

SLIDE REPAIR
NHSN-034-9(233)--2R-44

LETTING DATE
 07-21-2020

HENRY CO.

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Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM HENRY COUNTY SLIDE REPAIR

E of Grand Ave at N Jct US 218 (WB)

SCALES: As Noted

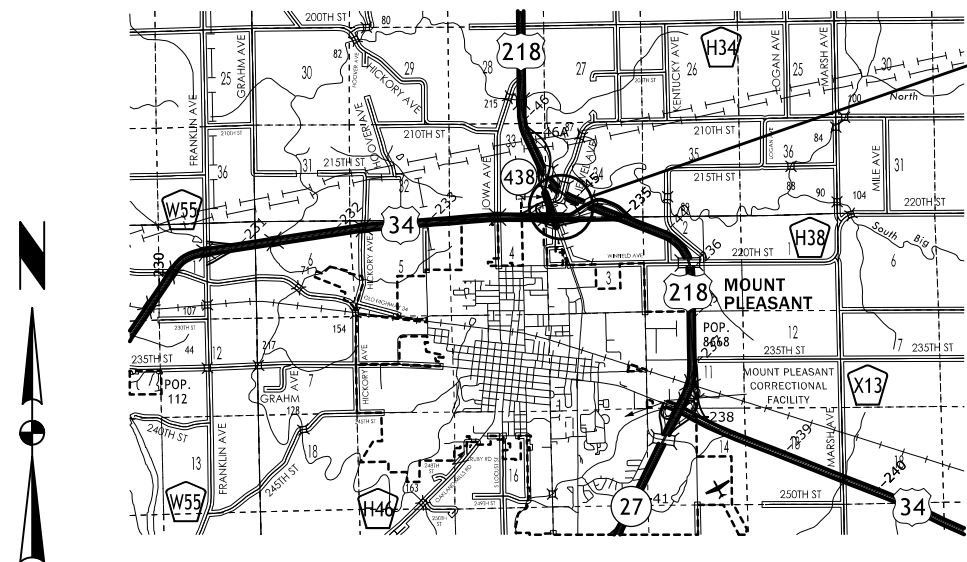
Refer to the Proposal Form for list of applicable specifications.

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

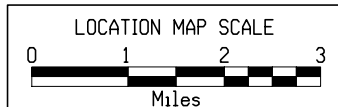


REVISIONS

TOTAL	
16	
PROJECT IDENTIFICATION NUMBER	
19-44-034-020	
PROJECT NUMBER	
NHSN-034-9(233)--2R-44	
R.O.W. PROJECT NUMBER	



PROJECT LOCATION
 US 34, MM 234.4 (North Foreslope)
 STA. 232+52 (Metric)



DESIGN DATA RURAL			
2017	AADT	2960	V.P.D.
20--	AADT	--	V.P.D.
20--	DHV	--	V.P.H.
	TRUCKS	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.
	<i>Paul W. Flattery</i>
	Signature _____ Date 05-05-2020 Paul W. Flattery Printed or Typed Name
	My license renewal date is December 31, 2021
Pages or sheets covered by this seal: A.1, C.1, D.1-D.4, J.1	

100-1D
10-18-05

PROJECT DESCRIPTION

This project is a Slide Repair on US 34. It involves benching and rebuilding the foreslope to pre-existing conditions.

100-1A
07-15-97

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

Item No.	Item Code	Item	Unit	Total	As Built Qty.
1	2101-0850001	CLEARING AND GRUBBING	ACRE	0.9	
2	2102-2625000	EMBANKMENT-IN-PLACE	CY	634.0	
3	2102-2710090	EXCAVATION, CLASS 10, WASTE	CY	634.0	
4	2102-2712015	EXCAVATION, CLASS 12, BOULDERS OR ROCK FRAGMENTS	CY	2.0	
5	2105-8425005	TOPSOIL, FURNISH AND SPREAD	CY	189.0	
6	2107-0875100	COMPACTION WITH MOISTURE CONTROL	CY	634.0	
7	2107-3825025	GRANULAR MATERIAL FOR BLANKET AND SUBDRAIN	CY	24.7	
8	2502-8212024	SUBDRAIN, LONGITUDINAL, (BACKSLOPE) 4 IN. DIA.	LF	120.0	
9	2502-8221306	SUBDRAIN OUTLET, DR-306	EACH	1	
10	2528-8445110	TRAFFIC CONTROL	LS	1.00	
11	2533-4980005	MOBILIZATION	LS	1.00	

**SEE RC SHEETS FOR ADDITIONAL BID ITEMS AND
QUANTITIES.**

105-4
10-18-11

STANDARD ROAD PLANS

The following Standard Road Plans apply to construction work on this project.

Number	Date	Title
DR-303	10-17-17	Subdrains (Longitudinal)
DR-306	10-16-18	Precast Concrete Headwall for Subdrain Outlets
TC-1	10-15-19	Work Not Affecting Traffic (Two-Lane or Multi-Lane)

100-4A
10-29-02

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
1	2101-0850001	CLEARING AND GRUBBING Quantity includes all disturbed areas.
-	-	-
2	2102-2625000	EMBANKMENT-IN-PLACE
3	2102-2710090	EXCAVATION, CLASS 10, WASTE See Tab. 103-12 in the CS Sheets for locations and details.
-	-	-
4	2102-2712015	EXCAVATION, CLASS 12, BOULDERS OR ROCK FRAGMENTS See Tab. 103-7 in the CS Sheets for locations and details.
-	-	-
5	2105-8425005	TOPSOIL, FURNISH AND SPREAD See Tab. 103-10 and Tab. 103-12 in the CS Sheets for locations and details.
-	-	-
6	2107-0875100	COMPACTION WITH MOISTURE CONTROL See Tab. 103-6 and Tab. 103-12 in the CS Sheets for locations and details.
-	-	-
7	2107-3825025	GRANULAR MATERIAL FOR BLANKET AND SUBDRAIN See Tab. 103-12 in the CS Sheets for locations and details.
-	-	-
8	2502-8212024	SUBDRAIN, LONGITUDINAL, (BACKSLOPE) 4 IN. DIA.
9	2502-8221306	SUBDRAIN OUTLET, DR-306 See Tab. 104-9 in the CS Sheets for locations and details.
-	-	-
10	2528-8445110	TRAFFIC CONTROL
-	-	-
11	2533-4980005	MOBILIZATION
-	-	-

SLIDE REPAIR

Site No.	Location		Side	Class 13 Excavation Waste CY	Embankment-in-Place CY	Class 10 Excavation		Class "E" Revetment Tons	Engineering Fabric SY	Erosion Stone Tons	Gra. Material Blankets & Subdrain CY	Macadam Slope Protection SY	Top Soil				Remarks
	Begin Sta.	End Sta.				Roadway and Borrow CY	Waste CY						Stripping Undercut Volume CY	Placement Undercut Volume CY	Placement with 1.4 Shrink Factor CY	Stripping Minus Placement with Shrink CY	
1	762+28.00	762+98.00	Lt.		634		634				24.7			135	189	-189	

TOPSOIL STRIPPING AND PLACEMENT

Location				Topsoil Stripping Thickness IN	Topsoil Placement Thickness IN	Remarks
Road Identification	Dir. of Traffic	Begin Station	End Station			
U.S. 34		762+28.00	762+98.00		8.0	

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.

SHRINKAGE DATA

Material	%	Remarks
Topsoil	40%	
Boulders		2 CY

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 CY	Class "A" Crushed Stone CY	Remarks		
		Station to Station	Depth D		Shoulder		Backslope		Bridge Berm (EW-203 or EW-204)		DR-303, DR-305 or DR-306						
					Size IN	Length FT	Size IN	Length FT	Standard Road Plan and Type	Size IN	Length FT	Station				Standard Road Plan and Type	
1	US 34	762+28.00	762+98.00	LT			4.0	120.0					762+63	DR-306	14.8		place on new backslope surface bench at Elevation 635
Total:							0.0	120.0					DR-306 = 1	14.8	0.0		

GEOTECHNICAL DESIGN



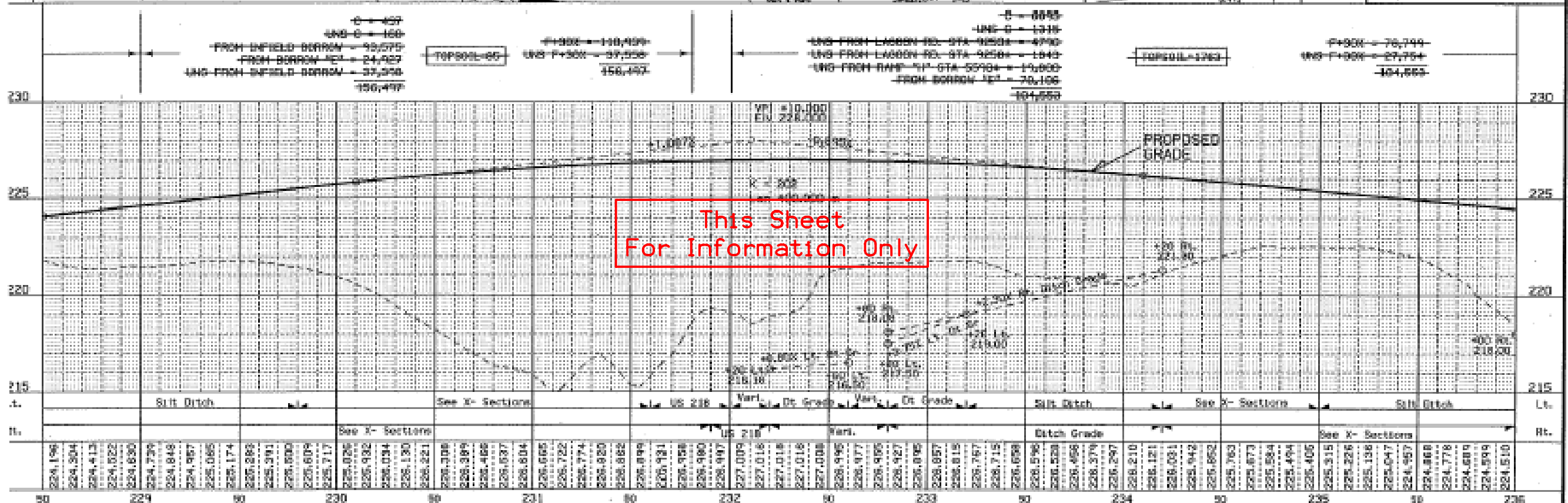
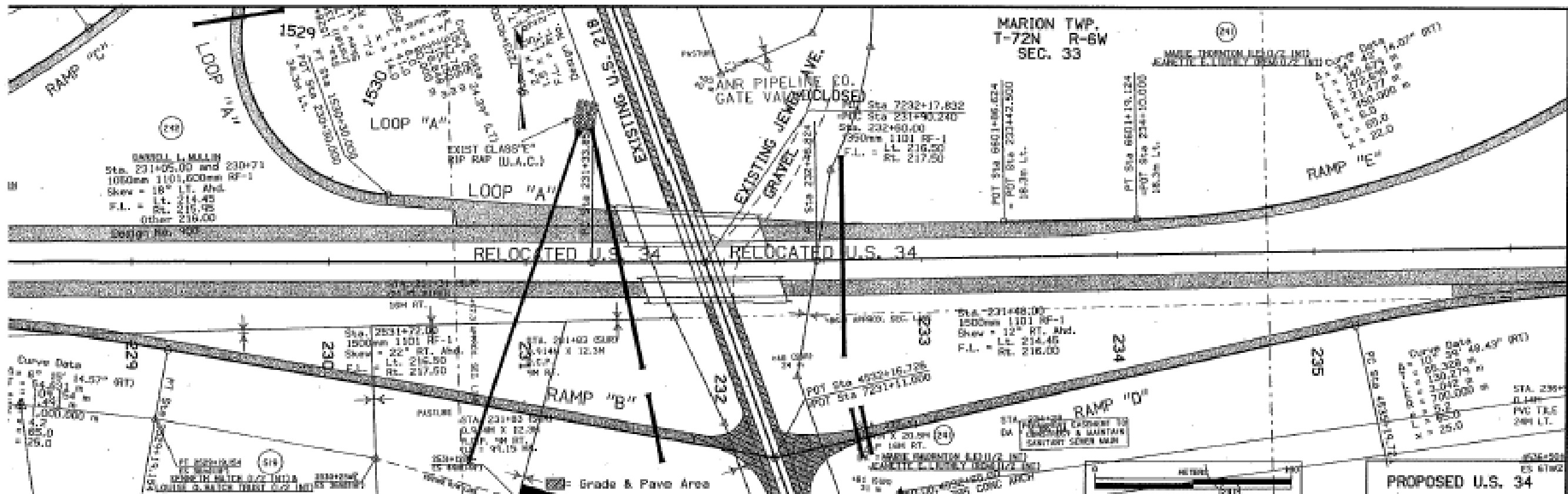
I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

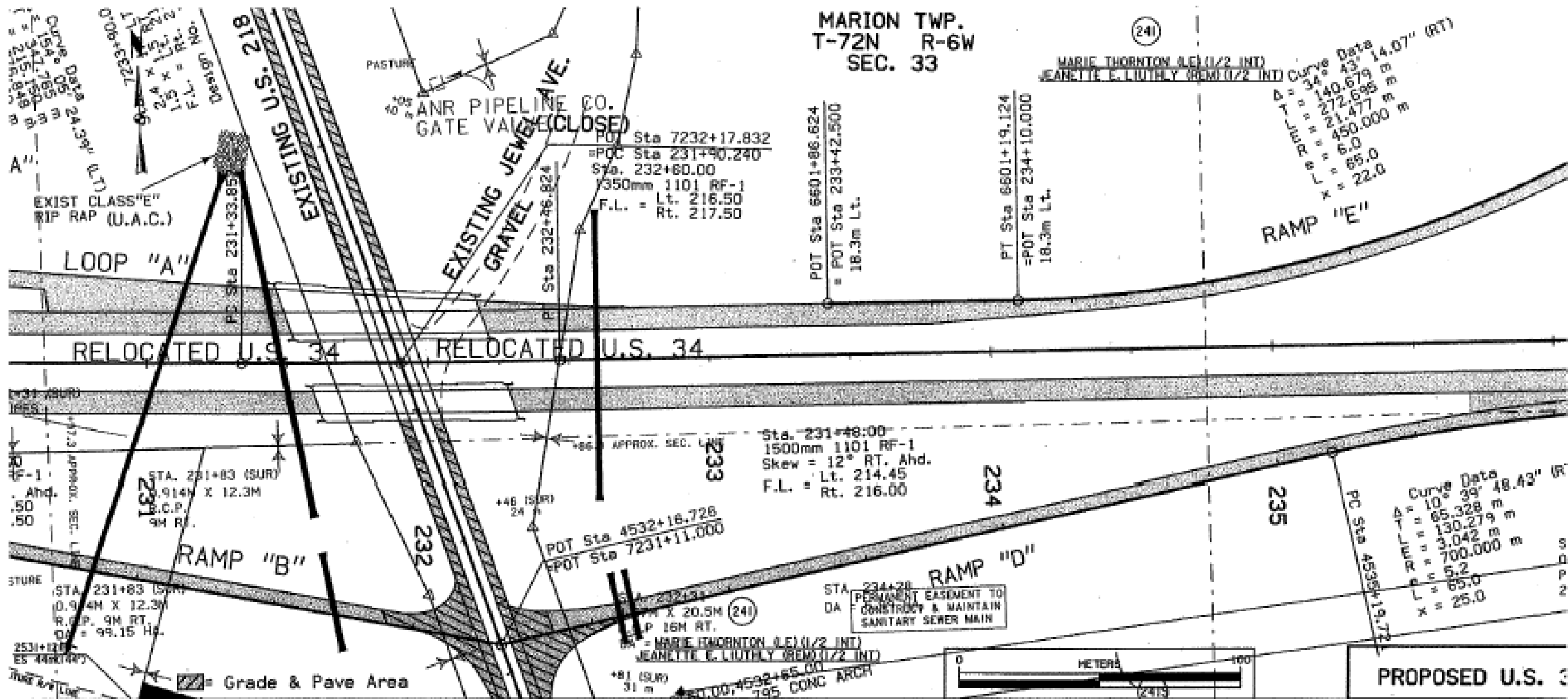
Signature: *Mark A. Dell* Date: *12/27/19*

Printed or Typed Name: Mark A. Dell

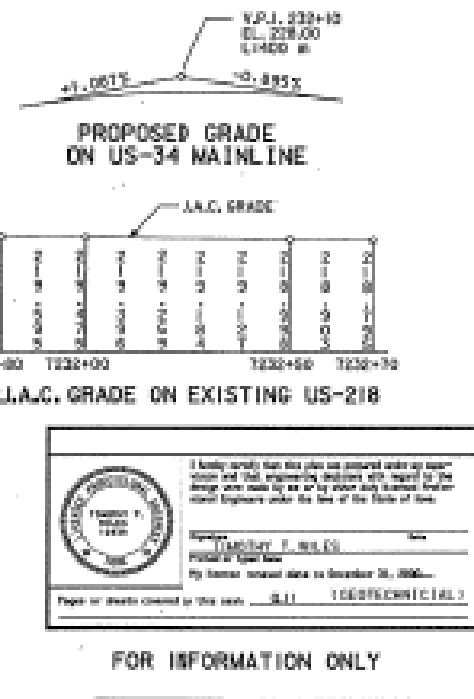
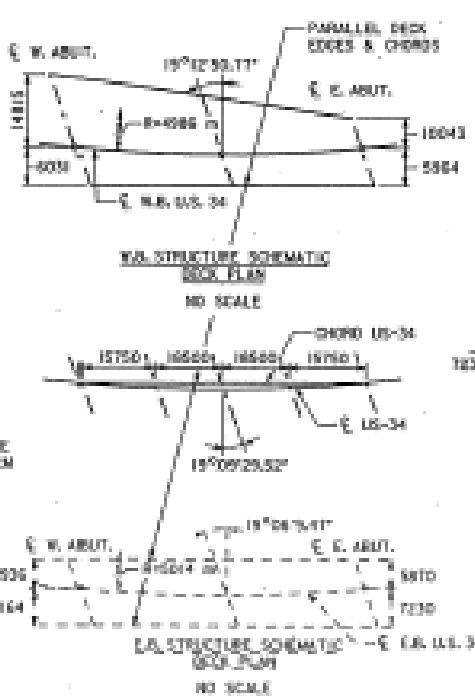
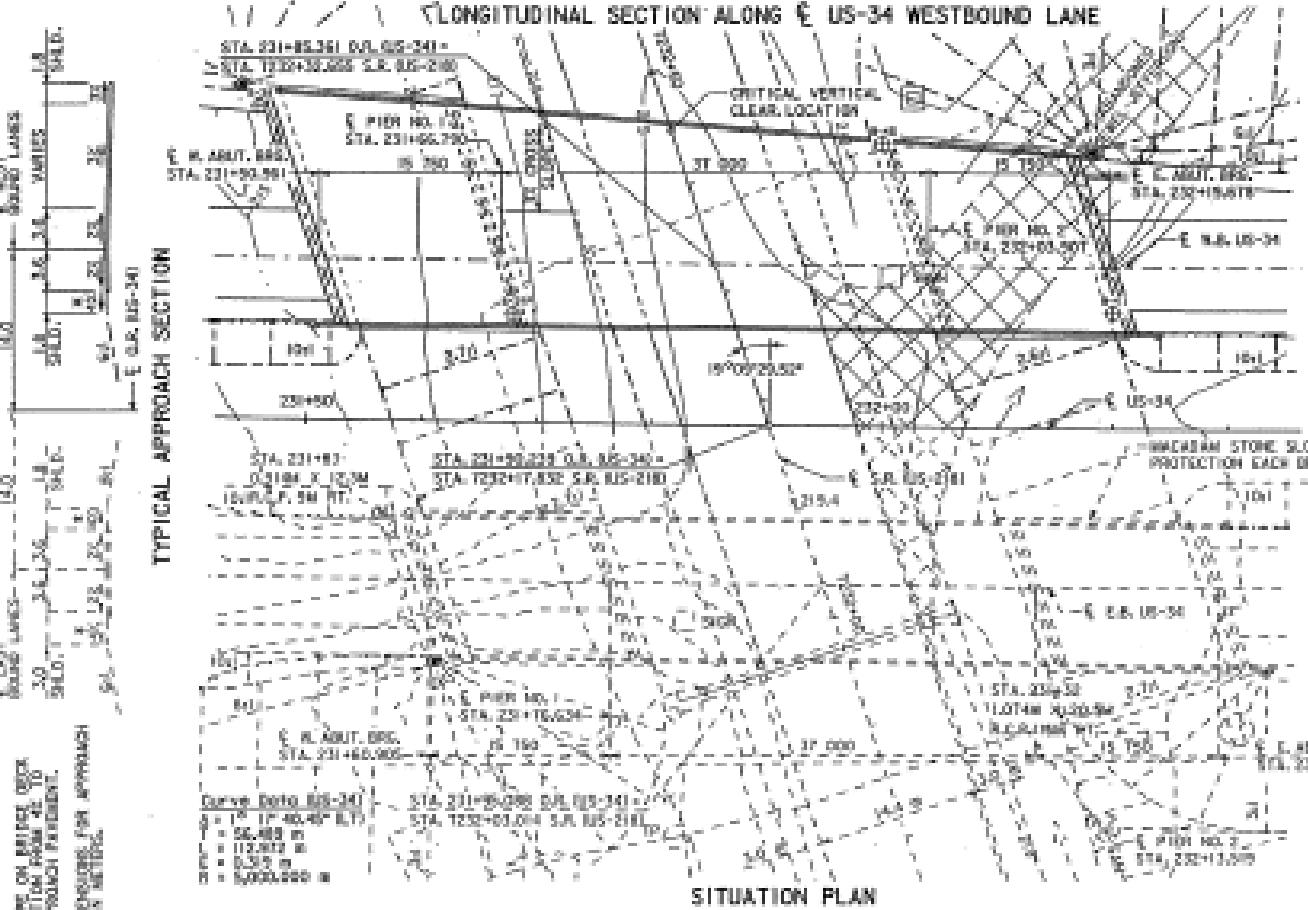
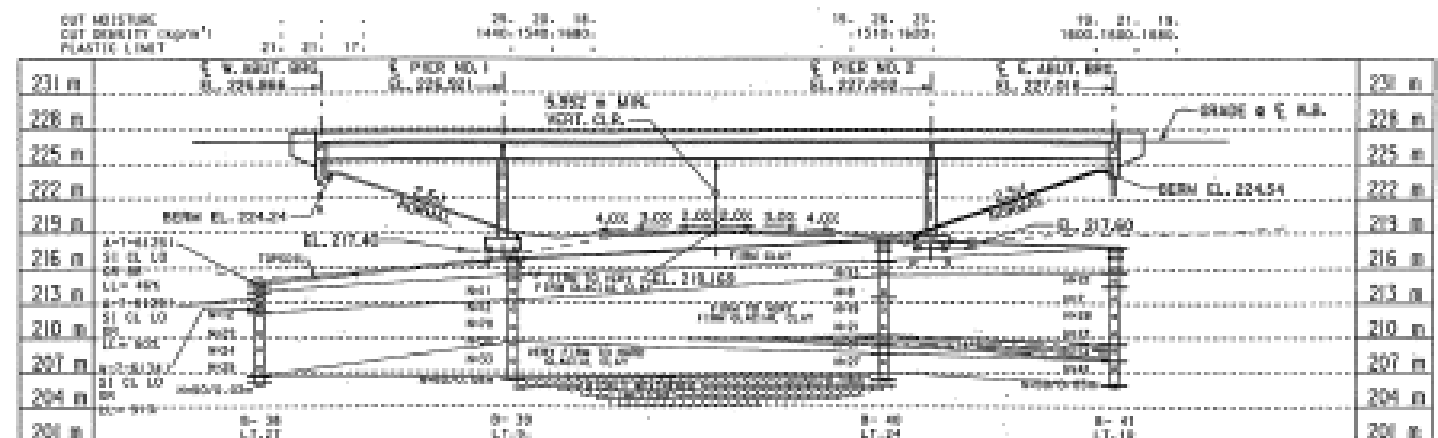
My license renewal date is December 31, 2021

Pages or sheets covered by this seal: CS.1, Q.1-2, W.1-4





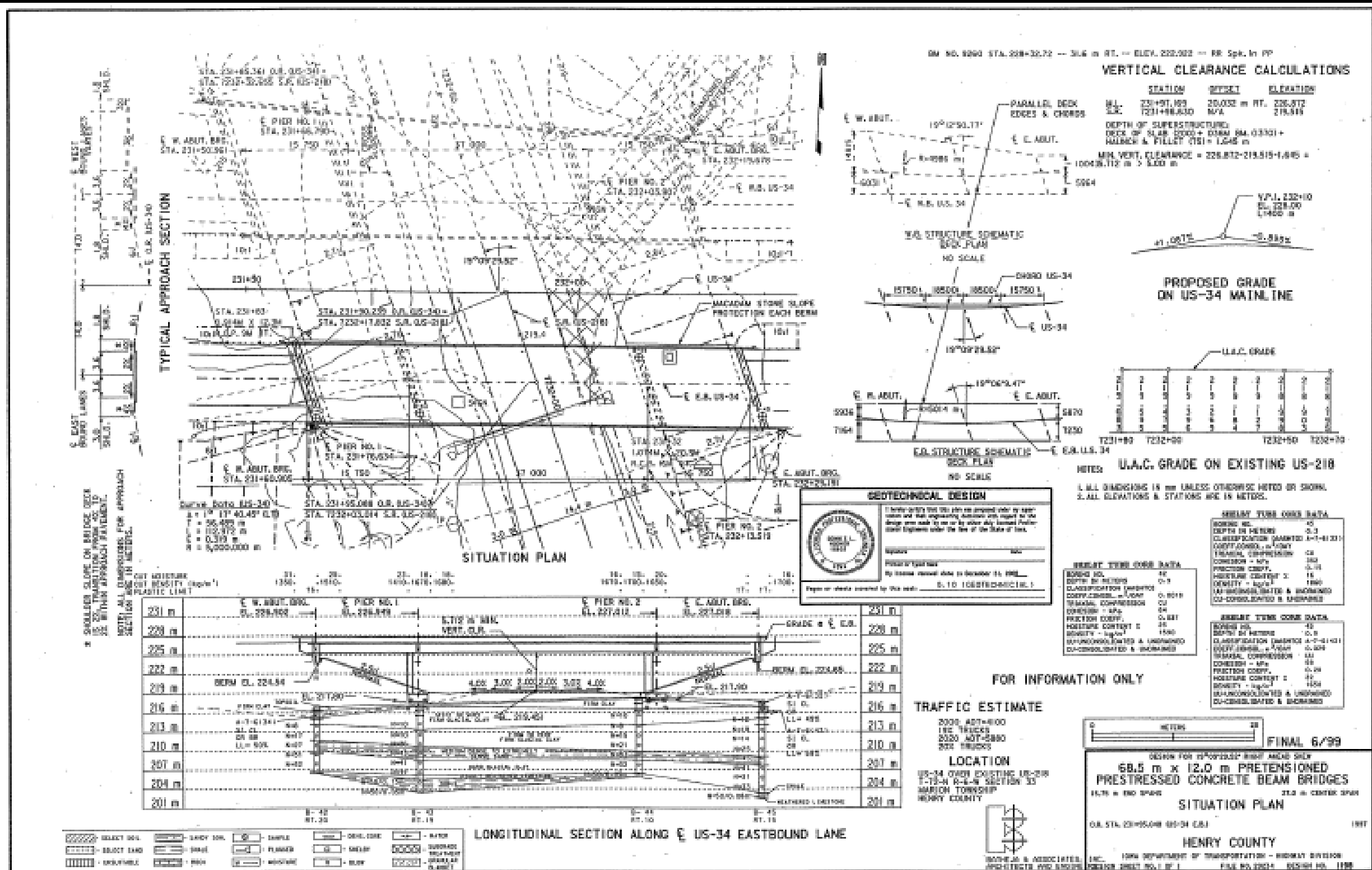
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For Information Only



	SELECT SOIL		EMBANKMENT		SAMPLE		CENTERLINE		RIGHT OF WAY
	SELECT SAND		BRIDGE		PLANKED		CLEAR		BRIDGE STRUCTURE
	EXISTING		ROCK		MANHOLE		CURB		BRIDGE RAILING

NOTES:
 1. ALL DIMENSIONS IN MM UNLESS OTHERWISE NOTED OR SHOWN.
 2. ALL ELEVATIONS & STATIONS ARE IN METERS.

This Sheet
For Information Only



This Sheet
For Information Only

108-23A
08-01-08

TRAFFIC CONTROL PLAN

Traffic on US 34 shall be maintained at all times.

108-25
10-21-14

511 TRAVEL RESTRICTIONS

Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
			None anticipated at this time.									

111-01
04-17-12

COORDINATED OPERATIONS

Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.

Project	Type of Work
None Provided.	

Slide Repair - US 34

From approximate Station 762+28 to Station 762+98 on the north (left side) of US 34, bench and rebuild the foreslope to pre-existing conditions (an approximate 2.75:1 slope) using suitable Class 10 cohesive material.

The rebuilt foreslope shall be covered with 8 inches of Topsoil.

The repair shall start at the toe of the existing foreslope and then extend up-slope.

Install a foreslope bench drain on the bench as shown on sheets W.2-W.4.

Benches shall extend a minimum of 5 feet into the undisturbed foreslope.

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



Marion TWP.
T-72N R-6W
SEC. 34

Sta. 763+12(SUR)
48" x 326' RCP

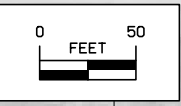
Slide Area

761+00 762+00 763+00 764+00 765+00

t. No. 33

ct. No. 4

Sect. No. 3



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	35	
2	2601-2643110	WATERING FOR SOD, SPECIAL DITCH CONTROL, OR SLOPE PROTECTION	MGAL	7	
3	2602-0000020	SILT FENCE	LF	200	
4	2602-0000071	REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS	LF	200	
5	2602-0000101	MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK	LF	20	
6	2602-0000320	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA.	LF	200	
7	2602-0000350	REMOVAL OF PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE	LF	200	
8	2602-0010010	MOBILIZATIONS, 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	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 25% additional quantity for field adjustments and replacements.
4	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.
5	2602-0000101	MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK This item is included for clean-out and repair of the silt fence and silt fence for ditch checks during the project.
6	2602-0000320	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA. Item is included for temporary perimeter sediment control, inlet protection, and water velocity reduction on slopes or ditches at locations to be determined during construction. Verify specific locations with the Engineer prior to beginning placement. Use Perimeter and Slope Sediment Control Devices fabricated using wood excelsior.
7	2602-0000350	REMOVAL OF PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE
8	2602-0010010	MOBILIZATIONS, 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.
	
	3/26/2020 Date
	Seana K. Godbold Printed or Typed Name My license renewal date is June 30, 2021
Pages or sheets covered by this seal: RC01 - 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-201	10-15-19	Silt Fence
EC-204	04-21-20	Perimeter and Slope Sediment Control Devices
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.**

232-11
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: Slope protection, Silt fence and Perimeter and slope sediment control device.

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.**

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

231-2
10-16-12

HERBICIDE

Sheets (MSDS.)

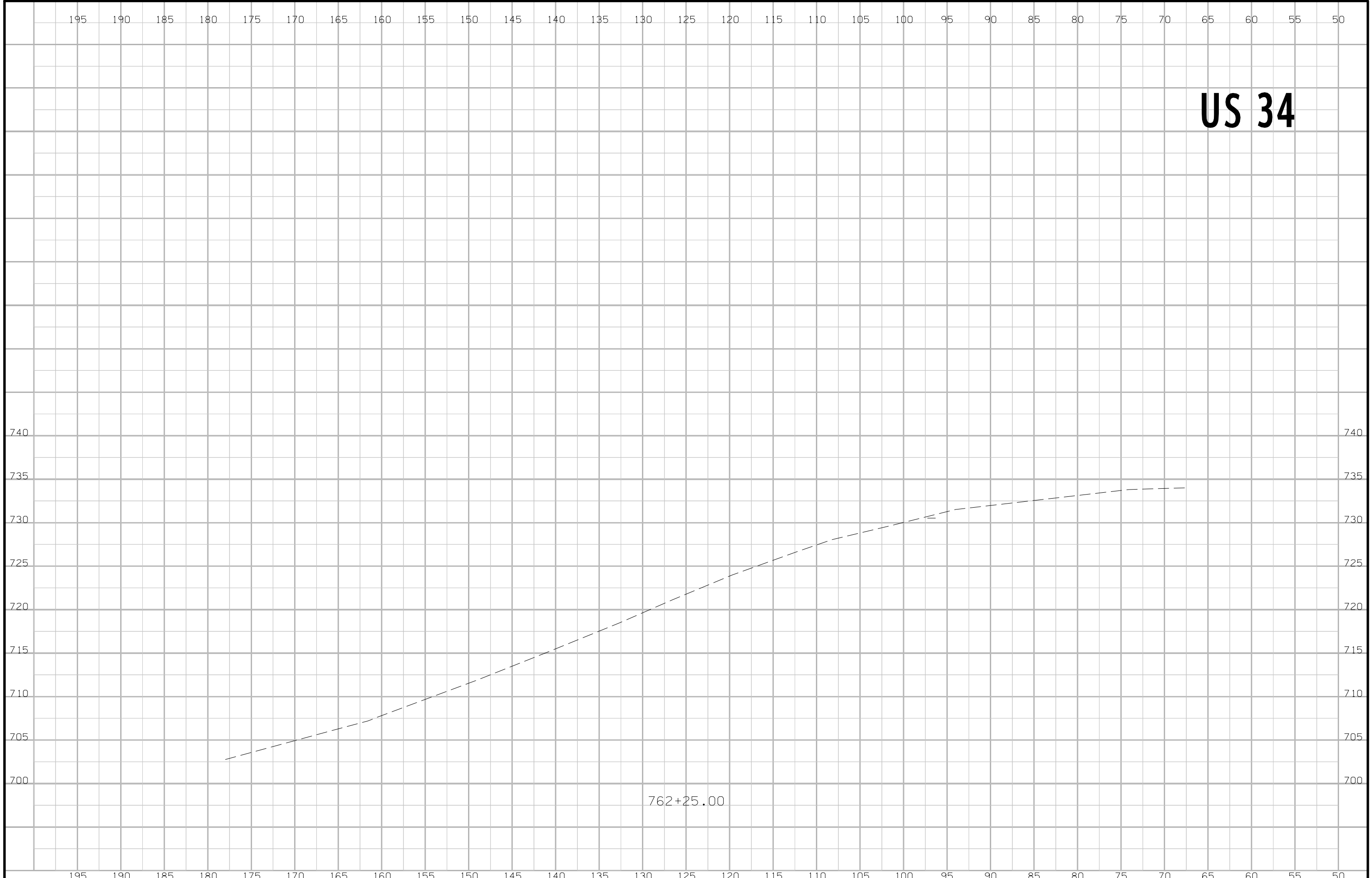
- Have copies of the herbicide and adjuvant labels and MSDSs on-hand and at locations of storage, transport, and application.
- Schedule work to maximize efficiency of the herbicide application in relation to weather conditions and plant growth stage. Follow any label recommendations given as "for best 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:
 - 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	Road Identification	Begin Station	End Station	Side	Turf Reinforcement Mat (TRM) (EC-104)				Slope Protection (EC-103)	Special Ditch Control (EC-101)	Remarks		
					L	W	Type 1	Type 2				Type 3	Type 4
							FT	FT				Squares	Squares
	Hwy 34	762+28.00	762+98.00	Lt	70	50				35			
	Total									35			

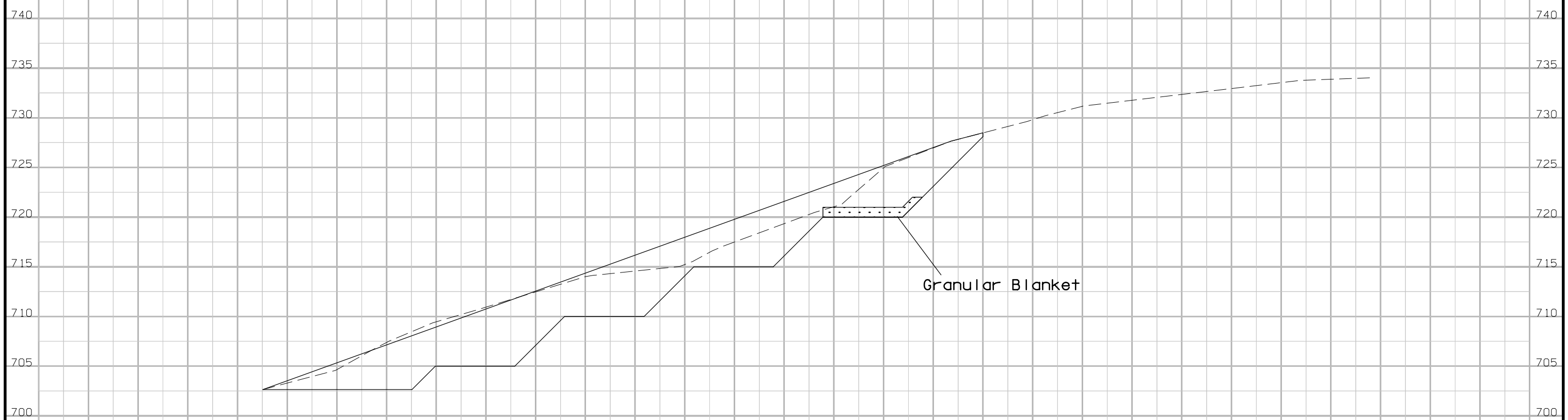
US 34



762+25.00

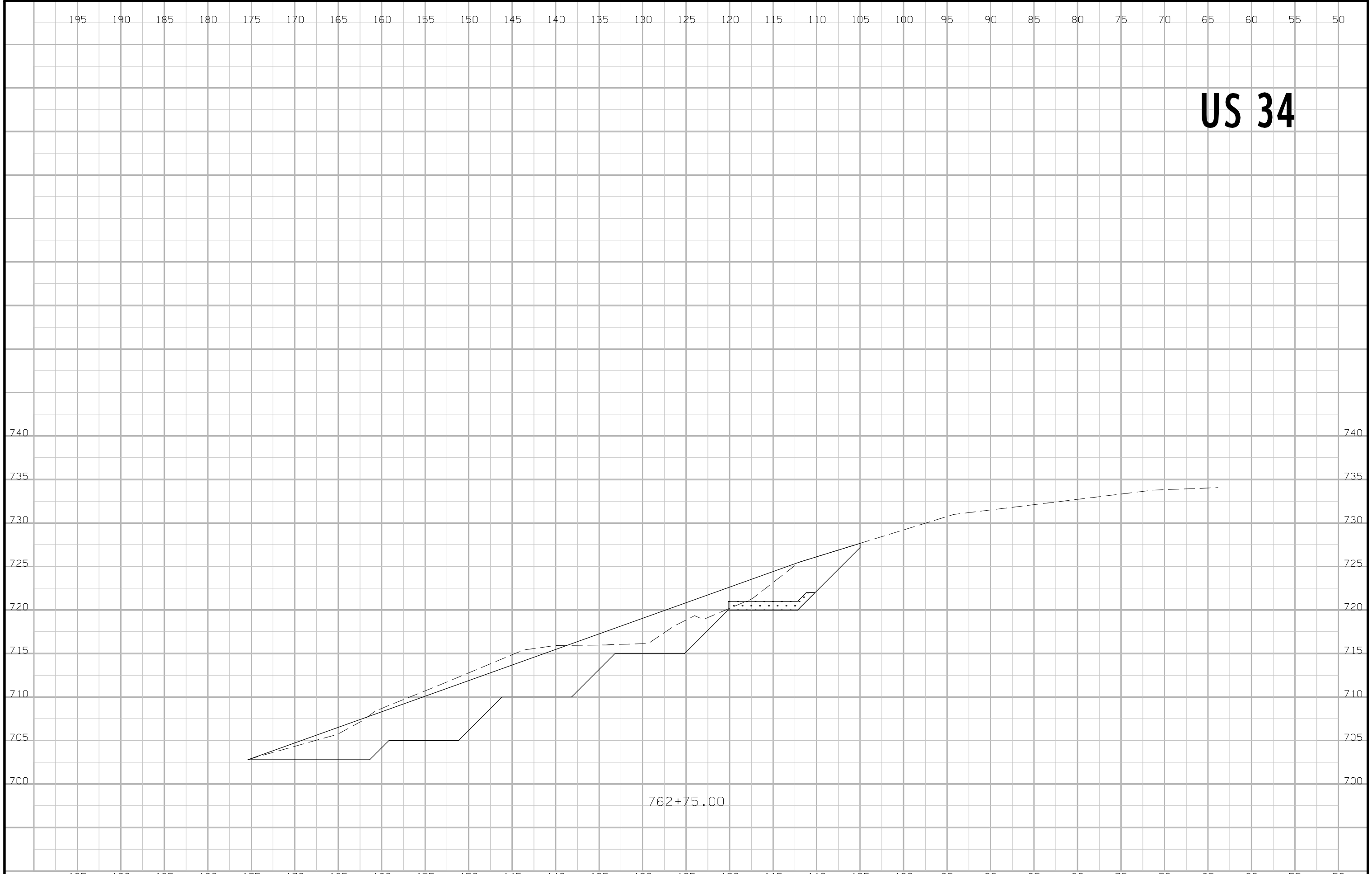
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US 34

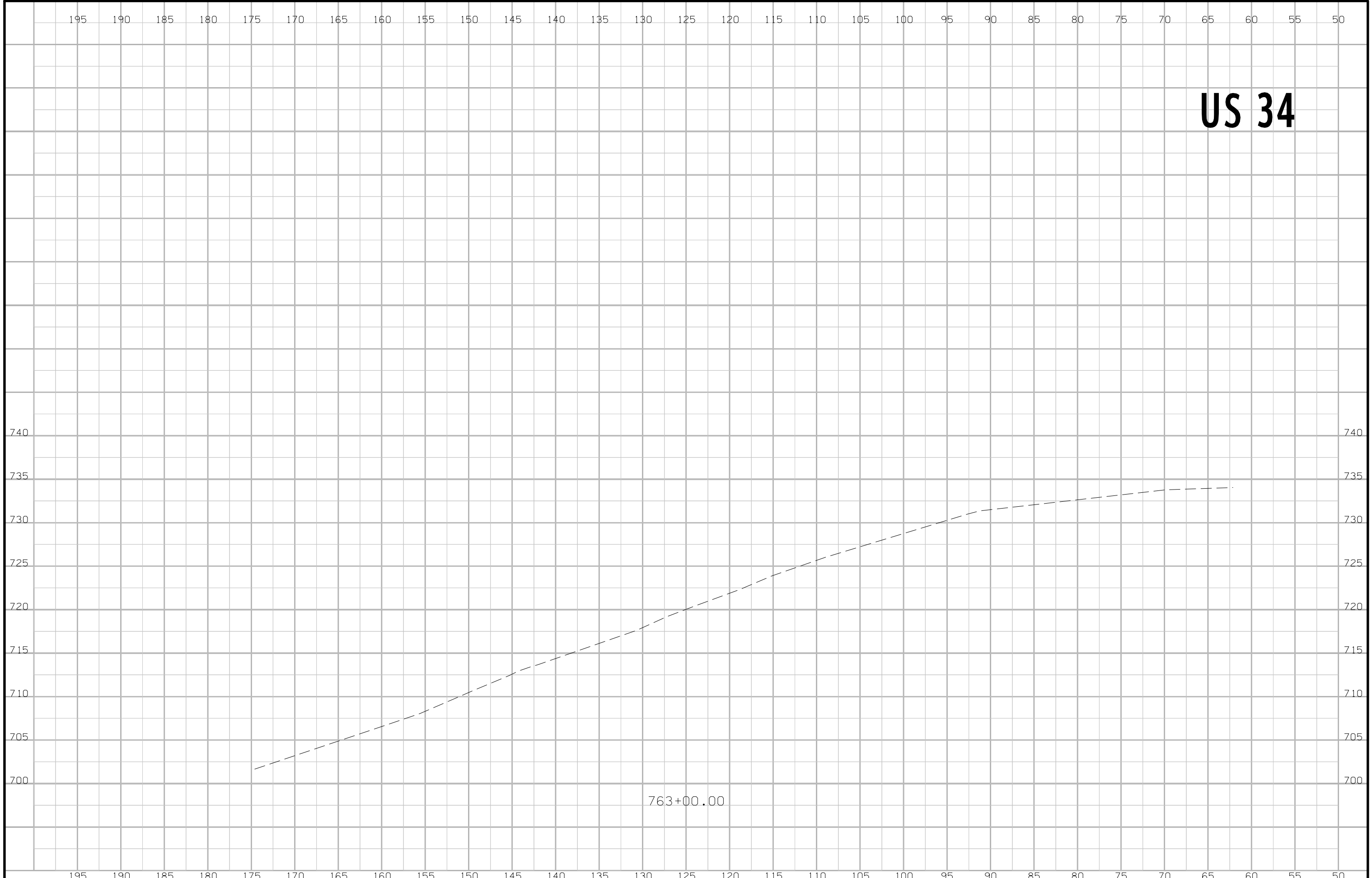


195 190 185 180 175 170 165 160 155 150 145 140 135 130 125 120 115 110 105 100 95 90 85 80 75 70 65 60 55 50

US 34



US 34



763+00.00