

**Marshview Project: Outfall:-B Proj.- B-2 & B-1b
July-November 2008**

Final report and summary of expenditures (J. Van Dusen Jan. 17, 2009)

Project B-2 is and was intended to be an integrated effort with Project B-1b, with both contracts initiated with Hardee Enterprises on Aug. 8, 2008. Project sheets/cost estimates were prepared for both B-1b and B-2 by David Mills, and some tree removal carried out by Carolina Tree Service in July. Due to medical reasons, John Van Dusen assumed project manager duties for David. Work timing and project sequence was altered due to NCDENR storm water permitting constraints. Much of project B-2 work was completed in September, with B-1b work carried out in October. The B-2 activity, in particular, required coordination with LFCC's Tee reconstruction on Hole #4! A total of four "add on(s)", such as the purchase of extra sod to complete finish work on hole #4 resulted in a \$944 cost overage. Final payment to the contractor was made on 12/17/08. The expenditures were as follows: B-2=\$26,724.66, and B-1b=\$54,218.94>>**total amount=\$80,943.60!**

Project Sheet Data : B-2

Project Name: **Hole #4 Area Drainage** Date: Rev 8/26/08

SWM project leader(s): D. Mills/J.VanDusen

Problem/ ID: Flooding on Purple Finch, & #4 Cart Path

HDR's Input and recommended solutions: see M-Plan pg. #8

- Control box and pipe for Pond#19 to #20 w/18" CPP>>possible change to grass swale for overflow? Pond inlet @22.25"MSL
- Install new (18") 24"CPP equalization pipe between Ponds #21.
- Install new 4x4 C-box in pond#20 with(24") 18" CPP to new 4x4 drop inlet on north side of #4 tee area. (2x18" CPP outflow to Marshview,per B-1b)
- Install new 3x3 drop inlet in south side swale of Purple Finch Dr.>>connect w/15"concrete pipe under roadway. Create new 2:1 swale down Lot 56&57 line to open pipe(15"CPP) under cart path.
- Replace pipe under tee w/18"CPP

Project follows recommendations for Approximate 25 year flood events.

Additional Engineering: ...ie., Survey lot lines per project B.1B...next to golf course, with elevations to pond levels from street. **18" and 24" double wall PVC pipe required! 15" concrete pipe used under Purple Finch Dr. Master Plan Elevations were recorded by Contractor!**

Contractor Bid: Name:B.Hardee_bid_

Date: 6-05-08_____

Cost Proposal: a) labor \$9871.75_____

b) materials \$ +Tax_12,882.91__

Materials advance request: \$_!0,000__

Check issued :_____

Estimated materials list:

Material Item w/o tax	QTY/description	Bid Price
Sand/Gravel/RipRap	3 ton rip rap rock	\$ 211.67
Lined PVC Pipe 24"	60 ft @ \$xx/ft,	\$ 4593 >>18x60=1097
Lined PVC Pipe 18"	160 ft. @ \$xx/ft.	\$ 3307 >>160x11=1736
15" concrete Pipe	approx60ft	\$ 600
Control Boxes / Inlets in ponds #20 & #21	(2?) 3X3 ft (1) 4x4ft	\$ 2299.5
Concrete	Box patching 4 yds	\$ 472.5
Other ie, seed, patch Sod around inlets	Hydroseed (4) Pallets	\$ 630 \$ 525
Labor Costs Pipe - Sod Rip Rap	x ft. @ \$ xx /ft.	\$ 8926.75 \$630 \$315
Materials + Labor Total	Bid Price	\$ 21911.67

Owners of lots with affected easements;

#49(BA) Gregory & Paula Fischetti, 13112 Chalkstone Way, Silver Springs, MD 20904

#56(BC) Mark & Linda Bolduc, 3096 Purple Finch Lane SW Supply NC 28462

#57(BC) Daniel W. Huff, 4 Needlepine Lane, Levittown PA 19054

(Insert Changes & Contractor alternatives here): Per Rev-5 9-15 -08

B-2 project revisions were initiated as a contractor alternative on 8-26-08 as follows:

Additional pipe (15" CPP) and a 2x2' drop inlet box +labor approved for a change of swale from Purple Finch roadway down to LFCC cart path to a "pipe under swale" structure. Invoice amount for this was \$1345.20

Addendum #2: a bid omit for 24" pipe connecting Pond #21 to#20 was invoiced 10/14 for \$1336.80.

B-2 detail :



Purple Finch Rd. drain and swale along Bolduc property line to pipe under cart path :

New, 2'x2' drop inlets on each side of roadway were installed and connected w/15" RCP. (pipe elev. @20.5ft. vs. 24.34ft on road)

A plan revision from swale to a pipe (15' CPP) under swale, was made accommodate the required depth and elevation at this pick up point. This line terminates into an open pipe invert on south side of cart path, to allow surface drainage. An 18" CPP line runs under the cart path to a 3'x3' inlet box next to #4 Tee, (elevation @20.5ft.)

Figure 1-- Purple Finch Inlet box w/15" CPP under swale

An 18" CPP line was set from the upstream 3x3 inlet box, (@20.5ft) under the tee, to the **Main 5'x5' three way Junction /inlet** (@20.3ft). See photo right>>

This replaces an existing galvanized pipe invert running into Pond#21, which was closed off at each end.

A new drainage path was created to transfer water from ponds 21,20,(see below)



Figure 2--Main three way Junction /Inlet Box @ #4 Tee



Figure 3---New Pond #20 Control Box

A new Connection was made from Pond#21 into Pond #20 located on the right side of the #4 fairway. This equalization pipe, (24"CPP) was set to a new MSL of 22.0 ft.

Out flow from Pond #20, via 3'x3' control box, also at 22.0 ft., will move 240ft downstream to the Main junction box via a new 18" CPP line. This new control structure will prevent problems from overtopping of pond #21! *Transfer from pond#19 (little snake island) is a future option into the Pond#20 control structure.*



Figure 4-- View from Main J-box toward Marshview Rd.

Drainage from the Main Junction will then proceed downstream from the tee area via two 18" CPP pipes, under Marshview Road, into another J-box (approx 180ft). **This section defines the starting point of Project B-1b,** in which a new single 24" CPP line was installed along the #3 cart path and down into Pond#16 at fairway Court 3. The total elevation change from the Main J-Box to Pond #16 is approx. 5.5ft.

Project Sheet Data : B-1b

Project Name: **Drain Marshview to Pond #16** Date: **7-31-08**

SWM project leader(s): D. Mills/J. Van Dusen

Problem/ ID: (compose from HDR MP)

Flooding on Marshview, Purple Finch, & #4 Cart Path

HDR's Input and recommended solutions: (compose from HDR MP)

Install outfall drain line w/24"CPP from drop inlet @#4tee area under Marshview Dr. downstream to Pond #16 at fairway Ct. 3.

Project follows recommendations for approximate of 25 year flood events.

NOTE: Rev. 2 adds swale from Purple Finch to #4 Tee.>>see B-2

Additional Engineering: *ie, 24" & 18" double wall PVC pipe required! Test dig to locate depth of utilities on Marshview Dr.* Elevations should be checked by Contractor! Est. drop 1/200 for 500 ft then 1/50 to pond #16 (info above to be inserted as "scope of work" in RFQ)*

Contractor Bid: *Name:* B. Hardee Enterprises *Date:* 6-05-08
Cost Proposal: a) *Labor* \$21,067.57_ b) *Materials* \$ +Tax_28,552.97
 Materials advance request: \$_15,000_ Check issued \$_____

Estimated Start Date 9/14/08 to 10/14/08

Estimated Materials list:

Material Item w/o tax	QTY/description	Bid Price
Sand/Gravel/RipRap	(4) ton rip rap rock	\$ 496.28
Lined PVC Pipe 24"	620 ft. @\$xx/ft>>	\$ 14627.97 >620x18.28=11333
Lined PVC Pipe 18"	320 ft. @ \$xx/ft	\$ 1316.52 >320X11=3520
Concrete pipe		\$
`	(2)4X4 ft + (3?) 3X3 ft	\$ 3867.92 >> +600?
Concrete	Box patching 6 yds	\$ 585.9
Other ie, seed, patch	Hydroseed	\$ 1260.
Sod around boxes	(6) Pallets	\$ 756.79
Resurface road and cart path.	Asphalt over rock & marl	\$ 2215.0
Create Swale between lots 56 & 57 on Purple Finch	5' w. x 1' d. x 200 ft. length	\$ 644.49
Labor Costs Pipe - Roadway- Sod & RipRap -	850 @ \$xx/Ft.	\$ 21,067.97
Materials + Labor Total	BID 6-05-08	\$ 47,752.97+tax

**Owners of lots with affected easements;
LFCC**

On Fairway Court #3:

#56 Edward & Carolyn Hager , 1 Oak Dr., Huntington, WV 25705

#57 Equity Trust Co., 336 Marker 55 Dr. Holden Beach NC 28462

On Marshview Drive:

#58 John & Kathryn Martin, 2718 Picardy Place, Charlotte, NC 28209

#49 Gregory & Paula Fischetti, 13112 Chalkstone Way, Silver Springs,
MD 20904

B-1b Detail:

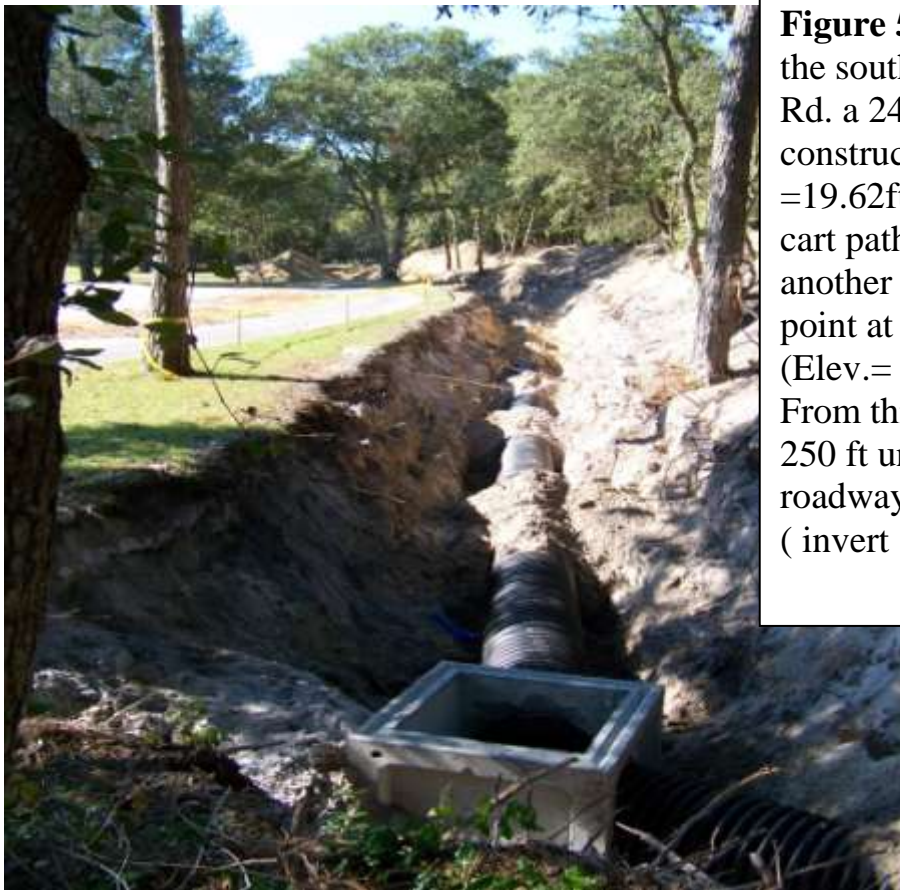


Figure 5: From the J-box on the south side of Marshview Rd. a 24" CPP line was constructed (pipe elev. =19.62ft) adjacent to the #3 cart path approx 300ft to another 3'x3' box & turning point at Lots B-#58/#59. (Elev.= 16.82ft)
From this point the pipe runs 250 ft under Fairway Court #3 roadway and into Pond #16. (invert Elev.= 15.0ft)

Figure 5--- "THE BIG DIG" on hole #3

B-1b Cont.



Figure 6--- J-box @ lot #57/58 toward FW Ct. #3

The 24" CPP pipe invert into Pond#16 at Fairway Court 3 was set at 15.0ft. **Figure 6---** shows the final pipe section running between lots 58/59.

As a project "add on", the equalization pipe between Ponds 16&17 was replaced with a rip rock check dam, thus creating a "fore-bay" condition. The overflow or MSL of both ponds is at 16.8ft.



