Stantec Consulting Services Inc.
12080 Corporate Parkway, Suite 200 Mequon WI 53092

April 20, 2023
Project Number: 193708725

Attention: Mr. Alex Allie and Mr. Peter Allie
River North, LLC
100 Maritime Drive, Suite 3C
Manitowoc, WI 54220

Reference: Construction Documentation Report – Installation of the Sub-Slab Depressurization System
River North, LLC Project Area
1000 River Point Drive Manitowoc, Wisconsin
BRRTS ID: 02-36-588366 (Open ERP)
Stantec Project No. 193708725

Dear Mr. Alex Allie and Mr. Peter Allie:

Stantec Consulting Services, Inc. (Stantec) provided periodic documentation during installation of a sub-slab depressurization system below the multi-family residential apartment building recently constructed at the River Point District in Manitowoc, Wisconsin (herein referred to as the "Property"). The location of the River Point District and the Property are outlined in grey and yellow, respectively, on Figure 1. The street address for the Property is 1000 River Point Drive. The open Wisconsin Department of Natural Resources (WDNR) Bureau for Remediation and Redevelopment Tracking System (BRRTS) case number associated with the Property is 02-36-588366.

BACKGROUND

Residual environmental impacts are present on the Property and likely associated with the placement of fill in the late 19th Century and the storage/handling/use of hazardous substances and/or petroleum by multiple prior owners/tenants, as summarized in the Stantec (2021a) Phase I Environmental Site Assessment (ESA). The most significant soil impacts at the Property are benzene, polycyclic aromatic hydrocarbons (PAHs), and heavy metals associated with black granular fill materials extending across the River Point District and onto the Property. Residual petroleum impacts (primarily benzene) were identified in groundwater on the Property (Stantec, 2021c) and are delineated on **Figure 2** as dashed pink and green lines relative to the recently constructed apartment building (outlined as a thick black line on **Figure 2**).

To reduce residual petroleum impacts, 781 tons of petroleum-impacted soil were excavated during construction and transported offsite for disposal at the Waste Management solid waste landfill located in Whitelaw, Wisconsin (Stantec, 2023). To further mitigate the potential for vapor intrusion into the apartment building, and as suggested in the Stantec (2021b) Remedial Action Plan and Material Management Plan (RAP/MMP), Stantec (2021c) designed a sub-slab depressurization system (SSDS) capable of mitigating the vapor intrusion risk to the building. This letter report provides documentation of system installation.

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Reference: **Construction Documentation Report – Installation of the Sub-Slab Depressurization System, River North, LLC Project Area; 1000 River Point Drive Manitowoc, Wisconsin**

SSDS INSTALLATION

The SSDS was installed by Consolidated Construction Co., Inc. per the Stantec (2021c) design. Photographic documentation of key phases of work is provided in Attachment A.

In summary, horizontal collection piping consisting of 6-inch diameter schedule (40) polyvinyl chloride (PVC) was prepared onsite by drilling ½-inch diameter holes every 20 linear inches with holes placed every 90-degrees around the circumference of the pipe (Attachment A, Photo Nos. 1, 2, 4, 5, and 9).

The piping for the SSDS was cut and dry fitted (Attachment A, Photo Nos. 6-8). After which, trenches (approximately 18-inches wide and 7-inches deep) were dug (Attachment A, Photo No. 11-15), the PVC pipes cemented together (Attachment A, Photo No. 10), and the horizontal pipe network bedded in rounded ¾-inch river stone in the trenches per the Stantec (2021c) plan (Attachment A, Photo Nos. 3 and 16-18). Please note the plenum was secured with an L-bracket to avoid shifting/vibration during final slab construction. The locations of the horizontal pipes are illustrated on **Figure 2** as red lines relative to the recently constructed apartment building (outlined as a thick black line on **Figure 2**).

The remaining slab subbase (3/4-inch clear angular stone without fines) was added/graded (Attachment A, Photo Nos. 19 and 20) and the vapor barrier installed (Attachment A, Photo Nos. 21-24). Following, the concrete slab was poured, and the area finished to serve as a parking garage.

The sub-slab piping was connected to PVC risers during construction, which terminate 1-foot above the roofline. The locations of the risers are illustrated on **Figure 2** as yellow circles. The pipe riser section schematic is provided as an inset image on **Figure 2.**

FUTURE WORK

The installed SSDS currently operates as a passive system. To confirm if the system needs to be made active to mitigate the risk for vapor intrusion, the Stantec (2021b) RAP/MMP, recommends conducting seasonal sub-slab vapor samples. The first round of sampling (heating season) was completed in March 2023, with future sampling scheduled for June and September 2024. Sample locations are illustrated as blue circles on **Figure 2.**

We recommend submitting a copy of this letter to WDNR for agency records. We trust this information meets your needs and we look forward to working with you further as the project progresses.

Sincerely,
STANTEC CONSULTING SERVICES INC

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Senior Engineer
hiedi.waller@stantec.com

Byers, Harris
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Date: 2023.04.28 09:53:35 -05'00'
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Enclosures:
Figures
Attachments:

LIMITATIONS

The conclusions in this letter are Stantec's professional opinion, as of the time of the letter, and concerning the scope described in the letter. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. This letter relates solely to the specific project for which Stantec was retained and the stated purpose for

which the letter was prepared. This letter is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

Stantec has assumed all information received from River North, LLC and third parties in the preparation of this letter to be correct. While Stantec has exercised a customary level of judgment or due diligence in the use of such information, Stantec assumes no responsibility for the consequences of any error or omission contained therein.

This letter is intended solely for use by River North, LLC in accordance with Stantec's contract with River North, LLC. While this letter may be provided to applicable authorities having jurisdiction and others for whom River North, LLC is responsible, Stantec does not warrant the services to any third party. This letter may not be relied upon by any other party without the express written consent of Stantec, which may be withheld at Stantec's discretion.

REFERENCES

Stantec, 2021a. Phase I Environmental Site Assessment, 1000 River Point Drive; Manitowoc, Wisconsin, August 25, 2021.

Stantec, 2021b, Remedial Action Plan and Materials Management Plan, 1000 River Point Drive, Manitowoc, Wisconsin, August 31, 2021.

Stantec, 2021c, Supplemental Site Investigation at the River Point District; Manitowoc, Wisconsin, September 10, 2021.

Stantec, 2023, Construction Documentation Report – Removal of Petroleum Impacted Soil, River North, LLC Project Area, 1000 River Point Drive, Manitowoc, Wisconsin, April 20, 2023.

Wisconsin Department of Natural Resources, 2023, Guidance: Wisconsin Vapor Quick Look-Up Table, January 2023.

FIGURES

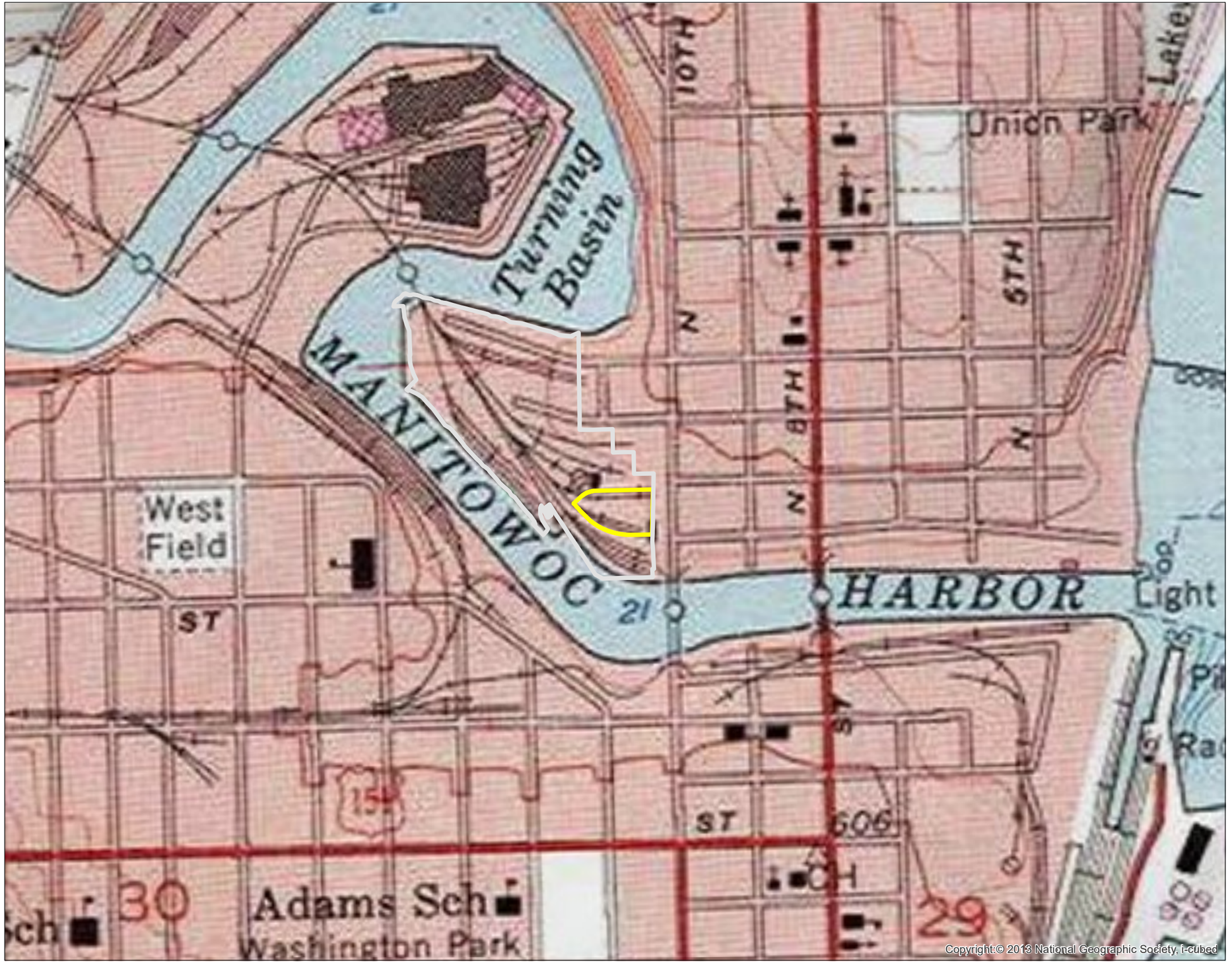


Figure No.
1

Title

Location of the River North LLC Project Area and Regional Topography

Client/Project
River North LLC Project Area
River Point District
City of Manitowoc

0 390 780 Feet

Prepared by HLB on 4/15/2021

Legend

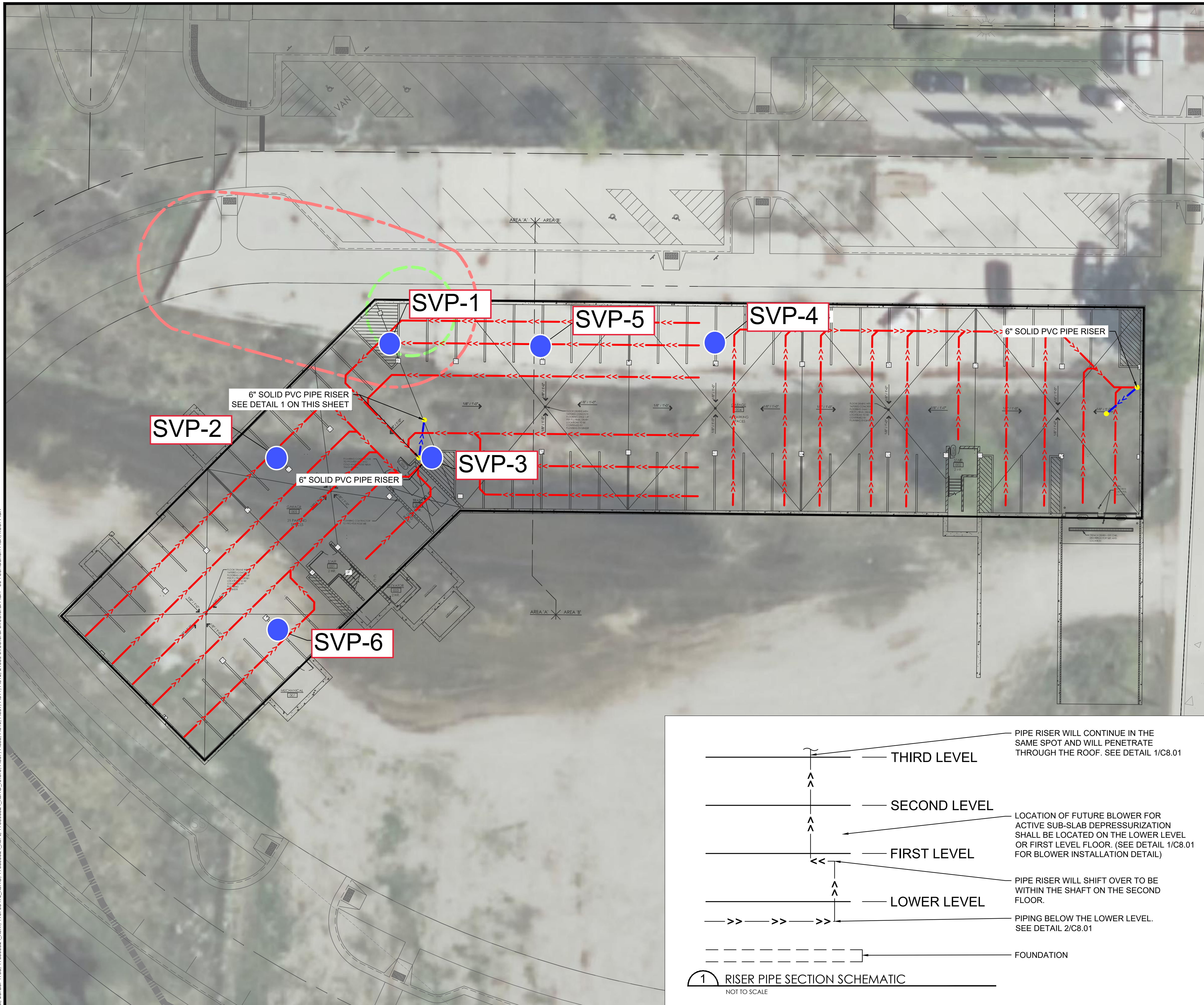
N

- River Point District
- River North LLC Project Area

Notes

1. Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet

Stantec



1 RISER PIPE SECTION SCHEMATIC
NOT TO SCALE

N

0 15' 30'

LEGEND

- ESTIMATED EXTENT OF RESIDUAL GROUNDWATER CONTAMINATION EXCEEDING PETROLEUM VOCS PAL
- ESTIMATED EXTENT OF RESIDUAL GROUNDWATER CONTAMINATION EXCEEDING BENZENE ES
- EXTENT OF SUB-SLAB DEPRESSURIZATION SYSTEM
- 6" SOLID PVC PIPE
- 6" PERFORATED PVC PIPE
- 6" PVC PIPE RISER
- SUB SLAB SAMPLE PORT

NOTES:

1. CONTRACTOR SHALL COORDINATE WITH STRUCTURAL PLANS FOR LOCATIONS WHERE PVC PIPE PENETRATES THE FOUNDATION. SEE STRUCTURAL DRAWINGS FOR FOUNDATION DEPTHS AND DESIGN.
2. PIPE PENETRATIONS SHALL SEAL THE PIPE PENETRATIONS WITH A PLUG, SEALANT OR ENGINEER APPROVED EQUAL.

Stantec
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SUB-SLAB VAPOR SAMPLING POINTS

RIVER NORTH APARTMENTS
PIERCE ENGINEERS, INC.
MANITOWOC, WISCONSIN

DATE OF ISSUANCE		
April 5, 2023		
NO	REVISION	DATE

SURVEY	---
DRAWN	JMV
DESIGNED	###
CHECKED	HAW
APPROVED	HAW
PROJ. NO.	193708490

SHEET NUMBER
Figure 2

Plot Date: 04/05/2023 - 2:01pm
Drawing name: \\Us0501-ppfss01\workgroup\1937\active\193708490\03_data\gis_cad\cad\dwg\sheets\193708490_SubSlab_Depressurization.dwg
Xrefs:, Border 1938, 193805824_XSXT, 193708490_XSNO, 193805824_XSNO, 193805824_XSPL, 193805824_XSNO_future, A307, A308, A310, A309, A311, A312, 21050-Structural-Structural Plan - 00-Foundation Plan, Roof Plan

Stantec

ATTACHMENT A
PHOTOGRAPHIC DOCUMENTATION

Stantec

Photographic Log

Client:	**River North**	**Project:**	**193708725**
Site Name:	**River North Apartments**	**Site Location:**	**1000 River Point Drive; Manitowoc, Wisconsin**

Photograph ID: 1 **Photo Location:** **Direction:** **Survey Date:** 11/22/2021 **Comments:** Stockpile of horizontal sub-slab piping. Note orientation and spacing of holes	
Photograph ID: 2 **Photo Location:** **Direction:** **Survey Date:** 11/22/2021 **Comments:** Stockpile of horizontal sub-slab piping. Note orientation and spacing of holes	

Client:	**River North**	**Project:**	**193708725**
Site Name:	**River North Apartments**	**Site Location:**	**1000 River Point Drive; Manitowoc, Wisconsin**

Photograph ID: 3 **Photo Location:** **Direction:** **Survey Date:** 11/22/2021 **Comments:** Stockpile of backfill for piping trenches	

Photograph ID: 4 **Photo Location:** **Direction:** **Survey Date:** 11/22/2021 **Comments:** Horizontal piping	

Client:	**River North**	**Project:**	**193708725**
Site Name:	**River North Apartments**	**Site Location:**	**1000 River Point Drive; Manitowoc, Wisconsin**

Photograph ID: 5 **Photo Location:** **Direction:** **Survey Date:** 11/22/2021 **Comments:** Hole diameter (typical)	

Photograph ID: 6 **Photo Location:** **Direction:** **Survey Date:** 11/22/2021 **Comments:** Dry fitting horizontal piping	

Client:	**River North**	**Project:**	**193708725**
Site Name:	**River North Apartments**	**Site Location:**	**1000 River Point Drive; Manitowoc, Wisconsin**

Photograph ID: 7 **Photo Location:** **Direction:** **Survey Date:** 11/22/2021 **Comments:** Dry fitting horizontal piping (typical)	

Photograph ID: 8 **Photo Location:** **Direction:** **Survey Date:** 11/22/2021 **Comments:** Dry fitting horizontal piping (typical)	

Client:	**River North**	**Project:**	**193708725**
Site Name:	**River North Apartments**	**Site Location:**	**1000 River Point Drive; Manitowoc, Wisconsin**

Photograph ID: 9 **Photo Location:** **Direction:** **Survey Date:** 11/22/2021 **Comments:** Hole spacing	

Photograph ID: 10 **Photo Location:** **Direction:** **Survey Date:** 11/22/2021 **Comments:** Cement used to connect PVC piping	

Client:	**River North**	**Project:**	**193708725**
Site Name:	**River North Apartments**	**Site Location:**	**1000 River Point Drive; Manitowoc, Wisconsin**

Photograph ID: 11 **Photo Location:** **Direction:** **Survey Date:** 11/22/2021 **Comments:** Trenching to install PVC piping	

Photograph ID: 12 **Photo Location:** **Direction:** **Survey Date:** 11/22/2021 **Comments:** Trenching to install PVC piping	

Client:	**River North**	**Project:**	**193708725**
Site Name:	**River North Apartments**	**Site Location:**	**1000 River Point Drive; Manitowoc, Wisconsin**

Photograph ID: 13 **Photo Location:** **Direction:** **Survey Date:** 11/22/2021 **Comments:** Backfilling PVC piping	
Photograph ID: 14 **Photo Location:** **Direction:** **Survey Date:** 11/22/2021 **Comments:** Trench depth (typical)	

Client:	**River North**	**Project:**	**193708725**
Site Name:	**River North Apartments**	**Site Location:**	**1000 River Point Drive; Manitowoc, Wisconsin**

Photograph ID: 15 **Photo Location:** **Direction:** **Survey Date:** 11/22/2021 **Comments:** Trench width (typical)	

Photograph ID: 16 **Photo Location:** **Direction:** **Survey Date:** 11/24/2021 **Comments:** Stockpiled river stone used to backfill the trenches with horizontal piping (typical)	

Client:	**River North**	**Project:**	**193708725**
Site Name:	**River North Apartments**	**Site Location:**	**1000 River Point Drive; Manitowoc, Wisconsin**

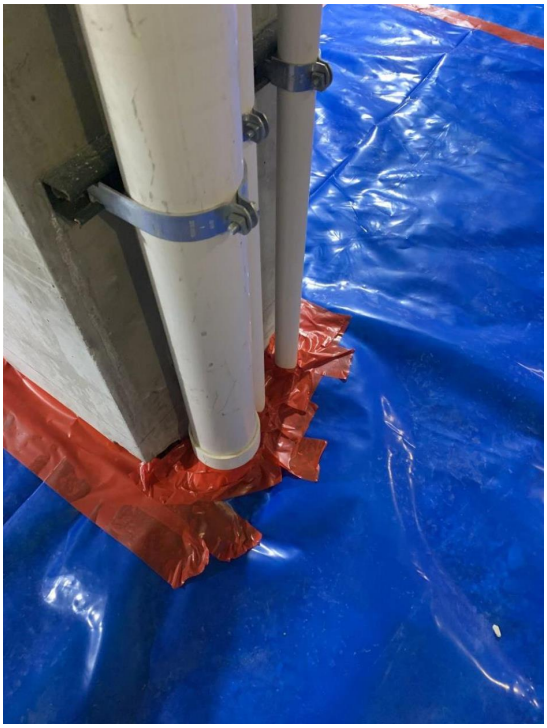
Photograph ID: 17 **Photo Location:** **Direction:** **Survey Date:** 11/24/2021 **Comments:** Stockpiled river stone used to backfill the trenches with horizontal piping.	

Photograph ID: 18 **Photo Location:** **Direction:** **Survey Date:** 11/24/2021 **Comments:** Bedded PVC piping as remaining sub-base is added	

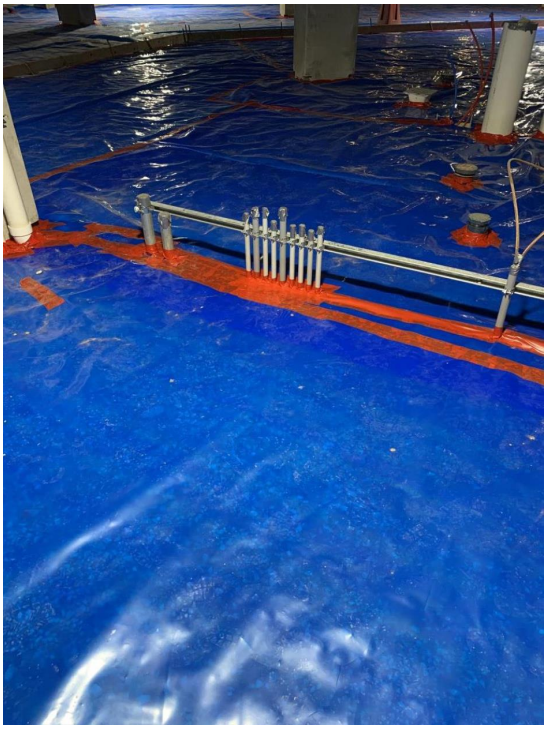
Client:	**River North**	**Project:**	**193708725**
Site Name:	**River North Apartments**	**Site Location:**	**1000 River Point Drive; Manitowoc, Wisconsin**

Photograph ID: 19 **Photo Location:** **Direction:** **Survey Date:** 11/24/2021 **Comments:** Bedded PVC piping as remaining sub-base is added	
Photograph ID: 20 **Photo Location:** **Direction:** **Survey Date:** 11/24/2021 **Comments:** Finished slab underlayment	

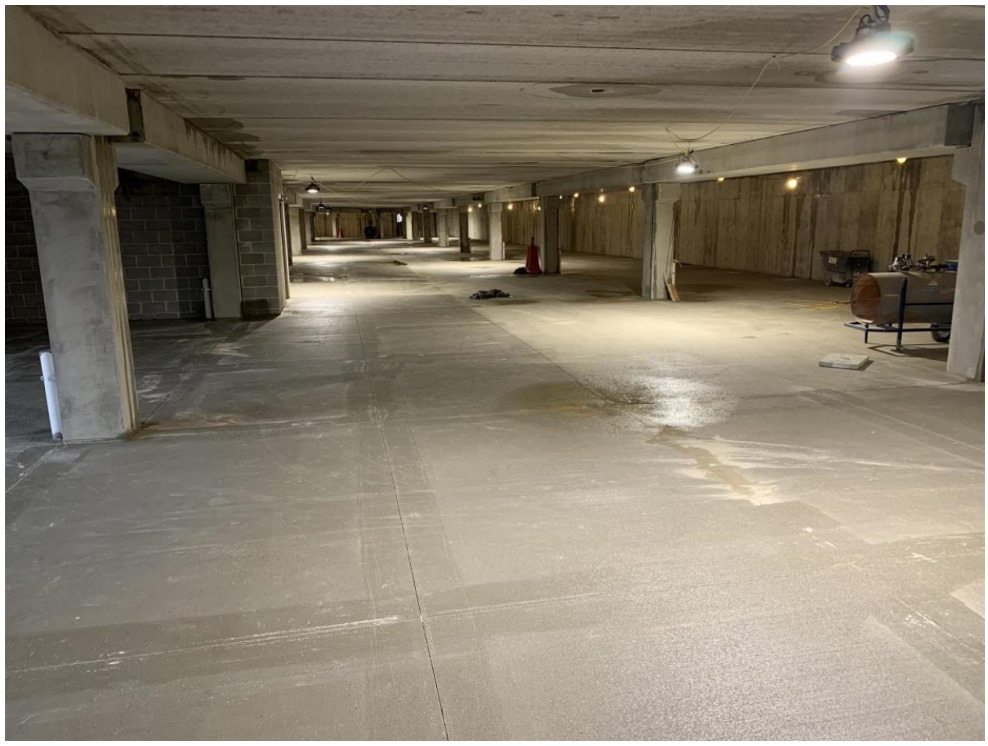
Client:	**River North**	**Project:**	**193708725**
Site Name:	**River North Apartments**	**Site Location:**	**1000 River Point Drive; Manitowoc, Wisconsin**

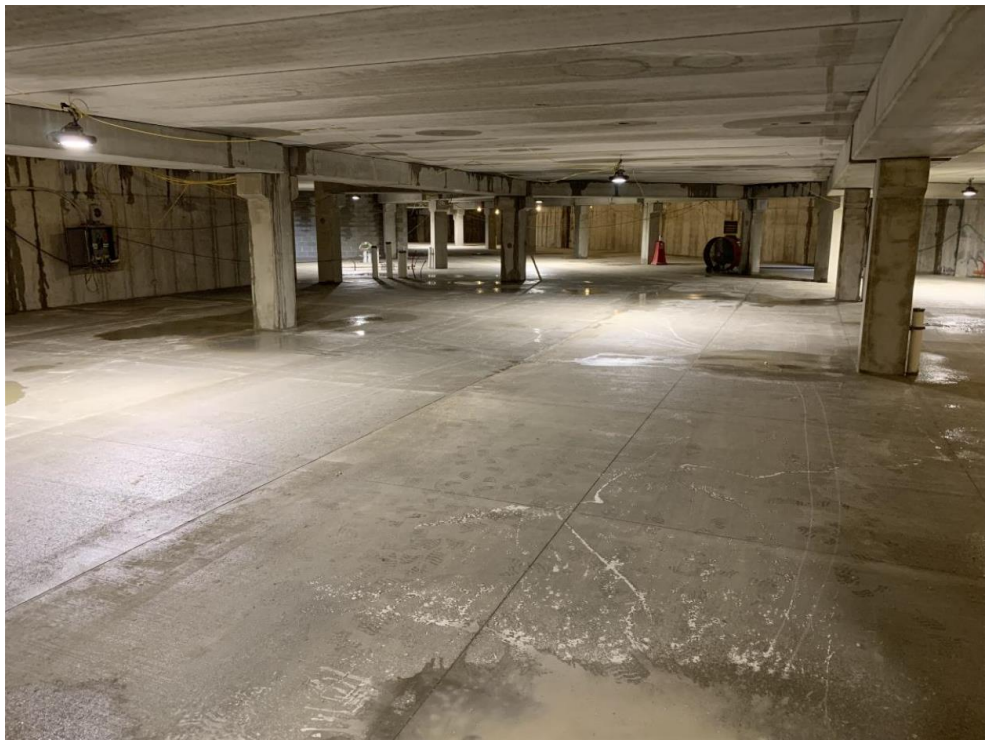
Photograph ID: 21 **Photo Location:** **Direction:** **Survey Date:** 3/16/2022 **Comments:** Vapor barrier (blue) and sealing penetrations (typical)	
Photograph ID: 22 **Photo Location:** **Direction:** **Survey Date:** 3/16/2022 **Comments:** Vapor barrier (blue) and sealing penetrations (typical)	

Client:	**River North**	**Project:**	**193708725**
Site Name:	**River North Apartments**	**Site Location:**	**1000 River Point Drive; Manitowoc, Wisconsin**

Photograph ID: 23 **Photo Location:** **Direction:** **Survey Date:** 3/18/2022 **Comments:** Vapor barrier (blue) and sealing penetrations (typical)	
Photograph ID: 24 **Photo Location:** **Direction:** **Survey Date:** 3/18/2022 **Comments:** Vapor barrier (blue) and sealing penetrations (typical)	

Client:	**River North**	**Project:**	**193708725**
Site Name:	**River North Apartments**	**Site Location:**	**1000 River Point Drive; Manitowoc, Wisconsin**

Photograph ID: 25	
Photo Location:	
Direction:	
Survey Date: 3/30/2022	
Comments: Finished concrete slab	

Photograph ID: 26	
Photo Location:	
Direction:	
Survey Date: 3/30/2022	
Comments: Finished concrete slab	