Northern Kentucky Water District

NORTHERN KENTUCKY WATER DISTRICT

PRESIDENT/CEO:
- RONALD LOVAN, P.E.

VICE PRESIDENTS:
- RICHARD B. HARRISON
- JACK P. BRAGG, JR.

BOARD OF COMMISSIONERS:
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- DAVID M. SPAULDING, ESQ - VICE CHAIR
- FRED A. MACKE, JR. - SECRETARY
- CLYDE CUNNINGHAM - TREASURER
- ANDREW C. COLLINS - COMMISSIONER
- DOUGLAS C. WAGNER, CDT - COMMISSIONER

VICINITY MAP
NTS

Contract Drawings For

Fort Thomas Treatment Plant

Basin Improvements

General/Demolition/Process/ Structural/Electrical

Project No.
000000000218839
HDR-CON0084311

Fort Thomas, Kentucky
January 15, 2015

freeland harris consulting engineers
201 west short street
suite 410
lexington, kentucky 40507

INDEX OF DRAWINGS

MATERIALS IN PLAN/SECTION

- ACOUSTICAL CEILING TILE (SECTION)
- ASPHALT (PLAN OR SMALL–SCALE SECTION)
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- BATT INSULATION (SECTION)
- BRICK MASONRY (PLAN AND/OR SECTION)
- CHECKERED PLATE (PLAN)
- CONCRETE (PLAN AND/OR SECTION)
- CONCRETE MASONRY (PLAN AND/OR SECTION)
- DEMOLITION (PLAN AND/OR SECTION)
- EARTH (SECTION)
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- GRATING (SECTION)
- GRATING (PLAN)
- GROUT (SECTION)
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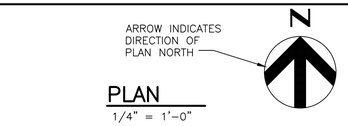
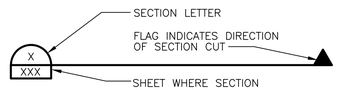
- HANDRAIL (PLAN) – EXISTING
- HANDRAIL (PLAN) – PROPOSED
- HANDRAIL (SECTION))
- FOAM FILLER (SECTION)

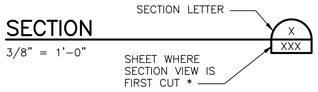
GENERAL SYMBOLOGY



PLAN TITLE



SECTION CUT MARKER



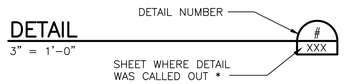
SECTION TITLE

DETAIL MARKER

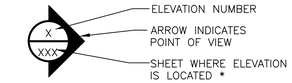
FOR REFERENCING DETAILS INCLUDED IN DRAWING SET.

DETAIL MARKER

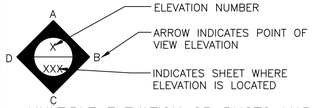
FOR REFERENCING DETAILS BOUND IN SPECIFICATIONS OR SEPARATE VOLUME.



DETAIL TITLE



SINGLE ELEVATION OR PHOTO MARKER



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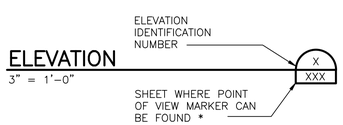
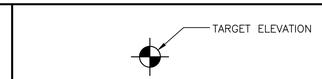


ELEVATION TITLE

* EXCEPTIONS WHERE THE SHEET NUMBER IS REPLACED BY A DASH (–).

1) FOR COMMON DETAILS, SECTIONS, ELEVATIONS OR DETAILS THAT ARE CUT OR CALLED OUT ON MULTIPLE SHEETS.
2) SECTIONS, ELEVATIONS OR DETAILS THAT ARE LOCATED ON THE SAME SHEET THEY ARE CUT OR CALLED OUT ON.



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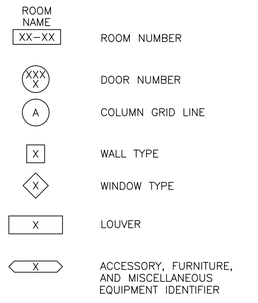


KEY NOTE DESIGNATION

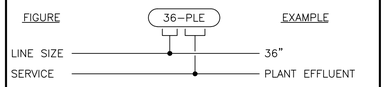
GENERAL LINE SYMBOLOGY

GENERAL ABBREVIATIONS

TYP.	TYPICAL
EXIST.	EXISTING
℄	CENTERLINE
FLOC.	FLOCCULATOR
▽ WSE 780.00	WATER SURFACE ELEVATION
EL.	ELEVATION
S.S.	STAINLESS STEEL
DIA.	DIAMETER
ALUM.	ALUMINUM
MAX.	MAXIMUM
MIN.	MINIMUM
CONC.	CONCRETE
W/	WITH
O.C.	ON CENTER
VFD	VARIABLE FREQUENCY DRIVE
M.C.C.	MOTOR CONTROL CENTER

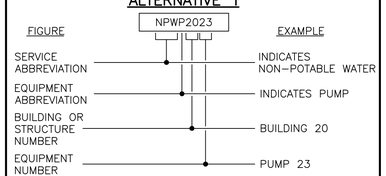
IDENTIFICATION SYMBOLOGY

PIPING

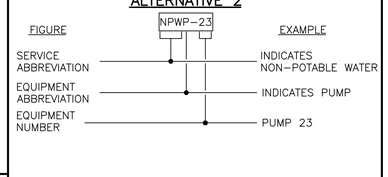


EQUIPMENT IDENTIFICATION

ALTERNATIVE 1



ALTERNATIVE 2



SHEET NAMING CONVENTION

AREA DESIGNATION

TO BE EDITED ON AN A PROJECT BASIS. TO BE DETERMINED BY THE PROJECT MANAGER, THEN ADDED TO THE GENERAL LEGEND.
EXAMPLE:
01 BUILDING OR AREA NAME
02 BUILDING OR AREA NAME
03 BUILDING OR AREA NAME

DISCIPLINE DESIGNATOR & DISCIPLINE ORDER

G	GENERAL
V	SURVEYING/MAPPING
X	DEMOLITION
C	CIVIL
L	LANDSCAPING
U	MULTI–DISCIPLINE
S	STRUCTURAL
A	ARCHITECTURAL
D	PROCESS
M	MECHANICAL (HVAC)
P	PLUMBING
F	FIRE PROTECTION
E	ELECTRICAL
Y	INSTRUMENTATION

DRAWING TYPE DESIGNATOR

0	GENERAL (SYMBOLS, LEGENDS)
1	PLANS
2	ELEVATIONS
3	SECTIONS
4	LARGE SCALE VIEWS
5	DETAILS
6	SCHEDULES AND DIAGRAMS
8	PROFILES
9	3D REPRESENTATIONS

EXAMPLE

GRAVITY THICKENER ARCHITECTURAL SECTION, SHEET 01

0	5				

AREA DESIGNATION

		A			

DISCIPLINE DESIGNATOR

			3		

SHEET TYPE DESIGNATOR

				0	1

SHEET NUMBER

GENERAL NOTES:

1. THIS IS A STANDARD SHEET SHOWING COMMON SYMBOLOGY. ALL SYMBOLS ARE NOT NECESSARILY USED ON THIS PROJECT.
2. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE–EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH SHEET FOR USAGE.

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ISSUE	DATE	DESCRIPTION
	01/15/15	BID SET

PROJECT MANAGER	BRETT D. FISHER
DRAWN BY	B. D. FISHER
REVIEWED BY	P. B. HANSON
PROJECT NUMBER	218839

STATE OF KENTUCKY · BRETT D. FISHER · 25569 · LICENSED PROFESSIONAL ENGINEER · 1/15/15

Northern Kentucky Water District

FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENTS

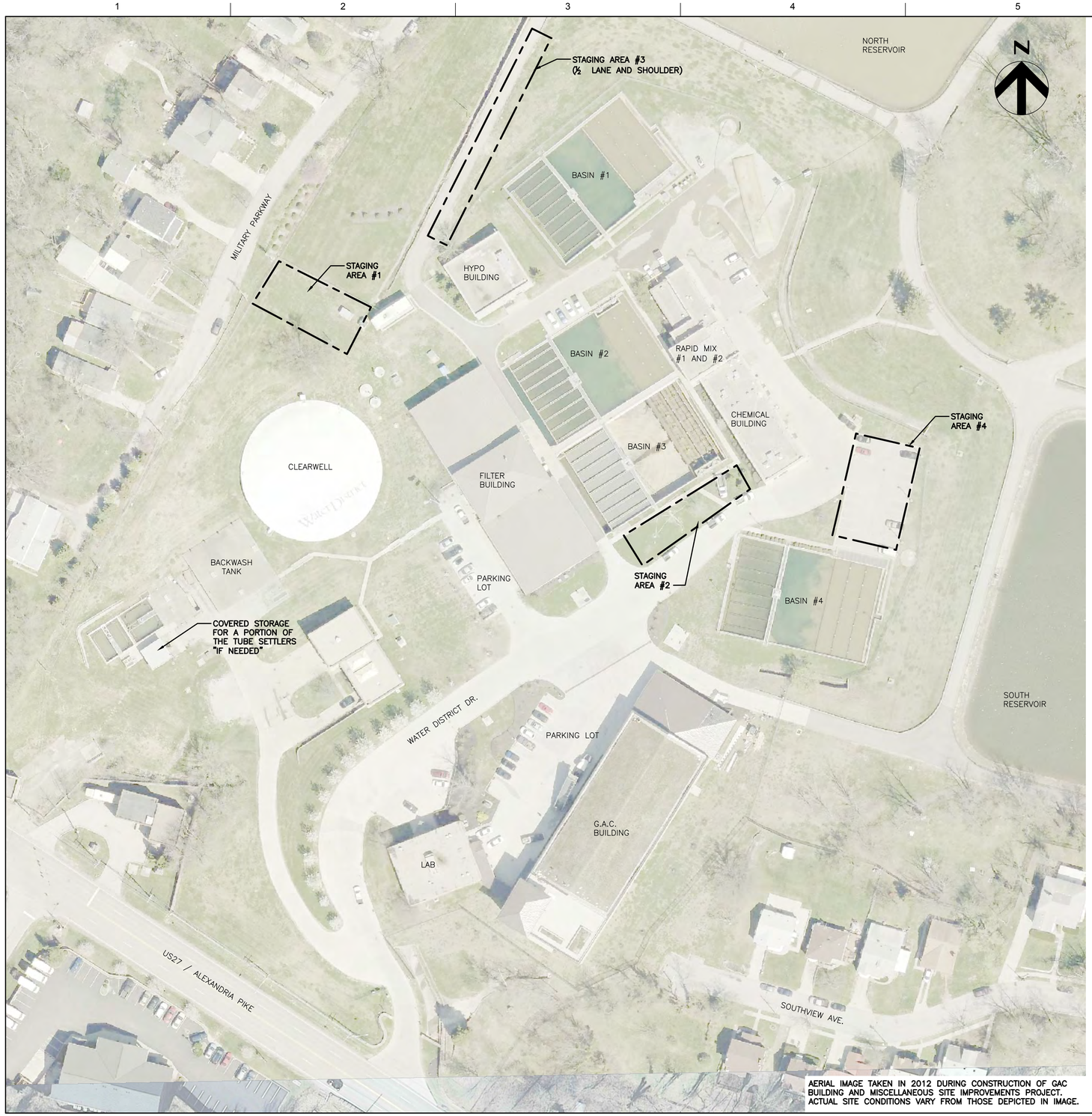
GENERAL

LEGEND AND SYMBOLOGY

0 1" 2"

FILENAME 00G002.dwg
SCALE AS NOTED

SHEET 00G002



AERIAL IMAGE TAKEN IN 2012 DURING CONSTRUCTION OF GAC BUILDING AND MISCELLANEOUS SITE IMPROVEMENTS PROJECT. ACTUAL SITE CONDITIONS VARY FROM THOSE DEPICTED IN IMAGE.

PROPOSED SEQUENCE OF WORK

1. MOBILIZE TO SITE
2. INSTALL TEMPORARY FACILITIES
3. PREPARE STAGING AREAS
4. RECEIVE AND PROPERLY STORE CONSTRUCTION MATERIALS
6. INSTALL TEMPORARY BULKHEAD IN COMBINED INFLUENT FLUME FROM BASIN #2 AND #3 TO FILTER BUILDING AS SHOWN ON SHEET 01D108. CONTRACTOR MUST COORDINATE WITH OWNER CLOSELY AS THE ENTIRE PLANT MUST BE TEMPORARILY TAKEN OUT OF SERVICE TO INSTALL TEMPORARY BULKHEAD. PLANT MUST BE DRAINED TO BELOW THE INVERT ELEVATION OF THE INFLUENT FLUME FOR INSTALLATION OF TEMPORARY BULKHEAD. FOLLOWING INSTALLATION, THE PLANT MUST BE PUT BACK INTO SERVICE IMMEDIATELY. THE BULKHEAD SHALL BE FABRICATED OF NSF-61 CERTIFIED MATERIALS. OWNER WILL ALLOW UP TO 4 HOURS OF PLANT SHUTDOWN TO COMPLETE THIS TASK. THE CONTRACTOR SHALL BE PREPARED TO RESTORE PLANT CAPACITY AT ANY TIME AFTER FOUR HOURS IN WHICH THE OWNER REQUESTS. IF THE BULKHEAD IS NOT INSTALLED SUCCESSFULLY ON THE FIRST ATTEMPT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING UP FOR ANY SCHEDULE DELAYS CAUSED BY ADDITIONAL ATTEMPTS.
7. CONCURRENTLY WITH THE INSTALLATION OF THE TEMPORARY BULKHEAD, THE CONTRACTOR CAN BEGIN REPLACEMENT OF THE 30" INFLUENT BUTTERFLY VALVES UPSTREAM OF RAPID MIX #1 TO FACILITATE DRIP TIGHT SHUT OFF OF INFLUENT RAW WATER FLOW TO RAPID MIX #1. IT IS NOTED THAT RAPID MIX #1 FEEDS BOTH BASIN #2 AND #3. THEREFORE, BOTH BASINS MUST BE TAKEN OUT OF SERVICE WHILE WORK REGARDING THE RAPID MIX #1 AND 30" BUTTERFLY VALVES IS TAKING PLACE.
8. FOLLOWING THE INSTALLATION OF THE TEMPORARY BULKHEAD THE CONTRACTOR CAN REPLACE THE BASIN #2 AND #3 48" EFFLUENT SLIDE GATES. FOLLOWING INSTALLATION, THE TEMPORARY BULKHEAD CAN BE REMOVED.
9. FOLLOWING THE INSTALLATION OF THE 30" BUTTERFLY VALVES AND 48" EFFLUENT SLIDE GATES, THE WORK IN RAPID MIX #1 AND BASIN #2 CAN COMMENCE THE CONTRACTOR IS NOT PERMITTED TO COMPLETE THE WORK IN BASIN #2 AND #3 CONCURRENTLY AND MUST DO EACH BASIN CONSECUTIVELY. THE CONTRACTOR IS ENCOURAGED TO COMPLETE THE WORK IN RAPID MIX #1 AS QUICKLY AS POSSIBLE SO AS IT CAN BE PUT BACK INTO SERVICE ALONG WITH BASIN #3 TO RESTORE THE PLANT CAPACITY FROM 22 MGD TO 33 MGD UNTIL SUCH A TIME THAT THE BASIN #2 WORK IS COMPLETED.
10. FOLLOWING THE COMPLETION OF THE BASIN #2 WORK AND RECEIVING APPROVAL FROM THE OWNER AND ENGINEER, BASIN #2 CAN BE PUT BACK INTO SERVICE AND WORK CAN COMMENCE ON BASIN #3.
11. COMPLETE ALL MISCELLANEOUS WORK REMAINING, BUT NOT SPECIFICALLY LISTED ABOVE.
12. COMPLETE COMPREHENSIVE CLEANUP OF ENTIRE CONSTRUCTION AREA
13. COMPLETE FINAL PROJECT PUNCHLIST
14. REMOVE PROJECT STAGING AREAS AND RESTORE TO ORIGINAL CONDITION
15. REMOVE TEMPORARY FACILITIES
16. RECEIVE WRITTEN PROJECT ACCEPTANCE FROM OWNER AND ENGINEER
17. DEMOBILIZE FROM SITE

GENERAL NOTES

- REFER TO SECTION 01015 FOR ADDITIONAL REQUIREMENTS AND STIPULATIONS.
- NKWD REQUIRES THE FORT THOMAS TREATMENT PLANT (FTTP) TO BE CAPABLE OF FULL PRODUCTION BETWEEN APRIL 15 AND NOVEMBER 1 OF EACH YEAR. CONTRACTOR SHOULD NOT ANTICIPATE ANY SHUTDOWNS OR REDUCED PLANT CAPACITY DURING THIS PERIOD UNLESS APPROVED IN WRITING BY OWNER.
- CONTRACTOR MUST SUBMIT AN OVERALL MAINTENANCE OF OPERATIONS PLAN (MOP) THAT OUTLINES METHODS, SEQUENCE, AND SCHEDULING FOR THE COMPLETION OF THE PROJECT, AS WELL AS, INDIVIDUAL MOP'S FOR ALL KEY ITEMS OF WORK TO BE REVIEWED AND APPROVED BY OWNER AND ENGINEER PRIOR TO WORK BEING PERFORMED.
- THE PROPOSED CONSTRUCTION SEQUENCING DESCRIBED ON THIS SHEET IS ONLY ONE POTENTIAL SEQUENCING OPTION AND IS GENERAL IN NATURE. THIS SEQUENCING PLAN IS SIMPLY INTENDED TO INFORM THE CONTRACTOR OF MAJOR STAGING CONCERNS THAT NEED TO BE TAKEN INTO ACCOUNT WHEN PREPARING THE MOP FOR THIS PROJECT. THE CONTRACTOR MAY MODIFY THE PROPOSED SEQUENCING ON THIS SHEET AS NECESSARY WITH APPROVAL FROM OWNER AND ENGINEER ON CHANGES.
- AS PART OF THE MOP, CONTRACTOR SHALL ACCOUNT FOR STARTUP TEST PERIODS IN EACH PHASE IN SEQUENCE OF CONSTRUCTION.
- SEVERAL LOCATIONS ON SITE HAVE BEEN DESIGNATED FOR CONSTRUCTION MATERIALS AND EQUIPMENT STAGING AREAS ON THE MAP ON THIS SHEET. NKWD REQUIRES THAT THE CONTRACTOR UTILIZE STAGING AREAS IN THE ORDER IN WHICH THEY ARE NUMBERED. AREA #1 BEING MOST PREFERRED AND AREA #4 BEING LEAST PREFERRED TO BE UTILIZED FOR STAGING.

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DRAWN BY	B. D. FISHER
REVIEWED BY	P. B. HANSON
PROJECT NUMBER	218839

STATE OF KENTUCKY · BRETT D. FISHER · 25958 · LICENSED PROFESSIONAL ENGINEER · 1/15/15

Northern Kentucky Water District

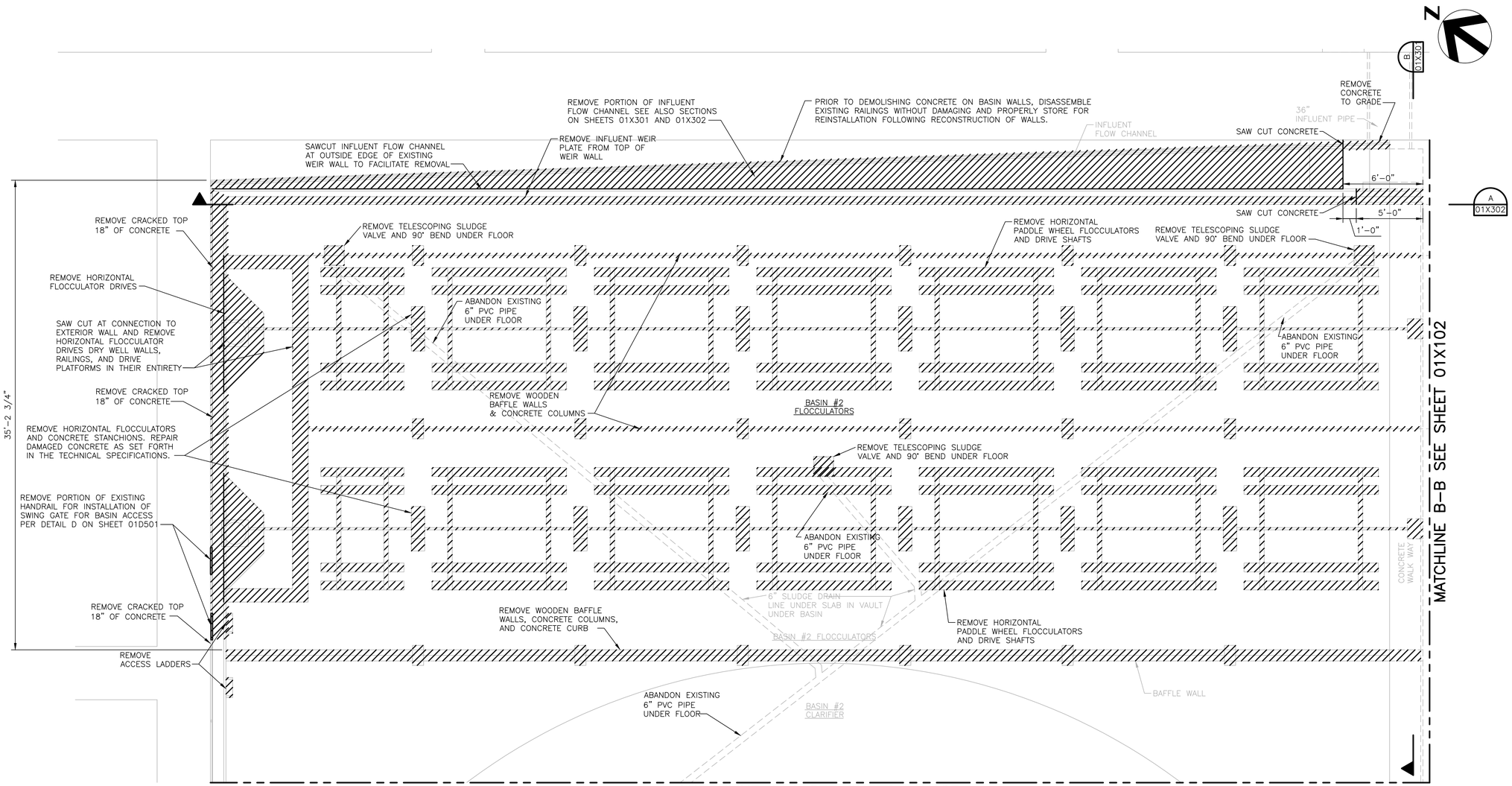
FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

GENERAL
CONSTRUCTION STAGING PLAN

0 1" 2"

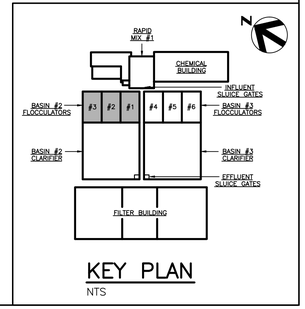
FILENAME 00G003.dwg
SCALE 1" = 50'

SHEET 00G003



BASIN #2 FLOCCULATION DEMOLITION PLAN

1/4"=1'-0"



KEY PLAN

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STATE OF KENTUCKY · BRETT D. FISHER · 25868 · LICENSED PROFESSIONAL ENGINEER · 1/15/15

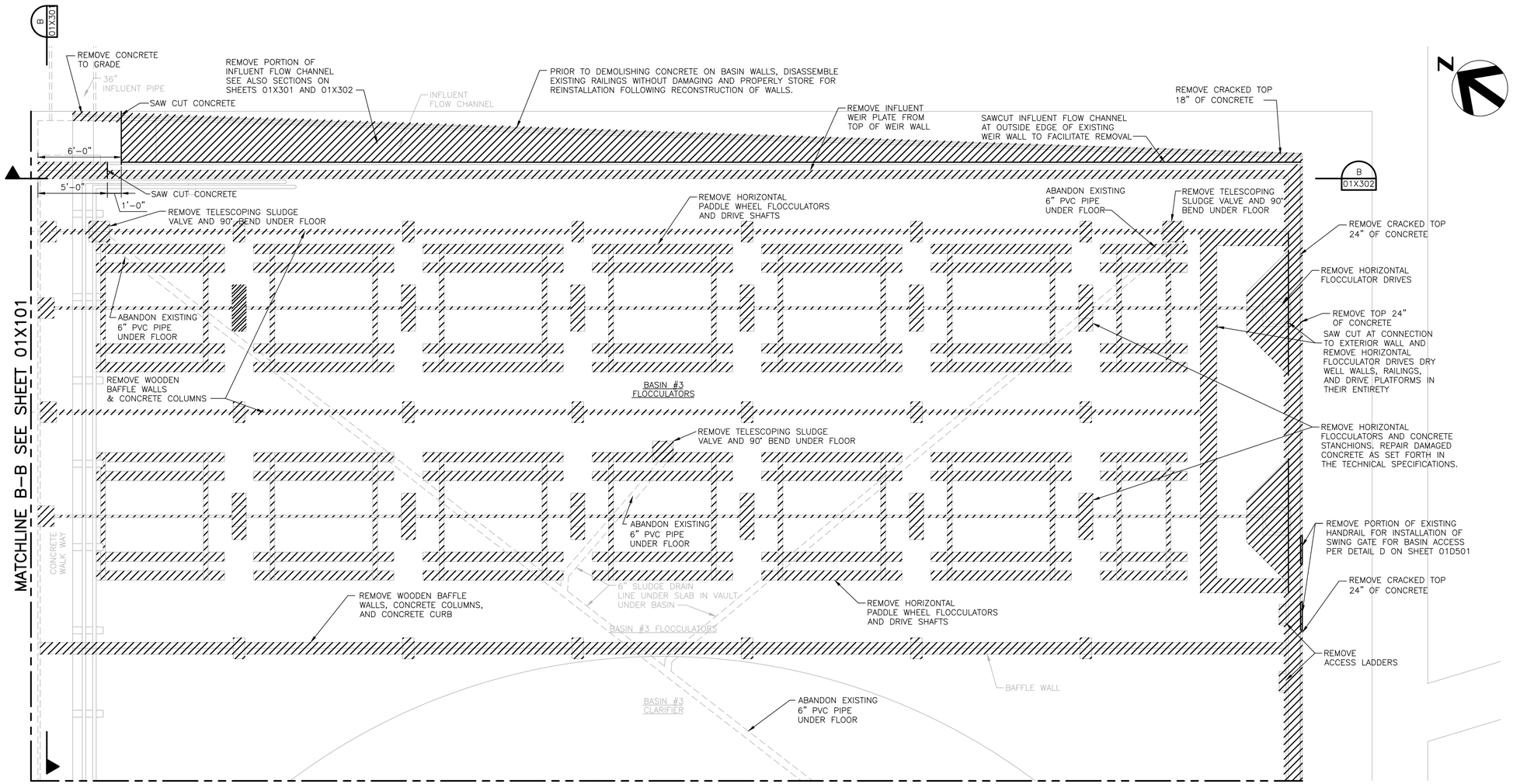
Northern Kentucky Water District

FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

DEMOLITION BASIN #2 FLOCCULATION DEMOLITION PLAN

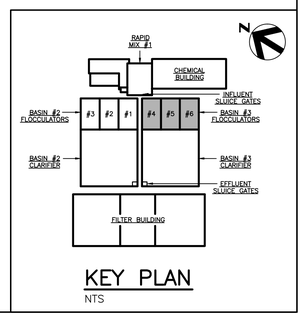
0 1" 2"

FILENAME	01X101.dwg
SCALE	1/4"=1'-0"
SHEET	01X101



BASIN #3 FLOCCULATION DEMOLITION PLAN

1/4"=1'-0"



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BRETT D. FISHER
29358
LICENSED PROFESSIONAL ENGINEER
1/15/15

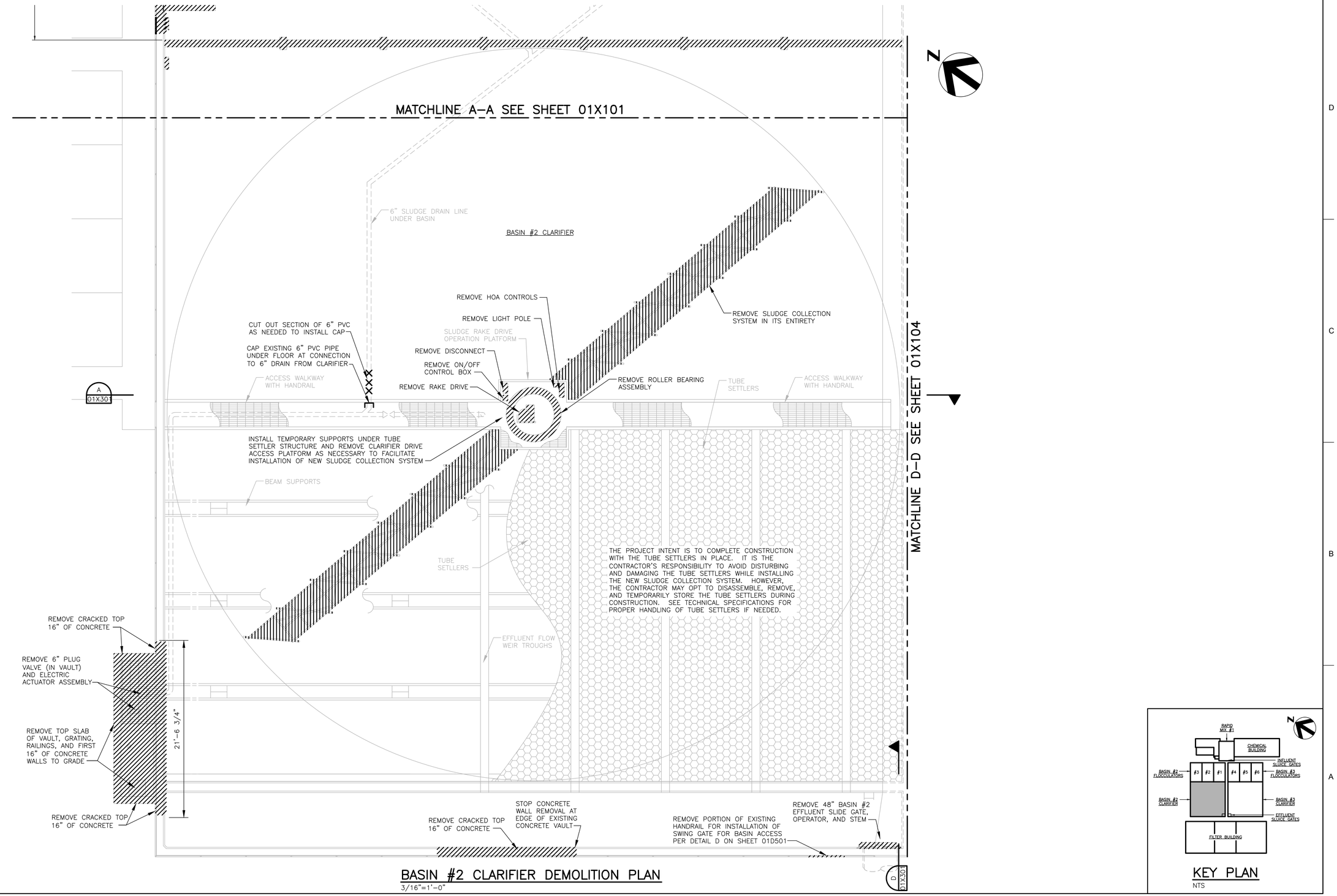
Northern Kentucky Water District

FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

DEMOLITION BASIN #3 FLOCCULATION DEMOLITION PLAN

0 1" 2"

FILENAME	01X102.dwg
SCALE	1/4"=1'-0"
SHEET	01X102



BASIN #2 CLARIFIER DEMOLITION PLAN

3/16"=1'-0"

KEY PLAN

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STATE OF KENTUCKY · BRETT D. FISHER · 28958 · LICENSED PROFESSIONAL ENGINEER · 1/15/15

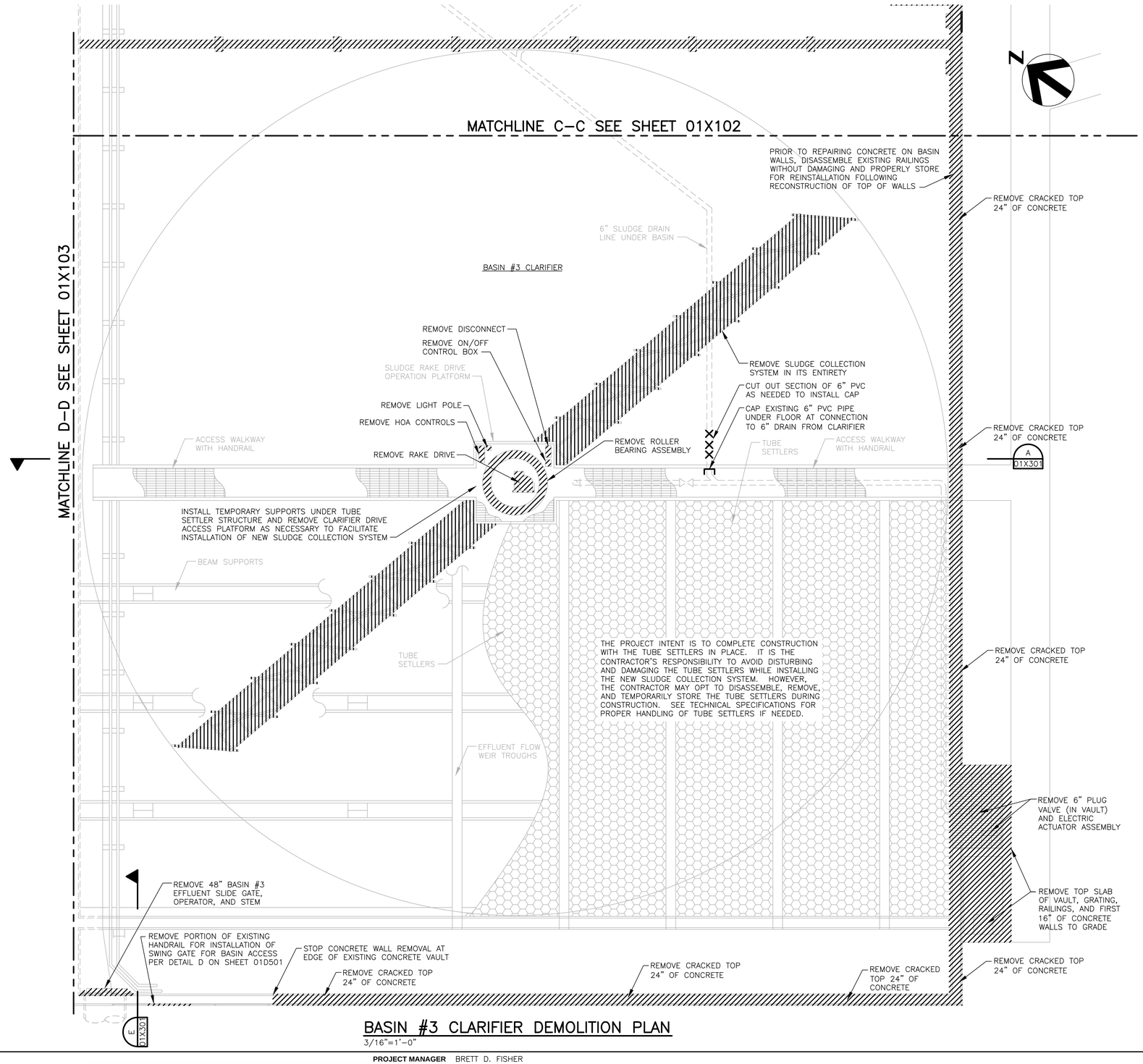
Northern Kentucky Water District

FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

DEMOLITION BASIN #2 CLARIFIER DEMOLITION PLAN

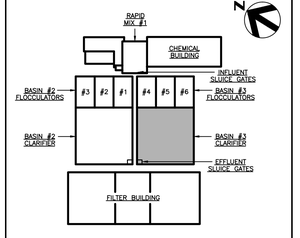
0 1" 2"

FILENAME	01X103.dwg
SCALE	3/16"=1'-0"
SHEET	01X103



BASIN #3 CLARIFIER DEMOLITION PLAN

3/16"=1'–0"



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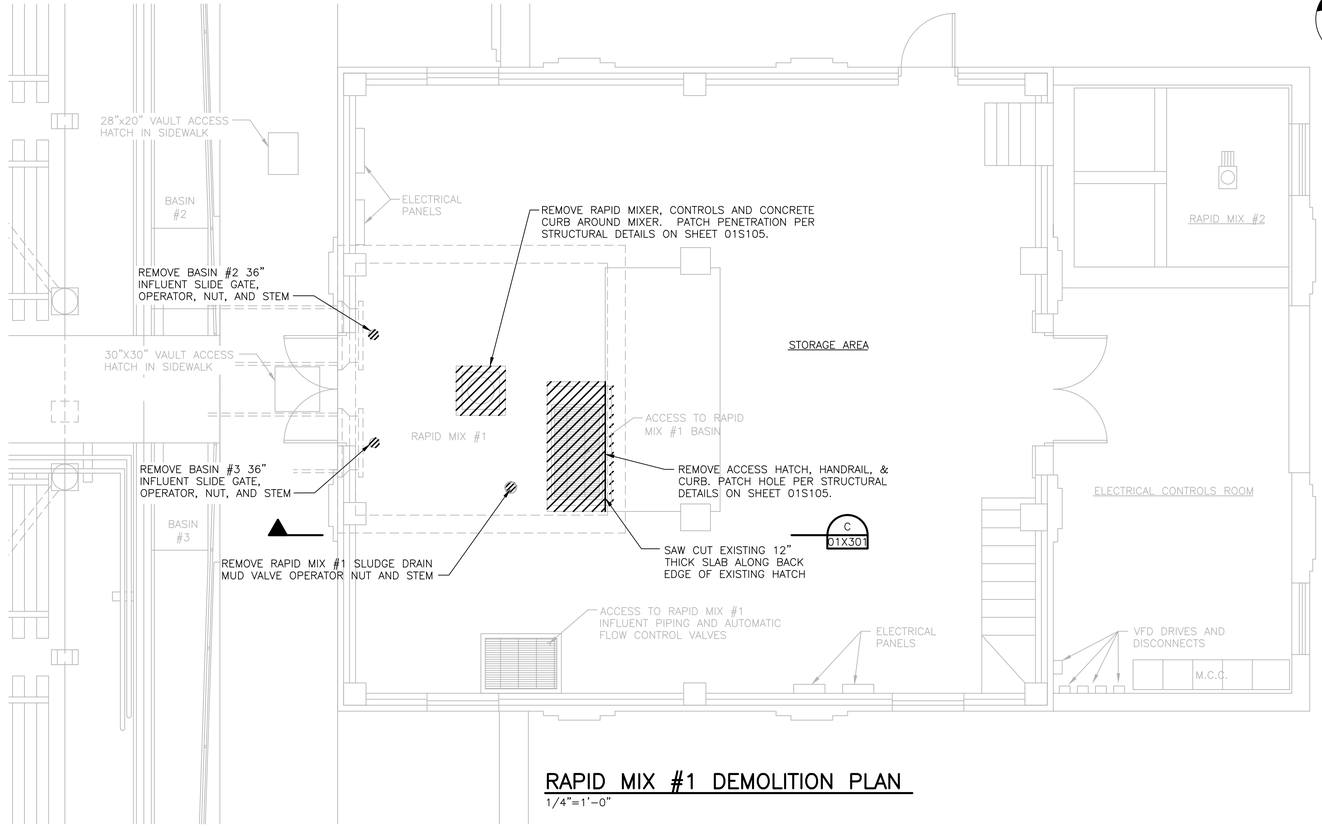
Northern Kentucky Water District

FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

DEMOLITION
BASIN #3
CLARIFIER
DEMOLITION PLAN

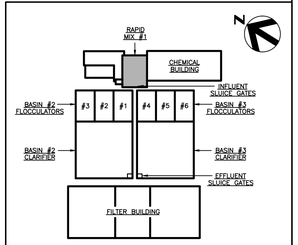
0 1" 2"

FILENAME	01X104.dwg
SCALE	3/16"=1'–0"
SHEET	01X104



RAPID MIX #1 DEMOLITION PLAN

1/4"=1'-0"



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STATE OF KENTUCKY · BRETT D. FISHER 22805 · LICENSED PROFESSIONAL ENGINEER · 1/15/15

Northern Kentucky Water District

FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

DEMOLITION
RAPID MIX #1
OPERATION FLOOR DEMOLITION PLAN

0 1" 2"

FILENAME	01X105.dwg
SCALE	1/4"=1'-0"
SHEET	01X105

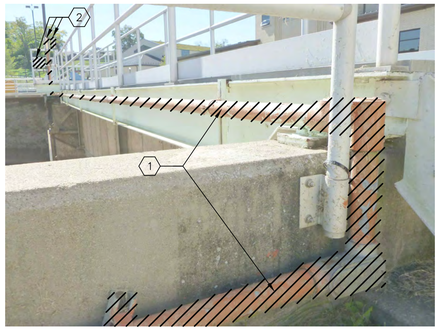


PHOTO 1
BASIN #2 CLAR. ELECTRICAL CONDUIT

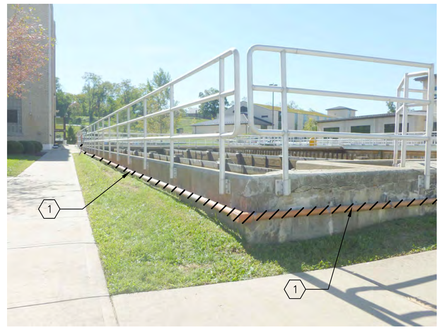


PHOTO 2
BASIN #2 CLAR. & FLOC. ELECTRICAL

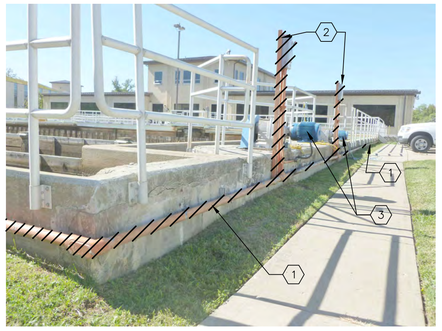


PHOTO 3
BASIN #2 CLAR. & FLOC. ELECTRICAL

PHOTO 4
BASIN #2 CLAR. & FLOC. ELECTRICAL

DEMOLITION NOTES:

1. REMOVE ALL ELECTRICAL CONDUITS AND MOUNTING HARDWARE.
2. REMOVE ALL DISCONNECTS AND CONTROL PANELS.
3. REMOVE FLOCCULATOR DRIVE MOTORS AND ASSEMBLIES.
4. REMOVE UNUSED PANEL BOARD AND PATCH MASONRY WALL AND PAINT TO MATCH SURROUNDING WALL.
5. REMOVE LIGHT POLE AND BASE. LEAVE ELECTRICAL JUNCTION FOR CONNECTION OF NEW LIGHT POLE DURING CONSTRUCTION.
6. REMOVE BASIN #2 AND #3 FLOCCULATOR VFD UNITS, DISCONNECTS, CONNECTING WIRING, AND CONDUITS BACK TO FEEDING PANEL AND TERMINATE.
7. REMOVE EXISTING 6" PLUG VALVE AND ACTUATOR ASSEMBLY, UMBILICAL CORD, AND REMOTE MOUNTED ACTUATOR CONTROLS.

PHOTO 5
BASIN #3 CLAR. & FLOC. ELECTRICAL

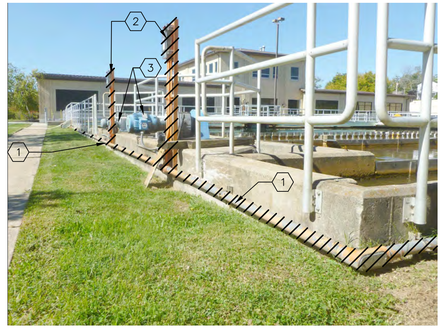


PHOTO 6
BASIN #3 CLAR. & FLOC. ELECTRICAL

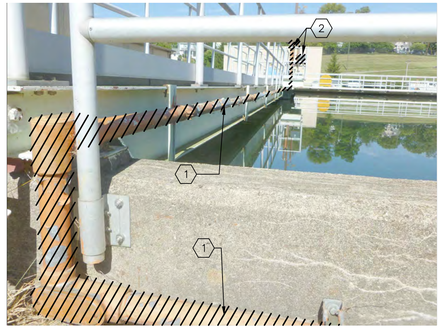


PHOTO 7
BASIN #3 CLAR. ELECTRICAL CONDUIT

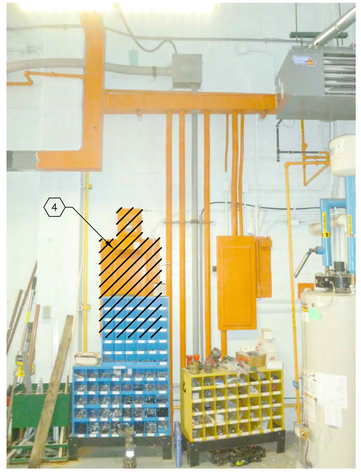


PHOTO 8
RAPID MIX #2 AREA LIGHTING PANEL

PHOTO 12 – BASIN #2 AND #3 (TYPICAL)
6" SLUDGE PLUG VALVE AND ACTUATOR

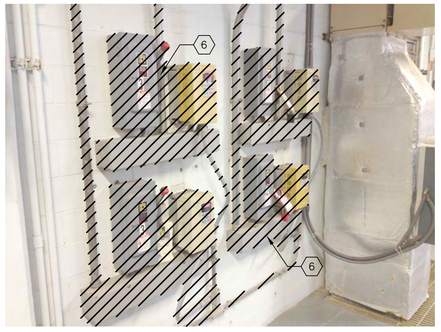
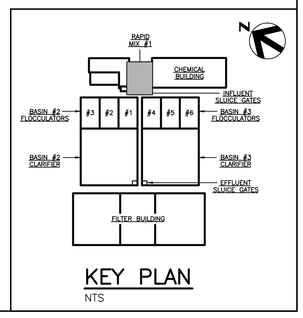


PHOTO 9
BASIN #2 AND #3 VFDS

PHOTO 11
BASIN #2 CLARIFIER LIGHT POLE

PHOTO 10
BASIN #3 CLARIFIER LIGHT POLE

PHOTO 11 – BASIN #2 AND #3 (TYPICAL)
6" SLUDGE PLUG VALVE ACTUATOR CONTROLS



KEY PLAN
NTS

freeland harris
consulting engineers
201 west short street
suite 410
lexington, kentucky 40507

HDR

ISSUE	DATE	DESCRIPTION
	01/15/15	BID SET

PROJECT MANAGER	BRETT D. FISHER
DRAWN BY	R.D. GREER
REVIEWED BY	R.L. ANDERSON
PROJECT NUMBER	218839

STATE OF KENTUCKY
R. L. ANDERSON
13551
LICENSED PROFESSIONAL ENGINEER
11/14/15

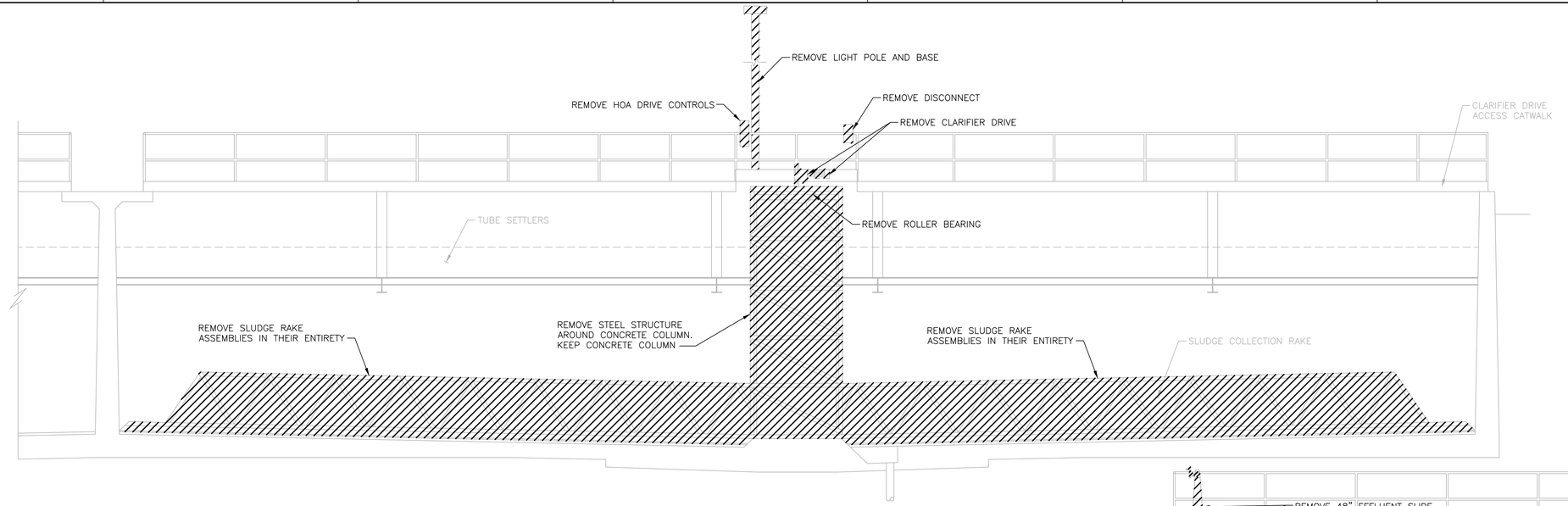
Northern Kentucky Water District

FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

DEMOLITION
BASIN #2 AND #3
ELECTRICAL
DEMOLITION PHOTO SECTIONS

0 1" 2"

FILENAME	01X106.dwg
SCALE	NONE
SHEET	01X106

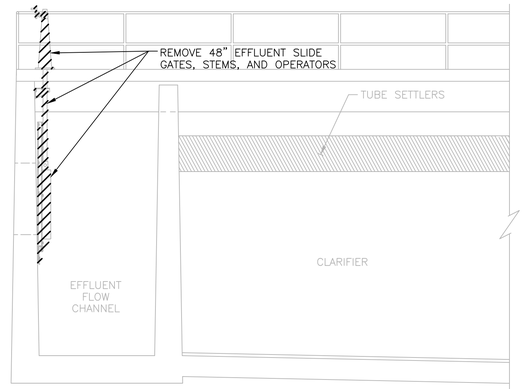


TYPICAL SECTION
BASINS #2 AND #3 CLARIFIER

A | A
01X103 | 01X104

1/4"=1'-0"

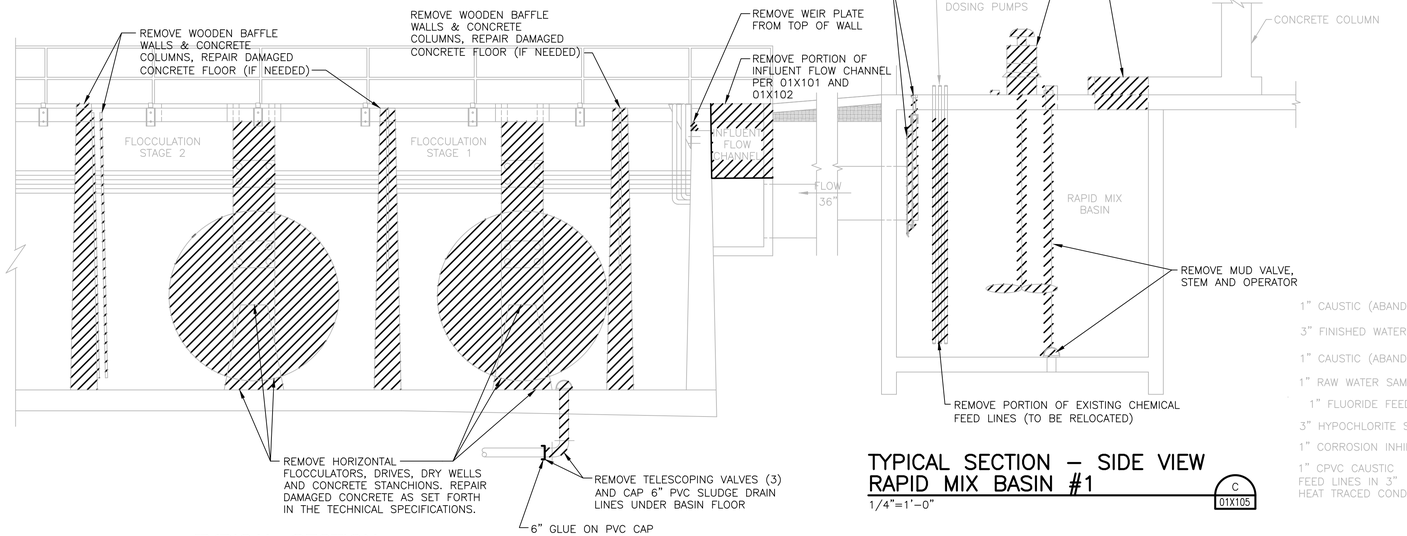
(SLUDGE COLLECTION RAKE ROTATED WITH SECTION LINE FOR CLARITY)



SECTION – SIDE VIEW
BASIN #2 EFFLUENT SLIDE GATE

D
01X103

1/4"=1'-0"



TYPICAL SECTION
BASIN #2 AND #3 FLOCCULATION

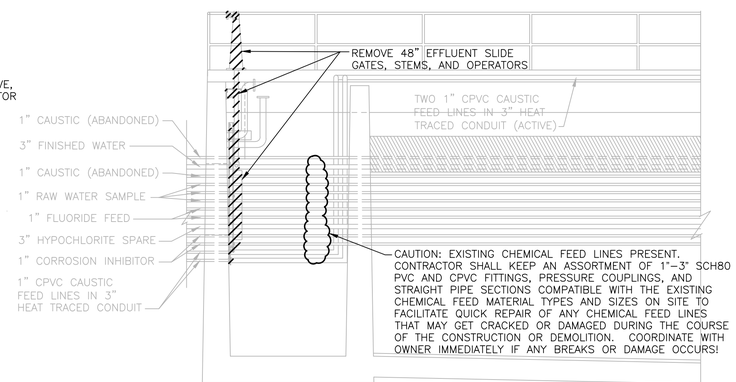
B | B
01X101 | 01X102

1/4"=1'-0"

TYPICAL SECTION – SIDE VIEW
RAPID MIX BASIN #1

C
01X105

1/4"=1'-0"



SECTION – SIDE VIEW
BASIN #3 EFFLUENT SLIDE GATE

E
01X104

1/4"=1'-0"

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201 west short street
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lexington, kentucky 40507

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ISSUE	DATE	DESCRIPTION
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PROJECT MANAGER	BRETT D. FISHER
DRAWN BY	B. D. FISHER
REVIEWED BY	P. B. HANSON
PROJECT NUMBER	218839

STATE OF KENTUCKY · BRETT D. FISHER · 25868 · LICENSED PROFESSIONAL ENGINEER · 1/15/15

Northern Kentucky Water District

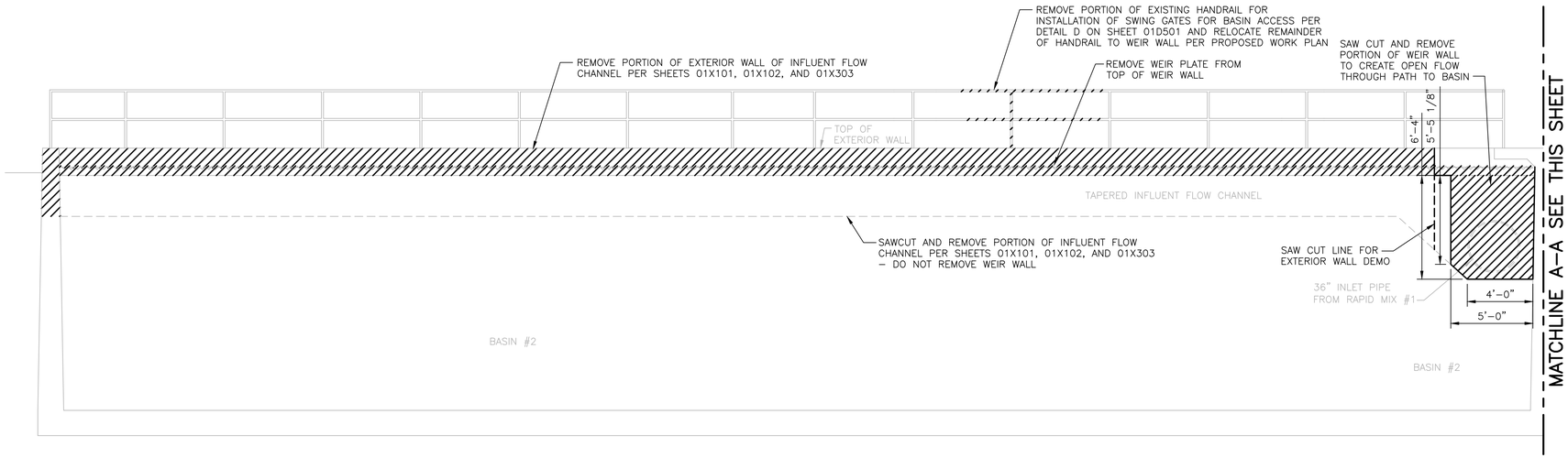
FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

DEMOLITION
BASIN #2 AND #3
MISCELLANEOUS DEMOLITION SECTIONS

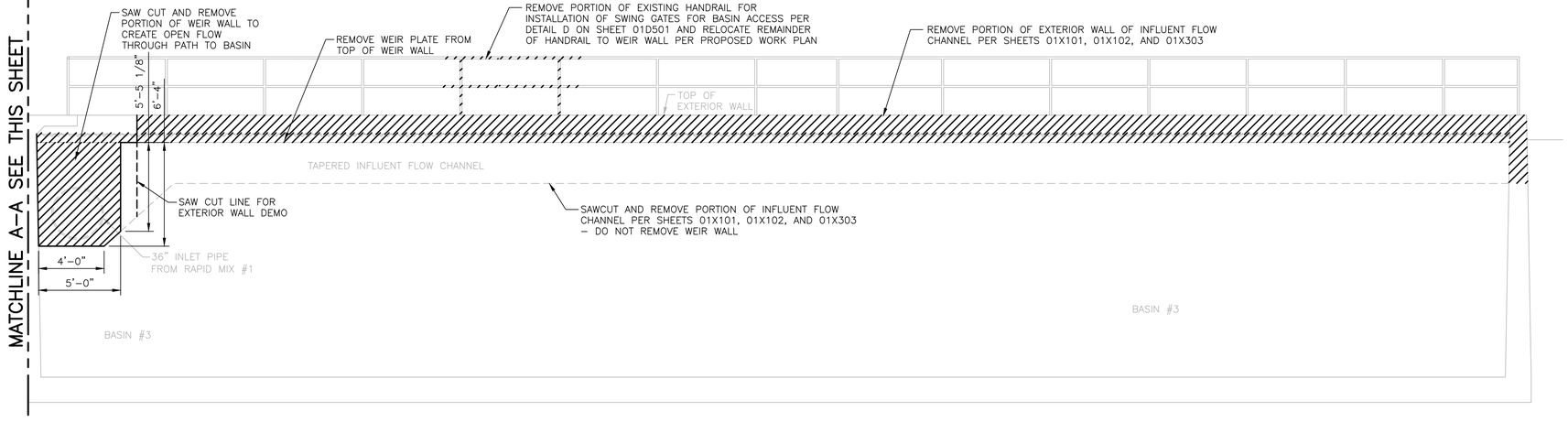
0 1" 2"

FILENAME 01X301.dwg
SCALE 1/4"=1'-0"

SHEET
01X301



SECTION
1/4"=1'-0"
A
01X101



SECTION
1/4"=1'-0"
B
01X102

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REVIEWED BY	P. B. HANSON
PROJECT NUMBER	218839

STATE OF KENTUCKY
BRETT D. FISHER
28958
LICENSED
PROFESSIONAL ENGINEER
1/15/15

Northern Kentucky Water District

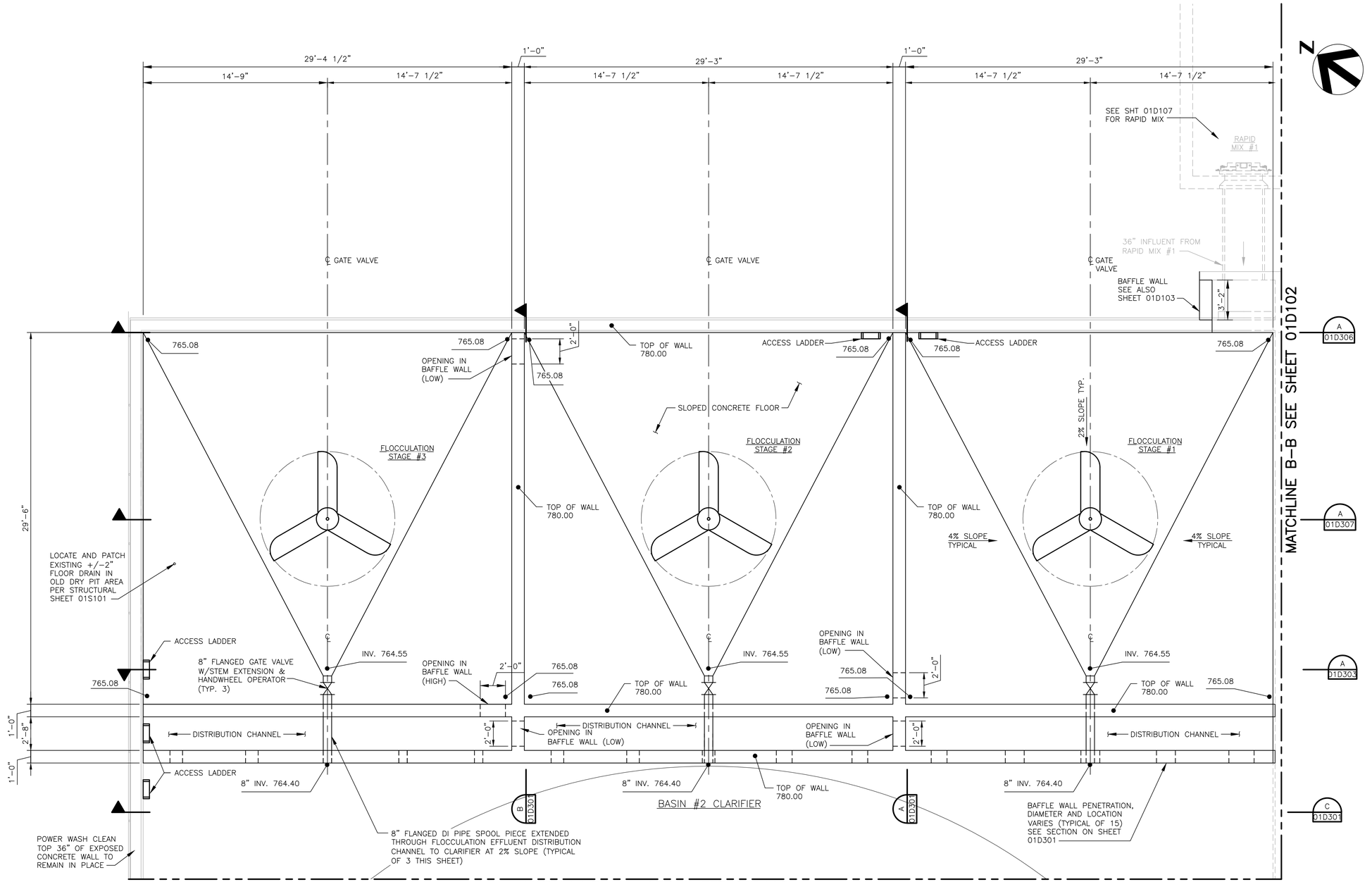
FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

DEMOLITION
BASIN #2 AND #3
INFLUENT FLOW CHANNEL
DEMOLITION SECTIONS

0 1" 2"

FILENAME 01X302.dwg
SCALE AS NOTED

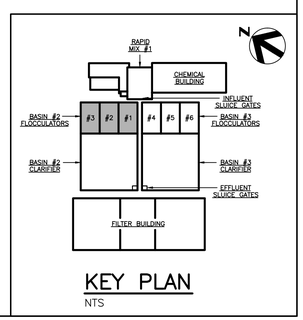
SHEET
01X302



MATCHLINE A-A SEE SHEET 01D105

BASIN #2 FLOCCULATION – LOWER PLAN

1/4"=1'-0"



KEY PLAN

NTS

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REVIEWED BY	P. B. HANSON
PROJECT NUMBER	218839

STATE OF KENTUCKY · BRETT D. FISHER · 25958 · LICENSED PROFESSIONAL ENGINEER · 1/15/15

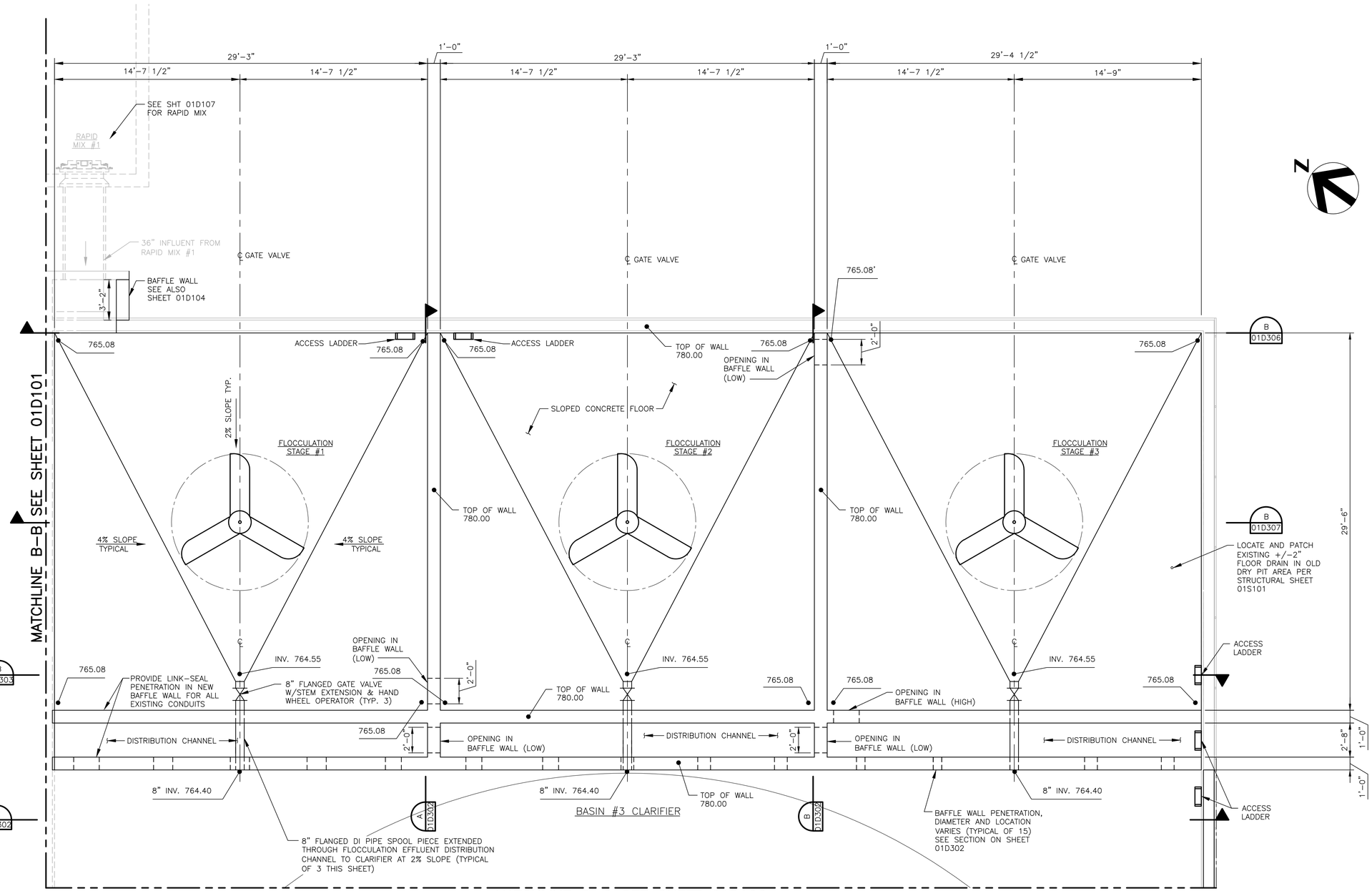
Northern Kentucky Water District

FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

PROCESS
BASIN #2
FLOCCULATION
LOWER PLAN

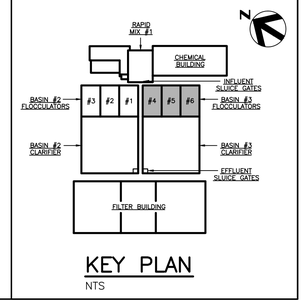
0 1" 2"

FILENAME	01D101.dwg
SCALE	1/4"=1'-0"
SHEET	01D101



BASIN #3 FLOCCULATION – LOWER PLAN

1/4"=1'-0"



KEY PLAN

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DRAWN BY	B. D. FISHER
REVIEWED BY	P. B. HANSON
PROJECT NUMBER	218839

BRETT D. FISHER 28968 LICENSED PROFESSIONAL ENGINEER STATE OF KENTUCKY
1/15/15

Northern Kentucky Water District

FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENTS

PROCESS BASIN #3 FLOCCULATION LOWER PLAN

0 1" 2"

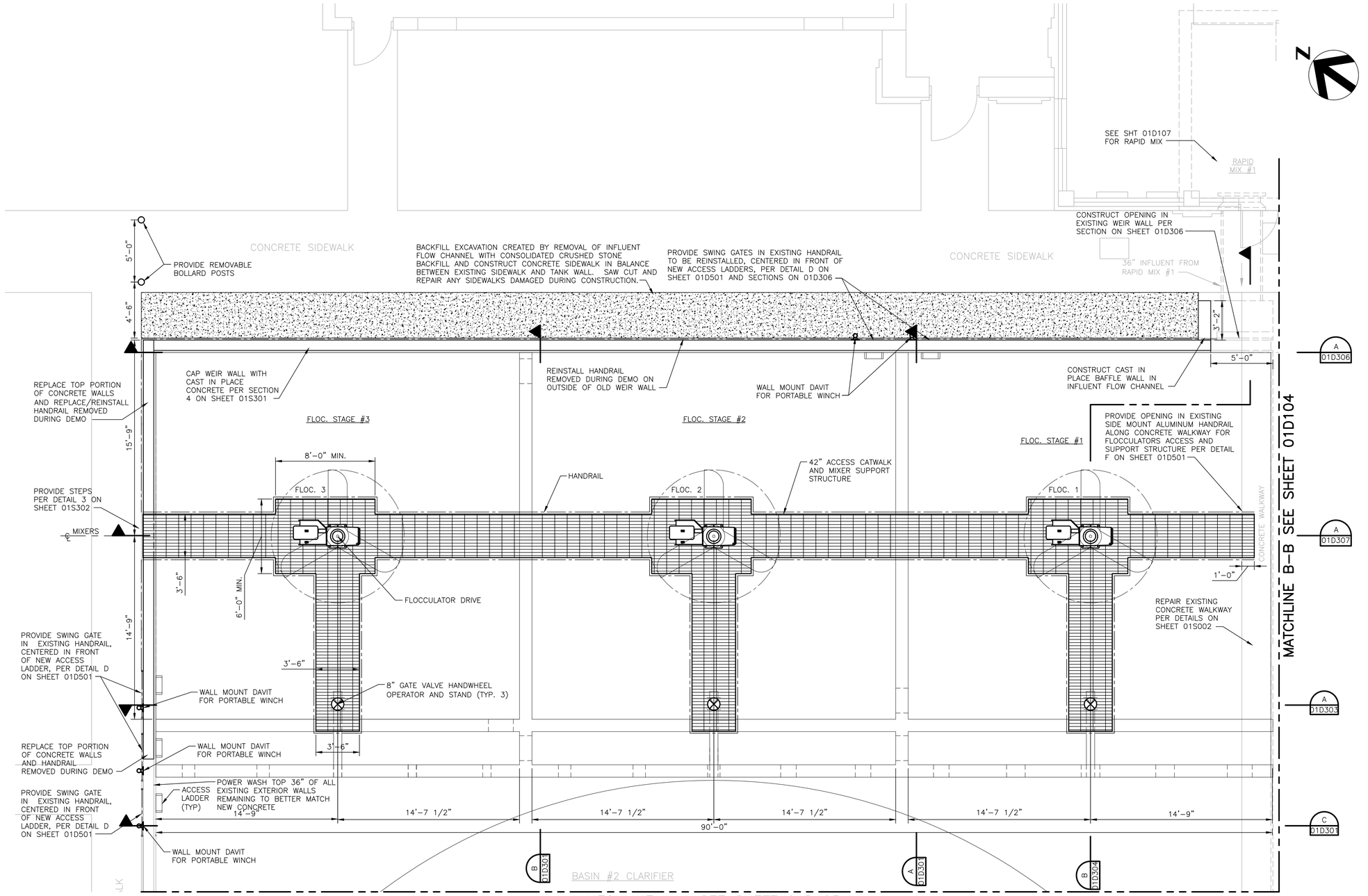
FILENAME 01D102.dwg

SCALE 1/4"=1'-0"

SHEET 01D102

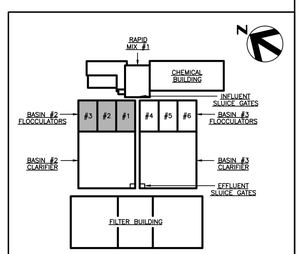
GENERAL NOTES:

1. REPLACE/REINSTALL HANDRAILS REMOVED DURING DEMO. ALL RAILINGS FORMERLY EMBEDDED POST RAILINGS REMOVED DURING DEMO, SHALL BE REPLACED WITH NEW WALL MOUNTED RAILINGS TO MATCH REMAINDER OF EXISTING RAILINGS WHEN POSSIBLE. IF WALL MOUNT IS NOT POSSIBLE, THEN INSTALL NEW EMBEDDED POST RAILINGS WHERE APPLICABLE. ALL EXISTING RAILINGS DAMAGED DURING DEMOLITION SHALL BE REPLACED WITH NEW RAILINGS OF THE SAME TYPE AND FUNCTION. THE CONTRACTOR MAY OPT TO REPLACE ALL RAILINGS AROUND BASIN #2 AND #3 IN LIEU OF SALVAGING AND REUSING THE EXISTING RAILINGS AS DEPICTED OR IMPLIED ON THE PLANS. CONTRACTOR IS RESPONSIBLE FOR DETERMINING ACTUAL QUANTITIES OF NEW, VS. REINSTALLATION OF EXISTING RAILINGS, BASED ON IT'S PLAN FOR CONSTRUCTION.



BASIN #2 FLOCCULATION – UPPER PLAN

1/4"=1'-0"



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REVIEWED BY	P. B. HANSON
PROJECT NUMBER	218839

STATE OF KENTUCKY · BRETT D. FISHER · 28868 · LICENSED PROFESSIONAL ENGINEER · 1/15/15

Northern Kentucky Water District

FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENTS

PROCESS BASIN #2 FLOCCULATION UPPER PLAN

0 1" 2"

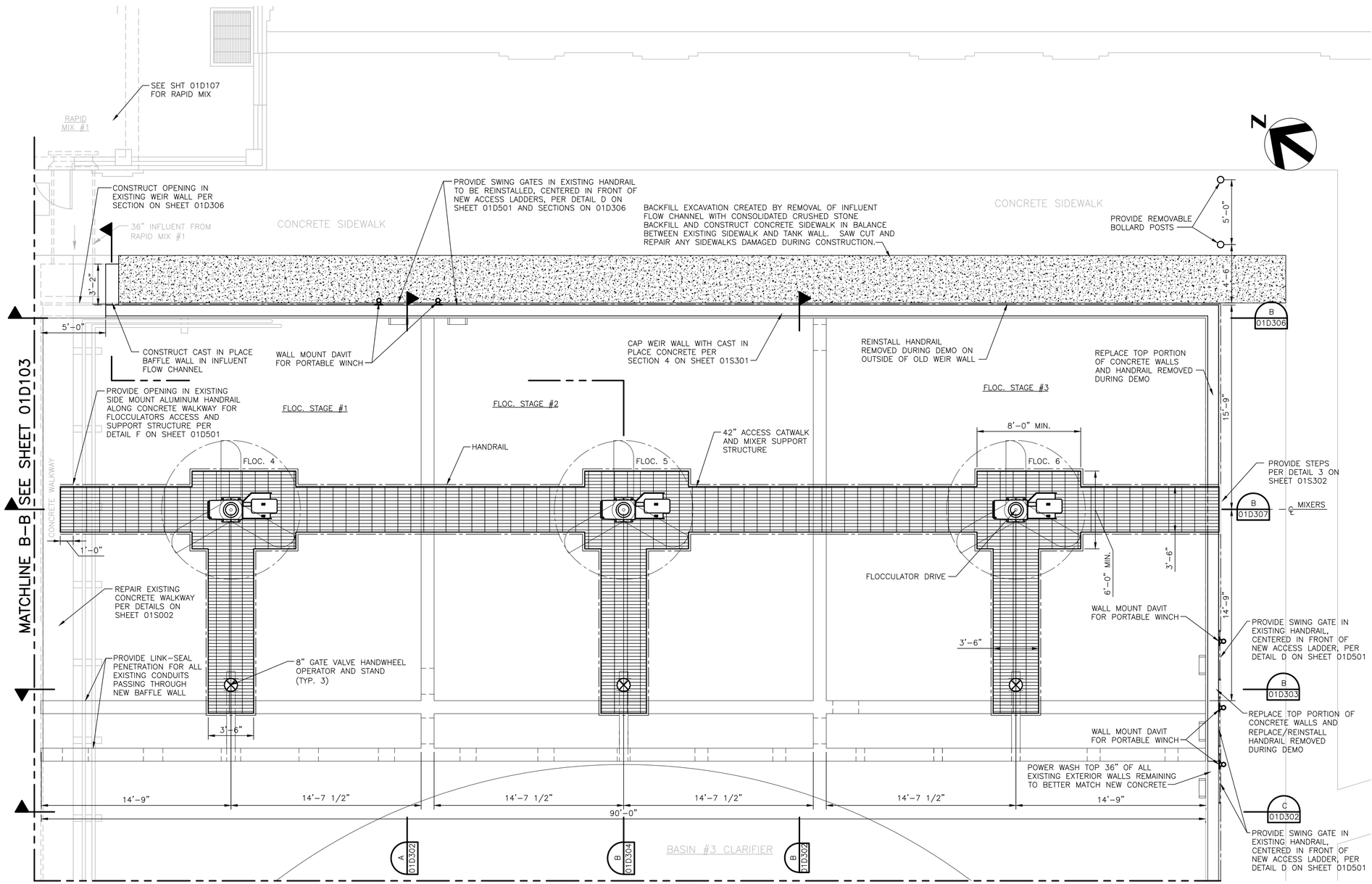
FILENAME 01D103.wg

SCALE 1/4"=1'-0"

SHEET 01D103

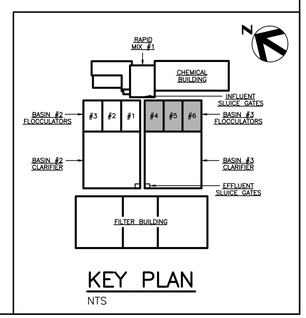
GENERAL NOTES:

1. REPLACE/REINSTALL HANDRAILS REMOVED DURING DEMO. ALL RAILINGS FORMERLY EMBEDDED POST RAILINGS REMOVED DURING DEMO, SHALL BE REPLACED WITH NEW WALL MOUNTED RAILINGS TO MATCH REMAINDER OF EXISTING RAILINGS WHEN POSSIBLE. IF WALL MOUNT IS NOT POSSIBLE, THEN INSTALL NEW EMBEDDED POST RAILINGS WHERE APPLICABLE. ALL EXISTING RAILINGS DAMAGED DURING DEMOLITION SHALL BE REPLACED WITH NEW RAILINGS OF THE SAME TYPE AND FUNCTION. THE CONTRACTOR MAY OPT TO REPLACE ALL RAILINGS AROUND BASIN #2 AND #3 IN LIEU OF SALVAGING AND REUSING THE EXISTING RAILINGS AS DEPICTED OR IMPLIED ON THE PLANS. CONTRACTOR IS RESPONSIBLE FOR DETERMINING ACTUAL QUANTITIES OF NEW, VS. REINSTALLATION OF EXISTING RAILINGS, BASED ON IT'S PLAN FOR CONSTRUCTION.



BASIN #3 FLOCCULATION – UPPER PLAN

1/4"=1'-0"



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201 west short street
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lexington, kentucky 40507

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REVIEWED BY	P. B. HANSON
PROJECT NUMBER	218839

STATE OF KENTUCKY · BRETT D. FISHER · 28568 · LICENSED PROFESSIONAL ENGINEER · 1/15/15

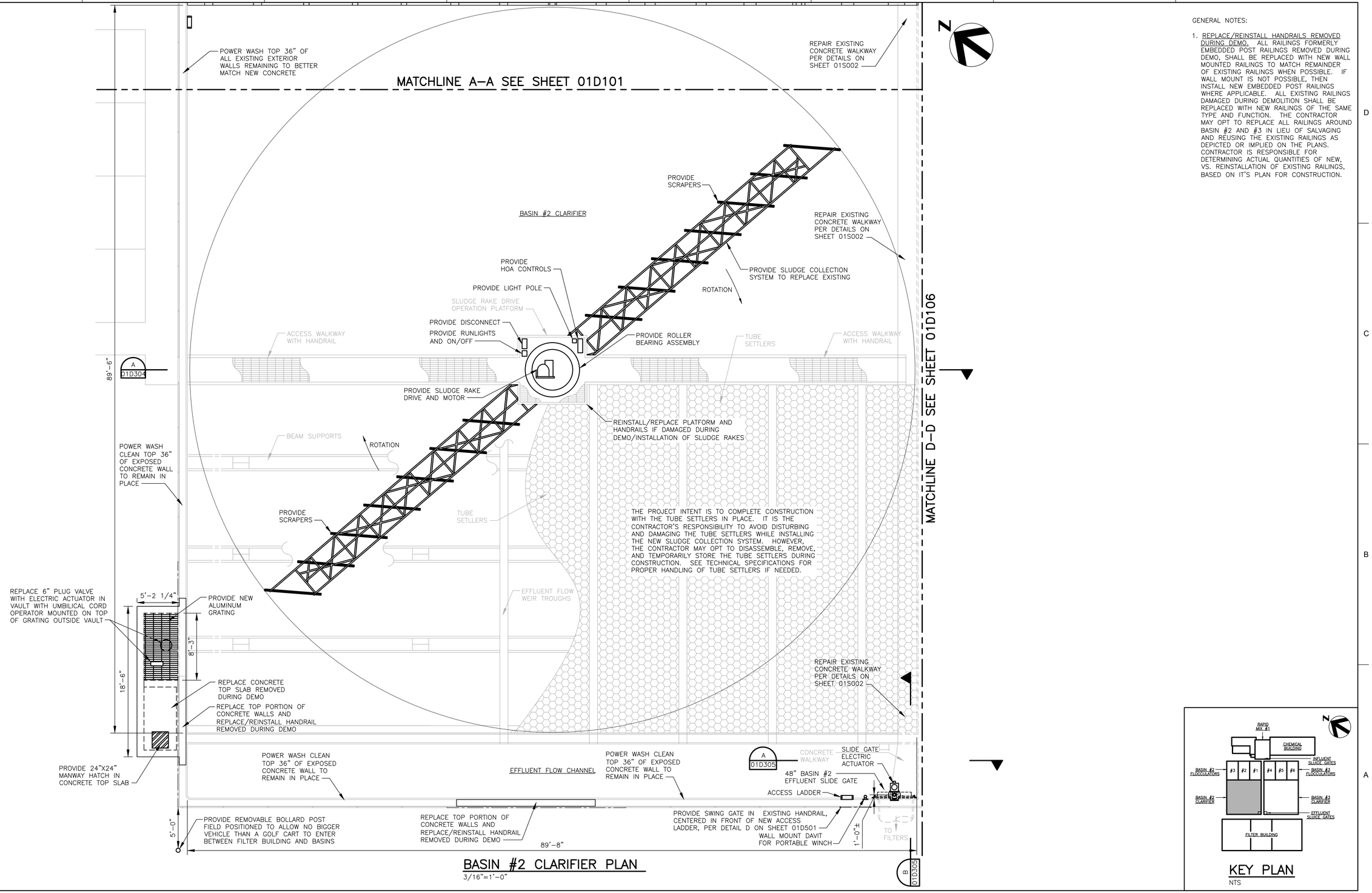
Northern Kentucky Water District

FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENTS

PROCESS BASIN #3 FLOCCULATION UPPER PLAN

0 1" 2"

FILENAME	01D104.dwg
SCALE	1/4"=1'-0"
SHEET	01D104



BASIN #2 CLARIFIER PLAN

3/16"=1'-0"

GENERAL NOTES:

1. REPLACE/REINSTALL HANDRAILS REMOVED DURING DEMO. ALL RAILINGS FORMERLY EMBEDDED POST RAILINGS REMOVED DURING DEMO, SHALL BE REPLACED WITH NEW WALL MOUNTED RAILINGS TO MATCH REMAINDER OF EXISTING RAILINGS WHEN POSSIBLE. IF WALL MOUNT IS NOT POSSIBLE, THEN INSTALL NEW EMBEDDED POST RAILINGS WHERE APPLICABLE. ALL EXISTING RAILINGS DAMAGED DURING DEMOLITION SHALL BE REPLACED WITH NEW RAILINGS OF THE SAME TYPE AND FUNCTION. THE CONTRACTOR MAY OPT TO REPLACE ALL RAILINGS AROUND BASIN #2 AND #3 IN LIEU OF SALVAGING AND REUSING THE EXISTING RAILINGS AS DEPICTED OR IMPLIED ON THE PLANS. CONTRACTOR IS RESPONSIBLE FOR DETERMINING ACTUAL QUANTITIES OF NEW, VS. REINSTALLATION OF EXISTING RAILINGS, BASED ON IT'S PLAN FOR CONSTRUCTION.

KEY PLAN

NTS

freeland harris consulting engineers
201 west short street
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lexington, kentucky 40507

HDR

ISSUE	DATE	DESCRIPTION
	01/15/15	BID SET

PROJECT MANAGER	BRETT D. FISHER
DRAWN BY	B. D. FISHER
REVIEWED BY	P. B. HANSON
PROJECT NUMBER	218839

STATE OF KENTUCKY BRETT D. FISHER 28069 LICENSED PROFESSIONAL ENGINEER 1/15/15

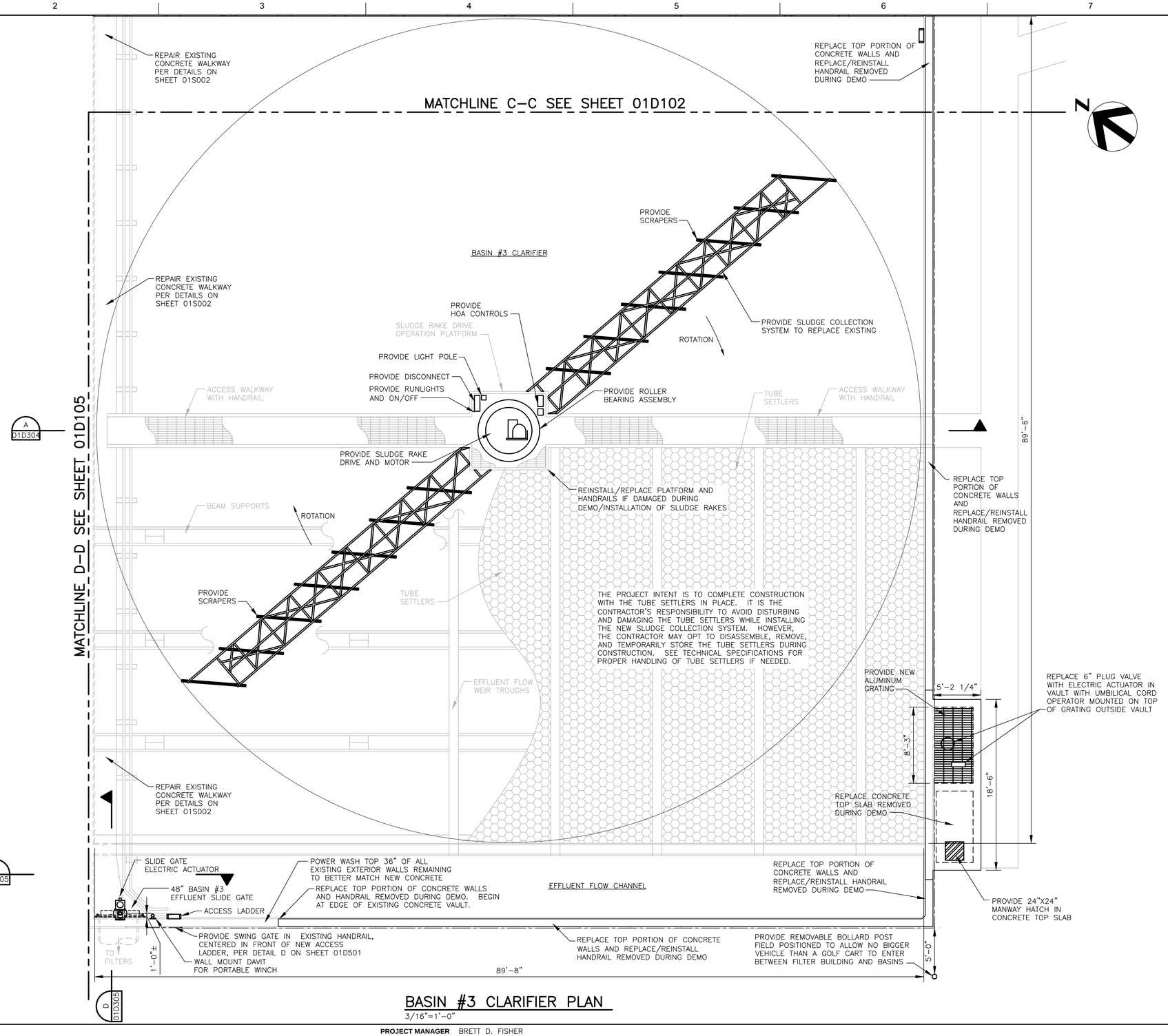
Northern Kentucky Water District

FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENTS

PROCESS BASIN #2 CLARIFIER PLAN

0 1" 2"

FILENAME	01D105.dwg
SCALE	3/16"=1'-0"
SHEET	01D105

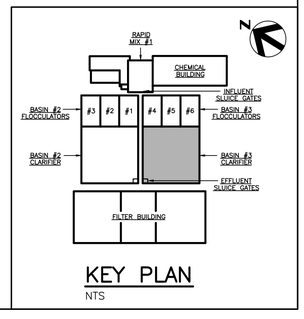


BASIN #3 CLARIFIER PLAN

3/16"=1'–0"

GENERAL NOTES:

1. REPLACE/REINSTALL HANDRAILS REMOVED DURING DEMO. ALL RAILINGS FORMERLY EMBEDDED POST RAILINGS REMOVED DURING DEMO, SHALL BE REPLACED WITH NEW WALL MOUNTED RAILINGS TO MATCH REMAINDER OF EXISTING RAILINGS WHEN POSSIBLE. IF WALL MOUNT IS NOT POSSIBLE, THEN INSTALL NEW EMBEDDED POST RAILINGS WHERE APPLICABLE. ALL EXISTING RAILINGS DAMAGED DURING DEMOLITION SHALL BE REPLACED WITH NEW RAILINGS OF THE SAME TYPE AND FUNCTION. THE CONTRACTOR MAY OPT TO REPLACE ALL RAILINGS AROUND BASIN #2 AND #3 IN LIEU OF SALVAGING AND REUSING THE EXISTING RAILINGS AS DEPICTED OR IMPLIED ON THE PLANS. CONTRACTOR IS RESPONSIBLE FOR DETERMINING ACTUAL QUANTITIES OF NEW, VS. REINSTALLATION OF EXISTING RAILINGS, BASED ON IT'S PLAN FOR CONSTRUCTION.



KEY PLAN

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DRAWN BY	B. D. FISHER
REVIEWED BY	P. B. HANSON
PROJECT NUMBER	218839

STATE OF KENTUCKY · BRETT D. FISHER · 28958 · LICENSED PROFESSIONAL ENGINEER · 1/15/15

Northern Kentucky Water District

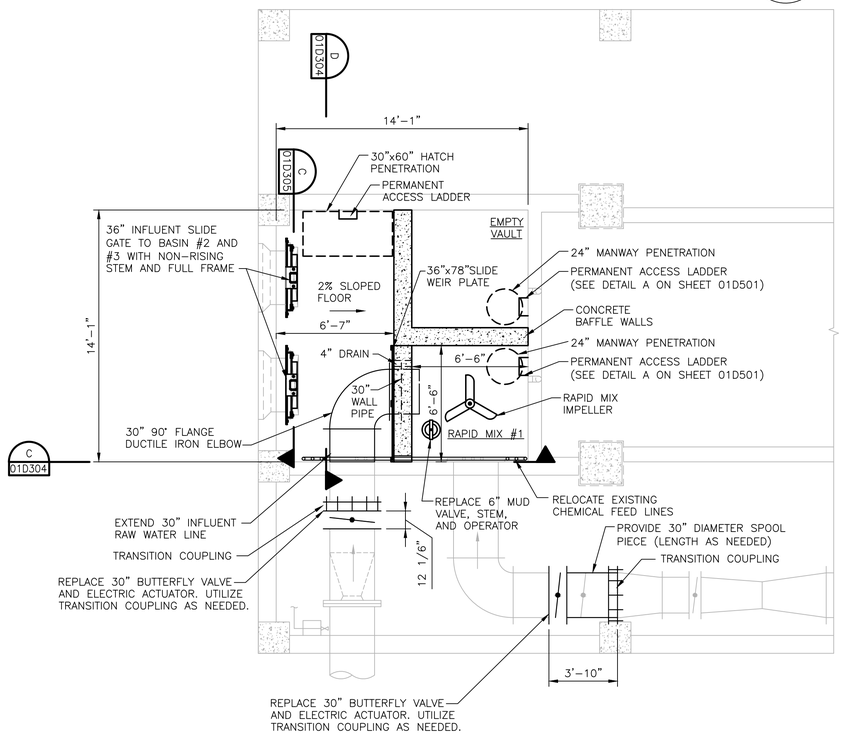
FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENTS

PROCESS BASIN #3 CLARIFIER PLAN

0 1" 2"

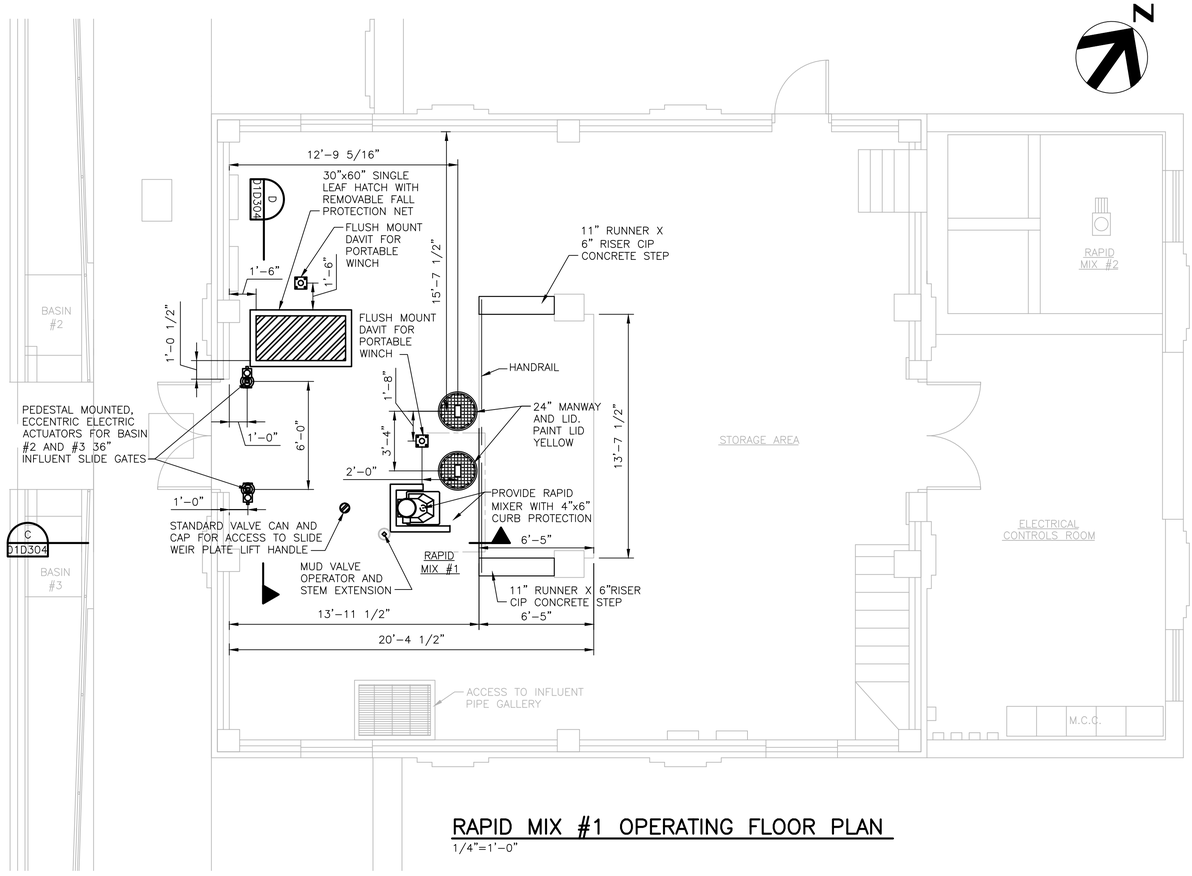
FILENAME 01D106.dwg
SCALE 3/16"=1'–0"

SHEET 01D106



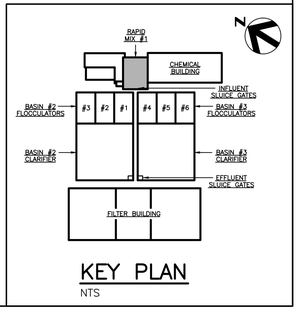
RAPID MIX #1 LOWER FLOOR PLAN

1/4"=1'-0"



RAPID MIX #1 OPERATING FLOOR PLAN

1/4"=1'-0"



KEY PLAN

NTS

freeland harris consulting engineers
201 west short street
suite 410
lexington, kentucky 40507

HDR

ISSUE	DATE	DESCRIPTION
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PROJECT MANAGER	BRETT D. FISHER
DRAWN BY	B. D. FISHER
REVIEWED BY	P. B. HANSON
PROJECT NUMBER	218839

STATE OF KENTUCKY · BRETT D. FISHER 28868 · LICENSED PROFESSIONAL ENGINEER · 1/15/15

Northern Kentucky Water District

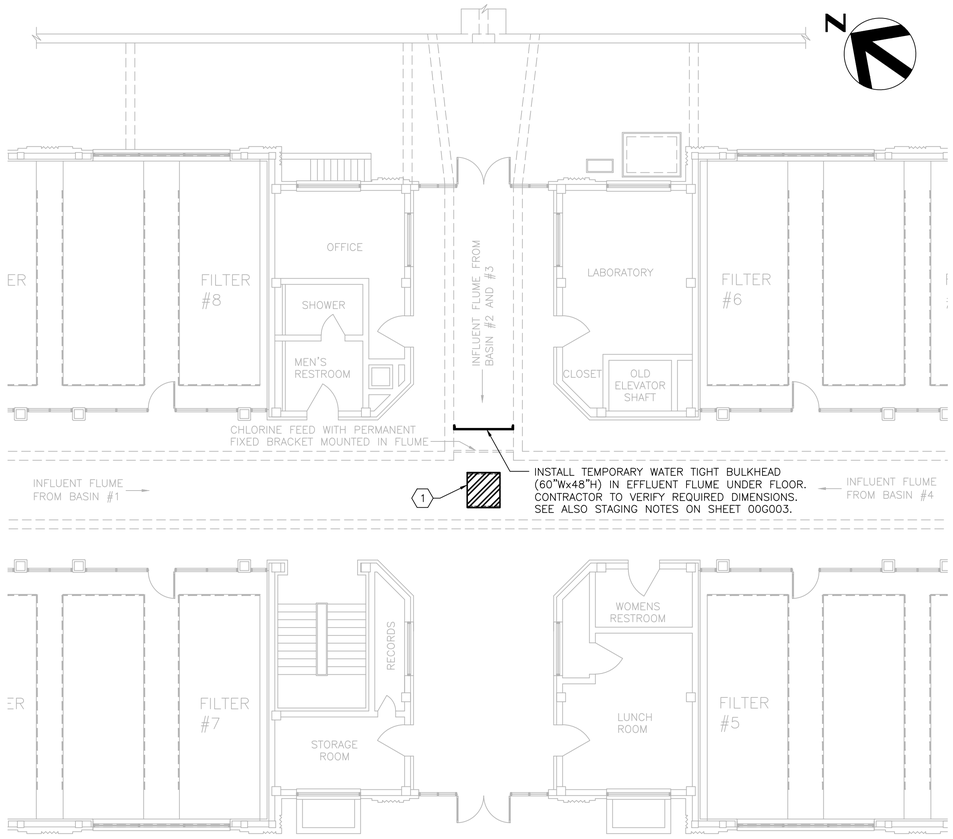
FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENTS

PROCESS RAPID MIX #1 FLOOR PLANS

0 1" 2"

FILENAME 01D107.dwg
SCALE 1/4"=1'-0"

SHEET 01D107

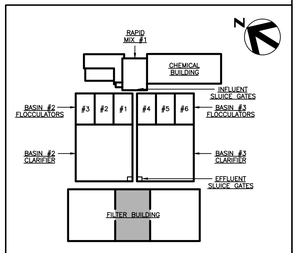


KEY NOTES:

1. REPLACE EXISTING HATCH WITH NEW 44"x47" ALL 316 STAINLESS STEEL FLOOR HATCH AND HARDWARE, BILCO TYPE J-AL, OR APPROVED EQUAL. CUT CONCRETE AROUND EXISTING FRAME TO REMOVE EXISTING HATCH AND FRAME, REFORM AND INSTALL NEW FRAME IN CONCRETE/GROUT AS SPECIFIED BY MANUFACTURERS INSTALLATION INSTRUCTIONS FOR "OLD WORK" CONSTRUCTION. FINISHED HATCH INSTALLATION SHALL BE FLUSH WITH EXISTING FLOOR. REPAIR TERRAZZO TILE FLOOR AFTER INSTALLATION. TILE SHALL BE BEST MATCHED FOR COLOR AND TYPE TO THE ADJACENT TILES.

FILTER BUILDING FIRST FLOOR PLAN
BASIN #2 AND #3 EFFLUENT FLUME TEMPORARY BULKHEAD PLAN

1/8"=1'-0"



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DRAWN BY	B. D. FISHER
REVIEWED BY	P. B. HANSON
PROJECT NUMBER	218839

BRETT D. FISHER 25959 LICENSED PROFESSIONAL ENGINEER STATE OF KENTUCKY
1/15/15

Northern Kentucky Water District

FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENTS

PROCESS BASIN #2 AND #3 EFFLUENT FLUME TEMPORARY BULKHEAD PLAN

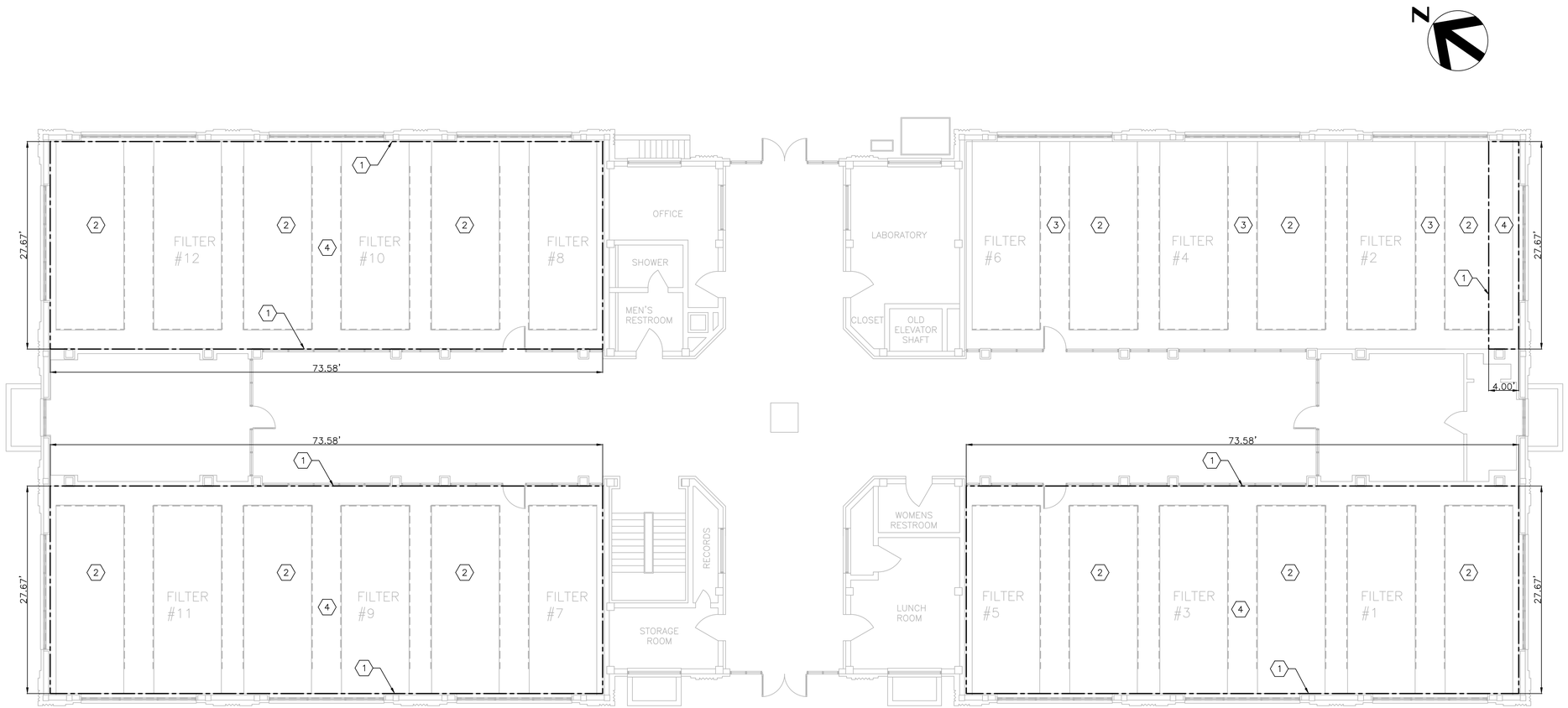
0 1" 2"

FILENAME 01D108.dwg
SCALE AS NOTED

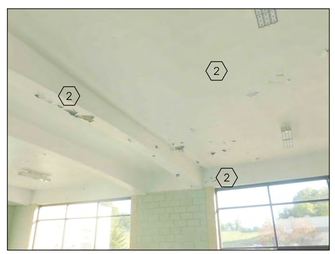
SHEET 01D108

KEY NOTES:

1. AS PER SPECIFICATIONS SECTION 09906 COMPLETE SURFACE PREPARATION AND PAINT/COAT ALL CEILING, BEAM, AND UPPER 24 INCHES OF WALLS (ABOVE TOP OF WALL TILE) SURFACES WITHIN THE EXTENTS OF THE DESIGNATED BOUNDARIES.
2. CONSTRUCT RIGID PROTECTIVE COVERS OVER ALL FILTERS TO PRECLUDE DEBRIS, PAINT DRIPPINGS, OR OTHER UNWANTED SUBSTANCES FROM ENTERING THE PROCESS WATER OR FILTERS DURING CONSTRUCTION. CONTRACTOR SHALL RECEIVE APPROVAL FROM OWNER ON PROPOSED MEANS OF COVERING OF FILTERS PRIOR TO CONSTRUCTION.
3. SURFACES ABOVE THIS AREA OF THE FILTER BAY ARE IN GOOD CONDITION AND DO NOT NEED TO BE RECOATED AND INCLUDED AS PART OF THE CONTRACTOR'S BID FOR THIS WORK.
4. CONTRACTOR IS REQUIRED TO TEST FOR THE PRESENCE OF LEAD PAINT PRIOR TO BEGINNING WORK AND TAKE THE NECESSARY PRECAUTIONS FOR LEAD PAINT SAFETY IF NEEDED.

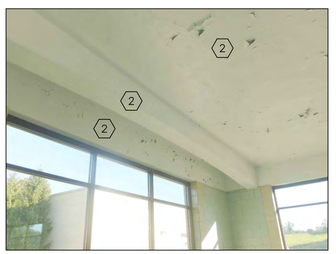


FILTER BUILDING
FILTER BAYS PAINT RESTORATION PLAN
1/8"=1'-0"

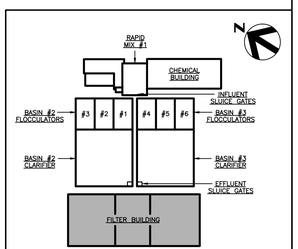


TYPICAL COATING CONDITION PHOTO 1
NTS

TYPICAL COATING CONDITION PHOTO 2
NTS



TYPICAL COATING CONDITION PHOTO 3
NTS



KEY PLAN
NTS

freeland harris consulting engineers
201 west short street
suite 410
lexington, kentucky 40507

HDR

ISSUE	DATE	DESCRIPTION
	01/15/15	BID SET

PROJECT MANAGER	BRETT D. FISHER
DRAWN BY	B. D. FISHER
REVIEWED BY	P. B. HANSON
PROJECT NUMBER	218839

STATE OF KENTUCKY
BRETT D. FISHER
20868
LICENSED
PROFESSIONAL ENGINEER
1/15/15

Northern Kentucky Water District

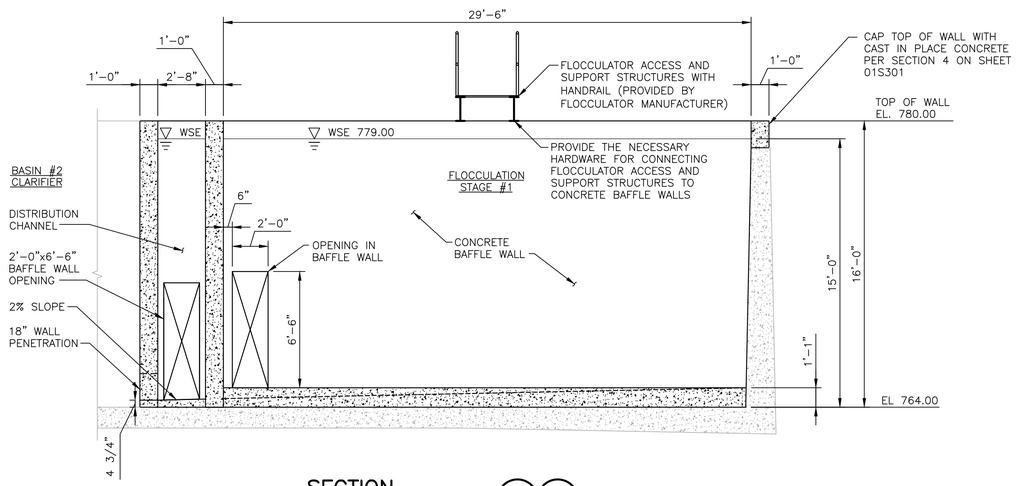
FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

PROCESS
FILTER BUILDING
FILTER BAYS PAINT RESTORATION PLAN

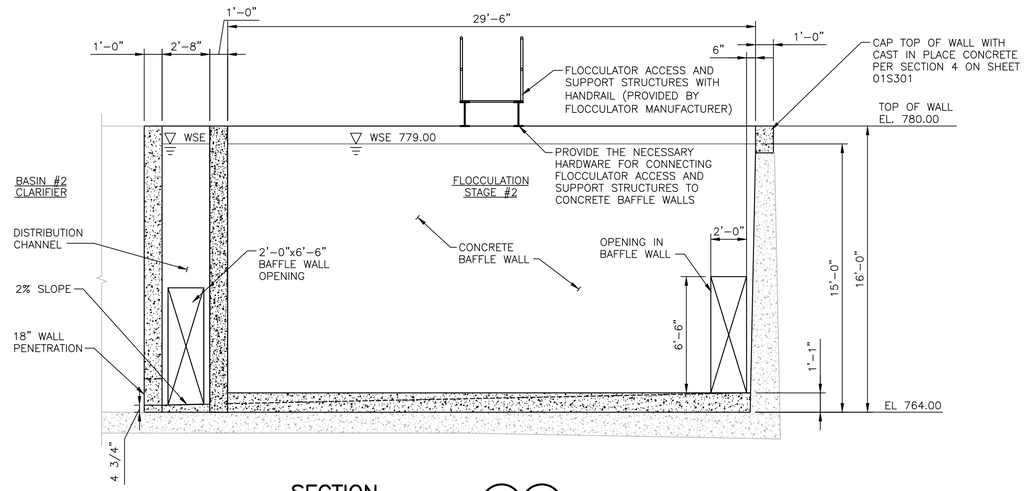
0 1" 2"

FILENAME 01D109.dwg
SCALE AS NOTED

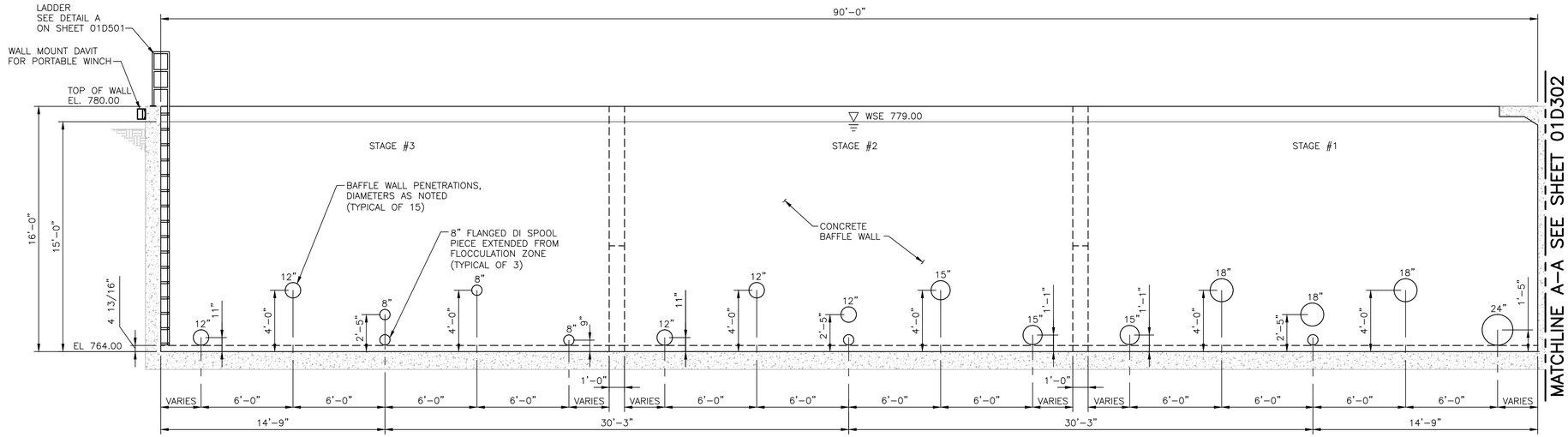
SHEET 01D109



SECTION
1/4"=1'-0"
A 01D101 | A 01D103



SECTION
1/4"=1'-0"
B 01D101 | B 01D103



SECTION
1/4"=1'-0"
C 01D101 | C 01D103

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HDR

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PROJECT NUMBER	218839

STATE OF KENTUCKY
BRETT D. FISHER
25568
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PROFESSIONAL ENGINEER
1/15/15

Northern Kentucky Water District

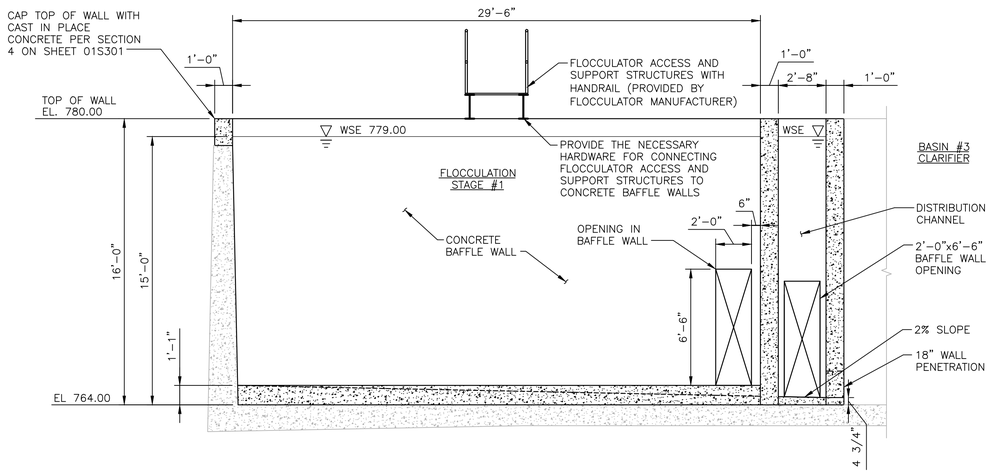
FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

PROCESS
BASIN #2
FLOCCULATION
BAFFLE WALL SECTIONS

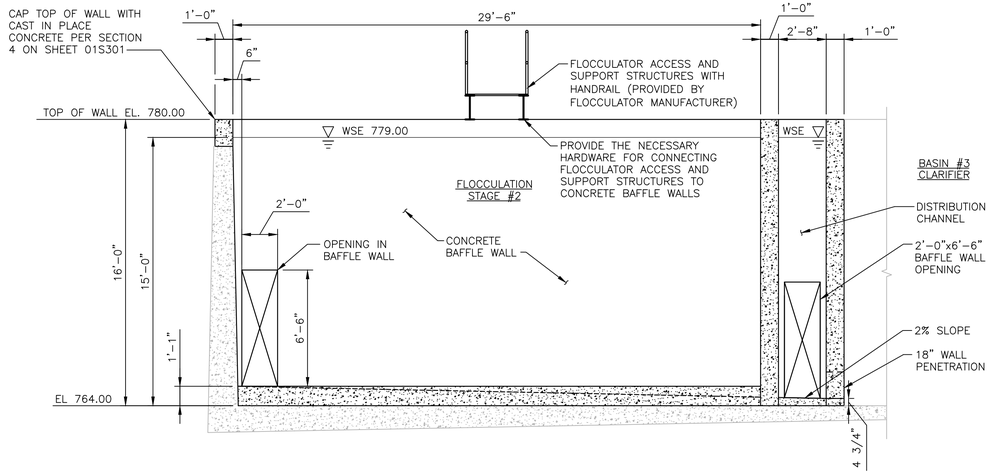
0 1" 2"

FILENAME 01D301.dwg
SCALE 1/4"=1'-0"

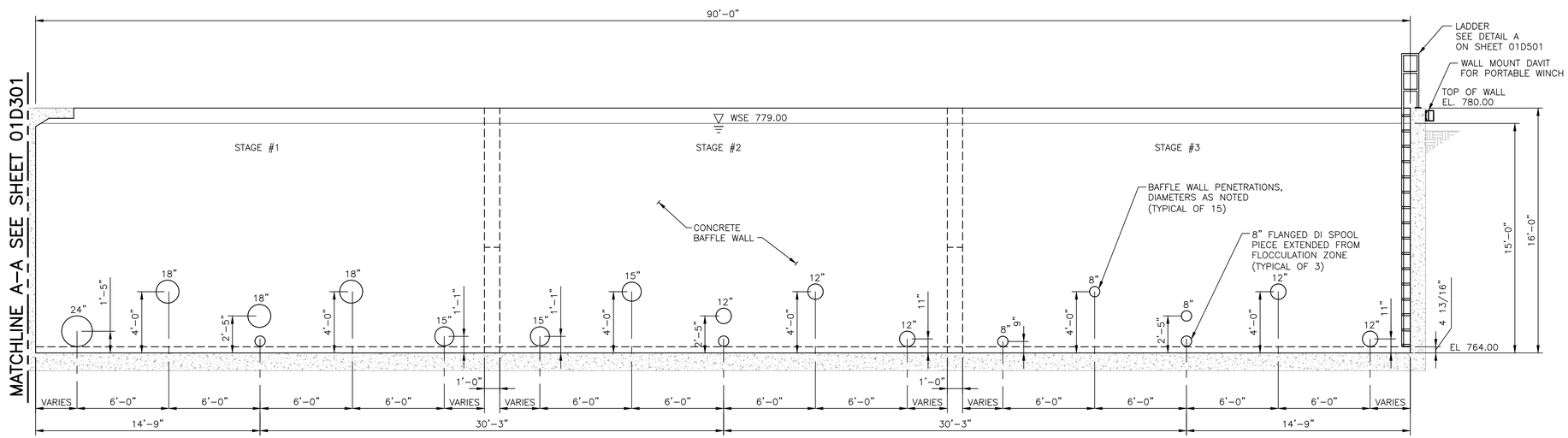
SHEET 01D301



SECTION
1/4"=1'-0"
A 01D102 | A 01D104



SECTION
1/4"=1'-0"
B 01D102 | B 01D104



SECTION
1/4"=1'-0"
C 01D102 | C 01D104

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DRAWN BY	B. D. FISHER
REVIEWED BY	P. B. HANSON
PROJECT NUMBER	218839

STATE OF KENTUCKY
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25958
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1/15/15

Northern Kentucky Water District

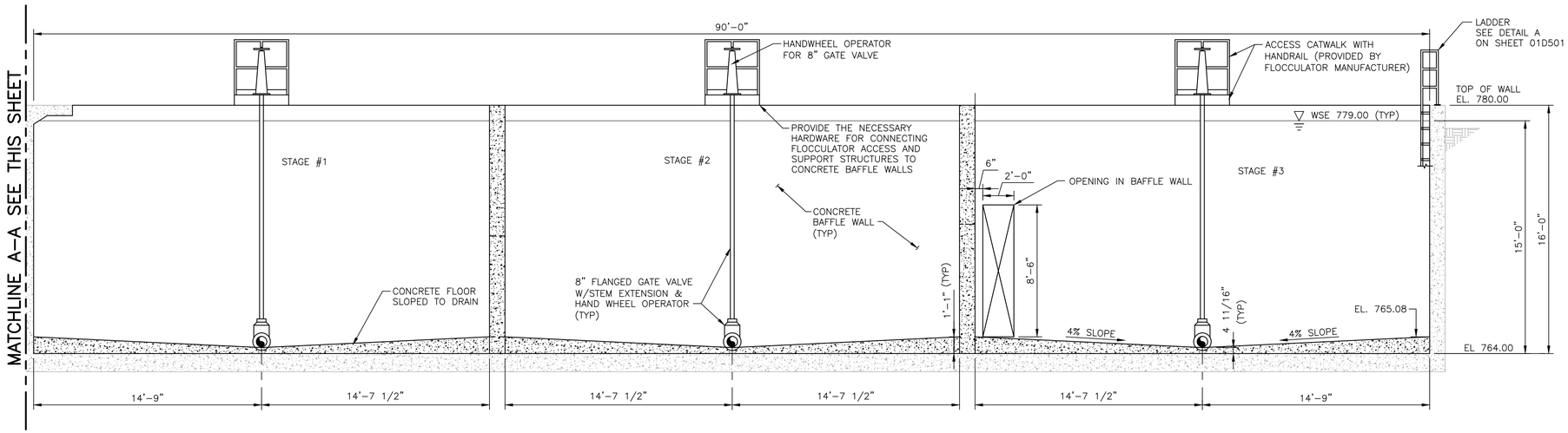
FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

PROCESS
BASIN #3
FLOCCULATION
BAFFLE WALL SECTIONS

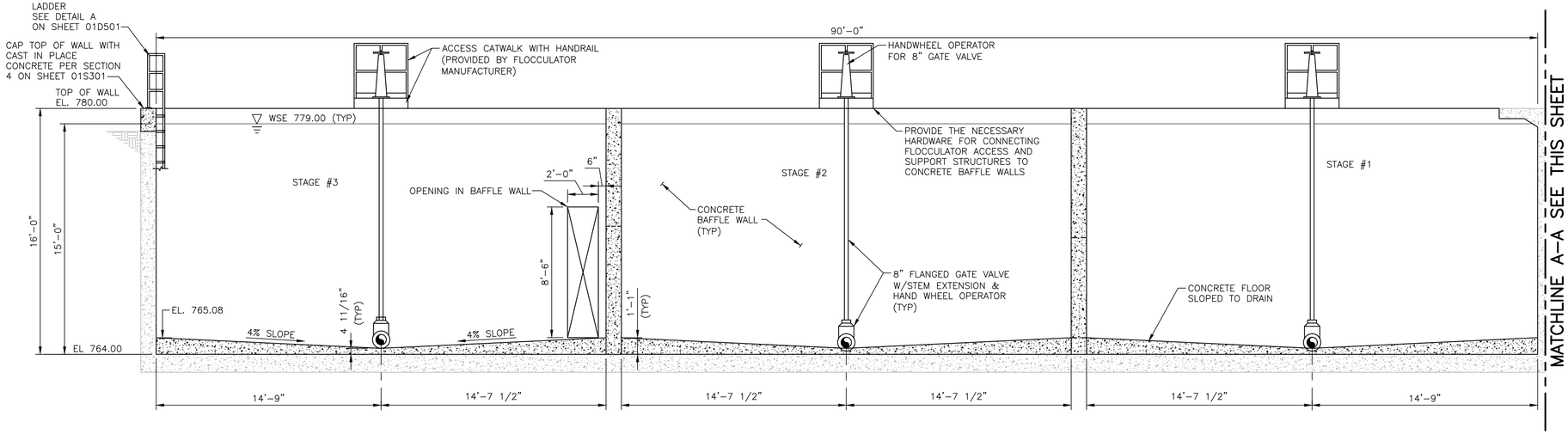
0 1" 2"

FILENAME 01D302.dwg
SCALE 1/4"=1'-0"

SHEET 01D302



SECTION
1/4"=1'–0"
A 01D101 | A 01D103



SECTION
1/4"=1'–0"
B 01D102 | B 01D104

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DRAWN BY	B. D. FISHER
REVIEWED BY	P. B. HANSON
PROJECT NUMBER	218839

STATE OF KENTUCKY * BRETT D. FISHER 23959 LICENSED PROFESSIONAL ENGINEER * 1/15/15

Northern Kentucky Water District

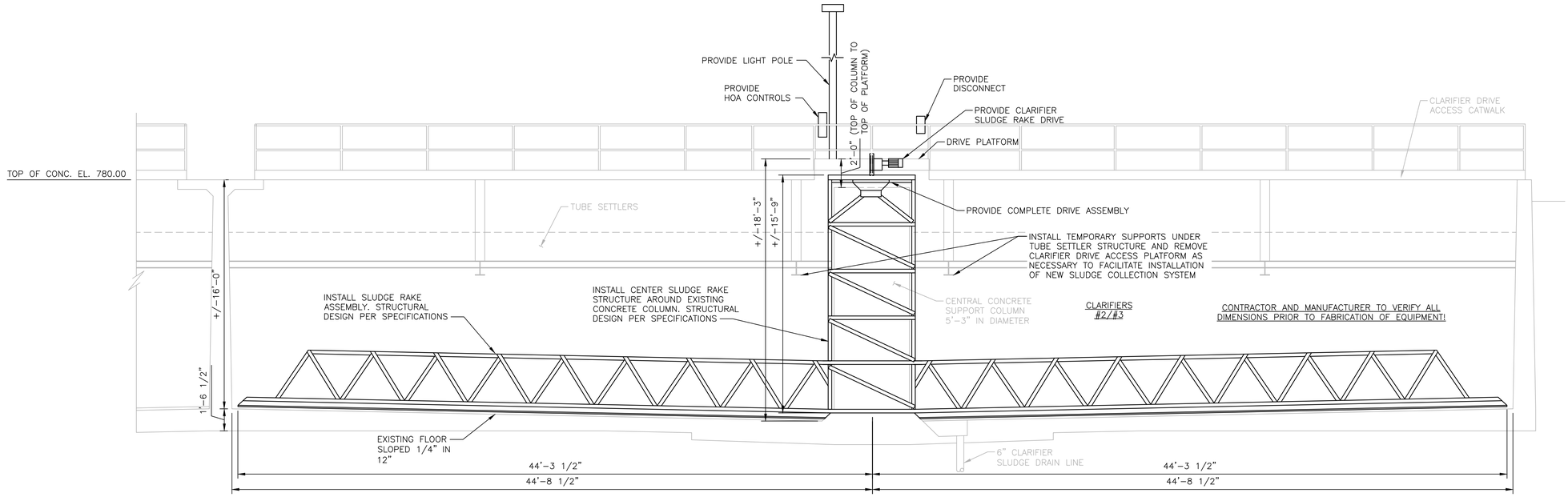
FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

PROCESS
BASIN #2 AND #3
MISCELLANEOUS SECTIONS

0 1" 2"

FILENAME 01D303.dwg
SCALE 1/4"=1'–0"

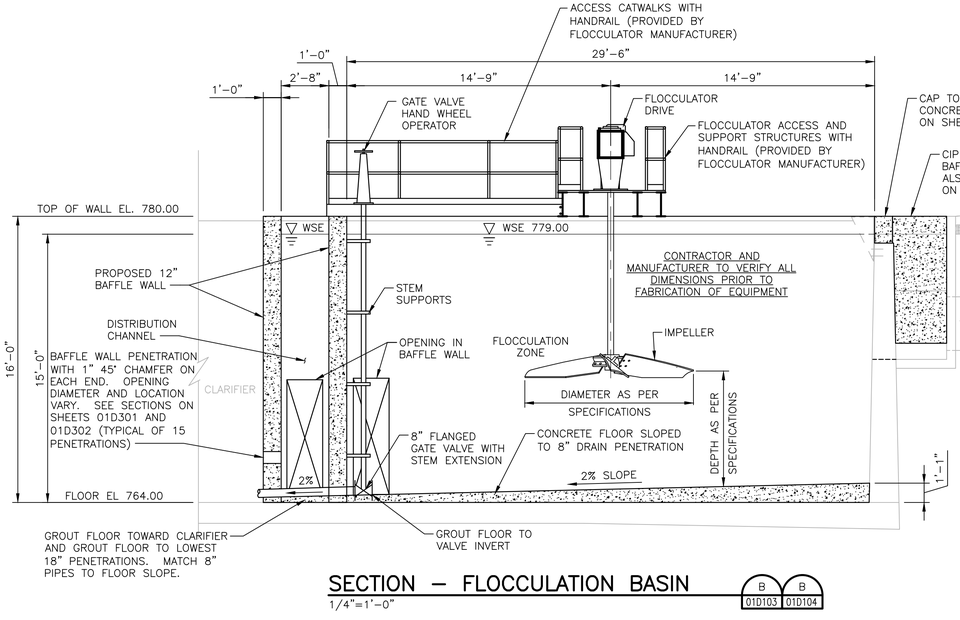
SHEET **01D303**



SECTION – CLARIFIERS

A 01D105 | A 01D106

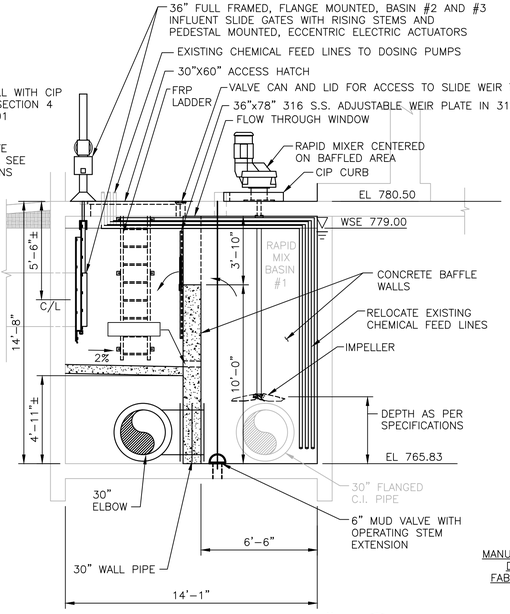
1/4"=1'-0"
(RAKE ARM ROTATED PARALLEL TO PLATFORM)



SECTION – FLOCCULATION BASIN

B 01D103 | B 01D104

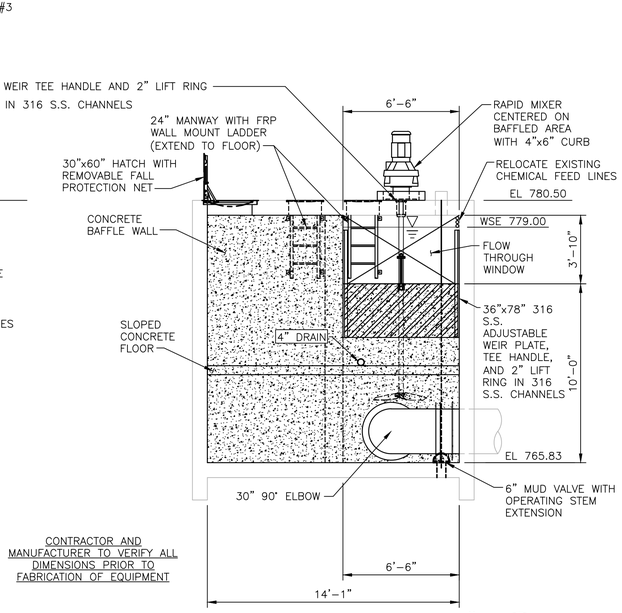
1/4"=1'-0"



SECTION – RAPID MIX BASIN #1

C 01D107

1/4"=1'-0"



CONTRACTOR AND MANUFACTURER TO VERIFY ALL DIMENSIONS PRIOR TO FABRICATION OF EQUIPMENT

SECTION – RAPID MIX BASIN #1

D 01D107

1/4"=1'-0"

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REVIEWED BY	P. B. HANSON
PROJECT NUMBER	218839

STATE OF KENTUCKY · BRETT D. FISHER · 28868 · LICENSED PROFESSIONAL ENGINEER · 1/15/15

Northern Kentucky Water District

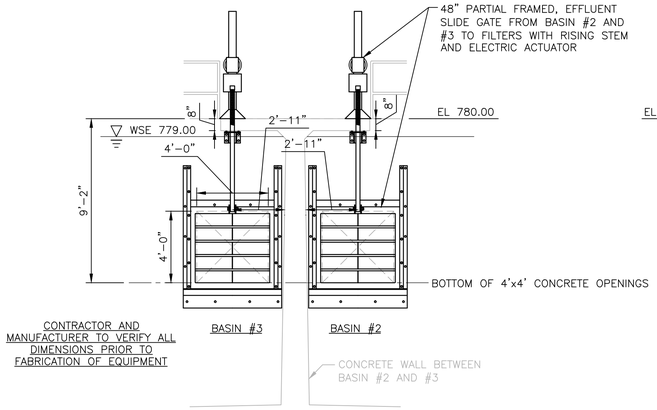
FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENTS

PROCESS BASIN #2 AND #3 MISCELLANEOUS SECTIONS

0 1" 2"

FILENAME 01D304.dwg
SCALE 1/4"=1'-0"

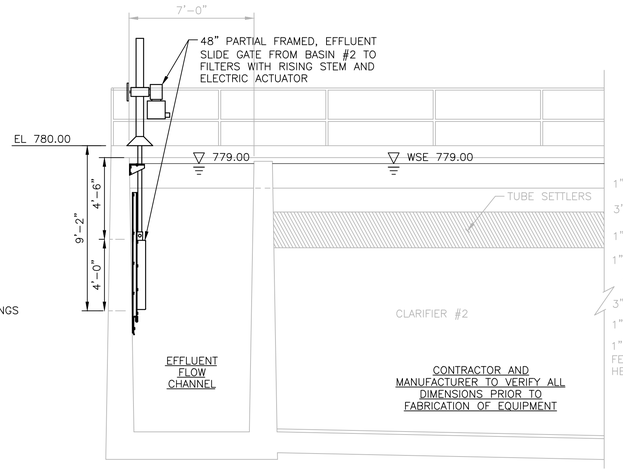
SHEET 01D304



SECTION – EFFLUENT SLIDE GATES

1/4"=1'-0"

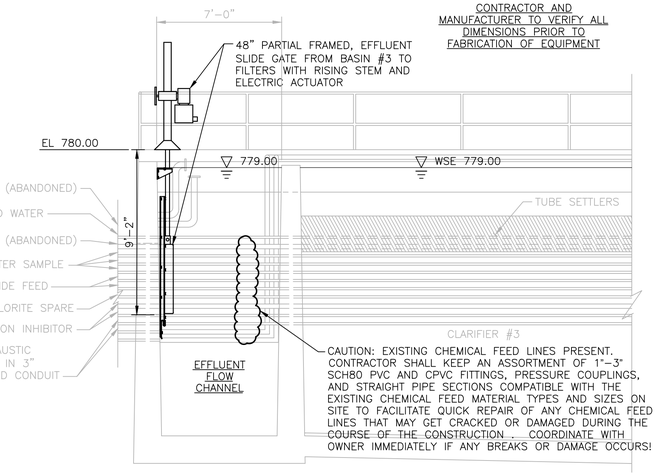
A 01D105 | A 01D106



BASIN #2 SECTION – EFFLUENT SLIDE GATE

1/4"=1'-0"

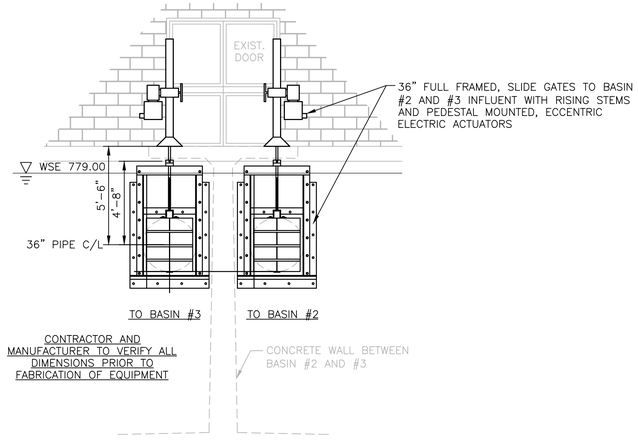
B 01D105



BASIN #3 SECTION – EFFLUENT SLIDE GATE

1/4"=1'-0"

D 01D106



SECTION – INFLUENT SLIDE GATES

1/4"=1'-0"

C 01D107

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lexington, kentucky 40507

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Northern Kentucky Water District

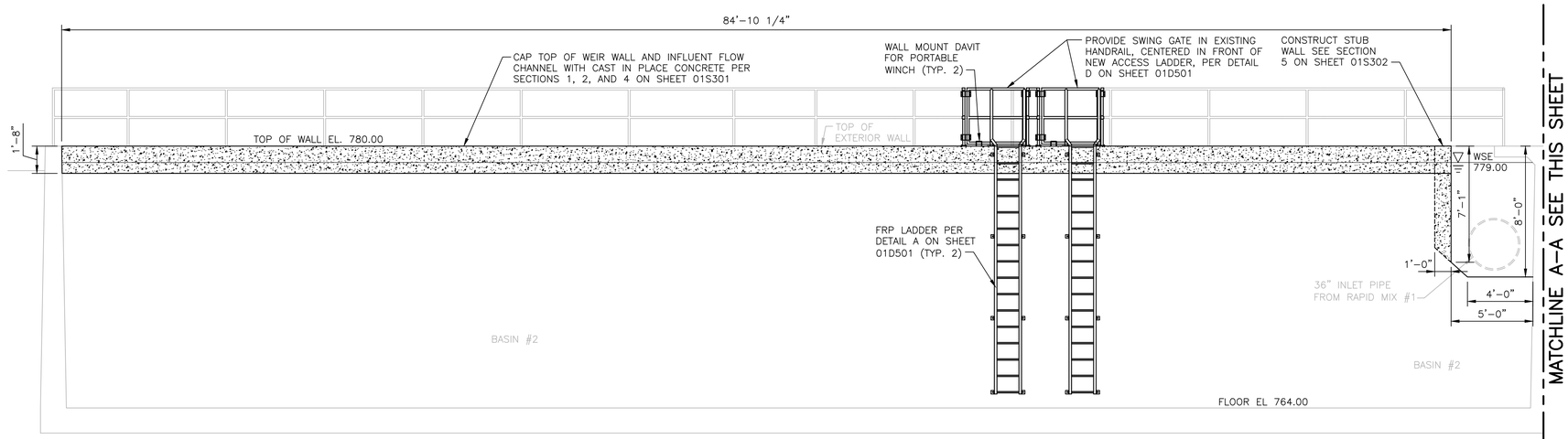
FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

PROCESS
BASIN #2 AND #3
MISCELLANEOUS SECTIONS

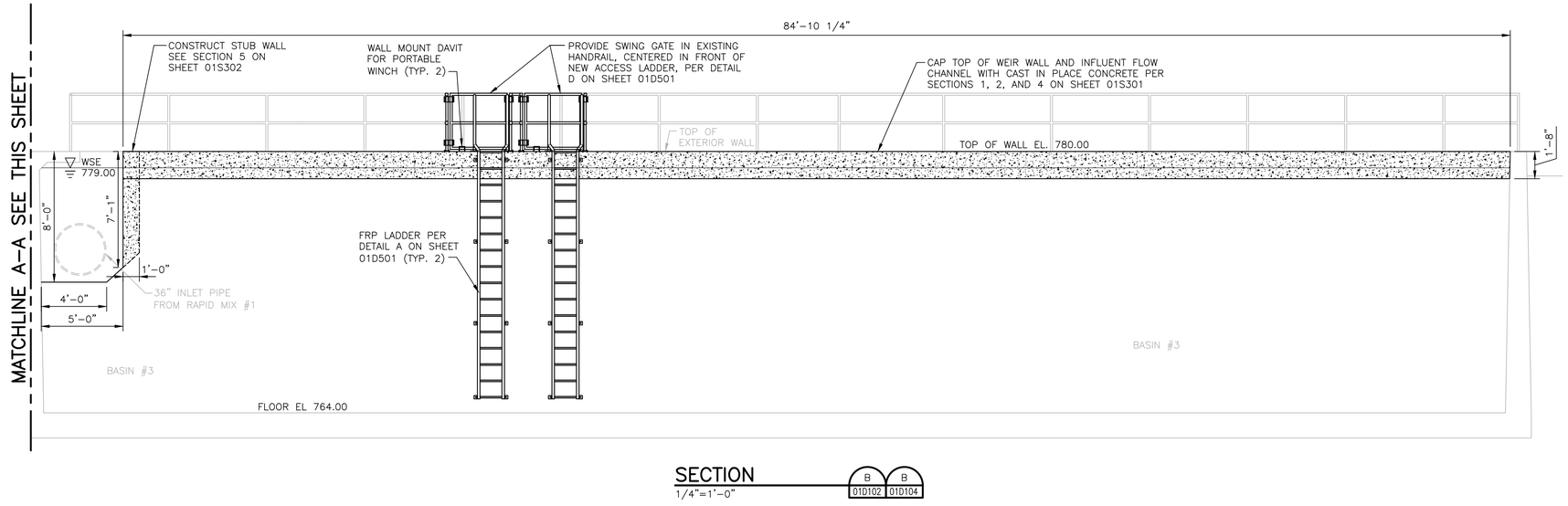
0 1" 2"

FILENAME 01D305.dwg
SCALE 1/4"=1'-0"

SHEET **01D305**



SECTION
1/4"=1'-0"
A 01D101 / A 01D103



SECTION
1/4"=1'-0"
B 01D102 / B 01D104

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HDR

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PROJECT NUMBER	218839

STATE OF KENTUCKY · BRETT D. FISHER · 25868 · LICENSED PROFESSIONAL ENGINEER · 1/15/15

Northern Kentucky Water District

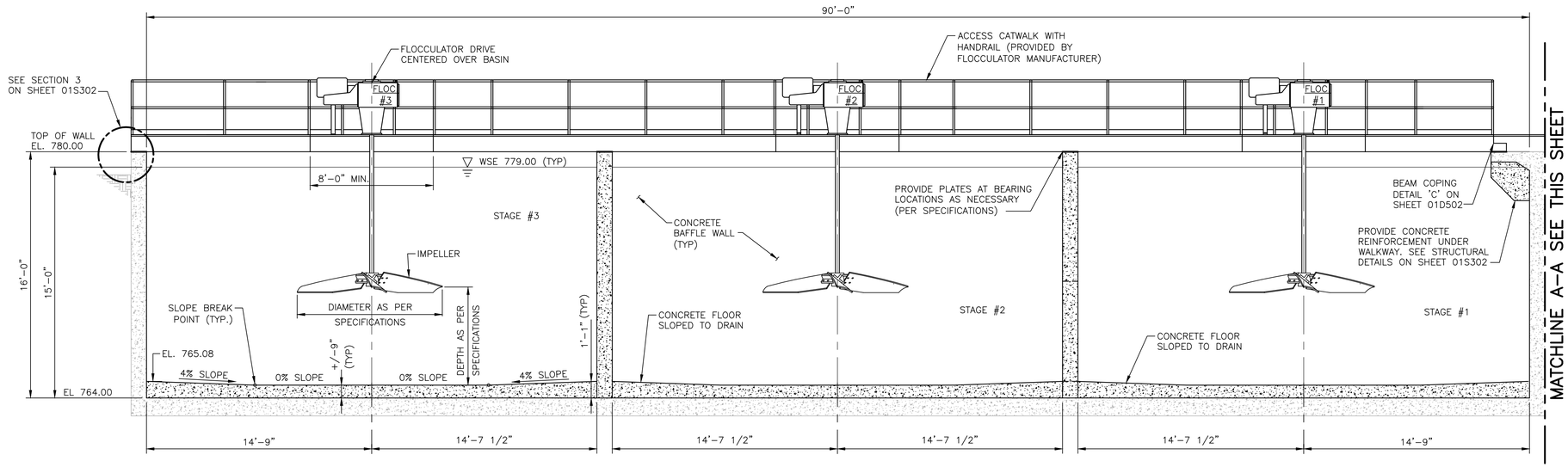
FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

PROCESS
BASIN #2 AND #3
INFLUENT FLOW CHANNEL SECTIONS

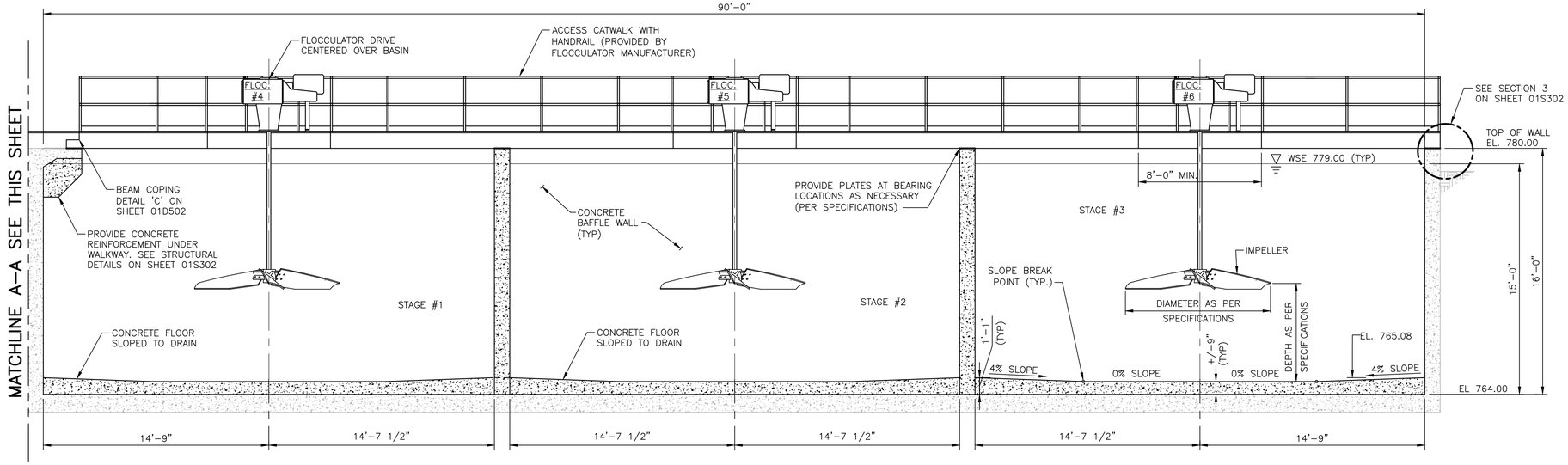
0 1" 2"

FILENAME 01D306.dwg
SCALE AS NOTED

SHEET 01D306



SECTION
1/4"=1'-0"
A 01D102 | A 01D104



SECTION
1/4"=1'-0"
B 01D101 | B 01D103

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STATE OF KENTUCKY · BRETT D. FISHER · 25868 · LICENSED PROFESSIONAL ENGINEER · 1/15/15

Northern Kentucky Water District

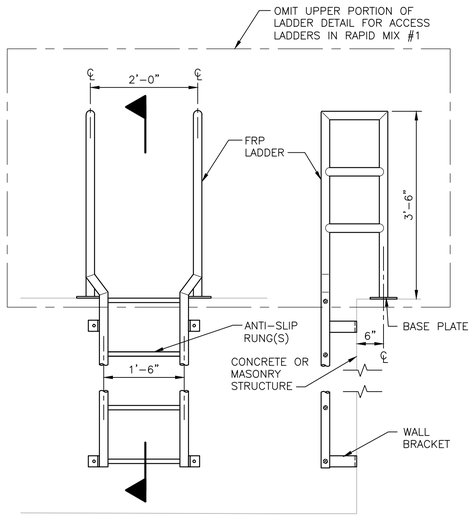
FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

PROCESS
BASIN #2 AND #3
MISCELLANEOUS SECTIONS

0 1" 2"

FILENAME 01D307.dwg
SCALE 1/4"=1'-0"

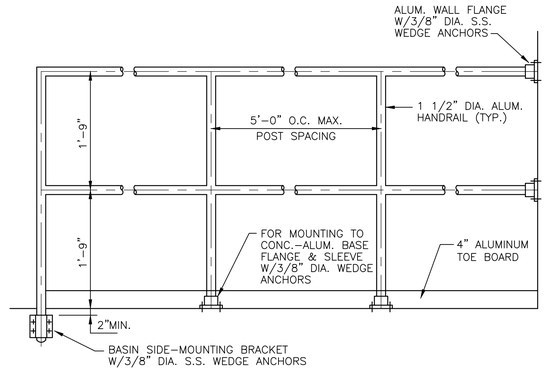
SHEET 01D307



FRP LADDER DETAIL

3/4"=1'-0"

A TYP



FRONT VIEW

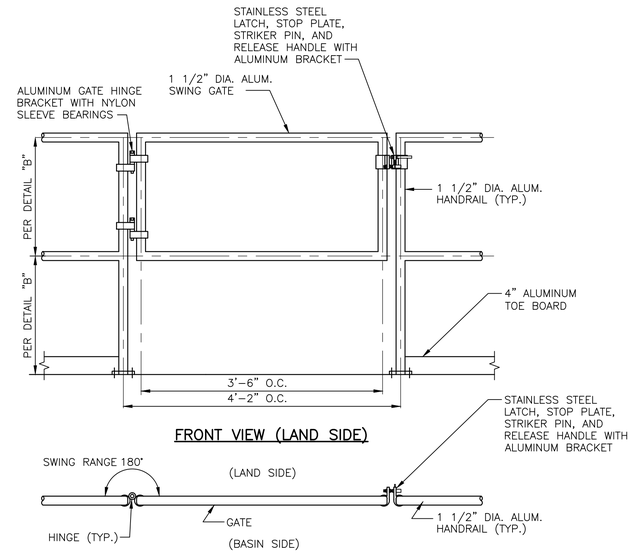
NOTES:

1. ALUMINUM HANDRAIL SHALL BE FABRICATED USING 1 1/2" NOMINAL DIAMETER x 0.145 WALL ALUMINUM PIPE W/WELDED FITTINGS.
2. JOINTS IN RAILING SHALL OCCUR ONLY AT FITTINGS.
3. ALL WELDS SHALL BE GROUND SMOOTH.

CONCRETE MOUNTED ALUMINUM HANDRAIL DETAILS

NTS

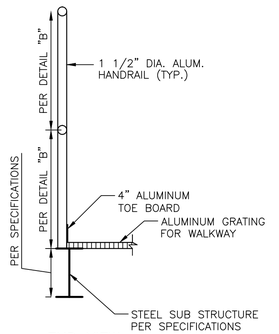
B TYP



HANDRAIL GATE DETAIL INSTALL IN NEW HANDRAIL

NTS

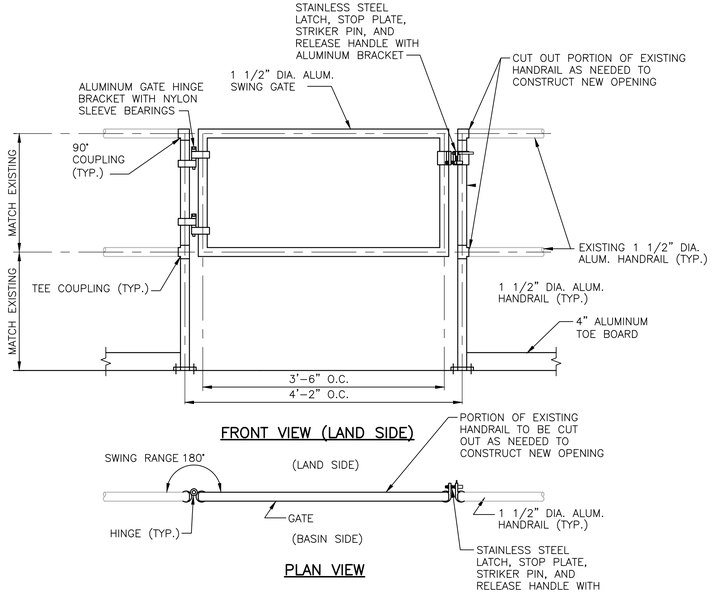
C TYP



HANDRAIL INSTALLED ON FLOCCULATOR ACCESS WALKWAYS

NTS

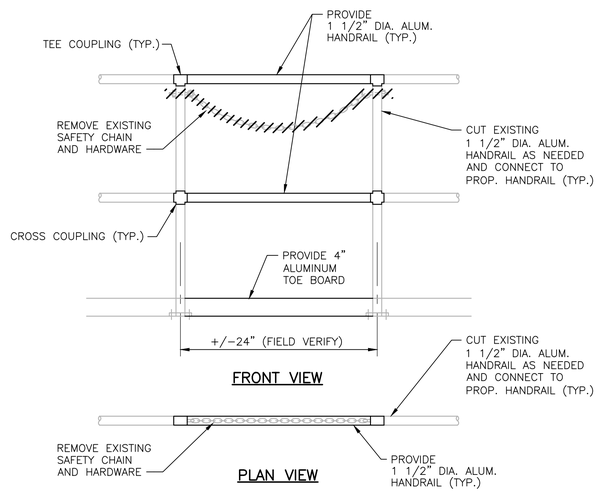
G TYP



HANDRAIL GATE DETAIL INSTALL IN EXISTING HANDRAIL

NTS

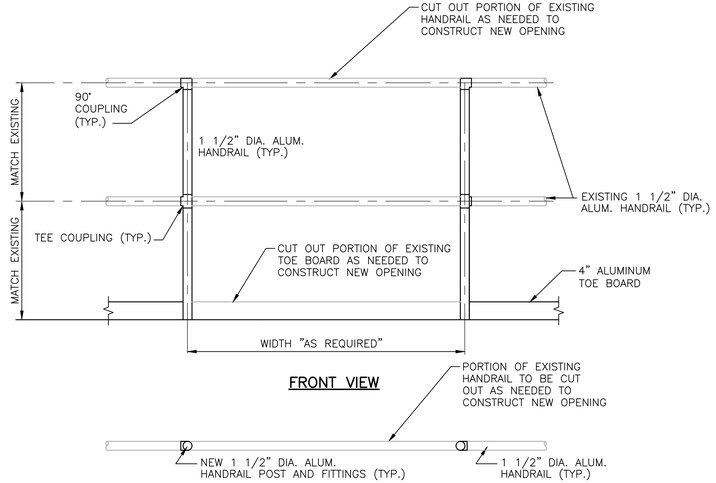
D TYP



SAFETY CHAIN ACCESS OPENING DETAIL CLOSURE OF EXISTING OPENING

NTS

E TYP



NEW OPENING DETAIL INSTALL IN EXISTING HANDRAIL

NTS

F TYP

freeland harris consulting engineers
201 west short street
suite 410
lexington, kentucky 40507

HDR

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REVIEWED BY	P. B. HANSON
PROJECT NUMBER	218839

STATE OF KENTUCKY BRETT D. FISHER 28868 LICENSED PROFESSIONAL ENGINEER 1/15/15

Northern Kentucky Water District

FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENTS

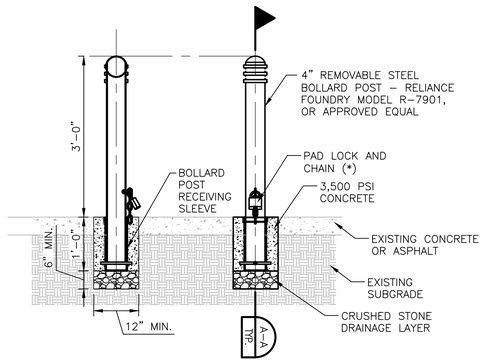
PROCESS STANDARD DETAILS

0 1" 2"

FILENAME 01D501.dwg

SCALE AS NOTED

SHEET 01D501



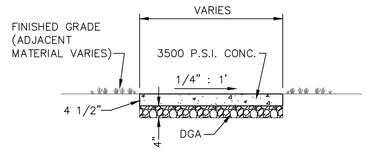
SECTION A–A FRONT VIEW

* PROVIDE STEEL CAP FOR POST SLEEVE WHEN BOLLARD IS NOT IN USE

REMOVABLE BOLLARD POST DETAIL

A TYP

NTS

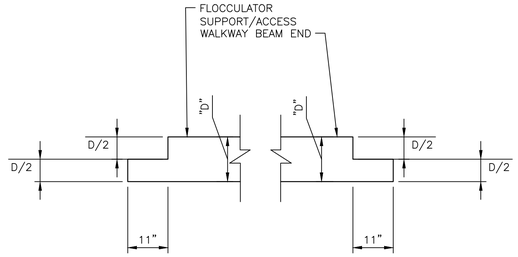


NOTE: SIDEWALK IS TO BE SLOPED TOWARD NATURAL DRAINAGE WHERE APPROPRIATE

CONCRETE SIDEWALK PAVEMENT SECTION

B TYP

NTS



FLOCCULATOR SUPPORT ACCESS WALKWAY BEAM END COPING FOR STEP DETAIL

C 01D307

NTS

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lexington, kentucky 40507

HDR

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REVIEWED BY	P. B. HANSON
PROJECT NUMBER	218839

STATE OF KENTUCKY · BRETT D. FISHER 25369 · LICENSED PROFESSIONAL ENGINEER · 1/15/15

Northern Kentucky Water District

FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENTS

PROCESS STANDARD DETAILS

0 1" 2"

FILENAME 01D502.dwg

SCALE AS NOTED

SHEET **01D502**

GENERAL STRUCTURAL NOTES

STRUCTURAL DESIGN CRITERIA

1. THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH THE FOLLOWING DESIGN CODES:

   A. ACI 350R–06, "ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES".

   B. ACI 318–11, "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE".

   C. KENTUCKY BUILDING CODE, 2013 EDITION.

DESIGN LOADS

ALL BUILDINGS AND STRUCTURES SHALL BE DESIGNED FOR OCCUPANCY CATEGORY III IN ACCORDANCE WITH ASCE 7–10. (TYPICAL UNLESS NOTED)

1. DEAD LOADS

   A. IN ACCORDANCE WITH THE AMERICAN SOCIETY OF CIVIL ENGINEERS ASCE 7–10, "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES.

2. LIVE LOADS

   A. THE FOLLOWING LIVE LOADS ARE AS RECOMMENDED IN ACI 350R–06, "ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES".

   CATWALKS AND STAIRS 100 PSF

CAST IN PLACE CONCRETE

1. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4500 PSI AT 28 DAYS.

2. ALL DESIGN AND CONSTRUCTION SHALL CONFORM TO THE ACI 318–11 "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE CONSTRUCTION" AND ALL DETAILS SHALL CONFORM TO THE LATEST EDITION OF THE "ACI DETAILING MANUAL" FOR REINFORCED CONCRETE STRUCTURES.

3. THE DESIGN AND CONSTRUCTION OF ALL ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES SHALL BE IN ACCORDANCE WITH ACI 350R–01, "ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES".

4. ALL REINFORCING STEEL SHALL BE GRADE 60 DEFORMED TYPE CONFORMING TO ASTM A615.

5. SPLICES IN CONTINUOUS VERTICAL OR HORIZONTAL REINFORCING STEEL SHALL BE CLASS "B" LAP SPLICE UNLESS OTHERWISE NOTED. ALL REINFORCING STEEL SHALL BE CONTINUOUS OR LAPPED WITH DOWELS AT CORNERS.

6. UNLESS OTHERWISE INDICATED, ALL CONCRETE COVER SHALL BE AS FOLLOWS:

   A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH ..... 3"
   B. CONCRETE CAST WITH FORMS AND EXPOSED TO EARTH, WATER, OR SEWAGE ..... 2"
   C. ALL OTHER CONCRETE ..... 1 1/2"

7. ALL NON–SHRINK GROUT SHALL BE NON–METALLIC TYPE AND SHALL CONFORM TO CRD–C 621, FACTORY PRE–MIXED.

CRACK REPAIR OF NEW CONCRETE

1. THIS STRUCTURE HAS BEEN DESIGNED TO MINIMIZE CRACKING, PER THE REQUIRMENTS OF ACI 350–06 AND ACI 350.4R–04. THE CONTRACTOR SHOULD CLOSELY FOLLOW THE PROJECT SPECIFICATIONS AND UTILIZE CONSTRUCTION PRACTICES TO MINIMIZE CONCRETE CRACKS.

2. ALL CRACKS THAT ARE ACTIVELY LEAKING OR THOSE WIDER THAN 0.010 INCH THAT OCCUR DURING THE PROJECT WARRANTY PERIOD SHALL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

3. ALL CRACK REPAIRS SHALL COMPLY WITH THE REQUIREMENTS INCLUDED IN ACI 546R–04, "CONCRETE REPAIR GUIDE" AND ACI 546.3R–06, "GUIDE FOR THE SELECTION OF MATERIALS FOR THE REPAIR OF CONCRETE."

4. THE CONTRACTOR SHALL SUBMIT PROPOSED REPAIR METHODS TO THE STRUCTURAL ENGINEER FOR REVIEW PRIOR TO CONDUCTING ANY REPAIR WORK.

SPECIAL INSPECTIONS:

1. ENGAGING THE SPECIAL INSPECTORS
   THE OWNER MUST ENGAGE INSPECTORS TO PERFORM SPECIAL INSPECTION ON THIS PROJECT.
   THESE INSPECTORS QUALIFICATIONS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR CONSIDERATION UPON COMPLETION, ALL REPORTS MUST BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW.

2. CONCRETE INSPECTOR REQUIREMENTS
   THE SPECIAL CONCRETE INSPECTOR MUST BE AN ACI LEVEL 1 TECHNICIAN.

3. CONCRETE FOUNDATIONS, WALKS AND SLAB ON GRADE.
   THE SPECIAL CONCRETE INSPECTOR SHALL INSPECT ALL CONCRETE.
   THIS INSPECTION SHALL INCLUDE:
   - CONFIRMATION OF ADEQUATE SOIL CONDITION.
   - VERIFICATION OF THE USE OF THE DESIGN MIX.
   - SAMPLE FRESH CONCRETE AS INDICATED IN THE SPECIFICATIONS.
   - VERIFICATION THAT REINFORCEMENT IS AS INDICATED ON THE DRAWINGS AND SPECIFICATIONS.
   - VERIFICATION THAT WATERSTOPS ARE AS SPECIFIED.

4. THE INSPECTION OF MASONRY CONSTRUCTION SHALL INCLUDE:
   - PERIODIC INSPECTIONS OF PROPORTIONS OF SITE–MIXED MORTAR AND GROUT.
   - PERIODIC INSPECTIONS OF PLACEMENT OF MASONRY UNITS AND CONSRTUCTION OF MORTAR JOINTS.
   - PERIODIC INSPECTION OF PLACEMENT OF REINFORCMENT AND CONNECTORS.
   - CONTINUOUS INSPECTION OF GROUT SPACE CELLS PRIOR TO GROUTING.
   - CONTINUOUS INSPECTION OF THE PLACEMENT OF GROUT.
   - PERIODIC INSPECTION OF SIZE AND LOCATION OF STRUCTURAL ELEMENTS.
   - CONTINUOUS INSPECTION OF TYPE, SIZE AND LOCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS FRAMES OR OTHER CONSTRUCTION.
   - PERIODIC INSPECTION OF SPECIFIED SIZE, GRADE AND TYPE OF REINFORCEMENT.
   - PERIODIC INSPECTION OF PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40°F) AND/OR HOT WEATHER (TEMPERATURE ABOVE 90°F)
   - CONTINUOUS INSPECTION OF PREPARATION OF ANY REQUIRED GROUT SPECIMENS, MORTAR SPECIMENS AND/OR PRISMS SHALL BE OBSERVED.

GENERAL

1. ALL TRADES SHALL REFER ALL APPLICABLE DRAWINGS FOR QUANTITY, LOCATION AND SIZE OF ALL OPENINGS AND EQUIPMENT PENETRATIONS.

2. IT IS THE GENERAL CONTRACTORS RESPONSIBILITY TO COORDINATE ALL OPENING SIZES AND LOCATIONS.

3. ALL CONSTRUCTION JOINTS IN VESSELS TO HAVE WATERSTOPS. PROVIDE EXPANDABLE WATERSTOPS @ EXPANSION JOINTS.

4. ALL WATER STOPS SHALL BE 6" LONG BY 3/8" THICK PVC TYPE, UNLESS NOTED OTHERWISE.

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201 west short street
suite 410
lexington, kentucky 40507

HDR

ISSUE	DATE	DESCRIPTION
	1/15/15	BID SET

PROJECT MANAGER	BRETT D. FISHER
DRAWN BY	J.L. HOAGLAND
REVIEWED BY	L.E. ALEXANDER
PROJECT NUMBER	218839

STATE OF KENTUCKY
LYMAN EDWARD ALEXANDER
16412
LICENSED PROFESSIONAL ENGINEER

Northern Kentucky Water District

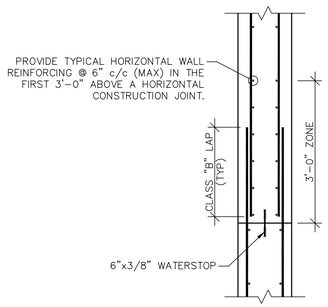
FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENTS

GENERAL STRUCTURAL GENERAL NOTES

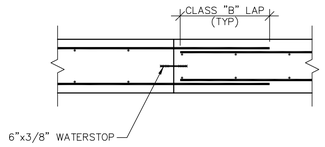
0 1" 2"

FILENAME 01S001.dwg
SCALE 1/4"=1'–0"

SHEET **01S001**

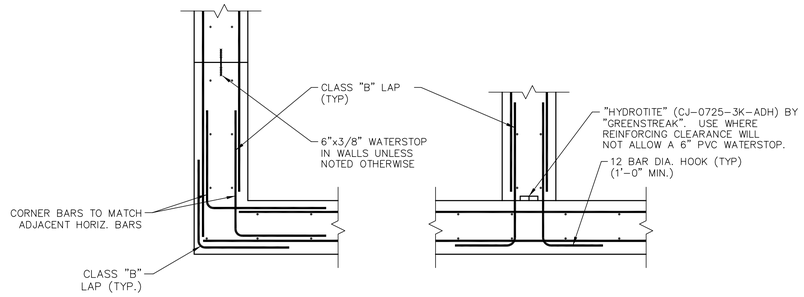


HORIZONTAL CONSTRUCTION JOINT
ELEVATION VIEW



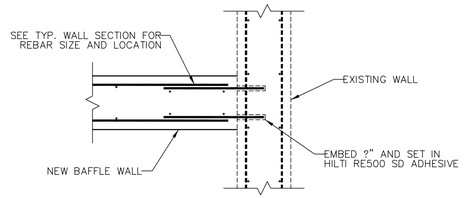
VERTICAL CONSTRUCTION JOINT
PLAN VIEW

TYPICAL CONSTRUCTION JOINTS
S2.1 TYP

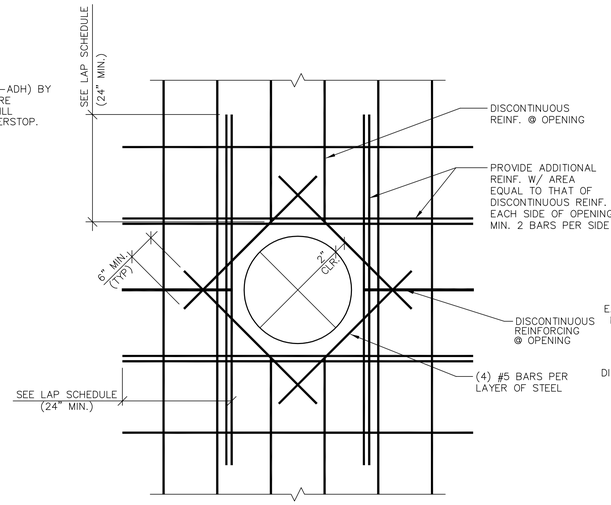


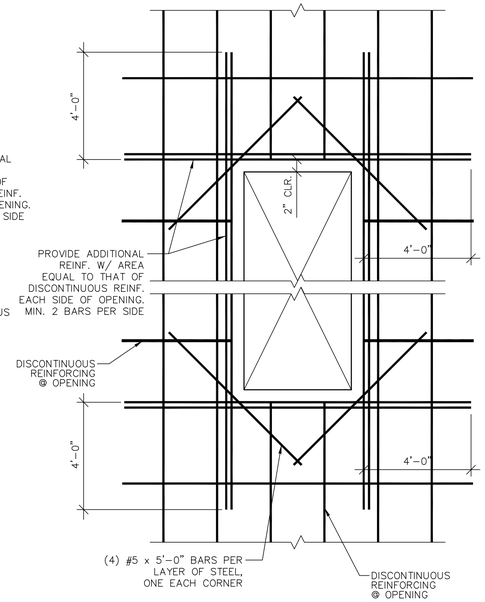
TYPICAL WALL & CORNER INTERSECTION
S2.2 TYP

NOTE: PROVIDE CONTINUOUS BARS OR DOWELS AT ALL CORNERS AND INTERSECTIONS OF WALLS.

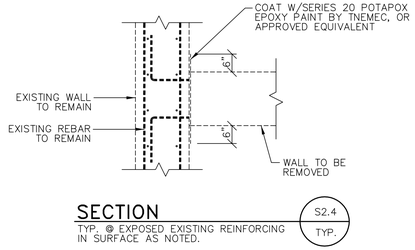


CONNECTION OF NEW WALL TO EXISTING WALL (PERPENDICULAR)
PLAN VIEW
S2.5 TYP.





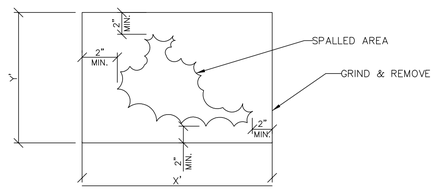
TYPICAL CONCRETE OPENING DETAIL
S2.3 TYP



SECTION
TYP. @ EXPOSED EXISTING REINFORCING IN SURFACE AS NOTED.
S2.4 TYP.

CONCRETE SURFACES REPAIR NOTES AND DETAILS

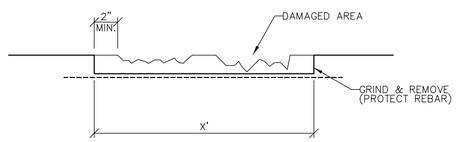
WALKWAY SURFACE REPAIR



TYPICAL SURFACE SPALLING REPAIR
PLAN VIEW
S2.6 TYP.

ESTIMATED QUANTITIES		
ITEM	QUANTITY	UNITS
OVERALL WALWAY AREA TO BE REPAIRED	1000	SQUARE FOOT
CRACK REPAIR	150	LF
SPALLED SURFACE AREA REPAIR	200	SQUARE FOOT

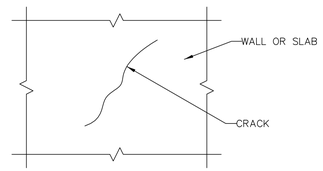
BID SHALL BE BASED ON STATED QUANTITIES. QUANTITIES SHALL BE REVIEWED & APPROVED BY OWNER/ENGINEER IN THE FIELD. NO PAYMENT WILL BE MADE FOR UNAPPROVED WORK.



TYPICAL SURFACE SPALLING REPAIR
SECTION
S2.7 TYP.

WALKWAY SURFACE REPAIR NOTES:
- CHAIN DRAG & IDENTIFY DELAMINATED AREAS
- CHIP AWAY DELAMINATED MATERIAL WITH 15 POUND (MAX.) IMPACT HAMMER
- SQUARE UP DELAMINTED AREA WITH GRINDER TO ELIMINATE FEATHERED EDGES
- SHOT BLAST ENTIRE WALKWAY WITH DUSTLESS SHOT BLASTING EQUIPMENT
- PATCH DELAMINTED AREAS WITH EPOXY (SIKA 22 LOW MOD EPOXY)
- BROADCAST AGGREGATE INTO EPOXY SURFACE
- ROUTE OUT CRACKS WITH 3/8" WIDE V-GROOVE
- SEAL CRACKS WITH SIKA 2C-NS SEALANT
- COAT WALKWAY WITH SIKA FLOOR FTP PRIMER
- COAT WALKWAY WITH SIKALASTIC 720 BASE COAT (25mil.)
- COAT WALKWAY WITH SIKALASTIC 745 AL (12 to 15 mil)
- BROADCAST SURFACE & BACK ROLL WITH ROUNDED QUARTZ AGGREGATE (16 – 30) @ RATE OF 15#/100SQ. OF COATED AREA.

TYPICAL BASIN CRACK REPAIR



TYPICAL CRACK REPAIR
PLAN/ELEVATION
S2.8 TYP.

BASIN #2 & #3
ROUTE OUT CRACKS WITH 3/8" WIDE V-GROOVE
INJECT WITH SIKAFIX HH HYDROPHILIC GROUT

BASIN #2 & #3 CRACK REPAIR
- ROUTE OUT CRACKS WITH 3/8" WIDE V-GROOVE.
- INJECT WITH SIKAFLEX HYDROPHILIC GROUT

ESTIMATED QUANTITIES		
ITEM	QUANTITY	UNITS
CRACK REPAIR	3000	LF

BID SHALL BE BASED ON STATED QUANTITIES. QUANTITIES SHALL BE REVIEWED & APPROVED BY OWNER/ENGINEER IN THE FIELD. NO PAYMENT WILL BE MADE FOR UNAPPROVED WORK.

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REVIEWED BY	L.E. ALEXANDER
PROJECT NUMBER	218839

STATE OF KENTUCKY — LYMAN EDWARD ALEXANDER — 16412 — LICENSED PROFESSIONAL ENGINEER

Northern Kentucky Water District

FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENTS

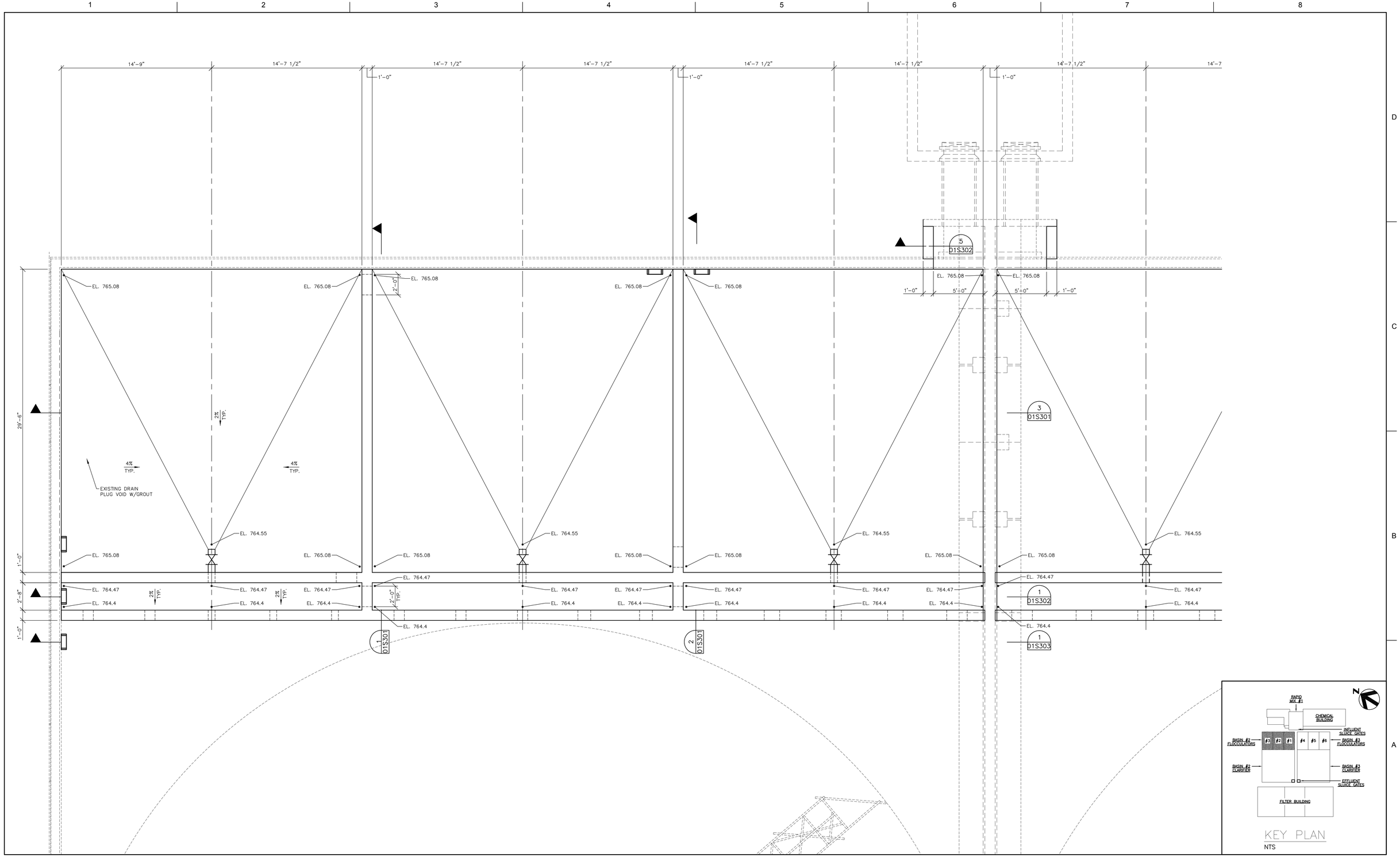
STRUCTURAL

TYPICAL DETAILS

0 1" 2"

FILENAME 01S002.dwg
SCALE 1/4"=1'-0"

SHEET **01S002**



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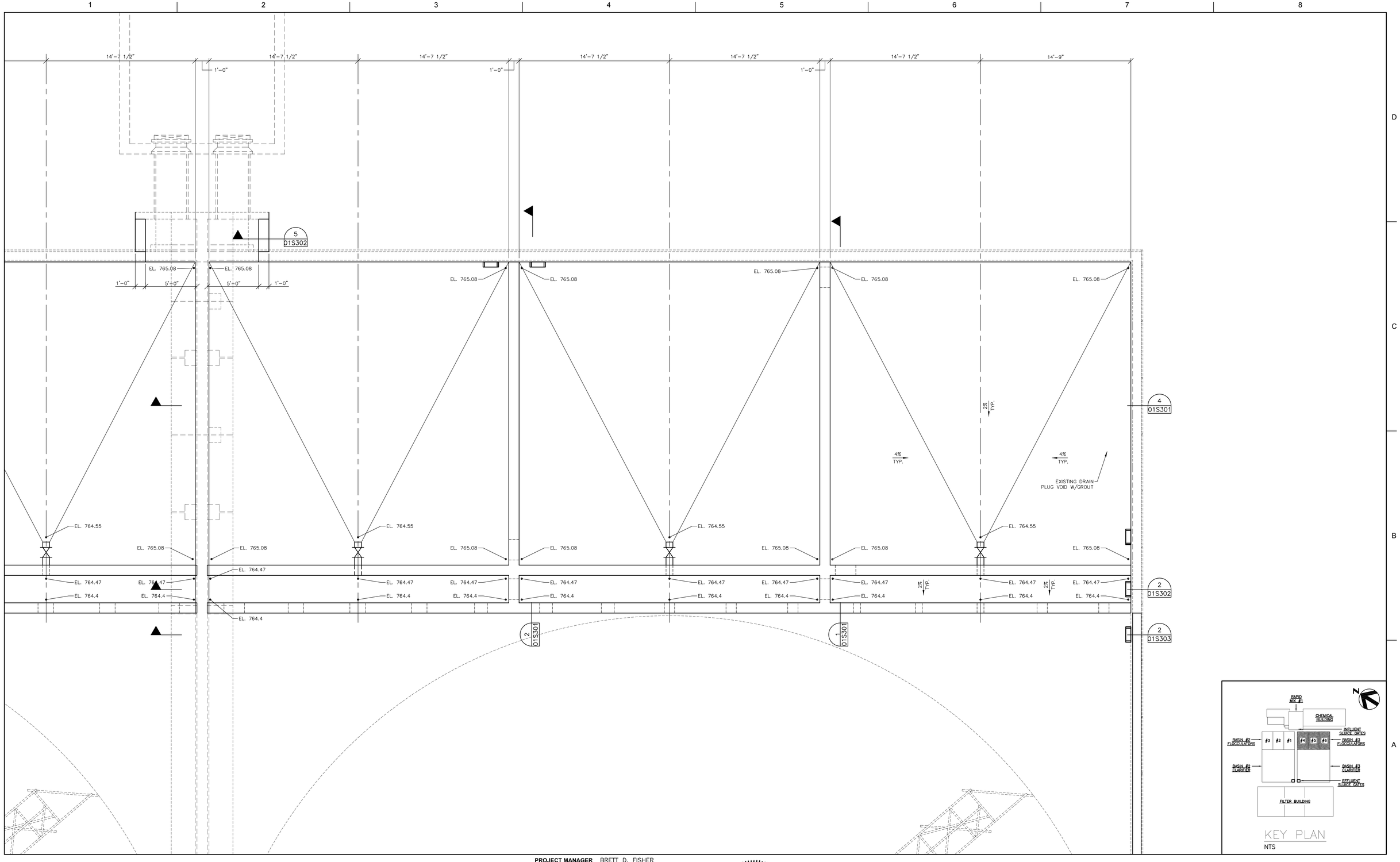
FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

STRUCTURAL BASIN #2 FLOCCULATION LOWER PLAN

0 1" 2"

FILENAME	01S101.dwg
SCALE	1/4"=1'-0"
SHEET	01S101



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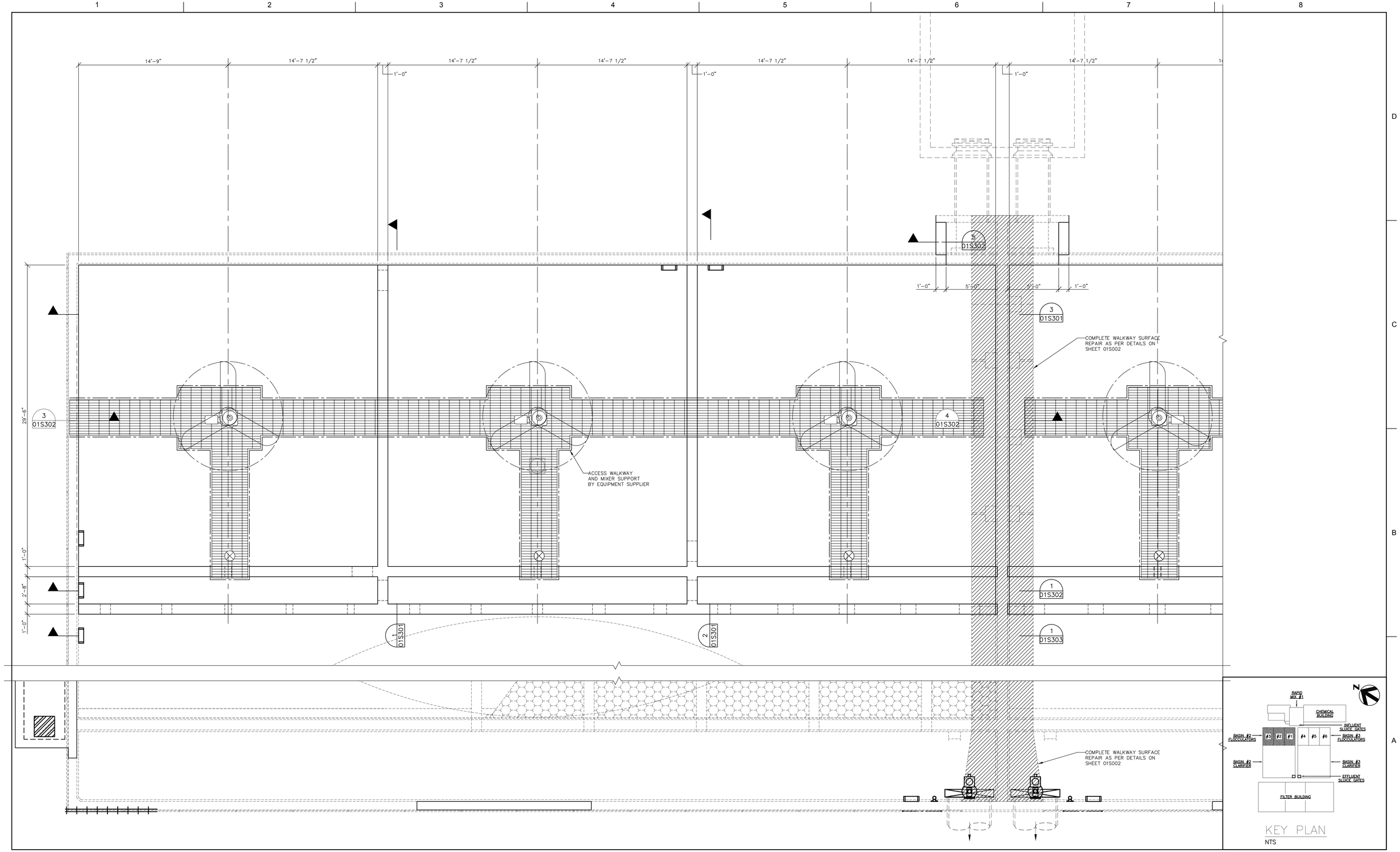
FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

STRUCTURAL BASIN #3 FLOCCULATION LOWER PLAN

0 1" 2"

FILENAME	01S102.dwg
SCALE	1/4"=1'-0"
SHEET	01S102



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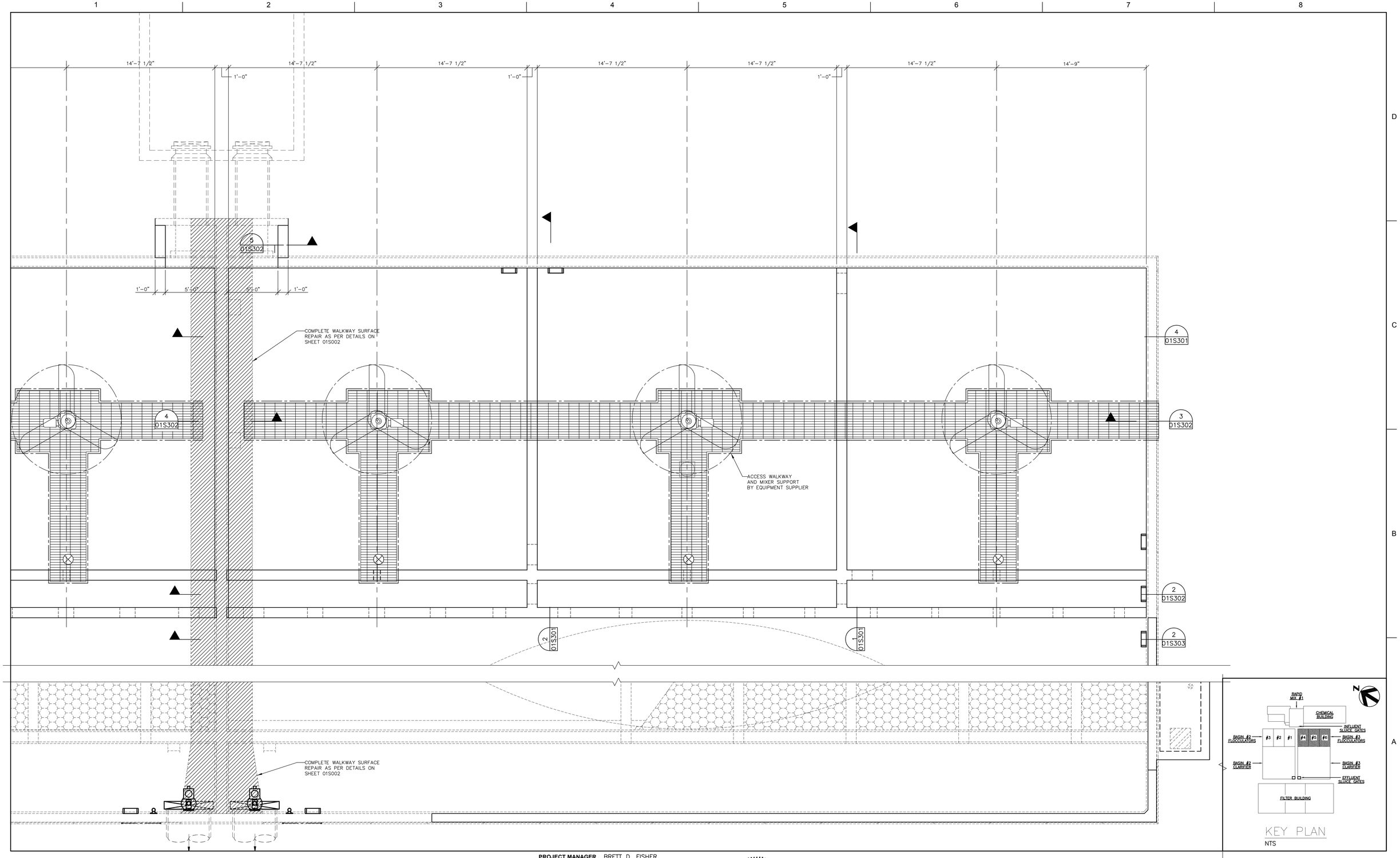
FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

STRUCTURAL BASIN #2 FLOCCULATION UPPER PLAN

0 1" 2"

FILENAME 01S103.dwg
SCALE 1/4"=1'-0"

SHEET 01S103



KEY PLAN
NTS

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FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENTS

STRUCTURAL BASIN #3 FLOCCULATION UPPER PLAN

0 1" 2"

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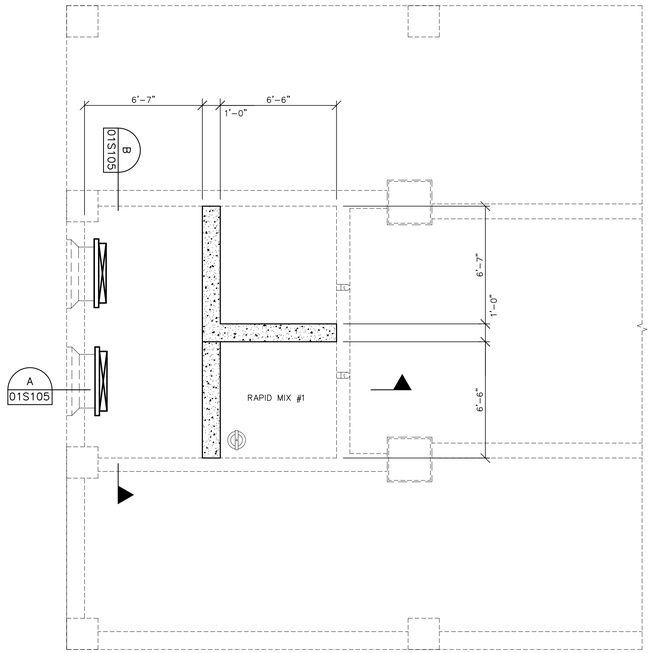
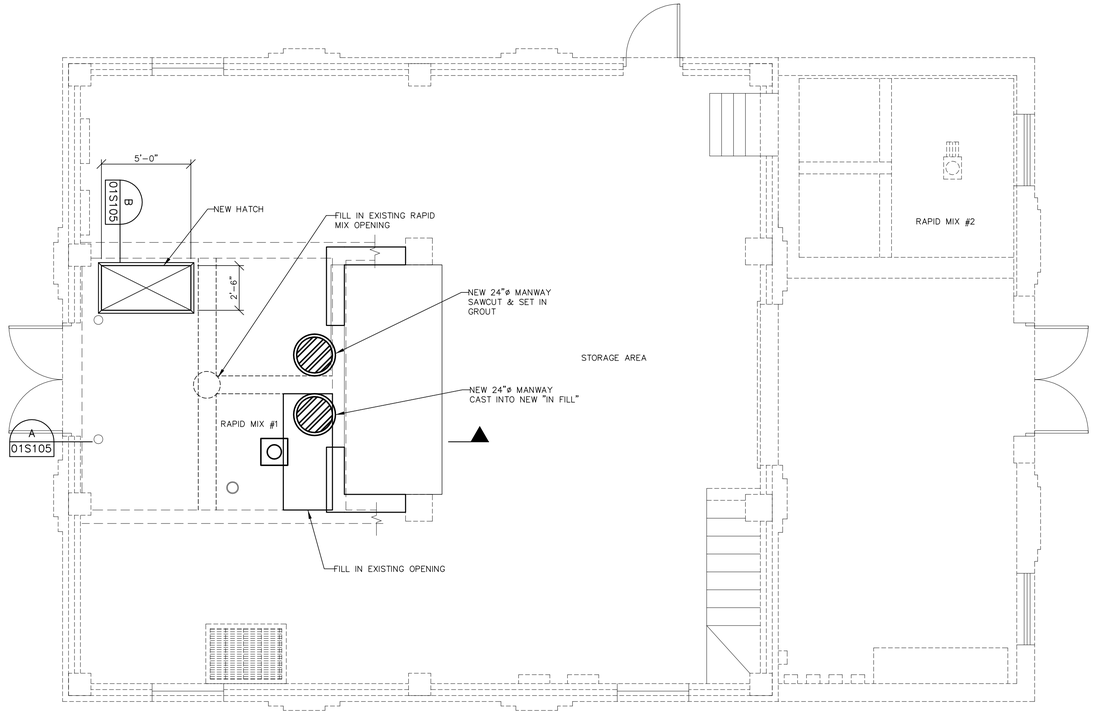
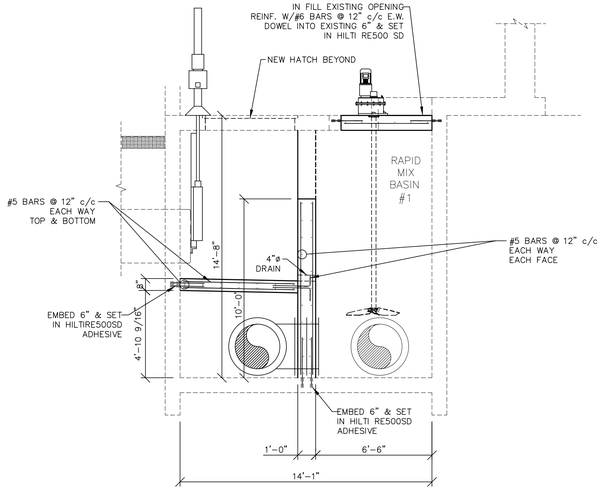
SCALE	1/4"=1'-0"
SHEET	01S104



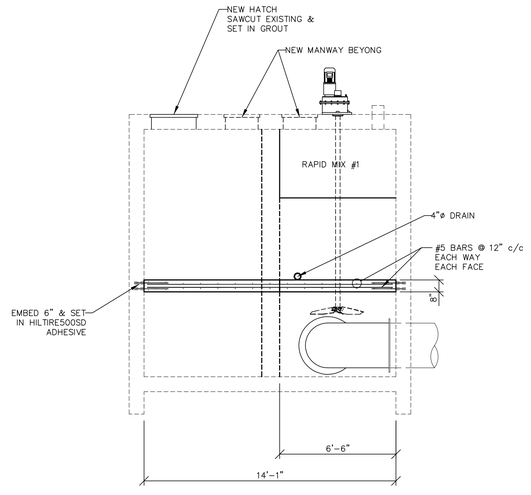
RAPID MIX #1 LOWER FLOOR PLAN
1/4"=1'-0"



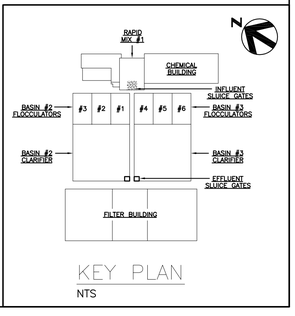
RAPID MIX #1 OPERATING FLOOR PLAN
1/4"=1'-0"



SECTION – RAPID MIX BASIN #1
1/4"=1'-0"
A 01S105



SECTION – RAPID MIX BASIN #1
1/4"=1'-0"
B 01S105



KEY PLAN
NTS

freeland harris consulting engineers
201 west short street
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lexington, kentucky 40507

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STATE OF KENTUCKY
LYMAN EDWARD ALEXANDER
18412
LICENSED PROFESSIONAL ENGINEER

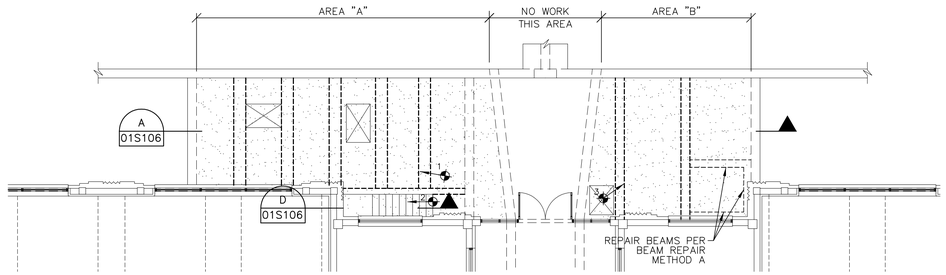
Northern Kentucky Water District

FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENTS

STRUCTURAL RAPID MIX PLANS

0 1" 2"

FILENAME	01S105.dwg
SCALE	1/4"=1'-0"
SHEET	01S105



EXISTING FILTER BLDG. BASEMENT LOWER FLOOR PLAN

N.T.S.

– LIMITS OF REPAIR WORK

– DENOTES ORIGIN & DIRECTION OF PHOTOS

GENERAL:

1. SOUND ALL CONCRETE WALLS, COLUMNS, BEAMS & CEILING IN AREA A & B.
2. IDENTIFY AND MARK ALL DETERIORATED AREAS TO BE REPAIRED.
3. REMOVE ALL LOOSE AND SCALING PAINT (AREA "B" ONLY).
4. CHIP AWAY DETERIORATED CONCRETE WITH 15 POUND (MAX.) IMPACT HAMMER.
5. REPAIR BEAMS AND CONCRETE SURFACES AS NOTED.
6. CONTRACTOR MUST HAVE AT LEAST 10 YEARS OF EXPERIENCE IN CONCRETE REPAIR METHODS USED.
7. FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS FOR PRODUCTS AND REPAIR PROCEDURES.

BEAM REPAIR – METHOD A:

1. COAT EXPOSED REINFORCING STEEL WITH SIKA ARMATEC 110 EPOCEM.
2. INSTALL STAINLESS STEEL PINS AND STAINLESS STEEL REINFORCING MAT TO BEAMS.
3. SHOTCRETE BEAMS WITH SIKACEM 103 (1 1/2 TO 2" THICK).

BEAM REPAIR – METHOD B:

1. CHIP AWAY CONCRETE TO APPROXIMATELY 3" BEYOND EXPOSED REINFORCING STEEL.
2. COAT EXPOSED REINFORCING STEEL WITH SIKA ARMATEC 110 EPOCEM.
3. INSTALL NEW REINFORCING STEEL PER DETAIL B/01S106.
4. FORM AND POUR BEAM ENCASEMENT WITH SIKA MONOTOP 611 POLYMER–MODIFIED MORTAR.

BEAM REPAIR – METHOD C:

1. CHIP AWAY EXISTING DETERIORATED CONCRETE (NOT LESS THAN 3" BEYOND EXPOSED. REINFORCING STEEL).
2. REPLACE EXISTING DETERIORATED REINFORCEMENT PER DETAIL C/01S106.
3. COAT REMAINING EXPOSED REINFORCING STEEL WITH SIKA ARMATEC 110 EPOCEM.
4. FORM AND POUR BEAM REPAIR WITH SIKA MONOTOP 611 POLYMER–MODIFIED MORTAR.

CEILING REPAIR – METHOD A:

1. COAT EXPOSED REINFORCING STEEL WITH SIKA ARMATEC 110 EPOCEM.
2. INSTALL STAINLESS STEEL PINS AND STAINLESS STEEL REINFORCING MAT TO BOTTOM OF CEILING.
3. SHOTCRETE CEILING WITH SIKACEM 103 (1 1/2 TO 2" THICK).

WALL AND COLUMNS:

1. COAT EXPOSED REINFORCING STEEL WITH SIKA ARMATEC 110 EPOCEM.
2. PATCH WITH SIKA MONOTOP 611 POLYMER–MODIFIED MORTAR.

PHOTO #1 – AREA "A" TYPICAL CONCRETE CONDITION

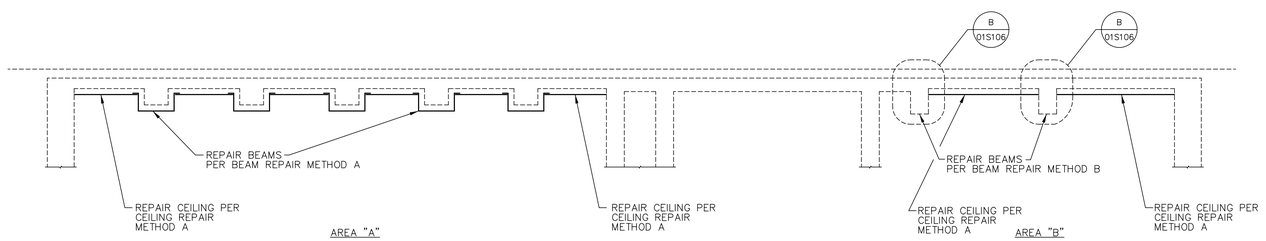
N.T.S.

PHOTO #2 – AREA "A" STAIRWAY TYPICAL CONCRETE CONDITION

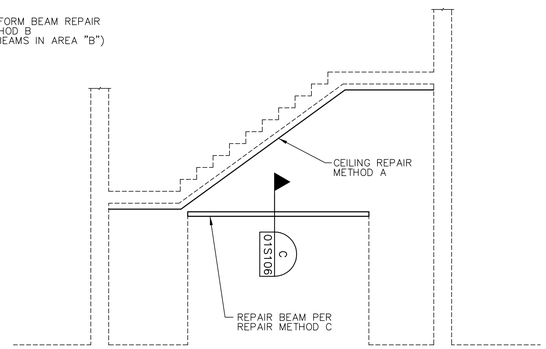
N.T.S.

PHOTO #3 – AREA "B" TYPICAL CONCRETE CONDITION

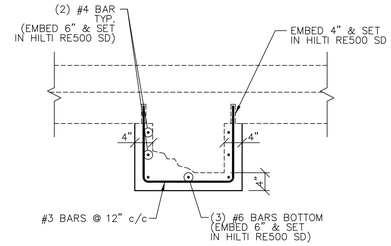
N.T.S.



SECTION
1/4"=1'–0"
A 01S106

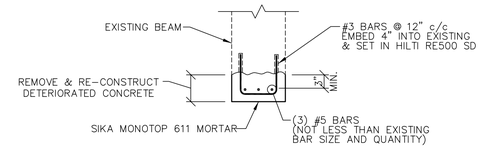


SECTION
1/4"=1'–0"
D 01S106



SECTION – BEAM REPAIR METHOD
3/4"=1'–0"
B 01S106

IN HILTI RE500 SD)

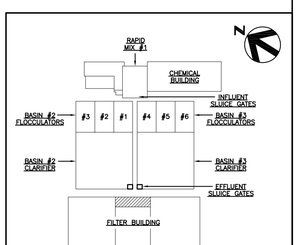


SECTION – BEAM REPAIR METHOD
3/4"=1'–0"
C 01S106

REMOVE & REPLACE EXISTING REINFORCEMENT. PROVIDE 24" LAPS, TO EXISTING, TYP.

ESTIMATED QUANTITIES		
ITEM	QUANTITY	UNIT
BEAM REPAIR METHOD A	85	LF
BEAM REPAIR METHOD B	35	LF
BEAM REPAIR METHOD C	15	LF
CEILING REPAIR METHOD A	800	SQUARE FT.
WALL AND COLUMNS	6	EACH (APPROX. 4 SQ. FT. EACH)

BID SHALL BE BASED ON STATED QUANTITIES. QUANTITIES SHALL BE REVIEWED & APPROVED BY OWNER/ENGINEER IN THE FIELD. NO PAYMENT WILL BE MADE FOR UNAPPROVED WORK.



KEY PLAN
NTS

freeland harris consulting engineers
201 west short street
suite 410
lexington, kentucky 40507

HDR

ISSUE	DATE	DESCRIPTION
	1/15/15	BID SET

PROJECT MANAGER	BRETT D. FISHER
DRAWN BY	J.L. HOAGLAND
REVIEWED BY	L.E. ALEXANDER
PROJECT NUMBER	218839

STATE OF KENTUCKY · LYMAN EDWARD ALEXANDER · 16412 · LICENSED PROFESSIONAL ENGINEER

Northern Kentucky Water District

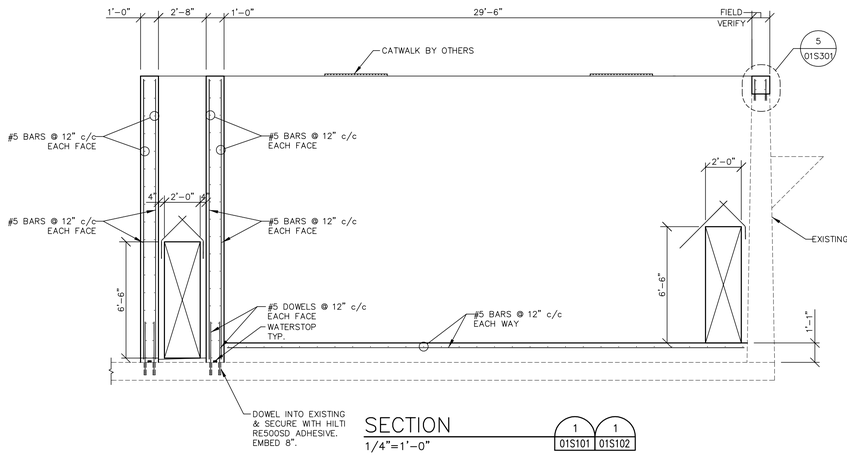
FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENTS

STRUCTURAL EXISTING FILTER BLDG. BASEMENT PLANS

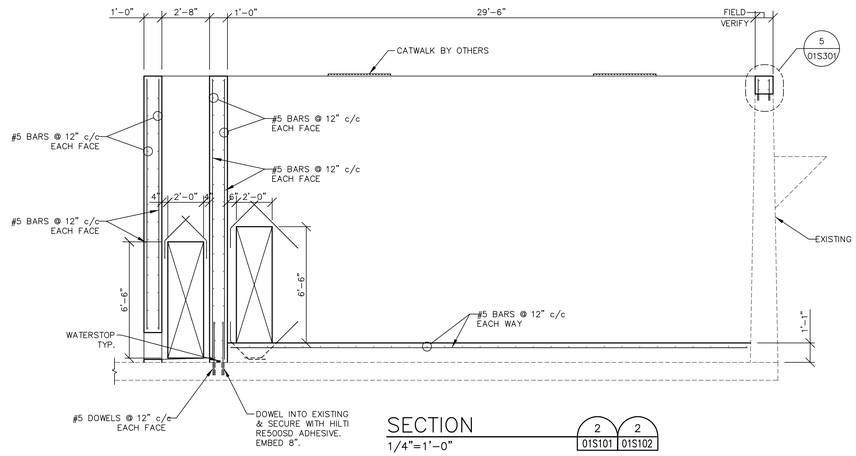
0 1" 2"

FILENAME 01S105.dwg
SCALE 1/4"=1'–0"

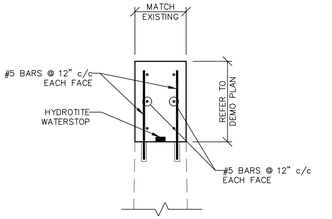
SHEET 01S106



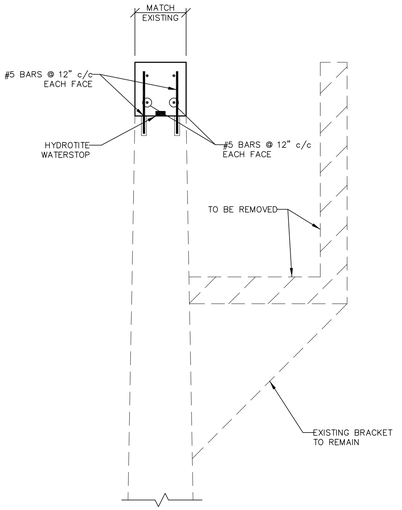
SECTION
1/4"=1'-0"
1 | 01S101 | 01S102



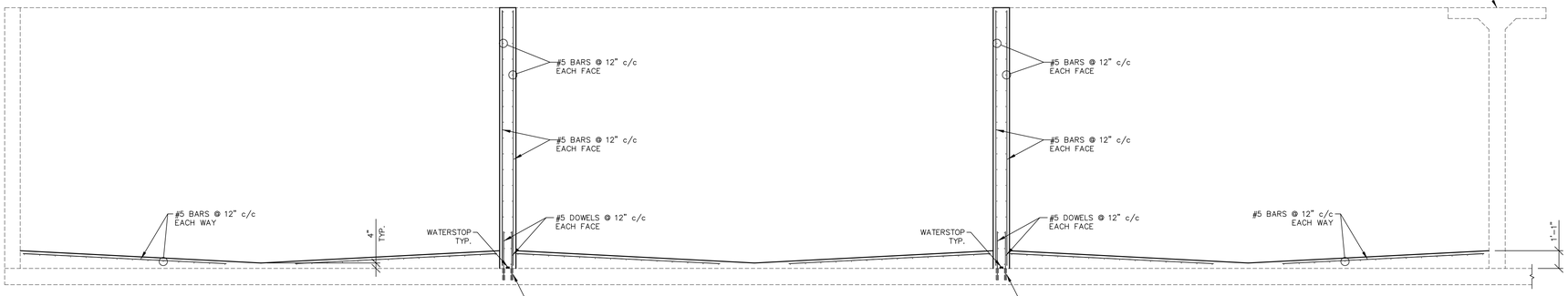
SECTION
1/4"=1'-0"
2 | 01S101 | 01S102



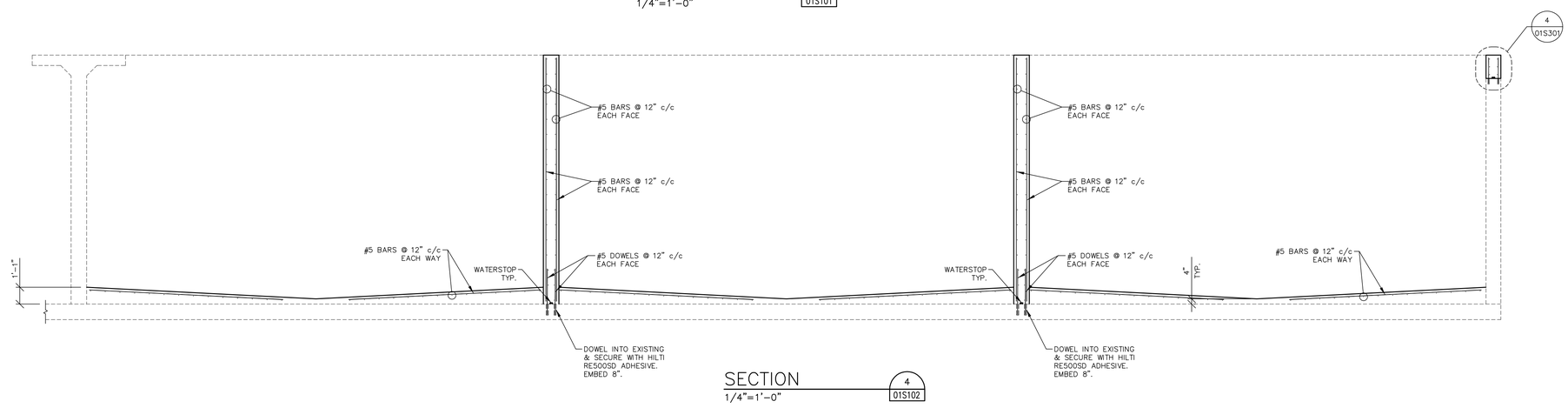
SECTION
3/4"=1'-0"
COORD. W/DEMO PLAN
4 | 01S301



SECTION
3/4"=1'-0"
COORD. W/DEMO PLAN
5 | 01S301



SECTION
1/4"=1'-0"
3 | 01S101



SECTION
1/4"=1'-0"
4 | 01S102

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REVIEWED BY	L.E. ALEXANDER	
PROJECT NUMBER	218839	

STATE OF KENTUCKY
LYMAN EDWARD ALEXANDER
16412
LICENSED PROFESSIONAL ENGINEER

Northern Kentucky Water District

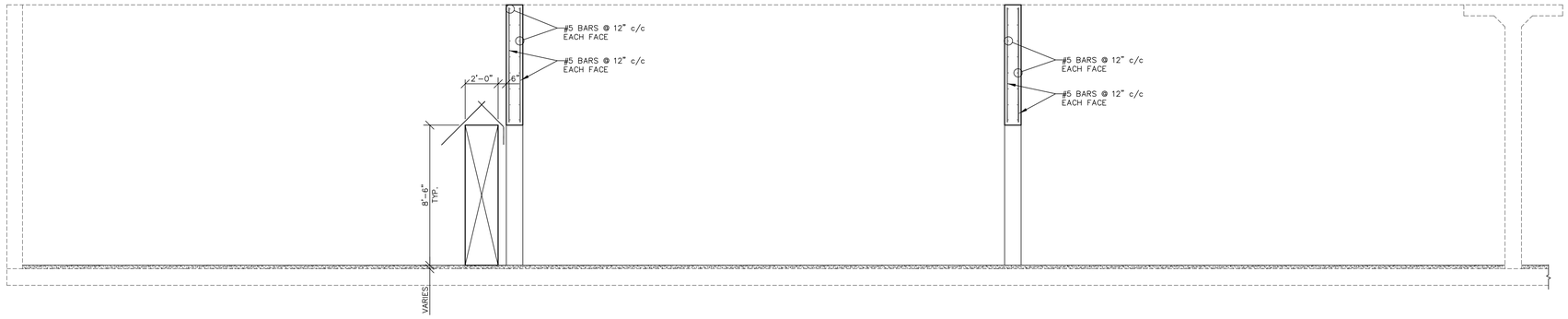
FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

STRUCTURAL BASIN #2 & #3 FLOCCULATION SECTIONS

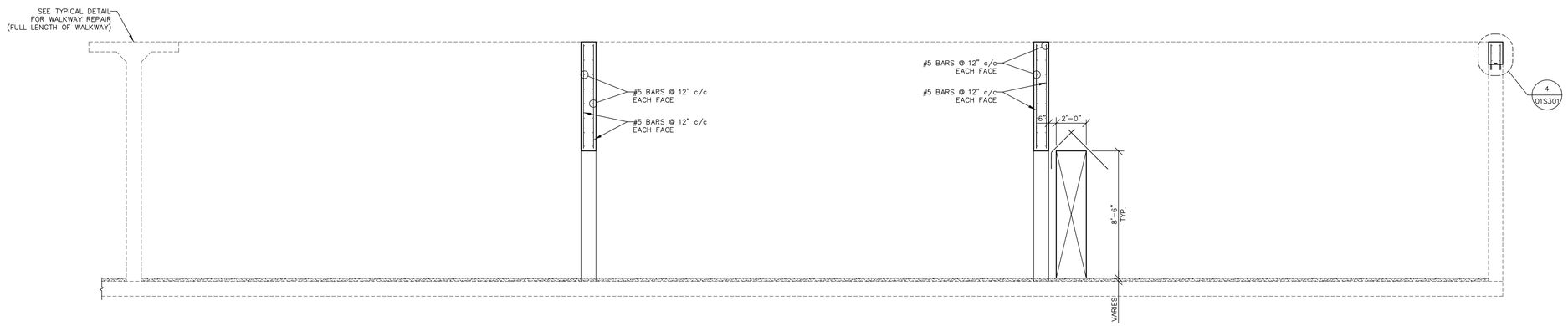
0 1" 2"

FILENAME 01S301.dwg
SCALE 1/4"=1'-0"

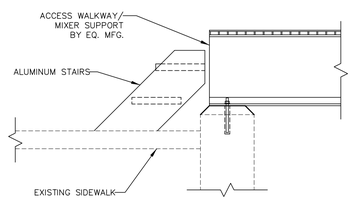
SHEET 01S301



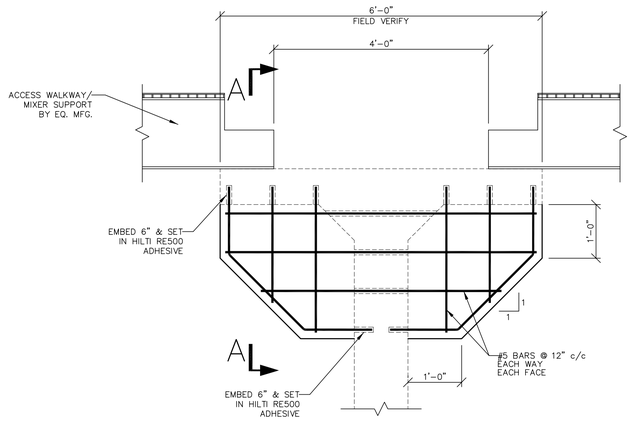
SECTION 1 / 01S101
1/4"=1'-0"



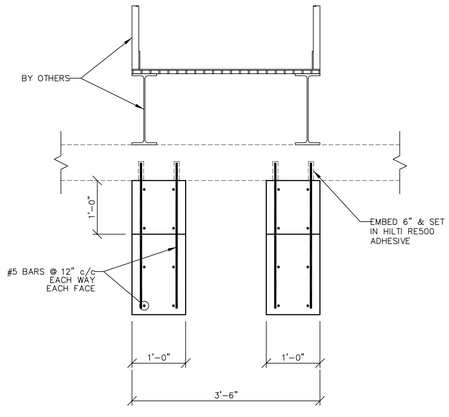
SECTION 2 / 01S102
1/4"=1'-0"



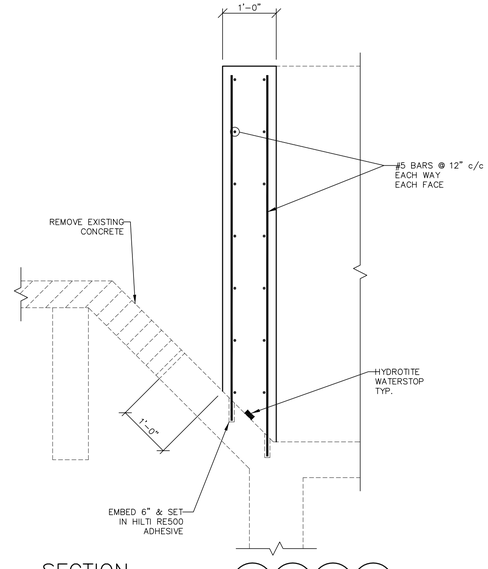
SECTION 3 / 01S302
3/4"=1'-0"



SECTION 4 / 01S103 | 4 / 01S104
3/4"=1'-0"



SECTION A–A
3/4"=1'-0"



SECTION 5 / 01S101 | 5 / 01S102 | 5 / 01S103 | 5 / 01S104
3/4"=1'-0"

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HDR

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PROJECT NUMBER	218839

STATE OF KENTUCKY
LYMAN EDWARD ALEXANDER
16412
LICENSED PROFESSIONAL ENGINEER

Northern Kentucky Water District

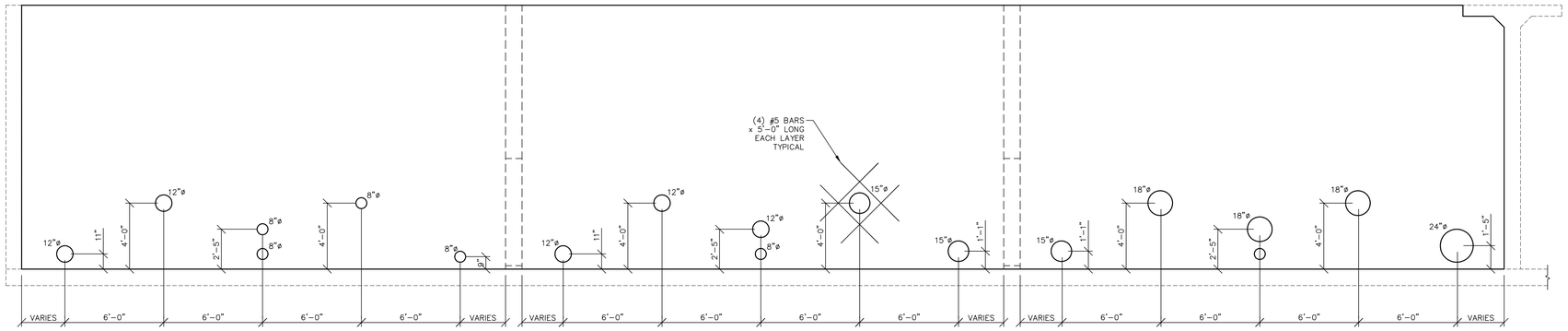
FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENTS

STRUCTURAL BASIN #2 & #3 FLOCCULATION SECTIONS

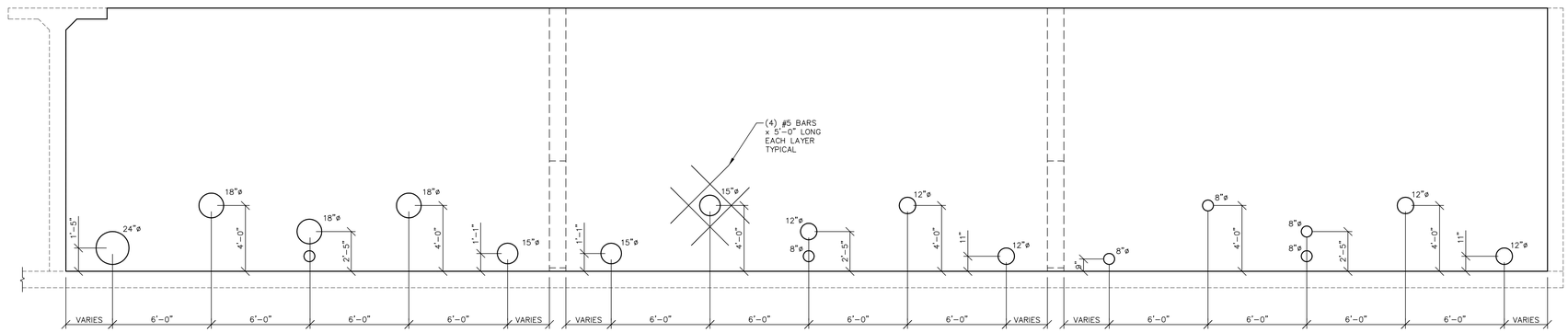
0 1" 2"

FILENAME 01S302.dwg
SCALE 1/4"=1'-0"

SHEET 01S302



SECTION
1/4"=1'-0"
1 / 01S101



SECTION
1/4"=1'-0"
2 / 01S102

ISSUE	DATE	DESCRIPTION
	1/15/15	BID SET

PROJECT MANAGER	BRETT D. FISHER
DRAWN BY	J.L. HOAGLAND
REVIEWED BY	L.E. ALEXANDER
PROJECT NUMBER	218839

freeland harris consulting engineers
201 west short street
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STATE OF KENTUCKY
LYMAN EDWARD ALEXANDER
16412
LICENSED PROFESSIONAL ENGINEER

Northern Kentucky Water District

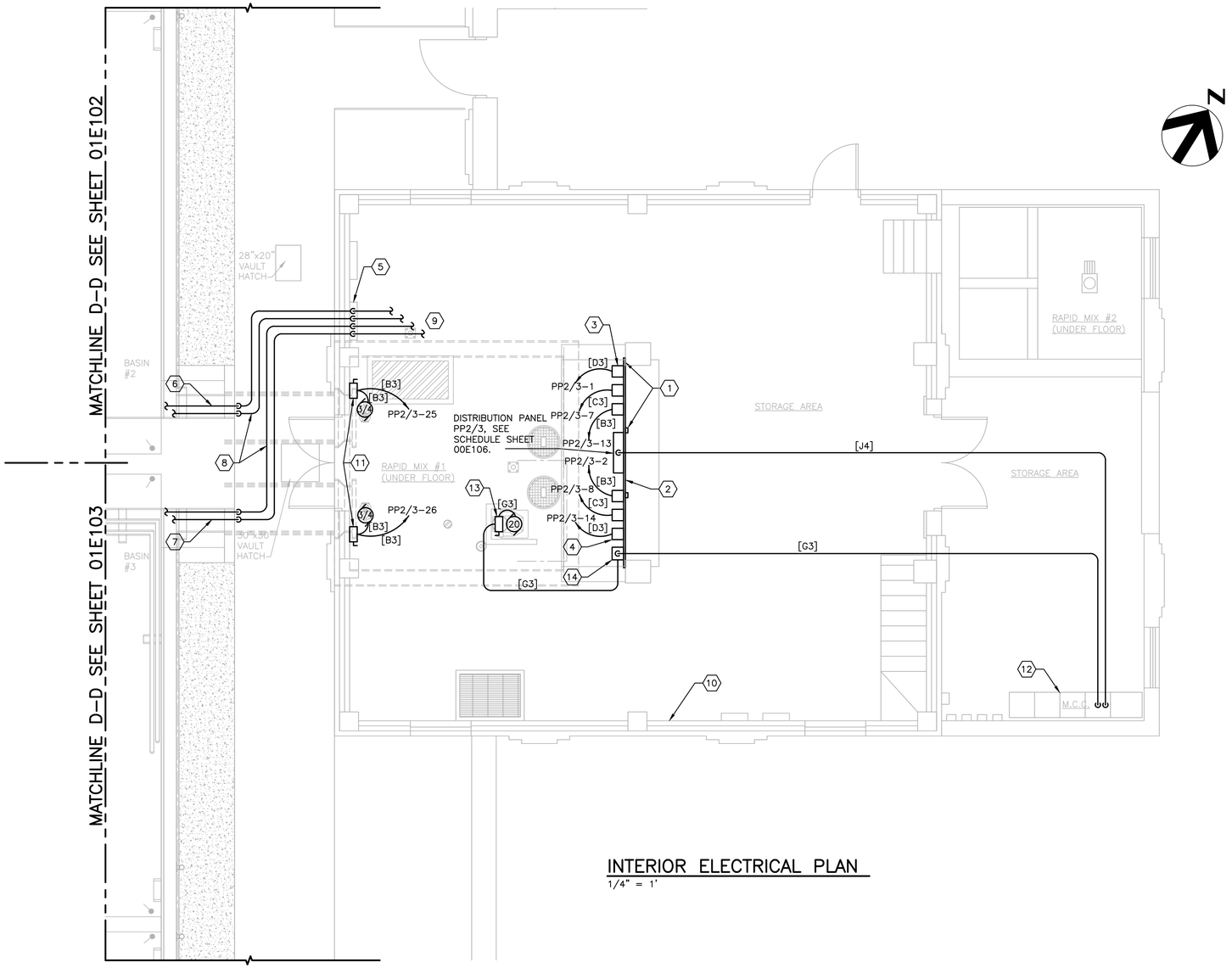
FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

STRUCTURAL BASIN #2 & #3 FLOCCULATION SECTIONS

0 1" 2"

FILENAME 01S303.dwg
SCALE 1/4"=1'-0"

SHEET 01S303



INTERIOR ELECTRICAL PLAN
1/4" = 1'

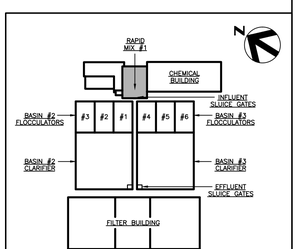
GENERAL NOTES:

1. SEE SHEET 01E106 FOR CIRCUIT CALLOUT SCHEDULE.
2. SEE SHEET 01E106 FOR PANELBOARD SCHEDULE.

KEY NOTES:

1. EQUIPMENT RACK TO BE ATTACHED TO FACE OF EXISTING BUILDING COLUMNS. TOP AND BOTTOM RAILS OF RACK TO BE OF ALUMINUM C-CHANNEL, SIZE AS REQUIRED. PROVIDE TWO VERTICAL C-CHANNEL SUPPORTS ANCHORED TO CONCRETE FLOOR EQUALLY SPACED ON REAR OF RACK. COORDINATE SPACING AND HEIGHT ABOVE FLOOR OF C-CHANNELS TO SUPPORT EQUIPMENT SUPPLIED. USE UNISTRUT VERTICAL MEMBERS AS REQUIRED FOR MOUNTING EQUIPMENT. RACK TO BE CONSTRUCTED TO ACCOMODATE FUTURE EQUIPMENT, SEE NOTE 2 BELOW.
2. SPACE ON REAR OF EQUIPMENT RACK RESERVED FOR FUTURE VFDs AND DISTRIBUTION PANEL FOR BASIN #1 AND #4.
3. VARIABLE FREQUENCY DRIVES FOR BASIN #2 VERTICAL FLOCCULATORS.
4. VARIABLE FREQUENCY DRIVES FOR BASIN #3 VERTICAL FLOCCULATORS.
5. REMOVE EXISTING ABANDONED FLUSH MOUNTED PANELBOARD AND DISCONNECT SWITCH. PATCH WALL TO MATCH ADJACENT SURFACES. USE THIS SPACE TO ROUTE ALL CONDUITS TO AND FROM CLARIFIERS AND FLOCCULATORS DOWN WALL. REFER TO PHOTO 8 ON SHEET 01X106.
6. CONDUITS TO BASIN #2 FLOCCULATORS AND CLARIFIER. SEE SHEETS 01E102 AND 01E104 FOR CONTINUATION AND FOR NUMBER AND SIZE OF CONDUITS.
7. CONDUITS TO BASIN #3 FLOCCULATORS AND CLARIFIER. SEE SHEETS 00E103 AND 00105 FOR CONTINUATION AND FOR NUMBER AND SIZE OF CONDUITS.
8. ROUTE CONDUITS THROUGH EXISTING UTILITY VAULT BELOW SIDEWALK.
9. CONDUITS TO RACK MOUNTED VFDs, NEW PANELBOARD PP2/3 OR EXISTING PANELBOARD IN MOTOR CONTROL CENTER AS FOLLOWS:
   - FOUR RECEPTACLE/CONTROL CIRCUITS EACH CONNECTED TO SPARE 1-POLE, 20 AMP CIRCUIT BREAKER IN EXISTING MCC PANELBOARD.
   - ONE CLARIFIER LIGHTING CIRCUIT CONNECTED TO SPARE 1-POLE, 20 AMP CIRCUIT BREAKER IN EXISTING MCC PANELBOARD
   - SIX FLOCCULATOR CIRCUITS AND ASSOCIATED CONTROL WIRING EACH CONNECTED TO RACK MOUNTED VFDs.
   - TWO CLARIFIER CIRCUITS AND ASSOCIATED CONTROL WIRING TO NEW MOTOR STARTERS INSTALLED IN EXISTING MOTOR CONTROL CENTER.
   - TWO EFFLUENT SLIDE GATE CIRCUITS TO NEW PANEL PP2/3.

   SEE PANEL SCHEDULE AND MCC DETAILS SHEET 00E106. COORDINATE EXACT CONDUIT ROUTING IN FIELD.
10. FOUR EXISTING FLOCCULATOR VFDs IN THIS LOCATION TO BE REMOVED. DISCONNECT CONDUCTORS AT MOTOR CONTROL CENTER AND REMOVE COMPLETE. REMOVE ALL EXPOSED CONDUIT AND ABANDON CONCEALED CONDUIT IN PLACE. REMOVE FOUR DISCONNECT SWITCHES AND VFDs AND RETURN TO OWNER IN GOOD CONDITION. REFER TO PHOTO 9 ON SHEET 01X106.
11. 30 AMP, 3-POLE, NON-FUSED DISCONNECT SWITCH IN NEMA 4X ENCLOSURE.
12. EXISTING 600 AMP, 208Y/120 VOLT, 3-PHASE SQUARE D MODEL 5 MOTOR CONTROL CENTER. SEE SHEET 01E106 FOR REQUIRED MODIFICATIONS.
13. 100 AMP, 3-POLE, NON-FUSED DISCONNECT SWITCH IN NEMA 4X ENCLOSURE.
14. VARIABLE FREQUENCY DRIVE FOR RAPID MIX.



KEY PLAN
NTS

freeland harris consulting engineers
201 west short street
suite 410
lexington, kentucky 40507

HDR

ISSUE	DATE	DESCRIPTION
	01/15/15	BID SET

PROJECT MANAGER	BRETT D. FISHER
DRAWN BY	R.D. GREER
REVIEWED BY	R.L. ANDERSON
PROJECT NUMBER	218839

STATE OF KENTUCKY · R.L. ANDERSON · 12551 · LICENSED PROFESSIONAL ENGINEER

Northern Kentucky Water District

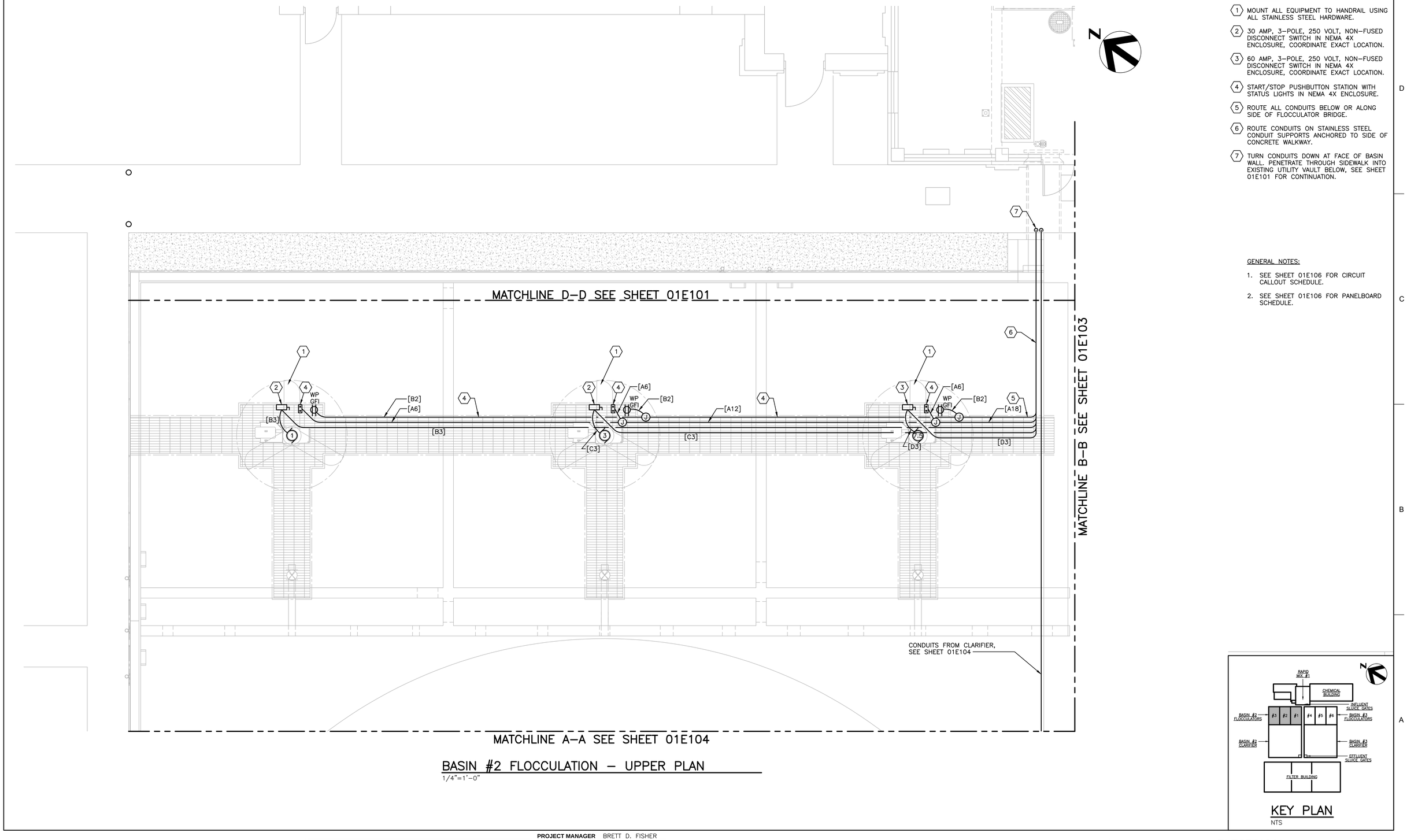
FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

ELECTRICAL
INTERIOR
INTERIOR ELECTRICAL PLAN

0 1" 2"

FILENAME 01E101.dwg
SCALE 1/4" = 1'-0"

SHEET 01E101



BASIN #2 FLOCCULATION – UPPER PLAN

1/4"=1'–0"

KEYNOTES:

1. MOUNT ALL EQUIPMENT TO HANDRAIL USING ALL STAINLESS STEEL HARDWARE.
2. 30 AMP, 3–POLE, 250 VOLT, NON–FUSED DISCONNECT SWITCH IN NEMA 4X ENCLOSURE, COORDINATE EXACT LOCATION.
3. 60 AMP, 3–POLE, 250 VOLT, NON–FUSED DISCONNECT SWITCH IN NEMA 4X ENCLOSURE, COORDINATE EXACT LOCATION.
4. START/STOP PUSHBUTTON STATION WITH STATUS LIGHTS IN NEMA 4X ENCLOSURE.
5. ROUTE ALL CONDUITS BELOW OR ALONG SIDE OF FLOCCULATOR BRIDGE.
6. ROUTE CONDUITS ON STAINLESS STEEL CONDUIT SUPPORTS ANCHORED TO SIDE OF CONCRETE WALKWAY.
7. TURN CONDUITS DOWN AT FACE OF BASIN WALL. PENETRATE THROUGH SIDEWALK INTO EXISTING UTILITY VAULT BELOW, SEE SHEET 01E101 FOR CONTINUATION.

GENERAL NOTES:

1. SEE SHEET 01E106 FOR CIRCUIT CALLOUT SCHEDULE.
2. SEE SHEET 01E106 FOR PANELBOARD SCHEDULE.

KEY PLAN

NTS

freeland harris consulting engineers
201 west short street
suite 410
lexington, kentucky 40507

HDR

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	01/15/15	BID SET

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DRAWN BY	R.D. GREER
REVIEWED BY	R.L. ANDERSON
PROJECT NUMBER	218839

R.L. ANDERSON 13551 LICENSED PROFESSIONAL ENGINEER STATE OF KENTUCKY

Northern Kentucky Water District

FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

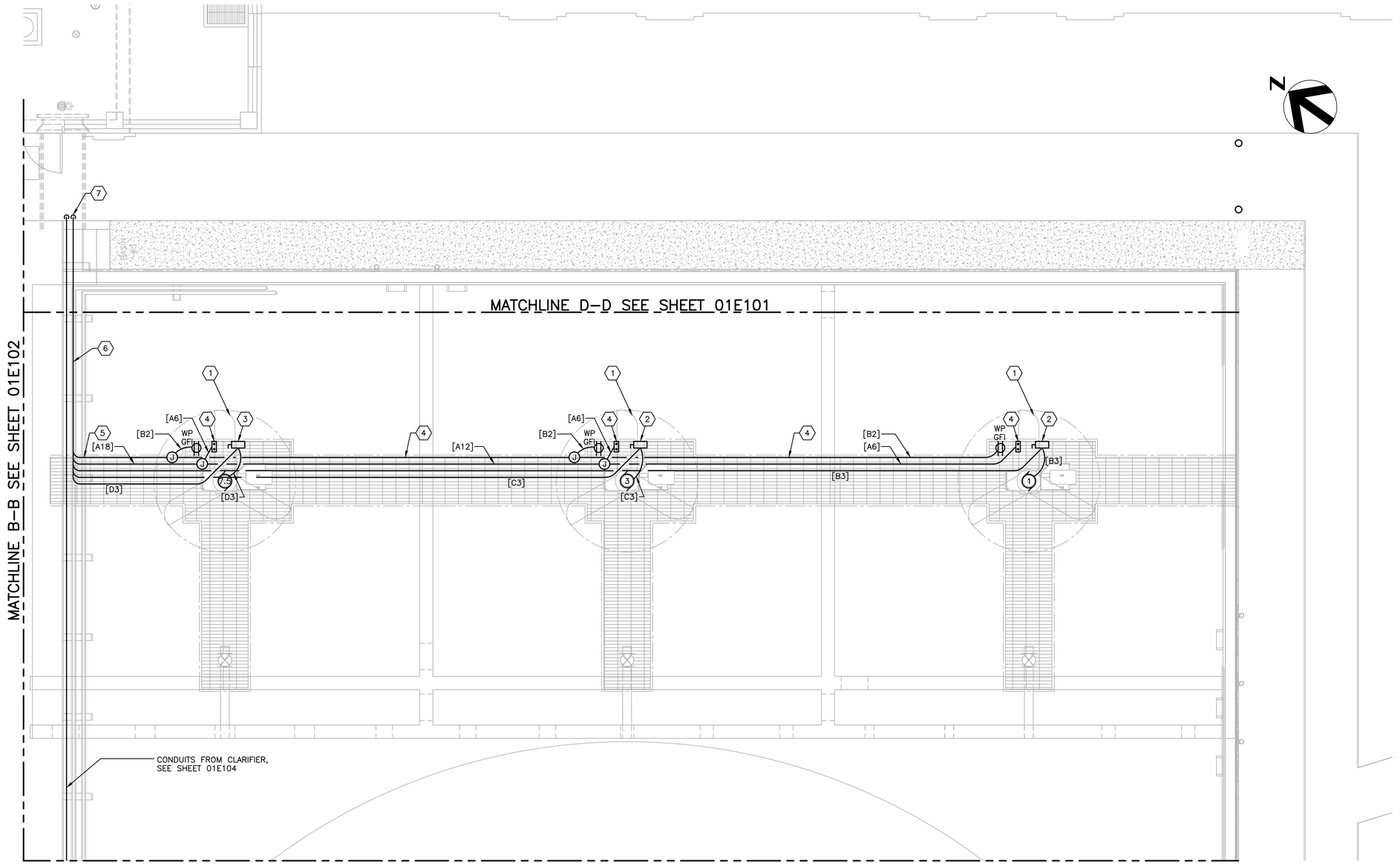
ELECTRICAL
BASIN #2
FLOCCULATION
UPPER PLAN

0 1" 2"

FILENAME 01E102.dwg

SCALE 1/4" = 1'–0"

SHEET 01E102



BASIN #3 FLOCCULATION – UPPER PLAN

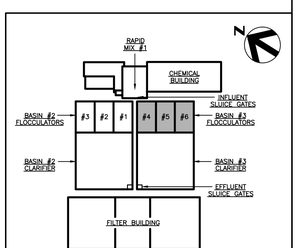
1/4"=1'-0"

KEYNOTES:

1. MOUNT ALL EQUIPMENT TO HANDRAIL USING ALL STAINLESS STEEL HARDWARE.
2. 30 AMP, 3–POLE, 250 VOLT, NON–FUSED DISCONNECT SWITCH IN NEMA 4X ENCLOSURE, COORDINATE EXACT LOCATION.
3. 60 AMP, 3–POLE, 250 VOLT, NON–FUSED DISCONNECT SWITCH IN NEMA 4X ENCLOSURE, COORDINATE EXACT LOCATION.
4. START/STOP PUSHBUTTON STATION WITH STATUS LIGHTS IN NEMA 4X ENCLOSURE.
5. ROUTE ALL CONDUITS BELOW OR ALONG SIDE OF FLOCCULATOR BRIDGE.
6. ROUTE CONDUITS ON STAINLESS STEEL CONDUIT SUPPORTS ANCHORED TO SIDE OF CONCRETE WALKWAY.
7. TURN CONDUITS DOWN AT FACE OF BASIN WALL. PENETRATE THROUGH SIDEWALK INTO EXISTING UTILITY VAULT BELOW, SEE SHEET 01E101 FOR CONTINUATION.

GENERAL NOTES:

1. SEE SHEET 01E106 FOR CIRCUIT CALLOUT SCHEDULE.
2. SEE SHEET 01E106 FOR PANELBOARD SCHEDULE.



KEY PLAN

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201 west short street
suite 410
lexington, kentucky 40507

HDR

ISSUE	DATE	DESCRIPTION
	01/15/15	BID SET

PROJECT MANAGER	BRETT D. FISHER
DRAWN BY	R.D. GREER
REVIEWED BY	R.L. ANDERSON
PROJECT NUMBER	218839

STATE OF KENTUCKY R.L. ANDERSON 13551 LICENSED PROFESSIONAL ENGINEER

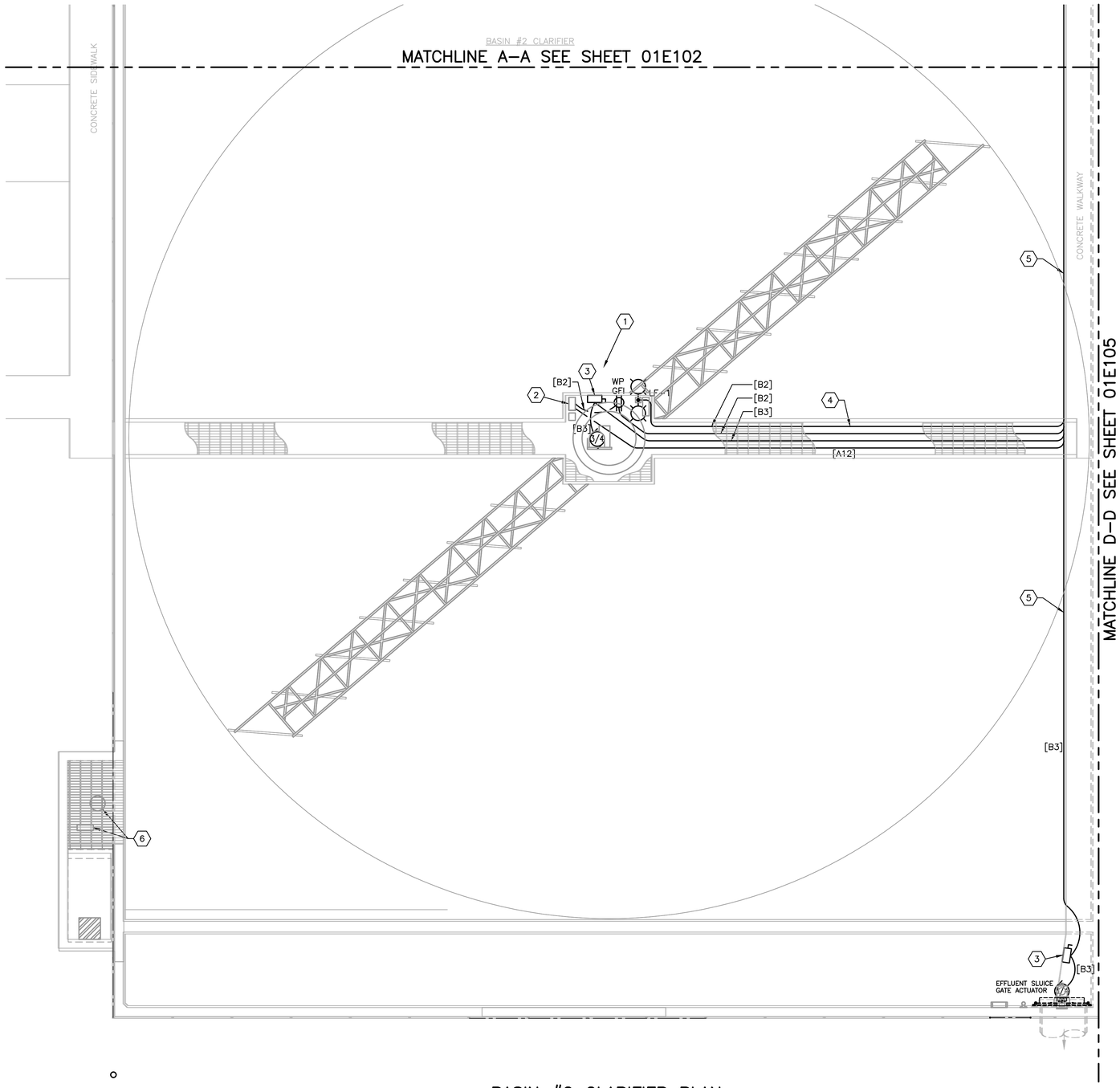
Northern Kentucky Water District

FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

ELECTRICAL
BASIN #3
FLOCCULATION
UPPER PLAN

0 1" 2"

FILENAME	01E103.dwg
SCALE	1/4" = 1'-0"
SHEET	01E103



BASIN #2 CLARIFIER PLAN

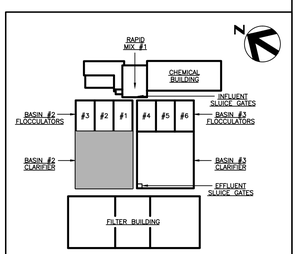
3/16"=1'-0"

KEYNOTES:

1. MOUNT ALL EQUIPMENT TO HANDRAIL USING ALL STAINLESS STEEL HARDWARE.
2. CONTROL PANEL PROVIDED WITH EQUIPMENT, INSTALLED BY CONTRACTOR, COORDINATE EXACT LOCATION.
3. 30 AMP, 3–POLE, 250 VOLT, NON–FUSED DISCONNECT SWITCH IN NEMA 4X ENCLOSURE, COORDINATE EXACT LOCATION.
4. ROUTE ALL CONDUITS BELOW OR ALONG SIDE OF CLARIFIER BRIDGE.
5. ROUTE CONDUITS ON STAINLESS STEEL CONDUIT SUPPORTS ANCHORED TO SIDE OF CONCRETE WALKWAY.
6. EXISTING 6" PLUG VALVE AND 120 VOLT ELECTRIC ACTUATOR TO BE REPLACED. COORDINATE ELECTRICAL SOURCE, DISCONNECT AND REMOVE EXISTING ACTUATOR. RE–CONNECT NEW ACTUATOR TO EXISTING ELECTRICAL CIRCUIT.

GENERAL NOTES:

1. SEE SHEET 01E106 FOR CIRCUIT CALLOUT SCHEDULE.
2. SEE SHEET 01E106 FOR PANELBOARD SCHEDULE.



KEY PLAN

NTS

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HDR

ISSUE	DATE	DESCRIPTION
	01/15/15	BID SET

PROJECT MANAGER	BRETT D. FISHER
DRAWN BY	R.D. GREER
REVIEWED BY	R.L. ANDERSON
PROJECT NUMBER	218839

R.L. ANDERSON 10551 STATE OF KENTUCKY 11/14/15

Northern Kentucky Water District

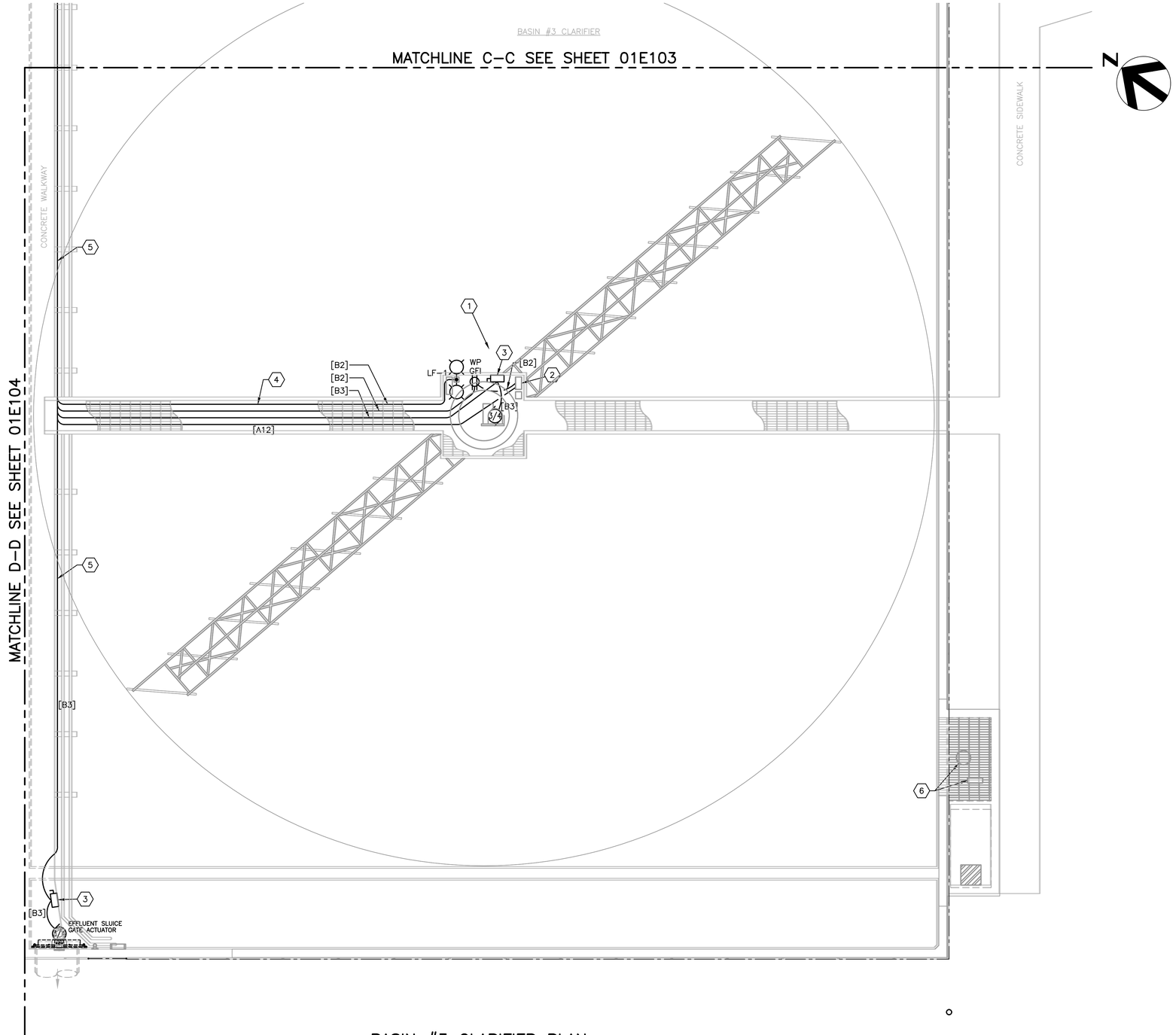
FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENTS

ELECTRICAL BASIN #2 CLARIFIER PLAN

0 1" 2"

FILENAME 01E104.dwg
SCALE 3/16" = 1'–0"

SHEET 01E104



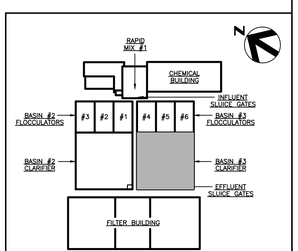
BASIN #3 CLARIFIER PLAN
3/16"=1'-0"

KEYNOTES:

1. MOUNT ALL EQUIPMENT TO HANDRAIL USING ALL STAINLESS STEEL HARDWARE.
2. CONTROL PANEL PROVIDED WITH EQUIPMENT, INSTALLED BY CONTRACTOR, COORDINATE EXACT LOCATION.
3. 30 AMP, 3-POLE, 250 VOLT, NON-FUSED DISCONNECT SWITCH IN NEMA 4X ENCLOSURE, COORDINATE EXACT LOCATION.
4. ROUTE ALL CONDUITS BELOW OR ALONG SIDE OF CLARIFIER BRIDGE.
5. ROUTE CONDUITS ON STAINLESS STEEL CONDUIT SUPPORTS ANCHORED TO SIDE OF CONCRETE WALKWAY.
6. EXISTING 6" PLUG VALVE AND 120 VOLT ELECTRIC ACTUATOR TO BE REPLACED. COORDINATE ELECTRICAL SOURCE, DISCONNECT AND REMOVE EXISTING ACTUATOR. RE-CONNECT NEW ACTUATOR TO EXISTING ELECTRICAL CIRCUIT.

GENERAL NOTES:

1. SEE SHEET 01E106 FOR CIRCUIT CALLOUT SCHEDULE.
2. SEE SHEET 01E106 FOR PANELBOARD SCHEDULE.



KEY PLAN
NTS

freeland harris consulting engineers
201 west short street
suite 410
lexington, kentucky 40507

HDR

ISSUE	DATE	DESCRIPTION
	01/15/15	BID SET

PROJECT MANAGER	BRETT D. FISHER
DRAWN BY	R.D. GREER
REVIEWED BY	R.L. ANDERSON
PROJECT NUMBER	218839

STATE OF KENTUCKY
R. L. ANDERSON
13551
LICENSED PROFESSIONAL ENGINEER
11/14/14

Northern Kentucky Water District

FORT THOMAS TREATMENT PLANT
BASIN IMPROVEMENTS

ELECTRICAL
BASIN #3
CLARIFIER
PLAN

0 1" 2"

FILENAME	01E105.dwg
SCALE	3/16" = 1'-0"
SHEET	01E105

CIRCUIT CALLOUTS

[A2] = [3/4" CONDUIT, 2–#14]

[A6] = [3/4" CONDUIT, 6–#14]

[A12] =[1" CONDUIT, 12–#14]

[A18] =[1 1/4" CONDUIT, 18–#14]

[B2] = [3/4" CONDUIT, 2–#12, 1–#12 GROUND]

[B3] = [3/4" CONDUIT, 3–#12, 1–#12 GROUND]

[C2] = [3/4" CONDUIT, 2–#10, 1–#10 GROUND]

[C3] = [3/4" CONDUIT, 3–#10, 1–#10 GROUND]

[D2] = [3/4" CONDUIT, 2–#8, 1–#8 GROUND]

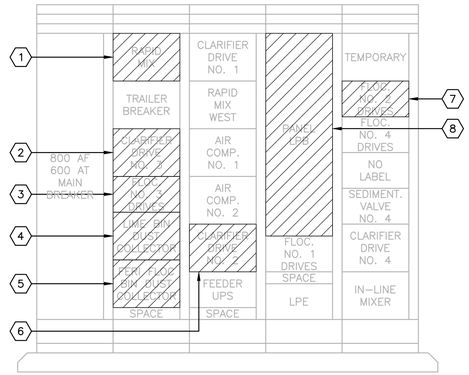
[D3] = [1" CONDUIT, 3–#8, 1–#8 GROUND]

[G2] = [1 1/4" CONDUIT, 2–#3, 1–#8 GROUND]

[G3] = [1 1/4" CONDUIT, 3–#3, 1–#8 GROUND]

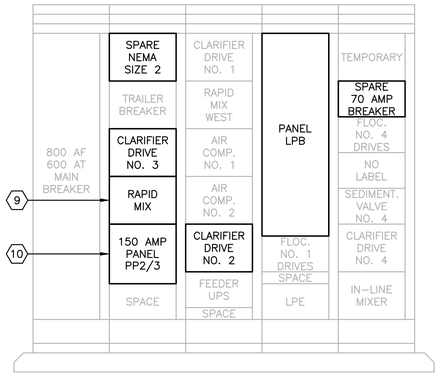
[J3] = [2" CONDUIT, 3–#1/0, 1–#6 GROUND]

[J4] = [2" CONDUIT, 4–#1/0, 1–#6 GROUND]



EXISTING MOTOR CONTROL CENTER (SQUARE D, MODEL 5)

NO SCALE



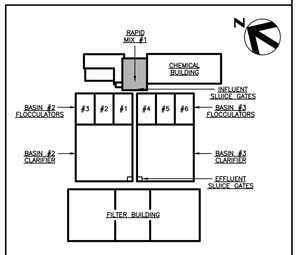
MODIFIED MOTOR CONTROL CENTER (SQUARE D, MODEL 5)

NO SCALE

KEYNOTES:

1. DISCONNECT AND REMOVE EXISTING RAPID MIX FEEDER COMPLETE. RE–LABEL EXISTING NEMA SIZE 2 STARTER AS SPARE.
2. DISCONNECT AND REMOVE EXISTING CLARIFIER NO. 3 FEEDER COMPLETE. REMOVE EXISTING STARTER COMPLETE AND INSTALL A NEMA SIZE 1 STARTER FOR NEW CLARIFIER NO. 3 IN EXISTING SPACE. REFER TO PHOTOS 5, 6, & 7 ON SHEET 01X106 FOR EXTERIOR CONDUITS.
3. DISCONNECT AND REMOVE EXISTING FLOC. NO. 3 DRIVES FEEDER COMPLETE. REMOVE EXISTING 70 AMP CIRCUIT COMPLETE. REFER TO PHOTOS 5, 6, & 7 ON SHEET 01X106 FOR EXTERIOR CONDUITS.
4. REMOVE EXISTING LIME BIN DUST COLLECTOR CIRCUIT BREAKER COMPLETE.
5. REMOVE EXISTING FERI FLOC BIN DUST COLLECTOR CIRCUIT BREAKER COMPLETE.
6. DISCONNECT AND REMOVE EXISTING CLARIFIER NO. 2 FEEDER COMPLETE. REMOVE EXISTING STARTER COMPLETE AND INSTALL A NEMA SIZE 1 STARTER FOR NEW CLARIFIER NO. 2 IN EXISTING SPACE. REFER TO PHOTOS 1, 2, 3, & 4 ON SHEET 01X106 FOR EXTERIOR CONDUITS.
7. DISCONNECT AND REMOVE EXISTING FLOC. NO. 2 DRIVES FEEDER COMPLETE. RE–LABEL EXISTING 70 AMP CIRCUIT AS SPARE. REFER TO PHOTOS 1, 2, 3, & 4 ON SHEET 01X106 FOR EXTERIOR CONDUITS.
8. EXISTING PANEL LPB TO REMAIN. CONNECT NEW RECEPTACLE AND CONTROL CIRCUITS TO EXISTING SPARE CIRCUIT BREAKERS IN THIS PANEL.
9. INSTALL A NEW 90 AMP, 3–POLE CIRCUIT BREAKER IN EXISTING SPACE FOR 20 HP RAPID MIX VFD.
10. INSTALL A NEW 150 AMP, 3–POLE CIRCUIT BREAKER IN EXISTING SPACE TO FEED PANEL PP2/3.

PANELBOARD	PP2/3			PHASE	3	MOUNTING	Surface		LOCATION	Equipment Rack							
				WIRE	4												
VOLTAGE	208Y/120			GROUND	1		MAIN	200	MAIN BREAKER	150 Amp, 3-Pole							
CKT #	CB	Wire / Cond.	LOAD SERVED	POLE	VA	LOAD A	PER B	PHASE C	VA	POLE	LOAD SERVED	Wire / Cond.	CB	CKT #			
1	40	#8, 1"	BASIN 2 STAGE 1 FLOCCULATOR	1	3039	6078			3039	2	BASIN 3 STAGE 1 FLOCCULATOR	#8, 1"	40	2			
			---	3	3039		6078		3039	4	---						
	3		---	5	3039			6078	3039	6	---		3				
7	20	#10,3/4"	BASIN 2 STAGE 2 FLOCCULATOR	7	1321	2642			1321	8	BASIN 3 STAGE 2 FLOCCULATOR	#10,3/4"	20	8			
			---	9	1321		2642		1321	10	---						
	3		---	11	1321			2642	1321	12	---		3				
13	15	#12,3/4"	BASIN 2 STAGE 3 FLOCCULATOR	13	577	1154			577	14	BASIN 3 STAGE 3 FLOCCULATOR	#12,3/4"	15	14			
			---	15	577		1154		577	16	---						
	3		---	17	577			1154	577	18	---		3				
19	15	#12,3/4"	CLARIFIER 2 EFFL. SLIDE GATE	19	421	4942			4521	20	CLARIFIER 3 EFFL. SLIDE GATE	#12,3/4"	15	20			
			---	21	421		842		421	22	---						
	3		---	23	421			842	421	24	---		3				
25	15	#12,3/4"	BASIN 2 RAPID MIX ACTUATOR	25	421	842			421	26	BASIN 3 RAPID MIX ACTUATOR	#12,3/4"	15	26			
			---	27	421		842		421	28	---						
	3		---	29	421			842	421	30	---		3				
31	15	#12,3/4"	SPARE	31	500	1000			500	32	SPARE	#12,3/4"	15	32			
			---	33	500		1000		500	34	---						
	3		---	35	500			1000	500	36	---		3				
			SPACE ONLY	37		0				38	SPACE ONLY						
			SPACE ONLY	39			0			40	SPACE ONLY						
			SPACE ONLY	41	1000					42	SPACE ONLY						
						16658	12558	12558									
TOTAL CONNECTED LOAD:						41,774	WATTS										



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STATE OF KENTUCKY R.L. ANDERSON 13551 LICENSED PROFESSIONAL ENGINEER 11/14/15

Northern Kentucky Water District

FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENTS

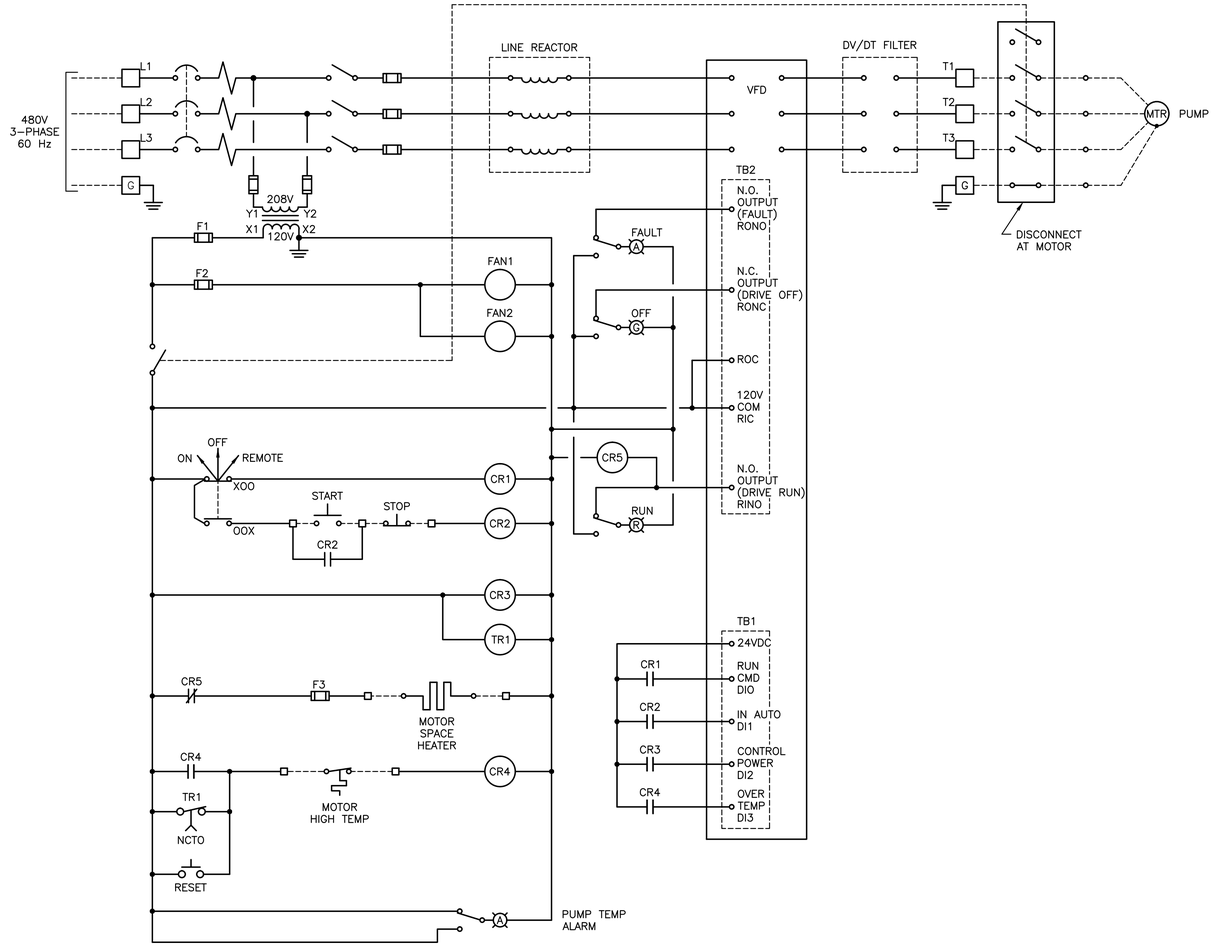
ELECTRICAL PANELBOARD SCHEDULE AND MOTOR CONTROL CENTER DETAILS

0 1" 2"

FILENAME 01E106.dwg

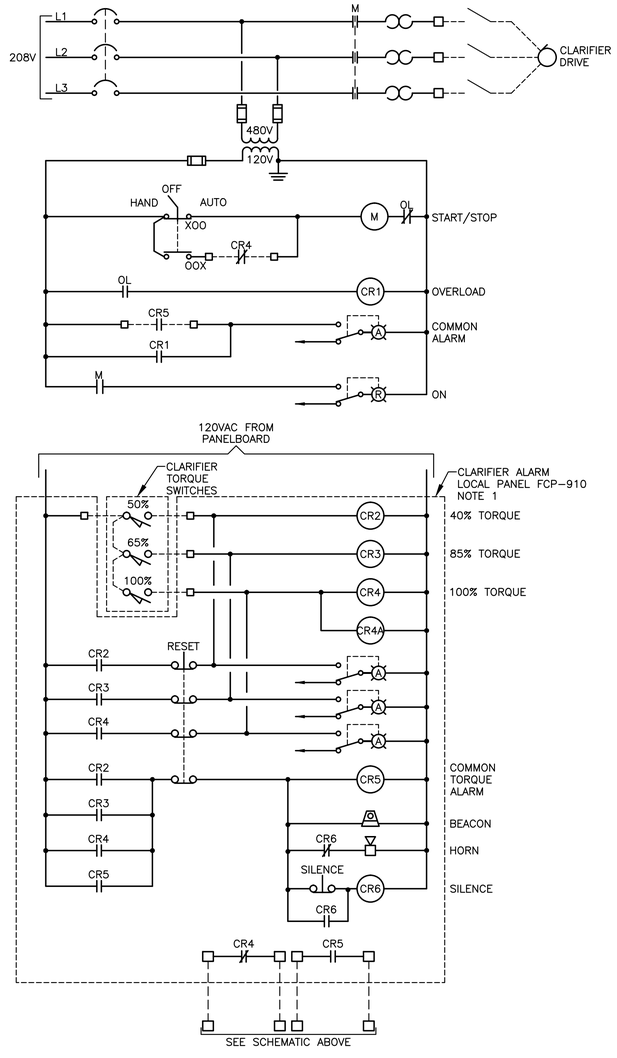
SCALE NONE

SHEET 01E106

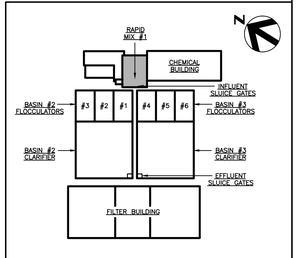


FLOCCULATOR CONTROL SCHEMATIC – TYPICAL

NOTE:
SCHEMATIC TYPICAL FOR RAPID MIX WITH THE EXCEPTION THAT IT HAS NO LOCAL START/STOP.



CLARIFIER CONTROL SCHEMATIC – TYPICAL



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STATE OF KENTUCKY
R.L. ANDERSON
12531
LICENSED PROFESSIONAL ENGINEER

Northern Kentucky Water District

FORT THOMAS TREATMENT PLANT BASIN IMPROVEMENTS

ELECTRICAL CONTROL SCHEMATICS

0 1" 2"

FILENAME 01E107.dwg
SCALE NONE

SHEET 01E107