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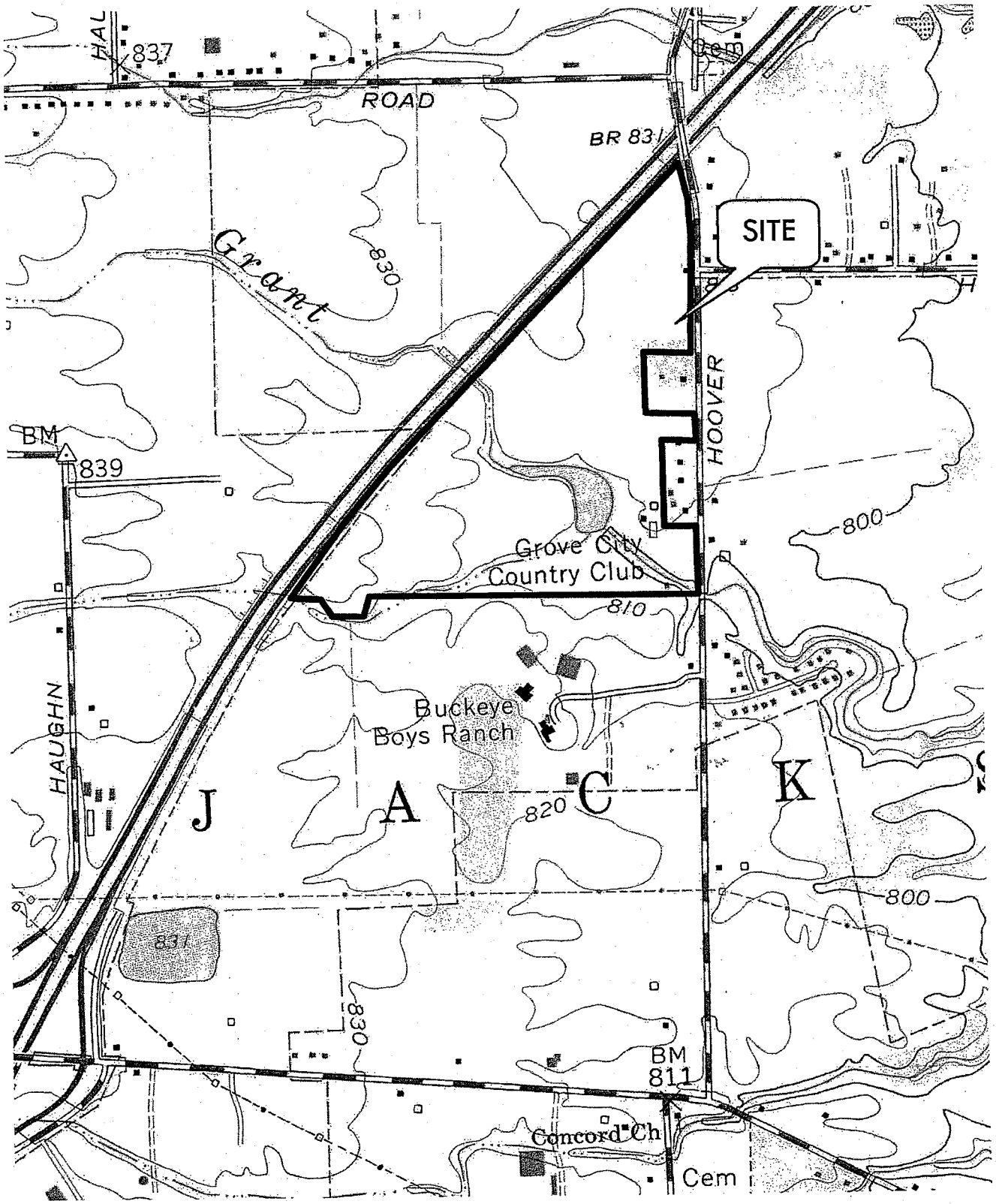

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N

SCALE: 1"= 1000'

0 500 1000 2000 FEET

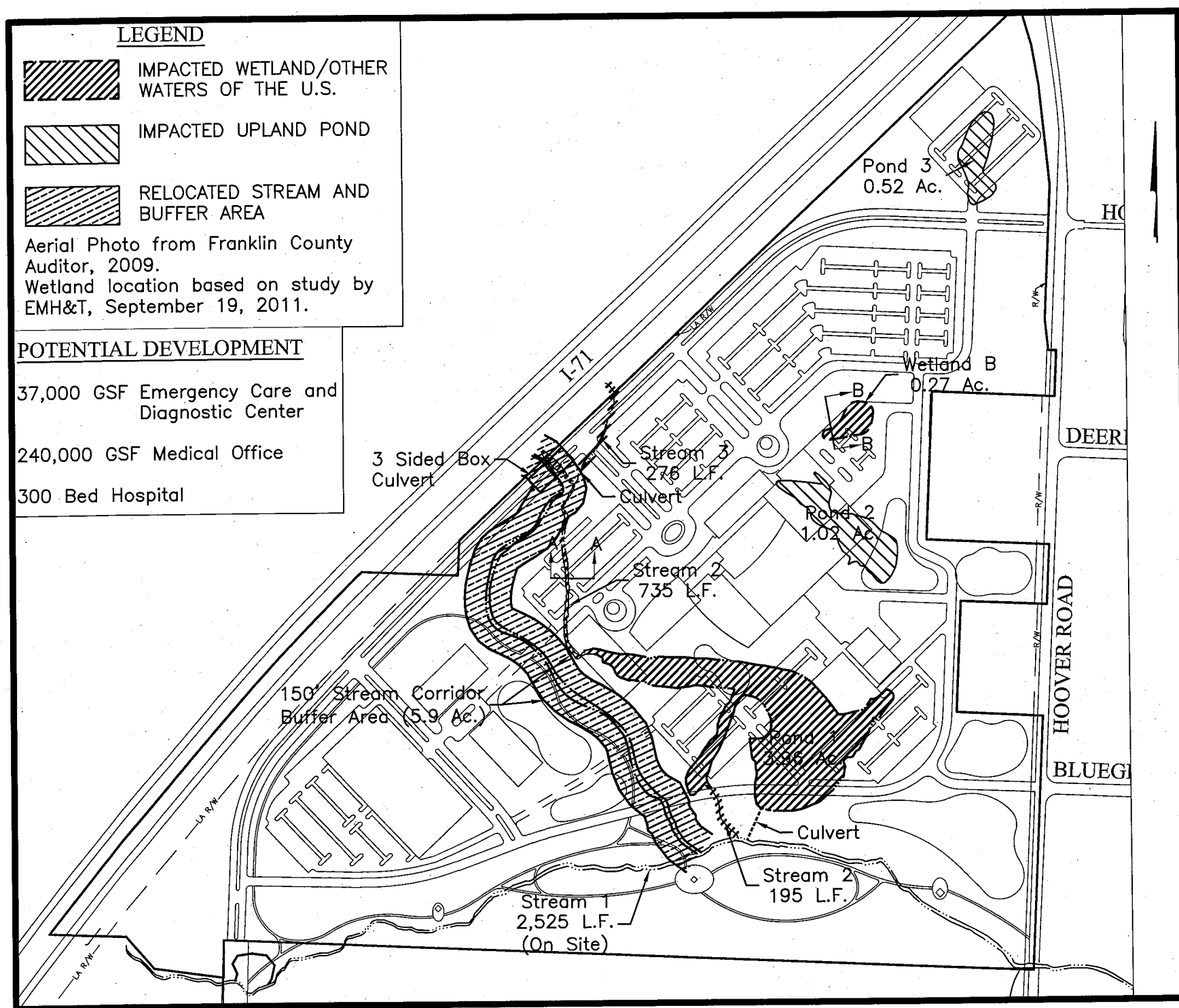
CITY OF GROVE CITY, FRANKLIN COUNTY, OHIO

MOUNT CARMEL HEALTH

USGS TOPOGRAPHIC MAP

FIGURE 1

Source:
- USGS COMMERCIAL POINT, OHIO (1988)



DATE: July 3, 2012

SCALE: None

JOB NO.: 2012-0435

CITY OF GROVE CITY, OHIO
MASTER DEVELOPMENT PLAN
FOR
MOUNT CARMEL HEALTH
PROPOSED PROJECT
FIGURE 2

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J:\20120435\Dwg\04Sheets\Exhibits\Figure 2.dwg Last Saved By: mfleshman, 7/3/2012 12:54 PM Last Printed By: Fleshman, Matthew, 7/3/2012 2:21 PM
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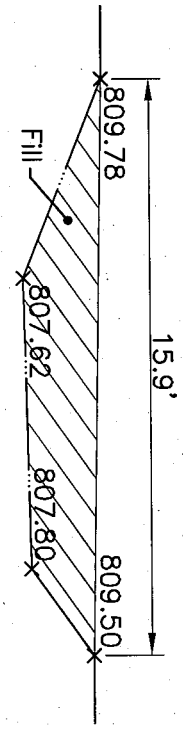
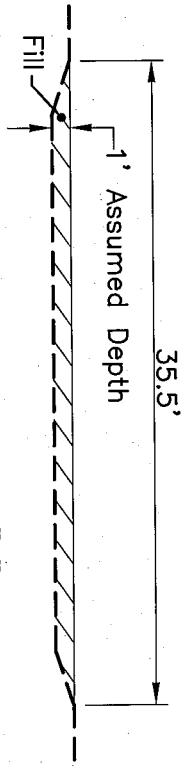


STREAM 2 SECTION A-A
Scale:None



WETLAND B SECTION B-B
Scale:None

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CITY OF GROVE CITY, OHIO
MASTER DEVELOPMENT PLAN
FOR
MOUNT CARMEL HEALTH
PROPOSED PROJECT
FIGURE 3

DATE: July 3, 2012
SCALE: None
JOB NO.: 2012-0435

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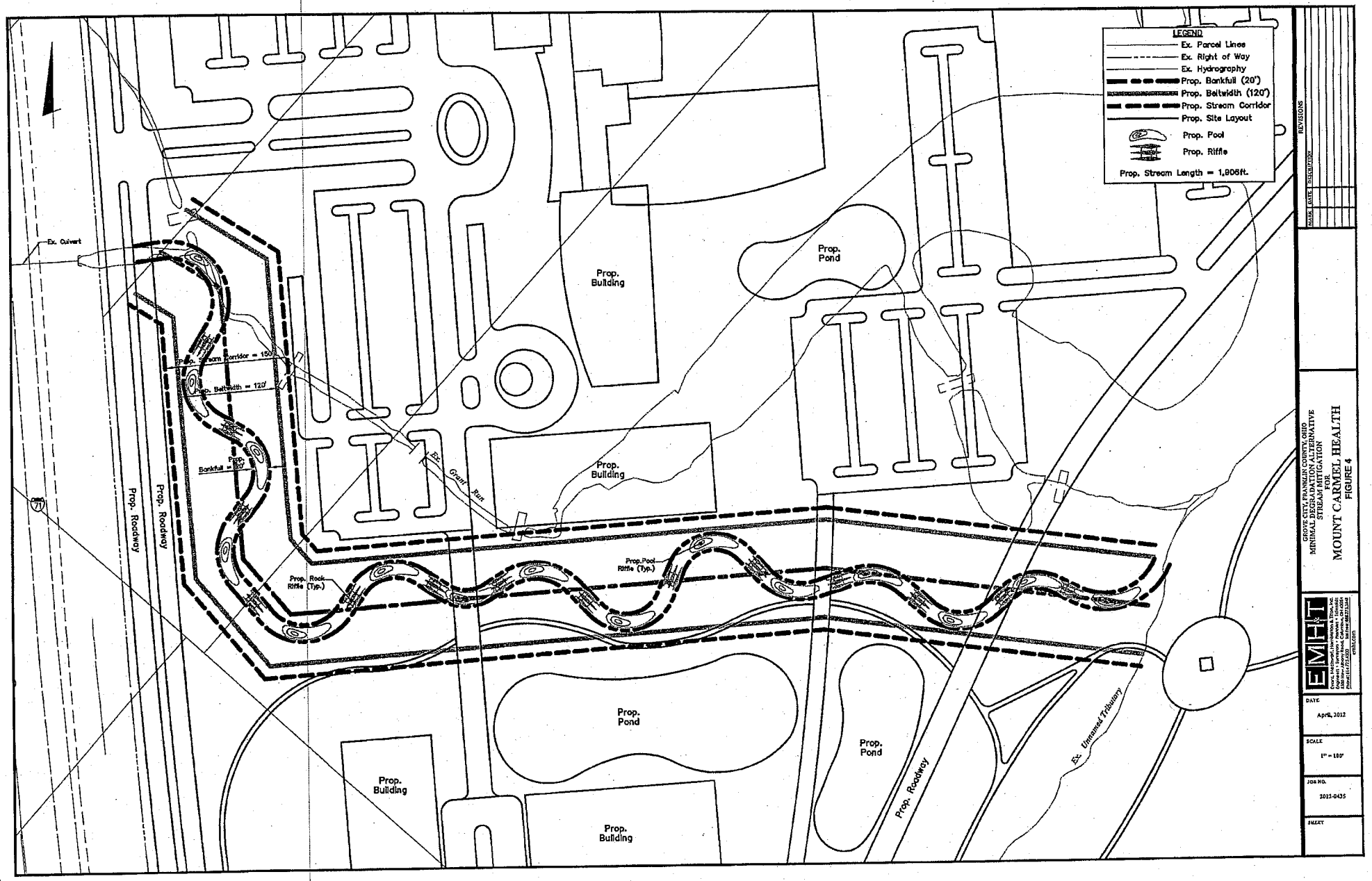

LEGEND
Ex. Parcel Lines
Ex. Right of Way
Ex. Hydrography
Prop. Bankfull (20')
Prop. Beltwidth (120')
Prop. Stream Corridor
Prop. Site Layout
Prop. Pool
Prop. Riffle
Prop. Stream Length = 1,906ft.
Ex. Culvert
Prop. Stream Corridor = 150'
Prop. Beltwidth = 120'
Prop. Bankfull = 20'
Prop. Rock Riffle (Typ.)
Prop. Pool Riffle (Typ.)
Ex. Grant Run
Prop. Roadway
Prop. Roadway
Prop. Building
Prop. Building
Prop. Building
Prop. Building
Prop. Pond
Prop. Pond
Prop. Pond
Prop. Roadway
Ex. Unnamed Tributary
71
REVISIONS
MARK DATE DESCRIPTION
GROVE CITY, FRANKLIN COUNTY, OHIO
MINIMALLY DEGRADED ALTERNATIVE
STREAM MITIGATION
FOR
MOUNT CARMEL HEALTH
FIGURE 4
EMH&T
DATE
April, 2012
SCALE
1" = 100'
JOB NO.
2012-0435
SHEET

ROCK RIFFLES:

Only imbedded (not visible) support and crest stone may be quarried limestone material. No construction rubble is permissible. All other material used to construct the rock riffle (all visible rock) shall be river rock, consisting of rounded stone with natural hues. The Contractor shall review samples of this material with the Construction Manager for approval prior to installation. See Riffle Materials Table for descriptions and sizes of materials.

1.0 CREST STONE

The crest stone shall be placed to the elevation shown and labeled on the stream profile. The crest elevation must pool water back to the base of the upstream riffle/run.

Installation:
The crest elevation must be determined and the center weir stone installed first. Trench into the stream bed approximately 1.5 feet and place the stone(s) so that the center weir stone reaches the crest elevation. Trench and install the remaining crest stones across the stream, elevating them into the banks the specified distance. Finished elevations of the crest stone must concentrate flows through the center of the riffle.

2.0 SUPPORT STONE

Installation:
Support stone must be placed tightly on both sides of the crest stone paying close attention to fit on the downstream side. Proper elevation of the support stone must be maintained and must be as high as the crest stone. Ten (10) feet downstream of the crest stone the support stone will be laid more loosely to create turbulence of flow across the riffle. At this point, the stone should start to become trenched into the streambed. At the end of the riffle, the support stone will be trenched fully into the stream bed to a depth of approximately 1.5 feet. Finished elevations of the support stone must concentrate flows across the center of the riffle and create non-laminar (turbulent) flow. Support stones will continue up the banks to the final elevation. Support stone will be trenched into the banks to support the crest stone.

3.0 FILL STONE

Installation:
After the installation of the larger crest and support stones, fill all voids with Fill Stone and compact with an excavator bucket. Final grading and transition with the upper bank area can be accomplished using this stone size.

4.0 PAYMENT

The cost of all labor and materials associated with the construction of rock riffles as shown on this plan, including crest, support and fill stone, shall be included in the price bid for Item Spec., Rock Riffle.

BOULDER TOE:

1.0 Material:

The boulder toe material may consist of quarried limestone (no construction rubble is permissible). The Contractor shall review samples of this material with the Construction Manager for approval prior to installation. The size of this material shall be consistent with the gradation of Type 'C' Rock Channel Protection, per ODOT Item 601.

2.0 Installation:

The boulder toe material shall be imbedded into the channel bottom and channel bank to the minimum depths shown on Detail 'C'. Filter fabric material per ODOT Item 712.09, Type B, shall be included in the construction of the boulder toe reinforcement, as demonstrated on Detail 'C'. Over-excavation of the channel bank to install the boulder toe reinforcement shall be backfilled with compactable material that is placed in lifts and graded to conform to the designed channel bank, and reinforced with the geotextile material specified by this plan.

3.0 Payment:

The cost of all labor and materials associated with the placement of Boulder Toe, shall be included in the price bid for Item Spec., Boulder Toe.

COIR ROLL:

1.0 Material:

Rolls shall consist of biodegradable material 16 inches in diameter with a density of 7 lbs./cu.ft. The coir roll outer netting shall consist of a brittle coir twine with a breaking strength of 90 lbs. Hardwood stakes to anchor the coir rolls shall be 2"x2"x36" in size. The specified length is a minimum and may need to be adjusted to allow for sufficient anchoring.

The Contractor may use coir rolls manufactured by ReLonka Products (800) 780-3215, or approved equal.

2.0 Installation:

Refer to Detail 'A' for a schematic of the location of the coir roll material along the channel and Detail 'C' for a schematic of the location of the coir rolls with respect to the other bank reinforcement materials.

The coir rolls shall be installed after the boulder toe material is in place. The upstream and downstream ends of the coir roll shall be bent back into the channel bank to prevent stream flow from cutting behind the Rolls. The ends of abutting coir rolls shall be tied together with twine. Hardwood stakes shall be driven into the native, undisturbed soil behind the Rolls. The Rolls shall be tied to the stakes with twine. Stakes shall be placed at the beginning and end of each Roll and at a maximum spacing of 2 feet.

3.0 Payment:

The cost of all labor and materials associated with the installation of the coir rolls and stakes shall be included in the price bid for Item Spec., Coir Roll, As Per Plan.

LIVE STAKES:

1.0 Material:

Live stake material shall be dormant and gathered locally (within or in proximity to the project site) or purchased from a reputable commercial supplier. The Contractor may use live stakes supplied by Ernst Conservation Seeds (800) 873-3321, or approved equal. This material shall be planted only during its natural dormancy period, extending from late fall through early spring. Stakes shall be 1/2 to 2 inches in diameter, 2 to 3 feet in length, and living based on the presence of young buds and green bark. Prior to installation, the stakes shall be cut so that they are angled on the bottom and flush on the top.

All harvested or purchased live stake material shall be preserved in a cool, moist environment until installation. Plant material that has been allowed to dry out or is not preserved in a dormant state prior to installation shall be discarded.

See Stream Planting Plan for Material List.

2.0 Installation:

Refer to Detail 'A' for a schematic of the location of the live stakes along the channel and Detail 'C' for a schematic of the location of the live stakes with respect to the other bank reinforcement materials.

Live stakes shall be installed in two (2) rows, with 2.0-foot spacing between the stakes. Three-fourths of the stake is to be imbedded within the channel bank. The angle of the imbedded stake to the channel bank shall be between 30 and 60 degrees. When installed, at least two (2) buds should remain above the ground surface and those buds shall be oriented upwards.

Live stakes that split or become bent or broken during installation shall be removed from the channel bank and discarded.

3.0 Payment:

The cost of all labor and materials associated with the installation of live stakes shall be included in the price bid for Item Spec., Stream Planting.

STOCKPILE COBBLE MATERIAL:

Remove and stockpile any available cobble stream bed material through the reach of the existing stream channel to be excavated/relocated. Stockpiled material shall be replaced within the excavated/relocated stream bed upon completion. Cost of this work to be included in the price bid for the various related items.

GEOTEXTILES:

The specified geotextile shall meet the specifications identified on this plan, unless otherwise approved by the Construction Manager.

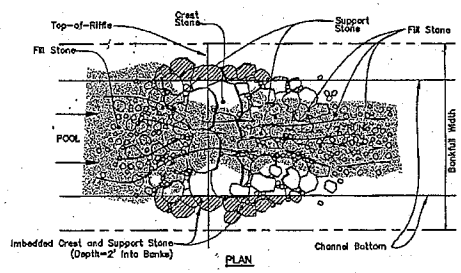
Geotextile shall be placed in accordance with ODOT CMS Item 671, and manufacturer's recommendations.

The geotextile Rolls shall be furnished with suitable wrapping for protection against moisture and extended ultraviolet exposure prior to placement. Each Roll shall be labeled or tagged to provide product identification sufficient for field inventory and quality control purposes. Rolls shall be stored in a manner which provides identification, as well as protection from the elements. If stored outdoors, the Rolls shall be elevated and protected with a waterproof cover.

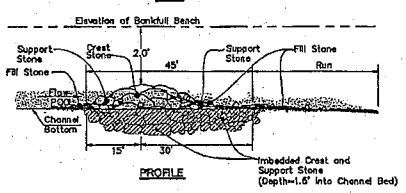
INSTALLATION:

- Over-excavation of the channel bank may be necessary to accomplish the installation of the boulder toe protection. The boulder toe protection shall be imbedded into the bottom of the channel to the depth specified.
- The live stakes shall be placed on top of the imbedded boulder toe material protruding into the native, undisturbed soil of the channel bank.
- Soil material, including the specified topsoil, shall be placed to backfill the over-excavated channel bank.
- The specified seeding shall be applied to the disturbed/restored soil material.
- The first (lowest) row of the geotextile material shall be anchored to the restored soil material.
- The coir roll material shall be installed and secured with the hardwood stakes protruding into the native, undisturbed soil of the channel bank.
- Any remaining rows of geotextile material shall be installed and anchored to the channel bank, with the last (highest) row "trenched" into the bank.

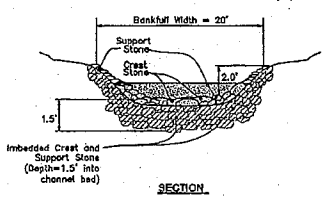
RIFFLE MATERIAL TABLE			
I.D.	DESCRIPTION	SIZE	% OF RIFFLE VOLUME
Crest Stone	Stone to establish the crest and footing of the Riffle	Rock Channel Protection, Type C Type C shall consist of sizes such that at least 85 percent of the total material by weight shall be larger than 6 inches but less than an 18-inch square opening. At least 50 percent of the total material by weight shall be larger than 12-inch square opening.	30%
Support Stone	Stone to transition upstream and down stream of the crest	Rock Channel Protection, Type D Support Stone shall have a gradation of sizes such that at least 85% of the material by weight shall be between 4" and 8" in diameter, 50% of which shall be larger than 6" in diameter.	50%
Fill Stone	Stone that fills the voids between the larger stone: Cobble- rounded river rock	Fill stone shall have a gradation of sizes such that at least 85% of the material by weight shall be between 1" and 6" in diameter, 50% of which shall be larger than 3" in diameter.	20%



PLAN

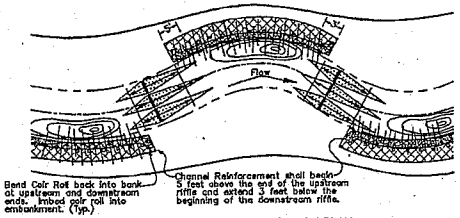


PROFILE



SECTION

ROCK RIFFLE DETAIL
Not to Scale



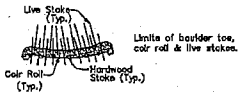
TYPICAL GEOTEXTILE LOCATION PLAN
Not to Scale

LEGEND

Limits of boulder toe, coir roll, and geotextile reinforcement**; refer to Detail "C", (This Sheet).

Riffle-Run Complex

Pool

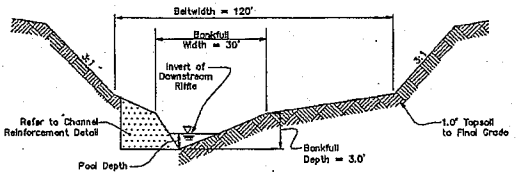


Limits of boulder toe, coir roll & live stakes.

NOTES

** Geotextile shall be an Erosion Control Mat, Type C per 712.11 or approved equivalent:

- 70% Straw/30% Coconut Fiber
- Photodegradable Polypropylene Netting



TYPICAL POOL SECTION
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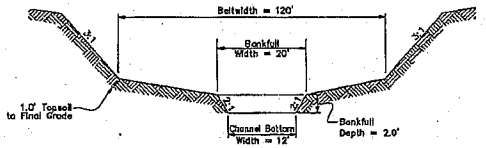

TYPICAL RIFFLE SECTION
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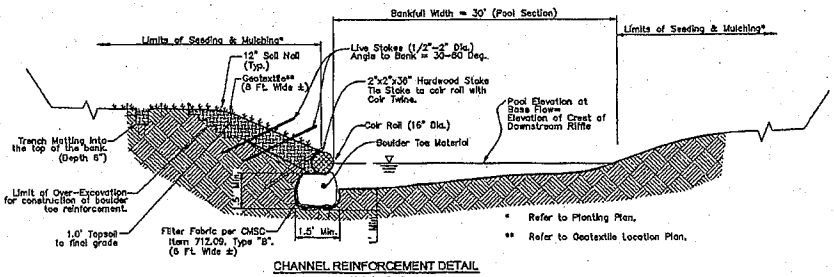

* Refer to Planting Plan.

** Refer to Geotextile Location Plan.

CHANNEL REINFORCEMENT DETAIL
Not to Scale

MARK	DATE	DESCRIPTION

REVISIONS

GROVE CITY, FRANKLIN COUNTY, OHIO
MINIMAL DEGRADATION ALTERNATIVE
STREAM MITIGATION
FOR
MOUNT CARMEL HEALTH
FIGURE 5A

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DATE
April, 2012

SCALE
As Noted

JOB NO.
2012-0435

SHEET

STREAM PLANTING ZONES

– Zone 1 – Outside Meander

Live Stakes

Common Name	Scientific Name
Silky dogwood	*Cornus amomum*
Red-osier dogwood	*Cornus sericea*
Peachleaved willow	*Salix amygdaloides*
Pussy willow	*Salix discolor*
Sandbar willow	*Salix interior*
Black willow	*Salix nigra*
Silky Willow	*Salix sericea*
Ninebark	*Physocarpus opulifolius*

– Zone 2 – Streamside Shrubs & Trees

Shrubs

Common Name	Scientific Name
Black chokeberry	*Aronia melanocarpa*
Rough leaf dogwood	*Cornus drummondii*
Gray dogwood	*Cornus racemosa*
Red-osier dogwood	*Cornus sericea*
Smooth alder	*Alnus serrulata*
Southern arrowwood	*Viburnum dentatum*
Blackhaw	*Viburnum prunifolium*
Elderberry	*Sambucus canadensis*
American hazelnut	*Corylus americana*

Trees

Common Name	Scientific Name
Cockspur hawthorne	*Crataegus crus-galli*
Shellbark hickory	*Carya laciniosa*
Swamp white oak	*Quercus bicolor*
Slippery elm	*Ulmus rubra*
Tulip tree	*Liriodendron tulipifera*
Sycamore	*Platanus occidentalis*
Eastern cottonwood	*Populus deltoides*
Black cherry	*Prunus serotina*
Swamp white oak	*Quercus bicolor*
Pin oak	*Quercus palustris*

⊙ =Balled and burlap trees

• Balled and burlap trees to be minimum 1" caliper diameter. #10 or #15 containerized trees may be substituted. Park grade trees may be used.

Balled and burlap trees to be planted at pools, 2 trees per pool, 5' from edge of bank, 1 tree per side (see plan view locations). Contractor to mark planting locations after construction of pools for approval by Construction Manager.

Remaining portion of Zone planted with 3-gallon trees as specified in stream planting table.

– Zone 3 – Floodprone Area/Buffer

Trees

Common Name	Scientific Name
Red maple	*Acer rubrum*
Sugar maple	*Acer saccharum*
Common hackberry	*Celtis occidentalis*
Eastern redbud	*Cercis canadensis*
Cockspur hawthorne	*Crataegus crus-galli*
Tulip tree	*Liriodendron tulipifera*
Black cherry	*Prunus serotina*
Shagbark hickory	*Carya ovata*
Red oak	*Quercus rubra*
Bur oak	*Quercus macrocarpa*
Pin oak	*Quercus palustris*
Slippery elm	*Ulmus rubra*
Beech	*Fagus grandifolia*
Black walnut	*Juglans nigra*
Black gum	*Nyssa sylvatica*
Pignut hickory	*Carya glabra*
White oak	*Quercus alba*

STREAM PLANTING TABLE

ZONE	MATERIAL	DENSITY	SPECIES
Zone 1	Live Stakes	2 rows with 2' spacing	7
Zone 2	3 Gallon Shrubs 3 Gallon Trees Balled & Burlap Trees*	20'x20' Centers 20'x20' Centers 2 per pool as indicated	7 7 7
Zone 3	3 Gallon Trees	16'x16' Centers	10

The species column designates the minimum number of species that shall be selected from each planting list.

NATIVE GRASS SEEDING TABLE

TYPE			APPLICATION RATES	APPLICATION DATES
OVER SEED:				
Annual Rye (Grain) or	*(Lolium multiflorum)*		40 lbs/acre	March – October
Winter Rye (Grain) or	*(Secale cereale)*		40 lbs/acre	October – February
Oats (Grain)	*(Avena sativa)*		15 lbs/acre	March – October
PERMANENT SEED: Native Grass Custom Seed Mix:			11 lbs/acre	October 1st – May 15th
Common Name	Scientific Name	Percentage		
Little bluestem	*Andropogon scoparius*	15		
Big bluestem	*Angropogon gerardii*	10		
Riverbank wild rye	*Elymus riparius*	10		
Silky wild rye	*Elymus villosus*	10		
Virginia wild rye	*Elymus virginicus*	10		
Indian grass	*Sorghastrum nutans*	7		
Switchgrass	*Panicum virgatum*	7		
Black-eyed susan	*Rudbeckia hirta*	6		
Ox-eye sunflower	*Heliopsis helianthoides*	4		
Gray-headed coneflower	*Ratibida pinnata*	4		
Cup plant	*Silphium perfoliatum*	3		
Tall white bread tongue	*Penstemon digitalis*	2		
Ohio spiderwort	*Tradescantia ohiensis*	1		
Joe pye weed	*Eupatorium fistulosum*	1		
Wild bergamot	*Monarda fistulosa*	1		

Over seed shall be applied with the permanent seed to quickly stabilize the site. This is required because the permanent seed takes much longer to germinate than the over seed.

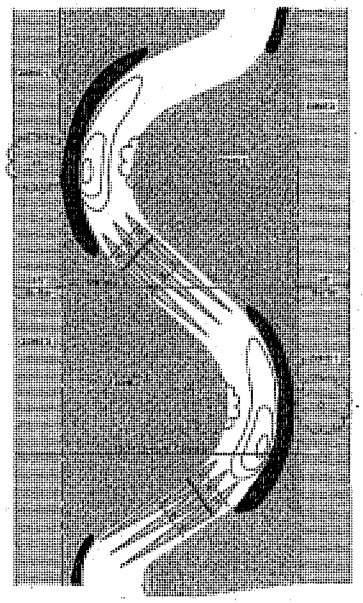
LANDSCAPING WARRANTY
Landscaper shall warranty at least an 80% survivability of all #3 containerized shrub and tree materials for one (1) year from planting date. Any dead, dying, or diseased material shall be replaced with like material.

Landscaper shall warranty 100% of all balled and burlap and #10 and larger containerized tree materials for one (1) year from planting date. Any dead, dying, or diseased plants shall be replaced with like species.

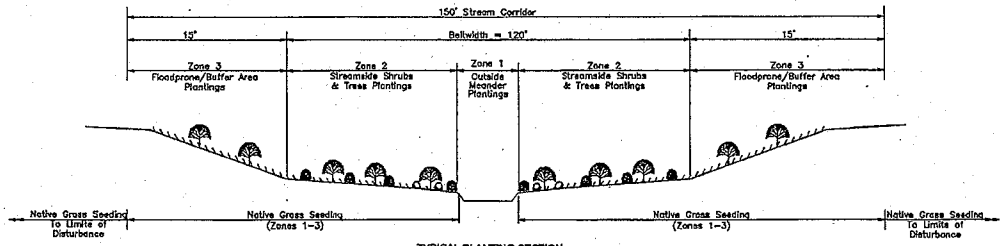
WATERING
Contractor shall insure that all material is thoroughly watered at time of planting, and once every week during the period of establishment. Sprinklers, gator bags or other such methods shall be used if rainfall is inadequate.

NOTES:
Final species selection will be based upon availability shall be approved in writing by the Construction Manager prior to ordering the plant material.

Permanent Seed and Over Seed to occur in Zones 1, 2, & 3 – See Table above.



PLANTING ZONES
Not to Scale



TYPICAL PLANTING SECTION
Not to Scale

SYMBOL	DATE	DESCRIPTION

REVISIONS

CITY OF GROVE CITY, FRANKLIN COUNTY, OHIO
MINIMAL DEGRADATION ALTERNATIVE
STREAM MITIGATION
FOR
MOUNT CARMEL HEALTH
FIGURE 5B

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DATE
April, 2012

SCALE
As Noted

JOB NO.
2012-0455

SHEET