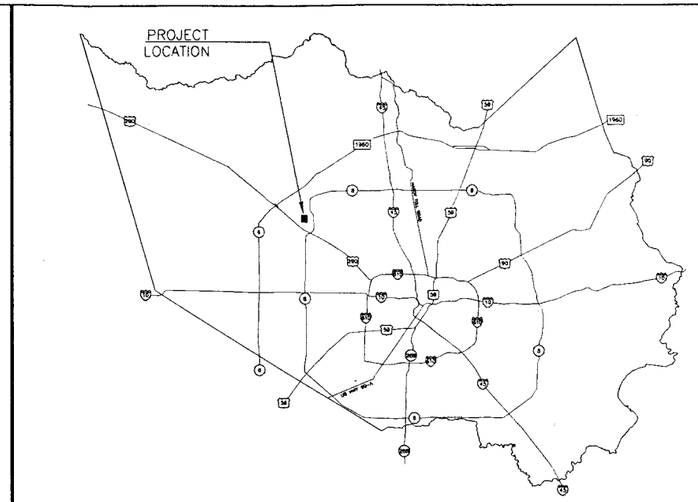
HCFCD PROJECT ID# E127-00-00-X005

DROP STRUCTURE AND EROSION REPAIRS FROM SENATE AVE. TO WHITE OAK BAYOU

HARRIS COUNTY
FLOOD CONTROL DISTRICT

ISSUED FOR CONSTRUCTION
JANUARY 30, 2013



VICINITY MAP
KEY MAP 409L,M

DRAWING INDEX
PCT 4

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COUNTY JUDGE ED EMMETT

PCT . 1	EL FRANCO LEE	PCT . 3	STEVE RADACK
PCT . 2	JACK MORMAN	PCT . 4	R. JACK CAGLE

EXECUTIVE DIRECTOR H.C.F.C.D. ARTHUR L. STOREY, JR.

STATE OF TEXAS
ERIN L. KNESEK
96616
LICENSED
PROFESSIONAL ENGINEER

Erin L. Knesek 9/13/12

SPI SCHAUMBURG POLK,
BEAUMONT ★ HOUSTON ★ TYLER
FIRM REGISTRATION NO. F-520
11767 KATY FREEWAY, SUITE 900
HOUSTON, TEXAS 77079-1779
281 . 920 . 0487

PROJECT ID: E127-00-00-X005 **JOB NO: 12/0295**

JERSEY VILLAGE

E100-00-00

E127-00-00

ELWOOD DR

JERSEY DR

SENATE AVE

NORTHWEST FWY (290)

PROJECT LOCATION

SAM HOUSTON TOLLWAY

GESSNER DR

N

0 500' 1000'

SCALE 1"=1000'

REV#	DESCRIPTION	DATE	APPR

HCFCD PROJECT ID# E127-00-00-X005

DROP STRUCTURE AND EROSION REPAIRS

LOCATION MAP

PREPARED: JCN	CHECKED: MCD	APPROVED: EK

SCHAUMBURG POLK, BEAUMONT • HOUSTON • TYLER
11767 KATY FREEWAY, SUITE 900
HOUSTON, TEXAS 77079-1778
281.920.0467

HARRIS COUNTY FLOOD CONTROL DISTRICT

9900 NORTHWEST FREEWAY
HOUSTON, TX 77092
713-684-4000

DATE: APRIL 2012

SCALE: 1"=1000'

SHEET NUMBER

2 OF 21

STATE OF TEXAS
ERIN L. KNESEK
96616
LICENSED PROFESSIONAL ENGINEER

Erin L. Knesek
9-13-12

GENERAL NOTES

1. THE PROJECT PLANS ARE INTENDED AS A GUIDE. THE PROJECT LIMITS WILL BE DETERMINED IN THE FIELD BY THE DESIGN ENGINEER PRIOR TO CONSTRUCTION ACTIVITIES. DUE TO THE DYNAMIC CONDITIONS IN THE FIELD, PROJECT SCOPE AND QUANTITIES MAY VARY FROM THE PLANS AND/OR CROSS SECTIONS. HCFCD RESERVES THE RIGHT TO ADJUST PLANS AND QUANTITIES AS NECESSARY. PROJECTS MAY BE ADDED OR DELETED FROM THE PACKAGE AS PRIORITIES CHANGE.
2. PROJECT CONSTRUCTION PRIORITY WILL BE DETERMINED BY THE ENGINEER.
3. FENCES AND/OR OTHER ENCROACHMENTS IN THE HCFCD RIGHT-OF-WAY ARE NOT TO BE REMOVED UNLESS OTHERWISE STATED ON THE PLANS. ACCESS IS LIMITED TO THE AVAILABLE HCFCD RIGHT-OF-WAY UNLESS OTHERWISE STATED ON THE PLANS. ANY ADDITIONAL OR ALTERNATIVE ACCESS IS THE RESPONSIBILITY OF THE CONTRACTOR.
4. DO NOT ENTER PRIVATE PROPERTY WITHOUT PROPER AUTHORITY FROM THE OWNER AND HCFCD.
5. IN CASES WHERE FENCE REMOVAL IS INDICATED ON THE PLANS, THE FENCE SHOULD BE REMOVED AND PLACED NEATLY ON THE ADJACENT PROPERTY.
6. THE ENGINEER WILL DETERMINE THE ACCEPTABILITY FOR THE REUSE OF STRIPPED VEGETATION AND TOPSOIL. UNACCEPTABLE MATERIAL WILL BE REMOVED AND PAID AS EXCAVATION AND DISPOSAL. MATERIAL FOUND TO BE ACCEPTABLE FOR REUSE SHALL BE STOCKPILED ON SITE. NO SEPARATE MEASUREMENT AND PAYMENT WILL BE MADE FOR STRIPPING, STOCKPILING AND PLACING ON-SITE TOPSOIL FOUND TO BE ACCEPTABLE FOR REUSE. THE COST FOR THIS WORK WILL BE INCIDENTAL TO RELATED PAY ITEMS UNDER SPECIFICATION SECTION 02315 LISTED ON THE UNIT PRICE SCHEDULE.
7. RIPRAP REMOVED DURING EXCAVATION FOR CHANNEL REPAIRS, MEETING SPECIFICATION SECTION NUMBER 02378, RIPRAP, SHOULD BE STOCKPILED FOR REUSE. PAYMENT SHALL BE AS EXCAVATION AND FILL (ON-SITE MATERIAL). DISPOSE OF NONCONFORMING MATERIAL. PAYMENT FOR DISPOSAL OF NONCONFORMING MATERIAL WILL BE MADE BY SPECIFICATION SECTION NUMBER 02120, REMOVE AND DISPOSE OF CONCRETE RUBBLE.
8. IN AREAS OF SINKHOLE AND JUGHOLE REPAIR, EXCAVATION IS REQUIRED TO EXPOSE UNDERGROUND VOIDS. SINKHOLES OCCURRING OVER OUTFALL PIPES WILL REQUIRE EXPOSING THE PIPE AND POSSIBLY REPLACING THE BAND COUPLER OR COLLAR AS DIRECTED BY THE DESIGN ENGINEER.
9. DEEP PLOWING (IF NEEDED)

   THE INTENT OF DEEP PLOWING THE SLOPE OR BERM OF A CHANNEL IS TO BREAK UP THE DESICCATED SOILS AND TO ELIMINATE ANY VOIDS, OR RILLING CLOSE TO THE SURFACE OF THE SLOPE OR BERM. THE CONTRACTOR WILL DEEP PLOW THE SLOPE OR BERM TO A MINIMUM DEPTH OF 2' IN AREAS CONTAINING VOIDS AND/OR RILLING.

   IN AREAS OF VOIDS ONLY, THE SURFACE FROM WHICH THE 2' DEPTH IS MEASURED WILL BE THE LEVEL OF THE SURROUNDING SOIL.

   IN AREAS OF RILLING, THE RILLS WILL FIRST BE KNOCKED DOWN AND LEVELED OFF. THE 2' DEPTH WILL THEN BE MEASURED FROM THIS NEW SURFACE. THE CONTRACTOR WILL DETERMINE THE MEANS AND METHOD FOR DEEP PLOWING.
10. THE INTENT OF THE CHANNEL DESILT IS TO RESTORE POSITIVE DRAINAGE DURING LOW FLOW CONDITIONS. THE CONTRACTOR SHALL GRADE THE CHANNEL FLOWLINE FOR POSITIVE FLOW. UNLESS SPECIFICALLY STATED OTHERWISE, IT IS NOT THE INTENT OF THE PROJECT TO DEEPEN THE CHANNEL BEYOND ITS ORIGINAL DESIGN CONFIGURATION. EXCAVATION OF SILT SHOULD NOT UNDERMINE THE TOE OF THE SLOPE.
11. WHEN DESILTING A CONCRETE LINED SECTION, REMOVE ALL SILT WITHIN THE CHANNEL ALONG THE SPECIFIED REACH.
12. TREES TO BE REMOVED WILL BE IDENTIFIED BY THE ENGINEER. ALL OTHER TREES TO REMAIN.
13. THE LOCATION AND GRADE OF THE BACKLSOPE INTERCEPTOR STRUCTURES AND SWALES SHALL BE AS DIRECTED BY THE ENGINEER AT THE TIME OF CONSTRUCTION.
14. UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER, THE BACKSLOPE INTERCEPTOR STRUCTURE SHALL BE SET AT A MAXIMUM DEPTH OF 2.5 FEET AND THE MINIMUM GRADE FOR BACKSLOPE SWALES SHALL BE 0.2%.
15. ADJUST YARD DRAINS. PAYMENT WILL BE INCIDENTAL TO UNIT ITEM 2200 SITE PREPARATION AND RESTORATION.
16. COMPLETED SECTIONS OF THE CHANNEL WILL BE TURNED OVER FOR VEGETATION ESTABLISHMENT IN MAXIMUM 1500 FOOT SEGMENTS.
17. CLEAR AND REMOVE ALL SILT FROM CULVERTS, PIPES AND UNDER BRIDGES TO THE PROPOSED DESIGN GRADES TO PROVIDE POSITIVE FLOW.
18. LENGHTS AND DIAMETERS REPRESENTED ON PLANS, ARE APPROXIMATE. CONTRACTOR WILL BE RESPONSIBLE FOR FIELD VERIFICATION PRIOR TO ORDERING MATERIALS.
19. ACTIVITIES THAT DISTURB BIRD HABITAT, INCLUDING BUT NOT LIMITED TO CLEARING, GRUBBING, AND IMPACTS TO STRUCTURES, WHERE MIGRATORY BIRDS MIGHT NEST, SHALL TAKE PLACE ONLY BETWEEN SEPTEMBER 15TH AND MARCH 1ST. IF ANY OF THESE ACTIVITIES ARE REQUIRED BETWEEN MARCH 1ST AND SEPTEMBER 15TH, HCFCD WILL DETERMINE IF A HABITAT SURVEY IS REQUIRED TO VERIFY THAT ACTIVE MIGRATORY BIRD NESTS ARE NOT PRESENT BEFORE WORK MAY PROCEED.

UTILITY NOTES

CENTERPOINT ENERGY RESOURCES CORP. (GAS)

CAUTION: UNDERGROUND GAS FACILITIES

CENTERPOINT ENERGY MAIN LINES (INCLUDING UNITED GAS TRANSMISSION AND/OR INDUSTRIAL GAS SUPPLY CORPORATION, WHERE APPLICABLE) ARE SHOWN IN APPROXIMATE LOCATION(S) ONLY. SERVICE LINES USUALLY ARE NOT SHOWN. THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT (713) 223-4567 OR 1-800-669-8344 A MINIMUM OF 48 HOURS PRIOR TO COMMENCING CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.

- WHEN CENTERPOINT ENERGY GAS PIPELINE MARKINGS ARE NOT VISIBLE, CALL (713) 967-8037 (7:00 A.M. TO 4:30 P.M.) FOR STATUS OF LINE LOCATION REQUEST BEFORE EXCAVATION BEGINS.
- WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTERPOINT ENERGY GAS FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.
- WHEN CENTERPOINT ENERGY GAS FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPELINE.
- THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.
- **FOR EMERGENCIES REGARDING GAS LINES CALL (713) 659-3552.**

CENTERPOINT ENERGY HOUSTON ELECTRIC LLC

WARNING: OVERHEAD ELECTRICAL FACILITIES

OVERHEAD LINES MAY EXIST IN THE PROJECT AREA. CENTERPOINT ENERGY HAS NOT ATTEMPTED TO MARK THESE LINES SINCE THEY ARE CLEARLY VISIBLE, BUT THE CONTRACTOR SHOULD LOCATE THEM PRIOR TO BEGINNING ANY CONSTRUCTION. THE CONTRACTOR SHALL BE FAMILIAR WITH ALL FEDERAL, STATE, AND LOCAL LAWS, ORDINANCES, AND REGULATIONS REQUIRING MINIMUM DISTANCES BE MAINTAINED FROM HIGH VOLTAGE OVERHEAD LINES. THE CONTRACTOR MAY BE SUBJECT TO CRIMINAL PENALTIES AND LIABLE FOR ALL DAMAGES CAUSED IN WHOLE OR IN PART FOR FAILURE TO FOLLOW SUCH LAWS, ORDINANCES AND/OR REGULATIONS. TO ARRANGE FOR LINES TO BE TURNED OFF OR REMOVED, CALL THE CENTERPOINT ENERGY AREA POWER CONSULTANT AT 713-207-2222.

SOUTHWESTERN BELL TELEPHONE COMPANY D/B/A AT&T TEXAS (SBC)

CAUTION: SBC FACILITIES

OVERHEAD FACILITIES ARE NOT SHOWN. THE LOCATIONS OF SBC UNDERGROUND FACILITIES, IF SHOWN, ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE FAILURE TO EXACTLY LOCATE AND PRESERVE THESE FACILITIES.

THE CONTRACTOR SHALL CALL 1-800-344-8377 A MINIMUM OF 48 HOURS PRIOR TO COMMENCING CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD LOCATED.

WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF SBC FACILITIES, ALL EXCAVATIONS SHALL BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES. WHEN BORING, THE CONTRACTOR SHALL EXPOSE THE SBC FACILITIES. WHEN SBC FACILITIES ARE EXPOSED, THE CONTRACTOR SHALL PROVIDE SUPPORT TO PREVENT DAMAGE TO SUCH FACILITIES. WHEN EXCAVATING NEAR TELEPHONE POLES, THE CONTRACTOR SHALL ADEQUATELY BRACE THE POLES FOR SUPPORT.

STATE OF TEXAS
ERIN L. KNESEK
96616
LICENSED
PROFESSIONAL ENGINEER
9-13-12

REV	DESCRIPTION	DATE	APPR

HCFCD PROJECT ID# E127-00-00-X005

DROP STRUCTURE AND EROSION REPAIRS

GENERAL NOTES

PREPARED: JCN | CHECKED: MCD | APPROVED: EK

SCHAUMBURG & POLK, INC.
TBPE FIRM REGISTRATION # 5361
11767 KATY FREEWAY, SUITE 900
HOUSTON, TEXAS 77079-1778
281.920.0487

HARRIS COUNTY FLOOD CONTROL DISTRICT
9900 NORTHWEST FREEWAY
HOUSTON, TX 77092
713-684-4000

DATE: APRIL 2012
SCALE: NTS

SHEET NUMBER
3 OF 21

CAPRI DRIVE

JERSEY VILLAGE
VOL. 242 - PG. 60 H.C.M.R.
BLOCK No. 41

LOT 1
LOT 2
LOT 3

JERSEY VILLAGE
VOL. 47 - PG. 1 H.C.M.R.
(Unable to read Plat)

SHEET 9

10' UTILITY EASEMENT
75' EASEMENT VOL. 47, PG. 1 H.C.M.R.
75' EASEMENT VOL. 242, PG. 60 H.C.M.R.
PROP. BASELINE E127
6+62
6+00
5+00
4+00
24" RCP
HIGH BANK
EXIST FLOWLINE
HIGH BANK
PP
TEL LINE
SWALE
EXIST WOOD FENCE
24" CMP
EXIST IRON FENCE
SWALE
BORE
TBM #2
10' UTILITY EASEMENT
24" CMP
24" RCP
EXIST FLOWLINE
HIGH BANK
3+00
2+00
1+00
0+00
75' EASEMENT VOL. 242, PG. 60 H.C.M.R.
75' EASEMENT VOL. 47, PG. 1 H.C.M.R.
24" CMP
HIGH BANK
LOT 7
LOT 8
LOT 9
SHEET 6
SUE LANE
ELWOOD DRIVE
LOT 1
LOT 2
LOT 3
LOT 4
LOT 5
LOT 6
SHEET 7
BLOCK No. 37A
JERSEY VILLAGE REPLAT
VOL. 213 - PG. 120 H.C.M.R.
SHEET 8
BLOCK No. 37B
JERSEY VILLAGE REPLAT
VOL. 213 - PG. 120 H.C.M.R.
SENATE AVE. (CONCRETE PAVING)
SENATE AVE.
120' R.O.W.
EXIST UNDERGROUND TELEPHONE
EXIST IRON FENCE
EXIST FLOWLINE
36" RCP
72" RCP
EXIST WATER LINE
14+69
15+00
13+00
12+00
11+00
10+00
8+00
7+00
6+00
5+00
4+00
HIGH BANK
75' EASEMENT VOL. 242, PG. 60 H.C.M.R.
75' EASEMENT VOL. 47, PG. 1 H.C.M.R.
PROP. BASELINE E127
24" CMP
HIGH BANK
24" CMP
ELWOOD DRIVE
LOT 1
LOT 2
LOT 3
LOT 4
RIVE

N

0 50' 100'
SCALE 1"=100'

ERIN L. KNESEK
96616
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS
Erin L. Knesek 9/13/12

REV#	DESCRIPTION	DATE	APPR

HCFCD PROJECT ID# E127-00-00-X005

DROP STRUCTURE AND EROSION REPAIRS
PROJECT LAYOUT

PREPARED: JCN	CHECKED: MCD	APPROVED: EK

SCHAUMBURG & POLK, INC.
BEAUMONT • HOUSTON • TYLER
11767 KATY FREEWAY, SUITE 900
HOUSTON, TEXAS 77079-1779
281.920.0487

HARRIS COUNTY FLOOD CONTROL DISTRICT
9900 NORTHWEST FREEWAY
HOUSTON, TX 77092
713-684-4000

DATE: APRIL 2012
SCALE: 1"=100'
SHEET NUMBER
4 OF 21

JERSEY DRIVE

LOT 4

BLOCK No. 37B
JERSEY VILLAGE REPLAT
VOL. 213 - PG. 120 H.C.M.R.

LOT 3

LOT 2

LOT 1

ELWOOD DRIVE

SUE LANE

BLOCK No. 37A
JERSEY VILLAGE REPLAT
VOL. 213 - PG. 120 H.C.M.R.

LOT 9 LOT 8 LOT 7 LOT 6 LOT 5 LOT 4 LOT 3 LOT 2 LOT 1

S 72°20'14" E

(40' PUBLIC R.O.W.)
N 77°39'46" E 282.05'

S 79°30'14" E 246.10'

399.96'

N 51°39'46" E

402.09'

SENATE AVE.
120' R.O.W.

SENATE AVE.
(CONCRETE PAVEMENT)

IRON ROD
STA.=11+99.86
OFFSET=99.87' L

I.R.

N 82°06'57" W 151.03'

IRON ROD
STA.=11+99.86
OFFSET=63.22' R

T.B.M. #1

SEE DETAIL "A"

75' EASEMENT
VOL. 213, PG. 120
H.C.M.R.

75' EASEMENT
VOL. 331, PG. 22
H.C.M.R.

75' EASEMENT
VOL. 213, PG. 120
H.C.M.R.

75' EASEMENT
VOL. 242, PG. 60
H.C.M.R.

C.L. AS PER PLAT

15' UTILITY ESMT.
VOL. 242, PG. 60 H.C.M.R.

IRON ROD
STA.=8+06.25
OFFSET=70.09' L

IRON ROD
STA.=5+46.19
OFFSET=68.49' R

S 70°51'44.26" W
828.76'

SEE DETAIL "B"

T.B.M. #2

IRON ROD
STA.=4+65.63
OFFSET=85.15' L

IRON ROD
STA.=4+55.73
OFFSET=74.30' R

N 61°50'14" W 203.00'

JERSEY VILLAGE
VOL. 47 - PG. 1 H.C.M.R.
(Unable to read Plat)

LOT 2

LOT 1

JERSEY VILLAGE
VOL. 242 - PG. 60 H.C.M.R.
BLOCK No. 41

LOT 2

LOT 3

LOT 1

S 23°19'47" E 378.81'

S 42°48'46" E 547.77'

N 22°19'46" E 61.00'

N 53°39'13" W 425.18'

R=618.06'
L=171.24'

R=618.06'
L=206.00'

R=618.06'
L=150.07'

R=3065.25'
L=46.02'

CAPRI DRIVE

DETAIL "A"
SCALE: NONE

DETAIL "B"
SCALE: NONE

60 0 60

LEGEND

CLF	CHAIN LINK FENCE
CONC	CONCRETE
FND	FOUND
C	CUTTER
H.C.C.F. NO.	HARRIS COUNTY CLERK'S FILE NUMBER
H.C.M.R.	HARRIS COUNTY MAP RECORDS
IR	IRON ROD
NG	NATURAL GROUND
PP	POWER POLE
R.O.W.	RIGHT-OF-WAY
SAN MH	SANITARY MANHOLE
S/W	SIDEWALK
STM MH	STORM MANHOLE
TC	TOP OF CURB
UGT	UNDERGROUND TELEPHONE LINE
CO	CLEAN OUT
FH	FIRE HYDRANT
HC	HANDICAP PARKING SIGN
	LIGHT STANDARD
	SIGN
SB	SOUTHWESTERN BELL MANHOLE
TB	TELEPHONE BOX
TPED	TELEPHONE PEDASTAL
	TREE
WM	WATER METER
WV	WATER VALVE
	OVERHEAD POWER LINE
	TOP BANK

NOTES:

1. THE BASIS OF BEARINGS SHOWN HEREON IS REFERENCED TO THE TEXAS STATE PLANE COORDINATE SYSTEM, NAD 1983, SOUTH CENTRAL ZONE, AS DERIVED FROM GPS OBSERVATIONS.
2. THIS SURVEY DOES NOT DETERMINE THE LOCATION OF WETLANDS, FAULT LINES, TOXIC WASTE, CEMETERIES, LANDFILLS, DUMPS OR ANY OTHER ENVIRONMENTAL ISSUES.
3. R. W. PATRICK & ASSOCIATES, INC. HAS NOT BEEN PROVIDED WITH CONSTRUCTION PLANS SHOWING THE LOCATION OF UNDERGROUND UTILITIES. UNDERGROUND UTILITIES MAY EXIST WHICH ARE NOT SHOWN HEREON.
4. THE BASIS OF ELEVATION FOR THIS PROJECT IS TAKEN FROM TSARP MONUMENT DESIGNATED 050105, ELEVATION 101.43 FEET NAVD88, 2001 ADJUSTMENT.

REFERENCE BENCHMARK:

TSARP BM 050105 — BRASS DISK STAMPED "E 100 BM20" ON BRIDGE AT TAHOE AND WHITE OAK BAYOU LOCATED DOWNSTREAM ON CONCRETE WALK ON SOUTH SIDE CENTER OF BRIDGE IN KEY MAP No. 409M IN THE WHITE OAK WATERSHED NEAR STREAM E100 -00-00 ELEVATION = 101.43 FEET, NAVD 1988, 2001 ADJUSTMENT.

PROJECT BENCHMARK:

TBM #1 — SQUARE CUT ON BRIDGE AT INTERSECTION OF SENATE AVE. AND SOUTH FORK WHITE OAK BAYOU ELEVATION= 104.29 FEET, NAVD 1988, 2001 ADJUSTMENT.

TBM #2 — RAIL ROAD SPIKE IN POWER POLE NEAR THE SOUTHEAST CORNER OF LOT 3, NORTH SIDE OF BAYOU ELEVATION= 102.85 FEET, NAVD 1988, 2001 ADJUSTMENT.

STATE OF TEXAS
REGISTERED
ALLEN MUNZ
1855
PROFESSIONAL
LAND SURVEYOR

Allen Munz
10-08-12

DESCRIPTION	DATE	APPR

HCFCD PROJECT ID# E127-00-00-X005

DROP STRUCTURE AND EROSION REPAIRS

RIGHT-OF-WAY
AND SURVEY CONTROL MAP

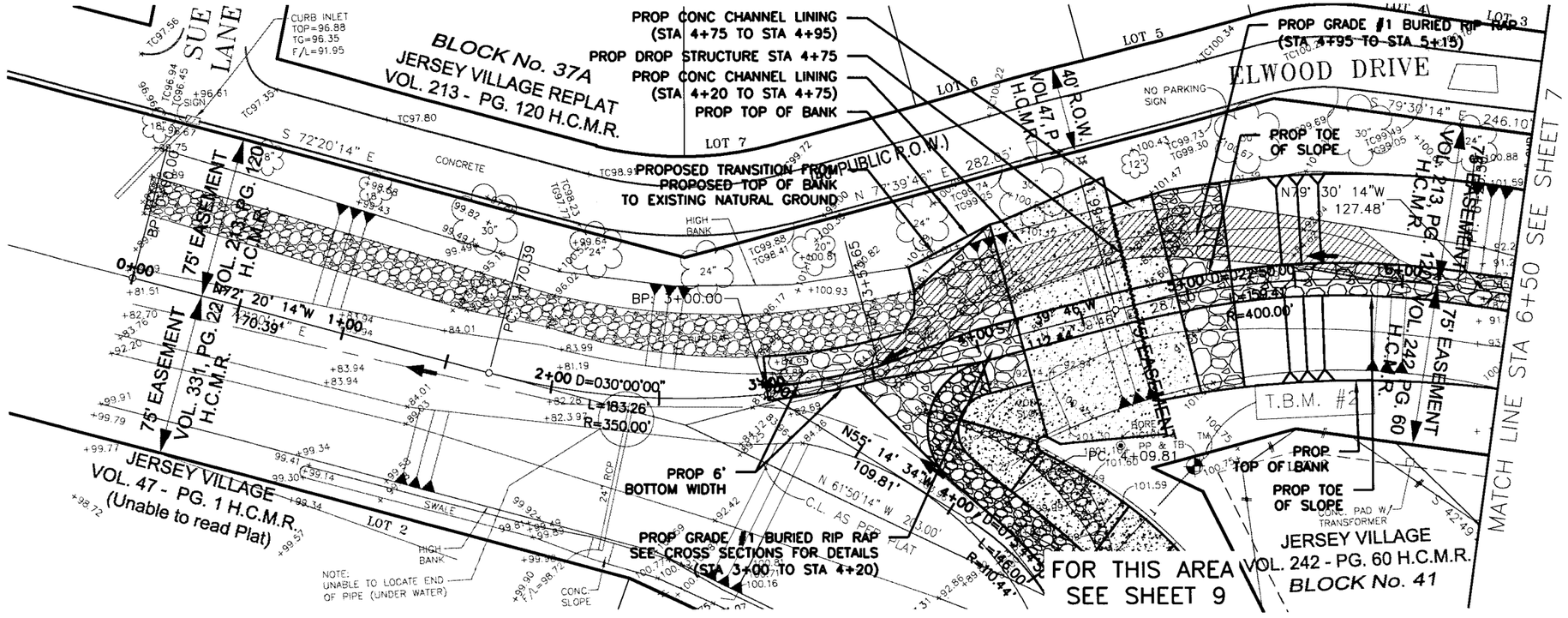
PREPARED: AJC
CHECKED: BSM
APPROVED: BSM

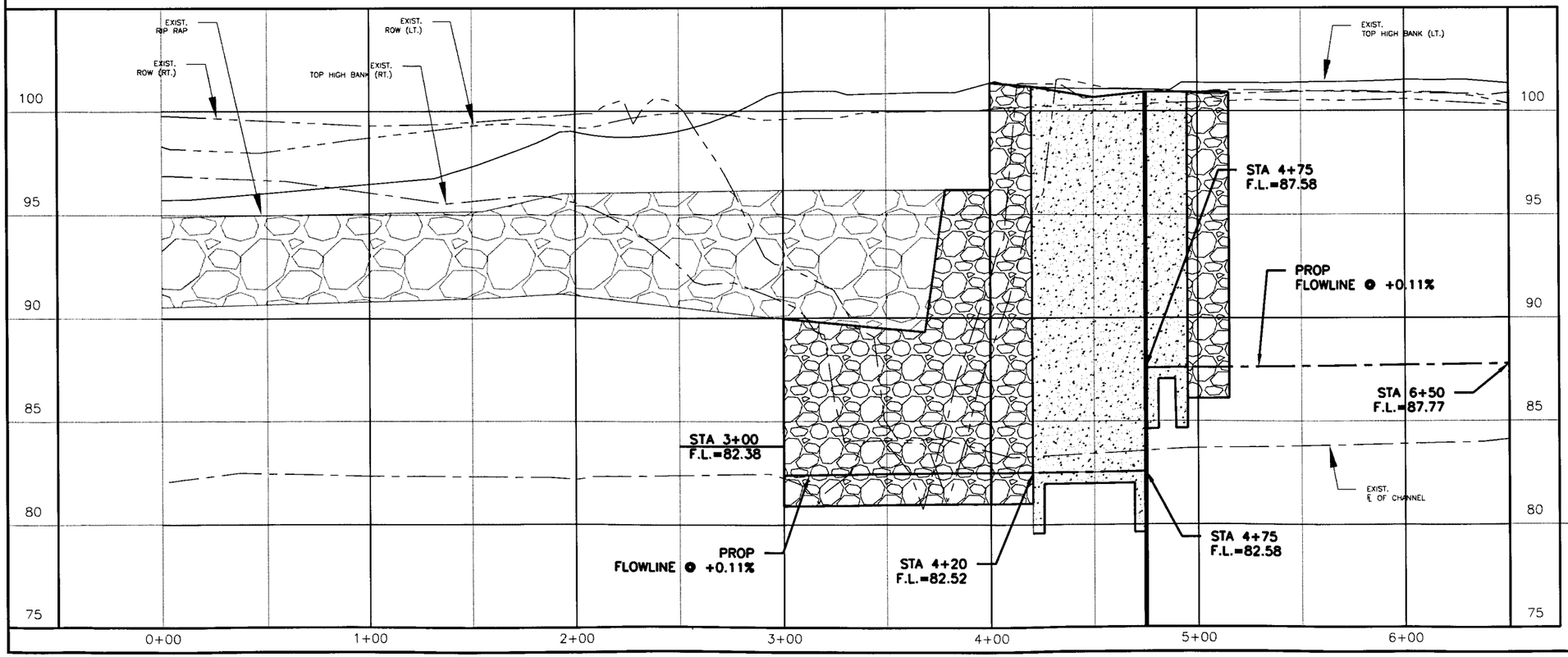
KBR Engineering, LLP
2550 GRAY FALLS - SUITE 215
HOUSTON, TEXAS 77077-5607
PH: 281-496-1000, FAX: 281-496-0007

Harris County Flood Control District
9900 Northwest Freeway
Houston, Texas 77092

DATE: 12-08-11
SCALE: 1"=60'

SHEET NUMBER
5 OF 21





ERIN L. KNESEK 96616 LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
9/13/12

NO.	DESCRIPTION	DATE	APPR

HCFCD PROJECT ID# E127-00-00-X005

DROP STRUCTURE AND EROSION REPAIRS

E127 PLAN AND PROFILE STA 0+00 TO STA 6+50

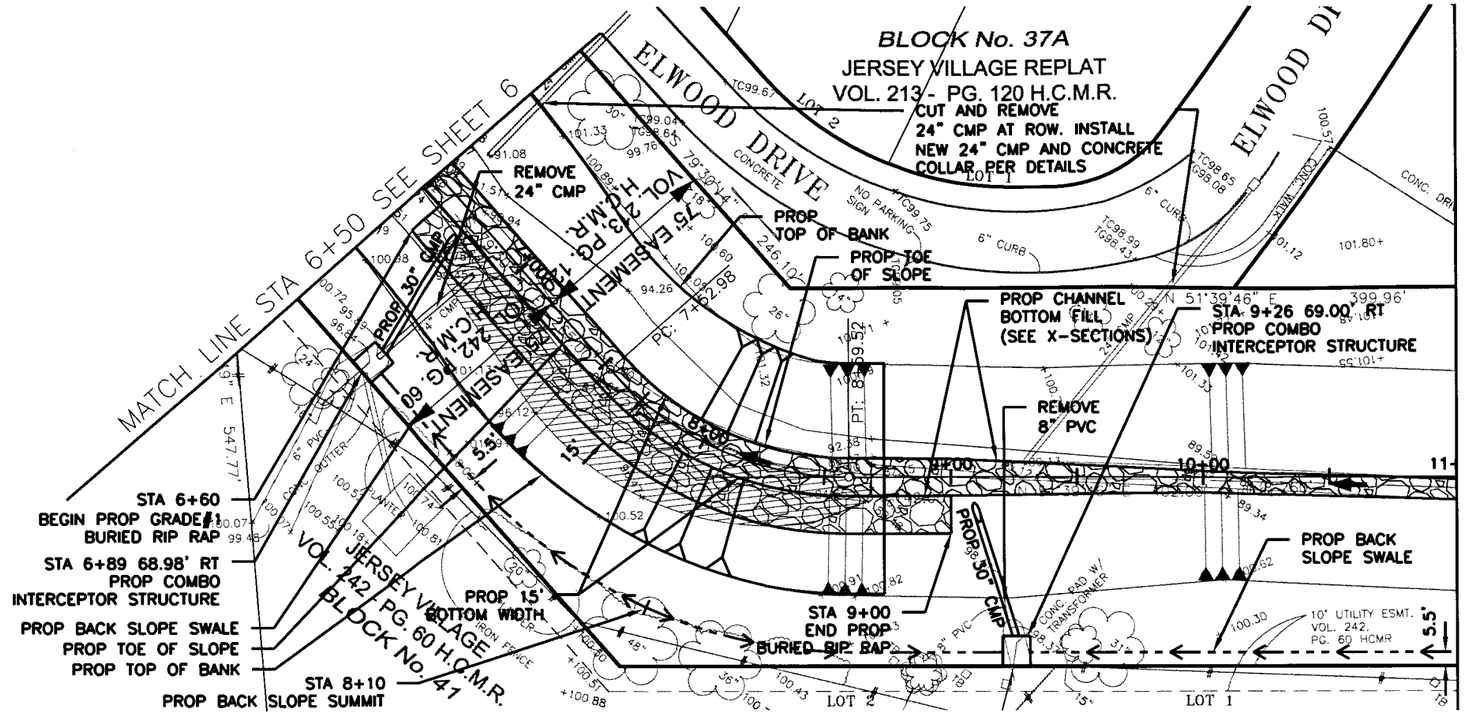
PREPARED: JCN | CHECKED: MCD | APPROVED: EK

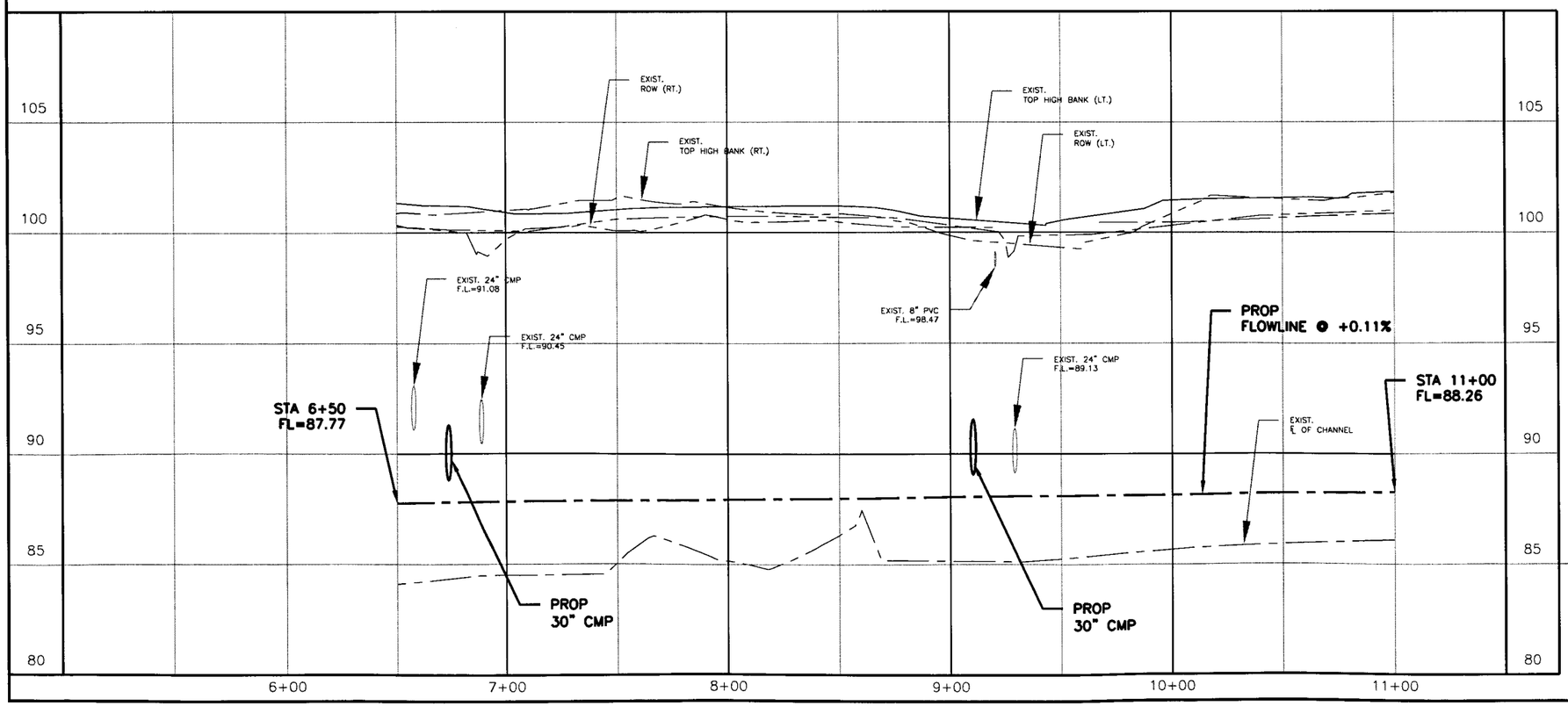
SCHAUMBURG & POLK, INC.
PROFESSIONAL ENGINEERS • SURVEYORS
BEAUMONT • HOUSTON • TYLER
11767 KATY FREEWAY, SUITE 900
HOUSTON, TEXAS 77079-1779
281. 920. 0467

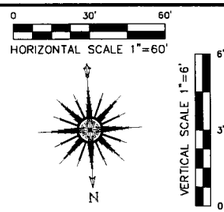
HARRIS COUNTY FLOOD CONTROL DISTRICT
9900 NORTHWEST FREEWAY
HOUSTON, TX 77092
713-684-4000

DATE: APRIL 2012
SCALE: 1"=60' H
1"=6' V

SHEET NUMBER
6 OF 21







EXISTING SLOPE EROSION

NOTE:
1. REPAIR SCOURED CHANNEL BOTTOM TO PROPOSED FLOWLINE FROM STA 5+70 TO STA 13+20 WITH WELL GRADED MIX. WELL GRADED MIX SHALL CONSIST OF A WELL GRADED MIXTURE OF MATERIAL FROM GRAVEL TO GRADE #1 RIP RAP, TO MINIMIZE VOIDS. THE MIXTURE SHALL CONSIST OF APPROXIMATELY 30% GRADE #1 RIP RAP, 55% 3" X 5" CRUSHED ROCK AND 15% RECYCLED CRUSHED CONCRETE BASE MATERIAL (GRAVEL). THE CRUSHED BASE MATERIAL SHALL MEET THE CRITERIA SHOWN IN THE TABLE BELOW, WHEN TESTED IN ACCORDANCE W/ASTM C-136.

RETAINED ON SQUARE SLEVE	% BY WEIGHT
1 3/4	0
7/8	10 - 35
3/8	30 - 50
No. 4	45 - 65
No. 40	70 - 85

THE TOP 18" OF THE WELL GRADED MIX WILL BE A LAYER OF GRADE #1 RIP RAP ALONG THE PROPOSED CHANNEL BOTTOM IN ACCORDANCE W/ RIP RAP DETAIL "B" ON SHEET 19 OF 21. THE 18" THICK RIP RAP LAYER SHALL BE PAID UNDER UNIT ITEM No. 02378-01. THE WELL GRADED MIX SHALL BE PAID UNDER UNIT ITEM No. 02378-05.

9/13/12

REV#	DESCRIPTION	DATE	APPR

HCFCD PROJECT ID# E127-00-00-X005

DROP STRUCTURE AND EROSION REPAIRS

E127 PLAN AND PROFILE STA 6+50 TO 11+00

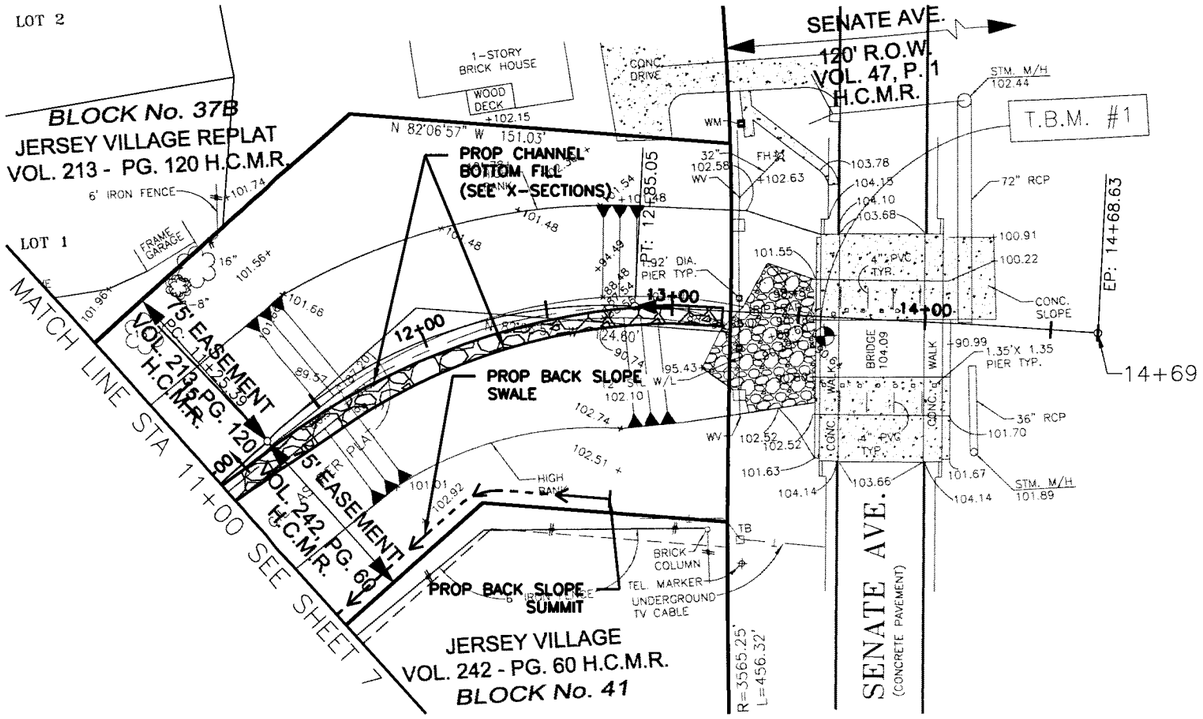
PREPARED: JCN | CHECKED: MCD | APPROVED: EK

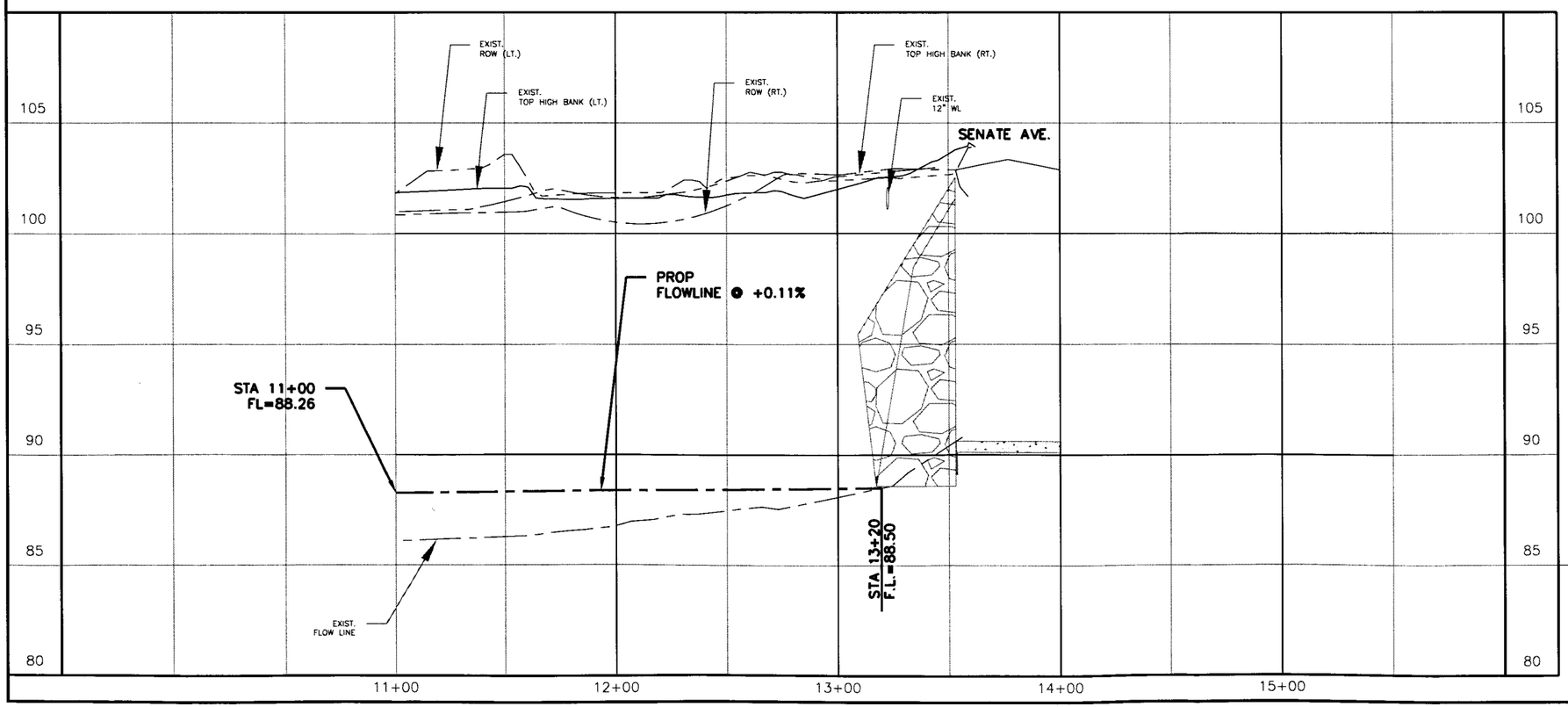
SCHAUMBURG POLK, INC.
HOUSTON BEAUMONT AUSTIN
11767 KATY FREEWAY, SUITE 900
HOUSTON, TEXAS 77079-1778
281 920 0467

HARRIS COUNTY FLOOD CONTROL DISTRICT
9900 NORTHWEST FREEWAY
HOUSTON, TX 77092
713-684-4000

DATE: APRIL 2012
SCALE: 1"=60' H
1"=6' V

SHEET NUMBER
7 OF 21





HORIZONTAL SCALE 1"=60'

VERTICAL SCALE 1"=6'

NOTE:
1. REPAIR SCOURED CHANNEL BOTTOM TO PROPOSED FLOWLINE FROM STA 5+70 TO STA 13+20 WITH WELL GRADED MIX. WELL GRADED MIX SHALL CONSIST OF A WELL GRADED MIXTURE OF MATERIAL FROM GRAVEL TO GRADE #1 RIP RAP, TO MINIMIZE VOIDS. THE MIXTURE SHALL CONSIST OF APPROXIMATELY 30% GRADE #1 RIP RAP, 55% 3" X 5" CRUSHED ROCK AND 15% RECYCLED CRUSHED CONCRETE BASE MATERIAL (GRAVEL). THE CRUSHED BASE MATERIAL SHALL MEET THE CRITERIA SHOWN IN THE TABLE BELOW, WHEN TESTED IN ACCORDANCE W/ASTM C-136.

RETAINED ON SQUARE SLEVE	% BY WEIGHT
1 3/4	0
7/8	10 - 35
3/8	30 - 50
No. 4	45 - 65
No. 40	70 - 85

THE TOP 18" OF THE WELL GRADED MIX WILL BE A LAYER OF GRADE #1 RIP RAP ALONG THE PROPOSED CHANNEL BOTTOM IN ACCORDANCE W/ RIP RAP DETAIL "B" ON SHEET 19 OF 21. THE 18" THICK RIP RAP LAYER SHALL BE PAID UNDER UNIT ITEM No. 02378-01. THE WELL GRADED MIX SHALL BE PAID UNDER UNIT ITEM No. 02378-05.

STATE OF TEXAS
ERIN L. KNESEK
96616
LICENSED
PROFESSIONAL ENGINEER
Erin L. Knesek 9/13/12

REV#	DESCRIPTION	DATE	APPR

HCFCD PROJECT ID# E127-00-00-X005

DROP STRUCTURE AND EROSION REPAIRS

E127 PLAN AND PROFILE STA 11+00 TO END

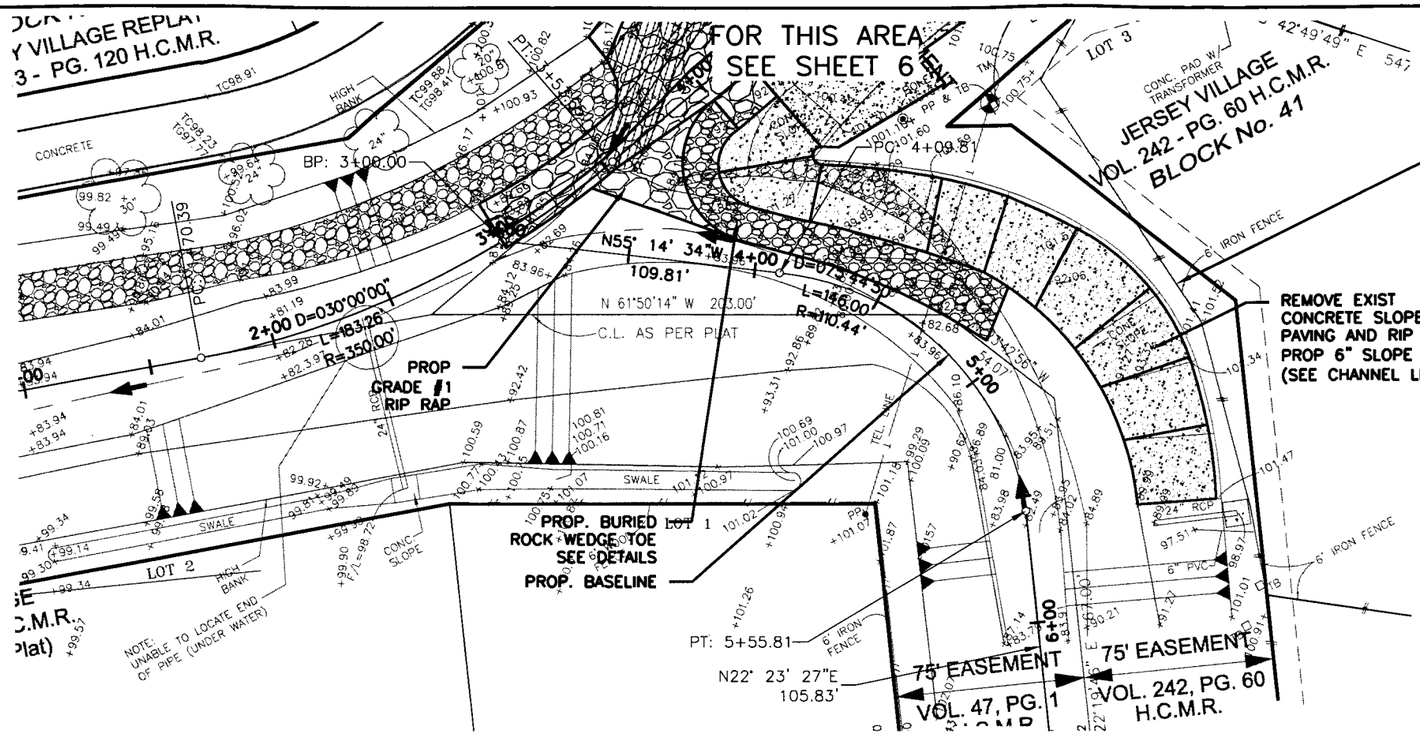
PREPARED: JCN | CHECKED: MCD | APPROVED: EK

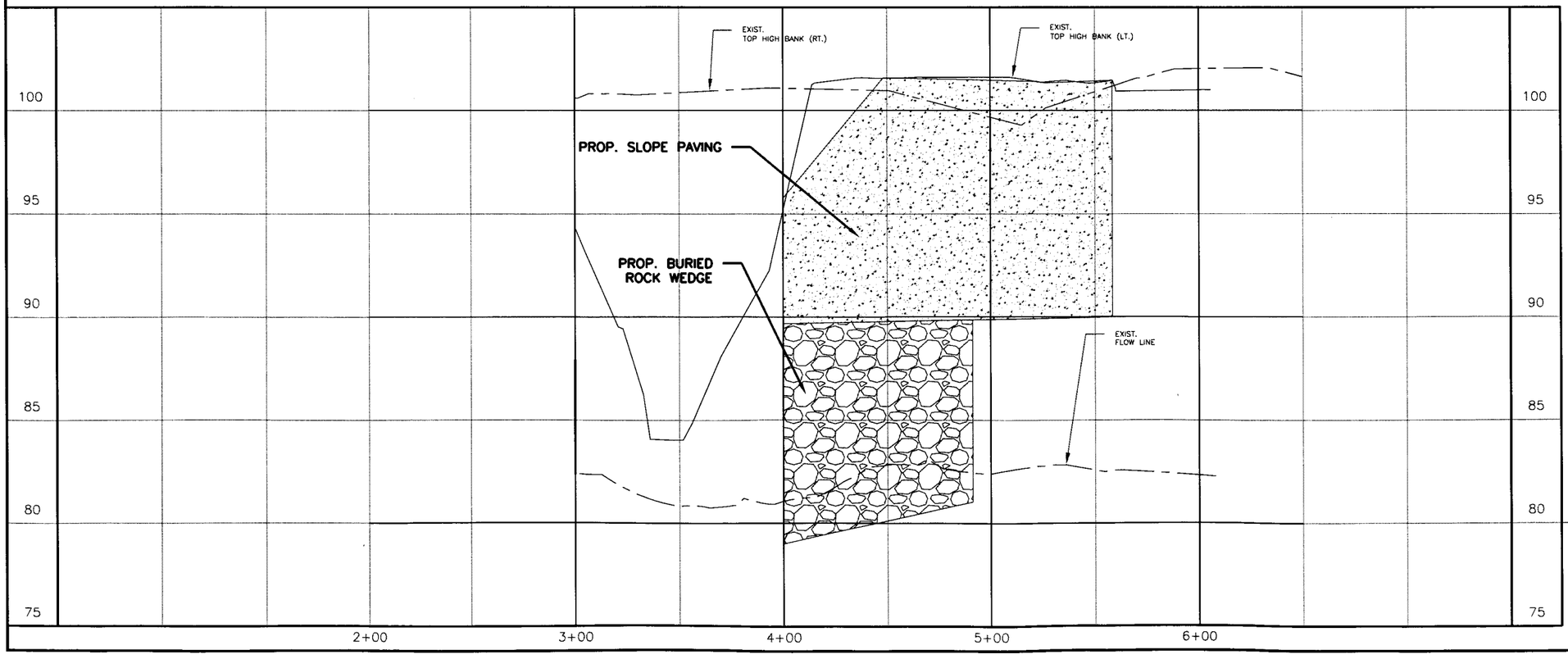
SCHAUMBURG & POLK, LLC
HOUSTON BEAUMONT AUSTIN
11767 KATY FREEWAY, SUITE 900
HOUSTON, TEXAS 77079-1779
281 920 0487

HARRIS COUNTY FLOOD CONTROL DISTRICT
9900 NORTHWEST FREEWAY
HOUSTON, TX 77092
713-684-4000

DATE: APRIL 2012
SCALE: 1"=60' H
1"=6' V

SHEET NUMBER
8 OF 21





ERIN L. KNESEK 95616 LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
Erin L. Knesek 9/12/12

REVISION	DESCRIPTION	DATE	APPR

HCFCD PROJECT ID# E127-00-00-X005

DROP STRUCTURE AND EROSION REPAIRS

PLAN AND PROFILE E100
STA 1+70 TO END

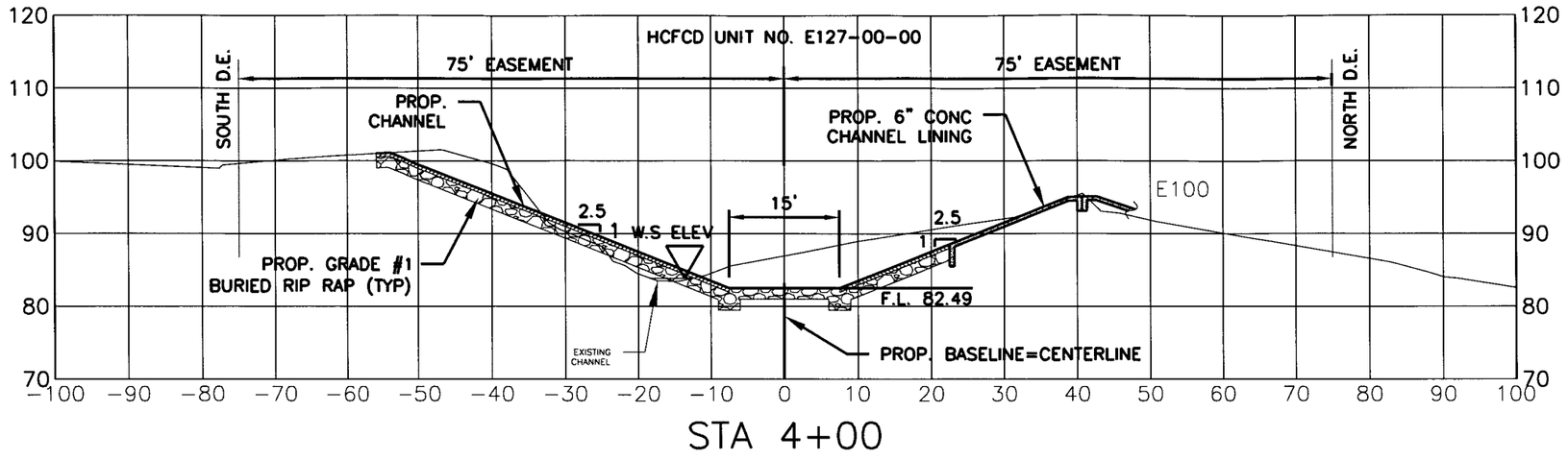
PREPARED: JCN | CHECKED: MCD | APPROVED: EK

SCHAUMBURG & POLK, LLC
BEAUMONT • HOUSTON • SAN ANTONIO • TYLER
11767 KATY FREEWAY, SUITE 800
HOUSTON, TEXAS 77079-1779
281 920 0467

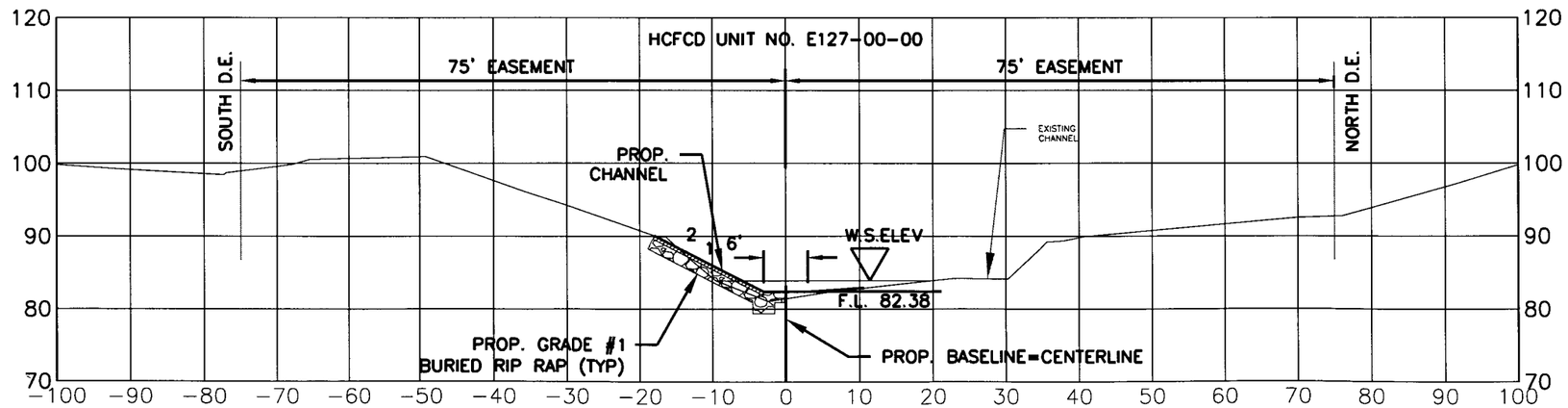
HARRIS COUNTY FLOOD CONTROL DISTRICT
9900 NORTHWEST FREEWAY
HOUSTON, TX 77092
713-684-4000

DATE: APRIL 2012
SCALE: 1"=60' H
1"=6' V

SHEET NUMBER
9 OF 21



STA 4+00



STA 3+00

NOTE:
1. ALL CROSS-SECTIONS ARE TAKEN LOOKING UPSTREAM.

STATION	DIST IN FEET	CUT (SF) END AREA	CUT (SF) DOUBLE END AREA	FILL (SF) END AREA	FILL (SF) DOUBLE END AREA	CUT (CY)	FILL (CY)
3+00		0.00		26.28			
	100		88.06		38.51	326.13	142.63
4+00		176.11		50.74			
					SHEET TOTAL	326.13	142.63
					CUMULATIVE TOTAL	326.13	142.63

STATE OF TEXAS
ERIN L. KNESEK
96616
LICENSED PROFESSIONAL ENGINEER

9/13/12

HORIZONTAL SCALE 1"=20'

VERTICAL SCALE 1"=20'

REV#	DESCRIPTION	DATE	APPR

HCFCD PROJECT ID# E127-00-00-X005

DROP STRUCTURE AND EROSION REPAIRS

E127 CROSS SECTIONS STA 3+00 AND STA 4+00

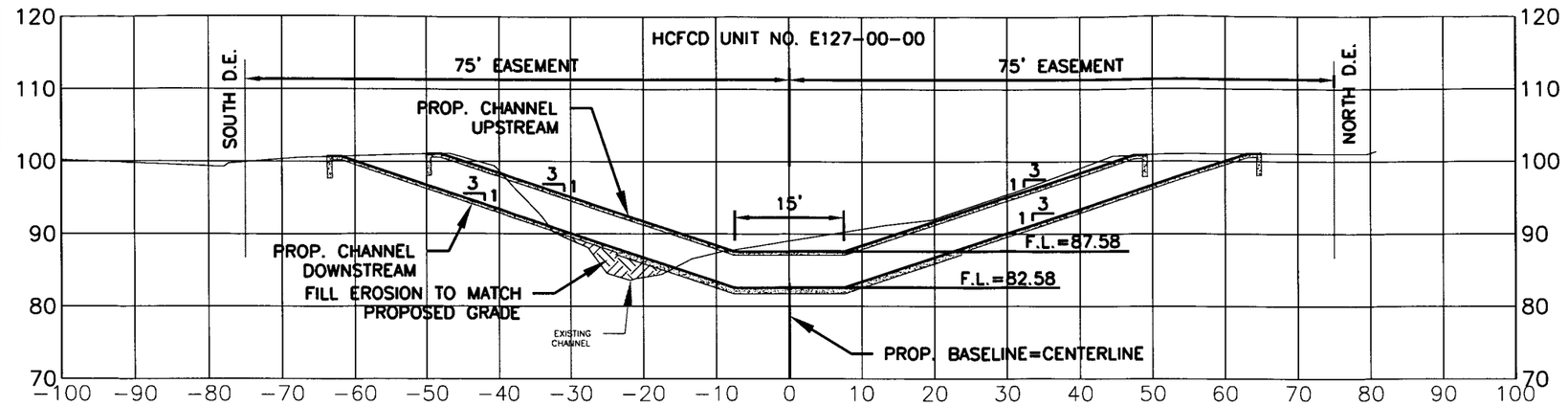
PREPARED: JCN | CHECKED: MCD | APPROVED: EK

SCHAUMBURG & POLK, LLC
HOUSTON • BEAUMONT • AUSTIN
11767 KATY FREEWAY, SUITE 800
HOUSTON, TEXAS 77079-1779
281 920 0487

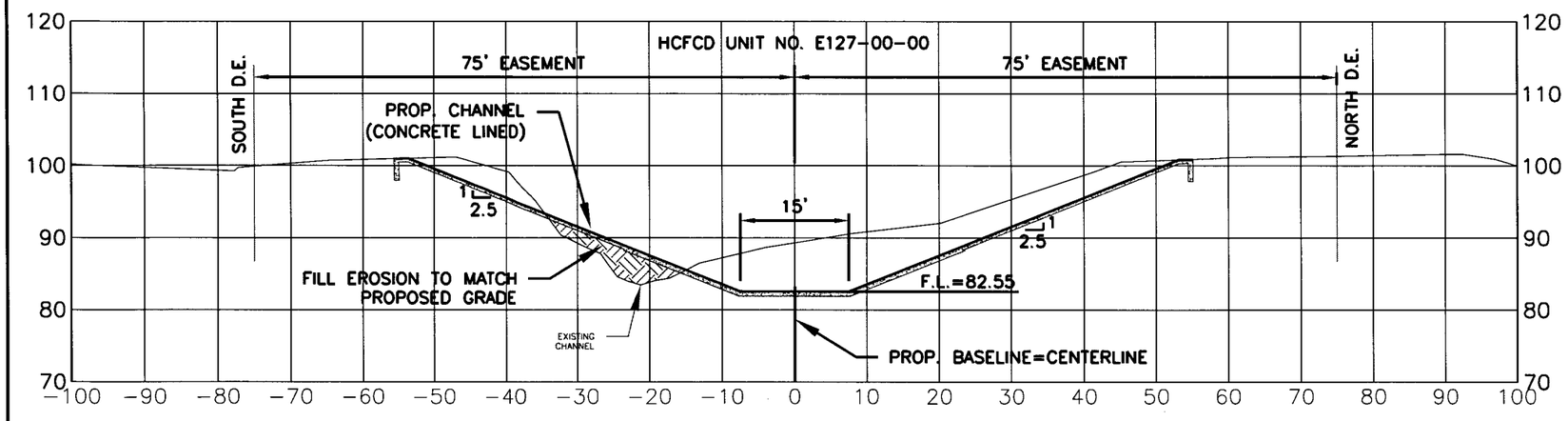
HARRIS COUNTY FLOOD CONTROL DISTRICT
9900 NORTHWEST FREEWAY
HOUSTON, TX 77092
713-684-4000

DATE: APRIL 2012
SCALE: 1"=20' H
1"=2' V

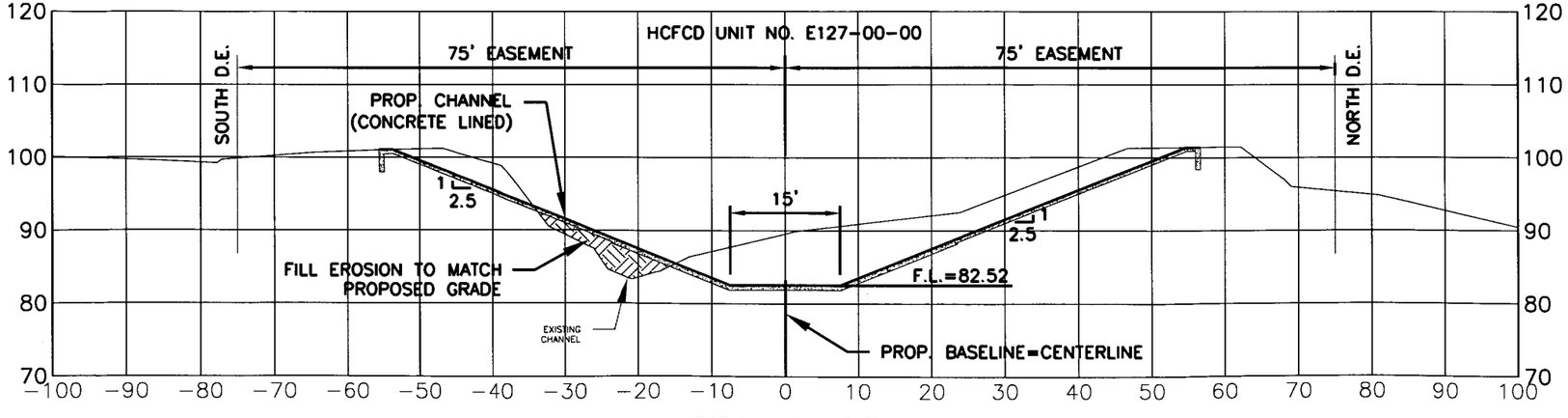
SHEET NUMBER
10 OF 21



STA 4+75 – DROP STRUCTURE



STA 4+50



STA 4+25

HORIZONTAL SCALE 1"=20'

VERTICAL SCALE 1"=20'

NOTE:
1. ALL CROSS-SECTIONS ARE TAKEN LOOKING UPSTREAM.

STATION	DIST IN FEET	CUT (SF) END AREA	CUT (SF) DOUBLE END AREA	FILL (SF) END AREA	FILL (SF) DOUBLE END AREA	CUT (CY)	FILL (CY)
4+00		176.11		50.74			
	25		243.73		56.11	225.67	51.95
4+25		311.34		61.47			
	25		309.65		62.76	286.71	58.11
4+50		307.95		64.04			
	25		373.95		54.49	346.25	50.45
4+75		439.94		44.93			
					SHEET TOTAL	858.63	160.50
					CUMULATIVE TOTAL	1184.75	303.13

ERIN L. KNESEK
96616
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
9/13/12

REV#	DESCRIPTION	DATE	APPR

HCFCD PROJECT ID# E127-00-00-X005

DROP STRUCTURE AND EROSION REPAIRS

E127 CROSS SECTIONS
STA 4+25, STA 4+50 AND STA 4+75

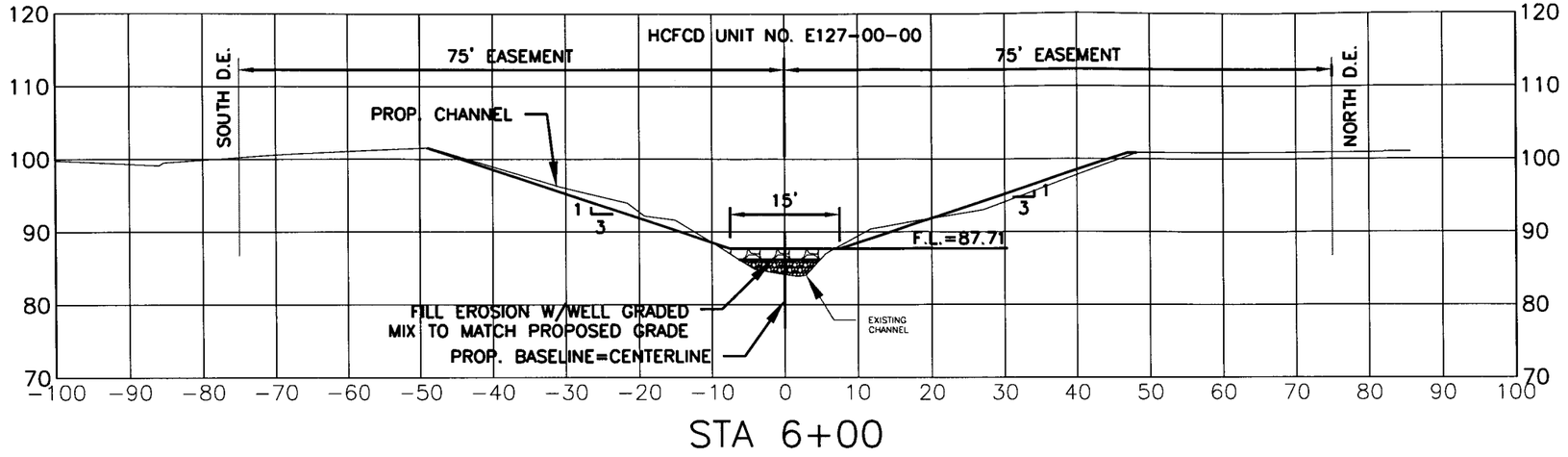
PREPARED: JCN
CHECKED: MCD
APPROVED: ELK

SCHAUMBURG & POLK, LLC
HOUSTON • BEAUMONT • AUSTIN • TYLER
11767 KATY FREEWAY, SUITE 800
HOUSTON, TEXAS 77079-1779
281.920.0467

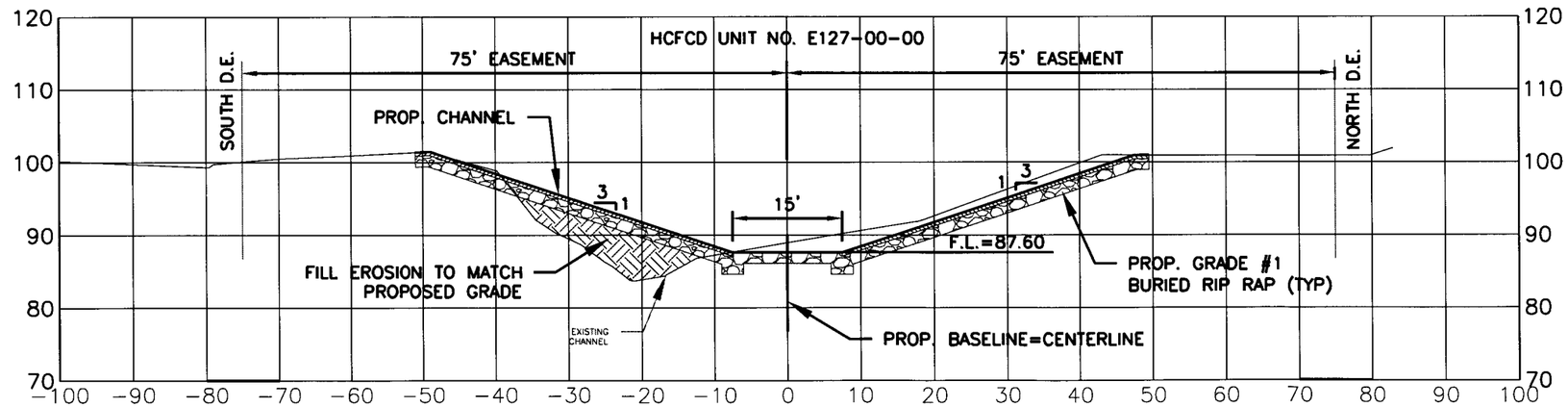
HARRIS COUNTY FLOOD CONTROL DISTRICT
9900 NORTHWEST FREEWAY
HOUSTON, TX 77092
713-684-4000

DATE: APRIL 2012
SCALE: 1"=20' H
1"=2' V

SHEET NUMBER
11 OF 21



STA 6+00



STA 5+00

NOTE:
1. ALL CROSS-SECTIONS ARE TAKEN LOOKING UPSTREAM.

STATION	DIST IN FEET	CUT (SF) END AREA	CUT (SF) DOUBLE END AREA	FILL (SF) END AREA	FILL (SF) DOUBLE END AREA	CUT (CY)	FILL (CY)
4+75		31.56		171.82			
	25		39.54		171.74	36.61	159.02
5+00		47.52		171.66			
	100		30.95		124.70	114.61	461.85
6+00		14.37		77.74			
					SHEET TOTAL	151.22	620.87
					CUMULATIVE TOTAL	1335.98	924.00

Erin L. Knesek 7/13/12

HORIZONTAL SCALE 1"=20'

VERTICAL SCALE 1"=20'

REV#	DESCRIPTION	DATE	APPR

HCFCD PROJECT ID# E127-00-00-X005

DROP STRUCTURE AND EROSION REPAIRS

E127 CROSS SECTIONS STA 5+00 AND STA 6+00

PREPARED: JCN | CHECKED: MCD | APPROVED: ELK

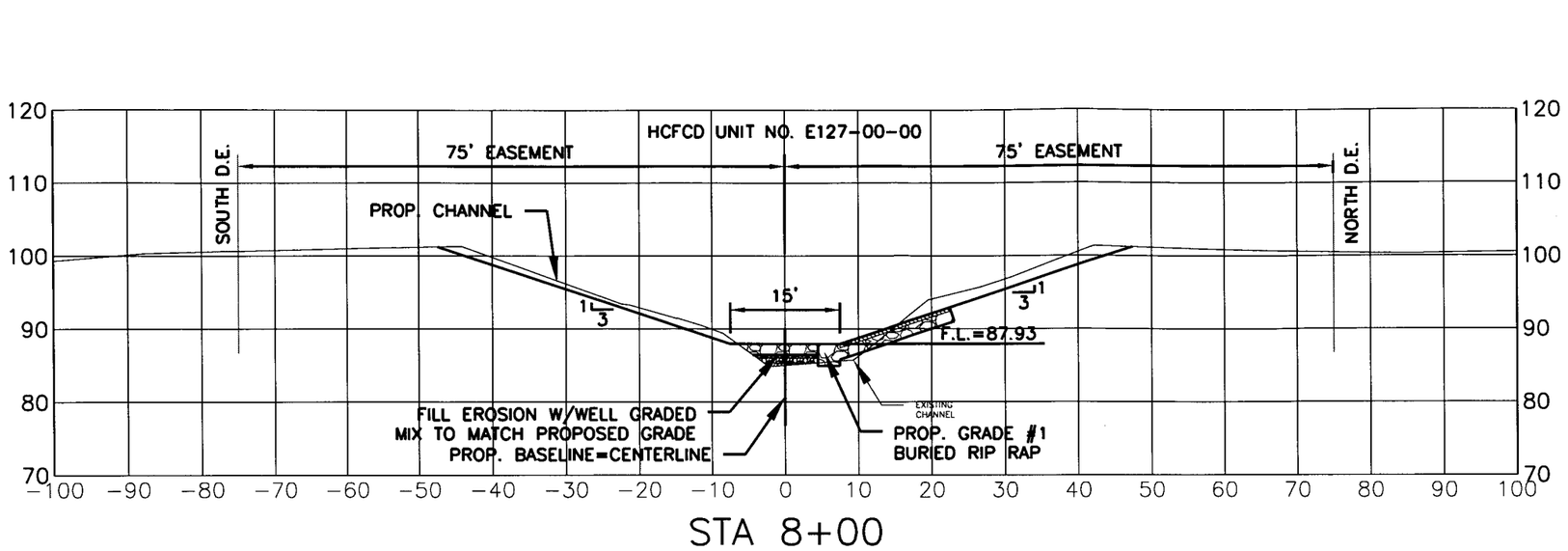
SCHAUMBURG & POLK, INC.
BEAUMONT • HOUSTON • TYLER
11767 KATY FREEWAY, SUITE 800
HOUSTON, TEXAS 77079-1779
281. 920. 0487

HARRIS COUNTY FLOOD CONTROL DISTRICT

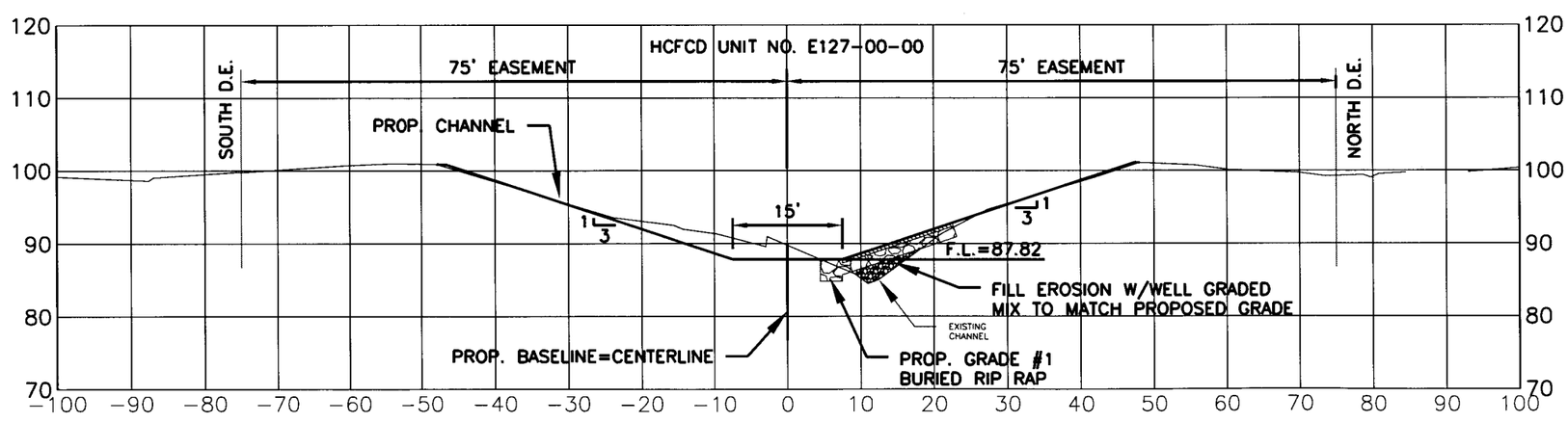
9900 NORTHWEST FREEWAY
HOUSTON, TX 77092
713-684-4000

DATE: APRIL 2012
SCALE: 1"=20' H
1"=2' V

SHEET NUMBER
12 OF 21



STA 8+00



STA 7+00

STATION	DIST IN FEET	CUT (SF) END AREA	CUT (SF) DOUBLE END AREA	FILL (SF) END AREA	FILL (SF) DOUBLE END AREA	CUT (CY)	FILL (CY)
6+00		14.37		77.74			
	100		26.68		77.79	98.80	288.09
7+00		38.98		77.83			
	100		42.15		65.79	156.09	243.65
8+00		45.31		53.74			
					SHEET TOTAL	254.89	531.74
					CUMULATIVE TOTAL	1590.87	1455.75

NOTE:
1. ALL CROSS-SECTIONS ARE TAKEN LOOKING UPSTREAM.

HORIZONTAL SCALE 1"=20'

VERTICAL SCALE 1"=20'

STATE OF TEXAS
ERIN L. KNESEK
96616
LICENSED
PROFESSIONAL ENGINEER

Erin L. Knesek 9/13/12

REV#	DESCRIPTION	DATE	APPR

HCFCD PROJECT ID# E127-00-00-X005

DROP STRUCTURE AND EROSION REPAIRS

E127 CROSS SECTIONS STA 7+00 AND 8+00

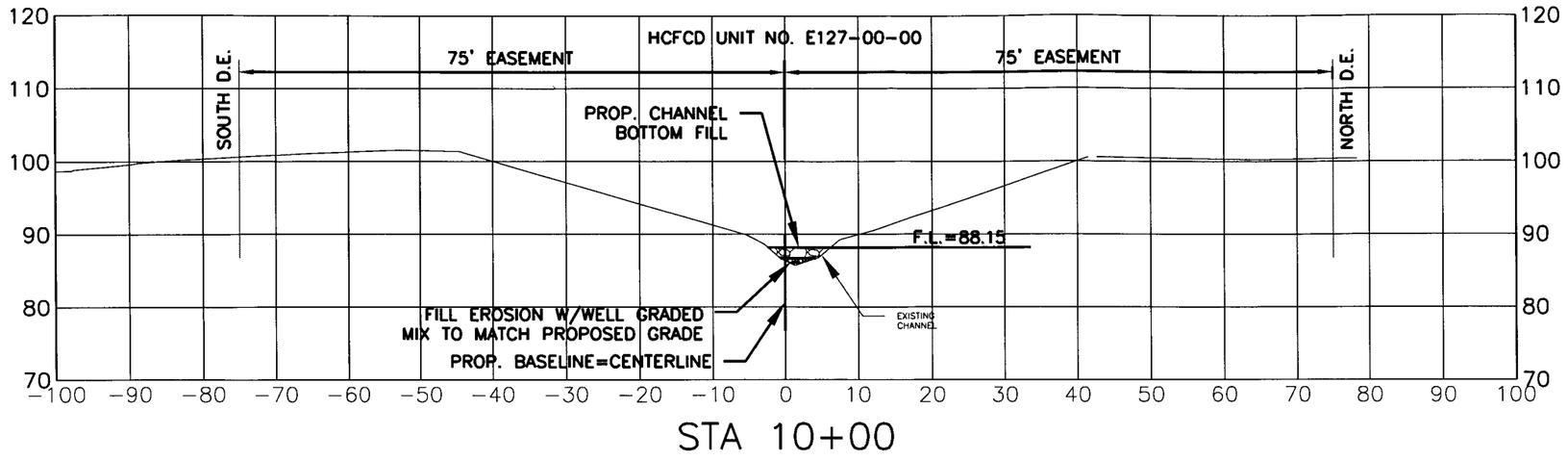
PREPARED: JCN | CHECKED: MCD | APPROVED: ELK

SCHAUMBURG POLK, INC.
BEAUMONT • HOUSTON • AUSTIN
11767 KATY FREEWAY, SUITE 800
HOUSTON, TEXAS 77079-1779
281. 920. 0467

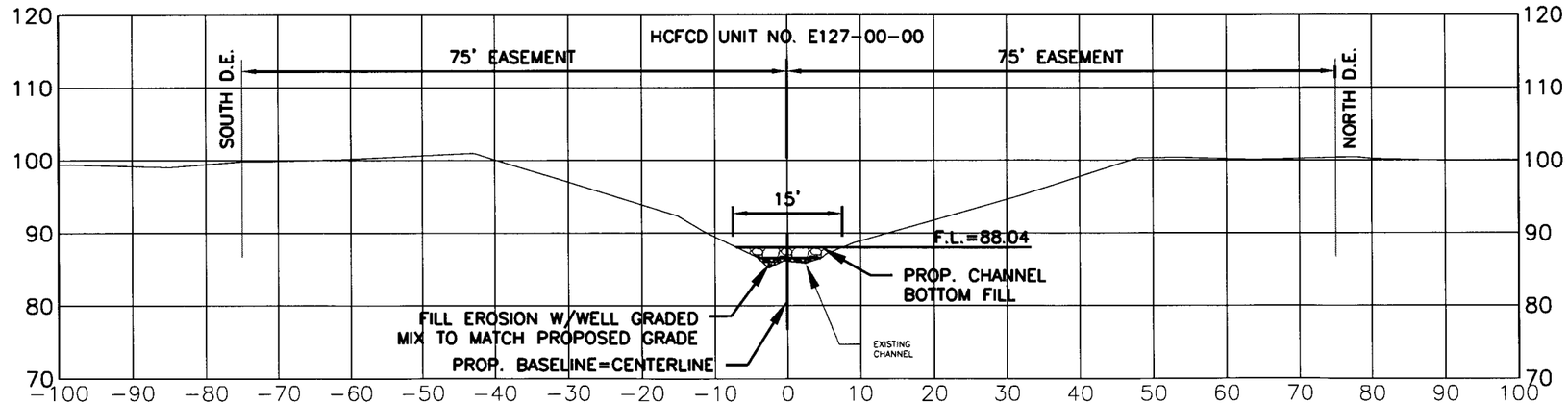
HARRIS COUNTY FLOOD CONTROL DISTRICT
9900 NORTHWEST FREEWAY
HOUSTON, TX 77092
713-684-4000

DATE: APRIL 2012
SCALE: 1"=20' H
1"=2' V

SHEET NUMBER
13 OF 21



STA 10+00



STA 9+00

STATION	DIST IN FEET	CUT (SF) END AREA	CUT (SF) DOUBLE END AREA	FILL (SF) END AREA	FILL (SF) DOUBLE END AREA	CUT (CY)	FILL (CY)
8+00		45.31		53.74			
	100		22.66		40.12	83.91	148.59
9+00		0.00		26.50			
	100		0.00		20.26	0.00	75.04
10+00		0.00		14.02			
					SHEET TOTAL	83.91	223.63
					CUMULATIVE TOTAL	1674.77	1679.38

NOTE:
1. ALL CROSS-SECTIONS ARE TAKEN LOOKING UPSTREAM.

HORIZONTAL SCALE 1"=20'

VERTICAL SCALE 1"=20'

REV#	DESCRIPTION	DATE	APPR

HCFCD PROJECT ID# E127-00-00-X005

DROP STRUCTURE AND EROSION REPAIRS

E127 CROSS SECTIONS STA 9+00 AND 10+00

PREPARED: JCN | CHECKED: MCD | APPROVED: ELK

SCHAUMBURG POLK, BEAUMONT • HOUSTON • TYLER
11767 KATY FREEWAY, SUITE 900
HOUSTON, TEXAS 77079-1779
281 920 0487

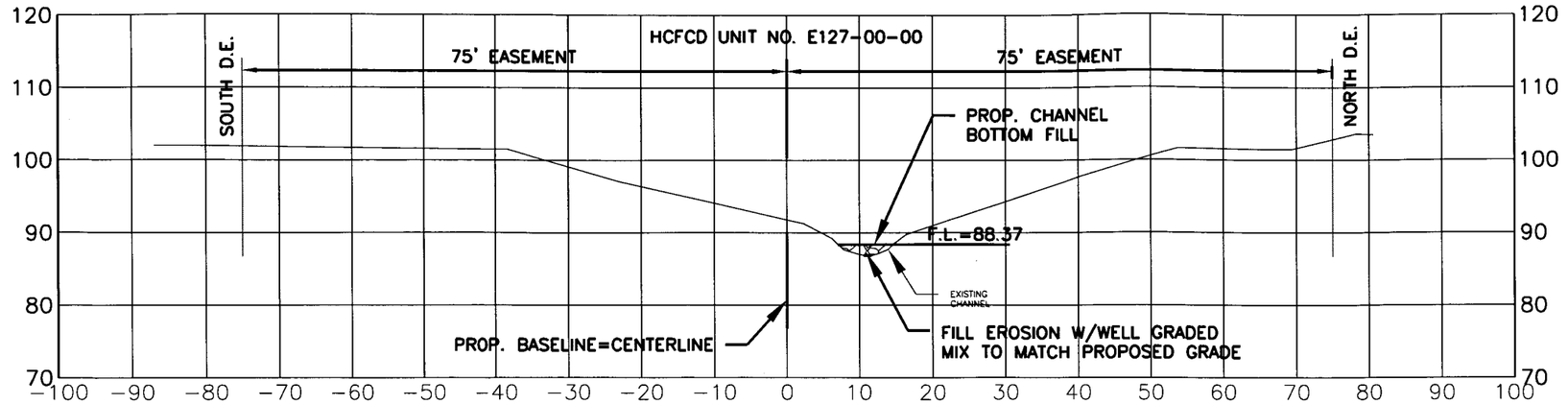
HARRIS COUNTY FLOOD CONTROL DISTRICT
9900 NORTHWEST FREEWAY
HOUSTON, TX 77092
713-684-4000

DATE: APRIL 2012
SCALE: 1"=20' H
1"=2' V

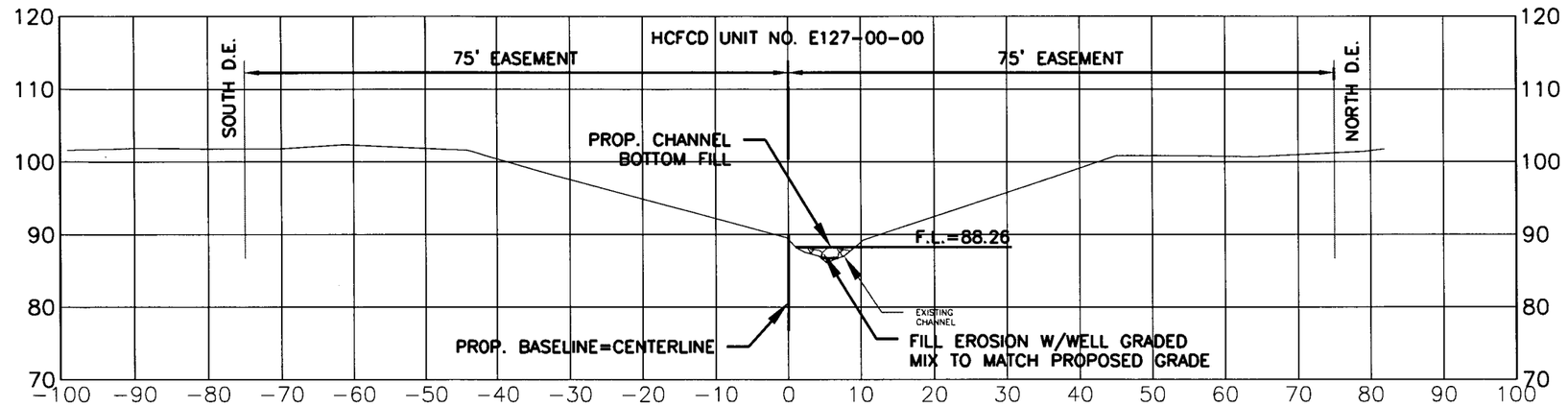
SHEET NUMBER
14 OF 21

STATE OF TEXAS
ERIN L. KNESEK
96616
LICENSED PROFESSIONAL ENGINEER

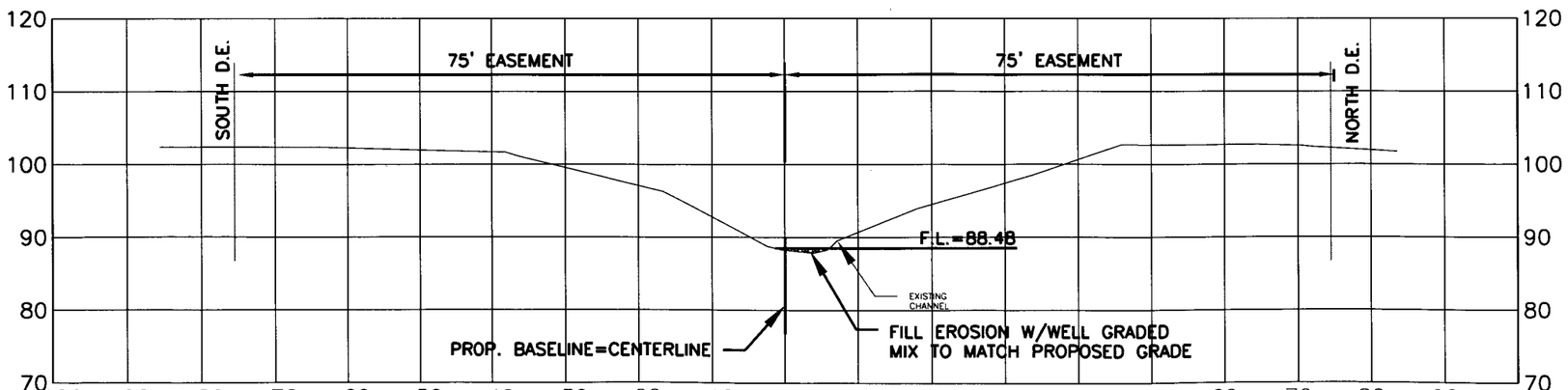
9/12/12



STA 12+00



STA 11+00



STA 13+00

HORIZONTAL SCALE 1"=20'

VERTICAL SCALE 1"=20'

NOTE:
1. ALL CROSS-SECTIONS ARE TAKEN LOOKING UPSTREAM.

STATION	DIST IN FEET	CUT (SF) END AREA	CUT (SF) DOUBLE END AREA	FILL (SF) END AREA	FILL (SF) DOUBLE END AREA	CUT (CY)	FILL (CY)
10+00		0.00		14.02			
	100		0.00		13.19	0.00	48.83
11+00		0.00		12.35			
	100		0.00		14.22	0.00	52.67
12+00		0.00		16.09			
	100		0.00		9.41	0.00	34.85
13+00		0.00		2.73			
					SHEET TOTAL	0.00	136.35
					CUMULATIVE TOTAL	1674.77	1815.73

STATE OF TEXAS
ERIN L. KNESEK
96616
LICENSED PROFESSIONAL ENGINEER

E. J. Knesek 9/13/12

REV#	DESCRIPTION	DATE	APPR

HCFCD PROJECT ID# E127-00-00-X005

DROP STRUCTURE AND EROSION REPAIRS

E127 CROSS SECTIONS
STA 11+00, 12+00 AND 13+00

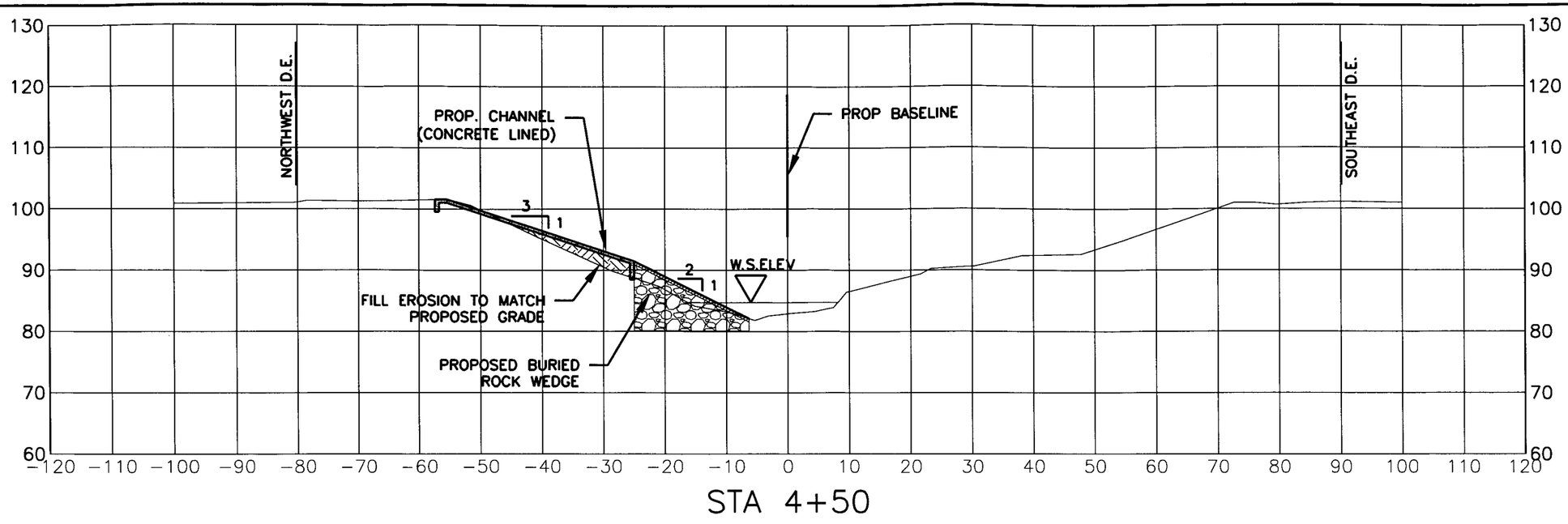
PREPARED: JCN | CHECKED: MCD | APPROVED: ELK

SCHAUMBURG & POLK, INC.
ENGINEERS • HOUSTON • TYLER
11767 KATY FREEWAY, SUITE 900
HOUSTON, TEXAS 77079-1779
281.920.0487

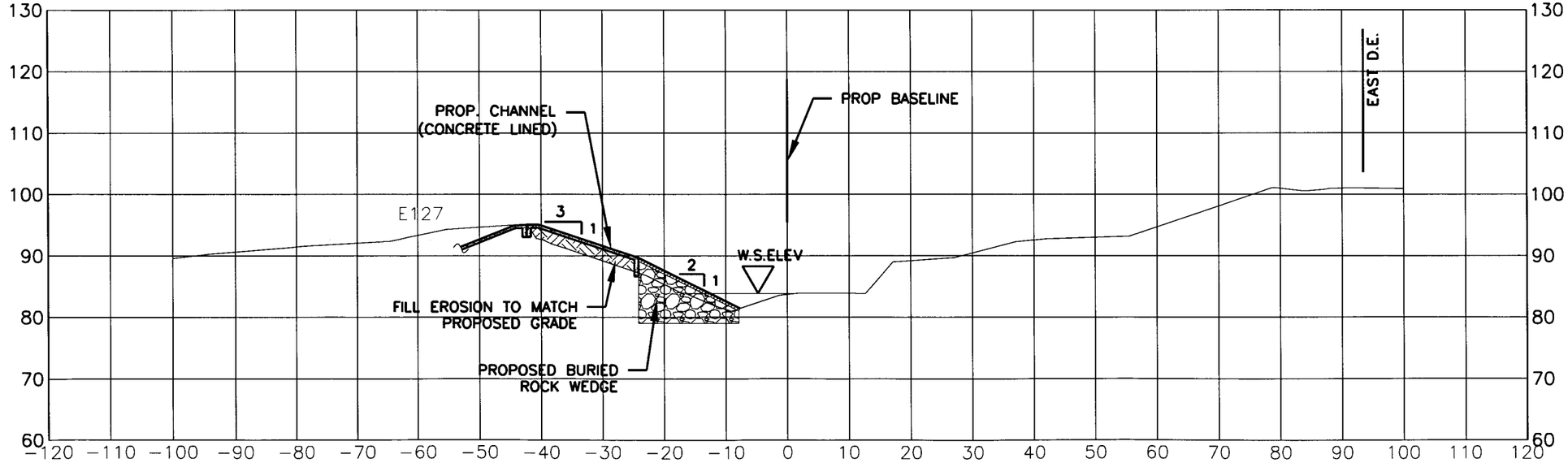
HARRIS COUNTY FLOOD CONTROL DISTRICT
9900 NORTHWEST FREEWAY
HOUSTON, TX 77092
713-684-4000

DATE: APRIL 2012
SCALE: 1"=20' H
1"=2' V

SHEET NUMBER
15 OF 21



STA 4+50



STA 4+00

STATION	DIST IN FEET	CUT (SF) END AREA	CUT (SF) DOUBLE END AREA	FILL (SF) END AREA	FILL (SF) DOUBLE END AREA	CUT (CY)	FILL (CY)
3+50		0.00		0.00			
	50		0.00		36.51	0.00	67.60
4+00		0.00		73.01			
	50		1.25		72.92	2.31	135.04
4+50		2.49		72.83			
					SHEET TOTAL	2.31	202.64
					CUMULATIVE TOTAL	2.31	202.64

0 10' 20'
HORIZONTAL SCALE 1"=20'

VERTICAL SCALE 1"=20'

REV#	DESCRIPTION	DATE	APPR

HCFCD PROJECT ID# E127-00-00-X005

DROP STRUCTURE AND EROSION REPAIRS

E100 CROSS SECTIONS STA 4+00 AND STA 4+50

PREPARED: JCN | CHECKED: MCD | APPROVED: EK

SCHAUMBURG & POLK, LLC
BEAUMONT • HOUSTON • TYLER
11767 KATY FREEWAY, SUITE 900
HOUSTON, TEXAS 77079-1779
281.920.0487

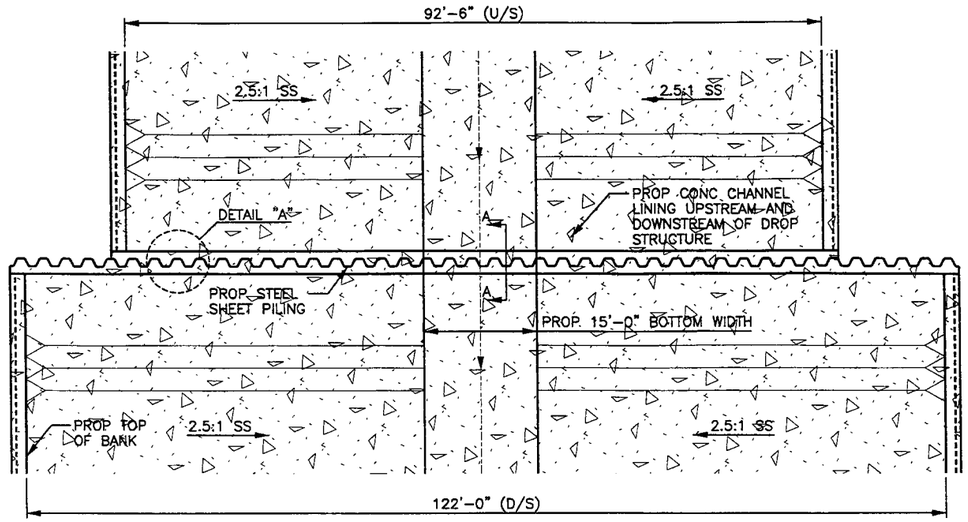
HARRIS COUNTY FLOOD CONTROL DISTRICT
9900 NORTHWEST FREEWAY
HOUSTON, TX 77092
713-684-4000

DATE: APRIL 2012
SCALE: 1"=20' H
1"=2' V

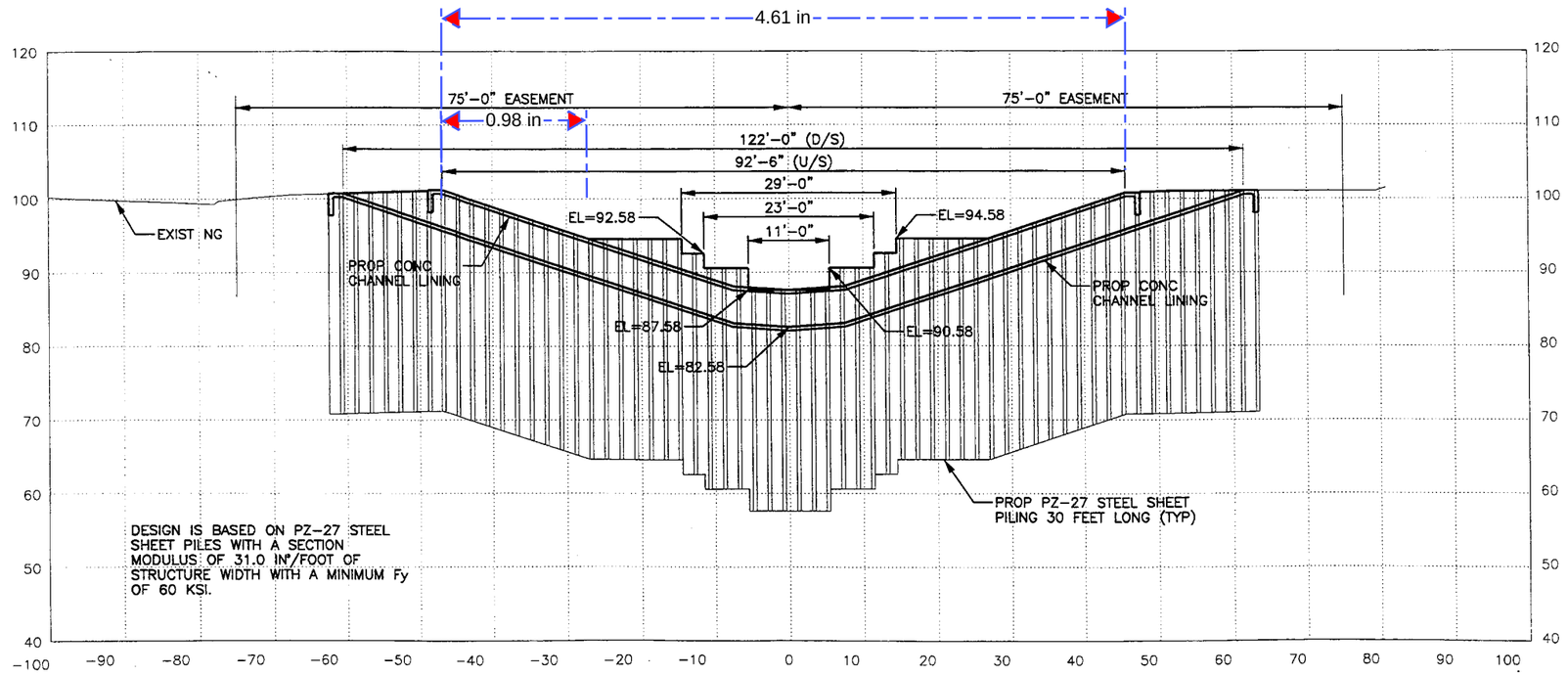
SHEET NUMBER
16 OF 21

STATE OF TEXAS
ERIN L. KNESEK
96616
LICENSED PROFESSIONAL ENGINEER

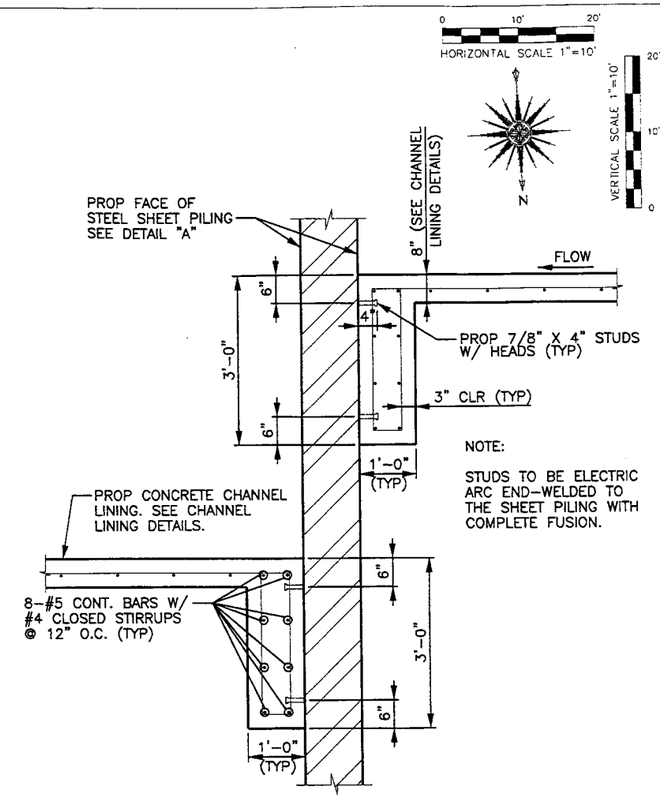
9/13/12



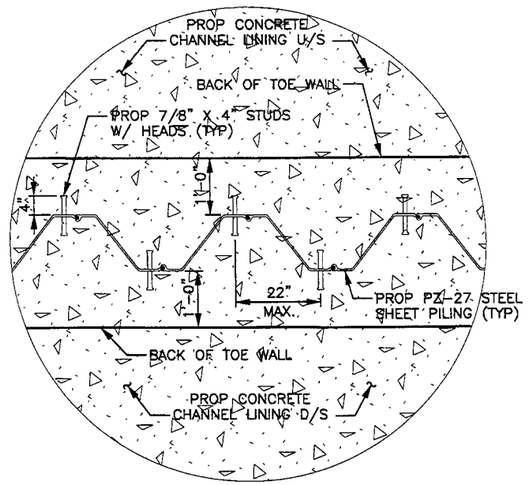
PLAN
STA 4+75 STRAIGHT DROP STRUCTURE
SCALE: 1"=10'



ELEVATION
STA 4+75 STRAIGHT DROP STRUCTURE
SCALE: 1"=10'



SECTION "A-A"
SCALE: NTS



DETAIL "A"
SCALE: NTS

REV	DESCRIPTION	DATE	APPR

PROJECT ID# E127-00-00X005
DROP STRUCTURE AND EROSION REPAIRS
DROP STRUCTURE DETAIL
STA 4+75

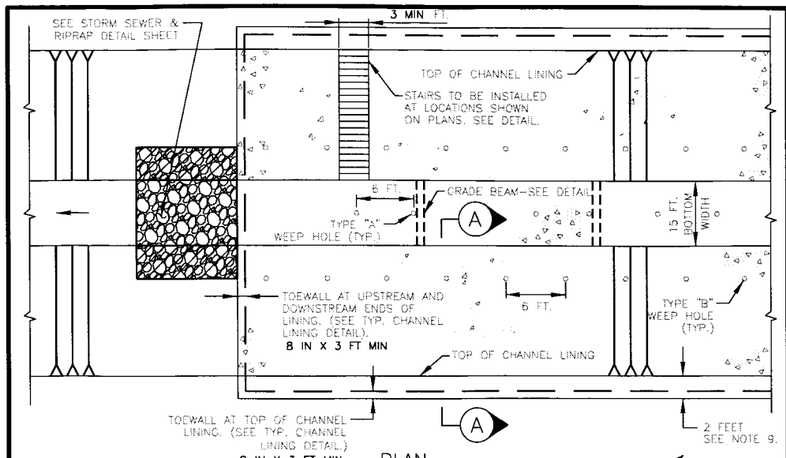
PREPARED: TJH
CHECKED: KWB
APPROVED: TJH

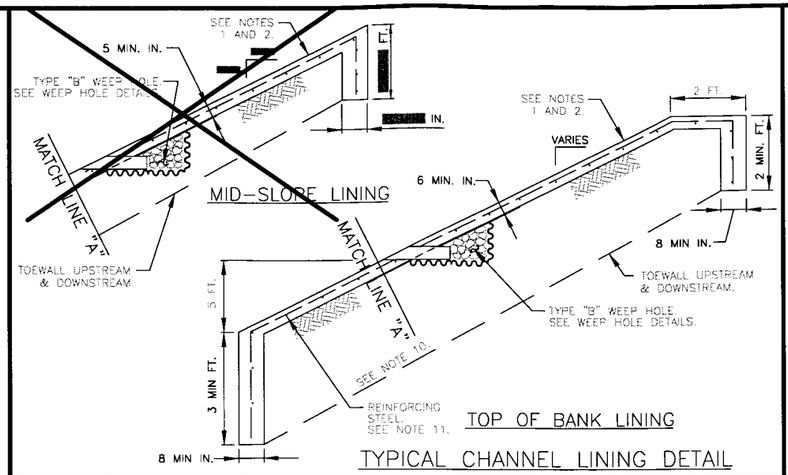
H2B, INC.
Texas Firm Registration No. 8856
1225 N Loop W, Suite 900
HOUSTON, TX 77008
713.864.2900

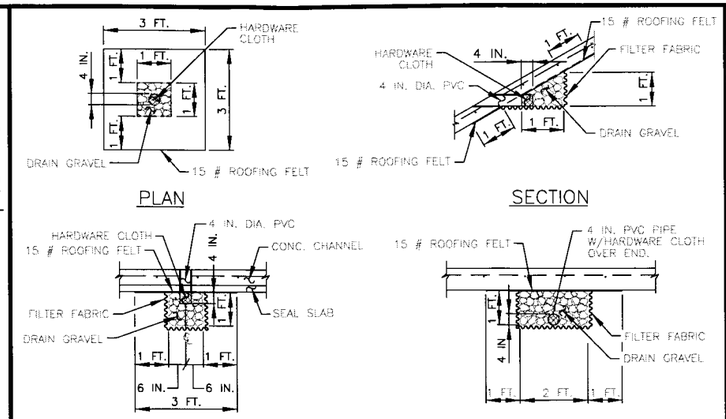
HARRIS COUNTY FLOOD CONTROL DISTRICT
9900 NORTHWEST FREEWAY
HOUSTON, TX 77092
713-684-4000

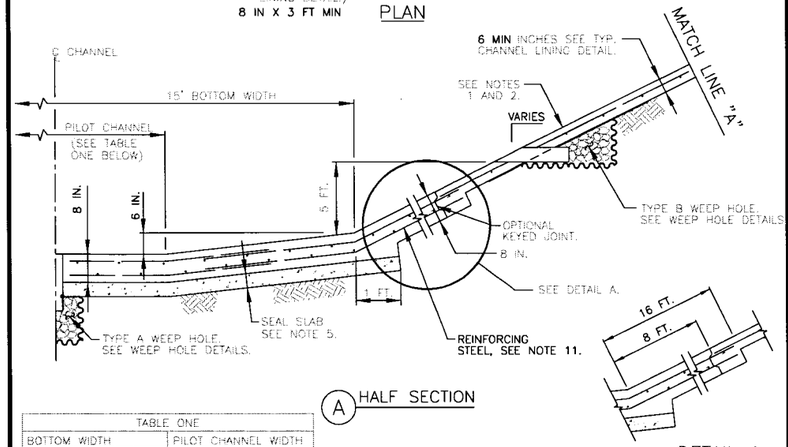
DATE: SEPT 2012
SCALE: 1"=10'

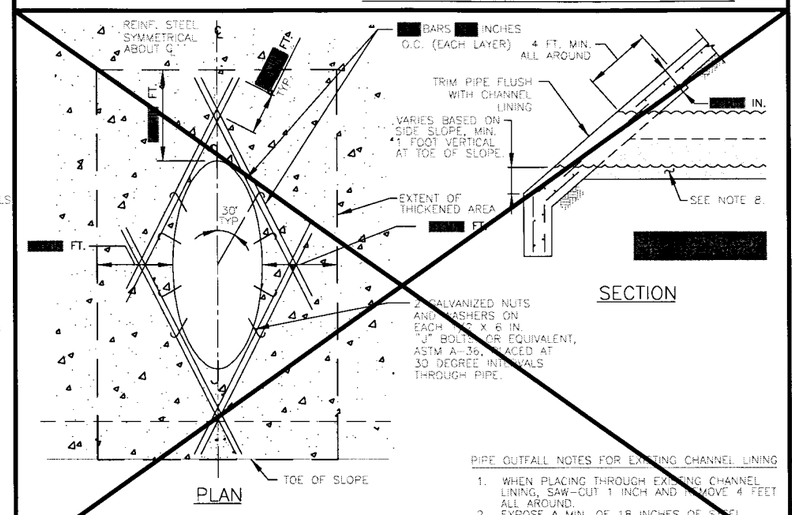
SHEET NUMBER
17 OF 21

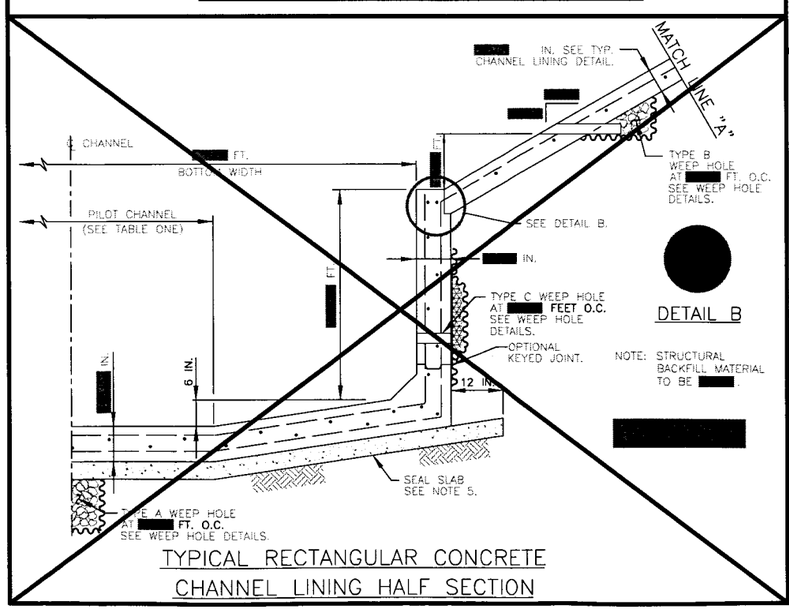


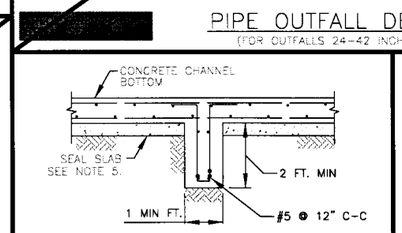


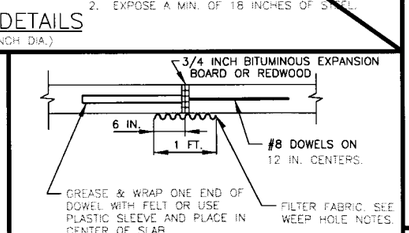


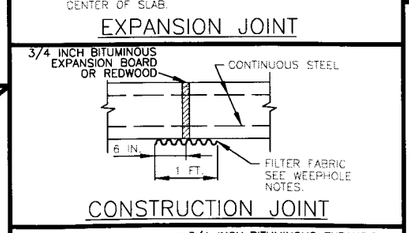


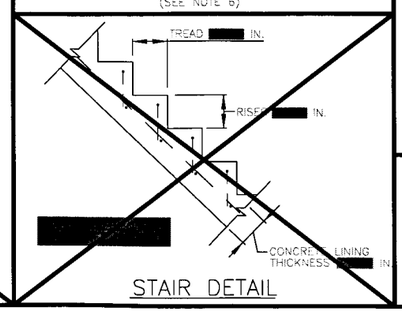












WEEP HOLE NOTES:

1. MATERIALS:
   a. PIPE: 4 INCH DIA. SCH. 40 PVC
   b. DRAIN GRAVEL:

SIEVE SIZE	% FINER
1 IN	100
3/4 IN	70 – 100
3/8 IN	20 – 90
NO. 4	0 – 60
NO. 8	0

   c. HARDWARE CLOTH: MIN. OPEN 1/8 IN, MAX. OPEN 1/4 IN
   d. FILTER FABRIC: NON-WOVEN GEOTEXTILE

MIN. AOS	SIEVE NO.	100 MIN
MAX. AOS	SIEVE NO.	70 MAX
WEIGHT	OZ/SY	6 OZ. MIN

2. CUT WEEP HOLE PIPE FLUSH WITH CONCRETE SURFACE.
3. TYPE "A" AND "C" WEEP HOLES FOR TYPICAL RECTANGULAR CONCRETE CHANNEL LINING, TO BE STAGGERED.

WEEP HOLE DETAILS

GENERAL NOTES:

1. STRUCTURAL CONCRETE FOR CONCRETE CHANNEL LINING AND NONSTRUCTURAL CONCRETE FOR SEAL SLAB SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION NO. 03310–CONCRETE.
2. REINFORCING STEEL SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION NO. 03310–CONCRETE.
3. EXCAVATION AND BACKFILL FOR CONCRETE CHANNEL LINING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION NO. 02316–STRUCTURAL EXCAVATING AND BACKFILLING.
4. RIPRAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION NO. 02378–RIPRAP AND GRANULAR FILL.
5. A NON–REINFORCED 4 INCH NONSTRUCTURAL CONCRETE SEAL SLAB WILL BE REQUIRED BENEATH THE BOTTOM OF CONCRETE CHANNELS.
6. STRUCTURAL CONCRETE GRADE BEAMS SHALL BE INSTALLED TRANSVERSLEY AT 20 FOOT MAX. CENTERS ON CONCRETE LINED CHANNELS WITH BOTTOM WIDTHS EQUAL TO OR GREATER THAN 20 FEET.
7. JOINTS:
   A. PLACE CONSTRUCTION AND/OR EXPANSION JOINT IN CONCRETE LOW–FLOW AND TRAPEZOIDAL BOTTOM SECTIONS AT 20 FOOT MIN., 60 FOOT MAX. SPACING CONTINUOUSLY THROUGH CHANNEL LINING.
   B. PLACE CONTROL JOINT ON SLOPES AT 20 FOOT SPACING.
8. CEMENT STABILIZED SAND SHALL BE PROVIDED AND PLACED IN ACCORDANCE WITH SPECIFICATION SECTION NO. 02321–CEMENT STABILIZED SAND.
9. DELETE 2 FT. FLAT EDGE WHEN LINING IS BELOW TOP OF BANK, SEE MID–SLOPE LINING DETAIL.
10. UPSTREAM AND DOWNSTREAM TOE WALL 3 FOOT MIN. DEPTH AT BOTTOM OF SLOPE AND 8 INCHES THICK.
11. #5 AT 12 INCH O.C. E.W. (DOUBLE MAT FOR 8" LINING (3") CLR TOP AND 3" CLR BOTTOM) SINGLE MAT FOR 6" LINING CENTERED

THIS DETAIL SHEET HAS BEEN PREPARED FOR USE ON HCFCD PROJECTS OR PROJECTS TO BE MAINTAINED BY THE HCFCD WHEN COMPLETED BY OTHERS. AN ENGINEER WHO INCORPORATES THE DETAILS ON THIS SHEET BECOMES RESPONSIBLE FOR ITS USE IN THE END PRODUCT IN ACCORDANCE WITH RULE §137.33 (b) AND (c) OF THE TEXAS STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS.

P.E. SEAL AND SIGNATURE

STATE OF TEXAS · ERIN L. KNESEK · 95616 · LICENSED · PROFESSIONAL ENGINEER

Erin L. Knesek 9/18/12

REV	DESCRIPTION	DATE	APPR

HCFCD PROJECT ID# E127–00–00–X005

DROP STRUCTURE AND EROSION REPAIRS

CONCRETE CHANNEL LINING DETAILS

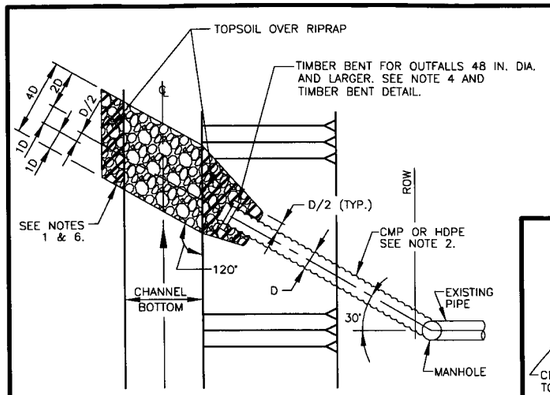
PREPARED: JCN | CHECKED: MCD | APPROVED: ELK

SCHAUMBURG & POLK, INC. HOUSTON TYLER
FIRM REGISTRATION NO. F-589
11767 KATY FREEWAY, SUITE 900
HOUSTON, TEXAS 77079-1779
281 920 0487

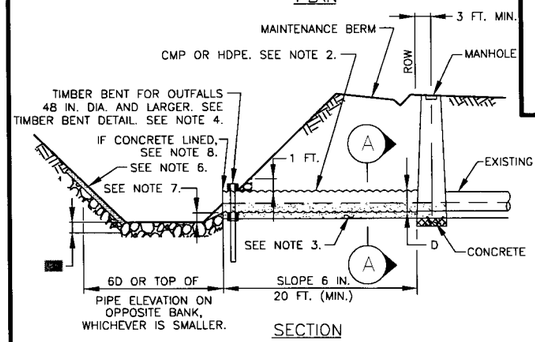
HARRIS COUNTY FLOOD CONTROL DISTRICT
9900 NORTHWEST FREEWAY
HOUSTON, TX 77092
713–684–4000

DATE: APRIL 2012
SCALE: NTS

SHEET NUMBER 18 OF 21

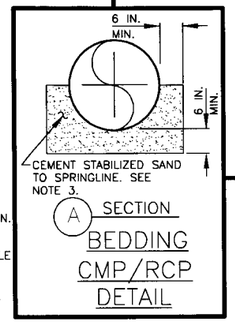


PLAN



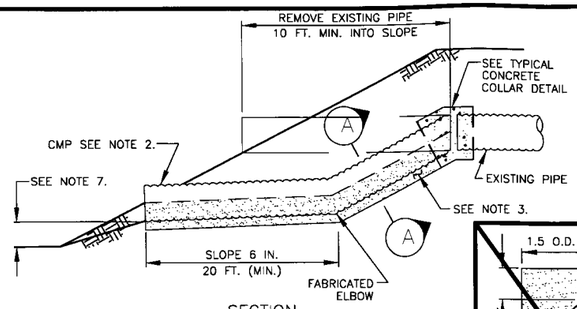
SECTION

TYPICAL STORM SEWER OUTFALL STRUCTURE LAYOUT



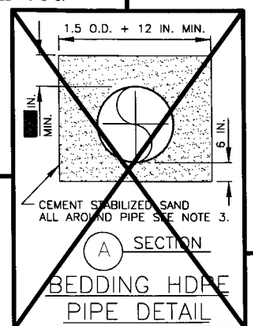
A SECTION

BEDDING CMP/RCP DETAIL



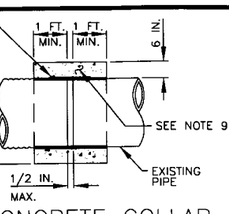
SECTION

PIPE ADJUSTMENT DETAIL 24-INCH TO 42-INCH DIAMETER

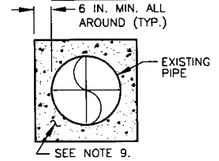


A SECTION

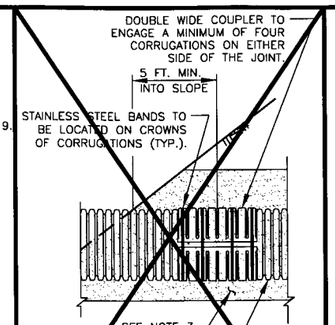
BEDDING HDPE PIPE DETAIL



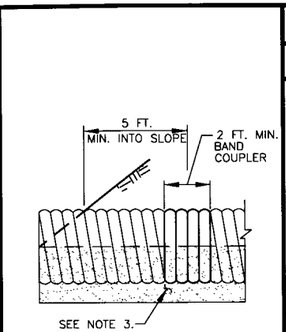
CONCRETE COLLAR DETAIL



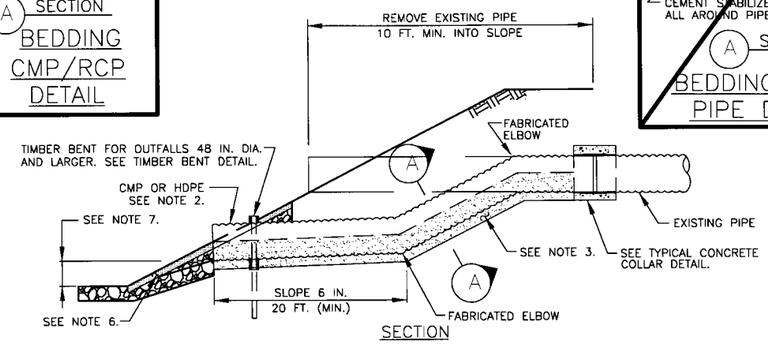
CONCRETE COLLAR DETAIL



HDPE PIPE BAND COUPLER DETAIL

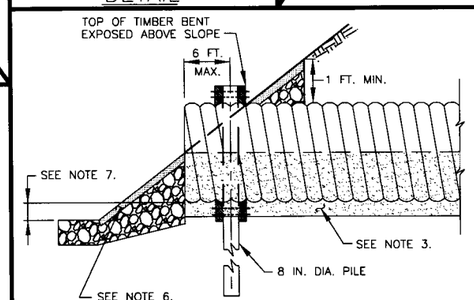


CMP BAND COUPLER DETAIL

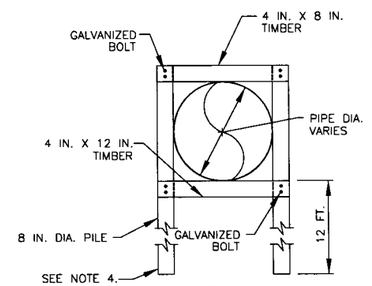


SECTION

PIPE ADJUSTMENT DETAIL 48-INCH AND LARGER DIAMETER

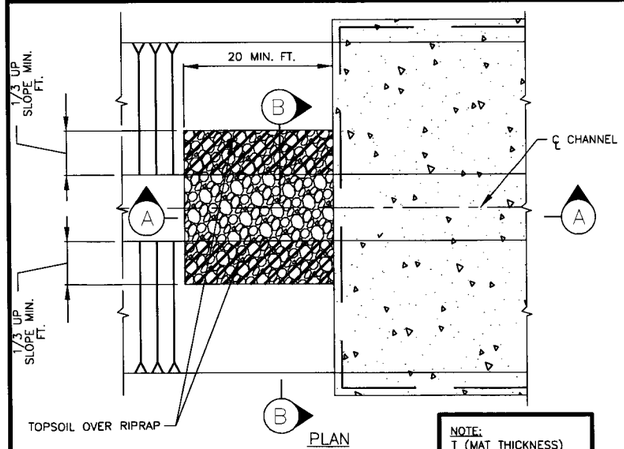


TYPICAL SECTION



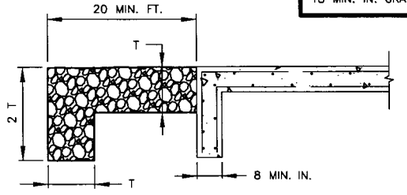
ELEVATION

TIMBER BENT DETAIL FOR 48-INCH AND LARGER OUTFALLS



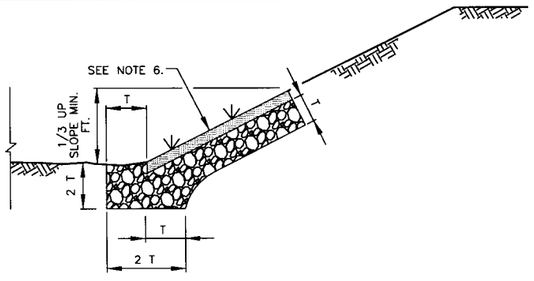
PLAN

NOTE:
T (MAT THICKNESS)
18 MIN. IN. GRADE 1

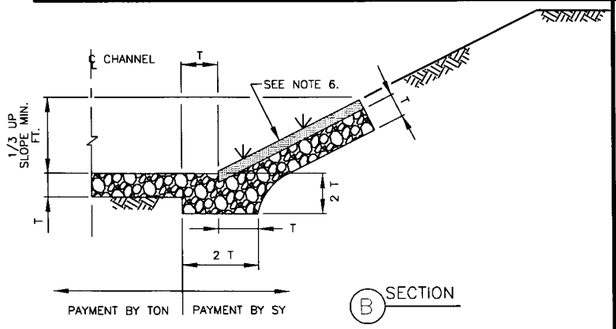


NOTE:
TOE-IN RIPRAP ACROSS CHANNEL BOTTOM & UP SLOPE. DO NOT PLACE TOE AGAINST CONCRETE.

A SECTION



TYPICAL RIPRAP LINING DETAIL-SIDE SLOPE ONLY



B SECTION

TYPICAL RIPRAP AT CONCRETE CHANNEL LINING

PIPE OUTFALL IN CHANNELS

BOTTOM WIDTH	PIPE OUTLET INVERT
6 FEET ≤ BW ≤ 20 FT	1 FOOT ABOVE FLOWLINE
20 FEET < BW ≤ 60 FT	AT TOE OF SLOPE
BW > 60 FT	AT TOE OF SLOPE

CORRUGATED GALVANIZED STEEL PIPE (TYPE I)

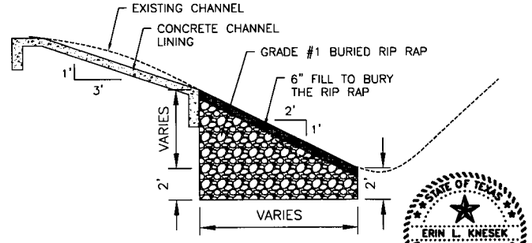
PIPE DIA. (in.)	MIN.FILL* (in.)	2-2/3" X 1/2" CORRUGATION SHEET THICKNESS gage	(in.)	(mm)	3" X 1" & 5" X 1" CORRUGATION MIN.FILL* (in.)	SHEET THICKNESS gage	(in.)	(mm)
24	12	16	.064	1.63	–	–	–	–
30	12	16	.064	1.63	–	–	–	–
36	12	16	.064	1.63	–	–	–	–
42	12	16	.064	1.63	12	16	.064	1.63
48	12	16	.064	1.63	12	16	.064	1.63
54	12	14	.079	2.01	12	16	.064	1.63
60	15	12	.109	2.77	12	16	.064	1.63
66	15	12	.109	2.77	15	16	.064	1.63
72	18	10	.138	3.51	15	16	.064	1.63
78	18	8	.168	4.27	18	16	.064	1.63
84	18	8	.168	4.27	18	14	.079	2.01
90	–	–	–	–	18	14	.079	2.01
96	–	–	–	–	18	14	.079	2.01

* MINIMUM DEPTH OF COVER ABOVE TOP OF PIPE.
MAXIMUM DEPTH OF COVER ABOVE TOP OF PIPE IS 20 FEET.

STORM SEWER OUTFALL NOTES:

1. INSTALL OUTFALLS 48 INCHES OR LARGER, AND STORM SEWER AND TREATMENT PLANT OUTFALLS OF ANY DIAMETER, WITH RIPRAP EROSION PROTECTION DIMENSIONED AS SHOWN IN "TYPICAL STORM SEWER OUTFALL STRUCTURE LAYOUT."
2. STORM SEWER OUTFALL PIPES WITHIN THE HCFCD RIGHT-OF-WAY SHALL BE CMP ~~OR HDPE~~ IN ACCORDANCE WITH SPECIFICATION SECTION 02642-CORRUGATED METAL PIPE, ~~HIGH DENSITY POLYETHYLENE PIPE (HDPE) IN ACCORDANCE WITH SPECIFICATION SECTION 02505 HIGH DENSITY POLYETHYLENE PIPE~~, OR APPROVED EQUAL. USE TABLE BELOW FOR CORRUGATED GALVANIZED STEEL PIPE.
3. PROVIDE AND PLACE CEMENT STABILIZED SAND IN ACCORDANCE WITH SPECIFICATION SECTION NO. 02321-CEMENT STABILIZED SAND.
4. TIMBER BENTS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02464-TIMBER BENTS.
5. STORM SEWER OUTFALLS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02316-STRUCTURAL EXCAVATING AND BACKFILLING.
6. RIPRAP SHALL BE PLACED IN ACCORDANCE WITH SPECIFICATION SECTION 02378-RIPRAP AND GRANULAR FILL. FILL RIPRAP VOIDS AND BURY RIPRAP A MINIMUM OF 6 INCHES WITH TOPSOIL ON SIDE SLOPE AS DIRECTED BY THE ENGINEER.
7. IN DETENTION BASINS, SET FLOWLINE OF OUTFALL AT TOE OF THE SLOPE. IN CHANNEL, USE ELEVATION INDICATED IN THE TABLE OR 1 FOOT ABOVE NORMAL WATER LEVEL WHICH EVER IS HIGHER.
8. SEE CONCRETE CHANNEL LINING DETAIL SHEET FOR CMP OR HDPE OUTFALL DETAILS THROUGH CONCRETE CHANNEL LINING.
9. STRUCTURAL CONCRETE #4 BARS (GRADE 40) 12 INCH O.C. EACH WAY - FOR COLLARS ONLY.

THIS DETAIL SHEET HAS BEEN PREPARED FOR USE ON HCFCD PROJECTS OR PROJECTS TO BE MAINTAINED BY THE HCFCD WHEN COMPLETED BY OTHERS. AN ENGINEER WHO INCORPORATES THE DETAILS ON THIS SHEET BECOMES RESPONSIBLE FOR ITS USE IN THE END PRODUCT IN ACCORDANCE WITH RULE 137.33 (b) AND (c) OF THE TEXAS STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS.



RIP RAP TOE DETAIL

N.T.S.

STATE OF TEXAS
ERIN L. KNESEK
96616
LICENSED
PROFESSIONAL ENGINEER

E.L. Knesek 9/13/12

REV	DESCRIPTION	DATE	APPR

HCFCD PROJECT ID# E127-00-00-X005

DROP STRUCTURE AND EROSION REPAIRS

STORM SEWER AND RIPRAP DETAILS

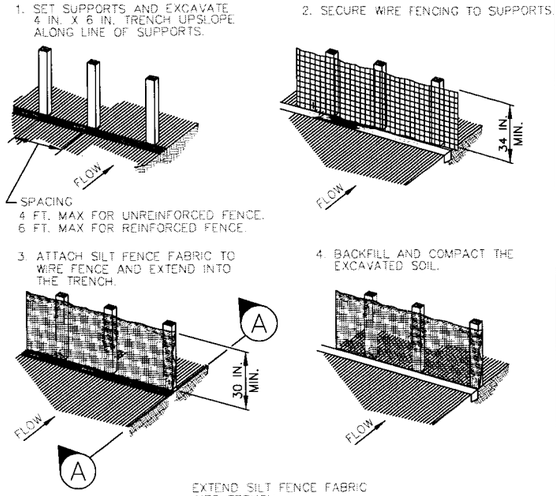
PREPARED: JCN | CHECKED: MCD | APPROVED: EK

SCHAUMBURG & POLK, INC.
HOUSTON • BEAUMONT • TYLER
11767 KATY FREEWAY, SUITE 800
HOUSTON, TEXAS 77079-1779
281 920 0487

HARRIS COUNTY FLOOD CONTROL DISTRICT
9900 NORTHWEST FREEWAY
HOUSTON, TX 77092
713-684-4000

DATE: APRIL 2012
SCALE: NTS

SHEET NUMBER
19 OF 21



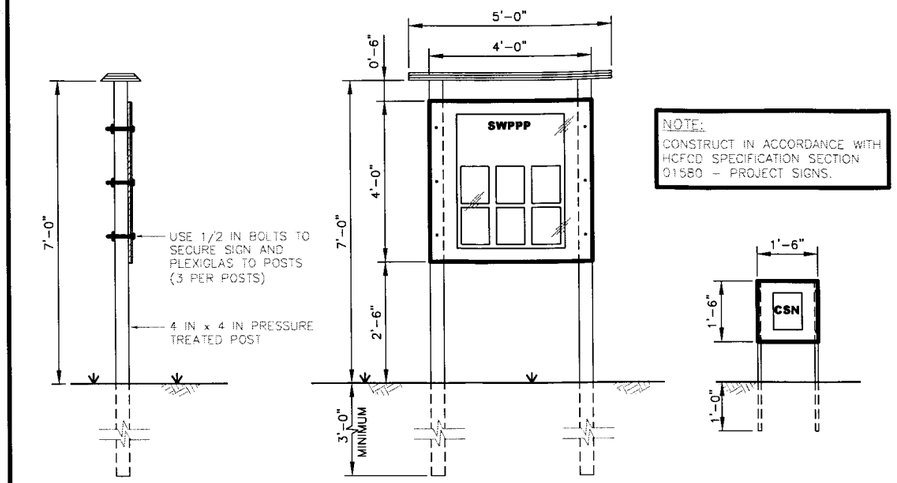
CONSTRUCTION NOTES:

1. SEE SPECIFICATION SECTION NO. 02361–SILT FENCES.

RSF — REINFORCED SILT FENCE SYMBOL

SF — SILT FENCE SYMBOL

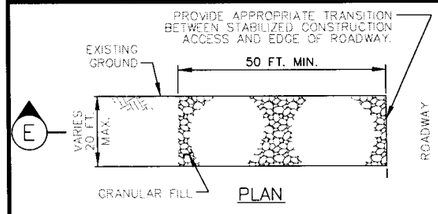
SILT FENCE

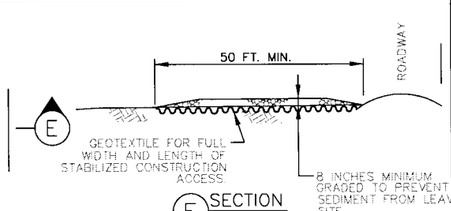


NOTE:
CONSTRUCT IN ACCORDANCE WITH HCFCD SPECIFICATION SECTION 01580 – PROJECT SIGNS.

LEFT SIDE | FRONT | CSN HOLDER

SWPPP / BMP SIGN AND CONSTRUCTION SITE NOTICE HOLDER DETAILS



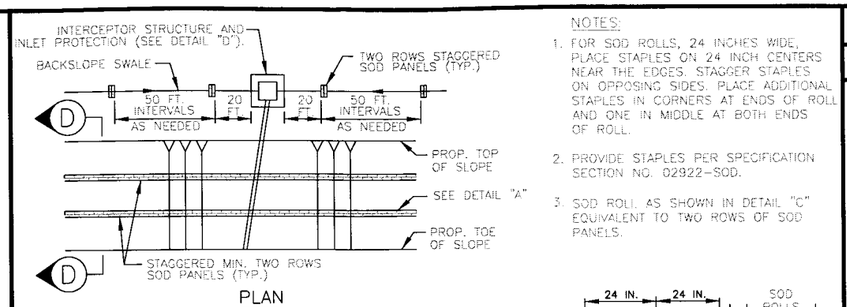


CONSTRUCTION NOTES:

1. SEE SPECIFICATION SECTION NO. 02365–STABILIZED CONSTRUCTION ACCESS.

SCA — SYMBOL

STABILIZED CONSTRUCTION ACCESS



NOTES:

1. FOR SOD ROLLS, 24 INCHES WIDE, PLACE STAPLES ON 24 INCH CENTERS NEAR THE EDGES. STAGGER STAPLES ON OPPOSING SIDES. PLACE ADDITIONAL STAPLES IN CORNERS AT ENDS OF ROLL AND ONE IN MIDDLE AT BOTH ENDS OF ROLL.
2. PROVIDE STAPLES PER SPECIFICATION SECTION NO. 02922–SOD.
3. SOD ROLL AS SHOWN IN DETAIL "C" EQUIVALENT TO TWO ROWS OF SOD PANELS.

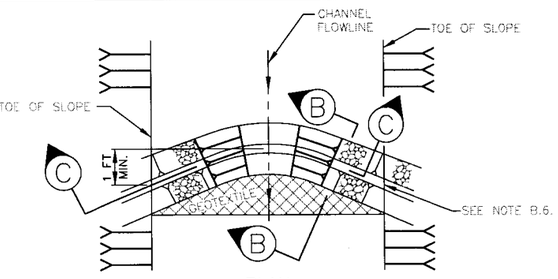
SOD — SYMBOL
IP — SYMBOL

SODDING

FILTER DAM NOTES:

A. TYPES OF FILTER DAMS
   1. TYPE 1 (NON-REINFORCED)
      a. HEIGHT – 18–24 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
      b. TOP WIDTH – 2 FEET (MINIMUM)
      c. SLOPES – 2:1 (MAXIMUM).
   2. TYPE 2 (REINFORCED).
      a. HEIGHT – 18–36 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
      b. TOP WIDTH – 2 FEET (MINIMUM).
      c. SLOPES – 2:1 (MAXIMUM).
   3. TYPE 3 (REINFORCED)
      a. HEIGHT – 36–48 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
      b. TOP WIDTH – 2 FEET (MINIMUM)
      c. SLOPES – 3:1 (MAXIMUM).
   4. TYPE 4 (GABION)
      a. HEIGHT – 30 INCHES (MINIMUM). MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
      b. TOP WIDTH – 2 FEET (MINIMUM)
   5. TYPE 5. AS SHOWN ON THE PLANS.

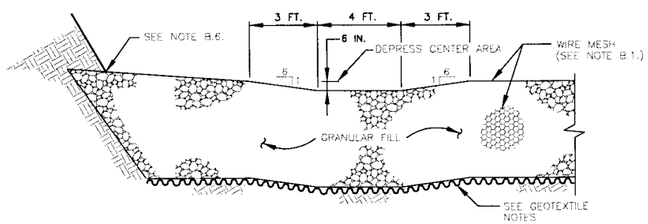
B. CONSTRUCT FILTER DAMS ACCORDING TO THE FOLLOWING CRITERIA UNLESS SHOWN OTHERWISE ON THE PLANS.
   1. TYPE 2 AND 3 FILTER DAMS: SECURE WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1 INCH DIAMETER HEXAGONAL OPENINGS.
   2. GRANULAR FILL:
      a. PLACE ON MESH TO HEIGHT AND SLOPES SHOWN ON PLANS OR AS SPECIFIED BY THE ENGINEER.
      b. 3–5 INCHES FOR ROCK FILTER DAM TYPES 1,2, AND 4 AND 4–8 INCHES FOR ROCK FILTER DAM TYPE 3. REFER TO GRANULAR FILL IN SPECIFICATION SECTION NO. 02378–RIPRAP AND GRANULAR FILL.
   3. WIRE MESH: FOLD AT UPSTREAM SIDE OVER GRANULAR FILL AND TIGHTLY SECURE TO ITSELF ON THE DOWNSTREAM SIDE USING WIRE TIES OR HOG RINGS.
   4. IN STREAMS: SECURE OR STAKE MESH TO STREAM BED PRIOR TO AGGREGATE PLACEMENT.
   5. SEE SPECIFICATION SECTION NO. 02364–FILTER DAMS.
   6. EMBED ONE FOOT MINIMUM INTO SLOPE AND AT SLOPE RAISE ONE FOOT HIGHER THAN CENTER OF DEPRESSED AREA.

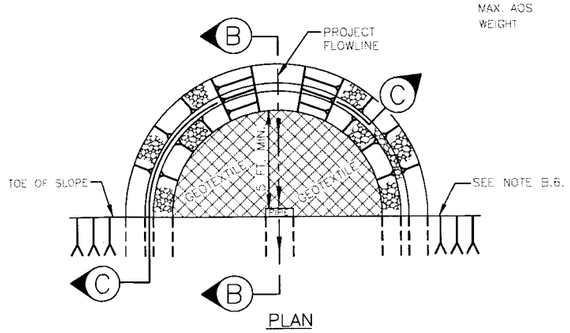


IN–CHANNEL FILTER DAM

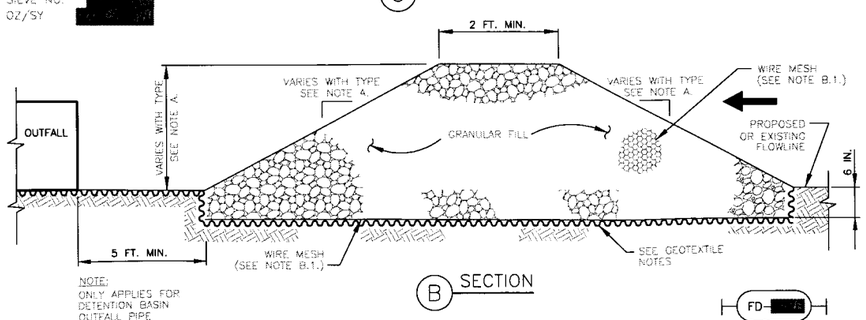
GEOTEXTILE NOTES:

MIN. AOS	SIEVE NO.	[redacted]
MAX. AOS	SIEVE NO.	
WEIGHT	OZ/SY	





FILTER DAM AT DETENTION BASIN OUTFALL PIPE



NOTE:
ONLY APPLIES FOR DETENTION BASIN OUTFALL PIPE PROTECTION.

FILTER DAM

FD — SYMBOL

THIS DETAIL SHEET HAS BEEN PREPARED FOR USE ON HCFCD PROJECTS OR PROJECTS TO BE MAINTAINED BY THE HCFCD. WHEN COMPLETED BY OTHERS, AN ENGINEER WHO INCORPORATES THE DETAILS ON THIS SHEET BECOMES RESPONSIBLE FOR ITS USE IN THE END PRODUCT IN ACCORDANCE WITH RULE 131.33 (b) AND (c) OF THE TEXAS STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS.

STATE OF TEXAS
ERIN L. KNESEK
96616
LICENSED
PROFESSIONAL ENGINEER

9/13/12

P.E. SEAL AND SIGNATURE

REV	DESCRIPTION	DATE	APPR

HCFCD PROJECT ID# E127–00–00–X005

DROP STRUCTURE AND EROSION REPAIRS

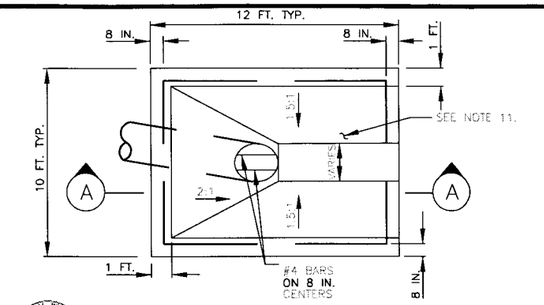
STORMWATER POLLUTION PREVENTION DETAILS

PREPARED: | CHECKED: | APPROVED:

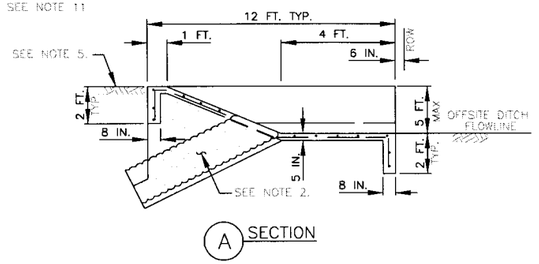
SCHAUMBURG & POLK, PC
FIRM REGISTRATION NO. F-520
11767 KATY FREEWAY, SUITE 900
HOUSTON, TEXAS 77079-1779
281. 920. 0467

HARRIS COUNTY FLOOD CONTROL DISTRICT
9900 NORTHWEST FREEWAY
HOUSTON, TX 77092
713–684–4000

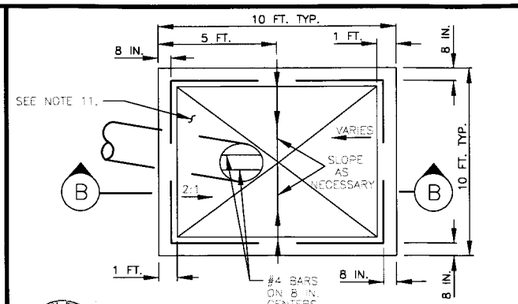
DATE: APRIL 2012
SCALE: NTS



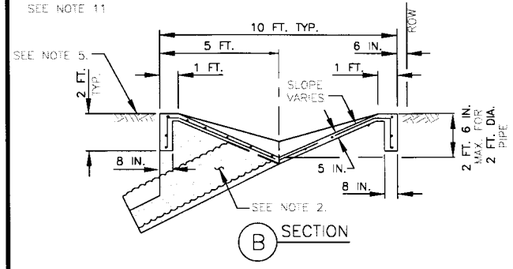
PLAN



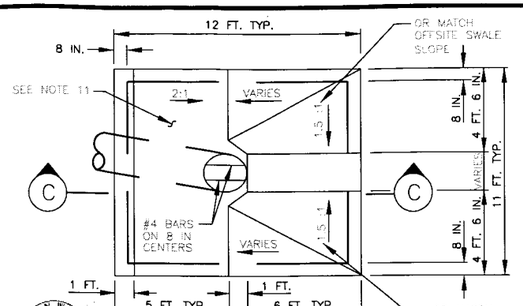
TYPICAL OFFSITE DITCH INTERCEPTOR STRUCTURE
(42 INCH MAX.)



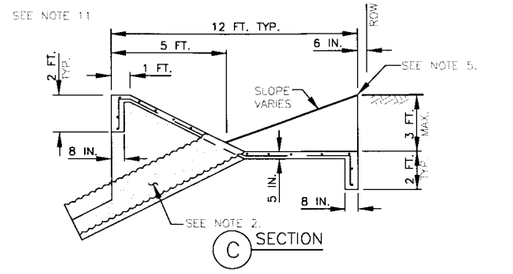
PLAN



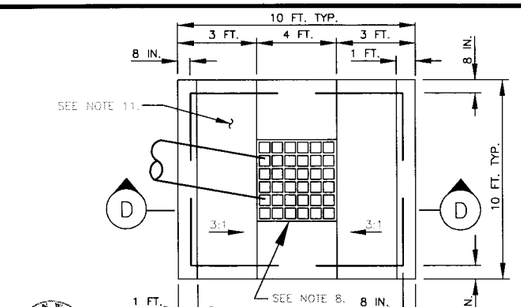
TYPICAL BACKSLOPE INTERCEPTOR STRUCTURE
(24 INCH & 30 INCH ONLY)



PLAN



COMBINATION BACKSLOPE & OFFSITE DITCH INTERCEPTOR STRUCTURE
(42 INCH MAX.)



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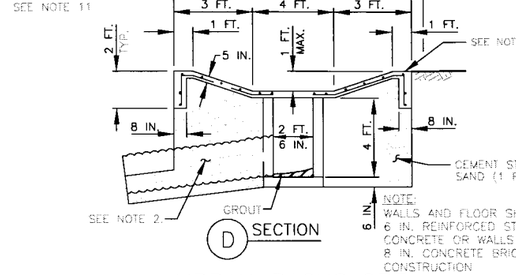
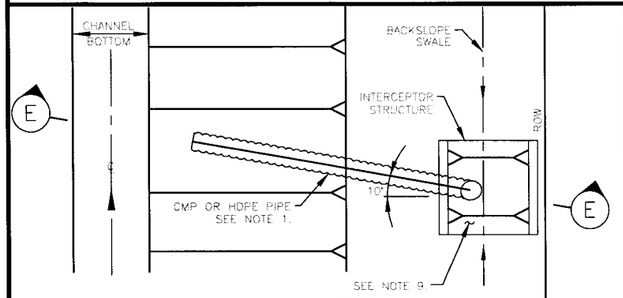


NOTE:
WALLS AND FLOOR SHALL BE 6 IN. REINFORCED STRUCTURAL CONCRETE OR WALLS MAY BE 8 IN. CONCRETE BRICK CONSTRUCTION

URBAN BACKSLOPE INTERCEPTOR STRUCTURE
(24 INCH ONLY)



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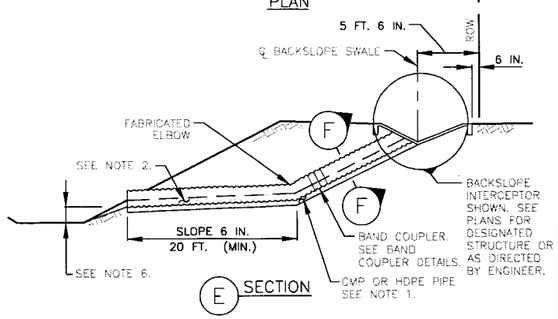
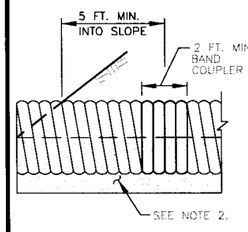


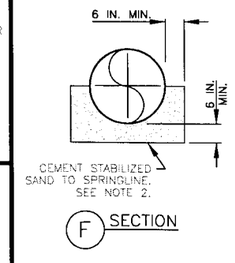
TYPICAL INTERCEPTOR OUTFALL STRUCTURE LAYOUT

PIPE OUTFALL IN CHANNELS

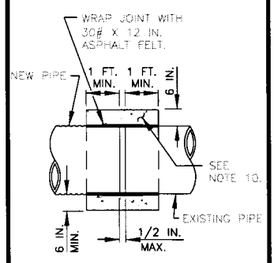
BOTTOM WIDTH	PIPE OUTLET INVERT
6 FEET ≤ BW ≤ 20 FT	1 FOOT ABOVE FLOWLINE
20 FEET < BW ≤ 60 FT	AT TOE OF SLOPE
BW > 60 FT	AT TOE OF SLOPE

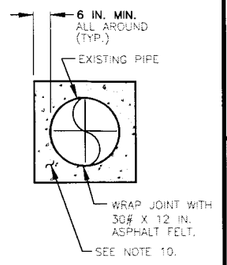


CMP BAND COUPLER DETAIL

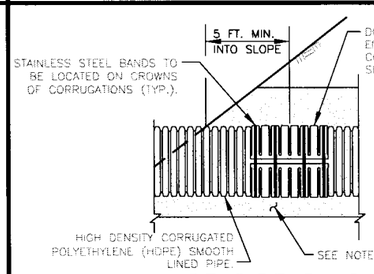


BEDDING CMP DETAIL

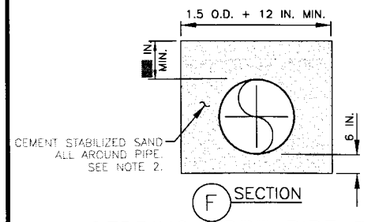




CONCRETE COLLAR DETAIL



HDPE PIPE BAND COUPLER DETAIL



BEDDING HDPE PIPE DETAIL

CORRUGATED GALVANIZED STEEL PIPE (TYPE I)

PIPE DIA. (in.)	MIN.FILL* (in.)	2-2/3" X 1/2" CORRUGATION SHEET THICKNESS gage	(in.)	(mm)	3" X 1" & 5" X 1" CORRUGATION MIN.FILL* (in.)	SHEET THICKNESS gage	(in.)	(mm)
24	12	16	.064	1.63	–	–	–	–
30	12	16	.064	1.63	–	–	–	–
36	12	16	.064	1.63	–	–	–	–
42	12	16	.064	1.63	12	16	.064	1.63
48	12	16	.064	1.63	12	16	.064	1.63

* MINIMUM DEPTH OF COVER ABOVE TOP OF PIPE.
MAXIMUM DEPTH OF COVER ABOVE TOP OF PIPE IS 20 FEET.

FOR LARGER PIPE SIZES SEE: STORM SEWER AND RIPRAP DETAILS SHEET

INTERCEPTOR STRUCTURE DETAIL NOTES:

1. INTERCEPTOR OUTFALL PIPES WITHIN THE HCFCD RIGHT-OF-WAY SHALL BE CMP OR HDPE PIPE IN ACCORDANCE WITH SPECIFICATION SECTION 02642- CORRUGATED METAL PIPE, HIGH DENSITY POLYETHYLENE (HDPE) PIPE IN ACCORDANCE WITH SPECIFICATION SECTION 2505-HIGH DENSITY POLYETHYLENE, OR APPROVED EQUAL. USE TABLE BELOW FOR CORRUGATED GALVANIZED STEEL PIPE.
2. PROVIDE AND PLACE CEMENT STABILIZED SAND IN ACCORDANCE WITH SPECIFICATION SECTION 02321-CEMENT STABILIZED SAND AND SECTION 02316 – STRUCTURAL EXCAVATING.
3. EXCAVATION, FILL AND BACKFILL FOR STORM SEWER OUTFALLS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02316-STRUCTURAL EXCAVATING AND BACKFILLING.
4. CONCRETE SHALL BE STRUCTURAL CONCRETE IN ACCORDANCE WITH SPECIFICATION SECTION 03310-CONCRETE.
5. INTERCEPTOR STRUCTURES:
   a. ADJUST LENGTH AND WIDTH IN FIELD AS NECESSARY.
   b. 2-FEET DEEP X 8-INCH WIDE TOE ALL AROUND THE STRUCTURE.
   c. STEEL REINFORCING-#4 BARS (GRADE 40) AT 12 INCHES ON CENTER EACH WAY.
   d. ANY INTERCEPTOR OUTFALL PIPE LARGER THAN MAXIMUM SIZE INDICATED REQUIRES A SEPARATE DETAIL.
   e. MATCH TOP OF CONCRETE WITH NATURAL GROUND.
6. IN DETENTION BASINS, SET FLOWLINE OF OUTFALL AT TOE OF THE SLOPE. IN CHANNEL, USE ELEVATION INDICATED IN THE TABLE OR 1 FOOT ABOVE NORMAL WATER LEVEL WHICH EVER IS HIGHER.
7. SEE CONCRETE CHANNEL LINING DETAIL SHEET FOR CMP OR HDPE OUTFALL DETAILS THROUGH CONCRETE CHANNEL LINING.
8. CONCRETE PAD AROUND TYPE "B" INLET: PAID FOR AS CONCRETE INTERCEPTOR STRUCTURE PER UNIT PRICE SCHEDULE. TYPE "B" INLET BOX, COH DWG. NO. 02632-02 WITH GRATE TOP, VULCAN FOUNDRY COMPANY, V-4880-1 OR APPROVED EQUAL, APPROX. 489 SQ.IN. OPENING.
9. BACKSLOPE SWALE AND INTERCEPTOR STRUCTURE ELEVATIONS AND LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE. FINAL ELEVATIONS AND LOCATIONS SHALL BE FIELD VERIFIED BY THE ENGINEER PRIOR TO INSTALLATION.
10. STRUCTURAL CONCRETE WITH #4 BARS (GRADE 40) 12 INCH O.C. EACH WAY – FOR COLLARS ONLY.
11. EPOXY CLEAN WATER CLEAR CHOICE LOGO BUTTON ON INTERCEPTORS. LOCATION TO BE DETERMINED BY THE ENGINEER.

THIS DETAIL SHEET HAS BEEN PREPARED FOR USE ON HCFCD PROJECTS OR PROJECTS TO BE MAINTAINED BY THE HCFCD WHEN COMPLETED BY OTHERS. AN ENGINEER WHO INCORPORATES THE DETAILS ON THIS SHEET BECOMES RESPONSIBLE FOR ITS USE IN THE END PRODUCT IN ACCORDANCE WITH RULE 137.33 (b) AND (c) OF THE TEXAS STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS.

STATE OF TEXAS
ERIN L. KNESEK
95616
LICENSED
PROFESSIONAL ENGINEER
9/13/12

REV	DESCRIPTION	DATE	APPR

HCFCD PROJECT ID# E127-00-00-X005

DROP STRUCTURE AND EROSION REPAIRS

INTERCEPTOR STRUCTURE DETAILS

PREPARED: JCN
CHECKED: MCD
APPROVED: EK

SCHAUMBURG & POLK, PC
HOUSTON • TEXAS
TBPE FIRM REGISTRATION # 4576
11767 KATY FREEWAY, SUITE 900
HOUSTON, TEXAS 77079-1779
281 920 0487

HARRIS COUNTY FLOOD CONTROL DISTRICT
9900 NORTHWEST FREEWAY
HOUSTON, TX 77092
713-684-4000

DATE: APRIL 2012
SCALE: NTS

SHEET NUMBER
21 OF 21