MONTANA FISH, WILDLIFE & PARKS

ADDENDUM NO. 2

TO: ALL BIDDERS OF RECORD

PROJECT: Logan State Park Septic System Replacement

FWP PROJECT #: 7176313

DATE: November 6, 2023

FROM: Randi Rognlie, Design and Construction Project Manager

Acknowledge receipt of this addendum by inserting its number and date in the Proposal Form and on the Bid Envelope. Failure to do so may subject bidder to disqualification.

This Addendum forms a part of the Contract Documents. Clarification and/or modifications area as follows:

1. Meeting notes from on-site prebid meeting on November 1, 2023 with attachment, including the DEQ approval letter, a power draw analysis and as-builts from the 2017 electrical infrastructure project.

END OF ADDENDUM NO. 2

DEQ
Montana Department
of Environmental Quality

August 17, 2023

Matt Nerdig, PE
A2Z Engineering
138 East Center Street, Ste. A
Kalispell, MT 59901

RE: Logan State Park, EQ#23-2050

Dear Consultant:

The design reports, construction plans, specifications and supporting information for the above-named project were received on February 09, 2023. The design documents were submitted under the seal of Matt Nerdig **PE# 17074**. Additional information requested by the Department was received on April 24, 2023 and July 3, 2023. The complete submittal was reviewed in accordance with the Department of Environmental Quality design standards in Circular DEQ-4, 2013 edition.

Wastewater:
The public wastewater treatment system shall consist of two existing 2,335-gallon septic tanks (total of 4,670 gallons), proposed septic tanks totaling 11,000-gallons, an effluent filter, two recirculation/dose tanks with a total volume of 4000-gallons, Department Approved Level II recirculating trickling filter treatment system, two post anoxic tanks with a total volume of 4,000-gallons, and an existing subsurface pressure dosed drainfield of such size and description as will comply with Title 17, Chapter 36, Sub-Chapters 1, 3, and 6 ARM.

The daily wastewater flow for the public wastewater treatment system is limited to the original approval of a maximum of 4,727 gallons per day.

The dump station use is limited to the original approval which limited the dump station to users of the park facilities only, not general highway users.

The conditions of approval for the recirculating trickling filter for Level II treatment require an Operation & Maintenance (O&M) contract, in accordance with ARM 17.30.718(8) and the service-related obligations listed in DEQ-4, Appendix D, in perpetuity, with an authorized Dealer/Representative.

The O&M contract shall include a bi-annual on-site inspection of all major components of the wastewater treatment system for the first two (2) years after use of the system begins, and annually thereafter, in accordance with ARM 17.30.718(8)(a).

Annual sampling in accordance with ARM 17.30.718(8)(b) is required for the life of the system and shall be for the following parameters: nitrate; nitrite, ammonia, TKN, BOD, TSS, fecal coliform, specific conductance and temperature. Effluent sampling shall be conducted after all treatment is complete but before discharge into the absorption system. All water analysis shall be conducted according to the EPA approved method by an independent laboratory, except for temperature which shall be measured on-site. The monitoring results must be maintained by the service provider and made available to the Department by the service provider at any time that the Department requests the results.

Plans and specifications for the Logan State Park project are hereby approved. One copy of the plans and specifications bearing the approval stamp of the Department of Environmental Quality is enclosed. A second set will be retained for Department record. The third set will be provided to the County Public Health Department.

Approval is given with the understanding that any deviation from the approved plans and specifications will be submitted to the Department for review and approval. The project may not be placed into service until the project engineer or designer certifies by letter to the Department that the activated portion of the project was constructed in substantial accordance with the plans and specifications approved by the Department and there are no deviations from the design standards other than those previously approved by the department. Within 90 days after the completion of construction, a complete set of certified "as-built" drawings must be signed and submitted to the Department.

It is further understood that construction of this project must be completed within three years of this approval date. If more than three years elapse before completing construction, plans and specifications must be resubmitted and approved before construction begins.

Department approval of this project covers only those portions of the plans and specifications that are subject to the Department's review authority under the Public Water Supply Laws (MCA 75-6) and the Administrative Rules promulgated thereunder (ARM 17.38). This approval does not cover items found within the plans and specifications that are outside of the Department's review authority, including but not limited to, electrical work, architecture, site grading or water and sewer service connections.

Thank you for your efforts regarding this submittal. If you have any further questions or concerns, please feel free to contact me at Jennifer.Warren@mt.gov.

Sincerely,

Jennifer Warren, PE
DEQ Engineering Bureau

Enclosures: One set of approved wastewater plans and specifications

cc: County Public Health Department
File: EQ#23-2050

PROTECTING THE WORLD'S WATER

Project Name: LOGAN STATE PARK | **PUMPS FOR TCOM PANEL PRELIMINARY QUOTE** | **10/24/2023**
Location: Thompson Lake, MT | **GLACIER PRECAST CONCRETE**
Application: State Park Campground | MIKE
Dedicated | PHONE LINE OR INTERNET

Estimated Electrical Draw

	Component	Product Model	Description	Amperage Draw	
RV DUMP TANK					
AdvanTex AX100					
	Recirc	PF500712-20	50 gpm, 3/4 Hp, 240V, 1-phase	8.5	3 FLOATS
	Recirc	PF500712-20	50 gpm, 3/4 Hp, 240V, 1-phase	8.5	
	Recirc	PF500712-20	50 gpm, 3/4 Hp, 240V, 1-phase	8.5	
	Recirc	PF500712-20	50 gpm, 3/4 Hp, 240V, 1-phase	8.5	
	Pre-Anoxic/ALK	PF300512-20	30 gpm, 1/2 Hp, 240V, 1-phase	6.2	TIMER
	POST-Anoxic/CARBON	PF300512-20	30 gpm, 1/2 Hp, 240V, 1-phase	6.2	TIMER
Dose Pumps					
	Dose (ASHLAND)	EP75M2	50 gpm, .75 Hp, 240V, 1-phase	8.0	DUPLEX-
	Dose (ASHLAND)	EP75M2	50 gpm, .75 Hp, 240V, 1-phase	8.0	DEMAND 5 FLOATS
Orenco Chem Feeds					
FUTURE	*LCF3636-AG (for ALK)*	Peristaltic Pump	120V, 1-phase	0.4	ON WITH PRE-POST
FUTURE		Mixer	120V, 1-phase	2.2	ON WITH PRE-POST
FUTURE	*CARBON*	Peristaltic Pump	120V, 1-phase	0.4	ON WITH PRE-POST
AdvanTex Vent Fans					
		AXVFACF-HT			
		Fan	1/12Hp, 120V, 1-phase	1.4	
		Heater	1/12Hp, 120V, 1-phase	8.3	
Panel Components					
		Controls	Misc.	5.0	
		TSD	Touch Screen Display (Optional)	1.0	
		GFI	Ground Fault Interrupter	15.0	
		HT	Heater	2.0	
		THERM	THERMOSTER	____	
	NO METERS	METERS	100' WIRE/PER		
			Total	98.0	
			Safety Factor	1.2	
			Estimated Projected Service Amps	118	

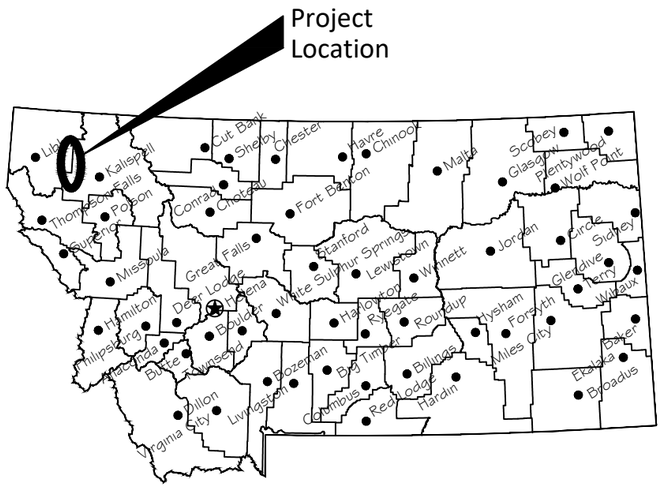
MONTANA FISH, WILDLIFE & PARKS

Logan State Park Electrification & Dock Project

As-Built Plans
Issued: June 28, 2017

Near Happy's Inn, Montana

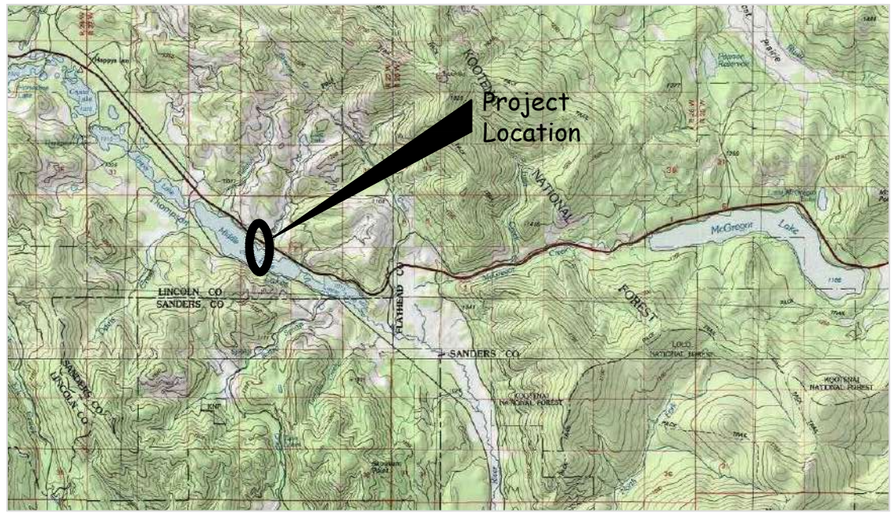
FWP # 7156501



Location Map

No Scale

North



Vicinity Map

No Scale

MONTANA FISH, WILDLIFE AND PARKS
DESIGN AND CONSTRUCTION

MAILING ADDRESS:
PO BOX 200701
HELENA, MT 59620-0701

PHYSICAL ADDRESS:
1522 9th AVENUE
HELENA, MT 59601

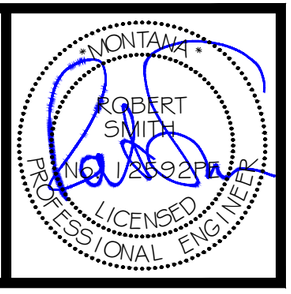
TEL 406.841.4000
FAX 406.841.4004
fwp.mt.gov/Doing Business/Design&Construction

A2Z ENGINEERING, PLLC

MAILING ADDRESS:
138 EAST CENTER STREET, SUITE A
KALISPELL, MONTANA 59901

TEL 406.755.7888
FAX 406.755.7880
a2z-engineering.com

DRAWING INDEX



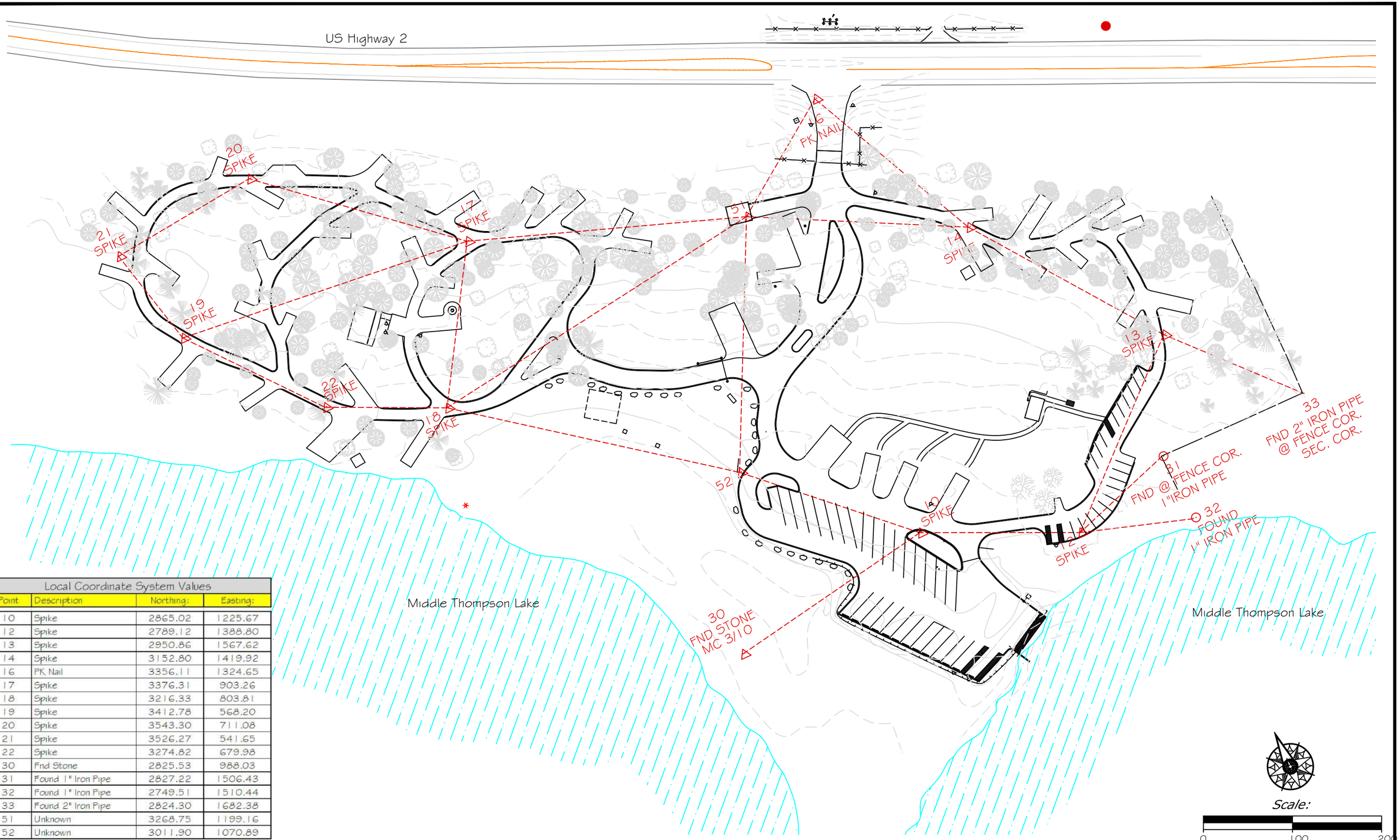
R Smith	August 16, 2016				
DRAWN BY:	DATE:	APPROVED BY:	DATE:	APPROVED BY:	DATE:
J Thomas	August 16, 2016				
CHECKED BY:	DATE:	APPROVED BY:	DATE:	APPROVED BY:	DATE:

Montana Fish, Wildlife & Parks

Cover Sheet

Logan State Park Electrification and Dock Project

SHEET: 1 of 15



Local Coordinate System Values			
Point	Description	Northing:	Easting:
10	Spike	2865.02	1225.67
12	Spike	2789.12	1388.80
13	Spike	2950.86	1567.62
14	Spike	3152.80	1419.92
16	PK Nail	3356.11	1324.65
17	Spike	3376.31	903.26
18	Spike	3216.33	803.81
19	Spike	3412.78	568.20
20	Spike	3543.30	711.08
21	Spike	3526.27	541.65
22	Spike	3274.82	679.98
30	Fnd Stone	2825.53	988.03
31	Found 1" Iron Pipe	2827.22	1506.43
32	Found 1" Iron Pipe	2749.51	1510.44
33	Found 2" Iron Pipe	2824.30	1682.38
51	Unknown	3268.75	1199.16
52	Unknown	3011.90	1070.89

R Smith August 16, 2016
DRAWN BY: DATE:

J Thomas August 16, 2016
CHECKED BY: DATE:

REVISED BY: DATE:

APPROVED BY: DATE:

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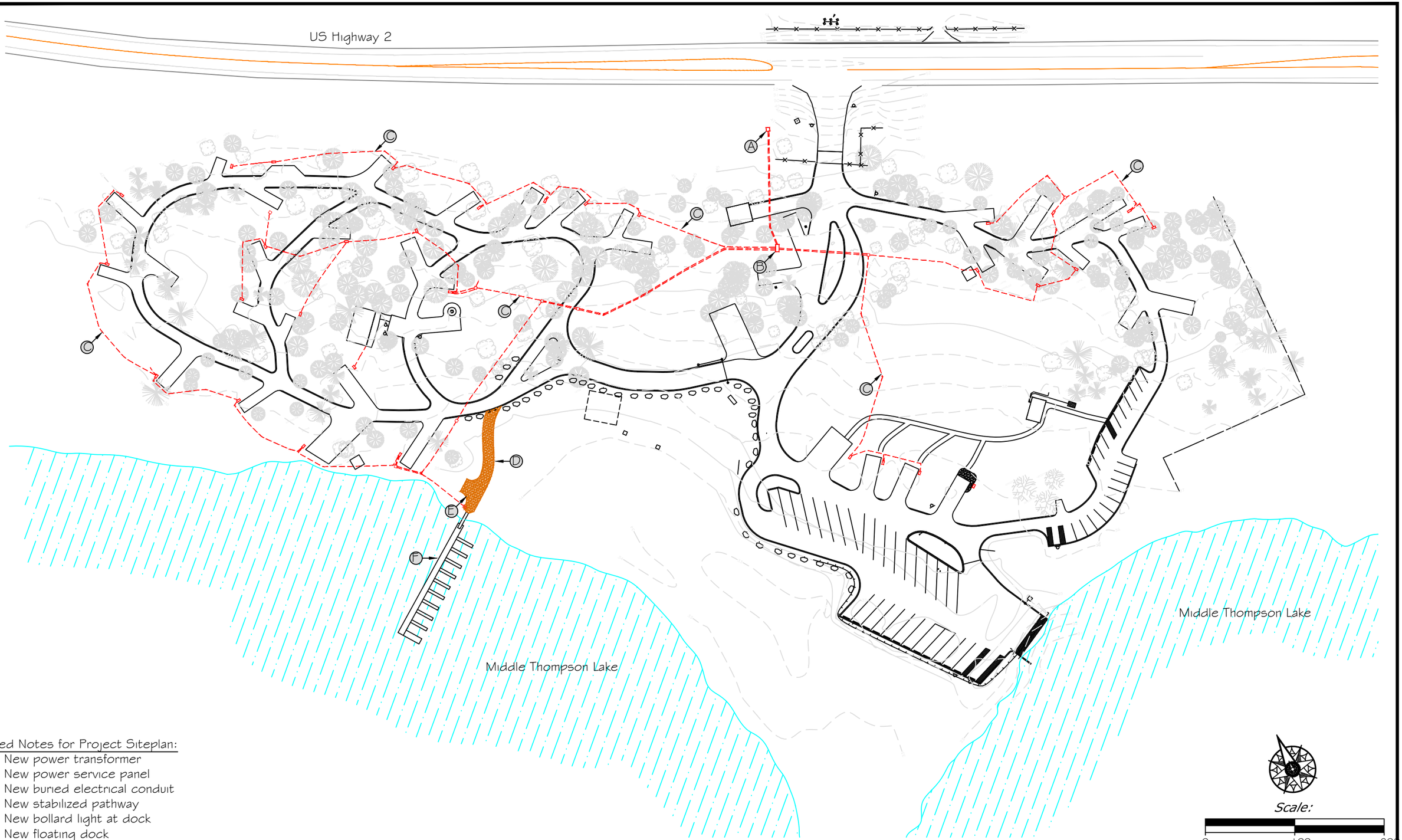
APPROVED BY: DATE:

Montana Fish, Wildlife & Parks

Survey Control
Logan State Park Electrification and Dock Project

SHEET: 2 of 15



Keyed Notes for Project Siteplan:

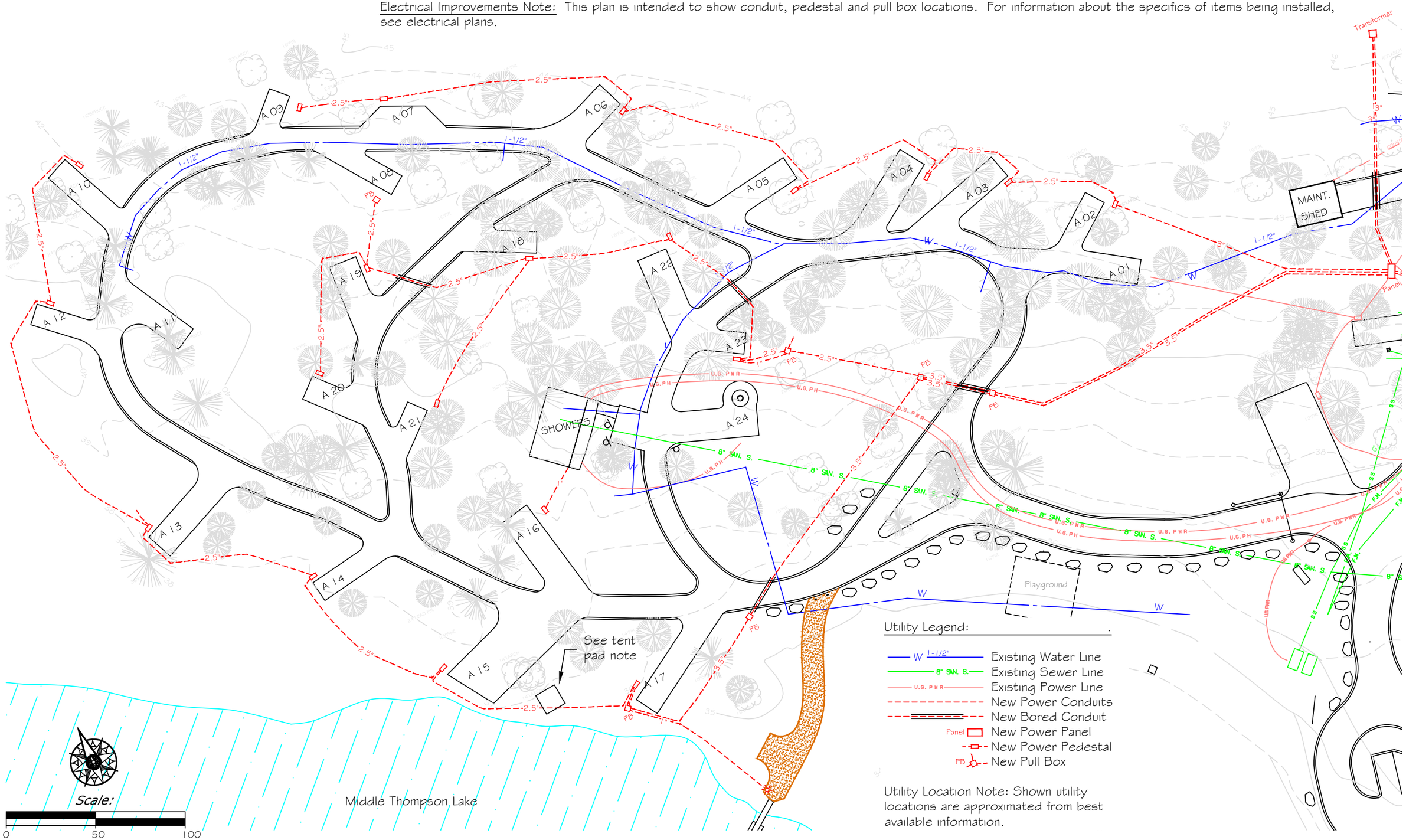
A. New power transformer
B. New power service panel
C. New buried electrical conduit
D. New stabilized pathway
E. New bollard light at dock
F. New floating dock

Scale:

0 100 200

R Smith August 16, 2016 DRAWN BY: DATE: J Thomas August 16, 2016 CHECKED BY: DATE:	REVISED BY: DATE: APPROVED BY: DATE:	APPROVED BY: DATE: APPROVED BY: DATE:	Montana Fish, Wildlife & Parks **Overall Siteplan** Logan State Park Electrification and Dock Project	SHEET: 3 of 15

Electrical Improvements Note: This plan is intended to show conduit, pedestal and pull box locations. For information about the specifics of items being installed, see electrical plans.



Utility Legend:

- W 1-1/2" — Existing Water Line
- 8" SAN. S. — Existing Sewer Line
- U.G. PWR — Existing Power Line
- New Power Conduits
- New Bored Conduit
- Panel — New Power Panel
- New Power Pedestal
- PB — New Pull Box

Utility Location Note: Shown utility locations are approximated from best available information.

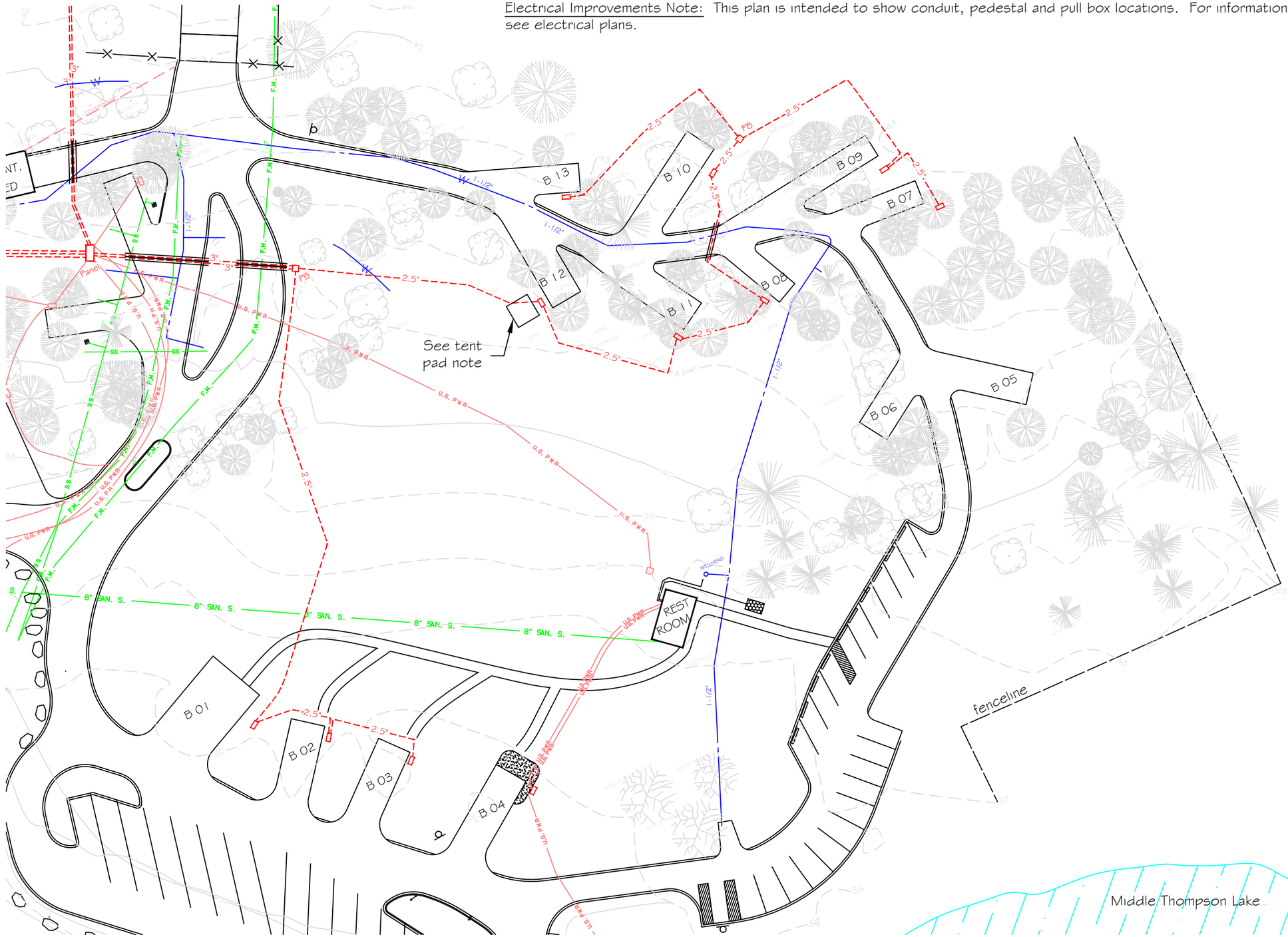
R Smith August 16, 2016	REVISED BY: DATE:	APPROVED BY: DATE:	Montana Fish, Wildlife & Parks
DRAWN BY: DATE:			
J Thomas August 16, 2016	APPROVED BY: DATE:	APPROVED BY: DATE:	
CHECKED BY: DATE:			

Loop A Conduit Routes

Logan State Park Electrification and Dock Project

SHEET: 4 of 15

Electrical Improvements Note: This plan is intended to show conduit, pedestal and pull box locations. For information about the specifics of items being installed, see electrical plans.



Utility Legend:

- W 1-1/2" — Existing Water Line
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- U.G. PWR — Existing Power Line
- New Power Conduits
- New Bored Conduit
- Panel — New Power Panel
- New Power Pedestal
- PB — New Pull Box

Utility Location Note: Shown utility locations are approximated from best available information.

Scale: 0 50 100

R Smith	August 16, 2016				
DRAWN BY:	DATE:	REVISED BY:	DATE:	APPROVED BY:	DATE:
J Thomas	August 16, 2016				
CHECKED BY:	DATE:	APPROVED BY:	DATE:	APPROVED BY:	DATE:

Montana Fish, Wildlife & Parks

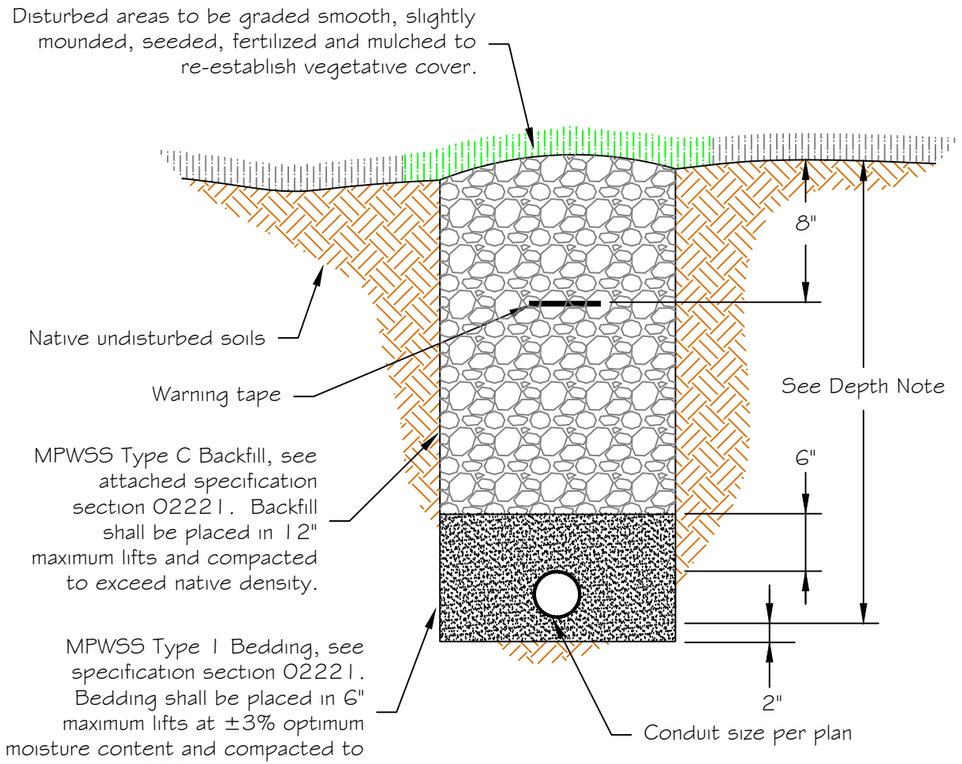
Loop B Conduit Routes

Logan State Park Electrification and Dock Project

SHEET: 5 of 15

Trenched Conduit Installation Detail (Vegetated Areas)

Not to Scale



Seed mix note: Contractor shall utilize C.H.S. "Forest Mix" native seed mixture for re-seeding all disturbed vegetated areas. This mix consists of:

- 40% Mountain Brome
- 35% Bluebunch Wheatgrass
- 15% Western Wheatgrass
- 10% Rough Fescue

Any substitutions must be approved by project engineer.

Fertilizer Rate: Apply 16-16-16 fertilizer at a rate of 150 pounds / acre.

Conduit Burial Depth Note (Both Trench Details):

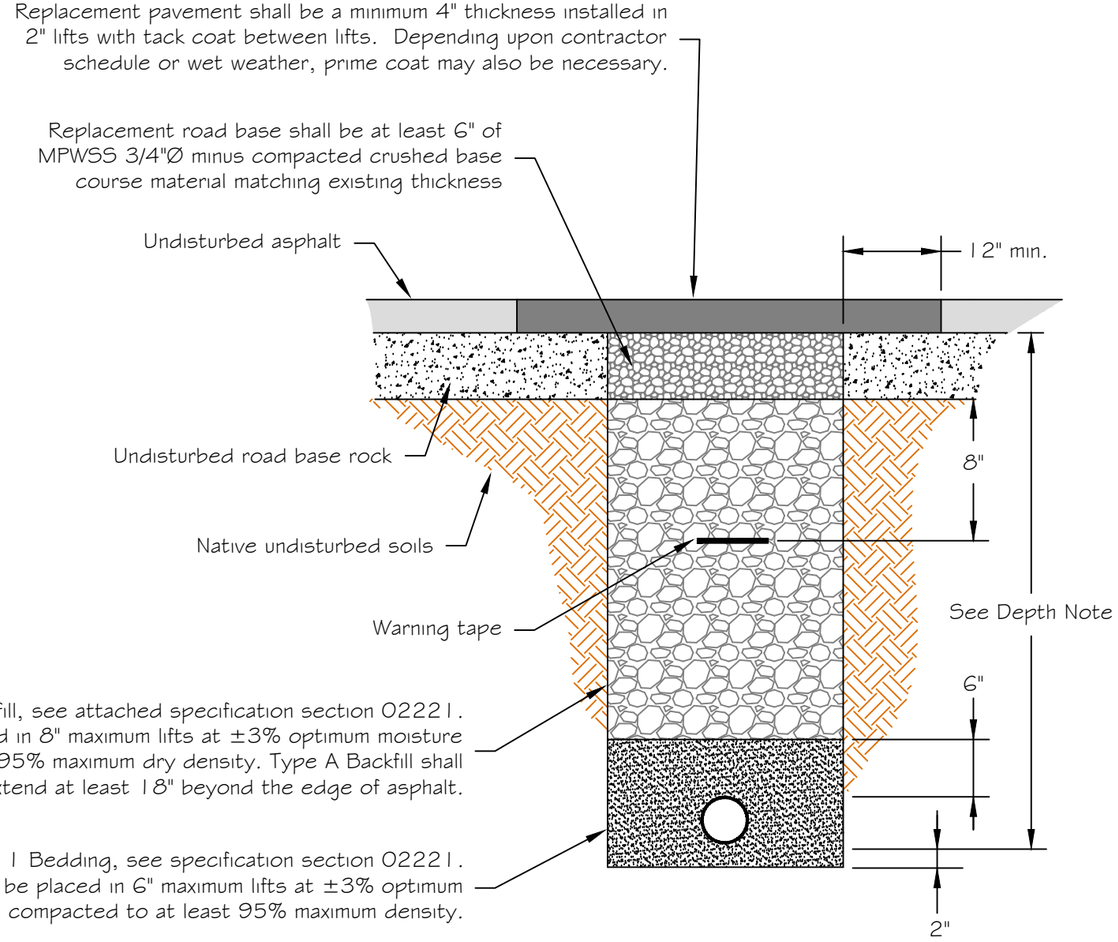
The depth of burial from the top of conduit to the finished grade ground surface shall be a minimum of:

- 18" for pedestal feeder (panel to pedestals)
- 33" for secondary feeder (transformer to panel)
- 42" for primary feeder (FEC pole to transformer)

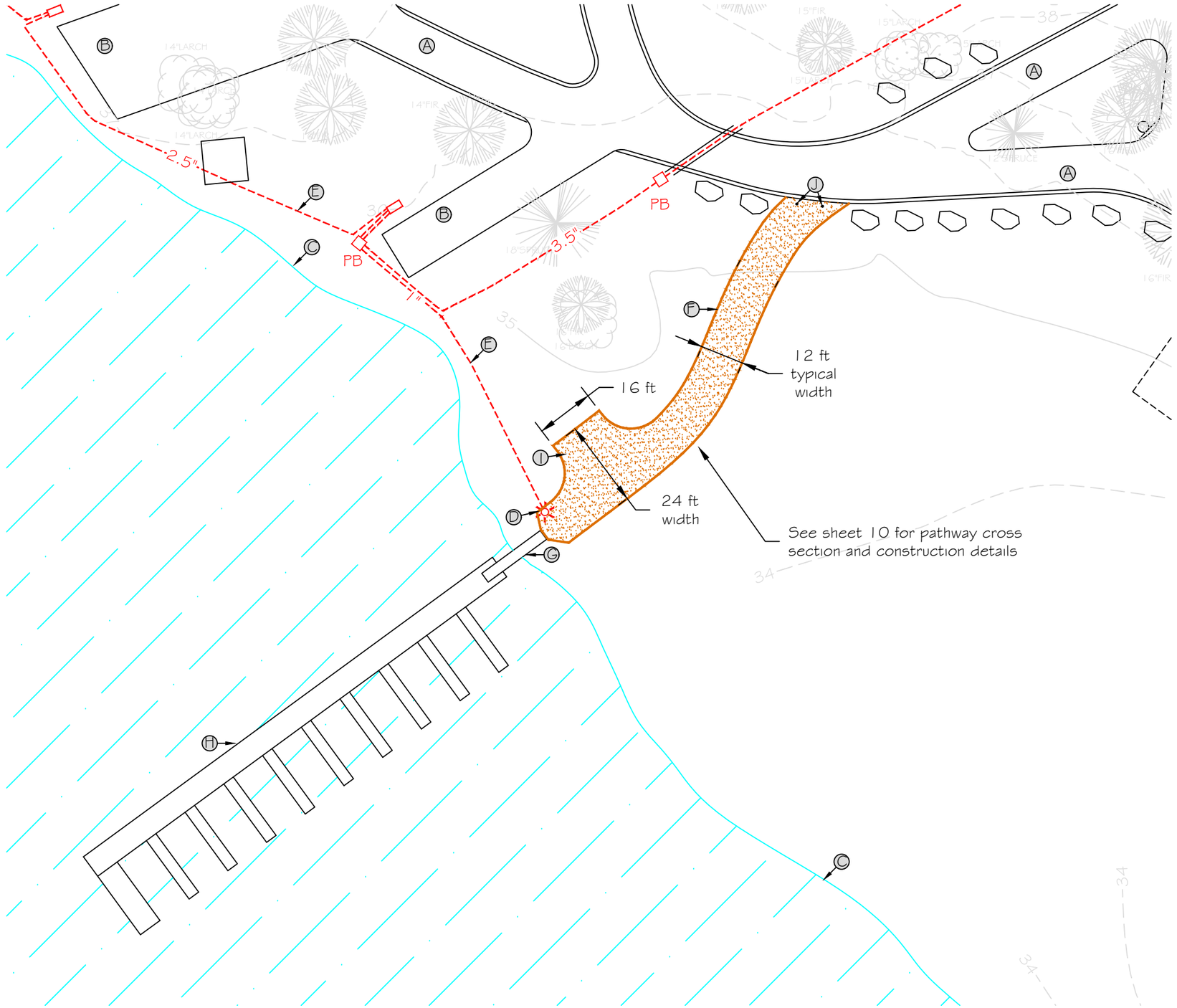
Asphalt Repair Over Trenched Conduit Installation

Not to Scale

Contractor Bidding Note: This is an alternative bid item replacing the conduit bored under asphalt items.



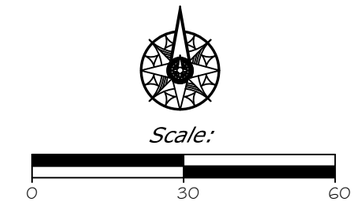
R Smith August 16, 2016 DRAWN BY: DATE: J Thomas August 16, 2016 CHECKED BY: DATE:	REVISED BY: DATE: APPROVED BY: DATE:	APPROVED BY: DATE: APPROVED BY: DATE:	Montana Fish, Wildlife & Parks	**Conduit Trenching Details** Logan State Park Electrification and Dock Project	SHEET: 6 of 15



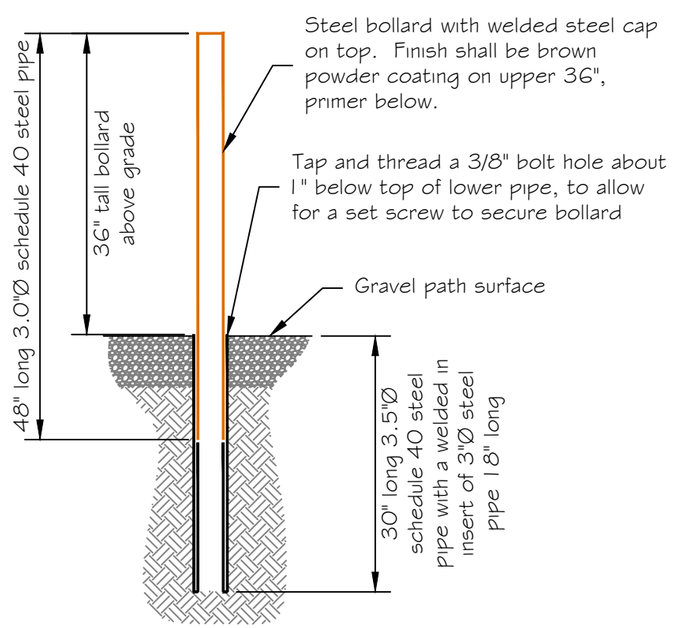
Keyed Notes for Siteplan:

A. Existing Asphalt Campground Roadway
B. Existing Campsite Asphalt Pad
C. Existing Shoreline

D. New Bollard Lighting
E. New Electrical Conduit
F. New pathway
G. New gangway
H. New floating dock
I. New turning pad
J. New bollards



Removable Steel Bollard Detail
Not to Scale



R Smith August 16, 2016 DRAWN BY: DATE:	REVISED BY: DATE:	APPROVED BY: DATE:	Montana Fish, Wildlife & Parks
J Thomas August 16, 2016 CHECKED BY: DATE:	APPROVED BY: DATE:	APPROVED BY: DATE:	

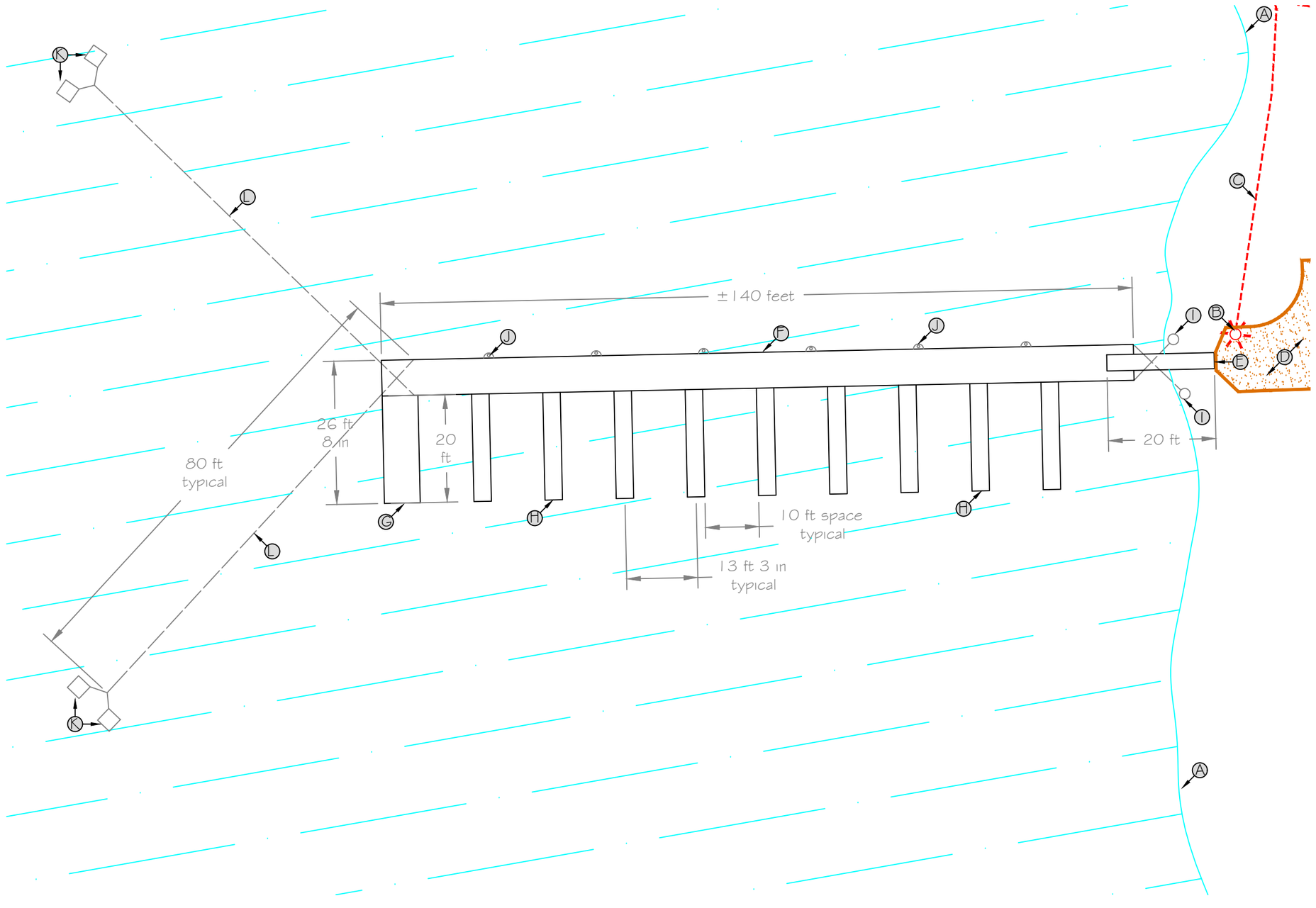
Dock & Pathway Siteplan

Logan State Park Electrification and Dock Project

SHEET: 7 of 15

Scale:

0 20 40



Keyed Notes for Siteplan:

A. Existing Shoreline

B. New Bollard Lighting
C. New Underground Electrical Conduit
D. New Pathway
E. New Gangway
F. New Floating Dock
G. New Dock End Section
H. New Finger Dock, typical

I. New shore anchor pin with crossed chain to end of dock, two typical on NE end of dock
J. New 2" galvanized pipe pile support to lakebed for stabilization, typical every 20 feet
K. New double 700 pound concrete anchors
L. New galvanized anchor chain

General Floating Dock Specifications:

The floating dock has the following nominal specifications and minimum accessories:

- Dock Minimum Length = 140 feet
- Dock Minimum Width = 80 inches
- Dock Minimum Depth (Thickness) = 15 inches
- Dock Minimum End Section Width = 80 inches
- Dock Minimum End Section Length = 20 feet
- Dock Minimum Finger Width = 40 inches
- Dock Minimum Finger Length = 20 feet

- Dock SW End Weight Anchors = 1400 lbs each
- Dock SW End Weight Anchors = Two
- Dock Minimum End Chains = $\frac{5}{16}$" ϕ 80 ft each
- Dock Minimum End Chains = Two
- Dock Minimum Shore Pins = 2
- Dock Minimum Shore Chains = $\frac{5}{16}$" ϕ 20 ft each
- Dock Minimum Shore Chains = Two

- Gangway Minimum Length = 20 feet
- Gangway Minimum Width = 36 inches
- Gangway Material = Aluminum

- Dock Boat Tie-Up Cleats = 73 minimum
- Dock Boat Fenders = 16 minimum
- Dock Corner Gussets = 19 minimum
- Dock Stabilization Piles = 6 minimum

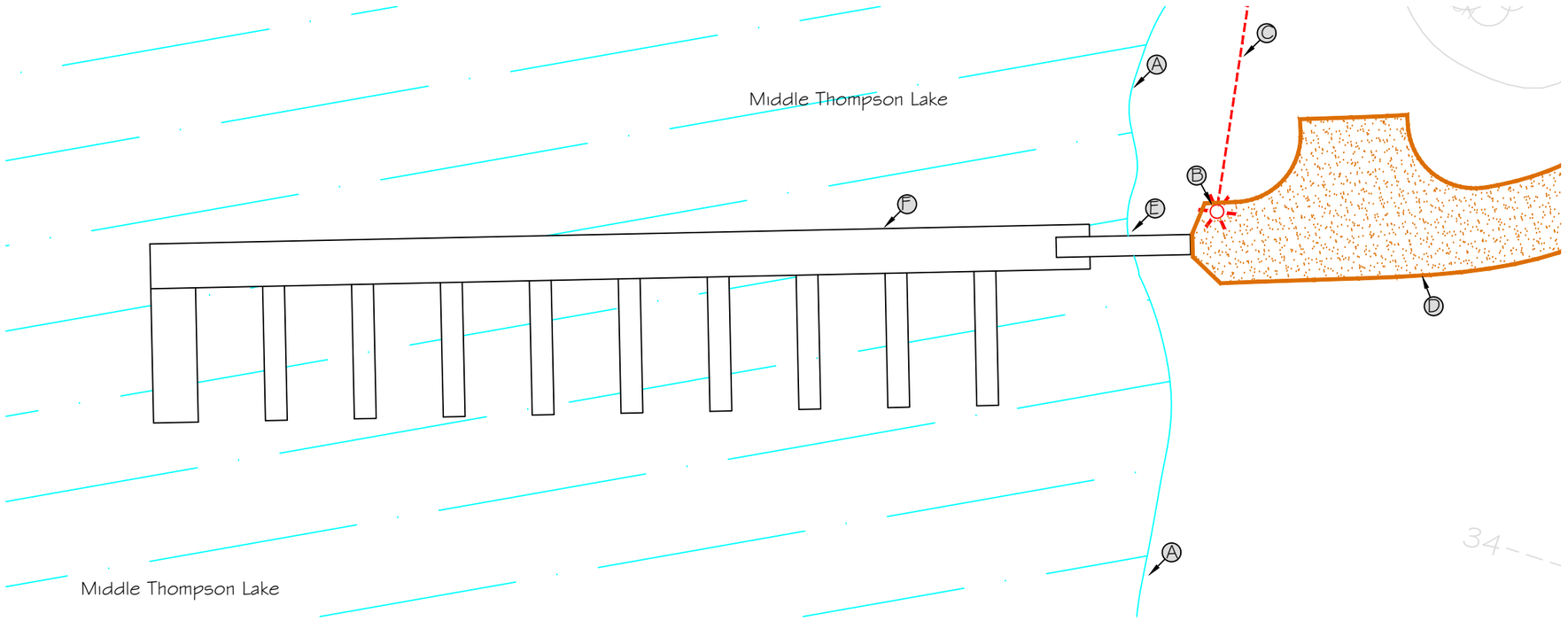
R Smith August 16, 2016 DRAWN BY: DATE: J Thomas August 16, 2016 CHECKED BY: DATE:	REVISED BY: DATE: APPROVED BY: DATE:	APPROVED BY: DATE: APPROVED BY: DATE:

Montana Fish, Wildlife & Parks

Dock Details

Logan State Park Electrification and Dock Project

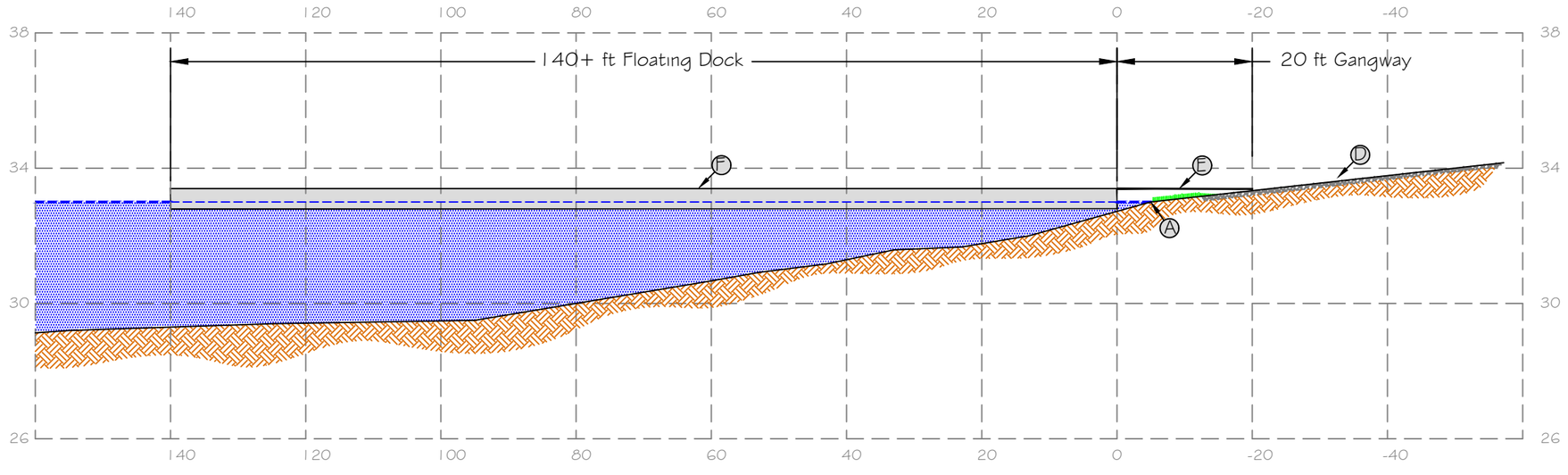
SHEET: 8 of 15

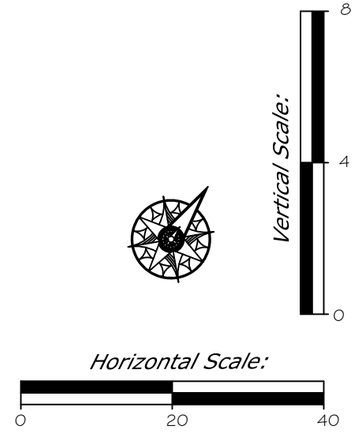


Keyed Notes for Siteplan:

A. Existing Shoreline & Ordinary High Water Mark

B. New Bollard Lighting
C. New Electrical Conduit
D. New Pathway
E. New Gangway
F. New floating dock





R Smith DRAWN BY: August 16, 2016 DATE:	REVISED BY: DATE:	APPROVED BY: DATE:	Montana Fish, Wildlife & Parks
J Thomas CHECKED BY: August 16, 2016 DATE:	APPROVED BY: DATE:	APPROVED BY: DATE:	

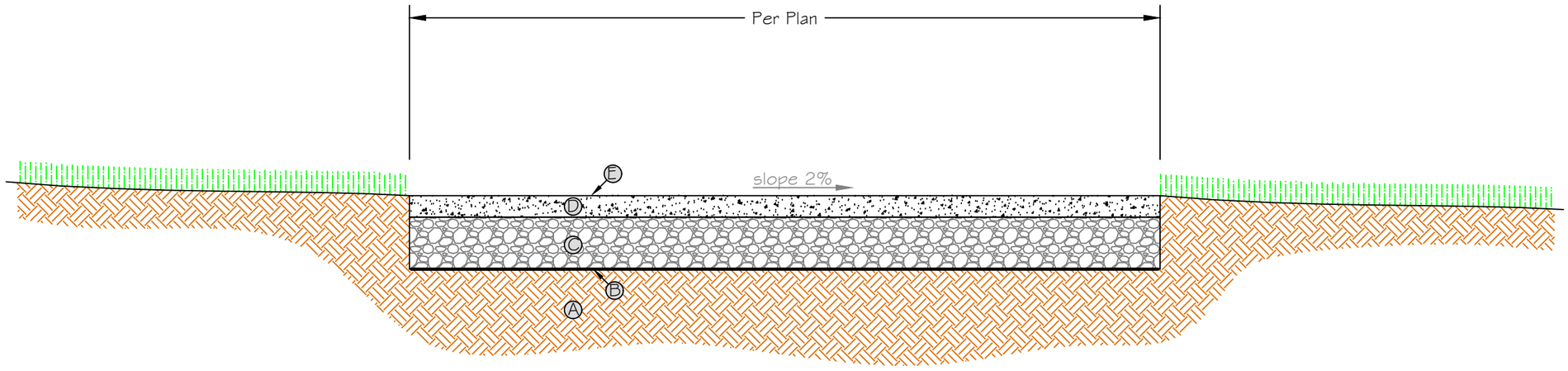
Proposed Dock Profile

Logan State Park Electrification and Dock Project

SHEET: 9 of 15

Gravel Surfaced Pathway Detail

Not to Scale



Pathway Construction Notes:

A. Subgrade: Existing subgrade materials shall be scarified to a depth of 8", water conditioned (as required) and re-compacted to improve subgrade uniformity and support. Compaction shall be a minimum of 95% of maximum laboratory dry density per AASHTO T99 or ASTM D698.
B. Geotextile: Road stabilization geotextile, see note below.
C. Crushed Base Course: Base course material shall be crushed, minimum 10" thickness of 1.5" minus material meeting the applicable gradation of the MPWSS table found in section 02234 part 2.4.A. This material shall be placed in lifts not exceeding 6" and shall be compacted to a minimum of 95% of maximum laboratory dry density per AASHTO T99.
D. Surface Course: Surface course material shall be a crushed, minimum 3" thickness of 0.75" minus material, well compacted meeting applicable gradation of MPWSS.
E. Final Grading: Surface of pathway shall not be vary more than 3/4" higher, and no lower, than adjacent lawn. Surface shall be cross-sloped to drain easterly with a standard 1/4 inch per foot or 2% grade.

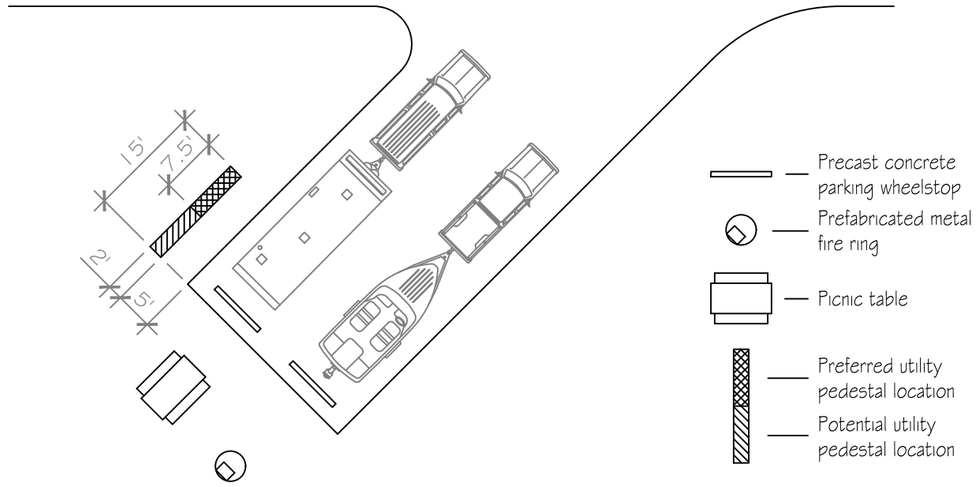
Additional Notes:

1. Minimum Standards: All work shall meet the minimum standards established in the current edition of the Montana Public Works Standard Specification (MPWSS). Some specifications in this detail or other project plan sheets and attachments may exceed the MPWSS.
2. Earthwork: To prepare for pathway construction all topsoil, root zone and any soft, frozen or otherwise unsuitable materials shall be removed.
3. Geotextile: If native subgrade material is found to contain significant amounts of clay or silt, engineer may direct contractor to install a geotextile. The geotextile shall be MIRIFI 500x or approved equal.
4. Surface Course: Contractor shall submit a surface course material sample and gradation to engineer for approval prior to installation.

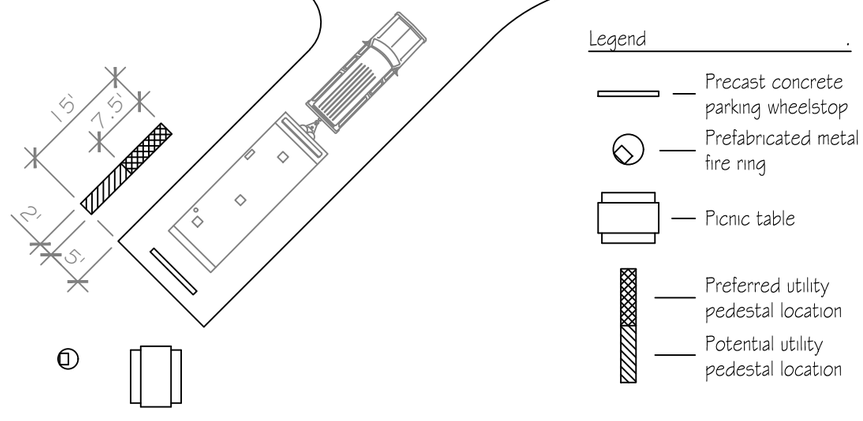
R Smith August 16, 2016 DRAWN BY: DATE: J Thomas August 16, 2016 CHECKED BY: DATE:	REVISED BY: DATE: APPROVED BY: DATE:	APPROVED BY: DATE: APPROVED BY: DATE:	Montana Fish, Wildlife & Parks	Pathway Details Logan State Park Electrification and Dock Project	SHEET: 10 of 15

Typical Electrical Pedestal Location Examples

Campground Loop Traffic Flow



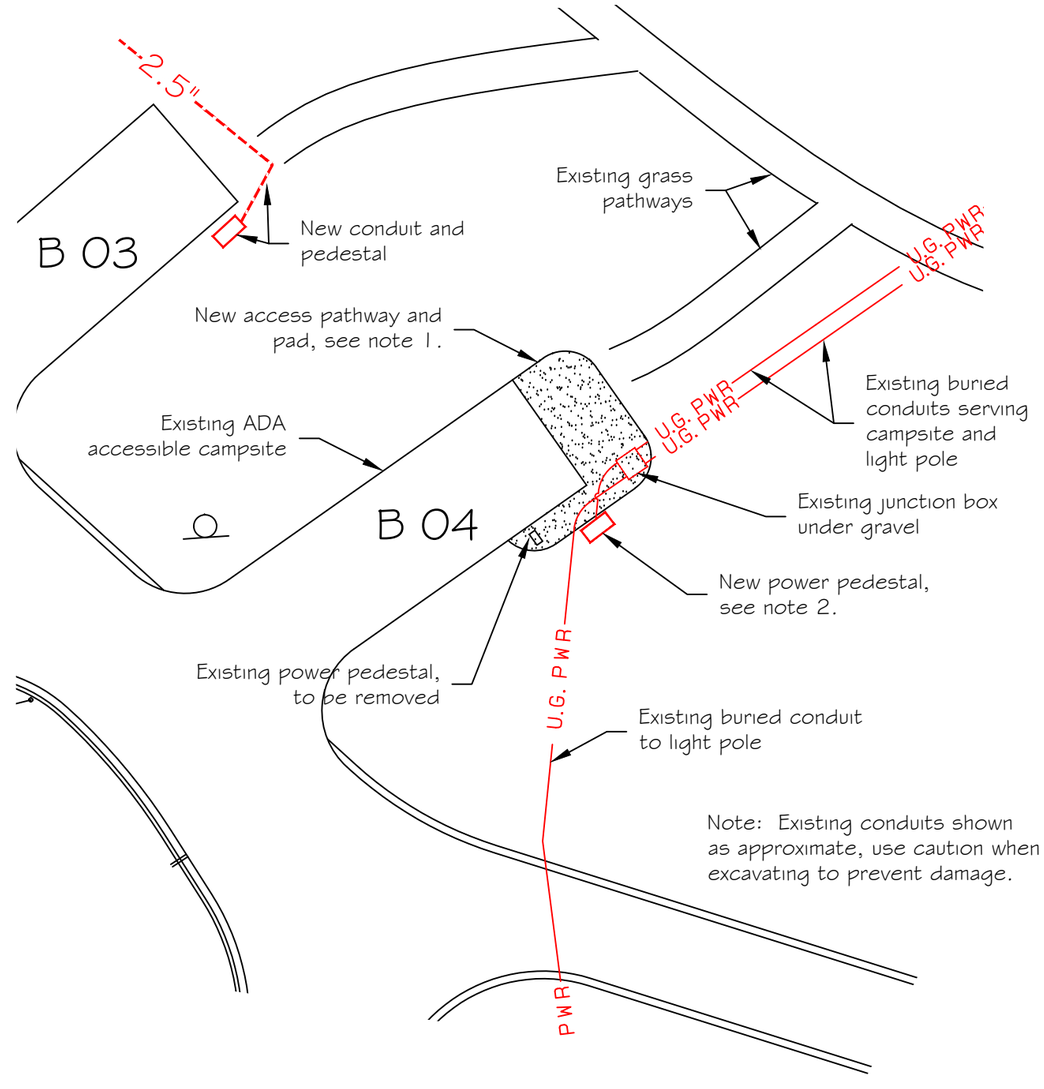
Campground Loop Traffic Flow



Campsite B-04 Improvements

Campsite B-04 Construction Notes:

1. Access Pad / Pathway: Contractor constructed an accessible pathway around the end of the campsite to allow for access to plug in the RV unit. The pad extended at least 10 feet beyond the end of the asphalt pad and fill in the 5 feet between the asphalt and the new power pedestal. Contractor cleared and grubed existing topsoil and vegetation, then filled up to asphalt pad level with $\frac{3}{4}$" crushed compacted MPWSS material.
2. Power Pedestal: The campsite had an existing power pedestal that had suffered regular damage from backing vehicles. The old unit was removed and a new pedestal installed in a better location.



R Smith August 16, 2016 DRAWN BY: DATE:	REVISED BY: DATE:	APPROVED BY: DATE:	Montana Fish, Wildlife & Parks
J Thomas August 16, 2016 CHECKED BY: DATE:	APPROVED BY: DATE:	APPROVED BY: DATE:	

Pededstal Location & ADA Pad Details

Logan State Park Electrification and Dock Project

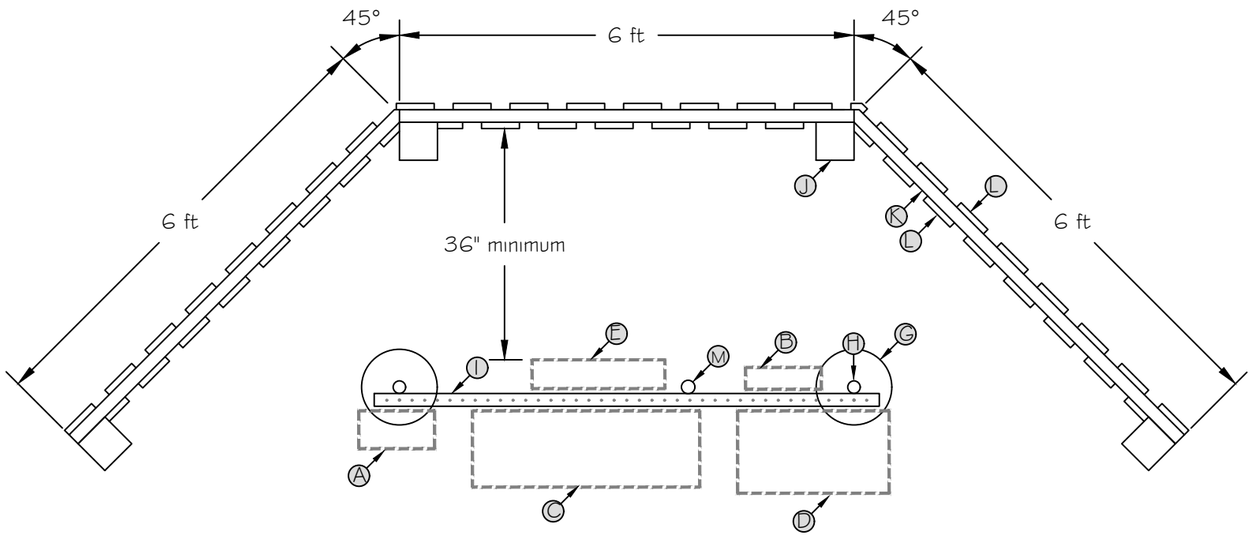
SHEET: 11 of 15

Keyed Notes:

A. New Meter
B. New Sub-Meter
C. New CT Enclosure
D. New MDP
E. Existing Panel A, removed and relocated to backside
F. Finished grade
G. New Foundation Piers, set 2" above finished grade, tops sloped to drain from center toward edges, see note this page for construction specifications
H. New Upright 2" Schedule 40 Steel Pipe, 8 feet in length with 24" embedment in foundation
I. New Cross Piece 2" Unistrut, 6.5 feet in length, install as many as required to mount panels
J. New 6" x 6" x 8 ft treated wooden post
K. New 2" x 4" x 6 ft treated wooden framing members
L. New $\frac{5}{8}$" x 6" x 6 ft wooden fence pickets, painted brown
M. Existing 3" steel post, tied to unistrut

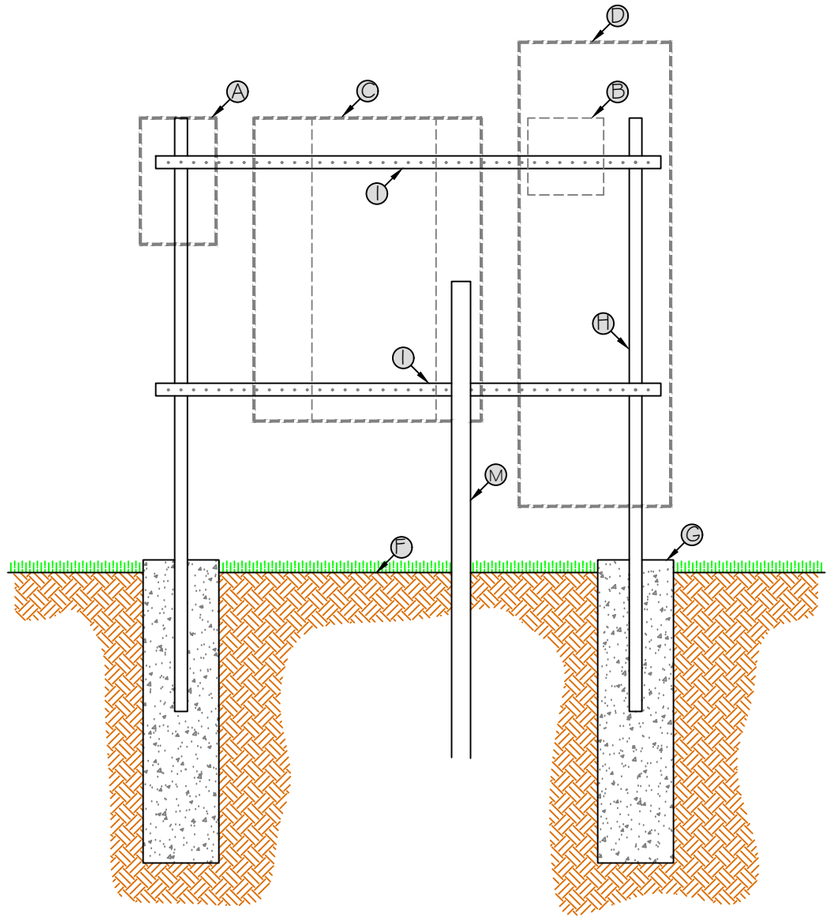
Concrete Piers Note: Piers are 12" diameter by 48" deep each, composed of 3,000 psi concrete. Vertical reinforcing in the piers will consist of four vertical #4 bars spaced equally around the pier 3" from the edge. Horizontal reinforcing shall consist of at least three hoops of #3 bar set at depth of 2", 8" and 14" below the top of the pier.

Steel Upright Note: Each pier shall have an eight foot long 2"Ø schedule 40 steel pipe, embedded 2 feet into the concrete pier. Pipe shall be powder coated brown. Pipe shall also be filled with concrete.



Service Assembly Support Structure and Screen Detail (Plan View):
Scale: $\frac{1}{2}$" = 1 foot

Service Assembly Support Structure (Elevation View):
Scale: $\frac{1}{2}$" = 1 foot

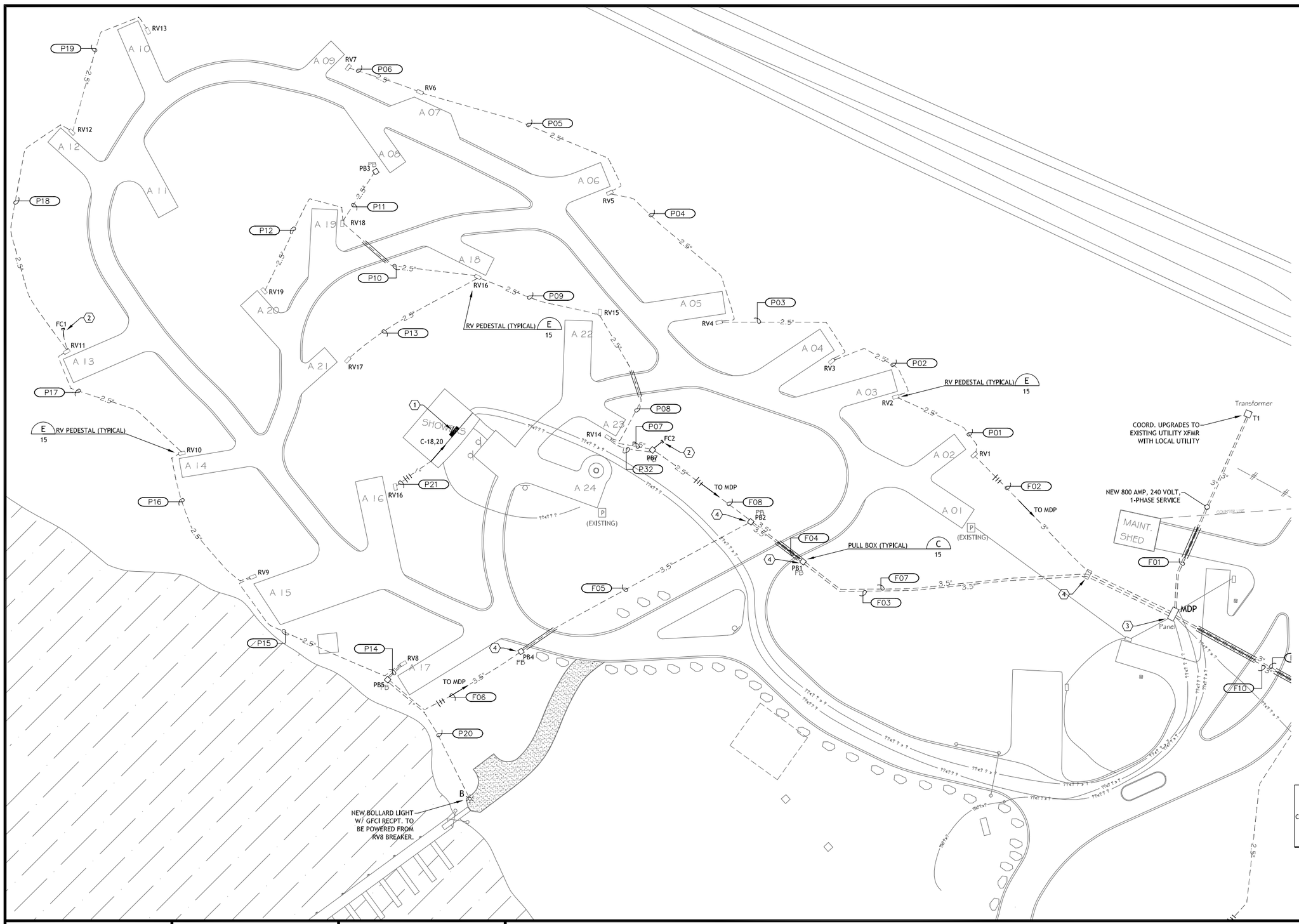


R Smith DRAWN BY:	August 16, 2016 DATE:	REVISED BY:	DATE:	APPROVED BY:	DATE:
J Thomas CHECKED BY:	August 16, 2016 DATE:	APPROVED BY:	DATE:	APPROVED BY:	DATE:

Montana Fish, Wildlife & Parks

Panel Support Structure
Logan State Park Electrification and Dock Project

SHEET: 12 of 15



GENERAL NOTES

1. SHOULD THE CONTRACTOR EXCEED THE ROUTING INDICATED ON THE DRAWING, THE CONDUCTOR AND CONDUIT SHALL BE INCREASED TO ALLOW FOR A 4% (MAX) VOLTAGE DROP, AND THE CONTRACTOR MUST NOTIFY THE ENGINEER IN WRITTING PRIOR TO ANY DEVIATION.
2. CONDUITS AND GROUND BOXES:
   1) ALL CONDUIT WORK COMPLETED BY GENERAL CONTRACTOR IS TO BE INSPECTED BY THE LICENSED ELECTRICAL CONTRACTOR PRIOR TO BURIAL.
   2) MINIMUM SIZE CONDUIT TO BE USED IS 1" FOR RCPT AND LIGHTING BRANCH CIRCUITS AND 2-1/2" FOR RV PEDESTAL CIRCUITS, SCHEDULE 40 PVC BURIED AT A DEPTH OF NOT LESS THAN 18", UNLESS OTHERWISE NOTED.
   3) CONDUIT WHERE ENTERING AND EXITING PEDESTAL BASES AND GROUND BOXES SHALL BE SEALED FROM DIRT, DEBRIS AND RODENTS (DUX SEAL, PERMA SEAL, ETC.).
   4) GROUND BOXES, WHERE USED, SHALL BE OUTDOOR RATED, AND INSTALLED FLUSH WITH FINISHED GRADE, OR NO MORE THAN 1" BELOW FINISHED GRADE. GROUND BOXES SHALL NOT BE INSTALLED HIGHER THAN FINISHED GRADE. GROUND BOXES SHALL BE ARRANGED TO DRAIN (GRAVEL BOTTOM, 3" MIN.).
   5) INSTALL PULL-ROPES THROUGH EACH PIECE OF CONDUIT INSTALLED.
3. WIRING METHODS:
   1) WIRE INSTALLED IN RV PEDESTAL CONDUIT RUNS SHALL NOT BE SMALLER THAN #300 AWG THWN ALUMINUM STRANDED CONDUCTOR, UNLESS NOTED OTHERWISE.
   2) WIRE INSTALLED IN RV PEDESTALS SHALL LAND ON THE LOOP FEED LUG TERMINAL BAR. THE CONTRACTOR MAY USE PIN TERMINAL CONNECTORS IN THE BASE OF THE PEDESTAL TO REDUCE FEEDER CONDUCTORS TO THE MAXIMUM CONDUCTOR SIZE ALLOWED BY THE PEDESTAL LUG TERMINAL BAR. USE OXIDE INHIBITOR FOR ALL ALUMINUM CONDUCTOR TERMINATIONS.
   3) COLOR CODE FOR WIRING SHALL BE CONSISTENT THROUGHOUT INSTALLATION.
   4) GROUND BOX SPLICES SHALL BE MADE WATER TIGHT.
4. PEDESTAL INSTALLATION AND WIRING:
   1) PEDESTALS AND PEDESTAL BASES SHALL BE PROVIDED AND INSTALLED PLUMB AND LEVEL.
   2) PEDESTALS SHALL BE DIRECT-BURY TYPE.
   3) AFTER INSTALLATION, PEDESTAL BASES SHALL BE COMPACTED TO 95% MDD STANDARD.
   4) REFER TO THE TYPICAL ELECTRICAL PEDESTAL LOCATION DETAILS ON SHEET 15 FOR DIMENSIONAL INFORMATION FOR PEDESTAL PLACEMENT AT THE CAMPSITES.
5. SIZES INDICATED FOR PULL BOXES AND CONDUITS ARE MINIMUMS.
6. REFER TO THE WIRE AND CONDUIT SCHEDULE FOR WIRE AND CONDUIT TAGS.
7. ALL CONDUCTORS TO BE THWN, UNLESS NOTED OTHERWISE.
8. THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES ARE NOT REPRESENTED ON THIS DRAWING. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES IN WRITING, MAKE HIS OWN SITE INVESTIGATION, AND SHALL BE RESPONSIBLE FOR SECURING THE EXACT LOCATION OF ALL EXISTING UNDERGROUND UTILITIES, BOTH PRIMARY AND SECONDARY, PUBLIC AND PRIVATE, THAT MAY INTERFERE WITH ALL DEMOLITION, TRENCHING, EXCAVATION, AND NEW CONSTRUCTION WORK PRIOR TO BEGINNING EXCAVATION. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT EXISTING UTILITY LINES, INCLUDING POWER, PHONE, GAS, WATER, AND SEWER, AND SHALL NOTIFY THE ENGINEER PRIOR TO ALL EXCAVATIONS. ALL UNDERGROUND UTILITY LINES DISTURBED SHALL BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR.
9. CONDUIT RUNS ON THIS DRAWING ARE SCHEMATIC AND SHOWN FOR IDENTIFICATION OF EXTERIOR POWER AND CONTROL WIRING REQUIREMENTS. SEE THE INTERIOR BUILDING ELECTRICAL PLAN(S) FOR CONDUIT ROUTING INSIDE OF THE BUILDING.
10. ▭ RV# = RV PEDESTAL
    □ PB# = PULL BOX
    ⊣ FC# = FUTURE CONNECTION

KEY NOTES ⟨X⟩

1. EXISTING PANEL 'C' INSIDE THE RESTROOM FACILITY. PROVIDE A NEW 50A-2P CIRCUIT BREAKER IN PANEL 'C' TO ACCOMMODATE THE NEW RV PEDESTAL (RV16) AT SITE A16.
2. PROVIDE A 1" CONDUIT STUB-OUT FOR CONNECTION TO FUTURE BICYCLE CAMP SITES. CAP AND SEAL CONDUIT, BURYING A 3/8" x 18" PIECE OF REBAR AT THE END OF THE CONDUIT FOR FUTURE LOCATE. CONFIRM ALL STUB-OUT LOCATIONS WITH F.W.P. BEFORE INSTALLATION.
3. DEMO THE EXISTING 200 AMP SERVICE AND PROVIDE A NEW 800 AMP SERVICE WITH ASSOCIATED METER BASE, CT CABINET, AND DISTRIBUTION PANEL. ALL RV PEDESTALS SHALL BE COLLECTIVELY SUB-METERED AT THE MDP. REFER TO THE ELECTRICAL RISER DIAGRAM ON SHEET 15 AND THE PANEL SUPPORT STRUCTURE DETAILS ON SHEET 12. (MDP INSTALLED WAS AN EATON TYPE PRL4 #P4C800LT24AH3R)
4. INSTALL A POLYPROPYLENE POWER PEDESTAL IN LIEU OF THE GROUND BOX DUE TO GROUND WATER PRESENCE AND LARGE CONDUCTOR SPLICE REQUIREMENTS. (NORDIC PSPF-101538-MG-CE)

CAUTION
EXISTING ELECTRICAL MAIN AND OTHER UNDERGROUND UTILITIES ARE PRESENT. THE CONTRACTOR SHALL MAKE HIS OWN INVESTIGATION TO OBTAIN THE EXACT INFORMATION NECESSARY TO PROTECT OR ACCESS ALL UNDERGROUND UTILITIES, BOTH PUBLIC AND PRIVATE.

Scale:
0 60 120

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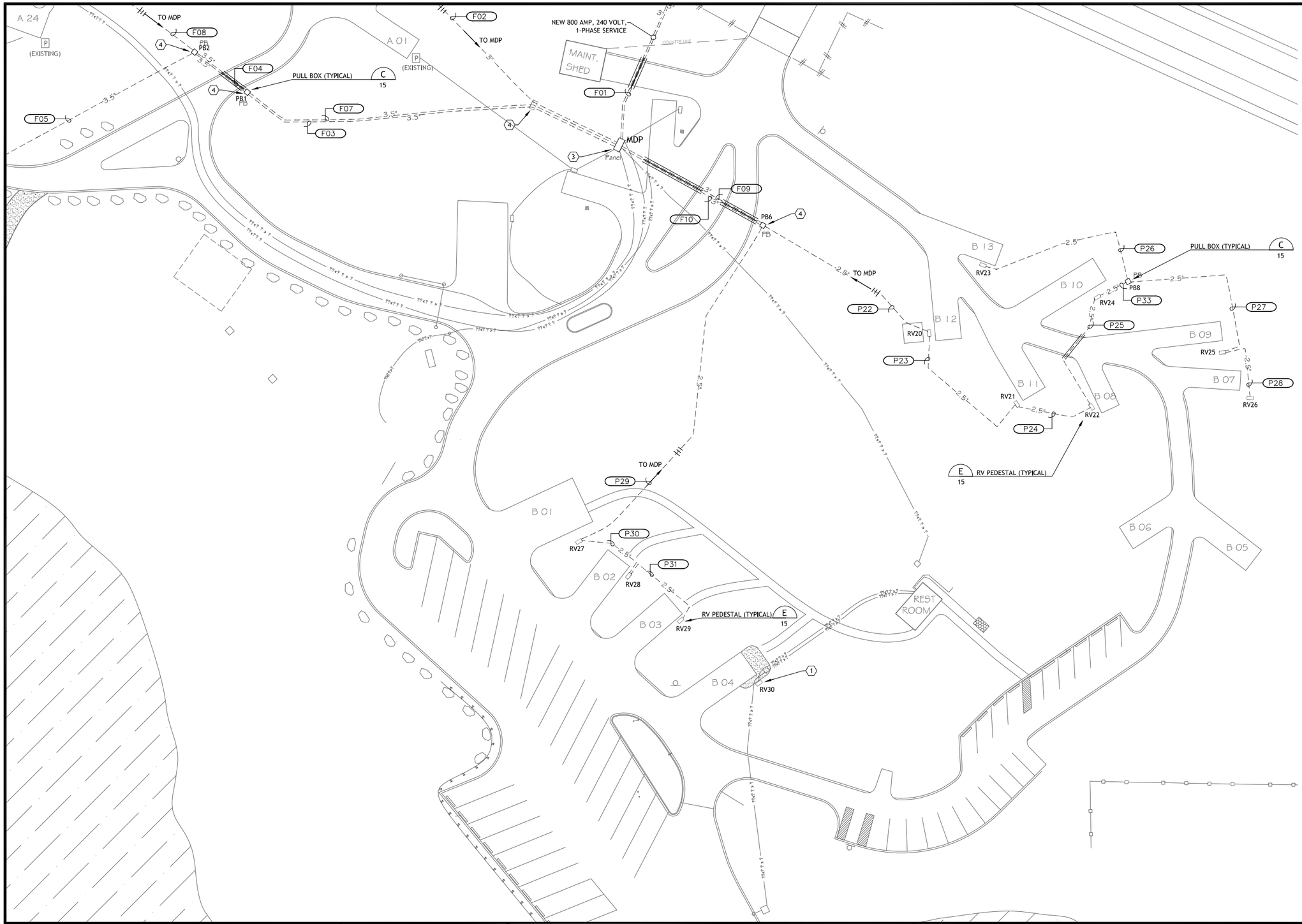
Montana Fish, Wildlife & Parks

Loop A Electrical Plan
Logan State Park Electrification and Dock Project

SHEET: 13 of 15



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10. ▭ RV# = RV PEDESTAL
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KEY NOTES ⟨X⟩

1. DEMO EXISTING RV PEDESTAL. INSTALL A NEW PEDESTAL IN THE NEW LOCATION INDICATED. REROUTE THE EXISTING BRANCH CIRCUIT CONDUCTORS TO THE NEW PEDESTAL LOCATION. BEWARE OF EXISTING BURIED CONDUIT. REFER TO "CAMPSITE B-04 IMPROVEMENTS" ON SHEET 11.
2. N/A
3. DEMO THE EXISTING 200 AMP SERVICE AND PROVIDE A NEW 800 AMP SERVICE WITH ASSOCIATED METER BASE, CT CABINET, AND DISTRIBUTION PANEL. REFER TO THE ELECTRICAL RISER DIAGRAM ON SHEET 15 AND THE PANEL SUPPORT STRUCTURE DETAILS ON SHEET 12. (MDP INSTALLED WAS AN EATON TYPE PRL4 #P4C800LT24AH3R)
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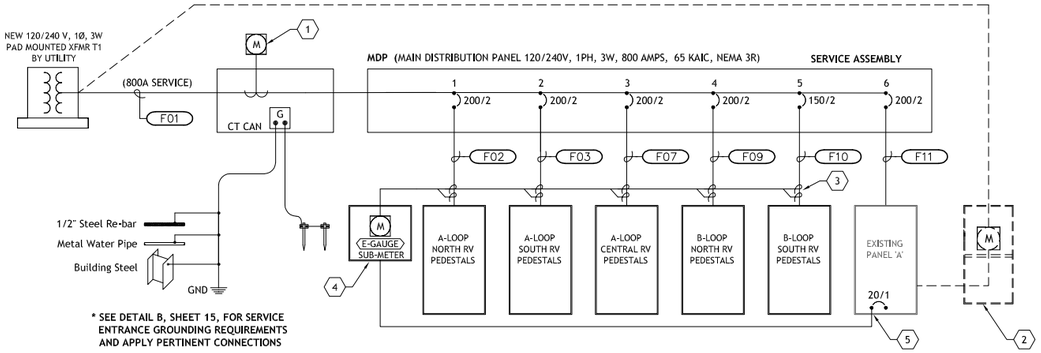
Montana Fish, Wildlife & Parks

Loop B Electrical Plan

Logan State Park Electrification and Dock Project

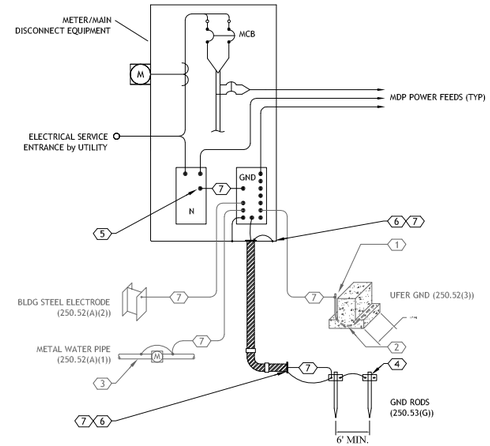
SHEET: 14 of 15



A ELECTRICAL RISER DIAGRAM
SCALE: N.T.S.

ELECTRICAL SITE PLAN - CONDUIT AND WIRE SCHEDULE

TAG#	CONDUIT SIZE	WIRE SIZE	FROM	TO	AMPS
F01	(2) 3"	By Utility Company (FEC)	FEC XFMR	MDP	800A, 1Ø, 3W+G
F02	3"	3#500AL, 1#4AL GND	MDP	A-LOOP NORTH (RV1)	200A, 1Ø, 3W+G
F03	3-1/2"	3#750AL, 1#4AL GND	MDP	A-LOOP SOUTH (PB1)	200A, 1Ø, 3W+G
F04	(2) 3-1/2"	(2) 3#750AL, 1#4AL GND	PB1	PB2	
F05	3-1/2"	3#750AL, 1#4AL GND	PB2	PB4	
F06	3-1/2"	3#750AL, 1#4AL GND	PB4	PB5	
F07	3-1/2"	3#750AL, 1#4AL GND	MDP	A-LOOP CENTRAL (PB1)	200A, 1Ø, 3W+G
F08	3-1/2"	3#750AL, 1#4AL GND	PB2	PB7	
F09	3"	3#350AL, 1#4AL GND	MDP	B-LOOP NORTH (PB6)	200A, 1Ø, 3W+G
F10	3"	3#300AL, 1#4AL GND	MDP	B-LOOP SOUTH (PB6)	150A, 1Ø, 3W+G
F11	2-1/2"	3#250AL, 1#4AL GND	MDP	(E) PANEL 'A'	200A, 1Ø, 3W+G
P01	2-1/2"	3#300AL, 1#4AL GND	RV1	RV2	
P02	2-1/2"	3#300AL, 1#4AL GND	RV2	RV3	
P03	2-1/2"	3#300AL, 1#4AL GND	RV3	RV4	
P04	2-1/2"	3#300AL, 1#4AL GND	RV4	RV5	
P05	2-1/2"	3#300AL, 1#4AL GND	RV5	RV6	
P06	2-1/2"	3#300AL, 1#4AL GND	RV6	RV7	
P07	2-1/2"	3#300AL, 1#4AL GND	PB7	RV14	
P08	2-1/2"	3#300AL, 1#4AL GND	RV14	RV15	
P09	2-1/2"	3#300AL, 1#4AL GND	RV15	RV16	
P10	2-1/2"	3#300AL, 1#4AL GND	RV16	RV18	
P11	2-1/2"	—	RV18	PB3	
P12	2-1/2"	3#300AL, 1#4AL GND	RV18	RV19	
P13	2-1/2"	3#300AL, 1#4AL GND	RV16	RV17	
P14	2-1/2"	3#350AL, 1#4AL GND	PB5	RV8	
	1"	2#8Cu, 1#10 GND	PB5	RV8	
P15	2-1/2"	3#350AL, 1#4AL GND	RV8	RV9	
P16	2-1/2"	3#350AL, 1#4AL GND	RV9	RV10	
P17	2-1/2"	3#350AL, 1#4AL GND	RV10	RV11	
P18	2-1/2"	3#350AL, 1#4AL GND	RV11	RV12	
P19	2-1/2"	3#350AL, 1#4AL GND	RV12	RV13	
P20	1"	2#8Cu, 1#10 GND	PB5	BOLLARD (B)	
P21	1"	3#6Cu, 1#10 GND	RV16	PANEL 'C'	
P22	2-1/2"	3#350AL, 1#4AL GND	PB6	RV20	
P23	2-1/2"	3#350AL, 1#4AL GND	RV20	RV21	
P24	2-1/2"	3#350AL, 1#4AL GND	RV21	RV22	
P25	2-1/2"	3#350AL, 1#4AL GND	RV22	RV24	
P26	2-1/2"	3#350AL, 1#4AL GND	PB8	RV23	
P27	2-1/2"	3#350AL, 1#4AL GND	PB8	RV25	
P28	2-1/2"	3#350AL, 1#4AL GND	RV25	RV26	
P29	2-1/2"	3#300AL, 1#4AL GND	PB6	RV27	
P30	2-1/2"	3#300AL, 1#4AL GND	RV27	RV28	
P31	2-1/2"	3#300AL, 1#4AL GND	RV28	RV29	
P32	1"	—	PB7	RV14	
P33	2-1/2"	3#350AL, 1#4AL GND	RV24	PB8	



B SERVICE GROUNDING DETAIL
SCALE: N.T.S.

DETAIL KEY NOTES: (X)

1. PROVIDE ENOUGH LENGTH TO TERMINATE DIRECTLY TO GROUND BUS.
2. INSTALL AN ELECTRODE ENCASED BY AT LEAST 2" OF CONCRETE, LOCATED WITHIN AND NEAR THE BOTTOM OF A CONCRETE FOUNDATION OR FOOTING THAT IS IN DIRECT CONTACT WITH THE EARTH, CONSISTING OF AT LEAST 20 FT OF ZINC GALVANIZED OR OTHER ELECTRICALLY CONDUCTIVE COATED STEEL REINFORCING BARS OF NOT LESS THAN ½" IN DIAMETER, OR CONSISTING OF AT LEAST 20 FT OF BARE COPPER CONDUCTOR NOT SMALLER THAN #4 AWG. REINFORCING BARS SHALL BE PERMITTED TO BE BONDED TOGETHER BY THE USUAL STEEL TIE WIRES OR OTHER EFFECTIVE MEANS.
3. GROUND THE INTERIOR METAL WATER PIPE WITHIN 5 FEET OF THE WATER PIPE ENTRANCE TO THE BUILDING. GROUNDING PATH CONTINUITY, OR THE BONDING CONNECTION TO INTERIOR PIPING, MUST NOT RELY ON WATER METERS OR SIMILAR EQUIPMENT (NEC 250.53(D)).
4. (2) 5/8" x 8'-0" COPPER CLAD STEEL GROUND RODS, 25 OHMS OR LESS. CLAMPS SHALL BE RATED FOR DIRECT BURIAL.
5. PROVIDE COPPER BONDING JUMPER SIZED PER NEC 250.28(D) OR FACTORY PROVIDED NEUTRAL TO GROUND BAR LINK. THIS IS THE ONLY PLACE IN THE BUILDING WHERE NEUTRAL TO GROUND SHALL BE BONDED TOGETHER.
6. BOND ALL METAL RACEWAYS CONTAINING GROUNDING ELECTRODE CONDUCTORS AT BOTH ENDS AS REQUIRED BY NEC 250.64(E). PROVIDE GROUNDING TYPE BUSHINGS AND FITTINGS.
7. BONDING JUMPERS AND COPPER GROUNDING ELECTRODE CONDUCTORS SHALL BE SIZED BASED UPON ELECTRICAL SERVICE SIZE (NEC 250.66).

KEY NOTES (X)

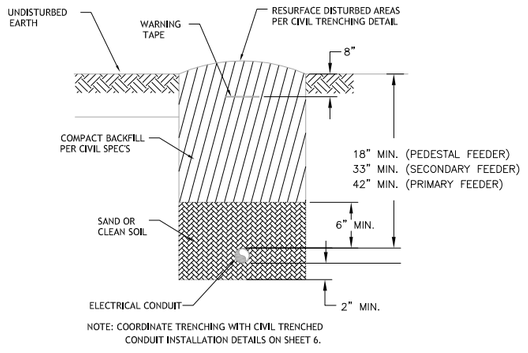
1. METERING EQUIPMENT SHALL BE SUBMITTED TO LOCAL UTILITY COMPANY FOR SIGNATURE APPROVAL AND THEN TO ELECTRICAL ENGINEER OF RECORD FOR APPROVAL.
2. DEMO EXISTING ELECTRICAL SERVICE AND ASSOCIATED METER BASE. BACK-FEED EXISTING PANEL 'A' THROUGH THE NEW MDP.
3. SPLIT-CORE CURRENT TRANSFORMER, 200 AMP. (TWO PER PANEL, TEN TOTAL). eGAUGE JD-SCT-024-0200, OR EQUIVALENT.
4. POWER METER SUB-METERING DEVICE IN LOCKABLE NEMA 3R ENCLOSURE. 6 CHANNELS MINIMUM; 240 VOLT, 200 AMP MINIMUM; 64-REGISTER DATABASE. THE SUB-METER SHALL MONITOR POWER USAGE FOR ALL RV CAMPSITES ON BOTH LOOPS 'A' AND 'B'. ENERGY USAGE DATA SHALL BE COLLECTED LOCALLY BY PARK SERVICE PERSONEL VIA A LOCAL, RJ45, ETHERNET CONNECTION. INTERNET CONNECTIVITY IS NOT AVAILABLE NOR REQUIRED. PROVIDE USER-INTERFACE SOFTWARE TO BE LOADED ON A PARK SERVICE LAPTOP. PROVIDE A 5-YEAR WARRANTY. THE SUB-METER SHALL BE AN eGAUGE #EG3000 IN A POWERED ENCLOSURE KIT (PEK), OR EQUIVALENT.
5. PROVIDE A DEDICATED 120V, 20 AMP BRANCH CIRCUIT FROM EXISTING PANEL 'A' TO THE POWER METER ENCLOSURE. PROVIDE A NEW 20A-1P CIRCUIT BREAKER IN PANEL 'A' (MATCH EXISTING BREAKER TYPES).

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	LAMPS PER FIXTURE	WATTS PER LAMP	LAMP SIZE	VOLTS	MAX WATTS	MOUNTING	MFG & P/N	NOTES
B	Bollard Light	1	30	LED 4000k	120	30	Bollard	Lumec: DOSB1-30W16LED4K-120V-GFII-BKTX	Black textured finish; Provide 15A, 120V, GFI receptacle.

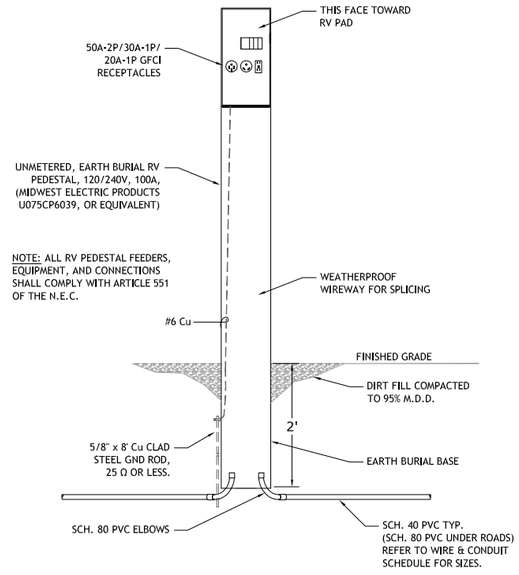
**CONTRACTOR MAY USE PULL BOXES AT HIS DISCRETION TO ASSIST IN LONG WIRE PULLS. ALL BOXES SHALL COMPLY WITH THIS DETAIL.

C TYPICAL PULL BOX DETAIL (PB#)
SCALE: N.T.S.



NOTE: COORDINATE TRENCHING WITH CIVIL TRENCHED CONDUIT INSTALLATION DETAILS ON SHEET 6.

D TYPICAL TRENCH DETAIL
SCALE: N.T.S.



E RV PEDESTAL DETAIL
SCALE: N.T.S.

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Montana Fish, Wildlife & Parks

Electrical Riser Diagram & Details
Logan State Park Electrification and Dock Project

SHEET: 15 of 15