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August 1, 2016

Mr. Mike Jasek
Project Manager, Lakefront Trail Improvement
F.H. Paschen
5515 N. East River Road
Chicago, IL 60656

RE: Radiological Survey Results – 15th Letter Report
Navy Pier Flyover / Lakefront Trail Improvement
AECOM Project No. 60318016

Dear Mr. Jasek:

Pursuant to requirements of the United States Environmental Protection Agency (USEPA) and conditions specified in permits issued by the City of Chicago Department of Public Health (CDPH), radiation monitoring is required to be performed for the above referenced project when construction activities will disturb fill soil that has not been previously screened for thorium. AECOM Technical Services, Inc. (AECOM) has been contracted to provide the required radiation surveillance and reporting.

The prior progress report (dated June 1, 2016) provided notification that screening activities would be conducted intermittently given that excavation activities requiring monitoring are occurring infrequently. Discussed below are the construction related excavation screening activities performed between June 2, 2016 and June 31, 2016.

Lake Shore Drive and E. Illinois Ave.

AECOM conducted radiological survey for the soil excavation activities conducted for the installation of an electrical conduit along the southern sidewalk of E. Illinois St, southeast of the intersection of Lake shore Drive and E. Illinois St. (refer to Sketch No 1). The surveying was completed on June 3, 2016. The excavation was approximately 30-feet long, 1.5 to 4-feet wide, to a depth of 3.5-feet below ground surface (bgs).

The gamma surveying did not indicate that the fill soils were above the removal action level established by the USEPA for the Streeterville area of Chicago. The USEPA removal action level for Chicago's Streeterville area is 7.1 picocuries per gram (pCi/g) total radium (Ra-226 + Ra-228). Gamma radiation count measurements for the trench were made using Ludlum Model 2221 (S/N: 176944) survey meter and an unshielded 2 x 2 inch NaI probe Model 44-10 (S/N: RN21187). For the instrument used the gamma count threshold indicative of the 7.1 pCi/g removal action level was 18,278 counts per minute (cpm) unshielded and 6,123 cpm shielded.

The field gamma measurements within the excavation, and of the spoil, during the excavation process did not exceed the instrument threshold previously stated and unshielded readings ranged from a minimum of 4,700 cpm to a maximum of 9,600 cpm unshielded. Based on field observations there was no indication of the presence of radiologically-contaminated fill and/or an exceedance of the USEPA removal action level of 7.1 pCi/g total radium. A copy of a field sketch documenting the work area location, dimensions, and survey readings is included as an attachment.

Lake Shore Drive Off-Ramp and River Walk

Surveying was performed on the soil excavated east of (refer to Sketch No. 2) Lake Shore Drive Off-ramp (onto E. Illinois Ave.) and north of the adjacent River Walk, required to address trench excavation for an installation of a bio-swale. The excavation and radiological survey was conducted on June 15, 16, 21, and 22, 2016. The excavation included a single trench, extending east-to-west, approximately 240-feet long, 7 to 8-feet wide, to a depth of approximately 3-feet bgs.

One area of elevated gamma readings was observed at the base of the excavation trench, which will be discussed separately. The monitoring results of the remaining excavation areas did not indicate that the fill soils were above the removal action level established by the USEPA for the Streeterville area of Chicago (7.1 pCi/g) total radium. Gamma radiation count measurements for the excavation were recorded using Ludlum Models 2221 survey meter (S/N: 172039) and an unshielded 2 x 2 inch NaI probe (Model 44-10). For the instrument used, the gamma count threshold indicative of the 7.1 pCi/g removal action level was 17,015 cpm unshielded and 6,684 cpm shielded. The field gamma measurements within the excavation, excluding the elevated area, during the excavation process did not exceed the instrument threshold previously stated and ranged from a minimum of 4,800 cpm to a maximum of 11,300 cpm unshielded. Based on field observations there was no indication of the presence of radiologically-contaminated fill and/or an exceedance of the USEPA removal action level of 7.1 pCi/g total radium.

An area less than 2 x 2-ft, at the base of the 36-inch deep trench excavation, was identified on June 22, 2016 (refer to annotated drawing) with shielded readings of 7,600 to 11,000 cpm (shielded threshold 6,684 cpm). The area was covered with a sheet of plywood. Further excavation was not required in this area for construction and fill above the area did not exhibit elevated readings. AECOM collected a soil sample on June 25, 2016, for gamma spectroscopy analysis. The sample (NPF-Bioswale) was collected at 3.5 ft below the ground surface (or about 6-inches below the base of the final depth of the trench). At this depth, the gamma readings were greater than 11,000 cpm shielded compared to the instrument threshold of 6,684 cpm shielded. On an as received basis, the lab results were 5.65 pCi/g total radium, while the moisture content for the sample was 12.9%. Therefore, the dry weight corrected total radium activity is 6.49 pCi/g. These soil analysis results, and associated lab reports, were previously transmitted to the USEPA via email. Based on these results, the soil at the base of the trench is below the USEPA removal action level of 7.1 pCi/g. No additional excavation is planned in this bio-swale area. Prior to backfilling, the sheet of plywood will be removed and a small section of orange plastic snow fence will be placed over the area. The snow fencing will serve as a marker to delineate the final depth of excavation for the area of elevated gamma readings.

Lake Shore Drive On-Ramp and E. Grand Ave.

AECOM conducted radiological surveying for excavation activities conducted to address an installation of retention walls along the east side of the Lake Shore Drive (LSD) on-ramp north of E. Grand Ave. (refer to Sketch No. 3, figure 1), and near the intersection of E. Grand Ave. and LSD on-ramp, Chicago, IL (refer to Sketch No. 3, figure 2). The surveying was completed between June 23 and July 15, 2016. The excavation was composed of three parallel trenches connected to a single trench. The total length of trench excavated was approximately 400-feet long, 2-feet wide, to a depth of 18 to 52-inches bgs. In addition, asphalt was removed along the west side of the site.

The monitoring results did not indicate that the fill soils were above the removal action level established by the USEPA for the Streeterville area of Chicago (7.1 pCi/g) total radium. Gamma radiation count measurements for the excavation were recorded using Ludlum Models 2221 survey meter (S/N: 172039) and an unshielded 2 x 2 inch NaI probe (Model 44-10). For the instrument used, the gamma count threshold indicative of the 7.1 pCi/g removal action level was 17,015 cpm unshielded.

The field gamma measurements within the excavation, and of the spoil, during the excavation process did not exceed the instrument threshold previously stated and ranged from a minimum of 3,800 cpm to a maximum of 14,400 cpm unshielded. Based on field observations there was no indication of the

presence of radiologically-contaminated fill and/or an exceedance of the USEPA removal action level of 7.1 pCi/g total radium. A copy of a field sketch documenting the area where work was performed is included as an attachment.

Concrete Walkway Removal

AECOM conducted radiological surveying for excavation activities conducted during removal of a concrete walk way southeast of the intersection of Lower Lake Shore Drive and E. Illinois Ave., Chicago, IL (refer to Sketch No. 4). The surveying was completed on July 20, 2016. The activity involved removal of a concrete walkway, approximately 120-feet long by 15-feet wide. The concrete was 8-inches thick and no additional excavation occurred beyond the removal of the concrete.

The monitoring results did not indicate that the fill soils were above the removal action level established by the USEPA for the Streeterville area of Chicago (7.1 pCi/g total radium). Gamma radiation count measurements for the excavation were recorded using Ludlum Models 2221 survey meter (S/N: 176944) and an unshielded 2 x 2 inch NaI probe (Model 44-10). For the instrument used, the gamma count threshold indicative of the 7.1 pCi/g removal action level was 18,278 cpm unshielded.

The field gamma measurements within the excavation, and of the spoil, during the excavation process did not exceed the instrument threshold previously stated and ranged from a minimum of 5,000 cpm to a maximum of 8,300 cpm unshielded. Based on field observations there was no indication of the presence of radiologically-contaminated material and/or an exceedance of the USEPA removal action level of 7.1 pCi/g total radium. A copy of a field sketch documenting the area where work was performed is included as an attachment.

Please contact us with any questions you have regarding this letter or the reported results.

Regards,



Andrew Kozak
Staff Geologist



Steven C. Kornder, Ph.D.
Senior Project Geochemist

cc: Michael Herbert, F.H. Paschen

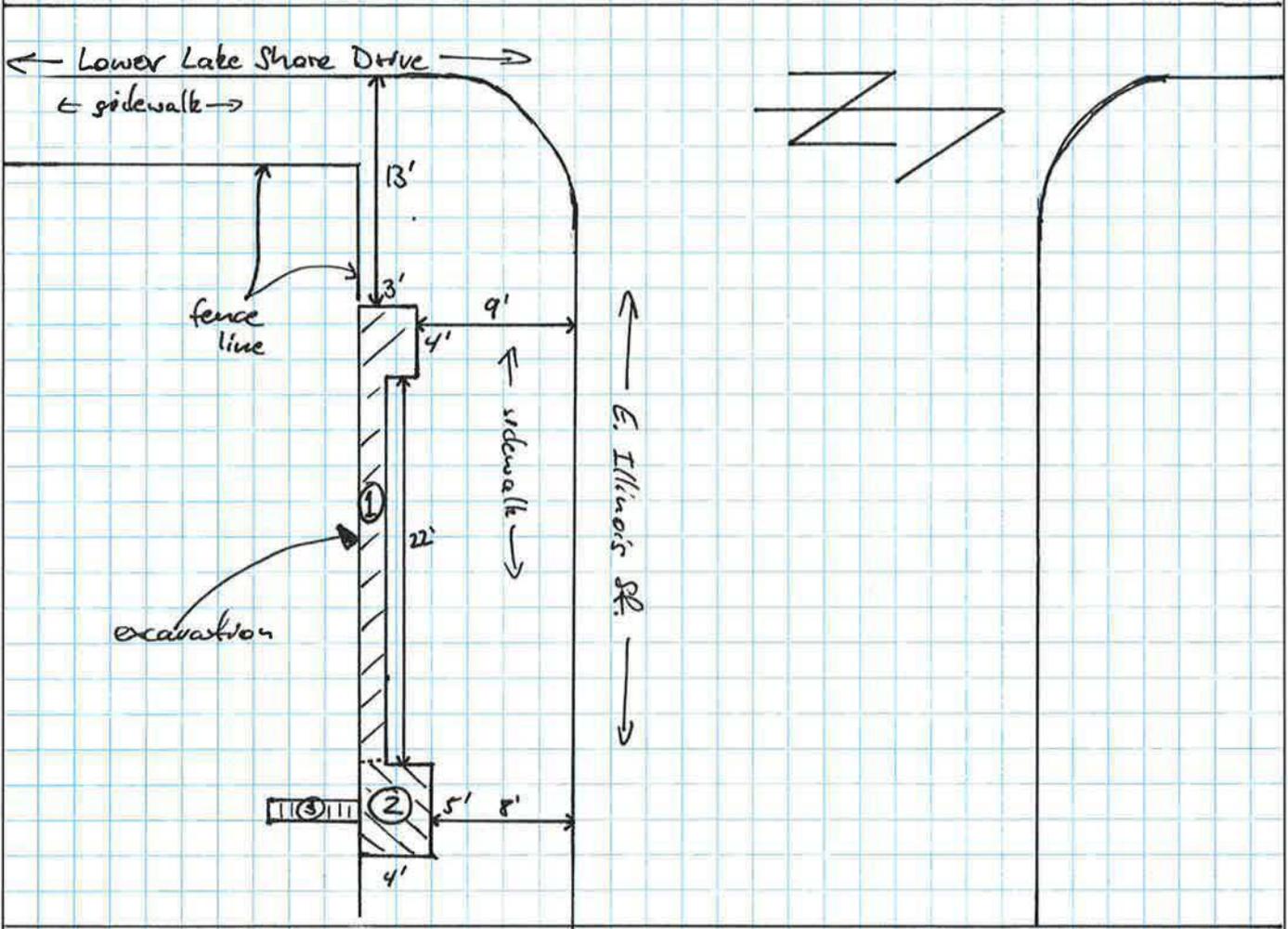
Attachments: Sketches
Drawing

SKETCHES

JOB TITLE Flyover - LSD @ E. Illinois St.
 JOB NO. 60318016 CALCULATION NO. _____
 ORIGINATOR Andrew Kozak DATE 6/3/16
 REVIEWER Steve Kauder DATE 6/6/16
 SCALE _____ SHEET NO. 1 OF 1

Survey Equipment

Ludlum 2221 S/N: 176944
 Probe 2x2 NaI S/N: RN21187
 unshielded: 18,278
 shielded: 6,123
 background: 5,400
 personnel: Adam Lock



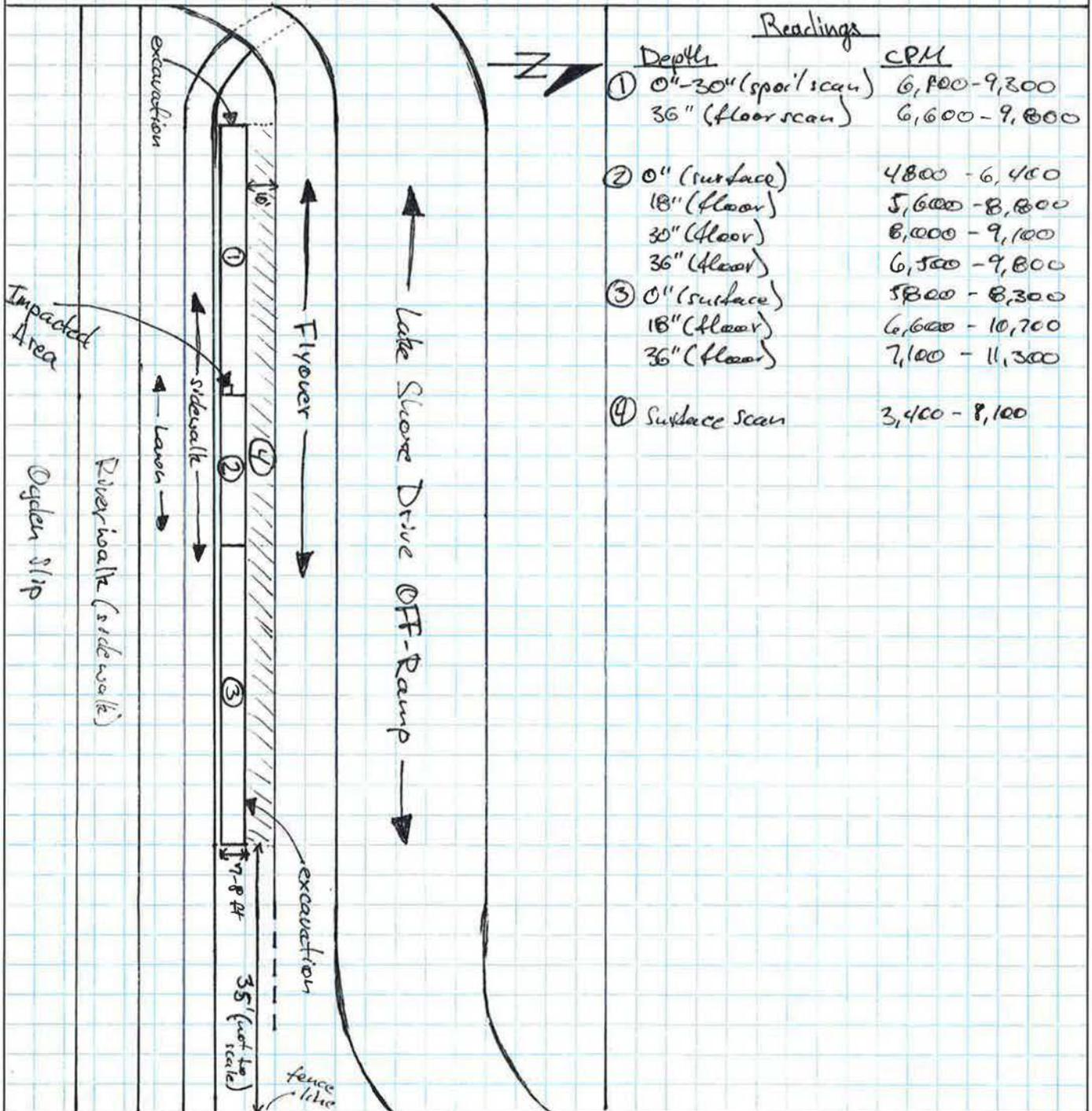
Readings

| <u>Excavation 1</u> | | <u>Excavation 2</u> | | <u>Excavation 3</u> | |
|---------------------|-------------|---------------------|-------------|---------------------|-------------|
| <u>Depth</u> | <u>CPM</u> | <u>Depth</u> | <u>CPM</u> | <u>Depth</u> | <u>CPM</u> |
| 0-6" (concrete) | — | 0" (concrete) | — | 0-6" (CA) | 5,100-6,100 |
| 6" | 4,900-5,900 | 6" | 4,900-6,000 | 6"-32" | 4,900-6,200 |
| 6"-20" | 5,100-8,100 | 6"-20" | 6,600-7,600 | 32"-42" | 4,700-6,300 |
| 20"-34" | 6,200-9,600 | 20"-34" | 6,100-7,900 | | |
| | | 34"-42" | 6,800-9,000 | | |

JOB TITLE Flyover - LSD off-ramp to River Walk
 JOB NO. 60318016 CALCULATION NO. _____
 ORIGINATOR Andrew Kozak DATE 6/15, 6/16, 6/21, 6/22
 REVIEWER Steve Koruder DATE 6/28
 SCALE 1" = 10 ft SHEET NO. 1 OF _____

Survey Equipment

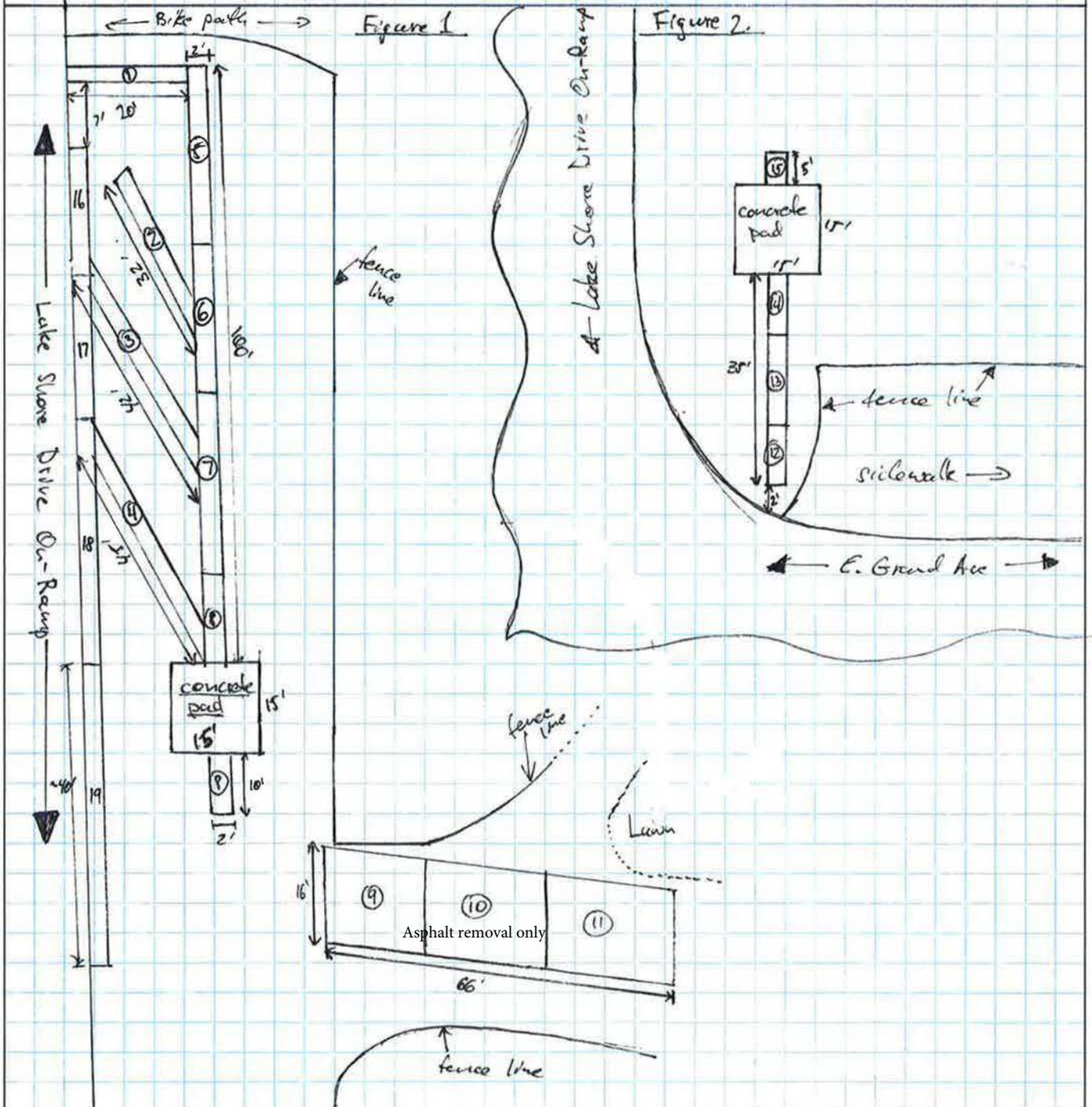
Ludlum 2221 S/N: 172039
 Probe NaI 2x2 S/N: 174496
 unshielded: 17,015
 shielded: 6,684
 background: 7,800
 personnel: K. Karczak



JOB TITLE Lake Shore Drive On-Ramp of E. Grand Ave.
 JOB NO. 60318016 CALCULATION NO. _____
 ORIGINATOR Andrew Kozak DATE 6/23, 6/24, 7/12, 7/13, 7/14, 7/15
 REVIEWER Steve Koruder DATE 7/25
 SCALE not to scale SHEET NO. 1 OF 2

Survey Equipment

Ludlum 2221 S/N: 172039
 Drobe 2x2 Nut S/N: 174496
 unshielded: 17,015
 shielded: 6,684
 background: 8,400-8,700
 personnel: K. Korczak, P. Kenny, A. Kozak



| <u>Readings</u> | | <u>Readings</u> | |
|--|--|-------------------------------------|---|
| <u>Depth</u> | <u>CPM</u> | <u>Depth</u> | <u>CPM</u> |
| ① 0" (surface) 18" | 6,800 - 7,800 7,700 - 9,100 | ⑬ 0" (surface) 18-24" | 4,400 - 6,000 4,600 - 5,800 |
| ② 0" (surface) | 5,000 - 6,600 8,000 - 9,600 | ⑭ 0" (surface) 18"-24" | 4,100 - 5,200 3,900 - 4,800 |
| ③ 0" (surface) 18" 36" | 7,500 - 8,700 8,100 - 9,700 8,200 - 9,700 | ⑮ 0" (surface) 18"-24" | 4,150 - 6,900 3,900 - 5,100 |
| ④ 0" (surface) 18" 36" | 7,400 - 9,500 9,500 - 16,600 8,700 - 11,300 | ⑯ 0" (surface) 18" 36" 52" | 9,700 - 10,800 10,000 - 12,000 9,500 - 12,100 9,800 - 11,800 |
| ⑤ 0" (surface) 18" 36" | 5,800 - 8,800 7,700 - 11,000 7,700 - 14,400 | ⑰ 0" (surface) 18" 36" 52" | 8,800 - 10,200 10,000 - 11,100 9,800 - 11,500 9,600 - 14,000 |
| ⑥ 0" (surface) 18" 36" | 4,700 - 7,100 6,300 - 11,700 7,900 - 13,300 | ⑱ 0" (surface) 18" 36" 52" | 8,600 - 10,500 9,700 - 10,100 8,800 - 10,500 8,800 - 14,000 |
| ⑦ 0" (surface) 18" 36" 50" | 4,700 - 7,800 6,400 - 8,400 8,800 - 11,000 8,500 - 12,000 | ⑲ 0" (surface) 18" | 5,300 4,700 - 8,500 |
| ⑧ 0" (surface) 6-18" (spor.) 24" | 7,200 - 8,700 9,000 - 13,900 7,100 - 9,100 | | |
| ⑨ 6" | 3,800 - 4,400 | | |
| ⑩ 6" | 4,200 - 5,400 | | |
| ⑪ 6" | 4,200 - 7,200 | | |
| ⑫ 0" (surface) 18-24" | 4,400 - 4,900 5,800 - 9,400 | | |

Survey Equipment

Lucium 2221 S/N: 176944

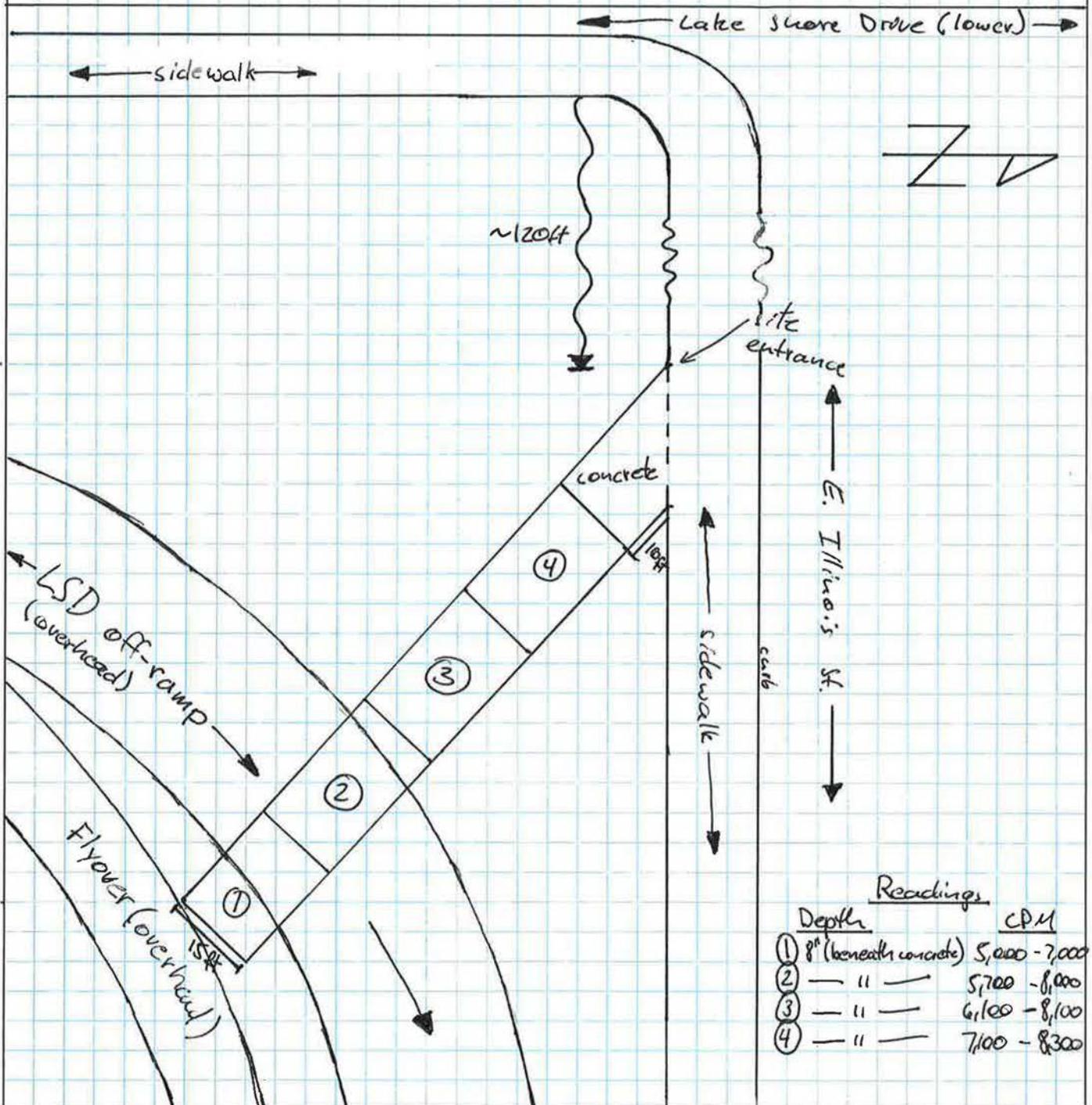
Probe 2x2 NaI S/N: RN21187

unshielded: 18,278cpm

shielded: 6,123cpm

background: 9,200cpm

personnel: A. Kozak



Readings

| Depth | CPM |
|-------------------------|---------------|
| ① 8" (beneath concrete) | 5,000 - 7,000 |
| ② — " — | 5,700 - 8,000 |
| ③ — " — | 6,100 - 8,100 |
| ④ — " — | 7,100 - 8,300 |

DRAWING

