LAND USE COMMISSION

Wednesday, September 27, 2023 | 7:00 P.M.
James C. Lytle City Council Chambers, Second Floor
Lorraine H. Morton Civic Center, 2100 Ridge Avenue

AGENDA

Those wishing to make public comments at the Land Use Commission meeting may submit written comments in advance or sign up to provide public comment in-person during the meeting by calling/texting 847-448-4311 or completing the Land Use Commission meeting online comment form available by clicking here, or visiting the Land Use Commission webpage, https://www.cityofevanston.org/government/boards-commissions-and-committees/land-use-commission, clicking on How You Can Participate, then clicking on Public Comment Form. Community members may watch the Land Use Commission meeting online at www.cityofevanston.org/channel16 or on Cable Channel 16.

I. CALL TO ORDER/DECLARATION OF A QUORUM

II. APPROVAL OF MEETING MINUTES: September 6, 2023 and September 13, 2023

III. OLD BUSINESS

A. Public Hearing: Special Use for a Planned Development | 1501 Central Street | 23PLND-0035

Northwestern University requests a Special Use for a Planned Development to demolish the existing Ryan Field stadium and ancillary maintenance building to construct a new 116 ft. tall stadium with a 35,000 spectator capacity in the U2 University Athletics Facilities District. The applicant is requesting the following site development allowances: 1) 1,408 total parking spaces (515 on-site, 893 in parking lot within 1,000 ft.) where 4,364 are required for the principal uses on the zoning lot, 2) A landscape strip of less than 35 ft. (specifically, 16 ft. 3 in. at closest point at the north-south and east-west property lines at the northeast corner of the lot) where 35 ft. is required when abutting a residential district, and 3) Open parking area with a 6 ft. 10 in. interior side yard setback where 15 ft. is required. The Land Use Commission is the recommending body for this case and the City Council is the determining body in accordance with Section 6-3-5-8 of the Evanston Zoning Code and Ordinance 92-O-21. PINs: 05-35-310-015-0000,

Order & Agenda Items are subject to change. Information about the Land Use Commission is available at: https://www.cityofevanston.org/government/boards-commissions-and-committees/land-use-commission. Questions can be directed to Meagan Jones, Neighborhood and Land Use Planner, at mmjones@cityofevanston.org or 847-448-4311. The City of Evanston is committed to making all public meetings accessible to persons with disabilities. Any citizen needing mobility or communications access assistance should contact 847-866-2919 (Voice) or 847-866-5095 (TYY). Requests for access assistance must be made 48 hours (two working days) in advance. Requests received with less than 48 hours (two working days) advance notice will be attempted using best efforts, but cannot be guaranteed.

La ciudad de Evanston está obligada a hacer accesibles todas las reuniones públicas a las personas minusválidas o las quines no hablan inglés. Si usted necesita ayuda, favor de ponerse en contacto con la Oficina de Administración del Centro a 847/866-2916 (voz) o 847/448-8052 (TDD).

5-35-310-020-0000, 5-35-318-015-0000, 5-35-310-007-0000, 5-35-310-019-0000, 5-35-310-022-0000 and 5-35-310-008-0000.

B. Public Hearing: Zoning Text Amendment | U2 University Athletic Facilities District | 23PLND-0010

Northwestern University requests a Text Amendment to the Zoning Ordinance, Section 6-15-7-2 Permitted Uses, to modify the list of permitted uses in the U2 University Athletics Facilities District and conditions required for public facing concerts. No changes are proposed to the U2 district boundaries. The Land Use Commission is the recommending body for this case and the City Council is the determining body in accordance with Section 6-3-4-6 of the Evanston Zoning Code and Ordinance 92-O-21**.**

IV. COMMUNICATION

V. PUBLIC COMMENT

VI. ADJOURNMENT

The Evanston Land Use Commission will hold a regularly scheduled meeting **on Wednesday, October 11, 2023, at 7:00 pm,** in the James C. Lytle Council Chambers in the Lorraine H. Morton Civic Center.

Land Use Commission Meeting Minutes
9.6.23
9.13.23

SPECIAL MEETING MINUTES

LAND USE COMMISSION

Wednesday, September 6, 2023
7:00 PM
Lorraine H. Morton Civic Center, 2100 Ridge Avenue, James C. Lytle City Council Chambers

Members Present: George Halik, Kiril Mirintchev, Kristine Westerberg, Max Puchtel, Jeanne Lindwall, Brian Johnson, Myrna Arevalo, and Matt Rodgers

Members Absent: John Hewko

Staff Present: Acting City Attorney Alex Ruggie, Community Development Director Sarah Flax, Neighborhood and Land Use Planner Meagan Jones, Zoning Administrator Melissa Klotz, and Planning Manager Liz Williams

Presiding Member: Matt Rodgers

Call to Order

Chair Rodgers opened the meeting at 7:01 PM. A roll call was then done and a quorum was determined to be present.

Approval of July 12, 2023 Meeting Minutes

Commissioner Halik recommended two minor edits. Lindwall made a motion to approve the Land Use Commission meeting minutes from July 12, 2023 as corrected. Seconded by Commissioner Puchtel. A voice vote was taken, and the motion passed 8-0.

New Business

A. Public Hearing: Special Use for a Planned Development | 1501 Central Street | 23PLND-0035.

Northwestern University requests a Special Use for a Planned Development to demolish the existing Ryan Field stadium and ancillary maintenance building to construct a new 116 ft. tall stadium with a 35,000 spectator capacity in the U2 University Athletics Facilities District. The applicant is requesting the following site development allowances: 1) 1,408 total parking spaces (515 on-site, 893 in parking lot within 1,000 ft.) where 4,364 are required for the principal uses on the zoning lot, 2) A landscape strip of less than 35 ft. (specifically, 16 ft. 3 in. at closest point at the north-south and east-west property lines at the northeast corner of the lot) where 35 ft. is required when abutting a residential district, and 3) Open parking area with a 6 ft. 10 in. interior side yard setback where 15 ft. is required. The Land Use

Commission is the recommending body for this case and the City Council is the determining body in accordance with Section 6-3-5-8 of the Evanston Zoning Code and Ordinance 92-O-21. PINs: 05-35-310-015-0000, 5-35-310-020-0000, 5-35-318-015-0000, 5-35-310-007-0000, 5-35-310-019-0000, 5-35-310-022-0000 and 5-35-310-008-0000.

B. Public Hearing: Zoning Text Amendment | U2 University Athletic Facilities District | 23PLND-0010.
Northwestern University requests a Text Amendment to the Zoning Ordinance, Section 6-15-7-2 Permitted Uses, to modify the list of permitted uses in the U2 University Athletics Facilities District and conditions required for public facing concerts. No changes are proposed to the U2 district boundaries. The Land Use Commission is the recommending body for this case and the City Council is the determining body in accordance with Section 6-3-4-6 of the Evanston Zoning Code and Ordinance 92-O-21.

Dave Davis, Northwestern University's Senior Executive Director for Neighborhood and Community Relations, presented an overview and noted that due to community input received to date, they have reduced the request for additional events to fund a new Ryan Field from twelve to six. He stated that it will have 12,000 fewer seats than the current stadium and that police reports confirm that historic events have been well managed. He noted that the proposed six additional concerts represent a 3.5% increase in utilization. Financial highlights include that the new stadium is privately funded and of the $800M investment, 35% is dedicated to local minority and women owned businesses. Luke Figora, Chief Operating Officer, Northwestern University, summarized the proposed text amendment language, components that would be in a Memorandum of Understanding (MOU) and additional public benefits.

Darren Nielsen, HNTB Vice President, presented a site plan and architectural overview which targets a LEED Gold designation and uses universal design principles. Michael Godoy, CAA ICON, provided a general overview of concert venue operations. Peter Lemmon, Professional Traffic Operations Engineer, Kimley-Horn, reviewed event transportation characteristics of games and concerts, key aspects of the dynamic transportation management plan and emergency response. Greg Hughes, Lead Acoustician, Wrightson, Johnson, Haddon and Willliams, reviewed the concert sound survey and sound model study and proposed mitigations. George Kisiel, President, Okrent Kisiel Associates, presented the applicant's approach to meet the special use standards for approval and belief that minor impacts are offset by the public benefits.

<u>Commissioner Questions</u>

Commissioners asked clarifying questions of the applicant on site development allowances, status of the capital campaign, final engineering design and construction timelines, stormwater management, parking and traffic. The applicant's owner's representative from CAA ICON summarized that demolition is intended to commence in December of 2023 with construction starting late Q1 or Q2 2024 continuing through Q3

2026 and that most of the funding is in place. A construction waste management plan will be developed by the general contractor. Private and public parking utilization statistics, availability and operations for concerts and football games were reviewed. Orientation of the stadium as it relates to pedestrian entrances, internal programming and sound control was discussed. Design, amenities, and possible uses of the open space at the corner of Ashland Avenue and Central Street were described. Permeable pavement is proposed in various locations including portions of the plazas and parking lots.

Northwestern University staff explained various text amendment intentions regarding outdoor lecture limits, venue capacity, temporary events and traffic control in the U2 District and agreed that clarifying language could be drafted. The applicant has discussed with city staff that a draft of the Memorandum of Understanding components such as a traffic management plan would be part of the City Council project approval and a final MOU would be considered during the permit process or prior to the first event. Further discussion on coordination with CTA, pedestrian sidewalk and street capacity, and other traffic management issues for events were discussed. The applicant's representative explained that the economic estimate for local jobs for their MWBE commitment includes partnerships and targets: 1) construction firms within the 3-county area; 2) ongoing operations; and 3) local businesses. Construction traffic impact on Central Street will be detailed once construction contracts are finalized; additionally, there will be a stormwater management plan, dust control mitigations and street repairs as necessary.

Public Comment

Chair Rodgers called for public comment from organizations and specific requests for continuance.

Stephen Harper, 640 Gregory Avenue, Wilmette, requested a continuance in writing regarding noise pollution and the Arup Report.

Senta Plunkett, President, Village of Wilmette, and Jerry Smith, Trustee, Village of Wilmette, 1325 Gregory Avenue, Wilmette objected to the proposed text amendment specific to outdoor concerts at Ryan Field and support construction of the stadium for university program and school athletics.

Dan Shapiro, Most Livable City Association (MLCA), Evanston, requested continuance for reasons provided in writing regarding text amendment clarifications. At the meeting he also requested: 1) additional time to review any potential new information (traffic management, rebuttal to Arup Report, peer review of the groundwater report, concert operations plan, CTA operational increase discussions, truck traffic and waste removal routing); and 2) the opportunity to ask cross-examination questions of the applicant.

Jane Grover, Field of Opportunities, 2677 Prairie Avenue, Evanston, supports the project and suggested equity be considered during the process.

Michael O'Connor, 1315 Jenks Street, Evanston, and Field of Opportunities supports the project as a resident adjacent to Ryan Field.

Leslie Williams, Community Alliance for Better Government, 2516 Prairie Avenue, Evanston, questioned the proposed economic public benefits including MWBE and considered the additional sustainability, accessibility and educational benefits not dependent on a commercial zoning change.

Peggy Baxter, 1320 Jenks Street, and 40 neighbors within 1,000 feet of Ryan Field support the proposed text amendment and special use proposal. She believes the improvements will increase adjacent home values.

Raj Ghate, 2505 Jackson Avenue, Evanston, supports the stadium proposal and the potential opportunities it could provide.

James Hebson, 1321 Rosalie Street, Evanston, supports the proposal and the potential economic benefits for Central Street.

Jeff Smith, 2724 Harrison Street, Evanston, representing Central Street Neighbors Association (CSNA), and believes that the proposal does not meet the standards for approval regarding neighborhood compatibility and parking.

Garrett Karp, Evanston Chamber of Commerce, 1007 Church Street, hosted informational sessions and received feedback that businesses are positive about short and long-term opportunities of a stadium, its private funding, and there is overall support for both aspects of the proposal.

Scott Gingold, 1326 Isabella Street, requested a continuance due to potential additional documents to review. He also asked to see details on related future city revenue and to cross-examine witnesses.

Fiona McCarthy, requested a continuance to ask questions on land use qualifications and noise and its subsequent health impacts.

Dana Hoffman, 1219 Central Street, submitted paperwork requesting continuance to ask questions regarding concert operations.

Deborah Thiersch, 624 Isabella Street, Wilmette, submitted paperwork requesting continuance to address new information.

Yvi Russell, 1724 Livingston Street, Evanston, submitted paperwork requesting continuance regarding the text amendment and materials not yet distributed.

Mary Rosinski, submitted paperwork requesting continuance regarding the Tripp Umbach Economic Impact Study.

Chair Rodgers provided direction on the presentation length including cross-examination for organizations (30 minutes) and individuals (10 minutes).

Commissioner Lindwall made a Motion to continue hearing Items A and B to the September 27, 2023 meeting. Seconded by Commissioner Westerberg. A roll call vote was taken, and the motion passed, 8-0.

Communications

There was none.

Adjournment

Commissioner Westerberg motioned to adjourn, Commissioner Lindwall seconded, and the motion carried, 8-0.

Adjourned 12:14 PM.

The next meeting of the Evanston Land Use Commission is a Special Meeting to be held on **Wednesday, September 13, 2023, at 7:00 PM, in the James C. Lytle Council Chambers in the Lorraine H. Morton Civic Center.**

Respectfully submitted,
Amy Ahner, AICP, Planning Consultant

Reviewed by,
Meagan Jones, AICP, Neighborhood and Land Use Planner

MEETING MINUTES

LAND USE COMMISSION

Wednesday, September 13, 2023
7:00 PM
Lorraine H. Morton Civic Center, 2100 Ridge Avenue, James C. Lytle City Council Chambers

Members Present: George Halik, Kiril Mirintchev, Kristine Westerberg, Max Puchtel, Jeanne Lindwall, and Matt Rodgers

Members Absent: Myrna Arevalo, John Hewko and Brian Johnson

Staff Present: Assistant City Attorney Brian George, Neighborhood and Land Use Planner Meagan Jones, Planner Cade Sterling, Planning Manager Liz Williams, and Community Development Director Sarah Flax

Presiding Member: Matt Rodgers

Call to Order

Chair Rodgers opened the meeting at 7:06 PM. A roll call was then done and a quorum was determined to be present.

New Business

A. Public Hearing: Major Variations | 1404 Judson Avenue | 23ZMJV-0041

Errol Kirsch, architect and applicant on behalf of the property owner, requests the following Major Zoning Variations to expand a non-conforming structure as it relates to bulk (Code Section 6-6-5-2): 1) a rear-yard setback of 3.75' where 30' is required and the existing legally non-conforming condition is 2.75' (Code Section 6-8-2-8 (A) 4); and 2) building lot coverage of 33.25% where 30% is the maximum permitted and 31% is the existing legally non-conforming condition (Code Section 6-8-2-7). The Land Use Commission is the determining body for the proposed zoning relief in accordance with Code Section 2-19-4 (E). PIN: 11-18-415-020-0000.

Mr. Kirsch reviewed the site plan and his reasoning regarding meeting the standards for approval. Mr. Kirsch summarized the September 12, 2023 Preservation Commission certificate of appropriateness and negative recommendation votes. Mr. Sterling added that the negative recommendation to the Land Use Commission was based on zoning and their concern of increasing bulk to the building especially on the north elevation.

Commissioner Questions

In response to commissioner questions, Mr. Kirsch reviewed architectural consequences of a smaller ADU, historical restrictions for the office and ADU locations and the financial reason for the improvements. He described the controls during construction and noted that the proposed ADU is less than 1,000 square feet of the approximate 1,400 square foot basement.

Ms. Harper, 1404 Judson Avenue owner, stated that she is an administrative law judge for hearings regarding sensitive law matters and the need for office security requirements. She said that the woodworking shop is used for home improvements and added that the ADU will provide income to allow her to retire in the home.

Public Comment

Chair Rodgers called for public comment.

Ann Trompeter, 1422 Judson Avenue, spoke against the addition and in support of fitting the ADU within the basement mentioning the entry discussed at the 9.12.23 Preservation Commission Meeting.

Amanda Hartnett, 1412 Judson Avenue, objects to the addition due to density, parking, and construction impacts.

Daniel Hartnett, 1412 Judson Avenue, objects to the addition due to the potential to fit the ADU within the existing interior space, and his opinion of the lack of proven zoning hardship and public benefit.

Nancy Liskar, 1400 Judson Avenue, objects to the effect on the exterior of the building, potential to fit the project within the existing interior space, density, and parking.

Bruce Styler, 1400 Judson Avenue, expressed concern regarding the architectural impact on the landmark property and resulting density in the neighborhood.

Chair Rodgers closed public testimony.

Chair Rodgers asks for final statements.

Mr. Kirsch responded that the alternative rear entry results in alterations to the stairs, and a reduction in the kitchen and shop areas. The total occupancy of the home is maximized at six (6). Investment in the home is preferred by the owner over renting outside office space.

Deliberations

Commissioner Halik expressed concern about the space available on the north side for the addition. He stated that other solutions seem possible and hardship has not been proven.

Commissioner Westerberg commented that the design of the addition does not represent the least deviation to make the improvement.

Commissioner Lindwall asked staff to comment on the approval process for a small portico entryway. Mr. Sterling responded that it would be a Minor Variation approved through administrative review.

Commissioner Puchtel supported the ADU.

Commissioner Mirintchev agreed that configurations other than the addition are possible.

Chair Rodgers stated that the house is being over programmed with the ADU, office, shop and other rental spaces.

The Chair reviewed the seven Standards for Major Variations (Section 6-3-8-12.E).

1. The requested variation will not have a substantial adverse impact on the use, enjoyment or property values of adjoining properties: The plan does not encroach on the adjacent properties, so the standard is met.
2. The requested variation is in keeping with the intent of the zoning ordinance: The intent of the Zoning Ordinance is to adapt homes over time, so the standard is met.
3. The alleged hardship or practical difficulty is peculiar to the property: The surrounding area has changed and densified over time and home improvements to this property are difficult, thus the standard is met.
4. The property owner would suffer a particular hardship or practical difficulty as distinguished from a mere inconvenience if the strict letter of the regulations were to be carried out: The standard is not met as the home can accommodate most of the desires of the owner.
5. Either the purpose of the variation is not based exclusively upon a desire to extract additional income from the property, or, while the granting of the variation will result in additional income to the applicant and while the applicant for the variation may not have demonstrated that the application is not based exclusively upon a desire to extract additional income from the property, the Land Use Commission or the City Council, depending on final jurisdiction under Section 6-3-8-2 of this Chapter, has found that public benefits to the surrounding neighborhood and the City as a whole will be derived from approval of the variation, that include, but are not limited to, any of the standards of Section 6-3-6-3 of this Chapter: The homeowner is seeking income but that is not a public benefit so the standard is not met.
6. The alleged difficulty or hardship has not been created by any person having an interest in the property: The site plan issues were not created by the owner, but the hardship is being created by the number of uses trying to be met within the home and therefore the standard is not met.

7. The requested variation requires the least deviation from the applicable regulation among the feasible options identified before the Land Use Commission issues its decision or recommendation to the City Council regarding said variation: Adapting the space within the home seems possible and so the standard is not met.

Chair Rodgers asked for Commissioner comments on the standards. There were none.

Commissioner Lindwall made a motion to recommend approval of the Major Variations for the property located at 1404 Judson Avenue, zoning case number 23ZMJV-0041. Second by Commissioner Puchtel. A roll call vote was taken, and the motion failed, 1-5.

B. Public Hearing: Major Variations | 1041 Ridge Court | 23ZMJV-0055
Mark Demsky, architect and applicant on behalf of the property owner, requests the following Major Zoning Variations to construct a two-story addition to the homes northeast volume: 1) a rear-yard setback of 6' where 30' is required (Code Section 6-8-2- 8 (A) 4); and 2) building lot coverage of 34.5% where 30% is the maximum permitted (Code Section 6-8-2-7). The Land Use Commission is the determining body for the proposed zoning relief in accordance with Code Section 2-19-4 (E). PIN: 11-19-113- 018-0000.

Mr. Demsky reviewed the site plan, existing and proposed elevations and streetscape views. He noted that a second story addition was considered. Amina Dimarco, 1041 Ridge Court, reviewed her family situation and reason for the request.

Commissioner Questions

In response to commissioner questions, Mr. Demsky noted that the proposed windows match the existing design.

Public Comment

Chair Rodgers called for public comment. There were none.

Chair Rodgers asks for final statements. There were none.

Chair Rodgers closed public testimony.

Deliberations

Commissioner Halik and Puchtel both support the solution for the site. Commissioner Mirintchev also supports the solution and asked the architect to consider more window and roof details.

The Chair reviewed the seven Standards for Major Variations (Section 6-3-8-12.E).

1. The requested variation will not have a substantial adverse impact on the use, enjoyment or property values of adjoining properties: The solution does not create an adverse impact and so the standard is met.
2. The requested variation is in keeping with the intent of the zoning ordinance: The standard is met to improve the property for the needs of the homeowner who had looked at other housing alternatives.
3. The alleged hardship or practical difficulty is peculiar to the property: The angled shape of the property is challenging and so the standard is met.
4. The property owner would suffer a particular hardship or practical difficulty as distinguished from a mere inconvenience if the strict letter of the regulations were to be carried out: The house is already a non-conforming home, and no hardship occurs with the request, so the standard is met.
5. Either the purpose of the variation is not based exclusively upon a desire to extract additional income from the property, or, while the granting of the variation will result in additional income to the applicant and while the applicant for the variation may not have demonstrated that the application is not based exclusively upon a desire to extract additional income from the property, the Land Use Commission or the City Council, depending on final jurisdiction under Section 6-3-8-2 of this Chapter, has found that public benefits to the surrounding neighborhood and the City as a whole will be derived from approval of the variation, that include, but are not limited to, any of the standards of Section 6-3-6-3 of this Chapter: The growing family is the reason, not income and so the standard is met.
6. The alleged difficulty or hardship has not been created by any person having an interest in the property: The owner bought the home and property and did not create the hardship, so the standard is met.
7. The requested variation requires the least deviation from the applicable regulation among the feasible options identified before the Land Use Commission issues its decision or recommendation to the City Council regarding said variation: The applicant had considered options that had a greater impact and so the standard is met.

Chair Rodgers asked for Commissioner comments on the standards. There were none.

Commissioner Lindwall made a motion to recommend approval of the Major Variations for the property located at 1041 Ridge Court, zoning case number 23ZMJV-0055. Second by Commissioner Puchtel. A roll call vote was taken, and the motion carried, 6-0.

Chair Rodgers called for a short break at 9:09 PM. The meeting resumed at 9:15 PM.

C. Public Hearing: Special Use for a Planned Development in conjunction with a Zoning Map Amendment | 504-514 South Boulevard | 23PLND-0027
Eugene Hu, requests a Special Use for a Planned Development and concurrent Zoning Map Amendment on behalf of PIRHL Developers, LLC, to rezone from

the existing R4 - General Residential Zoning District to the R5 General Residential Zoning District, and construct a 60 unit mixed-income housing development. The applicant is requesting the following site development allowances: an east street side-yard setback of 5' where 15' is required; a west interior side-yard setback of 6'-2" where 15' is required; an impervious surface ratio of 85% where 75% is the maximum permitted; building height of 62' where the lesser of 5 stories or 50' is the maximum permitted; no dedicated off-street loading berth where one short loading berth is required; and, a 25% density increase or +12 for a total of 60 units. The Land Use Commission is the recommending body for this case in accordance with Section 6-3-5-8 of the Evanston Zoning Code and Ordinance 92-O-21. PINS: 11-19-419-009-0000; and 11-19-419-010-0000.

Johana Casanova, Pirhl Developers, 800 West St. Clair Avenue, Cleveland, OH, reviewed the South Boulevard Shores project team who had been competitively selected by the city through an RFP process. Tiffany Ackerman, Hooker DeJong Architects, 2120 East Muskegon, MI, reviewed the proposed walk-up and townhouse style 60-unit plan and its sustainable components. Ms. Casanova reviewed the affordable unit mix and the rental subsidy program received.

Commissioner Questions

In response to commissioner questions, staff reviewed that community meetings were held in 2017 regarding site concepts, neighborhood meetings were held starting in 2019 and later public meetings were held through the RFP selection process. Ms. Ackerman stated that there is no designated loading dock at the rear of the building, but it could be accommodated. There is no basement, and the extent of north exposure unit design was discussed. Brad Hovanec, Cage Civil Engineering, reviewed the proposed stormwater plan and stated that they could look at more open space, but it would be at a loss of parking. A construction monitoring plan will be developed and reviewed as part of the engineering phase. Also, property owners to the east will retain Hinman Avenue access.

Ms. Ackerman clarified that the property will be owned in partnership between the Housing Authority of Cook County (HACC), Pirhl, and a new investor and taxed accordingly. It will be managed by HACC and Pirhl who will hire a third-party operator. There will be a part-time leasing agent/property manager on site with a dedicated office. The Enterprise Green Plus program through the Low Income Housing Tax Credit Program (LIHTC) is the primary source for net zero certification, among potential other sources, as the equivalent to the city required LEED Gold certification level.

Public Comment

Chair Rodgers called for public comment.

Bonnie Wilson, a real estate agent, stated her support of the development and the need for affordable rental housing.

Toni Rey, 1020 Grove Street, read a statement written by Virginia Ayers of South Boulevard, who both stated their support of the development and the need for affordable rental housing.

Rosemary Armocida, 530 Michigan Avenue, expressed her concern about parking, construction traffic on South Boulevard and construction impact on adjacent properties.

Sue Loellbach, Connections for the Homeless, spoke in support of the project.

Fergal Hanks, 1500 Chicago Avenue, spoke in support of the project.

Larry Donoghue, 525 Chicago Avenue, spoke in support of the project and its affordable housing component.

Rhonda Present, 546 Michigan Avenue, spoke in support of the project and its affordable housing component and would like more consideration to be given to reducing the number of units due to the potential traffic impact on the surrounding area.

Abbie Rosensweig, 616 Hinman Avenue, spoke in support of the project.

Doree Stein, 505 Hinman Avenue, spoke about housing concerns in the neighborhood.

Rafael Castellanos, 413 South Boulevard, spoke in support of the project yet expressed concerns regarding construction, traffic, financing, tenant selection, and the variances.

Tom Wheeler, 515 South Boulevard, spoke in support of affordable housing, yet expressed concerns regarding project transparency, traffic, and the number of units.

Michael Ollinger, 591 Chicago Avenue, expressed concern regarding project density.

Chair Rodgers asked for final statements.

Ms. Casanova stated that they are still working through details and will provide documents as they become available. She added that they can work with height and the unit count is tied to the award of the tax credit.

Chair Rodgers closed public testimony.

<u>Deliberations</u>

Commissioner Halik spoke about the fortunate selection by the Housing Authority of Cook County.

Commissioner Lindwall believes the density for the location, the massing along the South Boulevard, and the buffering to the east is appropriate and supports the project. She agreed with the staff recommended condition to continue to work on the design details for the north and east end elevations due to the complexity of the building material palette and complexity of the massing with the goal to simplify those elements and added that it should be communicated to the neighbors.

Commissioner Puchtel supports the project and noted that the number of variances in this case is offset by the opportunity to achieve affordable housing. He would like to add a condition for an off-street loading berth and supported the condition for staff to continue to work with the applicant on the north and east building facades.

Commissioner Mirintchev expressed concern regarding building bulk, height, the façade on South Boulevard and open space. He would like to see some of the units have east and south windows to reduce the number of north exposures.

Commissioner Westerberg would like to see any height reduction, a loading dock, vibration monitoring as part of the construction management plan, and further investigation of the recommendations made by the traffic consultant.

Chair Rodgers clarified that the project is affordable housing versus low income, 20 of the parking spaces are public use, and that the rezoning fits within the character of the neighborhood.

The Chair reviewed the four Standards for Amendments (Section 6-3-4-5).

1. Whether the proposed amendment is consistent with the goals, objectives and policies of the Comprehensive General Plan as adopted and amended from time to time by the City Council: The current Comprehensive General Plan considers affordable housing. Also, a parking lot is not the highest and best use for the property, so the proposed amendment meets the standard.
2. Whether the proposed amendment is compatible with the overall character of existing development in the immediate vicinity of the subject property: The surrounding area is R5, and the building character is similar and so the standard is met.
3. Whether the proposed amendment will have an adverse effect on the value of adjacent properties: The similar surrounding neighborhood residential uses will not be impacted so the standard is met.
4. The adequacy of public facilities and services: New construction will require expansion of public services, which is believed to be able to be met as the project represents only an increase from R4 to R5.

Chair Rodgers asked for Commissioner comments on the standards. There were none.

Commissioner Puchtel made a motion to recommend approval of the Zoning Map Amendment for the property located at 504-514 South Boulevard, zoning case

number 23PLND-0027. Second by Commissioner Lindwall. A roll call vote was taken, and the motion carried, 6-0.

The Chair reviewed the Standards for a Special Use (Section 6-3-5-10).

1. Is one of the listed special uses for the zoning district in which the property lies: It is permitted under the R5 District so the standard is met.
2. Complies with the purposes and the policies of the Comprehensive General Plan and the Zoning ordinance as amended from time to time: The current Comprehensive General Plan considers affordable housing. Also, a parking lot is not the highest and best use for the property, so the standard is met.
3. Will not cause a negative cumulative effect, when its effect is considered in conjunction with the cumulative effect of various special uses of all types on the immediate neighborhood and the effect of the proposed type of special use upon the City as a whole: Concerns about parking and construction traffic can be met through conditions offsetting a negative effect and thus meeting the standard.
4. Does not interfere with or diminish the value of property in the neighborhood: Placing a modern building in this location will increase surrounding property values and it will partially add tax revenue meeting the standard.
5. Is adequately served by public facilities and services: New construction will require expansion of public services, which is believed can be met as the project represents only an increase from R4 to R5.
5. Does not cause undue traffic congestion: The TOD design and on-site parking should adequately address this standard.
6. Preserves significant historical and architectural resources: There are no significant resources in the area.
7. Preserves significant natural and environmental resources: Open space around the building will be improved along with a net zero design should lessen its environmental impact meeting the standard.
8. Complies with all other applicable regulations of the district in which it is located and other applicable ordinances, except to the extent such regulations have been modified through the planned development process or the grant of a variation: The affordable housing organizations will be working with the applicant to meet regulations. It is anticipated that process will continue and meet the standard.

Chair Rodgers asked for Commissioner comments on the standards. There were none.

The Chair reviewed the Standards for Special Use for Planned Developments (Section 6-3-6-9).

1. The requested Site Development Allowance(s) will not have a substantial adverse impact on the use, enjoyment or property values of adjoining properties that is beyond a reasonable expectation given the scope of the applicable Site Development Allowance(s) of the Planned Development location: The public benefit of providing modern affordable housing demonstrates meeting this standard.

2. The proposed development is compatible with the overall character of existing development in the immediate vicinity of the subject property: There are similarly scaled buildings in the area, so the standard is met.
3. The development site circulation is designed in a safe and logical manner to mitigate potential hazards for pedestrians and vehicles at the site and in the immediate surrounding area: There are further improvements to be considered because of the traffic study which should be achievable, so the standard is met.
4. The proposed development aligns with the current and future climate and sustainability goals of the City: The building will have to comply with the City Green Building Ordinance and the LIHTC certification. Assuming compliance, the standard is met.
5. Public benefits that are appropriate to the surrounding neighborhood and the City as a whole will be derived from the approval of the requested Site Development Allowance(s): Public housing is a benefit, so the standard is met.

Chair Rodgers asked for Commissioner comments on the standards. There were none.

Commissioner Puchtel made a motion to recommend approval of the Special Use for a Planned Development for the property located at 504-514 South Boulevard, zoning case number 23PLND-0027, with the following conditions:

1) The proposed development shall substantially comply with the documents and testimony on record.
2) The applicant shall agree to a Construction Management Plan (CMP) before issuance of the building permit.
3) The applicant sets up a vibration monitoring program as part of the CMP and regularly communicates construction activities with the neighbors.
4) The applicant agrees to comply with the City of Evanston Green Building Ordinance and will obtain a LEED Gold Certification Rating or equivalent (Net Zero Certification).
5) The applicant continues to work with staff on design details for the north and east building elevations as well as explore the feasibility of lowering the proposed floor to floor heights.
6) The applicant agrees to comply with the General Conditions and Standards for Planned Developments with Code Section 6-8-1-10.
7) The applicant shall provide one off-street loading berth.

Second by Commissioner Lindwall. A roll call vote was taken, and the motion carried, 5-1.

Communications

Ms. Williams noted that the final contract with HDR is in process and a preliminary work plan is in process.

Adjournment

Commissioner Lindwall motioned to adjourn, Commissioner Puchtel seconded, and the motion carried, 6-0.

Adjourned 11:05 PM.

The next meeting of the Evanston Land Use Commission is a Special Meeting to be held on **Wednesday, September 27, 2023, at 7:00 PM, in the James C. Lytle Council Chambers in the Lorraine H. Morton Civic Center.**

Respectfully submitted,
Amy Ahner, AICP, Planning Consultant

Reviewed by,
Meagan Jones, AICP, Neighborhood and Land Use Planner

LAND USE COMMISSION

23PLND-0035
1501 Central Street
Planned Development

Memorandum

To: Chair and Members of the Land Use Commission

From: Meagan Jones, Neighborhood and Land Use Planner

CC: Sarah Flax, Director of Community Development
Elizabeth Williams, Planning Manager

Subject: Special Use for a Planned Development
1501 Central Street | 23PLND-0035

Date: August 23, 2023

Request

Northwestern University requests a Special Use for a Planned Development to demolish the existing Ryan Field stadium and ancillary maintenance building to construct a new 116 ft. tall stadium with a 35,000 spectator capacity in the U2 District. The applicant is requesting the following site development allowances:

1. 1,408 total parking spaces (515 on-site, 893 in parking lot within 1,000 ft.) where 4,364 are required for the principal uses on the zoning lot.
2. A landscape strip of less than 35 ft. (specifically, 16 ft. 3 in. at closest point at the north-south and east-west property lines at the northeast corner of the lot) where 35 ft. is required when abutting a residential district.
3. Open parking area with a 6 ft. 10 in. interior side yard setback where 15 ft. is required.

The Land Use Commission is the recommending body for this case in accordance with Section 6-3-5-8 of the Evanston Zoning Code and Ordinance 92-O-21. PINs: 05-35-310-015-0000, 5-35-310-020-0000, 5-35-318-015-0000, 5-35-310-007-0000, 5-35-310-019-0000, 5-35-310-022-0000 and 5-35-310-008-0000.

Notice

The Application has been filed in conformance with applicable procedural and public notice requirements including publication in the Evanston Review on August 3, 2023 and August 10, 2023 as well as the Sun-Times on August 3, 2023 and August 21, 2023.

General Information

Applicant/Owner: Northwestern University
2020 Ridge Avenue
Evanston, IL 60201

PINs: 05-35-310-015-0000, 5-35-310-020-0000, 5-35-318-015-0000, 5-35-310-007-0000, 5-35-310-019-0000, 5-35-310-022-0000 and 5-35-310-008-0000.

Analysis

Existing & Surrounding Conditions

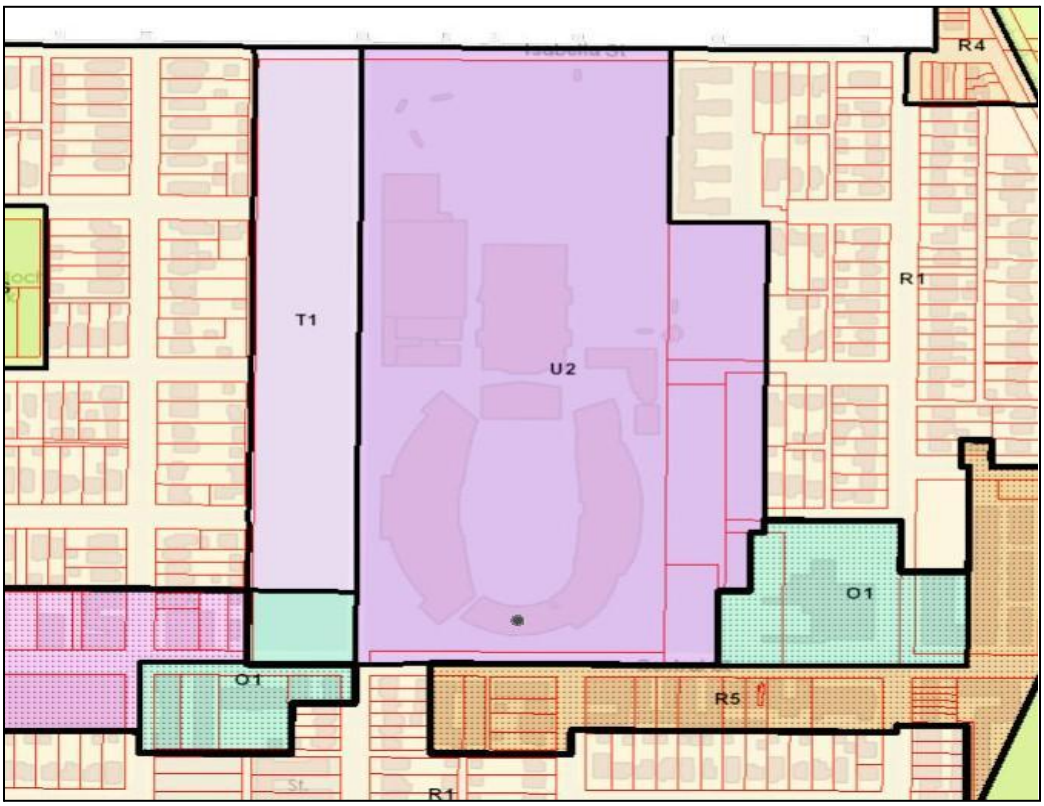
The site, 1501 Central Street, is approximately 29.7 acres (1,293,359.2 s.f.) located on the north side of Central Street, just east of Ashland Avenue and south of Isabella Street, the border between Evanston and the Village of Wilmette. The lot is rectangular with 785.75 feet of frontage along Central Street. It currently consists of Ryan Field, Welsh-Ryan Arena, Drysdale Field, Rocky Miller Park, Trienens (Athletic) Performance Center and Anderson Hall along with parking east, south and west of Ryan Field.

1501 Central Street - aerial

Immediately to the north of the subject property are single-family homes in the Village of Wilmette. Immediately west across Ashland Avenue is Northwestern University's parking lot, the south end of which is leased by the City of Evanston (99 parking spaces), and single family homes further west just across the adjacent alley. South across Central Street are several multi-family buildings including two with ground floor commercial, and single-family homes. To the immediate east of the site are single-family

homes, a multi-family building at Isabella and Evanston Hospital offices at Central Street.

The existing land use pattern in the block area includes a mix of various types of residential along with some commercial and institutional (hospital) uses.



Zoning map

Surrounding Zoning and Land Uses	Zoning Districts	Land Use
North	(Wilmette) R1 Districts	Single-family homes
South	R1- Single Family Residential R5 – General Residential O1 - Office oCSC- Central Street Corridor Overlay	Multi-family, Single-family homes, Commercial (Campus Gear)
East	R1- Single Family Residential O1 – Office	Single-family, Multi-family, Hospital Offices
West	T1- Transitional Campus District	Parking lot, Single Family, Commercial

	O1 – Office R1- Single Family Residential B1a - Business oCSC - Central Street Corridor Overlay	

Project Summary

The applicant proposes to demolish the existing stadium and ancillary maintenance building to construct a new open air 35,000 spectator capacity stadium with on-site parking (515 spaces), new maintenance enclosure and ancillary structures. The stadium is ovular shaped with a canopied open roof, oriented to face northwest/southeast, and consists of the following levels:

- Event Level
- Main Concourse
- Founders Level
- Upper Concourse
- Patio Level
- Press Level

Site Design & Access

The Event Level is below-grade and includes three loading berths and 20 parking spaces accessible from a ramp off of Central Street. This level provides direct field access and consists of team locker rooms, mechanical and telecom spaces, training rooms, kitchen, and some suite/club spaces among other items. General seating for spectators is located on the Main Concourse, Upper Concourse and Press Levels with access to the smaller Patio Level for concessions and restrooms and assumed limited access to the Founders Level. There are various controlled entry points into the stadium, the main entry from the east parking lot is located on the northeast side of the proposed stadium.

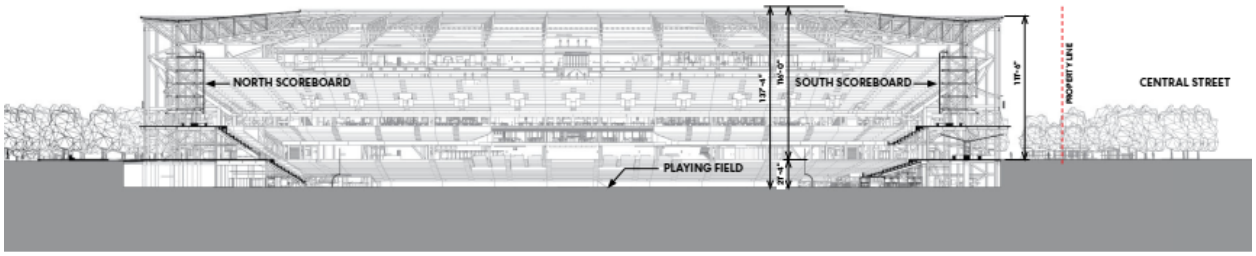
For passenger vehicles, two access points are proposed to the on-site parking, one off of Central Street near the southeast corner of the site, the other off of Isabella Street near the northeast corner of the site. For commercial vehicles, one access point to the three required long loading berths (12x50 feet) below grade is proposed at the south end of the site off of Central Street. Truck turning diagrams are provided in the attached development plans. Staff notes that targeted coordination will need to occur to ensure there are no potential conflicts between the loading berths and parked vehicles in this area and should be outlined in the Traffic Management Plan.

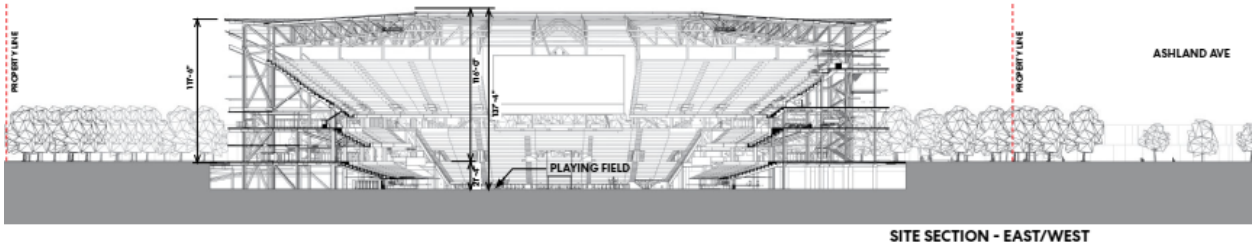
A new mechanical enclosure will replace the existing one at approximately the same location northeast of the stadium. Staff recommends a condition be considered to require the mechanical enclosure to be designed with sound attenuating material to mitigate any noise impacts. Plaza space is located on the southwest corner of the site

near the corner of Central Street and Ashland Avenue. Additional plaza space consisting of a bandshell and ancillary structures proposed for food sales are located west and north of the stadium. Emergency vehicles will have a clearance around the stadium, with a 20 ft. wide lane for medical emergency vehicles and fire lane widths of 24 ft. and 26 ft. which have been reviewed by the Fire Department. These lanes have access to/from Central Street and Ashland Avenue.

Bulk & Height

The building is proposed at the south end of the site with a northwest/southeast orientation. The field is located approximately 21 ft. 4 in. below grade with an overall height of the building from grade to the top of the canopy of 116 ft.. Per Section 6-15-7-8, the maximum height for university buildings is 125 ft. provided that in cases the required side or rear yards adjacent to or across a street or alley from an R1, R2 or R3 district shall be increased in width or depth by 2 ft. for each additional foot of building height above 35 ft. As noted above, the development site is adjacent to the R1 district to the east. Since the proposed height is 81 ft. above 35 ft., the minimum setback is 177 ft. (15 + {81*2} = 177). The proposed interior side yard setback of the building from the east property line is approximately 181 ft. which includes the required landscape strip.





North/South & East/West Site Sections

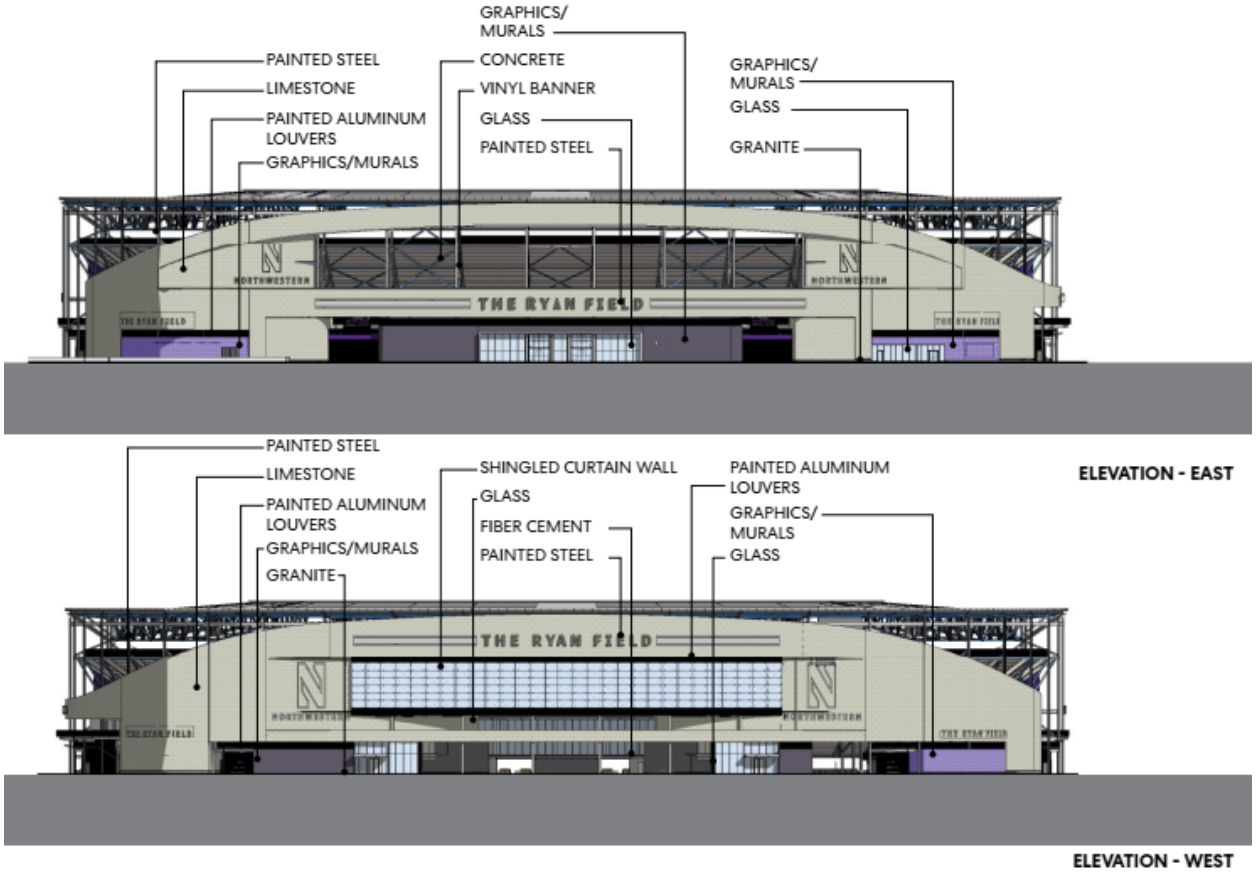
Architecture & Landscaping

The proposed exterior building materials include:

- Limestone
- Concrete

- Granite
- Painted Steel
- Painted Aluminum Louvers
- Perforated Metal
- Glass
- Shingled Curtain Wall
- Graphics/Murals

In addition to the proposed materials and design as illustrated below and on the attached elevations and renderings, the proposed building will be required to provide bird-friendly design elements per Ordinance 83-O-22 at the time of building permit application.The canopy design over the seating bowl provides some mitigation of light and sound pollution from the uses within the stadium. That being stated, a fully enclosed roof or dome over the field would provide additional mitigation of that pollution to the surrounding uses. Though a full roof or dome may require additional height to be added to the stadium, this could be a possible trade-off to further reduce impacts of sound and light from games and other proposed events.



Building Materials

The applicant will be providing the required 35 ft. wide landscape strip for the majority of the east interior side yard, which is adjacent to the R1 district, with the exception of a

small area near the northeast corner of the lot where a site development allowance is being requested for a 16 ft. 3 in. wide landscape strip to accommodate an existing TV broadcast cabinet. This landscape strip will integrate bio-infiltration swales to support the proposed development's stormwater management system. Shade trees are proposed along Central Street and Ashland Avenue as well as north of the stadium between the stadium and Welsh-Ryan Arena. Ornamental shrubs are scattered through the proposed plaza area and new play areas are proposed near the southeast and southwest corners of the building. A tree protection, preservation and replacement plan is provided as part of the attached plans.

Environmental Impacts

Given the proposed below-grade event level of the stadium, the need to provide a new storm sewer to the Northshore Channel, and concerns raised by residents and staff of the possible effects of this development, staff requested additional information regarding groundwater management strategies for groundwater withdrawal at the proposed stadium and a general environmental assessment of the impact these strategies will have on the neighborhoods around the stadium. The applicant provided information that included explaining the installation of a passive subsurface drainage system designed for the event level slab, confirmation that a geotechnical site exploration has been completed and a Subsurface Exploration and Geotechnical Engineering Report has been completed, and assurances that there will be no impact to the groundwater of the surrounding neighborhood areas nor to the existing vegetation.

The design of the project aligns with the University's goals to ensure existing facilities, new construction, and campus infrastructure are resilient, reliable, accessible, and sustainable. The project is pursuing a LEED Gold Certification and will implement new design features to improve the sustainability of the site. Detailed responses to questions asked of the applicant are within the Response to the 7.31.23 Staff Review Letter which is attached. Staff notes that the project would be required to meet both City engineering and Public Works requirements and Metropolitan Water Reclamation District (MWRD) requirements. In addition, staff has suggested several conditions for the Land Use Commission's consideration to ensure the proposed project aligns with the City's current and climate and sustainability goals.

Transportation & Mobility

On-Site & Off-Site Parking

The applicant proposes 1,408 total parking spaces, including 515 on-site (with 20 below grade parking spaces) and 893 parking spaces in the existing parking lot across the street from the site (within 1,000 ft. of the subject property) where 4,364 stalls are required for the principal uses on the lot (Ryan Field, Welsh-Ryan Arena, Drysdale Field and Rocky Miller Park).

Section 6-16-2-6 of the Zoning Code defers to the Illinois Accessibility Code, as amended, which requires nine (9) accessible parking stalls. 18 accessible parking stalls are proposed on the adjacent parking lot and 4 are proposed below grade for a proposed total of 22 new accessible parking spaces. 18 accessible parking spaces exist

on the parking lot across the street from the stadium.

In addition to the above-required parking stalls, the applicant is required per Section 4-2-2, Table 406.2.7.2 of Title 4 –Building Regulations of City Code to provide infrastructure for electric vehicles in the following ratio on the lot to be developed:

- 10% EV-Installed → 49 stalls
- 40% EV-Capable → 197 stalls

Loading
The proposed stadium requires three (3) on-site long loading berths (12x50 ft). The proposed development meets this requirement with the three berths proposed below grade with access off of Central Street. The applicant has indicated they anticipate deliveries and trucks used for events will utilize the below grade area to load and unload equipment as it has direct access to the playing field. Staff suggests a condition be added that deliveries and trucks used for events to load and unload equipment be limited to the below grade area to mitigate impacts to the surrounding area.

In addition to the required below grade loading, the applicant is also proposing to designate a pick-up/drop-off area for Transportation Network Companies (TNC's), such as Uber or Lyft. Prior to events it is assumed that those vehicles will drop-off passengers primarily along Central Street near Ryan Field; however, post events, a designated area will be established at Canal Shores Lot #1 and Haven Middle School's parking lot with the assistance of a geofence, a digital boundary restricting where TNC vehicles are able to pick-up and drop-off, and designated locations that will be communicated to drivers and passengers through the TNC's mobile apps.

Traffic and Circulation
The applicant submitted a Traffic Impact Study dated April 2023 and revised August 14, 2023, conducted by Kimley-Horn to analyze possible effects the proposed development may have on traffic in the area, specifically as it relates to proposed concert uses. The study noted that the proposed stadium has a capacity that is 12,000 fewer spectators than the existing stadium and that capacity decreases further for concert events to 28,500 spectators. The site itself is considered a Transit Oriented Development served by multiple public transportation lines. For train service, the CTA elevated light-rail Purple Line Davis Street stop and the Union Pacific North Metra stop are both within walking distance at transit stations approximately one quarter-mile from the subject property. Stops for CTA bus route #201 (which operates between the Howard Red Line Station along Ridge Road, Church Street, Sheridan Road, and Central Street to Old Orchard Shopping Center in Skokie) are located just south of the site. Additionally, the site is near designated bike routes on Isabella Avenue, Asbury Avenue, Lincoln Street and Green Bay Road. On-street parking is available on both sides of Central Street and the east side of Ashland Avenue. However, as part of suggested mitigation measures, the study does recommend that the parking be restricted on both sides of Central Street and that traffic be restricted to one way on Ashland Avenue during game days and events Limited parking is also available on Isabella Street and there is restricted parking on the north side of Isabella (no parking 2 hours before to 2 hours after football games).

The traffic study evaluated pre-event and post-event peak hours (6:00PM to 7:00PM and 10:00PM to 11:00PM respectively) on a typical weekday evening and Saturday evening to cover the possible range of concert event dates. The analysis took into account lane configurations and routing, on-street parking restrictions, traffic controls and active management of nearby intersections by Evanston Police as is typically done for football games. It also anticipated use of parking spaces at the on-site parking lots as well as off-site parking spaces at surface lots and garages on Northwestern's campus (1,613), Downtown garages (3,583), Canal Shores (850) and Commuter parking spaces on Poplar Street (200). It is anticipated that shuttle buses will be used to get people to and from the campus and downtown parking areas, similar to what is currently done for football games. Targeted efforts need to be enumerated as to how visitors will be encouraged to use the downtown parking and directed to shuttle service to and from the site. Additionally, staff has called attention to the fact that the Canal Shores parking is heavily dependent on weather conditions, as the surface is grass and not the standard hard surface required for parking spaces. Inclement weather conditions could render that parking option unusable. This raises concerns regarding the amount of consistently available parking spaces.

The study anticipates the following mode split for transportation to and from the stadium for concert events:

Table 6. Estimated Concert Transportation Mode Share

Travel Mode	Percent Share
Automobile + Park	52%
CTA (Purple Line)	30%
Metra	10%
Taxi / TNC	5%
Limo / Black Car	1%
Party Bus / Trolley	1%
Pedestrian / Bicycle	1%
Total	100%

Additionally, the study found that the proposed mix of on-site and off-site parking areas and use of different modes of transportation distributes the anticipated traffic and mitigates impact to the immediate surrounding area as do existing and proposed parking restrictions on the residential streets surrounding the stadium. It also found that current traffic volumes during evening concert peak hours are lower than volumes during typical weekday afternoon peak periods, resulting in additional capacity available to accommodate event traffic. Table 13 summarizes the existing and capacity analysis that results for the weekday and weekend (Saturday) pre-event and post-event peak hours expressed in terms of level of service (LOS). Levels of service range from A to F with LOS A as the highest (best traffic flow and least delay), LOS E as saturated or at-capacity conditions, and LOS F as the lowest (oversaturated conditions). The

analysis indicates intersections including Green Bay Road / Central Street, Green Bay Road / McCormick Boulevard, and Central Street / Ashland Avenue will experience the most impact to LOS and will be temporarily reduced below LOS D which is the typically the minimum level of service accepted by jurisdictional agencies in Northeastern Illinois.

Staff notes that, although a level of service "D" is acknowledged as being a generally accepted standard for jurisdictional agencies in northeastern Illinois, this decrease in the level of service on surrounding streets presents significant concern to staff. Possible decreases to a level of E or F need to be mitigated. As such, staff recommends the applicant propose additional mitigation measures prior to City Council consideration in addition to those outlined both in the impact study and corresponding peer review be included as conditions should the proposed development be approved. Additionally, as requested, the Traffic Management Plan shall be revisited on a regular basis to assist in correcting negative impacts that may be created.

The study suggests that partnerships with CTA and Metra could incentivize transit use which would also be in a better position to supplement shuttles for downtown parkers, ultimately reducing vehicle trips in the area for events. It also recommends using the same event measures currently utilized for football games days for pre and post event traffic management, including but not limited to: access and parking restrictions in surrounding neighborhoods, reorienting traffic flow on certain streets, use of shuttles to main campus and downtown parking garages, and use of police to help direct traffic.

City staff consulted with Interwest to conduct a review of the submitted Traffic Impact Study. The peer review provided comments (also attached) including limiting concert capacity to the number that has been stated (28,500), inclusion of wayfinding signage as the applicant's expense, confirmation that the bassline scenario for evaluating impacts includes manual controls used for football games, inclusion of on-site transit information kiosks, requiring off-site parking for employees, confirmation that the level of service (LOS) provided incorporates recommended mitigation measures, identifying and integrating mitigation measures to ensure pedestrian safety and enhance connections and linkages to transit, and explaining how the proposed project aligns with the City's Multi-Modal Transportation Plan.

In addition to these comments, Interwest suggested the following mitigation measures:

1. Implement specific roadway improvements where necessary, feasible and practical.
2. Identify and design mitigation measures to enhance pedestrian safety.
3. Enhance connections and linkages to transit.
4. Include on-site transit information kiosks.
5. Provide off-site parking for employees.
6. Ensure ongoing compliance with the City of Evanston Multi-Modal Transportation Plan.

The applicant responded to these comments and recommendations in their response to the most recent staff review letter dated July 31, 2023 and has submitted an outline of

the Traffic Management Plan which is attached to this staff report. This plan is intended to mitigate impacts associated with full capacity game day events.

Environmental Assessment Review (Sound Study)

The applicant provided an environmental assessment review conducted by Wrightson, Johnson, Haddon & Williams Inc., updated August 2, 2023 to analyze the anticipated sound produced by concert events at the proposed stadium (attached). Henderson Engineers conducted a series of environmental sound measurements at and around the Ryan Field property. Measurements were conducted during football game day and non-game daytimes to identify environmental sound levels and establish current sound levels experienced in the surrounding residential areas. Long term and spot sound measurements were conducted at various points surrounding the stadium and in the surrounding neighborhood.

For concerts, it was assumed that stage placement would be at the south end of the stadium, as the presence of other buildings north of it provide some level of sound mitigation (note: the applicant submitted a statement with an alternative placement on the north end, attached as part of the revised assessment review). Projected sound measurements showed as compared with a non-game day daytime activity ambient sound levels between 50-65 dBA and game-day activity ambient sound of 70-80 dBA, notably for a period of time that extends beyond just the football game itself. Concerts are projected to create sound levels at approximately 55-75 dBA and 85-95 dBC; dBA levels will reach similar peak levels to those measured for game day activities at the existing stadium. Levels associated with concerts, while elevated, are expected to occur for shorter aggregate periods of time than football game day activities, though they may be more consistent during that period. With added sound mitigation measures the sound levels are projected to drop to 60 and 65 dBA range.

Generally, the study found “While not eliminating sound emanating completely from the new stadium, the new stadium design elements [distributed house sound system, canopy above the seating area with sound reducing characteristics, and enclosures and walls around the seating bowl that help reduce sound emissions to the community] will be helpful in reducing sound in the neighboring communities when compared to the open nature of the current stadium with a cluster sound system” and expected that combined with lower stadium capacity, there will ultimately be less sound exposure to the residential properties surrounding the stadium compared to what is currently experienced.

City staff consulted with Interwest to conduct a review of the submitted Environmental Assessment Review (attached) which provided comments including but not limited to: adding definitions and a decibel (dBA) chart to provide context for different decibel levels, the need of the study to quantify sound levels once it reaches residential properties and the reduction as it goes to those properties, inclusion of ground-borne vibrations generated from construction and associated uses, listing of sensitive receptors/land uses within the area that may be affected, explanation of how how sound absorbing materials will be used throughout the structure, use of loudspeakers on the

site, how the proposed project and associated operations will comply with City Code as it relates to prohibited noises and inclusion of the Engineer's model inputs and outputs as an appendix.

In addition to these comments, Interwest suggested the following mitigation measures:

1. Limit the duration of full-capacity events, i.e., seven consecutive hours.
2. Design the PA system so that it does not exceed a Lmax of 70 dBA at the neighboring noise sensitive land uses, i.e., residences. This would require the installation of a distributing sound system with highly directional and carefully aimed loudspeakers around the bleachers and field. The distance between the loudspeakers and the coverage area should be minimized to reduce spill to the community. In addition, the PA system output volume should be regulated by an audio processor with the ability to limit the audio output levels (e.g. compressor/limiter).
3. Parking structures located within 200 feet of any residential use shall be constructed with a solid wall fronting the residences and utilize textured surfaces on garage floors and ramps to minimize tire squeal.
4. Utilize sound-absorbing materials on the exterior of stadium structures where appropriate and effective to reduce noise levels at adjacent off-site sensitive receptors.
5. Implement the Best Management Practices (BMP) listed in the Transportation Demand Management (TDM) to reduce traffic generated noise.
6. Locate the loading dock and trash/recycling areas for the stadium in the subterranean level, which will preclude noise from this source at exterior locations.

<u>Proposed Public Benefits</u>

Northwestern has proposed the following items as public benefits which will continue to be refined:

1. Local minority and women-owned business hiring and contracting efforts for construction jobs, which the University will report transparently;
2. Marketing and advertising support to the Central Street Business Association, among others;
3. Efforts to establish advance concert ticket presale windows for Evanston residents;
4. New space that will be open to the public from 7:00am – 9:00pm, subject to ordinary restrictions and periodic closures;
5. An annual, on-site signature City event; and
6. Free seasonal festivals and community movie nights.

Staff notes that the currently proposed public benefits list is limited and does not provide the tangible items that are typically seen for planned developments. As specified in the attached Northwestern's Letter of Intent (LOI) for the Memorandum of Understanding, final public benefits associated with the redevelopment of Ryan Field, including additional financial contributions by the University, remain under consideration and will be finalized prior to submission of this application for City Council review. Finalized

public benefits will be part of the ordinance for the project, should it receive Council approval.

Additional public benefits that could be considered include but are not limited to the following:

1. Environmental considerations: replacement of storm sewer east of the site
2. Inclusion of Evanston businesses, with emphasis on Central Street Businesses, within vendor areas of the stadium.
3. Deploy a right-sized zero emissions shuttle service for events.
4. Deconstruct existing buildings and reuse materials onsite.
5. Build an all-electric Net Zero Ryan Field or draft a 2040 “Net Zero Ryan Field” Implementation Plan.
6. Offset all vehicular tailpipe emissions related to construction and spectator attendance in perpetuity.
7. Offset all building energy emissions with additional local investment in renewable energy.
8. Preserve existing trees and contribute to the City’s tree health, maintenance, and planting efforts.
9. Contribute to the City’s Sustainability Fund.
10. Deploy two additional Divvy bikeshare stations.

Compliance with the Zoning Ordinance

The U2 University Athletic Facilities District is intended to permit the utilization of university facilities within the district in a manner that is compatible with the surrounding development, which is predominantly residential.

The applicant is requesting a Special Use for a Planned Development in the U2 District to construct a 35,000 spectator capacity stadium with ancillary structures and on-site parking spaces. The following site development allowances are being requested:

Base zoning, allowable Planned Development site development allowance			
	Base Requirements	**Site Development Allowance (SDA)**	**Proposed**
Parking Spaces	4,364	None	1,408 (515 on-site, 893 on parking lot w/in 1,000 ft.)
Landscape Strip	35 ft. (adjacent to residential districts)	None	16 ft. 3 in. at closest point

Side Yard Setback (*open parking*)	15 ft.	None	6 ft. 10 in.

Compliance with the Comprehensive Plan

The proposal generally complies with the Evanston Comprehensive General Plan with regards to use. The following goals, objectives and actions within the Comprehensive Plan should also be considered:

- *Support the growth and evolution of institutions while recognizing that they are part of their mostly residential surroundings; Assure that institutional development enhances surrounding neighborhoods as well as the economic development of Evanston (Chapter 6, p56).* The Comprehensive Plan recognizes that it is inevitable that some institutions will renovate, enlarge, or reduce in scale their operations in the future and that the City should support that growth and evolution so long as the growth does not have an adverse impact upon the residentially-zoned adjacent neighborhoods. The existing stadium has been in use since the 1920's, surrounded by residential uses. Constructing a more modern stadium that will decrease the number of spectators at the site, mitigate the noise from current and proposed uses, and provide new landscape plaza space will create a more inviting space and attract spectators and residents that will patronize local businesses. That being said, the increased activity will impact the surrounding areas in terms of increased traffic and noise. The traffic Management Plan and various suggested mitigation measures are critical to lessening the impact and will need to be enforced and revisited on an ongoing basis.
- *Recognize the benefits of mixing residential, commercial, and institutional uses in neighborhoods; Minimize the adverse effects of such circumstances as traffic and parking congestion or incompatible hours of operation as part of City technical assistance or zoning/site plan review of businesses and institutions proposing expansion or relocation to sites adjacent to residential areas. (Part 1, Ch. 2, Objective, pg. 25):* The proposed stadium will be replacing the existing stadium at a smaller capacity with expected football game days and associated traffic. The introduction of a number of concerts presents concerns to both staff and residents with regards to traffic management, parking and sound. Using mitigation efforts currently employed during football game days, expanding upon efforts to promote multi-modal travel use, and implementing suggested mitigation

efforts to reduce sound impacts on surrounding neighborhoods is imperative.

- *Encourage new developments to complement existing street and sidewalk patterns (Part I, Ch. 2, Policies/Actions, pgs. 25-26):* The proposed development increases the landscape areas within the site and street trees along Central Street and Ashland Avenue where there is currently an over-abundance of hardscape areas and parking. The new plaza area will lessen the impact of the new stadium from a pedestrian perspective and be a more inviting, interactive space for the overall community.

Compliance with the Design Guidelines for Planned Developments

The Design Guidelines for Planned Developments speak largely to buildings and sites used for residential, office and retail uses; construction of a stadium was likely not the type of development the guidelines contemplated. That being said, there are still some measures that can be applied to the proposed development. Building materials, as stated above vary and include, concrete, limestone, granite, glass and painted steel and metal among other materials. The proposed canopy will aid in reducing sound and light pollution from the interior of the stadium. Though, as previously stated, the sound and light pollution created by the stadium remains of great concern to staff and residents and a full roof or dome could help to further mitigate those impacts. The new ovular shaped stadium provides additional landscaped open space that does not currently exist and which will provide a less harsh pedestrian experience along Central Street and Ashland Avenue. The required 35 ft. landscape strip will be installed and provide a buffer between existing single family homes east of the site and the parking lot that will run along the east side of the lot where there currently either is none or a very narrow one exists.

Site circulation is fairly controlled with entry into the below–grade loading off of Central Street and access to the east parking lot off of Central Street and Isabella Street. Landscaped islands with shade trees are provided throughout the parking lot. Lighting within the east parking lot is proposed to match what currently exists. Emergency vehicle access will be provided off of Central Street, and Ashland Avenue as needed, through the parking lot with enough space provided around the perimeter of the stadium for both emergency medical vehicles and fire truck access. As noted above pedestrian entry into the stadium is provided at multiple points.

Staff Project Review Discussion

Staff met on May 30, 2023 to discuss the project prior to compiling several review letters to the applicant. During discussions a number of comments were shared and concerns raised including:

- Parking/traffic concerns- depending on Canal Shores for parking since inclement weather would render it unusable, confirmation of a location for uber/lyft pick-up and drop-off, effects on truck routes and truck turning concerns, the need for a Traffic Management Plan that could be used for various events at the site.
- Fire - confirming hydrant placement, emphasizing that below grade fire truck access is not preferred, possibility of including similar fire suppression system as is in Welsh-Ryan Arena.

- Public Works - the need for details on a storm sewer to the Northshore Channel if MWRD allows, confirmation of a future water main replacement on Ashland Avenue and the need for Ashland Avenue to be upgraded after construction.
- Landscaping - using raised curbs for new trees instead of tree grates and using mulch at the base, confirming a tree preservation and replacement plan.
- Sustainability - requiring a pre-check list for LEED certification, possibilities of including solar panels in the parking area
- Possibility of limiting the number of events that can occur on the site at the same time.

Additional comments and questions were provided in subsequent staff review letters which were provided to the applicant and made available on the City's Proposed Projects page.

Should the Land Use Commission recommend approval of the requested planned development and associated zoning relief, staff suggests the following conditions be considered as part of the recommendation:

1. A Traffic Management Plan shall be finalized prior to the completion of demolition and shall be reviewed administratively on an annual basis.
2. A Memorandum of Understanding (MOU) between the City of Evanston and Northwestern University shall be approved that includes but is not limited to the following:
    - Use and reimbursement of City services for events.
    - Prohibition of tailgating for concert events.
    - Coordination meetings for events.
    - Security Plan
    - Sustainability Plan
    - Traffic Management Plan
    - Concert Operations Plan
    - Advance Notice of Concerts
    - Alcohol Controls
    - Public Benefits
    - Community Input
3. Implementation of mitigation measures at the University's expense suggested within the Environmental Assessment Review and subsequent Peer Review, including but not limited to:
    - Maintain use of best practice design elements proposed for the stadium including, utilization of a distributed house sound system within the seating bowl that limits noise levels to 70 DBH at the property line, providing additional canopy or roof/dome above the seating areas that incorporates adequate sound reduction characteristics, and use of enclosures and walls that help reduce sound emissions to the surrounding community.
    - Add vertical barriers around the concourse areas or other openings in the stadium. Barriers can be permanent or retractable. Utilization of sound-absorbing materials on the exterior of stadium structures where

appropriate and effective shall also be incorporated into the building design.
    - Limit concert events to use of the stadium's PA system. The PA system shall be designed so that it does not exceed a Lmax of 70 dBA at the neighboring noise sensitive land uses, i.e., residences. This would require the installation of a distributing sound system with highly directional and carefully aimed loudspeakers around the bleachers and field. The distance between the loudspeakers and the coverage area should be minimized to reduce spill to the community. In addition, the PA system output volume should be regulated by an audio processor with the ability to limit the audio output levels (e.g. compressor/limiter).
    - Install sound monitoring devices in and around the stadium- in the stadium seating bowl (typically at the mix position), on the stadium property, and/or within the surrounding residential areas.
    - Implement the Best Management Practices (BMP) listed in the Transportation Management Plan (TMP) to reduce traffic generated noise.
4. The applicant shall propose additional traffic & pedestrian mitigation measures that increase pre and post event LOS prior to City Council consideration.
5. Implementation of mitigation measures at the applicant's cost suggested within the Traffic Impact Study and subsequent Peer Review, including but not limited to:
    - Implement specific roadway improvements where necessary, feasible and practical, including:
    - Identify and design mitigation measures to enhance pedestrian safety.
    - Enhance connections and linkages to transit.
    - Include on-site transit information kiosks.
    - Provide off-site parking for employees.
    - Ensure ongoing compliance with the City of Evanston Multi-Modal Transportation Plan.
6. Use of the bandshell in the plaza shall comply with all City Codes relating to noise.
7. Truck traffic and deliveries used for events to load and unload equipment shall be limited to the below grade area.
8. That the development complies with Chapter 4-13, Floodplain Regulations, of the Evanston City Code and the Watershed Management Ordinance of the Metropolitan Water Reclamation District, prior to the issuance of any building permits;
9. That the development complies with the City's bird-friendly design requirements per Ordinance 83-O-22 and Green Building Ordinance 82-O-22 prior to the issuance of any building permits;
10. That the development complies with the City's electric vehicle parking requirements per §4-2-2, Table 406.2.7.2 of the City Code prior to the issuance of any building permits;
11. That the applicant repair any damage done to public right-of-ways as a result of construction on site.

12. That the applicant sign and agrees to a Construction Management Plan (CMP) with the City of Evanston prior to the issuance of any building or demolition permits. The CMP must include but is not limited to the following: water and sewer utility connections, construction staging plan, on-street and on-site construction parking restrictions, hours of operation, a plan including cross-sections showing pedestrian access around the site with the use of curb ramps, signage and/or striping, if necessary, foundation survey of surrounding structures including weekly reporting of seismographs for the duration of construction, submittal of environmental testing report prior to construction, visibility diagram for all construction site access points, a proposed schedule for street opening for utility connections with cross-section details, and project updates via monthly newsletter and project website.
13. That the applicant must record the approving ordinance with the Cook County Clerk's Office.
14. A Ryan Field Sustainability Plan that includes both "Construction" and "Operations" with either an all-electric net zero building or a pathway to net zero greenhouse gas emissions by 2040.
    a. "Construction"
        i. Provide plan for deconstruction (not demolition) of the existing structure
        ii. Provide plan for onsite materials reuse
        iii. Use low-carbon steel and low-carbon concrete
        iv. Calculate embodied carbon
        v. Conduct feasibility study of greywater digester for food prep waste in concession areas
        vi. Collaborate with ComEd on full building electrification, EV charging, and available incentives
        vii. Conduct new feasibility study of solar PV or solar parking canopies
    b. "Operations"
        i. Plan a path towards net zero greenhouse gas emissions that primarily addresses emissions from the building's energy usage by 2040
        ii. Include food waste diversion services within the Stadium Complex.
        iii. Include reusable food and beverage wares and the needed infrastructure.
        iv. Provide litter management plans for parking lot and neighboring areas
        v. Install hand dryers in restrooms

Standards for Approval

Prior to making a recommendation of approval, approval with conditions, or denial of any Special Use for a Planned Development, the LUC must review the request against

the following standards: 1) Standards for Special Uses (Section 6-3-5-10) 2) Standards for Planned Developments (Section 6-3-6-9) and 3) and General Conditions, Site Controls, and Standards for Planned Developments in the Special Purpose and Overlay Districts (Section 6-15-1-9). As the Commission makes its findings, it may also consider how the requested planned development provides public benefits, as listed in Section 6-3-6-3.

For the Land Use Commission to recommend that the City Council grant a Special Use, the Land Use Commission must find that the proposed Special Use:

A. Is one of the special uses specifically listed in the zoning ordinance;
B. Is in keeping with purposes and policies of the adopted comprehensive general plan and the zoning ordinance as amended from time to time;
C. Will not cause a negative cumulative effect, when its effect is considered in conjunction with the cumulative effect of various special uses of all types on the immediate neighborhood and the effect of the proposed type of special use upon the City as a whole;
D. Does not interfere with or diminish the value of property in the neighborhood;
E. Can be adequately served by public facilities and services;
F. Does not cause undue traffic congestion;
G. Preserves significant historical and architectural resources;
H. Preserves significant natural and environmental features; and
I. Complies with all other applicable regulations of the district in which it is located and other applicable ordinances, except to the extent such regulations have been modified through the planned development process or the grant of a variation.

For the Land Use Commission to recommend that the City Council grant a Special Use for the Planned Development with the requested Site Development Allowances, the Land Use Commission must find:

A. The requested Site Development Allowance(s) will not have a substantial adverse impact on the use, enjoyment or property values of adjoining properties that is beyond a reasonable expectation given the scope of the applicable Site Development Allowance(s) of the Planned Development location.
B. The proposed development is compatible with the overall character of existing development in the immediate vicinity of the subject property.
C. The development site circulation is designed in a safe and logical manner to mitigate potential hazards for pedestrians and vehicles at the site and in the immediate surrounding area.
D. The proposed development aligns with the current and future climate and sustainability goals of the City.
E. Public benefits that are appropriate to the surrounding neighborhood and the City as a whole will be derived from the approval of the requested site development allowance(s).

For the Land Use Commission to recommend that the City Council grant a Special Use for the Planned Development with the requested Site Development Allowances in the U2 University Athletic Facilities District, the Land Use Commission must find:

A. General Conditions

1. Each planned development shall be compatible with surrounding development and not be of such a nature in height, bulk, or scale as to exercise any influence contrary to the purpose and intent of the Zoning Ordinance as set forth in Section 6-1-2, "Purpose and Intent."

   If the proposed planned development is for a property listed as an Evanston landmark, or for property located within a historic district listed on the National Register of Historic Places or for property located within a historic district so designated by the Evanston Preservation Commission, the planned development shall be compatible with the "Secretary of the Interior's Standards for Rehabilitation" as set forth in the National Historic Preservation Act of 1966, as amended.

2. Each planned development shall be compatible with and implement the adopted Comprehensive General Plan, as amended, the Plan for Downtown Evanston, any adopted land use or urban design plan specific to the area, this Zoning Ordinance, and any other pertinent City planning and development policies, particularly in terms of: (a) Land use (b) Land use intensity (c) Housing (d) Preservation (e) Environmental (f) Traffic impact and parking (g) Impact on schools, public services and facilities (h) Essential character of the downtown district, the surrounding residential neighborhoods, and abutting residential lots (i) Neighborhood planning (j) Conservation of the taxable value of land and buildings throughout the City, and retention of taxable land on tax rolls.

3. Each planned development shall be completed within two (2) years of the issuance of the special use permit for the planned development. If extensive or staged development is approved as part of the planned development, however, the two (2) year requirement may be extended to provide for a more reasonable time schedule. The expanded time schedule shall be adopted as part of the planned development and so noted on the special use permit for a planned development.

4. No special use permit for a planned development shall be valid for a period longer than one (1) year unless a building permit is issued and construction is actually begun within that period and is diligently pursued to completion. The City Council may, however, for good cause shown, extend the one (1) year period for such time as it shall determine, without further hearing before the Land Use Commission. The City Council may, at its sole discretion, place conditions on the extension in order to assure that the planned development is diligently pursued to its completion.

5. All landscaping treatment within the planned development shall be provided in accordance with the requirements set forth in Chapter 17, "Landscaping and Screening," and shown on the required landscape plan that shall be submitted as part of the planned development application.

B. Site Controls and Standards. The following site controls and standards are established to provide a regulatory framework that will promote excellence in site design. Their establishment is not intended to restrict or inhibit the Design and Project Review Committee or the applicant from applying other site design principles and standards that may be applicable to the planned development being proposed and that may be found in or interpolated from the Plan for Downtown Evanston, and the City's Manual of Design Guidelines or in common use by design professionals.

1. For all boundaries of the planned development not immediately abutting a dedicated and improved public street, there shall be provided a transition landscaped strip a width of at least the following:
   …
   (e) U2: Thirty-five (35) feet.

   The transitional landscape strip shall consist of vegetative screening, fencing, or decorative walls in accordance with the Manual of Design Guidelines and Chapter 17, "Landscaping and Screening." The transition landscaped strip and its treatment shall be depicted on the required landscape plan and submitted as part of the planned development application. Residential planned developments shall provide a transition landscape strip of the type noted above in this Subsection (B)1 of at least eight (8) feet in width.

2. Walkways developed for a planned development shall form a logical, safe and convenient system for pedestrian access to all project facilities and off-site destinations likely to attract substantial pedestrian traffic. Pedestrian ways shall not be used by other automotive traffic.

3. The location, construction and operation of parking, loading areas, and service areas, shall be designed to avoid adverse effects on residential uses within or adjoining the development and, where possible, provide additional parking beyond that required for the planned development to service the downtown district in which it is located.

4. Principal vehicular access points shall be designed to permit smooth traffic flow with controlled turning movements and minimum hazards to vehicular or pedestrian traffic. If the planned development employs local streets within the development, said streets shall not be connected to streets

outside the development in such a way as to encourage their use by through traffic.

5. The planned development shall provide, if possible, for underground installation of utilities (including electricity and telephone) both in public ways and private extensions thereof. Provisions shall be made for acceptable design and construction of stormwater facilities including grading, gutter, piping, treatment of turf, and maintenance of facilities.

6. For every planned development there shall be provided a market feasibility statement that shall indicate the consumer market areas for all uses proposed in the development, the population potential of the area or areas to be served by the uses proposed and other pertinent information concerning the need or demand for such uses of land.

7. For every planned development involving twenty (20) or more dwelling units or forty thousand (40,000) square feet in gross area, there shall be provided a traffic circulation impact study that shall show the effect of all proposed uses upon adjacent and nearby roads and highways. The study also shall show the amount and direction of anticipated traffic flow and clearly describe what road improvements and traffic control improvements might become necessary as result of the construction of the proposed development.

8. The Zoning Administrator may, at his discretion, require of the applicant additional studies or impact analyses when he determines that a reasonable need for such investigation is indicated.

Finally, in relation to Standard 6-3-6-9(E), below are examples of “the public benefits to the surrounding neighborhood and the City as a whole that are intended to be derived from the approval of planned developments, [which] include, but are not limited to:”

A. Preservation and enhancement of desirable site characteristics and open space.
B. A pattern of development which preserves natural vegetation, topographic and geologic features.
C. Preservation and enhancement of historic and natural resources that significantly contribute to the character of the City.
D. Use of design, landscape, or architectural features to create a pleasing environment or other special development features.
E. Provision of a variety of housing types in accordance with the City's housing goals.
F. Elimination of blighted structures or incompatible uses through redevelopment or rehabilitation.
G. Business, commercial, and manufacturing development to enhance the local economy and strengthen the tax base.

H. The efficient use of the land resulting in more economic networks of utilities, streets, schools, public grounds, buildings, and other facilities.
I. The substantial incorporation of generally recognized sustainable design practices and/or building materials to promote energy conservation and improve environmental quality, such as level gold or higher LEED (leadership in energy and environmental design) certification.

Action by the Commission

After making findings of fact as to whether or not the requested Special Use for a Planned Development with Site Development Allowances meets or does not meet the aforementioned standards, the Land Use Commission may make a recommendation or recommendations to the Planning & Development Committee of the City Council to approve, approve with conditions, or deny the zoning relief as requested.

Attachments

1. Original Planned Development Application
    - Project Narrative
    - Statement of Compliance
    - Response to 12.8.22 Staff Review Letter
2. Development Plans dated 8.15.23
    - P1 - Site Plan-Elevations-Materials-Bird Friendly Measures
    - P2 - Renderings-Photos of Existing
    - P3 - Signage Plan
    - P4 - Site Structures
    - P5 - Area Plan-Loading-Access-Circulation Diagram
    - P6 - Utilities-Drainage-Topography-Soil Conditions
    - P7 - Landscape Plan
    - P8 - Fences-Walls-Lighting
    - P9 - Shadow Diagrams
    - P10 - Pedestrian Path
3. Staff Review Letter Dated 7.31.23 with Interwest Peer Review
4. Applicant Response to 7.31.23 Staff Review Letter
5. Traffic Impact Study
6. Traffic Management Plan Outline
7. Environmental Assessment Review Report
8. Okrent Kiesiel Evaluation Report
9. Draft Letter of Intent (LOI) for future Memorandum of Understanding (MOU)
10. Applicant Submitted Press Summary
11. Applicant Submitted Petition in Support
12. Economic Impact Study
13. Public Comments Received as of August 31, 2023

LAND USE COMMISSION

23PLND-0010
Text Amendment
Permitted Uses in the U2 University Athletic Facilities District

Memorandum

To: Chair and Members of the Land Use Commission

From: Meagan Jones, Neighborhood and Land Use Planner

CC: Sarah Flax, Director of Community Development
Elizabeth Williams, Planning Manager

Subject: Zoning Text Amendment, U2 University Athletic Facilities District, 23PLND-0010

Date: September 6, 2023

Request

Northwestern University requests a Text Amendment to the Zoning Ordinance, Section 6-15-7-2 Permitted Uses, to modify the list of permitted uses in the U2 University Athletic Facilities District and conditions required for public facing concerts. No changes are proposed to the U2 district boundaries.The Land Use Commission is the recommending body for this case in accordance with Section 6-3-4-6 of the Evanston Zoning Code and Ordinance 92-O-21.

Notice

The Application has been filed in conformance with applicable procedural and public notice requirements including publication in the Evanston Review on August 3, 2023 and August 10, 2023 as well as the Sun-Times on August 3, 2023 and August 21, 2023.

General Information

Applicant: Northwestern University
2020 Ridge Avenue
Evanston, IL 60201

Analysis

Background

Per the City's Zoning Ordinance, the U2 University Athletic Facilities District "is intended to permit the utilization of university facilities within the district in a manner that is compatible with the surrounding development, which is predominantly residential."

The U2 District is currently applied north of Central Street to the City limits, between Ashland Avenue to the west and University property west of Asbury Avenue to the east.

This zoning district encompasses Ryan Field, Drysdale Field, Miller Park, Welsh-Ryan Arena, Trienens (Athletic) Performance Center and Anderson Hall.

The Zoning Ordinance lists permitted uses in the U2 District in Subsection 6-15-7-2. *Permitted Uses:*

> The following uses shall be permitted in the U2 district:
> Business or vocational school.
>
> Fieldhouse.
>
> Indoor recreational facility (college and university).
>
> Outdoor recreational facility (college and university).
>
> Parking lot (college and university).
>
> Playground.
>
> Stadium.
>
> The following uses shall be considered permitted uses when conducted in association with the above permitted uses:
>
> - Intramural and intercollegiate sports and athletic events and practice therefor.
> - Local, regional and State elementary and high school athletic events and practice therefor.
> - Band playing and practice in connection with the above events.
> - Commencement, convocation and graduation exercises.
> - University-sponsored lecture, speakers, musical performances and other cultural events held within an enclosed building provided that attendance is limited to ten thousand (10,000) or less.
> - Luncheons and dinners and dining room facilities in a stadium provided that attendance is limited to the seating capacity of the facilities.
> - Accessory uses to the above permitted uses, including administrative and faculty offices, classroom, auditoriums, athletic facilities and parking spaces.
> - Off-street parking for hospital employees and for university students and employees.
>
> Temporary event (provided they are of a community or cultural nature and further provided they meet the conditions listed below):
>
> > This Subsection provides standards to ensure that temporary uses shall not impose an undue adverse effect on neighboring streets or property.
> >
> > Community and cultural events of a nonprofit nature intended primarily for residents of the City and amateur athletic events shall be permitted provided that the following conditions are met:
> >
> > 1) Sponsors of the temporary event obtain a certificate of zoning

compliance pursuant to Section 6-4-8-2 of this Title.

2) Attendance at such events is limited to ten thousand (10,000) persons or less.

3) Adequate university parking is available and is provided to all persons attending the event.

4) Private security is provided for those parking areas utilized.

5) Adequate provision of traffic-control devices at no City expense, including personnel, shall be provided to ensure the free flow of traffic and the security and safety of said traffic flow.

6) Live animals used in conjunction with any event may only be stored within a completely enclosed building.

7) No more than seven (7) such events shall be held in any calendar year in any one facility, and each such event shall not exceed five (5) consecutive days in duration.

8) Lighting associated with such events shall be directed away from adjacent residences.

9) Tractor trailers may not remain running while parked on the public street or in off-street parking areas.

A Text Amendment to this Section of the Zoning Code was approved on November 11, 2019, by ordinance 135-O-19, pertaining to community and cultural events. This text amendment permitted Northwestern University to host national events on a trial basis within Welsh-Ryan Arena, which has a capacity of approximately 7,039 spectators. The provisions within that text amendment were approved on a sunset basis which expired on December 31, 2021 and no longer apply. Due to the Covid-19 pandemic, no events were held during that trial period.

Proposal

Northwestern is requesting the text amendment to clarify the types of community events permitted and to allow for up to 6 public-facing, full-capacity concerts. This represents a reduction from their original request of up to 10 public-facing concerts. Specifically, the applicant is requesting the following changes:

Current Language	**Proposed Language**	**Explanation**
The following uses shall be considered permitted uses when conducted in association with the above permitted uses:	*Eliminate language*	Remove ambiguity about what uses are “conducted in association with an above permitted use” and allow for use of facilities in the U2 district by the community.
Intramural and intercollegiate sports and athletic events and practice therefor.	Intramural, intercollegiate or amateur sports and athletic events and practice therefor.	Clarify that other amateur sports events are allowed in addition to high school or college athletics, such as Olympic trials or competitions, 7 on 7 football games, college pro

		days/combines and Special Olympics events.
Band playing and practice in connection with the above events.	Band playing and practice in connection with another permitted use.	Clarify that band playing and practice is allowed in connection with any other permitted use, not simply the ones listed above.
New Section	Outdoor lectures, speakers, non-musical festivals, social events and other community or cultural events, and musical performances in conjunction or associated with the foregoing (which shall require loudspeaker permits from the City for any noise amplification), hosted by the University or City and designed for the University or local community, provided that the capacity for such events is no greater than 7,500, and no more than 60 days of programming occurs annually. Such events shall not include any outdoor plaza rentals to organizations not affiliated with the University or City.	Add a new section allowing for smaller community events in the U2 District that are sponsored by the University or City, intended primarily to allow for the use of the new Ryan Field plazas by the community.
Luncheons and dinners and dining room facilities in a stadium provided that attendance is limited to the seating capacity of the facilities.	Banquet halls, including breakfasts, luncheons, dinners, meeting and dining room facilities, provided that attendance is limited to the capacity of the specific facilities.	Allow for other dining/private event uses, including philanthropic events, weddings, birthdays, etc.

Off-street parking for hospital employees and for university students and employees.	Off-street parking for hospital employees and for university students, employees, guests and invitees.	Add “guests and invitees” as allowed in the off-street parking.

Temporary event (provided they are of a community or cultural nature and further provided they meet the conditions listed below): Community and cultural events of a nonprofit nature intended primarily for residents of the City and amateur athletic events shall be permitted provided that the following conditions are met: Sponsors of the temporary event shall obtain a certificate of zoning compliance pursuant to Section 6-4-8-2 of this Title.	Public-facing concerts (provided they meet the conditions listed below):	Clarify and simplify the type of capacity events that are allowed and eliminate the requirement of a certificate of zoning compliance, as required operationally in order to book acts in advance. Note: The requirement of coordinating meetings with City staff will be included in an MOU between Evanston and Northwestern.
Attendance at such events is limited to ten thousand (10,000) persons or less.	Attendance at such events is limited to the capacity of the facility.	Allow for events up to the capacity of the respective facility.
Adequate university parking is available and is provided to all persons attending the event.	A coordinated Transportation Management Plan shall be submitted to the City Manager or its designee.	Provides for required parking to be governed by the approved Planned Development and a Traffic Management Plan that will cover utilization of off-site parking, alternate modes of transportation, the provision for closure of streets and other topics.
Private security is provided for those parking areas utilized.	Private security is provided for University-owned parking areas utilized.	Clarify that private security is only required for University-owned parking areas (or as established by the Traffic Management Plan).
Adequate provision of traffic-control devices at no City expense including personnel, shall be provided to ensure the free flow of traffic and the security and safety of said traffic flow	Reasonable provision of multi- modal traffic-control devices at no City expense including personnel, shall be provided to ensure the free flow of pedestrian, bike and vehicular traffic and the security and safety of said traffic flow.	Enhance requirement to include “multi-modal” traffic control, including pedestrian and bicycle traffic.

No more than seven (7) such events shall be held in any calendar year in any one facility, and each such event shall not exceed five (5) consecutive days in duration.	There shall be no more than six (6) total days of such events in any calendar year within the U2 district, excluding setup and takedown. Such events shall not occur on the same date as other full-capacity events at the stadium or fieldhouse.	Establish the number of permitted events as 6 total across the entire district. Prohibit two full-capacity events occurring simultaneously at Ryan Field and Welsh-Ryan Arena.
Tractor trailers may not remain running while parked on the public street or in off-street parking areas.	Vehicles may only idle in approved designated areas on private property.	Expand “tractor trailers” to all vehicles and allow for idling on private property but only in designated areas. Note: Idling on public streets is restricted by Evanston idling code.
New Section	Concert music may be amplified during the hours of 10:00 a.m. through 10:00 p.m. on Sundays through Thursdays (subject to the following), and during the hours of 10:00 a.m. through 10:15 p.m. on Fridays, Saturdays and days preceding national holidays and legal school holidays enumerated in 105 ILCS 5/24-2, as permitted for special events pursuant to Section 9-5-20 and any associated required permits shall be issued.	Add event hours more restrictive than proposed noise ordinances and common practice to be restricted after 10:00 pm on school nights and 10:15 pm other nights.
New Section	Any uses not outlined herein shall require approval by the City’s Special Events Committee.	Clarify involvement of the City’s Special Events Committee.

<u>Traffic and Sound Impacts</u>

Concerns have been raised and discussed regarding the traffic management and sound created from hosting the increased events at Ryan Field. Northwestern anticipates that concert events will largely take place on the weekends but some may be scheduled during weekday evenings. Both a traffic impact study and environmental sound assessment were submitted and are summarized below in relation to Northwestern University’s proposed planned development for a new Ryan Field stadium.

Traffic Impact Study

The applicant submitted a Traffic Impact Study dated April 2023 and revised August 14, 2023, conducted by Kimley-Horn to analyze possible effects the proposed development may have on traffic in the area, specifically as it relates to proposed concert uses. The

study noted that the proposed stadium has a capacity that is 12,000 fewer spectators than the existing stadium and that capacity decreases further for concert events to 28,500 spectators.

The applicant submitted a Traffic Impact Study dated April 2023 and revised August 14, 2023, conducted by Kimley-Horn to analyze possible effects the proposed development may have on traffic in the area, specifically as it relates to proposed concert uses. The study noted that the proposed stadium has a capacity that is 12,000 fewer spectators than the existing stadium and that capacity decreases further for concert events to 28,500 spectators. The site itself is considered a Transit Oriented Development served by multiple public transportation lines. For train service, the CTA elevated light-rail Purple Line Davis Street stop and the Union Pacific North Metra stop are both within walking distance at transit stations approximately one quarter-mile from the subject property. Stops for CTA bus route #201 (which operates between the Howard Red Line Station along Ridge Road, Church Street, Sheridan Road, and Central Street to Old Orchard Shopping Center in Skokie) are located just south of the site. Additionally, the site is near designated bike routes on Isabella Avenue, Asbury Avenue, Lincoln Street and Green Bay Road. On-street parking is available on both sides of Central Street and the east side of Ashland Avenue. However, as part of suggested mitigation measures, the study does recommend that the parking be restricted on both sides of Central Street and that traffic be restricted to one way on Ashland Avenue during game days and events Limited parking is also available on Isabella Street and there is restricted parking on the north side of Isabella (no parking 2 hours before to 2 hours after football games).

The traffic study evaluated pre-event and post-event peak hours (6:00PM to 7:00PM and 10:00PM to 11:00PM respectively) on a typical weekday evening and Saturday evening to cover the possible range of concert event dates. The analysis took into account lane configurations and routing, on-street parking restrictions, traffic controls and active management of nearby intersections by Evanston Police as is typically done for football games. It also anticipated use of parking spaces at the on-site parking lots as well as off-site parking spaces at surface lots and garages on Northwestern's campus (1,613), Downtown garages (3,583), Canal Shores (850) and Commuter parking spaces on Poplar Street (200). It is anticipated that shuttle buses will be used to get people to and from the campus and downtown parking areas, similar to what is currently done for football games. Targeted efforts need to be enumerated as to how visitors will be encouraged to use the downtown parking and directed to shuttle service to and from the site. Additionally, staff has called attention to the fact that the Canal Shores parking is heavily dependent on weather conditions, as the surface is grass and not the standard hard surface required for parking spaces. Inclement weather conditions could render that parking option unusable. This raises concerns regarding the amount of consistently available parking spaces.

Additionally, the study found that the proposed mix of on-site and off-site parking areas and use of different modes of transportation distributes the anticipated traffic and mitigates impact to the immediate surrounding area as do existing and proposed parking restrictions on the residential streets surrounding the stadium. It also found that current traffic volumes during evening concert peak hours are lower than volumes during typical weekday afternoon peak periods, resulting in additional capacity available to accommodate event traffic. Table 13 summarizes the existing and capacity analysis

that results for the weekday and weekend (Saturday) pre-event and post-event peak hours expressed in terms of level of service (LOS). Levels of service range from A to F with LOS A as the highest (best traffic flow and least delay), LOS E as saturated or at-capacity conditions, and LOS F as the lowest (oversaturated conditions). The analysis indicates intersections including Green Bay Road / Central Street, Green Bay Road / McCormick Boulevard, and Central Street / Ashland Avenue will experience the most impact to LOS and will be temporarily reduced below LOS D which is the typically the minimum level of service accepted by jurisdictional agencies in Northeastern Illinois. Staff notes that, although a level of service "D" is acknowledged as being a generally accepted standard for jurisdictional agencies in northeastern Illinois, this decrease in the level of service on surrounding streets presents significant concern to staff. Possible decreases to a level of E or F need to be mitigated. As such, staff recommends the applicant propose additional mitigation measures prior to City Council consideration in addition to those outlined both in the impact study and corresponding peer review be included as conditions should the proposed development be approved. Additionally, as requested, the Traffic Management Plan shall be revisited on a regular basis to assist in correcting negative impacts that may be created.

The study suggests that partnerships with CTA and Metra could incentivize transit use which would also be in a better position to supplement shuttles for downtown parkers, ultimately reducing vehicle trips in the area for events. It also recommends using the same event measures currently utilized for football games days for pre and post event traffic management, including but not limited to: access and parking restrictions in surrounding neighborhoods, reorienting traffic flow on certain streets, use of shuttles to main campus and downtown parking garages, and use of police to help direct traffic.

City staff consulted with Interwest to conduct a peer review of the submitted Traffic Impact Study. The peer review provided comments (attached within staff memorandum for the Planned Development) including limiting concert capacity to the number that has been stated (28,500), inclusion of wayfinding signage as the applicant's expense, confirmation that the bassline scenario for evaluating impacts includes manual controls used for football games, inclusion of on-site transit information kiosks, requiring off-site parking for employees, confirmation that the level of service (LOS) provided incorporates recommended mitigation measures, identifying and integrating mitigation measures to ensure pedestrian safety and enhance connections and linkages to transit, and explaining how the proposed project aligns with the City's Multi-Modal Transportation Plan.

Staff notes that, although a level of service "D" is acknowledged as being a generally accepted standard for jurisdictional agencies in northeastern Illinois, this decrease in the level of service on surrounding streets presents significant concern to staff. Possible decreases to a level of E or F need to be mitigated. As such, staff recommends the applicant propose additional mitigation measures prior to City Council consideration in addition to those outlined both in the impact study and corresponding peer review be included as conditions with the associated planned development application should that proposed development be approved. Additionally, as requested, the Traffic Management Plan shall be revisited on a regular basis to assist in correcting negative impacts that may be created from the additional uses.

Environmental Sound Assessment
The applicant provided an environmental assessment review conducted by Wrightson, Johnson, Haddon & Williams Inc., updated August 2, 2023 to analyze the anticipated sound produced by concert events at the proposed stadium (attached). Henderson Engineers conducted a series of environmental sound measurements at and around the Ryan Field property. Measurements were conducted during football game day and non-game daytimes to identify environmental sound levels and establish current sound levels experienced in the surrounding residential areas. Long term and spot sound measurements were conducted at various points surrounding the stadium and in the surrounding neighborhood.

The applicant provided an environmental assessment review conducted by Wrightson, Johnson, Haddon & Williams Inc., updated August 2, 2023 to analyze the anticipated sound produced by concert events at the proposed stadium (attached). Henderson Engineers conducted a series of environmental sound measurements at and around the Ryan Field property. Measurements were conducted during football game day and non-game daytimes to identify environmental sound levels and establish current sound levels experienced in the surrounding residential areas. Long term and spot sound measurements were conducted at various points surrounding the stadium and in the surrounding neighborhood.

For concerts, it was assumed that stage placement would be placed at the south end of the stadium, as the presence of other buildings north of it provide some level of sound mitigation (note: the applicant submitted a statement with an alternative placement on the north end, attached as part of the revised assessment review). Projected sound measurements showed as compared with a non-game day daytime activity ambient sound levels between 50-65 dBA and game-day activity ambient sound of 70-80 dBA, notably for a period of time that extends beyond just the football game itself. Concerts are projected to create sound levels at approximately 55-75 dBA and 85-95 dBC; dBA levels will reach similar peak levels to those measured for game day activities at the existing stadium. Levels associated with concerts, while elevated, are expected to occur for shorter aggregate periods of time than football game day activities, though they may be more consistent during that period. With added sound mitigation measures the sound levels are projected to drop to 60 and 65 dBA range.

Generally, the study found “While not eliminating sound emanating completely from the new stadium, the new stadium design elements [distributed house sound system, canopy above the seating area with sound reducing characteristics, and enclosures and walls around the seating bowl that help reduce sound emissions to the community] will be helpful in reducing sound in the neighboring communities when compared to the open nature of the current stadium with a cluster sound system” and expected that combined with lower stadium capacity, there will ultimately be less sound exposure to the residential properties surrounding the stadium compared to what is currently experienced.

City staff consulted with Interwest to conduct a review of the submitted Environmental Assessment Review (attached) which provided comments including but not limited to: adding definitions and a decibel (dBA) chart to provide context for different decibel levels, the need of the study to quantify sound levels once it reaches residential

properties and the reduction as it goes to those properties, inclusion of groundbourne vibrations generated from construction and associated uses, listing of sensitive receptors/land uses within the area that may be affected, explanation of how how sound absorbing materials will be used throughout the structure, use of loudspeakers on the site, how the proposed project and associated operations will comply with City Code as it relates to prohibited noises and inclusion of the Engineer's model inputs and outputs as an appendix.

In addition to these comments, Interwest suggested the following mitigation measures:

1. Limit the duration of full-capacity events, i.e., seven consecutive hours.
2. Design the PA system so that it does not exceed a Lmax of 70 dBA at the neighboring noise sensitive land uses, i.e., residences. This would require the installation of a distributing sound system with highly directional and carefully aimed loudspeakers around the bleachers and field. The distance between the loudspeakers and the coverage area should be minimized to reduce spill to the community. In addition, the PA system output volume should be regulated by an audio processor with the ability to limit the audio output levels (e.g. compressor/limiter).
3. Parking structures located within 200 feet of any residential use shall be constructed with a solid wall fronting the residences and utilize textured surfaces on garage floors and ramps to minimize tire squeal.
4. Utilize sound-absorbing materials on the exterior of stadium structures where appropriate and effective to reduce noise levels at adjacent off-site sensitive receptors.
5. Implement the Best Management Practices (BMP) listed in the Transportation Demand Management (TDM) to reduce traffic generated noise.
6. Locate the loading dock and trash/recycling areas for the stadium in the subterranean level, which will preclude noise from this source at exterior locations.

Economic Impact

As part of the Text Amendment application, the applicant provided an Economic Impact Study, which is linked in the attachments below. This analysis measured the effects of direct, indirect, and induced business volume as well as the government tax revenue impacts of rebuilding Ryan Field as well as impacts of operating the stadium and hosting Northwestern football games and other special events. The study projected significant economic impact during construction of the stadium and an increase in the economic impact of football and gameday visitors. The addition of concerts and other special events on site are projected to also contribute to new annual economic impact to the City.

The City has consulted with C.H. Johnson Consulting, Inc. to conduct its own Economic Impact Study which is due to be completed this month.

Department Findings

With regard to this proposed change to the U2 District, staff does acknowledge that this text amendment presents a possible opportunity to increase community facing events, especially within the plaza space. Currently, in addition to game days, University-sponsored lecture, speakers, musical performances and other cultural events

held within an enclosed building with an attendance limited to 10,000 or less is currently a permitted use. Additionally, temporary events that are of a community or cultural nature are permitted with a number of conditions attached related to maximum number of attendees, restrictions on the number of days the event can take place, adequate parking being available, security measures and other items. A limit of 7 events currently may also take place over the course of 5 days for each event which can create significant impact to the surrounding neighborhood. This being noted, opening up additional events to up to 28,500 attendees at Ryan Field and having up to 7,500 attendees at outdoor events up to 60 total days throughout the year is a significant increase in attendees, which as noted above results in a number of concerns for City staff related to parking, traffic circulation, level of service of surrounding streets and intersections, and sound attenuation for the surrounding community.

Patrons of the events permitted through this text amendment may likely frequent other businesses in the surrounding area and encourage additional foot traffic for Evanston's businesses, especially along Central Street and downtown where additional parking is available and accessible through proposed shuttle service for event days (and currently exists for game days). It is critical that the traffic management plan that is put in place is detailed and reviewed on a consistent basis in order to adjust for any traffic needs and mitigate traffic circulation or parking issues that may arise from the increase in visitors to the buildings on the site.

Should the Commission vote to recommend approval of the text amendment, staff suggests the following revisions or conditions to what is proposed:

1. That spectator capacity at the concerts within Ryan Field be limited to 28,500.
2. Should capacity be proposed to exceed 28,500 within Ryan Field, a revised Traffic Impact Study shall be submitted for review prior to scheduling of said event.
3. A Memorandum of Understanding (MOU) between the City of Evanston and Northwestern University shall be approved that includes but is not limited to the following:
    - Use and reimbursement of City services for events.
    - Prohibition of tailgating for concert events.
    - Coordination meetings for events.
    - Security Plan
    - Sustainability Plan
    - Traffic Management Plan
    - Concert Operations Plan
    - Advance Notice of Concerts
    - Alcohol Controls
    - Community Input
4. Limit concert events to use of the stadium's PA system. The PA system shall be designed so that it does not exceed a Lmax of 70 dBA at the neighboring noise sensitive land uses, i.e., residences. This would require the installation of a distributing sound system with highly directional and carefully aimed loudspeakers around the bleachers and field. The distance between the loudspeakers and the coverage area should be minimized to reduce spill to the community. In addition, the

PA system output volume should be regulated by an audio processor with the ability to limit the audio output levels (e.g. compressor/limiter).

5. Install sound monitoring devices in and around the stadium- in the stadium seating bowl (typically at the mix position), on the stadium property, and/or within the surrounding residential areas.
6. Truck traffic and deliveries used for events to load and unload equipment shall be limited to the below grade area.
7. The Traffic Management Plan is reviewed and updated administratively between the City and the University on an annual basis and when changes to events are proposed.
8. Limit concert duration and days to those enumerated within the proposed amendment. Set-up and take-down for said concerts shall be conducted in such a manner that trucks are utilized in the below-grade area and active take-down after concerts shall be limited to 2 hours after evening concert completion. All set-up and take-down activities shall follow regulations enumerated in City Code section 9-5-20 and Section 10-4-18.

Standards for Approval - Zoning Text Amendment

Below is the language from Section 6-3-4-5 of the Zoning Code, to assist the Land Use Commission in making their findings of fact and recommendation to the City Council regarding the proposed text amendment.

> *The wisdom of amending the text of the Zoning Ordinance or the Zoning Map is a matter committed to the sound legislative discretion of the City Council and is not controlled by any one standard. In making their determination, however, the City Council should, in determining whether to adopt or deny, or to adopt some modification of the Land Use Commission's recommendation consider, among other factors, the following:*
>
> *A. Whether the proposed amendment is consistent with the goals, objectives, and policies of the Comprehensive General Plan, as adopted and amended from time to time by the City Council.*
> *B. Whether the proposed amendment is compatible with the overall character of existing development in the immediate vicinity of the subject property.*
> *C. Whether the proposed amendment will have an adverse effect on the value of adjacent properties.*
> *D. The adequacy of public facilities and services.*

Action by the Commission

After making findings of fact as to whether or not the proposed text amendment meets the aforementioned standards, the Land Use Commission may make a recommendation or recommendations to the Planning & Development Committee of the City Council to approve, approve with modifications, or deny the proposed text amendment. The Commission must first consider and make a motion on the proposed text amendment prior to considering zoning case 23PLND-0010. The Land Use Commission is the recommending body and the City Council is the determining body pursuant to Section 6-3-4-6 of the Evanston City Code.

Attachments

1. Applicable Zoning Code Excerpt - Section 6-15-7-2
2. **(Current)** Zoning Text Amendment Request - **8.18.23**
    - Revised Application Information
    - Text Amendment Language
3. Original Zoning Text Amendment Application -**1.27.23**
    - Supplemental Application Information
    - Proposed Text Amendment Language
    - Concert Transportation Management Overview
4. Revised Zoning Text Amendment Request - **5.3.23**
    - Revised Application Information
    - Proposed Text Amendment Language
5. Revised Zoning Text Amendment Request - **8.14.23**
    - Revised Application Information
    - Proposed Text Amendment Language
6. Economic Impact Study
7. Traffic Impact Study
8. Environmental Assessment Review

6-15-7-2. - PERMITTED USES.

The following uses shall be permitted in the U2 district:

Business or vocational school.

Fieldhouse.

Indoor recreational facility (college and university).

Outdoor recreational facility (college and university).

Parking lot (college and university).

Playground.

Stadium.

The following uses shall be considered permitted uses when conducted in association with the above permitted uses:

- Intramural and intercollegiate sports and athletic events and practice therefor.
- Local, regional and State elementary and high school athletic events and practice therefor.
- Band playing and practice in connection with the above events.
- Commencement, convocation and graduation exercises.
- University-sponsored lecture, speakers, musical performances and other cultural events held within an enclosed building provided that attendance is limited to ten thousand (10,000) or less.
- Luncheons and dinners and dining room facilities in a stadium provided that attendance is limited to the seating capacity of the facilities.
- Accessory uses to the above permitted uses, including administrative and faculty offices, classroom, auditoriums, athletic facilities and parking spaces.
- Off-street parking for hospital employees and for university students and employees.

Temporary event (provided they are of a community or cultural nature and further provided they meet the conditions listed below):

This Subsection provides standards to ensure that temporary uses shall not impose an undue adverse effect on neighboring streets or property.

Community and cultural events of a nonprofit nature intended primarily for residents of the City and amateur athletic events shall be permitted provided that the following conditions are met:

1) Sponsors of the temporary event obtain a certificate of zoning compliance pursuant to Section 6-4-8-2 of this Title.
2) Attendance at such events is limited to ten thousand (10,000) persons or less.
3) Adequate university parking is available and is provided to all persons attending the event.
4) Private security is provided for those parking areas utilized.
5) Adequate provision of traffic-control devices at no City expense, including personnel, shall be provided to ensure the free flow of traffic and the security and safety of said traffic flow.
6) Live animals used in conjunction with any event may only be stored within a completely enclosed building.
7) No more than seven (7) such events shall be held in any calendar year in any one facility, and each such event shall not exceed five (5) consecutive days in duration.
8) Lighting associated with such events shall be directed away from adjacent residences.
9) Tractor trailers may not remain running while parked on the public street or in off-street parking areas.

(Ord. 108-0-98; Ord. No. 3-O-14, § 26, 2-10-2014)

Northwestern University
Additional Documents Submitted 9.6.23

Response to Staff Review Letter
GEI Geotechnical Report
Southeast Rendering - Plaza Entry and Ramp
Existing and Proposed Site and Elevations

DLA Piper LLP (US)
444 West Lake Street, Suite 900
Chicago, Illinois 60606
www.dlapiper.com

Katherine C. Jahnke Dale
katie.dale@dlapiper.com
T 312.368.2153
F 312.251.2856

September 6, 2023

Meagan Jones
Community Development Department
Planning & Zoning Division
2100 Ridge Avenue
Evanston, Illinois 60201

RE: **Planned Development Application Ryan Field – 1501 Central Street**
Response to August 31, 2023 Staff Review Letter

Dear Ms. Jones,

We are receipt of your August 31, 2023 review letter regarding the captioned matter. Please see below and attached in response to the comments contained therein.

Planning & Zoning

1. The Updated Development Allowances:
   A. Parking - 4,364 required for principal uses on the lot. 1,408 total (515 on-site, 893 in parking lot across Ashland Ave) are proposed. This also includes 99 parking spaces CoE leases from Northwestern.
   RESPONSE: Acknowledged.

   B. Landscape Strip - 35 ft. required abutting residential district. A landscape strip of 16 ft. 3 in. proposed at the closest point at the north-south and east-west property lines at the northeast corner of the lot.
   RESPONSE: Acknowledged.

   C. Open parking area near Central Street with a 6 ft. 10 in. setback where 15 ft. is required.
   RESPONSE: Acknowledged.

2. In relation to the update on groundwater management strategies for groundwater withdrawal at the proposed stadium and general environmental assessment of the impact these strategies please provide the following:
   A. Documentation of the geotechnical site exploration has been completed and the Subsurface Exploration and Geotechnical Engineering Report that was completed by GEI Consultants, Inc.

RESPONSE: There will not be any groundwater withdrawal at the new stadium. A passive underdrain system is incorporated into the design of the stadium. The underdrain will only collect the groundwater which has seeped into the below grade area of the building footprint. The system is not a pumped well, and it does not actively draw down groundwater from the surrounding area. The underdrain will not impact the groundwater of the surrounding neighborhood areas and will have no impact to the existing vegetation.

Please reference geotechnical study completed by GEI Consultants, Inc. dated November 14, 2022.

3. In addition to events in the plaza space, please clarify what other facilities on the site may be in use at the same time. Is it anticipated that this may be used prior to games within the athletic facilities on the site?
   RESPONSE: Use of the facilities for sports will not change as part of the proposed Planned Development or Text Amendment. The latest draft Text Amendment includes a provision saying that concerts will not be held on the same date as other full-capacity events in the district. The plaza spaces have been designed to accommodate varying types of events, which may occur before, during or after game days or community-centered events which occur on non-game days, but would be subject to coordination meetings as contemplated by the MOU.

4. Please provide photometrics for the updated lighting layout.
   RESPONSE: Photometrics of the proposed parking lots have been shared with the City. Coordination of the fixture types and spacing remain ongoing.

5. Staff will continue to work with you and provide suggestions for possible public benefits.
   RESPONSE: Noted.

6. Traffic Management Plan will continue to be refined through the process.
   RESPONSE: Noted.

Parking

1. Provide additional clarification and detail on the plan to bring more parkers into downtown garages. The response was very vague and didn't have any specifics.
   RESPONSE:
   - ***Parking is limited in the stadium vicinity:***
     Ryan Field is limited to 1,408 spaces in two surface lots to the immediately east and west of the stadium. Parking for concert events will be prohibited in the surrounding neighborhoods. It appears that parking will not be available at Canal

Shores. Approximately 200 spaces are available along Poplar Street near the Central Street Metra station. While some entrepreneurial parking will likely be offered in business parking lots in the area, additional off-site parking served by shuttles will be needed to accommodate expected demand. Northwestern University's campus and downtown Evanston collectively provide capacity to serve that demand in a way that can be efficiently accessed by shuttle service.

- ***Advance Purchase, Communications, and Promotion:***
  When tickets are purchased, and again leading up to events, parking information (i.e., locations, routes, costs) will be communicated to ticket holders. Parking off-site can be purchased in advance of the event, which will help to route traffic to those locations. Custom routes can be provided that correspond with the ticket purchaser's address. Additionally, off-site parking locations will be promoted via multiple channels including event-related communications, event-related websites, the University's event transportation/parking website, and multiple social media platforms.

- ***Wayfinding Signage:***
  Parking on-site will be pre-paid only. As traffic approaches the Central Street corridor and Ryan Field at several key decision-point intersections, signs will be posted (likely a combination of static and electronic variable message signs) indicating parking as pre-paid/coupon-only while directing traffic to designated off-site parking on campus and downtown. Signs and barricades prohibiting parking in the surrounding neighborhoods will also reinforce the limited parking options in the stadium vicinity.

- ***Downtown Business Partnerships:***
  A common activity before concerts includes pre-show dinner. Downtown restaurants coupled with parking and shuttles (or use of CTA and Metra transit options) present a great option for this. Promotions and/or partnerships with downtown restaurants can provide an opportunity to further encourage and communicate downtown parking options.

2. Please provide additional details on anticipated traffic impact for Thursday, Friday, and Sunday night events.
   RESPONSE: The traffic study focused analysis on Thursday and Saturday evening peak periods to evaluate impacts on potential weekday and weekend concert dates. Saturday counts were selected to represent weekend dates as traffic volumes on Saturdays are typically higher than counts on Sundays.

   Counts were also collected at the Central/Green Bay Road and Central/Ridge Road

intersections on a Friday to gauge the difference between typical weekday counts on Thursday and weekend counts on Saturday. The table below summarizes a comparison of the total intersection volumes at each intersection during the pre-event and post-event peak hour for the Thursday, Friday, and Saturday counts.

	Central / Green Bay		Central / Ridge	
	Pre-Event Peak Hour	Post-Event Peak Hour	Pre-Event Peak Hour	Post-Event Peak Hour
Thursday	1,721	371	645	140
Friday	1,700	467	633	210
% Difference (FRIDAY VS. THURSDAY)	-1%	+26%	-2%	+50%
Saturday	1,148	468	443	203
% Difference (SATURDAY VS. THURSDAY)	-33%	+26%	-31%	+45%

As shown in the table, Thursday pre-event volumes are the highest among the three days and Friday pre-event counts are very similar to Thursday counts. For post-event conditions, Friday and Saturday counts are very similar and higher than the same period on Thursday.

Based on this, analysis of the Thursday pre-event and Saturday post-event peak hours as included in the traffic study would be representative of conditions for a Friday night concert. Also, these days of the week include higher levels of traffic than on Sundays which leads to a more conservative analysis than evaluating the impact of concerts with Sunday traffic counts.

Public Works/Engineering

1. Please show the ramp to the below grade area on the renderings.
   RESPONSE: Please reference additional rendering which includes a view of the ramp leading to the below grade level.

2. Provide the wind analysis for the public sidewalks/pedestrian ground level areas surrounding the stadium.
   RESPONSE: RWDI, a global wind engineering firm, has been engaged to complete a wind analysis for the project. The final wind analysis report is in progress, and will be forwarded to the city upon completion.

Sustainability

1. The City would like written confirmation from ComEd that an all-electric building would

not be feasible. The City expects increased collaboration between Northwestern and ComEd to find a path towards building electrification including available FINANCIAL INCENTIVES ComEd would provide for a project like this.
RESPONSE: To date, ComEd has not confirmed if service is available at the level necessary to accomplish a fully electric facility of this scale.

As part of its continuing climate leadership efforts, the University has partnered with Ameresco, a leading clean technology integrator specializing in energy efficiency and renewable energy. This initiative will help the University significantly reduce its carbon footprint across both the Evanston and Chicago campuses while also providing learning opportunities for students.

The University will continue to investigate green initiatives which align with their Sustainability Plan, and move further towards its sustainability goals of reducing its energy and utility usage.

2. Will Northwestern be offsetting 100% of the fossil fuel electricity and natural gas use with the purchase of RECs?
RESPONSE: The University will continue to investigate green initiatives which align with their Sustainability Plan, and move further towards its sustainability goals of reducing its energy and utility usage.

3. Is it possible to have the waste stations individuals be paid; volunteer run initiatives for these events tend to struggle to operate properly for "zero-waste" events; Is there any expected offerings of reusable container options for drinks or other offered concessions to help reduce the amount of waste being generated?
RESPONSE: For 2023, a program called "Zero Waste Ryan Field" is being piloted by sustainNU and the student Sustainability Committee. This program will involve the concessionaire using fully compostable service receptacles and having student volunteers stationed throughout the stadium to inform fans about properly disposing of compostables and recyclables in the proper bins.

4. The Sustainability Plan within the MOU should be broken out into two parts: "Construction" & "Operations."
   - "Construction"
     - Provide plan for deconstruction (not demolition) of the existing structure
     - Provide plan for onsite materials reuse
     - Use low-carbon steel and low-carbon concrete
     - Calculate embodied carbon
     - Conduct feasibility study of greywater digester for food prep waste in connection areas

- Collaborate with ComEd on building electrification and EV charging
- Conduct new feasibility study of solar PV or solar parking canopies

- "Operations"
  - Plan a path towards net zero greenhouse gas emissions that primarily addresses emissions from the building's energy usage
  - Include food waste diversion services within the Stadium Complex
  - Include reusable food and beverage wares and the needed infrastructure
  - Provide litter management plans for parking lot, neighboring areas
  - Restroom Utilization of hand dryers

RESPONSE: The Sustainability Plan within the MOU shall address both construction and operational components as applicable, with some aspects being addressed within the Construction Management Plan as well. Details of the plan will continue to be developed to align with the City of Evanston requirements and the University's sustainability plan.

Please contact me with any questions or comments.

Very truly yours,

DLA Piper LLP (US)

Katherine C. Jahnke Dale

Enclosures

GEI Consultants

Consulting
Engineers and
Scientists

Subsurface Exploration and Geotechnical Engineering Report

Ryan Field Development

Evanston, Illinois

Submitted to:
Mr. Steven Himes
Northwestern University
2020 Ridge Ave., Suite 200
Evanston, IL 60208

Submitted by:
GEI Consultants, Inc.
8615 W. Bryn Mawr Ave., Suite 406
Chicago, IL 60631

November 14, 2022

Project 2200549

Darren S. Diehm, P.E., D.GE.
Senior Professional

GEI Consultants

Consulting
Engineers and
Scientists

November 14, 2022
GEI Project No. 2200549

VIA EMAIL: steven.himes@northwestern.edu

Mr. Steven Himes
Northwestern University
2020 Ridge Ave., Suite 200
Evanston, IL 60208

RE: Subsurface Exploration and Geotechnical Engineering Report for the Ryan Field Development at 1501 Central Street in Evanston, IL

Dear Mr. Himes;

GEI Consultants, Inc. (GEI) has completed our geotechnical site exploration for the reconstruction of Ryan Field in Evanston, Illinois.

Shallow foundations would be expected to provide suitable support for light and moderately loaded structures. The clay crust has shear strengths between about 1 and 3 ksf, however, much of the deposit has strengths between 1.75 and 2.5 ksf. To maintain settlement at less than 1 inch, spread footings should be supported at least 5 feet above the top of the soft clay. Spread-type footings bearing between elevation +15 and +5 ECD can be designed for a net allowable bearing pressure of 4,250 psf.

Deep foundations comprised of belled caissons bearing on very stiff to hard silty clay would be expected to be the most economical foundation for larger structures at this site. Caissons bearing between elevation -50 and -55 ECD can be designed for a net allowable bearing capacity of 12 ksf. Caissons extended to elevation -55 to -60 ECD may be designed for 23 ksf.

Occasional silt and sand layers may exist in the lower Park Ridge moraine, but they are not expected to interfere with caisson construction. Bell excavations near the top of hardpan are expected to be stable in most areas of the site. Where wet or seeping silt pockets are encountered, the caisson excavation can be extended deeper into the hardpan to allow belling to be completed in stable materials.

We appreciate the opportunity to provide our services for this project. Please do not hesitate to call with any questions regarding our report.

Sincerely,

GEI CONSULTANTS, INC.

Ati Fathi, P.E.
Senior Professional

Darren S. Diehm, P.E., D.GE.
Senior Professional

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Appendix A

Boring Location Plan

Soil Strength Data Summary

Soil Boring Logs

CPT Soundings

General Notes and Sampling Procedures

Pressuremeter Test Results

Appendix B

Lateral Capacity Analyses

Seismic Design Category

1. Purpose and Scope of Work

1.1 Introduction

We understand that Ryan Field is expected to be reconstructed entirely or mostly within the footprint of the existing stadium. The existing facility was constructed in 1926 and largely renovated in 1997. The new stadium may incorporate parts of the existing west towers.

1a: Project location **1b:** Existing site conditions (looking north)

Figure 1: Ryan Field, Evanston, IL (*rep. from Google Earth*)

The new stadium will be rotated counterclockwise by a little less than 40 degrees and it will expand south toward Central Avenue. The field surface is currently planned to be lowered by 20 to 25 feet from existing to grade to approximately elevation +0 Evanston City Datum (ECD). The stadium bowl foundations will extend up to approximately elevation +21 ECD. The maximum height of the stands at Press level will be elevation +93 ECD and the stadium roof is at elevation +128 ECD.

The preliminary stadium foundation loads provided by the structural engineer are as indicated below.

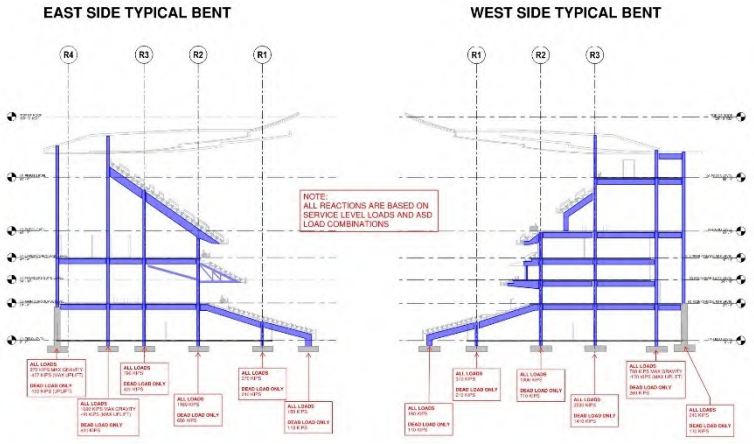


Figure 2: Preliminary foundation loads (*Thornton Tomasetti, Feb 2022*)

2. Exploration Procedures

A total of 24 soil borings and 7 CPT Soundings were completed at the approximate location shown below by Strata Earth Services under subcontract to GEI. The borings were labeled as identified in the request for proposal; Boring B-20 was skipped in the numbering sequence. A full-size boring location diagram is provided in the Appendix.

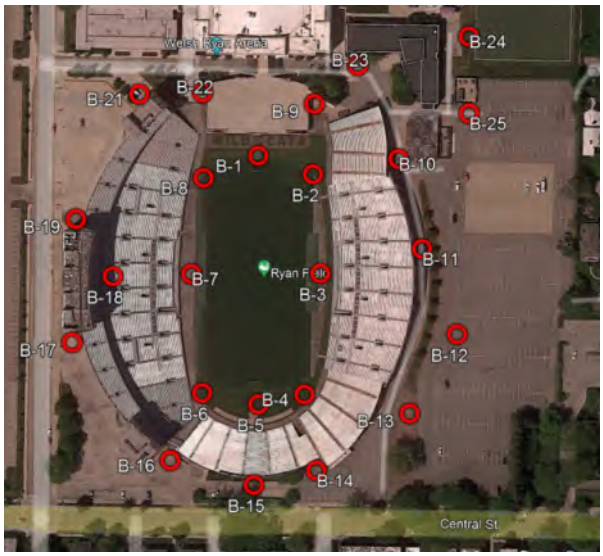


Figure 2: Soil boring locations for Ryan Field in Evanston, IL (*image rep. form Google Earth*)

The boreholes were advanced through the soil using a wash boring technique employing a tricone drilling bit and drilling fluids. Representative soil samples were obtained in the soil borings in general accordance with split-barrel sampling procedures as outlined in ASTM Standard D 1586.

A field log for each boring was prepared by the drill crew. The log included visual classifications of the materials encountered during drilling, as well as the driller's interpretation of the subsurface conditions between samples. The depth at which groundwater was encountered while sampling or drilling was observed and noted on the field log. The groundwater observations are presented on the lower left corner of the soil boring logs included in Appendix A.

The soil samples were sealed in jars and transported to our geotechnical laboratory for further examination and testing. The borehole was grouted to existing grade upon completion of the drilling operations, and the pavement was patched. The final boring logs included with this report represent an interpretation of the field log and include modifications based on laboratory observation and results of tests of the samples.

2.1 Specialized Field Testing Procedures

In addition to the standard exploration and sampling, GEI provided a program of specialized field testing as part of the subsurface investigation.

Cone penetration test soundings were performed at seven locations to further evaluate the shear strength of the soft to very stiff clay. The CPT has a 20mm sampling interval which provides a virtually continuous profile of soil strength. The data obtained during push of the CPT was reduced using friction angle correlations and bearing capacity (or cone) factors consistent with local conditions and published references. Plots of the interpreted soil shear strength, material type and pore water conditions as a function of depth are included in Appendix A. The vane shear testing was utilized to validate the CPT correlations.

A series of pressuremeter tests was performed to provide supplemental for design of foundations and to estimate settlement. The pressuremeter test consists of lowering an inflatable probe into the borehole to the desired test depth. The probe is expanded against the soils forming the walls of the borehole, and the pressure required to expand the probe and the corresponding volume changes are recorded incrementally. In effect, an in-situ stress-strain load test is performed in the soil. The results of the pressuremeter test can be related empirically to both allowable bearing capacity and settlement estimates.

The results of the CPT and pressuremeter tests are included in Appendix A.

2.2 Laboratory Procedures

Representative portions of the soil samples were visually examined by a geotechnical engineer to estimate the distribution of grain sizes, plasticity, organic content, moisture condition, color, presence of lenses and seams, and apparent geological origin. A calibrated hand penetrometer was used to estimate the approximate unconfined compressive strength of the cohesive soil samples. The soils were classified in accordance with our standard practice and assigned group symbols consistent with those recommended by the Unified Soil Classification System. A chart describing the classification system is included in Appendix A.

Results of the field and laboratory tests were plotted on the boring logs which are included in Appendix A. Similar soils were grouped into strata on the log. Please note that the strata contact lines represent approximate boundaries between soil types. The actual transition between soil types in the field may be gradual in both the horizontal and vertical directions.

All samples recovered from the borings will be retained for a period of 30 days, after which time they will be discarded unless other specific instructions as to their disposition are received.

3. Exploration Results

3.1 Subsurface Conditions

The Evanston subsoils are predominantly composed of large masses of clay deposited by the advances and retreats of the continental ice sheet during the Wisconsin glacial period. The clays consist of a series of ground moraines (or till sheets) lying one atop another. Geologically, six separate till sheets, representing six advances and retreats of the ice front, have been identified: (from bottom up typically) the Valparaiso moraine, Tinley moraine, and the Lake Border moraine which is comprised of the Park Ridge, Deerfield, Blodgett and Highland Park till sheets.

In most area urban fill extends to about 5 feet below surface grade. Isolated areas of deeper fill associated with utilities and previous construction do exist. The fill is underlain by 5 to 8 feet of silty sand and sandy silt which comprises the remnants of the sand blanket. In most areas of Evanston, the sand varies from 10 to 15 feet thick generally thinning from east to west behind Ridge Avenue. Local excavations appear to have replaced the sand with cohesive fill across much of the site.

The fill and sand are underlain by weathered (overconsolidated), stiff to very stiff clay which is often locally described as the "clay crust." This material represents the glacial lake bottom. The crust extends 25 to 30 feet below grade. Interbedded soft clay layers were encountered between 20 and 25 feet; however, they did not appear to be persistent across the site.

The top member (Blodgett and Deerfield) of the glacial drift consists of approximately 20 to 25 feet of compressible clay. The deposit typically has shear strengths less than 600 psf. Between elevation -5 and -10 ECD, the CPT and the borings indicate the soft clay is interbedded with thin (less than about 1 to 2-foot thick) stiff to very stiff clay seams. The shear strength of the seams varies from 1,000 to 3,000 psf.

The soft to medium clay is expected to be underlain by 25 to 30 feet of stiff to very stiff clay and silty clay which represents the Park Ridge moraine. Thin sand and silt seams are common in the deposit. Isolated outwash deposits may exist at the bottom of the Park Ridge moraine. These alluvial fans and streams of sand, silty sand, and sandy silt were deposited in glacial meltwater channels eroded into the underlying hardpan. Typically, the materials are water bearing, but they are not expected to be persistent at this site or to yield flow volumes significant enough to interfere with belled caisson construction.

The top of the Tinley moraine till sheet, which is commonly referred to as "hardpan," is expected between elevation -55 and -60 ECD. The hardpan in this area often exhibits a high silt content and it is generally between 20 and 25 feet thick. Occasional cobbles, gravelly zones, and/or interbedded sand seams may exist in the lower third of the deposit.

The remaining 10 to 15 feet of the soil overburden is expected to be comprised of water bearing granular deposits (sand, silty sand, silty gravel, and sandy silt) interbedded with hardpan clay. Layers of extremely dense sand and gravels are present throughout the Valparaiso moraine, and cobbles, boulders, and broken rock are commonly noted in the lower 5 feet of the deposit.

The Evanston bedrock consists of shallow dolomite formations mainly of Silurian age, and deep sandstone and dolomite formations of Cambrian and Ordovician age. The Devonian shale which once covered the dolomite was almost completely removed by glacial ice sheets and redeposited as part of the Tinley moraine. In the Chicago and Evanston area, the shale survives only as in-fills of fissures within the Silurian dolomite. The Niagaran series immediately underlies the glacial drift, and it varies in thickness from 240 to 425 feet, generally increasing eastwards towards the Lake Michigan basin.

The top of bedrock was not encountered in the completed borings which were extended to maximum depths of 100 feet below grade. Based on information from nearby sites, bedrock would be anticipated between elevation -90 and -95 ECD. The unconfined compressive strength of the dolomite is typically between 12,000 and 21,000 psi. The RQD, recovery, strength, and moisture condition, the Rock Mass Rating (RMR) of cores recovered from the upper 10 feet of bedrock is normally indicative of Good to Excellent quality rock.

The above summary is intended to provide an indication only of the major soil units encountered during the subsurface exploration. Conditions between individual boring locations may vary. The boring logs and CPT soundings are provided in Appendix A.

Table 2: General subsurface profile and geotechnical parameters

								Mohr-Coulomb		Pressuremeter			LPile	
Age	*Unit*	*Log*	*Name*	*Description*		*T/Layer Elevation (ECD)*	*Total Unit Wt, γ*	*Shear Strength, S_u (Adhesion, C_a)*	*Friction Angle, ϕ*	*Creep Pressure, P_f*	*Net Limit Pressure, P_l*	*Pressure Modulus, E_d*	*p-y Subgrade Modulus, k*	*E_{50}*
			Fill	VI	Man placed material consisting predominantly of sand-size particles with varying inclusions of cinders, brick, and concrete fragments.	+20 to +25	120-125 pcf	-	28-32 deg	-	-	-	40-60 pci	-
Pleistocene - Wisconsin			Glacial Lake Bottom	V	Weathered, over-consolidated clay with low to medium PI. Identified by Peck and Reed as "Desiccated Clay Crust."	+15 to +20	125-130 pcf	1-2.5 ksf (0.5-1.3 ksf)	-	3-4	4-7	45-70	450-750 pci	0.006-0.008
	Glacial Drift / *Lake Border moraines*		Blodgett and Deerfield	IVa	Grey to bluish grey clay and silty clay with occasional non-persistent silt and sandy silt seams. Normally to slightly overconsolidated with OCR between 1.1 and 1.6.	+0 to -5	122-127 pcf	0.4-0.6 ksf (0.3-0.5 ksf)	--	-	-	-	330-400 pci	0.01-0.014
				IVb		-10 to -15	125-127 pcf	0.45-0.7 ksf (0.3-0.4 ksf)	--	-	-	-	350-500 pci	0.009-0.011
			Park Ridge	II	Lacustrine and low plasticity clay with natural moisture content between 18-22%. Transitional zone of variable thickness.	-25 to -30	130-135 pcf	1.0-2.5 ksf (0.5-1.3 ksf)	-	10-15	15-22	130-150	550-900 pci	0.005-0.008
	Terminal moraine		Tinley moraine	II	Glacially consolidated low plasticity clay, silty clay and clayey silt. Blow counts in excess of 40 bpf and natural moisture contents below 14%. Locally referred to as "Chicago Hardpan."	-55 to -60	130-135 pcf	4.0-5.0 ksf (2.0-2.5 ksf)	-	17-25	26-39	230-620	1,000-1,200 pci	0.003 – 0.005
			Valparaiso moraine	I	Extremely dense sandy silt, silty gravel and gravelly sand with occasional cobbles and boulders.	-75 to -80	130-135 pcf	-	32-35 deg	25-35	42-55	870-1,150	100-120 pci	-
												Hoek-Brown		
Age	*Unit*	*Log*	*Name*	*Description*		*T/Layer Elevation (CCD)*	*Total Unit Wt, γ*	*Uniaxial Strength*	*Young's Modulus, E_r*	*RQD (RMR)*	*GSI*	*c'*	*ϕ'*	*K_{rm}*
Silurian	Niagran Series		Dolomite		Extremely weathered to disintegrated dolomite	-90 to -92 (Variable)	135-140 pcf	-	-	-	20-25	20-30 ksf	18-23 deg	0.00008
					Fresh to moderately weathered, hard to medium, grey to light tan, blocky, slightly to moderately vuggy dolomite and dolomite limestone. Generally near-horizontal bedding with slightly inclined to near-vertical joints.	-90 to -95 (Estimated)	150-160 pcf	7-30 ksi	1,500-3,000 ksi	71-98 (65-75)	60-70	85-210 ksf	35-38 deg	0.00005

3.2 Groundwater Conditions

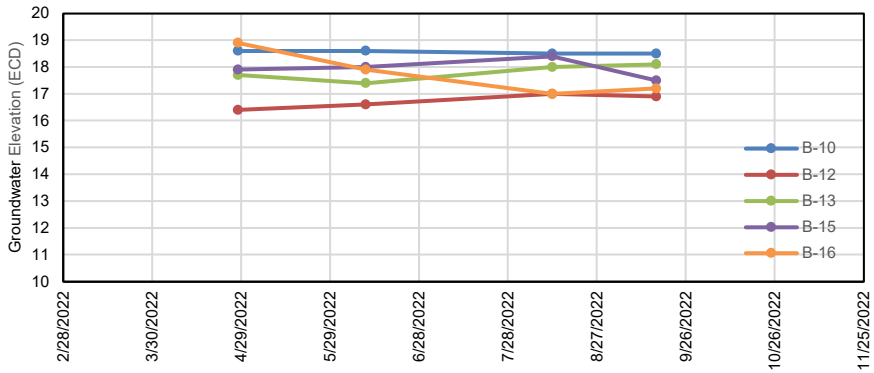
Groundwater in Evanston is contained in three primary aquifer systems. The shallowest aquifer occurs in the fill and upper sand deposits of the glacial drift, and it is directly influenced by the surface level of Lake Michigan. The remaining aquifers are contained within the bedrock.

Groundwater was observed at depths of 4 to 6 feet below grade at locations of predominantly granular fill or where the sand blanket was intact. In areas where the sand was removed and replaced with cohesive fill, or where the glacial lake bottom formed a ridge, groundwater was observed in the borings at 8 to 15 feet below grade. Based on the color change of the recovered cohesive samples, the groundwater table in the clay appears to be located near approximately elevation +18 ECD in most seasons.

Five piezometer wells were installed for long-term monitoring of the groundwater conditions. After installation, the wells were allowed to stand for several days, then they were bailed for development. Readings have been taken as indicated below.

Table 3: Groundwater readings

Boring ID	Surface El (ECD)	Screen Interval	Install (Development)	04/28/2022		06/10/2022		08/12/2022		09/16/2022	
				Water Depth	Elev (ECD)	Water Depth	Elev (ECD)	Water Depth	Elev (ECD)	Water Depth	Elev (ECD)
B-10	+24.8	15-20 ft	03/15/2022 (03/18/2022)	6.2 ft	+18.6	6.2 ft	+18.6	6.3 ft	+18.5	6.3 ft	+18.5
B-12	+24.5	15-20 ft	03/15/2022 (03/18/2022)	8.1 ft	+16.4	7.9 ft	+16.6	7.5 ft	+17	7.6 ft	+16.9
B-13	+24.1	15-20 ft	03/15/2022 (03/18/2022)	6.4 ft	+17.7	6.7 ft	+17.4	6.1 ft	+18	6 ft	+18.1
B-15	+24.7	15-20 ft	03/09/2022 (03/18/2022)	6.8 ft	+17.9	6.7 ft	+18	6.3 ft	+18.4	7.2 ft	+17.5
B-18	+25.6	15-20 ft	03/17/2022 (03/18/2022)	6.7 ft	+18.9	7.7 ft	+17.9	8.6 ft	+17	8.4 ft	+17.2



The groundwater level has remained essentially stable at the wells for the 182-day interval between the development and the last set of readings. At most locations the variation in the water elevation was by less than 6 inches.

Pore pressure dissipation tests were performed at depths of 30 and 35 feet in CPT-10 and CPT-12. Based on the interpreted values for 50% dissipation, t_{50}, the permeability of the upper clay was estimated to be between $1x10^{-7}$ and $2x10^{-7}$ cm/sec using the direct empirical correlation of Parez and Fauriel. Rising head slug tests were performed in the piezometers following the August readings. The permeability within the screen zone of the wells was determined to be 4 to 12 times slower than

the values estimated from the dissipation tests (between about $1x10^{-8}$ and $4x10^{-8}$ cm/sec). At one location the rising head permeability was nearly 25 times slower during the test.

Groundwater flow in the upper aquifer is preferential towards Lake Michigan. The static level of Lake Michigan has recently fallen approximately 2 feet from its historic high to approximately elevation +580 IGLD85 at Calumet Harbor. For the purposes of preliminary design, we would recommend the high long-term shallow groundwater table be assumed at elevation +20 ECD.

Piezometer observations in Chicago and Evanston typically indicate vertical drainage of the upper aquifer to the underlying bedrock. Saturation in most areas extends into the Park Ridge till sheet at which point the low permeability of the glacial drift begins to impede flow. The granular deposits of the Valparaiso moraine commonly exhibit piezometric head levels between 10 and 15 feet above the top elevation of the deposit. The pressure is not artesian, the head is indicative of the level of the upper bedrock aquifer.

4. Foundation Recommendations

4.1 Geotechnical Considerations

Shallow foundations would be expected to provide suitable support for light and moderately loaded structures. The clay crust has shear strengths between about 1 and 3 ksf, however, much of the deposit has strengths between 1.75 and 2.5 ksf. To maintain settlement at less than 1 inch, spread footings should be supported at least 5 feet above the top of the soft clay.

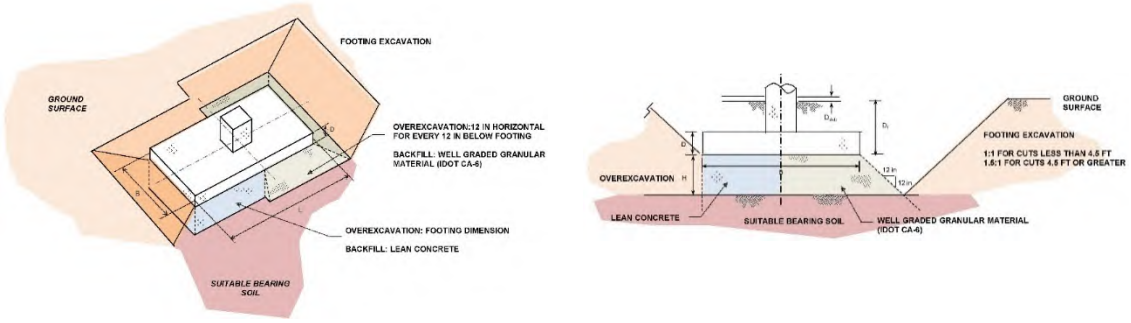
Deep foundations comprised of belled caissons bearing on hardpan silty clay would be expected to be the most economical foundation for larger structures at this site.

Occasional silt and sand layers may exist in the lower Park Ridge moraine, but they are not expected to interfere with caisson construction. Bell excavations near the top of hardpan are expected to be stable in most areas of the site. Where wet or seeping silt pockets are encountered, the caisson excavation can be extended deeper into the hardpan to allow belling to be completed in stable materials.

4.2 Spread Footing Foundations

The natural stiff and very stiff clay and isolated sand soils in the project area generally appear suitable for foundation support. Since variations could occur between the boring locations, the soils exposed in foundation excavations should be observed and tested by a GEI representative to check for the presence of unsuitable bearing soils.

If the unsuitable material is encountered at bearing elevation, they should be overexcavated and replaced with engineered fill. The overexcavation should extend outward 12 inches for every foot below the design bearing level. The foundations could then be extended to bear on the suitable soils at the deeper level, or the excavation could be backfilled back up to design footing elevation with engineered fill or lean concrete. If flowable fill or lean concrete is utilized as backfill, the footing excavation does not need to be extended beyond the edges of the footing.



3a: Footing excavation isometric **3b:** Section for lean concrete and granular backfill

Figure 3: Overexcavation for unsuitable bearing soil

Backfill placed beneath footings should consist of a well-graded granular material, containing less than 12% by weight passing the No. 200 (0.075 mm) sieve (preferably IDOT gradation CA-6). This material should be placed in thin lifts not exceeding 9 inches in loose thickness, and it should be compacted to a minimum of 95% of its maximum dry density as determined by the modified Proctor test (ASTM D 1557). Thinner lifts should be used where material is compacted with light or walk-behind equipment. If flowable fill or lean concrete is utilized as backfill, the footing excavation does not need to be extended beyond the edges of the footing.

Footings bearing on inspected and approved soils may be designed using the maximum net allowable soil bearing pressures provided below.

Table 4: Bearing capacity and **s**ettlement of belled caisson foundations

Geologic Unit		*Description*		*Elevation*	*Footing Type*	*Allowable Bearing Capacity*	*Estimated Settlement*
	Beach Sand	VI	Sand, Silty Sand, Sandy Silt	+22 to +15 ECD (Isolated)	Isolated	5 ksf	¾ - 1 in
					Continuous	4.5 ksf	¾ - 1 in
	Clay Crust	V	Stiff to Very Stiff Clay	+15 to -2 ECD	Isolated	4.25 ksf	¾ - 1 in
					Continuous	3.75 ksf	¾ - 1 in
					Soft Clay layers may be present between El +5 and -5 ECD		

Notes:
1. Subgrade to be inspected for unsuitable soils
2. Overexcavation to extend to suitable soil or nominal 2 feet below footing bearing elevation
3. Allowable load determined for FS = 3

At the maximum bearing pressures, the total settlements of footing foundations designed and constructed as recommended above are estimated to be less than about 1 inch. Differential settlements due to varying foundation loads and support conditions are estimated to be less than about ½-inch.

Footings placed in unheated areas should be embedded a minimum of 4 feet below finished grade to provide for adequate frost protection. Individual column footings should have a minimum width of 30 inches, and continuous wall footings should have a minimum width of 18 inches to prevent disproportionately small footing sizes.

The resistance to sliding of footings, grade beams, and core mats can be evaluated using the earth pressure coefficients and interface friction value tabulated below. Backfill against grade beams and mats should be placed in thin lifts, not exceeding 12 inches in loose thickness, and it should be compacted to 95% of the materials maximum dry density as determined by the modified Proctor test.

Table 5: Earth pressure coefficients and interface friction values

	Interface Friction Factor, tan δ	*Earth Pressure Coefficients*		
		Active, K_a	*Passive, K_p*	*At-Rest, K_0*
Granular Backfill				
(Sides of Grade Beams and Core Mats)	0.45	0.25	3.85	0.40
Footings				
(Mass Concrete on New Fill)	0.55	-	-	-
(Concrete on Cohesive Soil)	0.45	-	-	-

4.3 Caissons

4.3.1 Belled Caisson Bearing Capacity and Settlement

Bearing capacity analyses were performed to verify that the pressures beneath typical belled caissons would be within the limits set forth by Menard (1975) and Briaud (1987). Using the results of the pressuremeter tests, the allowable bearing pressure for typical belled caissons at the site is estimated as:

Table 6: Bearing capacity and **s**ettlement of belled caisson foundations

Geologic Unit		*Description*		*Bearing Elevation*	*Allowable Bearing Capacity*	*Estimated Settlement*
	Park Ridge	III	Stiff to Very Stiff to Hard Clay	-50 to -55 ECD	12 ksf	½ – ¾ in
	Tinley moraine	II	Hard Clay and Silty Clay "Hardpan"	-55 to -60 ECD	23 ksf	¾ – 1 in

Notes:
1. Minimum shaft diameter is 30 inches
2. Caisson bells should be a min. 1-ft thick at design edge and that sides slope at 60 deg (from horiz.)
3. Concrete strength should be at least 3,000 psi & compression stresses should not exceed $0.3f'_c$
4. Settlement estimated for maximum allowable bearing capacity

The maximum net allowable bearing pressure is the pressure which may be transmitted to the foundation soils in excess of the final minimum surrounding overburden pressure. In accordance with the International Building Code, a 33% increase can be applied to the allowable bearing pressure for wind and seismic loading. Side friction is ignored when computing the capacity of belled caissons to resist compression loads.

The estimated settlement was determined for the maximum recommended allowable bearing pressure.

4.3.2 Caisson Uplift Capacity

It is recommended that the ultimate uplift capacity of caissons with full length reinforcement be estimated based on the combined self-weight and side friction on the perimeter of the soil annulus projected above the bell. For the total stress analysis, the average unit weight of the soil should be assumed to be γ_s = 125 pcf, and the unit weight of the concrete can be assumed as γ_c = 150 pcf. The average unit side resistance along soil annulus can be assumed as c_a = 350 psf.

Hydrostatic uplift on the base of the caisson should be subtracted from the ultimate uplift resistance. The hydrostatic head should be assumed at elevation +20 ECD where the finished site elevation is consistent with existing grade. A hydrostatic head of approximately 85 feet would be conservative across the site. Where the site grade is lowered and an underdrain is provided, the hydrostatic head can be estimated from the finished slab-on-grade level.

Table 7: Uplift of belled caisson foundations

Shaft Dia	Bell Dia	Length	Allowable Uplift
2.5 ft	7.5 ft	55	300 kip
3 ft	9 ft		375 kip
3.5 ft	10.5 ft		460 kip
4 ft	12 ft		545 kip
4.5 ft	13.5 ft		640 kip
5 ft	15 ft		740 kip

Notes: 1. Hydrostatic uplift on base determined assuming 60 ft of head
2 Allowable uplift determined using a FS=2

A factor of safety of 2 should be provided against uplift when resistance is determined from self-weight of the foundations and side resistance.

4.3.3 Caisson Lateral Capacity

Lateral analyses of the caisson shafts were performed for free- and fixed-headed boundary conditions using the p-y curve method. A free-headed analysis is generally applied to cases where a pile extends above the ground line, or it can be conservatively applied when the pile is minimally embedded in the cap. A shaft fully embedded in a concrete grade beam, mat for cap may be modeled using fixed-headed boundary conditions. The loading in this case would consist of a lateral shear force and a slope (set equal to zero) at the pile head, and a vertical compression load. In most cases, the actual drilled shaft response will be somewhere between the values predicted for the fixed-headed and free-headed boundary conditions. The input boundary conditions are used by LPile for the solution of the finite difference equations which model the pile as a beam-column. Despite the similarity of the terms, they should not be confused with support conditions as defined by classical mechanics of materials.
Plots of pile-head deflection and moment versus lateral load are included in the attachments. The analyses assume the top of shaft is located at elevation +0 ECD.

Table 8: Summary of parametric lateral load analyses for caisson shafts

Shaft Diameter	*Free Head*		*Fixed Head*		*Equivalent Spring Modulus*	
	Max Shear	*Max Moment*	*Max Shear*	*Max Moment*	*Free Head*	*Fixed Head*
30”	30 kip	1,741 kip-in	61 kip	3,581 kip-in	80 kip/in	160 kip/in
36”	42 kip	2,915 kip-in	83 kip	5,659 kip-in	110 kip/in	220 kip/in
42”	54 kip	4,250 kip-in	104 kip	7,810 kip-in	140 kip/in	275 kip/in
48”	69 kip	6,345 kip-in	135 kip	11,800 kip-in	180 kip/in	360 kip/in
54”	84 kip	8,744 kip-in	164 kip	15,700 kip-in	220 kip/in	435 kip/in
60”	109 kip	13,100 kip-in	208 kip	21,700 kip-in	290 kip/in	555 kip/in

Notes: Tabulated values for allowable deflection of 0.375 inch.

Summary envelope plots for imposed pile-head deflections of 0.25 and 0.375-inch are also provided for each pile diameter.

The LPile analyses were performed for individual piles. Group effects for pile shadowing should be applied to the capacities in base shear analyses. GEI can determine the group reduction factor once the pile layout is finalized.

4.3.4 Caisson Construction Considerations

4.3.4.1 Squeeze Potential

Our experience has indicated that soft clay squeeze into a caisson shaft excavation done in the dry can be correlated with the ratio of total overburden pressure to undisturbed in-situ strength. A general guideline for the likelihood of squeeze as a function of caisson shaft radius and depth is tabulated below.

To use the table, first calculate the ratio of depth to the design shaft radius for the point of interest using consistent units. Second, compare the overburden pressure to the average undrained shear strength at that depth, again using consistent units. If the calculated pressure to strength ratio is greater than the tabulated limiting value, shaft squeeze is likely at that depth.

Table 9: Caisson shaft squeeze potential

Depth to Radius Ratio: $\frac{d}{R_{shaft}}$	*Min. Strength Ratio:* $\frac{\sigma_v}{S_u}$
4	5
8	6
12	6.5
16	7
20	7.5
24	8
28	8*
32	8*

Note: * The strength ratio is limited to a maximum value of 8 in the analyses

Based on the strength profile determined from the CPT soundings, we expect all shaft greater than 2.5 feet in diameter will have probability of squeeze between approximately elevation -15 and -25 ECD if the caissons are installed from existing grade. Squeeze can largely be eliminated if the caissons are installed from inside the excavation below about elevation +15 ECD.

4.3.4.2 Concrete Stresses and Permanent Steel Casing Considerations

In accordance with the International Building Code, the maximum allowable axial stress in the concrete shall not exceed $0.3f'_c$ for caissons without permanent casing. When permanent noncorrugated steel casing is used, the allowable axial stress may not exceed $0.4f'_c$ provided:

1. The design shall not use the casing to resist any portion of the axial load imposed.

2. The casing shall be seamless or provided withs of strength equal to the basic material and be of a configuration that will provide confinement to the cast-in-place concrete.
3. The ratio of steel yield strength (F_y) to the specified compressive strength (f'_c) shall not be less than 6.
4. The wall thickness shall not be less than 3/16 inch for steel pipes or tubes.
5. The casing thickness for rock socketed drilled shafts shall not be less than 3/8 inch.

Thinner wall casing may be used provided it is designed by an Illinois licensed structural engineer, and it is properly reinforced to support the full height earth pressure and hydrostatic loads. The casing must also be checked for bursting under the fluid concrete head pressure. The steel casing cannot be considered in the structural capacity of the caisson.

The casing provision is a material stress limitation on structural capacity. Permanent steel casing is not required where concrete stresses do not exceed $0.3f'_c$.

4.3.5 General Construction Considerations

To prevent surface soils from sloughing into the caisson shaft, and inflows from surface runoff and the shallow water table, it is recommended that an oversized, temporary casing be provided through the fill extending at least 3 feet into the underlying weathered clay. Where squeeze potential exists, the temporary casing should be extended as indicated above. Insofar as possible, the casing should be pushed ahead of the drill excavation. For safety, it is common for the top casing to project 42 inches above the surface working grade.

A corrugated permanent liner should be installed after belling where the design top of caisson is located within the temporary casing. The corrugated liner should extend at least 3 feet below the temporary casing. Once the concrete has set, typically the next day, grout should be placed between the corrugated liner and the temporary casings, and then the temporary casings can be pulled. If the design top of the caisson is below the temporary casing, a permanent corrugated liner will not be required.

Caisson shafts should be a minimum of 30 inches in diameter. Caisson bells should be at least 12 inches thick at the design edge, and that the sides slope at no less than 60 degrees from the horizontal. The caisson bell diameter should not exceed 3 times the shaft diameter.

Due to safety concerns, it is expected that the personnel will not be lowered into excavations to observe the base of the bell caisson excavation directly. For this reason, an explosion-proof camera should be lowered into the bell after final cleanup, to verify it is suitably free of loose material and debris. Alternatively, the caisson bell area can be oversized by 15% or the bell diameter increased by 1 foot, whichever is smaller.

Care should be taken to avoid caisson concrete hitting the sides of the shaft, or the rebar cage, if it is placed by the free-fall method. Caisson shafts and bell excavations should be clean of loose soil and as dry as practical prior to concrete placement. No more than 2 inches of standing water should be present at the bottom of the bell when the concrete is placed. Concrete slump should be in the range of 5 to 7 inches for free-fall placement, and between 7

to 9 inches when tremie methods are used. All concrete within 5 feet of placement grade should be consolidated by vibration.

The caisson design and construction procedures should be reviewed with the contractor selected for this work prior to the start of construction. If you wish, we would be pleased to review the plans and specifications for the foundation work once they are prepared so that we may have the opportunity to comment on soil and groundwater impacts on caisson design and construction procedures.

4.4 Earth Retention System and Excavation

4.4.1 Temporary Earth Retention

Open cut excavations less than 5 feet in height may be performed at slopes of 1H:1V. Excavations extending deeper than 5 feet must be sloped at 1.5H:1V or flatter, or the excavation must be shored.

Temporary earth retention systems may consist of free-draining soldier pile and lagging for depths up to approximately 6 to 8 feet below grade. Where excavations extend below the water table, a diaphragm-type retention system comprised of driven steel sheet pile, slurry wall, or secant pile wall should be used. Slurry walls and secant pile walls may be economic if they can be incorporated as permanent below grade walls for the structure.

Cantilever systems would be expected to support excavation heights up to 8 to 10 feet with suitable performance. Anchored systems with internal cross-lot bracing, rakers, or external tiebacks will be required for excavations greater than approximately 10 feet, and in areas which support heavy or concentrated surcharge loads. Anchored systems may also be used to reduce lateral deflections of the retaining walls in areas that are sensitive to excavation induced ground movements. Tiebacks which extend into the public right-of-way require special approval, and if left in-place will incur easement costs. A secant pile wall can be designed to provide greater stiffness per unit length than most sheet pile systems and they can support greater spans between bracing levels.

For owner-based designs, we would suggest the major soil units be assigned material parameters as provided in Table 2. For contractor-based designs, it is the responsibility of the selected contractor to review the provided geotechnical data and develop their own design profiles and material parameters in accordance with established geo-mechanical methods. GEI can provide a peer review of the contractor developed material parameters and earth retention system design should you desire.

For soils below the water table, the effective unit weight should be determined using a unit weight of water, γ_w = 62.4 pcf. In the case of horizontal backfill with no wall friction ($\delta = \beta =$ 0 deg) the Rankine and Coulomb models give the same result, and the equations become:

Active Earth $\quad K_a = \left(\tan\left(45deg - \frac{\varphi}{2}\right)\right)^2 \quad K_{ac} = 2\sqrt{K_a}$

Passive Earth $K_p = \left(\tan\left(45deg + \frac{\varphi}{2}\right)\right)^2$ $K_{pc} = 2\sqrt{K_p}$

At-rest earth pressure coefficients are given by:

At-Rest Earth $K_0 = 1 - \sin\varphi$

Staged excavation and end-of-construction analyses should be performed using undrained soil strength parameters. For short-term analyses using undrained parameters, the active and passive earth pressure coefficients, K_a and K_p are set to unity in cohesive (ϕ = 0 degree) soils. The cohesive coefficients K_{ac} and K_{pc} then become a value of 2. If the excavation is expected to remain open for an extended period, long-term analyses should be performed using drained parameters.

Flexible-type retaining walls comprised of sheet pile or soldier pile and lagging should be designed to resist loading due to active earth pressures. Unbalanced water pressure arising from internal site dewatering should be considered for sheet pile walls as seepage through interlocks would be expected to be minimal for hot-rolled sections and restricted for cold formed sections. Soldier pile and lagging walls can be assumed to be free draining.

Permanent grouted tiebacks which support the retaining walls should be provided with Double Corrosion Protection (DCP). The minimum unbonded length for ground anchors is 15 feet for strand tendons and 10 feet for bar tendons. These minimum values are intended to prevent significant reductions in load resulting from seating losses during transfer of load to the structure following anchor load testing. Longer unbonded lengths may be required to: (1) locate the bond length a minimum distance behind the critical potential failure surface; (2) locate the anchor bond zone in appropriate ground for anchoring; (3) ensure overall stability of the anchored system; and (4) accommodate long term movements. In general, the unbonded length is extended a minimum distance of H/5 or 5 feet behind the critical potential failure surface to accommodate minor load transfer to the grout column above top of the anchor bond zone.

For pressure grouted anchors, the average ultimate bond stress in the stiff to very stiff clay of the Park Ridge moraine is estimated to be between 30 and 35 psi. Within the hardpan clay below approximately elevation -55 ECD, the ultimate bond stress is estimated to be 50 to 75 psi. A factor of safety of 2 should be applied to the ultimate bond stress to determine the anchor pullout capacity. Pullout tests should be performed in advance of construction to verify the bond strength. The maximum effective bonded length of a grouted anchor is approximately 40 feet.

4.4.2 Permanent Below Grade Walls

Permanent reinforced concrete walls that extend below grade should be designed to support unbalanced earth, water, and lateral pressures due to exterior surcharges. Taking into consideration the variation of the soil profile on the perimeter walls, the lateral pressure due to unbalanced soil and water can be approximated as:

Table 10: Equivalent fluid pressure for design of permanent below grade (non-yielding) walls

Elevation	*Mechanism*	*Equivalent Fluid Pressure*	
		Restrained	*Cantilever*
Above Water Table (El. +20 ECD)	Soil	60 psf/ft	45 psf/ft
Below Water Table (Below El. +20 ECD)	Soil + Water	90 psf/ft	80 psf/ft

Any surcharge loads (due to adjacent roadways, crane pads, or floor slabs) or foundation pressures, within the area that projects upward from the base of the cut on a 45-degree angle should be included as additional lateral pressures on the retention system. A uniform surcharge of 250 psf (or an equivalent 2 feet of soil) should be applied to the ground surface to represent construction equipment or traffic loading. The lateral forces on the wall due to surcharges should be determined using an at-rest earth pressure coefficient, K_0, equal to 0.5.

Any shallow foundations adjacent to below grade walls should be included as localized surcharges. The stress beneath the footings should be assumed to extend outward and downward from the edges of the footings at a 2 vertical to 1 horizontal slope. The lateral pressure on the wall should be determined using an at-rest earth pressure coefficient, K_0 = 0.5, or:

$$p_{ftg} = K_0 q_{ftg} \frac{BL}{(B+z)(L+z)}$$

Where: K_0 = Coefficient of at-rest earth pressure (K_0 = 0.5)
q_{ftg} = Bearing pressure beneath footing
B = Width of footing
L = Length of footing
z = Depth below footing bearing level

Excavations which extend below the water table will require sump pumps with drainage trenches to provide a stable subgrade for construction. No exterior drainage is required for walls properly waterproofed and designed for the above-referenced earth pressures.

4.4.3 Slab-on-Grade

Floor slabs on grade should be isolated from foundations to permit relative displacement without cracking. Slabs should be sufficiently thick, and be provided with adequate reinforcing and jointing, to control minor slab cracking.

The use of a vapor retarder should be considered beneath concrete slabs on grade that will be covered with wood, tile, carpet or other moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer should refer to ACI 302 and/or ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder.

The modulus of subgrade reaction is dependent upon the nature of the soils supporting the slab and the provided thickness as tabulated below. Underdrains and leveling courses can be considered as contributing to the provided thickness.

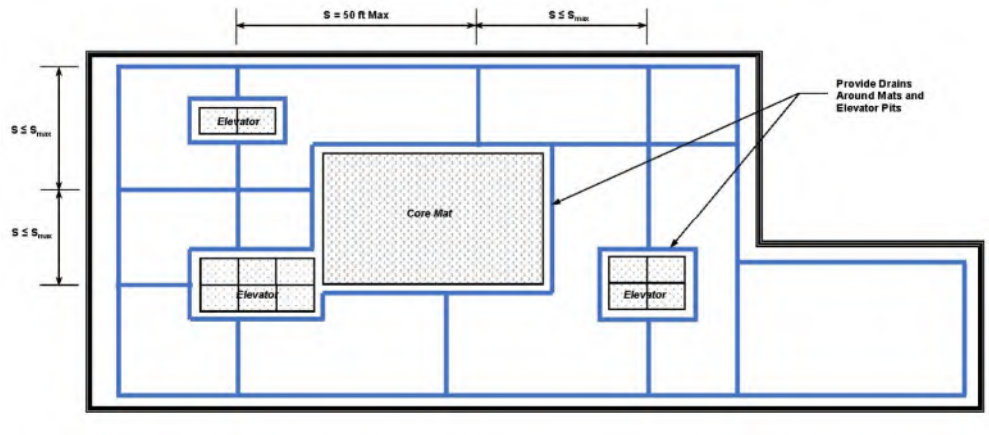
Table 11: Modulus of subgrade reaction for slab-on-grade

Subgrade Material	*Thickness*	*Modulus, k*
Existing Granular Fill	-	50 pci
New Granular Fill	6 in	65 pci
	12 in	100 pci
	24 in	175 pci

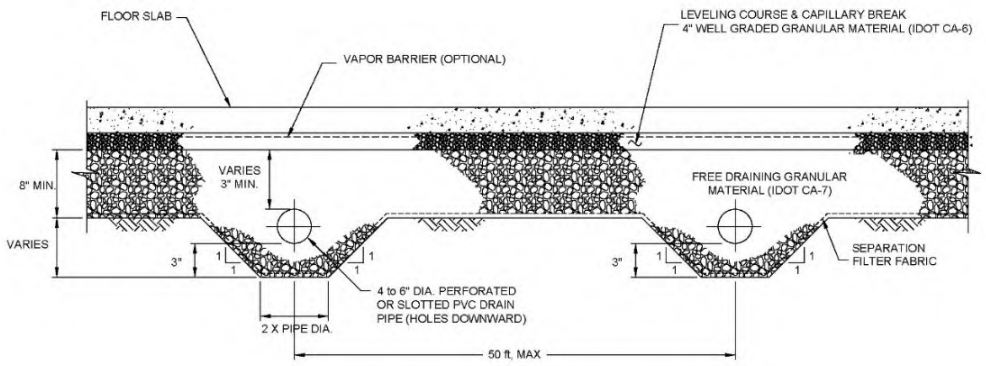
4.4.4 Underslab Drainage

A properly designed subsurface under drainage system should be provided for lower level slabs located below the water table at elevation +20 ECD. The system should include a minimum 8-inch thickness of clean, well-graded granular base similar in gradation to IDOT CA-7 placed over a non-woven geotextile (minimum 7 oz./yd^2) beneath the slabs. The geotextile will help to prevent soil contamination, or "fouling" of the drainage stone. The crushed stone should be compacted to a relative density no less than 90% of its maximum dry density defined by the Modified Proctor test (ASTM D 1557). Due to the risk of long-term degradation, crushed concrete is not recommended for use in underdrain collection systems. New perforated or slotted plastic drain lines should be installed around the interior perimeter of the basement, around the interior perimeter of any provided core mat, and on 50-foot centers beneath the slab interior. All drain pipes should be buried and surrounded in a minimum of 3 inches of crushed stone. The perforated or slotted openings in the drain pipes should be sized to prevent intrusion of the granular subbase materials into the drain. Drain lines do not have to be pitched to drain.

The 50-foot spacing and 8-inch thickness of the collection layer is designed to maintain the water mounding between drain lines below the bottom of the slab-on-grade.



4a: Typical underdrain layout for irregular floor plan



4b: Underdrain section

Figure 4: Underdrain Installation Detail

Groundwater inflow rates into excavations and/or underdrains will vary depending on the tightness of constructed earth retention system and the presence of any silt and sand seams in the relatively impervious silty clay it is keyed into. Considering permeability of the clays on the order of $1x10^{-8}$ cm/sec, the inflow rates can be expected to range as indicated below for an approximately 80,000 to 100,000 square foot area.

Table 12: Estimated groundwater inflow rates for design of underdrain

Condition	*Source*	*Inflow Rate*
Perimeter ERS Keyed into Clay	Base	25 to 50 gal/min
No Perimeter ERS (Fill/Clay)	Base + Sides	90 to 110 gal/min
No Perimeter ERS (Clay)	Base + Sides	30 to 60 gal/min

4.4.5 General Excavation Considerations

The site is surrounded by public right of way and excavations on the site are not expected to adversely impact infrastructure or utilities as ERS systems will be left in place.

In general, mass excavations should not extend below footing bearing level within 2 feet of existing foundations. Beyond this distance, mass excavations should not extend below an imaginary plane extending out and down at a slope of approximately 2H:1V. Even where this criterion is met, excavations which extend below the level of nearby existing footings should be backfilled the same day they are excavated.

We anticipate that excavation side slopes less than 5 feet in height will likely remain stable at slopes of 1.5H:1V for short periods of time. Excavation side slopes remaining open for extended periods may require flatter side slopes. Regardless, all excavations should be performed in accordance with pertinent local, state, federal, and OSHA regulations.

Open cut excavations and earth retention systems located adjacent to existing structures or the public right-of-way should consider the surcharge loading from foundations and infrastructure as described above for permanent below grade walls. For short term loading,

the active earth pressure coefficient for imposed surcharges should be set to unity in cohesive soils.
The global stability of excavations located adjacent to the public right-of-way should be demonstrated by analysis using limit equilibrium methods. A minimum factor of safety of 1.5 should be provided against rotational failure.

4.5 Site Classification

4.5.1 Seismic

Design parameters for Ryan Field were determined in accordance with Standard 9 of ASCE 7: *Minimum Design Loads for Buildings and Other Structures* based on site specific SPT tests, vane shear tests, and the laboratory shear strength measurements of recovered soil samples.

Table 13: Seismic parameters

Description	*Type*	*Value*	
		ASCE 7-16	ASCE 7-10
Site Classification	Stiff Soil	D	D
Risk Category		I-III	I-III
Seismic Design Category	SDC	B	B
MCE_R Ground Motion (0.2 Sec Period)	S_S	0.110	0.125
MCE_R Ground Motion (1 Sec Period)	S_1	0.060	0.059
MCE_G Peak Ground Acceleration	PGA	0.055	0.063

A full list of seismic design parameters for generation of earthquake ground motion response spectrums is provided in the attachments.

4.5.2 Expansive Soil or Fill

The soils encountered above the depth of seasonal change in the groundwater table consisted of predominantly granular urban fill and low plasticity clay. These materials would not experience volume change (shrinkage or swell) in response to inundation or changes in the groundwater table at this site.

4.5.3 Liquefaction

Based on the SPT tests, the level of the groundwater table, and the Seismic Design Category, the site subsoils are not considered liquefiable.

5. Limitations

This report was prepared for the exclusive use of Northwestern University for the Ryan Field Redevelopment in Evanston, Illinois. This report may require modification if there are any changes in the nature, design, or location of the proposed structures. We cannot accept responsibility for designs based on our recommendations unless we are engaged to review the final plans and specifications to evaluate whether any changes in the project affect the validity of our recommendations and whether our recommendations have been properly implemented in the design.

The recommendations in this report are based in part on the data obtained from the subsurface explorations. The nature and extent of variations between explorations may not become evident until construction. If variations from the anticipated conditions are encountered, it may be necessary to revise the recommendations in this report. Therefore, we recommend that GEI be engaged during construction to provide a full-time inspector during foundation installations to: a) verify bell caisson foundations bearing conditions, b) check that the subsurface conditions exposed during construction are in general conformance with our design assumptions, and c) ascertain that, in general, the geotechnical aspects of the work are being performed in compliance with the contract documents.

It was not part of our scope to explore for or research the locations of buried utilities or other buried structures at the site. Before construction of foundations for the proposed structure, a diligent effort should be made to determine the presence and location of any buried structures including utilities. This effort should include a thorough review of available drawings and other records of the site use and facilities. If the presence of such structures is determined to be likely, GEI should be notified so that we may review and revise our recommendations, if appropriate.

Our professional services for this project have been performed in accordance with generally accepted engineering practices; no warranty, expressed or implied, is made.

Appendix A

Boring Location Plan

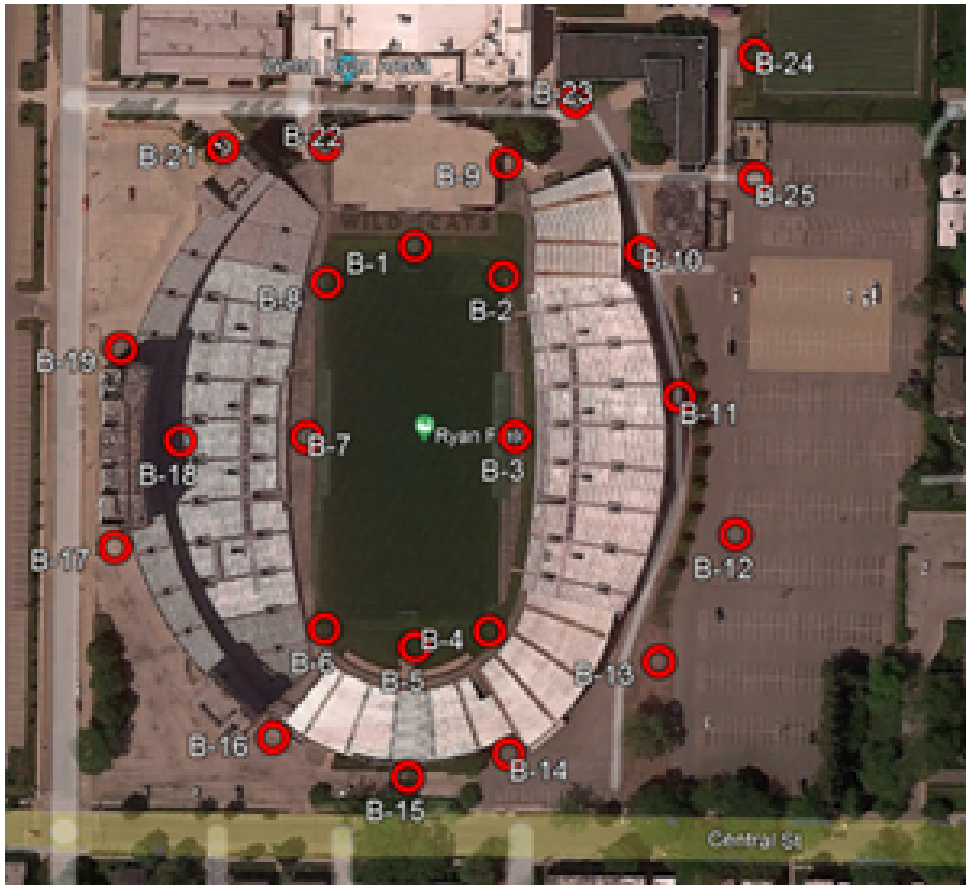
Soil Strength Data Summary

Soil Boring Logs

CPT Soundings

General Notes and Sampling Procedures

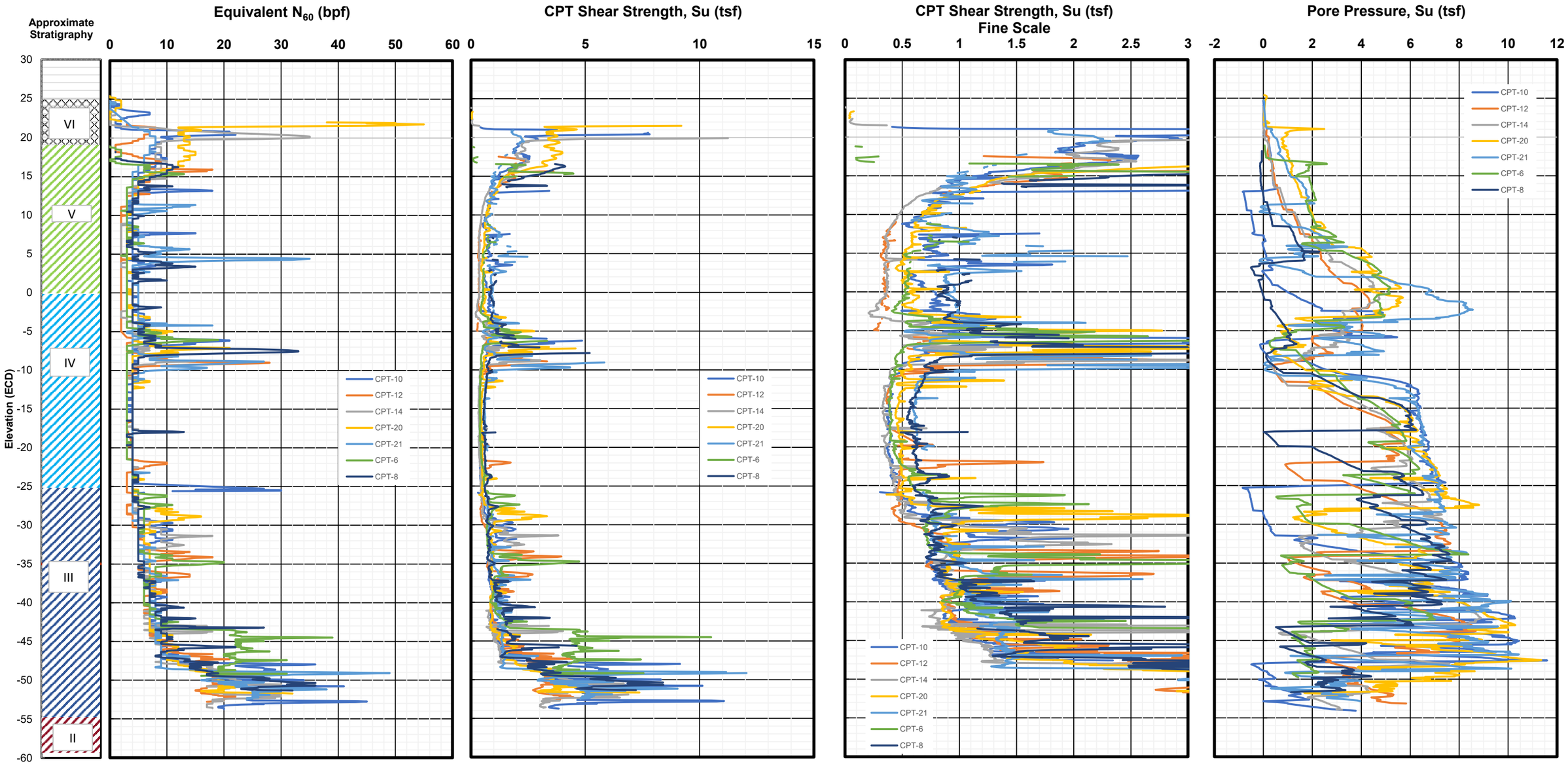
Pressuremeter Test Results



Existing Conditions

Conceptual Design

RYAN FIELD REDEVELOPMENT **EVANSTON, IL**	GEI Consultants	**SOIL BORING LOCATION DIAGRAM**
NORTHWESTERN UNIVERSITY	Project No. 2200549	APRIL 2022



VI. Fill & Sand
V. Glacial Lake Bottom
IV. Boldgett and Deerfield
III. Park Ridge
II. Tinley moraine
I. Valparaiso moraine

Ryan Field
Evanston, IL

Northwestern University
Evanston, IL

GEI Consultants

SOIL SHEAR STRENGTH VS. ELEVATION

Project: 2200549

April 22, 2022 AF

Figure 1

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-1**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 20.3

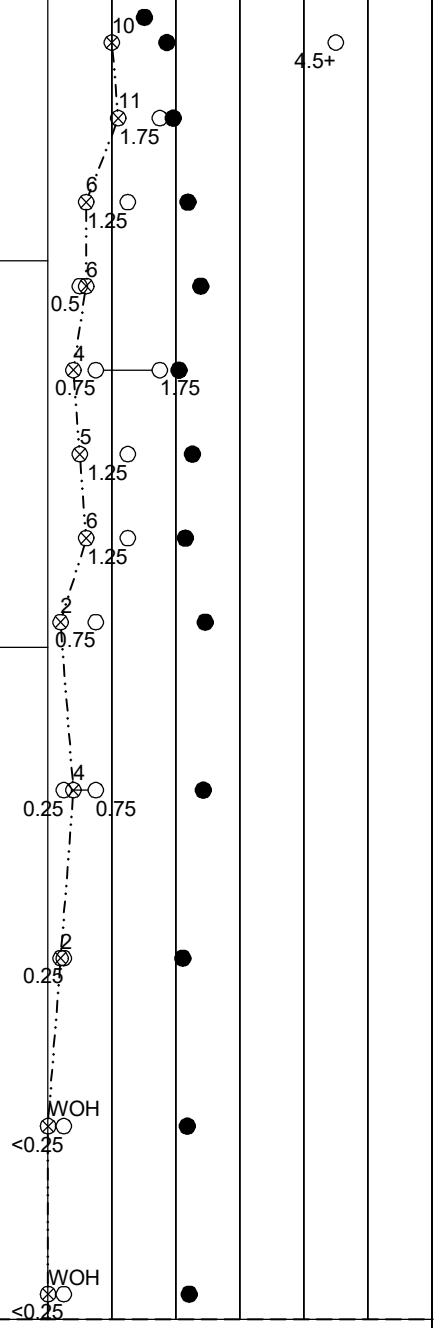
DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
20	1	SS			*(0.0)*Fill: Fine to medium sand with silt and fine gravel - brown - loose - medium dense (SP-SM)
	1A	SS			*(1.5)*Silty clay, trace fine to coarse and sand gravel - brown and gray - hard to stiff (CL)
	2	SS			
5	3	SS			
	4	SS			*(8.5)*Silty clay, trace fine to coarse and sand gravel - gray - stiff to medium (CL)
10 / 10	5	SS			
	6	SS			
15	7	SS			
	8	SS			
20 / 0					*(20.0)*Silty clay, trace fine to coarse sand and gravel - gray - soft to medium (CL)
	9	SS			
25					
	10	SS			
30 / -10					
	11	SS			
35					
	12	SS			

UNIT DRY WT. LBS/FT^3

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) × — WATER CONTENT (%) ● — LIQUID LIMIT (%) △ 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 14.0' Before Casing Removal	BORING STARTED **3/14/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/15/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **GeoProbe / Bill M (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **1** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

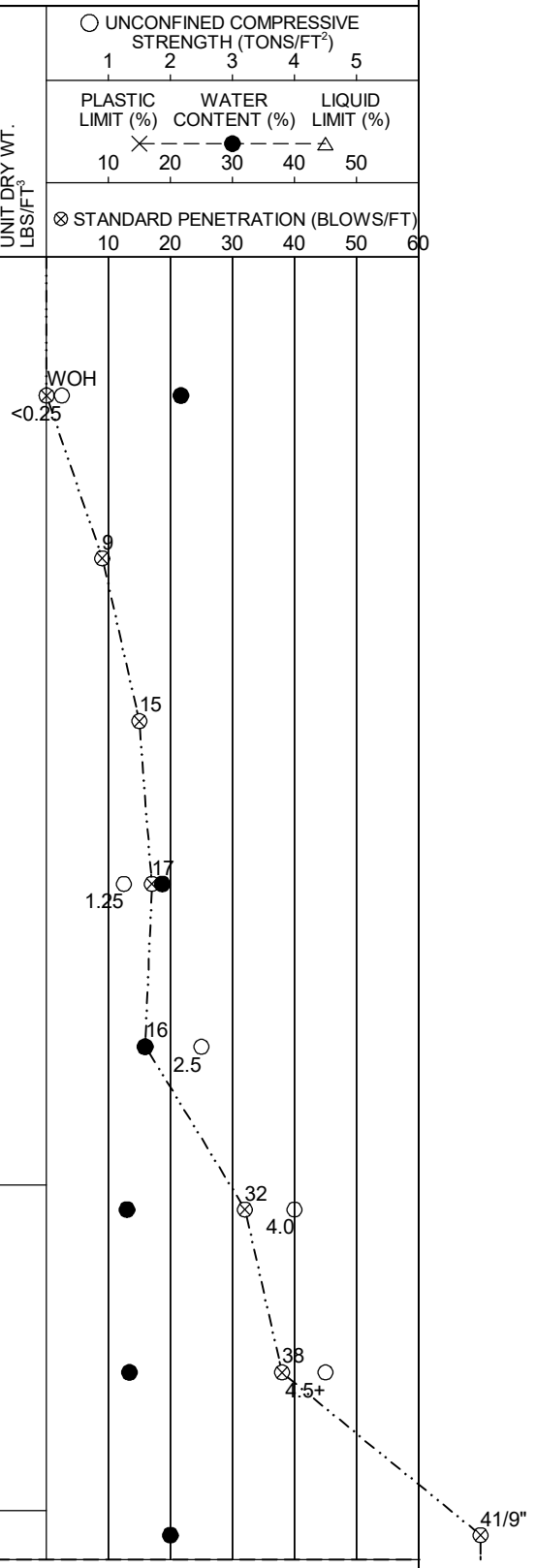
LOG OF BORING NUMBER **B-1**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 20.3

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT³
-20						
	13	SS				
45						
	14	SS			*(48.5)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to very stiff (CL)	
50 -30						
	15	SS				
55						
	16	SS				
60 -40						
	17	SS				
65						
	18	SS			*(68.5)*Silty clay, trace fine to coarse sand and gravel - gray - hard (CL)	
70 -50						
	19	SS				
75						
	20	SS			*(78.5)*Clayey silt, trace to little fine to coarse gravel - gray - very dense - wet (CL-ML)	



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 14.0' Before Casing Removal	BORING STARTED **3/14/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/15/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **GeoProbe / Bill M (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **2** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-1**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 20.3

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
-60						
85	21	SS				
	22	SS				
90 -70						
	23	SS			*(93.5)*Silty sand, trace to little fine to coarse gravel - gray - extremely dense - wet (SM)	
95						
	24	SS			End of Boring Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 98.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Automatic hammer used for Standard Penetration Tests. Borehole grouted upon completion.	
100 -80						
105						
110 -90						
115						

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)
1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%)
10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT)
10 20 30 40 50 60

63
50/3"
50/3"
50/2"

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 14.0' Before Casing Removal	BORING STARTED **3/14/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/15/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **GeoProbe / Bill M (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **3** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

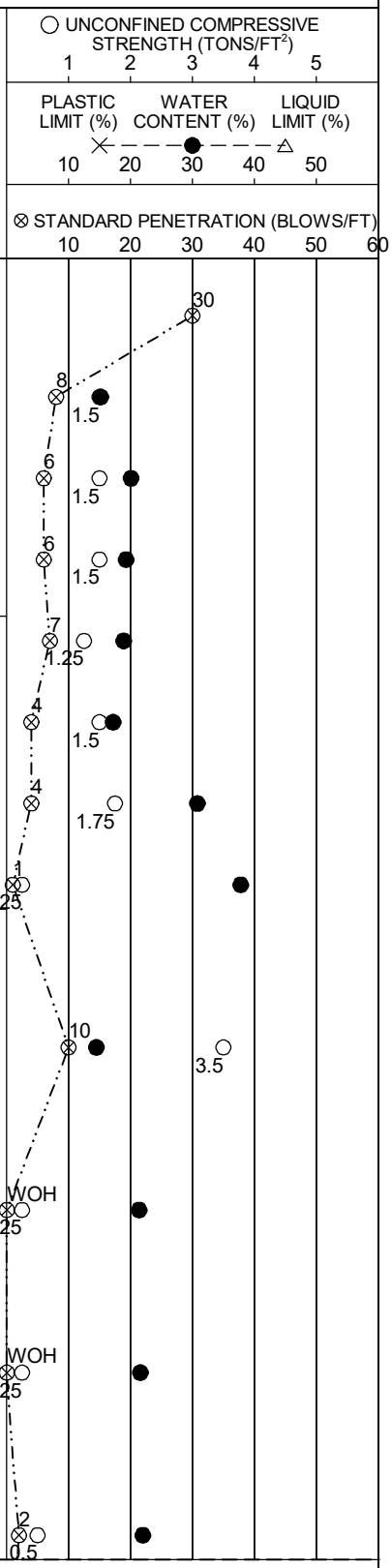
LOG OF BORING NUMBER **B-2**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 18.9

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
	1	SS			*(0.0)*Fill: Silty well-graded fine to coarse gravel with sand (crushed limestone) - light gray - moist - dense (GM)	
5	2	SS			*(3.5)*Silty clay, trace fine to coarse and sand gravel - brown and gray - stiff (CL)	
	3	SS				
10 / -10	4	SS				
	5	SS			*(11.0)*Silty clay, trace fine to coarse and sand gravel - gray - stiff to medium (CL)	
15	6	SS				
	7	SS				
0	8	SS				
20					*(20.0)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to soft (CL)	
	9	SS				
25						
-10	10	SS				
30						
	11	SS				
35						
-20	12	SS				



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 14.0' Before Casing Removal 14.0' After Casing Removal	BORING STARTED **3/15/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/16/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **GeoProbe / Bill M (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **1** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-2**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

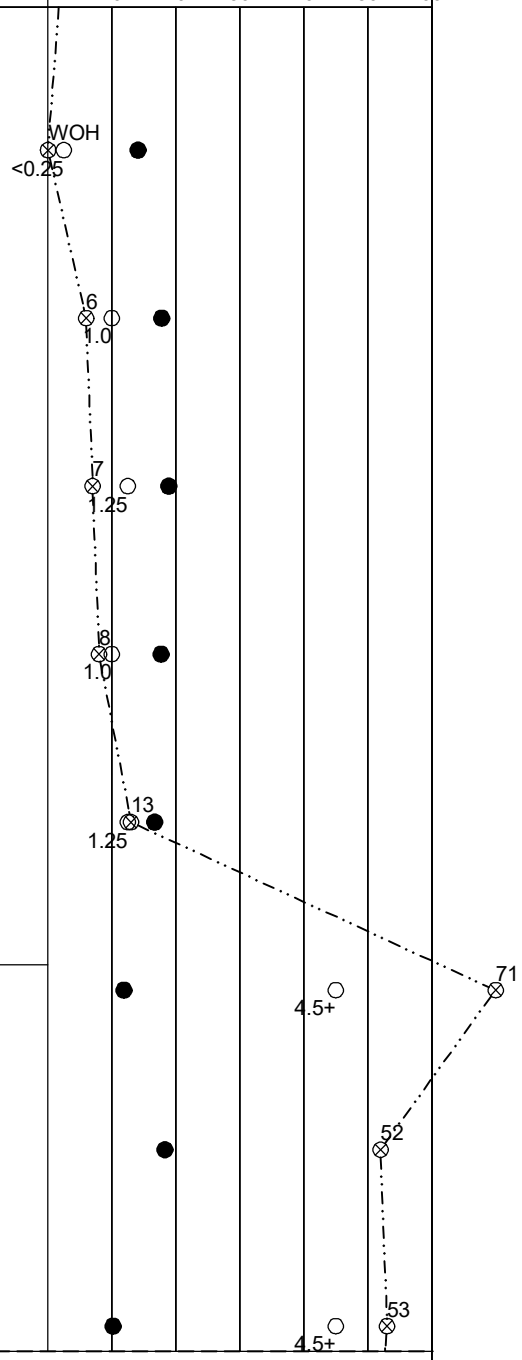
SURFACE ELEVATION (CCD) 18.9

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
-45	13	SS				
-30 / -50	14	SS			*(48.5)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to very stiff (CL)	
-55	15	SS				
-40 / -60	16	SS				
-65	17	SS				
-50 / -70	18	SS			*(68.5)*Silty clay, trace fine to coarse sand and gravel - gray - hard (CL)	
-75	19	SS			Sample 19: Moist silty sand layer noted	
-60	20	SS				

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) × — WATER CONTENT (%) ● — LIQUID LIMIT (%) △ 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 14.0' Before Casing Removal 14.0' After Casing Removal	BORING STARTED **3/15/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/16/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **GeoProbe / Bill M (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **2** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-2**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

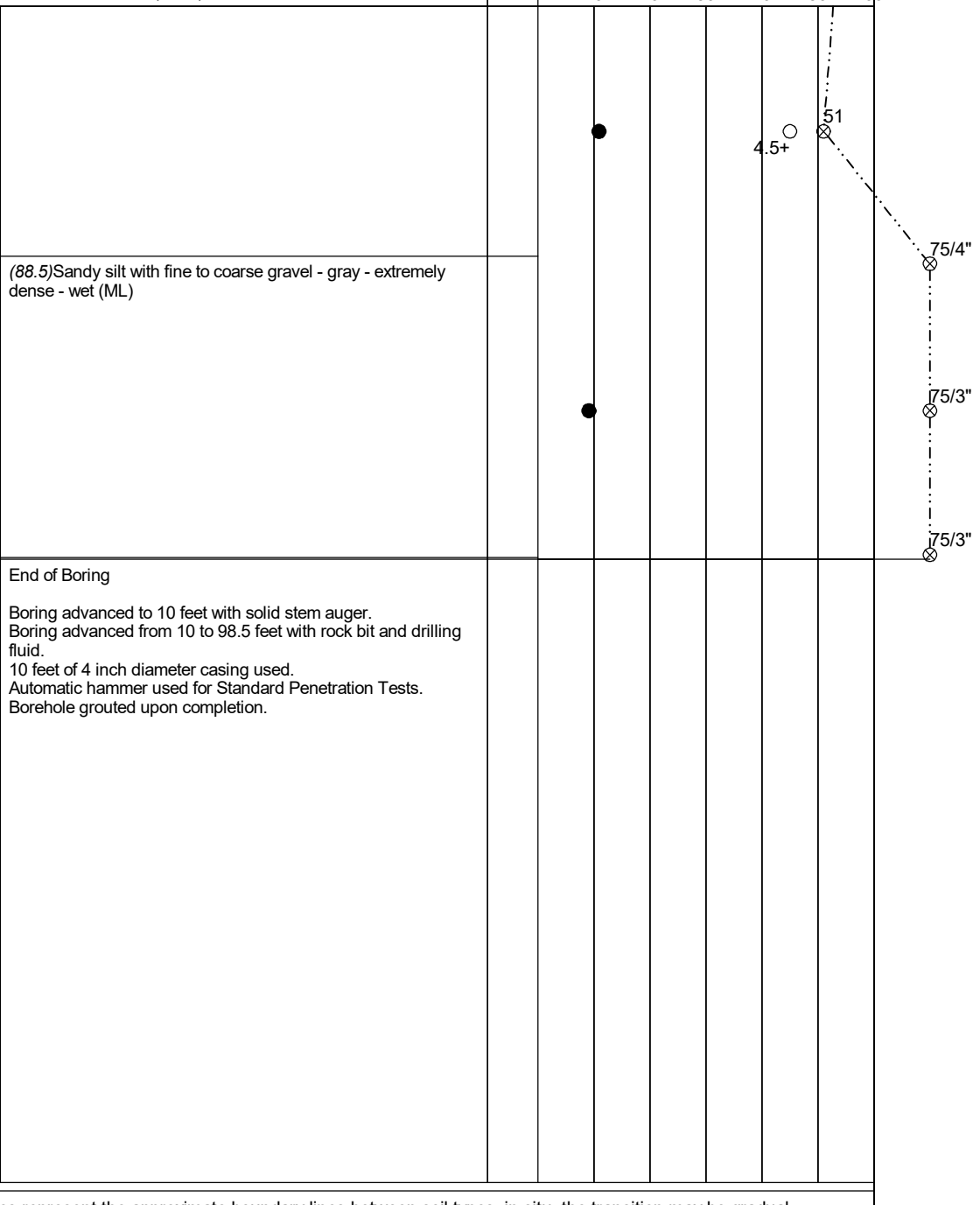
SURFACE ELEVATION (CCD) 18.9

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
85	21	SS				
-70	22	SS			*(88.5)*Sandy silt with fine to coarse gravel - gray - extremely dense - wet (ML)	
90						
	23	SS				
95						
-80	24	SS				
100					End of Boring Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 98.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Automatic hammer used for Standard Penetration Tests. Borehole grouted upon completion.	
105						
-90						
110						
115						
-100						

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)
1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%)
10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT)
10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 14.0' Before Casing Removal 14.0' After Casing Removal	BORING STARTED **3/15/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/16/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **GeoProbe / Bill M (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **3** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-3**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 18.9

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
					*(0.0)*Fill: 3 inches bituminous concrete; 9 inches sandy gravel
	1	SS			*(1.0)*Silty clay, trace fine to coarse and sand gravel - brown and gray - hard to stiff (CL)
5	2	SS			
	3	SS			*(6.0)*Silty clay, trace fine to coarse and sand gravel - gray - stiff to soft (CL)
10 / 10	4	SS			
	5	SS			
15	6	SS			
	7	SS			
0 / 20	8	SS			
25	9	SS			
-10 / 30	10	SS			
35	11	SS			
-20	12	SS			

UNIT DRY WT. LBS/FT^3

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) × WATER CONTENT (%) ● LIQUID LIMIT (%) △ 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60

7, 3.0, 4.5+, 6, 1.25, 3.25, 5, 1.75, 5, 0.25, 1.5, 5, 0.25, 1.25, 3, 1.0, WOH, 0.25, 3, 10, 0.75, WOH, <0.25, WOH, <0.25, WOH, 0.25

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: Dry to 10.0' WS/WD 13.0' Before Casing Removal 13.0' After Casing Removal	BORING STARTED **3/16/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/17/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **GeoProbe / Bill M (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **1** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-3**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

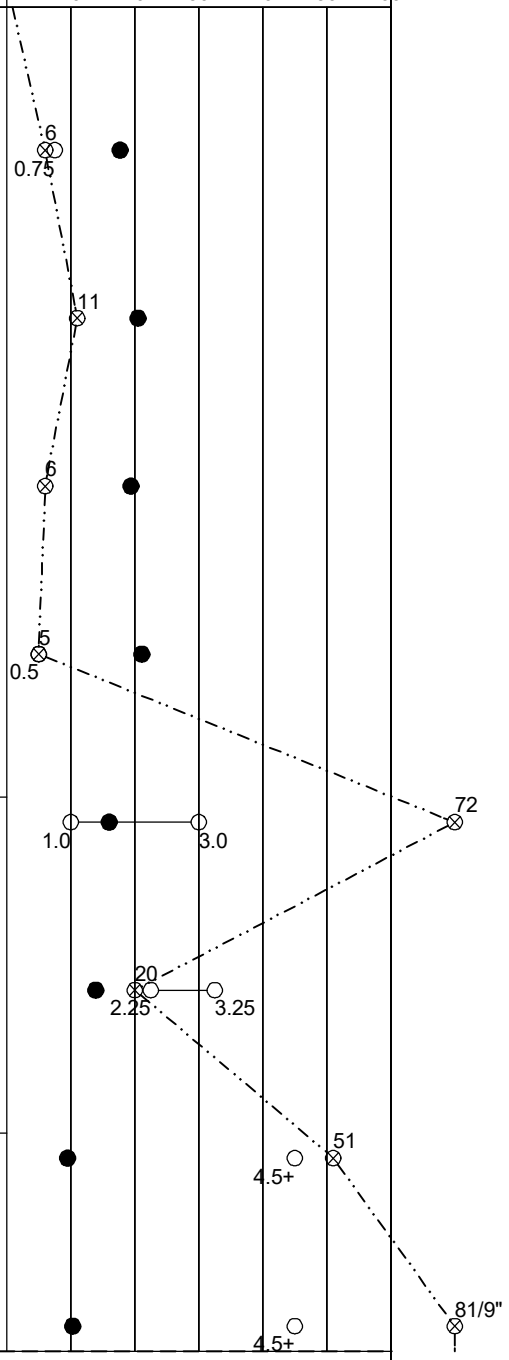
SURFACE ELEVATION (CCD) 18.9

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
-45	13	SS			
-30	14	SS			
-50					
-55	15	SS			
-40	16	SS			
-60					
-65	17	SS		*(63.5)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to very stiff (CL)	
-50	18	SS			
-70					
-75	19	SS		*(73.5)*Silty clay, trace fine to coarse sand and gravel - gray - hard (CL)	
-60	20	SS			

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)
1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%)
10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT)
10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: Dry to 10.0' WS/WD 13.0' Before Casing Removal 13.0' After Casing Removal	BORING STARTED **3/16/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/17/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **GeoProbe / Bill M (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **2** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-3**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 18.9

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3	STANDARD PENETRATION (BLOWS/FT)
85	21	SS			*(83.5)*Silty fine to coarse sand, trace to little clay and fine to coarse gravel - gray - extremely dense - wet (SM)		50/4"
-70 / 90	22	SS					50/3"
95	23	SS					75/3"
-80 / 100	24	SS			*(98.5)*Clayey silt, trace to little fine to coarse sand and gravel - gray - extremely dense - moist (CL-ML)		75/6"
					End of Boring Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 98.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Automatic hammer used for Standard Penetration Tests. Borehole grouted upon completion.		
-90 / 110							
115							
-100							

UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2): 1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%): 10 20 30 40 50

STANDARD PENETRATION (BLOWS/FT): 10 20 30 40 50 60

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: Dry to 10.0' WS/WD 13.0' Before Casing Removal 13.0' After Casing Removal	BORING STARTED **3/16/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/17/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **GeoProbe / Bill M (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **3** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-4**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 18.9

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE RECOVERY	DESCRIPTION OF MATERIAL
				*(0.0)*Fill: 2 inches bituminous concrete
	1	SS		*(0.2)*Fill: Clayey fine to coarse sand - black - medium dense - moist
5	2	SS		*(3.5)*Silty clay, trace fine to coarse and sand gravel - brown and gray - stiff to very stiff (CL)
	3	SS		
10 / 10	4	SS		
	5	SS		*(11.0)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to soft (CL)
15	6	SS		
	7	SS		
0 / 20	8	SS		
25	9	SS		
-10 / 30	10	SS		
35	11	SS		
-20	12	SS		

UNIT DRY WT. LBS/FT^3

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) — WATER CONTENT (%) — LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60

13, 9, 1.25, 14, 3.5, 15, 2.5, 13, 8, 1.5, 10, 1.5, 6, 1.0, WOH, 0.5, 21, 2, 0.5, WOH, 0.25

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: Dry to 6.0' WS/WD 9.0' Before Casing Removal 9.0' After Casing Removal	BORING STARTED **3/14/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/15/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **GeoProbe / Bill M (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **1** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

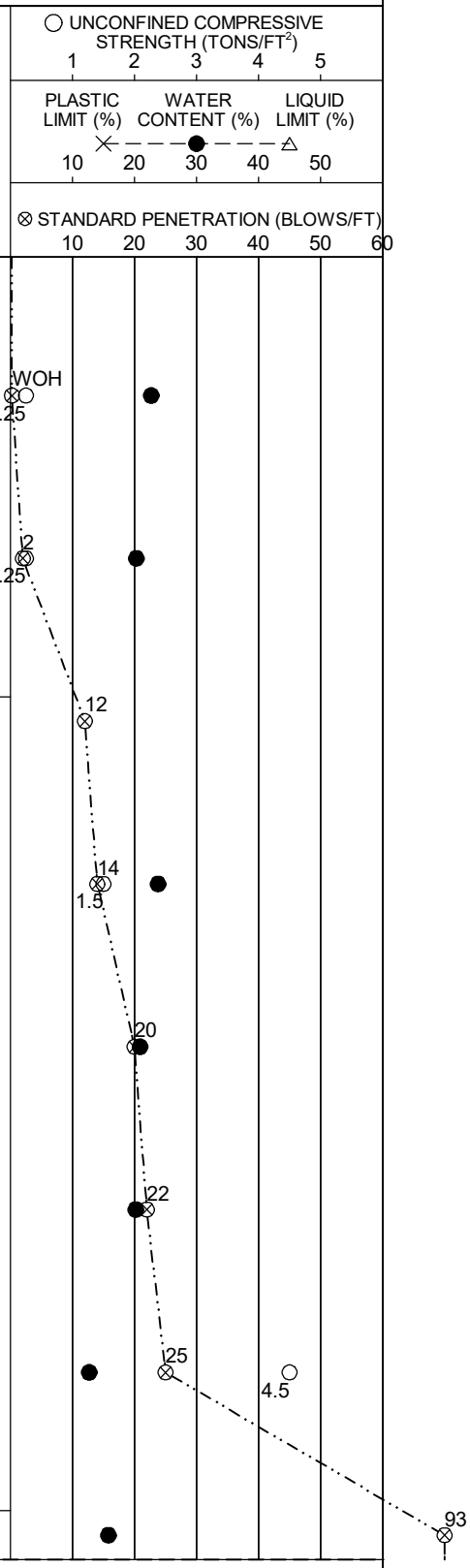
LOG OF BORING NUMBER **B-4**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 18.9

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
-45	13	SS			
-30	14	SS			
-50	15	SS		*(53.5)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to hard (CL)	
-40	16	SS			
-60	17	SS			
-50	18	SS			
-70	19	SS			
-60	20	SS		*(78.5)*Silty clay, trace to little fine to coarse sand and gravel - gray - hard (CL)	



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: Dry to 6.0' WS/WD 9.0' Before Casing Removal 9.0' After Casing Removal	BORING STARTED **3/14/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/15/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **GeoProbe / Bill M (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **2** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-4**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 18.9

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE / RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
85	21	SS			
-70 / 90	22	SS			
95	23	SS		*(93.5)*Sandy silt, trace to little fine to coarse gravel - gray - wet - extremely dense (ML)	
-80 / 100	24	SS		End of Boring Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 98.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Automatic hammer used for Standard Penetration Tests. Borehole grouted upon completion.	
-90 / 110					
-100 / 115					

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) — WATER CONTENT (%) — LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: Dry to 6.0' WS/WD 9.0' Before Casing Removal 9.0' After Casing Removal	BORING STARTED **3/14/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/15/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **GeoProbe / Bill M (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **3** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-5**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 24.9

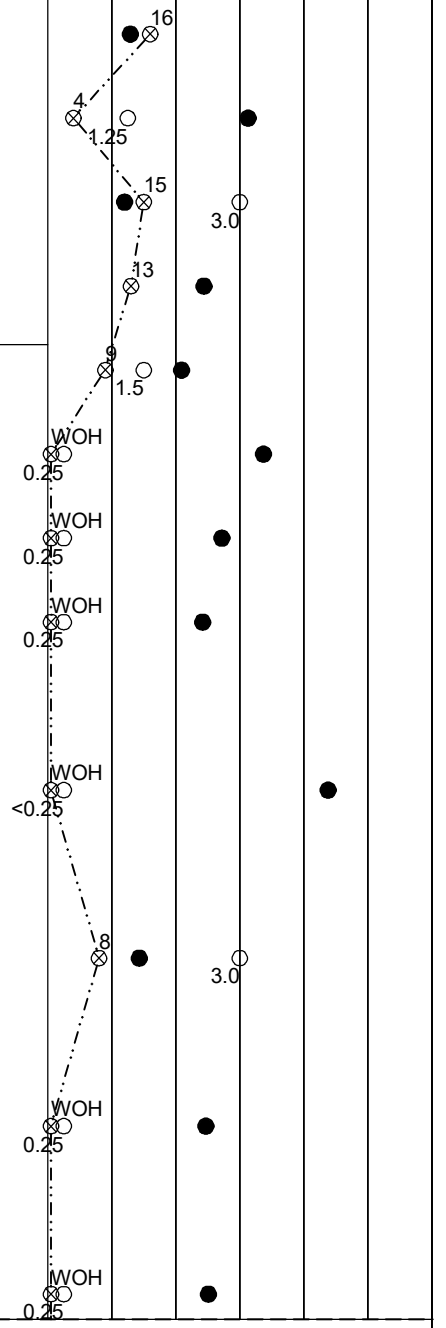
DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
					*(0.0)*Fill: 2 inches bituminous concrete
	1	SS			*(0.2)*Fill: Silty fine to medium sand, trace to little clay - black - medium dense - moist
5 / 20	2	SS			*(3.5)*Silty clay, trace fine to coarse and sand gravel - brown and gray - stiff to very stiff (CL)
	3	SS			
10	4	SS			
	5	SS			*(11.0)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to soft (CL)
15 / 10	6	SS			
	7	SS			
20	8	SS			
25 / 0	9	SS			
	10	SS			
30					
35 / 10	11	SS			
	12	SS			

UNIT DRY WT. LBS/FT^3

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 21.0' Before Casing Removal 21.0' After Casing Removal	BORING STARTED **3/15/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/16/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **CME-75 / Mark B (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **1** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-5**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 24.9

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT³	○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT²) 1 2 3 4 5 / PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%) 10 20 30 40 50 / ⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60
45 / 20	13	SS				WOH <0.25
50	14	SS				WOH 0.25
55 / 30	15	SS		*(53.5)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to hard (CL)		21
60	16	SS				16 0.25
65 / 40	17	SS				15
70	18	SS				11
75 / 50	19	SS		*(72.5)*Silty clay, trace to little fine to coarse sand and gravel - gray - hard (CL)		41 4.5+
	20	SS				26 3.0

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 21.0' Before Casing Removal
21.0' After Casing Removal

BORING STARTED **3/15/2022**

BORING COMPLETED **3/16/2022**

GEI OFFICE **Chicago**

ENTERED BY **LJE**

APPROVED BY **RCR**

NORTHING

EASTING

RIG/FOREMAN **CME-75 / Mark B (Strata)**

GEI PROJECT NO. **2200549**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

LOG OF BORING NUMBER **B-5**

PROJECT NAME: **Ryan Field Development**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

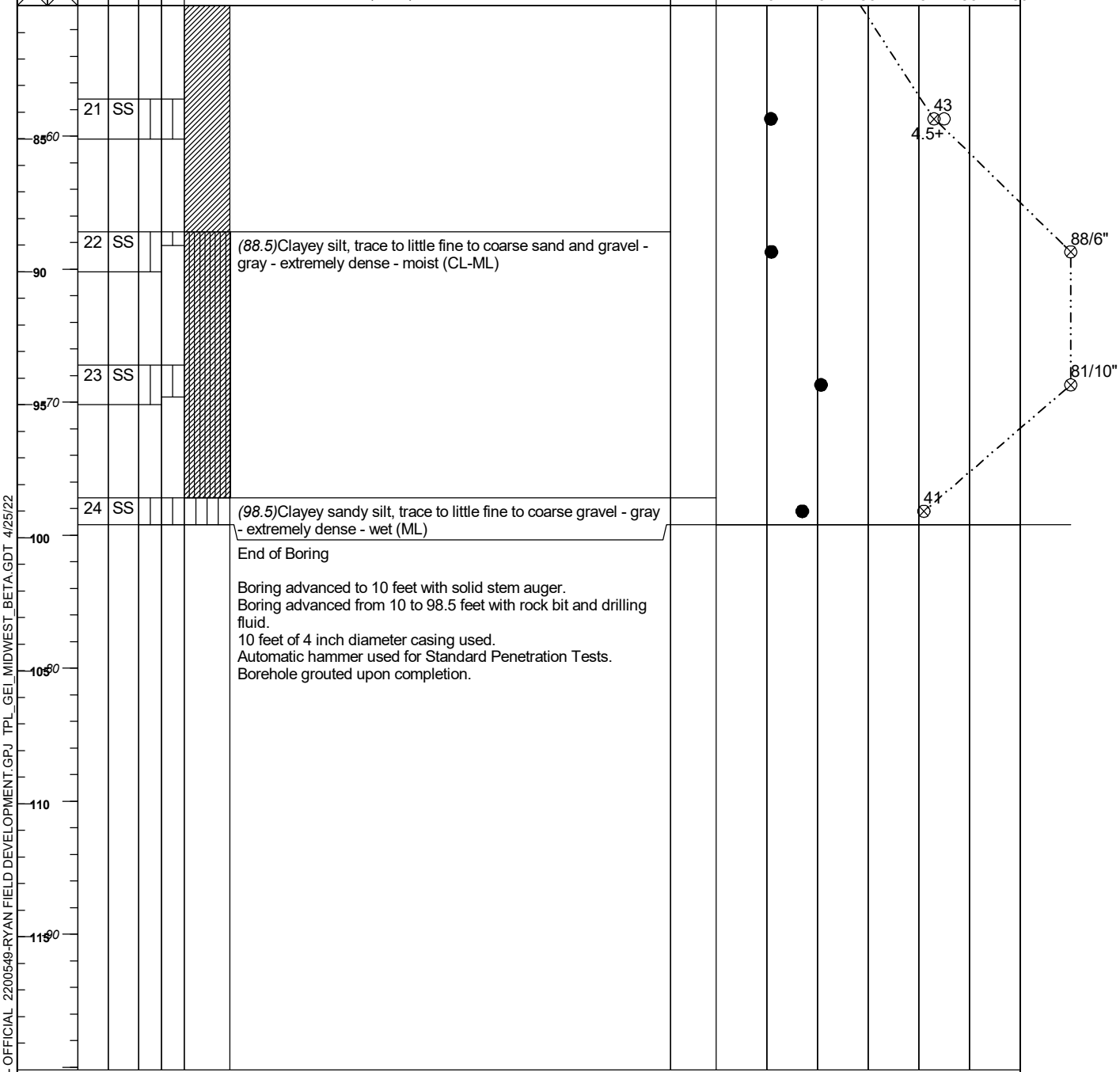
SURFACE ELEVATION (CCD) 24.9

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE / RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
85 60	21	SS			
90	22	SS		*(88.5)*Clayey silt, trace to little fine to coarse sand and gravel - gray - extremely dense - moist (CL-ML)	
95 70	23	SS			
	24	SS		*(98.5)*Clayey sandy silt, trace to little fine to coarse gravel - gray - extremely dense - wet (ML)	
100				End of Boring Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 98.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Automatic hammer used for Standard Penetration Tests. Borehole grouted upon completion.	
105 80					
110					
115 90					

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)
1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%)
10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT)
10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 21.0' Before Casing Removal 21.0' After Casing Removal	BORING STARTED **3/15/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/16/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **CME-75 / Mark B (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **3** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-6**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 19.0

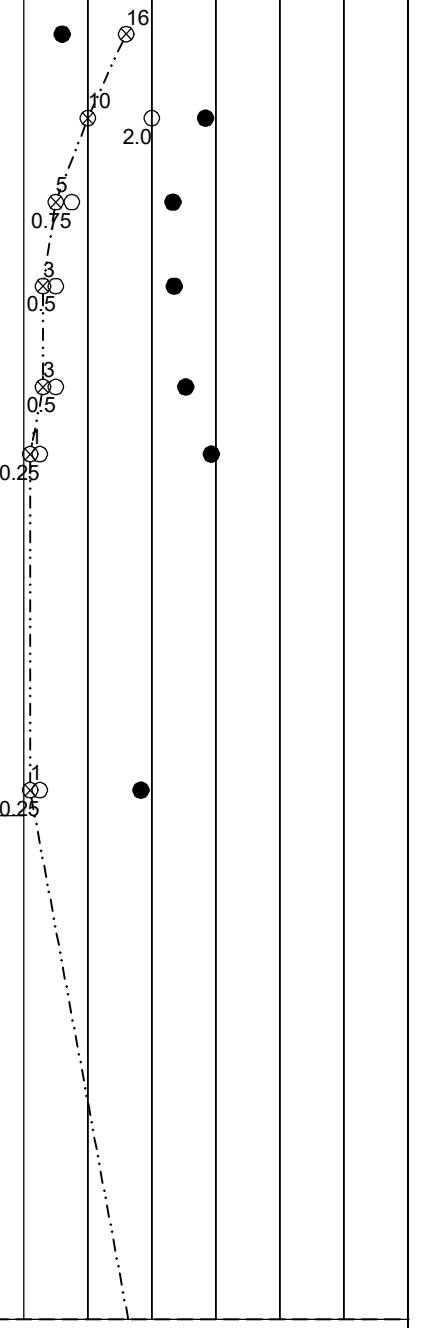
DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
					*(0.0)*Fill: 3 inches bituminous concrete
	1	SS			*(0.3)*Fill: Sandy gravel with silt (crushed concrete and asphalt) - gray and black - medium dense - moist
	2	SS			*(2.5)*Silty clay, trace fine to coarse and sand gravel - brown and gray - very stiff (CL)
5	3	SS			*(6.0)*Silty clay, trace fine to coarse sand and gravel - gray - medium to soft (CL)
10 / 10	4	SS			**Pressuremeter Test performed at 9.0 to 11.5 ft** **P_f = 3.9 tsf -- E_d = 66.0 tsf**
	5	SS			
15 / 0	6	SS			**Pressuremeter Test performed at 14.0 to 16.5 ft** **P_f = 3.6 tsf -- E_d = 138.0 tsf**
20 / -10	7	SS			**Pressuremeter Test performed at 24.0 to 26.5 ft** **P_f = 2.9 tsf -- E_d = 55.0 tsf**
25 / -20					*(25.0)*No sampling
30					
35					

UNIT DRY WT. LBS/FT^3

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 5.0' WD	BORING STARTED **3/8/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/9/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **CME-75 / Mark B (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **1** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-6**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 19.0

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
45 / -30						
50 / -35						
55 / -40						
60 / -45						
65 / -50						
70 / -55					*(69.0)*Silty clay, trace to little fine to coarse sand and gravel - gray - hard (CL)	
75 / -60	8	SS			**Pressuremeter Test performed at 72.5 to 75.0 ft P_f = 12.0 tsf -- E_d = 268.0 tsf**	
	9	SS				
	10	SS			**Pressuremeter Test performed at 77.5 to 80.0 ft P_f = 17.0 tsf -- E_d = 258.0 tsf**	

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60

48 4.5+ 53 4.5+ 62 4.5+

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 5.0' WD	BORING STARTED **3/8/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/9/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **CME-75 / Mark B (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **2** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-6**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 19.0

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT³
	11	SS				
	12	SS			*(82.0)*Clayey silt, trace to little fine to coarse sand and gravel - gray - extremely dense - moist (CL-ML) **Pressuremeter Test performed at 82.5 to 85.0 ft** **P_f = >24.1 tsf -- E_d = 628.0 tsf**	
85	13	SS				
-70						
90	14	SS				
95	15	SS			*(95.0)*Sandy silt with fine to coarse gravel, trace clay - gray - extremely dense - wet (ML)	
-80						
100	16	SS			End of Boring Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 98.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Automatic hammer used for Standard Penetration Tests. Borehole grouted upon completion.	
-90						
105						
-100						
110						
115						

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT²)
1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%)
10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT)
10 20 30 40 50 60

4.5+ 4.5+ 4.5+ 4.5+

74 50/3" 78/6" 78 75/3" 71/6"

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 5.0' WD	BORING STARTED **3/8/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/9/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **CME-75 / Mark B (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **3** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-7**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 19.1

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
				*(0.0)*Fill: 2 inches bituminous concrete; 10 inches asphalt grindings	
	1	SS		*(1.0)*Silty clay, trace fine to coarse and sand gravel - brown and gray - very stiff to stiff (CL)	
5	2	SS			
	3	SS			
10 / 10	4	SS		*(8.5)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to soft (CL)	
	5	SS			
15	6	SS			
	7	SS			
0 / 20	8	SS			
25	9	SS			
-10 / 30	10	SS			
35	11	SS			
-20	12	SS			

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60

7	12	10	6	7	5	WOH	WOH	2	WOH	WOH	WOH
1.5	1.5	1.5	1.5	1.5	3.0	0.5	0.25	0.25	0.25	<0.25	<0.25

3.5

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 18.0' Before Casing Removal 18.0' After Casing Removal	BORING STARTED **3/16/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/17/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **CME-75 / Mark B (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **1** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-7**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 19.1

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT³
-45	13	SS				
-30 / -50	14	SS				
-55	15	SS			*(53.5)*Silty clay, trace fine to coarse sand and gravel - gray - medium to soft (CL)	
-40 / -60	16	SS				
-65	17	SS				
-50 / -70	18	SS			*(68.5)*Silty clay, trace to little fine to coarse sand and gravel - gray - hard (CL)	
-75	19	SS				
-60	20	SS				

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT²) 1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60

WOH
0.25
4
11
0.75
6
0.25
25
100/4"
81/8"
66
4.5+

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 18.0' Before Casing Removal 18.0' After Casing Removal	BORING STARTED **3/16/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/17/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **CME-75 / Mark B (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **2** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-7**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

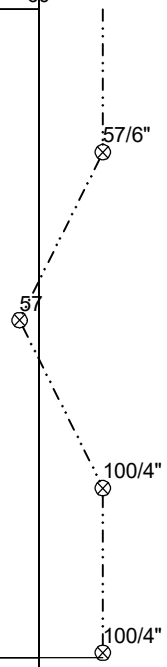
SURFACE ELEVATION (CCD) 19.1

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
85	21	SS			
-70 / 90	22	SS			
95	23	SS		*(93.8)*Sandy silt with fine to coarse gravel, trace clay - gray - extremely dense - wet (ML)	
-80 / 100	24	SS		End of Boring Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 98.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Automatic hammer used for Standard Penetration Tests. Borehole grouted upon completion.	
-90 / 110					
115					
-100					

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2): 1 2 3 4 5

PLASTIC LIMIT (%) / WATER CONTENT (%) / LIQUID LIMIT (%): 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT): 10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 18.0' Before Casing Removal 18.0' After Casing Removal	BORING STARTED **3/16/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/17/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **CME-75 / Mark B (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **3** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-8**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 19.0

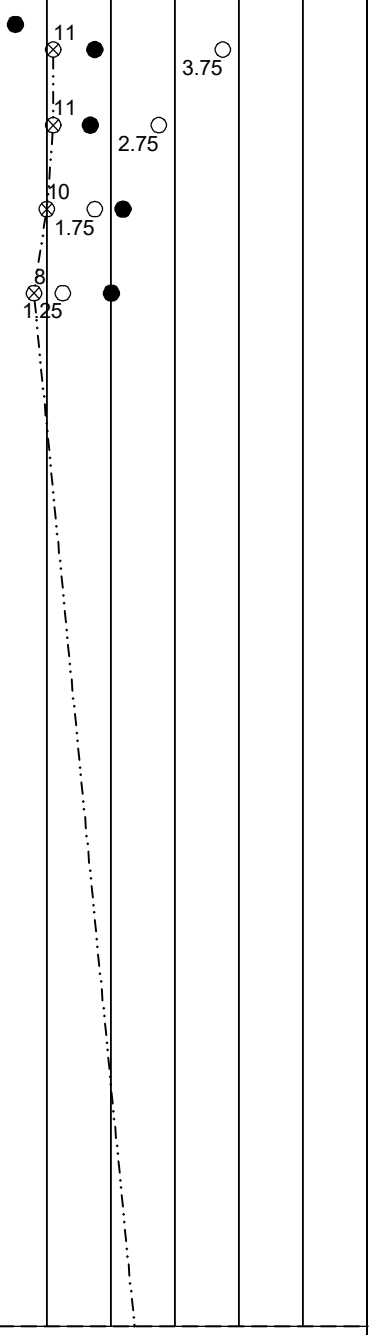
DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
					*(0.0)*Fill: 2 inches bituminous concrete
	1	SS			*(0.2)*Fill: Sandy gravel (crushed asphalt and concrete) - gray and black - medium dense - moist
	1A	SS			
					*(1.5)*Silty clay, trace fine to coarse and sand gravel - brown and gray - very stiff to stiff (CL)
	2	SS			
5					
	3	SS			
10	4	SS			
10					*(10.0)*No sampling
15					
0					
20					
25					
-10					
30					
35					
-20					

UNIT DRY WT. LBS/FT^3

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)
1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%)
10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT)
10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 5.5' WD	BORING STARTED **3/7/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/8/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **CME-75 / Mark B (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **1** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-8**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 19.0

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
45 / -30					
50 / -40					
55 / -50					
60 / -60					
65 / -70					
70 / -75	5	SS			*(71.0)*Silty clay, trace fine to coarse sand and gravel - gray - hard (CL)
					Pressuremeter Test performed at 71.5 to 74.0 ft **P_f = 16.5 tsf -- E_d = 307.0 tsf**
75	6	SS			
	7	SS			**Pressuremeter Test performed at 76.0 to 78.5 ft** **P_f = 22.0 tsf -- E_d = 873.0 tsf**
-60	8	SS			

UNIT DRY WT. LBS/FT^3

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60

40 4.5+ 69 4.5+ 30 51 4.5+

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 5.5' WD	BORING STARTED **3/7/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/8/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **CME-75 / Mark B (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **2** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

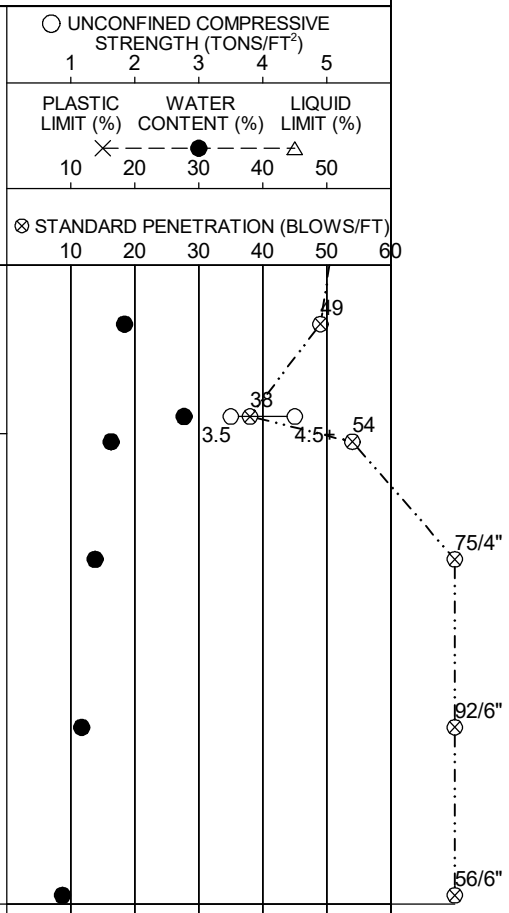
LOG OF BORING NUMBER **B-8**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 19.0

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
	9	SS			**Pressuremeter Test performed at 81.5 to 84.0 ft P_f = 10.0 tsf -- E_d = 133.0 tsf**	
	10	SS				
85	10A	SS			*(85.0)*Silty fine to coarse sand, trace to little fine to coarse gravel, trace clay - gray - extremely dense - moist to wet (SM)	
-70	11	SS				
90						
	12	SS				
95						
-80	13	SS				
100					End of Boring Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 98.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Automatic hammer used for Standard Penetration Tests. Borehole grouted upon completion.	
105						
-90						
110						
115						
-100						



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 5.5' WD	BORING STARTED **3/7/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/8/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **CME-75 / Mark B (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **3** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-9**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 25.0

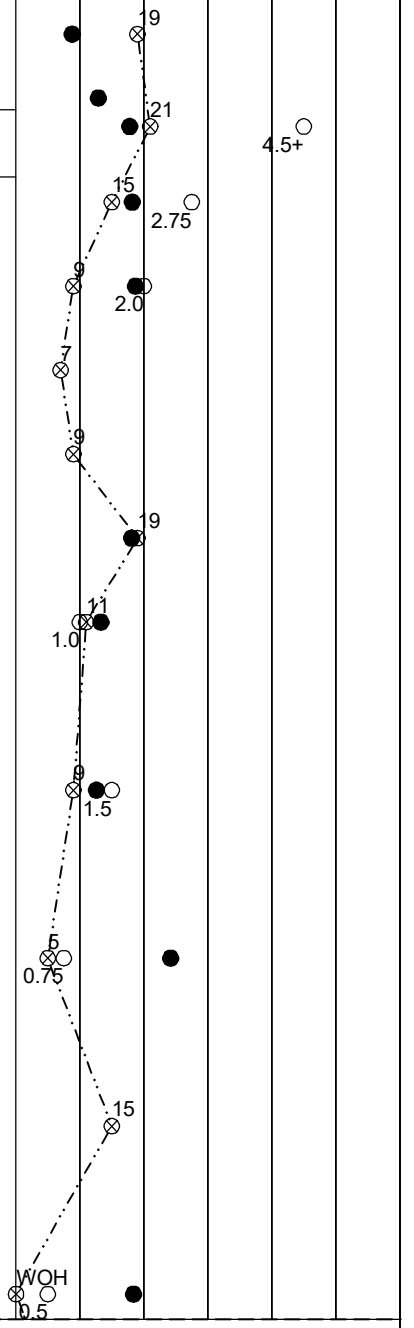
DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
					*(0.0)*Fill: 3 inches bituminous concrete; 9 inches base course
	1	SS			*(1.0)*Silty sand with fine gravel - brown - medium dense - moist to wet (SM)
	2	SS			
5 / 20	2A	SS			*(4.0)*Silty clay, trace fine to coarse and sand gravel - brown and gray - hard to very stiff (CL)
	3	SS			*(6.0)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to soft (CL)
	4	SS			
10	5	SS			
	6	SS			
15 / 10	7	SS			
	8	SS			
20					
	9	SS			
25 / 0					
	10	SS			
30					
	11	SS			
35 / 10					
	12	SS			

UNIT DRY WT. LBS/FT^3

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) — WATER CONTENT (%) — LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 3.5' WS	BORING STARTED **3/3/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/4/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **CME-75 / Mark B (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **1** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-9**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

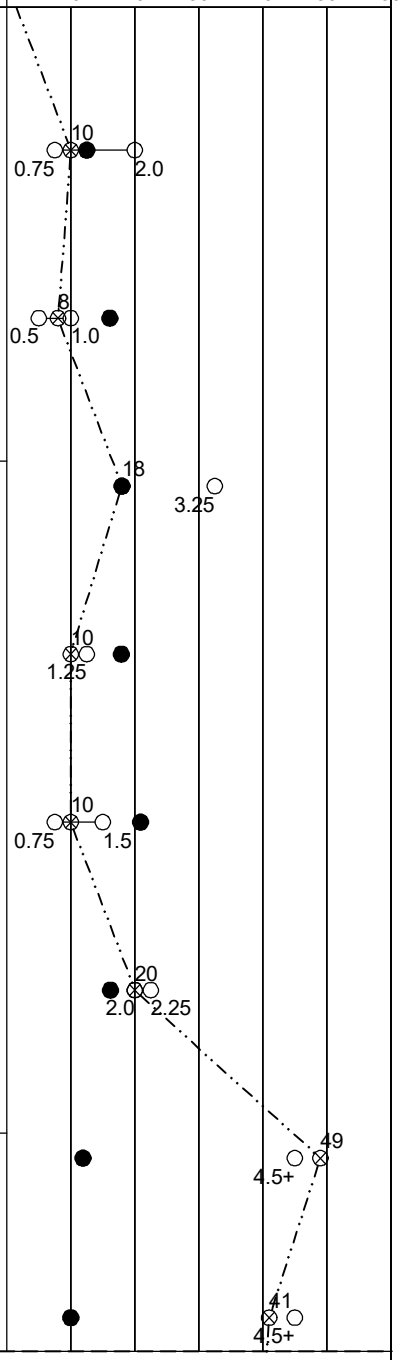
SURFACE ELEVATION (CCD) 25.0

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
45 / 20	13	SS			
50	14	SS			
55 / 30	15	SS		*(53.5)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to very stiff (CL)	
60	16	SS			
65 / 40	17	SS			
70	18	SS			
75 / 50	19	SS		*(73.5)*Silty clay, trace fine to coarse sand and gravel - gray - hard (CL)	
	20	SS			

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)
1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%)
10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT)
10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 3.5' WS

BORING STARTED **3/3/2022**

BORING COMPLETED **3/4/2022**

GEI OFFICE **Chicago**

ENTERED BY **LJE**

APPROVED BY **RCR**

NORTHING EASTING

RIG/FOREMAN **CME-75 / Mark B (Strata)**

GEI PROJECT NO. **2200549**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-9**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 25.0

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
85.0	21	SS				
90	22	SS			*(88.5)*Silt with sand and gravel - gray - extremely dense - wet (ML)	
95.0	23	SS				
100	24	SS			End of Boring Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 98.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Automatic hammer used for Standard Penetration Tests. Borehole grouted upon completion.	
105.0						
110						
115.0						

UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2): 1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%): 10 20 30 40 50

STANDARD PENETRATION (BLOWS/FT): 10 20 30 40 50 60

39

4.5+

36

72/5"

75/3"

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 3.5' WS	BORING STARTED **3/3/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/4/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **CME-75 / Mark B (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **3** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

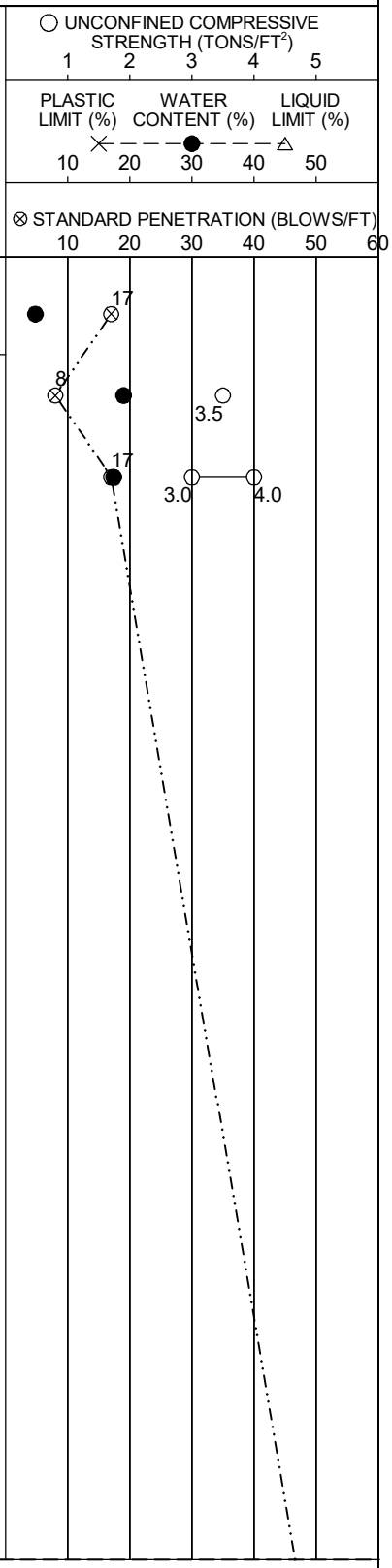
LOG OF BORING NUMBER **B-10**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 24.8

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
					*(0.0)*Fill: 3 inches bituminous concrete; 9 inches base course	
	1	SS			*(1.0)*Fill: Silty sandy fine to coarse gravel (crushed limestone) - light gray - medium dense - moist	
5 / 20	2	SS			*(3.0)*Silty clay, trace fine to coarse and sand gravel - brown and gray - hard to very stiff (CL)	
	3	SS				
10 / 15					*(7.5)*No sampling	
20						
25 / 0						
30						
35 / 10						



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: Dry at 7.5' WS	BORING STARTED **3/1/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/2/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **CME-75 / Mark B (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **1** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-10**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 24.8

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
45 / 20						
50						
55 / 30						
60						
65 / 40						
70						
75 / 50	4	SS			*(73.5)*Silty clay, trace fine to coarse sand and gravel - gray - hard (CL)	
	5	SS			**Pressuremeter Test performed at 74.0 to 76.5 ft** **P_f = 15.5 tsf -- E_d = 338.0 tsf**	
	6	SS				

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60

77 50 4.5+ 54 4.5+

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: Dry at 7.5' WS

BORING STARTED **3/1/2022**

BORING COMPLETED **3/2/2022**

GEI OFFICE **Chicago**

ENTERED BY **LJE**

APPROVED BY **RCR**

NORTHING EASTING

RIG/FOREMAN **CME-75 / Mark B (Strata)**

GEI PROJECT NO. **2200549**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-10**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

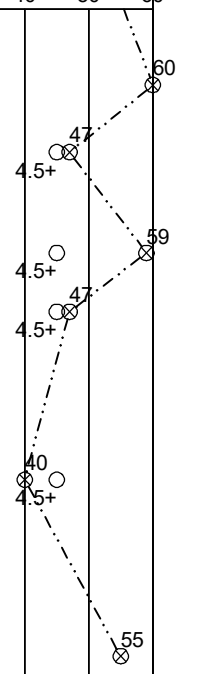
SURFACE ELEVATION (CCD) 24.8

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
	7	SS			**Pressuremeter Test performed at 79.0 to 81.5 ft** **P_f = >25.1 tsf -- E_d = 474.0 tsf**	
85 / 60	8	SS			**Pressuremeter Test performed at 84.0 to 86.5 ft** **P_f = 17.5 tsf -- E_d = 237.0 tsf**	
	9	SS				
90	10	SS				
95 / 70	11	SS				
100	12	SS			*(98.5)*Silt, trace to little sand and gravel, trace clay - gray - very dense - wet (ML)	
					End of Boring Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 98.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Automatic hammer used for Standard Penetration Tests. Borehole grouted upon completion.	
105 / 80						
110						
115 / 90						

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: Dry at 7.5' WS	BORING STARTED **3/1/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/2/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **CME-75 / Mark B (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **3** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-11**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

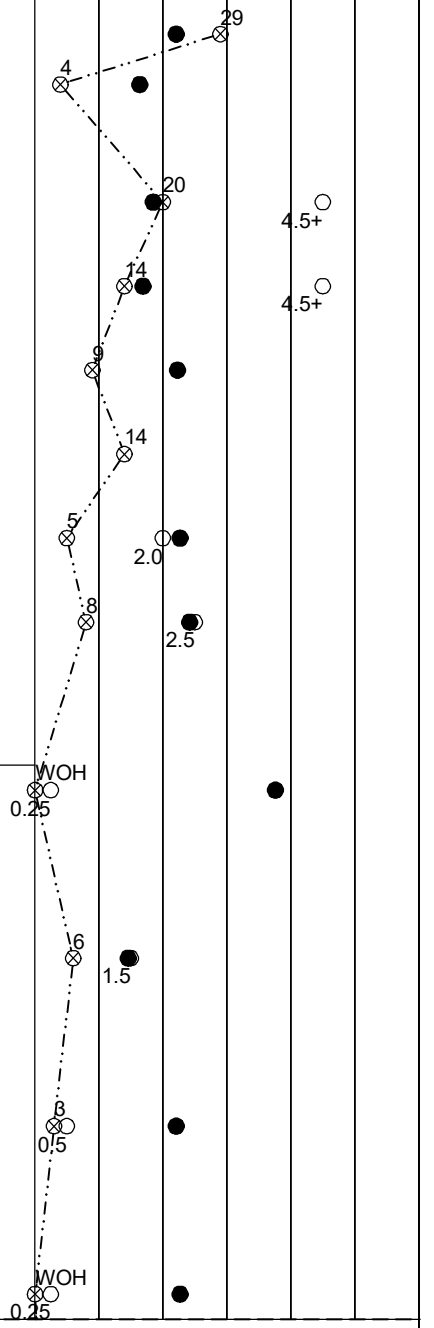
SURFACE ELEVATION (CCD) 24.9

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
					*(0.0)*Fill: 4 inches bituminous concrete	
	1	SS			*(0.3)*Fill: Silty fine to coarse sand with gravel - brown and black - medium dense to loose - moist (SM)	
	2	SS				
5 / 20	3	SS			*(4.8)*Silty clay, trace fine to coarse and sand gravel - brown and gray - hard (CL)	
	4	SS				
10	5	SS			*(11.0)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to very stiff (CL)	
	6	SS				
15 / 10	7	SS				
	8	SS				
20	9	SS			*(23.5)*Silty clay, trace fine to coarse sand and gravel - gray - soft to medium (CL)	
25 / 0	10	SS				
30	11	SS				
35 / 10	12	SS				

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: Dry at 10.0' WS
14.0' Before Casing Removal
16.0' After Casing Removal

BORING STARTED **3/3/2022**

BORING COMPLETED **3/4/2022**

GEI OFFICE **Chicago**

ENTERED BY **LJE**

APPROVED BY **RCR**

NORTHING EASTING

RIG/FOREMAN **B-57 / Dan (Strata)**

GEI PROJECT NO. **2200549**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

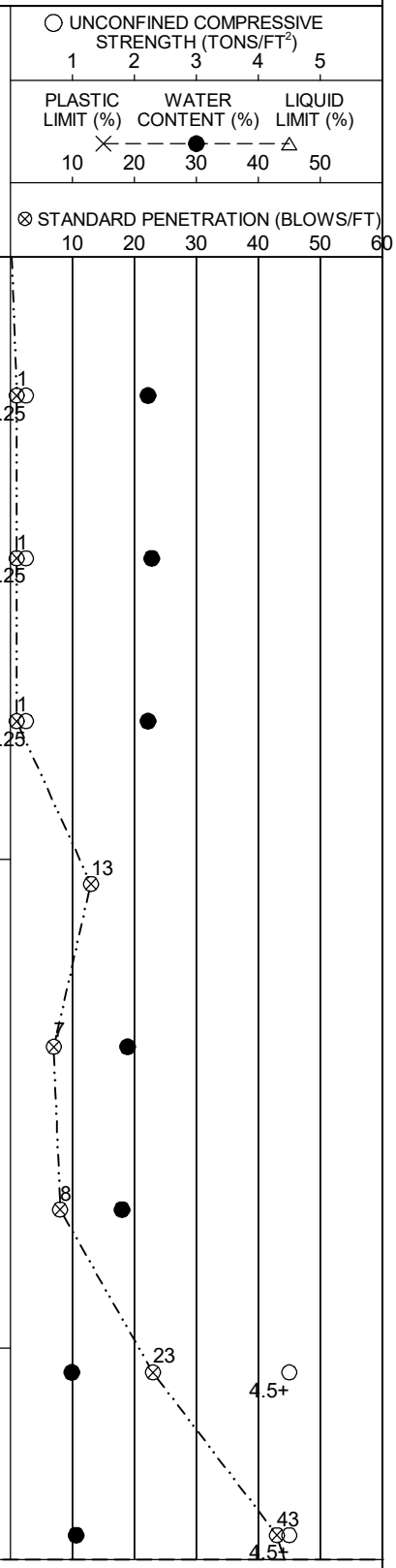
LOG OF BORING NUMBER **B-11**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 24.9

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT³
45 20	13	SS			0.25
50	14	SS			0.25
55 30	15	SS			0.25
60	16	SS		*(58.5)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to very stiff (CL)	
65 40	17	SS			
70	18	SS			
75 50	19	SS		*(73.5)*Silty clay, trace fine to coarse sand and gravel - gray - hard (CL)	
	20	SS			



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: Dry at 10.0' WS 14.0' Before Casing Removal 16.0' After Casing Removal	BORING STARTED **3/3/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/4/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **B-57 / Dan (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **2** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-11**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

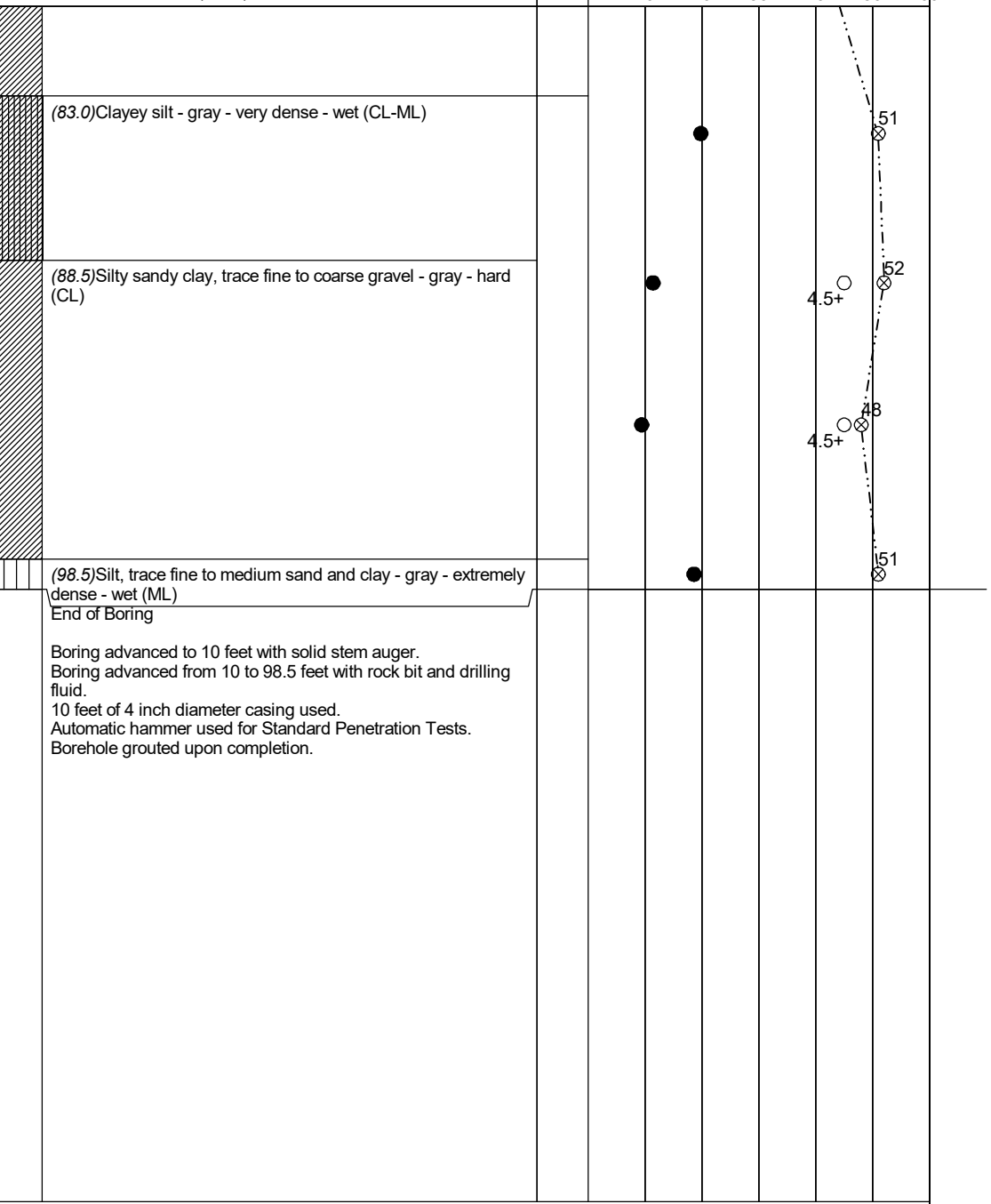
SURFACE ELEVATION (CCD) 24.9

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
85 / 60	21	SS		*(83.0)*Clayey silt - gray - very dense - wet (CL-ML)	
90	22	SS		*(88.5)*Silty sandy clay, trace fine to coarse gravel - gray - hard (CL)	
95 / 70	23	SS			
100	24	SS		*(98.5)*Silt, trace fine to medium sand and clay - gray - extremely dense - wet (ML)	
				End of Boring	
105 / 80				Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 98.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Automatic hammer used for Standard Penetration Tests. Borehole grouted upon completion.	
110					
115 / 90					

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)
1 2 3 4 5

PLASTIC LIMIT (%) — WATER CONTENT (%) — LIQUID LIMIT (%)
10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT)
10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: Dry at 10.0' WS
14.0' Before Casing Removal
16.0' After Casing Removal

BORING STARTED **3/3/2022**
BORING COMPLETED **3/4/2022**
RIG/FOREMAN **B-57 / Dan (Strata)**

GEI OFFICE **Chicago**
ENTERED BY **LJE**
APPROVED BY **RCR**

NORTHING EASTING

GEI PROJECT NO. **2200549**

PAGE NO. **3** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-12**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 24.5

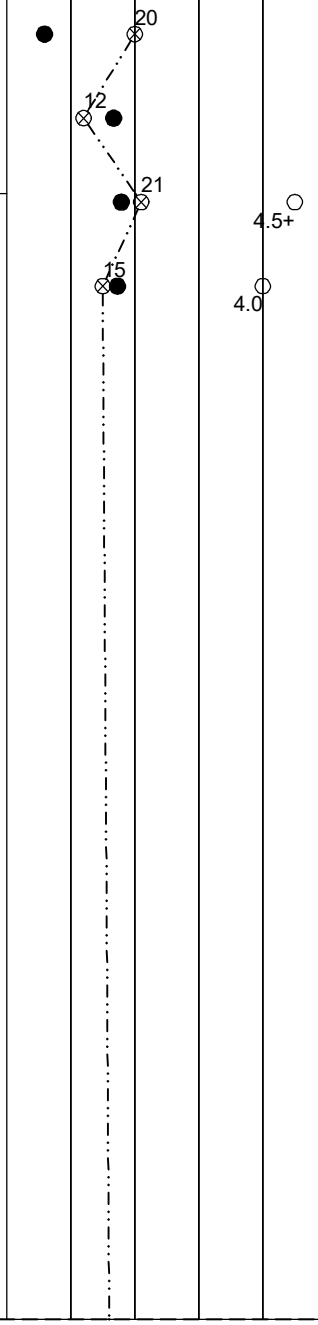
DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
					*(0.0)*Fill: 4 inches bituminous concrete
	1	SS			*(0.3)*Fill: Sandy gravel with silt (crushed asphalt and concrete) - black - medium dense - moist
20 / 5	2	SS			*(3.5)*Fine to medium sand with silt - brown - medium dense - moist (SP-SM)
	3	SS			*(6.5)*Silty clay, trace fine to coarse sand and gravel - brown - hard (CL)
	4	SS			
10					*(10.0)*No sampling
10 / 15					
20					
0 / 25					
30					
-10 / 35					

UNIT DRY WT. LBS/FT^3

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) × — WATER CONTENT (%) ● — LIQUID LIMIT (%) △ 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL:	BORING STARTED 3/2/2022	GEI OFFICE Chicago	
	BORING COMPLETED 3/3/2022	ENTERED BY LJE	APPROVED BY RCR
NORTHING EASTING	RIG/FOREMAN B-57 / Dan (Strata)	GEI PROJECT NO. 2200549	PAGE NO. 1 OF 3

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-12**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 24.5

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
-20 / 45						
50						
-30 / 55						
60						
-40 / 65						
70	5	SS			*(68.5)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to very stiff (CL)	
	6	SS				
-50 / 75	7	SS				
	8	SS			*(76.0)*Silty clay, trace fine to coarse sand and gravel - gray - hard (CL) **Pressuremeter Test performed at 76.5 to 79.0 ft** **P_f = 10.0 tsf -- E_d = 139.0 tsf**	
	9	SS				

UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%) 10 20 30 40 50

STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60

17 21 2.5 24 29 4.5+ 42 4.5+

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL:	BORING STARTED **3/2/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/3/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **B-57 / Dan (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **2** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-12**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

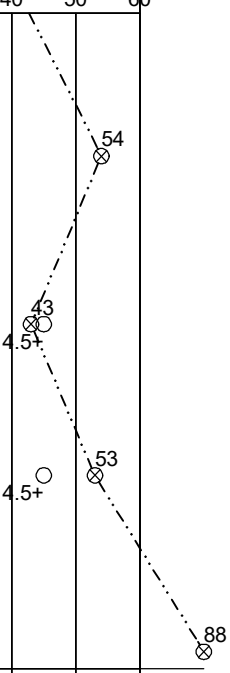
SURFACE ELEVATION (CCD) 24.5

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE / RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
-60 / 85	10	SS		*(83.5)*Silt, trace fine to medium sand and clay - gray - very dense - wet (ML) **Pressuremeter Test performed at 84.0 to 86.5 ft** **P_f = 16.5 tsf -- E_d = 462.0 tsf**	
-70 / 90	11	SS		*(88.5)*Silty sandy clay, trace fine to coarse gravel - gray - hard (CL) **Pressuremeter Test performed at 89.0 to 91.5 ft** **P_f = 22.0 tsf -- E_d = 395.0 tsf**	
-70 / 95	12	SS			
-80 / 100	13	SS		*(98.5)*Clayey silt, trace fine to coarse sand and gravel - gray - extremely dense - wet (CL-ML) End of Boring Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 98.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Automatic hammer used for Standard Penetration Tests. Borehole grouted upon completion.	
-90 / 105					
110					
-90 / 115					

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)
1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%)
10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT)
10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL:	BORING STARTED 3/2/2022	GEI OFFICE Chicago	
	BORING COMPLETED 3/3/2022	ENTERED BY LJE	APPROVED BY RCR
NORTHING EASTING	RIG/FOREMAN B-57 / Dan (Strata)	GEI PROJECT NO. 2200549	PAGE NO. 3 OF 3

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-13**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

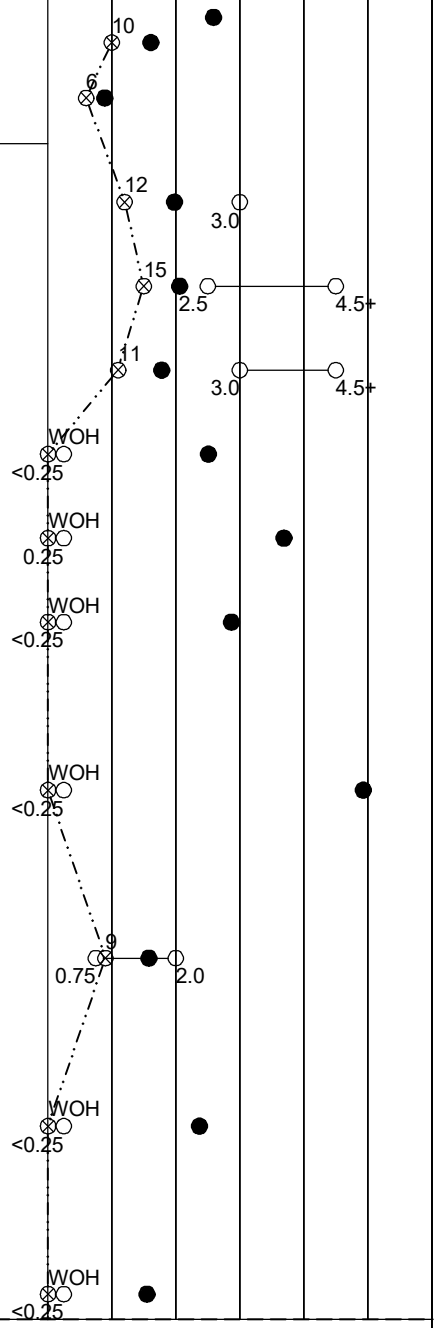
SURFACE ELEVATION (CCD) 24.1

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT³
					*(0.0)*Fill: 5 inches bituminous concrete	
	1	SS			*(0.4)*Fill: Silty sand, trace clay - black - medium dense - moist (SM)	
	1A	SS				
20 / 5	2	SS			*(1.5)*Fine to medium sand with silt - brown - medium dense to loose - moist (SP-SM)	
	3	SS			*(5.0)*Silty clay, trace fine to coarse sand and gravel - brown - very stiff to hard (CL)	
	4	SS				
10	5	SS				
10 / 15	6	SS			*(13.5)*Silty clay, trace fine to coarse sand and gravel - gray - soft to medium (CL)	
	7	SS				
20	8	SS				
0 / 25	9	SS				
30	10	SS				
-10 / 35	11	SS				
	12	SS				

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT²) 1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: Dry at 10.0' WS/WD	BORING STARTED **3/4/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/7/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **CME-75 / Mark B (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **1** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-13**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 24.1

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3	○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)	PLASTIC LIMIT (%) / WATER CONTENT (%) / LIQUID LIMIT (%)	⊗ STANDARD PENETRATION (BLOWS/FT)
-20 / 45	13	SS							WOH
									0.25
-25 / 50	14	SS							WOH
									<0.25
-30 / 55	15	SS							WOH
									<0.25
-35 / 60	16	SS			*(58.5)*Silty clay, trace fine to coarse sand and gravel - gray - stiff (CL)				11
									1.0
-40 / 65	17	SS							19
-45 / 70	18	SS			*(69.0)*Silty clay, trace fine to coarse sand and gravel - gray - hard (CL)				27
-50 / 75	19	SS							35
									4.5+
	20	SS							28
									3.5

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: Dry at 10.0' WS/WD	BORING STARTED **3/4/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/7/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **CME-75 / Mark B (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **2** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-13**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

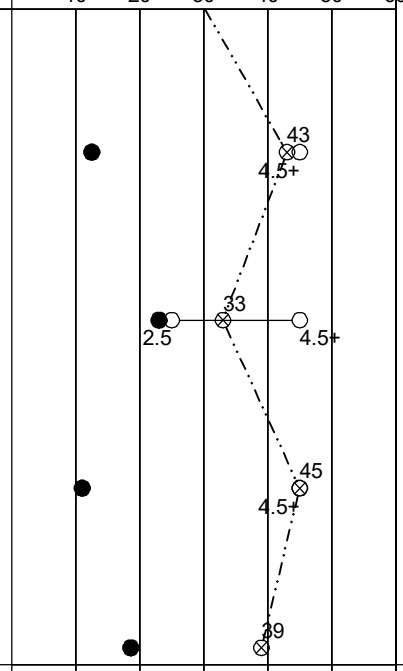
SURFACE ELEVATION (CCD) 24.1

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
-60 / 85	21	SS			
	22	SS			
-70 / 95	23	SS			
				*(95.0)*Silty sand, trace lcay - gray - very dense - wet (SM)	
	24	SS			
-80 / 105				End of Boring Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 98.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Automatic hammer used for Standard Penetration Tests. Borehole grouted upon completion.	
-90 / 115					

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: Dry at 10.0' WS/WD	BORING STARTED **3/4/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/7/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **CME-75 / Mark B (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **3** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

LOG OF BORING NUMBER **B-14**

PROJECT NAME: **Ryan Field Development**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 24.0

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
					*(0.0)*Fill: 3 inches bituminous concrete; 4 inches gravel base course	
	1	SS			*(0.6)*Fill: Silty sand, trace clay - brown and black - loose - moist (SM)	
20 / 5	2	SS			*(3.5)*Fine to medium sand with silt - brown - loose - moist (SP-SM)	
	3	SS			*(6.0)*Silty clay, trace fine to coarse sand and gravel - brown - very stiff to hard (CL)	
10	4	SS			*(10.0)*No sampling	

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)
1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%)
10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT)
10 20 30 40 50 60

8 4 8 12

4.0 4.5

10 / 15 / 20 / 0 / 25 / 30 / -10 / 35

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 5.0' WS	BORING STARTED **3/7/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/8/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **B-57 / Dan (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **1** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-14**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 24.0

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
-20 / 45						
-30 / 55						
-40 / 65						
-50 / 75	5	SS			*(73.5)*Silty clay, trace fine to coarse sand and gravel - gray - hard (CL)	
	6	SS				

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60

26

4.5+

31

4.5+

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 5.0' WS	BORING STARTED **3/7/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/8/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **B-57 / Dan (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **2** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-14**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

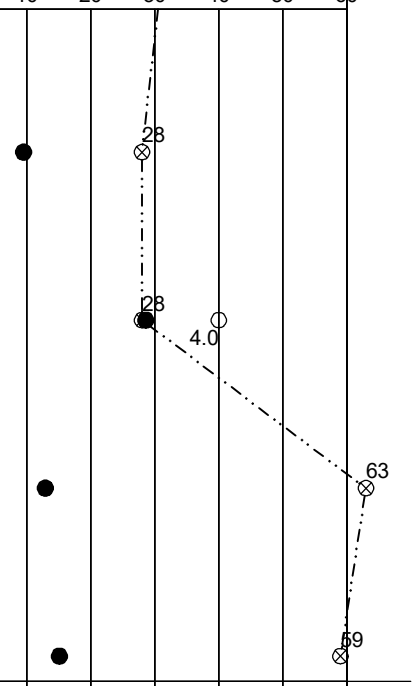
SURFACE ELEVATION (CCD) 24.0

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE / RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
-60 / 85	7	SS			
	8	SS			
-70 / 95	9	SS		*(93.5)*Silty sandy clay, trace fine to coarse gravel - gray - hard (CL)	
-80 / 105	10	SS		*(98.5)*Fine to coarse sand with silt, trace clay and fine gravel - gray - very dense - wet (SP-SM)	
-90 / 115				End of Boring Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 98.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Automatic hammer used for Standard Penetration Tests. Borehole grouted upon completion.	

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) — WATER CONTENT (%) — LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 5.0' WS	BORING STARTED **3/7/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/8/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **B-57 / Dan (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **3** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-15**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 24.7

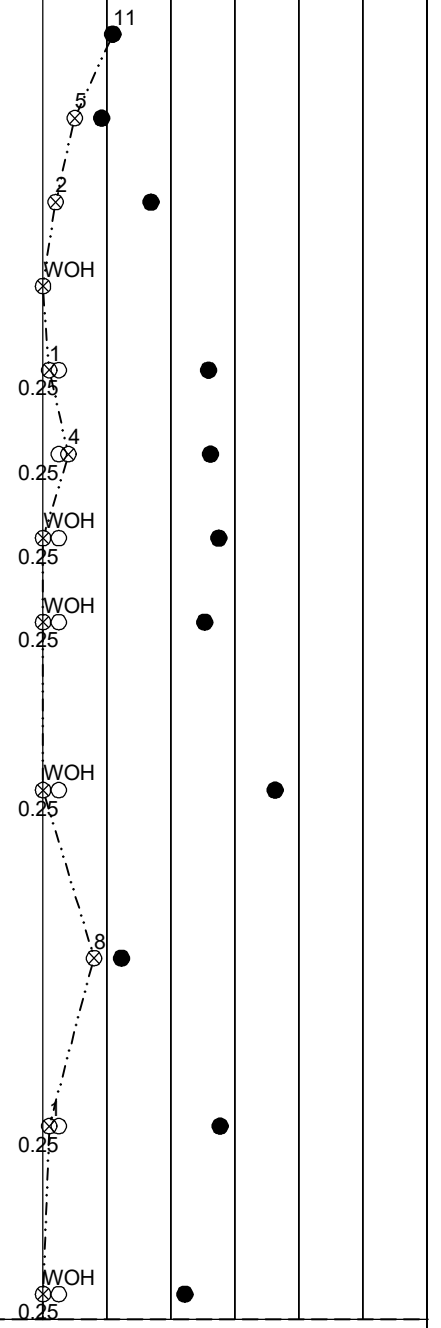
DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
					*(0.0)*Fill: 3 inches bituminous concrete; 4 inches gravel base course
	1	SS			*(0.3)*Fill: Silty fine to coarse sand, trace clay and fine to coarse gravel - dark brown and black - medium dense to loose - moist
5 / 20	2	SS			
	3	SS			
	4	SS			
10					
	5	SS			*(11.0)*Silty clay, trace fine to coarse sand and gravel - gray - soft to medium (CL)
15 / 10	6	SS			
	7	SS			
	8	SS			
20					
25 / 0	9	SS			
	10	SS			
30					
35 / 10	11	SS			
	12	SS			

UNIT DRY WT. LBS/FT^3

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%)
10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT)
10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 6.0' WS 14.0' Before Casing Removal 14.0' After Casing Removal	BORING STARTED **3/8/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/9/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **B-57 / Dan (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **1** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-15**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 24.7

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT³
20 / 45	13	SS			
50	14	SS			
30 / 55	15	SS		*(53.5)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to very stiff (CL)	
60	16	SS			
40 / 65	17	SS			
70	18	SS			
50 / 75	19	SS		*(73.0)*Silty clay, trace fine to coarse sand and gravel - gray - hard (CL)	
	20	SS			

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT²) 1 2 3 4 5

PLASTIC LIMIT (%) × — WATER CONTENT (%) ● — LIQUID LIMIT (%) △ 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60

WOH 0.25 | 1 0.25 | 5 0.25 | 11 1.75 | 6 1.25 | 11 | 26 4.5+ | 32 4.5+

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 6.0' WS
14.0' Before Casing Removal
14.0' After Casing Removal

BORING STARTED **3/8/2022**

BORING COMPLETED **3/9/2022**

GEI OFFICE **Chicago**

ENTERED BY **LJE**

APPROVED BY **RCR**

NORTHING EASTING

RIG/FOREMAN **B-57 / Dan (Strata)**

GEI PROJECT NO. **2200549**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-15**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

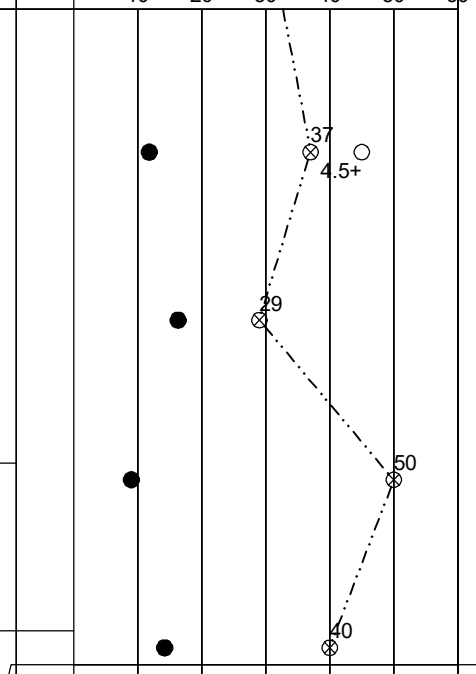
SURFACE ELEVATION (CCD) 24.7

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
85 (60)	21	SS				
90	22	SS				
95 (70)	23	SS			*(93.5)*Silty sandy clay, trace fine to coarse gravel - gray - hard (CL)	
100	24	SS			*(98.5)*Fine to coarse sand with silt, trace clay and fine gravel - gray - extremely dense - wet (SP-SM)	
					End of Boring	
105 (80)					Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 98.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Automatic hammer used for Standard Penetration Tests. Borehole grouted upon completion.	
110						
115 (90)						

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)
1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%)
10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT)
10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 6.0' WS
14.0' Before Casing Removal
14.0' After Casing Removal

BORING STARTED **3/8/2022**
BORING COMPLETED **3/9/2022**
GEI OFFICE **Chicago**
ENTERED BY **LJE**
APPROVED BY **RCR**
NORTHING
EASTING
RIG/FOREMAN **B-57 / Dan (Strata)**
GEI PROJECT NO. **2200549**
PAGE NO. **3** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-16**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 24.6

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
					*(0.0)*Fill: 2 inches bituminous concrete; 10 inches gravel base course
	1	SS			*(1.0)*Fine to medium sand with silt - brown - loose - moist (SP-SM)
5 / 20	2	SS			*(3.5)*Silty clay, trace fine to coarse sand and gravel - brown - hard (CL)
	3	SS			
	4	SS			*(8.5)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to very stiff (CL)
10					
	5	SS			*(11.0)*Silty clay, trace fine to coarse sand and gravel - gray - soft to medium (CL)
15 / 10	6	SS			
	7	SS			
20	8	SS			
25 / 0	9	SS			
	10	SS			
30					
35 / -10	11	SS			
	12	SS			

UNIT DRY WT. LBS/FT^3

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)
1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%)
10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT)
10 20 30 40 50 60

7
10
13
16
4
0.5
1
0.25
WOH
0.25
1
0.25
WOH
0.25
7
WOH
0.25
WOH
0.25
4.5+
4.5+

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: Dry at 7.5' WS
12.0' Before Casing Removal
12.0' After Casing Removal

BORING STARTED **3/9/2022**
BORING COMPLETED **3/10/2022**
GEI OFFICE **Chicago**
ENTERED BY **LJE**
APPROVED BY **RCR**
NORTHING
EASTING
RIG/FOREMAN **B-57 / Dan (Strata)**
GEI PROJECT NO. **2200549**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-16**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 24.6

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
-20 / 45	13	SS				WOH 0.25
	14	SS				WOH 0.25
-30 / 55	15	SS				1 0.25
	16	SS			*(58.0)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to very stiff (CL)	10 1.75
-40 / 65	17	SS			*(63.5)*Silty clay, trace fine to coarse sand and gravel - gray - hard (CL)	29 4.5+
	18	SS				45 4.5+
-50 / 75	19	SS				50 4.5+
	20	SS				100/6"

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: Dry at 7.5' WS 12.0' Before Casing Removal 12.0' After Casing Removal	BORING STARTED **3/9/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/10/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **B-57 / Dan (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **2** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-16**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

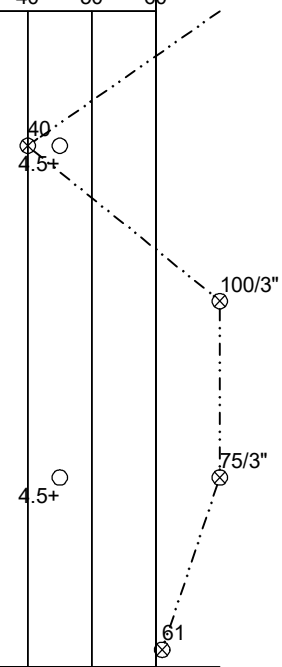
SURFACE ELEVATION (CCD) 24.6

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
-60 / 85	21	SS				
	22	SS			*(88.5)*Clayey silt, trace to little fine to coarse sand and gravel - gray - extremely dense - moist to wet (CL-ML)	
90						
	23	SS				
-70 / 95						
	24	SS			*(97.5)*Silt, trace clay and sand - gray - extremely dense - wet (ML)	
100					End of Boring Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 98.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Automatic hammer used for Standard Penetration Tests. Borehole grouted upon completion.	
-80 / 105						
110						
-90 / 115						

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)
1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%)
10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT)
10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: Dry at 7.5' WS
12.0' Before Casing Removal
12.0' After Casing Removal

BORING STARTED **3/9/2022**
BORING COMPLETED **3/10/2022**
GEI OFFICE **Chicago**
ENTERED BY **LJE**
APPROVED BY **RCR**
NORTHING
EASTING
RIG/FOREMAN **B-57 / Dan (Strata)**
GEI PROJECT NO. **2200549**
PAGE NO. **3** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-17**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

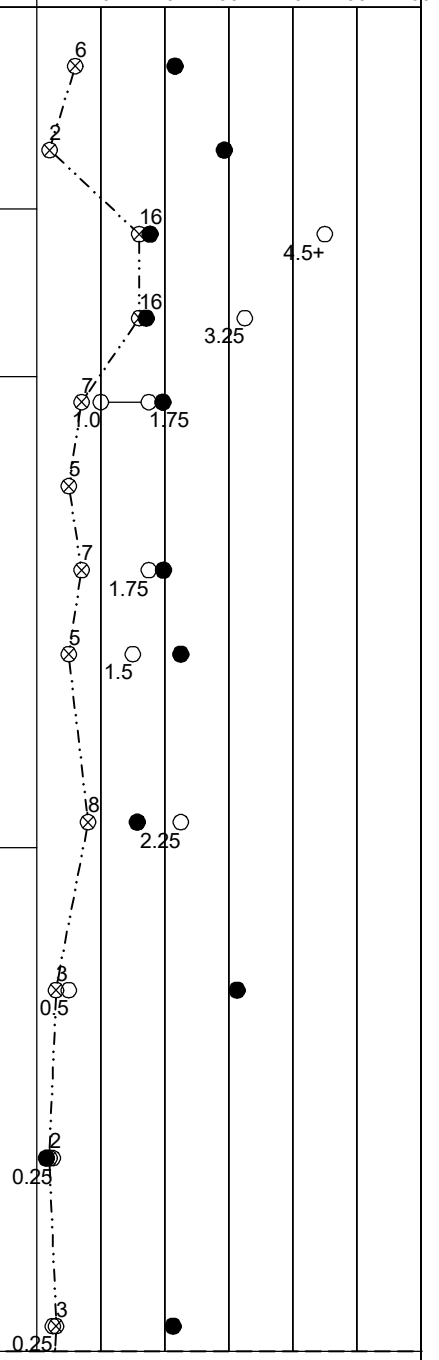
SURFACE ELEVATION (CCD) 25.4

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
					*(0.0)*Fill: 2 inches bituminous concrete; 4 inches gravel base course	
	1	SS			*(0.5)*Fill: Silty sand with gravel - black - loose - moist (SM)	
5 / 20	2	SS			*(3.5)*Clay, trace silt and fine sand - brown and gray - stiff (CH)	
	3	SS			*(6.0)*Silty clay, trace fine to coarse sand and gravel - brown - very stiff to hard (CL)	
10	4	SS				
	5	SS			*(11.0)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to very stiff (CL)	
	6	SS				
15 / 10	7	SS				
	8	SS				
20						
	9	SS				
25 / 0					*(25.0)*Silty clay, trace fine to coarse sand and gravel - gray - soft to medium (CL)	
	10	SS				
30						
	11	SS				
35 / -10						
	12	SS				

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)
1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%)
10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT)
10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 6.0' WS 15.0' Before Casing Removal 15.0' After Casing Removal	BORING STARTED **3/10/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/11/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **B-57 / Dan (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **1** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-17**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

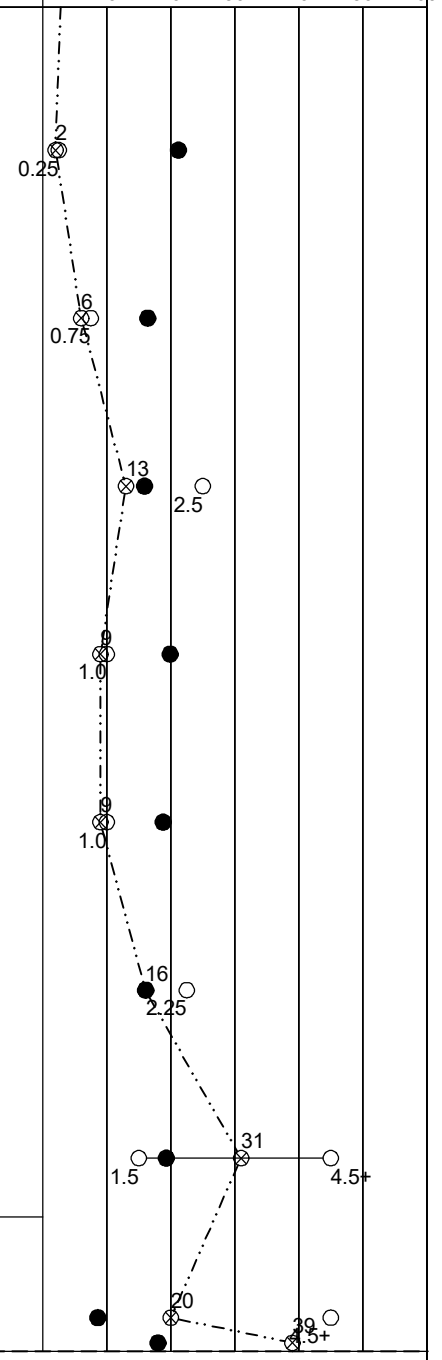
SURFACE ELEVATION (CCD) 25.4

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT³
45 -20	13	SS				
50	14	SS				
55 -30	15	SS			*(53.5)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to very stiff (CL)	
60	16	SS				
65 -40	17	SS				
70	18	SS				
75 -50	19	SS			*(76.0)*Silty clay, trace fine to coarse sand and gravel - gray - hard (CL)	
	20	SS				

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT²) 1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 6.0' WS 15.0' Before Casing Removal 15.0' After Casing Removal	BORING STARTED **3/10/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/11/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **B-57 / Dan (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **2** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

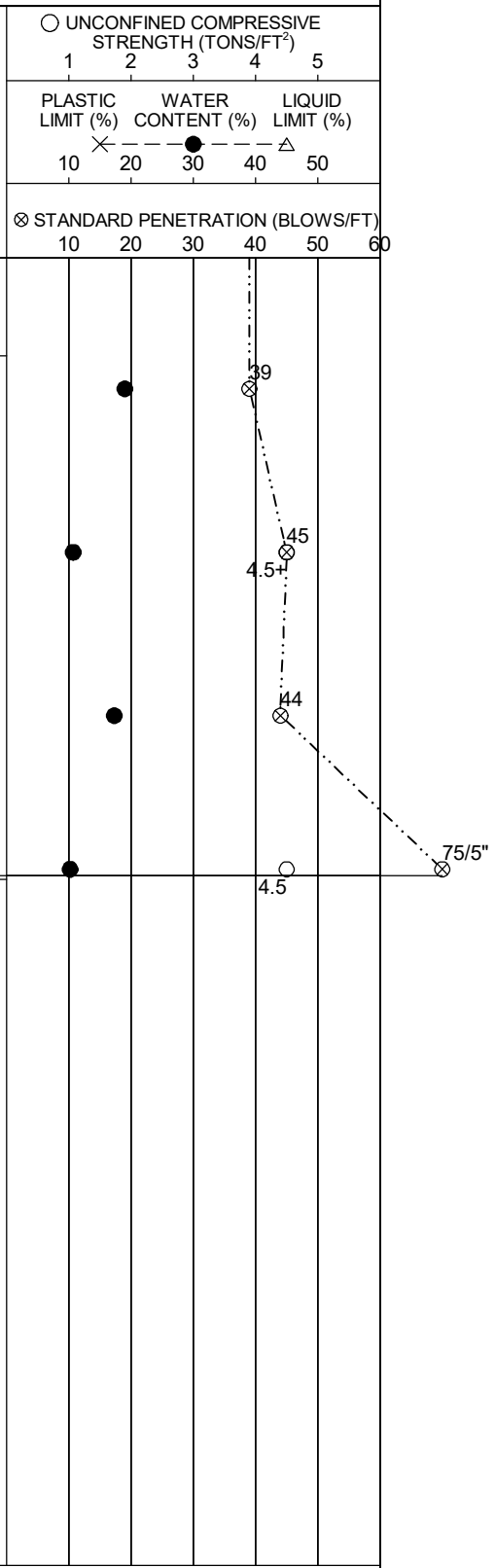
LOG OF BORING NUMBER **B-17**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 25.4

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT³
	20A	SS		*(79.5)*Clayey silt - gray - very dense - moist to wet (CL-ML)	
	21	SS		*(83.0)*Silty fine sand - gray - very dense - moist to wet (SM)	
85 -60	22	SS		*(88.0)*Silty clay, trace to little fine to coarse sand and gravel - gray - hard (CL)	
90	23	SS		*(93.5)*Sandy silt with fine to coarse gravel, trace clay - gray - very to extremely dense - wet (ML)	
95 -70	24	SS			
100				End of Boring Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 98.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Automatic hammer used for Standard Penetration Tests. Borehole grouted upon completion.	
105 -80					
110					
115 -90					



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 6.0' WS 15.0' Before Casing Removal 15.0' After Casing Removal	BORING STARTED **3/10/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/11/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **B-57 / Dan (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **3** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-18**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 25.6

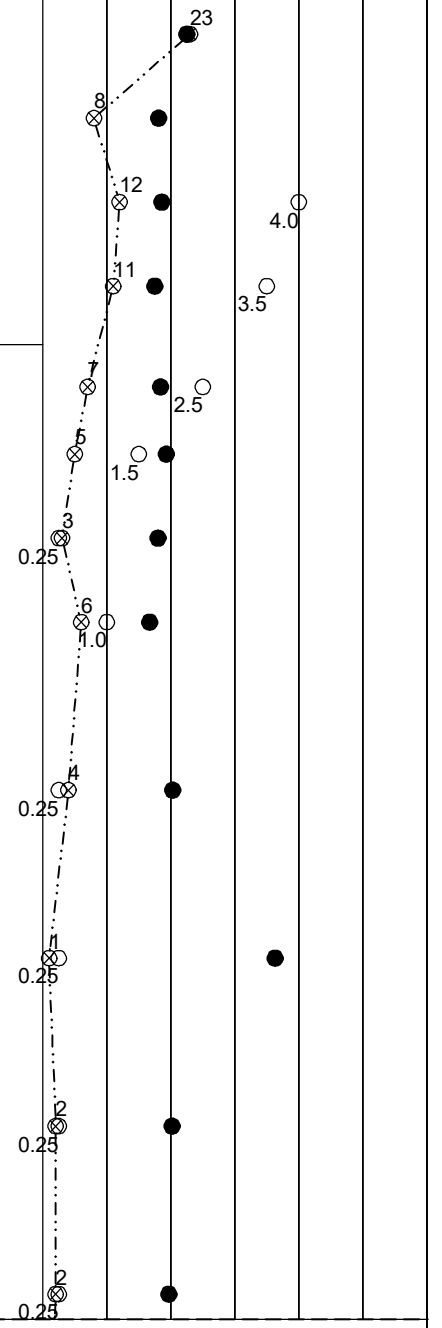
DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE RECOVERY	DESCRIPTION OF MATERIAL
				*(0.0)*Fill: 3 inches bituminous concrete
	1	SS		*(0.3)*Fill: Gravelly fine to coarse sand mixed with topsoil - gray and black - medium dense - moist
	2	SS		*(3.0)*Fine to medium sand with silt - brown - medium dense - moist (SP-SM)
5 / 20	3	SS		*(6.0)*Silty clay, trace fine to coarse sand and gravel - brown - very stiff to hard (CL)
	4	SS		**Pressuremeter Test performed at 9.0 to 11.5 ft P_f = 3.9 tsf -- E_d = 61.0 tsf**
10				
	5	SS		*(11.0)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to very stiff (CL)
	6	SS		
15 / 10				
	7	SS		*(16.0)*Silty clay, trace fine to coarse sand and gravel - gray - soft to medium (CL)
	8	SS		
20				
	9	SS		
25 / 0				
	10	SS		
30				
	11	SS		
35 / -10				
	12	SS		

UNIT DRY WT. LBS/FT^3

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) × — WATER CONTENT (%) ● — LIQUID LIMIT (%) △ 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 13.0' Before Casing Removal	BORING STARTED **3/17/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/18/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **B-57 / Dan (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **1** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

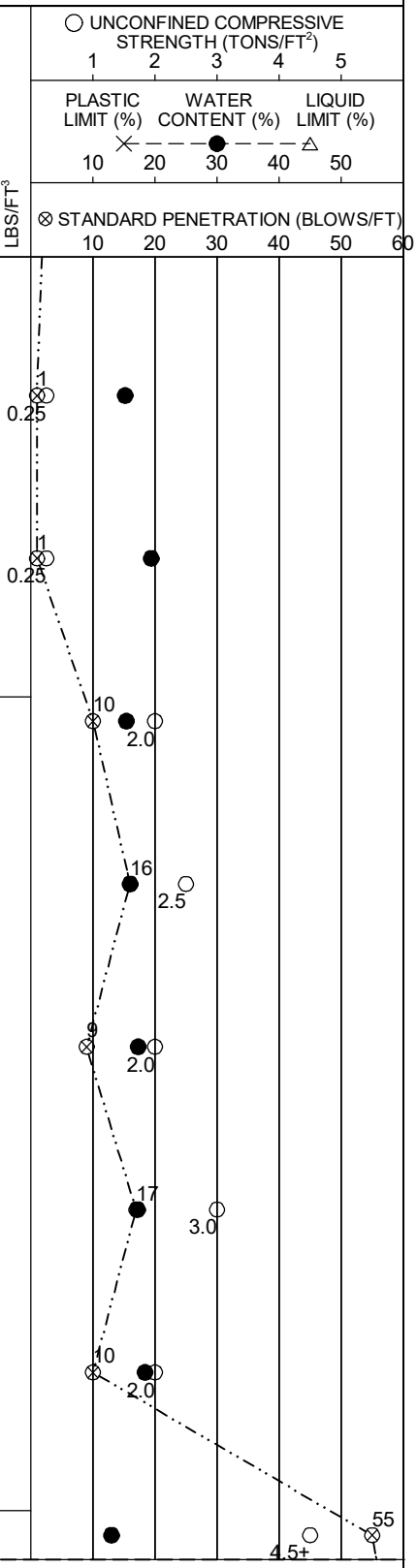
LOG OF BORING NUMBER **B-18**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 25.6

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
45 / -20	13	SS				
50	14	SS				
55 / -30	15	SS			*(53.5)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to very stiff (CL)	
60	16	SS				
65 / -40	17	SS				
70	18	SS				
75 / -50	19	SS				
	20	SS			*(78.5)*Silty clay, trace fine to coarse sand and gravel - gray - hard (CL)	



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 13.0' Before Casing Removal	BORING STARTED **3/17/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/18/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **B-57 / Dan (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **2** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-18**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 25.6

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
85 / -60	21	SS				
90	22	SS			*(88.5)*Clayey silt - gray - extremely dense - moist to wet (CL-ML)	
95 / -70	23	SS			*(93.5)*Silty clay, trace to little fine to coarse sand and gravel - gray - hard (CL)	
	24	SS			End of Boring Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 98.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Automatic hammer used for Standard Penetration Tests. Borehole grouted upon completion.	
100						
105 / -80						
110						
115 / -90						

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)
1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%)
10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT)
10 20 30 40 50 60

60
50/5"
84/10"
50/4"
4.5+
4.5+

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 13.0' Before Casing Removal	BORING STARTED **3/17/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/18/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **B-57 / Dan (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **3** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

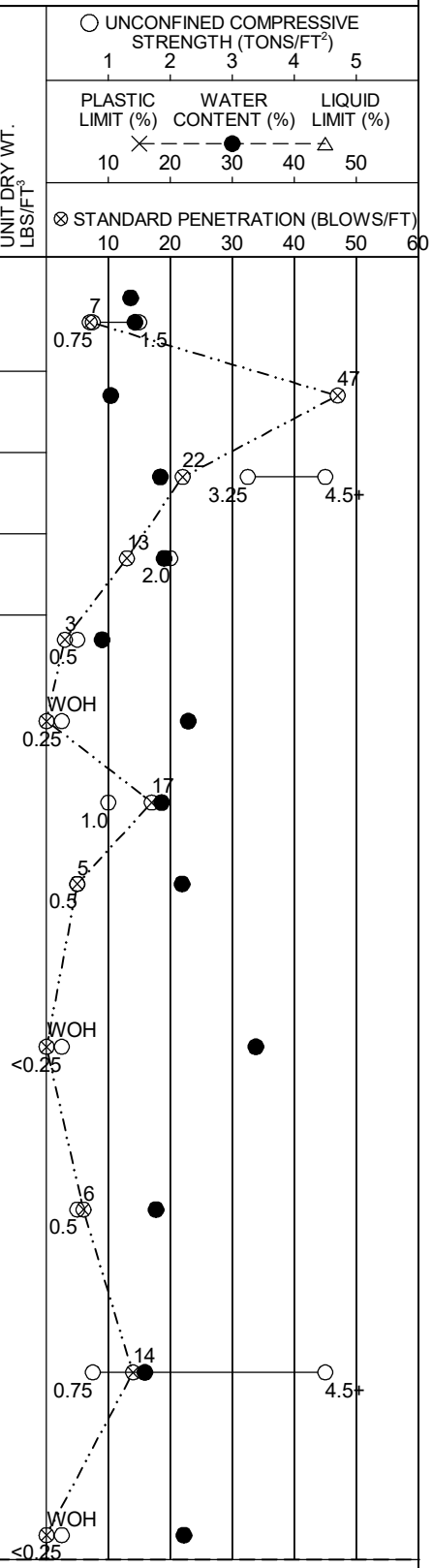
LOG OF BORING NUMBER **B-19**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 25.6

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
					*(0.0)*Fill: 3 inches bituminous concrete	
	1	SS			*(0.3)*Fill: Silty fine to coarse sand, some fine to coarse gravel - black - loose - moist	
	1A	SS				
					*(1.5)*Fill: Clayey sand, trace gravel - dark brown - loose - moist	
5 / 20	2	SS			*(3.5)*Fill: Fine to coarse sand with silt and fine to coarse gravel - brown - dense - moist (SP-SM)	
	3	SS			*(6.0)*Silty clay, trace fine to coarse sand and gravel - brown - very stiff to hard (CL)	
10	4	SS			*(8.5)*Silty clay, trace fine to coarse sand and gravel - gray - very stiff (CL)	
	5	SS			*(11.0)*Silty clay, trace fine to coarse sand and gravel - gray - soft to medium (CL)	
15 / 10	6	SS				
	7	SS				
20	8	SS				
25 / 0	9	SS				
	10	SS				
30						
35 / -10	11	SS				
	12	SS				



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 5.5' WD 16.0' Before Casing Removal 16.0' After Casing Removal	BORING STARTED **3/1/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/1/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **CME-75 / Mark B (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **1** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-19**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 25.6

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT³	○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT²) 1 2 3 4 5 / PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%) 10 20 30 40 50 / ⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60
45 / -20	13	SS				WOH <0.25
50	14	SS				WOH 0.25
55 / -30	15	SS				WOH 0.25
60	16	SS				WOH 0.5
65 / -40	17	SS		*(63.5)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to very stiff (CL)		12 1.5
70	18	SS				13 1.75
75 / -50	19	SS		*(71.0)*Silty clay, trace fine to coarse sand and gravel - gray - hard (CL)		35 4.5+
	20	SS				36 4.5+

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 5.5' WD 16.0' Before Casing Removal 16.0' After Casing Removal	BORING STARTED **3/1/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/1/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **CME-75 / Mark B (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **2** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-19**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 25.6

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
85 / -60	21	SS			
90	22	SS			
95 / -70	23	SS			
	24	SS			*(98.5)*Silty, trace clay and fine sand - gray - extremely dense - wet (ML)
					End of Boring

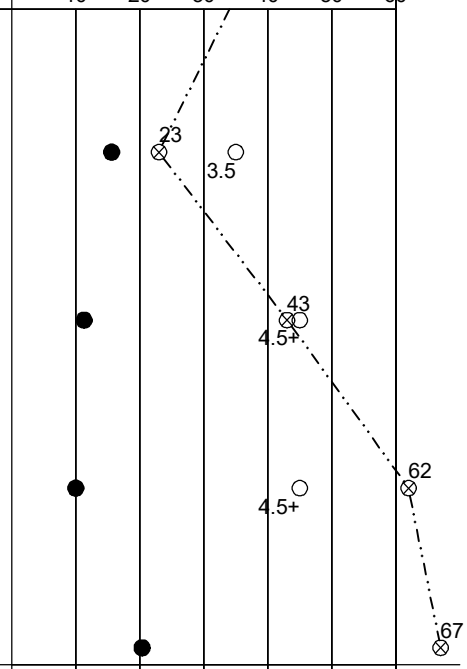
Boring advanced to 10 feet with solid stem auger.
Boring advanced from 10 to 98.5 feet with rock bit and drilling fluid.
10 feet of 4 inch diameter casing used.
Automatic hammer used for Standard Penetration Tests.
Borehole grouted upon completion.

UNIT DRY WT. LBS/FT^3

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)
1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%)
10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT)
10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 5.5' WD 16.0' Before Casing Removal 16.0' After Casing Removal	BORING STARTED **3/1/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/1/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **CME-75 / Mark B (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **3** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-20**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 25.5

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
					*(0.0)*Fill: 3 inches bituminous concrete; 9 inches gravel base course	
	1	SS			*(1.0)*Fill: Silty fine to coarse sand, trace fine to coarse gravel - black - loose - moist	
5 / 20	2	SS			*(3.5)*Fill: Sandy fine to coarse gravel, trace silt - brown - medium dense - moist	
	3	SS			*(6.0)*Silty clay, trace fine to coarse sand and gravel - brown - hard (CL)	
10 / 15	4	SS			*(8.5)*Silty clay, trace fine to coarse sand and gravel - gray - hard (CL)	
					*(10.0)*No sampling	

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60

8 26 28 20

4.5+ 4.5+

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 6.0' WS 14.0' Before Casing Removal	BORING STARTED **3/4/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/4/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **B-57 / Dan (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **1** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-20**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 25.5

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
45 / -20						
50						
55 / -30						
60						
65 / -40						
70						
75 / -50	5	SS			*(73.5)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to very stiff (CL)	
	6	SS				

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60

20 24 3.5

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 6.0' WS 14.0' Before Casing Removal	BORING STARTED **3/4/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/4/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **B-57 / Dan (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **2** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

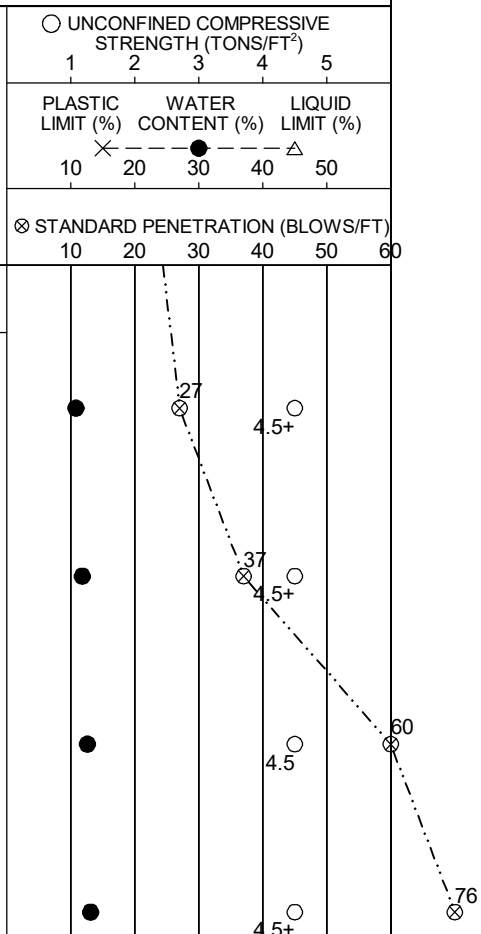
LOG OF BORING NUMBER **B-20**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 25.5

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
					*(82.0)*Silty clay, trace fine to coarse sand and gravel - gray - hard (CL)	
85 / -60	7	SS				
90	8	SS				
95 / -70	9	SS				
100	10	SS				
					End of Boring Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 98.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Automatic hammer used for Standard Penetration Tests. Borehole grouted upon completion.	
105 / -80						
110						
115 / -90						



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 6.0' WS 14.0' Before Casing Removal	BORING STARTED **3/4/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/4/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **B-57 / Dan (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **3** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-20A**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 25.5

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3	○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5 / PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%) 10 20 30 40 50 / ⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60
				*(0.0)*Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 23.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Borehole grouted upon completion.		
5 / *20*						
	1	PMT		**Pressuremeter Test performed at 9.0 to 11.5 ft** **P_f = 3.5 tsf -- E_d = 44.0 tsf**		
10						
	2	PMT		**Pressuremeter Test performed at 14.5 to 17.0 ft** **P_f = 3.2 tsf -- E_d = 90.0 tsf**		
15 / *10*						
20						
	3	PMT		**Pressuremeter Test performed at 24.0 to 26.5 ft** **P_f = 2.8 tsf -- E_d = 49.0 tsf**		
25 / *0*						
30						
35 / *-10*						

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL:	BORING STARTED **3/17/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/17/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **CME-75 / Mark B (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **1** OF **1**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-21**
Offset 24' Northeast

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

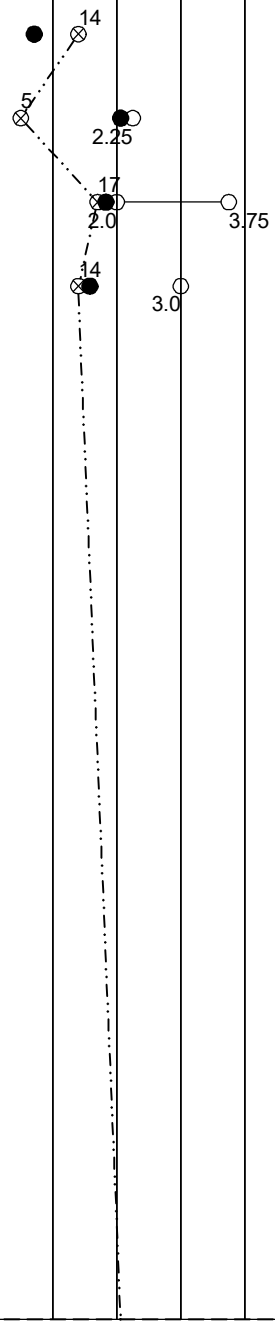
SURFACE ELEVATION (CCD) 25.0

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
					*(0.0)*Fill: 6 inches bituminous concrete; 6 inches gravel base course	
	1	SS			*(1.0)*Fill: Sandy silty gravel - gray and black - medium dense - moist	
5 / 20	2	SS			*(3.5)*Silty clay, trace fine to coarse sand and gravel - brown - very stiff to hard (CL)	
	3	SS				
10	4	SS			*(8.5)*Silty clay, trace fine to coarse sand and gravel - gray - very stiff (CL)	
					*(10.0)*No sampling	
15 / 10						
20						
25 / 0						
30						
35 / 10						

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)
1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%)
10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT)
10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 15.0' Before Casing Removal
8.0' After Casing Removal

BORING STARTED **3/2/2022**
BORING COMPLETED **3/3/2022**
GEI OFFICE **Chicago**
ENTERED BY **LJE**
APPROVED BY **RCR**
NORTHING
EASTING
RIG/FOREMAN **CME-75 / Mark B (Strata)**
GEI PROJECT NO. **2200549**
PAGE NO. **1** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-21**
Offset 24' Northeast

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

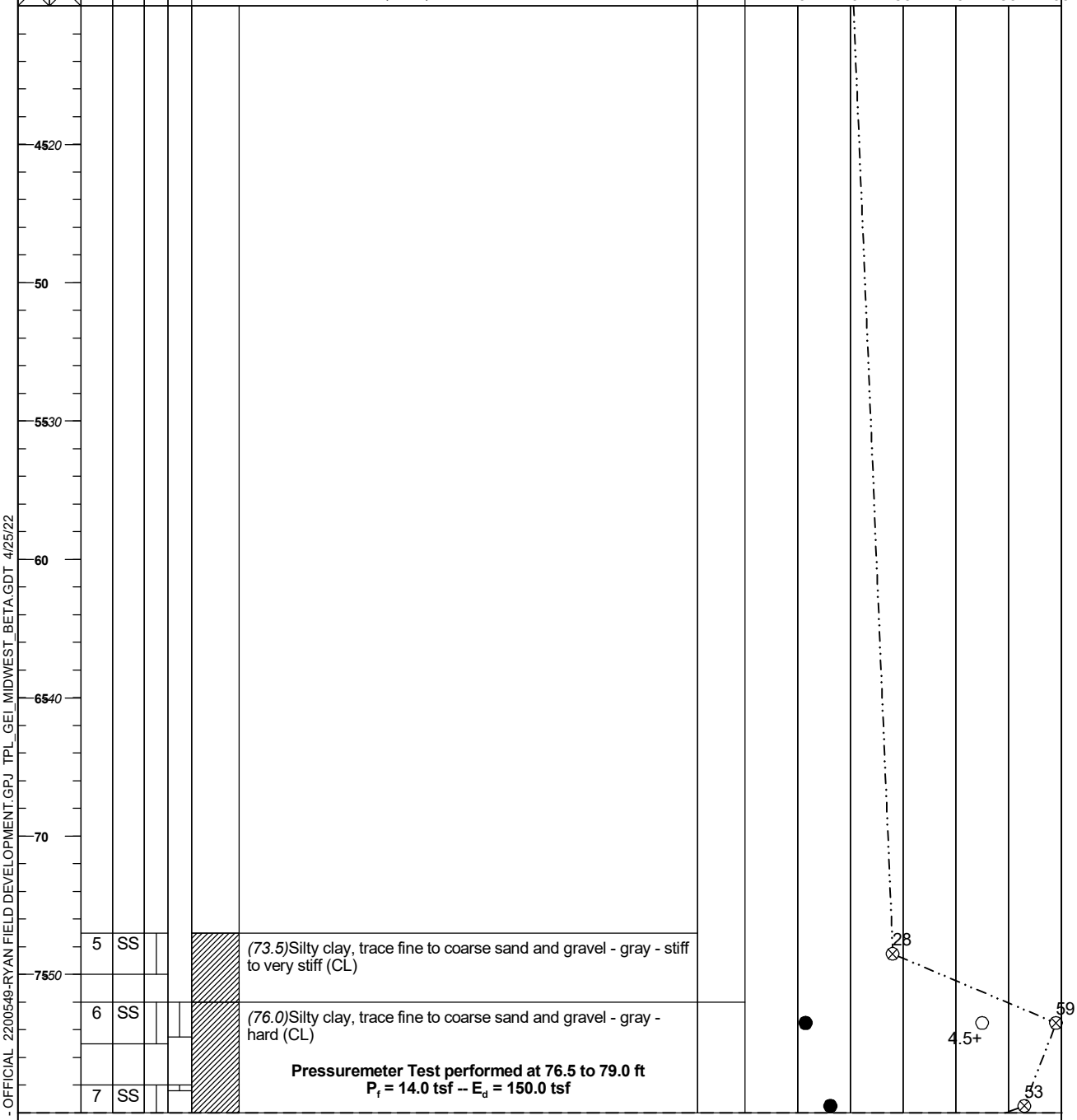
SURFACE ELEVATION (CCD) 25.0

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
45 / 20						
50						
55 / 30						
60						
65 / 40						
70						
75 / 50	5	SS			*(73.5)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to very stiff (CL)	
	6	SS			*(76.0)*Silty clay, trace fine to coarse sand and gravel - gray - hard (CL) **Pressuremeter Test performed at 76.5 to 79.0 ft** **P_f = 14.0 tsf -- E_d = 150.0 tsf**	
	7	SS				

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)
1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%)
10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT)
10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 15.0' Before Casing Removal
8.0' After Casing Removal

BORING STARTED **3/2/2022**
BORING COMPLETED **3/3/2022**
GEI OFFICE **Chicago**
ENTERED BY **LJE**
APPROVED BY **RCR**
NORTHING
EASTING
RIG/FOREMAN **CME-75 / Mark B (Strata)**
GEI PROJECT NO. **2200549**
PAGE NO. **2** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-21**
Offset 24' Northeast

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 25.0

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE / RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
	8	SS			
85.60	9	SS		*(84.0)*Clayey silt, trace to little fine to coarse sand and gravel - gray - dense to extremely dense - moist to wet (CL-ML)	
	10	SS		**Pressuremeter Test performed at 87.0 to 89.5 ft** **P_f = >33.7 tsf -- E_d = 1154.0 tsf**	
90					
95.70	11	SS			
	12	SS			
100				End of Boring Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 98.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Automatic hammer used for Standard Penetration Tests. Borehole grouted upon completion.	
105.80					
110					
115.90					

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)
1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%)
10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT)
10 20 30 40 50 60

28
38
62
82/4"
69/5"
4.5+

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 15.0' Before Casing Removal 8.0' After Casing Removal	BORING STARTED **3/2/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/3/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **CME-75 / Mark B (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **3** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

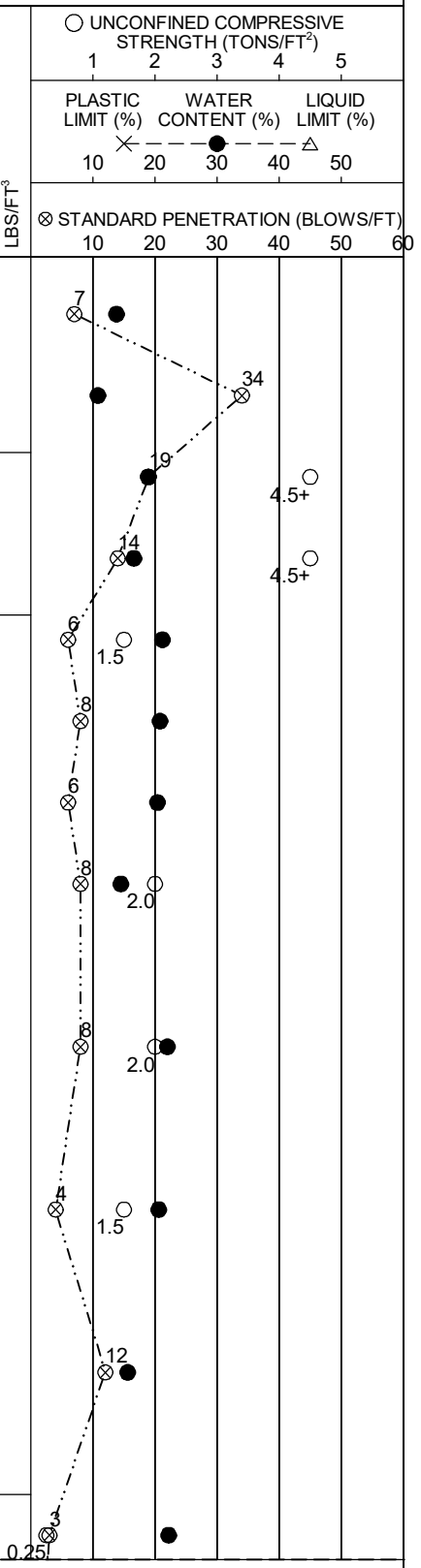
LOG OF BORING NUMBER **B-22**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 26.5

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
					*(0.0)*Fill: 3-1/2 inches bituminous concrete	
	1	SS			*(0.3)*Fill: Silty sand, trace clay - black - loose - moist	
	2	SS			*(3.5)*Gravelly sand with silt - brown - dense - moist (SP-SM)	
5 / 20	3	SS			*(6.0)*Silty clay, trace fine to coarse sand and gravel - brown - very stiff to hard (CL)	
	4	SS				
10	5	SS			*(11.0)*Silty clay, trace fine to coarse sand and gravel - gray - medium to very stiff (CL)	
	6	SS				
15 / 10	7	SS				
	8	SS				
20						
	9	SS				
25 / 0						
	10	SS				
30						
	11	SS			Sample 11: Moist to wet clayey silt	
35 / -10						
	12	SS			*(38.0)*Silty clay, trace fine to coarse sand and gravel - gray - soft to medium (CL)	



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 6.0' WS	BORING STARTED **3/7/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/13/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **B-57 / Dan (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **1** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

LOG OF BORING NUMBER **B-22**

PROJECT NAME: **Ryan Field Development**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 26.5

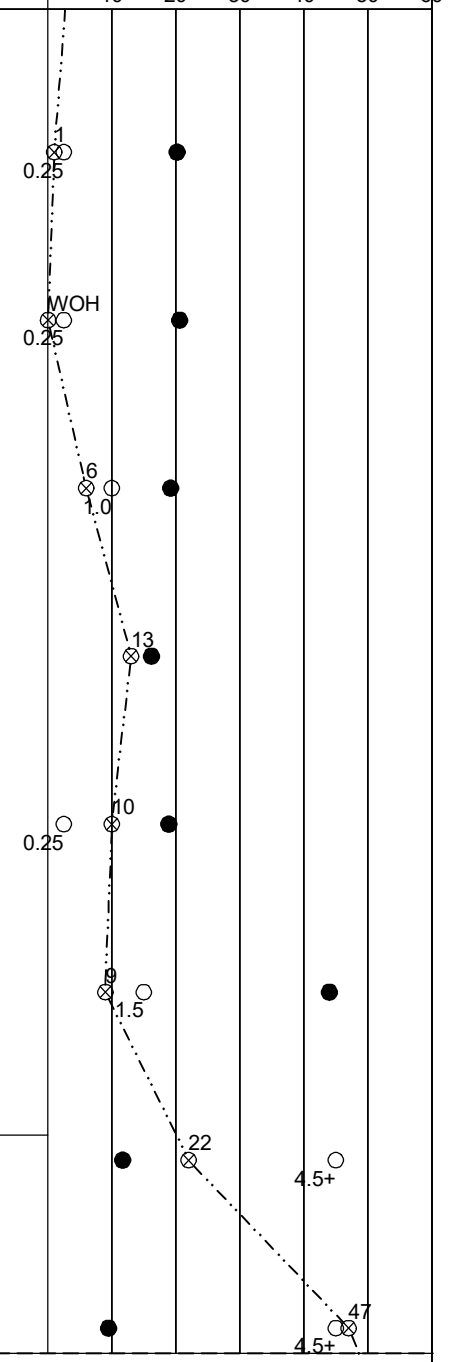
DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE RECOVERY	DESCRIPTION OF MATERIAL
45 / -20	13	SS		
50 / -25	14	SS		
55 / -30	15	SS		
60 / -35	16	SS		*(58.5)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to very stiff (CL)
65 / -40	17	SS		
70 / -45	18	SS		
75 / -50	19	SS		*(73.5)*Silty clay, trace fine to coarse sand and gravel - gray - hard (CL)
	20	SS		

UNIT DRY WT. LBS/FT^3

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 6.0' WS	BORING STARTED **3/7/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/13/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **B-57 / Dan (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **2** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-22**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

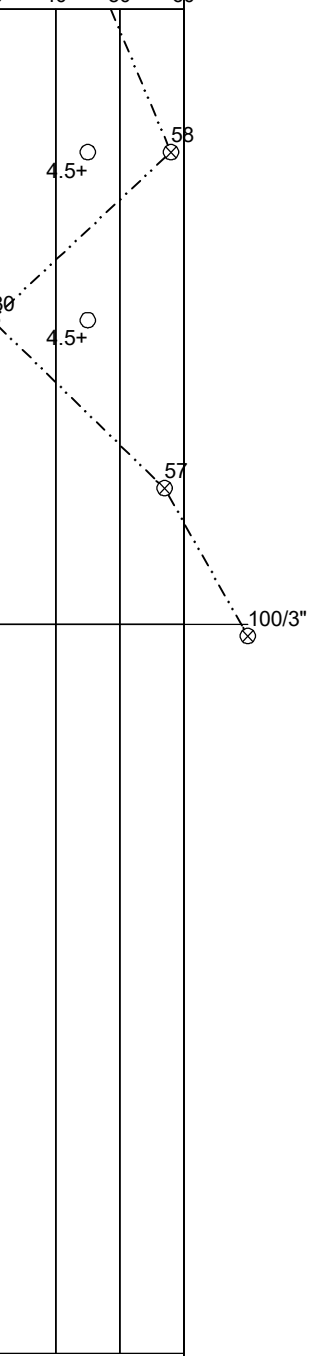
SURFACE ELEVATION (CCD) 26.5

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE / RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
85 / -60	21	SS			
90	22	SS			
95 / -70	23	SS		*(93.5)*Silty fine to medium sand - gray - very dense - wet (SM)	
100 / -75	24	SS		*(98.5)*Limestone gravel fragments End of Boring Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 98.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Automatic hammer used for Standard Penetration Tests. Borehole grouted upon completion.	
105 / -80					
110					
115 / -90					

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) — WATER CONTENT (%) — LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 6.0' WS	BORING STARTED **3/7/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/13/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **B-57 / Dan (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **3** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-23**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 25.2

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT³
					*(0.0)*Fill: 4 inches bituminous concrete	
	1	SS			*(0.3)*Fill: Silty sand, trace clay - brown and black - loose - moist	
5 / 20	2	SS			*(3.5)*Gravelly sand with silt - brown and gray - dense to medium dense - moist to wet (SP-SM)	
	3	SS				
10	4	SS			*(8.5)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to very stiff (CL)	
	5	SS				
15 / 10	6	SS				
	7	SS				
20	8	SS				
	9	SS				
25 / 0						
	10	SS				
30						
	11	SS				
35 / 10						
	12	SS			*(38.0)*Silty clay, trace fine to coarse sand and gravel - gray - soft to medium (CL)	

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT²) 1 2 3 4 5

PLASTIC LIMIT (%) — WATER CONTENT (%) — LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60

6, 43, 16, 15, 3.0, 10, 1.75, 8, 1.75, 8, 10, 7, 6, 1.75, 6, 1.75, 25, 4.5+, WOH, 0.25

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 3.5' WS	BORING STARTED **3/1/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/2/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **B-57 / Dan (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **1** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-23**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 25.2

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
45 / 20	13	SS			
50	14	SS			
55 / 30	15	SS			
60	16	SS			*(58.5)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to very stiff (CL)
65 / 40	17	SS			
70	18	SS			
75 / 50	19	SS			
	20	SS			78.0 - 78.5: Gravel zone noted *(78.5)*Silty clay, trace fine to coarse sand and gravel - gray -

UNIT DRY WT. LBS/FT^3

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) WATER CONTENT (%) LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60

WOH 0.25
WOH 0.25
4 0.25
15 2.5
12 2.25
12 2.25
22 3.5
41

The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 3.5' WS

BORING STARTED **3/1/2022**

BORING COMPLETED **3/2/2022**

GEI OFFICE **Chicago**

ENTERED BY **LJE**

APPROVED BY **RCR**

NORTHING EASTING

RIG/FOREMAN **B-57 / Dan (Strata)**

GEI PROJECT NO. **2200549**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

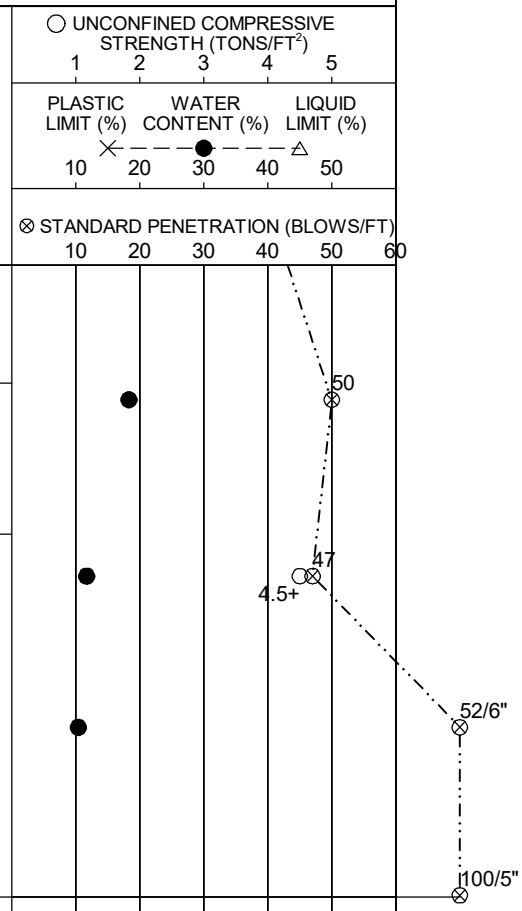
LOG OF BORING NUMBER **B-23**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD) 25.2

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE / RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
				hard (CL)	
85 / 60	21	SS		*(83.5)*Silt, trace clay and fine sand - gray - extremely dense - wet (ML)	
90	22	SS		*(88.0)*Silty sandy clay, trace to little gravel - gray - hard (CL)	
95 / 70	23	SS			
	24	SS		End of Boring Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 98.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Automatic hammer used for Standard Penetration Tests. Borehole grouted upon completion.	
100					
105 / 80					
110					
115 / 90					



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 3.5' WS	BORING STARTED **3/1/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/2/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **B-57 / Dan (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **3** OF **3**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-24**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

SURFACE ELEVATION (CCD)

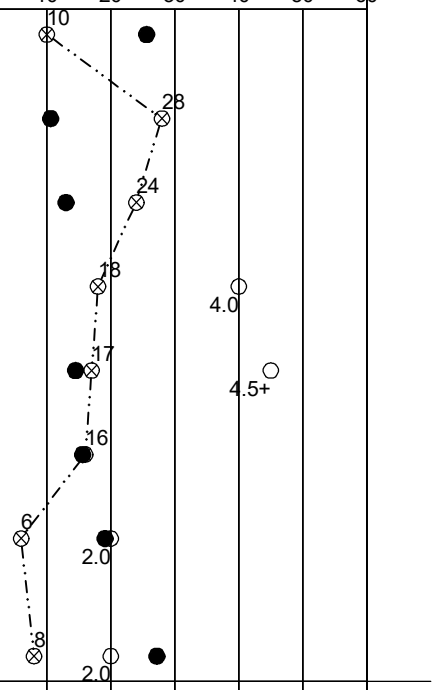
DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
0	1	SS			*(0.0)*Fill: Sandy topsoil - black - moist
	2	SS			*(2.5)*Fill: Sandy gravel with silt - brown - medium dense - moist
5	3	SS			*(5.0)*Silty clay, trace fine to coarse sand and gravel - brown - hard to very stiff (CL)
	4	SS			
10	5	SS			
	6	SS			
15	7	SS			
	8	SS			
20					End of Boring Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 18.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Automatic hammer used for Standard Penetration Tests. Borehole grouted upon completion.
25					
30					
35					

UNIT DRY WT. LBS/FT^3

○ UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2) 1 2 3 4 5

PLASTIC LIMIT (%) — WATER CONTENT (%) — LIQUID LIMIT (%) 10 20 30 40 50

⊗ STANDARD PENETRATION (BLOWS/FT) 10 20 30 40 50 60



The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 5.0' WS	BORING STARTED **3/8/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/8/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **CME-45 / Dan (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **1** OF **1**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

GEI Consultants

CLIENT: **Northwestern University**

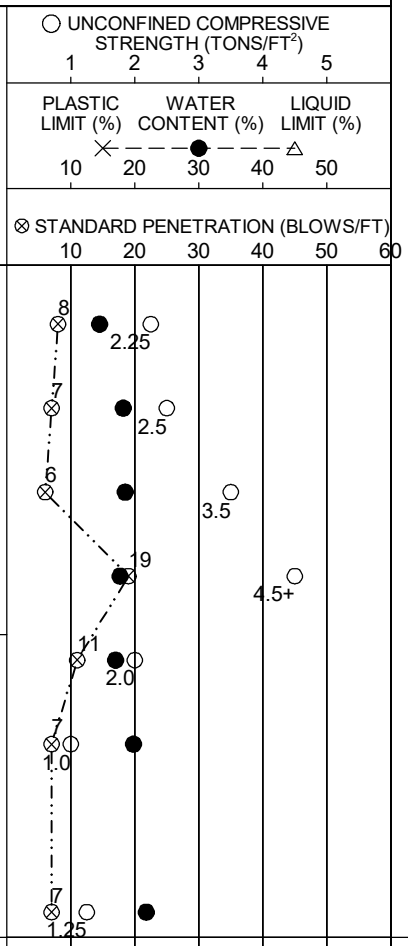
PROJECT NAME: **Ryan Field Development**

LOG OF BORING NUMBER **B-25**

ENGINEER

LOCATION: 1501 Central Ave., Evanston, IL

DEPTH (FT) / ELEVATION (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS/FT^3
SURFACE ELEVATION (CCD)						
	1	SS			*(0.0)*Fill: Clayey sand - dark brown and black - loose - moist	
	2	SS				
5	3	SS			*(6.0)*Silty clay, trace fine to coarse sand and gravel - brown - hard to very stiff (CL)	
	4	SS				
10	5	SS			*(11.0)*Silty clay, trace fine to coarse sand and gravel - gray - stiff to very stiff (CL)	
	6	SS				
15						
	7	SS				
20					End of Boring Boring advanced to 10 feet with solid stem auger. Boring advanced from 10 to 18.5 feet with rock bit and drilling fluid. 10 feet of 4 inch diameter casing used. Automatic hammer used for Standard Penetration Tests. Borehole grouted upon completion.	
25						
30						
35						

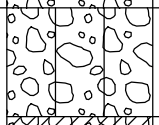
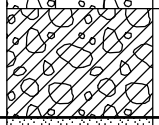
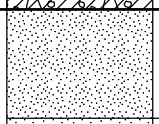
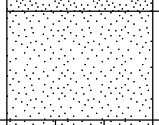
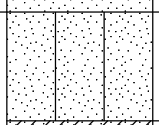
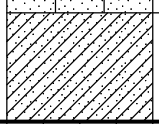
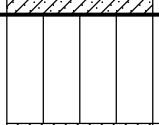
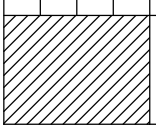
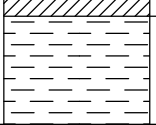
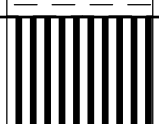
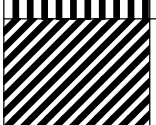
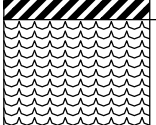
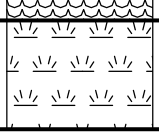


The stratification lines represent the approximate boundary lines between soil types: in situ, the transition may be gradual.

WATER LEVEL: 6.0' WS 23.5' AB	BORING STARTED **3/14/2022**	GEI OFFICE **Chicago**	
	BORING COMPLETED **3/14/2022**	ENTERED BY **LJE**	APPROVED BY **RCR**
NORTHING EASTING	RIG/FOREMAN **GeoProbe / Bill M (Strata)**	GEI PROJECT NO. **2200549**	PAGE NO. **1** OF **1**

MIDWEST BORING LOG - OFFICIAL 2200549-RYAN FIELD DEVELOPMENT.GPJ TPL_GEI_MIDWEST_BETA.GDT 4/25/22

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				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 SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

COARSE-GRAINED SOILS

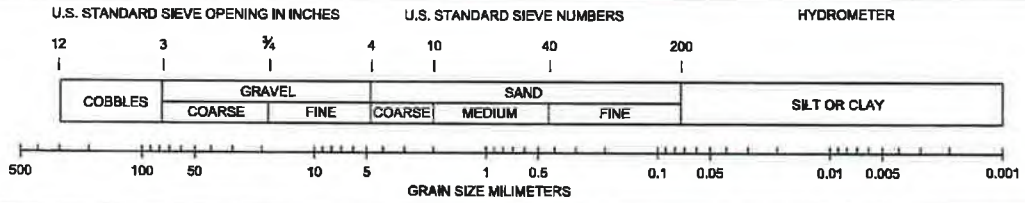
VISUAL-MANUAL DESCRIPTIONS

GEI Consultants

TYPICAL SOIL COLORS

- YELLOW
- OLIVE
- LIGHT BROWN
- BROWN
- REDDISH BROWN
- RED
- GRAY
- BLACK

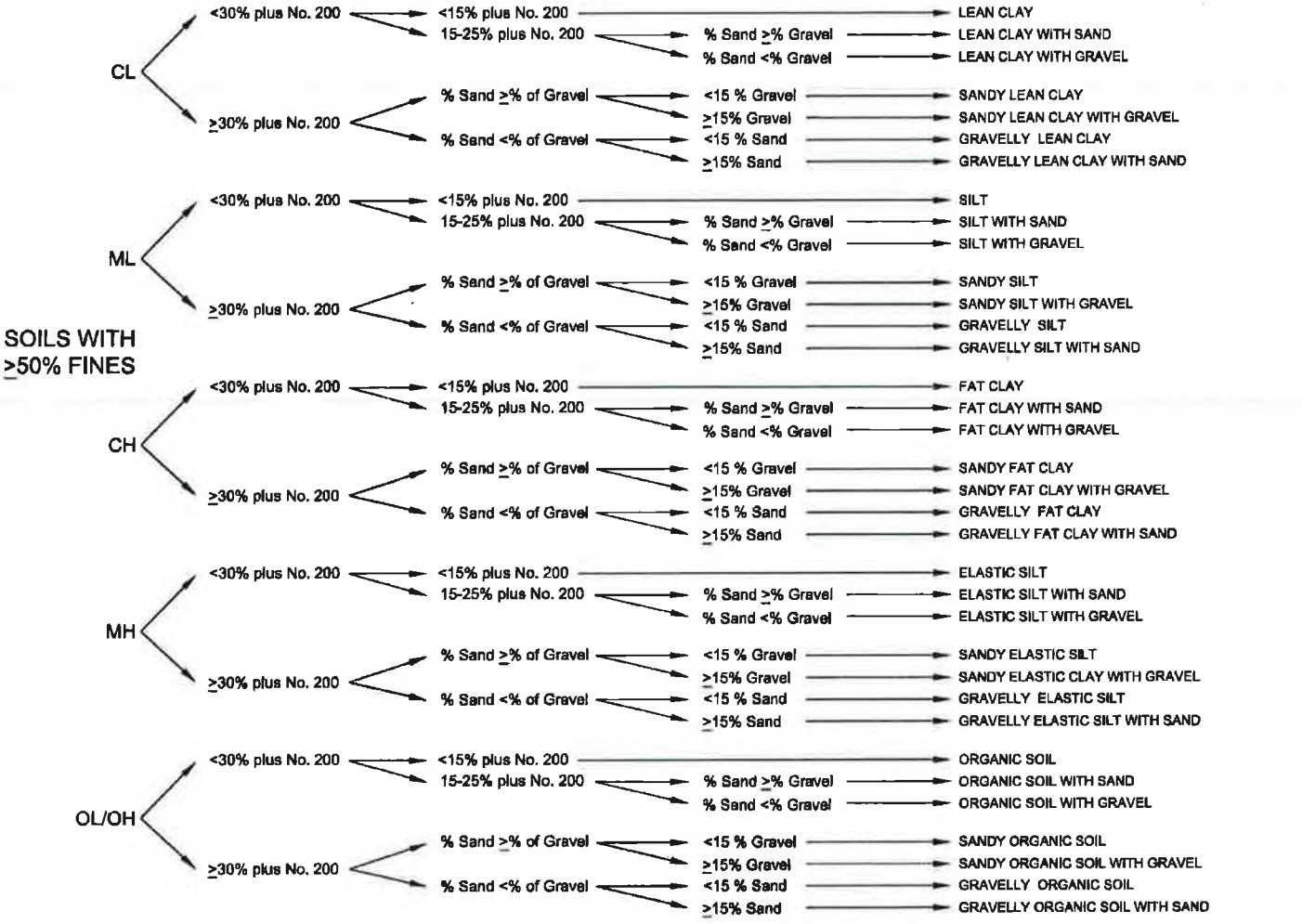
				GROUP SYMBOL	GROUP NAME
GRAVEL % Gravel > % Sand	≤5% Fines	WIDELY GRADED		GW	<15% Sand → WIDELY GRADED GRAVEL; ≥15% Sand → WIDELY GRADED GRAVEL WITH SAND
		NARROWLY GRADED		GP	<15% Sand → NARROWLY GRADED GRAVEL; ≥15% Sand → NARROWLY GRADED GRAVEL WITH SAND
	~10% Fines	WIDELY GRADED	Fines = ML or MH	GW-GM	<15% Sand → WIDELY GRADED GRAVEL WITH SILT; ≥15% Sand → WIDELY GRADED GRAVEL WITH SILT AND SAND
			Fines = CL or CH	GW-GC	<15% Sand → WIDELY GRADED GRAVEL WITH CLAY; ≥15% Sand → WIDELY GRADED GRAVEL WITH CLAY AND SAND
		NARROWLY GRADED	Fines = ML or MH	GP-GM	<15% Sand → NARROWLY GRADED GRAVEL WITH SILT; ≥15% Sand → NARROWLY GRADED GRAVEL WITH SILT AND SAND
			Fines = CL or CH	GP-GC	<15% Sand → NARROWLY GRADED GRAVEL WITH CLAY; ≥15% Sand → NARROWLY GRADED GRAVEL WITH CLAY AND SAND
	≥15% Fines		Fines = ML or MH	GM	<15% Sand → SILTY GRAVEL; ≥15% Sand → SILTY GRAVEL WITH SAND
			Fines = CL or CH	GC	<15% Sand → CLAYEY GRAVEL; ≥15% Sand → CLAYEY GRAVEL WITH SAND
SOILS WITH <50% FINES					
SAND % Sand ≥ % Gravel	≤5% Fines	WIDELY GRADED		SW	<15% Gravel → WIDELY GRADED SAND; ≥15% Gravel → WIDELY GRADED SAND WITH GRAVEL
		NARROWLY GRADED		SP	<15% Gravel → NARROWLY GRADED SAND; ≥15% Gravel → NARROWLY GRADED SAND WITH GRAVEL
	~10% Fines	WIDELY GRADED	Fines = ML or MH	SW-SM	<15% Gravel → WIDELY GRADED SAND WITH SILT; ≥15% Gravel → WIDELY GRADED SAND WITH SILT AND GRAVEL
			Fines = CL or CH	SW-SC	<15% Gravel → WIDELY GRADED SAND WITH CLAY; ≥15% Gravel → WIDELY GRADED SAND WITH CLAY AND GRAVEL
		NARROWLY GRADED	Fines = ML or MH	SP-SM	<15% Gravel → NARROWLY GRADED SAND WITH SILT; ≥15% Gravel → NARROWLY GRADED SAND WITH SILT AND GRAVEL
			Fines = CL or CH	SP-SC	<15% Gravel → NARROWLY GRADED SAND WITH CLAY; ≥15% Gravel → NARROWLY GRADED SAND WITH CLAY AND GRAVEL
	≥15% Fines		Fines = ML or MH	SM	<15% Gravel → SILTY SAND; ≥15% Gravel → SILTY SAND WITH GRAVEL
			Fines = CL or CH	SC	<15% Gravel → CLAYEY SAND; ≥15% Gravel → CLAYEY SAND WITH GRAVEL



1. GROUP NAME and (SYMBOL)
2. Structure , if any. (stratified layer thicknesses, lenses, varves, gradational changes)
3. Describe sand, gravel and fines components, with percentages, in order of predominance. Include max gravel size. For test pits give percent cobbles and boulders, by volume, and include max size.
4. Color
5. Sheen, odor, roots, ash, brick, cementation, reaction with HCL, etc.
6. "Fill," local name or geologic name, if known

GEI Consultants

FINE-GRAINED SOILS
VISUAL-MANUAL DESCRIPTIONS



ID OF INORGANIC FINE SOILS FROM MANUAL TESTS

Symbol	Name	Dry Strength	Dilatancy	Toughness*
ML	Silt	None to low	Slow to rapid	Low or thread cannot be formed
CL	Lean Clay	Medium to high	None to slow	Medium
MH	Elastic Silt	Low to medium	None to slow	Low to medium
CH	Fat Clay	High to very high	None	High

1. GROUP NAME and (SYMBOL)
2. Describe fines, sand, and gravel components, in order of predominance. Include plasticity of fines. Include percentages of sand and gravel.
3. Color
4. Sheen, odor, roots, ash, brick, cementation, torvane and penetrometer results, etc.
5. "Fill," local name or geologic name, if known

PEAT

Peat refers to a sample composed primarily of vegetable matter in varying stages of decomposition. The description should begin: PEAT (PT) and need not include percentages of sand, gravel or fines.

CRITERIA FOR DESCRIBING PLASTICITY

Description	Criteria
Nonplastic ML	A 1/8-in. (3 -mm) thread cannot be rolled at any water content
Low Plasticity ML, MH	The thread can barely be rolled and the lump cannot be formed when drier than the plastic limit *
Medium Plasticity MH, CL	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit
High Plasticity CH	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit

* Toughness refers to the strength of the thread near plastic limit. The lump refers to a lump of soil drier than the plastic, similar to dry strength.

GENERAL NOTES

Drilling and Sampling Symbols:

SS: Split-Spoon, 1 3/8-inch ID, 2-inch OD Unless otherwise noted
ST: Shelby Tube
PA: Power Auger
DB: Diamond Bit
AS: Auger Sample
JS: Jar Sample
VS: Vane Shear
WOH: Weight of Hammer
OS: Osterburg Sampler
HSA: Hollow Stem Auger
WS: Wash Sample
FT: Fish Tail
RB: Rock Bit
BS: Bulk Sample
PMT: Pressuremeter Test
GS: Giddings Sampler

Standard Penetration Test (STP) Value: Blows per foot of a 140-pound hammer falling 30 inches on a 2-inch OD split-spoon sampler, except where otherwise noted.

Water Level Measurement Symbols:

WL: Water Level
WS: While Sampling
WD: While Drilling
AB: After Boring
WCI: Wet Cave-in
DCI: Dry Cave-in
BCI: Before Casing Installation
BCR: Before Casing Removal
ACR: After Casing Removal

Water levels indicated on the boring logs are the levels measured in the boring at the time indicated. In permeable soils, the indicated elevations can be considered a reliable groundwater level. In impervious soils, the accurate determination of groundwater elevations may not be possible, even after several days of observations. In these cases, groundwater monitoring wells may need to be constructed and monitored for an extended period of time to determine the actual groundwater level.

Gradation Description and Terminology:

Coarse-grained or granular soils are defined as having more than 50% of their dry weight retained on the No. 200 sieve. Coarse grained soils include boulders, cobbles, gravel, and/or sand. Fine-grained soils are defined as having less than 50% of their dry weight retained on the No. 200 sieve. Fine grained soils include clay or clayey silt (cohesive), and silt (non-cohesive). In addition to gradation, granular soils are further defined based on their relative in-place density. Fine-grained soils are further defined based of their strength or consistency and plasticity. Additional information is provided below.

Major Component of Sample	Size Range	Other Components Present in Sample	Dry Weight, %
Boulders	Over 8 inches (200 mm)	Trace	1 to 5
Cobbles	8 inches to 3 inches (200 mm to 75 mm)	Trace to Some	5 to 12
Gravel	3 inches to No. 4 sieve	Some	12 to 34
Sand	Nos. 4 to 200 sieves (4.76 mm to 0.074 mm)	And	34 to 50
Silt	Passing No. 200 sieve (0.074 mm to 0.005 mm)		
Clay	Smaller than 0.005 mm		

Consistency of Cohesive Soils		Relative Density of Granular Soils	
Unconfined Compressive Strength, Qu, tsf	Consistency	N, blows per foot	Relative Density
<0.25	Very Soft	0 to 3	Very Loose
0.25 to 0.49	Soft	4 to 9	Loose
0.50 to 0.99	Medium (firm)	10 to 29	Medium Dense
1.0 to 1.99	Stiff	30 to 49	Dense
2.00 to 3.99	Very Stiff	50 – 80	Very Dense
4.00 to 8.00	Hard	>80	Extremely Dense
>8.00	Very Hard		

FIELD AND LABORATORY PROCEDURES

Field Sampling Procedures

Auger Sampling (AS)

In this procedure, soil samples are collected from cuttings off the auger flights as they are removed from the ground. Such samples provide a general indication of subsurface conditions; however, they do not provide undisturbed samples, nor do they provide samples from discrete depths.

Split-Barrel Sampling (SS) – (ASTM Standard D-1586-99)

In the split-barrel sampling procedures, a 2-inch O.D. split-barrel sampler is driven into the soil a distance of 18 inches by means of a 140-pound hammer falling 30 inches. The value of the Standard Penetration Resistance is obtained by counting the number of blows of the hammer over the final 12 inches of driving. The value provides a qualitative indication of the in-place relative density of cohesionless soils. The indication is only qualitative, however, since many factors can significantly affect the Standard Penetration Resistance Value, and direct correlation of results obtained by drill crews using different rigs, frilling procedures, and hammer-rod-spoon assemblies should not be made. A portion of the recovered sample is place in a sample jar and returned to the laboratory for further analysis and testing.

Shelby Tube Sampling Procedure (ST) - (ASTM D-1587-94)

In the Shelby tube sampling procedure, a thin-walled steel seamless tube with a sharp cutting edge is pushed hydraulically into the soil and a relatively undisturbed sample is obtained. This procedure is generally employed in cohesive soils. The tubes are identified, sealed, and carefully handled in the field to avoid excessive disturbance and are returned to the laboratory for extrusion and further analysis and testing.

Giddings Sampler (GS)

This type of sampling device consists of 5-foot sections of thin-wall tubing, which are capable of retrieving continuous columns of soil in 5-foot maximum increments. Because of a continuous slot in the sampling tubes, the sampler allows field determination of stratification boundaries and containerization of soil samples from any sampling depth within the 5-foot interval.

FIELD AND LABORATORY PROCEDURES

Subsurface Exploration Field Procedures

Hand-Auger Drilling (HA)

In this procedure, a sampling device is driven into the soil by repeated blows of a sledge hammer or a drop hammer. When the sampler is driven to the desired depth, the soil sample is retrieved. The hole is then advanced by manually turning the hand auger until the next sampling depth increment is reached. The hand auger drilling between sampling intervals also helps to clean and enlarge the borehole in preparation for obtaining the next sample.

Power Auger Drilling (PA)

In this type of drilling procedures, continuous flight augers are used to advance the boreholes. They are turned and hydraulically advanced by a truck, trainer, or track-mounted unit as site accessibility dictates. In auger drilling, casing and drilling mud are not required to maintain open boreholes.

Hollow-Stem Auger Drilling (HS)

In this drilling procedure, continuous flight augers (with open stems) are used to advance the boreholes. The open stem allows the sampling tool to be used without removing the augers from the borehole. Hollow-stem augers thus provide support to the sides of the borehole during the sampling operations.

Rotary Drilling (RD)

In employing rotary drilling methods, various cutting bits are used to advance the boreholes. In this process, surface casing and/or drilling fluids are used to maintain open boreholes.

Diamond Core Drilling (DB)

Diamond core drilling is used to sample cemented formations. In this procedure, a double tube (or triple tube) core barrel with a diamond bit cuts an annular space around a cylindrical prism of the material sampled. The sample is retrieved by a catcher just above the bit. Samples recovered by this procedure are placed in study containers in sequential order.

FIELD AND LABORATORY PROCEDURES

Laboratory Procedures

Water Content (Wc)

The water content of a soil is the ratio of the weight of water in a given soil mass to the weight of the dry soil. Water content is generally expressed as a percentage.

Hand Penetrometer (Qp)

In the hand penetrometer gtest, the unconfined compressive strength of a soil is determined to a maximum value of 4.5 tons per square foot (tsf) or 7.0 tsf, depending on the testing device utilized, by measuring the resistance of the soil sample to penetration by a small spring-calibrated cylinder. The hand penetrometer test has been carefully correlated with unconfined compressive strength tests and thereby provides a useful and a relative simple testing procedure in which soil strength can be quickly and easily estimated.

Unconfined Compression Tests (Qu)

In the unconfined compression strength test, an undisturbed prism of soil is loaded axially until failure or until 20% strain has been reached, whichever comes first.

Dry Density (γd)

The dry density is a measure of the amount of solids in a unit volume of soil. Use of this value is often made when measuring the degree of compaction of a soil.

Classification of Samples

In conjunction with the sample testing program, all soil samples are examined in our laboratory and visually classified on the basis of their texture and plasticity in general accordance with the Unified Soil Classification System. The soil descriptions on the boring logs are derived from this system, as well as the component gradation terminology, consistency of cohesive soils, and relative density of granular soils, as described on a separate sheet entitled General Notes. The estimated groups symbols, included in parentheses following the soil descriptions on the boring logs, are in general conformance with the Unified Soil Classification System (USCS).

FIELD AND LABORATORY PROCEDURES

Standard Boring Log Procedures

In the process of obtaining and testing samples and preparing this report, standard procedures are followed regarding field logs, laboratory data sheets, and samples.

Field logs are prepared during performance of the drilling and sampling operations and are intended to essentially portray field occurrences, sampling locations, and procedures.

Samples obtained in the field are frequently subjected to additional testing an re-classification in the laboratory by experienced Geotechnical Engineers; and therefore, differences between the field logs and the final logs may exist. The engineer preparing the report reviews the field logs, laboratory test data, and classifications and then, using judgement and experience in interpreting this data, may make further changes. It is common practice in the geotechnical engineering profession not to include field logs and laboratory data sheets in engineering reports, because they do not represent the engineer's final opinions as to appropriate descriptions for conditions encountered in the exploration and testing work. Results of laboratory tests are generally shown on the boring logs or are described in the text of the report, as appropriate.

Samples taken in the field, some of which are later subjected to laboratory tests, are retained in our laboratory for 60 days and then discarded, unless special disposition is requested by our client. Samples retained over a long period of time, even though in sealed jars, are subject to moisture loss, which changes the apparent strength of cohesive soil, generally increasing the strength from what was originally encountered in the field. Since they are then no longer representative of the moisture conditions initially encountered, observers of these samples need to recognize this factor.

GEI Consultants

Northwestern Ryan Field
Ryan Field (Evanston,IL)
Project Number :2200549

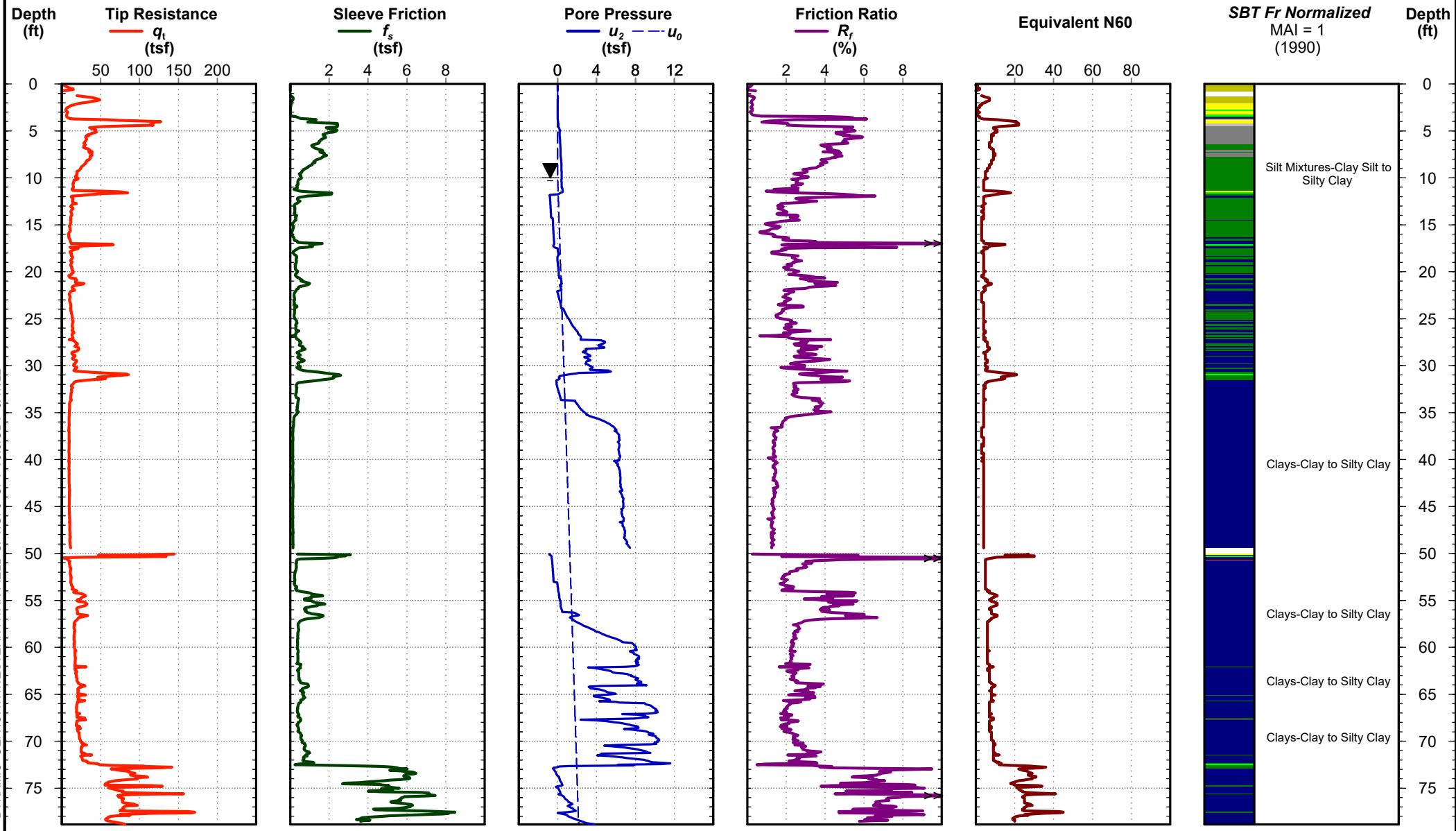
Cone Penetration Test

CPT-10

Date: Mar. 10, 2022
Estimated Water Depth: 10 ft
Rig/Operator: SBB

Latitude:
Longitude:
Elevation:

Total Depth: 78.9 ft
Termination Criteria:
Cone Size:



CPT REPORT - DYNAMIC GEI NORTHWESTERN RYAN FIELD CPT.GPJ CPT V3.0.GDT 3/17/22

CPT-10

Electronic File Name: CPT-10.cpt

GEI Consultants

Northwestern Ryan Field
Ryan Field (Evanston,IL)
Project Number :2200549

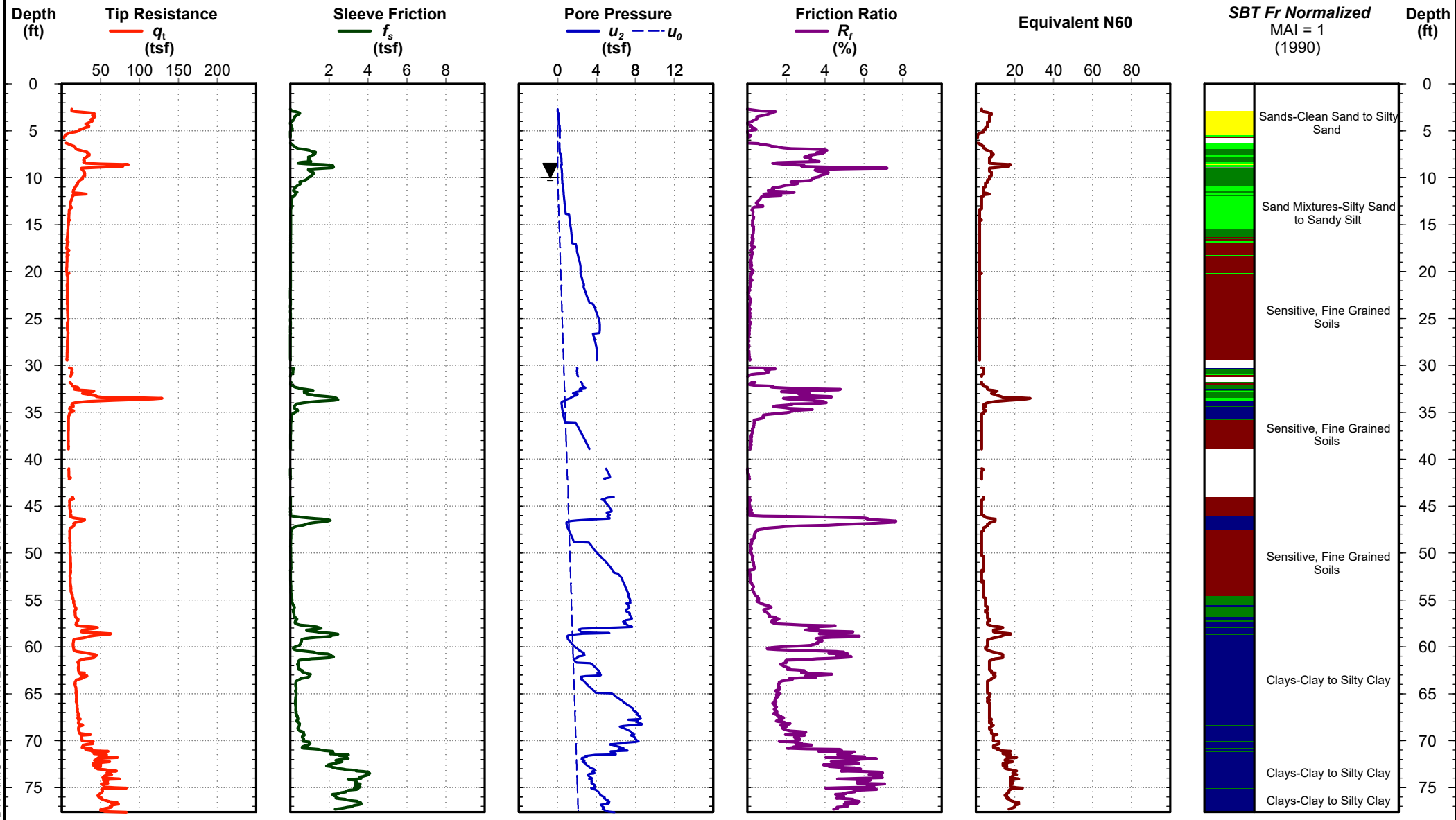
Cone Penetration Test

CPT-12

Date: Mar. 10, 2022
Estimated Water Depth: 10 ft
Rig/Operator: SBB

Latitude:
Longitude:
Elevation:

Total Depth: 77.6 ft
Termination Criteria:
Cone Size:



CPT REPORT - DYNAMIC GEI NORTHWESTERN RYAN FIELD CPT.GPJ CPT V3.0.GDT 3/17/22

CPT-12

Electronic File Name: CPT-12.cpt

GEI Consultants

Northwestern Ryan Field
Ryan Field (Evanston,IL)
Project Number :2200549

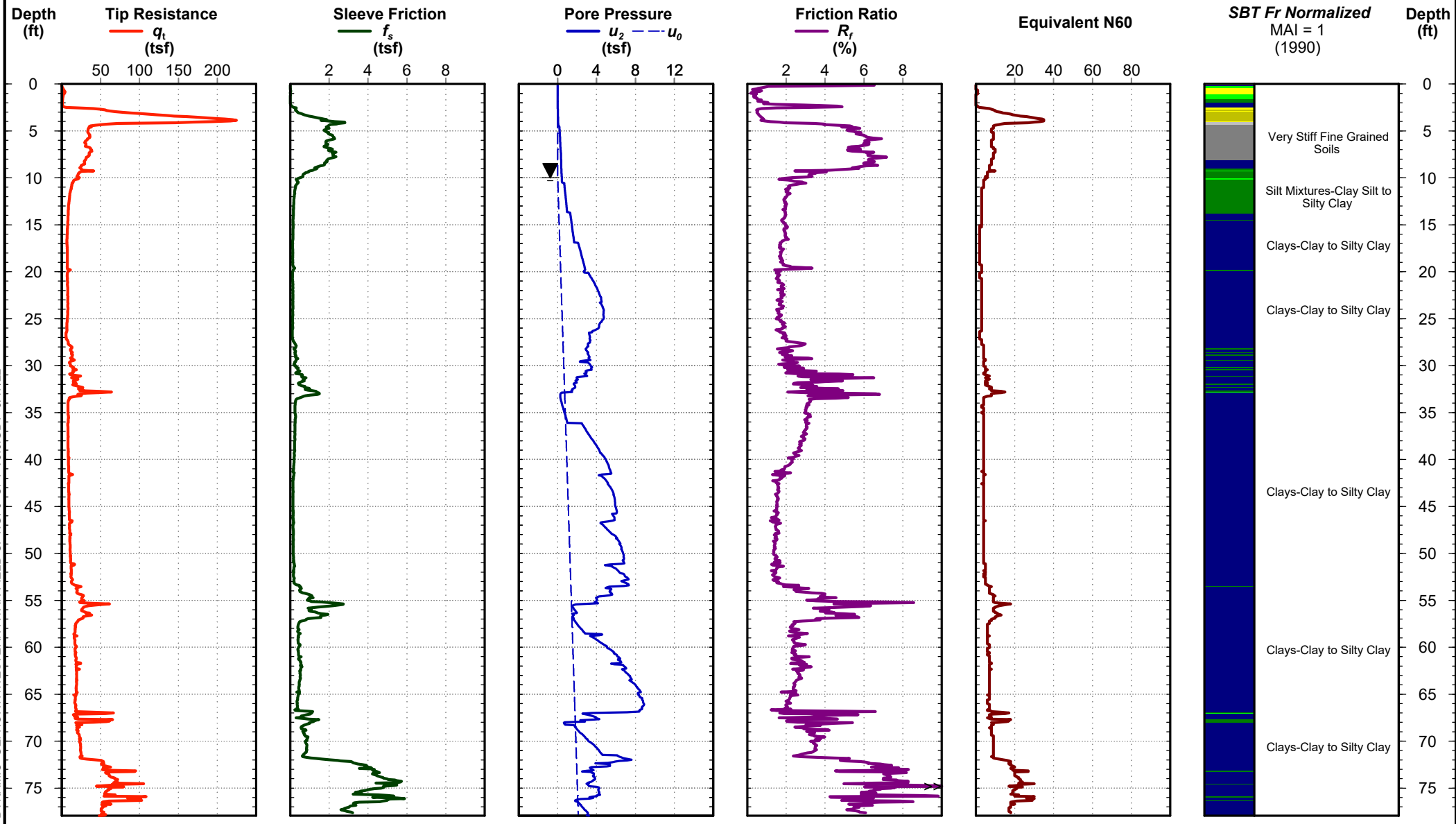
Cone Penetration Test

CPT-14

Date: Mar. 10, 2022
Estimated Water Depth: 10 ft
Rig/Operator: SBB

Latitude:
Longitude:
Elevation:

Total Depth: 78.0 ft
Termination Criteria:
Cone Size:



CPT REPORT - DYNAMIC GEI NORTHWESTERN RYAN FIELD CPT.GPJ CPT V3.0.GDT 3/17/22

CPT-14

Electronic File Name: CPT-14.cpt

GEI Consultants

Northwestern Ryan Field
Ryan Field (Evanston,IL)
Project Number :2200549

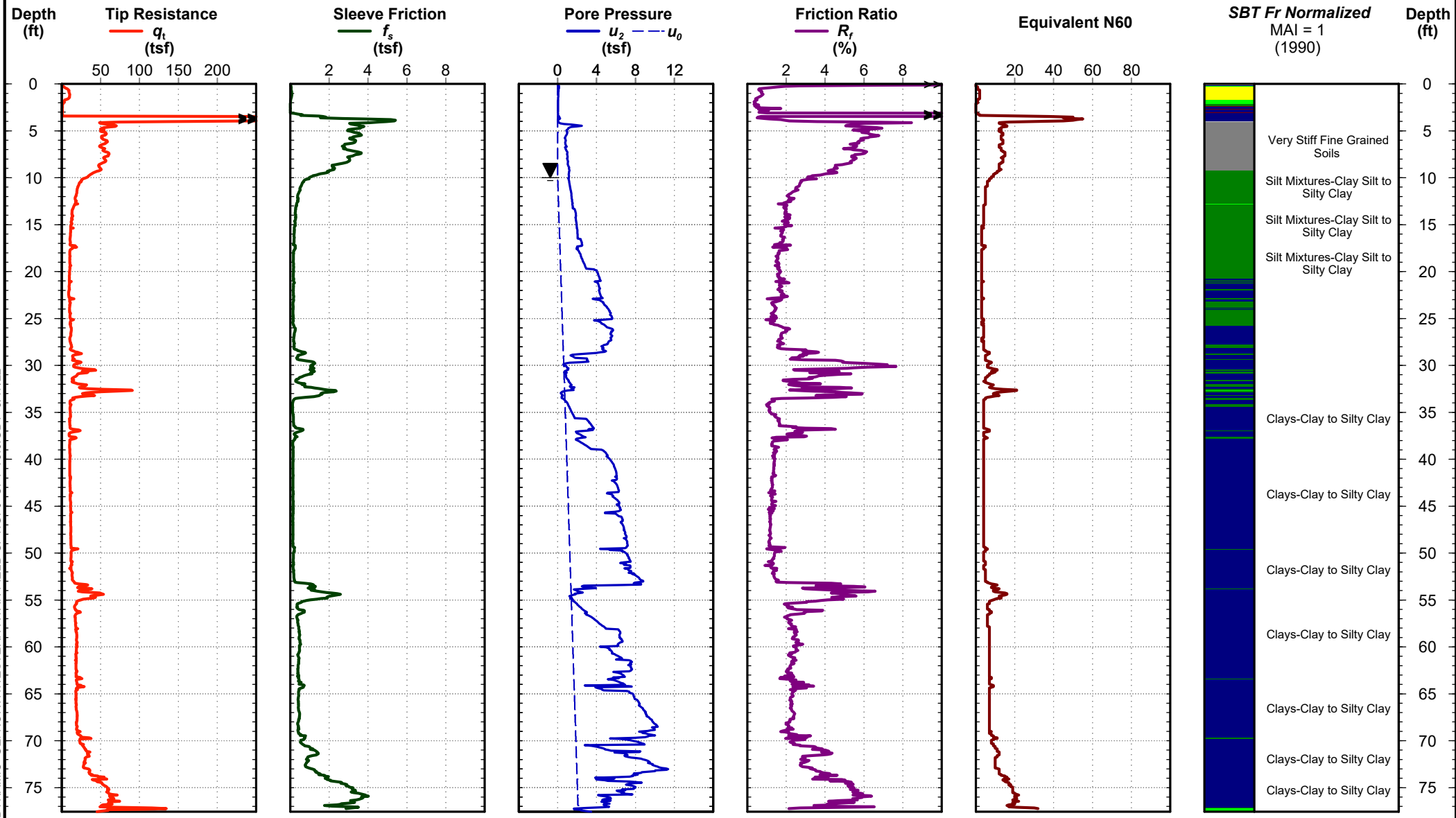
Cone Penetration Test

CPT-20

Date: Mar. 10, 2022
Estimated Water Depth: 10 ft
Rig/Operator: SBB

Latitude:
Longitude:
Elevation:

Total Depth: 77.6 ft
Termination Criteria:
Cone Size:



CPT REPORT - DYNAMIC GEI NORTHWESTERN RYAN FIELD CPT.GPJ CPT V3.0.GDT 3/17/22

CPT-20

Electronic File Name: CPT-20.cpt

GEI Consultants

Northwestern Ryan Field
Ryan Field (Evanston,IL)
Project Number :2200549

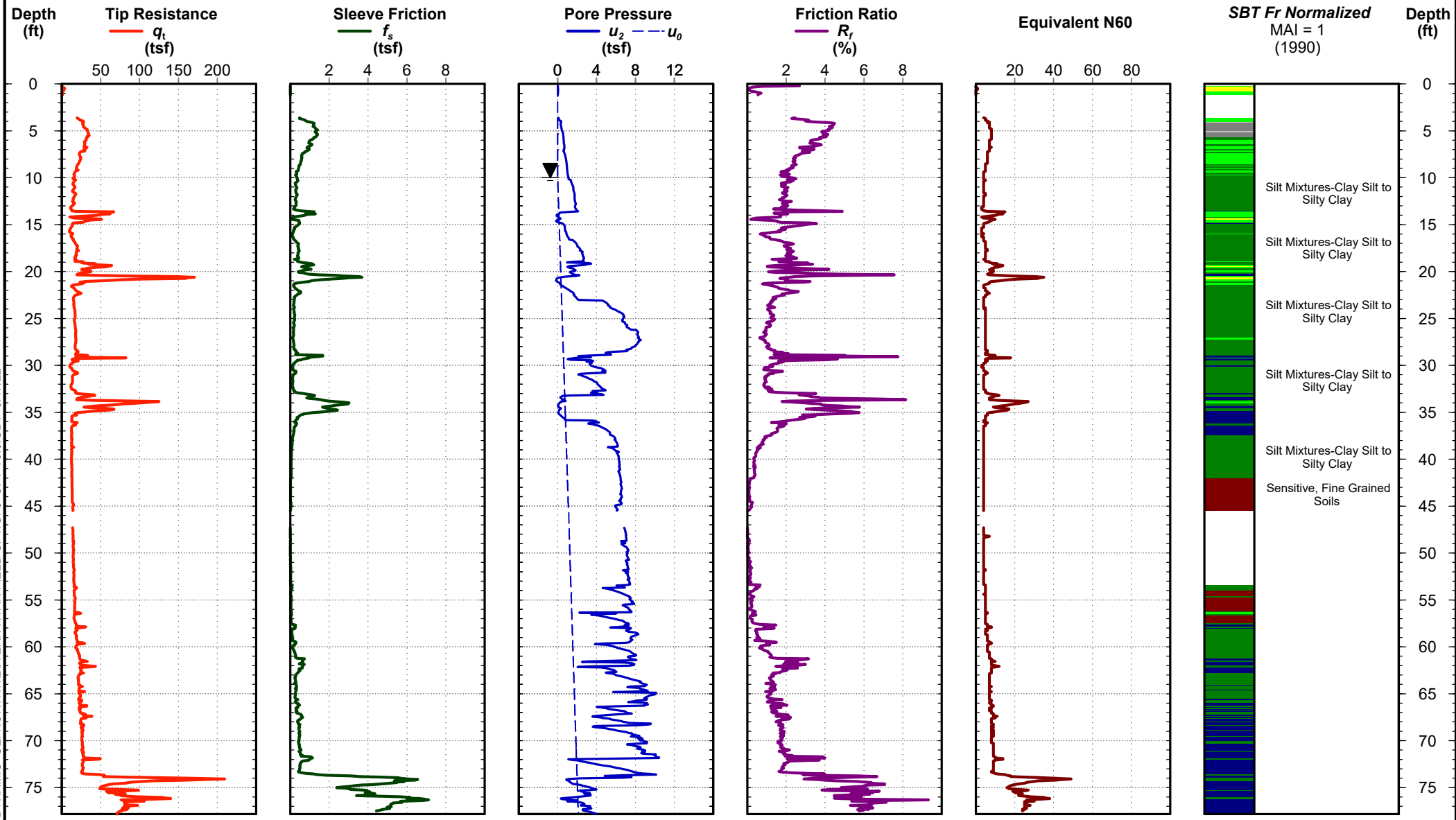
Cone Penetration Test

CPT-21

Date: Mar. 10, 2022
Estimated Water Depth: 10 ft
Rig/Operator: SBB

Latitude:
Longitude:
Elevation:

Total Depth: 77.8 ft
Termination Criteria:
Cone Size:



CPT REPORT - DYNAMIC GEI NORTHWESTERN RYAN FIELD CPT.GPJ CPT V3.0.GDT 3/17/22

CPT-21

Electronic File Name: CPT-21.cpt

GEI Consultants

Northwestern Ryan Field
Ryan Field (Evanston,IL)
Project Number :2200549

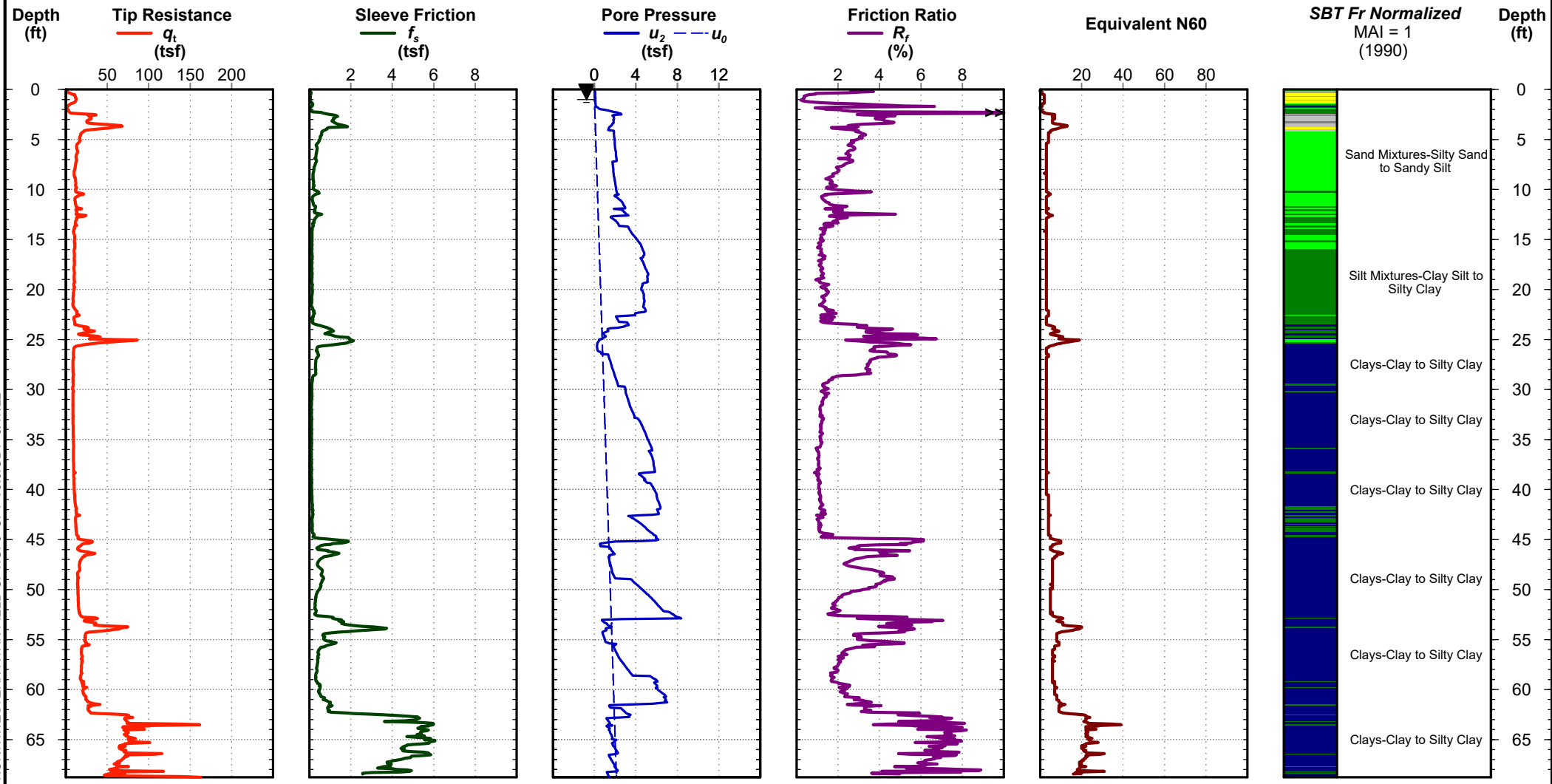
Cone Penetration Test

CPT-6

Date: Mar. 10, 2022
Estimated Water Depth: 1 ft
Rig/Operator: SBB

Latitude:
Longitude:
Elevation:

Total Depth: 68.8 ft
Termination Criteria:
Cone Size:



CPT REPORT - DYNAMIC GEI NORTHWESTERN RYAN FIELD CPT.GPJ CPT V3.0.GDT 3/17/22

Electronic File Name: CPT-6.cpt

CPT-6

GEI Consultants

Northwestern Ryan Field
Ryan Field (Evanston,IL)
Project Number :2200549

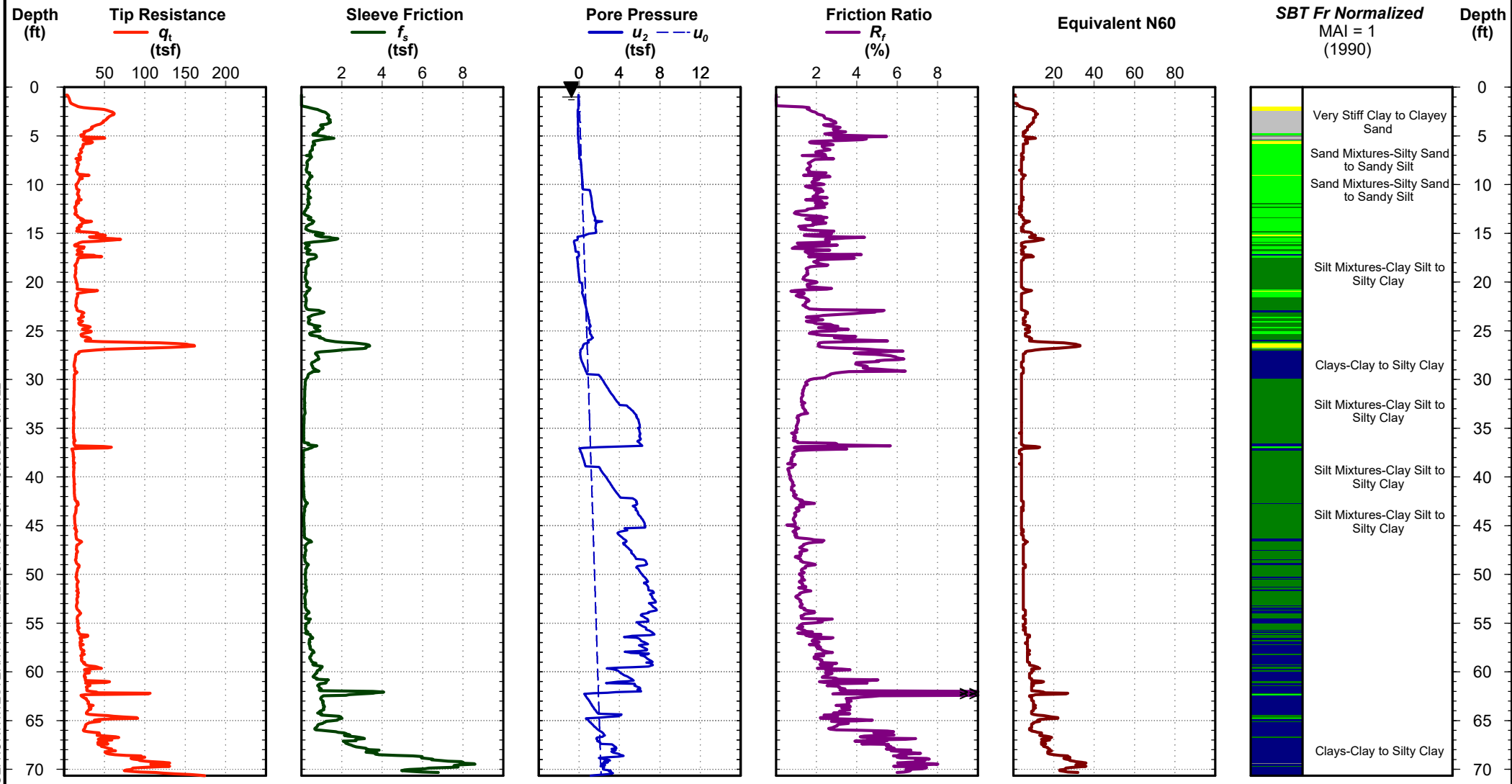
Cone Penetration Test

CPT-8

Date: Mar. 10, 2022
Estimated Water Depth: 1 ft
Rig/Operator: SBB

Latitude:
Longitude:
Elevation:

Total Depth: 70.7 ft
Termination Criteria:
Cone Size:

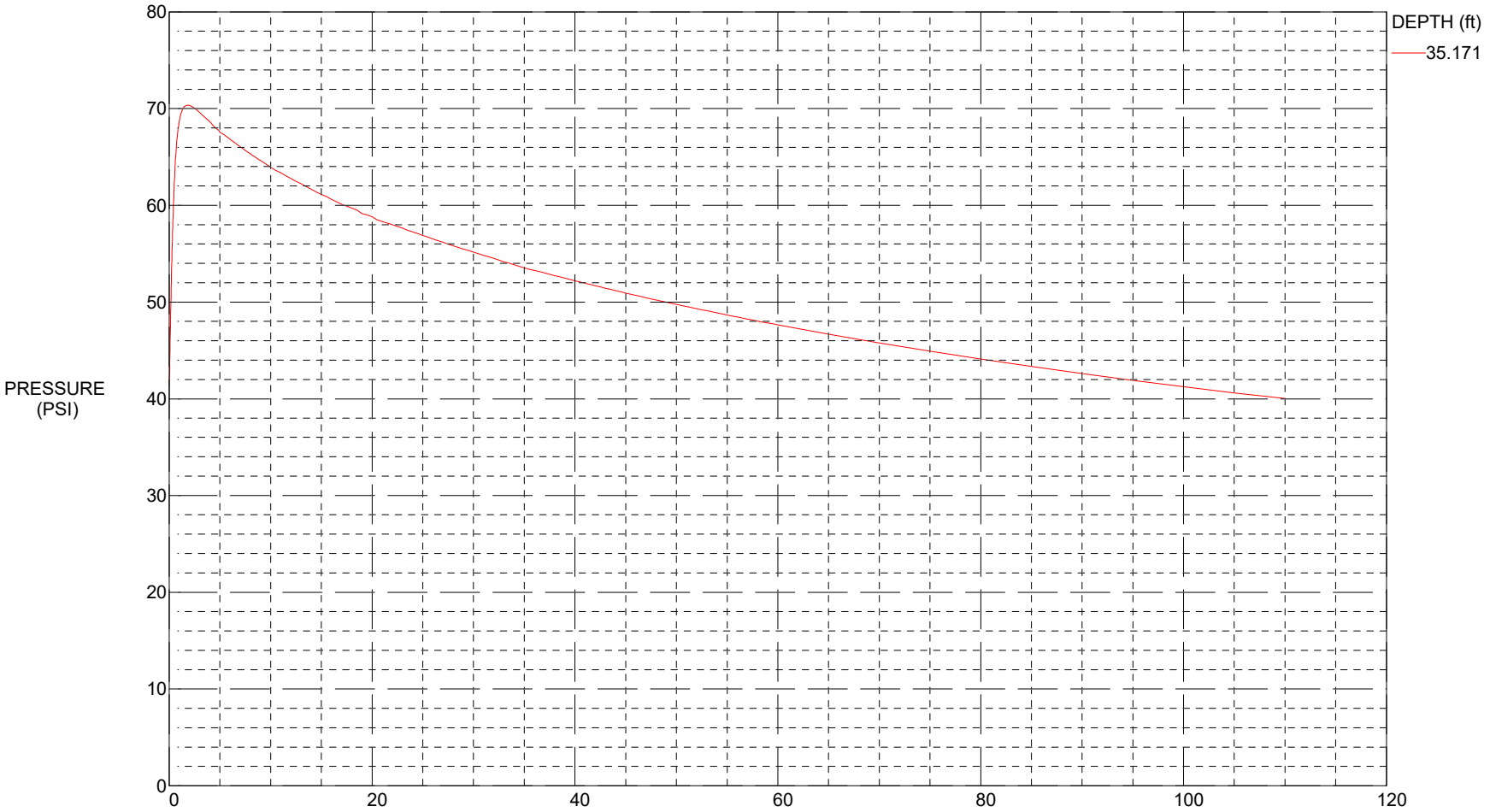


CPT REPORT - DYNAMIC GEI NORTHWESTERN RYAN FIELD CPT.GPJ CPT V3.0.GDT 3/17/22

Electronic File Name: CPT-8.cpt

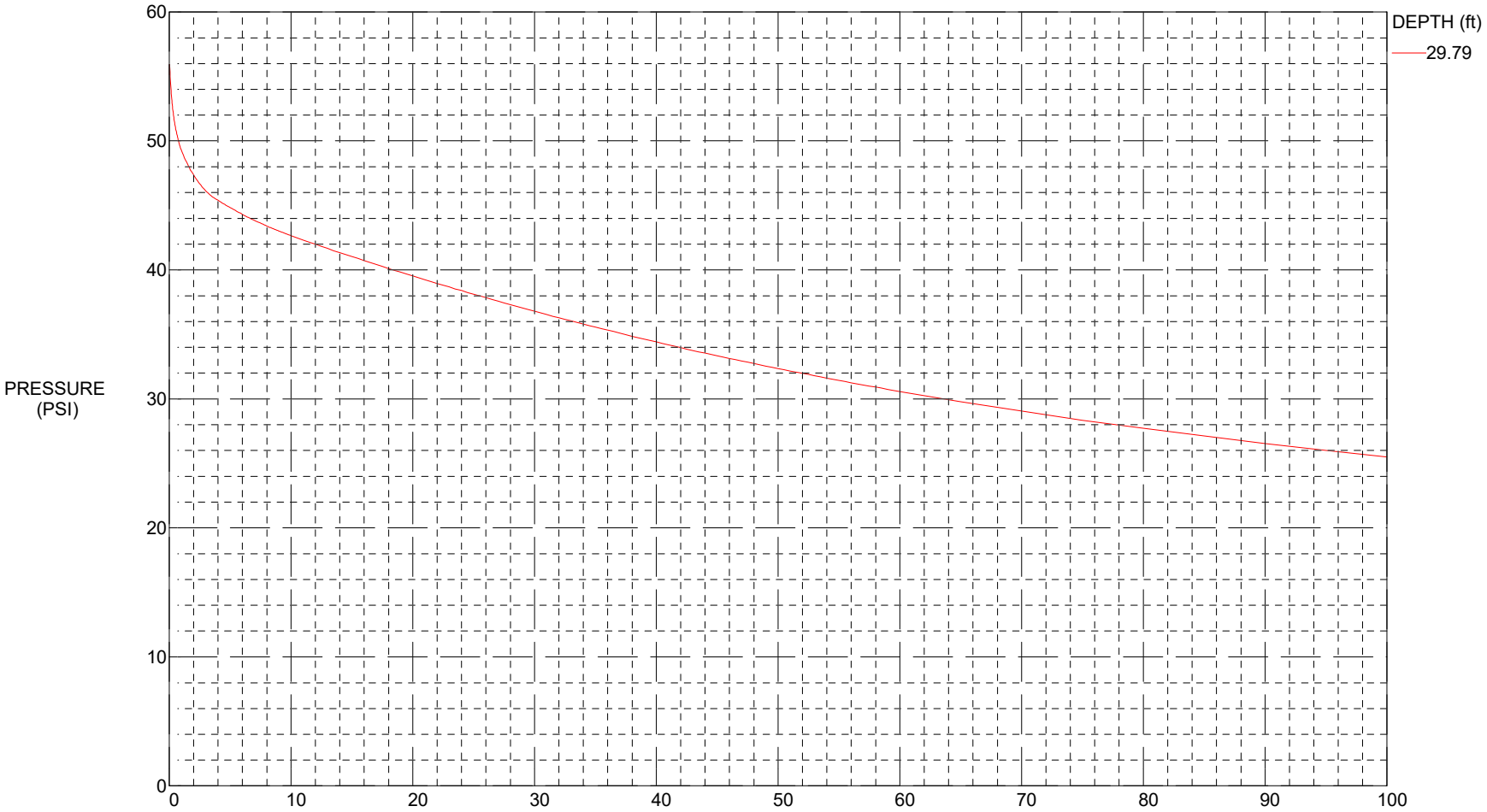
CPT-8

DISSIPATION
CUSTOMER: Customer
OPERATOR: SBB
CONE ID: DDG1168
LOCATION: Ryan Field
HOLE NUMBER: CPT-10
PREPARED BY: GEI Consultants

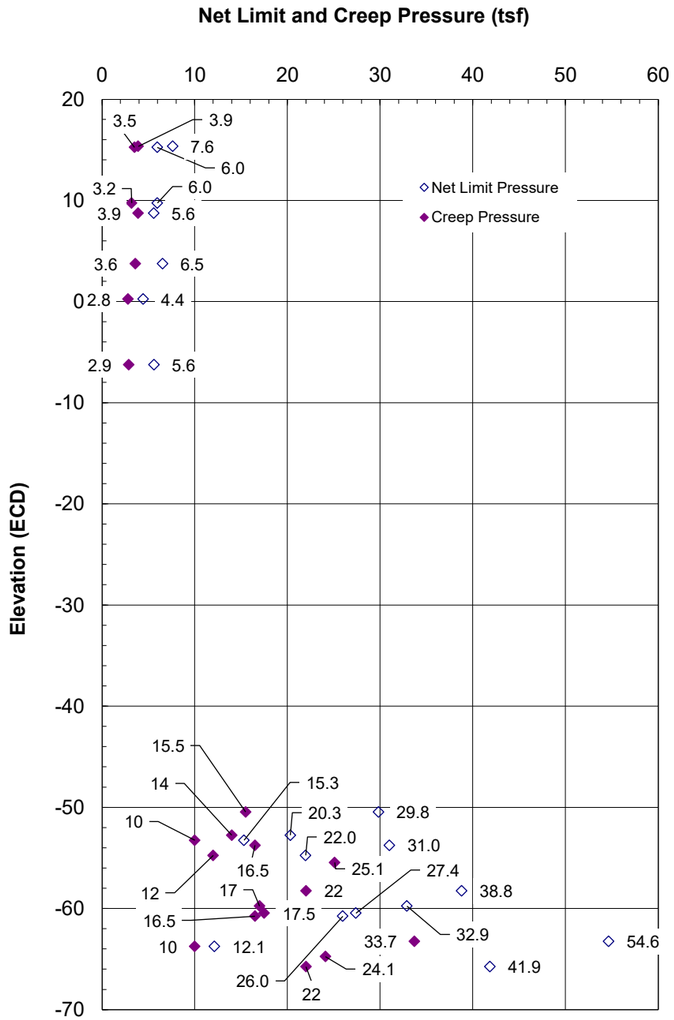


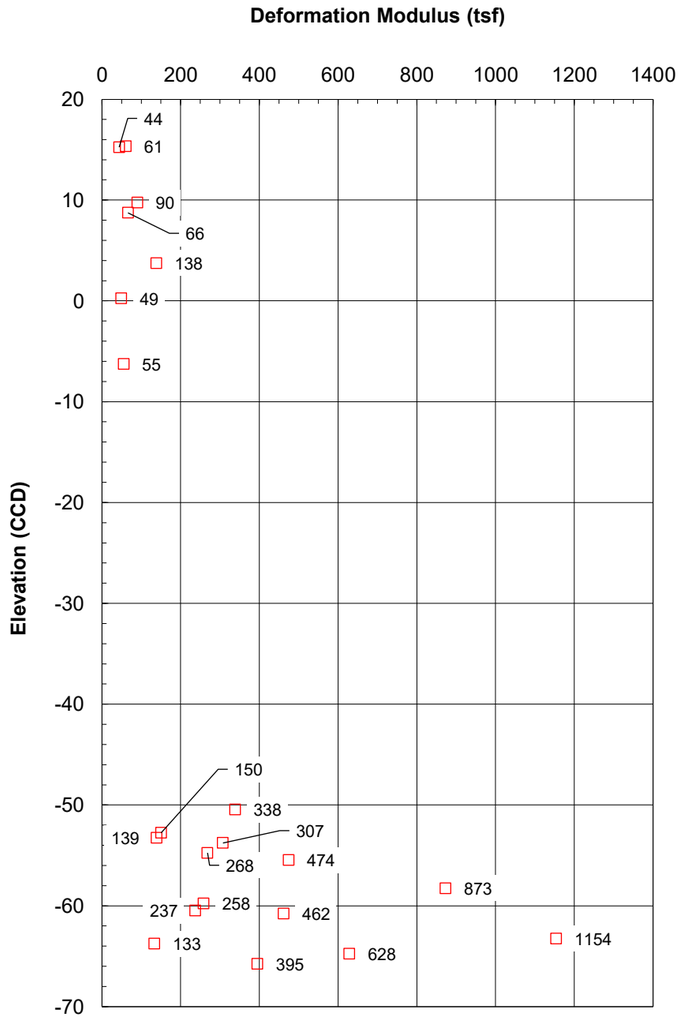
MAXIMUM PRESSURE = 70.351 (PSI)
HYDROSTATIC PRESSURE = 10.909 (PSI), WATER TABLE: 10.00 ft

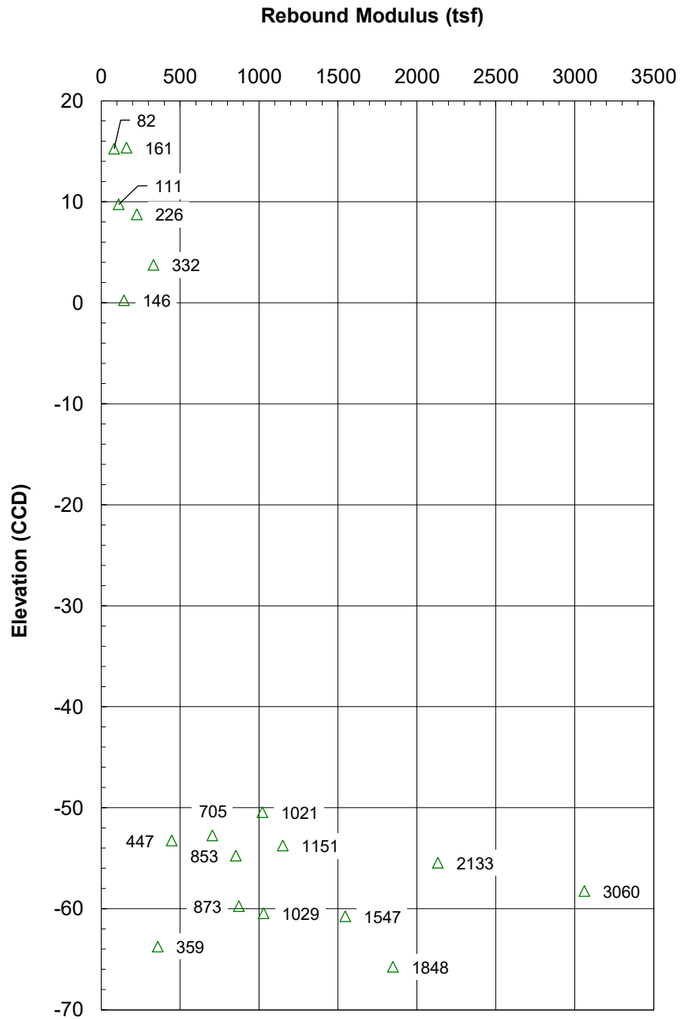
DISSIPATION
CUSTOMER: Customer
OPERATOR: SBB
CONE ID: DSG1096
LOCATION: Ryan Field
HOLE NUMBER: CPT-12
PREPARED BY: GEI Consultants



MAXIMUM PRESSURE = 55.92 (PSI)
HYDROSTATIC PRESSURE = 8.577 (PSI), WATER TABLE: 10.00 ft







GRAPHICAL PRESSUREMETER RESULTS

(PMT data from 2022 GEI Borings B-6, B-8, B-10, B-12, B-18, B-20A and B-21)

DRAWN BY AF	DATE 4/25/22		
CHECKED BY DSD	DATE 4/25/22	REV. NO.	
CALC. NO.			

PROJECT
SUMMARY OF PRESSUREMETER TEST RESULTS
Ryan Field
1501 Central Street
Evanston, Illinois

GEI Consultants
CALCULATION SHEET

STS PROJECT NO. 2002549
STS PROJECT FILE
SCALE
SHEET NO.

GEI Consultants
Consulting Engineers & Scientists

Project Name: Ryan Field Development
GEI Project Number: 2200549
Operator: R.Rusk
Date: March 26, 2022

PRESSUREMETER TEST RESULTS

Boring ID	Top of Boring Elevation (ft)	Test Depth (ft)	Test Midpoint Depth (ft)	Test Midpoint Elevation (ft)	P_o (tsf)	P_f (tsf)	P_L (tsf)	P^*_L (tsf)	E_d (tsf)	E^+ (tsf)	E_d/E^+	E_d/P^*_L	P_L/P_f
B-6	19.0	9.0 to 11.5	10.3	8.75	1.8	3.9	7.4	5.6	66	226	0.29	11.8	1.9
		14.0 to 16.5	15.3	3.75	1.8	3.6	8.3	6.5	138	332	0.41	21.1	2.3
		24.0 to 26.5	25.3	-6.25	1.5	2.9	7.1	5.6	55	-	-	9.8	2.5
		72.5 to 75.0	73.8	-54.75	5.0	12.0	27.0	22.0	268	853	0.31	12.2	2.2
		77.5 to 80.0	78.8	-59.75	5.0	17.0	37.9	32.9	258	873	0.30	7.9	2.2
		82.5 to 85.0	83.8	-64.75	7.0	>24.1	-	-	628	-	-	-	-
B-8	19.0	71.5 to 74.0	72.8	-53.75	5.0	16.5	36.0	31.0	307	1151	0.27	9.9	2.2
		76.0 to 78.5	77.3	-58.25	6.0	22.0	44.8	38.8	873	3060	0.29	22.5	2.0
		81.5 to 84.0	82.8	-63.75	5.5	10.0	17.6	12.1	133	359	0.37	11.0	1.8
B-10	24.8	74.0 to 76.5	75.3	-50.45	4.5	15.5	34.3	29.8	338	1021	0.33	11.3	2.2
		79.0 to 81.5	80.3	-55.45	6.5	>25.1	-	-	474	2133	0.22	-	-
		84.0 to 86.5	85.3	-60.45	6.5	17.5	33.9	27.4	237	1029	0.23	8.6	1.9
B-12	24.5	76.5 to 79.0	77.8	-53.25	5.0	10.0	20.3	15.3	139	447	0.31	9.1	2.0
		84.0 to 86.5	85.3	-60.75	6.0	16.5	32.0	26.0	462	1547	0.30	17.8	1.9
		89.0 to 91.5	90.3	-65.75	6.5	22.0	48.4	41.9	395	1848	0.21	9.4	2.2
B-18	25.6	9.0 to 11.5	10.3	15.35	1.4	3.9	9.0	7.6	61	161	0.38	8.0	2.3
B-20A	25.5	9.0 to 11.5	10.3	15.25	1.4	3.5	7.4	6.0	44	82	0.53	7.4	2.1
		14.5 to 17.0	15.8	9.75	1.5	3.2	7.5	6.0	90	111	0.81	15.1	2.3
		24.0 to 26.5	25.3	0.25	1.4	2.8	5.8	4.4	49	146	0.34	11.1	2.1
B-21	25.0	76.5 to 79.0	77.8	-52.75	5.5	14.0	25.8	20.3	150	705	0.21	7.4	1.8
		81.5 to 84.0	82.8	-57.75	Test zone disturbed by gravel. No test interpretation.								
		87.0 to 89.5	88.3	-63.25	6.5	>33.7	-	54.6	1154	-	-	-	-

GEI Consultants
Consulting Engineers & Scientists

Project Name: Ryan Field Development
GEI Job #: 2200549
Test Date: Tuesday, March 8, 2022
Boring No.: B-6
Test Depth (ft): 9.0 to 11.5
Test Zone Preparation: 2-5/8 In. Rock Bit

Probe Size: BX (58 mm)
Probe Deflated Vol. (cc): 535
Volumetric Zero Offset (cc): 60
Assumed Poisson's Ratio, ν: 0.33
Instrument Height (ft): 3
Operator: R.Rusk

No.	Field Pressure Readings (bars)	Field 30 Sec. Volume (cc)	Field 60 Sec. Volume (cc)	Creep Volume (cc)	Hydrostatic Pressure (tsf)	Membrane Resistance (tsf)	Corrected Pressure (tsf)	Corrected 30 Sec. Volume (cc)	Corrected 60 Sec. Volume, v_{60} (cc)	60 Sec. Radial Strain, $\Delta R/R_o$ (%)
1	0.0	64	70	6	0.4	0.02	0.4	4.0	10.0	0.93
2	0.5	107	127	20	0.4	0.15	0.8	46.9	66.9	6.07
3	1.0	164	183	19	0.4	0.28	1.2	103.9	122.9	10.89
4	1.5	216	234	18	0.4	0.39	1.6	155.9	173.9	15.11
5	2.0	262	277	15	0.4	0.48	2.0	201.9	216.9	18.55
6	2.5	293	296	3	0.4	0.52	2.5	232.8	235.8	20.03
7	3.0	307	309	2	0.4	0.55	3.0	246.8	248.8	21.04
8	3.5	322	327	5	0.4	0.59	3.5	261.8	266.8	22.42
9	4.0	344	350	6	0.4	0.64	4.0	283.7	289.7	24.16
10	2.5	346	346	0	0.4	0.63	2.4	285.8	285.8	23.87
11	3.5	356	356	0	0.4	0.65	3.4	295.8	295.8	24.61
12	4.5	378	389	11	0.4	0.73	4.4	317.7	328.7	27.06
13	5.0	409	421	12	0.4	0.79	4.8	348.7	360.7	29.39
14	5.5	447	459	12	0.4	0.87	5.3	386.6	398.6	32.10
15	6.0	484	497	13	0.4	0.95	5.7	423.6	436.6	34.76
16	6.5	525	540	15	0.4	1.04	6.2	464.6	479.6	37.71
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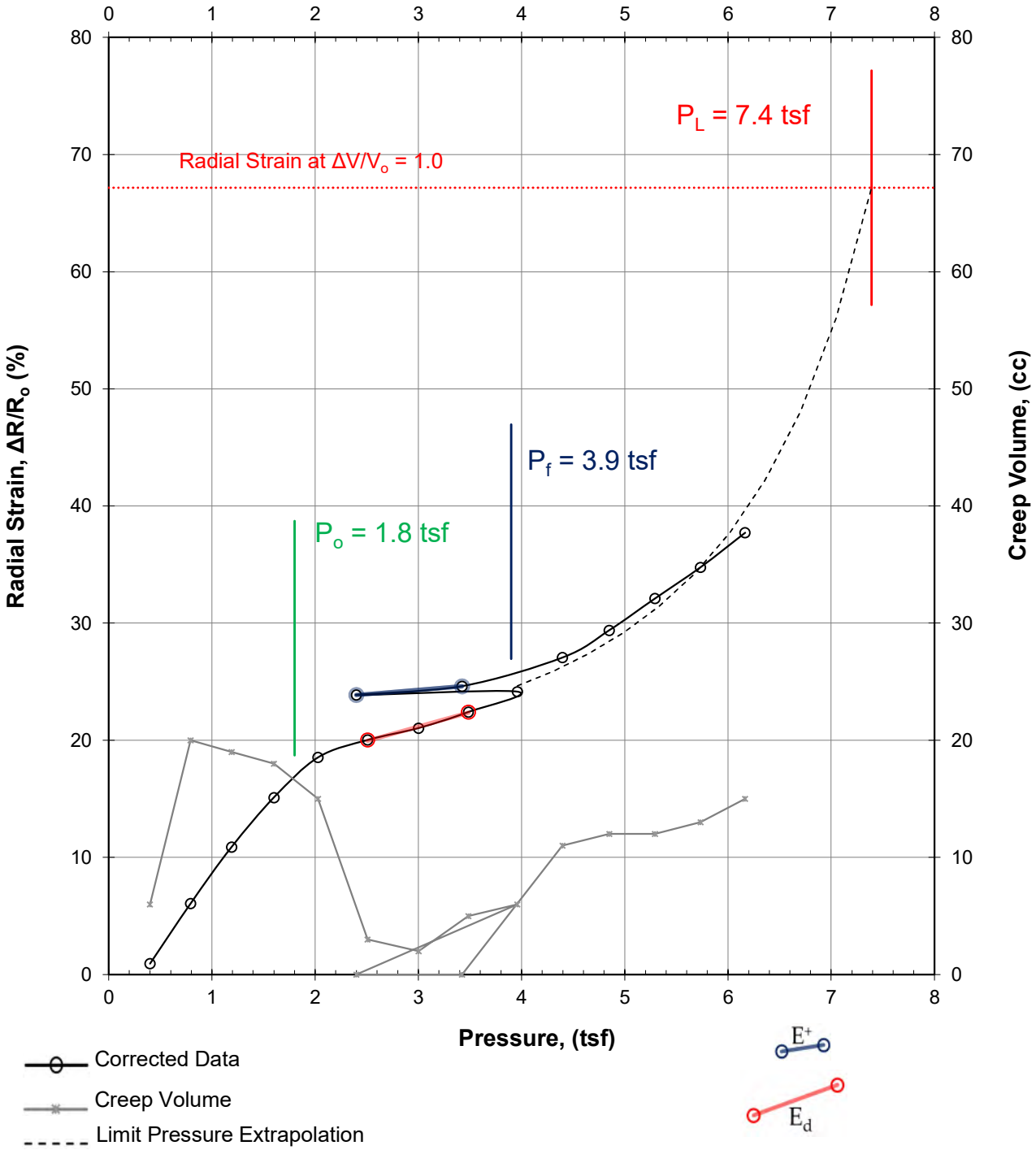
Project Name: Ryan Field Development
GEI Job #: 2200549

Boring No.: B-6
Test Depth (ft): 9.0 to 11.5



Test Results

P_o (tsf)	P_f (tsf)	P_L (tsf)	P^*_L (tsf)	E_d (tsf)	E^+ (tsf)	E_d/E^+	E_d/P^*_L	P_L/P_f
1.8	3.9	7.4	5.6	66	226	0.29	11.8	1.9

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Project Name: Ryan Field Development
GEI Job #: 2200549
Test Date: Tuesday, March 8, 2022
Boring No.: B-6
Test Depth (ft): 14.0 to 16.5
Test Zone Preparation: 2-5/8 In. Rock Bit

Probe Size: BX (58 mm)
Probe Deflated Vol. (cc): 535
Volumetric Zero Offset (cc): 60
Assumed Poisson's Ratio, ν: 0.33
Instrument Height (ft): 3
Operator: R.Rusk

No.	Field Pressure Readings (bars)	Field 30 Sec. Volume (cc)	Field 60 Sec. Volume (cc)	Creep Volume (cc)	Hydrostatic Pressure (tsf)	Membrane Resistance (tsf)	Corrected Pressure (tsf)	Corrected 30 Sec. Volume (cc)	Corrected 60 Sec. Volume, v_{60} (cc)	60 Sec. Radial Strain, $\Delta R/R_o$ (%)
1	0.0	60	60	0	0.6	0.00	0.6	0.0	0.0	0.00
2	0.5	90	112	22	0.6	0.12	1.0	29.9	51.9	4.74
3	1.0	155	180	25	0.6	0.27	1.4	94.9	119.9	10.64
4	1.5	216	222	6	0.6	0.36	1.8	155.9	161.9	14.13
5	2.0	230	231	1	0.6	0.38	2.3	169.8	170.8	14.86
6	2.5	237	237	0	0.6	0.40	2.8	176.8	176.8	15.35
7	3.0	244	245	1	0.6	0.41	3.3	183.8	184.8	15.99
8	3.5	257	261	4	0.6	0.45	3.8	196.7	200.7	17.27
9	4.0	271	275	4	0.6	0.48	4.3	210.7	214.7	18.38
10	4.5	288	294	6	0.6	0.52	4.8	227.7	233.7	19.87
11	2.8	289	289	0	0.6	0.51	2.9	228.8	228.8	19.48
12	4.0	297	297	0	0.6	0.53	4.2	236.7	236.7	20.10
13	5.5	329	347	18	0.6	0.63	5.7	268.6	286.6	23.92
14	6.5	389	416	27	0.6	0.78	6.6	328.6	355.6	29.02
15	7.3	465	497	32	0.6	0.95	7.2	404.5	436.5	34.76
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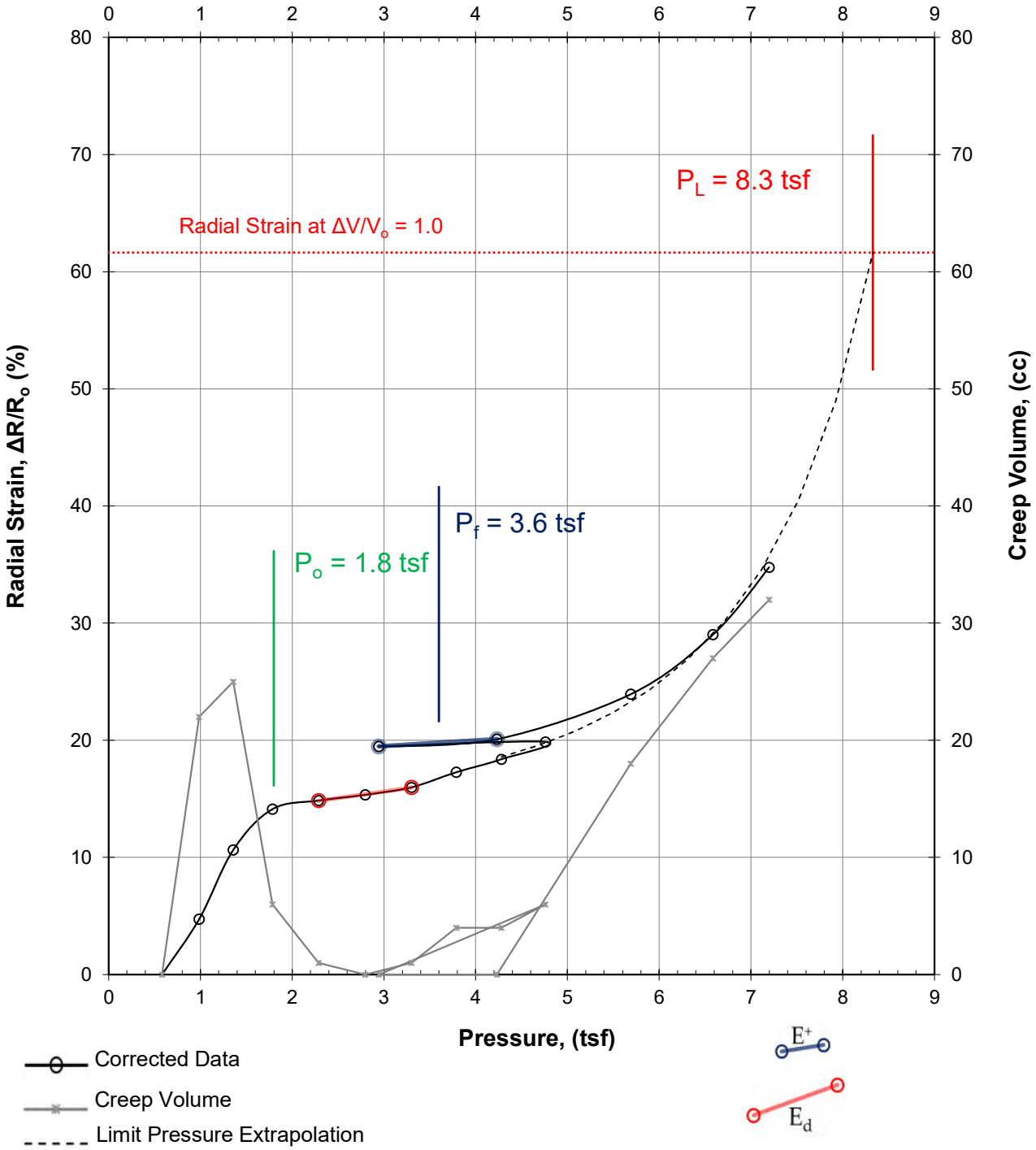
Project Name: Ryan Field Development
GEI Job #: 2200549

Boring No.: B-6
Test Depth (ft): 14.0 to 16.5



Test Results

P_o (tsf)	P_f (tsf)	P_L (tsf)	P^*_L (tsf)	E_d (tsf)	E^+ (tsf)	E_d/E^+	E_d/P^*_L	P_L/P_f
1.8	3.6	8.3	6.5	138	332	0.41	21.1	2.3

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Project Name: Ryan Field Development
GEI Job #: 2200549
Test Date: Tuesday, March 8, 2022
Boring No.: B-6
Test Depth (ft): 24.0 to 26.5
Test Zone Preparation: 2-5/8 In. Rock Bit

Probe Size: BX (58 mm)
Probe Deflated Vol. (cc): 535
Volumetric Zero Offset (cc): 60
Assumed Poisson's Ratio, ν: 0.33
Instrument Height (ft): 3
Operator: R.Rusk

No.	Field Pressure Readings (bars)	Field 30 Sec. Volume (cc)	Field 60 Sec. Volume (cc)	Creep Volume (cc)	Hydrostatic Pressure (tsf)	Membrane Resistance (tsf)	Corrected Pressure (tsf)	Corrected 30 Sec. Volume (cc)	Corrected 60 Sec. Volume, v_{60} (cc)	60 Sec. Radial Strain, $\Delta R/R_o$ (%)
1	0.0	74	74	0	0.9	0.03	0.9	13.9	13.9	1.29
2	0.5	112	125	13	0.9	0.15	1.3	51.9	64.9	5.89
3	1.0	145	152	7	0.9	0.21	1.7	84.9	91.9	8.25
4	1.5	167	167	0	0.9	0.24	2.2	106.8	106.8	9.53
5	2.3	191	197	6	0.9	0.31	2.9	130.8	136.8	12.06
6	3.0	220	228	8	0.9	0.38	3.7	159.8	167.8	14.61
7	3.8	259	274	15	0.9	0.48	4.3	198.7	213.7	18.30
8	4.5	308	325	17	0.9	0.59	5.0	247.7	264.7	22.26
9	5.3	365	390	25	0.9	0.73	5.7	304.6	329.6	27.13
10	6.0	437	467	30	0.9	0.89	6.3	376.6	406.6	32.66
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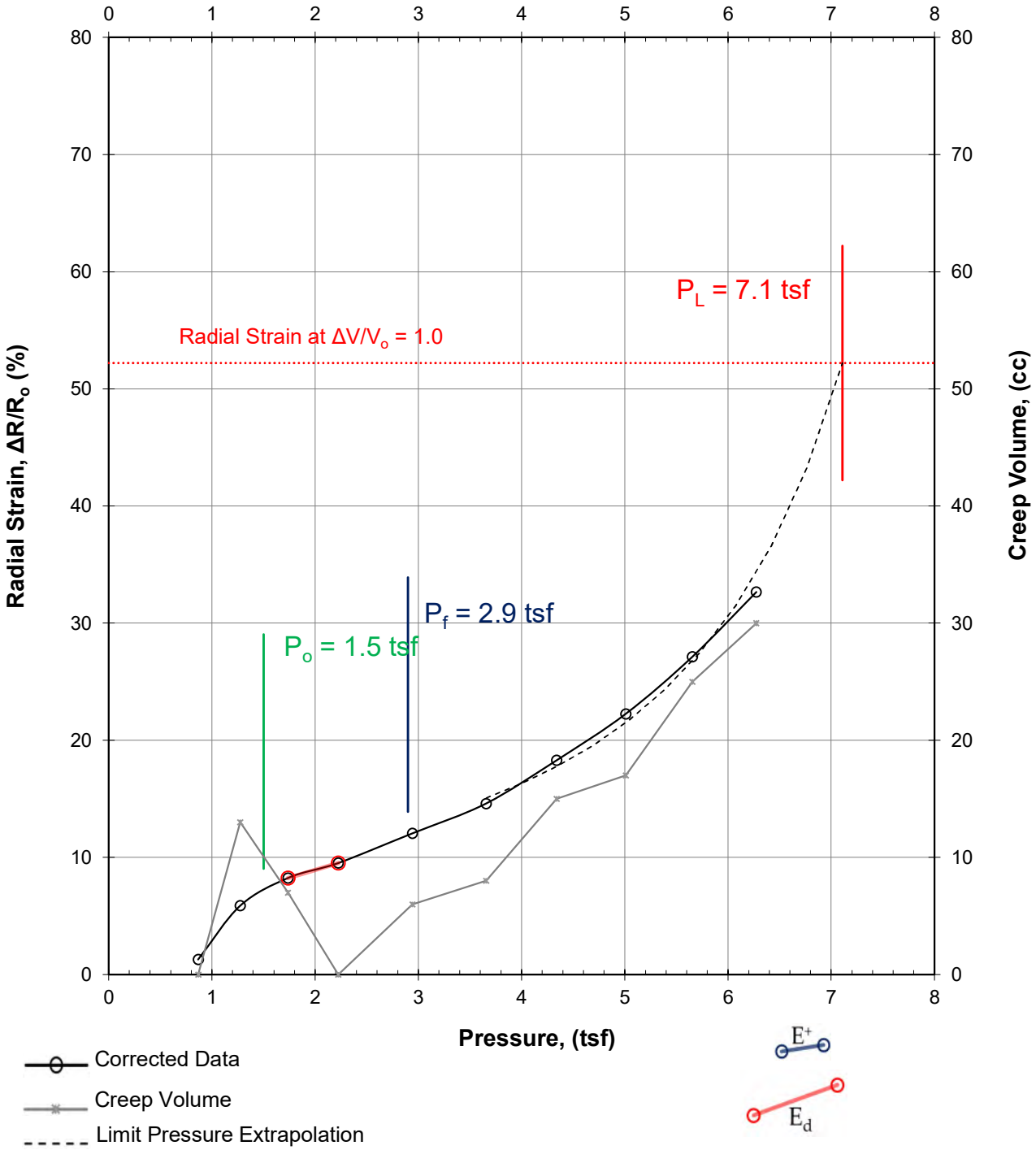
Project Name: Ryan Field Development
GEI Job #: 2200549

Boring No.: B-6
Test Depth (ft): 24.0 to 26.5



Test Results

P_o (tsf)	P_f (tsf)	P_L (tsf)	P^*_L (tsf)	E_d (tsf)	E^+ (tsf)	E_d/E^+	E_d/P^*_L	P_L/P_f
1.5	2.9	7.1	5.6	55	-	-	9.8	2.5

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Project Name: Ryan Field Development
GEI Job #: 2200549
Test Date: Wednesday, March 9, 2022
Boring No.: B-6
Test Depth (ft): 72.5 to 75.0
Test Zone Preparation: 2-5/8 In. Rock Bit

Probe Size: BX (58 mm)
Probe Deflated Vol. (cc): 535
Volumetric Zero Offset (cc): 60
Assumed Poisson's Ratio, ν: 0.33
Instrument Height (ft): 3
Operator: R.Rusk

No.	Field Pressure Readings (bars)	Field 30 Sec. Volume (cc)	Field 60 Sec. Volume (cc)	Creep Volume (cc)	Hydrostatic Pressure (tsf)	Membrane Resistance (tsf)	Corrected Pressure (tsf)	Corrected 30 Sec. Volume (cc)	Corrected 60 Sec. Volume, v_{60} (cc)	60 Sec. Radial Strain, $\Delta R/R_o$ (%)
1	1.0	112	134	22	2.4	0.17	3.3	51.8	73.8	6.67
2	3.0	159	161	2	2.4	0.23	5.3	98.6	100.6	9.00
3	6.0	181	181	0	2.4	0.27	8.4	120.4	120.4	10.68
4	10.0	216	222	6	2.4	0.36	12.5	155.1	161.1	14.07
5	14.0	267	276	9	2.4	0.48	16.6	205.9	214.9	18.39
6	9.0	271	271	0	2.4	0.47	11.4	210.2	210.2	18.02
7	13.0	281	281	0	2.4	0.49	15.5	219.9	219.9	18.79
8	17.0	327	337	10	2.4	0.61	19.6	265.7	275.7	23.10
9	18.0	356	363	7	2.4	0.67	20.6	294.6	301.6	25.05
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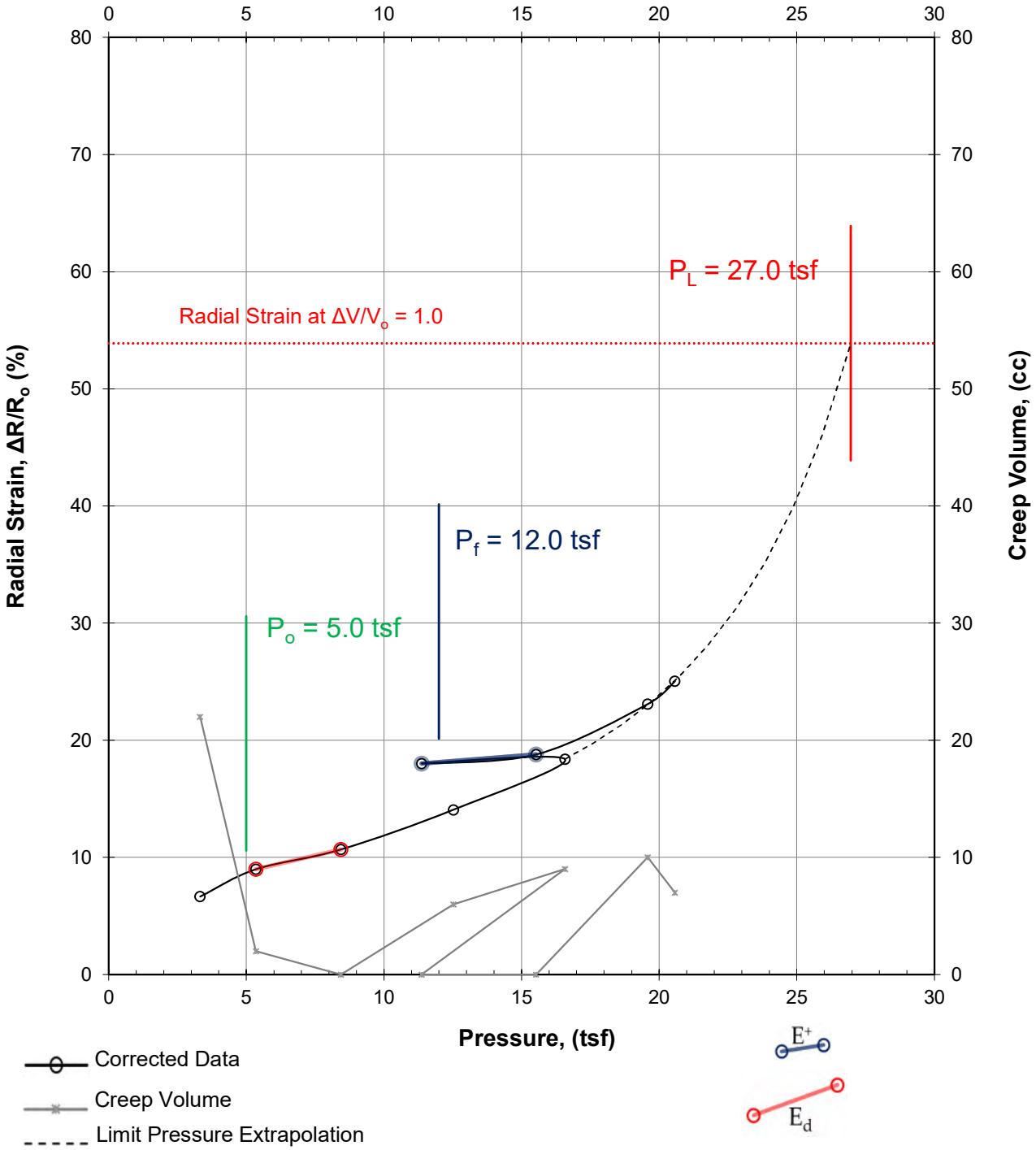
Project Name: Ryan Field Development
GEI Job #: 2200549

Boring No.: B-6
Test Depth (ft): 72.5 to 75.0



Test Results

P_o (tsf)	P_f (tsf)	P_L (tsf)	P^*_L (tsf)	E_d (tsf)	E^+ (tsf)	E_d/E^+	E_d/P^*_L	P_L/P_f
5.0	12.0	27.0	22.0	268	853	0.31	12.2	2.2

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Project Name: Ryan Field Development
GEI Job #: 2200549
Test Date: Wednesday, March 9, 2022
Boring No.: B-6
Test Depth (ft): 77.5 to 80.0
Test Zone Preparation: 2-5/8 In. Rock Bit

Probe Size: BX (58 mm)
Probe Deflated Vol. (cc): 535
Volumetric Zero Offset (cc): 60
Assumed Poisson's Ratio, ν: 0.33
Instrument Height (ft): 3
Operator: R.Rusk

No.	Field Pressure Readings (bars)	Field 30 Sec. Volume (cc)	Field 60 Sec. Volume (cc)	Creep Volume (cc)	Hydrostatic Pressure (tsf)	Membrane Resistance (tsf)	Corrected Pressure (tsf)	Corrected 30 Sec. Volume (cc)	Corrected 60 Sec. Volume, v_{60} (cc)	60 Sec. Radial Strain, $\Delta R/R_o$ (%)
1	1.0	98	111	13	2.6	0.12	3.5	37.8	50.8	4.64
2	3.0	164	165	1	2.6	0.24	5.5	103.6	104.6	9.34
3	6.0	184	184	0	2.6	0.28	8.6	123.4	123.4	10.94
4	10.0	211	211	0	2.6	0.34	12.7	150.1	150.1	13.16
5	14.0	244	245	1	2.6	0.41	16.8	182.9	183.9	15.92
6	18.0	278	281	3	2.6	0.49	20.9	216.6	219.6	18.76
7	22.0	323	328	5	2.6	0.59	25.0	261.3	266.3	22.38
8	15.3	321	321	0	2.6	0.58	17.9	259.8	259.8	21.88
9	21.0	336	336	0	2.6	0.61	23.9	274.4	274.4	23.00
10	25.0	373	381	8	2.6	0.71	28.0	311.1	319.1	26.35
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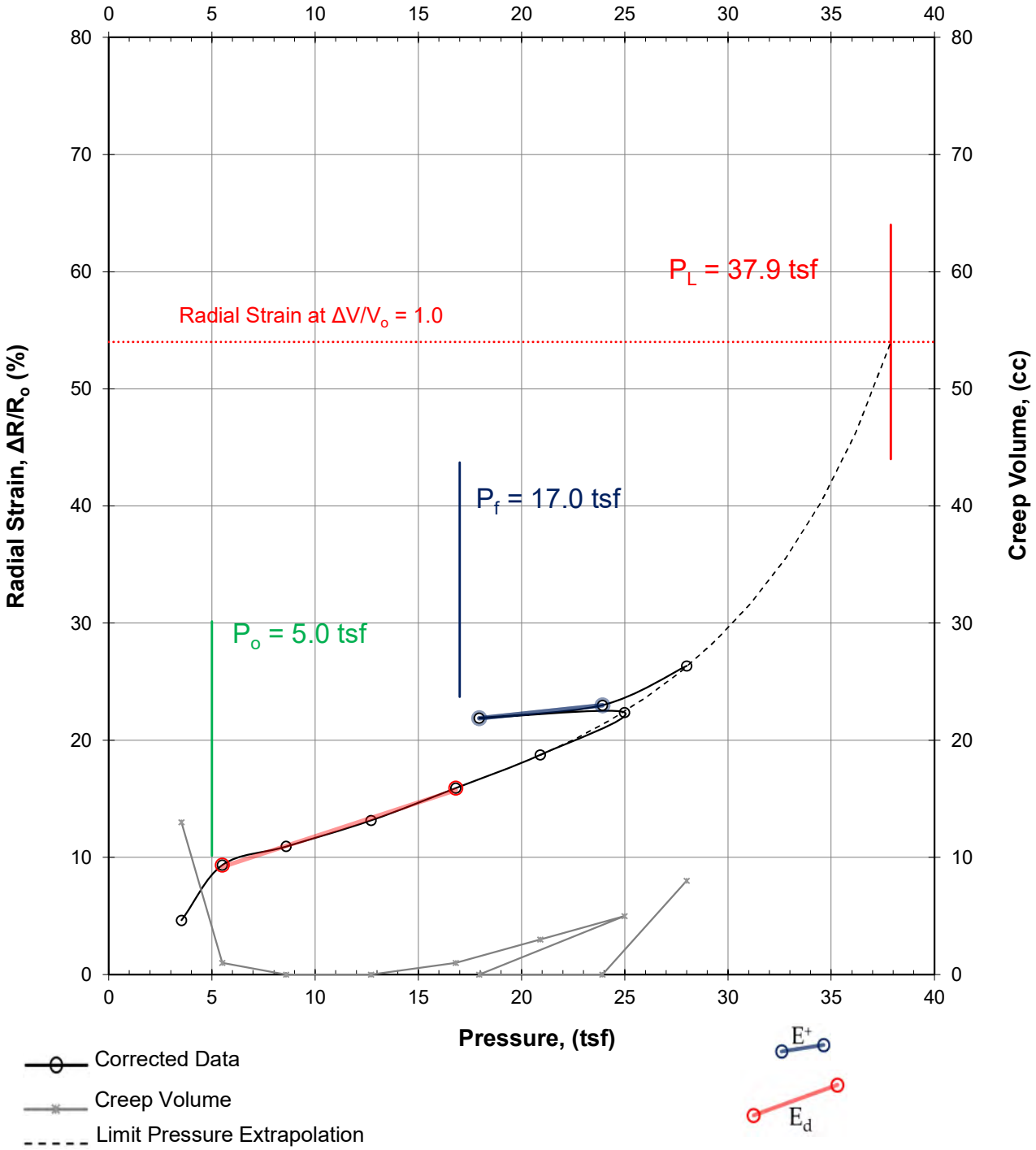
Project Name: Ryan Field Development
GEI Job #: 2200549

Boring No.: B-6
Test Depth (ft): 77.5 to 80.0



Test Results

P$_o$ (tsf)	P$_f$ (tsf)	P$_L$ (tsf)	P$^*_L$ (tsf)	E$_d$ (tsf)	E$^+$ (tsf)	E$_d$/E$^+$	E$_d$/P$^*_L$	P$_L$/P$_f$
5.0	17.0	37.9	32.9	258	873	0.30	7.9	2.2

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Project Name: Ryan Field Development
GEI Job #: 2200549
Test Date: Wednesday, March 9, 2022
Boring No.: B-6
Test Depth (ft): 82.5 to 85.0
Test Zone Preparation: 2-5/8 In. Rock Bit

Probe Size: BX (58 mm)
Probe Deflated Vol. (cc): 535
Volumetric Zero Offset (cc): 60
Assumed Poisson's Ratio, ν: 0.33
Instrument Height (ft): 3
Operator: R.Rusk

No.	Field Pressure Readings (bars)	Field 30 Sec. Volume (cc)	Field 60 Sec. Volume (cc)	Creep Volume (cc)	Hydrostatic Pressure (tsf)	Membrane Resistance (tsf)	Corrected Pressure (tsf)	Corrected 30 Sec. Volume (cc)	Corrected 60 Sec. Volume, v_{60} (cc)	60 Sec. Radial Strain, $\Delta R/R_o$ (%)
1	1.0	81	84	3	2.8	0.05	3.8	20.7	23.7	2.20
2	3.0	154	170	16	2.8	0.25	5.6	93.6	109.6	9.77
3	6.0	222	260	38	2.8	0.45	8.6	161.4	199.4	17.16
4	9.0	269	269	0	2.8	0.47	11.7	208.2	208.2	17.86
5	13.0	282	282	0	2.8	0.49	15.8	220.9	220.9	18.87
6	17.0	296	296	0	2.8	0.52	20.0	234.6	234.6	19.94
7	21.0	311	311	0	2.8	0.56	24.1	249.4	249.4	21.08
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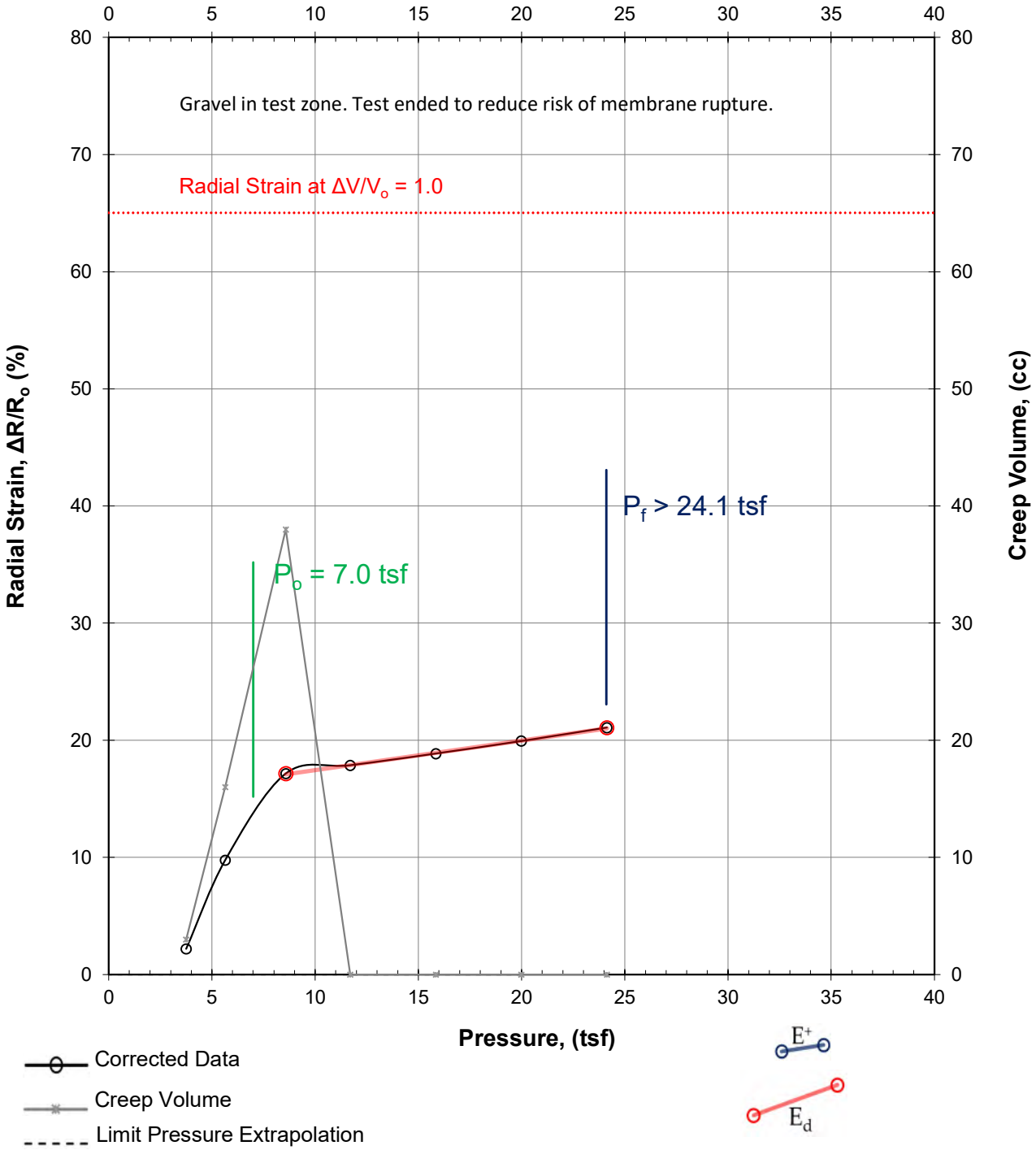
Project Name: Ryan Field Development
GEI Job #: 2200549

Boring No.: B-6
Test Depth (ft): 82.5 to 85.0



Test Results

P_o (tsf)	P_f (tsf)	P_L (tsf)	P^*_L (tsf)	E_d (tsf)	E^+ (tsf)	E_d/E^+	E_d/P^*_L	P_L/P_f
7.0	>24.1	-	-	628	-	-	-	-

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Project Name: Ryan Field Development
GEI Job #: 2200549
Test Date: Tuesday, March 8, 2022
Boring No.: B-8
Test Depth (ft): 71.5 to 74.0
Test Zone Preparation: 2-5/8 In. Rock Bit

Probe Size: BX (58 mm)
Probe Deflated Vol. (cc): 535
Volumetric Zero Offset (cc): 60
Assumed Poisson's Ratio, ν: 0.33
Instrument Height (ft): 3
Operator: R.Rusk

No.	Field Pressure Readings (bars)	Field 30 Sec. Volume (cc)	Field 60 Sec. Volume (cc)	Creep Volume (cc)	Hydrostatic Pressure (tsf)	Membrane Resistance (tsf)	Corrected Pressure (tsf)	Corrected 30 Sec. Volume (cc)	Corrected 60 Sec. Volume, v_{60} (cc)	60 Sec. Radial Strain, $\Delta R/R_o$ (%)
1	1.0	104	119	15	2.4	0.13	3.3	43.8	58.8	5.35
2	3.0	140	141	1	2.4	0.18	5.4	79.6	80.6	7.27
3	6.0	156	156	0	2.4	0.22	8.5	95.4	95.4	8.55
4	10.0	181	181	0	2.4	0.27	12.6	120.1	120.1	10.66
5	14.0	216	217	1	2.4	0.35	16.7	154.9	155.9	13.64
6	18.0	257	262	5	2.4	0.45	20.8	195.6	200.6	17.26
7	11.0	254	254	0	2.4	0.43	13.5	193.1	193.1	16.66
8	17.0	265	265	0	2.4	0.46	19.7	203.7	203.7	17.50
9	22.0	310	318	8	2.4	0.57	24.8	248.3	256.3	21.62
10	24.0	343	352	9	2.4	0.65	26.8	281.2	290.2	24.19
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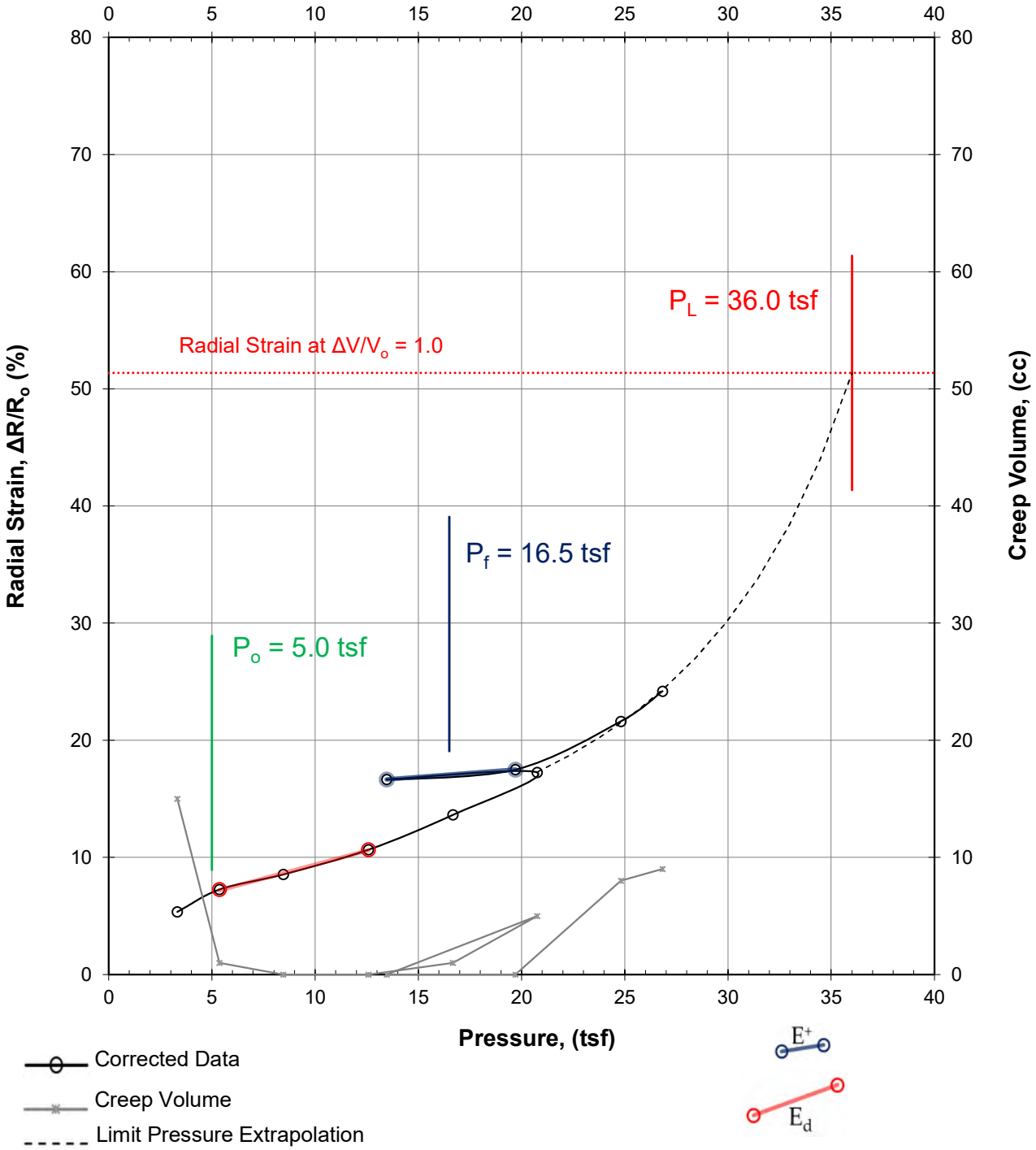
Project Name: Ryan Field Development
GEI Job #: 2200549

Boring No.: B-8
Test Depth (ft): 71.5 to 74.0



Test Results

P_o (tsf)	P_f (tsf)	P_L (tsf)	P^*_L (tsf)	E_d (tsf)	E^+ (tsf)	E_d/E^+	E_d/P^*_L	P_L/P_f
5.0	16.5	36.0	31.0	307	1151	0.27	9.9	2.2

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Project Name: Ryan Field Development
GEI Job #: 2200549
Test Date: Tuesday, March 8, 2022
Boring No.: B-8
Test Depth (ft): 76.0 to 78.5
Test Zone Preparation: 2-5/8 In. Rock Bit

Probe Size: BX (58 mm)
Probe Deflated Vol. (cc): 535
Volumetric Zero Offset (cc): 60
Assumed Poisson's Ratio, ν: 0.33
Instrument Height (ft): 3
Operator: R.Rusk

No.	Field Pressure Readings (bars)	Field 30 Sec. Volume (cc)	Field 60 Sec. Volume (cc)	Creep Volume (cc)	Hydrostatic Pressure (tsf)	Membrane Resistance (tsf)	Corrected Pressure (tsf)	Corrected 30 Sec. Volume (cc)	Corrected 60 Sec. Volume, v_{60} (cc)	60 Sec. Radial Strain, $\Delta R/R_o$ (%)
1	1.0	94	128	34	2.6	0.15	3.4	33.8	67.8	6.14
2	3.0	200	217	17	2.6	0.35	5.3	139.6	156.6	13.70
3	6.0	234	234	0	2.6	0.39	8.4	173.4	173.4	15.07
4	10.0	242	242	0	2.6	0.41	12.6	181.1	181.1	15.70
5	15.0	255	255	0	2.6	0.43	17.8	193.8	193.8	16.71
6	20.0	273	275	2	2.6	0.48	23.0	211.4	213.4	18.28
7	25.0	303	308	5	2.6	0.55	28.1	241.1	246.1	20.83
8	15.0	303	303	0	2.6	0.54	17.7	241.8	241.8	20.50
9	24.0	310	310	0	2.6	0.55	27.1	248.2	248.2	20.99
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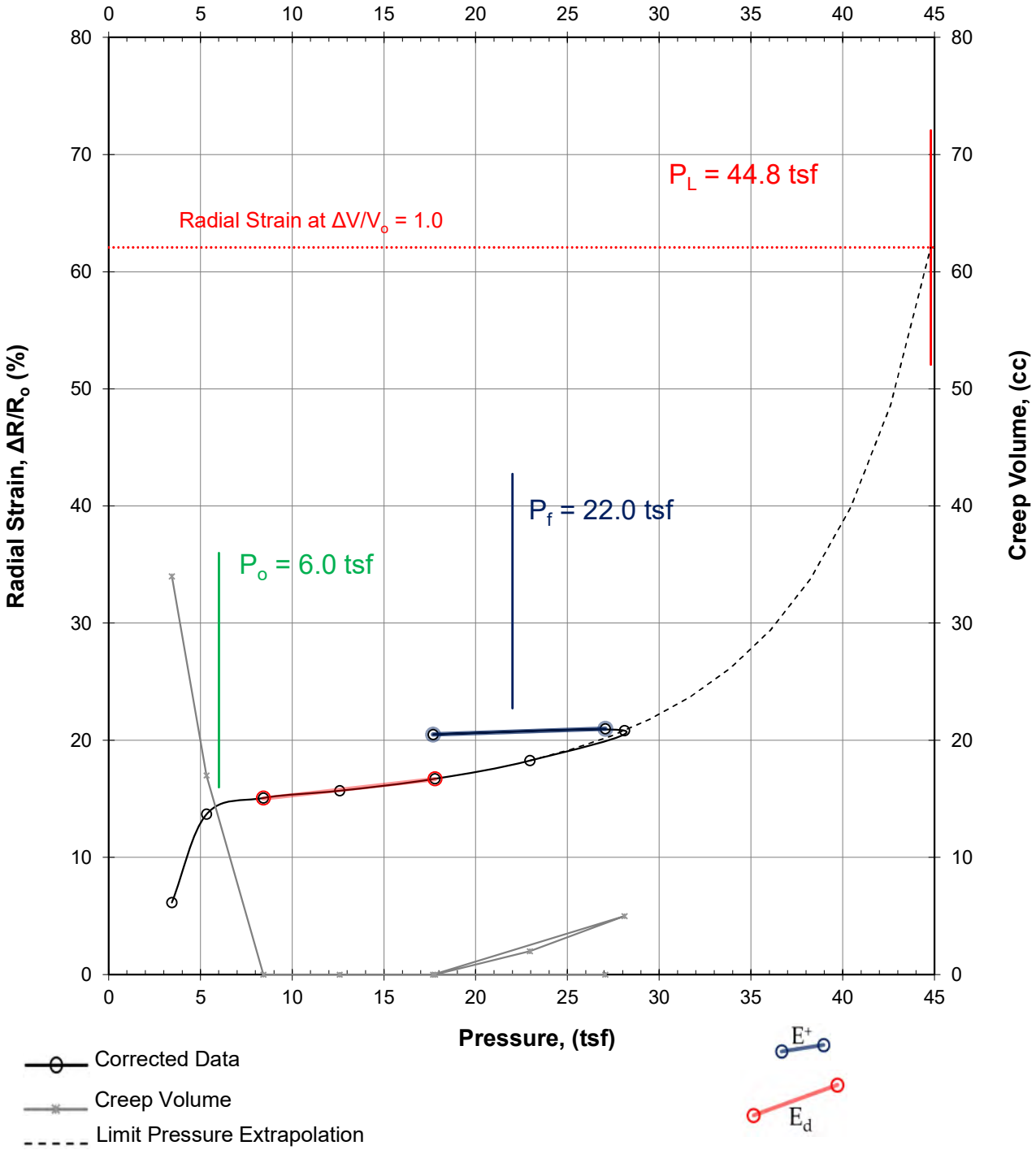
Project Name: Ryan Field Development
GEI Job #: 2200549

Boring No.: B-8
Test Depth (ft): 76.0 to 78.5



Test Results

P_o (tsf)	P_f (tsf)	P_L (tsf)	P^*_L (tsf)	E_d (tsf)	E^+ (tsf)	E_d/E^+	E_d/P^*_L	P_L/P_f
6.0	22.0	44.8	38.8	873	3060	0.29	22.5	2.0

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Project Name: Ryan Field Development
GEI Job #: 2200549
Test Date: Tuesday, March 8, 2022
Boring No.: B-8
Test Depth (ft): 81.5 to 84.0
Test Zone Preparation: 2-5/8 In. Rock Bit

Probe Size: BX (58 mm)
Probe Deflated Vol. (cc): 535
Volumetric Zero Offset (cc): 60
Assumed Poisson's Ratio, ν: 0.33
Instrument Height (ft): 3
Operator: R.Rusk

No.	Field Pressure Readings (bars)	Field 30 Sec. Volume (cc)	Field 60 Sec. Volume (cc)	Creep Volume (cc)	Hydrostatic Pressure (tsf)	Membrane Resistance (tsf)	Corrected Pressure (tsf)	Corrected 30 Sec. Volume (cc)	Corrected 60 Sec. Volume, v_{60} (cc)	60 Sec. Radial Strain, $\Delta R/R_o$ (%)
1	1.0	94	118	24	2.7	0.13	3.6	33.8	57.8	5.26
2	3.0	168	175	7	2.7	0.26	5.6	107.6	114.6	10.19
3	6.0	209	216	7	2.7	0.35	8.6	148.4	155.4	13.60
4	10.0	280	299	19	2.7	0.53	12.6	219.1	238.1	20.21
5	6.0	293	293	0	2.7	0.52	8.5	232.4	232.4	19.77
6	9.0	311	311	0	2.7	0.56	11.6	250.2	250.2	21.15
7	12.0	366	385	19	2.7	0.72	14.5	305.0	324.0	26.71
8	13.0	424	445	21	2.7	0.84	15.5	362.9	383.9	31.06
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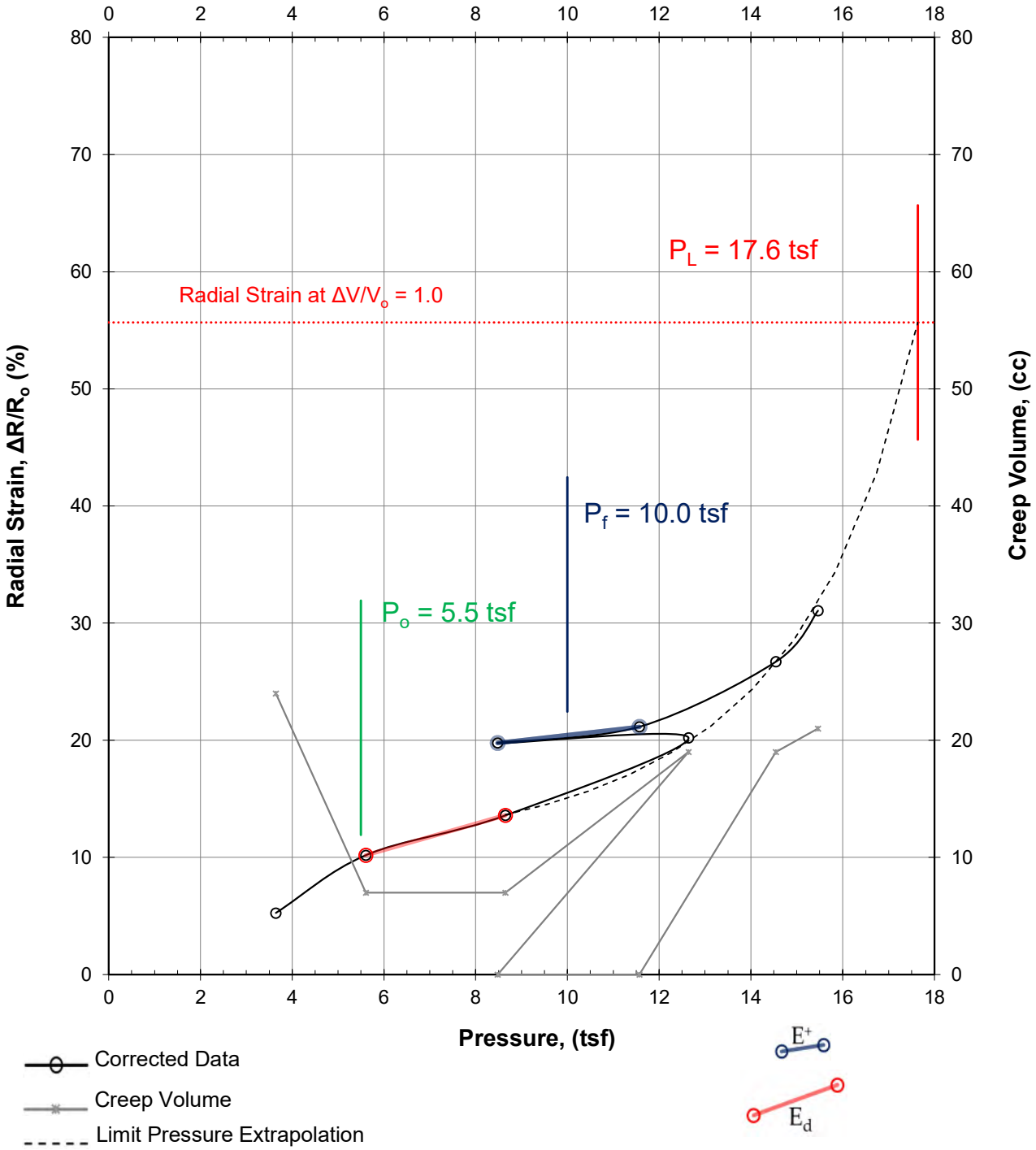
Project Name: Ryan Field Development
GEI Job #: 2200549

Boring No.: B-8
Test Depth (ft): 81.5 to 84.0



Test Results

P_o (tsf)	P_f (tsf)	P_L (tsf)	P^*_L (tsf)	E_d (tsf)	E^+ (tsf)	E_d/E^+	E_d/P^*_L	P_L/P_f
5.5	10.0	17.6	12.1	133	359	0.37	11.0	1.8

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Project Name: Ryan Field Development
GEI Job #: 2200549
Test Date: Wednesday, March 2, 2022
Boring No.: B-10
Test Depth (ft): 74.0 to 76.5
Test Zone Preparation: 2-5/8 In. Rock Bit

Probe Size: BX (58 mm)
Probe Deflated Vol. (cc): 535
Volumetric Zero Offset (cc): 37
Assumed Poisson's Ratio, ν: 0.33
Instrument Height (ft): 3
Operator: R.Rusk

No.	Field Pressure Readings (bars)	Field 30 Sec. Volume (cc)	Field 60 Sec. Volume (cc)	Creep Volume (cc)	Hydrostatic Pressure (tsf)	Membrane Resistance (tsf)	Corrected Pressure (tsf)	Corrected 30 Sec. Volume (cc)	Corrected 60 Sec. Volume, v_{60} (cc)	60 Sec. Radial Strain, $\Delta R/R_o$ (%)
1	0.5	47	50	3	2.5	0.03	3.0	9.8	12.8	1.19
2	2.0	76	77	1	2.5	0.09	4.5	38.7	39.7	3.64
3	5.0	87	87	0	2.5	0.11	7.6	49.5	49.5	4.52
4	8.0	102	102	0	2.5	0.15	10.7	64.3	64.3	5.84
5	11.0	121	121	0	2.5	0.19	13.8	83.1	83.1	7.48
6	14.0	147	149	2	2.5	0.25	16.9	108.9	110.9	9.87
7	17.0	174	177	3	2.5	0.31	19.9	135.6	138.6	12.21
8	20.0	208	215	7	2.5	0.40	23.0	169.4	176.4	15.32
9	13.5	210	210	0	2.5	0.39	16.2	171.9	171.9	14.95
10	19.0	221	221	0	2.5	0.41	21.9	182.5	182.5	15.81
11	23.0	255	266	11	2.5	0.51	26.0	216.2	227.2	19.36
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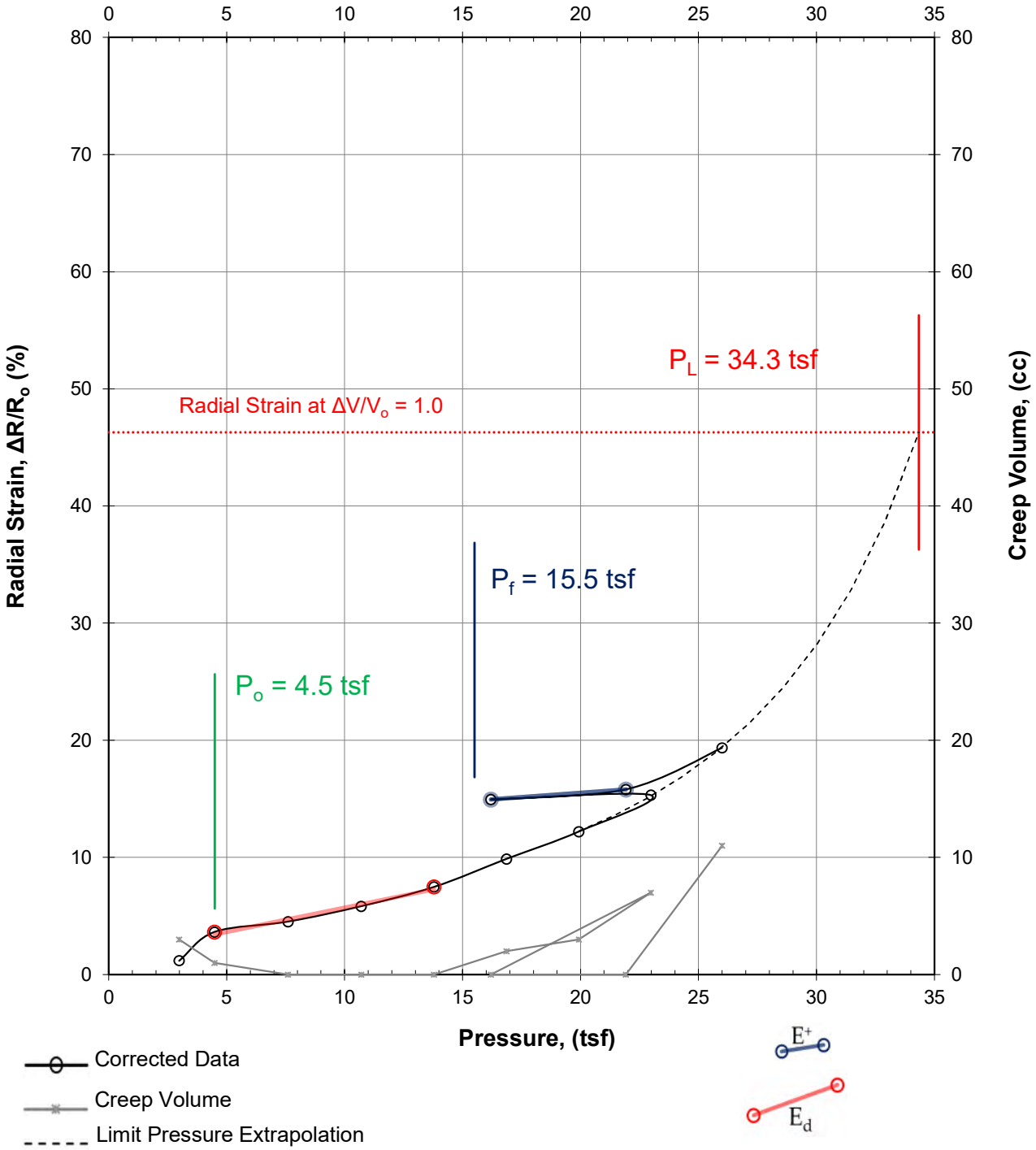
Project Name: Ryan Field Development
GEI Job #: 2200549

Boring No.: B-10
Test Depth (ft): 74.0 to 76.5



Test Results

P_o (tsf)	P_f (tsf)	P_L (tsf)	P^*_L (tsf)	E_d (tsf)	E^+ (tsf)	E_d/E^+	E_d/P^*_L	P_L/P_f
4.5	15.5	34.3	29.8	338	1021	0.33	11.3	2.2

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Project Name: Ryan Field Development
GEI Job #: 2200549
Test Date: Wednesday, March 2, 2022
Boring No.: B-10
Test Depth (ft): 79.0 to 81.5
Test Zone Preparation: 2-5/8 In. Rock Bit

Probe Size: BX (58 mm)
Probe Deflated Vol. (cc): 535
Volumetric Zero Offset (cc): 37
Assumed Poisson's Ratio, ν: 0.33
Instrument Height (ft): 3
Operator: R.Rusk

No.	Field Pressure Readings (bars)	Field 30 Sec. Volume (cc)	Field 60 Sec. Volume (cc)	Creep Volume (cc)	Hydrostatic Pressure (tsf)	Membrane Resistance (tsf)	Corrected Pressure (tsf)	Corrected 30 Sec. Volume (cc)	Corrected 60 Sec. Volume, v_{60} (cc)	60 Sec. Radial Strain, $\Delta R/R_o$ (%)
1	1.0	97	120	23	2.6	0.19	3.5	59.8	82.8	7.46
2	3.0	170	181	11	2.6	0.32	5.5	132.6	143.6	12.63
3	6.0	210	210	0	2.6	0.39	8.5	172.4	172.4	14.99
4	10.0	226	227	1	2.6	0.42	12.7	188.1	189.1	16.34
5	14.0	245	245	0	2.6	0.46	16.8	206.9	206.9	17.76
6	18.0	262	262	0	2.6	0.50	20.9	223.6	223.6	19.08
7	22.0	280	280	0	2.6	0.54	25.1	241.3	241.3	20.46
8	13.5	274	274	0	2.6	0.53	16.2	235.9	235.9	20.04
9	20.0	281	281	0	2.6	0.54	23.0	242.4	242.4	20.55
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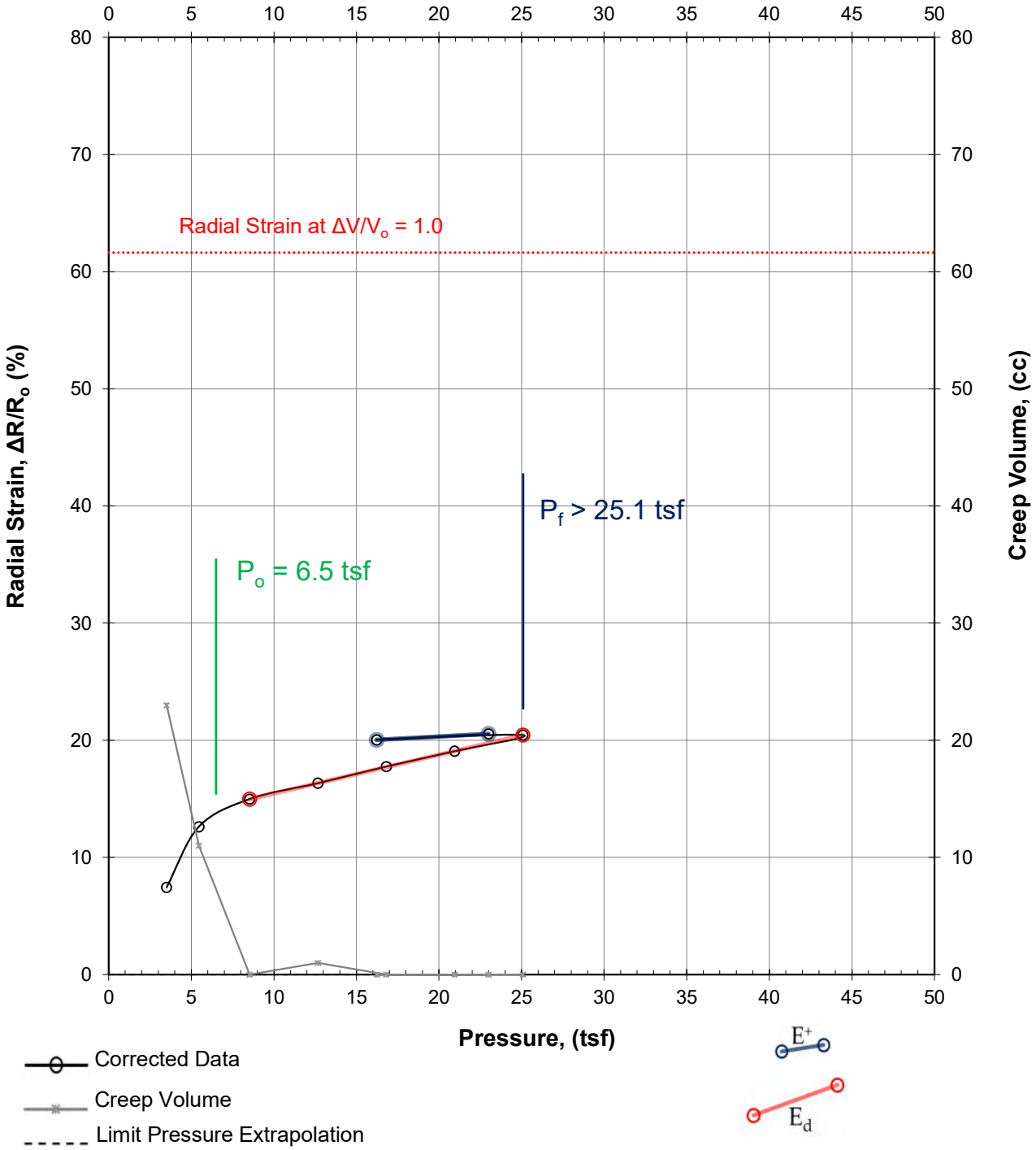
Project Name: Ryan Field Development
GEI Job #: 2200549

Boring No.: B-10
Test Depth (ft): 79.0 to 81.5



Test Results

P_o (tsf)	P_f (tsf)	P_L (tsf)	P^*_L (tsf)	E_d (tsf)	E^+ (tsf)	E_d/E^+	E_d/P^*_L	P_L/P_f
6.5	>25.1	-	-	474	2133	0.22	-	-

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Project Name: Ryan Field Development
GEI Job #: 2200549
Test Date: Wednesday, March 2, 2022
Boring No.: B-10
Test Depth (ft): 84.0 to 86.5
Test Zone Preparation: 2-5/8 In. Rock Bit

Probe Size: BX (58 mm)
Probe Deflated Vol. (cc): 535
Volumetric Zero Offset (cc): 37
Assumed Poisson's Ratio, ν: 0.33
Instrument Height (ft): 3
Operator: R.Rusk

No.	Field Pressure Readings (bars)	Field 30 Sec. Volume (cc)	Field 60 Sec. Volume (cc)	Creep Volume (cc)	Hydrostatic Pressure (tsf)	Membrane Resistance (tsf)	Corrected Pressure (tsf)	Corrected 30 Sec. Volume (cc)	Corrected 60 Sec. Volume, v_{60} (cc)	60 Sec. Radial Strain, $\Delta R/R_o$ (%)
1	0.5	40	45	5	2.8	0.02	3.3	2.8	7.8	0.72
2	2.0	69	70	1	2.8	0.07	4.8	31.7	32.7	3.01
3	3.0	79	80	1	2.8	0.10	5.8	41.6	42.6	3.91
4	5.0	106	108	2	2.8	0.16	7.9	68.5	70.5	6.38
5	10.0	145	145	0	2.8	0.24	13.0	107.1	107.1	9.55
6	14.0	174	175	1	2.8	0.31	17.1	135.8	136.8	12.06
7	18.0	207	210	3	2.8	0.39	21.2	168.6	171.6	14.92
8	22.0	266	277	11	2.8	0.53	25.3	227.3	238.3	20.22
9	24.0	310	321	11	2.8	0.63	27.2	271.1	282.1	23.59
10	15.5	312	312	0	2.8	0.61	18.4	273.7	273.7	22.95
11	21.3	325	325	0	2.8	0.64	24.4	286.3	286.3	23.90
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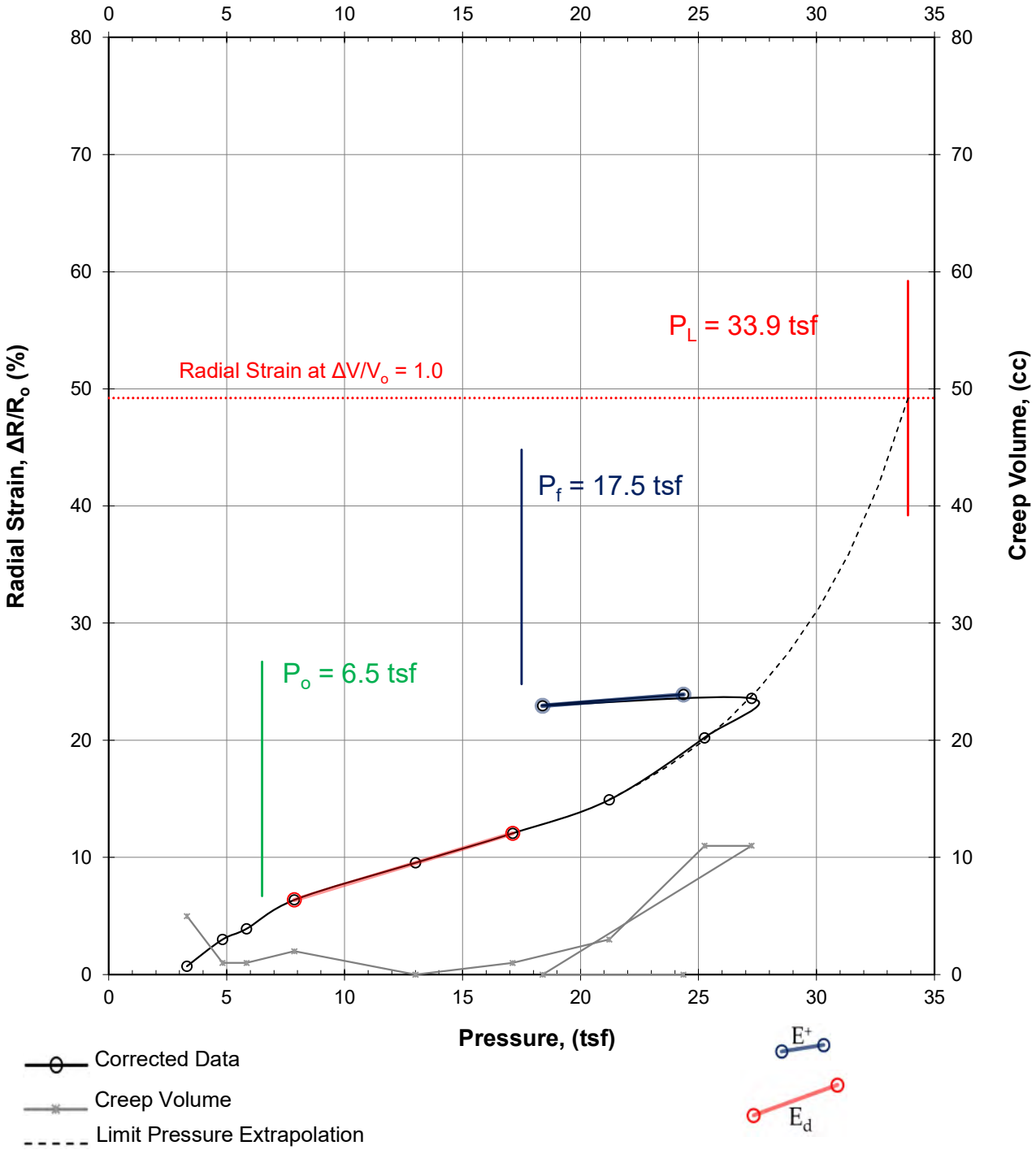
Project Name: Ryan Field Development
GEI Job #: 2200549

Boring No.: B-10
Test Depth (ft): 84.0 to 86.5



Test Results

P_o (tsf)	P_f (tsf)	P_L (tsf)	P^*_L (tsf)	E_d (tsf)	E^+ (tsf)	E_d/E^+	E_d/P^*_L	P_L/P_f
6.5	17.5	33.9	27.4	237	1029	0.23	8.6	1.9

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Project Name: Ryan Field Development
GEI Job #: 2200549
Test Date: Wednesday, March 2, 2022
Boring No.: B-12
Test Depth (ft): 76.5 to 79.0
Test Zone Preparation: 2-5/8 In. Rock Bit

Probe Size: BX (58 mm)
Probe Deflated Vol. (cc): 535
Volumetric Zero Offset (cc): 37
Assumed Poisson's Ratio, ν: 0.33
Instrument Height (ft): 3
Operator: R.Rusk

No.	Field Pressure Readings (bars)	Field 30 Sec. Volume (cc)	Field 60 Sec. Volume (cc)	Creep Volume (cc)	Hydrostatic Pressure (tsf)	Membrane Resistance (tsf)	Corrected Pressure (tsf)	Corrected 30 Sec. Volume (cc)	Corrected 60 Sec. Volume, v_{60} (cc)	60 Sec. Radial Strain, $\Delta R/R_o$ (%)
1	1.0	86	87	1	2.6	0.11	3.5	48.8	49.8	4.55
2	3.0	107	130	23	2.6	0.21	5.5	69.6	92.6	8.31
3	6.0	163	168	5	2.6	0.29	8.5	125.4	130.4	11.52
4	9.0	216	229	13	2.6	0.43	11.5	178.2	191.2	16.51
5	12.0	281	301	20	2.6	0.58	14.5	243.0	263.0	22.13
6	7.8	297	297	0	2.6	0.58	10.1	259.3	259.3	21.85
7	10.8	312	312	0	2.6	0.61	13.2	274.1	274.1	22.98
8	14.0	357	378	21	2.6	0.75	16.4	318.9	339.9	27.88
9	15.0	410	429	19	2.6	0.86	17.4	371.8	390.8	31.55
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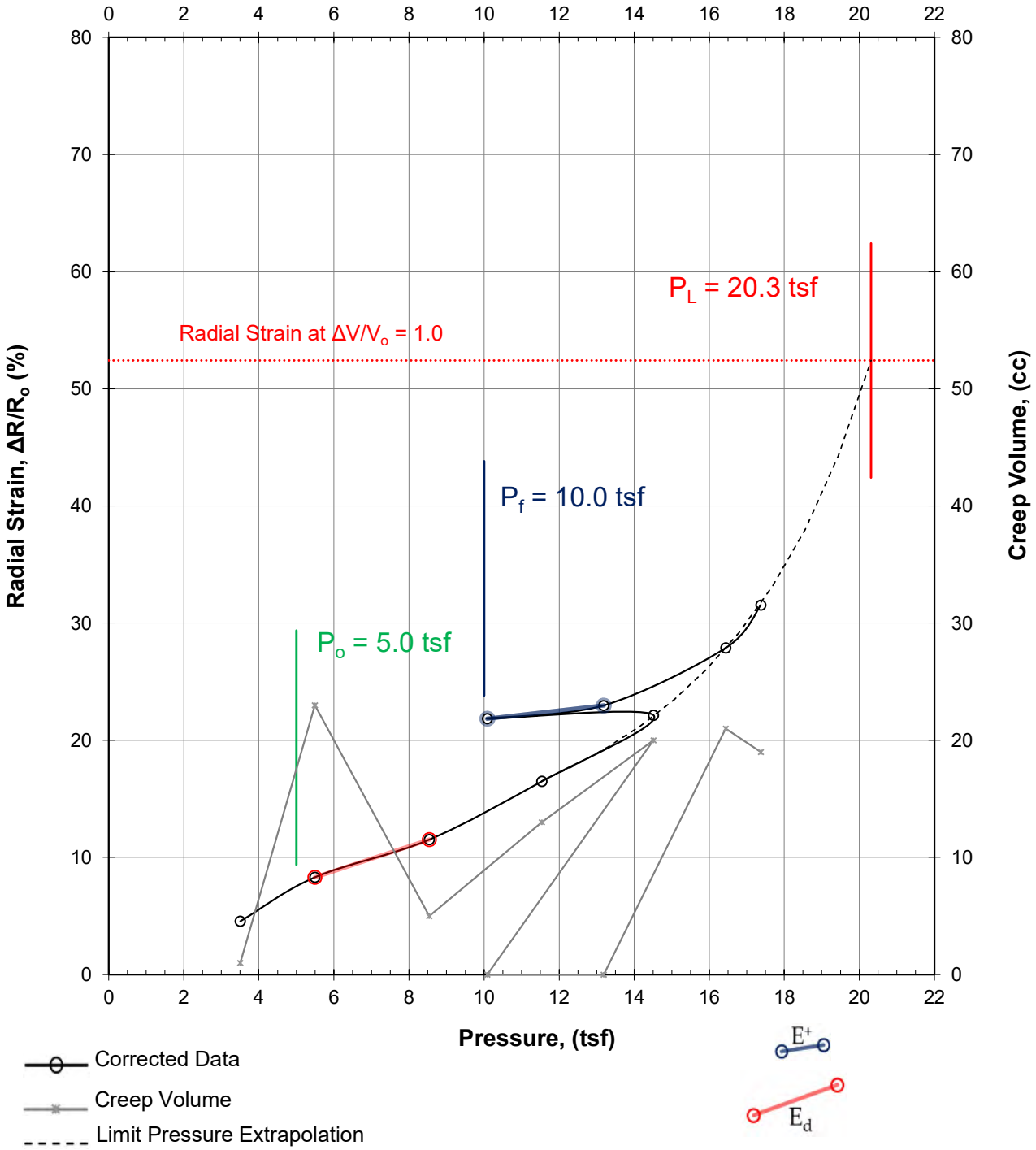
Project Name: Ryan Field Development
GEI Job #: 2200549

Boring No.: B-12
Test Depth (ft): 76.5 to 79.0



Test Results

P_o (tsf)	P_f (tsf)	P_L (tsf)	P^*_L (tsf)	E_d (tsf)	E^+ (tsf)	E_d/E^+	E_d/P^*_L	P_L/P_f
5.0	10.0	20.3	15.3	139	447	0.31	9.1	2.0

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Project Name: Ryan Field Development
GEI Job #: 2200549
Test Date: Wednesday, March 2, 2022
Boring No.: B-12
Test Depth (ft): 84.0 to 86.5
Test Zone Preparation: 2-5/8 In. Rock Bit

Probe Size: BX (58 mm)
Probe Deflated Vol. (cc): 535
Volumetric Zero Offset (cc): 37
Assumed Poisson's Ratio, ν: 0.33
Instrument Height (ft): 3
Operator: R.Rusk

No.	Field Pressure Readings (bars)	Field 30 Sec. Volume (cc)	Field 60 Sec. Volume (cc)	Creep Volume (cc)	Hydrostatic Pressure (tsf)	Membrane Resistance (tsf)	Corrected Pressure (tsf)	Corrected 30 Sec. Volume (cc)	Corrected 60 Sec. Volume, v_{60} (cc)	60 Sec. Radial Strain, $\Delta R/R_o$ (%)
1	1.0	120	141	21	2.8	0.23	3.6	82.8	103.8	9.27
2	3.0	201	212	11	2.8	0.39	5.6	163.6	174.6	15.17
3	6.0	236	237	1	2.8	0.45	8.6	198.4	199.4	17.16
4	10.0	255	255	0	2.8	0.48	12.8	217.1	217.1	18.57
5	14.0	281	283	2	2.8	0.55	16.9	242.9	244.9	20.73
6	18.0	322	330	8	2.8	0.65	21.0	283.6	291.6	24.30
7	12.5	329	329	0	2.8	0.65	15.2	291.0	291.0	24.25
8	17.0	336	336	0	2.8	0.66	19.9	297.6	297.6	24.75
9	21.0	375	389	14	2.8	0.77	24.0	336.4	350.4	28.64
10	23.0	424	441	17	2.8	0.88	25.9	385.2	402.2	32.36
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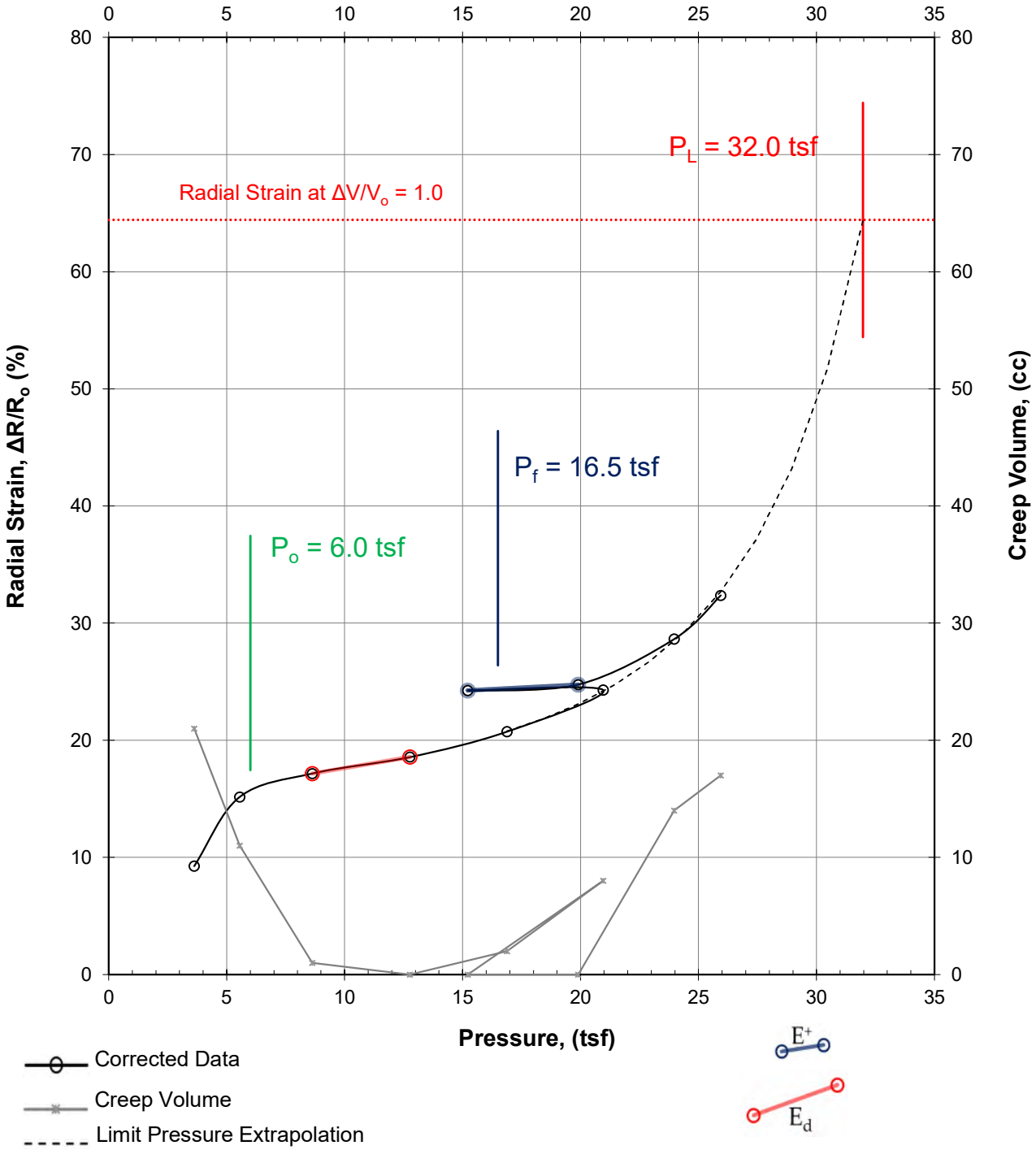
Project Name: Ryan Field Development
GEI Job #: 2200549

Boring No.: B-12
Test Depth (ft): 84.0 to 86.5



Test Results

P_o (tsf)	P_f (tsf)	P_L (tsf)	P^*_L (tsf)	E_d (tsf)	E^+ (tsf)	E_d/E^+	E_d/P^*_L	P_L/P_f
6.0	16.5	32.0	26.0	462	1547	0.30	17.8	1.9

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Project Name: Ryan Field Development
GEI Job #: 2200549
Test Date: Wednesday, March 2, 2022
Boring No.: B-12
Test Depth (ft): 89.0 to 91.5
Test Zone Preparation: 2-5/8 In. Rock Bit

Probe Size: BX (58 mm)
Probe Deflated Vol. (cc): 535
Volumetric Zero Offset (cc): 37
Assumed Poisson's Ratio, ν: 0.33
Instrument Height (ft): 3
Operator: R.Rusk

No.	Field Pressure Readings (bars)	Field 30 Sec. Volume (cc)	Field 60 Sec. Volume (cc)	Creep Volume (cc)	Hydrostatic Pressure (tsf)	Membrane Resistance (tsf)	Corrected Pressure (tsf)	Corrected 30 Sec. Volume (cc)	Corrected 60 Sec. Volume, v_{60} (cc)	60 Sec. Radial Strain, $\Delta R/R_o$ (%)
1	1.0	50	65	15	3.0	0.06	3.9	12.7	27.7	2.56
2	3.0	134	160	26	3.0	0.28	5.8	96.6	122.6	10.87
3	6.0	190	190	0	3.0	0.34	8.9	152.4	152.4	13.35
4	10.0	207	207	0	3.0	0.38	13.0	169.1	169.1	14.72
5	14.0	226	226	0	3.0	0.42	17.2	187.8	187.8	16.24
6	18.0	250	251	1	3.0	0.48	21.3	211.6	212.6	18.21
7	22.0	277	280	3	3.0	0.54	25.4	238.3	241.3	20.46
8	25.0	300	304	4	3.0	0.59	28.5	261.1	265.1	22.29
9	19.3	296	296	0	3.0	0.57	22.5	257.5	257.5	21.71
10	24.0	302	302	0	3.0	0.59	27.4	263.1	263.1	22.14
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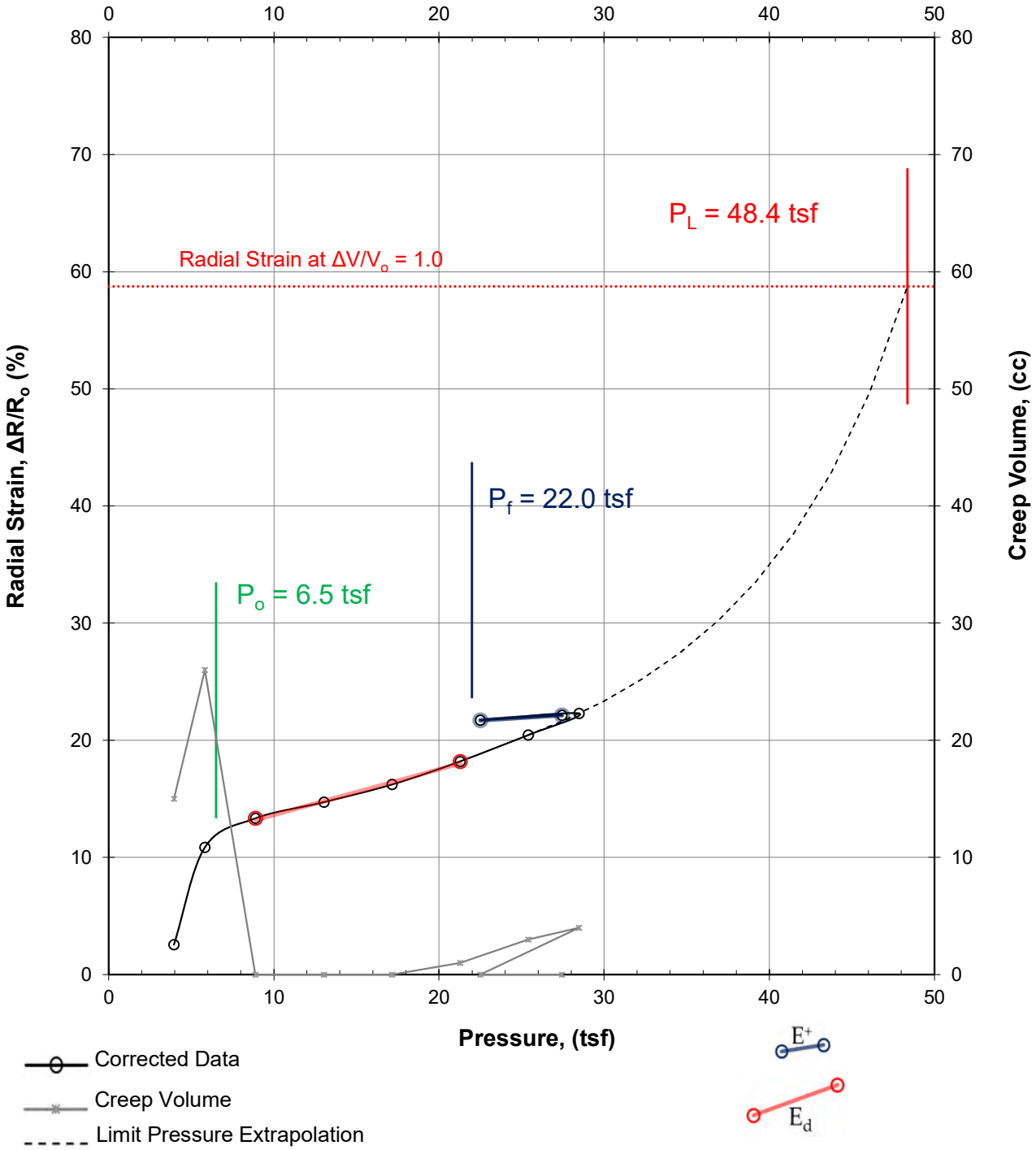
Project Name: Ryan Field Development
GEI Job #: 2200549

Boring No.: B-12
Test Depth (ft): 89.0 to 91.5



Test Results

P_o (tsf)	P_f (tsf)	P_L (tsf)	P^*_L (tsf)	E_d (tsf)	E^+ (tsf)	E_d/E^+	E_d/P^*_L	P_L/P_f
6.5	22.0	48.4	41.9	395	1848	0.21	9.4	2.2

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Project Name: Ryan Field Development
GEI Job #: 2200549
Test Date: Thursday, March 17, 2022
Boring No.: B-18
Test Depth (ft): 9.0 to 11.5
Test Zone Preparation: 2-5/8 In. Rock Bit

Probe Size: BX (58 mm)
Probe Deflated Vol. (cc): 535
Volumetric Zero Offset (cc): 27
Assumed Poisson's Ratio, ν: 0.33
Instrument Height (ft): 3
Operator: R.Rusk

No.	Field Pressure Readings (bars)	Field 30 Sec. Volume (cc)	Field 60 Sec. Volume (cc)	Creep Volume (cc)	Hydrostatic Pressure (tsf)	Membrane Resistance (tsf)	Corrected Pressure (tsf)	Corrected 30 Sec. Volume (cc)	Corrected 60 Sec. Volume, v_{60} (cc)	60 Sec. Radial Strain, $\Delta R/R_o$ (%)
1	0.0	52	52	0	0.4	0.06	0.4	25.0	25.0	2.31
2	0.8	106	127	21	0.4	0.22	1.0	78.9	99.9	8.94
3	1.5	165	173	8	0.4	0.33	1.7	137.9	145.9	12.81
4	2.5	195	198	3	0.4	0.38	2.7	167.8	170.8	14.86
5	3.5	227	234	7	0.4	0.46	3.6	199.8	206.8	17.75
6	4.5	259	270	11	0.4	0.54	4.6	231.7	242.7	20.57
7	5.5	299	312	13	0.4	0.63	5.5	271.6	284.6	23.77
8	4.0	318	318	0	0.4	0.64	4.0	290.7	290.7	24.23
9	5.0	332	332	0	0.4	0.67	5.0	304.7	304.7	25.28
10	6.0	358	368	10	0.4	0.75	5.9	330.6	340.6	27.93
11	7.0	397	412	15	0.4	0.84	6.9	369.5	384.5	31.10
12	7.5	440	456	16	0.4	0.94	7.3	412.5	428.5	34.20
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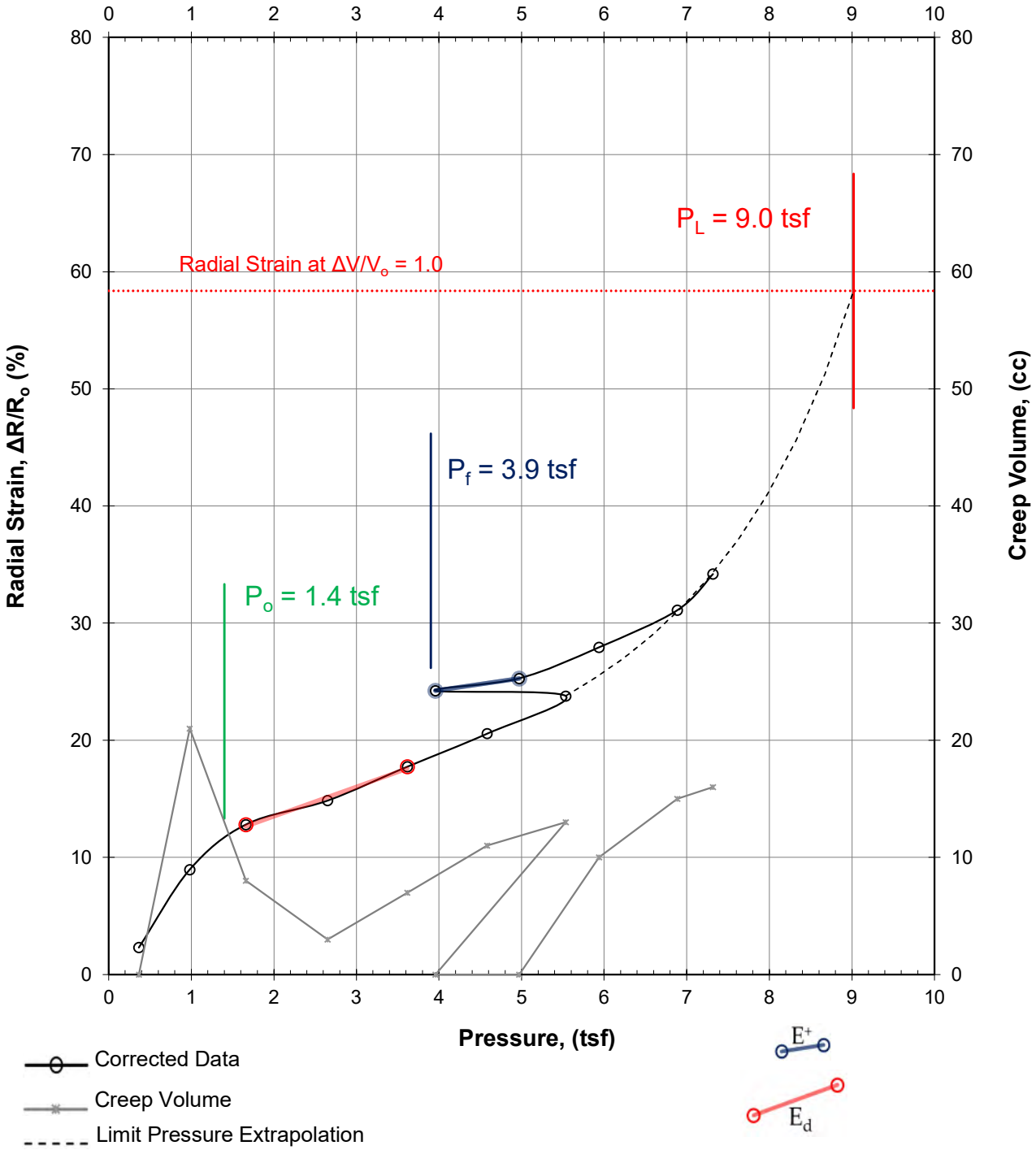
Project Name: Ryan Field Development
GEI Job #: 2200549

Boring No.: B-18
Test Depth (ft): 9.0 to 11.5



Test Results

P_o (tsf)	P_f (tsf)	P_L (tsf)	P^*_L (tsf)	E_d (tsf)	E^+ (tsf)	E_d/E^+	E_d/P^*_L	P_L/P_f
1.4	3.9	9.0	7.6	61	161	0.38	8.0	2.3

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Project Name: Ryan Field Development
GEI Job #: 2200549
Test Date: Thursday, March 17, 2022
Boring No.: B-20A
Test Depth (ft): 9.0 to 11.5
Test Zone Preparation: 2-5/8 In. Rock Bit

Probe Size: BX (58 mm)
Probe Deflated Vol. (cc): 535
Volumetric Zero Offset (cc): 27
Assumed Poisson's Ratio, ν: 0.33
Instrument Height (ft): 3
Operator: R.Rusk

No.	Field Pressure Readings (bars)	Field 30 Sec. Volume (cc)	Field 60 Sec. Volume (cc)	Creep Volume (cc)	Hydrostatic Pressure (tsf)	Membrane Resistance (tsf)	Corrected Pressure (tsf)	Corrected 30 Sec. Volume (cc)	Corrected 60 Sec. Volume, v_{60} (cc)	60 Sec. Radial Strain, $\Delta R/R_o$ (%)
1	0.3	42	42	0	0.4	0.03	0.6	15.0	15.0	1.39
2	0.8	53	56	3	0.4	0.07	1.1	25.9	28.9	2.67
3	1.5	80	90	10	0.4	0.14	1.8	52.9	62.9	5.71
4	2.3	117	120	3	0.4	0.21	2.6	89.8	92.8	8.33
5	3.0	142	145	3	0.4	0.26	3.3	114.8	117.8	10.46
6	3.8	176	183	7	0.4	0.35	4.0	148.7	155.7	13.63
7	4.5	210	230	20	0.4	0.45	4.7	182.7	202.7	17.42
8	3.3	230	230	0	0.4	0.45	3.4	202.8	202.8	17.43
9	4.0	248	248	0	0.4	0.49	4.1	220.7	220.7	18.85
10	5.5	300	320	20	0.4	0.65	5.5	272.6	292.6	24.38
11	6.4	366	388	22	0.4	0.79	6.3	338.6	360.6	29.38
12	6.8	430	449	19	0.4	0.92	6.5	402.6	421.6	33.71
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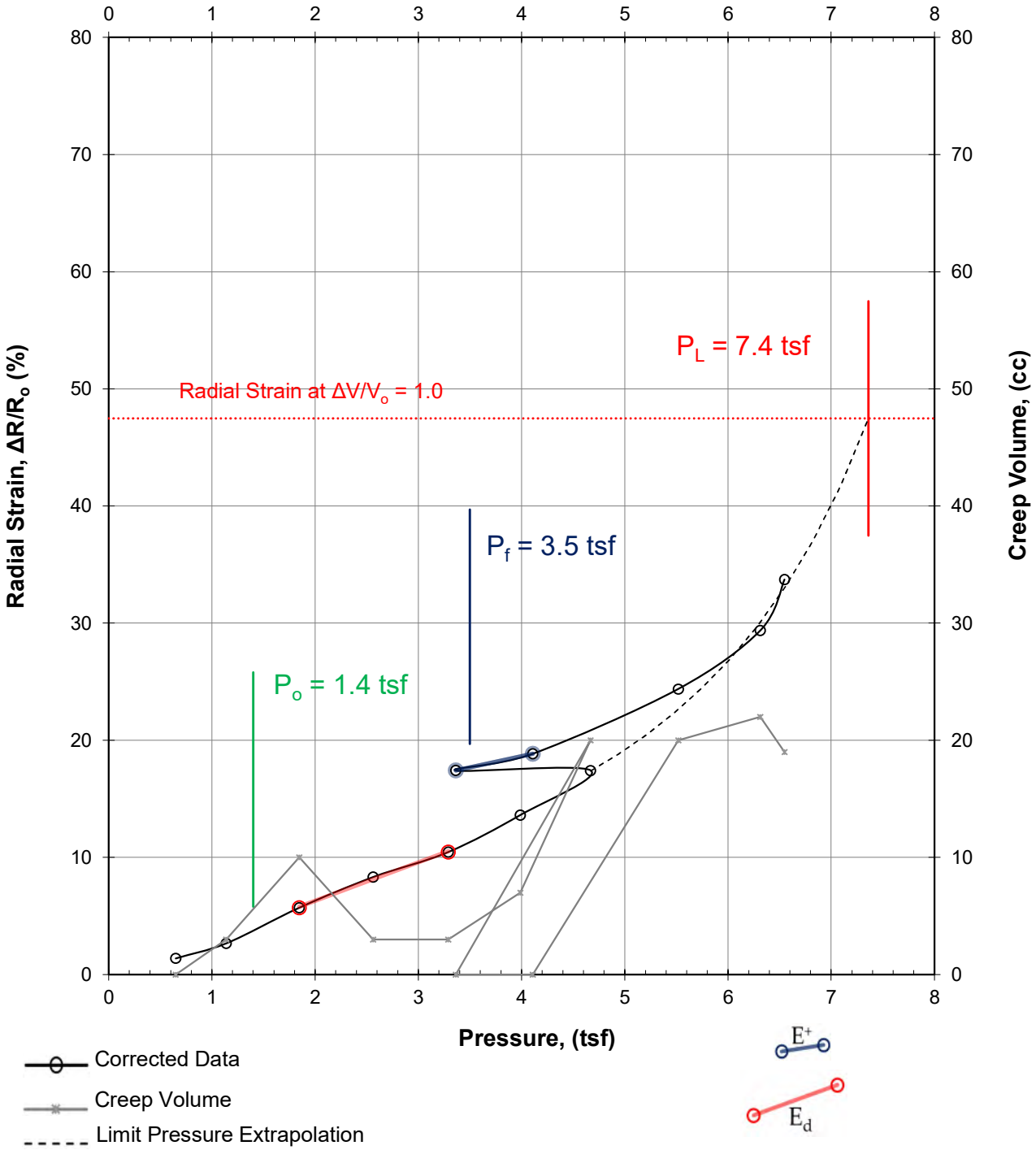
Project Name: Ryan Field Development
GEI Job #: 2200549

Boring No.: B-20A
Test Depth (ft): 9.0 to 11.5



Test Results

P_o (tsf)	P_f (tsf)	P_L (tsf)	P^*_L (tsf)	E_d (tsf)	E^+ (tsf)	E_d/E^+	E_d/P^*_L	P_L/P_f
1.4	3.5	7.4	6.0	44	82	0.53	7.4	2.1

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Project Name: Ryan Field Development
GEI Job #: 2200549
Test Date: Thursday, March 17, 2022
Boring No.: B-20A
Test Depth (ft): 14.5 to 17.0
Test Zone Preparation: 2-5/8 In. Rock Bit

Probe Size: BX (58 mm)
Probe Deflated Vol. (cc): 535
Volumetric Zero Offset (cc): 27
Assumed Poisson's Ratio, ν: 0.33
Instrument Height (ft): 3
Operator: R.Rusk

No.	Field Pressure Readings (bars)	Field 30 Sec. Volume (cc)	Field 60 Sec. Volume (cc)	Creep Volume (cc)	Hydrostatic Pressure (tsf)	Membrane Resistance (tsf)	Corrected Pressure (tsf)	Corrected 30 Sec. Volume (cc)	Corrected 60 Sec. Volume, v_{60} (cc)	60 Sec. Radial Strain, $\Delta R/R_o$ (%)
1	0.5	45	45	0	0.6	0.04	1.1	17.9	17.9	1.66
2	1.0	120	150	30	0.6	0.28	1.4	92.9	122.9	10.89
3	1.3	193	212	19	0.6	0.41	1.5	165.9	184.9	16.00
4	1.5	231	237	6	0.6	0.47	1.7	203.9	209.9	18.00
5	1.8	253	257	4	0.6	0.51	1.9	225.9	229.9	19.57
6	2.0	271	277	6	0.6	0.55	2.1	243.9	249.9	21.12
7	2.3	292	299	7	0.6	0.60	2.3	264.8	271.8	22.81
8	3.0	312	317	5	0.6	0.64	3.1	284.8	289.8	24.16
9	1.5	310	310	0	0.6	0.63	1.5	282.9	282.9	23.64
10	2.5	330	330	0	0.6	0.67	2.5	302.8	302.8	25.14
11	3.8	351	364	13	0.6	0.74	3.8	323.7	336.7	27.65
12	4.5	389	400	11	0.6	0.82	4.5	361.7	372.7	30.25
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GEI Consultants
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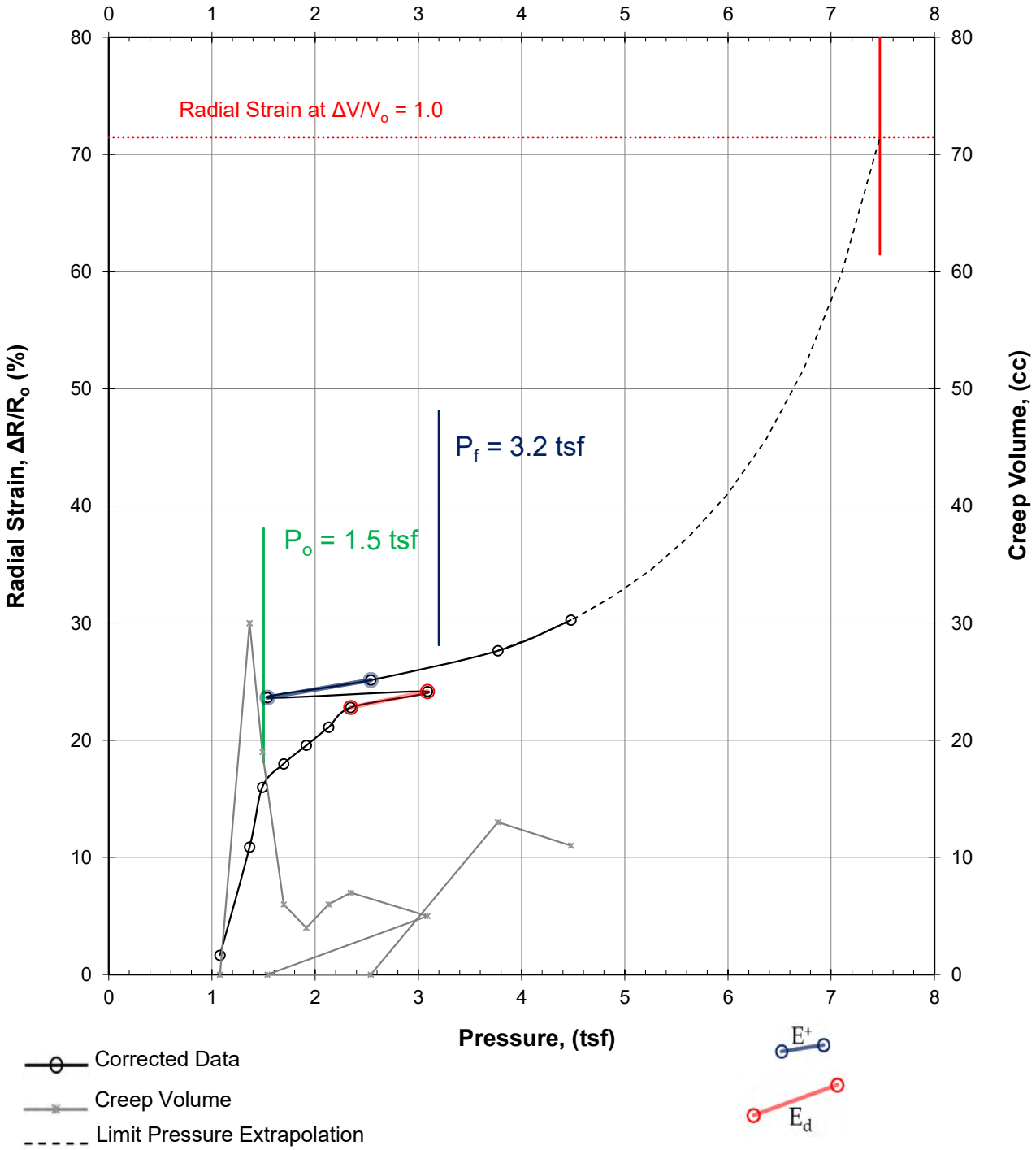
Project Name: Ryan Field Development
GEI Job #: 2200549

Boring No.: B-20A
Test Depth (ft): 14.5 to 17.0



Test Results

P_o (tsf)	P_f (tsf)	P_L (tsf)	P^*_L (tsf)	E_d (tsf)	E^+ (tsf)	E_d/E^+	E_d/P^*_L	P_L/P_f
1.5	3.2	7.5	6.0	90	111	0.81	15.1	2.3

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Project Name: Ryan Field Development
GEI Job #: 2200549
Test Date: Thursday, March 17, 2022
Boring No.: B-20A
Test Depth (ft): 24.0 to 26.5
Test Zone Preparation: 2-5/8 In. Rock Bit

Probe Size: BX (58 mm)
Probe Deflated Vol. (cc): 535
Volumetric Zero Offset (cc): 27
Assumed Poisson's Ratio, ν: 0.33
Instrument Height (ft): 3
Operator: R.Rusk

No.	Field Pressure Readings (bars)	Field 30 Sec. Volume (cc)	Field 60 Sec. Volume (cc)	Creep Volume (cc)	Hydrostatic Pressure (tsf)	Membrane Resistance (tsf)	Corrected Pressure (tsf)	Corrected 30 Sec. Volume (cc)	Corrected 60 Sec. Volume, v_{60} (cc)	60 Sec. Radial Strain, $\Delta R/R_o$ (%)
1	0.3	86	100	14	0.9	0.16	1.0	58.9	72.9	6.60
2	0.5	114	117	3	0.9	0.20	1.2	86.9	89.9	8.08
3	0.8	126	129	3	0.9	0.23	1.5	98.9	101.9	9.11
4	1.0	138	142	4	0.9	0.26	1.7	110.9	114.9	10.22
5	1.3	155	162	7	0.9	0.30	1.9	127.9	134.9	11.90
6	1.5	172	177	5	0.9	0.34	2.1	144.9	149.9	13.14
7	1.8	186	186	0	0.9	0.36	2.4	158.8	158.8	13.88
8	2.3	206	211	5	0.9	0.41	2.8	178.8	183.8	15.91
9	2.8	237	247	10	0.9	0.49	3.3	209.8	219.8	18.78
10	1.8	241	241	0	0.9	0.48	2.3	213.8	213.8	18.31
11	2.3	248	248	0	0.9	0.49	2.8	220.8	220.8	18.86
12	3.3	278	293	15	0.9	0.59	3.7	250.7	265.7	22.34
13	3.8	316	330	14	0.9	0.67	4.1	288.7	302.7	25.13
14	4.3	363	386	23	0.9	0.79	4.5	335.7	358.7	29.25
15	5.0	444	479	35	0.9	0.99	5.1	416.7	451.7	35.80
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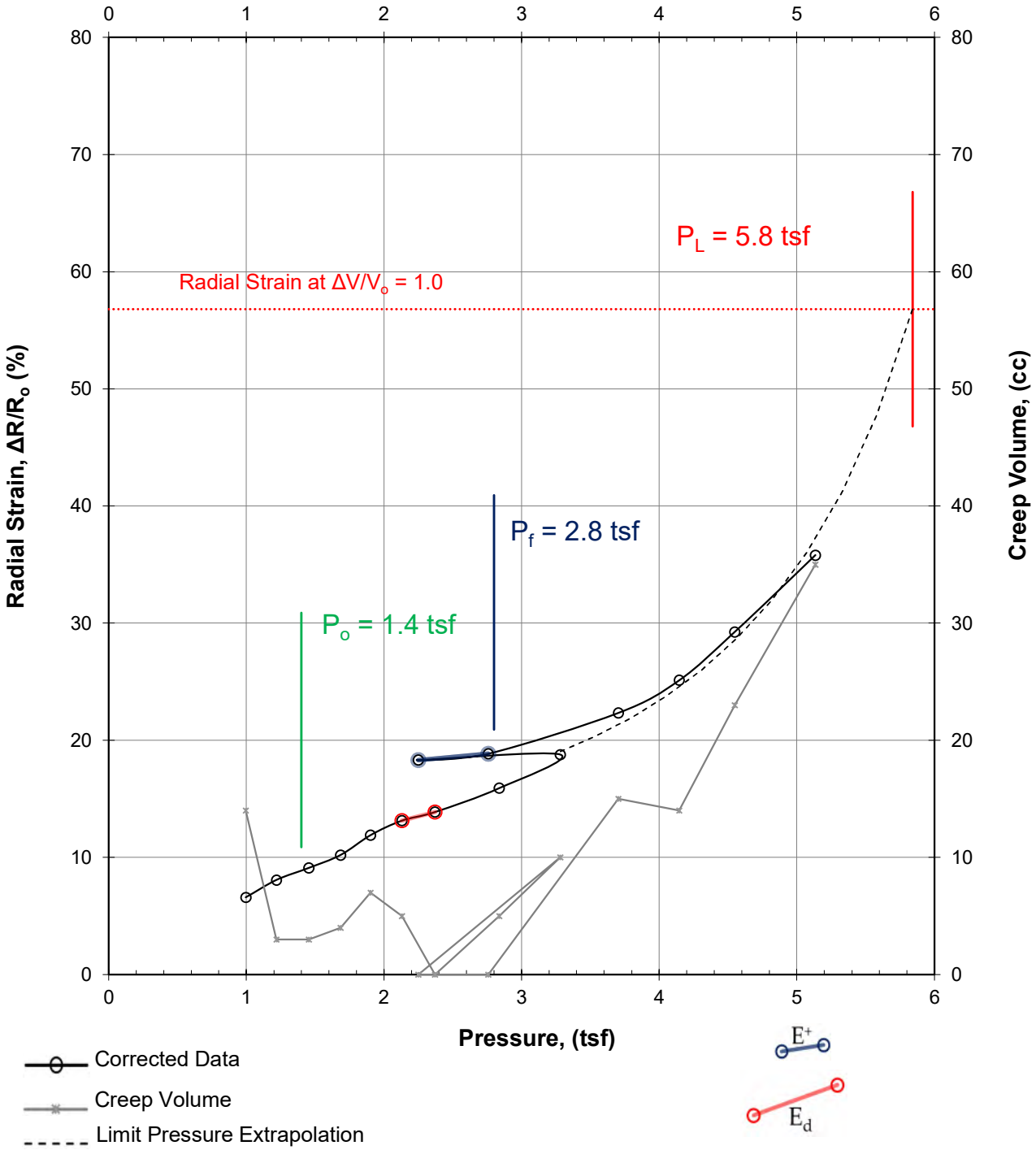
Project Name: Ryan Field Development
GEI Job #: 2200549

Boring No.: B-20A
Test Depth (ft): 24.0 to 26.5



Test Results

P_o (tsf)	P_f (tsf)	P_L (tsf)	P^*_L (tsf)	E_d (tsf)	E^+ (tsf)	E_d/E^+	E_d/P^*_L	P_L/P_f
1.4	2.8	5.8	4.4	49	146	0.34	11.1	2.1

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Project Name: Ryan Field Development
GEI Job #: 2200549
Test Date: Thursday, March 3, 2022
Boring No.: B-21
Test Depth (ft): 76.5 to 79.0
Test Zone Preparation: 2-5/8 In. Rock Bit

Probe Size: BX (58 mm)
Probe Deflated Vol. (cc): 535
Volumetric Zero Offset (cc): 27
Assumed Poisson's Ratio, ν: 0.33
Instrument Height (ft): 3
Operator: R.Rusk

No.	Field Pressure Readings (bars)	Field 30 Sec. Volume (cc)	Field 60 Sec. Volume (cc)	Creep Volume (cc)	Hydrostatic Pressure (tsf)	Membrane Resistance (tsf)	Corrected Pressure (tsf)	Corrected 30 Sec. Volume (cc)	Corrected 60 Sec. Volume, v_{60} (cc)	60 Sec. Radial Strain, $\Delta R/R_o$ (%)
1	1.0	80	95	15	2.6	0.15	3.5	52.8	67.8	6.14
2	3.0	172	197	25	2.6	0.38	5.3	144.6	169.6	14.76
3	6.0	242	248	6	2.6	0.49	8.3	214.4	220.4	18.83
4	9.0	285	290	5	2.6	0.58	11.4	257.2	262.2	22.07
5	12.0	330	338	8	2.6	0.69	14.4	302.0	310.0	25.68
6	15.0	382	398	16	2.6	0.81	17.4	353.8	369.8	30.05
7	9.0	386	386	0	2.6	0.79	11.2	358.2	358.2	29.21
8	14.0	404	404	0	2.6	0.83	16.4	375.9	375.9	30.48
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GEI Consultants
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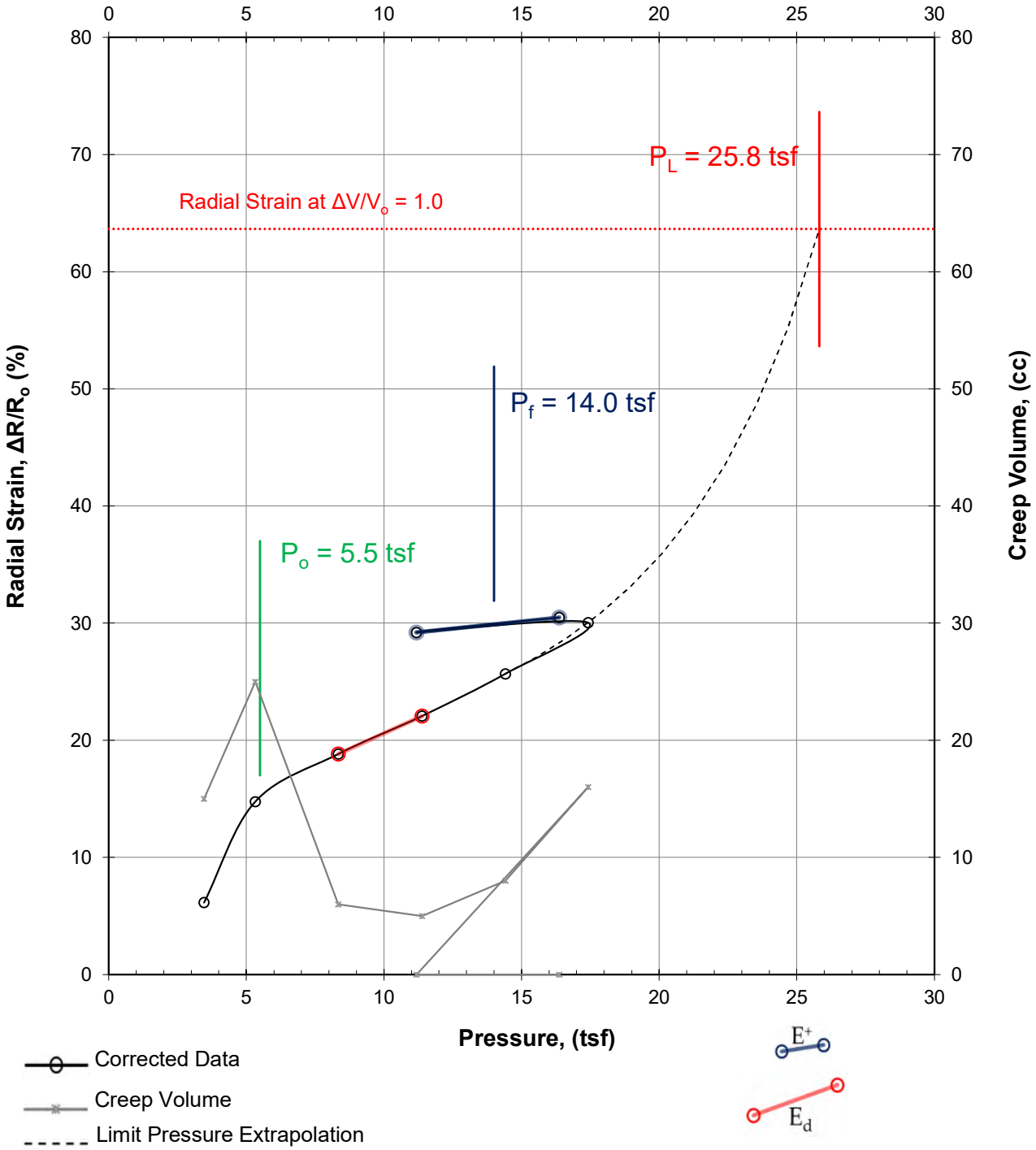
Project Name: Ryan Field Development
GEI Job #: 2200549

Boring No.: B-21
Test Depth (ft): 76.5 to 79.0



Test Results

P_o (tsf)	P_f (tsf)	P_L (tsf)	P^*_L (tsf)	E_d (tsf)	E^+ (tsf)	E_d/E^+	E_d/P^*_L	P_L/P_f
5.5	14.0	25.8	20.3	150	705	0.21	7.4	1.8

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Project Name: Ryan Field Development
GEI Job #: 2200549
Test Date: Thursday, March 3, 2022
Boring No.: B-21
Test Depth (ft): 81.5 to 84.0
Test Zone Preparation: 2-5/8 In. Rock Bit

Probe Size: BX (58 mm)
Probe Deflated Vol. (cc): 535
Volumetric Zero Offset (cc): 27
Assumed Poisson's Ratio, ν: 0.33
Instrument Height (ft): 3
Operator: R.Rusk

No.	Field Pressure Readings (bars)	Field 30 Sec. Volume (cc)	Field 60 Sec. Volume (cc)	Creep Volume (cc)	Hydrostatic Pressure (tsf)	Membrane Resistance (tsf)	Corrected Pressure (tsf)	Corrected 30 Sec. Volume (cc)	Corrected 60 Sec. Volume, v_{60} (cc)	60 Sec. Radial Strain, $\Delta R/R_o$ (%)
1	1.0	96	102	6	2.7	0.17	3.6	68.8	74.8	6.76
2	3.0	132	137	5	2.7	0.25	5.6	104.6	109.6	9.77
3	5.0	175	182	7	2.7	0.35	7.6	147.5	154.5	13.52
4	7.0	220	227	7	2.7	0.45	9.6	192.3	199.3	17.16
5	9.0	272	286	14	2.7	0.57	11.6	244.2	258.2	21.76
6	11.0	334	356	22	2.7	0.73	13.5	306.1	328.1	27.01
7	9.0	348	348	0	2.7	0.71	11.4	320.2	320.2	26.43
8	10.0	374	374	0	2.7	0.76	12.4	346.2	346.2	28.34
9	Test zone disturbed by gravel. No test interpretation.									
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GEI Consultants
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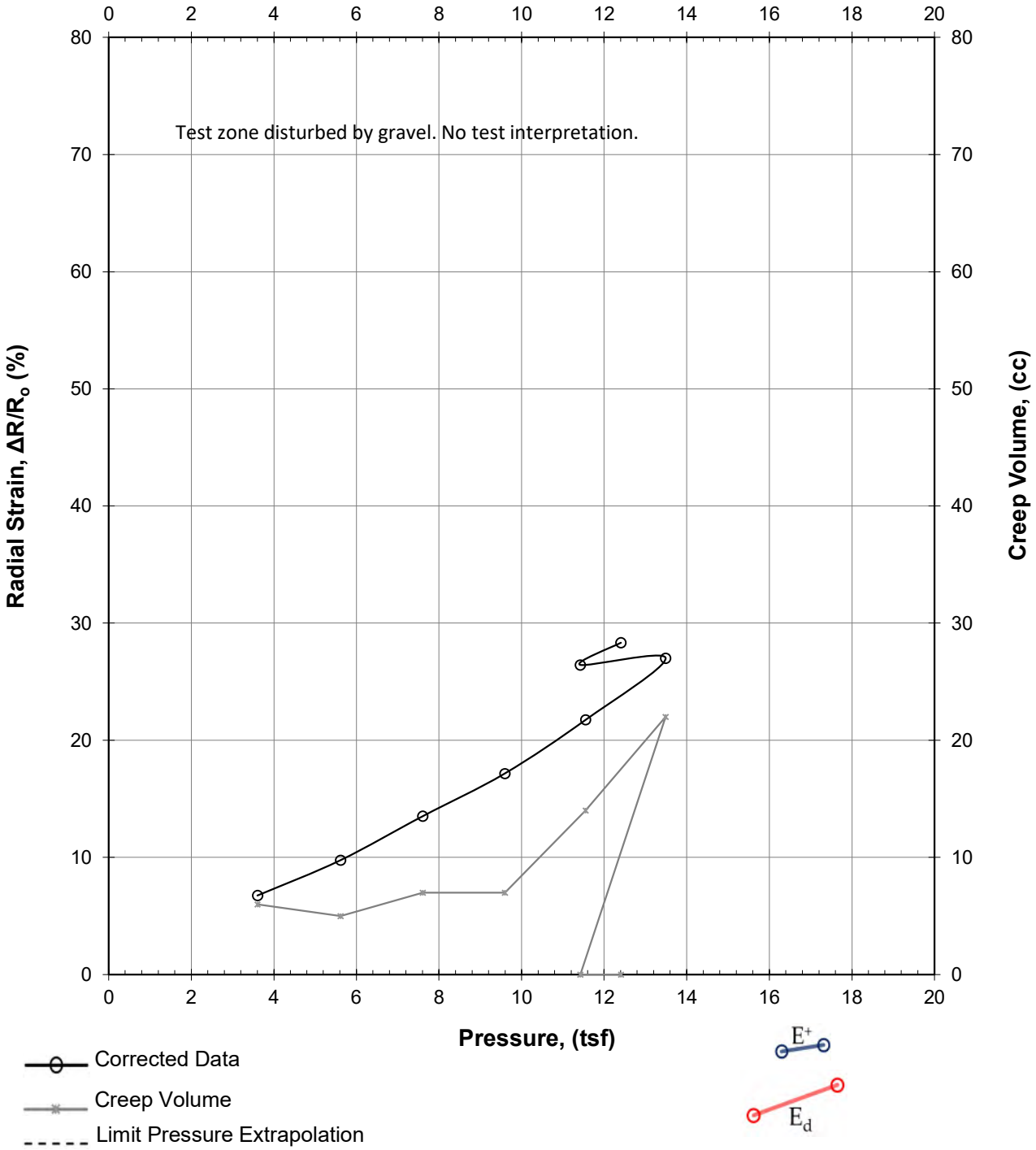
Project Name: Ryan Field Development
GEI Job #: 2200549

Boring No.: B-21
Test Depth (ft): 81.5 to 84.0



Test Results

P_o (tsf)	P_f (tsf)	P_L (tsf)	P^*_L (tsf)	E_d (tsf)	E^+ (tsf)	E_d/E^+	E_d/P^*_L	P_L/P_f
-	-	-	-	-	-	-	-	-

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Project Name: Ryan Field Development
GEI Job #: 2200549
Test Date: Thursday, March 3, 2022
Boring No.: B-21
Test Depth (ft): 87.0 to 89.5
Test Zone Preparation: 2-5/8 In. Rock Bit

Probe Size: BX (58 mm)
Probe Deflated Vol. (cc): 535
Volumetric Zero Offset (cc): 27
Assumed Poisson's Ratio, ν: 0.33
Instrument Height (ft): 3
Operator: R.Rusk

No.	Field Pressure Readings (bars)	Field 30 Sec. Volume (cc)	Field 60 Sec. Volume (cc)	Creep Volume (cc)	Hydrostatic Pressure (tsf)	Membrane Resistance (tsf)	Corrected Pressure (tsf)	Corrected 30 Sec. Volume (cc)	Corrected 60 Sec. Volume, v_{60} (cc)	60 Sec. Radial Strain, $\Delta R/R_o$ (%)
1	1.0	82	109	27	2.9	0.18	3.8	54.7	81.7	7.37
2	3.0	173	187	14	2.9	0.36	5.7	145.6	159.6	13.94
3	6.0	206	206	0	2.9	0.40	8.8	178.4	178.4	15.48
4	10.0	215	215	0	2.9	0.42	12.9	187.1	187.1	16.18
5	15.0	223	223	0	2.9	0.44	18.1	194.8	194.8	16.79
6	20.0	232	232	0	2.9	0.46	23.3	203.4	203.4	17.48
7	25.0	241	241	0	2.9	0.48	28.5	212.1	212.1	18.17
8	30.0	251	251	0	2.9	0.50	33.7	221.7	221.7	18.93
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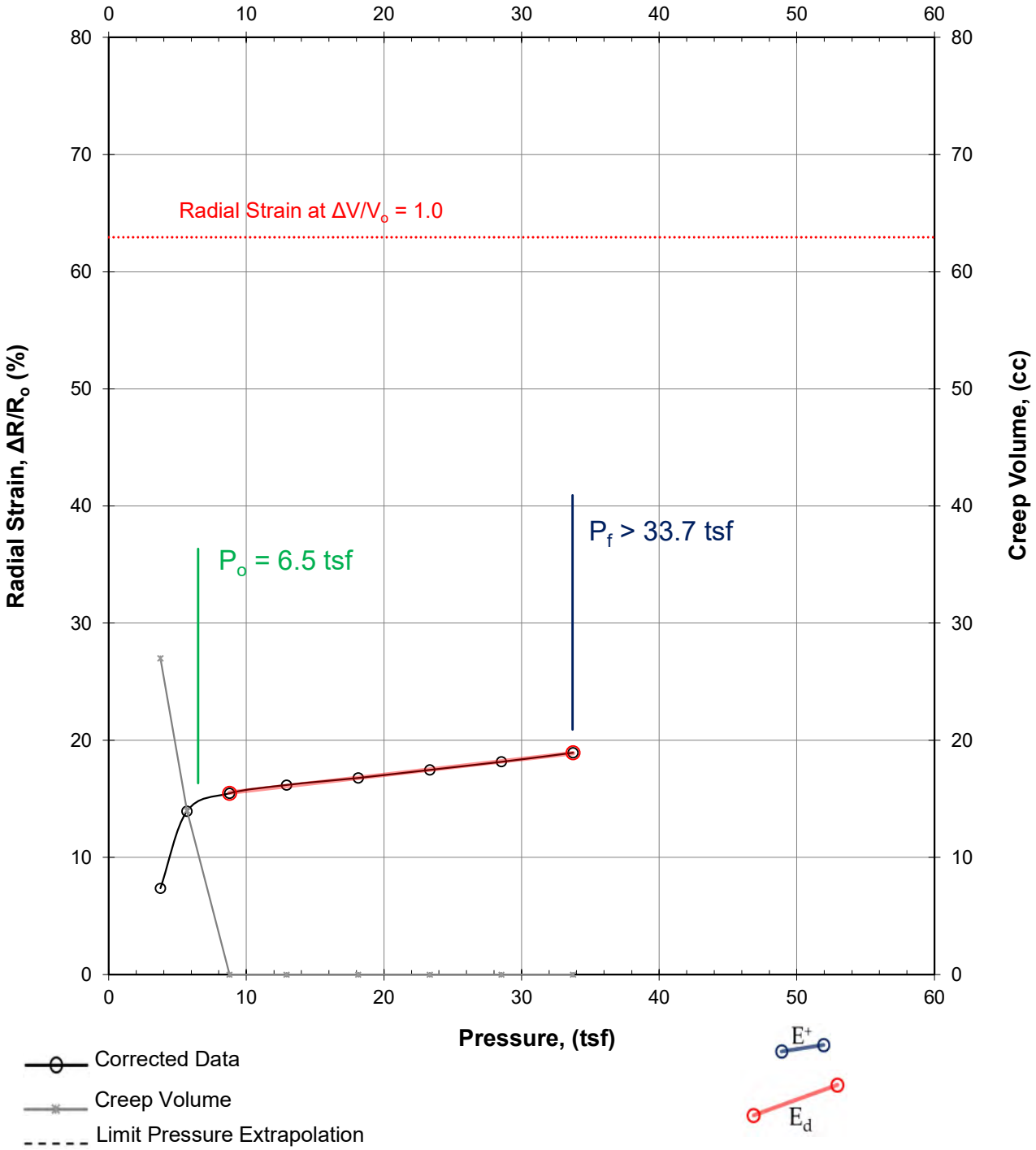
Project Name: Ryan Field Development
GEI Job #: 2200549

Boring No.: B-21
Test Depth (ft): 87.0 to 89.5



Test Results

P_o (tsf)	P_f (tsf)	P_L (tsf)	P^*_L (tsf)	E_d (tsf)	E^+ (tsf)	E_d/E^+	E_d/P^*_L	P_L/P_f
6.5	>33.7	-	54.6	1154	-	-	-	-

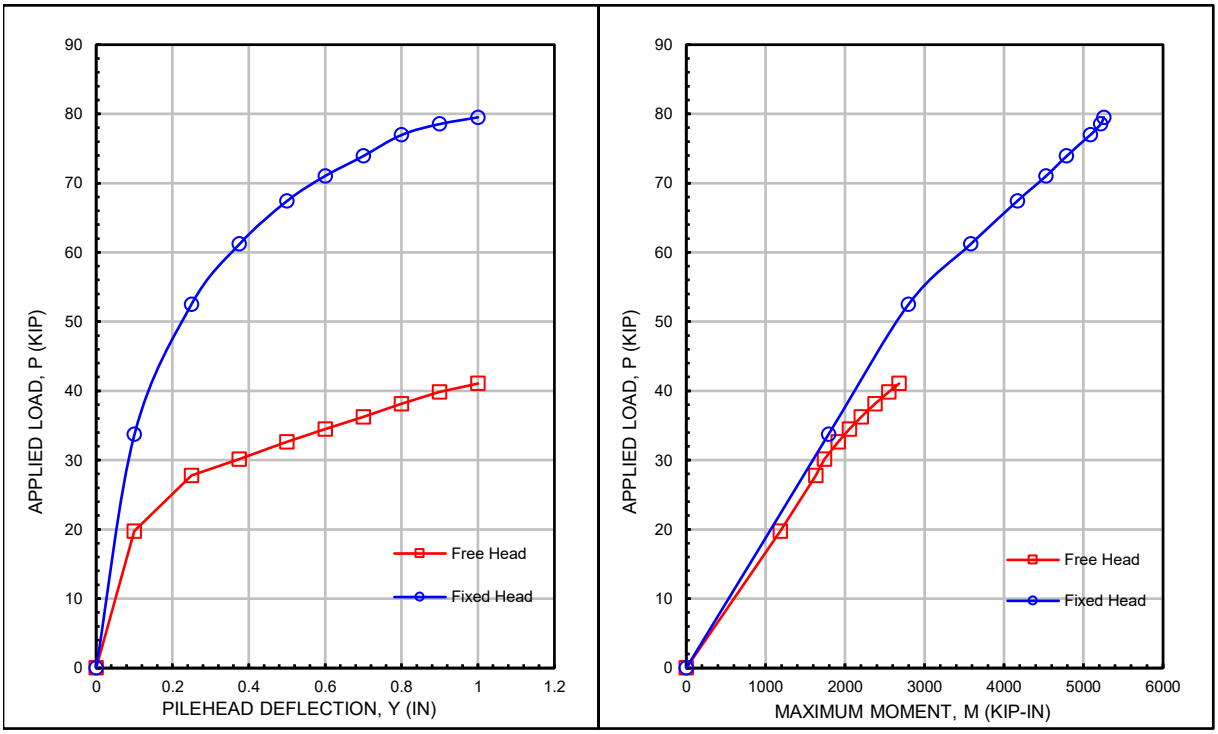
Appendix B

Lateral Capacity Analyses

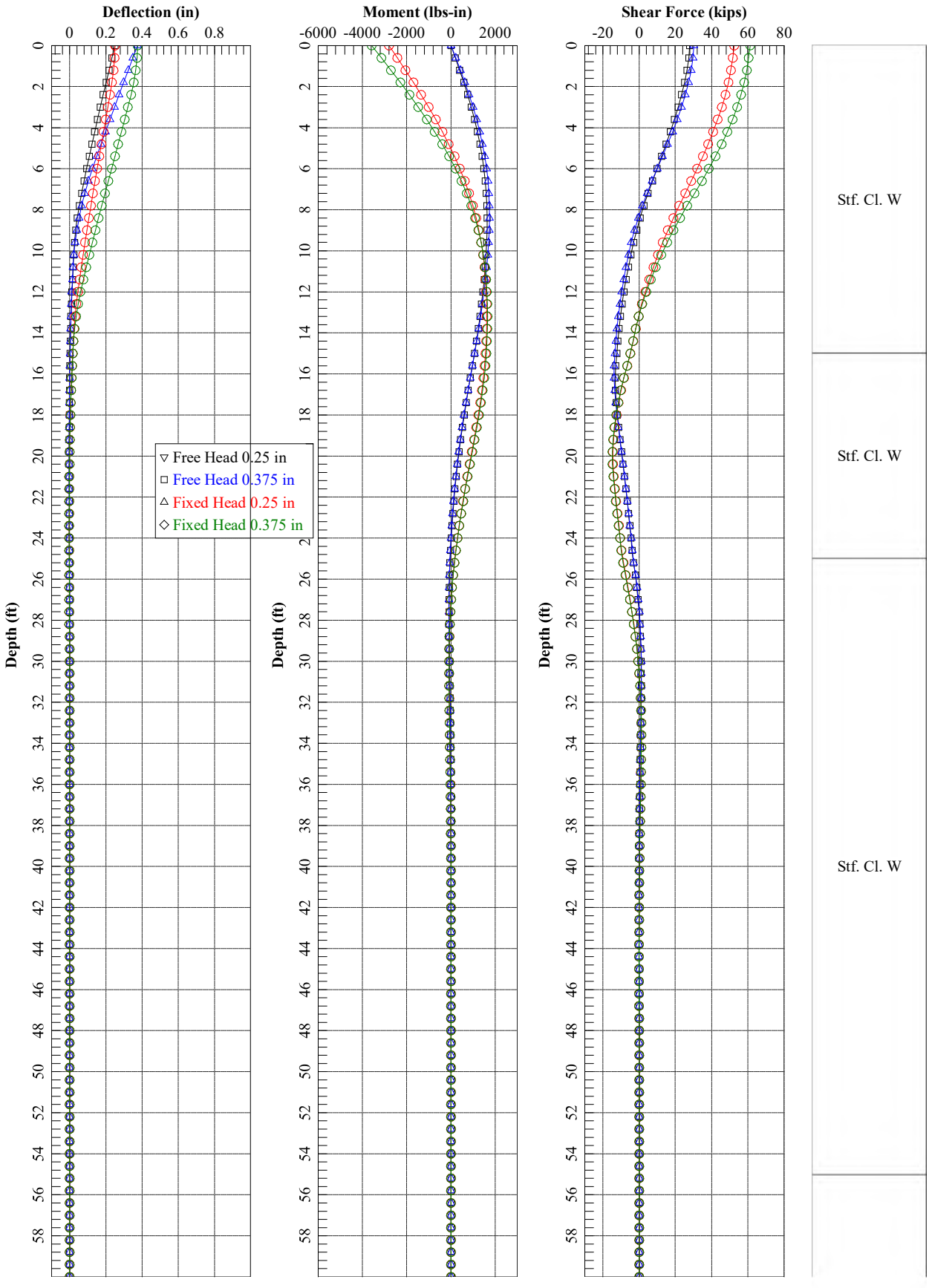
Seismic Design Category

ORIGINATED BY: AF 5/18/2022
CHECKED BY: DSD 5/18/2022

LATERAL LOAD ANALYSIS - LPILE
(30-in Diameter)



	FREE HEAD		FIXED HEAD					
DEFLECTION	SHEAR	MAX MOM	SHEAR	MAX MOM	SHEAR	MAX MOM	SHEAR	MAX MOM
0	0	0	0	0				
0.1	20	1186	34	1793				
0.25	28	1634	53	2798				
0.375	30	1741	61	3581				
0.5	33	1913	67	4168				
0.6	34	2056	71	4530				
0.7	36	2205	74	4789				
0.8	38	2380	77	5087				
0.9	40	2552	79	5217				
1	41	2680	80	5257				


Deflection (in)
0
0.2
0.4
0.6
0.8
Moment (lbs-in)
-6000
-4000
-2000
0
2000
Shear Force (kips)
-20
0
20
40
60
80
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
50
52
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58
Free Head 0.25 in
Free Head 0.375 in
Fixed Head 0.25 in
Fixed Head 0.375 in
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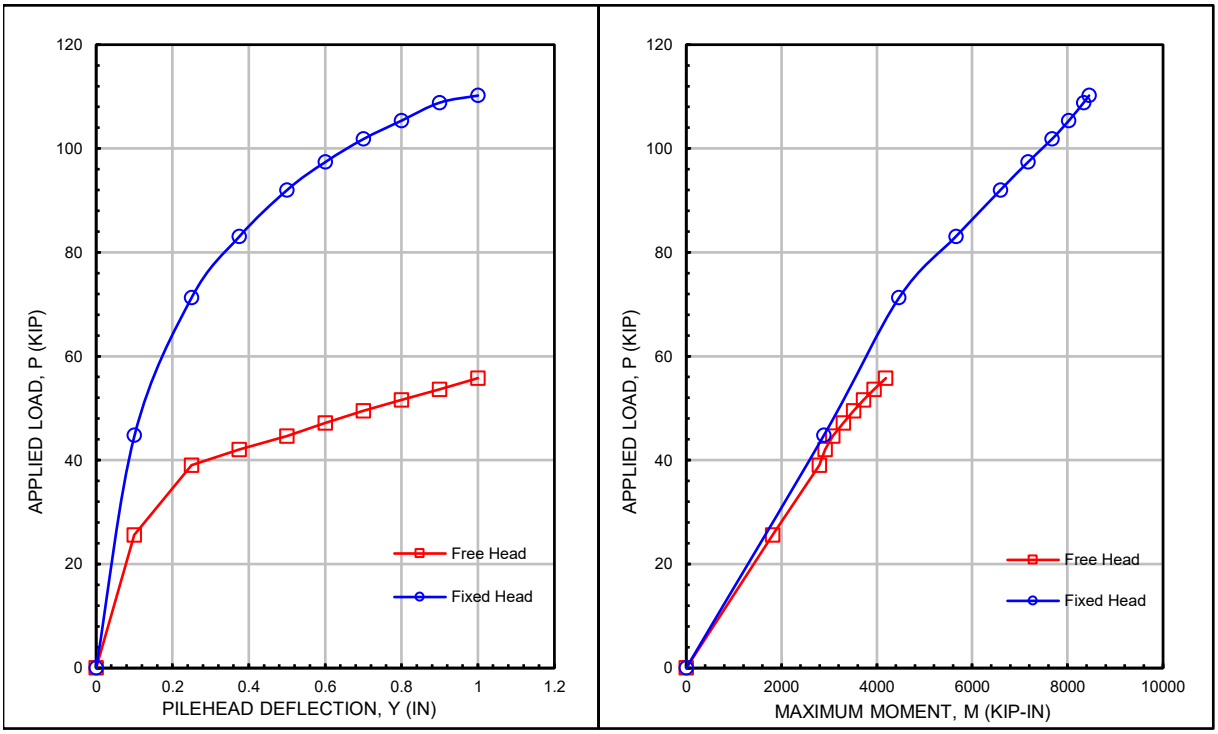
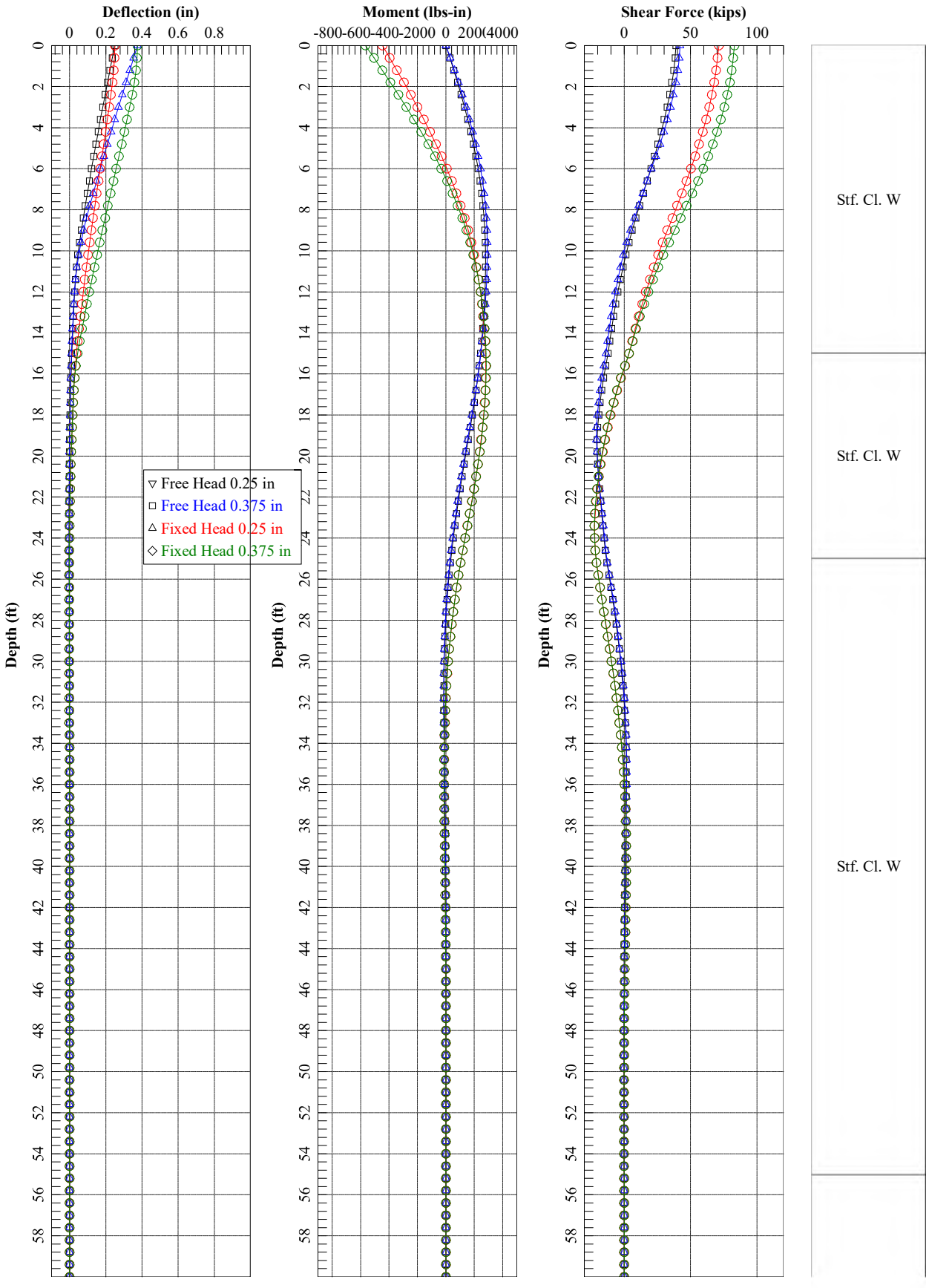
ORIGINATED BY: AF 5/18/2022
CHECKED BY: DSD 5/18/2022

LATERAL LOAD ANALYSIS - LPILE
(36-in Diameter)

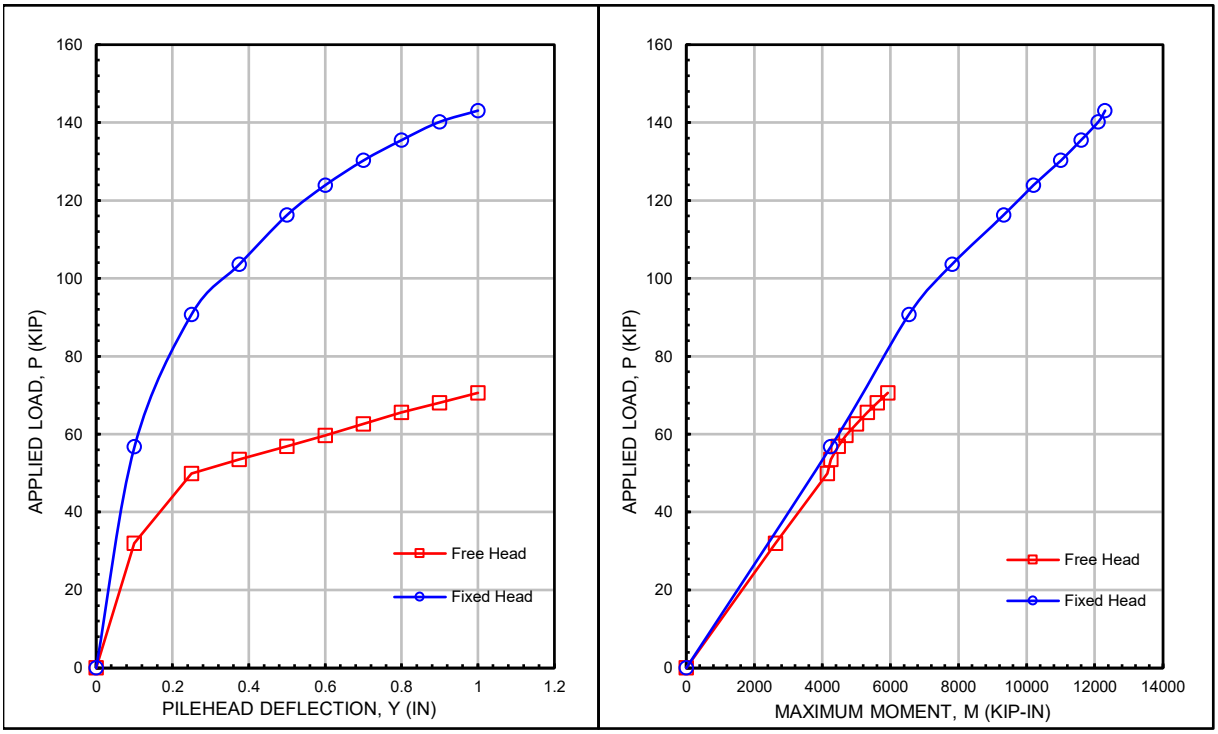


	FREE HEAD		FIXED HEAD					
DEFLECTION	SHEAR	MAX MOM	SHEAR	MAX MOM	SHEAR	MAX MOM	SHEAR	MAX MOM
0	0	0	0	0				
0.1	26	1815	45	2885				
0.25	39	2797	71	4461				
0.375	42	2915	83	5659				
0.5	45	3074	92	6593				
0.6	47	3298	97	7171				
0.7	49	3515	102	7675				
0.8	52	3724	105	8025				
0.9	54	3942	109	8338				
1	56	4187	110	8452				

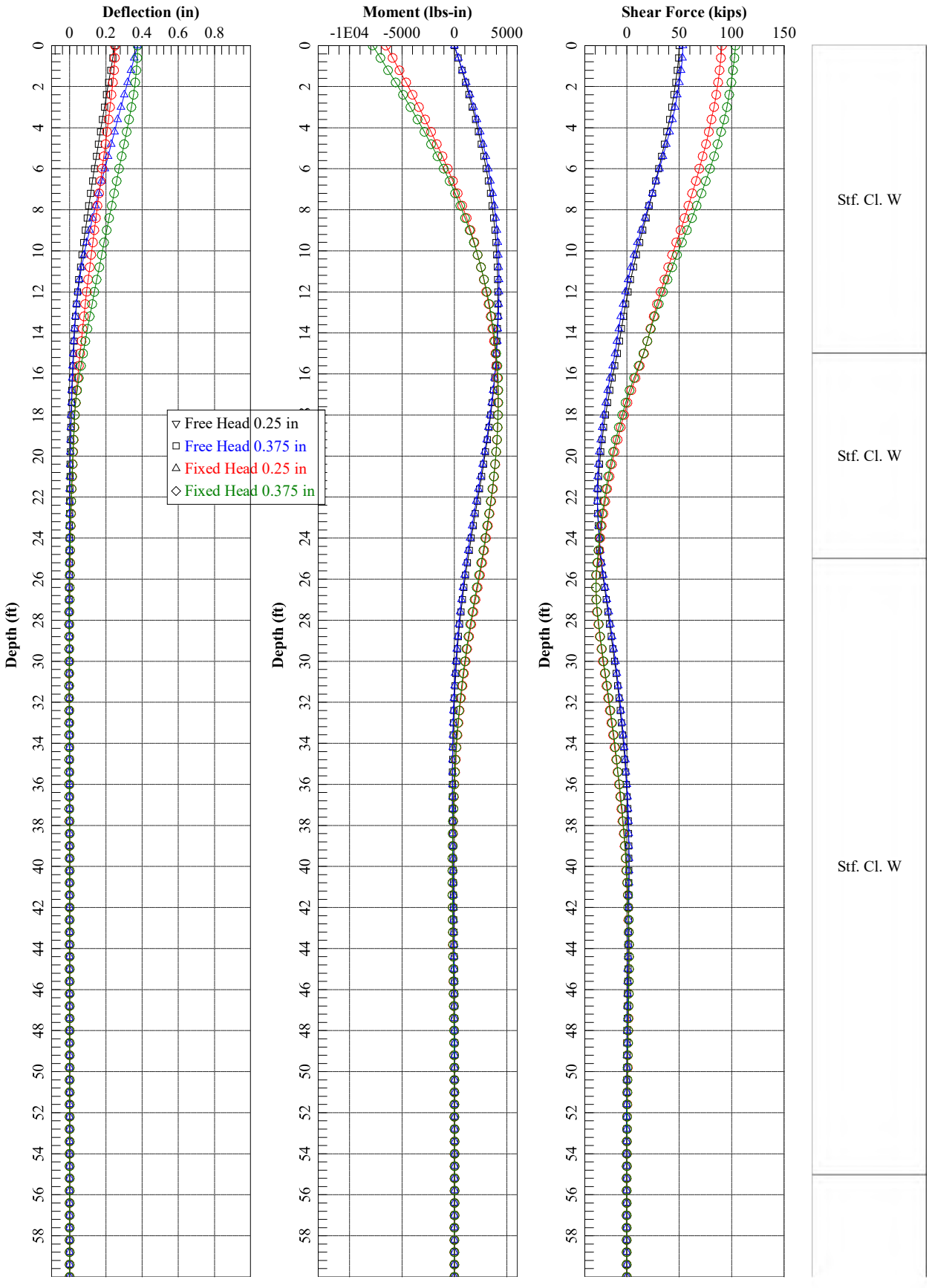

Deflection (in)
0 0.2 0.4 0.6 0.8
Moment (lbs-in)
-800-600-400-2000 0 200(4000
Shear Force (kips)
0 50 100
Depth (ft)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58
▽ Free Head 0.25 in
□ Free Head 0.375 in
△ Fixed Head 0.25 in
◇ Fixed Head 0.375 in
Stf. Cl. W
Stf. Cl. W
Stf. Cl. W

ORIGINATED BY: AF 5/18/2022
CHECKED BY: DSD 5/18/2022

LATERAL LOAD ANALYSIS - LPILE
(42-in Diameter)



	FREE HEAD		FIXED HEAD					
DEFLECTION	SHEAR	MAX MOM	SHEAR	MAX MOM	SHEAR	MAX MOM	SHEAR	MAX MOM
0	0	0	0	0				
0.1	32	2624	57	4245				
0.25	50	4145	91	6544				
0.375	54	4250	104	7810				
0.5	57	4467	116	9322				
0.6	60	4695	124	10200				
0.7	63	5000	130	11000				
0.8	66	5322	136	11600				
0.9	68	5610	140	12100				
1	71	5922	143	12300				


Deflection (in)
0
0.2
0.4
0.6
0.8
Moment (lbs-in)
-1E04
-5000
0
5000
Shear Force (kips)
0
50
100
150
Depth (ft)
0
2
4
6
8
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12
14
16
18
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24
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32
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42
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58
Free Head 0.25 in
Free Head 0.375 in
Fixed Head 0.25 in
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Stf. Cl. W
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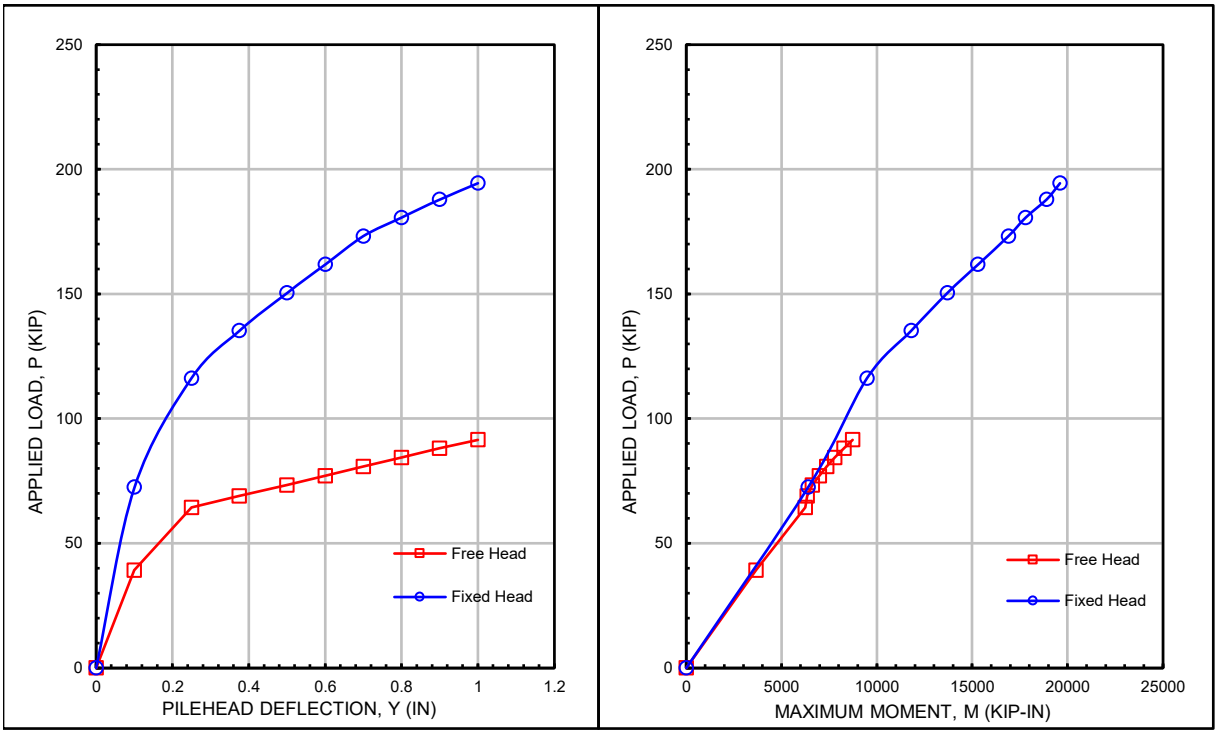
ORIGINATED BY: AF 5/18/2022
CHECKED BY: DSD 5/18/2022

LATERAL LOAD ANALYSIS - LPILE
(48-in Diameter)



	FREE HEAD		FIXED HEAD					
DEFLECTION	SHEAR	MAX MOM	SHEAR	MAX MOM	SHEAR	MAX MOM	SHEAR	MAX MOM
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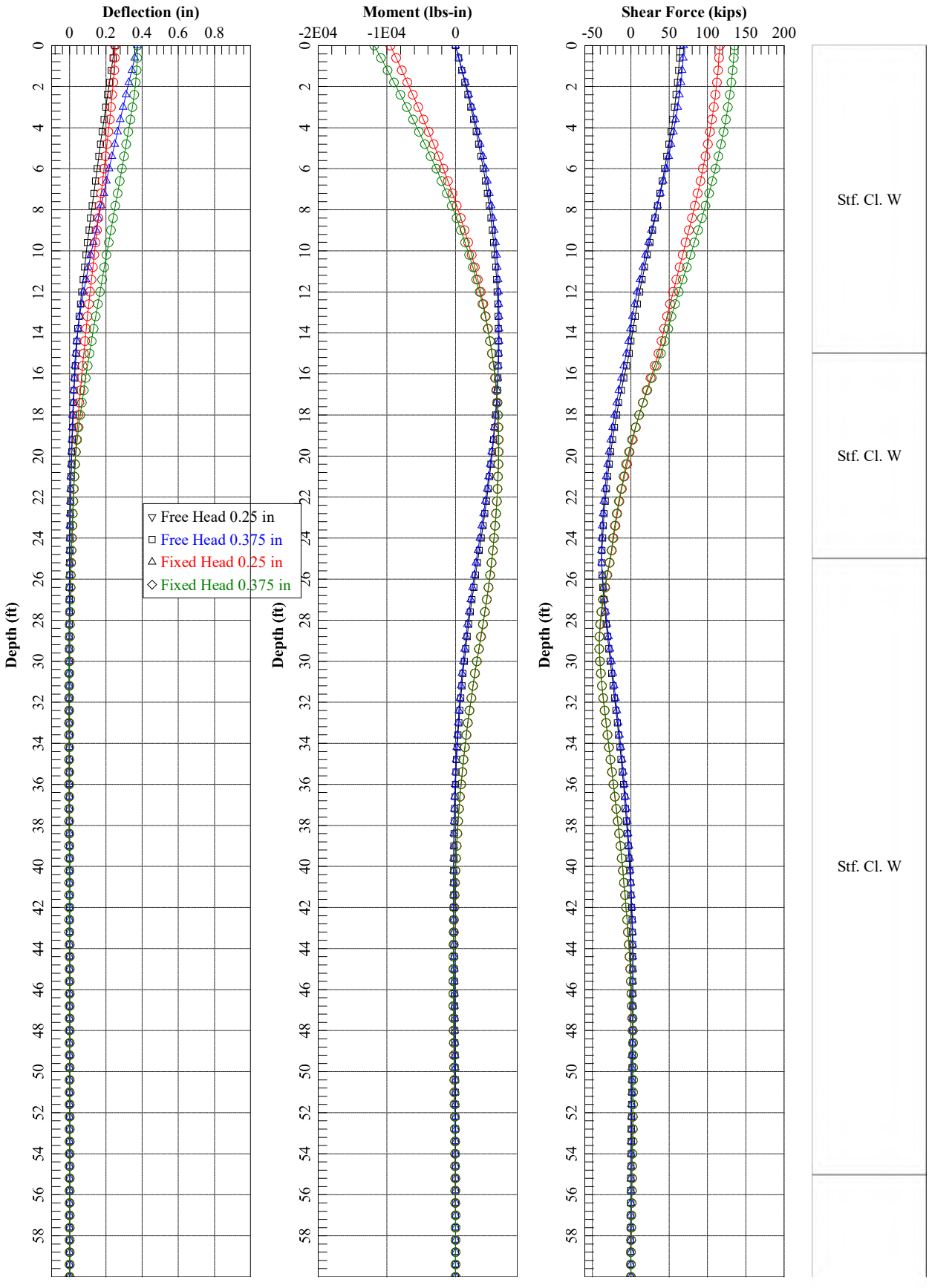
0.1	39	3663	73	6398				
0.25	64	6242	116	9486				
0.375	69	6345	135	11800				
0.5	73	6617	150	13700				
0.6	77	6979	162	15300				
0.7	81	7368	173	16900				
0.8	84	7792	181	17800				
0.9	88	8270	188	18900				
1	92	8730	194	19600				


Deflection (in)
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0.2
0.4
0.6
0.8
Moment (lbs-in)
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-1E04
0
Shear Force (kips)
-50
0
50
100
150
200
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
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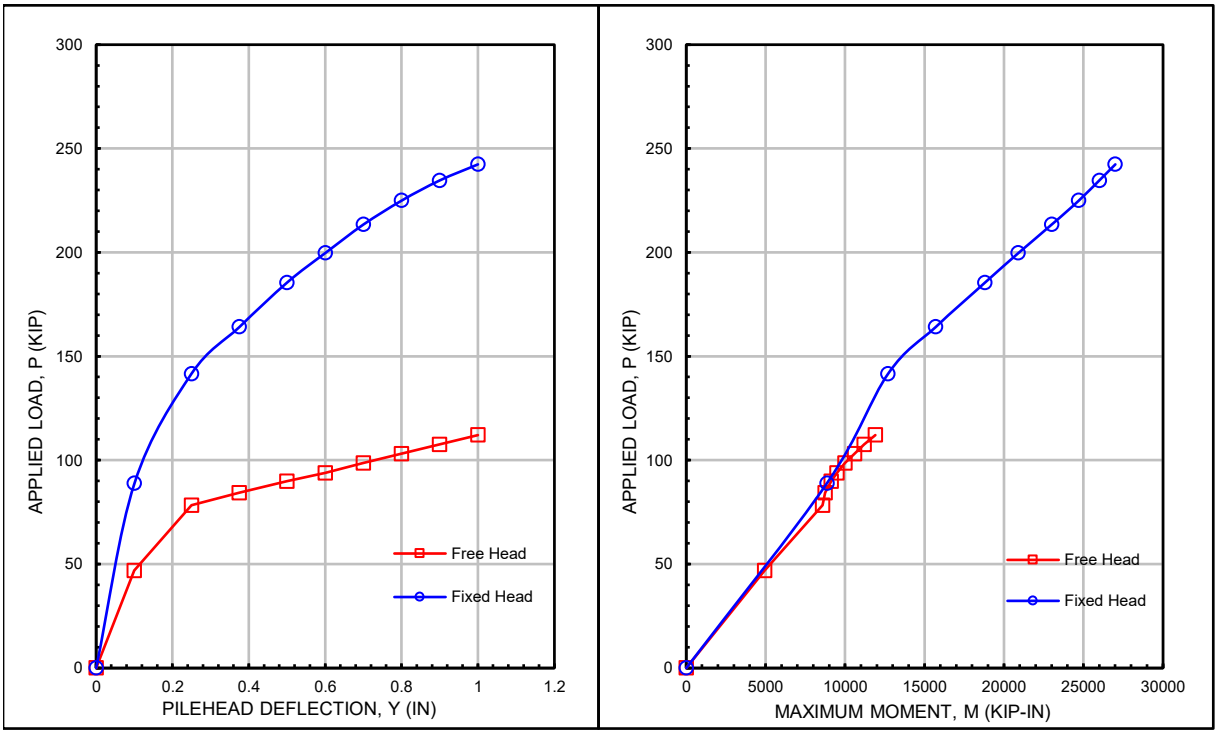
Free Head 0.25 in
Free Head 0.375 in
Fixed Head 0.25 in
Fixed Head 0.375 in
Stf. Cl. W
Stf. Cl. W
Stf. Cl. W

ORIGINATED BY: AF 5/18/2022
CHECKED BY: DSD 5/18/2022

LATERAL LOAD ANALYSIS - LPILE
(54-in Diameter)



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0.25	78	8594	142	12700				
0.375	84	8744	164	15700				
0.5	90	9124	186	18800				
0.6	94	9482	200	20900				
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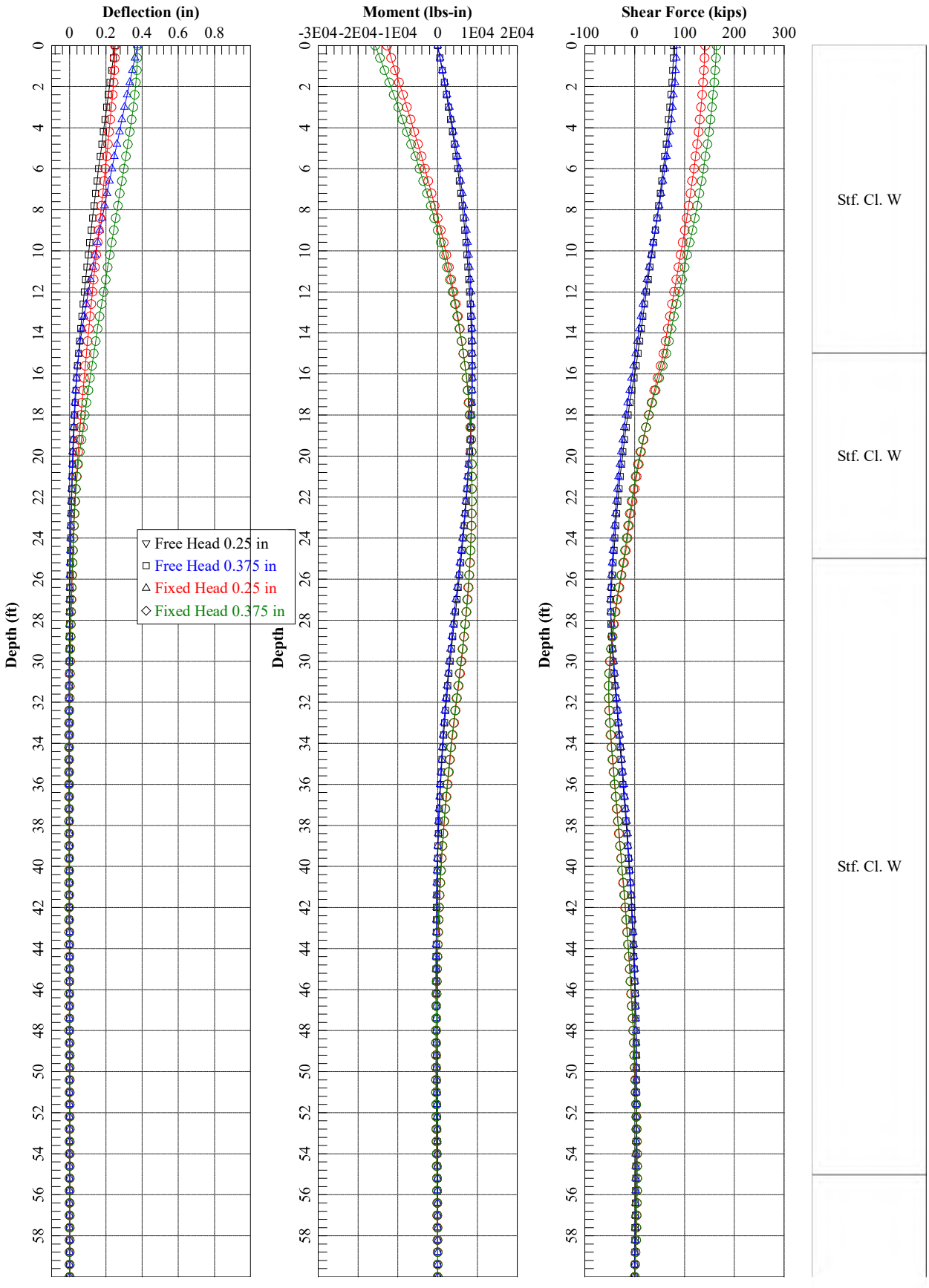
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Moment (lbs-in)
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Shear Force (kips)
-100 0 100 200 300
Depth (ft)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58
Free Head 0.25 in
Free Head 0.375 in
Fixed Head 0.25 in
Fixed Head 0.375 in
Stf. Cl. W
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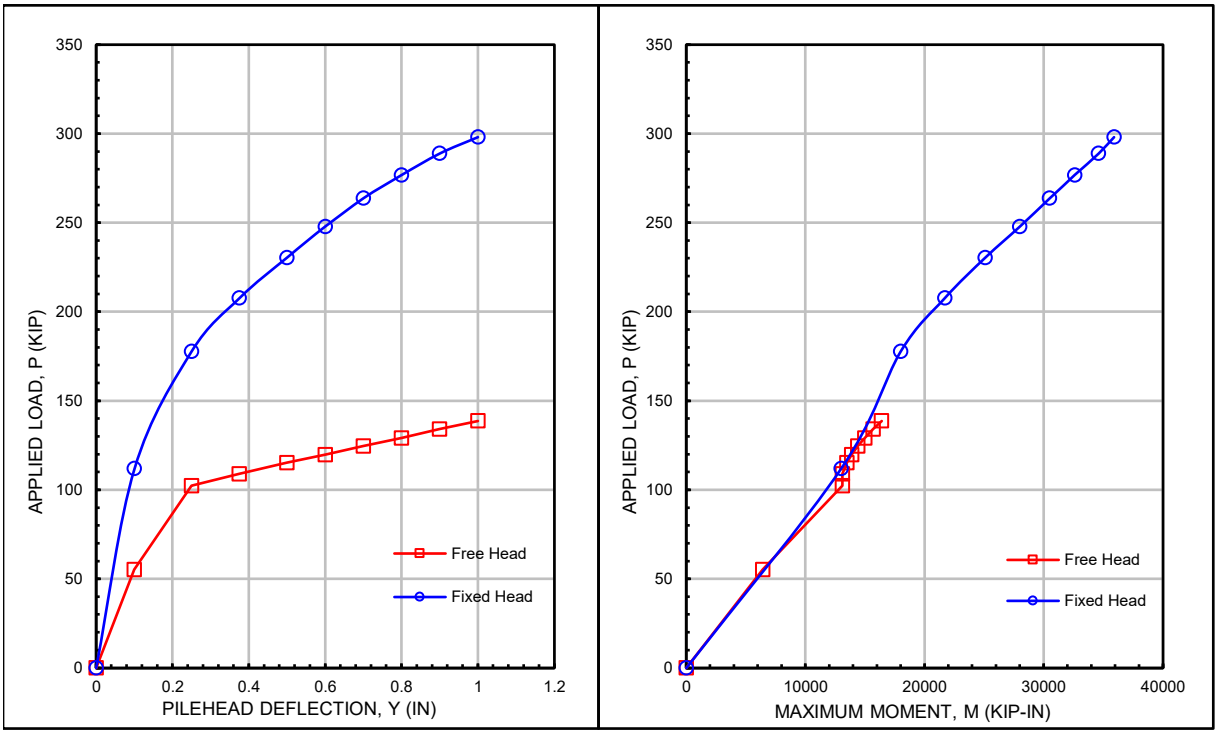
ORIGINATED BY: AF 5/18/2022
CHECKED BY: DSD 5/18/2022

LATERAL LOAD ANALYSIS - LPILE
(60-in Diameter)



	FREE HEAD		FIXED HEAD					
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0.1	55	6429	112	13000				
0.25	102	13100	178	18000				
0.375	109	13100	208	21700				
0.5	115	13500	231	25100				
0.6	120	13900	248	28000				
0.7	125	14400	264	30500				
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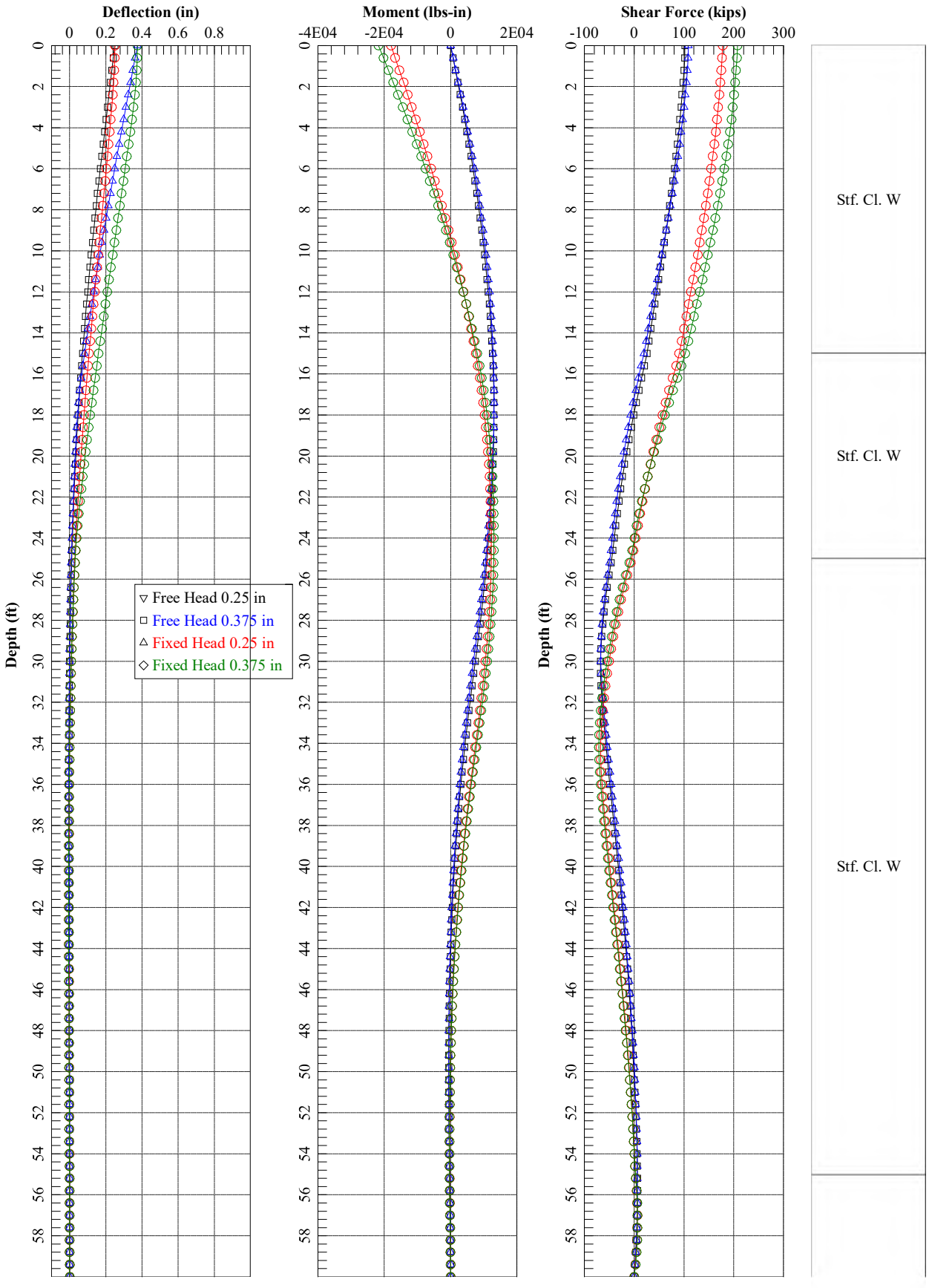
1	139	16400	298	35900				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Moment (lbs-in)
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Shear Force (kips)
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300
Depth (ft)
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Stf. Cl. W

1501 Central St, Evanston, IL 60208, USA

Latitude, Longitude: 42.0654464, -87.69249459999999

Date	3/6/2022, 3:20:04 PM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Default (See Section 11.4.3)

Type	Value	Description
S_S	0.11	MCE_R ground motion. (for 0.2 second period)
S_1	0.06	MCE_R ground motion. (for 1.0s period)
S_{MS}	0.176	Site-modified spectral acceleration value
S_{M1}	0.144	Site-modified spectral acceleration value
S_{DS}	0.117	Numeric seismic design value at 0.2 second SA
S_{D1}	0.096	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	B	Seismic design category
F_a	1.6	Site amplification factor at 0.2 second
F_v	2.4	Site amplification factor at 1.0 second
PGA	0.055	MCE_G peak ground acceleration
F_{PGA}	1.6	Site amplification factor at PGA
PGA_M	0.088	Site modified peak ground acceleration
T_L	12	Long-period transition period in seconds
SsRT	0.11	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	0.116	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.5	Factored deterministic acceleration value. (0.2 second)
S1RT	0.06	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.068	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.5	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.952	Mapped value of the risk coefficient at short periods
C_{R1}	0.886	Mapped value of the risk coefficient at a period of 1 s

1501 Central St, Evanston, IL 60201, USA

Latitude, Longitude: 42.0651698, -87.69282249999999

Date	11/15/2022, 11:35:28 AM
Design Code Reference Document	ASCE7-10
Risk Category	II
Site Class	D - Stiff Soil

Type	Value	Description
S_S	0.125	MCE_R ground motion. (for 0.2 second period)
S_1	0.059	MCE_R ground motion. (for 1.0s period)
S_{MS}	0.2	Site-modified spectral acceleration value
S_{M1}	0.141	Site-modified spectral acceleration value
S_{DS}	0.133	Numeric seismic design value at 0.2 second SA
S_{D1}	0.094	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	B	Seismic design category
F_a	1.6	Site amplification factor at 0.2 second
F_v	2.4	Site amplification factor at 1.0 second
PGA	0.062	MCE_G peak ground acceleration
F_{PGA}	1.6	Site amplification factor at PGA
PGA_M	0.1	Site modified peak ground acceleration
T_L	12	Long-period transition period in seconds
SsRT	0.125	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	0.137	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.5	Factored deterministic acceleration value. (0.2 second)
S1RT	0.059	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.067	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.5	Factored deterministic acceleration value. (Peak Ground Acceleration)
PGA_{UH}	0.062	Uniform-hazard (2% probability of exceedance in 50 years) Peak Ground Acceleration
C_{RS}	0.913	Mapped value of the risk coefficient at short periods

Type	Value	Description
C_{R1}	0.873	Mapped value of the risk coefficient at a period of 1 s
C_V		Vertical coefficient

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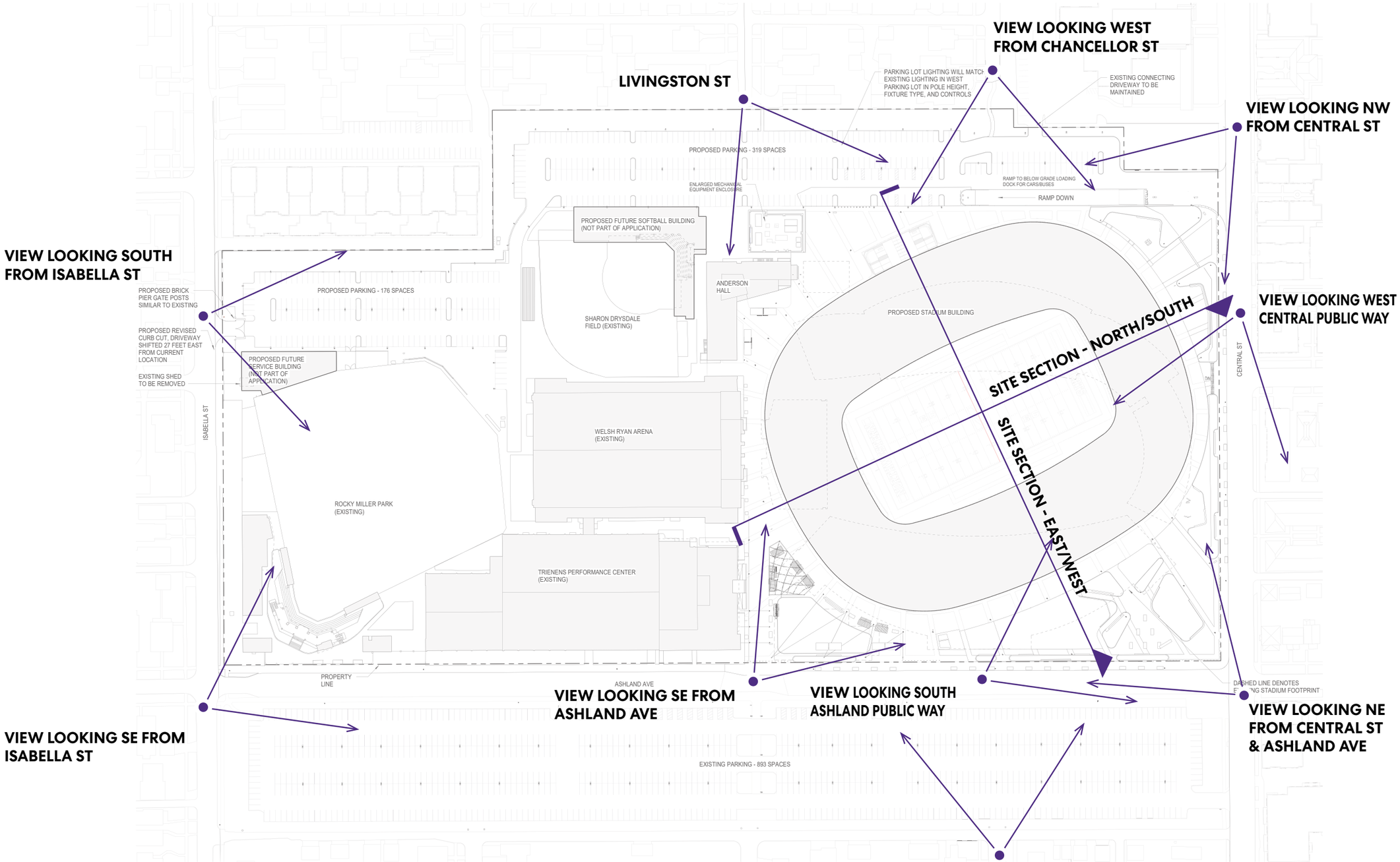
RYAN FIELD
GATE 3
SOUTHEAST ENTRANCE
STUDENT PLAZA
pepsi
MAIN ENTRY
TAILGATING ENTRY



RENDERING VIEW LOCATION KEYPLAN

SCALE: 1" = 160'
0' 40' 80' 160' 320'
N

NORTHWESTERN UNIVERSITY
RYAN FIELD REDEVELOPMENT
PLANNED DEVELOPMENT APPLICATION

HNTB
Perkins&Will
AUG 11,2023

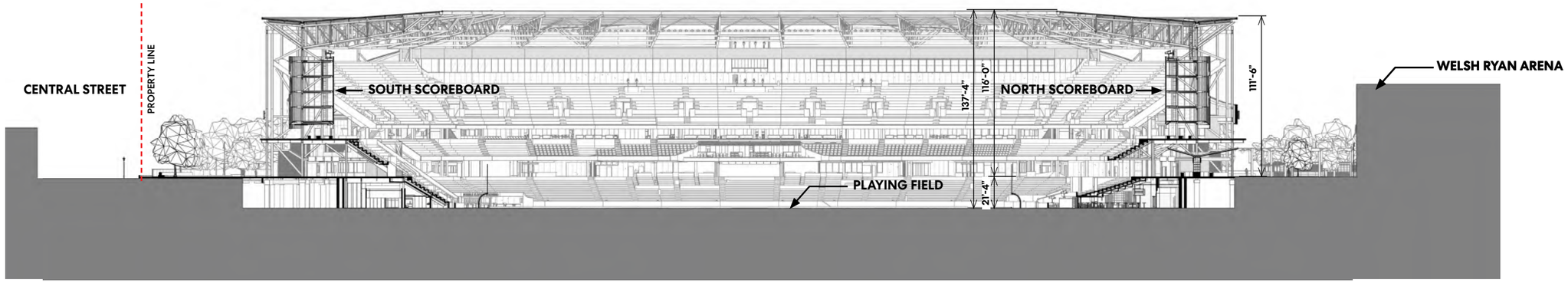
DP-03

BUILDING HEIGHT

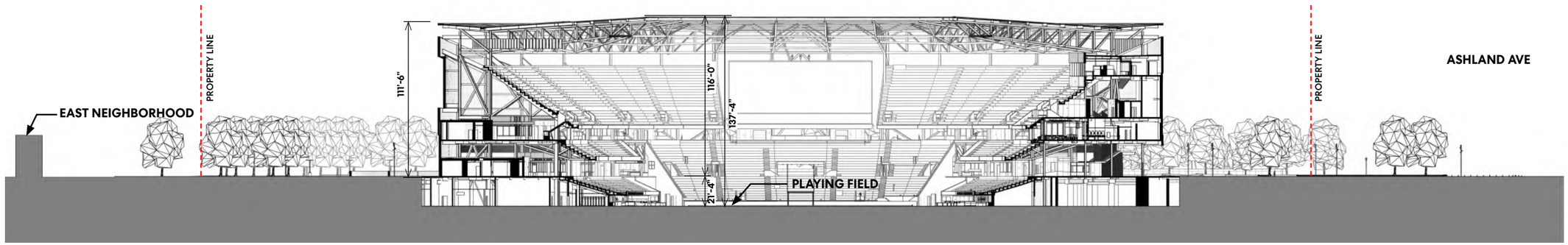
PER 6-15-7-8 (B) SIDE YARD SETBACK ADJACENT TO R1 SHALL INCREASE IN WIDTH BY TWO FEET FOR EACH ADDITIONAL FOOT OF BUILDING HEIGHT ABOVE 35 FEET

NEW STADIUM BUILDING HEIGHT = 116' (81' ABOVE 35')
REQUIRED SIDEYARD SETBACK = 15' + (81' x 2) = 177'

PROPOSED SIDEYARD SETBACK = 181'
MAX. ALLOWABLE HEIGHT BASED ON THIS SETBACK = 118'



SITE SECTION - NORTH/SOUTH



SITE SECTION - EAST/WEST

NORTHWESTERN UNIVERSITY
RYAN FIELD REDEVELOPMENT
PLANNED DEVELOPMENT APPLICATION

SITE SECTIONS

0' 20' 40' 80' 160'
SCALE: 1" = 80'

HNTB Perkins&Will
AUG 11,2023

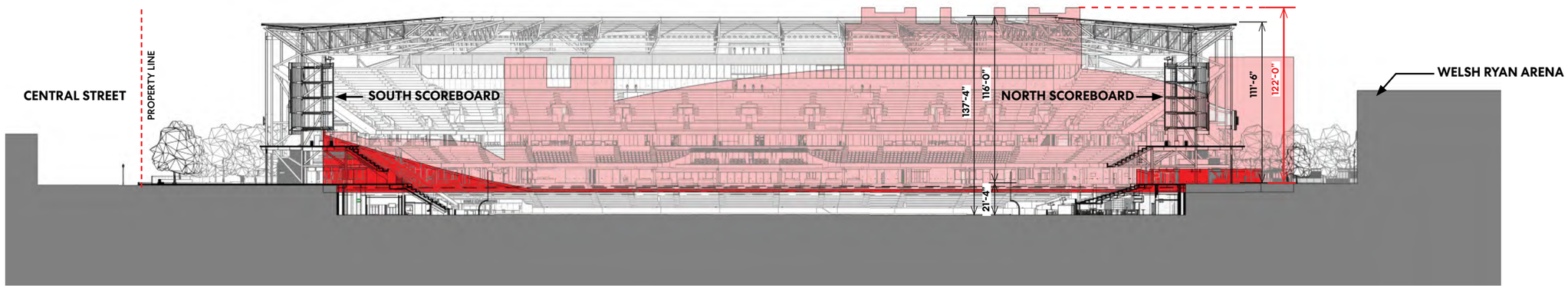
DP-04A

BUILDING HEIGHT

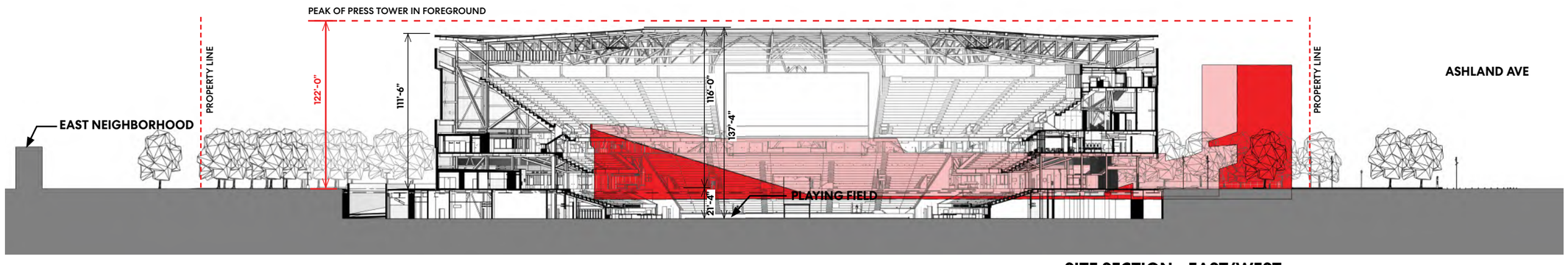
PER 6-15-7-8 (B) SIDE YARD SETBACK ADJACENT TO R1 SHALL INCREASE IN WIDTH BY TWO FEET FOR EACH ADDITIONAL FOOT OF BUILDING HEIGHT ABOVE 35 FEET

NEW STADIUM BUILDING HEIGHT = 116' (81' ABOVE 35')
REQUIRED SIDEYARD SETBACK = 15' + (81' x 2) = 177'

PROPOSED SIDEYARD SETBACK = 181'
MAX. ALLOWABLE HEIGHT BASED ON THIS SETBACK = 118'



SITE SECTION - NORTH/SOUTH



SITE SECTION - EAST/WEST

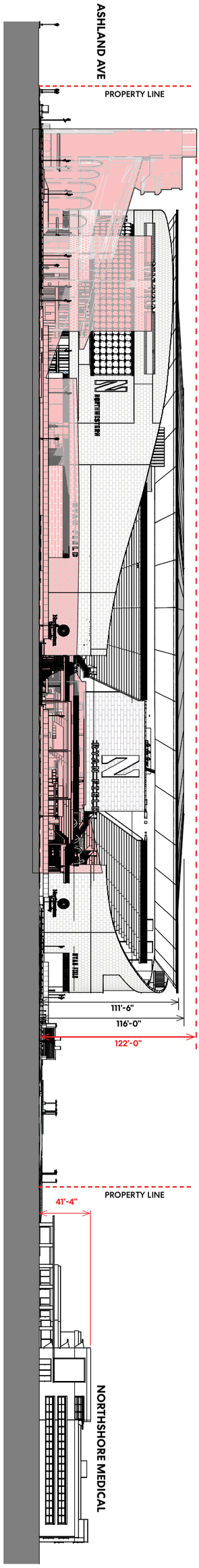
NORTHWESTERN UNIVERSITY
RYAN FIELD REDEVELOPMENT
PLANNED DEVELOPMENT APPLICATION

SITE SECTIONS

0' 20' 40' 80' 160'
SCALE: 1" = 80'

HNTB
Perkins&Will
AUG 11,2023

DP-04B



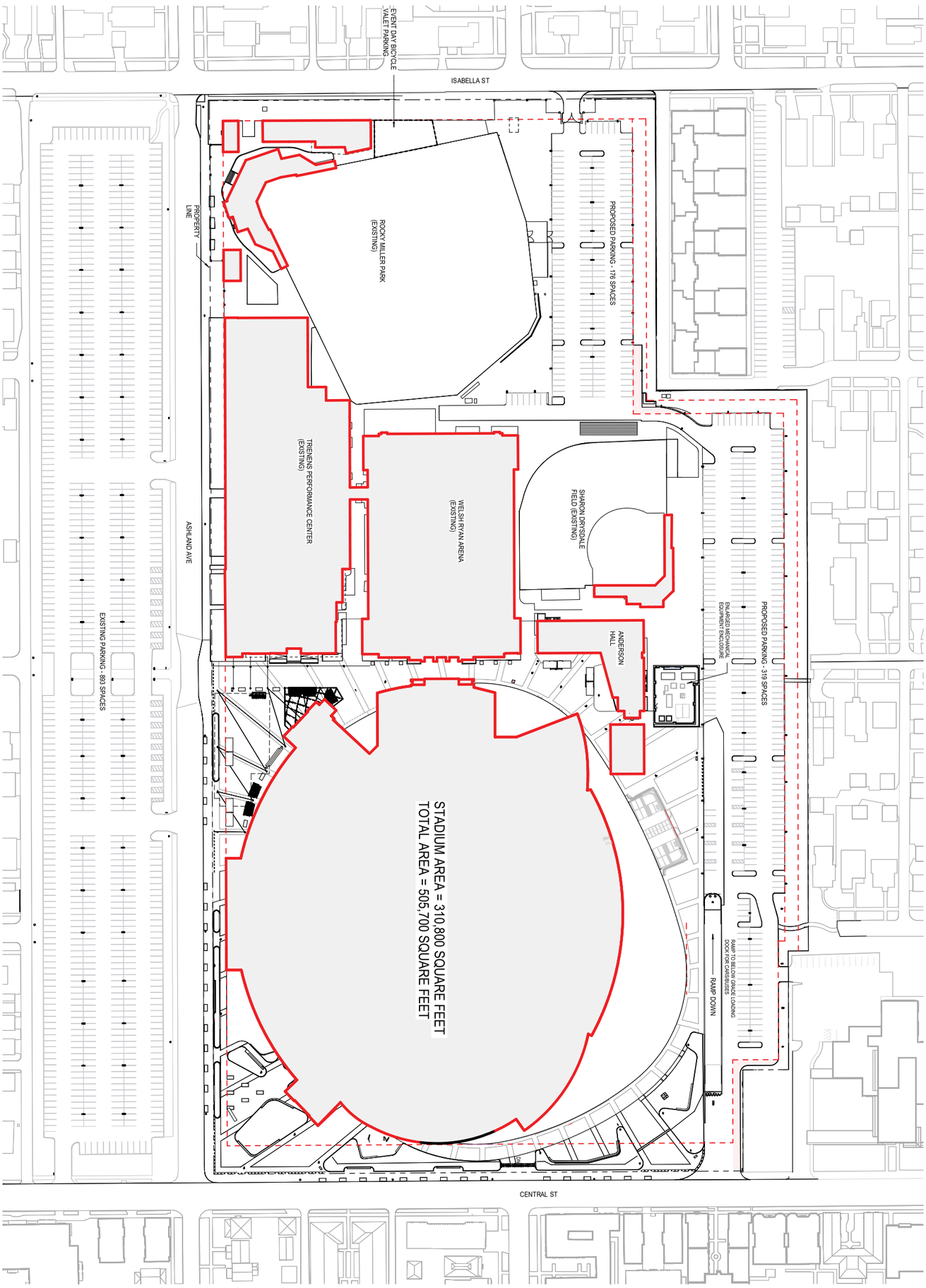
SITE ELEVATION - CENTRAL ST

*STREET TREES NOT SHOWN FOR CLARITY

HNTB
Perkins&Will
AUG 11,2023

0' 20' 40' 80' 160'
SCALE: 1"= 80'

NORTHWESTERN UNIVERSITY
RYAN FIELD REDEVELOPMENT
PLANNED DEVELOPMENT APPLICATION



DP-02B

HNTB
Perkins&Will
AUG 11,2023

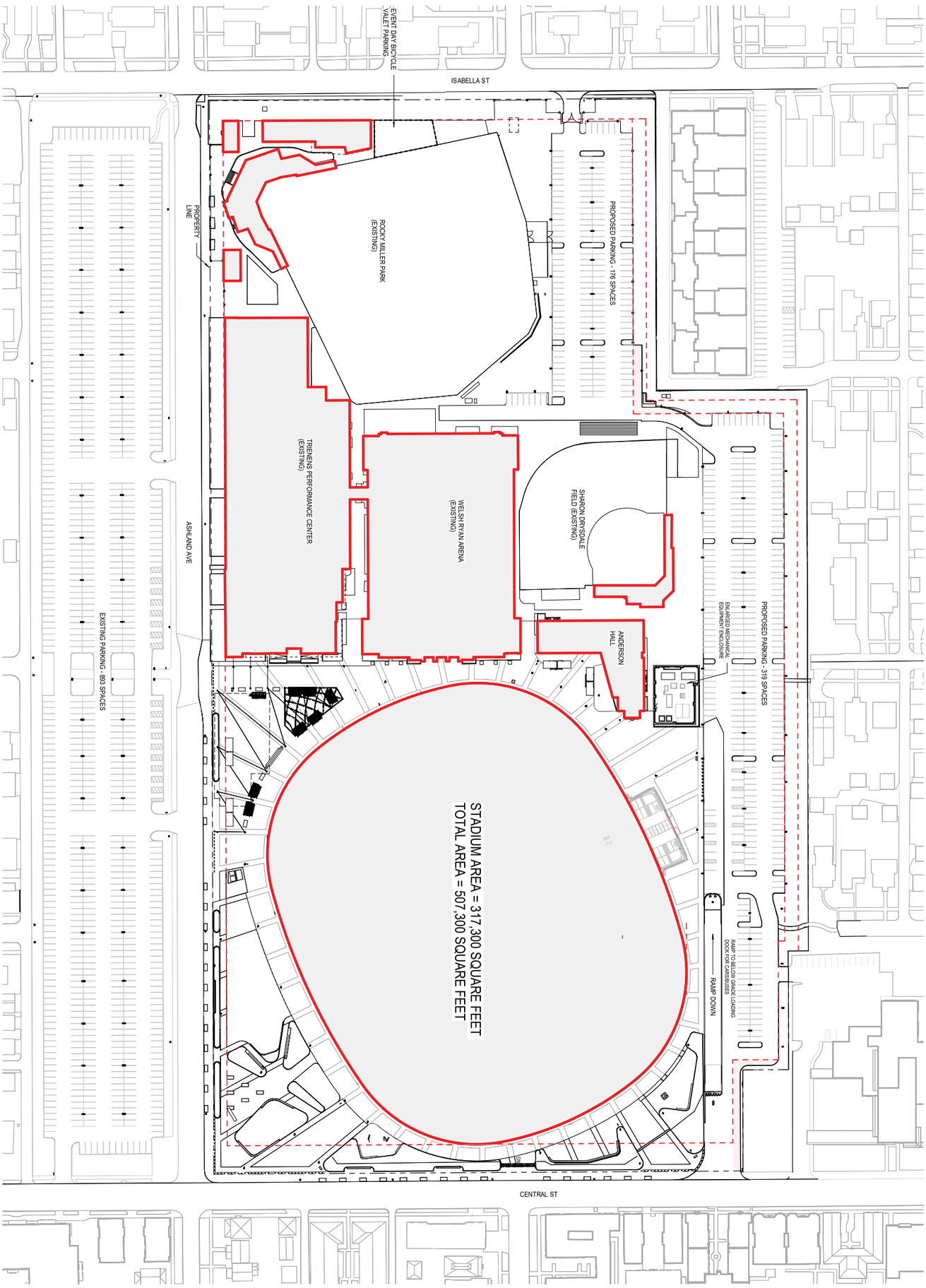
SITE AREA PLAN - EXISTING

N

0' 40' 80' 160' 320'

SCALE: 1"= 160'

NORTHWESTERN UNIVERSITY
RYAN FIELD REDEVELOPMENT
PLANNED DEVELOPMENT APPLICATION



DP-02C

HNTB
Perkins&Will
AUG 11,2023

SITE AREA PLAN - PROPOSED

N

0' 40' 80' 160' 320'

SCALE: 1"= 160'

NORTHWESTERN UNIVERSITY
RYAN FIELD REDEVELOPMENT
PLANNED DEVELOPMENT APPLICATION

Northwestern University
Additional Documents Submitted 9.19.23

Response to Land Use Commission Questions
WJHW Response to Arup Sound Study Report
Concert Operations Plan Outline
South Elevation Design Alternative
RWDI Wind Analysis Memo
Linberger Co. - CohnReznick Rebuttal Report
Home Game Police Call Information
Existing vs Proposed Site Plan
Subject Matter Expert Bios

DLA Piper LLP (US)
444 West Lake Street, Suite 900
Chicago, Illinois 60606
www.dlapiper.com

Katherine C. Jahnke Dale
katie.dale@dlapiper.com
T 312.368.2153
F 312.251.2856

September 19, 2023

Meagan Jones
Community Development Department
Planning & Zoning Division
2100 Ridge Avenue
Evanston, Illinois 60201

RE: **Planned Development & Text Amendment Applications**
Ryan Field – 1501 Central Street
Written Response to Comments Made at the September 6 Land Use Commission

Dear Ms. Jones,

In preparation for the September 27, 2023 Plan Commission hearing, the Northwestern University project team would like to provide responses to certain comments that were made by the Land Use Commission members and public at the September 6, 2023 hearing. Additional information or follow-up can be provided at the next Land Use Commission meeting.

As a preliminary matter, it was stated several times during the September 6 meeting that there is "significant opposition" to the requested approvals. We would like to note that this characterization appears to ignore the fact that there is significant *support* for the project and requested text amendment in the community as well. This is evidenced by the petition signed by almost 3,000 Evanston residents that was previously submitted as well as third party grassroots organizations, such as the Field of Opportunities, with more than 800 supporters.

We have also enclosed the police incident reports that Mr. Dave Davis submitted for the public record at the September 6 meeting.

Additionally, given the limited time provided to Northwestern to make its presentation and the technical issues on September 6, we feel that we were unable to fully introduce our team of subject matter experts and their qualifications. Northwestern has assembled a team of experts from across the country for this project and a summary of their qualifications is attached.

Finally, we noted in the public comments posted prior to the September 6 meeting that some residents had commissioned a land valuation analysis from CohnReznick. We have asked Mary Linberger, a certified MAI appraiser, to review and provide her opinion on the analysis. A summary of her review is enclosed.

Comment: Provide a response to the Arup report provided in the submitted public

comments.
Response: Please see the enclosed detailed response to the Arup report.

Comment: Provide information on hospital shift changes and the timing. How will those interact with event traffic patterns and parking availability?
Response: Hospital activity, both associated with physicians/employees and patients/visitors is heavily focused during weekdays before 5 PM. Hospital parking needs are at their peak between late morning (11 AM) and mid-afternoon (3 PM).

According to its leadership, NorthShore Evanston Hospital's daily shift changes fall in the following windows:

6:30am-8am
2:30pm-4pm
6:30pm-7:30pm
10:30pm-midnight

While various shift-oriented employees maintain different shift times, the main shift change at hospitals occurs around 3 PM. Non-clinical and other non-shift-oriented employees typically end their work day between 5 and 6 PM. Overall hospital parking demands over the course of a weekday consistently show steady reduction in parking after 3 PM. The day (main) shift at most hospitals typically accounts for 60-70 percent of physicians and employees while the evening and night shifts are collectively comprised of the balance. Similar to evenings, weekends also have lower levels of employees and patient activity compared to weekdays.

Given that concert events would be typically planned for evenings on weekdays or weekends, the pre-event arrival and post-event departure periods do not align with the main employee shift and higher periods of hospital activity (up until 3 PM and to a lesser extent until 5 PM).

Northwestern has not been aware of any issues or concerns related to activities on the Athletics Central Street campus related to hospital shift changes.

Question: What, if any, is the change in the amount of green space as a result of the changes to the parking lots?
Response: The existing green space in the U2 District is 226,300 sf and the proposed green space is 208,900 sf. Areas outside of stadium which have artificial turf are excluded from the calculations. Although the total square footage in the proposed plan is reduced by 7.7%, the landscape buffer will provide new trees and vegetation along the eastern property line, as shown on the submitted landscape plans.

Comment: Provide more details regarding the amount and availability of parking.
Response: Capacity concert events are estimated to generate a need for approximately 5,400-6,000 parking spaces. Parking is planned collectively between on site, off site (walkable) and off site (shuttle). Approximately 1,400 spaces are available on site, 200 spaces are available along Poplar Avenue (near Central Street Metra), 1,600+ spaces on campus, and 2,800 spaces in downtown Evanston garages. This does not include entrepreneurial private lots that may sell

spaces in the general area approaching the stadium area nor does it include all parking options on the University's campus.

With respect to availability of off-site parking options, the University controls campus parking and can ensure spaces are available as needed while also considering concerts would largely occur when most students are away on summer break. For downtown parking, we coordinated with SP+, who manages the City's off-street parking facilities, as well as other privately-owned parking garages, to review utilization data and outline the typical parking availability downtown (including non-City-owned public off-street parking) on weekday and weekend evenings during Late Spring-Late Summer months when outdoor concerts would be expected to occur. The availability of parking is outlined below:

Location	Typical Available Spaces	
	Weekday Evening	Weekend Evening
E2 Self-Park (1890 N Maple)	100 (28%)	100 (28%)
1629 Orrington	250 (71%)	250 (71%)
1800 Maple Self-Park	840 (70%)	840 (70%)
Sherman Plaza (821 Davis)	840 (70%)	840 (70%)
Church Street Self-Park (525 Church)	450 (75%)	420 (70%)
500 Davis	50 (67%)	50 (67%)
One Rotary Center (1560 Sherman)	315 (65%)	320 (66%)
TOTAL	**2,845 (67%)**	**2,820 (66%)**

As outlined above, approximately 2,800-2,850 spaces are typically available within publicly available off-street parking in downtown Evanston during late Spring-late Summer months on weekday and weekend evenings.

Additionally, the University has also entered into an agreement with NorthShore Evanston Hospital that allows for the NU use of up to 700 excess capacity parking spaces in NorthShore's parking garages on evenings where capacity events are hosted at Ryan Field – football games and concerts.

Our estimate for a need for approximately 5,400-6,000 parking spaces is based on eliminating football parking in the surrounding neighborhoods on streets, on front and side lawns (sold by residents), and in residential private parking spaces/garages (sold by residents). In response to neighbor input, concert event parking is proposed to be prohibited in the surrounding neighborhoods. This will result in less traffic generated in the stadium area overall and removal of traffic circulating through residential neighborhoods in search of parking. We also note that capacity concert events are 39% smaller than the current football capacity.

Question: How will truck loading/staging work for concerts? How do we ensure they will not be staging on the area streets?
Response: The load in and load out procedure for an event shall be carefully coordinated to

result in an efficient set up and removal of equipment needed for an event. The coordination efforts will involve the careful planning of an offsite location for truck marshalling in conjunction with a sequenced delivery cadence to the underground loading dock area. This type of sequenced operation would apply to both the initial set up and removal of the event equipment. Sequencing of the truck traffic will be organized by the event operator, who will notify the offsite marshalling location when a truck may leave the marshalling location to being routing to the stadium in order to provide a "just in time" delivery to the underground loading dock. The underground loading dock is currently designed to accommodate 3 separate truck loading bays with 5 additional bays for bus parking. Members of the community will observe trucks and buses entering and leaving the underground loading area, not idling on the surrounding streets.

It should be noted that this is a significant upgrade from the current loading operations at the existing stadium. Currently, there is is no loading dock area at Ryan Field. Deliveries are accepted in multiple areas, including spaces adjacent to residential neighbors and, in some cases, on Ashland Avenue. The current concession operations take deliveries near Gate M (south tower) in an area that will become green space in the new stadium. Additionally, trucks regularly unload on the east side of Ryan Field adjacent to neighboring homes. Compared to the comprehensive loading plan for concerts and game days outlined above, this is a significant improvement.

Question: Are there other comparable universities having concerts in their athletic facilities? Of those, are any with residential nearby?
Response: While each specific situation is unique, we have identified a list of 36 other Power 5 schools that have had at least one concert in their football stadium since 2016. Of those, 17 are located adjacent to or in relatively close proximity to single-family residential areas. In addition to the Power 5 universities that have hosted concerts, we have identified another 12 "Group of Five" schools that have hosted at least one stadium concert during the same period. It should be noted that all such schools are not-for-profit universities.

It should also be noted that many comments were made comparing the proposed concert use to other venues, such as the United Center, Allstate Arena and Wrigley Field. While the capacity of the stadium may be comparable to some of these venues, it should be noted that such comparisons are inaccurate when considering (1) the frequency of events at these locations and (2) the availability of both Metra and CTA rail transit at Ryan Field compared to these other venues.

For example, Wrigley Field has 81 home baseball games and up to 14 concerts in a given year in addition to extensive large-scale community events and is only serviced by CTA rail. In addition to 36 Chicago Wolves games and many other sports events, Allstate Arena will host approximately 55 concerts in 2023 and is not easily accessed via CTA rail or Metra. Similarly, in addition to 41 Bulls games and 41 Blackhawks games, the United Center will host 69 concerts in 2023 and hosted 72 concerts in 2022, while also not being easily served by either rail provider. Finally, McCormick place has hundreds of events per year, some of which with attendance of over 100,000 people.

As clearly demonstrated by these differences in event frequency and rail transit availability, these

comparisons are inaccurate and misleading notwithstanding similarities in capacity of some of these venues.

Comment: Provide copies of the Traffic Management and Concert Operations Plans and Memorandum of Understanding.
Response: As noted in all submission to date, these documents will be completed and submitted to staff for review at a later date. The MOU will be finalized and signed prior to building permit. The other plans will be finalized prior to certificate of occupancy and updated at least annually thereafter. Summaries of what will be included in the MOU and Transportation Management Plan have been provided in previously submitted materials. A summary of what would be included in the Concert Operations Plan is enclosed. Northwestern has decades of experience dealing with traffic management for football, and that knowledge will help to develop concert operation plans that protect the needs of the neighborhood balanced with the needs of concert patrons.

Question: Will City staff conduct a peer review of Northwestern's geotechnical report?
Response: Northwestern submitted its geotechnical report to the City on September 6. No comments have been received to date. Note that the report reconfirms that there will be no impact on adjacent properties. Additionally, all permits for the proposed stadium will go through typical City review processes and meet applicable codes.

Comment: What is the status of the City economic impact study?
Response: The City released its economic impact study on Friday, September 15 and is available on the City's Community Development Department's "Proposed Projects" website.

Comment: Various clarifying questions regarding the text amendment language and intent.
Response: As previously stated by counsel on the record at the September 6 meeting, Northwestern is amenable to the various modifications to the text amendment that were discussed, if the Commission desired to include such changes as a condition of approval. Those changes include:

- Confirm in the approval ordinance that the text amendment is only effective if the stadium is built;
- Providing in the text amendment that the Transportation Management Plan (TMP) would be submitted to the City Manager or its designee for approval and in the approval ordinance that the TMP would apply to both concerts and football games; and
- Clarifying that any use of the bandshell/music outside of the public-facing concerts would be in conjunction with community events.

The University is open to considering further refinement of its proposed text amendment language if the Land Use Commission or members of the community believe that it would be helpful to have clearer confirmation of the University's intent with respect to the proposed uses.

Comment: Did the University consider wrapping the south façade of the stadium with additional limestone?

Response: The University has prepared the attached alternate south façade design, which mirrors the current north façade, for the City and Commission's review and consideration.

Please contact me with any questions or comments.

Very truly yours,

DLA Piper LLP (US)

Katherine C. Jahnke Dale

Enclosures

WJHW

WRIGHTSON | JOHNSON | HADDON | WILLIAMS

Designers and Planners for Sound, Video, Multi-Media
Telecommunications, Broadcast, Theatre & Acoustics

Dallas • San Antonio • Denver

September 18, 2023

Mr. Darren Nielsen
Vice President/KC Studio Leader
HNTB
715 Kirk Drive
Kansas City, MO 64105

Subject: Ryan Field Redevelopment at Northwestern University
Rebuttal to Arup report

Dear Mr. Nielson,

WJHW has been involved in the sports and entertainment venue industry for over 30 years, having completed extensive work on professional and collegiate projects, and it is this expertise that we bring to the Northwestern University project. WJHW was founded in 1991 and has been an industry leader in acoustics and sound system design for the vast majority of professional arenas and stadia since. Our resume includes all 32 current NFL stadia, all 30 NBA arenas, 24 of 32 NHL arenas (75%), 28 of 30 MLB stadia (93%), and 19 of 29 MLS stadia (66%). Additionally, WJHW has completed numerous collegiate stadia and arenas for Power 5 conference teams including:

- **SEC:** U of Arkansas, U of Alabama, U of Tennessee, Louisiana State, Mississippi, Mississippi State, Texas A&M, U of Texas, U of Missouri, U of Georgia, Auburn, U of Florida, and U of Kentucky
- **ACC:** North Carolina, Duke, Georgia Tech, Wake Forest, Florida State, U of Virginia, Louisville, Boston College, North Carolina State, Notre Dame, and Virginia Tech
- **BIG12:** U of Houston, Iowa State, U of Kansas, Kansas State, TCU, Oklahoma, Texas Tech, U of Cincinnati, and West Virginia
- **PAC12:** Arizona State, U of California, U of Colorado, U of Oregon, Oregon State, Stanford, and U of Utah
- **BIG10:** Iowa, Minnesota, Northwestern, Purdue, Michigan, Ohio State, Penn State, Rutgers, and Nebraska

Our efforts in these projects include sound system design and acoustics analysis as well as many of the technologies utilized in these facilities (e.g. broadcast, audio-video, security). Further, WJHW provides concert support in numerous large stadia including Levi's Stadium (Santa Clara, CA), AT&T Stadium (Arlington, TX), US Bank Stadium (Minneapolis, MN), Globe Life Field (Arlington, TX), and NRG Stadium (Houston, TX) for a variety of acts. Our expertise in these venues is substantial and is unrivalled in the industry.

This extensive experience allows us to speak with unique authority on the subjects of interest to the Evanston and surrounding communities, and we offer the following responses to the Arup report dated August 11, 2023 and revised comments dated August 15, 2023.

3424 Midcourt Road, Suite 124, Carrollton, TX 75006
972.934.3700 voice 972.934.3720 fax

General Comments

The ARUP Report states at its outset that:

"This memo provides comments and questions on the documents provided to Arup for our review. No additional analysis of the information presented in the WJHW reports was conducted."

The ARUP Report does not provide any evidence for the Land Use Commission to consider that refutes the findings of Henderson or WJHW regarding sound propagation. It does not provide any indication of SPLs above those levels modeled by Henderson nor does it opine on whether those levels would have an adverse impact on the health, safety, and welfare of nearby neighbors or the community.

The following general comments were raised in the Arup Report:

- **Arup Comment:** General description of sound mitigation strategies could help limit noise impact to the community; however, they need to be developed in detail and assessed (in terms of both feasibility and effectiveness). No definitive design solutions or proposed operational limits or criteria are proposed. [See Section 4.2.1, Item 14 and Section 4.2.2, Item 21]

  WJHW Response: *The report describes noise mitigation elements starting on page 5; notably there are multiple permanent items included in the stadium design that are intended to lower community sound levels for football games and other events, in comparison with the existing stadium, including:*

  - *The event level/field being set 20+ ft below grade which reduces total building openings through which sound can escape to the community.*
  - *A distributed house sound system within the seating bowl which reduces sound output of the house system compared to the current end zone cluster.*
  - *A canopy above the seating areas provides adequate sound reduction characteristics and reduces the bowl opening through which sound can transmit to the community.*
  - *Enclosures and walls around the seating bowl that further reduces openings in the building and reduces sound emissions to the community.*

  Temporary sound mitigation strategies focusing on the northwest corner of the stadium are being analyzed, including sound curtains and moveable partitions which will have a minimum sound reduction performance of 20 dBA.

  In addition to the permanent architectural elements and temporary measures noted above, multiple operational parameters have been proposed such as:

  - *Ending concerts at 10:00 pm Sunday – Thursday and 10:15 pm Friday – Saturday notwithstanding local ordinances allowing sound until 11:00 on weekend evenings.*
  - *Installation of sound monitoring devices in and/or around the stadium.*

- *Limiting maximum sound levels at the sound board.*

- **Arup Comment:** There is a limited representation of the community through the measured and modeled sound levels. Comparisons are made against only three long-term measurement locations in Evanston, and no locations in Wilmette or potentially impacted areas farther from the Ryan Field site. [See Section 3.1, Items 1-4]

  WJHW Response: *Measurement locations are representative of the areas near the stadium that likely have the greatest (worst case) acoustic impact in the community. As these areas likely have the greatest sound exposure, it is proper to focus on these areas specifically. We note that Arup completed sound measurements in Wilmette indicating ambient LAeq values are between 46 and 52 dBA (which are in excess of the statutory limit of 45 dBA for evening/nighttime) and 58 to 65 dBC.*

- **Arup Comment:** Short-term gameday measurements at additional receptors (9 locations in Evanston, 1 in Wilmette) were conducted for between 30-seconds and 2-minutes each. Gameday activities occurring during these short intervals are not documented (e.g. sound generated by crowd activities or public address announcements), so it is not clear if this measurement period was long enough to accurately represent gameday activity sound. [See Section 3.1, Items 5-6]

  WJHW Response: *All short-term gameday measurements included activity noise from the stadium which was primary public address announcements or fan noise, as noted on page 4 of the report.*

- **Arup Comment:** 3D acoustic / electroacoustic computer modeling of concerts does not include pertinent information including assumptions on the sound system including the number of loudspeaker clusters, music genre which can vary in frequency spectra, and parameters of the modeling inputs including applicable standards if meteorological affects have been considered. [See Section 4.2.1, Item 13]

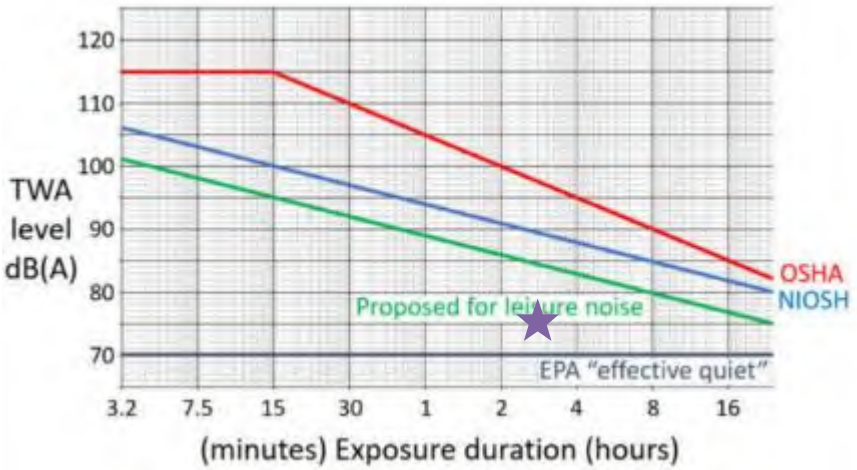
  WJHW Response: *Specifics regarding the concert system/stage setup modeled are listed on page 7 of the report. These include stage set on south end of stadium, line array loudspeakers (4 total), pop/rock music frequency spectrum, and sound level set at 101 dBA at the mix position (100 ft from front of stage). Regarding meteorological affects, the analysis is based on ISO 9613 which describes conditions including an outward wind direction from the noise source(s) - in this instance the stage sound system modelled and "moderate" temperature inversion. ISO 9613 (stated on page 6) is an industry standard for predicting environmental sound and provides a conservative (not extreme) condition for sound propagation. Per ISO 9613, the method describes "the sound propagation from known sound sources under meteorological conditions favorable to sound propagation." Additionally, the distances to the nearest residences are such that the wind and inversion conditions will have a minimal impact at those locations.*

- **Arup Comment:** Other than commentary that gameday and concert sound would be audible, there is no other assessment of noise impact provided beyond general ambient sound level comparisons. Impact on the community in terms of annoyance, or other adverse health effects of noise should be considered. [See Section 4.2.2, Item 21]

  WJHW Response: *The report does not speculate on the perceived discomfort of any particular resident, but rather compares the existing noise environment at the potentially most affected residences and against the quantitative noise regulations, where appliable. Regarding adverse health effects, community sound levels will not create dangerous conditions or result in hearing damage/loss (per OSHA standards for noise exposure). Interference with speech communication may occur in close proximity to the stadium (with the possibility that this may only occur on the University property) and can be further mitigated to the north by the implementation of temporary noise mitigation solutions. Sleep disturbance is limited – if not eliminated – by the agreed event end time of 10:00 pm or 10:15 pm. Cardio vascular, physiological, and mental health issues are related to long term noise exposure which is vastly different than the amount of exposure proposed for concert events (approximately 3 hours per event, 6 days of the year). Annoyance is subjective as, indeed, some in the community have indicated they anticipate deriving a positive experience from the concert count, but it may occur with levels of 55 dBC or greater, and the duration of events limit this impact to a few hours across 6 days a year.*

  Additionally, it should be noted the upper sound limit as shown in the model is representative of a peak condition, and is not anticipated to be consistent.

  It is noted the comparisons to game day events show these impacts are already known/experienced in the neighborhoods and efforts to minimize the sound levels will likely improve the conditions for game days and limit overall impact during concert events.



From International Journal of Environmental Research and Public Health, article "Loud Music and Leisure Noise Isa Common Cause of Chronic Hearing Loss, Tinnitus and Hyperacusis", Pienkowski, 2021

The above graphic indicates sound level limits versus exposure time which result in risk to the community regarding noise exposure. The higher end of predicted sound levels outside the stadium from concerts are up to 75 dBA. These levels at an approximate exposure of 3 hours, as indicated by the ★ above, are substantially below the levels required by OSHA, NIOSH, and the proposed leisure noise levels. Levels below 70 dBA – which encompass the vast majority of the surrounding community – are "EPA Effective Quiet" related to community noise exposure.

- **Arup Comment:** Ambient sound level comparisons are based on broadband dBA levels only. The frequency spectrum of amplified music concerts is significantly different than other ambient sound sources and typically include substantial low-frequency sound energy (125Hz and below) which can be particularly disturbing to the community. Comparisons of predicted music levels with ambient sound should include a more detailed frequency analysis, at a minimum comparing low- frequency sound levels. [See Section 4.2.2, Items 15, 16, & 21]

  WJHW Response: *Anticipated dBC levels were provided in the report on page 9 at the request of the City of Evanston, which include low-frequency sound impact. dBA is specifically used for comparisons as this value is commonly used to describe the relative loudness of sound as perceived by the human ear, and is the most common metric for statutory noise control including the Village of Wilmette and State of Illinois, and many Federal (FHA, FAA, DOT, etc.) agencies. WJHW acknowledges the difference in frequency content between concerts and University football games will be perceptible and reiterates the short duration of the potential impacts.*

- **Arup Comment:** There is no description of planned scheduling and timing of noise-producing concert activities including event setup, soundchecks, the concert event, and teardown. [See Section 4.2.2, Item 22]

  WJHW Response: *Setup of the stage, sound system, lighting and supplemental equipment will typically occur the day before a concert event. Members of the community will observe trucks and buses entering and leaving the underground loading area. The day of the concert will involve completion of setup activities, sound system tuning and sound check activities in the afternoon occurring for 45-60 minutes, and the concert event in the evening. Immediately following the concert event, dismantling of the stage, sound system, lighting and supplemental equipment will commence, and wrap up the following day. Each event is unique in terms of show elements as well as requirements and limitations stated by the venue. All applicable regulations regarding noise and on-site activities/hours will be complied with.*

- **Arup Comment:** Arup observed that ambient sound levels at each location were mostly continuous, with some intermittent road traffic. This means that for the majority of the time, residents perceive a lower ambient sound level than is represented by a time-average metric like L_{eq} used as the basis in WJHW letters. This may be quantified by statistical percentile sound levels.

  WJHW Response: *Leq is used in the establishment of most noise ordinances and Federal regulations. It is the most commonly applied metric for community noise evaluation and regulation. The University team understands sound levels fluctuate across time and realize sound levels will occasionally be above or below the Leq (average) sound level. Additionally, Leq is the industry standard method for determining compliance with statutory requirements for community sound levels, such as the State of Illinois requirements for 1-hour Leq (Illinois Administrative Code, Title 35, Section 900.103 - Measurement Procedures). It is noted that Arup acknowledges that most ambient sound levels are "mostly continuous" and observed average sound levels of 46-52 dBA in the Wilmette neighborhoods. These average levels are above the statutory limits set by Wilmette (45 dBA) and further negate the proposed statistical metrics (percentiles) for base ambient sound levels.*

- **Arup Comment**: Given the concert music sound would be relatively continuous during each set piece, evaluation of concert sound levels within the Wilmette community would be better gauged by comparing the ambient sound levels using a statistical percentile level (e.g. L_{90} – the sound levels exceeded for 90% of the measurement interval) rather than the time-averaged L_{eq} sound level used in the WJHW letters. [See Section 4.2.1]

  WJHW Response: *L90 essentially sets the lower limit of the of the ambient sound field and does not realistically represent the expectation for sound levels within the community. Sound levels exceed these values 90% of the time (54 minutes out of every hour). We understand that there may be particularly quiet moments during a day/evening, but the Leq represents the average and sound level may be at, above, or below this value as sound fluctuates. Further, Leq is the most common metric used by municipalities to describe adverse or disagreeable sound levels within the community and has been found to correlate well with annoyance (Kryter, The Effects of Noise on Man, 1970, pg 310).*

  Arup's contention that concert music is "relatively continuous" is an inaccurate assumption as they contend sound levels should be compared to the lowest sound level perceived in the community, but make no comment on the average sound level perceived (to which, some period of time would exceed these average/Leq values) and presume to argue the community will perceive annoyance based on levels observed only 6 minutes of every hour. While these brief moments may allow sound to be heard more clearly, it is not representative of the entirety of time the concerts will occur.

- **Arup Comment**: From our sound survey of Wilmette locations, L90 ranged from 38-40dBA. The time-averaged sound levels (LAeq) ranged from 46-52dBA which is generally lower than the range quoted in the WJHW letter conclusions ("50-65 dBA" from page 8, paragraph 4). [See Table 1]

  WJHW Response: *Northwestern acknowledges the measurements conducted by Arup on the Village of Wilmette. Henderson did not conduct long term measurements in Wilmette in order to compare directly to the data collected from Arup. The neighborhood noise study conducted by Henderson was continuous from Friday to Sunday at three locations in Evanston in order to capture typical game day sound. It should also be noted that Arup's measurements were taken on a Thursday evening, which is presumably quieter than a weekend with no gameday activity.*

- **Arup Comment**: Based on our observations, we recommend that L90 levels are utilized as the baseline for community ambient sound levels within the residential areas in Wilmette.

  WJHW Response: *L90 describes the lower limit of ambient sound levels. While this may be how low sound could get, it sets an expectation for community sound level that is lower than what is actually perceived on site. Noise fluctuates and expecting community noise sources to occur at levels below 90% of the other/existing community noise sources is unrealistic which is why Leq is also the common standard for statutory requirements and is more appropriate to describe whether an exceedance or violation occurs. WJHW disagrees with this as the only method for comparing concert sound levels to neighborhood ambient levels. Leq is also descriptive of the perceived noise environment.*

- **Arup Comment**: The WJHW letters do not reference any local or regional noise codes or ordinances. Noise ordinances exist for Wilmette, Evanston, and the State of Illinois. Furthermore, the WJHW letters do not propose any criteria to quantitatively assess noise impact. [see Appendix A]

  WJHW Response: *Noted. The noise ordinance for Evanston is a nuisance ordinance (i.e. no set noise level limits) and Wilmette and Illinois include specific dBA or octave band noise limits. The Wilmette sound level limits are 45 dBA and the average ambient – per Arup's measurements – exceed the level limits during the time concerts would occur already. WJHW also notes the State of Illinois limits are based on 1-hour Leqs (further reinforcing the argument to use Leq as the baseline for ambient sound level comparison). It is also noted the levels predicted in the Henderson model are the upper limit of sound level transmitted to the community, meaning the Leq values are likely to fall below the values indicated in the Henderson model.*

- **Arup Comment:** A summary table comparing predicted concert sound levels (according to the WJHW letters) against ambient sound levels surveyed by Arup is presented in Table 1.

Location	Sound Level Measured[9]		Wilmette noise ordinance[10]	Illinois State noise limits[11]	Henderson predicted concert sound level ("with Additional Sound Mitigation" scenario)[12]	Noise codes exceeded? (Y/N)	Ambient sound levels exceeded? (Y/N)
	L_{90}	L_{eq}					
640 Gregory Ave	39 dBA 53 dBC	47 dBA 60 dBC	45 dBA	55 dBA 73 dBC	60-65 dBA 75-80 dBC	Y	Y
624 Isabella Ave	40 dBA 53 dBC	52 dBA 65 dBC	45 dBA	55 dBA 73 dBC	60-65 dBA 75-80 dBC	Y	Y
128 5th St	39 dBA 53 dBC	47 dBA 58 dBC	45 dBA	55 dBA 73 dBC	60-65 dBA 75-80 dBC	Y	Y
6th & Maple	38 dBA 52 dBC	46 dBA 59 dBC	45 dBA	55 dBA 73 dBC	60-65 dBA 75-80 dBC	Y	Y

Table 1: Comparison of predicted concert sound with surveyed ambient sound at Wilmette locations

WJHW Response: *WJHW notes the LAeq values measured by Arup are all above the statutory requirements for the Village of Wilmette. Statute requires sound emissions to not exceed 45 dBA; all ambient Leq values are 46 dBA or above. Statutory limits noted for the State of Illinois are based on 1-hour Leqs (per staff Mr. Anand Rao, 312.814.3956). We reiterate the Henderson model indicates the "worst case" - the upper limit generated from the modelled sound system – for sound levels generated at the stadium and the Leq values will be lower.*

It should be noted that none of the SPLs referenced in this chart exceed any threshold that would be considered harmful or result in a negative impact on health, safety or welfare for an exposure over a three-hour duration, six times per year.

Detailed Comments

Item 1	
Document	WJHW letter 1, Henderson Exhibit, pages 3 and 7
	Henderson Exhibit Tables 1 and 4 include weather conditions during the gameday and non-gameday measurements, based on an internet source. The tabulated "Max Wind Speed" for 5 out of 7 measurements periods is greater than typical 12 mph maximum speed recommended in measurement procedure standards[13,14]. The Henderson exhibit states "Overall, weather had negligible effects on the measurements."
Arup Comment	Provide explanation and additional observations to support the statement that weather conditions had negligible effect on measurements.
WJHW Response	The max wind speed included in the report was the maximum for the day and was not the continuous wind speed. Measured sound levels exceeded the wind induced noise levels reported utilizing the Larson Davis Model EPS2116 Outdoor Microphone Protection, therefore wind was assumed to have a negligible effect. Link to Larson Davis information follows. https://www.larsondavis.com/docs/librariesprovider2/datasheets/ld-eps2116-outdoor-noise-monitoring-microphone-protection-ds-0240.pdf?sfvrsn=c2e4e3c5_18. Additional wind speed and gust information can be accessed from www.wunderground.com for additional context, however, these measurements are not at the specific meter locations.

Item 2	
Document	WJHW letter 1, Henderson Exhibit, page 6
	Long-term ambient sound survey locations do not include receivers in Wilmette, or generally beyond 3 or 4 blocks from Ryan Field
Arup Comment	Supplementary ambient sound surveys including additional neighborhoods to provide better representation of potentially impacted areas.
WJHW Response	The neighborhood noise study locations aligned with the original gameday noise study locations near the stadium.

Item 3	
Document	WJHW letter 1, Henderson Exhibit, page 7
	The non-gameday weekend measurement results in Table 5 are a duplicate of gameday measurements results in Table 2.
Arup Comment	Clarify which table is gameday or non-gameday noise results. Provide the missing table of information.
WJHW Response	Results table was mistakenly duplicated. Table 5 in the Henderson survey has been updated, and attached.

Item 4	
Document	WJHW letter 1, Henderson Exhibit, page 2
	Henderson Exhibit: Long-term measurements of gameday sound levels were conducted in/around Ryan Field parking lots only.
Arup Comment	Conduct gameday measurements at neighborhood locations to document typical gameday activity sound (crowd cheers, public address announcements, etc.).
WJHW Response	Short duration measurements were collected during the gameday noise study at various locations in the surrounding neighborhoods. These measurements included activities described by Arup.

Item 5	
Document	WJHW letter 1, Henderson Exhibit, page 4
	Gameday measurements in neighborhoods were short-duration 30-120s at each location. This measurement duration may be too short to represent gameday activity sound levels.
Arup Comment	Measurements of existing gameday sound in surrounding community should capture range of gameday activity sound (crowd cheers, public address announcements, etc.). Document the gameday activities occurring during measurement intervals. Conduct longer or multiple measurements at each location as required to capture typical range of gameday activity levels.
WJHW Response	Short duration measurements were collected during the gameday noise study. All measurements included activity noise from the stadium which was primarily public address announcements and fan noise.

Item 6	
Document	WJHW letter 1, Henderson Exhibit, pages 4-5
	Only one gameday measurement (30-120 seconds in duration) was conducted in Wilmette. Results for gameday measurements are presented as an aggregate range with no results at individual receptors presented.
Arup Comment	Provide a supplementary gameday activity sound survey which includes additional neighborhoods to provide better representation of impacted areas. Include measurement results for each receiver location.
WJHW Response	Measurements were conducted in neighborhoods with close proximity to the stadium and are representative of those areas which may have the greatest impact from stadium activities.

Item 7	
Document	WJHW letters, pages 2-3
	The comparison of gameday vs. non-gameday activity sound in neighborhoods is based on a mix of different receivers and mix of long-term and short term (60-120 second acquisitions) and comparing broad ranges over multiple receivers.
Arup Comment	To quantify community sound levels due to gameday activities and compare to typical ambient (non- gameday) metrics, measurements of similar duration (longer than the 30-120s duration measurements measured by Henderson), time-of-day, and location could provide a more clear and meaningful comparison. Comparisons should be documented at each position rather than presenting overall aggregate range across all receivers.
WJHW Response	Figures 1 (page 3) and 2 (page 4) show long term measured sound levels during gameday and non-gameday weekends. Measurements are at the same location, have the same time period, and indicate sound levels across the entirety of the day (daytime and nighttime). Gameday and neighborhood noise studies utilized different locations. Studies occurred at different times during the year, but both occurred over the weekend.

Item 8	
Document	WJHW letters, page 3
	WJHW compares surveyed gameday activity sound levels with ambient Leq dBA levels. Figures 1 and 2 also show logged LA90 levels, though these are not referenced or discussed in WJHW's analysis.
Arup Comment	For neighborhoods with intermittent traffic, measured L90 sound levels are a more appropriate representation of the ambient sound conditions. The L90 levels should also be compared against gameday activity sound levels when considering noise impact.
WJHW Response	L90 is the lower limit of the ambient sound level and sets an unrealistic expectation for the fluctuating nature of ambient sound. A full 90% of the sound experienced is above the limit set by L90. Leq is the standard statutory representation of measured sound level in community noise standards, including the State of Illinois.

Item 9	
Document	WJHW letters, pages 3-4
	A description of new stadium design elements is included and is argued that the new build design elements will "be helpful in reducing sound…". There is not sufficient analysis or modeling to demonstrate the gameday sound impact of the new stadium design and the outcomes of each individual and/or combination of elements. There is also no description of the proposed "canopy" with information about the design parameters (e.g. materiality, extent of coverage, etc.).
Arup Comment	Provide additional analysis each of these design elements can offer individually and collectively to clearly illustrate a more quantifiable estimate of outcomes related to sound levels in the surrounding communities. Clarify which of the listed elements (canopy, barriers, absorptive material, etc.) will be included in the stadium design.
Item 9 (revision A)	
Updated Document	WJHW letter 3, pages 5-6
	An additional description has been included (#3, page 6) that describes enclosures and walls around the seating bowl using vertical barriers. It is unclear if this is only a descriptor of elements that had already been included in analysis presented later in the document or a new/updated element of the design that has been incorporated in updated analysis.
Arup Comment	Provide additional analysis each of these design elements can offer individually and collectively to clearly illustrate a more quantifiable estimate of outcomes related to sound levels in the surrounding communities. Clarify which of the listed elements (canopy, barriers, absorptive material, etc.) will be included in the stadium design. Clarify if item #3 – enclosures and walls around the seating bowl – had previously been included in the presented 3D acoustic / electroacoustic modeled results.
WJHW Response	Comparing the individual contribution of each noise isolation element is unnecessary. It is the collective result of all noise mitigation elements which is relevant to the community. The noise mitigation outline in the report (pages 5, 10, and 14) are included in the modelling and the results are representative of the community noise levels anticipated with these items included in the design. Enclosures and walls around the seating bowl have remained consistent throughout the modeling exercise.

Item 10	
Document	WJHW letters, pages 2-3
	Surveyed gameday sound levels are compared with ambient Leq dBA levels. Figures 1 and 2 also show logged L90 dBA levels, though these are not referenced or discussed in the narrative.
Arup Comment	For neighborhoods with intermittent traffic, measured L90 percentile levels are a more appropriate representation of the ambient sound conditions perceived by residents. The L90 levels should also be compared against gameday sound levels when considering noise impact.
WJHW Response	L90 is the lower limit of the ambient sound level and sets an unrealistic expectation for the fluctuating nature of ambient sound. A full 90% of the sound experienced is above the limit set by L90. Leq is the standard statutory representation of measured sound level in community noise standards, including the State of Illinois.

Item 11	
Document	WJHW letters, page 3
	A distributed sound system is described as an element that will be included in the design. The benefits cited with regards to community noise are not unreasonable but are not quantified. No clear statement is made about the use of this system for other events (e.g. concerts).
Arup Comment	Provide analysis that illustrates the benefits of the distributed sound system for gameday community noise. Clarify if this distributed sound system will be used for other events. In our experience, a distributed sound system is likely not viable for large concert sound reinforcement.
WJHW Response	Regarding the concert experience using the distributed system, WJHW's experience shows this can be used - though, often they are not. Should a distributed system be used during a concert, it would be used as fill (as in, filling in the gaps that the stage/main system does not cover). The primary/directional sound would still come from the stage. WJHW has seen house sound systems used in conjunction with the touring rig, specifically in AT&T Stadium (Dallas) and US Bank (Minneapolis).

Item 12	
Document	WJHW letters page 4
	The letter states "We would expect that these design features, combined with lower capacity, will ultimately result in less sound exposure to the residential properties surrounding the stadium compared to the current experience." The argument that lower stadium capacity will not necessarily result in less sound exposure is not correlated with sound level measurements or modeled results. We note that the listed game attendance during the weekend surveyed by Henderson was recorded as 32,123. (https://nusports.com/sports/football/stats/2022/wisconsin/boxscore/19987) which is slightly below the maximum game capacity of the new stadium design of 35,000.
Arup Comment	Statements of sound exposure based on lower stadium capacity design should be made in the context of actual crowd sizes of Ryan Field games in recent years.
WJHW Response	This is a general reference for stadium size (i.e. capacity). WJHW stands by the comment that the design features will result in less sound exposure to the community. The stadium design features provide improvement in noise reduction to the community – regardless of crowd size – as they provide additional barriers to sound transmission. The existing, on grade stadium is essentially wide open. The proposed new stadium includes numerous barriers around the perimeter of the seating bowl, is partially below grade and will have a canopy to limit sound transmission.

Item 13	
Document	WJHW letters, pages 4-7
	Details on input data or methodology for the 3D acoustic / electroacoustic modeled concert sound predictions are not provided. Relevant details include: • Stadium reference design (only 2D plan view shown) • Sound system design and configuration • Frequency spectrum of sound source levels (only overall dBA level at sound mix position is presented). Assumed frequency spectrum has a significant impact on audibility and disturbance in neighborhoods (e.g. whether a reasonable pop/rock, dance/EDM, r&b/hip hop, or other musical genre spectrums are considered) • Modeling standards used (user options within the modeling software). For example, is the 3D acoustic / electroacoustic model based on Cadna's implementation of ISO 9613? Is full 3D sound diffraction implemented? What ground effects are assumed? Does it account for meteorological (atmospheric) effects?
Arup Comment	Provide 3D acoustic / electroacoustic modeling input data and details listed above.
Item 13 (revision A)	
Updated Document	WJHW letter 3, pages 6-7
	Additional details are provided on input data and methodology for the 3D acoustic / electroacoustic modeled concert sound predictions including: • The 3D acoustic / electroacoustic model is based on Cadna's implementation of ISO 9613. It is noted that 'adverse wind conditions in all directions related to the sound source per ISO 9613' have been included. Other environmental factors (e.g. air temperature, humidity, temperature inversions, etc.) have not been included in the model. Have other standards been considered for implementation in the model? • The amplified sound source is noted to be a 'pop music' frequency spectrum. No details of the frequency spectrum are provided in relation to the sound levels set at the sound board location. • Use of a line array sound system is noted as the amplified sound source positioned at 56 ft above the field. Further details of the sound system design and configuration are not provided – just a photograph of an example of a line array loudspeaker – nor any details how Cadna incorporates a amplified sound system into its modeling input. While these details clarify portions of our previous comments, further clarifications would help evaluate the results and conclusions and what limitations of the 3D acoustic / electroacoustic remain.
Arup Comment	Provide additional 3D acoustic / electroacoustic modeling input data and details listed above.
WJHW Response	Stadium is based on the architectural model. Sound system design is based on a generic touring concert sound system and specific inputs are indicated on page 7 of the report. Frequency spectrum is based on a typical pop music concert spectrum. Modeling standards include: • Frequency spectrum utilized was from a previously measured rock concert.

	• Industry Standard: ISO 9613 • Meteorology was not accounted for in calculations. • Ground absorption was not accounted for in calculations. • Lateral Diffraction Setting: some Obj This modelling approach was intentionally conservative as it does not include any event attendees (empty seats included in the model), trees and additional landscaping which will further assist in the attenuation of sound.

Item 14	
Document	WJHW letter 2, pages 5-7
	Concert sound prediction maps are included for two scenarios: A baseline design and a design "with Additional Sound Mitigation" (figures 3-6). While WJHW's narrative describes various noise mitigation options in general, details of noise mitigation design included in Henderson's "Additional Sound Mitigation" scenario are not presented.
Arup Comment	Provide design details for "mitigated scenario" to clarify what each of these design elements can offer individually and collectively. Clarify which of the listed elements will be included in the stadium design to clearly illustrate a more quantifiable estimate of outcomes related to noise.
WJHW Response	The mitigated scenario is the result of closing in locations of the north elevation openings. As the design of the structure continues to evolve, the University is committed to finalizing the investigation of mitigation options which will provide the most benefit to the surrounding community.

Item 15	
Document	WJHW letter 2, pages 5-7
	Concert sound predictions are presented as broadband dBA and dBC results only. No frequency band results, or indication of low-frequency results are provided.
Arup Comment	Consider frequency spectrum of predictions results, especially low-frequency (125Hz and below) impact.
WJHW Response	dBA is the standard to which most municipalities determine acceptability of community noise, including the Village of Wilmette and the State of Illinois. Low frequency sound impact is represented by dBC and was included in the report at the request of the City of Evanston.

Item 16	
Document	WJHW letters, pages 8-10
	The specific nature of concert sound compared to typical or existing ambient sound sources in the environment are not addressed. Amplified concerts typically contain prevalent low-frequency (bass) energy that is often rhythmic. Characterizing concert sound in terms of single broadband dBA sound levels is not sufficient, and sound pressure levels at lower frequencies should be specifically considered. Considerations appropriate for an impact assessment are referenced in environmental noise survey standards, and there is precedent in other noise codes, agreements, and guidance documents.
Arup Comment	Provide a noise impact study that contains specific consideration of characteristics of concert music sounds compared to other existing ambient sound in the community.
WJHW Response	Model images of the dBA and dBC contour maps have been provided to represent noise from concert events.

Item 17	
Document	WJHW letters, pages 5-6
	An argument is made for the shielding effect of Northwestern University buildings to the North as partial justification of North-facing orientation of sound system. However, building shielding appears to benefit a small percentage of Wilmette residential land area as demonstrated in Henderson's 3D acoustic / electroacoustic modeling output.
Arup Comment	Provide further clarification on the level of benefit shielding is providing for community noise from concert events.
Item 17 (revision A)	
Updated Document	WJHW letter 3, page 9
	An argument is made that alternative stage locations do not realize the sound reduction benefits of the building barrier effect of structures to the North of Ryan Field in comparison to those to the South. However, 3D acoustic / electroacoustic modeling is not presented to qualify this conclusion and provide numerical and statistical comparison of the predicted sound levels and the population affected.
Arup Comment	Provide further clarification on the level of benefit shielding is providing for community noise from concert events.
WJHW Response	The benefit of shielding from the University buildings is noted in the report on page 9. In addition to the shielding effect of the buildings to the north, reference Appendix C North Stage Analysis for additional factors which warrant the final stage orientation.

Item 18	
Document	WJHW letters, page 6
	An argument is made that the effects of including structures beyond the Northwestern University property (not included in Henderson's 3D acoustic / electroacoustic model) would result in lower noise levels: "…would limit how far into the residential area sound travels before it reaches ambient levels. The sound levels in the residential community will be lower than at the property line, when factoring in the impact of other structures, distance, directivity, and other factors." There is no analysis or estimate of the difference or at what distance the sound is estimated to be attenuated to ambient (or code required) levels. Buildings also reflect sound and may cause local increases in sound level. Meteorological effects, depending on weather conditions, can result in less attenuation with distance.
Arup Comment	Additional enhancements to the 3D acoustic / electroacoustic model to include residential structures and meteorological conditions should be included to analyze and accurately quantify the predicted sound attenuation with distance.
Item 18 (revision A)	
Updated Document	WJHW letter 3, page 9
	The updated figures illustrate sound levels that differ from previous results, but no discussion is provided why there may be differences. Reviewing the mitigated option (figure 7), items of note include: • Sound levels at various properties to the north have increased from 80 dBC in previous results to 85 dBC • Sound levels to the north within the residential areas are 75 dBC – 80 dBC along the south facing portion of the property. The north side of the property appears to benefit from some 'sound shadowing' with levels typically at 70 dBC *or* 5 dBC lower than the south portion of the property. No discussion is provided on the effects of the meteorological conditions included, what effects additional meteorological conditions may have which have not been modeled, or a statistical analysis of sound levels from the updated model results with the residential structures included.
Arup Comment	Additional enhancements to the 3D acoustic / electroacoustic model to include meteorological conditions should be included to analyze and accurately quantify the predicted sound attenuation with distance in varying conditions. Statistical analysis of the sound levels with/without the inclusion of the 3D modeled structures should be provided to evaluate the outcomes of their inclusion in the 3D acoustic / electroacoustic model.
WJHW Response	Additional residential and community buildings were included in the model per a previous response. Weather conditions can vary substantially - day to day, time of year, and even over an evening. While these conditions can impact sound transmission, the sheer number of combinations would be impossible to model. At this time, ISO 9613 has been used as the baseline as this is the industry standard to utilize when modelling anticipated sound levels.

Item 19	
Document	WJHW letters, pages 4-8)
	There is no description of planned scheduling and timing of sound from concert activities including event setup, soundchecks, the concert event, and teardown.
Arup Comment	Timing of concerts and other sound generating activities associated with concert production should be considered in a noise impact assessment.
WJHW Response	Setup of the stage, sound system, lighting and supplemental equipment will typically occur the day before a concert event. Members of the community will observe trucks and buses entering and leaving the underground loading area. The day of the concert will involve completion of setup activities, sound check activities in the afternoon occurring for 45-60 minutes, and the concert event in the evening. Immediately following the concert event, dismantling of the stage, sound system, lighting and supplemental equipment will commence, and wrap up the following day. Each event is unique in terms of show elements as well as requirements and limitations stated by the venue.

Item 20	
Document	WJHW letters, pages 1,3,4,6, & 8
	The focus of the document is the sound impact of residential properties, but does not address other building and land uses in the community.
Arup Comment	A noise impact study should consider all noise-sensitive uses, including but not limited to, residential, worship, healthcare facilities, education (schools), and outdoor parks and recreation spaces that would potentially be impacted.
WJHW Response	The closest sensitive receivers to the stadium are residential neighborhoods and the majority of our effort has been related to them. There are other sensitive spaces within Evanston and Wilmette that may experience sound impact, but our assessment shows these to have lower overall impact. We have not forgotten about these potential receivers, but the overwhelming concern is with the residential properties closest to the stadium.

Item 21	
Document	WJHW letters, page 1
	The introduction states that the memo "includes comments on the potential impact of sport and concert activities at the stadium on the surrounding communities". The WJHW letter does not make clear statements on noise impact to the community. General statements concerning the audibility of concert and gameday activity sound (that they will be audible) are given. The letter compares limited modeled and measured broadband sound pressure levels without reference to local or regional noise codes, and without interpretation of impact on the community these sound levels may have. The geographical extents of the area studied (measured and modeled) are limited and do not address all neighborhoods that may be impacted.
Arup Comment	A noise impact assessment has not been provided and is recommended.
WJHW Response	The report outlines the study completed for this project. Statements made are representative of the results.

Item 22	
Document	WJHW letters, pages 9-10
	Recommendations for concert sound mitigation include limiting sound levels by implementing sound level limits, noise level monitoring, and limiting hours of concerts. No specific limits are proposed or details of concert event management approaches for activities such as soundcheck, event start, curfew times, and teardown.
Arup Comment	The concert sound mitigation strategies should be developed in more detail and assessed in terms of both feasibility and effectiveness including event management approaches.
WJHW Response	The report describes noise mitigation elements starting on page 5; notably there are multiple permanent items included in the stadium design that are intended to lower community sound levels for football games and other events, in comparison with the existing stadium, including: • The event level/field being set 20+ ft below grade which reduces total building openings through which sound can escape to the community. • A distributed house sound system within the seating bowl which reduces sound output of the house system compared to the current end zone cluster. • A canopy above the seating areas provides adequate sound reduction characteristics and reduces the bowl opening through which sound can transmit to the community. • Enclosures and walls around the seating bowl that further reduces openings in the building and reduces sound emissions to the community. Temporary sound mitigation strategies focusing on the northwest corner of the stadium are being analyzed, including sound curtains and moveable partitions which will have a minimum sound reduction performance of 20 dBA. In addition to the permanent architectural elements and temporary measures noted above, multiple operational parameters have been proposed such as: • Ending concerts at 10:00 pm Sunday – Thursday and 10:15 pm Friday – Saturday notwithstanding local ordinances allowing sound until 11:00 on weekend evenings. • Installation of sound monitoring devices in and/or around the stadium. Limiting maximum sound levels at the sound board.

Item 23 (new item)	
Document	WJHW letter 2, pages 5-7 Concert sound prediction maps are included for two scenarios: A baseline design and a design "with Additional Sound Mitigation" (figures 3-6).
Updated Document	WJHW letter 3, pages 8-12
	Concert sound prediction maps are included for two scenarios: A baseline design and a design "with Additional Sound Mitigation" (figures 4-7). 3D modelled structures beyond the property line of Northwestern University two to three blocks away have been included. However, no information on the source and currency of the 3D GIS data is noted. A different false color scale step is used in these figures which makes it difficult to compare to the previously published results.
Arup Comment	Provide details for 3D GIS information used. Provide figures with false color map scales equivalent to the previous presented figures (or update previous figures) to allow for direct comparison between modeled results.
WJHW Response	Structures beyond the University's property line were modelled to the following boundaries: Maple Avenue (North), Bryant Avenue (East), Lincoln Street (South) and Broadway Avenue (West). dBA and dBC scale was adjusted to focus on the levels encountered in the model in an effort to minimize confusion caused by the use of similar colors on the previous scale. dBA and dBC data shown in the modeling images can be directly compared as the only adjustment between the two reports was to include the structures outside of the University's property line to the extents noted above.

We appreciate the opportunity to provide the above responses to the comments and concerns raised by Arup.
Regards,

Greg Hughes
Principal

HENDERSON ENGINEERS

Exhibit - Noise Surveys

Two noise surveys were completed on separate occasions in order to assess the existing ambient noise levels during a gameday weekend and non-gameday weekend. The noise surveys were conducted with field calibrated Larson Davis Model 831 Type 1 sound level meters (SLM), each placed inside a weather-tight environmental enclosure. The microphone for each SLM was located in an environmental enclosure with a windscreen. The complete sound measuring apparatus was attached to an arm mount which was installed on a light pole or column along with the environmental kit approximately 10 – 12 feet above the ground.

1. Gameday Weekend

   An environmental noise survey was conducted for a continuous 67-hour period on October 7-10, 2022. See figures below for measurement locations.

Figure 1: Site Map of Measurement Location (Google Maps)

Figure 2: Measurement Equipment Photos

Below is a summary of the weather conditions during the measurement period.

Table 1: Weather Conditions (wunderground.com)

	Weather	Temperature (high / low)	Max Wind Speed
October 7, 2022	Fair	56° / 42°	17 mph
October 8, 2022	Fair	58° / 38°	17 mph
October 9, 2022	Fair	68° / 42°	12 mph
October 10, 2022	Fair	73° / 47°	13 mph

Overall, weather had negligible effects on the measurements.

The following table provides the overall measurement summary. See appendix for definitions.

Table 2: Overall Measurement Summary Results

	Date	Timeframe	L_{eq} "Average" (dBA)	$L_{max,slow}$ "Maximum" (dBA)	$L_{min,slow}$ "Minimum" (dBA)	L10 (dBA)	L90 (dBA)
Meter 1	10/7/2022	2pm - 12am	57.6	97.7	43.6	58.9	46.4
	10/8/2022	12am - 12am	71.8	90.0	42.5	77.4	44.4
	10/9/2022	12 am -12am	55.8	79.3	42.1	59.8	44.3
	10/10/2022	12am - 9am	55.4	85.2	35.8	55.6	44.3
Meter 2	10/7/2022	2pm - 12am	68.5	98.8	47.0	67.3	51.2
	10/8/2022	12am - 12am	71.4	99.1	46.5	76.7	47.4
	10/9/2022	12 am -12am	63.0	99.0	46.4	63.2	47.4
	10/10/2022	12am - 9am	60.2	88.9	40.0	63.8	47.9
Meter 3	10/7/2022	2pm - 12am	60.3	90.3	43.2	60.9	49.7
	10/8/2022	12am - 12am	74.2	89.4	42.2	79.8	44.5
	10/9/2022	12 am -12am	57.3	87.7	41.5	57.7	44.1
	10/10/2022	12am - 9am	58.7	91.3	41.8	60.0	43.0

A. Gameday Noise

1) There were tailgates/parties consisting of amplified music and large groups of people near the location of each sound level meter. The sound levels measured during the game in these locations is inflated when considering the sound level in the neighborhood during gamedays.

Figure 4: Tailgate/Party at South End of West Parking Lot October 8, 2022

2) In addition to the long duration measurements, short duration sound measurements were collected in the surrounding neighborhood to determine the sound level at different locations around the site during the football game. The short duration measurements were collected with a Larson Davis Model 831 Type 1 sound level meter with windscreen and ranged in duration from 30 – 120 seconds. Refer to the following figure for short duration sound measurement locations.

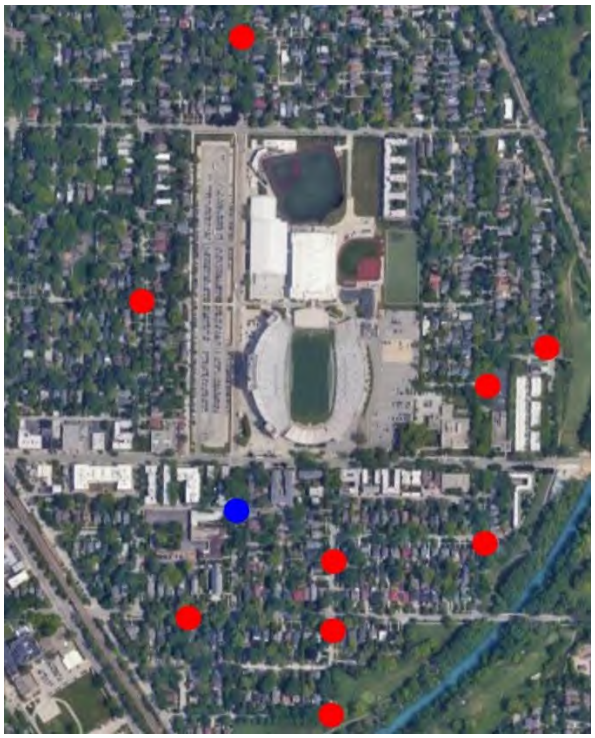


Figure 5: Short Duration Sound Measurement Locations October 8, 2022

3) The LAeq sound levels ranged from 50-65 dBA for the locations shown in red. The LAeq sound level at the blue location was 84 dBA primarily due to the large party at the south end of west parking lot shown in Figure 4.

4) The primary noise source from the football stadium was the sound system, and it was audible at all of the short duration sound measurement locations. Since this is not a consistent noise source, it is not possible to isolate that sound from the other ambient noise such as cars, people, trains, and birds.

5) The main loudspeaker cluster is located at the north endzone and directed to the south. Based on subjective listening and sound levels measured, the sound levels are higher in the neighborhoods to the south than to the north from the stadium sound system. The sound levels from stadium sound system are higher in the neighborhoods to the east than to the west due to the east side of the stadium having a lower height since the pressbox is located on the west side.

2. Non-Gameday Weekend

An environmental noise survey was conducted for a continuous 57-hour period on December 2-4, 2022 during a non-gameday weekend. The sound level meter locations differed from the gameday noise survey, as they were placed in the surrounding neighborhoods. See figures below for measurement location.

Figure 6: Site Map of Measurement Location (Google Maps)

Figure 7: Measurement Equipment Photos

Table 3: Sound Level Meter Locations

	Intersection	
Meter 1	Chancellor St.	Asbury Av.
Meter 2	Lincoln St.	Jackson Av.
Meter 3	Chancellor St.	Eastwood Av.

Below is a summary of the weather conditions during the measurement period.

Table 4: Weather Conditions (wunderground.com)

	Weather	Temperature (high / low)	Max Wind Speed
December 2, 2022	Fair	53° / 36°	23 mph
December 3, 2022	Fair	51° / 21°	26 mph
December 4, 2022	Early Morning Rain	40° / 19°	16 mph

Overall, weather had negligible effects on the measurements.

The following table provides the overall measurement summary. See appendix for definitions.

Table 5: Overall Measurement Summary Results

	Date	Timeframe	L_{eq} "Average" (dBA)	$L_{max,slow}$ "Maximum" (dBA)	$L_{min,slow}$ "Minimum" (dBA)	L10 (dBA)	L90 (dBA)
Meter 1	12/2/2022	10am - 12am	56.4	79.8	45.4	59.1	48.8
	12/3/2022	12am - 12am	53.6	77.4	41.7	56.6	44.4
	12/4/2022	12 am -7pm	65.2	104.3	33.3	56.4	43.1
Meter 2	12/2/2022	10am - 12am	62.3	86.5	41.7	66.7	47.4
	12/3/2022	12am - 12am	60.5	83.0	36.3	65.7	41.6
	12/4/2022	12 am -7pm	66.7	106.5	32.8	66.5	36.0
Meter 3	12/2/2022	10am - 12am	56.5	87.7	40.8	58.4	46.1
	12/3/2022	12am - 12am	52.8	83.9	37.5	55.4	41.4
	12/4/2022	12 am -7pm	64.9	106.3	32.6	55.3	37.4

NORTHWESTERN
RYAN FIELD

Concert Operations Plan Outline
DRAFT

1. Licensing & Permissions
    a. Venue Overview & Objectives
    b. Definitions
    c. Roles & Responsibilities
    d. Insurance
    e. Licensing
    f. AHJ Approvals
    g. Permits

2. Venue Design & Configuration
    a. Access
    b. Security
    c. Power & Distribution
    d. Lighting
    e. Seating & Viewing Areas
    f. Restrooms
    g. Waste Management
    h. Water
    i. Catering
    j. Signage

3. Venue Rules & Regulations
    a. Sound Mitigation Deployment
    b. Sound Check Protocol (Timing & Sound Level)
    c. Event Sound Levels
        i. Sound Board
        ii. Property Perimeter
    d. Traffic & Parking Management
    e. Fines

4. Health & Safety
    a. Risk Assessment
    b. Access Overview (Ingress & Egress)
        i. General Public, Artist / Promoter, Venue Staff
        ii. Barriers & Fencing
        iii. Security Check Points
        iv. Circulation
    c. Emergency Access
        i. Emergency Vehicle Access Points
    d. Emergency Evacuation
        i. Evacuation Policy & Procedure
        ii. Exit Routes
        iii. Assembly Points
    e. First Aid
    f. Weather Conditions
    g. Security Protocols
    h. Crowd Management

5. Organization Charts & Communication
    a. Key Points of Contact

DRAFT

Concert Operations Plan Outline
DRAFT

i. Venue Manager
ii. Event Organizer
iii. Event Manager
iv. Health & Safety Officer
v. Stage Manager
vi. Press Coordinator

b. Team Directories
c. Communication Procedures
i. Radio Channels

6. Event Logistics & Schedule
   a. Load In Procedures
      i. Off Site Marshalling Location & Communication Protocol
      ii. Idling Protocol
      iii. Grade Level Logistics
      iv. Loading Dock Logistics
      v. Stage Installation
      vi. Equipment Set Up
      vii. Lighting Set Up
   b. Event Day
      i. Stage Installation
      ii. Equipment Set Up
      iii. Lighting Set Up
      iv. Seating
      v. Crowd Control & Ticketing
   c. Load Out Procedures
      i. Off Site Marshalling Location & Communication Protocol
      ii. Idling Protocol
      iii. Grade Level Logistics
      iv. Loading Dock Logistics
      v. Stage Dismantle
      vi. Equipment Dismantle
      vii. Lighting Set Dismantle
      viii. Restoration

7. Traffic Management
   a. Parking Areas
      i. Preferred
      ii. On Site
      iii. Off Site Supplemental
   b. Public Transportation
   c. Ride Share
   d. Road Closures
   e. Signage

DRAFT

NORTHWESTERN UNIVERSITY
RYAN FIELD REDEVELOPMENT
PLANNED DEVELOPMENT APPLICATION

SOUTH ELEVATION DESIGN ALTERNATE

0' 40' 80' 160' 320'
SCALE: 1" = 160'

N

HNTB
Perkins&Will
AUG 11.2023

600 Southgate Drive
Guelph ON Canada
N1G 4P6
Tel: +1.519.823.1311

MEMORANDUM

DATE:	2023-09-20	**RWDI Reference No.:** 2201458
TO:	Darren Nielsen - HNTB	**EMAIL:** DNielsen@hntb.com
CC:	Paul Griesemer - HNTB	**EMAIL:** PGriesemer@hntb.com
FROM:	Tim Wiechers - RWDI Jason Munn - RWDI	**EMAIL:** Tim.Wiechers@rwdi.com Jason.Munn@rwdi.com
RE:	**Representative Pedestrian Wind Comfort around Proposed Site Northwestern University Ryan Field (NURF) Redevelopment Evanston, IL**	

Dear Darren,

RWDI has been retained in the capacity of wind engineering consultant for the proposed Northwestern University Ryan Field (NURF) Project. RWDI's engagement has involved the study of various wind interactions with the stadium structure. Specifically, RWDI has evaluated generalized wind flow patterns as it pertains to *Pedestrian Wind Comfort* within and closely adjacent to the proposed stadium. RWDI understands that at the current juncture an interest has been raised with respect to wind analysis around public sidewalks and ground level areas surrounding the stadium.

For the purposes of this memorandum and the intent herein, RWDI has presented select imagery from the computational fluid dynamics analysis to illustrate comparative conditions between the existing site conditions and potential future conditions given representative stadium massing.

1. Objective

The objective of this assessment is to provide an evaluation of the potential wind conditions in pedestrian areas in the immediately surrounding neighborhood based on the CFD modeling. The assessment is based on the following:

- A review of the regional long-term meteorological data from applicable nearby airport stations;
- A representative 3D model of the proposed Project received in Schematic Design;
- The use of *Orbital Stack*, an in-house proprietary CFD tool;

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- RWDI's engineering judgment, experience, and expert knowledge of wind flows around buildings; and,
- The RWDI wind comfort criteria (refer to Section 3, herein).

2. CFD for Wind Simulation

Computational Fluid Dynamics (CFD) is a numerical technique that can be used for simulating wind flows in complex environments. For this analysis, CFD techniques were used to generate a virtual wind tunnel where flows around the site and its surroundings were simulated in full scale. The computational domain that covered the site and its surroundings was divided into millions of small cells where calculations were performed, yielding a prediction of wind conditions across the entire study domain. CFD excels as a tool for wind modeling, presenting early design advice, comparing different design and site scenarios, resolving complex flow physics, and helping diagnose problematic wind conditions. While the computational modeling method used in the current assessment does not explicitly simulate the transient behavior of turbulent wind, its effects were estimated based on other calculated quantities.

CFD simulations were completed for the existing site condition and a representation of the proposed site condition within the context of the existing site surroundings. Landscaping and other smaller architectural and accessory features were not included in the computer model in order to provide more conservative wind conditions (as is the norm for this level of assessment).

The winds approaching the modelled area were simulated for 16 directions (starting at 0°, at 22.5° increments around the compass), accounting for the effects of the atmospheric boundary layer and terrain impacts. Wind data were obtained in the form of ratios of wind speeds at approximately 5 ft above concerned levels, to the mean wind speed at a reference height. The data was then combined with meteorological records obtained from appropriate nearby meteorological stations to determine the wind speeds and frequencies in the simulated areas.

3. RWDI Pedestrian Wind Criteria

The RWDI pedestrian wind criteria, which have been developed by RWDI through research and consulting practice since 1974, are used in the current study. These criteria have been widely accepted by municipal authorities as well as by the building design and city planning community. Regional differences in wind climate and thermal conditions as well as variations in age, health, clothing, etc. can affect a person's perception of the wind climate. Therefore, comparisons of wind speeds for the existing and proposed building configurations are the most objective way in assessing local pedestrian wind conditions. In general, the combined effect of mean and gust speeds on pedestrian comfort can be quantified by a Gust Equivalent Mean (GEM).

Comfort Category	GEM Speed (mph)	Description
Sitting	≤ 6	Calm or light breezes desired for outdoor restaurants and seating areas where one can read a paper without having it blown away
Standing	≤ 8	Gentle breezes suitable for main building entrances, bus stops, and other places where pedestrians may linger
Strolling	≤ 10	Moderate winds that would be appropriate for window shopping and strolling along a downtown street, plaza or park
Walking	≤ 12	Relatively high speeds that can be tolerated if one's objective is to walk, run or cycle without lingering
Uncomfortable	> 12	Strong winds of this magnitude are considered a nuisance for all pedestrian activities, and wind mitigation is typically recommended

Notes:

(1) *GEM Speed = max (Mean Speed, Gust Speed/1.85)* and *Gust Speed = Mean Speed + 3*RMS Speed*;
(2) Wind conditions are considered to be comfortable if the predicted GEM speeds are within the respective thresholds for at least 80% of the time.
(3) The comfort assessment was conducted for two seasonal periods, summer (May to October) and winter (November to April) because in a climate such as that found in Evanston, there are distinct differences in pedestrian outdoor behaviors between these two-time periods.

4. Simulation Results and Discussion

The predicted seasonal wind comfort conditions for the existing site and with the proposed stadium development in place are presented in Images 1 and 2. The results are presented as color contours of wind speeds based on the wind criteria (Section 3). The contours represent wind speeds at a horizontal plane approximately 5 ft above the concerned level.

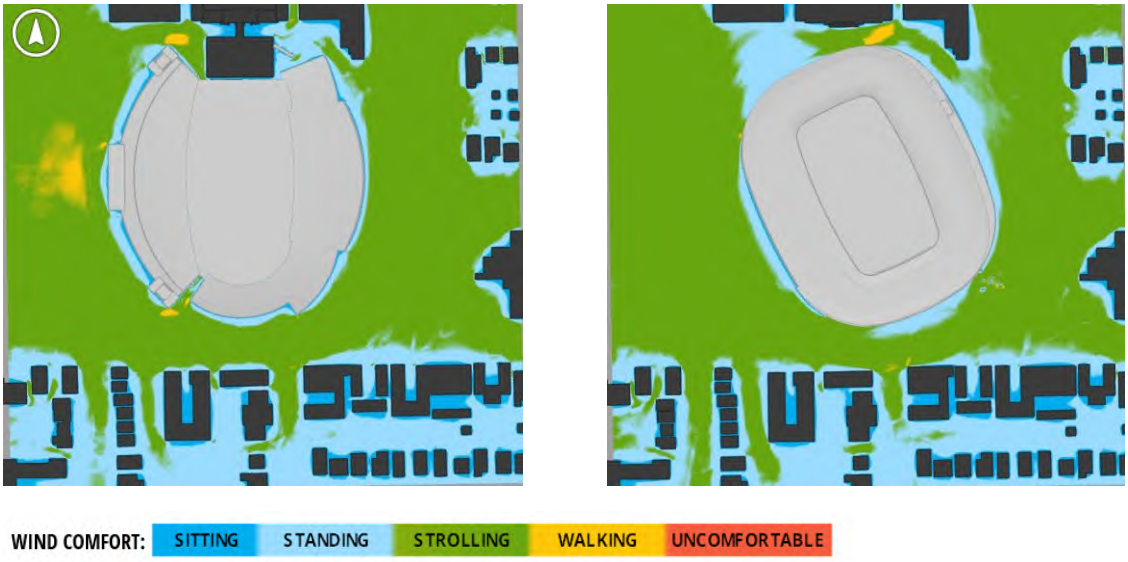


Image 1 – Pedestrian Wind Comfort Prediction for Summer (May through October) Conditions for Existing Configuration (left) versus Representative Proposed Configuration (right)

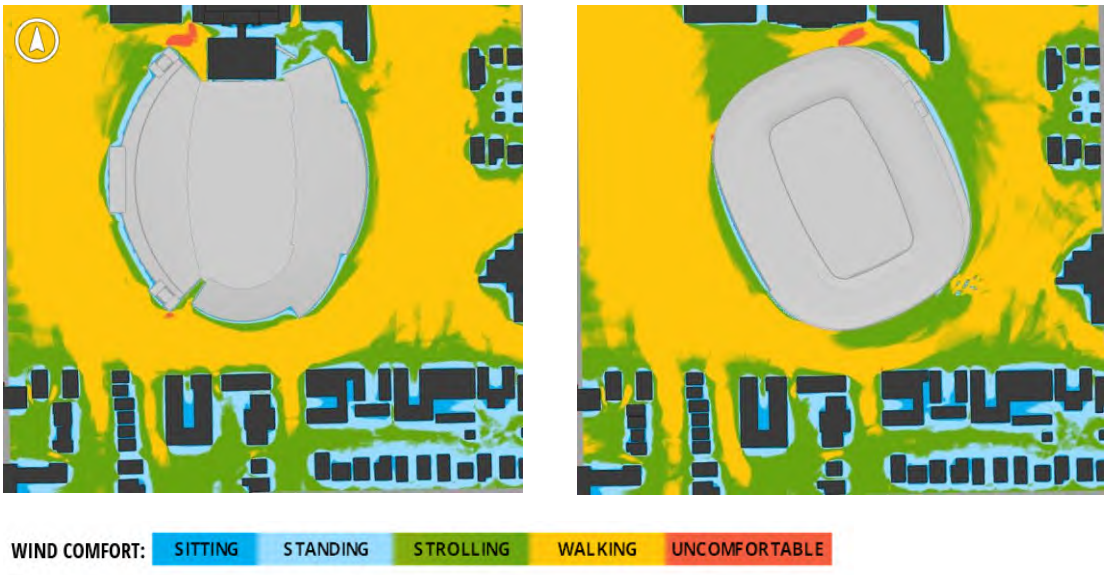


Image 2 – Pedestrian Wind Comfort Prediction for Winter (November through April) Conditions for Existing Configuration (left) versus Representative Proposed Configuration (right)

Based on the above simulation findings, it can be evidenced that by-and-large Pedestrian Wind Comfort conditions around the stadium site are expected to be consistent with the existing site conditions. The generalized orientation and massing of the proposed stadium with respect to predominant winds, may result in somewhat more tenable conditions wind comfort conditions at certain areas immediately adjacent to the stadium. Site features, as well as landscaping elements, can be implemented to further enhance the wind environment around the stadium.

In both scenarios evaluated conditions at or around the stadium are expected to be comfortable for conditions ranging from standing to walking. RWDI expects that these conditions align with the intended usage of the areas around the site.

An exception of potentially increased wind environment exists between the existing (and proposed) Stadium and Welsh Ryan Arena. The 'constriction' of wind at this area is expected to cause localized accelerations in wind flow. It is worth nothing that this acceleration is expected to be localized and not significantly extend into the patron realm of the adjacent neighborhood to the east of the stadium.

5. Conclusion

We trust that the representative results from computational fluid dynamics (CFD) simulations herein assists and provides a useful summary of information pertaining to portions of wind study conducted by RWDI for the proposed Northwestern University Ryan Field Redevelopment Project.

Yours truly,

ROWAN WILLIAMS DAVIES & IRWIN INC. (RWDI)

Statement of Limitations

This memorandum was prepared by Rowan Williams Davies & Irwin Inc. ("RWDI") for HNTB ("Client"). The findings and conclusions presented have been prepared for the Client and are specific to the project described herein ("Project"). The conclusions and recommendations contained in this memorandum are specific to conditions modelled and based on the information provided to RWDI at certain junctures in the lifecycle of the Project. Because the contents of this memorandum may not reflect the final design of the Project or subsequent changes made after the date of this memorandum, RWDI recommends that it be retained by Client during the final stages of the project to verify that the results and recommendations provided have been correctly interpreted in the final design of the Project.

The conclusions and recommendations contained in this memorandum have also been made for the specific purpose(s) set out herein. Should the Client or any other third party utilize the memorandum and/or implement the conclusions and recommendations contained therein for any other purpose or project without the involvement of RWDI, the Client or such third party assumes any and all risk of any and all consequences arising from such use and RWDI accepts no responsibility for any liability, loss, or damage of any kind suffered by Client or any other third party arising therefrom.

Finally, it is imperative that the Client and/or any party relying on the conclusions and recommendations in this memorandum carefully review the stated assumptions contained herein and to understand the different factors which may impact the conclusions and recommendations provided.

September 18, 2023

Northwestern University
C/o Katie C. Jahnke Dale
DLA Piper LLP (US)
444 West Lake Street
Suite 900
Chicago, IL 60606-0089

Re: Proposed Ryan Field Stadium Redevelopment
Northwestern University
Evanston, Illinois

Ladies and Gentlemen,

Northwestern University is proposing to replace its existing football stadium, Ryan Field ("Ryan"), with a smaller state-of-the art facility. As part of this project, it also seeks to host up to six public concerts per year. This plan will require certain zoning relief including: (1) a Special Use that would permit this redevelopment and (2) a Text Amendment that would permit these concerts (in addition to other activities). Among the standards that must be met for these changes to be approved is that they will not have an adverse effect on or interfere with the values of surrounding properties. This is the standard I am addressing in this report.

The Most Livable City Association, a local citizens' group, has obtained a Property Value Impact Study (dated August 14, 2023) from CohnReznick ("Report") which concludes that adding 10 concerts to the activities at Ryan could reduce surrounding property values by three to five percent. At your request, I have reviewed this Report and provided the following comments.

In my opinion, the Report has structured its analysis in such a way that it fails to address the question at hand, which is the impact on surrounding homes of adding concerts to the activities at an existing stadium. Instead, the analysis considers whether the presence of a stadium itself negatively impacts the surrounding homes. As a result, I do not believe this Report has any relevance to the decision-making regarding the redevelopment of Ryan, the proposal to hold concerts there or the approval standards applicable to either of the forgoing.

BACKGROUND INFORMATION

The Report draws conclusions regarding Ryan based on an analysis of homes near a stadium in the Forest Hills neighborhood of Queens, New York - 820 miles east of Evanston.

1017 RIDGE AVENUE
EVANSTON, ILLINOIS 60202
PHONE 312.968.1017
EMAIL mary@marylinberger.com

The Forest Hills Stadium ("Forest Hills") was constructed in 1923 and has a seating capacity of 13,000 (as reported on its website). It was the longtime home of the U.S. Open tennis tournament until 1978. It is in a fully developed residential neighborhood where homes date from the 1920s and frequently sell in the range of $2,000,000. No one acquiring a home near Forest Hills (or Ryan, for that matter) could be surprised to know that it can periodically be very busy while many other times sitting unused.

In comparing Ryan and Forest Hills, I would note the following:

- The closest single-family homes to Forest Hills are about 80 feet from the south edge of the stadium. The closest single-family homes to Ryan are about 280 feet from the east edge of the stadium.

- Forest Hills lacks any on-site parking and since event attendees cannot park on the surrounding residential streets (as is the case with Ryan) they must use public transportation or a ride service. Ryan has parking on site as well as access to university parking within walking distance.

- Forest Hills began holding concerts in 1963 which stopped in 1998 but resumed in 2013. With a recent schedule of around 30 concerts annually, the activity level at Forest Hills far exceeds the six concerts proposed for Ryan.

- The Report notes that Forest Hills has endeavored to control sound transmission due to neighbors' complaints. While the Report does not note that Ryan will have a state-of-the-art system to mitigate sound outside the stadium, it does seem to suggest that it could impact its conclusions when it states "…. we have concluded that quantifiable negative impact may occur to adjacent properties, dependent on mitigation efforts by the University." Emphasis added.

DATA CONSIDERED

The Report studies a target area around Forest Hill and contrasts it with a much larger control area further away. In neither instance, does the Report explain how the boundaries for these areas were selected.

The Report provides information on 21 home sales near Forest Hills between September 2018 and January 2023 as well as 20 sales in the control area between October 2018 and May 2023.

The period 2018 through 2023 has been the most tumultuous in many decades. Marking March 2020 as the point when the Covid pandemic began to have a profound impact on daily life, this period encompasses the pandemic as well as 19 months of the pre-pandemic period. Fourteen (two-thirds) of the sales near Forest Hills closed after the onset of the pandemic while only 10 (half) of the control group sales did.

With a total of 41 sales, I do not believe that the Report's database is large enough or controlled enough to produce reliable statistical evidence as to the impact of any single variable on property values.

METHODOLOGY APPLIED

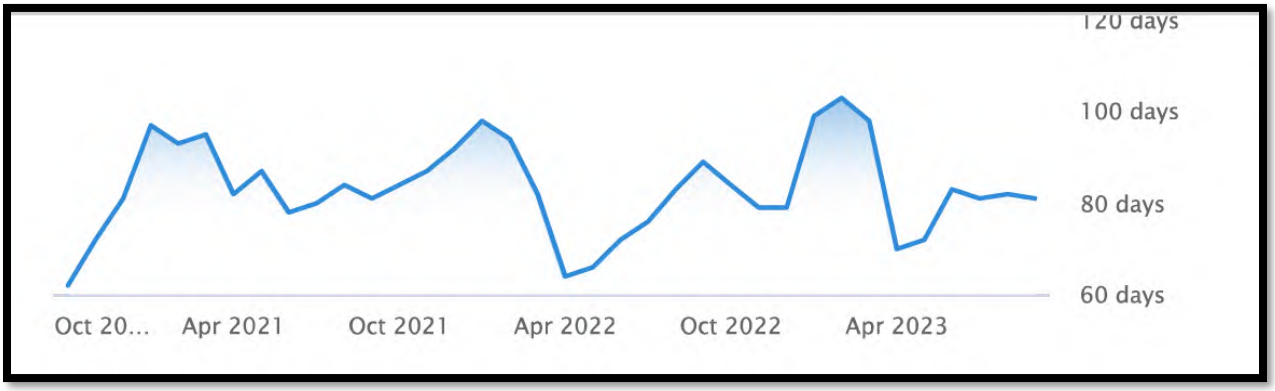
The Report says that it is studying the value impact on surrounding homes of reintroducing concerts at Forest Hills in 2013. However, the methodology it employs does not address this issue. An analysis that addressed this issue would contrast home prices in proximity to Forest Hills in the period after 2013 with a prior period when no concerts were held.

Instead, the Report compares a group of homes very near Forest Hills with a group further away and represents that any differences between them reflect the negative impact of concerts at Forest Hills. In fact, the Report is inaccurately measuring the impact of Forest Hills itself.

The Report's conclusions rely on the following measures:

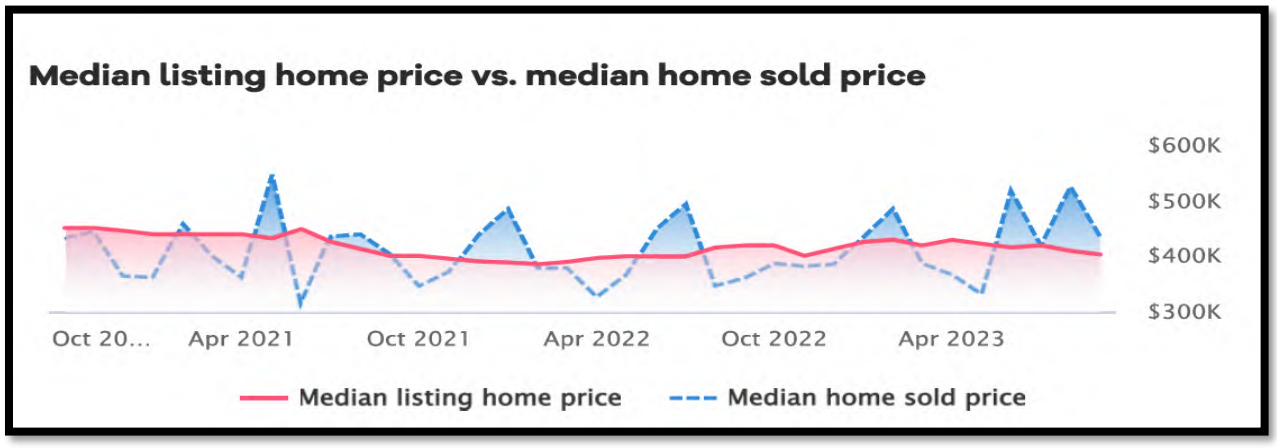
- The Report indicates that the **median sales price per square** foot for homes near Forest Hills was 2.85 percent lower than in the control area. This is a modest differential and could be accounted for by many factors, most obviously the timing of these sales as well as the varying features and conditions of the individual homes.

- The Report says that the **median marketing time** for homes near Forest Hills was 190 days whereas for homes in the control area it was 177 days, indicating a differential of 7.3 percent. However, as indicated by the following table from Realtor.com, recent marketing times have been very volatile in the Forest Hills neighborhood, indicating that a property's time of sale could impact its marketing time.



Median Market Period – Forest Hills – Source: Realtor.com

- The Report says that the **median spread between listing prices and sales prices** was 10.56 percent near Forest Hills as compared with 6.3 percent in the control area. In my experience, this differential can often reflect sellers' motivations and realism regarding their home's value. Furthermore, as indicated by the table below from Realtor.com., sale and listing prices in this neighborhood have varied sharply over the past few years.



Data from Forest Hills - Source: Realtor.com -

- The Report charts resales of homes in both groups from 1998 through 2023, which spans the pre-and post-concert period (the concerts were resumed in 2013). These sales were used to calculate the **median monthly price appreciation rate** for these areas, which has been 0.33 percent near Forest Hills and 0.38 percent in the control area. I believe this difference of 0.05 percent would be seen as de minimus by most market participants.

  Most interesting about this metric, however, is that it indicates that the long-term appreciation rate for homes near Forest Hills has been essentially the same as for the control group despite the re-introduction of concerts.

CONCLUSIONS

I observe the following regarding the homes that the Report has studied:

- There is substantial overlap in their prices. Among the 21 homes near Forest Hills, 11 sold for $1,700,000 to $2,500,000 as did 12 of the homes among the 20 in the control group.

- The most expensive home that has sold near Forest Hills commanded $4,000,000 in October 2021 and the most expensive home in the control area sold for $4,100,000 in June 2022. Using the Report's cited median monthly appreciation rate of 0.3 percent, essentially all of this difference can be attributed to market appreciation.

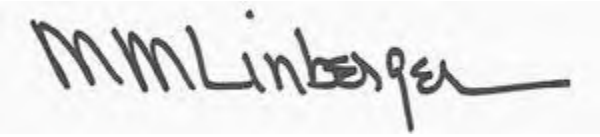
- The home experiencing the highest rate of monthly appreciation (0.5 percent) near Forest Hills is located at 32 Tennis Place. It sold in 2003 and then resold in 2018 – a 15- year span. For the first 10 years there were no concerts and for the last five years there were.

- The most expensive home currently on the market in the Forest Hills neighborhood (according to Realtor.com) is located at 69-36 Dartmouth Street and is listed for $3,999,000. It is about 80 feet from the south edge of the stadium.

I do not believe the Report provides any evidence that the concerts at Forest Hills have negatively impacted surrounding property values. Nor has it provided any convincing evidence that Forest Hills itself has negatively impacted surrounding property values.

Respectfully submitted,

LINBERGER & COMPANY, LLC

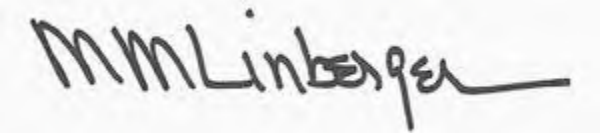


Mary M. Linberger, MAI

CERTIFICATION

I do hereby certify that, except as otherwise noted in this report:

- I have no present or contemplated future interest in the real estate that is the subject of this report.
- I have no personal interest or bias with respect to the subject matter of this report or the parties involved. The amount of the fee is not contingent upon reporting a predetermined opinion that favors the cause of the client, the attainment of a stipulated result, or the occurrence of a subsequent event.
- To the best of my knowledge and belief the statements of fact contained in this report, upon which the analysis, opinions, and conclusions expressed herein are based, are true and correct.
- I have not relied on any single item of information to the exclusion of other information and all data were analyzed within the framework of my judgment, knowledge, and experience. I have not withheld any pertinent information.
- This report sets forth all of the limiting conditions (imposed by the terms of the assignment or by me) affecting my analysis, opinions and conclusions.
- This report has been made in conformity with and is subject to the requirements of the Code of Professional Ethics and Standards of Professional Conduct of the Appraisal Institute.
- No other person has prepared the analysis, conclusions, and opinions concerning real estate that are set forth in this report.
- As of the date of this report, I have completed the requirements of the continuing education program of the Appraisal Institute and am certified by the state of Illinois.
- The use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives.



Mary M. Linberger, MAI

CONTINGENT AND LIMITING CONDITIONS

This Certification is expressly subject to the following stipulations:

- I obtained the information, estimates, and opinions contained in this report from sources considered reliable and believed to be true and correct; however, I can assume no responsibility for accuracy.

- I assume no responsibility for matters of a legal nature.

QUALIFICATIONS

EDUCATION

Ms. Linberger was an undergraduate student at LeMoyne College in Syracuse, New York, and a graduate student at the University of Chicago. She holds the MAI designation from the Appraisal Institute and is a certified general appraiser in Illinois.

EXPERIENCE

Ms. Linberger has been engaged in providing real estate appraisal and consulting services for over 30 years. She was initially employed by the Marling Group, a Chicago-based firm that provided appraisal and consulting services to an institutional clientele on a national basis. In 1985, she formed her own firm.

AREAS OF SPECIALIZATION

Ms. Linberger specializes in providing testimony and other litigation support in areas such as condemnation and zoning. She has extensive experience estimating the value impact of factors such as special uses, zoning changes, environmental contamination, encroachments, easements and parking losses.

Some of her recent assignments have included:

- Evaluating the value impact on a large commercial property of a zoning ordinance that would substantially reduce the allowed size of its exterior signage;
- Evaluating the value impact of a full-service living facility for the homeless on the values of surrounding residential and commercial properties;
- Evaluating the value impact of a road widening which results in an irreplaceable parking loss for a funeral home;
- Evaluating the value impact on businesses in a suburban downtown of converting their privately owned and operated parking to free, municipally owned and operated parking;
- Estimating the value impact on an industrial property of an avigation easement which would limit its allowable building height to 20 feet;
- Evaluating the value impact of soil contamination from an adjoining property on a vacant commercial building being marketed for redevelopment by a major retailer; and
- Evaluating the value impact on surrounding properties of replacing a coal-burning electric generating plant with a battery energy storage system (BESS).

COMMUNICATIONS

Call Time	Event ID	Rpt #	Street	Nature	CallSo
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COMMUNICATIONS

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Call Time	Event ID	Rpt #	Street	Nature	CallSo
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09/11/2021 11	20212540083		601 DEMPSTER ST	RELOCATION TOW	PHONE
09/11/2021 11	20212540081		2201 MAPLE AV	RELOCATION TOW	PHONE
09/11/2021 10	20212540079		860 HINMAN AV	PARKING COMPLAI	PHONE
09/11/2021 10	20212540078	21007547	2425 OAKTON ST	ACCIDENTAL DAMA	PHONE
09/11/2021 10	20212540076	21007546	960 MULFORD ST	THEFT	PHONE
09/11/2021 10	20212540073		2674 SHERIDAN RD	LEAF BLOWER VIO	PHONE
09/11/2021 10	20212540072		1454 ELMWOOD AV	CHILD CUSTODY I	PHONE
09/11/2021 10	20212540070		1228-306 EMERSON ST	NUISANCE COMPLA	PHONE
09/11/2021 10	20212540069		WASHINGTON ST/BROWN AV	LEAF BLOWER VIO	PHONE
09/11/2021 09	20212540067	21007545	2102 DOBSON ST	THEFT	PHONE
09/11/2021 09	20212540066		CENTRAL ST/GIRARD AV	MISCELLANEOUS P	PHONE
09/11/2021 09	20212540065		1924 DEMPSTER ST	BURGLAR ALARM	PHONE

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Call Time	Event ID	Rpt #	Street	Nature	CallSo
09/25/2021 21	20212680193		1423 GREY AV	NUISANCE COMPLA	PHONE
09/25/2021 21	20212680192		OAK AV/LAKE ST	DISORDERLY COND	PHONE
09/25/2021 20	20212680190		337-2E CUSTER AV	DISTURBANCE	PHONE
09/25/2021 20	20212680189	21008013	1630-1511 CHICAGO AV	VOLUNTARY COMMI	PHONE
09/25/2021 19	20212680180		3017 CENTRAL ST	FIREWORKS	PHONE
09/25/2021 19	20212680179		LINCOLN ST/ORRINGTON A	FIREWORKS	PHONE
09/25/2021 19	20212680177		DEMPSTER ST/ELMWOOD AV	FIREWORKS	PHONE
09/25/2021 19	20212680176		1128 CHICAGO AV	DISTURBANCE	PHONE
09/25/2021 19	20212680175		1828 DEMPSTER ST	CHECK WELL BEIN	PHONE
09/25/2021 19	20212680174	21008011	1022 DAVIS ST	LOST PROPERTY	PHONE
09/25/2021 19	20212680171	21008012	2724 LAWNDALE AV	DECEPTIVE PRACT	PHONE
09/25/2021 18	20212680166	21008010	822 SEWARD ST	HARASSMENT	PHONE
09/25/2021 18	20212680165		812 GROVE ST	PREMISE CHECK	PHONE
09/25/2021 18	20212680163		1805 MONROE ST	PARKING COMPLAI	PHONE
09/25/2021 18	20212680161		319 DEMPSTER ST	NUISANCE COMPLA	PHONE
09/25/2021 18	20212680159		860 HINMAN AV	PARKING COMPLAI	PHONE
09/25/2021 18	20212680157		607-K2 SHERIDAN RD	CHECK WELL BEIN	PHONE
09/25/2021 17	20212680154	21008009	1802 FOSTER ST	STANDBY ASSIST	PHONE
09/25/2021 17	20212680151		1829 DEMPSTER ST	DISORDERLY COND	PHONE
09/25/2021 16	20212680145		2516 PARK PL	LEAF BLOWER VIO	PHONE
09/25/2021 15	20212680134		919 FOSTER ST	NUISANCE COMPLA	PHONE
09/25/2021 15	20212680128	21008007	327-2 KEDZIE ST	DECEPTIVE PRACT	PHONE
09/25/2021 14	20212680122		2045 MAPLE AV	NUISANCE COMPLA	PHONE
09/25/2021 13	20212680114		2045 MAPLE AV	NUISANCE COMPLA	PHONE
09/25/2021 13	20212680110		901 MAPLE AV	DISORDERLY COND	PHONE
09/25/2021 12	20212680104	21008003	SHERMAN AV/LINCOLN ST	FOUND/CONFISCAT	PHONE
09/25/2021 12	20212680103	21008005	1935 JACKSON AV	FOUND/CONFISCAT	PHONE
09/25/2021 12	20212680102		1127 MADISON ST	NUISANCE COMPLA	PHONE
09/25/2021 12	20212680101		2045 MAPLE AV	NUISANCE COMPLA	PHONE
09/25/2021 12	20212680100	21008004	2050 GREEN BAY RD	CRIMINAL DAMAGE	PHONE
09/25/2021 11	20212680091	21008001	2301 FOSTER ST	ASSIST EVANSTON	PHONE

Call Time	Event ID	Rpt #	Street	Nature	CallSo
09/25/2021 11	20212680090		2115 MAPLE AV	NUISANCE COMPLA	PHONE
09/25/2021 11	20212680089		729 CHICAGO AV	VAGRANT	PHONE
09/25/2021 11	20212680088		2536 HURD AV	PARKING COMPLAI	PHONE
09/25/2021 10	20212680085		817 CHURCH ST	DISORDERLY COND	PHONE
09/25/2021 10	20212680081	21008000	1122 MAPLE AV	ANIMAL COMPLAIN	PHONE
09/25/2021 09	20212680069		2700 HURD AV	PREMISE CHECK	PHONE
09/25/2021 09	20212680068		860 HINMAN AV	CANCELLED CALL	PHONE
09/25/2021 09	20212680065	21007998	1916 DEMPSTER ST	FOUND/CONFISCAT	PHONE
09/25/2021 09	20212680064	21007996	1731 GREENWOOD ST	CRIMINAL DAMAGE	PHONE

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Call Time	Event ID	Rpt #	Street	Nature	CallSo
10/16/2021 21	20212890199		RIDGE AV/MAIN ST	RECKLESS DRIVER	PHONE
10/16/2021 21	20212890196		3308 CULVER ST	ASSIST OTHER AG	PHONE
10/16/2021 21	20212890193		332 CUSTER AV	ASSIST OTHER AG	PHONE
10/16/2021 20	20212890189	21008684	901 MAPLE AV	ASSIST OTHER AG	PHONE
10/16/2021 20	20212890186		1507 EMERSON ST	PREMISE CHECK	PHONE
10/16/2021 20	20212890185	21008682	2520 GROSS POINT RD	CHECK WELL BEIN	PHONE
10/16/2021 20	20212890184		1325 BRUMMEL ST	NUISANCE COMPLA	PHONE
10/16/2021 20	20212890183		CUSTER AV/HOWARD ST	TRAFFIC STOP	PHONE
10/16/2021 19	20212890178	21008681	1101 WASHINGTON ST	MISSING PERSON-	PHONE
10/16/2021 19	20212890175	21008680	635 CHICAGO AV	THEFT	PHONE
10/16/2021 19	20212890174		1245-111 ELMWOOD AV	NUISANCE COMPLA	PHONE
10/16/2021 19	20212890173		RIDGE AV/CENTRAL ST	CHECK WELL BEIN	PHONE
10/16/2021 19	20212890172		1570 ELMWOOD AV	DISORDERLY COND	PHONE
10/16/2021 18	20212890171		ELMWOOD AV/DOBSON ST	PARKING COMPLAI	PHONE
10/16/2021 18	20212890170		1618 BENSON AV	DISTURBANCE	PHONE
10/16/2021 18	20212890168		HINMAN AV/KEDZIE ST	RECKLESS DRIVER	PHONE
10/16/2021 18	20212890167		1720 MAPLE AV	DISORDERLY COND	PHONE
10/16/2021 18	20212890166	21008679	105 GREY AV	SUSP INCIDENT	PHONE
10/16/2021 18	20212890164		1019 DARROW AV	NUISANCE COMPLA	PHONE
10/16/2021 18	20212890162		MAIN ST/RIDGE AV	PANHANDLER	PHONE
10/16/2021 17	20212890156		811 CHICAGO AV	VAGRANT	PHONE
10/16/2021 17	20212890154		1000-BLK DEWEY AV	NUISANCE COMPLA	PHONE
10/16/2021 17	20212890153	21008678	1802 FOSTER ST	STANDBY ASSIST	PHONE
10/16/2021 16	20212890145		ISABELLA ST/ASBURY AV	NUISANCE COMPLA	PHONE
10/16/2021 16	20212890144		FOREST AV/MAIN ST	TRAFFIC MISCELL	PHONE
10/16/2021 16	20212890143		1603 ORRINGTON AV	NUISANCE COMPLA	PHONE
10/16/2021 16	20212890142	21008677	1511 SHERMAN AV	THEFT	PHONE
10/16/2021 16	20212890141		1125 HARTREY AV	BURGLAR ALARM	PHONE
10/16/2021 16	20212890137		1033 ELMWOOD AV	DRUG RELATED AC	PHONE
10/16/2021 16	20212890136		1741 HOVLAND CT	DISTURBANCE	PHONE
10/16/2021 15	20212890133		1821 DARROW AV	CHECK WELL BEIN	PHONE

Call Time	Event ID	Rpt #	Street	Nature	CallSo
10/16/2021 14	20212890127	21008675	CHICAGO AV/DEMPSTER ST	TRAFFIC ACCIDEN	PHONE
10/16/2021 13	20212890120	21008673	901 MAPLE AV	MISSING PERSON-	PHONE
10/16/2021 12	20212890110		1803 GREY AV	LANDLORD/TENANT	PHONE
10/16/2021 12	20212890106		3313 PAYNE ST	BURGLAR ALARM	PHONE
10/16/2021 12	20212890104		HARTREY AV/EMERSON ST	NUISANCE COMPLA	PHONE
10/16/2021 12	20212890103		2719 BROADWAY AV	PARKING COMPLAI	PHONE
10/16/2021 12	20212890102	21008671	2011 FOSTER ST	HARASSMENT	PHONE
10/16/2021 12	20212890101		1608 SHERMAN AV	HOLD UP PANIC A	PHONE
10/16/2021 11	20212890099		2218-208 MAPLE AV	CHECK WELL BEIN	PHONE
10/16/2021 11	20212890092		1730 SHERMAN AV	DISORDERLY COND	PHONE
10/16/2021 11	20212890091		2142 MAPLE AV	CITY ORDINANCE	PHONE
10/16/2021 10	20212890088		2142 MAPLE AV	NUISANCE COMPLA	PHONE
10/16/2021 10	20212890087	21008670	1580 DEWEY AV	BURGLARY TO VEH	PHONE
10/16/2021 10	20212890086		1515 COLFAX ST	PARKING COMPLAI	PHONE
10/16/2021 10	20212890085		1945 SHERMAN AV	NUISANCE COMPLA	PHONE
10/16/2021 09	20212890078	21008669	1711 SHERMAN AV	THEFT	PHONE
10/16/2021 09	20212890072	21008668	609-1D OAKTON ST	VOLUNTARY COMMI	PHONE
10/16/2021 09	20212890071		ASBURY AV/GREENLEAF ST	LOST CONFUSED P	PHONE
10/16/2021 09	20212890069	21008667	901 MAPLE AV	MISSING PERSON-	PHONE

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Call Time	Event ID	Rpt #	Street	Nature	CallSo
10/30/2021 21	20213030189		1811 SHERIDAN RD	CITY ORDINANCE	PHONE
10/30/2021 21	20213030188		1030 CENTRAL ST	NUISANCE COMPLA	PHONE
10/30/2021 21	20213030187		2627 HIGHLAND AV	DISORDERLY COND	PHONE
10/30/2021 21	20213030186		3200-BLK HARTZELL ST	NUISANCE COMPLA	PHONE
10/30/2021 21	20213030182		1300 MCDANIEL AV	NUISANCE COMPLA	PHONE
10/30/2021 21	20213030177		811 EMERSON ST	RELOCATION TOW	PHONE
10/30/2021 20	20213030175	21009136	338-8 CUSTER AV	HARASSMENT	PHONE
10/30/2021 20	20213030174		915 DAVIS ST	MISCELLANEOUS P	PHONE
10/30/2021 20	20213030172		DEMPSTER ST/JUDSON AV	NUISANCE COMPLA	PHONE
10/30/2021 20	20213030171		1600 DODGE AV	PREMISE CHECK	PHONE
10/30/2021 20	20213030170		2107 BRUMMEL ST	RECKLESS DRIVER	PHONE
10/30/2021 19	20213030166		LINCOLN ST/ASBURY AV	CHECK WELL BEIN	PHONE
10/30/2021 19	20213030165	21009133	800 HINMAN AV	THEFT	PHONE
10/30/2021 19	20213030164		ELMWOOD AV/GROVE ST	CANCELLED CALL	PHONE
10/30/2021 18	20213030159		2529 ASHLAND AV	PARKING COMPLAI	PHONE
10/30/2021 17	20213030157		1805 MONROE ST	PARKING COMPLAI	PHONE
10/30/2021 17	20213030156		944 ASHLAND AV	PREMISE CHECK	PHONE
10/30/2021 17	20213030153	21009132	1116 GARNETT PL	AUTO THEFT	PHONE
10/30/2021 17	20213030152	21009131	1944 JACKSON AV	BATTERY	PHONE
10/30/2021 17	20213030151		142 CLYDE AV	VEHICLE ALARM	PHONE
10/30/2021 17	20213030150	21009130	2050 GREEN BAY RD	BURGLARY	PHONE
10/30/2021 16	20213030148	21009129	900 CLARK ST	HIT AND RUN	PHONE
10/30/2021 16	20213030147		1742 LEMAR AV	HOLD UP PANIC A	PHONE
10/30/2021 16	20213030144	21009128	EMERSON ST/GREEN BAY R	TRAFFIC ACCIDEN	PHONE
10/30/2021 16	20213030143		2700-BLK LAWNDALE AV	LEAF BLOWER VIO	PHONE
10/30/2021 16	20213030141	21009127	1741 HOVLAND CT	HIT AND RUN	PHONE
10/30/2021 15	20213030138	21009126	901 MAPLE AV	MISSING PERSON-	PHONE
10/30/2021 15	20213030134		909 DAVIS ST	DISORDERLY COND	PHONE
10/30/2021 15	20213030133		355 RIDGE AV	UNWANTED PERSON	PHONE
10/30/2021 15	20213030129		1454 ELMWOOD AV	DUPLICATE TICKE	PHONE
10/30/2021 15	20213030128		1228 LAKE ST	DECEPTIVE PRACT	PHONE

Call Time	Event ID	Rpt #	Street	Nature	CallSo
10/30/2021 14	20213030127		MAPLE AV/CLARK ST	HIT AND RUN	PHONE
10/30/2021 13	20213030119		2325 LEE ST	ANIMAL COMPLAIN	PHONE
10/30/2021 13	20213030118	21009124	DODGE AV/FOSTER ST	HIT AND RUN	PHONE
10/30/2021 13	20213030117	21009123	2212 LINCOLN ST	SUSP INCIDENT	PHONE
10/30/2021 13	20213030116	21009125	1128 CHICAGO AV	TRAFFIC ACCIDEN	PHONE
10/30/2021 13	20213030114		1800 MAPLE AV	DISORDERLY COND	PHONE
10/30/2021 13	20213030113	21009122	DAVIS ST/OAK AV	HARASSMENT	PHONE
10/30/2021 13	20213030111		MAIN ST/HINMAN AV	DRUG RELATED AC	PHONE
10/30/2021 13	20213030109	21009120	914 SHERMAN AV	THEFT	PHONE
10/30/2021 12	20213030106		1567 RIDGE AV	CHECK WELL BEIN	PHONE
10/30/2021 12	20213030104		1025 GARNETT PL	PARKING COMPLAI	PHONE
10/30/2021 12	20213030102		1211 CHICAGO AV	MISCELLANEOUS P	PHONE
10/30/2021 12	20213030101		MCCORMICK BL/GREEN BAY	RECKLESS DRIVER	PHONE
10/30/2021 12	20213030099		1620 CENTRAL ST	PARKING COMPLAI	PHONE
10/30/2021 12	20213030097	21009119	1424 HARTREY AV	CRIMINAL DAMAGE	PHONE
10/30/2021 12	20213030095		512-3N LEE ST	ASSAULT	PHONE
10/30/2021 11	20213030092		1128 CHICAGO AV	PANHANDLER	PHONE
10/30/2021 11	20213030090		MAIN ST/CHICAGO AV	DISORDERLY COND	PHONE
10/30/2021 11	20213030086	21009118	1105 SIMPSON ST	DUMPING COMPLAI	PHONE
10/30/2021 11	20213030083		1616 SHERMAN AV	PREMISE CHECK	PHONE
10/30/2021 11	20213030081		JENKS ST/EASTWOOD AV	PARKING COMPLAI	PHONE
10/30/2021 11	20213030076		341 CUSTER AV	CANCELLED CALL	PHONE
10/30/2021 11	20213030075		322 MAIN ST	LEAF BLOWER VIO	PHONE
10/30/2021 11	20213030073		630 DAVIS ST	CHECK WELL BEIN	PHONE
10/30/2021 10	20213030068		807 HINMAN AV	TOWED VEHICLE	PHONE
10/30/2021 10	20213030067		EMERSON ST/WESLEY AV	LEAF BLOWER VIO	PHONE
10/30/2021 10	20213030066		1328 BRUMMEL ST	PARKING COMPLAI	PHONE
10/30/2021 10	20213030065		SHERIDAN RD/KEDZIE ST	LEAF BLOWER VIO	PHONE
10/30/2021 10	20213030062		CHURCH ST/MAPLE AV	REFERRED TO OTH	PHONE
10/30/2021 09	20213030057		807 HINMAN AV	PARKING COMPLAI	PHONE
10/30/2021 09	20213030056		KEDZIE ST/MICHIGAN AV	LEAF BLOWER VIO	PHONE

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Call Time	Event ID	Rpt #	Street	Nature	CallSo
11/06/2021 21	20213100205	21009333	1245 ELMWOOD AV	ASSAULT	PHONE
11/06/2021 21	20213100204		1933 HARRISON ST	DISORDERLY COND	PHONE
11/06/2021 21	20213100202		1741-2 DODGE AV	UNWANTED PERSON	PHONE
11/06/2021 21	20213100198		1101 WASHINGTON ST	JUVENILE INVEST	PHONE
11/06/2021 21	20213100196		300 DODGE AV	UNWANTED PERSON	PHONE
11/06/2021 20	20213100195		501 SHERIDAN RD	FIREWORKS	PHONE
11/06/2021 20	20213100193		2673 ORRINGTON AV	PREMISE CHECK	PHONE
11/06/2021 20	20213100190	21009332	2627 HIGHLAND AV	HARASSMENT	PHONE
11/06/2021 20	20213100187	21009331	1924 DEMPSTER ST	ASSIST EVANSTON	PHONE
11/06/2021 20	20213100184		1639 MCDANIEL AV	ANIMAL COMPLAIN	PHONE
11/06/2021 19	20213100182		MAIN ST/RIDGE AV	PANHANDLER	PHONE
11/06/2021 19	20213100181		917 ELMWOOD AV	DISORDERLY COND	PHONE
11/06/2021 19	20213100180		1625 MAPLE AV	DISORDERLY COND	PHONE
11/06/2021 19	20213100179		ELMWOOD AV/DOBSON ST	PARKING COMPLAI	PHONE
11/06/2021 18	20213100171		806 DEMPSTER ST	PARKING COMPLAI	PHONE
11/06/2021 18	20213100170		1801 MAIN ST	DRUG RELATED AC	PHONE
11/06/2021 17	20213100163	21009327	813 BRUMMEL ST	GRAFFITI	PHONE
11/06/2021 17	20213100162		MAPLE AV/LEE ST	PREMISE CHECK	PHONE
11/06/2021 17	20213100161		1324 CENTRAL ST	PARKING COMPLAI	PHONE
11/06/2021 16	20213100158		1028 CENTRAL ST	CANCELLED CALL	PHONE
11/06/2021 16	20213100156	21009326	800-809 HINMAN AV	BURGLARY	PHONE
11/06/2021 16	20213100154		901 RIDGE AV	CHECK WELL BEIN	PHONE
11/06/2021 16	20213100153		811 EMERSON ST	RELOCATION TOW	PHONE
11/06/2021 16	20213100152		801 MAIN ST	DISORDERLY COND	PHONE
11/06/2021 16	20213100149		733 LINCOLN ST	NUISANCE COMPLA	PHONE
11/06/2021 16	20213100145		826 HAMLIN ST	NUISANCE COMPLA	PHONE
11/06/2021 16	20213100144		100-BLK GREY AV	PARKING COMPLAI	PHONE
11/06/2021 15	20213100141		1828 DODGE AV	ANIMAL CRUELTY	PHONE
11/06/2021 15	20213100140	21009324	1018 DARROW AV	ANIMAL COMPLAIN	PHONE
11/06/2021 15	20213100139		1910 ORRINGTON AV	NUISANCE COMPLA	PHONE
11/06/2021 15	20213100138		CHURCH ST/CHICAGO AV	TRAFFIC MISCELL	PHONE

Call Time	Event ID	Rpt #	Street	Nature	CallSo
11/06/2021 15	20213100137	21009323	901 MAPLE AV	INVOLUNTARY COM	PHONE
11/06/2021 15	20213100131		CENTRAL ST/PRAIRIE AV	NUISANCE COMPLA	PHONE
11/06/2021 14	20213100128		1110 COLFAX ST	BURGLAR ALARM	PHONE
11/06/2021 14	20213100115		1111 LAKE SHORE BL	CHECK WELL BEIN	PHONE
11/06/2021 13	20213100113		HOWARD ST/DODGE AV	TRAFFIC ACCIDEN	PHONE
11/06/2021 13	20213100111	21009321	2025 MCDANIEL AV	THEFT	PHONE
11/06/2021 13	20213100106		1128 CHICAGO AV	CHECK WELL BEIN	PHONE
11/06/2021 12	20213100105		901 DAVIS ST	PREMISE CHECK	PHONE
11/06/2021 12	20213100099	21009319	505 FLORENCE AV	CITY ORDINANCE	PHONE
11/06/2021 12	20213100098		1780 MAPLE AV	PARKING COMPLAI	PHONE
11/06/2021 12	20213100096	21009317	901 MAPLE AV	BATTERY	PHONE
11/06/2021 12	20213100095		1034 ASBURY AV	ANIMAL COMPLAIN	PHONE
11/06/2021 11	20213100088		2005 WASHINGTON ST	BURGLAR ALARM	PHONE
11/06/2021 11	20213100086		1818-REAR MAPLE AV	LOST PROPERTY	PHONE
11/06/2021 11	20213100082	21009315	320 DODGE AV	HARASSMENT	PHONE
11/06/2021 11	20213100079	21009314	1501 SHERMAN AV	ROBBERY	PHONE
11/06/2021 10	20213100077		811 EMERSON ST	RELOCATION TOW	PHONE
11/06/2021 10	20213100070	21009311	2119 PIONEER RD	THEFT	PHONE
11/06/2021 10	20213100066		HARRISON ST/PROSPECT A	CITY ORDINANCE	PHONE
11/06/2021 10	20213100064	21009312	327 DEMPSTER ST	AUTO THEFT	PHONE
11/06/2021 10	20213100061	21009313	847 BROWN AV	DECEPTIVE PRACT	PHONE

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Call Time	Event ID	Rpt #	Street	Nature	CallSo
11/20/2021 21	20213240204	21009728	136-2N RIDGE AV	BATTERY	PHONE
11/20/2021 21	20213240201		HOWARD ST/CUSTER AV	DISORDERLY COND	PHONE
11/20/2021 21	20213240193	21009727	1454 ELMWOOD AV	VIOLATION OF OR	PHONE
11/20/2021 19	20213240179		938 EDGEMERE CT	BURGLAR ALARM	PHONE
11/20/2021 19	20213240178		736 JUDSON AV	BURGLAR ALARM	PHONE
11/20/2021 19	20213240174		319-407 DEMPSTER ST	NUISANCE COMPLA	PHONE
11/20/2021 19	20213240173	21009726	GREEN BAY RD/ASBURY AV	SHOTS FIRED	PHONE
11/20/2021 17	20213240163		2313 NATHANIEL PL	NUISANCE COMPLA	PHONE
11/20/2021 17	20213240159		1580 SHERMAN AV	PREMISE CHECK	PHONE
11/20/2021 17	20213240153		1585 RIDGE AV	PARKING COMPLAI	PHONE
11/20/2021 16	20213240148		1585 RIDGE AV	DUPLICATE TICKE	PHONE
11/20/2021 16	20213240147		650 MICHIGAN AV	LEAF BLOWER VIO	PHONE
11/20/2021 16	20213240144		1585 RIDGE AV	PARKING COMPLAI	PHONE
11/20/2021 15	20213240140	21009724	1926 DEMPSTER ST	HIT AND RUN	PHONE
11/20/2021 15	20213240138	21009723	2312 GREENWOOD ST	MISSING PERSON-	PHONE
11/20/2021 14	20213240128	21009720	1809 LAKE ST	ANIMAL COMPLAIN	PHONE
11/20/2021 14	20213240126		2346 COLFAX TER	BURGLAR ALARM	PHONE
11/20/2021 14	20213240124		2411 BRADLEY PL	ANIMAL COMPLAIN	PHONE
11/20/2021 14	20213240122	21009721	1011 HOWARD ST	BURGLARY	PHONE
11/20/2021 13	20213240118		909 FOSTER ST	FOUND/CONFISCAT	PHONE
11/20/2021 13	20213240117		2114 DEWEY AV	PARKING COMPLAI	PHONE
11/20/2021 13	20213240115	21009718	640 PITNER AV	STANDBY ASSIST	PHONE
11/20/2021 13	20213240114		1558 HOWARD ST	TRAFFIC ACCIDEN	PHONE
11/20/2021 13	20213240111	21009716	1406 CHICAGO AV	BATTERY	PHONE
11/20/2021 13	20213240106		915 HINMAN AV	NUISANCE COMPLA	PHONE
11/20/2021 13	20213240103		600-BLK BRUMMEL ST	LEAF BLOWER VIO	PHONE
11/20/2021 12	20213240099		SOUTH BL/CUSTER AV	ACCIDENTAL DAMA	PHONE
11/20/2021 12	20213240098		909 FOSTER ST	FOUND/CONFISCAT	PHONE
11/20/2021 12	20213240094		3333 CENTRAL ST	TRAFFIC ACCIDEN	PHONE
11/20/2021 12	20213240091		626 HARTREY AV	PARKING COMPLAI	PHONE
11/20/2021 11	20213240090		802 MAIN ST	THEFT	PHONE

Call Time	Event ID	Rpt #	Street	Nature	CallSo
11/20/2021 10	20213240086		ELMWOOD AV/GREENLEAF S	DISORDERLY COND	PHONE
11/20/2021 10	20213240084		825 CLARK ST	PANHANDLER	PHONE
11/20/2021 10	20213240080		322 DEMPSTER ST	PARKING COMPLAI	PHONE
11/20/2021 10	20213240077		2289 HOWARD ST	HOLD UP PANIC A	PHONE
11/20/2021 09	20213240073	21009713	2766 RIDGE AV	DECEPTIVE PRACT	PHONE
11/20/2021 09	20213240070		300 MAIN ST	PARKING COMPLAI	PHONE

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Call Time	Event ID	Rpt #	Street	Nature	CallSo
08/27/2022 21	20222390269		2600 COLFAX ST	PREMISE CHECK	PHONE
08/27/2022 20	20222390255		2438 MAIN ST	BURGLAR ALARM	PHONE
08/27/2022 20	20222390245		2657 STEWART AV	BURGLAR ALARM	PHONE
08/27/2022 20	20222390241		DODGE AV/MULFORD ST	TRAFFIC MISCELL	PHONE
08/27/2022 20	20222390238		550 HINMAN AV	NUISANCE COMPLA	PHONE
08/27/2022 20	20222390237		320 DODGE AV	DUPLICATE TICKE	PHONE
08/27/2022 20	20222390235	22007172	952-1 DOBSON ST	DOMESTIC RELATE	PHONE
08/27/2022 19	20222390228		1100-BLK FLORENCE AV	PREMISE CHECK	PHONE
08/27/2022 19	20222390225		814 MAIN ST	BURGLAR ALARM	PHONE
08/27/2022 19	20222390224		2117 OAKTON ST	PARKING COMPLAI	PHONE
08/27/2022 19	20222390221		CENTRAL ST/RIDGE AV	TRAFFIC MISCELL	PHONE
08/27/2022 18	20222390214		500-BLK HINMAN AV	NUISANCE COMPLA	PHONE
08/27/2022 18	20222390210	22007171	825 MAIN ST	THEFT	PHONE
08/27/2022 18	20222390209		2201 DEMPSTER ST	ASSIST OTHER AG	PHONE
08/27/2022 18	20222390208	22007168	320 DODGE AV	DISTURBANCE	PHONE
08/27/2022 18	20222390202	22007170	900 EDGEMERE CT	SUSP INCIDENT	PHONE
08/27/2022 18	20222390201		2663 HILLSIDE LN	ANIMAL COMPLAIN	PHONE
08/27/2022 18	20222390200	22007167	1616 SHERMAN AV	DISTURBANCE	PHONE
08/27/2022 17	20222390197		CENTRAL ST/GIRARD AV	TRAFFIC ACCIDEN	PHONE
08/27/2022 17	20222390196		ASBURY AV/HOWARD ST	RECKLESS DRIVER	PHONE
08/27/2022 17	20222390195	22007166	2205 FOSTER ST	THEFT	PHONE
08/27/2022 17	20222390189		1300 MCDANIEL AV	CHECK WELL BEIN	PHONE
08/27/2022 17	20222390188		300 DODGE AV	PARKING COMPLAI	PHONE
08/27/2022 16	20222390187		901 MAPLE AV	DUPLICATE TICKE	PHONE
08/27/2022 16	20222390182		1720 OAK AV	RELOCATION TOW	PHONE
08/27/2022 16	20222390177		MAIN ST/RIDGE AV	PANHANDLER	PHONE
08/27/2022 16	20222390176	22007165	901 MAPLE AV	INVOLUNTARY COM	PHONE
08/27/2022 15	20222390170		549-1A SHERIDAN RD	PREMISE CHECK	PHONE
08/27/2022 15	20222390167		2485 HOWARD ST	TRESPASSING	PHONE
08/27/2022 14	20222390159		2010 DEWEY AV	TRAFFIC ACCIDEN	PHONE
08/27/2022 14	20222390153		MAIN ST/FOWLER AV	CHECK WELL BEIN	PHONE

Call Time	Event ID	Rpt #	Street	Nature	CallSo
08/27/2022 13	20222390147		SOUTH BL/SHERIDAN RD	CHECK WELL BEIN	PHONE
08/27/2022 13	20222390142		2230 MAIN ST	CHECK WELL BEIN	PHONE
08/27/2022 12	20222390129		1000 GREY AV	BURGLAR ALARM	PHONE
08/27/2022 12	20222390125	22007164	1427 CHICAGO AV	BATTERY	PHONE
08/27/2022 12	20222390123		2300 CENTRAL ST	TRAFFIC ACCIDEN	PHONE
08/27/2022 12	20222390121		549-2B SHERIDAN RD	BURGLAR ALARM	PHONE
08/27/2022 12	20222390119		2316 EMERSON ST	ANIMAL COMPLAIN	PHONE
08/27/2022 12	20222390116		CHICAGO AV/DEMPSTER ST	CHECK WELL BEIN	PHONE
08/27/2022 12	20222390115		821 CHICAGO AV	HARASSMENT	PHONE
08/27/2022 11	20222390112	22007163	2425 OAKTON ST	ACCIDENTAL DAMA	PHONE
08/27/2022 11	20222390111	22007162	CHURCH ST/LEMAR AV	THEFT	PHONE
08/27/2022 11	20222390107		DARROW AV/SIMPSON ST	PARKING COMPLAI	PHONE
08/27/2022 11	20222390105		2748 GREEN BAY RD	TRAFFIC ACCIDEN	PHONE
08/27/2022 11	20222390103		1929 GREY AV	ANIMAL COMPLAIN	PHONE
08/27/2022 11	20222390100		1124 CLEVELAND ST	CHECK WELL BEIN	PHONE
08/27/2022 11	20222390099		MAPLE AV/DAVIS ST	CHECK WELL BEIN	PHONE
08/27/2022 11	20222390097		800 GREENLEAF ST	HAZARDOUS SITUA	PHONE
08/27/2022 11	20222390096	22007160	705 MAIN ST	CRIMINAL DAMAGE	PHONE
08/27/2022 11	20222390094		320 DODGE AV	PREMISE CHECK	PHONE
08/27/2022 10	20222390088	22007159	SHERMAN AV/GREENWOOD S	ASSAULT	PHONE
08/27/2022 10	20222390081		MONROE ST/DEWEY AV	PARKING COMPLAI	PHONE
08/27/2022 10	20222390077		1625 SHERMAN AV	ATTEMPT THEFT	PHONE
08/27/2022 10	20222390075		320 DODGE AV	ASSIST OTHER AG	PHONE
08/27/2022 09	20222390070	22007158	701 MAIN ST	ANIMAL BITE	PHONE
08/27/2022 09	20222390068	22007161	1721 KEENEY ST	FOUND/CONFISCAT	PHONE
08/27/2022 09	20222390066		1000 DAVIS ST	DISORDERLY COND	PHONE

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09/10/2022 21	20222530297		541-B1 HINMAN AV	ANIMAL COMPLAIN	PHONE
09/10/2022 21	20222530291		2600 COLFAX ST	PREMISE CHECK	PHONE
09/10/2022 20	20222530286		855 HINMAN AV	MISCELLANEOUS I	PHONE
09/10/2022 20	20222530278		1821 HOVLAND CT	NUISANCE COMPLA	PHONE
09/10/2022 20	20222530275		MADISON ST/RIDGE AV	FOUND/CONFISCAT	PHONE
09/10/2022 19	20222530267		1510 DARROW AV	PARKING COMPLAI	PHONE
09/10/2022 19	20222530264		811 EMERSON ST	RELOCATION TOW	PHONE
09/10/2022 19	20222530259		100-BLK CLYDE AV	PARKING COMPLAI	PHONE
09/10/2022 19	20222530258		1028 CENTRAL ST	PREMISE CHECK	PHONE
09/10/2022 19	20222530254		1212 DARROW AV	PARKING COMPLAI	PHONE
09/10/2022 19	20222530241		DODGE AV/MULFORD ST	NUISANCE COMPLA	PHONE
09/10/2022 18	20222530236		204 LAKE ST	BURGLAR ALARM	PHONE
09/10/2022 18	20222530235		207 KEDZIE ST	NUISANCE COMPLA	PHONE
09/10/2022 18	20222530234		1411 PITNER AV	CANCELLED CALL	PHONE
09/10/2022 18	20222530231		836 CHICAGO AV	CHECK WELL BEIN	PHONE
09/10/2022 18	20222530228		605 DEMPSTER ST	FOUND/CONFISCAT	PHONE
09/10/2022 17	20222530226		1801 MAIN ST	TRAFFIC ACCIDEN	PHONE
09/10/2022 17	20222530222	22007608	1401 SHERIDAN RD	THEFT	PHONE
09/10/2022 17	20222530221	22007606	800 GREENLEAF ST	CRIMINAL DAMAGE	PHONE
09/10/2022 17	20222530219		1213 DARROW AV	PARKING COMPLAI	PHONE
09/10/2022 17	20222530218		1811 SHERIDAN RD	PREMISE CHECK	PHONE
09/10/2022 17	20222530217	22007607	1105 CENTRAL ST	TRAFFIC ACCIDEN	PHONE
09/10/2022 17	20222530212	22007604	2211 OAKTON ST	HIT AND RUN	PHONE
09/10/2022 16	20222530209	22007605	132 CLYDE AV	MENTAL SUBJECT	PHONE
09/10/2022 16	20222530200		1510 DARROW AV	PARKING COMPLAI	PHONE
09/10/2022 16	20222530195		1133 HINMAN AV	PREMISE CHECK	PHONE
09/10/2022 16	20222530193		1328 BRUMMEL ST	PARKING COMPLAI	PHONE
09/10/2022 16	20222530192		1500 LAKE ST	ANIMAL COMPLAIN	PHONE
09/10/2022 16	20222530190		635 CHICAGO AV	MISCELLANEOUS I	PHONE
09/10/2022 16	20222530186	22007603	1400-204 CHICAGO AV	THEFT	PHONE
09/10/2022 15	20222530180		2400 MAIN ST	CHECK WELL BEIN	PHONE

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09/10/2022 15	20222530172		605 DEMPSTER ST	FOUND/CONFISCAT	PHONE
09/10/2022 15	20222530170		855 HINMAN AV	ASSIST OTHER AG	PHONE
09/10/2022 15	20222530168		242 CALLAN AV	CHECK WELL BEIN	PHONE
09/10/2022 14	20222530163		2023 GREY AV	PREMISE CHECK	PHONE
09/10/2022 14	20222530160		2404 RIDGE AV	JUVENILE INVEST	PHONE
09/10/2022 14	20222530152		930 HINMAN AV	PARKING COMPLAI	PHONE
09/10/2022 13	20222530142	22007600	1454 ELMWOOD AV	FOUND/CONFISCAT	PHONE
09/10/2022 13	20222530139		PRAIRIE AV/LINCOLN ST	PARKING COMPLAI	PHONE
09/10/2022 13	20222530138		2209 HOWARD ST	ANIMAL COMPLAIN	PHONE
09/10/2022 13	20222530133		1501-403 MAPLE AV	CHECK WELL BEIN	PHONE
09/10/2022 13	20222530131		2307 PARK PL	LEAF BLOWER VIO	PHONE
09/10/2022 13	20222530128		1121 CHURCH ST	RELOCATION TOW	PHONE
09/10/2022 12	20222530119		GRANT ST/PROSPECT AV	PREMISE CHECK	PHONE
09/10/2022 12	20222530115	22007598	2533 CENTRAL PARK AV	FOUND/CONFISCAT	PHONE
09/10/2022 12	20222530114		1454 ELMWOOD AV	TURNED IN/CONFI	PHONE
09/10/2022 12	20222530113	22007599	2315 CENTRAL ST	CHECK WELL BEIN	PHONE
09/10/2022 12	20222530111	22007597	1731 SOUTH BL	CHILD CUSTODY I	PHONE
09/10/2022 11	20222530109		2300-505 NOYES CT	CHECK WELL BEIN	PHONE
09/10/2022 11	20222530104		1424 WESLEY AV	BURGLAR ALARM	PHONE
09/10/2022 10	20222530099		300 DODGE AV	PARKING COMPLAI	PHONE
09/10/2022 10	20222530098	22007596	901 MAPLE AV	MISSING PERSON-	PHONE
09/10/2022 10	20222530093		918 WASHINGTON ST	RELOCATION TOW	PHONE
09/10/2022 10	20222530090		GREY AV/EMERSON ST	CHECK WELL BEIN	PHONE
09/10/2022 09	20222530083	22007594	CENTRAL ST/EASTWOOD AV	ACCIDENT WITH I	PHONE
09/10/2022 09	20222530081	22007593	1519 DEWEY AV	THEFT	PHONE
09/10/2022 09	20222530079	22007595	1147 MAPLE AV	BURGLARY TO VEH	PHONE
09/10/2022 09	20222530068		LAKE ST/DODGE AV	PARKING COMPLAI	PHONE
09/10/2022 09	20222530067		2438 MAIN ST	BURGLAR ALARM	PHONE
09/10/2022 09	20222530061		2655 ASBURY AV	TOWED VEHICLE	PHONE

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09/17/2022 21	20222600257		2400 MAIN ST	RELOCATION TOW	PHONE
09/17/2022 21	20222600256		811 EMERSON ST	NUISANCE COMPLA	PHONE
09/17/2022 21	20222600249		612 MULFORD ST	NUISANCE COMPLA	PHONE
09/17/2022 20	20222600240		1500 MCDANIEL AV	HOLD UP PANIC A	PHONE
09/17/2022 20	20222600239		1000 GROVE ST	DISORDERLY COND	PHONE
09/17/2022 20	20222600238		1918 LAKE ST	CHECK WELL BEIN	PHONE
09/17/2022 20	20222600237		1570 ELMWOOD AV	PREMISE CHECK	PHONE
09/17/2022 20	20222600233		2110 MAPLE AV	NUISANCE COMPLA	PHONE
09/17/2022 20	20222600231		SHERIDAN SQ/SHERIDAN R	PREMISE CHECK	PHONE
09/17/2022 20	20222600229		901-1W WASHINGTON ST	CHECK WELL BEIN	PHONE
09/17/2022 20	20222600226		SHERMAN AV/SEWARD ST	PREMISE CHECK	PHONE
09/17/2022 20	20222600224		811 EMERSON ST	NUISANCE COMPLA	PHONE
09/17/2022 19	20222600217		825 CHICAGO AV	BURGLAR ALARM	PHONE
09/17/2022 19	20222600214	22007816	725 MICHIGAN AV	AUTO THEFT	PHONE
09/17/2022 19	20222600212		2201 MAPLE AV	RELOCATION TOW	PHONE
09/17/2022 19	20222600211		1137 PITNER AV	HARASSMENT	PHONE
09/17/2022 18	20222600199		1944-2 JACKSON AV	BURGLAR ALARM	PHONE
09/17/2022 17	20222600194	22007815	1022 CENTRAL ST	DISTURBANCE	PHONE
09/17/2022 17	20222600193	22007814	2485 HOWARD ST	CRIMINAL DAMAGE	PHONE
09/17/2022 16	20222600189	22007813	2110 DEWEY AV	DISTURBANCE	PHONE
09/17/2022 16	20222600187		2621 HARRISON ST	BURGLAR ALARM	PHONE
09/17/2022 16	20222600186		1950 GREEN BAY RD	PREMISE CHECK	PHONE
09/17/2022 16	20222600184		1600-BLK PITNER AV	PARKING COMPLAI	PHONE
09/17/2022 16	20222600182		HURD AV/PARK PL	CHECK WELL BEIN	PHONE
09/17/2022 15	20222600178		2650 RIDGE AV	CHECK WELL BEIN	PHONE
09/17/2022 15	20222600175		355 RIDGE AV	CHECK WELL BEIN	PHONE
09/17/2022 15	20222600174	22007812	ELMWOOD AV/MAIN ST	CHECK WELL BEIN	PHONE
09/17/2022 15	20222600171		2400-BLK LINCOLN ST	PREMISE CHECK	PHONE
09/17/2022 15	20222600170	22007811	821 CHICAGO AV	LOST PROPERTY	PHONE
09/17/2022 15	20222600169		1128 CHICAGO AV	PANHANDLER	PHONE
09/17/2022 14	20222600167		1104 FOSTER ST	PARKING COMPLAI	PHONE

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09/17/2022 14	20222600164	22007809	1100 SOUTH BL	ACCIDENTAL DAMA	PHONE
09/17/2022 13	20222600161		910 SIMPSON ST	DISORDERLY COND	PHONE
09/17/2022 13	20222600160	22007810	901 MAPLE AV	MISSING PERSON-	PHONE
09/17/2022 13	20222600158		2209 HOWARD ST	PREMISE CHECK	PHONE
09/17/2022 13	20222600157		LINCOLN ST/SHERIDAN RD	TRAFFIC ACCIDEN	PHONE
09/17/2022 13	20222600155		1501 CENTRAL ST	CHECK WELL BEIN	PHONE
09/17/2022 13	20222600152	22007807	1616 SHERMAN AV	DOMESTIC RELATE	PHONE
09/17/2022 13	20222600150	22007808	835 SEWARD ST	HARASSMENT	PHONE
09/17/2022 13	20222600147		MAIN ST/RIDGE AV	PANHANDLER	PHONE
09/17/2022 12	20222600145	22007805	1406 CHICAGO AV	DISTURBANCE	PHONE
09/17/2022 12	20222600144	22007806	943-1 JUDSON AV	DECEPTIVE PRACT	PHONE
09/17/2022 12	20222600143		MAIN ST/CHICAGO AV	CHECK WELL BEIN	PHONE
09/17/2022 12	20222600140		1560 OAK AV	BURGLAR ALARM	PHONE
09/17/2022 12	20222600139	22007804	616 HARTREY AV	HIT AND RUN	PHONE
09/17/2022 11	20222600138		503 CUSTER AV	PARKING COMPLAI	PHONE
09/17/2022 11	20222600137		1101 DAVIS ST	CHECK WELL BEIN	PHONE
09/17/2022 11	20222600134		1813 CHURCH ST	ASSIST OUTSIDE	PHONE
09/17/2022 11	20222600131	22007803	811 EMERSON ST	ATTEMPT THEFT	PHONE
09/17/2022 10	20222600130	22007802	LAKE ST/DODGE AV	MAN WITH A GUN	PHONE
09/17/2022 10	20222600127	22007801	RIDGE AV/GREENWOOD ST	TRAFFIC ACCIDEN	PHONE
09/17/2022 10	20222600122		1118 JUDSON AV	BURGLAR ALARM	PHONE
09/17/2022 10	20222600121		MAPLE AV/LEE ST	ASSIST EVANSTON	PHONE
09/17/2022 10	20222600119	22007800	3221 HARTZELL ST	THEFT	PHONE
09/17/2022 10	20222600115		2148 MAPLE AV	NUISANCE COMPLA	PHONE
09/17/2022 09	20222600113		2700-BLK GIRARD AV	PARKING COMPLAI	PHONE
09/17/2022 09	20222600107		816 SIMPSON ST	NUISANCE COMPLA	PHONE
09/17/2022 09	20222600105		1508 HINMAN AV	CHECK WELL BEIN	PHONE
09/17/2022 09	20222600102		1418 LAKE ST	BURGLAR ALARM	PHONE
09/17/2022 09	20222600100		2731 THAYER ST	BURGLAR ALARM	PHONE

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09/24/2022 21	20222670317		1515 CHICAGO AV	NUISANCE COMPLA	PHONE
09/24/2022 21	20222670308		1726 GREY AV	NUISANCE COMPLA	PHONE
09/24/2022 21	20222670305	22008043	2149 GREY AV	SHOTS FIRED	PHONE
09/24/2022 21	20222670303		MAIN ST/CHICAGO AV	RECKLESS DRIVER	PHONE
09/24/2022 21	20222670298		1523 WILDER ST	NUISANCE COMPLA	PHONE
09/24/2022 20	20222670283		1304 DARROW AV	PARKING COMPLAI	PHONE
09/24/2022 20	20222670281	22008042	2650 RIDGE AV	SEX OFFENSE INV	PHONE
09/24/2022 20	20222670273		800 ELGIN RD	RELOCATION TOW	PHONE
09/24/2022 20	20222670267		1031 CENTRAL ST	TRAFFIC ACCIDEN	PHONE
09/24/2022 20	20222670265		1707 CENTRAL ST	TOWED VEHICLE	PHONE
09/24/2022 19	20222670264		1454 ELMWOOD AV	MISCELLANEOUS P	PHONE
09/24/2022 19	20222670263		1515 CHICAGO AV	NUISANCE COMPLA	PHONE
09/24/2022 19	20222670260	22008041	2905 HARRISON ST	BURGLARY	PHONE
09/24/2022 19	20222670253		2410 BROWN AV	ANIMAL COMPLAIN	PHONE
09/24/2022 18	20222670247		1413 GREY AV	DISTURBANCE	PHONE
09/24/2022 18	20222670243		CENTRAL ST/JACKSON AV	UNWANTED PERSON	PHONE
09/24/2022 18	20222670242	22008047	830 HAMLIN ST	MISCELLANEOUS I	PHONE
09/24/2022 18	20222670235	22008038	1702 DODGE AV	HARASSMENT	PHONE
09/24/2022 18	20222670234		911 FOSTER ST	UNWANTED PERSON	PHONE
09/24/2022 18	20222670233		900-101 CHICAGO AV	THEFT	PHONE
09/24/2022 18	20222670232	22008037	719 FOREST AV	SUSP INCIDENT	PHONE
09/24/2022 17	20222670230		908 SIMPSON ST	DISORDERLY COND	PHONE
09/24/2022 17	20222670229	22008034	1711 DODGE AV	DOMESTIC RELATE	PHONE
09/24/2022 17	20222670225		1200-BLK DARROW AV	ANIMAL COMPLAIN	PHONE
09/24/2022 17	20222670224	22008035	2310-2W CENTRAL ST	SUSPICIOUS PERS	PHONE
09/24/2022 17	20222670223	22008036	1413 GREY AV	HARASSMENT	PHONE
09/24/2022 17	20222670221		1112 GARNETT PL	NUISANCE COMPLA	PHONE
09/24/2022 17	20222670220	22008033	1935-2 HARTREY AV	ANIMAL BITE	PHONE
09/24/2022 17	20222670215		2148 MAPLE AV	NUISANCE COMPLA	PHONE
09/24/2022 16	20222670210		531 SHERIDAN RD	CRIMINAL DAMAGE	PHONE
09/24/2022 16	20222670207		MAIN ST/SHERMAN AV	DISTURBANCE	PHONE

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09/24/2022 16	20222670199	22008032	2752 BRYANT AV	THEFT	PHONE
09/24/2022 16	20222670194		1420 FOWLER AV	SUSP INCIDENT	PHONE
09/24/2022 15	20222670192		1512 GROVE ST	ASSIST OUTSIDE	PHONE
09/24/2022 15	20222670190		1815 LAKE ST	ASSIST OUTSIDE	PHONE
09/24/2022 15	20222670188		2533 OAKTON ST	TURNED IN/CONFI	PHONE
09/24/2022 15	20222670185		2142 MAPLE AV	NUISANCE COMPLA	PHONE
09/24/2022 15	20222670184	22008031	2420 MAIN ST	BATTERY	PHONE
09/24/2022 15	20222670182		1928 DEMPSTER ST	TRAFFIC ACCIDEN	PHONE
09/24/2022 15	20222670181		830 HAMLIN ST	NUISANCE COMPLA	PHONE
09/24/2022 15	20222670180		1616 ORRINGTON AV	DISTURBANCE	PHONE
09/24/2022 15	20222670179		1830 DEMPSTER ST	BURGLAR ALARM	PHONE
09/24/2022 14	20222670175		1603 ORRINGTON AV	DISORDERLY COND	PHONE
09/24/2022 14	20222670174		SHERMAN AV/HAMLIN ST	NUISANCE COMPLA	PHONE
09/24/2022 14	20222670172		CHURCH ST/HINMAN AV	MISCELLANEOUS P	PHONE
09/24/2022 14	20222670171	22008030	916 MICHIGAN AV	BURGLARY	PHONE
09/24/2022 14	20222670159		1303 ROSALIE ST	PARKING COMPLAI	PHONE
09/24/2022 13	20222670157		821 DAVIS ST	CANCELLED CALL	PHONE
09/24/2022 13	20222670156		1016 COLFAX ST	PARKING COMPLAI	PHONE
09/24/2022 13	20222670155	22008029	1915 DEWEY AV	THEFT	PHONE
09/24/2022 13	20222670154		1111-2 PITNER AV	STANDBY ASSIST	PHONE
09/24/2022 13	20222670149	22008027	RIDGE AV/WASHINGTON ST	ACCIDENT WITH I	PHONE
09/24/2022 12	20222670142		2009 HARRISON ST	CANCELLED CALL	PHONE
09/24/2022 12	20222670137		2450 MAIN ST	TRAFFIC ACCIDEN	PHONE
09/24/2022 12	20222670136		550 ASBURY AV	ANIMAL COMPLAIN	PHONE
09/24/2022 12	20222670135		2010 GREY AV	PARKING COMPLAI	PHONE
09/24/2022 12	20222670134	22008026	2223 RIDGE AV	BURGLARY	PHONE
09/24/2022 11	20222670130		1221-1E HULL TER	DRIVING WITHOUT	PHONE
09/24/2022 11	20222670127		CHICAGO AV/KEDZIE ST	RECKLESS DRIVER	PHONE
09/24/2022 11	20222670126	22008025	355 RIDGE AV	CRIMINAL DAMAGE	PHONE
09/24/2022 11	20222670123		601 DEMPSTER ST	RELOCATION TOW	PHONE
09/24/2022 11	20222670119		1128 CHICAGO AV	UNWANTED PERSON	PHONE
09/24/2022 11	20222670116		2635 CRAWFORD AV	CANCELLED CALL	PHONE
09/24/2022 11	20222670115		425 DAVIS ST	PARKING COMPLAI	PHONE
09/24/2022 11	20222670113		1221-1E HULL TER	DRIVING WITHOUT	PHONE
09/24/2022 10	20222670110	22008024	912 MICHIGAN AV	VIOLATION OF OR	PHONE

Call Time	Event ID	Rpt #	Street	Nature	CallSo
09/24/2022 10	20222670108		2518 GREEN BAY RD	MISCELLANEOUS I	PHONE
09/24/2022 10	20222670105	22008021	517 LEE ST	DOMESTIC RELATE	PHONE
09/24/2022 10	20222670102		1200-BLK HARVARD TER	PARKING COMPLAI	PHONE
09/24/2022 10	20222670101	22008022	1740-2A HINMAN AV	UNWANTED PERSON	PHONE
09/24/2022 09	20222670094	22008020	1633 CENTRAL ST	TRAFFIC ACCIDEN	PHONE
09/24/2022 09	20222670088		1422 DODGE AV	PARKING COMPLAI	PHONE
09/24/2022 09	20222670084		DODGE AV/GREENWOOD ST	ANIMAL COMPLAIN	PHONE
09/24/2022 09	20222670081		601 DEMPSTER ST	RELOCATION TOW	PHONE
09/24/2022 09	20222670078		1720 MAPLE AV	PREMISE CHECK	PHONE
09/24/2022 09	20222670072		601 DEMPSTER ST	RELOCATION TOW	PHONE

COMMUNICATIONS

Call Time	Event ID	Rpt #	Street	Nature	CallSo
10/08/2022 21	20222810258		LAKE ST/ELMWOOD AV	PREMISE CHECK	PHONE
10/08/2022 21	20222810256		DEMPSTER ST/DODGE AV	RECKLESS DRIVER	PHONE
10/08/2022 21	20222810249		1818 DODGE AV	NUISANCE COMPLA	PHONE
10/08/2022 21	20222810244		1523 WILDER ST	NUISANCE COMPLA	PHONE
10/08/2022 21	20222810243		1914 DARROW AV	DUPLICATE TICKE	PHONE
10/08/2022 21	20222810242	22008463	SHERMAN AV/GROVE ST	SUSP INCIDENT	PHONE
10/08/2022 21	20222810240		1300 MCDANIEL AV	PARKING COMPLAI	PHONE
10/08/2022 20	20222810227		2201 MAPLE AV	RELOCATION TOW	PHONE
10/08/2022 20	20222810226	22008462	1932 CENTRAL ST	CHECK WELL BEIN	PHONE
10/08/2022 20	20222810223		1715 CHICAGO AV	TRAFFIC ACCIDEN	PHONE
10/08/2022 19	20222810193	22008459	2700 GROSS POINT RD	FOUND/CONFISCAT	PHONE
10/08/2022 19	20222810190		2611 THAYER ST	ANIMAL COMPLAIN	PHONE
10/08/2022 18	20222810186		355 RIDGE AV	UNWANTED PERSON	PHONE
10/08/2022 18	20222810185		1000 MAIN ST	PARKING COMPLAI	PHONE
10/08/2022 18	20222810183	22008456	1101 WASHINGTON ST	MISSING PERSON-	PHONE
10/08/2022 18	20222810180		1136 LAKE SHORE BL	BURGLAR ALARM	PHONE
10/08/2022 18	20222810179		721 SEWARD ST	NUISANCE COMPLA	PHONE
10/08/2022 18	20222810178		112 CUSTER AV	PARKING COMPLAI	PHONE
10/08/2022 17	20222810175	22008455	1004-3D MAIN ST	MISCELLANEOUS P	PHONE
10/08/2022 17	20222810170		811 EMERSON ST	RELOCATION TOW	PHONE
10/08/2022 17	20222810169		1911 GREEN BAY RD	BURGLAR ALARM	PHONE
10/08/2022 16	20222810166	22008454	1422 DEMPSTER ST	TRAFFIC ACCIDEN	PHONE
10/08/2022 16	20222810163		716 CHURCH ST	UNWANTED PERSON	PHONE
10/08/2022 16	20222810158		CHANCELLOR ST/BRYANT A	THEFT	PHONE
10/08/2022 15	20222810155	22008453	2019 DARROW AV	THEFT	PHONE
10/08/2022 15	20222810154	22008452	2112 MAIN ST	TRAFFIC ACCIDEN	PHONE
10/08/2022 15	20222810150		1520 DEMPSTER ST	LEAF BLOWER VIO	PHONE
10/08/2022 15	20222810149	22008451	2019 DARROW AV	THEFT	PHONE
10/08/2022 14	20222810148		355 RIDGE AV	DISORDERLY COND	PHONE
10/08/2022 14	20222810145		600-BLK BRUMMEL ST	PREMISE CHECK	PHONE
10/08/2022 14	20222810144		1722 LIVINGSTON ST	PARKING COMPLAI	PHONE

Call Time	Event ID	Rpt #	Street	Nature	CallSo
10/08/2022 13	20222810135		904 SHERMAN AV	DISORDERLY COND	PHONE
10/08/2022 13	20222810134	22008450	1300 OAK AV	BATTERY	PHONE
10/08/2022 13	20222810132		2033 BENNETT AV	PREMISE CHECK	PHONE
10/08/2022 12	20222810130		919 FOSTER ST	DUPLICATE TICKE	PHONE
10/08/2022 12	20222810124		909 FOSTER ST	NUISANCE COMPLA	PHONE
10/08/2022 12	20222810122		830 HAMLIN ST	NUISANCE COMPLA	PHONE
10/08/2022 12	20222810120		601 DEMPSTER ST	RELOCATION TOW	PHONE
10/08/2022 11	20222810118		1116 RIDGE AV	TRAFFIC ACCIDEN	PHONE
10/08/2022 11	20222810115	22008449	CENTRAL ST/ASHLAND AV	TRAFFIC ACCIDEN	PHONE
10/08/2022 11	20222810114		2425 OAKTON ST	ACCIDENTAL DAMA	PHONE
10/08/2022 11	20222810113		1743 BENSON AV	VAGRANT	PHONE
10/08/2022 11	20222810111		OAKTON ST/SHERMAN AV	PARKING COMPLAI	PHONE
10/08/2022 11	20222810110		1640 CHICAGO AV	THEFT	PHONE
10/08/2022 10	20222810104		821 DAVIS ST	PREMISE CHECK	PHONE
10/08/2022 09	20222810079		1500-BLK CHURCH ST	ANIMAL COMPLAIN	PHONE

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Call Time	Event ID	Rpt #	Street	Nature	CallSo
11/05/2022 21	20223090299	22009332	CHURCH ST/OAK AV	DISTURBANCE	PHONE
11/05/2022 21	20223090297		1620 FOSTER ST	PARKING COMPLAI	PHONE
11/05/2022 20	20223090291		812 CHURCH ST	UNWANTED PERSON	PHONE
11/05/2022 20	20223090288		901 MAPLE AV	HARASSMENT	PHONE
11/05/2022 20	20223090285		703 REBA PL	PARKING COMPLAI	PHONE
11/05/2022 20	20223090284		2037 OAKTON ST	BURGLAR ALARM	PHONE
11/05/2022 20	20223090282	22009331	MAIN ST/SHERMAN AV	DOMESTIC RELATE	PHONE
11/05/2022 19	20223090279		2424 DEMPSTER ST	ANIMAL CRUELTY	PHONE
11/05/2022 19	20223090276		1936 WESLEY AV	PREMISE CHECK	PHONE
11/05/2022 19	20223090275	22009330	1223 ELMWOOD AV	DRIVING UNDER T	PHONE
11/05/2022 19	20223090273		601 DEMPSTER ST	RELOCATION TOW	PHONE
11/05/2022 19	20223090272		100-BLK CLYDE AV	PARKING COMPLAI	PHONE
11/05/2022 19	20223090270		RIDGE AV/EMERSON ST	TRAFFIC ACCIDEN	PHONE
11/05/2022 19	20223090267	22009329	1500 SHERMAN AV	ACCIDENTAL DAMA	PHONE
11/05/2022 18	20223090266		BROWN AV/BRUMMEL ST	ANIMAL COMPLAIN	PHONE
11/05/2022 18	20223090265		514 MAIN ST	PARKING COMPLAI	PHONE
11/05/2022 18	20223090264		1454 ELMWOOD AV	CHECK WELL BEIN	PHONE
11/05/2022 18	20223090262		812 GROVE ST	PREMISE CHECK	PHONE
11/05/2022 18	20223090261		CHICAGO AV/GROVE ST	PARKING COMPLAI	PHONE
11/05/2022 18	20223090259	22009327	EMERSON ST/DEWEY AV	ACCIDENT WITH I	PHONE
11/05/2022 18	20223090257		800 GREENLEAF ST	PREMISE CHECK	PHONE
11/05/2022 18	20223090256	22009328	1818 HOVLAND CT	DOMESTIC RELATE	PHONE
11/05/2022 18	20223090255		555 HOWARD ST	DUPLICATE TICKE	PHONE
11/05/2022 17	20223090249	22009326	1516-709 HINMAN AV	DEATH INVESTIGA	PHONE
11/05/2022 17	20223090246		1318 SHERMAN PL	HAZARDOUS SITUA	PHONE
11/05/2022 16	20223090243	22009324	313 HOWARD ST	THEFT	PHONE
11/05/2022 16	20223090241		LINCOLNWOOD DR/CENTRAL	HAZARDOUS SITUA	PHONE
11/05/2022 16	20223090238		1231 CHICAGO AV	BURGLAR ALARM	PHONE
11/05/2022 16	20223090230		1037 DARROW AV	HAZARDOUS SITUA	PHONE
11/05/2022 15	20223090229	22009325	2400 MAIN ST	THEFT	PHONE
11/05/2022 15	20223090224		2485 HOWARD ST	HAZARDOUS SITUA	PHONE

Call Time	Event ID	Rpt #	Street	Nature	CallSo
11/05/2022 15	20223090220	22009321	1454 ELMWOOD AV	LOST PROPERTY	PHONE
11/05/2022 14	20223090216	22009320	1524 MADISON ST	ACCIDENTAL DAMA	PHONE
11/05/2022 14	20223090215		ISABELLA ST/ASBURY AV	PREMISE CHECK	PHONE
11/05/2022 14	20223090213		1510 CENTRAL ST	MISCELLANEOUS P	PHONE
11/05/2022 14	20223090212		901 MAPLE AV	DISTURBANCE	PHONE
11/05/2022 14	20223090207	22009322	919 FOSTER ST	ACCIDENTAL DAMA	PHONE
11/05/2022 14	20223090204		2119 HARRISON ST	BURGLAR ALARM	PHONE
11/05/2022 14	20223090201	22009318	901 MAPLE AV	MISSING PERSON-	PHONE
11/05/2022 13	20223090198		CENTRAL ST/GREEN BAY R	ACCIDENTAL DAMA	PHONE
11/05/2022 13	20223090197	22009317	2209 HOWARD ST	TRAFFIC ACCIDEN	PHONE
11/05/2022 13	20223090195		BROADWAY AV/LIVINGSTON	CITY ORDINANCE	PHONE
11/05/2022 13	20223090190		1031 CENTRAL ST	DISORDERLY COND	PHONE
11/05/2022 12	20223090184		2034 WARREN ST	HAZARDOUS SITUA	PHONE
11/05/2022 12	20223090183		1318 SEWARD ST	HAZARDOUS SITUA	PHONE
11/05/2022 12	20223090182		2401 CRAIN ST	HAZARDOUS SITUA	PHONE
11/05/2022 12	20223090181		CENTRAL ST/POPLAR AV	HAZARDOUS SITUA	PHONE
11/05/2022 12	20223090179		932-2W JUDSON AV	PREMISE CHECK	PHONE
11/05/2022 12	20223090178		301 CHICAGO AV	PARKING COMPLAI	PHONE
11/05/2022 12	20223090177		2658 GREEN BAY RD	TRAFFIC ACCIDEN	PHONE
11/05/2022 12	20223090176		1723 SIMPSON ST	PARKING COMPLAI	PHONE
11/05/2022 12	20223090175		DEMPSTER ST/DODGE AV	HAZARDOUS SITUA	PHONE
11/05/2022 12	20223090174		DEWEY AV/OAKTON ST	TRAFFIC ACCIDEN	PHONE
11/05/2022 12	20223090169	22009316	921-2F HINMAN AV	PREMISE CHECK	PHONE
11/05/2022 12	20223090168		DODGE AV/GREENWOOD ST	HAZARDOUS SITUA	PHONE
11/05/2022 12	20223090167		DODGE AV/CLEVELAND ST	PREMISE CHECK	PHONE
11/05/2022 12	20223090165		MCCORMICK BL/GREEN BAY	HAZARDOUS SITUA	PHONE
11/05/2022 12	20223090164		GREEN BAY RD/NOYES ST	HAZARDOUS SITUA	PHONE
11/05/2022 11	20223090162		2403 HASTINGS AV	HAZARDOUS SITUA	PHONE
11/05/2022 11	20223090157		1245 CHICAGO AV	PARKING COMPLAI	PHONE
11/05/2022 11	20223090155		MCDANIEL AV/NATHANIEL	HAZARDOUS SITUA	PHONE
11/05/2022 11	20223090154		901 RIDGE AV	PREMISE CHECK	PHONE
11/05/2022 11	20223090152	22009315	400 MAIN ST	CRIMINAL DAMAGE	PHONE
11/05/2022 11	20223090150		811-3N SEWARD ST	NUISANCE COMPLA	PHONE
11/05/2022 11	20223090148		1331 ASBURY AV	HAZARDOUS SITUA	PHONE
11/05/2022 11	20223090147		CRAWFORD AV/CENTRAL ST	TRAFFIC ACCIDEN	PHONE

Call Time	Event ID	Rpt #	Street	Nature	CallSo
11/05/2022 10	20223090145		310 CHURCH ST	HOLD UP PANIC A	PHONE
11/05/2022 10	20223090144		310 CHURCH ST	HOLD UP PANIC A	PHONE
11/05/2022 10	20223090143		718 MAIN ST	HAZARDOUS SITUA	PHONE
11/05/2022 10	20223090142		2116 CENTRAL ST	PARKING COMPLAI	PHONE
11/05/2022 10	20223090140	22009314	1817 FOSTER ST	DOMESTIC RELATE	PHONE
11/05/2022 10	20223090134	22009313	410-231 RIDGE AV	DOMESTIC RELATE	PHONE
11/05/2022 10	20223090133		2200 MADISON PL	HAZARDOUS SITUA	PHONE
11/05/2022 10	20223090131	22009312	RIDGE AV/LINCOLN ST	FOUND/CONFISCAT	PHONE
11/05/2022 10	20223090130		1640 CHICAGO AV	CHECK WELL BEIN	PHONE
11/05/2022 09	20223090120		806 RIDGE AV	PREMISE CHECK	PHONE
11/05/2022 09	20223090113		1308 ELMWOOD AV	PREMISE CHECK	PHONE
11/05/2022 09	20223090108		718-1E SIMPSON ST	CHECK WELL BEIN	PHONE
11/05/2022 09	20223090106		FOWLER AV/GREENWOOD ST	HAZARDOUS SITUA	PHONE
11/05/2022 09	20223090104	22009310	1318 WESLEY AV	CRIMINAL DAMAGE	PHONE

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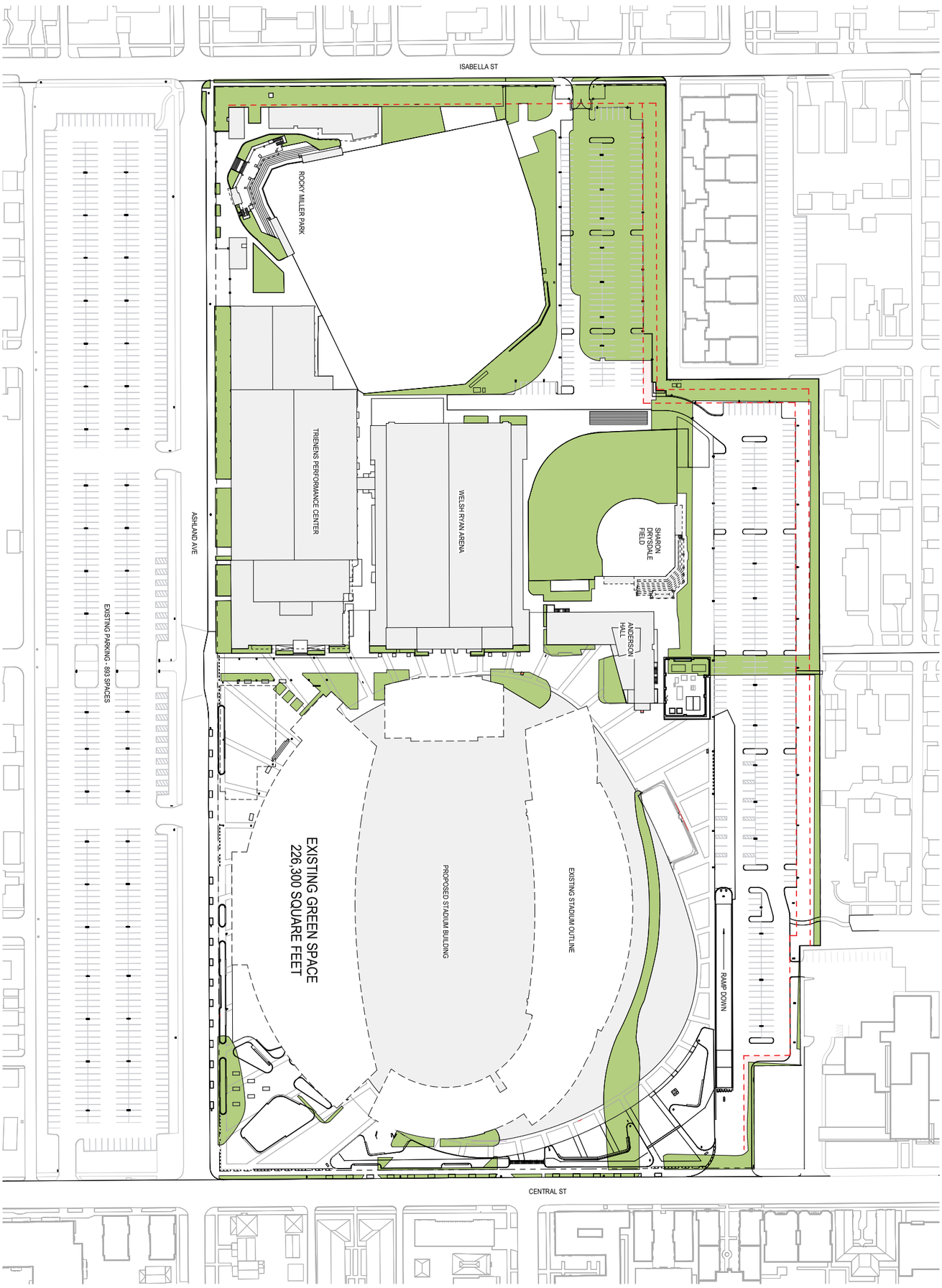
Call Time	Event ID	Rpt #	Street	Nature	CallSo
11/26/2022 20	20223300164		1123 MADISON ST	NUISANCE COMPLA	PHONE
11/26/2022 20	20223300159		847 DODGE AV	DISORDERLY COND	PHONE
11/26/2022 20	20223300156		901 HINMAN AV	PARKING COMPLAI	PHONE
11/26/2022 19	20223300143		KEENEY ST/MICHIGAN AV	PREMISE CHECK	PHONE
11/26/2022 17	20223300134		525 DEMPSTER ST	CHECK WELL BEIN	PHONE
11/26/2022 17	20223300133		MAIN ST/DODGE AV	PREMISE CHECK	PHONE
11/26/2022 16	20223300127		CLARK ST/SHERIDAN RD	RECKLESS DRIVER	PHONE
11/26/2022 16	20223300124		2639 BROADWAY AV	PARKING COMPLAI	PHONE
11/26/2022 15	20223300118		355 RIDGE AV	PREMISE CHECK	PHONE
11/26/2022 14	20223300113	22009926	901 MAPLE AV	MISSING PERSON-	PHONE
11/26/2022 13	20223300110		2220 GREENLEAF ST	BURGLAR ALARM	PHONE
11/26/2022 12	20223300105		1922 FOSTER ST	ASSIST OUTSIDE	PHONE
11/26/2022 11	20223300091	22009923	1410-506 CHICAGO AV	VOLUNTARY COMMI	PHONE
11/26/2022 11	20223300080		1310 MAPLE AV	PARKING COMPLAI	PHONE
11/26/2022 10	20223300068	22009920	JACKSON AV/FOSTER ST	AUTO THEFT	PHONE



EXISTING	226,300 SF
PROPOSED	208,900 SF
% CHANGE	-7.7%

HNTB
Perkins&Will
SEPT 19, 2023

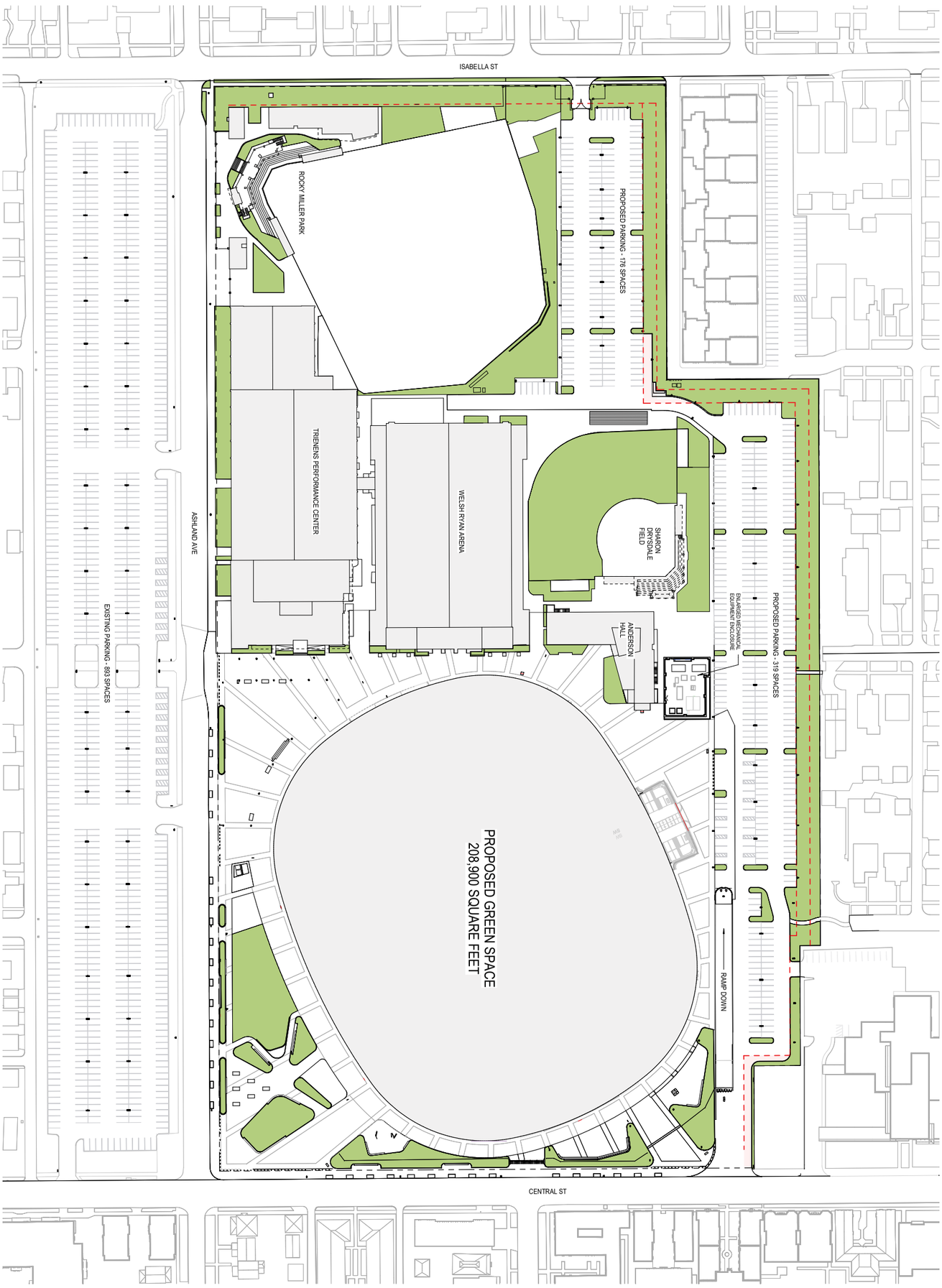
SITE AREA PLAN - GREEN SPACE

N

0' 40' 80' 160' 320'

SCALE: 1"= 160'

NORTHWESTERN UNIVERSITY
RYAN FIELD REDEVELOPMENT
PLANNED DEVELOPMENT APPLICATION



EXISTING	226,300 SF
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HNTB
Perkins&Will
SEPT 19, 2023

SITE AREA PLAN - GREEN SPACE

N

0' 40' 80' 160' 320'

SCALE: 1"= 160'

NORTHWESTERN UNIVERSITY
RYAN FIELD REDEVELOPMENT
PLANNED DEVELOPMENT APPLICATION

Presenter Bios

Community Outreach	Dave Davis	Dave Davis is the Senior Executive Director for Neighborhood and Community Relations at Northwestern University. In this role, Dave advises the President, Provost, and Executive Vice President on the local political implications of University policy and decision-making. He also leads the University's signature social justice programs in Evanston and works to expand meaningful and reciprocal partnerships between Northwestern and the City of Evanston that bolsters the University's reputation as an economic anchor and socially engaged institution. Additionally, Dave serves as the University's ambassador to Evanston government officials, business associations, school district leaders, community groups, and residents.
University Operations	Luke Figora	Luke Figora joined Northwestern University in 2015 and currently serves as Chief Operating Officer and Vice President for Operations. In this role he oversees a variety of operational and financial units including Facilities, IT, Neighborhood & Community Relations, and Risk, Audit, and Compliance. Most recently, Luke led Northwestern's COVID-19 response and was the face to the Northwestern community for COVID-related communications, as well as the conduit to local efforts in the City of Evanston and City of Chicago.
Concerts Operations	Michael Godoy	Michael is a highly effective operations executive at CAA ICON with over 30 years of experience in the management of sports and entertainment venues. He has a comprehensive background of not only coordinating a variety of sports and entertainment events, but also leading day-to-day facility operations including design, construction and capital planning for over 75 projects valued at over $7B. CAA ICON has managed the development of many of the most successful stadium and arena projects in the world and has experience in planning, activating, designing, constructing, and commissioning projects for MLS, NFL, NBA, NHL, and MLB franchises totaling nearly $40 billion, including over 2,000 consulting engagements.
Design & Acoustics	Darren Nielsen	Darren Nielsen has spent his 26-year career at HNTB, focused on Collegiate Athletics projects, including Division 1 Power 5 stadiums for Illinois, Nebraska, Kentucky, and South Carolina, among others, and most recently led the MLS project at Lower.com for the Columbus Crew. HNTB is one of the leading architectural, engineering, and planning firms, embracing a culture of creativity, sustainable design, and cutting-edge technology to offer design solutions that are authentic, creative, and reflective of the unique character of each client's city, community and region.
	Chris Hale	Chris Hale is an Architect and Managing Principal at Perkins & Will with over 30 years of experience. He managed the design of Northwestern's Ryan Fieldhouse & Walter Athletics Center.
	Bryan Schabel	Bryan Schabel is a Principal and Design Director at Perkins & Will. He has been with the firm for 28 years and has designed numerous award-winning buildings, including Northwestern's Ryan Fieldhouse & Walter Athletics Center and the Segal Visitors Center.

	Greg Hughes	Greg Hughes has worked for Wrightson, Johnson, Haddon, & Williams, Inc. for over 20 years as the lead acoustician at the firm and is an expert at acoustical sound assessments, sound measurements and monitoring, noise reduction assessments and noise mitigation. WJHW has been involved in the sports and entertainment venue industry for over 30 years, having completed extensive work on professional and collegiate projects, and it is this expertise that we bring to the Northwestern University project. WJHW was founded in 1991 and has been an industry leader in acoustics and sound system design for the vast majority of professional arenas and stadia since. Our resume includes all 32 current NFL stadia, all 30 NBA arenas, 24 of 32 NHL arenas (75%), 28 of 30 MLB stadia (93%), and 19 of 29 MLS stadia (66%). Additionally, WJHW has completed numerous collegiate stadia and arenas for Power 5 conference teams including: • **SEC:** U of Arkansas, U of Alabama, U of Tennessee, Louisiana State, Mississippi, Mississippi State, Texas A&M, U of Texas, U of Missouri, U of Georgia, Auburn, U of Florida, and U of Kentucky • **ACC:** North Carolina, Duke, Georgia Tech, Wake Forest, Florida State, U of Virginia, Louisville, Boston College, North Carolina State, Notre Dame, and Virginia Tech • **BIG12:** U of Houston, Iowa State, U of Kansas, Kansas State, TCU, Oklahoma, Texas Tech, U of Cincinnati, and West Virginia • **PAC12:** Arizona State, U of California, U of Colorado, U of Oregon, Oregon State, Stanford, and U of Utah • **BIG10:** Iowa, Minnesota, Northwestern, Purdue, Michigan, Ohio State, Penn State, Rutgers, and Nebraska Our efforts in these projects include sound system design and acoustics analysis as well as many of the technologies utilized in these facilities (e.g. broadcast, audio-video, security). Further, WJHW provides concert support in numerous large stadia including Levi's Stadium (Santa Clara, CA), AT&T Stadium (Arlington, TX), US Bank Stadium (Minneapolis, MN), Globe Life Field (Arlington, TX), and NRG Stadium (Houston, TX) for a variety of acts. Our expertise in these venues is substantial and is unrivalled in the industry.
Transport-ation	Peter Lemmon	Peter Lemmon brings 25 years of experience focused on traffic engineering and multimodal transportation planning with Kimley Horn here in the Chicago area. In that time, he's worked with the Bears, Cubs, and Fire on various projects as well as the Centennial Plan for Navy Pier. Peter has also worked with the City of Evanston on numerous projects and has been an Evanston resident for over 20 years. On this project, Kimley-Horn is also supported by SP+ Gameday, who currently manages and operates gameday parking and shuttle services for Northwestern University as well as the public parking garages and lots for the City of Evanston, providing additional local experience with local parking conditions.

Land Planner	George Kisiel	George Kisiel is a licensed architect and a certified planner. He is a member of the American Institute of Architects, the American Planning Association, and the American Institute of Certified Planners. He is the president and owner of Okrent Kisiel Associates, Inc., where he has been employed for over 40 years. He has been accepted as an expert in planning and zoning in the courts of Cook, Lake, Will and DuPage Counties, Illinois and has appeared before numerous planning and administrative review boards throughout the Chicago metro area. He and his firm have extensive experience in Evanston, particularly in the context of large scale redevelopment projects including involvement in the development of Church St. Plaza, Optima Towers, Optima Horizons, McDoughal Littell, and Mather Lifeways.

Supporting Subject Matter Expert Bios

Current Ryan Field	Scott Arey	A Northwestern Athletics and Recreation staff member since 1991, Scott has been responsible for the management of all events at Ryan Field and Welsh Ryan Arena beginning with the 2001 season. Scott is also on the board of directors for the Collegiate Event and Facility Managers Association (CEFMA) as well as Evanston's own non-profit Girls Play Sports. Inc.
	Eric Chin	Deputy Police Chief Eric Chin oversees public safety operations of both Northwestern's Evanston and Chicago Campuses and has over 25 years of experience serving in the profession of public safety at two Big Ten institutions. Deputy Police Chief Chin facilitates Northwestern's Behavioral Consultation Team, and for critical events, he serves in the role of either onsite forward command or as the incident commander in the unified command post. He is a graduate of the FBI National Academy and also serves on the executive board of the Joint Terrorism Task Force for the FBI Chicago Office.
	Deneé Barracato	Deneé Barracato is Deputy Director of Athletics at Northwestern. She leads and manages four areas for the University, including Capital Projects & Operations and Events & Facilities Management. Internally Barracato serves as the liaison to Facilities Management, Operations and Risk Management and the Northwestern University Police Department. Barracato leads and provides the strategic direction for Northwestern Athletics' world-class facilities and its capital projects program, which includes the oversight, planning, design, and construction efforts for the $800 million Ryan Field Redevelopment Project.
	Jesse Marks	Jesse Marks was named deputy director of athletics for development at Northwestern University in September 2021. As part of his dual role within the University fundraising structure, Marks also will serve as senior executive director of athletics development on Northwestern's Alumni Relations and Development team, reporting to the university's senior associate vice president for schools and programs. Among other accomplishments, Marks is a member of the National Association of Athletic Development Directors (NAADD) and served as an adjunct professor in the University of Miami's School of Education Sports Administration Program, teaching sport promotions and sales. In 2019, Marks was recognized by the "South Florida Business Journal" as a "Forty Under 40" honoree, representing top young professionals in the South Florida community.
Owners Rep	Dan Loosbrock	Dan Loosbrock is a Senior Vice President with CAA ICON, whom has been hired by Northwestern University to perform Owners Representative services, overseeing all design and construction. Dan has extensive experience overseeing the development of large, complex facilities totaling approximately $2.6 Billion over the course of his 25 year career. Relevant

		facilitates include Canvas Stadium at Colorado State University and Target Field, Minneapolis MN.
	Brian Byrne	Brian is a project management executive with 24 years of experience in the design and project management of sports and entertainment venues. He spent the initial 10 years of his career on the architectural side of the sports and entertainment venue development before transitioning to being an owner's representative managing design and construction for multiple professional, collegiate, and commercial sports and entertainment venues. Project experience highlights include, Moody Center (University of Texas at Austin), Chase Center, T-Mobile Arena, LA Live (Sports & Entertainment Complex), Lincoln Financial Field, Toyota Park, among several others.

Continuance Requests and Supplement Information from Requesters of the Continuances

SHAPIRO & ASSOCIATES LAW

618 Academy Drive, Unit B | Northbrook, IL 60062

July 13, 2023

Via Email

Meagan Jones
Neighborhood and Land Use Planner
Morton Civic Center
City of Evanston
2100 Ridge Avenue
Evanston, IL 60201
mmjones@cityofevanston.org

Re: 1501 Central Street (Ryan Field)

Dear Ms. Jones:

Thank you for your response to Ms. McFarlane's letter seeking a meeting with the City of Evanston Planning staff regarding Northwestern's applications for a planned development to rebuild its stadium and for a zoning change to hold concerts and other commercial entertainment events at its Central Street athletic campus. I appreciate the staff's hard work in this matter, as I am sure there is a lot of coordination and review that is yet required.

As you know, I represent the Most Livable City Association (MLCA), which has been channeling the Evanston community's response to Northwestern's applications. The proposed $800 million reconstruction and rebuilding of Ryan Field is no doubt an enormous project that will have implications throughout the City and beyond, including but not limited to traffic, light, sound, property values and financial impacts. As would be expected with such an enormous project, many of those impacts remain to be addressed. Accordingly, given the level of preparation needed and the magnitude of the project, MLCA cannot possibly make its presentation within the ten minutes referred to in the Land Use Commission rules. We would ask for 30 minutes, not including time for cross examination, if necessary. Indeed, the LUC rules are unclear if cross examination is permitted and if so by whom, of whom, at what point, and for how long.

I am also concerned about the idea that Northwestern's applications are complete and therefore the Land Use Commission must take up those applications by early August. As you know, section 6-3-6-8(C) of the City's code provides that the public hearing on a planned development application "shall be held not less than fifteen (15) calendar days and no more than sixty (60) calendar days from the date of receipt of the complete application, subject to agenda availability of the Land Use Commission." Accordingly, the 60-day deadline for holding a public hearing does not begin until the planned development application is complete. Currently, the application is not complete for the following reasons.

info@shapiroassociateslaw.com | Phone 312.763.9640 | Fax 312.763.9641

evaluate Northwestern's applications well in advance of the hearing would benefit both staff and the public and would be appropriate to be able to properly move forward. For that additional reason alone a continuance of the anticipated August 9, 2023, LUC hearing would be in order.

Notwithstanding the incompleteness of the application, MLCA would welcome the opportunity to meet with both Northwestern and City representatives to discuss whether our differences can be resolved, if not narrowed with a goal of having a new stadium that can benefit both the University and the City's residents.

Very truly yours,
SHAPIRO & ASSOCIATES LAW

By _____
Dan Shapiro

cc: Lauren McFarlane Davies
David DeCarlo

City of Evanston

Meagan Jones <mmjones@cityofevanston.org>

1501 Central Street (Ryan Field)

1 message

Dan Shapiro <dshapiro@shapiroassociateslaw.com> Thu, Sep 7, 2023 at 11:17 AM
To: Meagan Jones <mmjones@cityofevanston.org>

As a follow up to my voicemail message from moments ago, as well as Chairman Rodgers suggestion that I reach out to staff, below is a list of those items that I mentioned in conjunction with last night's request for a continuance. It is my hope that these items can be addressed by Northwestern in a timely fashion prior to the September 27, 2023 Land Use Commission meeting.

- Complete Traffic Management Plan
- Response to Arup Report
- Peer Review report of groundwater study
- Operations Plan for public concerts addressing, among other things, set up and take down plans
- Conclusions of conversations with CTA and Metra regarding necessary operational increases
- Truck traffic and waste removal routing/plans
- Text amendment revisions (not mentioned last night but included herein)

Please feel free to contact me if you have any questions.

Thank you.

SHAPIRO & ASSOCIATES LAW

Daniel C. Shapiro

Shapiro & Associates Law

618 Academy Drive, Unit B

Northbrook, IL 60062

Phone: 312.763.9640

Fax: 312.763.9641

dshapiro@shapiroassociateslaw.com

www.ShapiroAssociatesLaw.com

Preamble

This report updates the July 23, 2023, report previously submitted to the Evanston Land Use Commission. The revised report is necessitated because of significant revisions by Northwestern to the number of onsite parking places at its proposed development since the original Kimley-Horn "Concert Venue Traffic Impact Study." This report provides an updated analysis of parking demand and shuttle bus requirements after taking these changes into consideration. **Refer to Items 5 and 6 on pages 6-7, Attachments 2 and 3 on pages 18-20, and revised the Conclusions section.**

Executive Summary

In its zoning text amendment application for the U2 Zoning District, Northwestern requests approval to significantly expand the number and types of permitted events. Additional requested events include six (6) public-facing concerts per year with attendance up to stadium capacity (up to 35,000 spectators), an unlimited number of various indoor events with attendance up to 10,000 persons, and up to 60 days of outdoor events with attendance up to 7,500 persons. Most of these events are not permitted in the current zoning code.

It is widely recognized that these additional events will have an impact on traffic and parking in areas surrounding the stadium. The area could experience unprecedented traffic and parking impacts on any day of the year. For the six days with stadium capacity concerts, the impacts will be experienced in multiple areas of Evanston and Wilmette.

As part of its application for approval of the text amendment, Northwestern has submitted a ***"Concert Venue Traffic Impact Study"***, prepared by Kimley Horn, to support its proposal and to mitigate detrimental impacts. We believe that this study is flawed, incomplete, and does not sufficiently address the full range of traffic and parking impacts likely to occur. In addition, the conclusions and recommendations presented in the report are not realistic, will create adverse impacts on residents and businesses (including downtown Evanston), and cannot be supported by the existing infrastructure. We specifically argue:

1. The Kimley Horn report makes the unsupported and flawed assumption that 30% of concert attendees will travel to/from the concert using the CTA Purple Line.

2. The Kimley Horn report makes the unsupported assumption that 10% of concert attendees will travel to/from the concert using the METRA UP-North rail line.

3. The Kimley Horn report makes the flawed assumption that 52% of concert attendees will travel to/from the concert using a personal auto.

4. The Kimley Horn report incorrectly assumes that 80% of parking spaces in downtown parking lots will be available for concert parking. The later revised estimate of 67% is likely incorrect also.

5. Based on Items 1-4 above, the Kimley Horn report incorrectly concludes that the number of parking spaces available will be sufficient to meet parking demand for sold-out concerts. There will actually be a deficit in parking spaces.

6. Based on Items 1-5 above, the Kimley Horn report significantly underestimates the number of shuttles that will be needed to transport concert attendees to/from downtown and Northwestern lots.

7. Use of the downtown parking lots for concerts will create unavoidable congestion and crowd out other patrons who will not have access to parking needed for restaurants, the movie theater, and the Northlight Theater (scheduled to open next year).

8. Northwestern has not submitted a Traffic Management Plan for the demolition and construction phases of the stadium project.

9. Northwestern has not submitted a Traffic Management Plan to show how large equipment and semi-trucks will access and circulate through the community, site, and loading area to deliver and remove concert venue equipment.

10. Northwestern has not submitted a comprehensive event Traffic Management Plan for proposed concerts and other events.

11. The Kimley Horn street/intersection capacity analysis and conclusions are flawed and inaccurate.

12. The scope of the Kimley Horn study does not include a traffic and parking analysis, nor mitigation recommendations, for the events of 7,500 - 10,000 persons, which are larger crowds than collegiate basketball games at Welsh Ryan Arena (capacity of 7,039 persons).

Item 1

The Kimley Horn report makes the flawed assumption that 30% of concert attendees will travel to/from the concert using the CTA Purple Line.

Kimley Horn doesn't provide a valid basis for this assumption, which is flawed, unrealistic, and unattainable for the reasons below.

Even if Northwestern promotes and encourages CTA usage, the maximum number of persons who could ride the CTA Purple Line over a 2-hour peak time before/after a concert is 15-16%. As shown in Attachment 1 (on page 18), we estimate that a maximum of 4,600 persons could ride the CTA, not 8,550 persons as assumed in the Kimley Horn report. This estimate is based on CTA infrastructure capacity data for the Purple Line (6 car trains, 4 trains per hour, all fully loaded to 80% of "crush capacity" for two hours (96 passengers per car), and that all passengers on every car are traveling to the concert). Even this seems like an unrealistic, overly optimistic, unsustainable scenario. It doesn't happen for sold-out baseball games and concerts at Wrigley Field.

At a recent public meeting, Kimley Horn verbally estimated 25-35% of spectators at Wrigley Field baseball games commute to the event using the CTA. Assuming 30% ridership, this translates to roughly 12,000 persons for a sold-out Wrigley Field game or concert. The reality is that a relatively equal number of CTA riders travel southbound toward downtown Chicago versus northbound toward Evanston. This means that only 15% of Cubs game attendees ride northbound on CTA trains (maximum of 6,000 persons). Of these, most exit the train in Chicago. The remaining passengers ride to Howard Street, where about ½ transfer to the Yellow Line (Skokie) and ½ take the Purple Line. Realistically, this means that only 4% of Cubs game attendees use the Purple Line (roughly 1,500 persons). Even though only about 4% of attendees for a sold-out Cubs game use the Purple line, it doesn't mean that more won't use the Purple line to get to a concert. While many attendees of Cubs games can come from multiple CTA lines, the Purple line is the only line that goes to Ryan Field. **The bottom line is that it is highly misleading to assume/suggest that 30% CTA ridership to Cubs games means that 30% can ride to a concert at Ryan Field. It would be physically impossible due to capacity and infrastructure constraints described above.**

Northwestern states that it is in discussions with CTA, hoping to leverage transit service for Ryan Field concerts by supplementing service schedules with additional trains. Again, this is infeasible and highly unlikely. Purple Line platform length is limited to 6 cars per train. CTA does not modify its schedule for sold-out events at Wrigley Field, and there is no evidence whatsoever to suggest that it will/can provide additional service for Ryan Field concerts.

Item 2

The Kimley Horn report makes the unsupported assumption that 10% of concert attendees will travel to/from the concert using the METRA UP-North rail line.

The 10% estimate matches reported data for Ravinia concerts. However, the 10% Ravinia estimate already includes an extra train that METRA operates on concert dates. These trains are usually full of Ravinia patrons and would not be able to accommodate an additional 10% of new passengers who want to attend a Ryan Field concert.

Furthermore, METRA does not provide additional trains at the end of Ravinia concerts. Trains run on a regular schedule. Passengers who miss the first train need to wait on the platform for up to an hour for the next regularly scheduled train. Where will Ryan Field concert attendees wait at the end of a concert? This is especially a concern on evenings with Ravinia concerts when the trains arriving at Central Street will likely be full (or partially full) with other passengers traveling back to Chicago.

Northwestern states that it is in discussions with METRA to provide additional train service for concerts at Ryan Field but has not provided any evidence that this will happen. To reach the 10% assumption for a Ryan Field concert, METRA would need to add 2-3 additional trains during the peak 2-hour period before and after concerts. While desirable, it seems highly unrealistic to assume/suggest that 10% of Ryan Field concert attendees will be able to use this mode of transportation.

Based on this reality, we believe that a more sensible maximum estimate of METRA ridership should be based on 50% available capacity on three METRA trains within the 2-hour peak times before and after a Ryan Field concert. Even this is doubtful and overly optimistic, but it translates into 2,285 passengers riding METRA, or a maximum of 8% of Ryan Field concert attendees (not 10% as assumed in the Kimley Horn report).

Item 3

The Kimley Horn report makes the flawed assumption that 52% of concert attendees will travel to/from the concert using a personal auto.

Kimley Horn does not provide a rationale for the 52% estimate. As we state in Items 1 and 2 above, we believe that the maximum CTA ridership will be 16% (not 30%). METRA ridership will be roughly 8% (not 10%). This will result in an 16% net reduction in Kimley Horn's estimates for public transit to Ryan Field concerts. It seems appropriate and realistic to conclude that these

folks will need to use a personal auto to travel to Ryan Field concerts. This would increase the personal auto estimate from 52 to 68% of concert attendees, which is slightly more consistent with Ravinia data, where 90% of attendees use a personal auto.

After making these adjustments, we calculate that 19,380 persons (68% of 28,500) will arrive by car. Assuming 2.5 persons per car, 7,752 cars will require a parking space. See Item 5 below and Attachment 2 on page 19.

Item 4

The Kimley Horn report incorrectly assumes that 80% of parking spaces in downtown public parking garages will be available for concert parking. The later revised estimate of 67% is likely incorrect also.

The total number of parking spaces in three City-managed downtown parking structures is 3,583. Kimley Horn estimated that 80% of these spaces (2,866) would be available for concert attendees. We believe that far fewer parking spaces will be available in downtown garages. For example, the Maple Avenue garage is heavily used by patrons of the AMC Evanston 12 movie theater and nearby restaurants. This garage often seems to be over 50% full. From personal observations at these garages, availability seems to be significantly less than Northwestern's assumptions.

Evanston City Staff asked for evidence to support the 80% assumption. Northwestern reviewed actual utilization data. Subsequently, in a June 27, 2023 letter reply to City staff, Northwestern revised their estimates downward to 67% availability. At the same time, they added four different parking garages into the inventory to claim an overall similar net number of available downtown parking spaces.

However, the revised estimates that Northwestern provided in their June 27 letter to the City are also incorrect. The 67% availability may not be accurate due to math errors in the table.

1. At the Maple Avenue garage, the June 27 letter states that 840 spaces are available (70% availability). This is incorrect. This garage has a known published capacity of 1,400 spaces. When doing the math, this means that availability is only 60% (not 70%).

2. At the Sherman Plaza garage, the June 27 letter states that 840 spaces are available (70% availability). Again, this is incorrect. This garage has a known published capacity of 1,583 spaces, which means that availability is 53% (not 70%).

3. In the same June 27 letter, Northwestern reported a revised total of 2,924-2,949 available parking spaces for all seven downtown facilities. However, when adding up the columns of data in the June 27 letter, the numbers total up to 2,829-2,859 spaces.

Item 5

Based on Items 1-4 above, the Kimley Horn report incorrectly concludes that the number of parking spaces available will be sufficient to meet parking demand for sold-out concerts. There will actually be a deficit in parking spaces.

The original Kimley Horn report indicates that 6,522 parking spaces will be available for Ryan Field concerts (2,366 onsite and 4,156 remote). Based on 52% of concert attendees using a personal auto, they calculate a parking demand of 5,928 spaces, resulting in a surplus of 594 available parking spaces for sold-out Ryan Field concerts. As described in Items 1-3 above, we believe that a more realistic estimate is that at least 68% of concertgoers will use a personal auto. Based on this estimate, we calculate a parking demand of 7,752 parking spaces.

Additionally, Northwestern has provided multiple recent revisions to the number of onsite parking spaces. As itemized below, the number of onsite parking spaces has decreased from 2,366 to 1,575, which is 791 fewer than the estimates in the Kimley-Horn report.

1. Northwestern added 92 off-street parking spaces at the U2 property. The Kimley-Horn report originally estimated a total 1,316 spaces in the East and West parking lots. This number has been revised twice since then (to 1,365 and now 1,408 spaces).

2. In a September 6, 2023, response letter to Meagan Jones, Northwestern now assumes that the 850 "onsite" parking places at Canal Shores golf course will not be available. Previous reports assumed that these parking spaces would be available and were included in the totals for onsite parking. Since this is no longer the case, these 850 cars will need to park remotely and use shuttles, something that was not factored into earlier analysis of parking demand and shuttle requirements.

3. The Kimley-Horn report states that 200 "onsite" parking places will be available at the Poplar Street lot (85% of the lot capacity). The author of this report physically counted 197 parking places at this lot; 85% of this number is 167 (33 fewer spaces).

The net change of these three items means that there will be 791 fewer onsite parking places (+92-850-33 = -791). **The end result of these revisions is that there will be a deficit of 2,021 parking spaces, not a surplus of 594.** Refer to Attachment 2 on page 19.

Item 6

Based on Items 1-5 above, the Kimley Horn report significantly underestimates the number of shuttles that will be needed to transport concert attendees to/from downtown and Northwestern lots.

The Kimley Horn estimates for remote parking and shuttle use are based on the assumption that 52% of concertgoers will drive a personal auto to a concert and that 2,366 parking spaces will be available onsite. Their report concludes that 3,562 automobiles (9,195 persons) will need to park at remote lots located in downtown Evanston and on the Northwestern campus. These persons will be transported on shuttle buses from the remote parking lots to/from the concert. Column A of Attachment 3 (page 20) presents the data provided by Kimley Horn. Their report recommends 75-115 shuttle vehicles, each making 2-3 roundtrip shuttle runs per hour before and after a concert.

However, as described in Item 5 above, onsite parking lots near Ryan Field can accommodate only 1,575 automobiles (1,408 at the East/West U2 lots and 167 at Poplar Street). In addition, as stated earlier, we believe that 68% will use a personal auto to attend a concert. Based on these two factors, Column B of Attachment 3 (page 20) indicates that 15,945 attendees will require shuttle transportation. An estimated 129-199 shuttle vehicles will be required, not 75-115 as stated in the Kimley Horn report.

The Kimley Horn report suggests that shuttle buses can complete 2-3 roundtrip shuttle runs per hour. We believe that 3 shuttle runs per hour is impossible. Even 2 shuttle runs per hour are optimistic and depend on ideal conditions. At best, under ideal conditions, it will take 5 minutes to load passengers at a remote lot, 10 minutes to commute to the venue, 5 more minutes to unload, and 10 minutes to return to the remote lot (a total of 30 minutes for a roundtrip). For Ryan Field concerts, actual commuting time is likely to be higher due to the expected high traffic volumes, pedestrian traffic, congestion, waiting times, etc.

As a point of reference from the Fall 2022 season, Northwestern reports that during the Ohio State football game on November 7, 2022 (representing a highly attended game), 47 shuttle trips were loaded post-game with a counted ridership of 2,406 passengers returning to off-site parking on campus and downtown. **For the proposed concerts, it will be necessary to transport 6-7 times as many passengers on shuttles to/from the remote parking lots compared to a well-attended collegiate football game. The large number of shuttles needed will further impact the residential streets along the shuttle routes, which will experience 6-7 times as much shuttle traffic as for a well-attended college football game.**

Item 7

Use of the downtown parking lots for concerts will create unavoidable congestion and crowd out other patrons who will not have access to parking needed for restaurants, the movie theater, and the Northlight Theater (scheduled to open next year).

The Kimley Horn report indicates that Northwestern needs to rely heavily on the availability of campus and downtown City-managed parking lots and garages. The report concludes there will be enough parking spaces to meet demand, but this conclusion is based on flawed assumptions of CTA and METRA ridership. As described in Item 5 above, there will be a deficit of available parking spaces in remote lots.

1. When Ryan Field concert patrons are directed to downtown parking garages, we believe that parking demand will overwhelm availability. As an example, the downtown Maple Street parking garage has an inventory of 1,400 spaces for passenger cars. The latest estimates from Northwestern indicate that 840 spaces will be available (60%). However, on many evenings, especially weekends, this lot is well over 50% full of restaurant customers, permit holders, and AMC Evanston 12 theater patrons (and soon Northlight Theater patrons). It is highly doubtful that 840 spaces will be available for Ryan Field concert attendees. Similar capacity constraints will likely occur at other downtown garages.

2. As a result, we anticipate that there will be significant traffic congestion, competition for parking spaces, and general disarray in the downtown area. Cars will need to find alternative parking and circulate through downtown and adjacent neighborhoods multiple times before finding and selecting another lot or on-street parking spot. This will add considerable "duplicate" volume to the existing traffic, create indecisiveness on where to turn and which direction to try next, add to delays, and crowd out movie, theater, and restaurant patrons.

3. Concert patrons will need to be transported the last mile to Ryan Field from these lots via a proposed shuttle. As described in Item 6 above, 129-199 shuttle buses will be required, which will add to the traffic congestion as they circulate and queue up to load and unload passengers.

Item 8

Northwestern has not submitted a Traffic Management Plan for the demolition and construction phases of the stadium project.

A resident who has worked closely with the trucking industry for 40 years estimates that at least 14,000 truckloads will be required during the 2.5-year demolition/construction period. Each vehicle will be loaded one-way only – which means 28,000 semi-tractor trailer trips on local residential streets:

- 5,000 loads to haul away 70,000 tons of demolition debris
- 4,000 more to remove soil required to lower the field and truck dock by 21'4"
- 5,000 more to bring new material to the site
- Thousands of contractors will require parking and shuttle transportation

On December 8, 2022, the City requested that Northwestern submit a "Construction Management Plan", including information regarding truck routes, contractor parking, etc. Five months after the City asked for this information, Northwestern's attorney responded that it will eventually submit a "Construction Management Plan." It still hasn't. Given the enormity and duration of the construction and parking requirements, it is essential for this information to be submitted to the City before consideration of the project.

Item 9

Northwestern has not submitted a Traffic Management Plan to show how large equipment and semi-trucks will access and circulate through the community, site, and loading area to deliver and remove concert venue equipment.

Touring bands are traveling construction projects. They travel with tons of performance equipment in 12 to 50 semi-tractor trailers (sometimes over 100 trucks): staging, trusses, lighting, video screens, speakers, amplifiers, instruments, props, pyrotechnics, catering equipment, support staff, and more. The tractor-trailers won't fit under many Evanston viaducts, which limits the routing options for truck convoys. Despite City Staff requests, Northwestern has not provided a traffic plan to route and deliver these convoys of equipment to Ryan Field. Its lawyer says a Traffic Management Plan ("TMP") will handle everything, but no such plan exists.

Depending on the act, it takes from two to seven days to deliver the cargo and set everything up. Each concert will create multiple-day road traffic impacts, not limited to the concert date itself. This 2½-minute video depicts the load-in/set-up process at a venue-comparable 30,000-seat stadium: https://www.youtube.comt/watch?v=JgGuRKgvWQ4 It can also take days to tear down and remove this equipment. Construction and teardown work occurs all day and night long in many cases.

Item 10

Northwestern has not submitted a comprehensive event Traffic Management Plan for proposed concerts and other events.

Events such as stadium concerts (and even smaller events) have an impact on traffic mobility in the wider area. Access roads become congested; parking places fill up; public transit handles much larger passenger volumes; sidewalks and cycle paths become congested so that pedestrians, cars, and cyclists end up in between each other; disruptions occur for residents; emergencies occur.

Coordinating the various transportation modes requires a thorough, planned approach, with input from a variety of stakeholders, including well-defined roles and responsibilities, materials and equipment deployment, communications methods, contingency plans, emergency plans, etc. Transportation managers do not have the luxury of trial and error in managing event traffic. Once an event begins, they have a limited amount of time in which to get it right. Thus, coordinated planning well in advance of an event is essential.

In a June 12, 2023, letter to Northwestern, City Staff has requested an event-based comprehensive Traffic Management Plan. On June 27, Northwestern's attorneys responded by writing that such a plan was currently in development. Given the size, frequency, and intensity of the proposed events at the proposed Ryan Field, a credible and comprehensive plan is essential. However, it does not exist yet and has not been provided as part of the text amendment application.

Item 11

The Kimley Horn street /intersection capacity analysis and conclusions are flawed and inaccurate.

Street traffic access to Ryan Field occurs via a few key single-lane urban traffic corridors, including Central Street, Lincoln Street, Isabella Street, and Green Bay Road. During collegiate football and basketball games, significant delays occur on these and other nearby residential streets. In contrast to most other large stadiums, there are no divided, multiple-lane highways to provide access to Ryan Field.

Using a software program, Kimley Horn completed a capacity analysis of nearby streets and intersections to determine the ability to accommodate pre- and post-event traffic volumes for

concerts at Ryan Field with 28,500 attendees. We believe that the conclusions for many of the streets and intersections are highly inaccurate and grossly underestimate actual traffic volumes.

At the Central Street and Ashland intersection, for example, the report concludes that the maximum projected eastbound queue will be 12 vehicles before a sold-out concert. However, it is well-known that traffic backs up considerably (sometimes for miles) even though police officers control these intersections. The photo below shows traffic backed up for a 2022 basketball game with only 7,000 attendees.

In a second example below, the Kimley Horn report concludes that the Ashland/Isabella intersection is expected to operate at a "Category A Level of Service" (unimpeded movement, free-flow conditions) on all approaches before and after sold-out weekday and weekend concerts. The two videos below were taken less than one block from this intersection before a sold-out Northwestern basketball game on February 15, 2023, attended by approximately 7,000 persons. The first video below shows typical backed-up traffic before the game. The second video shows cars traveling down residential alleys to bypass the gridlock on Isabella Street.

https://www.youtube.com/watch?v=UJMsDnUfchM&list=PLHEJFQeWEJxV7h_ZuzCV85eBlbyXTa0wv&index=1

https://www.youtube.com/watch?v=yxtwXBUhHMc&list=PLHEJFQeWEJxV7h_ZuzCV85eBlbyXTa0wv&index=2

In the third example below, the image below depicts normal traffic volume on Central Street (the primary access road for Ryan Field) on days without any events. In this image, taken on July 23, 2023, cars are backed-up single-file for over 0.25 miles while waiting through multiple cycles of a traffic signal.

These are only a few examples of the flawed capacity analysis and resulting inaccurate conclusions in the Kimley Horn report.

Item 12

The scope of the Kimley Horn study does not include a traffic and parking analysis, nor mitigation recommendations, for the unlimited events of up to 10,000 persons and 60 outdoor events up 7,500 persons, both of which are larger crowd sizes than collegiate basketball games at Welsh Ryan Arena (capacity of 7,039 persons).

In its text amendment application, Northwestern seeks to host an unlimited number of 10,000-person events, including 60 outdoor events of 7,500 persons. As described in Item 11 above, it is well known that events with 7,000 persons at Welsh Ryan Arena can create significant traffic gridlock and parking congestion due to the very limited street access.

1. Instead of 18 collegiate basketball games per year with 7,000 attendees, the text amendment seeks to host an unlimited number of 10,000-person events on any day of the year. Every day could create more congestion than that of a typical sold-out basketball game.

2. Northwestern has 1,408 parking spaces at its East and West Ryan parking lots. This is enough parking for only 3,520 persons, not 10,000. If 70% of attendees drive a car to a 10,000-person event (7,000 persons @ 2.5 persons/car), this will require 2,800 parking spaces. Since only 1,408 spaces are available, 1,393 cars (3,480 persons) will need to find a place to park. Since nearby on-street parking will likely be prohibited (as indicated in the Kimley Horn report), patrons will need to find remote parking. Shuttle buses may be needed.

3. Similarly, if 70% of attendees drive a car to one of the proposed 60 events for 7,500 persons, 2,100 parking spaces will be needed. Since only 1,408 spaces are available, approximately 700 cars (1,750 persons) will need to find a place to park.

Yet, even though requested by City staff, Northwestern has not submitted a traffic and parking study or management plan for these types of events as part of its text amendment application. Such a study and plan must be completed, and it must include a credible plan to manage traffic flow, provide enough parking, and specify other mitigations to reduce known problems with congestion and parking availability.

Conclusions and Recommendations

The 12 items above call into question the accuracy, integrity, and completeness of Northwestern's assumptions and conclusions when providing traffic and parking information to the City. Northwestern has not provided enough information to make informed decisions. In addition, the information that has been provided is based on unverified/flawed assumptions, which result in incorrect and biased conclusions and recommendations.

The question of relying on a developer's traffic/parking study has been posed previously by City staff and Councilmembers. At the June 14, 2021, Planning and Development Committee Meeting, Johanna Nyden (former Community Development Director) stated that in more than ten years of working for the City, she had never seen a developer's traffic study that concluded there would be significantly more traffic from a new development. Councilmember Wynne agreed and stated that the City should conduct its own independent analyses of such studies which are often biased. See https://www.youtube.com/watch?v=F9GLCRMsiTc&t=2536s (starting at 42:00 on the recording).

Given the substantially increased frequency and intensity of proposed events, the inherent bias in developer studies, and the impact on the surrounding community (and even downtown businesses), we strongly recommend the following:

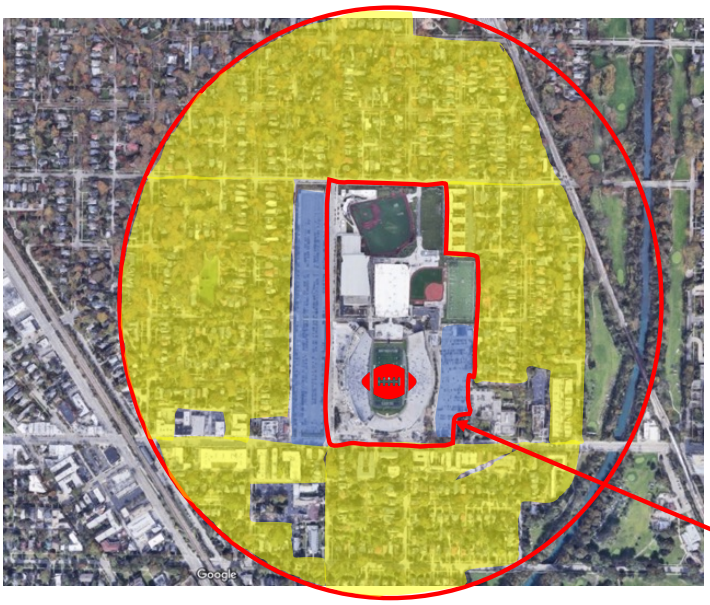
1. The City should conduct its own traffic and parking study to obtain accurate, unbiased data provided by an independent **qualified** traffic consultant. It is essential that the scope of such a study include smaller 7,500- to 10,000-person events (not just sold-out concerts). Northwestern is seeking to host an unlimited number of these events, which are widely known to create considerable detrimental traffic and parking impacts. There is only enough parking at Ryan Field lots for 1,408 cars (3,520 persons).

2. The City should require Northwestern to provide the missing traffic management plans before further consideration of the proposed zoning amendment and planned development.

Even if a more credible, complete traffic and parking study is performed, one must acknowledge that Ryan Field is entirely surrounded by residentially zoned family neighborhoods. The stadium is not surrounded by acres of sufficient parking. There are no interstates or arterial roads. There are only a few single-lane "collector roads" and residential streets that provide access to Ryan Field, Evanston Hospital, a fire station, five elementary schools, city parks, and over 500 homes. The capacity of the existing streets and parking is not adequate to support frequent large events, even with the maximum possible use of public transit and remote parking. This

makes concerts and frequent large events incompatible with the character of the surrounding development, which is primarily residential.

U2 Zoning District (Northwestern University)



- Distance to closest single-family home = 181 feet (proposed)
- 520 single-family homes and 21 multi-family dwellings within 1000 feet
- Extremely limited access roads and off-street parking
- Thousands of vehicles enter and park in residential neighborhoods

U2 district boundary

In the above image, the large red circle defines the 1000-foot perimeter boundary from the U2 district. The yellow shading shows the locations of residences within this boundary.

When benchmarking with other Big 10 universities, Northwestern's Ryan Field has almost twice as many single-family residences within 1000 feet compared to all other universities combined. According to the recently published "Economic Impact Study" by Johnson Consulting, nine annual concerts in total were held at these universities. Of these, five (5) were held at stadiums that were ½ mile or greater from the nearest single-family residences, and four (4) were held at stadiums that were 520-1,100 feet from the nearest single-family residence. There were zero concerts held where single-family residences were within 500 feet. (Northwestern's proposed stadium will be 181 feet from the nearest single-family residence and across the street from several multi-family dwellings. (There are 520 single-family residences and 21 multi-family dwellings within 1000 feet.)

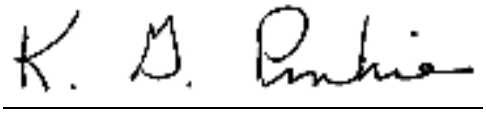
BENCHMARK COMPARISON OF BIG TEN FOOTBALL STADIUMS

Name of University	Number of Single-Family Residences Within 1000 Feet	Distance to Closest Single-Family Residence (feet)	Number of Annual Concerts	Number of Other Non-Football Events
Penn State	0	3,600	0	0
Ohio State	0	3,200	4	2
Illinois	0	2,500	0	0
Michigan State	0	2,500	0	0
Minnesota	0	2,500	1	0
Maryland	0	2,400	0	2
Indiana	0	1,200	0	0
Nebraska	0	1,100	1	1
Rutgers	10	900	0	0
Purdue	33	600	2	0
Iowa	44	520	1	1
Wisconsin	115	500	0	2
Michigan	93	350	0	1
Combined Totals (Excluding NU)	295	--	9	9
Northwestern	520	181 (proposed)	6 (proposed)	Unlimited (proposed)

NOTE: Concert and other event values were extracted from the recent Johnson Consulting report provided to the City of Evanston.

The increased frequency and intensity of traffic and parking congestion for concerts and other large events will create enormous detrimental impacts on the entire community, including downtown Evanston and neighboring Wilmette. It is already well known that large events such as 6-7 collegiate football and 15-18 basketball games (per year) cripple traffic congestion and parking availability in the surrounding area. Adding concerts and an unlimited number of 7,500-10,000 person events would completely change the character of the surrounding neighborhood from a residentially zoned community to a congested commercial entertainment center.

Respectfully Submitted,



Kenneth G. Proskie

ATTACHMENT 1

TRANSPORTATION MODE F0R RYAN FIELD CONCERT VENUE

	COLUMN A	**COLUMN B**
	Kimley Horn Transportation Mode Assumptions for Ryan Field Concerts	**Realistic Transportation Modes Based on Capacity Data for Ryan Field Concerts**
CTA Passengers During 2-Hour Peak Before/After Concert	8,550 (30% assumed; no rationale provided)	4,608 (16% of concert attendees based on 96 concert attendees per train car (80% of crush capacity), 6 cars per train, 4 trains per hour, all passengers on all trains are Ryan Field concert attendees)
METRA Passengers During 2-Hour Peak Before/After Concert	2,850 (10% assumed; no rationale provided)	2,285 (8% of concert attendees based on 95 concert attendees per train car, 8 cars per train, 3 trains within 2-hour peak, and 50% of passengers are Ryan Field concert attendees)
Concert Attendees Using a Personal Auto	14,820 (52% assumed; no rationale provided)	19,380 (68% based on the above revised estimates of CTA and METRA ridership)

Footnotes:

1. All values are based on a sold-out concert with 28,500 attendees.
2. CTA Purple Line platforms have a capacity of 6 train cars; trains are scheduled every 15 minutes; the published capacity is 61 persons per train car; and the "crush capacity" is 123 persons per train car.
3. The METRA platform at Central Street has a capacity of 8 train cars; 3 trains are assumed per 2-hour peak before concerts (including 1 extra concert train like Ravinia); the seated capacity of 138 passengers per train car; and the "crush capacity" is 238 passengers per train car. The 50% adjustment is based on trains already partially loaded (sometimes fully loaded) with passengers traveling to Ravinia concerts and other regular commuters.
4. "Crush Capacity" is defined to be the number of passengers that can squeeze into a train car, assuming that every seat is occupied and that standing passengers are crushed against one another. There is no space for another passenger to enter without causing serious discomfort to the passengers on board.
5. In Column B, the Kimley Horn assumptions are adjusted to reflect the revised CTA and METRA ridership estimates, based on real capacity data and crush capacities.

ATTACHMENT 2

PARKING REQUIREMENTS F0R RYAN FIELD CONCERT VENUE

		COLUMN A	COLUMN B
		Kimley Horn Assumptions	**Realistic Maximum Based on Revised Estimates Provided in Attachment 1**
LINE 1	**Concert Attendees Using a Personal Auto**	14,820 (52% of attendees per Kimley Horn report)	19,380 (68% of attendees per Attachment 1)
LINE 2	**Parking Demand (spaces needed)**	5,928 (2.5 persons per vehicle)	7,752 (2.5 persons per vehicle)
LINE 3	**Onsite Parking Spaces Available**	2,366 (Kimley Horn report)	1,575 (see Item 5 on page 6)
LINE 4	**Remote Parking Spaces Available**	4,156 (Kimley Horn report)	4,156 (Kimley Horn report)
LINE 5	**Total Parking Spaces Available (Line 3 + Line 4)**	6,522 (Kimley Horn report)	5,731
LINE 6	**Remote Parking Spaces Needed (Line 2 – Line 3)**	3,562	6,177
LINE 7	**Remote Parking Spaces (Surplus versus Deficit) (Line 4 – Line 6)**	**594 (surplus)**	**2,021 (deficit)**

Footnotes:

1. All values are based on a sold-out concert with 28,500 attendees.
2. "Parking Demand" is based on 2.5 concert attendees per vehicle (same as Kimley Horn's report).
3. In Column A, Lines 3-4 are based on values in the Kimley Horn report. The total number of available spaces is 6,522. The 4,156 remote spaces are located in downtown Evanston and Northwestern campus lots/garages.
4. In Column B, Lines 3-4 have been revised per the revised values provided by Northwestern as listed in Item 5 on page 6.
5. Kimley Horn assumes that 80% of the parking spaces in each downtown and Northwestern remote lot will be available for concert attendees.

ATTACHMENT 3

SHUTTLE REQUIREMENTS FOR RYAN FIELD CONCERT VENUE

	COLUMN A	**COLUMN B**
	Kimley Horn Assumptions	**Realistic Maximum Based on Revised Estimates Provided in Attachments 1 and 2**
Persons Who Need Shuttle for Remote Parking	9,195 (3,562 offsite cars per Kimley Horn report)	15,945 (6,177 offsite cars per Attachment 2)
Shuttle Requirements 0-1 Hour Before Concert	• 4,598 persons • 115 shuttle runs • 58 shuttle buses	• 7,973 persons • 199 shuttle runs • 100 shuttle buses
Shuttle Requirements 1-2 Hour Before Concert	• 4,597 persons • 115 shuttle runs • 58 shuttle buses	• 7,972 persons • 199 shuttle runs • 100 shuttle buses
Shuttle Requirements 0-1 Hour After Concert	• 7,816 persons • 195 shuttle runs • 98 shuttle buses	• 13,553 persons • 338 shuttle runs • 170 shuttle buses
Shuttle Requirements 1-2 Hour After Concert	• 1,379 persons • 35 shuttle runs • 18 shuttle buses	• 2,392 persons • 60 shuttle runs • 30 shuttle buses
Recommended Number of Shuttle Vehicles	75-115 (Kimley Horn report)	129-199

Footnotes:

1. All values are based on a sold-out concert with 28,500 attendees.
2. "Persons Who Need Shuttle for Remote Parking" are based on the number of remotely parked personal autos, each with 2.58 passengers (per the Kimley Horn report).
3. "Shuttle Requirements" are based on the following assumptions from the Kimley Horn report:
    a. A 40-passenger capacity per shuttle vehicle
    b. Each shuttle vehicle makes two roundtrip runs per hour
    c. 50% of shuttle riders require use 0-1 hour pre-concert
    d. 50% of shuttle riders require use 1-2 hours pre-concert
    e. 85% of shuttle riders require use 0-1 hour post-concert
    f. 15% of shuttle riders require use 1-2 hours post-concert

GINGOLDLEGAL

July 17, 2023

To the City of Evanston Land Use Commission
For distribution via City of Evanston Law Department (Alex Ruggie)
BY EMAIL (aruggie@cityofevanston.org)

Re: Continuance of August 9 Hearing regarding Ryan Field Project

Dear Commission Members:

I write with respect to the Commission's consideration of Northwestern University's applications to rebuild its football stadium and to amend the zoning ordinance with respect to the U2 zoning district (the "Application"). I understand from the City Manager's website and what I've read in the local press that the Application is scheduled to be considered at the August 9, 2023 Land Use Commission ("LUC") meeting.[1] Pursuant to Article VI, Section 6 of the LUC's amended Rules and Procedures, I respectfully request that the LUC grant a continuance of the August 9 hearing and its consideration of the Application until such time as the City of Evanston can finish collecting information from Northwestern and to then conduct further independent studies of the issues addressed by the (i) Environmental Assessment Review and Summary conducted by Wrightson, Johnson, Haddon & Williams with respect to the noise expected to be generated by the concert events that Northwestern seeks to hold; and (ii) Concert Venue Traffic Impact Study conducted by Kimley Horn with respect to the parking and traffic issues presented by such events (together, the "Northwestern Studies").

As many of you know, I served for ten years as a member of Evanston's Zoning Board of Appeals. I am very familiar with the City's Zoning Ordinance and the challenges of applying its strictures to a developing city. I hope that my commitment to the City of Evanston as a ten-year volunteer, and the subject matter expertise that experience has given me, may accord some weight to what I have to say. I also live at 1326 Isabella St., well within 500 feet of Northwestern's property and the U2 District, and thus will be very directly impacted by what Northwestern proposes to occur at the subject property.

[1] If the matter has not yet been officially calendared for August 9 by the LUC, I request that you consider this letter and my request in determining when to schedule such meeting, such that it occurs only after the City has had an opportunity to finish collecting information from Northwestern and to conduct its own independent studies.

I also would like to point out that, in my ten years on the Zoning Board, I argued for and voted in favor of many Northwestern's projects, often in my neighborhood and often over the objection of my own neighbors. I voted in favor of "The Great Room" late night café in 2010, the renovations to the Rocky Miller Park in 2016, and the reconstruction of Northwestern's west parking lot on Central Street in 2016. I have found that, in the end, Northwestern regularly has shown a willingness to adapt and compromise to better make its projects fit the neighborhoods in which it co-resides. What Northwestern has proposed is a sea change from the use of U2 District property as it has existed since Ryan Field first was constructed in 1926. While I, and my neighbors in the 7th Ward and in the south of Wilmette, all unquestionably signed on to move into a neighborhood that would host 6-7 football games per year, and other University sporting events, none of us ever contemplated that Northwestern would one day use these facilities to host a number of for-profit concerts, in some ways unlimited. Given the significance of this change, and its *potential* to have devastating impacts on the surrounding neighbor properties, it is even more critically important than usual that the LUC allow the City more time to engage **truly qualified**, independent experts to review and challenge the biased assumptions and analyses commissioned by Northwestern so the LUC (and later, City Council) can be presented with and consider full, non-biased expert evidence analyzing these potential impacts.

The LUC's responsibilities with respect to zoning matters are established in the City Code. As all of you unquestionably know, the Standards for Amendments of Northwestern's proposed text amendment to expand the uses permitted in the U2 District require the LUC and City Council to consider:

(A) Whether the proposed amendment is consistent with the goals, objectives, and policies of the Comprehensive General Plan, as adopted and amended from time to time by the City Council.
(B) Whether the proposed amendment is compatible with the overall character of existing development in the immediate vicinity of the subject property.
(C) Whether the proposed amendment will have an adverse effect on the value of adjacent properties.
(D) The adequacy of public facilities and services.

The Code states that these should be considered "among other factors." Traditionally, with respect to zoning amendments, the LUC also considers whether the proposed use will cause a negative cumulative effect on surrounding properties or the immediate neighborhood; whether the use will interfere with or diminish the value of properties in the area; and whether the use will cause undue traffic, parking congestion or noise. *See* Code §§ 6-3-5-10 (Standards for Special Uses) and 6-3-5-16(J) (Standards for Administrative Review Use).

The Northwestern Studies—and the issues addressed by them—are directly applicable to each of these standards that LUC must consider in determining whether to recommend the proposed text amendment. With respect to the Comprehensive General Plan, i.e., the first applicable standard, in its current version,[2] the Comprehensive General Plan specifically addresses the role in our community of Northwestern University, by far the greatest landowner and employer in Evanston. Chapter 6 of the Plan discusses our "Institutions" (including Northwestern). Its stated goal is to "[s]upport the growth and evolution of institutions [like Northwestern] while recognizing that they are a part of their mostly residential surroundings." The Plan's policies state the need to "[r]eview zoning standards and parking regulations to work toward a balance between institutional needs and the quality of surrounding neighborhoods." The text further clarifies, "As a goal, Evanston should support the growth and evolution of institutions so long as the growth does not have an adverse impact upon the residentially-zoned adjacent neighborhoods." Again, in order to approve the proposed text amendment and the for-profit Northwestern events it would allow, this body must find that the Amendment is consistent with these goals, objectives and policies. And it also must find that the public facilities are adequate to serve the amended permissions. As of now, however, the LUC (and City Council) are not informed by complete, accurate, fact-grounded information or analyses.

That the applicant-commissioned Northwestern Studies (as well as Northwestern's fanciful economic study for the project) may be biased and should be viewed with skepticism is not a revelation. At the June 14, 2021 City Planning and Development meeting, Community Development Director Johanna Nyden observed that in more than ten years working for the City of Evanston, she had never seen an applicant-commissioned traffic study that concluded there would be significantly more traffic from a new development project. Councilmember Wynne echoed that the City should undergo independent analyses of such studies in order to avoid the bias in having them conducted and paid for by the applicant. *See* https://www.youtube.com/watch?v=F9GLCRMsiTc&t=2536s (starting at 42:30). Here, the Northwestern Studies unsurprisingly conclude there will be minimal impacts from the addition of the concert events.

The City of Evanston's Staff recognizes the importance of conducting its own studies to analyze these issues. I know for a fact that the City had been working for months to negotiate with Arup, a well-respected firm with extensive experience in concert sound, to evaluate the sound-related issues in that Northwestern Study. I was told by a neighbor that the City recently changed course and switched its discussions for such a sound study with SafeBuilt, a company with no particular experience in sound or concert sound. Based on comments City Staff made to this neighbor, it seems the City may have made this decision based in large part on the

[2] In the spring of 2023, the City began a process of considering a new Comprehensive Plan and Zoning Code. Obviously, if the Comprehensive Plan and Zoning Code may be changed materially by this process, it further begs the question whether the LUC or City Council should be considering a significant text amendment for the U2 District right now at all.

concern that the August 9 hearing date would not allow them enough time to have the work done by the seemingly-more-qualified Arup firm.

I also am aware that the City requested Northwestern to produce (a) an Event Management Traffic Plan (promised in the traffic Study) and also (b) a truck staging plan related to the large equipment and trucks that will be associated with the events. I believe Northwestern has not yet produced such information. City Staff obviously should have time to receive and review this additional information well in advance of the LUC's consideration of the issues, and to have their independent experts consider the information in their own analyses.

The City should be permitted to allow those studies to be conducted and to shape its recommendations to the LUC and City Council, as well as to allow affected neighbors and all Evanstonians to further evaluate their own positions on the proposed project.

In sum, the LUC cannot possibly fulfill its duties in evaluating the Standards, and should not take any action on the presently proposed zoning text amendment, until after City Staff has had an opportunity to receive and evaluate all of the information requested of Northwestern, to commission its own independent studies of the traffic, parking and noise issues presented by the Application, and to formulate appropriate recommendations to LUC in view of the same. Therefore, I respectfully request an indefinite continuance until such independent evidence can be gathered and evaluated.

Thank you for your consideration of my request for a continuance.

Sincerely,

Scott H. Gingold

Cc: Matt Rodgers (Evanston Land Use Commission, Chair)
Meghan Jones (City of Evanston, Proposed Projects, Staff Contact Ryan Field Project)
Nicholas Cummings (City of Evanston, Law Department)
Stephanie Mendoza (City of Evanston, Clerk)
Paul Zalmezak (City of Evanston, Head of Economic Development)
Eleanor Revelle (7th Ward Councilmember)

GINGOLDLEGAL

September 7, 2023

To the City of Evanston Land Use Commission
For distribution via City of Evanston Law Department (Alex Ruggie)
BY EMAIL (aruggie@cityofevanston.org)

Re: Continuance of September 6 / September 27 / October 11 Hearing regarding Ryan Field Project

Dear Commission Members:

I previously wrote on August 17 to request a continuance of the Commission's hearing regarding Northwestern University's applications to rebuild its football stadium and to amend the zoning ordinance with respect to the U2 zoning district (the "Application"). I live at 1326 Isabella Street, well within 500 feet of the U2 zoning district / subject property. My request for a continuance was recognized at the September 6 hearing last night, and was granted. At the meeting, I verbally amended the reasons for my continuance request, and Chairman Rodgers requested that I submit an updated written letter formalizing those reasons (which again, were granted at the September 6 meeting).

Categorically, there are two reasons I request a continuance:

First, I request a continuance in order to provide ample time *before* the next hearing for Northwestern to provide and supplement the record with many key pieces of missing evidence. City Staff recognized this shortcoming on Page 12 of last night's meeting packet: "***Staff notes that the currently proposed public benefits list is limited and does not provide the tangible items that are typically seen for planned developments***." Dan Shapiro, representing the Most Livable City Association, last night listed at least seven pieces of evidence referenced in Northwestern's presentation and the Commission's questions, but not included in the materials submitted or presented thus far. That list included:

1. Traffic Management Plan (TMP). This was referenced repeatedly in Peter Lemmon's comments regarding the traffic impacts resulting from the proposed concert events. It is clear that the TMP is a large part of Northwestern's assertion that the negative impacts can be mitigated by the TMP. This key piece of evidence should be a part of the record that the Commission considers in deciding whether the applicable standards are met.
2. Concert Operations Plan (COP). Mr. Godoy testified that a large part of the success of this project will depend on a general COP and also event-specific operations plans.

Northwestern has not produced any such plan, or even suggested what its parameters might be. Like the TMP, this needs to be a part of the record under consideration, i.e., so the Commission can evaluate the impacts.

3. Northwestern's demolition waste removal plan. Commissioner Puchtel asked about this, and Northwestern simply testified that it would have one. Like the above plans, because this touches an issue the Commission addressed, this plan should be proposed more concretely and should be produced.
4. Memorandum of Understanding. Luke Figora, Northwestern's Chief Operating Officer, presented a slide as to what is required in an MOU, but did not set forth Northwestern's position on the items. Again, however, Northwestern conceded that an MOU with the City needs to be worked out as part of any approval. Without knowing Northwestern's position, the Commission (and City Council) are in no position to judge whether the MOU provides sufficient offset for the negative impacts of the project.
5. Northwestern's Rebuttal to the Wilmette-commissioned Arup sound report. Northwestern's sound expert, Greg Hughes, and its zoning attorney, both acknowledged that this rebuttal report has been prepared but not yet submitted. Obviously, the amount of sound pollution projected to reach the surrounding neighborhoods is a significant issue and a potentially large negative impact from the project. All of the evidence should be submitted and subject to Commission and public scrutiny before the next meeting, when property owners and interest groups are being permitted to question witnesses and rebut evidence.
6. Disclosure regarding Northwestern's discussions with the public transit stakeholders. Peter Lemmon testified—in response to a comment from Commissioner Lindwall—that the current public facilities cannot adequately serve the 8,000+ concert-goers who his traffic model projects will come to and leave the concert via public transportation, i.e., the Metra, CTA and Pace. He stated that Northwestern is in discussions with these entities about the feasibility of adding routes and lines to make that volume possible. However, Northwestern has not disclosed any of those communications. All written communications (including e-mails) with those entities should be produced on an ongoing basis so the Commission can better judge whether this piece of the proposal is even feasible.
7. Peer review study of the ground water diversion / retention proposal. Northwestern plans to route significant amounts of ground water under the properties abutting the U2 district and into the canal, and for weeks already has been staging equipment to that end on Isabella Street. City Staff suggested this review in its recommendations in the packet; and Commissioner Westerberg also suggested that Northwestern pay for a study to have this proposal peer reviewed, due to the potentially devastating ecological and environmental impacts of the plan. This seems like a very minimal assurance, and Northwestern should provide this level of review for something potentially so significant.

I would add to Mr. Shapiro's list:

8. Economic benefits detail. Northwestern has thrown around a lot of numbers in its materials and presentations, and also to the public. Perhaps most significantly, Northwestern repeatedly has referenced that this project can be expected to generate $1B in economic benefits for the City of Evanston over the next ten years. Dave Davis also said Northwestern is committed to spending $208M on "local" minority and women owned businesses. While economic impacts are not a part of the applicable standards, Northwestern has made these promises regarding economic benefits a cornerstone of its proposal and Its expert Mr. Kiesel opined that these benefits offset the "inconveniences" to the neighborhood. Northwestern should be made to substantiate its claims by producing a line-item spreadsheet showing the assumptions and calculations leading to its $1B figure, and all other financial assertions, in order for the Commission, Council and public to be able to test and evaluate the eye-popping claims.
9. Presentation. Northwestern's PowerPoint presentation from last night should be added to the record and made available for review. Presumably any Commission approval would require development consistent with the materials submitted, and the presentation is no exception.

All of these materials, and others previously requested or recommended by City Staff (see 9/6/23 packet at 16-18), should be produced *prior* to the next hearing so the property owners have a chance to evaluate and to ask questions and provide rebuttal evidence, if appropriate. Moreover, City Staff and the Commission should have these materials in advance of the next meeting so they too can evaluate and ask questions, and include all key evidence in their consideration of the standards.

Second, I request a continuance in order to provide myself an opportunity to reasonably examine all witnesses who testified on behalf of Northwestern's Application last night, to present witnesses on my own behalf, and to present evidence to rebut testimony given by Northwestern last night.

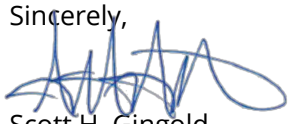
Under the Evanston Zoning Ordinance, §§ 6-3-5-17 (for special use proposals), 6-3-6-11 (for planned development proposals) and 6-3-8-11 (for major variation proposals), as a property owner living within 500 feet of the U2 District / subject property, I have a right:

(A) To inspect all documents and material submitted as part of the Application;
(B) To reasonably examine all witnesses testifying;
(C) To present witnesses on my own behalf;
(D) To present evidence to rebut testimony given by Northwestern.

I presently plan to exercise all of these rights in the time I am allotted at the next hearing. I question whether the 10-minutes I requested is sufficient for me to exercise all of these rights, but I will do my best to meet that time allotment.

Thank you for your consideration of (and granting of, last night) my request for a continuance.

Sincerely,



Scott H. Gingold

Cc: Matt Rodgers (Evanston Land Use Commission, Chair)
Meghan Jones (City of Evanston, Proposed Projects, Staff Contact Ryan Field Project)
Stephanie Mendoza (City of Evanston, Clerk)
Paul Zalmezak (City of Evanston, Head of Economic Development)
Eleanor Revelle (7th Ward Councilmember)

GINGOLDLEGAL

September 20, 2023

To the City of Evanston Land Use Commission and City Council
For distribution via City of Evanston Law Department (Alex Ruggie) and City Staff (Meagan Jones) (aruggie@cityofevanston.org; mmjones@cityofevanston.org)

Report Evaluating Northwestern University's Proposed Special Use for a Planned Development / Text Amendment Under Evanston Zoning Standards

BACKGROUND AND EXPERIENCE

I have been a commercial litigation attorney for 25 years. I also served for ten years as a member of the Evanston Zoning Board of Appeals, and in that capacity heard and decided hundreds of cases applying the standards of the Evanston Zoning Ordinance, including many applications filed by Northwestern University ("The Great Room"; West Parking Lot Renovation; Baseball Stadium construction). As a result of the expertise I gained from serving in this capacity, several clients have engaged me to consult on and present their cases to administrative bodies regarding land use and zoning matters. The opinions in this report are my own, and are based on my experience in such matters.

In addition to the foregoing, my law firm, Gingold Legal, is an Evanston-based business. And I live and work at 1326 Isabella Street, well within 500 feet of the U2 District. My family moved to this neighborhood, in part, because we like participating in and being near the athletic campus of Northwestern University.

SCOPE OF REPORT

Northwestern University has submitted two applications before the City: (1) for a Special Use for a Planned Development, subject to the standards of Section 6-3-5-10 of the Evanston Zoning Code and Ordinance, to demolish and rebuild a new Ryan Field stadium; and (2) for a related Text Amendment to Section 6-15-7-2 (Permitted Uses) of the Code to modify the list of permitted uses in order to enable Northwestern to hold up to 6 public-facing concerts within the U2 District and an unlimited number of other types of events within the U2 (collectively referred to herein as "concerts" for ease of reference), subject to the standards of Section 6-3-4-6 of the Evanston Zoning Code and Ordinance. Northwestern took the position at the

September 6, 2023 Land Use Commission hearing that "for [Northwestern] to consider the project *today*," these applications are tied together, "all or none."[1]

This report does not evaluate the aspects of the first application to demolish and rebuild a new football stadium. It focuses only on evaluating the aspects of both applications with respect to the proposed expanded use of the U2 District to hold up to 6 commercial concerts at Ryan Field, an unlimited number of events "intended for the University community" for up to 10,000 attendees, and an unlimited number of other events for up to 7,500 attendees (including 66 proposed outdoor events).

[1] *See* 9/6/23 LUC Hearing, YouTube video at 2:05:06 (Luke Figora, Northwestern COO). As a practical matter, Northwestern's "all or none" position is likely posturing. It is a member of the Big Ten Conference, each of whose member schools fields a football team. The Big Ten negotiated an $8 billion television deal, primarily based on football and basketball game broadcast rights, that is projected to distribute to each of its member schools $80-$100 million per year. *See* *https://www.espn.com/college-football/story/_/id/34417911/big-ten-completes-7-year-7-billion-media-rights-agreement-fox-cbs-nbc*.
Northwestern must field a football team to get this money (and probably to remain in the Conference); and although it certainly does not require a new stadium to do so, having one would improve Northwestern's ability to attract talented players and coaches. There is only one place for Northwestern to field a football team on or even near its campus, at Ryan Field in the U2 District. Northwestern President Michael Schill has stated publicly that the cost of renovating Ryan Field would be the same as the demolition / rebuild project. In other words, Northwestern is likely to be willing to rebuild or remodel its football stadium in the absence of the Text Amendment with expanded uses for public-facing concerts.

The math also does not make much sense regarding Northwestern's professed "need" to have the concerts in order to move forward with the stadium rebuild. Northwestern claimed it already has raised the $800 million required to rebuild the stadium (primarily from a large donation by Pat Ryan, Jr., whose name will be attached to the stadium in perpetuity), but Luke Figora acknowledged on September 6 that some of that amount will be serviced by debt. *See* 9/6/23 LUC Hearing, YouTube video at 2:07:57. Figora later conceded that the concerts are expected only to generate about $2 million net per year for Northwestern. *Id.* at 2:11:10. This is not much money compared to the cost of an $800 million build, and the very small amount suggests that the adverse impacts to the surrounding neighborhood are not at all worth the meager amount Northwestern claims it will get from the concerts. Presumably, the cost of the debt service is the only reason that Northwestern "needs" the concerts, i.e., in order to avoid going out of pocket on the costs of that debt. Again, given that tiny amount of net income, Northwestern financially should be willing and able to rebuild the stadium without the Text Amendment.

SUMMARY OF OPINIONS

> *"Your scientists were so preoccupied with whether or not they could, they didn't stop to think if they should."* — Dr. Ian Malcolm, *Jurassic Park*

Northwestern's proposal to expand and commercialize the uses of Ryan Field and the U2 District fails to meet most of the standards applicable to its applications. Most importantly, the proposal will create significant negative / adverse impacts on the surrounding neighborhood in contravention of the City's Comprehensive General Plan, a key standard for both applications.

From a Land Use and Zoning perspective, almost nothing about Northwestern's proposal to expand the uses of the U2 District makes sense:

- The proposal would require 96% of the available Off-Site parking spaces to be occupied by concertgoers, effectively shutting down downtown Evanston to driving residents and non-concertgoers. (And that number would increase if Northwestern's assumptions prove untrue that 40% of the attendees will take public transportation to the concerts.) In fact, contrary to what Northwestern has presented, this dearth of parking ensures that on concert event nights there likely will be significant *negative economic impacts* to all of Evanston and its businesses. Although hypothesized otherwise by Northwestern, concertgoers coming to and parking in Evanston are not going to have time for a pre-concert meal when they must scramble to find available parking and then stand in line for one of 283 or more shuttles. Rather than spending their money downtown, these people will be inside Ryan Field during concerts held from 6-10pm, buying their dinner and drinks from Northwestern's vendors. And the crowding out caused by these concertgoing parkers will ensure that non-concertgoers who otherwise might come to Evanston (as well as concertgoers who might do so in the absence of the Text Amendment) do not have an opportunity to come and spend their money in Evanston.

- Given the limited number of train runs, train cars, and capacity constraints of the CTA and Metra trains, Northwestern's proposal assumes more people will come to Evanston on public transportation than is even possible. And the 10,000+ people estimated to take these trains will need to wait in impossibly long lines after the concerts end in order to get on the limited-capacity trains (and, for Metra, which run only hourly at that time of night). In turn, in reality, this error on Northwestern's part will create even more vehicle traffic and parking demand.

- Northwestern's plan to shuttle more than 11,000 parkers to and from the concerts also is likely impossible. To do so, Northwestern proposes 283 shuttles (full, with 40 people riding each) will need to make the 30-minute trip before and after the events.

It is unclear what time these people would need to be parked. Northwestern's estimates assume 75-115 buses will be operating at a time, suggesting that they will be running back and forth in 30-minute loops for at least 90 minutes before and after an event. Even if this were logistically feasible, regardless it will create significant traffic congestion all around the City and especially in the Seventh Ward. It also will result in very long lines of concertgoers standing in the streets and sidewalks as they wait their turn to get on a shuttle bus, some of them for up to 90 minutes.

- There will be significantly increased traffic congestion. In addition to the ~1400 cars parking On-Site and ~4,500 cars that Northwestern currently projects will be driving though Evanston in search of Off-Site parking, Northwestern's assumptions require 283 shuttles coming to and from the Off-Site parking areas with 11,300 passengers as well as 7% of concertgoers (1,995 people) arriving by taxis, "TNCs" like Uber and Lyft, Limo / black car, and party bus / trolley. The traffic in the surrounding neighborhood and also downtown Evanston, and the roads serving the routes in between, will be overwhelmed by this vehicle traffic, at least in the hours immediately before and after the concerts.

- There will be sustained concert noise pollution in the surrounding neighborhood at decibel levels potentially dangerous and unquestionably disruptive to residents in its path, and in any event unlawful under the City of Evanston's noise Ordinance.

Northwestern has been proposing changes in use like this, unsuccessfully, for more than 40 years. The reason why its applications have been rejected: because the U2 District is in a residential neighborhood and the negative adverse impacts are too much for the surrounding neighborhood and City of Evanston to bear.

ANALYSIS OF STANDARDS FOR SPECIAL USES FOR PLANNED DEVELOPMENTS / TEXT AMENDMENTS

1. Special Use for a Planned Development (Section 6-3-5-10, Evanston Zoning Code)

Standards: For the Land Use Commission to recommend that the City Council grant a Special Use for a Planned Development, the Land Use Commission must find that the proposed Special Use meets all of the following standards.

A. Is one of the special uses specifically listed in the zoning ordinance;

This standard is not met.

The fact that Northwestern seeks a Text Amendment to the uses permitted under Section 6-15-7-2 of the Zoning Ordinance is an admission that the proposed use within the U2 District as a public-facing concert venue currently is not permitted. Nor is such use a permitted special use under Section 6-15-7-3.

B. Is in keeping with purposes and policies of the adopted comprehensive general plan and the zoning ordinance as amended from time to time;

This standard is not met.

In its current version,[2] the adopted Comprehensive General Plan specifically addresses the role in our community of Northwestern University, by far the greatest landowner in Evanston. Chapter 6 of the Plan discusses our "Institutions" (including Northwestern, and also two hospitals, seventeen schools and over eighty places of worship). The stated goal regarding our "Institutions" is to "[s]upport the growth and evolution of institutions ***while recognizing that they are a part of their mostly residential surroundings.***" The Plan's stated objectives are to "Assure that institutional development ***enhances surrounding neighborhoods***." To that end, the Plan's stated policies include the need to "[r]eview zoning standards and parking regulations to work toward a balance between ***institutional needs*** and the ***quality of surrounding neighborhoods***."

The text of Chapter 6 of the Plan further clarifies, "As a goal, Evanston should support the growth and evolution of institutions ***so long as the growth does not have an adverse impact upon the residentially-zoned adjacent neighborhoods***." It continues, "Although the City … cannot prescribe policies to prevent such change from occurring, ***enforcing the standards of***

[2] In the spring of 2023, the City began a process of considering a new Comprehensive Plan and Zoning Code. The stated goals include the development of a new Zoning Code and Map. Obviously, this raises a question whether the LUC or City Council should be considering Northwestern's significant text / map amendment for the U2 District right now at all.

the City's Zoning Ordinance is essential if proposed changes would disrupt the residential character and environment of surrounding neighborhoods."[3]

Northwestern's proposed new permitted use is not consistent with these goals, objectives and policies. The "growth" Northwestern is proposing through its application to amend the text of this City's Zoning Ordinance is simply not a part of Northwestern's educational or athletic missions and will have only adverse impacts on the ***surrounding neighborhood***. To the contrary, Northwestern concedes, and City Staff's August 23, 2023 Memorandum to the Land Use Commission finds, the proposed concert uses will result in the following adverse impacts to the surrounding neighborhood and also to Evanston at large:

- Insufficient parking. Northwestern's assertion that there is adequate parking to serve the proposed concert use is completely unrealistic. Based on mathematically-just-barely-possible and -more-likely-impossible assumptions, Kimley-Horn assumes that concertgoers would utilize 96% of the City's available Off-Site parking (and that far more people would need to travel on CTA and Metra train lines than are even possible, meaning even more parking demand is likely). And even if these scenarios were possible, Northwestern's maximization of these resources would make them unavailable to Evanstonians and other non-concert goers, resulting in discouraged use of and *decreased* economic activity in Evanston by these groups on concert nights.

  Kimley-Horn, Northwestern's traffic study provider, estimates that approximately 52% of the 28,500 concertgoers (14,820 people) will arrive to Evanston by car, representing 5,928 vehicles (the Kimley-Horn estimate assumes 2.5 people per vehicle). Kimley-Horn estimated that these cars will be accommodated as follows:

  Kimley-Horn Table 3: Assessment of Available Parking

Parking Location	Available Parking Spaces
"**On-Site**" **Stadium Lots**	
Northwestern West / East Parking Lots	1316
Canal Shores	850
Poplar Avenue	200

[3] Northwestern's zoning "expert," George Kisiel, stated his apparent misunderstanding that the General Comprehensive Plan is concerned with "whether there's significant undue impacts on … the City as a whole." *See* 9/6/23 LUC Hearing, YouTube video at 48:20. The language quoted herein demonstrates that the Plan is concerned with the impacts of institutional development on the "surrounding neighborhoods," using that phrase over and over. This neighborhood focus makes much more sense, when discussing land use. Notwithstanding his mistake, as shown in this report, the adverse impacts of Northwestern's Text Amendment / change of use proposal will reach beyond the Seventh Ward and will negatively affect the City of Evanston and particularly its downtown District.

"**Off-Site**" **Northwestern Lots**	1290 (utilizing 80% of the 1,613 available spaces)
"**Off-Site**" **Downtown Evanston Lots**	2,866 (utilizing 80% of the 3,583 available spaces)[4]
Total available parking spaces	6,522

In Northwestern's September 6, 2023 to City Staff, it conceded that no spaces will be made available by Canal Shores, meaning those 850 vehicles instead must occupy space in the Off-Site lots. Thus, those lots would need to be filled well beyond the 80% capacity assumed by Kimley-Horn for its proposal to work. In fact, if all 850 of the previously-designated Canal Shores parkers must park in these Off-Site lots, ***Northwestern's plan would require concert parkers to take up 96% of the available parking in all of Downtown Evanston and the Northwestern lots***.[5] Kimley-Horn previously stated its assumption that 20% of these lots (1,040 spaces) would be "available for parking by others (e.g., students, residents, and business patrons)." Instead, only 190 empty spaces will be available for these non-concert groups to attempt to find.

In addition, the impossible assumption that 40% of concertgoers will take the CTA and Metra trains, as discussed below, means that many of those people likely will drive their own cars instead creating even more parking demand and traffic congestion.

Just because the entire City has (barely) enough total parking spaces to accommodate one stadium concert, that does not make the parking sufficient for zoning purposes. To wit, the Land Use Commission *routinely* requires as a condition to Special Use

[4] In Northwestern's June 27, 2023 letter to City Staff, it contradicted the Kimrey-Horn assumptions of 80% availability in three large downtown parking lots, showing availability of 28% in the Maple Street garage, 70% availability in Sherman Plaza garage, and 75% availability at Church Street. However, Northwestern's letter attempts to make up for the error by adding new parking garages and stating, "approximately 2,900 to 2,950 spaces are typically available within publicly available off-street parking in downtown Evanston." And at the September 6 Hearing, Mr. Lemmon testified that his discussions with the garages revealed approximately 67% available parking on nights approximating concert events. *See* 9/6/23 LUC Hearing, YouTube video at 1:11:49. Yet Kimrey-Horn never has revised its own analysis or assumptions which are based on 80% availability. There may not, in fact, be enough garage parking spaces in Evanston to accommodate Northwestern's plan.

[5] Kimley-Horn assumed that 850 parking spaces would come from four "lots" at Canal Shores. Therefore, those 850 vehicles instead will have to use other Off-Site parking, bringing the number from 4,924 to 5,774.

applicants that they agree not to use the available street parking specifically in order to ensure that Evanston business patrons have a place to park near the shops they wish to visit.[6]

Nor can one compare this proposed use or its effects to even the most highly-attended of Northwestern football games. In Northwestern's June 27, 2023 letter to City Staff, it attested that for the Ohio State football game in November 2022, only 2400 visitors parked off-site and a total of 47 shuttles were needed. In contrast, ***the current proposal for concerts involves approximately 7 times as many parking visitors and shuttles as the most highly-attended football game.*** The parking and traffic needs will consume the entire City.

Northwestern's proposal (to have 96% of the available offsite parking consumed by concertgoers) is not a reasonable burden on the City of Evanston. This amount of use unquestionably will discourage all other visitors from coming to Evanston on concert nights; they will want to avoid driving around aimlessly in search of the few remaining parking spots that may be available and then likely not near their dining or shopping destinations.

These are called "crowding out" effects, a negative economic impact not accounted for or quantified by Northwestern's or the City's economic analysis reports (indeed the IMPLAN model they both use does not account for negative economic impacts[7]). Rather than *create* economic activity for Evanston, for the 3-4 hours during a concert event, while all concertgoers are *inside* the concert venue, Evanston businesses will have far fewer opportunities for local and commuting patrons to visit their restaurants, stores and shops.[8] This is one reason why almost all of the supposed

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[6] Commissioner Halek recognized this as a potential impediment to Kimley-Horn's assumptions about the number of parking spaces available in Evanston's garages. *See* 9/6/23 LUC Hearing, YouTube video at 1:11:04 (other Special Use applicants, when challenged about available parking, say their people can park in the garages).

[7] See https://www.carolinajournal.com/opinion/iron-man-no-the-real-hero-is-the-super-multiplier/ ("In short, this [IMPLAN] is a model of sums — it is all plus signs. Despite what it says, it doesn't measure the *total* economic impact; it measures only *benefits* expanded by whatever multipliers it used (more on that below). It doesn't take *costs* into account.").

[8] Neither Northwestern's nor the City's economic impact analyses consider this conundrum. Rather, they simply mistakenly assume that concertgoers themselves will spend more money in Evanston resulting in some incremental economic benefits. This assumption makes no practical sense. For example, for a Friday night event that starts with opening acts at 6pm, concertgoers presumably will be arriving to Evanston in a rush from their work days in the hour beforehand. Most of these people will not have time to leisurely park in Evanston to shop or have a meal beforehand; instead, they will need to wait in line for the 30-minute shuttle ride (as Kimley-Horn's Peter Lemmon testified on September 6, 2023) to Ryan Field. Nor will the concertgoers be spending any money in Evanston from 6pm-10pm, because they will

"economic impact" from the concerts will accrue only within the U2 District at the concerts themselves, i.e., to Northwestern and its outside vendors alone.

Presumably, there will be an even greater burden on the available parking in the surrounding neighborhoods in the Seventh Ward, and the crowding out effects more pronounced there. Although Kimley-Horn does not specify, one can reasonably assume that concertgoers *first* will seek out all of the available non-Northwestern parking in the Seventh Ward. Thus, while it is crystal clear why the residents of the surrounding neighborhood will be negatively impacted by the increased traffic and parking demand, it also is evident that businesses in the surrounding neighborhood will suffer on concert nights.

- An unrealistic shuttle plan. Hand-in-hand with the consumption of all of the City's parking spaces, Northwestern's plan assumes that the people who park off site will take shuttle buses from their cars, to and from Ryan Field. To accommodate the 11,300 Off-Site parkers (as adjusted for the previous Canal Shores parkers), at 40 passengers per shuttle (see Kimley-Horn report, Table 7), this plan would require there to be at least 283 separate shuttle runs (if each bus is completely full) both before and after the concerts, which Northwestern has represented would take approximately 30 minutes per ride. Kimley-Horn's report mistakenly assumes only 105 shuttles (see Kimley-Horn report, Table 8). After a concert, per Kimley-Horn's report, these 11,300 parkers are expected to wait in a line on Ashland Avenue for a return shuttle.

  According to Kimley-Horn's Peter Lemmon, the "current estimates" assume 20 buses will run at a time,[9] but Lemon later testified that there might be 75-115 buses operating and making approximately 3 runs each (before and after the event).[10]

  This plan is unrealistic. 283 shuttle runs before or after a concert would dwarf any amount of shuttles Northwestern has managed for any football game (again, Northwestern stated that the Ohio State game required 47 shuttles for just 2,400 people). At 30 minutes per run and 20 shuttles running at a time, even with overlapping buses, the shuttles collectively would consume Evanston's roadways for hours.

- Insufficient public transportation infrastructure. Kimley-Horn's study assumes that an additional 11,400 people will arrive at and leave the concerts via the CTA Purple Line (30%, 8,550 people) and the Metra train (10%, 2,850 people). However, these modes

be inside at the concerts. Nor will they spend their money after the show, when most Evanston retailers and restauranteurs already have closed their stores.

[9] *See* 9/6/23 LUC Hearing, YouTube video at 1:17:51.

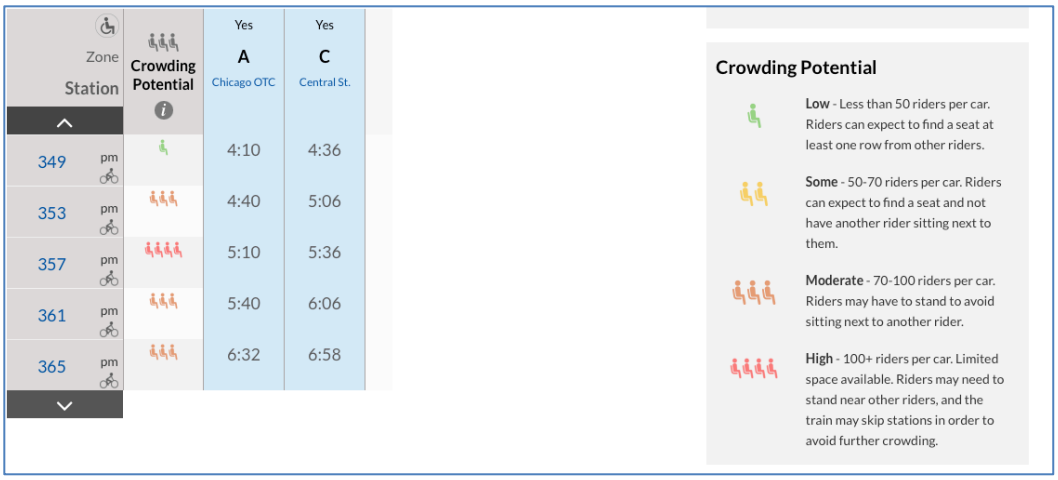
[10] *See* 9/6/23 LUC Hearing, YouTube video at 1:19:39.

of public transportation cannot absorb this incremental capacity, as Kimley-Horn's Peter Lemmon conceded on September 6 when he indicated that the City would need to negotiate additional train line runs with these providers.

As for the CTA Purple Line, this proposal is nothing like concertgoers or baseball attendees taking the El trains to Wrigley Field. Wrigley Field El train riders arrive both southbound and northbound, on both the Red Line and the Brown Line. In contrast, in Evanston, most CTA riders likely would come only from the south, as Central Street is the penultimate stop on the Purple Line. Further, the Purple Line trains are much smaller than the Red and Brown Lines and with far fewer train runs; each Purple Line train has a maximum of 6 cars[11] each with a capacity of 123 riders,[12] accommodating a maximum total of 738 passengers. Thus, for Kimley-Horn's assumptions to be correct, the 8,550 people arriving and departing on Purple Line trains would require 12 separate train runs. In order to advocate for Northwestern's concert project, Kimley-Horn has made a completely unrealistic assumption—the Purple Line does not have the capacity to accommodate the number of concertgoers Kimley-Horn requires, and cannot possibly add enough additional train line runs in the hours before and after the concert to make this proposal feasible.[13]

As for the Metra, the Union Pacific North Line currently makes stops at Central Street station: Northbound (e.g., from Chicago) at 5:06pm, 5:36pm, and 6:06pm; and Southbound (e.g., from the north suburbs) at 5:16pm, 5:43pm, and 6:23pm.[14] Kimley-Horn's analysis assumes that 2,850 people will take the Metra to and from the concerts. However, according to the Metra Rail website, the trains at these times already are crowded (and therefore highly unlikely to be able to accommodate this incremental volume of Ryan Field concertgoers):

[11] https://en.wikipedia.org/wiki/Purple_Line_(CTA).
[12] https://en.wikipedia.org/wiki/5000-series_(CTA).
[13] Peter Lemmon acknowledged these problems at the September 6, 2023 Land Use Commision hearing, stating "It's a little bit different here, … and it would take some additional operation. … You know, it's going to be busy. … These are going to be very full trains for an hour after a concert or more, as people are going." 9/6/23 LUC Hearing, YouTube video at 2:47:42. As of the September 6, 2023 Land Use Commission hearing, Northwestern had not secured any type of agreement with the CTA or Metra Rail. Thus, particularly with the nearly-full capacity of all of Evanston's parking, the entire viability of Northwestern's proposed ability to accommodate even one concert is based on a presently unsupported assumption.
[14] There is a Northbound stop at 6:58pm and a Southbound stop at 6:49pm, but presumably very few people would want to arrive at Central Street station just minutes before the concert time.



Each Metra car can hold a maximum of 135 passengers (including standing room), and the trains running at these times average 6-7 cars.[15] This means that Northwestern's needs alone would require at least four (slightly more than three) full Metra trains during rush hour, i.e., with no non-concertgoing riders. This is another unrealistic assumption, where the forced math just does not meet the realities.

Additionally, the significant burden this rush on the CTA and Metra trains will put on the public transportation will harm Evanstonians trying to use public transportation, including those people trying to return to their homes from work on a concert evening. And again, that burden likely will be greater on those people living in the Seventh Ward, i.e., the surrounding neighborhood that the General Comprehensive Plan demands be protected. This general unavailability and heavy crowding of the Purple Lines and Metra trains also will discourage non-concertgoers (including Evanstonians) from utilizing public transportation to patronize downtown Evanston or Central Street on concert nights.

After a concert, one can imagine lines of 8,550 people trying to get on the CTA platform at Central Street (again, requiring at least 12 separate trains) or 2,550 people trying to get on the Metra platform at Central Street. This volume of people undoubtedly also will be noisy to the surrounding neighbors as they wait in frustration just to get onto the platform for the next many trains.

- Significantly increased traffic congestion. Northwestern says in its September 6 letter to Staff that On-Site parking will be pre-paid only. This does not mean that people coming to Evanston in cars will not drive to the Seventh Ward in search of parking; it only means that they will be turned away by Northwestern once they get there. In fact, Northwestern concedes this, stating in the September 6 letter, "As traffic approaches

[15] Source: 9/18/23 phone call to Metra Passenger Services (312-322-6777).

the Central Street corridor and Ryan Field…, signs will be posted indicating parking as pre-paid/coupon only while directing traffic to designated off-site parking on campus and downtown. Signs and barricades prohibiting parking in the surrounding neighborhoods will also reinforce the limited parking options in the stadium vicinity." In other words, Northwestern concedes that many people will be driving to and around the Seventh Ward searching for nearby parking before being directed elsewhere.

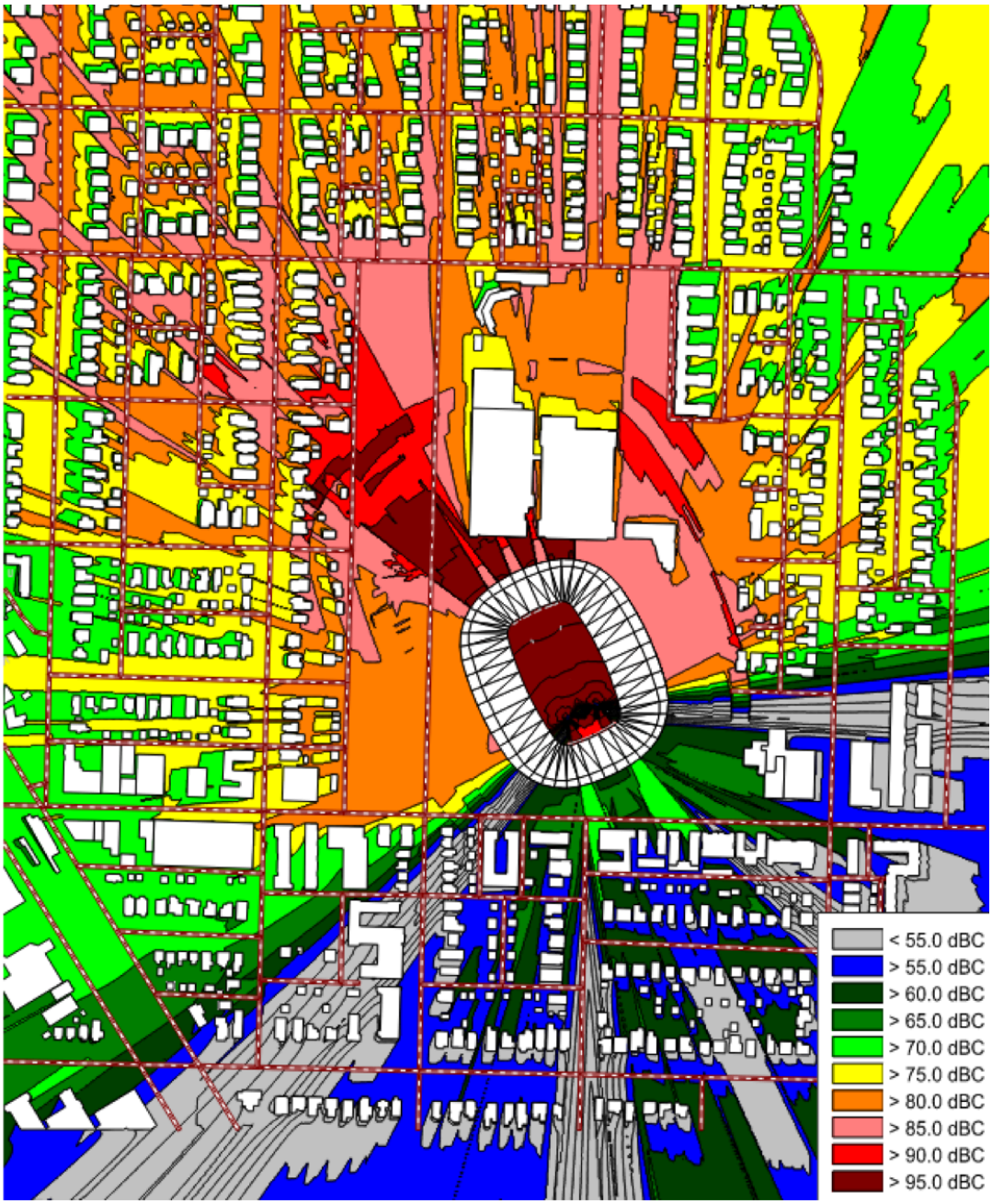
Again, the Northwestern plan calls for some 5,000 cars to park in the Off-Site locations, meaning that in the hour or two before the concert the City's streets in these areas will be consumed with these vehicles.

In addition, per Kimley-Horn's report there will need to be at least 283 shuttles coming to and from the area with off-site parkers; as well as 7% of concertgoers (1,995 people) arriving by taxis, "TNCs" like Uber and Lyft, Limo / black car, and party bus / trolley.[16] The traffic in the surrounding neighborhood will be overwhelmed by this vehicle traffic, at least in the hours immediately before and after the concerts.

- Invasive noise pollution. As with traffic, Northwestern and its sound expert, Wrightson Johnson Haddon Williams ("WHJW"), freely acknowledge that the proposed concerts will result in some degree of concert sound permeating the surrounding neighborhoods. WHJW's report suggests that its modeling shows the concert sound levels that reach the neighborhood, primarily to the north and west due to the stadium and stage orientations, likely will include decibel levels above 75 dBC for several blocks in each direction and above 80 dBC and even 90 dBC for some adjacent properties:

[16] Kimley-Horn's Lemmon acknowledged that it would be difficult to stop these arriving third-party modes of transportation to avoid the Ryan Field area during concert drop-offs, but that the post-event pickups can be managed by Geofencing. *See* 9/6/23 LUC Hearing, YouTube video at 1:15:40. It is not clear where the Geofenced areas would be, because Northwestern has not submitted a Traffic Management Plan; presumably, this could result in many visitors waiting on neighborhood streets for their rides to arrive.

WJHW Figure 5 – Concert Sound, Neighborhood Sound Permeation (dBC)[17]



[17] WJHW initially used modeling that showed only measurements in dBA, not dBC. In response to criticism of this choice in Arup's responsive report, WJHW included in its updated August 2023 report modeling of dBC levels as well.

Part of the reason for this distribution of sound is, as Commissioner Halek observed, is because Northwestern designed the stadium to be open (with no solid walls) on the ends facing north and south.[18] WJHW further notes that these sounds are likely to last continuously for 3-4 hours (unlike, it says, more-sporadic amplified sound coming from football games).

Northwestern's zoning code expert, George Kisiel, incredibly testified at the September 6, 2023 LUC meeting that these levels of sound are a "mere inconvenience" to these neighbors.[19] The Village of Wilmette disagreed when giving its testimony, stating that these levels of sound are not acceptable and would run afoul of Wilmette's noise ordinance.

Similarly, ***Evanston's noise ordinance (Evanston Code § 9-5-20) makes "unlawful" the making of any loud noise "which either annoys, disturbs, injures or endangers the comfort, repose, convenience, health, peace or safety of others, within the limits of the City."*** Some sounds that Evanston's Ordinance declares to be automatic violations of this Ordinance, due to their noise volumes, are Audio Systems broadcasting sound from a vehicle "if the sound generated by the device is audible to a person … with normal hearing at a distance of seventy-five feet or greater."[20] Thus, regardless of whether these decibel levels are a "mere inconvenience" as posited by Mr. Kisiel, they unquestionably are "unlawful" in Evanston (and Wilmette) to the extent they annoy or disturb the "convenience" or comfort of the surrounding neighborhood.

As stated above, the Comprehensive General Plan encourages institutions' growth but only "so long as the growth does not have an adverse impact upon the residentially-zoned adjacent neighborhoods." These many adverse impacts alone should result in the Commission's and City Council's denial of Northwestern's proposed Special Use and related Text Amendment. The proposal is completely out of the character of the residential neighborhood, will cause

[18] *See* 9/6/23 LUC Hearing, YouTube video at 1:40:00. Dan Loosbrock, Northwestern's third party project manager for the construction, confirmed that the canopies at the top of the stadium have "limited" acoustic attenuation properties, if any. *Id.* at 1:43:51.

[19] Mr. Kisiel further testified on September 6, also incredibly, that "the proposal does not represent a change in use" there is "no reason to believe that undue negative impacts would occur." *See* 9/6/2023 LUC Hearing, YouTube Video at 48:20 and 50:56. These all are stunning statements given the issues presented herein, the obvious problems with Northwestern's parking and sound studies, and as stated by other experts including Northwestern's own witnesses. It shows that Mr. Kisiel is willing to turn a blind eye to the realities of the project in order to support his conclusion, and a willingness to ignore land use concerns and the Evanston zoning standards.

[20] The Commission is likely well aware of the new Evanston gas-powered leaf blower ordinance, a subsection of Code § 9-5-20, which also is intended to keep loud sounds from Evanston's neighborhoods (completely prohibited from May 15 – September 30, and time-limited during the winter months). Surely, Northwestern's concerts broadcasting sound for 3-4 hours at a time represent a greater sound nuisance to the surrounding neighborhood than a gas-powered leaf blower running for 10-15 minutes.

myriad adverse impacts (parking, traffic congestion, and unlawful noise pollution), and even then depends on unrealistic plans for mitigating these effects. Northwestern's proposal runs completely afoul of what the Comprehensive General Plan requires for institutional development.

C. Will not cause a negative cumulative effect, when its effect is considered in conjunction with the cumulative effect of various special uses of all types on the immediate neighborhood and the effect of the proposed type of special use upon the City as a whole;

This standard is not met.

For the above reasons, it seems clear that Northwestern's special use for concerts would cause a negative cumulative impact on the neighborhoods immediately adjacent to the U2 District. It would completely deplete the parking resources of and availability of public transportation to and from the Seventh Ward (and of downtown Evanston), harming rather than helping businesses in the area by discouraging and preventing non-concertgoers from frequenting those businesses while concertgoers themselves sit inside Ryan Field at concerts for 3-4 hours.

D. Does not interfere with or diminish the value of property in the neighborhood;

This standard more likely than not is not met.

Credible evidence has been submitted that the proposed Special Use / Text Amendment likely would decrease the value of properties in the surrounding neighborhood. The report submitted by MLCA, prepared by Cohn Reznick, researched appraisal literature and also conducted an impact study based on a similar change in use to a football stadium located in Queens, New York. Based on this analogous data, Cohn Reznick estimated a potential negative impact on property values of 3-5%, at the "low end of the range". Intuitively, it makes sense that single family homes located in residential neighborhoods that abut concert venues would be harder to sell to other families (especially those with children), i.e., meaning less valuable.

While one neighbor testified on September 6 that she had observed property sales "above asking prices" in the neighborhood over the past year, those observations are consistent with demand-driven property value increases across Evanston and Chicagoland and which have nothing to do with the properties' proximity to the U2 District.

E. Can be adequately served by public facilities and services;

For the reasons stated above, this standard is not met.

Northwestern's plan —if all of its other unrealistic assumptions work out perfectly— would consume 96% of the City's available parking spaces. It also would require the coordination of 283 shuttles to and from the venue. And it requires more people to arrive and depart on CTA and Metra trains (over 10,000) than those trains can even support.

F. Does not cause undue traffic congestion;

For the reasons stated above, this standard has not been met and likely cannot be met.

There is no question that the concerts would cause increased traffic congestion. Cars seeking parking unquestionably will drive to the Seventh Ward, looking for parking and/or perhaps seeking to drop off some of their passengers close to the venue, and will be re-routed to other parts of Evanston (causing additional traffic). Taxis, "TNCs" like Uber and Lyft, limos / black cars, and party buses and trolleys, collectively currently are estimated to be used by nearly 2,000 of the concertgoers, a number that surely will increase due to the fact that the public transportation cannot accommodate Northwestern's assumed numbers. 283 shuttles also will be running on 30-minute routes from parking areas to and from the venue.

Whether this is "undue" traffic congestion is unresolved because Northwestern has not submitted a Traffic Management Plan as City Staff has requested.[21] It seems unlikely that this amount of traffic congestion can be mitigated by such a Plan.

G. Preserves significant historical and architectural resources;

This standard seems inapplicable. However, the existing football stadium that has been on this site for nearly 100 years will be demolished.

H. Preserves significant natural and environmental features; and

This standard seems inapplicable. However, Northwestern is proposing several landscape beautification measures.

I. Complies with all other applicable regulations of the district in which it is located and other applicable ordinances, except to the extent such

[21] Accord 9/6/23 LUC Hearing, YouTube video at 1:01:50 (Lemmon, "I'm not aware of a formal Traffic Management Plan … at this point"). As Commissioner Arevalo observed, one significant potential problem with having no TMP is how the exit of cars from the Ryan Field lots will be managed after concert events. *See* 9/6/23 LUC Hearing, YouTube video at 1:29:37. Lemmon responded that there might be police staged there to manage the exit of 1408 cars from those lots; he did not speak to how the other ~5,000 vehicles exiting the rest of Evanston's garages and lots after 10:00pm (likely later, given the need for shuttles back to those vehicles) might be managed.

regulations have been modified through the planned development process or the grant of a variation.

The proposed Special Use does not comply with the current Zoning Code and Ordinance. Hence, the need for Northwestern's proposed Text Amendment.

Additionally, the existing Permitted Uses in the U2 District have special standards "***to ensure that temporary uses shall not impose an undue adverse effect*** on neighboring streets or property." *See* Ordinance § 6-15-7-2. Among these safeguards, attendance at such events is limited to 7,000 persons indoors or 3,000 outdoors; adequate parking and traffic control are made available by Northwestern; and no more than six single-day events are permitted. Again, these limitations — on attendees, and on number of days — were legislatively established to ensure that the temporary uses do not impose an undue adverse effect on the surrounding neighborhoods. This implies that uses in excess of these were deemed to create undue adverse effects.

It is unclear whether the proposal would violate other applicable regulations, particularly with respect to Northwestern's plan to reroute groundwater from the stadium site through below ground pipes and into the canal. At the September 6 hearing, Commissioner Lindwall suggested that Northwestern commission a peer review study of this portion of its proposal. To date, no such study has been conducted.

2. <u>Text Amendment to Section 6-15-7-2, Permitted Uses</u> (Section 6-3-4-6)

Standards: "In making their determination, … the City Council should, in determining whether to adopt or deny, or to adopt some modification of the Land Use Commission's recommendation consider, among other factors, the following:"

(A) Whether the proposed amendment is consistent with the goals, objectives, and policies of the Comprehensive General Plan, as adopted and amended from time to time by the City Council.

This standard is not met. It is discussed at length above.

(B) Whether the proposed amendment is compatible with the overall character of existing development in the immediate vicinity of the subject property.

This standard is not met.

The stated purpose of the U2 District has been codified by the City of Evanston in Zoning Code § 6-15-7-1: "The U2 university athletic facilities district is intended to permit the utilization of

university facilities within the district ***in a manner that is compatible with the surrounding development, which is predominately residential***.

The U2 District sits in and among a predominately residential neighborhood. While a football stadium has existed in this location for nearly 100 years, many of the residences in the area predate even the arrival of the stadium and therefore the character of the neighborhood has been residential for longer than the "U2 District" existed. In this time, Northwestern never has been permitted to hold for-profit pubic-facing concerts at the venue.[22] To the contrary, in November 2019 Northwestern applied for and received a temporary / pilot program change to the ordinance allowing them to hold indoor concerts at Welsh-Ryan arena (of up to 7,000 attendees), but in June 2021 City Council voted against continuing that permission (by a 7-2 vote). In fact, City Council has denied Northwestern's applications for similar changes to the zoning ordinance at least four separate times since 1975.[23] Northwestern has sued the City of Evanston, multiple times, over issues related to the U2 District and other university-related uses.[24]

A large-scale public-facing concert venue is completely out of character for and incompatible with the residential character of this area, as the City has codified by the permitted uses (in Section 2-15-7-2) and has recognized time and time again by denying Northwestern's many re-iterated applications.

(C) Whether the proposed amendment will have an adverse effect on the value of adjacent properties.

This standard likely is not met, as discussed above.

---

[22] Past concerts cited by Northwestern, presented on a slide by Dave Davis at the September 6 LUC hearing, have been either student events, events held on Northwestern's main campus (e.g., at Cohn Auditorium or McGaw Hall), or were conducted illegally and without permitting in defiance of Evanston's zoning. For example, the Carly Rae Jepsen, SOPHIE, Willow Smith and Amine + Michelle shows held at Welsh-Ryan Arena in October 2018-2022, respectively, each was a part of Northwestern's "A&O Productions Blowout," an annual student body event that therefore is within the currently permitted uses of Section 6-15-7-2. *See e.g.* https://dailynorthwestern.com/2021/10/04/ae/willow-and-raveena-to-perform-at-ao-productions-blowout/

[23] https://dailynorthwestern.com/2020/09/25/city/why-should-we-trust-you-despite-pandemic-complications-residents-remain-opposed-to-for-profit-events-at-welsh-ryan-arena-citing-distrust-with-northwestern/

[24] In 1978, the Supreme Court of Illinois wrote an opinion putting an end to one such lawsuit in which Northwestern was "seeking a declaration that a city zoning ordinance forbidding commercial activity, including professional sports, in the [U2] district was unconstitutional." *See Northwestern Univ. v. City of Evanston*, 74 Ill.2d 80 (Ill. 1978). The Supreme Court upheld the dismissal of the case.

(D) **The adequacy of public facilities and services.**

This standard is not met, as discussed above.

3. Treatment of The Supposed Economic Benefits to the City of Evanston are Illusory and Not Relevant to a Land Use Analysis.

Notably, there is nothing in the Comprehensive General Plan or the Zoning Ordinance standards that says the negative impacts on surrounding neighborhoods should be overlooked or trumped by the promise of economic returns to the City of Evanston at large. To the contrary, the Plan speaks only to the balancing of considering potential enhancements to and negative impacts within the "surrounding neighborhoods" themselves. This policy makes sense from a land use / planning standpoint, because it prevents large scale developers from essentially bribing the City through the promise of large monetary payments to the detriment of particular neighborhoods affected by the development.

Northwestern has for nearly a year been trumpeting the promise of "potential" economic impacts from its proposed projects to the City of Evanston. As recognized in the City of Evanston's own economic impact analysis, "Tripp Umbach predicted the construction of the new stadium will generate $1.3B in economic impact within Cook and Lake Counties." Dave Davis, often Northwestern's public voice of the project, made a similar "billion dollar" promise in an interview broadcast on the ABC nightly news on September 6, 2023.

Even if these impacts were relevant to consideration of the applicable Zoning Ordinance standards (which they are not), in order to properly consider the Text Amendment proposal — which is unrelated to conducting football games or other university athletic events in the U2[25] — the claimed economic impacts for new uses (i.e., concerts) must be disaggregated from the economic impacts hypothesized from the construction and athletics use of a new football stadium, as well as from other uses currently permitted. The Tripp Umbach analysis concluded, based on the then proposal of hosting 10-12 concerts, that concerts and "ticketed amateur events" will contribute $35 million in new annual economic activity by 2031. At 6 concerts, presumably the figure is closer to $18-20 million. While this hypothetical figure certainly could be significant, it is nowhere near the public message of "a billion dollars" that Northwestern has been repeating will benefit Evanston.

Additionally, the very concept of "economic impacts" is hypothetical and a somewhat dubious prediction. Tripp Umbach describes "economic impacts" as "direct, indirect, and induced business volume (economic and employment)." Its study has little evidentiary value, as

[25] In its September 6, 2023 letter to City Staff, Northwestern wrote, "Use of the facilities for sports will not change as part of the proposed Planned Development or Text Amendment."

recognized by the City of Evanston's independent economic study conducted by Johnson Consulting:

> In summary, the Tripp Umbach report provides only its top-line findings without sufficient supporting data that would help explain how the analysis arrived at those findings and allow for thorough and careful weighing of evidence and testing of the analysis by the readers. There is a lack of input on negative impacts or cost of the projects such as substation effect and incremental cost of the new project. ***Much more information would need to be provided for the readers to be able to assess the reasonableness of the overall analysis and of its analytical components.***

In other words, the Tripp Umbach report lacks the transparency needed for it to be seriously considered as evidence of anything concrete. (The Johnson Consulting report finds a much more modest "economic impact," although its model and findings have their own flaws.)

With the numbers being touted by Northwestern, "economic impact" carefully must be distinguished from fiscal or financial impact to, i.e., tax dollars to be received by, the City. The City's own independent economic impact study, released on September 14, found that the 6 concerts will result in only $200,000 in incremental fiscal impact to the City of Evanston. And while Northwestern has guaranteed $2 million to the City in annual tax revenue (*see* Northwestern 9/6 Presentation, Slide 38), the Johnson Consulting report shows that the historical levels of fiscal impact *without concerts* are $2.3 million annually. ***Northwestern's guarantee is for less*** than the amount of taxes it historically has paid resulting from the existing, permitted uses.[26]

The *amount* of the promised economic impacts also is dubious. As Johnson Consulting found, Northwestern has steadfastly refused to produce publicly the data underlying the Tripp Umbach report or its assumptions. But a cursory review reveals a host of confounding problems with these hypothetical impacts, some of which are repeated in the Johnson Consulting study:

- The hypothesized economic impacts are aggregated (construction; football games; concerts; other uses).

- A very large part of the "economic impacts" are the "direct economic impact of spending by Northwestern University to operate and host events at Ryan Field." In other words, Tripp Umbach is counting the money Northwestern spends on

[26] It also bears noting that there is nothing stopping Northwestern from financially supporting other aspects of the City, particularly in the relatively small amounts proposed on Slide 38; the fact that it is leveraging and attempting to trade this support in exchange for a change in its permitted uses of the U2 District, frankly, reflects poorly on Northwestern and its lack of recognition of its place in the Evanston community.

construction and on operating football games and other events to be an "economic impact." These are not benefits to Evanston.

- Not all of the economic impacts are incremental or related to concerts. The existing uses of Ryan Field and Welsh-Ryan Arena generate economic impacts already. For example, the Tripp Umbach report estimates that football games will generate $52.2 million in annual economic impacts by 2031, but notes that they currently generate $43.7 million annually (i.e., with no Text Amendment). Some of this increase surely is simply the result of inflation and / or the time value of money, although the report does not quantify that.

- Even if the Tripp Umbach numbers were defensible, a Text Amendment allowing concerts is not required to generate most of the hypothesized economic impacts. Northwestern already is allowed to host football games and other university athletic events in the U2. Its Zoning lawyer from DLA Piper, Katie Jahnke Dale, argued at the September 6 hearing that under the current Ordinance, Northwestern already is allowed to host many of the "other events" it is proposing to host (i.e., under Section 6-15-7-2, the "60-days of community programming" outside the stadium would be permitted temporary "community and cultural events intended primarily for residents of the city"; and certain indoor Welsh-Ryan events already are permitted as "university-sponsored … musical performances and other cultural events held within an enclosed building").[27] In other words, Northwestern already can have these types of events, and create their hypothetical economic impacts, without the Text Amendment.

- Not all of the economic impacts will go to the City of Evanston. The largest chunk of economic impacts will accrue within the U2 District, i.e., to Northwestern. While this spending takes place in Evanston, and thus is part of the economic impact modeling, it does not benefit Evanstonians, businesses within Evanston, or the City of Evanston's tax coffers. At the September 6 hearing, Tripp Umbach clarified that most of the people it will hire for construction will be hired regionally, not necessarily from Evanston, and that its commitment to use 35% M/WBEs also is regional, not local.[28] Additionally, some of the predicated spending also is likely to take place outside of Evanston—in fact, the Tripp Umbach and City of Evanston studies both mistakenly assume more hotel rooms in Evanston than currently exist (not to mention that

[27] See 9/6/23 LUC Hearing, YouTube video at 1:49:06. Ms. Dale testified that in her opinion, "Temporary events of a community or cultural nature that meet the following conditions so they are community and cultural events *of a nonprofit nature intended primarily for the residents of the City and amateur athletic events* and those are allowed for up to 10,000 people and to that seven – seven - seven events of five days each for each facility under the current Code…. They're *limited to those – that nature of events though*." (emphases added)

[28] 9/6/23 LUC Hearing, YouTube video at 2:53:09.

regional concerts, unlike football games with out-of-state fans, are unlikely to result in overnight hotel stays in any event).

- The downstream impacts (indirect and induced effects) from concerts on business volume are overstated. These impacts presume that concertgoers will be spending money in *Evanston*, dining out in Evanston or shopping at Evanston stores before or after concerts. Given the time when concerts will occur from 6-10pm, this makes no practical sense. As a practical reality, people are not going to arrive and go out to dinner in Evanston at 4:30pm to enable them to get to their 30-minute shuttles and make it over to Ryan Field for a 6pm concert. Nor will they shop in Evanston stores during that time. Instead, and particularly on weeknights when most people will come after their workdays end, they will arrive just in time to park their cars and wait to take their shuttles, and then will sit inside Ryan Field for 3-4 hours where, perhaps, they will buy Northwestern's food from Northwestern's vendors. This benefits Northwestern, not Evanston or Evanston's businesses. Moreover, as shown above, because the concerts will require 96% of the available City parking spaces and will fill the public transportation with concertgoers, the project will have a crowding out effect on overall spending in the City of Evanston, i.e., discouraging travel and spending by other people who would come to Evanston and spend money from 6-10pm on a Friday or Saturday night.

There is not much concrete in Northwestern's financial representations, other than the promise of $2 million per year in tax dollars to the City of Evanston, a number less than the current taxes generated by the stadium's use. While that "guarantee" cannot be overlooked, again, most of it will come from athletic and other events already permitted under the current Ordinance. And Johnson Consulting concluded the incremental tax revenue from 6 concerts is just $200,000. These figures are a far cry from the "billion dollars" Northwestern talks about in the news, and certainly not enough to justify the negative impacts the concerts will create in the surrounding neighborhood. And again, it bears repeating, these hypothetical economic impacts are not a factor applicable to the zoning and land use standards at issue.

CONCLUDING REMARKS

The LUC and City Council routinely deny applications for special uses that generate far less parking and traffic concerns than Northwestern's application. For example, in February 2022 City Council rejected a proposal for a convenience store to be located at 518 Davis Street, among other reasons because (Ald. Wynne) it believed the "alley carries a lot of traffic and [we] have a lot of seniors walking on the sidewalk because of retirement communities nearby." In June 2023, the Land Use Commission and then City Council both rejected for the third time Horizon's proposed residential high-rise at 1621-31 Chicago Avenue, citing among other things the lack of fit for the project in that particular neighborhood. In May 2023, the Land Use Commission voted not to recommend Kensington's application for a childcare center at the intersection of Central Street and Gross Point Road, over concerns about impacts on traffic — impacts far lower than the projected impacts from stadium concerts at the equally busy intersections near Central Street and Green Bay Road. Add to these concerns the anticipated noise pollution — which at any modeled decibel level considered by Northwestern's experts, over a 3-4 hour period, would be unquestionably unlawful under the City's Ordinance — and Northwestern's land use proposal obviously is not a fit for the residential neighborhood in which its land sits. It does not meet the land use and zoning standards required to approve Northwestern's applications.

Very truly yours,

Scott H. Gingold

9-6-23

I hereby request a continuance based on Northwestern's assertion that it will be responding at some future time to Arup Acoustics' Reports & I request time to respond to Northwestern's future submission.

Steven J. Hughes

I live within 1000' feet of the site and received notice of this meeting

640 GREENLEAF AVE
WILMETTE, IL 60091

[redacted]

City of Evanston

Meagan Jones <mmjones@cityofevanston.org>

Sept. 27 continuance topics

Steven Harper <harperste@gmail.com> Fri, Sep 15, 2023 at 9:18 AM
To: Meagan Jones <mmjones@cityofevanston.org>

Hi, Megan,

In response to your earlier message, my handwritten request prepared during the September 6 hearing doesn't cover everything. I plan to question Northwestern's witnesses and present additional evidence concerning sound issues, concert-related issues and, time permitting, related financial matters.

Thanks and have a great weekend.

-Steve

--
Steven J. Harper, creator of **The Insurrection Timeline**, **The Pandemic Timeline series,** and **The Trump-Russia-Ukraine Timeline** at BillMoyers.com. Author of *The Lawyer Bubble - A Profession in Crisis* (Basic Books/Perseus, 2013, 2016), *Crossing Hoffa: A Teamster's Story* (Borealis, 2007), and other books; adjunct professor at Northwestern University Law School; former litigation partner at Kirkland & Ellis LLP.

Commissioner Rodgers: Sept 6, 2023

I, Dana Hoffman, 1219 Central St, Apt C, lived within 4,000 ft of the Stadium. I am requesting a continuance for the purpose of rebutting evidence presented by Northwestern on the subject of concert operations and to cross-examine Northwestern's experts on this subject.

Sincerely,

DH

City of Evanston

Meagan Jones <mmjones@cityofevanston.org>

Continuance Request Follow-up

Dana Hoffman <hellodana@gmail.com> Sun, Sep 17, 2023 at 4:32 PM
To: Meagan Jones <mmjones@cityofevanston.org>

Dear Ms. Jones:

In response to your question, at the September 6, 2023, Land Use Commission hearing on NU's applications for a planned development and a zoning change, I asked for, and was granted, a continuance.

Under the Evanston Zoning Ordinance (§ 6-3-6-11 and other provisions), as a property owner living within 1000 feet of the U2 District /subject property, I have a right:

(A) To inspect all documents and material submitted as part of the Application;

(B) To reasonably examine all witnesses testifying;

(C) To present witnesses on my own behalf;

(D) To present evidence to rebut testimony given by Northwestern.

I plan to exercise all of these rights in the time I am allotted at the next hearing. I intend to speak on concert management operations including but not limited to truck management, shuttle operations, pre- and post-event operations, and related issues. If you have any questions, please let me know.

Sincerely,

Dana Hoffman
1219 Central St, Apt C
Evanston, IL 60201
(312) 493-3262
hellodana@gmail.com
danahoffman2020@gmail.com

[Quoted text hidden]

I, Fiona McCarthy, live within the 1,000 ft. of NU @ 1712 Livingston St. I request a continuance for the purpose of asking questions of NU's consultants on the land use qualifications as well as noise and subsequent health impact.

Kind regards,

Fiona McCarthy

City of Evanston

Meagan Jones <mmjones@cityofevanston.org>

Continuance Request Follow-up

5 messages

Meagan Jones <mmjones@cityofevanston.org> Tue, Sep 12, 2023 at 11:58 AM
To: fiona.m.martin@gmail.com

Good morning,

I am contacting those who requested continuances at last Wednesday's Land Use Commission meeting to make sure we have properly documented your reason for the request and intended topic for your statements/questioning at the September 27th Land Use Commission meeting. Your submitted request stated you wish to ask questions of Northwestern's consultants relating to land-use qualifications as well as noise impacts of the use and subsequent health impacts of it. Are there additional details relating to this request you wish to submit at this time or does your submitted request cover everything?

Thank you. Respectfully,

Meagan Jones
Neighborhood and Land Use Planner
Community Development
Morton Civic Center
City of Evanston

2100 Ridge Ave. | Evanston, IL 60201 | 847-448-8170 | 224-307-8350
mmjones@cityofevanston.org | cityofevanston.org

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Meagan Jones <mmjones@cityofevanston.org> Mon, Sep 18, 2023 at 9:04 AM
To: fiona.m.martin@gmail.com

Good morning,

Following up on my previous email, per the Commission Chair's request at the September 6th meeting, if you have specific questions that you are comfortable sharing related to the matters within your continuance request, please forward those to me ahead of the meeting so that we can try to get more detailed responses for them.

Thank you. Please let me know if you have any questions.
Respectfully,

Meagan Jones
Neighborhood and Land Use Planner
Community Development

Morton Civic Center
City of Evanston

2100 Ridge Ave. | Evanston, IL 60201 | 847-448-8170 | 224-307-8350
mmjones@cityofevanston.org | cityofevanston.org

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[Quoted text hidden]

Fiona Martin McCarthy <fiona.m.martin@gmail.com> Wed, Sep 20, 2023 at 6:40 PM
To: Meagan Jones <mmjones@cityofevanston.org>
Cc: Eleanor Revelle <erevelle@cityofevanston.org>

Hi Meagan,

Yes, as a resident living within 1,000 ft of the U2, I intend to present evidence and ask questions of NU regarding the real-life impact of concerts and large events on children and families in the surrounding homes, including but not limited to noise, stress, sleep disruption, and the impacts to schools. My understanding is that I have been allocated 10 minutes for this next week.
If you have any questions, please let me know.

Thank you,
Fiona
[Quoted text hidden]

Meagan Jones <mmjones@cityofevanston.org> Thu, Sep 21, 2023 at 12:45 PM
To: Fiona Martin McCarthy <fiona.m.martin@gmail.com>

Hello,

Yes, the Chair has allocated 10 minutes for you to present and ask questions regarding your specified topics. If you have those questions drafted and are comfortable sharing, please forward those to me so that we can try to get more detailed responses for them.

Respectfully,

Meagan Jones
Neighborhood and Land Use Planner
Community Development
Morton Civic Center
City of Evanston

2100 Ridge Ave. | Evanston, IL 60201 | 847-448-8170 | 224-307-8350
mmjones@cityofevanston.org | cityofevanston.org

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[Quoted text hidden]

Fiona Martin McCarthy <fiona.m.martin@gmail.com> Thu, Sep 21, 2023 at 1:19 PM
To: Meagan Jones <mmjones@cityofevanston.org>

Meagan, I don't have everything drafted yet. If I get it ready before hand I'll share, but I probably won't have it finalized in advance.

Thank you,
Fiona
[Quoted text hidden]

I Mary Rosinski
as a neighbor within a
1000 sq F ~~Request~~ Request A Continuance
To specifically ask
Questions on The Impact
Study from Trip Umbach Report

Thank you
Mary Rosinski

City of Evanston

Meagan Jones <mmjones@cityofevanston.org>

LUC Continuance

1 message

Mary Rosinski <maryrosinski@gmail.com> Wed, Sep 20, 2023 at 9:56 AM
To: "mmjones@cityofevanston.org" <mmjones@cityofevanston.org>
Cc: Mary Rosinski <maryrosinski@gmail.com>

Hello Ms. Jones:

In response to your question, at the September 6, 2023, Land Use Commission hearing on NU's applications for a planned development and a zoning change, I asked for, and was granted, a continuance.

Under the Evanston Zoning Ordinance (§ 6-3-6-11 and other provisions), as a property owner living within 1000 feet of the U2 District /subject property, I have a right:

(A) To inspect all documents and material submitted as part of the Application;

(B) To reasonably examine all witnesses testifying;

(C) To present witnesses on my own behalf;

(D) To present evidence to rebut testimony given by Northwestern.

I plan to exercise all of these rights in the time I am allotted at the next hearing. I intend to speak on real estate and impact to the community. If you have any questions, please let me know.

Thank you,

Mary Rosinski

1729 Chancellor

Evanston, Il 60201

847 293-6167

REQUEST FOR CONTINUANCE

I'm Yvi Russell, and reside at 1724 Livingston St., Evanston, within 1,000 feet of 1501 Central St., Evanston.

I hereby object to the applicant's presentation, and formally request a sufficient continuation, so I can prepare and present evidence to rebut NU's new testimony presented today.

Today, September 6, 2023, there's some new evidence that's been presented today, there's also a lack of evidence on some points, and there is contrary evidence on it; and all of that is evidence-oriented. NU continues to amend their approaches, and because of an inability to prepare, it would be impossible for me and others to refute NU's statements during todays' proceedings.

Six days ago, at the Aug 31, 2023 NU- City Committee, residents and the Committee members asked specific questions re. NU's proposals. NU had no answers to several of the questions and/or replied that we would get answers to some of these questions six days later, at LUC's meeting. Thus, we were not given the opportunity before today to find out the new evidence: we were not given the opportunity to examine in full the details and parameters of NU's proposals .

Because residents within 1,000 feet of the U2 District did not have time to review and prepare for the new additional material that NU just presented tonight for the first time, it would impossible for us to cogently rebut NU's testimony presented today and so, we ask for a continuance in order to be able to rebut..

Additionally, the material presented in the Land Use Commission addendum Comments Received as of 8.31.23 **is incomplete. It omits entire paragraphs of material that was submitted to LUC.**

Just before noon on September 5, 2023, I alerted Meagan Jones about the omissions.

Therefore, I and you, Chairman and Members of LUC, have been unable to read in full or in a timely manner the complete pertinent material that was submitted on time to the City to be enclosed in LUC's material for the 9/6/2023 meeting.

Date: 9/6/2023

Email: yvisivy@sbcglobal.net

Name: Yvi Russell

Signature: Yvi K Russell

Pursuant to Article XIII, section E, of the Evanston Plan Commission, Administrative Rules and Procedures, we the undersigned, persons with an ownership interest in property within the distance requirements, hereby object to the petitioner's ("Applicant") presentation and formally request a sufficient continuance to prepare and present evidence to rebut testimony given by the Applicant.

Yvi Russell

(Name)

Yvi K Russell

(Signature)

1724 Livingston St
Evanston, IL 60201

(Address)

Three Standard USES

1. TYPE: Location & Nature of Events
2. FREQUENCY: Number of Events
3. INTENSITY: Crowd Size at Events

4th USE: **EFFECTS**

Three standard uses are type, frequency and intensity

Type: The proposed location includes all U2 venues. The proposed nature has radically changed. For profit events are requested and also other amateur sports events i.e. Olympic trials or competitions.

Frequency: Currently we have, for crowds of about 2-3,000, one current temporary event or in fact no temporary events. Proposed events: 66 days per year.

Intensity: The proposed crowd swells to 7,500 for 60 days, and 6 concert days to stadium capacity. Setup and takedown days add at least another 12 days of increase in traffic, pollution and noise. As a result of the three uses we have

Effects, which can be seen as a 4th use.

Effects have impacts

Economic Impact: includes costs for City safety services, streets maintenance, events clean-up; Central Street business loss of revenue, and future litigations. All these costs outweigh the claimed but unsubstantiated economic gain to Evanston.

Traffic Impact: Routes to and from the U2 have not changed. There are no free-ways to relieve congestion. Demographics and new buildings have increased congestion, and area parking is scarce even on non-event days: Proposed events will further curtail access to homes and businesses. NU free but inadequate parking will not deter drivers from using residential parking, park illegally on residents' property, in front of fire hydrants or too close to street-and-alley intersections. Past attempts to increase shuttles have actually worsened congestion. You can see that in the 1996 Council meetings. I have the minutes. Any new construction such as the Central Street bridge will add to congestion.

Nuisance Impact: More frequent crowds will add to litter and the use of areas near homes as open latrines.

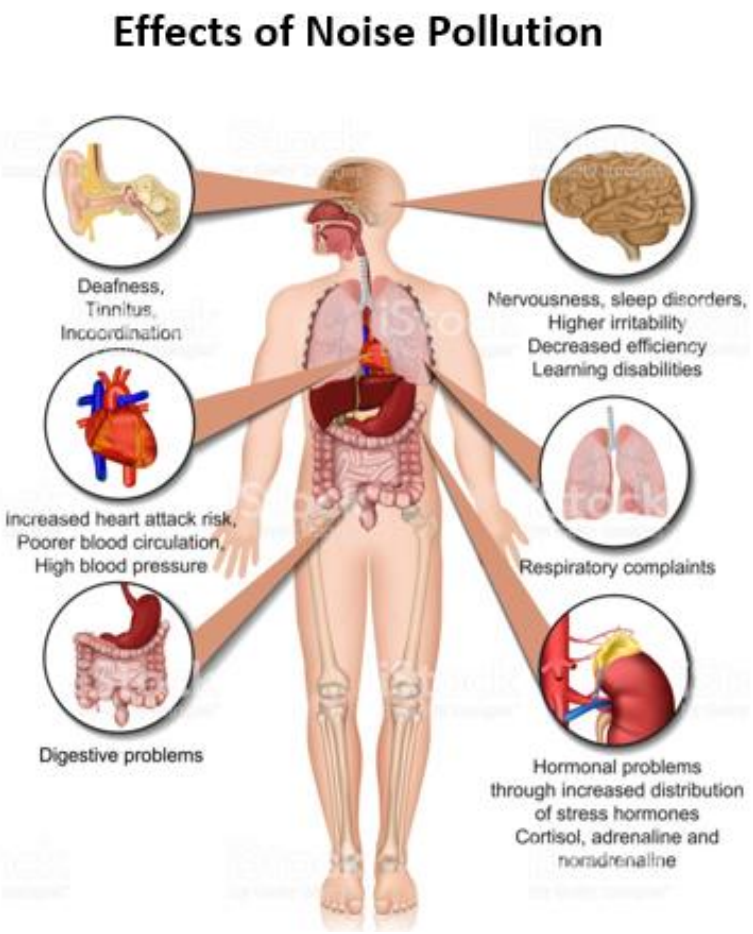
Safety Impact: U2 events have impeded safety services. More events increase risk. Increased traffic and drunk driving endanger pedestrians, especially children and seniors. We need safe, unimpeded access to local medical facilities, the branch library, music and art venues, pre-schools, St. A's Parish and School, and at least three public schools. Will police monitor all key street intersections?

Proposed events will increase pollution which harms the environment and human physiology

Chemical pollution stems from increased car and bus exhaust. Science links increased health factors with traffic caused pollution, especially idling and slow-moving traffic. Empty NU busses do idle on Ashland and even on Livingston. Semis, tour busses, shuttles, extra Metra trains also idle and will move slowly in traffic.

Artificial light pollution from venues and cars interferes with our immune system, metabolism and behavior, and also can affect the spread of zoonotic diseases.

Noise pollution stems from tailgaters, crowds entering and leaving events, loudspeakers, fireworks, vehicles, and event set-up and break-down. U2 noise already impacts Evanston and Wilmette residents. A bandstand on the proposed Plaza will add additional venue for noise generation, for NUu requests *Band play and practice in connection with another permitted use*, which includes 60 days of events, including musical performances



Precedent Impact: Precedent affects all uses. This amendment would give NU a lucrative incentive to host all 13 days of temporary events at double or triple the crowd size, of the single, alleged current temporary event which actually does not exist as such. The proposal sets a precedent for NU to be granted incremental size increases for pro-sport and for-profit events. It doesn't have to go from eight, 7,000 to 40,000. It could go from 7,000 to 8,000, to 9,000, and so on. A full Stadium is as if almost 2/3 of Evanston's population converged on the residential neighborhood!

Legal precedent was used repeatedly to sue or try strong-arm the City. The amendment weakens the City's power to uphold the entire U2 ordinance. In the 70's, Counsel Jack Siegel warned the City about weakening its pending Supreme Court case if NU were allowed to host **one** professional tennis event. In 1976, in a sworn affidavit to the Circuit Court, NU falsely claimed to have held the 1971 tennis tournament when in fact the Council had stopped it, despite NU's clause that it would not establish a

precedent. Then in 1996, the Evanston Chamber of Commerce, in support of NU professional tennis proposal, used the very word *precedent* to state **falsely** pro tennis events were held in the 70's for several years. In fact, only two events took place, and the City sued NU over both.

MORE ON PARKING

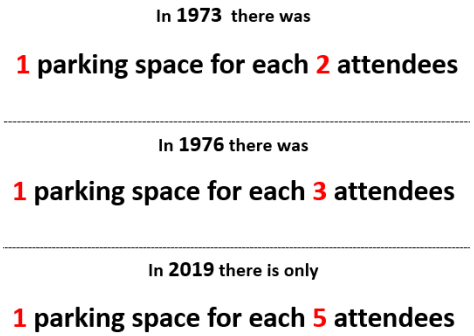
Current ordinance: *Adequate university parking is available and is provided to all persons attending the event.*

Proposed ordinance: *A coordinated Transportation Management Plan shall be submitted to the City Manager or its designee.*

Also, Security Measures will change. Current ordinance*: Private security is provided for those parking areas utilized.* Proposed ordinance: *Private security is provided for University-owned parking areas utilized.*

Who would be paying for security in the other parking areas? The City?

Will the precedent encourage other entities in districts to claim equivalent parking relief?

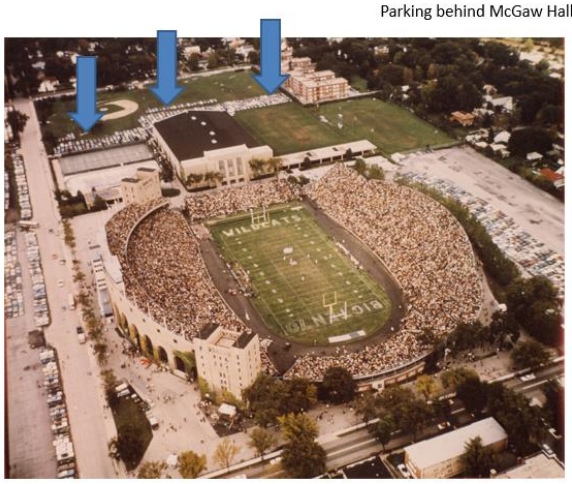


In **1973**, there were 4,275 parking spots. McGaw seated 8,000: thus, one parking spot per 2 people.

In **1976**, 3,600 parking spots were left. McGaw seated 11,000: one spot per 3 people.

In **2019**, there are only 1359 spots. With a proposed venue capacity of 7,000, one spot must serve 5 people.

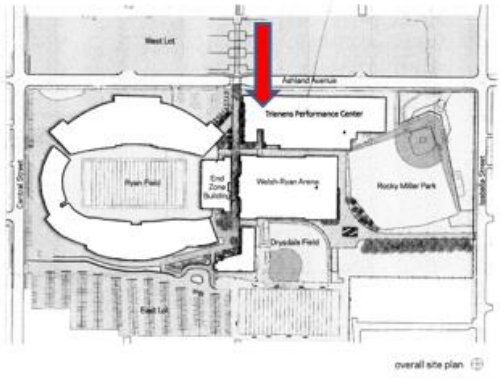
Parking behind McGaw Hall, circa 1970's



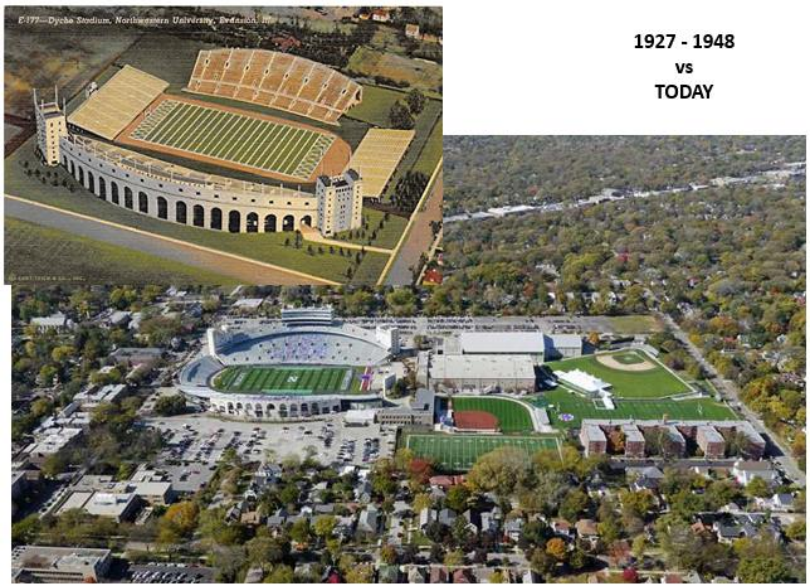
The blue arrows show where parking used to be in the 70's. It's **all gone**.

Early 60's:
Parking next to McGaw Hall

The Trienens Performance Center occupies the footprint of the 60's parking



Baseball Grandstand: 65 spaces lost in 1984



In **1984**, NU bamboozled the City into granting parking relief for NU's baseball grandstand **after** its construction was approved the previous year. 65 required parking spots were lost!

The Trienens Performance Center occupies the space where there was parking in the 60's.

The city granted U2 expansions trusting NU's promises: no more permanent buildings, no height increases, we have adequate parking, no football night games; and always the mantra: the venue is only for amateur sports, only for not-for-profit events. Once a permit is granted, promises vanish.

Now again, as many times before, NU tries to subvert the City ordinance that governs U2 permitted uses. History shows us not to trust Northwestern.

Generations of City committee members spent innumerable hours to stop NU from hosting commercial events and professional sports.

In 1971 Northwestern applied to the City for a permit to host professional Tennis at Mac Gaw Hall. The Council denied NU's application because it would:

1. **alter the essential character of the locality by increasing the intensity of the use so as to detract from the essential character of the surrounding neighborhood**

2. **be injurious to and depreciate the value of other property and improvements in the neighborhood in which it located due to increased traffic congestion, pedestrian traffic, noise, and litter, all of which would be an unavoidable consequence of the proposed intensification of use of this property.**

3. **increase the danger of fire and the public safety by making it more difficult for emergency vehicles to carry our their functions over congested residential streets.**

These are the reasons for rejecting NU's 1971 professional tennis proposal, that it:

Would alter the essential character of the locality by increasing the intensity of the use so as to detract from the essential character of the surrounding residential neighborhood

Two: would be injurious to and depreciate the value of other property and improvements in the neighborhood in which it is located due to increased traffic congestion, pedestrian traffic, noise, litter, all of which would be an unavoidable consequence of the proposed intensification of use of the property.

Three: would increase the danger of fire and the public safety by making it more difficult for emergency vehicles to carry out their functions over congested residential streets.

Presented to LUC on 9/6/2023 by Yvi Russell – 7th Ward

To LUC: re. NU Zoning Proposal "New Section"

New Section	Outdoor lectures, speakers, non-musical festivals, social events and other community or cultural events, and musical performances in conjunction or associated with the foregoing (which shall require loudspeaker permits from the City for any noise amplification), hosted by the University or City and designed for the University or local community, provided that the capacity for such events is no greater than 7,500, and no more than 60 days of programming occurs annually. Such events shall not include any outdoor plaza rentals to organizations not affiliated with the University or City.	Add a new section allowing for smaller community events in the U2 District that are sponsored by the University or City, intended primarily to allow for the use of the new Ryan Field plazas by the community.

As I noticed before the 9/6/23 LUC meeting, and **most importantly**, as Commissioner Lindwall, during the LUC meeting, asked about this NU proposal passage, you can read in it: NU, in an underhanded way, is proposing to get in the Plaza unlimited non-NU/City sponsored events (with indeterminate number of attendees), by way of stating that the sixty (7,500 attendees) community/University events would not *include* ***any outdoor plaza rentals to organizations not affiliated with the University of City.***

NU answered Lindwall's query re. the NU proposal passage by stating under oath:

"At the end of the current Text Amendment there's a section that says *uses not outlined herein shall require approval by the City Special Events Committee.* So, what those other private entities would need to do is go through the typical Special Events process that any other, you know, private event in the City at any other venue that needs to go through that process would have to do."

Whether it's Staff directly, or a City appointed board that would grant such permits, that would be a process that opens the door to Plaza events of a commercial nature, both in unspecified number and also I might add, unspecified number of attendees. So, NU essentially is asking for what they asked before: unlimited 10K events at the Plaza, besides the 60 (7,500 attendees). But apparently only some residents and Commissioner Lindwall noticed that.

Below see the section of the transcript where Commissioner Lindwall questions Katie Jahnke Dale (Zoning & Land Use Attorney for NU) about the Plaza section of the proposal. I testify under oath that it is an accurate transcript of the video recording of the 9.26.23 LUC meeting.

I put in bold the relevant passage about the Special Events process.

2:14:42 Lindwall: Then I have a real clarification question. You know, the section that's dealing with outdoor lectures, speakers, and non-musical events. It ends with the following sent -sentences: *such events shall not include any outdoor Plaza rentals to organizations not affiliated* with - *with the University or City.* And I'm really kind of trying to understand what that means. Does that mean that outdoor Plaza rentals aren't - are prohibited entirely, or could a non-affiliated group rent the facilities for other uses?

2:15:19 Dale: Yeah, great question. So, I think what we're trying to accomplish in that section and make it very clear, that by right, the use is limited to University- and City-events. That was in response to feedback or suspicions that we were going to try to, you know, make it - rent this out all the time for private entities. So, we wanted that section to be really focused on a lot of the plaza activation items that Luke went through in his presentation. At the end of the current Text Amendment there's a section that says *uses not outlined herein shall require approval by the City Special Events Committee.* **So, what those other private entities would need to do is go through the typical Special Events process that any other, you know, private event in the City at any other venue that needs to go through that process would have to do**. So, we were trying in that sentence that you're noticing. to try to limit ourselves in response to community feedback on what types of events could be there by right with this Text Amendment.

Lindwall: I'm just suggesting that that language is not clear in that.

Dale: We'd be happy to-

Lindwall: I mean it, you know, would need to be prohibited, if that's what you mean.

Dale: Sure.

Lindwall: It should say prohibited.

I was not at all clear if Lindwall demanded a prohibition, specifically, on any other event in the Plaza (besides the 60 University/community events with 7500 attendees).

With the present proposal NU is going under the radar, in applying by proxy, for unlimited events of a commercial or unspecified nature. This is not acceptable. NU's is already planning to burden the community with the commercial concerts and up to 60 days of Plaza NU/City community events, up to 7,5500 attendees. What their Zoning Proposal deviously adds, are additional events, of unspecified nature, unspecified numbers of attendees, and unspecified number of times during a calendar year.

It's true that other entities in the City are allowed to apply for **commercial use** events via the Special Events process, but **currently the U2 District's Zoning does not allow such Use.**

Yvi Russell, 9/22/2023

Land Use

Pursuant to Article XIII, section E, of the Evanston Plan Commission, Administrative Rules and Procedures, we the undersigned, persons with an ownership interest in property within the distance requirements, hereby object to the petitioner's ("Applicant") presentation and formally request a sufficient continuance to prepare and present evidence to rebut testimony given by the Applicant.

NU presented new information. I wish to ~~make~~ have time to review this so that I, a neighbor within 1000 feet, can respond.

Deborah Thiersch

(Name)

Deborah Thiersch

(Signature)

624 Isabella Street

(Address)

within 1000 ft.

City of Evanston

Meagan Jones <mmjones@cityofevanston.org>

Continuance Request Follow-up

D Thiersch <dthiersch3@gmail.com> Mon, Sep 18, 2023 at 5:48 PM
To: Meagan Jones <mmjones@cityofevanston.org>
Cc: erevelle@cityofevanston.org, Laurie McFarlane Davies <lmcfarlane2720@comcast.net>, David DeCarlo <ddecarlo@mostlivablecity.org>

Dear Ms. Jones:

Thank you for your email. In response to your question, at the September 6, 2023, Land Use Commission hearing on NU's applications for a planned development and a zoning change, I asked for, and was granted, a continuance.

Under the Evanston Zoning Ordinance (§ 6-3-6-11 and other provisions), as a property owner living within 1000 feet of the U2 District / subject property, I have a right:

(A) To inspect all documents and material submitted as part of the Application;

(B) To reasonably examine all witnesses testifying;

(C) To present witnesses on my own behalf;

(D) To present evidence to rebut testimony given by Northwestern.

I plan to exercise these rights in the time I am allotted at the next hearing. I intend to speak about past traffic impacts from events at the U2 district, and traffic impacts from the proposed events at the U2 district, including but not limited to congestion, speeding, accidents, and threats to emergency health services.

If you have any questions, please let me know.

Thank you,

Debbie Thiersch
624 Isabella Street
Wilmette, IL

Cc: Eleanor Revelle, 7th Ward Councilmember, at erevelle@cityofevanston.org

On Tue, Sep 12, 2023 at 10:47 AM Meagan Jones <mmjones@cityofevanston.org> wrote:
[Quoted text hidden]

Field of Opportunities' Request for Continuance of the Evanston Land Use Commission's September 6, 2023 Hearing Regarding Ryan Field (Items 23PLND-0010 & 23PLND-0035)

Request to be Heard and to Cross Examine Witnesses during the Commission's September 27, 2023 Continuation of its Deliberations and Certain Procedural Concerns/Objections

As an owner of property within 1,000 feet of Ryan Field and a member of Field of Opportunities, I hereby request a continuance of the Commission's hearing regarding Ryan Field pursuant to Section 6 of Article VI of the Commission's Rules and Procedures for the purposes described in Paragraph (1) below and submit the procedural concerns and objections described in paragraph (2) below:

1. Continuance request and request for 30 minutes of rebuttal and cross examination, as follows:

    a. Rebuttal and Cross examination of Steven Harper regarding his statements of advocacy that were presented as factual evidence during his sworn testimony on September 6, 2023.

    b. Rebuttal and Cross examination of Most Livable City's counsel regarding his memorandum of legal contentions that were not made available by Commission staff until shortly before the hearing on September 6, 2023.

    c. Cross examination of ARUP regarding Steven Harper's characterization of its report in his advocacy statements during the Commission's September 6, 2023 hearing.

    d. Cross examination of other experts whose reports or testimony are presented during the continued hearing by opponents of the applications.

2. Procedural Objections:

    a. We request that the evidence supplied by the individuals and entities referred to in 1(a) through 1(d) above be excluded from the record if they do not make themselves available for the cross examination we requested in those paragraphs.

b. We contend that evidence submitted by opponents as expert evidence should be excluded if those opponents do not make the experts available for cross examination by the Applicant during the September 27, 2023 continuation of the hearing. An exception would be appropriate if the Commission believes due to an exchange of correspondence in the record between the Applicant and the expert, the Applicant had sufficient opportunity to challenge the expert's conclusions on the record.

c. We contend that the time afforded Applicant to make its presentations and offer rebuttal has been inadequate compared to the cumulative time offered to opponents. The imbalance fostered several comments during the September 6, 2023 hearing criticizing Applicant for incomplete remarks.

Dated September 8, 2023
Respectfully submitted by:

Michael O'Connor – on behalf of *Field of Opportunities*
1315 Jenks Street
Evanston, IL

Selected Neighbor's of Ryan Field's
Request for Continuance of the Evanston Land Use Commission's September 6, 2023 Hearing Regarding Ryan Field,

Request to be Heard and to Cross Examine Witnesses during the Commission's September 27, 2023 continuation of its Deliberations and

Certain Procedural Concerns/Objections

As owners of property within 1,000 feet of Ryan Field and member of the Selected Neighbor's of Ryan Field, we hereby request a continuance of the Commission's hearing regarding Ryan Field pursuant to Section 6 of Article VI of the Commission's Rules and Procedures for the purposes described in Paragraph (1) below and submit the procedural concerns and objections described in paragraph (2) below:

1. Continuance request and request for 30 minutes of rebuttal and cross examination, as follows:

    a. Rebuttal and Cross examination of Steven Harper regarding his statements of advocacy that were presented as factual evidence during his sworn testimony on September 6, 2023.

    b. Rebuttal and Cross examination of Most Livable City's counsel regarding his memorandum of legal contentions that were not made available by Commission staff until shortly before the hearing on September 6, 2023.

    c. Cross examination of ARUP regarding Steven Harper's characterization of its report in his advocacy statements during the Commission's September 6, 2023 hearing.

    d. Cross examination of CohnReznick regarding its property study submitted by Most Livable City.

    e. Cross examination of other experts whose reports or testimony are presented during the continued hearing by opponents of the applications.

2. Procedural Objections:

a. We request that the evidence supplied by the individuals and entities referred to in 1(a) through 1(e) above be excluded from the record if they do not make themselves available for the cross examination we requested in those paragraphs.

b. We contend that evidence submitted by opponents as expert evidence should be excluded if those opponents do not make the experts available for cross examination by the Applicant during the September 27, 2023 continuation of the hearing. An exception would be appropriate if the Commission believes due to an exchange of correspondence in the record between the Applicant and the expert, the Applicant had sufficient opportunity to challenge the expert's conclusions on the record.

c. We contend that the time afforded Applicant to make its presentations and offer rebuttal has been inadequate compared to the cumulative time offered to opponents. The imbalance fostered several comments during the September 6, 2023 hearing criticizing Applicant for incomplete remarks.

Dated September 8, 2023

Peggy Baxter
1320 Jenks Street

Dr. Raj Ghate
2505 Jackson Avenue

September 13, 2023

To the City of Evanston Land Use Commission
For distribution via City of Evanston Law Department (Alex Ruggie)
BY EMAIL (aruggie@cityofevanston.org)

Re: Continuance of September 6 / September 27 / October 11 Hearing regarding Ryan Field

Dear Commission Members:

I live at 1321 Jenks Street, Evanston, within 500 feet of the U2 District.

I was unable to attend the LUC meeting on September 6th as I was out of town. I did watch the entire meeting on the City's website and noted near the end of the meeting that Chairman Rodgers gave community members who were present and who submitted their requests in writing, the opportunity to request a continuance. He then approved all 8 of those requests, some of which were submitted in writing during the meeting. Since I was not physically present and therefore unable to submit a written request for a continuance at that time, I am doing so now.

Under the Evanston Zoning Ordinance, §§ 6-3-5-17 (for special use proposals), 6-3-6-11 (for planned development proposals) and 6-3-8-11 (for major variation proposals), as a property owner living within 500 feet of the U2 District / subject property, I have a right:

(A) To inspect all documents and material submitted as part of the Application;
(B) To reasonably examine all witnesses testifying;
(C) To present witnesses on my own behalf;
(D) To present evidence to rebut testimony given by Northwestern.

I presently plan to exercise all of these rights in the time I am allotted at the next hearing.

I have a 25-year career in non-profit finance, working both on Wall Street and for various non-profit organizations. I intend to speak as an expert in non-profit finance. I also plan to bring and present evidence from an expert witness who is an economist.

Since Chairman Rodgers gave the others requesting continuances each 10-minutes to present, I request that I be afforded the same amount of time.

Thank you for your consideration of my request.

Sincerely,

Jill Greer
1321 Jenks Street, Evanston
312-543-6041
jill.greer68@gmail.com

Cc: Matt Rodgers (Evanston Land Use Commission, Chair)
Meagan Jones (City of Evanston, Proposed Projects, Staff Contact Ryan Field Project)
Eleanor Revelle (7th Ward Councilmember)

Public Comments

CORRECTED Public Comment Form Submissions - thru 8.31.23

CORRECTED Public Comment Form Submissions- thru 9.6.23

Comments Submitted Between 9.6.23 and 9.21.23