



DO NOT WRITE, TYPE OR STAMP ANYTHING ABOVE THIS LINE OR IN THE MARGINS.

WHEREAS, in order to insure the proper and adequate maintenance of the stormwater treatment facilities in compliance with legal requirements, it is necessary to establish binding covenants, conditions, and restrictions applicable to the Property, and

WHEREAS, the Property Owner does hereby establish the following regulations, stipulations, easements, covenants, conditions and restrictions pursuant to Chapter 16.210 of the Overland Park Municipal Code, on the Property:

- 1.0      **Homes or Business Association Requirements:** The Property Owner hereby states that Property Owner will fulfill the following conditions which are requirements of OPMC Section 16.210.100 related to formation of a Homes or Business Association:
- 1.1      Prior to consummation of the sale of any lot in the Subdivision, the Property Owner shall cause the Subdivision's Homes or Business Association (the "Association") to be duly formed as a Kansas corporation.
  - 1.2      Prior to the sale of any lot in the Subdivision, The Property Owner shall cause to be recorded with the Johnson County Records and Tax Administration, Johnson County, Kansas, a Homes or Business Association Declaration covering all of the platted lots within the Subdivision that includes this Agreement by reference.
  - 1.3      The Homes or Business Association Declaration shall require that the Homes or Business Association levy assessments against the lots within the Subdivision sufficient to pay for maintenance and future replacement of the Stormwater Treatment Facilities and for any costs incurred by reason of this Agreement. The Association will have an enforceable lien on any lot in the Subdivision in the event that any individual Property Owner fails to pay an assessment. All purchasers of lots will be given an outline summary of the maintenance obligations of the Association as per this Agreement.
  - 1.4      The Association Declaration shall contain a provision requiring the written consent of the City to the termination of the Association Declaration in its entirety or to any amendment, modification or termination of any provision thereto regarding the Stormwater Treatment Facilities.
  - 1.5      The Association Declaration shall name the City as a third-party beneficiary of all provisions therein relating to the Stormwater Treatment Facilities and will give the City the right to enforce all restrictions, obligations and other provisions regarding the Stormwater Treatment Facilities.
  - 1.6      Prior to the sale of any lots within any future phases of the Subdivision, The Property Owner will cause to be recorded with the Register of Deeds of Johnson County, Kansas, a Association Declaration covering all of the platted lots within such phase of the Subdivision and containing the provisions regarding the Stormwater Treatment Facilities set forth herein.

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2.0 Disclosure of Maintenance Requirements:

- 2.1 Minimum maintenance frequency and maintenance measures required for all stormwater treatment facilities are shown on **Attachment B (Maintenance Requirements)**.
- 2.2 It is understood by the Property Owner and City that actual maintenance costs and future replacement costs are variable, however for budgetary purposes, the project designer is required to estimate future maintenance and replacement costs so that the Property Owner may better plan future required expenditures. Based on the project designer's estimates, the following section tabulates anticipated maintenance and replacement costs:

**A) Bio-Retention Basins (BR-1)**

Establishment 1-3 Year (2019 Dollars)

-	Watering 1" weekly as needed	24 times @ \$50	\$1,200
-	Remove litter monthly	12 times @ \$50	\$600
-	Monthly Inspection monitoring weed control, erosion, plant re-placement		
		▪ 12 times @ 50	\$600
-	Inspection Corrective Measures	12 times @ 250	\$3,000
-	Add Mulch Annually		\$800
-	City Stormwater Quality BMP Certification (Bi-Annually)		\$150

**TOTAL** **\$6,350**

Yearly Maintenance Beyond Initial Three Year period (2019 Dollars)

-	Vegetation Cleanup (Trim, prune, etc.)	1 time @ 2,400	\$800
-	Inspect plants, erosion, siltation, functionality	1 time @ \$300	\$300
-	Inspect corrective measures	1 times @ \$1,500	\$1,500
-	Add Mulch Annually		\$800
-	City Stormwater Quality BMP Certification (Bi-annually)	\$300	\$150

**TOTAL** **\$3,550**

Replacement Cost of BR **\$20,000**

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**B) NATIVE VEGETATION AREAS**

Yearly Maintenance (2019 Dollars)

-Remove litter, and verify no disturbance 2 times @ \$500 \$1,000

**CITY REQUIRED INSPECTIONS:**

Inspection & Report (1 time) for above (1<sup>st</sup> Year) \$ 500 / ea.  
Subsequent Inspection (1 time) & Report (Bi-Annual) \$ 300 / ea.

Replacement Cost \$12,000

**3.0 Property Owner Responsibilities**

3.1 The Property Owner shall provide and is responsible for all maintenance of the designated stormwater treatment facilities as shown on the Property, including, but not limited to, sediment removal and disposal, maintenance of inlet and outlet works, trash and debris removal, vector control, and management of vegetation in accordance with the plan requirements in order to insure that all such facilities remain in proper working condition in accordance with approved design standards and all applicable legal requirements. In accordance with Section 16.210.100.G of the Overland Park Municipal Code, the Property Owner shall make records of the installation and of all maintenance and repairs, and shall retain the records for at least five years. These records shall be made available to the City during inspection of the facility and at other reasonable times upon request.

3.2 The Property Owner agrees to actively pursue measures to prevent unauthorized activities pursuant to Chapter 16.210 of the Overland Park Municipal Code which interfere with the function of the stormwater treatment facility.

3.3 In Accordance with Section 16.210.100 of the Overland Park Municipal Code, the Property Owner agrees to submit an inspection report to the City at a minimum interval of one (1) year following initial certification and subsequently every two (2) years thereafter. The inspection report shall be completed and sealed by a registered professional engineer in the State of Kansas, unless the Director of Planning and Development Services approves other qualified professionals to perform these duties. Such inspection report shall document each item, including, but not limited to, the need for removal of sediment, litter, and other debris, grass cutting, removal of undesirable vegetation, and replacement of vegetation that is part of the stormwater treatment facility. Any maintenance needs found must be addressed in a timely manner and documentation submitted showing that required maintenance has been performed. Maintenance certifications shall be submitted on a form approved by the City and shall include photographs documenting the condition of the facility at the time of the inspection.

**4.0 Maintenance Access Easements:**

In consideration of the sum of one dollar (\$1.00), receipt and sufficiency of which is hereby acknowledged, the Property Owner does convey to the Homes or Business Association, forever a perpetual access easement over and through the following referenced real estate for the purpose of obtaining access for inspecting, maintaining, and repairing a stormwater treatment facility; further the

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City of Overland Park may utilize such access easements for purposes of enforcing maintenance requirements as set forth in Section 5.0 of this agreement.

**SEE ATTACHMENT 'A'**

If it is the preference of the Property Owner to provide defined access easements for the stormwater treatment facilities on site, the legal description for each easement shall be provided on **Attachment C (Access Easements)**.

This Access Easement is executed and delivered and said easement is granted upon the following conditions:

A. It is understood by the Property Owner that the City of Overland Park shall have the right at all times to use the herein described access easement for the purpose of inspecting, maintaining, and repairing the stormwater treatment facility as provided for under Section 5.0 of this agreement.

B. That the Property Owner shall be fully responsible for providing and maintaining the access easement and the stormwater treatment facility and shall not construct fences, walls, landscaping, structures, or other items which would prevent reasonably convenient maintenance and repair access to the facility.

C. The rights granted herein shall not be construed to interfere with or restrict the Property Owner, his/her/its heirs, executors, administrators, successors and assigns from the use of the premises with respect to the construction and maintenance of property improvements along and over the premises herein described so long as the same are so constructed as not to impair the rights of access to a stormwater treatment facility granted herein.

This easement shall run with the land and apply to all interests now owned or hereinafter acquired to the above-described property.

**5.0 Maintenance Enforcement by City**

5.1 If, after reasonable notice to the Property Owner, the Property Owner shall fail to maintain the Stormwater Treatment Facility as set forth herein and other applicable legal requirements, the City may perform all necessary repair or maintenance work, and the City may assess the Property Owner and the Property, for the cost of the work and any applicable penalties. For the purposes of this document, "reasonable notice" shall consist of 30 days prior written notice sent to the Property Owner, unless there are exigent circumstances requiring either immediate or shorter response than said 30 days would provide, in which case the notice provided shall be whatever is reasonable under those circumstances. The Property Owner does herein grant the City, its agents and contractors, a right of entry on said property for the purpose of inspecting, installing, maintaining or repairing the Stormwater Treatment Facility, and shall execute any documents deemed necessary by the City, if any, relating thereto.

5.2 The City may record an Affidavit of Nonpayment of Maintenance Charges in the Office of the Johnson County Records and Tax Administration, of Johnson County, Kansas, stating (a) the legal description of the property upon which the lien is claimed, (b) the name(s) of the Owner(s) of said property as last known to the City, and (c) the amount of the Maintenance Charge which is unpaid. The Lien shall be created at the time of the filing and recording of

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the Affidavit and such lien shall be superior to all other charges, liens, or encumbrances which may thereafter in any manner arise or be imposed upon the subject property, whether arising from or imposed by judgment or decree or by any agreement, contract, mortgage, or other instrument, saving and excepting only such liens for taxes and other public charges as are by applicable law made superior.

- 5.3 It is understood by Property Owner that the City of Overland Park is under no past, present, or future obligation to expend public funds or take any other action whatsoever to maintain or improve the stormwater treatment facility. The City or Property Owner shall have the right to enforce, by any proceeding at law or in equity, all restrictions, conditions, covenants, reservations, liens, and charges now or hereafter imposed by the provisions of this Declaration. The City or the Property Owner shall have the right to include in their claim for relief a reasonable sum to reimburse them for their attorneys' fees and any other expenses reasonably incurred in enforcing their rights hereunder. Failure by the City or by the Property Owner to enforce any covenant or restriction herein contained shall in no event be deemed a waiver of the right to do so thereafter. Neither shall failure by the City to enforce the provisions hereof be deemed a waiver of any provision hereof as to any other Owner.

- 6.0 **Indemnification:** The Property Owner shall indemnify and hold the City harmless from any and all damage, loss, claims or liability of any kind whatsoever arising from the installation, maintenance, repair, operation or use of the stormwater treatment facility including, but not limited to, any loss occasioned by reason of damage or injury to persons or property which may occur. In addition, the Property Owner shall pay all costs and expenses involved in defending all actions arising there from.

These covenants and agreements as set forth herein, fully executed, shall be filed with the Johnson County Records and Tax Administration Office, Johnson County, Kansas, and the filing of the same shall constitute constructive notice to all heirs, successors, transferees, and assigns of the Property Owner of these covenants and agreements running with the land and notice of all stipulations made thereto. This document may not be amended or modified in any way without the prior written approval of the authorized officials of the City of Overland Park, Kansas, and that approval must be indicated on the face of any subsequently recorded document amending or modifying this document.

Notwithstanding other provisions of this document placing rights, duties, obligations and responsibilities on the Property Owner, as that term is defined herein, those rights, duties, obligations and responsibilities shall only be exercised or enforced in the following manner: when the property is owned by the current owner, or by a succeeding developer, those requirements shall only be exercised or enforced by or against those legal entities. When an approved Association takes over ownership of the Property, those rights, duties, obligations and responsibilities shall succeed to that Association as provided in the legal documents creating the same. It is not the intent of this document to create or impose any rights, duties, obligations and responsibilities directly on subsequent owners of individual lots within the subdivision, unless or until the Homes Association is unwilling or unable to exercise or comply with and enforce the terms of this document and fully meet all the duties, obligations and responsibilities set forth herein, including, without being limited to, payment of any costs imposed by this document by all means specified in the documents creating the Association, including assessment of individual lot owners when necessary. If that Association shall cease to exist or be in default of its duties, obligations or responsibilities as set forth herein, the City shall have the option of directly enforcing them against individual owners of lots within the subdivision.

The City, at Property Owner's cost, shall cause this agreement to be filed with the Johnson County Records and Tax Administration Office, Johnson County, Kansas. Each party hereto shall receive a duly executed copy of this agreement for its official records.

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IN WITNESS WHEREOF, the undersigned have caused this maintenance agreement to be duly executed the day and year first written above.

BY: Mark R Simpson  
Switzer land Company, L.L.C.  
Managing Member  
Mark Simpson, Member

ACKNOWLEDGMENT

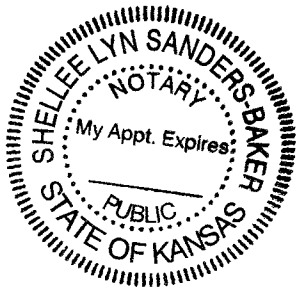
STATE OF KANSAS )  
 ) ss.  
COUNTY OF JOHNSON )

BE IT REMEMBERED, That on this 27 day of May, 2020, before me, the undersigned, a Notary Public in and for the County and State aforesaid, came Mark Simpson who is personally known to me to be the same persons who executed the foregoing instrument of writing on behalf of Switzer Land Company, L.L.C., and said persons duly acknowledged the execution of the same to be the act and deed of the limited liability company.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my official seal the day and year last above written.

My Commission Expires:  
3-29-21






Shellee Lyn Sanders-Baker  
Notary Public

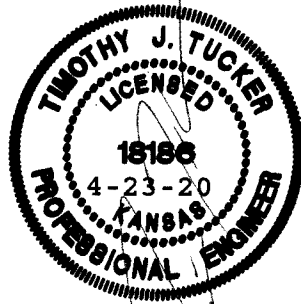


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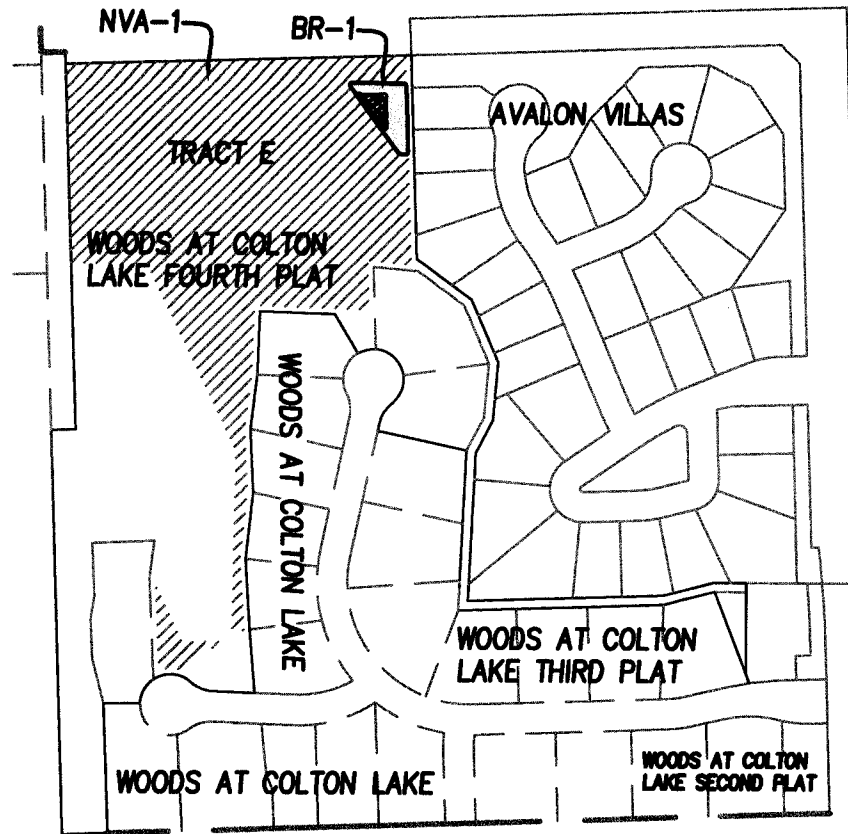
## ATTACHMENT "A" STORMWATER TREATMENT FACILITY PLAN WOODS AT COLTON LAKE FOURTH PLAT

**LEGEND**

-  PONDING AREA
-  BIO-RETENTION BASIN
-  UNDERDRAIN
-  PROPERTY BOUNDARY
-  NATIVE VEGETATION AREA



SCALE: 1"=300'



\\PHELPS-SERVER\Projects\190924\Drawings\Easements\STORMWATER MAINTENANCE AGREEMENT ATTACHMENT A.dwg Layout: A Mar 18, 2020 - 4:04pm



PLANNING  
ENGINEERING  
IMPLEMENTATION

PHELPS ENGINEERING, INC  
1270 N. Winchester  
Olathe, Kansas 66061

(913) 393-1155  
Fax (913) 393-1166  
www.phelpsengineering.com

PROJECT NO. 190924  
DATE: 03-18-20  
BY: JAZ



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**Attachment B (Minimum Maintenance Requirements)**

**NATIVE VEGATATED AREAS (NVA)**

1. Trash Removal (PERIODIC THROUGH SEASON)
  - a. Native vegetated areas should have litter/trash/debris removed bi-annually.
2. FERTILIZING
  - a. Fertilizer should not be applied either in or around the NAITIVE VEGATATED AREAS.

**BIORETENTION BASIN (BR)**

3. WATERING (PERIODIC THROUGH GROWING SEASON)
  - a. The BIORETENTION BASIN should be watered a weekly until it is evident the plants are established.
  - b. If rains are occurring and BIORETENTION BASIN is receiving plenty of drainage, supplemental watering should be eliminated.
  - c. During the summer months, supplemental watering may be necessary during dry periods.
  - d. After the second year of being established, water plantings only as necessary during dry periods.
4. WEED CONTROL (PERIODIC THROUGH GROWING SEASON)
  - a. BIORETENTION BASIN should be weeded and litter/trash/debris removed on a monthly basis from April through September.
  - b. Any isolated void areas in the RAINGARDEN area should be re-mulched
  - c. Spot application on individual weeds should be done using Roundup or an approved equal according to the manufacturer's recommendations.
  - d. Method used shall be a wick applicator or wet rag method placing herbicide on weeds only.
  - e. Do not spray weeds.
  - f. In years after establishment, perform weed control using Roundup or approved equal as necessary.
5. SILT REMOVAL (YEARLY)
  - a. After the first year and plants have been cut back to a couple inches tall, inspect BIORETENTION BASIN for evidence of silt. This should be done particularly near where water enters the BIORETENTION BASIN. If there is evidence of significant silt deposits, remove the silt and spread over other non-BMP landscape beds on the property or dispose of properly.
  - b. Inspect BIORETENTION BASIN yearly for evidence of silting or need for additional maintenance.

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6. REMOVING LAST YEAR'S GROWTH (YEARLY)
  - a. Because most native plants have more than one season of interest, the current year's growth should be left intact until early spring of each year. Exceptions to this rule would be some nongrass type plants that, once fall arrives, do not have a nice appearance and should be cut down. (Do not pull plants.) Woody shrubtype plants should only be trimmed if necessary.
  - b. Typically, the old growth should be removed in early to mid March.
  - c. If last year's growth has not already been removed by the time cool season lawn grasses start to green up, or, at the very latest, when you can see new growth just starting to emerge from the soil, cut the old growth and remove immediately.
  - d. An easy way to remove old growth is using a hack saw or coping saw to cut plants off a couple of inches above top of duff, mat, or mulch. (Do not pull plants.)
  - e. Dispose of old growth properly.
  - f. At this time, remove any natural or manmade debris and dispose of properly.
  - g. Re-mulch bare soil areas of BIORETENTION BASIN.
  
7. FERTILIZING
  - a. Fertilizer should not be applied either in or around the BIORETENTION BASIN especially where drainage will run over fertilized areas into the BIORETENTION BASIN.
  - b. BIORETENTION BASINS do not need fertilizer which will only promote growth of weeds and potentially tall spindly plants which will be structurally weakened.

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**Attachment C  
(Property Legal Description)**






**Tract "E", Woods at Colton Lake Fourth Plat, a subdivision of land in the City of Overland Park,  
Johnson County, Kansas**

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**LEGEND**

-  BIORETENTION DRAINAGE AREA
-  PRESERVED NATIVE VEGETATION AREA WITHIN TRACT "E" - WOODS AT COLTON LAKE FOURTH PLAT
-  TRACT "E" - WOODS AT COLTON LAKE FOURTH PLAT (AREA NOT TO BE DEDICATED TO PRESERVED NATIVE VEGETATION WITH THIS PLAN)
-  ALLOWED MANICURED/MOWED STRIP ADJACENT TO LOTS (NOT INCLUDED IN NVA AREAS)
-  ALLOWED MANICURED/MOWED STRIP ADJACENT TO LOTS (NOT INCLUDED IN NVA AREAS)



SCALE: 1"=60'  
0' 60' 120'



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PLANNING  
ENGINEERING  
IMPLEMENTATION



**STORMWATER TREATMENT PLAN**  
AVALON VILLAS  
OVERLAND PARK, KANSAS  
PIP 2020-00001

No.	Date	Revisions:	By / App.

PROJECT NO. 190924  
DATE: 2/20/20  
DRAWN: JAZ  
CHECKED: MAM APPROVED: JLT  
CERTIFICATE OF AUTHORIZATION  
LAND SURVEYING - LS-82  
ENGINEERING - E-361  
EXPIRES: 02/20/2028  
STATE OF KANSAS  
KANSAS BOARD OF PROFESSIONAL ENGINEERS

**NATIVE SEED MIX #1**

(NATIVE SEED MIX PER #1)

COMMON NAME	BOTANICAL NAME	PLS RATE / AC	% OF MIX
LITTLE BLUESTEM	SCHIZACHYRIUM SCOPARIUM	3 (5)* LBS / ACRE	13 (21)*
SIDEOATS GRAMA	BOUTELOUA CURTIPENDULA	3 (5)* LBS / ACRE	13 (22)*
BLUE GRAMA	BOUTELOUA GRACILLIS	3 (5)* LBS / ACRE	13 (22)*
SWITCHGRASS	PANICUM VIRGATUM	3 (5)* LBS / ACRE	13 (22)*
BIG BLUESTEM	ANDROPOGON GERARDII	5 LBS / ACRE	22*
INDIANGRASS	SORGHASTRUM NUTANS	3 LBS / ACRE	13*
VIRGINIA WILDRYE		3 LBS / ACRE	13
<b>TOTAL:</b>		<b>23 LBS / ACRE</b>	<b>100</b>

NOTE: THIS IS A GENERAL MIX - SEED MIX COULD VARY AT TIME OF PLANTING

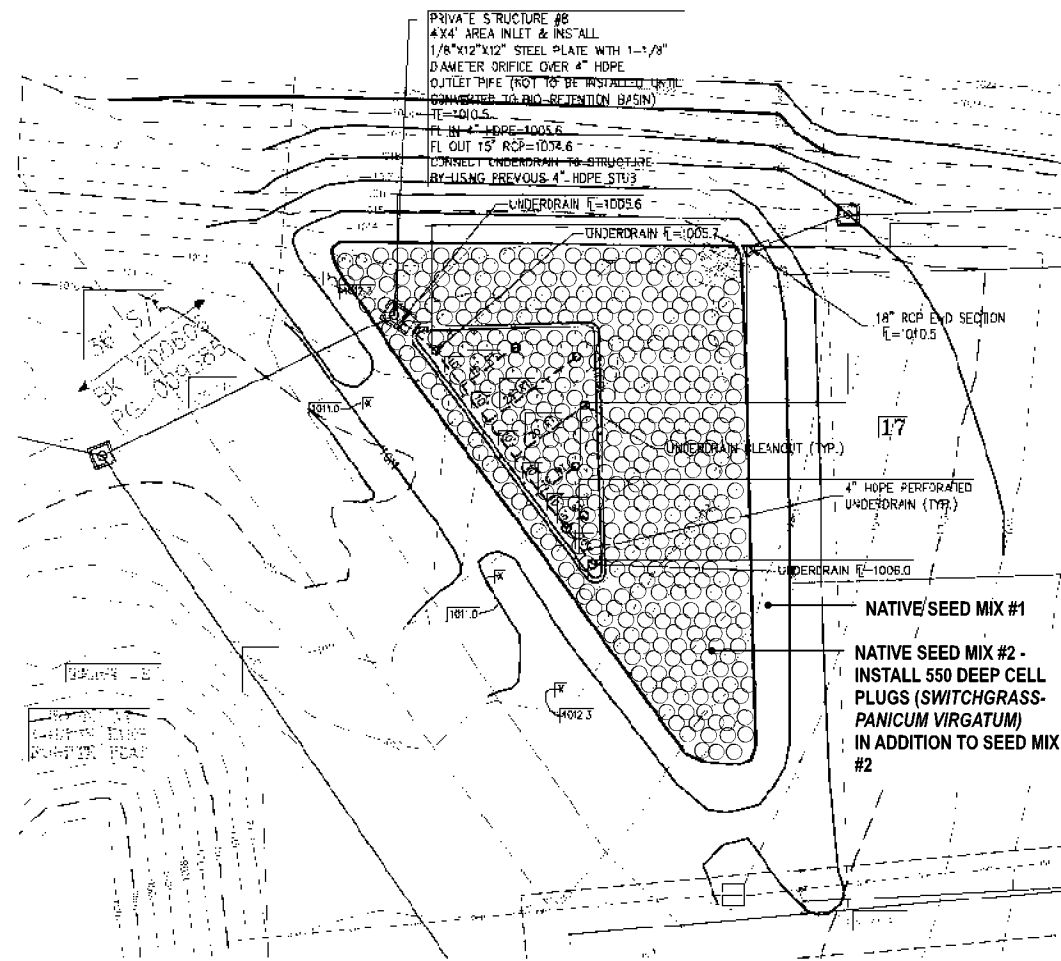
\* 20'-25' SWATH BEHIND RESIDENTIAL LOTS TO OF SEEDED WITH SHORTER MIX—BIG BLUE-STEM AND INDIANGRASS TO BE ELIMINATED FROM MIX IN THIS AREA AND ADDITIONAL SHORTER GRASSES TO BE SEED AT 5 LBS / AC INSTEAD OF 3 LBS / AC

**NATIVE SEED MIX #2 ( FOR BASIN BOTTOM - WET AREAS )**

(NATIVE SEED MIX #2)

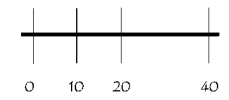
COMMON NAME	BOTANICAL NAME	PLS RATE / AC	% OF MIX
BLUE JOINT GRASS	CALAMGROSTIS CANADENSIS	1 LBS / ACRE	5
SWITCHGRASS	PANICUM VIRGATUM	3 LBS / ACRE	15
FOX SEDGE	CAREX VULPINOIDEA	3 LBS / ACRE	15
TUSsock SEDGE	CAREX STRICTA	3 LBS / ACRE	15
COMMON RUSH	ELEOCHARIS PALUSTRIS	2 LBS / ACRE	15
VIRGINIANA WILD RYE	ELYMUS VIRGINICUS	7 LBS / ACRE	35
<b>TOTAL</b>		<b>19 LBS / ACRE</b>	<b>100</b>

NOTE: THIS IS A GENERAL MIX - SEED MIX COULD VARY AT TIME OF PLANTING



**BIO-RETENTION BASIN (BR-1)**

TREATMENT AREA=3.12 ACRES  
 PONDING AREA=4,971 SF  
 PONDING ELEVATION=1010.0  
 FILTER BED AREA=1,420 S.F.  
 FILTER BED ELEVATION=1009.0

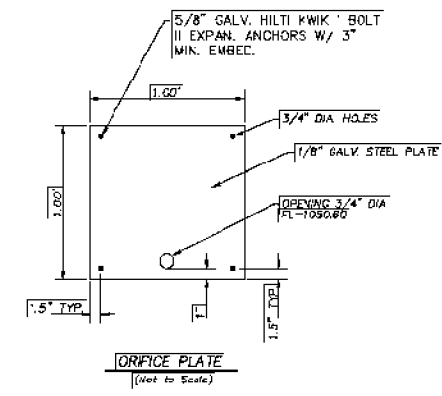
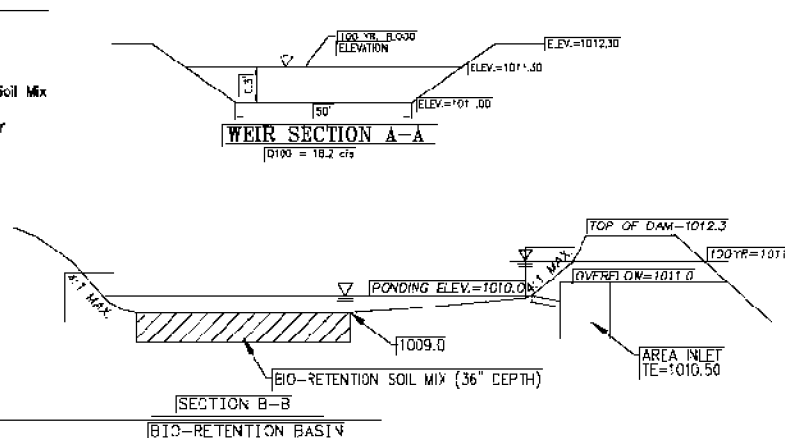


**BIO-RETENTION PARAMETERS**

3.12 Acres	Treatment Area
30% %	% impervious to Basin
0.11 Ac.-Ft.	Water Quality Volume
3.0 Ft.	BIO-RETENTION Soil Mix Depth
1.5 Ft./Day	Coefficient of Permeability for BIO-RETENTION Soil Mix
1.0 Ft.	Maximum Ponding Depth
2.00 Days	Time Required for Water Quality Volume to filter through BIO-RETENTION Soil Mix
1,419 Sq. Ft.	Minimum Required Filter Bed Area
4,966 Sq. Ft.	Minimum Required Ponding Area

**100-YEAR OVERFLOW CALCULATIONS**

Tc=7.8 Minutes  
 $Q_{100} = 256 / (7.8 + 19.3) = 9.28 \text{ in/hr}$   
 $Q_{100} = KICIA = (1.25)(0.51)(9.28 \text{ in/hr})(3.12 \text{ Acres}) = 18.5 \text{ CFS}$



**Bio-retention Basin Maintenance and Inspections**

Bio-retention basins shall be inspected regularly and maintained when necessary to ensure that the basin is functioning properly. The following is a list of periodic inspections and maintenance actions that should be taken to upkeep the Bio-retention basin.

- The Bio-retention basin shall be inspected biannually for erosion.
- Biannually the basin shall be inspected for locations of bare soil. Random bare spots may be corrected with spot mulching. Where there are significant amounts of bare soil, old mulch remaining shall be removed and disposed of properly before new mulch is distributed.
- The vegetation shall be inspected annually. Any dead or diseased vegetation shall be removed.
- If the vegetation is stressed, the soil shall be inspected for contamination. If the soil is contaminated, then full or partial replacement of the planting zone is required.
- If treatment of vegetation is necessary, chemicals used shall be low-toxic and used to the least amount necessary.
- Once to twice per year an application of an alkaline product, such as limestone, shall be applied to the basin to counteract soil acidity resulting from slightly acidic precipitation. Before making the application, the soil should be tested for the pH level to determine how much alkaline product to add.
- The outlet structure shall be inspected annually that it is functioning properly. Any obstructions to the overflow shall be removed.
- Any trash or sediment shall be removed as necessary.
- The basin shall be aerated periodically.
- Any voluntary not desired vegetation shall be removed periodically (weeding).

**LEGEND**

- EXISTING CONTOURS
- PROPOSED CONTOURS
- PONDING AREA
- FILTER BED AREA
- UNDERDRAIN

**NATIVE VEGETATION INSTALLATION**

**PERSONNEL:** All work shall be performed by experienced personnel regularly engaged in native plant establishment.

**EQUIPMENT:** Native seeding operations shall be accomplished with equipment suitable for preparing the seed bed, installing native seed and planting plugs, and applying soil amendments (i.e. fertilizer, etc.). Equipment necessary for the proper preparation of the ground surface and for handling and placing all required materials shall be of a size appropriate for the areas to be worked, on hand, and in good condition.

**SUBMITTALS:**

**General.** All information required by the Engineer and/or Owner shall be submitted prior to commencing the native seeding/planting installation. Work done prior to Engineer and/or Owner review of the submittals will be considered unacceptable and shall be removed at the sole cost of the Contractor.

**Labels.** All native seed mix, planting plug and soil amendment labels shall be submitted to the Engineer and/or Owner for acceptance prior to installation.

**TIMING:** Native seeding shall be preferentially performed as a late fall dormant seeding (November). The Contractor shall maintain temporary erosion control practices during non-seeding/planting periods. Once started, the work shall continue in an expeditious manner until complete. When conditions delay native seeding/planting, erosion control measures shall be implemented to prevent soil erosion by stormwater runoff or excessive wind. **Note: native seeding/ planting shall occur no less than 14 days after herbicide application.**

**SITE PREPARATION:**

Mow invasive pear trees and seed any critical areas that may have erosion problems to annual rye grass for the summer to control sediment issues. Dormant seeding of native grasses in November. Allow overburden or material from the mowing to breakdown through the summer. **Topsoil.** Prior to native seeding and planting, rotate topsoil to a fine seedbed at least 3 inches deep. The native seeding areas shall be free from tree roots, clay balls, 1-inch diameter and greater stones, and other materials that hinder seeding/planting and maintenance operation. The native seeding areas shall be maintained until seeding and plantings are installed to insure a smooth area with no gullies or depressions.

**Fertilizer.** Fertilizer for native seeding and planting shall consist of a 3-7-2 (Nitrogen, Phosphate, Potassium) all natural fertilizer with mycorrhizae and humates, prairie formulation mixture, uniform in composition, free flowing and suitable for application with approved equipment. The fertilizer shall be delivered to the site in convenient containers, each fully labeled, conforming to the applicable state fertilizer laws, bearing the name, trade mark, or trade name, and a warranty of the producer. The fertilizer shall be distributed uniformly and incorporated into the topsoil to a depth of at least 2-inches by disking or harrowing and at a rate of 50 pounds per 1,000 square feet.

**NATIVE SEEDING:** The areas designated for native seeding shall be seeded with the native grass mixture shown in tables on this sheet.

Species in the native seed mixture (PLS) shall be supplied as pure live seed. Native seeds shall comply with the requirements of the applicable state seed laws. Seeds shall be free of prohibited weed seeds and the completed mix shall not have more than 1 percent total of other weed seeds. Seeds shall be delivered to the site in convenient containers, each fully labeled, bearing the name, trade name, or trade mark, and a warranty of the producer and a certificate of the percentage of the purity and germination of each kind of seed specified. Native seeds shall originate from within a 100-mile radius of the project site if at all possible.

The Contractor shall utilize a rangeland type grain drill or no-till planter, such as by Truax, or equivalent approved by the Owner. The seed drill shall be designed and equipped to handle native seed mixtures and to ensure accurate placement to a depth not greater than one-quarter inch deep. The implement shall be capable of calibration, and the Contractor shall field demonstrate the accuracy of the field implement in placing the specified quantity of native seed. If the soil is too wet to install seed with a seed drill, a mechanical broadcast seeder shall be used. Immediately following the completion of native seed placement, the entire area shall be compacted by means of a roller or cultipacker implement to provide no less than 90 pounds of weight per linear foot of implement width.

**EROSION CONTROL:** After the native establishment area has been properly fertilized, seeded and planted, the Contractor shall install Erosion Control Mat over steep slopes. Mat shall be North American SC 150-BN Biodegradable mat or equivalent.

**WATER:** Thoroughly water the native establishment areas immediately after installation of the native seeding/planting and continue to water as necessary during the first growing season to increase plant survivability.

**CLEANUP AND REMOVAL:** After seeding/planting is complete, cleanup any remaining materials, debris, trash, etc. Remove any tools, equipment, empty containers, and all other debris generated by the Contractor.

**REPAIR:** The native establishment areas shall be kept free from traffic until accepted. If any time before acceptance by the Engineer and/or Owner, any portion of the native establishment areas becomes gullied or otherwise damaged, or the seeding has been damaged or destroyed by the Contractor's operations, then the affected portion shall be repaired to re-establish the specified condition prior to the acceptance of the work.

**ACCEPTANCE AND GUARANTEE:**

**Provisional Acceptance** - The work shall be considered 90% complete after all of the native seed/plantings and erosion control has been installed and the Contractor has completed all required clean up, removal, and repair as described above.

**Final Acceptance** - The work shall be considered 100% complete after the Contractor has met or exceeded the performance standard criteria below and completed all required clean up, removal, and repair described above.

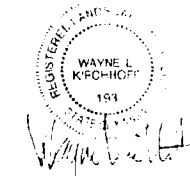
**Guarantee** - The Contractor shall guarantee the successful establishment of 70% native vegetation within one full growing season after provisional acceptance.

**MAINTENANCE**

During the first 2 or 3 growing seasons, most native plant growth will be directed towards the roots. Expect the native plantings to look established and full after the third or fourth growing season.

**WEED CONTROL:** Controlling competition is important when establishing native vegetation. Weeds should be controlled chemically or by mowing. It is important to mow early and often to assure adequate control and to not smother young seedlings. During the establishment period, inspect the native areas every 2 weeks for weed pressure. To manage weed competition, mow when weeds are a few inches above the seedling height. Mow early before the weeds have a chance to smother out the natives and about every two weeks throughout the first growing season to keep competitors from shading young plants.

**HERBICIDES:** Severe infestations of noxious or highly competitive weeds may require treatments. Herbicides such with trade names such as Pursuit® and Plateau® are labeled for limited use in native establishment areas. Refer to product labels for specific application information. It is recommended that a wick applicator be used during herbicide treatments to minimize damage to native vegetation.



4.28.20

**Bio-retention Basin Maintenance and Inspections**

Bio-retention basins shall be inspected regularly and maintained when necessary to ensure that the basin is functioning properly. The following is a list of periodic inspections and maintenance actions that should be taken to upkeep the Bio-retention basin.

- The Bio-retention basin shall be inspected biannually for erosion.
- Biannually the basin shall be inspected for locations of bare soil. Random bare spots may be corrected with spot mulching. Where there are significant amounts of bare soil, old mulch remaining shall be removed and disposed of properly before new mulch is distributed.
- The vegetation shall be inspected annually. Any dead or diseased vegetation shall be removed.
- If the vegetation is stressed, the soil shall be inspected for contamination. If the soil is contaminated, then full or partial replacement of the planting zone is required.
- If treatment of vegetation is necessary, chemicals used shall be low-toxic and used to the least amount necessary.
- Once to twice per year an application of an alkaline product, such as limestone, shall be applied to the basin to counteract soil acidity resulting from slightly acidic precipitation. Before making the application, the soil should be tested for the pH level to determine how much alkaline product to add.
- The outlet structure shall be inspected annually that it is functioning properly. Any obstructions to the overflow shall be removed.
- Any trash or sediment shall be removed as necessary.
- The basin shall be aerated periodically.
- Any voluntary not desired vegetation shall be removed periodically (weeding).

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- EXISTING CONTOURS
- PROPOSED CONTOURS
- PONDING AREA
- FILTER BED AREA
- UNDERDRAIN



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**BIORETENTION FACILITY PLAN**  
 AVALON VILLAS  
 OVERLAND PARK, KANSAS  
 PIP 2020-00001

NO.	DATE	DESCRIPTION
1	4.28.20	BR-1 PLANTINGS

PROJECT NO.	DATE	DESCRIPTION
190924	4.28.20	BR-1 PLANTINGS