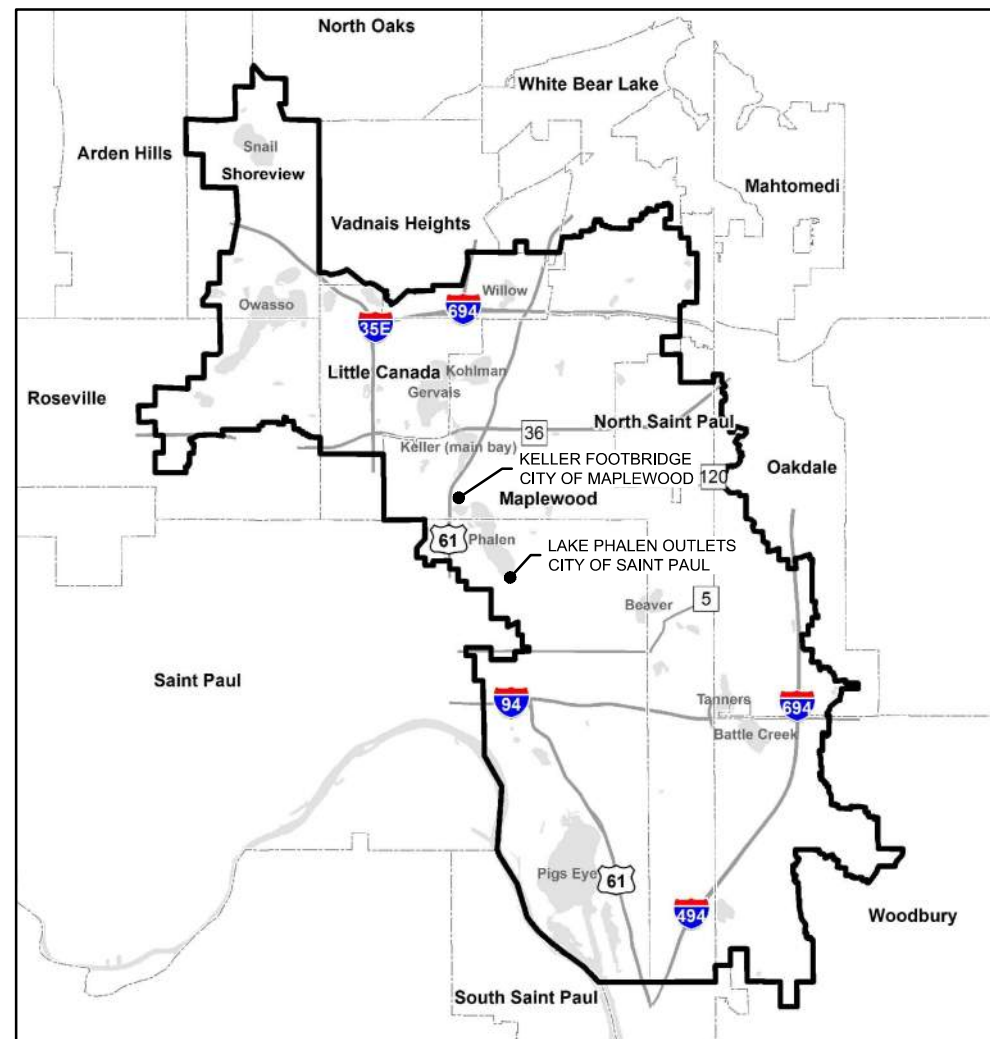


RAMSEY-WASHINGTON METRO WATERSHED DISTRICT LITTLE CANADA, MINNESOTA

KELLER CHANNEL WEIR AND PHALEN OUTLET RESILIENCY



DISTRICT MAP

SHEET INDEX

G-GENERAL
C-CIVIL
S-STRUCTURAL
E-ELECTRICAL

SHEET NO. TITLE

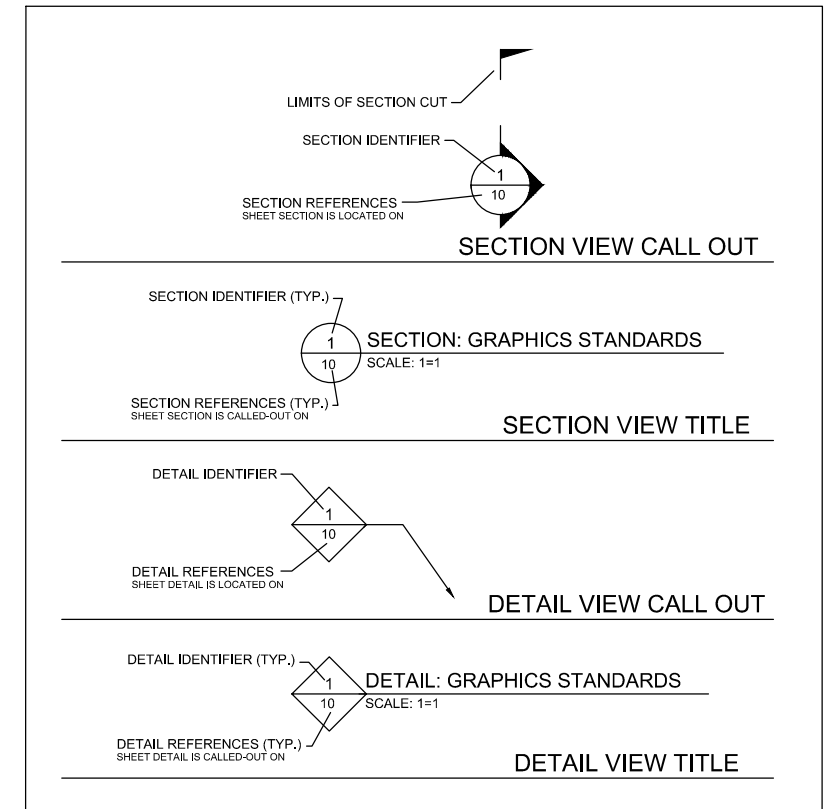
- G-01 TITLE SHEET
- G-02 STORMWATER POLLUTION PREVENTION PLAN (SWPPP)
- G-03 EROSION CONTROL, DETAILS

- C-01 PHALEN OUTLET STRUCTURES, SITE PLAN
- C-02 KELLER CHANNEL WEIR STRUCTURE, SITE PLAN
- C-03 PHALEN WEST OUTLET, EXISTING STRUCTURE AND APPURTENANCES
- C-04 PHALEN EAST OUTLET, EXISTING STRUCTURE AND APPURTENANCES
- C-05 KELLER DAM FOOTBRIDGE, EXISTING STRUCTURE AND APPURTENANCES
- C-06 PHALEN WEST OUTLET, SITE GRADING AND STORM PLAN, PROFILE & SECTION
- C-07 PHALEN EAST OUTLET, SITE GRADING AND STORM PLAN, PROFILE & SECTION

- S-01 PHALEN EAST OUTLET STRUCTURE, DEMO PLANS AND SECTIONS
- S-02 PHALEN EAST OUTLET STRUCTURE, PLANS AND SECTIONS
- S-03 PHALEN WEST OUTLET STRUCTURE, DEMO PLANS AND SECTIONS
- S-04 PHALEN WEST OUTLET STRUCTURE, PLANS AND SECTIONS
- S-05 KELLER CHANNEL WEIR STRUCTURE, PLANS, SECTIONS AND DETAILS

- E-01 ELECTRICAL SYMBOLS AND ABBREVIATIONS
- E-02 PHALEN ELECTRICAL SITE PLAN
- E-03 PHALEN ENLARGED ELECTRICAL SITE PLANS
- E-04 PHALEN SECTIONS
- E-05 KELLER ELECTRICAL SITE PLAN
- E-06 KELLER SECTIONS
- E-07 ELECTRICAL DETAILS
- E-08 PHALEN OUTLETS CONTROL PANEL ELECTRICAL SCHEMATICS
- E-09 PHALEN OUTLETS CONTROL PANEL ELECTRICAL SCHEMATICS
- E-10 KELLER CHANNEL CONTROL PANEL ELECTRICAL SCHEMATICS
- E-11 KELLER CHANNEL CONTROL PANEL ELECTRICAL SCHEMATICS

SYMBOLS AND ABBREVIATIONS:



CONTACTS:

ENGINEER CONTACT:
Brad Lindaman
Barr Engineering Co.
4300 MarketPointe Drive
Minneapolis, MN 55435
952-832-2808
blindaman@barr.com

OWNER'S REPRESENTATIVE CONTACT:
Tina Carstens, Administrator
2665 Noel Drive
Little Canada, MN 55117
651.792.7960
tina.carstens@rwmwd.org



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CADD USER: Greg Nelson FILE: M:\DESIGN\2362\365\00\2362135500_ACAD 2017_0-01 TITLE SHEET AND INDEX.DWG PLOT SCALE: 1:2 PLOT DATE: 7/29/2020 5:02 PM

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.		CLIENT BID CONSTRUCTION	7/31/20					Project Office: BARR ENGINEERING CO. 4300 MARKETPOINTE DRIVE Suite 200 MINNEAPOLIS, MN 55435	Scale AS SHOWN		KELLER CHANNEL WEIR & PHALEN OUTLET RESILIENCY TITLE SHEET AND INDEX	BARR PROJECT No. 23/62-1355.00
PRINTED NAME BRADLEY J. LINDAMAN	SIGNATURE	RELEASED TO/FOR	A	B	C	0		1	2			3
NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION	DATE	LICENSE #	22178			DWG. No. G-01	REV. No. A

GENERAL CONSTRUCTION ACTIVITY INFORMATION:

The Stormwater Pollution Prevention Plan (SWPPP) is required for the General Permit Authorization to Discharge Stormwater Associated with Construction Activity (NPDES Permit) as required by the Minnesota Pollution Control Agency (MPCA) under the National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS).

This project is a water control project to manage and maintain lake levels and prevent flooding around Keller Lake and Lake Phalen for the Ramsey-Washington Metro Watershed District. The purpose of the project is to provide new control structures on the Phalen Lake outlets and modify the existing Keller Lake weir to protect the surface waters within the watershed. The project is located within the Ramsey Washington Metro Watershed District within Ramsey County in the Cities of Maplewood and St. Paul, Minnesota. Proposed construction will take place at two sites; Keller Weir within the SW₁ of Section 16, T29N, R22W Latitude: 44.9980, Longitude: -93.0630 and Lake Phalen Outlets within the SE₁ of Section 21, T29N, R22W Latitude: 44.9794, Longitude: -93.0479.

LOCATION MAP

See Title Sheet G-01 of the Construction Plans, Site Location Map and Sheet Index of site locations.

The project Work includes mobilization and demobilization; lowering of existing Keller Channel Weir by removing 2 feet of the existing concrete weir, control of water and/or dewatering to perform work; installation of new piping systems with level control structures with weir gates to the existing outlet control structures; riprap and filter installation at inlets/outlets; site restoration with native seed mixes; temporary and permanent erosion controls. Erosion prevention measures are required to prevent sediment from being transported off site or to the surface waters. Refer to project drawings for further details.

The anticipated total area of disturbance is approximately 0.36 acres. This Project is under one acre and does not require a General Permit Authorization to Discharge Stormwater Associated with Construction Activity (NPDES Permit).

The total area of pre-construction impervious area is approximately 0.00 acres. The total area of post-construction impervious area is approximately 0.00 acres.

DATES OF CONSTRUCTION: Begin Construction November 2020, Completion June 2021.

RESPONSIBLE PERSONS:

Below is a list of people responsible for this project who are knowledgeable and experienced in the application of erosion prevention and sediment control BMPs. They shall oversee the implementation of the SWPPP, inspection, and maintenance of erosion prevention, and sediment control BMPs before and during construction.

RESPONSIBLE PERSONS:

OWNER: Ramsey Washington Metro Watershed District	CONTRACTOR: TBD
MAILING ADDRESS: 2665 Noel Drive Little Canada, MN 55117	MAILING ADDRESS: TBD TBD, MN 55--
CONTACT PERSON: Tina Carstens Administrator	CONTACT PERSON: TBD Owner
PHONE: 651-792-7960	PHONE: 000-000-0000
MOBILE PHONE:	MOBILE PHONE: 000-000-0000
EMAIL: tina.carstens@rwmd.org	EMAIL: TBD
EMAIM: Dave Vlasin	
Watershed Project Manager Ramsey Washington Metro Watershed District 2665 Noel Drive Little Canada, MN 55117 651-792-7972	

TRAINED INDIVIDUAL	RESPONSIBILITY	APPLICABLE TRAINING	TRAINING DOCUMENTATION ATTACHED?
Jacob N. Burggraff Barr Engineering Co. 4300 MarketPointe Drive Bloomington, MN 55435 952-832-2743 612-991-0042 jbarggraff@barr.com	Preparation of SWPPP	Design of Construction SWPPPs U of MN, April 2008, Updated Nov. 2010, March 2014, May 2017 Expires May 31, 2020	No

Greg Nelson Barr Engineering Co. 4300 MarketPointe Drive Bloomington, MN 55435 952-832-2770 612-599-8889 gnelson@barr.com	Oversight of SWPPP Implementation, Revision Amendment	Project Management Barr Engineering	No
---	---	--	----

TBD TBD TBD TBD, MN 55000 000-000-0000	Performance or Supervision of Installation Maintenance, and Repair of BMPs, Performance of SWPPP Inspections.	Construction Site Manager U of M Expires 00, 0000	No
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RECEIVING WATERS:

Water Body Name:	Water body ID:	Special Water?	Impaired Water?
Lake Phalen	62-0013-00	No	Yes-Non/Construction

Project Area Soil Type: Rural Land, hydrologic soil groups Ta, Sb, HaB, HaB2, Lf, Df.

REGULATORY CONTEXT:

Special or Impaired Waters: This project discharges to impaired waters within one mile of the sites with non-related construction impairments and will not need to follow the requirements for discharging to an impaired water in 23.1, 23.2, 23.7, 23.8, 23.9, and 23.10 of the permit.

This project stormwater discharge is not anticipated to impact any of the following: Outstanding resource value waters, trout waters, calcareous fens, properties listed by the National Register of Historic Places or archaeological sites and is not subject to additional regulations due to any formal environmental reviews, endangered or threatened species. The project will have minimal impact on a wetland area and will follow the guidelines of the Ramsey Washington Metro Watershed District Rule "C" while excavating the improved channel conditions.

PROJECT PLANS AND SPECIFICATIONS:

Required Feature	Sheet No.
Cover Sheet and Drawing Index (Site Location Map)	G-01
Stormwater Pollution Prevention Plan (SWPPP)	G-02
Construction Limits	C-01 to C-02
Existing and Final Grades with Flow Direction	C-01 to C-02
Impervious Surfaces	C-01 to C-02
Potential Pollution generating activities	C-01 to C-02
Areas not to be disturbed	C-01 to C-02
Areas where construction will be phased	C-01 to C-02
Temporary and Permanent erosion and sediment control BMPs	C-01 to C-03
Standard Details for erosion and sediment control	C-03
Estimated Preliminary BMP Quantities	Bid Documents, Bid Form

TEMPORARY EROSION CONTROL PRACTICES

Timing:

- Delineate areas of the site not to be disturbed (with flags, stakes, signs, silt fence, etc.) before work begins.
- Construction phasing will be used when possible to minimize concurrent soil exposure; stabilizing areas as soon as work is completed; and restoring access paths when they are no longer needed.
- Initiate stabilization immediately whenever any construction activity has permanently or temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days.
- Complete stabilization no later than 7 calendar days after the construction activity in any portion of the site has temporarily or permanently ceased.

BMPs:

- Erosion control and stabilization practices to be installed are depicted on the Drawings No. G-02, C-01 and C-02, and include: silt fence, sediment control logs, riprap outlet, inlet drain protection, erosion control blanket, rock construction entrance, flotation silt curtain, and vegetation (through seeding).
- Soils stockpiles shall be stabilized with fast-growing cover crop and hydro mulch and silt fence or sediment log shall be placed around the perimeter of the stock piles.
- Erosion control blanket shall be used to cover all disturbed slopes.
- Direct construction site discharges to vegetated areas where feasible.
- Install all BMPs in accordance with relevant manufacturer specifications and accepted engineering practices.

TEMPORARY SEDIMENT CONTROL PRACTICES

Timing:

- Establish sediment control practices on all downgradient perimeters prior to commencing any upgradient land-disturbing activities.
- If sediment control practices must be adjusted or removed to accommodate short-term activities, complete the activity as quickly as possible and re-install immediately after the activity has been completed or before the next precipitation event (even if the activity is not yet complete).
- Maintain downgradient sediment control practices until final stabilization has been achieved for upgradient areas.

BMPs:

- Minimize soil compaction where feasible.
- Preserve topsoil where feasible; if topsoil must be removed, store in a segregated stockpile for reuse in site restoration.
- Sediment control practices to be installed are depicted on Sheets C-01, C-02 and C-03 and include: rock construction entrance, storm sewer pipe rip rap outlet, flotation silt curtain, silt fence, siltation logs, inlet protection.
- Install silt fence or siltation logs around the perimeter of temporary soil stockpiles.
- Any dewatering of site construction areas that have turbid or sediment laden water must be discharged into a filtering device such as containment bin or filter bag for treatment. Any dewatering discharge cannot adversely affect the receiving waters downstream of the construction site.
- Install rock construction entrances as a vehicle tracking BMP to minimize the track out of sediment from the construction site.
- Monitor adjacent paved surfaces for track out of sediment from construction site and remove sediment via street sweeping if necessary.
- Install all BMPs in accordance with relevant manufacturer specifications and accepted engineering practices.

BMP DESIGN FACTORS

- Expected amount, frequency, intensity, and duration of precipitation: Approximately 2.4 inches of precipitation from the 1-year, 24-hour storm event (Atlas 14).
- Nature of stormwater runoff and run-on at the sites, including factors such as expected flow from impervious surfaces, slopes, and site drainage features; The sites accumulates some runoff from off site slopes. Contractor shall install all erosion and sedimentation control devices to handle this off site runoff.
- If any stormwater flow will be channelized at the site, design BMPs to control both peak flow rates and total stormwater volume to minimize erosion at outlets and to minimize downstream channel and streambank erosion: Peak flow rates and total stormwater volume should not be increased during this project. Channelized flow will be routed to vegetated areas where appropriate.
- Range of soil particle sizes expected to be present on the site and surrounding area: clay, sandy clay, sandy silt, silty sand, sand, gravel.

PERMANENT STORMWATER MANAGEMENT SYSTEM

This project will not generate greater than one acre of new impervious surface and will not require a stormwater management system.

INSPECTION AND MAINTENANCE ACTIVITIES

Inspection Requirements:

- Inspect the entire construction site at least once every 7 days during active construction and within 24 hours after a rainfall event greater than 0.5 inches in 24 hours.
- Contractor must keep inspection log and copies of the log must be submitted with payment applications.
- Where parts of the site have permanent cover, but work remains on other parts of the site, inspection frequency may be reduced to once per month in areas with permanent cover.
- Inspect all erosion prevention and sediment control BMPs and pollution prevention management measures for integrity and effectiveness.
- Inspect surface waters for evidence of erosion and sediment deposition.
- Inspect construction site vehicle exit locations for evidence of off-site sediment tracking onto paved surfaces and inspect streets and other areas adjacent to the project for evidence of off-site accumulations of sediment.
- Inspections must be conducted by an appropriately trained individual in accordance with the Construction Stormwater (CSW) Permit.

Maintenance Requirements:

- Repair, replace, or supplement all nonfunctional BMPs with functional BMPs by the end of the next business day after discovery or as soon as field conditions allow access.
- Repair, replace or supplement all perimeter control devices when they become nonfunctional or the sediment reaches 1/2 of the height of the device.
- Remove all deltas and sediment deposited in surface waters and re-stabilize the areas where sediment removal results in exposed soil within 7 days of discovery.
- Remove tracked sediment from all paved surfaces both on and off site within 24 hours of discovery.
- Remove off-site accumulations of sediment in a manner and at a frequency sufficient to minimize off-site impacts.
- Maintain all BMPs accordance with relevant manufacturer specifications and accepted engineering practices.

Recordkeeping:

- All inspections and maintenance must be recorded within 24 hours in writing and records must be retained with the SWPPP.
- Records of each inspection and maintenance activity shall include:
 - Date and time of inspections
 - Name of person(s) conducting inspections
 - Findings of inspections, including the specific location where corrective actions are needed.
 - Corrective actions taken (including dates, times, and party completing maintenance activities).
 - Date and amount of all rainfall events greater than 0.5 inches in 24 hours; rainfall amounts will be obtained from a properly maintained rain gauge installed onsite, a weather station that is within 1 mile of the site, or a weather reporting system that provides site specific rainfall data from radar summaries.
 - If any discharge is observed to be occurring during the inspection, a record of all points of the property from which there is a discharge must be made, and the discharge should be described (i.e., color, odor, floating, settled, or suspended solids, foam, oil sheen, and other obvious indicators of pollutants) and photographed.
 - Any amendments to the SWPPP proposed as a result of the inspection must be incorporated within 7 calendar days.

RECORD RETENTION

Copies of inspection records for the time period of that payment application shall accompany the payment applications.

This SWPPP including, all changes to it, and inspections and maintenance records must be kept at the site during construction in either the field office or in an on-site vehicle during normal working hours.

Upon request make this SWPPP (including all certificates, reports, records, or other information required by the CSW Permit) available to federal, state, and local officials within 72 hours for the duration of the permit and for 3 years following.

POLLUTION PREVENTION MANAGEMENT MEASURES

- Minimize exposure to stormwater of the following products, materials, or wastes: building products that have potential to leach pollutants are not expected to be present on site, but if present exposure to stormwater will be minimized through coverage with plastic sheeting; pesticides, herbicides, insecticides, fertilizers, treatment chemicals, and landscape materials through coverage with plastic sheeting; hazardous materials and toxic waste (including oil, diesel fuel, gasoline, hydraulic fluids, paint solvents, petroleum-based products, wood preservatives, additives, curing compounds, and acids) through proper

storage in sealed containers in restricted access storage areas and in compliance with Minn. R. ch. 7045 including secondary containment as applicable; solid waste through proper storage, collection, and disposal in compliance with Minn. R. ch. 7035.

- Position portable toilets so that they are secure and will not be tipped or knocked over.
- Properly dispose of sanitary waste in accordance with Minn. R. ch. 7041.
- Spill Prevention and Response: Take reasonable steps to prevent the discharge of spilled or leaked chemicals, ensure adequate supplies of absorbent and other dry clean-up materials are available at all times to clean up discharged materials and that an appropriate disposal method is available for recovered spilled materials, report and clean up spills immediately as required by Minn. Stat. §115.061.
- Fueling and maintenance of equipment and/or vehicles will not occur on-site.
- Washing of vehicles and/or equipment will not occur on-site.
- Washout of concrete and/or other similar wastes (such as stucco, paint, form release oils, curing compounds and other construction materials) must be self contained wash-out and not cleaned on-site.

FINAL STABILIZATION

Ensure final stabilization of the site.

- For final stabilization to be considered complete, the following must occur:
 - Complete all soil disturbing activities at the site.
 - Stabilize all soils with permanent cover, 70% or greater vegetation cover of disturbed areas.
 - Remove all temporary synthetic and structural erosion prevention and sediment control BMPs.
 - Permanent Cover will consist of seeding, erosion control blanket on slopes and disturbed areas, and seeding and mulching in all other disturbed areas.
 - Storm sewer culverts shall have flared sections and riprap to eliminate erosion.
 - Within 30 days after all activities for final stabilization have been completed, submit a Notice of Termination (NOT) form to the MPCA. (This project will disturb less than one acre and not require a MPCA Permit so there will be no need to file a Notice of Termination).

SWPPP AMENDMENTS OR CHANGES

See Contractor's Inspection Log Records.

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NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.	
PRINTED NAME	BRADLEY J. LINDAMAN
SIGNATURE	
DATE	LICENSE # 22178

CLIENT	07/31/20									
BID										
CONSTRUCTION										
RELEASED TO/FOR	A	B	C	0	1	2	3			
DATE RELEASED										

BARR
Project Office:
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MINNEAPOLIS, MN 55435
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Ph: 1-800-632-2277
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www.barr.com

Scale	AS SHOWN
Date	6/22/2020
Drawn	JNB
Checked	-
Designed	JNB
Approved	-

RAMSEY-WASHINGTON
METRO WATERSHED DISTRICT

**KELLER CHANNEL WEIR & PHALEN
OUTLET RESILIENCY**

STORMWATER POLLUTION
PREVENTION PLAN (SWPPP)

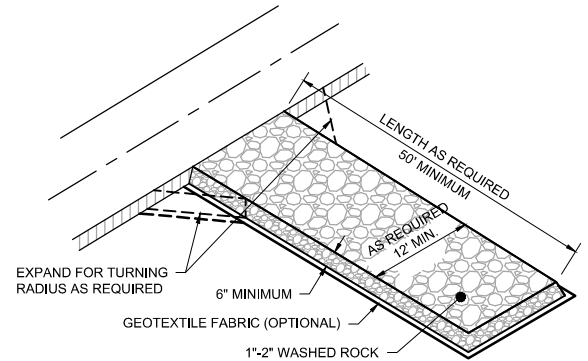
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CLIENT PROJECT No.	
DWG. No. G-02	REV. No. A



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1-800-252-1166

CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD-LOCATING ALL SITE UTILITIES, PRIVATE AND PUBLIC, PRIOR TO STARTING THE WORK. ALL UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE. ANY UTILITIES DAMAGED BY CONTRACTOR SHALL BE REPAIRED BY CONTRACTOR TO THE SATISFACTION OF THE UTILITY OWNER.

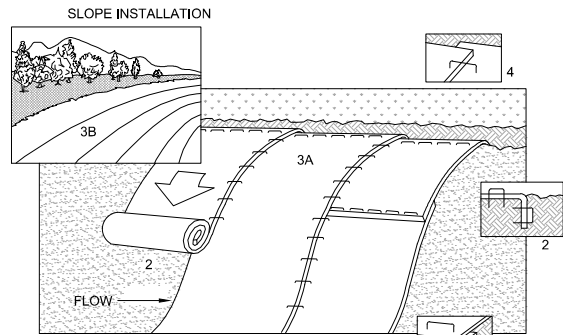
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NOTES:

1. MAINTAIN ENTRANCE THROUGHOUT THE CONSTRUCTION PERIOD AND REPAIR OR REPLACE AS REQUIRED TO PREVENT TRACKING OFFSITE.
2. REMOVE ENTRANCE IN CONJUNCTION WITH FINAL GRADING AND SITE STABILIZATION.

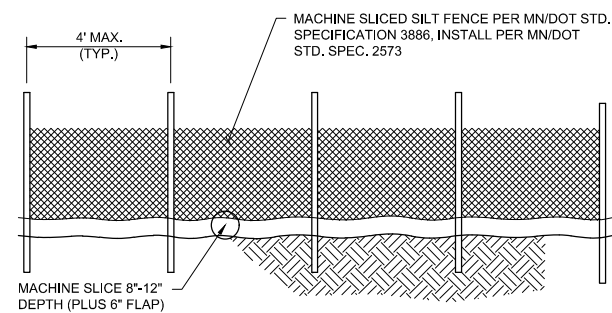
1 **DETAIL: CONSTRUCTION ENTRANCE - ROCK**
NOT TO SCALE



NOTES:

1. REFER TO MANUFACTURER RECOMMENDATIONS FOR STAPLE PATTERNS FOR SLOPE INSTALLATIONS.
2. PREPARE SOIL BY LOOSENING TOP 1-2 INCHES AND APPLY SEED (AND FERTILIZER WHERE REQUIRED) PRIOR TO INSTALLING BLANKETS. GROUND SHOULD BE SMOOTH AND FREE OF DEBRIS.
3. BEGIN (A) AT THE TOP OF THE SLOPE AND ROLL THE BLANKETS DOWN OR (B) AT ONE END OF THE SLOPE AND ROLL THE BLANKETS HORIZONTALLY ACROSS THE SLOPE.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 6" OVERLAP, WITH THE UPHILL BLANKET ON TOP.
5. WHEN BLANKETS MUST BE SPICED DOWN THE SLOPE, PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH APPROXIMATELY 6" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART.
6. BLANKET MATERIALS SHALL BE AS SPECIFIED OR AS APPROVED BY ENGINEER.

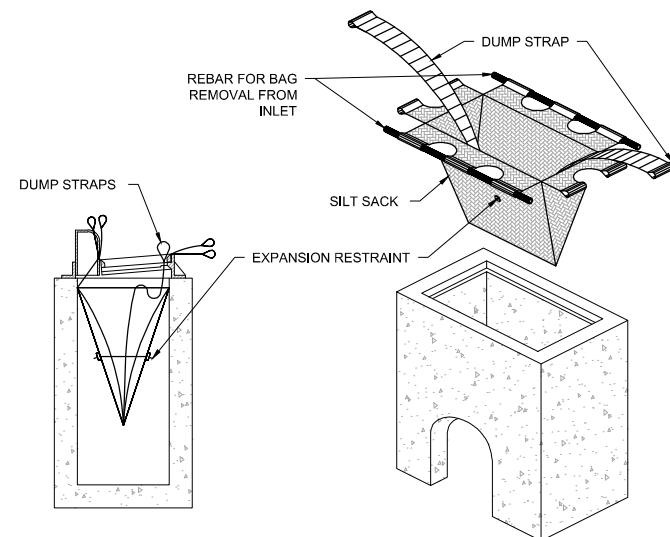
2 **DETAIL: EROSION CONTROL BLANKET - INSTALLATION**
NOT TO SCALE



NOTES:

1. INSTALL SILT FENCE PRIOR TO ANY GRADING WORK IN THE AREA TO BE PROTECTED AND MAINTAIN THROUGHOUT THE CONSTRUCTION PERIOD. REMOVE SILT FENCE AND ANY ACCUMULATED SEDIMENT IN CONJUNCTION WITH THE FINAL GRADING AND SITE STABILIZATION.
2. SILT FENCE MATERIALS AND INSTALLATION SHALL MEET THE REQUIREMENTS OF MN/DOT SPECIFICATIONS 2573 AND 3886.
3. NO HOLES OR GAPS SHALL BE PRESENT IN UNDER SILT FENCE. PREPARE AREA AS NEEDED TO SMOOTH SURFACE OR REMOVE DEBRIS.
4. REMOVE ACCUMULATED SEDIMENT WHEN BUILD UP REACHES 1/3 OF FENCE HEIGHT. OR INSTALL A SECOND SILT FENCE DOWNSTREAM OF THE ORIGINAL FENCE AT A SUITABLE DISTANCE.
5. WHEN SPICES ARE NECESSARY MAKE SPICE AT POST ACCORDING TO SPICE DETAIL. PLACE THE END POST OF THE SECOND FENCE INSIDE THE END POST OF THE FIRST FENCE. ROTATE BOTH POSTS TOGETHER AT LEAST 180 DEGREES TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL. CUT THE FABRIC NEAR THE BOTTOM OF THE POSTS TO ACCOMMODATE THE 6 INCH FLAP, THEN DRIVE BOTH POSTS AND BURY THE FLAP AND COMPACT BACKFILL.

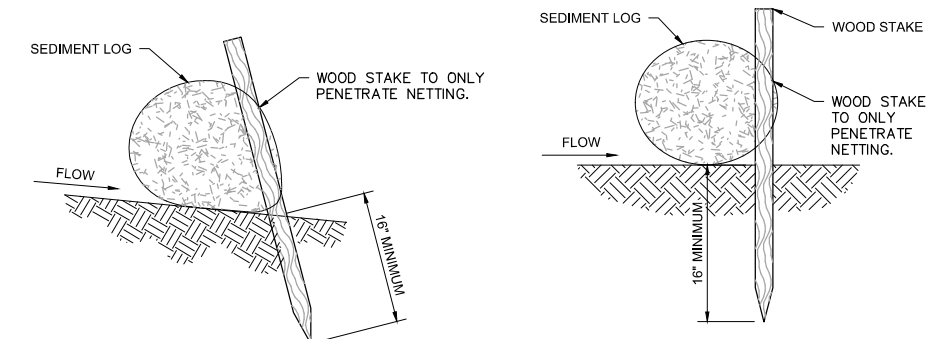
3 **DETAIL: SILT FENCE - MACHINE SLICED**
NOT TO SCALE



NOTES:

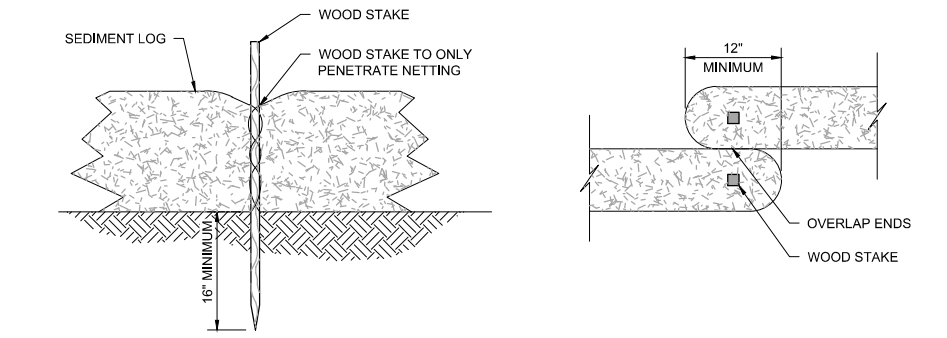
1. INSTALL INLET PROTECTION PRIOR TO ANY GRADING WORK IN THE AREA TO BE PROTECTED OR IMMEDIATELY FOLLOWING ANY CATCHBASIN INSTALLATION AND MAINTAIN THROUGHOUT THE CONSTRUCTION PERIOD.
2. MATERIALS SHALL BE SUFFICIENT TO ALLOW FLOW WHILE BLOCKING SEDIMENT, NO HOLES OR GAPS SHALL BE PRESENT IN/AROUND FILTER SACK.
3. CLEAN FILTER SACK AND REMOVE ACCUMULATED SEDIMENT AS REQUIRED TO ALLOW FLOW INTO THE CATCHBASIN AND PREVENT SEDIMENT FROM LEAVING THE DEVICE.
4. REMOVE DEVICE AND ANY ACCUMULATED SEDIMENT IN CONJUNCTION WITH THE FINAL GRADING AND SITE STABILIZATION.

4 **DETAIL: INLET PROTECTION, FILTER SACK TYPE**
NOT TO SCALE



SIDE VIEW ON SLOPE

SIDE VIEW FLAT



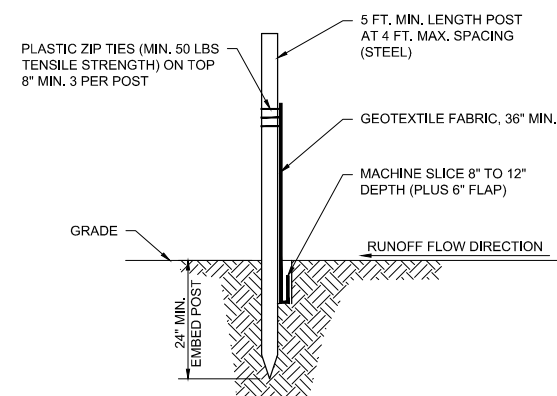
FRONT VIEW

TOP VIEW

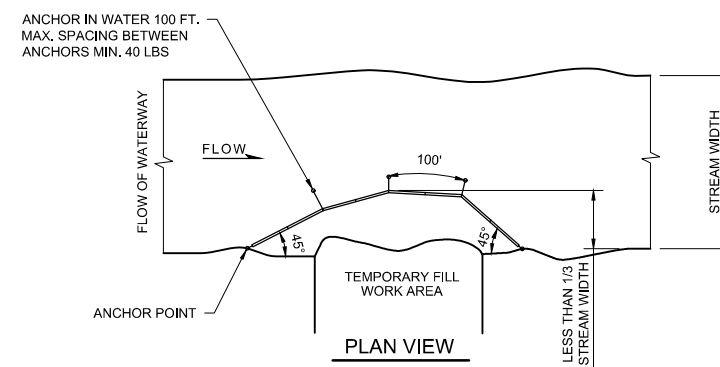
NOTES:

1. INSTALL SEDIMENT LOG ALONG CONTOURS (CONSTANT ELEVATION).
2. NO GAPS SHALL BE PRESENT UNDER SEDIMENT LOG. PREPARE AREA AS NEEDED TO SMOOTH SURFACE OR REMOVE DEBRIS.
3. REMOVE ACCUMULATED SEDIMENT WHEN REACHING 1/3 OF LOG HEIGHT.
4. MAINTAIN SEDIMENT LOG THROUGHOUT THE CONSTRUCTION PERIOD AND REPAIR OR REPLACED AS REQUIRED.

5 **DETAIL: EROSION LOG - STAKING**
NOT TO SCALE



SECTION VIEW

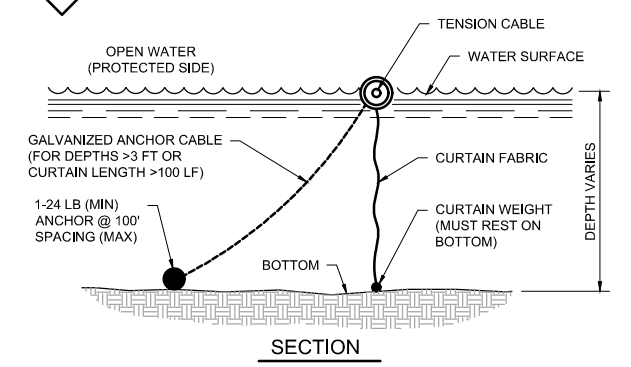


PLAN VIEW

NOTES:

1. INSTALL SILT CURTAIN PRIOR TO ANY CONSTRUCTION ACTIVITIES IN AREAS DRAINING TO OPEN WATER OR WORK IN WATER.
2. ANCHOR TENSION CABLE AT SHORE AT BOTH END WITH STEEL POSTS OF DIAMETER AND LENGTH SUFFICIENT TO PREVENT BENDING AND PULL-OUT.
3. ELIMINATE ANCHOR AND CABLE FOR WATER DEPTHS LESS THAN 3'-0" OR DISTANCE BETWEEN SHORE ANCHORS FOR TENSION CABLE OF LESS THAN 100'
4. CURTAIN WEIGHT SHALL BE HEAVY ENOUGH TO HOLD CURTAIN VERTICAL IN CURRENT AND WAVES TYPICAL FOR THE SITE.
5. SILT CURTAIN MATERIALS SHALL CONFORM TO MN/DOT SPECIFICATION 3887.
6. MAINTAIN SILT CURTAIN AND REPAIR OR REPLACE AS REQUIRED TO PREVENT DISCHARGE OF SEDIMENT TO PROTECTED WATER BODY.
7. REMOVE ANY ACCUMULATED SEDIMENT PRIOR TO REMOVAL OF SILT CURTAIN.
8. REMOVE SILT CURTAIN FOLLOWING SITE STABILIZATION OR AS DIRECTED BY ENGINEER.

6 **DETAIL: FLOTATION SILT CURTAIN**
NOT TO SCALE



SECTION

ISSUED FOR PROJECT APPROVAL

CADD USER: Greg Nelson FILE: M:\DESIGN\23821355\01\TBD-2382135500_C3D_2020_EC DETAILS-TX3D0013.DWG PLOT SCALE: 1:2 PLOT DATE: 7/2/2020 10:29 AM

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME: BRADLEY J. LINDAMAN
SIGNATURE: _____
DATE: _____ LICENSE # 22178

CLIENT	07/31/20								
BID									
CONSTRUCTION									
RELEASED TO/FOR	A	B	C	0	1	2	3		
DATE RELEASED									

BARR Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
Suite 200
MINNEAPOLIS, MN 55435

Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

Scale	AS SHOWN
Date	6/2/2020
Drawn	GGN
Checked	
Designed	
Approved	

RAMSEY-WASHINGTON
METRO WATERSHED DISTRICT

KELLER CHANNEL WEIR & PHALEN
OUTLET RESILIENCY

EROSION CONTROL
DETAILS

BARR PROJECT No.	23/62-1355.00
CLIENT PROJECT No.	
DWG. No.	G-03
REV. No.	A



CADD USER: Greg Nelson FILE: M:\DESIGN\236213550_C01 PHALEN SITE PLAN.DWG PLOT SCALE: 1:2 PLOT DATE: 7/31/2020 11:10 AM



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PROJECT APPROVAL

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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SIGNATURE: _____

DATE: _____ LICENSE # 22178

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BID							
CONSTRUCTION							
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DATE RELEASED							

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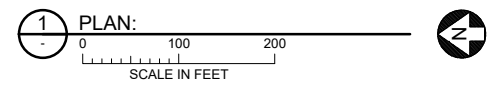
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Date	6/2/2020
Drawn	GGN
Checked	
Designed	
Approved	



**KELLER CHANNEL WEIR & PHALEN
OUTLET RESILIENCY**

**PHALEN OUTLET STRUCTURES
SITE PLAN**

BARR PROJECT No.	23/62-1355.00
CLIENT PROJECT No.	
DWG. No.	C-01
REV. No.	A



ISSUED FOR
PROJECT APPROVAL

CADD USER: Greg Nelson FILE: M:\DESIGN\232821355_00\232821355_00_C-02_KELLER_SITE_PLAN.DWG PLOT SCALE: 1:2 PLOT DATE: 7/31/2020 10:49 AM

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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PRINTED NAME: **BRADLEY J. LINDAMAN**
 SIGNATURE: _____
 DATE: _____ LICENSE # 22178

CLIENT	07/31/20						
BID							
CONSTRUCTION							
RELEASED TO/FOR	A	B	C	0	1	2	3
DATE RELEASED							

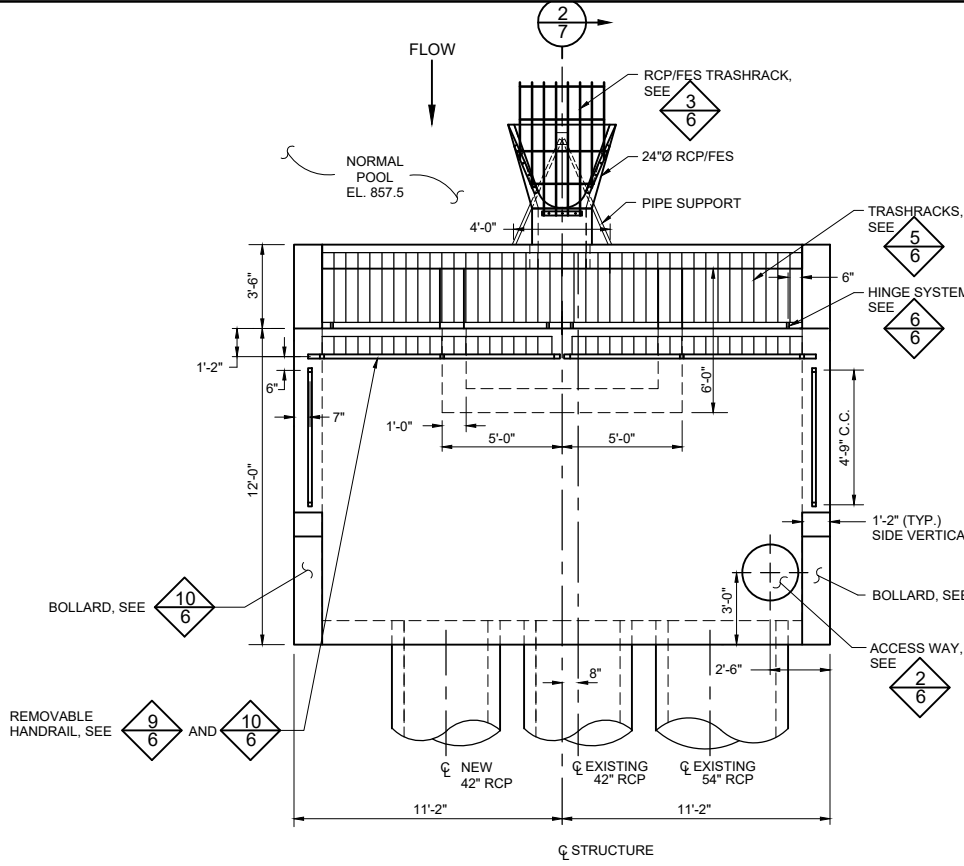
BARR
 Project Office:
 BARR ENGINEERING CO.
 4300 MARKETPOINTE DRIVE
 Suite 200
 MINNEAPOLIS, MN 55435
 Corporate Headquarters:
 Minneapolis, Minnesota
 Ph: 1-800-632-2277
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 Ph: 1-800-632-2277
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Scale	AS SHOWN
Date	6/2/2020
Drawn	GGN
Checked	
Designed	
Approved	



**KELLER CHANNEL WEIR & PHALEN
 OUTLET RESILIENCY**
 KELLER CHANNEL WEIR STRUCTURE
 SITE PLAN

BARR PROJECT No.	23/62-1355.00
CLIENT PROJECT No.	
DWG. No.	C-02
REV. No.	A

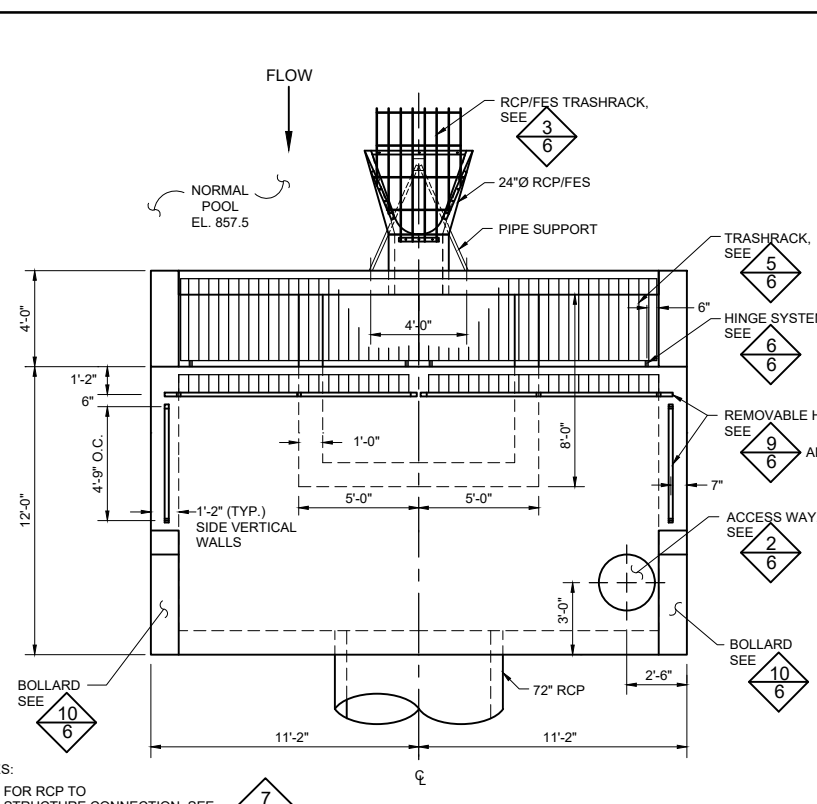


1 PLAN: PHALEN STRUCTURE #2

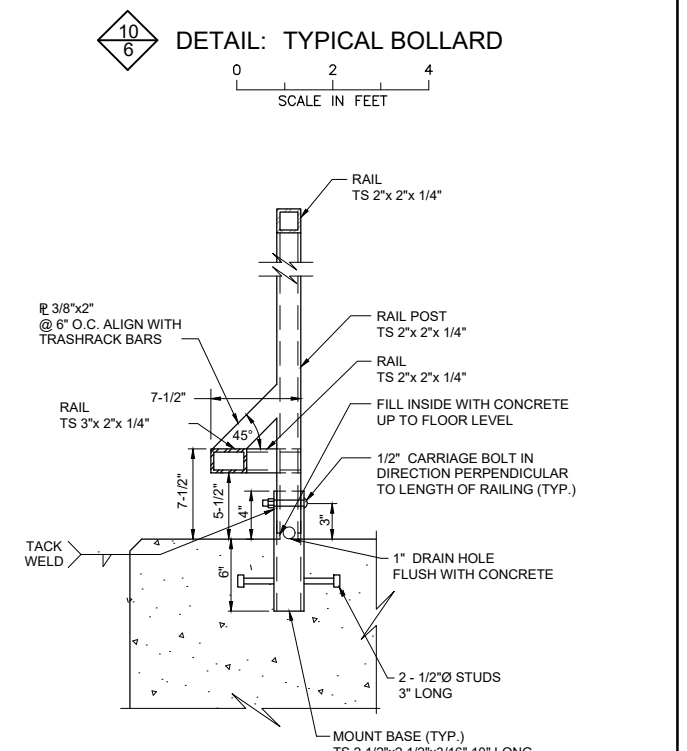
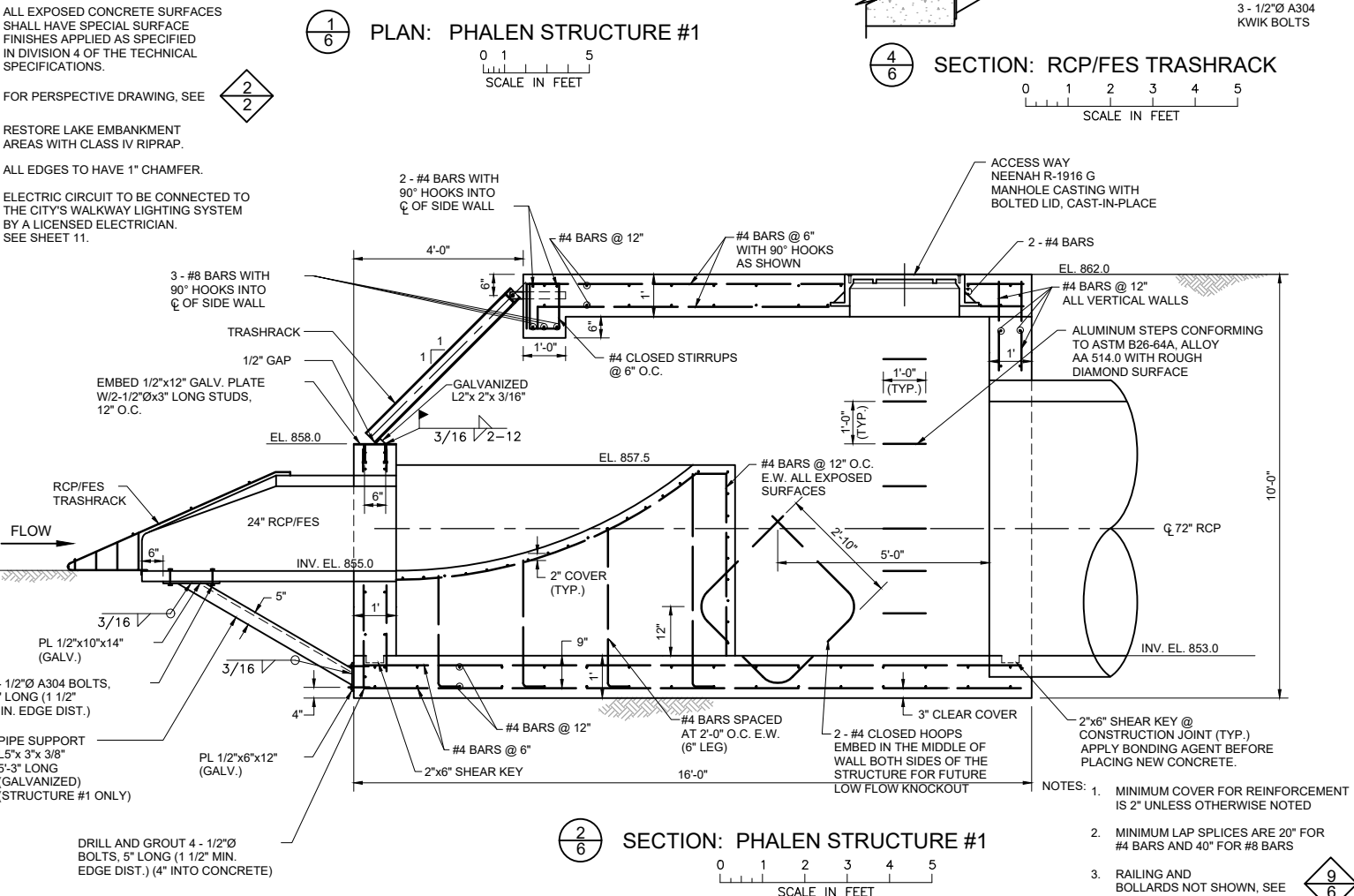
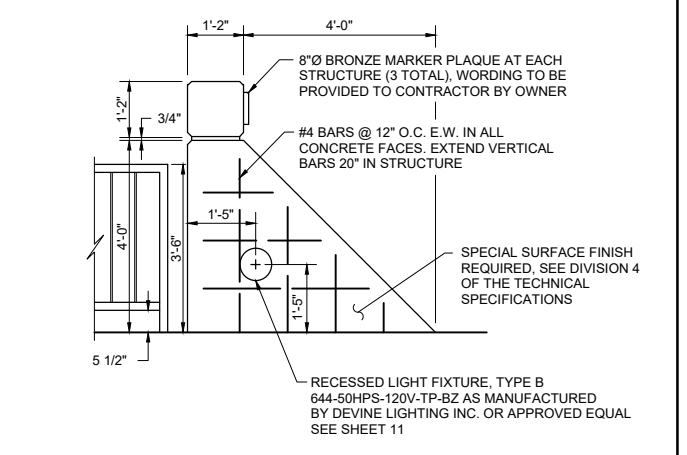
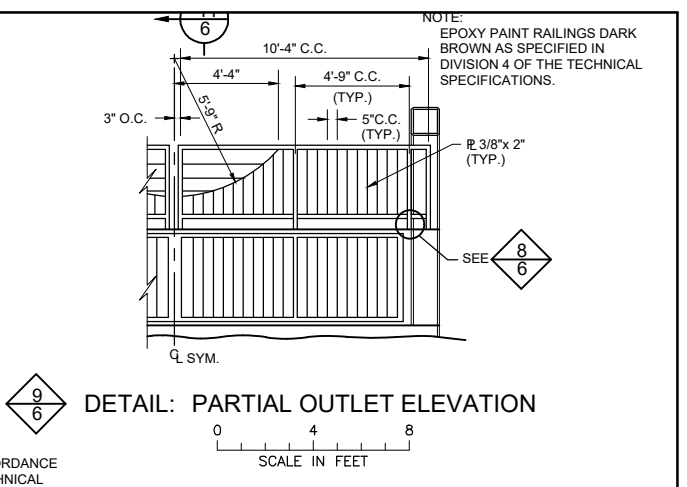
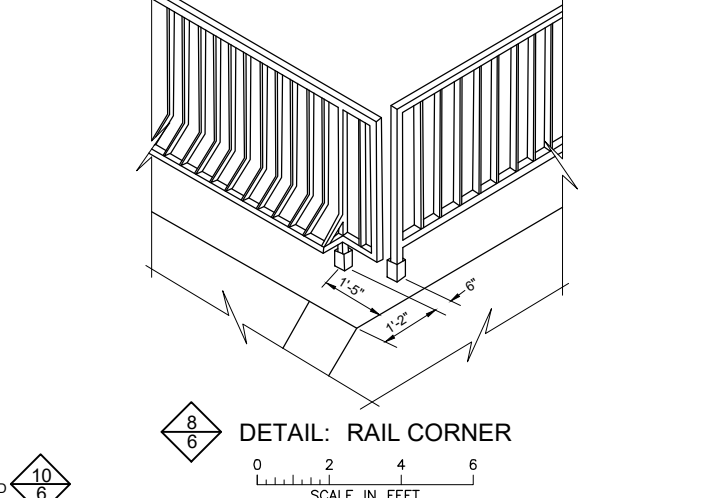
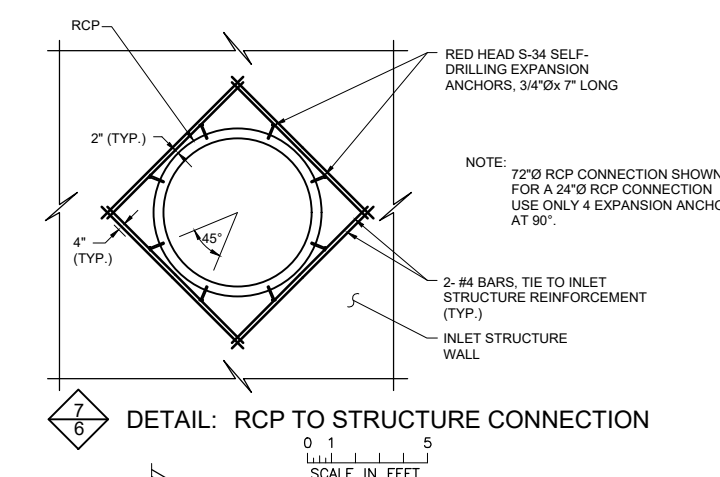
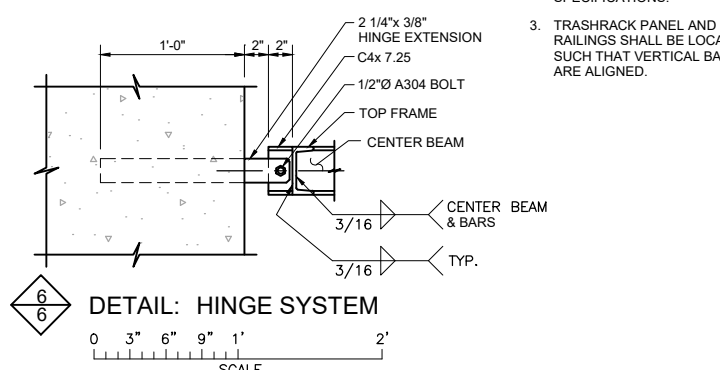
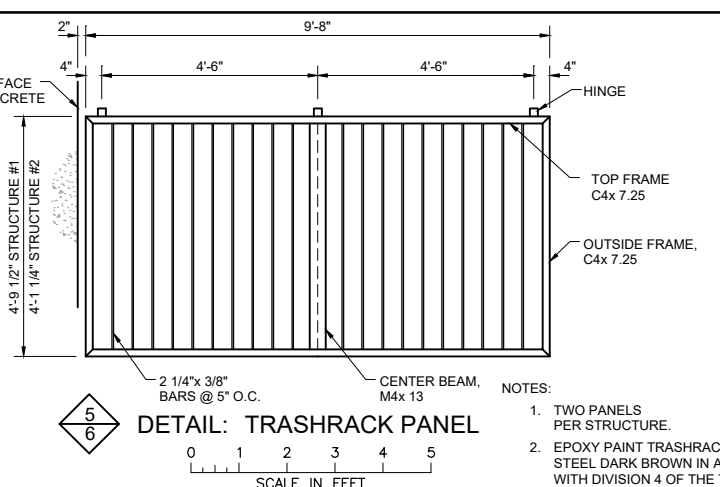
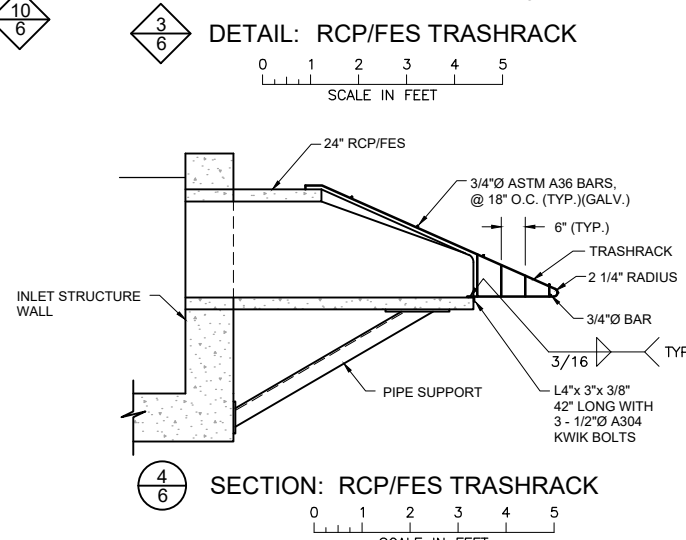
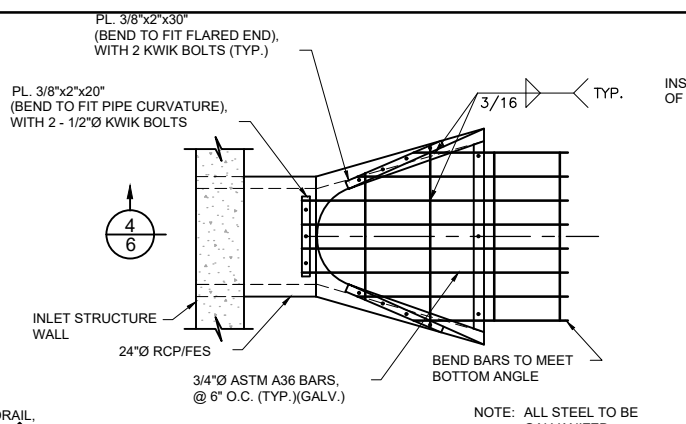
- NOTES:
- FOR RCP TO STRUCTURE CONNECTION, SEE 7/6
 - ALL EXPOSED CONCRETE SURFACES SHALL HAVE SPECIAL SURFACE FINISHES APPLIED AS SPECIFIED IN DIVISION 4 OF THE TECHNICAL SPECIFICATIONS.
 - FOR PERSPECTIVE DRAWING, SEE 2/2
 - PROTECT EMBANKMENTS WITH CLASS IV RIPRAP.
 - ALL EDGES TO HAVE 1" CHAMFER.
 - ELECTRIC CIRCUIT TO BE CONNECTED TO THE CITY'S WALKWAY LIGHTING SYSTEM BY A LICENSED ELECTRICIAN. SEE SHEET 11.



CADD USER: Greg Nelson FILE: M:\DESIGN\2362\3550_00\3550_C04 EX EAST PHALEN OUTLET.DWG PLOT SCALE: 1:3 PLOT DATE: 7/29/2020 4:59 PM



- NOTES:
- FOR RCP TO STRUCTURE CONNECTION, SEE 7/6
 - ALL EXPOSED CONCRETE SURFACES SHALL HAVE SPECIAL SURFACE FINISHES APPLIED AS SPECIFIED IN DIVISION 4 OF THE TECHNICAL SPECIFICATIONS.
 - FOR PERSPECTIVE DRAWING, SEE 2/2
 - RESTORE LAKE EMBANKMENT AREAS WITH CLASS IV RIPRAP.
 - ALL EDGES TO HAVE 1" CHAMFER.
 - ELECTRIC CIRCUIT TO BE CONNECTED TO THE CITY'S WALKWAY LIGHTING SYSTEM BY A LICENSED ELECTRICIAN. SEE SHEET 11.



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RAMSEY-WASHINGTON
METRO WATERSHED DISTRICT

KELLER CHANNEL WEIR & PHALEN OUTLET RESILIENCY

PHALEN EAST OUTLET EXISTING STRUCTURE AND APPURTENANCES

BARR PROJECT No. **23/62-1355.00**
CLIENT PROJECT No. _____
DWG. No. **C-04** REV. No. **A**

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

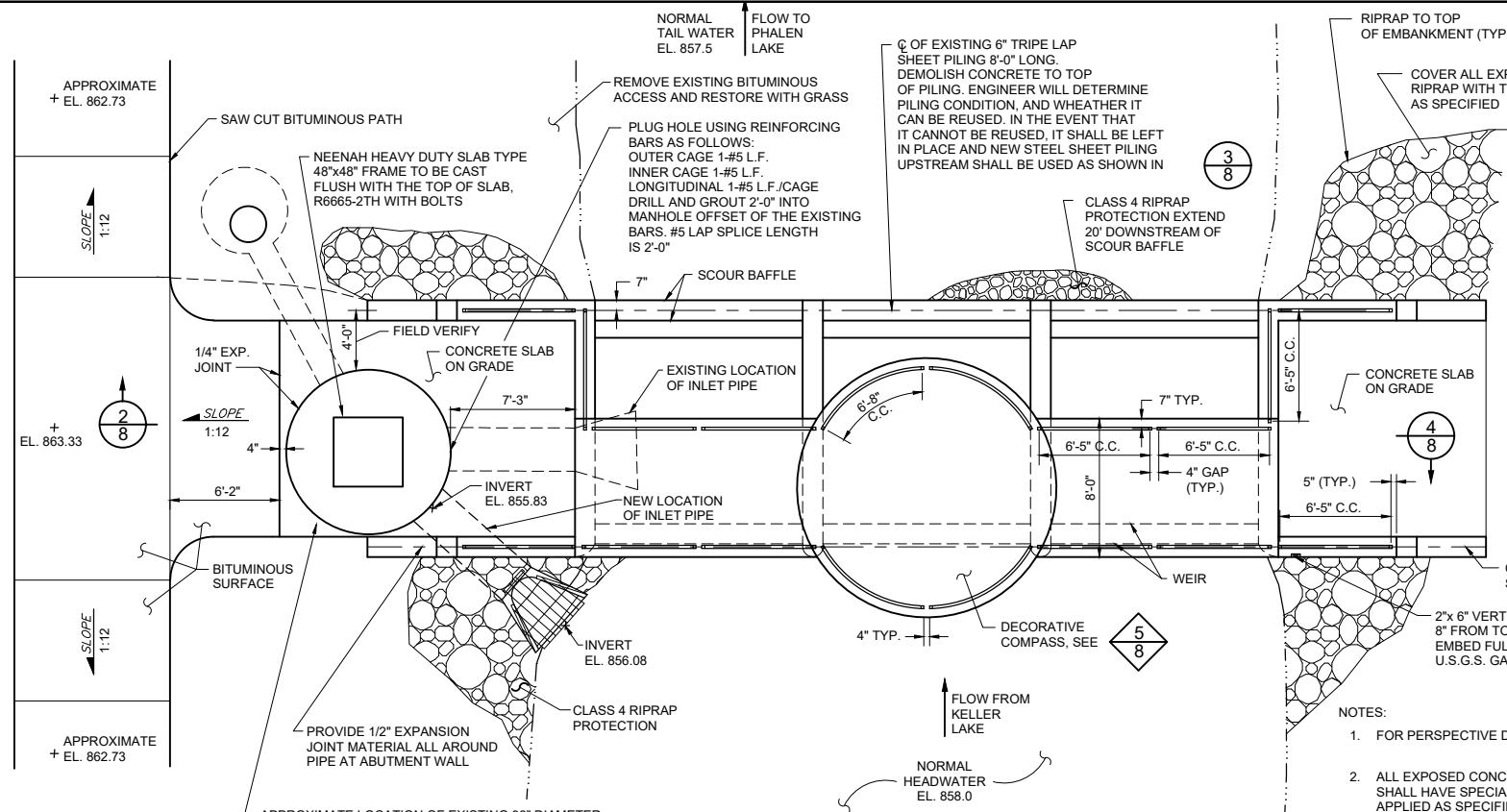
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME: **BRADLEY J. LINDAMAN**
SIGNATURE: _____
DATE: _____ LICENSE # **22178**

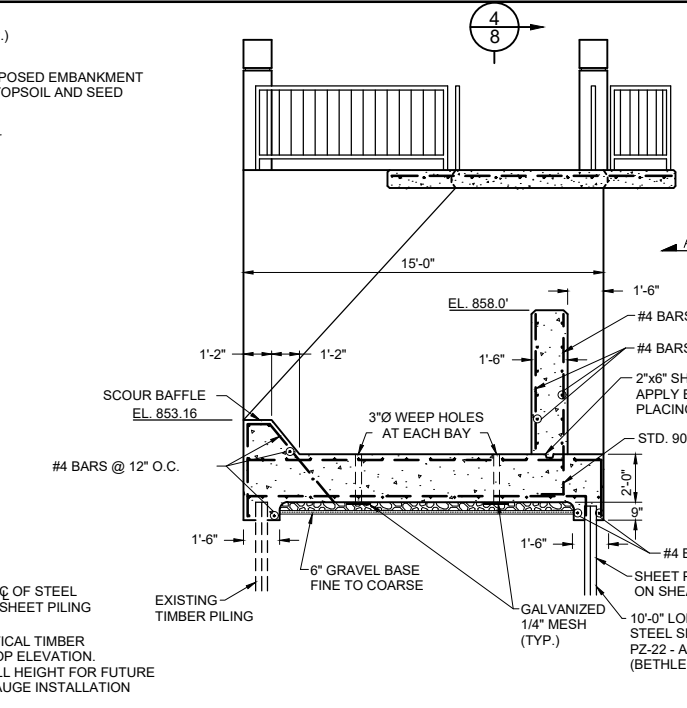
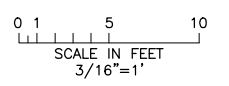
CLIENT	BID	CONSTRUCTION	RELEASED TO/FOR	DATE RELEASED

Scale	AS SHOWN
Date	6/2/2020
Drawn	GGN
Checked	
Designed	
Approved	

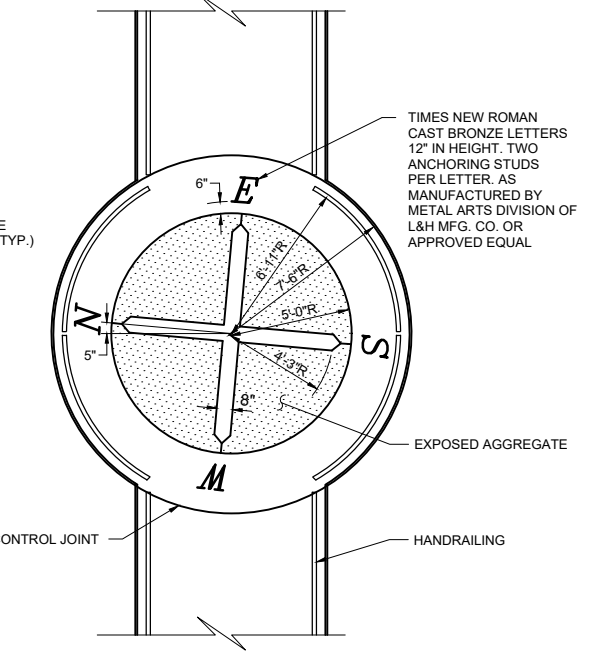
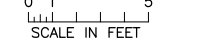
ISSUED FOR PROJECT APPROVAL



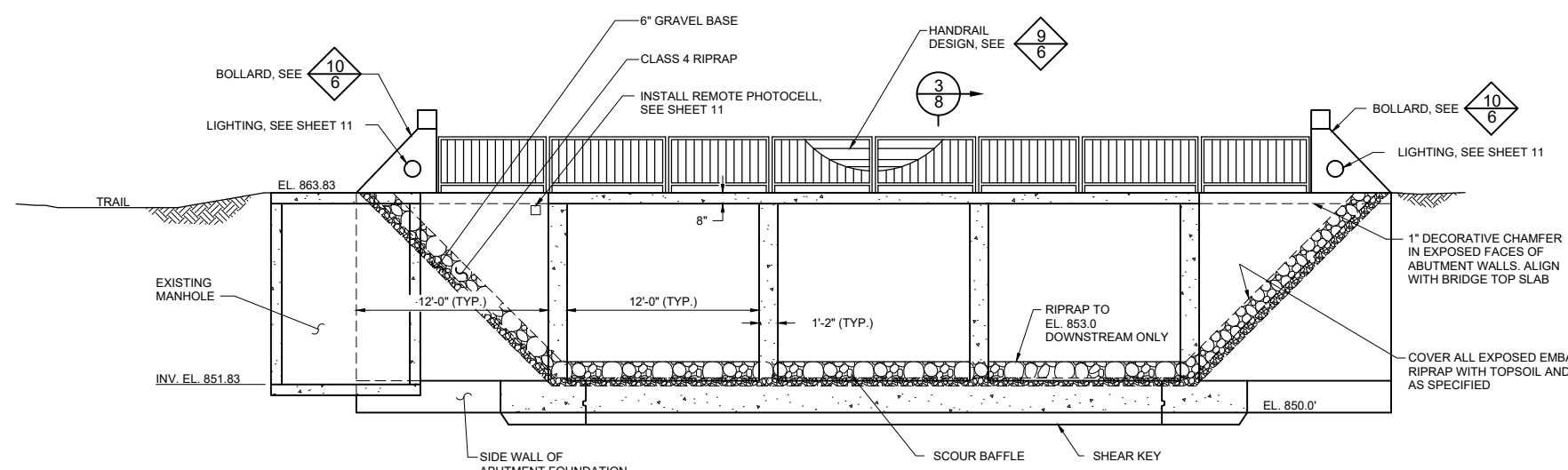
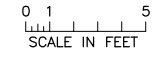
1/8 PLAN: DAM/FOOTBRIDGE



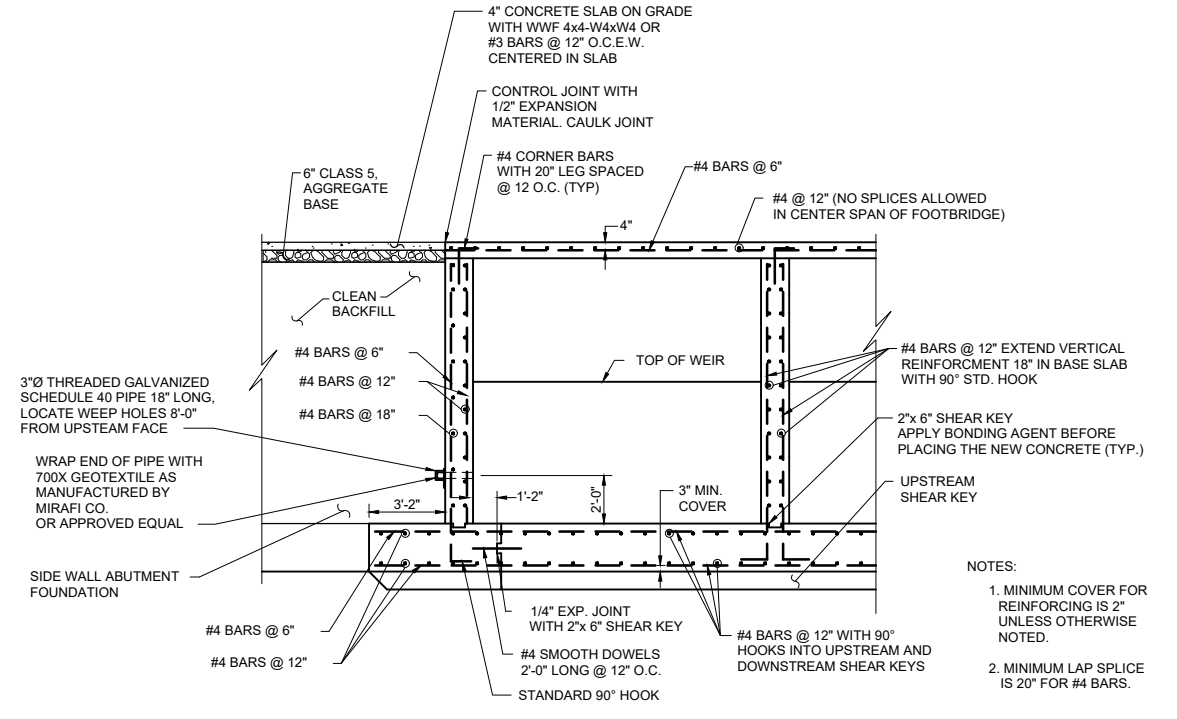
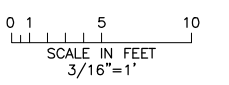
3/8 SECTION: TYPICAL SECTION



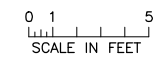
5/8 DETAIL: COMPASS PLAN



2/8 SECTION: DAM/FOOTBRIDGE



4/8 SECTION: CONCRETE REINFORCING



- NOTES:
- FOR PERSPECTIVE DRAWING, SEE 1/2
 - ALL EXPOSED CONCRETE SURFACES SHALL HAVE SPECIAL SURFACE FINISHES APPLIED AS SPECIFIED IN DIVISION 4 OF THE TECHNICAL SPECIFICATIONS.
 - EXISTING FOOTBRIDGE TO BE REMOVED AND THE DEMOLITION RUBBLE DISPOSED OF OFF-SITE. THIS FOOTBRIDGE IS LOCATED JUST DOWNSTREAM OF THIS NEW FOOTBRIDGE. EXISTING CONCRETE BOTTOM ELEVATION IS APPROXIMATELY 850.0'.
 - ALL EDGES TO HAVE 1" CHAMFER.
 - ELECTRIC CIRCUIT TO BE CONNECTED TO THE ELECTRIC SUPPLY IN THE PUMP STATION BY A LICENSED ELECTRICIAN. SEE SHEET 11.
 - SALVAGE TOP SLAB OF EXISTING MANHOLE AND DELIVER TO THE DEPARTMENT OF PUBLIC WORKS OF RAMSEY COUNTY.

- NOTES:
- MINIMUM COVER FOR REINFORCING IS 2" UNLESS OTHERWISE NOTED.
 - MINIMUM LAP SPLICE IS 20" FOR #4 BARS.

CADD USER: Greg Nelson FILE: M:\DESIGN\23821355_00\23821355_00_KELLER DAM FOOTBRIDGE.DWG PLOT SCALE: 1:2 PLOT DATE: 7/20/2020 4:59 PM

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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PRINTED NAME: BRADLEY J. LINDAMAN
 SIGNATURE: _____
 DATE: _____ LICENSE # 22178

CLIENT	BID	CONSTRUCTION	RELEASED TO/FOR	DATE RELEASED
07/31/20			A B C 0 1 2 3	

Project Office:
BARR ENGINEERING CO.
 4300 MARKETPOINTE DRIVE
 Suite 200
 MINNEAPOLIS, MN 55435

Corporate Headquarters:
 Minneapolis, Minnesota
 Ph: 1-800-632-2277
 Fax: (952) 832-2601
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Scale	AS SHOWN
Date	6/2/2020
Drawn	GGN
Checked	
Designed	
Approved	



KELLER CHANNEL WEIR & PHALEN OUTLET RESILIENCY

KELLER DAM FOOTBRIDGE EXISTING STRUCTURE AND APPURTENANCES

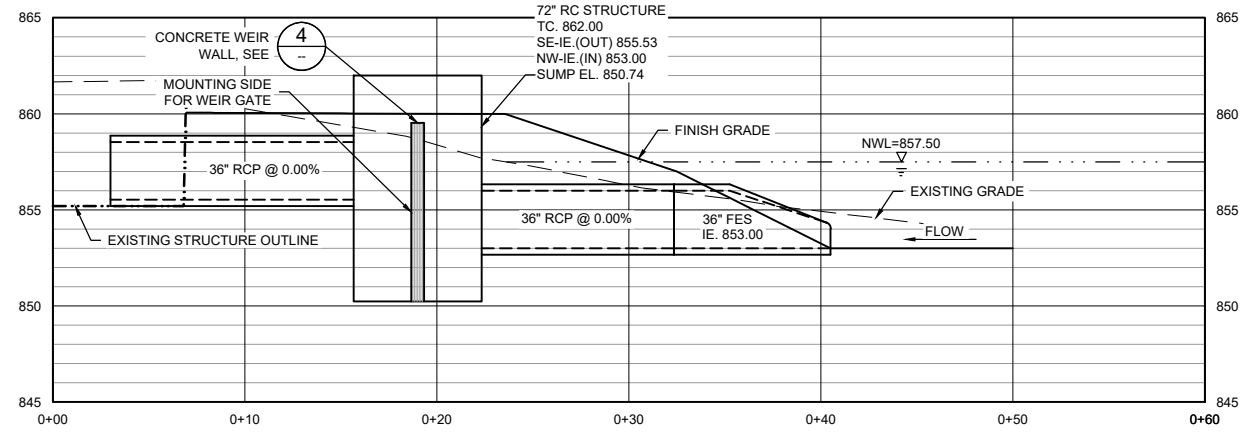
BARR PROJECT No.	23/62-1355.00
CLIENT PROJECT No.	
DWG. No.	C-05
REV. No.	A

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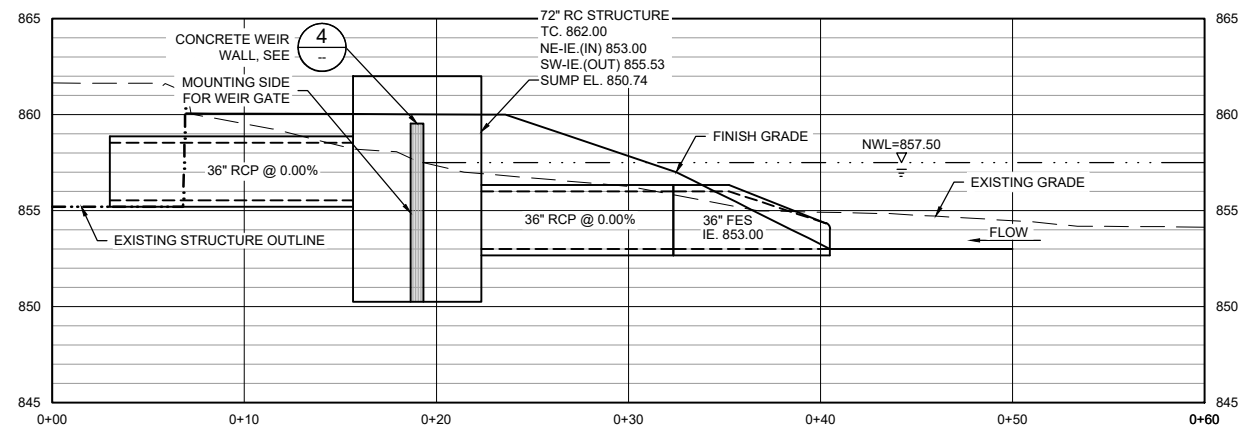
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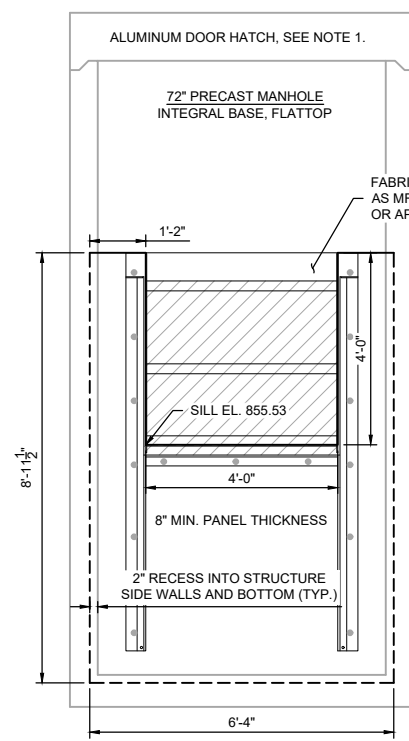
1 PLAN
 0 10 20
 SCALE IN FEET



2 PROFILE
 0 5 10
 SCALE IN FEET



3 PROFILE
 0 5 10
 SCALE IN FEET



- NOTES:**
- 3' X 4' ALUMINUM ANGLE FRAME FLOOR DOOR HATCH, SINGLE LEAF CAST INTO TOP SLAB.

4 SECTION: CONCRETE WEIR WALL W/GATE
 0 1 2 3 4
 SCALE IN FEET

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CLIENT BID	07/31/20						
CONSTRUCTION							
RELEASED TO/FOR	A	B	C	0	1	2	3

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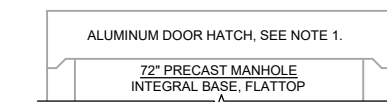
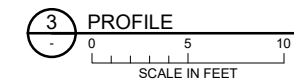
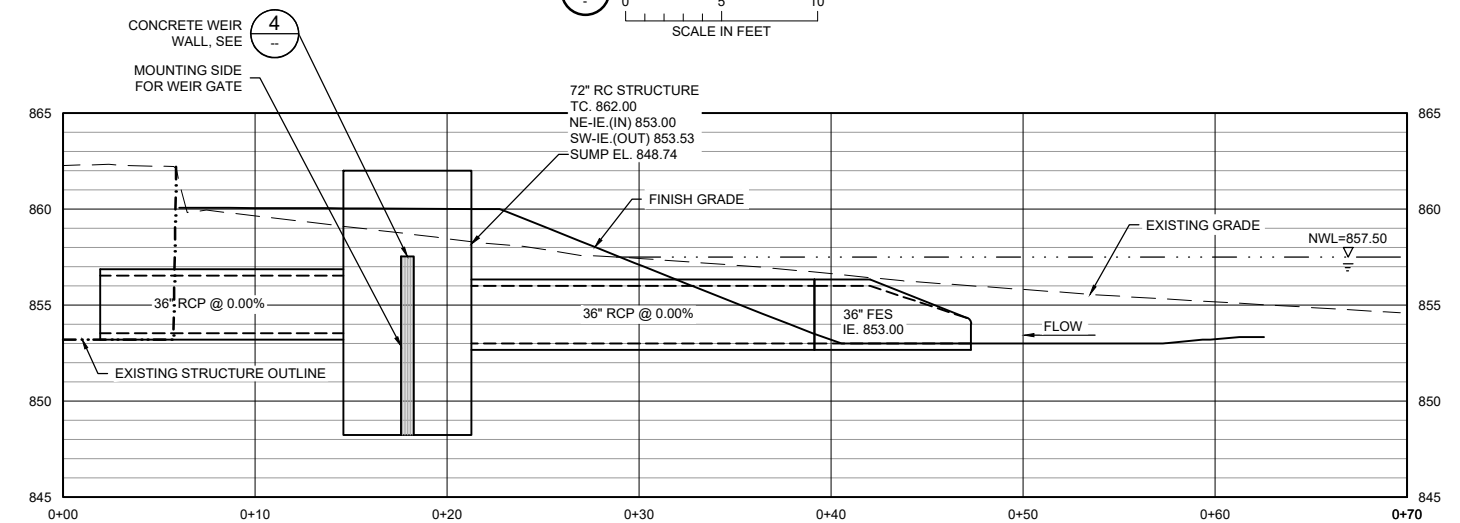
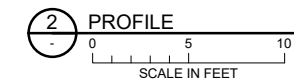
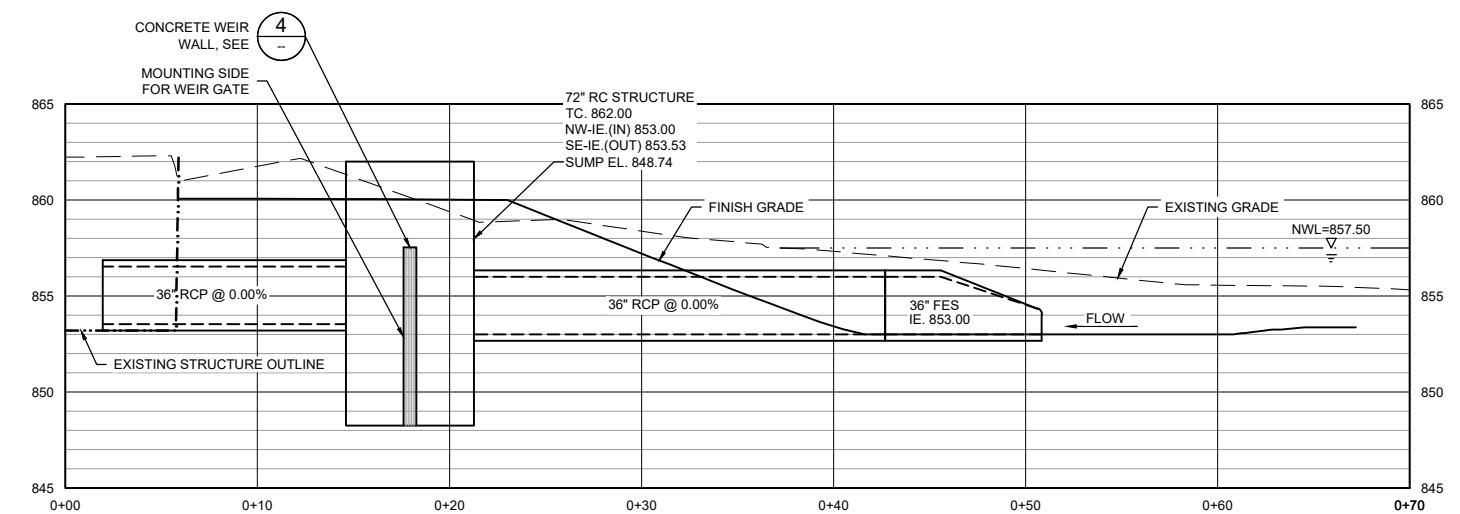
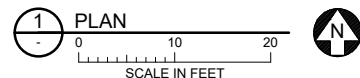
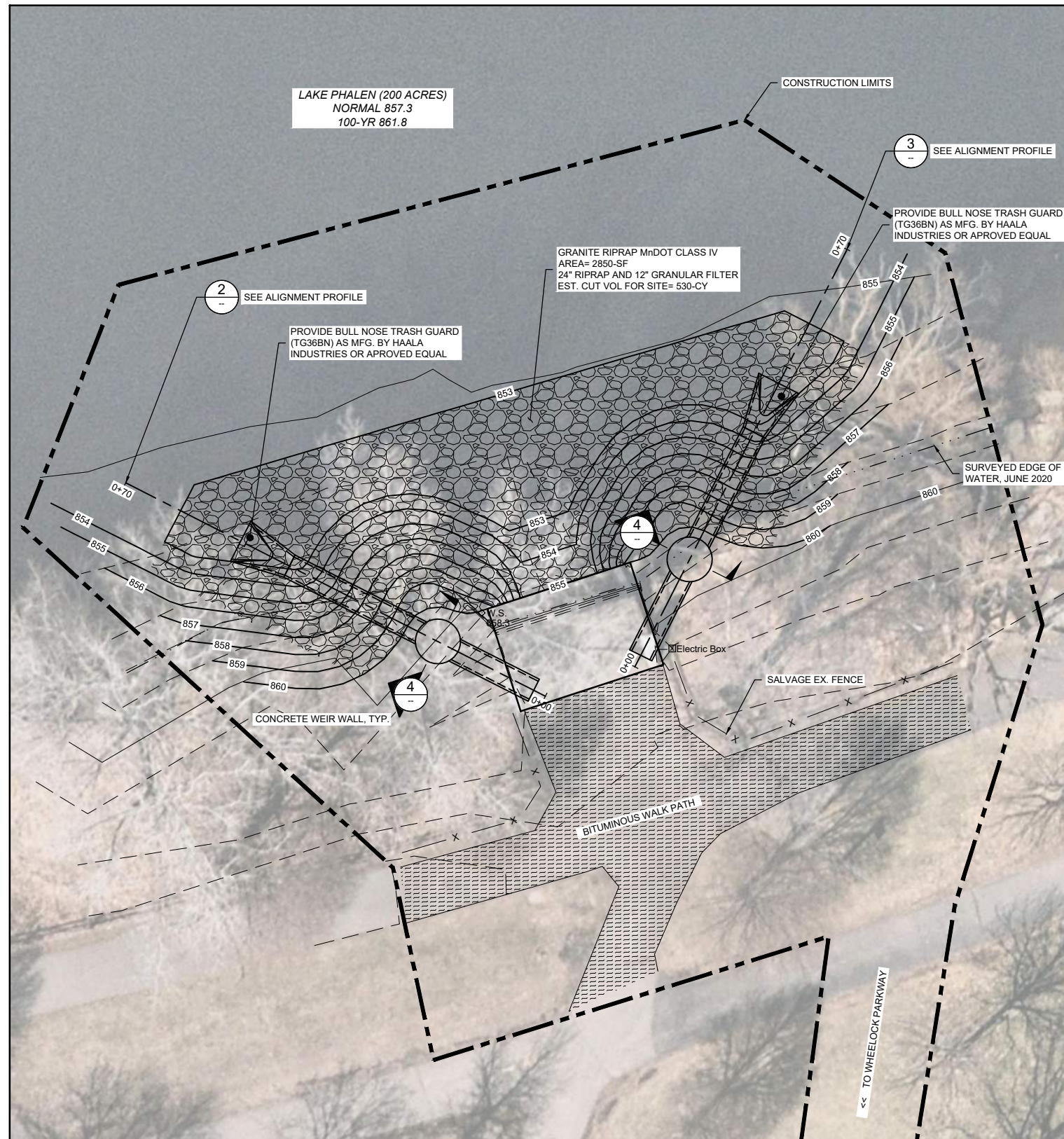
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Date	6/2/2020
Drawn	GGN
Checked	
Designed	GGN
Approved	



KELLER CHANNEL WEIR & PHALEN OUTLET RESILIENCY

PHALEN WEST OUTLET SITE GRADING AND STORM PLAN, PROFILE & SECTION

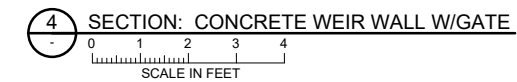
BARR PROJECT No.	23/62-1355.00
CLIENT PROJECT No.	
DWG. No.	C-06
REV. No.	A



FABRICATED WEIR GATE, AS MFG. BY WHIPPS, INC. OR APPROVED EQUAL

NOTES:

- 3' X 4' ALUMINUM ANGLE FRAME FLOOR DOOR HATCH, SINGLE LEAF CAST INTO TOP SLAB.



ISSUED FOR PROJECT APPROVAL

CADD USER: Greg Nelson FILE: M:\DESIGN\23821355_00\23821355_00_C-07 PHALEN EAST DWG PLOT SCALE: 1:2 PLOT DATE: 7/31/2020 10:20 AM

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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SIGNATURE: _____
DATE: _____ LICENSE # 22178

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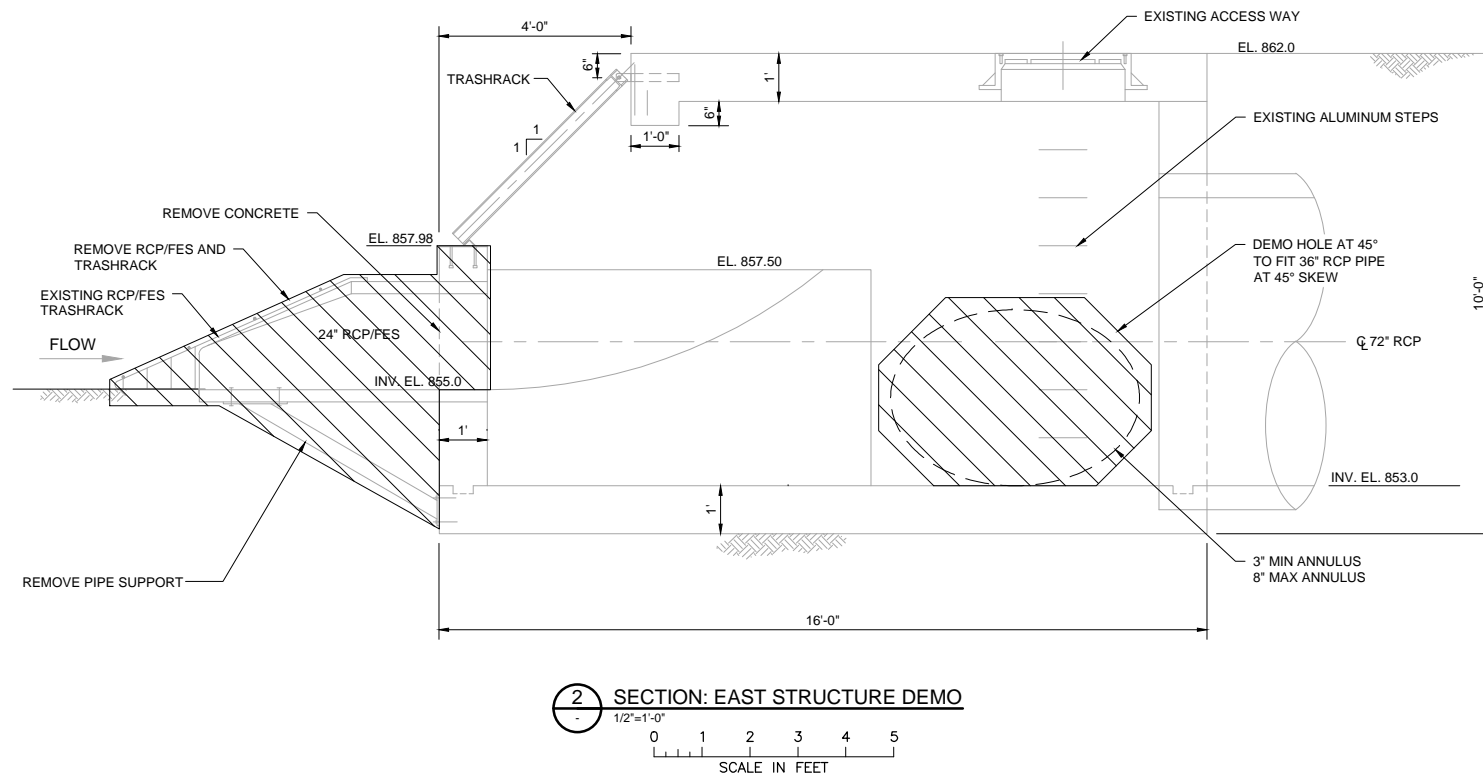
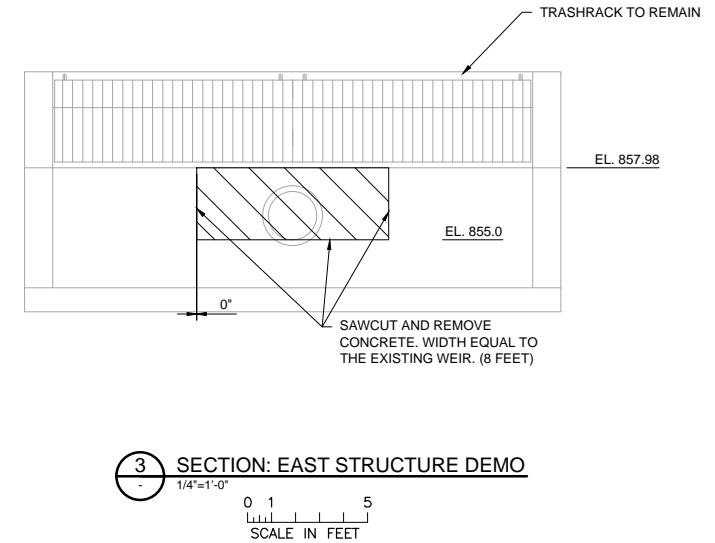
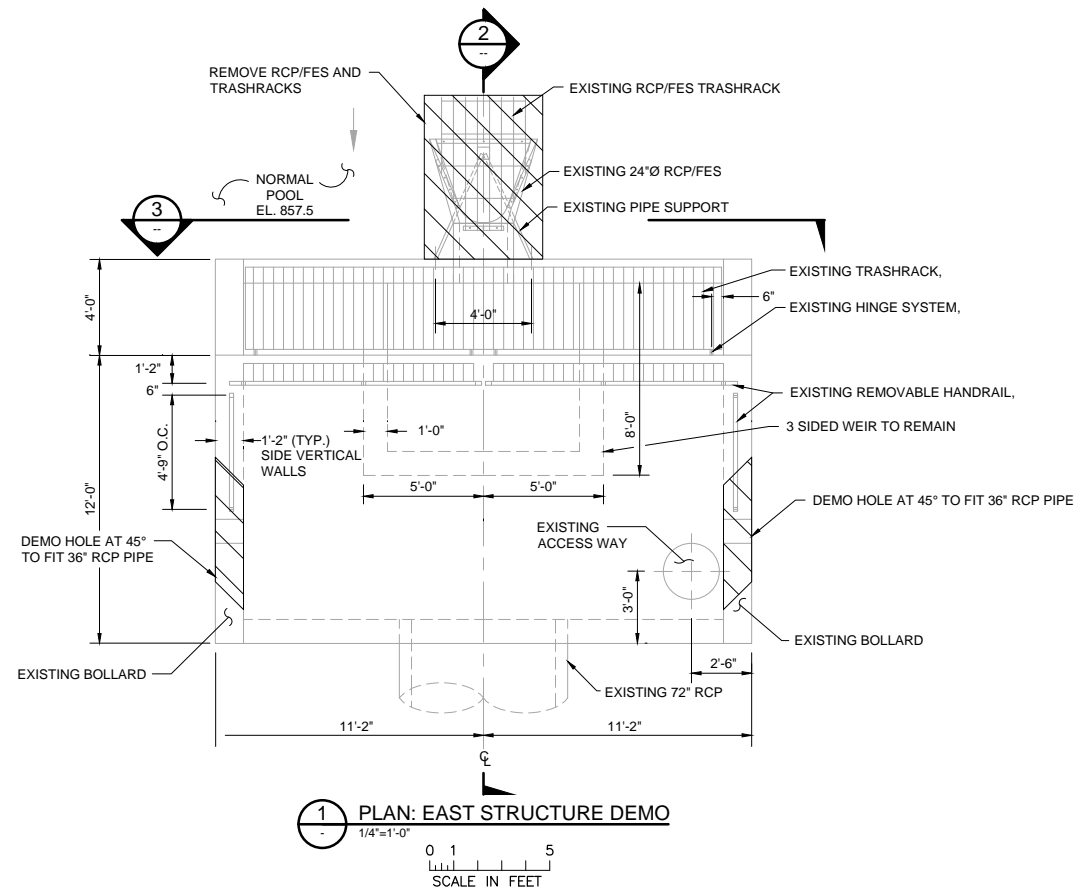


**KELLER CHANNEL WEIR & PHALEN
OUTLET RESILIENCY**

PHALEN EAST OUTLET SITE GRADING
AND STORM PLAN, PROFILE & SECTION

BARR PROJECT No.	23/62-1355.00
CLIENT PROJECT No.	
DWG. No.	C-07
REV. No.	A

CADD USER: Joseph A. Milasius FILE: M:\DESIGN\23621355\00\STRUCTURAL\23621355\00-S-01.DWG PLOT SCALE: 1:2 PLOT DATE: 7/31/2020 9:51 AM
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1.0 GENERAL REQUIREMENTS

A. GENERAL

- THESE NOTES ARE COMPLEMENTARY TO THE SPECIFICATIONS AND DRAWINGS AND REPRESENT MINIMUM REQUIREMENTS. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- DO NOT SCALE DRAWINGS.
- THE STRUCTURAL DRAWINGS REPRESENT THE FINISHED STRUCTURE AND, EXCEPT WHERE SPECIFICALLY SHOWN, DO NOT INDICATE THE METHOD OR MEANS OF CONSTRUCTION.

B. GOVERNING CODES

- PERFORM WORK IN COMPLIANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL CODES AND REGULATIONS.
 - 2018 IBC WITH 2020 MINNESOTA BUILDING CODE AMENDMENTS

C. DESIGN LOADS

- TRASH RACK: 50% BLOCKAGE
 - HEADWATER: EL. 862.0'
 - TAILWATER: EL. 858.5'

2.0 GROUTING

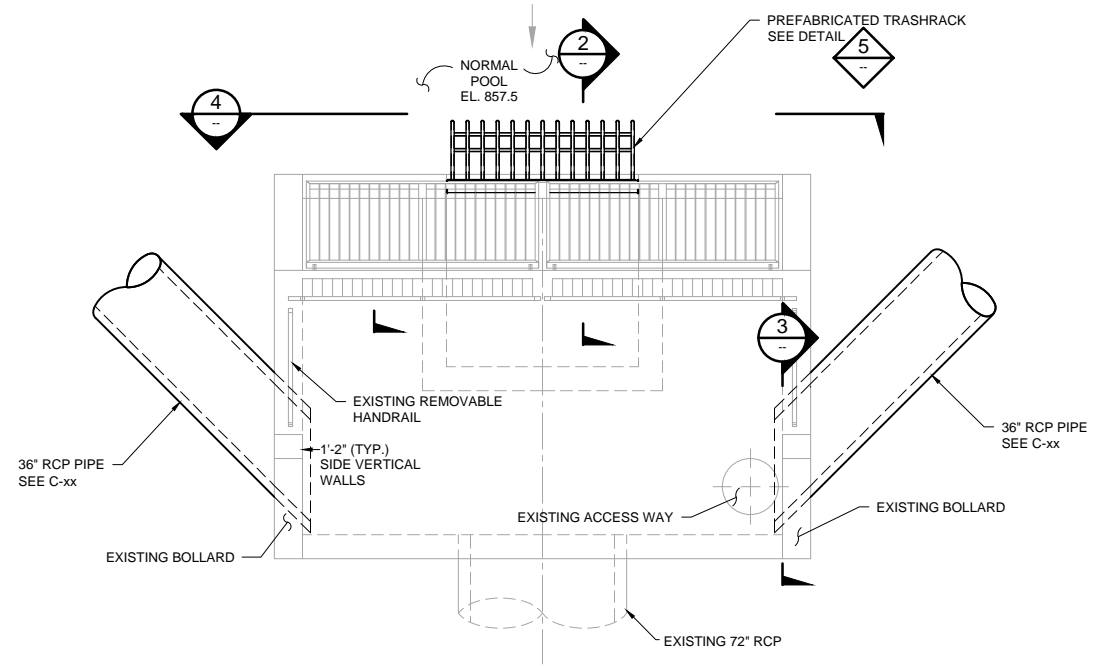
- PORTLAND CEMENT, SAND, AND WATER SUFFICIENT FOR PLACEMENT AND HYDRATION.
- MINIMUM 28-DAY SPECIFIED COMPRESSIVE STRENGTH: 5,000 PSI.

3.0 STRUCTURAL STEEL

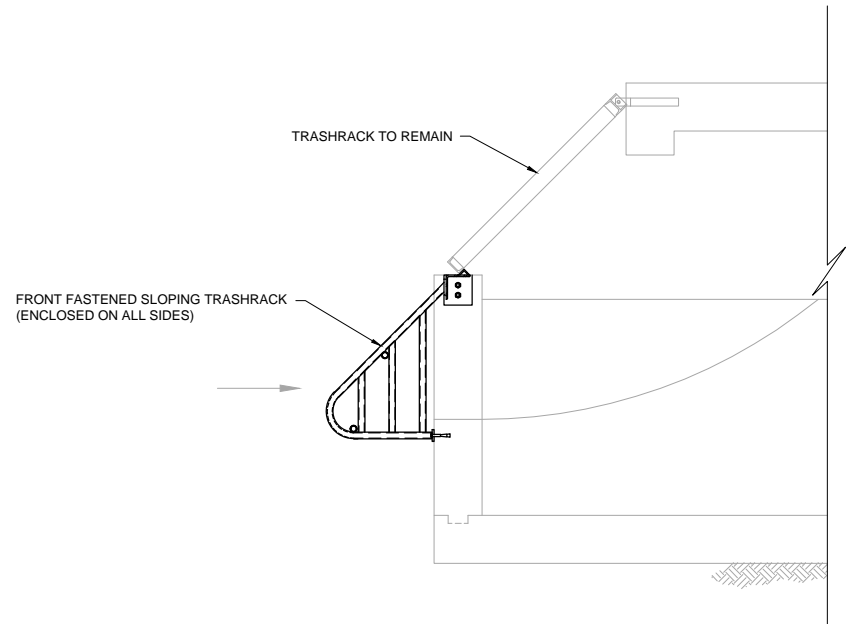
- PIPES: ASTM A53, GRADE B, SCHEDULE 40, FY = 35 KSI
- STEEL PLATES AND BARS: ASTM A36, FY = 36 KSI
- FASTENERS:
 - HIGH STRENGTH BOLTS: ASTM F1852 TWIST-OFF BOLTS OR ASTM A325, TYPE 1
 - NUTS: ASTM A563, HEAVY HEX, GRADE C
 - WASHERS: ASTM F436
 - COMPRESSIBLE-WASHER-TYPE DIRECT TENSION INDICATOR: ASTM F959
 - POST-INSTALLED ANCHORS:
 - ADHESIVE ANCHORS: HILTI HIT-RE 500-SD EPOXY ADHESIVE ANCHORING SYSTEM WITH HAS-E THREADED ROD PER ICC ESR-2322.
 - MECHANICAL ANCHORS: HILTI KWIK BOLT-TZ EXPANSION ANCHORS PER ICC ESR-1917.
- FILLER MATERIAL FOR WELDED CONNECTIONS: MINIMUM TENSILE STRENGTH OF 70,000 PSI (E70XX ELECTRODES)

ISSUED FOR
PROJECT APPROVAL

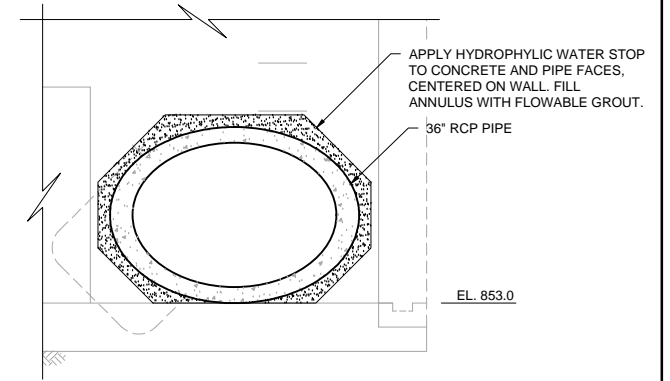
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NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION		RELEASED TO/FOR	A	B	C	0	1	2	3						



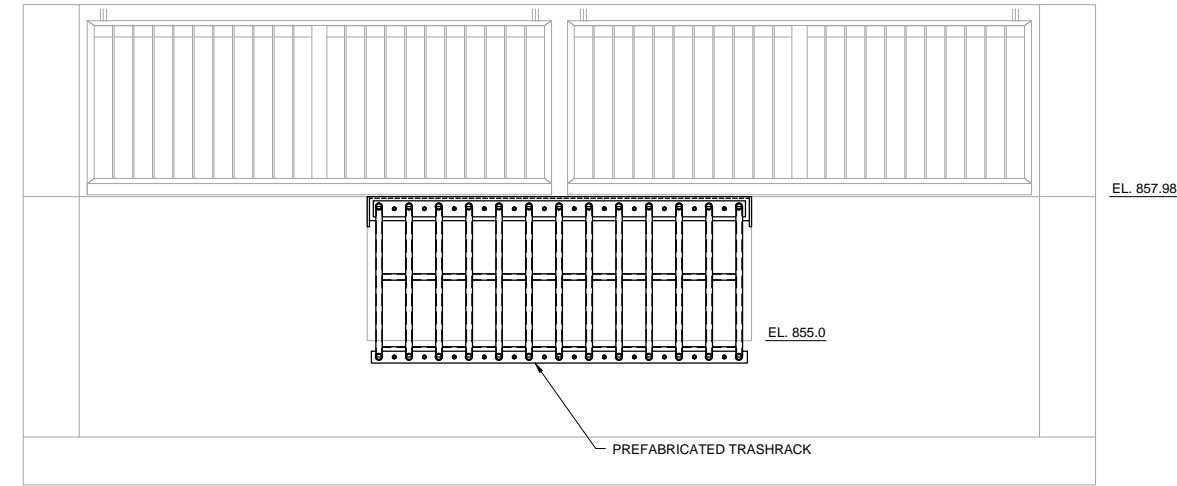
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 SCALE IN FEET



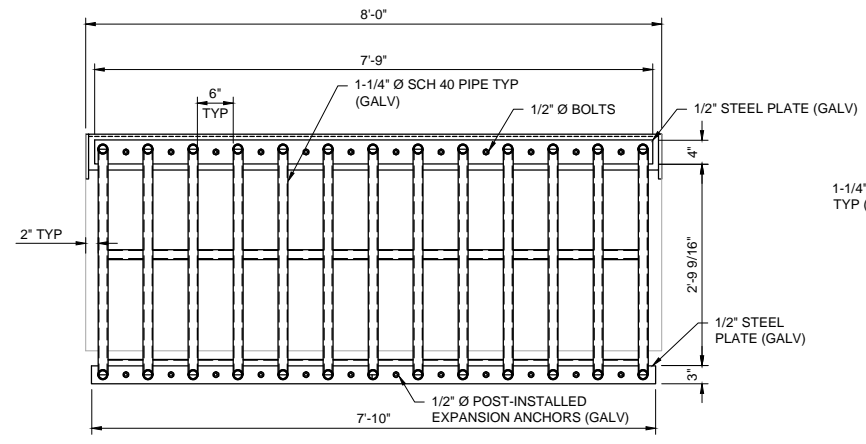
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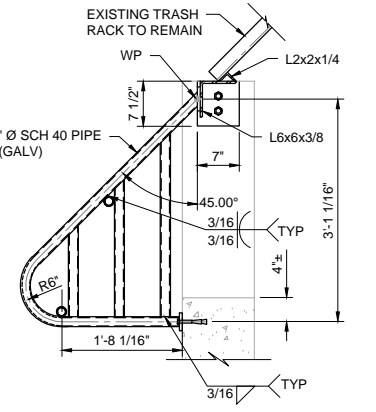
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 SCALE IN FEET



3 SECTION: EAST STRUCTURE MODIFICATION
 1/2"=1'-0"
 0 1 2 3 4 5
 SCALE IN FEET



5 DETAIL: PREFABRICATED TRASHRACK
 3/4"=1'-0"
 0 1 2 3
 SCALE



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CADD USER: Joseph A. Milsthus FILE: M:\DESIGN\23621355\00\STRUCTURAL\23621355\00-S-02.DWG PLOT SCALE: 1:2 PLOT DATE: 7/31/2020 11:20 AM
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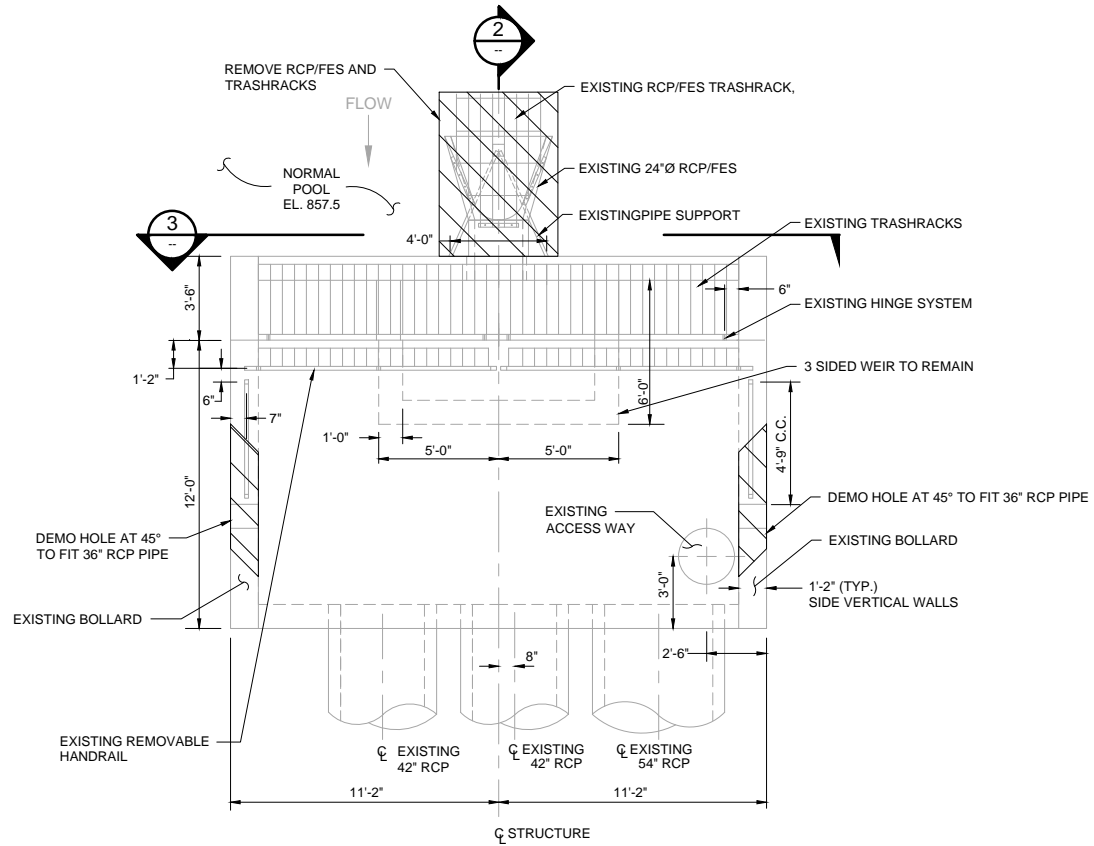
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Date	06/19/20
Drawn	JAM4
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Approved	BJS

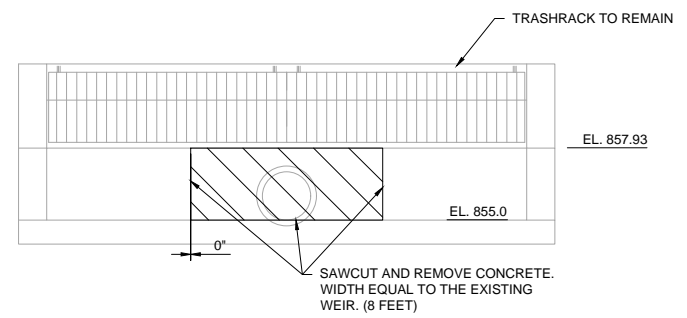
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 METRO WATERSHED DISTRICT

**KELLER CHANNEL WEIR & PHALEN
 OUTLET RESILIENCY**
**PHALEN EAST OUTLET STRUCTURE
 PLANS AND SECTIONS**

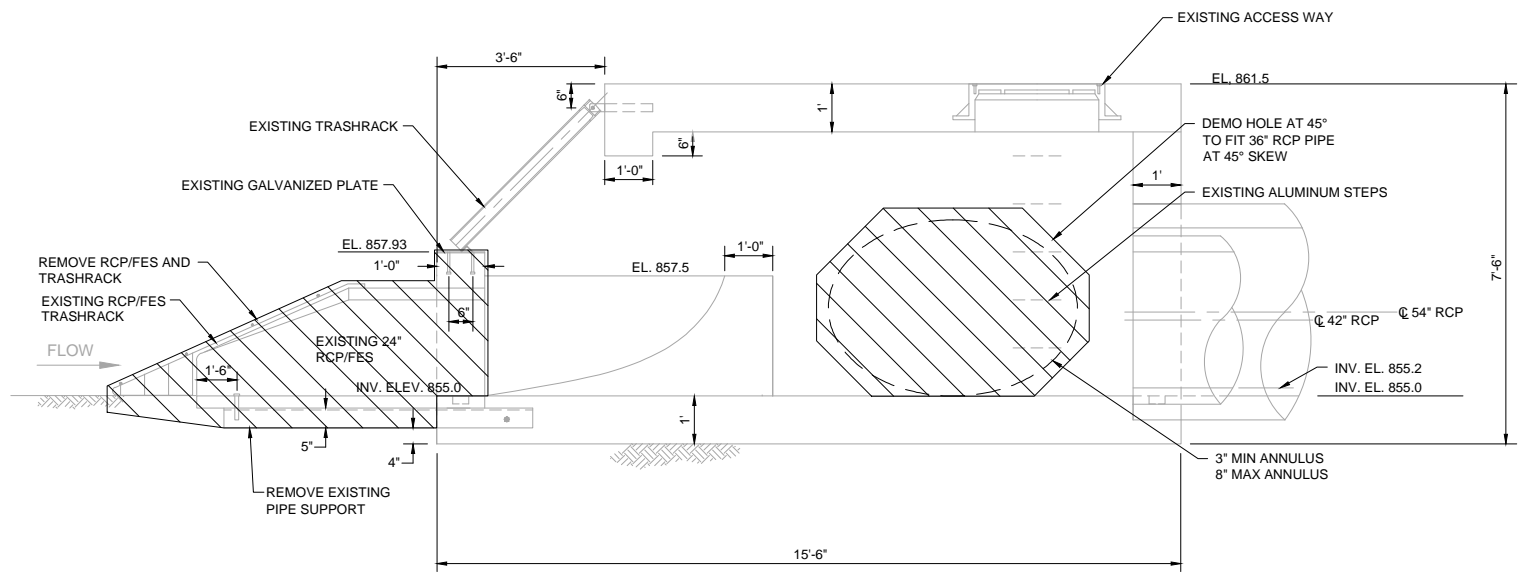
BARR PROJECT No.	
23621355.00	
CLIENT PROJECT No.	
DWG. No.	REV. No.
S-02	A



1 PLAN: WEST STRUCTURE DEMO
 1/4"=1'-0"
 0 1 5
 SCALE IN FEET



3 SECTION: WEST STRUCTURE DEMO
 1/4"=1'-0"
 0 1 5
 SCALE IN FEET



2 SECTION: WEST STRUCTURE DEMO
 1/2"=1'-0"
 0 1 2 3 4 5
 SCALE IN FEET

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CADD USER: Joseph A. Milstadius FILE: M:\DESIGN\23621355\00\STRUCTURAL\23621355\00-S-03.DWG PLOT SCALE: 1:2 PLOT DATE: 7/31/2020 10:04 AM
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CLIENT	07/31/20						
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CONSTRUCTION							
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DATE RELEASED							

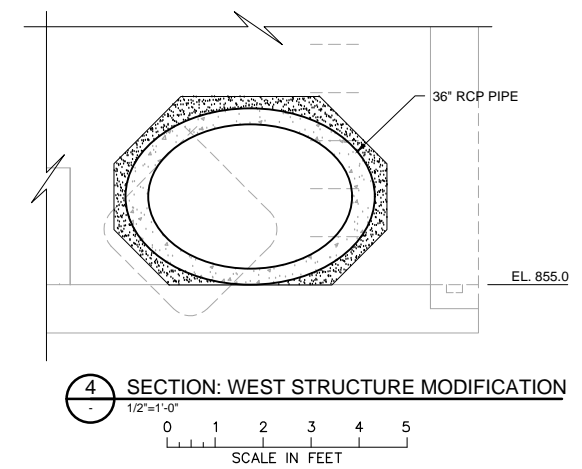
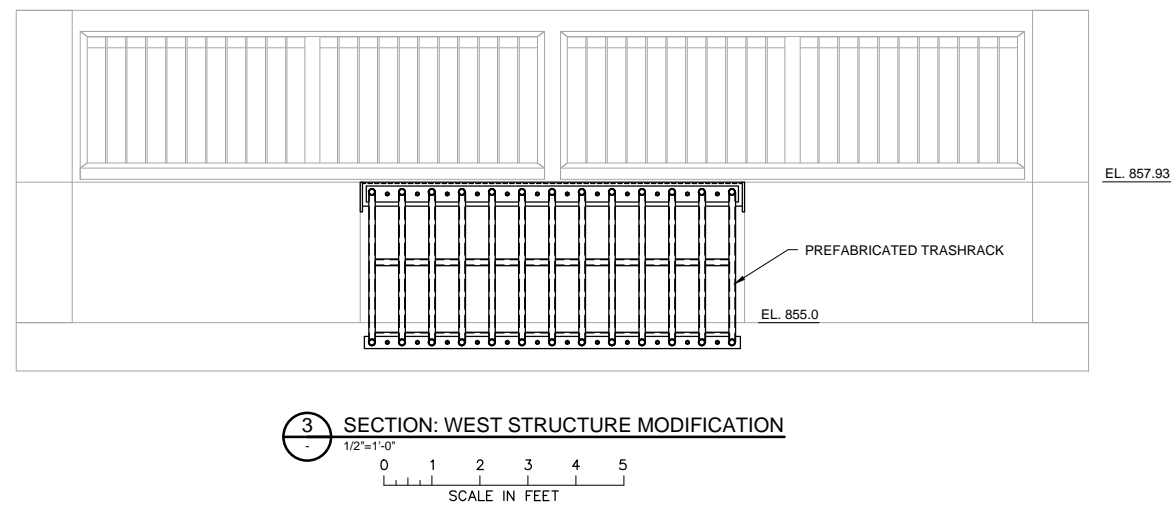
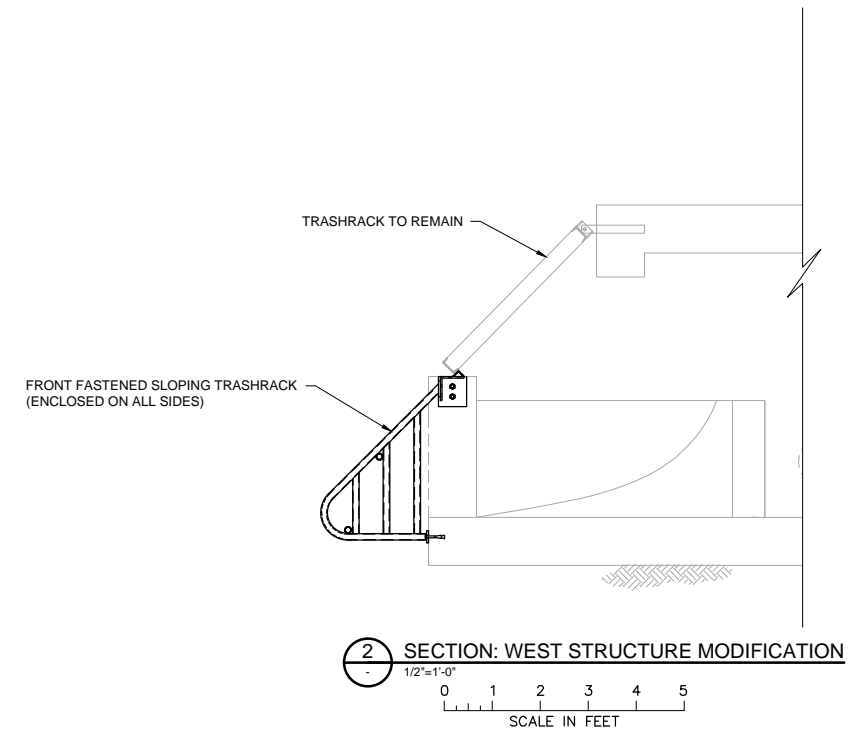
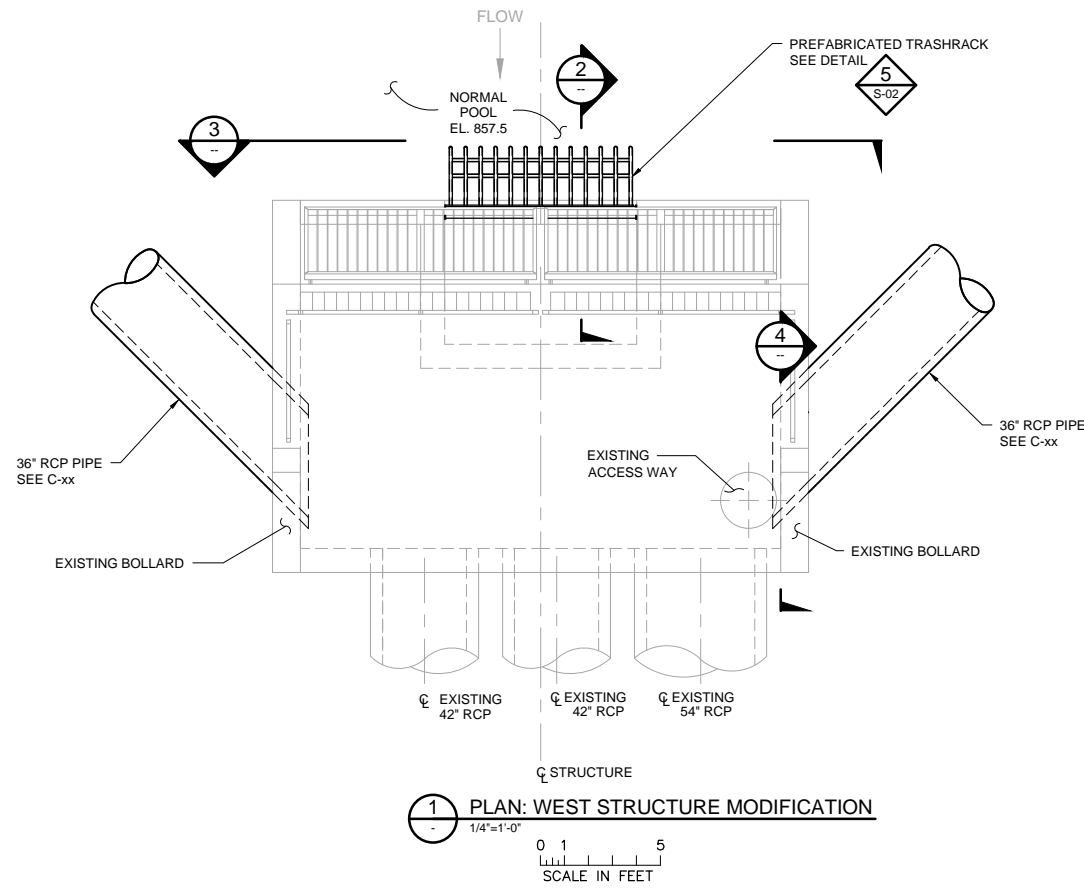
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**KELLER CHANNEL WEIR & PHALEN
 OUTLET RESILIENCY**
**PHALEN WEST OUTLET STRUCTURE
 DEMO PLANS AND SECTIONS**

BARR PROJECT No.	23621355.00
CLIENT PROJECT No.	
DWG. No.	S-03
REV. No.	A



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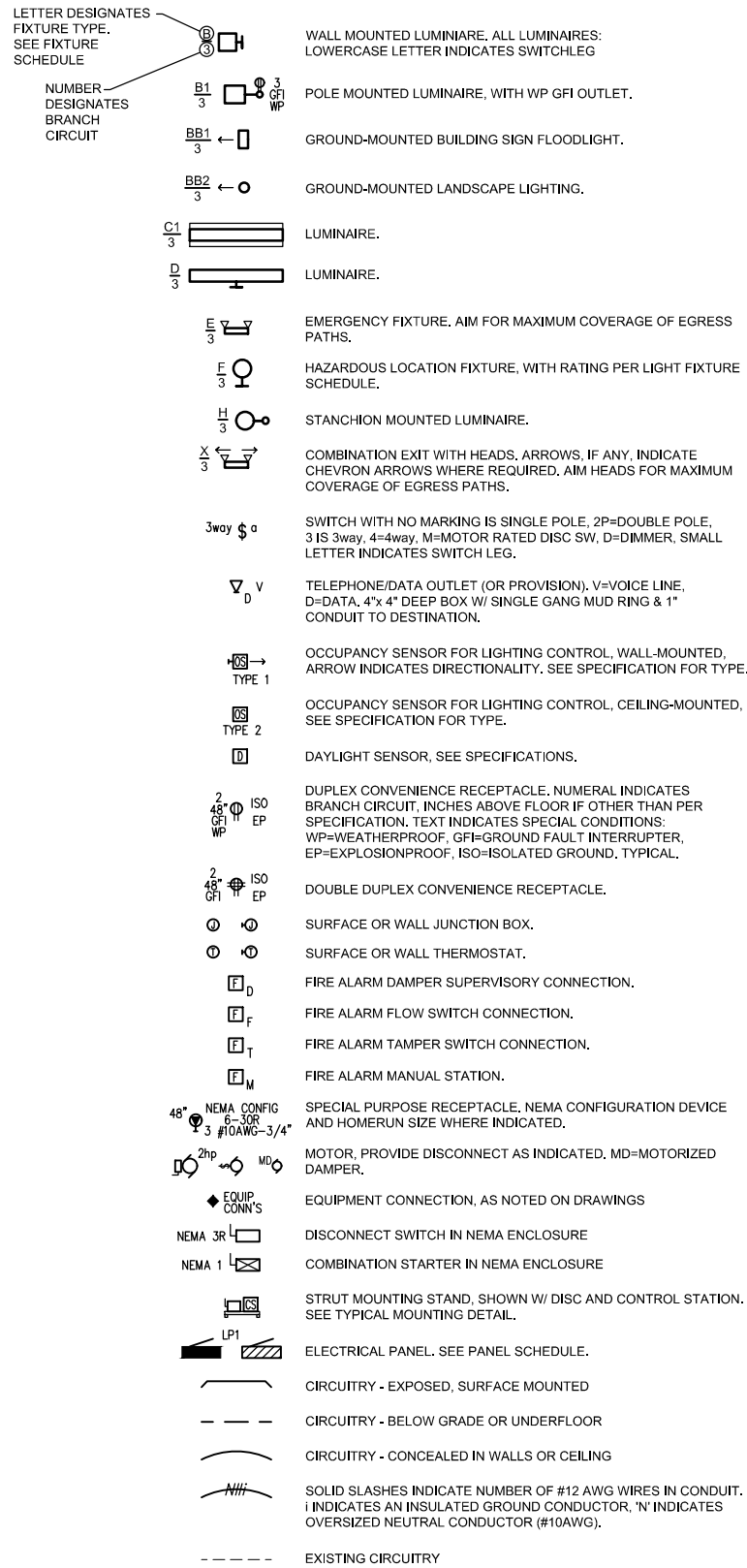


**KELLER CHANNEL WEIR & PHALEN
OUTLET RESILIENCY**

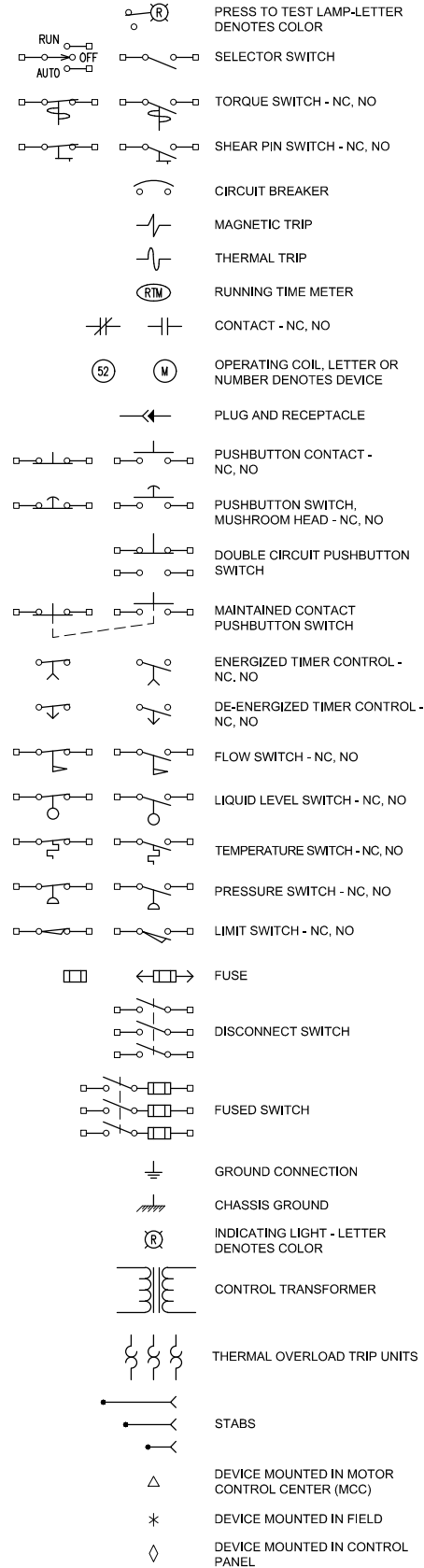
**PHALEN WEST OUTLET STRUCTURE
PLANS AND SECTIONS**

BARR PROJECT No. 23621355.00	
CLIENT PROJECT No.	
DWG. No. S-04	REV. No. A

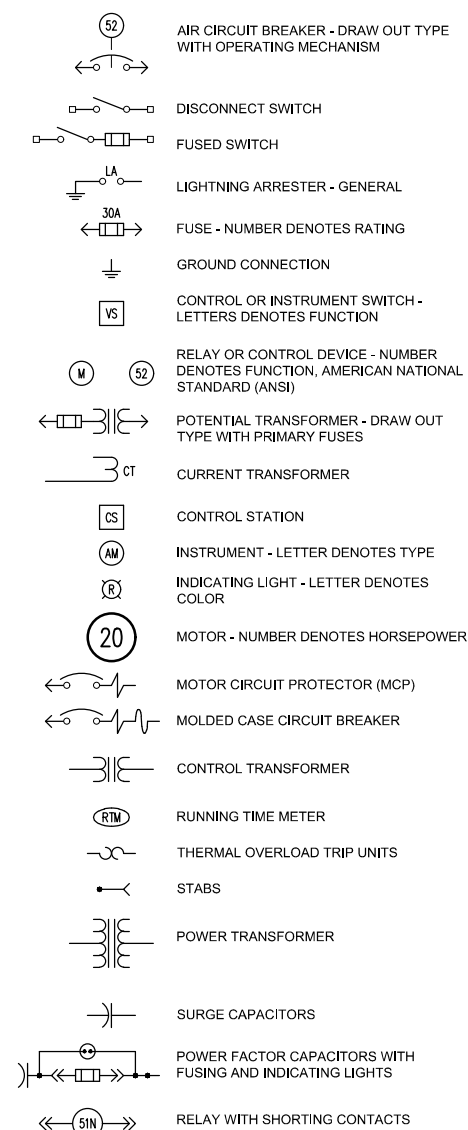
LUMINAIRE & DEVICE LEGEND



SCHEMATIC SYMBOLS



ONE-LINE DIAGRAM SYMBOLS



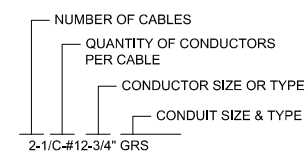
ABBREVIATIONS

A	AMPERES	M	MOTOR STARTER OPERATING COIL
ACK	ACKNOWLEDGE	MAX	MAXIMUM
AFB	ABOVE FINISHED FLOOR	MCM	THOUSAND CIRCULAR MILS
AFG	ABOVE FINISH GRADE	MCP	MOTOR CIRCUIT PROTECTOR
AM	AMMETER	MECH	MECHANICAL
ANN	ANNUNCIATOR	MFR	MANUFACTURER
AS	AMMETER SWITCH	MH	METAL HALIDE
AWG	AMERICAN WIRE GAGE	MIN	MINUTE OR MINIMUM
BKR	BREAKER	MTD	MOUNTED
BLDG	BUILDING	NF	NON-FUSED
C	CONDUIT	NC	NORMALLY CLOSED
CKT	CIRCUIT	NO	NORMALLY OPEN
CL	CENTER LINE	NTC	NOT CONNECTED
CO	CONVENIENCE OUTLET	OL(S)	OVERLOAD RELAY CONTACT(S)
CONN	CONNECTIONS	PF	POWER FACTOR
CONTR	CONTRACTOR	PVC	POLYVINYLCHLORIDE CONDUIT
CP	CONTROL PANEL	REQD	REQUIRED
CPT	CONTROL POWER TRANSFORMER	RS	RIGID STEEL CONDUIT
CS	CONTROL STATION	RTM	RUNNING TIME METER
CT	CURRENT TRANSFORMER	SDS	SPECIFIED IN OTHER DIVISION OF SPECIFICATIONS
CU	COPPER	SE	SERVICE ENTRANCE
DE	DUAL ELEMENT	SEC	SECOND OR SECONDARY
DISC	DISCONNECT	SIG	SIGNAL
DP	DISTRIBUTION PANEL	SOL Vv	SOLENOID VALVE
ELEC	ELECTRICAL	SP	SINGLE POLE
EMT	ELECTRICAL METALLIC TUBING	SPECS	SPECIFICATIONS
EP	EXPLOSION PROOF	SSNR	"SOFT START" NON-REVERSING
EQUIP	EQUIPMENT	SSR	"SOFT START" REVERSING
EWC	ELECTRIC WATER COOLER	SW	SWITCH
F & I	FURNISH AND INSTALL	S.S.	STAINLESS STEEL (TYPE 316)
FU	FUSE OR FUSIBLE	TD	TIME DELAY
GFI	GROUND FAULT INTERRUPTER	TEMP	TEMPERATURE
GND	GROUND	TSTAT	THERMOSTAT
GRS	GALVANIZED RIGID STEEL CONDUIT	UH	UNIT HEATER
HD	HEAVY DUTY	U.N.O.	UNLESS NOTED OTHERWISE
HP	HORSEPOWER	V	VOLTS
HPS	HIGH PRESSURE SODIUM	VM	VOLTMETER
HTR	HEATER	VS	VOLTMETER SWITCH
HZ	HERTZ (CYCLES/SECOND)	Vv	VALVE
IMC	INTERMEDIATE METAL CONDUIT	VFD	VARIABLE FREQUENCY DRIVE
INCAND	INCANDESCENT	W	WATTS OR WIRE
IND	INDICATING OR INDICATOR	W/	WITH
JB	JUNCTION BOX	WHM	WATT-HOUR METER
J-BOX	JUNCTION BOX	WM	WATT METER
kVA	KILOVOLT-AMPERES	WW	WIREWAY
kVAR	KILOVOLT-AMPERES REACTIVE	WP	WEATHERPROOF
kW	KILOWATTS	XDCR	TRANSUDER
LT	LIGHT	XFMR	TRANSFORMER
LMF	LIQUID-TIGHT METALLIC CORE FLEXIBLE CONDUIT	XFR	TRANSFER

COLORS

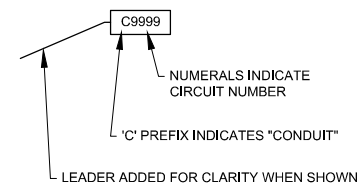
A	AMBER	O	ORANGE
BK	BLACK	R	RED
BR	BROWN	V	VIOLET
BU	BLUE	W	WHITE
GRN	GREEN	Y	YELLOW
GY	GRAY		

CIRCUIT LEGEND



CIRCUIT DESIGNATOR

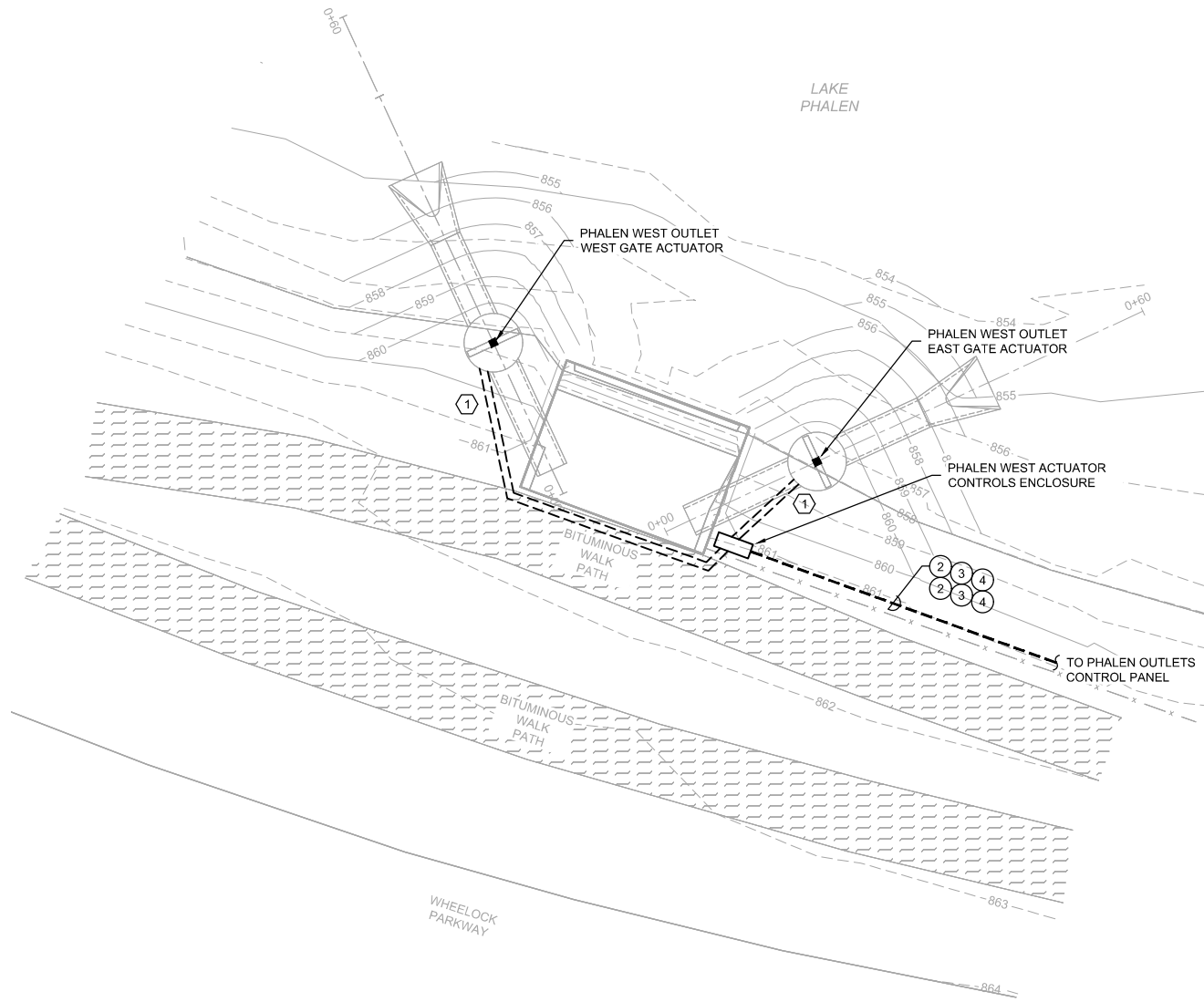
REFER TO CABLE & CONDUIT SCHEDULE(S)



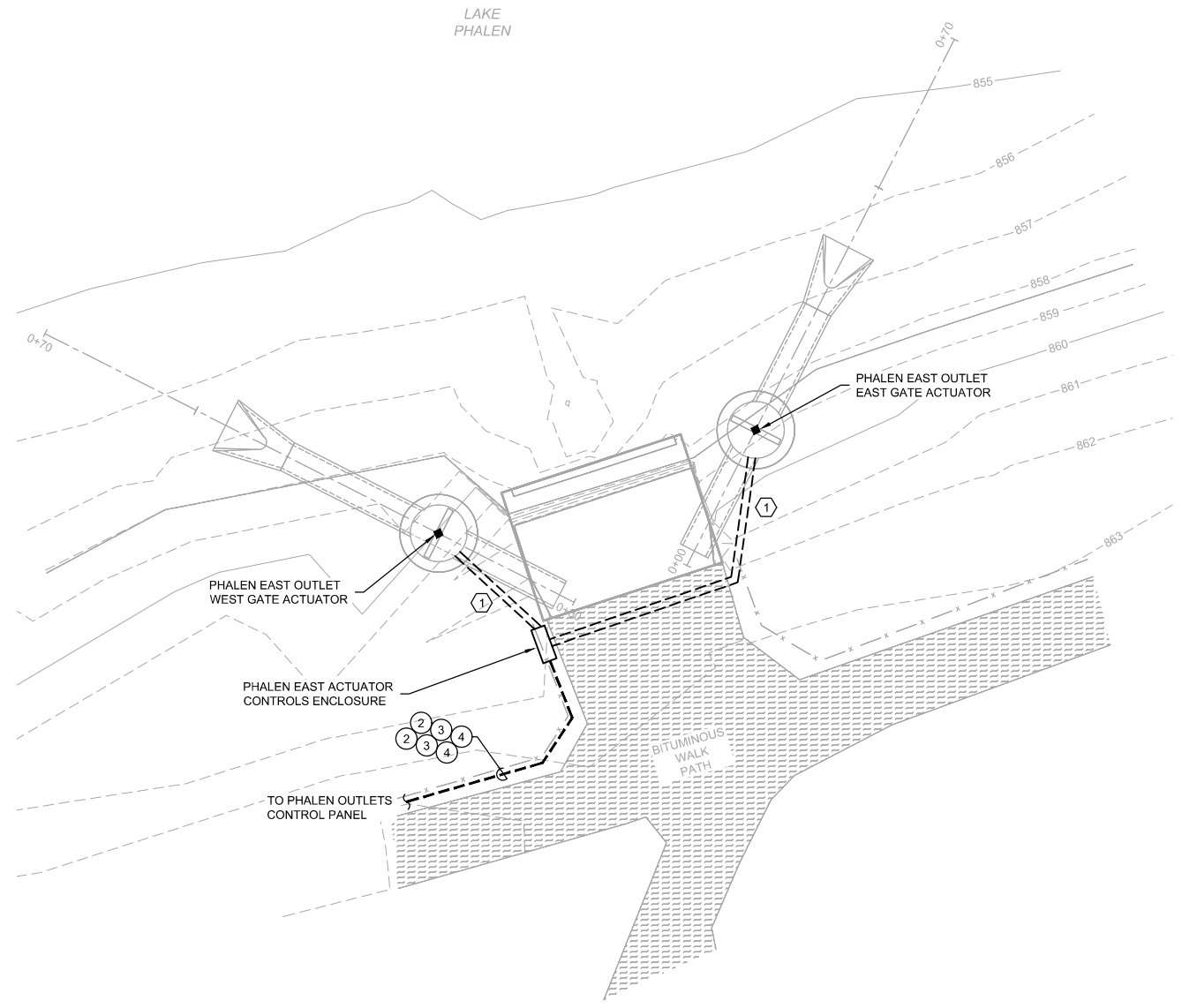
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				PRINTED NAME				CONSTRUCTION				Ph: 1-800-632-2277 Fax: (952) 832-2601 www.barr.com				Date 7/10/2020								CLIENT PROJECT No.							
				SIGNATURE				RELEASED TO/FOR				Checked ZMN				ELECTRICAL SYMBOLS & ABBREVIATIONS				DWG. No. E-01											
NO.				BY				CHK.				APP.								DATE				REVISION DESCRIPTION				Approved -			



1 PLAN: PHALEN WEST
 SCALE IN FEET



2 PLAN: PHALEN EAST
 SCALE IN FEET

- GENERAL NOTES:**
- FIELD CONFIRM LOCATIONS OF ALL EXISTING UNDERGROUND UTILITIES, CABLES, CONDUITS, ETC. PRIOR TO CONSTRUCTION. CONTRACTOR SHALL REPAIR SUCH ITEMS AT NO COST IF DAMAGED BY THE CONTRACTOR.
 - PROVIDE TEMPORARY SUPPORT FOR EXISTING FACILITIES THAT WILL BE EXPOSED DUE TO GENERAL, PROCESS AND STRUCTURAL CONSTRUCTION.
 - FIELD CONFIRM AND COORDINATE CONDUIT ROUTING.
 - CORE DRILL EXISTING STRUCTURES AS REQUIRED FOR NEW CONDUIT INSTALLATION. PATH ALL SURFACES TO MATCH EXISTING. ALL CORE DRILL LOCATIONS SHALL BE VERIFIED WITH ENGINEER.

- NUMBERED NOTES:**
- TWO (2) - 2" CONDUITS FROM ACTUATOR CONTROL ENCLOSURE TO EACH GATE STRUCTURE FOR MFR. ACTUATOR CABLES.

- CIRCUIT LEGEND:**
- 4-1/C-#6-2°C
 - 3-1/C-#12, 1-1/C-#12G-1°C
 - 10-1/C-#14, 1°C
 - 1-2/C-#16SH, 1°C

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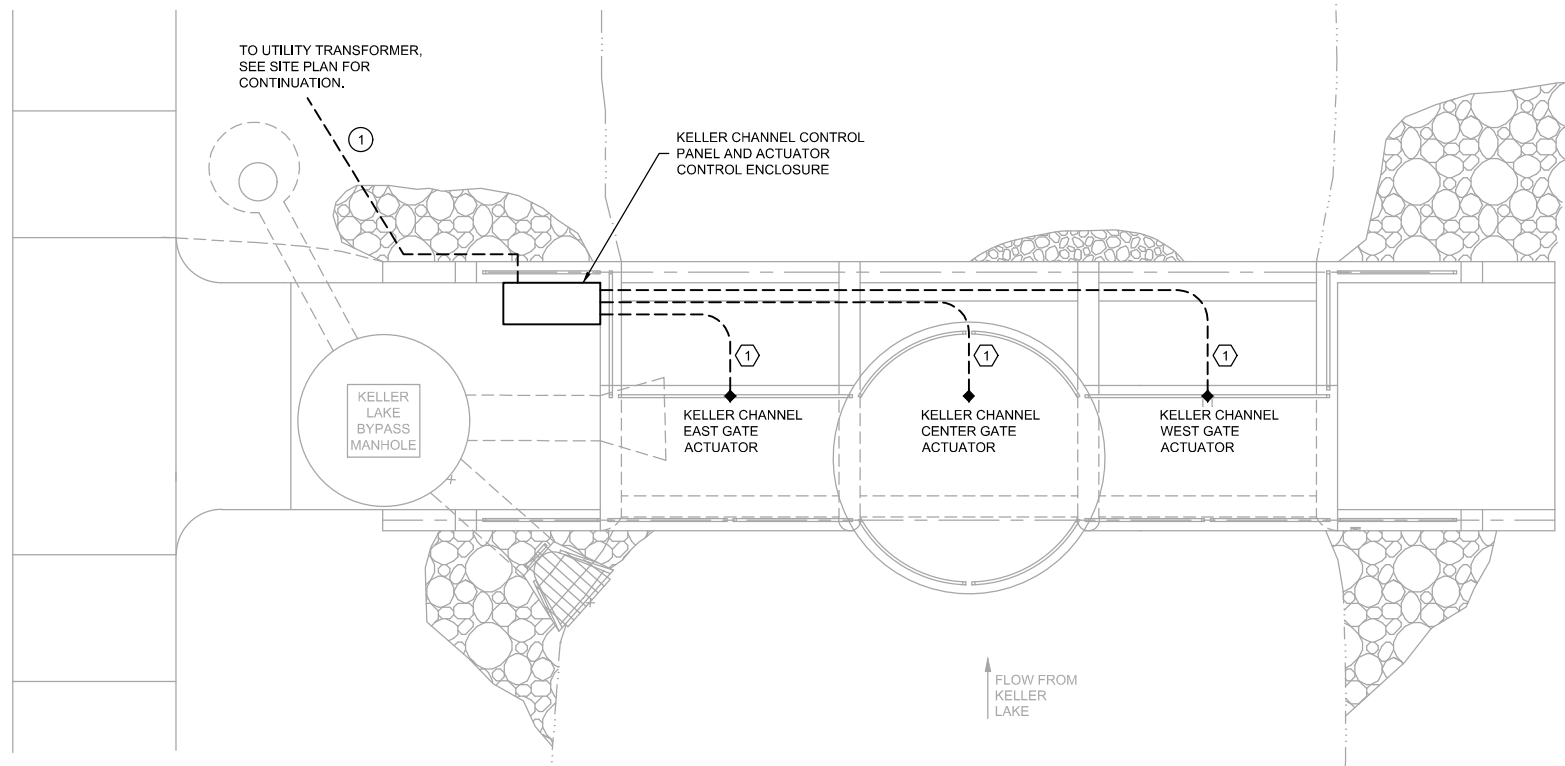
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 BARR ENGINEERING CO.
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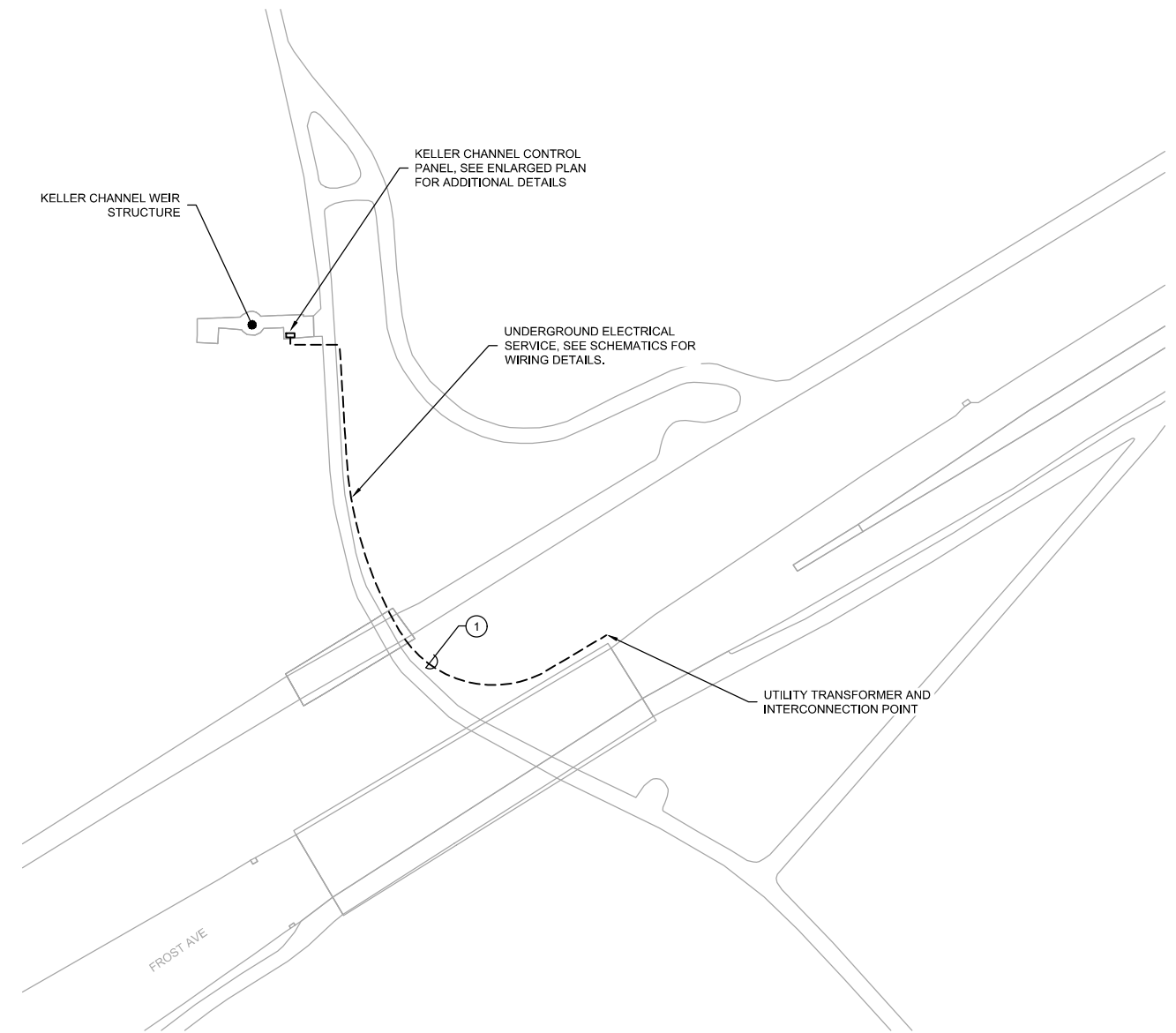
KELLER CHANNEL WEIR & PHALEN
 OUTLET RESILIENCY
 PHALEN OUTLETS
 ENLARGED ELECTRICAL SITE PLANS

BARR PROJECT No.	23/62-1355.00
CLIENT PROJECT No.	
DWG. No.	E-03
REV. No.	A



1 PLAN: KELLER CHANNEL ENLARGED ELECTRICAL

0 1 5 10
SCALE



2 PLAN: ELECTRICAL SITE

0 50 100
SCALE IN FEET

GENERAL NOTES:

- FIELD CONFIRM LOCATIONS OF ALL EXISTING UNDERGROUND UTILITIES, CABLES, CONDUITS, ETC. PRIOR TO CONSTRUCTION. CONTRACTOR SHALL REPAIR SUCH ITEMS AT NO COST IF DAMAGED BY THE CONTRACTOR.
- PROVIDE TEMPORARY SUPPORT FOR EXISTING FACILITIES THAT WILL BE EXPOSED DUE TO GENERAL, PROCESS AND STRUCTURAL CONSTRUCTION.
- FIELD CONFIRM AND COORDINATE CONDUIT ROUTING.
- CORE DRILL EXISTING STRUCTURES AS REQUIRED FOR NEW CONDUIT INSTALLATION. PATH ALL SURFACES TO MATCH EXISTING. ALL CORE DRILL LOCATIONS SHALL BE VERIFIED WITH ENGINEER.
- COORDINATE ALL ELECTRIC UTILITY SERVICES WITH THE SERVING ELECTRIC UTILITY, XCEL ENERGY.
- SEE ENLARGED PLANS FOR ADDITIONAL ELECTRICAL DETAILS.

NUMBERED NOTES:

- 2" CONDUIT FROM ACTUATOR CONTROL MODULE TO GATE ACTUATOR FOR MRF. ACTUATOR CABLES, SECURE CONDUITS TO UNDER SIDE OF CONCRETE SLAB USING STAINLESS STEEL HARDWARE.

CIRCUIT LEGEND:

- 4-1/C-#6-2"C
- 3-1/C-#12, 1-1/C-#12G-1"C
- 10-1/C-#14, 1"C
- 1-2/C-#16SH, 1"C

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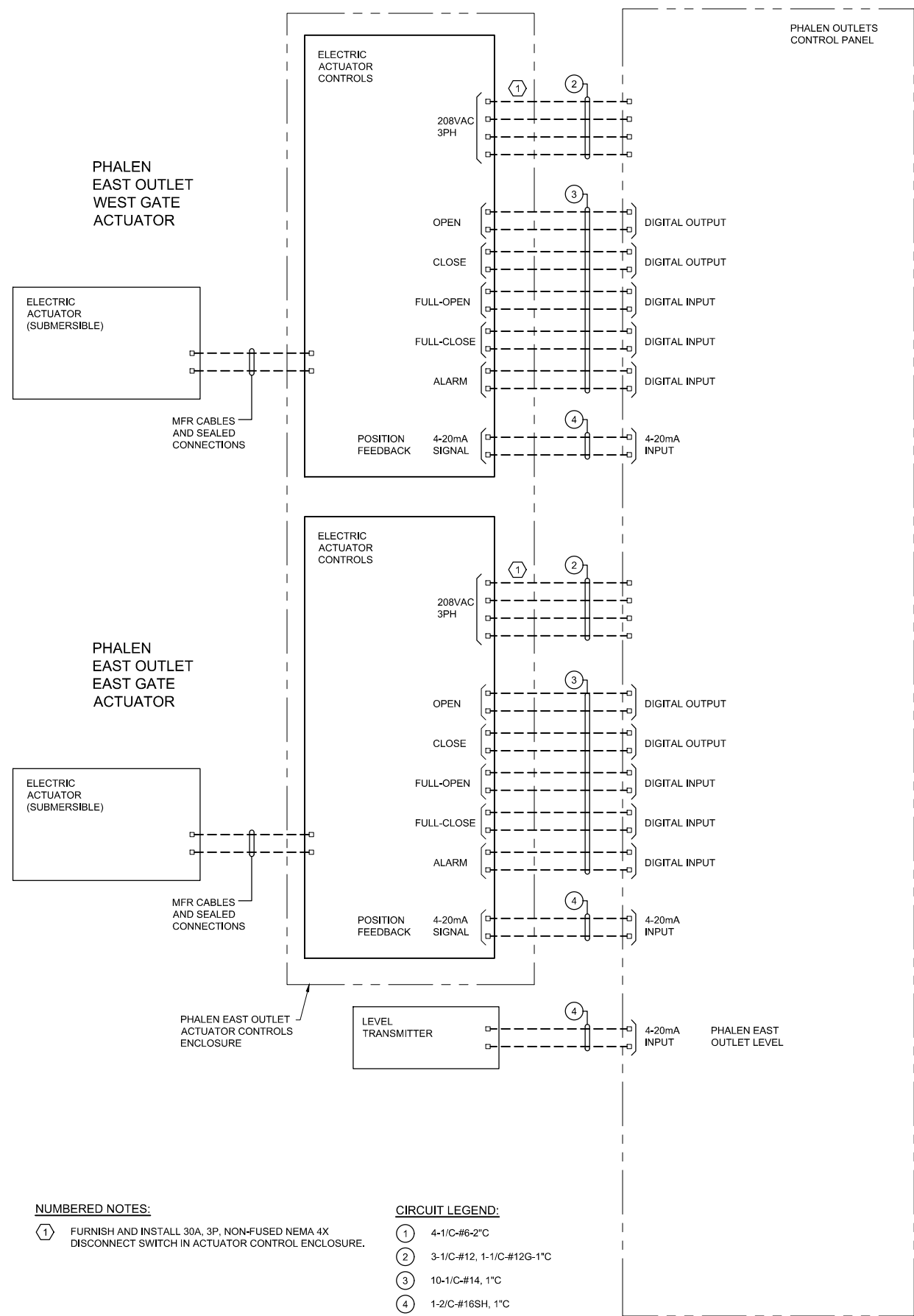
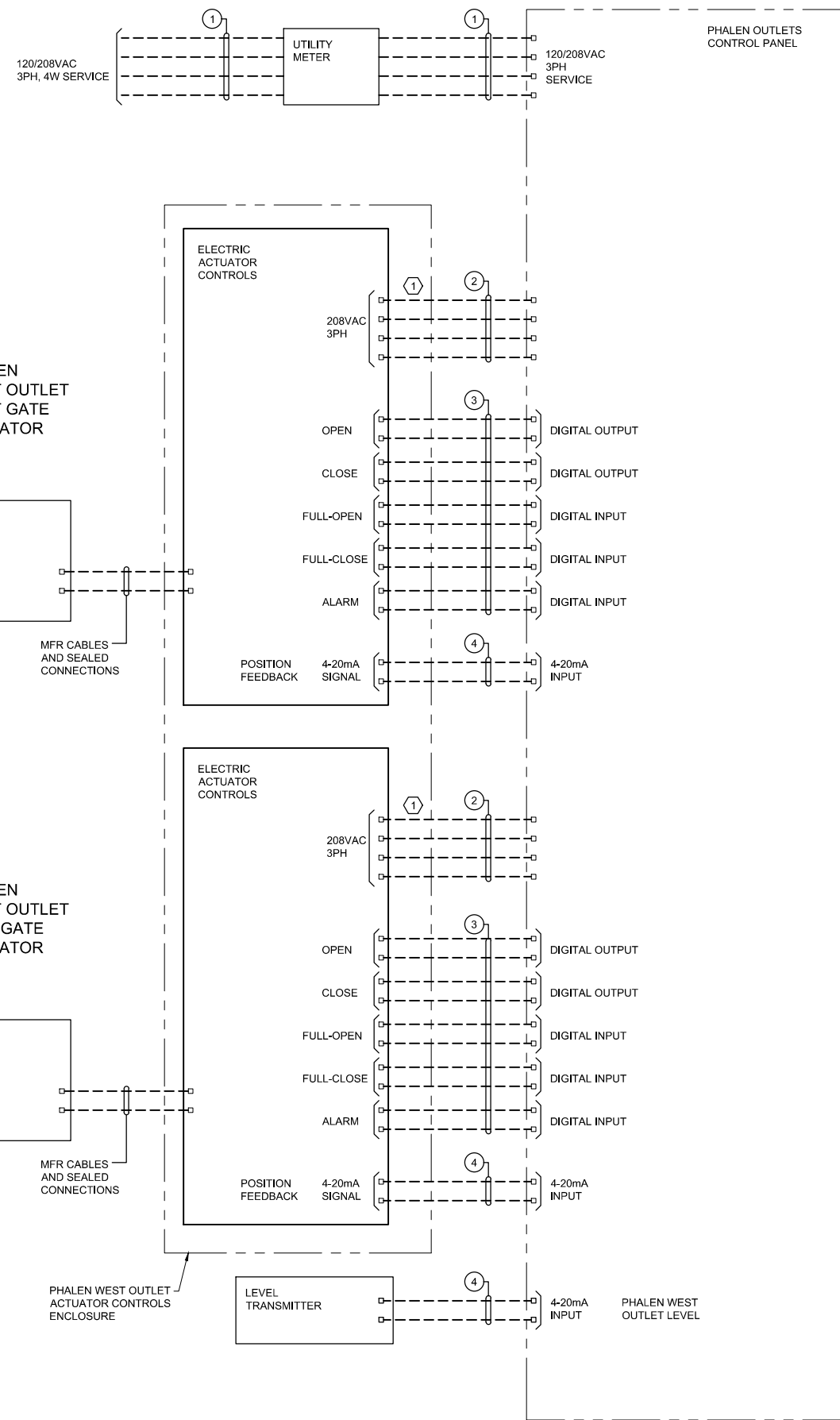
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Designed	ZMN
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**KELLER CHANNEL WEIR & PHALEN
OUTLET RESILIENCY**

**KELLER CHANNEL WEIR STRUCTURE
ELECTRICAL SITE PLAN**

BARR PROJECT No. 23/62-1355.00	
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DWG. No. E-05	REV. No. A



NUMBERED NOTES:

- ① FURNISH AND INSTALL 30A, 3P, NON-FUSED NEMA 4X DISCONNECT SWITCH IN ACTUATOR CONTROL ENCLOSURE.

CIRCUIT LEGEND:

- ① 4-1/C-#6-2°C
- ② 3-1/C-#12, 1-1/C-#12G-1°C
- ③ 10-1/C-#14, 1°C
- ④ 1-2/C-#16SH, 1°C

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CADD USER: Chad Lukow FILE: M:\DESIGN\23621355.00\2362135500_E-08.DWG PLOT SCALE: 1:2 PLOT DATE: 7/30/2020 9:45 AM

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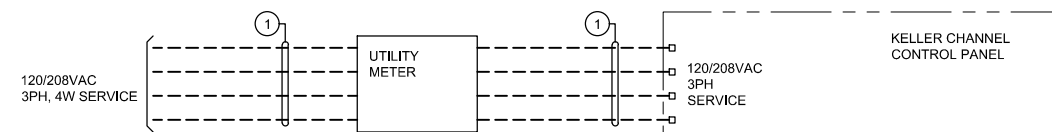
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RAMSEY-WASHINGTON
 METRO WATERSHED DISTRICT

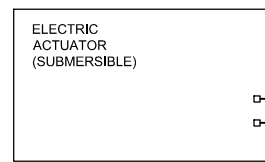
KELLER CHANNEL WEIR & PHALEN OUTLET RESILIENCY

PHALEN OUTLETS CONTROL PANEL ELECTRICAL SCHEMATICS

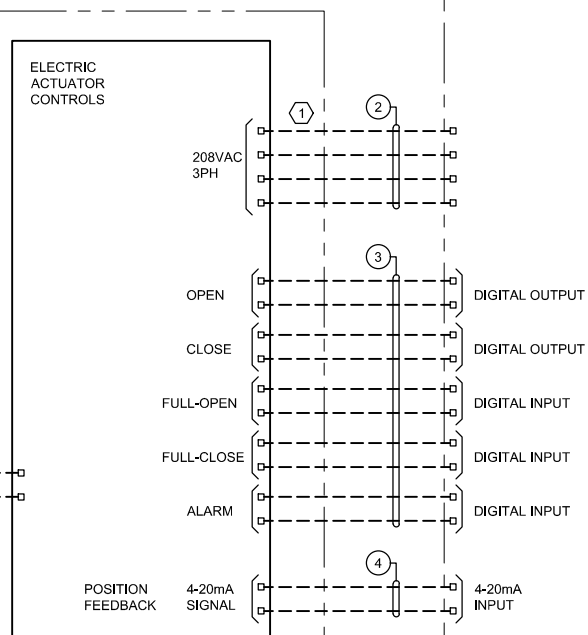
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CLIENT PROJECT No.	
DWG. No.	E-08
REV. No.	A



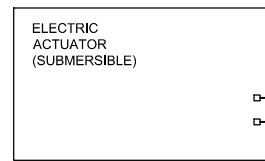
KELLER WEST GATE ACTUATOR



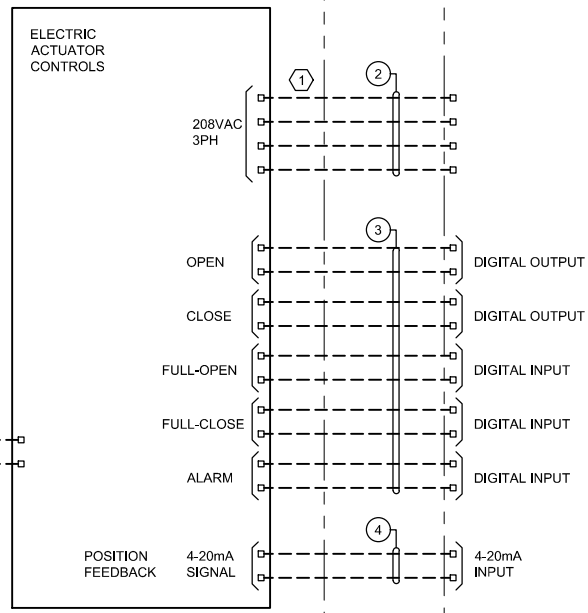
MFR CABLES AND SEALED CONNECTIONS



KELLER CENTER GATE ACTUATOR

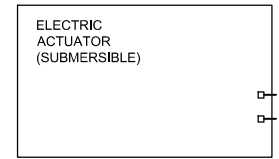


MFR CABLES AND SEALED CONNECTIONS

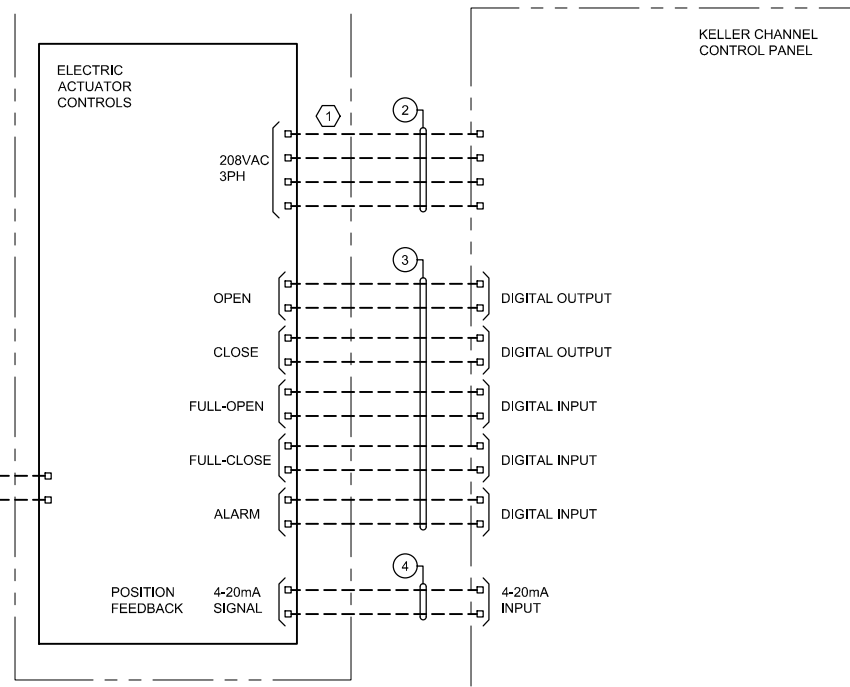


ACTUATOR CONTROLS ENCLOSURE. FABRICATE TO BACK OF CONTROL PANEL

KELLER EAST GATE ACTUATOR



MFR CABLES AND SEALED CONNECTIONS



PHALEN EAST OUTLET LEVEL

NUMBERED NOTES:

- ① FURNISH AND INSTALL 30A, 3P, NON-FUSED NEMA 4X DISCONNECT SWITCH IN ACTUATOR CONTROL ENCLOSURE.

CIRCUIT LEGEND:

- ① 4-1/C-#6-2°C
- ② 3-1/C-#12, 1-1/C-#12G-1°C
- ③ 10-1/C-#14, 1°C
- ④ 1-2/C-#16SH, 1°C

ISSUED FOR PROJECT APPROVAL

CADD USER: Chad Lukow FILE: M:\DESIGN\2362\1355.00\2362\1355_00.DWG PLOT SCALE: 1:2 PLOT DATE: 7/30/2020 9:46 AM

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME: _____
 SIGNATURE: _____
 DATE: _____ LICENSE # _____

CLIENT	07/31/20						
BID							
CONSTRUCTION							
RELEASED TO/FOR	A	B	C	0	1	2	3
DATE RELEASED							

BARR Project Office:
 BARR ENGINEERING CO.
 4300 MARKETPOINTE DRIVE
 Suite 200
 MINNEAPOLIS, MN 55435
 Ph: 1-800-632-2277
 Fax: (952) 832-2601
 www.barr.com

Scale	AS SHOWN
Date	7/10/2020
Drawn	CML2
Checked	ZMN
Designed	ZMN
Approved	-



KELLER CHANNEL WEIR & PHALEN OUTLET RESILIENCY
 KELLER CHANNEL CONTROL PANEL ELECTRICAL SCHEMATICS

BARR PROJECT No.	23/62-1355.00
CLIENT PROJECT No.	
DWG. No.	E-10
REV. No.	A

CONTRACT DOCUMENTS

KELLER CHANNEL WEIR AND PHALEN OUTLET RESILIENCY PROJECT RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

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Appendices

Appendix A: Erosion Control Inspection Log

