



PERMIT REPORT

To: Board of Managers

From: Heidi Quinn, Permitting Technician

Date: November 8, 2018

Re: Permit 18-625: Minnehaha Creek FEMA Streambank Repairs

Recommendation:

Approval of MCWD permit application on the following conditions:

1. Identification of the contractor responsible for implementing the erosion control plan.
2. Submission of a construction schedule.

And stipulation:

1. Submission of an as-built survey upon project completion.
2. No activity affecting the bed of a watercourse may be conducted between March 15th and June 15th.

Background:

The Minnehaha Creek Watershed District (MCWD), in partnership with the Minneapolis Park and Recreation Board (MPRB), has submitted a permit application for the repair and stabilization of streambanks along Minnehaha Creek in the City of Minneapolis. The repairs and stabilization are proposed for areas of creek bank that were damaged by flooding in 2014. The application was completed on October 29th, 2018 and a public notice was sent to property owners within 600 feet of the project on October 25th, 2018. All land on which work will take place is owned by the MPRB; MCWD is undertaking the work on the MPRB land through a Memorandum of Understanding for the project entered by the parties on September 6th, 2018 (attachment 2).

Through an engineering screening and coordination with the MPRB and the City of Minneapolis, 10 sites were identified that required repair and stabilization, to reduce erosion and protect the stream channel from future flood damage. While the work will take place at multiple distinct locations, the applicant has requested approval of a single permit; joint analysis of the work at the 10 sites provides efficiency without diminishing the effectiveness or applicability of the MCWD rules.

The project triggers the District's Erosion Control, Floodplain Alteration, and Shoreline and Streambank Stabilization rules. The Applicant has also requested an exception from Section 3(a) and 3(b) of the District's Floodplain Alteration rule. The below table summarizes the project site identification number, proposed work, and applicable rules.



Project Site	Work Proposed	Applicable Rule(s)
2	Class V Trail Repair	Erosion Control, Floodplain Alteration
5	Hard Armor Stabilization	Erosion Control, Streambank Stabilization, Floodplain Alteration
8	Class V Trail & Bioengineering	Erosion Control, Streambank Stabilization, Floodplain Alteration
9	Replacement of Riprap over Existing Retaining Wall	Streambank Stabilization
10	Salvage and Repair of Limestone slabs and Stabilize Bank	Erosion Control, Streambank Stabilization – Public Access, Floodplain Alteration
11	Salvage and Repair of Limestone Stairs	Streambank Stabilization- Public Access
13	Class V Trail Repair	Erosion Control
26	Bioengineered Stabilization	Erosion Control, Streambank Stabilization, Floodplain Alteration
30	Hard Armor Stabilization	Erosion Control, Streambank Stabilization, Floodplain Alteration
34	Bioengineered Stabilization	Erosion Control, Streambank Stabilization, Floodplain Alteration

Table 1: Proposed Work Summary per Plan Set (attachment 3)

The application is before the board of managers because of the exception request, and in keeping with MCWD policy directing board review and determination of permits for MCWD projects.

District Rule Analysis:

Erosion Control Rule

The District’s Erosion Control Rule is applied to projects proposing 5,000 square feet of disturbance or 50 cubic yards of fill, excavation, or stockpiling on-site. The Applicant is proposing a total of 13,068 square feet and 93 cubic yards of disturbance, therefore the rule is triggered. In accordance with the rule provisions, the Applicant has submitted an erosion control plan which identifies erosion and sediment control best management practices. These include a rock construction entrance, silt fence down gradient of disturbed areas, silt curtain locations should winter conditions not hold, and inlet protection where necessary. Additionally, a vegetative stabilization plan including the incorporation of six-inches of topsoil into underlying soils prior to final stabilization has also been provided.



Identification of the responsible contractor and construction schedule are listed as recommended conditions of approval. Upon satisfaction of the recommended condition, the project meets the Erosion Control Rule.

Floodplain Alteration

The Floodplain Alteration Rule is triggered whenever land altering activity is proposed beneath the 100-year high water elevation of any waterbody. The Applicant is proposing disturbance in the floodplain of Minnehaha Creek, at 6 of the 10 project sites; 2, 5, 8, 10, 30 and 34, therefore the rule is triggered (see attached plans, attachment 2).

Section 3(a) of the rule requires the creation of floodplain storage capacity to be created for any fill placed below within the floodplain to ensure that the fill shall not cause a net decrease in storage capacity below the projected 100-year high water elevation of a waterbody or watercourse (per section 3(b)). The Applicant has requested an exception from providing compensatory storage for fill at 6 projects sites, totaling 115.5 cubic yards of floodplain fill as described in table 2 below. The Exception analysis is provided at the end of the permit report.

Project Site	Work Proposed	Estimated Fill (cy)
2	Class V Trail Repair	19.5
5	Hard Armor Stabilization	5
8	Class V Trail & Bioengineering	50
10	Outfall and Bank Stabilization	3
30	Bioengineered Stabilization	1
34	Bioengineered Stabilization	37
Total:		115.5

Table 2: Proposed fill below the 100-year high water elevation

Section 3(b) of the rule requires no increase in the 100-year flood elevation of a watercourse. While the Applicant is proposing floodplain fill associated with the stabilization and repair practices as shown in the attached plans, information has been submitted demonstrating no change in the 100-year flood elevation based on the estimated lateral recession analysis (numerically details the amount of streambank material lost laterally to the creek on an annual basis; and, compares this to the amount added to identify any difference in water dispersion) and a FEMA Damage Report, attachment 4, (specifically detailing damage to Minnehaha Creek after the 2014 floods). As demonstrating a no increase in 100-year elevation typically requires the creation of compensatory storage, the Applicant has requested an exception to 3(b) for the methodology used to demonstrate no increase in the 100-year elevation of 6 sites on Minnehaha Creek. The Exception analysis is provided at the end of the permit report.



Section 3(c) of the rule states that section 3(a) of this rule does not apply to fill in a waterbasin if the applicant shows that the proposed fill, together with the filling of all other properties on the waterbody to the same degree of encroachment will not cause high water or aggravate flooding on other properties. Because the project involves a watercourse, section 3(c) of the rule does not apply to this project.

Section 3(d) of the rule requires that no new impervious surface be created in the lesser of 25 feet of the centerline of a watercourse or the 10-year floodplain, unless that surface is an integral component of a linear public roadway or trail. All impervious surface within 25 feet of the centerline of the creek is part of the existing trail system (sites 2 and 8), which is undergoing repairs within its existing footprint and not proposing any new or additional impervious surface. The proposed project has met this criteria of the rule.

Section 3(e) of the rule is not applicable, as no ice ridge grading is proposed.

Section 3(f) of the rule requires that the low openings to all structures be a minimum of 2 feet above the 100 year high water elevation. No new buildings are proposed with the project, therefore section 3(f) is not applicable.

Under section 4(h) of the rule, submission of an as-built survey upon project completion is required for any project proposing more than 50 cubic yards of disturbance within the floodplain. Because the proposed project exceeds 50 cubic yards of floodplain disturbance, submission of an as-built survey is required, and has been listed in the recommended stipulations on the permit.

Upon satisfaction of the recommended stipulations, the project will meet the Floodplain Alteration Rule, apart from section 3(a) & 3(b), as noted above, for which the Applicant has requested an Exception.

Shoreline and Streambank Stabilization

The Shoreline and Streambank Stabilization rule regulates alterations and improvements to the banks of watercourses. The project is proposing stabilization of approximately 480 linear feet of eroded and damaged creek banks through, bioengineering and hard armoring stabilization techniques at 6 sites, salvage and repair of public access at 2 sites and maintenance of an existing retaining wall at 1 site. The below table 3 summarizes the project sites and applicable rule criteria within the Shoreline and Streambank Stabilization rule.



Project Site	Work Proposed	Applicable Rule Section(s)
5	Hard Armor Stabilization	Section 6- Stabilization & Section 10-Retaining Walls
8	Bioengineering	Section 6- Stabilization
9	Replacement of Riprap over Existing Retaining Wall	Section 10- Retaining Walls
10	Salvage and Repair of Limestone slabs and Bank/Outfall Stabilization	Section 6- Stabilization & Section 11- Other Improvements- Public Access
11	Salvage and Repair of Limestone Stairs	Section 11- Other Improvements- Public Access
26	Bioengineered Stabilization	Section 6- Stabilization
30	Hard Armor Stabilization	Section 6- Stabilization & Section 10- Retaining Walls
34	Bioengineered Stabilization	Section 6- Stabilization

Table 3: Shoreline Stabilization Rule Criteria per Project Site

Site 5, a component of site 10, and site 30 are proposing to replace the hard armor that was in place prior to slope failures in 2014. Sites 5 & 30 are also analyzed under section 10 for retaining walls for a proposed 1:1 slope, additionally site 9 is maintenance of an existing retaining wall analyzed under section 10. Sites 8, 26, and 34 are proposed to utilize bioengineering to stabilize and repair failing slopes, As a portion of the stabilization and slope correction techniques at sites 10 and 11, fieldstone bank blocks, acting as a dual purpose access point to the creek and a stabilization measure prior to being severely damaged by the 2014 floods, will be salvaged and repaired. The bank blocks are considered to be integral to the corridor as they have provided safe and reliable access for recreators. The bank blocks have been analyzed under section 11 of the rule for other improvements.

Stabilization of Creek Banks

Per section 4(a) of the rule, applications for streambank stabilization must complete and report calculations to document bankfull stream velocity and shear stress. The Applicant has submitted calculations documenting the shear stress of 6 project sites which have been summarized in Table 4 below. Based on this information, the Applicant has met section 4(a) of the rule.



Project Site	Max. Vel. (f/s)	Max. Shear (lb/sf)
5	4.4	4
8	4.5	3.5
10	7.3	5.2
26	4.1	0.8
30	2.9	1.5
34	3	3.3

Table 4: Shear Stress Results

Per section 4(b) of the rule, the proposed stabilization practice must be consistent with the shear stress calculated. The below table 5 summarizes the stabilization practice that corresponds to the shear stress calculation and the Applicant’s proposed stabilization method.

Project Site	Max. Vel. (f/s)	Max. Shear (lb/sf)	Stabilization Practice per Rule	Proposed Stabilization Method	Design Flexibility Requested
5	4.4	4	Bioengineering	Riprap	Yes
8	4.5	3.5	Bioengineering	Bioengineering	No
10	7.3	5.2	Riprap	Riprap	No
26	4.1	0.8	Biological	Bioengineering	Yes
30	2.9	1.5	Biological	Riprap	Yes
34	3	3.3	Bioengineering	Bioengineering	No

Table 5: Shear Stress and Stabilization Method Summary

As noted above, the Applicant’s submittals detail shear stresses of less than 2.5 lbs/sq. ft for sites 26 and 30, which corresponds to the utilization of biological stabilization techniques only. Sites 5, 8, and 34 show shear stresses between 2.5 lbs/sq.ft and 5.0 lbs/sq. ft., which corresponds to the utilization of bioengineering stabilization techniques. Site 10 shows a shear stress greater than 5.0 lbs/sq. ft which corresponds to hard armor riprap. The Applicant has requested Design Flexibility under section 5 of the rule, to utilize hard armoring at sites 5 and 30, and bio-engineering practices at site 26, as they believe the shear stress calculation inaccurately predicts the degree of anticipated erosion. The proposed stabilization method at sites 8, 10, and 34 are in conformance with section 4(b).

Per section 5 of the rule, the District may approve alternative stabilization techniques if the applicant provides sufficient evidence to demonstrate that the proposed stabilization practice represents the minimal impact solution with respect to all other reasonable alternatives. The Applicant has submitted peak flow data obtained from the USGS gage showing that peak flows



at the Hiawatha Station were at 871 cubic feet per second (cfs) on June 19th, 2014 (attachment 5). The District's 2010 XP-SWMM models the 100-year flow at 833 cfs for this location which is used to calculate the shear stress and velocity. Additionally, the Applicant has provided a plan and cross-sections detailing a bioengineering practice for site 26, which encompasses both biological and hard-armoring stabilization techniques, and hard armoring techniques for sites 5 and 30. The bioengineered banks will include a section with hard armoring stabilizing the toe of bank with joint plantings. The hard-armoring at sites 5 and 30 will be constructed of rip-rap meeting section 6(a) of this rule, with the exception to 6(a)(3) as the slope will be at a 1:1 ratio and have been analyzed under section 10 Criteria for Retaining Walls. Due the location of sites 5 and 30 (at straight runs following bends), higher velocities occur during flood flows, creating additional erosive potential, necessitating the use of structural stabilization techniques. Furthermore, biological stabilization at sites 26 and 30 and bioengineering stabilization at site 5 would require 3:1 and no steeper than 2:1 slopes, respectively. To achieve a 3:1-2:1 slope at

these locations (due to existing site conditions) would require re-sloping the existing bank, and result in an increase in channel capacity and hydraulics. Furthermore, re-sloping the banks would result in greater tree removal in a confined urban corridor. The applicant has demonstrated that the use of such practices represents the minimal impact solution with respect to achieving reliable stabilization throughout the creek corridor without overuse of hard-armoring or other structural materials. The hard-armoring used is limited to sites 5 and 30, and a toe boulder at site 26 where its inclusion is proposed to protect the existing trail infrastructure. Based on the analysis of staff and the District Engineer, the Applicant has sufficiently demonstrated the need for bioengineering and hard-armoring and that the proposed stabilization methods represent the minimal impact solution.

Per section 6(a) of the rule, the applicant must demonstrate:

- The installation of structural stabilization practices occurs only where there is a demonstrated need to prevent erosion or to restore eroded shoreline/streambank;
 - The applicant has provided plans, photographs, a FEMA damage report, lateral recession analysis, hydraulic calculations, and a supporting narrative proposing the use of bioengineering and hard-armoring as a stabilization technique. Based on the analysis of staff and the District Engineer, the Applicant has sufficiently demonstrated the need to prevent erosion and protect the streambank.
- Removal of native vegetation within the streambank stabilization zone is limited, especially clear cutting within the access corridor and preservation of native vegetation outside of the access corridor;
 - Based on the applicant's plan set submittal, the re-establishment, repair, and stabilization of the creek bank will minimize removal of trees and incorporate natural vegetation as a component of the bioengineering stabilization. Native vegetation is proposed to be kept to the extent feasible, and tree protection has



been shown on the site plans where applicable. The re-established creek banks will be vegetated to establish a natural vegetative community throughout the corridor, and ensure creek banks and associated slopes are stabilized. Based on staff and the District Engineer's analysis, the Applicant has met this criteria of the rule.

- Stabilization practices shall be installed at a 3:1 slope or flatter where practical or feasible, not to exceed a 2:1 slope. Slopes proposed at greater than a 2:1 slope shall be analyzed under section 10- Criteria for Retaining Walls;
 - The Applicant has submitted cross-sections specifications in the plan set showing bioengineering stabilization methods that will not exceed at 2:1 slopes. The proposed riprap at site 10 will not exceed a 2:1 slope. Sites 5 and 30 have riprap proposed at a 1:1 slope and are analyzed under section 10 for retaining walls in the report. Based on staff and the District Engineer's analysis, the Applicant has met this criteria of the rule.
- Encroachment from streambanks shall be minimized to the greatest extent practical to limit hydraulic impacts.
 - Bank stabilization practices will tie into the existing creek bottoms and will also tie into bank slopes and side slopes as applicable. The Applicant has also submitted lateral recession analysis demonstrating that no hydraulic impacts will occur as a result of the stabilization practices. This criteria of the rule has been met.
- Stabilization practices cannot reduce the cross-sectional area of the channel nor result in a net increase in the flood stage upstream or at the site of the streambank stabilization practice unless it can be demonstrated to not exacerbate high-water conditions;
 - The Applicant has submitted plans, cross-sections, hydraulic calculations, and a lateral recession analysis that details the cross-section of the creek in relation to the proposed stabilization practices. Based on these submittals, staff and the District Engineer have concluded that the stabilization practices implemented on the channel banks do not reduce the channel's cross-sectional area from the pre-flood conditions. Additionally, staff and the District Engineer have determined that the neither the flood stage nor high-water conditions will be exacerbated based on the analysis the Applicant has submitted. The methodology to demonstrate no rise in the floodstage is discussed under the Exception analysis of the permit report.
- Streambank stabilization practices shall conform to the natural alignment of the bank;
 - The stabilization practices utilized are proposed as repairs to the streambank, which have eroded significantly since the flood events in 2014. The Applicant has supplied thorough documentation via the FEMA Damage Report of the previous extent of streambank, the documented damages, and the approximate quantities needed to restore the areas. The proposed project will restore the extent



of the previous streambank, following its natural alignment, and provide additional flood and erosion resiliency. Based upon the analysis of the District Engineer and staff, the Applicant has met this criteria of the rule.

- The design shall reflect the engineering properties of the underlying soils and any soil corrections or reinforcements. For a streambank, design shall conform to engineering principles for the hydraulic behavior of open-channel flow;
 - The Applicant has submitted plans, cross-sections, and a lateral recession analysis to demonstrate conformance with this criteria of the rule. Based on staff and the District Engineer's analysis of the submittals, the streambank repair and stabilization will be conducted such that the properties of the soils throughout the creek bed and banks are reflected in the design. Further, staff and the District Engineer verified via the submitted information that the design conforms to the hydraulic behavior of open-channel flow. Based on staff and the District Engineer's analysis, the Applicant has met this criteria of the rule.
- For sites involving aquatic plantings or removals, a separate Aquatic Plant Management Permit shall be obtained from the DNR, when applicable;
 - No aquatic plant management is proposed, therefore the criteria is not applicable.
- Any work below the OHW shall be encircled by a floatation sediment curtain.
 - Based on the plans and narrative supplied by the Applicant, the proposed stabilization will occur during the winter months to ensure frozen conditions and the minimization of suspended sediment. A plan has also been developed to incorporate floating silt curtain and other erosion prevention measures around the disturbed stream area in the event that the water column is not entirely frozen. Staff and the District Engineer have determined that this criteria of the rule has been met.

In summary, the Applicant has demonstrated, and staff and the District Engineer concur that applicable aspects of section 6(a), apart from the requested exception for the methodology used to demonstrate no increase in the 100-year floodstage, of the rule have been met.

Per section 6(b) of the rule, the applicant must meet the following criteria for bioengineering techniques:

- Live plantings incorporated into the shoreline or bank shall be native aquatic and/or native upland vegetation known to occur in the North Central Hardwood Forest eco-region of Minnesota;
 - The Applicant has submitted plan specification that outline the vegetation to be utilized within the bioengineering stabilization practice. All species are native and appropriate to the conditions. Based on the information submitted, staff and the District Engineer's analysis, the Applicant has met this criteria of the rule.



- Vegetative treatments shall be installed in accordance with the Natural Resource Conservation Service “Engineering Field Handbook Chapter 16”
 - The proposed shoreline stabilization, as shown in the plan set, is designed in accordance with the referenced resource. The Applicant has met this criteria of the rule.
- If wave barriers are utilized, they shall be located within the 3 foot water depth or less and may not create obstruction to navigation. Wave barriers shall be removed within 2 years of installation.
 - No wave barriers are proposed as part of this project, therefore, this criteria of the rule is not applicable.
- Bioengineered stabilization also must comply with the criteria in 6(c)(1-3) and (5).
 - This has been analyzed below.

Per section 6(c) of the rule, the applicant must meet the following criteria for structural stabilization:

- Hard-armoring inert material, such as riprap, shall be considered wetland fill only if proposed to be placed within an area identified as wetland.
 - Based on the plans, cross-sections, wetland materials, and narrative submitted by the Applicant, staff and the District Engineer have determined that no hard-armoring will be placed within a wetland, therefore, the Applicant has met this criteria of the rule.
- Riprap shall extend no higher than the top of the bank, or two feet above the 100-year high water elevation, whichever is lower;
 - Per the plans and cross-sections submitted by the Applicant, staff and the District Engineer have determined that hard-armoring stabilization practices will be placed at the top of the bank, below the 100-year flood elevation of the channel. Based upon this analysis, the Applicant has met this criteria of the rule.
- Riprap materials shall be durable stone meeting the size and gradation requirements of MnDOT Class III or IV riprap. Toe boulders shall be at least 50% buried and may be as large as 30 inches in diameter.
 - Per the plans, cross-sections, and specifications submitted by the Applicant, staff and the District Engineer have determined that the materials utilized for hard-armoring meet the criteria for MnDOT Class III riprap, and all toe boulders are anchored at least 50% in the underlying substrate. Based upon this analysis, the Applicant has met this criteria of the rule.
- A transitional granular filler meeting requirements of MnDOT 3601.B, at least 6 inches in depth, shall be placed between the native shoreline and the riprap to prevent erosion of fine grained soils. A geotextile filter fabric meeting the requirements of MnDOT 3733 shall be placed beneath the granular filler where appropriate.



- Per the plans, cross-sections, and specifications submitted by the Applicant, staff and the District Engineer have determined that the granular filler and geotextile fabric meet the requirements and specifications of MnDOT 3601.B and MnDOT 3733. Based upon this analysis, the Applicant has met this criteria of the rule.
- Structural stabilization practices, including riprap, are recommended to include plantings between individual boulders or native upland plantings to retard runoff and prevent erosion wherever feasible and practical.
 - Based on the plans, cross-sections, and specifications submitted by the Applicant, live-stakings of native plantings will be included upland and between individual boulders to further reduce erosion caused by runoff and streamflow at sites 8, 26, & 34. Based upon this analysis, the Applicant has met this criteria of the rule.

In summary, the Applicant has demonstrated, and staff and the District Engineer concur, that all applicable aspects of section 6(b) and (c) of the rule have been met.

Section 8(a-d), and 9(a-c) of the rule are not applicable, as no sand blankets are proposed with the project.

Section 10, criteria for retaining walls is applicable for any project proposing a stabilization methods that exceeds a 2:1 slope. Sites 5, 9, and 30 propose hard-armoring stabilization at a 1:1 slope, therefore this section of the rules is applicable.

Per section 10(a), a new retaining wall, or repair/reconstruction of an existing retaining wall that increases floodplain encroachment beyond that required by technically sound and accepted repair/reconstruction methods, is permitted only pursuant to a variance or an exception under the District Variance Rule. The applicant must demonstrate that there is no adequate stabilization

alternative. Upon review by staff and the District Engineer, the proposed hard armoring stabilization at sites 5, 9, and 30 do not propose to increase floodplain encroachment beyond the technically sound and accepted engineering principals required for the bank stabilization, negating the need for an exception or variance to the criteria.

Per section 10(b), wooden seawalls and/or steel sheetpiling retaining walls shall comply with accepted engineering principles. The proposed stabilization methods are hard armor riprap and do not include wood seawalls nor sheetpiling, therefore section 10(b) is not applicable to the project.

Per section 10(c), the applicant shall submit a structural analysis prepared by a professional engineer registered in the State of Minnesota, in the practice of civil engineering, showing that the wall will withstand expected ice and wave action and earth pressures. The applicant has submitted plans and cross-sections prepared by a registered engineer in the State of Minnesota that demonstrate that the hard armoring stabilization is in conformance with technically sound



and accepted engineering principals. The District Engineer has confirmed that the proposed stabilization will withstand the velocity and shear stress of the creek. Ice, wave, and earth pressures were not analyzed as ice and wave pressures are applicable to shorelines and not streambanks. Furthermore, the hard armoring at 1:1 slopes will be less than 2 feet high, it is a general accepted engineering practice that earth pressure are analyzed for retaining walls 4 feet and greater in height, therefore there is no earth pressure analysis that is applicable to the project. The District Engineer has determined that the requirements of 10(c) have been met.

Per section 10(d), the applicant shall submit a survey prepared by a registered land surveyor locating the finished wall and shall file a certificate of survey with the District. Submission of an as-built survey is listed as a recommended stipulation.

In summary, the proposed hard armoring stabilization proposed at a 1:1 slope at sites 5, 9, and 30 meet the criteria for retaining walls.

Per section 11 of the rule, boat ramps and other shoreline improvements must comply with accepted engineering principles as follows:

- Boat ramps and other similar improvements shall not be allowed in riparian shoreline areas unless the applicant demonstrates that no feasible alternative riparian access is available, that aquatic habitat and water quality impacts are minimized;
- Installation of boat ramps shall involve placement of no more than 50 cubic yards of inert, clean material, and the maximum width of shoreline disturbance shall be 15 feet unless the facility is a commercial marina or public launch facility that requires a greater width; and
- Materials utilized for construction of boat ramps or other similar improvements shall be safe and cause no adverse environmental impacts; the improvement shall be of sound design and construction so that the improvement is reasonably expected to be safe and effective.

As noted in the narrative of the Shoreline and Streambank Stabilization section of this report, field stone bank blocks serving as recreational access points are proposed to be repaired in like kind as part of this project. Based upon the plans, cross-sections, and detail sheets provided by the Applicant, the access points will be salvaged and reset with vegetation borders, with an approximate slope of 2:1. As noted in the narrative provided by the Applicant, the access points have served a dual purpose in stabilizing the banks of the creek, and provide safe access to paddlers and tubers that utilize the creek for recreational purposes. Based on the analysis of staff and the District Engineer, repair of the access points proposed are permitted as there are no feasible or prudent alternatives available that minimize aquatic habitat and water quality impacts, and provide stabilization to the banks of the creek. Further, based on the details and cross-sections supplied by the Applicant, the access points will utilize existing, salvaged materials that minimize impacts to the streambank, comprise less than a total of 50 cubic yards of clean



material, will comprise a width of less than 15 feet, cause no environmental degradation, and adhere to sound engineering principles, demonstrating they are both safe and effective. Based on staff and the District Engineer's analysis, the applicant has met this criteria of the rule.

Based upon the analysis outlined above, the Applicant has met all applicable sections of the Shoreline and Streambank Stabilization Rule.

Exception

The Variance and Exception Rule allows the Board of Managers to grant exceptions from a provision of the rules on a determination that the proposed application will achieve a greater degree of water resource protection than strict compliance with the provision. The Applicant has requested an exception from the Floodplain Alteration rule, sections 3(a) for providing compensatory storage for fill within the 100-year floodplain and 3(b) for the methodology used to demonstrate no increase in the 100-year floodstage of a waterbody or watercourse.

The stated goal of the proposed project is to repair and stabilize eroded streambank in response to the 2014 flood events, and provide additional flood resiliency to the area. The Applicant is proposing to utilize VRSS (bioengineering technique) and hard armoring in order to accomplish these goals. Per the proposal, floodplain fill is a component of both stabilization applications to tie practices into the remaining native streambank, provide native vegetation, minimize tree removal and restore eroded areas to the extent of pre-flood conditions. To provide clarity, floodplain fill, as it appears throughout this section, refers to material that is placed below the 100-year flood elevation of Minnehaha Creek. Since District rules provide no time frame in which to consider a previously existing condition (ex. pre-flood), material utilized to replace eroded streambank as a result of the 2014 flood is considered floodplain fill in the strictest sense. Strict compliance with the rule would result in additional grading to the banks of the creek to create compensatory storage (resulting in changes to hydraulic capacity), resulting in greater disturbance to the creek, and require additional tree removal in an urban corridor. The majority of the fill is associated with bioengineering stabilization methods to ensure the establishment of native vegetation along the bank, which comports with the spirit of the Streambank Stabilization rule as outlined in the rules, 'intent':

- Preserve the natural appearance of shoreline and streambank areas;
- Encourage and foster bioengineering, landscaping and preservation of natural vegetation as preferred means of stabilizing shorelines and streambanks;
- Assure that improvement of shoreline and streambank areas to prevent erosion complies with accepted engineering principles in conformity with Minnesota Department of Natural Resources construction guidelines; and
- Preserve water quality and the ecological integrity of the riparian environment, including wildlife, fisheries, and recreational water resources.



Table 6 below details the erosion estimated from lateral recession, FEMA’s estimate of total erosion, the estimated amount of fill needed for the stabilization and repair, and the total gain in flood storage capacity from the completed work. As demonstrated via Table 6, the end result from the completed work is a net gain in flood storage space compared to pre-flood conditions. Site 2 was not analyzed under the lateral recession analysis as it is a trail upland from the bank of the creek. Site 26 is shown as no change in flood storage space as existing materials are being reshaped, and no fill will be imported or exported from the project site. Site 34 shows fill volumes greater than the FEMA erosion estimates, however, the fill volumes proposed fall within the projected annual erosion from the lateral recession analysis.

Project Site	Estimated Cut			FEMA Erosion Estimate (cy)	Estimated Fill (cy)	Estimated Net Cut (cy) Based on FEMA Erosion Estimate
	Estimated Lateral Recession (cy)					
2 ⁽¹⁾	n/a		n/a	6	19.5	-13.5
5	3	to	5	33	5	28
8	29	to	49	96	50	46
10	3	to	5	3	3	0
26	21	to	34	N/A	0	0
30	1	to	1	14	1	13
34 ⁽²⁾	43	to	72	25	37	-12
					Total	61.5

⁽¹⁾Note: Although the fill volume is greater than the FEMA Erosion Estimate, the estimate was documented in October of 2014 and has experienced additional erosion as documented with photographs and the plan set. No Lateral Recession was estimated as trail is upland from streambank

⁽²⁾Note: Although the fill volume is greater than the FEMA Erosion Estimate, it is less than the estimate lateral recession volume range.

Table 6: Lateral Recession Analysis Results

While the Applicant is proposing floodplain fill associated with the stabilization and repair practices as shown in the attached plans, information has been submitted demonstrating no change in the 100-year flood elevation from modeled conditions. The Applicant has supplied a lateral recession analysis (numerically details the amount of streambank material lost laterally to the creek on an annual basis; and, compares this to the amount added to identify any difference in water dispersion) and a FEMA Damage Report (specifically detailing damage to Minnehaha Creek after the 2014 floods). The comparative analysis of the lateral recession equations against the FEMA Damage Report (used as field verification of the lateral recession equations) demonstrates that flood storage space will ultimately be created within the creek corridor compared to pre-flood conditions. Because additional flood storage space is available, the



Applicant has proven that no-rise in the 100-year flood elevation will occur and is requesting that the Board approve the methodology provided.

In summary, the Applicant has demonstrated that the placement of floodplain fill is necessary to provide stabilization practices that prevent large-scale lateral recession of the creek banks, prevent water quality degradation, and protect natural resources and pedestrian infrastructure in the creek corridor. Based on the estimated lateral recession equation, FEMA erosion estimate, and the amount of proposed fill to stabilize eroded streambanks as identifies in the FEMA damage report, the applicant has demonstrated that compensatory storage will be created based on the methodology used and that there will be no rise in the 100-year floodstage. Strict compliance with the rule would result in greater site disturbance to the urbanized corridor and would require 115.5 cubic yards of compensatory storage to be created, resulting in no gain in floodplain storage capacity. The project as proposed will provide 61.5 cubic yards of new compensatory storage within the 100-year floodplain of Minnehaha Creek demonstrating a greater degree of natural resource protection than strict compliance with section 3(a) and has demonstrated that there will be no increase in the 100-year floodstage per section 3(b).

Summary:

The Minneapolis Parks and Recreation Board in partnership with the Minnehaha Creek Watershed District have applied for a Minnehaha Creek Watershed District permit for Erosion Control, Floodplain Alteration, Shoreline and Streambank Stabilization rules, and an Exception for the restoration of streambanks in Minnehaha Creek. The proposed project meets the applicable requirements under the applicable rules, upon satisfaction of the recommended conditions & stipulations and approval of the Exception by the Board of Managers. Staff recommends approval of the permit with the conditions & stipulations listed.

Attachments:

1. Water Resources Application Form
2. Memorandum of Understanding
3. Site Plans
4. FEMA Damage Report
5. USGS Gage Graph

18-626

Print Form

WATER RESOURCE PERMIT APPLICATION FORM

Use this form to notify/apply to the Minnehaha Creek Watershed District (MCWD) of a proposed project or work which may fall within their jurisdiction. Fill out this form completely and submit with your site plan, maps, etc. to the MCWD at:
15320 Minnetonka Blvd. Minnetonka, MN 55345.

Keep a copy for your records.

YOU MUST OBTAIN ALL REQUIRED AUTHORIZATIONS BEFORE BEGINNING WORK.

1. Name of each property owner: Minneapolis Park and Recreation Board / MCWD
Mailing Address: 2117 West River Road City: Minneapolis State: MN Zip: 55411
Email Address: _____ Phone: _____ Fax: _____

2. Property Owner Representative Information (not required) (licensed contractor, architect, engineer, etc...)
Business Name: Minnehaha Creek Watershed District Representative Name: Tiffany Schaufler
Business Address: 15320 Minnetonka Blvd City: Minnetonka State: MN Zip: 55345
Email Address: tschaufler@minnehahacreek.org Phone: 952-641-4513 Fax: 952-471-0682

3. Project Address: 10 sites - see attached plan sheets City: _____
State: _____ Zip: _____ Qtr Section(s): _____ Section(s): _____ Township(s): _____ Range(s): _____
Lot: _____ Block: _____ Subdivision: _____ PID: _____

4. Size of project parcel (square feet or acres): _____
Area of disturbance (square feet): 13,068 Volume of excavation/fill (cubic yards): _____
Area of existing impervious surface: _____ Area of proposed impervious surface: _____
Length of shoreline affected (feet): 480 Waterbody (& bay if applicable): Minnehaha Creek

5. Type of permit being applied for (Check all that apply):

- | | |
|--|---|
| <input checked="" type="checkbox"/> EROSION CONTROL | <input type="checkbox"/> WATERBODY CROSSINGS/STRUCTURES |
| <input checked="" type="checkbox"/> FLOODPLAIN ALTERATION | <input type="checkbox"/> STORMWATER MANAGEMENT |
| <input type="checkbox"/> WETLAND PROTECTION | <input type="checkbox"/> APPROPRIATIONS |
| <input type="checkbox"/> DREDGING | <input type="checkbox"/> ILLICIT DISCHARGE |
| <input checked="" type="checkbox"/> SHORELINE/STREAMBANK STABILIZATION | |

6. Project purpose (Check all that apply):

- | | |
|--|--|
| <input type="checkbox"/> SINGLE FAMILY HOME | <input type="checkbox"/> MULTI FAMILY RESIDENTIAL (apartments) |
| <input type="checkbox"/> ROAD CONSTRUCTION | <input type="checkbox"/> COMMERCIAL or INSTITUTIONAL |
| <input type="checkbox"/> UTILITIES | <input type="checkbox"/> SUBDIVISIONS (include number of lots) |
| <input type="checkbox"/> DREDGING | <input type="checkbox"/> LANDSCAPING (pools, berms, etc.) |
| <input checked="" type="checkbox"/> SHORELINE/STREAMBANK STABILIZATION | <input type="checkbox"/> OTHER (DESCRIBE): _____ |

7. NPDES/SDS General Stormwater Permit Number (if applicable): _____

8. Waterbody receiving runoff from site: Minnehaha Creek

9. Project Timeline: Start Date: _____ Completion Date: _____

Permits have been applied for: City County MN Pollution Control Agency DNR COE
Permits have been received: City County MN Pollution Control Agency DNR COE

By signing below, I hereby request a permit to authorize the activities described herein. I certify that I am familiar with MCWD Rules and that the proposed activity will be conducted in compliance with these Rules. I am familiar with the information contained in this application and, to the best of my knowledge and belief, all information is true, complete and accurate. I understand that proceeding with work before all required authorizations are obtained may be subject to federal, state and/or local administrative, civil and/or criminal penalties.

Tiffany Schaufler
Signature of Each Property Owner

10/24/18
Date

Memorandum of Understanding

To support the Integrated Planning of the Minnehaha Creek Subwatershed within Minneapolis

This Memorandum of Understanding (“MOU”) is entered into effective as of the date of the last signature on this document (“Effective Date”) by and between the City of Minneapolis (“City”); the City of Minneapolis acting by and through its Park and Recreation Board (“MPRB”), a body corporate and politic under the laws of the State of Minnesota; and the Minnehaha Creek Watershed District (“MCWD”), a watershed district duly established pursuant to Minnesota Statutes Chapter 103D.

Recitals and statement of purpose

- a. The parties share responsibility for improving environmental quality within the Minnehaha Creek Subwatershed of the City of Minneapolis, and recognize the benefit of working in close partnership at the intersection of the vision and mission of the respective organizations.
 - i. The Minneapolis Park and Recreation Board exists to provide places and recreation opportunities for all people, and is committed to protecting and improving its natural resources parkland and recreation opportunities for current and future generations.
 - ii. The Minnehaha Creek Watershed District has articulated a vision of a landscape of vibrant communities where the natural and built environments exist in balance to create value and enjoyment, and is committed to protecting and improving land and water through public and private partnerships.
 - iii. The City of Minneapolis has set a course to be a growing and vibrant world-class city with a flourishing economy and pristine environment, where all people are safe and healthy and have equitable opportunities for success and happiness.
- b. The parties share a history of successful collaboration having cooperated on projects such as the Minneapolis Chain of Lakes Regional Park Project, one of the largest urban water-quality restoration projects to date in the United States.

- c. The parties recognize that their mutual goals are best achieved through integrated land and water resource planning, and wish to memorialize their commitment to working together in pursuit of a balanced urban ecology that integrates goals and plans for the natural and built environments.
- d. To support the level of integration and alignment desired across respective plans, policies and investments, the parties wish to establish a framework to actively coordinate and align their respective work on an annual basis, at both a policy and technical level.

1. Goals

- a. The parties will work together to coordinate and align policies, plans and capital improvements to improve the natural and built environments within the Minnehaha Creek subwatershed in the City of Minneapolis.
- b. The parties will work together to identify multi-jurisdictional initiatives to achieve complex water resource goals such as:
 - i. Reducing flooding
 - ii. Achieving regional pollutant load reductions identified in TMDLs
 - iii. Reducing discharge volumes to, and peak flows within Minnehaha Creek,
 - iv. Eliminating combined sewer overflows and reducing inflow and infiltration to the sanitary sewer
- c. Wherever possible, the parties will work to integrate natural resource goals across disciplines to intersect with planned recreation improvements, infrastructure improvements, development, etc., to reduce cost and maximize public benefit.
- d. The parties will achieve the desired integration through the use of a predictable and repeatable annual work plan, identifying opportunities to establish shared agency priorities that can be subsequently incorporated into budgets, capital improvement plans, policy development, master planning efforts, and other agency-specific plans and initiatives.
- e. The parties intend for these shared agency priorities to benefit from collaborative planning, cost sharing, and the development of investment strategies that will attract additional outside funding, through the coordinated pursuit of grant funds, legislation, and other partnerships.

2. Example Opportunities for Partnering under the MOU

- a. FEMA Repairs to Minnehaha Creek – The Minnehaha Creek Watershed District (MCWD) has been awarded monies from the Federal Emergency Management Association to repair sections of streambank on Minnehaha Creek, damaged during 2014 flooding. The MCWD has also been awarded monies from the Clean Water Legacy Fund to integrate the planning of FEMA damage repair with opportunities to address water quality issues associated with stormwater discharges into Minnehaha Creek. Together these efforts will improve the ecological integrity of the Minnehaha Creek corridor and reduce pollutant loading to Lake Hiawatha, an Impaired Water.

This work intersects with the clean water and recreation goals of the Minneapolis Park and Recreation Board, that has planned investments in trail improvements within areas of identified damage to Minnehaha Creek; is undertaking an ecosystems services plan for MPRB land; and has interest in developing a shared vision for the Minnehaha Creek corridor through the City of Minneapolis. This work also intersects with the clean water and infrastructure management goals of the City of Minneapolis that has planned stormsewer improvements within the areas of identified damage to Minnehaha Creek.

The parties have a mutual interest in collaboratively planning this FEMA work to identify opportunities for the intersection of streambank improvements, stormwater management improvements, infrastructure improvements, recreation investments, ecosystems and corridor plans.

- b. Hiawatha Golf Course – The City of Minneapolis and the Minneapolis Park & Recreation Board are pursuing investigations of alternatives to the current level of stormwater and groundwater pumping. The investigations will consider methods of addressing TMDL levels at Lake Hiawatha, water and habitat quality at Lake Hiawatha and Minnehaha Creek, localized flooding and groundwater intrusion for nearby private properties and public streets, local stormwater infrastructure function and capacity, and enhanced or expanded public recreation opportunities.
- c. Priority Flood Mitigation Areas 29/30 in the vicinity of 50th and Chowen – there is a need to integrate planning and implementation actions to address localized flooding in the Fulton neighborhood just north of Minnehaha Creek and south west of Lake Harriet. The City intends to lead the feasibility study, design, and construction of flood mitigation working in close coordination with MPRB, recognizing programmed neighborhood park improvements and aligning with MCWD efforts to minimize pollutants and minimize peak flows to connected downstream waters.

3. Integrated Planning Process

- a. The parties commit to work together by designating staff representatives to a Planning Team who are well informed about all their respective agency goals, plans, and budgets.
- b. The Planning Team will collaborate at least quarterly to identify opportunities for shared agency priorities, and be responsible for jointly recommending to policy makers the alignment of policies, long range planning efforts, master plans, feasibility studies, capital improvement plans, and the operational and project budgets to support them.
- c. The City of Minneapolis and the Minneapolis Park and Recreation Board prepare budget requests for the Capital Long Range Improvement Committee (CLIC) in the first quarter of each calendar year to establish capital project and program priorities for five years.
- d. The MCWD begins budget forecasting in the first quarter of each calendar year and produces a draft 2-3 year capital improvement plan, which it distributes for review, in June of each calendar year.
- e. On or before March of each year the Planning Team will produce a draft 2-5 year Partnership Plan and Investment Strategy. The Plan will inform and be informed by the CLIC process. The Plan will identify opportunities for integrating planning, policy, and capital project initiatives across agencies. The Plan will include, but not necessarily be limited to:
 - i. A brief initiative/project description;
 - ii. Estimated upfront costs, capital costs and long-term operation and maintenance costs;
 - iii. Potential cost sharing opportunities across the agencies;
 - iv. Supporting outside funding and financing (grants, appropriations, bonding, etc); and
 - v. Timelines for implementation including quarterly milestones
- f. The parties agree that this Partnership Plan is intended as a planning guide for coordinated project planning and implementation, but does not formally obligate any party to implementation of any specific project; such commitments are to be addressed in specific project agreements, as discussed below.
- g. On or before June 30 each year, the Technical Planning Team will present the Partnership Plan for review and a resolution of support by each party's governing board or council. For the City the CLIC process and development and presentation of the annual budget will satisfy this provision. The plan will inform the respective agencies' budget priorities.

4. Project Development and Implementation Process

- a. Following review and support of the Plan by each agency, the Planning Team will jointly develop a project specific implementation plan to be memorialized into a project specific agreement. Project specific implementation plans will detail roles and responsibilities for further feasibility studies, design, bidding, construction management and oversight, and long-term operations and maintenance.

5. Term

This MOU shall be effective until December 31, 2022, and may be renewed thereafter by agreement of the parties for terms of five years, or other terms as the parties may decide ("Term").

6. Termination and Withdrawal

a. Withdrawal. Any party may withdraw from this MOU upon 30-days prior written notice to the remaining parties, evidenced by resolution of the Party's governing body.

b. Effect of Withdrawal, and Obligations. A party withdrawing from this Agreement shall fulfill any remaining or outstanding obligations previously entered into under.

c. Termination. This MOU shall terminate upon the occurrence of any one of the following events:

- (i) When necessitated by operation of law or as a result of a decision by a court of competent jurisdiction; or
- (ii) When a majority of the parties agrees to terminate this MOU; or
- (iii) Upon expiration of the Term.

7. Liability

a. Each party agrees that it will be responsible for its own acts and omissions, the acts and omissions of its commissioners, officers and employees and any liability resulting there from to the extent authorized by law. No party shall be responsible for the acts of the others and the results thereof. This MOU shall not change, alter, or affect the preexisting liability or absence of liability of any party. Each party acknowledges and agrees that it is insured or self-insured consistent with the limits established in Minnesota State Statute. Each party agrees to promptly notify all parties if it becomes aware of any potential claim(s) related to this MOU, or facts giving rise to such claims.

b. Notwithstanding the foregoing, the terms of this MOU are not to be construed as, nor operate as, waivers of a party's statutory or common law immunities or limitations on liability, including, but not limited to, Minnesota Statutes Chapter 466.

8. **Data and Intellectual Property**

a. The parties, their officers, agents, owners, partners, employees, volunteers and subcontractors agree to abide by the provisions of the Minnesota Government Data Practices Act, Minnesota Statutes, Chapter 13, and all other applicable State and Federal laws, rules, regulations and orders relating to data privacy or confidentiality, and as any of the same may be amended. Each party shall be responsible for any claims resulting from its officers', agents', owners', partners', employees', volunteers', assignees' or subcontractors' unlawful disclosure and/or use of such protected data, or other noncompliance with the requirements of this section.

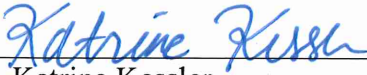
b. No party shall acquire any right, title or interest in any other Party's data that is restricted from public disclosure by any applicable law.

c. All right, title and interest in all copyrightable material which the parties may conceive or originate and which arises directly out of the performance of this MOU are the joint property of the parties. Each party grants the other parties a perpetual, irrevocable, royalty-free, worldwide and nonexclusive license to use any copyrighted material for any legal purpose including but not limited to using, disclosing, reproducing, modifying, preparing derivative works from, distributing, performing and displaying the copyrighted material.

9. **Subsequent Agreements.** This MOU constitutes the entire agreement between the parties as of the Effective Date and supersedes all prior written or oral agreements relating to the formation of this MOU. Notwithstanding any other provision to the contrary, any subsequent or ancillary agreement between one or more of the parties arising out of the partnering or cooperation contemplated by this MOU must be memorialized in writing, and shall be subject to the contracting policies, procedures, and laws applicable to each such party.


10. **Counterparts.** This Agreement may be executed in any number of counterparts, each of which shall be deemed to be an original, but all of which, when taken together, shall constitute but one and the same instrument.

For the City of Minneapolis

By: 
Katrina Kessler
Director of Surface Waters and Sewers

Date: 9/6/2018

For the Minneapolis Park & Recreation Board

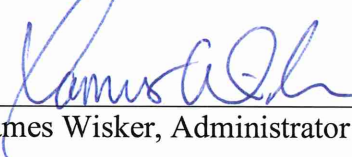
By: 
Brad Bourn, President

Date: 8-29-18

By: 
Jennifer Ringold, Secretary

Date: 8/29/18

For the Minnehaha Creek Watershed District

By: 
James Wisker, Administrator

Date: 9-6-18

CONSTRUCTION PLANS FOR MINNEHAHA CREEK FEMA REPAIR PROJECT

PREPARED FOR MINNEHAHA CREEK WATERSHED DISTRICT

OCTOBER 2018

Attachment 3



7500 OLSON MEMORIAL HWY, SUITE 300
GOLDEN VALLEY, MN 55427
PHONE: 763-252-8800
FAX: 953-831-1988
WWW.WENCK.COM

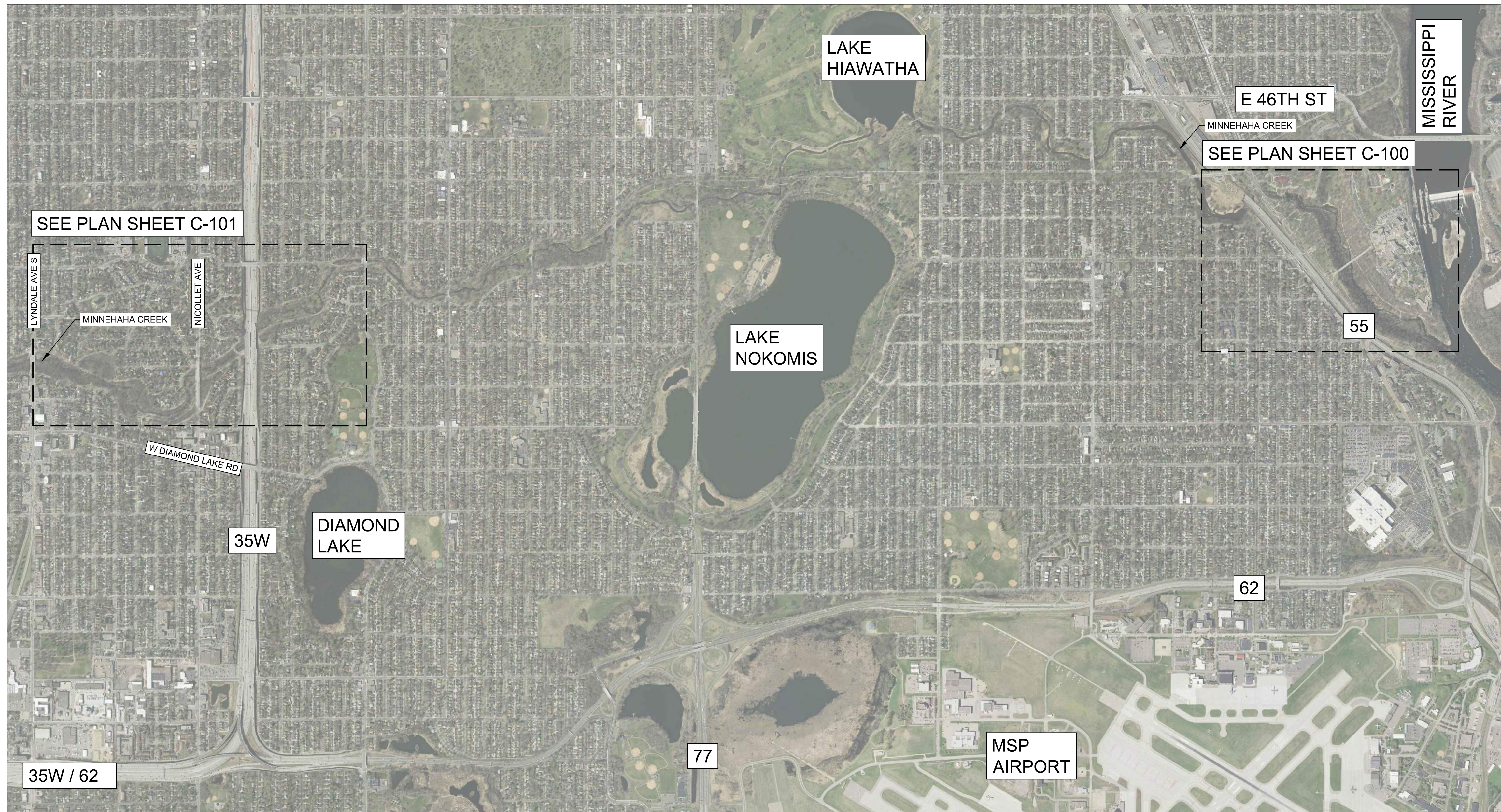


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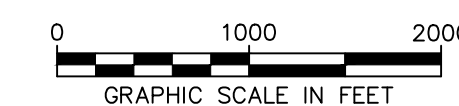
**MINNEHAHA CREEK
WATERSHED DISTRICT**
QUALITY OF WATER, QUALITY OF LIFE



**MINNEHAHA CREEK FEMA
REPAIR PROJECT**
MINNEAPOLIS, MN



PROJECT VICINITY MAP



SHEET INDEX	
SHEET	TITLE
G-100	TITLE AND INDEX SHEET
G-101	LEGEND AND NOTES
C-100	LOCATION PLAN EAST
C-101	LOCATION PLAN WEST
C-102	SITE PLAN - PROJECT 2
C-103	SITE PLAN - PROJECT 5
C-103A	CROSS SECTION - PROJECT 5
C-104	SITE PLAN - PROJECT 8
C-105	SITE PLAN - PROJECTS 9 - 11
C-105A	CROSS SECTION - PROJECT 10
C-106	SITE PLAN - PROJECT 13
C-107	SITE PLAN - PROJECT 30
C-107A	CROSS SECTION - PROJECT 30
C-107B	SITE ACCESS - PROJECT 30
EC-200	SWPPP
C-800	DETAILS
C-801	DETAILS
C-802	DETAILS
CS-100	SITE PLAN - PROJECT 8
CS-101	CROSS SECTIONS - PROJECT 8
CS-102	SITE PLAN - PROJECT 26
CS-103	CROSS SECTIONS - PROJECT 26
CS-800	TYPICAL SECTION
CS-801	DETAILS
CS-802	DETAILS
THIS PLAN CONTAINS 25 SHEETS	

WARNING:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALLING FOR LOCATIONS OF ALL EXISTING UTILITIES. THEY SHALL COOPERATE WITH ALL UTILITY COMPANIES IN MAINTAINING THEIR SERVICE AND/OR RELOCATION OF LINES.

THE CONTRACTOR SHALL CONTACT GOPHER STATE ONE CALL AT 651-454-0002 AT LEAST 48 HOURS IN ADVANCE FOR THE LOCATIONS OF ALL UNDERGROUND WIRES, CABLES, CONDUITS, PIPES, MANHOLES, VALVES OR OTHER BURIED STRUCTURES BEFORE DIGGING. THE CONTRACTOR SHALL REPAIR OR REPLACE THE ABOVE WHEN DAMAGED DURING CONSTRUCTION AT NO COST TO THE OWNER.

CALL BEFORE YOU DIG
GOPHER STATE ONE CALL
TWIN CITY AREA: 651-454-0002
TOLL FREE 1-800-252-1166

PROJECT TITLE:

ISSUE NO.:

DESCRIPTION:

DATE:

CERTIFICATION:

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Christopher J. Meehan
License #: 43066

Date: 10/01/2018

PROJECT NO.: 0185-0103

DWN BY: SJB CHKD BY: MIS APP'D BY: CM
ISSUE DATE: 10/01/2018

ISSUE NO.: 0

SHEET TITLE:
TITLE AND INDEX SHEET

SHEET NO.:
G-100

PROJECT SCOPE

THE CONTRACTOR SHALL COMPLETE ALL EROSION CONTROL, GRADING, AND RESTORATION TO ACHIEVE PROPOSED IMPROVEMENTS AS INDICATED ON THE DRAWINGS IN CONFORMANCE WITH GOVERNING SPECIFICATIONS AND CODES.

GENERAL NOTES

- ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH MN DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" (LATEST EDITION) & LATEST SUPPLEMENTS, AND APPLICABLE CITY AND COUNTY REGULATIONS. UNLESS OTHERWISE NOTED, ALL WORK SHALL CONFORM AS APPLICABLE TO THESE STANDARDS AND SPECIFICATIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING ALL MATERIAL AND LABOR TO CONSTRUCT THE FACILITY AS SHOWN AND DESCRIBED IN THE CONSTRUCTION DOCUMENTS IN ACCORDANCE WITH THE APPROPRIATE APPROVING AUTHORITIES, SPECIFICATIONS, AND REQUIREMENTS.
- ALL QUANTITIES ARE APPROXIMATE AND MAY VARY TO ALLOW COMPLETION OF WORK.
- EXISTING UTILITIES SHOWN ARE LOCATED ACCORDING TO THE INFORMATION AVAILABLE TO THE ENGINEER AT THE TIME OF THE TOPOGRAPHIC SURVEY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR THE ENGINEER. NO GUARANTEE IS MADE THAT ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN OR THAT THE LOCATION OF THOSE SHOWN ARE ENTIRELY ACCURATE. THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF C/ASCE 38-2 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".
- TOPOGRAPHIC INFORMATION IS TAKEN FROM A COMBINATION OF LIDAR DATA AND A PARTIAL TOPOGRAPHIC SURVEY BY WENCK ASSOCIATES. IF THE CONTRACTOR DOES NOT ACCEPT EXISTING TOPOGRAPHY AS SHOWN ON THE PLANS, WITHOUT EXCEPTION, THEN THE CONTRACTOR SHALL SUPPLY AT THEIR OWN EXPENSE A TOPOGRAPHIC SURVEY BY A REGISTERED LAND SURVEYOR TO THE OWNER FOR REVIEW.
- EXACT LOCATION OF UNDERGROUND UTILITIES SUCH AS GAS, TELEPHONE, FIBER OPTIC, PIPELINES, ELECTRICAL, AND CABLE TV ARE UNKNOWN. CONTRACTOR RESPONSIBLE FOR LOCATING PRIOR TO STARTING WORK.
- CONTRACTOR SHOULD ANTICIPATE PRIVATE UTILITY CONFLICTS THROUGHOUT THE PROJECT SUB CUT AND TRENCH AREAS AND SHALL COORDINATE WITH PRIVATE UTILITY OWNERS IF ENCOUNTERED. IT IS THE CONTRACTORS RESPONSIBILITY TO CONTACT THE VARIOUS UTILITY COMPANIES WHICH MAY HAVE BURIED OR AERIAL UTILITIES WITHIN OR NEAR THE CONSTRUCTION AREA BEFORE COMMENCING WORK. THE CONTRACTOR SHALL PROVIDE 48 HOURS MINIMUM NOTICE TO ALL UTILITY COMPANIES PRIOR TO BEGINNING CONSTRUCTION.
- THE RELOCATION AND OR PROTECTION OF ALL EXISTING UTILITIES MUST BE COORDINATED BY THE CONTRACTOR AND ANY COSTS FOR SUCH WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR EXTRA TIME AND EFFORT OF PROVISIONS NECESSARY TO WORK AROUND OR UNDER ANY UTILITIES.
- PROTECT EXISTING PAVEMENT AND SITE FEATURES, EXCEPT AS NOTED.
- THE CONTRACTOR SHALL HAVE AVAILABLE AT THE JOB SITE AT ALL TIMES ONE COPY OF THE CONSTRUCTION DOCUMENTS INCLUDING PLANS, SPECIFICATIONS, AND SPECIAL CONDITIONS AND COPIES OF ANY REQUIRED CONSTRUCTION PERMITS.
- ANY DISCREPANCIES ON THE DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER BEFORE COMMENCING WORK. NO FIELD CHANGES OR DEVIATIONS FROM DESIGN ARE TO BE MADE WITHOUT PRIOR APPROVAL FROM THE OWNER AND NOTIFICATION TO THE ENGINEER.
- MAINTAIN DRAINAGE CONVEYANCE DURING CONSTRUCTION (BOTH PIPED AND OVERLAND).
- THE EXISTING PAVEMENT CONDITIONS HAVE BEEN DOCUMENTED, AND ANY DAMAGE TO THE EXISTING PAVEMENT, CURBING, AND STRIPING SHALL BE REPLACED BY THE CONTRACTOR, TO THE OWNERS SATISFACTION, AT NO ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES DURING CONSTRUCTION PHASES OF THIS PROJECT. THE CONTRACTOR WILL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGES TO THE ADJACENT PROPERTIES OCCURRING DURING THE CONSTRUCTION PHASES OF THIS PROJECT.
- SAFETY NOTICE TO CONTRACTORS: IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS ON THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE DUTY OF THE ENGINEER OR THE OWNER TO CONDUCT CONSTRUCTION REVIEW OF THE CONTRACTOR'S PERFORMANCE IS NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES IN, ON OR NEAR THE CONSTRUCTION SITE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR DOCUMENTING AND MAINTAINING AS-BUILT INFORMATION WHICH SHALL BE RECORDED AS CONSTRUCTION PROGRESSES OR AT THE COMPLETION OF APPROPRIATE CONSTRUCTION INTERVALS AND SHALL BE RESPONSIBLE FOR PROVIDING AS-BUILT DRAWINGS TO THE OWNER FOR THE PURPOSE OF CERTIFICATION TO JURISDICTIONAL AGENCIES REQUIRED. ALL AS-BUILT DATA SHALL BE COLLECTED BY A STATE OF MN PROFESSIONAL LAND SURVEYOR WHOSE SERVICES ARE ENGAGED BY THE CONTRACTOR.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS DO NOT CONFLICT WITH ANY KNOWN EXISTING OR OTHER PROPOSED IMPROVEMENTS. IF ANY CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER PRIOR TO INSTALLATION OF ANY PORTION OF THE SITE WORK THAT WOULD BE AFFECTED. FAILURE TO NOTIFY OWNER OF AN IDENTIFIABLE CONFLICT PRIOR TO PROCEEDING WITH INSTALLATION RELIEVES OWNER OF ANY OBLIGATION TO PAY FOR A RELATED CHANGE ORDER.

EROSION CONTROL NOTES AND MAINTENANCE

- THE STORM WATER POLLUTION PREVENTION PLAN ("SWPPP") IS COMPRISED OF THE EROSION CONTROL PLAN, THE STANDARD DETAILS, THE PLAN NARRATIVE, SPECIFICATIONS, ATTACHMENTS, IN ADDITION TO THE PERMIT AND ALL SUBSEQUENT REPORTS AND RELATED DOCUMENTS.
- IF APPLICABLE, ALL CONTRACTORS AND SUBCONTRACTORS SHALL OBTAIN A COPY OF THE SWPPP AND MN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT AND BE FAMILIAR WITH THEIR CONTENTS.
- BEST MANAGEMENT PRACTICES (BMP'S) AND CONTROLS SHALL CONFORM TO FEDERAL, STATE, OR LOCAL REQUIREMENTS OR MANUAL OF PRACTICE, AS APPLICABLE. THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL CONTROLS AS DIRECTED BY THE PERMITTING AGENCY OR OWNER, OR AS SITE CONDITIONS DICTATE.
- ALL EROSION CONTROL DEVICES SHOWN ON THESE PLANS SHALL BE INSTALLED PRIOR TO THE START OF LAND DISTURBING ACTIVITIES.
- ALL MEASURES STATED ON THE EROSION AND SEDIMENT CONTROL PLAN, AND IN THE STORM WATER POLLUTION PREVENTION PLAN, SHALL BE MAINTAINED IN FULLY FUNCTIONAL CONDITION UNTIL NO LONGER REQUIRED FOR A COMPLETED PHASE OF WORK OR FINAL STABILIZATION OF THE SITE. ALL EROSION CONTROL AND SEDIMENTATION CONTROL MEASURES SHALL BE CHECKED BY A CERTIFIED INSPECTOR AT LEAST ONCE EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A 0.5" RAINFALL EVENT, AND CLEANED AND REPAIRED IN ACCORDANCE WITH THE FOLLOWING.
 - INLET PROTECTION DEVICES AND BARRIERS SHALL BE REPAIRED OR REPLACED IF THEY SHOW SIGNS OF UNDERMINING OR DETERIORATION.
 - ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED, WATERED, AND RESEEDED AS NEEDED. FOR MAINTENANCE REQUIREMENTS REFER TO THE STANDARD SPECIFICATIONS.
 - SILT FENCES SHALL BE REPAIRED TO THEIR ORIGINAL CONDITIONS IF DAMAGED. SEDIMENT SHALL BE REMOVED FROM THE SILT FENCES WHEN IT REACHES ONE-THIRD THE HEIGHT OF THE SILT FENCE.
 - THE CONSTRUCTION ENTRANCE(S) SHALL BE MAINTAINED IN CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE CONSTRUCTION ENTRANCES AS CONDITIONS DEMAND.
 - THE TEMPORARY PARKING AND STORAGE AREA SHALL BE KEPT IN GOOD CONDITION (SUITABLE FOR PARKING AND STORAGE). THIS MAY REQUIRE PERIODIC TOP DRESSING OF AS CONDITIONS DEMAND.
 - REMOVE TRACKED SEDIMENT FROM ALL PAVED SURFACES BOTH ON AND OFFSITE ON A DAILY BASIS (INCIDENTAL).
 - MINIMIZE DUST FROM CONSTRUCTION OPERATIONS BY PROVIDING WATER OR OTHER APPROVED METHOD ON A DAILY BASIS (INCIDENTAL).
 - ALL MAINTENANCE OPERATIONS SHALL BE DONE IN A TIMELY MANNER BUT IN NO CASE LATER THAN 2 CALENDAR DAYS FOLLOWING THE INSPECTION.
- ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED DEPENDING ON SITE CONDITIONS DURING CONSTRUCTION. COORDINATE WITH ENGINEER.
- ALL EROSION CONTROL DEVICES TO BE INSTALLED PRIOR TO COMMENCEMENT OF WORK, MAINTAINED IN ACCORDANCE WITH THE SWPPP, NPDES, AND SPECIFICATIONS THROUGHOUT DURATION OF PROJECT, AND REMOVED UPON ESTABLISHMENT OF FINAL STABILIZATION AS DIRECTED BY ENGINEER. EROSION CONTROL MEASURES USED FOR CONSTRUCTION SHALL NOT BE REMOVED UNTIL AUTHORIZED BY OWNER OR ENGINEER.
- FINAL STABILIZATION TO BE COMPLETED WITHIN ONE WEEK (7 DAYS) OF SITE GRADING. ALL DISTURBED AREAS SHALL BE STABILIZED WITH SEED, SOD, OR ROCK BASE AS DETAILED ON THE CONSTRUCTION DOCUMENTS.
- ALL EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE SWPPP.
- ALL DISTURBED UNPAVED AREAS ARE TO IMMEDIATELY RECEIVE SALVAGED TOPSOIL, SEED AND MULCH AND WATERED UNTIL A HEALTHY STAND OF GRASS IS OBTAINED.
- TEMPORARY SEEDING OR OTHER APPROVED METHODS OF STABILIZATION SHALL BE INITIATED WITHIN 7 DAYS OF THE LAST DISTURBANCE ON ANY AREA OF THE SITE.
- SITE ENTRY AND EXIT LOCATIONS SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT THE TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAYS. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ON A PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY. WHEN WASHING IS REQUIRED IT SHALL BE DONE IN AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAP OR OTHER BMP. ALL FINES IMPOSED FOR DISCHARGING SEDIMENT ONTO PUBLIC AREAS SHALL BE PAID BY THE CONTRACTOR.
- CONTRACTOR SHALL DENOTE ON THE PLAN THE TEMPORARY PARKING, STORAGE AREAS, EQUIPMENT MAINTENANCE AND CLEANING AREA, AND AREA FOR LOCATING PORTABLE FACILITIES SUCH AS TOILETS OR OFFICE TRAILER.
- ALL WASH WATER (VEHICLE CLEANING, EQUIPMENT CLEANING, ETC.) SHALL BE DETAINED AND PROPERLY TREATED OR DISPOSED.
- SUFFICIENT OIL AND GREASE ABSORBING MATERIALS AND FLOTATION BOOMS SHALL BE MAINTAINED ON SITE OR READILY AVAILABLE TO CONTAIN AND CLEAN-UP FUEL OR CHEMICAL SPILLS AND LEAKS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR DUST CONTROL ON SITE. THE USE OF MOTOR OILS AND OTHER PETROLEUM BASED OR TOXIC PRODUCTS FOR DUST SUPPRESSION OPERATIONS IS PROHIBITED.
- RUBBISH, TRASH, GARBAGE, LITTER, OR OTHER SUCH MATERIALS SHALL BE DEPOSITED INTO SEALED CONTAINERS. MATERIALS SHALL BE PREVENTED FROM LEAVING THE PREMISES THROUGH THE ACTION OF WIND OR STORM WATER DISCHARGE INTO DRAINAGE DITCHES OR WATERS OF THE STATE.
- ALL STORM WATER POLLUTION PREVENTION MEASURES PRESENTED ON THE PLAN SHALL BE INITIATED AS SOON AS PRACTICABLE.
- CONTRACTOR SHALL INCORPORATE APPROPRIATE BMP'S AS NECESSARY TO ENSURE THAT ALL STAGING AREAS, STOCKPILES, SPOILS, ETC. SHALL BE LOCATED SUCH THAT THEY WILL NOT ADVERSELY AFFECT STORM WATER QUALITY.
- ALL EROSION CONTROL MEASURES ARE TO BE INSTALLED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS FOR THIS PROJECT. CHANGES ARE TO BE APPROVED BEFORE CONSTRUCTION BY THE DESIGN ENGINEER.
- IF THE EROSION CONTROL PLAN AS APPROVED CANNOT CONTROL EROSION AND OFF-SITE SEDIMENTATION FROM THE PROJECT, THE EROSION CONTROL PLAN WILL HAVE TO BE REVISED AND/OR ADDITIONAL BMP'S AND MEASURES IMPLEMENTED. ANY REVISIONS TO THE EROSION CONTROL PLAN MADE BY THE CONTRACTOR MUST BE APPROVED BY THE ENGINEER.

TRAFFIC CONTROL

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL CONSTRUCTION STAGING, ON OR OFFSITE, AS NECESSARY TO COMPLETE THE WORK AS SPECIFIED IN THE PROJECT DOCUMENTS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL. ALL TRAFFIC CONTROL SHALL CONFORM TO THE LATEST EDITION OF THE MN MUTCD, INCLUDING THE LATEST FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS. A TRAFFIC CONTROL PLAN SHALL BE SUBMITTED TO THE ENGINEER, OWNER, MINNEAPOLIS PARK AND RECREATION BOARD AND CITY FOR REVIEW AND APPROVAL PRIOR TO ANY CONSTRUCTION RELATED ACTIVITIES. PLANS SHALL COMPLY WITH ALL APPLICABLE PERMIT REQUIREMENTS
- TRAFFIC CONTROL INCLUDES ALL NECESSARY SIGNAGE, TEMPORARY FENCING AND MARKINGS REQUIRED FOR SIDEWALK, TRAIL, AND PARK AREA CLOSURES NEEDED FOR COMPLETION OF THE WORK. COORDINATE WITH MINNEAPOLIS PARK AND RECREATION BOARD.

PERMITS REQUIRED

- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SECURE ANY AND ALL STATE, COUNTY, AND CITY PERMITS NECESSARY FOR CONSTRUCTION.

HORIZONTAL AND VERTICAL CONTROL

- THE HORIZONTAL CONTROL FOR THIS PLAN IS HENNEPIN COUNTY COORDINATE SYSTEM NAD83.
- THE VERTICAL CONTROL FOR THIS PLAN IS NAVD88.

GRADING NOTES

- GENERAL CONTRACTOR AND ALL SUBCONTRACTORS SHALL VERIFY THE SUITABILITY OF ALL EXISTING AND PROPOSED SITE CONDITIONS INCLUDING GRADES AND DIMENSIONS BEFORE START OF CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES.
- CONTRACTOR SHALL SALVAGE ALL TOPSOIL PRIOR TO GRADING, AND STOCKPILE IT FOR RESPREADING. TOPSOIL WASTED SHALL BE REPLACED AT NO ADDITIONAL COST TO OWNER. RESPREAD TOPSOIL FOR FINAL GRADING.
- THE CONTRACTOR SHALL RESTRICT ALL GRADING AND CONSTRUCTION ACTIVITIES TO AREAS DESIGNATED ON THE PLANS.
- CONTRACTOR SHALL GRADE THE SITE TO THE ELEVATIONS INDICATED AND ENSURE THERE IS POSITIVE DRAINAGE FROM THE PROPOSED BUILDINGS AND/OR PADS AND NO PONDING IN PAVED AREAS. CONTRACTOR TO NOTIFY ENGINEER IF ANY GRADING DISCREPANCIES ARE FOUND IN THE EXISTING AND PROPOSED GRADES PRIOR TO PLACEMENT OF PAVEMENT OR UTILITIES.
- ALL ELEVATIONS SHOWN ON PLAN ARE TOP OF FINISHED SURFACE UNLESS OTHERWISE NOTED.
- CONTRACTOR IS REQUIRED TO MEET ALL APPLICABLE OSHA STANDARDS.
- IF DEWATERING IS REQUIRED, THE CONTRACTOR SHALL OBTAIN ANY APPLICABLE REQUIRED PERMITS. THE CONTRACTOR IS TO COORDINATE WITH THE OWNER AND/OR ENGINEER PRIOR TO ANY EXCAVATION.
- LIMITS OF CONSTRUCTION ARE TO THE PROPERTY LINE UNLESS OTHERWISE SPECIFIED ON THE PLAN.
- UNSUITABLE SOILS DISCOVERED ONSITE DURING GRADING OPERATIONS SHALL BE EXCAVATED AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE REGULATIONS AND BY DIRECTION OF ENGINEER.
- CONTRACTOR SHALL BLEND NEW EARTHWORK SMOOTHLY TO TRANSITION BACK TO EXISTING GRADE.
- SITE SHALL BE GRADED TO MAINTAIN POSITIVE DRAINAGE FROM THE SITE TO EXISTING AND PROPOSED STORMWATER SYSTEMS AND AVOID PONDING WATER. SUBGRADE THAT BECOMES SATURATED WITH WATER AND UNABLE TO MEET MOISTURE AND DENSITY REQUIREMENTS WILL BE CORRECTED BY CONTRACTOR AT NO EXPENSE TO OWNER.
- ONSITE EXCAVATED BOULDERS MEETING THE SIZE REQUIREMENTS FOR RIPRAP WILL BE ALLOWED FOR USE AS RIPRAP. COORDINATE WITH OWNER.

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CLIENT:

MINNEHAHA CREEK WATERSHED DISTRICT
 QUALITY OF WATER, QUALITY OF LIFE



MINNEHAHA CREEK FEMA REPAIR PROJECT
 MINNEAPOLIS, MN

DATE	DESCRIPTION	ISSUE NO.							
10/01/2018	ISSUED FOR BID	0							

CERTIFICATION:
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 Christopher J. Meehan
 License #: 43066
 Date: 10/01/2018

PROJECT NO.: **0185-0103**
 DWN BY: SJB CHKD BY: MIS APPD BY: CM
 ISSUE DATE: **10/01/2018**
 ISSUE NO.: **0**

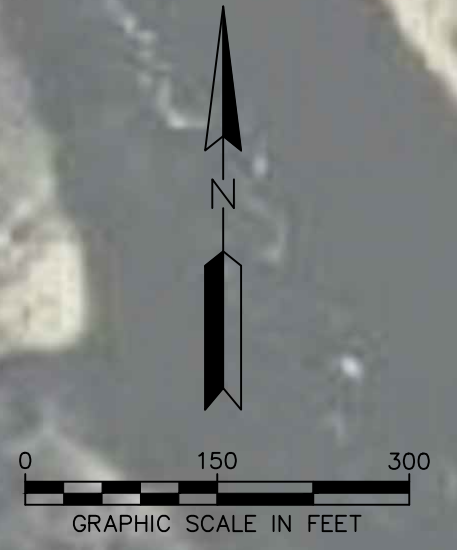
SHEET TITLE:
LEGEND & NOTES

SHEET NO.:
G-101



PROJECT 2-13 ACCESS AND RESTORATION NOTES:

- ACCESS TO THE SITE IS PROVIDED FROM 46TH AVE THROUGH THE EXISTING MAINTENANCE ROAD AS INDICATED. LIMITS SHOWN ARE APPROXIMATE AND WILL BE DELINEATED IN THE FIELD BY THE OWNER AND ENGINEER. PROVIDE CONSTRUCTION FENCE/SNOW FENCE AT LIMITS.
- CONTRACTOR TO PROTECT ALL TREES WITHIN THE CONSTRUCTION LIMITS AND ADJACENT TO PROJECT SITES, EXCEPT WHERE NOTED, OR AS APPROVED BY MPRB AND THE OWNER. BUCKTHORN MAY BE REMOVED BY CONTRACTOR AS REQUIRED FOR CONSTRUCTION WITHOUT PERMISSION. DAMAGE TO EXISTING TREES TO REMAIN SHALL BE REPLACED BY CONTRACTOR AT NO COST TO THE OWNER.
- TIE BACK TREE BRANCHES TO PREVENT DAMAGE AS APPROVED BY MPRB WHEN IN CONFLICT WITH CONSTRUCTION ACTIVITIES.
- PROVIDE GEOTEXTILE FABRIC AND 6" WOODCHIP MULCH WHERE CONSTRUCTION ACTIVITIES IMPACT RED OAK ROOT ZONES. CONSTRUCTION LIMITS SHALL BE A MINIMUM OF 8 FEET FROM THE TREE TRUNKS.
- PROVIDE MEANS FOR SECURITY AND SAFETY OF STAGING AREA, EQUIPMENT, MATERIALS, ETC.
- RESTORE SITE ACCESS AND STAGING AREA WITH MNDOT SEED MIXES 25-131 & 36-711 (AS DIRECTED) AND STRAW MULCH TO PRECONSTRUCTION CONDITIONS AT COMPLETION OF THE PROJECT. SCARIFY AND LOOSEN SOIL AS REQUIRED OR AS DIRECTED BY THE OWNER AND ENGINEER FOR INSTALLATION OF SEED AND STRAW MULCH.
- REVIEW AND COMPLY WITH ALL ROAD WEIGHT LIMITS/RESTRICTIONS.
- PROVIDE FLAGGERS AND SIGNAGE PER MNMUTCD AND LATEST FIELD MANUAL FOR ACCESS TO THE SITE AND TRUCKS HAULING. PROVIDE TRAFFIC CONTROL PLAN FOR REVIEW. NO ROAD CLOSURES ALLOWED.
- MAINTAIN ACCESS TO ACCESS TO ADJACENT TRAILS AND ROADWAY, EXCEPT WHERE APPROVED BY MPRB.
- PROTECT PAVEMENTS AND CURB FROM DAMAGE WITH PROTECTION MEASURES/SURFACE TREATMENT AS REQUIRED. DAMAGED PAVEMENT AND/OR CURB AS A RESULT OF CONSTRUCTION ACTIVITIES SHALL BE REPLACED AT THE EXPENSE OF THE CONTRACTOR.

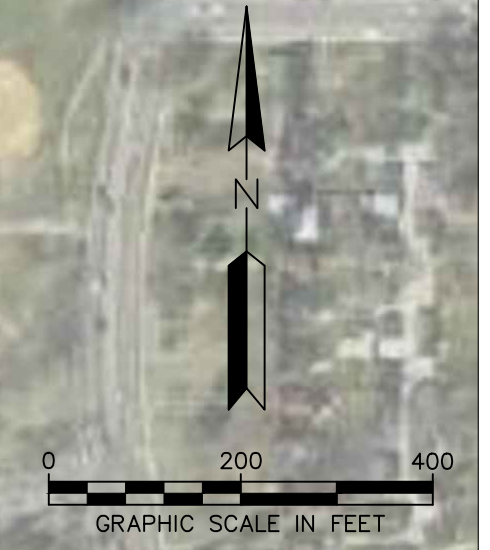


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 Christopher J. Meehan
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PROJECT NO.:	0185-0103	
DWN BY:	CHRD BY:	APP'D BY:
SJB	MIS	CM
ISSUE DATE:	10/01/2018	
ISSUE NO.:	0	
SHEET TITLE:	LOCATION PLAN EAST	
SHEET NO.:	C-100	



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PROJECT NO.: **0185-0103**
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 ISSUE DATE: 10/01/2018

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 SHEET TITLE:
LOCATION PLAN WEST

SHEET NO.:
C-101



PROJECT TITLE:

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Christopher J. Meehan

License #: 43066
Date: 10/01/2018

PROJECT NO.: 0185-0103

DWN BY: SJB CHD BY: MIS APPD BY: CM

ISSUE DATE: 10/01/2018

ISSUE NO.: 0

SHEET TITLE:
SITE PLAN -
PROJECT 2

SHEET NO.:
C-102



INSTALL AND COMPACT GRAVEL SURFACING IN WASHOUT AREA AS DIRECTED IN FIELD.

INSTALL AND COMPACT GRAVEL SURFACING IN WASHOUT AREA AS DIRECTED IN FIELD.

INSTALL AND COMPACT GRAVEL SURFACING IN WASHOUT AREA AS DIRECTED IN FIELD.

RECONSTRUCT TRAIL (TYP)
• SUBGRADE PREPARATION
• GEOTEXTILE
• 4 IN GRAVEL TRAIL
SEE DETAIL 3/C-802

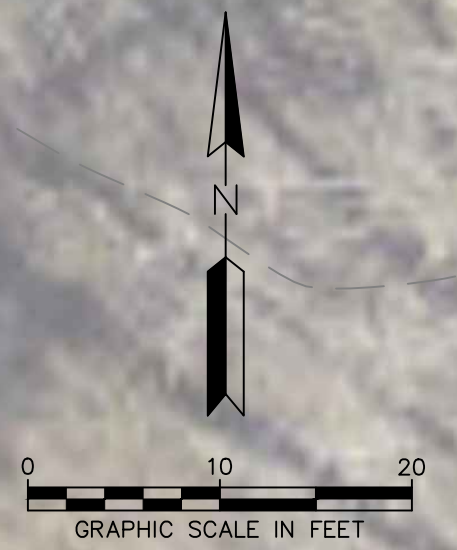
ACCESS FROM BRIDGE 4 - APPROXIMATELY 9 FEET WIDE. LIMITED TO SMALL UTILITY VEHICLES (KUBOTA OR SIMILAR W/ APPROX VEHICLE WEIGHT OF 2,000 LBS).

INSTALL FRENCH DRAIN (APPROXIMATE LOCATION) TO BE FIELD DIRECTED SEE DETAIL 4/C-802

- PROJECT 2 NOTES:
1. PROTECT ALL PAVEMENT, TRAILS, BOARDWALK, BRIDGES, RETAINING WALLS, AND OTHER SITE FEATURES NOT CALLED OUT FOR REMOVAL. ANY DAMAGE TO EXISTING SITE FEATURES SHALL BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR.
 2. ACCESS IS FROM BRIDGE 4. VEHICLE ACCESS ACROSS BRIDGE 4 IS LIMITED TO SMALL UTILITY VEHICLES (KUBOTA OR SIMILAR W/ APPROX. WEIGHT OF 2,000 LBS).
 3. CONTRACTOR MUST PROVIDE MEANS TO KEEP ALL MATERIALS FROM WASHING INTO THE CREEK.
 4. REPAIR AREA OF THE TRAIL SHOWN IS APPROXIMATE AND SHALL BE FIELD DIRECTED AS NECESSARY TO COMPLETE THE WORK.
 5. TEMPORARY TRAIL CLOSURE WITH SIGNAGE REQUIRED, REVIEW PLAN W/ MPRB PRIOR TO STARTING WORK.



PHOTO - PROJECT 2 LOOKING FROM END OF BRIDGE TOWARD NORTHWEST





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PROJECT NO.: 0185-0103

DWN BY: SJB CHKD BY: MUS APP'D BY: CM
ISSUE DATE: 10/01/2018

ISSUE NO.: 0

SHEET TITLE:
SITE PLAN - PROJECT 5

SHEET NO.:
C-103



PHOTO - PROJECT 5 LOOKING NORTHWEST AT UNDERMINED FOOTING



PHOTO - PROJECT 5 LOOKING SOUTHEAST TOWARD PROJECT AREA

- PROJECT 5 NOTES:**
1. PROTECT ALL PAVEMENT, TRAILS, BRIDGES, BOARDWALK, RETAINING WALLS, AND OTHER SITE FEATURES. ANY DAMAGE TO EXISTING FEATURES SHALL BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR.
 2. ACCESS IS FROM THE CREEK JUST TO THE SOUTH OF BRIDGE 3. ACCESS TO THIS PROJECT AREA SHALL BE THROUGH THE CREEK - NO BRIDGE ACCESS ALLOWED. ACCESS LOCATION TO BE DIRECTED IN THE FIELD AND MAY REQUIRE CUTTING FALLEN TREES.
 3. CONTRACTOR MUST PROVIDE MEANS TO KEEP ALL MATERIALS FROM WASHING INTO THE CREEK.
 4. REPAIR AREA OF THE CREEK BANK SHOWN IS APPROXIMATE AND SHALL BE FIELD DIRECTED AS NECESSARY TO COMPLETE THE WORK.
 5. ISOLATE WORK AREA AND DE-WATER OR PROVIDE IN-STREAM EROSION CONTROL AS DETERMINED BY ENGINEER GIVEN CURRENT FLOW CONDITIONS.
 6. CLEAR AND GRUB BANK TO REMOVE VEGETATION (STOCKPILE ORGANIC TOPSOIL)
 7. REVEGETATE THE DISTURBED AREA AS SPECIFIED.
 8. TEMPORARY TRAIL CLOSURE WITH SIGNAGE REQUIRED, REVIEW PLAN W/ MPRB PRIOR TO STARTING WORK.



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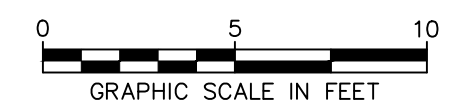
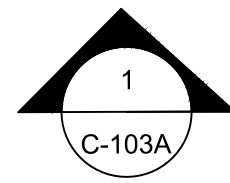
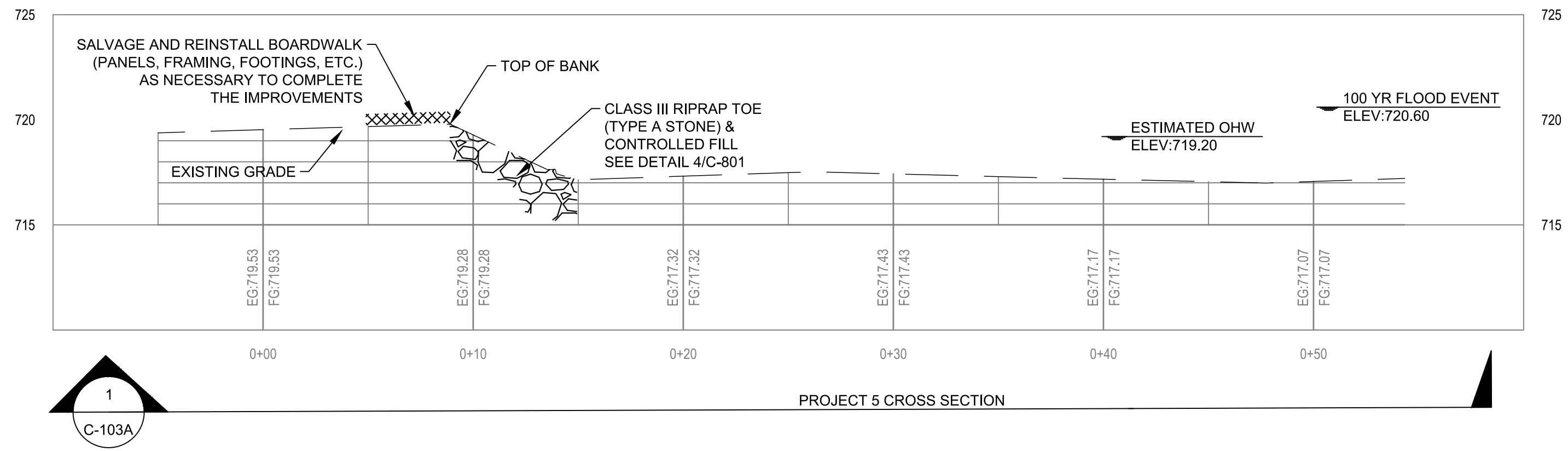


CLIENT:

MINNEHAHA CREEK
 WATERSHED DISTRICT
 QUALITY OF WATER, QUALITY OF LIFE



**MINNEHAHA CREEK FEMA
 REPAIR PROJECT**
 MINNEAPOLIS, MN



PROJECT TITLE:

ISSUE NO.:

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Christopher J. Meehan
 Christopher J. Meehan

License #: 43066

Date: 10/01/2018

PROJECT NO.: 0185-0103

DWN BY:	CHKD BY:	APP'D BY:
SJB	MIS	CM

ISSUE DATE: 10/01/2018

ISSUE NO.: 0

SHEET TITLE:
 CROSS SECTION -
 PROJECT 5

SHEET NO.:
C-103A



PHOTO - PROJECT 8 LOOKING SOUTHEAST TOWARD THE PROJECT

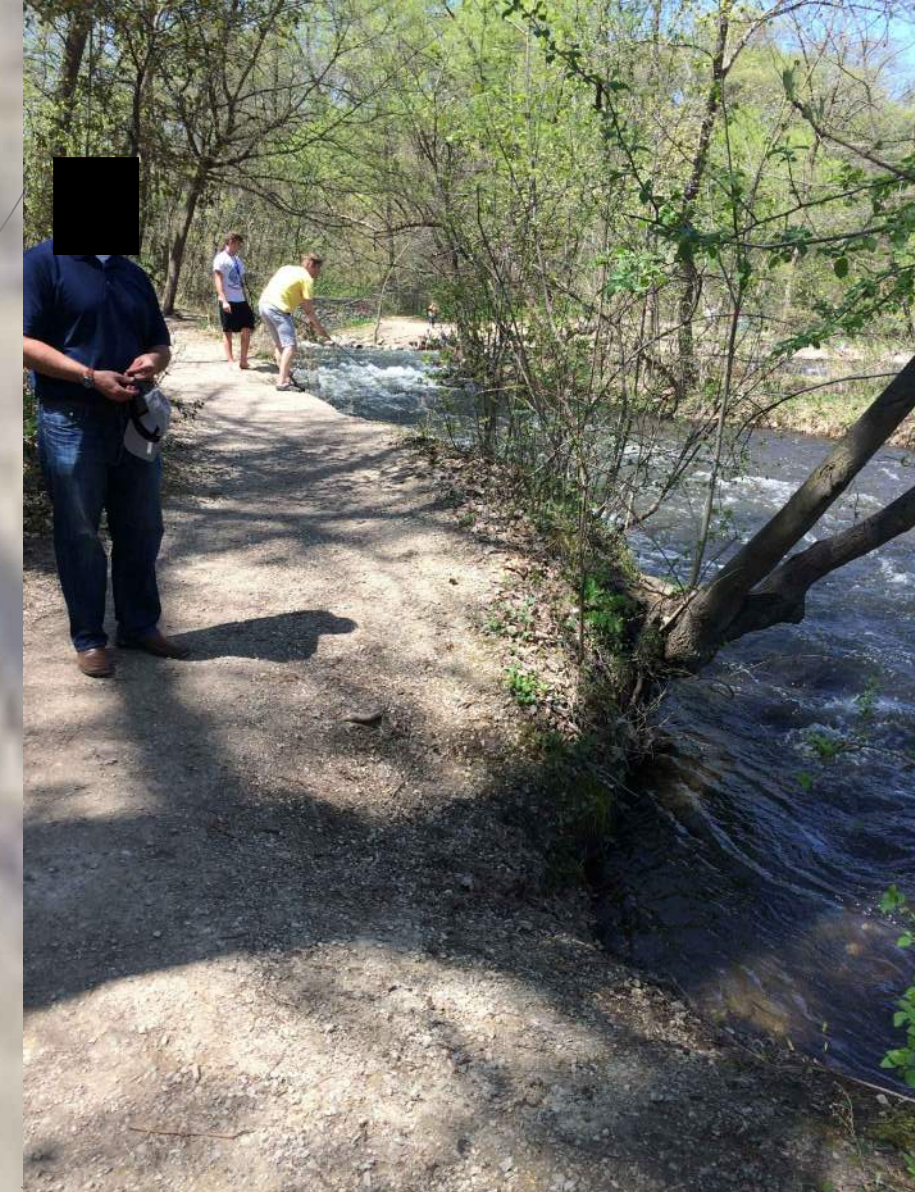


PHOTO - PROJECT 8 LOOKING NORTHWEST TOWARD THE PROJECT

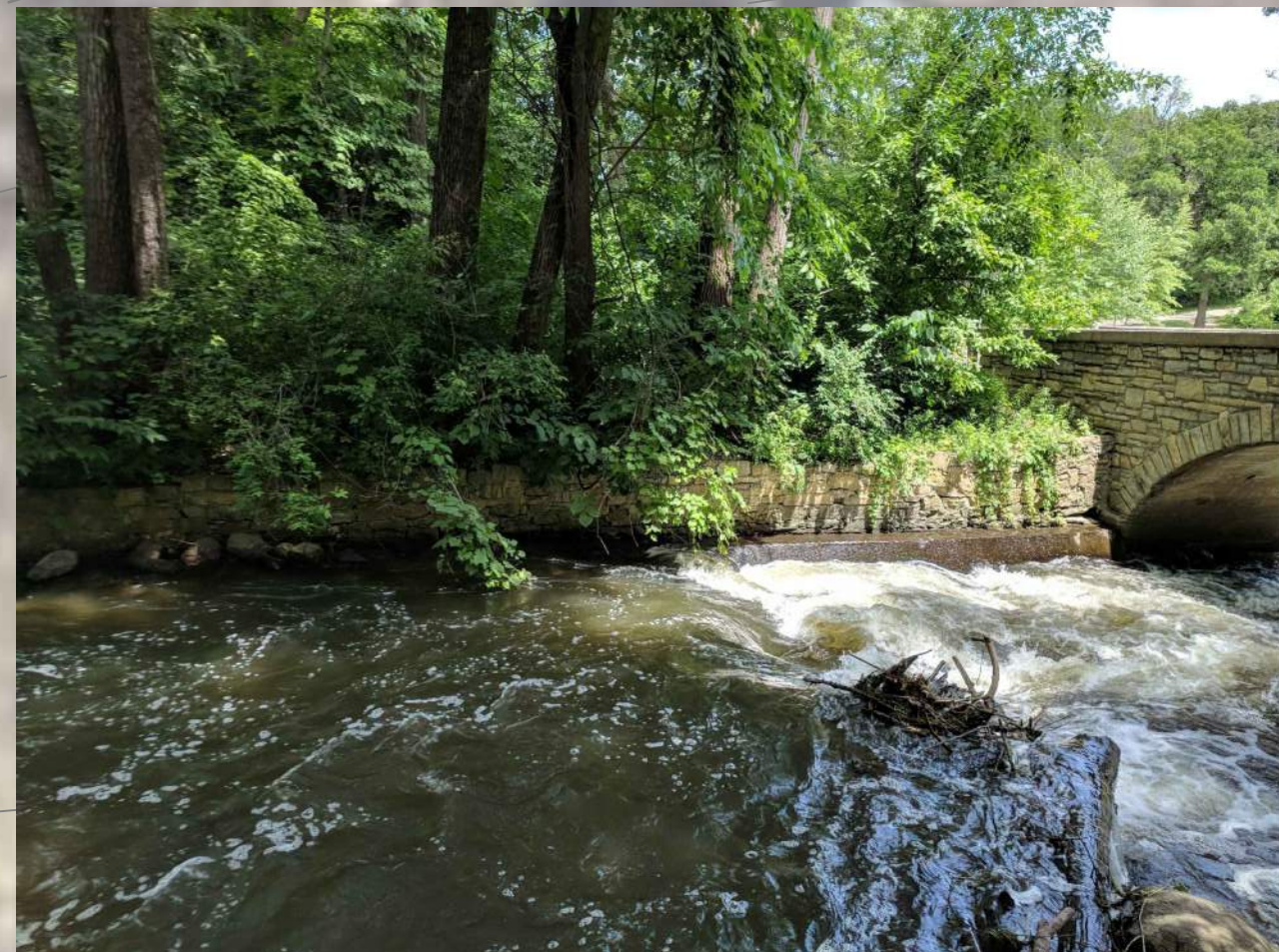
- PROJECT 8 NOTES:**
1. PROTECT ALL PAVEMENT, TRAILS, RETAINING WALLS, STONE SEATING BLOCKS AND OTHER SITE FEATURES. ANY DAMAGE TO EXISTING FEATURES SHALL BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR. ACCESS IS FROM THE CREEK FROM PROJECT LOCATION 10
 2. CONTRACTOR MUST PROVIDE MEANS TO KEEP ALL MATERIALS FROM WASHING INTO THE CREEK. REPAIR AREA OF THE TRAIL SHOWN IS APPROXIMATE AND SHALL BE FIELD DIRECTED AS NECESSARY TO COMPLETE THE WORK.
 3. NOT ALL TREES SHOWN. REVIEW W/ OWNER AND ENGINEER PRIOR TO STARTING WORK.
 4. TEMPORARY TRAIL CLOSURE WITH SIGNAGE REQUIRED, REVIEW PLAN W/ MPRB PRIOR TO STARTING WORK.

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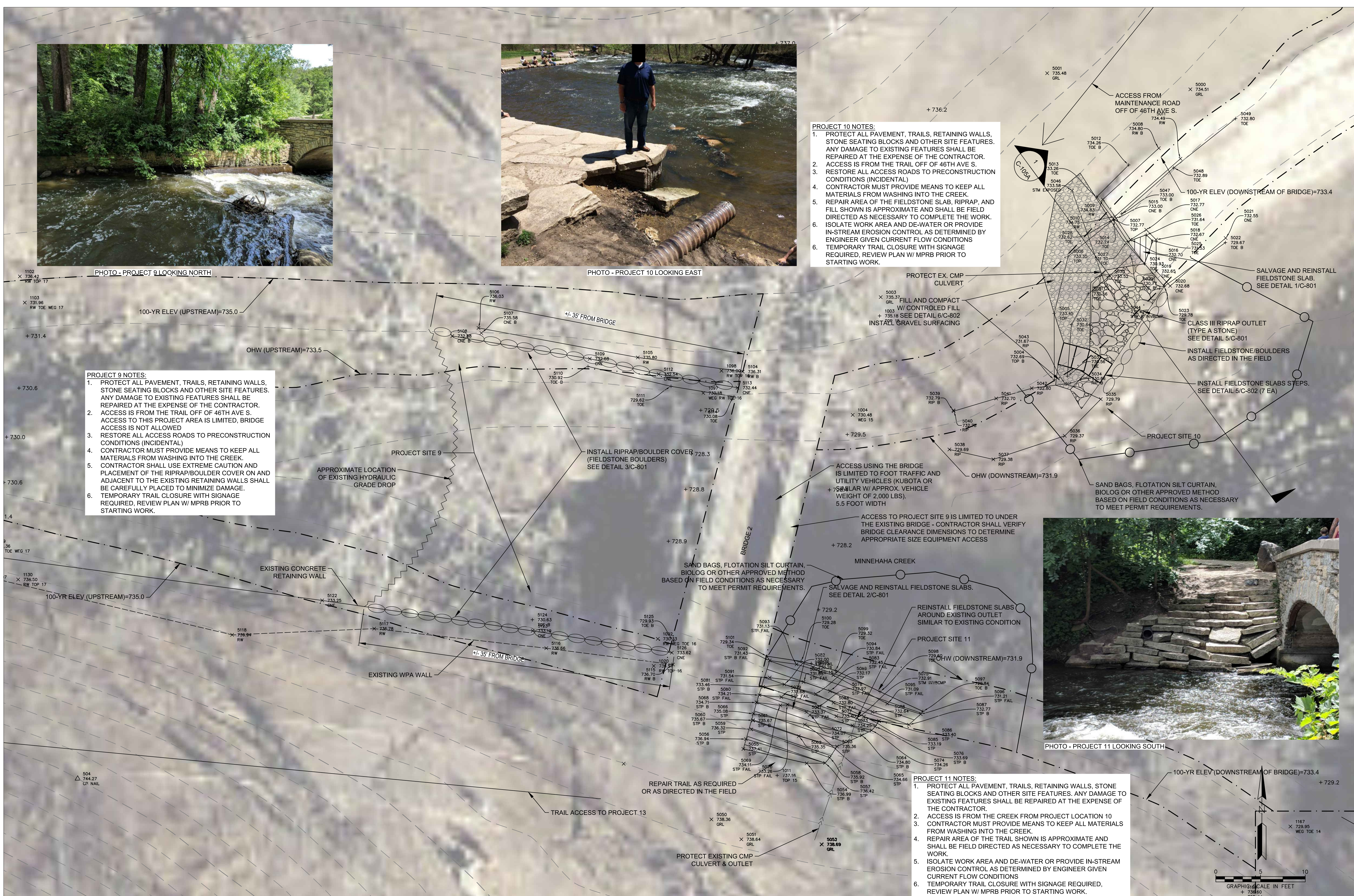
PROJECT NO.: **0185-0103**
 DWN BY: SJB CHKD BY: MUS APP'D BY: CM
 ISSUE DATE: 10/01/2018
 ISSUE NO.: 0
 SHEET TITLE:
SITE PLAN - PROJECT 8
 SHEET NO.:
C-104



- PROJECT 10 NOTES:**
1. PROTECT ALL PAVEMENT, TRAILS, RETAINING WALLS, STONE SEATING BLOCKS AND OTHER SITE FEATURES. ANY DAMAGE TO EXISTING FEATURES SHALL BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR.
 2. ACCESS IS FROM THE TRAIL OFF OF 46TH AVE S.
 3. RESTORE ALL ACCESS ROADS TO PRECONSTRUCTION CONDITIONS (INCIDENTAL)
 4. CONTRACTOR MUST PROVIDE MEANS TO KEEP ALL MATERIALS FROM WASHING INTO THE CREEK.
 5. REPAIR AREA OF THE FIELDSTONE SLAB, RIPRAP, AND FILL SHOWN IS APPROXIMATE AND SHALL BE FIELD DIRECTED AS NECESSARY TO COMPLETE THE WORK.
 6. ISOLATE WORK AREA AND DE-WATER OR PROVIDE IN-STREAM EROSION CONTROL AS DETERMINED BY ENGINEER GIVEN CURRENT FLOW CONDITIONS
 6. TEMPORARY TRAIL CLOSURE WITH SIGNAGE REQUIRED, REVIEW PLAN W/ MPRB PRIOR TO STARTING WORK.

- PROJECT 9 NOTES:**
1. PROTECT ALL PAVEMENT, TRAILS, RETAINING WALLS, STONE SEATING BLOCKS AND OTHER SITE FEATURES. ANY DAMAGE TO EXISTING FEATURES SHALL BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR.
 2. ACCESS IS FROM THE TRAIL OFF OF 46TH AVE S. ACCESS TO THIS PROJECT AREA IS LIMITED, BRIDGE ACCESS IS NOT ALLOWED
 3. RESTORE ALL ACCESS ROADS TO PRECONSTRUCTION CONDITIONS (INCIDENTAL)
 4. CONTRACTOR MUST PROVIDE MEANS TO KEEP ALL MATERIALS FROM WASHING INTO THE CREEK.
 5. CONTRACTOR SHALL USE EXTREME CAUTION AND ADJACEMENT OF THE RIPRAP/BOULDER COVER ON AND ADJACENT TO THE EXISTING RETAINING WALLS SHALL BE CAREFULLY PLACED TO MINIMIZE DAMAGE.
 6. TEMPORARY TRAIL CLOSURE WITH SIGNAGE REQUIRED, REVIEW PLAN W/ MPRB PRIOR TO STARTING WORK.

- PROJECT 11 NOTES:**
1. PROTECT ALL PAVEMENT, TRAILS, RETAINING WALLS, STONE SEATING BLOCKS AND OTHER SITE FEATURES. ANY DAMAGE TO EXISTING FEATURES SHALL BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR.
 2. ACCESS IS FROM THE CREEK FROM PROJECT LOCATION 10
 3. CONTRACTOR MUST PROVIDE MEANS TO KEEP ALL MATERIALS FROM WASHING INTO THE CREEK.
 4. REPAIR AREA OF THE TRAIL SHOWN IS APPROXIMATE AND SHALL BE FIELD DIRECTED AS NECESSARY TO COMPLETE THE WORK.
 5. ISOLATE WORK AREA AND DE-WATER OR PROVIDE IN-STREAM EROSION CONTROL AS DETERMINED BY ENGINEER GIVEN CURRENT FLOW CONDITIONS
 6. TEMPORARY TRAIL CLOSURE WITH SIGNAGE REQUIRED, REVIEW PLAN W/ MPRB PRIOR TO STARTING WORK.



PROJECT TITLE:	MINNEHAHA CREEK FEMA REPAIR PROJECT		
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DATE:	10/01/2018	Prepared by:	Christopher J. Meehan
PROJECT NO.:	0185-0103	Date:	10/01/2018
DWN BY:	SJB	CHKD BY:	MUS
APPD BY:	CM	ISSUE DATE:	10/01/2018
ISSUE NO.:	0	SHEET TITLE:	SITE PLAN - PROJECTS 9 - 11
SHEET NO.:	C-105		



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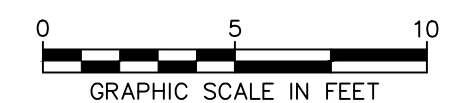
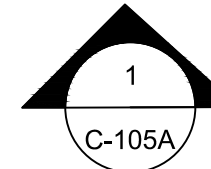
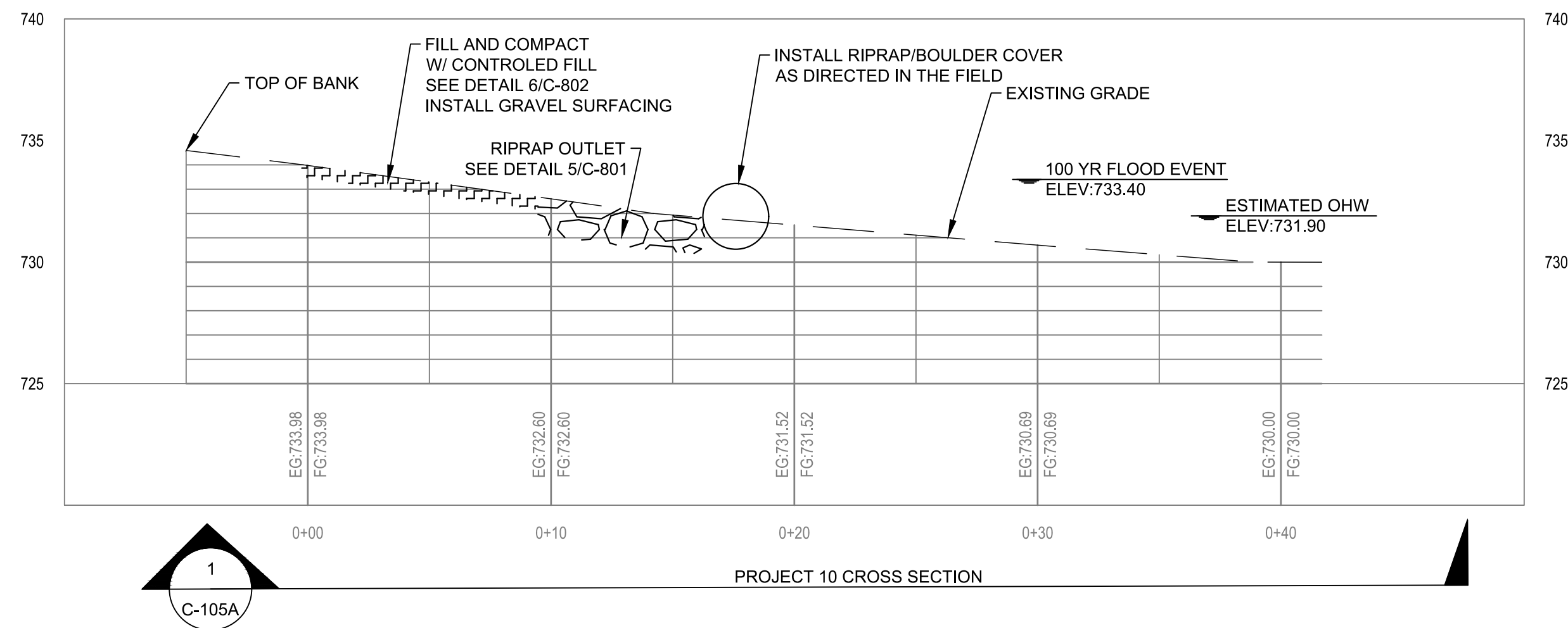


CLIENT:

MINNEHAHA CREEK
 WATERSHED DISTRICT
 QUALITY OF WATER, QUALITY OF LIFE



**MINNEHAHA CREEK FEMA
 REPAIR PROJECT**
 MINNEAPOLIS, MN



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License #: 43066

Date: 10/01/2018

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DWN BY:	CHKD BY:	APP'D BY:
SJB	MIS	CM

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SHEET TITLE:
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Christopher J. Meehan
Christopher J. Meehan

License #: 43066
Date: 10/01/2018

PROJECT NO.: 0185-0103

DWN BY: SJB CHKD BY: MIS APP'D BY: CM

ISSUE DATE: 10/01/2018

ISSUE NO.: 0

SHEET TITLE:
SITE PLAN -
PROJECT 13

SHEET NO.:
C-106



PROJECT 13 NOTES:

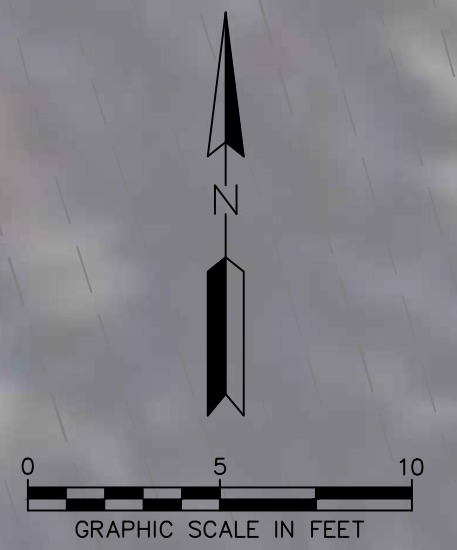
1. PROTECT ALL PAVEMENT, TRAILS, RETAINING WALLS, STONE SEATING BLOCKS AND OTHER SITE FEATURES. ANY DAMAGE TO EXISTING FEATURES SHALL BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR. ACCESS IS FROM THE TRAIL SOUTH OF BRIDGE 2. EQUIPMENT LOADING IS LIMITED IF USING THE BRIDGE.
2. RESTORE ALL ACCESS ROADS TO PRECONSTRUCTION CONDITIONS (INCIDENTAL)
3. CONTRACTOR MUST PROVIDE MEANS TO KEEP ALL MATERIALS FROM WASHING INTO THE CREEK.
4. REPAIR AREA OF THE LIMESTONE EDGER AND GRAVEL SHOWN IS APPROXIMATE AND SHALL BE FIELD DIRECTED AS NECESSARY TO COMPLETE THE WORK.
5. TEMPORARY TRAIL CLOSURE WITH SIGNAGE REQUIRED. REVIEW PLAN W/ MPRB PRIOR TO STARTING WORK.



PHOTO - PROJECT 13 LOOKING WEST, TOWARD PROJECT AREA



PHOTO - PROJECT 13 LOOKING NORTH, TOWARD PROJECT AREA





PROJECT TITLE:

ISSUE NO.:

DESCRIPTION:

DATE:

CERTIFICATION:

DATE:

PROJECT NO.:

DWN BY:

ISSUE DATE:

ISSUE NO.:

SHEET TITLE:

SHEET NO.:

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10/01/2018

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SJB

10/01/2018

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SITE PLAN -
PROJECT 30

C-107



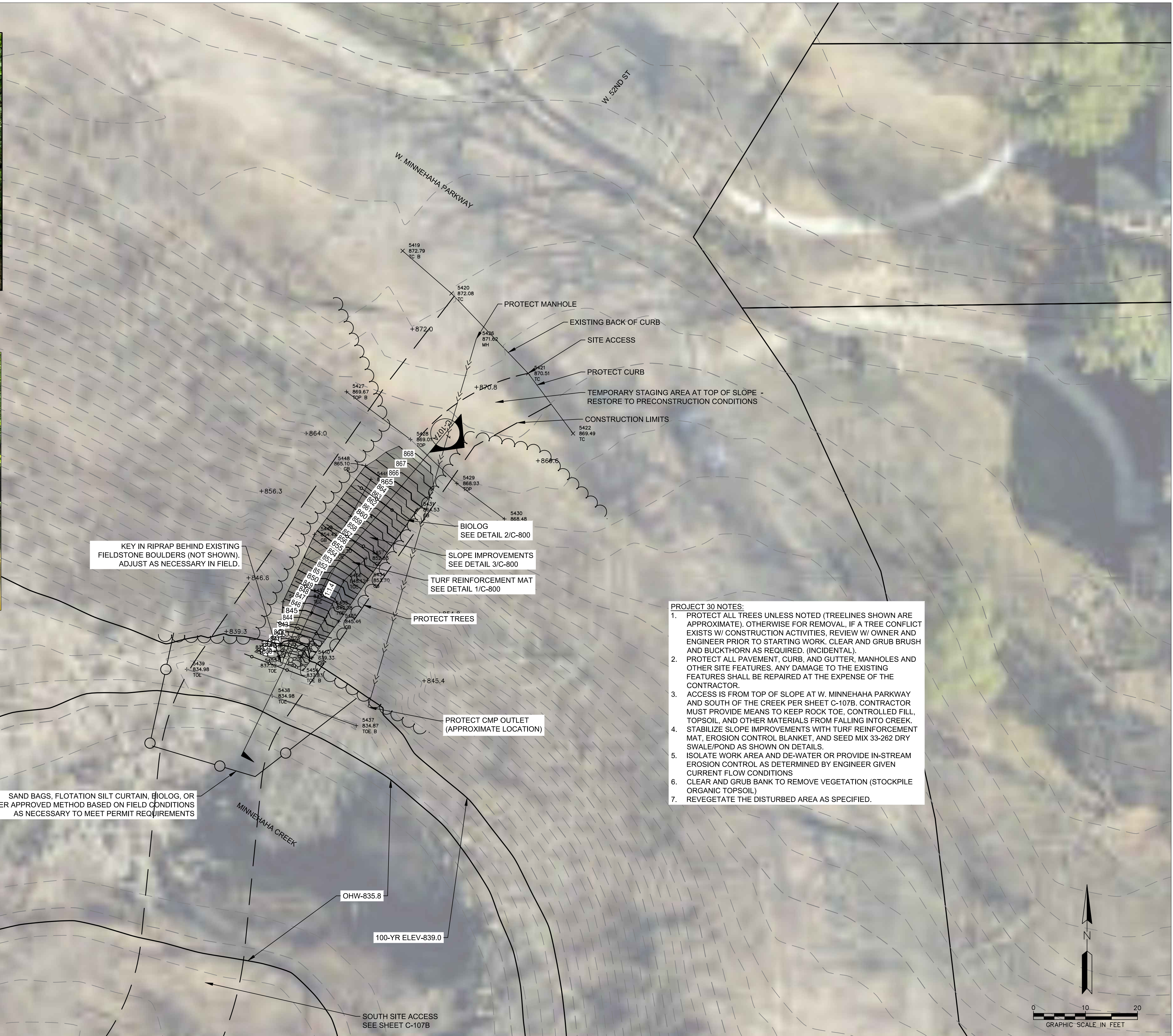
PHOTO - PROJECT 30 LOOKING SOUTH, DOWN SLOPE FROM W MINNEHAHA PARKWAY



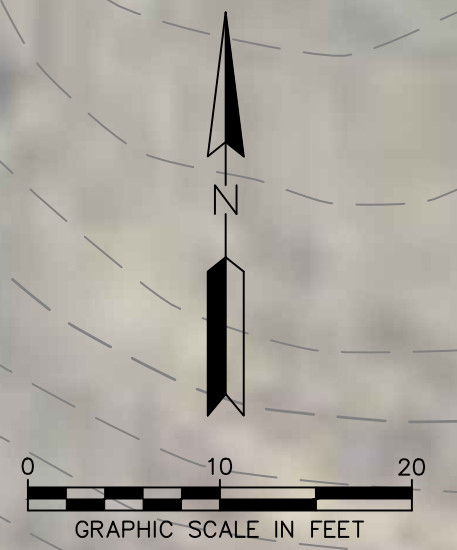
PHOTO - PROJECT 30 LOOKING EAST, AT TOE OF SLOPE FROM MINNEHAHA CREEK



PHOTO - PROJECT 30 LOOKING NORTH, UP SLOPE FROM MINNEHAHA CREEK



- PROJECT 30 NOTES:**
1. PROTECT ALL TREES UNLESS NOTED (TREE LINES SHOWN ARE APPROXIMATE). OTHERWISE FOR REMOVAL, IF A TREE CONFLICT EXISTS W/ CONSTRUCTION ACTIVITIES, REVIEW W/ OWNER AND ENGINEER PRIOR TO STARTING WORK. CLEAR AND GRUB BRUSH AND BUCKTHORN AS REQUIRED. (INCIDENTAL).
 2. PROTECT ALL PAVEMENT, CURB, AND GUTTER, MANHOLES AND OTHER SITE FEATURES. ANY DAMAGE TO THE EXISTING FEATURES SHALL BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR.
 3. ACCESS IS FROM TOP OF SLOPE AT W. MINNEHAHA PARKWAY AND SOUTH OF THE CREEK PER SHEET C-107B. CONTRACTOR MUST PROVIDE MEANS TO KEEP ROCK TOE, CONTROLLED FILL, TOPSOIL, AND OTHER MATERIALS FROM FALLING INTO CREEK.
 4. STABILIZE SLOPE IMPROVEMENTS WITH TURF REINFORCEMENT MAT, EROSION CONTROL BLANKET, AND SEED MIX 33-262 DRY SWALE/POND AS SHOWN ON DETAILS.
 5. ISOLATE WORK AREA AND DE-WATER OR PROVIDE IN-STREAM EROSION CONTROL AS DETERMINED BY ENGINEER GIVEN CURRENT FLOW CONDITIONS
 6. CLEAR AND GRUB BANK TO REMOVE VEGETATION (STOCKPILE ORGANIC TOPSOIL)
 7. REVEGETATE THE DISTURBED AREA AS SPECIFIED.





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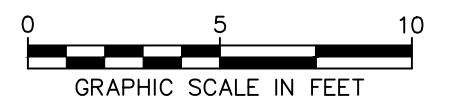
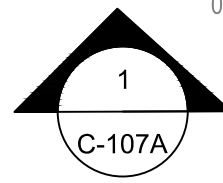
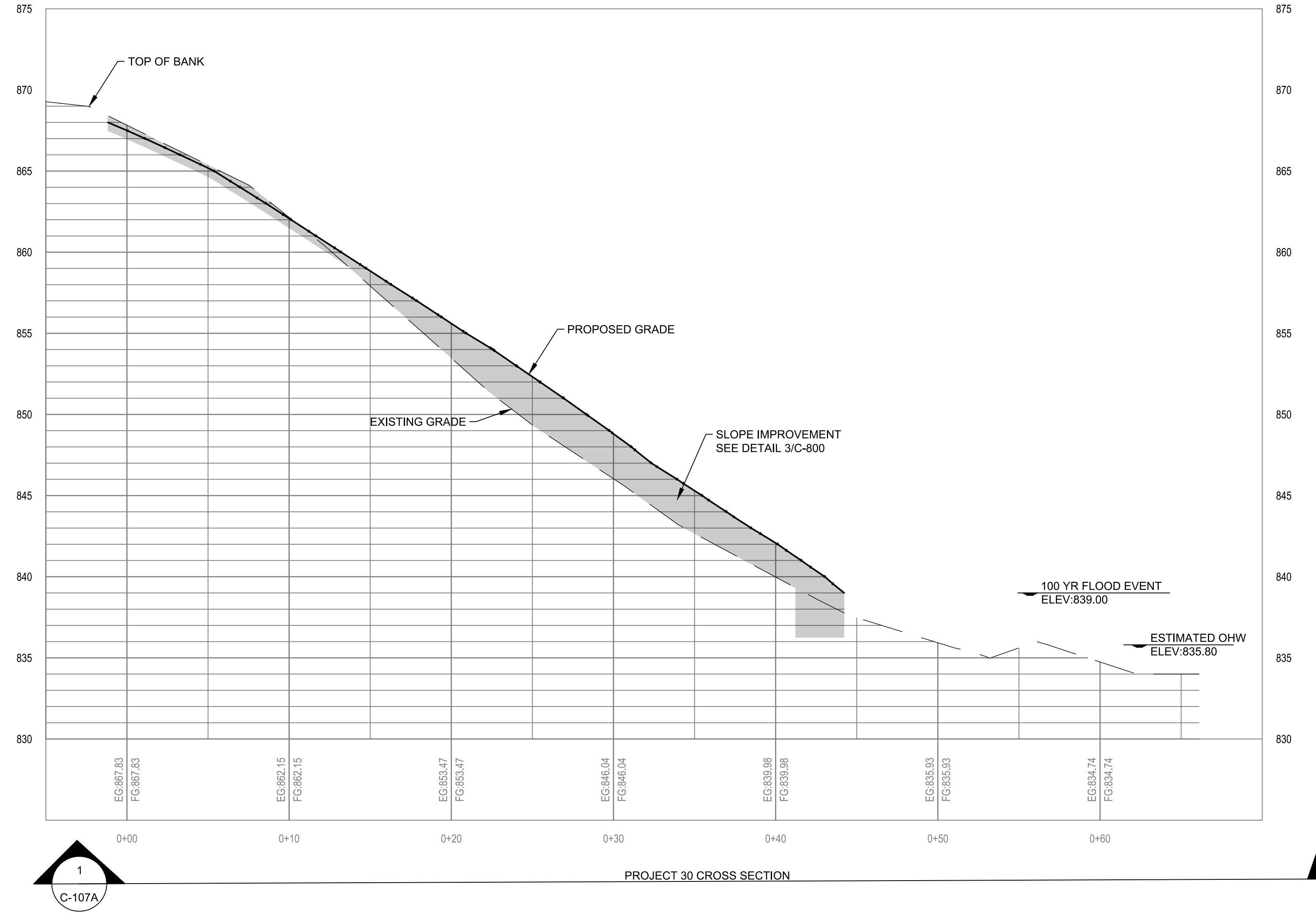


CLIENT:

MINNEHAHA CREEK
WATERSHED DISTRICT
QUALITY OF WATER, QUALITY OF LIFE



**MINNEHAHA CREEK FEMA
REPAIR PROJECT**
MINNEAPOLIS, MN



PROJECT TITLE:

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DWN BY: SJB | CHKD BY: MIS | APP'D BY: CM

ISSUE DATE: 10/01/2018

ISSUE NO.: 0

SHEET TITLE:
CROSS SECTION - PROJECT 30

SHEET NO.: C-107A



PROJECT 30 ACCESS AND RESTORATION NOTES:

1. ACCESS TO THE SITE IS PROVIDED FROM 52ND ST/W MINNEHAHA PARKWAY ON THE NORTH, AND THROUGH THE MPRB PARK LAND ON THE SOUTH. LIMITS SHOWN ARE APPROXIMATE AND WILL BE DELINEATED IN THE FIELD BY THE OWNER AND ENGINEER. PROVIDE CONSTRUCTION FENCE/SNOW FENCE AT LIMITS.
2. CONTRACTOR TO PROTECT ALL TREES WITHIN THE CONSTRUCTION LIMITS, EXCEPT WHERE NOTED, OR AS APPROVED BY MPRB AND THE OWNER. BUCKTHORN MAY BE REMOVED BY CONTRACTOR AS REQUIRED FOR CONSTRUCTION WITHOUT PERMISSION. DAMAGE TO EXISTING TREES TO REMAIN SHALL BE REPLACED BY CONTRACTOR AT NO COST TO THE OWNER.
3. TIE BACK TREE BRANCHES TO PREVENT DAMAGE AS APPROVED BY MPRB WHEN IN CONFLICT WITH CONSTRUCTION ACTIVITIES.
4. PROVIDE GEOTEXTILE FABRIC AND 6" WOODCHIP MULCH WHERE CONSTRUCTION ACTIVITIES IMPACT RED OAK ROOT ZONES. CONSTRUCTION LIMITS SHALL BE A MINIMUM OF 8 FEET FROM THE TREE TRUNKS.
5. PROVIDE MEANS FOR SECURITY AND SAFETY OF STAGING AREA, EQUIPMENT, MATERIALS, ETC.
6. RESTORE SITE ACCESS AND STAGING AREA WITH MNDOT SEED MIXES 25-131 & 36-711 (AS DIRECTED) AND STRAW MULCH TO PRECONSTRUCTION CONDITIONS AT COMPLETION OF THE PROJECT. SCARIFY AND LOOSEN SOIL AS REQUIRED OR AS DIRECTED BY THE OWNER AND ENGINEER FOR INSTALLATION OF SEED AND STRAW MULCH.
7. REVIEW AND COMPLY WITH ALL ROAD WEIGHT LIMITS/RESTRICTIONS.
8. PROVIDE FLAGGERS AND SIGNAGE PER MNDOTCD AND LATEST FIELD MANUAL FOR ACCESS TO THE SITE AND TRUCKS HAULING. PROVIDE TRAFFIC CONTROL PLAN FOR REVIEW. NO ROAD CLOSURES ALLOWED.
9. MAINTAIN ACCESS TO ACCESS TO ADJACENT TRAILS AND ROADWAY.
10. PROTECT PAVEMENTS AND CURB FROM DAMAGE WITH PROTECTION MEASURES/SURFACE TREATMENT AS REQUIRED. DAMAGED PAVEMENT AND/OR CURB AS A RESULT OF CONSTRUCTION ACTIVITIES SHALL BE REPLACED AT THE EXPENSE OF THE CONTRACTOR.



PROJECT TITLE:

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DWN BY: SJB CHKD BY: MUS APPD BY: CM

ISSUE DATE: 10/01/2018

ISSUE NO.: 0

SHEET TITLE:
 SITE ACCESS - PROJECT 30

SHEET NO.:
C-107B

PROJECT INFORMATION

PROJECT NAME: 2018 FEMA FLOODWAY REPAIRS
PROJECT LOCATION: MINNEHAHA CREEK WATERSHED DISTRICT
PROJECT TYPE: STREAM BANK RESTORATION

TOTAL AREA DISTURBED BY CONSTRUCTION: ±0.3 ACRES.
TOTAL SITE AREA: ±0.3 ACRES.
ESTIMATED CONSTRUCTION DATES: OCTOBER 2018-MARCH 2019

CUMULATIVE IMPERVIOUS SURFACE/PERMANENT STORMWATER MANAGEMENT REQUIREMENTS:
THERE IS CURRENTLY ±0.1 ACRES OF EXISTING IMPERVIOUS SURFACE IN THE PROJECT AREA.

THE PROPOSED AREA OF IMPERVIOUS IS ±0.1 ACRES RESULTING IN A ±0.0 ACRE NET INCREASE IN IMPERVIOUS SURFACE.

THE SITE ULTIMATELY DRAINS TO, AND IS LOCATED DIRECTLY ON, MINNEHAHA CREEK, WHICH IS LISTED AS AN IMPAIRED WATER FOR AQUATIC LIFE AND AQUATIC RECREATION.

THE CONSTRUCTION PLANS OUTLINE STABILIZATION PRACTICES INCLUDING RIPRAP, ROCK TOES, SEEDING, AND INSTALLATION OF EROSION CONTROL BLANKET FOR VEGETATIVE RE-ESTABLISHMENT.

PARTY RESPONSIBLE FOR LONG TERM OPERATION AND MAINTENANCE OF THE SITE (OWNER):
MINNEHAHA CREEK WATERSHED DISTRICT
CONTACT: TIFFANY SCHAUFLEDER
CONTACT PHONE: (952) 471-0590
CONTACT EMAIL: TSCHAUFLEDER@MINNEHAHACREEK.ORG

PARTY RESPONSIBLE FOR IMPLEMENTATION OF THE SWPPP (CONTRACTOR):
TBD - CONTRACTOR SHALL PROVIDE A CHAIN OF RESPONSIBILITY WITH ALL OPERATORS ON THE SITE FOR INCORPORATION INTO THIS SWPPP DOCUMENT TO ENSURE THAT THE SWPPP WILL BE IMPLEMENTED AND STAY IN EFFECT UNTIL THE CONSTRUCTION PROJECT IS COMPLETE (THROUGH FINAL STABILIZATION AND NOT SUBMITTAL).

INSPECTIONS

THE INSPECTION LOG WILL BE COMPLETED BY THE CONTRACTOR FOR THE CONSTRUCTION SITE.
INSPECTOR(S): TBD - TRAINING DOCUMENTATION (PER PART IV.E OF THE PERMIT) WILL BE INCORPORATED INTO THIS SWPPP AS SOON AS THE PERSONNEL FOR THE PROJECT HAVE BEEN DETERMINED.

INSPECTIONS AT THE SITE WILL BE COMPLETED IN ACCORDANCE WITH THE PERMIT AS FOLLOWS:
ONCE EVERY SEVEN (7) DAYS DURING ACTIVE CONSTRUCTION AND,
WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 0.5 INCHES IN 24 HOURS.

- 1. THE INDIVIDUAL PERFORMING INSPECTIONS MUST BE TRAINED AS REQUIRED BY PART IV.E OF THE PERMIT. TRAINING DOCUMENTATION SHALL BE PROVIDED BY THE CONTRACTOR FOR INCORPORATION INTO THE SWPPP.

AT A MINIMUM, THE FOLLOWING SHALL BE COMPLETED DURING EACH INSPECTION:

- RECORD DATE AND TIME OF INSPECTION.
-RECORD RAINFALL RECORDS SINCE THE MOST RECENT INSPECTION.
-INSPECT THE SITE FOR EXCESS EROSION AND SEDIMENTATION.
-INSPECT THE SITE FOR DEBRIS, TRASH, AND SPILLS.

THE GC MUST UPDATE THE SWPPP, INCLUDING THE JOBSITE BINDER AND SITE MAPS, TO REFLECT THE PROGRESS OF CONSTRUCTION ACTIVITIES AND GENERAL CHANGES TO THE PROJECT SITE.

THE CONTRACTOR MAY UPDATE OR MODIFY THE SWPPP WITHOUT ENGINEER APPROVAL IN AN EMERGENCY SITUATION TO PREVENT SEDIMENT DISCHARGE OR PROTECT WATER QUALITY.

EROSION AND SEDIMENT CONTROL

PRIOR TO ANY SITE DISTURBANCE, AND AS REQUIRED AS CONSTRUCTION PROGRESSES, ANY PERMIT REQUIRED EROSION PREVENTION MEASURES AND THE SEDIMENT CONTROL DEVICES (BIOLOG, EROSION CONTROL BLANKET) SHOWN ON THE CONSTRUCTION DRAWINGS WILL BE INSTALLED AT THE SITE.

ALL EXPOSED SOIL AREAS WITHIN THE CONSTRUCTION LIMITS WILL BE STABILIZED WITHIN 7 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY (WILL NOT RESUME FOR A PERIOD EXCEEDING 7 CALENDAR DAYS) OR PERMANENTLY CEASED.

CONTRACTOR SHALL IMPLEMENT APPROPRIATE CONSTRUCTION PHASING, VEGETATIVE BUFFER STRIPS, HORIZONTAL SLOPE GRADING, AND OTHER CONSTRUCTION PRACTICES THAT MINIMIZE EROSION WHEN PRACTICAL.

SWPPP IMPLEMENTATION, PHASING, AND SEQUENCE OF CONSTRUCTION

BMP AND EROSION CONTROL INSTALLATION SEQUENCE SHALL BE AS FOLLOWS:

- 1. INSTALL PERIMETER CONTROL, IF APPLICABLE.
2. PREPARE TEMPORARY STORAGE, PARKING, AND PHASING AREAS.
3. CONSTRUCT AND STABILIZE DIVERSIONS AND TEMPORARY SEDIMENT TRAPS/BASINS, IF REQUIRED.

SEDIMENT CONTROL PRACTICES MUST MINIMIZE SEDIMENT FROM ENTERING SURFACE WATERS, INCLUDING CURB AND GUTTER SYSTEMS AND STORM SEWER INLETS.

- 1. INSTALLATION OF SEDIMENT CONTROL PRACTICES ON ALL DOWN GRADIENT PERIMETERS PRIOR TO LAND DISTURBING ACTIVITIES.
2. STREET SWEEPING SHALL BE PERFORMED IF VEHICLE TRACKING BMPs ARE NOT ADEQUATE TO PREVENT SEDIMENT TRACKING.

THE FOLLOWING GUIDELINES WILL BE USED TO DETERMINE IF POLLUTION CONTROL DEVICES REQUIRE MAINTENANCE, REPAIR, OR REPLACEMENT:

-IF SEDIMENT CONTROL DEVICES SUCH AS SILT FENCE ARE FILLED TO 1/3 THE HEIGHT OF THE FENCE, REMOVE ALL SEDIMENT WITHIN 24 HOURS OF DETECTION OR NOTIFICATION.

-IF INLET PROTECTION DEVICES APPEAR PLUGGED WITH SEDIMENT, ARE FILLED TO 1/3 CAPACITY, OR HAVE STANDING WATER AROUND THEM, REMOVE THE SEDIMENT AND CLEAN OR REPLACE THE FILTER WITHIN 24 HOURS OF DETECTION OR NOTIFICATION.

-IF THE GRAVEL CONSTRUCTION ENTRANCE(S) ARE FILLED WITH SEDIMENT EITHER REPLACE THE ENTRANCE OR ADD ADDITIONAL GRAVEL WITH 24 HOURS OF DETECTION OR NOTIFICATION.

-IF SEDIMENT FROM THE SITE IS OBSERVED ON ADJACENT STREETS OR OTHER PROPERTIES, THE INSPECTOR SHALL IDENTIFY THE SOURCE AND DISCHARGE LOCATION OF THE SEDIMENT AND INSTRUCT TO IMPLEMENT ADDITIONAL EROSION AND SEDIMENT CONTROLS AT THOSE LOCATIONS TO PREVENT FUTURE DISCHARGES.

-IF BUILDING MATERIALS, CHEMICALS, OR GENERAL REFUSE IS BEING USED, STORED, DISPOSED OF, OR OTHERWISE MANAGED INAPPROPRIATELY, CORRECT SUCH DEFECTS WITHIN 24 HOURS OF DETECTION OR NOTIFICATION.

-IF EXCESSIVE SEDIMENTS OR DEBRIS ARE OBSERVED AT THE FLARED END SECTION OUTFALLS, THE INSPECTOR SHALL DETERMINE THE SOURCE AND DISCHARGE LOCATIONS OF SUCH MATERIALS. IF THE DISCHARGE HAS OCCURRED ON THE PROPERTY, REMOVE THE SEDIMENTS AND DEBRIS WITHIN 24 HOURS OF NOTIFICATION AND CORRECT THE SOURCE OF SUCH MATERIALS AS DIRECTED BY THE INSPECTOR

CERTIFICATION

IN ACCORDANCE WITH PART III.A.2.A.I. OF THE GENERAL PERMIT AUTHORIZATION TO DISCHARGE STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITY UNDER THE NPDES, THE PREPARER OF THIS DOCUMENT WAS TRAINED UNDER THE UNIVERSITY OF MINNESOTA EROSION AND SEDIMENT CONTROL CERTIFICATION PROGRAM.

POLLUTION PREVENTION MEASURES

SOLID WASTE
SOLID WASTE, INCLUDING BUT NOT LIMITED TO, COLLECTED ASPHALT AND CONCRETE MILLINGS, FLOATING DEBRIS, PAPER, PLASTIC, FABRIC, CONSTRUCTION AND DEMOLITION DEBRIS AND OTHER WASTE MUST BE DISPOSED OF PROPERLY AND MUST COMPLY WITH MPCA DISPOSAL REQUIREMENTS.

HAZARDOUS MATERIALS
HAZARDOUS MATERIALS, INCLUDING BUT NOT LIMITED TO OIL, GASOLINE, PAINT AND ANY HAZARDOUS SUBSTANCE MUST BE PROPERLY STORED INCLUDING SECONDARY CONTAINMENTS, TO PREVENT SPILLS, LEAKS OR OTHER DISCHARGE.

CONSTRUCTION EQUIPMENT/VEHICLES
EXTERNAL WASHING OF TRUCKS AND OTHER CONSTRUCTION VEHICLES MUST BE LIMITED TO A DEFINED AREA OF THE SITE. RUNOFF MUST BE CONTAINED AND WASTE PROPERLY DISPOSED OF.

CONCRETE WASHOUT AREA
CONCRETE WASHOUT WILL BE PERMITTED ON-SITE; CONTRACTOR SHALL FOLLOW ALL PERMIT REQUIREMENTS FOR CONCRETE WASHOUT. THE CONTRACTOR SHALL PROVIDE EFFECTIVE CONTAINMENT FOR ALL LIQUID AND SOLID WASTES GENERATED BY WASHOUT OPERATIONS.

FERTILIZERS AND LANDSCAPE MATERIALS MUST BE UNDER COVER TO PREVENT THE DISCHARGE OF POLLUTANTS OR PROTECTED BY SIMILARLY EFFECTIVE MEANS DESIGNED TO MINIMIZE CONTACT WITH STORMWATER.

PORTABLE TOILETS MUST BE POSITIONED SO THAT THEY ARE SECURE AND WILL NOT BE TIPPED OR KNOCKED OVER - SANITARY WASTE MUST BE DISPOSED OF PROPERLY.

GENERAL SWPPP NOTES

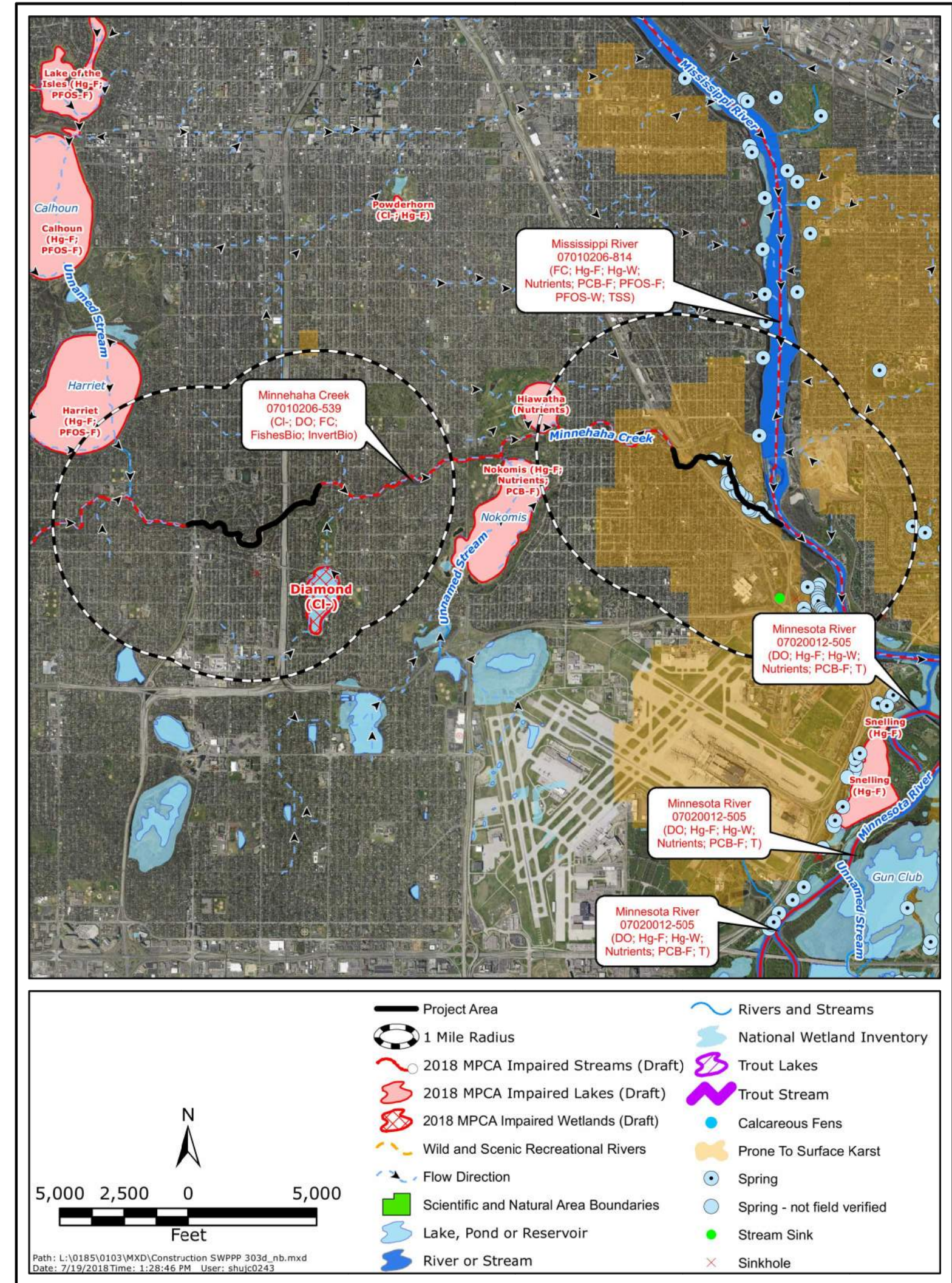
DEWATERING IS NOT ANTICIPATED TO BE REQUIRED. IN THE EVENT THAT DEWATERING IS NECESSARY CONTRACTOR SHALL COMPLY WITH PERMIT PART IV.D. REQUIREMENTS FOR DEWATERING.

THIS SWPPP SHALL BE AMENDED BY THE CONTRACTOR IN ACCORDANCE WITH THE PERMIT AS NECESSARY TO INCLUDE ADDITIONAL REQUIREMENTS TO CORRECT PROBLEMS IDENTIFIED OR ADDRESS SITUATIONS PER PART III.B. OF THE PERMIT.

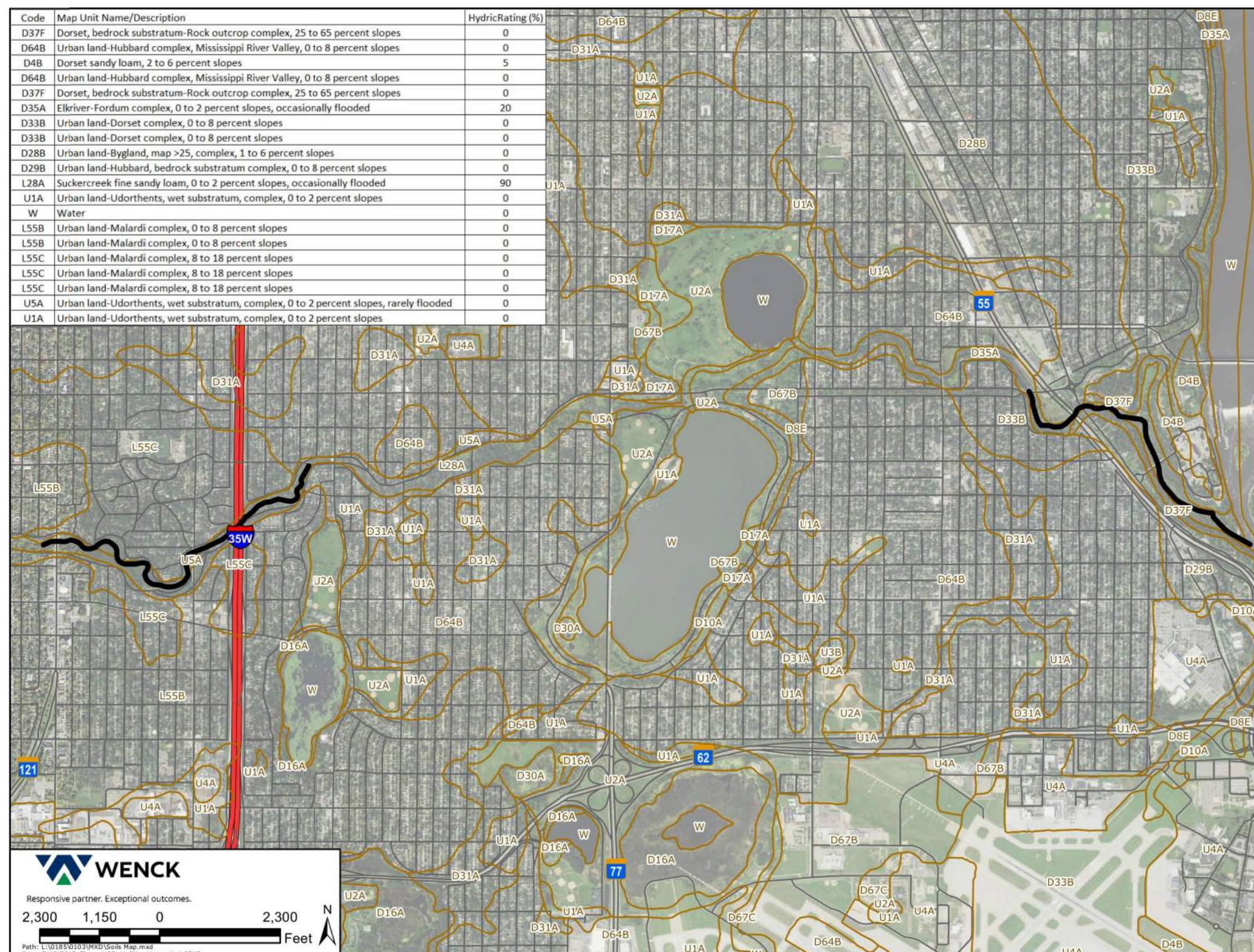
THE PROJECT MAY DISTURB 5 OR MORE ACRES THAT PROMOTE DRAINAGE TO A COMMON LOCATION. THEREFORE A TEMPORARY SEDIMENT BASIN MAY BE REQUIRED. THIS SWPPP SHALL BE AMENDED BY THE CONTRACTOR IN ACCORDANCE WITH THE GENERAL PERMIT TO INCLUDE TEMPORARY SEDIMENTATION BASINS.

FINAL STABILIZATION

ALL PERVIOUS AREAS DISTURBED BY CONSTRUCTION AS DESIGNATED WILL RECEIVE VEGETATIVE COVER ACCORDING TO THE PLANS AND SPECIFICATIONS AND WITHIN THE SPECIFIED VEGETATIVE TIME SCHEDULE. FINAL STABILIZATION WILL OCCUR WHEN THE SITE HAS A UNIFORM VEGETATIVE COVER WITH A DENSITY OF 70% OVER THE RESTORED PERVIOUS AREAS.



SOIL MAP



WENCK logo and contact info. MINNEHAHA CREEK WATERSHED DISTRICT logo. PROJECT TITLE: MINNEHAHA CREEK FEMA REPAIR PROJECT. SHEET NO.: EC-200.

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CLIENT:

MINNEHAHA CREEK
WATERSHED DISTRICT
QUALITY OF WATER, QUALITY OF LIFE



PROJECT TITLE:
MINNEHAHA CREEK FEMA
REPAIR PROJECT
MINNEAPOLIS, MN

PROJECT TITLE:

ISSUE NO.:

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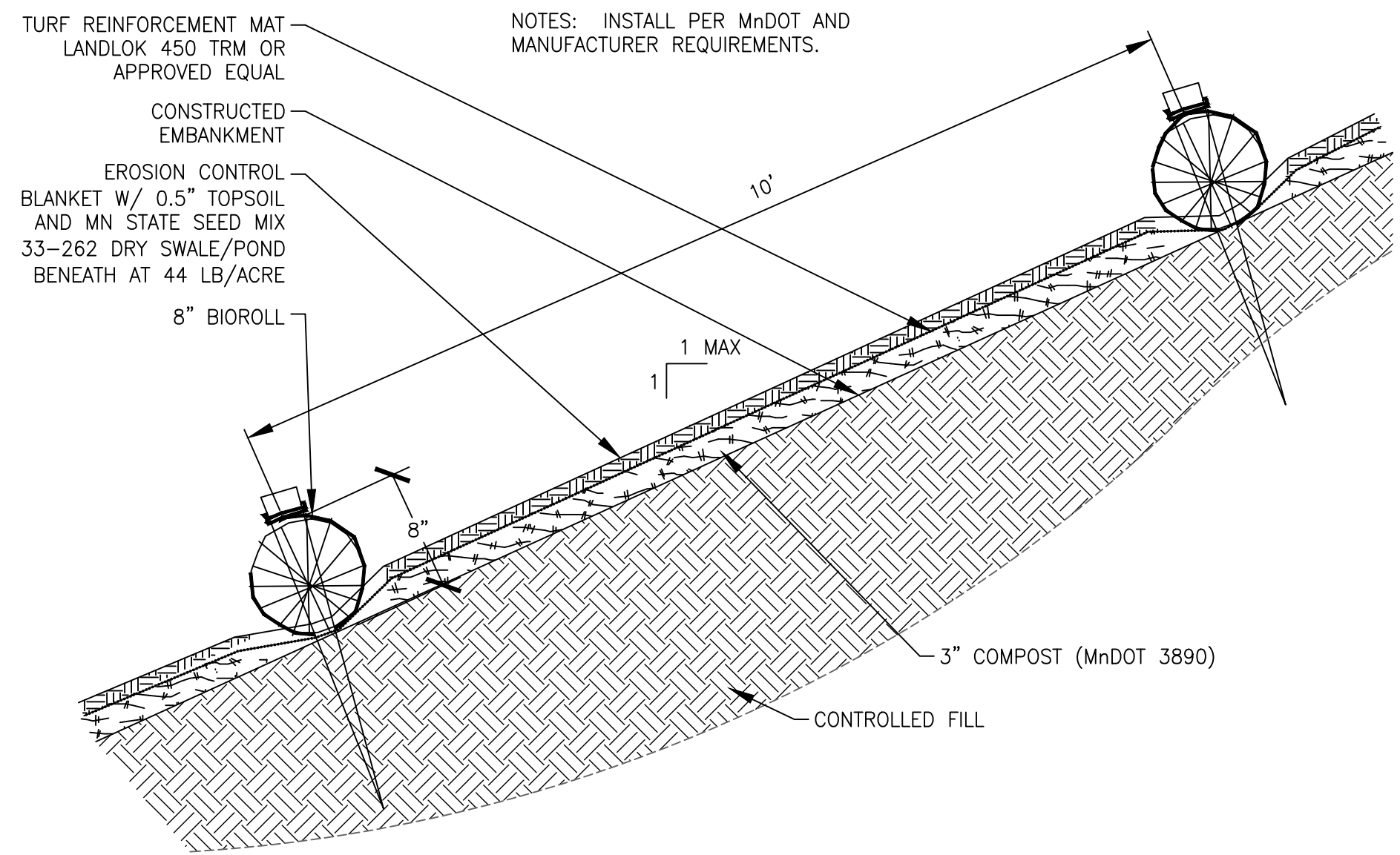
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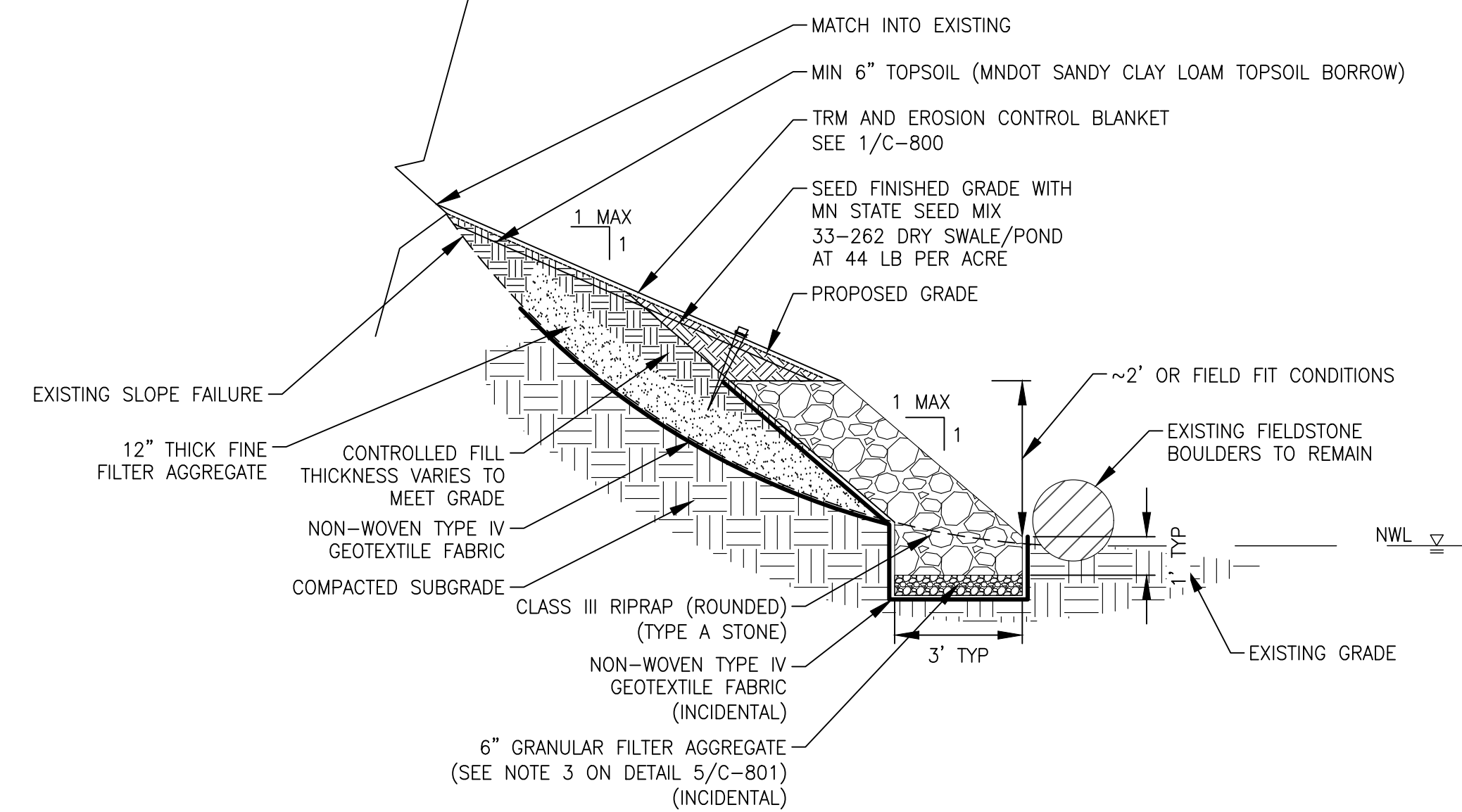
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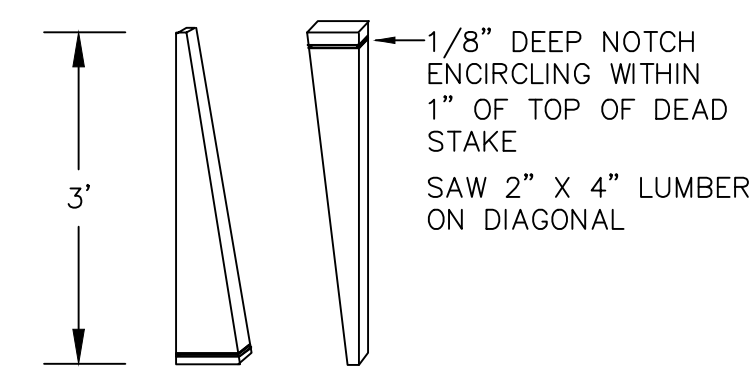
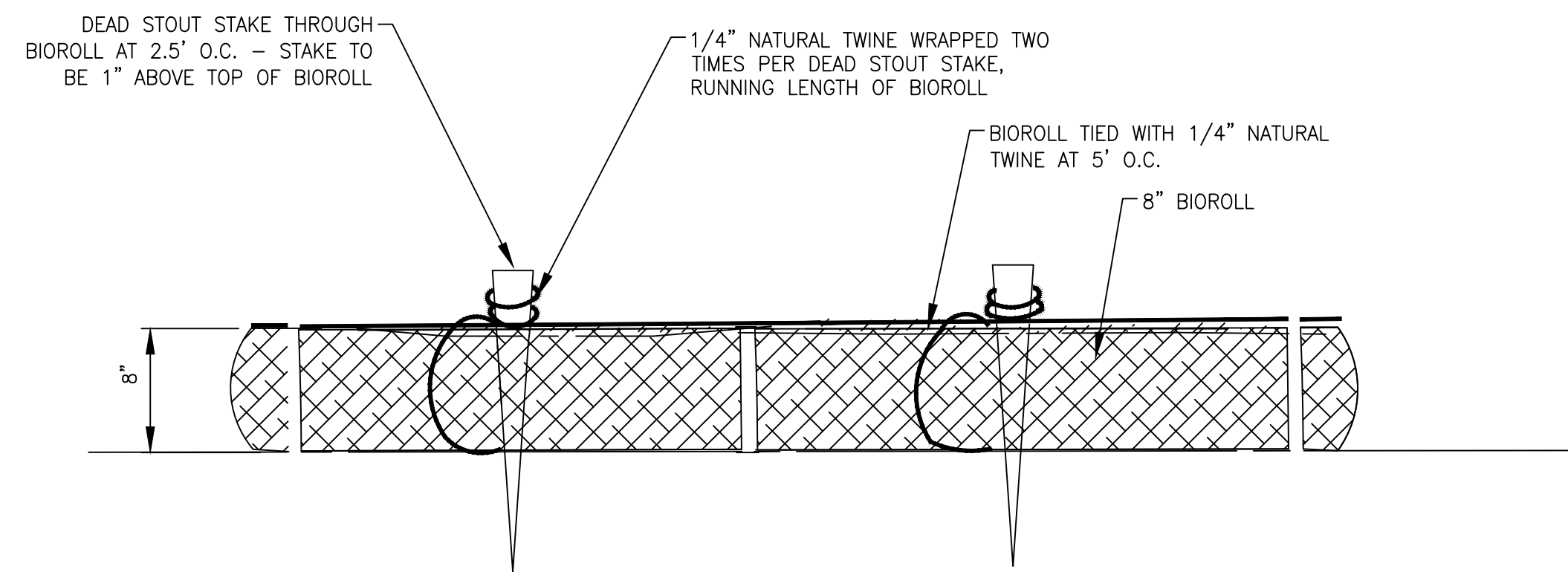
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C-800

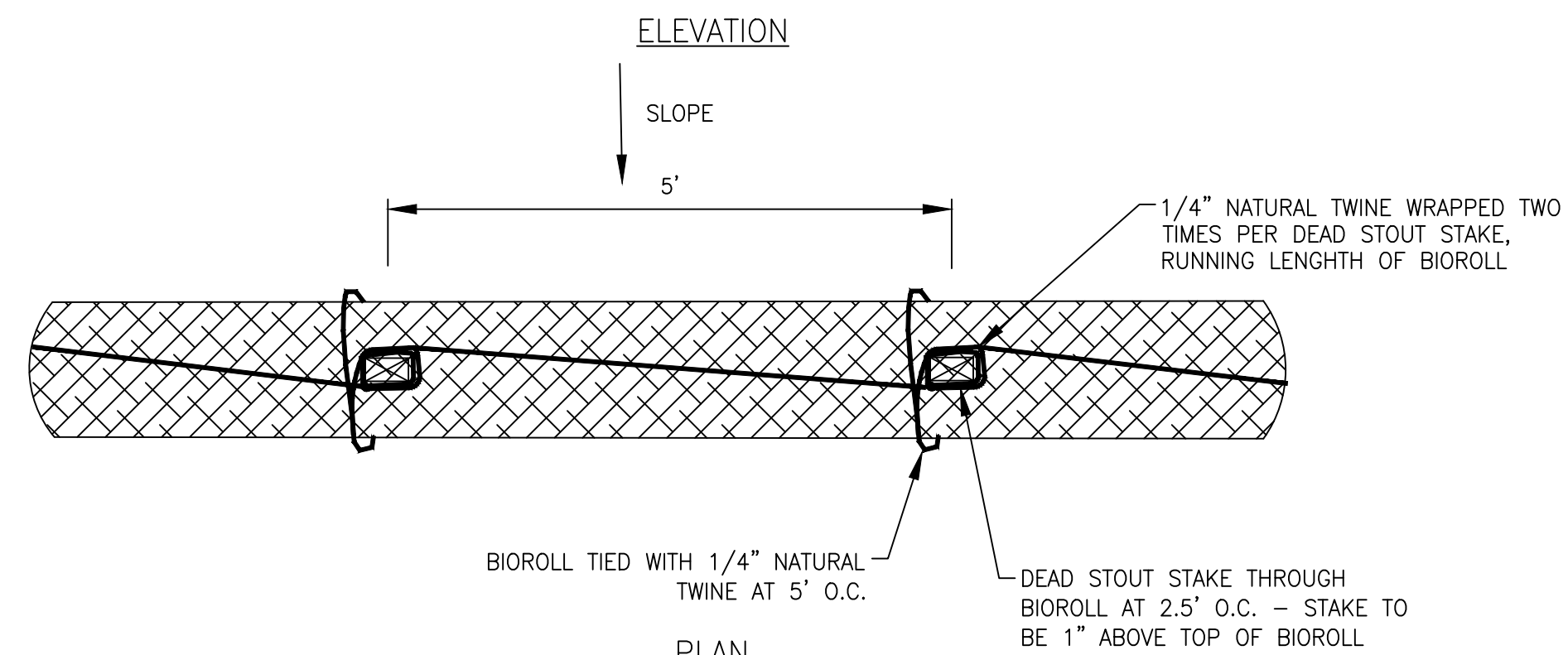


SLOPE IMPROVEMENT
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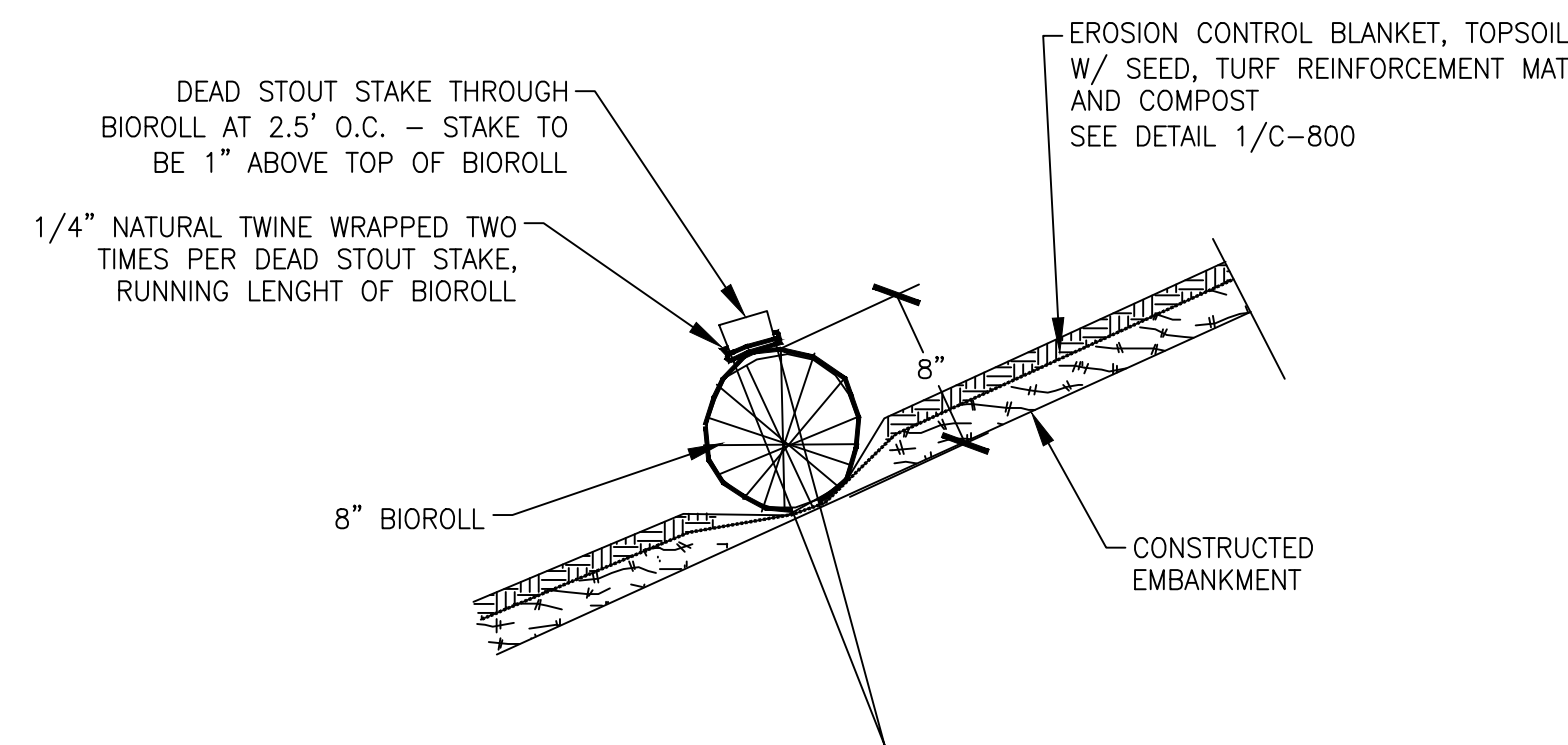


TYPICAL DEAD STOUT STAKE



BIOROLL
NOT TO SCALE

2
C-800

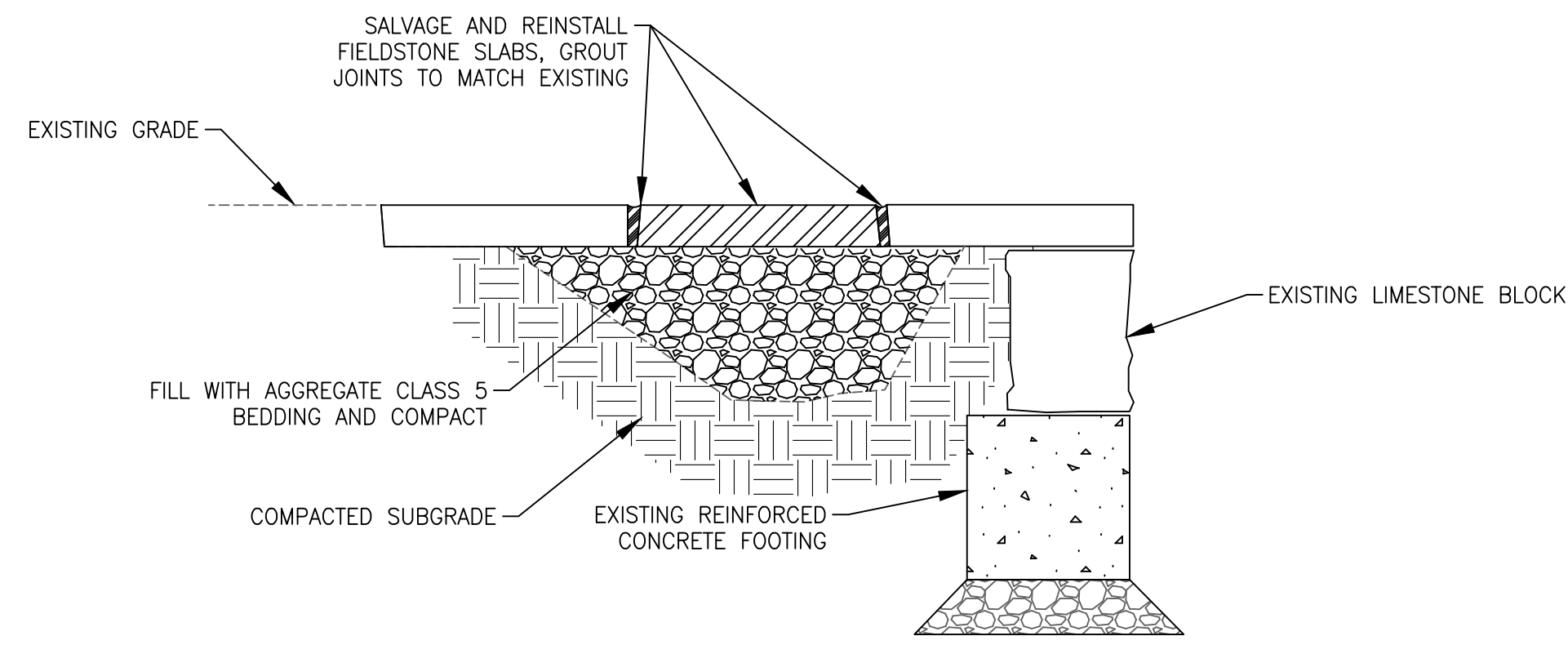


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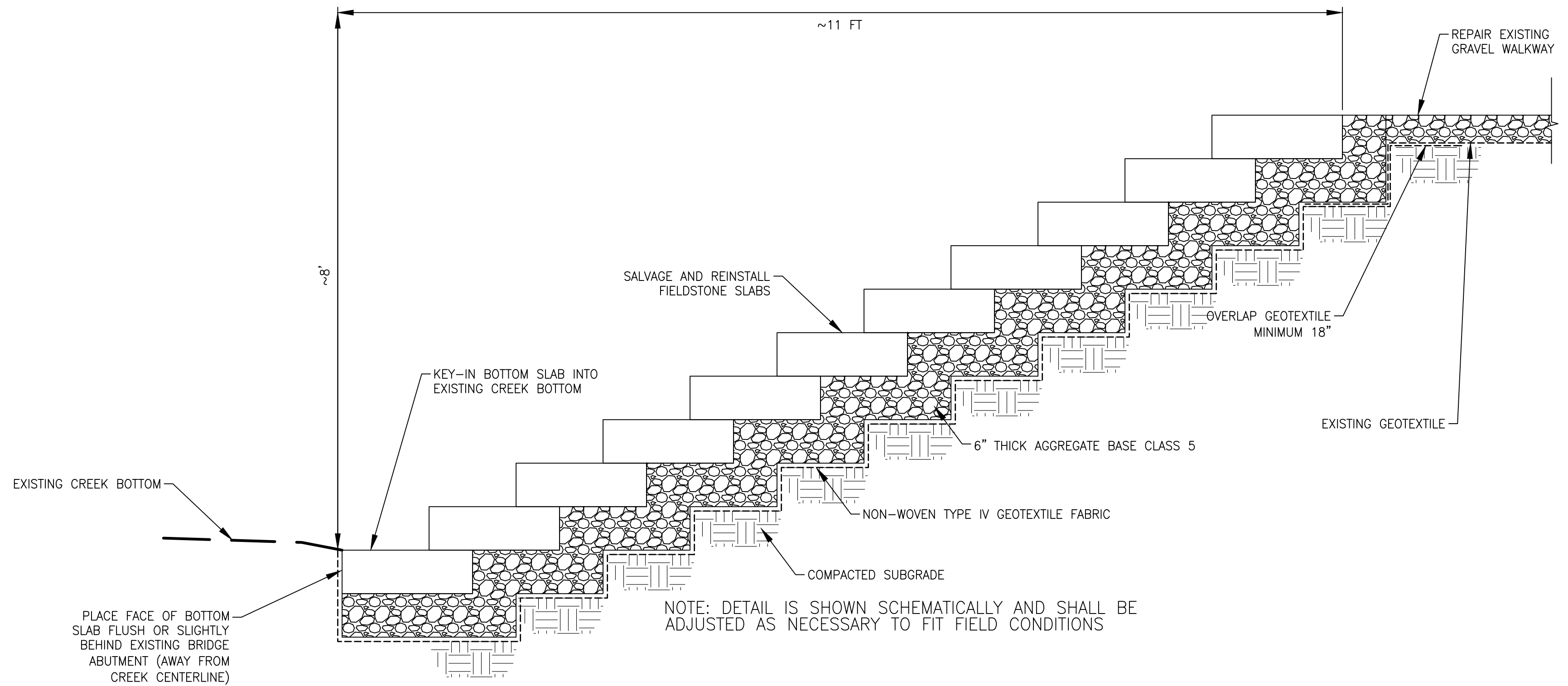
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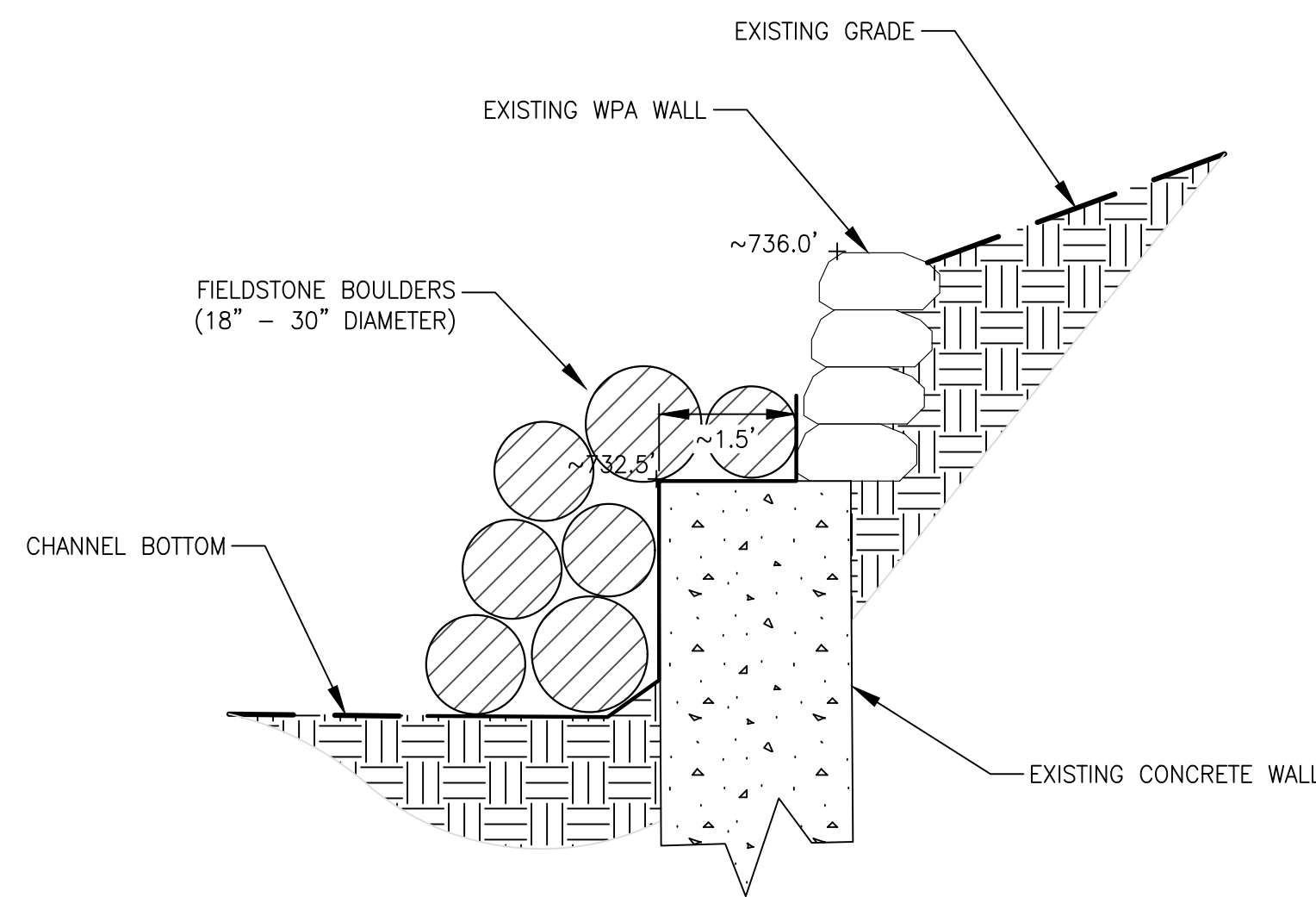
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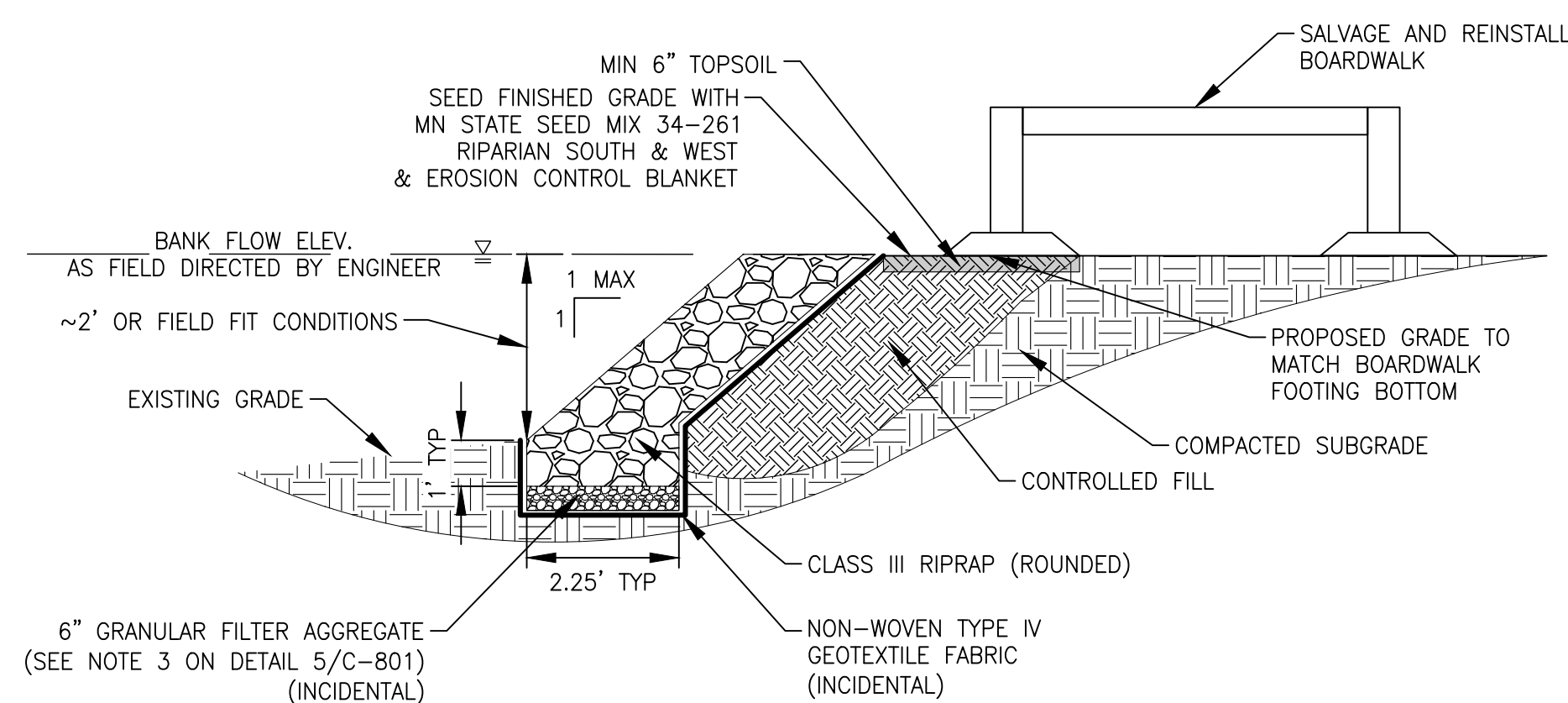
FIELDSTONE SLAB REPAIR
NOT TO SCALE 1
C-801



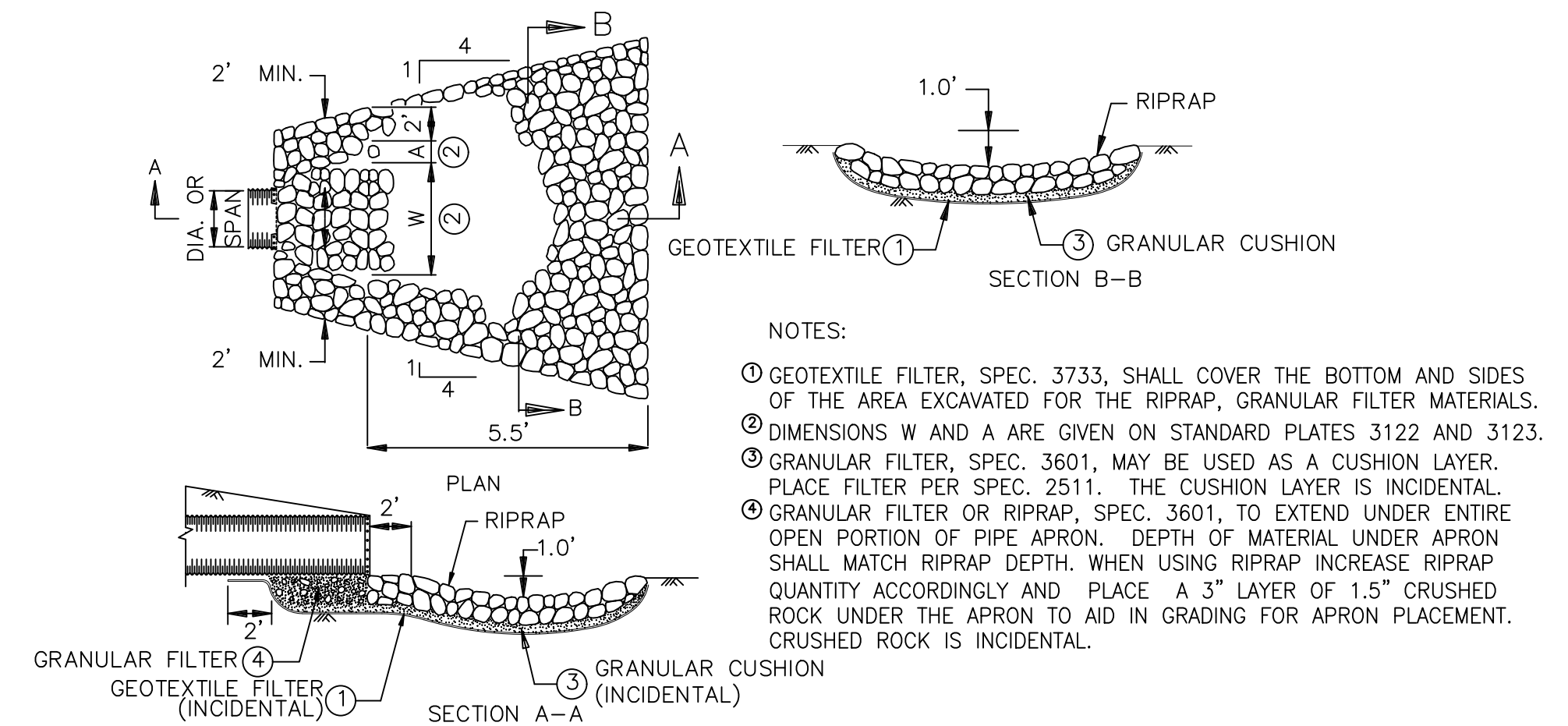
FIELDSTONE SLABS REPAIR - PROJECT 11
NOT TO SCALE 2
C-801



RIPRAP/BOULDER COVER
NOT TO SCALE 3
C-801



CLASS III RIPRAP TOE & CONTROLLED FILL DETAIL
NOT TO SCALE 4
C-801



PIPE OUTLET RIPRAP
NOT TO SCALE 5
C-801



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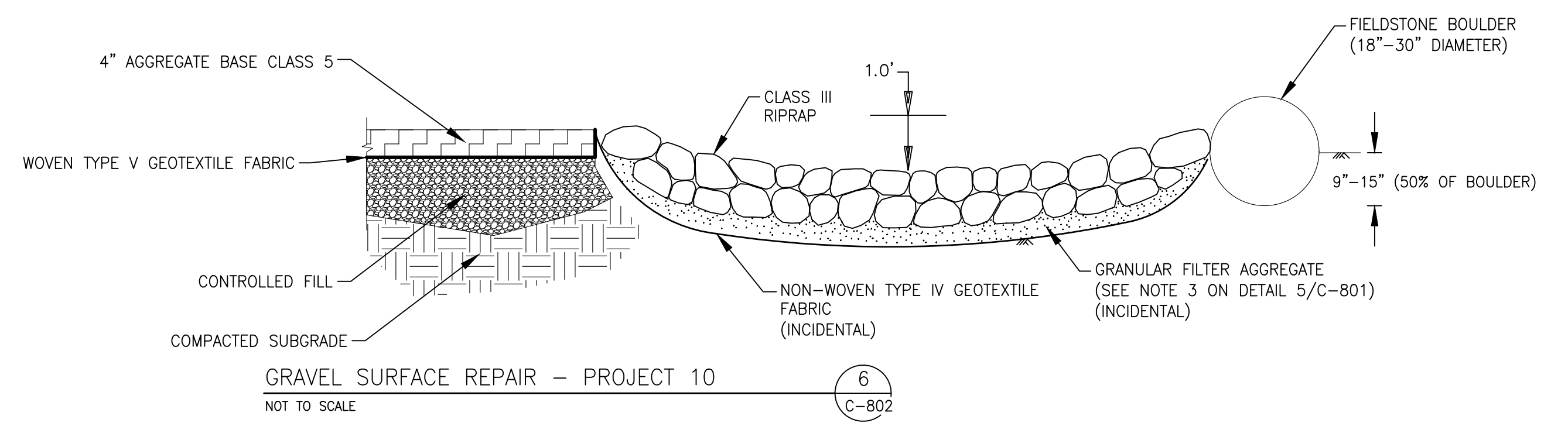
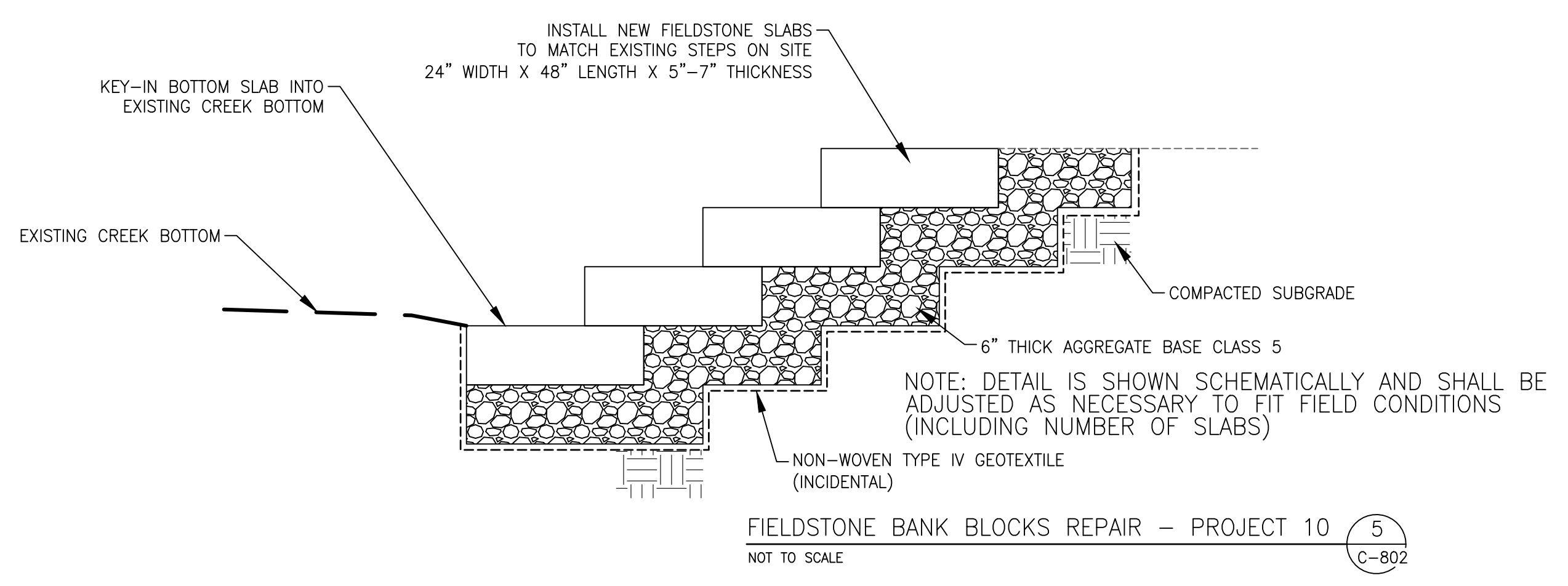
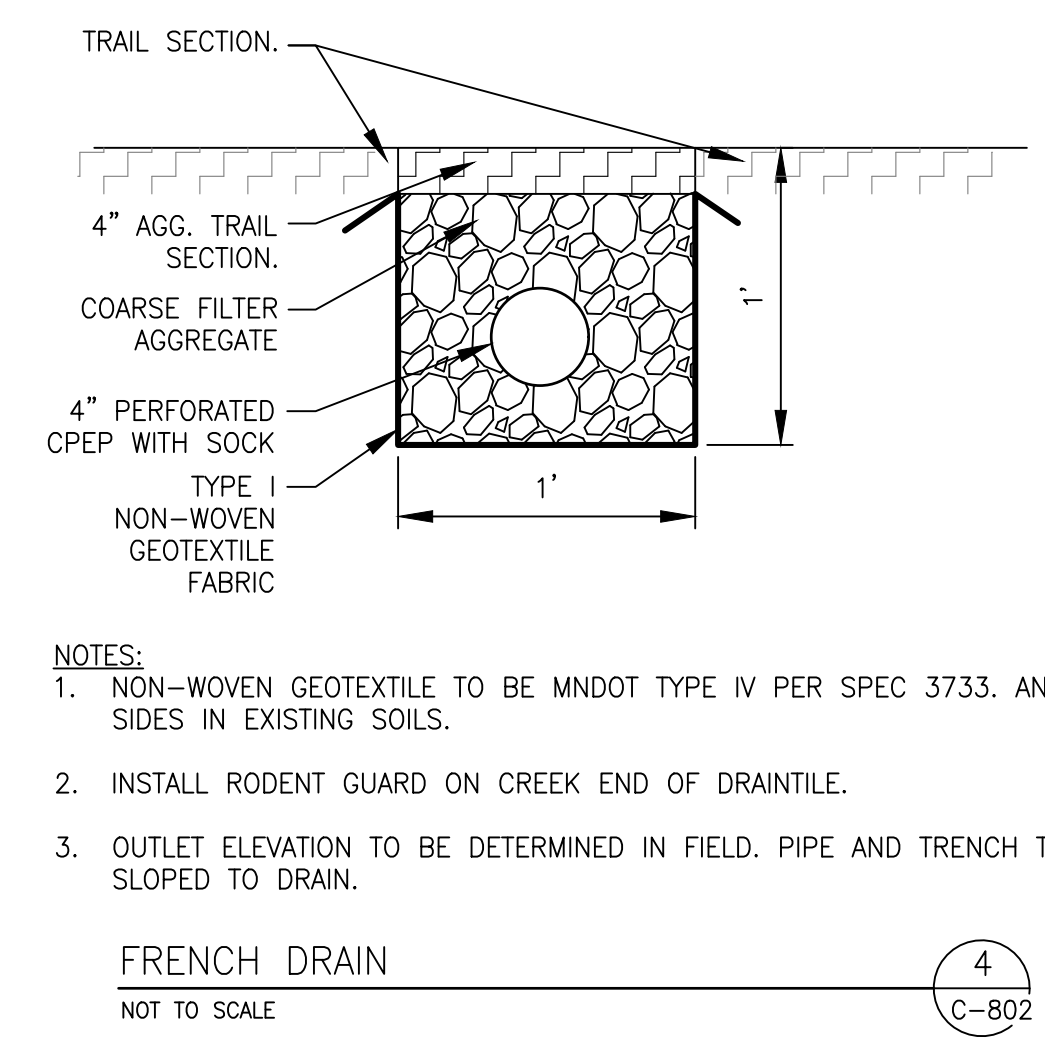
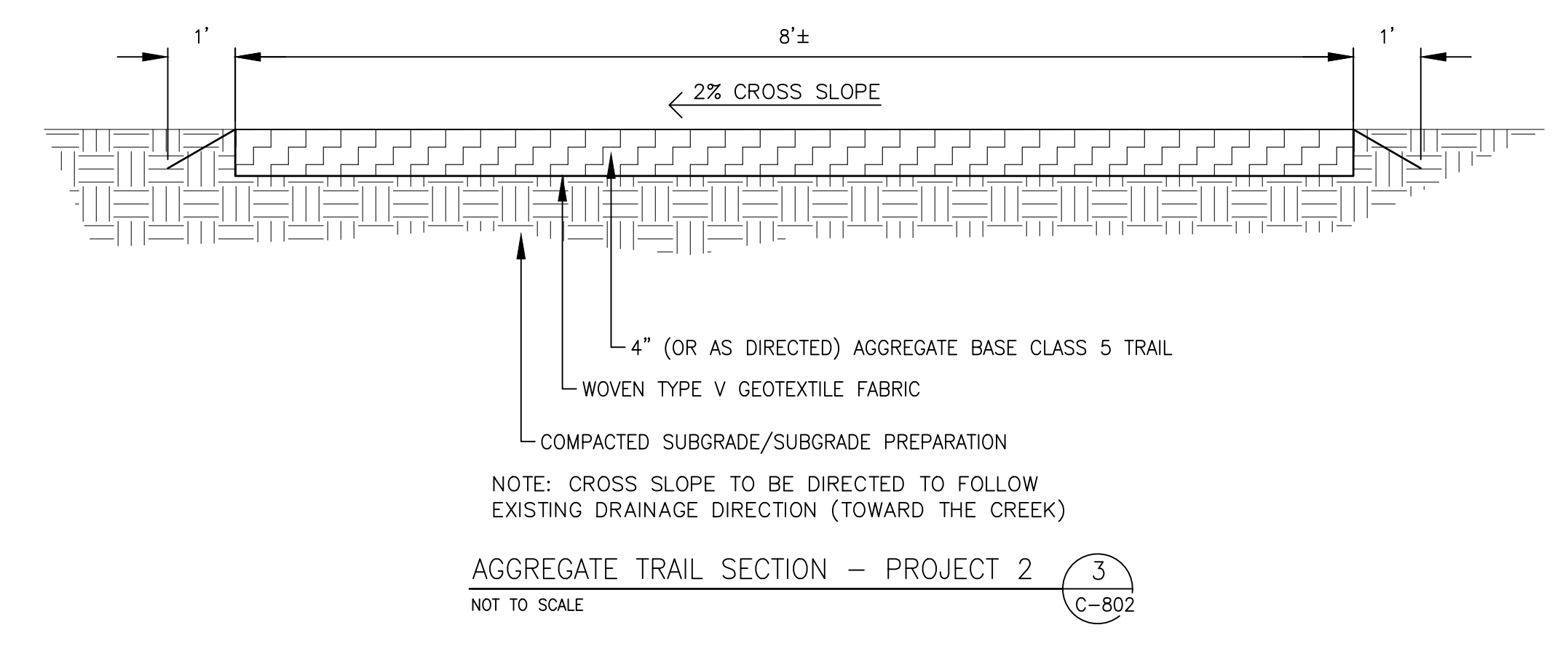
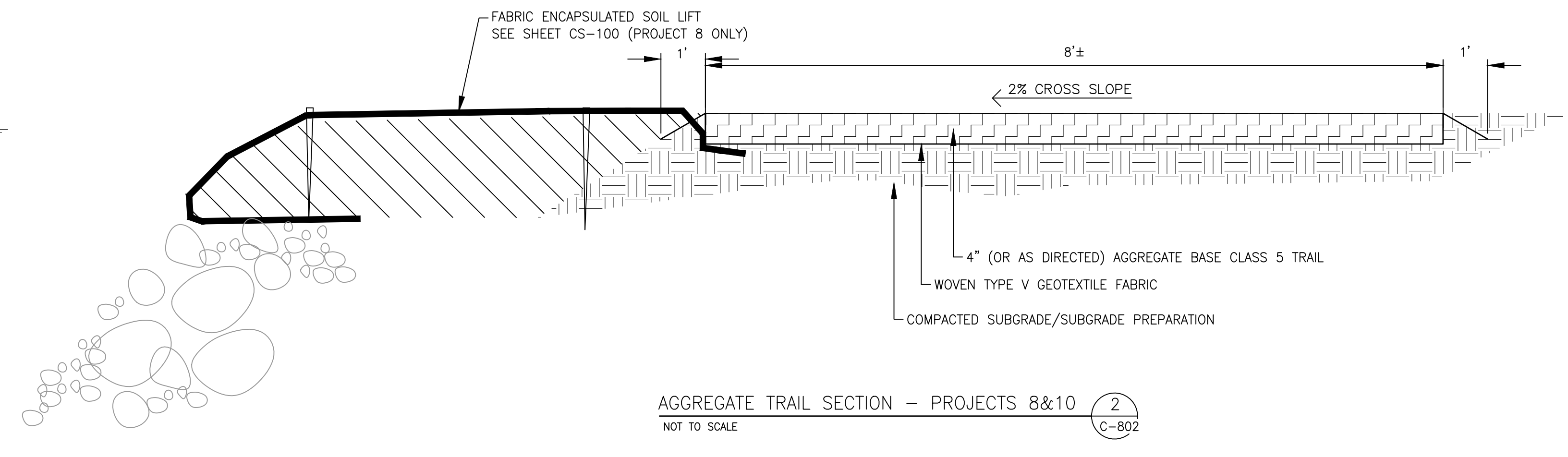
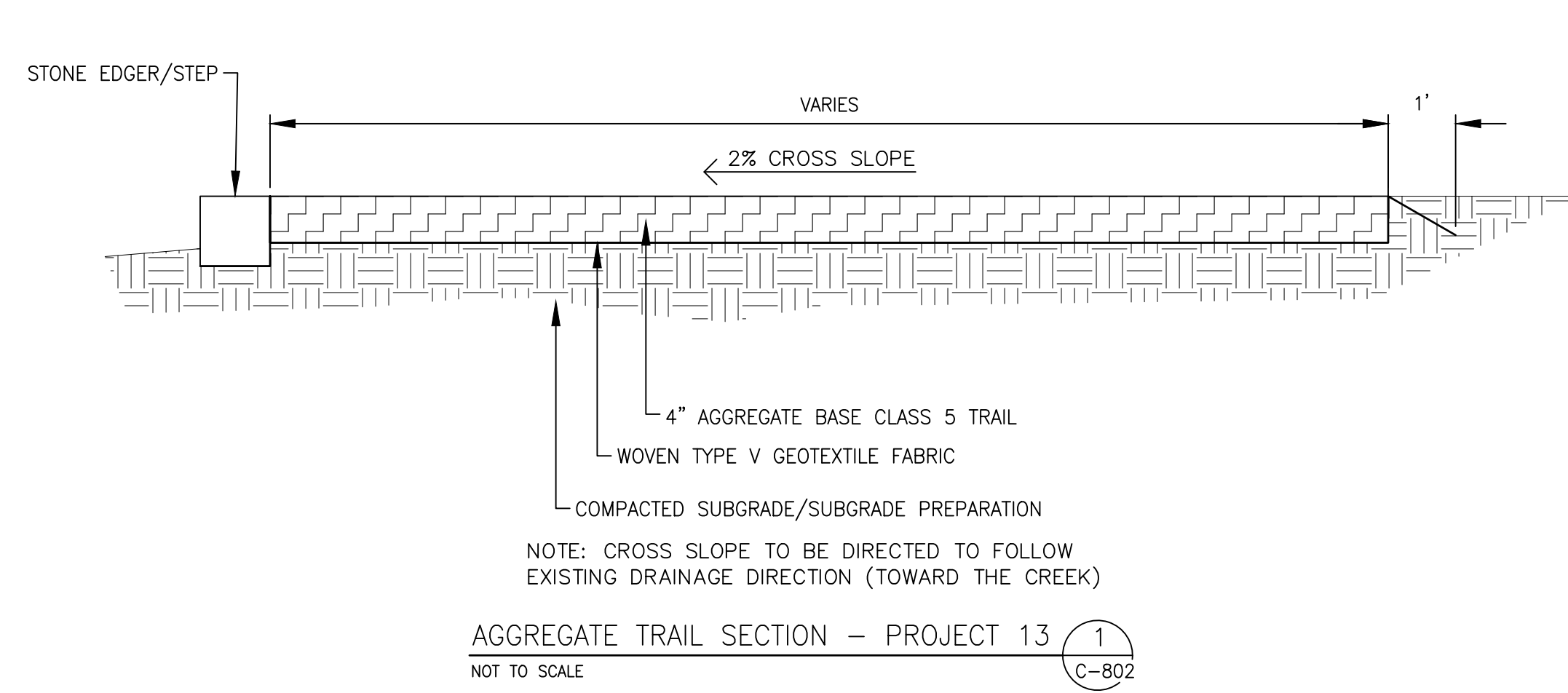
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ISSUE DATE: **10/01/2018**

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C-801

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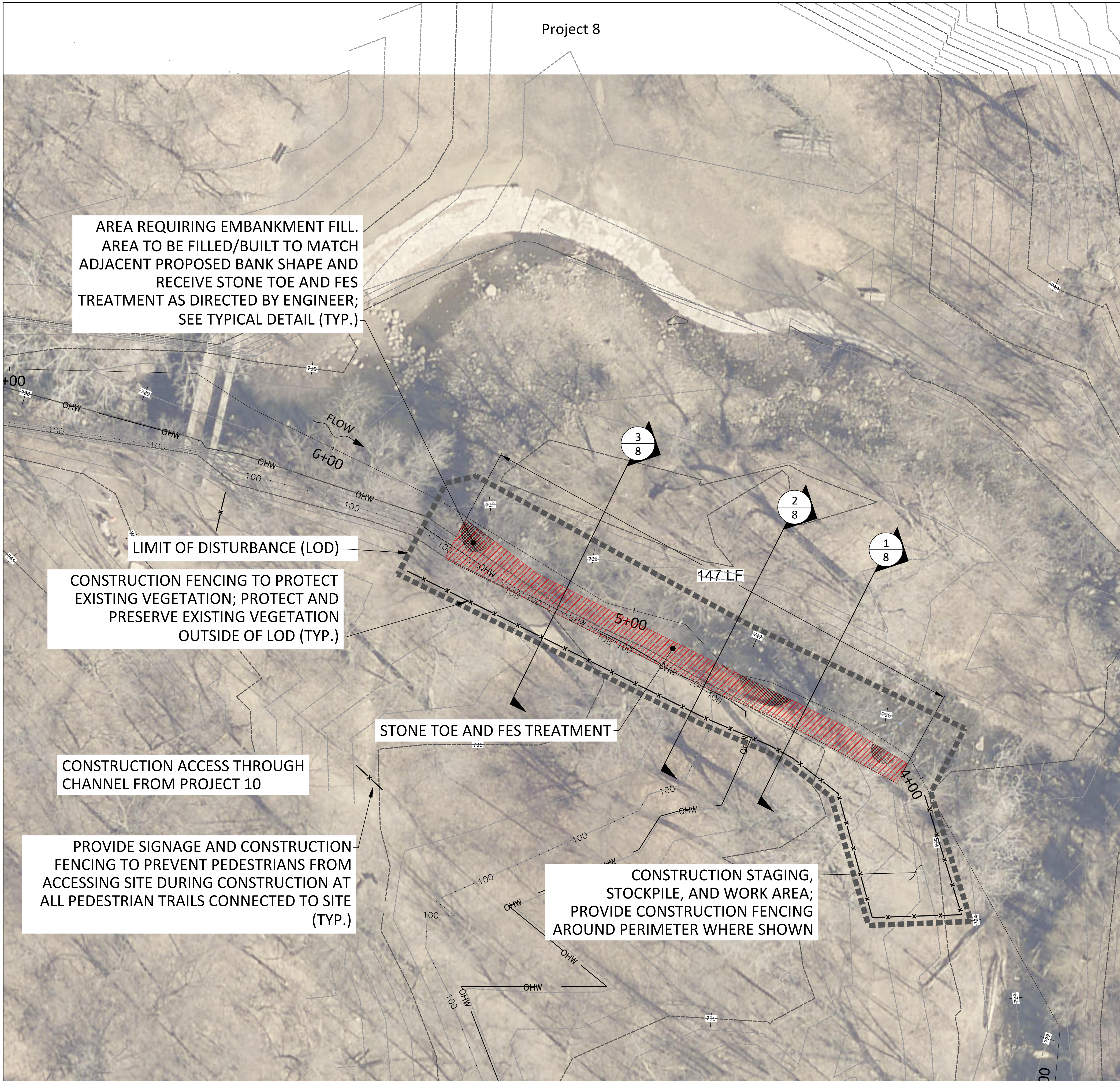
Christopher J. Meehan
Christopher J. Meehan
License #: 43066
Date: 10/01/2018

PROJECT NO.:	0185-0103	
DWN BY:	CHWD BY:	APP'D BY:
SJB	MIS	CM
ISSUE DATE:	10/01/2018	
ISSUE NO.:	0	
SHEET TITLE:	DETAILS	
SHEET NO.:	C-802	

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Project 8



AREA REQUIRING EMBANKMENT FILL.
AREA TO BE FILLED/BUILT TO MATCH
ADJACENT PROPOSED BANK SHAPE AND
RECEIVE STONE TOE AND FES
TREATMENT AS DIRECTED BY ENGINEER;
SEE TYPICAL DETAIL (TYP.)

LIMIT OF DISTURBANCE (LOD)

CONSTRUCTION FENCING TO PROTECT
EXISTING VEGETATION; PROTECT AND
PRESERVE EXISTING VEGETATION
OUTSIDE OF LOD (TYP.)

CONSTRUCTION ACCESS THROUGH
CHANNEL FROM PROJECT 10

PROVIDE SIGNAGE AND CONSTRUCTION
FENCING TO PREVENT PEDESTRIANS FROM
ACCESSING SITE DURING CONSTRUCTION AT
ALL PEDESTRIAN TRAILS CONNECTED TO SITE
(TYP.)

CONSTRUCTION STAGING,
STOCKPILE, AND WORK AREA;
PROVIDE CONSTRUCTION FENCING
AROUND PERIMETER WHERE SHOWN

STONE TOE AND FES TREATMENT

CONSTRUCTION SEQUENCING

1. ISOLATE WORK AREA AND DE-WATER OR PROVIDE IN-STREAM EROSION CONTROL AS DETERMINED NECESSARY BY ENGINEER
2. CLEAR AND GRUB BANK TO REMOVE VEGETATION (STOCKPILE ORGANIC TOPSOIL)
3. EXCAVATE THE SUBGRADE AT TOE TO 2 FEET BELOW EXISTING GRADE
4. PREPARE THE BANK BY FILLING AND EXCAVATING TO THE ELEVATIONS AS DEPICTED ON THE PLANS AND AS STAKED IN THE FIELD (DIMENSIONS MAY VARY)
5. PLACE A 1.5-FOOT-THICK LAYER OF TYPE A STONE TO THE ELEVATIONS AS DEPICTED ON THE PLANS, AS STAKED IN THE FIELD, AND AS DIRECTED BY THE FIELD ENGINEER
6. CONSTRUCT FABRIC ENCAPSULATED SOIL (FES) LIFTS TO THE ELEVATIONS AS DEPICTED ON THE PLANS, AS STAKED IN THE FIELD, AND AS DIRECTED BY THE FIELD ENGINEER
7. REVEGETATE THE DISTURBED AREA AS DESCRIBED IN THE TECHNICAL SPECIFICATIONS

CONSTRUCTION ELEVATIONS

CROSS SECTION	STATION	ELEV AT BANK TOE	TOP ROCK ELEV	TOP FES ELEV
1	4+40	727.00	730.00	731.00
2	4+70	728.00	731.00	733.00
3	5+20	729.00	731.00	735.00

PLAN LEGEND

- EXISTING CHANNEL
- TOP OF BANK
- ORDINARY HIGH WATER
- 100 YR FLOOD ELEVATION

7500 OLSON MEMORIAL HWY, SUITE 300
GOLDEN VALLEY, MN 55427
PHONE: 763-252-8800
FAX: 952-831-1288
WWW.WENCK.COM

SUB CONSULTANT:

CLIENT:

MINNEHAHA CREEK WATERSHED DISTRICT
QUALITY OF WATER, QUALITY OF LIFE

PROJECT TITLE:

MINNEHAHA CREEK FEMA REPAIR PROJECT

MINNEAPOLIS, MN

ISSUE NO.	DESCRIPTION	DATE
0	ISSUED FOR BID	10/1/2018

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Maren K. Hancock
MAREN K. HANCOCK
License #: 54634
Date: 10/1/2018

PROJECT NO.: 0185-0103

DWN BY: SM CHK'D BY: JK, MM APP'D BY: MH

ISSUE DATE: 10/01/2018

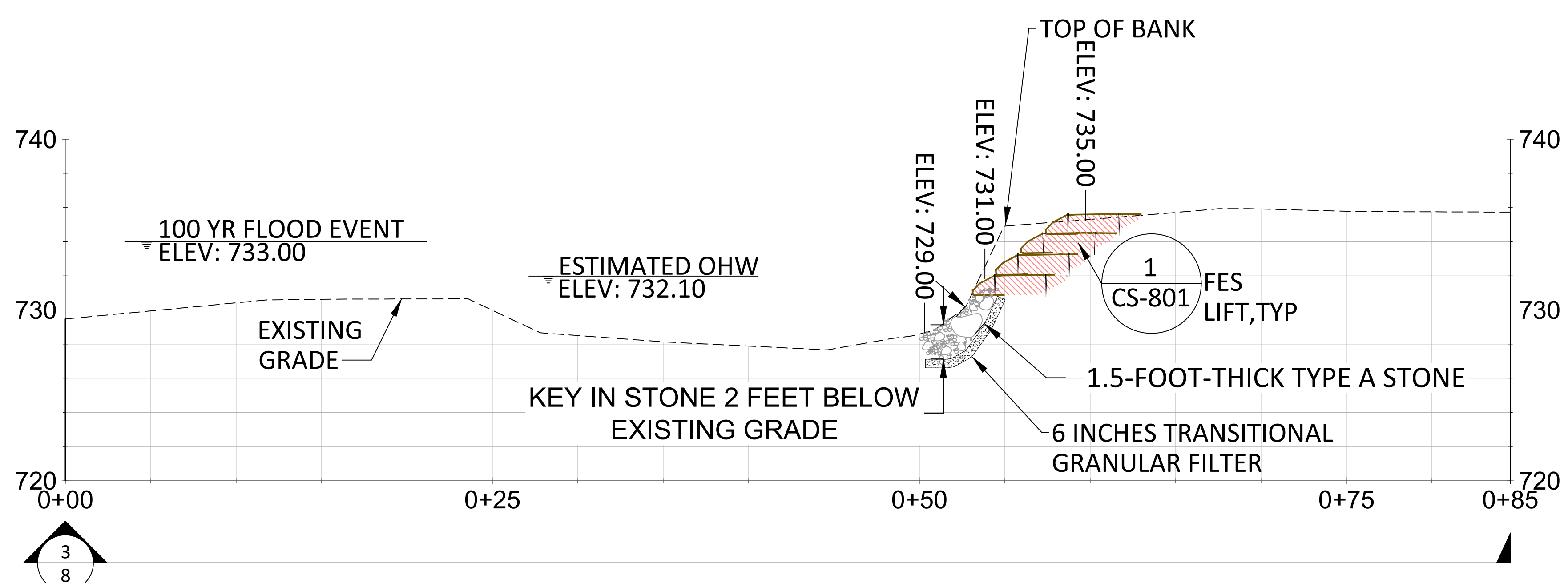
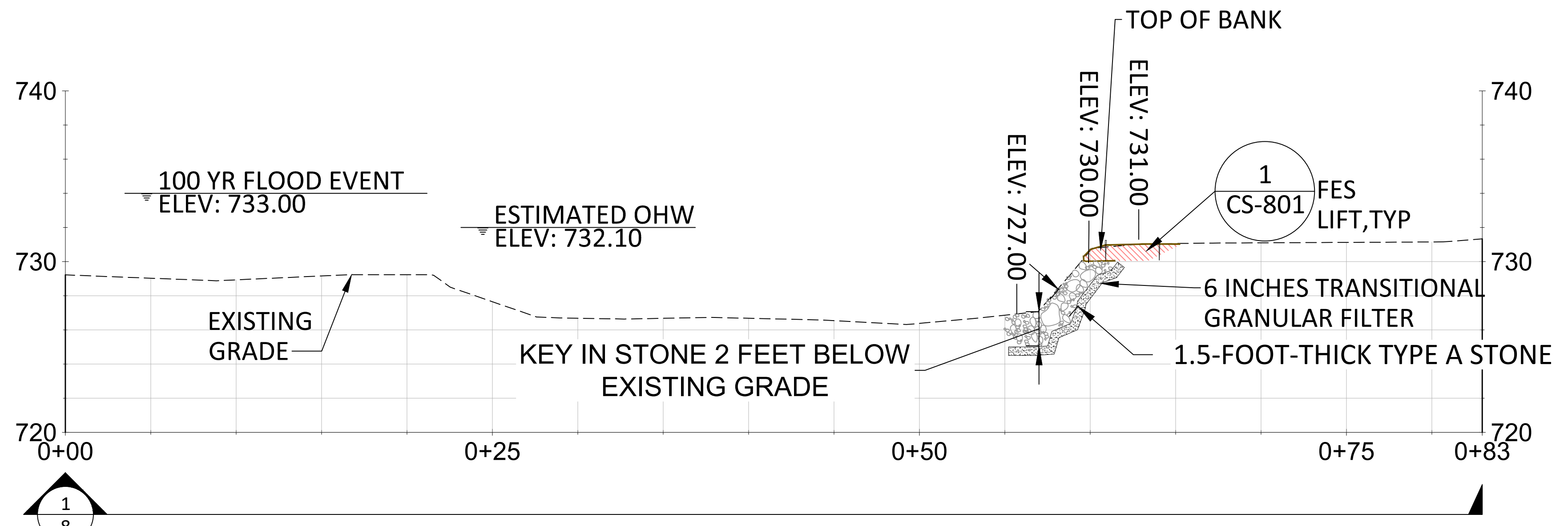
ISSUE NO.: 0

SHEET TITLE:
SITE PLAN - PROJECT 8

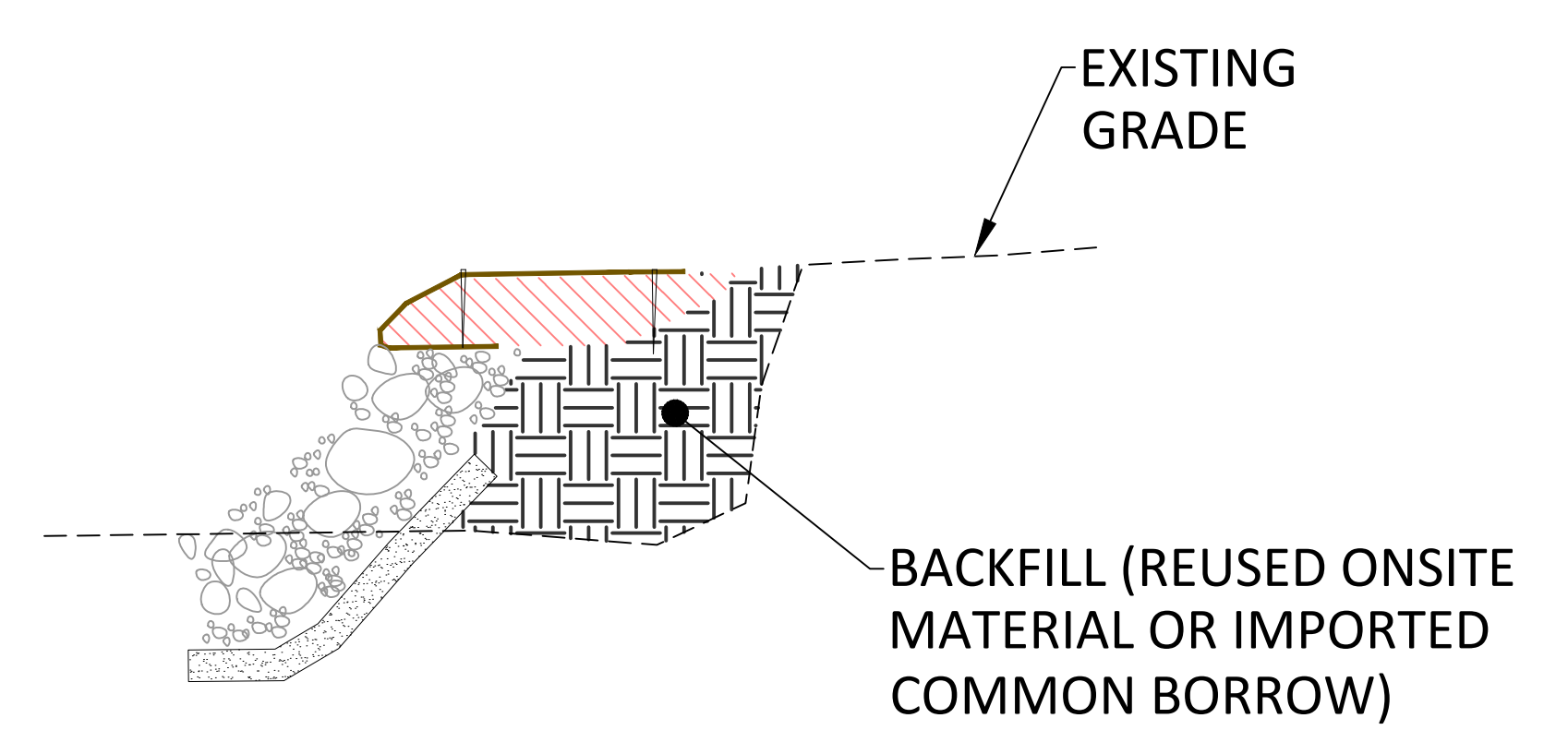
SHEET NO.:
CS-101

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10/2/2018 8:59:44 AM



- NOTE:
- 1) ALL STONES AT BANK TOE SHALL BE BURIED A MINIMUM OF 50% IN EXISTING GRADE
 - 2) ELEVATIONS AND GRADES ARE BASED ON LIDAR CONTOURS. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY EXISTING CONDITIONS.
 - 3) THE FINISH BANK SLOPE OF TYPE A STONE SHALL NOT EXCEED 2H:1V.



TYP 8 TYPICAL SECTION FOR AREAS REQUIRING EMBANKMENT FILL
NOT TO SCALE

WENCK
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PHONE: 763-252-8800
FAX: 952-831-1288
WWW.WENCK.COM

SUB CONSULTANT:
inter-fluve

CLIENT:
MINNEHAHA CREEK WATERSHED DISTRICT
QUALITY OF WATER, QUALITY OF LIFE

PROJECT TITLE:
MINNEHAHA CREEK FEMA REPAIR PROJECT
MINNEAPOLIS, MN

ISSUE NO:	0
DESCRIPTION:	ISSUED FOR BID
DATE:	10/1/2018

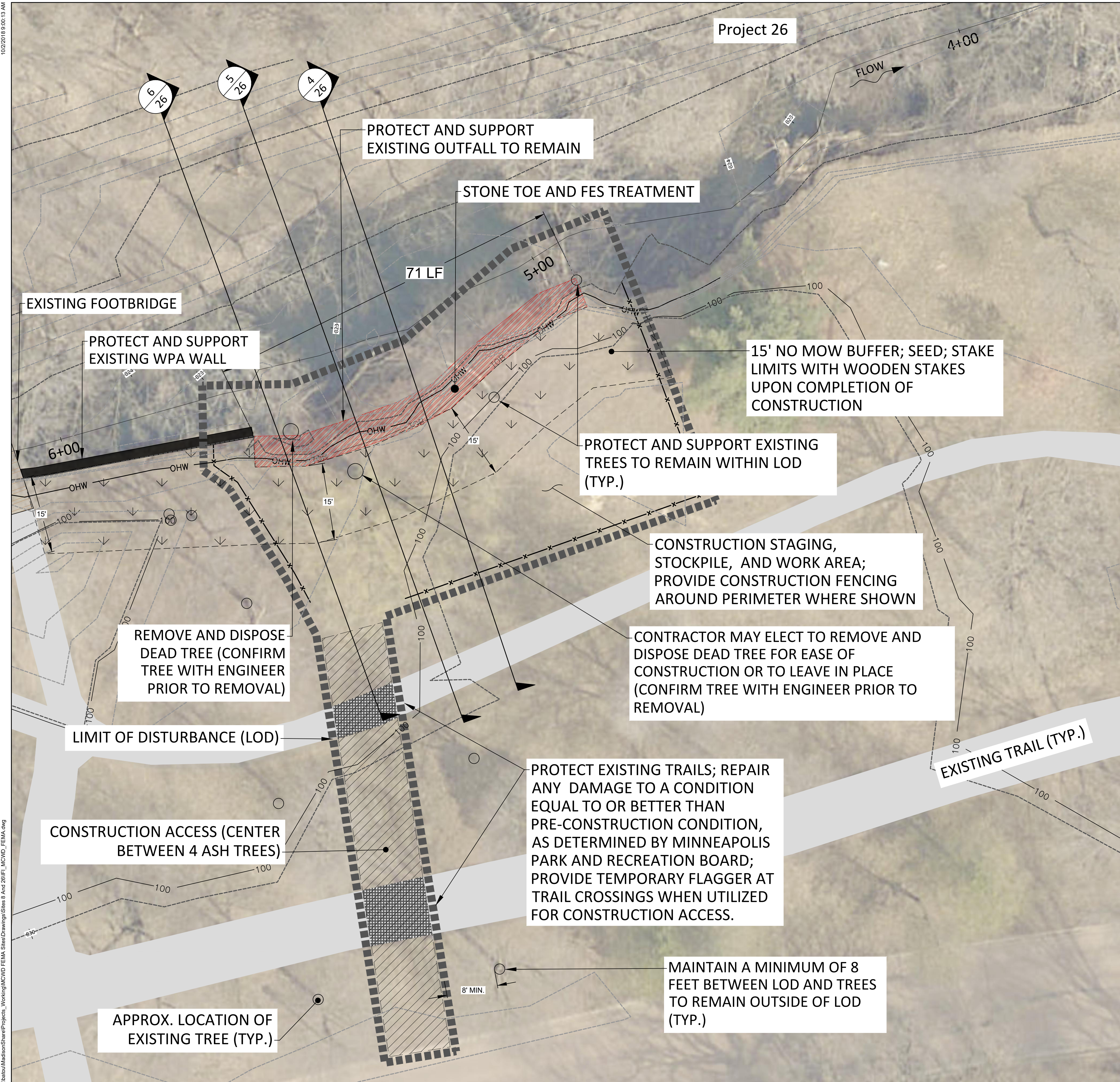
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Maren K. Hancock
MAREN K. HANCOCK
License #: 54634
Date: 10/1/2018

PROJECT NO.: 0185-0103
DWN BY: SM CHK'D BY: JK, MM APP'D BY: MH
ISSUE DATE: 10/01/2018
ISSUE NO.: 0
SHEET TITLE: CROSS SECTIONS - PROJECT 8
SHEET NO.: **CS-102**

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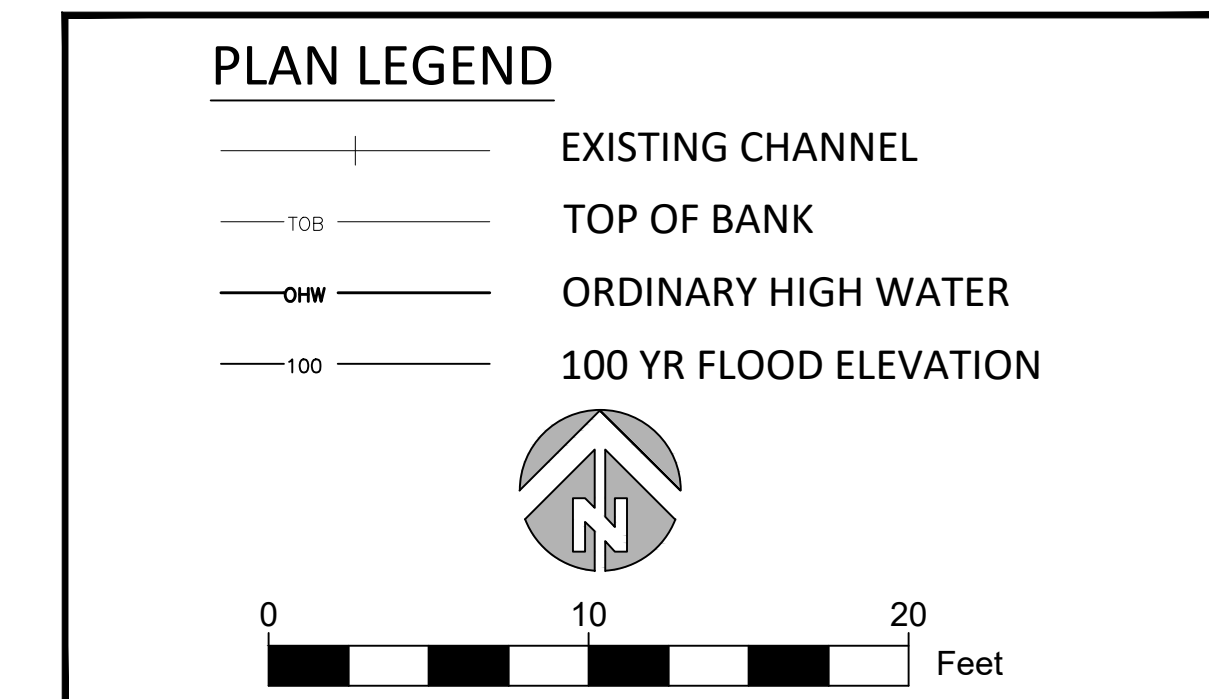
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CONSTRUCTION SEQUENCING

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7. REVEGETATE THE DISTURBED AREA AS DESCRIBED IN THE TECHNICAL SPECIFICATIONS

CROSS SECTION	STATION	ELEV AT BANK TOE	TOP ROCK ELEV	TOP FES ELEV
4	5+30	823.00	828.00	830.00
5	5+45	823.00	827.00	829.00
6	5+60	824.00	827.50	828.50



MINNEHAHA CREEK WATERSHED DISTRICT
QUALITY OF WATER, QUALITY OF LIFE



PROJECT TITLE:
MINNEHAHA CREEK FEMA REPAIR PROJECT
MINNEAPOLIS, MN

ISSUE NO:	0
DESCRIPTION:	ISSUED FOR BID
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Date: 10/1/2018

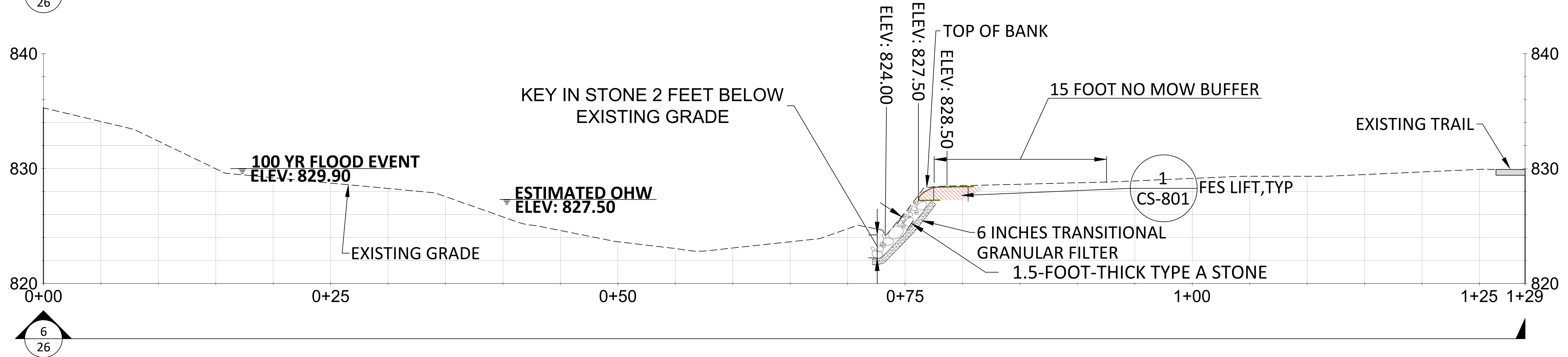
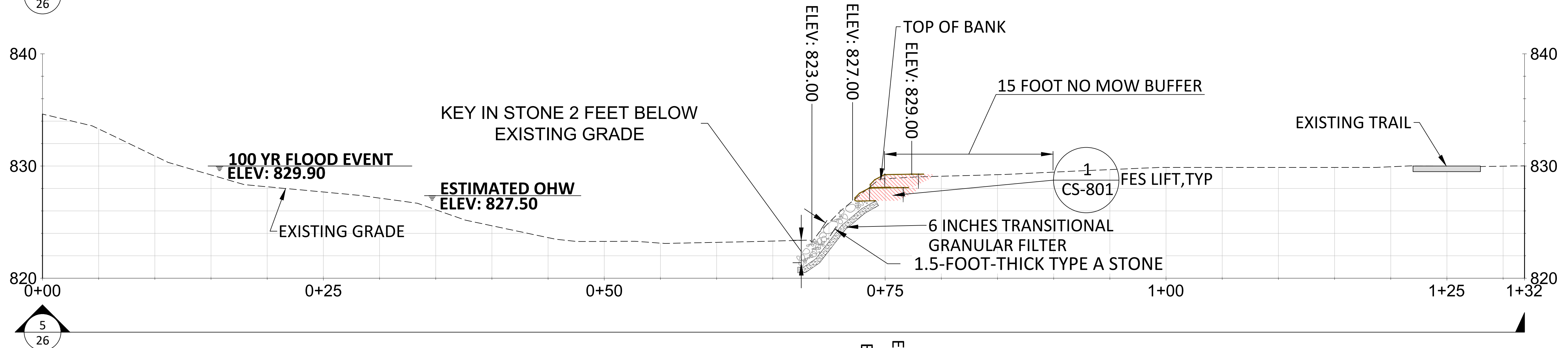
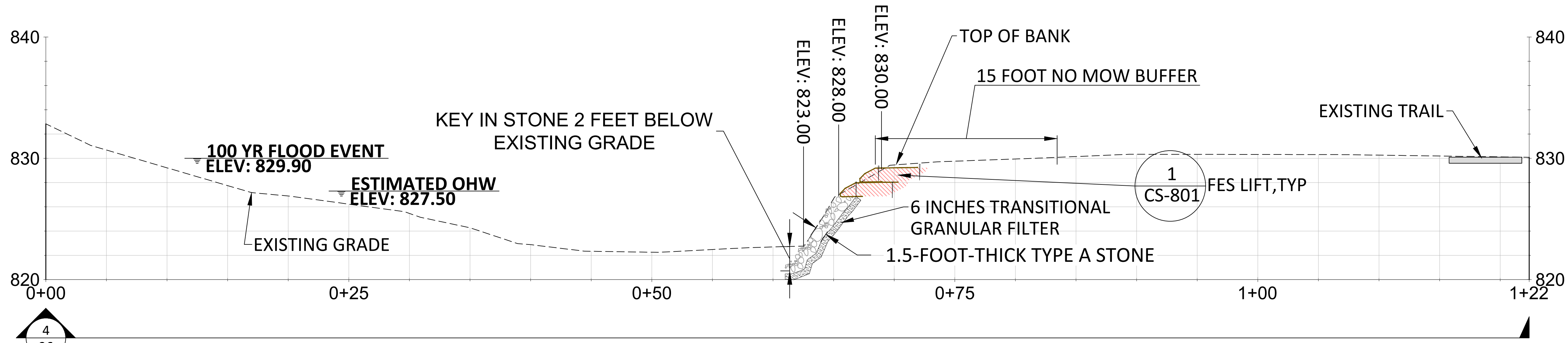
PROJECT NO.: 0185-0103
DWN BY: SM CHK'D BY: JK, MM APP'D BY: MH
ISSUE DATE: 10/01/2018

ISSUE NO.: 0
SHEET TITLE:
SITE PLAN - PROJECT 26

SHEET NO.: **CS-103**

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NOTE:

- 1) ALL STONES AT BANK TOE SHALL BE BURIED A MINIMUM OF 50% IN EXISTING GRADE
- 2) ELEVATIONS AND GRADES ARE BASED ON LIDAR CONTOURS. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY EXISTING CONDITIONS.
- 3) THE FINISH BANK SLOPE OF TYPE A STONE SHALL NOT EXCEED 2H:1V.



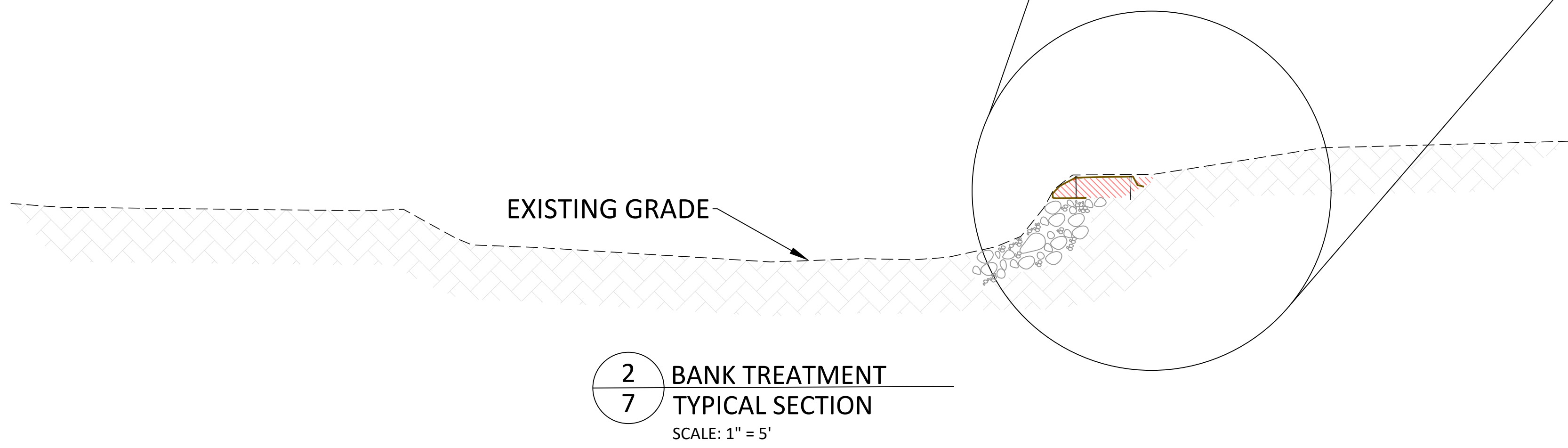
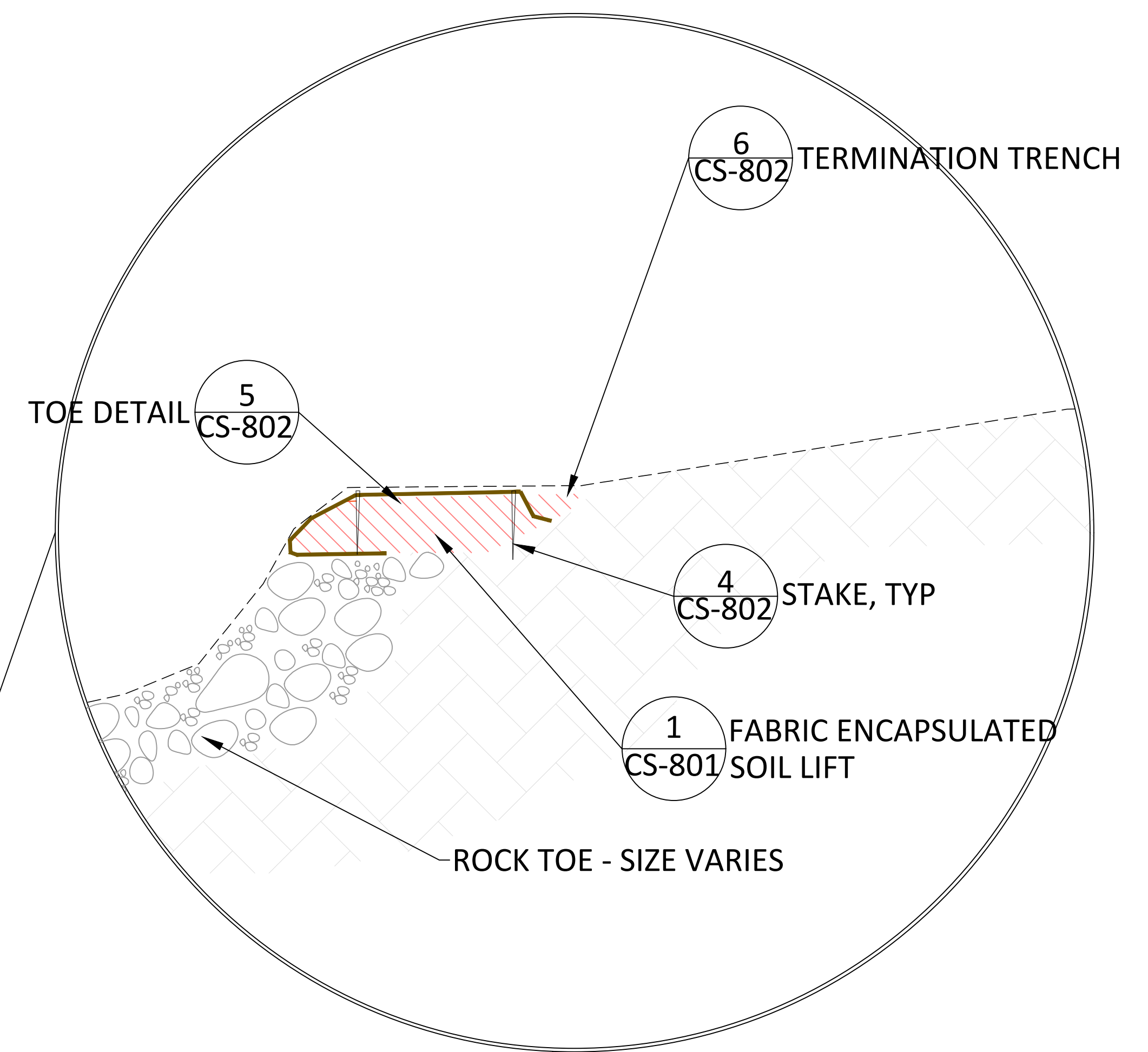
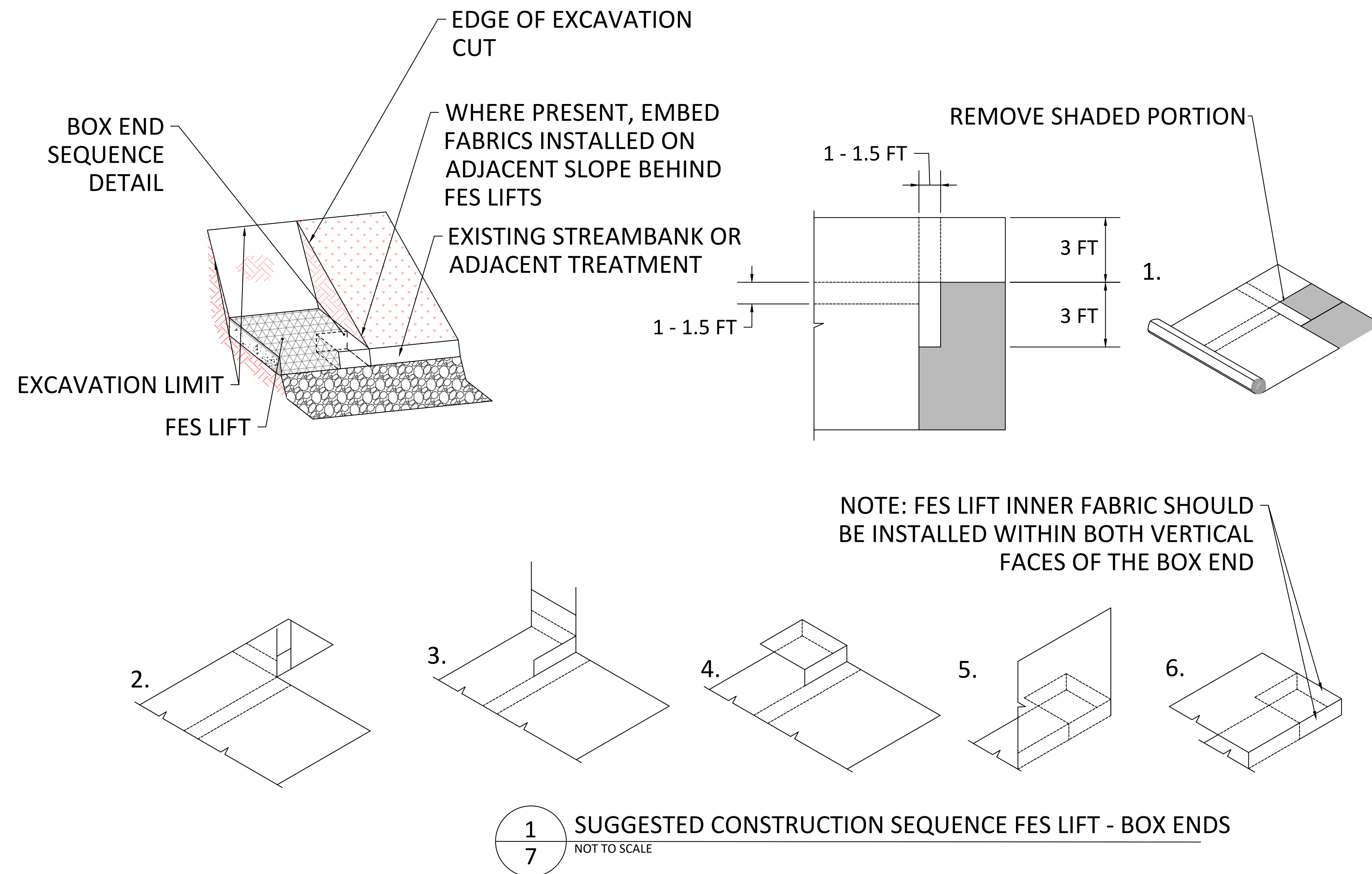
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ISSUE NO.:	0
DESCRIPTION:	ISSUED FOR BID
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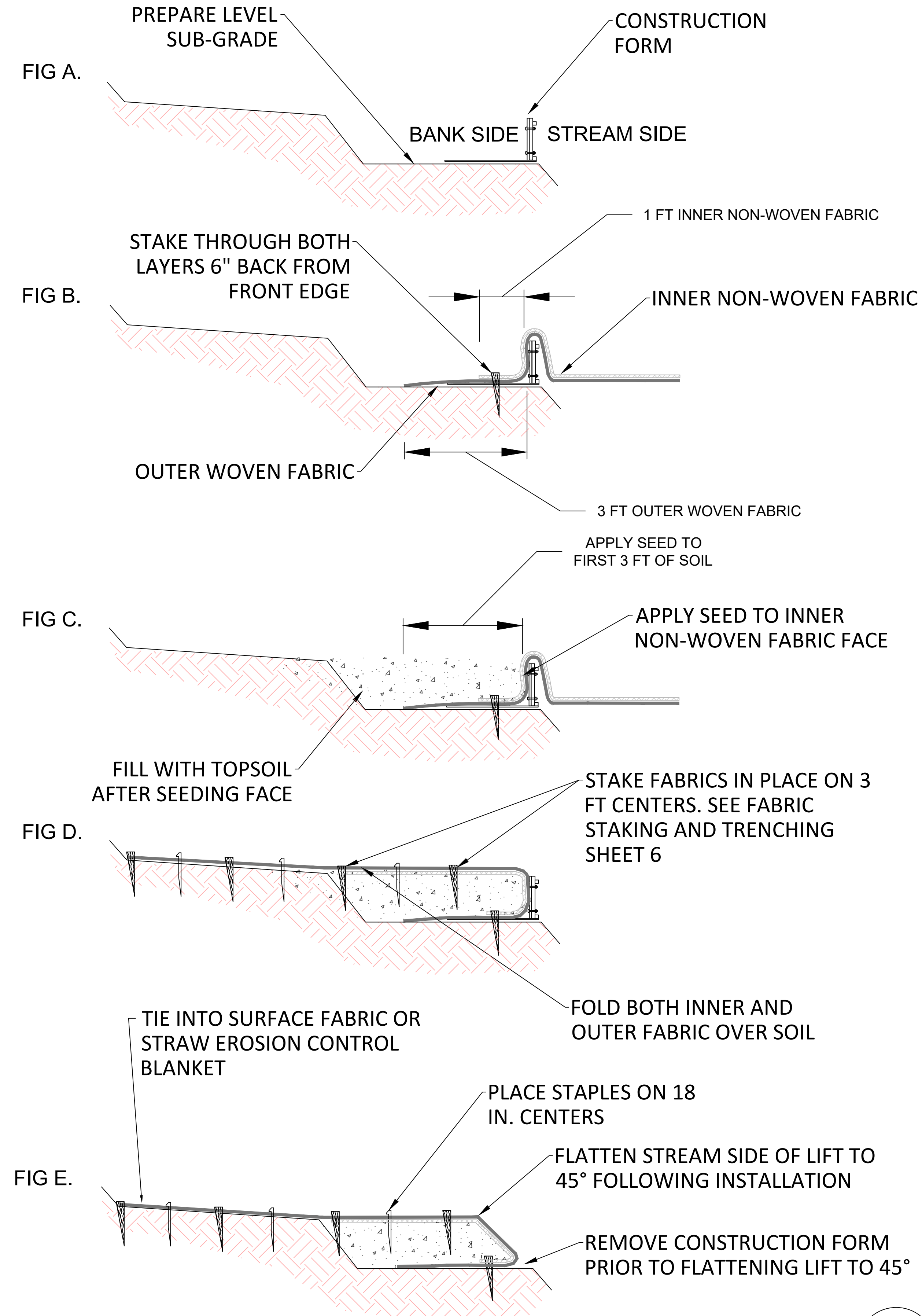
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Maren K. Hancock
 MAREN K. HANCOCK
 License #: 54634
 Date: 10/1/2018

PROJECT NO.:	0185-0103	
DWN BY:	CHK'D BY:	APP'D BY:
SM	JK, MM	MH
ISSUE DATE:	10/01/2018	
ISSUE NO.:	0	
SHEET TITLE:	CROSS SECTIONS - PROJECT 26	

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GENERAL INSTRUCTIONS FOR FABRIC ENCAPSULATED LIFTS (FES)

1. BANKS MAY BE CONSTRUCTED IN EITHER AN UPSTREAM OR DOWNSTREAM DIRECTION, AS LONG AS THE FABRIC IS OVERLAPPED FROM UPSTREAM TO DOWNSTREAM.
2. PLACE A SERIES OF THREE OR MORE FORMS ON THE GROUND SO THAT THE FORMS FOLLOW THE PROPOSED STREAM BANK ALIGNMENT. BUTT THE ENDS OF THE FORMS TIGHTLY TOGETHER.
3. UNROLL THE OUTER WOVEN FABRIC PARALLEL TO THE LONG AXIS OF THE CHANNEL AND POSITION IT SO THAT 3 FEET EXTENDS FOR EMBEDMENT ON THE BANK SIDE OF THE FORMS (FIG B), AND A MINIMUM 3 FEET EXTENDS LENGTHWISE BEYOND THE LAST FORM FOR OVERLAP. DRAPE THE REMAINDER OF THE FABRIC OVER THE TOP OF THE FORMS ON THE STREAM SIDE (FIG B).
4. UNROLL THE INNER NON-WOVEN FABRIC OVER THE TOP OF THE WOVEN OUTER FABRIC (FIG B) AND POSITION IT SO THAT AT LEAST 1 FOOT OF THE INNER NON-WOVEN FABRIC EXTENDS AS AN EMBEDMENT LENGTH ON THE BANK SIDE OF THE FORMS (FIG C). DRAPE THE REMAINDER OF THE FABRIC OVER THE TOP OF THE FORMS ON THE STREAM SIDE AND ALIGN THE LONG EDGES OF THE FABRICS. STRETCH AND PULL THE FABRIC LAYERS TO REMOVE WRINKLES.
5. APPLY NATIVE SEED MIX TO INNER NON-WOVEN FABRIC ALONG VERTICAL EDGE OF LIFT (FIG C). PLACE TOPSOIL OVER THE FABRIC ON THE BANK SIDE OF THE FORMS.
6. APPLY NATIVE SEED MIX TO TOP OF FILL (FIG C).
7. FOLD THE LOOSE ENDS OF THE TWO FABRIC LAYERS BACK OVER THE COMPACTED FILL MATERIAL AND STRETCH TIGHTLY TO REMOVE WRINKLES (FIG D). SECURE WITH WOODEN STAKES 1 PER 3 L.F. ALONG THE BACK EDGE AND INTO UNDISTURBED SOIL.
8. REMOVE THE FORMS FROM THE FRONT OF THE COMPLETED LIFTS (FIG. 2). LEAVE THE LAST FORM IN PLACE AT THE END OF THE NEWLY CONSTRUCTED LIFT (FIG. 2).
9. WHERE THE TOP OF THE LIFT MEETS THE GROUND SURFACE, EXCAVATE A KEY TRENCH 1 FOOT DEEP ALONG THE EDGE OF THE OUTER FABRIC LAYER, PARALLEL TO THE FORMS. SEED ENTIRE AREA OF TOP LIFT. SECURE FABRIC IN THE TRENCH WITH WOODEN STAKES, 3 FT O.C. TO TRANSITION TO EITHER SURFACE FABRIC OR STRAW EROSION CONTROL BLANKET.
10. SUPPLEMENT LIFT STAKING WITH ADDITIONAL WOODEN STAPLES ON 18" CENTERS EXCEPT WHERE WOODEN STAKES HAVE ALREADY BEEN PLACED.

SUGGESTED SEQUENCE FOR PLACEMENT OF FORMS

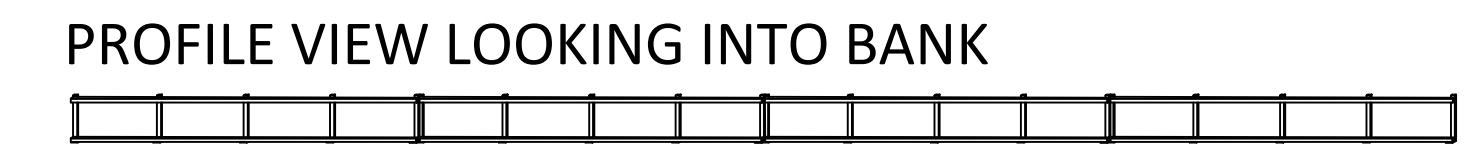


FIG 1. PLACE A ROW OF CONSTRUCTION FORMS ALONG DESIRED CHANNEL ALIGNMENT FOR FIRST FES LIFT.

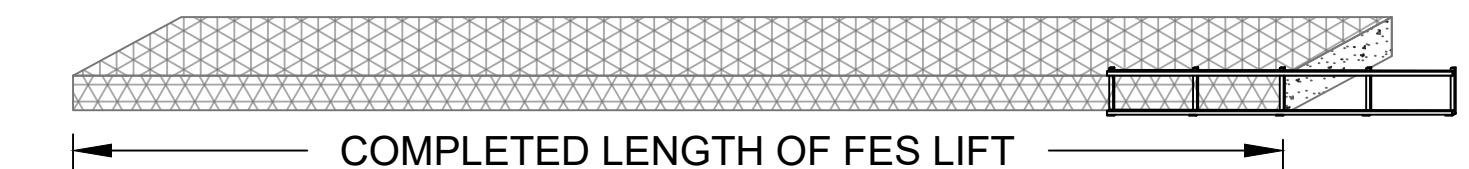


FIG 2. CONSTRUCT FES LIFTS ALONG LENGTH OF FIRST SET OF FORMS AND THEN BEGIN PLACEMENT OF FORMS AND CONSTRUCTION OF SECOND LIFT.

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GOLDEN VALLEY, MN 55427
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WWW.WENCK.COM

SUB CONSULTANT:
inter-fluve

CLIENT:
MINNEHAHA CREEK WATERSHED DISTRICT
QUALITY OF WATER, QUALITY OF LIFE

PROJECT TITLE:
MINNEHAHA CREEK FEMA REPAIR PROJECT

ISSUE NO.: 0

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Maren K. Hancock
MAREN K. HANCOCK
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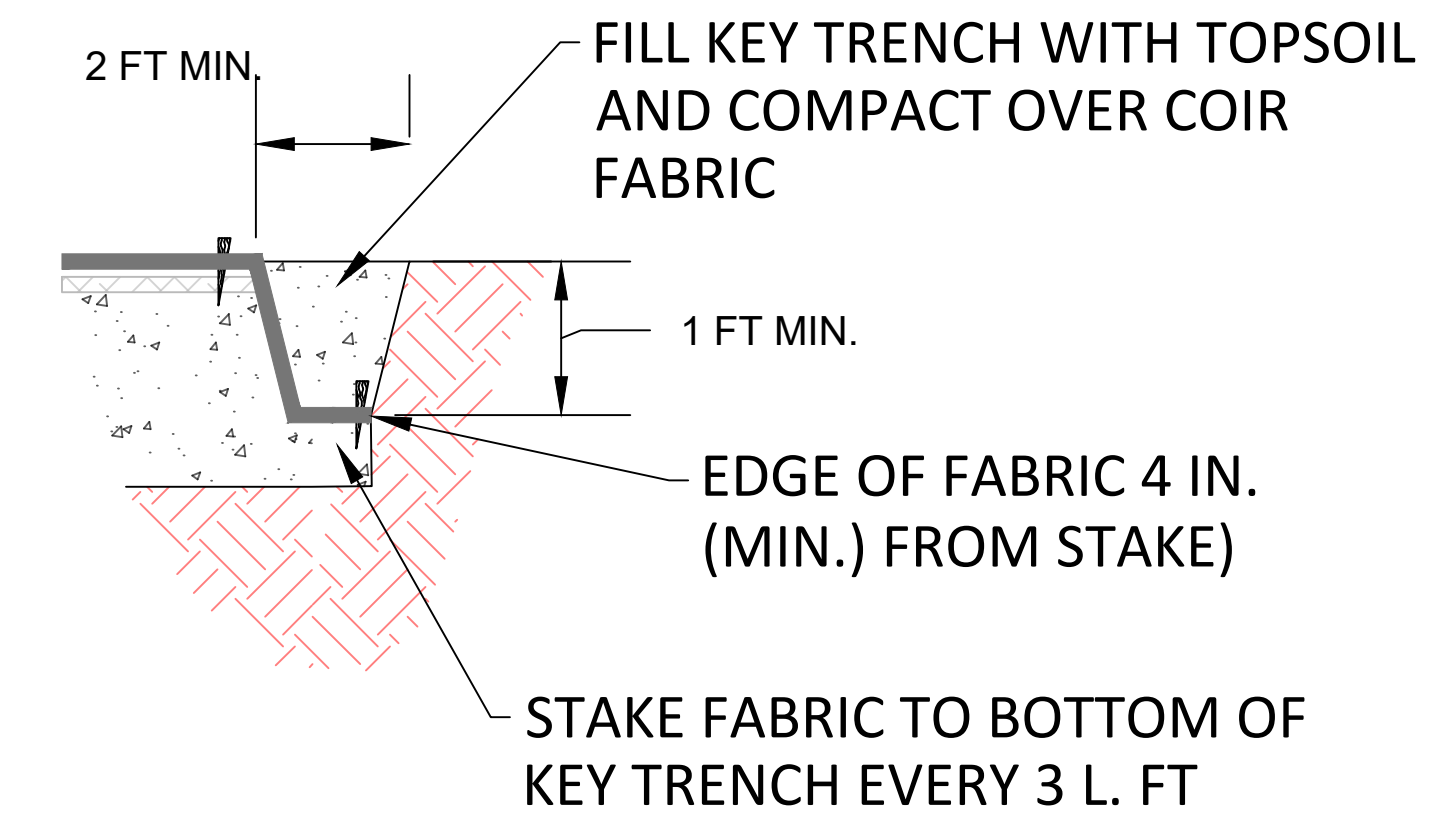
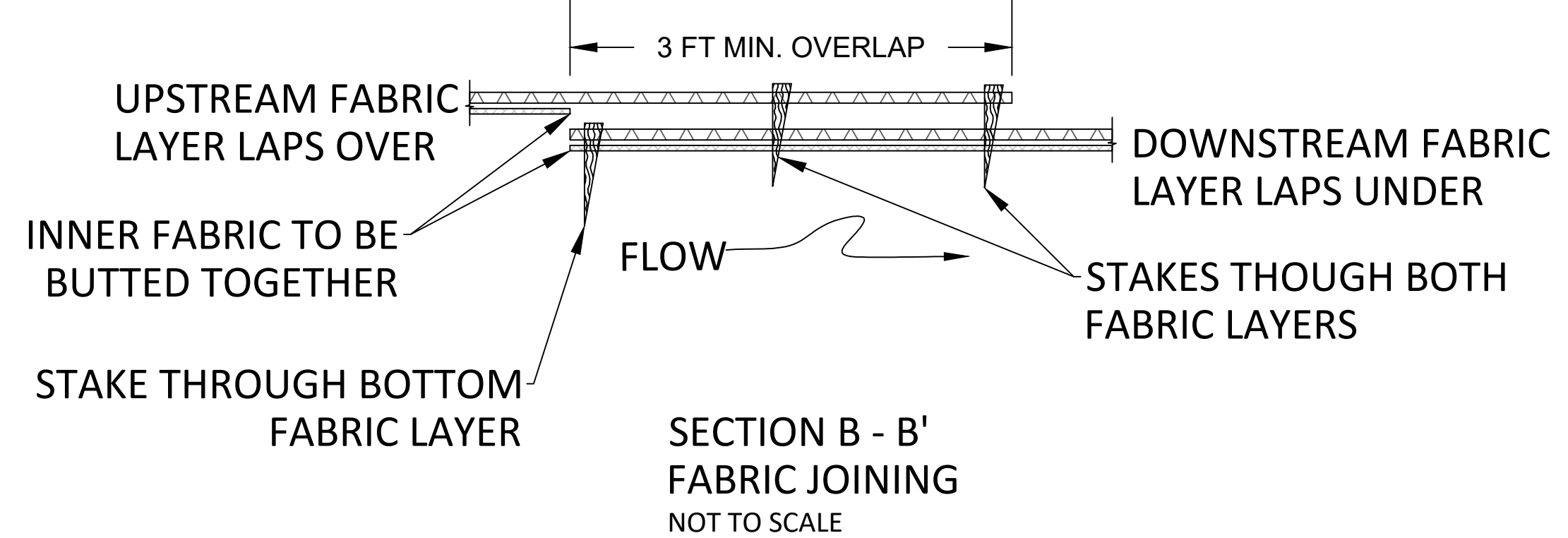
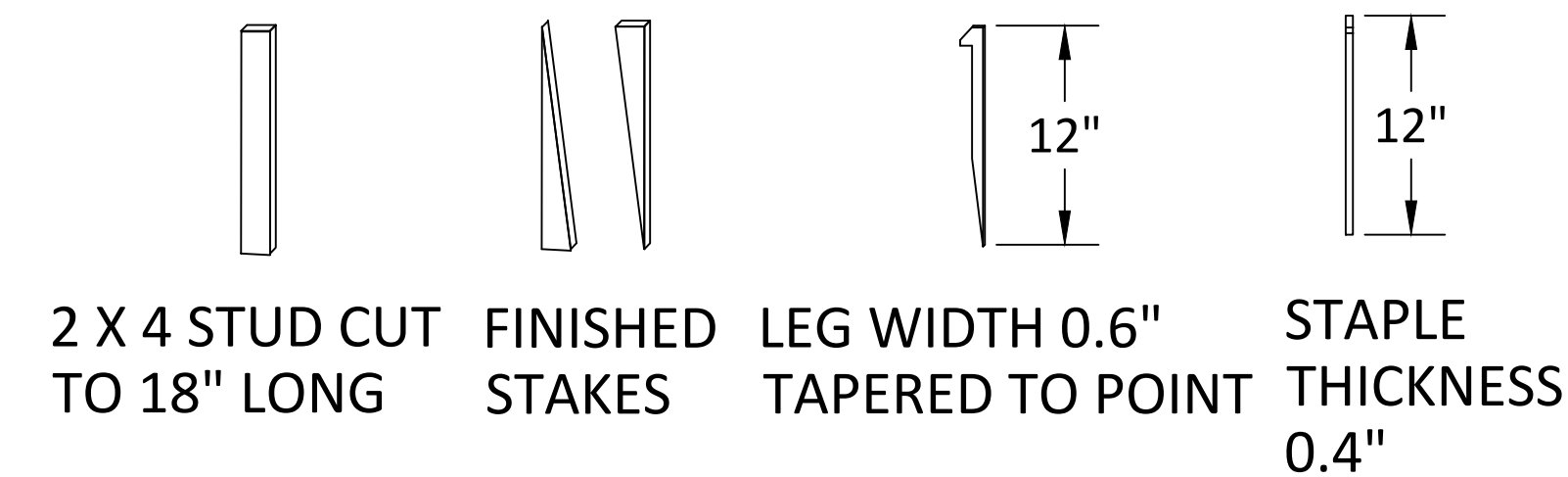
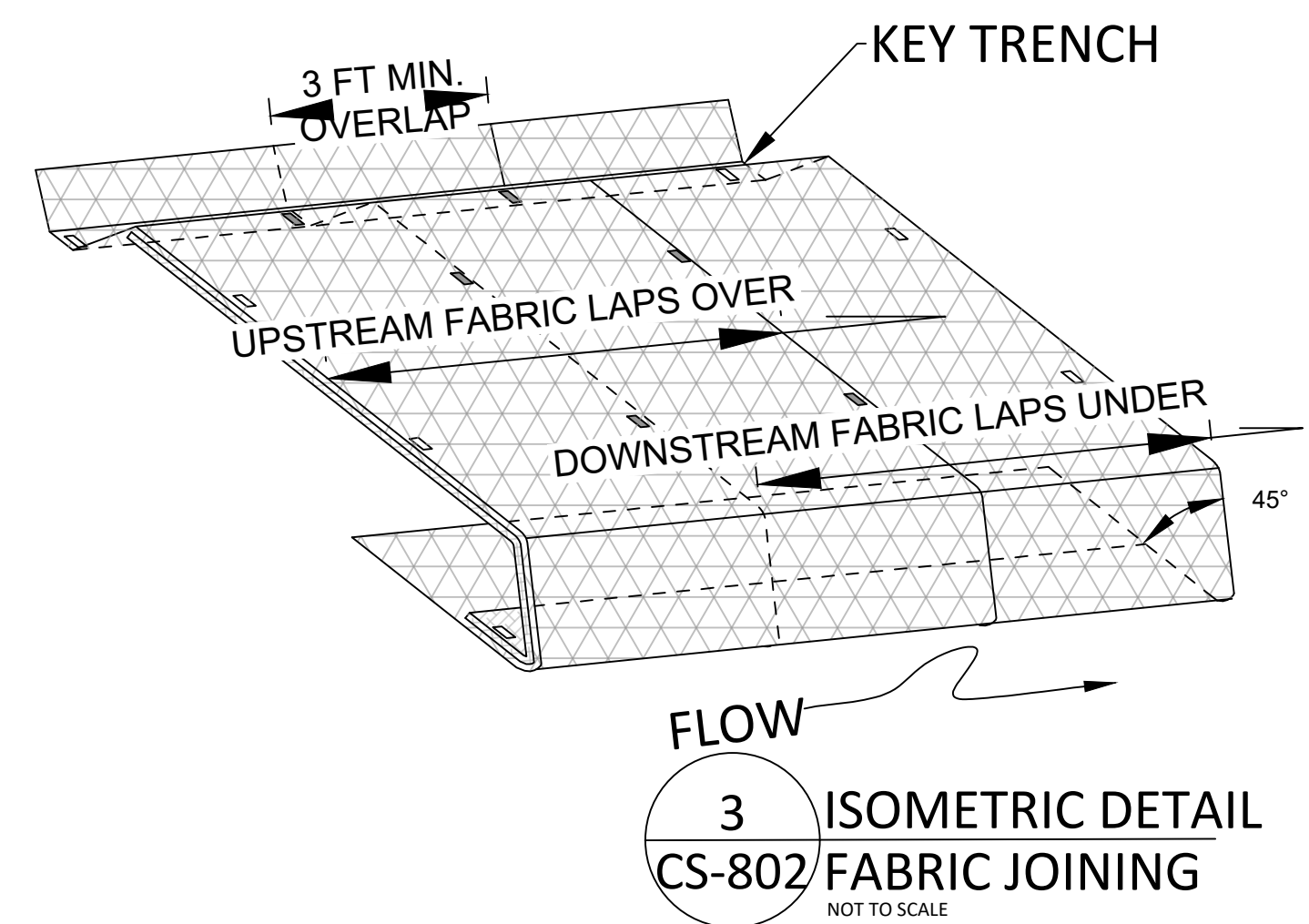
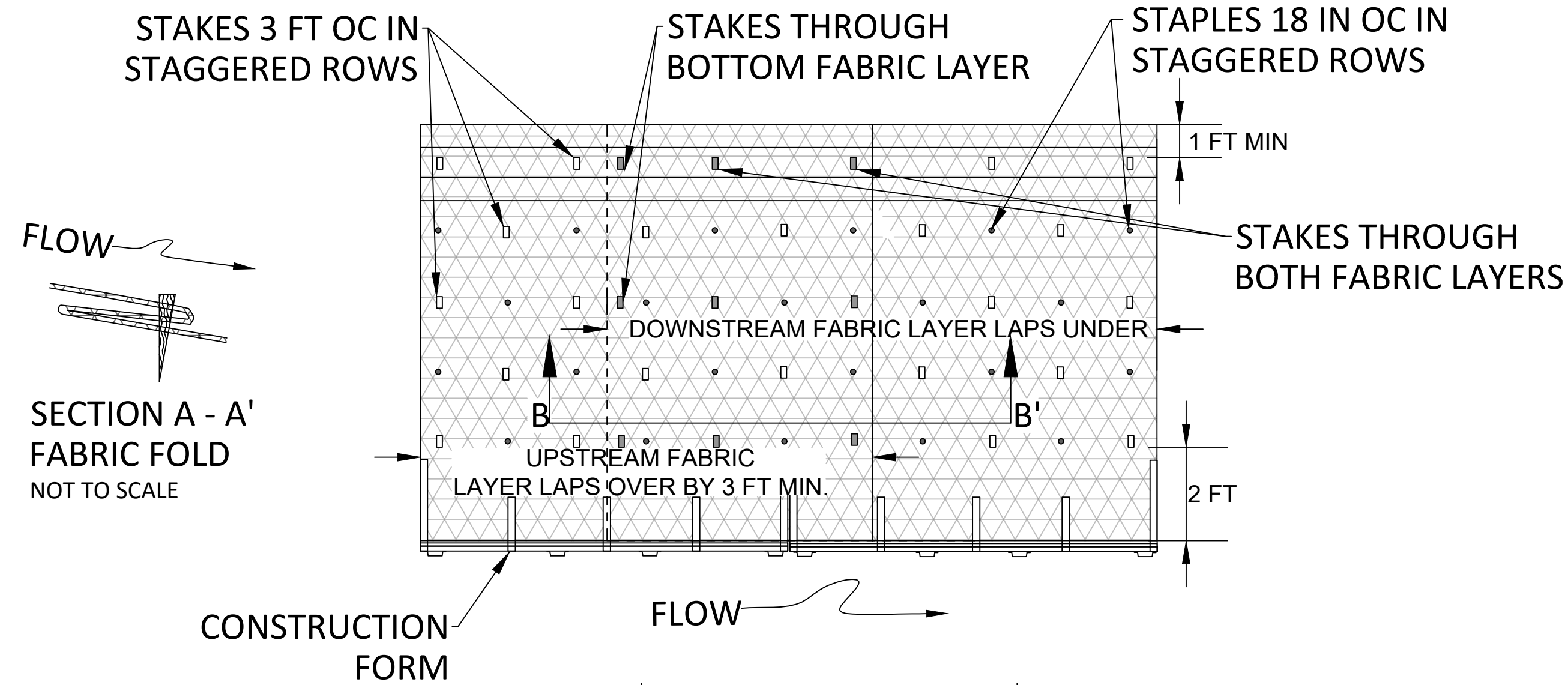
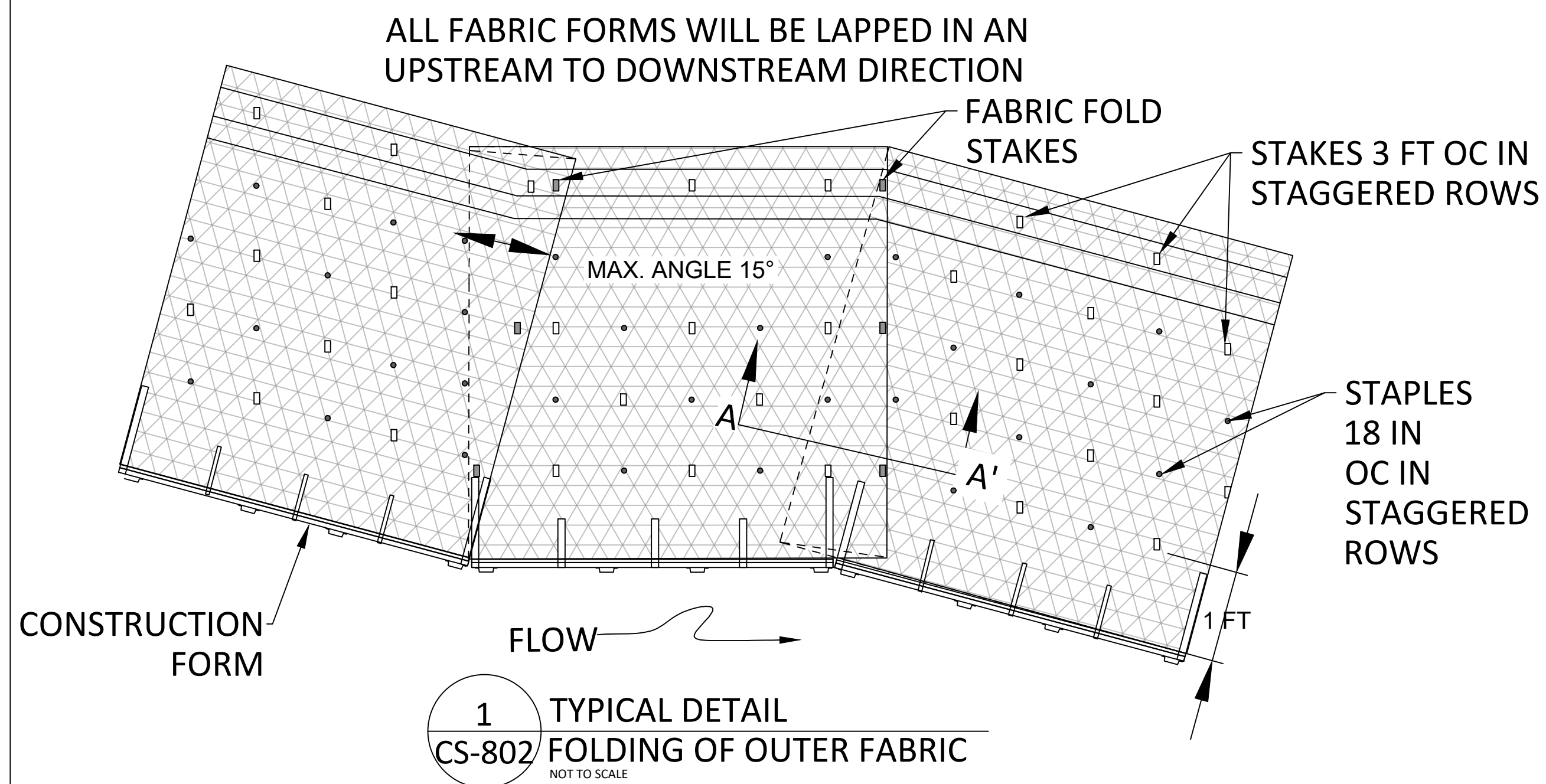
PROJECT NO.: 0185-0103

DWN BY: SM CHKD BY: JK, MM APPD BY: MH
ISSUE DATE: 10/01/2018

ISSUE NO.: 0

SHEET TITLE:
DETAILS

SHEET NO.:
CS-801



GENERAL NOTES ON SECURING COIR FABRIC

1. SECURE THE OUTER WOVEN FABRIC, WITH A WOODEN STAKE THROUGH THE FABRIC ON 3 FT CENTERS (SEE DETAIL VIEW 2)
NOTE: THE HOLES FOR STAKES SHALL NOT BE PRECUT. ALLOW THE STAKE TO BREAK THE MINIMUM NUMBER OF STRANDS AS IT IS BEING DRIVEN IN. DRIVE STAKES SO THAT 2" TO 3" OF THE TOP OF THE STAKE IS LEFT EXPOSED.
2. OUTER WOVEN FABRIC ENDS SHALL BE JOINED BY LAPPING THE UPSTREAM PIECE OF FABRIC OVER THE DOWNSTREAM PIECE AS SHOWN IN SECTION B-B. OVERLAPS SHALL BE A MINIMUM OF 3 FT, INNER NON-WOVEN FABRIC ENDS SHALL BE BUTTED TOGETHER, NOT OVERLAPPED. OVERLAPS SHALL BE STAGGERED FROM LIFT TO LIFT BY A MINIMUM OF 15 FT.
3. STAKE AND STAPLE SPACING IS DEFINED IN SPECIFICATIONS FOR FES LIFT AND SURFACE FABRIC.

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SHEET TITLE:	DETAILS	
SHEET NO.:	CS-802	



FEMA Damage Report Contents Based on Project Site Number

Attached are FEAM Project Worksheets (PWs) 755, 764, and 806. Each FEMA project was listed within these PW documents and can be found using the PW # and Site # below:

- Project 2: PW 755, Site 4
- Project 5: PW 755, Site 1
- Project 8: PW 806, Site 6
- Project 9: PW 806, Site 3
- Project 10: PW 806, Site 5
- Project 11: PW 806, Site 4
- Project 13: PW 806, Site 2
- Project 26: PW 764, Site 9
- Project 30: PW 764, Site 7
- Project 34: PW 764, Site 3

payment was received, whichever is later.

3. Direct Administrative Costs

The subgrantee is requesting direct administrative costs that are directly chargeable to this specific project. Associated eligible work is related to administration of the PA project only and in accordance with 44 CFR 13.22. These costs are treated consistently and uniformly as direct costs in all federal awards and other subgrantee activities and are not included in any approved indirect cost rates.

4. Environmental, Historic Preservation and Permits

Applicant must comply with all applicable environmental and historic preservation laws, and obtain all necessary permits prior to commencement of work. Failure to follow these guidelines could jeopardize federal funding

5. Appeals

The applicant may appeal this determination through the State office of the Governor's Authorized Representative (GAR) within 60 days of notification of this determination as stated in Title 44 CFR 206.206. The appeal must include supporting documentation and reference appropriate regulations.

6. Changes to Scope of Work described in this PW/SA (Sub-grant Application):

The applicant shall comply with all applicable codes and standards in the completion of eligible work to repair or replace damaged public facilities. Any change to the approved scope of work on a Project Worksheet (PW/SA) must be reported and approved before work begins. Failure to report changes may jeopardize Federal and State funding. In the case of a change in scope of work, the applicant should immediately notify Bill Hirte at (651) 201-7431 State PAO, Minnesota Department of Public Safety/Homeland Security and Emergency Management prior to starting work.

In addition:

State field staff sets initial site visits with applicants (and coordinates with PACL) to make sure everyone is on same page State needs to be at all signings and exits.

7. PROCUREMENT [Include if any contracts were utilized, or if applicant plans on contracting]

The applicant is required to adhere to Federal, State and Local Government Procurement rules and regulations and maintain adequate records to support the basis for all purchasing of goods, materials, and contracting services for projects approved under the Public Assistance Program as stated in CFR § 13.36. Units of work listed in the bid solicitation should match the units identified in the approved scope of work. If less than 3 bids are obtained, State and FEMA approval is required prior to proceeding.

8. Minnehaha Creek Watershed District follows the MN Municipal Contracting Law (MN Stat. and 471.345)

PA-05-
MN-
4182-
PW-
00755

PA-05-
MN-4182-
State-
0054(51) N D 07-21-
2018 0 \$107,315.56 0 \$107,315.56 \$

Facility Number: 1 Facility Name: Minnehaha Creek Watershed District, Cat D

Location: Minnehaha Creek Water Dist HQ 15320 Minnetonka Blvd.
Minnetonka, MN 55345

GPS 44.93816, -93.47345

Scope of Duns Number: 150731255

Work:

DAC: The applicant submitted 31.5 personnel hours and 77 vehicle miles for \$4,092.56

WORK TO BE COMPLETED:

The Applicant will do all repairs and replacements with contracts: (Spreadsheet attached). Project will replace existing material to pre-incident condition based on previous project bid tabs to include labor, equipment and materials costs.

Site 1. Elevated Trail, GPS, 44.91334, -93.20762 Contractor will Shape 150ft x 8ft x .75 = 33 CY of bank at a 2:1 Slope @ \$30,000CY. Relocate 150 LF of trail @ \$200.00 LF (**removed). Fabricate & Install New 25 ft Raised Trail Section @ \$4,000.00. Install 250LF of Erosion Control @ \$4.00 LF. And install 100SY of Erosion Mat and seed @ \$3.00 SY. Site surface preparation estimated @ \$40,000.00. HMP Attached for this site. ** Work to relocate 150 ft of trail has been removed as it is not necessary to restore pre-disaster condition of the facility (see determination memorandum).

Site 2. Undercut South (Right) Creek, GPS, 44.91155, -93.20697 Contractor will replace washed out Toe Boulders in an area 200ft L X 35ft W X 2ft D/27= 521.5CY or 730 Tons @ \$120.00 a Ton. Replace fill material in the undercut area of the creek in an area 200ft L X 5ft W X 2ft D/27= 80CY @ \$25.00 CY. Remove newly formed sandbar in an area 100ft. L x 45 ft. W x 2.8 ft. D/27 = 417 CY @ \$24.00CY. **This facility has been determined to be ineligible for FEMA Public Assistance – unimproved natural feature (see determination memorandum).

Site 3. Mill Dam Area. GPS 44.91041, -93.20500. Contractor will replace/repair Toe boulders washed out in an area 69ft L X 14ft W X 2ft D/27= 71.5CY or 100 Tons @ \$120.00 a Ton. The sand/gravel bar on the left side of the creek that separates this newer channel from the older channel will be removed by the contractor to restore the original channel and flow pattern 70ft L X 41ft W X 4ft D/27= 417CY @ \$24.00CY (**removed). The site surface preparation is estimated to include an area 75LF @ \$175.00LF. ** Work associated with channel realignment has been determined to be ineligible as information was inadequate to establish pre-disaster sediment levels and determine disaster related damage (see determination memorandum).

Site 4. Repair Trail Washout. GPS 44.91102, -93.20636. Contractor will replace the damaged section of the trail with 83SY of Geo Tech fabric @ \$1.00SY and Class 5 Trail Material in an area 150ft L X 2ft W X .25ft D/27= 3CY @ \$50.00CY and base fill of three inches over the same dimensions with 3CY of fill @ \$25.00CY. Site preparation is estimated at \$500.00 this will include the installation of the Geo Tech fabric under the entire 5ft W trail for the entire 150 feet (150 X 5/9=83SY).

Site 5. GPS, 44.90998, -93.20391. Applicant will use contractor services to rechanneling downstream of Bridge 4 starting about 200 ft downstream the channel. The current stream path will be rechanneled to the previous stream stabilization channel over an area covering an estimated 150ft L X 24ft W X 6.25ft D/27 =833CY of Fill material @ \$25.00CY to allow flow in the engineered drainage pathway. This operation will require Site Surface Preparation over a 228LF @ \$175.00LF, Shaping the bank at a 2:1 ratio involving 138CY area @ \$30.00CY, Contractor will install Erosion MAT and Seed over an area 150ft L X 30ft W = 4500/9= 500SY @ \$3.00SY and conduct Erosion Control actions over a 350LF area @ \$4.00LF. Additionally the gravel bar that formed in an area 140 ft. L x 50 ft. W x 4 ft. D/27 = 1038 @ \$24.00CY will be removed. The FEMA staff Geo Tech Engineer recommended the applicant have the USDA (HEC-RAS) Stream Flow Study conducted to confirm the Wink Engineering Inc. actions are the most effective and efficient fix for this site. HMP for this site attached. **All work at this site has been determined to be ineligible. Work to repair bank damage at this site and re-direct flow has been determined to be ineligible as information available is inadequate to show that the damaged bank was improved/maintained or constituted integral ground associated with another eligible facility. Work to remove deposited sediment (gravel bar) has been removed as information available is not adequate to establish pre-disaster sediment levels and determine disaster related damage (see determination memorandum).

SCOPE NOTES:

The Subgrantee has the responsibility as a watershed district to manage the capacity of this stream and other parts of the watershed in accordance with their charter as an agency. The Minnehaha Creek Watershed District has a Joint Powers Agreement with the City Minneapolis City's Park and Recreation Board. This agreement gives the MCWD to authority to maintain the Minnehaha Creek, structures and trails. The applicant plans on contracting all replacement work. No work will be completed by Force Account Labor or Equipment. The work to be completed will be bid out to qualified contractors. Some work may be done during the winter of 2014-2015, while the remainder is expected to be done after the winter season and may not begin until after June 2015.

Erosion Control is highlighted by the Minnehaha Creek Watershed District (MCWD) which summarizes the erosion control rule MCWD requires and the MPCA Erosion Control which is from the MN Pollution Control agency on the different techniques that are used for Erosion control. Additional attached documentation includes the Measurement and Payment document (attached). See page 3 for list of Erosion Control Bid items.

Permitting costs are estimated. The actual amount of charges will only be determined after contract award.

The applicant submitted a Minnehaha Falls Cost Estimate to do the work at all sites. The cost estimates in this document (spreadsheet attached) were considered along with

several site visits to best determine the most accurate cost estimates.

Direct Administrative Charges for work gathering data, support of site visits and other qualifying work in support of this PW, under DAC guidelines, has been presented by the applicant.

STANDARD PROJECT NOTES:

1 PA Alternative Procedures (Pilot Program)

The subgrantee was informed of the PA Alternative Procedures (Pilot Program) for Debris PW preparation. The subgrantee is NOT using the SRIA option; opting to use FEMA's standard PA procedures for this project.

2. Record Retention

Complete records and cost documents for all approved work must be maintained for at least three years from the date the last project was completed or from the date final payment was received, whichever is later.

3. Direct Administrative Costs

The subgrantee is requesting direct administrative costs that are directly chargeable to this specific project. Associated eligible work is related to administration of the PA project only and in accordance with 44 CFR 13.22. These costs are treated consistently and uniformly as direct costs in all federal awards and other subgrantee activities and are not included in any approved indirect cost rates.

4. Environmental, Historic Preservation and Permits

Applicant must comply with all applicable environmental and historic preservation laws, and obtain all necessary permits prior to commencement of work. Failure to follow these guidelines could jeopardize federal funding.

5. Mitigation.

The Applicant has requested Mitigation and Hazard Mitigation Proposal is attached.

6. Appeals

The applicant may appeal this determination through the State office of the Governor's Authorized Representative (GAR) within 60 days of notification of this determination as stated in Title 44 CFR 206.206. The appeal must include supporting documentation and reference appropriate regulations.

7. Changes to Scope of Work described in this PW/SA (Sub-grant Application):

The applicant shall comply with all applicable codes and standards in the completion of eligible work to repair or replace damaged public facilities. Any change to the approved scope of work on a Project Worksheet (PW/SA) must be reported and approved before work begins. Failure to report changes may jeopardize Federal and State funding. In the case of a change in scope of work, the applicant should immediately notify Bill Hirte at (651) 201-7431 State PAO, Minnesota Department of Public Safety/Homeland Security and Emergency Management prior to starting work.

In addition:

State field staff sets initial site visits with applicants (and coordinates with PACL) to make sure everyone is on same page State needs to be at all signings and exits.

8. PROCUREMENT

The applicant is required to adhere to Federal, State and Local Government Procurement rules and regulations and maintain adequate records to support the basis for all purchasing of goods, materials, and contracting services for projects approved under the Public Assistance program, as stated in 44 CFR 13.36. Units of work listed in the bid solicitation should match the units identified in the approved scope of work. If less than three bids are obtained, State and FEMA approval is recommended prior to proceeding.

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07-21-
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0 \$69,267.96

\$

SCOPE NOTES

1. [Sandy Act Statement: for Large Permanent Work Projects] PA Alternative Procedures (Pilot Program)

The subgrantee was informed of the SRIA PA Alternative Procedures (Pilot Program) for Permanent Work project preparation. The subgrantee is NOT using the SRIA option; opting to use FEMA's standard PA procedures for this project.

2. Record Retention

Complete records and cost documents for all approved work must be maintained for at least three years from the date the last project was completed or from the date final payment was received, whichever is later.

3. Direct Administrative Costs

The subgrantee is requesting direct administrative costs that are directly chargeable to this specific project. Associated eligible work is related to administration of the PA project only and in accordance with 44 CFR 13.22. These costs are treated consistently and uniformly as direct costs in all federal awards and other subgrantee activities and are not included in any approved indirect cost rates.

4. Environmental, Historic Preservation and Permits

Applicant must comply with all applicable environmental and historic preservation laws, and obtain all necessary permits prior to commencement of work. Failure to follow these guidelines could jeopardize federal funding.

5. Mitigation.

The Applicant has requested Mitigation and Hazard Mitigation Proposals are attached.

6. Appeals

The applicant may appeal this determination through the State office of the Governor's Authorized Representative (GAR) within 60 days of notification of this determination as stated in Title 44 CFR 206.206. The appeal must include supporting documentation and reference appropriate regulations.

7. Changes to Scope of Work described in this PW/SA (Sub-grant Application):

The applicant shall comply with all applicable codes and standards in the completion of eligible work to repair or replace damaged public facilities. Any change to the approved scope of work on a Project Worksheet (PW/SA) must be reported and approved before work begins. Failure to report changes may jeopardize Federal and State funding. In the case of a change in scope of work, the applicant should immediately notify Bill Hirte at (651) 201-7431 State PAO, Minnesota Department of Public Safety/Homeland Security and Emergency Management prior to starting work.

In addition:

State field staff sets initial site visits with applicants (and coordinates with PACL) to make sure everyone is on same page State needs to be at all signings and exits.

8. PROCUREMENT [Include if any contracts were utilized, or if applicant plans on contracting]

The applicant is required to adhere to Federal, State and Local Government Procurement rules and regulations and maintain adequate records to support the basis for all purchasing of goods, materials, and contracting services for projects approved under the Public Assistance program, as stated in 44 CFR 13.36. Units of work listed in the bid solicitation should match the units identified in the approved scope of work. If less than three bids are obtained, State and FEMA approval is recommended prior to proceeding.

NOTE: The Minnehaha Creek Watershed District follows the Minnesota Uniform Municipal Contracting Law (Minn. Stat. § 471.345) <https://www.revisor.mn.gov/statutes/?id=471.345>

9. All estimates were completed by the Applicant Consultant. These are historical and local estimates and are fair and reasonable to this Project Specialist.

PA-05-
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0	\$173,361.35	N	D	PA-05- MN-4182- State- 0037(34)	01-21- 2016	0	\$173,361.35	\$	
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Facility Number: 1 **Facility Name:** Minnehaha Creek Watershed District

Location: GPS taken at Minnehaha Creek Water Dist HQ 44.93791 -93.47391

Scope of Work: Duns Number: 150731255

DAC costs: Applicant submitted 20 Hours Labor at @ \$2,479.95.

WORK TO BE COMPLETED

Site 1. GPS 44.91495, -93.20878. To return the up slope near Trail Bridge 1 on right downstream side the contractor will. Replace Class 5 trail material in an area 80FT L X 30FT W X .33FT/27 = 30 CY @ \$50.00CY. Replace destroyed Geo Tech fabric in an area, 75FT X 24FT/9 = 200 SY. @ \$.50SY. Site Surface Preparation of \$1,000.00.

Site 2. GPS 44.91473, -93.20940. The Contractor will repair trail erosion downstream of Bridge 1 on the right side in an area 270FT L X 5FT W X .083ft/27 = 4CY of trail material (class 5) \$50.00 CY. Replace destroyed Geo Tech fabric in an area 75ft L X 18ft W/9 = 150SY. Site Surface Preparation is \$1,000.00. Damage was caused by runoff from high areas of the trail. Site 2 is located about midway (right side) between trail bridges 1 and 2.

Site 3. GPS 44.91473, -93.20811. The contractor will repair/replace damaged Toe Boulders along creek bank foundations upstream of Trail Bridge 1 in an area 190FT L X 45FT W X 1.5FT/27 = 464CY/650T @ \$120.00 Ton. The fast flow caused the loss of toe boulders, washing them down stream and burying them in mud and silt.

Site 4. GPS 44.91485, -93.20848. The contractor will reposition and restore Limestone slabs that armors the creek bank, estimated to be 35FT L X 12FT W X .33FT D/27 = 5CY. High flows and creek eddies undermined some limestone rock slabs on this side resulting in limestone slabs slumping, approx. 35LF @ \$331.00 LF.

Site 5. GPS 44.91485, -93.20848. The contractor will replace fill soil in an area 10FT L X 4FT W X 2FT D/27 = 3CY @ \$25.00 CY and Class 3 Rip Rap loss in an area 10FT L X 9FT/9 = 10SY @ \$63.00 SY. In addition surface Erosion Mat and Seed will be used to stabilize an area 10SY @ \$3.00 SY.

Site 6. GPS 44.91473, -93.20940 Contractor will Clear and grade .04 AC @ \$200.00 and conduct Erosion Control along the right bank of channel (downstream flow) about 180 ft. below Bridge 2 in an area 250ft LF @ \$4.00 LF and install Native seed and Erosion Control Mat over a 100 SY area @ \$1.00 SY. Along this section, erosion due to high flows resulted in the undercutting of banks and degradation of trail (edge of trail near creek) in an area 250ft L X 8ft W, the bank will be reshaped at a 2:1 ratio in an area 50FT L X 20FT W X 2.5FT D/27 = 93CY @ \$30.00 CY. One section of bank undercut is about 150 ft. Long and 8 ft Wide. Trail will need to be reconstructed in a 200 LF section @ \$13.00 LF. Site Prep for this site will be \$36,500.00. HMP Attached

Site 7. GPS 44.91334, -93.20697. Contractor will repair stream bank along and under an existing plastic/wood member trail with Fill material in an area 60FT L X 20FT W X 1FT D/27 = 44CY @ \$25.00 CY. Install 1 inch trail material to repair trail washout in an area 200FT L X 8FT W X .5FT D X/27 = 30CY @ \$50.00 CY. Install Geo Tech fabric that was destroyed and washed out in an area 150FT L X 12FT W/9 = 200 SY @ \$0.50 SY. Site surface Preparation for this location is \$1,000.00. HMP Attached:

Site 8. GPS 44.91387, -93.20784. The Contractor will return the site to pre incident condition with the installation of 1 inch Trail material in an area 200FT L X 20FT W X .167FT/27 = 25CY @ \$50.00 CY. Replace destroyed Geo Tech fabric in an area 90FT L X 6FT W/9 = 60SY @ \$0.50 SY. The Site preparation for this area will be \$500.00 and require the development of a Bioengineered Bank in an area 200FT L X 30 FT W/9 = 667SY @ \$6.56 SY. HMP Attached:

SCOPE NOTE:

1. PA Alternative Procedures Pilot Program

The subgrantee was informed of the SRIA PA Alternative Procedures (Pilot Program) for Permanent Work project preparation. The subgrantee is NOT using the SRIA option; opting to use FEMA's standard PA procedures for this project.

2. Record Retention

Complete records and cost documents for all approved work must be maintained for at least three years from the date the last project was completed or from the date final payment was received, whichever is later.

3. Direct Administrative Costs

The sub grantee is requesting direct administrative costs that are directly chargeable to this specific project. Associated eligible work is related to administration of the PA project only and in accordance with 44 CFR 13.22. These costs are treated consistently and uniformly as direct costs in all federal awards and other sub grantee activities and are not included in any approved indirect cost rates.

4. Environmental, Historic Preservation and Permits

Applicant must comply with all applicable environmental and historic preservation laws, and obtain all necessary permits prior to commencement of work. Failure to follow these guidelines could jeopardize federal funding.

5. Mitigation.

The Applicant has requested Mitigation and Hazard Mitigation Proposal is attached.

6. Appeals

The applicant may appeal this determination through the State office of the Governor's Authorized Representative (GAR) within 60 days of notification of this determination as stated in Title 44 CFR 206.206. The appeal must include supporting documentation and reference appropriate regulations.

7. Changes to Scope of Work described in this PW/SA (Sub-grant Application):

The applicant shall comply with all applicable codes and standards in the completion of eligible work to repair or replace damaged public facilities. Any change to the approved scope of work on a Project Worksheet (PW/SA) must be reported and approved before work begins. Failure to report changes may jeopardize Federal and State funding. In the case of a change in scope of work, the applicant should immediately notify Bill Hirte at (651) 201-7431 State PAO, Minnesota Department of Public Safety/Homeland Security and Emergency Management prior to starting work.

In addition:

State field staff sets initial site visits with applicants (and coordinates with PACL) to make sure everyone is on same page State needs to be at all signings and exits.

8. Procurement

The applicant is required to adhere to Federal, State and Local Government Procurement rules and regulations and maintain adequate records to support the basis for all purchasing of goods, materials, and contracting services for projects approved under the Public Assistance program, as stated in 44 CFR 13.36. Units of work listed in the bid solicitation should match the units identified in the approved scope of work. If less than three bids are obtained, State and FEMA approval is recommended prior to proceeding.

8A. Minnehaha Creek Water District follows the Minnesota Uniform Municipal Contracting Law (MN. Stat. & 471.345).

9. Large Projects

This is a large project and final funding will be based on actual costs incurred by the applicant for completing eligible work specifically approved in the scope of work for this project. 44 CFR 206.203.1 states "Federal funding shall equal the Federal share of actual costs documented by the grantee."

PROJECT NOTES;

The Subgrantee has the responsibility as a watershed district to manage the capacity of this stream and other parts of the watershed in accordance with their charter as an agency. The Minnehaha Creek Watershed District has a Joint Powers Agreement with the City Minneapolis City's Park and Recreation Board. This agreement gives the MCWD the authority to maintain the Minnehaha Creek, structures and trails. The applicant plans on contracting all work. No work will be completed by Force Account Labor or Equipment. The work to be completed will be bid out to qualified contractors. Some work may be done during the winter of 2014-2015, while the remainder is expected to be done after the winter season and may not begin until after June 2015.

Surface Preparation involves removing old fabric and site is prepared by leveling damaged area for trail replacement material.

The cost estimates presented in the applicant's estimates are based on historic contract costs and are considered to be reasonable. Examples of the contract costs presented in this PW are based on those of the attached Minnehaha Falls Bid Tab.

Erosion Control is highlighted by the Minnehaha Creek Watershed District (MCWD) which summarizes the erosion control rule MCCWS requires and the MPCA Erosion Control which is from the MN Pollution Control agency on the different techniques that are to be used for erosion control. Additional attached documentation includes the Measurement and Payment document (attached). See page 3 for list of Erosion Control Bid Items

Attached are the Agreement between Minnehaha Creek Watershed and Interfluve Inc. which list Permitting Assistance and the associated costs for permitting assistance. Also attached is the RESPEC Design Contract which list tasks associated with permitting (page 6) and the associated costs for permitting (page 9). Permitting costs are estimated. The actual amount of charges will be known at bid opening.

The applicant submitted a Minnehaha Falls Cost Estimate to do the work at all sites. The cost estimates in this document (attached) were considered along with several site visits to best determine the most accurate cost estimates to do the work at all sites.

Total for 6 PWs: \$353,893.29

\$ _____

Subgrantee Admin: \$0.00

Grand Total: \$353,893.29

Generated Date: 02/04/2015 15:42

**Federal Emergency Management Agency
Project Completion and Certification Report (P.4)
Disaster: FEMA-4182-DR-MN**

Applicant FIPS ID: 000-UEK9K-00 **Applicant/Subdivision Name:** MINNEHAHA CREEK WATERSHED DISTRICT

Certification

I hereby certify that to the best of my knowledge and belief all work and costs claimed are eligible in accordance with the grant conditions, all work claimed has been completed, and all costs claimed have been paid in full.

I certify that all funds were expended in accordance with the provisions of the signed FEMA-State Agreement and I recommend an approved amount of \$_____

Signed: _____ Date: _____

Signed: _____ Date: _____

Applicant's Authorized Representative

Governor's Authorized Representative

and Emergency Management prior to starting work.

In addition:

State field staff sets initial site visits with applicants (and coordinates with PACL) to make sure everyone is on same page State needs to be at all signings and exits.

8. PROCUREMENT [Include if any contracts were utilized, or if applicant plans on contracting]

The applicant is required to adhere to Federal, State and Local Government Procurement rules and regulations and maintain adequate records to support the basis for all purchasing of goods, materials, and contracting services for projects approved under the Public Assistance program, as stated in 44 CFR 13.36. Units of work listed in the bid solicitation should match the units identified in the approved scope of work. If less than three bids are obtained, State and FEMA approval is recommended prior to proceeding.

NOTE: The Minnehaha Creek Watershed District follows the Minnesota Uniform Municipal Contracting Law (Minn. Stat. § 471.345) <https://www.revisor.mn.gov/statutes/?id=471.345>

9. All estimates were completed by the Applicant Consultant. These are historical and local estimates and are fair and reasonable to this Project Specialist.

PA-05-MN-4182-PW-00764	0	\$76,013.98	N	D	PA-05-MN-4182-State-0035(33)		01-21-2016	0	\$76,013.98		\$	
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Facility Number: 1 **Facility Name:** Minnehaha Creek 11 Sites

Location: Minnehaha Creek-Grays Bay Dam 21 east to Minnehaha Falls 11 Sites
GPS 44.90793 -93.28981

Scope of Work: DUNS No. 150731255
DAC: Applicant has recorded 16.7 hours of labor and 4 hours of equipment in support of this PW for the amount of \$1803.98

WORK TO BE COMPLETED

Site 1 44.90793; -93.28981
Contractor, utilizing in place procedures, will provide, site access and restoration \$1000, erosion control \$250 and site grading and unclassified fill \$2000, and will also provide 45ft x 13ft /9 = 65 sy native seed and erosion control blanket \$6/sy to repair the 5ft x 8ft x 2ft washed out area and the 70ft of bank erosion and to restore the damaged area to pre-disaster condition.

Site 2 44.90819; -93.28972
Contractor, utilizing in place procedures, will provide, site access and restoration \$2500, erosion control \$1000 and site grading and unclassified fill \$2500 to repair the 35ft x 2.5ft x 2ft of bank erosion and to repair the 4ft x 20ft x 2.5ft of washout, and will provide 18ft x 5ft x 1.5ft /27 = 5 cy top soil \$20/cy, 45ft x 11 ft /9 = 55 sy native seed and erosion control blanket \$6/sy to repair the 126ft x 2ft x 1.5ft of damaged area and restore it to pre-disaster condition . Mitigation will be performed on this site. See attached Mitigation Sheet.

Site 3 44.90796; -93.28964
Contractor, utilizing in place procedures, will provide, site access and restoration \$2000, erosion control \$250 and site grading and unclassified fill \$2500, and will provide 30ft x 4.5ft x 1ft /27 = 5 cy topsoil \$20/cy and 45ft x 11ft /9 = 55 sy native seed and erosion control blanket \$6/sy to repair the 225ft x 2ft x 1.5ft damaged area and restore it to pre-disaster condition. Mitigation will be performed on this site. See attached Mitigation Sheet.

Site 4 44.90826; -93.28718

Contractor, utilizing in place procedures, will provide, site access and restoration \$2000, erosion control \$500 and site grading and unclassified fill \$2000, and will provide 45ft x 12 /9 = 60 sy native seed and erosion control blanket \$6/sy to repair the 225ft x 2ft x 1.5ft damaged creek drainage ravine area and restore it to pre-disaster condition. Mitigation will be performed on this site. See attached Mitigation Sheet.

Site 5 44.90802; -93.28635

Contractor, utilizing in place procedures, will provide, site access and restoration \$2000, erosion control \$250 and site grading and unclassified fill \$2000, and will provide 55ft x 9ft /9 = 55 sy native seed and erosion control blanket \$6/sy to repair the erosion of 60ft of bank and restore the damaged area to pre-disaster condition.

Site 6 44.90802; -93.28635

Contractor, utilizing in place procedures, will provide, site access and restoration \$2000, erosion control \$250 and site grading and unclassified fill \$2500, and will provide 45ft x 4.5ft x 2ft /27 = 15 cy topsoil \$20/cy, 76ft x 8ft x 4ft /27 = 90 cy of fill \$25 cy and 45ft x 13ft /9 = 65 sy native seed and erosion control blanket \$6/sy to repair the damaged and eroded area 243ft x 2ft x 2ft and the 70ft x 2.5ft x 2ft area of washout behind the WPA wall and restore the damaged area to pre-disaster condition. Mitigation will be performed on this site. See attached Mitigation Sheet.

Site 7 44.90812; -93.28378

Contractor, utilizing in place procedures, will provide, site access and restoration \$2000, erosion control \$250 and site grading and unclassified fill \$2500, and will provide 18ft x 5ft x 1.5ft /27 = 5 cy topsoil \$20/cy, and 90ft x 10ft /9 = 100 sy native seed and erosion control blanket \$6/sy to repair the damaged and eroded area 126ft x 2ft x 1.5ft and the 6ft x 20ft x 2.5ft area of slope failure and restore the damaged area to pre-disaster condition. Mitigation will be performed on this site. See attached Mitigation Sheet.

Site 8 Start GPS 44.90703; -93.28268 End GPS 44.91008; -93.27349

Contractor, utilizing in place procedures, will provide, site access and restoration \$2000, erosion control \$500 and site grading and unclassified fill \$2500, and will provide 54ft x 5ft x 2ft /27 = 20 cy topsoil \$20/cy, and 20ft x 9ft /9 = 20 sy native seed and erosion control blanket \$6/sy to repair the 142ft x 2ft x 2ft eroded and washed out area and restore the damaged area to pre-disaster condition. Mitigation will be performed on this site. See attached Mitigation Sheet.

Site 9 44.91034; -93.27263

Contractor, utilizing in place procedures, will provide, site access and restoration \$1000, and will provide 30ft x 9ft /9 = 30 sy native seed and erosion control blanket \$6/sy to repair the eroded and washed out area and restore the damaged area to pre-disaster condition.

Site 10 44.91053; -93.27232

Contractor, utilizing in place procedures, will provide, site access and restoration \$1000, and will provide 30ft x 9ft /9 = 30 sy native seed and erosion control blanket \$6/sy to repair the eroded and washed out area and restore the damaged area to pre-disaster condition .

Site 11 44.91055; -93.27179

Contractor, utilizing in place procedures, will provide, site access and restoration \$1000, erosion control \$250 and site grading and unclassified fill \$1500 and will provide 18ft x 5ft x 1.5ft /27 = 5 cy topsoil \$20/cy, 30ft x 6ft /9 = 20 sy native seed and erosion control blanket \$6/sy to repair the 126ft x 2ft x 1.5ft of eroded and washed out area and restore the damaged area to pre-disaster condition. . Mitigation will be performed on this site. See attached Mitigation Sheet.

SCOPE NOTES

1. [Sandy Act Statement: for Large Permanent Work Projects] PA Alternative Procedures (Pilot Program)

The subgrantee was informed of the SRIA PA Alternative Procedures (Pilot Program) for Permanent Work project preparation. The subgrantee is NOT using the SRIA option; opting to use FEMA's standard PA procedures for this project.

2. Record Retention

Complete records and cost documents for all approved work must be maintained for at least three years from the date the last project was completed or from the date final payment was received, whichever is later.

3. Direct Administrative Costs

The subgrantee is requesting direct administrative costs that are directly chargeable to this specific project. Associated eligible work is related to administration of the PA

project only and in accordance with 44 CFR 13.22. These costs are treated consistently and uniformly as direct costs in all federal awards and other subgrantee activities and are not included in any approved indirect cost rates.

4. Environmental, Historic Preservation and Permits

Applicant must comply with all applicable environmental and historic preservation laws, and obtain all necessary permits prior to commencement of work. Failure to follow these guidelines could jeopardize federal funding.

5. Mitigation.

The Applicant has requested Mitigation and Hazard Mitigation Proposals are attached.

6. Appeals

The applicant may appeal this determination through the State office of the Governor's Authorized Representative (GAR) within 60 days of notification of this determination as stated in Title 44 CFR 206.206. The appeal must include supporting documentation and reference appropriate regulations.

7. Changes to Scope of Work described in this PW/SA (Sub-grant Application):

The applicant shall comply with all applicable codes and standards in the completion of eligible work to repair or replace damaged public facilities. Any change to the approved scope of work on a Project Worksheet (PW/SA) must be reported and approved before work begins. Failure to report changes may jeopardize Federal and State funding. In the case of a change in scope of work, the applicant should immediately notify Bill Hirte at (651) 201-7431 State PAO, Minnesota Department of Public Safety/Homeland Security and Emergency Management prior to starting work.

In addition:

State field staff sets initial site visits with applicants (and coordinates with PAOL) to make sure everyone is on same page State needs to be at all signings and exits.

8. PROCUREMENT [Include if any contracts were utilized, or if applicant plans on contracting]

The applicant is required to adhere to Federal, State and Local Government Procurement rules and regulations and maintain adequate records to support the basis for all purchasing of goods, materials, and contracting services for projects approved under the Public Assistance program, as stated in 44 CFR 13.36. Units of work listed in the bid solicitation should match the units identified in the approved scope of work. If less than three bids are obtained, State and FEMA approval is recommended prior to proceeding.

NOTE: The Minnehaha Creek Watershed District follows the Minnesota Uniform Municipal Contracting Law (Minn. Stat. § 471.345) <https://www.revisor.mn.gov/statutes/?id=471.345>

9. All estimates were completed by the Applicant Consultant. These are historical and local estimates and are fair and reasonable to this Project Specialist.

Total for 4 PWs:	\$157,131.94		\$ _____
Subgrantee Admin:	\$0.00		
Grand Total:	\$157,131.94		

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**Federal Emergency Management Agency
Project Completion and Certification Report (P.4)
Disaster: FEMA-4182-DR-MN**

Applicant FIPS ID: 000-UEK9K-00 **Applicant/Subdivision Name:** MINNEHAHA CREEK WATERSHED DISTRICT

Certification

I hereby certify that to the best of my knowledge and belief all work and costs claimed are eligible in accordance with the grant conditions, all work claimed has been completed, and all costs claimed have been paid in full.

I certify that all funds were expended in accordance with the provisions of the signed FEMA-State Agreement and I recommend an approved amount of \$_____

Signed: _____ Date: _____

Signed: _____ Date: _____

Applicant's Authorized Representative

Governor's Authorized Representative

