



AECOM
100 S. Wacker Drive, Suite 500
Chicago, Illinois 60606

312-939-1000 tel
312-939-4198 fax

April 4, 2017

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

RE: Radiological Survey Results – 16th 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 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 last progress report (dated August 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 July 1, 2016 and April 4, 2017.

Retention Wall at E. Grand Ave. and Lake Shore Drive On-Ramp

AECOM conducted radiological survey for fill excavation activities conducted to address installation of a retention wall east of the N. Lake Shore Drive (LSD) on-ramp and north of E. Grand Ave. (refer to Figure 1). The surveying was completed on August 10 and 23, 2016. The excavation was approximately 30-feet long, 4 to 5-feet wide, to a depth of 2 to 3-feet below ground surface (bgs).

The gamma survey did not indicate that the urban fill material was 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: 172039) survey meter and an unshielded 2 x 2 inch NaI probe Model 44-10 (S/N: 172039). For the instrument used the gamma count threshold indicative of the 7.1 pCi/g removal action level was 17,253 counts per minute (cpm) unshielded and 7,018 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 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. A copy of a field sketch documenting the work area location, dimensions, and survey readings is included as an attachment (refer to Figure 1).

Sidewalk Grading/Excavations at N. Lake Shore Drive and Lake Shore Drive On-Ramp

AECOM conducted radiological survey for fill excavation activities conducted to address an installation of concrete walk ways east of N. Lake Shore Drive (LSD) on-ramp and north of E. Grand Ave. (refer to Figure 1). The surveying was completed on August 12, 15, 18, and October 10, 2016. Three excavations/grading activities were conducted within the Site. The first excavation extended from the Flyover staircase east towards an existing asphalt walkway and continued north to additional existing asphalt walkway. The excavation was approximately 80-feet long, 5 to 20-feet wide, to a depth of 9 to 12-inches bgs. The second area extended from the northern extent of the Site, to approximately 150-feet south along the Flyover. This area was approximately 20-feet wide and excavated to 12-inches bgs. The third excavation was located on the west side of the Site, along N. Lake Shore Drive On-Ramp. The excavation was approximately 20-feet wide, 30-feet long, to a depth of less than 12-inches bgs.

The gamma survey did not indicate that the fill material was above the removal action level established by the USEPA for the Streeterville area of Chicago. Gamma radiation count measurements for the trench were made using Ludlum Model 2221 (S/N: 172039) survey meter and an unshielded 2 x 2 inch NaI probe Model 44-10 (S/N: 174496). For the instrument used the gamma count threshold indicative of the 7.1 pCi/g removal action level was 17,253 cpm unshielded and 7,018 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 the majority readings ranged from a minimum of 4,700 cpm to a maximum of 11,000 cpm unshielded. Some small areas exhibited readings with higher readings (<16,000 cpm), but did not exceed the threshold. 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 (refer to Figure 1).

Light Bases at Lower N. Lake Shore Drive and E. Illinois St. / E. Grand Ave

AECOM conducted radiological survey for fill excavation activities conducted to address an installation of light bases at two locations; northeast corner of E. Illinois St. and Lower Lake Shore Drive and northeast of E. Grand Ave. and Lower Lake Shore Drive (refer Figure 1 and 2, respectively). The surveying was completed on August 15 and 16, 2016. The activities included excavations of three separate light bases, utilizing a hydrovac, rotary drill, and a mini-excavator. The light bases are approximately 2-feet in diameter, and excavated to a depth of 34 to 54-inches. A single light base required the area to be over-excavated due to a concrete obstruction.

The gamma survey did not indicate that the fill material was above the removal action level established by the USEPA for the Streeterville area of Chicago. Gamma radiation count measurements for the trench were made using Ludlum Model 2221 (S/N: 172039, S/N: 176944) survey meter and an unshielded 2 x 2 inch NaI probe Model 44-10 (S/N: 174496, S/N: 21187). For the instrument used the gamma count threshold indicative of the 7.1 pCi/g removal action level was 17,253 and 18,278 cpm unshielded and 7,018 cpm and 6,123 cpm shielded, respectively.

The field gamma measurements within the excavation, and of the spoil, during the excavation process did not exceed the instrument threshold previously stated and the majority of unshielded readings ranged from a minimum of 7,000 cpm to a maximum of 10,000 cpm unshielded. One anomalous reading of 16,000 cpm unshielded was identified, though it did not exceed the unit's threshold value. 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. .

Sidewalk Excavations/Grading at Lower Lake Shore Drive and E. Illinois St.

AECOM conducted radiological survey for fill excavation activities conducted to address an installation of concrete walkways and removal of existing asphalt pavement, south of E. Illinois St. and east of Lower

Lake Shore Drive north of the river walk (refer to Figure 3). The surveying was conducted on August 16, 17, 18 and September 29, 2016 as well as March 6, 7, 8, 9, 10, 13, and 15, 2017. The excavation was composed of several irregularly shaped areas, following a layout of a planned sidewalk (refer to Figure 3). The depth of the excavations varied from 6 to 18-inches bgs.

During grading on August 18, 2016, two areas with elevated readings were found at the southern edge near the river walk (Figure 3). The first area found was along the fence line just north of the river walk along Ogden Slip. The initial elevated readings were observed while concrete in the area was being broken up. After the removal of some of the concrete (approx. 8-inches thick) an area was observed with readings of approximately 100,000 cpm unshielded. This area was approximately 30-inches north of the Ogden Slip river walk. A second area was also discovered approximately 15-20 feet north of the first area beneath a layer of granite pavers was a layer of black cinders and ash. Gamma readings in this area after removal of the pavers ranged from approximately 16,000 to 22,500 cpm unshielded compared to an instrument threshold 17, 253 cpm. This second area was also approximately 10 x 25 feet. These areas were successfully remediated on October 27 and 28, 2016. Approximately, 35 cubic yards of contaminated fill was containerized during the remediation work. The USEPA verification samples collected from the area confirmed that the contamination had been removed. This material was loaded on February 23, 2017, for transport to and disposal at the US Ecology Grand View Idaho facility. Additional details regarding the remediation activities will be summarized in the remediation report for this area.

During the grading activities on March 6, 2017, an area covered with granite pavers approximately 20-feet by 40-feet, was identified with elevated gamma readings after the pavers were removed. Elevated readings of 11,200 to 24,000 cpm (shielded) were observed directly beneath the granite pavers in a layer of black ash and cinders. For the Ludlum (S/N: 326720) instrument utilized, the gamma count threshold indicative of 7.1 pCi/g removal action level was 7,097 cpm shielded. Gamma survey readings of the remaining grading areas (refer Figure 3), did not indicate that fill material was above the removal action level. The area identified with elevated gamma readings was successfully remediated on March 16, 2017. Approximately 33 cubic yards of contaminated fill was containerized during the remediation work. The USEPA verification sample collected from the area confirmed that the contamination had been removed. This material was loaded on April 4, 2017, for transport and disposal at the US Ecology Grand View Idaho facility. Additional details regarding the remediation activities will be summarized in the remediation report for this area.

The remaining areas involved in grading activities did not indicate that the fill material was above the removal action level established by the USEPA for the Streeterville area of Chicago. An additional Ludlum was used during gamma radiation count measurements; Ludlum Model 2221 (S/N: 172039) survey meter and an unshielded 2 x 2 inch NaI probe Model 44-10 (S/N: 174496). For this instrument used the gamma count threshold indicative of the 7.1 pCi/g removal action level was 17,253 cpm unshielded and 7,018 cpm shielded.

Excluding the areas with elevated gamma readings, the field gamma measurements during sidewalk slab removal and grading, did not exceed the instrument threshold previously stated. The unshielded readings ranged from a minimum of 4,800 cpm to a maximum of 9,900 cpm, while shielded readings ranged between 1,900 cpm to 5,200 cpm. 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.

Central Sprinkler-Sprinkler Excavations at Lower Lake Shore Drive and E. Illinois St.

AECOM conducted radiological survey for fill excavation activities conducted to address sprinkler installation south of E. Illinois St. and east of Lower Lake Shore Drive (refer to Figure 3). The surveying was completed on August 22, 2016, as well as March 8, 9, 10, 13, and 15, 2017. The activities included several excavations within and outside of the Site. The excavations were 2-feet wide, 1 to 3-feet deep, with lengths of 20 to 100-feet respectively. Additional lateral sprinkler line were also excavated and

installed, however the depth for lateral lines was approximately 8-inches and the surface survey conducted in March 2014 was adequate to address these shallow installations.

The gamma survey did not indicate that the fill material was above the removal action level established by the USEPA for the Streeterville area of Chicago. Gamma radiation count measurements for the trench were made using Ludlum Model 2221 (S/N: 172039) survey meter and an unshielded 2 x 2 inch NaI probe Model 44-10 (S/N: 174496). For the instrument used the gamma count threshold indicative of the 7.1 pCi/g removal action level was 17,253 cpm unshielded and 7,018 cpm shielded. A second Ludlum was utilized during the gamma survey (S/N: 326720) with threshold of 17,193 cpm shielded and 7,097 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 unshielded readings ranged from a minimum of 6,400 cpm to a maximum of 10,800 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.

ADA Walkway Replacement at E. Grand Ave. and Lower Lake Shore Drive

AECOM conducted radiological survey for fill excavation activities related to replacement of intersecting ADA compliant walkways at the south east corner of the intersection of E. Grand Ave. and Lower Lake Shore Drive (refer to Figure 4). The surveying was completed on November 11, 2016. The activities included removal of existing non-ADA compliant walkways, regrading, and replacement. The area consisted of two walkway section measuring 10 to 16-feet wide, 20 to 32-feet long, and to a depth of 6 to 12-inches bgs. The depth of the excavation was sloped, east to west and south to north respectively, to meet ADA regulations.

The gamma survey did not indicate that the fill material was above the removal action level established by the USEPA for the Streeterville area of Chicago. Gamma radiation count measurements for the trench were made using Ludlum Model 2221 (S/N: 172039) survey meter and an unshielded 2 x 2 inch NaI probe Model 44-10 (S/N: 174496). For the instrument used the gamma count threshold indicative of the 7.1 pCi/g total radium removal action level was 17,253 cpm unshielded and 7,018 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 4,400 cpm to a maximum of 8,800 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 Figure 4 in the attachments.

Sign Base Installations

AECOM conducted radiological survey for fill excavation activities associated with two installations of sign bases. Sign base #1 was located northeast of the intersection of E. Grand Ave. and E. Ohio St, while base #2 was located southeast of the intersection of E. Grand Ave. and N. Streeter Dr. (refer to Figures 5 and 6, respectively). The surveying was completed on November 17, 2016. Both sign bases were approximately 1-foot in diameter to a depth of 4-feet bgs.

The gamma survey did not indicate that the fill material was above the removal action level established by the USEPA for the Streeterville area of Chicago. Gamma radiation count measurements for the trench were made using Ludlum Model 2221 (S/N: 172039) survey meter and an unshielded 2 x 2 inch NaI probe Model 44-10 (S/N: 174496). For the instrument used the gamma count threshold indicative of the 7.1 pCi/g removal action level was 17,253 cpm unshielded and 7,018 cpm shielded.

Sign base #1 gamma measurements within the excavation did not exceed the instrument threshold previously stated and unshielded readings ranged from a minimum of 8,800 cpm to a maximum of 14,500 cpm unshielded. Survey readings at the termination depth of sign base #1 were collected using a shield due to interference, with results ranging from a minimum of 5,800 cpm to a maximum of 6,100 cpm shielded. Sign base #2 gamma measurements within the excavation did not exceed the instrument threshold previously stated and unshielded readings ranged from a minimum of 8,100 cpm to a maximum of 12,500 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.

Conduit Installation East of Lower Lake Shore Drive and E. Illinois St.

AECOM conducted radiological survey for fill excavation activities conducted to address an installation of an electrical conduit approximately 105-feet east of the intersection of Lower Lake Shore Drive and E. Illinois St. (refer to Figure 7). The surveying was completed on November 23, 2016. The activities included an excavation within a sidewalk extending south into the E. Illinois St. The excavation total dimensions were approximately 6-feet wide, 13-feet long, and 6 to 42-inches deep.

The gamma survey did not indicate that the fill material was above the removal action level established by the USEPA for the Streeterville area of Chicago. Gamma radiation count measurements for the trench were made using Ludlum Model 2221 (S/N: 172039) survey meter and an unshielded 2 x 2 inch NaI probe Model 44-10 (S/N: 174496). For the instrument used the gamma count threshold indicative of the 7.1 pCi/g removal action level was 17,253 cpm unshielded and 7,018 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 7,700 cpm to a maximum of 15,100 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.

Jane Adams Memorial Park Walkway Grading and Excavations

AECOM conducted radiological survey during removal of temporary asphalt path, and excavation and grading operations of concrete walkways north of the intersection of E. Grand Ave. and Lower Lake Shore Drive. The area is considered to be part of Jane Adams Park. (refer to Figure 8). The surveying was completed between November 28 and December 6, 2016. The activities included several related excavations in the southwest area of the Jane Adams Park. The excavated areas were 350-feet long, 10 to 20-feet wide, and to a depth of 6 to 60-inches deep. The area with deepest cuts was sloped north to south to meet existing grade (refer to Figure 8).

The gamma survey did not indicate that the fill material was above the removal action level established by the USEPA for the Streeterville area of Chicago. Gamma radiation count measurements for the trench were made using Ludlum Model 2221 (S/N: 172039) survey meter and an unshielded 2 x 2 inch NaI probe Model 44-10 (S/N: 174496). For the instrument used the gamma count threshold indicative of the 7.1 pCi/g removal action level was 17,253 cpm unshielded and 7,018 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 the average unshielded readings ranged from a minimum of 6,000 cpm to a maximum of 12,000 cpm unshielded, with anomalous readings up to 15,400 cpm (refer to Jane Adams Memorial Park Survey Readings Table 1 which are located following Figure 8). 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.

Jane Adams Memorial Park Hot Spot

During the Jane Adams Memorial Park Walkway Grading and Excavations operations, between November 28 and December 6, 2016, AECOM identified elevated gamma readings and asbestos mantle strings. An area approximately 4 x 2-feet, was identified with unshielded readings of 24,000 to 50,000 cpm, between two sidewalk excavations (refer to Figure 8). The area was covered with plastic sheeting and covered with screened fill to prevent exposure and during ongoing construction activities. Further excavations were not required in this area limited delineation was performed. Furthermore, the area was fenced with snow fencing and signage. The area was successfully remediated on January 27, 2017. Approximately 3 cubic yards of contaminated fill was containerized during the remediation work. This material was loaded on February 23, 2017, for transport and disposal at the US Ecology Grand View Idaho facility. The USEPA verification samples confirmed that the contamination had been removed. Additional details regarding the remediation activities will be summarized in the remediation report for this area.

Jane Adam's Memorial Park Tree Installations

AECOM conducted radiological survey during tree installation within Jane Adams Memorial Park, north of the intersection of E. Grand Ave. and Lake Shore Drive On-Ramp (refer to Figure 8). The surveying was completed on November 29, 2016. The excavation consisted of seven tree wells which were approximately 2 to 3-feet wide and 2-feet bgs.

The gamma survey did not indicate that the fill material was above the removal action level established by the USEPA for the Streeterville area of Chicago. Gamma radiation count measurements for the trench were made using Ludlum Model 2221 (S/N: 172039) survey meter and an unshielded 2 x 2 inch NaI probe Model 44-10 (S/N: 174496). For the instrument used the gamma count threshold indicative of the 7.1 pCi/g removal action level was 17,253 cpm unshielded and 7,018 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 the average unshielded readings ranged from a minimum of 7,000 cpm to a maximum of 12,000 cpm unshielded, with anomalous readings observed at tree well number 17, which exhibited readings of 13,100 to 16,100 cpm at 18-inches bgs (refer to Jane Adams Memorial Park Survey Readings Table 3 located on the page behind Figure 8). A shield was utilized for the final depth of 24-inches bgs with survey readings of 3,300 to 4,500 cpm (shielded). Despite the anomalous survey readings the observed readings were below the USEPA removal action level of 7.1 pCi/g total radium. Based on field observations the remainder of surveyed tree wells showed no indication of the presence of radiologically-contaminated fill and/or an exceedance of the USEPA removal action level.

Flyover Tree Installation E. Illinois St and Lower Lake Shore Drive

AECOM conducted radiological survey during tree installation and replacement of concrete walkways within the Ogden Slip Flyover area southeast of the intersection of E. Illinois St. and Lower Lake Shore Drive as well as the Jane Adams Memorial Park area north of the intersection of E. Grand Ave. and Lower Lake Shore Drive (refer to Figure 9). The surveying was completed on November 16 and 29, 2016. The excavation consisted of thirteen tree wells which were approximately 2 to 3-feet wide and 2-feet bgs and replacement of fractured concrete walkways, 22-feet long by 10-feet wide.

The gamma survey did not indicate that the fill material was above the removal action level established by the USEPA for the Streeterville area of Chicago. Gamma radiation count measurements for the trench were made using Ludlum Model 2221 (S/N: 172039) survey meter and an unshielded 2 x 2 inch NaI probe Model 44-10 (S/N: 174496). For the instrument used the gamma count threshold indicative of the 7.1 pCi/g removal action level was 17,253 cpm unshielded and 7,018 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 the unshielded readings, for tree well excavations, ranged from a minimum of 5,000 cpm to a maximum of 13,500 cpm unshielded (refer to

Ogden Slip Flyover Survey Readings Table 1 on the page following Figure 9 in the attachments). The unshielded readings observed during the replacement of concrete walkway ranged between a minimum of 3,600 cpm to a maximum of 5,400 cpm (refer to Ogden Slip Flyover Survey Readings Table 2). 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.

Jane Adams Memorial Park Utility Excavation

AECOM conducted radiological survey during utility trench excavation operations north of the intersection of E. Grand Ave. and Lake Shore Drive On-Ramp. The area is considered to be part of Jane Adams Park (refer to Figure 8). The surveying was completed on December 6, 2016. The excavation consisted of two trenches that joined at a single conduit box. The two trenches were approximately 1-foot wide, total length of 150-feet, to a depth of 30 to 66-inches bgs, depending on the location.

The gamma survey did not indicate that the fill material was above the removal action level established by the USEPA for the Streeterville area of Chicago. Gamma radiation count measurements for the trench were made using Ludlum Model 2221 (S/N: 172039) survey meter and an unshielded 2 x 2 inch NaI probe Model 44-10 (S/N: 174496). For the instrument used the gamma count threshold indicative of the 7.1 pCi/g removal action level was 17,253 cpm unshielded and 7,018 cpm shielded.

Due to the width of the trenches and interferences from the walls of the trench, a shield was utilized during the surveying operations. The field gamma measurements within the excavation, and of the spoil, during the excavation process did not exceed the instrument threshold previously stated with shielded readings ranged from a minimum of 2,400 cpm to a maximum of 5,400 cpm shielded, with (Jane Adams Memorial Park Survey Readings Table 2 located following Figure 8). 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.

E. Illinois St. Sidewalk Replacement

AECOM conducted radiological survey during concrete sidewalk removal and grading activities, along the south side of E. Illinois St., east of the intersection of Lower Lake Shore Drive and E. Illinois St. (refer to Figure 9). The surveying was completed on March 13 and 15, 2017. The scope of work consisted of removal of existing sidewalk slab and grading activities. The area was approximately 160-feet long, 15-feet wide, and excavated to a depth of 6 to 12-inches bgs. For the Ludlum (S/N: 176944) instrument utilized, the gamma count threshold indicative of 7.1 pCi/g removal action level was 17,270 cpm unshielded and 6,175 cpm shielded.

During the sidewalk removal and grading activities, an area 16-feet by 5-feet, was identified with elevated gamma readings. In this area a 3-inch layer of tan fill sand was observed above a layer of black ash containing fill. The elevated readings appeared to be associated with the ash fill material. Elevated readings of 20,000 cpm (shielded) were observed at the surface tan sand. Gamma survey readings of areas (refer to Figure 9) to the north and south of the elevated gamma readings did not indicate fill material above the removal action level. The area identified with elevated gamma readings was successfully remediated on March 16, 2017. Approximately 45 cubic yards of contaminated fill was containerized during the remediation work. The USEPA verification sample collected from the area confirmed that the contamination had been removed. This material was loaded on April 4, 2017, for transport and disposal at the US Ecology Grand View Idaho facility. Additional details regarding the remediation activities will be summarized in the remediation report for this area.

Excluding the area with elevated gamma readings, the field gamma measurements during sidewalk slab removal and grading, did not exceed the instrument threshold previously stated and unshielded readings ranged from a minimum of 5,200 cpm to a maximum of 9,600 cpm, while shielded readings ranged between 1,200 cpm to 4,200 cpm. 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.

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

Regards,

A handwritten signature in blue ink, appearing to read 'Andrew Kozak'.

Andrew Kozak
Staff Geologist

A handwritten signature in blue ink, appearing to read 'Steve Kornder'.

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

cc: Michael Herbert, F.H. Paschen

Attachments: Sketches

**SKETCHES AND
SURVEY DATA**

<u>Readings</u>	
<u>Area#/Depth</u>	<u>CPM</u>
<u>#1</u>	
0-2 feet (spoil)	5,600-6,400
2 feet (floor)	5,200-7,400
<u>#2</u>	
0-3 feet (spoil)	6,500-8,100
3 feet (floor)	7,200-11,300
<u>#3</u>	
surface	4,700-6,800
<u>#4</u>	
surface	5,700-7,500
12inches	7,500-14,500
<u>#5</u>	
surface	7,000-11,100
<u>#6</u>	
surface	6,200-9,500
<u>#7</u>	
surface	7,400-10,200
12inches	8,200-9,800
<u>#8</u>	
9-12inches	7,100-9,100
<u>#9</u>	
18inches	12,000-16,000
36inches (Shielded)	4,425-5,500
<u>#10</u>	
surface	7,500-10,050
18 inches	8,200-11,500
36 inches	7,500-10,200
54 inches	7,800-9,500

<u>Area#/Depth</u>	<u>CPM</u>
<u>#1</u>	
0-2 feet (spoil)	5,600-6,400
2 feet (floor)	5,200-7,400
<u>#2</u>	
0-3 feet (spoil)	6,500-8,100
3 feet (floor)	7,200-11,300
<u>#3</u>	
surface	4,700-6,800
<u>#4</u>	
surface	5,700-7,500
12inches	7,500-14,500
<u>#5</u>	
surface	7,000-11,100
<u>#6</u>	
surface	6,200-9,500
<u>#7</u>	
surface	7,400-10,200
12inches	8,200-9,800
<u>#8</u>	
9-12inches	7,100-9,100
<u>#9</u>	
18inches	12,000-16,000
36inches (Shielded)	4,425-5,500
<u>#10</u>	
surface	7,500-10,050
18 inches	8,200-11,500
36 inches	7,500-10,200
54 inches	7,800-9,500

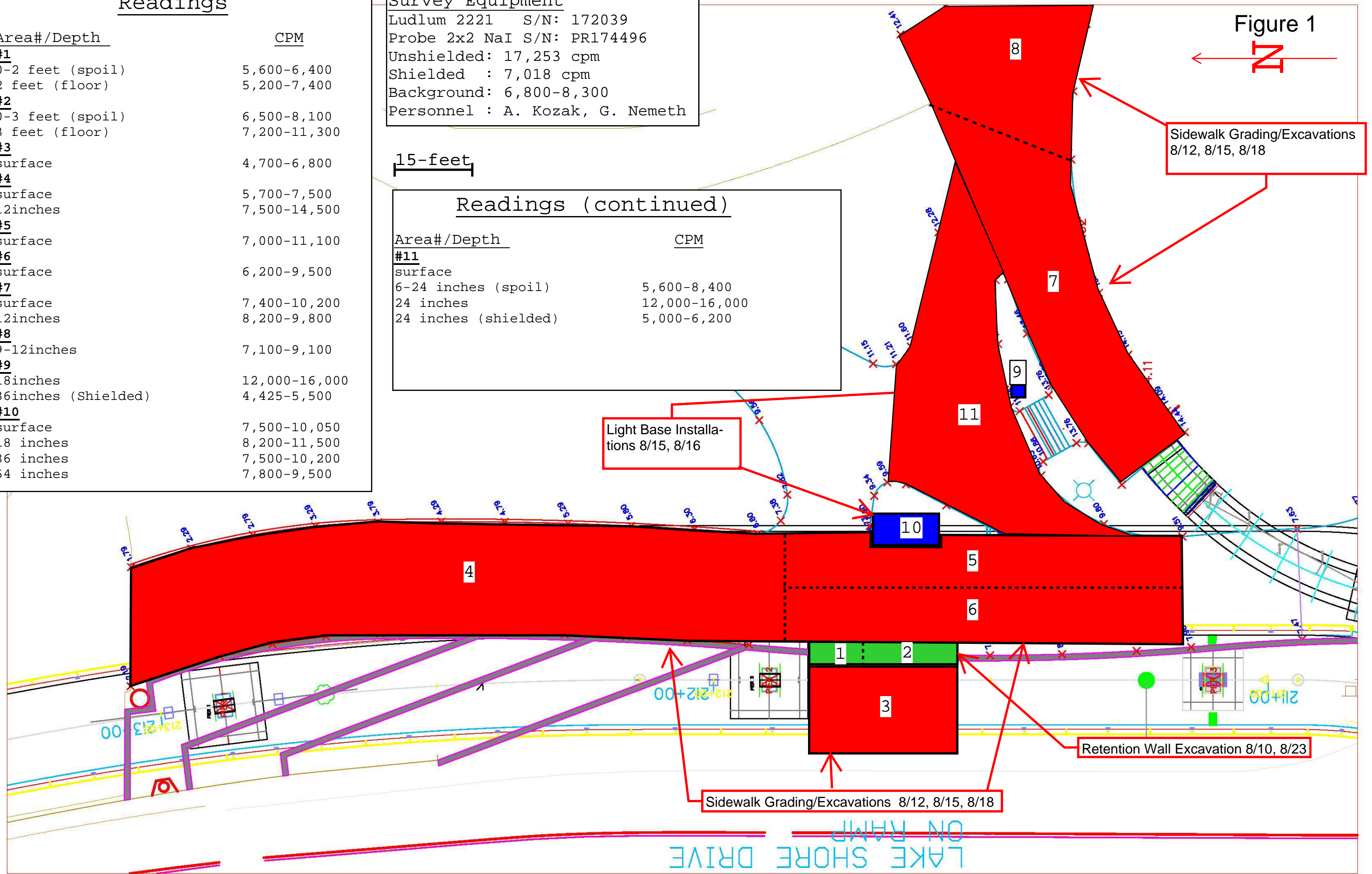
```
Ludlum 2221      S/N: 172039
Probe 2x2 NaI S/N: PR174496
Unshielded: 17,253 cpm
Shielded   : 7,018 cpm
Background: 6,800-8,300
Personnel  : A. Kozak, G. Nemeth
```

```
Ludlum 2221      S/N: 172039
Probe 2x2 NaI S/N: PR174496
Unshielded: 17,253 cpm
Shielded   : 7,018 cpm
Background: 6,800-8,300
Personnel  : A. Kozak, G. Nemeth
```

<u>Readings (continued)</u>	
<u>Area#/Depth</u>	<u>CPM</u>
<u>#11</u>	
surface	
6-24 inches (spoil)	5,600-8,400
24 inches	12,000-16,000
24 inches (shielded)	5,000-6,200

<u>Area#/Depth</u>	<u>CPM</u>
<u>#11</u>	
surface	
6-24 inches (spoil)	5,600-8,400
24 inches	12,000-16,000
24 inches (shielded)	5,000-6,200

<u>Area#/Depth</u>	<u>CPM</u>
<u>#11</u>	
surface	
6-24 inches (spoil)	5,600-8,400
24 inches	12,000-16,000
24 inches (shielded)	5,000-6,200

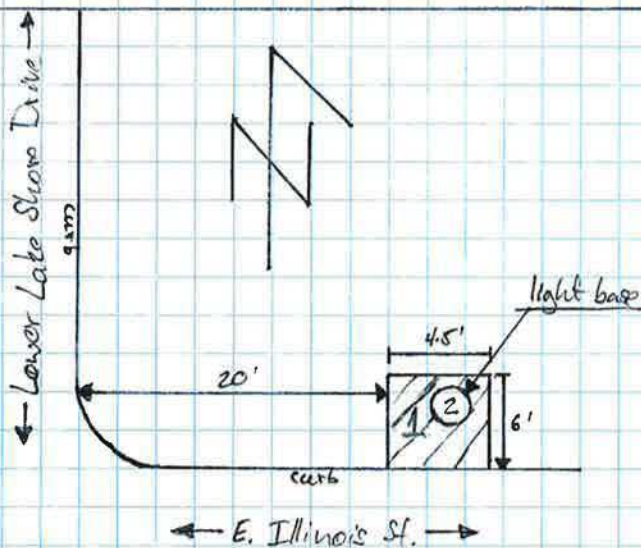


JOB TITLE Flyover Pascher, - Lake Shore Drive & Illinois / Grand
 JOB NO. 60305263 CALCULATION NO. _____
 ORIGINATOR A. Kozak DATE 9/12/16
 REVIEWER S. Koruder DATE 8/16, 8/15
 SCALE _____ SHEET NO. 1 OF 1

Figure 2

Survey Equipment

Ludlum 2221 S/N: 176944
 Probe 2x2 NaI S/N: R11211807
 unshielded: 18,278 cpm
 shielded: 6,123 cpm
 background: 8,800 cpm
 personnel: G. Nannieth

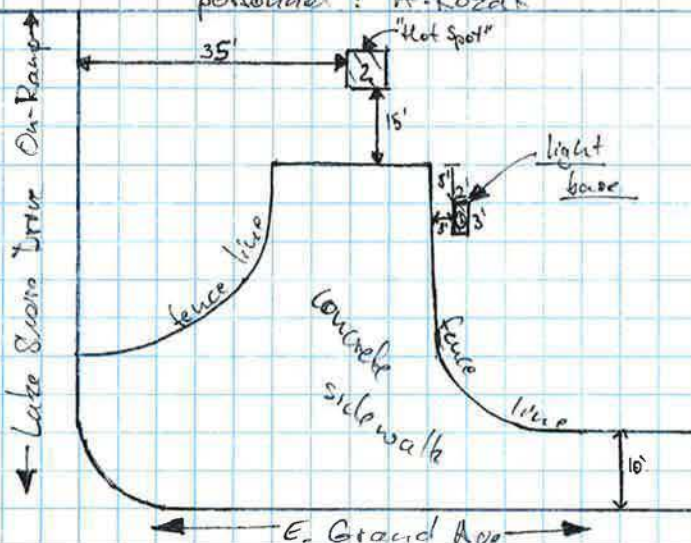


Readings

Depth	CPM
① surface (concrete) 18"	5,500 - 6,500
② surface (concrete) 18"	8,500 - 9,500
36"	7,700 - 9,400
84"	9,500 - 11,500

Survey Equipment

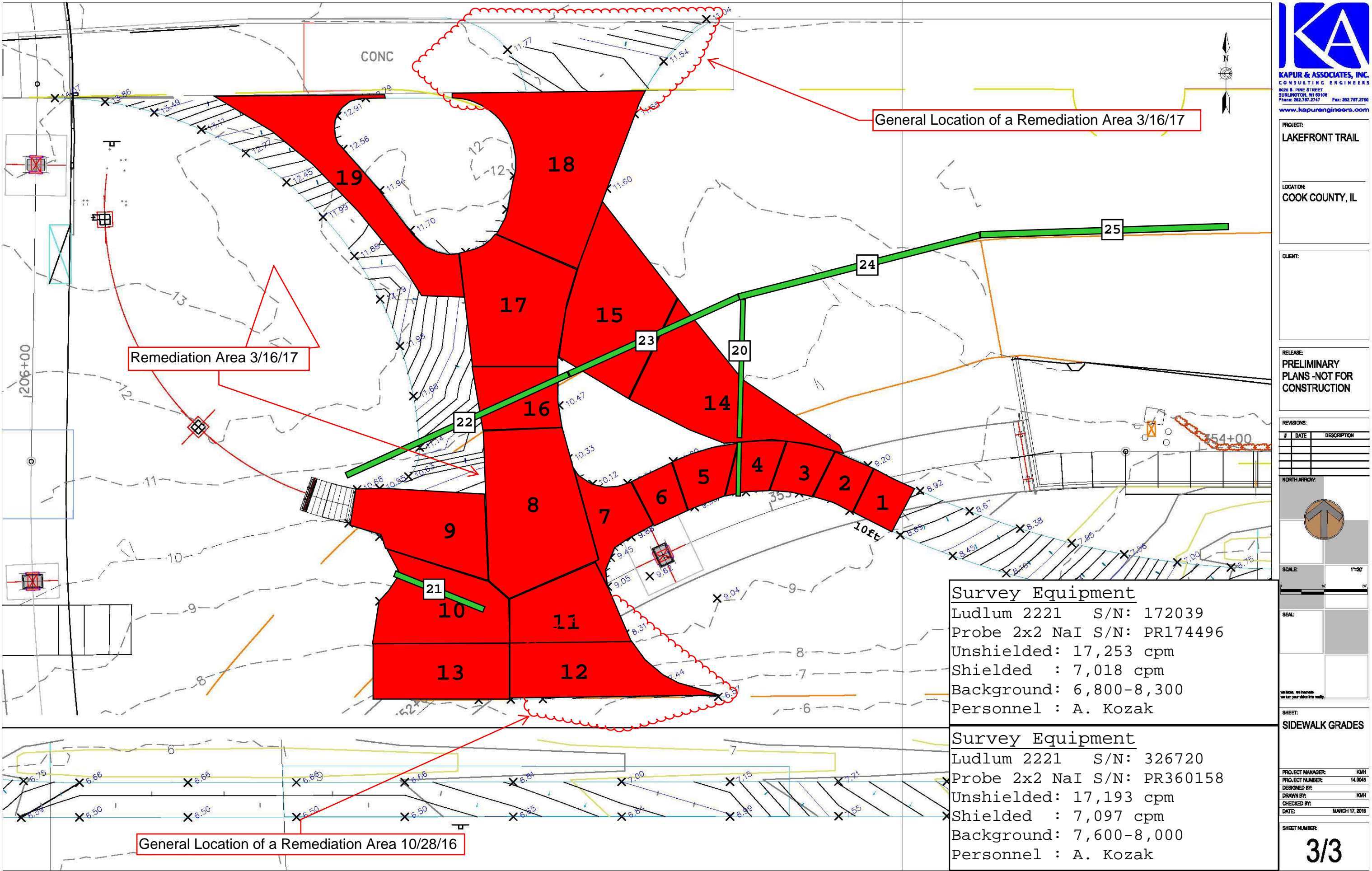
Ludlum 2221 S/N: 172039
 Probe 2x2 NaI S/N: 174496
 unshielded: 17,253 cpm
 shielded: 7,018 cpm
 background: 7,200 cpm
 personnel: A. Kozak



Readings

Depth	CPM
① surface 0-5' (spot)	6,700 - 7,200
② 0-6" (12" below sidewalk)	7,000 - 8,400
	17,000 - 22,000

Figure 3



Ogden Slip Flyover
Sidewalk Grading and Sprinkler Main Installation
Figure 3

Table 1. Sidewalk Grading

Section #	Depth (bgs)	Readings (cpm)
1)	0"	surveyd March, 2014
	9"	5600-6400
2)	0"	surveyd March, 2014
	9"	5900-7900
3)	0"	surveyd March, 2014
	9"	5000-7000
4)	0"	surveyd March, 2014
	9"	4800-6800
5)	0"	surveyd March, 2014
	9"	4900-7900
6)	0"	surveyd March, 2014
	9"	5500-6600
7)	0"	surveyd March, 2014
	9"	6200-8800
8)	0"	surveyd March, 2014
	9"	5600-6400
	21-27" (Remediation Area)	11,200-20,400 (shielded)
9)	0"	surveyed March 2014
	18"	6100-8300
10)	0"	surveyed March 2014
	18"	7100-9400
11)	0"	surveyed March 2014
	18"	6900-9900
12)	0"	surveyed March 2014
	18"	6400-7500
13)	0"	surveyed March 2014
	18"	5800-6400
14)	0"	surveyed March 2014
	9"	3400-6900
15)	0"	surveyed March 2014
	9"	6400-9000
16)	0"	surveyed March 2014
	14"-18"	1900-5200 (shielded)
17)	0"	surveyed March 2014
	16"	2100-3400 (shielded)
18)	0"	surveyed March 2014
	12" (stone)	1800-3600 (shielded)
19)	0"	surveyed March 2014
	14"	2,100-3800 (shielded)

*all readings are unshielded unless specified

Table 2. Sprinkler Main Installation

Section #	Depth (bgs)	Readings (cpm)
20)	0"	surveyd March, 2014
	9"	3400-6900
	18"	8000-10000
	18"-24"	2100-4200 (shielded)
21)	0"	surveyd March, 2014
	9"	3400-6900
	18"	7400-10800
22)	0"	surveyd March, 2014
	0-24" (spoil)	6,400-8,900
23)	0"	surveyed March 2014
	16"	3000-3800 (shielded)
24)	0"	surveyed March 2014
	16-18"	2600-4100 (shielded)
25)	0"	surveyed March 2014
	18"	1900-2000
	24-30"	2400-4000

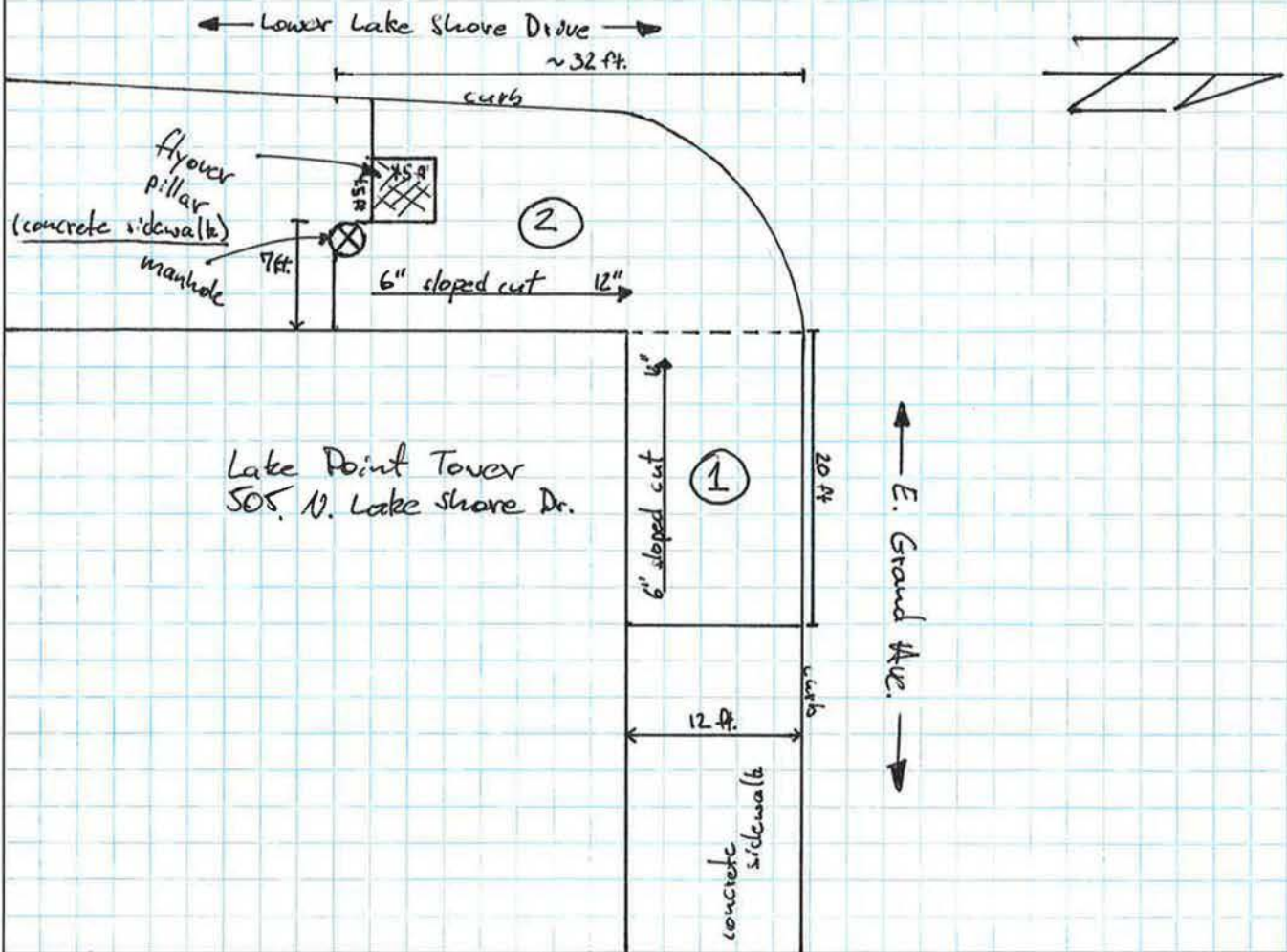
*all readings are unshielded unless specified

JOB TITLE Navy Pier Flyover - E. Grand Ave. & LSD On-Ramp
 JOB NO. 603/8016 CALCULATION NO. _____
 ORIGINATOR A. Kozak DATE 11/16/16
 REVIEWER S. Koruder DATE 12/28/16
 SCALE 1 sq = 2.5 ft SHEET NO. 1 OF 1

Figure 4

Survey Equipment

Ludlum 2221 S/N: 172039
 Probe 2x2 NaI S/N: 174496
 unshielded: 17,253 cpm
 shielded: 7,018 cpm
 background: 8,000 cpm
 personnel: A. Kozak



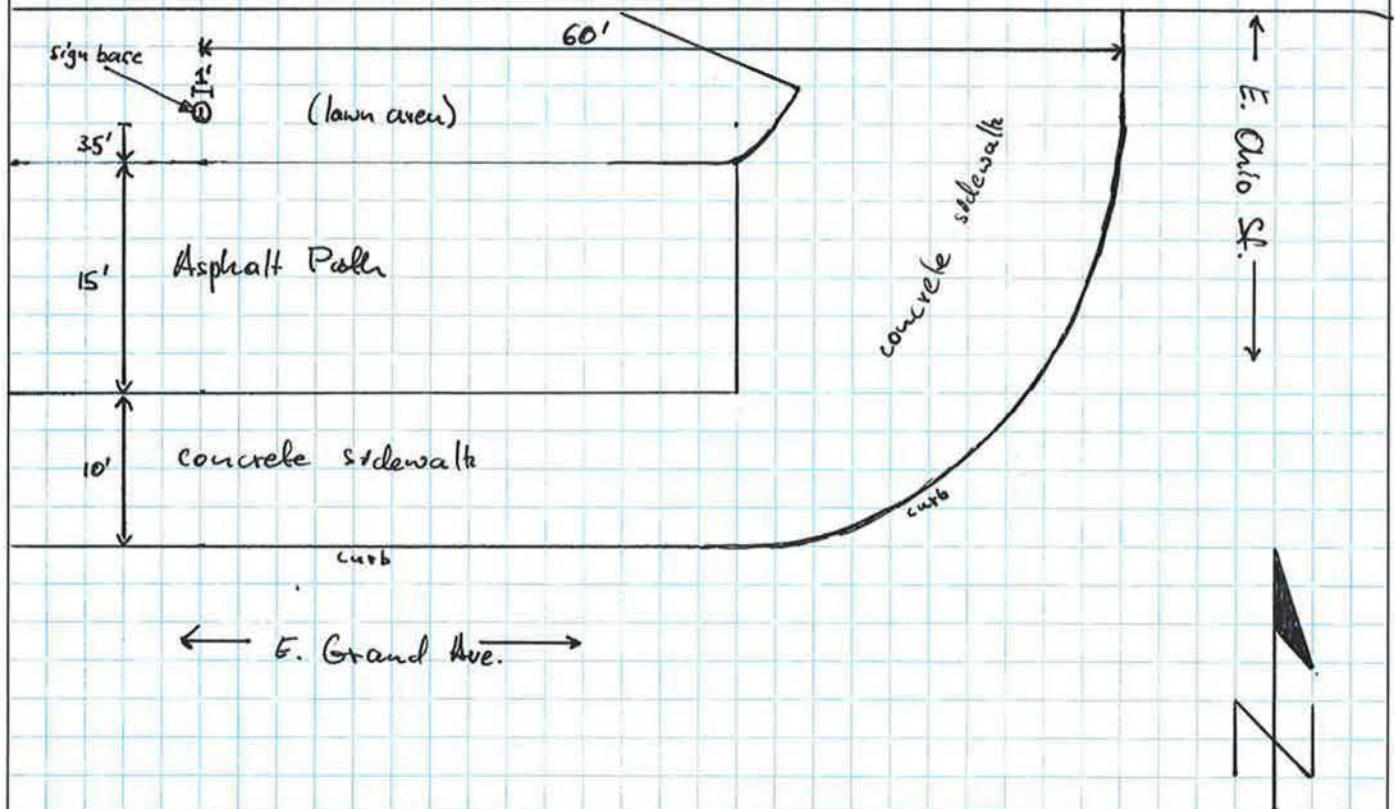
<u>Survey Readings</u>		
<u>Section</u>	<u>Depth</u>	<u>Readings (CPM)</u>
1	0" (concrete)	—
	6"-12" (sloped North)	6,700 - 8,800
2	0" (concrete)	—
	6"-12" (sloped West)	4,400 - 6,300

JOB TITLE Navy Pier Flyover - Sign #1 E. Grand Ave. and E. Ohio St.
 JOB NO. 60318016 CALCULATION NO. _____
 ORIGINATOR A. Kozak DATE 11/17/16
 REVIEWER S. Karuder DATE 12/29/16
 SCALE 1sq = 2.5 ft SHEET NO. 1 OF _____

Figure 5

Survey Equipment

Ludlum 2221 S/N: 172039
 Probe 2x2 NaI S/N: 174496
 unshielded: 17,253 cpm
 shielded: 7,018 cpm
 background: 8,000 cpm
 personnel: A. Kozak



Survey Readings

(all readings are unshielded unless specified)

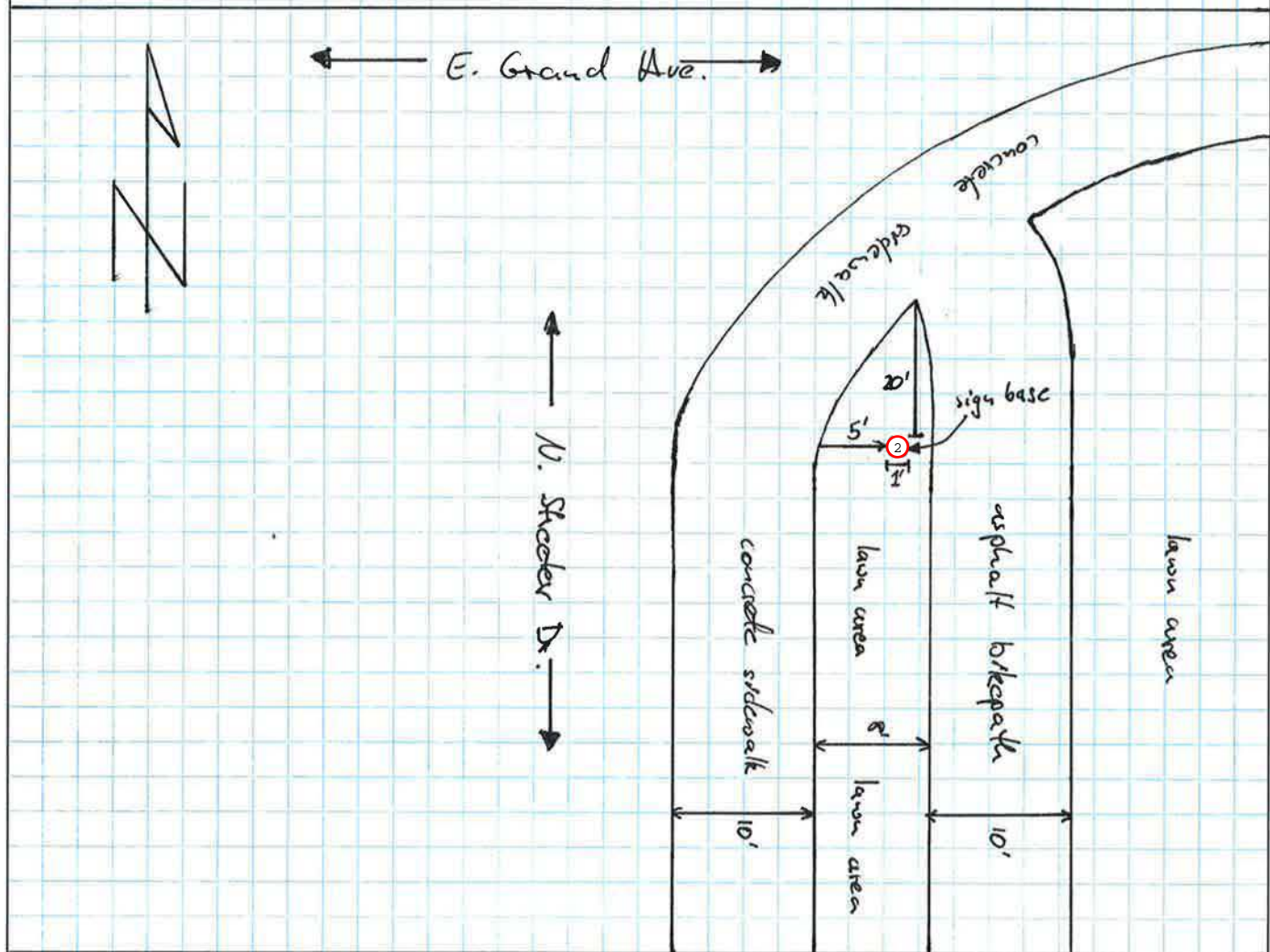
<u>Section</u>	<u>Depth</u>	<u>Readings (CPM)</u>
1	0"	8,000
	18"	11,100
	36"	14,500
	48"	5,800-6,100 (shielded)

JOB TITLE Navy Pier Flyover - Sign #2 E. Grand Ave & N. Streeter Dr.
 JOB NO. 60318016 CALCULATION NO. _____
 ORIGINATOR A. Kozak DATE 11/17/16
 REVIEWER S. Koruder DATE 12/29/16
 SCALE 1 sq. = 2.5 ft. SHEET NO. 2 OF 2

Figure 6

Survey Equipment

Ludlum 2221 S/N: 172039
 Probe 2x2 NaI S/N: 174496
 unshielded: 12,253 cpm
 shielded: 7,018 cpm
 background: 8,000 cpm
 personnel: A. Kozak



Survey Readings

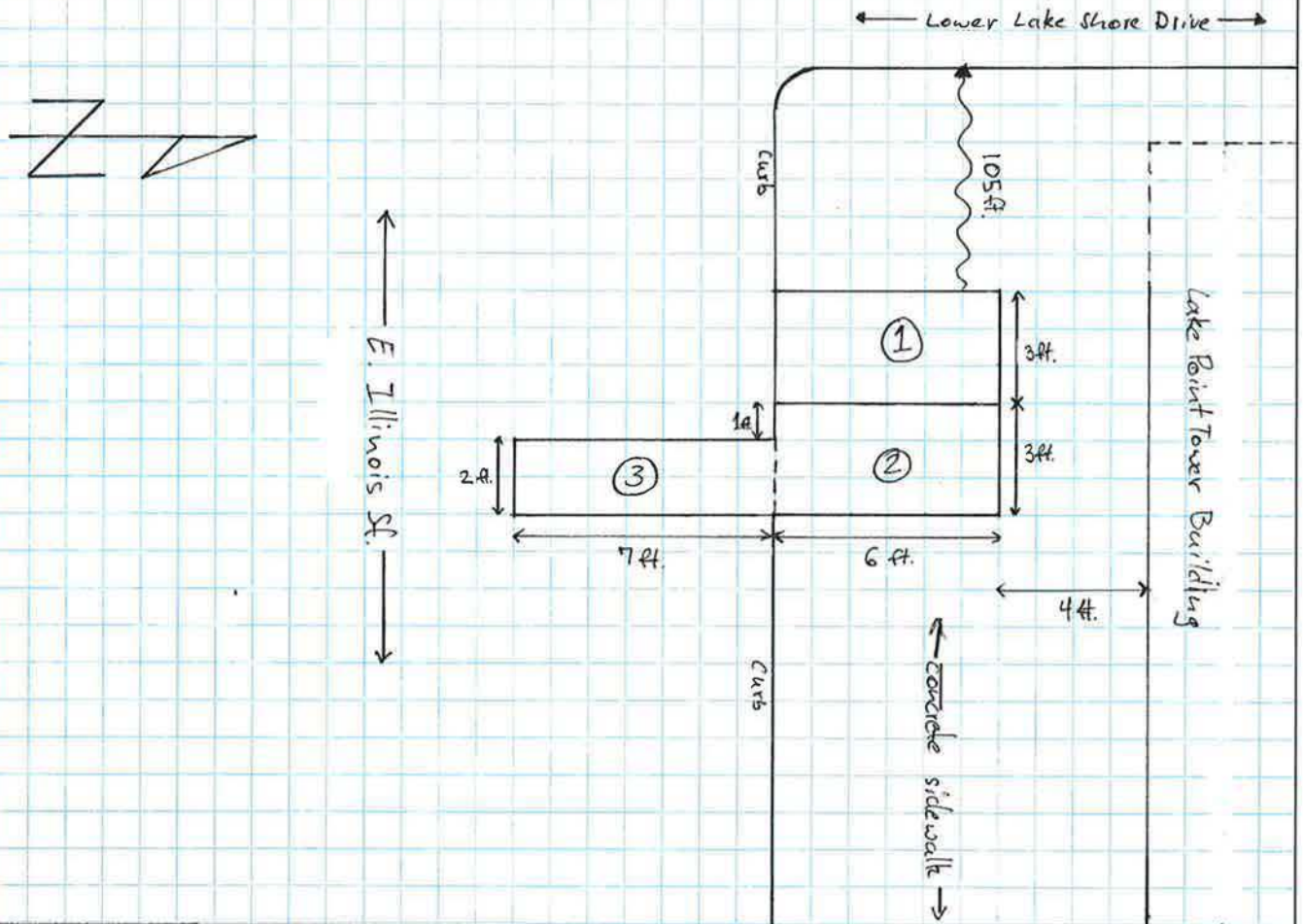
<u>section</u>	<u>Depth</u>	<u>Readings (CPM)</u>
2	0"	8,100 - 9,800
	18"	8,800
	36"	11,250
	48"	12,500

JOB TITLE Flyover - E. Illinois St. & Lake Shore Drive
 JOB NO. 60318016 CALCULATION NO. _____
 ORIGINATOR A. Kozak DATE 11/23/16
 REVIEWER S. Koruder DATE 12/30/16
 SCALE 1 sq = 1 ft SHEET NO. 1 OF 1

Survey Equipment

Ludlum 2221 S/N : 172039
 Probe 2x2 NaI S/N : 174496
 unshielded : 17,253 cpm
 shielded : 7,018 cpm
 background : 8,000 cpm

Figure 7



Survey Readings

Section	Depth	Reading (CPM)
①	6"	7,700 - 8,500
②	6"	7,700 - 8,500
	24"	8,100 - 9,600
	42"	12,000 - 13,200
③	12"	7,500 - 8,200
	30"	9,100 - 9,800
	42"	9,000 - 15,100

Survey Equipment

Ludlum 2221 S/N : 172039

Probe 2x2 NaI S/N : 174496

unshielded: 17,270 cpm

shielded: 6,175 cpm

background: 8,000 cpm

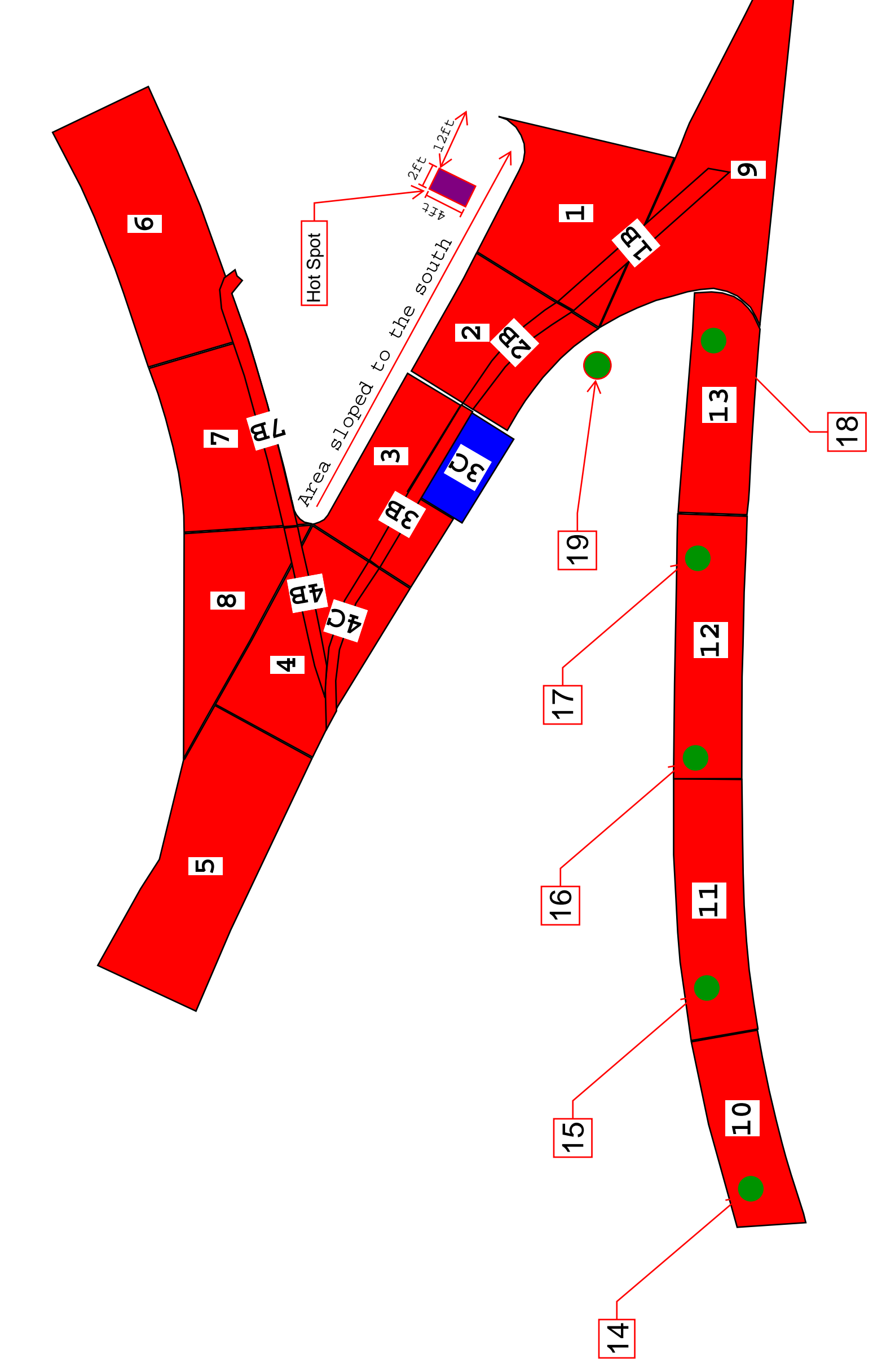
Legend

Tree wells

Walkways

Utility Lines

Catch Basin



Tables 1, 2 and 3
Jane Adams Memorial Park Survey Readings
(all survey readings are unshielded unless specified)

Table 1. Asphalt removal, walkway excavations

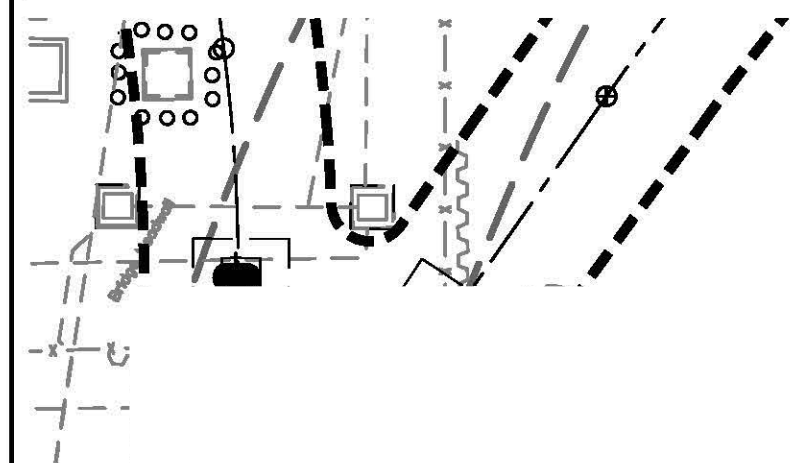
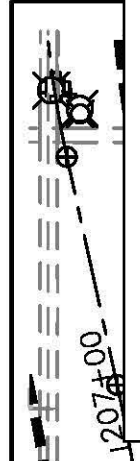
<u>Section #</u>	<u>Depth</u>	<u>Readings (CPM)</u>
1	0" (asphalt)	-
	6"	4,600 - 7,200
	12"	7,100 - 12,000
2	0" (asphalt)	-
	6"	4,200 - 5,500
	24"	6,800 - 10,100
	36"	8,700 - 12,800
	48"	9,100 - 15,400
3	0" (asphalt)	-
	6"	3,800 - 5,300
	24"	6,600 - 9,800
	42"	7,500 - 11,900
4	0" (asphalt)	-
	6"	5,600 - 7,300
	24"	8,700 - 9,800
	32"	7,000 - 8,500
5	0" (asphalt)	-
	6"	5,300 - 9,100
	18"	6,100 - 9,900
6	0" (asphalt)	-
	6"	5,100 - 6,900
	12"	4,700 - 9,200
7	0" (asphalt)	-
	6"	6,100 - 9,100
	12"	5,200 - 8,700
8	0" (asphalt)	-
	6"	4,000 - 6,200
	18"	5,800 - 8,300
9	0" (stone)	surveyed 8/16
	16"	7,700 - 12,600
10	0"	previously surveyed
	12"	7,600 - 10,000
11	0"	previously surveyed
	12"	6,200 - 10,000
12	0"	previously surveyed
	12"	8,000 - 11,800
13	0"	previously surveyed
	12"	7,900 - 11,700

Table 2. Utility Excavations

<u>Section #</u>	<u>Depth</u>	<u>Readings (CPM)</u>
1B	0"-12"	see table 1 section #1
	30"	2,400 - 4,200 (shielded)
2B	0" - 48"	see table 1 section #2
	60"	2,700 - 5,100
3B	0" - 24"	see table 1 section #3
	66"	3,700 - 5,400 (shielded)
4B	0" - 32"	see table 1 section #4
	50"	3,100 - 4,900 (shielded)
4C	0" - 32"	see table 1 section #4
	50"	3,600 - 5,200 (shielded)
7B	0" - 12"	see table 1 section #7
	30"	2,700 - 4,500 (shielded)

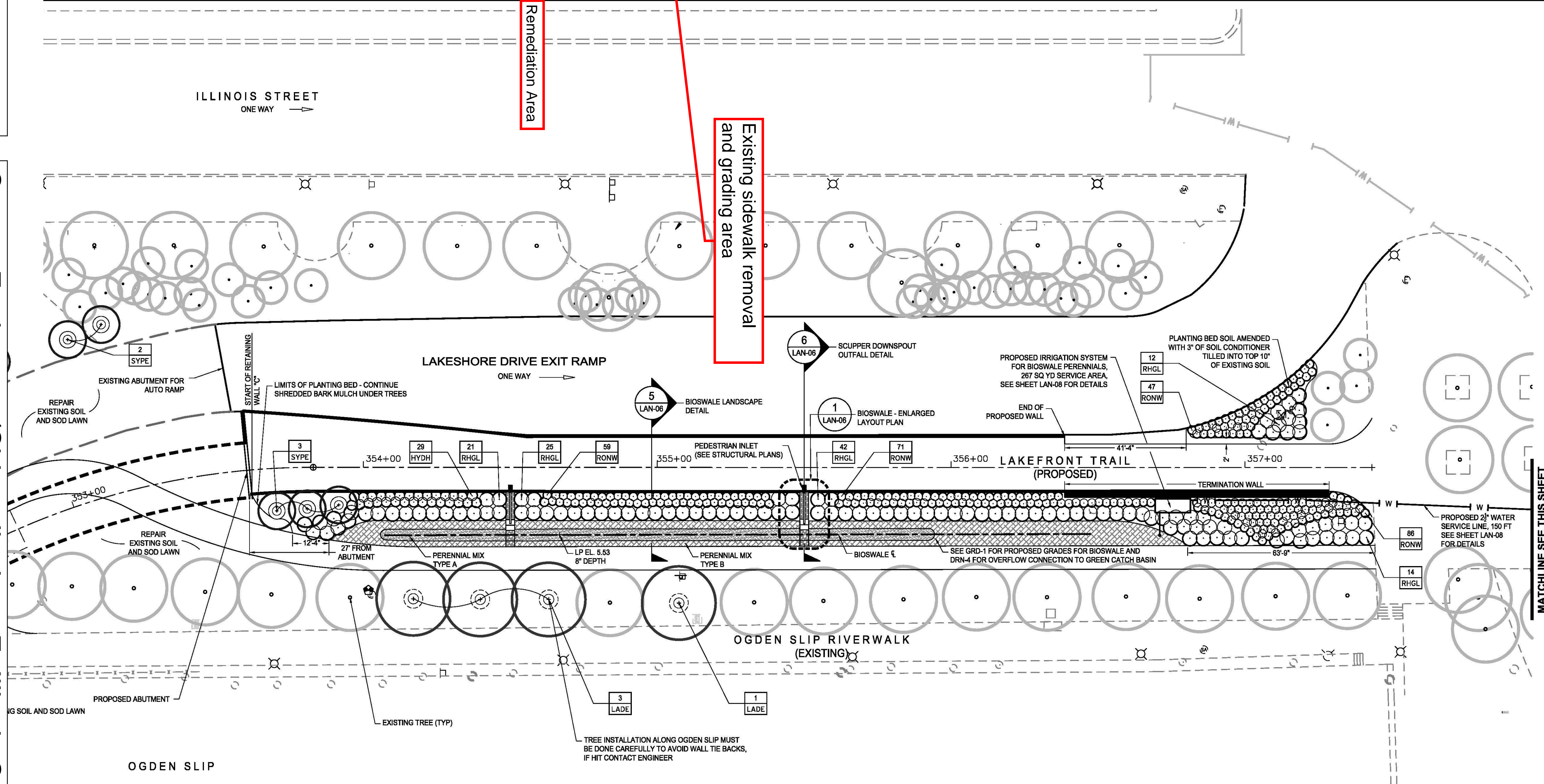
Table 3. Tree Wells

<u>Section #</u>	<u>Depth</u>	<u>Readings (CPM)</u>
14	0"	previously surveyed
	18"	7,100 - 8,200
	24"	7,400 - 10,000
15	0"	previously surveyed
	18"	7,600 - 10,000
	24"	8,900 - 11,500
16	0"	previously surveyed
	18"	7,700 - 10,000
	24"	8,500 - 11,800
17	0"	previously surveyed
	18"	13,100 - 16,100
	24"	3,300 - 4,500 (shielded)
18	0"	previously surveyed
	18"	11,000 - 12,400
	24"	13,100 - 14,000
19	0"	previously surveyed
	18"	8,300 - 9,000
	24"	9,000 - 10,800
20	0"	previously surveyed
	18"	8,300 - 9,900
	24"	11,000 - 12,400



MATCHLINE SEE THIS SHEET

Survey Equipment (Sidewalk along E. Illinois St.)
Ludlum 2221 S/N : 172039
Probe 2x2 NaI S/N : 174496
unshielded: 17,270 cpm
shielded: 6,175 cpm
background: 7,600 cpm



PROPOSED LANDSCAPE PLAN

UNIT	QUANTITY	COMMENT
CU YD	200	QUANTITY SPECIFIED FOR BOTH SHEETS LAN-04 / LAN-05
SQ YD	141	QUANTITY SPECIFIED FOR BOTH SHEETS LAN-04 / LAN-05
SQ YD	3280	QUANTITY SPECIFIED FOR BOTH SHEETS LAN-04 / LAN-05
CU YD	33	QUANTITY SPECIFIED FOR BOTH SHEETS LAN-04 / LAN-05
EACH	1	QUANTITY SPECIFIED FOR BOTH SHEETS LAN-04 / LAN-05
EACH	1	QUANTITY SPECIFIED FOR BOTH SHEETS LAN-04 / LAN-05
CU YD	190	SEE LAN-06 FOR DETAILED BILL OF MATERIALS FOR 'AY ITEM
EACH	2	SEE LAN-06 FOR DETAILED BILL OF MATERIALS FOR 'AY ITEM
EACH	1	QUANTITY AS SPECIFIED ON SHEET LAN-04, DETAIL 'N SHEET LAN-08
EACH	1	QUANTITY AS SPECIFIED ON SHEET LAN-04, DETAIL 'N SHEET LAN-08
FEET	150	QUANTITY AS SPECIFIED ON SHEET LAN-04, DETAIL 'N SHEET LAN-08
EACH	1	QUANTITY AS SPECIFIED ON SHEET LAN-04, DETAIL 'N SHEET LAN-08
SQ YD	267	QUANTITY AS SPECIFIED ON SHEET LAN-04, DETAIL 'N SHEET LAN-08
LSUM	1	QUANTITY AS SPECIFIED ON SHEET LAN-04, DETAIL 'N SHEET LAN-08
LSUM	1	QUANTITY AS SPECIFIED ON SHEET LAN-04, DETAIL 'N SHEET LAN-08
LSUM	1	QUANTITY AS SPECIFIED ON SHEET LAN-04, DETAIL 'N SHEET LAN-08
EACH	30	QUANTITY AS SPECIFIED ON SHEET LAN-04, DETAIL 'N SHEET LAN-08

BILL OF MATERIALS (CONTINUED)

TREE INSTALLATION							
CANOPY TREES							
CODE	UNIT	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	COND	COMMENT
LADE	EACH	4	LARIX DECIDUA	EUROPEAN LARCH	4 IN.	BB	SPECIMEN QUALITY
ORNAMENTAL TREES							
MADP	EACH	6	MALUS 'DREAM PINK'	DREAM PINK CRABAPPLE	7 FT.	BB	MULTI-STEM
SYPE	EACH	20	SYRINGA PEKINENSIS	PEKING LILAC TREE	8 FT.	BB	MULTI-STEM
PLANT INSTALLATION							
SHRUBS							
VXCB	EACH	21	VIBURNUM CARLESII X MACROCEPHALUM 'CAYUGA'	CYUGA KOREAN SPICE VIBURNUM	36 IN.	CONT.	42" O.C. SPACING
HYDH	EACH	46	HYDRANGEA PANICULATA 'D'HARUMA'	D'HARUMA HYDRANGEA	30 IN.	CONT.	30" O.C. SPACING
HYQP	EACH	29	HYDRANGEA QUERCIFOLIA 'PEE WEE'	PEE WEE DWARF OAK LEAF HYDRANGEA	18 IN.	CONT.	30" O.C. SPACING
RHGL	EACH	114	RHUS AROMATICA 'GRO LOW'	GRO LOW FRAGRANT SUMAC	18 IN.	CONT.	54" O.C. SPACING
ROSE	EACH	301	ROSA RUGOSA 'NEARLY WILD'	NEARLY WILD ROSE	18 IN.	CONT.	30" O.C. SPACING
PERENNIAL MIX TYPE A							
EUPU	EACH	122	ERIGONUM PURPUREUM	PURPLE JOE PYE WEED	1 GAL.	CONT.	18" O.C. SPACING
LISP	EACH	122	LIPICATA	DENSE BLAZING STAR		CONT.	18" O.C. SPACING
VEFA	EACH	122	IA FASCICULATA	COMMON IRONWEED		CONT.	18" O.C. SPACING
PERENNIAL MIX TYPE B							
SOSP	EACH	263	IO SPECIOSA	SHOWY GOLDENROD		CONT.	18" O.C. SPACING
TROH	EACH	263	CANTIA OHIENSIS	OHIO SPIDERWORT		CONT.	18" O.C. SPACING
ZIAU	EACH	263	REA	GOLDEN ALEXANDER		CONT.	18" O.C. SPACING

KEY

- PROPOSED TREES
- PROPOSED SHRUBS
- EXISTING TREES TO REMAIN
- PERENNIAL MIX TYPE A
- PERENNIAL MIX TYPE B
- MULCHED / NON-PLANTED AREAS

GENERAL NOTES:

MAINTAIN EXISTING GRADE AROUND TREES. DO NOT DISTURB ROOT ZONE. MAINTAIN AND PROVIDE POSITIVE DRAINAGE IN ALL PLANTING AREAS

THE SOIL FOR THE SHRUB PLANTING BEDS OUTSIDE OF THE BIOSWALE WILL BE AMENDED WITH SOIL CONDITIONER. 3 INCHES OF SOIL CONDITIONER TO BE TILLED INTO TOP 10 INCHES OF EXISTING SOIL.

NO.	BY	DATE	DESCRIPTION
REVISIONS			
LAKEFRONT TRAIL IMPROVEMENT FROM JANE ADDAMS PARK TO OGDEN SLIP			
PROPOSED LANDSCAPE PLAN			
NAVY PIER ACCESS RAMP			
CONSULTANT			
HNTB			
CITY OF CHICAGO			
DEPARTMENT OF TRANSPORTATION			
BUREAU OF BRIDGES & TRANSIT			
DRAWN	JLS/SAH	SHEET NO.	LAN-04
CHECKED	JLS/SAH		
APPROVED	JLS/SAH		
DATE	10/19/12		
SCALE	1:20		4 OF 9 SHEETS
CONTRACT NO.	14815	PROJECT NO.	44867

Figure 9

Ogden Slip Flyover
Survey Readings - Tree Wells and Sidewalk Removal
(all survey readings are unshielded unless specified)

Table 1. Tree Wells

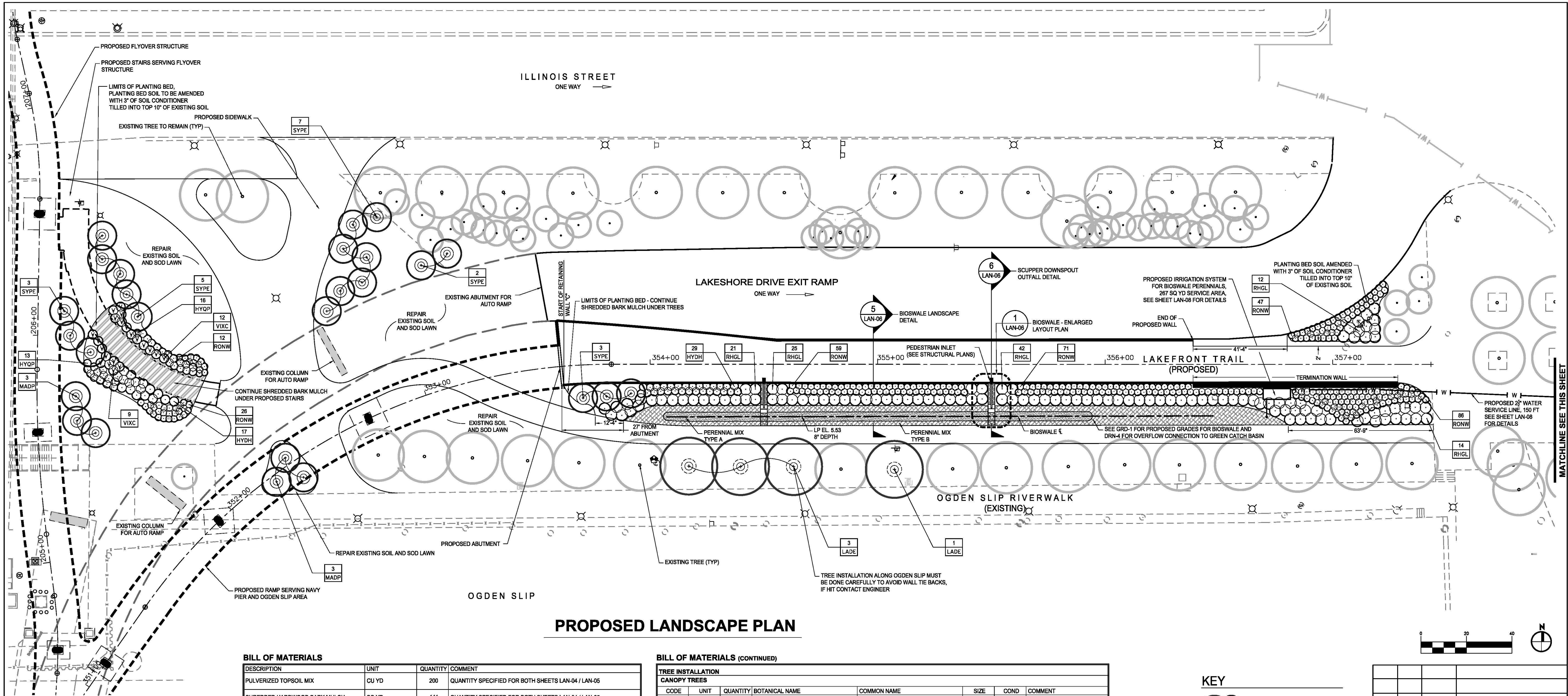
Section #	Depth	Readings (CPM)
1	0"	surveyd March, 2014
	18"	9,000 - 11,200
2	0"	surveyd March, 2014
	18"	8,700 - 10,000
3	0"	surveyd March, 2014
	18"	9,800 - 12,900
4	0"	surveyd March, 2014
	18"	10,000 - 12,500
5	0"	surveyd March, 2014
	18"	8,800 - 10,800
6	0"	surveyd March, 2014
	18"	7,600 - 9,100
7	0"	surveyd March, 2014
	18"	9,900 - 13,000
8	0"	surveyd March, 2014
	18"	11,000 - 13,200
9	0"	surveyd March, 2014
	18"	9,700 - 12,900
10	0"	surveyd March, 2014
	18"	8,900 - 11,100
11	0"	surveyd March, 2014
	18"	9,100 - 10,800
12	0"	surveyd March, 2014
	18"	11,000 - 13,500
13	0"	surveyd March, 2014
	18"	5,000 - 7,300

Table 2. Concrete Removal

Section #	Depth	Readings (CPM)
1	0" (asphalt)	-
	6"	3,700 - 5,400
2	0" (asphalt)	-
	6"	3,600 - 4,700

Table 3. Sidewalk Slab Removal

Section #	Depth	Readings (CPM)
1	6"	5,200-8,400
2	6"	6,100-9,600
	12" (curb)	6,000-7,200
3	6"	1,200-3,300 (shielded)
	12" (curb)	1,900-4,200 (shielded)
4	6"	1,900-4,000 (shielded)
5	6"	1,900-3,300 (shielded)
	12" (curb)	1,600-2,200 (shielded)
6	6"	2,000-3,000 (shielded)



PROPOSED LANDSCAPE PLAN

BILL OF MATERIALS

DESCRIPTION	UNIT	QUANTITY	COMMENT
PULVERIZED TOPSOIL MIX	CU YD	200	QUANTITY SPECIFIED FOR BOTH SHEETS LAN-04 / LAN-05
SHREDDED HARDWOOD BARK MULCH	SQ YD	141	QUANTITY SPECIFIED FOR BOTH SHEETS LAN-04 / LAN-05
SODDING, SALT TOLERANT	SQ YD	3280	QUANTITY SPECIFIED FOR BOTH SHEETS LAN-04 / LAN-05
SOIL CONDITIONER, 3 INCH	CU YD	33	QUANTITY SPECIFIED FOR BOTH SHEETS LAN-04 / LAN-05
TREE PRUNING	EACH	1	QUANTITY SPECIFIED FOR BOTH SHEETS LAN-04 / LAN-05
VERTICAL MULCHING	EACH	1	QUANTITY SPECIFIED FOR BOTH SHEETS LAN-04 / LAN-05
GROWING MEDIUM, 24 INCH	CU YD	190	SEE LAN-06 FOR DETAILED BILL OF MATERIALS FOR PAY ITEM
SCUPPER DOWNSPOUT OUTFALL	EACH	2	SEE LAN-06 FOR DETAILED BILL OF MATERIALS FOR PAY ITEM
WATER TAP, 2 INCH	EACH	1	QUANTITY AS SPECIFIED ON SHEET LAN-04, DETAILS ON SHEET LAN-08
WATER VALVE ASSEMBLY, 2 INCH	EACH	1	QUANTITY AS SPECIFIED ON SHEET LAN-04, DETAILS ON SHEET LAN-08
WATER METER IN VAULT, 2 INCH	EACH	1	QUANTITY AS SPECIFIED ON SHEET LAN-04, DETAILS ON SHEET LAN-08
WATER SERVICE LINE, 2 1/2 INCH	FEET	190	QUANTITY AS SPECIFIED ON SHEET LAN-04, DETAILS ON SHEET LAN-08
BACKFLOW PREVENTER (RP2), 2 INCH	EACH	1	QUANTITY AS SPECIFIED ON SHEET LAN-04, DETAILS ON SHEET LAN-08
IRRIGATION SYSTEM	SQ YD	267	QUANTITY AS SPECIFIED ON SHEET LAN-04
IRRIGATION SYSTEMS FALL SHUTDOWN	LSUM	1	QUANTITY AS SPECIFIED ON SHEET LAN-04
IRRIGATION SYSTEMS SPRING STARTUP	LSUM	1	QUANTITY AS SPECIFIED ON SHEET LAN-04
IRRIGATION SYSTEMS INSPECTION	LSUM	1	QUANTITY AS SPECIFIED ON SHEET LAN-04
TREE IRRIGATION BAGS	EACH	30	

BILL OF MATERIALS (CONTINUED)

TREE INSTALLATION							
CANOPY TREES							
CODE	UNIT	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	COND	COMMENT
LADE	EACH	4	LARIX DECIDUA	EUROPEAN LARCH	4 IN.	BB	SPECIMEN QUALITY
ORNAMENTAL TREES							
MADP	EACH	6	MALUS 'DREAM PINK'	DREAM PINK CRABAPPLE	7 FT.	BB	MULTI-STEM
SYPE	EACH	20	SYRINGA PEKINENSIS	PEKING LILAC TREE	8 FT.	BB	MULTI-STEM
PLANT INSTALLATION							
SHRUBS							
VIXC	EACH	21	VIBURNUM CARLESII X MACROCEPHALUM 'CAYUGA'	CYUGA KOREAN SPICE VIBURNUM	36 IN.	CONT.	42" O.C. SPACING
HYDH	EACH	46	HYDRANGEA PANICULATA 'DHARUMA'	DHARUMA HYDRANGEA	30 IN.	CONT.	30" O.C. SPACING
HYQP	EACH	29	HYDRANGEA QUERCIFOLIA 'PEE WEE'	PEE WEE DWARF OAK LEAF HYDRANGEA	18 IN.	CONT.	30" O.C. SPACING
RHGL	EACH	114	RHUS AROMATICA 'GRO LOW'	GRO LOW FRAGRANT SUMAC	18 IN.	CONT.	54" O.C. SPACING
RONW	EACH	301	ROSA RUGOSA 'NEARLY WILD'	NEARLY WILD ROSE	18 IN.	CONT.	30" O.C. SPACING
PERENNIAL MIX TYPE A							
EUPU	EACH	122	EUPATORIUM PURPUREUM	PURPLE JOE PYE WEED	1 GAL.	CONT.	18" O.C. SPACING
LISP	EACH	122	LIATRIS SPICATA	DENSE BLAZING STAR	1 GAL.	CONT.	18" O.C. SPACING
VEFA	EACH	122	VERNONIA FASCICULATA	COMMON IRONWEED	1 GAL.	CONT.	18" O.C. SPACING
PERENNIAL MIX TYPE B							
SOSP	EACH	263	SOLIDAGO SPECIOSA	SHOWY GOLDENROD	1 GAL.	CONT.	18" O.C. SPACING
TROH	EACH	263	TRADESCANTIA OHIENSIS	OHIO SPIDERWORT	1 GAL.	CONT.	18" O.C. SPACING
ZIAU	EACH	263	ZIZIA AUREA	GOLDEN ALEXANDER	1 GAL.	CONT.	18" O.C. SPACING

KEY

- PROPOSED TREES
- PROPOSED SHRUBS
- EXISTING TREES TO REMAIN
- PERENNIAL MIX TYPE A
- PERENNIAL MIX TYPE B
- MULCHED / NON-PLANTED AREAS

GENERAL NOTES:

MAINTAIN EXISTING GRADE AROUND TREES. DO NOT DISTURB ROOT ZONE. MAINTAIN AND PROVIDE POSITIVE DRAINAGE IN ALL PLANTING AREAS

THE SOIL FOR THE SHRUB PLANTING BEDS OUTSIDE OF THE BIOSWALE WILL BE AMENDED WITH SOIL CONDITIONER. 3 INCHES OF SOIL CONDITIONER TO BE TILLED INTO TOP 10 INCHES OF EXISTING SOIL.

NO.	BY	DATE	DESCRIPTION
REVISIONS			
LAKEFRONT TRAIL IMPROVEMENT FROM JANE ADDAMS PARK TO OGDEN SLIP			
PROPOSED LANDSCAPE PLAN			
NAVY PIER ACCESS RAMP			
CONSULTANT			
HNTB			
CITY OF CHICAGO			
DEPARTMENT OF TRANSPORTATION			
BUREAU OF BRIDGES & TRANSIT			
DRAWN	JLS/SAH	SHEET NO.	
CHECKED	JLS/SAH	LAN-04	
APPROVED	JLS/SAH		
DATE	10/19/12		
SCALE	1:20	4 OF 9 SHEETS	
CONTRACT NO.	14815	PROJECT NO. 44867	