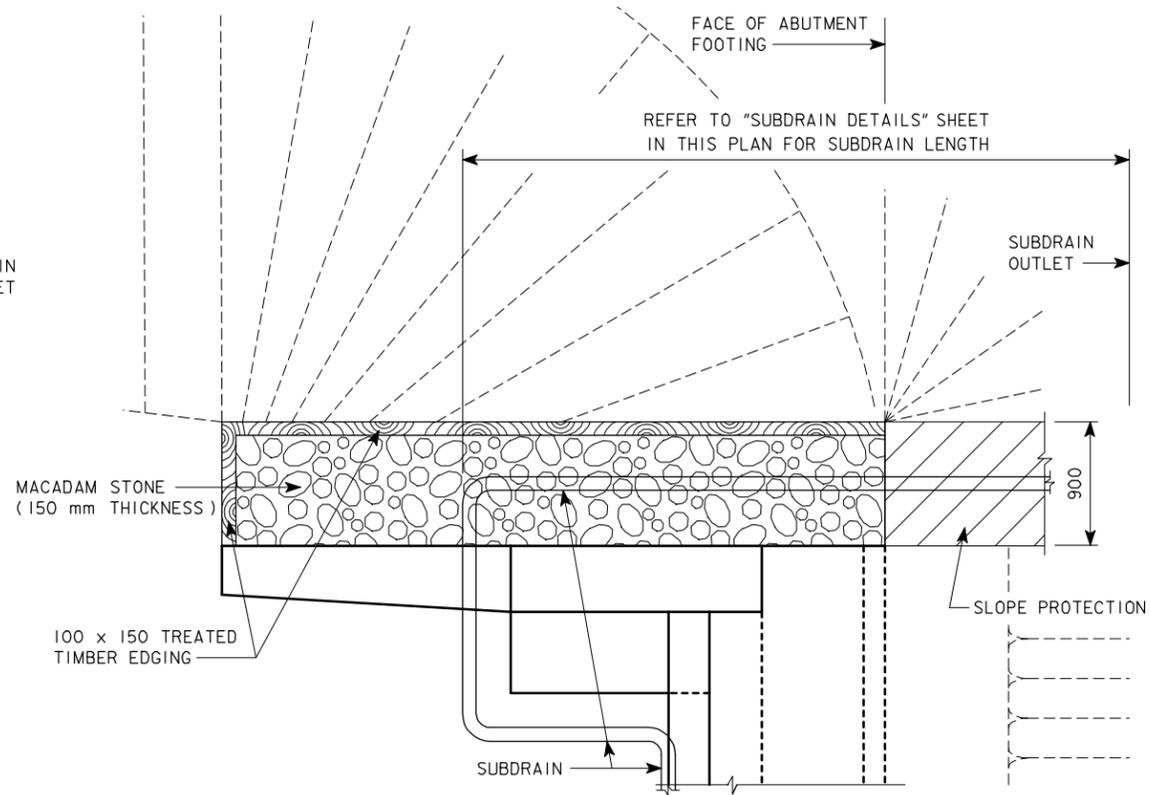
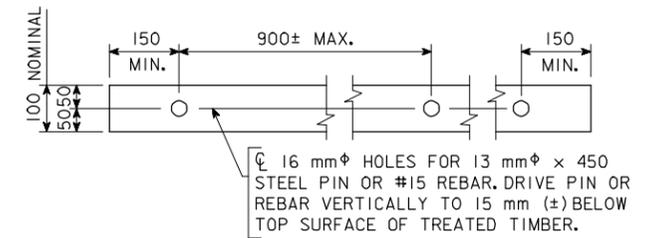


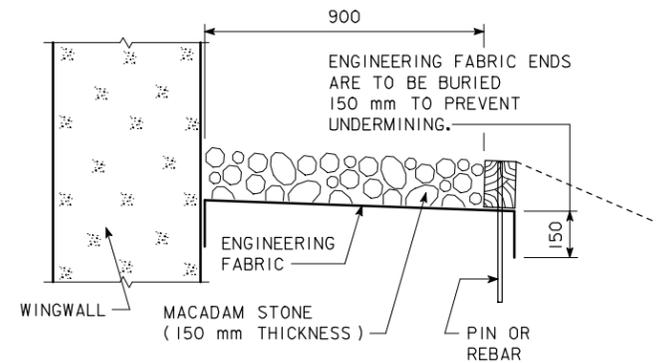
TOP VIEW OF WING ARMORING



TOP VIEW OF WING ARMORING WITH WING EXTENSION



100 x 150 TREATED TIMBER EDGING DETAILS



DETAIL "A"

GENERAL NOTES:

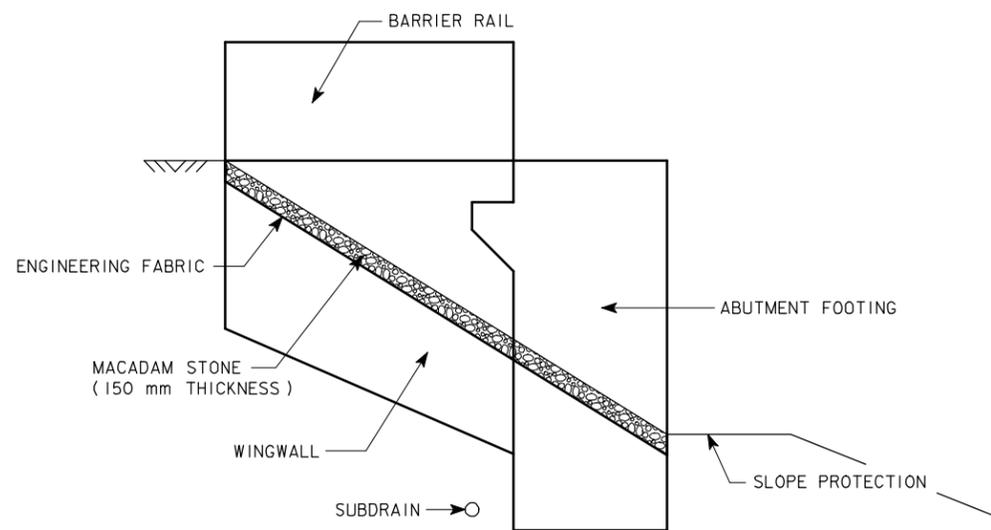
MACADAM STONE SHALL BE PLACED ALONG THE SIDE OF THE WING AND ABUTMENT FOOTING AS SHOWN IN DETAIL "A". THIS IS TYPICAL AT EACH CORNER OF THE BRIDGE UNLESS OTHERWISE NOTED IN THE PLANS. THE MACADAM STONE AT THESE LOCATIONS SHALL BE UNDERLAYED WITH ENGINEERING FABRIC MEETING THE REQUIREMENTS OF 4196.01 C.

THE MACADAM STONE SHALL MEET THE REQUIREMENTS OF 4122.02, COARSE MATERIAL (NO CHOKE STONE IS ALLOWED).

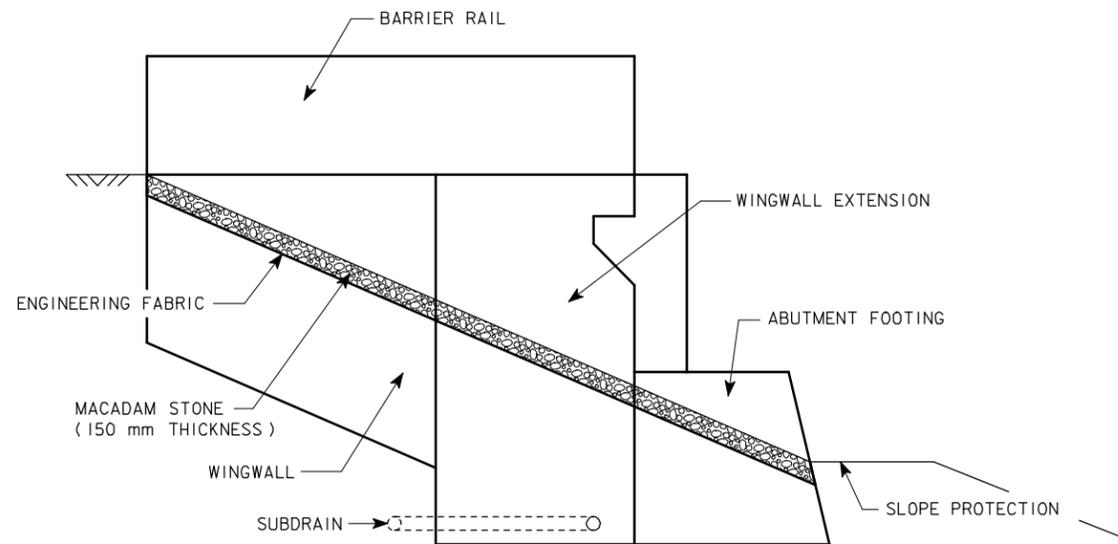
WOOD PRESERVATIVE TREATMENT FOR THE TIMBER EDGING SHALL MEET THE REQUIREMENTS FOR GUARDRAIL POSTS, SAWED FOUR SIDES, AS SPECIFIED IN 4161.

THE MACADAM STONE SHALL BE DEPOSITED, SPREAD, CONSOLIDATED AND SHAPED BY MECHANICAL OR HAND METHODS THAT WILL PROVIDE UNIFORM 150 mm DEPTH AND DENSITY AND PROVIDE UNIFORM SURFACE APPEARANCE.

PAYMENT FOR THE BRIDGE WING ARMORING SHALL BE INCIDENTAL TO THE BID ITEM "STRUCTURAL CONCRETE (BRIDGE)" AND SHALL INCLUDE COSTS OF ALL MATERIAL AND LABOR TO CONSTRUCT THE WING ARMORING AS SHOWN ON THESE PLANS.



PROFILE VIEW OF WING ARMORING
(SHOWN FOR INTEGRAL ABUTMENT)

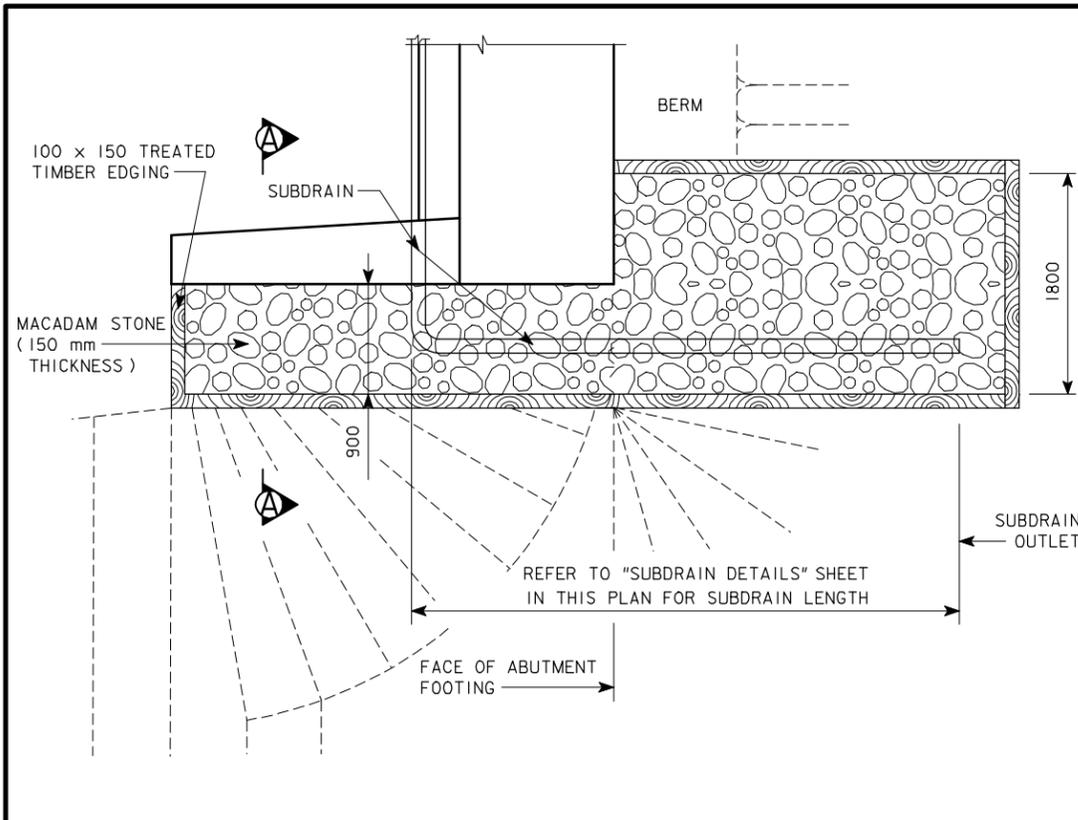


PROFILE VIEW OF WING ARMORING WITH WING EXTENSION
(SHOWN FOR STUB ABUTMENT)
(INTEGRAL ABUTMENT WITH WING EXTENSIONS SIMILAR)

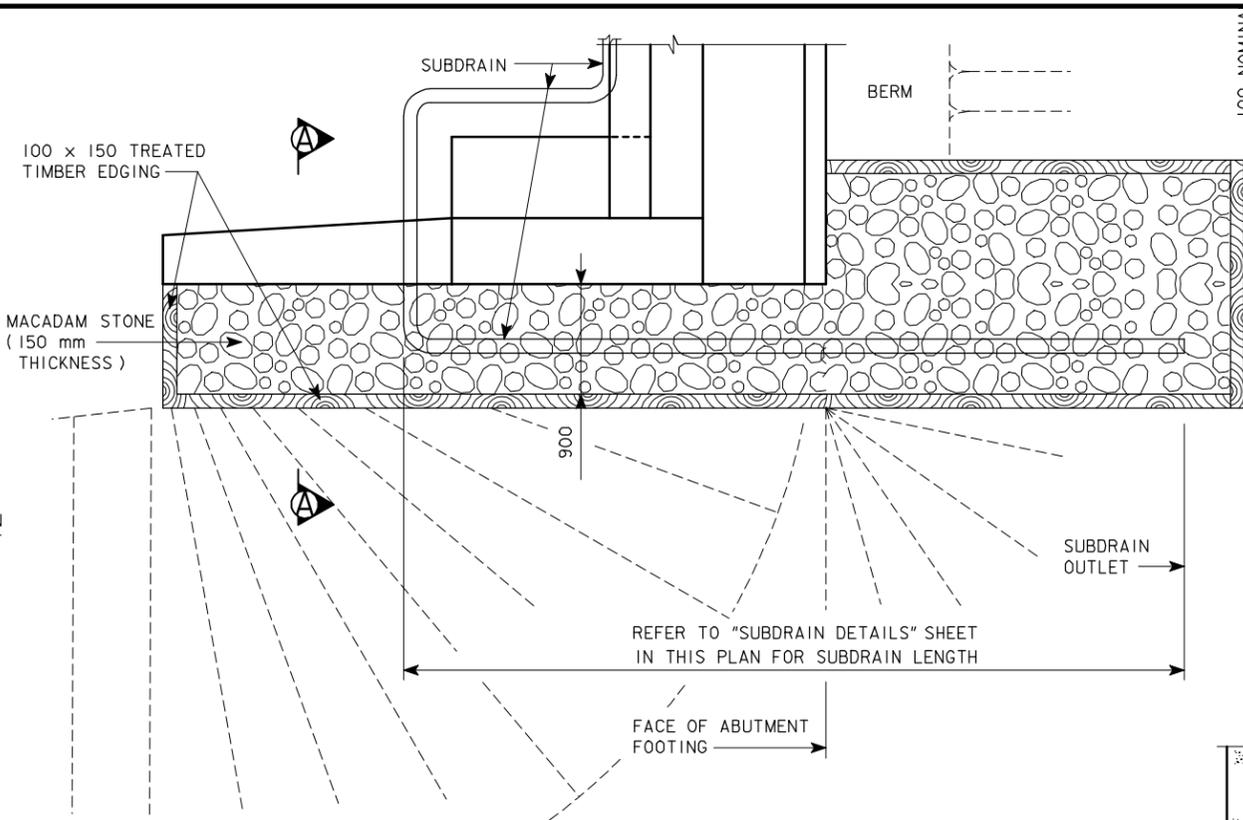
BRIDGE WING ARMORING

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. ___ OF ___ FILE NO. ___ DESIGN NO. ___

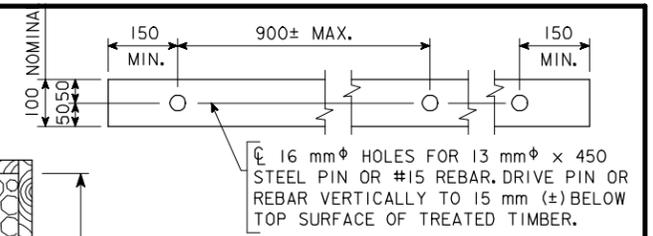
CORRECTION 08-02 - PAYMENT FOR BRIDGE WING ARMOURING CLARIFIED IN NOTES. HM1005.S01; THIS SHEET ISSUED 06-02.



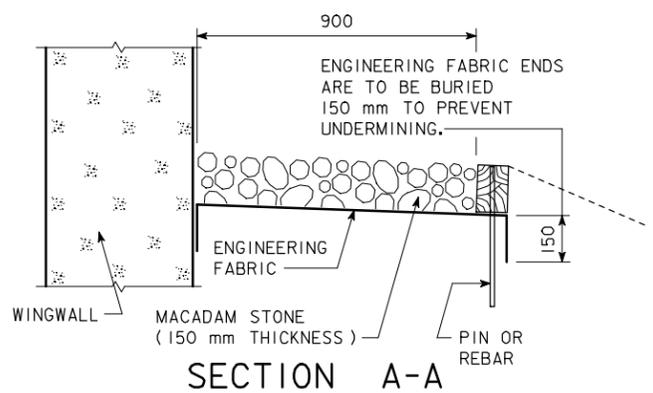
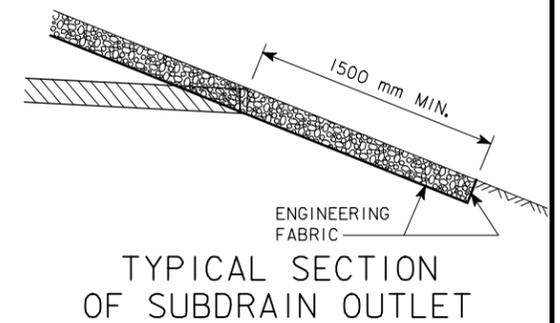
TOP VIEW OF WING ARMORING



TOP VIEW OF WING ARMORING WITH WING EXTENSION



100 x 150 TREATED TIMBER EDGING DETAILS



GENERAL NOTES:

MACADAM STONE SHALL BE PLACED ALONG THE SIDE OF THE WING AND ABUTMENT FOOTING AS SHOWN IN SECTION A-A. THIS IS TYPICAL AT EACH CORNER OF THE BRIDGE UNLESS OTHERWISE NOTED IN THE PLANS. THE MACADAM STONE AT THESE LOCATIONS SHALL BE UNDERLAYED WITH ENGINEERING FABRIC MEETING THE REQUIREMENTS OF 4196.01 C.

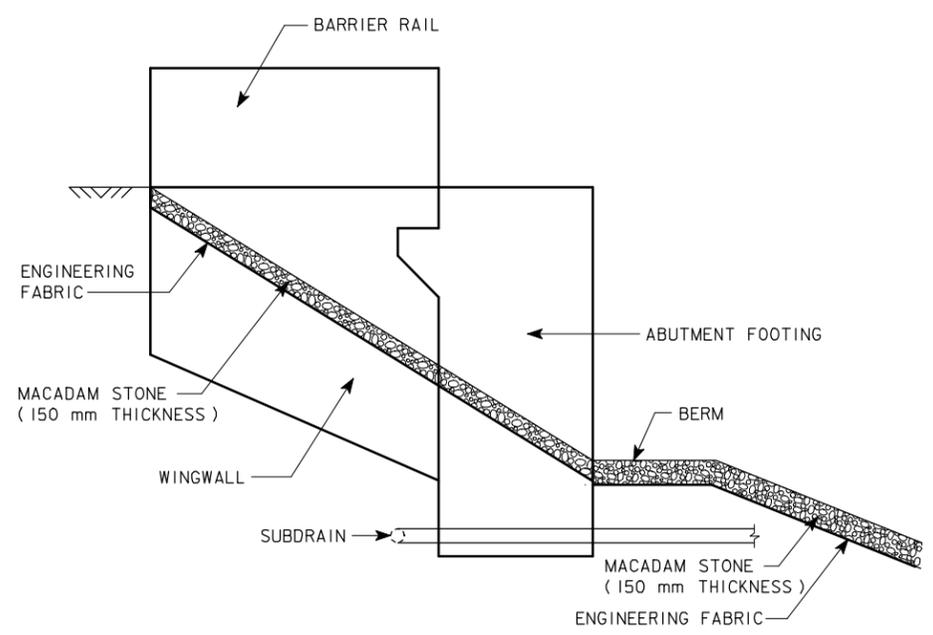
THE MACADAM STONE SHALL MEET THE REQUIREMENTS OF 4122.02, COARSE MATERIAL (NO CHOKE STONE IS ALLOWED).

WOOD PRESERVATIVE TREATMENT FOR THE TIMBER EDGING SHALL MEET THE REQUIREMENTS FOR GUARDRAIL POSTS, SAWED FOUR SIDES, AS SPECIFIED IN 4161.

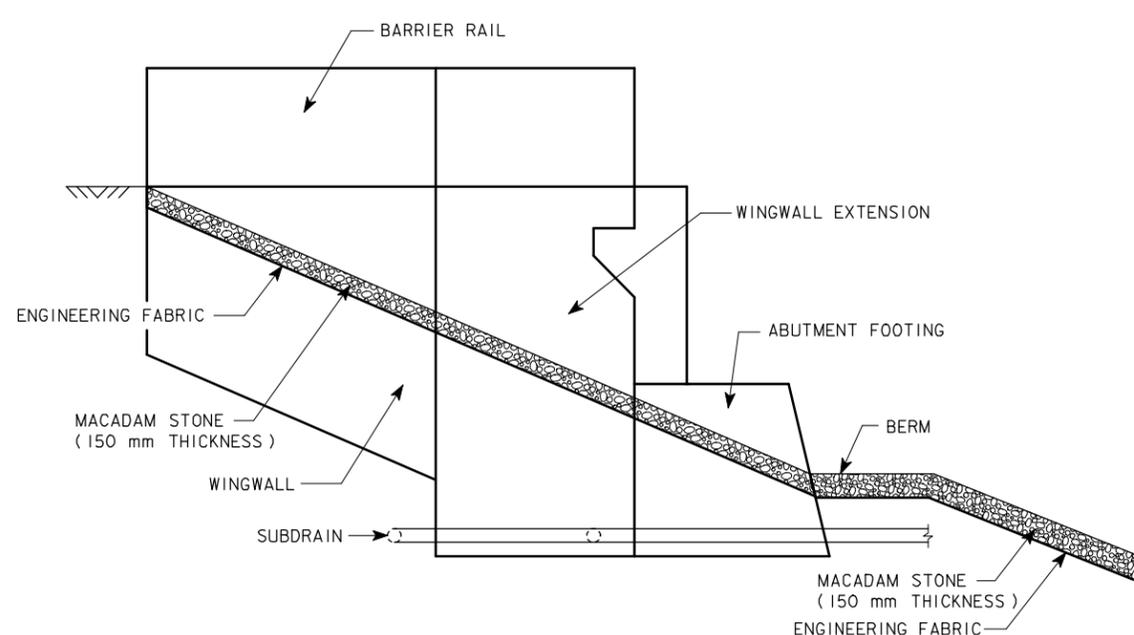
THE MACADAM STONE SHALL BE DEPOSITED, SPREAD, CONSOLIDATED AND SHAPED BY MECHANICAL OR HAND METHODS THAT WILL PROVIDE UNIFORM 150 mm DEPTH AND DENSITY AND PROVIDE UNIFORM SURFACE APPEARANCE.

PAYMENT FOR THE BRIDGE WING ARMORING SHALL BE INCIDENTAL TO THE BID ITEM "STRUCTURAL CONCRETE (BRIDGE)" AND SHALL INCLUDE COSTS OF ALL MATERIAL AND LABOR TO CONSTRUCT THE WING ARMORING AS SHOWN ON THESE PLANS.

REVISED 07-04 - DETAIL "A" CHANGED TO SECTION A-A. HMI005A.SOI: THIS SHEET ISSUED 06-02.



PROFILE VIEW OF WING ARMORING (SHOWN FOR INTEGRAL ABUTMENT)

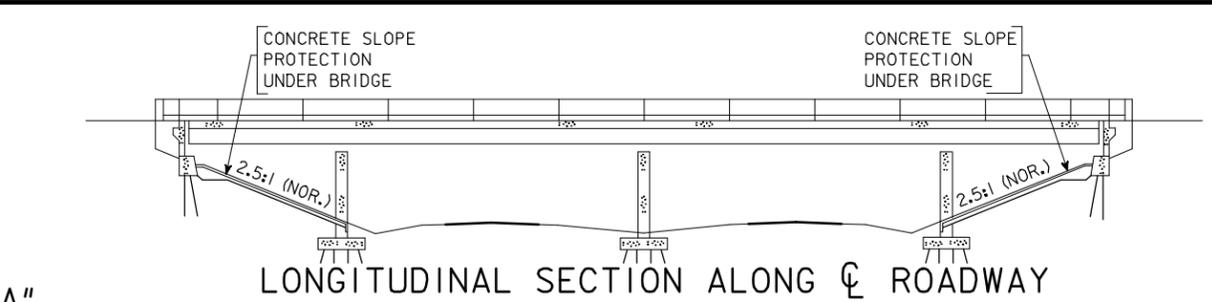
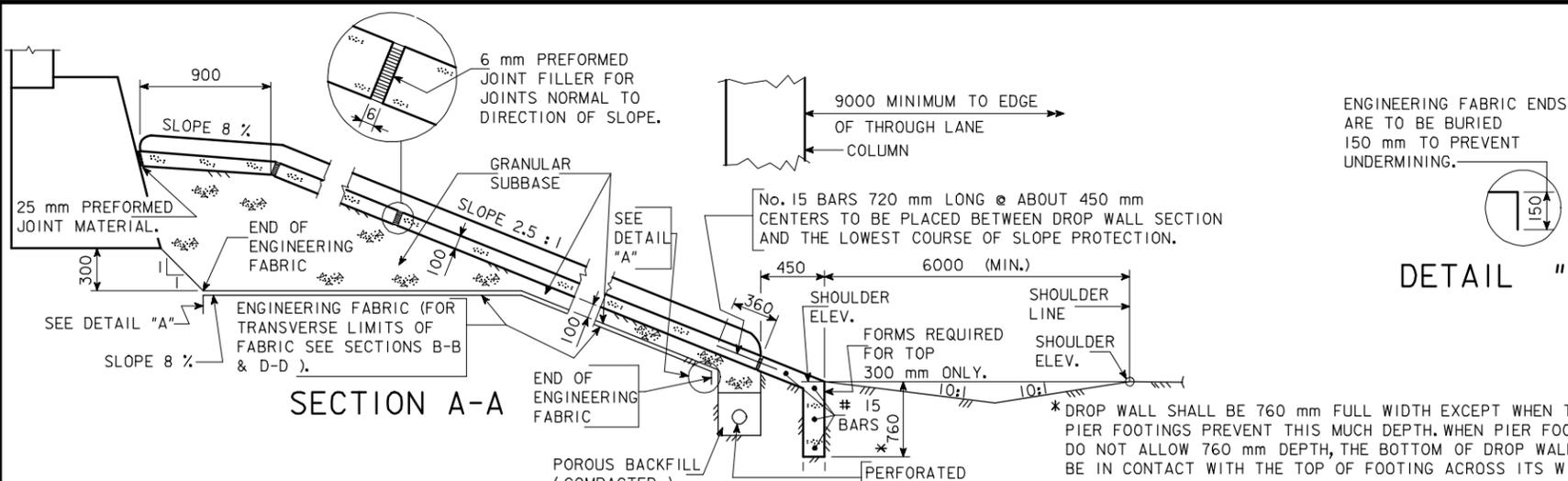


PROFILE VIEW OF WING ARMORING WITH WING EXTENSION (SHOWN FOR STUB ABUTMENT) (INTEGRAL ABUTMENT WITH WING EXTENSIONS SIMILAR)

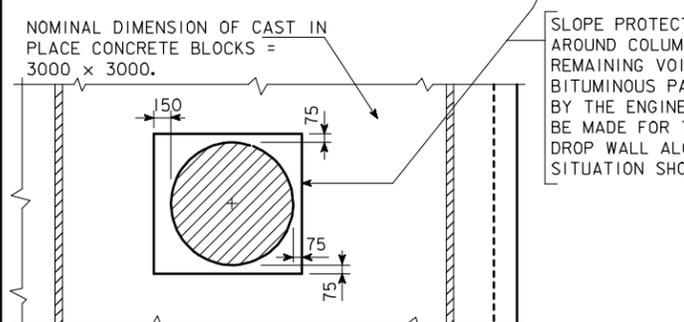
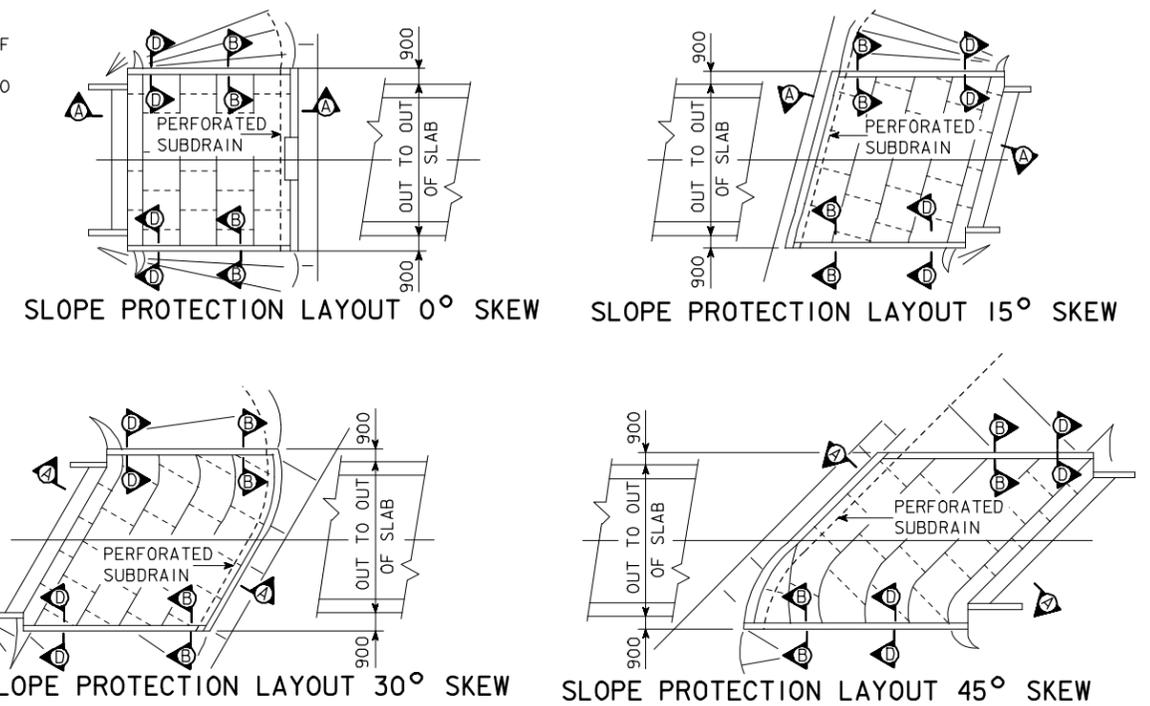
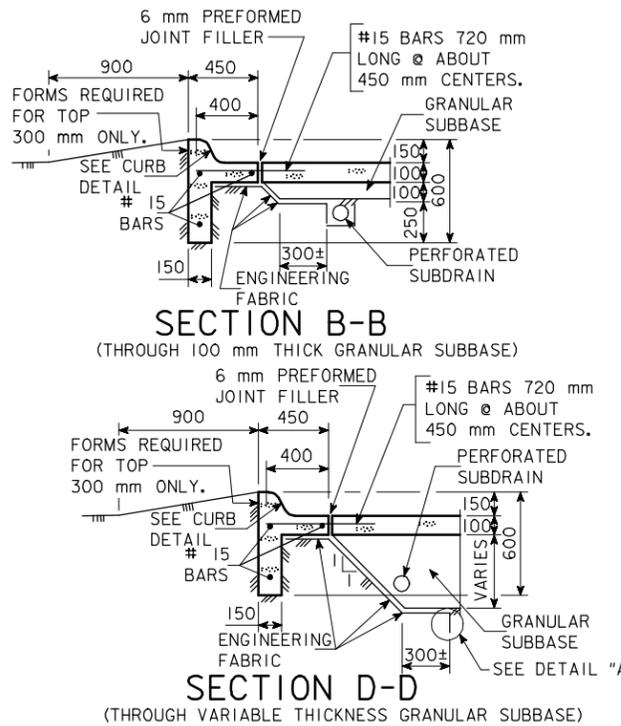
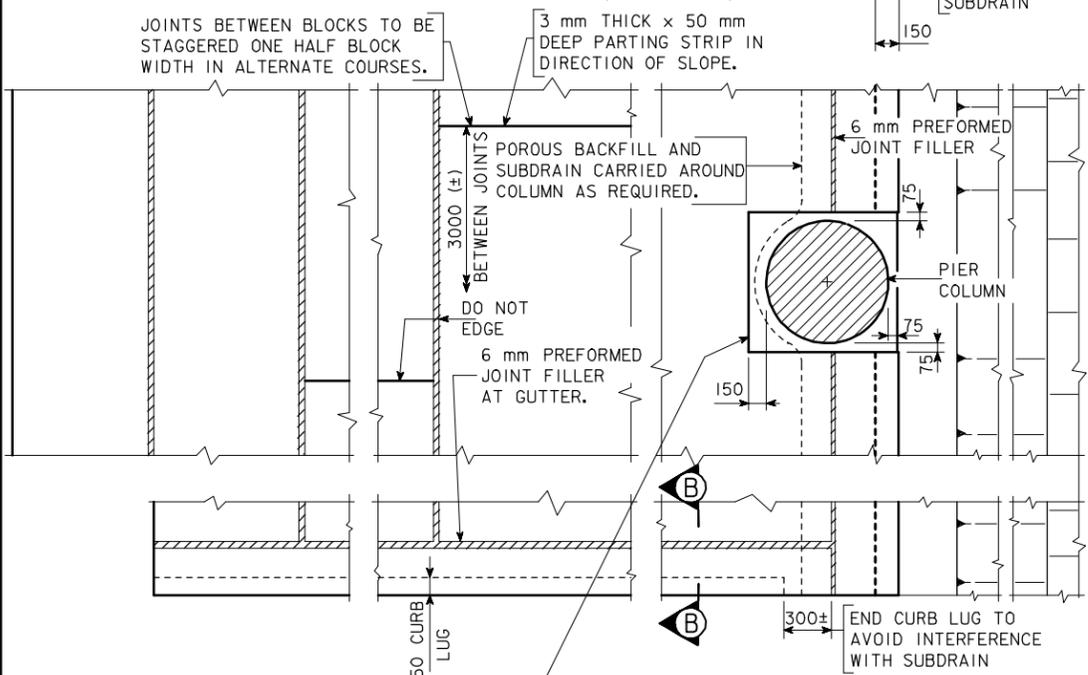
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ___ OF ___ FILE NO. ___ DESIGN NO. ___

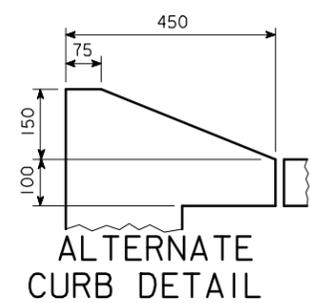
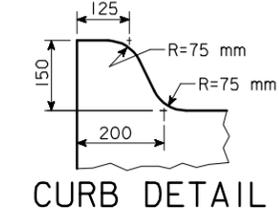
REVISED 06-02 - GENERAL NOTES, SECTION A-A, SLOPE PROTECTION LAYOUTS CHANGED. SECTION C-C DELETED. SUBDRAIN ADDED TO SECTION B-B AND D-D. HM1006.S01 - THIS SHEET ISSUED 9-1-95.



DETAIL "A"



PART SLOPE PROTECTION PLAN FOR COLUMNS IN SLOPE (0° SKEW)



GENERAL NOTES :

ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED OR SHOWN.

THIS PLAN SHEET SHOWS DETAILS FOR PLACING A PORTLAND CEMENT CONCRETE SLOPE PROTECTION UNDER OVERHEAD STRUCTURES.

THE CURRENT STANDARD SPECIFICATIONS OF THE IOWA D.O.T. SHALL APPLY WITH MODIFICATIONS OR ADDITIONS LISTED BELOW:

FINISH - CLASS I, FLOATED SURFACE FINISH.

CURE - CURE AS PER CURRENT SPECIFICATIONS.

GRANULAR SUBBASE - THIS PREWETTED MATERIAL SHALL BE DEPOSITED BY A METHOD APPROVED BY THE ENGINEER AND BE THOROUGHLY TAMPED OR VIBRATED TO INSURE COMPACTION. FINISHED SHAPE SHALL BE AS SHOWN IN SECTION A-A.

FORESLOPE PREPARATION - THE BRIDGE BERM FORESLOPE SHALL BE COMPACTED AND SHAPED AS SHOWN IN SECTION A-A ON THIS SHEET. THE BERM FORESLOPE SHALL BE FIRM WHEN THE ENGINEERING FABRIC AND GRANULAR SUBBASE ARE PLACED.

ENGINEERING FABRIC SHALL MEET REQUIREMENTS OF 4196.01B. IF THE ENGINEERING FABRIC IS LAPPED, THE LAPS SHALL BE A MINIMUM OF 300 mm IN LENGTH, SHINGLE FASHION WITH UP SLOPE LAP PIECE ON TOP AND STAPLED FOR CONTINUITY.

THE CAST IN PLACE CONCRETE IS TO BE POURED IN APPROXIMATELY 3000 mm WIDE COURSES, BUT ALL COURSES ON ONE SLOPE SHOULD HAVE APPROXIMATELY EQUAL WIDTHS. ADJACENT COURSES SHALL NOT BE POURED WITHIN 15 HOURS OF ONE ANOTHER. THE JOINTS IN THE DIRECTION OF THE SLOPE ARE TO BE STAGGERED ABOUT ONE HALF BLOCK WIDTH.

PAYMENT FOR "CONCRETE SLOPE PROTECTION" WILL BE MADE ON A SQUARE METER BASIS FOR SLOPE PROTECTION CONSTRUCTED. THE UNIT PRICE BID PER SQUARE METER IS TO INCLUDE COSTS OF ALL MATERIALS AND LABOR REQUIRED TO CONSTRUCT THE SLOPE PROTECTION AS SHOWN ON THESE PLANS. THE FORESLOPE SHAPING AND COMPACTING AND THE DISPOSAL OF EXCESS SOIL FROM SHAPING OR TRENCHING, AS DIRECTED BY THE ENGINEER, SHALL BE CONSIDERED INCIDENTAL TO PLACING THE CONCRETE SLOPE PROTECTION.

WHERE EROSION CONTROL WORK IS COMPLETED THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY PLANT MATERIALS DESTROYED ADJACENT TO SLOPE PROTECTION AREA. THE CONTRACTOR SHALL REPLANT, RESEED AND REMULCH ALL AREAS IN ACCORDANCE WITH SECTION 2601 OF THE CURRENT METRIC STANDARD SPECIFICATIONS, AT THE CONTRACTOR'S EXPENSE.

THE BRIDGE CONTRACTOR IS TO INSTALL SUBDRAINS AS DETAILED ON THE SUBDRAIN DETAILS SHEET.

ESTIMATED QUANTITIES

DESCRIPTION	LOCATION	QUANTITY
SLOPE PROTECTION, CONCRETE	ABUT.	m ²
SLOPE PROTECTION, CONCRETE	ABUT.	m ²
TOTAL		m ²

ITEMS TO BE INCLUDED IN "CONCRETE SLOPE PROTECTION":

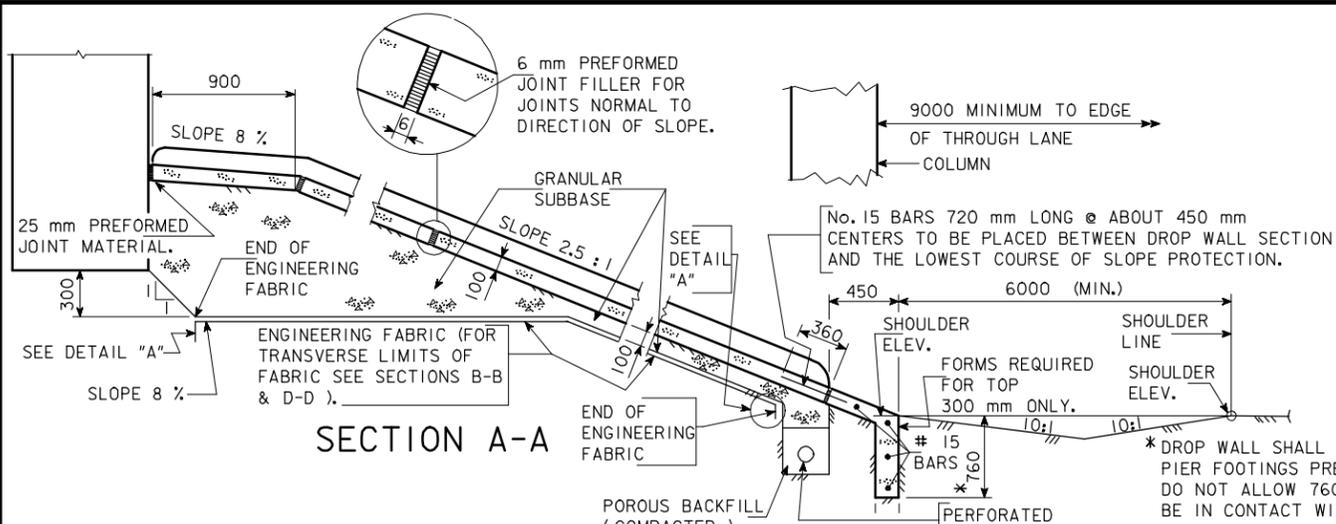
- ENGINEERING FABRIC.
- GRANULAR SUBBASE.
- CLASS "C" STRUCTURAL CONCRETE.
- #15 REINFORCING.
- PREFORMED JOINT FILLER.
- EXCAVATION, SHAPING AND COMPACTING.
- COMMERCIAL BITUMINOUS PATCHING MATERIAL.

CONCRETE SLOPE PROTECTION

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

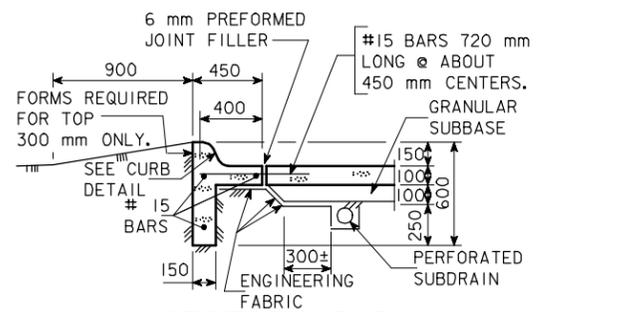
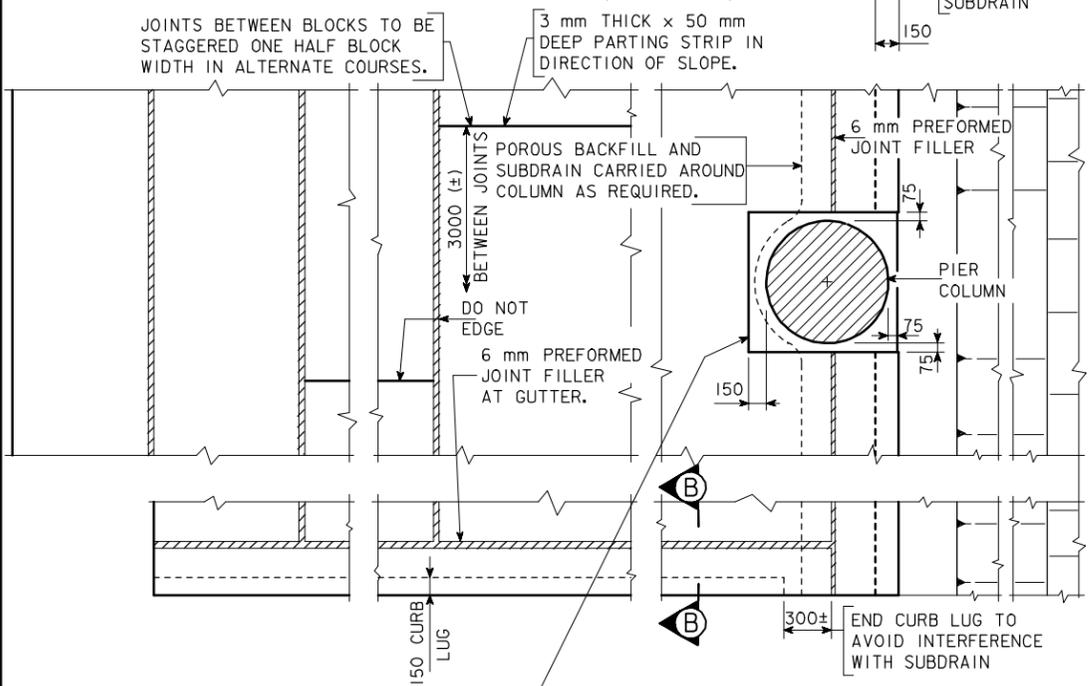
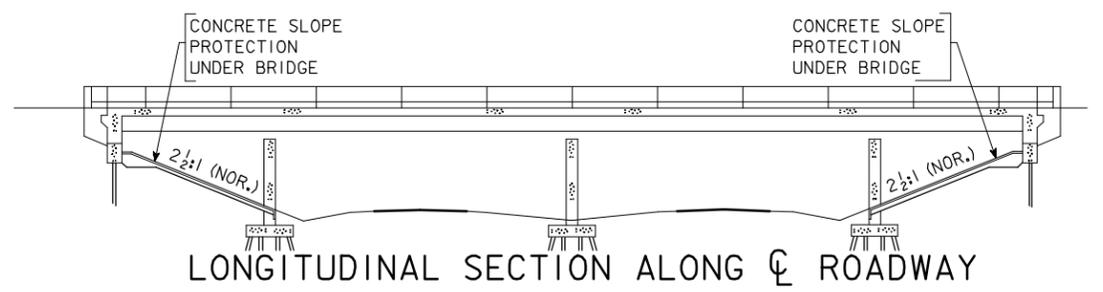
DESIGN SHEET NO. ____ OF ____ FILE NO. ____ DESIGN NO. ____

REVISED 06-02 - GENERAL NOTES, SECTION A-A, SLOPE PROTECTION LAYOUTS CHANGED. SECTION C-C DELETED. SUBDRAIN ADDED TO SECTION B-B AND D-D. HM1006A.SOI : THIS SHEET ISSUED 9-1-95.

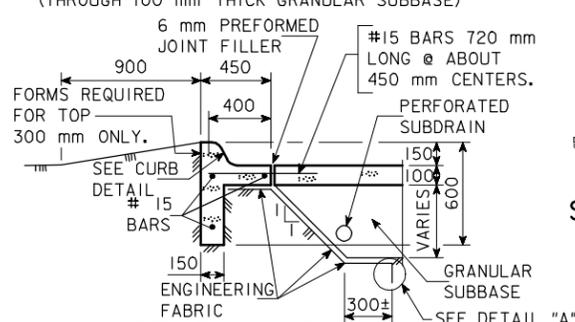


ENGINEERING FABRIC ENDS ARE TO BE BURIED 150 mm TO PREVENT UNDERMINING.

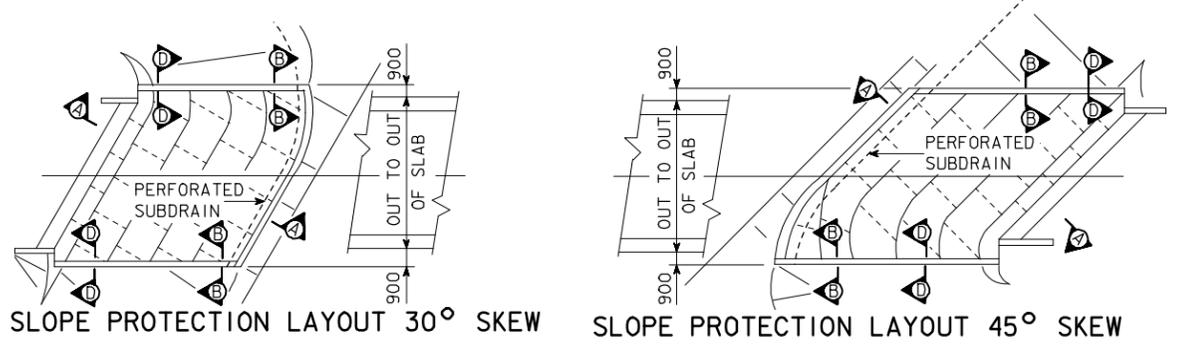
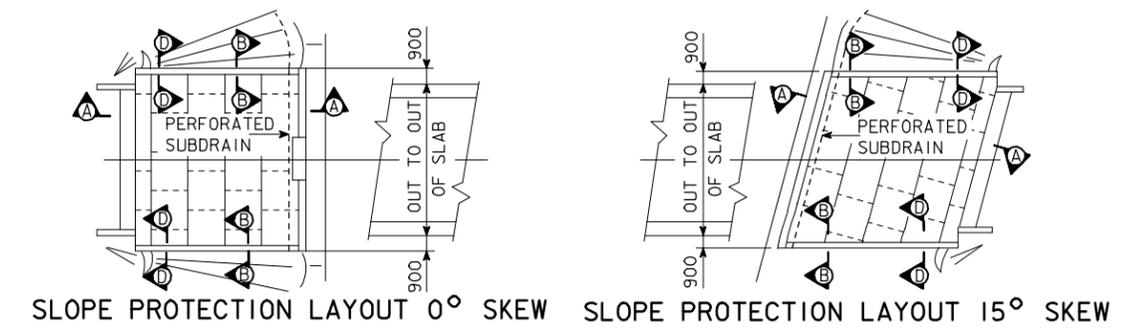
DETAIL "A"



SECTION B-B

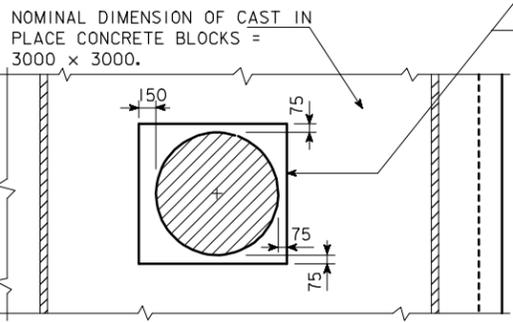


SECTION D-D

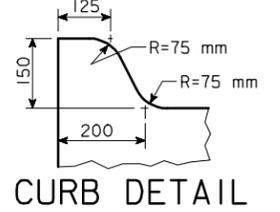


ESTIMATED QUANTITIES		
DESCRIPTION	LOCATION	QUANTITY
SLOPE PROTECTION, CONCRETE	ABUT.	m ²
SLOPE PROTECTION, CONCRETE	ABUT.	m ²
TOTAL		m ²

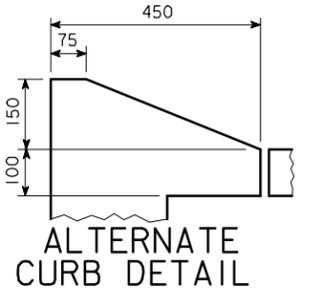
ITEMS TO BE INCLUDED IN "CONCRETE SLOPE PROTECTION":
 ENGINEERING FABRIC.
 GRANULAR SUBBASE.
 CLASS "C" STRUCTURAL CONCRETE.
 #15 REINFORCING.
 PREFORMED JOINT FILLER.
 EXCAVATION, SHAPING AND COMPACTING.
 COMMERCIAL BITUMINOUS PATCHING MATERIAL.



PART SLOPE PROTECTION PLAN FOR COLUMNS IN SLOPE (0° SKEW)



CURB DETAIL



ALTERNATE CURB DETAIL

GENERAL NOTES :

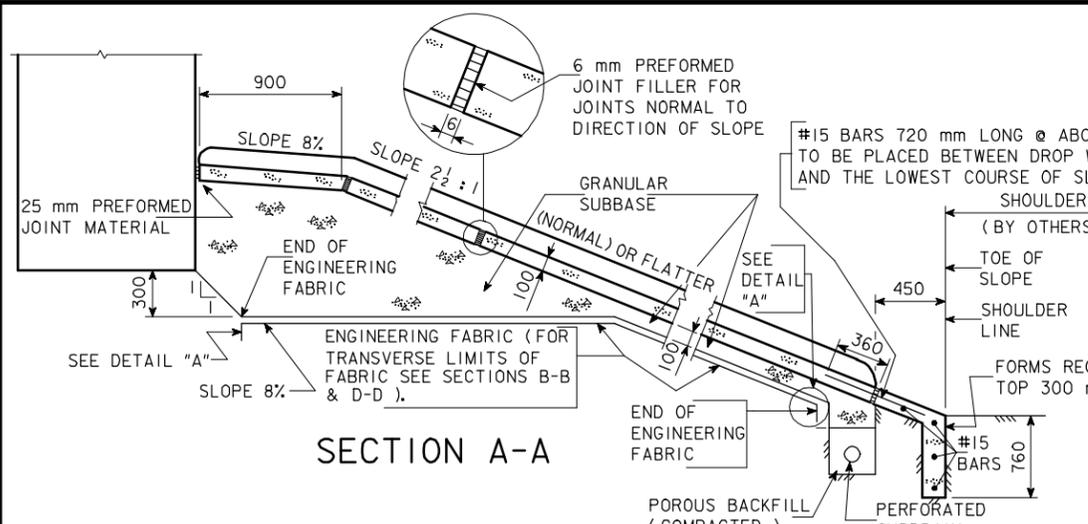
ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED OR SHOWN.
 THIS PLAN SHEET SHOWS DETAILS FOR PLACING A PORTLAND CEMENT CONCRETE SLOPE PROTECTION UNDER OVERHEAD STRUCTURES.
 THE CURRENT STANDARD SPECIFICATIONS OF THE IOWA D.O.T. SHALL APPLY WITH MODIFICATIONS OR ADDITIONS LISTED BELOW:
 FINISH - CLASS I, FLOATED SURFACE FINISH.
 CURE - CURE AS PER CURRENT SPECIFICATIONS.
 GRANULAR SUBBASE - THIS PREWETTED MATERIAL SHALL BE DEPOSITED BY A METHOD APPROVED BY THE ENGINEER AND BE THOROUGHLY TAMPED OR VIBRATED TO INSURE COMPACTION. FINISHED SHAPE SHALL BE AS SHOWN IN SECTION A-A.
 FORESLOPE PREPARATION - THE BRIDGE BERM FORESLOPE SHALL BE COMPACTED AND SHAPED AS SHOWN IN SECTION A-A ON THIS SHEET. THE BERM FORESLOPE SHALL BE FIRM WHEN THE ENGINEERING FABRIC AND GRANULAR SUBBASE ARE PLACED.
 ENGINEERING FABRIC SHALL MEET REQUIREMENTS OF 4196.01B. IF THE ENGINEERING FABRIC IS LAPPED, THE LAPS SHALL BE A MINIMUM OF 300 mm IN LENGTH, SHINGLE FASHION WITH UP SLOPE LAP PIECE ON TOP AND STAPLED FOR CONTINUITY.

THE CAST IN PLACE CONCRETE IS TO BE POURED IN APPROXIMATELY 3000 mm WIDE COURSES, BUT ALL COURSES ON ONE SLOPE SHOULD HAVE APPROXIMATELY EQUAL WIDTHS. ADJACENT COURSES SHALL NOT BE POURED WITHIN 15 HOURS OF ONE ANOTHER. THE JOINTS IN THE DIRECTION OF THE SLOPE ARE TO BE STAGGERED ABOUT ONE HALF BLOCK WIDTH.
 PAYMENT FOR "CONCRETE SLOPE PROTECTION" WILL BE MADE ON A SQUARE METER BASIS FOR SLOPE PROTECTION CONSTRUCTED. THE UNIT PRICE BID PER SQUARE METER IS TO INCLUDE COSTS OF ALL MATERIALS AND LABOR REQUIRED TO CONSTRUCT THE SLOPE PROTECTION AS SHOWN ON THESE PLANS. THE FORESLOPE SHAPING AND COMPACTING AND THE DISPOSAL OF EXCESS SOIL FROM SHAPING OR TRENCHING, AS DIRECTED BY THE ENGINEER, SHALL BE CONSIDERED INCIDENTAL TO PLACING THE CONCRETE SLOPE PROTECTION.
 WHERE EROSION CONTROL WORK IS COMPLETED THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY PLANT MATERIALS DESTROYED ADJACENT TO SLOPE PROTECTION AREA. THE CONTRACTOR SHALL REPLANT, RESEED AND REMULCH ALL AREAS IN ACCORDANCE WITH SECTION 2601 OF THE CURRENT METRIC STANDARD SPECIFICATIONS, AT THE CONTRACTOR'S EXPENSE.
 THE BRIDGE CONTRACTOR IS TO INSTALL SUBDRAINS AS DETAILED ON THE SUBDRAIN DETAILS SHEET.

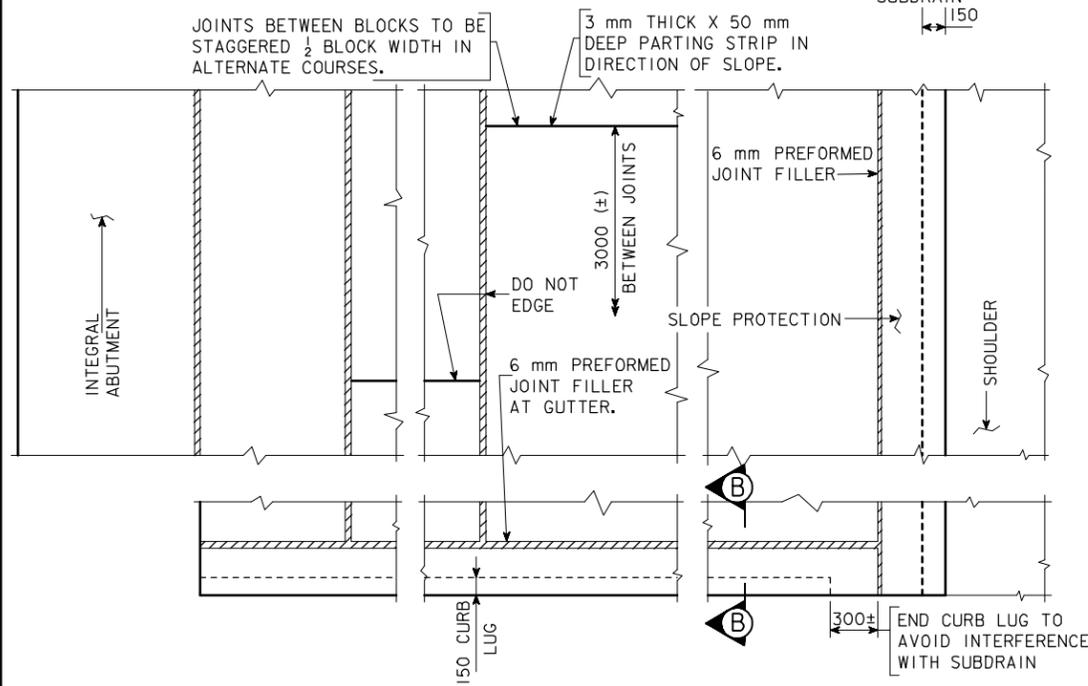
CONCRETE SLOPE PROTECTION

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. ____ OF ____ FILE NO. ____ DESIGN NO. ____

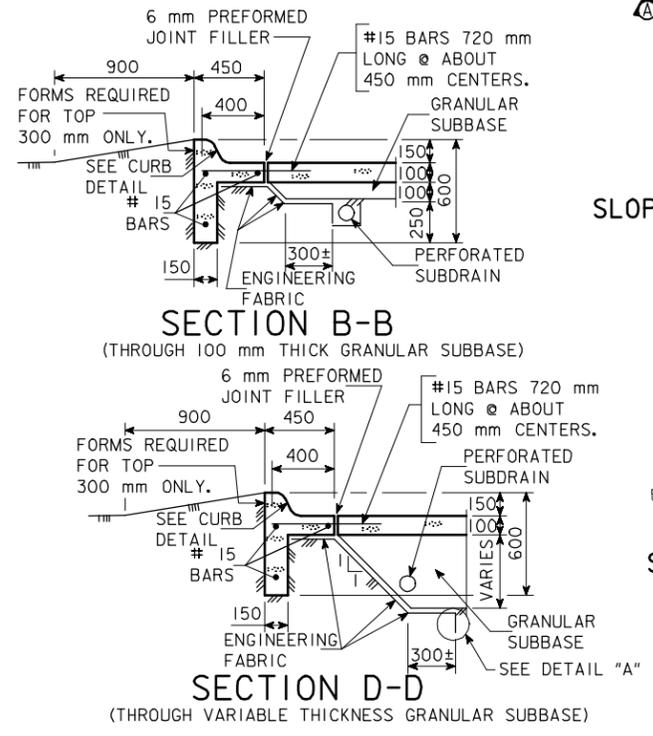
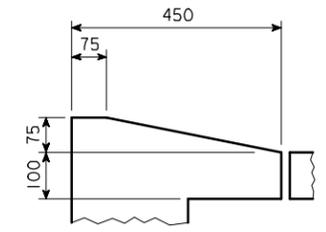
REVISED 06-02 - GENERAL NOTES, SECTION A-A, SLOPE PROTECTION LAYOUTS CHANGED. SECTION C-C DELETED. SUBDRAIN ADDED TO SECTION B-B AND D-D. FM1006B.SOI : THIS SHEET ISSUED 9-1-95.



SECTION A-A



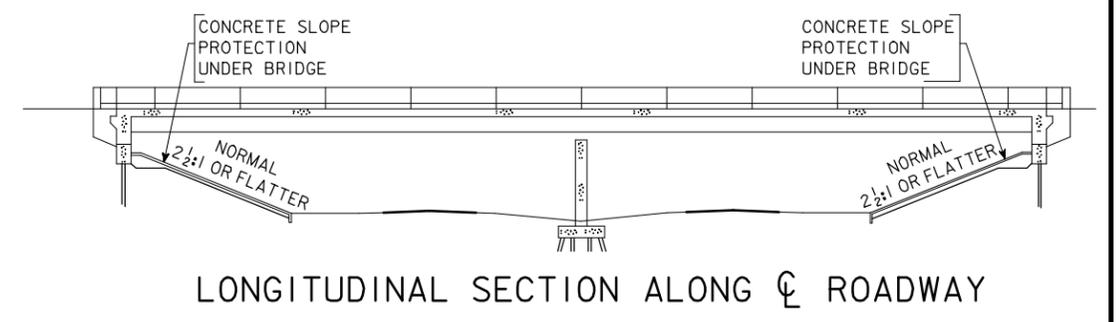
CURB DETAIL



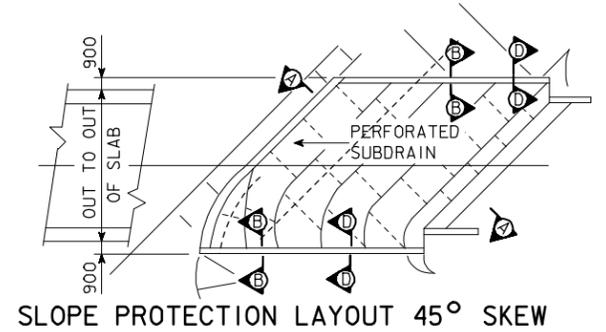
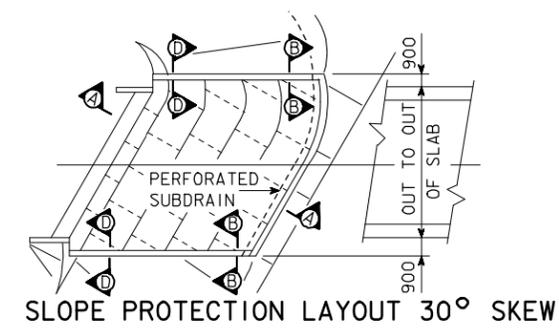
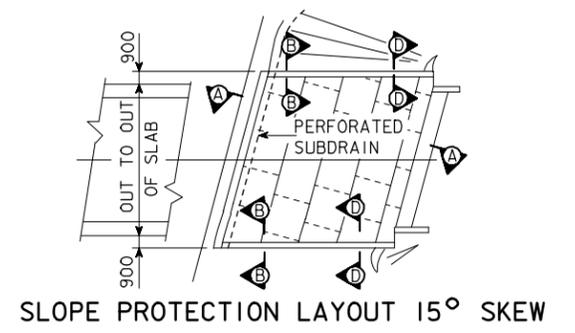
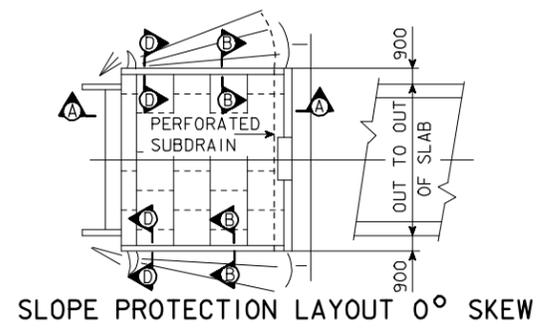
SECTION B-B
(THROUGH 100 mm THICK GRANULAR SUBBASE)

SECTION D-D
(THROUGH VARIABLE THICKNESS GRANULAR SUBBASE)

DETAIL "A"



LONGITUDINAL SECTION ALONG C ROADWAY



ESTIMATED QUANTITIES

DESCRIPTION	LOCATION	QUANTITY
SLOPE PROTECTION, CONCRETE	ABUT.	m ²
SLOPE PROTECTION, CONCRETE	ABUT.	m ²
TOTAL		m ²

ITEMS TO BE INCLUDED IN "CONCRETE SLOPE PROTECTION":
 ENGINEERING FABRIC.
 GRANULAR SUBBASE.
 CLASS "C" STRUCTURAL CONCRETE.
 #15 REINFORCING.
 PREFORMED JOINT FILLER.
 EXCAVATION, SHAPING AND COMPACTING.
 COMMERCIAL BITUMINOUS PATCHING MATERIAL.

GENERAL NOTES :

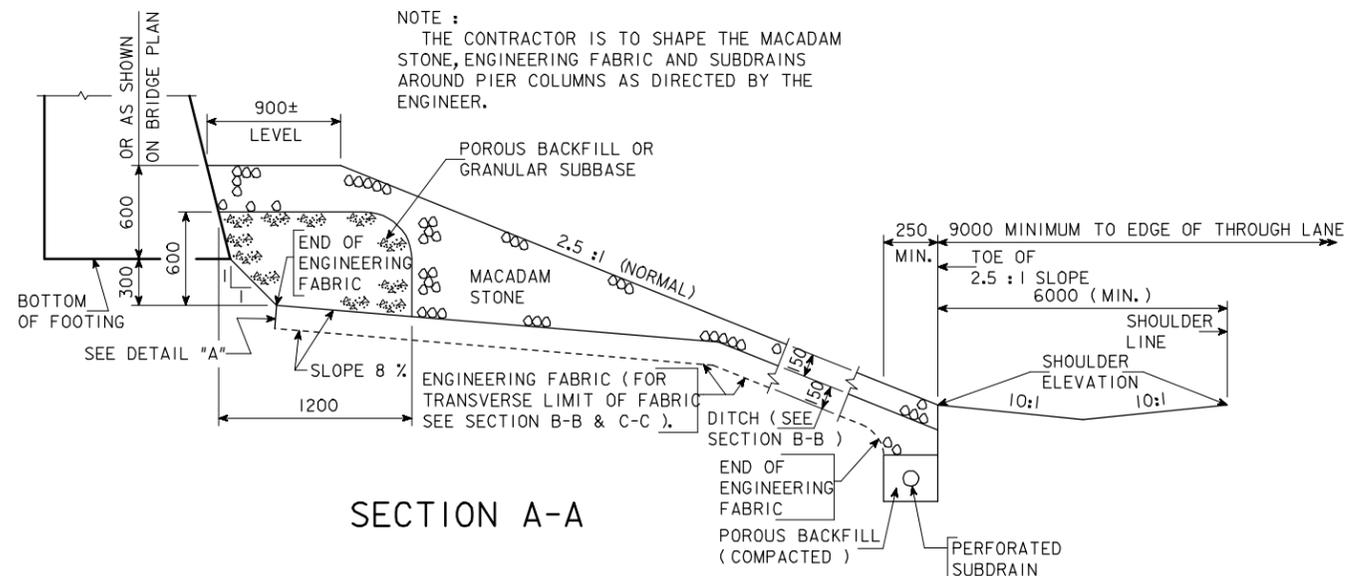
ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED OR SHOWN.
 THIS PLAN SHEET SHOWS DETAILS FOR PLACING A PORTLAND CEMENT CONCRETE SLOPE PROTECTION UNDER OVERHEAD STRUCTURES.
 THE CURRENT STANDARD SPECIFICATIONS OF THE IOWA D.O.T. SHALL APPLY WITH MODIFICATIONS OR ADDITIONS LISTED BELOW:
 FINISH - CLASS I, FLOATED SURFACE FINISH.
 CURE - CURE AS PER CURRENT SPECIFICATIONS.
 GRANULAR SUBBASE - THIS PREWETTED MATERIAL SHALL BE DEPOSITED BY A METHOD APPROVED BY THE ENGINEER AND BE THOROUGHLY TAMPED OR VIBRATED TO INSURE COMPACTION. FINISHED SHAPE SHALL BE AS SHOWN IN SECTION A-A.
 FORESLOPE PREPARATION - THE BRIDGE BERM FORESLOPE SHALL BE COMPACTED AND SHAPED AS SHOWN IN SECTION A-A ON THIS SHEET. THE BERM FORESLOPE SHALL BE FIRM WHEN THE ENGINEERING FABRIC AND GRANULAR SUBBASE ARE PLACED.
 ENGINEERING FABRIC SHALL MEET REQUIREMENTS OF 4196.01B. IF THE ENGINEERING FABRIC IS LAPPED, THE LAPS SHALL BE A MINIMUM OF 300 mm IN LENGTH, SHINGLE FASHION WITH UP SLOPE LAP PIECE ON TOP AND STAPLED FOR CONTINUITY.

THE CAST IN PLACE CONCRETE IS TO BE POURED IN APPROXIMATELY 3000 mm WIDE COURSES, BUT ALL COURSES ON ONE SLOPE SHOULD HAVE APPROXIMATELY EQUAL WIDTHS. ADJACENT COURSES SHALL NOT BE POURED WITHIN 15 HOURS OF ONE ANOTHER. THE JOINTS IN THE DIRECTION OF THE SLOPE ARE TO BE STAGGERED ABOUT ONE HALF BLOCK WIDTH.
 PAYMENT FOR "CONCRETE SLOPE PROTECTION" WILL BE MADE ON A SQUARE METER BASIS FOR SLOPE PROTECTION CONSTRUCTED. THE UNIT PRICE BID PER SQUARE METER IS TO INCLUDE COSTS OF ALL MATERIALS AND LABOR REQUIRED TO CONSTRUCT THE SLOPE PROTECTION AS SHOWN ON THESE PLANS. THE FORESLOPE SHAPING AND COMPACTING AND THE DISPOSAL OF EXCESS SOIL FROM SHAPING OR TRENCHING, AS DIRECTED BY THE ENGINEER, SHALL BE CONSIDERED INCIDENTAL TO PLACING THE CONCRETE SLOPE PROTECTION.
 WHERE EROSION CONTROL WORK IS COMPLETED THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY PLANT MATERIALS DESTROYED ADJACENT TO SLOPE PROTECTION AREA. THE CONTRACTOR SHALL REPLANT, RESEED AND REMULCH ALL AREAS IN ACCORDANCE WITH SECTION 2601 OF THE CURRENT METRIC STANDARD SPECIFICATIONS, AT THE CONTRACTOR'S EXPENSE.
 THE BRIDGE CONTRACTOR IS TO INSTALL SUBDRAINS AS DETAILED ON THE SUBDRAIN DETAILS SHEET.

CONCRETE SLOPE PROTECTION

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. ___ OF ___ FILE NO. ___ DESIGN NO. ___

REVISED 06-02 - GENERAL NOTES, SECTION A-A, SLOPE PROTECTION LAYOUTS CHANGED. SECTION D-D REMOVED. SUBDRAIN ADDED TO SECTION C-C. HM1006C.SOI - THIS SHEET ISSUED. 9-1-95.

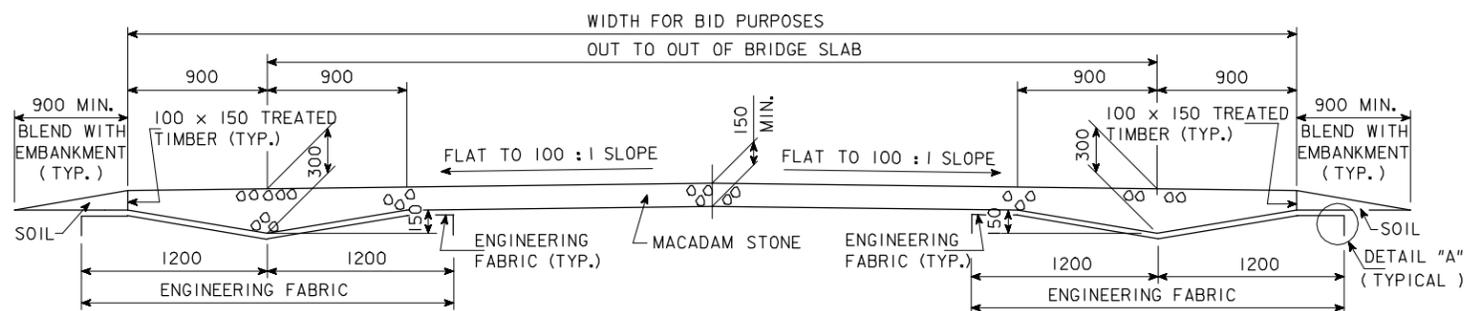


SECTION A-A

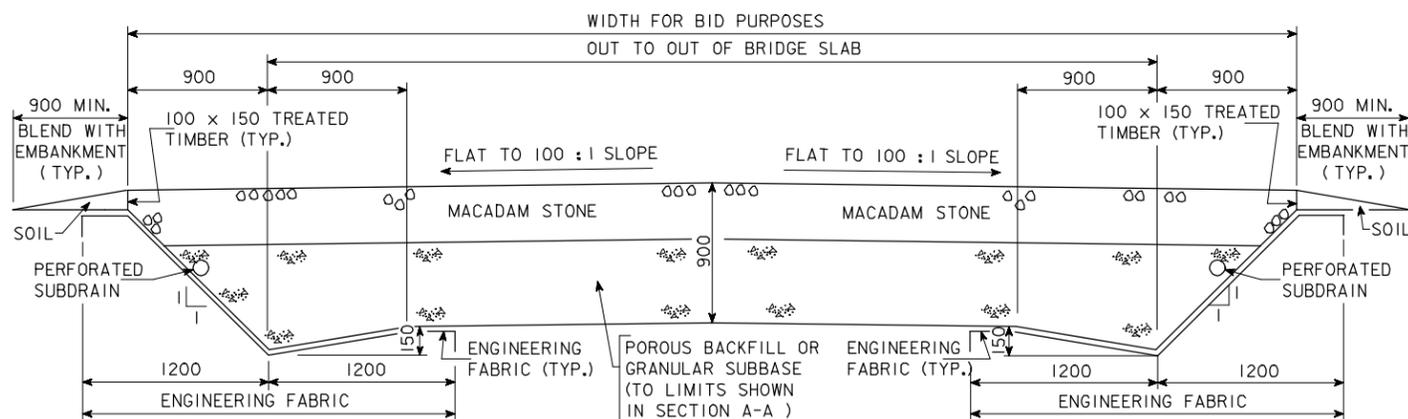
ENGINEERING FABRIC ENDS ARE TO BE BURIED 150 mm TO PREVENT UNDERMINING



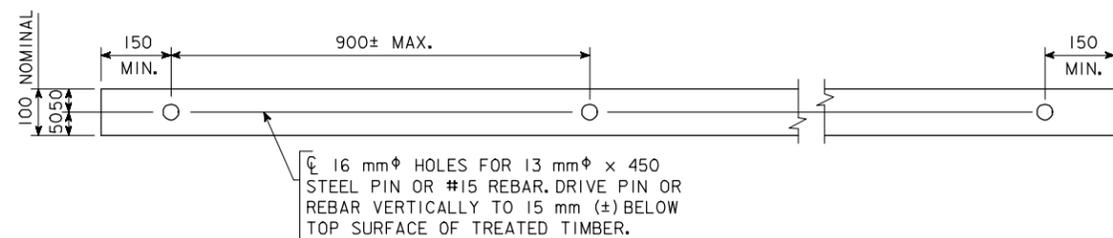
DETAIL "A"



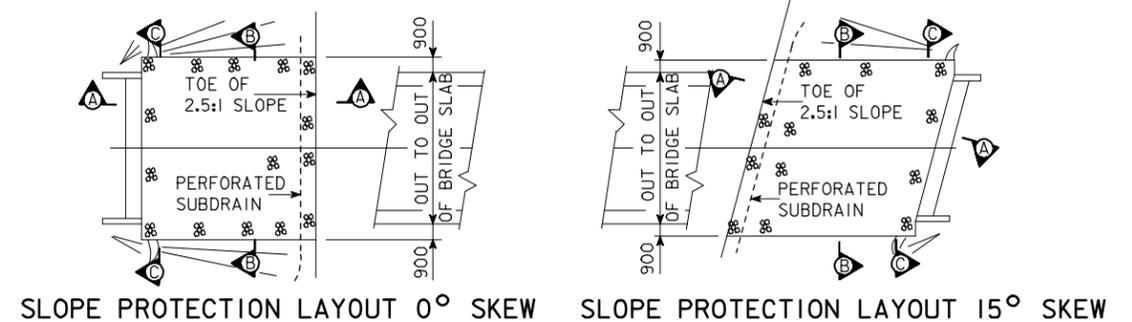
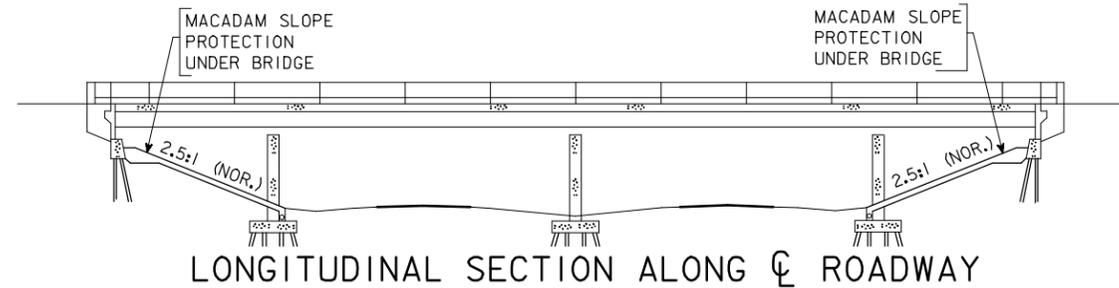
SECTION B-B



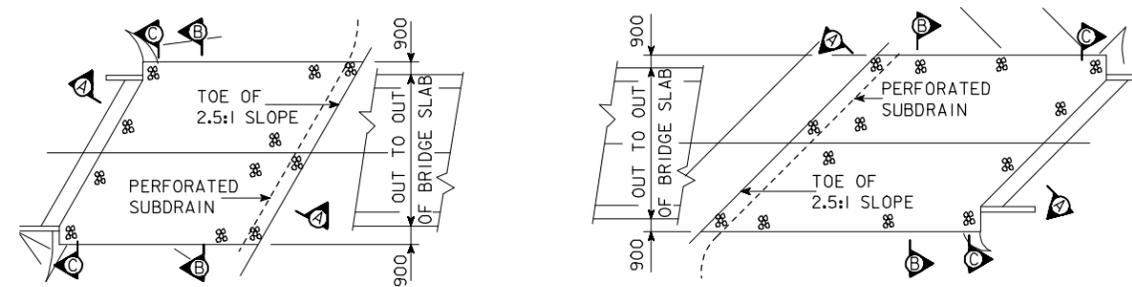
SECTION C-C



100 x 150 TREATED TIMBER EDGING DETAILS



SLOPE PROTECTION LAYOUT 0° SKEW SLOPE PROTECTION LAYOUT 15° SKEW



SLOPE PROTECTION LAYOUT 30° SKEW SLOPE PROTECTION LAYOUT 45° SKEW

GENERAL NOTES :

ALL DIMENSIONS, UNLESS OTHERWISE NOTED OR SHOWN, ARE IN MILLIMETERS (mm). THIS PLAN SHEET SHOWS DETAILS FOR PLACING A "MACADAM STONE SLOPE PROTECTION" UNDER OVERHEAD STRUCTURES.

THE BRIDGE BERM FORESLOPE SHALL BE COMPACTED AND SHAPED AS SHOWN ON THIS SHEET, THE SITUATION PLAN AND AS DIRECTED BY THE ENGINEER. THE BERM FORESLOPE SHALL BE FIRM WHEN THE ENGINEERING FABRIC AND MACADAM STONE ARE PLACED.

THE ENGINEERING FABRIC SHALL MEET THE REQUIREMENTS OF 4196.01C. IF THE ENGINEERING FABRIC IS LAPPED THE LAPS SHALL BE A MINIMUM OF 300 mm IN LENGTH, SHINGLE FASHION WITH UP SLOPE LAP PIECE ON TOP AND STAPLED FOR CONTINUITY.

THE MACADAM STONE SHALL MEET THE REQUIREMENTS OF 4122.02, COARSE MATERIAL (NO CHOKE STONE IS ALLOWED).

WOOD PRESERVATIVE TREATMENT FOR THE TIMBER EDGING SHALL MEET THE REQUIREMENTS FOR GUARDRAIL POSTS, SAWED FOUR SIDES, AS SPECIFIED IN 4161.

THE MACADAM STONE SHALL BE DEPOSITED, SPREAD, CONSOLIDATED AND SHAPED BY MECHANICAL OR HAND METHODS THAT WILL PROVIDE UNIFORM DEPTH AND DENSITY AND PROVIDE UNIFORM SURFACE APPEARANCE.

PAYMENT FOR "MACADAM STONE SLOPE PROTECTION" WILL BE MADE ON A SQUARE METER BASIS FOR SLOPE PROTECTION CONSTRUCTED. THE UNIT PRICE BID PER SQUARE METER SHALL INCLUDE ALL COSTS FOR MATERIAL AND LABOR REQUIRED TO CONSTRUCT THE SLOPE PROTECTION SHOWN ON THESE PLANS.

THE BERM FORESLOPE SHAPING AND COMPACTING AND THE DISPOSAL OF EXCESS SOIL FROM SHAPING OR TRENCHING SHALL BE CONSIDERED INCIDENTAL TO PLACING THE SLOPE PROTECTION. WHERE EROSION CONTROL WORK HAS BEEN COMPLETED THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY PLANT MATERIAL DESTROYED ADJACENT TO THE SLOPE PROTECTION AREA. THE CONTRACTOR SHALL REPLANT, RESEED AND REMULCH ALL DISTURBED AREAS, DESIGNATED BY THE ENGINEER, IN ACCORDANCE WITH SECTION 2601 OF THE CURRENT STANDARD SPECIFICATIONS, AT THE CONTRACTOR'S EXPENSE.

THE BRIDGE CONTRACTOR IS TO INSTALL SUBDRAINS AS DETAILED ON THE SUBDRAIN DETAILS SHEET.

ESTIMATED QUANTITIES

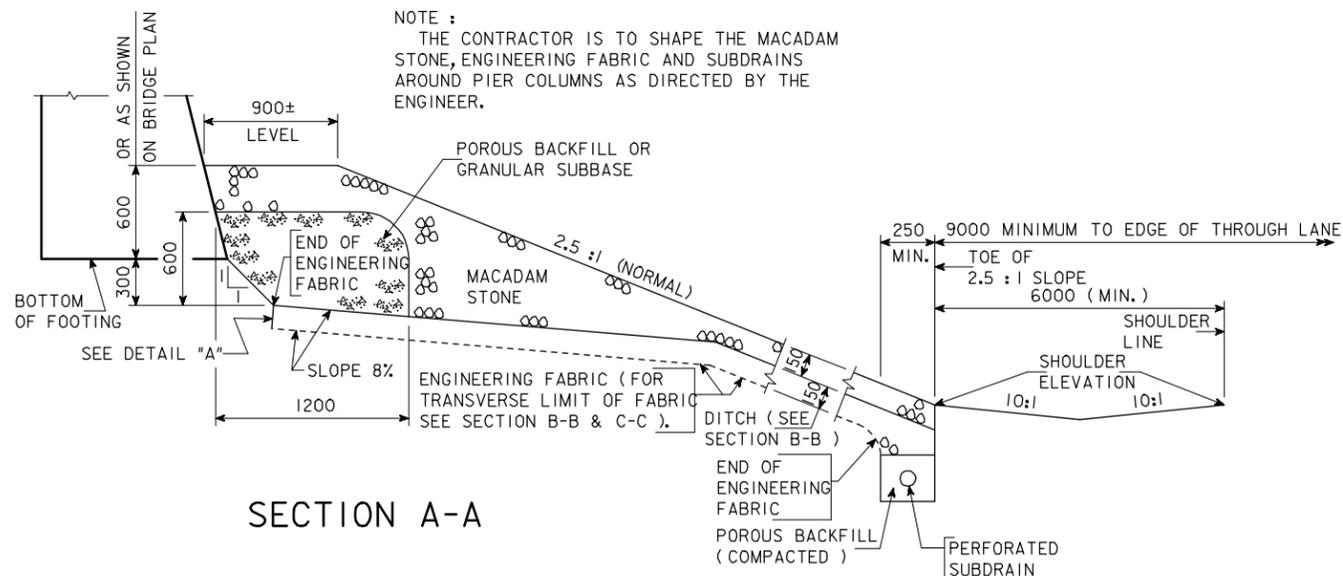
DESCRIPTION	LOCATION	QUANTITY
SLOPE PROTECTION, MACADAM STONE	ABUT.	m ²
SLOPE PROTECTION, MACADAM STONE	ABUT.	m ²
	TOTAL	m ²

ITEMS TO BE INCLUDED IN "MACADAM STONE SLOPE PROTECTION":
 EXCAVATING, SHAPING AND COMPACTING.
 ENGINEERING FABRIC.
 MACADAM STONE.
 100 x 150 TREATED TIMBER EDGING.
 13 mm Ø STEEL PINS (OR #15 REBARS).
 POROUS BACKFILL OR GRANULAR SUBBASE BACKFILL AT FRONT FACE ABUTMENT FOOTING

MACADAM STONE SLOPE PROTECTION

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. ____ OF ____ FILE NO. ____ DESIGN NO. ____

NOTE :
THE CONTRACTOR IS TO SHAPE THE MACADAM STONE, ENGINEERING FABRIC AND SUBDRAINS AROUND PIER COLUMNS AS DIRECTED BY THE ENGINEER.

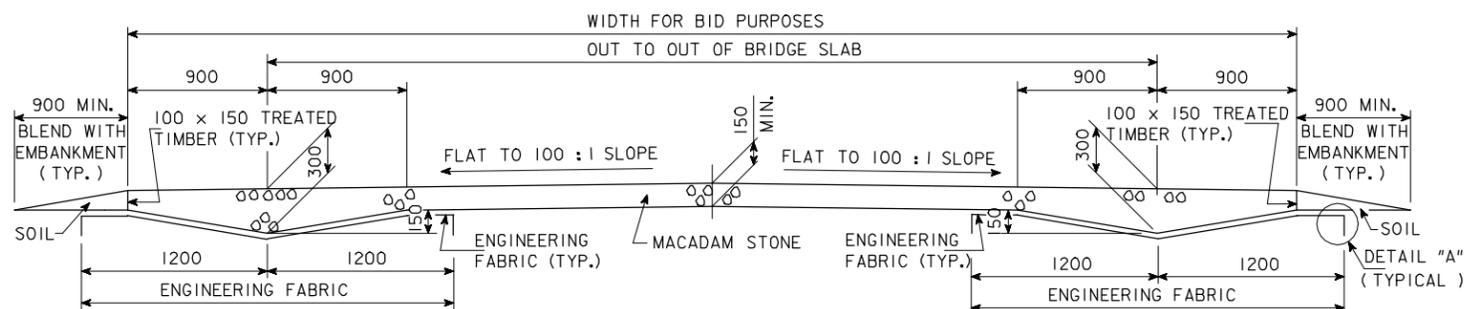


SECTION A-A

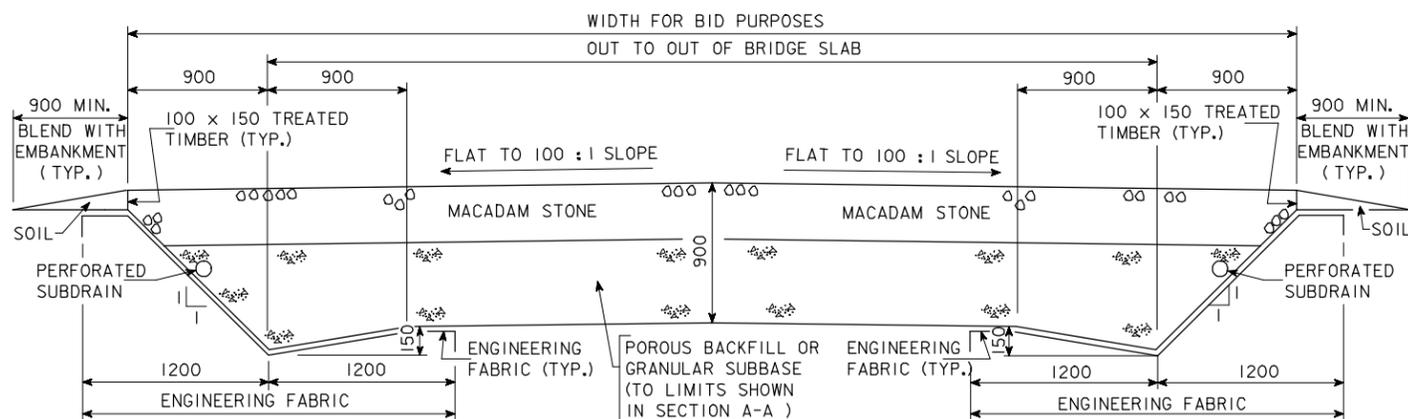
ENGINEERING FABRIC ENDS ARE TO BE BURIED 150 mm TO PREVENT UNDERMINING



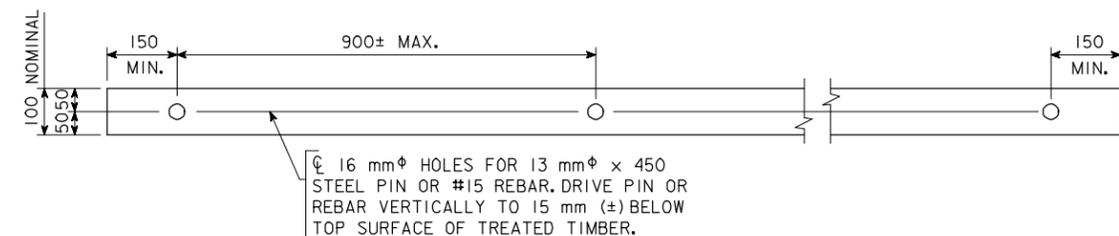
DETAIL "A"



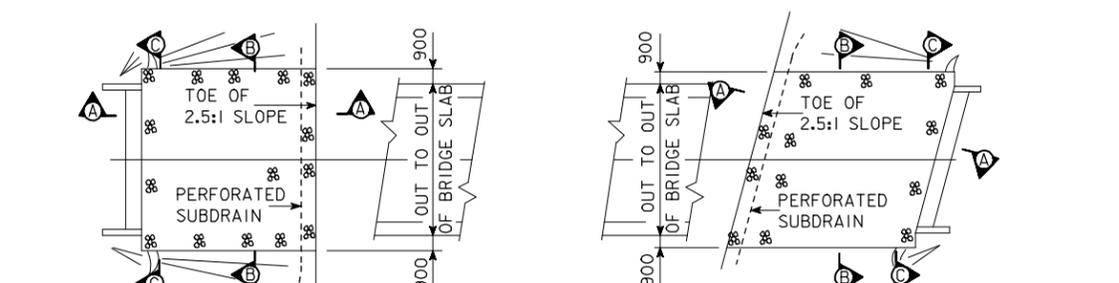
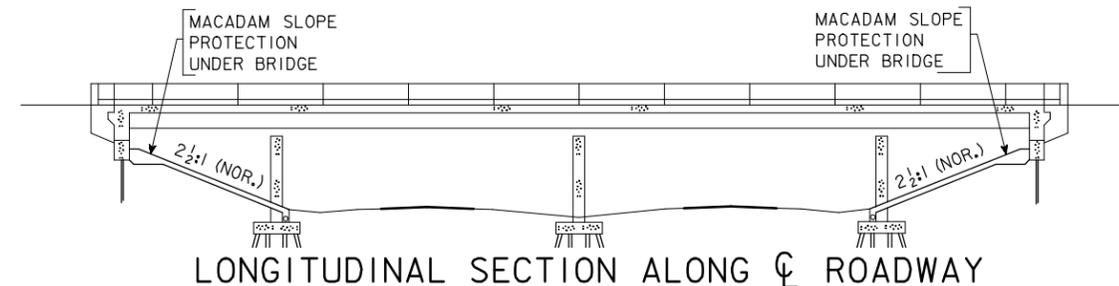
SECTION B-B



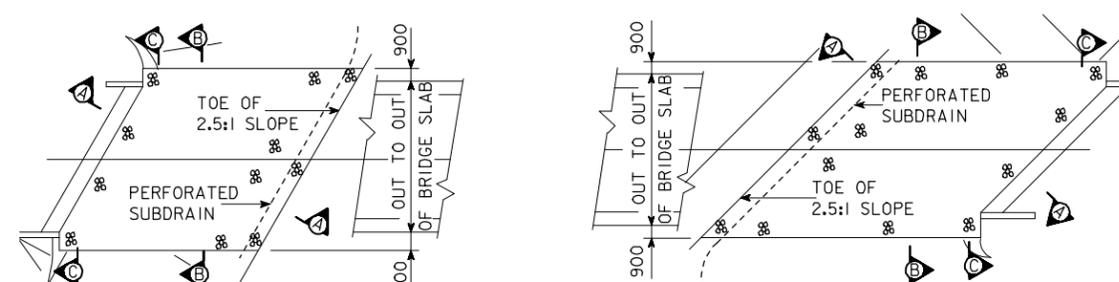
SECTION C-C



100 x 150 TREATED TIMBER EDGING DETAILS



SLOPE PROTECTION LAYOUT 0° SKEW SLOPE PROTECTION LAYOUT 15° SKEW



SLOPE PROTECTION LAYOUT 30° SKEW SLOPE PROTECTION LAYOUT 45° SKEW

GENERAL NOTES :

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THE BRIDGE CONTRACTOR IS TO INSTALL SUBDRAINS AS DETAILED ON THE SUBDRAIN DETAILS SHEET.

ESTIMATED QUANTITIES

DESCRIPTION	LOCATION	QUANTITY
MACADAM STONE SLOPE PROTECTION	ABUT.	m ²
MACADAM STONE SLOPE PROTECTION	ABUT.	m ²
	TOTAL	m ²

ITEMS TO BE INCLUDED IN "MACADAM STONE SLOPE PROTECTION" :
EXCAVATING, SHAPING AND COMPACTING.
ENGINEERING FABRIC.
MACADAM STONE.
100 x 150 TREATED TIMBER EDGING.
13 mmØ STEEL PINS (OR #15 REBARS).
POROUS BACKFILL OR GRANULAR SUBBASE BACKFILL AT FRONT FACE ABUTMENT FOOTING

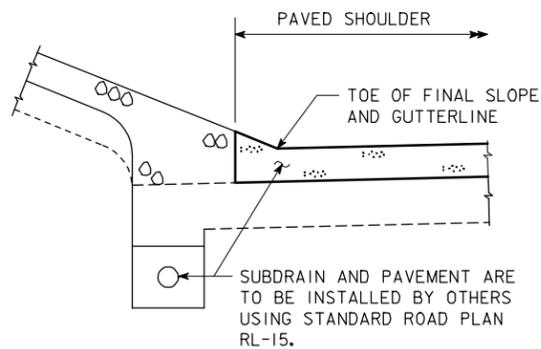
MACADAM STONE SLOPE PROTECTION

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. ___ OF ___ FILE NO. ___ DESIGN NO. ___

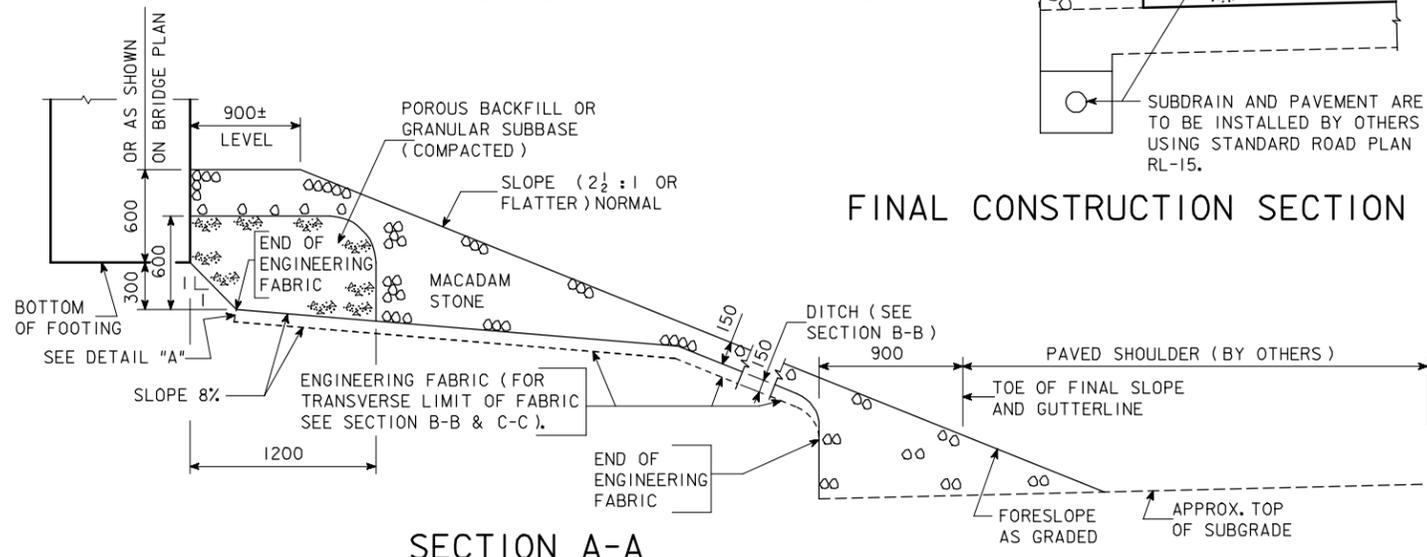
REVISED 06-02... GENERAL NOTES: SECTION A-A, SLOPE PROTECTION LAYOUTS CHANGED. SECTION D-D REMOVED. SUBDRAIN ADDED TO SECTION C-C. HM1006D.SOI: THIS SHEET ISSUED 9-1-96.

REVISED 06-02 - FINAL CONSTRUCTION SECTION A-A ADDED. SECTION A-A MODIFIED. SUBDRAIN ADDED TO SECTION C-C. M10006.SOI THIS SHEET ISSUED 9-1-95.

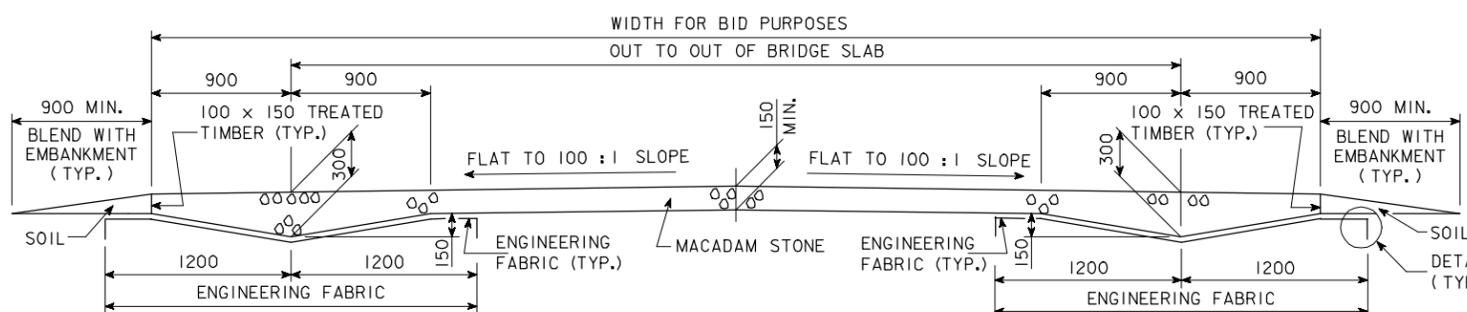
- CONSTRUCTION STAGING:**
 1) STAKE TOE OF FINAL SLOPE AND GUTTERLINE
 2) SHAPE FORESLOPE, INCLUDING SIDE DITCH, TOP AND TOE OF BERM
 3) PLACE ENGINEERING FABRIC AND MACADAM STONE.



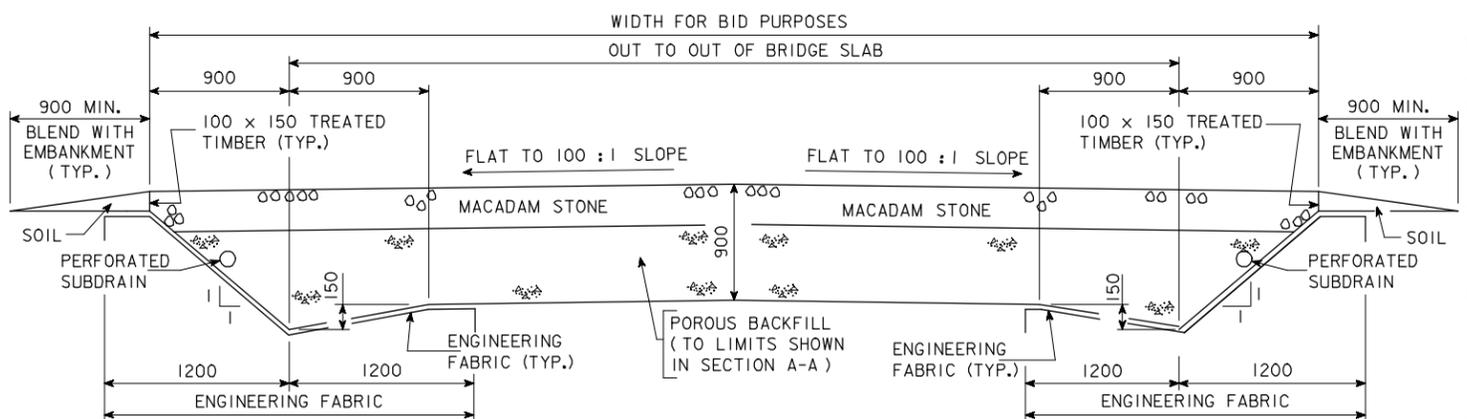
FINAL CONSTRUCTION SECTION A-A



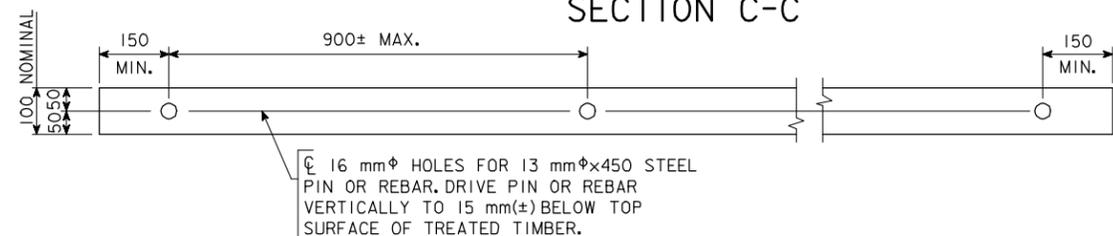
SECTION A-A



SECTION B-B



SECTION C-C

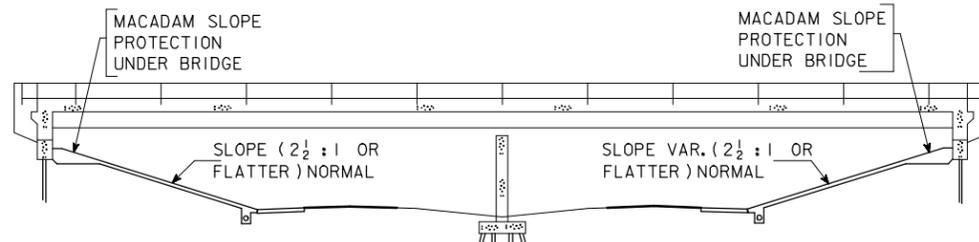


100 x 150 TREATED TIMBER EDGING DETAILS

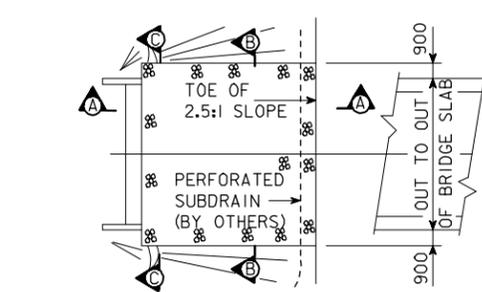
ENGINEERING FABRIC ENDS ARE TO BE BURIED 150 mm TO PREVENT UNDERMINING



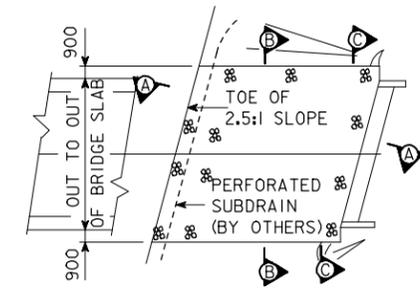
DETAIL "A"



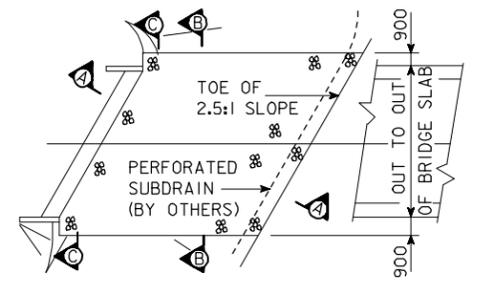
LONGITUDINAL SECTION ALONG C ROADWAY



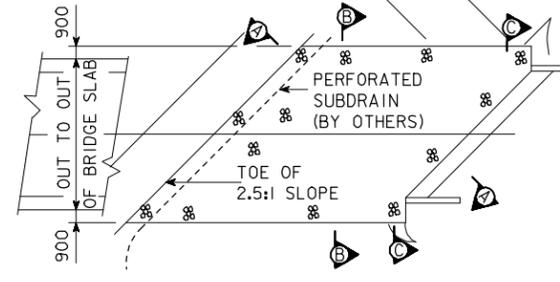
SLOPE PROTECTION LAYOUT 0° SKEW



SLOPE PROTECTION LAYOUT 15° SKEW



SLOPE PROTECTION LAYOUT 30° SKEW



SLOPE PROTECTION LAYOUT 45° SKEW

GENERAL NOTES:

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ESTIMATED QUANTITIES

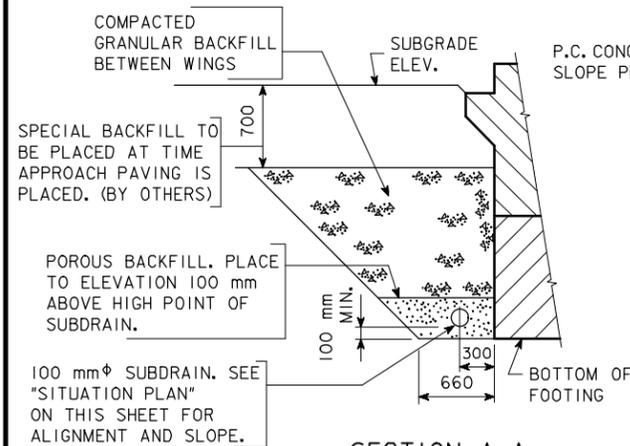
DESCRIPTION	LOCATION	QUANTITY
MACADAM STONE SLOPE PROTECTION	ABUT.	m ²
MACADAM STONE SLOPE PROTECTION	ABUT.	m ²
	TOTAL	m ²

ITEMS TO BE INCLUDED IN "MACADAM STONE SLOPE PROTECTION":
 EXCAVATING, SHAPING AND COMPACTING
 ENGINEERING FABRIC
 MACADAM STONE
 100 x 150 TREATED TIMBER EDGING
 13 mm Ø STEEL PINS (OR #15 REBARS)
 POROUS BACKFILL OR GRANULAR SUBBASE BACKFILL AT FRONT FACE ABUTMENT FOOTING

MACADAM STONE SLOPE PROTECTION

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. ___ OF ___ FILE NO. ___ DESIGN NO. ___

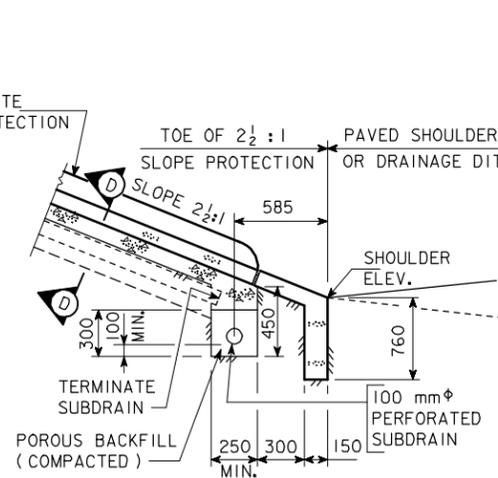
BENCH MARK:



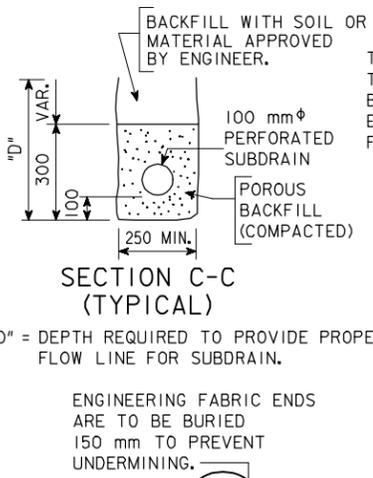
SECTION A-A

NOTE: SPECIAL BACKFILL MAY BE SUBSTITUTED FOR GRANULAR BACKFILL.

GRANULAR BACKFILL DETAILS



SECTION B-B

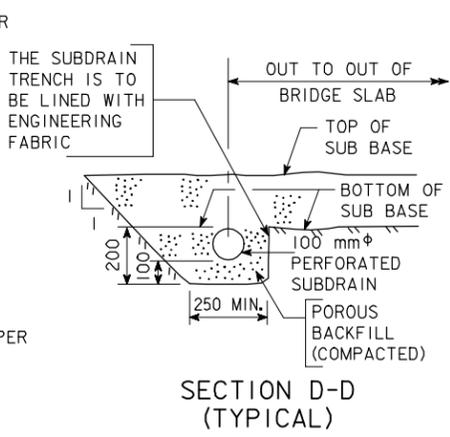


SECTION C-C (TYPICAL)

"D" = DEPTH REQUIRED TO PROVIDE PROPER FLOW LINE FOR SUBDRAIN.

ENGINEERING FABRIC ENDS ARE TO BE BURIED 150 mm TO PREVENT UNDERMINING.

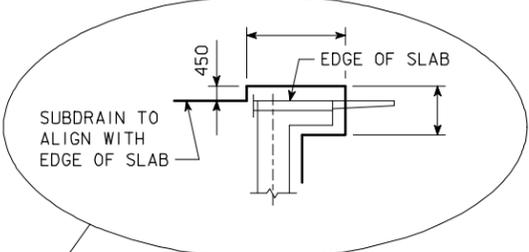
ENGINEERING FABRIC DETAIL



SECTION D-D (TYPICAL)

SUBDRAIN NOTES :

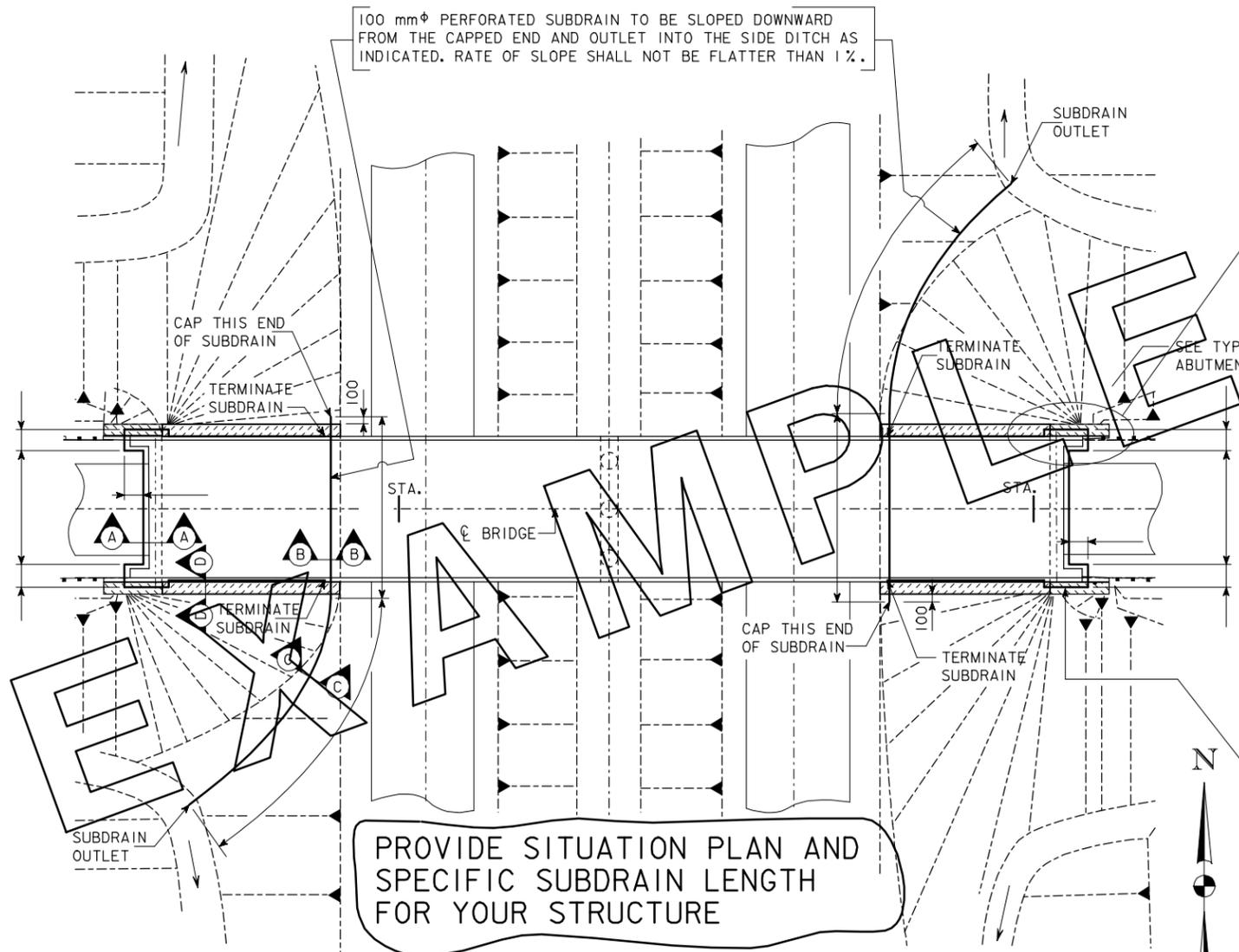
THIS PLAN SHEET SHOWS DETAILS FOR PLACING ALL SUBDRAINS AND SUBDRAIN OUTLETS REQUIRED FOR THIS STRUCTURE.
 THE SUBDRAINS SHALL BE 100 mm IN DIAMETER AND MEET THE REQUIREMENTS OF SECTION 4143.01 B OF THE CURRENT I.D.O.T. STANDARD SPECIFICATION. THE SUBDRAIN OUTLET SHALL CONSIST OF A 1800 mm LENGTH OF PIPE WITH A REMOVABLE RODENT GUARD AS DETAILED ON THIS SHEET.
 THE COST OF FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), GRANULAR BACKFILL, POROUS BACKFILL, AND SUBDRAIN OUTLET IS TO BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL CONCRETE (BRIDGE)". NO EXTRA PAYMENT WILL BE MADE.
 THE DIMENSIONS SHOWN FOR THE PROPOSED SUBDRAINS ARE BASED ON THE PROPOSED GRADING LAYOUT OF BRIDGE BERMS. THE DIMENSIONS SHOWN ARE FOR ESTIMATING ONLY. REQUIRED LENGTHS AND GENERAL LOCATIONS OF SUBDRAINS ARE SUBJECT TO CHANGE DUE TO FIELD ADJUSTMENTS OF THE GRADING LAYOUT.
 THE UPHILL END OF THE PERFORATED SUBDRAIN UNDER THE SLOPE PROTECTION SHALL BE CAPPED AS APPROVED BY THE ENGINEER.
 THE POROUS BACKFILL AND SUBDRAIN ARE TO BE CARRIED AROUND PIER COLUMNS IF THE COLUMN PLACEMENT INTERFERES WITH ALIGNMENT OF SUBDRAIN AS SHOWN ON THIS SHEET.



SUBDRAIN OUTLET ELEVATIONS

LOCATION	ELEVATION
TOE OF ??? BERM	
TOE OF ??? BERM	

100 mm ϕ PERFORATED SUBDRAIN TO BE SLOPED DOWNWARD FROM THE CAPPED END AND OUTLET INTO THE SIDE DITCH AS INDICATED. RATE OF SLOPE SHALL NOT BE FLATTER THAN 1%.

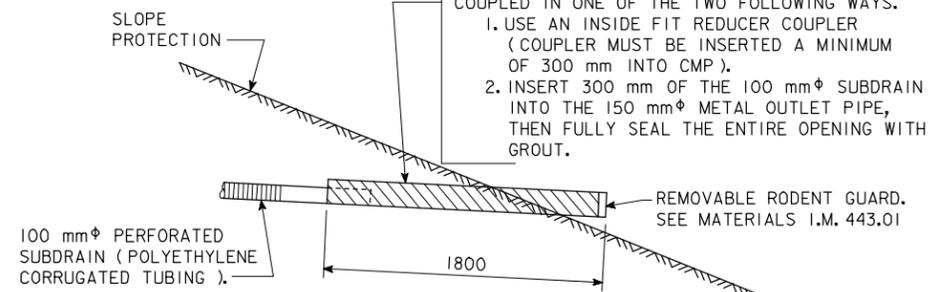


PROVIDE SITUATION PLAN AND SPECIFIC SUBDRAIN LENGTH FOR YOUR STRUCTURE

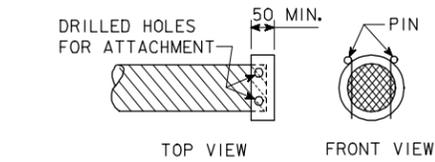
SITUATION PLAN

SHOWING SUBDRAIN LOCATIONS

150 mm ϕ CORRUGATED METAL PIPE OUTLET, OR 100 mm ϕ CORRUGATED DOUBLE-WALLED PE OR PVC PIPE OUTLET WITH AN APPROPRIATE COUPLER. IF METAL PIPE IS USED, THE PIPES SHOULD BE COUPLED IN ONE OF THE TWO FOLLOWING WAYS.
 1. USE AN INSIDE FIT REDUCER COUPLER (COUPLER MUST BE INSERTED A MINIMUM OF 300 mm INTO CMP).
 2. INSERT 300 mm OF THE 100 mm ϕ SUBDRAIN INTO THE 150 mm ϕ METAL OUTLET PIPE, THEN FULLY SEAL THE ENTIRE OPENING WITH GROUT.



TYPICAL SECTION OF SUBDRAIN OUTLET



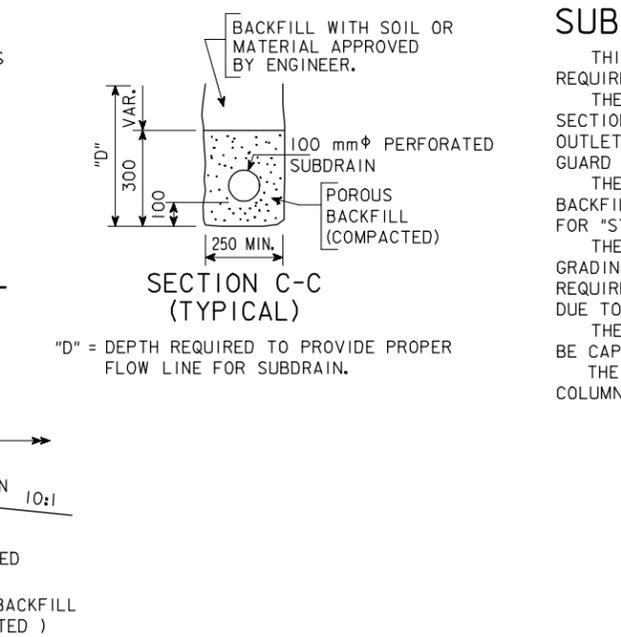
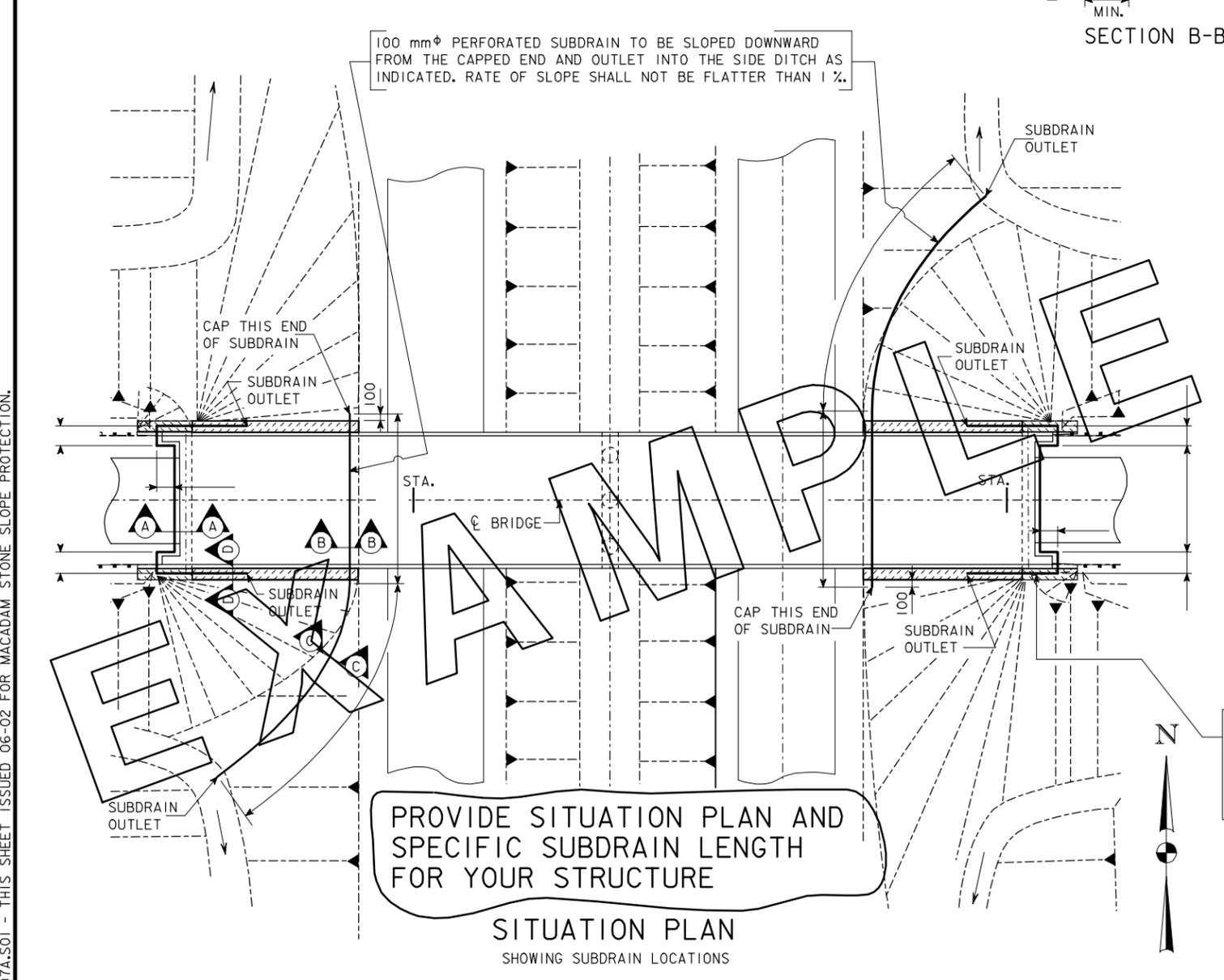
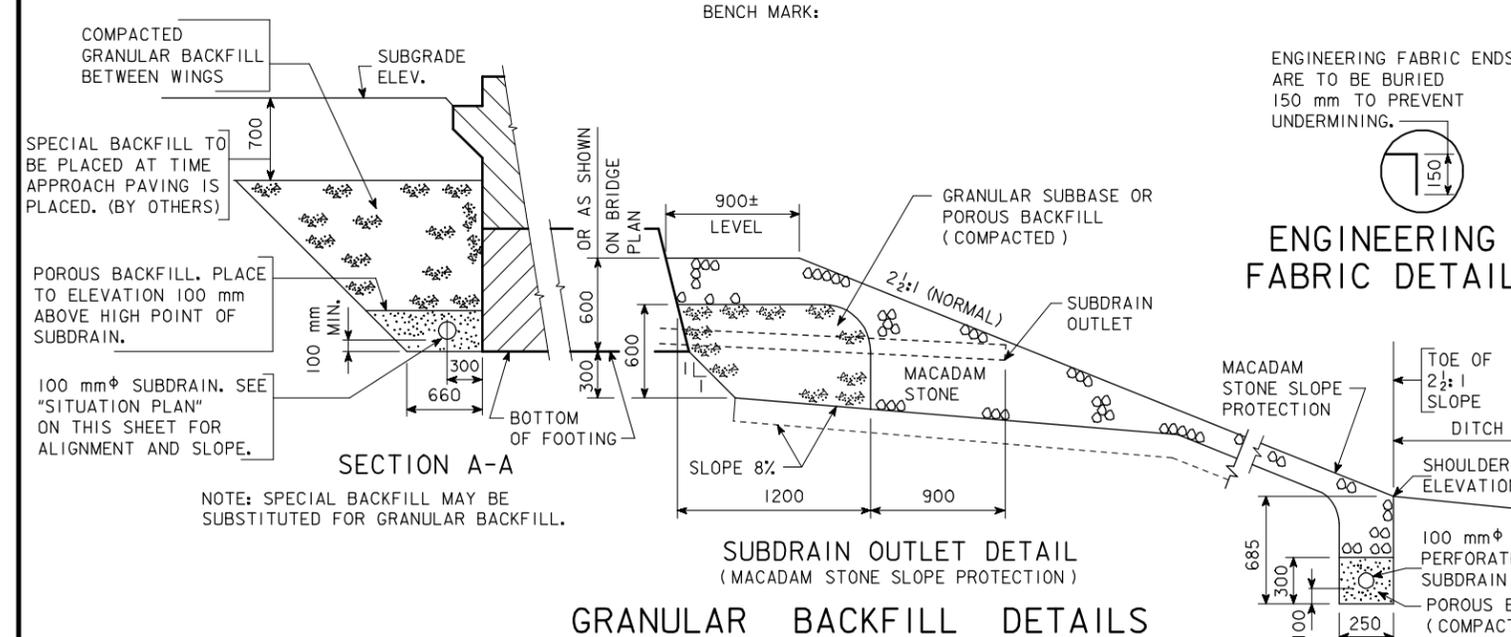
REMOVABLE RODENT GUARD DETAILS
OUTLET DETAILS

SUBDRAIN DETAILS

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. ___ OF ___ FILE NO. ___ DESIGN NO. ___

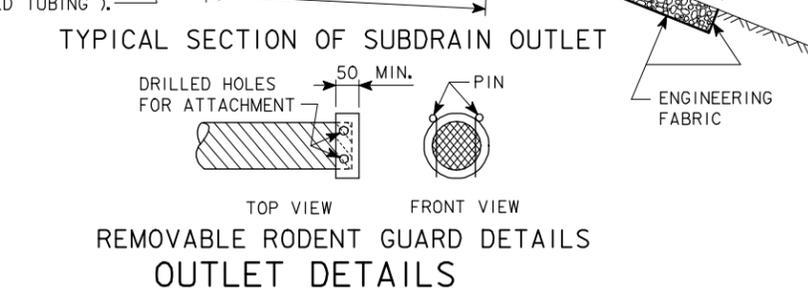
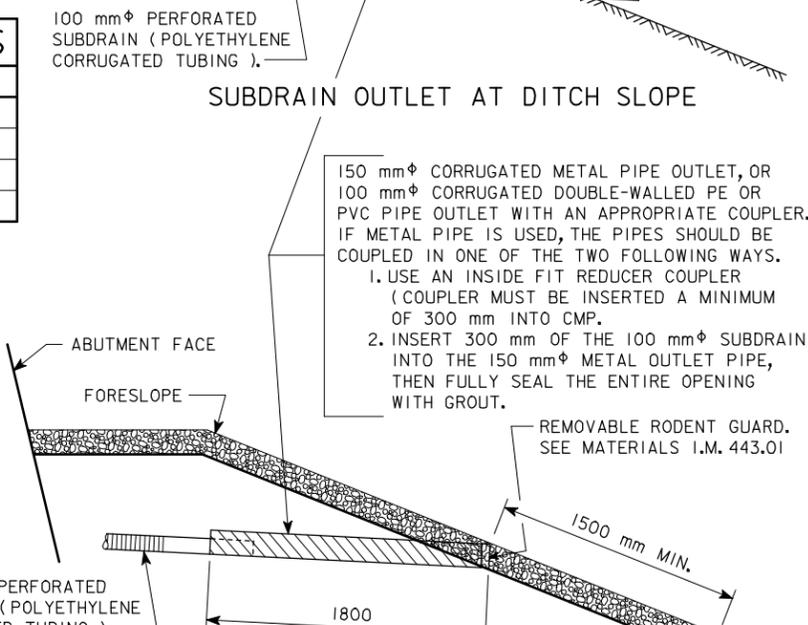
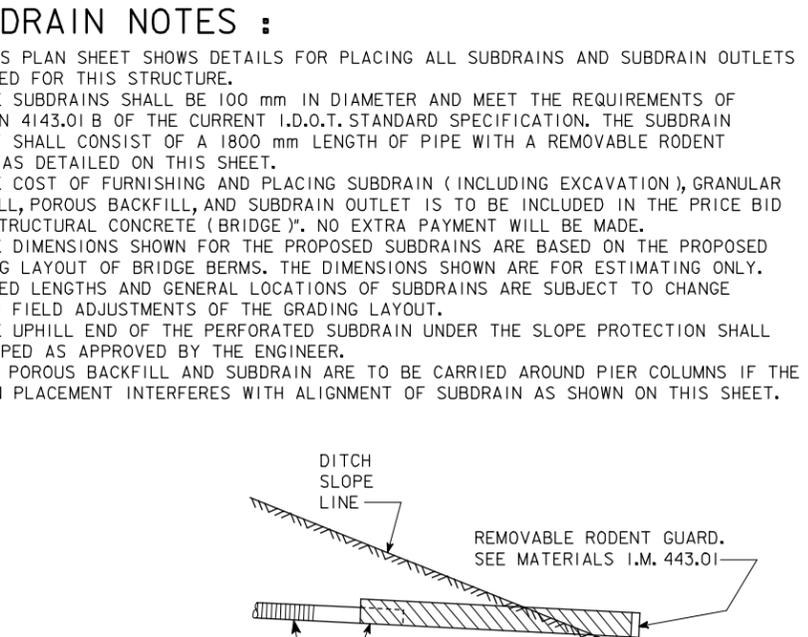
REVISED 06-02 - SUBDRAIN OUTLET CHANGED. THIS SHEET IS FOR CONCRETE SLOPE PROTECTION. HM1007.SOI; THIS SHEET ISSUED, 12-07-98.

HM1007A.S01 - THIS SHEET ISSUED 06-02 FOR MACADAM STONE SLOPE PROTECTION.



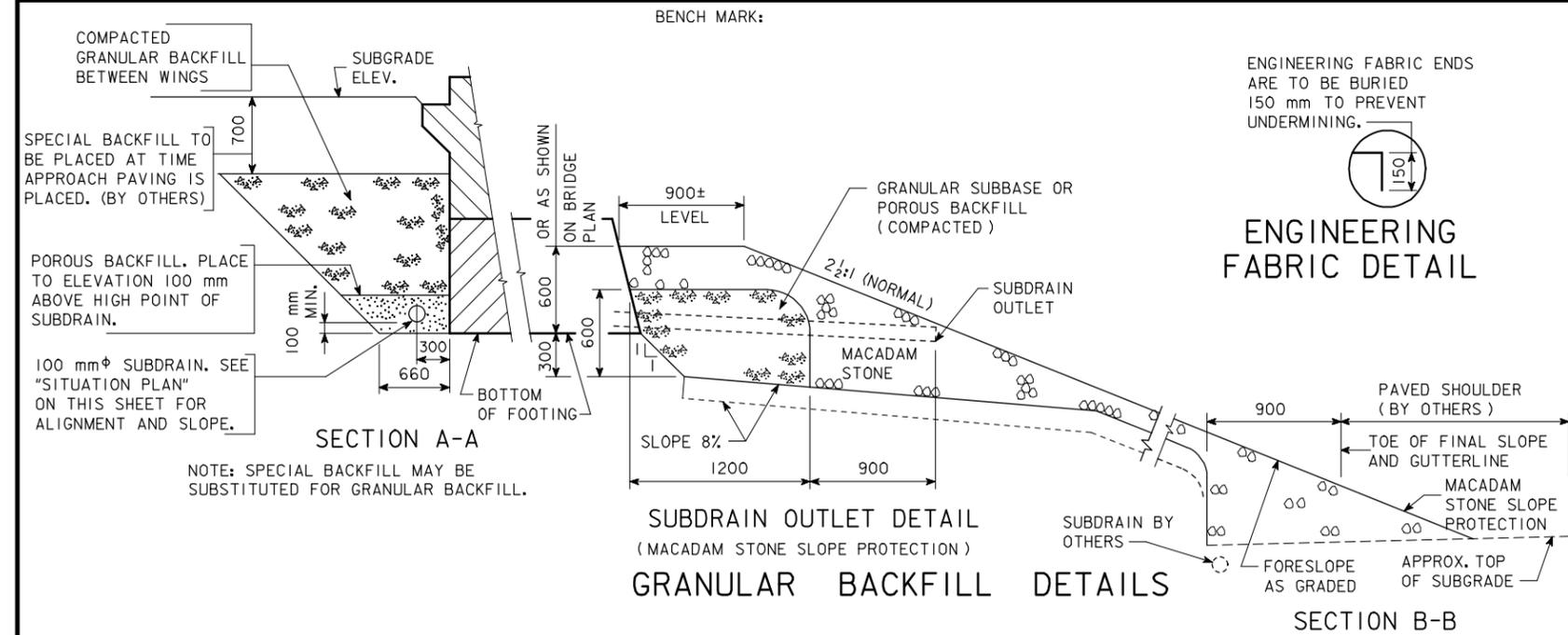
SUBDRAIN OUTLET ELEVATIONS

LOCATION	ELEVATION
??? ABUTMENT	
TOE OF ??? BERM	
??? ABUTMENT	
TOE OF ??? BERM	



SUBDRAIN DETAILS

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. ___ OF ___ FILE NO. ___ DESIGN NO. ___



SUBDRAIN NOTES :

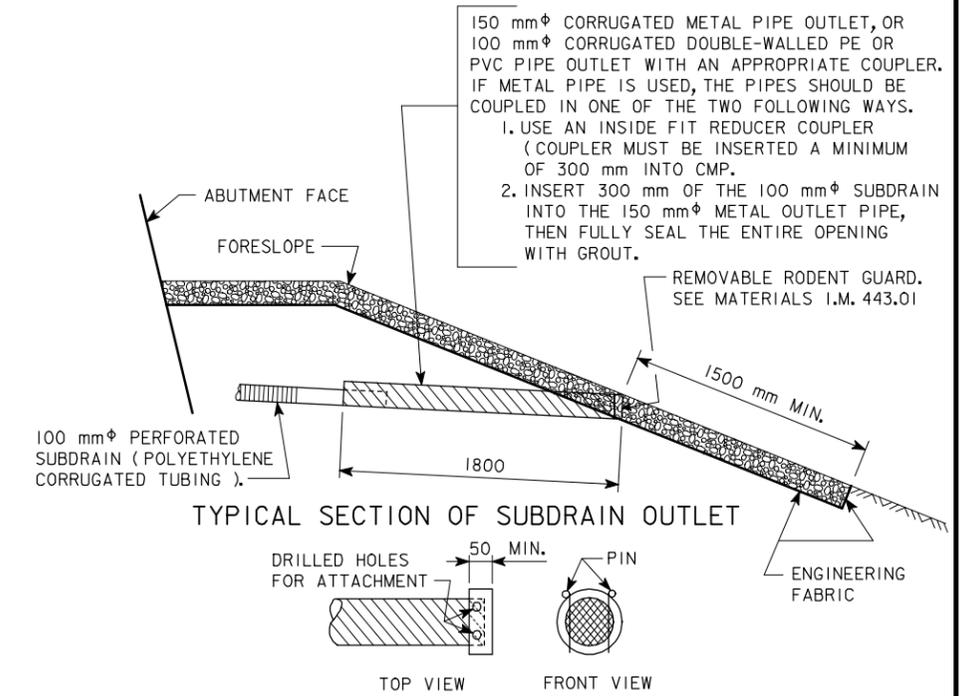
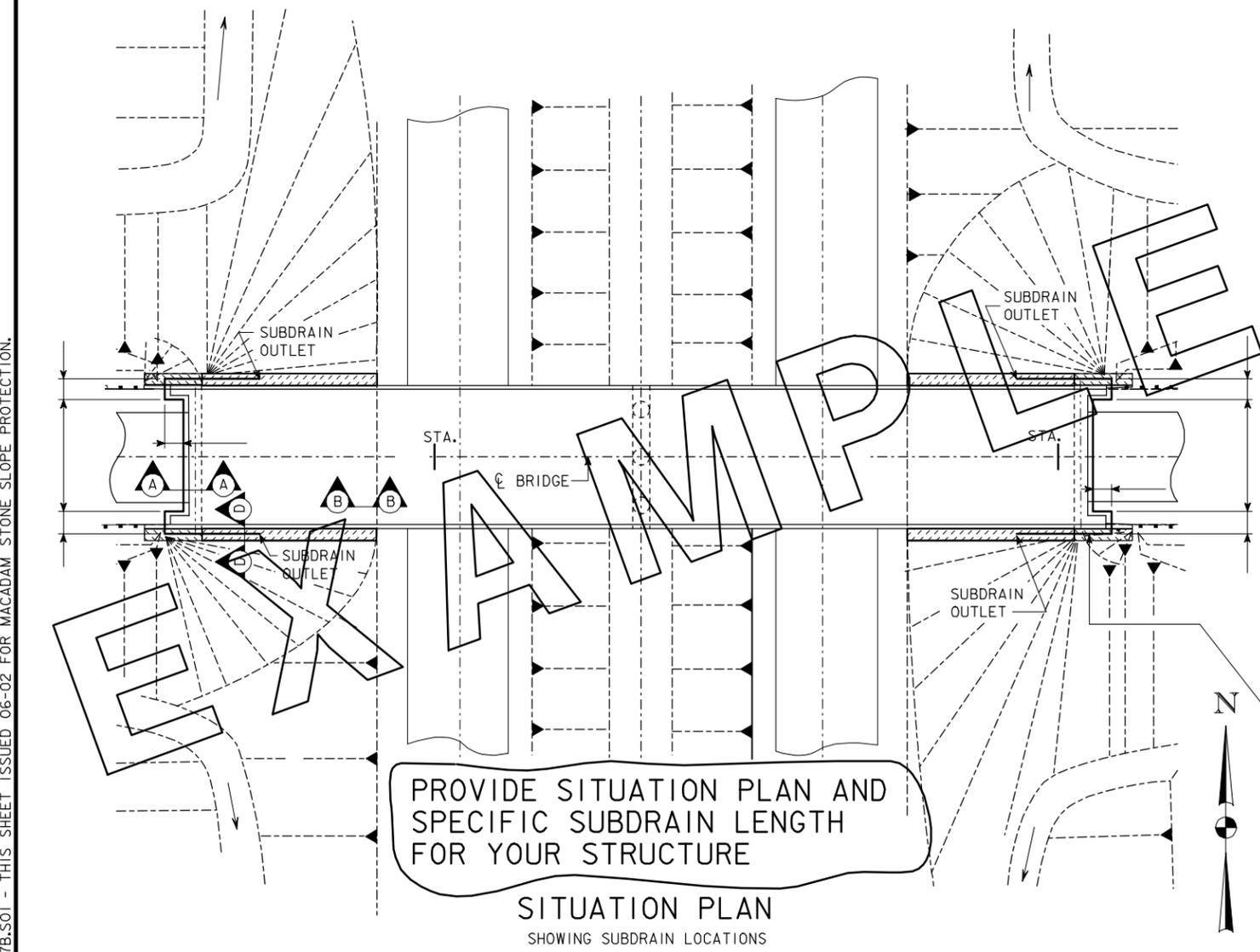
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SUBDRAIN OUTLET ELEVATIONS	
LOCATION	ELEVATION
??? ABUTMENT	
??? ABUTMENT	



SUBDRAIN DETAILS

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ___ OF ___ FILE NO. ___ DESIGN NO. ___

