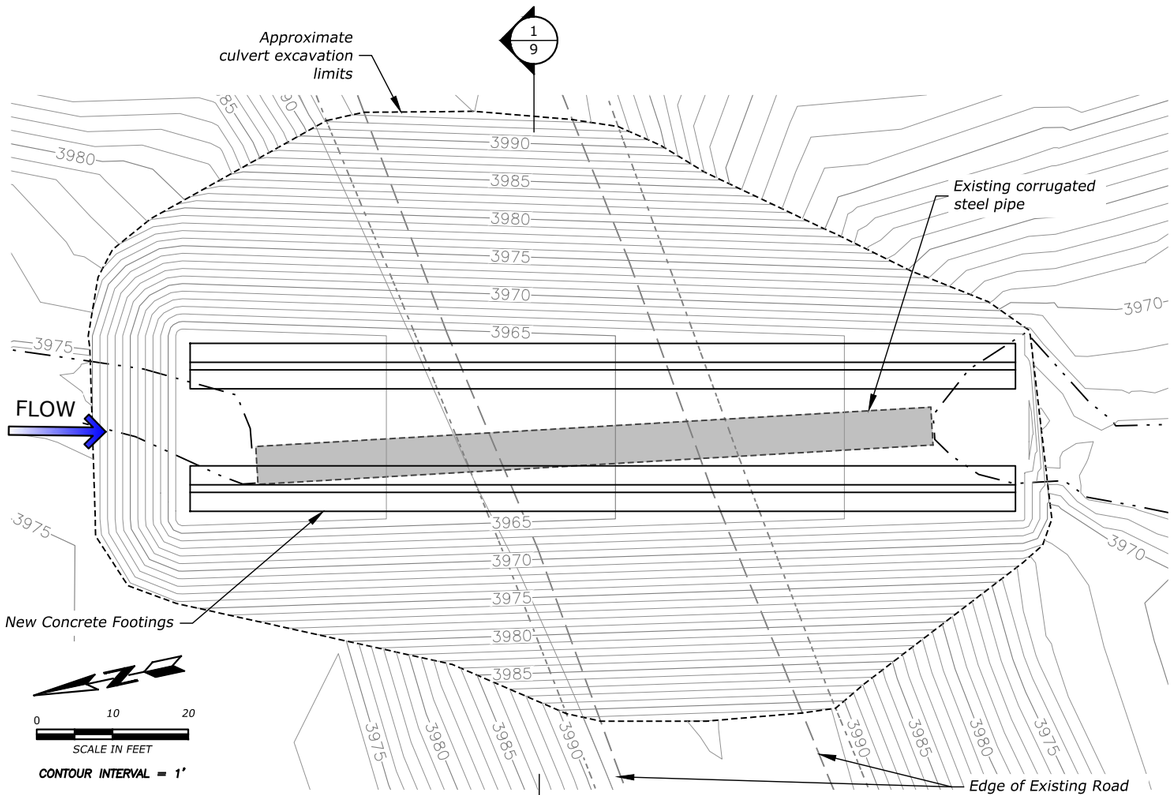
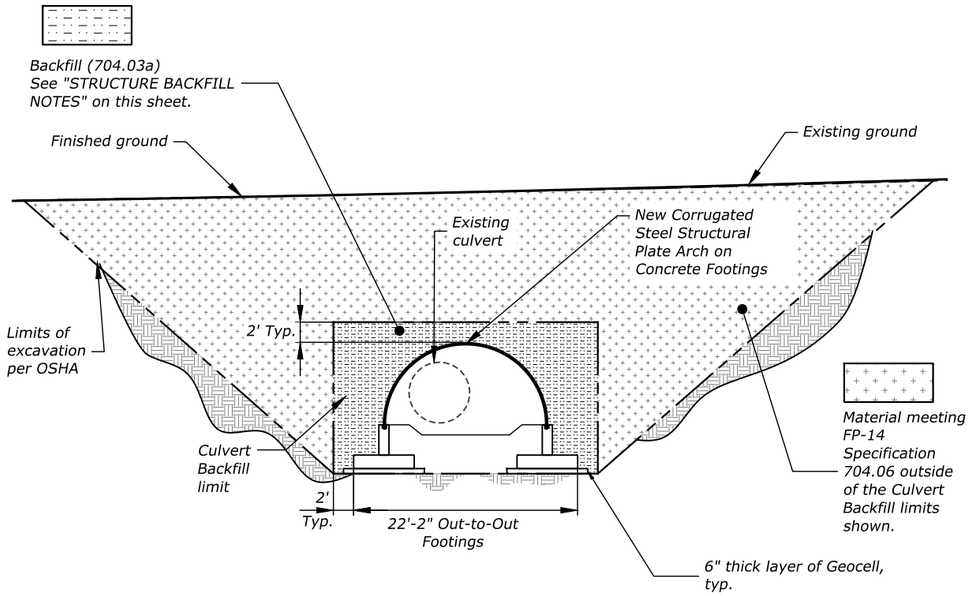


PLAN

1/9



1/7 STRUCTURAL EXCAVATION & BACKFILL SECTION

NOT TO SCALE

DEWATERING AND SOIL EROSION CONTROL NOTES:

1. Protect against soil erosion and sedimentation during construction in accordance with FP-14 Section 157, the project permits. Prepare and submit a soil erosion and sediment control plan to the CO for approval.
2. Dewater the excavation in accordance with FP-14 Sections 208 and 157 and the requirements on sheet 13.
3. Contractor should anticipate water infiltrating the excavations.
4. Culvert excavation, riprap, and backfill are to be completed in accordance with the Contract Specifications. Standing or running water in the work area does not relieve the contractor from meeting the specifications.
5. Dewatering is the sole responsibility of the contractor. Develop and submit to the CO a project-specific dewatering and sediment control plan with the excavation plan for approval. Sheet 13 illustrates the general dewatering requirements and possible methods and equipment and is not considered adequate or complete for this project. Develop and submit a project-specific dewatering plan including drawings and a written outline illustrating and describing proposed layout, methods, and equipment. See sheet 13 for dewatering flows during construction. Approval of the contractor's dewatering plan does not relieve the contractor from completing the work as required. If the contractor's methods are not producing adequate results, the contractor must re-evaluate and submit another dewatering plan. Re-submittal of the dewatering plan, if required, is incidental to the work.

STRUCTURE EXCAVATION NOTES:

1. Complete structure excavation in accordance with FP-14 Section 209.
2. The contractor is solely responsible for excavation support and compliance with all applicable OSHA regulations.
3. Notify the CO immediately if bedrock or soft, unsuitable soils are encountered.

STRUCTURE BACKFILL NOTES:

1. Backfill limits shown here are the minimum requirements. Place backfill in accordance with FP-14 Section 209, and as shown on these Plans, with material meeting the requirements of Subsection 704.03a. Compact backfill material in accordance with FP-14 FSSS Subsection 209.10, Compaction Method 2. Any material outside the Backfill limits shown is considered Road Embankment and the material must meet the requirements of FP-14 Subsection 704.06.
2. It is assumed that material conserved from the structure excavation at this site will meet the requirement for Backfill (704.03a) and Road Embankment (704.06). Some mixing and sorting may be required to meet the material specification. Haul and dispose unsuitable and excess material to the designated waste site. Haul and disposal of unsuitable and excess material is incidental.

United States Department of Agriculture
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REGION 1
NORTHERN REGION

PROJECT NAME

MCINERNIE CREEK AOP

NFSR 38 - MP 22.681

FLATHEAD NATIONAL FOREST

HUNGRY HORSE RANGER DISTRICT

DRAWING TITLE

STRUCTURE EXCAVATION & BACKFILL

DATE
Feb-22

ARCHIVE NO.

DESIGNER
J. NEIBERGS

DRAWN
J. NEIBERGS

CHECKED
B. KAMRUD

PROJECT NO.
7241

DWG SHEET NO.
9

SHEET 9 OF 17

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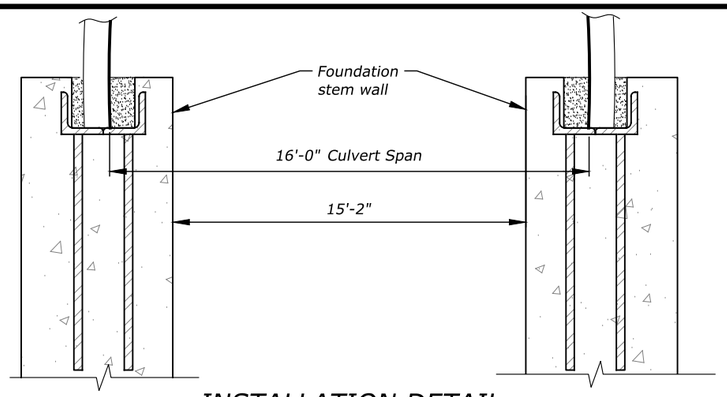
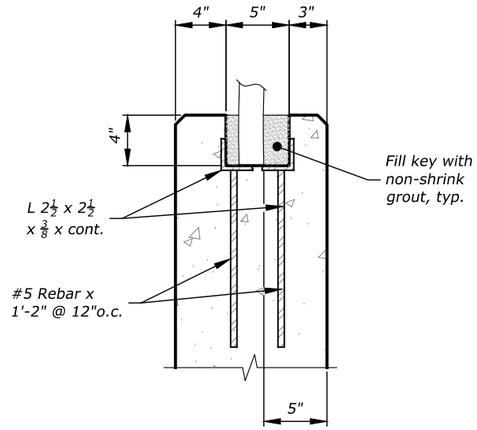


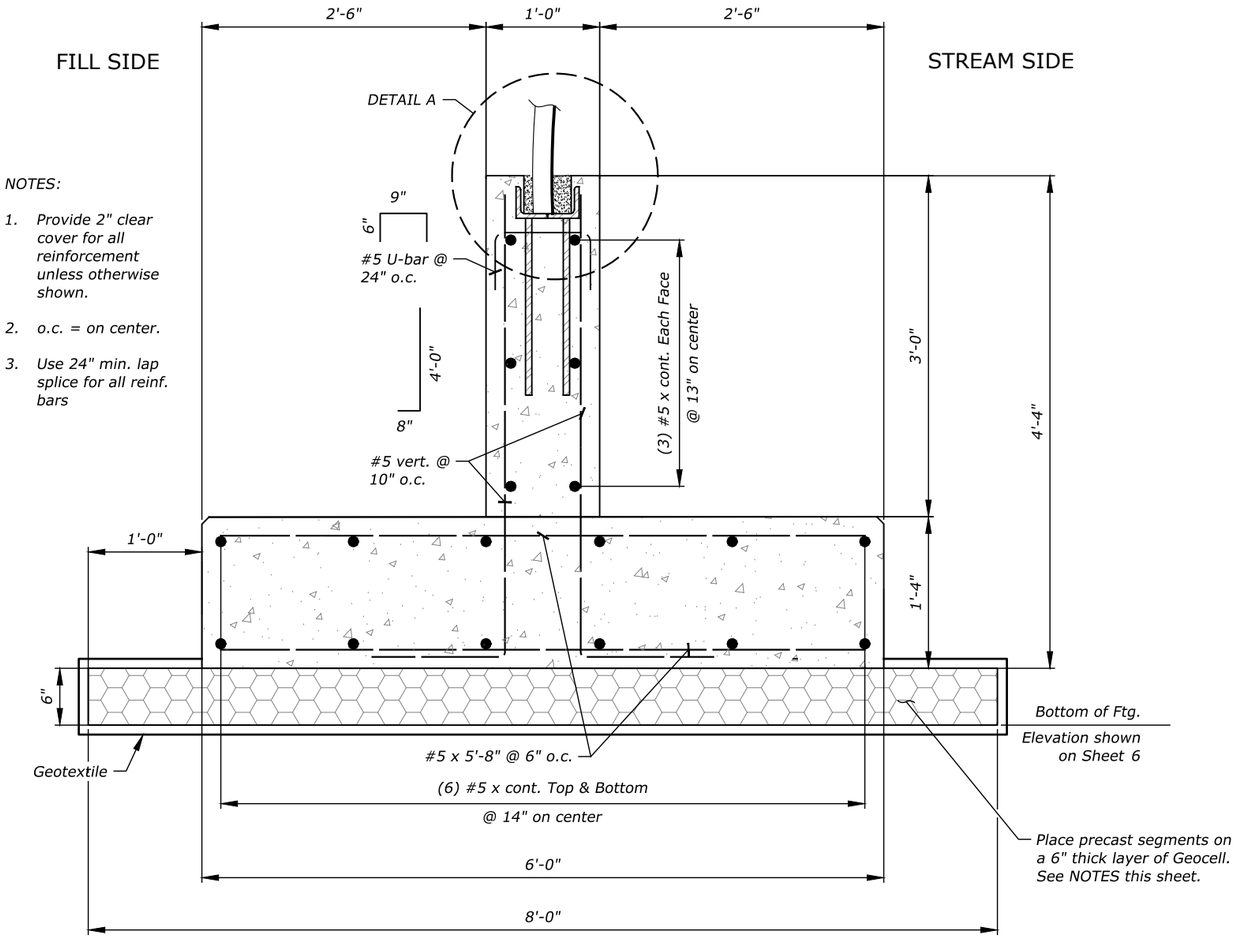
INSTALLATION DETAIL

Not to Scale



DETAIL A

Not to Scale



FOOTING DETAIL

Scale: 3/4" = 1'-0"

NOTES:

1. *Provide 2" clear cover for all reinforcement unless otherwise shown.*
2. *o.c. = on center.*
3. *Use 24" min. lap splice for all reinf. bars*

FOUNDATION NOTES

1. *A foundation investigation was NOT conducted at this site. Soils were assumed to be a Very Dense Gravel, Boulder-Gravel Mixture. Notify the CO immediately if bedrock, silts, or very soft clay soils are encountered within the limits of the foundations shown in these PLANS. In no case should the footing be placed directly on large boulders, random outcroppings of bedrock, or soft soils without prior approval.*
2. *Prepare foundation in accordance with Section 208 of the Specifications. Foundation must be approved in writing by the CO prior to placing the geocell.*

INFORMATIONAL QUANTITIES

ITEM DESCRIPTION	UNIT	QUANTITY
STRUCTURAL CONCRETE, CLASS A(AE)	Cubic Yard	88.8
REINFORCING STEEL	Pounds	14,230

Informational Quantities shown above are for the precast culvert footing and considered incidental to Item 55217.

GEOCELL NOTES:

1. *Place Geocell on undisturbed subgrade.*
2. *Install Geocell in accordance with Forest Service Supplemental Specifications (FSSS) 272.06, holding lines and grades in place with suitable side forms (i.e. "stretcher frames" or steel stakes) to ensure cells are expanded to the minimum dimension required by the manufacturer.*
3. *Backfill Geocell with coarse granular backfill per FSSS Subsection 703.03(c).*
4. *Place Class 1, Type A Separation Geotextile under Geocell and wrap over top after backfilling (incidental to Item 27201).*
5. *Extend Geocell 1' minimum beyond limits of footing on all sides.*

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REGION 1
NORTHERN REGION

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MCINERNIE CREEK AOP

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FLATHEAD NATIONAL FOREST

HUNGRY HORSE RANGER DISTRICT

DRAWING TITLE

FOOTING DETAILS

DATE
Feb-22

ARCHIVE NO.

DESIGNER
J. NEIBERGS

DRAWN
J. NEIBERGS

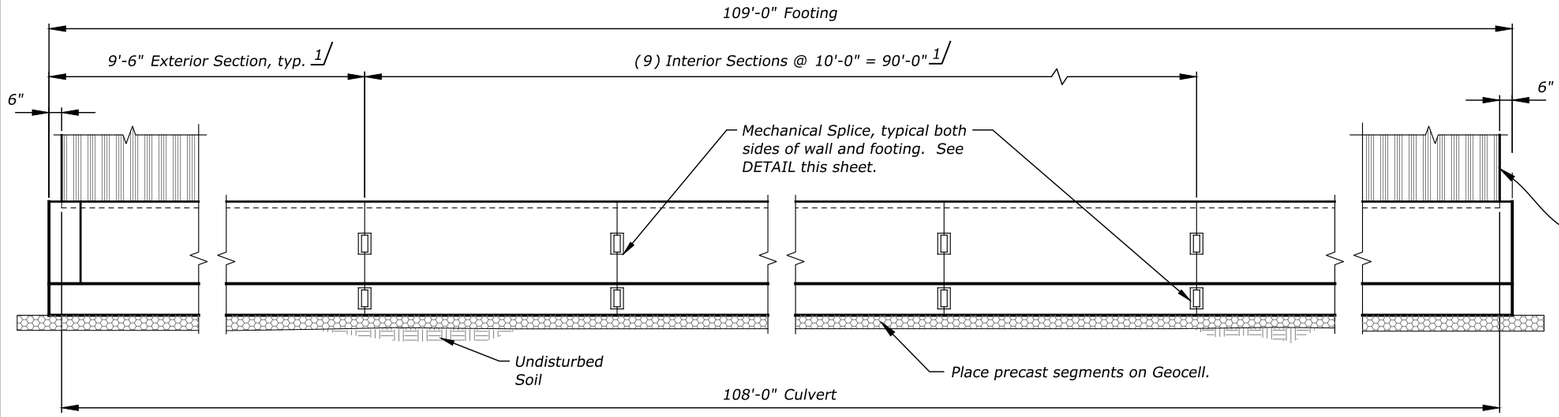
CHECKED
B. KAMRUD

PROJECT NO.
7241

DWG SHEET NO.
10

SHEET 10 OF 17

3/2/22 07:22 BRETT F:\7241 MCINERNIE AOP SCOPING\DRAWINGS\DWG\CIVIL\2 DESIGN\7241 MCINERNIE_CULVERT - DESIGN.DWG;



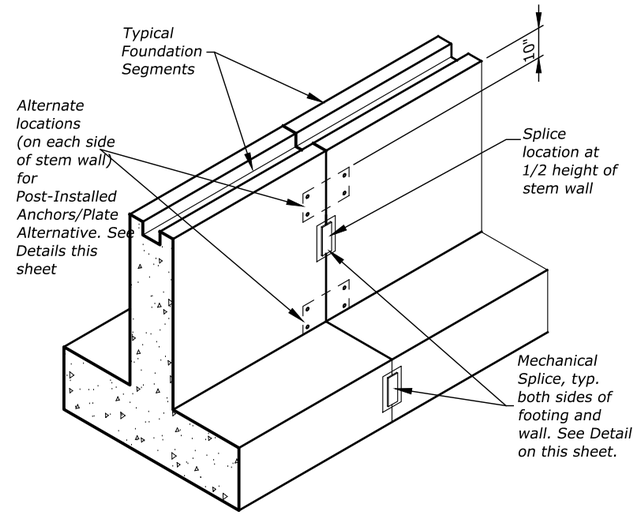
PRECAST FOUNDATION ELEVATION

Not to Scale

1/ Contractor may adjust precast segment lengths shown depending upon setting equipments capabilities. Footing weight is approximately 1800 lb/ft.

Prior to fabricating precast footings submit for approval shop drawings detailing segment lengths, splice connections, proposed concrete mix design, pick locations, and selected connection for culvert.

Other precast/prefabricated footing options that meet size, strength and functionality of concrete footings shown may be submitted for review and approval.



TYPICAL PRECAST SEGMENT

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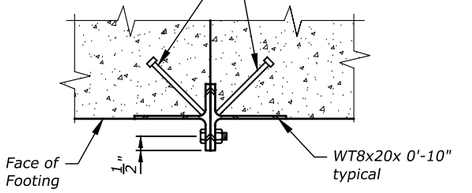
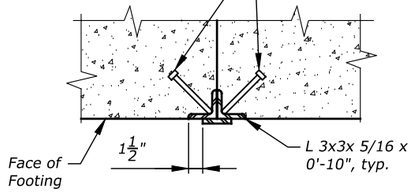
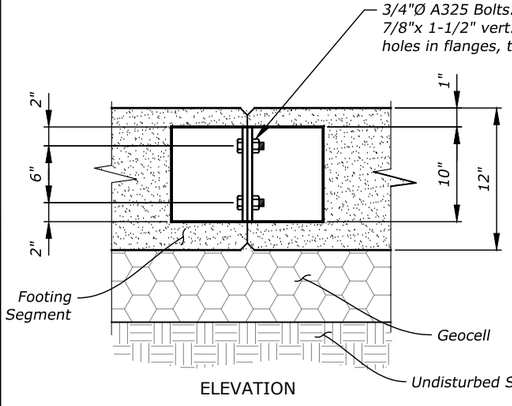


PLAN SECTION

Footing splice shown wall splice similar.

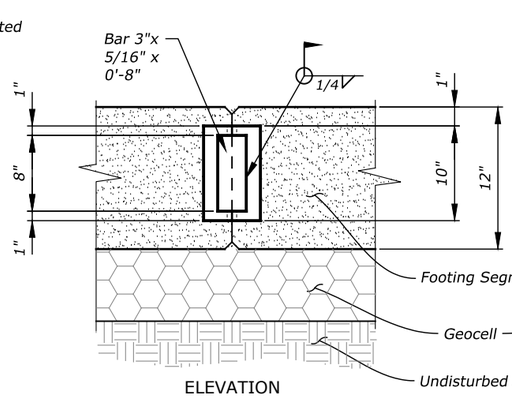


PLAN SECTION



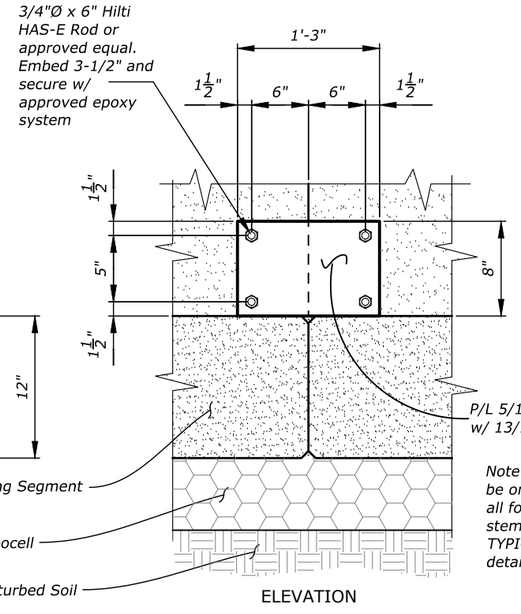
ELEVATION

BOLTED ALTERNATE



ELEVATION

WELDED ALTERNATE



ELEVATION

POST-INSTALLED ANCHORS ALTERNATE

Note: Post-Installed Plates may be omitted from the footing and all four may be installed on the stem wall as shown on the TYPICAL PRECAST SEGMENT detail on this sheet.

MECHANICAL SPLICE DETAIL

Not to Scale

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REGION 1
NORTHERN REGION

PROJECT NAME

MCINERNIE CREEK AOP

NFSR 38 - MP 22.681

FLATHEAD NATIONAL FOREST

HUNGRY HORSE RANGER DISTRICT

DRAWING TITLE

PRECAST DETAILS

DATE
Feb-22

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DESIGNER
J. NEIBERGS

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11

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J. NEIBERGS

CHECKED
B. KAMRUD

PROJECT NO.
7241

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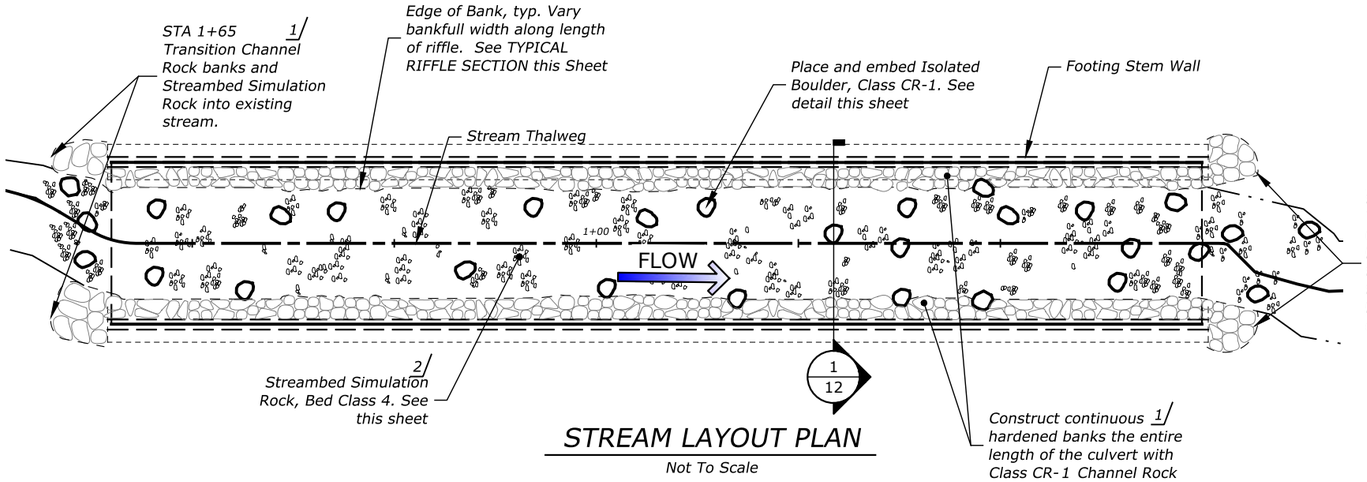
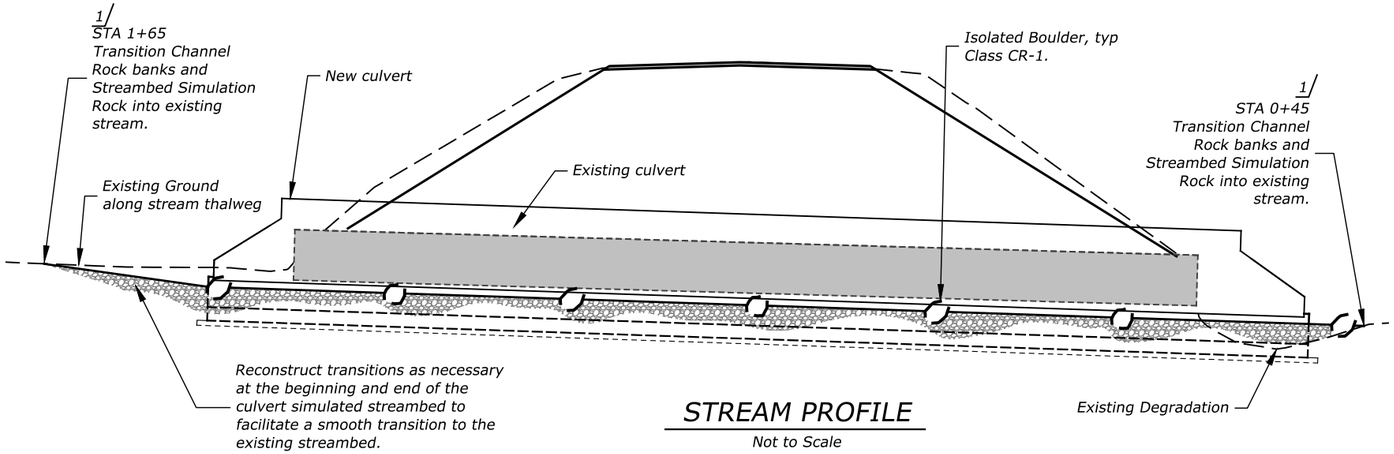


STREAM LAYOUT PLAN

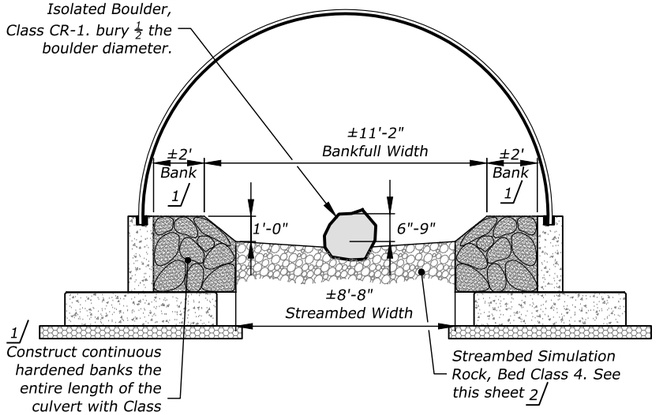
Not To Scale

PHOTO SHOWS EXAMPLE OF RIFFLE SEGMENT WITH BOULDERS AND STREAMBED TO BE PLACED IN CULVERT.



STREAM PROFILE

Not to Scale



1/12 TYPICAL RIFFLE SECTION

Not To Scale

FOOTNOTES:

1/ *Inter-mix streambed material as directed by CO during placement of Channel Rock Bank to seal voids throughout the section.*

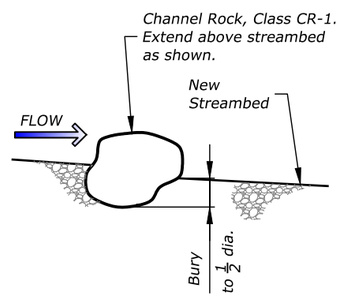
2/ *The final channel bottom should be a dense, well interlocked streambed with low permeability. Compact each layer and fill surface voids by washing in fine material. Use water pressure, tamping rods, and similar hand operated equipment to force fine material into all surface voids.*

Native material meeting the gradation for the specified Bed Class, and Channel Rock may be salvaged and incorporated into the simulated streambed, channel banks, and isolated boulders.

Bed Class 4 STREAMBED SIMULATION ROCK

FIELD MIX GUIDE

PROPORTIONS	*CLASS 4*
1 UNITS	10" - 4"
2 UNITS	4" - 1-3/4"
2 UNITS	1-3/4" - 1/2"
1 UNITS	1/2" - No. 10 (FINES)
1/2 UNITS	No. 10 (FINES)



RANDOM ROCK DETAIL

Not to Scale

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REGION 1
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PROJECT NAME

MCINERNIE CREEK AOP

NFSR 38 - MP 22.681

FLATHEAD NATIONAL FOREST

HUNGRY HORSE RANGER DISTRICT

DRAWING TITLE

STREAM SIMULATION DETAILS

DATE
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DESIGNER	DWG SHEET NO.
J. NEIBERGS	12
DRAWN: J. NEIBERGS	
CHECKED: B. KAMRUD	
PROJECT NO.: 7241	SHEET 12 OF 17

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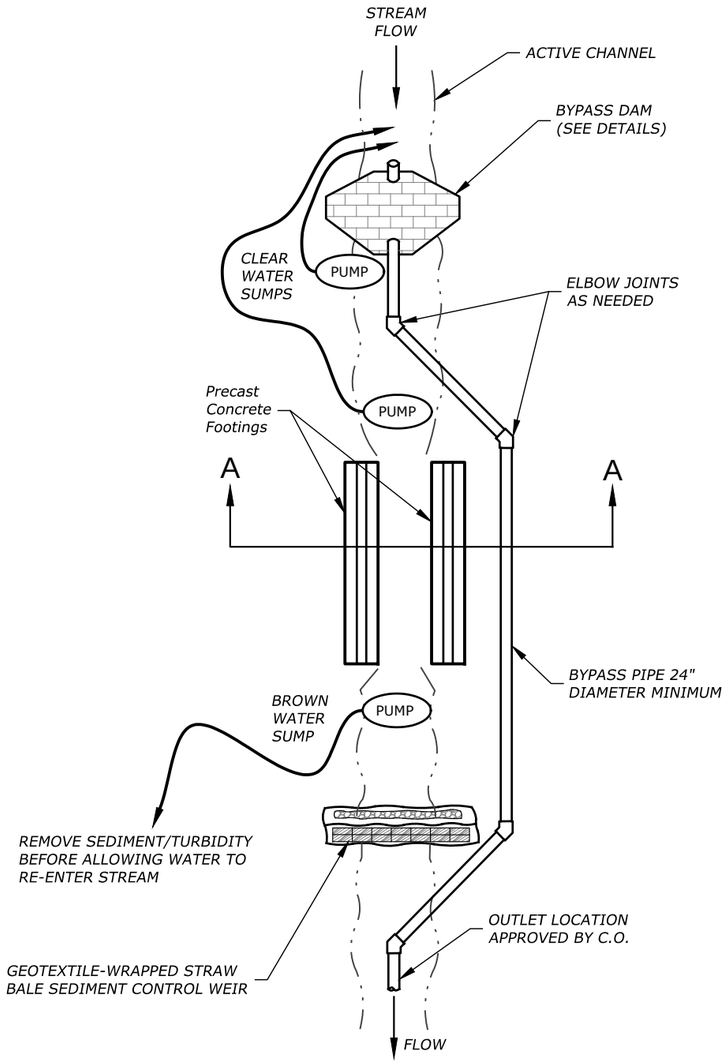
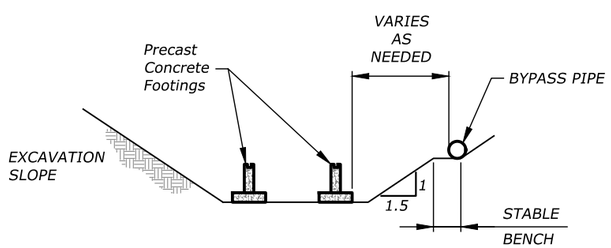
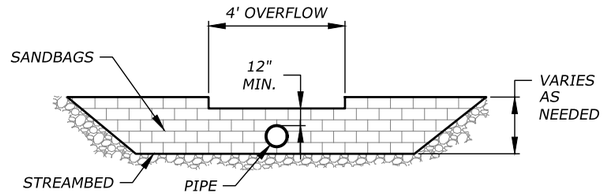


BYPASS TYPICAL PLAN VIEW

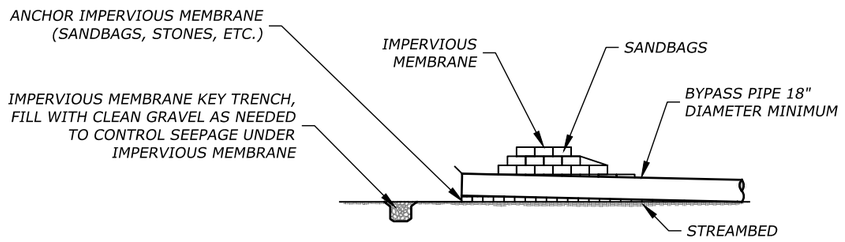
(NOT TO SCALE)



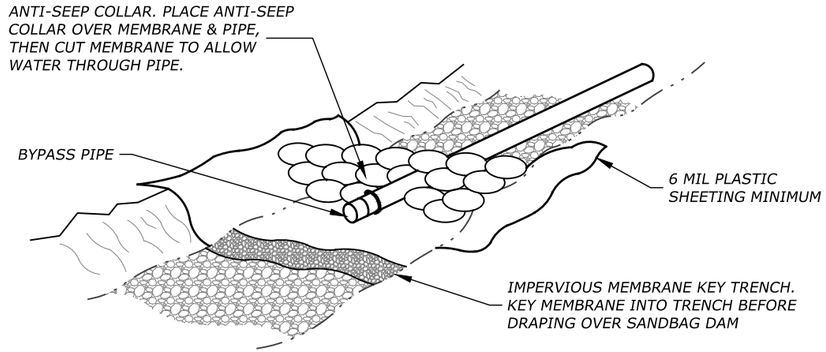
TYPICAL SECTION A-A



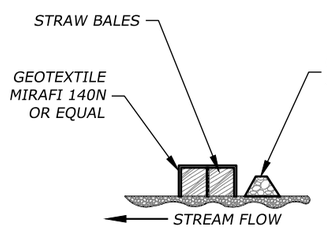
BYPASS DAM ELEVATION VIEW



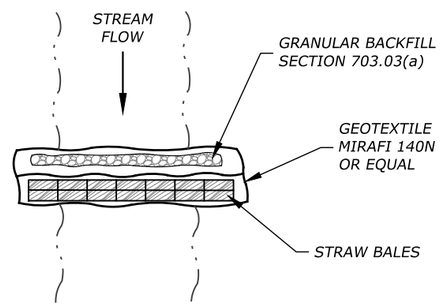
BYPASS DAM PROFILE VIEW



SANDBAG BYPASS DAM DETAILS



SECTION VIEW



PLAN VIEW

GEOTEXTILE-WRAPPED STRAW BALE SEDIMENT CONTROL WEIR

NOTES:

1. *Dewater excavations in accordance with FP-14 Sections 208, 209 and 157, as applicable, and the requirements shown. Protect against soil erosion and sedimentation during construction in accordance with FP-14 Section 157 and the project permits.*
2. *Dewatering is the sole responsibility of the Contractor. Develop and submit to the CO a project-specific Dewatering Plan with the Excavation Plan for approval. At a minimum, the Dewatering Plan must include drawings and a written outline illustrating and describing proposed layout, methods, equipment and anticipated stream flow volume. Approval of the Contractor's Dewatering Plan does not relieve the Contractor from completing the work as required. If the Contractor's methods are not producing adequate results, the Contractor must stop work immediately, re-evaluate, and submit a revised Dewatering Plan. Do not proceed with work until the revised Dewatering Plan is approved by the CO. Re-submittal of the Dewatering Plan, if required, is incidental to the work.*
3. *This sheet illustrates the general dewatering requirements and possible methods and equipment and is not considered adequate or complete for this project.*
4. *Contractor is responsible for sizing all pumps, dams, bypass pipe, open channels, and any other means proposed to divert the stream flow.*
5. *All work in the vicinity of the stream is to be completed in accordance with the contract specifications. Standing or running water in the work area does not relieve the Contractor from meeting the specifications.*
6. *Wash the newly construction channel prior to re-watering. This includes hosing the new channel and pumping the turbid wash water onto either vegetated ground or a settling basin in accordance with the approved Dewatering Plan. Return the stream flow to the newly constructed channel slowly and in a manner to minimize sedimentation.*

NOT FOR CONSTRUCTION

Contractor Submittal & Approval by CO Required According to FSSS 157

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REGION 1
NORTHERN REGION

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MCINERNIE CREEK AOP

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FLATHEAD NATIONAL FOREST

HUNGRY HORSE RANGER DISTRICT

DRAWING TITLE

DEWATERING REQUIREMENTS

DATE: Feb-22	
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CHECKED: B. KAMRUD	SHEET 13 OF 17
PROJECT NO.: 7241	

FLATHEAD NATIONAL FOREST

MCINERNIE CREEK AOP - NSFR 38 MP 22.681

Road Cross Sections

Prepared By : DJ&A ENGINEERS PLANNERS SURVEYORS

Sheet XS1 OF XS4

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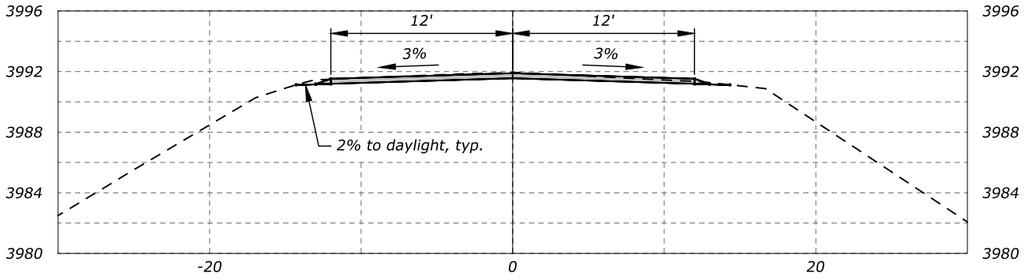

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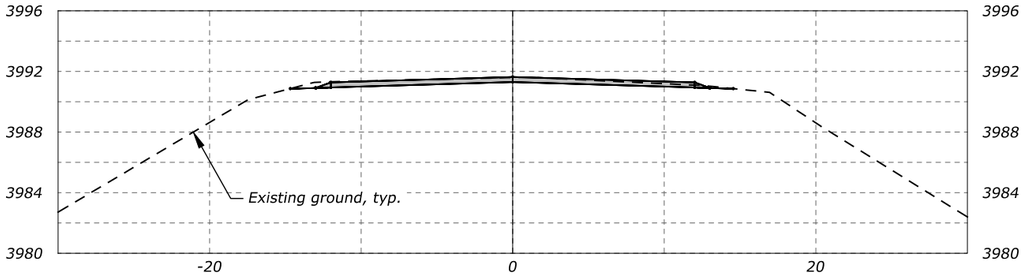

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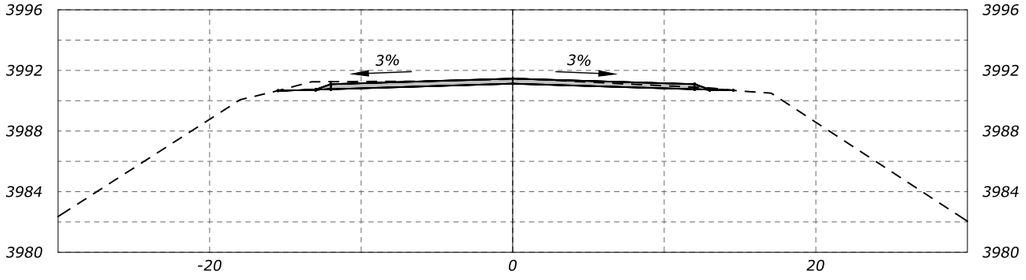

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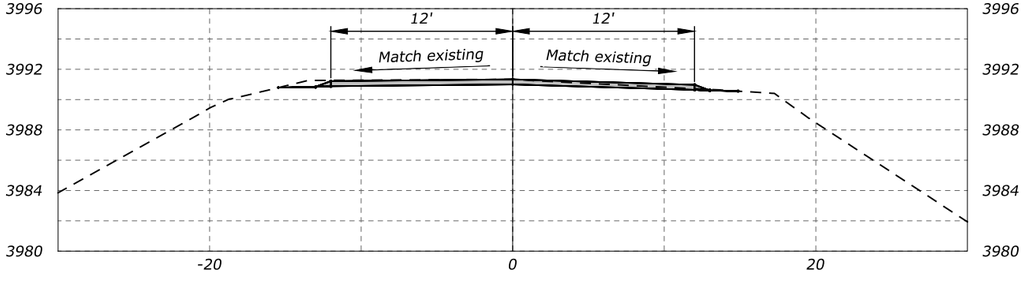

FLATHEAD NATIONAL FOREST
MCINERNIE CREEK AOP - NSFR 38 MP 22.681
Road Cross Sections

Prepared By : DJ&A ENGINEERS PLANNERS SURVEYORS

Sheet XS2 OF XS4

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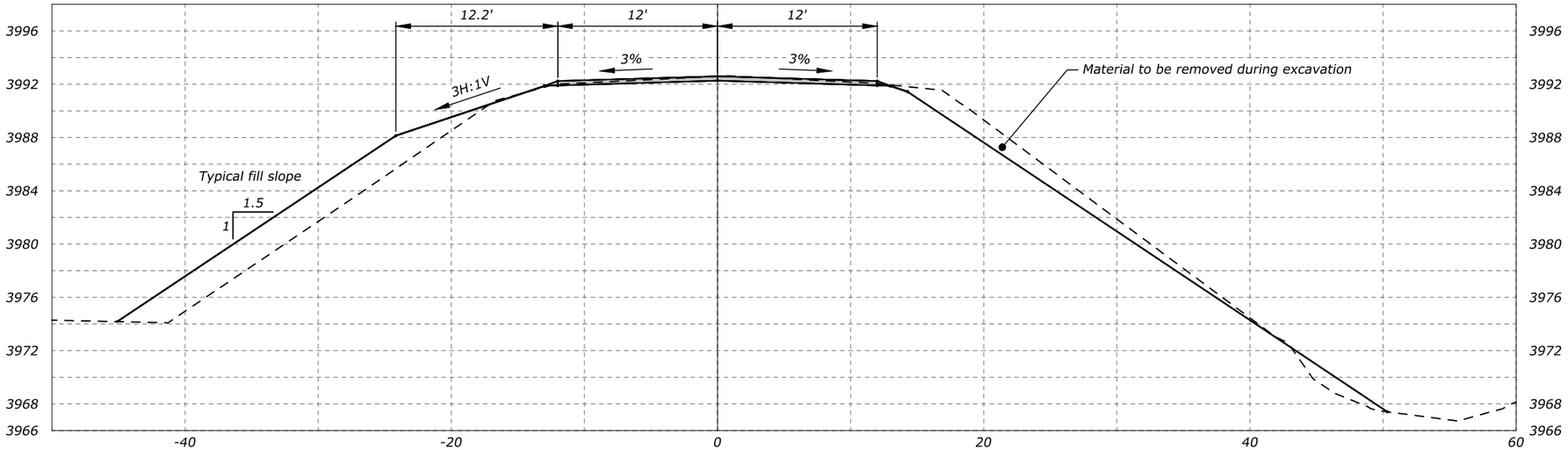

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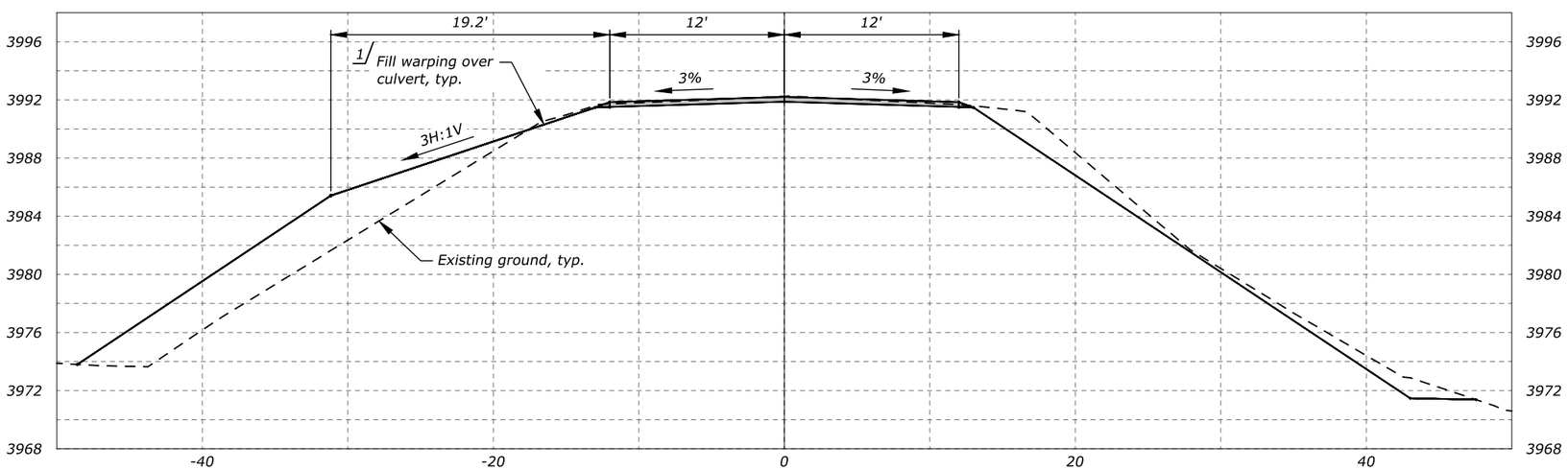

1/ See FILL WARPING DETAIL on Sheet 6.

FLATHEAD NATIONAL FOREST

MCINERNIE CREEK AOP - NSFR 38 MP 22.681

Road Cross Sections

Prepared By : DJ&A ENGINEERS PLANNERS SURVEYORS

Sheet XS3 OF XS4

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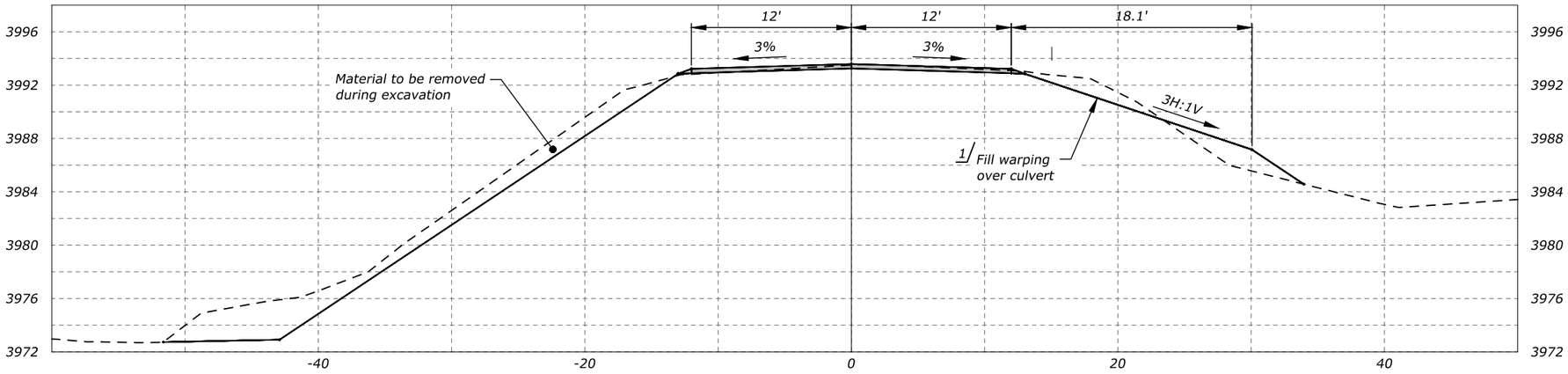

1/ See FILL WARPING DETAIL on Sheet 6.

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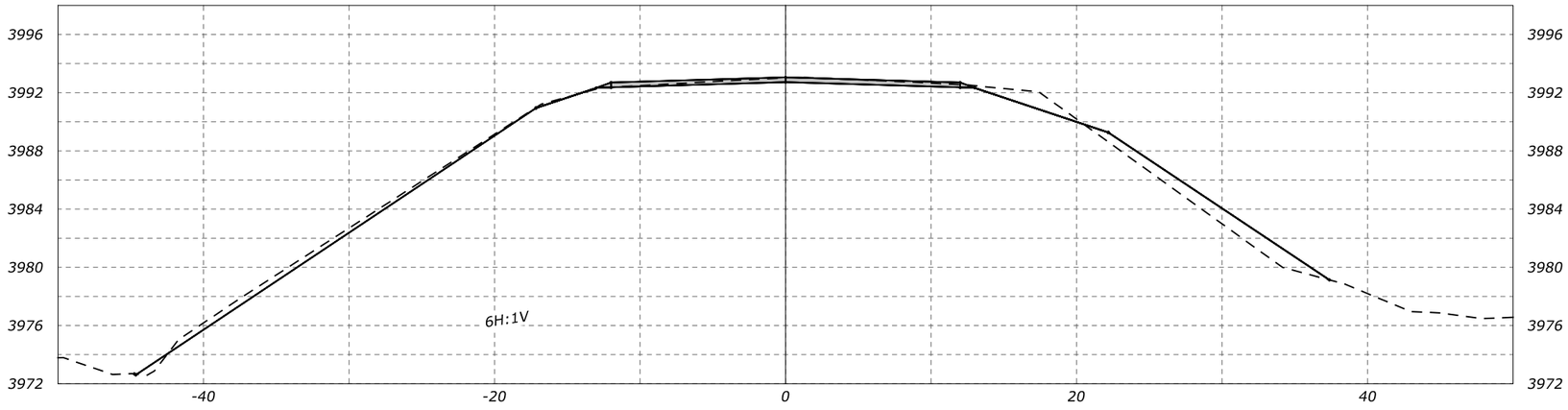

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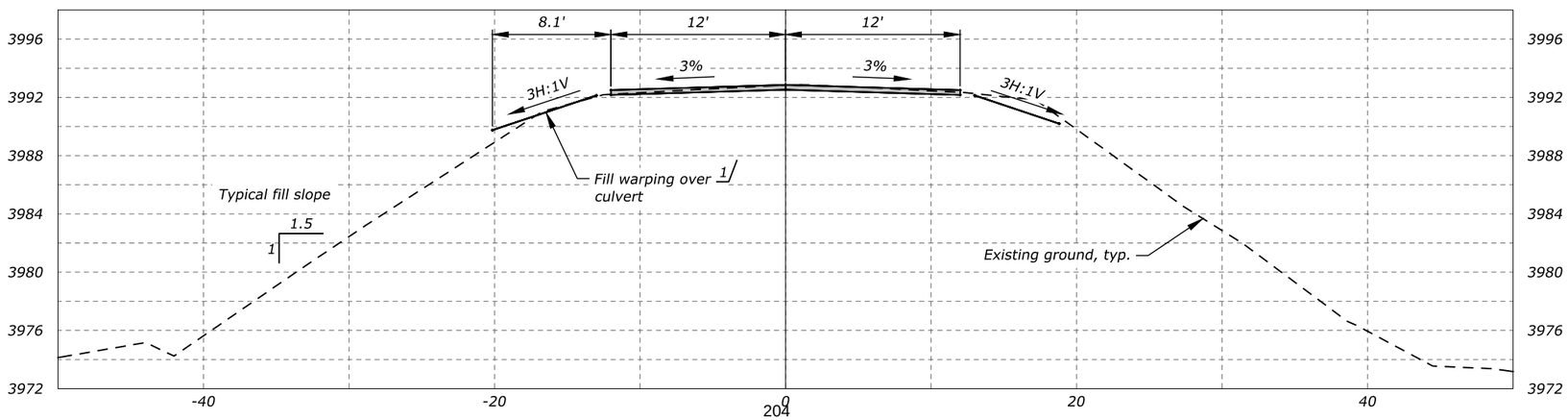

FLATHEAD NATIONAL FOREST

MCINERNIE CREEK AOP - NSFR 38 MP 22.681

Road Cross Sections

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Sheet XS4 OF XS4

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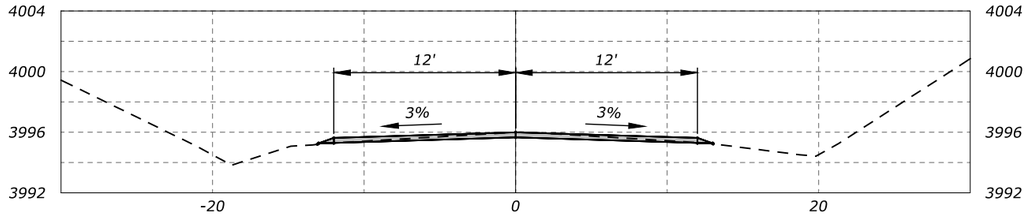

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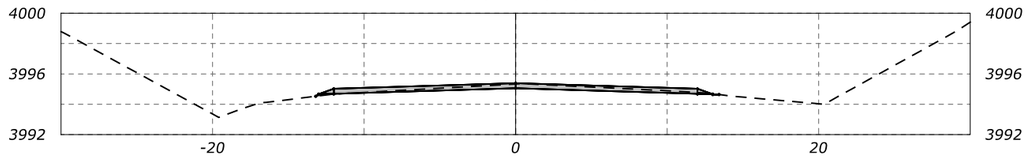

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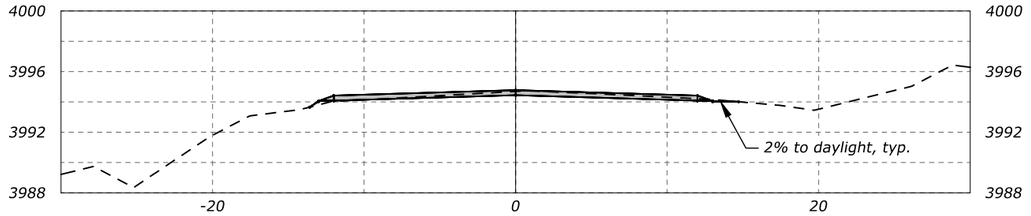

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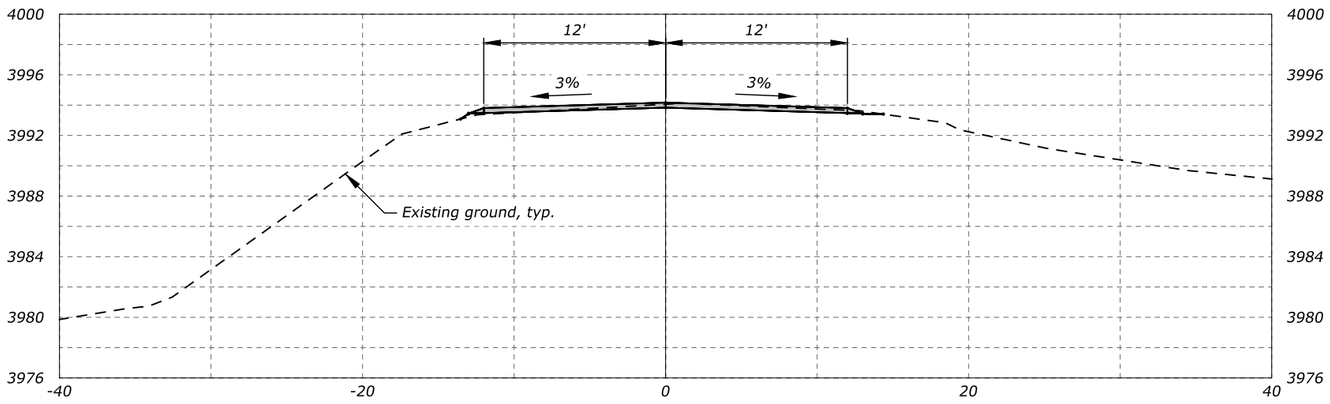

FLATHEAD NATIONAL FOREST
MCINERNIE CREEK AOP - NSFR 38 MP 22.681
Long Profile

Prepared By : DJ&A ENGINEERS PLANNERS SURVEYORS

Sheet 1 OF 1

SEGMENT	ELEVATION CHANGE (ft)	SEGMENT LENGTH (ft)	GRADIENT	% GRADIENT DIFFERENCE BETWEEN SUCCESSIVE SEGMENTS	% GRADIENT DIFFERENCE WITH DESIGN (S=3.4%)	MAXIMUM RESIDUAL POOL DEPTH (ft)
A	0.05	43.23	0.12%	N/A	103.40%	N/A
B (Reference)	- 2.08	54.35	- 3.83%	3408.86%	12.56%	0.5
C	- 0.05	36.01	- 0.14%	96.37%	95.92%	0.5
D	- 1.96	50.27	- 3.90%	2708.02%	14.67%	1.3
Culvert	- 7.64	223.01	- 3.43%	N/A	0.76%	N/A
E	- 1.24	28.43	- 4.36%	27.31%	28.28%	N/A
F	- 1.55	78.65	- 1.97%	54.82%	42.04%	0.5

LEGEND

- B — Segment
- △ — Grade Break Beginning/End Segment
- ▽ — Pool