

LETTING DATE  
August 3, 2010

## TRAFFIC CONTROL PLAN

THIS ROAD WILL BE OPEN TO THROUGH TRAFFIC DURING CONSTRUCTION. LOCAL TRAFFIC TO ADJACENT PROPERTIES WILL BE MAINTAINED AS PROVIDED FOR IN ARTICLE 1107.08 OF THE CURRENT STANDARD SPECIFICATIONS. TRAFFIC CONTROL DEVICES, PROCEDURES, LAYOUTS, SIGNING, AND PAVEMENT MARKINGS INSTALLED WITHIN THE LIMITS OF THIS PROJECT SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, AS ADOPTED BY THE DEPARTMENT PER 761 OF THE IOWA ADMINISTRATIVE CODE (IAC), CHAPTER 130."

## PERMITS

THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF U.S. ARMY CORPS OF ENGINEERS PERMIT NO. \_\_\_\_\_. A COPY OF THIS PERMIT IS AVAILABLE FROM THE CRAWFORD COUNTY ENGINEER'S OFFICE UPON REQUEST. THE U.S. ARMY CORPS OF ENGINEERS RESERVES THE RIGHT TO VISIT THE SITE WITHOUT PRIOR NOTICE.

THIS PROJECT IS COVERED BY IOWA DNR FLOODPLAIN CONSTRUCTION PERMIT NO. \_\_\_\_\_.

THIS PROJECT IS COVERED BY THE IOWA DEPARTMENT OF NATURAL RESOURCES NPDES GENERAL PERMIT NO. 2. THE CONTRACTOR SHALL CARRY OUT THE TERMS AND CONDITIONS OF GENERAL PERMIT NO. 2 AND THE STORM WATER POLLUTION PREVENTION PLAN WHICH IS A PART OF THESE CONTRACT DOCUMENTS. REFER TO SECTION 2602 OF THE IOWA DOT STANDARD SPECIFICATIONS FOR ADDITIONAL INFORMATION.

## DRAWING APPROVAL

ALL SHOP DRAWINGS THAT REQUIRE APPROVAL SHALL BE APPROVED BY SUNDQUIST ENGINEERING, P.C.

ADDRESS: 120 SOUTH MAIN, P.O. BOX 220  
DENISON, IOWA 51442-0220  
TELEPHONE: (712)263-8118

THESE SHOP DRAWINGS SHALL NOT BE SENT TO IOWA D.O.T. OFFICE OF BRIDGE DESIGN.



# Iowa Department of Transportation Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE

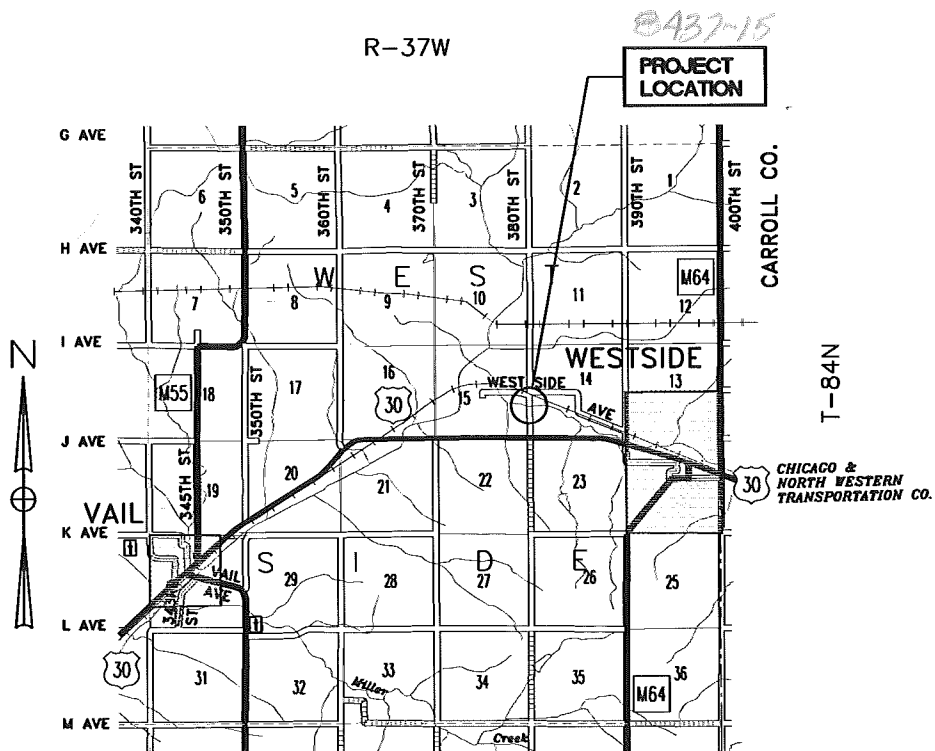
## FARM-TO-MARKET SYSTEM CRAWFORD COUNTY

PROJECT NO. LHC47-14W  
STREAM CHANNEL STABILIZATION STRUCTURE  
ON 380TH STREET  
EAST BOYER RIVER

IN COOPERATION WITH LOESS HILLS DEVELOPMENT AND  
CONSERVATION AUTHORITY - HUNGRY CANYONS ALLIANCE

SCALES: As Noted

The Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, Series 2009, plus General Supplemental Specifications; and applicable Supplemental Specifications, Developmental Specifications, and Special Provisions, shall apply to construction on this project.



Call Before You Dig!  
1800.292.8989  
Call the toll-free number at least  
48 hours  
prior to ALL excavations in Iowa.

|                   |            |
|-------------------|------------|
| 04-30-02          | 101-4      |
| DESIGN DATA RURAL |            |
| 2004 AADT         | 50 V.P.D.  |
| 2028 AADT         | 100 V.P.D. |
| 201X DHV          | X V.P.H.   |
| TRUCKS            | X %        |
| TOTAL             |            |
| DESIGN ESALs      |            |

Approved

*[Signature]*  
*[Signature]*  
*[Signature]*

BOARD OF SUPERVISORS

Approved

*[Signature]*  
CRAWFORD COUNTY ENGINEER

11/12/08  
DATE



I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

*[Signature]* 5/1/08  
TROY J. GROTH, P.E. #14450 DATE

MY LICENSE RENEWAL DATE IS DECEMBER 31, 2009.  
PAGES OR SHEETS COVERED BY THIS SEAL:  
ALL SHEETS

**SUNDQUIST ENGINEERING, P.C.**  
CONSULTING ENGINEERS  
HIGHWAYS • MUNICIPAL • MAPPING • SURVEYING  
120 S. MAIN, P.O. BOX 220, DENISON, IOWA 51442-0220  
PHONE: (712)263-8118 FAX: (712)263-2181

DESIGN TEAM: TJG/SAS/DRD

ENGLISH

SE PROJECT NO. : 02508

DATE : 04/08

FHWA#

CRAWFORD COUNTY

PROJECT NUMBER LHC47-14W

SHEET NUMBER A1

GENERAL NOTES

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAKE ALL NECESSARY ARRANGEMENTS WITH ADJACENT PROPERTY OCCUPANTS FOR RESTRAINING LIVESTOCK FROM ENTERING THE RIGHT-OF-WAY DURING CONSTRUCTION.

CONTRACTOR IS TO USE DUE CAUTION IN WORKING OVER AND AROUND ALL TILE LINES. BREAKS IN THE TILE LINE DUE TO THE CONTRACTOR'S CARELESSNESS ARE TO BE REPLACED AT HIS EXPENSE WITHOUT COST TO THE COUNTY. ANY TILE LINES BROKEN OR DISTURBED BY CUT LINES WILL BE REPLACED AS DIRECTED BY THE ENGINEER IN CHARGE OF CONSTRUCTION AND AT THE COUNTY'S EXPENSE.

ALL BORROW AREAS, STOCKPILE AREAS, HAUL ROADS AND AREAS FOR MANEUVERING EQUIPMENT ON THIS PROJECT WILL REQUIRE SUBSOIL TILLAGE TO AN AVERAGE DEPTH OF 18 TO 24 INCHES. SUCH TILLAGE SHALL BE ACCOMPLISHED ON MAXIMUM OF THREE FOOT CENTERS. SUCH AREAS SHALL BE DESIGNATED BY THE COUNTY ENGINEER.

WHERE PUBLIC UTILITY FIXTURES ARE SHOWN AS EXISTING ON THE PLANS OR ENCOUNTERED WITHIN THE CONSTRUCTION AREA, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE OWNERS OF THOSE UTILITIES PRIOR TO THE BEGINNING OF ANY CONSTRUCTION. THE CONTRACTOR SHALL AFFORD ACCESS TO THESE FACILITIES FOR NECESSARY MODIFICATION OF SERVICES. UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS, AND THEREFORE THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. IT IS POSSIBLE THERE MAY BE OTHERS, THE EXISTENCE OF WHICH IS PRESENTLY NOT KNOWN OR SHOWN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THEIR EXISTENCE AND EXACT LOCATION AND TO AVOID DAMAGE THERETO. NO CLAIMS FOR ADDITIONAL COMPENSATION WILL BE ALLOWED TO THE CONTRACTOR FOR ANY INTERFERENCE OR DELAY CAUSED BY SUCH WORK.

CONTRACTOR SHALL NOTIFY ONE-CALL (1-800-292-8989) FOR UTILITY LOCATES PRIOR TO COMMENCING WORK.

CONSTRUCTION STAKING WILL BE PROVIDED BY THE OWNER IN ACCORDANCE WITH ARTICLE 1105.06.

EQUIPMENT FOR HANDLING AND CONVEYING MATERIALS DURING CONSTRUCTION SHALL BE OPERATED TO PREVENT DUMPING OR SPILLING THE MATERIAL INTO WATERBODIES, STREAMS OR WETLANDS EXCEPT AS APPROVED HEREIN AND IN THE 404 PERMIT.

CONSTRUCTION ACTIVITIES SHALL BE CONDUCTED DURING LOW TO NORMAL FLOWS. LOW TO NORMAL FLOWS SHALL BE DETERMINED IN CONSULTATION WITH THE PROJECT ENGINEER AND ARE DEFINED AS FLOWS AT OR BELOW THE ORDINARY HIGH WATER MARK. THE ORDINARY HIGH WATER MARK IS THAT LINE ON THE SHORE OF A STREAM OR WATERBODY ESTABLISHED BY THE FLUCTUATIONS OF WATER AND BEST INDICATED BY THE LINE IMPRESSED ON THE BANK CONTAINING VEGETATION ABOVE AND BARE SOIL BELOW.

THE PRIME CONTRACTOR SHALL EMPLOY CONTROLS TO REDUCE THE EROSIVENESS OF LAND ADJACENT TO SURFACE WATERS AND WETLANDS, INCLUDING ESTABLISHMENT AND MAINTENANCE OF EROSION CONTROL DURING AND AFTER CONSTRUCTION AND REVEGETATION OF ALL DISTURBED AREAS UPON PROJECT COMPLETION. THE PRIME CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION OF ALL EROSION CONTROL MEASURES.

CARE SHALL BE TAKEN TO PREVENT ANY PETROLEUM PRODUCTS, CHEMICALS, OR OTHER DELETERIOUS MATERIALS FROM ENTERING WATERBODIES, STREAMS OR WETLANDS.

ALL CONSTRUCTION DEBRIS SHALL BE DISPOSED OF AT AN UPLAND, NON-WETLAND LOCATION, IN SUCH A MANNER THAT IT CANNOT ENTER A WATERWAY OR WETLAND.

CONSTRUCTION EQUIPMENT, ACTIVITIES, AND MATERIALS SHALL BE KEPT OUT OF STREAMS AND WETLANDS TO THE MAXIMUM EXTENT POSSIBLE.

CLEARING AND GRUBBING OF VEGETATION, INCLUDING TREES LOCATED IN OR IMMEDIATELY ADJACENT TO WETLANDS AND STREAMS, SHALL BE LIMITED TO THAT WHICH IS ABSOLUTELY NECESSARY FOR CONSTRUCTION OF THE PROJECT. ALL VEGETATIVE MATERIAL REMOVED FROM THE RIGHT OF WAY SHALL BE DISPOSED OF AT AN UPLAND, NON-WETLAND LOCATION.

SEEDING WILL BE ACCOMPLISHED BY OTHERS.

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE WASTE AREAS OR DISPOSAL SITES FOR EXCESS MATERIAL (EXCAVATED MATERIAL OR BROKEN CONCRETE) WHICH IS NOT DESIRABLE TO BE INCORPORATED INTO THE WORK INVOLVED ON THIS PROJECT.

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT AREAS (INCLUDING HAUL ROADS) SELECTED FOR WASTE OR DISPOSAL NOT IMPACT 1) CULTURALLY SENSITIVE SITES OR GRAVES OR 2) WETLANDS OR "WATERS OF THE U.S.", INCLUDING STREAMS OR STREAM BANKS BELOW THE "ORDINARY HIGH WATER MARK", WITHOUT AN APPROVED U.S. ARMY CORPS OF ENGINEERS SECTION 404 PERMIT.

NO PAYMENT FOR OVERHAUL WILL BE ALLOWED FOR MATERIAL HAULED TO THESE SITES. NO MATERIAL SHALL BE PLACED WITHIN THE RIGHT-OF-WAY, UNLESS SPECIFICALLY STATED IN THE PLANS.

THE CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN ACCESS TO INDIVIDUAL PROPERTIES DURING CONSTRUCTION.

RELOCATED ACCESS SHALL BE COMPLETED TO INDIVIDUAL PROPERTIES PRIOR TO REMOVAL OF EXISTING ACCESS.

IF THE PERMANENT ACCESS CANNOT BE COMPLETED PRIOR TO REMOVAL OF THE EXISTING ACCESS, THE CONTRACTOR SHALL PROVIDE AND MAINTAIN AN ALTERNATE ACCESS. TEMPORARY GRANULAR SURFACING WILL BE PAID FOR AS A CONTRACT ITEM OR BY EXTRA WORK.

ESTIMATE REFERENCE INFORMATION

DATA LISTED BELOW ARE FOR INFORMATIONAL PURPOSES ONLY AND SHALL NOT CONSTITUTE A BASIS FOR ANY EXTRA WORK ORDERS.

1. CLEARING AND GRUBBING

THIS ITEM SHALL CONSIST OF CLEARING AND GRUBBING WITHIN THE CONSTRUCTION LIMITS SHOWN ON PLAN SHEET V1.

2. EMBANKMENT-IN-PLACE

PLAN QUANTITY FOR EMBANKMENT-IN-PLACE INCLUDES FILL + 35% SHRINK.

TYPE "A" COMPACTION WILL BE REQUIRED. BORROW FROM SUITABLE CLASS 10 CHANNEL EXCAVATION ALLOWED. ADDITIONAL NECESSARY BORROW SHALL BE PROVIDED BY THE CONTRACTOR. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED. ALL AREAS TO RECEIVE NEW EMBANKMENT SHALL BE THOROUGHLY CLEANED OF ALL VEGETATION AND OTHER DEBRIS. EXISTING SURFACES SHALL BE PLOWED, STEPPED OR BENCHED PRIOR TO PLACEMENT OF NEW EMBANKMENT FILLS. SUCH WORK SHALL BE INCLUDED IN AND CONSIDERED INCIDENTAL TO THIS ITEM.

FILL MATERIALS SHALL CONTAIN NO SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS. FILL SHALL NOT BE PLACED UPON A FROZEN SURFACE, NOR SHALL SNOW, ICE OR FROZEN MATERIAL BE INCORPORATED IN THE FILL.

PAYMENT FOR THIS ITEM SHALL BE BASED ON PLAN QUANTITY.

3. EXCAVATION, CLASS 10, CHANNEL

SUITABLE CLASS 10 CHANNEL EXCAVATION MAY BE USED FOR EMBANKMENT-IN-PLACE. EXCESS MATERIALS AND UNSUITABLE MATERIAL SHALL BE HAULED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR. THE COST OF HAULING AND DISPOSING OF THIS MATERIAL SHALL BE INCLUDED IN AND CONSIDERED INCIDENTAL TO THE PRICE BID FOR CLASS 10 CHANNEL EXCAVATION.

QUANTITY INCLUDES EXCAVATION REQUIRED TO INSTALL THE SPECIAL REVETMENT. QUANTITY INCLUDES THE EXCAVATION REQUIRED TO TRANSITION PROPOSED CHANNEL SLOPES INTO EXISTING SLOPES WITHIN THE LIMITS SHOWN ON PLAN SHEET V1.

PAYMENT FOR THIS ITEM SHALL BE BASED ON PLAN QUANTITY.

4. PILES, FURNISH AND INSTALL STEEL, HP 10X42

INCLUDES FURNISHING AND INSTALLING THE HP 10X42 WALER AS DETAILED ON PLAN SHEET U2. BOLTS, NUTS AND WASHERS REQUIRED TO INSTALL WALER SHALL MEET THE REQUIREMENTS OF ARTICLE 4153.07 AND SHALL BE INCLUDED IN AND CONSIDERED INCIDENTAL TO THIS ITEM.

5. PILES, STEEL SHEET

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING THE SHEET PILES AS SHOWN ON THE DRAWINGS. THIS ITEM SHALL INCLUDE FIELD CUTTING THE SHEET PILES TO THE SPECIFIED 2:1 GRADE AS SHOWN ON THE PLANS.

THE SHEET PILES AND APPURTENANT METAL WORK SHALL MEET THE REQUIREMENTS OF ASTM A328, A572 OR A690. THE SHEET PILES SHALL BE INSTALLED STARTING FROM THE CENTERLINE OF THE WEIR SECTION AND PROGRESSING AWAY FROM THE CENTERLINE.

SHEET PILES SHALL MEET THE FOLLOWING REQUIREMENTS:

- (a) MINIMUM SECTION MODULUS OF 19.25 CU. IN. PER FOOT OF LENGTH.
- (b) MINIMUM WALL THICKNESS OF 3/8 INCH.

6. ENGINEERING FABRIC

SEE PLAN SHEET U1 - DETAILS OF PLACEMENT OF ENGINEERING FABRIC FOR INSTALLATION DETAILS. MATERIAL TO CONFORM TO IOWA DOT MATERIALS IM 496.01 APPENDIX A, EMBANKMENT EROSION CONTROL (SPECIFICATION 4196.01C).

MATERIAL SHALL BE JOINED BY OVERLAPPING A MINIMUM OF 18 INCHES. THE QUANTITY OF ENGINEERING FABRIC FOR WHICH PAYMENT WILL BE MADE, WHEN PLACED AS SHOWN IN THE CONTRACT DOCUMENTS, WILL BE THE QUANTITY SHOWN IN THE CONTRACT DOCUMENTS IN SQUARE YARDS. MATERIAL FOR LAPS IS NOT INCLUDED IN THE PLAN QUANTITY

ESTIMATED PROJECT QUANTITIES

| ITEM NO. | ITEM CODE    | ITEM                                     | UNIT | TOTAL | AS BUILT QUAN. |
|----------|--------------|------------------------------------------|------|-------|----------------|
| 1        | 2101-0850001 | CLEARING AND GRUBBING                    | ACRE | 1.2   |                |
| 2        | 2102-2625000 | EMBANKMENT-IN-PLACE                      | CY   | 1330  |                |
| 3        | 2104-2710020 | EXCAVATION, CLASS 10, CHANNEL            | CY   | 1224  |                |
| 4        |              | PILES, FURNISH & INSTALL STEEL, HP 10x42 | LF   | 91    |                |
| 5        | 2501-5775000 | PILES, STEEL SHEET                       | SF   | 1720  |                |
| 6        | 2507-3250005 | ENGINEERING FABRIC                       | SY   | 909   |                |
| 7        | 2507-4011100 | CONCRETE GROUT FOR REVETMENT OR GABION   | CY   | 73    |                |
| 8        | 2507-6850053 | REVETMENT, SPECIAL                       | TON  | 915   |                |
| 9        | 2528-8445110 | TRAFFIC CONTROL                          | LS   | 1     |                |
| 10       | 2533-4980005 | MOBILIZATION                             | LS   | 1     |                |
| 11       | 2599-9999010 | REMOVAL OF WATER                         | LS   | 1     |                |

STANDARD ROAD PLANS

The following Standard Road Plans shall be considered applicable to construction work on this project.

| NUMBER | DATE     | SHEETS | TITLE                      |
|--------|----------|--------|----------------------------|
| TC-1   | 10-17-06 | 1      | WORK NOT AFFECTING TRAFFIC |
|        |          |        |                            |
|        |          |        |                            |

7. CONCRETE GROUT FOR REVETMENT OR GABION

GROUTING OPERATION SHALL NOT BE PERFORMED EXCEPT IN THE PRESENCE OF THE ENGINEER.

THE AVERAGE RATE OF GROUT APPLICATION SHALL BE 5.4 CUBIC FEET OF GROUT PER SQUARE YARD OF SURFACE AREA.

THE GROUT SHALL BE CONSOLIDATED INTO THE VOIDS WITH THE USE OF A CONCRETE VIBRATOR.

METHOD OF MEASUREMENT: THE ENGINEER WILL COMPUTE TO THE NEAREST 0.1 CUBIC YARD THE VOLUME OF CONCRETE GROUT FOR REVETMENT OR GABION FURNISHED AND ACCEPTABLY PLACED WITHIN THE SPECIFIED LIMITS, FROM THE NOMINAL VOLUME OF EACH BATCH AND A COUNT OF BATCHES. GROUT UNUSED OR WASTED, INCLUDING ANY PARTIAL BATCH REMAINING AT THE COMPLETION OF THE OPERATION, WILL BE ESTIMATED AND DEDUCTED BY THE ENGINEER. METHOD OF MEASUREMENT IN THE CURRENT STANDARD SPECIFICATIONS SHALL NOT APPLY.

8. REVETMENT, SPECIAL

SPECIAL REVETMENT SHALL MEET THE REQUIREMENTS OF STANDARD SPECIFICATIONS SECTION 2507.03, CLASS B REVETMENT.

MATERIAL SHALL MEET THE REQUIREMENTS OF STANDARD SPECIFICATIONS SECTION 4130 FOR CLASS B REVETMENT ON PRIMARY PROJECTS. PRIOR TO MATERIAL DELIVERY, CONTRACTOR SHALL PROVIDE CERTIFICATION THAT MATERIAL MEETS SAID SPECIFICATIONS.

CONTRACTOR SHALL BE REQUIRED TO STOCKPILE SELECTED LARGE STONES. SELECTED STONES SHALL BE PLACED IN THE LONGITUDINAL CENTER 1/3 OF THE CHANNEL BOTTOM SUCH THAT 1/3 OF THE MASS OF EACH STONE PROTRUDES FROM THE SURFACE OF THE GROUT AS DIRECTED BY THE ENGINEER. SUCH PLACEMENT SHALL OCCUR AFTER INSTALLATION OF SPECIAL REVETMENT AND PRIOR TO GROUTING OPERATION. THIS WORK SHALL BE INCLUDED IN AND CONSIDERED INCIDENTAL TO THE PRICE BID FOR THIS ITEM.

THE CONTRACTOR WILL BE RESPONSIBLE FOR REMOVAL OF ALL REMNANTS OF RIPRAP STOCKPILES FROM FARM FIELDS UTILIZED BY CONTRACTOR IN THE PROJECT AREA. THIS WORK WILL BE INCLUDED IN AND CONSIDERED INCIDENTAL TO THE PRICE BID FOR THIS ITEM.

MATERIAL FOR SPECIAL REVETMENT SHALL BE MEASURED IN TONS TO THE NEAREST 0.1 TONS. ONLY MATERIAL PLACED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS WILL BE MEASURED.

FOR THE QUANTITY OF REVETMENT FURNISHED AND PLACED, THE CONTRACTOR WILL BE PAID THE CONTRACT UNIT PRICE PER TON.

11. REMOVAL OF WATER

THIS ITEM CONSISTS OF DIVERTING SURFACE WATER AND DEWATERING THE SITE AS NEEDED FOR CONSTRUCTION. POLLUTION CONTROL SHALL BE INCLUDED IN AND CONSIDERED INCIDENTAL TO THIS ITEM. DEWATERING OF SITE SHALL INCLUDE REMOVAL OF WATER FROM THE PROPOSED STILLING BASIN TO FACILITATE PLACEMENT OF ENGINEERING FABRIC, RIPRAP AND GROUT. PLACEMENT OF GROUT IN STANDING WATER SHALL NOT BE ALLOWED.

REFER TO PLAN SHEET U2 FOR ADDITIONAL REQUIREMENTS OF THIS ITEM.

ESTIMATED PROJECT QUANTITIES  
AND GENERAL INFORMATION

REV.:

SUNDQUIST ENGINEERING, P.C.  
CONSULTING ENGINEERS

HIGHWAYS • MUNICIPAL • MAPPING • SURVEYING  
120 S. MAIN, P.O. BOX 220, DENISON, IOWA 51442  
PHONE: (712)263-8118 FAX: (712)263-2181

SE PROJECT NO. 02508 DATE: 04/08 DRAWN BY: DRD REVIEWED BY: SAS APPROVED BY: TJG

CRAWFORD COUNTY PROJECT NO. LHC47-I4W

SHEET BI

ALL CONTRACTORS/SUBCONTRACTORS SHALL CONDUCT THEIR OPERATIONS IN A MANNER THAT MINIMIZES EROSION AND PREVENTS SEDIMENTS FROM LEAVING THE HIGHWAY RIGHT-OF-WAY. THE PRIME CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE AND IMPLEMENTATION OF THE POLLUTION PREVENTION PLAN (PPP) FOR THEIR ENTIRE CONTRACT. THIS RESPONSIBILITY SHALL BE FURTHER SHARED WITH SUBCONTRACTORS WHOSE WORK IS A SOURCE OF POTENTIAL POLLUTION AS DEFINED IN THIS PPP.

1. SITE DESCRIPTION

THIS POLLUTION PREVENTION PLAN (PPP) IS FOR THE CONSTRUCTION OF A CRAWFORD COUNTY SECONDARY ROAD STREAM CHANNEL STABILIZATION STRUCTURE OFF COUNTY ROAD (380TH ST) OVER THE EAST BOYER RIVER.

THIS PPP COVERS APPROXIMATELY 1.2 ACRES WITH AN ESTIMATED 1.2 ACRES BEING DISTURBED. THE PORTION OF THE PPP COVERED BY THIS CONTRACT HAS 1.2 ACRES DISTURBED.

THE PPP IS LOCATED IN AN AREA OF ONE SOIL ASSOCIATION, (MARSHALL). THE ESTIMATED AVERAGE NRCS RUNOFF CURVE NUMBER FOR THIS PPP AFTER COMPLETION WILL BE 58.

REFER TO THE PROJECT PLANS FOR LOCATIONS OF TYPICAL SLOPES, DITCH GRADES, AND MAJOR STRUCTURAL AND NON-STRUCTURAL CONTROLS. A COPY OF THIS PLAN WILL BE ON FILE AT THE PROJECT ENGINEER'S OFFICE. RUNOFF FROM THIS WORK WILL FLOW INTO THE EAST BOYER RIVER.

POTENTIAL SOURCES OF POLLUTION:  
SITE SOURCES OF POLLUTION GENERATED AS A RESULT OF THIS WORK RELATE TO SILTS AND SEDIMENT WHICH MAY BE TRANSPORTED AS A RESULT OF A STORM EVENT. HOWEVER, THIS PPP PROVIDES CONVEYANCE FOR OTHER (NON-PROJECT RELATED) OPERATIONS. THESE OTHER OPERATIONS HAVE STORM WATER RUNOFF, THE REGULATION OF WHICH IS BEYOND THE CONTROL OF THIS PPP. POTENTIALLY THIS RUNOFF CAN CONTAIN VARIOUS POLLUTANTS RELATED TO SITE-SPECIFIC LAND USES. EXAMPLES ARE:

RURAL AGRICULTURAL ACTIVITIES:  
RUNOFF FROM AGRICULTURAL LAND USE CAN POTENTIALLY CONTAIN CHEMICALS INCLUDING HERBICIDES, PESTICIDES, FUNGICIDES AND FERTILIZERS.

COMMERCIAL AND INDUSTRIAL ACTIVITIES:  
RUNOFF FROM COMMERCIAL AND INDUSTRIAL LAND USE MAY CONTAIN CONSTITUENTS ASSOCIATED WITH THE SPECIFIC OPERATION. SUCH OPERATIONS ARE SUBJECT TO POTENTIAL LEAKS AND SPILLS WHICH COULD BE COMMINGLED WITH RUN-OFF FROM THE FACILITY. POLLUTANTS ASSOCIATED WITH COMMERCIAL AND INDUSTRIAL ACTIVITIES ARE NOT READILY AVAILABLE SINCE THEY ARE TYPICALLY PROPRIETARY.

2. CONTROLS

AT LOCATIONS WHERE RUNOFF CAN MOVE OFFSITE, SILT FENCE SHALL BE PLACED ALONG THE PERIMETER OF THE AREAS TO BE DISTURBED PRIOR TO BEGINNING GRADING, EXCAVATION OR CLEARING AND GRUBBING OPERATIONS. VEGETATION IN AREAS NOT NEEDED FOR CONSTRUCTION SHALL BE PRESERVED. AS AREAS REACH THEIR FINAL GRADE, ADDITIONAL SILT FENCES, SILT BASINS, INTERCEPTING DITCHES, SOD FLUMES, LETDOWNS, BRIDGE END DRAINS, AND EARTH DIKES SHALL BE

3. OTHER CONTROLS

CONTRACTOR DISPOSAL OF UNUSED CONSTRUCTION MATERIALS AND CONSTRUCTION MATERIAL WASTES SHALL COMPLY WITH APPLICABLE STATE AND LOCAL WASTE DISPOSAL, SANITARY SEWER, OR SEPTIC SYSTEM REGULATIONS. IN THE EVENT OF A CONFLICT WITH OTHER GOVERNMENTAL LAWS, RULES AND REGULATIONS, THE MORE RESTRICTIVE LAWS, RULES OR REGULATIONS SHALL APPLY.

APPROVED STATE OR LOCAL PLANS:  
DURING THE COURSE OF THIS CONSTRUCTION, IT IS POSSIBLE THAT SITUATIONS WILL ARISE WHERE UNKNOWN MATERIALS WILL BE ENCOUNTERED. WHEN SUCH SITUATIONS ARE ENCOUNTERED, THEY WILL BE HANDLED ACCORDING TO ALL FEDERAL, STATE, AND LOCAL REGULATIONS IN EFFECT AT THE TIME.

4. MAINTENANCE

THE CONTRACTOR IS REQUIRED TO MAINTAIN ALL TEMPORARY EROSION CONTROL MEASURES IN PROPER WORKING ORDER, INCLUDING CLEANING, REPAIRING, OR REPLACING THEM THROUGHOUT THE CONTRACT PERIOD. CLEANING OF SILT CONTROL DEVICES SHALL BEGIN WHEN THE FEATURES HAVE LOST 50% OF THEIR CAPACITY.

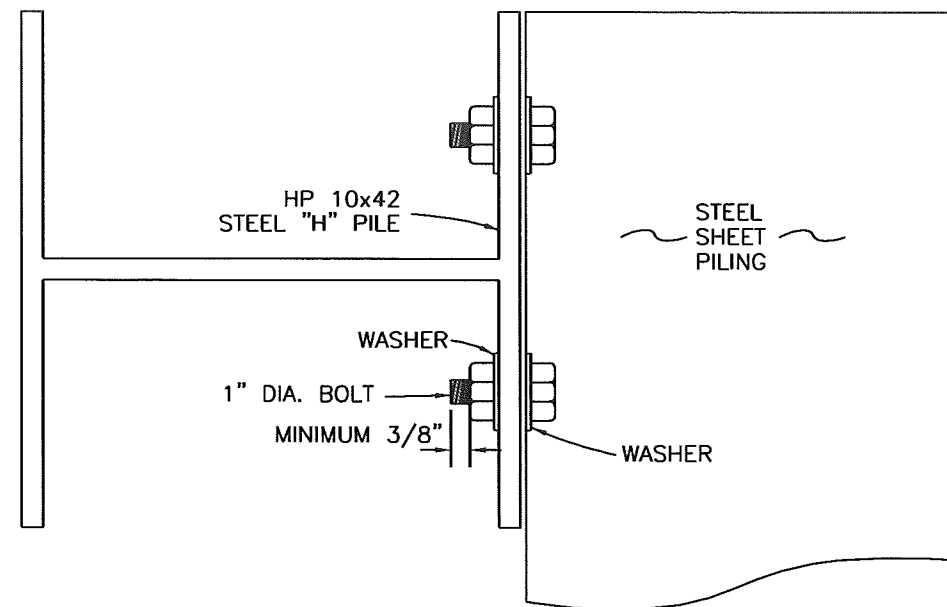
5. INSPECTIONS

INSPECTIONS SHALL BE MADE JOINTLY BY THE CONTRACTOR AND THE CONTRACTING AUTHORITY EVERY SEVEN CALENDAR DAYS AND AFTER EACH RAIN EVENT THAT IS ONE HALF INCH OR GREATER. THE CONTRACTOR SHALL IMMEDIATELY BEGIN CORRECTIVE ACTION OF ALL DEFICIENCIES FOUND. THE FINDINGS OF THIS INSPECTION SHALL BE RECORDED IN THE PROJECT DIARY. THIS PPP MAY BE REVISED BASED ON THE FINDINGS OF THE INSPECTION. THE CONTRACTOR SHALL IMPLEMENT ALL REVISIONS. ALL CORRECTIVE ACTIONS SHALL BE COMPLETED WITHIN 3 CALENDAR DAYS OF THE INSPECTION.

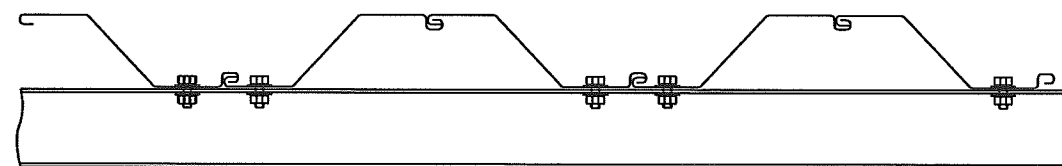
6. NON-STORM DISCHARGES

THIS INCLUDES SUBSURFACE DRAINS (I.E. LONGITUDINAL AND STANDARD SUBDRAINS), SLOPE DRAINS AND BRIDGE END DRAINS. THE VELOCITY OF THE DISCHARGE FROM THESE FEATURES MAY BE CONTROLLED BY THE USE OF PATIO BLOCKS, CLASS A STONE OR EROSION STONE.

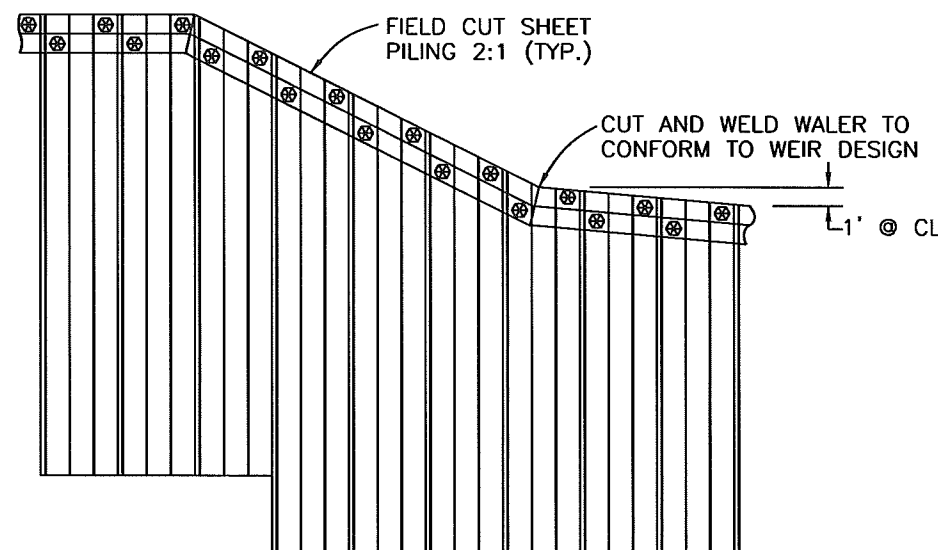




**BOLT DETAIL**



**WALER BOLT PLACEMENT (HEAVY "Z" STYLE SHEETS)**



**NOTES:**

1. ALL BOLTS SHALL BE 1" DIA. W/2 WASHERS. BOLTS SHALL EXTEND AT MINIMUM 3/8" BEYOND NUT.
2. ALL HOLES SHALL BE FIELD CUT 1/16" DIA. LARGER THAN THE BOLTS.

**DETAILS OF WALER**

NO SCALE

**CONSTRUCTION SPECIFICATIONS**

**REMOVAL OF WATER**

**1. SCOPE**

THE WORK SHALL CONSIST OF REMOVAL OF SURFACE WATER AND GROUND WATER AS NEEDED TO PERFORM THE REQUIRED CONSTRUCTION IN ACCORDANCE WITH THE SPECIFICATIONS. IT SHALL INCLUDE (1) BUILDING AND MAINTAINING ALL NECESSARY TEMPORARY IMPOUNDING WORKS, CHANNELS, AND DIVERSIONS, (2) FURNISHING, INSTALLING AND OPERATING ALL NECESSARY PUMPS, PIPING AND OTHER FACILITIES AND EQUIPMENT, AND (3) REMOVING ALL SUCH TEMPORARY WORKS AND EQUIPMENT AFTER THEY HAVE SERVED THEIR PURPOSES.

**2. DIVERTING SURFACE WATER**

THE CONTRACTOR SHALL BUILD, MAINTAIN AND OPERATE ALL COFFERDAMS, CHANNELS, FLUMES, SUMPS, AND OTHER TEMPORARY DIVERSION AND PROTECTIVE WORKS NEEDED TO DIVERT STREAMFLOW AND OTHER SURFACE WATER THROUGH OR AROUND THE CONSTRUCTION SITE AND AWAY FROM THE CONSTRUCTION WORK WHILE CONSTRUCTION IS IN PROGRESS. UNLESS OTHERWISE SPECIFIED, A DIVERSION MUST DISCHARGE INTO THE SAME NATURAL DRAINAGEWAY IN WHICH ITS HEADWORKS ARE LOCATED.

UNLESS OTHERWISE SPECIFIED, THE CONTRACTOR SHALL FURNISH TO THE ENGINEER, IN WRITING, HIS PLAN FOR DIVERTING SURFACE WATER BEFORE BEGINNING THE CONSTRUCTION WORK FOR WHICH THE DIVERSION IS REQUIRED. ACCEPTANCE OF THIS PLAN WILL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR COMPLETING THE WORK AS SPECIFIED.

**3. DEWATERING THE CONSTRUCTION SITE**

FOUNDATIONS, CUTOFF TRENCHES AND OTHER PARTS OF THE CONSTRUCTION SITE SHALL BE DEWATERED AND KEPT FREE OF STANDING WATER OR EXCESSIVELY MUDDY CONDITIONS AS NEEDED FOR PROPER EXECUTION OF THE CONSTRUCTION WORK. THE CONTRACTOR SHALL FURNISH, INSTALL, OPERATE AND MAINTAIN ALL DRAINS, SUMPS, PUMPS, CASING, WELLPOINTS, AND OTHER EQUIPMENT NEEDED TO PERFORM THE DEWATERING AS SPECIFIED. DEWATERING METHODS THAT CAUSE A LOSS OF FINES FROM FOUNDATION AREAS WILL NOT BE PERMITTED.

UNLESS OTHERWISE SPECIFIED, THE CONTRACTOR SHALL FURNISH TO THE ENGINEER, IN WRITING, HIS PLAN FOR DEWATERING BEFORE BEGINNING THE CONSTRUCTION WORK FOR WHICH THE DEWATERING IS REQUIRED. ACCEPTANCE OF THIS PLAN WILL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR COMPLETING THE WORK AS SPECIFIED.

**4. EROSION AND POLLUTION CONTROL**

REMOVAL OF WATER FROM THE CONSTRUCTION SITE SHALL BE ACCOMPLISHED IN SUCH A MANNER THAT EROSION AND THE TRANSMISSION OF SEDIMENT AND OTHER POLLUTANTS ARE MINIMIZED.

**5. REMOVAL OF TEMPORARY WORKS**

AFTER THE TEMPORARY WORKS HAVE SERVED THEIR PURPOSES, THE CONTRACTOR SHALL REMOVE THEM OR LEVEL AND GRADE THEM TO THE EXTENT REQUIRED TO PRESENT A SLIGHTLY APPEARANCE AND TO PREVENT ANY OBSTRUCTION OF THE FLOW OF WATER OR ANY OTHER INTERFERENCE WITH THE OPERATION OF OR ACCESS TO THE PERMANENT WORKS.

EXCEPT AS OTHERWISE SPECIFIED, PIPES AND CASINGS SHALL BE REMOVED FROM TEMPORARY WELLS AND THE WELLS SHALL BE FILLED TO GROUND LEVEL WITH GRAVEL OR OTHER MATERIAL APPROVED BY THE CONTRACTING OFFICER.

**6. MEASUREMENT AND PAYMENT**

PAYMENT FOR THIS ITEM WILL BE MADE AT THE CONTRACT LUMP SUM PRICE AND WILL CONSTITUTE FULL COMPENSATION FOR COMPLETION OF THE WORK.

**SPECIAL DETAILS**

REV.:

**SUNDQUIST ENGINEERING, P.C.**  
CONSULTING ENGINEERS

HIGHWAYS • MUNICIPAL • MAPPING • SURVEYING  
120 S. MAIN, P.O. BOX 220, DENISON, IOWA 51442  
PHONE: (712)263-8118 FAX: (712)263-2181

SE PROJECT NO.: 02508 DATE: 04/08 DRAWN BY: DRD REVIEWED BY: SAS APPROVED BY: TJG

DESIGN NO.

FILE NO.

CRAWFORD COUNTY PROJECT NO. LHC47-14W

SHEET U2

PARCEL  
NUMBER ① PROPERTY OWNER  
MARVIN GOTTSCH

1293.58

①  
NE1/4 SE1/4  
15-84-37

TOP  
WOOD  
POST

WESTSIDE  
AVE

CP #2  
E1/4 COR.  
SEC. 15  
FD. 3" IDOT  
ALUM. CAP



BM #1: SPIKE IN CORNER POST  
69' WEST OF NW CORNER OF BRIDGE  
ELEV. 1296.88

| HORIZONTAL CONTROL |            |            |           |
|--------------------|------------|------------|-----------|
| DESCRIPTION        | NORTHING   | EASTING    | ELEVATION |
| CP #1              | 11407.6400 | 10000.0000 | 1333.74   |
| CP #2              | 12614.1700 | 10000.0000 | 1300.08   |
| P.O.T. 8+00        | 11928.1776 | 9704.0001  |           |
| P.C. 9+02.26       | 11877.4345 | 9792.7788  |           |
| P.I. 9+52.26       | 11852.6230 | 9836.1883  |           |
| P.T. 10+00         | 11852.6230 | 9886.1883  |           |
| P.O.T. 11+00       | 11852.6230 | 9986.1883  |           |

**LOCATION**  
CRAWFORD COUNTY  
T-84N R-37W  
SECTION 15  
WESTSIDE TWP.  
OVER EAST BOYER RIVER

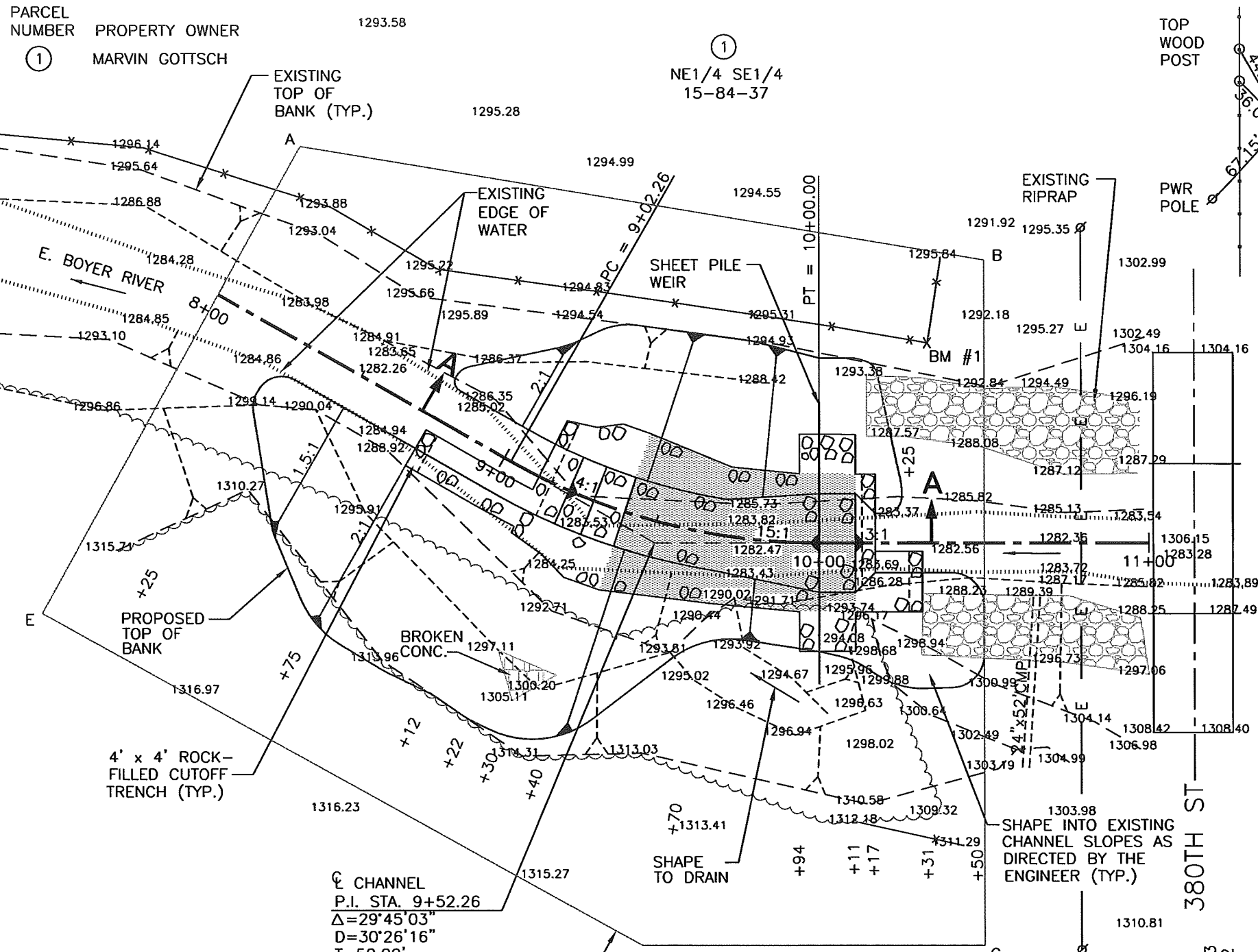
**HYDROLOGY AND HYDRAULICS**  
DRAINAGE AREA = 17.2 SM  
CHANNEL SLOPE = 15.6 FT/MILE

| STORM | RUNOFF VELOCITY |        | STAGE<br>ELEV.* |
|-------|-----------------|--------|-----------------|
|       | CFS             | FT/SEC |                 |
| Q2    | 750             | 4.4    | 1288.6          |
| Q5    | 1420            | 5.5    | 1289.9          |
| Q10   | 1930            | 6.1    | 1290.7          |
| Q25   | 2650            | 6.8    | 1291.7          |
| Q50   | 3230            | 7.2    | 1292.4          |
| Q100  | 3840            | 7.6    | 1293.1          |

\* AT WEIR SECTION STA. 10+00

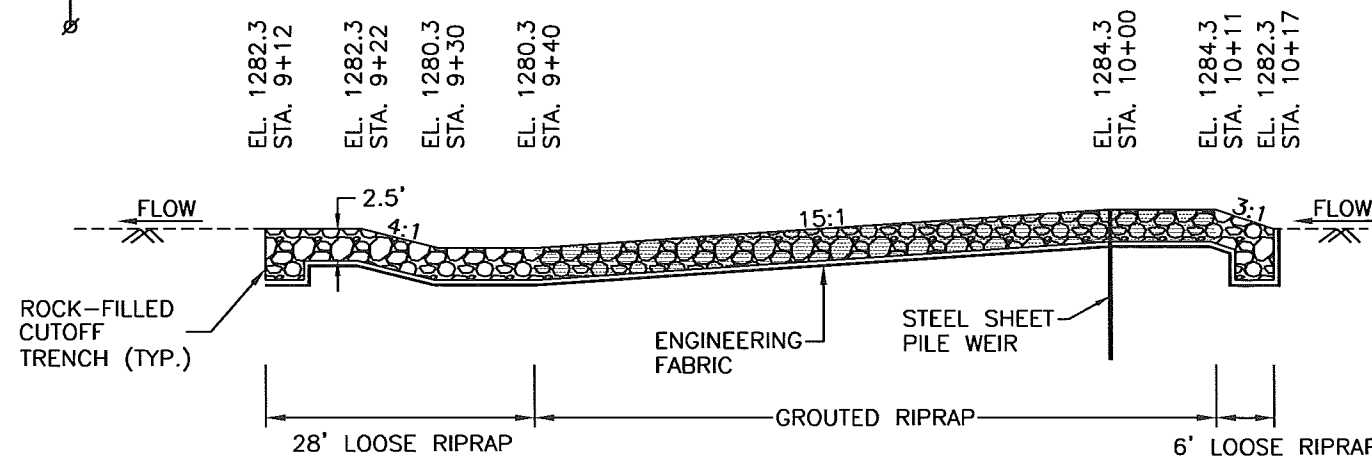
LOOSE RIPRAP  
 GROUTED RIPRAP

NOTE: SEE CHANNEL CROSS SECTIONS  
FOR WEIR DETAILS AND DETAILS OF  
RIPRAP PLACEMENT.



①  
NE1/4 SE1/4  
15-84-37

| HORIZONTAL CONTROL<br>LIMITS OF CLEARING & GRUBBING |            |           |
|-----------------------------------------------------|------------|-----------|
| POINT NO.                                           | NORTHING   | EASTING   |
| A                                                   | 11973.1704 | 9728.9295 |
| B                                                   | 11938.6568 | 9936.1883 |
| C                                                   | 11730.3222 | 9936.1883 |
| D                                                   | 11730.3222 | 9832.3869 |
| E                                                   | 11831.2230 | 9650.2801 |



**SECTION A-A**  
NOT TO SCALE

**WEIR SITUATION PLAN**

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SE PROJECT NO. 02508 DATE: 04/08 DRAWN BY: DRD REVIEWED BY: SAS APPROVED BY: TJG

DESIGN NO. . FILE NO. . CRAWFORD COUNTY PROJECT NO. LHC47-I4W

SHEET VI

