STATE	PROJECT NUMBER	SHEET	TOTAL SHEETS
N.D.	CH1504	1	32

CASS COUNTY HIGHWAY DEPARTMENT

PLANS

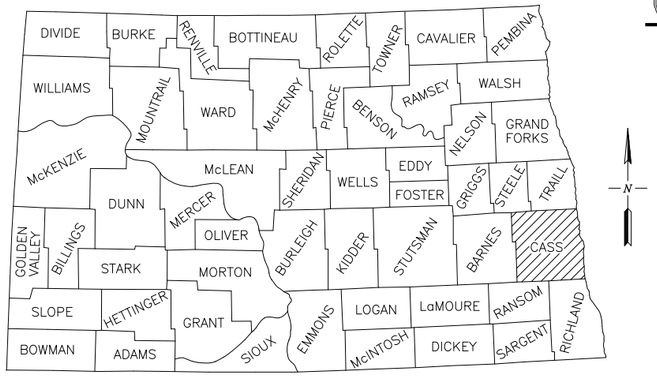
FOR THE PROPOSED IMPROVEMENT OF A

COUNTY HIGHWAY

COUNTY PROJECT NO. CH1504

GRADING, BITUMINOUS SURFACING, BITUMINOUS OVERLAY & INCIDENTALS

CASS CO. HWY 6; FROM CASS CO. HWY 38 CASS CO. HWY 5



SKETCH MAP OF NORTH DAKOTA SHOWING COUNTIES

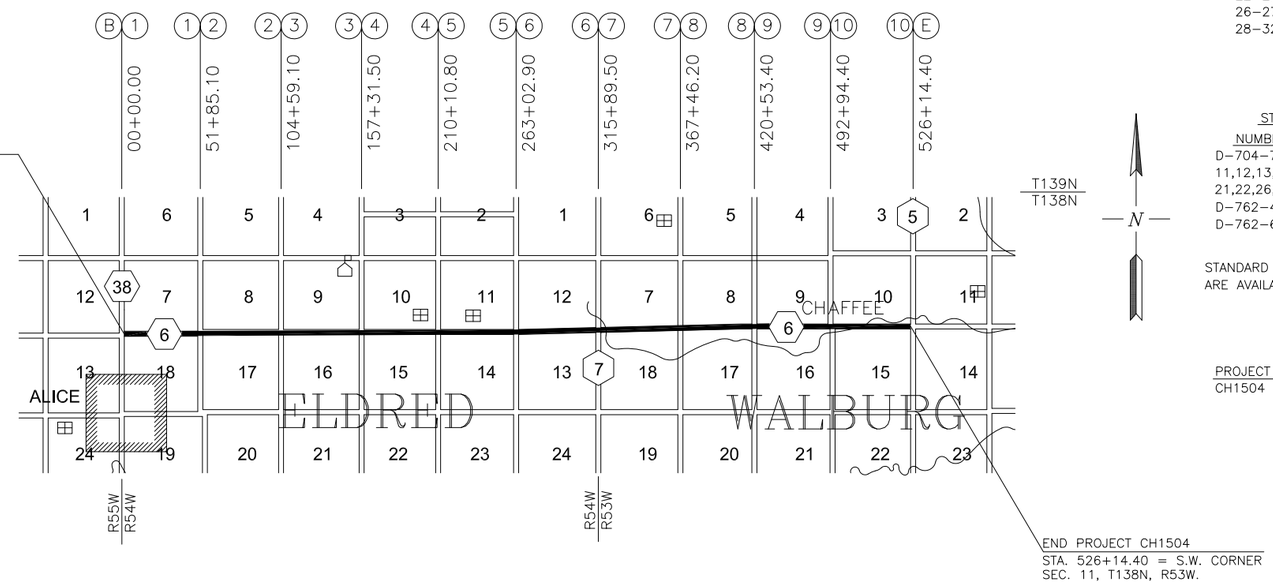
GOVERNING SPECIFICATIONS:
2014 STANDARD SPECIFICATIONS ADOPTED BY THE NORTH DAKOTA DEPARTMENT OF TRANSPORTATION AND THE SUPPLEMENTAL SPECIFICATIONS EFFECTIVE ON THE DATE THE PROJECT IS ADVERTISED.

INDEX OF DRAWINGS

SHEET NO.	TITLE
1	COVER SHEET
2	SCOPE OF WORK
3–5	CONSTRUCTION NOTES
6–8	BASIS OF ESTIMATE
9	ESTIMATED QUANTITIES
10–14	TYPICAL SECTIONS
15	CULVERT DETAILS
16	INTERSECTION DETAILS
17–18	APPROACH DETAILS
19	RUMBLE STRIP DETAILS
20–21	CONSTRUCTION SIGNING
22–25	ARCH CULVERT DETAILS
26–27	PLAN AND PROFILE
28–32	CROSS SECTIONS

DESIGN SPEED	55 MPH
MINIMUM SIGHT DISTANCE (STOPPING)	495 FEET
SUPERELEVATION	.05 FT/FT
HIGHWAY CROSS SLOPE	2.1%

BEGIN PROJECT CH1504
STA. 0+00.00 = N.W. CORNER
SEC. 18, T138N, R54W.



END PROJECT CH1504
STA. 526+14.40 = S.W. CORNER
SEC. 11, T138N, R53W.

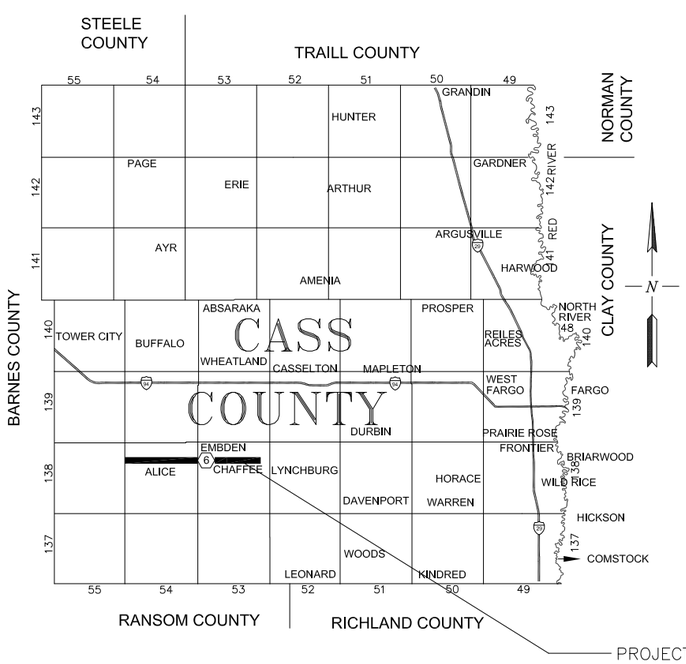
STANDARD DRAWINGS

NUMBER	TITLE
D–704–7,8,9,10, 11,12,13,14,15 21,22,26,56	CONSTRUCTION SIGNING & BARRICADE DETAILS
D–762–4	PAVEMENT MARKING
D–762–6	SHORT TERM PVMT. MARKING

STANDARD DRAWINGS ARE NOT INCLUDED IN PLANS BUT ARE AVAILABLE AT THE COUNTY ENGINEER'S OFFICE.

LENGTH OF PROJECT

PROJECT	MILES GROSS	MILES NET
CH1504	9.965	9.965



THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY
JASON P. BENSON
N.D. REG. NO. 7490
ON 02/27/2015 AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

CASS COUNTY HIGHWAY DEPARTMENT
PROJECT NO. CH1504

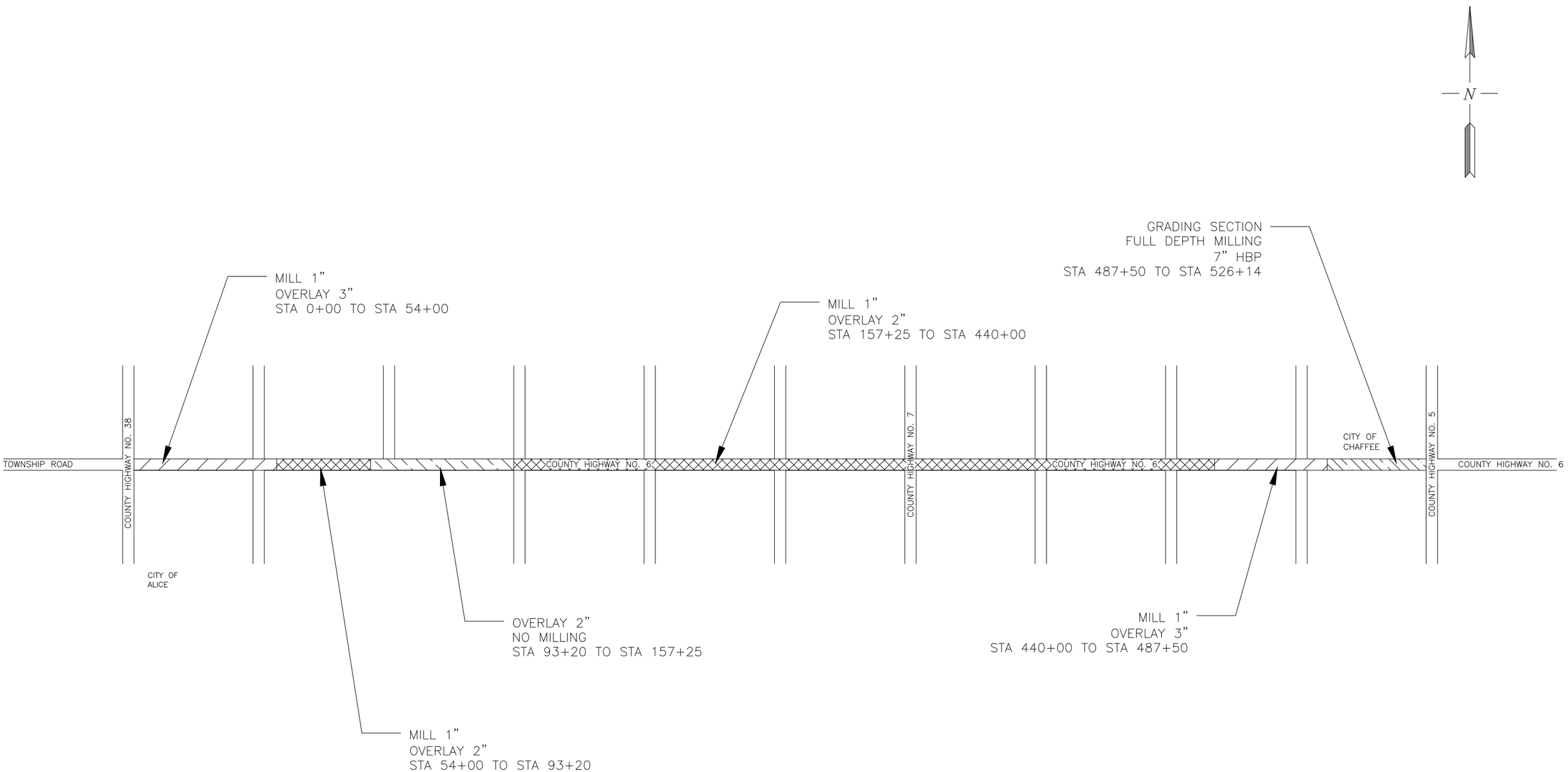
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

JASON P. BENSON /s/ DATE: 02/27/15

JASON P. BENSON N.D. REG. NO. 7490

J:\Admin-Eng\PROJECTS\C-6 Overlay - Cass 38 to C5\CH1504 Plan Set.dwg

STATE	PROJECT NUMBER	SHEET	TOTAL SHEETS
N.D.	CH1504	2	32



THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY
JASON P. BENSON
N.D. REG. NO. 7490
ON 02/27/2015 AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

CASS COUNTY HIGHWAY DEPARTMENT
PROJECT NO. CH1504
SCOPE OF WORK

J:\Admin-Eng\PROJECTS\C-6 Overlay - Cass 38 to C5\CH1504 Plan Set.dwg

GENERAL PROVISIONS:
Thicknesses shown on the typical sections for surfacing are approximate. It is intended that the plan tonnages provided for by the basis of estimate will be used uniformly throughout the project unless otherwise authorized by the Engineer.

The attention of the bidders is directed to M.S. 298.75 (Aggregate Material Tax), pursuant to the removal of aggregates from any deposit in Minnesota.

HOT BITUMINOUS PAVEMENT:
The hot bituminous pavement shall be placed and accepted according to NDDOT Standard Specifications Section 430. **OUTSIDE EDGE OF SLOUGH MUST REMAIN 1.5" OR THINNER OR BE RAKED OUT OR REPAIRED BY CONTRACTOR AT THEIR EXPENSE.**

All compaction equipment shall meet the NDDOT Standard Specification 151.01.

All hot bituminous mix and asphalt cement required shall be measured and paid for by the ton of "RAP – SUPERPAVE FAA 42" and "PG 58–28 ASPHALT CEMENT". This shall be considered full payment for performing this work.

WARM MIX ASPHALT (WMA):
Warm Mix Asphalt (WMA) may be substituted for Hot Mix Asphalt (HMA) at the Contractor's choosing. The WMA additive or technology is at the Contractor's choosing, and to be approved by the Engineer. All costs and savings associated with WMA shall be included in the unit cost for "RAP – SUPERPAVE FAA 42."

HAUL ROADS:
The Contractor's attention is directed to Section 107.08 of the Standard Specifications regarding the use of public roads for hauling materials to the project. Haul roads that will not be allowed for this project are as follows: Barnes County Highway 6 from State Highway 32, East to the Cass County line. Cass County Highway 26, from the Barnes County line East to State Highway 38, and Cass County Highway 10 from Tower City East to State Highway 38. No Township roads anywhere in Cass County will be allowed for haul road usage. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INVESTIGATE THE SUITABILITY OF ROUTES WITH THE AGENCY HAVING CONTROL OF THE ROAD PRIOR TO SUBMITTING A BID.

PRIME OR TACK COAT:
This item shall be included in the unit cost for "RAP – SUPERPAVE FAA 42."

The emulsified asphalt must be applied in accordance with Section 401.04 of the Standard Specifications.

FOG COAT:
The pavement shall receive a fog coat in the driving lanes with CSS–1H, SS–1H or MS–1 emulsified asphalt (diluted 50/50) at a rate of 0.10 gallons per square yard. The fog coat shall be placed after the rumble strips are cut. Rumble strips fogged first @ 2' wide in one direction, then fog the pavement surface the opposite direction, staying 1' from the centerline stripe and re–shooting the 2' rumble strip.

TRAFFIC CONTROL:
Lump sum "TRAFFIC CONTROL" bid item shall include all signage required for construction (See sheet 21 for device listing), flagging and pilot car. Flagging hours are estimated at 350 hours for the project, Pilot Car hours are estimated at 175 hours for the project.

PLACEMENT OF CLASS 5 AGGREGATE:
The Contractor shall be responsible for the direction, placement (Dumpman) and coordination of aggregate trucks.

CULTURAL RESOURCE PRESERVATION AND CLEARANCES OF GRAVEL PITS:
In accordance with section 107.05 of the standard specifications, the contractor is required to ensure that applicable cultural resource laws and regulations have been followed for all material sources. Below is the NDDOT website of pits that been certified.

http://www.dot.nd.gov/dotnet2/materialsource/certificatesofapproval.aspx

All material source locations, even those opened prior to the current project, must have been subjected to class III cultural resources inventory prior to use. Inventory results will determine recommendations regarding use of a particular source. The contractor's attention is directed to section 107.06 of the standard specifications for the treatment of any cultural resources that may be uncovered within the right of way.

WEED CONTROL:
Successful bidders as part of their supply contract will be required as part of the bid acceptance to comply with the following:

1. All noxious weeds must be controlled within the pit and extraction area each year in compliance with North Dakota State Agriculture Department recommendations for noxious weed control.
2. The county weed officer shall inspect the pit and extraction area before any materials shall be removed and shall by written letter certify operator's compliance with the North Dakota Department of Agriculture's recommendations for noxious weed control.
3. Any questions concerning the certifications of compliance for noxious weed control and the requirements thereunder is available from the County Weed Officer at (701) 298–2388.

This request is made pursuant to section 4.1–47 of the North Dakota Century Code.

TRAFFIC CONTROL FOR RUMBLE STRIPS:
The contractor shall use Standard Drawing D–704–15 layout A or Standard Drawing D–704–56 for shoulder rumble strips.

Any other method of traffic control must be requested by the Contractor and approved by the Engineer prior to use in the field. All costs for this work shall be included in the price bid for "RUMBLE STRIPS – ASPHALT SHOULDER".

MILLED MATERIAL:
Contractor shall use the milled bituminous material for recycle for "RAP – SUPERPAVE FAA 42." Excess milled material, meeting a maximum size of 1 1/2", with 90% passing the 1" sieve, shall be disposed of by stockpiling at the County stockpile in Gardner, ND. Upon stockpiling at the yard, material becomes property of the county. All costs shall be included in the unit cost for "MILLING PAVEMENT SURFACE."

RECYCLED ASPHALT PAVEMENT (RAP):
Contractor shall add up to 15% recycled asphalt pavement (RAP), with a tolerance of ±5% in the Superpave FAA 42 mixture. All costs and savings of using the recycled material shall be included in the unit cost for "RAP – SUPERPAVE FAA 42."

RAP must be utilized in accordance with Section 430.03 E of the Standard Specification.

CLASS AE–3 CONCRETE:
This bid item shall include all costs associated with placing concrete for the culvert head walls, including reinforcing steel.

PIPE CONDUIT:
The minimum allowable materials for pipe conduit are the following:

a. Reinforced Concrete Storm Drain – Class III
b. Spiral Rib Steel Pipe Aluminized Type 2
  b.a. Centerline, city streets, and elevator approaches to be at .079" wall thickness.
  b.b. All other pipe may be .064" wall thickness.
c. Corrugated Polyethylene
  c.a. Centerline, city streets, and elevator approaches to be ADS IBHP Triplewall PE pipes manufactured by ADS or approved equal
  c.b. All other pipe may be ADS IBPL Dual Wall PE pipes manufactured by ADS or approved equal

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY
JASON P. BENSON
N.D. REG. NO. 7490
ON 02/27/2015 AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

CASS COUNTY HIGHWAY DEPARTMENT
PROJECT NO. CH1504
CONSTRUCTION NOTES

WATER:

Water required to achieve the optimum moisture content will be considered incidental to the price bid for the stabilization process. Also, any water required for the roadway shaping of the existing aggregate and the additional Class 5 aggregate materials.

ROAD MAINTENANCE AND CENTERLINE CULVERT INSTALLATION:

The Contractor shall be responsible for maintaining the roadway and driveways so that they remain accessible to local residents and emergency vehicles at all times whether construction is in progress or not in progress. Installation and backfilling to a height for safe passage of traffic must be completed prior to sundown on the same day as the installation was started. The trench class 5 aggregate shall be paid for by the (TON). The cost of the reinforcing fabric shall be included in the culvert items. The contractor shall verify the depth of culverts in the field before the works starts. See detail on sheet 15 for centerline culvert detail.

EARTHWORK:

Forty five percent (45%) additional volume in yardage computed by the average end area method is allowed for shrinkage in the earth embankment. Additional material for approaches and entrances has been added to the project.

Payment for "COMMON EXCAVATION – TYPE B" shall be in accordance with section 203 of the Standard Specification. Average haul has not been computed for this project.

The bid item for "COMMON EXCAVATION _ TYPE B" shall also include all costs associated with undercutting the ditch bottom 0.5 feet to allow for topsoil placement.

COMMON EXCAVATION – WASTE:

This item includes all costs associated to excavate and dispose of material removed from the Cass County Right of Way ditches, to construct a ditch bottom 8' wide, with approximate 3:1 backslopes. Disposal site shall be off the project limits and approved by the Engineer. Pay quantity based on truck load counts.

TOPSOIL:

All excavation and embankment areas shall require removal and placement of topsoil (6" minimum depth) as shown in the typical sections. Removed topsoil shall be stockpiled on the right of way at designated acceptable locations outside the grading limits. If topsoil is placed before paving is complete, excess topsoil shall be stockpiled along the shoulders to be used to cover the Class 5 and pavement to the top of the asphalt slough. All costs to complete shall be included in price bid for "TOPSOIL."

REMOVAL OF EXISTING CULVERTS:

All culverts removed on the project shall become the property of the contractor, except for two 18" CMP culverts at STA 519+54 LT and STA 521+67 LT which will become property of the County. Disposal shall be at a location off the project determined by the contractor and approved by the engineer. All costs associated with removal, including excavation for culverts, shall be included in the price bid for the new culverts to replace the culverts removed. Also included shall be all costs associated with removal and disposal of any existing aprons, flap gates or other attached appurtenances.

CLASS 2 EXCAVATION:

All culvert excavation, foundation fill excavation, channel excavation, riprap excavation, placement of ordinary backfill, compaction, water, and shaping of roadway inslopes and channel slopes shall be included in the unit price bid for "CLASS 2 EXCAVATION". Extend excavation 50' beyond end sections to transition back to existing ditch bottom. Class 2 Excavation shall be performed according to Section 210 of the standard specifications.

The suitability of material from on–site excavations for use as backfill will be determined by the engineer. The contractor shall remove and replace approximately 6" of topsoil over the excavation and embankment areas, except the 30' roadbed. Backfill shall be placed and compacted in accordance with Section 203.04 E.3 of the Standard Specifications. If the excavated material is deemed not suitable for ordinary backfill, it shall become property of the contractor and disposed of outside of the road right–of–way, not adjacent to the construction site, and at a site approved by the engineer. All costs associated with excavation, hauling, depositing and leveling the waste material shall be included in the unit price bid for "CLASS 2 EXCAVATION".

FOUNDATION PREPARATION:

The bidders shall be aware of the possible inundated conditions at this site before the bid opening. The cost of any cofferdams, dewatering the excavation, and channel bypass shall be included in the bid for "Foundation Preparation."

FOUNDATION FILL:

The quantity for foundation fill was computed to a depth of 1.5' below the culvert; however, this may vary depending on the soil conditions. Larger rock is required to stabilize the foundation it will be paid for as "FOUNDATION FILL." The bed for the pre–cast sections shall consist of fine graded material approximately 6" in depth below the culvert. Geosynthetic material Type S1 shall be placed above larger rock to separate from fine graded material. All aggregate described above shall be included in the price bid for "FOUNDATION FILL." Material will be accepted by Engineers Statement. No aggregate testing shall be required unless deemed necessary by the Engineer.

CRUSHED CONCRETE:

Salvaged or reclaimed concrete may be substituted aggregate base and shoulder material. The salvaged or reclaimed concrete must meet gradation requirements found in section 817.01 of the standard specifications:

SIEVE SIZE	PERCENT PASSING
1–1/2"	100
1"	90–100
NO. 4	35–85
NO. 30	16–50
NO. 200	0–12

Plan quantity includes 25% shrinkage.

SEEDING:

Contractor will seed and mulch areas disturbed by construction activity. Contractor shall provide erosion checks until turf is established as directed by the Engineer in the field.

Seeding – Class III shall be used as shown in the turf establishment and erosion control plans. The seed mixture for all areas except those designated as urban shall be as follows:

CLASS III	PERCENT OF PURE LIVE SEEDS PER ACRE
MEADOW BROMEGRASS	25%
INTERMEDIATE WHEATGRASS	25%
CRESTED WHEATGRASS	25%
TETRAPLOID INT. RYEGRASS	10%
CREEPING ALFALFA	15%

80 LBS OF SEED AND 20 LBS OF RYE PER ACRE.

All areas designated as Seeding – Class III (Urban) in the turf establishment and erosion control plans shall be as follows:

CLASS III	POUNDS OF PURE LIVE SEEDS PER ACRE
BLUEGRASS (2 KINDS)	120
CREEPIN RED FESCUE	20
PERENNIAL RYE	20
TOTAL	160

Fertilizer shall be a mixture of 5–10–5 applied at the rate of 100 lbs per acre. All costs for labor, equipment and materials necessary to complete this work shall be included in the unit price bid for "SEEDING – CLASS III".

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY
JASON P. BENSON
N.D. REG. NO. 7490
ON 02/27/2015 AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

CASS COUNTY HIGHWAY DEPARTMENT
PROJECT NO. CH1504
CONSTRUCTION NOTES

PORTLAND CEMENT:

This item shall include all costs associated Portland Cement required for this project. The estimated quantity is 6% by weight. Certifications will be required for this material. This item will be paid per the actual tons of material required by the mix design for necessary field changes to be approved by the engineer in the field.

STABILAZATION:

This item shall include all costs associated with stabilization of the center 1' X 34' of subgrade with Portland cement. This item shall also include all costs associated with restoring the subgrade back to the bluetop elevations and 2.1% cross slope.

EQUIPMENT FOR SUBGRADE REPAIR:

The Road Reclaimer – The Contractor shall furnish a self–propelled machine designed to blend together the remaining in–place aggregate and subgrade. It shall be capable of uniformly blending the material to the depth of 12" or as directed by the Engineer. The width required to be stabilization is 26' for mainline, therefore the machine would be required to make the necessary number of passes.

The control system shall be capable of fully automated operation, as well as manual operation, when injecting the liquids to be addmixed. All functions shall be controlled from the operators' station including automatic nozzle cleaning, partial spray bar use, and on–the–fly changes to the quantities of material being added. Non contact flow meters shall be employed to measure liquid volumes and the control systems shall be proportional to the machines advance speed and shall be capable of maintaining accurate mixing regardless of changes in the machines working speed.

All pumps shall be separately controlled by the automatic system in the operators' cabin. During automatic operation, the system will allow liquids to be added only when the machine is in motion.

There shall be a system allowing the operator to verify that the nozzles on the spray bars are open and working from the operators' cabin.

The pump shall spray liquid into the mixing chamber through a single spray bar with sixteen spray nozzles. The nozzles shall be self–cleaning and the operator shall be able to switch off any number of individual nozzles, for working at reduced widths, from the control console in the operators cabin.

All reclaimed materials and aggregates shall be mixed properly to provide a homogenous material prior to injecting the stabilizing agent. The Reclaiming Machine shall be capable of injecting the stabilizing agent and automatically metering it with a variation of not more than plus or minus 0.2 percent by weight of the stabilizing agent. The unit shall be equipped with facilities so that the Contractor can verify and calibrate these items by a method acceptable to the Engineer.

The Reclaimer shall be equipped with a system capable of adding a binding agent with water for material compaction, from bulk tankers, directly into the mixing chamber.

The pump shall be a positive displacement, eccentric shaft style with a minimum capacity of 210 gallons per minute, and shall be resistant to damage from the contaminants in the water or stabilizing agent.

The drop spreader truck shall be capable of accurately placing the cement in a uniform manner per the mix design requirements.

QUALITY CONTROL/QUALITY ASSURANCE:

A third party testing lab will be required for QC/QA testing. A nuclear gauge will be required to check and verify moisture before and after the cement is added. This will insure that the optimum moisture and density per the mix design requirements. A mix design will be required for this project prior to construction. The contractor will determine the number of field samples needed to get a good representative of the existing field conditions. The mix design shall be submitted to the engineer for approval.

The contractor must have an individual on site at all times capable of making decisions and recommendations to the Engineer as field conditions change throughout the project to assure the best possible product.

CONSTRUCTION SURVEY:

Cass County will provide the initial cut and fill stakes at the right of way lines at each station, approximately 4 benchmarks per mile, and initial inlet and outlet stakes for all culverts only. All other survey work to necessary to construct the project to the lines, grade and typical sections shown on the plans shall be the responsibility of the contractor.

The lump sum bid item "CONSTRUCTION SURVEY" only covers the final blue top hubs at the road centerline, LT & RT shoulders and LT & RT ditches at each full station and elevation shots on the inlets and outlets of all culverts to verify they are set at the correct grade between STA 487+50 to STA 526+14.

The Contractor shall provide the Engineer with copies of the "blue top" survey notes. These survey notes shall include verification of the finished roadway, ditch, and culvert elevations and will include any corrective actions taken to repair errors in the construction of the roadway or ditches. The survey notes shall be signed and dated by the individual in charge of the survey.

A TIN file of the roadway will be made available to the Contractor if machine control used. Survey item will still be employed to verify the final blue top elevations and inlets and outlets of all the culverts with use of machine control.

RAILROAD PROTECTIVE LIABILITY INSURANCE:

This project nears the Red River Valley and Western Railroad through Chaffee and at crossing number 062471K. This type of work that will be performed near and within the railroad right of way is Grading and Culvert Installation. Inquiries for protective liability insurance should be directed to:

Mr. Dan Zink
Red River Valley and Western RR
116 4th Street South
Wahpeton, ND 58074
(701)–642–8257

RAILWAY NOTIFICATION:

The contractor shall notify Red River Valley and Western a minimum of 5 days prior to performing work on or adjacent to the railroad right–of–way for possible flagging.

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY
JASON P. BENSON
N.D. REG. NO. 7490
ON 02/27/2015 AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

CASS COUNTY HIGHWAY DEPARTMENT
PROJECT NO. CH1504
CONSTRUCTION NOTES

STATE	PROJECT NUMBER	SHEET	TOTAL SHEETS
N.D.	CH1504	6	32

BASIS OF ESTIMATE (SURFACING INTERSECTIONS)

DESCRIPTION	HWY 6 & ST 38		HWY 6 & 7		HWY 6 & 5	
RECYCLED ASPHALT PAVEMENT - FAA 42	400	TON	100	TON	400	TON
ASPHALT CEMENT	20	TON	5	TON	20	TON
EMULS. ASPH. FOR TACK COAT	108	GAL.	27	GAL.	108	GAL.
INTERSECTION RECYCLED ASPHALT PAVEMENT - FAA 42 TOTALS = 900 TONS						

OVERLAYING APPROACHES - WEST OF CHAFFEE

DESCRIPTION	PRIVATE DRIVE		SECTION LINE		FIELD APPROACH		TOTAL	
AMOUNT	8		17		24			
RECYCLED ASPHALT PAVEMENT - FAA 42	20	TON	20	TON	8	TON	692	TON
ASPHALT CEMENT	1	TON	1	TON	0.4	TON	34.6	TON
AGGREGATE BASE - CLASS 5	23	TON	23	TON	23	TON	1127	TON
EMULS. ASPH. FOR TACK COAT	15	GAL.	15	GAL.	10	GAL.	615	GAL.

BITUMINOUS SURFACING APPROACHES

DESCRIPTION	PRIVATE DRIVE		SECTION LINE		FIELD APPROACH		TOTAL	
AMOUNT	15		3		0			
RECYCLED ASPHALT PAVEMENT - FAA 42	32	TON	32	TON	8	TON	576	TON
ASPHALT CEMENT	1.6	TON	1.6	TON	0.4	TON	28.8	TON
AGGREGATE BASE - CLASS 5	23	TON	23	TON	23	TON	414	TON
EMULS. ASPH. FOR TACK COAT	15	GAL.	15	GAL.	10	GAL.	270	GAL.

BASIS OF ESTIMATE

MATERIAL	BASIS OF ESTIMATE
AGGREGATE BASE COURSE - CLASS 5	1.875 TON/CY
SHRINKAGE FOR CLASS 5	COMPACTED VOLUME IN PLACE PLUS 25%
CLASS 5 FOR APPROACHES	23 TONS/APPROACH
HOT BITUMINOUS PAVEMENT	2 TON/CY
ADDED ASPHALT CEMENT	5.0% OF HBP BY WEIGHT
EMULSIFIED ASPHALT FOR TACK COAT	0.05 GAL/SY
EMULSIFIED ASPHALT FOR RUMBLE STRIPS	0.10 GAL/SY
EMULSIFIED ASPHALT FOR FOG COAT	0.05 GAL/SY
WATER	
AGGREGATE BASE CLASS 5 COMPACTION	30 GAL/TON
AS A DUST PALLATIVE ON HAUL ROADS	30 M GAL PER DAY OF HAULING
	(ESTIMATED TO BE 15 DAYS)
TRAFFIC CONTROL	
FLAGGING	12 HOURS FLAGGING/FLAGGER/2000 TONS FAA 42
PILOT CAR	12 HOURS PILOT CAR/2000 TONS FAA 42

COMMON EXCAVATION - TYPE B CH1504

STA/ LOCATION	CUT AREA (SF)	CUT VOL (CY)	FILL AREA (SF)	FILL VOL (CY)	CUMULUATIVE CUT (CY)	CUMULATIVE FILL (CY)	NET VOL (CY)
488+05.000	229.69	0.00	0.00	0.00	0.00	0.00	0.00
489+00.000	73.86	534.70	534.70	23.29	534.70	58.85	475.84
490+00.000	63.78	254.89	254.89	32.16	789.59	207.76	581.83
491+00.000	93.33	290.94	290.94	8.75	1,080.53	317.62	762.91
492+00.000	95.09	348.92	348.92	6.61	1,429.45	358.87	1,070.58
493+00.000	100.47	362.14	362.14	8.91	1,791.59	400.55	1,391.04
494+00.000	75.54	325.94	325.94	22.30	2,117.52	484.34	1,633.18
495+00.000	59.62	249.78	249.78	68.48	2,367.30	729.23	1,638.08
496+00.000	104.58	304.07	304.07	58.61	2,671.37	1,070.49	1,600.89
496+29.000	110.88	115.71	115.71	58.48	2,787.09	1,161.67	1,625.42
497+00.000	122.29	306.58	306.58	53.42	3,093.67	1,375.00	1,718.66
498+00.000	89.32	391.87	391.87	47.49	3,485.54	1,645.98	1,839.56
498+65.000	124.59	257.48	257.48	50.27	3,743.01	1,816.61	1,926.40
499+00.000	139.95	171.46	171.46	50.79	3,914.47	1,911.60	2,002.88
500+00.000	128.28	496.73	496.73	44.24	4,411.20	2,166.78	2,244.42
501+00.000	144.33	504.83	504.83	38.54	4,916.03	2,389.08	2,526.95
502+00.000	115.10	480.42	480.42	42.91	5,396.45	2,607.78	2,788.67
503+00.000	110.34	417.47	417.47	39.48	5,813.92	2,829.01	2,984.91
504+00.000	200.41	575.45	575.45	0.00	6,389.38	2,935.03	3,454.35
505+00.000	189.06	721.23	721.23	0.00	7,110.61	2,935.03	4,175.58
505+85.000	116.80	481.44	481.44	54.27	7,592.05	3,058.90	4,533.15
506+00.000	106.31	61.97	61.97	69.29	7,654.03	3,108.66	4,545.36
506+90.000	126.01	387.20	387.20	64.01	8,041.22	3,430.79	4,610.43
507+00.000	135.15	48.36	48.36	63.92	8,089.58	3,465.14	4,624.44
508+00.000	160.94	548.32	548.32	62.62	8,637.90	3,804.95	4,832.95
509+00.000	120.92	521.97	521.97	62.10	9,159.88	4,139.87	5,020.01
510+00.000	131.92	468.23	468.23	60.37	9,628.11	4,468.75	5,159.36
510+44.000	144.53	225.26	225.26	56.96	9,853.37	4,607.37	5,245.99
511+00.000	156.05	311.71	311.71	53.01	10,165.08	4,772.74	5,392.34
512+00.000	151.21	569.01	569.01	63.72	10,734.09	5,086.19	5,647.90
512+31.000	148.75	172.20	172.20	64.59	10,906.29	5,193.00	5,713.29
513+00.000	144.82	375.12	375.12	65.80	11,281.41	5,434.60	5,846.81
514+00.000	141.85	530.88	530.88	61.99	11,812.29	5,777.75	6,034.53
514+20.000	147.88	107.31	107.31	63.77	11,919.60	5,845.29	6,074.30
515+00.000	134.06	417.70	417.70	67.10	12,337.30	6,126.42	6,210.88
516+00.000	125.08	479.90	479.90	72.86	12,817.20	6,502.23	6,314.97
516+84.000	112.42	369.45	369.45	74.58	13,186.65	6,834.78	6,351.87
517+00.000	109.40	64.75	64.75	75.21	13,251.40	6,901.05	6,350.35
518+00.000	81.40	353.34	353.34	74.39	13,604.74	7,302.75	6,301.99
519+00.000	77.11	293.55	293.55	59.68	13,898.28	7,662.77	6,235.51
519+84.000	70.01	228.86	228.86	67.75	14,127.15	7,950.20	6,176.94
520+00.000	69.14	41.23	41.23	69.94	14,168.37	8,009.36	6,159.02
521+00.000	72.80	262.84	262.84	77.53	14,431.22	8,405.32	6,025.89
522+00.000	105.85	330.84	330.84	63.87	14,762.05	8,784.99	5,977.07
523+00.000	143.57	461.38	461.38	57.59	15,223.43	9,111.46	6,111.97
524+00.000	169.88	580.47	580.47	64.17	15,803.90	9,438.42	6,365.48
525+00.000	142.16	577.86	577.86	59.38	16,381.75	9,770.18	6,611.57
526+00.000	477.82	1,148.11	1,148.11	0.00	17,529.86	9,929.63	7,600.23
EXISTING PVMT	0.00	(2,171.00)	0.00	0.00	15,358.86	9,929.63	5,429.23
APPROACHES	0.00	0.00	0.00	2,577.00	15,358.86	12,506.63	2,852.23
DITCH CLEANING	0.00	556.00	0.00	0.00	15,914.86	12,506.63	3,408.23

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY
JASON P. BENSON
N.D. REG. NO. 7490
ON 02/27/2015 AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

CASS COUNTY HIGHWAY DEPARTMENT
PROJECT NO. CH1504
BASIS OF ESTIMATE

STATE	PROJECT NUMBER	SHEET	TOTAL SHEETS
N.D.	CH1504	7	32

PAVING TONNAGE ESTIMATE CH1504

TYPE	STA START	STA END	LENGTH (FT)	WIDTH (FT)	AREA (SF)	THICKNESS (IN)	TONS
MAINLINE	0+00	54+00	5,400	26	140,400	3	2,600
SLOUGH	0+00	54+00	5,400	3	16,200	3	300
MAINLINE	54+00	93+20	3,920	26	101,920	2	1,258
SLOUGH	54+00	93+20	3,920	3	11,760	2	145
MAINLINE	93+20	157+25	6,405	26	166,530	2	2,056
SLOUGH	93+20	157+25	6,405	3	19,215	2	237
MAINLINE	157+25	440+00	28,275	26	735,150	2	9,076
SLOUGH	157+25	440+00	28,275	3	84,825	2	1,047
MAINLINE	440+00	487+00	4,750	26	123,500	3	2,287
SLOUGH	440+00	487+00	4,750	3	14,250	3	264
MAINLINE	487+50	526+14	3,864	26	100,464	7	4,341
SHOULDER	487+50	526+14	3,864	16	61,824	4	1,527
LOT	499+50	503+75	425	31	13,175	6	488
SLOUGH	487+50	499+50	1,200	2	2,400	4	59
SLOUGH RT	499+50	503+75	425	2	850	4	11
SLOUGH	503+75	526+14	2,239	2	4,478	4	111
						TOTAL	**25,807**
						5% OVERAGE	**1,290**
						APPROACHES/INT	**2,168**
						GRAND TOTAL	**29,265**

GEOTEXTILE FABRIC CH1504

TYPE	LOCATION	AREA (SY)
S1	148TH AVE CMPA	216
R1	148TH AVE CMPA	439
S1	CASS 5 CMPA	208
R1	CASS 5 CMPA	537
	TOTAL (S1)	**424**
	TOTAL (R1)	**976**

REMOVE CULVERTS CH1504

STA	LANE	TYPE	DIA (IN)	LENGTH (LF)
488+05	CL	CMP	36	64
498+63	CL	CMP	18	42
489+85	LT	CMP	18	40
496+17	LT	CMP	18	134
504+70	RT	CMP	18	22
506+20	RT	CMP	18	208
504+41	LT	CMP	18	20
504+85	LT	CMP	18	20
505+74	LT	CMP	18	22
509+76	RT	CMP	24	50
506+74	LT	CMP	18	66
507+63	LT	CMP	18	126
509+52	LT	CMP	18	22
510+32	LT	CMP	18	28
512+18	LT	CMP	18	22
514+01	LT	CMP	18	34
516+64	LT	CMP	18	40
518+76	LT	CMP	18	40
526+14	RT	CMPA	60	92
526+14	RT	CMPA	66	76
			TOTAL	**1,104**

PAVEMENT MARKING QUANTITIES

START STA	END STA	LANE	4" YELLOW TEMPORARY (3 LIFTS)		4" PERMANENT MARKING			
			SKIP (L.F.)	NPZ (L.F.)	4" SKIP (L.F.)	4" NPZ (L.F.)	4" WHITE (L.F.)	TOTAL 4" (L.F.)
0+00	8+60	LT/RT		1,720		1,720	1,720	3,440
8+60	487+50		11,973		11,973		95,780	107,753
11+80	18+00	LT		620		620		620
57+65	74+65	LT		1,700		1,700		1,700
86+90	93+25	RT		635		635		635
93+25	106+85	LT		1,360		1,360		1,360
157+60	171+70	RT		1,410		1,410		1,410
171+70	180+60	LT		890		890		890
186+80	192+40	RT		560		560		560
192+40	197+45	LT		505		505		505
310+20	316+20	RT		600		600		600
317+05	322+30	LT		525		525		525
487+50	526+14		966		966		7,728	8,694
TOTAL =			38,817	31,575	12,939	10,525	105,228	128,692

MAXIMUM SIZE OF AGGREGATES

DESCRIPTION	TYPE OF AGGR.	MAXIMUM SIZE
RECYCLED ASPHALT PAVEMENT - FAA 42	CRUSHED	5/8"
AGGREGATE BASE & SHOULDERS - CLASS 5	CRUSHED	1"

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY
JASON P. BENSON
N.D. REG. NO. 7490
ON 02/27/2015 AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

CASS COUNTY HIGHWAY DEPARTMENT
PROJECT NO. CH1504
BASIS OF ESTIMATE

J:\Admin-Eng\PROJECTS\C-6 Overlay - Cass 38 to C5\CH1504 Plan Set.dwg

STATE	PROJECT NUMBER	SHEET	TOTAL SHEETS
N.D.	CH1504	8	32

MILLING BITUMINOUS PAVEMENT - 1"

STATION	WIDTH (FT)	LENGTH (FT)	DEPTH (IN)	AREA (SY)	TONS HBP
0+00 TO 93+20	26	9,320	1	26,924	1,496
157+25 TO 440+00	26	28,275	1	81,683	4,538
440+00 TO 487+50	26	4,750	1	13,722	762
TOTAL				122,329	6,796

MILLING BITUMINOUS PAVEMENT - FULL DEPTH - 8"

STATION	WIDTH (FT)	LENGTH (FT)	DEPTH (IN)	AREA (SY)	TONS HBP
487+50 TO 525+25	26	3,775	7.5	10,906	4,544
TOTAL				10,906	4,544

CLASS 5 ESTIMATE CH1504

TYPE	STA START	STA END	LENGTH (FT)	WIDTH (FT)	AREA (SF)	THICKNESS (IN)	TONS
MAINLINE	487+00	526+14	3,914	40	156,560	10	9,060
LOT	499+50	503+75	425	31	13,175	6	457
SHOULDER	487+00	526+14	3,914	12	46,968	3	815
						TOTAL	**10,332**
						5% OVERAGE	**1,033**
						APPROACHES	**1,541**
						GRAND TOTAL	**12,906**

PIPE CONDUIT CH1504

STA START	STA END	LANE	APP. WIDTH (FT)	OFFSET (FT)	DIA (IN)	INV. ELEV.	OUT ELEV.	COVER (FT)	LENGTH (LF)	CL5 BACKFILL (TONS)	METAL END SECTIONS
488+05	488+05	CL	N/A	N/A	36	965.73	965.71	4.3	68	384	2
498+65	498+65	CL	N/A	N/A	18	968.10	967.78	3.1	64	231	2
496+11	497+65	LT	24	36	18	969.76	968.63	1.7	154	390	2
504+78	505+22	LT	24	36	18	965.57	965.43	1.3	44	99	2
505+60	506+10	LT	24	36	18	965.30	965.13	1.7	50	127	2
506+67	508+97	LT	30	35	18	964.94	964.17	1.9	230	613	2
506+62	507+18	RT	30	42	24	963.26	963.11	1.6	56	151	2
510+15	510+73	LT	30	36	18	963.78	963.59	2.0	58	159	2
512+04	512+58	LT	24	38	18	963.15	962.97	2.1	54	155	2
513+90	514+50	LT	30	40	18	962.53	962.30	2.2	60	176	2
516+55	517+13	LT	24	40	18	961.51	961.29	2.5	58	183	2
519+46	520+22	LT	30	42	18	960.40	960.10	3.6	76	306	2
521+60	522+40	LT	30	46	18	959.51	959.16	3.9	80	342	2
								TOTAL	**1,052**	**3,316**	**26**

EMULSIFIED ASPHALT FOR TACK COAT

LOCATION	LENGTH (FT)	WIDTH (FT)	AREA (SY)	GAL
MAINLINE - TOP LIFT	48,700	26	140,689	7,034
CHAFFEE - 1ST LIFT	3,914	26	11,307	565
CHAFFEE - TOP LIFT	3,914	34	14,786	739
APPROACHES/INTERSECTIONS				1,101
TOTAL =			166,782	9,439

EMULSIFIED ASPHALT FOR FOGGING

LOCATION	LENGTH (FT)	WIDTH (FT)	AREA (SY)	GAL
RUMBLE STRIPS	49,000	4	21,778	1,089
MAINLINE	48,700	26	140,689	7,034
MAINLINE	3,914	34	14,786	739
TOTAL =			177,253	8,862

ARCH CONDUIT CH1504

STA START	STA END	LANE	OFFSET (FT)	VERT DIM (IN)	HORIZ DIM (IN)	INV. ELEV.	OUT ELEV.	COVER (FT)	LENGTH (LF)	CL5 BACKFILL (TONS)
472+64	473+24	RT		71	47	966.60	966.50	2.0	70	40
472+64	473+24	RT		71	47	966.60	966.50	2.0	70	40
472+64	473+24	RT		71	47	966.60	966.50	2.0	70	40
525+68	526+60	RT	48	71	47	958.60	958.50	2.2	92	265
525+68	526+60	RT	54	77	52	958.60	958.50	1.8	92	265

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY
JASON P. BENSON
N.D. REG. NO. 7490
ON 02/27/2015 AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

CASS COUNTY HIGHWAY DEPARTMENT
PROJECT NO. CH1504
BASIS OF ESTIMATE

STATE	PROJECT NUMBER	SHEET	TOTAL SHEETS
N.D.	CH1504	9	32

CASS COUNTY HIGHWAY DEPARTMENT

PROJECT NO. CH1504
GRADING, BITUMINOUS SURFACING, BITUMINOUS OVERLAY, & INCIDENTALS
CASS HIGHWAY 6 FROM CASS HIGHWAY 38 TO CASS HIGHWAY 5

ESTIMATED QUANTITIES

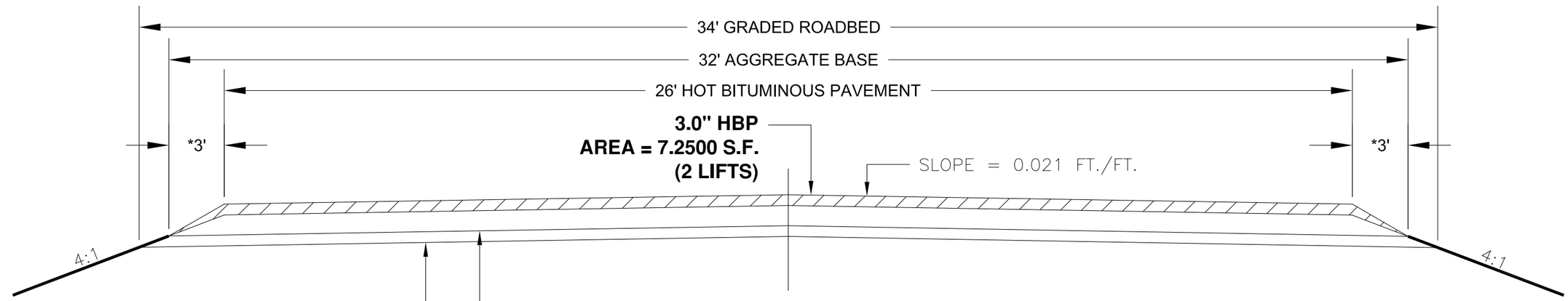
ITEM	SPEC NO.	CODE	DESCRIPTION	UNIT	APPROX. QUANTITY
1	103	0100	CONTRACT BOND	L SUM	1
2	107	0100	RAILWAY PROTECTION INSURANCE	L SUM	1
3	201	0295	CLEARING AND GRUBBING	L SUM	1
4	202	0105	REMOVAL OF STRUCTURE	L SUM	1
5	203	0096	COMMON EXCAVATION - TYPE B	CY	12,507
6	203	0109	TOPSOIL	CY	8,944
7	203	0113	COMMON EXCAVATION - WASTE	CY	3,408
8	210	0111	CLASS 2 EXCAVATION	L SUM	1
9	210	0210	FOUNDATION FILL	CY	212
10	210	0212	FLOWABLE FILL	CY	38
11	210	0405	FOUNDATION PREPARATION-BOX CULVERT	EA	2
12	216	0100	WATER	M GAL	668
13	234		CEMENT STABILIZED SUBGRADE	SY	14,597
14	251	0300	SEEDING CLASS III	ACRE	10.6
15	253	0101	STRAW MULCH	ACRE	8.2
16	253	0201	HYDRAULIC MULCH	ACRE	2.4
17	255	0102	ECB TYPE 2	SY	480
18	256	0100	RIPRAP - GRADE 1	CY	96
19	261	0112	FIBER ROLL 12IN	LF	560
20	302	0120	AGGREGATE BASE COURSE CL 5	TON	17,281
21	401	0070	FOG SEAL	GAL	8,861
22	411	0105	MILLING PAVEMENT SURFACE - FULL DEPTH	SY	10,906
23	411	0112	MILLING PAVEMENT SURFACE - 1"	SY	122,329
24	430	0142	RAP - SUPERPAVE FAA 42	TON	29,265
25	430	1000	CORING BITUMINOUS SURFACING	EA	58
26	430	5828	PG 58-28 ASPHALT CEMENT	TON	1,463
27	550	2040	PORTLAND CEMENT	TON	473
28	602	1160	TYPE AE-3 CONCRETE	CY	8
29	702	0100	MOBILIZATION	L SUM	1
30	704	1100	TRAFFIC CONTROL	L SUM	1
31	706	0301	FIELD LABORATORY-TYPE C	L SUM	1
32	709	0401	GEOTEXTILE FABRIC - TYPE S1	SY	424
33	709	0701	GEOTEXTILE FABRIC - TYPE R1	SY	976
34	714	4099	PIPE CONDUIT 18IN-APPROACH	LF	992
35	714	4106	PIPE CONDUIT 24IN-APPROACH	LF	60
36	714	4115	PIPE CONDUIT 36IN	LF	68
37	714	4281	PIPE CONDUIT ARCH 71IN X 47IN	LF	302
38	714		PIPE CONDUIT ARCH 77IN X 52IN	LF	92
39	714	6500	END SECT METAL 18IN	EA	24
40	714	6505	END SECT METAL 24IN	EA	2
41	714	6515	END SECT METAL 36IN	EA	2
42	760	0005	RUMBLE STRIPS-ASPHALT SHOULDER	MILE	18.4
43	762	0405	SHORT TERM 4 IN BROKEN LINE-PNT TAPE OR RSD MRK	LF	38,817
44	762	0410	SHORT TERM 4 IN LINE NPZ - PN TP OR RS MRK	LF	31,575
45	762	1104	PVMT MK PAINTED 4IN LINE	LF	128,692
46	930		QC/QA TESTING	L SUM	1
47	930	2510	CONSTRUCTION SURVEYING	L SUM	1

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY
JASON P. BENSON
N.D. REG. NO. 7490
ON 02/27/2015 AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

CASS COUNTY HIGHWAY DEPARTMENT
PROJECT NO. CH1504
ESTIMATED QUANTITIES

J:\Admin-Eng\PROJECTS\C-6 Overlay - Cass 38 to C5\CH1504 Plan Set.dwg

STATE	PROJECT NUMBER	SHEET	TOTAL SHEETS
N.D.	CH1504	10	32



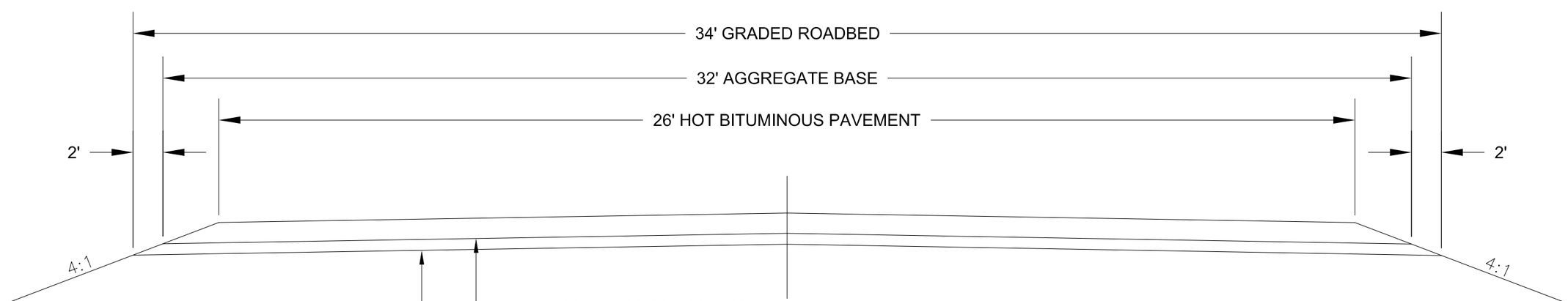
3" BITUMINOUS BASE COURSE (INPLACE)

3.5" HOT BIT. PVMT (INPLACE)
1" REMOVED BY MILLING

TYPICAL OVERLAY SECTION

NOT TO SCALE
STA 0+00.00 TO 54+00.00
STA 440+00.00 TO 487+50.00

***THE ENGINEER IN THE FIELD WILL DETERMINE THE DIMENSIONS OF THE SHOULDER AND SLOUGH TO BEST FIT THE FIELD CONDITIONS**



EXISTING SECTION

NOT TO SCALE
STA 0+00.00 TO 54+00.00
STA 440+00.00 TO 487+50.00

3" BITUMINOUS BASE COURSE (INPLACE)

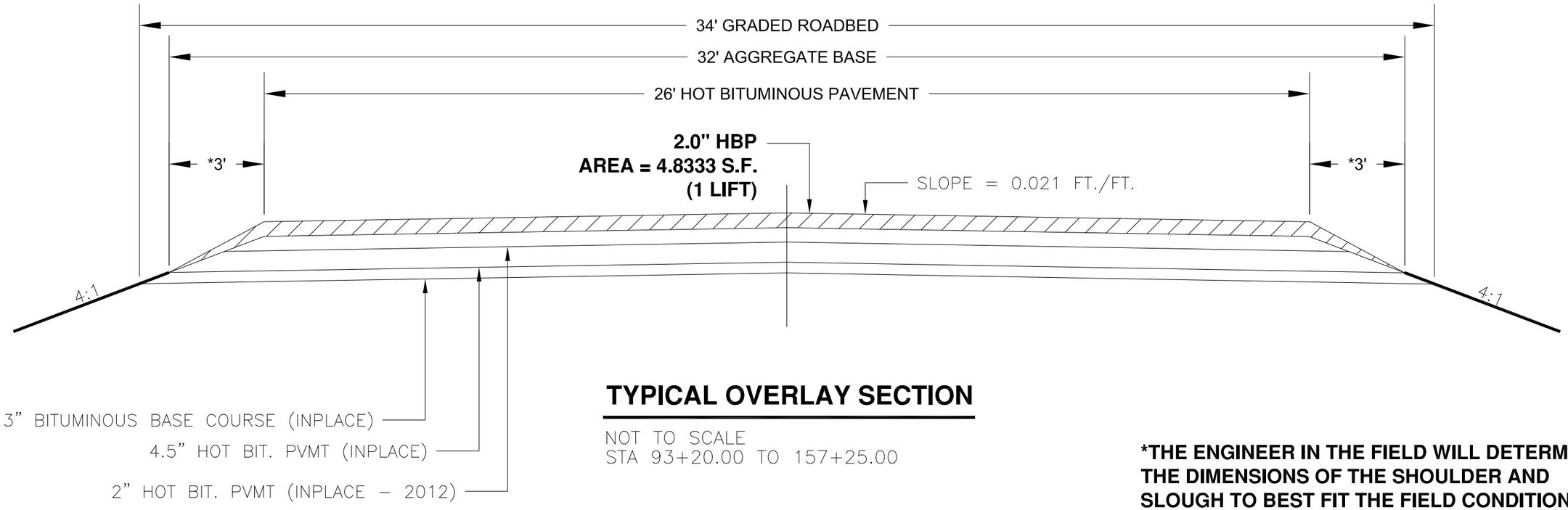
4.5" HOT BIT. PVMT (INPLACE)

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY
JASON P. BENSON
N.D. REG. NO. 7490
ON 02/27/2015 AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

CASS COUNTY HIGHWAY DEPARTMENT
PROJECT NO. CH1504
TYPICAL SECTIONS

J:\Admin-Eng\PROJECTS\C-6 Overlay - Cass 38 to C5\CH1504 Plan Set.dwg

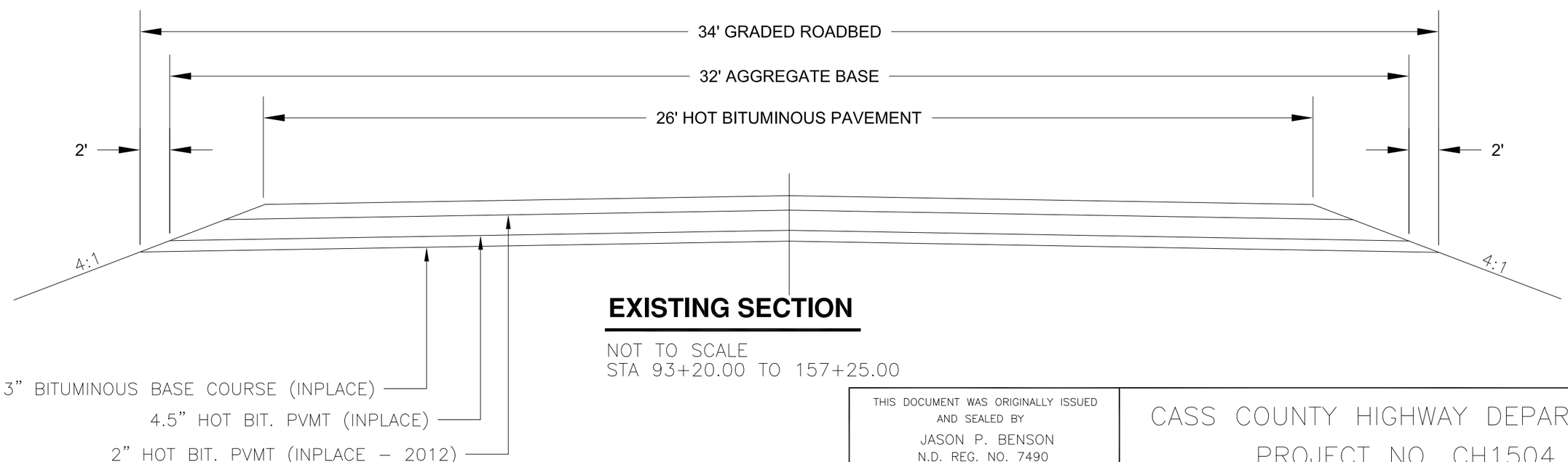
STATE	PROJECT NUMBER	SHEET	TOTAL SHEETS
N.D.	CH1504	11	32



TYPICAL OVERLAY SECTION

NOT TO SCALE
STA 93+20.00 TO 157+25.00

***THE ENGINEER IN THE FIELD WILL DETERMINE THE DIMENSIONS OF THE SHOULDER AND SLOUGH TO BEST FIT THE FIELD CONDITIONS**



EXISTING SECTION

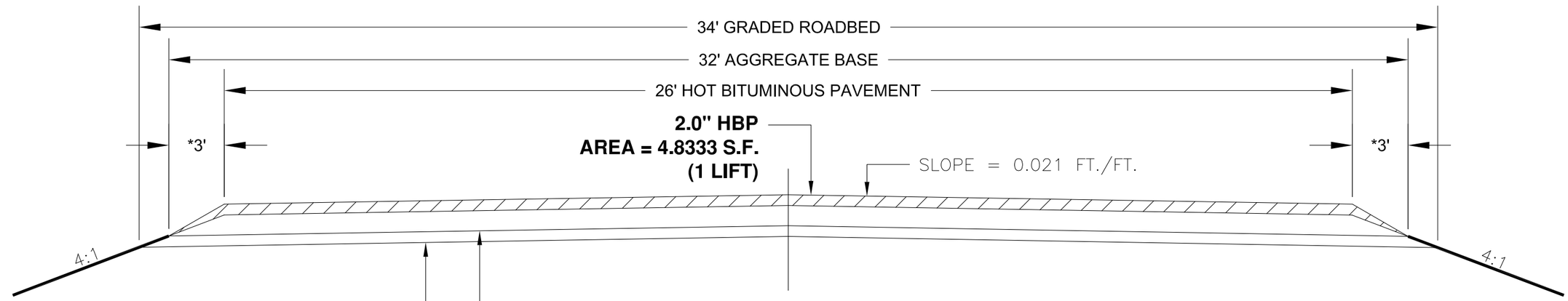
NOT TO SCALE
STA 93+20.00 TO 157+25.00

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY
JASON P. BENSON
N.D. REG. NO. 7490
ON 02/27/2015 AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

CASS COUNTY HIGHWAY DEPARTMENT
PROJECT NO. CH1504
TYPICAL SECTIONS

J:\Admin-Eng\PROJECTS\C-6 Overlay - Cass 38 to C5\CH1504 Plan Set.dwg

STATE	PROJECT NUMBER	SHEET	TOTAL SHEETS
N.D.	CH1504	12	32



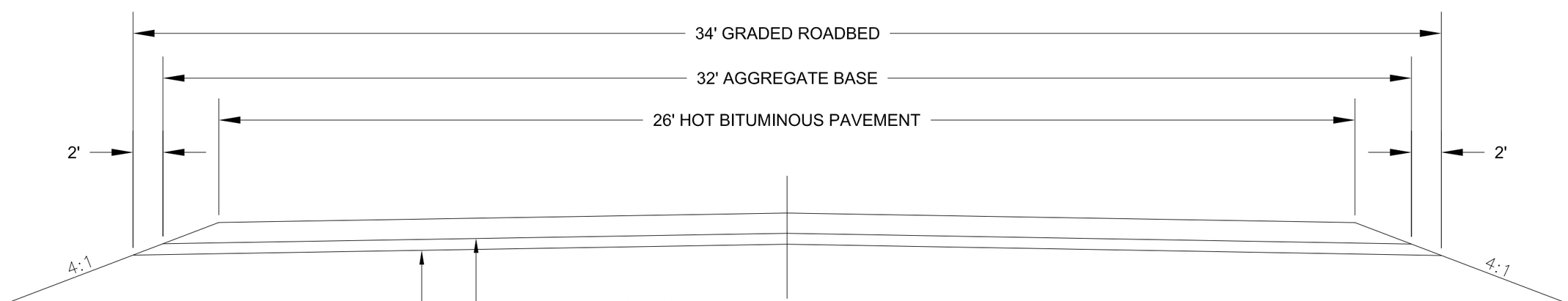
3" BITUMINOUS BASE COURSE (INPLACE)

3.5" HOT BIT. PVMT (INPLACE)
1" REMOVED BY MILLING

TYPICAL OVERLAY SECTION

NOT TO SCALE
STA 54+00.00 TO 93+20.00
STA 157+25.00 TO 440+00.00

***THE ENGINEER IN THE FIELD WILL DETERMINE THE DIMENSIONS OF THE SHOULDER AND SLOUGH TO BEST FIT THE FIELD CONDITIONS**



EXISTING SECTION

NOT TO SCALE
STA 0+00.00 TO 93+20.00
STA 157+25.00 TO 440+00.00

3" BITUMINOUS BASE COURSE (INPLACE)

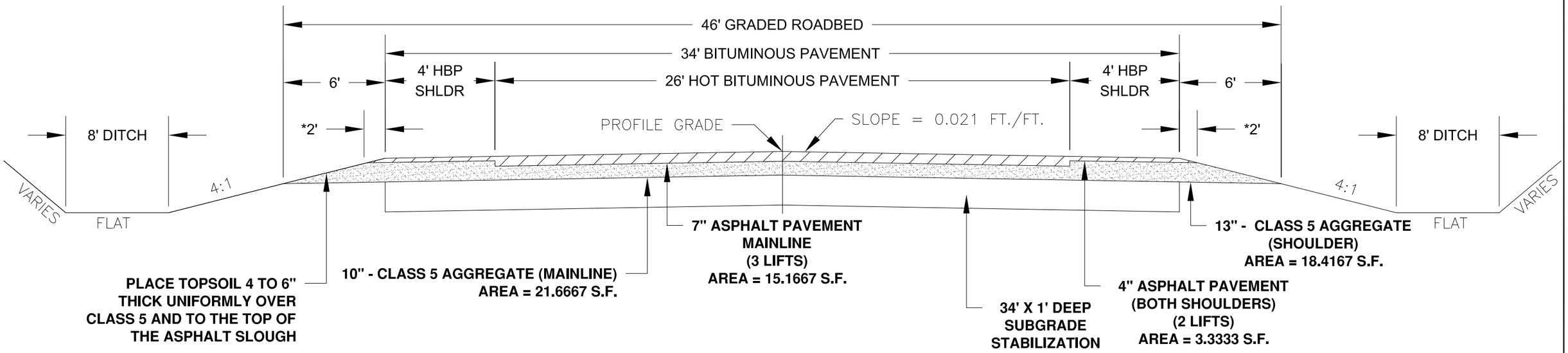
4.5" HOT BIT. PVMT (INPLACE)

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY
JASON P. BENSON
N.D. REG. NO. 7490
ON 02/27/2015 AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

CASS COUNTY HIGHWAY DEPARTMENT
PROJECT NO. CH1504
TYPICAL SECTIONS

J:\Admin-Eng\PROJECTS\C-6 Overlay - Cass 38 to C5\CH1504 Plan Set.dwg

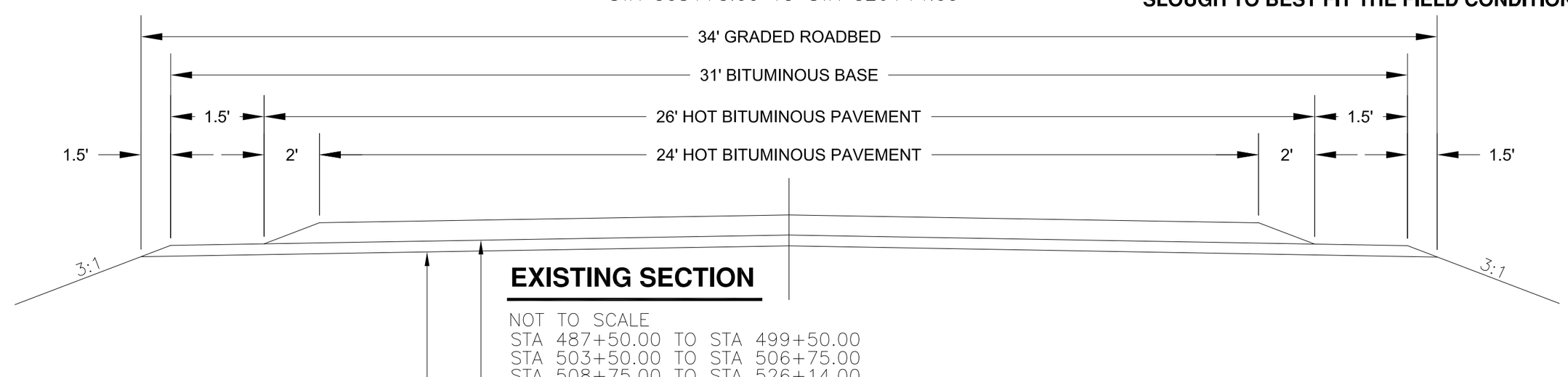
STATE	PROJECT NUMBER	SHEET	TOTAL SHEETS
N.D.	CH1504	13	32



TYPICAL GRADING & SURFACING SECTION

NOT TO SCALE
STA 487+50.00 TO STA 499+50.00
STA 503+50.00 TO STA 506+75.00
STA 508+75.00 TO STA 526+14.00

***THE ENGINEER IN THE FIELD WILL DETERMINE THE DIMENSIONS OF THE SHOULDER AND SLOUGH TO BEST FIT THE FIELD CONDITIONS**



EXISTING SECTION

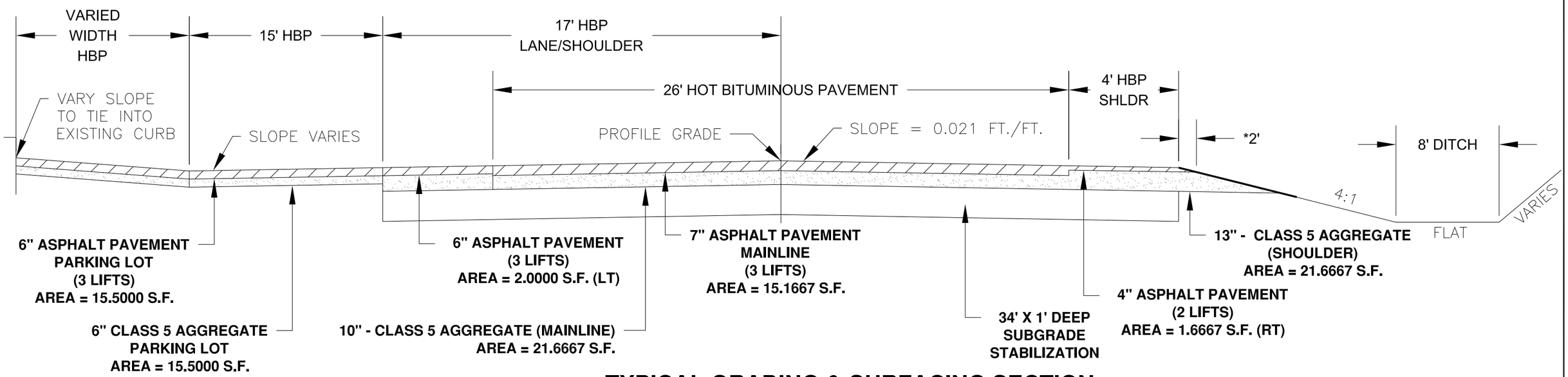
NOT TO SCALE
STA 487+50.00 TO STA 499+50.00
STA 503+50.00 TO STA 506+75.00
STA 508+75.00 TO STA 526+14.00

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY
JASON P. BENSON
N.D. REG. NO. 7490
ON 02/27/2015 AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

CASS COUNTY HIGHWAY DEPARTMENT
PROJECT NO. CH1504
TYPICAL SECTIONS

J:\Admin-Eng\PROJECTS\C-5 Overlay - Cass 38 to C5\CH1504 Plan Set.dwg

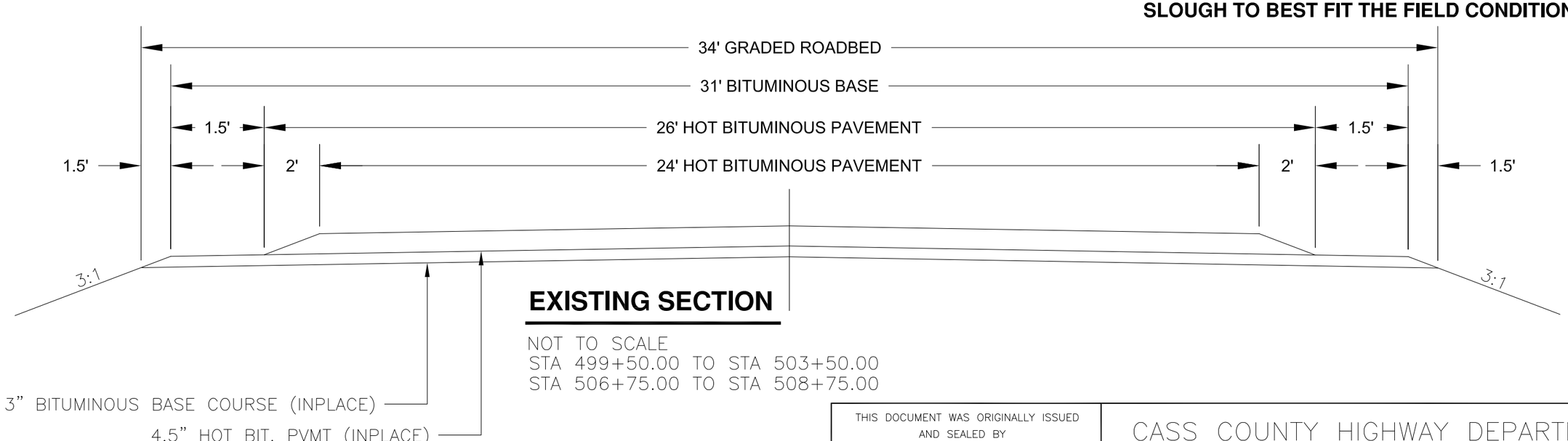
STATE	PROJECT NUMBER	SHEET	TOTAL SHEETS
N.D.	CH1504	14	32



TYPICAL GRADING & SURFACING SECTION

NOT TO SCALE
STA 499+50.00 TO STA 503+50.00
STA 506+75.00 TO STA 508+75.00

***THE ENGINEER IN THE FIELD WILL DETERMINE THE DIMENSIONS OF THE SHOULDER AND SLOUGH TO BEST FIT THE FIELD CONDITIONS**



EXISTING SECTION

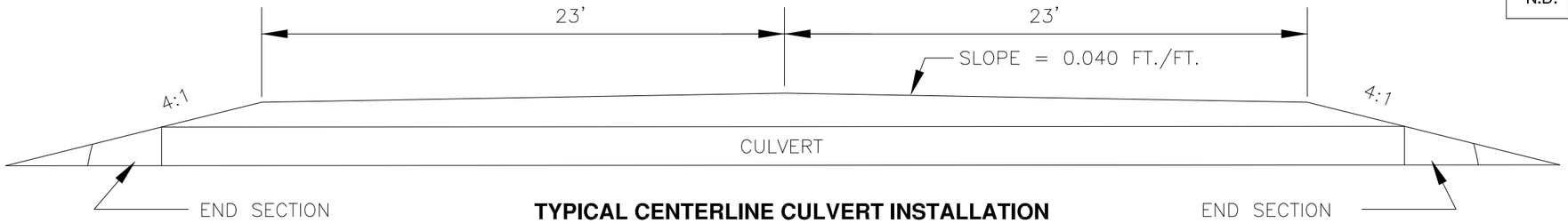
NOT TO SCALE
STA 499+50.00 TO STA 503+50.00
STA 506+75.00 TO STA 508+75.00

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY
JASON P. BENSON
N.D. REG. NO. 7490
ON 02/27/2015 AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

CASS COUNTY HIGHWAY DEPARTMENT
PROJECT NO. CH1504
TYPICAL SECTIONS

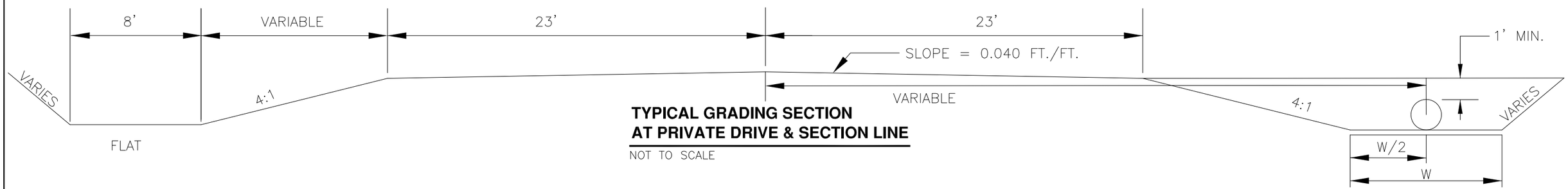
J:\Admin-Eng\PROJECTS\C-5 Overlay - Cass 38 to C5\CH1504 Plan Set.dwg

STATE	PROJECT NUMBER	SHEET	TOTAL SHEETS
N.D.	CH1504	15	32



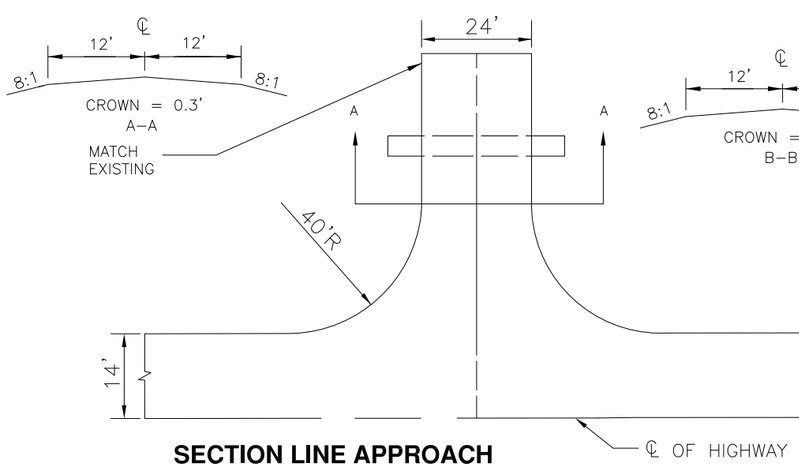
TYPICAL CENTERLINE CULVERT INSTALLATION

NOT TO SCALE



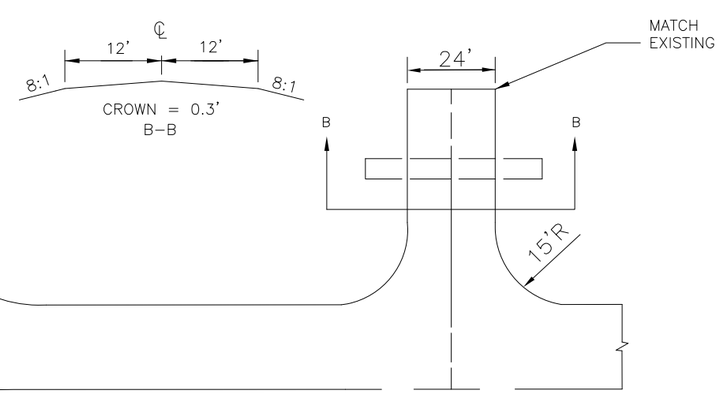
TYPICAL GRADING SECTION AT PRIVATE DRIVE & SECTION LINE

NOT TO SCALE



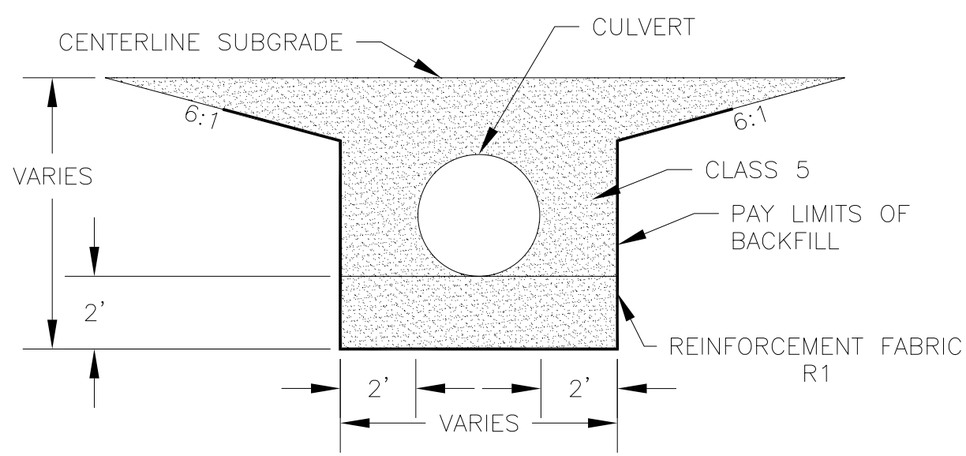
SECTION LINE APPROACH

NOT TO SCALE



FIELD & PRIVATE DRIVE APPROACH

NOT TO SCALE



CENTERLINE CULVERT BACKFILL DETAIL

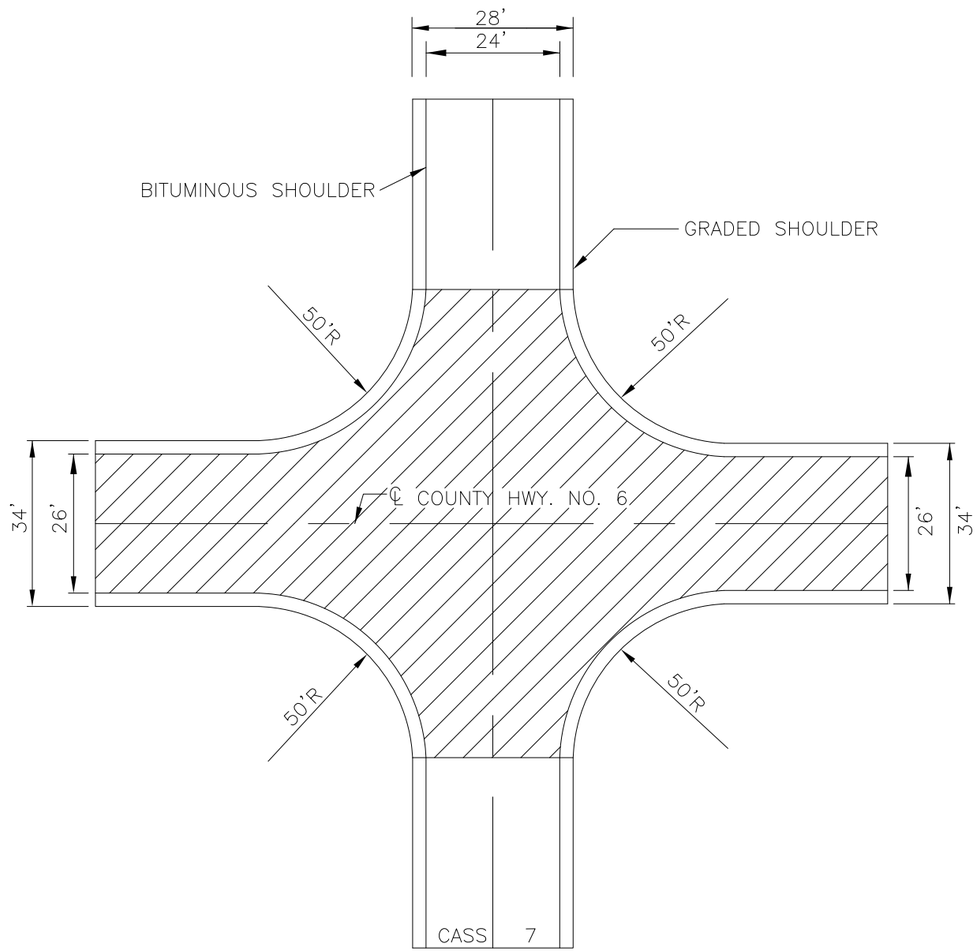
NOT TO SCALE

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY
JASON P. BENSON
N.D. REG. NO. 7490
ON 02/27/2015 AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

CASS COUNTY HIGHWAY DEPARTMENT
PROJECT NO. CH1504
CULVERT DETAILS

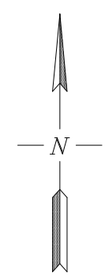
J:\Admin-Eng\PROJECTS\C-6 Overlay - Cass 38 to C5\CH1504 Plan Set.dwg

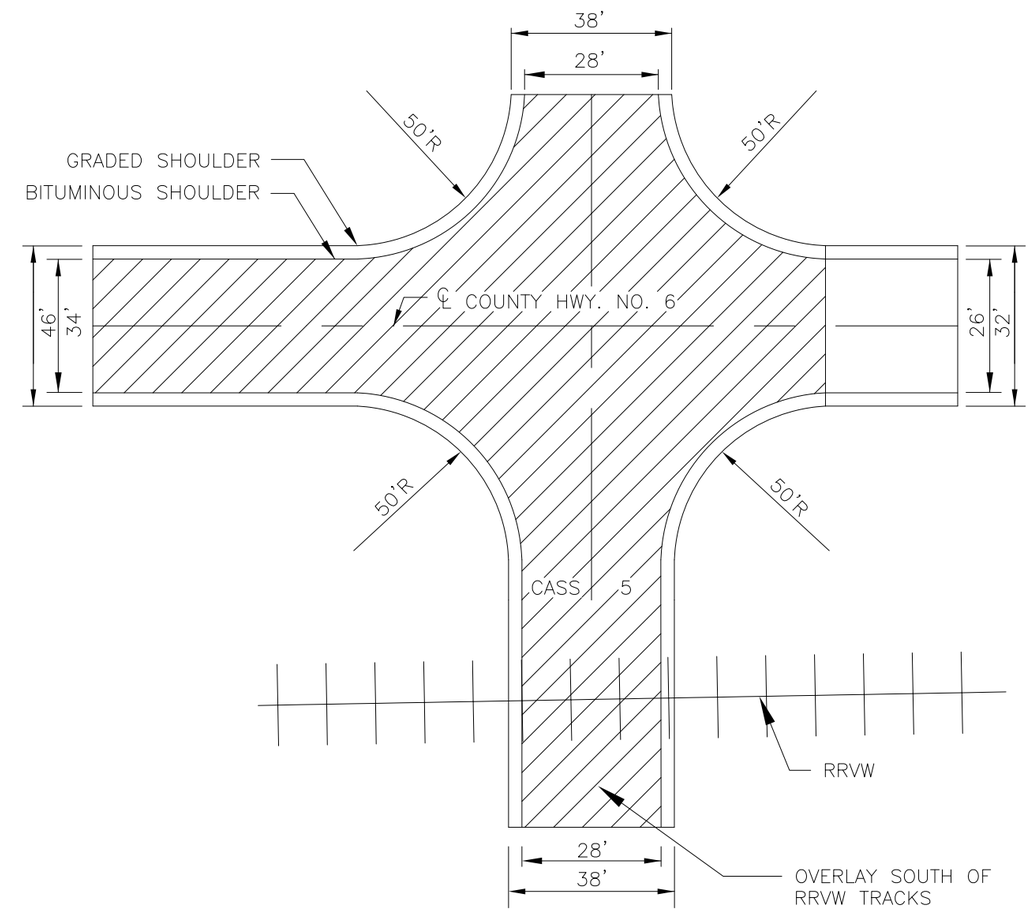
STATE	PROJECT NUMBER	SHEET	TOTAL SHEETS
N.D.	CH1504	16	32



INTERSECTION DETAIL

CASS COUNTY HIGHWAY 6 & 7
STA 315+89.50
NOT TO SCALE





INTERSECTION DETAIL

CASS COUNTY HIGHWAY 5 & 6
STA 526+14.40
NOT TO SCALE

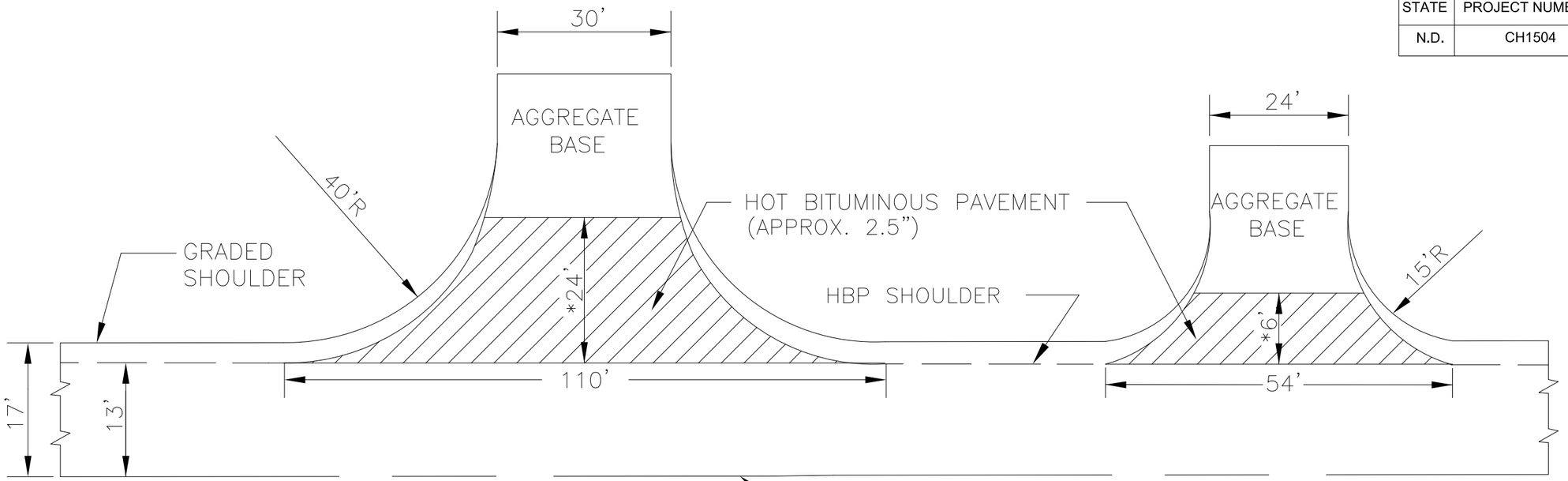
*** DIMENSIONS MAY VARY.
ENGINEER IN FIELD SHALL DETERMINE
EXACT LIMITS OF SURFACING AT ALL
DRIVES AND APPROACHES.**

THIS DOCUMENT WAS ORIGINALLY ISSUED
AND SEALED BY
JASON P. BENSON
N.D. REG. NO. 7490
ON 02/27/2015 AND THE ORIGINAL
DOCUMENT IS STORED AT THE CASS COUNTY
HIGHWAY DEPARTMENT, WEST FARGO, ND

CASS COUNTY HIGHWAY DEPARTMENT
PROJECT NO. CH1504
INTERSECTION DETAILS

J:\Admin-Eng\PROJECTS\C-6 Overlay - Cass 38 to C5\CH1504 Plan Set.dwg

STATE	PROJECT NUMBER	SHEET	TOTAL SHEETS
N.D.	CH1504	17	32



SECTION LINE APPROACH

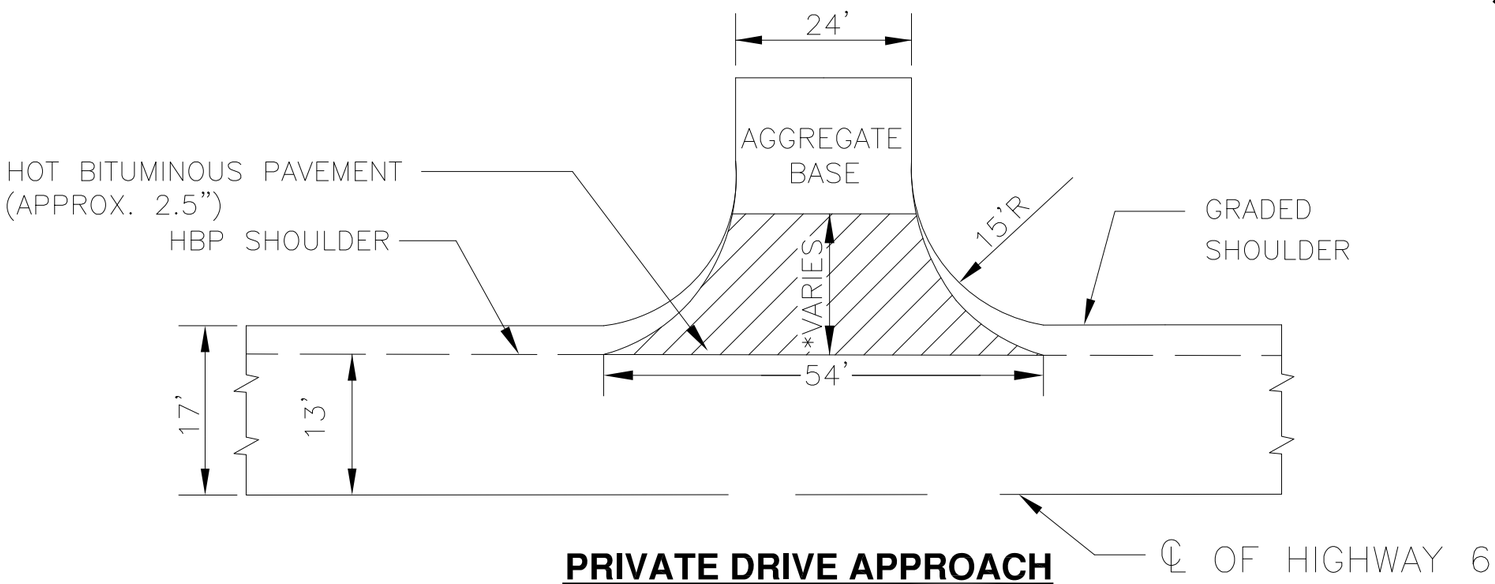
NOT TO SCALE

℄ OF HIGHWAY 6

FIELD APPROACH

NOT TO SCALE

*** DIMENSIONS MAY VARY. ENGINEER IN FIELD SHALL DETERMINE EXACT LIMITS OF SURFACING AT ALL DRIVES AND APPROACHES.**



PRIVATE DRIVE APPROACH

NOT TO SCALE

℄ OF HIGHWAY 6

PLACEMENT OF APPROACH PVMT:

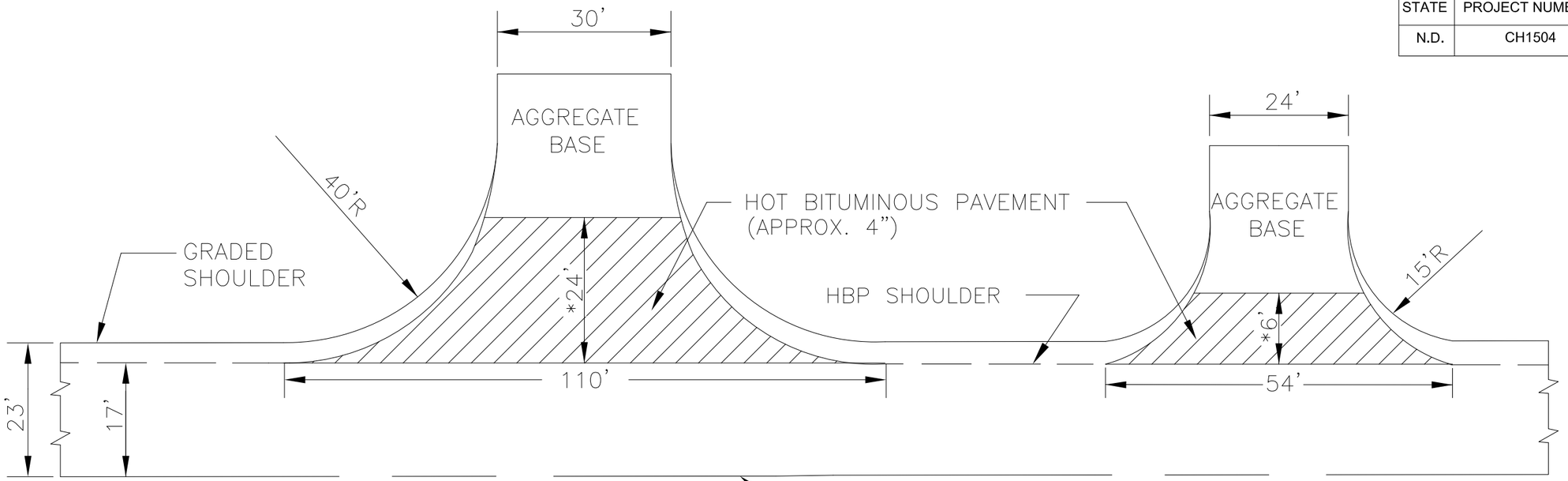
PAVEMENT FOR APPROACHES SHALL BE PLACED AHEAD OF THE MAINLINE TOP LIFT PAVING OPERATION. NO COLD JOINT WILL BE ALLOWED BETWEEN THE MAINLINE AND APPROACHES.

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY
JASON P. BENSON
N.D. REG. NO. 7490
ON 02/27/2015 AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

CASS COUNTY HIGHWAY DEPARTMENT
PROJECT NO. CH1504
APPROACH DETAILS

J:\Admin-Eng\PROJECTS\C-6 Overlay - Cass 38 to C5\CH1504 Plan Set.dwg

STATE	PROJECT NUMBER	SHEET	TOTAL SHEETS
N.D.	CH1504	18	32



SECTION LINE APPROACH

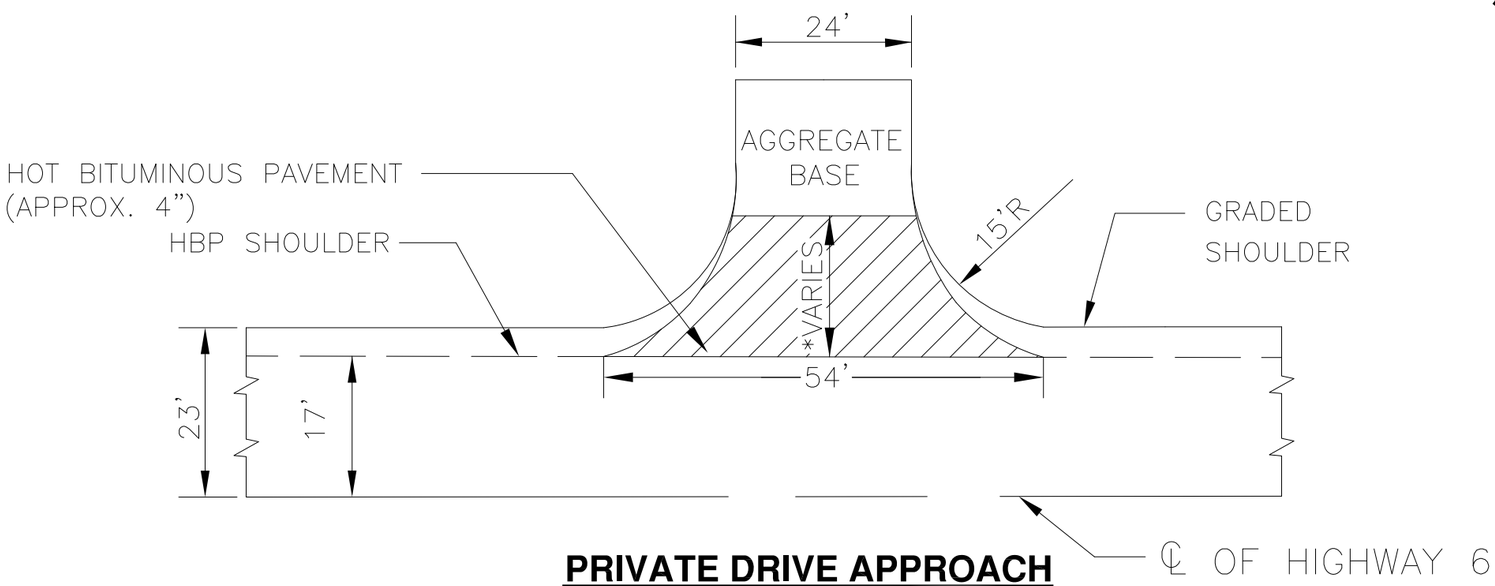
NOT TO SCALE

℄ OF HIGHWAY 6

FIELD APPROACH

NOT TO SCALE

*** DIMENSIONS MAY VARY. ENGINEER IN FIELD SHALL DETERMINE EXACT LIMITS OF SURFACING AT ALL DRIVES AND APPROACHES.**



PRIVATE DRIVE APPROACH

NOT TO SCALE

℄ OF HIGHWAY 6

PLACEMENT OF APPROACH PVMT:

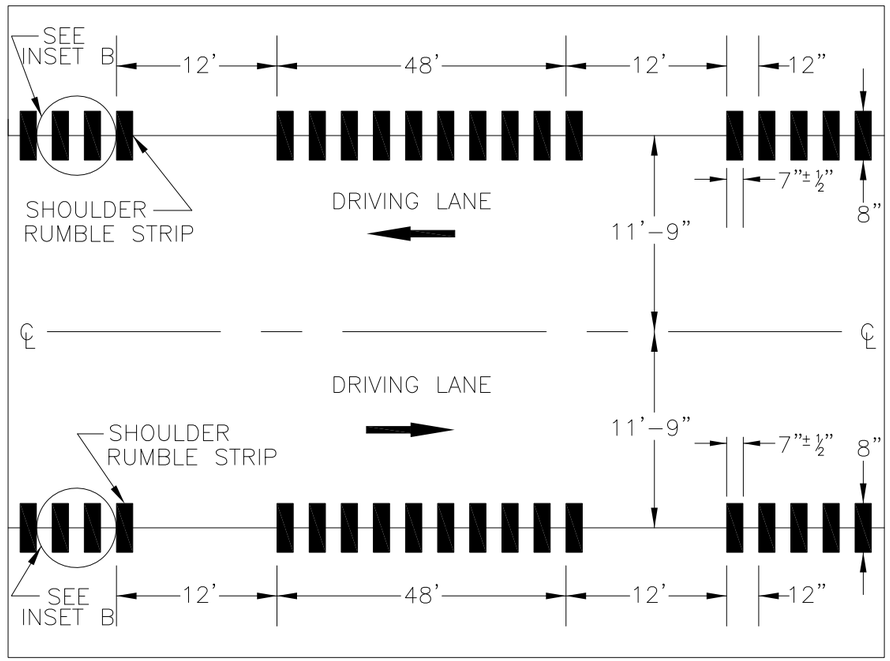
PAVEMENT FOR APPROACHES SHALL BE PLACED AHEAD OF THE MAINLINE TOP LIFT PAVING OPERATION. NO COLD JOINT WILL BE ALLOWED BETWEEN THE MAINLINE AND APPROACHES.

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY
JASON P. BENSON
N.D. REG. NO. 7490
ON 02/27/2015 AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

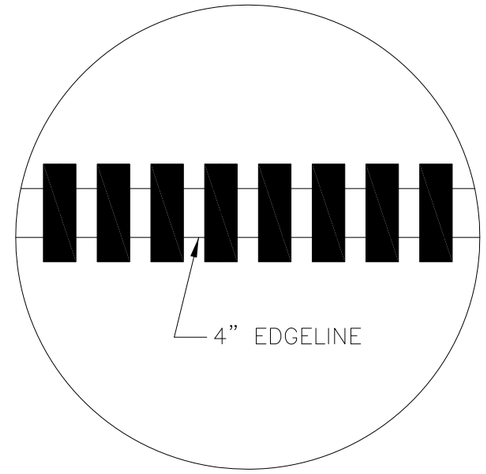
CASS COUNTY HIGHWAY DEPARTMENT
PROJECT NO. CH1504
APPROACH DETAILS – CHAFFEE

J:\Admin-Eng\PROJECTS\C-6 Overlay - Cass 38 to C5\CH1504 Plan Set.dwg

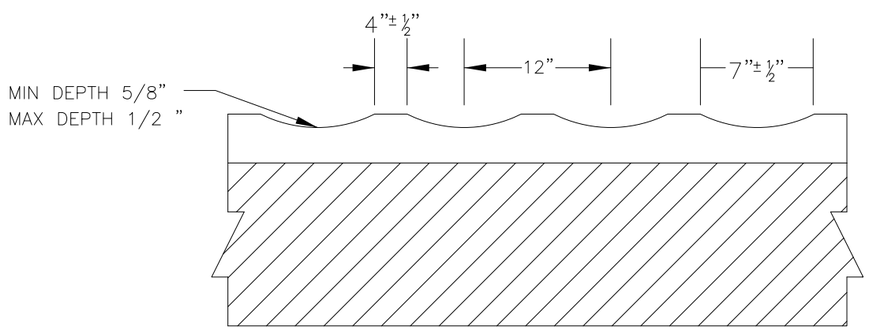
STATE	PROJECT NUMBER	SHEET	TOTAL SHEETS
N.D.	CH1504	19	32



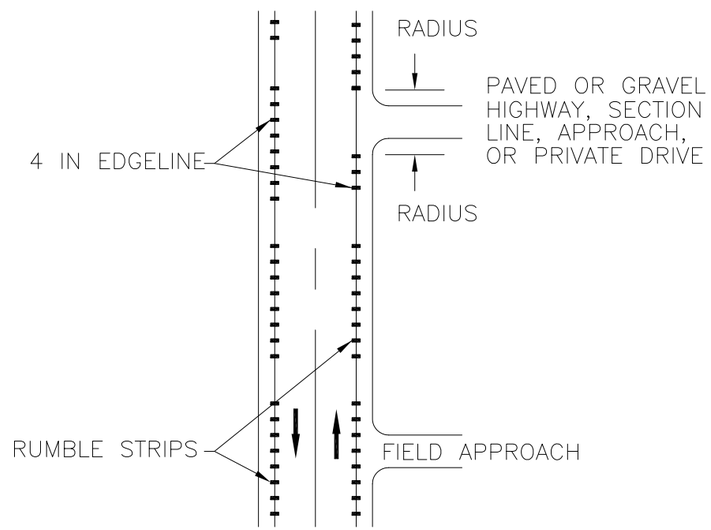
PLAN VIEW OF RUMBLE STRIPS



INSET B - SHOULDER RUMBLE STRIP



PROFILE VIEW OF RUMBLE STRIPS



ENTRANCE ROADWAYS

NOTES:

1) Rumble strips shall be milled into the bituminous paved shoulders. All milled materials shall be swept off of the driving lanes and paved shoulders using a mechanical sweeper. All costs for sweeping shall be included in the price bid for "RUMBLE STRIPS – ASPHALT SHOULDER."

2) Rumble strips milled into new or existing bituminous pavements shall be fog sealed across the full width of the milling with an application of SS–1h or CSS–1h emulsified asphalt at a rate of about 0.10 Gal/SY diluted 50/50 sprayed in both directions. All costs for fog sealing shall be included in the price bid for "RUMBLE STRIPS – ASPHALT SHOULDER."

3) Discontinue rumble strips across bridge decks and approach slabs, adjacent to guardrail, and 1/2 mile on either side of:
- highways with posted speeds 45 mph or less
- all urban areas
- areas with curb and gutter

4) Discontinue shoulder rumble strips through the entire length of right turn lanes, 100' before right turn lane tapers, and at the radius of a paved or gravel highway, section line, approach, or private drive.

5) All costs associated with the use of a paint dribble line for rumble strip alignment shall be included in the "RUMBLE STRIPS – ASPHALT SHOULDER" bid item.

RUMBLE STRIP DETAILS

NOT TO SCALE

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY
JASON P. BENSON
N.D. REG. NO. 7490
ON 02/27/2015 AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

CASS COUNTY HIGHWAY DEPARTMENT
PROJECT NO. CH1504
RUMBLE STRIP DETAILS

J:\Admin-Eng\PROJECTS\C-6 Overlay - Cass 38 to C5\CH1504 Plan Set.dwg

STATE	PROJECT NUMBER	SHEET	TOTAL SHEETS
N.D.	CH1504	20	32

TRAFFIC CONTROL LEGEND

POST-MOUNTED SIGN

TYPE III BARR.

A — ROAD WORK AHEAD — W20-1-48

B — ROAD WORK 500 FT — W20-1-48

C — ROAD WORK NEXT X MILES — G20-1a-60

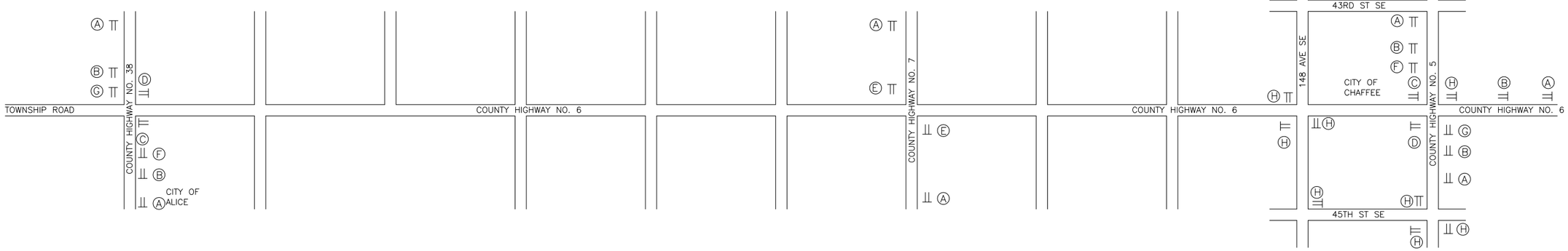
D — END ROAD WORK — G20-2a-48

E — ROAD WORK ← NEXT X MILES NEXT X MILES → — G20-50a-72

F — ROAD WORK NEXT X MILES → — G20-52a-72

G — ROAD WORK ← NEXT X MILES — G20-52a-72

H — M4-8-24, M1-4-24, M5-1-21



CONSTRUCTION SIGN LAYOUT

NOT TO SCALE

*** NOTE: TRAFFIC CONTROL BID ITEM IS LUMP SUM AS PER NDDOT SPEC 704.04. SEE SIGN LIST ON SHEET 21 FOR SIGN QUANTITIES.**

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY JASON P. BENSON N.D. REG. NO. 7490 ON 02/27/2015 AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

CASS COUNTY HIGHWAY DEPARTMENT
PROJECT NO. CH1504
CONSTRUCTION SIGN LAYOUT

J:\Admin-Eng\PROJECTS\C-6 Overlay - Cass 38 to C5\CH1504 Plan Set.dwg

PROJECT NO. CH1504

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQ'D	UNITS PER AMOUNT	UNITS SUB-TOTAL
G20-1a-60	**60" X 24"**	**ROAD WORK NEXT ___ MILES**	**2**	**34**	**68**
G20-2a-48	**48" X 24"**	**END ROAD WORK**	**2**	**19**	**38**
G20-4-36	**36" X 18"**	**PILOT CAR FOLLOW ME**	**1**	**18**	**18**
G20-50a-72	**72" X 36"**	**ROAD WORK NEXT ___ MILES RT & LT ARROWS**	**2**	**37**	**74**
G20-52a-72	**72" X 24"**	**ROAD WORK NEXT ___ MILES RT OR LT ARROWS**	**4**	**30**	**120**
G20-54-48	48" X 36"	OVERHEAD BRIDGE PAINTING		30	
G20-8-48	48" X 36"	TEMPORARY SURFACE NEXT ___ MILES		30	
M1-4-24	**24" X 24"**	**ROUTE MARKER (POST AND INSTALLATION ONLY)**	**13**	**10**	**130**
M3-2-24	24" X 12"	EAST (MOUNTED ON ROUTE MARKER POST)		7	
M3-3-24	24" X 12"	SOUTH (MOUNTED ON ROUTE MARKER POST)		7	
M3-4-24	24" X 12"	WEST (MOUNTED ON ROUTE MARKER POST)		7	
M4-10-48	**48" X 18"**	**DETOUR ARROW RIGHT or LEFT**	**2**	**23**	**46**
M4-8-24	24" X 12"	DETOUR (MOUNTED ON THE ROUTE MARKER POST)		7	
M5-1-21	**21" X 15"**	**ARROW AHD AND RT or LT (MTD ON ROUTE MKR POST)**	**13**	**7**	**91**
M6-1-21	**21" X 15"**	**ARROW RT or LT (MOUNTED ON ROUTE MARKER POST)**	**13**	**7**	**91**
R1-1-48	48" X 48"	STOP		32	
R1-1-30	30" X 30"	STOP		32	
R1-1a-18	**18" X 18"**	**STOP and SLOW PADDLE Back to Back**	**4**	**5**	**20**
R1-2-48	48" X 48"	YIELD TO ONCOMING TRAFFIC		29	
R2-1-48	48" X 60"	SPEED LIMIT		39	
R2-1a-24	24" X 24"	MINIMUM FEE $80		10	
R2-5a-48	48" X 60"	SPEED ZONE AHEAD		39	
R4-1-48	48" X 60"	DO NOT PASS		39	
R4-7-48	48" X 60"	KEEP RIGHT SYMBOL		39	
R4-8-48	48" X 60"	KEEP LEFT SYMBOL		39	
R10-6-48	48" X 72"	STOP HERE ON RED		16	
R11-2-48	48" X 30"	ROAD CLOSED		28	
R11-2a-48	48" X 30"	STREET CLOSED		28	
R11-3a-60	60" X 30"	ROAD CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY		31	
R11-3b-60	60" X 30"	BRIDGE OUT __ MILES AHEAD LOCAL TRAFFIC ONLY		31	
R11-3c-48	60" X 30"	STREET CLOSED		31	
R11-4a-60	60" X 30"	STREET CLOSED TO THRU TRAFFIC		31	
W1-1-48	48" X 48"	RIGHT or LEFT SHARP CURVE ARROW		35	
W1-2-48	48" X 48"	RIGHT or LEFT CURVE ARROW		35	
W1-3-48	48" X 48"	RIGHT or LEFT SHARP REVERSE CURVE ARROW		35	
W1-4-48	48" X 48"	RIGHT or LEFT REVERSE CURVE ARROW		35	
W1-6-48	48" X 24"	LARGE ARROW		26	
W3-1a-48	48" X 48"	STOP AHEAD SYMBOL		35	
W3-2a-48	48" X 48"	YIELD AHEAD SYMBOL		35	
W5-1-48	48" X 48"	ROAD NARROWS		35	

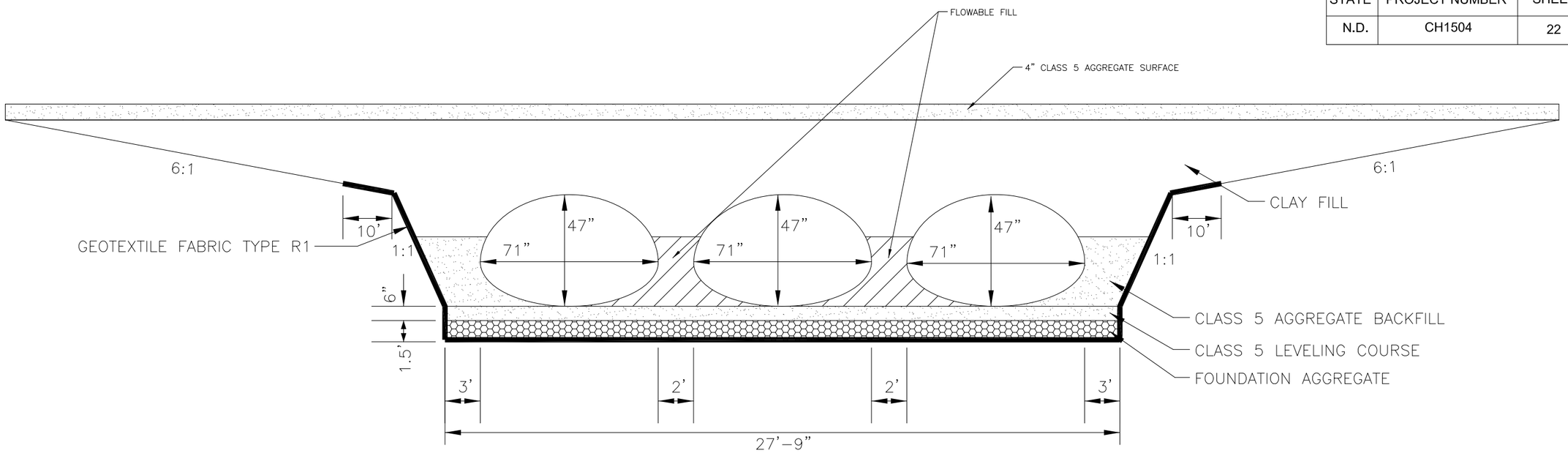
SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQ'D	UNITS PER AMOUNT	UNITS SUB-TOTAL
W6-3-48	48" X 48"	TWO WAY TRAFFIC SYMBOL		35	
W8-11-48	**48" X 48"**	**UNEVEN LANES**	**12**	**35**	**420**
W8-1-48	**48" X 48"**	**BUMP**	**6**	**35**	**210**
W8-3a-48	48" X 48"	PAVEMENT ENDS SYMBOL		**35**	
W8-53-48	**48" X 48"**	**TRUCKS ENTERING HIGHWAY**	**6**	**35**	**210**
W8-54-48	48" X 48"	TRUCKS ENTERING AHEAD OR ___ FT.		35	
W8-55-48	48" X 48"	TRUCKS CROSSING AHEAD OR ___ FT.		35	
W8-9-48	48" X 48"	LOW SHOULDER		35	
W8-9a-48	**48" X 48"**	**SHOULDER DROP OFF**	**6**	**35**	**210**
W13-1-24	24" X 24"	___ MPH ADVISORY SPEED PLATE		11	
W13-4-48	48" X 60"	RAMP ARROW		39	
W20-1-48	**48" X 48"**	**ROAD WORK ___ FT.**	**12**	**35**	**420**
W20-1a-48	48" X 48"	MEN WORKING SYMBOL		35	
W20-2-48	48" X 48"	DETOUR ___ FT.		35	
W20-3-48	48" X 48"	ROAD OR STREET CLOSED AHEAD or ___ FT.		35	
W20-4-48	48" X 48"	ONE LANE ROAD AHEAD or ___ FT.		35	
W20-51-48	48" X 48"	EQUIPMENT WORKING		35	
W20-52-54	54" X 12"	NEXT ___ MILES		12	
W20-5-48	48" X 48"	RIGHT or LEFT LANE CLOSED AHEAD or ___ FT.		35	
W20-7a-48	48" X 48"	FLAGGING SYMBOL		35	
W20-7b-48	48" X 48"	BE PREPARED TO STOP		35	
W20-7k-24	24" X 18"	___ FEET		10	
W20-8-48	48" X 48"	STREET CLOSED		35	
W21-2-48	48" X 48"	FRESH OIL		35	
W21-50-48	48" X 48"	BRIDGE PAINTING AHEAD OR ___ FT.		35	
W21-51-48	48" X 48"	MATERIAL ON ROADWAY		35	
W21-5-48	48" X 48"	SHOULDER WORK		35	
W22-7-48	48" X 48"	SINGLE LANE AHEAD or ___ FT.		35	
W22-8-48	48" X 48"	FRESH OIL LOOSE ROCK		35	
		TOTAL UNITS			**2,166**

				SPEC&CODE 704-1000	
TYPE III	**8' LONG**	**BARRICADES**	**EACH**	**704-1052**	**18**
TYPE II	2' MIN.	BARRICADES	EACH	704-1051	
TYPE I	6' TO 10'	BARRICADES	EACH	704-1050	
	18" X 36" MIN.	DELINEATOR DRUMS	EACH	704-1060	

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY
JASON P. BENSON
N.D. REG. NO. 7490
ON 02/27/2015 AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

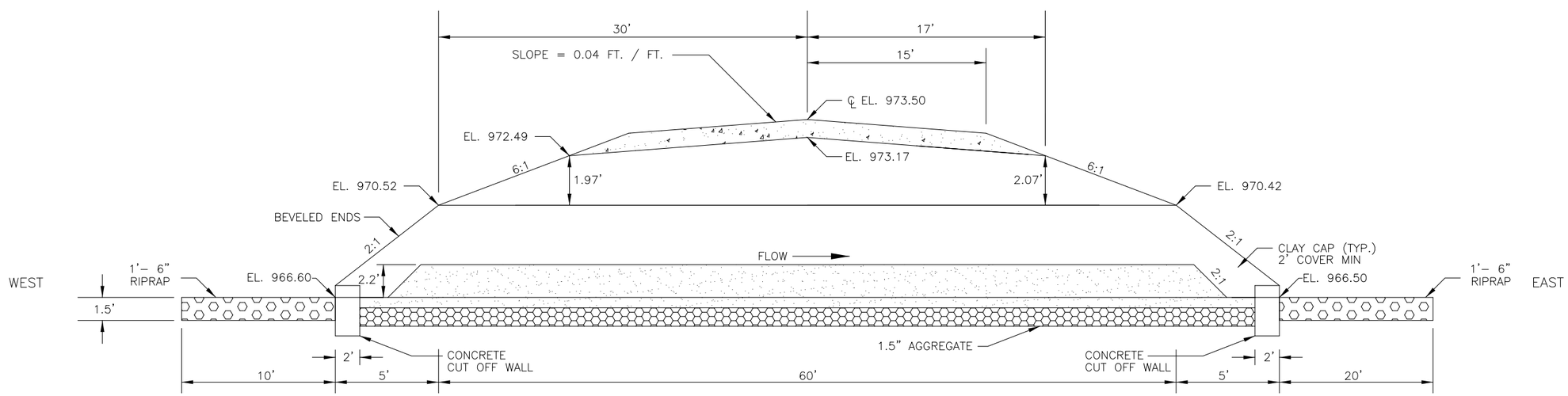
CASS COUNTY HIGHWAY DEPARTMENT
PROJECT NO. CH1504
TRAFFIC CONTROL DEVICE LISTING

STATE	PROJECT NUMBER	SHEET	TOTAL SHEETS
N.D.	CH1504	22	32



END VIEW

NOT TO SCALE



SIDE VIEW

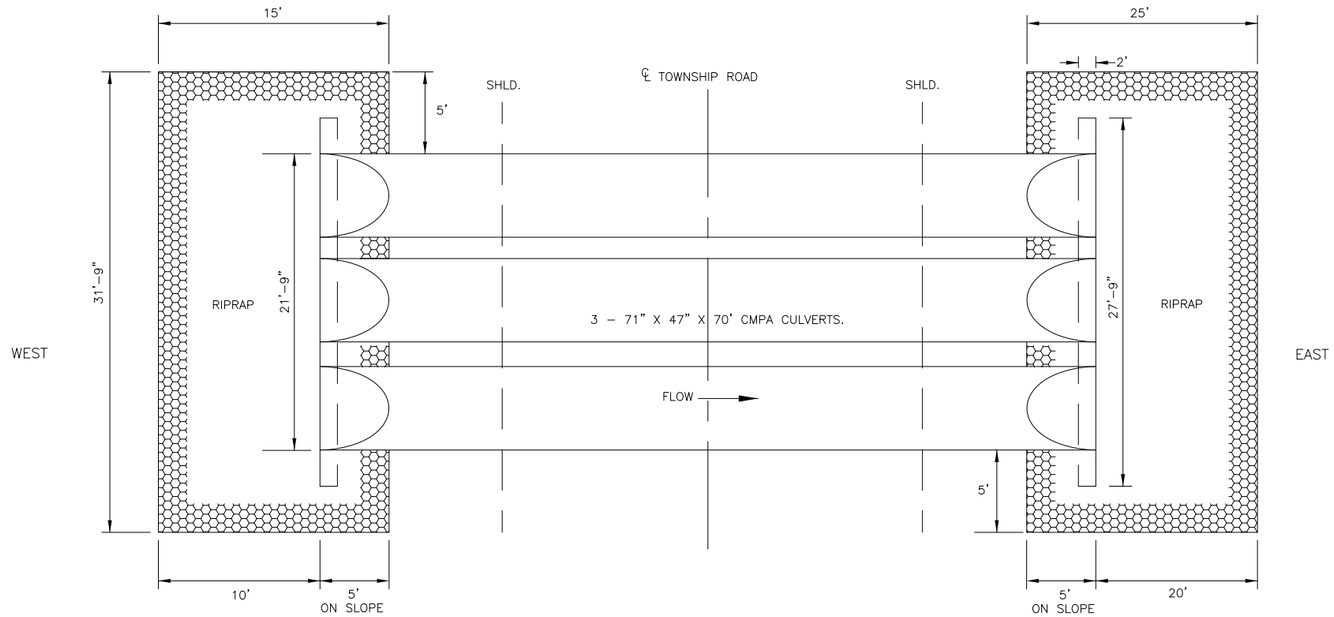
NOT TO SCALE

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY
JASON P. BENSON
N.D. REG. NO. 7490
ON 02/27/2015 AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

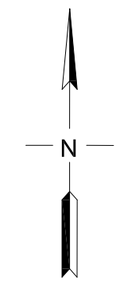
CASS COUNTY HIGHWAY DEPARTMENT
PROJECT NO. CH1504
ARCH PIPE DETAILS

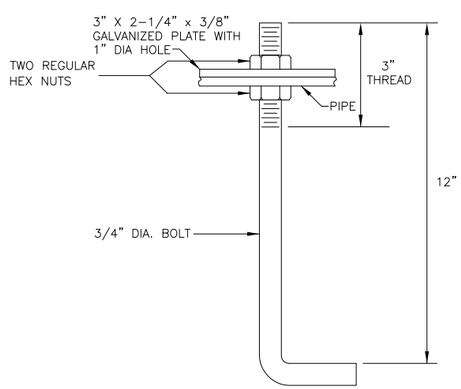
J:\Admin-Eng\PROJECTS\C-6 Overlay - Cass 38 to C5\CH1504 Plan Set.dwg

STATE	PROJECT NUMBER	SHEET	TOTAL SHEETS
N.D.	CH1504	23	32

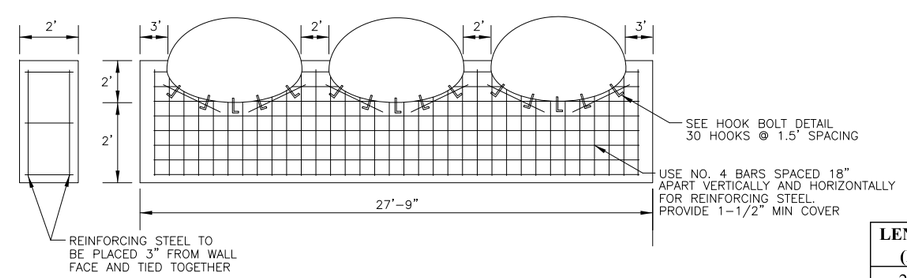


PLAN VIEW
NOT TO SCALE





HOOK BOLT DETAIL
NOT TO SCALE



CUTOFF WALL DETAIL
NOT TO SCALE

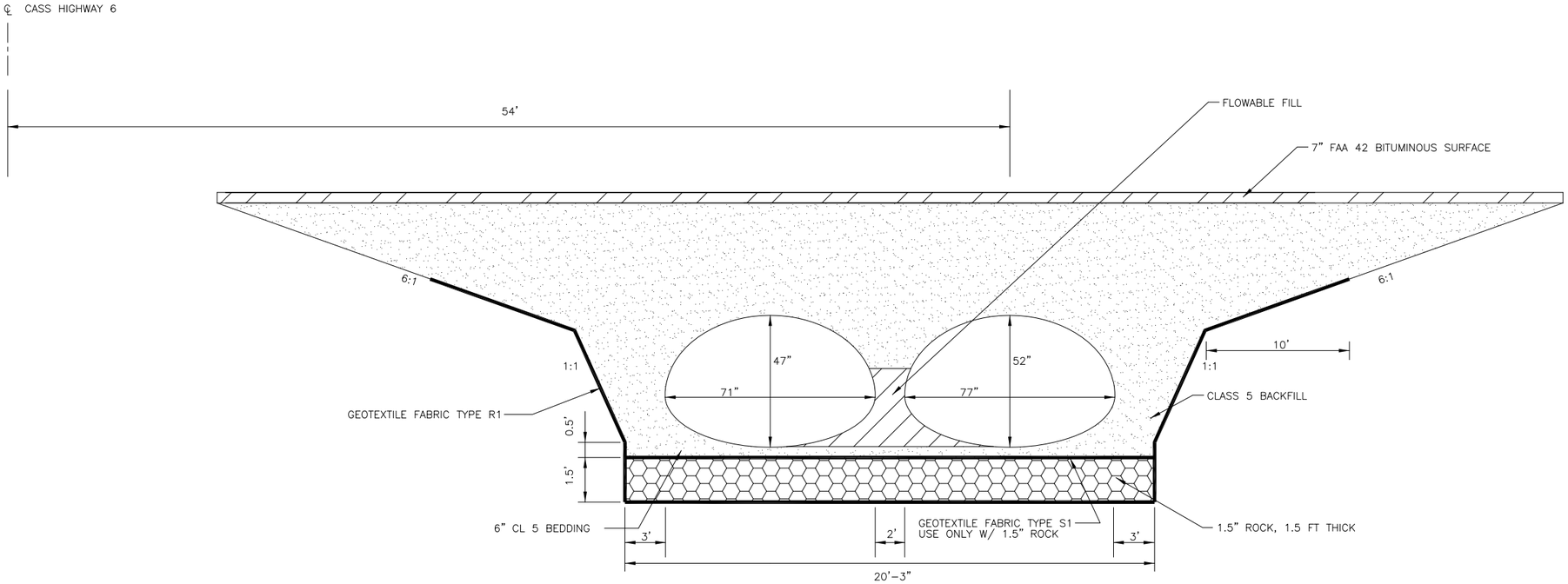
LENGTH (FT)	AMOUNT
27.25	12
4	42
1.5	18
TOTAL LENGTH	522

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY
JASON P. BENSON
N.D. REG. NO. 7490
ON 02/27/2015 AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

CASS COUNTY HIGHWAY DEPARTMENT
PROJECT NO. CH1504
ARCH PIPE DETAILS

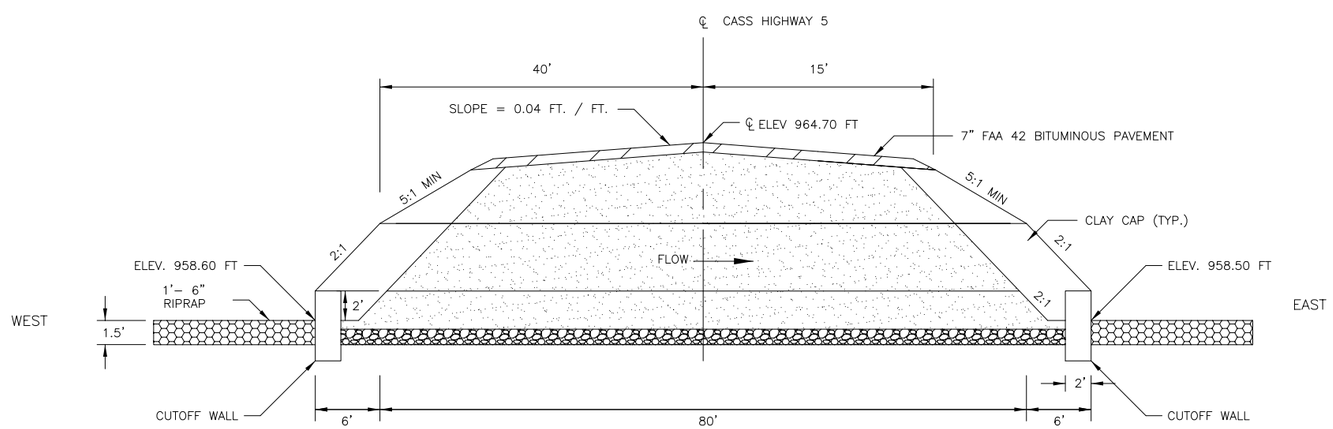
J:\Admin-Eng\PROJECTS\C-6 Overlay - Cass 38 to C5\CH1504 Plan Set.dwg

STATE	PROJECT NUMBER	SHEET	TOTAL SHEETS
N.D.	CH1504	24	32



END VIEW

NOT TO SCALE



SIDE VIEW

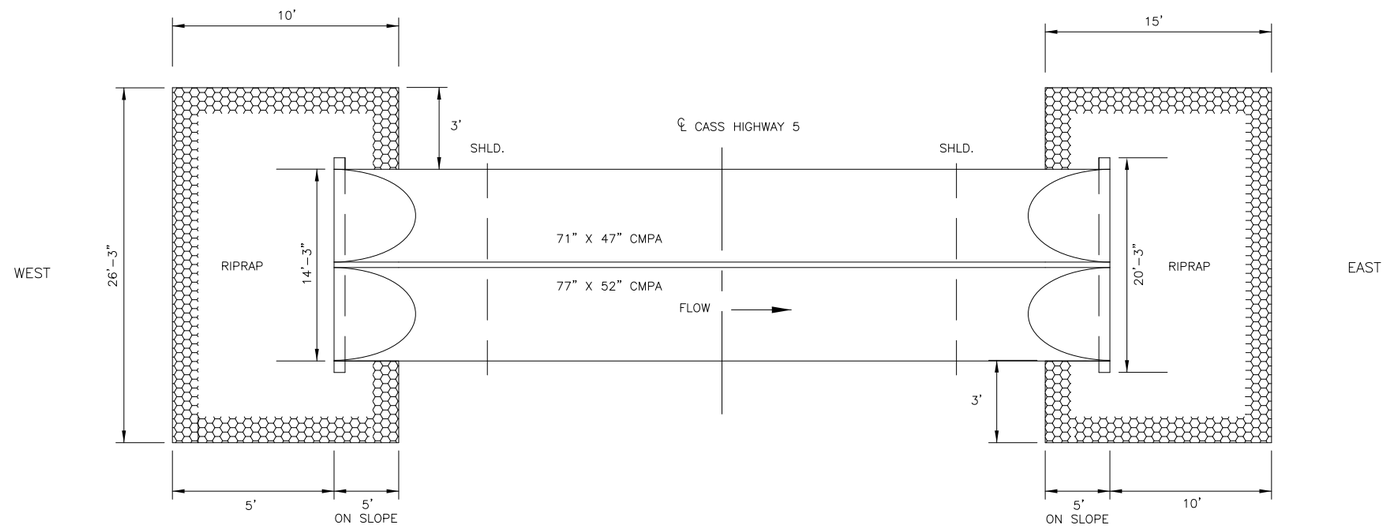
NOT TO SCALE

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY
JASON P. BENSON
N.D. REG. NO. 7490
ON 02/27/2015 AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

CASS COUNTY HIGHWAY DEPARTMENT
PROJECT NO. CH1504
ARCH PIPE DETAILS

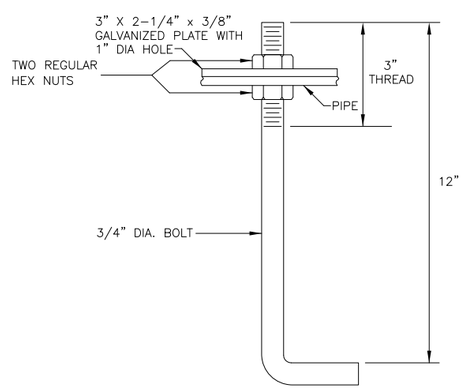
J:\Admin-Eng\PROJECTS\C-6 Overlay - Cass 38 to C5\CH1504 Plan Set.dwg

STATE	PROJECT NUMBER	SHEET	TOTAL SHEETS
N.D.	CH1504	25	32



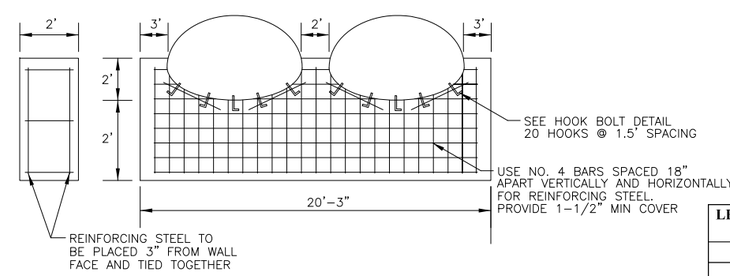
PLAN VIEW

NOT TO SCALE



HOOK BOLT DETAIL

NOT TO SCALE



CUTOFF WALL DETAIL

NOT TO SCALE

LENGTH (FT)	AMOUNT
19.83	12
4	34
1.5	12
TOTAL LENGTH	392

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY

JASON P. BENSON

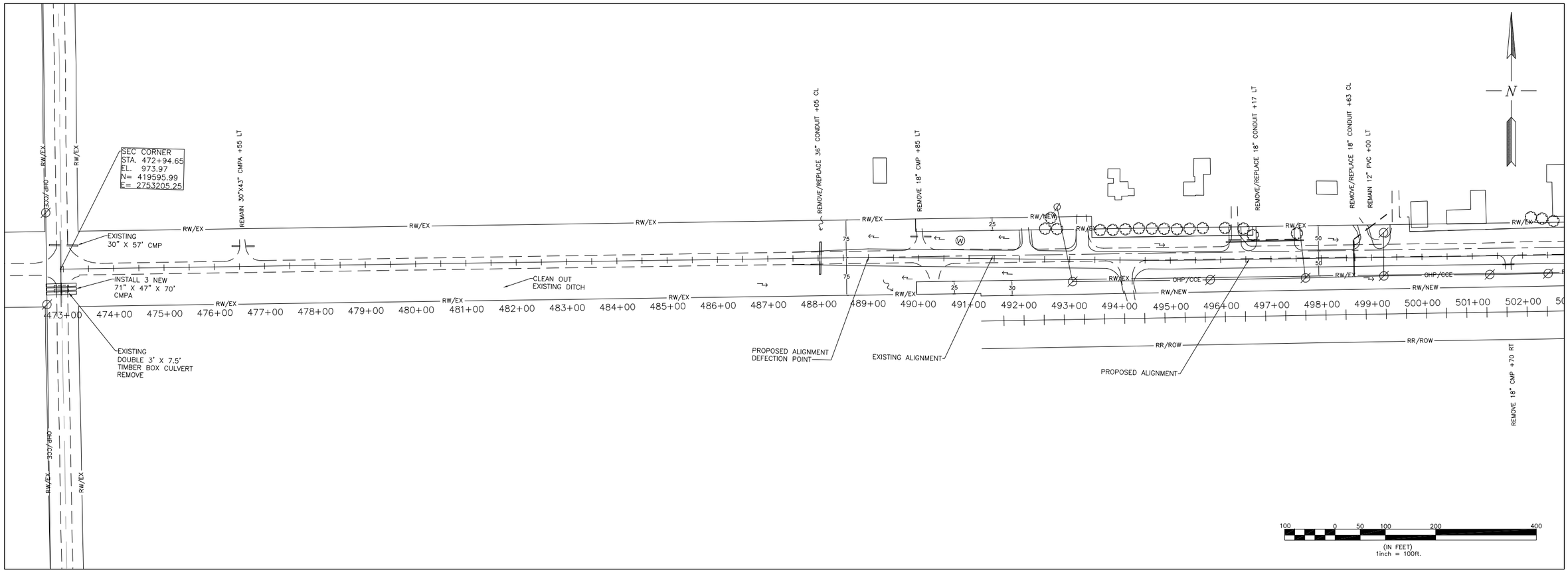
N.D. REG. NO. 7490

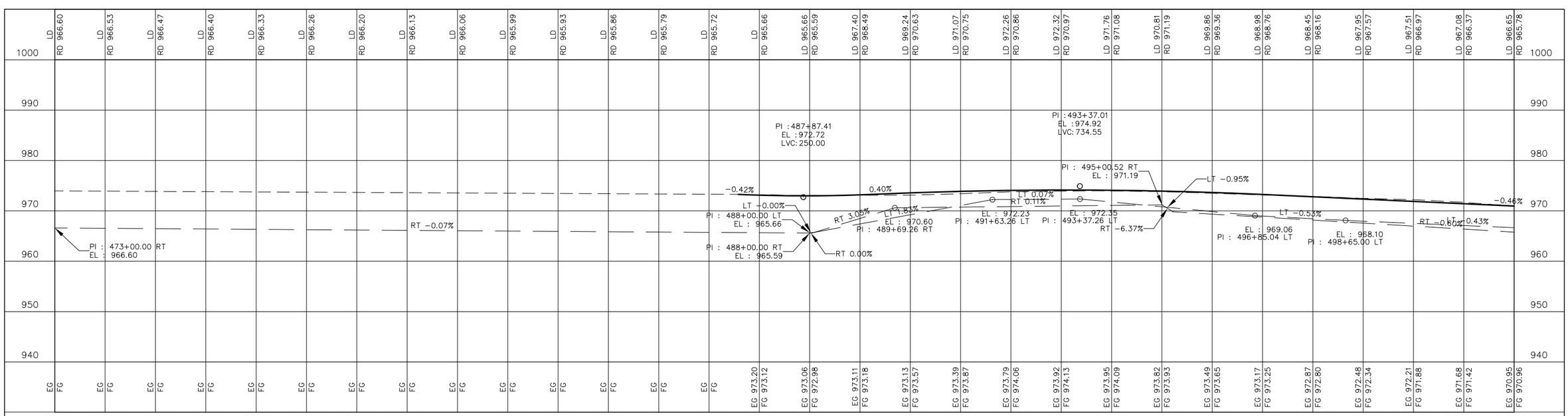
ON 02/27/2015 AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

CASS COUNTY HIGHWAY DEPARTMENT

PROJECT NO. CH1504

ARCH PIPE DETAILS





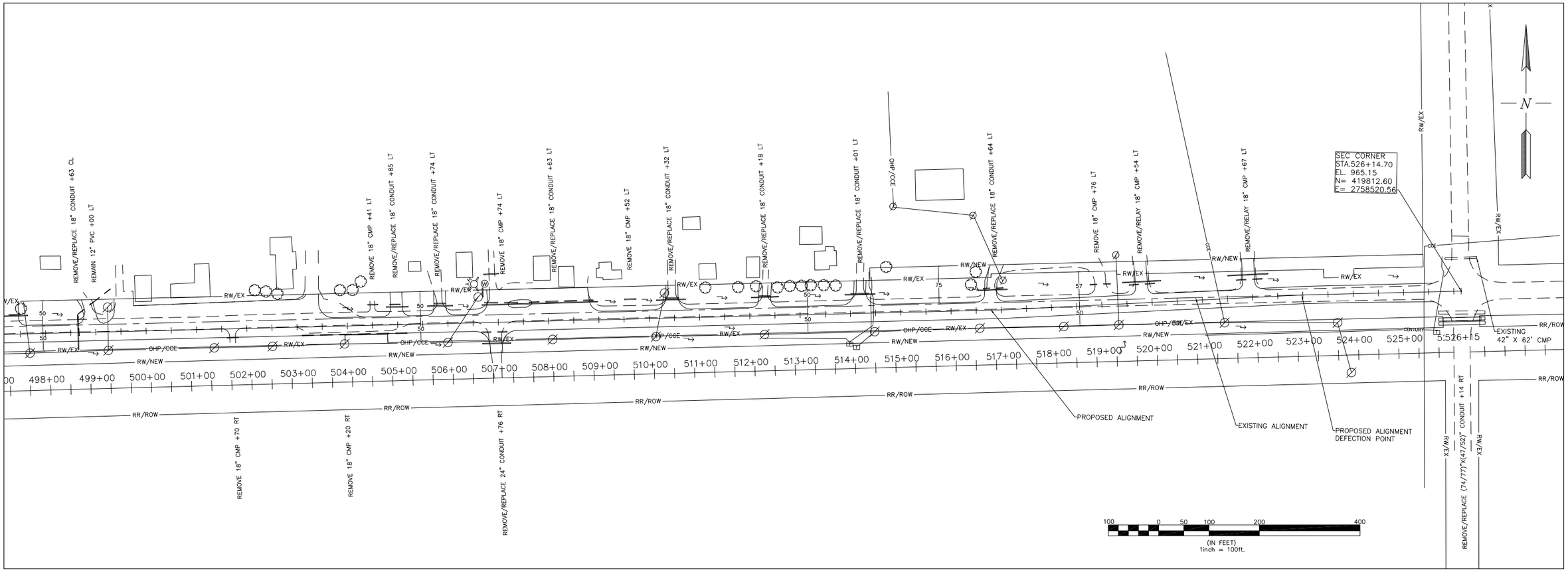
J:\Admin-Eng\Projects\C6 Overlay - Cass 38 to C5\Chaffee Corridor Offset Align.dwg Plan and Profile-3/3/2015 12:37 PM-(jltchyk)

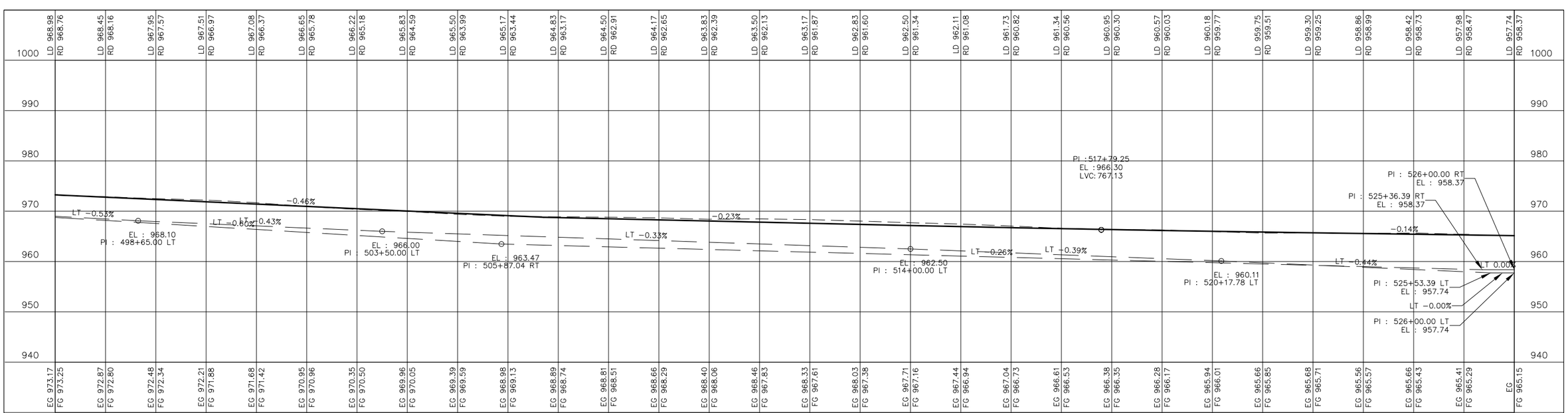
THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY JASON P. BENSON N.D. REG. NO. 7490 ON 02/27/15
AND THE ORIGINAL DOCUMENT IS STORED AT THE CASS COUNTY HIGHWAY DEPARTMENT, WEST FARGO, ND

CASS COUNTY HIGHWAY DEPARTMENT
WEST FARGO, NORTH DAKOTA

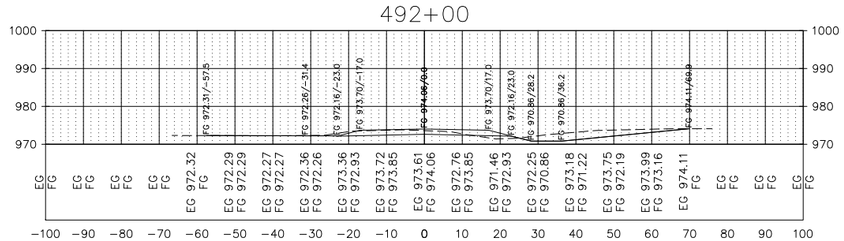
CH1504
PLAN AND PROFILE

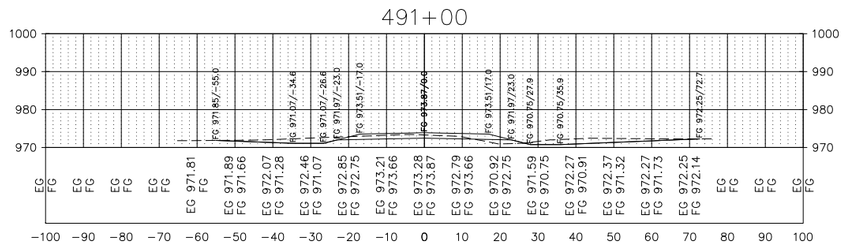
REV. 02-27-15

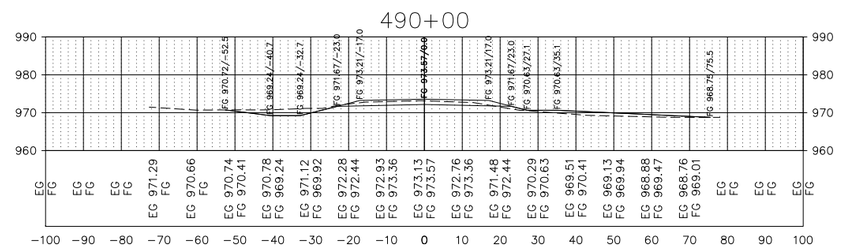


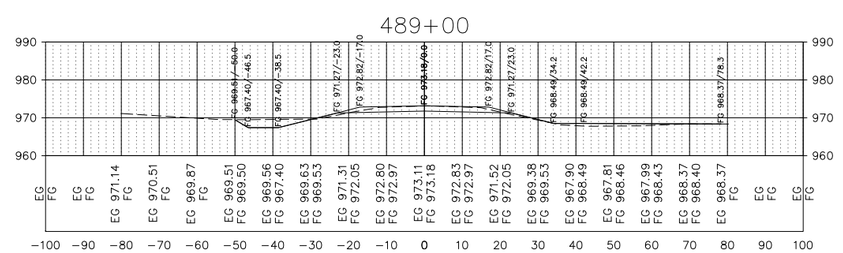


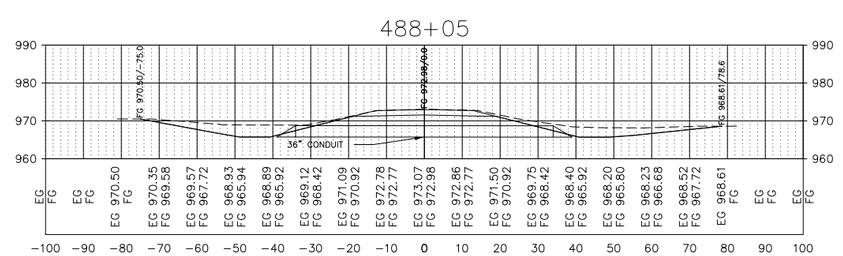
J:\Admin-Eng\Projects\C6 Overlay - Cass 38 to C5\Chaffee Corridor Offset Align.dwg Plan and Profile (2)-3/3/2015 9:15 AM-(ltchyk)

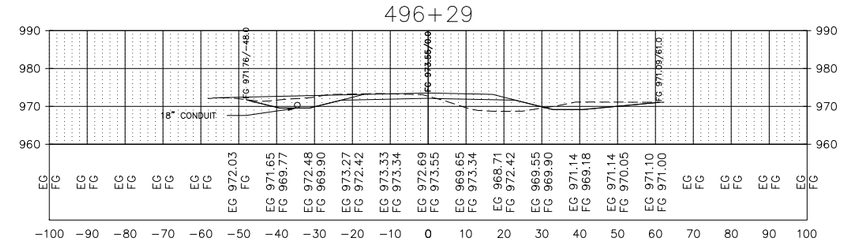


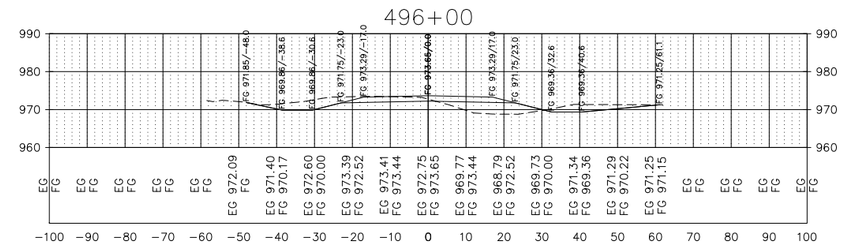


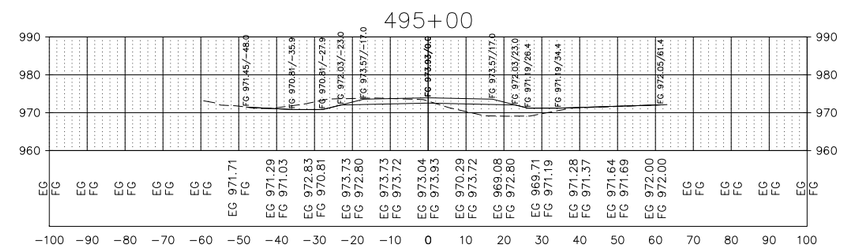


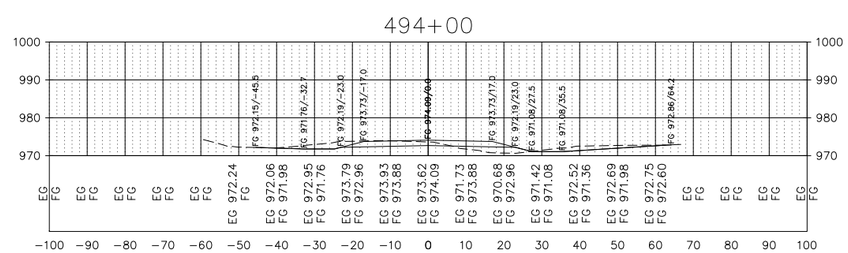


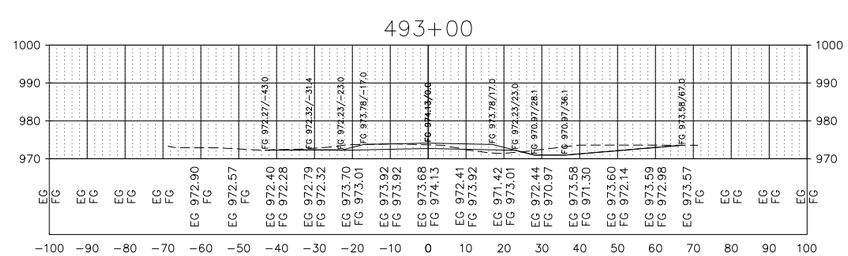




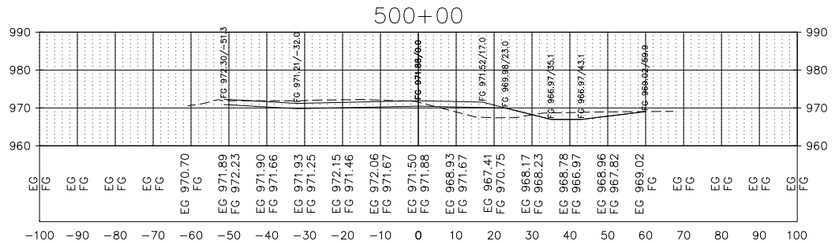


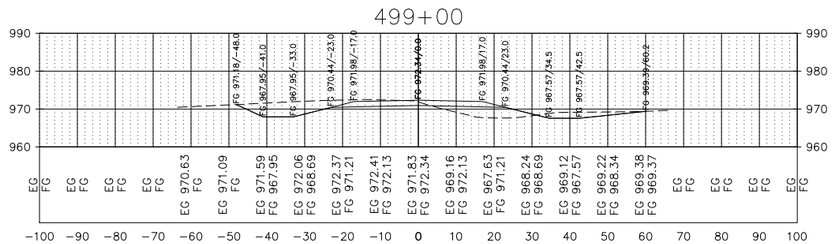


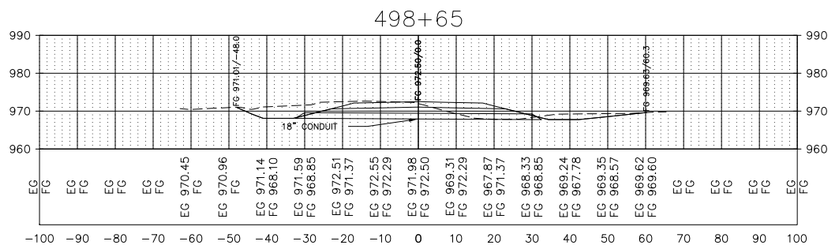


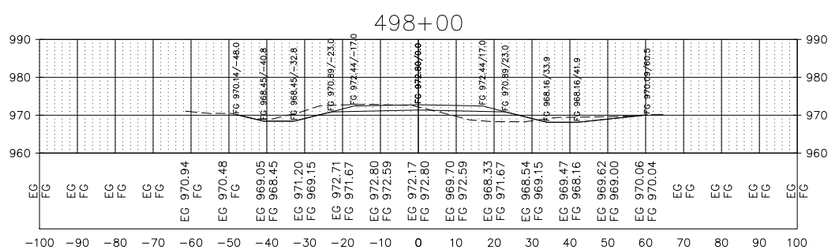


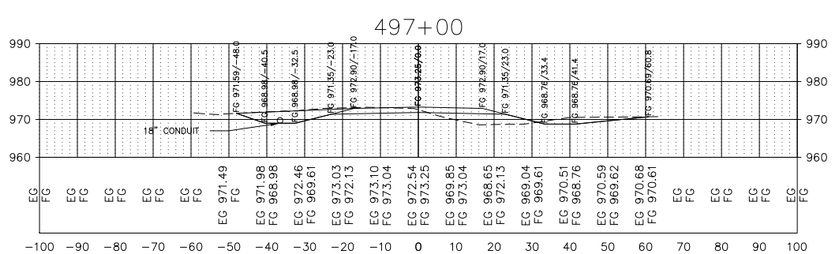
J:\Admin-Eng\Projects\C6 Overlay - Cass 38 to C5\Chaffee Corridor Offset Align.dwg-Cass Cross Sections-3/3/2015 9:17 AM-(litchyk)

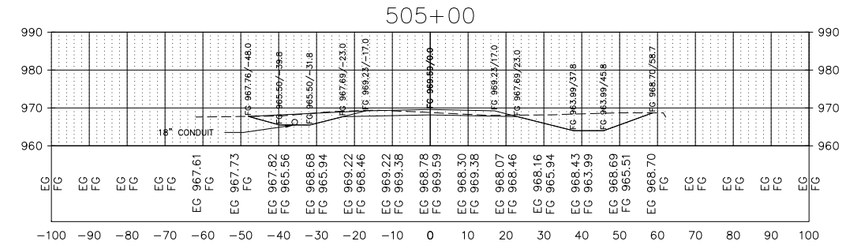


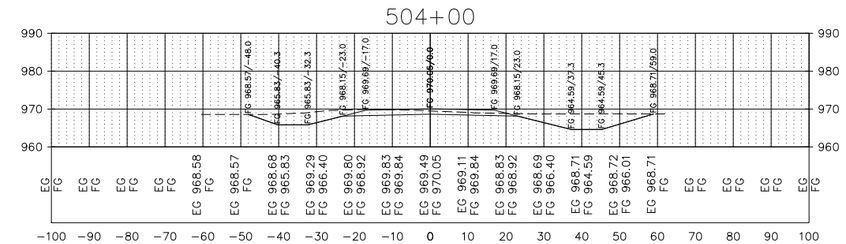


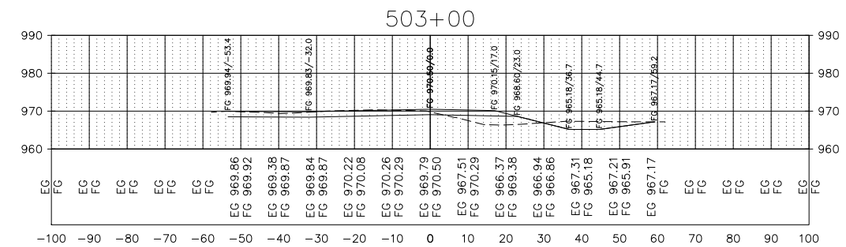


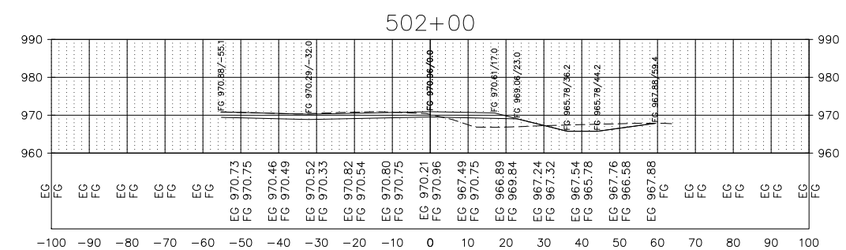


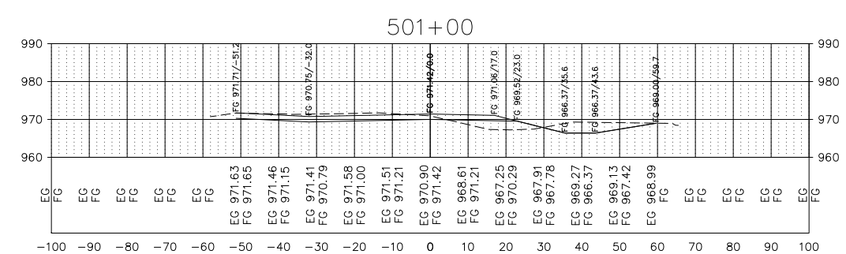




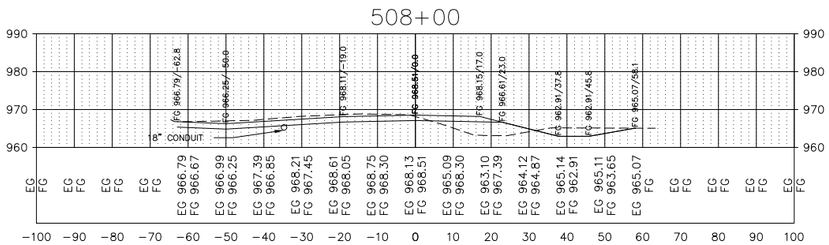


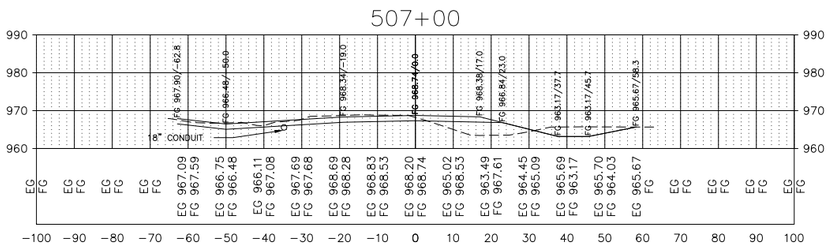


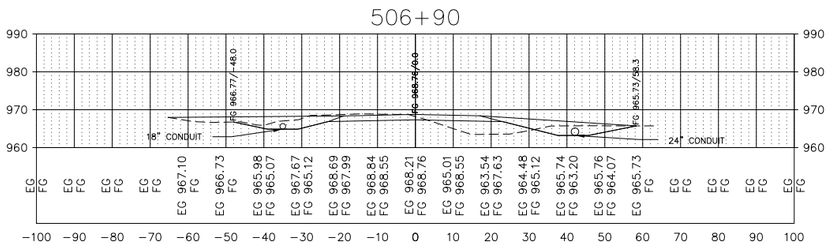


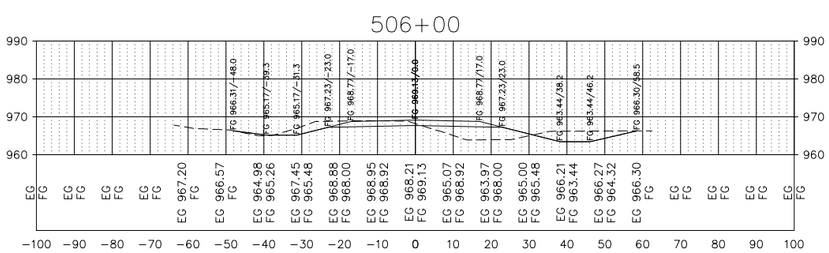


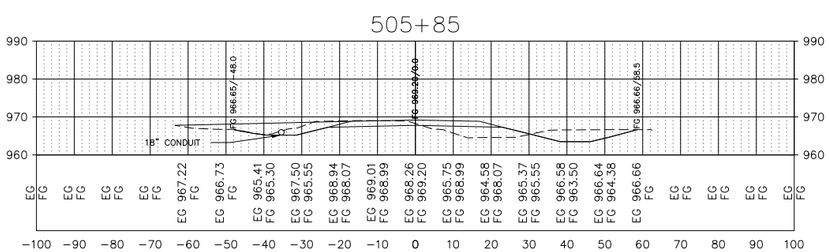
J:\Admin-Eng\Projects\C6 Overlay - Cass 38 to C5\Chaffee Corridor Offset Align.dwg-Cass Cross Sections (2)-3/3/2015 9:18 AM-filitchyk)

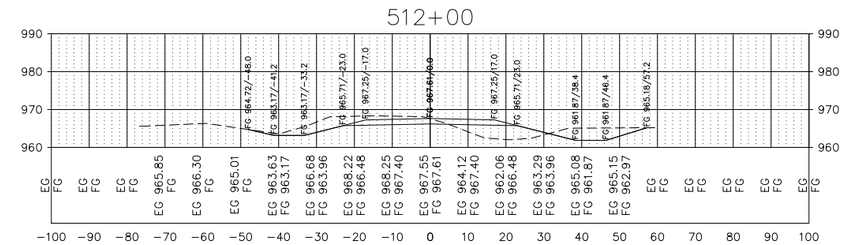


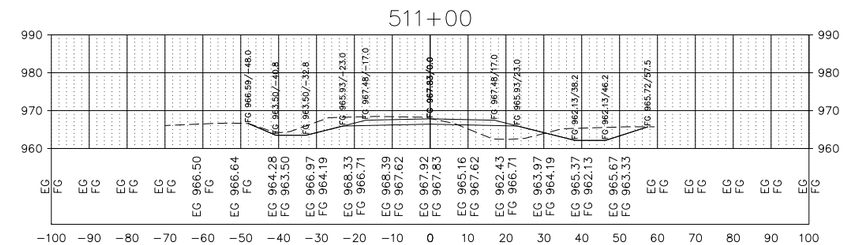


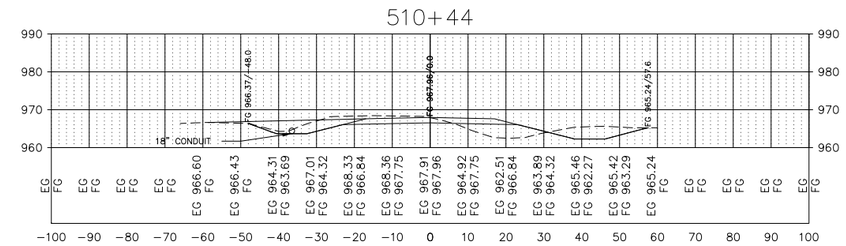


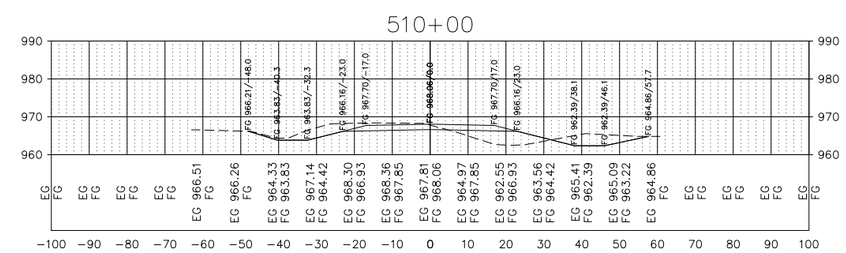


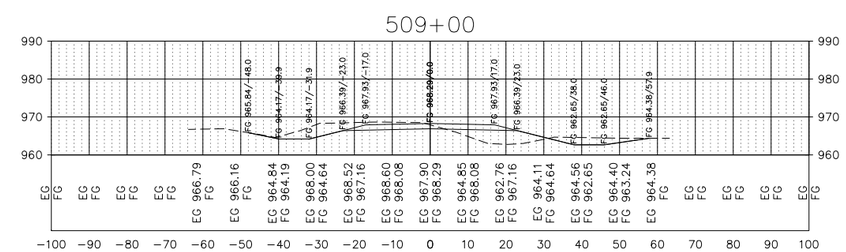




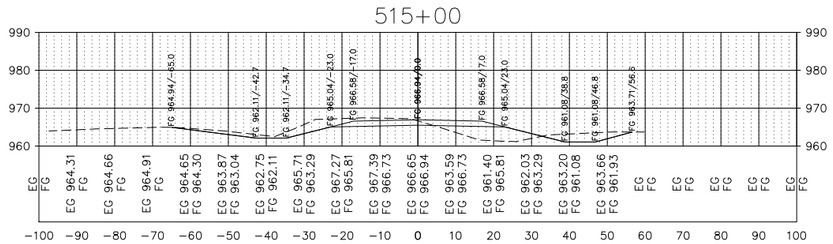


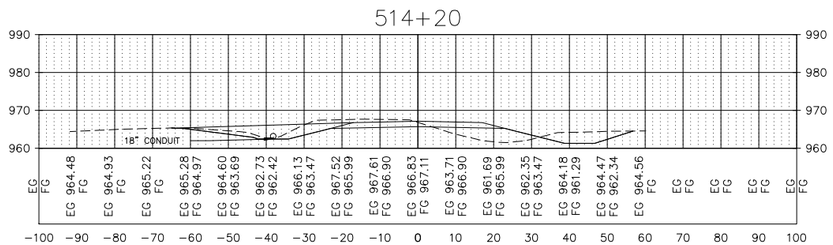


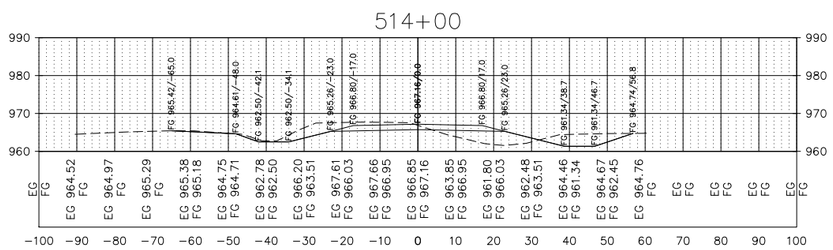


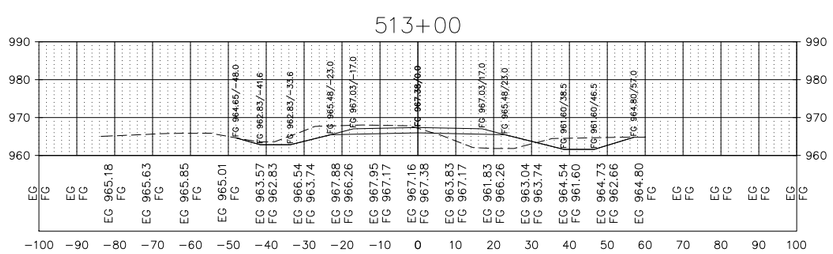


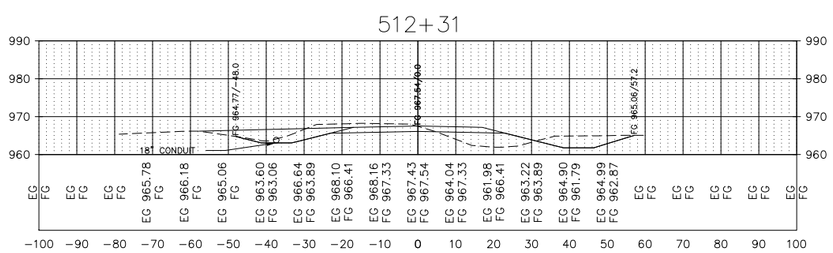
J:\Admin-Eng\Projects\C6 Overlay - Cass 38 to C5\Chaffee Corridor Offset Align.dwg-Cass Cross Sections (3)-3/3/2015 9:18 AM-(litchyk)

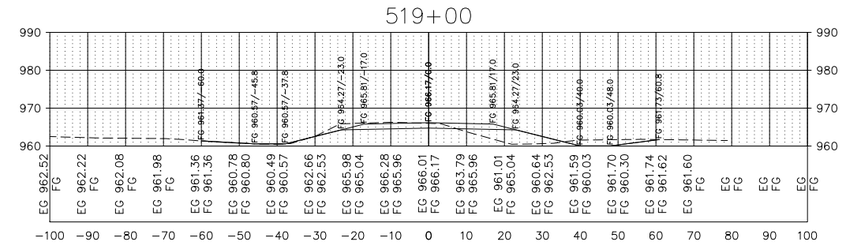


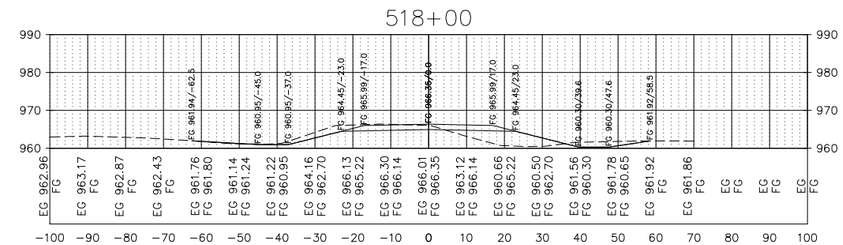


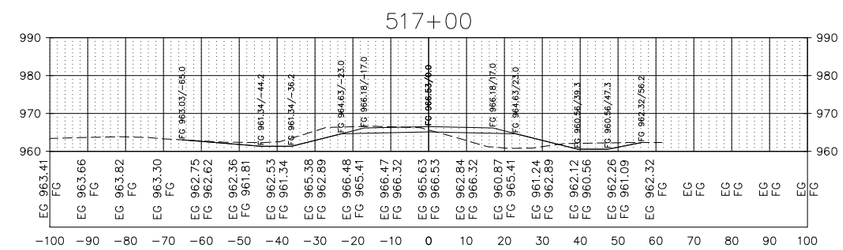


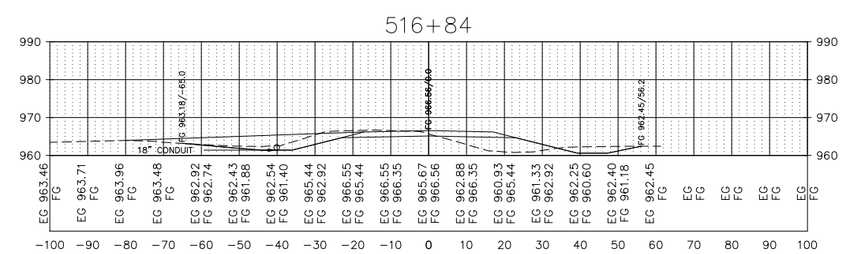


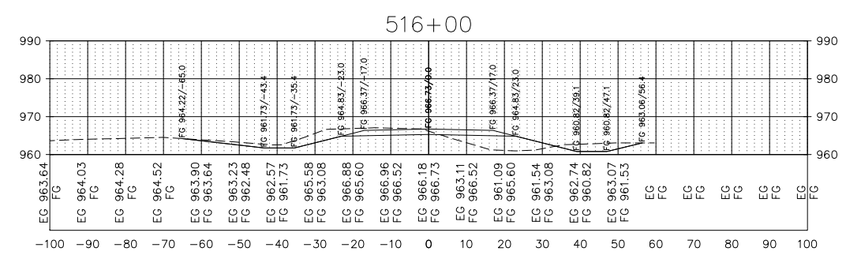




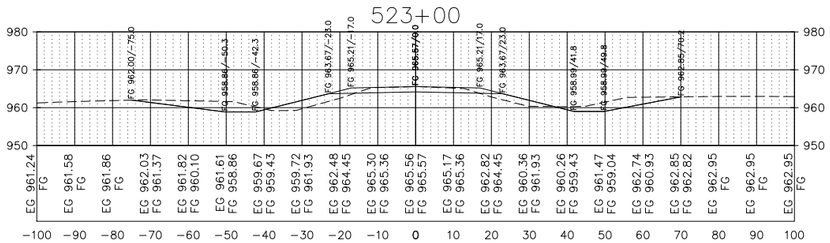


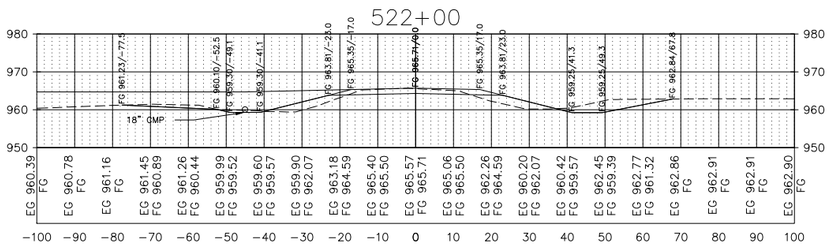


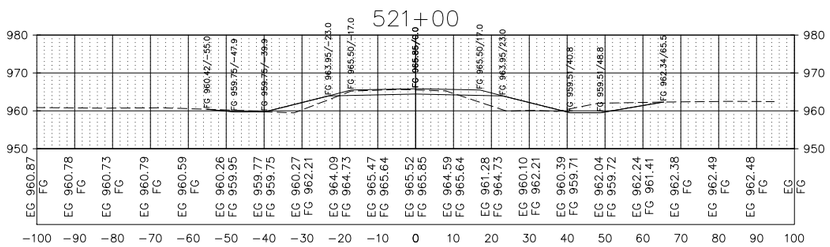


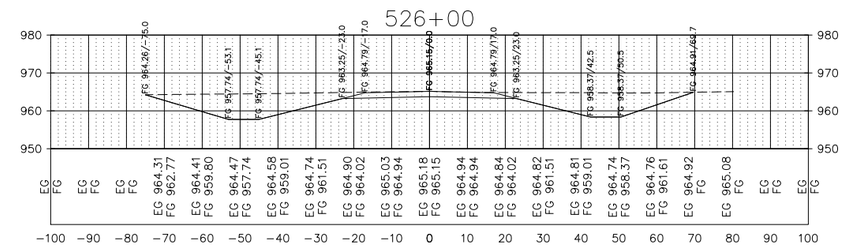


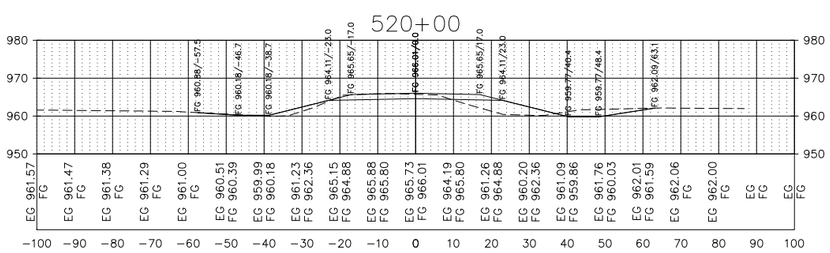
J:\Admin-Eng\Projects\C6 Overlay - Cass 38 to C5\Chaffee Corridor Offset Align.dwg-Cass Cross Sections (4)-3/3/2015 9:18 AM-(litchyk)

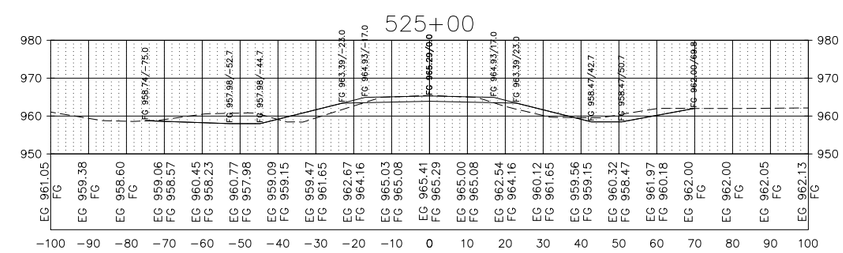


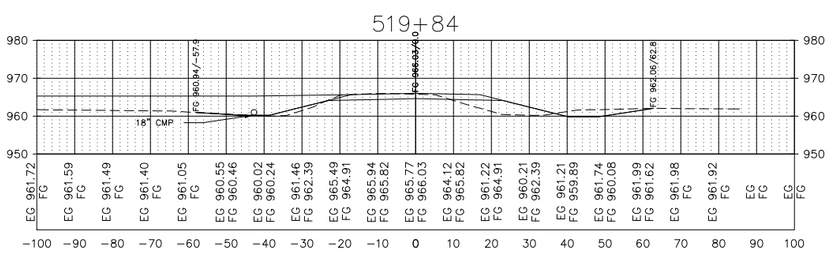


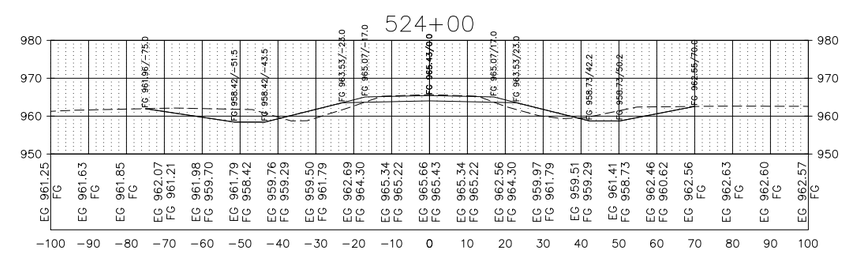












J:\Admin-Eng\Projects\C6 Overlay - Cass 38 to CS\Chaffee Corridor Offset Align.dwg-Cass Cross Sections (5)-3/3/2015 9:19 AM-(litchyk)