

WASHINGTON CO.
SLIDE REPAIR
ER-001-4(57)--28-92

LETTING DATE
 06-16-2020

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Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM WASHINGTON COUNTY SLIDE REPAIR

0.6 mi N of IA 78

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

Value Engineering Saves. Refer to Article 1105.14 of the Specifications.



REVISIONS

TOTAL

20

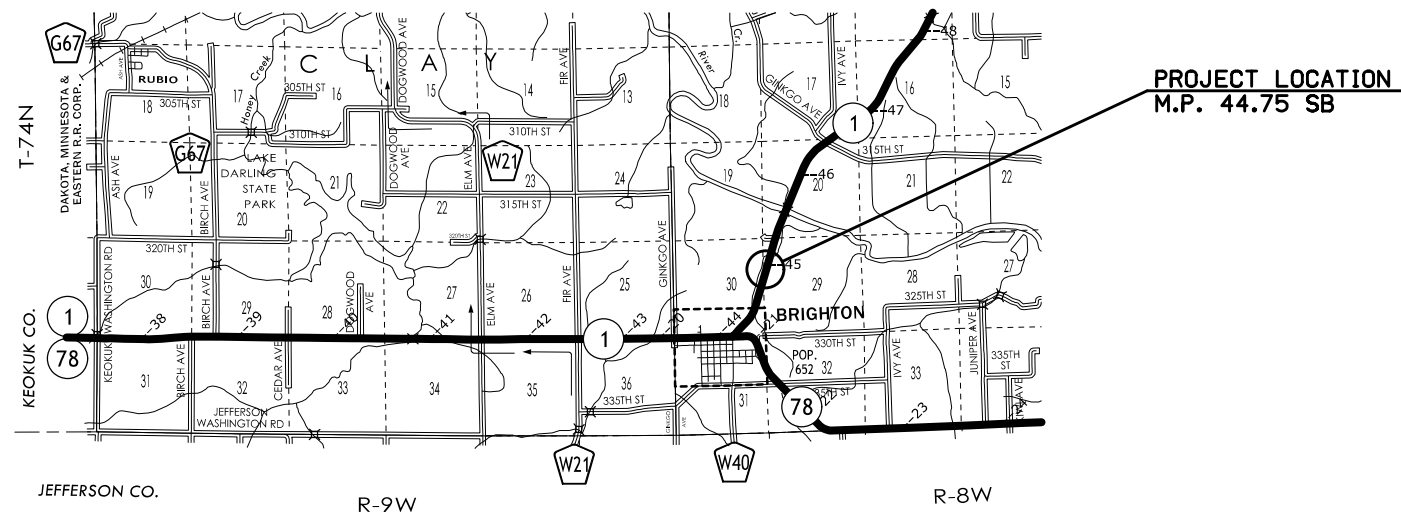
PROJECT IDENTIFICATION NUMBER

20-92-001-010

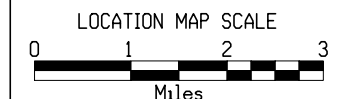
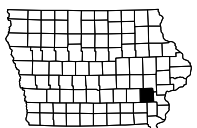
PROJECT NUMBER

ER-001-4(57)--28-92

R.O.W. PROJECT NUMBER



PROJECT LOCATION
M.P. 44.75 SB



DESIGN DATA RURAL

2017	AADT	2480	V.P.D.
20--	AADT	--	V.P.D.
20--	DHV	--	V.P.H.
	TRUCKS	9.27	%
	Total		
	Design ESALs	--	


INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1	Paul W. Flattery	Primary Signature Block
CS.1	Mark A. Dell	Geotechnical Design
RC.1	Seana K. Godbold	Landscape Design

ROADWAY DESIGN



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 _____ Date 04-07-2020
 Paul W. Flattery
 Printed or Typed Name
 My license renewal date is December 31, 2021

Pages or sheets covered by this seal: A.1, B.1, C.1-C.2, D.1-D.2, J.1

FILE NO.

ENGLISH

DESIGN TEAM **Flattery \ Jack**

WASHINGTON COUNTY

PROJECT NUMBER

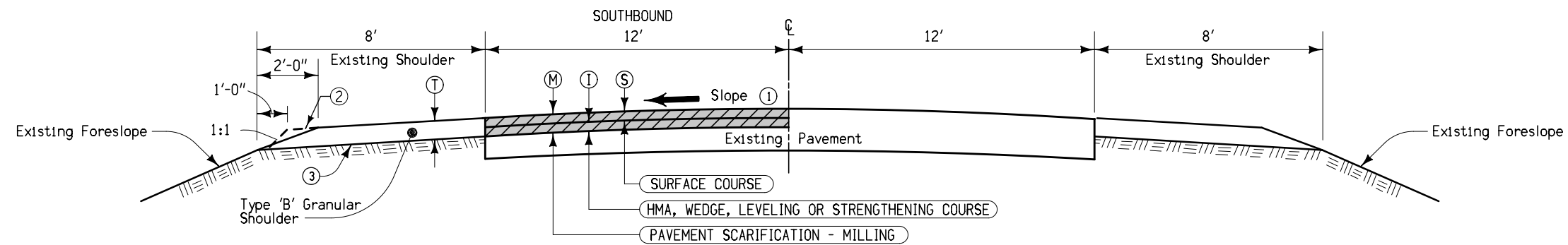
ER-001-4(57)--28-92

SHEET NUMBER

A.1

2:15:32 PM 3/24/2020 mjack

pw:\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\9200101020\Design\CADD.Files\Sheet.Files\92001057-A01.dgn



- Notes:
- ① Correct and maintain the finished slope to the maximum allowable slope of 3.0 % and minimum allowable slope of 2.0 %.
 - ② Place and compact material to the dashed lines; then blade and shape to foreslope that portion above the solid line in the outer 2' and roll with loaded truck tire.
 - ③ Existing shoulder surface to be shaped to a uniform cross slope prior to placing granular shoulder material. Shape to ensure the thickness of the granular shoulder material is not less than the thickness of the resurfacing.

Design Quantities						
Location		③	①	④	⑤	Remarks
Road Identification	Station To Station	Inches	Inches	Inches	Inches	
IA 1 SOUTHBOUND	130+50 - 131+50				3	
IA 1 SOUTHBOUND	131+50 - 132+25	2	1	3	3	
IA 1 SOUTHBOUND	132+25 - 133+00				3	

**TYPICAL CROSS SECTION
HMA RESURFACING & PAVEMENT
SCARIFICATION**

103-12
10-15-19

SLIDE REPAIR

Site No.	Location		Side	Boulders Cl. 12 Exc.	Embankment-in-Place	Class 10		Class "E" Revetment	Engineering Fabric	Erosion Stone	Gra. Material Blankets & Subdrain	Macadam Stone Slope Protection	Top Soil		Remarks
	Begin Sta.	End Sta.				Excavation	Waste						Furnish & Spread	Strip, Salvage & Spread	
1	130+25.00	132+15.00	Lt.		1657		874				162			650	

104-9
10-17-17

LONGITUDINAL SUBDRAIN SHOULDER AND BACKSLOPE

Refer to Soils Sheets

* Not a bid item. Bridge berm quantities assume a trench depth of 24 inches.

Line No.	Road or Lane Identification	Location		Side	Longitudinal Subdrain (DR-303)						Subdrain Outlet		Porous* Backfill	Class "A"* Crushed Stone	Remarks	
		Station to Station	Depth		Shoulder		Backslope		Bridge Berm (EW-203 or EW-204)		DR-303, DR-305 or DR-306					
					Size	Length	Size	Length	Standard Road Plan and Type	Size	Length	Station				Standard Road Plan and Type
1	NBL	130+25.00	132+15.00	LT	66.0			4.0	215.0				131+20.00	DR-306	26.5	place on bench at elevation 665
2	NBL	130+25.00	132+15.00	LT	66.0			4.0	215.0				130+25.00	DR-306	26.5	place on bench at elevation 655
Totals							0.0		430.0					DR-306 = 2		

103-10
04-18-17

TOPSOIL STRIPPING AND PLACEMENT

Road Identification	Location			Topsoil Stripping Thickness	Topsoil Placement Thickness	Remarks
	Dir. of Traffic	Begin Station	End Station			
IA 1	SBL	130+25.00	132+15.00	12.0	8.0	

103-6
10-17-17

EMBANKMENT WITH MOISTURE CONTROL

Moisture Control is required for all Class 10 fill placed in all locations and depths. Stability berms placed outside the normal foreslope template and topsoil will not require Moisture Control.


103-7
08-01-08

SHRINKAGE DATA

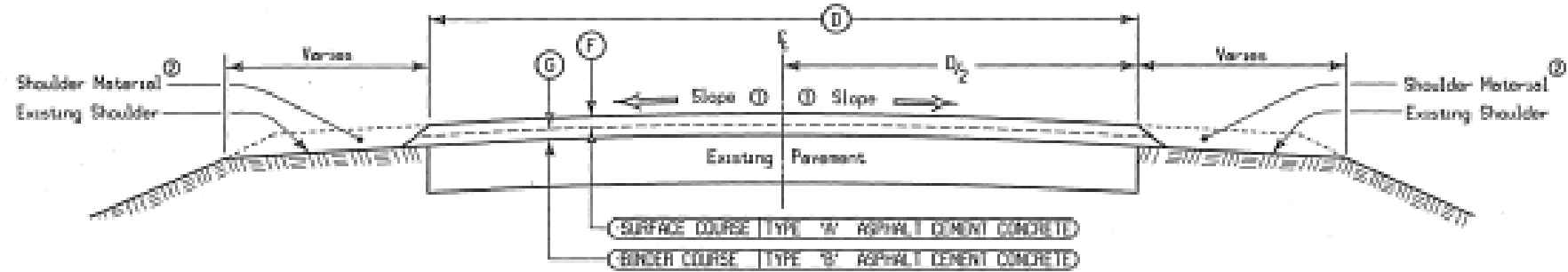
Material	%	Remarks
Class 10	30%	
Topsoil	40%	

GEOTECHNICAL DESIGN

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: Mark A. Dell Date: 3/3/2020
 Mark A. Dell
 Printed or Typed Name
 My license renewal date is December 31, 2021

Pages or sheets covered by this seal: CS.1, Q.1-2, W.1-5

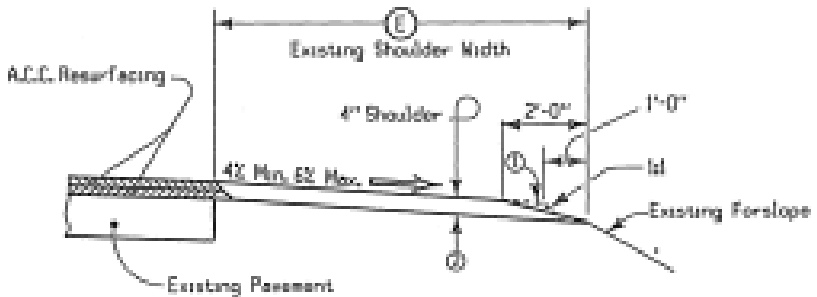


DESIGN RATES	
ITEM	RATE
Surface Course	145 lbs/cu yd
Binder Course	145 lbs/cu yd
Tack Coat	0.05 gal/sq yd

TABLE OF DESIGN QUANTITIES For Station									
LOCATION		F	G	E	PRIME & TACK COAT	ASPHALT CEMENT	ASPHALT CEMENT CONCRETE		
ROAD IDENTIFICATION	STATION TO STATION	inches	inches	Feet	lb/cu yd	tons	SURFACE	BINDER	tons
IA, 1	100+65	102+90	2	2	28	31.11	4.14	34.09	34.40
IA, 1	102+90	856+24	2	2	22	24.44	3.31	28.97	31.98

- Notes:
- ① Finished slope shall match existing pavement except that the maximum allowable slope is 10 %; minimum allowable slope is 2.5 %. Section may be modified as directed by the engineer through areas of special shaping.
 - Refer to tabulation listing of super-elevated curves and Standard Road Plans for additional requirements through super-elevated curves.
 - ② Shoulder material as specified elsewhere on these plans refer to typical (T2) for "Type 'B' Granular Surfaced Shoulder".
 - ③ Tack Coat estimated for 2 applications.
 - ④ Includes 4.7% loss for cross correction.

TYPICAL CROSS SECTION
ASPHALT CEMENT CONCRETE RESURFACING



- Notes:
- Quantities have been determined on the basis of a design weight of 145 lbs per cubic foot.
- ① Place and compact material to the dashed lines then blade and slope to forelope that portion above the solid line in the outer 2' and roll with loaded truck tires.
 - ② Existing shoulder surface to be shaped to a uniform cross slope prior to placing granular shoulder material. Shape to ensure the thickness of the granular shoulder material is not less than the thickness of the resurfacing. Shaping shall not be paid for separately, but shall be considered incidental to grade bid for granular shoulder material.
 - ③ Tons per side per station.

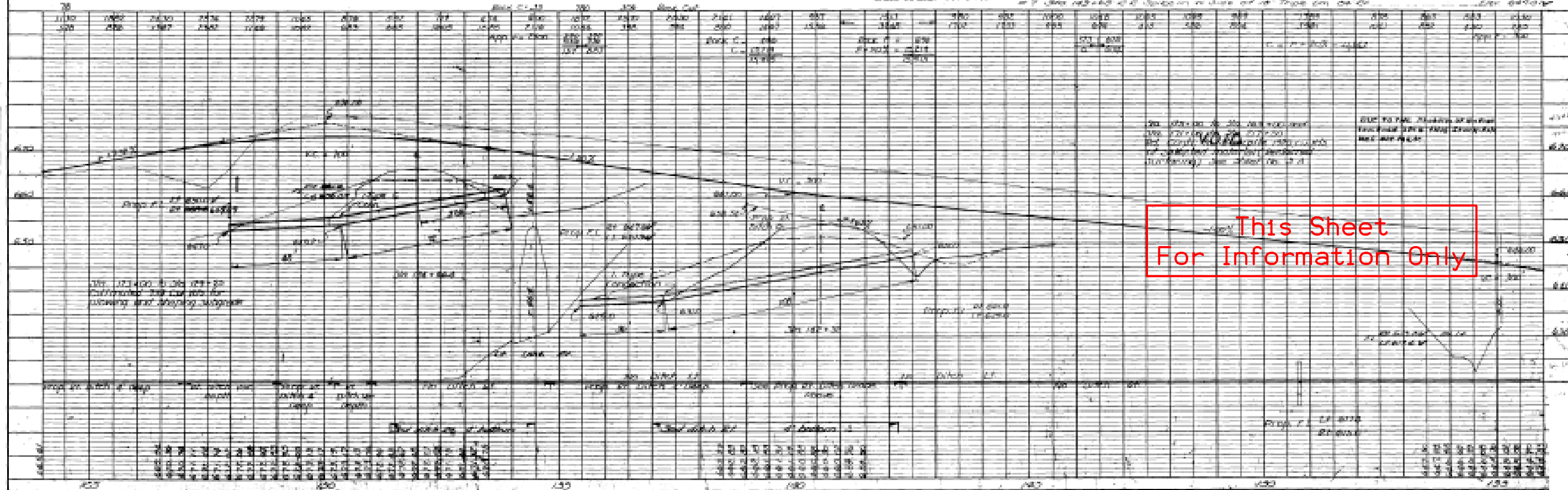
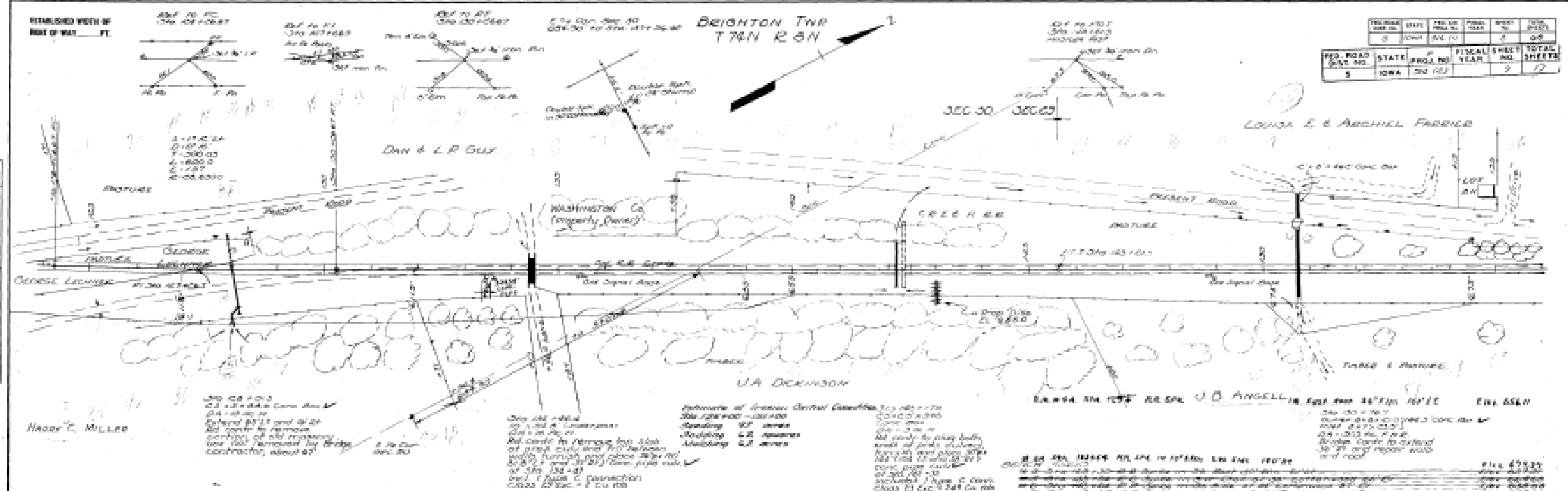
LOCATION				TONS	E
ROAD IDENTIFICATION	STATION TO STATION	SIDE	②	③	Feet
IA, 1	100+65	856+24	Both	27	30

TYPICAL SECTION
FOR TYPE 'B' GRANULAR SHOULDER
ADJACENT TO ASPHALT CEMENT CONCRETE RESURFACING

This Sheet
For Information Only

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	IOWA	200 (20)		2	12

BRIGHTON TWP
T7N R3N



This Sheet
For Information Only

PLAN	DATE	BY

PROFILE	DATE	BY

Slide Repair - IA 1

On the west (left) side of IA 1 from approximate Station 130+25 to Station 132+15, bench and rebuild the foreslope to pre-existing conditions (3:1 slope or flatter) using suitable Class 10 cohesive material.

The repair shall start near/at the toe of the existing foreslope and then extend up-slope to within 1-foot of the outside edge of the gravel shoulder.

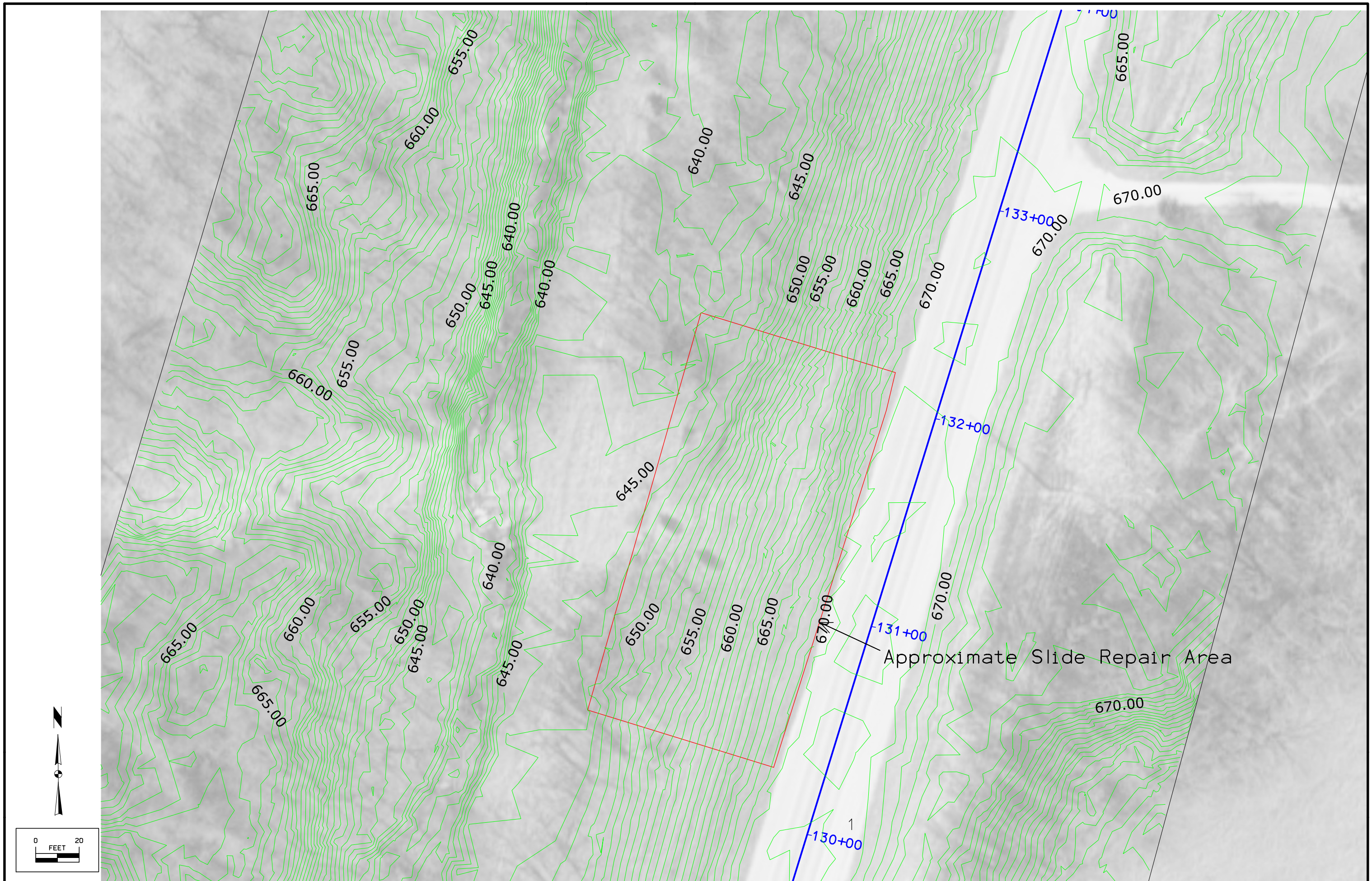
Benches shall extend a minimum of 6 feet into the undisturbed foreslope.

Slope repair shall avoid damaging the water service utility located near the toe of the existing foreslope.

Install a foreslope bench drain on the benches as shown on Sheet W.3 and detailed in Tab 104-09.

Strip 12 inches of surficial material to be considered topsoil and then spread 8 inches of this topsoil material after rebuilding the foreslope.

Actual limits of the repair will depend on conditions at the time of construction.



100-1A
07-15-97


**ESTIMATED PROJECT QUANTITIES
(1 DIVISION PROJECT)**

Item No.	Item Code	Item	Unit	Total	As Built Qty.
1	2601-2638352	SLOPE PROTECTION, WOOD EXCELSIOR MAT	SQ	56.0	
2	2601-2643110	WATERING FOR SOD, SPECIAL DITCH CONTROL, OR SLOPE PROTECTION	MGAL	11.20	
3	2601-2643412	TURF REINFORCEMENT MAT, TYPE 2	SQ	56.0	
4	2602-0000020	SILT FENCE	LF	231.3	
5	2602-0000071	REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS	LF	231.3	
6	2602-0000101	MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK	LF	23.1	
7	2602-0000150	STABILIZED CONSTRUCTION ENTRANCE, EC-303	LF	100.0	
8	2602-0010010	MOBILIZATIONS, EROSION CONTROL	EACH	1	
9	2602-0010020	MOBILIZATIONS, EMERGENCY EROSION CONTROL	EACH	1	

100-4A
10-29-02

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
1	2601-2638352	SLOPE PROTECTION, WOOD EXCELSIOR MAT Refer to Tab. 100-22 for locations. Refer to Standard Road Plan EC-103 ----- Prepare seedbed according to Article 2601.03, B, 4, of the Standard Specifications prior to seeding and fertilizing under the slope protection.
2	2601-2643110	WATERING FOR SOD, SPECIAL DITCH CONTROL, OR SLOPE PROTECTION Estimate for watering Special Ditch Control, Slope Protection Areas, Turf Reinforcement Mat, or Transition Mat is based on a total of four waterings at a rate of 50 gallons per square. Estimate for watering Sod is based on a total of six waterings at a rate of 100 gallons per square.
3	2601-2643412	TURF REINFORCEMENT MAT, TYPE 2
4	2602-0000020	SILT FENCE Refer to Tab. 100-17. The tabulation includes estimated locations for placement of "Silt Fence" to address erosion to be encountered during construction. Verify the specific locations with the Engineer prior to beginning placement. Bid item includes tab quantity for the paving project for new locations and 10% of the original tab quantity for the grading project (insert original tab quantity from the grading project) for field adjustments and replacements.
5	2602-0000071	REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS This item is included for silt fence and silt fence for ditch check removal required for staging reasons, removal to allow for replacement (replacement to be paid separately), or for areas that have achieved 70% permanent growth.
6	2602-0000101	MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK This item is included for maintaining the new silt fence and silt fence ditch checks installed for the paving project and existing silt fence and silt fence ditch checks installed as part of the grading project.
7	2602-0000150	STABILIZED CONSTRUCTION ENTRANCE, EC-303
8	2602-0010010	MOBILIZATIONS, EROSION CONTROL
9	2602-0010020	MOBILIZATIONS, EMERGENCY EROSION CONTROL

LANDSCAPE DESIGN	
	I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and responsible charge. I am a duly licensed professional landscape architect under the laws of the state of Iowa.
	
	3/17/2020 Date
	Printed or Typed Name Seana K. Godbold My license renewal date is June 30, 2021
Pages or sheets covered by this seal: RC01 - 03; RR01 - 02	

105-4 10-18-11		
STANDARD ROAD PLANS		
The following Standard Road Plans apply to construction work on this project.		
Number	Date	Title
EC-103	04-21-15	Wood Excelsior Mat for Slope Protection
EC-104	04-17-18	Turf Reinforced Mat (TRM)
EC-201	10-15-19	Silt Fence
EC-502	04-21-15	Seeding in Rural Areas

232-3A
04-16-19

**EROSION CONTROL
(RURAL SEEDING)**

Following the completion of work in a disturbed area and according to the seeding dates in Section 2601 of the Standard Specifications, place seed, fertilizer, and mulch on the disturbed area lying 8 feet adjacent to shoulder and median as follows:

Place seed and fertilize according to the requirements of Article 2601.03,C,3 and Section 4169 of the Standard Specifications.

Place mulch according to the requirements of Articles 2601.03,E,2,a and 4169.07,A of the Standard Specifications.

Preparing the seedbed, furnishing and applying seed, fertilizer, and mulch are all incidental to mobilization and will not be paid for separately.

232-3C
04-16-19

**EROSION CONTROL
(NATIVE GRASS SEEDING)**

Following the completion of work in a disturbed area and according to the seeding dates in Section 2601 of the Standard Specifications, place seed and mulch on the disturbed area lying 8 feet or more beyond the shoulder as follows:

SEED MIX:

Big bluestem (Andropogon gerardii)	6 lbs. PLS/Acre (7.0 kg/ha)
Indiangrass (Sorghastrum nutans)	6 lbs. PLS/Acre (7.0 kg/ha)
Little bluestem (Schizachyrium scoparium)	6 lbs. PLS/Acre (7.0 kg/ha)
Partridge Pea (Chamaecrista fasciculata)	4 lbs. PLS/Acre (4.5 kg/ha)
Sideoats grama (Bouteloua curtipendula)	4 lbs. PLS/Acre (4.5 kg/ha)
Canada wildrye (Elymus canadensis)	2 lbs. PLS/Acre (2.2 kg/ha)
Switchgrass (Panicum virgatum)	1 lbs. PLS/Acre (1.1 kg/ha)
Oats (Avena sativa)	32 lbs./Acre (36.0 kg/ha)

Furnish Big bluestem, Indiangrass, Canada wildrye and Little bluestem that is debearded or equal to facilitate the application of seed.

Furnish seed certified as Source Identified Class (Yellow Tag) Source G0-Iowa. Oats are excluded from this requirement.

Place seed according to the requirements of Article 4169.02 of the Standard Specifications.

Place mulch according to the requirements of Articles 2601.03,E,2,a and 4169.07,A of the Standard Specifications.

Preparing the seedbed, furnishing and applying seed and mulch are incidental to mobilization and will not be paid for separately.

232-11
04-16-19

**EROSION CONTROL
(STABILIZING CROP SEEDING)**

If outside of permanent seeding dates in Section 2601 of the Standard Specifications, or if required by a storm water permit, place stabilizing crop, fertilizer, and mulch on the disturbed area as follows:

Place seed and fertilize according to the requirements of Article 2601.03,C,1 and Section 4169 of the Standard Specifications.

Place mulch according to the requirements of Articles 2601.03,E,2,a and 4169.07,A of the Standard Specifications.

Preparing the seedbed, furnishing and applying seed, fertilizer, and mulch are incidental to mobilization and will not be paid for separately.

281-3
10-17-17

**STORM WATER
BEST MANAGEMENT PRACTICES**

When the following best management practices are used, they are intended to account for disturbed areas where storage volume cannot be provided: Silt Fence and TRM Type II

231-2
10-16-12

HERBICIDE

For all herbicide applications, the following provisions shall apply.

- Follow all laws, rules and regulations related to the handling of pesticides, including but not limited to:
 - Follow all herbicide label directions, restrictions, and precautions.
 - The company responsible for the herbicide applicator must be licensed with Iowa Department of Agriculture and Land Stewardship (IDALS) as a commercial pesticide applicator company.
 - The person applying the herbicide must be certified through IDALS as a pesticide applicator in Category 6, Right-of-Way. For herbicide applications that require an aquatic certification, the applicator must also be certified as a pesticide applicator in Category 5, Aquatics.
 - Use herbicide and adjuvant products labeled for the application site:
 - For applications on the primary highway right-of-way, use only products labeled for use on highway rights-of-way or roadsides.
 - For applications to or over water, use only products labeled for corresponding use in aquatic sites, unless intermittent pockets of standing water, such as tire ruts, and the product is labeled for such use.
 - For applications to areas in the water conveyance portion of the ditch that do not contain water at the time of application, use only products labeled for non-irrigation ditch banks or aquatic sites.
 - Do not apply any herbicide to or over standing or flowing water unless required coverage is obtained under a National Pollutant Discharge and Elimination System (NPDES) Pesticide Discharge Permit through Iowa DNR. If standing or flowing water is encountered in areas when they need to be sprayed, notify Iowa DOT (Roadside Development) to determine if submittal of a Notice of Intent (NOI) is required.
- Schedule work according to weather conditions and take measures to avoid off-target damage, such as runoff, leaching, drift and volatilization.
 - Do not spray herbicide 24 hours prior to forecast precipitation that is expected to cause significant runoff conditions.
 - For areas with saturated soil, such as ditch bottoms, do not spray herbicide 24 hours prior to forecast precipitation, unless using products labeled for aquatic sites.
 - For conventional applications, avoid applications when wind speed exceeds 10 mph. For invert applications, avoid applications when wind speed exceeds 15 mph.
 - For conventional foliar applications, use a drift retardant and maintain drift control throughout the application period by adding more to the tank as it breaks down from agitation.
 - Avoid spraying volatile products when temperatures are forecast to exceed 85° F within 3 days.
 - Check the IDALS Sensitive Crops Directory and do not spray adjacent to a listed operation when wind is blowing towards it.
- Respond to allegations of any off-target damage attributed to handling and spraying of herbicide.
- Provide the following documents to the Engineer for approval not less than 2 weeks prior to the application.
 - A copy of the herbicide and adjuvant labels, including any applicable supplemental labels.
 - A copy of the herbicide and adjuvant Material Safety Data Sheets (MSDS.)
- Have copies of the herbicide and adjuvant labels and MSDSs on-hand and at locations of storage, transport, and application.
- Schedule work to maximize efficiency of the herbicide application in relation to weather conditions and plant growth stage. Follow any label recommendations given as "for best results."
 - For weed applications:
 - To determine if weeds are "actively growing," use as a guideline that there needs to have been at least 1 hour of temperature above 65° F and 1 hour of sun in the day prior to, of, or forecast before a rain the day after the application.
 - For spring applications to thistles, apply after basal leaves of Canada thistles are fully extended, and after rosettes of musk thistle are at least 8 inches diameter, but before flower stage.
 - For fall applications to thistles, apply prior to the second hard freeze of 28° F, unless otherwise listed in the label directions.
 - For tree and brush applications:

231-2
10-16-12

HERBICIDE

- For foliar applications and cut stump/surface applications with water-soluble products, apply after leaves are fully opened in the spring and prior to leaf discoloration in the fall.
 - For cut stump applications with oil soluble products, do not apply during periods of heavy sap flow. Use as a guideline that heavy sap flow occurs in late winter to early spring when nighttime temperatures below 32° F are followed by daytime temperatures above 32° F with sunny conditions.
 - For cut stump and basal bark applications, add sufficient dye so that treated areas are visible to inspection 7 days after application.
- Notify the Engineer prior to calibrating, mixing and applying herbicides, including incidental items.
- Provide copies of daily spray logs to the RCE at the end of each week of spraying (form provided by Iowa DOT).
- If Contractor does not complete spray item on schedule, the Engineer may adjust the schedule.

100-22
04-21-15

ROLLED EROSION CONTROL

Refer to EC-101, EC-103 and EC-104

Location				L FT	W FT	Turf Reinforcement Mat (TRM) (EC-104)				Slope Protection (EC-103) Squares	Special Ditch Control (EC-101) Squares	Remarks
Road Identification	Begin Station	End Station	Side			Type 1 Squares	Type 2 Squares	Type 3 Squares	Type 4 Squares			
Hwy 1	133+65.00	135+50.00	Lt	185	30							
Hwy 1	133+65.00	135+50.00	Lt	185	30					56		
Rolled Erosion Control Tab Totals:										56		





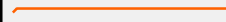


100-17
04-20-10

TABULATION OF SILT FENCES








Refer to EC-201

Location			Length LF	Remarks
Begin Station	End Station	Side		
133+65.00	135+50.00	Lt	185.0	
SF Tab Totals:			185.0	
SF Bid Totals:			231.3	125% of Tab Total
SF maintenance Totals:			23.1	10% of Bid Total
SF Removal Totals:			231.3	100% of Bid Total






LINE STYLE LEGEND OF EROSION CONTROL SHEETS



-  Silt Fence
-  Perimeter and Slope Sediment Control Device (9")
-  Perimeter and Slope Sediment Control Device (12")
-  Perimeter and Slope Sediment Control Device (20")
-  Open-Throat Curb Intake Sediment Filter
-  Concentrated Flow
-  Sheet Flow

CELL LEGEND OF EROSION CONTROL SHEETS

















-  Temporary Sediment Control basin
-  Erosion Control for Circular Intake or Manhole Well
-  Erosion Control for Rectangular Intake or Manhole Well
-  Grate Intake Sediment Filter Bag
-  Silt Basin
-  Silt Fence Tail
-  Stormwater Drainage Basin Discharge Point

PLAN VIEW COLOR LEGEND OF EROSION CONTROL SHEETS

LINEWORK	Design Color No.	
Green	(2)	 Existing Topographic Features and Labels
Blue	(1)	 Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)	 Existing Utilities
Black	(0)	 Permanent Erosion Control Features
Blaze Orange	(222)	 Temporary Erosion Control Features

SHADING	Design Color No.		Transparency
Citron	(234)	 Mulching, All Types	50%
Light Brown	(238)	 Special Ditch Control, Wood Excelsior Mat	0%

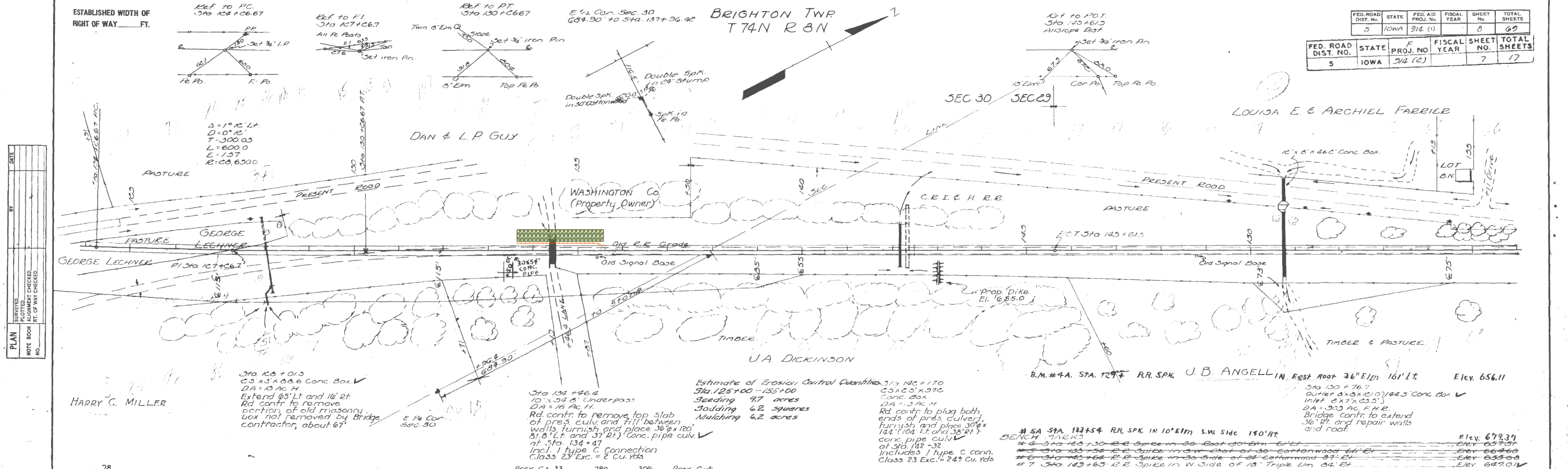
PATTERN LEGEND OF EROSION CONTROL SHEETS

- | | |
|---|--|
|  Seeding and Fertilizing |  Turf Reinforcement Mat Type 1 |
|  Seeding and Fertilizing (Rural) |  Turf Reinforcement Mat Type 2 |
|  Seeding and Fertilizing (Urban) |  Turf Reinforcement Mat Type 3 |
|  Native Grass Seeding |  Turf Reinforcement Mat Type 4 |
|  Salt Tolerant Seeding |  Slope Protection, Wood Excelsior Mat |
|  Wetland Grass Seeding |  Transition Mat |
|  Wildflower Seeding |  Rock Features, Permanent |
|  Sodding |  Rock Features, Temporary |

EROSION CONTROL LEGEND AND SYMBOL INFORMATION SHEET

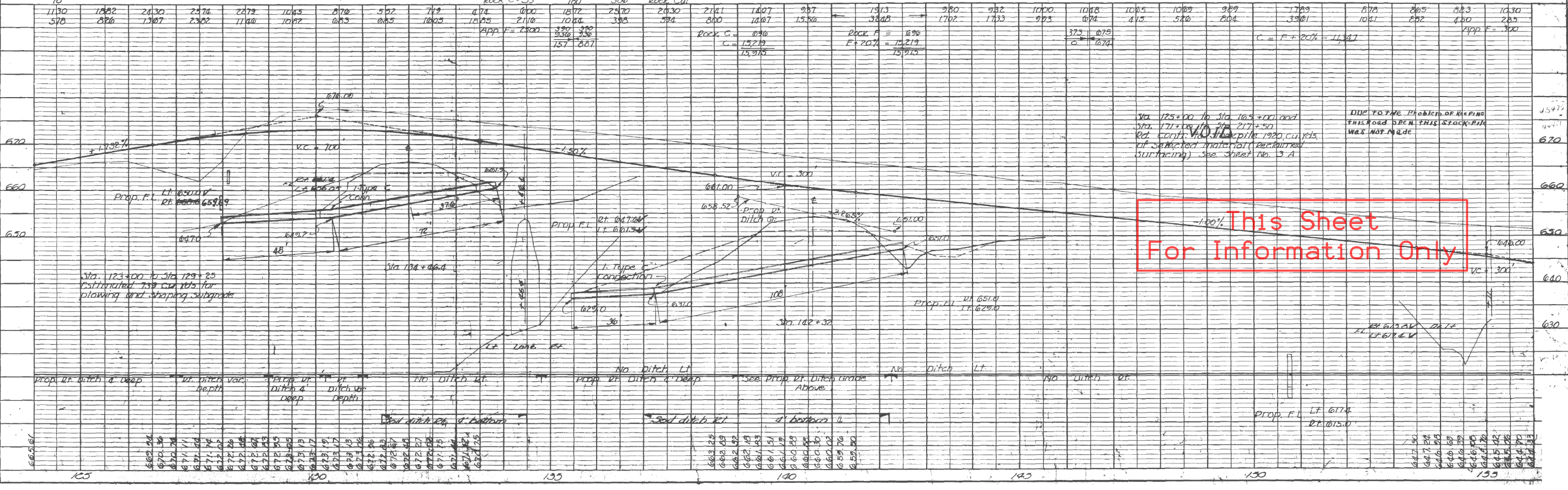
(COVERS SHEET SERIES R)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	914 (1)		8	60
FED. ROAD DIST. NO.	STATE	F. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	514 (2)		7	17



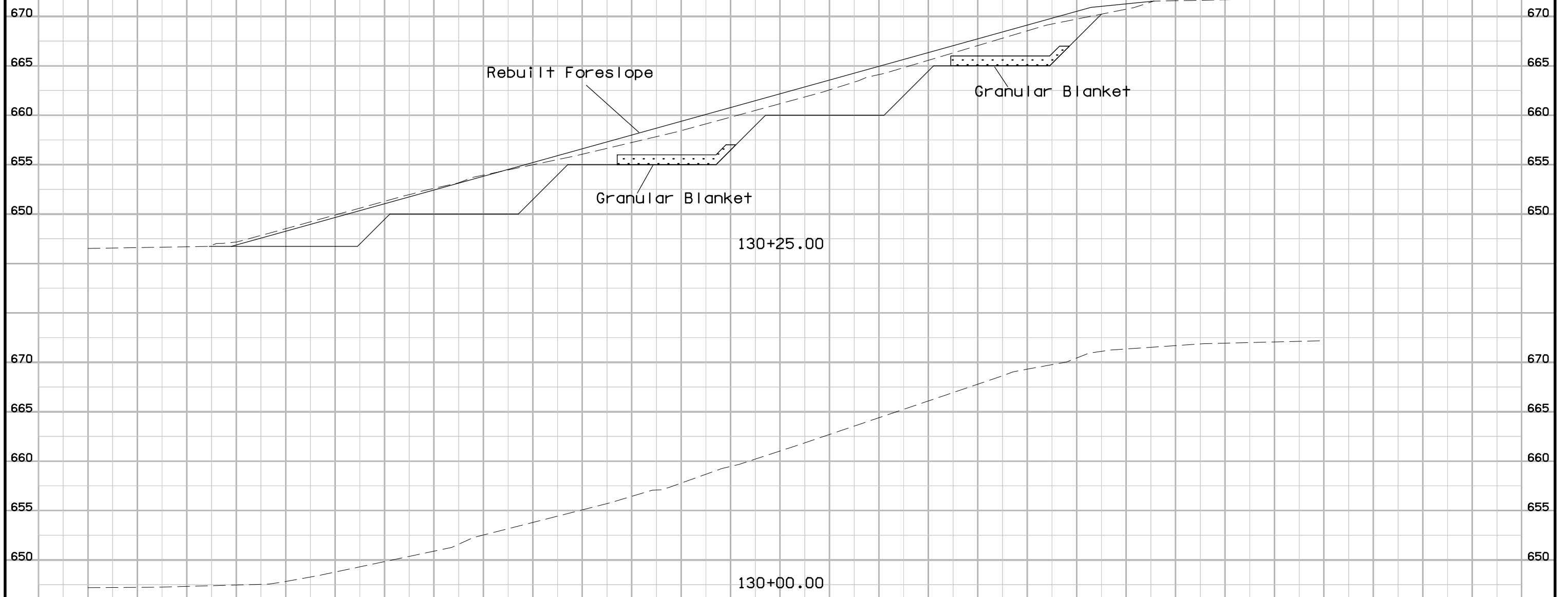
PLAN	DATE
BY	
REVISION	
NO.	
DATE	
BY	
REVISION	
NO.	
DATE	
BY	
REVISION	
NO.	

PROFILE	DATE
BY	
REVISION	
NO.	
DATE	
BY	
REVISION	
NO.	

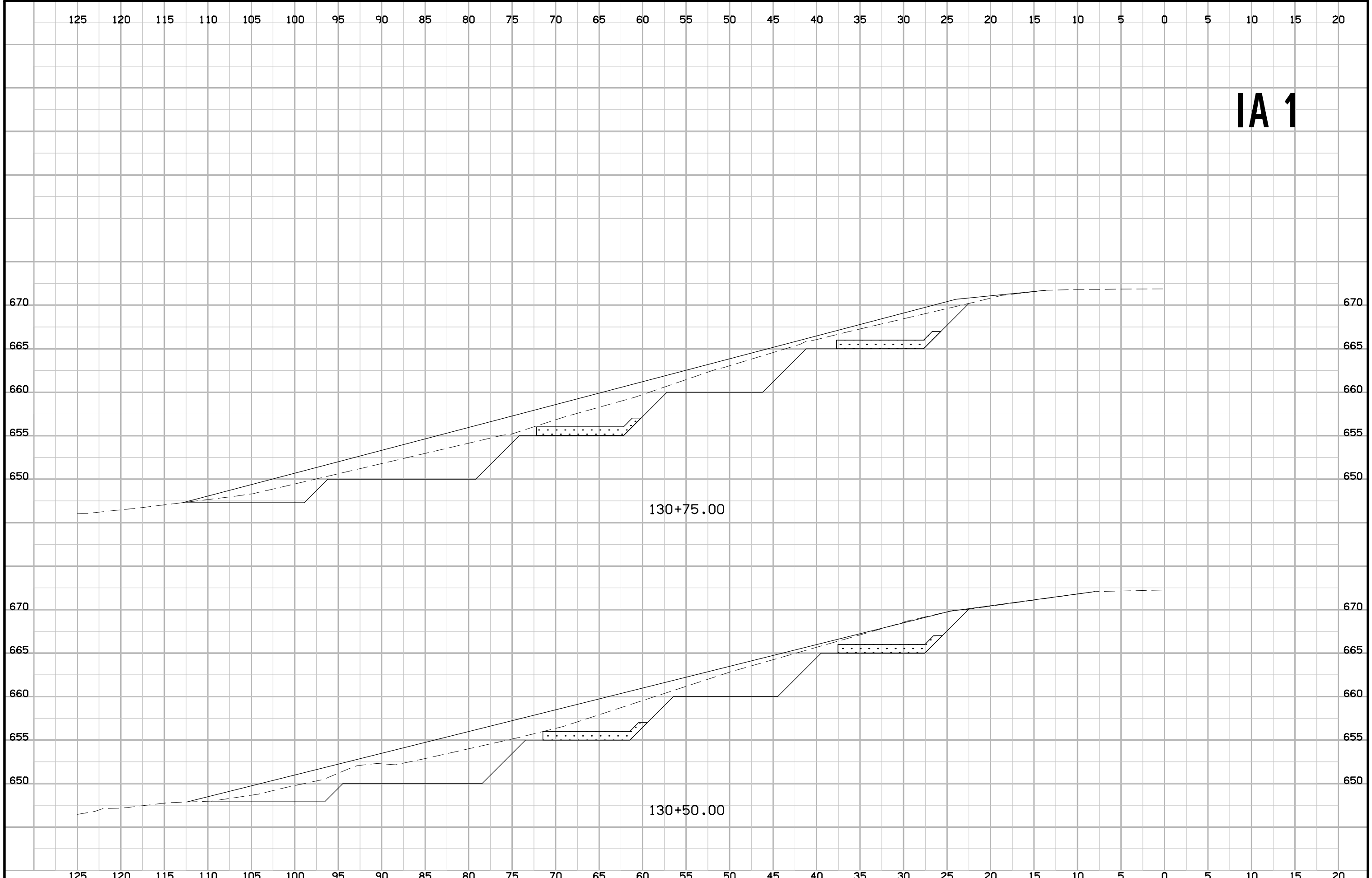


Cross Sections were developed from Lidar
and may not fully depict current site conditions.

IA 1



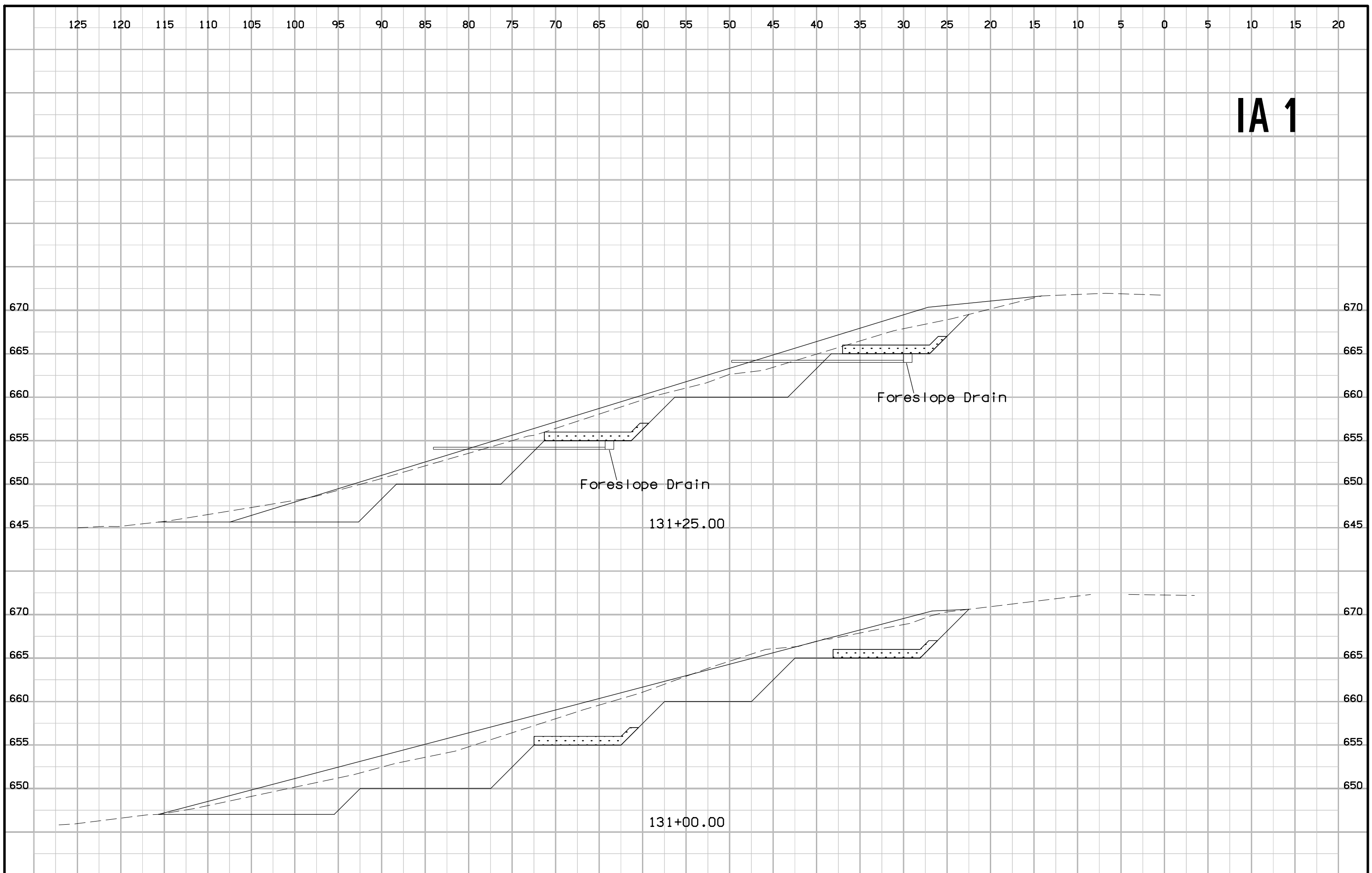
IA 1



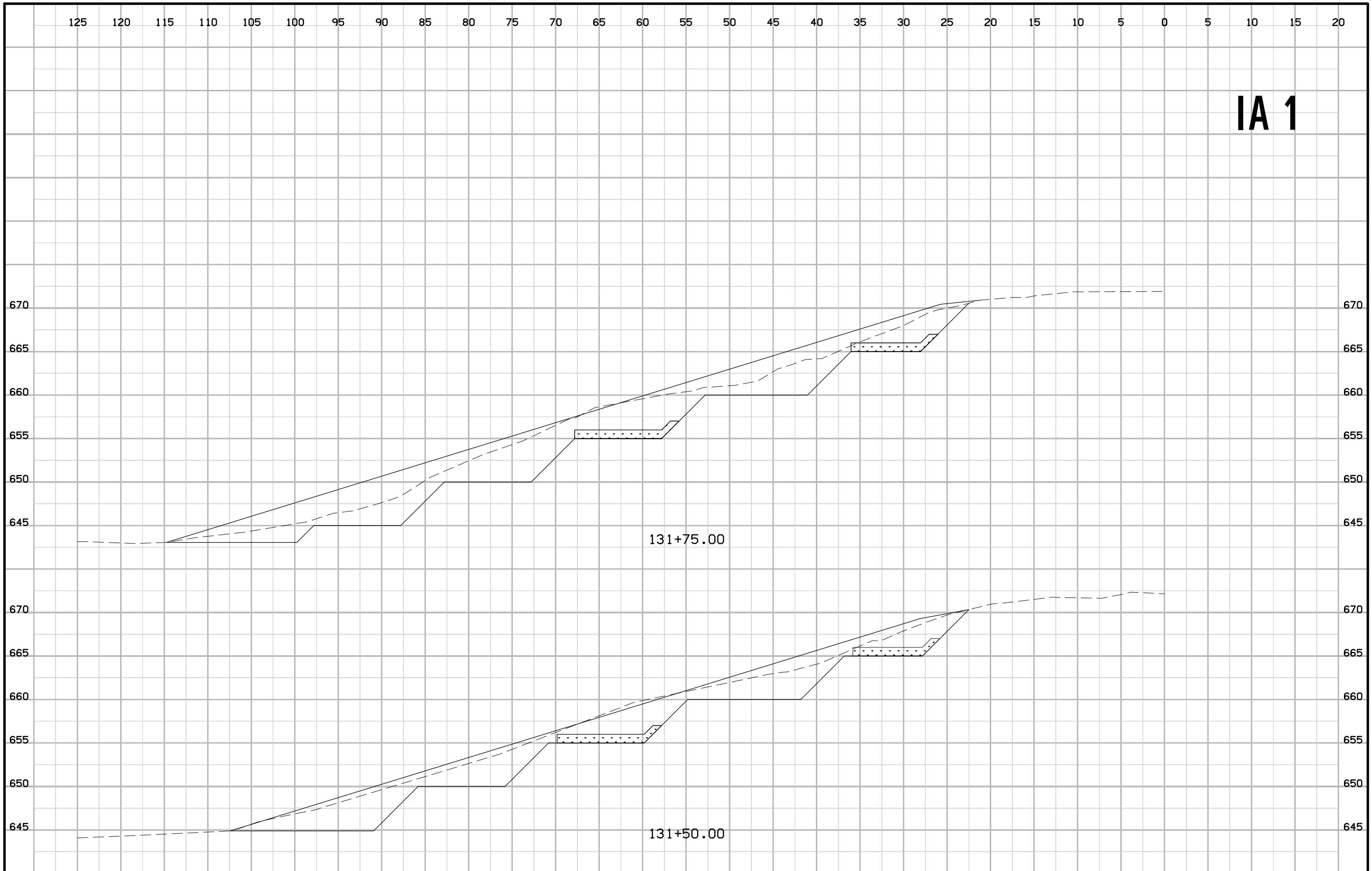
130+75.00

130+50.00

IA 1



IA 1



IA 1

