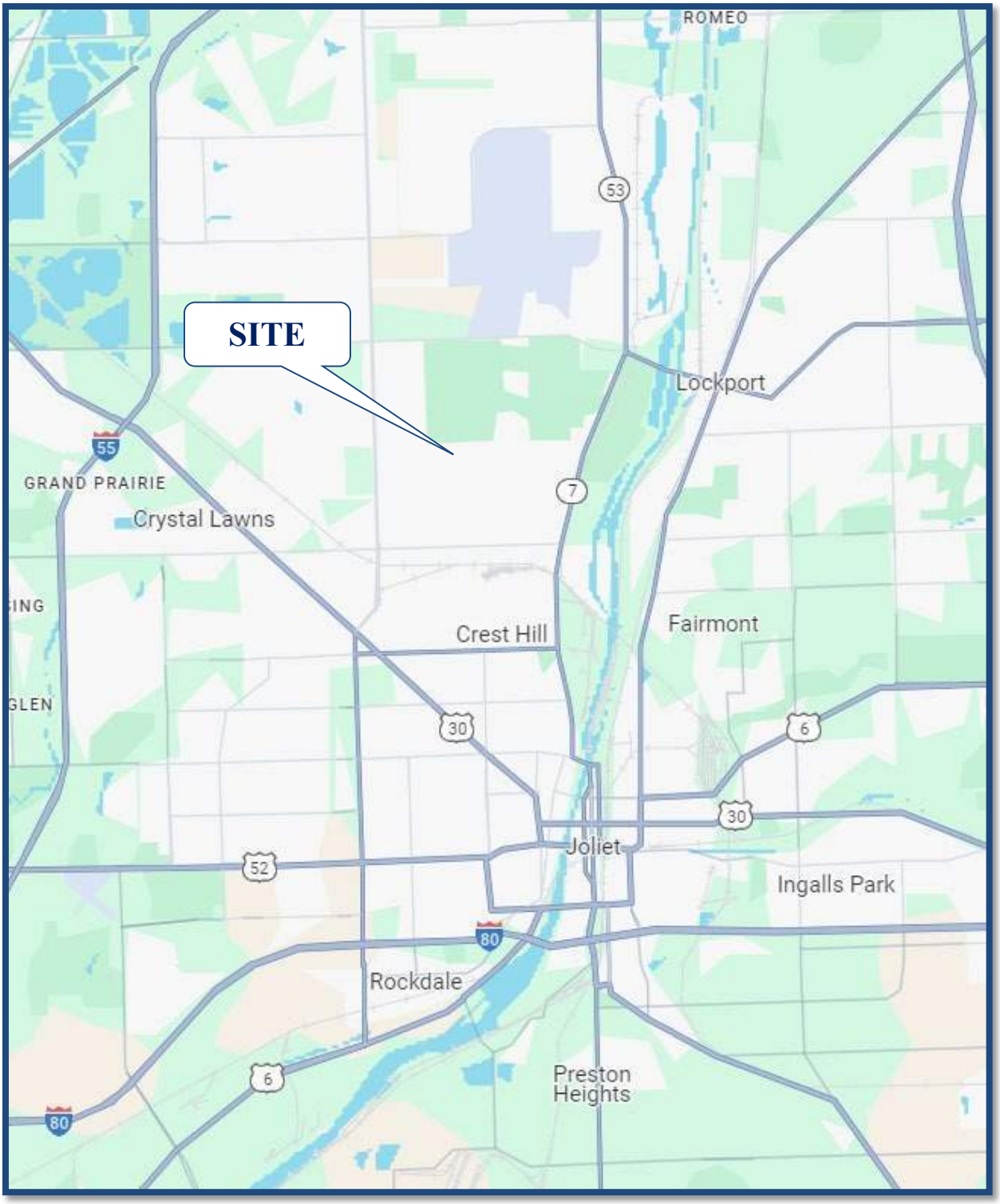
- Existing roadway conditions
- A description of the proposed facility
- Directional distribution of the facility traffic
- Vehicle trip generation for the facility
- Future traffic conditions, including access to the facility
- Traffic analyses for the weekday morning and weekday evening peak hours
- Recommendations with respect to adequacy of the site access and adjacent roadway system

Traffic capacity analyses were conducted for the weekday morning and weekday evening peak hours for the following conditions:

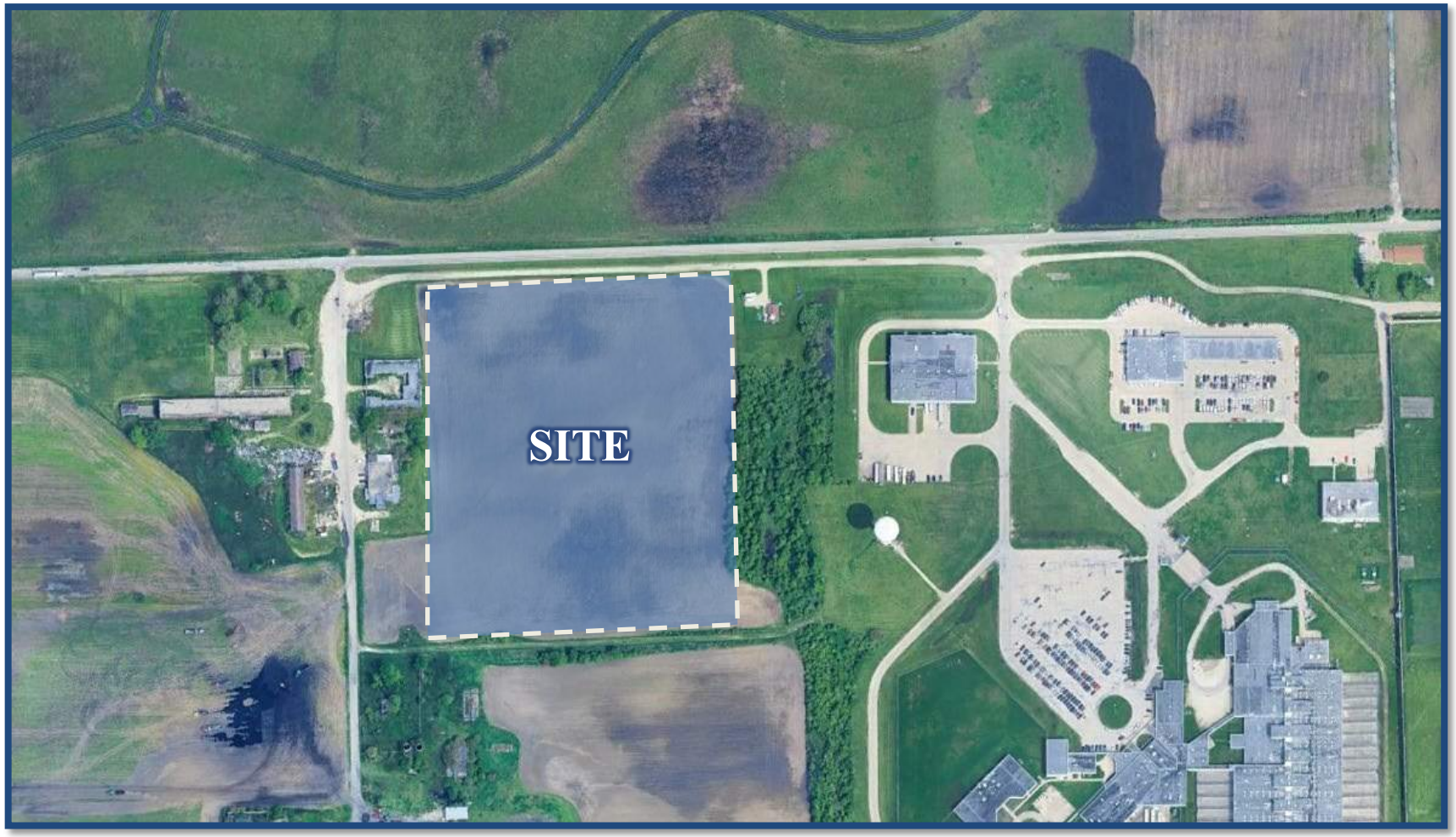
1. Existing Conditions – Analyzes the capacity of the existing roadway system using existing peak hour traffic volumes in the surrounding area.

2. Year 2030 No-Build Conditions – Analyzes the capacity of the existing roadway system using peak hour traffic volumes adjusted to represent the background growth of the area as well as any traffic to be generated by other developments in the area.

3. Year 2030 Total Projected Conditions – Analyzes the capacity of the future roadway system using the projected traffic volumes that include the existing traffic volumes, background growth, and the traffic estimated to be generated by the full buildout of the proposed facility.



Site Location **Figure 1**



Aerial View of Site **Figure 2**

2. Existing Conditions

Existing transportation conditions in the vicinity of the site were documented based on field visits conducted by KLOA, Inc. in order to obtain a database for projecting future conditions. The following provides a description of the geographical location of the site, physical characteristics of the area roadway system including lane usage and traffic control devices, and existing peak hour traffic volumes.

Site Location

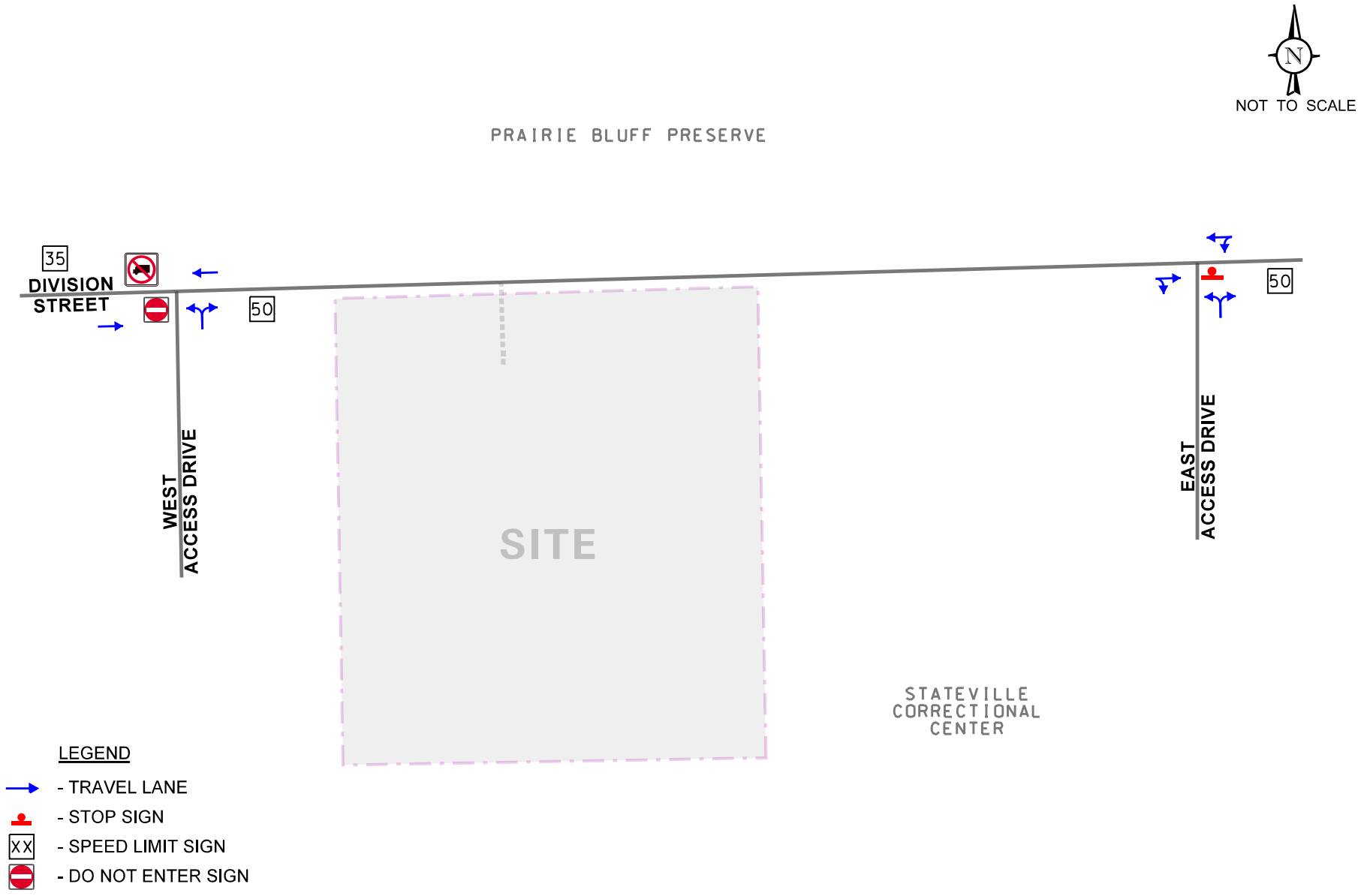
The site, which is currently vacant, is located on the east side of Division Street approximately 0.85 miles east of Weber Road and adjacent on the east, south, and west to the Stateville Prison. Prairie Bluff Preserve of the Forest Preserve District of Will County is located on the north side of Division Street. The nearest residential area to the site is located approximately one-quarter mile to the west.

Existing Roadway System Characteristics

The characteristics of the existing roadways near the facility are described below and illustrated in **Figure 3**.

Division Street is an east-west, major collector roadway that provides one lane in each direction in the vicinity of the site. Division Street does not provide separate turn lanes in the vicinity of the site. Division Street carries an annual average daily traffic (AADT) of 6,500 vehicles (IDOT 2023). East of the Stateville Division Street western access drive, Division Street is under the jurisdiction of the Illinois Department of Transportation (IDOT) and has a posted speed limit of 50 miles per hour. West of the Stateville Division Street western access drive, Division Street is under the jurisdiction of the City of Crest Hill and has a posted speed limit of 35 miles per hour.

The Stateville Division Street western and middle Division Street access drives generally boarder the subject site on the west and the east sides, respectively. The middle access drive has a gravel surface and provides one inbound lane and one outbound lane. The western access drive has a gravel surface and is restricted to outbound movements only via a “Do Not Enter” located at the access drive’s intersection with Division Street.



Lockport FPD
Training Site
Crest Hill, Illinois

Existing Roadway Characteristics

KLOA
Kenig,Lindgren,O'Hara,Aboona,Inc.

Job No: 24-245

Figure: 3

Existing Traffic Volumes

To determine current traffic conditions in the vicinity of the site, KLOA, Inc. conducted peak period traffic counts on Thursday, October 3, 2024, during the weekday morning (7:00 to 9:00 A.M.) and evening (4:00 to 6:00 P.M.) peak periods at the following intersections:

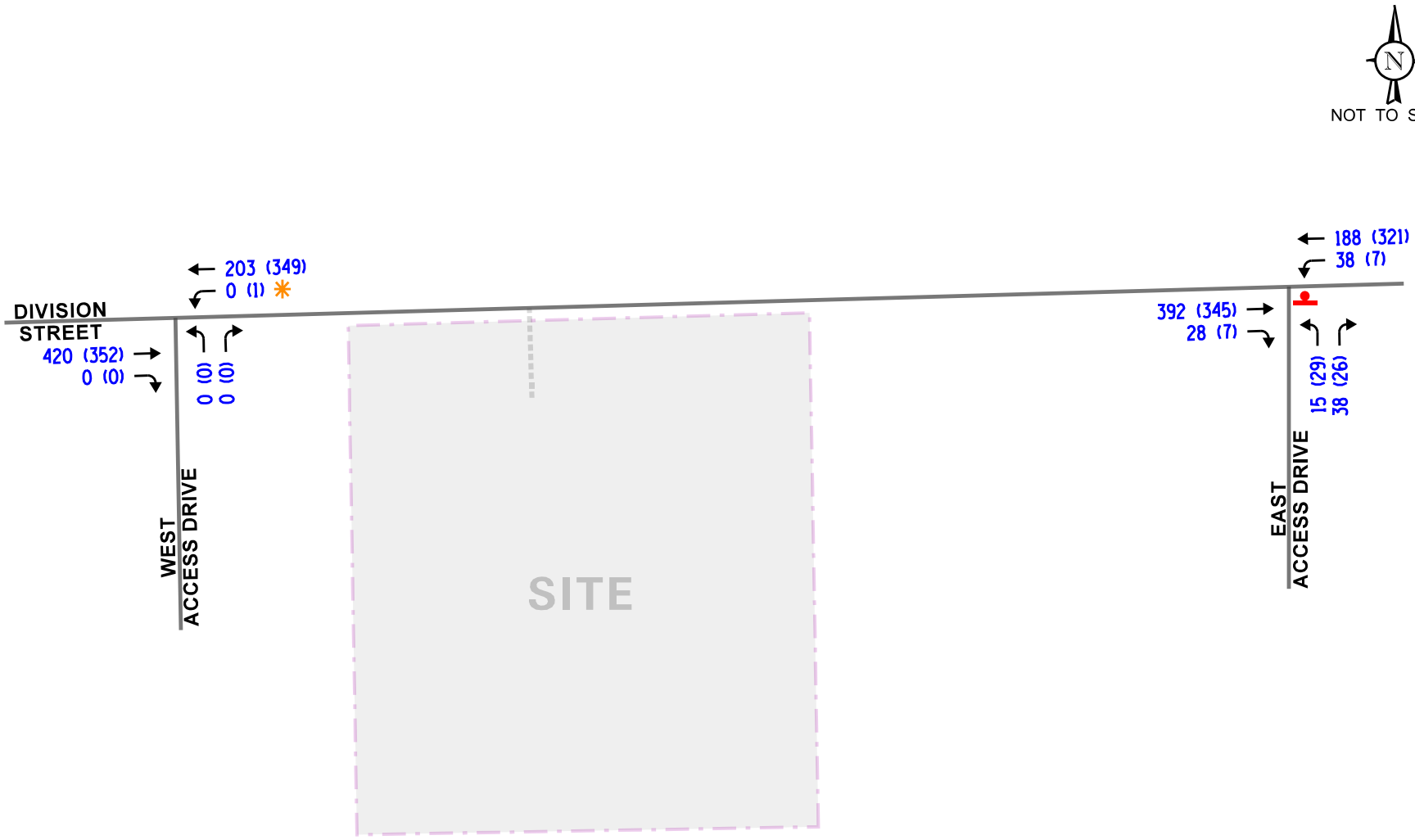
- Division Street with Stateville middle access drive
- Division Street with Stateville western access drive

The results of the traffic counts indicated that the weekday morning peak hour of traffic occurs from 7:00 A.M. to 8:00 A.M. and the weekday evening peak hour of traffic occurs from 4:00 P.M. to 5:00 P.M. **Figure 4** illustrates the existing peak hour vehicle traffic volumes. Copies of the traffic count summary sheets are included in the Appendix.

Crash Data Summary

KLOA, Inc. obtained crash data from IDOT for the most recent past five years available (2019 to 2023) for the intersections included in the study. A review of the crash data indicated that no crashes were reported at any of the intersections[1] during the review period.

[1] IDOT DISCLAIMER: The motor vehicle crash data referenced herein was provided by the Illinois Department of Transportation. Any conclusions drawn from analysis of the aforementioned data are the sole responsibility of the data recipient(s).



Lockport FPD
Training Site
Crest Hill, Illinois

Existing Traffic Volumes

KLOA
Kenig,Lindgren,O'Hara,Aboona,Inc.

Job No: 24-245

Figure: 4

3. Traffic Characteristics of the Proposed Facility

To properly evaluate future traffic conditions in the surrounding area, it was necessary to determine the traffic characteristics of the proposed facility, including the directional distribution and volumes of traffic that it will generate.

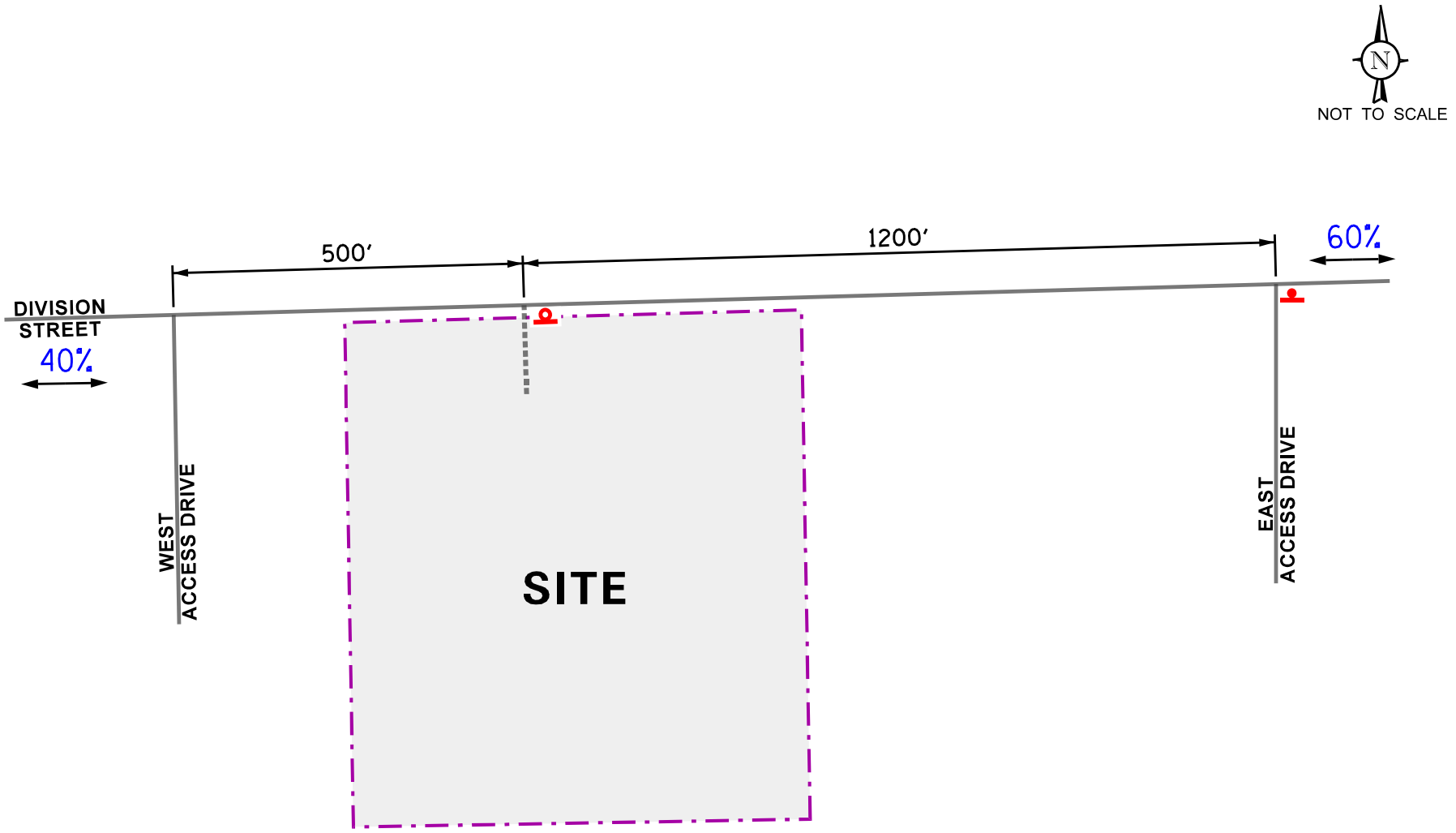
Proposed Site and Development Plan

As proposed, the approximately 23,400 square-foot facility is to consist of a training facility for the Lockport Township FPD, maintenance facility for the FPD's fire equipment, and a law enforcement shooting range. In addition, the facility will provide parking for a total of 165 passenger vehicles and 10 fire trucks. Access to the facility is proposed to be provided via one access drive located on the south side of Division Street approximately 500 feet east of the Stateville Division Street western access drive and 1,200 feet west of the Stateville Division Street middle access drive. The access drive is to provide one 12-foot inbound lane and one 12-foot outbound lane separated by a 12-foot median. The outbound lane will be under stop sign control. In addition, the access drive will include larger radiuses to accommodate the turning of the large fire trucks.

A copy of the site plan is included in the Appendix.

Directional Distribution

The directions from which patrons and employees will approach and depart the site were estimated based on existing travel patterns, as determined from the traffic counts, and the operation of the roadway system. **Figure 5** illustrates the directional distribution of the facility-generated traffic.



Lockport FPD
Training Site
Crest Hill, Illinois

Directional Distribution

KLOA
Kenig,Lindgren,O'Hara,Aboona,Inc.

Job No: 24-245

Figure: 5

Peak Hour Traffic Volumes

The number of peak hour trips estimated to be generated by the proposed facility was based on its projected operation as provided by the project team and summarize below:

- Practical training will take place at the facility three days a week, usually on Tuesdays, Wednesdays, and Thursdays, starting at 9:00 A.M. and ending between 3:00 and 4:00 P.M. Each session will include one to two fire companies and will have a maximum of 10 to 15 people per session, including the trainers.

- EMS training may take place at the facility on Mondays. Currently, the training occurs at each of the fire companies. Any EMS training will have a similar, if not. less number of participants as the practical training with similar start and end times.

- Specialty team training will take place at the facility once a month from 8:00 A.M. to 12:00 P.M. with a maximum of 30 people, including the trainers.

- The facility will have one mechanics that will repair and maintain the equipment.

- The law enforcement gun range will be used throughout the day with a limited number of people using the range at any one time.

- The facility will hold one to two special events per year with an attendance of 100 to 150 people.

Table 1 shows the estimated weekday morning and evening peak hour traffic to be generated by the facility on a regular basis. To provide a conservative analysis, it was assumed that all the participants, trainers, and the mechanic would arrive and depart during the morning and evening peak hours.

Table 1
PROJECTED DEVELOPMENT-GENERATED TRAFFIC VOLUMES

Type/Size	Weekday Morning Peak Hour			Weekday Evening Peak Hour		
	In	Out	Total	In	Out	Total
FPD Training and Maintenance Facility	15	2	17	2	15	17

4. Projected Traffic Conditions

The total projected traffic volumes include the existing traffic volumes, increase in background traffic due to growth, and the traffic estimated to be generated by the proposed subject facility.

Facility Traffic Assignment

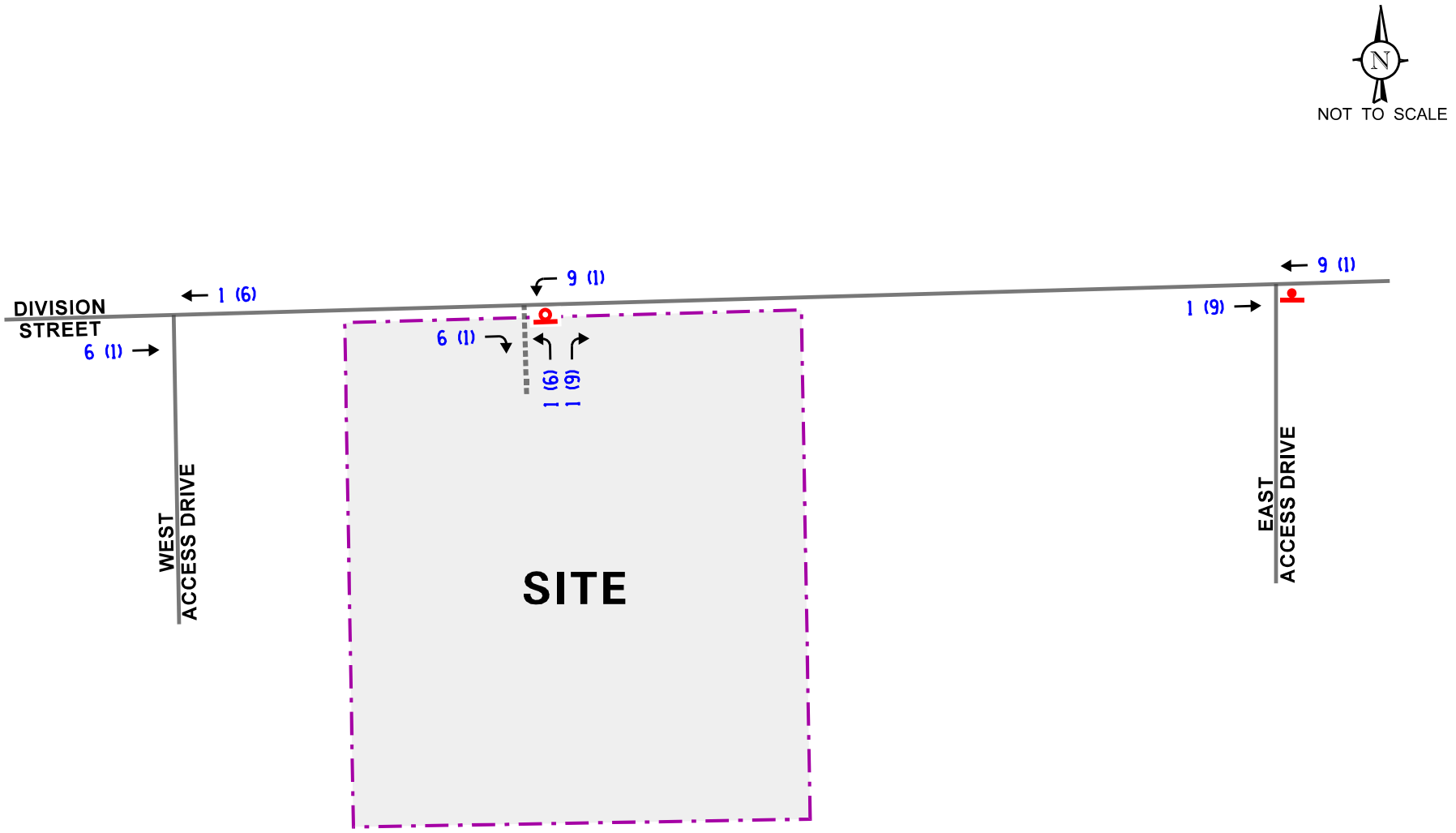
The estimated weekday morning and weekday evening peak hour traffic volumes that will be generated by the proposed training site were assigned to the roadway system in accordance with the previously described directional distribution (Figure 5). **Figure 6** illustrates the traffic assignment of the new vehicle trips.

Background (No-Build) Traffic Conditions

The existing traffic volumes (Figure 4) were increased by a regional growth factor to account for the increase in existing traffic related to regional growth in the area (i.e., not attributable to any particular planned development). Based on Annual Average Daily Traffic (AADT) projections provided by the Chicago Metropolitan Agency for Planning (CMAP) in a letter dated September 30, 2024, the existing traffic volumes are projected to increase by a total of three percent (0.5 percent compounded annually) to represent Year 2030 no-build conditions (one-year buildout plus five years). In addition, the Year 2030 background traffic volumes included the traffic to be generated by the Illinois State Police District 5 Headquarters and Joliet Forensic Science Laboratory to be located on the north side of Division Street just west of IL 31. Year 2030 background traffic volumes are shown in **Figure 7**. A copy of the CMAP 2050 projections letter is included in the Appendix.

Year 2030 Total Projected Traffic Volumes

The development-generated traffic (Figures 6) was added to the Year 2030 no-build traffic volumes (Figure 7) to determine the projected Year 2030 total traffic volumes, as shown in **Figure 8**.



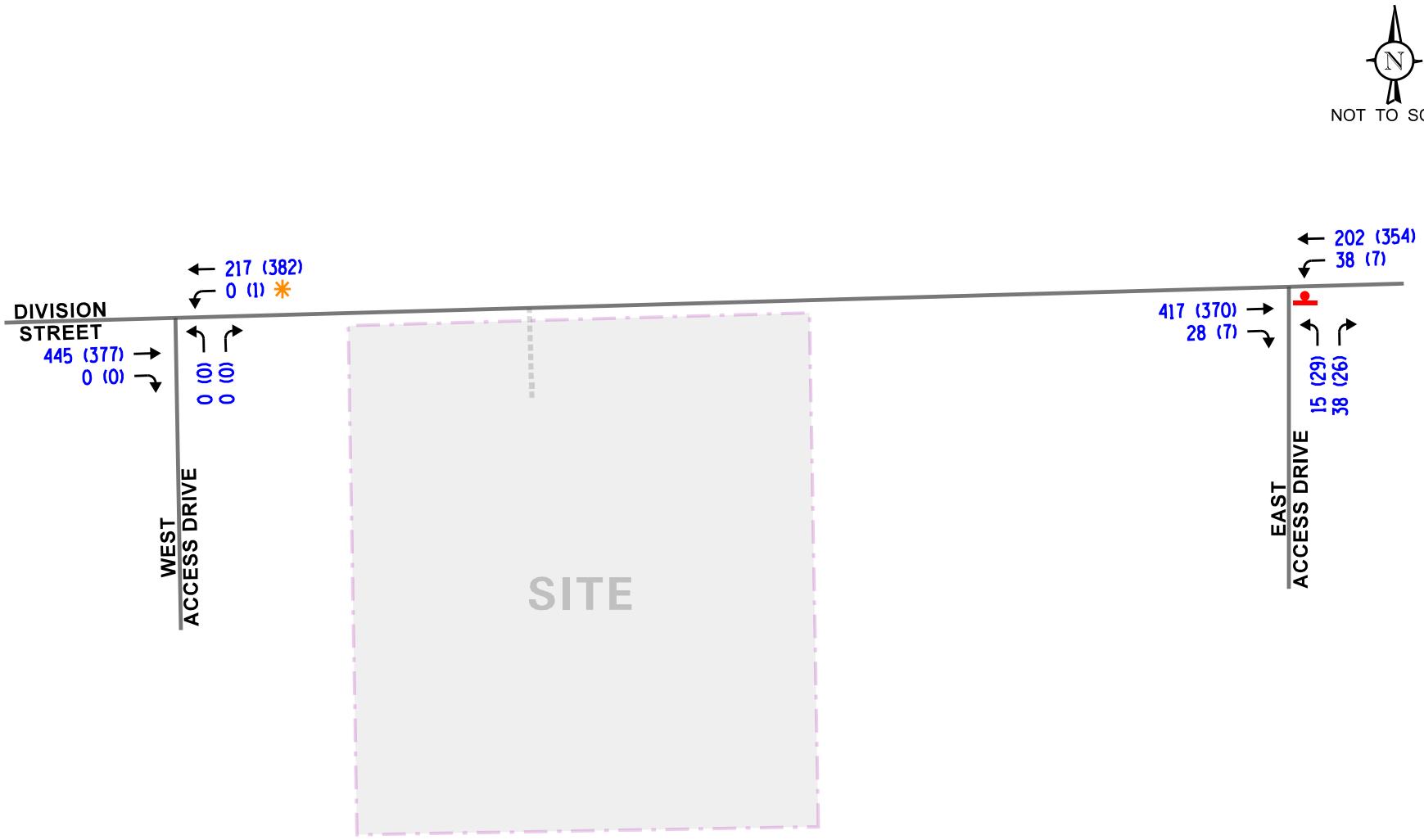
Lockport FPD
Training Site
Crest Hill, Illinois

Site-Generated Traffic Volumes

KLOA
Kenig,Lindgren,O'Hara,Aboona,Inc.

Job No: 24-245

Figure: 6



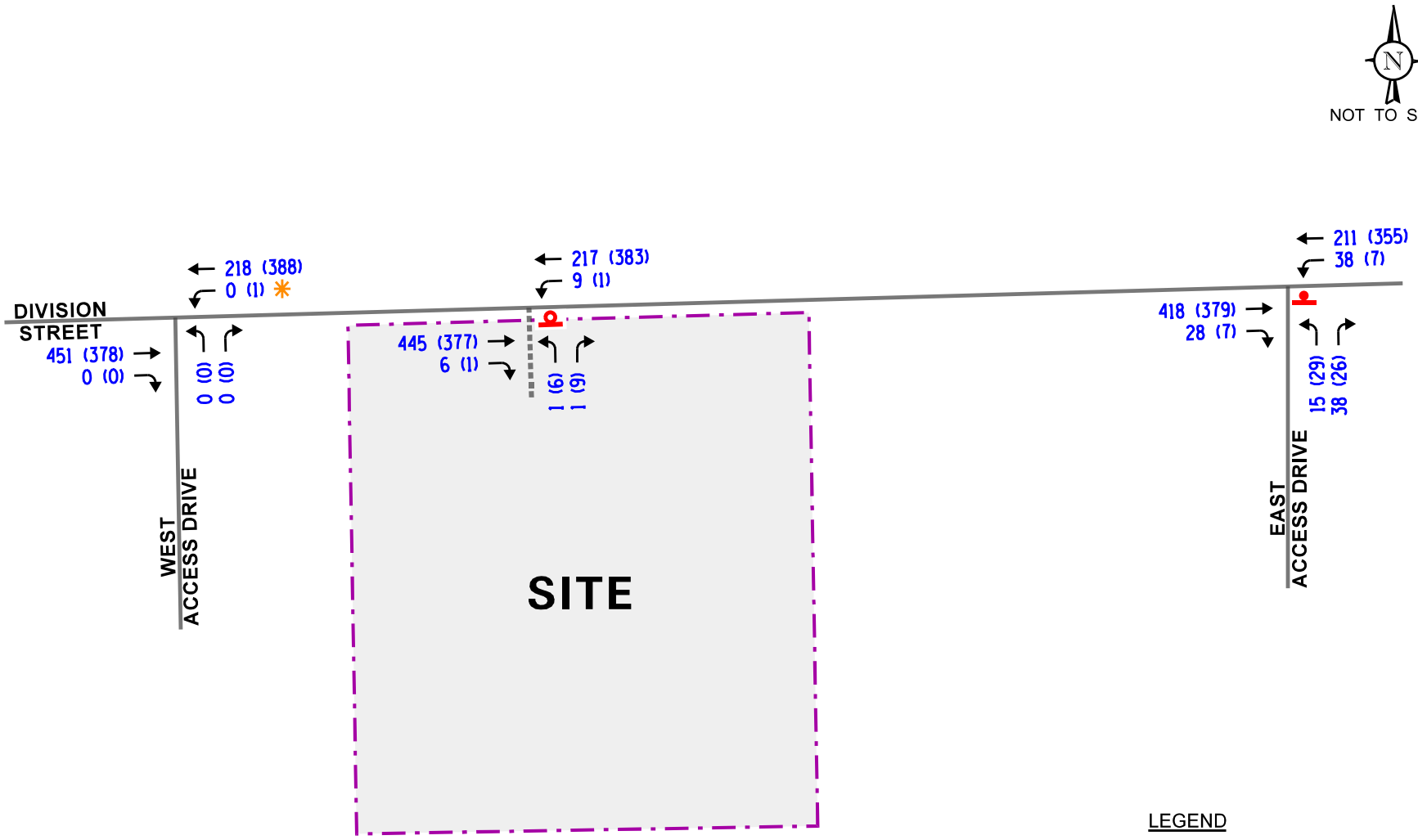
Lockport FPD
Training Site
Crest Hill, Illinois

Year 2030 No-Build Traffic Volumes

KLOA
Kenig,Lindgren,O'Hara,Aboona,Inc.

Job No: 24-245

Figure: 7



Lockport FPD
Training Site
Crest Hill, Illinois

Year 2030 Total Traffic Volumes

KLOA
Kenig,Lindgren,O'Hara,Aboona,Inc.

Job No: 24-245

Figure: 8

5. Traffic Analysis and Recommendations

The following provides an evaluation conducted for the weekday morning and weekday evening peak hours. The analysis includes conducting capacity analyses to determine how well the roadway system and access drives are projected to operate and whether any roadway improvements or modifications are required.

Traffic Analyses

Roadway and adjacent or nearby intersection analyses were performed for the weekday morning and evening peak hours for the existing (Year 2024), Year 2030 no-build, and Year 2030 total projected traffic volumes.

The traffic analyses were performed using the methodologies outlined in the Transportation Research Board's *Highway Capacity Manual (HCM),* 6th Edition and analyzed using Synchro/SimTraffic 11 software. The analysis for the traffic-signal controlled intersection were accomplished using actual cycle lengths and phasings to determine the average overall vehicle delay and levels of services.

The analyses for the unsignalized intersections determine the average control delay to vehicles at an intersection. Control delay is the elapsed time from a vehicle joining the queue at a stop sign (includes the time required to decelerate to a stop) until its departure from the stop sign and resumption of free flow speed. The methodology analyzes each intersection approach controlled by a stop sign and considers traffic volumes on all approaches and lane characteristics.

The ability of an intersection to accommodate traffic flow is expressed in terms of level of service, which is assigned a letter from A to F based on the average control delay experienced by vehicles passing through the intersection. The *Highway Capacity Manual* definitions for levels of service and the corresponding control delay for signalized intersections and unsignalized intersections are included in the Appendix of this report.

Summaries of the traffic analysis results showing the level of service and overall intersection delay (measured in seconds) for the existing (2024), Year 2030 no-build, and Year 2030 total projected conditions are presented in **Tables 2** through **4**. A discussion of each intersection follows. Summary sheets for the capacity analyses are included in the Appendix.

Table 2
UNSIGNALIZED – EXISTING CONDITIONS

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour	
	LOS	Delay	LOS	Delay
Division Street with Stateville Middle Access Drive[1]				
• Northbound Approach	B	13.0	B	13.5
• Westbound Left Turn	A	8.4	A	8.0
Division Street with Stateville Western Access Drive[1]				
• Northbound Approach	A	0.0	A	0.0
• Westbound Left Turn[2]	A	0.0	A	8.0

LOS = Level of Service
Delay is measured in seconds.
1 – Two-way stop control
2 – Illegal Movement

Table 3
UNSIGNALIZED – YEAR 2030 NO-BUILD CONDITIONS

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour	
	LOS	Delay	LOS	Delay
Division Street with Stateville Middle Access Drive[1]				
• Northbound Approach	B	13.4	B	14.2
• Westbound Left Turn	A	8.5	A	8.1
Division Street with Stateville Western Access Drive[1]				
• Northbound Approach	A	0.0	A	0.0
• Westbound Left Turn[2]	A	0.0	A	8.1

LOS = Level of Service
Delay is measured in seconds.
1 – Two-way stop control
2 – Illegal Movement

Table 4
UNSIGNALIZED – YEAR 2030 TOTAL CONDITIONS

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour	
	LOS	Delay	LOS	Delay
Division Street with Stateville Middle Access Drive[1]				
• Northbound Approach	B	13.5	B	14.3
• Westbound Left Turn	A	8.5	A	8.1
Division Street with Stateville Western Access Drive[1]				
• Northbound Approach	A	0.0	A	0.0
• Westbound Left Turn[2]	A	0.0	A	8.1
Division Street with Proposed Site Access Drive[1]				
• Northbound Approach	B	12.6	B	12.6
• Westbound Left Turn	A	8.3	A	8.1

LOS = Level of Service
Delay is measured in seconds.
1 – Two-way stop control
2 – Illegal Movement

Discussion and Recommendations

The following summarizes how the intersections are projected to operate and identifies any roadway and traffic control improvements necessary to accommodate the facility-generated traffic.

Division Street with Stateville Middle Access Drive

The results of the capacity analysis indicate that the northbound approach currently operates at level of service (LOS) B during the weekday morning and weekday evening peak hours. The westbound left-turn movement currently operates at LOS A during both peak hours. Under Year 2030 no-build and total projected conditions, the critical approach and movement are projected to continue operating at the current levels of service, with minimal increases in delay over the existing conditions. As such, this intersection has sufficient reserve capacity to accommodate the traffic estimated to be generated by the proposed facility and no roadway improvements or traffic control modifications are required.

Division Street with Stateville Western Access Drive

The results of the capacity analysis indicate the northbound approach currently operates at LOS A during the weekday morning and weekday evening peak hours. While the access drive is has a "Do Not Enter" sign, vehicles were observed entering the access drive from Division Street. The westbound left-turn movement currently operates at LOS A during the peak hours. Under Year 2030 no-build and total projected conditions, the critical approach and movement are projected to continue operating at the current levels of service, with minimal increases in delay over the existing conditions. As such, this intersection has sufficient reserve capacity to accommodate the traffic estimated to be generated by the proposed facility and no roadway improvements or traffic control modifications are required.

Division Street with Proposed Site Access Drive

Access to the facility is proposed to be provided via one access drive located on the south side of Division Street approximately 500 feet east of the Stateville Division Street western access drive and 1,200 feet west of the Stateville Division Street middle access drive. The access drive is to provide one 12-foot inbound lane and one 12-foot outbound lane separated by a 12-foot median. The outbound lane will be under stop sign control. In addition, the access drive will include larger radiuses to accommodate the turning of the large fire trucks.

The total projected volumes at this intersection were compared to the turn-lane warrants found in Chapter 36 of the IDOT Bureau of Design and Environment (BDE) Manual. The comparison of the traffic volumes to the turn lane warrants showed that a right-turn lane or a left-turn lane are not warranted on Division Street serving the proposed access drive. A copy of the turn-lane warrants is included in the Appendix.

The results of the capacity analysis indicate that the northbound approach from the proposed facility will operate at LOS B during the weekday morning and weekday evening peak hours. The westbound left-turn movement into the access drive is projected to operate at LOS A during the peak hours. As such, this intersection is projected to provide efficient access to the facility with limited impact to the traffic on Division Street.

6. Conclusion

Based on the preceding analyses and recommendations, the following conclusions have been made:

- As proposed, the site will be developed into a training and maintenance facility for the Lockport Township Fire Protection District.

- Access to the facility is proposed to be provided via one access drive located on the south side of Division Street approximately 500 feet east of the Stateville Division Street western access drive and 1,200 feet west of the Stateville Division Street middle access drive. The access drive is to provide one 12-foot inbound lane and one 12-foot outbound lane separated by a 12-foot median. The outbound lane will be under stop sign control. In addition, the access drive will include larger radiuses to accommodate the turning of the large fire trucks.

- An eastbound right-turn lane and a westbound left-turn lane are not warranted on Division Street serving the proposed access drive.

- The proposed access drive will provide efficient access to the facility.

- The existing roadway system has sufficient reserve capacity to accommodate the traffic to be generated by the facility and no roadway improvements and/or traffic control modifications are required.

Appendix

Traffic Count Summary Sheets
Site Plan
CMAP 2050 Projections Letter
Level of Service Criteria
Capacity Analysis Summary Sheets
Turn Lane Warrants

Traffic Count Summary Sheets

Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990 kpachowicz@kloainc.com

Count Name: Division Street with Access Drive (west) TMC
Site Code:
Start Date: 10/03/2024

Turning Movement Data

Start Time	Division Street Eastbound					Division Street Westbound					Access Drive Northbound					
	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
7:00 AM	0	83	9	0	92	0	17	56	0	73	0	10	19	0	29	194
7:15 AM	0	101	6	0	107	0	3	44	0	47	0	3	14	0	17	171
7:30 AM	0	104	5	0	109	0	3	41	0	44	0	2	2	0	4	157
7:45 AM	0	92	8	0	100	0	15	47	0	62	0	0	3	0	3	165
Hourly Total	0	380	28	0	408	0	38	188	0	226	0	15	38	0	53	687
8:00 AM	0	85	13	0	98	0	13	55	0	68	0	2	7	0	9	175
8:15 AM	0	86	5	0	91	0	2	40	0	42	0	4	7	0	11	144
8:30 AM	0	63	5	0	68	0	1	51	0	52	0	3	3	0	6	126
8:45 AM	0	72	0	0	72	0	3	48	0	51	1	1	0	0	2	125
Hourly Total	0	306	23	0	329	0	19	194	0	213	1	10	17	0	28	570
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	67	3	0	70	0	3	82	0	85	0	24	18	0	42	197
4:15 PM	0	101	1	0	102	0	1	69	0	70	0	2	2	0	4	176
4:30 PM	0	102	0	0	102	0	2	77	0	79	0	2	4	0	6	187
4:45 PM	0	75	3	0	78	0	1	93	0	94	0	1	2	0	3	175
Hourly Total	0	345	7	0	352	0	7	321	0	328	0	29	26	0	55	735
5:00 PM	0	73	1	0	74	0	5	78	0	83	0	4	4	0	8	165
5:15 PM	0	74	0	0	74	0	2	72	0	74	0	3	2	0	5	153
5:30 PM	0	81	1	0	82	0	0	69	0	69	0	2	3	0	5	156
5:45 PM	0	65	3	0	68	0	4	66	0	70	0	4	9	0	13	151
Hourly Total	0	293	5	0	298	0	11	285	0	296	0	13	18	0	31	625
Grand Total	0	1324	63	0	1387	0	75	988	0	1063	1	67	99	0	167	2617
Approach %	0.0	95.5	4.5	-	-	0.0	7.1	92.9	-	-	0.6	40.1	59.3	-	-	-
Total %	0.0	50.6	2.4	-	53.0	0.0	2.9	37.8	-	40.6	0.0	2.6	3.8	-	6.4	-
Lights	0	1268	61	-	1329	0	75	961	-	1036	1	66	98	-	165	2530
% Lights	-	95.8	96.8	-	95.8	-	100.0	97.3	-	97.5	100.0	98.5	99.0	-	98.8	96.7
Buses	0	6	2	-	8	0	0	4	-	4	0	1	1	-	2	14
% Buses	-	0.5	3.2	-	0.6	-	0.0	0.4	-	0.4	0.0	1.5	1.0	-	1.2	0.5
Single-Unit Trucks	0	28	0	-	28	0	0	10	-	10	0	0	0	-	0	38
% Single-Unit Trucks	-	2.1	0.0	-	2.0	-	0.0	1.0	-	0.9	0.0	0.0	0.0	-	0.0	1.5
Articulated Trucks	0	22	0	-	22	0	0	13	-	13	0	0	0	-	0	35
% Articulated Trucks	-	1.7	0.0	-	1.6	-	0.0	1.3	-	1.2	0.0	0.0	0.0	-	0.0	1.3
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Count Name: Division Street with Access Drive (west) TMC
Site Code:
Start Date: 10/03/2024

Turning Movement Peak Hour Data (7:00 AM)

Start Time	Division Street Eastbound					Division Street Westbound					Access Drive Northbound					
	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
7:00 AM	0	83	9	0	92	0	17	56	0	73	0	10	19	0	29	194
7:15 AM	0	101	6	0	107	0	3	44	0	47	0	3	14	0	17	171
7:30 AM	0	104	5	0	109	0	3	41	0	44	0	2	2	0	4	157
7:45 AM	0	92	8	0	100	0	15	47	0	62	0	0	3	0	3	165
Total	0	380	28	0	408	0	38	188	0	226	0	15	38	0	53	687
Approach %	0.0	93.1	6.9	-	-	0.0	16.8	83.2	-	-	0.0	28.3	71.7	-	-	-
Total %	0.0	55.3	4.1	-	59.4	0.0	5.5	27.4	-	32.9	0.0	2.2	5.5	-	7.7	-
PHF	0.000	0.913	0.778	-	0.936	0.000	0.559	0.839	-	0.774	0.000	0.375	0.500	-	0.457	0.885
Lights	0	368	27	-	395	0	38	179	-	217	0	15	38	-	53	665
% Lights	-	96.8	96.4	-	96.8	-	100.0	95.2	-	96.0	-	100.0	100.0	-	100.0	96.8
Buses	0	0	1	-	1	0	0	2	-	2	0	0	0	-	0	3
% Buses	-	0.0	3.6	-	0.2	-	0.0	1.1	-	0.9	-	0.0	0.0	-	0.0	0.4
Single-Unit Trucks	0	9	0	-	9	0	0	4	-	4	0	0	0	-	0	13
% Single-Unit Trucks	-	2.4	0.0	-	2.2	-	0.0	2.1	-	1.8	-	0.0	0.0	-	0.0	1.9
Articulated Trucks	0	3	0	-	3	0	0	3	-	3	0	0	0	-	0	6
% Articulated Trucks	-	0.8	0.0	-	0.7	-	0.0	1.6	-	1.3	-	0.0	0.0	-	0.0	0.9
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Site Code:
Start Date: 10/03/2024

Turning Movement Peak Hour Data (4:00 PM)

Start Time	Division Street Eastbound					Division Street Westbound					Access Drive Northbound					
	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
4:00 PM	0	67	3	0	70	0	3	82	0	85	0	24	18	0	42	197
4:15 PM	0	101	1	0	102	0	1	69	0	70	0	2	2	0	4	176
4:30 PM	0	102	0	0	102	0	2	77	0	79	0	2	4	0	6	187
4:45 PM	0	75	3	0	78	0	1	93	0	94	0	1	2	0	3	175
Total	0	345	7	0	352	0	7	321	0	328	0	29	26	0	55	735
Approach %	0.0	98.0	2.0	-	-	0.0	2.1	97.9	-	-	0.0	52.7	47.3	-	-	-
Total %	0.0	46.9	1.0	-	47.9	0.0	1.0	43.7	-	44.6	0.0	3.9	3.5	-	7.5	-
PHF	0.000	0.846	0.583	-	0.863	0.000	0.583	0.863	-	0.872	0.000	0.302	0.361	-	0.327	0.933
Lights	0	332	6	-	338	0	7	316	-	323	0	29	26	-	55	716
% Lights	-	96.2	85.7	-	96.0	-	100.0	98.4	-	98.5	-	100.0	100.0	-	100.0	97.4
Buses	0	5	1	-	6	0	0	1	-	1	0	0	0	-	0	7
% Buses	-	1.4	14.3	-	1.7	-	0.0	0.3	-	0.3	-	0.0	0.0	-	0.0	1.0
Single-Unit Trucks	0	4	0	-	4	0	0	1	-	1	0	0	0	-	0	5
% Single-Unit Trucks	-	1.2	0.0	-	1.1	-	0.0	0.3	-	0.3	-	0.0	0.0	-	0.0	0.7
Articulated Trucks	0	4	0	-	4	0	0	3	-	3	0	0	0	-	0	7
% Articulated Trucks	-	1.2	0.0	-	1.1	-	0.0	0.9	-	0.9	-	0.0	0.0	-	0.0	1.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Site Code:
Start Date: 10/03/2024

Turning Movement Data

Start Time	Division Street Eastbound					Division Street Westbound					Access Drive Northbound					
	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
7:00 AM	0	91	0	0	91	0	0	66	0	66	0	0	0	0	0	157
7:15 AM	0	106	0	0	106	0	0	45	0	45	0	0	0	0	0	151
7:30 AM	0	116	0	0	116	0	0	46	0	46	0	0	0	0	0	162
7:45 AM	0	107	0	0	107	0	0	43	0	43	0	0	0	0	0	150
Hourly Total	0	420	0	0	420	0	0	200	0	200	0	0	0	0	0	620
8:00 AM	0	91	0	0	91	0	0	57	0	57	0	0	0	0	0	148
8:15 AM	0	87	0	0	87	0	0	51	0	51	0	0	0	0	0	138
8:30 AM	0	66	0	0	66	0	0	49	0	49	0	0	0	0	0	115
8:45 AM	0	71	1	0	72	0	0	48	0	48	0	0	0	0	0	120
Hourly Total	0	315	1	0	316	0	0	205	0	205	0	0	0	0	0	521
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	68	0	0	68	0	1	99	0	100	0	0	0	0	0	168
4:15 PM	0	110	0	0	110	0	0	75	0	75	0	0	0	0	0	185
4:30 PM	0	99	0	0	99	0	0	75	0	75	0	0	0	0	0	174
4:45 PM	0	75	0	0	75	0	0	99	0	99	0	0	0	0	0	174
Hourly Total	0	352	0	0	352	0	1	348	0	349	0	0	0	0	0	701
5:00 PM	0	78	0	0	78	0	0	78	0	78	0	0	0	0	0	156
5:15 PM	0	75	0	0	75	0	0	80	0	80	0	0	0	0	0	155
5:30 PM	0	79	0	0	79	0	0	76	0	76	0	0	0	0	0	155
5:45 PM	0	64	0	0	64	0	0	73	0	73	0	0	0	0	0	137
Hourly Total	0	296	0	0	296	0	0	307	0	307	0	0	0	0	0	603
Grand Total	0	1383	1	0	1384	0	1	1060	0	1061	0	0	0	0	0	2445
Approach %	0.0	99.9	0.1	-	-	0.0	0.1	99.9	-	-	0.0	0.0	0.0	-	-	-
Total %	0.0	56.6	0.0	-	56.6	0.0	0.0	43.4	-	43.4	0.0	0.0	0.0	-	0.0	-
Lights	0	1324	1	-	1325	0	1	1030	-	1031	0	0	0	-	0	2356
% Lights	-	95.7	100.0	-	95.7	-	100.0	97.2	-	97.2	-	-	-	-	-	96.4
Buses	0	7	0	-	7	0	0	5	-	5	0	0	0	-	0	12
% Buses	-	0.5	0.0	-	0.5	-	0.0	0.5	-	0.5	-	-	-	-	-	0.5
Single-Unit Trucks	0	29	0	-	29	0	0	13	-	13	0	0	0	-	0	42
% Single-Unit Trucks	-	2.1	0.0	-	2.1	-	0.0	1.2	-	1.2	-	-	-	-	-	1.7
Articulated Trucks	0	23	0	-	23	0	0	12	-	12	0	0	0	-	0	35
% Articulated Trucks	-	1.7	0.0	-	1.7	-	0.0	1.1	-	1.1	-	-	-	-	-	1.4
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	-	-	-	-	0.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Site Code:
Start Date: 10/03/2024

Turning Movement Peak Hour Data (7:00 AM)

Start Time	Division Street Eastbound					Division Street Westbound					Access Drive Northbound					
	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
7:00 AM	0	91	0	0	91	0	0	66	0	66	0	0	0	0	0	157
7:15 AM	0	106	0	0	106	0	0	45	0	45	0	0	0	0	0	151
7:30 AM	0	116	0	0	116	0	0	46	0	46	0	0	0	0	0	162
7:45 AM	0	107	0	0	107	0	0	43	0	43	0	0	0	0	0	150
Total	0	420	0	0	420	0	0	200	0	200	0	0	0	0	0	620
Approach %	0.0	100.0	0.0	-	-	0.0	0.0	100.0	-	-	0.0	0.0	0.0	-	-	-
Total %	0.0	67.7	0.0	-	67.7	0.0	0.0	32.3	-	32.3	0.0	0.0	0.0	-	0.0	-
PHF	0.000	0.905	0.000	-	0.905	0.000	0.000	0.758	-	0.758	0.000	0.000	0.000	-	0.000	0.957
Lights	0	407	0	-	407	0	0	189	-	189	0	0	0	-	0	596
% Lights	-	96.9	-	-	96.9	-	-	94.5	-	94.5	-	-	-	-	-	96.1
Buses	0	1	0	-	1	0	0	2	-	2	0	0	0	-	0	3
% Buses	-	0.2	-	-	0.2	-	-	1.0	-	1.0	-	-	-	-	-	0.5
Single-Unit Trucks	0	8	0	-	8	0	0	7	-	7	0	0	0	-	0	15
% Single-Unit Trucks	-	1.9	-	-	1.9	-	-	3.5	-	3.5	-	-	-	-	-	2.4
Articulated Trucks	0	4	0	-	4	0	0	2	-	2	0	0	0	-	0	6
% Articulated Trucks	-	1.0	-	-	1.0	-	-	1.0	-	1.0	-	-	-	-	-	1.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	-	-	0.0	-	-	0.0	-	0.0	-	-	-	-	-	0.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

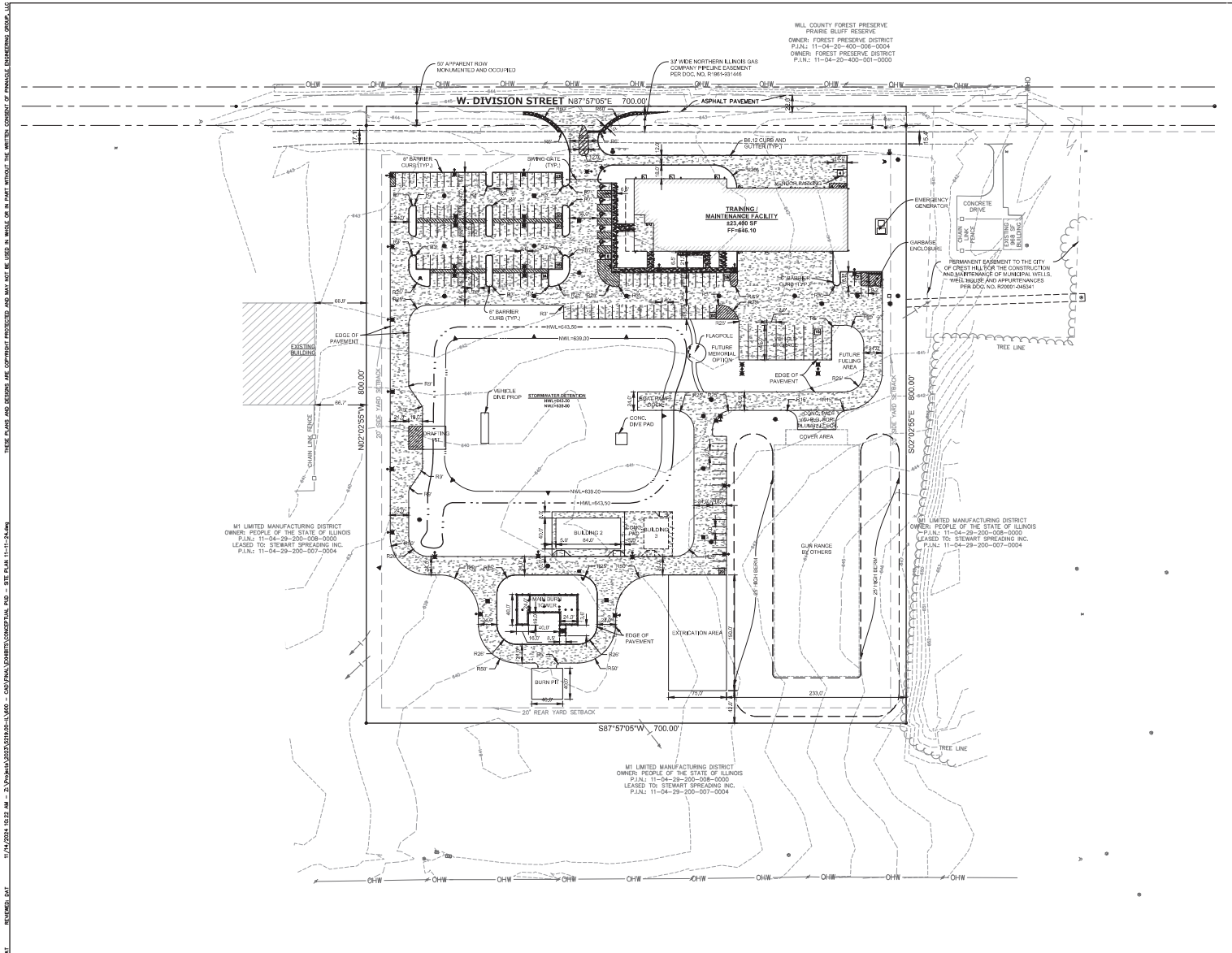
Rosemont, Illinois, United States 60018
(847)518-9990 kpachowicz@kloainc.com

Count Name: Division Street with Access Drive (west) TMC
Site Code:
Start Date: 10/03/2024

Turning Movement Peak Hour Data (4:00 PM)

Start Time	Division Street Eastbound					Division Street Westbound					Access Drive Northbound					
	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
4:00 PM	0	68	0	0	68	0	1	99	0	100	0	0	0	0	0	168
4:15 PM	0	110	0	0	110	0	0	75	0	75	0	0	0	0	0	185
4:30 PM	0	99	0	0	99	0	0	75	0	75	0	0	0	0	0	174
4:45 PM	0	75	0	0	75	0	0	99	0	99	0	0	0	0	0	174
Total	0	352	0	0	352	0	1	348	0	349	0	0	0	0	0	701
Approach %	0.0	100.0	0.0	-	-	0.0	0.3	99.7	-	-	0.0	0.0	0.0	-	-	-
Total %	0.0	50.2	0.0	-	50.2	0.0	0.1	49.6	-	49.8	0.0	0.0	0.0	-	0.0	-
PHF	0.000	0.800	0.000	-	0.800	0.000	0.250	0.879	-	0.873	0.000	0.000	0.000	-	0.000	0.947
Lights	0	339	0	-	339	0	1	342	-	343	0	0	0	-	0	682
% Lights	-	96.3	-	-	96.3	-	100.0	98.3	-	98.3	-	-	-	-	-	97.3
Buses	0	5	0	-	5	0	0	1	-	1	0	0	0	-	0	6
% Buses	-	1.4	-	-	1.4	-	0.0	0.3	-	0.3	-	-	-	-	-	0.9
Single-Unit Trucks	0	3	0	-	3	0	0	2	-	2	0	0	0	-	0	5
% Single-Unit Trucks	-	0.9	-	-	0.9	-	0.0	0.6	-	0.6	-	-	-	-	-	0.7
Articulated Trucks	0	5	0	-	5	0	0	3	-	3	0	0	0	-	0	8
% Articulated Trucks	-	1.4	-	-	1.4	-	0.0	0.9	-	0.9	-	-	-	-	-	1.1
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	-	-	0.0	-	0.0	0.0	-	0.0	-	-	-	-	-	0.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Site Plan



LEGEND

- CONCRETE PAVEMENT
  - 8" PORTLAND CEMENT CONCRETE MINIMUM 4000 PSI AT 14 DAYS
  - 6" COMP. CA-6 AGGREGATE BASE COURSE, TYPE B
  - ***PAVEMENT SECTION SHALL BE PER GEOTECHNICAL ENGINEER'S RECOMMENDATION OR PER OWNERS SPECIFICATION***
- SIDEWALK
  - 5" PORTLAND CEMENT CONCRETE
  - 4" COMPACTED CA-6 AGGREGATE BASE COURSE, TYPE B
- 6" BARRIER CURB
- B-6.12 CURB & GUTTER
- DEPRESSED B-6.12 CURB & GUTTER
- 10 PARKING STALL COUNT (NOT TO BE PAINTED)

UTILITY LEGEND

	EXISTING	PROPOSED
SANITARY MANHOLE		
STORM MANHOLE		
CATCH BASIN		
INLET		
PRECAST FLARED END SECTION		
CONCRETE HEADWALL		
VALVE VAULT		
VALVE BOX		
FIRE HYDRANT		
BUFFALO BOX		
CLEANOUT		
SANITARY SEWER		
FORCE MAIN		
STORM SEWER		
DRAIN TILE		
WATER MAIN	W	W
LIGHTING		
ELECTRICAL CABLE	E	E
ELECTRICAL TRANSFORMER OR PEDESTAL		
POWER POLE		
GUY WIRE		
STREET SIGN		
GAS MAIN	G	G
TELEPHONE LINE	T	T

SITE DATA

TOTAL PROPERTY AREA:	12.86 ACRES
APPARENT ROW MONUMENTED & OCCUPIED:	0.40 ACRES
DEVELOPED AREA:	12.46 ACRES
PIN:	11-04-29-200-009-0000
BUILDING FOOTPRINTS:	
TRAINING MAINTENANCE FACILITY:	±23,400 SF.
BUILDING NO. 2 & 3 CONCRETE PAD:	9,048 SF.
MAIN BURN TOWER:	2,655 SF.
REQUIRED PARKING:	
TRAINING FACILITY: (TRADE SCHOOL)	2 SPACES / 3 EMPLOYEES = 38 SPACES 1 SPACE / 4 STUDENTS = 4 SPACES
MAINTENANCE FACILITY: (WAREHOUSE)	1 SPACE / EMPLOYEE = 6 SPACES 1 SPACE / VEHICLE = 12 SPACES
TOTAL REQUIRED:	60 SPACES
PROVIDED PARKING:	165 STALLS (INCLUDING 6 ADA SPACES)

NORTH

GRAPHICAL SCALE (FEET)

0 1" = 60' 120'

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PINNACLE ENGINEERING GROUP
ENGINEERING | NATURAL RESOURCES | SURVEYING
IL DESIGN FIRM 184.006289-0010
PLAN | DESIGN | DELIVER
www.pinnacle-engr.com
CHICAGO OFFICE:
180 E. MAIN ST. | SUITE 217
EAST DUNDEE, IL 60118
(847) 551-9300
CHICAGO | MILWAUKEE | NATIONWIDE

LOCKPORT TOWNSHIP FPD
TRAINING & MAINTENANCE FACILITY
CREST HILL, ILLINOIS

REVISIONS

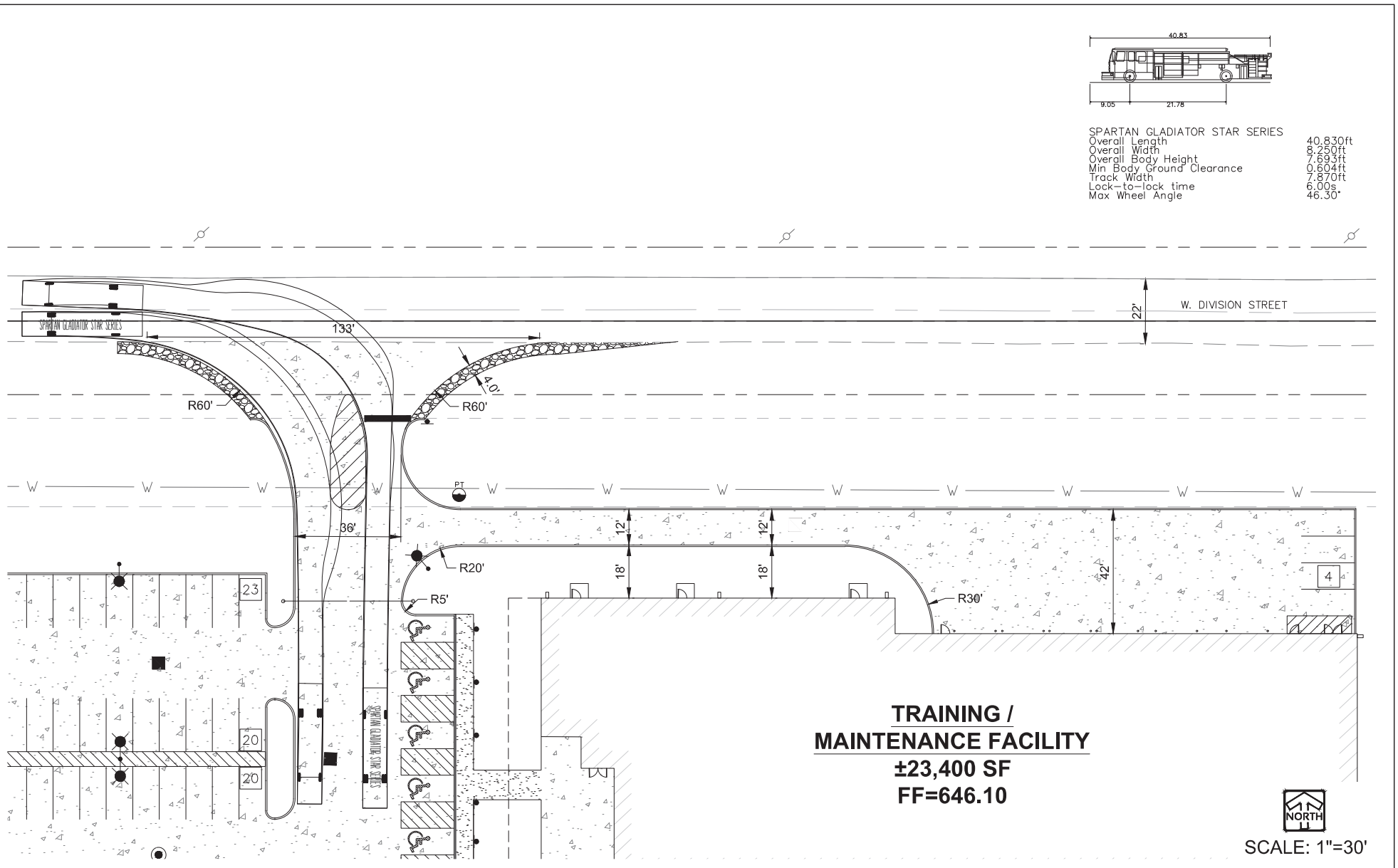
CONCEPTUAL PLANNED UNIT DEVELOPMENT SITE PLAN

PROJ JOB No. 2318.00-IL\600 DAT
PROJ PM DAT
START DATE 08-05-24
SCALE 1"=60'

SHEET 1 OF 1

www.pinnacle-engr.com

CONCEPTUAL PLANNED UNIT DEVELOPMENT - SITE PLAN



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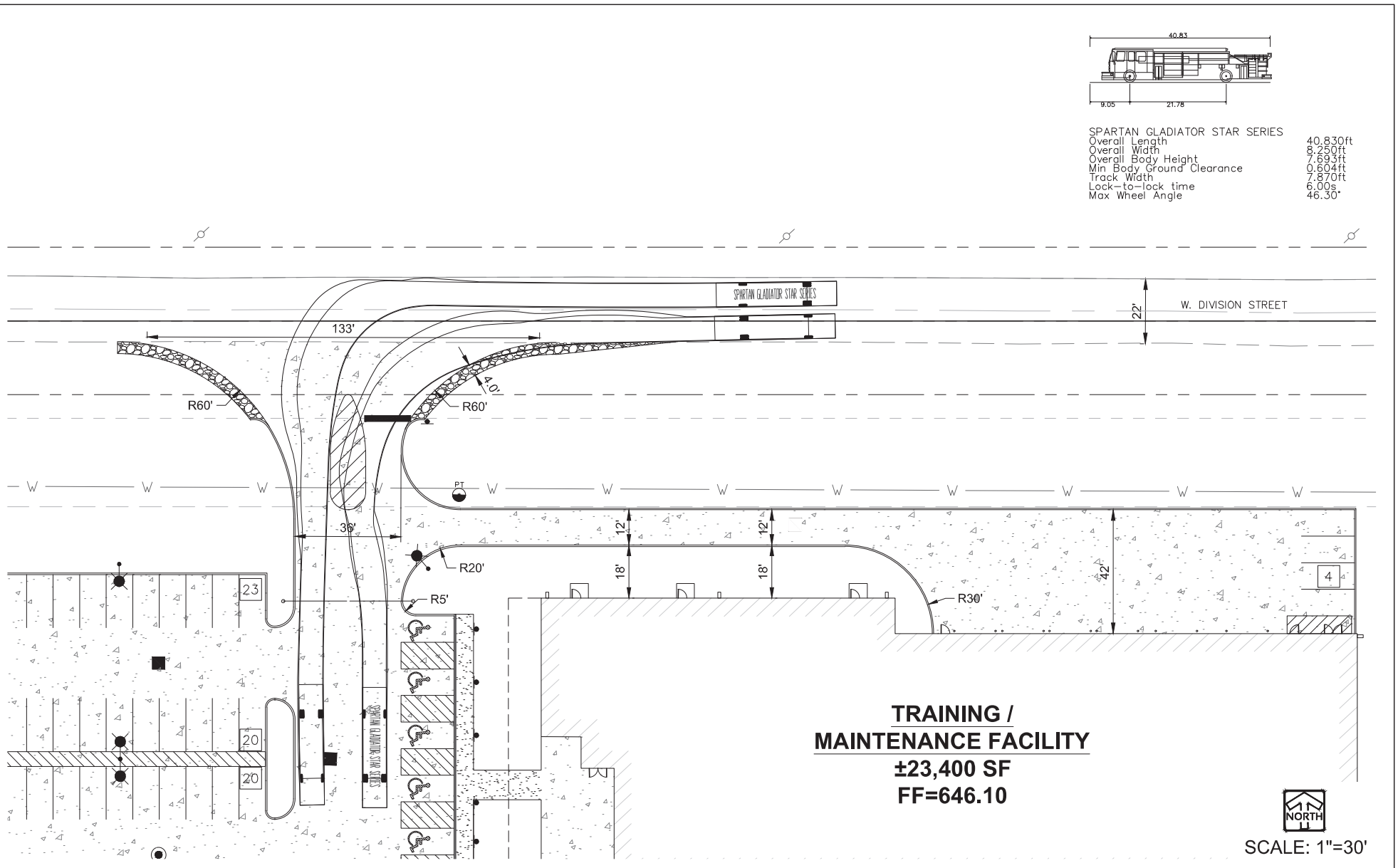
ACCESS ROAD EXHIBIT - FIRE TRUCK TURN EXHIBIT

SHEET 1 OF 3 JOB NO. 5219.00-IL 11/11/2024

PINNACLE ENGINEERING GROUP
1051 E. MAIN STREET | SUITE 217 | EAST DUNDEE, IL 60118 | WWW.PINNACLE-ENGR.COM | CHICAGO@PINNACLE-ENGR.COM

PLAN | DESIGN | DELIVER



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ACCESS ROAD EXHIBIT - FIRE TRUCK TURN EXHIBIT

SHEET 2 OF 3 JOB NO. 5219.00-IL 11/11/2024

PINNACLE ENGINEERING GROUP
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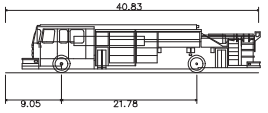
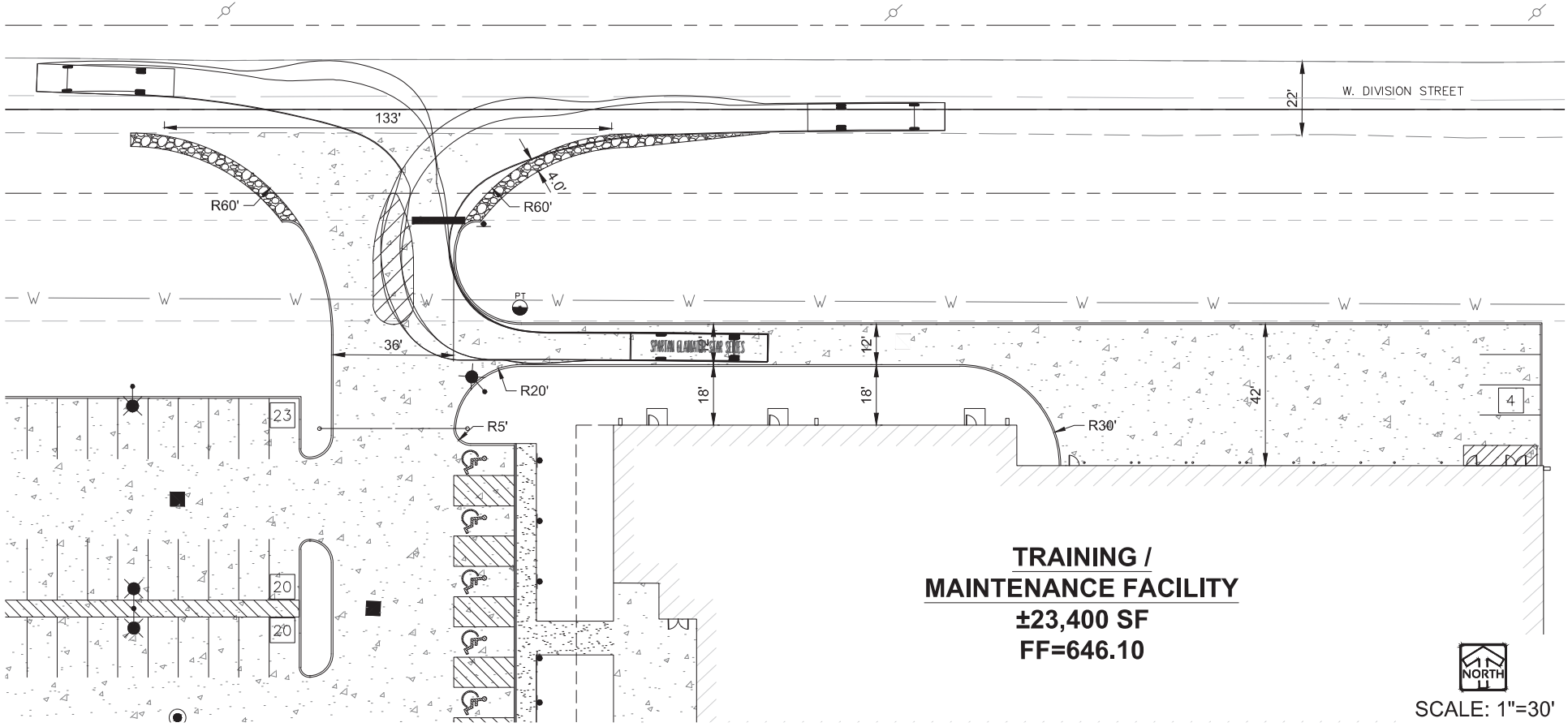
PLAN | DESIGN | DELIVER



SPARTAN GLADIATOR STAR SERIES

Overall Length	40.830ft
Overall Width	8.250ft
Overall Body Height	7.693ft
Min Body Ground Clearance	0.604ft
Track Width	7.870ft
Lock-to-lock time	6.00s
Max Wheel Angle	46.30°



TRAINING / MAINTENANCE FACILITY
±23,400 SF
FF=646.10

NORTH

SCALE: 1"=30'

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ACCESS ROAD EXHIBIT - FIRE TRUCK TURN EXHIBIT

SHEET 3 OF 3 *JOB NO. 5219.00-IL* 11/11/2024

PINNACLE ENGINEERING GROUP
1051 E. MAIN STREET | SUITE 217 | EAST DUNDEE, IL 60118 | WWW.PINNACLE-ENGR.COM | CHICAGO@PINNACLE-ENGR.COM

PLAN | DESIGN | DELIVER

CMAP 2050 Projections Letter

Chicago Metropolitan Agency for Planning

433 West Van Buren Street, Suite 450
Chicago, IL 60607
cmap.illinois.gov | 312-454-0400

October 1, 2024

Ryan May
Project Coordinator
Kenig, Lindgren, O'Hara and Aboona, Inc.
9575 West Higgins Road
Suite 400
Rosemont, IL 60018

Subject: Division Street between Weber Road and IL 53
IDOT

Dear Ms. May:

In response to a request made on your behalf and dated September 30, 2024, we have developed year 2050 average daily traffic (ADT) projections for the subject location.

ROAD SEGMENT	Current ADT (2023)	Year 2050 ADT
Division St from Weber Rd to IL 53	6,500	7,450

Traffic projections are developed using existing ADT data provided in the request letter and the results from the June 2024 CMAP Travel Demand Analysis. The regional travel model uses CMAP 2050 socioeconomic projections and assumes the implementation of the ON TO 2050 Comprehensive Regional Plan for the Northeastern Illinois area. The provision of this data in support of your request does not constitute a CMAP endorsement of the proposed development or any subsequent developments.

If you have any questions, please call me at (312) 386-8806 or email me at jrodriguez@cmap.illinois.gov

Jose Rodriguez, PTP, AICP
Senior Planner, Research & Analysis

cc: Rios (IDOT)
\2024_TrafficForecasts\CrestHill\wi-41-24\wi-41-24.docx

Level of Service Criteria

LEVEL OF SERVICE CRITERIA

Signalized Intersections		
Level of Service	**Interpretation**	**Average Control Delay (seconds per vehicle)**
A	Favorable progression. Most vehicles arrive during the green indication and travel through the intersection without stopping.	≤10
B	Good progression, with more vehicles stopping than for Level of Service A.	> 10 - 20
C	Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear. Number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.	> 20 - 35
D	The volume-to-capacity ratio is high and either progression is ineffective or the cycle length is too long. Many vehicles stop and individual cycle failures are noticeable.	> 35 - 55
E	Progression is unfavorable. The volume-to-capacity ratio is high and the cycle length is long. Individual cycle failures are frequent.	> 55 - 80
F	The volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.	> 80

Unsignalized Intersections	
Level of Service	**Average Total Delay (sec/veh)**
A	0 - 10
B	> 10 - 15
C	> 15 - 25
D	> 25 - 35
E	> 35 - 50
F	> 50

Source: *Highway Capacity Manual*, 6th Edition.

Capacity Analysis Summary Sheets

Existing Weekday Morning Peak Hour

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	392	28	38	188	15	38
Future Vol, veh/h	392	28	38	188	15	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	4	0	5	0	0
Mvmt Flow	440	31	43	211	17	43

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	471	0	753	456
Stage 1	-	-	-	-	456	-
Stage 2	-	-	-	-	297	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1101	-	380	609
Stage 1	-	-	-	-	643	-
Stage 2	-	-	-	-	758	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1101	-	363	609
Mov Cap-2 Maneuver	-	-	-	-	363	-
Stage 1	-	-	-	-	643	-
Stage 2	-	-	-	-	725	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	13
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	511	-	-	1101	-
HCM Lane V/C Ratio	0.117	-	-	0.039	-
HCM Control Delay (s)	13	-	-	8.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	420	0	0	203	0	0
Future Vol, veh/h	420	0	0	203	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	0	0	6	0	0
Mvmt Flow	438	0	0	211	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	438	0	649	438
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	211	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1133	-	438	623
Stage 1	-	-	-	-	655	-
Stage 2	-	-	-	-	829	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1133	-	438	623
Mov Cap-2 Maneuver	-	-	-	-	438	-
Stage 1	-	-	-	-	655	-
Stage 2	-	-	-	-	829	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1133	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Capacity Analysis Summary Sheets

Existing Weekday Evening Peak Hour

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	345	7	7	321	29	26
Future Vol, veh/h	345	7	7	321	29	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	4	14	0	2	0	0
Mvmt Flow	371	8	8	345	31	28

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	379	0	736	375
Stage 1	-	-	-	-	375	-
Stage 2	-	-	-	-	361	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1191	-	389	676
Stage 1	-	-	-	-	699	-
Stage 2	-	-	-	-	710	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1191	-	386	676
Mov Cap-2 Maneuver	-	-	-	-	386	-
Stage 1	-	-	-	-	699	-
Stage 2	-	-	-	-	704	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	13.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	484	-	-	1191	-
HCM Lane V/C Ratio	0.122	-	-	0.006	-
HCM Control Delay (s)	13.5	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	352	0	1	349	0	0
Future Vol, veh/h	352	0	1	349	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	0	0	2	0	0
Mvmt Flow	371	0	1	367	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	371	0	740	371
Stage 1	-	-	-	-	371	-
Stage 2	-	-	-	-	369	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1199	-	387	679
Stage 1	-	-	-	-	702	-
Stage 2	-	-	-	-	704	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1199	-	387	679
Mov Cap-2 Maneuver	-	-	-	-	387	-
Stage 1	-	-	-	-	702	-
Stage 2	-	-	-	-	703	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1199	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	8	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Capacity Analysis Summary Sheets

Year 2030 No-Build Weekday Morning Peak Hour

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	417	28	38	202	15	38
Future Vol, veh/h	417	28	38	202	15	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	4	0	5	0	0
Mvmt Flow	469	31	43	227	17	43

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	500	0	798	485
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	313	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1075	-	358	586
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	746	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1075	-	342	586
Mov Cap-2 Maneuver	-	-	-	-	342	-
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	712	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	13.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	488	-	-	1075	-
HCM Lane V/C Ratio	0.122	-	-	0.04	-
HCM Control Delay (s)	13.4	-	-	8.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	445	0	0	217	0	0
Future Vol, veh/h	445	0	0	217	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	0	0	6	0	0
Mvmt Flow	464	0	0	226	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	464	0	690	464
Stage 1	-	-	-	-	464	-
Stage 2	-	-	-	-	226	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1108	-	414	602
Stage 1	-	-	-	-	637	-
Stage 2	-	-	-	-	816	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1108	-	414	602
Mov Cap-2 Maneuver	-	-	-	-	414	-
Stage 1	-	-	-	-	637	-
Stage 2	-	-	-	-	816	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1108	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Capacity Analysis Summary Sheets

Year 2030 No-Build Weekday Evening Peak Hour

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	370	7	7	354	29	26
Future Vol, veh/h	370	7	7	354	29	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	4	14	0	2	0	0
Mvmt Flow	398	8	8	381	31	28

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	406	0	799	402
Stage 1	-	-	-	-	402	-
Stage 2	-	-	-	-	397	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1164	-	357	653
Stage 1	-	-	-	-	680	-
Stage 2	-	-	-	-	683	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1164	-	354	653
Mov Cap-2 Maneuver	-	-	-	-	354	-
Stage 1	-	-	-	-	680	-
Stage 2	-	-	-	-	677	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	452	-	-	1164	-
HCM Lane V/C Ratio	0.131	-	-	0.006	-
HCM Control Delay (s)	14.2	-	-	8.1	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	377	0	1	382	0	0
Future Vol, veh/h	377	0	1	382	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	0	0	2	0	0
Mvmt Flow	397	0	1	402	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	397	0	801	397
Stage 1	-	-	-	-	397	-
Stage 2	-	-	-	-	404	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1173	-	356	657
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	679	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1173	-	356	657
Mov Cap-2 Maneuver	-	-	-	-	356	-
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	678	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1173	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	8.1	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Capacity Analysis Summary Sheets

Year 2030 Total Projected Weekday Morning Peak Hour

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	418	28	38	211	15	38
Future Vol, veh/h	418	28	38	211	15	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	4	0	5	0	0
Mvmt Flow	470	31	43	237	17	43

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	501	0	809	486
Stage 1	-	-	-	-	486	-
Stage 2	-	-	-	-	323	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1074	-	353	585
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	738	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1074	-	337	585
Mov Cap-2 Maneuver	-	-	-	-	337	-
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	704	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	13.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	484	-	-	1074	-
HCM Lane V/C Ratio	0.123	-	-	0.04	-
HCM Control Delay (s)	13.5	-	-	8.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	451	0	0	218	0	0
Future Vol, veh/h	451	0	0	218	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	0	0	6	0	0
Mvmt Flow	470	0	0	227	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	470	0	697	470
Stage 1	-	-	-	-	470	-
Stage 2	-	-	-	-	227	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1102	-	410	598
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	815	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1102	-	410	598
Mov Cap-2 Maneuver	-	-	-	-	410	-
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	815	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1102	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	445	6	9	217	1	1
Future Vol, veh/h	445	6	9	217	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	0	0	6	0	0
Mvmt Flow	468	6	9	228	1	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	474	0	717	471
Stage 1	-	-	-	-	471	-
Stage 2	-	-	-	-	246	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1099	-	399	597
Stage 1	-	-	-	-	632	-
Stage 2	-	-	-	-	800	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1099	-	395	597
Mov Cap-2 Maneuver	-	-	-	-	395	-
Stage 1	-	-	-	-	632	-
Stage 2	-	-	-	-	793	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	12.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	475	-	-	1099	-
HCM Lane V/C Ratio	0.004	-	-	0.009	-
HCM Control Delay (s)	12.6	-	-	8.3	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Capacity Analysis Summary Sheets

Year 2030 Total Projected Weekday Evening Peak Hour

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	379	7	7	355	29	26
Future Vol, veh/h	379	7	7	355	29	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	4	14	0	2	0	0
Mvmt Flow	408	8	8	382	31	28

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	416	0	810	412
Stage 1	-	-	-	-	412	-
Stage 2	-	-	-	-	398	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1154	-	352	644
Stage 1	-	-	-	-	673	-
Stage 2	-	-	-	-	683	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1154	-	349	644
Mov Cap-2 Maneuver	-	-	-	-	349	-
Stage 1	-	-	-	-	673	-
Stage 2	-	-	-	-	677	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	14.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	445	-	-	1154	-
HCM Lane V/C Ratio	0.133	-	-	0.007	-
HCM Control Delay (s)	14.3	-	-	8.1	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	378	0	1	388	0	0
Future Vol, veh/h	378	0	1	388	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	0	0	2	0	0
Mvmt Flow	398	0	1	408	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	398	0	808	398
Stage 1	-	-	-	-	398	-
Stage 2	-	-	-	-	410	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1172	-	353	656
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	674	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1172	-	353	656
Mov Cap-2 Maneuver	-	-	-	-	353	-
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	673	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1172	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	8.1	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	377	1	1	383	6	9
Future Vol, veh/h	377	1	1	383	6	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	0	0	2	0	0
Mvmt Flow	397	1	1	403	6	9

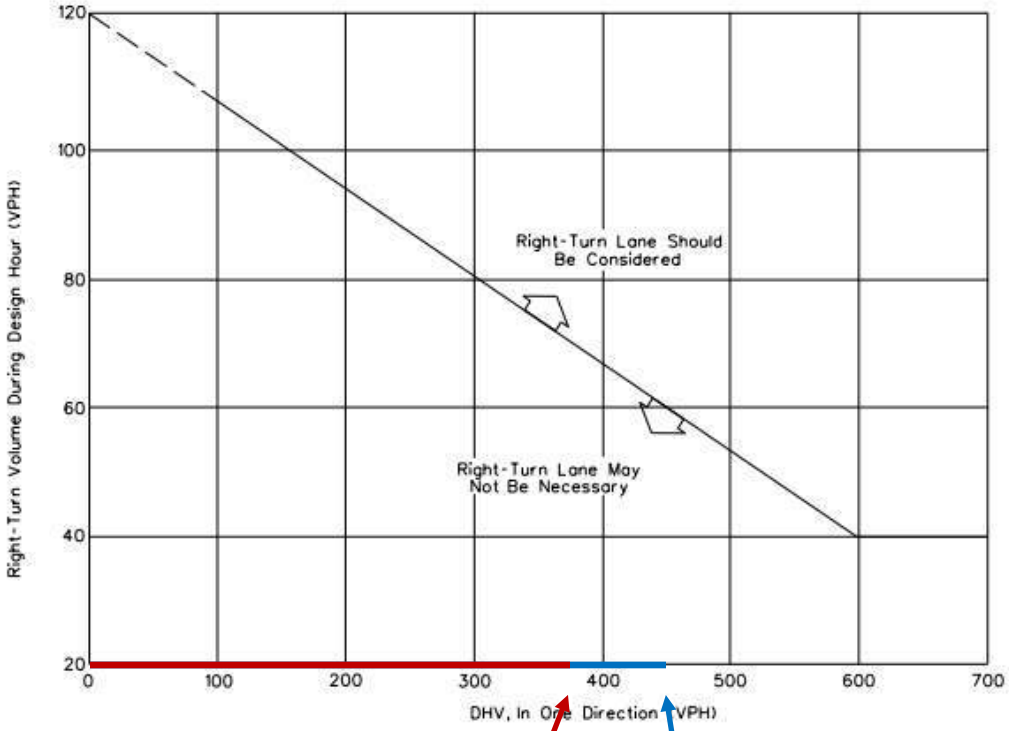
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	398	0	803	398
Stage 1	-	-	-	-	398	-
Stage 2	-	-	-	-	405	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1172	-	355	656
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	678	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1172	-	355	656
Mov Cap-2 Maneuver	-	-	-	-	355	-
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	677	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	490	-	-	1172	-
HCM Lane V/C Ratio	0.032	-	-	0.001	-
HCM Control Delay (s)	12.6	-	-	8.1	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Turn Lane Warrants

DIVISION STREET WITH PROPOSED SITE ACCESS DRIVE



Note: For highways with a design speed below 50 mph (80 km/hr), with a DHV in one direction of less than 300, and where right turns are greater than 40, an adjustment should be used. To read the vertical axis of the chart, subtract 20 from the actual number of right turns.

Example

Given:	Design Speed	=	35 mph (60 km/hr)
	DHV (in one direction)	=	250 vph
	Right Turns	=	100 vph

Problem: Determine if a right-turn lane is warranted.

Solution: To read the vertical axis, use 100 - 20 = 80 vph. The figure indicates that right-turn lane is not necessary, unless other factors (e.g., high crash rate) indicate a lane is needed.

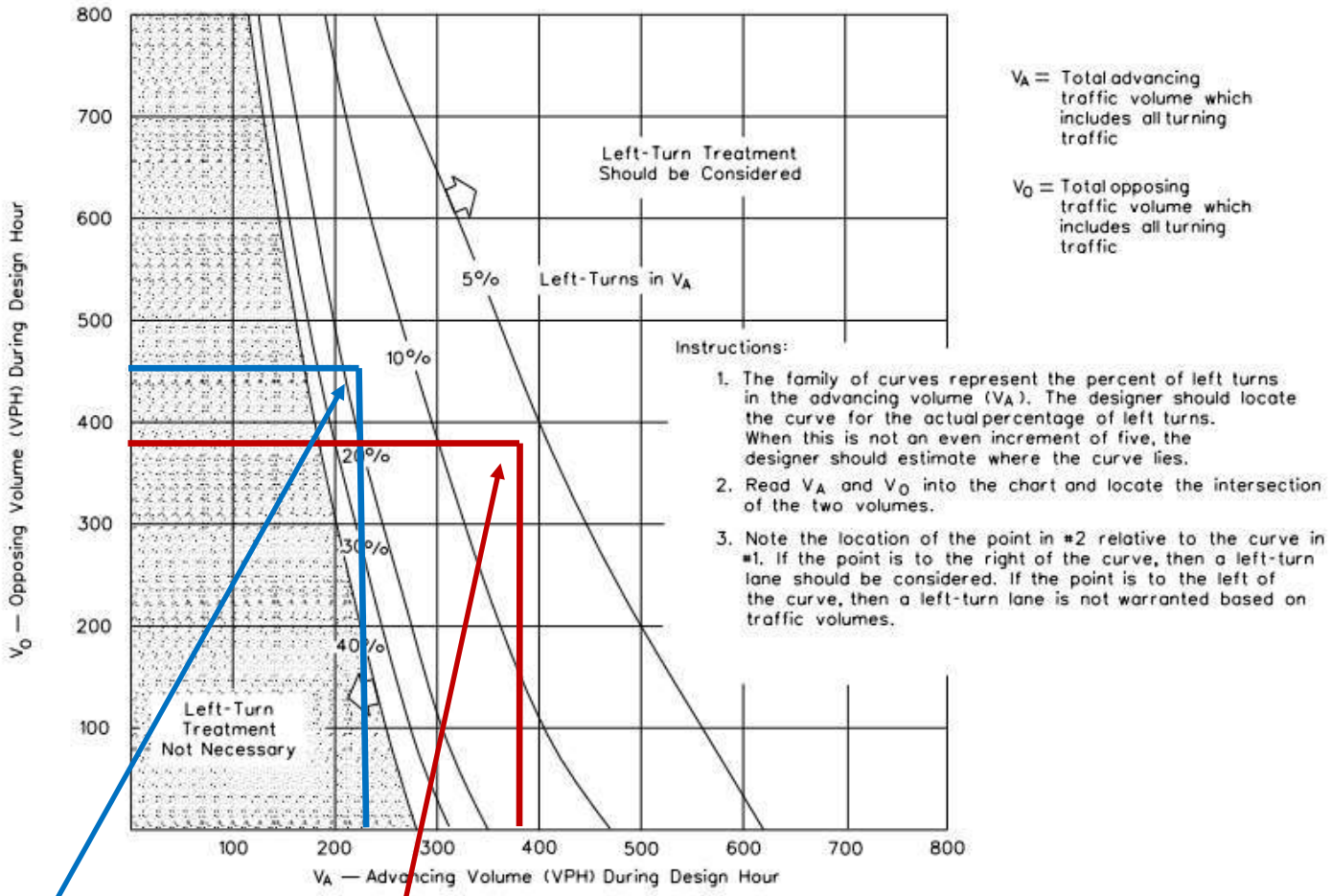
GUIDELINES FOR RIGHT-TURN LANES AT UNSIGNALIZED INTERSECTIONS ON TWO-LANE HIGHWAYS

Figure 36-3.A

AM Peak Hour (451, 6)

PM Peak Hour (378, 1)

DIVISION STREET WITH PROPOSED SITE ACCESS DRIVE



VOLUME GUIDELINES FOR LEFT-TURN LANES AT UNSIGNALIZED INTERSECTIONS ON TWO-LANE HIGHWAYS
(55 mph Design Speed)

Figure 36-3.D

AM Peak Hour (228, 451, 4%)

PM Peak Hour (384, 378, 0%)

EXHIBIT ‘Q’

SOIL BORING REPORT

EXHIBIT 'Q'

Construction & Geotechnical Material Testing, Inc.

60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

May 23, 2023

Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

CGMT Project No. 23G0270

Reference: ***Report of Subsurface Exploration and Geotechnical Engineering Services, Proposed New Training Grounds, Lockport Fire Protection District, Division Street, East of Borio Drive, Lockport, Illinois***

Dear Mr. Estes:

CGMT, Inc. has completed the subsurface exploration and geotechnical engineering analyses for the proposed New Training Grounds to be located at Division Street, East of Borio Drive, in Lockport, Illinois. This report describes the subsurface exploration procedures, laboratory testing, and geotechnical recommendations for project construction. A Boring Location Plan is included in the Appendix of this report along with the Boring Logs performed for the exploration.

We appreciate this opportunity to be of service to the Lockport Fire Protection District and FGM Architects, Inc. during the design phase of this project. If you have any questions with regard to the information and recommendations presented in this report, or if we can be of further assistance to you in any way during the planning or construction of this project, please do not hesitate to contact us.

Respectfully,

CONSTRUCTION AND GEOTECHNICAL MATERIAL TESTING, INC.

Pratik Patel, P.E.
Vice President

3pc: Encl.

REPORT OF

SUBSURFACE EXPLORATION AND
GEOTECHNICAL ENGINEERING SERVICES

NEW TRAINING GROUNDS
LOCKPORT FIRE PROTECTION DISTRICT
DIVISION STREET, EAST OF BORIO DRIVE
LOCKPORT, ILLINOIS

CGMT PROJECT NO. 23G0270

FOR

FGM ARCHITECTS, INC.
OAK BROOK, ILLINOIS

MAY 23, 2023

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Construction & Geotechnical Material Testing, Inc. (CGMT) has completed your subsurface exploration and geotechnical engineering project. The subsurface conditions encountered during our exploration and CGMT's conclusions and recommendations are summarized below. This summary should not be considered apart from the entire text of the report with all the qualifications and considerations mentioned herein. Details of our conclusions and recommendations are discussed in the following sections and in the Appendix of this report.

The project site is located at Division Street, East of Borio Drive in Lockport, Illinois. A total of sixteen (16) exploratory borings, B-1 through B-16, were performed for this project. The soil conditions encountered at the borings performed at the site are summarized as follows.

Approximately 8 to 22 inches of topsoil was encountered at the ground surface at the boring locations. Beneath the topsoil, the borings encountered dark brown and brown, stiff to hard silty clay and sandy clay fill soils that extended to depths of approximately 3½ to 6 feet below the existing ground surface below the existing ground surface. The clay fill soils were underlain by brown, dense gravel fill soils that extended to a depth of approximately 8½ feet below grade, where brown, stiff sandy clay fill that extended to a depth of approximately 13½ feet below grade. Beneath the fill, the borings encountered natural, stiff to hard silty clay soils that continued to the boring termination depths of approximately 20 feet below the existing ground surface. Boring B-7 encountered a layer of brown, medium dense silt between depths of approximately 8½ to 13½ feet below grade.

If available, records of compaction obtained during the mass earthwork phase of the project should be provided to CGMT for our review. However, if records are not available, the existing fill soils appear to have been placed with some measure of control of moisture content and density and it should be feasible to support floor slabs, pavements, and new fill.

If the Lockport Fire Protection District is willing to accept some risk of total and differential settlement and associated long term maintenance, the existing fill material similar to those encountered in the borings extending to depths of approximately 3½ to 13½ feet below the surrounding grade may remain in place below floor slabs and pavements but the subgrade must pass a proofroll under the observation of a CGMT geotechnical engineer or soils technician. However, if the Lockport Fire Protection District is unwilling to accept the risk, then the existing fill soils should be completely removed and replaced with new engineered fill.

Based on the anticipated structural loading and subsurface conditions, conventional shallow foundation systems consisting of spread and/or continuous footings, extended through existing fill soils (encountered in the borings to depths of approximately 3½ to 13½ feet below the existing ground surface) bearing on the natural, stiff to hard silty clay and sandy clay is considered feasible and appropriate to support the proposed training center improvements. For footings, extended through existing fill soils, bearing at depths of at least 3½ feet below grade on natural, stiff to hard silty clay and sandy clay or new, properly compacted engineered fill, we recommend a maximum net allowable soil bearing pressure of 3,000 psf be used to proportion the footings.

We recommend that the excavation of building foundations be monitored full-time by a CGMT geotechnical engineer or his representative to verify that the exposed subgrade materials and the soil bearing pressure will be suitable for the proposed structure.

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PROJECT OVERVIEW

Introduction

This report presents the results of our subsurface exploration and engineering services for the proposed new training grounds for the Lockport Fire Protection District in Lockport, Illinois. A General Location Plan included in the Appendix of this report, shows the approximate location of this project.

Project Description

ITEM	DESCRIPTION
Site Layout	See Boring Location Diagram in the Appendix
Proposed Construction	The new fire station training facility will include a single story, CMU framed fire station building covering 18,860 square feet, training/maintenance facility, burn tower, and several other training accessories.
Structural Loads	Max. column loads: 200 kips (Anticipated); Max. wall loads: 4 kips per lineal foot (Anticipated)
Grading and Existing Site Considerations	We estimate less than 2 to 3 feet of grade changes will be necessary to establish final site grades.
Ancillary Improvements	Parking for several passenger vehicles, drive areas and a central retention area are also planned.

Scope of Work

The conclusions and recommendations contained in this report are based on the soil borings performed in the vicinity of the proposed building and pavement areas, and associated laboratory testing of selected soil samples. The scope of the subsurface exploration included the following.

Number of Borings	Depth (feet)
16	20

The results of the soil borings, along with a Boring Location Plan showing the approximate locations where the borings were performed, are included in the Appendix of this report. Once the samples were returned to our laboratory we laboratory tests on selected representative soil samples from the borings to evaluate pertinent engineering properties, and, we analyzed the field and laboratory data to develop appropriate engineering recommendations.

The purpose of this report is to provide information and geotechnical engineering recommendations with regard to:

- Subsurface Soil and Groundwater Conditions
- Seismic Considerations
- Site Preparation and Earthwork
- Foundation Design and Construction
- Floor Slab Design and Construction
- Pavement Design and Construction

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EXPLORATION RESULTS

Site Description

ITEM	DESCRIPTION
Project Location	The project site is located on the south side of Division Street, approximately 3,000 east of Borio Drive, in Lockport, Illinois.
Existing Site Improvements	At the time of our exploration, the project site was an agricultural field.
Existing Topography	The site is rolling with the lowest site grades located at the southwest corner of the project site. Site grades across the site ranged from approximately 624 feet down to 619 feet.

Soil Conditions

A total of sixteen (16) borings, B-1 through B-16 were performed for this project. The subsurface conditions encountered at the borings performed at the site can be summarized as follows.

Approximately 8 to 22 inches of topsoil was encountered at the ground surface at the boring locations. Beneath the topsoil, the borings encountered dark brown and brown, stiff to hard silty clay and sandy clay fill soils that extended to depths of approximately 3½ to 6 feet below the existing ground surface below the existing ground surface. The clay fill soils were underlain by brown, dense gravel fill soils that extended to a depth of approximately 8½ feet below grade, where brown, stiff sandy clay fill that extended to a depth of approximately 13½ feet below grade. Beneath the fill, the borings encountered natural, stiff to hard silty clay soils that continued to the boring termination depths of approximately 20 feet below the existing ground surface. Boring B-7 encountered a layer of brown, medium dense silt between depths of approximately 8½ to 13½ feet below grade.

SOILS	SOIL CHARACTERISTICS
Silty Clay & Sandy Clay (Existing Fill)	Unconfined Compressive Strengths: 1.0 to 4.5+ tsf Dry Density Determinations: 89.6 to 105.3 pcf Moisture Contents: 13.3 to 26.4 percent
Gravel (Existing Fill)	Dense; 36 blows per foot
Silty Clay & Sandy Clay (Existing Fill)	Unconfined Compressive Strengths: 1 to 4.5+ tsf Moisture Contents: 10.5 to 22.1 percent
Silt (Natural)	Medium dense; 10 blows per foot

The specific soil types observed at the borings are noted on the boring logs, enclosed in the Appendix.

Groundwater Observations

Observations for groundwater were made during sampling and upon completion of the drilling operations at the boring locations. In auger drilling operations, water is not introduced into the boreholes, and the groundwater position can often be obtained by observing water flowing into or out of the boreholes. Furthermore, visual observation of the soil samples retrieved during the auger drilling exploration can often be used in evaluating the groundwater conditions. Groundwater levels were observed during drilling and immediately the completion of drilling. Groundwater measurements are summarized in the table below.

BORINGS	GROUNDWATER LEVELS (FEET)	
	DURING DRILLING	IMMEDIATELY AFTER COMPLETION
B-1 through B-4	6 to 13.5	3.5 to 6
B-5 through B-16	None	None

Glacial till soils in the Midwest frequently oxidize from gray to brown above the level at which the soil remains saturated. The seasonal high water table is often interpreted to be near this zone of color change. Based on the results of this exploration, the seasonal high water table may be located at depths of approximately 6 to 13½ feet below current grade.

More definitive evidence of prevailing groundwater levels could be obtained through the use of groundwater monitoring wells, which CGMT could install and monitor if requested.

It should be noted that the groundwater level can vary based on precipitation, evaporation, surface run-off and other factors not immediately apparent at the time of this exploration. Surface water runoff will be a factor during general construction, and steps should be taken during construction to control surface water runoff and to remove any water that may accumulate in the proposed excavations as well as floor slab and pavement areas. Precipitation generally varies seasonally. To assist in anticipating groundwater fluctuations changes throughout the year, average monthly precipitation is provided in the table below. Average precipitation levels were obtained from wunderground.com.

Seasonal Precipitation													
Month	January	February	March	April	May	June	July	August	September	October	November	December	Total
Normal Precipitation (inches)	1.73	1.79	2.50	3.38	3.68	3.45	3.70	4.90	3.21	3.15	3.15	2.25	36.89

Seismic Zone

Based on the 2015 International Building Code, Table 1615.1.1 Site Class Definitions, the site soils can be characterized as Site Class D. Site Class D is described as Stiff Soil Profile for the top 100 ft of the site soil profile. Since we drilled to a maximum depth of 20 feet for this exploration, based on our experience with the soils in this area, the available geologic maps and following the direction of IBC 2015 when there are no borings to 100 feet deep, it is our opinion the site would be defined as Site Class D.

CGMT also calculated the spectral response factors based on the site class as well as the latitude and longitude of the project location using United States Geological Survey (USGS) seismic calculator software. The calculated values are presented in the table below.

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Seismic Design Criteria					
Lockport FPD Training Grounds					
Lockport, Illinois					
Latitude	41.580468	Longitude	-88.105588	Site Class	D
S_s	0.160g	S_{MS}	0.255g	S_{DS}	0.170g
S_1	0.068g	S_{M1}	0.164g	S_{D1}	0.110g

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ANALYSIS AND RECOMMENDATIONS

Overview

The following recommendations have been developed on the basis of the previously described project characteristics and subsurface conditions encountered. If there are any changes to the project characteristics or if different subsurface conditions are encountered during construction, CGMT should be consulted so that the recommendations of this report can be reviewed.

A summary of the results of the exploration are provided in the table below.

Preliminary Bearing Table

Boring	Boring Depth (feet)	Depth to Groundwater (feet)		Approximate Depth to Soils Suitable for a Net Allowable Bearing Pressure of 3,000 psf*
		During Drilling	After Completion	
B-1	20	13.5	12.5	3.5
B-2	20	6	10	6
B-3	20	13	12	6
B-4	20	13.5	15	3.5
B-5	20	None	None	3.5
B-6	20	None	None	3.5
B-7	20	None	None	3.5
B-8	20	None	None	3.5
B-9	20	None	None	3.5
B-10	20	None	None	3.5
B-11	20	None	None	3.5
B-12	20	None	None	3.5
B-13	20	None	None	3.5
B-14	20	None	None	3.5
B-15	20	None	None	13.5
B-16	20	None	None	3.5

* To be used a minimum of 3½ feet below adjacent outside grade.

Subgrade Preparation and Engineered Fill

Subgrade Preparation

Initial subgrade preparation should consist of complete stripping/removal of topsoil, asphalt pavement course, existing base course materials, vegetation, and any other soft or unsuitable/deleterious materials from the location of the new FPD training grounds, as well as, pavement areas. Unsuitable materials, such as topsoil/buried topsoil or organic soils, should either be stockpiled for later use in landscaping fills or placed in approved disposal areas either on-site or off-site.

We recommend that the project geotechnical engineer or his representative should be on site to monitor stripping and site preparation operations and observe that unsuitable soils have been satisfactorily removed and to observe proofrolling.

Due to the widely spaced distribution of borings combined with the potential for soil disturbance, the accuracy of topsoil thicknesses based upon measurements at the boring locations is limited. In addition, the density of the surface soils also may impact the measured topsoil thickness. As such, the thicknesses reported on the boring logs should be considered approximate. To provide improved estimates for stripping volumes, CGMT recommends a supplemental topsoil survey be performed.

The presence of field tiles should be considered when developing plans and specifications. Where field tiles are encountered, we recommend that they be rerouted to a storm sewer system or properly abandoned upgradient from the site. Field tiles in new building and pavement areas should be removed or grouted.

After removal of unsuitable/deleterious materials and stripping to the desired grade, and prior to fill placement, we recommend the stripped/exposed subgrades be observed by an experienced geotechnical engineer or his authorized representative at the time of construction in order to aid in identifying localized soft/loose or unsuitable materials which should be removed. Proofrolling using a loaded dump truck having an axle weight of at least 10 tons, may be used at this time to aid in identifying localized soft or unsuitable material which should be removed. Any soft or unsuitable materials encountered during proofrolling should be compacted in place or removed and replaced with an approved backfill compacted to the criteria given below. Prior to proofrolling, pavement and floor slab areas that will receive less than 1 foot of new fill, should be scarified to a depth of about 9 inches, moisture conditioned, and recompacted as recommended below.

If available, records of compaction obtained during the mass earthwork phase of the project should be provided to CGMT for our review. However, if records are not available, the existing fill soils appear to have been placed with some measure of control of moisture content and density and it should be feasible to support floor slabs, pavements, and new fill.

If the Lockport Fire Protection District is willing to accept some risk of total and differential settlement and associated long term maintenance, the existing fill material similar to those encountered in the borings extending to depths of approximately 3½ to 13½ feet below the surrounding grade may remain in place below floor slabs and pavements but the subgrade must pass a proofroll under the observation of a CGMT geotechnical engineer or soils technician. However, if the Lockport Fire Protection District is unwilling to accept the risk, then the existing fill soils should be completely removed and replaced with new engineered fill.

During final preparation of subgrades, a smooth drum roller is often used to provide a flat surface and provide for better drainage to reduce the negative impact of rain events. Due to the relative sensitivity of the silty clay and sandy clay soils, we recommend that these materials be static rolled (no vibrations) to reduce the potential for subgrade soil disturbance. We also recommend crowning the subgrade to provide positive drainage off the building and pavement area subgrades.

Engineered Fill

Where new fill material is required for backfill or to otherwise reach the design subgrade elevation beneath slabs-on-grade and pavements, we recommend that engineered fill be used. Any soil placed as engineered fill should be an approved material, free of organic matter or debris, be a non-frost susceptible soil, and have a liquid limit and plasticity index less than 40 and 15, respectively. The project geotechnical engineer should be consulted to determine the suitability of off-site/on-site materials for use as engineered fill, prior to use or placement. We do not recommend the use of 3-inch stone as engineered fill to backfill undercuts, particularly under floor slabs and foundations. Fill materials containing large voids are more susceptible to future movement that may become unstable resulting in excessive and variable settlement.

Fill should be placed in lifts not exceeding 8 inches in loose thickness, moisture conditioned to within 2 percent of the optimum moisture content, and compacted to at least 95 percent of the maximum dry density obtained in accordance with ASTM Specification D 1557, Modified Proctor Method. Fill placed below footing base elevations should be compacted to at least 95 percent of the material's modified Proctor maximum dry density (ASTM D 1557). Engineered fill placed to support foundations should extend 1 foot beyond the outside edges of the footings and from that point outward laterally 1 foot for every 2 feet of fill thickness below the footings. Laboratory proctor tests should be performed on fill materials to determine the maximum dry density and optimum moisture content. A shrinkage factor of 15 percent can be assumed for estimating earthwork quantities for bidding purposes.

We recommend suitable silty clays used to raise the grade or backfill undercuts should be compacted with a sheepsfoot roller. Granular engineered fill should be compacted with a smooth drum roller or adequate heavy vibratory plate. Moisture control during earthwork operations, including the use of disking or appropriate drying equipment and techniques, should be expected.

In-place density tests should be performed with a minimum of 1 test per 2,000 square feet of fill area for each lift of fill placed. We recommend that the placement of engineered fill be monitored full-time by CGMT representative and in-place density tests should be performed to verify the adequacy of the compaction for each lift of fill placed.

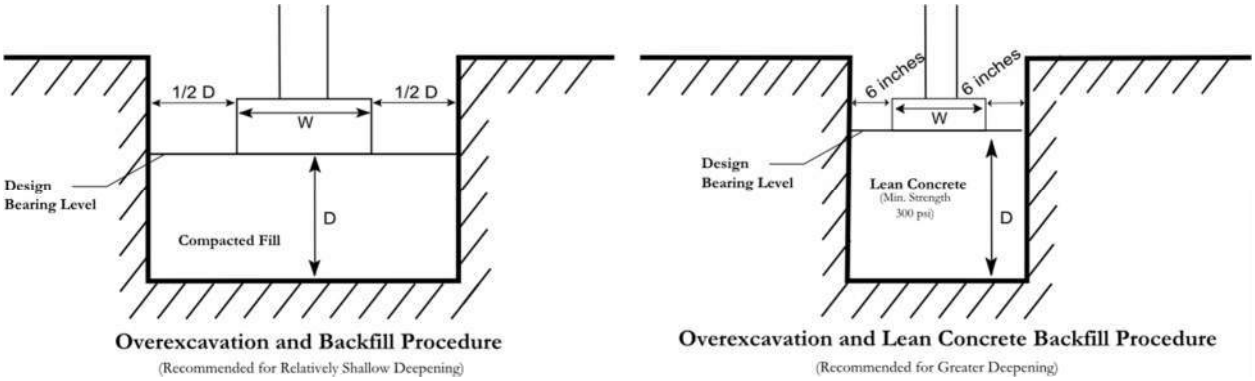
Footing Foundations

Based on the anticipated structural loading and subsurface conditions, conventional shallow foundation systems consisting of spread and/or continuous footings, extended through existing fill soils (encountered in the borings to depths of approximately 3½ to 13½ feet below the existing ground surface) bearing on the natural, stiff to hard silty clay and sandy clay is considered feasible and appropriate to support the proposed training center improvements. For footings, extended through existing fill soils, bearing at depths of at least 3½ feet below grade on natural, stiff to hard silty clay and sandy clay or new, properly compacted engineered fill, we recommend a maximum net allowable soil bearing pressure of 3,000 psf be used to proportion the footings.

To reduce the potential for foundation bearing failure and excessive settlement due to local shear or "punching" action, we recommend that continuous footings have a minimum width of 18 inches and that isolated column footings have a minimum lateral dimension of 30 inches. In addition, footings should be placed at a depth to provide adequate frost cover protection. We recommend the footings be placed at a minimum depth of 3½ feet below finished grade.

We recommend that the excavation of building foundations be monitored on a full-time basis by a CGMT geotechnical engineer or his representative to verify that the exposed subgrade materials and the soil bearing capacity will be suitable for the proposed building and is consistent with the boring log information obtained during the geotechnical exploration.

The contractor should be prepared to undercut/overexcavate and extend the footings to soils of adequate bearing capacity. As an alternative, after overexcavation and removal of weaker/low bearing capacity soils or unsuitable soils, the foundation subgrade can be raised using compacted engineered fill or lean concrete to a minimum frost depth of 3½ feet below final exterior grade. Engineered fill should be compacted to a minimum of 95 percent of the maximum dry density as discussed in the **Subgrade Preparation and Engineered Fill** section. The zone of the engineered fill placed below the foundations should extend 1 foot beyond the outside edges of the footings and from that point, outward laterally 1 foot inches for every 2 feet of fill thickness below the footing. The overexcavation and backfill procedure is depicted in the figure below. If lean concrete is used to replace weaker/low bearing soils or unsuitable soils, no lateral overexcavation will be necessary, but the excavation should be 1 foot wider than the footing (6 inches on each side).



Settlement of the conventional shallow foundations, designed in accordance with our recommendations presented in this report, is expected to be within tolerable limits for the proposed building. For footings, extended through existing fill soils, placed on natural, stiff to hard silty clay, sandy clay, or properly compacted engineered fill and designed as discussed above, maximum total settlement is expected to be in the range of 1 inch or less. These settlement values are based on our engineering experience with the soil and the anticipated structural loading, and are to guide the structural engineer with his design.

Floor Slab Design

For the design and construction of the new building slabs-on-grade for the proposed building, we recommend that all existing vegetation, topsoil or organic soils, and any unsuitable/deleterious materials should be removed and replaced with compacted engineered fill as discussed in the **Site Preparation and Engineered Fill** section. If the removal is performed in accordance with these recommendations, we anticipate floor slabs for the structures will be supported on stable and approved subgrades consisting of silty clay, or on new engineered fill.

It is assumed that the existing floor slab subgrade has performed satisfactorily during the proofroll discussed in the Subgrade Preparation subsection, even though existing fill soils were encountered to depths of 3½ to 13½ feet. Provided that the floor slab subgrade passes a proofroll, the risk of excessive settlement is low. However, if the floor slab subgrade does not pass the proofroll, some undercutting and placement of controlled backfill will be required.

We recommend that floor slabs be underlain by a minimum of 6 inches of granular material having a maximum aggregate size of 1½ inches and no more than 2 percent of fines. Prior to placing the granular material, the floor subgrade soil should be properly compacted, proofrolled, and free of standing water, mud, and frozen soil. For design of Portland cement concrete slabs-on-grade, a modulus of subgrade reaction (k) of 100 pounds per cubic inch (pci) can be used for slabs constructed on subgrade prepared as discussed herein.

A properly designed and constructed capillary break layer can often mitigate the need for a moisture retarder and can assist in more uniform curing of concrete. If a vapor retarder is considered to provide additional moisture protection, special attention should be given to the surface curing of the slabs to reduce uneven drying of the slabs and associated cracking and/or slab curling. The use of a blotter or cushion layer above the vapor retarder can also be considered for project specific reasons. Please refer to ACI 302.1R96 *Guide for Concrete Floor and Slab Construction* and ASTM E 1643 *Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs* for additional guidance on this issue.

We recommend that the floor slab be isolated from the foundation footings so differential settlement of the structure will not induce shear stresses on the floor slab. Also, in order to reduce the crack width of any shrinkage cracks that may develop near the surface of the slab, we recommend mesh reinforcement as a minimum be included in the design of the floor slab. Temperature and shrinkage reinforcements in slabs on ground should be positioned in the upper third of the slab thickness. The Wire Reinforcement Institute recommends the mesh reinforcement be placed 2 inches below the slab surface or upper one-third of slab thickness, whichever is closer to the surface. Adequate construction joints, contraction joints and isolation joints should also be provided in the slab to reduce the impacts of cracking and shrinkage. Please refer to ACI 302.1R96 *Guide for Concrete Floor and Slab Construction* for additional information regarding concrete slab joint design.

Pavements

For the design and construction of exterior pavements, we recommend that topsoil and otherwise unsuitable soils be removed before construction of new pavements and that new pavements will be supported by stable and approved subgrades consisting of silty clay or on new engineered fill.

It is assumed that the existing pavement subgrade has performed satisfactorily during the proofroll discussed in the **Subgrade Preparation** subsection, even though existing fill soils were encountered to depths of 3½ to 13½ feet. Provided that the pavement subgrade passes a proofroll, the risk of excessive settlement is low. However, if the pavement subgrade does not pass the proofroll, some undercutting and placement of controlled backfill will be required.

We anticipate the new pavement will be constructed of asphaltic concrete or Portland cement concrete. We expect that the proposed parking lot will generally be utilized for light duty traffic, and the driveways and loading and unloading areas be utilized for light to medium duty traffic. Heavy traffic loads would be anticipated for areas near any dumpsters where garbage trucks would often cross. We recommend the pavement subjected to light traffic be underlain by a minimum of 8 inches of base course granular material, similar to Illinois Department of Transportation gradation CA-6.

Assuming the pavement subgrade will consist predominantly of the cohesive soils and new fill prepared in accordance with the recommendations given in this report, an estimated IBR value of 3 could be used in proportioning a flexible pavement section. Similarly, an estimated modulus of subgrade reaction value equal to 100 pounds per cubic inch could be used for design of rigid concrete pavement sections. A Subgrade Stability Rating (SSR) rating of (Poor) should be used for pavement design. Concrete pavements should be air-entrained Portland cement concrete with a minimum compressive strength of 4,000 psi and a minimum flexural strength of 650 psi. Concrete strength requirements are outlined in article 1020.04 of the Standard Specifications for Road and Bridge Construction, effective April 1, 2016.

Some typical pavement sections used in this region of the country are given below which could be considered for preliminary estimating purposes. Other sections can also be considered. These sections assume a low volume of light vehicle loads (automobiles, vans, pickups, etc.). They should also be considered minimum thicknesses, and, as such, periodic maintenance should be anticipated. Final design sections should consider details such as final grades, traffic loadings, traffic volumes, the desired design life and any local, county or city codes. If you wish, we would be pleased to perform a detailed pavement section design using AASHTO or Asphalt Institute procedures when this information is available. It should also be noted that these sections do not consider if the binder course will be subject to construction vehicle traffic for an extended period of time. Some distress to the binder course and aggregate base could occur, if this is the case.

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TYPICAL PAVEMENT SECTIONS*

	Light Duty (Parking Lots)	Heavy Duty ** (Drives)
Portland Cement Concrete	5 inches	6 inches
Full Depth Asphalt	5.5 inches	7 inches
Combined Section:		
Asphalt	3 inches	4 inches
Crushed Stone Base Course	8 inches	10 inches

* All materials should meet the current Illinois Department of Transportation Standard Specifications for Road and Bridge Construction requirements.

** In areas of anticipated heavy traffic, delivery trucks, or concentrated loads, a minimum concrete thickness of 7 inches is recommended but should be evaluated further when loading conditions are known.

Minimum design requirements for hot-mix asphalt (HMA) shall follow Article 1030.05 of the Standard Specifications for Road and Bridge Construction, effective April 1, 2016. During asphalt pavement construction, the wearing and leveling course should be compacted to a minimum of 93 percent of the theoretical density value. Prior to placing the granular material, the pavement subgrade soil should be properly compacted, proofrolled, and free of standing water, mud, and frozen soil.

An important consideration with the design and construction of pavements is surface and subsurface drainage. Where standing water develops, either on the pavement surface or within the base course layer, softening of the subgrade and other problems related to the deterioration of the pavement can be expected. Furthermore, good drainage should reduce the possibility of the subgrade materials becoming saturated over a long period of time. We would be pleased to be of further assistance to you in the design of the project pavements by providing additional recommendations during construction of the project.

Periodic maintenance of pavements should be anticipated. The subgrade parameters provided in this report consider that significant changes in the subgrade moisture content do not occur. To reduce the potential for changes in subgrade moisture, all paved areas should be sloped to provide rapid drainage of surface water and to drain water away from the pavement edges. Water that is allowed to pond on or adjacent to the pavement can saturate and soften the subgrade soils and subsequently accelerate pavement deterioration.

Granular base or subbase materials directly below pavement sections can also collect infiltrated surface water and soften the subgrade as well as increase the effects of frost action, both of which can be detrimental to pavements. For these reasons, where granular materials are used over a cohesive soil subgrade or where the groundwater level is within 3.5 feet of finished pavement subgrade, we recommend that consideration be given to using pavement underdrains hydraulically connected to the granular base or subbase to improve the pavement performance and extend its service life. Underdrains should be installed at 300 to 500 feet intervals and at low points in the roadway profile. Pipe underdrains shall be installed according to Check Sheet #19 of the Supplemental Specifications and Recurring Special Provisions, effective January 1, 2015.

Stormwater Detention Ponds

The soils encountered in most borings generally consisted of silty clay. A clay liner will be needed if significant sandy textured soils are encountered during pond excavation. Recommendations for construction of low permeability clay liners are included below. For the most part, reworking of the exposed clay soils on the sides and bottom of the pond should develop a satisfactory liner.

The silty clay soils encountered at the site generally appear suitable for liner material provided they include relatively small amounts of sand and silt. We would recommend that further evaluation of the on-site soils (or any off-site borrow materials) for use as liner material be performed at the time of construction.

We recommend that compacted low permeability clay liners have a minimum thickness of 24 inches. For construction of the clay liners, it may be necessary to bench side walls of the ponds horizontally, with 1 to 3-foot vertical steps. This would allow horizontal placement and compaction of the liner section. However, adequate compaction for the purpose of detention is probably possible for cohesive fill placed in lifts parallel to the cut slope. Permanent slopes should be constructed at 3(H) on 1(V) or flatter, and erosion control measures should also be used.

Suitable low permeability clay liner material should be placed horizontally in loose lifts of 9 inches or less and compacted to a minimum of 93 percent of the material's maximum modified Proctor dry density (ASTM D-1557). Formation of the liner in three or more lifts would be conducive to constructing a low permeability liner. Clay liner materials should be placed and compacted at moisture contents within about 0 to +4 percent of the material's optimum moisture content. The moisture contents of the liner materials should be maintained to avoid desiccation and shrinkage cracking of the clay liner.

In general, infiltration rates in soil decrease during rain events as the pore spaces between soil grains fill with stored water. The infiltration rates provided here are estimations based on relevant literature and our empirical observations with local soils. On site testing, with the use of a double-ring infiltrometer for example, would provide better site-specific infiltration estimates. For clays, initial estimated infiltration rates may be on the order of ½ inch per hour but would drop to the saturated steady-state infiltration rate of approximately 0.1 inches per hour within 30 minutes to 1 hour, or less in the case of well compacted or desiccated subgrades.

General Construction Considerations

We recommend that the subgrade preparation, installation of the foundations, and construction of slabs-on-grade be monitored by a CGMT geotechnical engineer or his representative. Methods of verification and identification such as proofrolling, DCP testing and hand auger probe holes will be necessary to further evaluate the subgrade soils and identify unsuitable soils. The contractor should be prepared to overexcavate footing excavations at isolated locations. We recommend that excavations of new foundations be monitored on a full-time basis by a CGMT geotechnical engineer or his representative to verify that the soil bearing pressure and the exposed subgrade materials will be suitable for the proposed training grounds and are consistent with the boring log information obtained during this geotechnical exploration. We would be pleased to provide these services.

Since localized areas of soft/unsuitable soils may be present below the bearing elevation of foundations, we recommend that hand-auger borings be performed to at least half the footing width, or a minimum of 3 feet below each isolated column footing and to at least 2 feet below continuous footings. Hand auger borings should be performed at each column footing and at approximately 20-foot intervals along continuous footings to verify the suitability of the soils to support the recommended maximum net allowable bearing pressure. If soft/unsuitable soils are encountered, the footings should be extended until suitable bearing soils are encountered or the unsuitable soils should be removed beneath the base of the footing and replaced with compacted engineered fill or lean concrete. The foundation contractor should expect undercutting/overexcavation or removal of unsuitable material without delay and replacement with engineered fill at the time of foundation excavation/construction.

All loose or soft soils in the subgrade or foundation excavation areas should be densified or removed before placing any concrete or fill. Accumulated water or runoff water at the base of the foundation excavations should also be promptly removed. Groundwater seepage is anticipated not to be a major factor during foundation excavations or undercutting. If encountered, we believe sump and pump system should be adequate to remove accumulated seepage from the bottom of excavations prior to placement of concrete or crushed stone. Concrete should not be placed in water. To reduce the potential for frost heave related problems; forms should be used prior to the placement of foundation concrete.

Exposure to the environment may weaken the soils at the foundations bearing level if the excavations remain open for too long a time. Therefore, foundation concrete should be placed the same day that excavations are opened, when possible. If the bearing soils are softened by surface water intrusion or exposure, the softened soils must be removed from the immediately prior to placement of concrete.

We recommend adequate surface and subsurface drainage be considered in the design and construction of floor slabs and pavements. Where standing water develops, either on slab or pavement surfaces or within the base course layer, softening of the subgrade and other problems related to the deterioration of the floor slabs and pavements can be expected. Adequate drainage should reduce the possibility of the subgrade materials becoming saturated over a long period of time. To reduce water infiltration to the pavement section and within the base course layer resulting in softening of the subgrade and deterioration of the slabs and pavements, we recommend the timely repair or sealing of joints and cracks in slabs and pavement.

All unsuitable materials should be removed and replaced with environmentally clean, inorganic fill and free of debris or harmful matter. Unsuitable materials removed from the project site should be disposed of in accordance with all applicable federal, state, and local regulations.

The contractor should avoid stockpiling excavated materials immediately adjacent to the excavation walls. We recommend that stockpile materials be kept back from the excavation a minimum distance equal to the excavation depth to avoid surcharging the excavation walls. If this is impractical due to space constraints, the excavation walls should be retained with bracing designed for the anticipated surcharge loading.

Excavations should comply with the requirements of OSHA 29CFR, Part 1926, Subpart P, "Excavations" and its appendices, as well as other applicable codes. This document states that the contractor is solely responsible for the design and construction of stable, temporary excavations. The excavations should not only be in accordance with current OSHA excavation and trench safety standards but also with applicable local, state, and federal regulations. The contractor should shore, slope or bench the excavation sides when appropriate. In no case should excavations extend below the level of adjacent structures, utilities or pavements, unless underpinning or other adequate support is provided. Site safety is the sole responsibility of the contractor, who shall also be responsible for the means, methods and sequencing of construction operations.

13
EXPLORATION PROCEDURES

Subsurface Exploration Procedures

The soil borings were located in the field by a CGMT Field Engineer based on the proposed boring site plan provided to us. As required by the State of Illinois, the driller notified Illinois One-Call System, JULIE, to verify underground utilities in the vicinity of the project site prior to drilling operations.

The soil borings were performed with a truck-mounted rotary-type auger drill rig, which utilized continuous hollow stem augers to advance the boreholes. Representative soil samples were obtained at 2½ foot intervals for the first 10 feet and 5 foot intervals thereafter by means of conventional split-barrel sampling procedures. In this procedure, a 2-inch O.D., split-barrel sampler is driven into the soil a distance of 18 inches by a 140-pound hammer falling 30 inches. The number of blows required to drive the sampler through a 12-inch interval, after initial setting of 6 inches, is termed the Standard Penetration Test (SPT) or N-value and is indicated for each sample on the boring logs. The SPT value can be used as a qualitative indication of the in-place relative density of cohesionless soils. In a less reliable way, it also indicates the consistency of cohesive soils. This indication is qualitative, since many factors can significantly affect the standard penetration resistance value and prevent a direct correlation between drill crews, drill rigs, drilling procedures, and hammer-rod-sampler assemblies. The drill rig utilized an automatic trip hammer to drive the sampler. Consideration of the effect of the automatic hammer's efficiency was included in the interpretation of subsurface information for the analyses prepared for this report.

The drill crew maintained a field log of the soils encountered in the borings. After recovery, each geotechnical soil sample was removed from the sampler and visually classified. Representative portions of each soil sample were then sealed in jars and brought to our laboratory in Elk Grove Village, Illinois for further visual examination and laboratory testing. After completion of the drilling operations, the boreholes were backfilled with auger cuttings to the existing ground surface.

Laboratory Testing Program

Representative soil samples were selected and tested in our laboratory to check field classifications and to determine pertinent engineering properties. The laboratory testing program included visual classifications and unconfined compressive strength and moisture content determinations. Dry density determinations were performed on selected samples of existing fill soils.

An experienced geotechnical engineer classified each soil sample on the basis of texture and plasticity in accordance with the Unified Soil Classification System. The group symbols for each soil type are indicated in parentheses following the soil descriptions on the boring logs. A brief explanation of the Unified System is included with this report. The geotechnical engineer grouped the various soil types into the major zones noted on the boring logs. The stratification lines designating the interfaces between earth materials on the boring logs and profiles are approximate; in situ, the transitions may be gradual.

Unconfined compressive strength tests were performed on cohesive soil samples with the use of a calibrated hand penetrometer. In the hand penetrometer test, the unconfined compressive strength of a soil sample is estimated, to a maximum of 4½ tons per square foot (tsf) by measuring the resistance of a soil sample to penetration of a small, calibrated spring-loaded cylinder.

The soil samples will be retained in our laboratory for a period of 60 days, after which, they will be discarded unless other instructions are received as to their disposal.

14
CLOSING

We recommend that the construction activities be monitored by CGMT to provide the necessary overview and to check the suitability of the subgrade soils for supporting the foundations. Once final loads become available, CGMT must be contacted to review the recommendations presented herein.

This report has been prepared in order to aid in the evaluation of this property and to assist the architect and/or engineer in the design of this project. The scope is limited to the specific project and locations described herein and our description of the project represents our understanding of the significant aspects relative to soil and foundation characteristics. In the event that any change in the nature or location of the proposed construction outlined in this report are planned, we should be informed so that the changes can be reviewed and the conclusions of this report modified or approved in writing by the geotechnical engineer. It is recommended that all construction operations dealing with earthwork and foundations be reviewed by an experienced geotechnical engineer to provide information on which to base a decision as to whether the design requirements are fulfilled in the actual construction. If you wish, we would welcome the opportunity to provide field construction services for you during construction.

The analysis and recommendations submitted in this report are based upon the data obtained from the soil borings and tests performed at the locations as indicated on the Boring Location Plan and other information referenced in this report. This report does not reflect any variations, which may occur between the borings. In the performance of the subsurface exploration, specific information is obtained at specific locations at specific times. However, it is a well known fact that variations in soil conditions exist on most sites between boring locations and also such situations as groundwater levels vary from time to time. The nature and extent of variations may not become evident until the course of construction. If variations then appear evident, after performing on-site observations during the construction period and noting characteristics and variations, a reevaluation of the recommendations for this report will be necessary.

APPENDIX

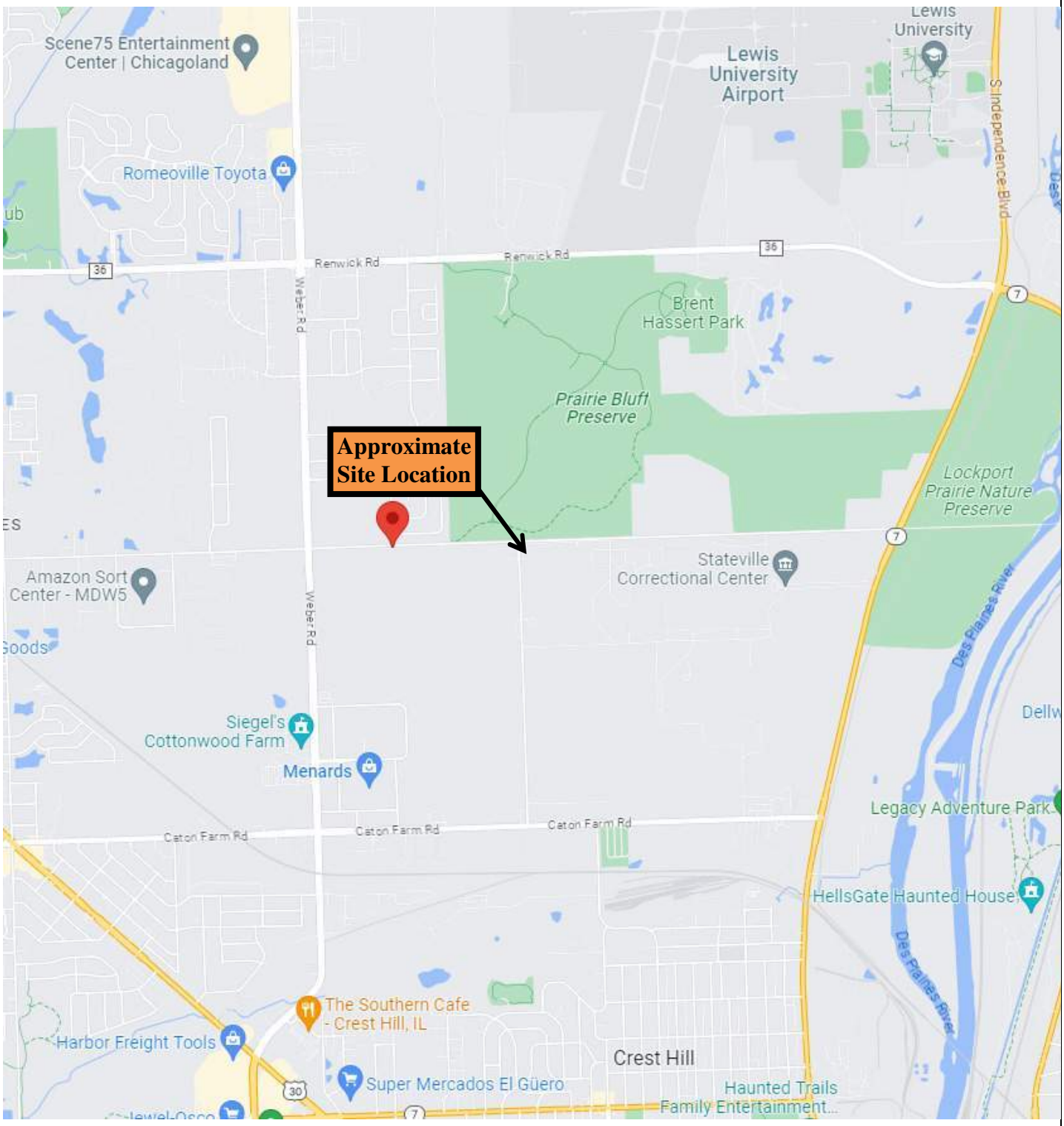
Vicinity Map

Boring Location Plan

Boring Logs

Unified Soil Classification System

Reference Notes for Boring Logs



	VICINITY MAP	N	**CGMT Project No. 23G0270** **New Training Grounds** **Division Street, East of Borio Drive** **Lockport, Will County, Illinois**

Drawing Not To Scale

N

LEGEND

- Approximate Soil Boring Location

Soil Boring Location Diagram

Lockport FPD Training Grounds

W. Division Street
Lockport, Illinois 60441

Project Manager	Project Number
P. Patel	23G0270
Date	Sheet Number
5/23/2023	Fig. 1

Drawing Not To Scale

N

LEGEND

- Approximate Soil Boring Location

Soil Boring Location Diagram

Lockport FPD Training Grounds

W. Division Street
Lockport, Illinois 60441

Project Manager	Project Number
P. Patel	23G0270
Date	Sheet Number
5/23/2023	Fig. 2

Drawing Not To Scale

LEGEND

- Approximate Soil Boring Location

Soil Boring Location Diagram

Lockport FPD Training Grounds

W. Division Street
Lockport, Illinois 60441

Project Manager	Project Number
P. Patel	23G0270
Date	Sheet Number
5/23/2023	Fig. 3

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-01**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 12" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0		Silty Clay, Trace Sand and Gravel, brown, very stiff (CL FILL)	SS-1 1.0' - 2.5' 8" Recovery	2 3 4	18.0	2.25	
	2.0							
	3.0							
	4.0		Silty Clay, Trace Sand and Gravel, brown and gray, stiff to hard (CL)	SS-2 3.5' - 5.0' 18" Recovery	4 6 6	17.1	4.5+	
	5.0							
	6.0			SS-3 6.0' - 7.5' 18" Recovery	4 6 8	16.5	4.5+	
	7.0							
	8.0							
	9.0			SS-4 8.5' - 10.0' 15" Recovery	3 5 7	18.8	1.0	
	10.0							
	11.0							
	12.0							
	13.0							
	14.0		Silty Clay, Trace Sand and Gravel, gray, very stiff (CL)	SS-5 13.5' - 15.0' 18" Recovery	3 6 8	18.1	2.0	
	15.0							
	16.0							
	17.0							
	18.0							
	19.0			SS-6 18.5' - 20.0' 18" Recovery	4 6 8	22.1	2.75	
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: 13½ feet
Immediately After Drilling: 12½ feet

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-02**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 12" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0		Silty Clay, Trace Sand and Gravel, dark brown, stiff (CL FILL)	SS-1 1.0' - 2.5' 12" Recovery	2 2 2	26.4	1.75	**Dry Density:** 1.0' - 2.5'= 89.6 lbs/ft^3
	2.0		Saturated					
	3.0							
			Sandy Clay, Trace Gravel, brown, stiff (CL FILL)	SS-2 3.5' - 5.0' 15" Recovery	- 2 2	16.5	1.75	
	4.0							
	5.0							
	6.0		Silty Clay, Trace Sand and Gravel, gray, very stiff (CL)	SS-3 6.0' - 7.5' 18" Recovery	3 2 2	19.9	2.0	
	7.0							
	8.0							
	9.0			SS-4 8.5' - 10.0' 18" Recovery	2 5 6	16.7	3.0	
	10.0							
	11.0							
	12.0							
	13.0							
	14.0			SS-5 13.5' - 15.0' 18" Recovery	3 6 8	19.3	2.5	
	15.0							
	16.0							
	17.0							
	18.0							
	19.0			SS-6 18.5' - 20.0' 18" Recovery	3 6 8	20.0	2.25	
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: 6 feet
Immediately After Drilling: 10 feet

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.

60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-03**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 18" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0			SS-1	2	-	-	
			Silty Clay, Trace Sand and Gravel, brown, very stiff (CL FILL)	1.0' - 2.5'	2	23.2	2.25	
	2.0			10" Recovery	3			
	3.0							
			Sandy Clay, Trace Gravel, brown, stiff (CL FILL)	SS-2	2			
	4.0			3.5' - 5.0'	5	17.7	1.0	
				8" Recovery	7			
	5.0							
	6.0		Silty Clay, Trace Sand and Gravel, brown and gray, very stiff to hard (CL)	SS-3	3			
				6.0' - 7.5'	6	21.4	3.0	
	7.0			18" Recovery	6			
	8.0							
				SS-4	2			
	9.0			8.5' - 10.0'	4	16.8	4.5+	
				17" Recovery	8			
	10.0							
	11.0							
	12.0							
	13.0							
			Silty Clay, Trace Sand and Gravel, gray, very stiff (CL)	SS-5	3			
	14.0			13.5' - 15.0'	6	15.2	3.25	
				18" Recovery	8			
	15.0							
	16.0							
	17.0							
	18.0							
				SS-6	3			
	19.0			18.5' - 20.0'	5	20.0	2.5	
				18" Recovery	6			
	20.0		END of BORING at 20 Feet					

Drilling Contractor:	CGMT, Inc.	**Water Level (Ft.)**	
Drilling Method:	3¼" O.D. H.S.A. Split Spoon Sampling	**During Drilling:**	13 feet
Drilling Equipment:	CME-45C Truck Mounted Drill Rig	**Immediately After Drilling:**	12 feet
	REVIEWED BY: NPW		

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-04**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 14" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0		Silty Clay, Trace Sand and Gravel, brown, very stiff (CL FILL)	SS-1 1.0' - 2.5' 9" Recovery	2 3 4	17.1	3.0	
	2.0							
	3.0		Silty Clay, Trace Sand and Gravel, brown and gray, hard (CL)	SS-2 3.5' - 5.0' 12" Recovery	4 6 7	16.6	4.5+	
	4.0							
	5.0							
	6.0			SS-3 6.0' - 7.5' 17" Recovery	3 7 9	15.0	4.5+	
	7.0							
	8.0							
	9.0			SS-4 8.5' - 10.0' 18" Recovery	3 8 9	15.2	4.5+	
	10.0							
	11.0							
	12.0							
	13.0							
	14.0		Silty Clay, Trace Sand and Gravel, gray, stiff to very stiff (CL)	SS-5 13.5' - 15.0' 18" Recovery	2 6 7	15.1	2.0	
	15.0							
	16.0							
	17.0							
	18.0							
	19.0			SS-6 18.5' - 20.0' 18" Recovery	2 4 6	21.1	1.75	
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: 13½ feet
Immediately After Drilling: 15 feet

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-05**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 15" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0		Silty Clay, Trace Sand and Gravel, brown, very stiff (CL FILL)	SS-1 1.0' - 2.5' 11" Recovery	2 4 4	19.7	3.75	**Dry Density:** 1.0' - 2.5'= 105.3 lbs/ft^3
	2.0							
	3.0		Silty Clay, Trace Sand and Gravel, brown and gray, very stiff to hard (CL)	SS-2 3.5' - 5.0' 14" Recovery	3 4 5	15.9	4.5+	
	4.0							
	5.0							
	6.0			SS-3 6.0' - 7.5' 18" Recovery	3 4 13	16.6	3.25	
	7.0							
	8.0							
	9.0		Silty Clay, Trace Sand and Gravel, gray, stiff to very stiff (CL)	SS-4 8.5' - 10.0' 18" Recovery	3 4 6	15.4	2.75	
	10.0							
	11.0							
	12.0							
	13.0							
	14.0			SS-5 13.5' - 15.0' 18" Recovery	3 4 7	15.1	2.75	
	15.0							
	16.0							
	17.0							
	18.0							
	19.0			SS-6 18.5' - 20.0' 18" Recovery	2 3 6	21.8	1.25	
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: None
Immediately After Drilling: None

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.

60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-06**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 17" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0			SS-1	2	-	-	
			Silty Clay, Trace Sand and Gravel, brown, very stiff (CL FILL)	1.0' - 2.5'	3	19.2	2.0	
	2.0			16" Recovery	3			
	3.0							
			Silty Clay, Trace Sand and Gravel, brown and gray, very stiff (CL)	SS-2	2			
	4.0			3.5' - 5.0'	3	17.8	3.75	
				12" Recovery	4			
	5.0							
	6.0		Silty Clay, Trace Sand and Gravel, gray, very stiff (CL)	SS-3	3			
				6.0' - 7.5'	5	15.5	3.5	
	7.0			16" Recovery	7			
	8.0							
				SS-4	4			
	9.0			8.5' - 10.0'	6	13.9	3.0	
				11" Recovery	8			
	10.0							
	11.0							
	12.0							
	13.0							
				SS-5	3			
	14.0			13.5' - 15.0'	4	17.5	2.0	
				7" Recovery	7			
	15.0							
	16.0							
	17.0							
	18.0							
				SS-6	3			
	19.0			18.5' - 20.0'	4	21.1	2.0	
				18" Recovery	5			
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: None
Immediately After Drilling: None

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-07**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 13" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0		Silty Clay, Trace Sand and Gravel, brown, hard (CL FILL)	SS-1 1.0' - 2.5' 13" Recovery	3 4 8	13.3	4.5+	
	2.0							
	3.0		Silty Clay, Trace Sand and Gravel, brown and gray, very stiff to hard (CL)	SS-2 3.5' - 5.0' 12" Recovery	3 4 6	14.9	4.5+	
	4.0							
	5.0							
	6.0			SS-3 6.0' - 7.5' 16" Recovery	1 3 5	16.8	3.0	
	7.0							
	8.0							
	9.0		Silt, Trace Sand and Gravel, brown, medium dense (ML)	SS-4 8.5' - 10.0' 14" Recovery	3 6 4	23.1	-	
	10.0							
	11.0							
	12.0							
	13.0							
	14.0		Silty Clay, Trace Sand and Gravel, gray, very stiff (CL)	SS-5 13.5' - 15.0' 18" Recovery	2 3 6	16.6	3.5	
	15.0							
	16.0							
	17.0							
	18.0							
	19.0			SS-6 18.5' - 20.0' 16" Recovery	2 4 6	20.6	2.5	
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: None
Immediately After Drilling: None

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-08**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 20" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0			SS-1	2	-	-	
			Silty Clay, Trace Sand and Gravel, brown, very stiff (CL FILL)	1.0' - 2.5'	3	16.3	2.0	
	2.0			7" Recovery	3			
	3.0							
			Silty Clay, Trace Sand and Gravel, brown and gray, hard (CL)	SS-2	3			
	4.0			3.5' - 5.0'	3	14.8	4.0	
				13" Recovery	3			
	5.0							
	6.0			SS-3	3			
				6.0' - 7.5'	4	16.6	4.5+	
	7.0			18" Recovery	8			
	8.0							
				SS-4	3			
	9.0			8.5' - 10.0'	5	15.7	4.5+	
				17" Recovery	7			
	10.0							
	11.0							
	12.0							
	13.0							
			Silty Clay, Trace Sand and Gravel, gray, very stiff (CL)	SS-5	4			
	14.0			13.5' - 15.0'	5	18.9	3.25	
				13" Recovery	8			
	15.0							
	16.0							
	17.0							
	18.0							
				SS-6	3			
	19.0			18.5' - 20.0'	5	19.2	2.0	
				18" Recovery	6			
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: None
Immediately After Drilling: None

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-09**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 11" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0		Sandy Clay, Trace Gravel, brown, very stiff (CL FILL)	SS-1 1.0' - 2.5' 16" Recovery	2 3 4	18.1	2.25	
	2.0							
	3.0		Silty Clay, Trace Sand and Gravel, brown and gray, very stiff to hard (CL)	SS-2 3.5' - 5.0' 15" Recovery	3 4 4	14.9	3.5	
	4.0							
	5.0							
	6.0			SS-3 6.0' - 7.5' 16" Recovery	3 5 6	13.9	4.0	
	7.0							
	8.0							
	9.0			SS-4 8.5' - 10.0' 14" Recovery	5 7 7	16.4	4.5+	
	10.0							
	11.0							
	12.0							
	13.0							
	14.0		Silty Clay, Trace Sand and Gravel, gray, very stiff (CL)	SS-5 13.5' - 15.0' 13" Recovery	2 5 6	13.6	2.0	
	15.0							
	16.0							
	17.0							
	18.0							
	19.0			SS-6 18.5' - 20.0' 16" Recovery	4 5 6	10.5	2.75	
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: None
Immediately After Drilling: None

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-10**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 12" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0		Silty Clay, Trace Sand and Gravel, dark brown, very stiff (CL FILL)	SS-1 1.0' - 2.5' 10" Recovery	2 4 4	21.4	2.0	**Dry Density:** 1.0' - 2.5'= 97.1 lbs/ft^3
	2.0							
	3.0							
	4.0		Silty Clay, Trace Sand and Gravel, brown and gray, very stiff to hard (CL)	SS-2 3.5' - 5.0' 14" Recovery	2 5 4	17.2	2.5	
	5.0							
	6.0			SS-3 6.0' - 7.5' 18" Recovery	3 3 6	15.7	4.5+	
	7.0							
	8.0							
	9.0			SS-4 8.5' - 10.0' 15" Recovery	4 8 10	14.3	4.5+	
	10.0							
	11.0							
	12.0							
	13.0							
	14.0		Silty Clay, Trace Sand and Gravel, gray, very stiff (CL)	SS-5 13.5' - 15.0' 15" Recovery	3 5 9	19.3	3.0	
	15.0							
	16.0							
	17.0							
	18.0							
	19.0			SS-6 18.5' - 20.0' 18" Recovery	3 6 7	16.6	3.75	
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: None
Immediately After Drilling: None

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: B-11
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 8" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0		Sandy Clay, Trace Gravel, brown, hard (CL FILL)	SS-1 1.0' - 2.5' 9" Recovery	2 5 7	14.8	4.5+	
	2.0							
	3.0		Silty Clay, Trace Sand and Gravel, brown and gray, very stiff to hard (CL)	SS-2 3.5' - 5.0' 8" Recovery	2 5 6	15.5	4.5+	
	4.0							
	5.0							
	6.0			SS-3 6.0' - 7.5' 18" Recovery	3 6 8	17.5	4.5+	
	7.0							
	8.0							
	9.0			SS-4 8.5' - 10.0' 18" Recovery	6 6 6	17.2	3.75	
	10.0							
	11.0							
	12.0							
	13.0							
	14.0		Silty Clay, Trace Sand and Gravel, gray, stiff (CL)	SS-5 13.5' - 15.0' 18" Recovery	3 5 6	21.2	1.5	
	15.0							
	16.0							
	17.0							
	18.0							
	19.0			SS-6 18.5' - 20.0' 18" Recovery	3 4 6	21.7	1.5	
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: None
Immediately After Drilling: None

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: B-12
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 13" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0		Sandy Clay, Trace Gravel, brown, stiff (CL FILL)	SS-1 1.0' - 2.5' 6" Recovery	2 3 3	14.7	1.0	
	2.0							
	3.0		Silty Clay, Trace Sand and Gravel, brown and gray, hard (CL)	SS-2 3.5' - 5.0' 12" Recovery	4 6 10	13.4	4.5+	
	4.0							
	5.0							
	6.0			SS-3 6.0' - 7.5' 18" Recovery	4 5 8	16.3	4.5+	
	7.0							
	8.0							
	9.0			SS-4 8.5' - 10.0' 15" Recovery	5 7 13	15.7	4.5+	
	10.0							
	11.0							
	12.0							
	13.0							
	14.0		Silty Clay, Trace Sand and Gravel, gray, very stiff (CL)	SS-5 13.5' - 15.0' 16" Recovery	3 5 7	17.2	3.25	
	15.0							
	16.0							
	17.0							
	18.0							
	19.0			SS-6 18.5' - 20.0' 18" Recovery	3 5 5	21.2	2.0	
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: None
Immediately After Drilling: None

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-13**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 22" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0			SS-1 1.0' - 2.5' 10" Recovery	2 3 6	- 23.9	- 2.5	
	2.0		Silty Clay, Trace Sand and Gravel, dark brown, very stiff (CL FILL)					
	3.0							
	4.0		Silty Clay, Trace Sand and Gravel, brown and gray, very stiff to hard (CL)	SS-2 3.5' - 5.0' 12" Recovery	4 5 6	20.5	3.0	
	5.0							
	6.0			SS-3 6.0' - 7.5' 18" Recovery	2 3 7	14.8	4.5+	
	7.0							
	8.0							
	9.0		Silty Clay, Trace Sand and Gravel, gray, very stiff (CL)	SS-4 8.5' - 10.0' 17" Recovery	2 6 8	14.9	3.75	
	10.0							
	11.0							
	12.0							
	13.0							
	14.0			SS-5 13.5' - 15.0' 18" Recovery	2 6 7	14.9	3.0	
	15.0							
	16.0							
	17.0							
	18.0							
	19.0			SS-6 18.5' - 20.0' 18" Recovery	3 3 6	20.1	2.0	
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: None
Immediately After Drilling: None

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-14**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 16" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0			SS-1	2	-	-	
			Sandy Clay, Trace Gravel, brown, very stiff (CL FILL)	1.0' - 2.5'	2	15.7	2.5	
	2.0			17" Recovery	4			
	3.0							
			Silty Clay, Trace Sand and Gravel, brown and gray, very stiff to hard (CL)	SS-2	5			
	4.0			3.5' - 5.0'	5	14.2	4.5+	
	5.0			18" Recovery	5			
	6.0			SS-3	3			
				6.0' - 7.5'	5	18.2	4.5+	
	7.0			18" Recovery	7			
	8.0							
				SS-4	2			
	9.0			8.5' - 10.0'	5	18.6	3.0	
	10.0			18" Recovery	6			
	11.0							
	12.0							
	13.0							
			Silty Clay, Trace Sand and Gravel, gray, very stiff (CL)	SS-5	2			
	14.0			13.5' - 15.0'	3	15.2	3.0	
	15.0			18" Recovery	5			
	16.0							
	17.0							
	18.0							
				SS-6	2			
	19.0			18.5' - 20.0'	3	20.3	2.5	
				18" Recovery	6			
	20.0		END of BORING at 20 Feet					

Drilling Contractor:	CGMT, Inc.	**Water Level (Ft.)**	
Drilling Method:	3¼" O.D. H.S.A. Split Spoon Sampling	**During Drilling:**	None
Drilling Equipment:	CME-45C Truck Mounted Drill Rig	**Immediately After Drilling:**	None
	REVIEWED BY: NPW		

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: B-15
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 12" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0		Silty Clay, Trace Sand and Gravel, dark brown, very stiff (CL FILL)	SS-1 1.0' - 2.5' 9" Recovery	2 2 4	18.6	2.5	
	2.0							
	3.0		Silty Clay, Trace Sand and Gravel, brown, hard (CL FILL)	SS-2 3.5' - 5.0' 18" Recovery	3 4 5	17.8	4.5+	
	4.0							
	5.0							
	6.0		Gravel, Trace Sand, brown, Dense (GP FILL)	SS-3 6.0' - 7.5' 4" Recovery	24 22 14	5.4	-	
	7.0							
	8.0							
	9.0		Sandy Clay, Trace Gravel, brown, stiff (CL FILL)	SS-4 8.5' - 10.0' 16" Recovery	11 10 9	14.6	1.5	
	10.0							
	11.0							
	12.0							
	13.0							
	14.0		Silty Clay, Trace Sand and Gravel, gray, very stiff (CL)	SS-5 13.5' - 15.0' 18" Recovery	4 6 8	18.2	3.0	
	15.0							
	16.0							
	17.0							
	18.0							
	19.0			SS-6 18.5' - 20.0' 18" Recovery	4 5 6	21.2	2.5	
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: None
Immediately After Drilling: None

Soil Boring Log

Construction & Geotechnical Material Testing, Inc.
60 Martin Lane, Elk Grove Village, Illinois 60007
Telephone (630) 595-1111 ♦ Fax (630) 595-1110

Boring No.: **B-16**
Date: Thursday, May 11, 2023
Project: Lockport FPD Training Grounds
W. Division Street, Lockport, Illinois 60441
Project No.: 23G0270
Boring Location: See Boring Location Diagram
Logged By: L.S.H.
Ground Elevation:

Soil Boring Prepared for:
Mr. Jason M. Estes, AIA
FGM Architects, Inc.
1211 W. 22nd Street, Suite 700
Oak Brook, Illinois 60523

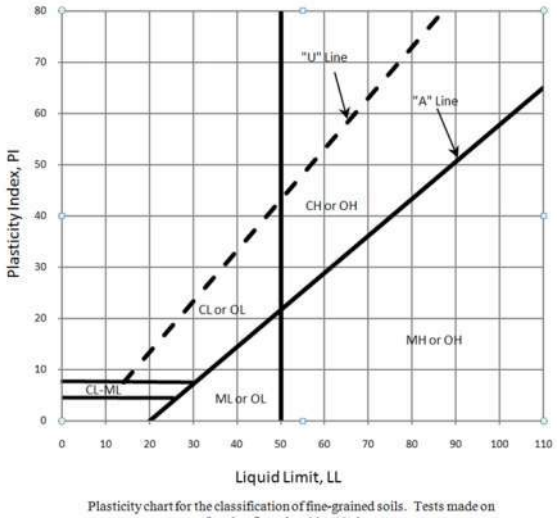
Elevation	Depth	Strata	Soil / Rock Description	Sample Type & No. Depth Interval (Ft) Recovery (in)	Blow Count	Moisture Content (%)	Unconfined Compressive Strength (TSF)	Notes & Test Results
	0.0		Approximately 13" of Topsoil					Unconfined compressive strength of soil samples estimated using a calibrated penetrometer.
	1.0		Silty Clay, Trace Sand and Gravel, brown, very stiff (CL FILL)	SS-1 1.0' - 2.5' 14" Recovery	2 4 6	14.4	3.25	
	2.0							
	3.0							
	4.0		Silty Clay, Trace Sand and Gravel, brown and gray, stiff to hard (CL)	SS-2 3.5' - 5.0' 15" Recovery	3 5 5	16.4	4.5+	
	5.0							
	6.0			SS-3 6.0' - 7.5' 18" Recovery	4 6 10	16.6	4.5+	
	7.0							
	8.0							
	9.0			SS-4 8.5' - 10.0' 18" Recovery	3 4 6	16.3	3.75	
	10.0							
	11.0							
	12.0							
	13.0							
	14.0			SS-5 13.5' - 15.0' 18" Recovery	3 4 7	15.9	3.25	
	15.0							
	16.0							
	17.0							
	18.0							
	19.0			SS-6 18.5' - 20.0' 16" Recovery	3 4 4	20.7	1.5	
	20.0		END of BORING at 20 Feet					

Drilling Contractor: CGMT, Inc.
Drilling Method: 3¼" O.D. H.S.A. Split Spoon Sampling
Drilling Equipment: CME-45C Truck Mounted Drill Rig
REVIEWED BY: NPW

Water Level (Ft.)
During Drilling: None
Immediately After Drilling: None

UNITED SOIL CLASSIFICATION SYSTEM
(ASTM D-2487)

Major Division		Group Symbol	Typical Names	Classification on basis of percentage of fines	Classification Criteria
Coarse-grained soils: More than 50% retained on No. 200 sieve	Gravels: More than 50% of coarse fraction retained on No. 4 sieve	GW	Well-graded gravels and gravel-sand mixtures, little or no fines	GW, GP, SW, SP GM, GC, SM, SC Borderline classification requiring use of dual symbol	$C_u = D_{60}/D_{10}$ greater than 4 $C_z = (D_{30})^2/(D_{10}XD_{60})$ between 1 & 3
		GP	Poorly graded gravels and gravel-sand mixtures, little or no fines		Not meeting both criteria for GW
		GM	Silty gravels, gravel-sand-silt mixtures		Atterberg limits plot below "A" line or plasticity index less than 4
		GC	Clayey gravels, gravel-sand-clay mixtures		Atterberg limits plot above "A" line and plasticity index greater than 7
	Sands: More than 50% of coarse fraction passes No. 4 sieve	SW	Well-graded sands and gravelly sands, little or no fines	Less than 5% pass No. 200 sieve More than 12% pass No. 200 sieve 5% to 12% pass No. 200 sieve	$C_u = D_{60}/D_{10}$ greater than 6 $C_z = (D_{30})^2/(D_{10}XD_{60})$ between 1 & 3
		SP	Poorly graded sands and gravelly sands, little or no fines		Not meeting both criteria for SW
		SM	Silty sands, sand-silt mixtures		Atterberg limits plot below "A" line or plasticity index less than 4
		SC	Clayey sands, sand-clay mixtures		Atterberg limits plot above "A" line and plasticity index greater than 7
Fine-grained soils: 50% or more passing No. 200 sieve	Silts and Clays: Liquid limit 50% or less	ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands	Note: U-line represents approximate upper limit of LL and PI combinations natural soils (empirically determined). ASTM D-2487	
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays		
		OL	Organic silts and organic silty clays of low plasticity		
	Silts and Clays: Liquid limit greater than 50%	MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts		
		CH	Inorganic clays of high plasticity, fat clays		
		OH	Organic clays of medium to high plasticity		
Highly organic soils		Pt	Peat, muck and other highly organic soils		Fibrous organic matter; will char, burn or glow



Plasticity chart for the classification of fine-grained soils. Tests made on fraction finer than No. 40 sieve

Borderline classifications, used for soils possessing characteristics of two groups, are designated by combinations of group symbols. For example: GW-GC, well-graded gravel-sand mixture with clay binder

UNIFIED SOIL CLASSIFICATION SYSTEM

REFERENCE NOTES FOR BORING LOGS

I. Drilling and Sampling Symbols:

SS – Split Spoon Sampler
ST – Shelby Tube Sampler
RC – Rock Core: NX, BX, AX
PM – Pressuremeter
DC – Dutch Cone Penetrometer
RB – Rock Bit Drilling
BS – Bulk Sample of Drilling
PA – Power Auger (no sample)
HSA – Hollow Stem Auger
WS – Wash Sample

Standard Penetration (Blows/Ft) refers to the blows per foot of a 140 lb. hammer falling 30 inches on a 2 inch O.D. split spoon sampler, as specified in ASTM D-1586. The blow count is commonly referred to as the N-value.

II. Correlation of Penetration Resistances to Soil Properties:

Relative Density-Sands, Silts

SPT – N	Relative Density
0 – 3	Very Loose
4 – 9	Loose
10 – 29	Medium Dense
30 – 49	Dense
50 – 80	Very Dense

Consistency of Cohesive Soils

Unconfined Compressive Strength, Qp, tsf	Consistency
under 0.25	Very Soft
0.25 – 0.49	Soft
0.50 – 0.99	Firm
1.00 – 1.99	Stiff
2.00 – 3.99	Very Stiff
4.00 – 8.00	Hard
over 8.00	Very Hard

III Unified Soil Classification Symbols:

GP – Poorly Graded Gravel
GW – Well Graded Gravel
GM – Silty Gravel
GC – Clayey Gravel
SP – Poorly Graded Sand
SW – Well Graded Sand
SM – Silty Sand
SC – Clayey Sand
ML – Low Plasticity Silt
MH – High Plasticity Silt
CL – Low Plasticity Clay
CH – High Plasticity Clay
OL – Low Plasticity Organic
OH – High Plasticity Organic
CL-ML – Dual Classification (Typical)

IV. Water Level Measurement Symbol:

WL – Water Level
WS – While Sampling
WD – While Drilling
BCR – Before Casing Removal
ACR – After Casing Removal
WCI – Wet Cave In
DCI – Dry Cave In

The water levels are those water levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in a granular soil. In clays and plastic silts, the accurate determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally applied.

EXHIBIT ‘R’

RANGE SOUND TEST RESULTS

EXHIBIT 'H'

LOCKPORT POLICE DEPARTMENT

Richard Harang
Chief of Police

1212 S. Farrell Road
Lockport, IL 60441
(815) 838-2132
Fax: (815) 838-9233
www.lockportpolice.info

August 1, 2024

Chief John O'Connor
Lockport Township Fire Protection District
19623 Renwick Rd.
Lockport, IL 60441

Chief O'Connor,

On July 9, 2024, the Lockport Police Department firearms training staff conducting noise level testing at the Illinois Department of Corrections firing range, located on Caton Farm Rd., to determine the impact that the placement of noise dampening berms would have on the decibel levels generated by gunshots. All the testing was conducted using a decibel meter located 25 yards from the firearm at the time of the shot.

These tests resulted in the following data:

- With no berm in place and behind the shooter, the average decibel level recorded was 88 dB.
- When recorded behind a 12 ft berm and behind the shooter, the average decibel level recorded was 62 dB.
- When recorded behind a 12 ft berm and in front of the shooter, the average decibel level recorded was 72 dB.

The first two tests were to determine the sound impact of adding a fourth berm to the proposed range project. By installing a berm behind the firing line, the testing showed that we can expect a 18% reduction in the sound level produced. For comparison, 62 dB is the equivalent of a normal conversation being conducted by two people three feet apart (See the attached Decibel Level Comparison Chart from Yale University https://ehs.yale.edu/sites/default/files/files/decibel-level-chart.pdf). Additionally, this reading was taken at 25 yards; the noise level will continue to drop as the distance between the gunshot and the person hearing it increases.

The final test was to determine the noise level being generated by the existing Illinois Department of Corrections and Illinois State Police Ranges. This test showed that by orienting the range so that the firing line faces away from residences, there would be a 20% decrease in the level of noise being generated by the use of the range.

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If you have any questions regarding this testing or the test results, please do not hesitate to reach out.

Sincerely,

Ron Huff
Deputy Chief of Police

Decibel Level Comparison Chart

Environmental Noise	*dBA*
Jet engine at 100’	140
Pain Begins	*125*
Pneumatic chipper at ear	120
Chain saw at 3’	110
Power mower	107
Subway train at 200’	95
Walkman on 5/10	94
Level at which sustained exposure may result in hearing loss	*80-90*
City Traffic	85
Telephone dial tone	80
Chamber music, in a small auditorium	75-85
Vacuum cleaner	75
Normal conversation	60-70
Business Office	60-65
Household refrigerator	55
Suburban area at night	40
Whisper	25
Quiet natural area with no wind	20
Threshold of hearing	0

Note: dBA = Decibels, A weighted

EXHIBIT ‘S’

SOUND STATEMENT

by

Soundscape Engineering, LLC

Soundscape Engineering
Practical Solutions from Professional Engineers

February 28, 2025

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Subject: Sound Statement for Proposed Outdoor Firing Range at Lockport FPD Training Grounds West Division Street, Lockport, Illinois

Dear Jason and Jennifer,

Soundscape has been retained to assess the noise transmission from the proposed Lockport FPD firing range to the surrounding neighborhood and evaluate the benefits of the planned berms and sound barrier. This sound statement describes the project background, status of our analysis, and the proposed noise mitigations.

Qualifications

Soundscape Engineering is a consulting firm that provides sound and vibration measurement, assessment, and design consulting services. We do not sell any products or have affiliations with any product manufacturers, allowing us to provide an unbiased service to our clients. Each of our Principal Consultants is a licensed professional engineer and/or is Board Certified by the Institute of Noise Control Engineering. We work with developers, businesses, architects, and engineers to assist them with meeting local and state noise regulations. We have worked with local governments in Illinois and Michigan, including the City of Grand Rapids, City of East Grand Rapids, Genesee County (MI), City of Chelsea (MI), City of Des Plaines, Village of East Dundee, the United City of Yorkville, and the Village of Wilmette. This work has included assessment of noise impact for proposed projects, advising them during plan check on issues of noise transmission from manufacturing facilities and event and hospitality venues, and, in the case of Yorkville and Wilmette, assisting with updating the local noise ordinances.

Key Personnel

Firm partner Nathan Sevener is in responsible charge of the work associated with this project. Mr. Sevener has 29 years of experience as an acoustical consultant and is a Board-Certified Member of the Institute of Noise Control Engineering. He has been responsible for assessing environmental noise for projects located throughout the Midwest and beyond.

Aimee Lalime is our Senior Consultant assigned to the project. Ms. Lalime holds Master's and Bachelor's Degrees from Virginia Polytechnic Institute, is a Board-Certified Member of the Institute of Noise Control Engineering, and has been working as a sound and vibrations specialist since 2001.

Background

FGM Architects is designing the Lockport Township FPD Training Grounds and Outdoor Range located in the Lockport Fire Protection District on West Division Street in Lockport, Illinois. The site is adjacent to the Stateville Correctional Center. As shown in Figure 1, the outdoor firing range would be surrounded by 24' tall berms on three sides and a 20' tall absorptive sound barrier on the north side. The hours of operation and other design details are described in the Project Narrative.

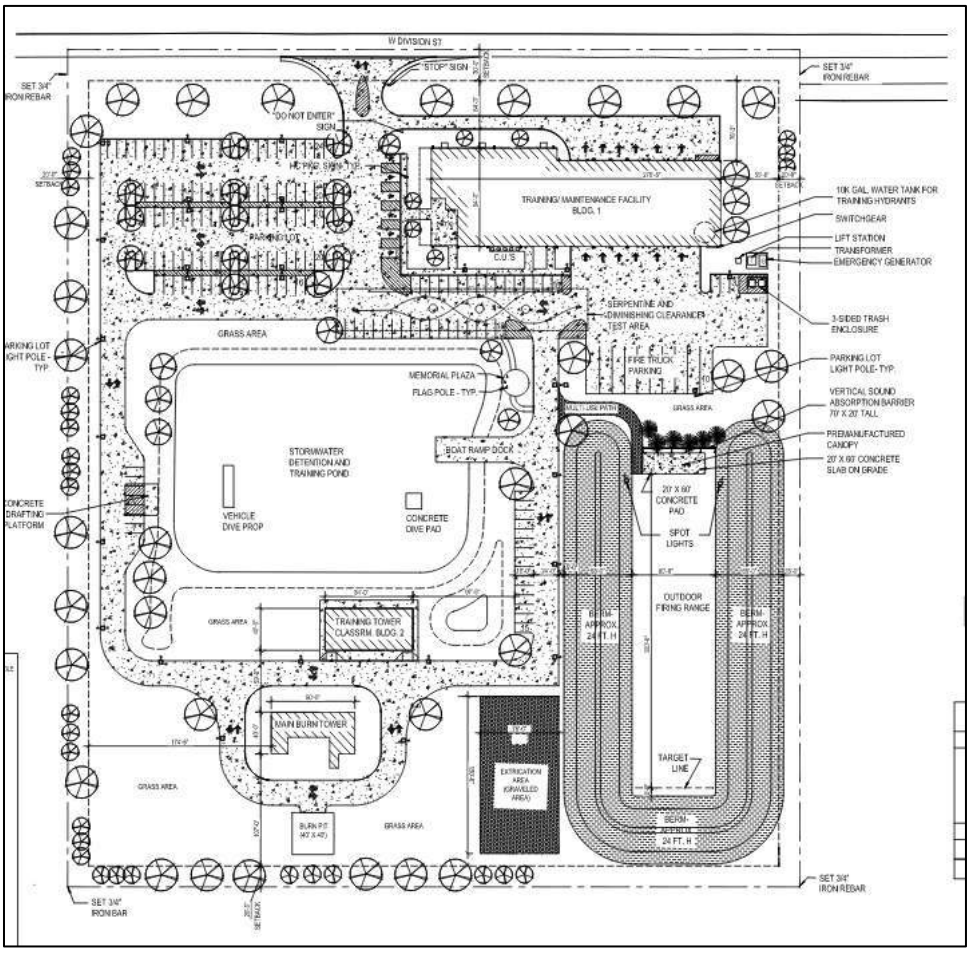

Figure 1: Lockport Township FPD Training Grounds, Lockport, Illinois

The outdoor firing range is being designed to accommodate a maximum of 15 shooters. Most of the training would be with handguns, but it is anticipated that AR-15 rifles would be used as well.

The design team has been asked to assess sound transmission to the nearby residential properties. The distances to the nearest residential areas are shown in the zoning map below (Figure 2). Our assessment will include sound levels with and without the planned earthen berms and sound barrier wall.

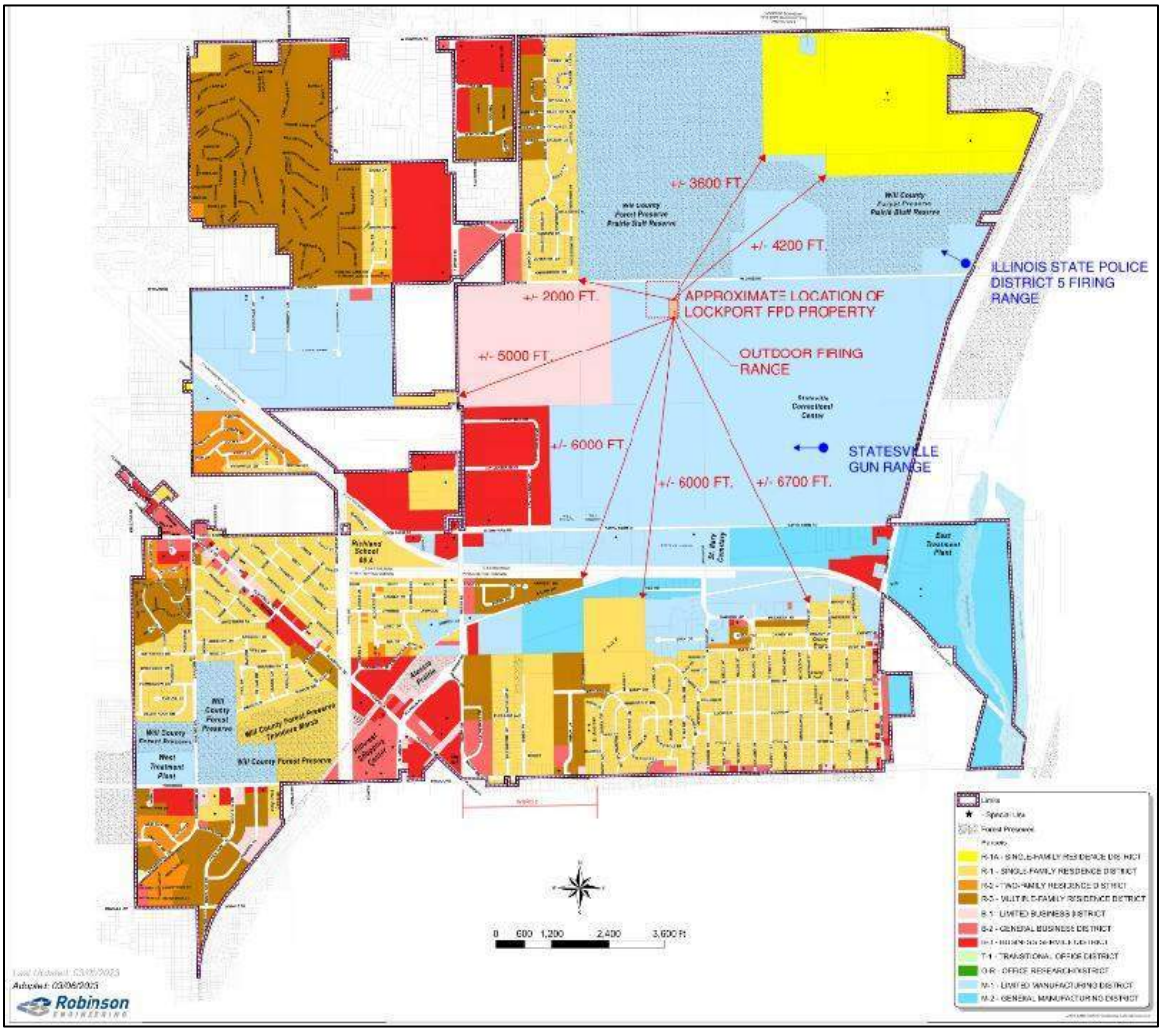

Figure 2: Location of Firing Range with Respect to Nearby Residential Areas

Preliminary Results

We are still in the process of modelling the sound propagation. The initial results of our work project that the sound levels at the nearest residences, which are located approximately 2,000 feet northwest of the site, will be up to 59-69 dBA (impulsive maximum, LAI_{max}) without mitigation and 58-68 dBA with the currently proposed mitigation.

LAI_{max} sound levels at residences located 6,000 feet to the south are predicted to be between 49 and 59 dBA without mitigation and 45 to 55 dBA with the planned berms/barrier.

At the library and the closest residents to the west (approximately 5,000 feet southwest of the site), the predicted LAI_{max} sound levels are 50-60 dBA without mitigation and 40-50 dBA with the planned berms/barrier.

Concluding Comment

Our full report will be provided once the sound propagation modelling is complete.

Sincerely,

Soundscape Engineering LLC
Per:

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