

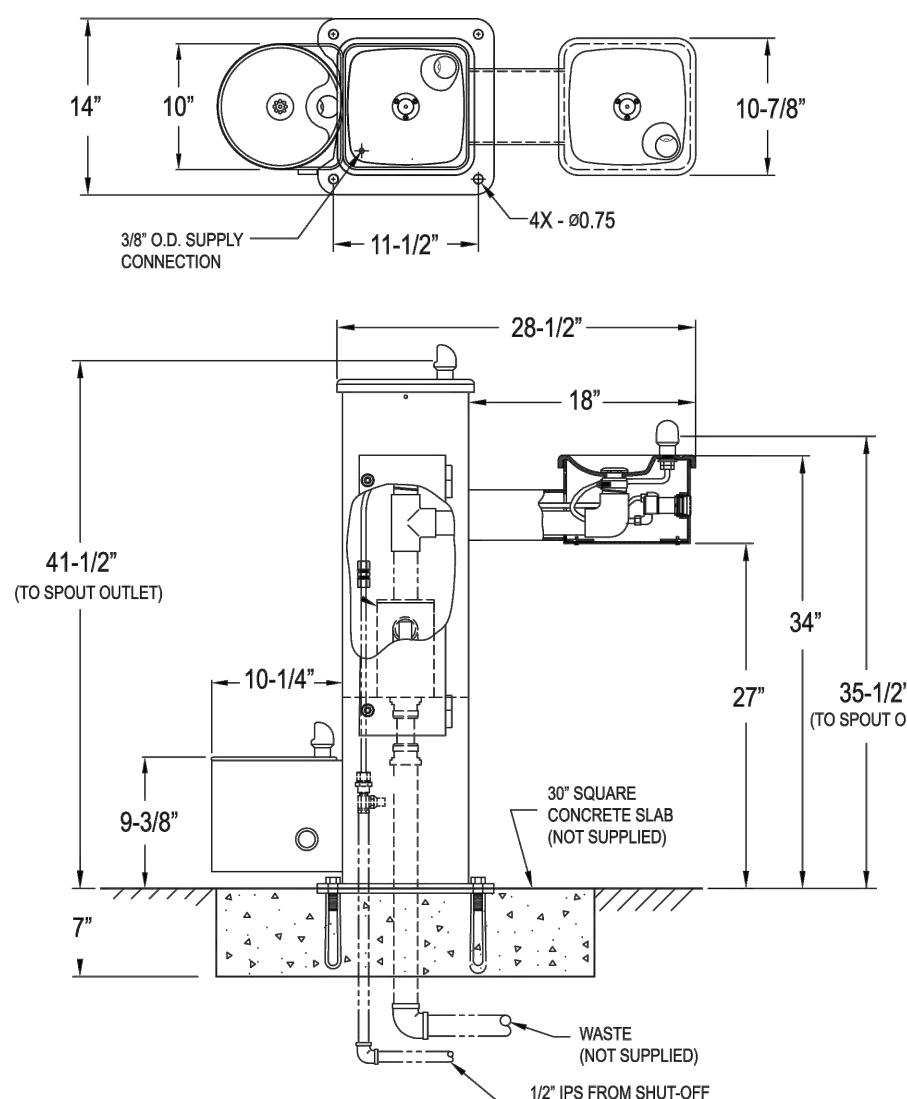


Model # 3500D

627 Amersale Drive
Naperville, IL 60563
Phone: (800) 323-5664
Fax: (630) 897-0573
sales@belson.com

Dimension Sheet

Drinking Fountain | Square Pedestal | Dual Height | Pet Fountain



www.belson.com

Water Fountain Detail

NTS

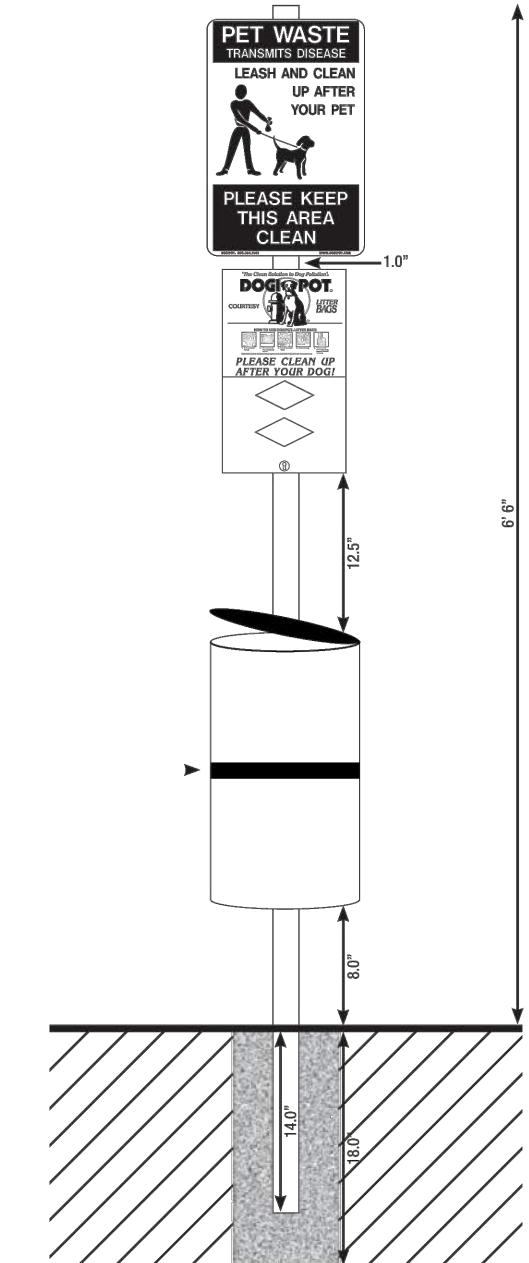


Model # DP-1003-L

111 North River Road
North Aurora, IL 60542
Phone: (800) 323-5664
Fax: (630) 897-0573
sales@belson.com

Dimension Sheet

PET WASTE DISPOSAL STATION



www.belson.com

Pet Station Detail

NTS

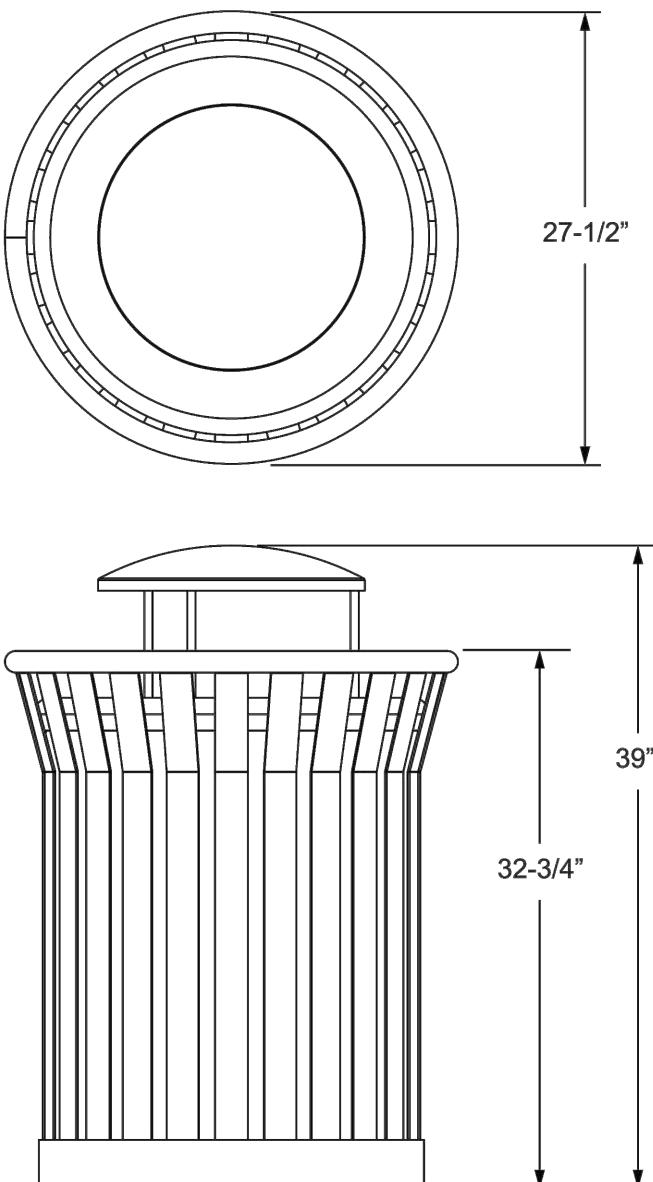


Model # JK-36RB

627 Amersale Drive
Naperville, IL 60563
Phone: (800) 323-5664
Fax: (630) 897-0573
sales@belson.com

Dimension Sheet

JACKSON COLLECTION TRASH RECEPTEACLES WITH RAIN BONNET LID



www.belson.com

Trash Receptacle Detail

NTS

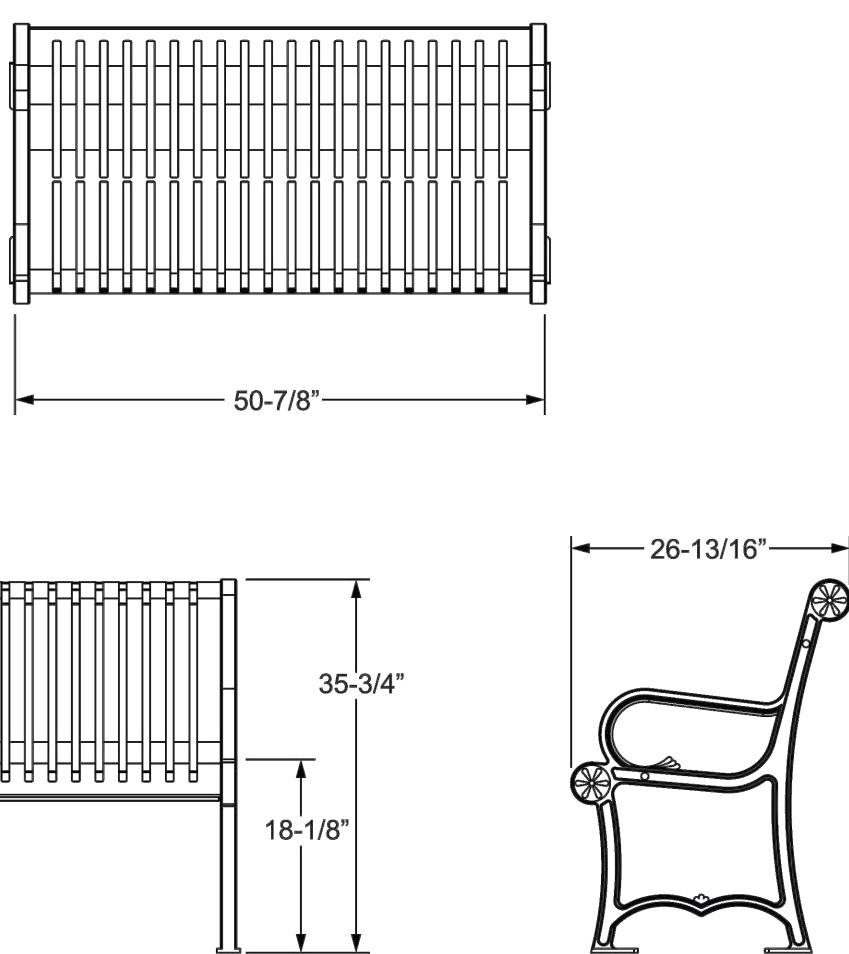


Model # 964-S4

627 Amersale Drive
Naperville, IL 60563
Phone: (800) 323-5664
Fax: (630) 897-0573
sales@belson.com

Dimension Sheet

CHARLESTON BENCH WITH SLAT PATTERN



www.belson.com

Bench Detail

NTS

STATE ROAD 19 CORRIDOR IMPROVEMENTS (PA7663)

PROJECT:

SITE CONSTRUCTION DETAILS

SHEET TITLE: _____

DRAWN BY: NI

DESIGNED BY: CAK/ZDH

PM REVIEW: RAN

QA/QC REVIEW: DSK

DATE: 03/02/23

SEAL: DARYL S. KARP REGISTERED NO. PE19900163 STATE OF ILLINOIS PROFESSIONAL ENGINEER.

SIGNATURE: DSK

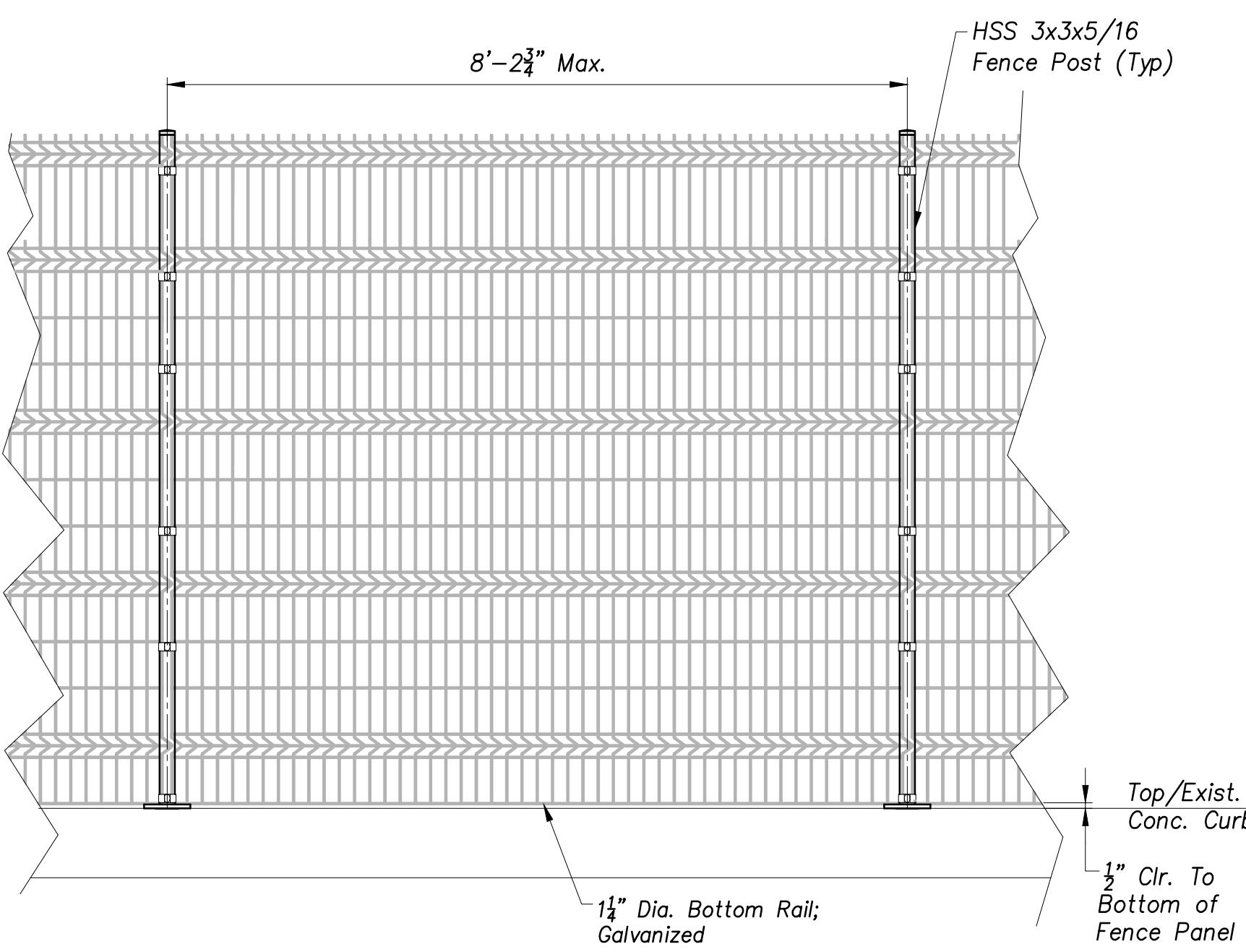
DATE: 03/02/2023

SCALE: HORIZ: AS SHOWN VERT: N/A

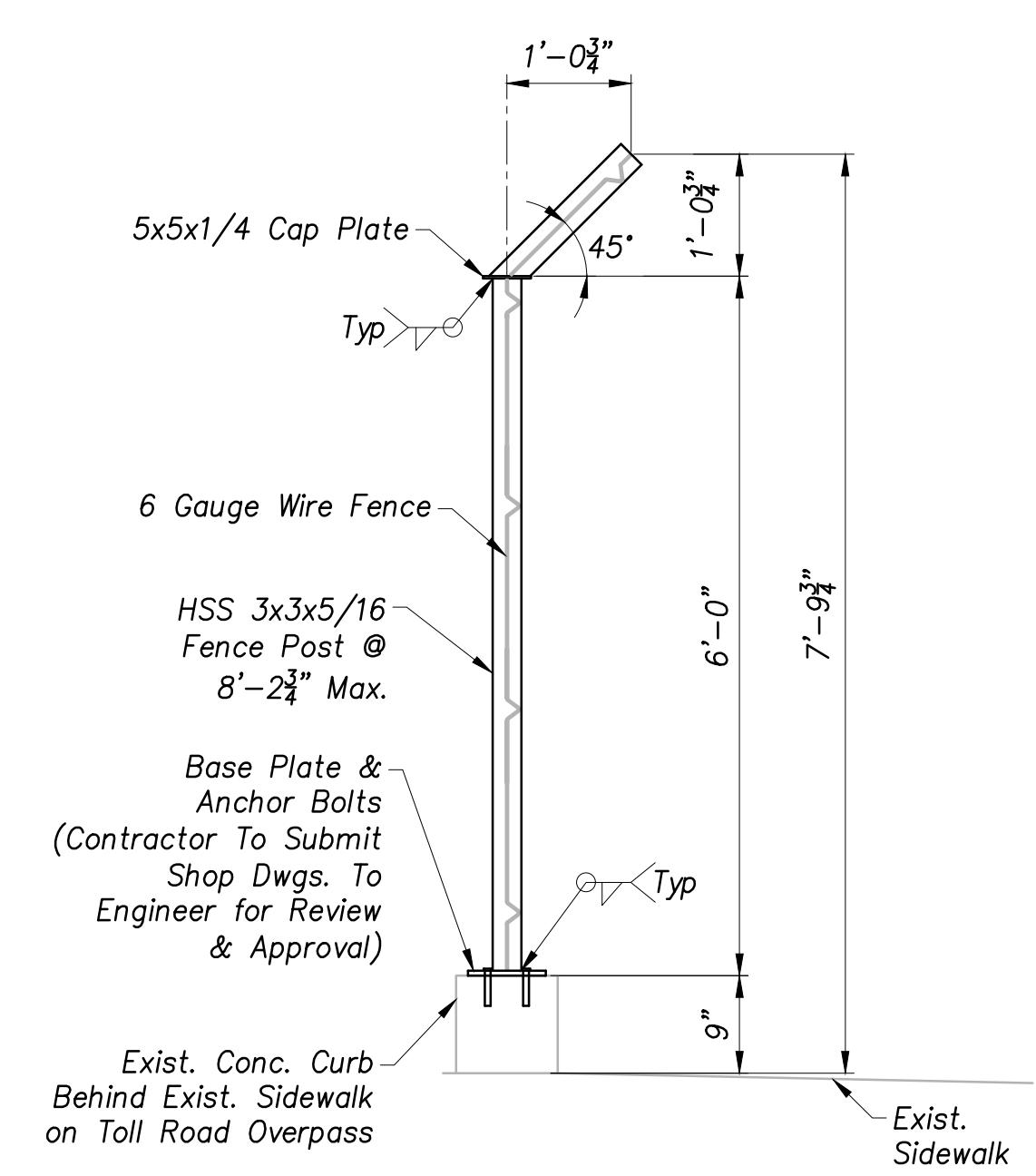
ACI JOB #: 20-1114

ACI JOB # 20-1114

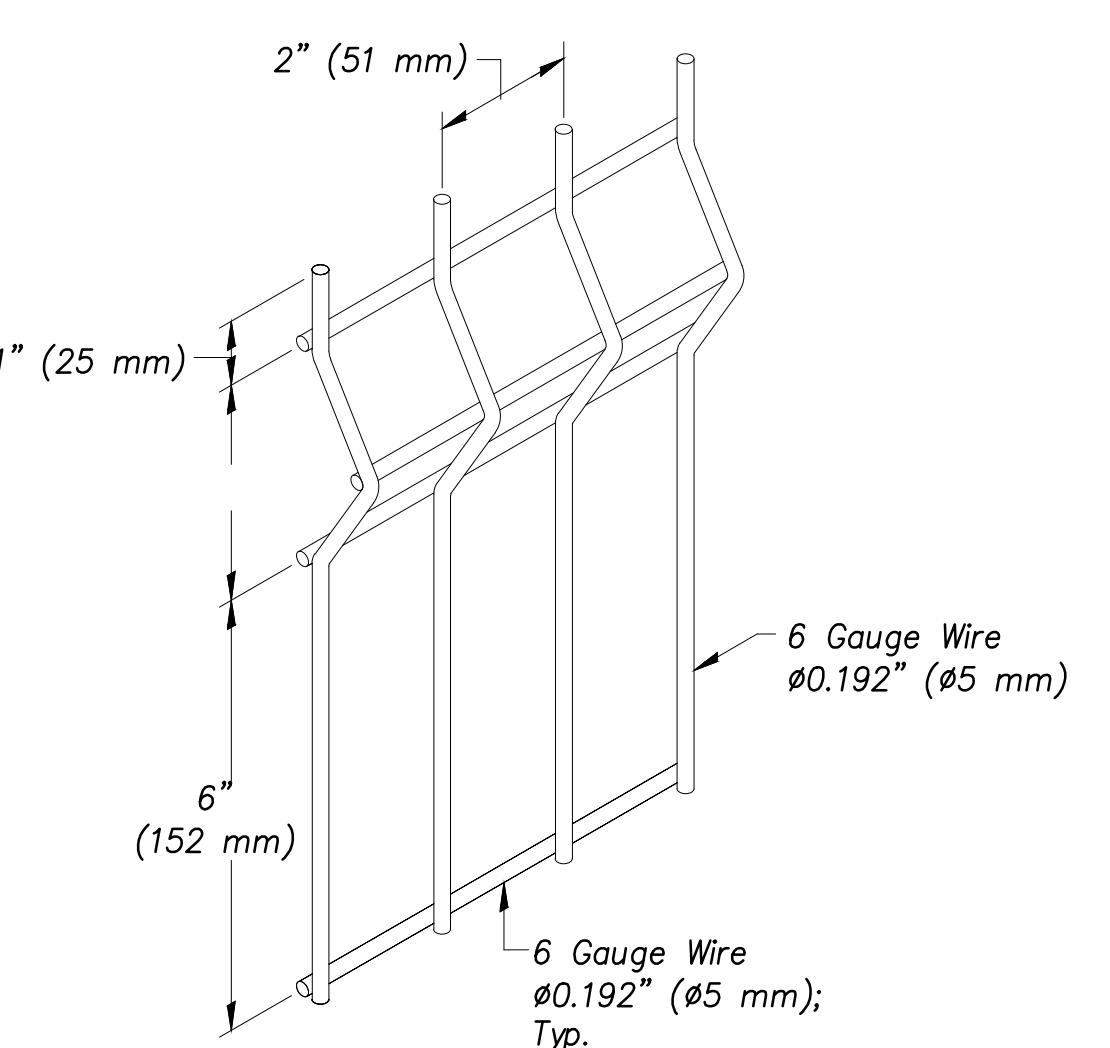
Sheet No. 51 of 56



FENCE PANEL



FENCE POST



FENCE ISOMETRIC

Pedestrian Fence Detail

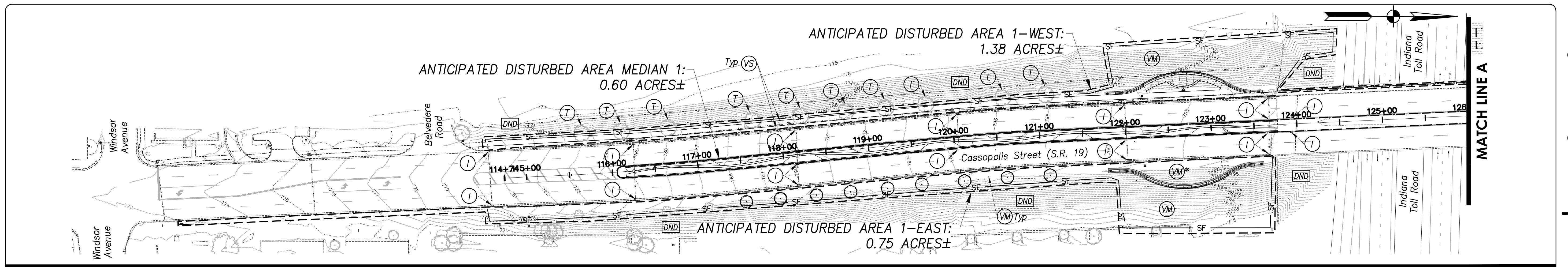
NTS

STATE ROAD 19 CORRIDOR IMPROVEMENTS (PA7663)

PROJECT:
 SHEET TITLE:
 DRAWN BY:
 NI
 DESIGNED BY:
 CAK/ZDH
 PM REVIEW:
 RAN
 QA/QC REVIEW:
 DSK
 DATE:
 03/02/23

SEAL:
 DARYL S. KNAPP
 REGISTERED
 STATE OF
 INDIANA
 PROFESSIONAL ENGINEER
 NO. PEI9900163
 SIGNATURE:
 DATE:
 03/02/2023
 SCALE:
 HORIZ: 1" = 60'
 VERT: N/A
 ACI JOB #
 20-1114
 SHEET NO.

52 of 56



SWPPP LEGEND

- (A) Staging Area w/SWPPP & NOI Location
- (C) Concrete Washout Structure; (If concrete waste is returned to the concrete plant for disposal or concrete delivery trucks with self-contained washout systems are utilized, this BMP is not required)
- (I) Inlet Protection
- (P) Pipe End Section & Turf Reinforcement Mat
- (S) Temporary Soil Stockpile
- (T) Tree Protection
- (VM) Vegetate Disturbed Area w/Seeding & Secured Mulch (if disturbed area remains idle for more than 15 days); (Erosion Control Blanket to be used on areas that fail to stabilize with seed and mulch)
- (VS) Vegetate Disturbed Area with Sod
- SF- Temporary Silt Fence (As Needed)
- DND Existing Vegetative Filter DO NOT DISTURB

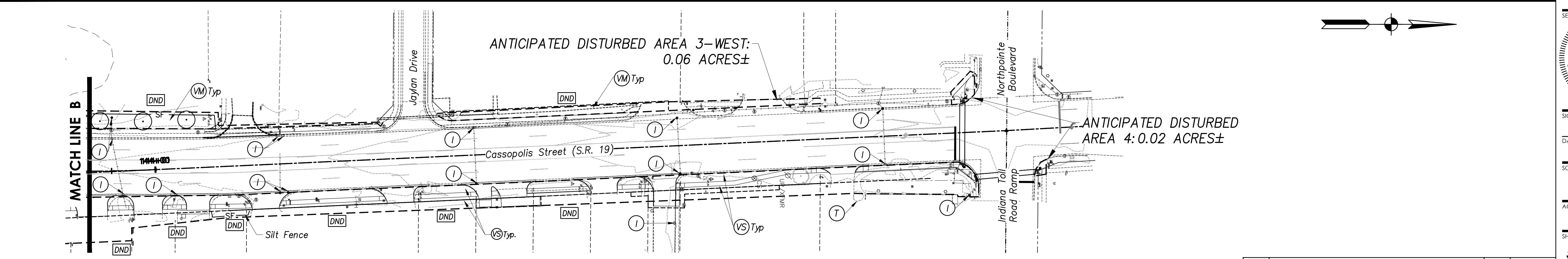
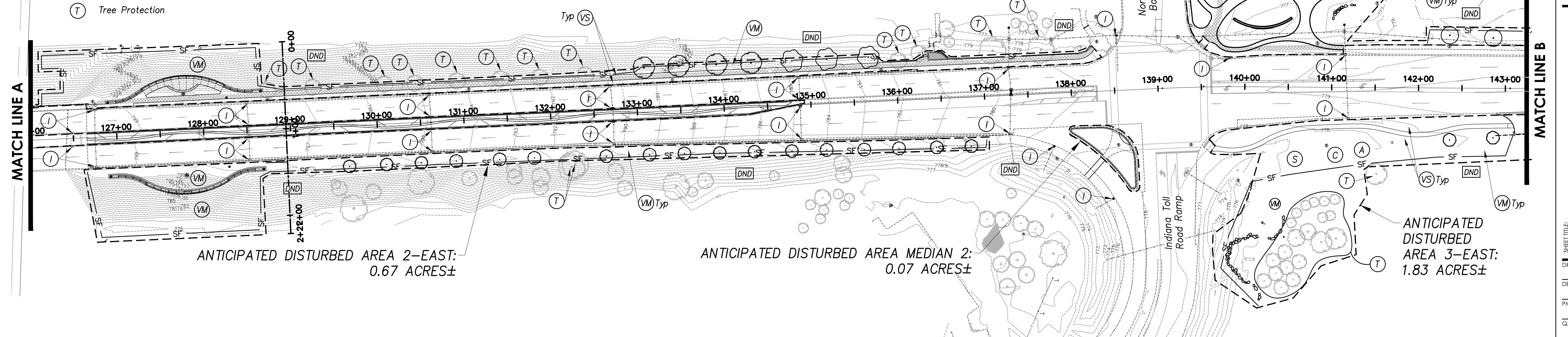
GENERAL NOTES

1. See Sheet 53 for SWPPP Notes.
2. Total Anticipated Disturbed Area = 6.42 Acres±.

INSPECTIONS/REPORTING

Inspections of all erosion and sediment control best management practices (BMPs) and stormwater related BMPs must be completed on a weekly basis and within one (1) business day after each storm event of one-half inch or greater. All inspections are to be completed using PermitTrackESC, which is a web based software the Greater Elkhart County Stormwater Partnership is using to allow electronic completion and submittal of each inspection report (www.mypermitrack.com). This project has been entered into PermitTrackESC and a project specific inspection report has been created. The On-Site Erosion Control Supervisor or Inspector will need to make sure they have a user account with PermitTrack to be able to complete the required inspection reports. If there are questions, please contact the Elkhart County SWD at (574) 523-2030.

All repairs, failures, and additional erosion control measures installed at the project are to be noted in the individual inspection report. Inspections must be made available within 48 hours to any governing body that requests to view them. Finally, inspections are to continue until the project until a Notice of Termination has been approved.



SWPPP NOTES

- All erosion control measures shall be implemented in accordance with this plan and shall comply with Elkhart County standards and 327 IAC 15-5 or "Rule 5" as outlined in the Indiana Storm Water Quality Manual and on the following website for best management practices (BMPs): www.in.gov/dem/4902.htm.
- The Owner must notify IDEM's Rule 5 Coordinator at (317) 233-1864 and the Elkhart County Engineering Department at least 48 hours prior to any land disturbing activity and upon completion so that final site inspections may be performed for compliance.
- Contractor shall renew the Elkhart County Storm Water Discharge Permit if construction is not completed within the allocated time frame listed on the permit.
- If construction is not completed within 5 years or if an early release from the permit is not received as specified under 327 IAC 15-5-8, the Owner shall renew the permit. Once all construction is completed for the entire project, the Owner must file the IDEM "Notification of Termination" form to Elkhart County who will process this form and forward to IDEM.
- Storm sewer inlets within the construction limits and existing inlets nearby that may be impacted by construction shall be protected as specified on this plan or an approved equal. The intent of this measure is to prevent sediment from entering the drainage system. See inlet protection detail(s).
- Until the project is accepted by the Owner, the Contractor shall maintain all erosion control measures to prevent sediment from entering public and private storm sewers and from leaving the project site. Contractor shall implement and maintain any additional measures at the request of the Local and/or State Stormwater and Erosion Control Inspectors at no additional cost.
- SILT FENCE** – The location of silt fence shown on the drawing shall act as a guide for the Contractor to follow. Actual field conditions shall dictate the location and amount of silt fence required to prevent sediment from entering public and private storm sewers and from leaving the project site. Silt fence shall also be installed at specific down slope areas as shown on the plan. Silt fence or other appropriate sediment barriers shall be installed a minimum of 10 feet from the toe of slope of any onsite or offsite soil stockpile, borrow and/or disposal areas. See "Silt Fence" detail.
- The location shown on the plan for the concrete washout structure is tentative and subject to change by the Contractor and Owner prior to construction. See "Concrete Washout" detail.
- Soil material shall be temporarily stockpiled onsite as necessary during construction in accordance with "Rule 5" guidelines and any excess material not needed shall be hauled away and disposed of in accordance with "Rule 5" guidelines. See "Topsoil Stockpile" detail.
- Locations for temporary construction staging and dewatering operations (if required) shall be determined by the Contractor and Owner prior to construction. These locations shall be provided to Elkhart County prior to construction of said items and adequate protection installed to protect public and private drainage systems.
- All areas disturbed by construction shall be stabilized with seeding measures. Temporary Seeding shall take place as soon as possible on any bare or thinly vegetated areas which have less than 70 percent cover and will remain inactive for a period of 15 days or more. Temporary and Permanent Seeding shall be in accordance with the Indiana Storm Water Quality Manual.
- Erosion Control Blankets, where specified, shall be North American Green DS-150 or approved equal. Contractor shall follow the manufacturer's guidelines for installation and maintenance. See temporary slope stabilization detail.
- All work performed within Elkhart County right-of-way shall conform with county standards and details.

MULCHING SPECIFICATIONS

TABLE 1. MULCH SPECIFICATIONS

MATERIAL (1)	RATE/ACRE	COMMENTS
Straw or Hay	2 tons	Should be dry, free of undesirable seeds. Spread by hand or machine. Must be crimped or anchored (See Table 2).
Wood fiber or cellulose (1)	1 ton	Apply with a hydraulic mulch machine and use with tacking agent.

(1) Mulching is not recommended in concentrated flows. Consider erosion control blankets or other stabilization methods.

TABLE 2. MULCH ANCHORING SPECIFICATIONS

ANCHORING METHOD	HOW TO APPLY
Mulch anchoring tool or farm disk (dull, serrated, and blades set straight)	Crimp or punch the straw or hay two to four inches into the soil. Operate machinery on the contour of the slope.
Cleating with dozer tracks	Operate dozer up and down slope to prevent formation of rills by dozer cleats.
Wood hydromulch fibers	Apply according to manufacturer's recommendations.
Synthetic tackifiers, binders, or soil stabilizers	Apply according to manufacturer's recommendations.
Netting (synthetic or biodegradable material)	Install netting immediately after applying mulch. Anchor netting w/staples. Edges of netting strips should overlap with each up-slope strip overlapping 4"-6" over the adjacent down-slope strip. Best suited to slope applications. Installation details are site specific; follow manufacturer's recommendations.

(1) All forms of mulch must be anchored to prevent displacement by wind and/or water.

APPLICATION

- Coverage: Mulch should have a uniform density of at least 75 percent over the soil surface.
- Apply mulch at the recommended rate shown in Table 1.
- Spread the mulch material uniformly by hand, hayfork, mulch blower, or hydraulic mulch machine. After spreading, no more than 25 percent of the ground should be visible.
- Anchor straw or hay mulch immediately after application. The mulch can be anchored using one of the methods listed below:
 - Crimp with a mulch anchoring tool, a weighted farm disk with dull serrated blades set straight, or track cleats of a bulldozer,
 - Apply hydraulic mulch with short cellulose fibers,
 - Apply a liquid tackifier,
 - Cover with netting secured by staples.

Maintenance

- Inspect within 24 hours of each rain event and at least once a week.
- Check for erosion or movement of mulch; repair damaged areas, reseed, apply new mulch and anchor the mulch in place.
- Continue inspections until vegetation is firmly established.
- If erosion is severe or recurring, use erosion control blankets or other more substantial stabilization methods to protect the area.

COMPOST MULCHING

Compost Specifications

- Feedstocks may include but are not limited to well-composted vegetable matter, leaves, yard trimmings, food scraps, composted manures, paper fiber, wood bark, Class A biosolids (as defined in Title 40 of the Code of Federal Regulations at 40 CFR Part 503), or any combination thereof.
- Compost shall be produced using an aerobic composting process meeting 40 CFR Part 503 regulations, including time and temperature data indicating effective weed seed, pathogen, and insect larvae kill.
- Compost shall be well decomposed, stable, and weed free.
- Refuse free (less than one percent by weight).
- Free of any contaminants and materials toxic to plant growth.
- Inert materials not to exceed one percent by dry weight pH of 5.5 to 8.0.
- Carbon-nitrogen ratio not to exceed 100.
- Moisture content not to exceed 45 percent by dry weight.
- Variable particle size with maximum dimensions of three inches in length, one-half inch in width and one-half inch in depth.
- Compost particle size: 100% passing 2" sieve; 99% passing 1" sieve; 90% passing 3/4" sieve; 25% passing > 1/4" sieve.

Bonding Agents (optional)

Tackifiers, flocculants, or microbial additives may be used to remove sediment and/or additional pollutants from storm water runoff. (All additives combined with compost materials should be tested for physical results at a certified erosion and sediment control laboratory and biologically tested for elevated beneficial microorganisms at a United States Compost Council, Seal of Testing Assurance, approved testing laboratory.)

Soil Material (optional)

5%-10% sandy loam (as classified by the U.S. Department of Agriculture soil classification system).

Cover Density – 90% or greater over the soil surface.

Anchoring Method

Moisten compost/mulch blanket for a minimum of 60 days. Erosion control netting (optional).

TABLE 3. COMPOST BLANKET THICKNESS

SLOPE	THICKNESS OF COMPOST BLANKET	THICKNESS OF COMPOST BLANKET WITH EROSION CONTROL NETTING
< 25%	< 4:1	1 to 2 inches Not Applicable
25% to 50%	4:1 to 2:1	1 to 2 inches 2 inches
> 50%	> 2:1	2 to 3 inches 3 inches

APPLICATION

- Remove existing vegetation, large soil clods, rocks, stumps, large roots, and debris in areas where compost mulch is to be applied and dispose of in designated areas.
- Scarfie sloping areas.
- Aerate areas to be covered with compost/mulch blanket. (Proper aeration will require a minimum of two passes oriented in opposite directions.)
- Broadcast a minimum of one pound of nitrogen (N), one-half pound of phosphorus (P2O5), and one-half pound of potash (K2O) per 1,000 square feet or 300 to 400 pounds per acre of 12-12-12 analysis fertilizer, or equivalent, per acre.
- Apply compost mulch blanket with a pneumatic blower or per manufacturer's directions.
- Apply within three days of completing aeration operations.
- Overlap top of slope shoulder by five to ten feet.
- Seed may be applied at time of installation. (Seed must be evenly blended into the compost if applied with a pneumatic blower or applied with a calibrated seeder attachment prior to installation of the compost blanket.)
- Water compost mulch blanket for a period of 60 days following application. (On steeper slopes, it may be necessary to install erosion control netting over the compost blanket.)
- Mist blanket for first seven days and then every three days throughout the remainder of the 60-day period.
- Maintain a constant moisture content of 40 percent to 60 percent.

Maintenance

- Inspect within 24 hours of a rain event and at least once a week.
- Repair eroded areas. Reseed, if applicable.
- Monitor vegetation and apply appropriate soil amendments (if needed) per a soil test.

SOD SPECIFICATIONS

INSTALLATION

Sod should not be installed during hot weather, on dry soil, frozen soil, compacted clay, loose sand or gravelly substrate soils, aggregate, or pesticide treated soil. The ideal time to lay sod is May 1 to June 1 or September 1 to September 30, although it can be installed as early as March 15 if available or June 1 to September 1 if irrigated.

SITE PREPARATION

- Apply topsoil if existing soil conditions are unsuitable for establishing vegetation.
- Grade the site to achieve positive drainage and create a smooth, firm soil surface.
- Where applicable, use a chisel plow, disk, harrow, or rake to break up compacted soils and create a favorable rooting depth of six to eight inches.

SOD BED PREPARATION

- Test soil to determine pH and nutrient levels.
- If soil pH is too acidic for the grass sod to be installed, apply lime according to soil test results or at the rate recommended by the sod supplier.
- Apply fertilizer as recommended by the soil test. If testing was not done, apply 400 to 600 pounds per acre of 12-12-12 analysis fertilizer, or equivalent.
- Work the soil amendments into the upper two to four inches of soil with a disk or rake operated across the slope.
- Rake or harrow the area to achieve a smooth final grade and then roll or cultipack the soil surface to create a firm surface on which to lay the sod.

LAYING SOD

- Install sod within thirty-six hours of its cutting.
- Store the sod in a shaded location during installation.
- Immediately before laying the sod, rake the soil surface to break any crust. (If the weather is hot, lightly irrigate the soil surface prior to laying the sod.)
- Lay sod strips in a brick-like pattern.
- Butt all joints tightly against each other (do not stretch or overlap them), using a knife or mason's trowel to trim and fit sod into irregular shaped areas.
- Roll the sod lightly after installation to ensure firm contact between the sod and soil.
- Irrigate newly sodded areas until the underlying soil is wet to a depth of four inches, and then keep moist until the grass takes root.

SLOPE APPLICATION

- Install sod strips with the longest dimension perpendicular to the slope.
- Where slopes exceed a ratio of 3:1, staple or stake each strip at the corners and in the middle.

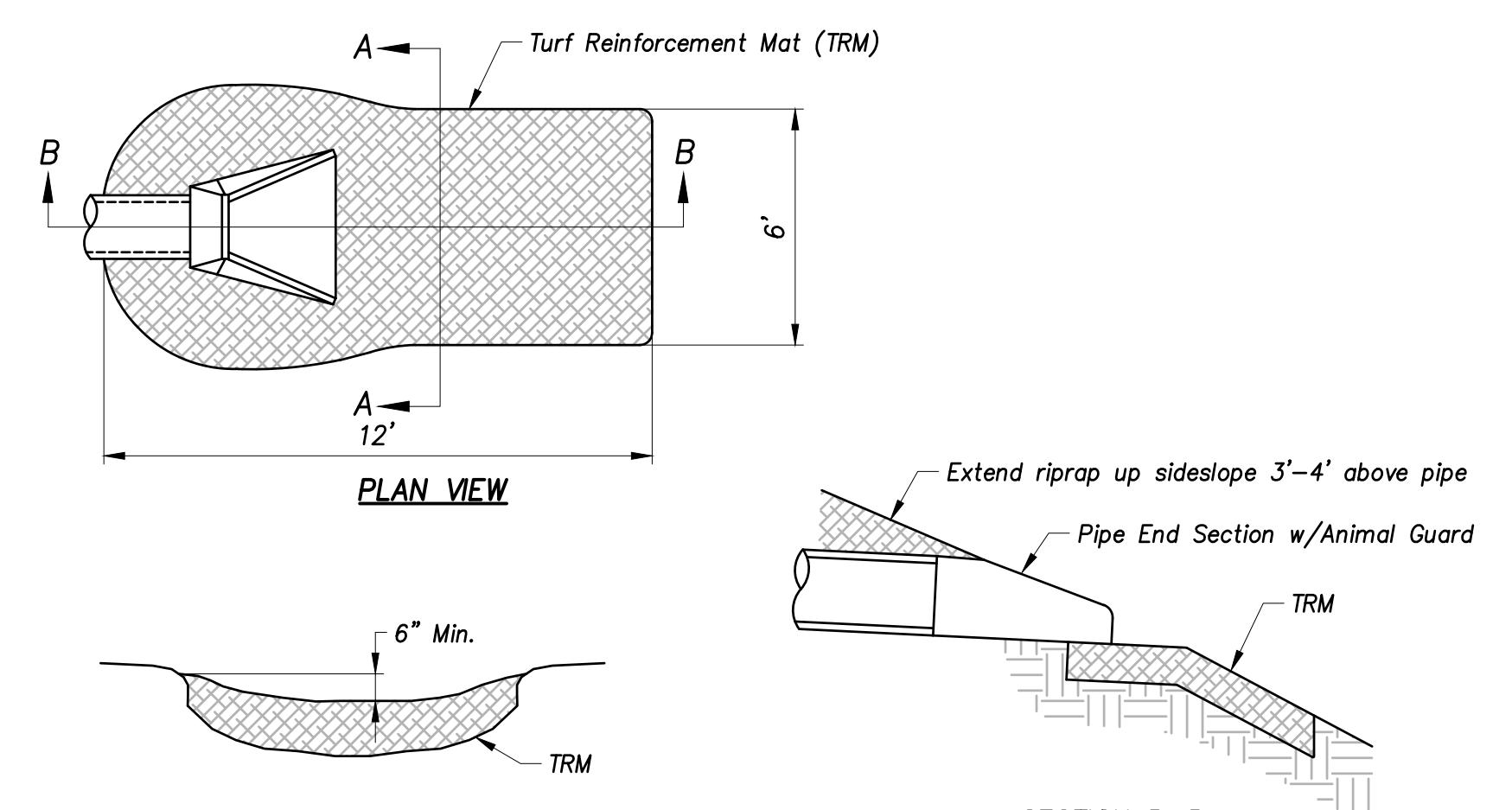
CHANNEL APPLICATION

(Sodding provides quicker protection than seeding and may reduce the risk of early washout.)

- Excavate the channel, allowing for the full thickness of the sod.
- Lay sod strips with the longest dimension perpendicular to channel flow.
- Staple or stake each strip of sod at the corners and in the middle.
- Staple jute or biodegradable polypropylene netting over the sodded area to minimize the potential for washout during establishment.

Maintenance

- Inspect within 24 hours of each rain event and at least once every seven calendar days until sod is well rooted.
- Keep sod moist until fully rooted.
- After sod is well-rooted (two to three weeks), maintain a plant height of two to three inches.
- Time mowing to avoid ruts in turf.
- Fertilize turf areas annually. Apply fertilizer in a split application. For coolseason grasses, apply one-half of the fertilizer in late spring and one-half in early fall. For warm-season grasses, apply one-third in early spring, one-third in late spring and one-third in mid-summer.



INSTALLATION

- Prepare subgrade – remove vegetation and debris, excavate to bottom of bedding material, compact any fill to the density of the surrounding material and smooth the foundation.
- Place turf reinforcement mat in accordance with manufacturer's recommendations.

Maintenance

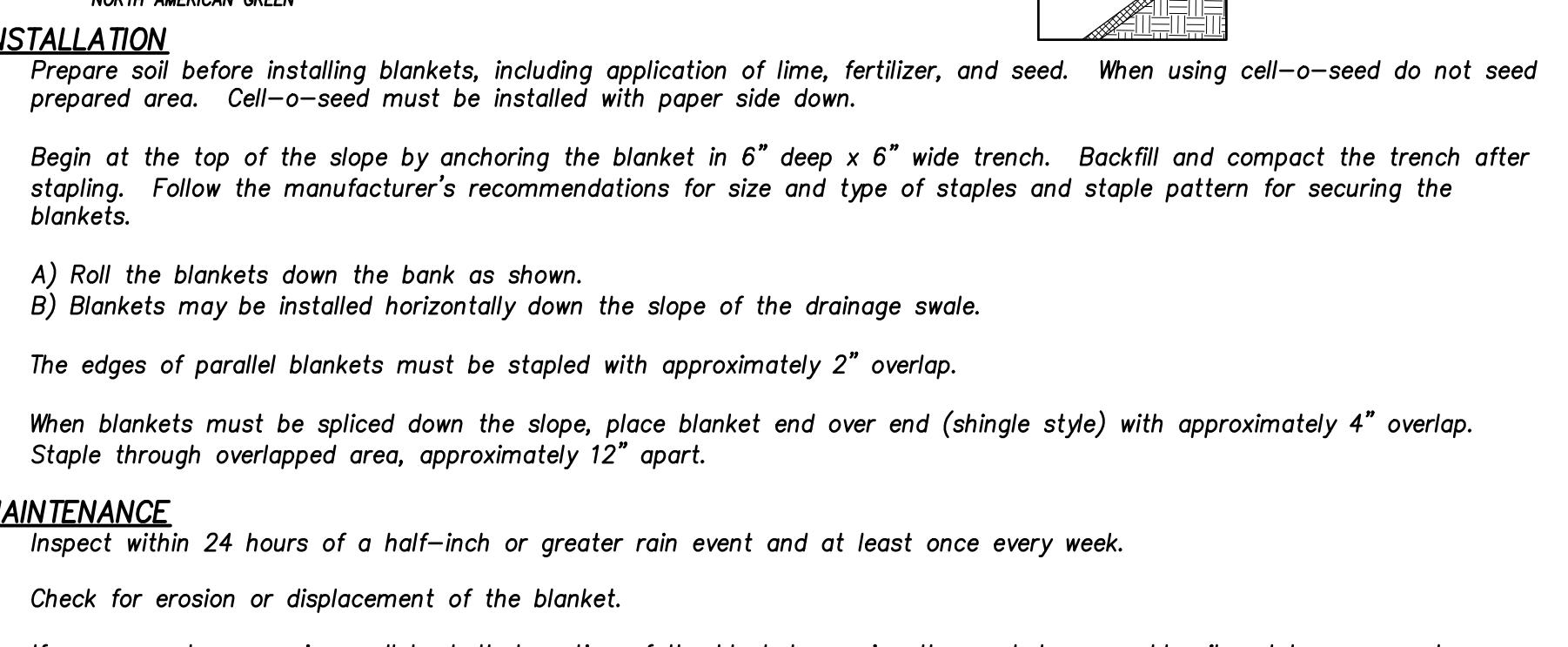
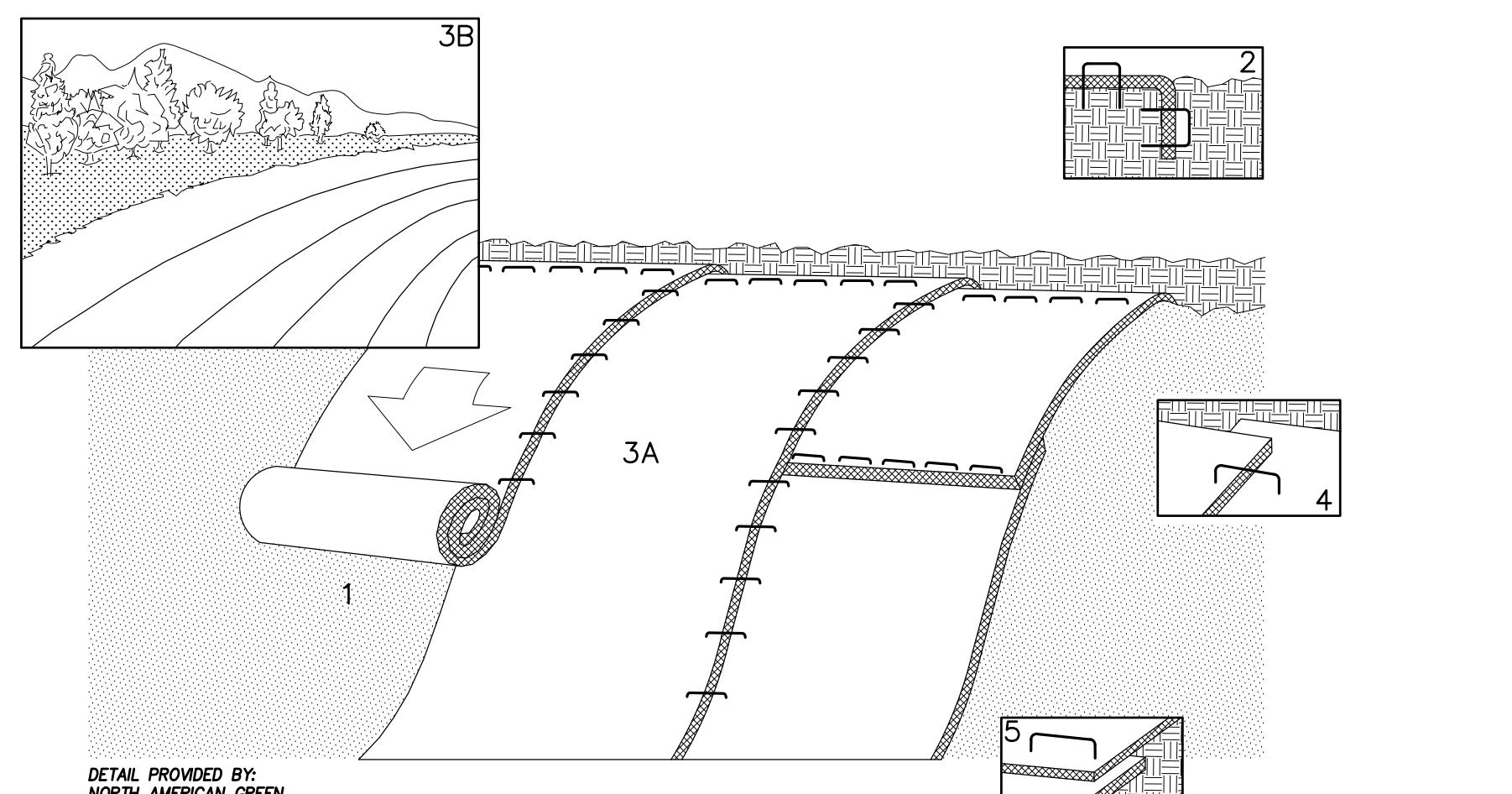
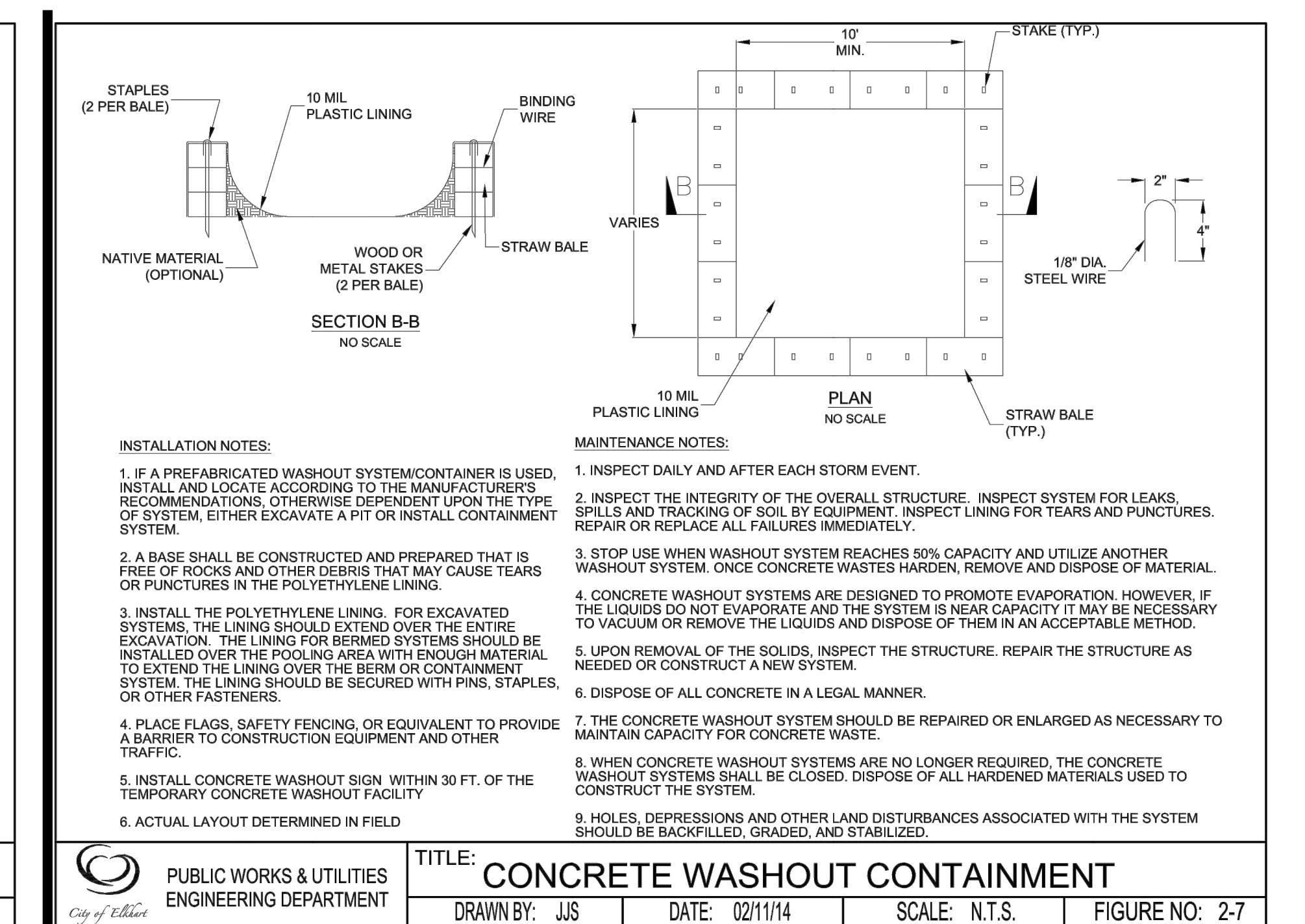
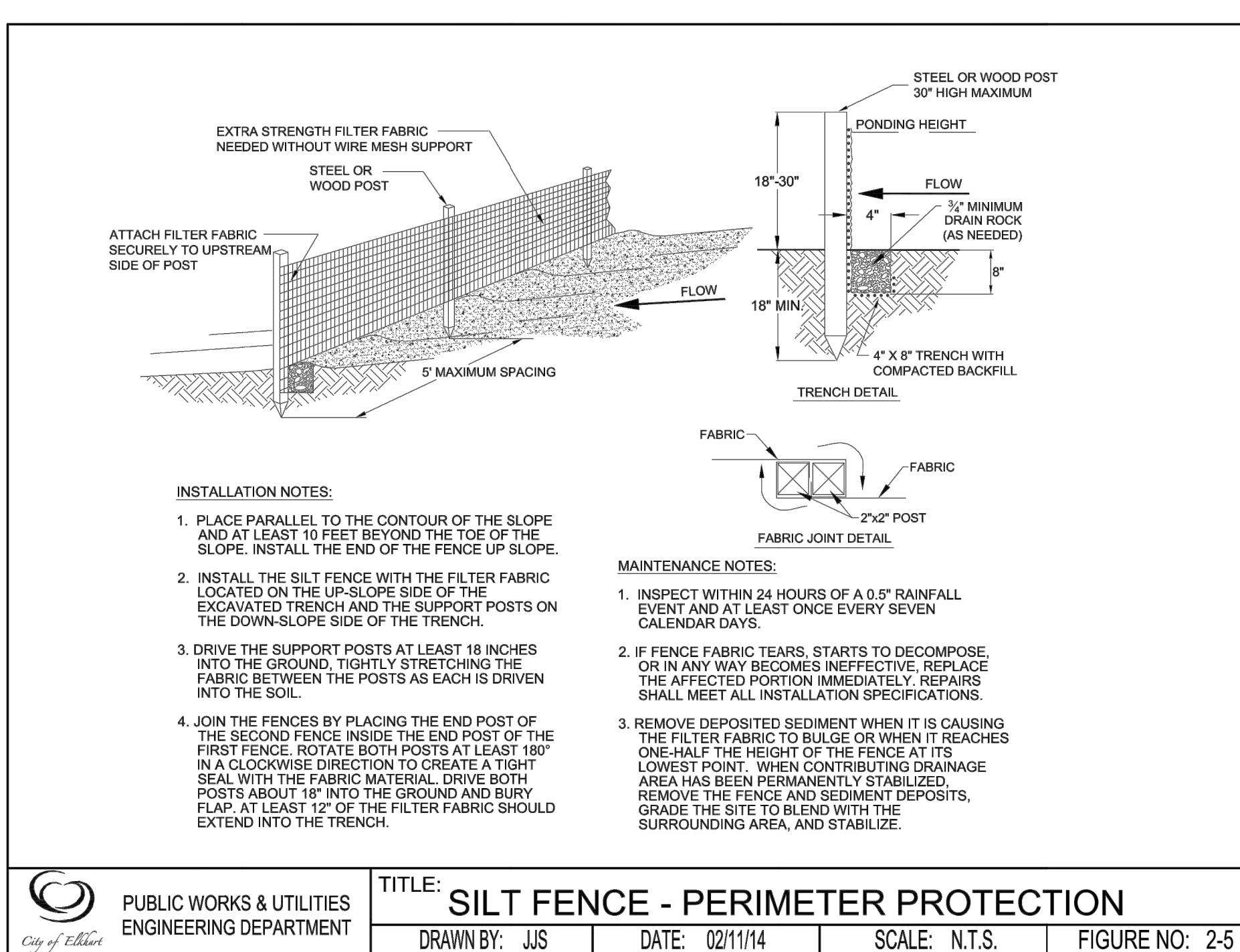
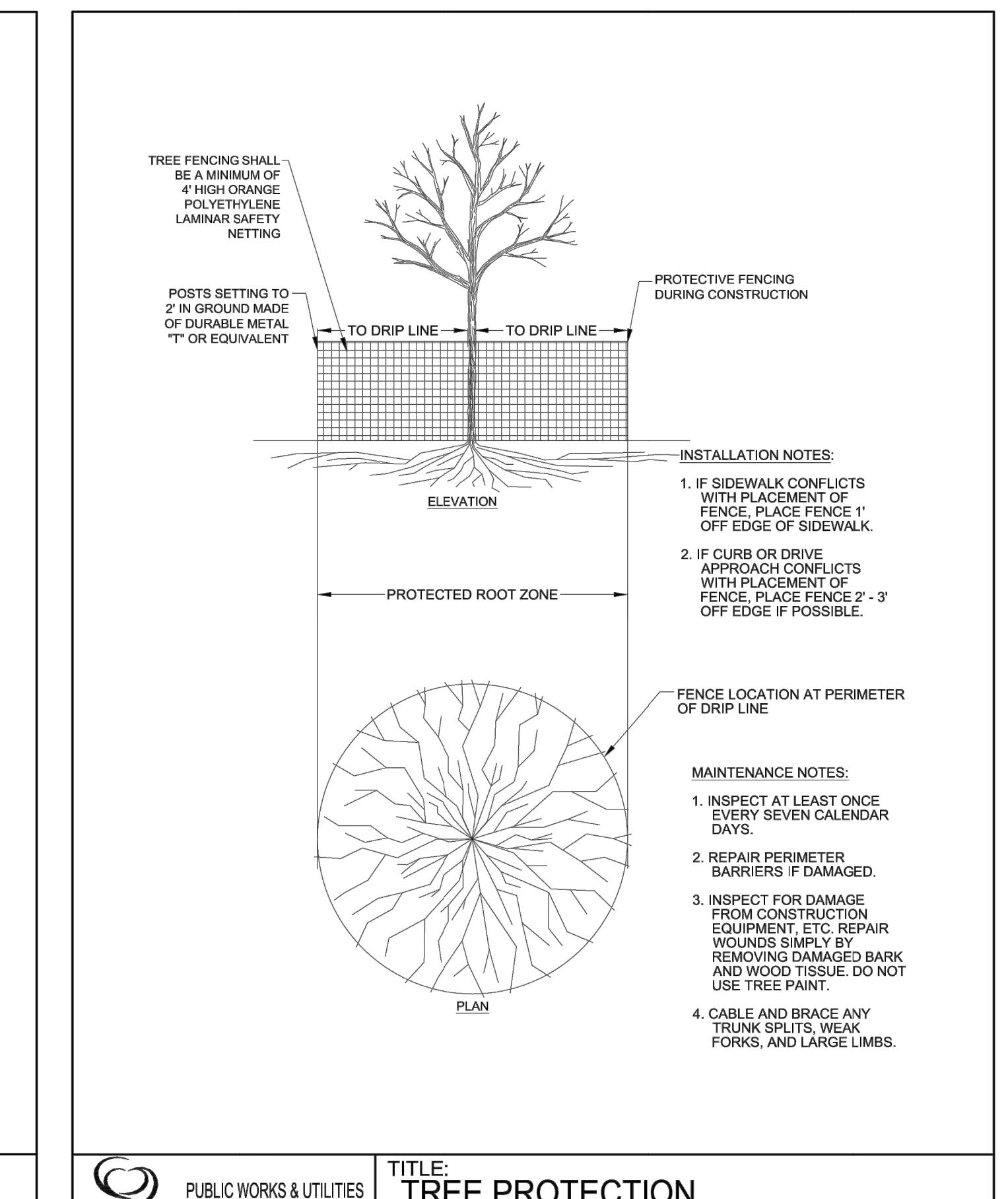
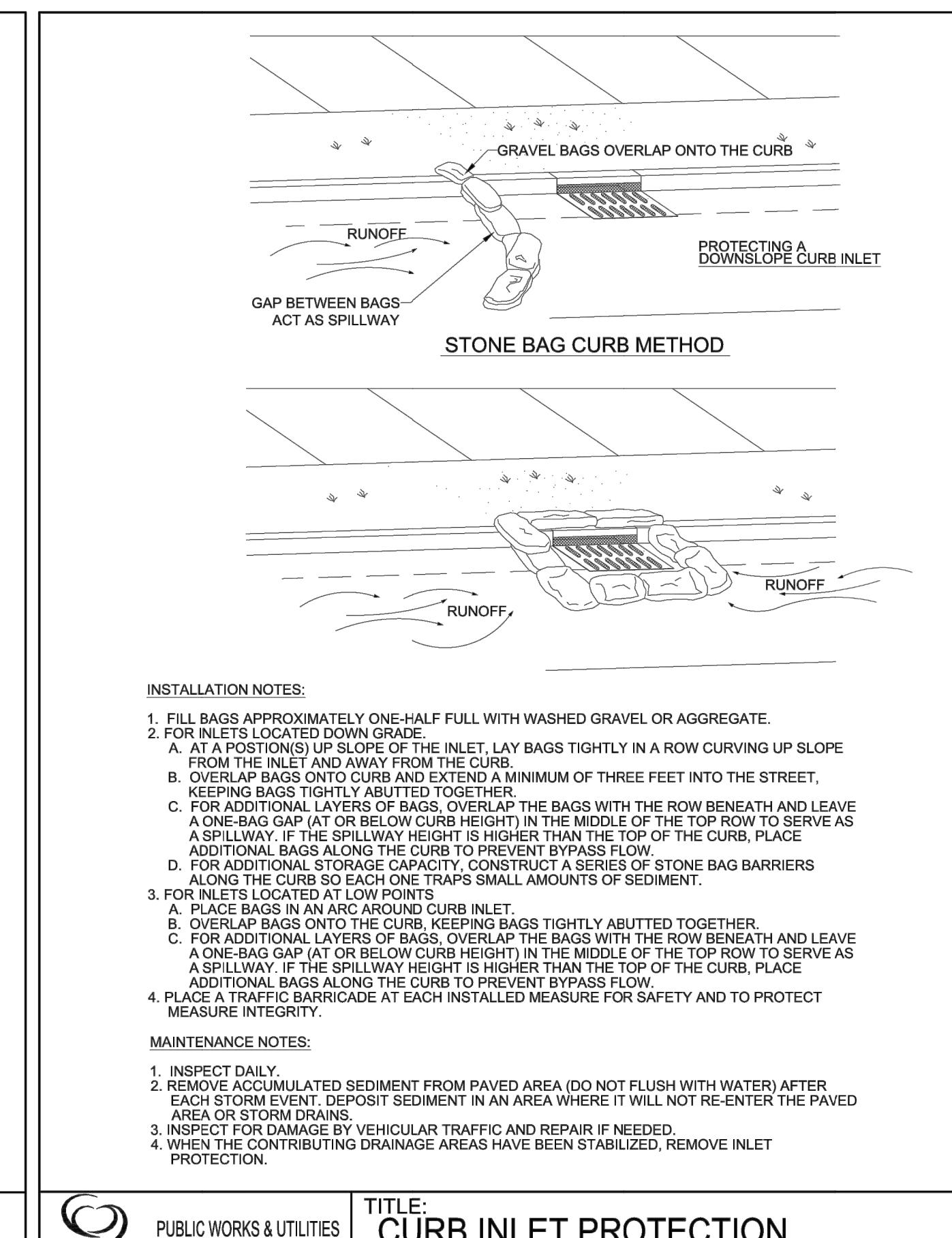
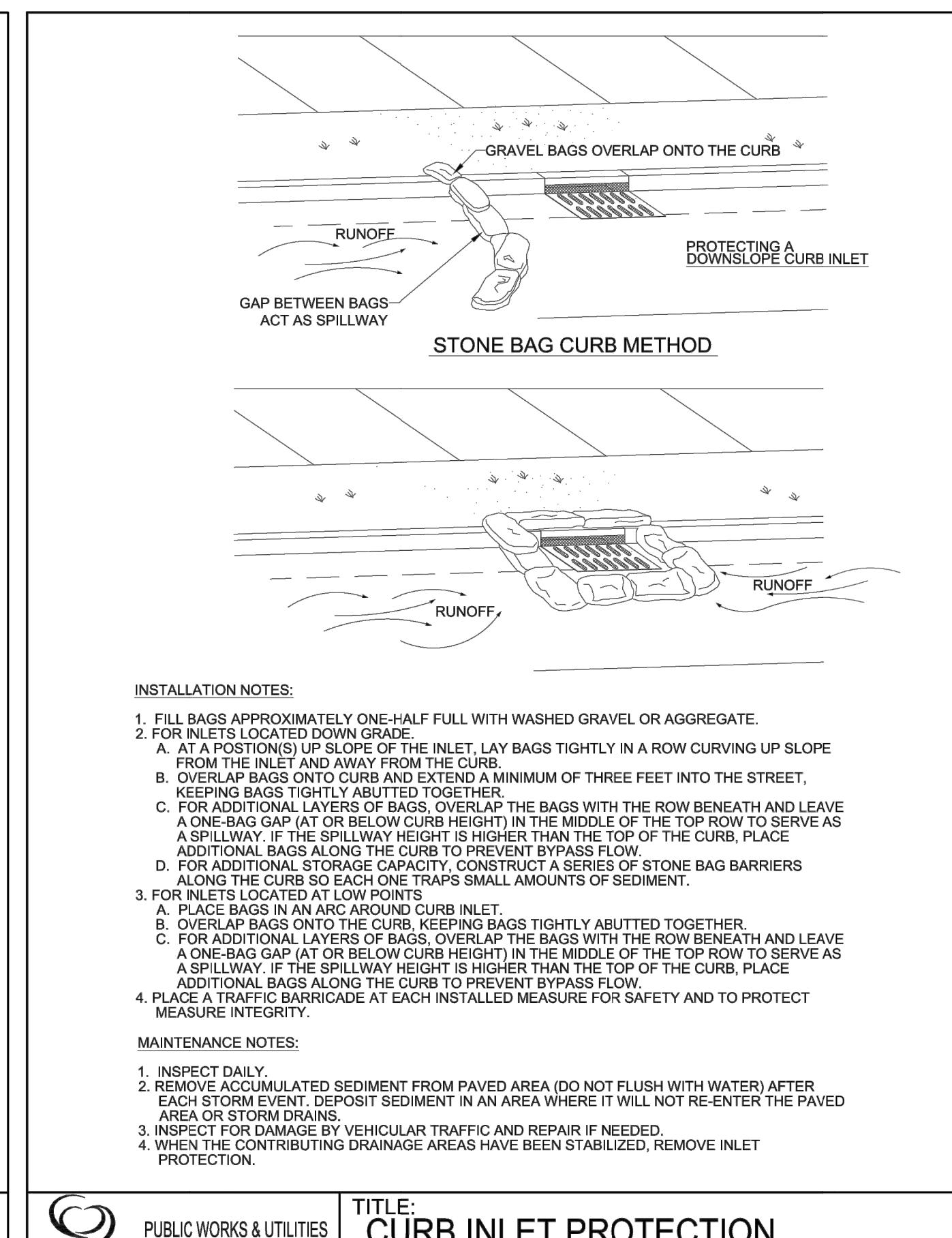
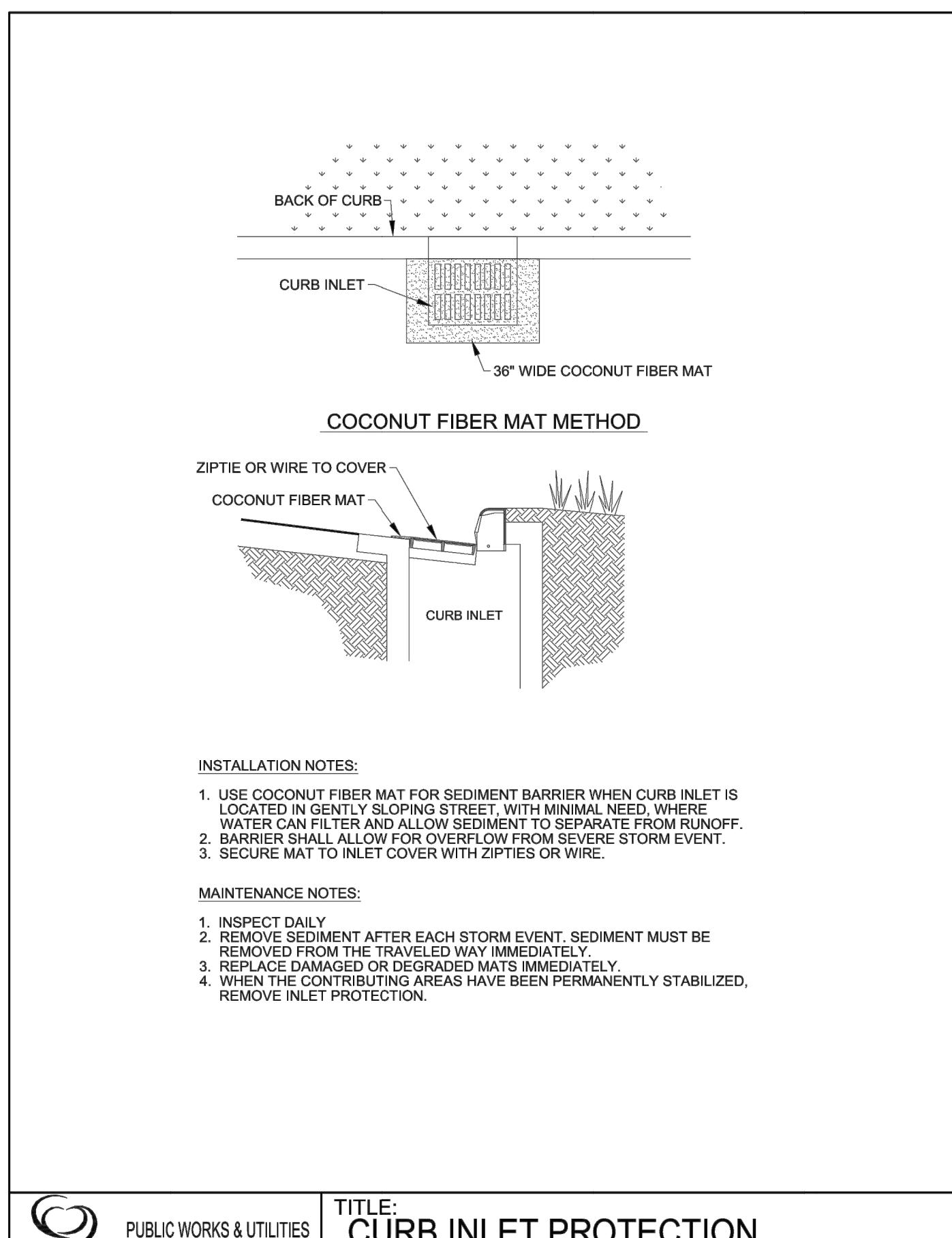
- Inspection should occur at least once a week and following each ½" or more rain event.
- Inspect for mat displacement or wear; repair as needed in accordance with manufacturer's recommendations.
- Check for erosion or scouring around mat; repair immediately.
- Check for piping or undercutting; repair immediately.

TURF REINFORCEMENT MAT & PIPE END SECTION TREATMENT

(Not To Scale)

STATE ROAD 19 CORRIDOR IMPROVEMENTS (PA7663)

PROJECT:

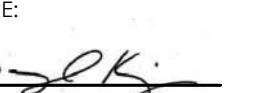


STATE ROAD 19 CORRIDOR IMPROVEMENTS (PA7663)

PROJECT:

STORM WATER POLLUTION PREVENTION PLAN

SHEET TITLE:

DRAWN BY: NI
 DESIGNED BY: CAK/ZDH
 PM REVIEW: RAN
 QA/QC REVIEW: DSK
 DATE: 03/02/23
 SEAL: DARYL S. KNAPP, P.E.
 STATE OF INDIANA
 PROFESSIONAL ENGINEER
 SIGNATURE: 
 DATE: 03/02/2023
 SCALE:
 HORIZ: AS SHOWN
 VERT: N/A
 ACI JOB #: 20-1114
 SHEET NO.: 55 of 56

Comments: March 02, 2023 - 4-0pm
 Abonmarche - March 02, 2023 - 4-0pm

DORMANT AND FROST SEEDING SPECIFICATIONS

CONTRACTOR TO DETERMINE THE APPROPRIATE SEEDING METHOD BASED ON THE TIME OF YEAR.

PURPOSE

1. To provide early germination and soil stabilization in the spring.
2. To reduce sediment-laden stormwater runoff from being transported to downstream areas.
3. To improve visual aesthetics of construction area.
4. To repair or enhance previous seeding.

MATERIALS REQUIRED

1. Soil amendments based upon analysis of soil by a soil testing service. (fertilizer, etc.)
2. Seed (information follows)

3. Mulch (straw, hay, wood fiber, etc.) for protection of seedbed, moisture retention and encouragement of plant growth. mulch must be anchored to prevent dispersal by wind or water. may be covered with manufactured erosion control blankets.

SEEDING SPECIFICATIONS

Note that seeding done outside of the optimum seeding dates increases the chances of seeding failure. dates may be shortened or extended depending on the location of the site within the State of Indiana. Mulch alone is an acceptable temporary cover and may be used in lieu of temporary seeding, providing that it is appropriately anchored. perennial species may be used as a temporary cover, especially if the area to be seeded will remain idle for more than one year (see permanent seeding).

Temporary Dormant or Frost Seeding

Wheat or Rye: 150 pounds per acre
Spring Oats: 150 pounds per acre
Annual Rye Grass: 60 pounds per acre

Permanent Dormant or Frost Seeding

OPEN LOW-MAINTENANCE AREAS (REMAINING IDLE MORE THAN 6 MONTHS):

Perennial ryegrass & white clover: ryegrass 75 pounds per acre + 3 pounds of clover per acre, optimum soil ph 5.6 to 7.0
Perennial ryegrass & tall fescue: ryegrass 45 pounds per acre + 45 pounds of fescue per acre, optimum soil ph 5.6 to 7.0
Tall fescue & white clover: fescue 75 pounds per acre + 3 pounds of white clover per acre, optimum soil ph 5.5 to 7.5
Kentucky bluegrass, smooth bromegrass, switchgrass, timothy, perennial ryegrass, & white clover: bluegrass 30 pounds per acre + 15 pounds of bromegrass per acre + 5 pounds of switchgrass per acre + 6 pounds of timothy per acre + 15 pounds of ryegrass per acre + 3 pounds of white clover per acre, optimum soil ph 5.5 to 7.5

STEEP BANKS AND CUTS (LOW-MAINTENANCE AREAS NOT MOWED):

Smooth bromegrass & red clover: bromegrass 50 pounds per acre + 30 pounds of red clover per acre, optimum soil ph 5.5 to 7.0
Tall fescue & white clover: fescue 75 pounds per acre + 30 pounds of white clover per acre, optimum soil ph 5.5 to 7.5
Tall fescue & red clover: fescue 75 pounds per acre + 30 pounds of red clover per acre, optimum soil ph 5.5 to 7.5
Orchard grass, red clover & white clover: orchard grass 45 pounds per acre + 30 pounds of red clover per acre + 3 pounds of white clover per acre, optimum soil ph 5.6 to 7.0

LAWNS AND HIGH-MAINTENANCE AREAS:

Bluegrass: bluegrass 210 pounds per acre, optimum ph 5.5 to 7.0
Perennial ryegrass & bluegrass: 90 pounds of ryegrass per acre & 135 pounds of bluegrass per acre, optimum ph 5.6 to 7.0
Tall fescue (turf type) & bluegrass: fescue 250 pounds per acre + 45 pounds of bluegrass per acre, optimum soil ph 5.6 to 7.5

CHANNELS AND AREAS OF CONCENTRATED FLOW:

Perennial ryegrass & white clover: ryegrass 225 pounds per acre + 3 pounds of white clover per acre, optimum soil ph 5.5 to 7.0
Kentucky bluegrass, smooth bromegrass, switchgrass, timothy, perennial ryegrass, & white clover: bluegrass 30 pounds per acre + 15 pounds of bromegrass per acre + 5 pounds of switchgrass per acre + 6 pounds of timothy per acre + 15 pounds of ryegrass per acre + 3 pounds of white clover per acre, optimum soil ph 5.5 to 7.5

Tall fescue & white clover:

fescue 225 pounds per acre + 3 pounds of clover per acre, optimum soil ph 5.5 to 7.5

Tall fescue, perennial rye grass, & Kentucky bluegrass:

fescue 225 pounds per acre + 30 pounds of ryegrass per acre + 30 pounds of bluegrass per acre, optimum soil ph 5.5 to 7.5

FOR BEST RESULTS:

1. Legume seed should be inoculated
2. Seeding mixtures containing legumes should be spring-seeded although, the grass may be fall-seeded and the legume frost seeded
3. If legumes are fall-seeded, do so in early fall
4. If using mixtures other than those listed above, increase seeding rates by 50 percent over the conventional seeding rates.

APPLICATION

Site Preparation:

1. Grade the site to achieve positive drainage.

Dormant Seeding:

1. Test soil to determine pH and nutrient levels.
2. Broadcast soil amendments as recommended by soil test and work into the upper 2 to 4 inches of soil. If testing is not done, apply 200 to 300 pounds per acre of 12-12-12 analysis fertilizer, or equivalent.
3. Apply anchored mulch immediately after completion of grading and addition of soil amendments.
4. Select appropriate seed species (see seed specifications above). Broadcast the seed on top of the mulch and/or into existing ground cover at rates shown. Areas are to be seeded when soil temperatures are below 50 degrees but the soil is not frozen.

Frost Seeding:

1. Test soil to determine pH and nutrient levels.
2. Broadcast soil amendments as recommended by a soil test and work into the upper 2 to 4 inches of soil before it freezes. If testing was not done, apply 200 to 300 pounds per acre of 12-12-12 analysis fertilizer, or equivalent.
3. Select appropriate seed species or mixture (see seed specifications above). Broadcast the seed on the seedbed when the soil is frozen. do not work the seed into the soil.

MAINTENANCE

1. Inspect at least once every seven calendar days.
2. Check for erosion or movement of mulch.
3. Check for inadequate cover (less than 80 percent density over the soil surface); reseed and mulch in mid to late April if necessary. For best results, reseed within the recommended dates shown under temporary and permanent seeding).
4. Apply 200 to 300 pounds per acre of 12-12-12 analysis fertilizer, or equivalent, between April 15 and May 10 or during periods of vigorous growth.
5. Fertilize turf areas annually. Apply fertilizer in a split application. For cool-season grasses, apply 1/2 in late Spring and 1/2 in early Fall. For warm-season grasses, Apply 1/3 in early Spring, 1/3 in late Spring, and the remaining 1/3 in middle Summer.

Note: Required density of vegetative cover = 80 percent or greater over the soil surface.

PERMANENT SEEDING SPECIFICATIONS

APPLICATION

Site Preparation:

1. Grade the site to achieve positive drainage.

Seedbed Preparation:

2. Add topsoil or compost mulch to achieve needed depth for establishment of vegetation. (Compost material may be added to improve soil moisture holding capacity, soil friability, and nutrient availability.)
3. Till the soil to obtain a uniform seedbed. Use a disk or rake, operated across the slope, to work the soil amendments into the upper two to four inches of the soil.

Seeding

Optimum seeding dates are March 1 to May 10 and August 10 to September 30. Permanent seeding done between May 10 and August 10 may need to be irrigated. Seeding outside or beyond optimum seeding dates is still possible with the understanding that reseeding or overseeding may be required if adequate surface cover is not achieved. Reseeding or overseeding can be easily accomplished if the soil surface remains well protected with mulch.

4. Select a seeding mixture and rate from Table 1 Permanent Seeding Recommendations. Select seed mixture based on site conditions, soil pH, intended land use, and expected level of maintenance.

5. Apply seed uniformly with a drill or cultipacker seeder or by broadcasting. Plant or cover the seed to a depth of one-fourth to one-half inch. If drilling or broadcasting the seed, ensure good seed-to-soil contact by firming the seedbed with a roller or cultipacker after completing seeding operations. (If seeding is done with a hydroseeder fertilizer and mulch can be applied with the seed in a slurry mixture.)

6. Mulch all seeded areas and use appropriate methods to anchor the mulch in place. Consider using erosion control blankets on sloping areas and conveyance channels.

MAINTENANCE

1. Inspect within 24 hours of each rain event and at least once every seven calendar days until the vegetation is successfully established.
2. Characteristics of a successful stand include vigorous dark green or bluishgreen seedlings with a uniform vegetative cover density of 90 percent or more.
3. Check for erosion or movement of mulch.
4. Repair damaged, bare, gullied, or sparsely vegetated areas and then fertilize, reseed, and apply and anchor mulch.
5. If plant cover is sparse or patchy, evaluate the plant materials chosen, soil fertility, moisture condition, and mulch application; repair affected areas either by overseeding or preparing a new seedbed and reseeding. Apply and anchor mulch on the newly seeded areas.
6. If vegetation fails to grow, consider soil testing to determine soil pH or nutrient deficiency problems. (Contact your soil and water conservation district or cooperative extension office for assistance.)
7. If additional fertilization is needed to get a satisfactory stand, do so according to soil test recommendations.
8. Add fertilizer the following growing season. Fertilize according to soil test recommendations.
9. Fertilize turf areas annually. Apply fertilizer in a split application. For cool-season grasses, apply one-half of the fertilizer in late spring and one-half in early fall. For warm-season grasses, apply one-third in early spring, one-third in late spring, and the remaining one-third in middle summer.

OPEN LOW-MAINTENANCE AREAS (REMAINING IDLE FOR MORE THAN 6 MONTHS)

SEED MIXTURES	RATE/ACRE PURE LIVE SEED	OPTIMUM SOIL PH
1. Perennial ryegrass – white clover (1)	70 lbs. 2 lbs.	5.6 to 7.0
2. Perennial ryegrass – tall fescue (2)	70 lbs. 50 lbs.	5.6 to 7.0
3. Tall fescue, turf type (2) – white clover (1)	70 lbs. 2 lbs.	5.5 to 7.5

LOW-MAINTENANCE AREAS (NOT MOWED)

SEED MIXTURES	RATE/ACRE	OPTIMUM SOIL PH
1. Smooth brome grass – red clover (1)	35 lbs. 20 lbs.	5.5 to 7.0
2. Tall fescue (2) – white clover (1)	50 lbs. 2 lbs.	5.5 to 7.5
3. Tall fescue (2) – red clover (1)	50 lbs. 20 lbs.	5.5 to 7.5
4. Orchard grass – red clover (1) – white clover (1)	30 lbs. 20 lbs. 2 lbs.	5.6 to 7.0
5. Crownvetch (1) – tall fescue (2)	12 lbs. 30 lbs.	5.6 to 7.0

(1) For best results: (a) legume seed should be inoculated; (b) seeding mixtures containing legumes should preferably be spring-seeded, although the grass may be fall-seeded and the legume frost-seeded (see Dormant Seeding and Frost Seeding on page 4); and (c) if legumes are fall-seeded, do so in early fall.

(2) Tall fescue provides little cover for, and may be toxic to some species of wildlife. The Indiana Department of Natural Resources recognizes the need for additional research on alternatives such as buffalograss, orchardgrass, smooth bromegrass, and switchgrass. This research, in conjunction with demonstration areas, should focus on erosion control characteristics, wildlife toxicity, turf durability, and drought resistance.

Notes:
 1. An oat or wheat companion or nurse crop may be used with any of the above permanent seeding mixtures, at the following rates:
 a. spring oats – one-fourth to three-fourths bushel per acre
 b. wheat – no more than one-half bushel per acre
 2. A high potential for fertilizer, seed, and mulch to wash exists on steep banks, cuts, and in channels and areas of concentrated flow.

TEMPORARY SEEDING SPECIFICATIONS

TABLE 1. TEMPORARY SEEDING SPECIFICATIONS

SEED SPECIES (1)	RATE/ACRE	PLANTING DEPTH	OPTIMUM DATES (2)
Wheat or Rye	150 lbs.	1 to 1-1/2 inches	Sept. 15 – Oct. 30
Spring Oats	100 lbs.	1 inch	March 1 – April 15
Annual Ryegrass	40 lbs.	1-1/4 inch	March 1 – May 1
German Millet	40 lbs.	1 to 2 inches	May 1 – June 1
Sudangrass	35 lbs.	1 to 2 inches	May 1 – July 30
Buckwheat	60 lbs.	1 to 2 inches	April 15 – June 1
Corn (broadcast)	300 lbs.	1 to 2 inches	May 11 – Aug. 10
Sorghum	35 lbs.	1 to 2 inches	May 1 – July 15

(1) Perennial species may be used as a temporary cover, especially if the area to be seeded will remain idle for more than one year (See Permanent Seeding).

(2) Seeding done outside the optimum seeding dates increases the chances of seeding failure. Dates may be extended or shortened based on the location of the project site within the state.

Note:
 Mulch alone is an acceptable temporary cover and may be used in lieu of temporary seeding, provided that it is appropriately anchored. A high potential for fertilizer, seed, and mulch to wash exists on steep banks, cuts, and in channels and areas of concentrated flow.

APPLICATION

Seedbed Preparation:

1. Test soil to determine