



U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE, REGION 1

ROAD AND CULVERT PLANS FOR:

McINERNIE CREEK CULVERT REPLACEMENT

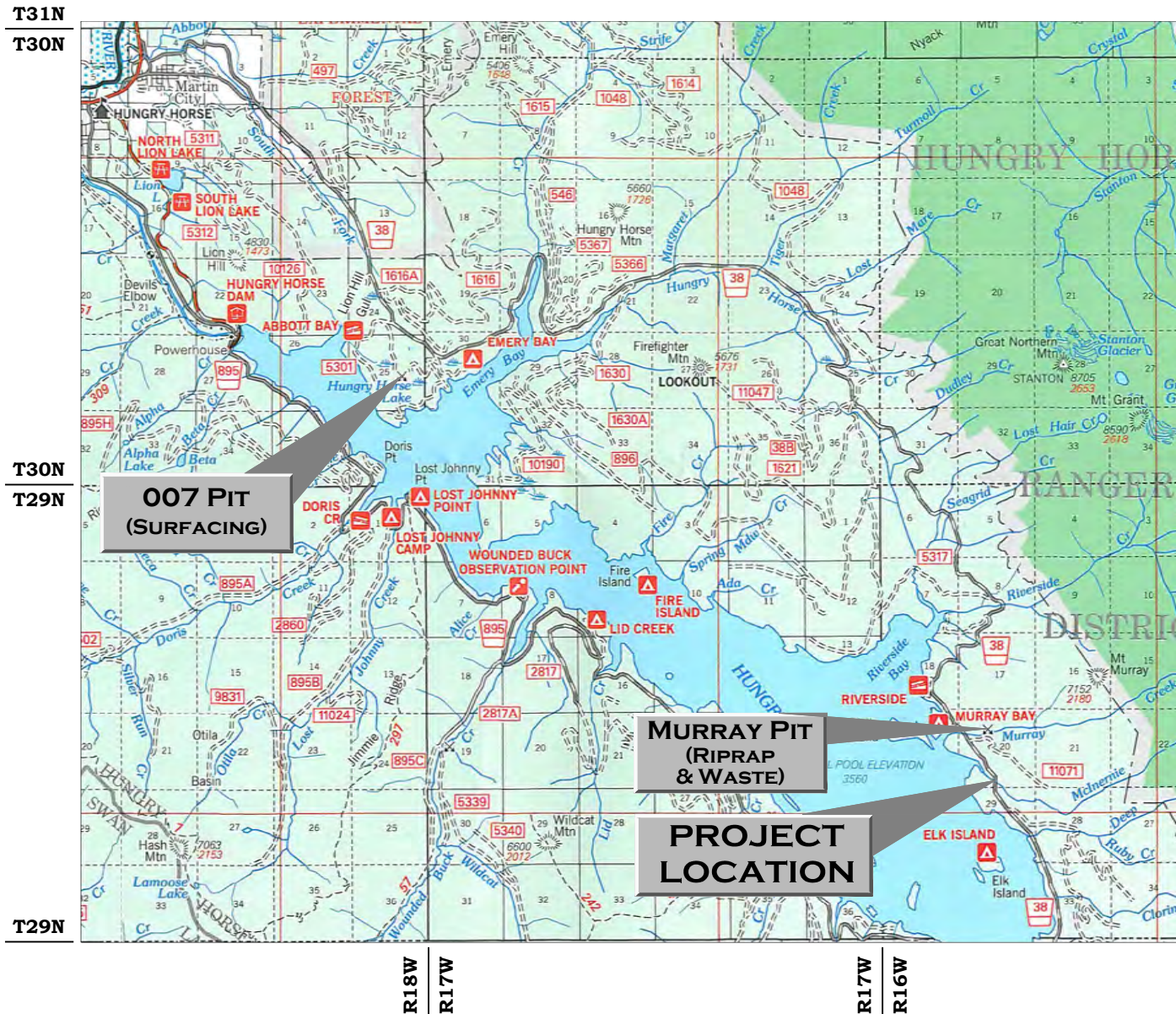
NFSR 38 MP 22.68

HUNGRY HORSE RANGER DISTRICT
FLATHEAD NATIONAL FOREST
FLATHEAD COUNTY, MONTANA



LOCATION MAP

INDEX TO SHEETS	
NO.	DESCRIPTION
1	TITLE SHEET
2	SCHEDULE OF QUANTITIES & GENERAL NOTES
3, 4, 5	HIP GUIDELINES
6	TYPICAL ROADWAY SECTION & POINT TABLES
7	ROAD PLAN & PROFILE
8	CULVERT GENERAL LAYOUT
9	STRUCTURE EXCAVATION & BACKFILL
10	FOOTING DETAILS
11	PRECAST DETAILS
12	STREAM SIMULATION DETAILS
13	DEWATERING REQUIREMENTS
XS1-XS4	ROAD CROSS SECTIONS



VICINITY MAP

RECOMMENDED BY:

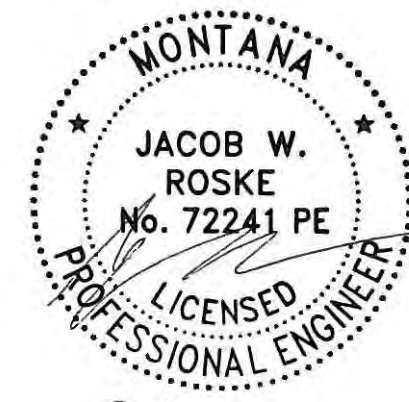
HUNGRY HORSE DISTRICT RANGER

DATE

APPROVED BY:

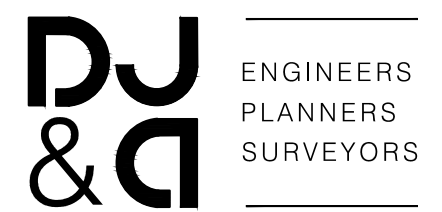
FLATHEAD ENGINEERING STAFF OFFICER

DATE



3/1/2022

- GOVERNMENT FURNISHED:
- CHANNEL ROCK (MURRAY PIT)
- SURFACING (007 PIT)
- RIPRAP (MURRAY PIT)
- CONTRACTOR FURNISHED:
- ALL OTHER MATERIALS



SCHEDULE OF QUANTITIES

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY		REMARKS
15101	MOBILIZATION	LUMP SUM	ALL		TRAFFIC CONTROL, FIRE PROTECTION, EQUIPMENT CLEANING, AND ANY MAINTENANCE OF EXISTING NFS ROADS FOR CONTRACTOR ACCESS IS INDIRECT TO THIS PAY ITEM
15713	SOIL EROSION & POLLUTION CONTROL	LUMP SUM	ALL		INCLUDES DEWATERING. SEE GENERAL NOTES
20301	REMOVAL OF EXISTING CORRUGATED STEEL PIPE, METHOD A	EACH	1		
20806	STRUCTURE EXCAVATION	LUMP SUM	ALL		
25101	PLACED RIPRAP, CLASS 4	CUBIC YARD	35	CQ	GOVERNMENT SOURCE. SOME SORTING EXPECTED
27201	GEOCELL FOUNDATION STABILIZATION, 6" DEPTH	SQUARE YARD	194	CQ	
30207	CRUSHED AGGREGATE, SURFACING, COMPACTION METHOD 1	CUBIC YARD	70	CQ	GOVERNMENT SOURCE.
55217	PRECAST CONCRETE MEMBER, CULVERT FOOTING	LINEAR FOOT	218		
60303	16'-0" SPAN X 8'-4" RISE STRUCTURAL PLATE ARCH, 0.138" THICKNESS	LINEAR FOOT	108		
62504	SEEDING, DRY METHOD, WITH MULCH	LUMP SUM	ALL		GOVERNMENT FURNISHED SEED
62904	EROSION CONTROL BLANKET, TYPE 4	SQUARE YARD	500	CQ	
64802	PLACED STREAMBED SIMULATION MATERIAL BED CLASS 4, METHOD A	CUBIC YARD	60	CQ	COMMERCIAL SOURCE. MATERIAL FROM THE EXCAVATION MEETING THE GRADATION FOR BED CLASS 4 MAY BE SALVAGED AND INCORPORATED INTO THE SIMULATED STREAMBED.
64804	PLACED STREAMBED CHANNEL ROCK FOR CULVERT BANKS, CLASS CR-1, METHOD A	CUBIC YARD	40	CQ	GOVERNMENT SOURCE. SOME SORTING WILL BE REQUIRED. ROCK SALVAGED FROM THE EXCAVATION MEETING THE GRADATION FOR CLASS CR-1 MAY BE SALVAGED AND INCORPORATED INTO THE SIMULATED STREAMBED.
64806	PLACED STREAMBED CHANNEL ROCK FOR ISOLATED BOULDERS, CLASS CR-1, METHOD A	CUBIC YARD	20	CQ	GOVERNMENT SOURCE. SOME SORTING WILL BE REQUIRED. ROCK SALVAGED FROM THE EXCAVATION MEETING THE GRADATION FOR CLASS CR-1 MAY BE SALVAGED AND INCORPORATED INTO THE SIMULATED STREAMBED.

CQ= CONTRACT QUANTITY (SEE SECTION 109.02(B) OF THE STANDARD SPECIFICATIONS;

SCHEDULE B: OPTIONAL ITEM 1 - EQUIPMENT RENTAL

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY		REMARKS
B62201A	EQUIPMENT RENTAL, HYDRAULIC EXCAVATOR WITH THUMB	hour	8		
B62201B	EQUIPMENT RENTAL, LARGE DUMP TRUCK	hour	8		

GENERAL NOTES

DESIGN: This structure is designed for HL-93 live loading in accordance with AASHTO LRFD Bridge Design Specifications, 9th Edition.

HYDROLOGY AND HYDRAULICS: This structure has been designed to pass a Q100 flood event with a headwater depth to culvert rise ratio less than 0.8. Flow data is provided on Sheet 8.

SPECIFICATIONS: Construct the project in compliance with Federal Highway Administration Standard Specifications for Construction of Road and Bridges on Federal Highway Projects (FP-14) and applicable Forest Service Supplemental Specifications.

DEWATERING & EROSION CONTROL PLAN: Submit a dewatering and soil erosion and sediment control plan to the contracting officer for approval at least fifteen (15) days prior to beginning work. See Section 157 of the Supplemental Specifications, the notes on Sheets 3-5, and the general requirements shown on Sheet 13. Construct temporary means to divert the flow of the live stream as necessary to perform work. Do not pump water from excavations directly into the live stream.

DISPOSAL: All materials designated for removal become the property of the contractor and are to be disposed of by removing from the forest in an environmentally safe manner in accordance with all local, state and federal requirements. Dispose of excess or unsuitable material at the location designated in FSSS Section 105. Hauling of excess or unsuitable material is incidental to associated work.

TEMPORARY TRAFFIC CONTROL: Submit a temporary traffic control plan to the Contracting Officer for approval at least 30 days prior to intended use.

IN-STREAM WORK: All in-stream work will be done after July 15th. Allowance shall be given to the Forest Service to capture and remove fish and other aquatic organisms from within the construction work area prior to and during work activities.

CONCRETE: Use Class A(AE) Concrete for Precast members. The required 28-day compressive strength (F'c) is 5,000 psf with an entrained air content of 5% ± 1%. Finish all precast elements with an ordinary surface finish. Make all concrete in accordance with an approved mix design. Chamfer all exposed edges of concrete 3/4" and fillet all acute angles 3" unless otherwise noted.

REINFORCING STEEL: Use reinforcing steel of the deformed type conforming to AASHTO M31 (ASTM A615) Grade 60. Concrete cover is as shown; where not shown it must conform to AASHTO. Cut and bend reinforcing steel in conformance with ACI 315. Lap splice bars 2' min.

HARDWARE AND STRUCTURAL STEEL: Use shapes, plates and bars meeting the requirements of ASTM A36, unless otherwise specified in these plans. Use hardware meeting the requirements of ASTM A325, except as noted in the drawings.

WELDING: Weld in accordance with the Structural Welding Code, AWS D1.1. A certified welder is required.

UTILITIES: The locations of all existing utilities are approximate. The contractor shall verify the type, size, and locations of all existing utilities prior to construction. Contractor to call "dig line" 811 for utility locates.



United States Department of Agriculture
Forest Service

**REGION 1
NORTHERN REGION**

PROJECT NAME

**MCINERNE CREEK
AOP**

NFSR 38 - MP 22.681

**FLATHEAD
NATIONAL FOREST**

**HUNGRY HORSE
RANGER DISTRICT**

DRAWING
TITLE

**SCHEDULE OF
QUANTITIES &
GENERAL NOTES**

DATE

Feb-22

ARCHIVE NO.

DESIGNER
J. NEIBERGS

DWG SHEET NO.

2

DRAWN
J. NEIBERGS

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B. KAMRUD

PROJECT NO.
7241

SHEET 2 OF 17

HIP GENERAL CONSERVATION MEASURES APPLICABLE TO ALL ACTIONS

These measures will be implemented on all projects covered under the HIP.

PROJECT DESIGN AND SITE PREPARATION

1) State and Federal Permits

- A. All applicable regulatory permits and official authorizations will be obtained by the Sponsor before project implementation.
- B. These permits and authorizations include, but are not limited to, National Environmental Policy Act (NEPA), National Historic Preservation Act, appropriate state agency removal and fill permits, USACE Clean Water Act (CWA) 404 permits, CWA Section 401 water quality certifications.

2) Timing of in-water work

- A. No in-water work shall occur prior to July 15.
- B. Any change to the established work window will require regional state biologist and BPA EC Lead approval.

3) Contaminants

- A. The Project Sponsor will complete a site assessment to identify the type, quantity, and extent of any potential contamination for any action that involves excavation of more than 20 cubic yards of material.
- B. The site assessment, stored with the project files, will summarize:
 - 1. The site visit, condition of property, and identification of areas used for various industrial processes;
 - 2. Available records, such as former site use, building plans, and records of any prior contamination events;
 - 3. Interviews with knowledgeable people, such as site owners, operators, and occupants, neighbors, or local government officials; and
 - 4. The type, quantity, and likelihood of potential contaminants and sources present at the site.

4) Site layout and flagging

- A. The project area will be clearly flagged prior to construction.
- B. Areas to be flagged include:
 - 1. Sensitive resource areas, such as areas below ordinary high water (OHW), spawning areas, springs, and wetlands;
 - 2. Equipment entry and exit points;
 - 3. Road and stream crossing alignments;
 - 4. Staging, storage, and stockpile areas; and
 - 5. No-herbicide-application areas and buffers.

5) Temporary access roads and paths

- A. Existing access roads and paths will be preferentially used whenever possible, and the number and length of temporary access roads and paths through riparian areas and floodplains will be minimized to lessen soil disturbance, soil compaction, and impacts to vegetation.
- B. Vehicle use and human activities, including walking in areas occupied by terrestrial ESA- listed species, will be minimized.

5) Temporary access roads and paths (Continued)

- C. Temporary access roads and paths will not be built on slopes where grade, soil, or other features suggest a likelihood of excessive erosion or failure. If slopes are steeper than 30%, the road will be designed by a civil engineer with experience in steep road design.
- D. The removal of riparian vegetation during construction of temporary access roads will be minimized. When temporary vegetation removal is required, vegetation will be cut at ground level (not grubbed).
- E. At project completion, all temporary access roads and paths will be obliterated and the soil will be stabilized and revegetated. Road and path obliteration refers to the most comprehensive degree of decommissioning and involves decompacting the surface and ditch, pulling the fill material onto the running surface and reshaping to match the original contour.

6) Staging, storage, and stockpile areas

- A. Staging areas (used for construction equipment storage, vehicle storage, fueling, servicing, and hazardous material storage) will be 150 feet or more from any natural waterbody or wetland, or on an adjacent established road area in a location and manner that will preclude erosion into, or contamination of, the stream or floodplain. Staging areas may be closer than 150 feet if the area is above (elevation) the 100-yr floodplain and spill prevention measures are approved by the BPA EC Lead.
- B. Natural materials used for implementation of aquatic restoration, such as large wood, gravel, and boulders, may be staged within 150 feet if clearly indicated in plans. Recommend referring to area as "Natural Material Stockpile Area" with a note that states vehicle storage, equipment storage, hazardous materials, fueling, and servicing not permitted in this area.
- C. Any large wood, topsoil, and native channel material displaced by construction will be stockpiled for use during site restoration at a specifically identified and flagged area.
- D. Any material not used in restoration, and not native to the floodplain, will be removed to a location outside of the 100-year floodplain for disposal.

7) Equipment

- A. Mechanized equipment and vehicles will be selected, operated, and maintained in a manner that minimizes adverse effects on the environment (e.g., minimally-sized, low pressure tires; minimal hard-turn paths for tracked vehicles; temporary mats or plates within wet areas or on sensitive soils).
- B. Equipment will be stored, fueled, and maintained in a clearly identified staging area that meets staging area conservation measures.
- C. Refueled in a vehicle staging area located 150 feet or more from a natural waterbody or wetland, or in an isolated hard zone, such as a paved parking lot or adjacent, established road (this measure applies only to gas or diesel-powered equipment with tanks larger than 5 gallons);
- D. Inspected daily for fluid leaks before leaving the vehicle staging area for operation within 150 feet of any natural water body or wetland; and
- E. Thoroughly cleaned before operation below ordinary high water (OHW), and as often as necessary during operation, to remain free of grease.

8) Erosion control

- A. Erosion control best management practices (BMPs) will be prepared and carried out, commensurate with the scope of the action. Temporary erosion control measures include:
 - 1. Temporary erosion control BMPs shall be in place before any significant alteration of the action site, and shall be appropriately installed downslope of project activity within the riparian buffer area until site rehabilitation is complete.
 - 2. If there is a potential for eroded sediment to enter the stream, sediment barriers will be installed and maintained for the duration of project implementation.
 - 3. Temporary erosion control measures may include sedge mats, fiber wattles, silt fences, jute matting, wood fiber mulch with soil binder, or geotextiles and geosynthetic fabric. Biodegradable netting may be used so that they can decompose on site.
 - 4. Soil stabilization utilizing wood fiber mulch and tackifier (hydro-applied) may be used to reduce erosion of bare soil if the materials are noxious-weed-free and nontoxic to aquatic and terrestrial animals, soil microorganisms, and vegetation.
 - 5. Sediment will be removed from erosion control once it has reached 1/3 of the exposed height of the control.
 - 6. Once the site is stabilized following construction, temporary erosion controls will be removed.
- B. Emergency erosion controls. The following materials for emergency erosion control will be available at the work site:
 - a. A supply of sediment control materials; and
 - b. An oil-absorbing floating boom whenever surface water is present.

9) Dust abatement

- A. The Project Sponsor will determine the appropriate dust control measures by considering soil type, equipment usage, prevailing wind direction, and the effects caused by other erosion and sediment control measures. In addition, the following criteria will be followed:
 - B. Work will be sequenced and scheduled to reduce exposed bare soil subject to wind erosion.
 - C. Dust-abatement additives and stabilization chemicals (typically magnesium chloride, calcium chloride salts, or lignin sulfonate) will not be applied within 25 feet of a natural waterbody or wetland and will be applied so as to minimize the likelihood that they will enter streams. Applications of lignin sulfonate will be limited to a maximum rate of 0.5 gallons per square yard of road surface, assuming a 50:50 (lignin sulfonate to water) solution.
 - D. Application of dust abatement chemicals will be avoided during or just before wet weather and at stream crossings or other areas that could result in unfiltered delivery of the dust abatement chemicals to a waterbody (typically these would be areas within 25 feet of a natural waterbody or wetland; distances may be greater where vegetation is sparse or slopes are steep).
 - E. Spill containment equipment will be available during application of dust abatement chemicals.
 - F. Petroleum-based products will not be used for dust abatement.



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DRAWING
TITLE

HIP GUIDELINES - 1

DATE

Feb-22

ARCHIVE NO.

DESIGNER

J. NEIBERGS

DWG SHEET NO.

3

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SHEET 3 OF 17

PROJECT DESIGN AND SITE PREPARATION (CONTINUED)

10) Spill prevention, control, and counter measures

- A. A description of hazardous materials (fuel, lubricants, hydraulic fluid For additional information and suppliers of biodegradable hydraulic fluids, motor oil, lubricant, or grease. See, Environmentally Acceptable Lubricants by the U.S. EPA (2011)/ e.g., mineral oil, polyglycol, vegetable oil, synthetic ester; Mobil® biodegradable hydraulic oils, Total® hydraulic fluid, Terresolve Technologies Ltd.® biobased biodegradable lubricants, Cougar Lubrication® 2XT Bio engine oil, Series 4300 Synthetic Bio-degradable Hydraulic Oil, 8060-2 Synthetic Bio-Degradable Grease No. 2, etc.;/, or other contaminants) that will be used, including inventory, storage, and handling procedures, will be available on-site.
- B. Written procedures for notifying environmental response agencies will be posted at the work site.
- C. Spill containment kits (including instructions for cleanup and disposal) adequate for the types and quantity of hazardous materials used at the site will be available at the work site.
- D. Workers will be trained in spill containment procedures and will be informed of the location of spill containment kits.
- E. Any waste liquids generated at the staging areas will be temporarily stored under an impervious cover, such as a tarpaulin, until they can be properly transported to, and disposed of, at a facility that is approved for receipt of hazardous materials.
- F. Pumps used adjacent to water shall use spill containment systems.

11) Invasive species control

- A. Prior to entering the site, all vehicles and equipment will be power-washed, allowed to dry fully, and inspected to make sure no plants, soil, or other organic material adheres to the surface.
- B. Watercraft, waders, boots, and any other gear to be used in or near water will be inspected for aquatic invasive species.
- C. Wading boots with felt soles are not to be used due to their propensity for aiding in the transfer of invasive species unless decontamination procedures have been approved by the EC Lead.

WORK AREA ISOLATION AND FISH SALVAGE

1) Work Area Isolation

- A. Any work area requiring excavation or mobilization of sediment within the wetted channel will be isolated from the active stream whenever ESA-listed fish are reasonably certain to be present, or if the work area is less than 300-feet upstream from known ESA-listed fish spawning habitats. If the work area isolation practices would cause greater impacts than it would prevent, is located in deep or swiftly flowing water, or if fish can be effectively excluded by nets or screens, then an approval from a NMFS habitat biologist may be pursued.
- B. Work area isolation & fish salvage activities are considered incidental to construction-related activities and shall occur during the state-recommended in-water work windows.

1) Work Area Isolation (Continued)

- C. When work area isolation is required, design plans will include all isolation elements, fish release areas, a pump to be used to dewater the isolation area, and, when fish are present, a fish screen that meets NMFS's fish screen criteria (NMFS 2011 NMFS. 2011. Anadromous salmonid passage facility design. Northwest Region. Available online at: http://www.habitat.noaa.gov/pdf/salmon_passage_facility_design.pdf/, or most current). Wider mesh screens may be used after all fish have been removed from the isolated area.
- D. Work area isolation and fish capture activities take place during periods of the coolest air and water temperatures possible, normally early in the morning versus late in the day, and during conditions appropriate to minimize stress to fish species present.

2) Dewatering

- A. Dewatering, when necessary, will be conducted over a sufficient period of time to allow species to naturally migrate out of the work area and will be limited to the shortest linear extent practicable.
- B. Diversion around the construction site may be accomplished with a cofferdam and a by-pass culvert or pipe, or a lined, non-erodible diversion ditch. Where gravity feed is not possible, a pump may be used, but must be operated in such a way as to avoid repetitive dewatering and rewatering of the site. Impoundment behind the cofferdam must occur slowly through the transition, while constant flow is delivered to the downstream reaches.
- C. All pumps will have fish screens to avoid juvenile fish impingement or entrainment, and will be operated in accordance with NMFS's current fish screen criteria (NMFS 2011, or most recent version). If the pumping rate exceeds 3 cubic feet per second (cfs), a NMFS Engineering review will be necessary. If the screen is in an isolated area with no fish (salmonids or larval lamprey), a larger mesh screen may be used.
- D. Dissipation of flow energy at the bypass outflow will be provided to prevent damage to riparian vegetation and/or stream channel.
- E. Seepage water will be pumped to a temporary storage and treatment site or into upland areas to allow water to percolate through soil or to filter through vegetation prior to reentering the stream channel.

CONSTRUCTION AND POST-CONSTRUCTION CONSERVATION MEASURES

1) Construction and discharge water

- A. Surface water may be diverted to meet construction needs, but only if developed sources are unavailable or inadequate.
- B. Diversions will not exceed 10% of the available flow.
- C. All construction discharge water will be collected and treated using the best available technology suitable for site conditions. Treatments to remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present will be provided.

2) Time and extent of disturbance

- A. Earthwork (including drilling, excavation, dredging, filling and compacting) in which mechanized equipment is used in stream channels, riparian areas, and wetlands will be completed as quickly as possible.
- B. Mechanized equipment will be used in streams only when project specialists believe that such actions are the only reasonable alternative for implementation, or would result in less sediment in the stream channel or damage (short- or long-term) to the overall aquatic and riparian ecosystem relative to other alternatives. To the extent feasible, mechanized equipment will work from the top of the bank, unless work from another location would result in less habitat disturbance.

3) Cessation of work

- A. Project operations will cease when high flow conditions may result in inundation of the project area, except for efforts to avoid or minimize resource damage.
- B. Project operations will cease when allowable water quality levels are exceeded as defined by the state CWA section 401 water quality certification or HIP Turbidity Monitoring Protocol. See CWA Section 401 Water Quality Certification for more information.

4) Site restoration

- A. All streambanks, soils, and vegetation will be cleaned up and restored as necessary using stockpiled large wood, topsoil, and native channel material.
- B. All project-related waste will be removed.
- C. All temporary access roads, crossings, and staging areas will be decompacted and re-contoured. When necessary for revegetation and infiltration of water, compacted areas of soil will be loosened.
- D. All disturbed areas will be rehabilitated in a manner that results in similar or improved conditions relative to pre-project conditions. This will be achieved through redistribution of stockpiled materials, seeding, and/or planting with local native seed mixes or plants.

5) Revegetation

- A. Planting and seeding will occur prior to or at the beginning of the first growing season after construction.
- B. Use a mix of species, appropriate to the site that will achieve establishment, shade, and erosion control objectives. These would, preferably be forb, grass, shrub, or tree species native to the project area or region.
- C. Vegetation, such as willow, sedge and rush mats, will be salvaged from disturbed or abandoned floodplains, stream channels, or wetlands, and replanted at the site in appropriate locations.
- D. Short-term stabilization measures may include the use of non-native sterile seed mix (when native seeds are not available), weed-free certified straw, jute matting, and other similar techniques.
- E. Surface fertilizer will not be applied within 50 feet of any stream channel, waterbody, or wetland.



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HIP GUIDELINES - 2

DATE

Feb-22

ARCHIVE NO.

DESIGNER

J. NEIBERGS

DWG SHEET NO.

4

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B. KAMRUD

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7241

SHEET 4 OF 17

CONSTRUCTION AND POST-CONSTRUCTION CONSERVATION MEASURES (CONTINUED)

6) Site access and implementation monitoring

- A. The Project Sponsor will retain the right of reasonable access to the site in order to monitor the success of the project over its life. Project Sponsor staff or their designated representative will provide implementation monitoring to ensure:
 - a. General conservation measures are adequately followed.
 - b. Effects to listed species are not greater than predicted and incidental take limitations are not exceeded.
 - c. Turbidity monitoring is being conducted in accordance with the HIP turbidity monitoring protocol.
- B. The Project Sponsor or designated representative will submit the Project Completion Form (PCF) to ensure compliance with the applicable BiOp.

7) CWA section 401 water quality certification

- A. The Project Sponsor or designated representative will complete and record water quality observations to ensure that in-water work is not degrading water quality.
- B. During construction, CWA section 401 water quality certification provisions provided by the Montana Department of Environmental Quality will be followed.

HIP TURBIDITY MONITORING PROTOCOL AND CONSERVATION MEASURES

The Project Sponsor is responsible for monitoring turbidity during implementation. If the geomorphology of the project area (e.g., silty or claylike materials) or the nature of the action (e.g., large amounts of bare earth exposure) shall preclude the successful compliance with these triggers, notify the BPA EC Lead in advance of the likelihood of an exceedance and seek additional recommendations. Turbidity protocol is as follows:

- A. Take a background turbidity measurement approximately 100 feet upstream from the project area using a recently-calibrated turbidimeter or estimated using visual observations (Figure 1). Note the turbidity level, location, and time of the background measurement.
- B. Record the turbidity measured using a calibrated turbidimeter or estimated by visual observation (Figure 1) before work begins at the downstream point, known as the measurement compliance point. Note the turbidity level, location, and time. The compliance point shall be located downstream of the disturbance area, approximately:
 - 1. 50 feet downstream for streams that are less than 30 feet wide;
 - 2. 100 feet downstream for streams between 30 and 100 feet wide;
 - 3. 200 feet downstream for streams greater than 100 feet wide; and
 - 4. 300 feet from the discharge point or nonpoint source for locations subject to tidal or coastal scour.
- C. Turbidity shall be measured by turbidimeter or estimated by visual observation at the background and compliance points every 4 hours while work is being implemented.

HIP TURBIDITY MONITORING PROTOCOL AND CONSERVATION MEASURES (CONTINUED)

- D. If there is a visible difference between a compliance point and the background then an exceedance (10% or more) has occurred and must be noted in the PCF. Adjustments or corrective measures must be taken in order to reduce turbidity.
- E. If exceedances occur for more than two consecutive monitoring intervals (after 8 hours), the activity must stop until the turbidity level returns to background, and the BPA EC Lead must be notified after the project is concluded. The BPA EC Lead shall document the reasons for the exceedances and the corrective measures taken. This is very important as BPA is required to report to the Services upon all exceedances.
- F. If at any time, monitoring, inspections, or observations/samples show that the turbidity controls are ineffective, immediately mobilize work crews to repair, replace, or reinforce controls as necessary. Document those occurrences in the Project Completion Form (PCF).
- G. The Project Sponsor shall submit a summary of readings, exceedances, control failures, adaptive measures to BPA using the HIP Project Completion Form (PCF).



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DRAWING
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HIP GUIDELINES - 3

DATE

Feb-22

ARCHIVE NO.

DESIGNER
J. NEIBERGS

DWG SHEET NO.

5

DRAWN
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B. KAMRUD

PROJECT NO.
7241

SHEET 5 OF 17

CONTROL POINT TABLE				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
CP-1	10327.75	10119.29	3989.75	rpc
CP-2	10146.58	10064.56	3993.23	NAIL
CP-3	10000.00	10000.00	4000.00	rpc
CP-4	10210.61	10049.93	3991.65	NAIL
CP-5	10118.01	10176.43	3977.64	NAIL
CP-6	10218.22	9993.84	3968.77	NAIL

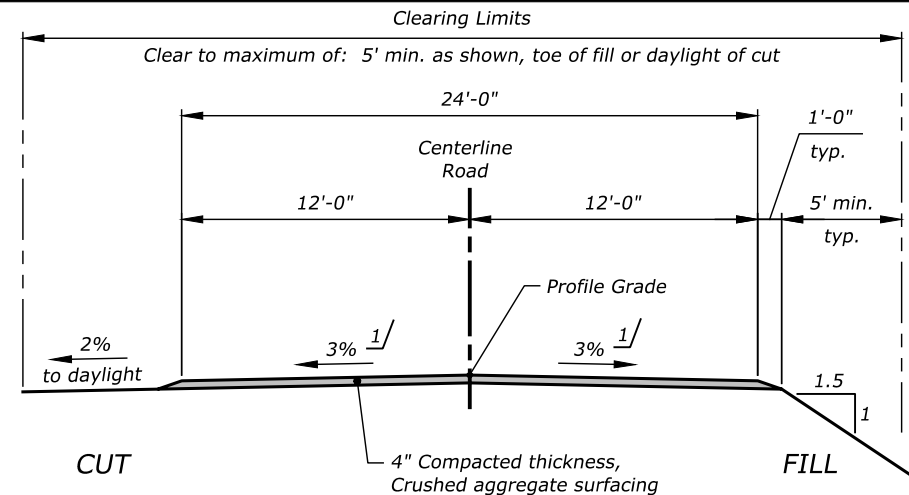
** COORDINATE SYSTEM IS LOCAL **

CENTERLINE POINTS				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
5000	10297.6539	10081.8634	3991.33	STA 1196+00
5001	10278.0053	10078.1315	3991.45	STA 1196+20
5002	10258.3659	10074.3508	3991.64	STA 1196+40
5003	10238.7265	10070.5701	3991.89	STA 1196+60
5004	10219.0871	10066.7894	3992.21	STA 1196+80
5005	10199.4477	10063.0086	3992.60	STA 1197+00
5006	10188.2018	10060.8437	3992.85	STA 1197+11.45
5007	10179.8083	10059.2279	3993.05	STA 1197+20
5008	10160.1689	10055.4472	3993.58	STA 1197+40
5009	10140.5295	10051.6665	3994.17	STA 1197+60
5010	10120.8901	10047.8857	3994.78	STA 1197+80
5011	10101.2507	10044.1050	3995.38	STA 1198+00
5012	10081.6113	10040.3243	3995.99	STA 1198+20

CL CULVERT

CULVERT LAYOUT POINTS				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
6000	10152.6823	10100.7357	3967.28	Upstream Layout
6001	10167.1711	10109.9427	3967.28	Upstream Layout
6002	10225.5981	10017.9981	3963.61	Downstream Layout
6003	10211.1093	10008.7911	3963.61	Downstream Layout

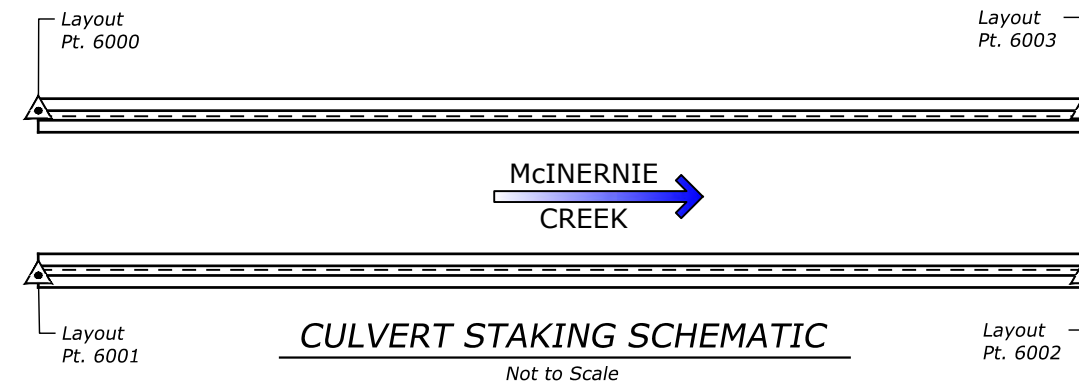
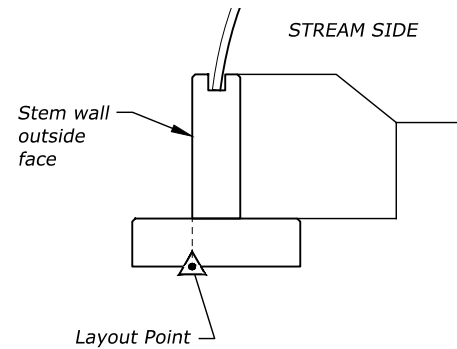
** Layout points are outside face of stem wall at bottom of footing **



TYPICAL SECTION

Not to Scale

1/ See cross sections



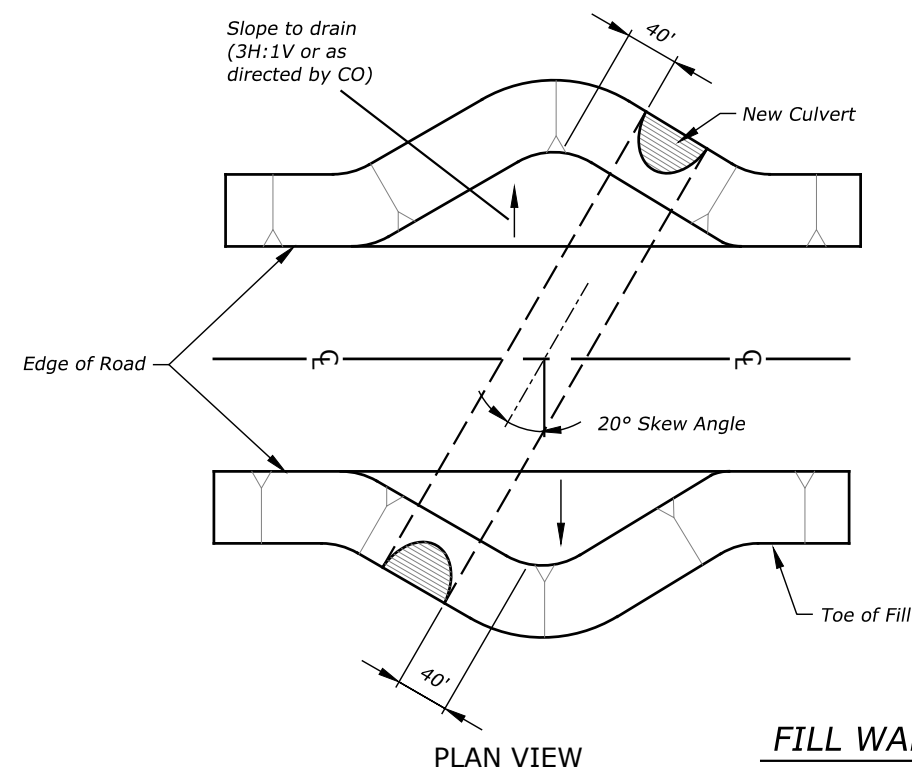
CULVERT STAKING SCHEMATIC

Not to Scale

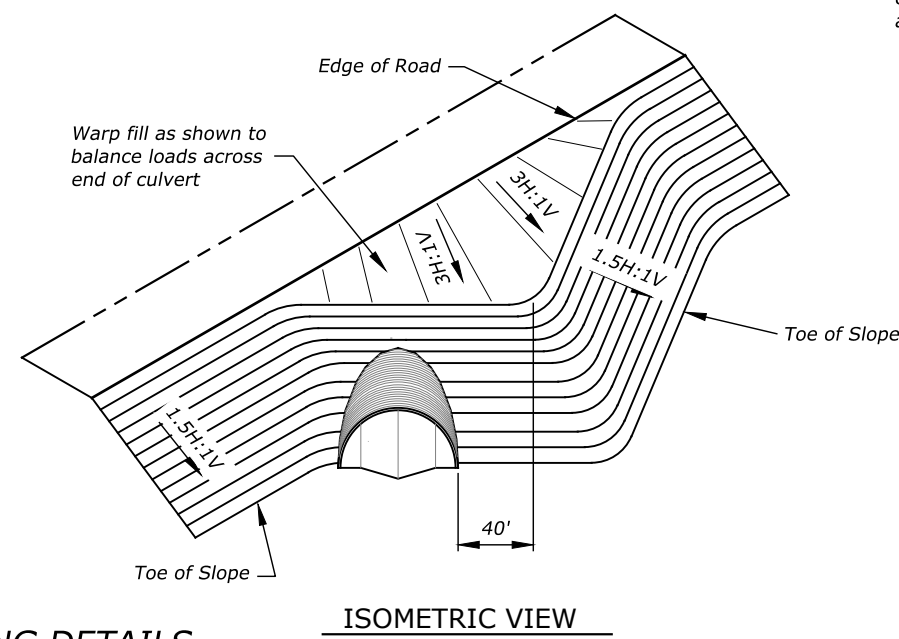
FOOTNOTES:

1/ Coordinate with the Contracting Officer to confirm the exact staging area location.

1/ Approximate Staging Area, See Sheets 2-5 for Staging Area and Erosion and Sediment Control Requirements



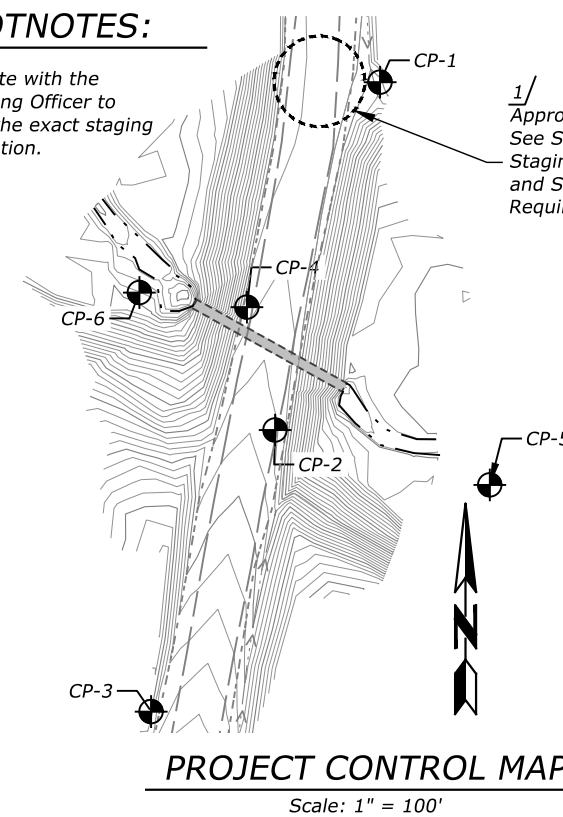
PLAN VIEW



ISOMETRIC VIEW

FILL WARPING DETAILS

Not to Scale



PROJECT CONTROL MAP

Scale: 1" = 100'



United States Department of Agriculture
Forest Service

REGION 1
NORTHERN REGION

PROJECT NAME

**MCINERIE CREEK
AOP**

NFSR 38 - MP 22.681

**FLATHEAD
NATIONAL FOREST**

**HUNGRY HORSE
RANGER DISTRICT**

DRAWING
TITLE

**TYPICAL SECTION &
POINT TABLES**

DATE

Feb-22

ARCHIVE NO.

DESIGNER

J. NEIBERGS

DWG SHEET NO.

6

DRAWN

J. NEIBERGS

CHECKED

B. KAMRUD

PROJECT NO.

7241

SHEET 6 OF 17



United States Department of Agriculture
Forest Service

REGION 1
NORTHERN REGION

PROJECT NAME
**MCINERNIE CREEK
AOP**
NFSR 38 - MP 22.681

FLATHEAD
NATIONAL FOREST

HUNGRY HORSE
RANGER DISTRICT

DRAWING
TITLE
**CULVERT GENERAL
LAYOUT**

DATE
Feb-22

ARCHIVE NO.

DESIGNER
J. NEIBERGS

DWG SHEET NO.

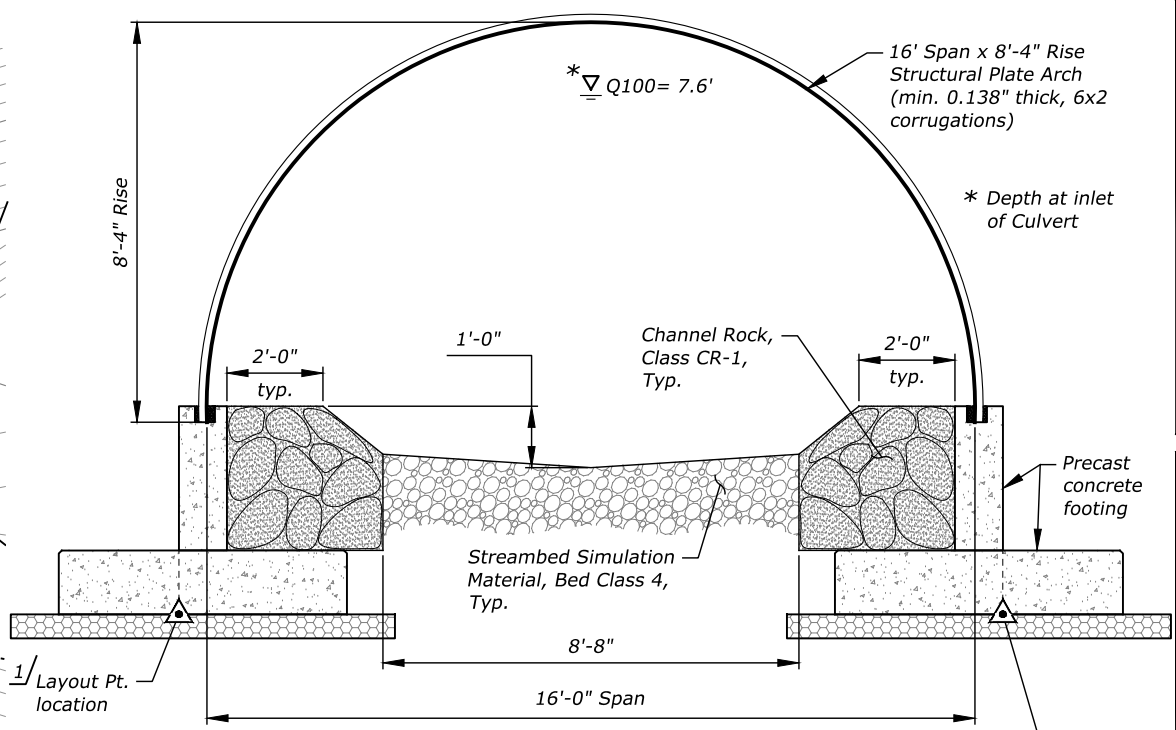
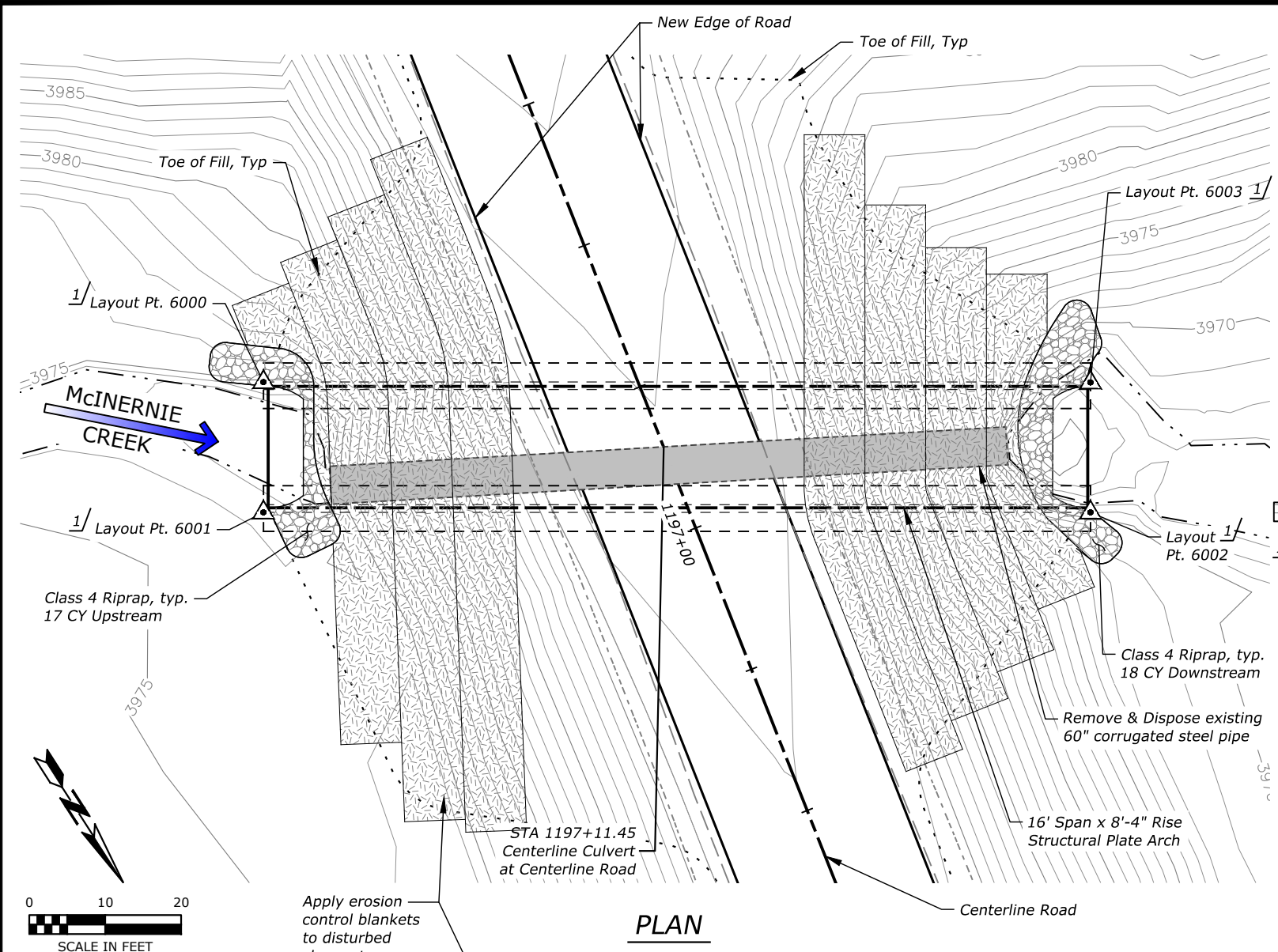
8

DRAWN
J. NEIBERGS

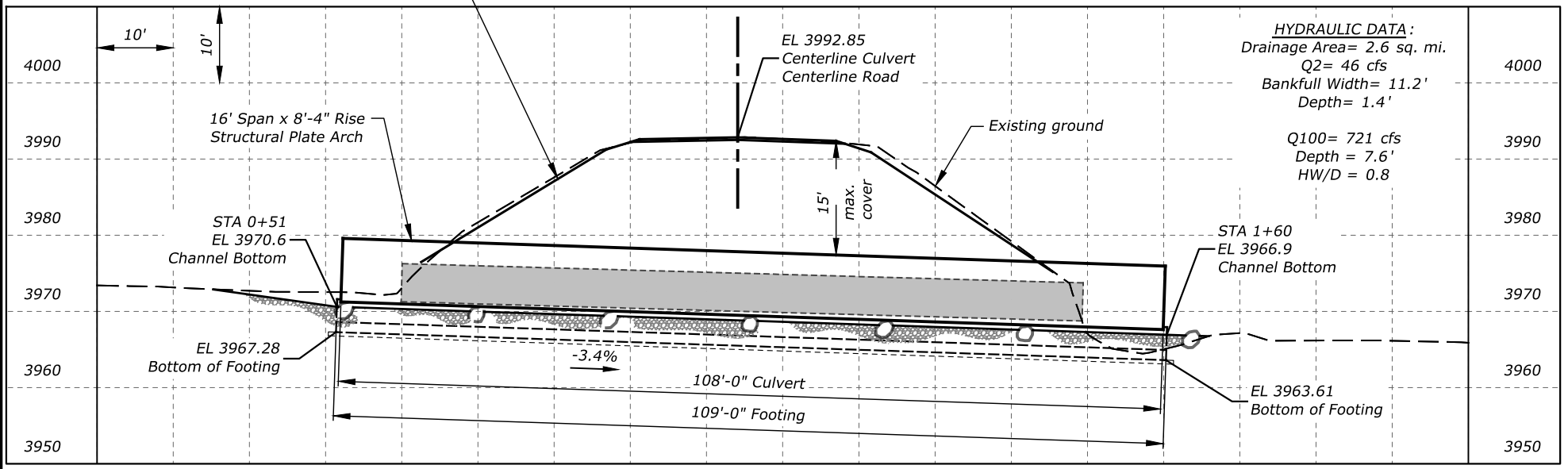
CHECKED
B. KAMRUD

PROJECT NO.
7241

SHEET 8 OF 17



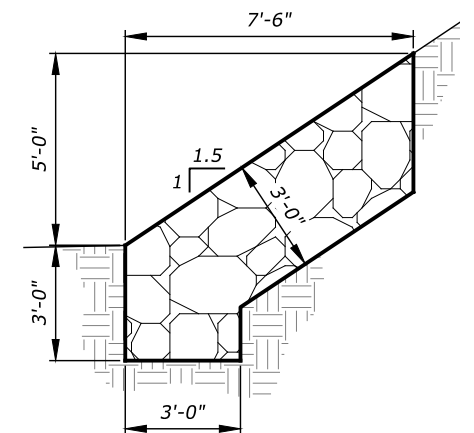
TYPICAL SECTION
No Scale
1/ See Sheet 6 for STAKING SCHEMATIC and layout point table.



SECTION ALONG CENTERLINE CULVERT

HYDRAULIC DATA:
Drainage Area= 2.6 sq. mi.
Q2= 46 cfs
Bankfull Width= 11.2'
Depth = 1.4'

Q100= 721 cfs
Depth = 7.6'
HW/D = 0.8



RIPRAP DETAIL
Not to Scale
OUTSIDE OF CULVERT

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